WILSON & COMPANY

5694 Mission Center Road, Suite 602-147
San Diego, CA 92108
619-952-2936 phone

May 9, 2013

Ms. Gayle Ackerman, AICP
City of Lake Forest
25550 Commercentre Drive, Suite 100
Lake Forest, CA 92630

Subject: Traffic for Portola Center TTMs 15353 & 17300

Dear Ms. Ackerman:

Wilson & Company has reviewed the Portola Center Tentative Maps, dated April 2, 2013, which include the conversion of the ½ acre park to four additional single family residential units near the east entrance to Portola South (TTM 15353). From a traffic perspective, this change results in an increase in average daily traffic (ADT) volumes of 38 trips and an increase of 3 trips and 4 trips during the AM peak-hour and PM peak-hour, respectively. The increase in traffic is considered negligible. None of the study intersections in the immediate vicinity of the project site would experience a significant increase in delay and would not result in any additional traffic impacts.

It is my recommendation that no changes to the previous analyses contained in the January 2013 traffic study is required and that the conclusions and recommendations remain valid for the project. Should you have any questions, please do not hesitate to contact me at 619-952-2936 or by email at marc.mizuta@wilsonco.com.

Sincerely,
WILSON & COMPANY

Marc Mizuta, PE, PTOE
Senior Traffic Engineer

Cc: Scott Molloy, Baldwin & Sons

WILSON & COMPANY

5694 Mission Center Road, Suite 602-147
San Diego, CA 92108
619-952-2936 phone

June 6, 2013

Ms. Gayle Ackerman, AICP
City of Lake Forest
25550 Commercentre Drive, Suite 100
Lake Forest, CA 92630

Subject: Portola Center Traffic Impact Study, Project Construction Traffic Updated

Dear Ms. Ackerman:

This letter is in response to updated grading and hauling information for the Portola Center Project. In light of the adjusted quantities of fill material to be exchanged between the different Planning Areas for the Project and the need to analyze a hauling schedule with all of the Planning Areas undergoing grading at the same time, I have amended Section 9.7, "Project Construction Traffic", of the Portola Center Traffic Impact Study (Jan. 2013). This amended section is provided as an attachment to this letter both in a strikeout/underline version and a clean version.

In summary, the adjusted grading quantities would affect the timing and amount of hauling vehicle trips between the sites. The scenario where all of the Portola Center Planning Areas undergo grading at the same time would result in all of the hauling activity occurring in the first year of the grading operation. No new project-related traffic impacts would occur as a result of these adjustments to the grading quantities and timing of grading activity, no other changes to the Portola Center Traffic Impact Study (Jan. 2013) are required, and the conclusions and recommendations in the study remain valid for the project. Should you have any questions, please do not hesitate to contact me at 619-952-2936 or by email at marc.mizuta@wilsonco.com.

Sincerely,
WILSON & COMPANY

Marc Mizuta, PE, PTOE
Senior Traffic Engineer

Cc: Scott Molloy, Baldwin & Sons

Attached: Portola Center Traffic Impact Study, Section 9.7 Amended

PORTOLA CENTER TRAFFIC IMPACT STUDY (JAN. 2013)
SECTION 9.7 (AMENDED-STRIKEOUT/UNDERLINE VERSION)

9.7 Project Construction Traffic

Prior to the completion of the project, construction traffic will be generated by construction equipment traffic between the planning areas and vehicular traffic related to the construction workers and delivery of materials to the project site. At approximately 195 acres in size, the project site is large enough to accommodate the on-site storage of all construction equipment and construction worker parking. Staging areas with appropriate screening for construction equipment storage and construction worker parking will be established on-site near the new project entries.

During the project's grading phase, it is expected that all cut and fill will be balanced within each planning area, however the grading of the Northwest and Northeast Planning Areas (Zones 13 and 16) will require the total exchange of approximately ~~900,000~~1,100,000 cubic yards of fill material such that approximately ~~450~~550,000 cubic yards of select backfill material from the South Planning Area (Zone 17) will be exchanged with ~~450~~550,000 cubic yards of standard fill from the North Planning Areas (approximately ~~50~~110,000 cubic yards from Portola Northwest and ~~400~~440,000 cubic yards from Portola Northeast). This fill material will be hauled between the Northwest and South sites using ~~either scrapers or~~ dump trucks and between the Northeast and South sites using either scrapers or dump trucks or a combination of both.

The typical dump truck has a hauling capacity of ~~12~~ 16 cubic yards of dirt. The typical scraper has a hauling capacity of 24 cubic yards. Using trucks to exchange dirt between the Northwest and South sites would result in approximately 14,000 individual truck trips (7,000 round trips) between these sites. Using scrapers to exchange dirt between the Northeast and South sites would result in a total of approximately 37,000 scraper trips (18,500 round trips) between these sites. The exchange of soil between the Northwest and South Planning Areas is expected to occur over a 2-month period (40 work days) with an average of 360 truck trips (180 round trips) per day or 60 trips (30 round trips) per hour for an average of 6 hours per day (typically 9:00 a.m. to 3:00 p.m.). The exchange of soil between the Northeast and South Planning Areas is expected to occur over a 5 to 6 month period (100 – 120 work days) with an average of 360 scraper trips (180 round trips) per day or 60 trips (30 round trips) per hour for an average of 6 hours per day (typically 9:00 a.m. to 3:00 p.m.).~~The exchange of dirt between the planning areas will result in vehicles carrying dirt in both directions. Therefore, 900,000 cubic yards of dirt will result in approximately 75,000 loaded truck trips or 37,500 loaded scraper trips over the life of the project's grading phase. On any given day, it is reasonable to assume that up to 3,000 cubic yards of dirt can be hauled between the sites by trucks and up to 10,000 cubic yards by scrapers, resulting in 250 truck trips in a given day or approximately 420 scraper trips. Spread out over 6 hours, this results in approximately 42 truck trips per hour or 70 scraper trips per hour under peak activity levels. Considering that dirt will not be hauled between the planning areas every day during construction of the project and certain days will experience a higher amount of trips than other days,~~

~~the~~ The full grading of the project is expected to last about 2 to 3 years~~. or 500 work days, with~~ Under a scenario where all of the Planning Areas undergo grading at the same time, soil hauling would occur within the first year of the grading operation.
~~occurring at various levels throughout that period. With hauling occurring for a six hour period over 500 work days, this equates to an average of 150 truck trips per day/25 truck trips per hour (or an average of 75 scraper trips per day/12 to 14 scraper trips per hour) occurring during the off-peak periods (typically 9:00 AM to 3:00 PM) at Project Driveway 2 with this same amount of average hourly trips also using Project Driveways 1 and 3 for a much shorter period of time.~~

To facilitate the exchange of fill material between the planning areas, access to Northwest Planning Area via Project Driveway 1, access to the Northeast Planning Area via Project Driveway 2, and access to the South Planning Area via Project Driveway 3 would be established in advance of other grading activities. Prior to initiation of hauling activity, the traffic signal at the Glenn Ranch Road/Saddleback Ranch Road intersection will be modified to provide for signal controlled access into and out of the South Planning Area and the traffic signals will be installed for the new four-way signalized intersection at Project Driveway 2 along Glenn Ranch Road. The transport of fill material between the South and Northeast Planning Areas would be restricted to occur only at Project Driveway 2 whereas the transport of fill material between the South and Northwest Planning Areas would be between Project Driveways 3 and 1 and utilize the Glenn Ranch Road/Saddleback Ranch Road intersection as well as the portion of Saddleback Ranch Road between the two driveways. Hauling of the material would be restricted to occur during the off-peak hours (9:00 a.m. to 3:00 pm) and appropriate traffic control personnel ("flaggers") will be used to ensure construction vehicles operate safely along Saddleback Ranch Road and Glenn Ranch Road and in a manner that minimizes disruption of traffic ~~on Glenn Ranch Road and Saddleback Ranch Road~~along these roadways.

As it relates to construction worker trips, based on data from existing and previous residential construction projects (e.g., "Village 2" Project in Chula Vista), it is anticipated that, under the most conservative assumption with a maximum of 50 homes under construction at one time, a maximum of 250 workers and an average of 150 workers would be on site at any given time during the construction of the project. Many of these workers stagger their work schedules and would not arrive or depart at the same time. However, as a conservative estimate, if all 250 workers drove individually and arrived and departed during the peak periods, the interim traffic generated by construction workers traveling to and from the project site would be substantially less than what the project would generate when fully constructed and occupied (see Table 4.1). As a result, no new impacts are anticipated to result from construction activities.

PORTOLA CENTER TRAFFIC IMPACT STUDY (JAN. 2013)
SECTION 9.7 (AMENDED-CLEAN VERSION)

9.7 Project Construction Traffic

Prior to the completion of the project, construction traffic will be generated by construction equipment traffic between the planning areas and vehicular traffic related to the construction workers and delivery of materials to the project site. At approximately 195 acres in size, the project site is large enough to accommodate the on-site storage of all construction equipment and construction worker parking. Staging areas with appropriate screening for construction equipment storage and construction worker parking will be established on-site near the new project entries.

During the project's grading phase, it is expected that all cut and fill will be balanced within each planning area, however the grading of the Northwest and Northeast Planning Areas (Zones 13 and 16) will require the total exchange of approximately 1,100,000 cubic yards of fill material such that approximately 550,000 cubic yards of select backfill material from the South Planning Area (Zone 17) will be exchanged with 550,000 cubic yards of standard fill from the North Planning Areas (approximately 110,000 cubic yards from Portola Northwest and 440,000 cubic yards from Portola Northeast). This fill material will be hauled between the Northwest and South sites using dump trucks and between the Northeast and South sites using either scrapers or dump trucks or a combination of both.

The typical dump truck has a hauling capacity of 16 cubic yards of dirt. The typical scraper has a hauling capacity of 24 cubic yards. Using trucks to exchange dirt between the Northwest and South sites would result in approximately 14,000 individual truck trips (7,000 round trips) between these sites. Using scrapers to exchange dirt between the Northeast and South sites would result in a total of approximately 37,000 scraper trips (18,500 round trips) between these sites. The exchange of soil between the Northwest and South Planning Areas is expected to occur over a 2-month period (40 work days) with an average of 360 truck trips (180 round trips) per day or 60 trips (30 round trips) per hour for an average of 6 hours per day (typically 9:00 a.m. to 3:00 p.m.). The exchange of soil between the Northeast and South Planning Areas is expected to occur over a 5 to 6 month period (100 – 120 work days) with an average of 360 scraper trips (180 round trips) per day or 60 trips (30 round trips) per hour for an average of 6 hours per day (typically 9:00 a.m. to 3:00 p.m.).

The full grading of the project is expected to last about 2 to 3 years. Under a scenario where all of the Planning Areas undergo grading at the same time, soil hauling would occur within the first year of the grading operation.

To facilitate the exchange of fill material between the planning areas, access to Northwest Planning Area via Project Driveway 1, access to the Northeast Planning Area via Project Driveway 2, and access to the South Planning Area via Project Driveway 3 would be established in advance of other grading activities. Prior to initiation of hauling activity, the traffic signal at the Glenn Ranch Road/Saddleback Ranch Road intersection will be modified to provide for signal controlled access into and out of the South Planning Area and the traffic signals will be installed for the new four-way signalized intersection at Project Driveway 2 along Glenn Ranch Road. The transport of fill material

between the South and Northeast Planning Areas would be restricted to occur only at Project Driveway 2 whereas the transport of fill material between the South and Northwest Planning Areas would be between Project Driveways 3 and 1 and utilize the Glenn Ranch Road/Saddleback Ranch Road intersection as well as the portion of Saddleback Ranch Road between the two driveways. Hauling of the material would be restricted to occur during the off-peak hours (9:00 a.m. to 3:00 pm) and appropriate traffic control personnel ("flaggers") will be used to ensure construction vehicles operate safely along Saddleback Ranch Road and Glenn Ranch Road and in a manner that minimizes disruption of traffic along these roadways.

As it relates to construction worker trips, based on data from existing and previous residential construction projects (e.g., "Village 2" Project in Chula Vista), it is anticipated that, under the most conservative assumption with a maximum of 50 homes under construction at one time, a maximum of 250 workers and an average of 150 workers would be on site at any given time during the construction of the project. Many of these workers stagger their work schedules and would not arrive or depart at the same time. However, as a conservative estimate, if all 250 workers drove individually and arrived and departed during the peak periods, the interim traffic generated by construction workers traveling to and from the project site would be substantially less than what the project would generate when fully constructed and occupied (see Table 4.1). As a result, no new impacts are anticipated to result from construction activities.

Portola Center Project
Traffic Impact Study

(Project Number: 10-100-602-00)

FINAL Draft Report

January 2013

Prepared for:

SunRanch Capital Partners, LLC
280 Newport Center Drive, #240
Newport Beach, CA 92660

and

USA Portola Properties, LLC
610 W. Ash Street, Suite 1500
San Diego, CA 92101

***Prepared By*:**

WILSON &COMPANY
5694 Mission Center Road, Suite 602-147
San Diego, CA 92108
(619) 952-2936

Table of Contents

List of Tables

List of Figures

Appendices

1.0 Introduction

1.1 Study Purpose

The purpose of this Traffic Impact Study (TIS) is to identify and document traffic impacts related to the development of the proposed Portola Center Project (proposed project) in the City of Lake Forest, California, and to recommend mitigation measures for the identified roadway and intersection deficiencies that could result with the project. Project-specific mitigation measures are referred to as "Project Features" in the "City of Lake Forest Vacant Land Opportunities III Traffic Study" dated July 2005. For all other mitigation measures recommended for any of the five (5) intersections in the vicinity of the project site (referred to as "Secondary Intersections"), the applicant's responsibility will be based on a "Fair Share" contribution of traffic mitigation fees as specified in the Lake Forest Transportation Mitigation (LFTM) Program.

1.2 Existing Transportation Improvement Programs

The LFTM program is a citywide Traffic Improvement Program that identifies financial obligations to participating development areas referred to as the Vacant Land Opportunities Areas in the City of Lake Forest. The five development areas are the Shea/Baker, Portola Center, Irvine Ranch Water District (IRWD), Whisler/Greystone, and Peachwood/Pacific Heritage properties. The LFTM program defines the study influence area as all of the City of Lake Forest plus parts of the cities of Irvine, Laguna Hills, Laguna Woods and Mission Viejo.

In addition to LFTM Fees, the project will also be subject to a variety of other traffic mitigation fees, including the Foothill/Eastern Traffic Corridor Traffic Fee, the El Toro Road Fee Program, the Foothill Circulation Phasing Plan Traffic Fee, and the Santiago Canyon Road Fee.

The County of Orange Master Plan of Arterial Highways (MPAH) system was assumed in the Vacant Land Opportunities III Traffic Study and includes the following new roadway and roadway improvements in the City of Lake Forest that are not currently funded:

- The extension of Ridge Route Drive from west of Rockfield Boulevard to Avenida de la Carlota; and
- The widening and grade separation of Ridge Route Drive at the railroad crossing between Jeronimo Road and Muirlands Boulevard.

The time frame for implementing these unfunded improvements is currently unknown, and future MPAH amendments could affect the implementation of some or all of the improvements mentioned here. Therefore, the LFTM Program addressed a future scenario that did not include these new roadway links in the LFTM implementation time frame. The intent was to ensure adequate levels of service without these links so that a fully funded implementation program could be established to address the 2030 traffic demands in the City of Lake Forest.

1.3 Project Overview

The proposed project is located in the City of Lake Forest, to the north of SR-241 and to the west of El Toro Road. The project site is comprised of three Planning Areas: the Northwest Planning

Area (Traffic Analysis Zone 13): the Northeast Planning Area (Zone 16): and the South Planning Area (Zone 17). The project proposes to build 930 residential units (613 single-family homes, 260 multi-family homes, 57 affordable multi-family homes, and 10,000 square feet of neighborhood serving commercial space. A total of 18 accessory/secondary units, which by California Law are not counted as separate dwelling units, are proposed as attached and integrated into 18 single family homes planned in the North Planning Areas. These 18 attached accessory units are included in the average daily vehicle trip generation table for this study. The project also includes approximately 11 acres of park land and recreational facilities, and approximately two miles of public trails.

The Project includes four main entrances to three planning areas. The Northwest Planning Area would take access off of Saddleback Ranch Road in the form of an unsignalized T-intersection. The Northeast and South Planning Areas would take access off of Glenn Ranch Road in the form of a signalized four-way intersection and the South Planning Area would take a second access at the intersection of Glenn Ranch Road and Saddleback Ranch Road with the addition of an intersection leg making that intersection a signalized four-way intersection. Consistent with the Orange County Fire Authority's (OCFA's) requirements for emergency access, the Northeast Planning Area also includes a gated emergency access connection to Glenn Ranch Road. For more detailed information on the Project Description and Project Driveways, please see Chapter 4 of this study.

1.4 Project Study Area & Traffic Condition Scenarios

The project study area is defined based on peak hour intersection criteria, and includes all major intersections where the proposed project would increase traffic by more than one percent. This significant impact criteria are consistent with guidelines used by the City of Lake Forest and the surrounding jurisdictions in defining the area of impact for such studies. The LFTM Program, in conjunction with contributions from the North Irvine Transportation Mitigation (NITM) Program, will provide funding for the improvements identified in the City of Lake Forest in addition to intersections in the City of Irvine that are impacted by land use changes in the Vacant Land Opportunities Areas.

Figure 1-1 presents the location of the project in a regional context, **Figure 1-2** presents the Project Study Area, and **Figure 1-3** shows the locations of the project driveways. The scenarios analyzed in this study include the following:

- *Existing Conditions* –establishes the existing baseline of traffic operations within the study area.

- *Existing Plus Project Conditions* – represents the traffic conditions on the Existing roadway network with the addition of traffic generated by the proposed project.

- *Near Term Year 2015 Base Conditions* – establishes a Near Term no-build baseline against which traffic generated by the proposed project can be compared. The Year 2015 represents an approximate timeframe when the project is expected to be constructed and is consistent with the Near Term forecasts for the City of Lake Forest.

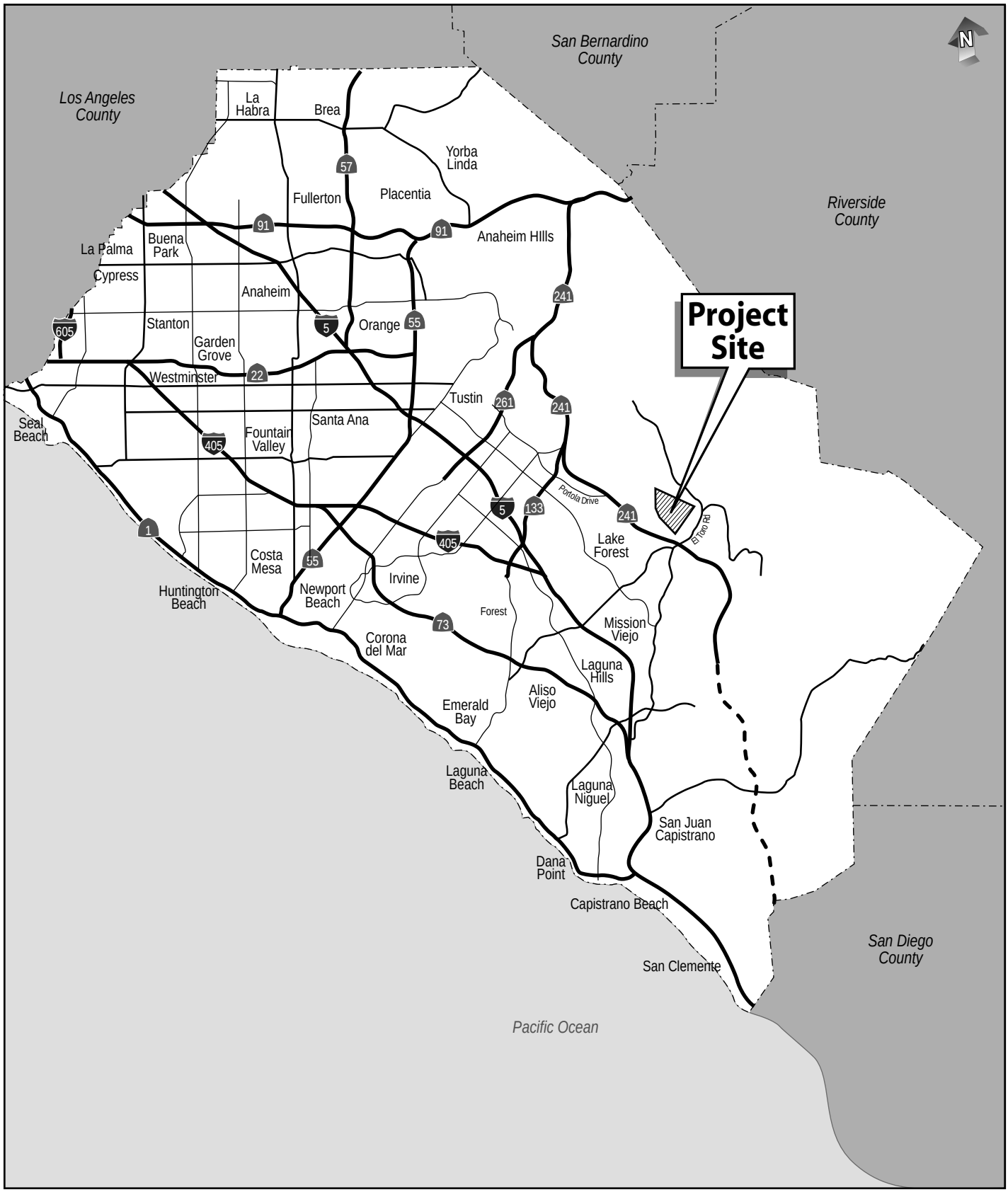
- *Near Term Year 2015 Base Plus Project Conditions* – represents the Year 2015 baseline traffic conditions with the addition of traffic generated by the proposed project.

- *Buildout Year 2030 Base Conditions* – represents the buildout Conditions without the project and assumes that all remaining vacant land is built out accounting for the cumulative impact of all approved and planned projects in the City of Lake Forest. Major development projects approved and pending near the project vicinity are included in the future traffic conditions analyzed in this report along with any circulation system improvements related to those projects. These projects include Shea/Baker, Whisler, Serrano Summit (on the Irvine Ranch Water District site), and the Glass Creek Sports Park . Development outside the city limits (i.e., Skyridge and Saddle Crest) are represented by OCTAM data which assumes the development of these sites.

- *Buildout Year 2030 Base Plus Project Conditions* – represents the Year 2030 Buildout Base Conditions with the addition of traffic generated by the proposed project.

The Near Term Year 2015 and Buildout Year 2030 traffic volume forecasts (with and without project) were obtained from forecast model runs produced by Stantec on behalf of the City of Lake Forest. Traffic operational analyses were conducted using the Intersection Capacity Utilization (ICU) and the Highway Capacity Manual (HCM) 2000 methodologies. The HCM methodology was conducted using the Synchro 7 software by Trafficware and provided as the basis for validating the ICU results.

Designated site-specific intersections were analyzed for impacts by the proposed project as stipulated in the Vacant Land Opportunities Study and modeled by Stantec. The study intersections are comprised of two (2) "Project Features", five (5) "Secondary Intersections", and nine (9) additional "Secondary Intersections" not specified in the Vacant Land Opportunities Study for the proposed project but requested by City staff, for a total of sixteen (16) study intersections.

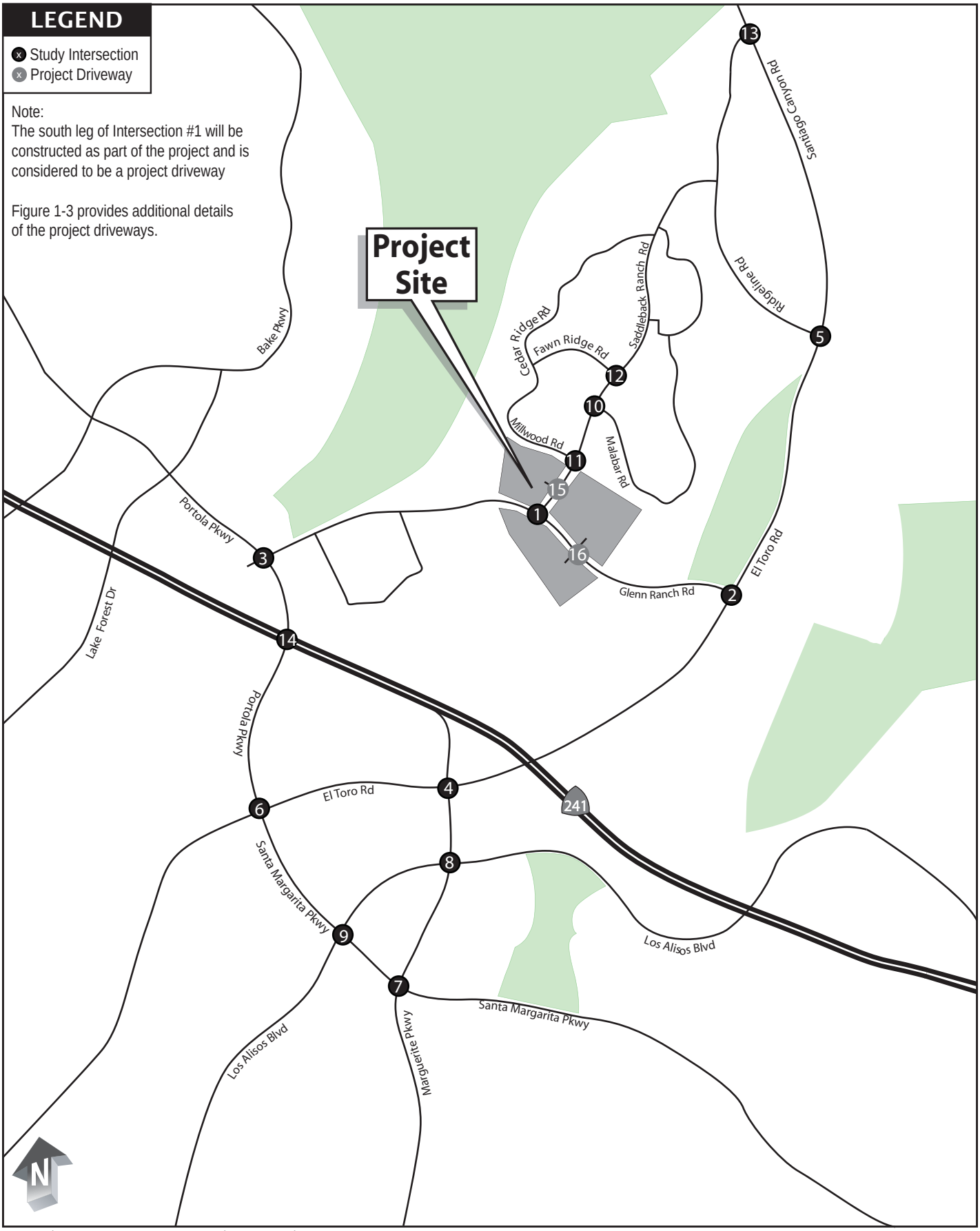


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 1-1
Regional Location Map

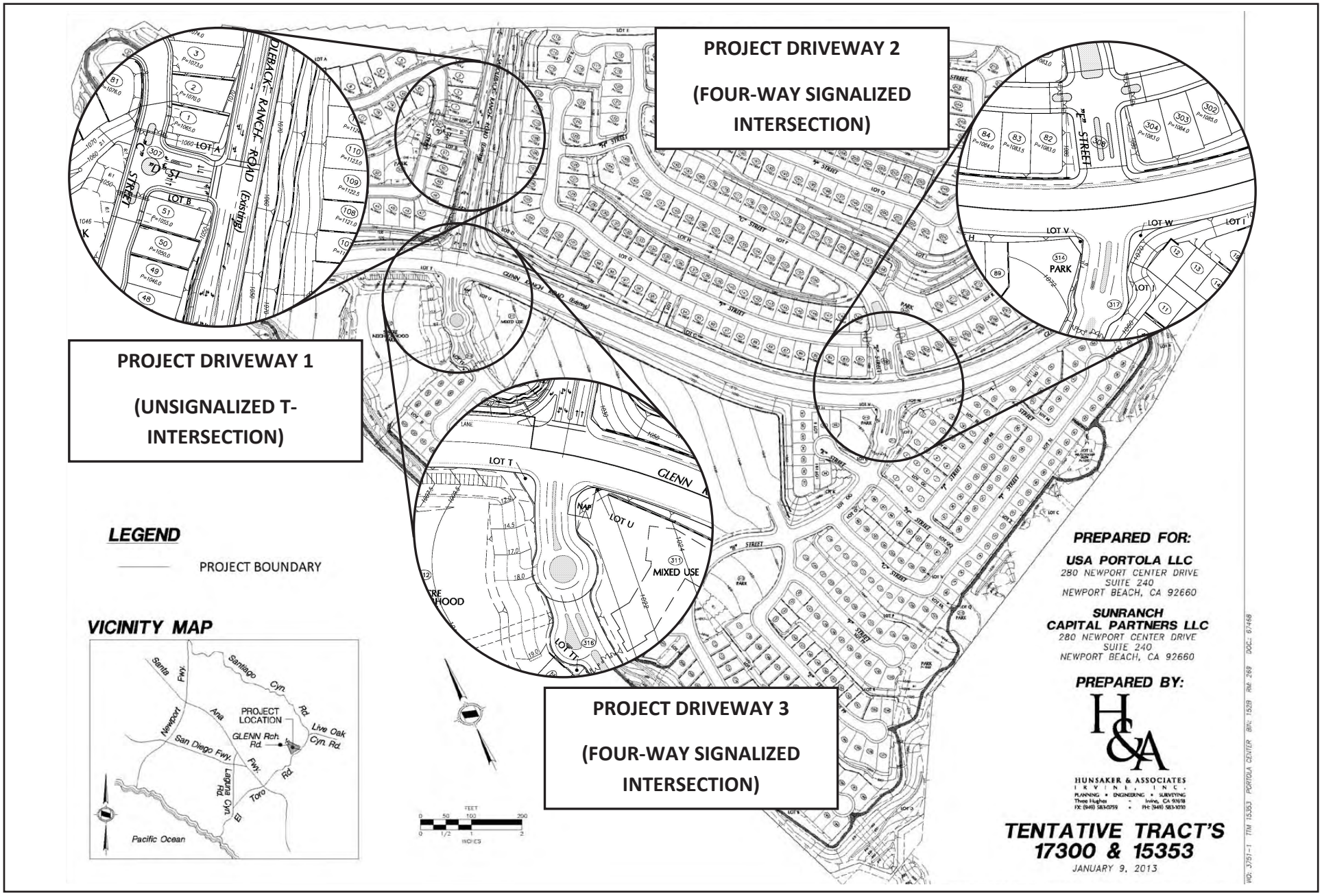


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 1-2
Project Study Area



Source: Hunsaker & Associates

Figure 1-3
Project Driveways

1.3 Report Organization

Following this Introduction chapter, this report is organized into the following sections:

2.0 Analysis Methodologies – This chapter describes the methodologies and standards utilized for the analysis of roadway and intersection traffic conditions.

3.0 Existing Conditions – This chapter describes the existing traffic network within the project study area and provides analysis results for existing traffic conditions.

4.0 Project Description – This chapter describes the proposed project including project traffic generation.

5.0 Existing Plus Project Traffic Conditions – This chapter describes projected traffic conditions on the Existing roadway network with the addition of the project traffic.

6.0 Near Term Year 2015 Traffic Conditions – This chapter describes projected Near Term traffic conditions for the Year 2015. Analysis results are provided for the No-Project (Year 2015 Base) and Year 2015 Base Plus Project conditions.

7.0 Buildout Traffic Conditions – This chapter describes projected Buildout traffic conditions represented by the Year 2030 cumulative traffic conditions with Buildout of all vacant land within the City of Lake Forest for both the No-Project (Year 2030 Base) and Year 2030 Base Plus Project conditions.

8.0 HCM Analysis – This chapter provides intersection Level of Service (LOS) analysis results using the 2000 Highway Capacity Manual (HCM 2000) methodology for comparison with the ICU results for the study intersections.

9.0 Other Traffic-Related Topics – This chapter summarizes the results of other analyses performed for the project, which include an alternative lane configuration at the Saddleback Ranch Road/Glenn Ranch Road intersection, intersection spacing between the Saddleback Ranch Road/Glenn Ranch Road intersection and Project Driveway 1, queuing at Project Driveway 2, gated project entrances, pedestrian access at project driveways, the existing traffic congestion problem at Portola Hills Elementary, and project construction traffic.

10.0 Project Driveway Alternatives – This chapter analyzes alternative driveway configurations for the project, including dual project driveways to the Northeast Planning Area of the project (one located on Saddleback Ranch Road and the other located on Glenn Ranch Road), a full access at the La Quinta/Malabar Road stub street to the Northeast Planning Area, and other driveway alternatives evaluated for the project.

11.0 Summary of Findings – Outlines the overall study findings and identifies recommended project-related mitigation measures.

2.0 Analysis Methodologies

This traffic impact assessment was conducted in accordance with the standards identified in the Circulation Element of the City of Lake Forest General Plan, and in accordance with the 2011 Orange County Congestion Management Program (CMP) *Traffic Impact Analysis Guidelines*, as discussed in the following sections.

2.1 Roadway Segment Level of Service Standards and Thresholds

The project site is served by a roadway network that includes both regional and local facilities. The regional facility in the vicinity of the project site is State Route 241 (SR-241), also referred to as the Foothill Transportation Corridor. In addition, the Orange County CMP identifies El Toro Road as a CMP roadway. The County of Orange Master Plan of Arterial Highways (MPAH) defines the classifications of the following MPAH facilities (per General Plan ultimate build-out):

- El Toro Road, Los Alisos Boulevard, and Portola Parkway as six-lane major arterials, and
- Glenn Ranch Road as a four-lane primary arterial.

Consistency with the MPAH is critical to a local agency's eligibility for the Orange County Combined Transportation Funding Programs. The MPAH program is administered by the Orange County Transportation Authority (OCTA).

2.1.1 Long-Range Area-Wide Project Performance Criteria

The Circulation Element of the City of Lake Forest General Plan identifies performance criteria based on the peak hour operations at intersections for long-range area-wide projects. The performance criteria are LOS D for all intersections except critical intersections where LOS E is acceptable with the requirement that regular monitoring take place. Additional information on the performance criteria can be found in Table 2-2 of the *City's CEQA Significance Threshold Guide*.

2.1.2 Project-Specific Arterial Roads Performance Criteria

For project-specific impacts, the analysis of arterial roadways is typically based on the capacity of the intersections within the arterial network since intersection capacity limits the ultimate capacity of an arterial highway. Levels of Service for arterial road intersections are determined based on operating conditions (expressed in LOS) during the morning and evening peak hours when most travelers are commuting to and from work and the roadways and intersections are typically the most active. The City of Lake Forest has established LOS D as the minimum acceptable operating LOS at intersections during peak hours and LOS E at critical intersections. Additional information on the LOS criteria can be found in the *City's General Plan, Table C-3*. For intersections located within the City of Mission Viejo, LOS D is also the minimum acceptable operating LOS during the peak hours.

2.2 Peak Hour Intersection Level of Service Standards and Thresholds

This section presents the methodologies used to perform peak hour intersection capacity analyses at the signalized and unsignalized intersections within the study area. The LOS criteria and impact significance thresholds are discussed below for signalized and unsignalized intersections.

Two methods were used to conduct the signalized intersection analysis, the Intersection Capacity Utilization (ICU) methodology and the Highway Capacity Manual (HCM) 2000 methodology. The ICU methodology produces a volume to capacity ratio (v/c ratio) at each intersection, which corresponds to its respective LOS. The HCM methodology produces a projected delay at each intersection, which corresponds to its respective LOS. In essence, the ICU methodology measures how an intersection is performing relative to its maximum capacity whereas the HCM methodology measures how an intersection is performing relative to a defined threshold for an acceptable amount of delay. It is important to mention that the HCM methodology also produces a projected v/c ratio, and a corresponding LOS, which is considered a more reliable predictor of intersection performance for unsignalized intersections that experience a high volume of traffic. Further discussion on this topic can be found in Section 2.2.2, "Unsignalized Intersection Analysis Using HCM".

Although the ICU methodology is the principal methodology used by the City of Lake Forest, the HCM methodology is widely used by other jurisdictions in Southern California as well as the state and the nation, and is used herein to supplement the ICU methodology and provide critical measures of effectiveness (MOEs) such as queuing and delay.

2.2.1 ICU Methodology

The ICU methodology presents an assessment of intersection operation as a ratio of the critical volume to capacity ranging from free flow (near 0.00) to capacity (near 1.00). This methodology calculates the ICU as the sum of the V/C ratios for all critical movements of an intersection, and is generally considered to be compatible with the intersection capacity analysis in the HCM 2000 methodology. The range of ICU values with the corresponding LOS (A through F) is presented in **Table 2.1**.

TABLE 2.1
CMP LOS FOR ARTERIALS BASED ON ICU V/C RATIO

Level of Service (LOS)	v/c Ratio (or ICU)	Description
A	0.00–0.60	Primarily free flow operations at average travel speeds usually about 90 percent of free flow speed. Vehicles can maneuver unimpeded within the traffic stream. Delay at signalized intersections is minimal.
B	0.61–0.70	Reasonably unimpeded operations at average travel speeds usually about 70 percent of free flow speed. Ability to maneuver is only slightly restricted and stopped delays are not bothersome. Drivers are not subjected to appreciable tension.
C	0.71–0.80	Represents stable operations, however, ability to maneuver and change lanes in mid-block locations may be more restricted. Longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50 percent of free-flow speed. Drivers will experience some appreciable tension.
D	0.81–0.90	Borders on a range in which small increases in flow may cause substantial increases in approach delay, and hence, decreases in arterial speed. Causes range from adverse signal progression, inappropriate signal timing, high volumes, or any combination. For planning purposes, this Level of Service is the lowest that is considered acceptable. Average travel speeds are about 40 percent of free-flow speed.
E	0.91–1.00	Characterized by significant approach delays and average travel speeds of one-third of free-flow speed or lower, caused by adverse progression, high signal density, extensive queuing at critical intersections, inappropriate signal timing, or some combination.
F	> 1.00	Characterized by arterial flow at extremely low speeds below one-third to one-quarter of free flow speed. Congestion is likely at critical signalized intersections, resulting in high approach delays. Adverse progression is frequently a contributor to this condition.

Source: *City of Lake Forest CEQA Significance Threshold Guide*, Table 2-1 (March 2009)

The following assumptions were used in conducting the ICU analysis, which are consistent with the City's performance criteria:

- Saturation Flow Rate: 1,700 vehicles/hour/lane
- Clearance Interval: 0.05
- Right-Turn-On-Red Utilization Factor: 0.75
- Performance standard: LOS D (corresponding to peak hour ICU of less than or equal to 0.90) for locations other than CMP intersections.
- Performance standard: LOS E (peak hour ICU less than or equal to 1.00) for CMP intersections.

2.2.2 HCM Methodology

The HCM 2000 methodology is used in this study to validate the ICU methodology and to provide additional measures of effectiveness (MOEs), such as queues and delays, for signalized and un-signalized intersections. The HCM methodology produces an overall intersection delay, which is translated into a Level of Service (LOS) for the intersection, as well as delays and v/c

ratios per approach. The v/c ratios calculated under the HCM methodology are comparable to the v/c ratios calculated under the ICU methodology.

Signalized Intersection Analysis Using HCM

The HCM operational analysis methodology is used in accordance with Chapter 16 of the *Highway Capacity Manual 2000 (HCM 2000), Transportation Research Board Special Report 209*. The HCM 2000 methodology relates the intersection LOS to intersection control delay, in terms of seconds per vehicle (sec/veh). This methodology sets 1,900 passenger-cars per hour per lane (pcphpl) as the base (or ideal) saturation flow rate at signalized intersections, which is based on the minimum headway that can be sustained between departing vehicles at a signalized intersection. The service saturation flow rate, which reflects the saturation flow rate specific to the study facility, is determined by adjusting the ideal saturation flow rate for lane width, on-street parking, bus stops, pedestrian volume, traffic composition (or percentage of heavy vehicles), and shared lane movements (e.g. through and right-turn movements sharing the same lane). The LOS criteria used for the analysis of signalized intersections are described in **Table 2.2**, identifying the thresholds of control delays and the associated LOS. The computerized HCM analysis of intersection operations was performed utilizing the Synchro *7* traffic analysis software by Trafficware.

TABLE 2.2
LOS CRITERIA FOR SIGNALIZED INTERSECTIONS

Average Control Delay (seconds/vehicle)	Level of Service (LOS) Characteristics
<10	*LOS A* describes operations with very low delay. This occurs when progression is extremely favorable, and most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
>10– 20	*LOS B* describes operations with generally good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
>20 – 35	*LOS C* describes operations with higher delays, which may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
>35– 55	*LOS D* describes operations with high delay, resulting from some combination of unfavorable progression, long cycle lengths, or high volumes. The influence of congestion becomes more noticeable, and individual cycle failures are noticeable.
>55 – 80	*LOS E* is considered the limit of acceptable delay. Individual cycle failures are frequent occurrences.
>80	*LOS F* describes a condition of excessively high delay, considered unacceptable to most drivers. This condition often occurs when arrival flow rates exceed the LOS D capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay.

Source: Highway Capacity Manual 2000 (HCM 2000), TRB Special Report 209

Unsignalized Intersection Analysis Using HCM

Unsignalized intersections, including two-way and all-way stop-controlled intersections, were analyzed herein using the Chapter 17 methodology of the HCM 2000. The LOS for two-way stop-controlled (TWSC) intersections, including T-intersections, is determined by the computed control delay and is defined for each minor movement. **Table 2.3** summarizes the LOS criteria for unsignalized intersections. The Synchro 7 software, by Trafficware, supports this methodology and was employed in this study to produce delay and LOS results.

TABLE 2.3
LOS CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Average Control Delay (seconds/vehicle)	Level of Service (LOS)
≤10	A
>10 and ≤15	B
>15 and ≤25	C
>25 and ≤35	D
>35 and ≤50	E
>50	F

Source: 2000 Highway Capacity Manual, TRB Special Report 209

Consistent with the policies of the City of Lake Forest, LOS D is considered to be the threshold of acceptable traffic operations at an intersection during the AM and PM peak hours and at critical intersections operating at LOS E where the ICU value is less than or equal to 1.0. All other intersections operating at LOS E or F would be considered to be failing. However, it should be noted that the HCM methodology for unsignalized intersections becomes unreliable when traffic conditions are projected to be at LOS E or F conditions. The methodology assumes that vehicles are not able to find a gap in traffic when volumes on the major street are high and results in much higher projected delays than what are typically observed in the field. Under such conditions, the HCM v/c ratio, and the corresponding LOS associated with that ratio, become more reliable predictors of traffic conditions and the expected LOS.

2.3 Determination of Significant Impacts

For the purpose of identifying those intersections where significant project-related traffic impacts would occur and project-related mitigation would be required, the following criteria have been established for intersections within the City of Lake Forest.

2.3.1 Project-Specific Impact Significance Threshold Criteria

A proposed project is considered to have a significant impact when both of the following conditions are met:

- ICU values at intersections under the "With Project" conditions exceed the City of Lake Forest minimum performance standard of LOS D (i.e. ICU of 0.90).

- ICU values at intersections under the "With Project" conditions increase by 0.02 or greater compared to the "Without Project" conditions that are operating at LOS E or F.

It should be noted that the criteria listed above are applied for this project since all study intersections are non-CMP intersections.

In addition, project-specific traffic impacts may also be considered significant if the project design features could result in traffic hazards. Such design features include: sharp curves, limited sight distance, tight turning radii, short merging distance, uneven roadway grade, or other features deemed by the City Traffic Engineer to create a hazard.

In other jurisdictions throughout southern California, the increase in delay resulting from a project based on the HCM methodology is used to determine project impacts. For an intersection operating at LOS E of F, a project is considered to have a significant impact if the project results in an increase of greater than two seconds of delay at that intersection.

For this project, a project specific impact at intersections will be based on the ICU thresholds listed above, which is consistent with the City of Lake Forest's significance criteria. However, if the project results in any project specific impacts at signalized intersections based on the HCM methodology, mitigation measures may also be provided.

2.3.2 Mitigation Requirements

Mitigation is required for intersections identified with project impacts. In order to mitigate the project's impacts, improvements that will either bring the intersection back to an acceptable LOS or to pre-project conditions are required.

Mitigation measures necessary to negate the project impacts are identified in this study to be either "Project Features" or "Secondary Improvements." The Portola Center Development Agreement holds the owner/applicant responsible for the costs associated with implementing the "Project Features" and for a fair share of the cost of implementing the "Secondary Improvements" in accordance with the procedures utilized to determine the allocation of the cost of the LFTM improvements.

3.0 Existing Conditions

This chapter presents existing daily and peak hour traffic volumes at study roadway segments and intersections and the Level of Service (LOS) analysis results under Existing Conditions.

3.1 Existing Roadway Network

Several regionally and locally significant roadways traverse the study area and its vicinity, as described below:

North-South Facilities

Saddleback Ranch Road – Saddleback Ranch Road between Glenn Ranch Road and Millwood Road is a four-lane roadway with a center left turn lane. It has a posted speed limit of 50 mph. North of Malabar Road, Saddleback Ranch Road is a two-lane roadway with a continuous left turn lane with a posted speed limit of 40 mph.

El Toro Road – El Toro Road between Glenn Ranch Road and Painted Trails Parkway is a four-lane roadway with a striped median and a posted speed limit of 50 mph. El Toro Road between Painted Trails Parkway and Marguerite Parkway is a five-lane roadway (two westbound lanes /three eastbound lanes), with a raised median and a posted speed limit of 55 mph. North of Glenn Ranch Road, El Toro Road is a two-lane undivided roadway with bike lane facilities.

Marguerite Parkway – Marguerite Parkway between El Toro Road and Santa Margarita Parkway is a four-lane roadway with a striped median, bike-lane facilities and has a posted speed limit of 45 mph.

Portola Parkway– Portola Parkway between Lake Forest Drive and El Toro Road is a six-lane roadway with a raised median and bike-lane facilities. It has a posted speed limit of 45 mph.

East-West Facilities

Glenn Ranch Road – Glenn Ranch Road between Portola Parkway and El Toro Road is a four-lane roadway with a striped median. It has a posted speed limit of 50 mph.

Santa Margarita Parkway– Santa Margarita Parkway between El Toro Road and Marguerite Parkway is a six-lane roadway with a raised median and bike-lane facilities. It has a posted speed limit of 45 mph.

Los Alisos Boulevard – Los Alisos Boulevard between Cordova Road and Marguerite Parkway is a four-lane roadway with a raised median and bike-lane facilities. It has a posted speed limit of 50 mph.

Study Intersections

Within the study area, sixteen (16) intersections were identified as key study intersections for analysis in this study as modeled by Stantec. **Table 3.1** summarizes the list of intersections in

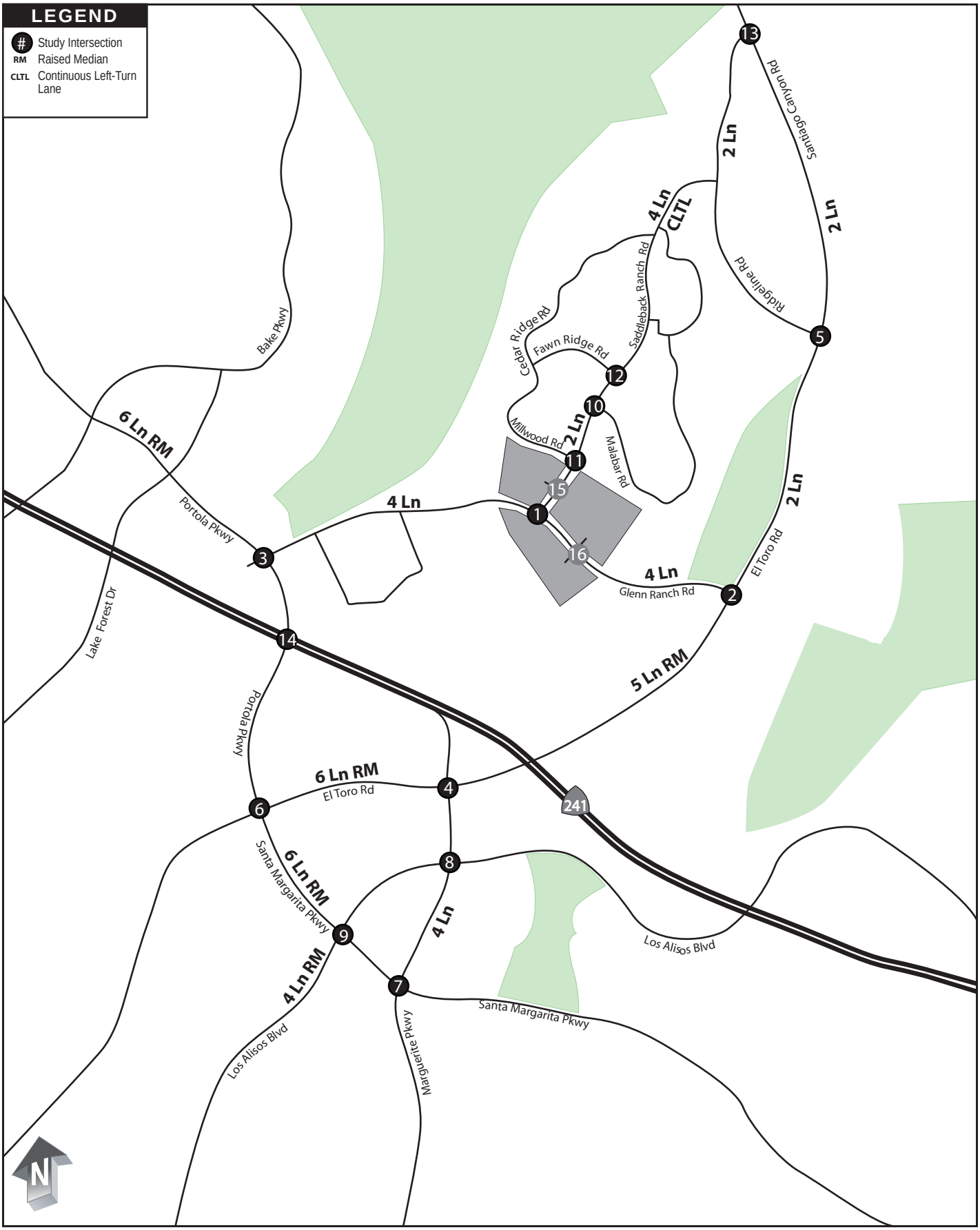
the study area and lists the traffic control at each intersection. It should be noted that the naming convention for intersections listed below is North-South / East-West.

TABLE 3.1
STUDY INTERSECTIONS

#	Intersection	Traffic Control
1	Saddleback Ranch Rd / Project Driveway 3 @ Glenn Ranch Rd	Signal [(a)]
2	El Toro Rd @ Glenn Ranch Rd	Signal
3	Portola Pkwy @ Glenn Ranch Rd	Signal
4	Marguerite Pkwy @ El Toro Rd	Signal
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	Signal
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	Signal
7	Marguerite Pkwy @ Santa Margarita Pkwy	Signal
8	Marguerite Pkwy @ Los Alisos Blvd	Signal
9	Los Alisos Blvd @ Santa Margarita Pkwy	Signal
10	Saddleback Ranch Rd @ Malabar Rd	OWSC
11	Saddleback Ranch Rd @ Millwood Rd	OWSC
12	Saddleback Ranch Rd @ Fawn Ridge Rd	Signal
13	Ridgeline Rd @ Santiago Canyon Rd	OWSC
14	Portola Pkwy @ SR-241 Ramps	Signal
15	Saddleback Ranch Rd @ Project Driveway 1	OWSC [(b)]
16	Project Driveway 2 @ Glenn Ranch Rd	Signal [(b)]

Note:
Signal: Traffic signal, OWSC: One-Way Stop Control or T-intersection
(a) The south leg of this intersection does not exist and will be constructed as part of the project.
(b) These intersections will be constructed as part of the project

Existing geometrics of the study area roadways are shown in **Figure 3-1** and intersection geometrics and traffic control are shown in **Figure 3-2**. It should be noted that all intersections listed above currently exist, except for the south leg of Intersection 1 and Intersections 15 and 16. These intersections and/or legs of the intersection would be constructed as part of the proposed project.

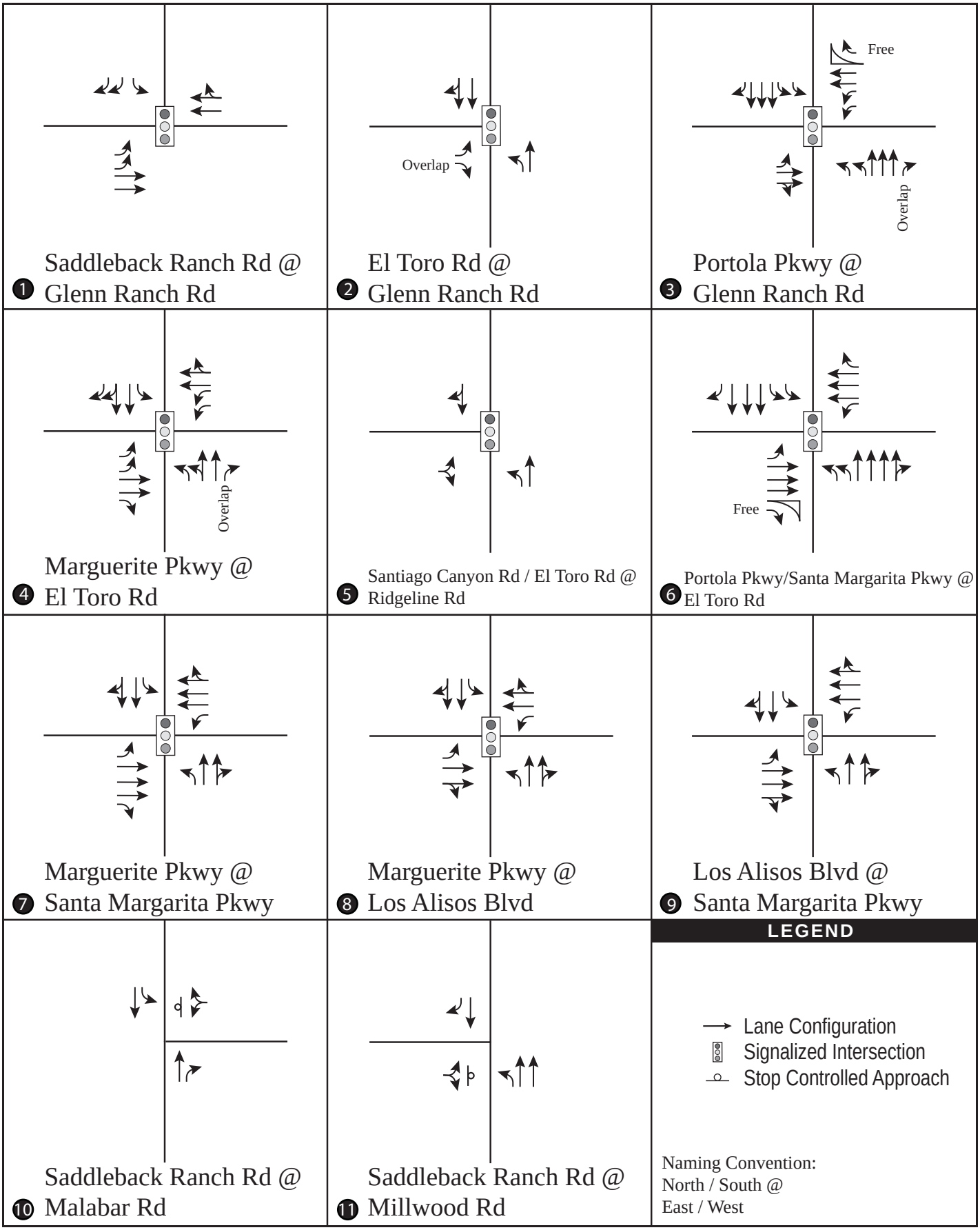


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY ENGINEERS & ARCHITECTS

Figure 3-1
Roadway Geometrics
Existing Conditions

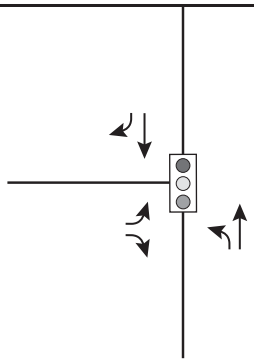


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

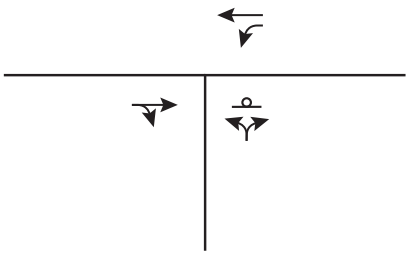
Portola Center
Traffic Impact Study

WILSON & COMPANY ENGINEERS & ARCHITECTS

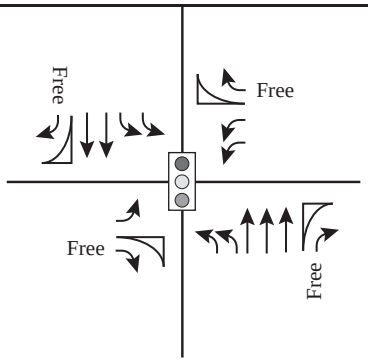
Figure 3-2
Intersection Geometrics
Existing Conditions



⓬ Saddleback Ranch Rd @ Fawn Ridge Rd



⓭ Ridgeline Rd @ Santiago Canyon Rd



⓮ Portola Pkwy @ SR-241 Ramps

LEGEND

- Lane Configuration
- Signalized Intersection
- Stop Controlled Approach

Naming Convention:
North / South @
East / West

Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY ENGINEERS & ARCHITECTS

Figure 3-2
Intersection Geometrics (cont.)
Existing Conditions

3.2 Existing Roadway and Intersection Volumes

Figure 3-3 shows existing Average Daily Traffic (ADT) volumes for the study area roadway segments and **Figure 3-4** shows the AM / PM peak hour traffic volumes at the key study area intersections. The study area intersection and roadway segment ADT were obtained on June 9, 2010, and September 15, 2010. Peak hour traffic count data at the Portola Parkway/SR-241 Ramps intersections were obtained from the City of Lake Forest and traffic data was obtained on October 14, 2010. All dates of the traffic counts include school traffic associated with the Portola Hills Elementary School in the Portola Hills neighborhood north of the project. It should be noted that recent traffic counts were obtained in September 2012 along Saddleback Ranch Road and at the intersections along Saddleback Ranch Road between Fawn Ridge Road and Glenn Ranch Road. The updated traffic volumes have been used for this analysis. These traffic volumes resulted in a slight increase in volumes compared to the counts obtained in 2010. Since traffic volumes did not significantly increase over the last two years, the traffic volumes from 2010 would still be valid and represent Existing Conditions. The counts are provided in **Appendix A**.

3.3 Existing LOS Analysis

LOS analyses under Existing Conditions were conducted using the methodologies described in Chapter 2.0. The LOS results using the City-supported ICU methodology are discussed below.

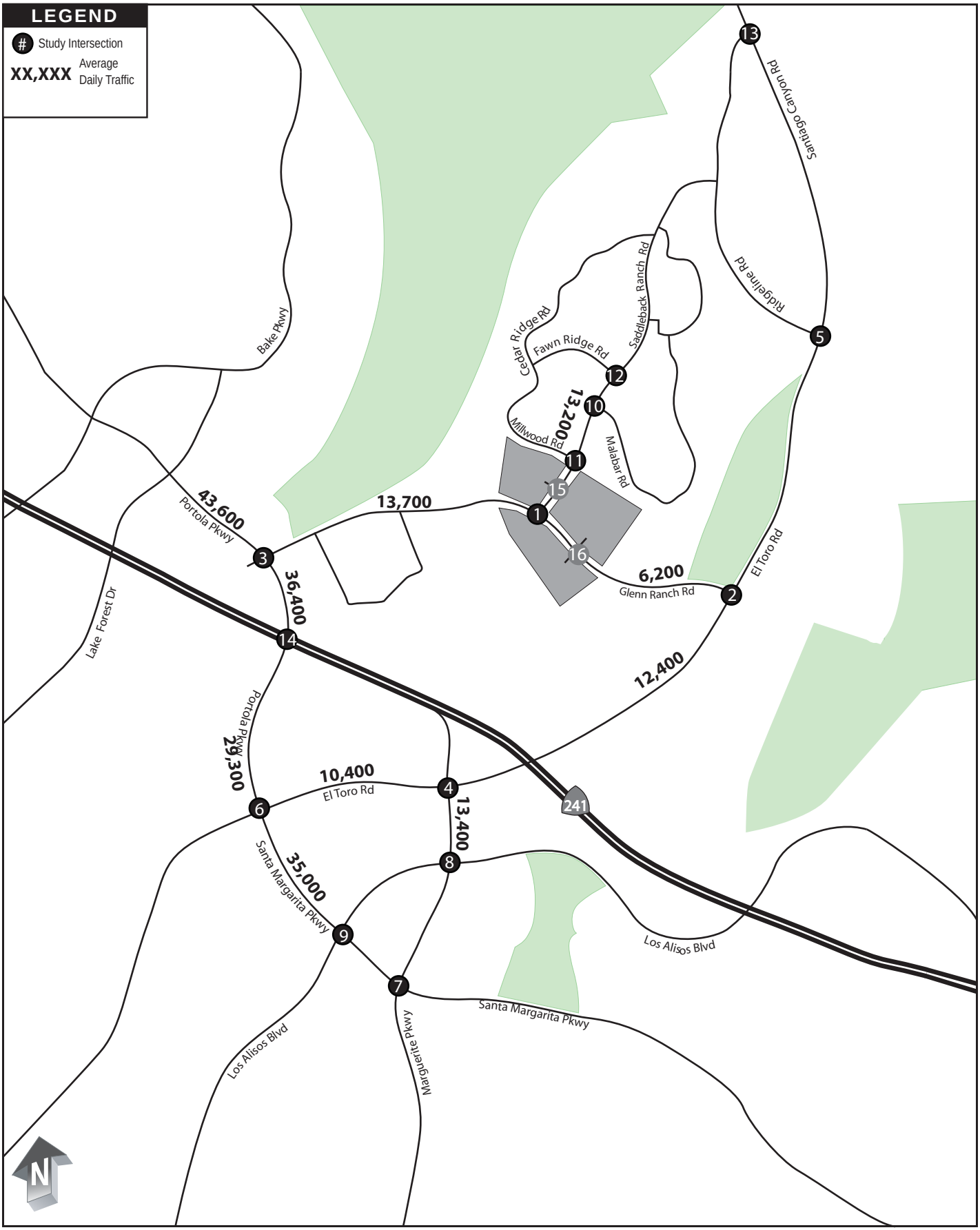
Intersection Capacity Utilization (ICU) Analysis Results

Table 3.2 displays the LOS analysis results for the key study area intersections under Existing Conditions using the ICU methodology. The ICU worksheets are presented in **Appendix B**. As shown in the table, the ICU analysis indicates that all of the key study intersections are currently operating at acceptable LOS D or better under Existing Conditions, as determined using the ICU methodology.

TABLE 3.2
ICU PEAK HOUR INTERSECTION LOS SUMMARY
EXISTING CONDITIONS

#	Intersection	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
1	Saddleback Ranch Rd @ Glenn Ranch Rd	0.38	A	0.32	A
2	El Toro Rd @ Glenn Ranch Rd	0.34	A	0.49	A
3	Portola Pkwy @ Glenn Ranch Rd	0.57	A	0.52	A
4	Marguerite Pkwy @ El Toro Rd	0.36	A	0.29	A
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	0.31	A	0.35	A
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	0.61	B	0.55	A
7	Marguerite Pkwy @ Santa Margarita Pkwy	0.69	B	0.65	B
8	Marguerite Pkwy @ Los Alisos Blvd	0.35	A	0.45	A
9	Los Alisos Blvd @ Santa Margarita Pkwy	0.83	D	0.82	D
10	Saddleback Ranch Rd @ Malabar Rd	0.59	A	0.46	A
11	Saddleback Ranch Rd @ Millwood Rd	0.65	B	0.29	A
12	Saddleback Ranch Rd @ Fawn Ridge Rd	0.48	A	0.34	A
13	Ridgeline Rd @ Santiago Canyon Rd	0.23	A	0.30	A
14	Portola Pkwy @ SR-241 Ramps	0.43	A	0.53	A

Source: Wilson & Company, Inc.; January 2013



Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY ENGINEERS & ARCHITECTS

Figure 3-3
Roadway Average Daily Traffic Volumes
Existing Conditions

xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

Saddleback Ranch Rd @ Glenn Ranch Rd

	194 / 121 ↑	
771 / 254 ←	1	213 / 97 →
137 / 657 ↑		
58 / 369 →		

El Toro Rd @ Glenn Ranch Rd

	210 / 114 ←	283 / 473 ↑
219 / 58 ←	2	521 / 375 ↓
39 / 275 ↑		
209 / 135 ↓		

Portola Pkwy @ Glenn Ranch Rd

	630 / 426 ↑	
109 / 82 ←	3	649 / 1646 ↓
63 / 89 ↑		
27 / 39 →		
46 / 99 ↓		

Marguerite Pkwy @ El Toro Rd

	5 / 6 ↑	
0 / 11 ←	4	1 / 38 ↓
1 / 11 ↑		
161 / 286 →		
100 / 291 ↓		

Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

	62 / 146 ←	258 / 507 ↑
12 / 11 ←	5	378 / 288 ↓
15 / 9 ↑		
217 / 76 ↓		

Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd

	588 / 349 ←	35 / 38 ↑
233 / 440 ←	6	32 / 250 ↓
297 / 222 ↑		
164 / 470 →		
379 / 590 ↓		

Marguerite Pkwy @ Santa Margarita Pkwy

	458 / 314 ←	177 / 182 ↑
61 / 45 ←	7	157 / 147 ↓
32 / 95 ↑		
618 / 1131 →		
158 / 523 ↓		

Marguerite Pkwy @ Los Alisos Blvd

	24 / 19 ←	124 / 149 ↑
132 / 73 ←	8	100 / 251 ↓
91 / 103 ↑		
136 / 215 →		
48 / 36 ↓		

Los Alisos Blvd @ Santa Margarita Pkwy

	139 / 114 ←	166 / 339 ↑
31 / 78 ←	9	209 / 195 ↓
85 / 48 ↑		
444 / 183 →		
165 / 69 ↓		

Saddleback Ranch Rd @ Malabar Rd

	275 / 608 ←	36 / 115 ↑
747 / 293 ↓	10	8 / 16 →
		144 / 61 ↓

Saddleback Ranch Rd @ Millwood Rd

	26 / 56 ←	300 / 586 ↑
5 / 4 ←	11	884 / 310 ↓
0 / 1 ↑		
109 / 48 ↓		

Saddleback Ranch Rd @ Fawn Ridge Rd

	36 / 126 ←	244 / 473 ↑
36 / 18 ←	12	555 / 246 ↓
32 / 21 ↑		
177 / 58 ↓		

Ridgeline Rd @ Santiago Canyon Rd

	73 / 58 ←	7 / 17 ↑
	13	241 / 428 ↓
309 / 293 →		5 / 19 ↓
48 / 73 ↓		

Portola Pkwy @ SR-241 Ramps

	374 / 144 ←	26 / 39 ↑
213 / 166 ←	14	643 / 1323 ↓
106 / 89 ↑		
112 / 104 ↓		

	1404 / 874 ←	
151 / 447 ←		618 / 205 ↑
		77 / 70 ↓

WILSON & COMPANY ENGINEERS & ARCHITECTS

Portola Center

Intersection Peak Hour Traffic Volumes - Existing Conditions

Figure 3-4

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[10100602007V07.xls]Ex Figure

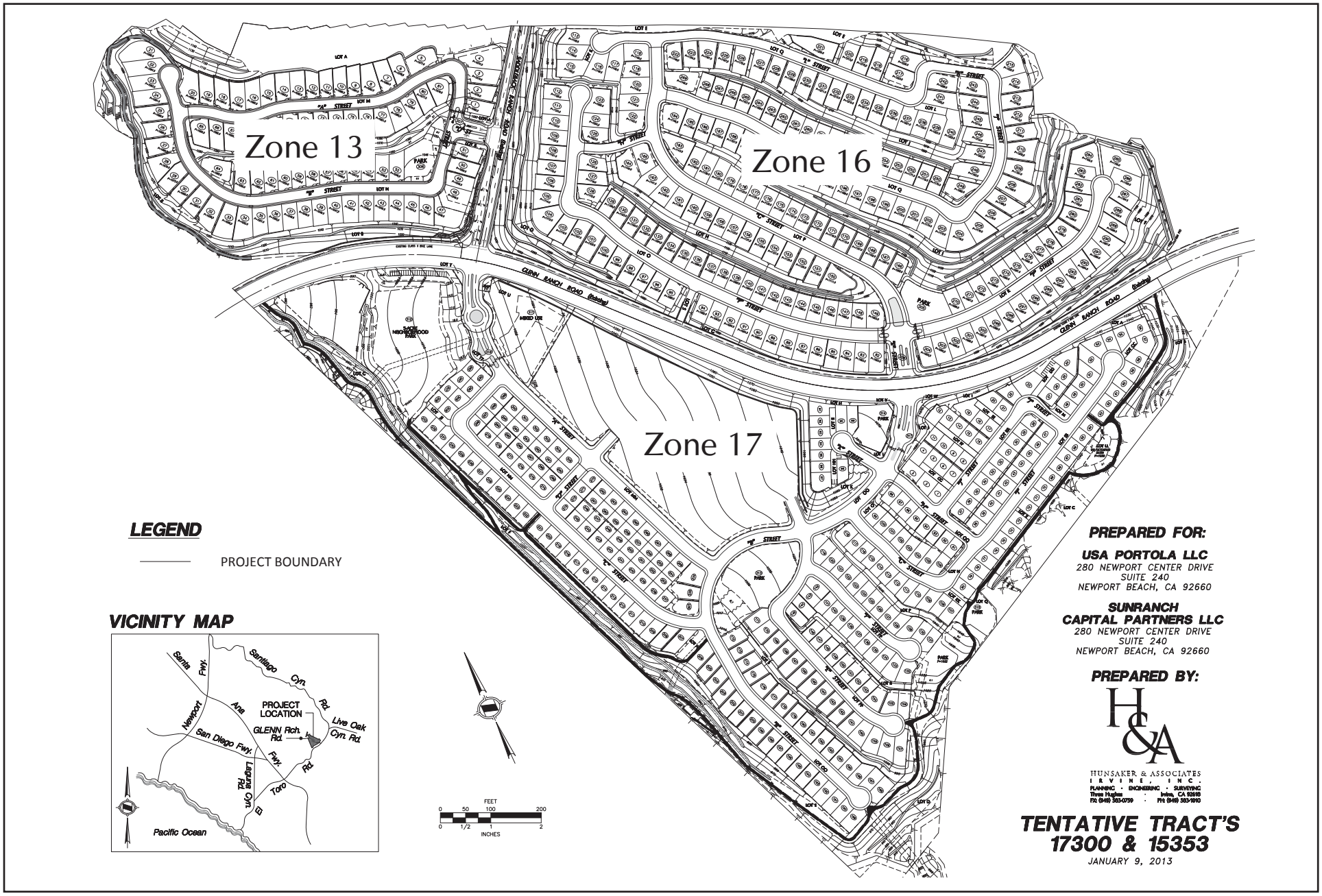
4.0 Project Description

This section provides a description of the proposed project including proposed land uses and projected trip generation. Project trip distribution and assignment were conducted via application of the City of Lake Forest Traffic Analysis Model (LFTAM) conducted by Stantec.

4.1 Project Description

The proposed project is located in the City of Lake Forest north of SR-241 and west of El Toro Road. The project is bifurcated by Glenn Ranch Road and Saddleback Ranch Road and, as a result, is comprised of three planning areas, the Northwest Planning Area, the Northeast Planning Area, and the South Planning Area. The three planning areas correspond to three Traffic Analysis Zones (TAZs). The Northwest Planning Area is Zone 13, the Northeast Planning Area is Zone16, and the South Planning Area is Zone 17. Zones 13 and 16 are located north of Glenn Ranch Road and west and east of Saddleback Ranch Road, respectively. Zone 17 is located south of Glenn Ranch Road. The project proposes to build 930 residential units (613 single-family homes, 260 multi-family homes, 57 affordable multi-family homes, and 10,000 square feet of neighborhood serving commercial space. A total of 18 accessory/secondary units, which by California Law are not counted as separate dwelling units, are proposed as attached and integrated into 18 single family homes planned in the North Planning Areas. These 18 attached accessory units are included in the average daily vehicle trip generation table for this study. The 57 affordable multi-family homes would be included on a mixed use site with 10,000 sf of commercial space. The project also includes approximately 11 acres of park land and recreational facilities, including a 5-acre neighborhood park, several smaller pedestrian-oriented neighborhood parks, private HOA recreational facilities, and approximately two miles of public trails. The proposed project is presented in **Figure 4-1.** Additional details on the project design, including the current Tentative Tract Maps for the project (TTM 15353 and TTM 17300), can be found on the City of Lake Forest website and are available for review at the City of Lake Forest Planning Department.

Access for the project is planned off of Glenn Ranch Road and Saddleback Ranch Road through three new project driveways. Project Driveway 1 is in the form of an unsignalized T-intersection located off of Saddleback Ranch Road and will provide the only access for the Northwest Planning Area (Zone 13). Project Driveway 2 is in the form of a signalized four-way intersection located off of Glenn Ranch Road and will provide the only access to the Northeast Planning Area (Zone 16). This driveway will also provide one of the two access points to the South Planning Area (Zone 17). Project Driveway 3 is in the form of a signalized four-way intersection and is an extension of the south leg of the Saddleback Ranch Road/Glenn Ranch Road intersection that provides the other access point to the South Planning Area (Zone 17). Please refer to Figure 1-3 for more specific information on the configuration and location of the project driveways.



Source: Hunsaker & Associates

Figure 4-1
Proposed Site Plan

It should be noted that the location of Project Driveway 1 meets the minimum requirements for stopping sight distance (Orange County Design Manual) for a posted speed limit of 50 mph along Saddleback Ranch Road. The minimum sight distance was determined to be 500 feet centerline to centerline from the nearest intersection. Project Driveway 1 is approximately 575 feet centerline to centerline from the Millwood Road intersection along Saddleback Ranch Road just north of the project, and Project Driveway 1 is approximately 500 feet centerline to centerline north of the Glenn Ranch Road/Saddleback Ranch Road intersection. Project Driveway 2 along Glenn Ranch Road is approximately 1,800 feet centerline to centerline east of the Glenn Ranch Road/Saddleback Ranch Road intersection. Consistent with OCFA's requirements for emergency access, Zone 16 also includes a gated and paved emergency access connection to Glenn Ranch Road approximately 900 feet east of the Glenn Ranch Road/Saddleback Ranch Road intersection. This emergency access connection would be under the control of OCFA and only available for vehicle ingress and egress during an emergency.

Access for Zone 17 will be through two project driveways off of Glenn Ranch Road. The first driveway associated with Zone 17 will be through the construction of the south leg of the existing Saddleback Ranch Road/Glenn Ranch Road intersection (Project Driveway 3). The second driveway associated with Zone 17 will be aligned with Project Driveway 2 to Zone 16.

Both project driveways along Glenn Ranch Road, Project Driveways 2 and 3, would be signalized as a project design feature whereas Project Driveway 1 along Saddleback Ranch Road would not be signalized. Additional analysis is provided in Chapter 10 of the project driveway alternatives that were evaluated as part of this study, including an alternative to provide a second full access to Zone 16 at the La Quinta/Malabar Road stub street, an alternative to provide dual project driveways to Zone 16, and other driveway alternatives that were evaluated for Zones 13 and 16.

4.2 Project Trip Generation

An estimate of the number of vehicle trips generated by the proposed project was determined using trip generation rates outlined in the 2005 Vacant Land Opportunities Study as presented in **Table 4.1**. These trip generation rates are consistent with the rates used in the LFTAM. The various land uses in the project were each assigned a trip generation rate applicable to that use, including the 18 attached accessory/secondary dwelling units in Zones 13 and 16. It should be noted that there are no published or established trip rates for accessory dwelling units. The accessory dwelling units in the project will be small in size (under 700 square feet) and attached to the primary residence. From a trip generation standpoint, the units are expected to function more like a studio or one-bedroom apartment. However, to ensure that this study did not underestimate these trips, the multi-family trip rate of 8.15 trips per unit was assumed as a conservative estimate. In practice, the occupants in the accessory dwelling units would be expected to generate considerably less vehicular traffic than a typical multi-family home. Also, it should be noted that the much higher sports park trip generation rate was used instead of a neighborhood park rate for the 5-acre park located in Zone 17.

TABLE 4.1
PROJECT TRIP GENERATION

Zone	Land Use	Amount		Rate	ADT	AM PEAK			PM PEAK		
						In	Out	Total	In	Out	Total
13	Single Family Detached	81	DU	9.57	775	15	46	61	52	30	82
	Second Units	6	DU	8.15	49	1	3	4	3	2	5
	Neighborhood Park	0.6	Acres	1.59	1	0	0	0	0	0	0
				Subtotal	825	16	49	65	55	32	87
16	Single Family Detached	223	DU	9.57	2,134	42	125	167	144	81	225
	Second Units	12	DU	8.15	98	2	6	8	5	4	9
	Neighborhood Park	0.5	Acres	1.59	1	0	0	0	0	0	0
				Subtotal	2,233	44	131	175	149	85	234
17	Single Family Detached	309	DU	9.57	2,957	58	174	232	200	112	312
	Multi Family Homes	260	DU	8.15	2,119	44	130	174	118	85	203
	Multi Family Homes (Affordable)	57	DU	8.15	465	10	28	38	26	18	44
	Commercial	10	TSF		1,520	22	14	36	63	69	132
	Active Public Neighborhood Park	5	Acres	53.8	269	0	0	0	17	21	38
	Neighborhood Parks/HOA Facilities	4.5	Acres	1.59	7	0	0	0	0	0	0
				Subtotal	7,337	134	346	480	424	305	729
				Total	10,395	194	526	720	628	422	1,050

(1) LN(T) = .65 x LN(X) + 5.83
Commercial AM Peak Hour Volume = .024 of ADT (IN = 61%; OUT = 39%)
Commercial PM Peak Hour Volume = .087 of ADT (IN = 48%; OUT = 52%)

As shown in the table, the proposed project will generate a daily total of 10,395 ADT, and peak hour volumes of 720 in the AM peak (194 in, 526 out), and 1,050 in the PM peak (628 in, 422 out).

It is important to note that the traffic model used for this analysis was based on a previous iteration of the proposed project (April 2011) with more single family and less multifamily homes, which correspondingly produced a higher number of daily trips when compared to the current proposed project. Therefore, the analysis is considered conservative in the context of the current proposed project. **Table 4.2** provides a comparison of the April 2011 project trips and

the current project trips. Traffic volumes used for the analysis at the off-site study intersections under the various scenarios (Existing, Near Term, and Buildout) and the determination of significant impacts were based on the April 2011 project traffic generation. At the project driveways, traffic volumes were based on the current project traffic that is shown in Table 4.1. Under the current proposed project, PM peak trips would be less and the AM peak trips would be slighter higher (five additional trips). The five additional AM peak trips would be considered to have a negligible effect at off-site intersections and the overall distribution of project trips at offsite intersections based on travel patterns remains the same.

TABLE 4.2
ORIGINAL AND CURRENT PROJECT TRIP GENERATION COMPARISON

Land Use	Amount		ADT	AM PEAK			PM PEAK		
				In	Out	Total	In	Out	Total
Original Project Included in LFTAM									
Single Family Detached	704	DU	6,737	132	396	528	455	256	711
Second Units	0	DU	0	0	0	0	0	0	0
Multi Family Homes	169	DU	1,377	28	85	113	77	55	132
Multi Family Homes (Affordable)	57	DU	465	10	28	38	26	18	44
Commercial	10	TSF	1,520	22	14	36	63	69	132
Neighborhood Park	1.8	Acres	3	0	0	0	0	0	0
Public Sports Park	8.3	Acres	447	0	0	0	28	34	62
		Total	10,549	192	523	715	649	432	1,081
Current Proposed Project									
Single Family Detached	613	DU	5,866	115	345	460	396	223	619
Second Units	18	DU	147	3	9	12	8	6	14
Multi Family Homes	260	DU	2,119	44	130	174	118	85	203
Multi Family Homes (Affordable)	57	DU	465	10	28	38	26	18	44
Commercial	10	TSF	1,520	22	14	36	63	69	132
Neighborhood Parks/HOA Facilities	5.6	Acres	9	0	0	0	0	0	0
Active Public Neighborhood Park	5	Acres	269	0	0	0	17	21	38
		Total	10,395	194	526	720	628	422	1,050
Difference (Current Proposed - Original Project)			-154	2	3	5	-21	-10	-31

* The April 2011 project was included in the Lake Forest Traffic Analysis Model (LFTAM) and updated by Stantec on June 29, 2011. The trip generation and traffic forecasts are provided in Appendix C.

5.0 Existing Plus Project Traffic Conditions

This section provides an analysis of the Existing traffic conditions with the addition of the proposed project.

5.1 Existing Plus Project Traffic Conditions

This scenario included the Existing traffic volumes with the addition of traffic from the proposed project. No changes to the roadway geometrics would occur under this scenario except at the project driveways, which are shown in bold. **Figure 5-1** displays the intersection geometric configurations under the Existing Plus Project conditions. **Figure 5-2** illustrates the intersection peak hour traffic volumes for this scenario. LOS analyses were conducted using the methodologies described in Chapter 2.0, and the LOS results using the ICU methodology are presented below.

Intersection Capacity Utilization (ICU) Analysis Results

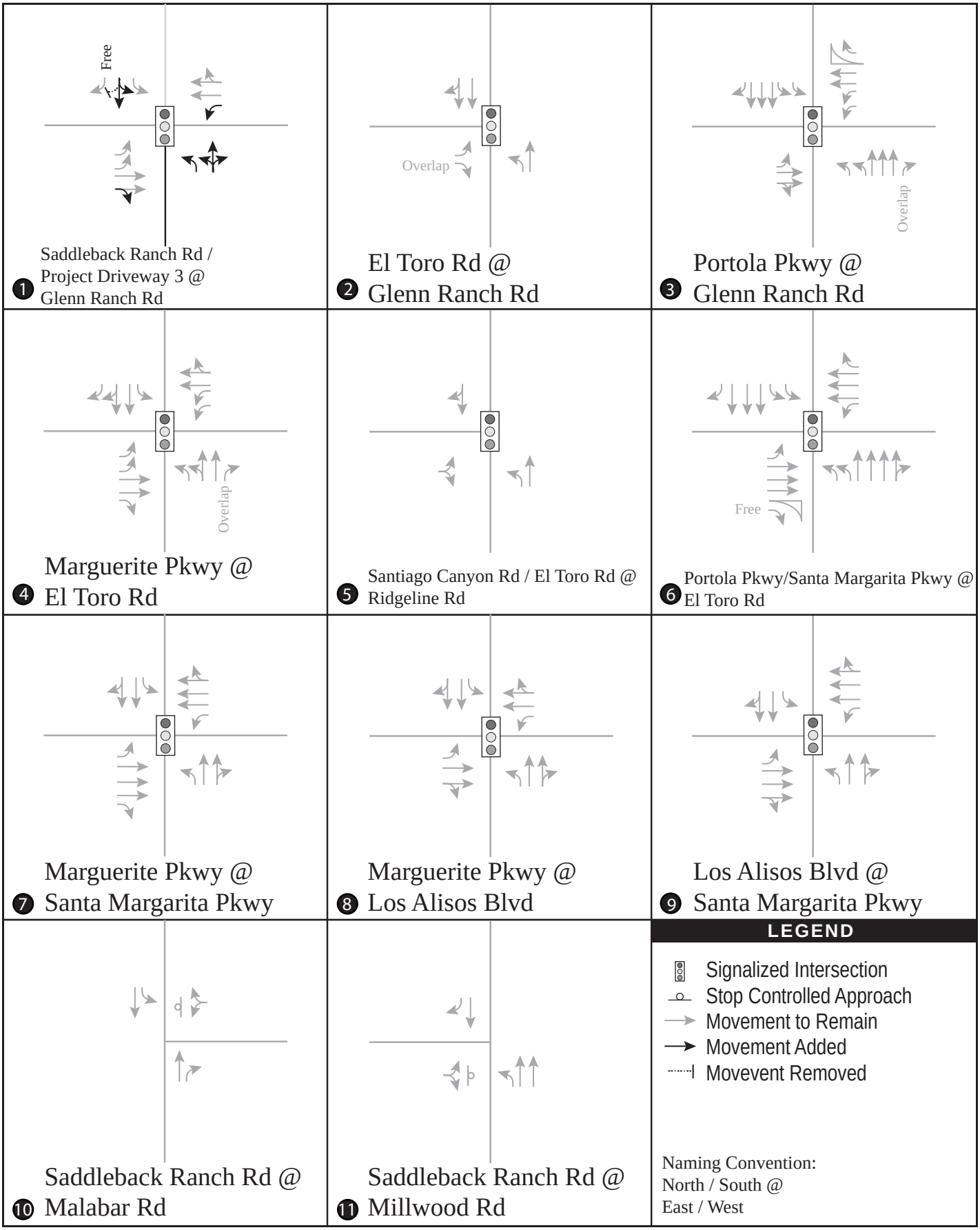
Table 5.1 displays the LOS analysis results for the key study area intersections under the Existing Plus Project conditions using the ICU methodology. As shown in the table, all of the study intersections would continue to operate in a similar fashion as in the Existing Conditions scenario with LOS D or better operations. All project driveways would operate at LOS A during the peak hours. As a result, no mitigation is required at any study intersection or project driveway. The ICU worksheets are included in **Appendix B**.

TABLE 5.1
ICU PEAK HOUR INTERSECTION LOS SUMMARY
EXISTING PLUS PROJECT CONDITIONS

#	Intersection	AM Peak Hour		PM Peak Hour		Δ in ICU	
		ICU	LOS	ICU	LOS	AM	PM
1	Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd	0.34	A	0.43	A	-0.04	0.11
2	El Toro Rd @ Glenn Ranch Rd	0.40	A	0.49	A	0.06	0.00
3	Portola Pkwy @ Glenn Ranch Rd	0.63	B	0.65	B	0.06	0.13
4	Marguerite Pkwy @ El Toro Rd	0.39	A	0.55	A	0.03	0.26
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	0.31	A	0.35	A	0.00	0.00
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	0.65	B	0.66	B	0.04	0.11
7	Marguerite Pkwy @ Santa Margarita Pkwy	0.70	B	0.66	B	0.01	0.01
8	Marguerite Pkwy @ Los Alisos Blvd	0.36	A	0.48	A	0.01	0.03
9	Los Alisos Blvd @ Santa Margarita Pkwy	0.84	D	0.82	D	0.01	0.00
10	Saddleback Ranch Rd @ Malabar Rd	0.61	B	0.49	A	0.02	0.03
11	Saddleback Ranch Rd @ Millwood Rd	0.67	B	0.34	A	0.02	0.05
12	Saddleback Ranch Rd @ Fawn Ridge Rd	0.49	A	0.37	A	0.01	0.03
13	Ridgeline Rd @ Santiago Canyon Rd	0.23	A	0.30	A	0.00	0.00
14	Portola Pkwy @ SR-241 Ramps	0.45	A	0.56	A	0.02	0.03
15	Saddleback Ranch Rd @ Project Dwy 1	0.37	A	0.26	A	0.37	0.26
16	Project Dwy 2 @ Glenn Ranch Rd	0.39	A	0.36	A	0.39	0.36

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F

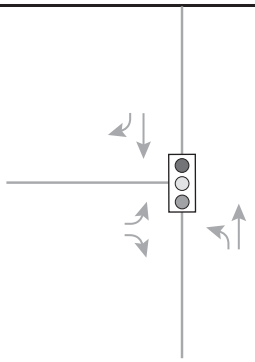


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

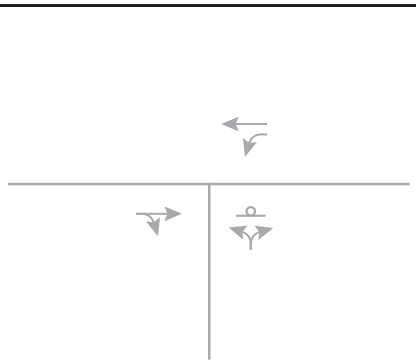
Portola Center
Traffic Impact Study

WILSON & COMPANY ENGINEERS & ARCHITECTS

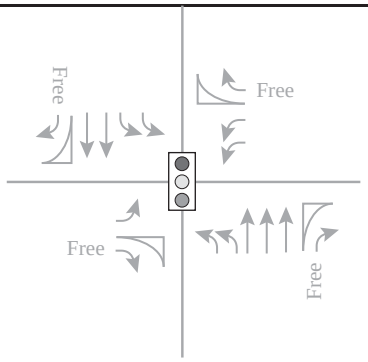
Figure 5-1
Intersection Geometrics
Existing Plus Project Conditions



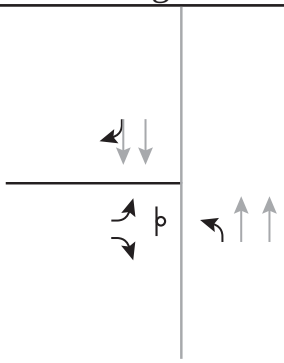
Saddleback Ranch Rd @
⓬ Fawn Ridge Rd



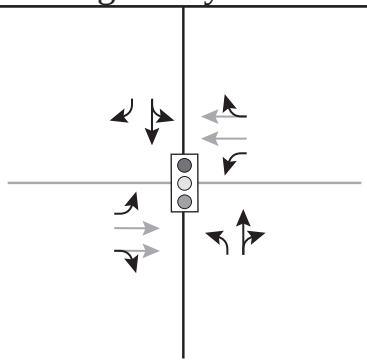
Ridgeline Rd @
⓭ Santiago Canyon Rd



Portola Pkwy @
⓮ SR-241 Ramps



Saddleback Ranch Rd @
⓯ Project Driveway 1



Project Driveway 2 @
⓰ Glenn Ranch Rd

LEGEND

- Signalized Intersection
- Stop Controlled Approach
- Movement to Remain
- Movement Added
- Movevent Removed

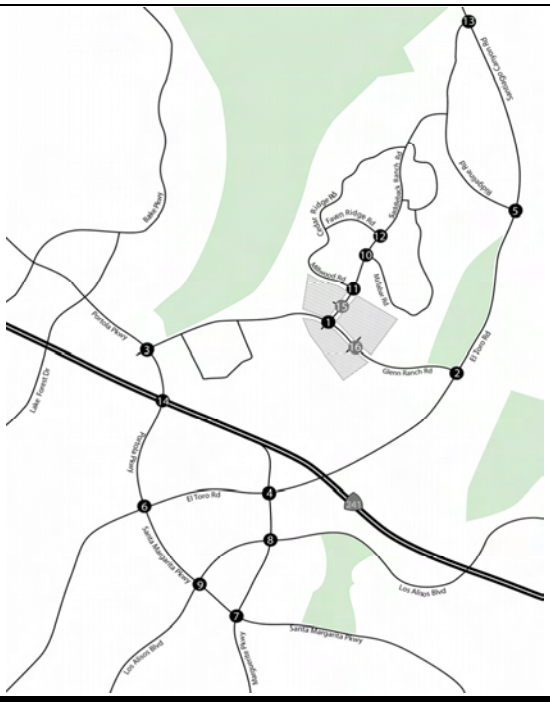
Naming Convention:
North / South @
East / West

Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 5-1
Intersection Geometrics (cont.)
Existing Plus Project Conditions



xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

Saddleback Ranch Rd / Project Driveway 3 @ Glenn Ranch Rd

806 / 277	239 / 163	
9 / 30	512 / 250	
236 / 152	9 / 30	
148 / 696	1	125 / 111
136 / 623		24 / 21
49 / 152		24 / 21

El Toro Rd @ Glenn Ranch Rd

221 / 64		
521 / 375		
44 / 279	2	237 / 202
283 / 194		283 / 473

Portola Pkwy @ Glenn Ranch Rd

109 / 82	835 / 591	
649 / 1646	83 / 46	
408 / 905	470 / 432	
63 / 89	3	157 / 58
37 / 70		1558 / 930
46 / 99		369 / 390

Marguerite Pkwy @ El Toro Rd

0 / 11	5 / 6	
1 / 38	373 / 141	
2 / 10	530 / 444	
1 / 11	4	331 / 105
161 / 286		14 / 37
100 / 291		287 / 540

Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

12 / 11		
380 / 294		
15 / 9	5	62 / 146
217 / 76		263 / 511

Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd

328 / 516	172 / 87	
593 / 1186	543 / 200	
32 / 250	27 / 20	
332 / 335	6	588 / 349
164 / 470		1304 / 717
379 / 590		35 / 38

Marguerite Pkwy @ Santa Margarita Pkwy

61 / 45	107 / 175	
442 / 413	1167 / 794	
173 / 160	208 / 157	
32 / 95	7	458 / 314
629 / 1139		272 / 349
158 / 523		177 / 182

Marguerite Pkwy @ Los Alisos Blvd

132 / 73	232 / 139	
448 / 367	372 / 171	
116 / 264	148 / 154	
91 / 103	8	24 / 19
136 / 215		285 / 406
48 / 36		124 / 149

Los Alisos Blvd @ Santa Margarita Pkwy

31 / 78	108 / 207	
1420 / 854	208 / 307	
209 / 195	315 / 239	
85 / 48	9	153 / 158
455 / 191		695 / 1627
202 / 99		166 / 339

Saddleback Ranch Rd @ Malabar Rd

774 / 381	26 / 9	
8 / 16	144 / 61	
	10	349 / 667
		36 / 115

Saddleback Ranch Rd @ Millwood Rd

5 / 4		
911 / 398		
0 / 1	11	26 / 56
109 / 48		374 / 645

Saddleback Ranch Rd @ Fawn Ridge Rd

36 / 18		
582 / 334		
32 / 21	12	36 / 126
177 / 58		318 / 532

Ridgeline Rd @ Santiago Canyon Rd

23 / 75	241 / 428	
	5 / 19	
63 / 51	13	73 / 58
309 / 293		7 / 17
48 / 73		

Portola Pkwy @ SR-241 Ramps

213 / 166	618 / 205	
785 / 1437	77 / 70	
151 / 447	14	374 / 144
106 / 89		1456 / 1044
112 / 104		26 / 39

Saddleback Ranch Rd @ Project Driveway 1

2 / 8		
1009 / 431		
7 / 4	15	14 / 47
42 / 28		393 / 697

Project Driveway 2 @ Glenn Ranch Rd

111 / 72	7 / 22	
20 / 13	504 / 242	
	11 / 34	
37 / 127	16	145 / 128
303 / 492		28 / 24
56 / 178		

WILSON & COMPANY ENGINEERS & ARCHITECTS

Portola Center

Intersection Peak Hour Traffic Volumes - Existing Plus Project Conditions

Figure 5-2

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[10100602007V07.xls]EXWP Figure

6.0 Near Term Year 2015 Traffic Conditions

This section provides an analysis of Year 2015 traffic conditions both with and without the proposed project. The Year 2015 traffic forecast for the Near Term scenario, dated June 29, 2011, was provided by Stantec using the LFTAM, which is derived from the Orange County Transportation Analysis Model (OCTAM), the regional model maintained by the Orange County Transportation Authority (OCTA). These forecasts account for the partial growth in other Vacant Land properties.

6.1 Near Term Year 2015 Base Traffic Conditions

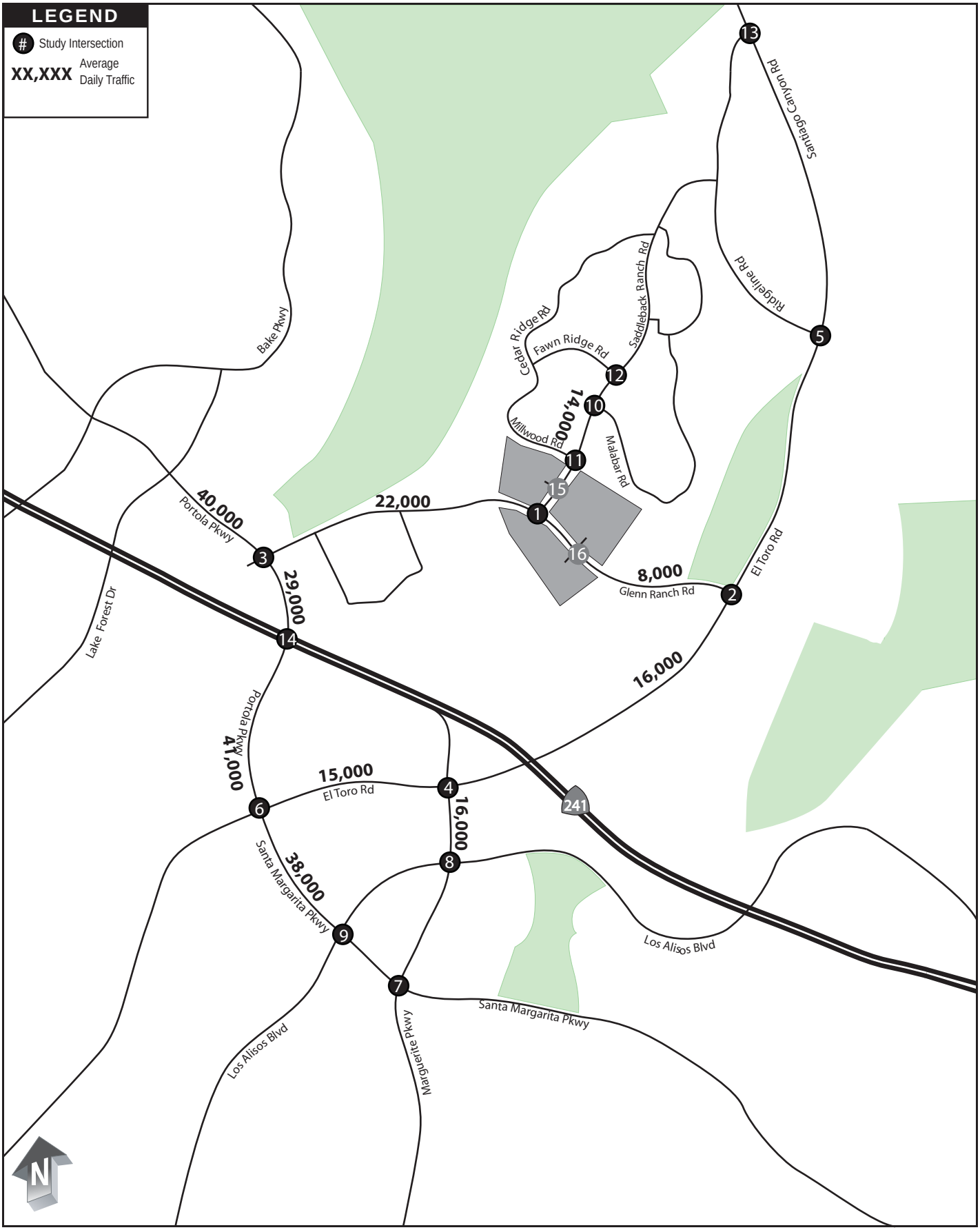
Roadway segment ADT and intersection peak hour turning movement volumes under Near Term Year 2015 Base Conditions are displayed in **Figure 6-1** and intersection peak hour turning movement volumes under Near Term Year 2015 Base Conditions are displayed in **Figure 6-2.** The roadway and intersection geometrics under this scenario are assumed to be the same as under the Existing Condition. LOS analyses under Near Term Base Conditions were conducted using the methodologies described in Chapter 2.0. The LOS results using the ICU methodology are discussed below.

Intersection Capacity Utilization (ICU) Analysis Results

Table 6.1 displays the LOS analysis results for the key study area intersections under Near Term Base Conditions using the ICU methodology. As shown in the table, all of the key study intersections would operate at acceptable LOS D or better during both peak hours, except for the following intersection with ICU's and LOS shown in bold in the table:

- #6 Portola Parkway/Santa Margarita Parkway @ El Toro Road (LOS E – PM Peak)
- #9 Los Alisos Boulevard @ Santa Margarita Parkway (LOS E – AM Peak)

The detailed ICU worksheets are provided in **Appendix B**.



Source: Wilson & Company, Inc., Engineers & Architects; December 2012

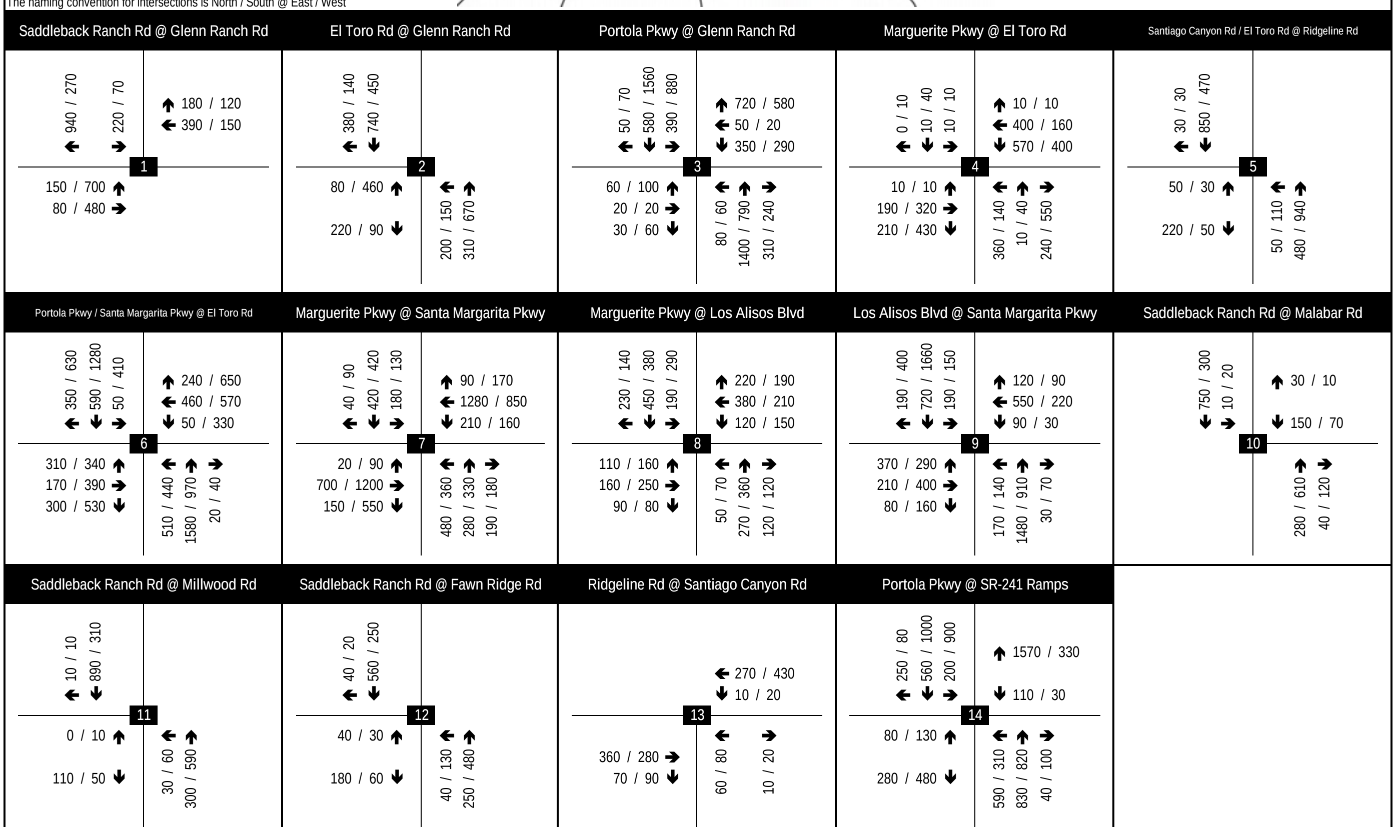
Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 6-1
Roadway Average Daily Traffic Volumes
Near-Term Year 2015 Base Conditions

xx / yy = AM / PM Peak-Hour Turning Movement Volumes

The naming convention for intersections is North / South @ East / West



WILSON & COMPANY ENGINEERS & ARCHITECTS

Portola Center

Intersection Peak Hour Traffic Volumes - Near Term Year 2015 Base Conditions

Figure 6-2

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[1010060200TV07.xls]NT Figure

TABLE 6.1
ICU PEAK HOUR INTERSECTION LOS SUMMARY
NEAR TERM YEAR 2015 BASE CONDITIONS

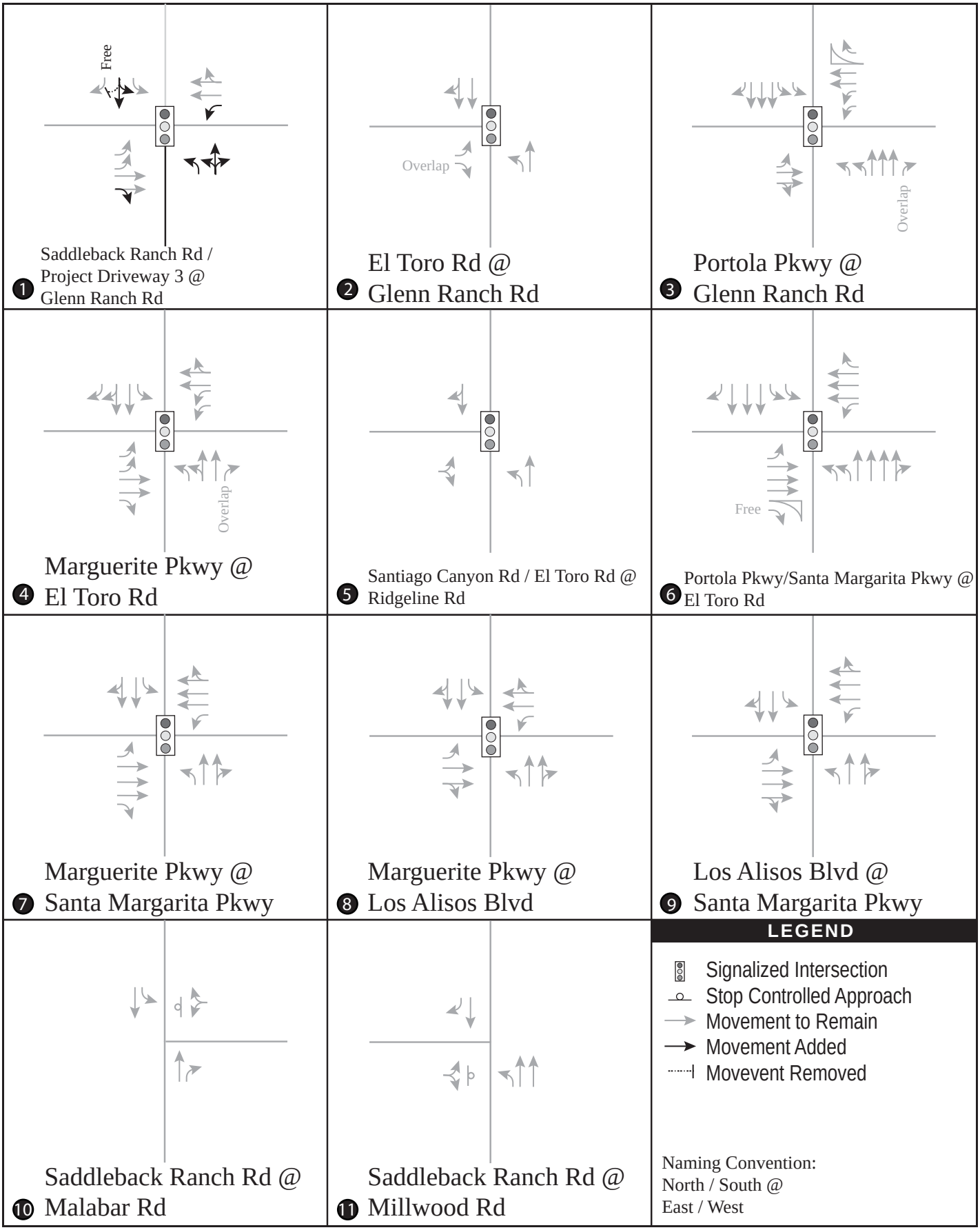
#	Intersection	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
1	Saddleback Ranch Rd @ Glenn Ranch Rd	0.45	A	0.34	A
2	El Toro Rd @ Glenn Ranch Rd	0.44	A	0.71	C
3	Portola Pkwy @ Glenn Ranch Rd	0.54	A	0.56	A
4	Marguerite Pkwy @ El Toro Rd	0.42	A	0.62	B
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	0.58	A	0.60	A
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	0.61	B	**0.92**	**E**
7	Marguerite Pkwy @ Santa Margarita Pkwy	0.71	C	0.71	C
8	Marguerite Pkwy @ Los Alisos Blvd	0.41	A	0.49	A
9	Los Alisos Blvd @ Santa Margarita Pkwy	**0.93**	**E**	0.83	D
10	Saddleback Ranch Rd @ Malabar Rd	0.60	A	0.47	A
11	Saddleback Ranch Rd @ Millwood Rd	0.65	B	0.31	A
12	Saddleback Ranch Rd @ Fawn Ridge Rd	0.49	A	0.35	A
13	Ridgeline Rd @ Santiago Canyon Rd	0.27	A	0.30	A
14	Portola Pkwy @ SR-241 Ramps	0.43	A	0.55	A

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F

6.2 Near Term Year 2015 Base Plus Project Traffic Conditions

This scenario included Near Term Year 2015 Base traffic volumes with the addition of traffic from the proposed project. No changes to the roadway geometrics would occur under this scenario. **Figure 6-3** displays the intersection geometric configurations under Near Term Year 2015 Base Plus Project Conditions. The main changes occur at the project driveways and improvements are shown in bold. **Figure 6-4** illustrates the daily traffic volumes for this scenario and **Figure 6-5** illustrates the intersection peak hour traffic volumes for this scenario. LOS analyses were conducted using the methodologies described in Chapter 2.0, and the LOS results using the ICU methodology are presented below.

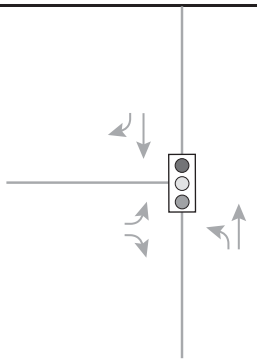


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

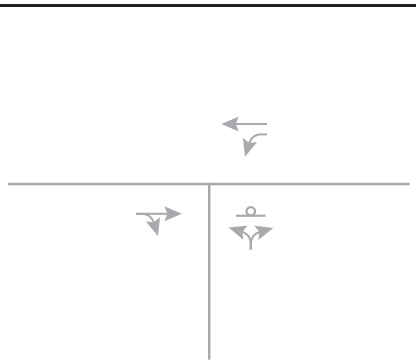
Portola Center
Traffic Impact Study

WILSON & COMPANY ENGINEERS & ARCHITECTS

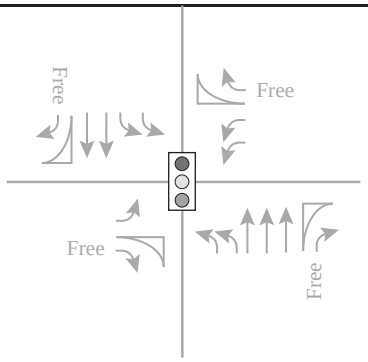
Figure 6-3
Intersection Geometrics
Near-Term Year 2015 Base Plus Project Conditions



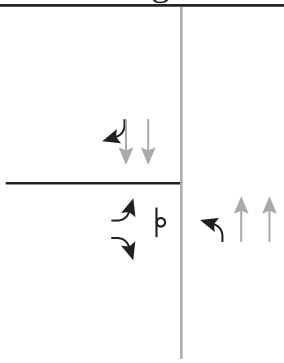
Saddleback Ranch Rd @
⓬ Fawn Ridge Rd



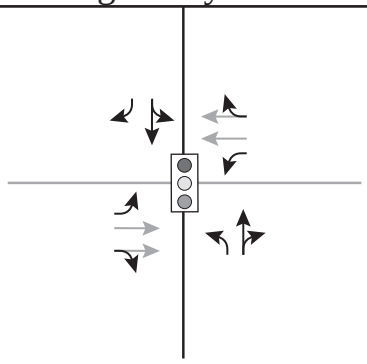
Ridgeline Rd @
⓭ Santiago Canyon Rd



Portola Pkwy @
⓮ SR-241 Ramps



Saddleback Ranch Rd @
⓯ Project Driveway 1



Project Driveway 2 @
⓰ Glenn Ranch Rd

LEGEND

- Signalized Intersection
- Stop Controlled Approach
- Movement to Remain
- Movement Added
- Movevent Removed

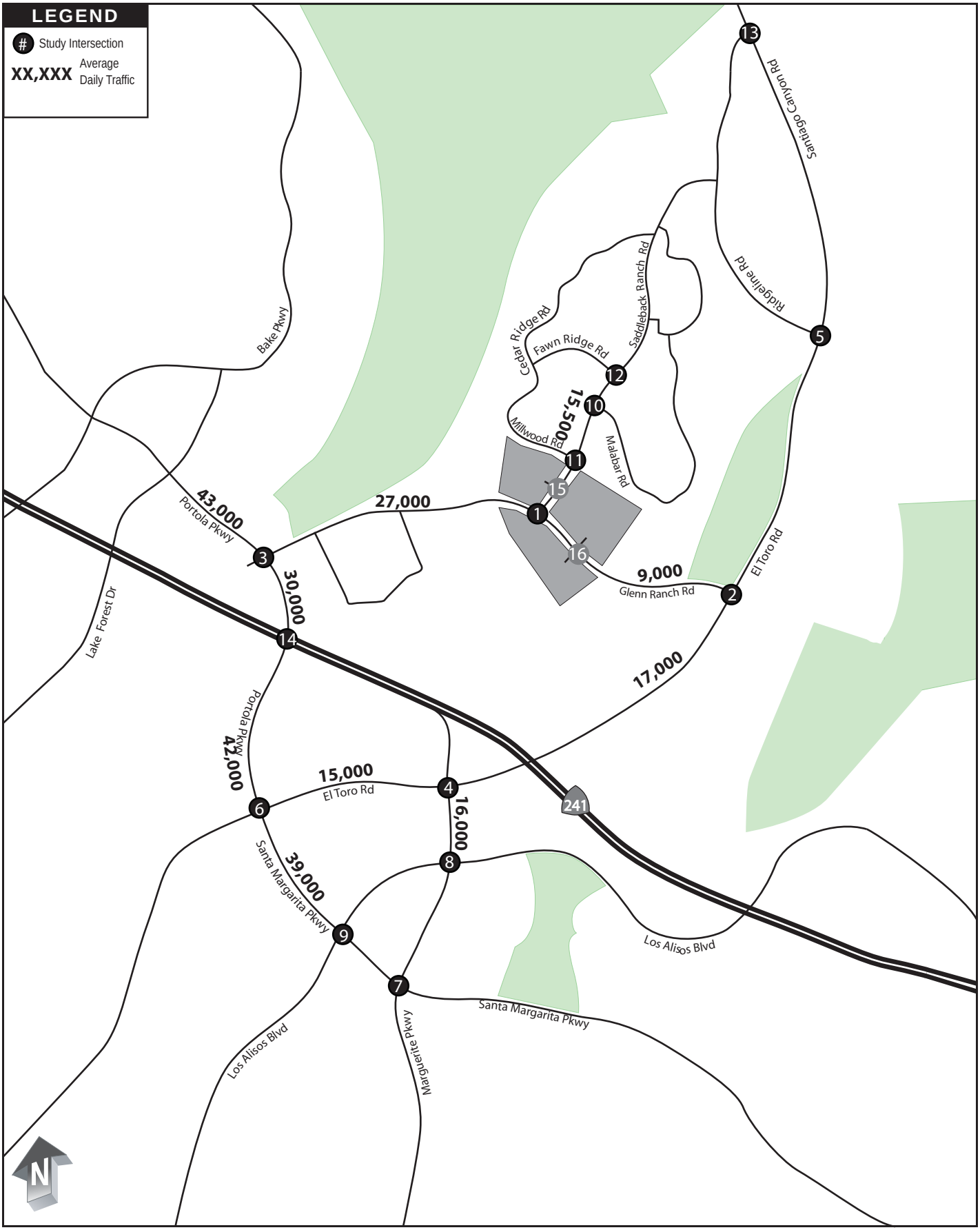
Naming Convention:
North / South @
East / West

Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 6-3
Intersection Geometrics (cont.)
Near-Term Year 2015 Base Plus Project Conditions

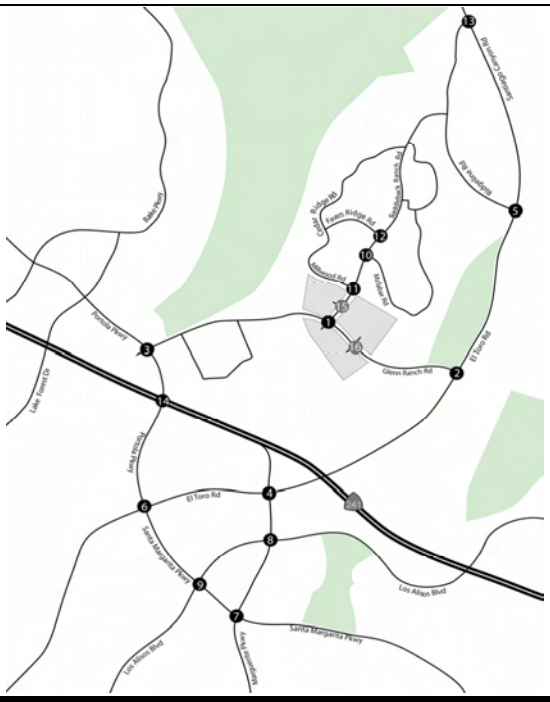


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

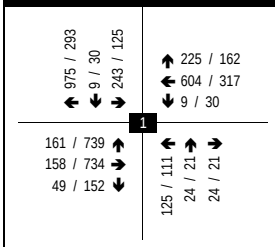
WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 6-4
Roadway Average Daily Traffic Volumes
Near-Term Year 2015 Base Plus Project Conditions

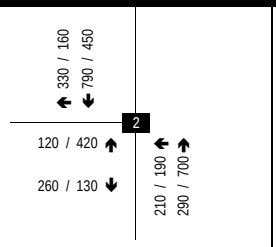


xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

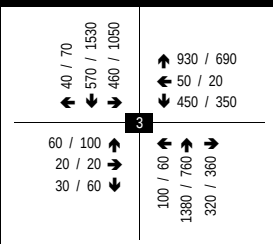
Saddleback Ranch Rd / Project Driveway 3 @ Glenn Ranch Rd



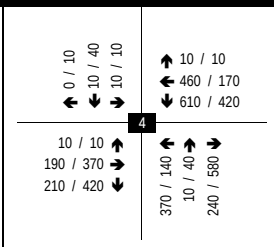
El Toro Rd @ Glenn Ranch Rd



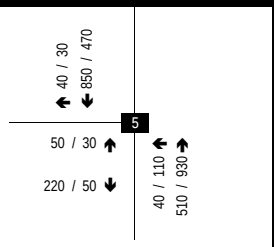
Portola Pkwy @ Glenn Ranch Rd



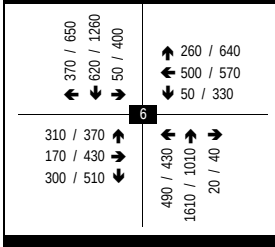
Marguerite Pkwy @ El Toro Rd



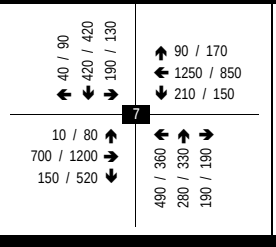
Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd



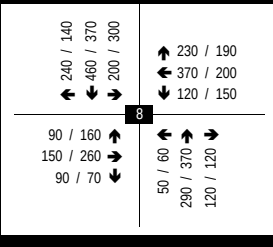
Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd



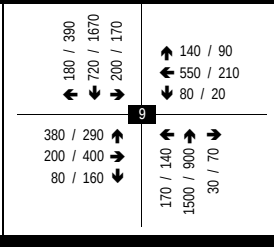
Marguerite Pkwy @ Santa Margarita Pkwy



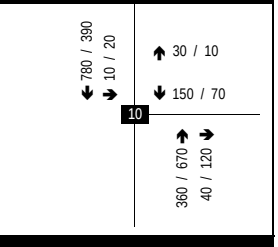
Marguerite Pkwy @ Los Alisos Blvd



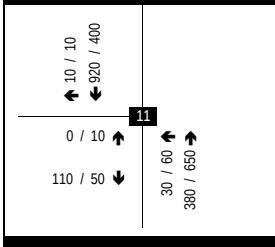
Los Alisos Blvd @ Santa Margarita Pkwy



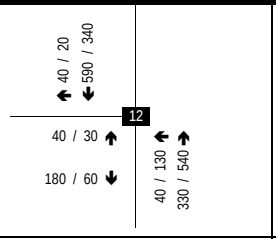
Saddleback Ranch Rd @ Malabar Rd



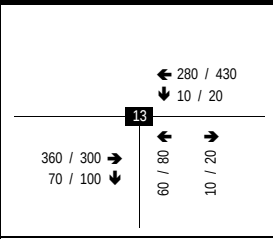
Saddleback Ranch Rd @ Millwood Rd



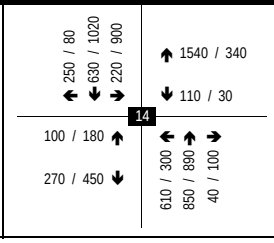
Saddleback Ranch Rd @ Fawn Ridge Rd



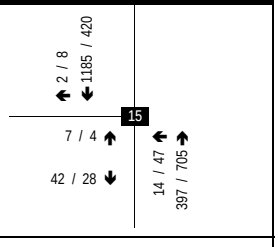
Ridgeline Rd @ Santiago Canyon Rd



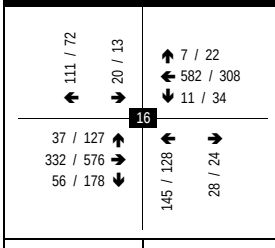
Portola Pkwy @ SR-241 Ramps



Saddleback Ranch Rd @ Project Driveway 1



Project Driveway 2 @ Glenn Ranch Rd



Portola Center

Intersection Peak Hour Traffic Volumes - Near Term Year 2015 Base Plus Project Conditions

Figure 6-5

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[10100602007V07.xls]NTWP Figure

Intersection Capacity Utilization (ICU) Analysis Results

Table 6.2 displays the LOS analysis results for the key study area intersections under Near Term Year 2015 Base Plus Project Conditions using the ICU methodology. As shown in the table, all of the study intersections would continue to operate in a similar fashion as in the Baseline scenario and all project driveways would operate at LOS C or better during the peak hour conditions. Although the Portola Parkway/Santa Margarita Parkway @ El Toro Road and Los Alisos Boulevard @ Santa Margarita Parkway intersections would continue to operate at LOS E, the addition of project traffic would result in an increase in the ICU value of 0.01 or less at these intersections for the affected peak periods and would not exceed the City of Lake Forest's significance threshold of an increase in the ICU value of 0.02 or more (see Section 2.3, "Determination of Significant Impacts"). Thus, the project would not result in any significant impacts to the study intersections and, as a result, no mitigation is required. The ICU worksheets are included in **Appendix B**.

TABLE 6.2
ICU PEAK HOUR INTERSECTION LOS SUMMARY
NEAR TERM YEAR 2015 BASE PLUS PROJECT CONDITIONS

#	Intersection	AM Peak Hour		PM Peak Hour		Δ in ICU	
		ICU	LOS	ICU	LOS	AM	PM
1	Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd	0.39	A	0.47	A	-0.06	0.13
2	El Toro Rd @ Glenn Ranch Rd	0.47	A	0.71	C	0.03	0.00
3	Portola Pkwy @ Glenn Ranch Rd	0.60	A	0.62	B	0.06	0.06
4	Marguerite Pkwy @ El Toro Rd	0.44	A	0.64	B	0.02	0.02
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	0.57	A	0.60	A	-0.01	0.00
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	0.62	B	**0.91**	E	0.01	-0.01
7	Marguerite Pkwy @ Santa Margarita Pkwy	0.72	C	0.71	C	0.01	0.00
8	Marguerite Pkwy @ Los Alisos Blvd	0.42	A	0.51	A	0.01	0.02
9	Los Alisos Blvd @ Santa Margarita Pkwy	**0.94**	E	0.83	D	0.01	0.00
10	Saddleback Ranch Rd @ Malabar Rd	0.62	B	0.50	A	0.02	0.03
11	Saddleback Ranch Rd @ Millwood Rd	0.67	B	0.37	A	0.02	0.06
12	Saddleback Ranch Rd @ Fawn Ridge Rd	0.51	A	0.39	A	0.02	0.04
13	Ridgeline Rd @ Santiago Canyon Rd	0.27	A	0.30	A	0.00	0.00
14	Portola Pkwy @ SR-241 Ramps	0.48	A	0.59	A	0.05	0.04
15	Saddleback Ranch Rd @ Project Dwy 1	0.42	A	0.26	A	0.42	0.26
16	Project Dwy 2 @ Glenn Ranch Rd	0.41	A	0.39	A	0.41	0.39

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F

7.0 Buildout Year 2030 Traffic Conditions

This section provides an analysis of Year 2030 Buildout traffic conditions both with and without the proposed project. The Year 2030 traffic forecast for the Buildout scenario, dated June 29, 2011, was provided by Stantec. The traffic forecasts assume all vacant land is developed and includes the Lake Forest Glass Creek Sports Park project. The Buildout traffic forecasts have been updated from previous traffic forecasts and are consistent with other recently approved projects within the study area.

7.1 Buildout Year 2030 Base Traffic Conditions

Roadway segment ADT and intersection peak hour turning movement volumes under Buildout Year 2030 Base Conditions are displayed in **Figure 7-1** and intersection peak hour turning movement volumes under Buildout Year 2030 Base Conditions are displayed in **Figure 7-2.**

According to the Orange County Master Plan of Arterial Highways, El Toro Road has been upgraded to a 6-lane major roadway between Trabuco Road and Live Oak Canyon Road. This improvement is also consistent with the Orange County Public Works Transportation Capital Improvement Program (CIP) and is scheduled to be widened using funds from the El Toro Road Fee Program. Although funds have been identified to widen this facility to a 6-lane roadway, it was assumed that El Toro Road would be widened by at least a lane in each direction and result in a 4-lane roadway. This improvement would affect the intersection of Glenn Ranch Road and Ridgeline Road along El Toro Road and result in two through lanes in each direction. It should be noted that according to Stantec, the volumes along Saddleback Ranch Road decrease between the Year 2015 Conditions and the 2030 Conditions because the traffic model assigns more traffic to El Toro Road instead of to Saddleback Ranch Road as a result of these improvements.

At the Santiago Canyon Road @ Ridgeline Road intersection, an improvement to signalize this intersection has also been identified in the Orange County Public Works Transportation CIP for Fiscal Year 2011/2012. As a result, a traffic signal has been assumed with no other changes to the lane configurations at the intersection.

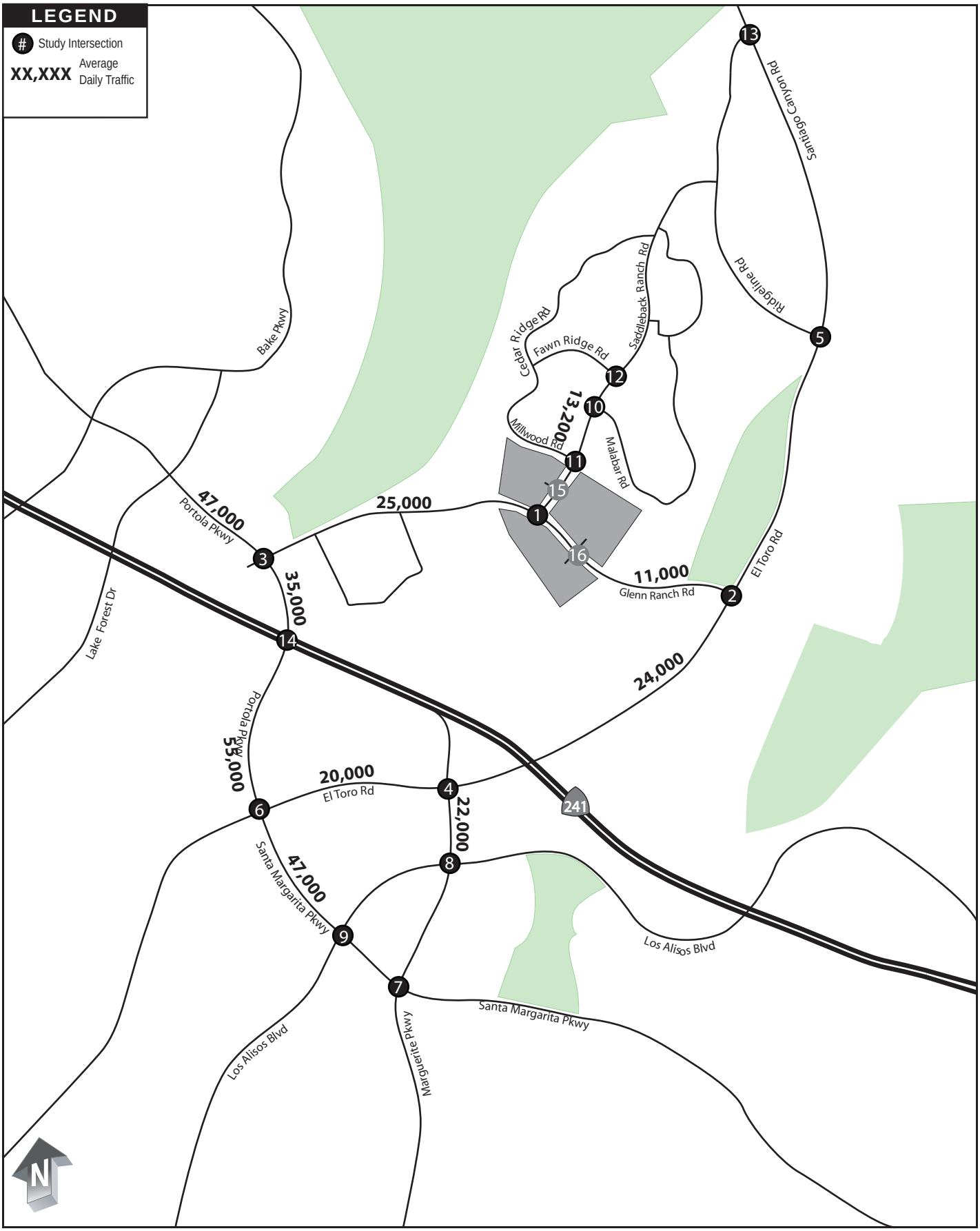
Figure 7-3 illustrates the intersection geometrics for these three intersections for the Year 2030 Baseline Condition. All other roadway segments and intersections within the study area would remain the same as the Existing Conditions and Near Term 2015 scenarios.

Intersection Capacity Utilization (ICU) Analysis Results

Table 7.1 displays the LOS analysis results for the key study area intersections under Buildout Base Conditions using the ICU methodology. As shown in the table, most of the key study intersections would operate at an acceptable LOS D or better during both peak hours except for the following intersections, with ICU value and LOS shown in bold in the table:

- #4 Marguerite Parkway @ El Toro Road (LOS E – PM Peak)
- #6 Portola Parkway/Santa Margarita Parkway @ El Toro Road (LOS F – PM Peak)
- #9 Los Alisos Boulevard @ Santa Margarita Parkway (LOS F – AM Peak)

The detailed ICU worksheets are provided in **Appendix B**.

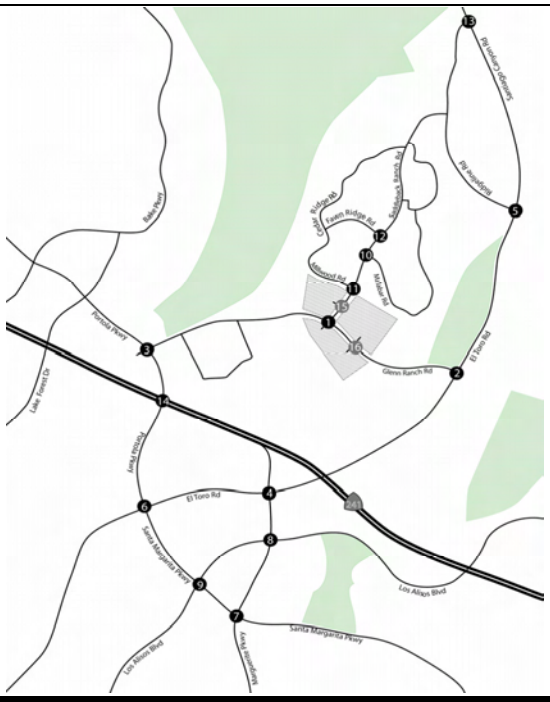


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

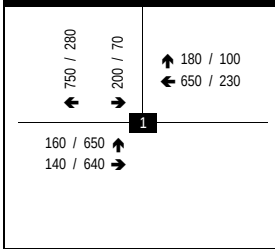
WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 7-1
Roadway Average Daily Traffic Volumes
Buildout Year 2030 Base Conditions

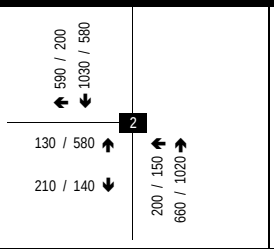


xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

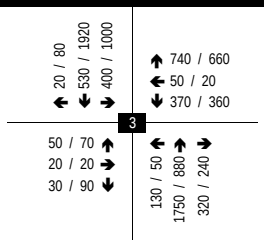
Saddleback Ranch Rd @ Glenn Ranch Rd



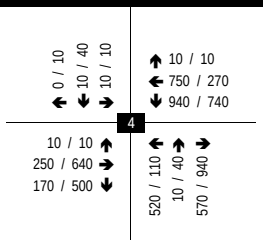
El Toro Rd @ Glenn Ranch Rd



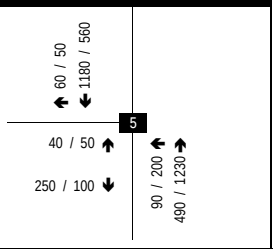
Portola Pkwy @ Glenn Ranch Rd



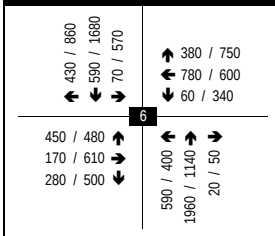
Marguerite Pkwy @ El Toro Rd



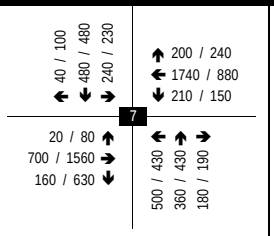
Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd



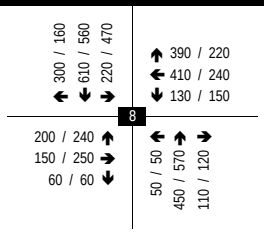
Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd



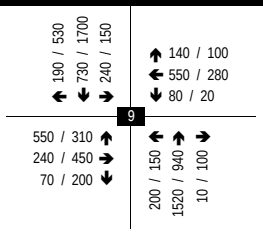
Marguerite Pkwy @ Santa Margarita Pkwy



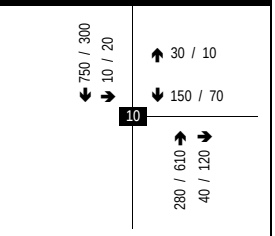
Marguerite Pkwy @ Los Alisos Blvd



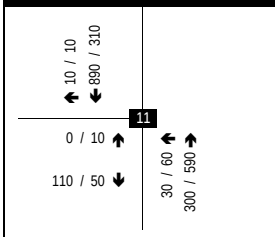
Los Alisos Blvd @ Santa Margarita Pkwy



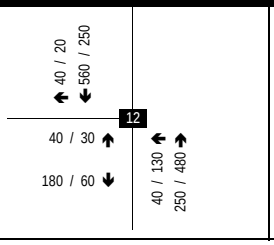
Saddleback Ranch Rd @ Malabar Rd



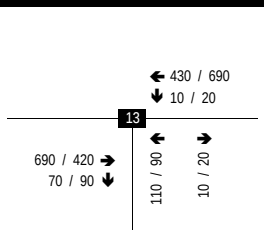
Saddleback Ranch Rd @ Millwood Rd



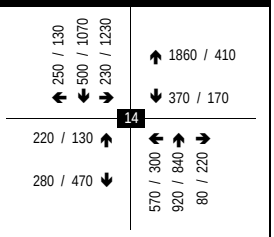
Saddleback Ranch Rd @ Fawn Ridge Rd



Ridgeline Rd @ Santiago Canyon Rd



Portola Pkwy @ SR-241 Ramps

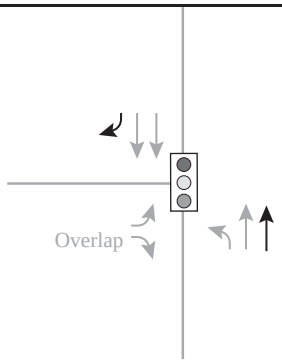


Portola Center

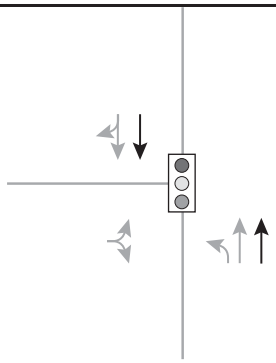
Intersection Peak Hour Traffic Volumes - Buildout Year 2030 Base Conditions

Figure 7-2

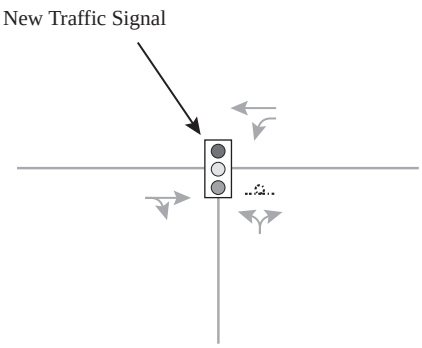
E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[101006020OTV07.xls]BO Figure



El Toro Rd @
❷ Glenn Ranch Rd



Santiago Canyon Rd / El Toro Rd @
❺ Ridgeline Rd



Ridgeline Rd @
⓭ Santiago Canyon Rd

LEGEND

- Signalized Intersection
- Stop Controlled Approach
- Movement to Remain
- Movement Added
- Movevent Removed

Naming Convention:
North / South @
East / West

Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 7-3
Intersection Geometrics
Buildout Year 2030 Base Conditions

TABLE 7.1
ICU PEAK HOUR INTERSECTION LOS SUMMARY
BUILDOUT YEAR 2030 BASE CONDITIONS

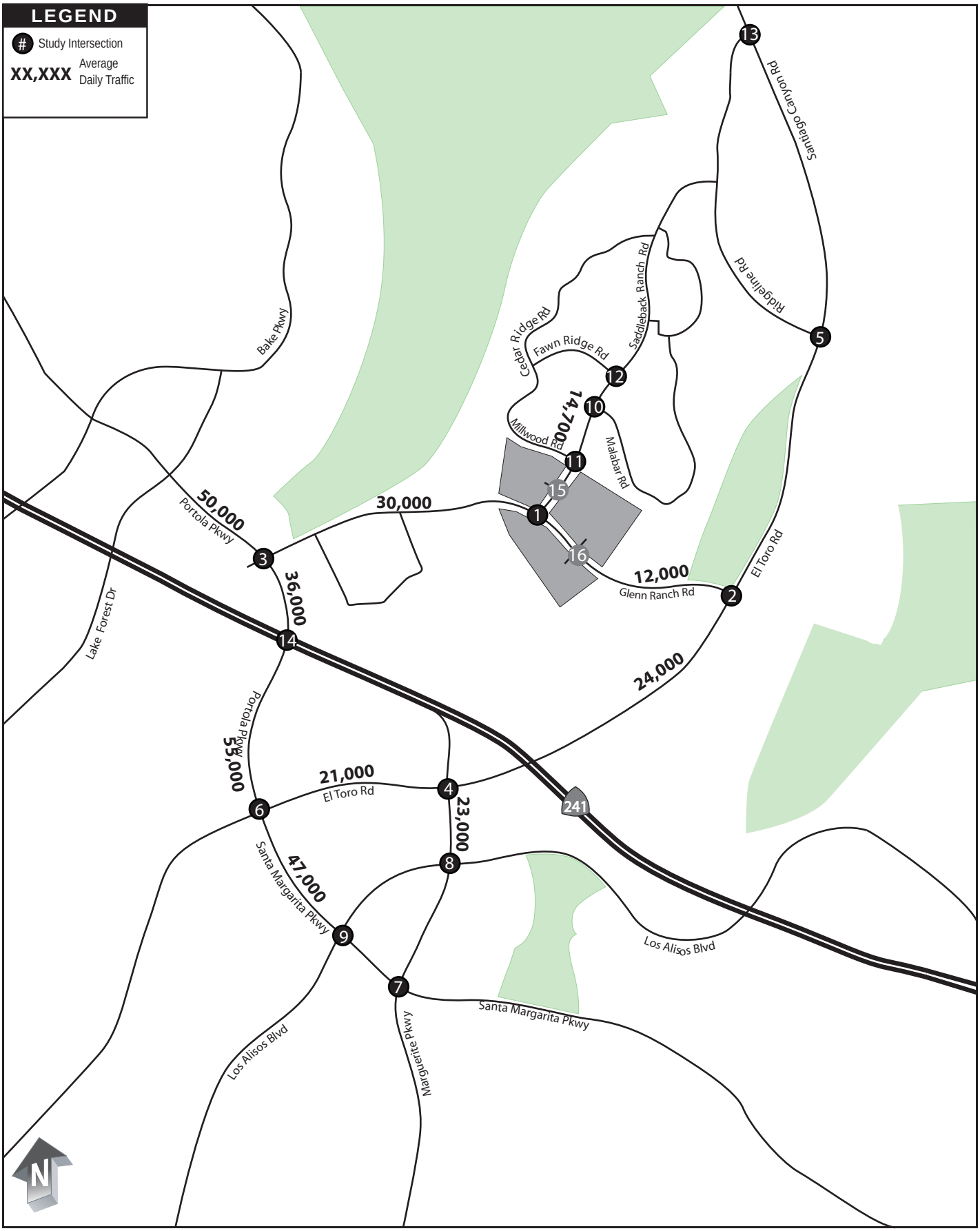
#	Intersection	AM Peak Hour		PM Peak Hour	
		ICU	LOS	ICU	LOS
1	Saddleback Ranch Rd @ Glenn Ranch Rd	0.47	A	0.35	A
2	El Toro Rd @ Glenn Ranch Rd	0.55	A	0.69	B
3	Portola Pkwy @ Glenn Ranch Rd	0.63	B	0.63	B
4	Marguerite Pkwy @ El Toro Rd	0.60	A	**0.92**	E
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	0.45	A	0.41	A
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	0.82	D	**1.01**	F
7	Marguerite Pkwy @ Santa Margarita Pkwy	0.83	D	0.84	D
8	Marguerite Pkwy @ Los Alisos Blvd	0.56	A	0.71	C
9	Los Alisos Blvd @ Santa Margarita Pkwy	**1.07**	F	0.87	D
10	Saddleback Ranch Rd @ Malabar Rd	0.60	A	0.47	A
11	Saddleback Ranch Rd @ Millwood Rd	0.65	B	0.31	A
12	Saddleback Ranch Rd @ Fawn Ridge Rd	0.49	A	0.35	A
13	Ridgeline Rd @ Santiago Canyon Rd	0.47	A	0.46	A
14	Portola Pkwy @ SR-241 Ramps	0.50	A	0.65	B

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F

7.2 Buildout Year 2030 Base Plus Project Traffic Conditions

This scenario included Buildout Year 2030 Base traffic volumes with the addition of traffic from the proposed project. No changes to the roadway or intersection geometrics would occur under this scenario and the Buildout geometrics are consistent with the Near Term geometrics shown in Figure 6-3. **Figure 7-4** illustrates the daily traffic volumes for this scenario and **Figure 7-5** illustrates the intersection peak hour traffic volumes for this scenario.

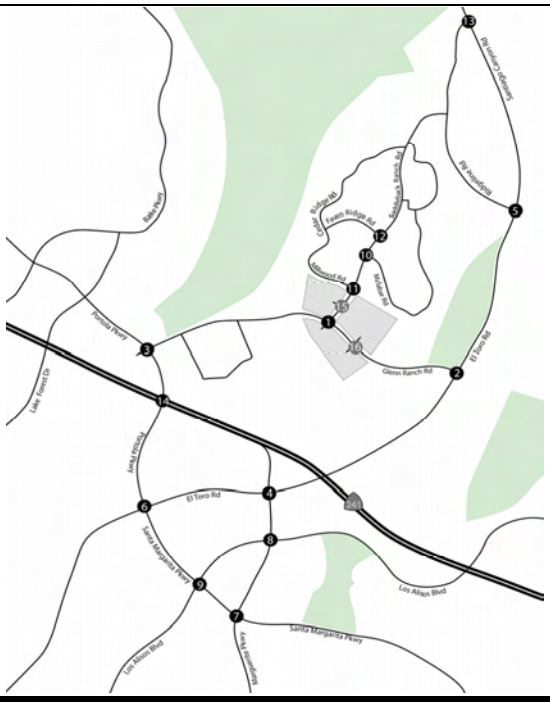


Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 7-4
Roadway Average Daily Traffic Volumes
Buildout Year 2030 Base Plus Project Conditions



xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

Saddleback Ranch Rd / Project Driveway 3 @ Glenn Ranch Rd

785 / 303	9 / 30	223 / 125
225 / 142	1	
864 / 397		
9 / 30		
171 / 689		125 / 111
218 / 894		24 / 21
49 / 152		24 / 21

El Toro Rd @ Glenn Ranch Rd

500 / 270	1150 / 550	
	2	
180 / 550		230 / 180
250 / 180		450 / 1100

Portola Pkwy @ Glenn Ranch Rd

20 / 70	530 / 1860	450 / 1140
940 / 770	3	
50 / 20		
450 / 400		
60 / 70		130 / 60
20 / 30		1730 / 860
30 / 90		310 / 350

Marguerite Pkwy @ El Toro Rd

0 / 10	10 / 40	10 / 10
10 / 10	4	
860 / 270		
980 / 760		
10 / 10		510 / 110
260 / 730		10 / 40
170 / 490		580 / 960

Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

60 / 40	1200 / 580	
	5	
40 / 40		90 / 210
250 / 100		530 / 1250

ortola Pkwy / Santa Margarita Pkwy @ El Toro F

430 / 850	640 / 1700	70 / 590
410 / 750	6	
830 / 600		
60 / 340		
450 / 490		580 / 410
180 / 670		1950 / 1150
280 / 490		20 / 50

Marguerite Pkwy @ Santa Margarita Pkwy

40 / 100	500 / 490	230 / 220
210 / 240	7	
1730 / 880		
220 / 150		
20 / 80		500 / 450
710 / 1560		350 / 410
170 / 620		180 / 190

Marguerite Pkwy @ Los Alisos Blvd

310 / 160	620 / 570	240 / 440
360 / 230	8	
410 / 240		
130 / 150		
230 / 260		50 / 50
150 / 250		450 / 560
50 / 70		110 / 120

Los Alisos Blvd @ Santa Margarita Pkwy

190 / 510	740 / 1710	240 / 150
170 / 100	9	
570 / 280		
90 / 20		
550 / 310		210 / 150
250 / 460		1530 / 940
80 / 200		10 / 90

Saddleback Ranch Rd @ Malabar Rd

780 / 390	10 / 20	
30 / 10	10	
150 / 70		
		360 / 670
		40 / 120

Saddleback Ranch Rd @ Millwood Rd

10 / 10	920 / 400	
	11	
0 / 10		30 / 60
110 / 50		380 / 650

Saddleback Ranch Rd @ Fawn Ridge Rd

40 / 20	590 / 340	
	12	
40 / 30		40 / 130
180 / 60		330 / 540

Ridgeline Rd @ Santiago Canyon Rd

	450 / 700	
	10 / 20	
	13	
700 / 430		110 / 90
70 / 110		10 / 20

Portola Pkwy @ SR-241 Ramps

260 / 130	560 / 1080	250 / 1200
1840 / 420	14	
360 / 170		
230 / 190		560 / 300
290 / 450		910 / 880
		90 / 210

Saddleback Ranch Rd @ Project Driveway 1

2 / 8	975 / 430	
	15	
7 / 4		14 / 47
42 / 28		397 / 705

Project Driveway 2 @ Glenn Ranch Rd

111 / 72	20 / 13	
7 / 22	16	
842 / 368		
11 / 34		
37 / 127		145 / 128
372 / 746		28 / 24
56 / 178		

WILSON & COMPANY ENGINEERS & ARCHITECTS

Portola Center

Intersection Peak Hour Traffic Volumes - Buildout Year 2030 Base Plus Project Conditions

Figure 7-5

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[10100602007V07.xls]BOWP Figure

Intersection Capacity Utilization (ICU) Analysis Results

Table 7.2 displays the LOS analysis results for the key study area intersections under Buildout Year 2030 Base Plus Project Conditions using the ICU methodology. As shown in the table, the same three intersections, Marguerite Parkway @ El Toro Road, Portola Parkway/Santa Margarita Parkway @ El Toro Road, and Los Alisos Boulevard @ Santa Margarita Parkway, that would operate at LOS E or F in the Buildout Year 2030 Base scenario would continue to operate at LOS E or F in the Buildout Year 2030 Base Plus Project scenario and all project driveways would operate at LOS C or better during the peak hour conditions.

Although the Marguerite Parkway @ El Toro Road, the Portola Parkway/Santa Margarita Parkway @ El Toro Road, and the Los Alisos Boulevard @ Santa Margarita Parkway intersections would continue to operate at LOS E or F, the addition of project traffic would result in an increase in the ICU value of 0.01 or less at these intersections for the affected peak periods, and, therefore, would not exceed the City of Lake Forest's significance threshold of an increase in the ICU value of 0.02 or more (see Section 2.3, "Determination of Significant Impacts"). Thus, the project would not result in any significant impacts to the study intersections and, as a result, no mitigation is required. The ICU worksheets are included in **Appendix B**.

TABLE 7.2
ICU PEAK HOUR INTERSECTION LOS SUMMARY
BUILDOUT YEAR 2030 BASE PLUS PROJECT CONDITIONS

#	Intersection	AM Peak Hour		PM Peak Hour		Δ in ICU	
		ICU	LOS	ICU	LOS	AM	PM
1	Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd	0.45	A	0.48	A	-0.02	0.13
2	El Toro Rd @ Glenn Ranch Rd	0.64	B	0.69	B	0.09	0.00
3	Portola Pkwy @ Glenn Ranch Rd	0.66	B	0.69	B	0.03	0.06
4	Marguerite Pkwy @ El Toro Rd	0.62	B	**0.93**	**E**	0.02	0.01
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	0.45	A	0.42	A	0.00	0.01
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	0.84	D	**1.02**	**F**	0.02	0.01
7	Marguerite Pkwy @ Santa Margarita Pkwy	0.84	D	0.85	D	0.01	0.01
8	Marguerite Pkwy @ Los Alisos Blvd	0.58	A	0.69	B	0.02	-0.02
9	Los Alisos Blvd @ Santa Margarita Pkwy	**1.07**	**F**	0.87	D	0.00	0.00
10	Saddleback Ranch Rd @ Malabar Rd	0.62	B	0.50	A	0.02	0.03
11	Saddleback Ranch Rd @ Millwood Rd	0.67	B	0.37	A	0.02	0.06
12	Saddleback Ranch Rd @ Fawn Ridge Rd	0.51	A	0.39	A	0.02	0.04
13	Ridgeline Rd @ Santiago Canyon Rd	0.47	A	0.46	A	0.00	0.00
14	Portola Pkwy @ SR-241 Ramps	0.51	A	0.68	B	0.01	0.03
15	Saddleback Ranch Rd @ Project Dwy 1	0.36	A	0.26	A	0.36	0.26
16	Project Dwy 2 @ Glenn Ranch Rd	0.49	A	0.44	A	0.49	0.44

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** letter indicates unacceptable LOS E or F

8.0 HCM Intersection Analysis

In addition to the ICU analysis, the key study intersections were also analyzed using the 2000 Highway Capacity Manual (HCM 2000) methodology as described in Section 2.2.2. The purpose of using the HCM 2000 methodology was to provide a comparative analysis of the ICU methodology and to provide additional measures of effectiveness (MOEs) besides LOS, such as queue length, delays per vehicle, and the ability to factor signal timing parameters such as right-turn overlap phases. The HCM methodology produces an overall intersection delay and delays and v/c ratios per approach. When compared to the ICU results, the HCM analysis consistently yielded more conservative results (i.e., worse delays and LOS). The analysis scenarios analyzed in this section include:

- *Existing Conditions (With and Without Project)*
- *Near Term Year 2015 Conditions (With and Without Project)*
- *Buildout Year 2030 Conditions (With and Without Project)*

All HCM LOS worksheets for the scenarios listed above are provided in **Appendix D**.

8.1 Existing LOS Analysis (HCM)

This section provides an analysis of the existing traffic conditions using the HCM methodology. The scenarios analyzed in this section include Existing Conditions and the Existing Plus Project Conditions.

Existing Conditions

Table 8.1 summarizes the intersection LOS and average vehicle control delay results for the key study area intersections under Existing Conditions. As shown in the table, all of the key study intersections are shown to operate at acceptable LOS D or better under Existing Conditions when the HCM methodology is used, with the exception of the following two intersections:

- #9 Los Alisos Boulevard @ Santa Margarita Parkway (LOS F – AM Peak, LOS E – PM Peak)
- #11 Saddleback Ranch Road @ Millwood Road (LOS E – AM Peak)

As discussed in Section 2.2.2, the HCM methodology for unsignalized intersections becomes unreliable when traffic conditions are projected to be at LOS E or F conditions. In the case of the Saddleback Ranch Road @ Millwood Road intersection, the delay reported from the HCM methodology at this unsignalized intersection is much higher than what was observed in the field. On average, vehicles were observed to wait no more than 10 seconds before turning onto Saddleback Ranch Road from Millwood Road, as opposed to the 36.4 seconds predicted by the methodology. As shown in the HCM LOS worksheets in Appendix D, the HCM v/c ratio of 0.59 (LOS A) for the eastbound movement of Millwood Road would more accurately reflect the operations of this intersection and is consistent with the ICU value of 0.65 shown in Table 3.2.

TABLE 8.1
HCM PEAK HOUR INTERSECTION LOS SUMMARY
EXISTING CONDITIONS

#	Intersection	Traffic Control	AM		PM	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)
1	Saddleback Ranch Rd @ Glenn Ranch Rd	Signal	17.2	B	18.5	B
2	El Toro Rd @ Glenn Ranch Rd	Signal	10.2	B	11.1	B
3	Portola Pkwy @ Glenn Ranch Rd	Signal	21.5	C	24.7	C
4	Marguerite Pkwy @ El Toro Rd	Signal	15.6	B	16.7	B
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	Signal	10.3	B	7.5	A
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	Signal	36.1	D	23.0	C
7	Marguerite Pkwy @ Santa Margarita Pkwy	Signal	45.5	D	35.4	D
8	Marguerite Pkwy @ Los Alisos Blvd	Signal	24.2	C	28.5	C
9	Los Alisos Blvd @ Santa Margarita Pkwy	Signal	**82.4**	**F**	**69.9**	**E**
10	Saddleback Ranch Rd @ Malabar Rd	OWSC(c)	25.1	D	14.7	B
11	Saddleback Ranch Rd @ Millwood Rd	OWSC(c)	**36.4**	**E**	11.0	B
12	Saddleback Ranch Rd @ Fawn Ridge Rd	Signal	12.1	B	13.1	B
13	Ridgeline Rd @ Santiago Canyon Rd	OWSC(c)	15.8	C	19.3	C
14	Portola Pkwy @ SR-241 Ramps	Signal	10.1	B	9.9	A

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F
OWSC: One-way stop-control, Signal: Traffic signal
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one- or two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 7.
(c) At unsignalized intersections, the delay for the stop-controlled approach becomes unreliable when operations approach LOS E/F conditions. The operations are more consistent with the v/c ratio reported for the stop controlled movement.

Existing Plus Project Conditions

Table 8.2 summarizes the intersection LOS and average vehicle control delay results for the key study area intersections under the Existing Plus Project Conditions. As shown in the table, the same two intersections that would operate at LOS E or F under the Existing Conditions would continue to operate at LOS E or F in the Existing Plus Project Conditions.

At the Los Alisos Boulevard @ Santa Margarita Parkway intersection, this intersection would continue to operate at LOS F and E conditions during the AM and PM peak periods, respectively, however the project would not result in a significant increase in delay when compared to the existing conditions as shown in Table 8.1. As a result, no mitigation is required based on the results from the HCM methodology.

At the Saddleback Ranch Road @ Millwood Road intersection, this intersection would remain at LOS E with and without the addition of the project traffic, and, under the HCM methodology, the addition of the project would result in an increase in delay by more than two seconds. However, as discussed in Section 2.2.2 and elsewhere in this study, the projected delays produced by the HCM methodology for unsignalized intersections become unreliable when traffic conditions are projected to be at LOS E or F conditions. As shown in the HCM LOS worksheets in Appendix D, the HCM v/c ratio for the eastbound movement along Millwood

Road is 0.61 (LOS B) and is consistent with the ICU value of 0.67 shown in Table 5.1. As a result, this location would not be considered to have a significant impact and no mitigation is required.

TABLE 8.2
HCM PEAK HOUR INTERSECTION LOS SUMMARY
EXISTING PLUS PROJECT CONDITIONS

#	Intersection	Traffic Control	AM		PM		Δ in Delay	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)	AM	PM
1	Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd	Signal	19.2	B	30.4	C	2.0	11.9
2	El Toro Rd @ Glenn Ranch Rd	Signal	10.5	B	12.6	B	0.3	1.5
3	Portola Pkwy @ Glenn Ranch Rd	Signal	29.4	C	38.5	D	7.9	13.8
4	Marguerite Pkwy @ El Toro Rd	Signal	17.8	B	20.7	C	2.2	4.0
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	Signal	11.2	B	7.8	A	0.9	0.3
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	Signal	47.2	D	27.9	C	11.1	4.9
7	Marguerite Pkwy @ Santa Margarita Pkwy	Signal	49.7	D	38.4	D	4.2	3.0
8	Marguerite Pkwy @ Los Alisos Blvd	Signal	31.7	C	28.9	C	7.5	0.4
9	Los Alisos Blvd @ Santa Margarita Pkwy	Signal	**82.5**	F	70.7	E	0.1	0.8
10	Saddleback Ranch Rd @ Malabar Rd	OWSC(c)	29.0	D	16.1	C	3.9	1.4
11	Saddleback Ranch Rd @ Millwood Rd	OWSC(c)	**39.5**	E	12.0	B	3.1	1.0
12	Saddleback Ranch Rd @ Fawn Ridge Rd	Signal	18.3	B	18.6	B	6.2	5.5
13	Ridgeline Rd @ Santiago Canyon Rd	OWSC(c)	15.8	C	19.3	C	0.0	0.0
14	Portola Pkwy @ SR-241 Ramps	Signal	13.6	B	13.2	B	3.5	3.3
15	Saddleback Ranch Rd @ Project Dwy 1	OWSC(c)	14.1	B	10.3	B	14.1	10.3
16	Project Dwy 2 @ Glenn Ranch Rd	Signal	13.0	B	15.7	B	13.0	15.7

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F.
OWSC: One-way stop-control, Signal: Traffic signal
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one- or two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 7.
(c) At unsignalized intersections, the delay for the stop-controlled approach becomes unreliable when operations approach LOS E/F conditions. The operations are more consistent with the v/c ratio reported for the stop controlled movement.

8.2 Near Term Year 2015 LOS Analysis (HCM)

This section provides an analysis of Year 2015 traffic conditions both with and without the proposed project using the HCM methodology. The scenarios analyzed in this section include the Near Term Year 2015 Base Conditions and the Near Term Year 2015 Base Plus Project Conditions.

Near Term Year 2015 Base Conditions

Table 8.3 summarizes the intersection LOS and average vehicle control delay results for the key study area intersections under the Near Term Year 2015 Base Conditions. As shown in the table,

all of the study intersections would operate at acceptable LOS D or better with the exception of the following three intersections:

- #6 Portola Parkway/Santa Margarita Parkway @ El Toro Road (LOS E – PM Peak)
- #9 Los Alisos Boulevard @ Santa Margarita Parkway (LOS F – AM Peak, LOS E – PM Peak)
- #11 Saddleback Ranch Road @ Millwood Road (LOS E – AM Peak)

As discussed in Section 8.1, "Existing Conditions", the HCM v/c ratio of 0.60 (LOS B) for the eastbound movement of the Saddleback Ranch Road @ Millwood Road intersection would more accurately reflect the operations of this intersection instead of the LOS E conditions reported by the HCM methodology. This v/c ratio is also consistent with the ICU value of 0.65 shown in Table 6.1.

TABLE 8.3
HCM PEAK HOUR INTERSECTION LOS SUMMARY
NEAR TERM YEAR 2015 BASE CONDITIONS

#	Intersection	Traffic Control	AM		PM	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)
1	Saddleback Ranch Rd @ Glenn Ranch Rd	Signal	19.2	B	18.8	B
2	El Toro Rd @ Glenn Ranch Rd	Signal	12.6	B	18.4	B
3	Portola Pkwy @ Glenn Ranch Rd	Signal	18.0	B	20.7	C
4	Marguerite Pkwy @ El Toro Rd	Signal	18.0	B	17.3	B
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	Signal	15.3	B	8.3	A
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	Signal	28.7	C	**65.5**	E
7	Marguerite Pkwy @ Santa Margarita Pkwy	Signal	40.2	D	36.4	D
8	Marguerite Pkwy @ Los Alisos Blvd	Signal	23.3	C	26.1	C
9	Los Alisos Blvd @ Santa Margarita Pkwy	Signal	**81.6**	F	**72.5**	E
10	Saddleback Ranch Rd @ Malabar Rd	OWSC(c)	32.2	D	14.2	B
11	Saddleback Ranch Rd @ Millwood Rd	OWSC(c)	**40.6**	E	11.5	B
12	Saddleback Ranch Rd @ Fawn Ridge Rd	Signal	20.4	C	16.8	B
13	Ridgeline Rd @ Santiago Canyon Rd	OWSC(c)	11.6	B	15.1	C
14	Portola Pkwy @ SR-241 Ramps	Signal	12.7	B	16.4	B

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F
OWSC: One-way stop-control, Signal: Traffic signal
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one- or two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 7.
(c) At unsignalized intersections, the delay for the stop-controlled approach becomes unreliable when operations approach LOS E/F conditions. The operations are more consistent with the v/c ratio reported for the stop controlled movement.

Near Term Year 2015 Base Plus Project Conditions

Table 8.4 summarizes the intersection LOS and average vehicle control delay results for the key study area intersections under Near Term Year 2015 Base Plus Project Conditions. As shown in the table, the same three intersections that would operate at LOS E or F under the Near Term Year 2015 Base Conditions would continue to operate at LOS E or F.

Although the two signalized intersections would continue to operate at LOS E or F, the proposed project is not considered to have a significant impact at these intersections since the increases in delay do not exceed the significance threshold (increase of more than two seconds of delay when intersections operate at LOS E or F). As a result, no mitigation is required these intersections.

At the Saddleback Ranch Road @ Millwood Road intersection, this intersection would remain at LOS E with and without the addition of the project traffic, and, under the HCM methodology, the addition of the project would result in an increase in delay by more than two seconds. However, as discussed in Section 2.2.2 and elsewhere in this study, the projected delays produced by the HCM methodology for unsignalized intersections become unreliable when traffic conditions are projected to be at LOS E or F conditions. As shown in the HCM LOS Worksheets in Appendix D, the HCM v/c ratio for the eastbound movement along Millwood Road is 0.63 (LOS B) and is consistent with the ICU value of 0.67 shown in Table 6.2. As a result, this location would not be considered to have a significant impact and no mitigation is required.

TABLE 8.4
HCM PEAK HOUR INTERSECTION LOS SUMMARY
NEAR TERM YEAR 2015 BASE PLUS PROJECT CONDITIONS

#	Intersection	Traffic Control	AM		PM		Δ in Delay	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)	AM	PM
1	Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd	Signal	20.0	B	25.1	C	0.8	6.3
2	El Toro Rd @ Glenn Ranch Rd	Signal	14.7	B	18.5	B	2.1	0.1
3	Portola Pkwy @ Glenn Ranch Rd	Signal	19.5	B	26.0	C	1.5	5.3
4	Marguerite Pkwy @ El Toro Rd	Signal	19.6	B	19.2	B	1.6	1.9
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	Signal	15.4	B	8.3	A	0.1	0.0
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	Signal	30.1	C	**66.9**	E	1.4	1.4
7	Marguerite Pkwy @ Santa Margarita Pkwy	Signal	40.4	D	36.5	D	0.2	0.1
8	Marguerite Pkwy @ Los Alisos Blvd	Signal	24.1	C	26.6	C	0.8	0.5
9	Los Alisos Blvd @ Santa Margarita Pkwy	Signal	**82.8**	F	**73.9**	E	1.2	1.4
10	Saddleback Ranch Rd @ Malabar Rd	OWSC(c)	31.9	D	16.8	C	2.6	1.6
11	Saddleback Ranch Rd @ Millwood Rd	OWSC(c)	**41.1**	E	12.5	B	3.7	1.0
12	Saddleback Ranch Rd @ Fawn Ridge Rd	Signal	13.0	B	14.2	B	1.5	0.8
13	Ridgeline Rd @ Santiago Canyon Rd	OWSC(c)	16.3	C	20.2	C	0.2	0.8
14	Portola Pkwy @ SR-241 Ramps	Signal	13.5	B	18.6	B	0.8	2.2
15	Saddleback Ranch Rd @ Project Dwy 1	OWSC(c)	15.9	C	10.3	B	15.9	10.3
16	Project Dwy 2 @ Glenn Ranch Rd	Signal	14.5	B	15.9	B	14.5	15.9

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F
OWSC: One-way stop-control, Signal: Traffic signal
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one- or two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 7.
(c) At unsignalized intersections, the delay for the stop-controlled approach becomes unreliable when operations approach LOS E/F conditions. The operations are more consistent with the v/c ratio reported for the stop controlled movement.

8.3 Buildout Year 2030 LOS Analysis (HCM)

This section provides an analysis of Year 2030 traffic Conditions both with and without the proposed project using the HCM methodology. The scenarios analyzed in this section include the Buildout Year 2030 Base Conditions and the Buildout Year 2030 Base Plus Project Conditions.

Buildout Year 2030 Base Conditions Analysis

Table 8.5 summarizes the intersection LOS and average vehicle control delay results for the key study area intersections under the Buildout Year 2030 Base Conditions. As shown in the table, all of the study intersections would operate at acceptable LOS D or better with the exception of the following four intersections:

- #6 Portola Parkway/Santa Margarita Parkway @ El Toro Road (LOS F – PM Peak)
- #7 Marguerite Parkway @ Santa Margarita Parkway (LOS E – AM Peak)
- # 9 Los Alisos Boulevard @ Santa Margarita Parkway (LOS F – AM and PM Peaks)
- #11 Saddleback Ranch Road @ Millwood Road (LOS E – AM Peak)

As discussed in Section 8.1, "Existing Conditions", the HCM v/c ratio of 0.60 (LOS B) for the eastbound movement of the Saddleback Ranch Road @ Millwood Road intersection would more accurately reflect the operations of this intersection instead of the LOS E conditions reported by the HCM methodology. The HCM v/c ratio is also consistent with the ICU value of 0.65 shown in Table 7.1.

TABLE 8.5
HCM PEAK HOUR INTERSECTION LOS SUMMARY
BUILDOUT YEAR 2030 BASE CONDITIONS

#	Intersection	Traffic Control	AM		PM	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)
1	Saddleback Ranch Rd @ Glenn Ranch Rd	Signal	17.9	B	16.3	B
2	El Toro Rd @ Glenn Ranch Rd	Signal	11.9	B	19.4	B
3	Portola Pkwy @ Glenn Ranch Rd	Signal	21.6	C	25.6	C
4	Marguerite Pkwy @ El Toro Rd	Signal	21.6	C	33.0	C
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	Signal	12.6	B	8.0	A
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	Signal	51.3	D	**119.6**	**F**
7	Marguerite Pkwy @ Santa Margarita Pkwy	Signal	**61.3**	**E**	52.4	D
8	Marguerite Pkwy @ Los Alisos Blvd	Signal	30.9	C	40.7	D
9	Los Alisos Blvd @ Santa Margarita Pkwy	Signal	**117.8**	**F**	**91.7**	**F**
10	Saddleback Ranch Rd @ Malabar Rd	OWSC(c)	26.8	D	15.2	C
11	Saddleback Ranch Rd @ Millwood Rd	OWSC(c)	**37.4**	**E**	11.5	B
12	Saddleback Ranch Rd @ Fawn Ridge Rd	Signal	11.5	B	13.4	B
13	Ridgeline Rd @ Santiago Canyon Rd	Signal	8.5	A	6.9	A
14	Portola Pkwy @ SR-241 Ramps	Signal	16.2	B	20.1	C

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F
OWSC: One-way stop-control, Signal: Traffic signal
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one- or two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 7.
(c) At unsignalized intersections, the delay for the stop-controlled approach becomes unreliable when operations approach LOS E/F conditions. The operations are more consistent with the v/c ratio reported for the stop controlled movement.

Buildout Year 2030 Base Plus Project Conditions Analysis

Table 8.6 summarizes the intersection LOS and average vehicle control delay results for the key study area intersections under Buildout Year 2030 Base Plus Project Conditions. As shown in the table, the same four intersections that would operate at LOS E or F under the Buildout Year 2030 Base Conditions would continue to operate at LOS E or F.

Although the four intersections would continue to operate at LOS E or F, only one intersection is considered to be significantly impacted by the proposed project since the increase in delay exceeds the significance threshold (shown in the table with bold and shaded values).

- #6 Portola Parkway/Santa Margarita Parkway @ El Toro Road (LOS F – PM Peak)

At the Saddleback Ranch Road @ Millwood Road intersection, this intersection would remain at LOS E with and without the addition of the project traffic, and, under the HCM methodology, the addition of the project would result in an increase in delay by more than two seconds. However, as discussed in Section 2.2.2 and elsewhere in this study, the projected delays produced by the HCM methodology for unsignalized intersections become unreliable when traffic conditions are projected to be at LOS E or F conditions. As shown in the HCM LOS Worksheets in Appendix D, the HCM v/c ratio for the eastbound movement along Millwood

Road is 0.63 (LOS B) and is consistent with the ICU value of 0.67 shown in Table 7.2. As a result, this location would not be considered to have a significant impact and no mitigation is required.

TABLE 8.6
HCM PEAK HOUR INTERSECTION LOS SUMMARY
BUILDOUT YEAR 2030 BASE PLUS PROJECT CONDITIONS

#	Intersection	Traffic Control	AM		PM		Δ in Delay	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)	AM	PM
1	Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd	Signal	28.8	C	26.4	C	10.9	10.1
2	El Toro Rd @ Glenn Ranch Rd	Signal	16.7	B	21.2	C	4.8	1.8
3	Portola Pkwy @ Glenn Ranch Rd	Signal	23.9	C	30.5	C	2.3	4.9
4	Marguerite Pkwy @ El Toro Rd	Signal	22.3	C	41.6	D	0.7	8.6
5	Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd	Signal	12.7	B	8.0	A	0.1	0.0
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	Signal	53.6	D	122.0	F	2.3	2.4
7	Marguerite Pkwy @ Santa Margarita Pkwy	Signal	63.1	E	54.7	D	1.8	2.3
8	Marguerite Pkwy @ Los Alisos Blvd	Signal	33.8	C	41.7	D	2.9	1.0
9	Los Alisos Blvd @ Santa Margarita Pkwy	Signal	119.5	F	93.5	F	1.7	1.8
10	Saddleback Ranch Rd @ Malabar Rd	OWSC(c)	31.9	D	16.8	C	5.1	1.6
11	Saddleback Ranch Rd @ Millwood Rd	OWSC(c)	41.1	E	12.5	B	3.7	1.0
12	Saddleback Ranch Rd @ Fawn Ridge Rd	Signal	13.0	B	16.7	B	1.5	3.3
13	Ridgeline Rd @ Santiago Canyon Rd	Signal	8.5	A	9.5	A	0.0	2.6
14	Portola Pkwy @ SR-241 Ramps	Signal	16.7	B	25.2	C	0.5	5.1
15	Saddleback Ranch Rd @ Project Dwy 1	OWSC(c)	13.8	B	10.3	B	13.8	10.3
16	Project Dwy 2 @ Glenn Ranch Rd	Signal	14.4	B	17.2	B	14.4	17.2

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F. **Bold and shaded cells** indicate significant project impacts.
OWSC: One-way stop-control, Signal: Traffic signal
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one- or two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 7.
(c) At unsignalized intersections, the delay for the stop-controlled approach becomes unreliable when operations approach LOS E/F conditions. The operations are more consistent with the v/c ratio reported for the stop controlled movement.

Buildout Year 2030 Conditions Analysis with Mitigation

To mitigate the HCM-based operational deficiencies identified under the Buildout Year 2030 Base Plus Project Conditions, the following improvement is recommended at the impacted intersection:

- #6 Portola Parkway/Santa Margarita Parkway @ El Toro Road: Add an overlap phase for the southbound right-turn movement from Portola Parkway to El Toro Road and the eastbound u-turn movement along El Toro Road will need to be prohibited. This improvement reduces the delays for this movement and reduces the overall delays of the intersection. (See **Figure 8-1**)

Figure 8-1 Proposed Mitigation for Portola Parkway/Santa Margarita Parkway @ El Toro Rd

The results of the LOS analysis using the HCM methodology for the significantly impacted intersection listed above under Buildout Year 2030 Plus Project Conditions with mitigation are presented in **Table 8.7**. As shown in the table, the proposed mitigation improves the operations at the Portola Parkway/Santa Margarita Parkway @ El Toro Road intersection to Conditions better than without the project. However, this intersection would still operate at LOS F during the PM Peak Period.

The HCM intersection analysis worksheets with the proposed mitigations are presented in **Appendix E.**

TABLE 8.7
HCM PEAK HOUR INTERSECTION LOS SUMMARY
BUILDOUT YEAR 2030 BASE PLUS PROJECT CONDITIONS WITH MITIGATION

#	Intersection	Traffic Control	Before Mitigation				After Mitigation			
			AM		PM		AM		PM	
			Delay (a)	LOS (b)	Delay (a)	LOS (b)	Delay (a)	LOS (b)	Delay (a)	LOS (b)
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	Signal	53.6	D	122.0	F	53.2	D	111.0	F

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F
OWSC: One-way stop-control, Signal: Traffic signal
(a) Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle. At a one- or two-way stop-controlled intersection, delay refers to the worst movement.
(b) LOS calculations are based on the methodology outlined in the *2000 Highway Capacity Manual* and performed using Synchro 7.

9.0 Other Traffic-Related Topics

The following section discusses some of the other traffic-related topics associated with the proposed project or the surrounding community of Portola Hills. These topics include the lane configuration options at the Saddleback Ranch Road/Glenn Ranch Road intersection, intersection spacing between the Saddleback Ranch/Glenn Ranch Road intersection and Project Driveway 1, gated project entrances, pedestrian access at the project driveways, Portola Hills Elementary school traffic, and project construction traffic.

9.1 Lane Configuration Options at Saddleback Ranch Road/Glenn Ranch Road Intersection

The traffic analysis contained in previous sections of the traffic study completed for the Saddleback Ranch Road/Glenn Ranch Road intersection included a southbound free right-turn lane from Saddleback Ranch Road to Glenn Ranch Road. Another lane configuration option that was considered at this intersection is controlling the southbound right-turn movements along Saddleback Ranch Road by removing the free right-turn lane and replacing it with two controlled right-turn lanes. Under this configuration, southbound right-turning vehicles would have to stop at a red light and yield to any pedestrians crossing Glenn Ranch Road before making a right-turn.

Figure 9-1 illustrates the alternate lane configuration assumed at this intersection for analysis. As shown in the figure, the southbound approach along Glenn Ranch Road includes two right-turn lanes and a shared left-through lane. This configuration is the same (minus the through lane and the southerly leg) as what is constructed in the field today.

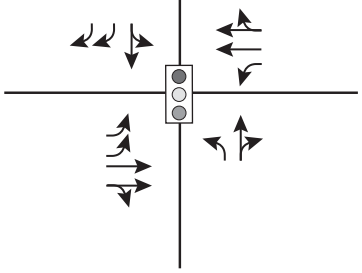
The ICU and HCM analyses were performed at this intersection for the Year 2015 and Year 2030 With Project scenarios (please refer to Section 2.2 for more information on these two methodologies). **Table 9.1** summarizes the results of the analysis. As shown in the table, by replacing the southbound free right-turn lane from Saddleback Ranch Road to Glenn Ranch Road with controlled dual right turn lanes (equivalent to the current configuration), operations would still result in an acceptable LOS D or better during both AM and PM peak periods. Also, it should be noted that the HCM analysis provided more conservative results compared to the ICU analysis. The ICU and HCM intersection analysis worksheets for the Saddleback Ranch Road/Glenn Ranch Road intersection are presented in **Appendix F.**

TABLE 9.1
PEAK HOUR INTERSECTION LOS SUMMARY
ALTERNATIVE LANE CONFIGURATIONS AT SADDLEBACK RANCH RD/GLENN RANCH RD

		ICU Analysis				HCM Analysis			
		SB Free Right-Turn		SB Permitted Right-Turn		SB Free Right-Turn		SB Permitted Right-Turn	
Scenario	Peak Hour	ICU	LOS	ICU	LOS	Delay	LOS	Delay	LOS
Year 2015	AM	0.39	A	0.60	A	20.0	B	31.8	C
	PM	0.47	A	0.52	A	25.1	C	34.4	C
Year 2030	AM	0.45	A	0.62	B	28.8	C	32.8	C
	PM	0.48	A	0.53	A	26.4	C	35.1	D

Source: Wilson & Company, Inc.; January 2013

Note: The values shown in the table correspond to the With Project conditions in the Near Term (2015) and Buildout (2030).



1 Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd

LEGEND

Signalized Intersection

Lane Configuration

Naming Convention:
North / South @
East / West

Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 9-1
Alternate Intersection Geometrics
Saddleback Ranch Rd @ Glenn Ranch Rd

9.2 Intersection Spacing between Saddleback Ranch Road/Glenn Ranch Road Intersection and Project Driveway 1

In order to account for the closely spaced intersections along Saddleback Ranch Road between Millwood Road and Glenn Ranch Road with the addition of the project driveway (Project Driveway 1) as a three-way unsignalized intersection, an operational analysis was prepared using SimTraffic of how these two intersections, the Saddleback Ranch Road/Glenn Ranch Road intersection and the Project Driveway 1/Saddleback Ranch Road intersection, would function together. SimTraffic is a microsimulation program that can model closely-spaced intersections and can account for queue spillbacks from adjacent intersections. SimTraffic produces delays and queues that are based on the performance of each vehicle in the network and takes into account the performance of vehicles at congested locations. SimTraffic's methodology is not consistent with that of the *Highway Capacity Manual*, but the same criteria are being applied to equate the operations of the intersections for comparison purposes. In general, SimTraffic calculates the delay of each vehicle at each respective intersection (taking into account the performance characteristics of each vehicle) and produces an overall delay for the intersection. The delays and queues generated by SimTraffic are the average of five unique simulation runs for that condition (Existing Conditions, Buildout, etc.) at that period (AM or PM).

Traffic simulations of the operation of the two intersections were prepared for the following scenarios during the AM and PM peak hour:

- Existing Conditions
- Buildout Year 2030 Baseline Conditions
- Buildout Year 2030 With Project Conditions

Results from SimTraffic indicated acceptable LOS D or better operations in both the free-right turn and a controlled right turn options at the Saddleback Ranch Road/Glenn Ranch Road intersection. Under both the AM and PM peak periods, both intersections would operate at an acceptable LOS under all scenarios and result in queue lengths that are contained within the respective turn pockets. **Figure 9-2** shows a screenshot of the traffic simulation along Saddleback Ranch Road.

Figure 9-2 Traffic Simulation Along Saddleback Ranch Road

9.3 Gated Project Entrances

The Project has been designed with the option to have gated entrances at each of the Project's Driveways. The optional gated entrances have been designed in accordance with the Orange County Standard Plan 1107 for gated entrances to ensure an adequate queue length between each project entrance and the gates to prevent cars from backing up into the adjoining intersection and onto City streets. All of the project's entrances have been designed to exceed this standard with the majority of the project entrances exceeding it by a factor of two or more. Please refer to Tentative Tract Maps 15353 and 17300 for detailed information on the gated entrances.

9.4 Analysis of Potential for Onsite Queuing at Project Driveway 2 to the Northeast Site

With a single driveway providing access to 223 homes, the potential for the queuing of vehicles exiting and entering the north leg of Project Driveway 2 was considered. A queuing analysis was conducted at the Project Driveway 2/Glenn Ranch Road intersection under the Near Term and Buildout scenarios (see Figure 4-1A). The north leg of Driveway 2 consists of two departure lanes and two receiving lanes and is approximately 125 feet in depth from curb to curb. This analysis addresses the concern over the potential for the queuing of vehicles inside Driveway 2 during the AM and PM peak periods to cause an operational deficiency. **Table 9.2** summarizes the results of the queuing analysis and **Figure 9-3** illustrates the layout of the north leg of Project Driveway 2.

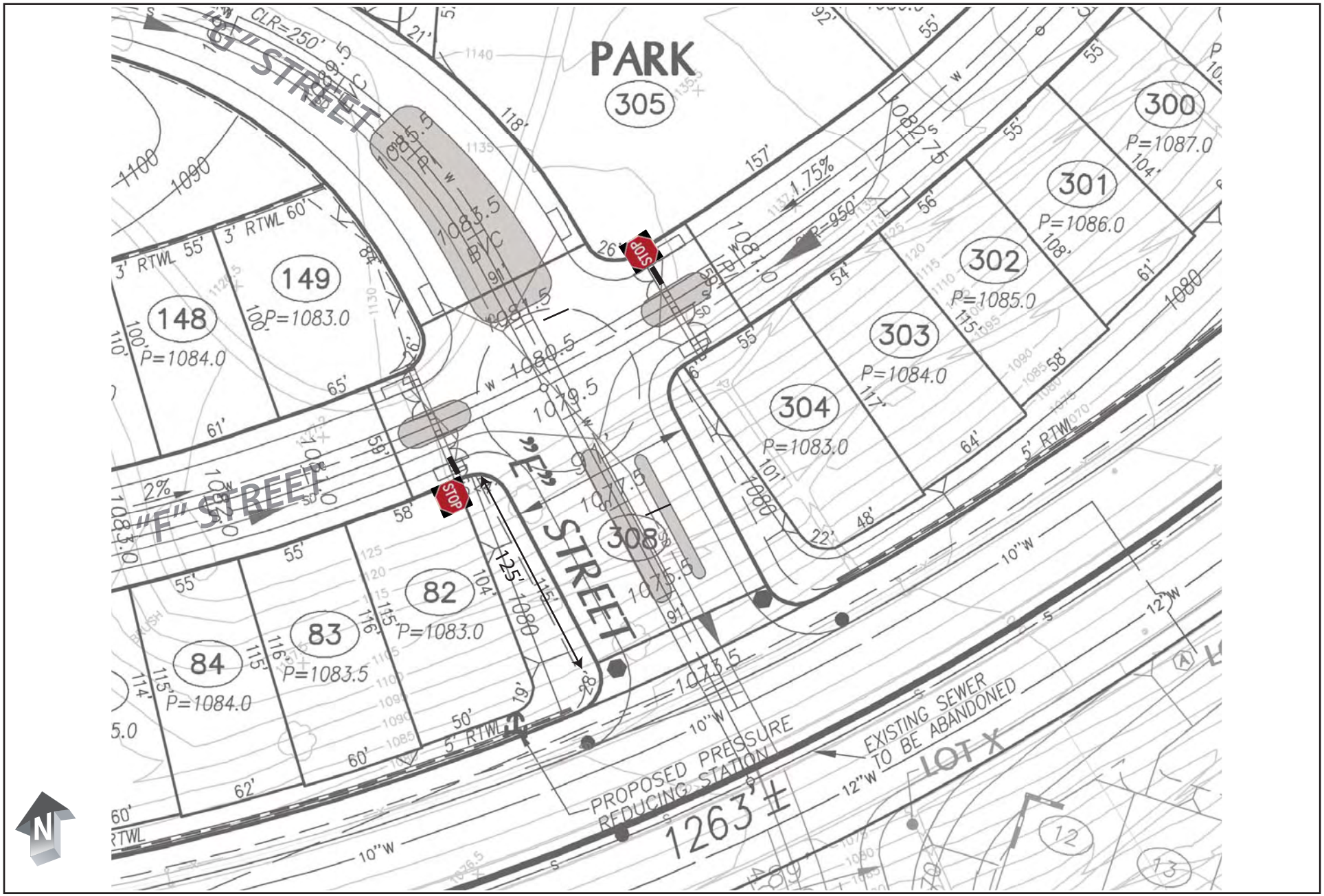
As shown in the table, the queues for the southbound approach of Project Driveway 2 in either the Near Term or Buildout scenarios would be approximately 40 feet or 2 vehicles in length. The expected queue length would not exceed the available storage length of 125 feet, and, therefore, would not result in operational deficiencies. Given that AM and PM peak period traffic conditions at this driveway are comparable, it is reasonable to assume that the northbound approach of Project Driveway 2 would also not result in queues that exceed the available storage length. The queuing worksheets are provided in **Appendix G**.

TABLE 9.2
QUEUING ANALYSIS AT PROJECT DRIVEWAY 2/GLENN RANCH ROAD

#	Intersection	Movement	Storage Length (ft)	95th Percentile Queue Length (ft)			
				Near Term Year 2015		Buildout Year 2030	
				AM	PM	AM	PM
16	Project Driveway 2/Glenn Ranch Road	SB TH-LT	125	20	20	20	20
		SB RT	125	40	40	40	40

Source: Wilson & Company, Inc.; January 2013

Note: Queue lengths have been rounded up to the nearest 20 feet.



Source: Wilson & Company, Inc., Engineers & Architects; January 2013

Figure 9-3
Project Driveway 2 Layout

9.5 Pedestrian Access at Project Driveways

Project driveways 2 and 3 along Glenn Ranch Road would accommodate pedestrian crossings at all legs of these intersections. Project Driveway 1 would accommodate pedestrian crossings at the west leg of this intersection only, and pedestrians would not be permitted to cross Saddleback Ranch Road at this unsignalized intersection. With the installation of a traffic signal at Project Driveway 2 and the modification of the traffic signal at Project Driveway 3 (Saddleback Ranch Road/Glenn Ranch Road intersection), the signal timings would be adjusted to allow for the minimum time required for pedestrians to cross the street and would meet the minimum pedestrian crossing speed of 3.5 feet per second as outlined in the California Manual of Uniform Traffic Control Devices (MUTCD). At the Saddleback Ranch Road/Glenn Ranch Road intersection, it is recommended that a pedestrian/equestrian push button be installed on the signal mast arm poles at the northwest and northeast corners of the intersection to allow for controlled pedestrian crossings across the north leg of that intersection.

9.6 Portola Hills Elementary School Driveway Congestion

Saddleback Ranch Road currently experiences a 15-minute back-up of traffic as a result of a deficient driveway access at the Portola Hills Elementary School. Field observations were made during a typical school day at the elementary school in June 2012 while school was in session. Two crossing guards were located at the Saddleback Ranch Road/Fawn Ridge Road intersection to assist children crossing the street. Many parents parked their vehicles along Fawn Ridge Road, Saddleback Ranch Road, and Pendleton Road and walked with their children to school. Congestion and long queues were observed along northbound and southbound Saddleback Ranch Road at the driveway to Portola Hills Elementary. Most of the congestion occurred between 7:45 AM and 8:00 AM and traffic returned to normal operations along Saddleback Ranch Road by 8:10 AM.

Based on the field operations, the congestion along Saddleback Ranch Road resulted from the school's poor on-site circulation in conjunction with the deficient school driveway configuration. Under current conditions, any increase in enrollment at the elementary school will likely contribute to the present traffic congestion around the school entrance. However, even when the school is operating at full capacity, the congestion period is not anticipated to last more than 15 to 20 minutes.

Over time, school enrollment at Portola Hills Elementary has fluctuated. Recent enrollment at the school and across the district has been declining over the last several years. According to the Saddleback Valley Unified School District, the projected enrollment at Portola Hills Elementary for the 2012-2013 school year is 749 students. The current capacity of Portola Hills Elementary is 850 students, leaving the school currently 101 students below capacity. As of 2004, the majority of the students at Portola Hills Elementary resided in Portola Hills and to a lesser extent, the Trabuco Canyon Area. Given the goal of assigning elementary school children to a school closest to their residence, it is reasonable to assume that, over time, priority will be given to Portola Hills and Portola Center students to attend Portola Hills Elementary, assuming available capacity and up to the school reaching its capacity. Therefore, it is foreseeable that new families in the Portola Center Project will send their children to Portola Hills Elementary when capacity is made available at the school. Given the proximity of the school to the Portola

Center Project, it is reasonable to assume that some students from the project may carpool, walk or ride bikes to school, reducing the number of actual school trips from the project.

Finally, it is important to clarify that, despite the declining enrollment of Portola Hills Elementary over the last several years, the traffic model used for this traffic study assumes the school is operating at full capacity in the Near-Term Plus Project Conditions and Buildout Plus Project Conditions. This core assumption about Portola Hills Elementary is reflected in the LOS analysis and roadway ADTs contained in this study for the proposed project as well as the project driveway alternatives considered in this study. For example, the LOS results contained in this study at the Glenn Ranch Road, Millwood Road, Malabar Road, and Fawn Ridge Road intersections along Saddleback Ranch Road reflect Portola Hills Elementary operating at full capacity, despite the school presently operating at below capacity. Therefore, the traffic model does not distinguish between trips that are coming from outside of the community and those coming from the Project when predicting the performance of intersections along Saddleback Ranch Road.

9.7 Project Construction Traffic

Prior to the completion of the project, construction traffic will be generated by construction equipment traffic between the planning areas and vehicular traffic related to the construction workers and delivery of materials to the project site. At approximately 195 acres in size, the project site is large enough to accommodate the on-site storage of all construction equipment and construction worker parking. Staging areas with appropriate screening for construction equipment storage and construction worker parking will be established on-site near the new project entries.

During the project's grading phase, it is expected that all cut and fill will be balanced within each planning area, however the grading of the Northwest and Northeast Planning Areas (Zones 13 and 16) will require the total exchange of approximately 900,000 cubic yards of fill material such that approximately 450,000 cubic yards of select backfill material from the South Planning Area (Zone 17) will be exchanged with 450,000 cubic yards of standard fill from the North Planning Areas (approximately 50,000 cubic yards from Portola Northwest and 400,000 cubic yards from Portola Northeast). This fill material will be hauled between the sites using either scrapers or dump trucks or a combination of both.

The typical dump truck has a hauling capacity of 12 cubic yards of dirt. The typical scraper has a hauling capacity of 24 cubic yards. The exchange of dirt between the planning areas will result in vehicles carrying dirt in both directions. Therefore, 900,000 cubic yards of dirt will result in approximately 75,000 loaded truck trips or 37,500 loaded scraper trips over the life of the project's grading phase. On any given day, it is reasonable to assume that up to 3,000 cubic yards of dirt can be hauled between the sites by trucks and up to 10,000 cubic yards by scrapers, resulting in 250 truck trips in a given day or approximately 420 scraper trips. Spread out over 6 hours, this results in approximately 42 truck trips per hour or 70 scraper trips per hour under peak activity levels. Considering that dirt will not be hauled between the planning areas every day during construction of the project and certain days will experience a higher amount of trips than other days, the full grading of the project is expected to last about 2 years or 500 work days, with hauling occurring at various levels throughout that period. With hauling occurring for a six-hour period over 500 work days, this equates to an average of 150 truck trips per day/25 truck

trips per hour (or an average of 75 scraper trips per day/12 to 14 scraper trips per hour) occurring during the off-peak periods (typically 9:00 AM to 3:00 PM) at Project Driveway 2 with this same amount of average hourly trips also using Project Driveways 1 and 3 for a much shorter period of time.

To facilitate the exchange of fill material between the planning areas, access to Northwest Planning Area via Project Driveway 1, access to the Northeast Planning Area via Project Driveway 2, and access to the South Planning Area via Project Driveway 3 would be established in advance of other grading activities. The transport of fill material between the South and Northeast Planning Areas would be restricted to occur only at Project Driveway 2 whereas the transport of fill material between the South and Northwest Planning Areas would be between Project Driveways 3 and 1 and utilize the Glenn Ranch Road/Saddleback Ranch Road intersection as well as the portion of Saddleback Ranch Road between the two driveways. Hauling of the material would be restricted to occur during the off-peak hours and appropriate traffic control personnel ("flaggers") will be used to ensure construction vehicles operate safely and in a manner that minimizes disruption of traffic on Glenn Ranch Road and Saddleback Ranch Road.

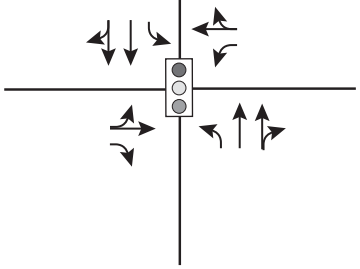
As it relates to construction worker trips, based on data from existing and previous residential construction projects (e.g., "Village 2" Project in Chula Vista), it is anticipated that, under the most conservative assumption with a maximum of 50 homes under construction at one time, a maximum of 250 workers and an average of 150 workers would be on site at any given time during the construction of the project. Many of these workers stagger their work schedules and would not arrive or depart at the same time. However, as a conservative estimate, if all 250 workers drove individually and arrived and departed during the peak periods, the interim traffic generated by construction workers traveling to and from the project site would be substantially less than what the project would generate when fully constructed and occupied (see Table 4.1). As a result, no new impacts are anticipated to result from construction activities.

10.0 Project Driveway Alternatives

This section discusses Project Driveway Alternatives for the Northwest (Zone 13) and Northeast (Zone 16) Planning Areas, located northwest and northeast of the Saddleback Ranch Road/Glenn Ranch Road intersection, respectively. The section includes alternatives that were determined to be feasible and analyzed with respect to their impacts on the study intersections and alternatives that were evaluated but rejected because they were determined to be inconsistent with roadway design objectives.

10.1 Alternative 1: Dual Project Driveways to the Northeast Site

Under the proposed project, access to the Northeast site is provided by a single driveway located off of Glenn Ranch Road (Project Driveway 2). An alternate access to Zone 16 that was considered included another driveway located directly across from and aligned with Project Driveway 1 along Saddleback Ranch Road (4-way signalized intersection). **Figure 10-1** shows the intersection geometrics at the Saddleback Ranch Road @ Project Driveway 1 intersection assuming Driveway 1 also provided access to the Northeast Planning Area.



Saddleback Ranch Rd @
⓯ Project Dwy 1

LEGEND

→ Lane Configuration

Signalized Intersection

Naming Convention:
North / South @
East / West

Source: Wilson & Company, Inc., Engineers & Architects; December 2012

Portola Center
Traffic Impact Study

WILSON & COMPANY
ENGINEERS & ARCHITECTS

Figure 10-1
Alternate Intersection Geometrics
Saddleback Ranch Rd @ Project Dwy 1

Redistributed Traffic Volumes

Since this alternative includes access to the Northeast site off of both Saddleback Ranch Road and Glenn Ranch Road, there would be a redistribution of project traffic from Project Driveway 2 to Project Driveway 1 when compared to the proposed project. Based on a land use plan prepared for this scenario, it was assumed that approximately 50 percent of the project traffic would be redistributed to Project Driveway 1. Intersections that would be affected under this alternative include the following:

- Saddleback Ranch Road @ Project Driveway 1
- Saddleback Ranch Road/Project Driveway 3 @ Glenn Ranch Road
- Project Driveway 2 @ Glenn Ranch Road

All other intersections would not be affected by this project driveway alternative. **Figure 10-2** and **Figure 10-3** show the redistributed traffic volumes for the alternate project access scenario under the Year 2015 and Year 2030 With Project Conditions, respectively.

LOS Analysis

Table 10.1 summarizes the results of the affected intersections under this alternative under the Year 2015 and Year 2030 With Project Conditions. It should be noted that the lane configuration at the Saddleback Ranch Road/Project Driveway 3 @ Glenn Ranch Road intersection includes the free right-turn lane option in this alternative. As shown in the table, all of the intersections would operate at an acceptable LOS C or better during both peak periods for the Year 2015 and Year 2030 With Project scenarios.

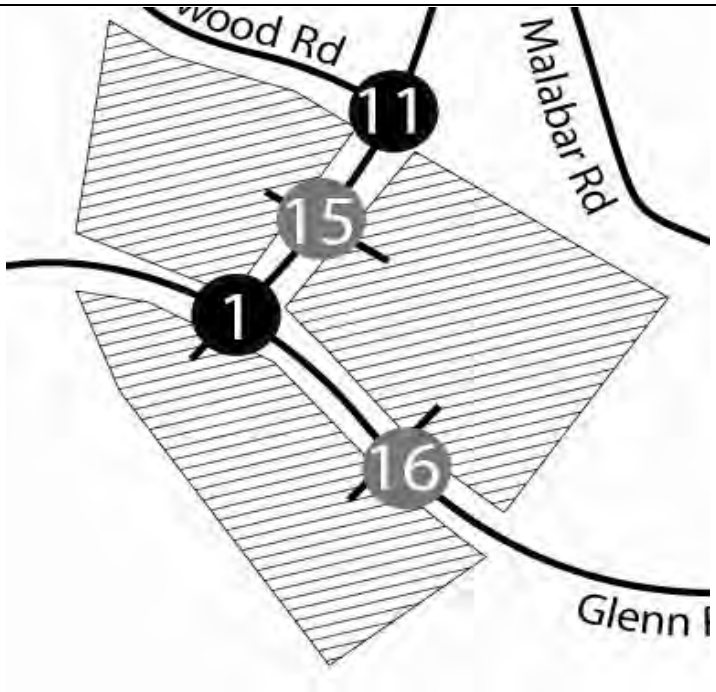
The HCM intersection analysis worksheets for this project driveway alternative are presented in **Appendix H.**

TABLE 10.1
PEAK HOUR INTERSECTION LOS SUMMARY
ALTERNATE PROJECT ACCESS FOR THE NORTHEAST SITE

#	Intersection	Peak Hour	Year 2015		Year 2030	
			Delay	LOS	Delay	LOS
1	Saddleback Ranch Rd / Project Driveway 3 @ Glenn Ranch Rd	AM	16.0	B	18.8	B
		PM	24.1	C	25.0	C
15	Saddleback Ranch Rd @ Project Driveway 1	AM	6.5	A	6.3	A
		PM	5.9	A	5.7	A
16	Project Driveway 2 @ Glenn Ranch Rd	AM	14.6	B	14.0	B
		PM	16.3	B	16.1	B

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** letter indicates unacceptable LOS E or F
The analysis at Intersection #1 includes the free right-turn movement along southbound Saddleback Ranch Rd.



xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd

1024 / 324 ←	4 / 13 ↓	239 / 99 →
178 / 794 ↑	148 / 697 →	54 / 170 ↓
138 / 122 ←	10 / 9 ↑	24 / 21 →

1

202 / 148 ↑
570 / 299 ←
9 / 30 ↓

Saddleback Ranch Rd @ Project Dwy 1

2 / 6 ←	1170 / 373 ↓	4 / 15 →
5 / 3 ↑	44 / 29 ↓	
14 / 50 ←	358 / 782 ↑	18 / 60 →

15

13 / 9 ↑
52 / 34 ↓

Project Dwy 2 @ Glenn Ranch Rd

52 / 33 ←	13 / 9 →	
18 / 60 ↑	327 / 573 →	56 / 178 ↓
145 / 128 ←		28 / 24 →

16

4 / 15 ↑
580 / 302 ←
11 / 34 ↓

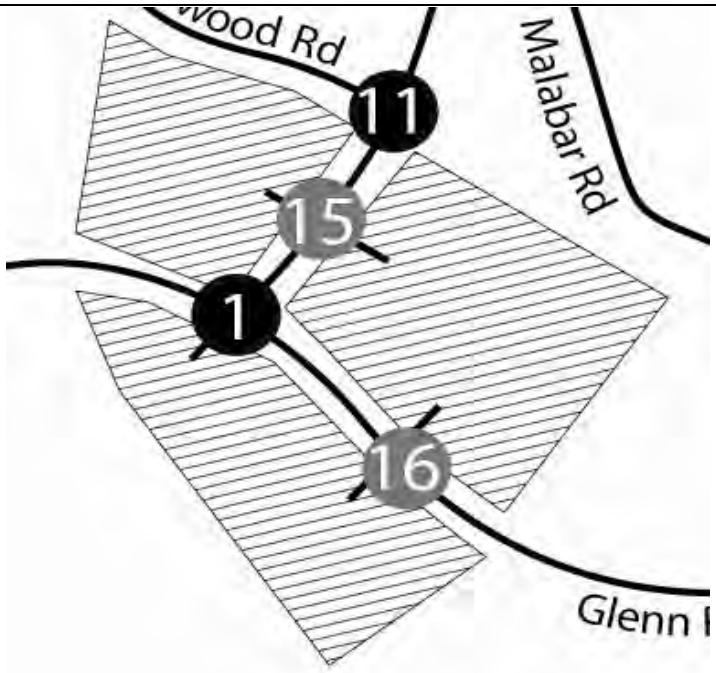
WILSON & COMPANY ENGINEERS & ARCHITECTS

Portola Center

Redistributed Traffic Volumes With Alternate Project Access to Northeast Site (Year 2015)

Figure 10-2

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[10100602007V07.xls]NTWP Figure (Alt Access)



xx / yy = AM / PM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd

834 / 334 ←	4 / 13 ↓	219 / 99 →
↑ 202 / 128	← 830 / 379	↓ 9 / 30
188 / 744 ↑	208 / 857 →	54 / 170 ↓
←	↑	→
138 / 122	10 / 9	24 / 21

1

Saddleback Ranch Rd @ Project Dwy 1

2 / 6 ←	960 / 383 ↓	4 / 15 →
↑ 13 / 9	↓ 52 / 34	
5 / 3 ↑	44 / 29 ↓	
←	↑	→
14 / 50	358 / 782	18 / 60

15

Project Dwy 2 @ Glenn Ranch Rd

52 / 33 ←	13 / 9 →	
↑ 4 / 15	← 840 / 362	↓ 11 / 34
18 / 60 ↑	367 / 743 →	56 / 178 ↓
←		→
145 / 128		28 / 24

16

WILSON & COMPANY ENGINEERS & ARCHITECTS

Portola Center

Redistributed Traffic Volumes With Alternate Project Access to Northeast Site (Year 2030)

Figure 10-3

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[10100602007V07.xls]BOWP Figure (Alt Access)

10.2 Alternative 2: Full Access at La Quinta/Malabar Road

As part of the evaluation of project access alternatives, the opening up of the La Quinta stub street out to Malabar Road as a second full access to the Northeast site was also considered. It was assumed that a full access at the La Quinta/Malabar Road stub street would not be used as a project driveway for vehicles returning home via Glenn Ranch Road as this would serve as a circuitous route to the Northeast site. Instead, it was assumed that full access at the La Quinta/Malabar Road stub street would provide more direct access to some residents of the Northeast site traveling to and from the Portola Hills Elementary School. In order to estimate the amount of traffic that would use this access, assumptions were made about the number of trips from the Northeast site that would access Portola Hills Elementary in the AM peak period. Correspondingly, project traffic would be redistributed at Project Driveway 2. The following sections describe the methodology for redistributing the project traffic and the LOS analysis under this alternative.

Methodology

Several assumptions were established to analyze this alternative. It was assumed that any of the project traffic that would use the La Quinta/Malabar Road Access would be associated with parents picking-up and dropping off their children at Portola Hills Elementary. For this alternative, it was also assumed that all of the elementary students in the Northeast site would attend Portola Hills Elementary and that each student would result in a single trip exiting the site. In reality, with a connection at La Quinta/Malabar, some students may walk to Portola Hills Elementary and some may carpool from the Northeast site and some students from the Northeast site will attend other schools. Therefore, this key assumption is considered conservative.

From a traffic standpoint, the AM peak period is the only time period analyzed for this alternative since the elementary school trips mainly occur during the AM peak hour and fall outside of the PM peak period. It is reasonable to assume that afternoon trips to and from Portola Hills Elementary utilizing the La Quinta/Malabar Access would be roughly equal to the amount of trips utilizing the driveway in the AM peak period; however, these trips would be distributed over a larger time period and expected to occur predominantly outside of the PM peak hour (5:00 to 6:00 PM). To determine the amount of trips from the Northeast site that would be generated by student drop-off and pick-up at Portola Hills Elementary, the elementary student generation rate of 0.34 students per single family home was used. This rate was provided by the Saddleback Valley Unified School District. For the Northeast site, with 223 single family homes, this results in 76 elementary school trips exiting the site in the AM peak period (0.34 x 223 = 76 elementary students from the Northeast site).

Only a portion of the homes with elementary students in the Northeast site would be expected to utilize the La Quinta/Malabar Access. As a conservative estimate, this study assumes that a maximum of 75 percent of these trips would utilize this driveway. The remaining 25 percent of these trips would use Project Driveway 2 along Glenn Ranch Road. With the Northeast site generating a total of 76 elementary student trips exiting the site in the AM peak period under this scenario, this would result in 57 (0.75 x 76 = 57) school trips utilizing the La Quinta/Malabar Access in the AM peak period. For the return trips from Portola Hills Elementary School, it was assumed that 25 percent would return home and make a left-turn onto Malabar Road while the rest would continue downhill along Saddleback Ranch Road. This resulted in approximately 14

trips making a left onto Malabar Road (0.25 x 57 = 14) and 43 trips continuing south along Saddleback Ranch Road (0.75 x 57 = 43).

In summary, the following assumptions were used for this analysis:

- A full access to the Northeast site at La Quinta/Malabar would be used exclusively for student drop-off and pick-up at Portola Hills Elementary
- All of the elementary students from the Northeast site would attend Portola Hills Elementary
- School drop-off would coincide with the AM peak period whereas pick-up would not
- The Northeast site would generate a total of 76 elementary school children (see calculation above)
- 75 percent of the school trips from the Northeast site to Portola Hills Elementary would utilize the La Quinta/Malabar Access, the remaining 25 percent would utilize Driveway 2
- 25 percent of the school trips utilizing the La Quinta/Malabar Access would return home along Malabar to the Northeast site after dropping off their children at Portola Hills Elementary

For the traffic analysis, the following intersections were evaluated with the opening of a project access at La Quinta/Malabar Road:

- Saddleback Ranch Road/Glenn Ranch Road
- Saddleback Ranch Road/Project Driveway 1
- Saddleback Ranch Road/Millwood Road
- Saddleback Ranch Road/Malabar Road
- Project Driveway 2/Glenn Ranch Road

All other intersections would not be affected with the redistribution of traffic and result in the same traffic shown in previous figures with project traffic. As it relates to the return trips, it is important to emphasize that the traffic model for this study assumes Portola Hills Elementary is operating at full capacity at all times such that there is no change in the Saddleback Ranch Road AM peak hour trips north of Malabar Road predicted by this study for any of the alternatives analyzed. This core assumption about Portola Hills Elementary is reflected in the LOS analysis and roadway ADTs contained in this study for the proposed project as well as the alternatives considered in this study. The return trips from Portola Hills Elementary are already captured by the model and reflected in the intersection performance for the various intersections along Saddleback Ranch Road for the proposed project. Opening up a project access at La Quinta/Malabar Road merely results in the redistribution of a certain percentage of these trips (assumed to be 25 percent) returning from the school on to Malabar Road consistent with the reasoning stated above that a majority of the school drop-off trips become commuter trips while some may return home. Therefore, this alternative would be expected to slightly improve the performance of the Millwood Road/Saddleback Ranch Road and the Glenn Ranch Road/Saddleback Ranch Road intersections when compared to the proposed project. The Project Driveway 2/Glenn Ranch Road intersection would also improve in operations with a full access driveway at La Quinta/Malabar Road.

Redistributed Traffic Volumes

Figure 10-4 illustrates the redistributed project traffic volumes during the AM peak hour and **Figure 10-5** illustrates the traffic volumes used for the analysis. As shown in the figure, the 57 trips are distributed from Malabar Road, up the hill to Portola Hills Elementary School, and then back down the hill along Saddleback Ranch Road. Approximately 25 percent of the traffic (14 trips) would make a left-turn at Malabar Road, resulting in 14 fewer trips down Saddleback Ranch Road.

LOS Analysis

Table 10.2 summarizes the results of the affected intersections with the opening of Malabar Road as a full access driveway under the Year 2030 Buildout Plus Project scenario. As shown in the table, delays at the affected intersections are similar in all scenarios except at the Saddleback Ranch Road/Malabar Road intersection when compared to the scenario with no access off of Malabar Road. With the added trips distributed and assigned through this intersection, operations would degrade to LOS F conditions during the AM Peak. It should be noted that the HCM methodology for unsignalized intersections becomes unreliable when traffic conditions are projected to be at LOS E/F conditions. The v/c ratios for the minor street approaches are similar to results shown in Table 7.2. However, for comparison purposes, a full access to the Northeast site at La Quinta/Malabar Road would result in slightly greater delays at the Saddleback Ranch Road/Malabar Road intersection.

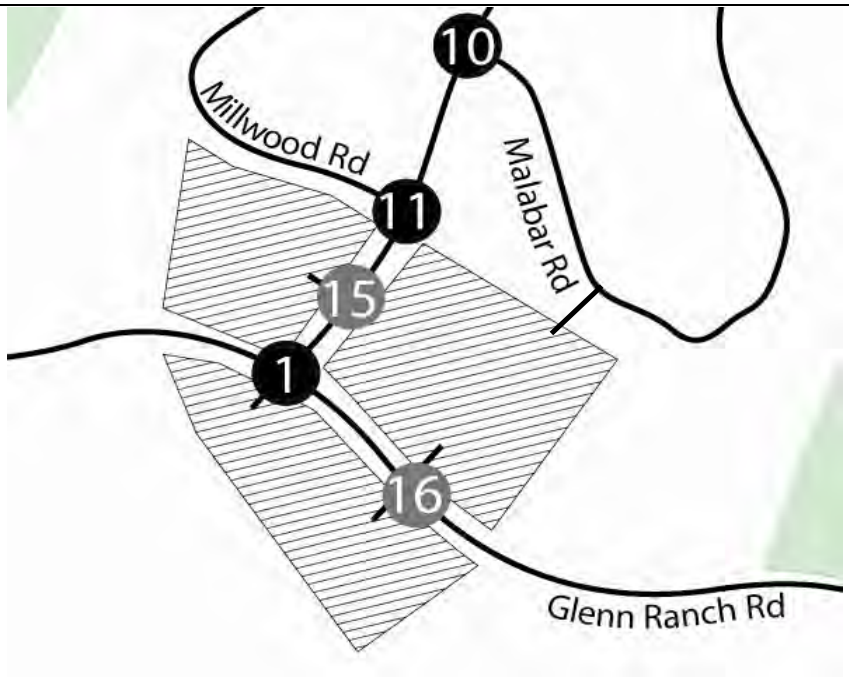
The HCM intersection analysis worksheets for the full access to the Northeast site at La Quinta/Malabar Road Stub Street are presented in **Appendix I.**

TABLE 10.2
PEAK HOUR INTERSECTION LOS SUMMARY
FULL ACCESS AT MALABAR ROAD

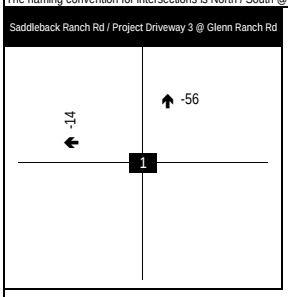
#	Intersection	Proposed Project (Access off of GRR to NE Site)		Alternate Project (Access off of SRR and GRR to NE Site)		Alternate Project (Full Access to NE Site at Malabar)	
		Delay	LOS	Delay	LOS	Delay	LOS
1	Saddleback Ranch Rd / Project Driveway 3 @ Glenn Ranch Rd (a)	28.8	B	18.8	B	18.8	B
	(b)	32.8	C	27.0	C	31.1	C
10	Saddleback Ranch Rd @ Malabar Rd	31.9	D	34.8	D	**51.0**	**F (c)**
11	Saddleback Ranch Rd @ Millwood Rd	**41.1**	**E (c)**	**41.9**	**E (c)**	**40.1**	**E (c)**
15	Saddleback Ranch Rd @ Project Driveway 1	13.8	B	6.3	A	14.8	B
16	Project Driveway 2 @ Glenn Ranch Rd	14.4	B	14.0	B	14.5	B

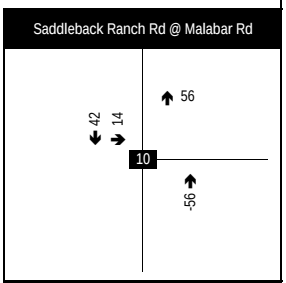
Source: Wilson & Company, Inc.; January 2013

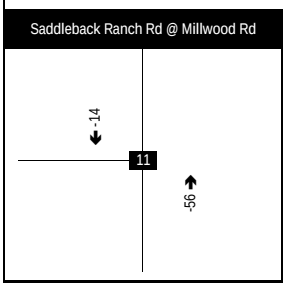
Note: **Bold** letter indicates unacceptable LOS E or F
All results shown in the table correspond to the Year 2030 Buildout Plus Project scenario during the AM Peak and analyzed using the HCM methodology.
(a) Includes a free right-turn movement along southbound Saddleback Ranch Rd.
(b) Includes a permissive right-turn movement along southbound Saddleback Ranch Rd
(c) At unsignalized intersections, the delay for the stop-controlled approach becomes unreliable when operations approach LOS E/F conditions. The operations are more consistent with the v/c ratio reported for the stop controlled movement.

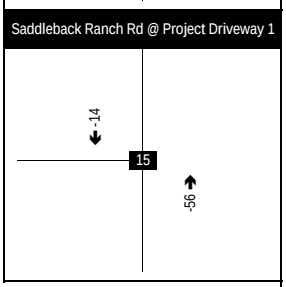


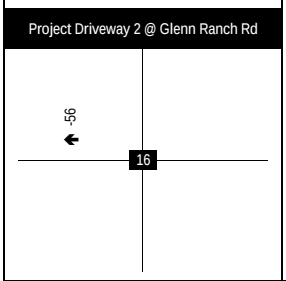
xx = AM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West











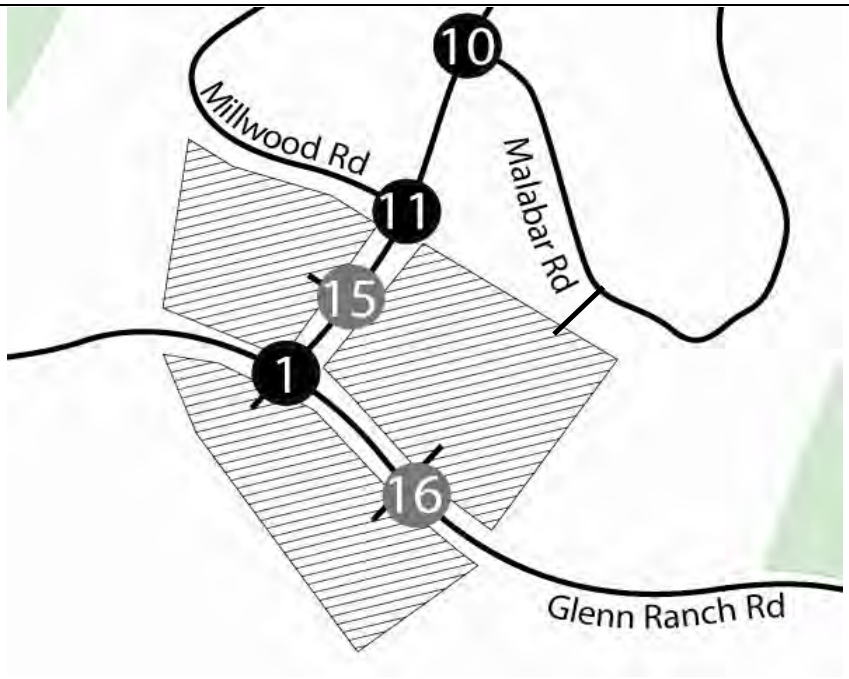
WILSON & COMPANY ENGINEERS & ARCHITECTS

Portola Center

Redistributed Project Traffic Volumes with Malabar Road Connection

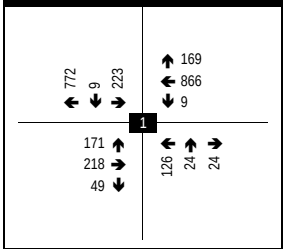
Figure 10-4

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[10100602007V07.xls]Malabar Proj Assign Figure

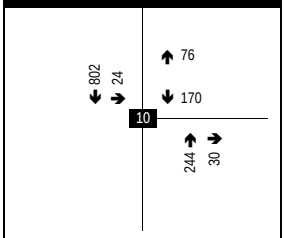


xx = AM Peak-Hour Turning Movement Volumes
The naming convention for intersections is North / South @ East / West

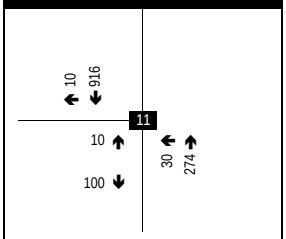
Saddleback Ranch Rd / Project Driveway 3 @ Glenn Ranch Rd



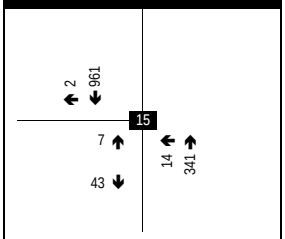
Saddleback Ranch Rd @ Malabar Rd



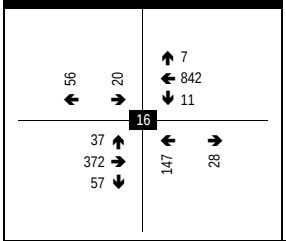
Saddleback Ranch Rd @ Millwood Rd



Saddleback Ranch Rd @ Project Driveway 1



Project Driveway 2 @ Glenn Ranch Rd



Portola Center

Year 2030 Traffic Volumes with Malabar Road Connection

Figure 10-5

WILSON & COMPANY ENGINEERS & ARCHITECTS

E:\Projects\10-100-60200_60300_60301_Portola_Baldwin_JPB_Sunranch\Traffic Volumes\[10100602007V07.xls]Malabar BOWP Figure

10.3 Additional Northwest and Northeast Site Driveway Alternatives Evaluated

Two driveway alternatives were evaluated for the Northwest and Northeast Planning Areas and determined to be inconsistent with Orange County Highway design objectives. The discussion summarizing the results of this evaluation follows.

A driveway to the Northwest site along Glenn Ranch Road and a second driveway to Northeast site along Glenn Ranch Road were evaluated in lieu of the proposed project driveways. Glenn Ranch Road is classified as a Primary Arterial in the Orange County Master Plan of Highways. Section 205.2 of the *Orange County Highway Design Manual* states that "efforts should always be made on arterial highways to limit the access in order to improve the traffic carrying capacity (of the arterial) and to reduce the number of conflict points". These two driveway alternatives in combination would result in four intersections along an approximately 0.44-mile stretch of Glenn Ranch Road. A second driveway to the Northeast site along Glenn Ranch Road would result in three intersections along an approximately one third of a mile stretch of Glenn Ranch Road. When intersections are necessary along arterials, the preferred minimum distance between intersections is one quarter mile (1,320 feet). Four intersections within a 0.44-mile distance would be nearly twice the recommended concentration of intersections along an arterial and three intersections along a one third of a mile stretch would result in intersections separated by approximately 900 feet or less.

Section 205.2 of the *Orange County Highway Design Manual* further states that "when access to more than one street or highway is possible, access to lower classification streets is preferred". In this case, both the Northwest and Northeast sites can take access off of Saddleback Ranch Road, a roadway with a lower classification than Glenn Ranch Road and a street that is not classified as an arterial. Therefore, a driveway to the Northwest site and a second driveway to the Northeast site along Glenn Ranch Road do not meet this goal of the *Orange County Highway Design Manual* to limit access along arterials. Finally, a driveway to the Northwest site along Glenn Ranch Road would need to be within approximately 600 feet or less from the Saddleback Ranch Road/Glenn Ranch Road intersection to serve the Northwest Site and would eliminate the "free right turn" option for that intersection. For the reasons stated above, these alternatives were not included for further analysis in this traffic study.

11.0 Summary of Findings

This chapter provides a summary of the key findings and study recommendations, including the LOS results for each scenario analyzed. Specific recommendations related to mitigation of project traffic impacts on the roadway network are listed.

11.1 Summary of Intersection Analyses

Table 11.1 summarizes the intersection LOS results for each of the analyzed scenarios using the ICU and HCM methodologies, including the scenario with the proposed mitigation measures. It should be noted that under the ICU methodology, no significant impacts would result at any of the study intersections. However, under the HCM methodology, one intersection would result in a significant impact and potential improvements have been identified to mitigate the project's impact. Also, it should be noted that at the Saddleback Ranch Road/Millwood Road intersection, the increase in delay is unreliable when conditions are at LOS E/F for an unsignalized intersection. The v/c ratio for the eastbound approach along Millwood Road is a more appropriate measurement of the actual performance of this intersection and compares well to the results of the ICU methodology.

As shown in the table, the majority of all the key study intersections would operate at LOS D or better under all scenarios. There would be a few intersections that would operate at LOS E or F in specific future year scenarios. However, based on the HCM methodology, only the Portola Parkway/Santa Margarita Parkway @ El Toro Road intersection would be considered to be impacted by the project under the Year 2030 Buildout Scenario since the increase in delay would exceed the significance threshold. It should be noted that under the ICU methodology, no intersections would be significantly impacted by the project under any of the scenarios analyzed.

TABLE 11.1
SUMMARY OF INTERSECTION PEAK HOUR LEVEL OF SERVICE RESULTS

#	Intersection	Peak Hour	ICU / HCM						
			Existing	Existing w/Project	2015 Baseline	2015 w/Project	2030 Baseline	2030 w/Project	2030 w/Project + Mitigation
1	Saddleback Ranch Rd / Project Dwy 3 @ Glenn Ranch Rd	AM	A / B	A / B	A / B	A / B	A / B	A / C	
		PM	A / B	A / C	A / B	A / C	A / B	A / C	
2	El Toro Rd @ Glenn Ranch Rd	AM	A / B	A / B	A / B	A / B	A / B	B / B	
		PM	A / B	A / B	C / B	C / B	B / B	B / C	
3	Portola Pkwy @ Glenn Ranch Rd	AM	A / C	B / C	A / B	A / B	B / C	B / C	
		PM	A / C	B / D	A / C	B / C	B / C	B / C	
4	Marguerite Pkwy @ El Toro Rd	AM	A / B	A / B	A / B	A / B	A / C	B / C	
		PM	A / B	A / C	B / B	B / B	E / C	E / D	
5	Santiago Canyon Rd / El Toro	AM	A / B	A / B	A / B	A / B	A / B	A / B	

#	Intersection	Peak Hour	ICU / HCM						
			Existing	Existing w/Project	2015 Baseline	2015 w/Project	2030 Baseline	2030 w/Project	2030 w/Project + Mitigation
	Rd @ Ridgeline Rd	PM	A / A	A / A	A / A	A / A	A / A	A / A	
6	Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd	AM	B / D	B / D	B / C	B / C	D / D	D / D	D / D
		PM	A / C	B / C	E / E	E / E	F / F	F / F	F / F
7	Marguerite Pkwy @ Santa Margarita Pkwy	AM	B / D	B / D	C / D	C / D	D / E	D / E	
		PM	B / D	B / D	C / D	C / D	D / D	D / D	
8	Marguerite Pkwy @ Los Alisos Blvd	AM	A / C	A / C	A / C	A / C	A / C	A / C	
		PM	A / C	A / C	A / C	A / C	C / D	B / D	
9	Los Alisos Blvd @ Santa Margarita Pkwy	AM	D / F	D / F	E / F	E / F	F / F	F / F	
		PM	D / E	D / E	D / E	D / E	D / F	D / F	
10	Saddleback Ranch Rd @ Malabar Rd	AM	A / D	B / D	A / D	B / D	A / D	B / D	
		PM	A / B	A / C	A / C	A / C	A / C	A / C	
11	Saddleback Ranch Rd @ Millwood Rd	AM	B / E	B / E (a)	B / E	B / E (a)	B / E	B / E (a)	
		PM	A / B	A / B	A / B	A / B	A / B	A / B	
12	Saddleback Ranch Rd @ Fawn Ridge Rd	AM	A / B	A / B	A / B	A / B	A / B	A / B	
		PM	A / B	A / B	A / B	A / B	A / B	A / B	
13	Ridgeline Rd @ Santiago Canyon Rd	AM	A / C	A / C	A / C	A / C	A / A	A / A	
		PM	A / C	A / C	A / C	A / C	A / A	A / A	
14	Portola Pkwy @ SR-241 Ramps	AM	A / B	A / B	A / B	A / B	A / B	A / B	
		PM	A / A	A / B	A / B	A / B	B / C	B / C	
15	Saddleback Ranch Rd @ Project Dwy 1	AM		A / B		A / C		A / B	
		PM		A / B		A / B		A / B	
16	Project Dwy 2 @ Glenn Ranch Rd	AM		A / B		A / B		A / B	
		PM		A / B		A / B		A / B	

Source: Wilson & Company, Inc.; January 2013

Note: **Bold** values indicate unacceptable LOS E or F. **Bold and shaded cells** indicate significant project impacts.

(a) At unsignalized intersections, the delay for the stop-controlled approach becomes unreliable when operations approach LOS E/F conditions. The operations are more consistent with the v/c ratio reported for the stop controlled movement.

11.2 Mitigation Measures

To mitigate the HCM-based intersection LOS deficiency, the following mitigation measure is proposed at the impacted intersection:

- #6 Portola Parkway/Santa Margarita Parkway @ El Toro Road: Add an overlap phase for the southbound right-turn movement from Portola Parkway to El Toro Road and the eastbound u-turn movement along El Toro Road will need to be prohibited.

With the implementation of the proposed mitigation measure, traffic conditions at the intersection would still result in LOS F conditions. However, the delays associated with this intersection would be improved to better than pre-project conditions.

11.3 Summary of Traffic Related Topics and Project Driveway Alternatives

The analysis at the Saddleback Ranch Road @ Glenn Ranch Road intersection with the alternate lane configuration of removing the southbound free-right turns resulted in acceptable operations under all future year scenarios from both the ICU- and HCM-based methodology.

Traffic simulations have been prepared to evaluate the operations along Saddleback Ranch Road due to the closely spaced intersections with the addition of the project driveway. The traffic simulations confirmed that the delays and queues would be minimized along Saddleback Ranch with the addition of the project for the Year 2030 Buildout scenario.

The Project has been designed with the option to have gated entrances at each of the Project's Driveways. The optional gated entrances have been designed in accordance with the Orange County Standard Plan 1107 for gated entrances to ensure an adequate queue length between each project entrance and the gates to prevent cars from backing up into the adjoining intersection.

Based on the queuing analysis provided at the Project Driveway 2 @ Glenn Ranch Road intersection, queues would not exceed the available storage length for the north leg of Driveway 2.

All project driveway locations along Saddleback Ranch Road and Glenn Ranch Road would accommodate pedestrian crossings that would meet the minimum pedestrian crossing speed of 3.5 feet per second as outlined in the California Manual of Uniform Traffic Control Devices (MUTCD). At the Saddleback Ranch Road/Glenn Ranch Road intersection, it is recommended that a pedestrian/equestrian push button be installed on the signal mast arm poles at the northwest and northeast corners of the intersection to allow for controlled pedestrian crossings across the north leg of that intersection.

Saddleback Ranch Road currently experiences a 15-minute back-up of traffic as a result of a deficient driveway access at the Portola Hills Elementary School. Based on the field operations, the congestion along Saddleback Ranch Road resulted from the school's poor on-site circulation in conjunction with the deficient school driveway configuration. It is foreseeable that new families in the Portola Center Project will send their children to Portola Hills Elementary when capacity is made available at the school. The traffic model used for this study assumes the school is operating at full capacity in the Near Term plus Project and Buildout plus Project scenarios.

Trucks and scrapers hauling dirt between the Planning Areas would be confined to operate at the project driveways and during the off-peak period of the day and vehicular traffic generated during construction would not exceed the amount of traffic generated by the proposed project. As a result, no new impacts would result during construction.

The project driveway alternative analysis for the Northeast site (two driveways providing access to the Northeast site at Project Driveways 1 and 2) resulted in acceptable LOS conditions for all project driveway intersections during both peak periods.

If a second full access project to the Northeast site was provided at the La Quinta/Malabar Road stub street, additional traffic is expected along Malabar Road. This increase in traffic would result in slightly longer delays at the Saddleback Ranch Road/Malabar Road intersection and

slightly shorter delays at the Saddleback Ranch Road/Millwood Road and Saddleback Ranch Road/Glenn Ranch Road intersections.

Finally, project driveway alternatives along Glenn Ranch Road to the Northwest and Northeast Planning Areas were evaluated but determined to be inconsistent with Orange County Highway Design Manual objectives for arterials and were not included for further analysis in this study.

11.4 Conclusions

As shown in the summary table above, the HCM methodology consistently produced more conservative LOS results as compared to the ICU methodology. The HCM results were provided in this study to ensure a comprehensive assessment and to identify potentially failing conditions that merit further analysis. Mitigation at intersections experiencing a significant impact resulting from the ICU methodology is the City's adopted standard. Results from the ICU analysis resulted in no significant impacts from the project at the study intersections. However, the project is still providing improvements at a study intersection based on the HCM methodology. The proposed mitigation measure is shown to mitigate the significant impact from the proposed project to below a level of significance and bring the LOS conditions to pre-project conditions or better.

Appendix A

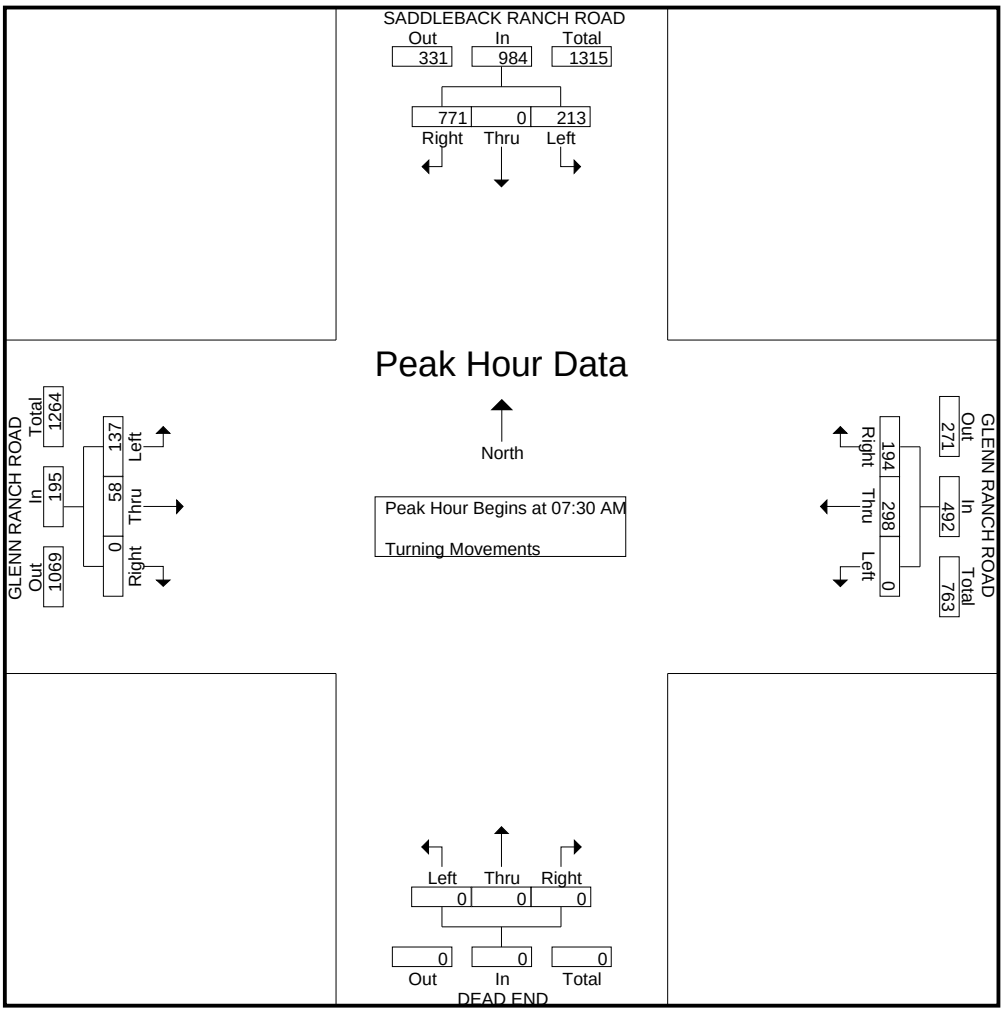
Traffic Counts

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

City: LAKE FOREST
N-S Direction: SADDLEBACK RANCH ROAD
E-W Direction: GLENN RANCH ROAD

File Name : H1209024
Site Code : 00005054
Start Date : 9/27/2012
Page No : 2

	SADDLEBACK RANCH ROAD Southbound				GLENN RANCH ROAD Westbound				DEAD END Northbound				GLENN RANCH ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	190	0	55	245	38	56	0	94	0	0	0	0	0	10	17	27	366
07:45 AM	197	0	**58**	255	**95**	**90**	0	**185**	0	0	0	0	0	14	**40**	54	**494**
08:00 AM	**205**	0	55	**260**	44	78	0	122	0	0	0	0	0	12	40	52	434
08:15 AM	179	0	45	224	17	74	0	91	0	0	0	0	0	**22**	40	**62**	377
Total Volume	771	0	213	984	194	298	0	492	0	0	0	0	0	58	137	195	1671
% App. Total	78.4	0	21.6		39.4	60.6	0		0	0	0		0	29.7	70.3		
PHF	.940	.000	.918	.946	.511	.828	.000	.665	.000	.000	.000	.000	.000	.659	.856	.786	.846

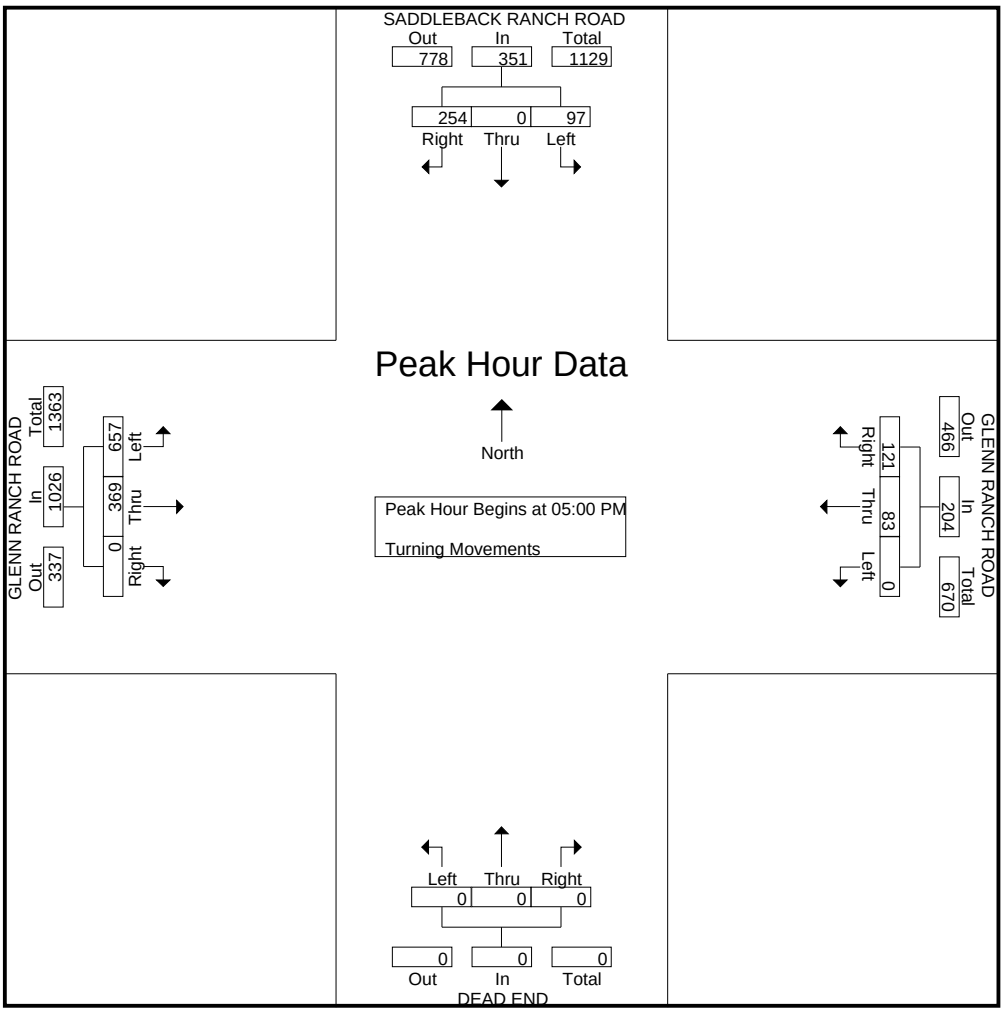


Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

City: LAKE FOREST
N-S Direction: SADDLEBACK RANCH ROAD
E-W Direction: GLENN RANCH ROAD

File Name : H1209035
Site Code : 00000000
Start Date : 10/2/2012
Page No : 2

	SADDLEBACK RANCH ROAD Southbound				GLENN RANCH ROAD Westbound				DEAD END Northbound				GLENN RANCH ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**65**	0	23	88	27	22	0	49	0	0	0	0	0	100	164	**264**	**401**
05:15 PM	63	0	**27**	**90**	30	18	0	48	0	0	0	0	0	**101**	162	263	401
05:30 PM	65	0	23	88	31	**24**	0	**55**	0	0	0	0	0	79	**170**	249	392
05:45 PM	61	0	24	85	**33**	19	0	52	0	0	0	0	0	89	161	250	387
Total Volume	254	0	97	351	121	83	0	204	0	0	0	0	0	369	657	1026	1581
% App. Total	72.4	0	27.6		59.3	40.7	0		0	0	0		0	36	64		
PHF	.977	.000	.898	.975	.917	.865	.000	.927	.000	.000	.000	.000	.000	.913	.966	.972	.986



Intersection Turning Movement

Prepared by:

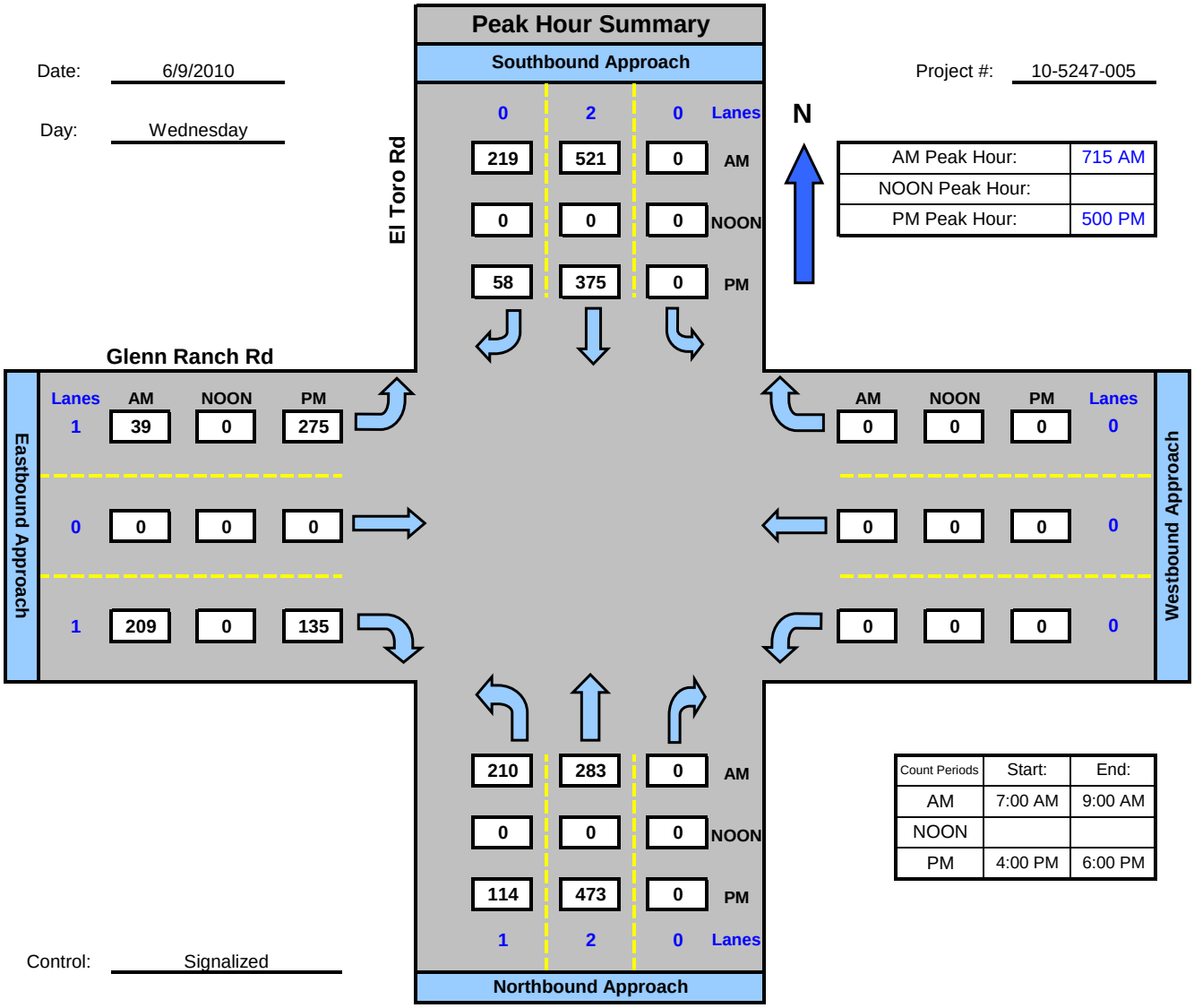
National Data & Surveying Services

El Toro Rd and Glenn Ranch Rd , City of Lake Forest

Date: 6/9/2010

Day: Wednesday

Project #: 10-5247-005



AM Peak Hour:	715 AM
NOON Peak Hour:	
PM Peak Hour:	500 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Control: Signalized

Intersection Turning Movement

Prepared by:

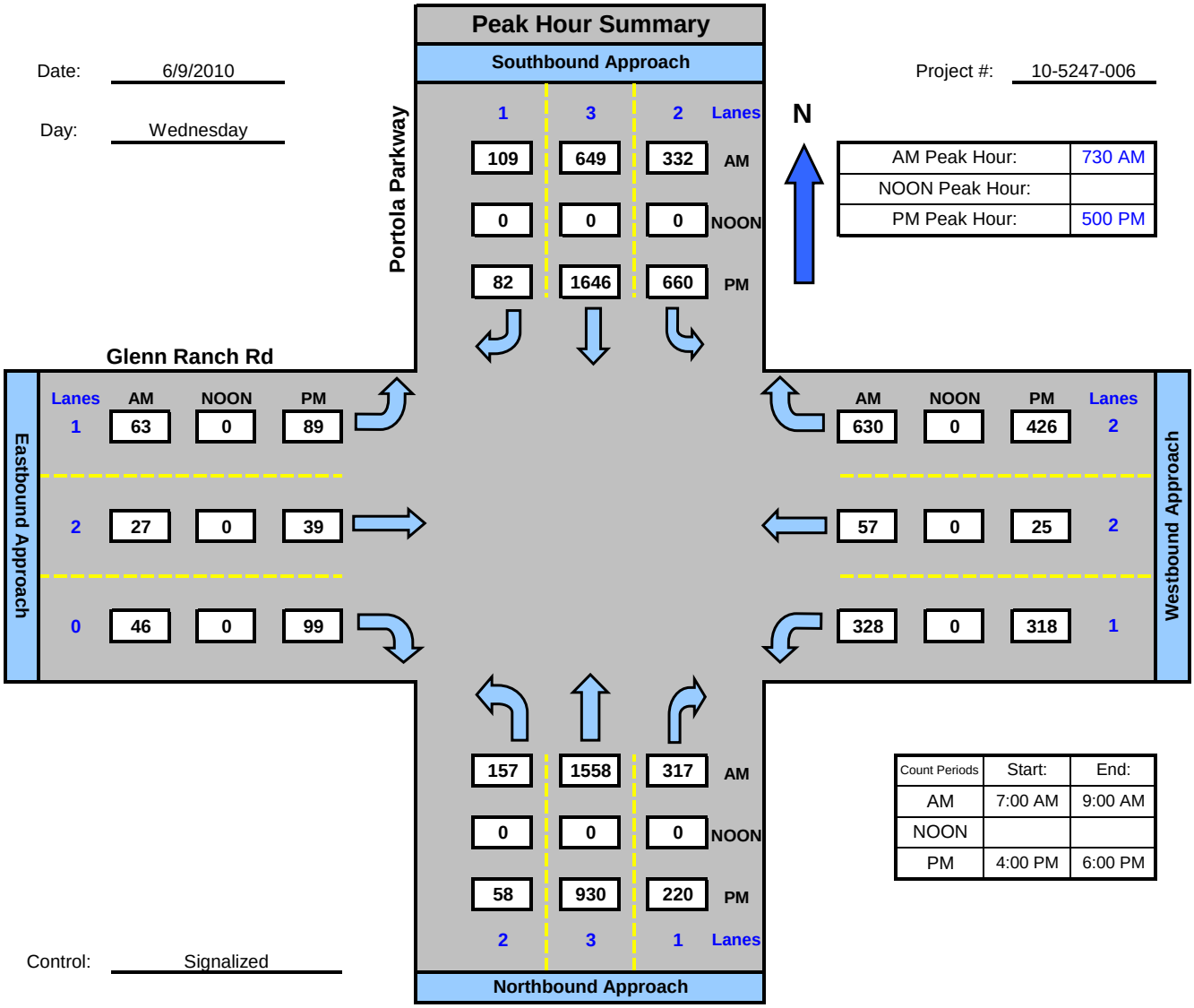
National Data & Surveying Services

Portola Parkway and Glenn Ranch Rd , City of Lake Forest

Date: 6/9/2010

Day: Wednesday

Project #: 10-5247-006



AM Peak Hour:	730 AM
NOON Peak Hour:	
PM Peak Hour:	500 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Control: Signalized

Intersection Turning Movement

Prepared by:

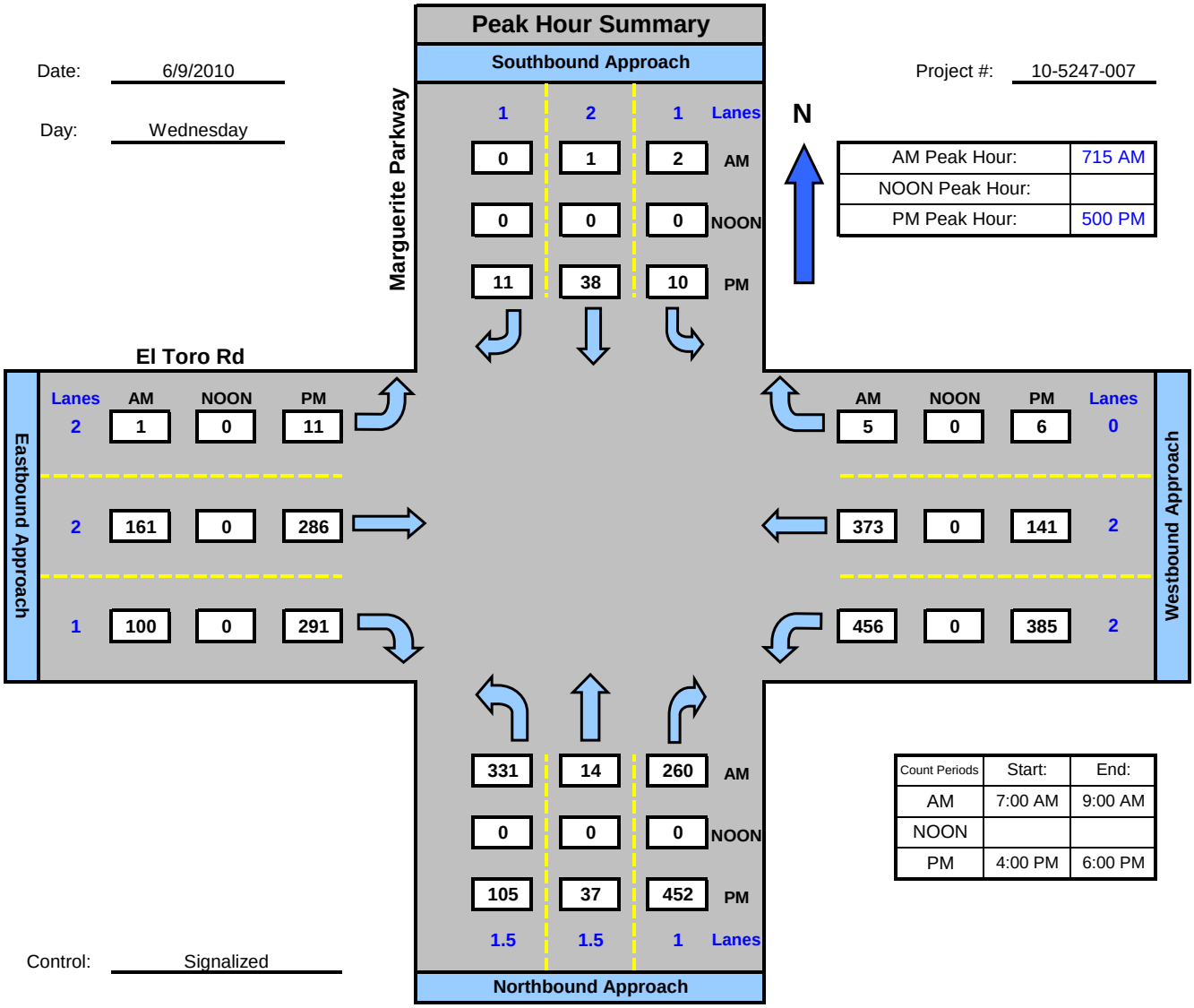
National Data & Surveying Services

Marguerite Parkway and El Toro Rd , City of Lake Forest

Date: 6/9/2010

Day: Wednesday

Project #: 10-5247-007



AM Peak Hour:	715 AM
NOON Peak Hour:	
PM Peak Hour:	500 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Control: Signalized

Intersection Turning Movement

Prepared by:

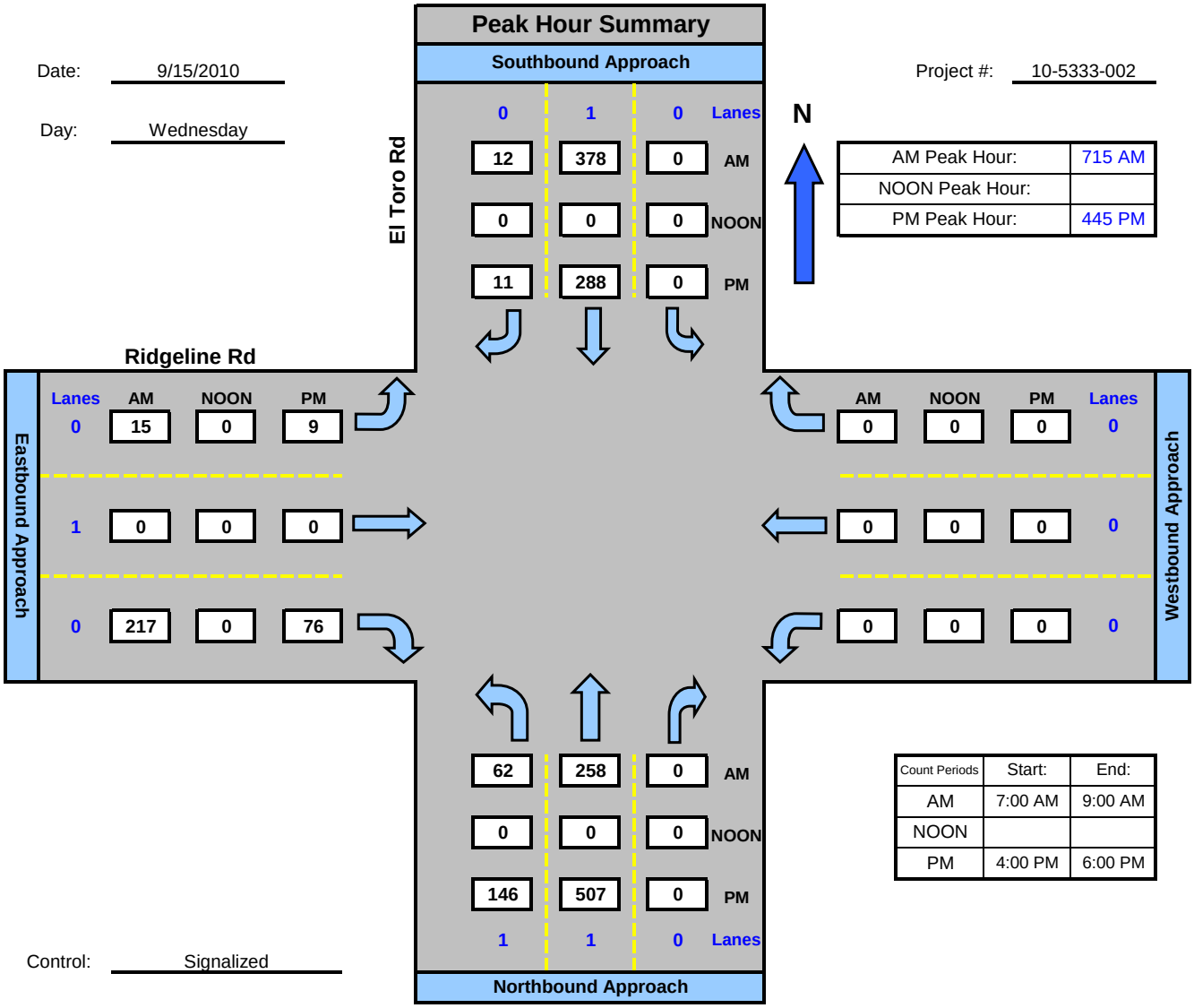
National Data & Surveying Services

El Toro Rd and Ridgeline Rd , City of Lake Forest

Date: 9/15/2010

Day: Wednesday

Project #: 10-5333-002



AM Peak Hour:	715 AM
NOON Peak Hour:	
PM Peak Hour:	445 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Control: Signalized

Intersection Turning Movement

Prepared by:

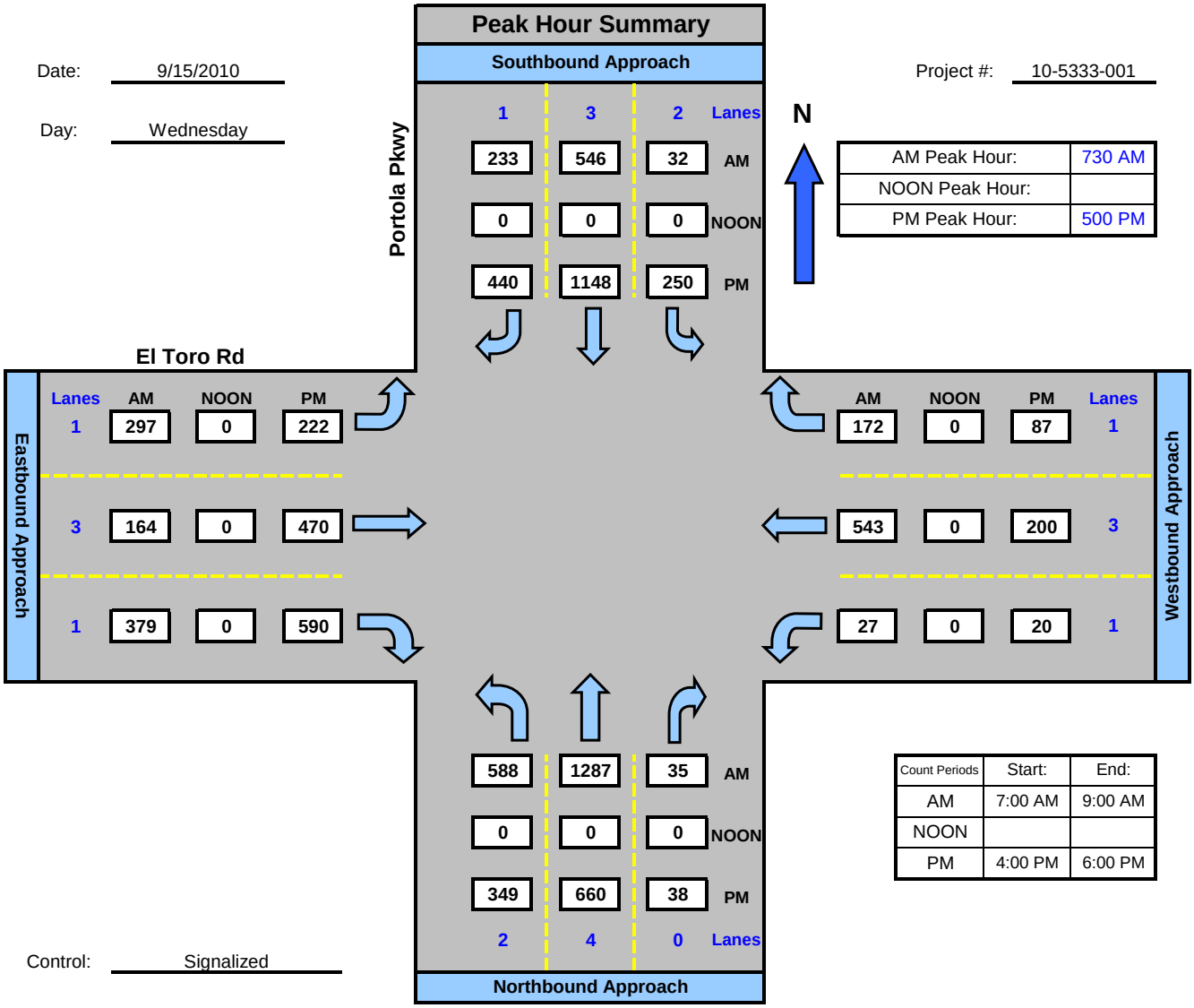
National Data & Surveying Services

Portola Pkwy and El Toro Rd , City of Lake Forest

Date: 9/15/2010

Day: Wednesday

Project #: 10-5333-001



AM Peak Hour:	730 AM
NOON Peak Hour:	
PM Peak Hour:	500 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

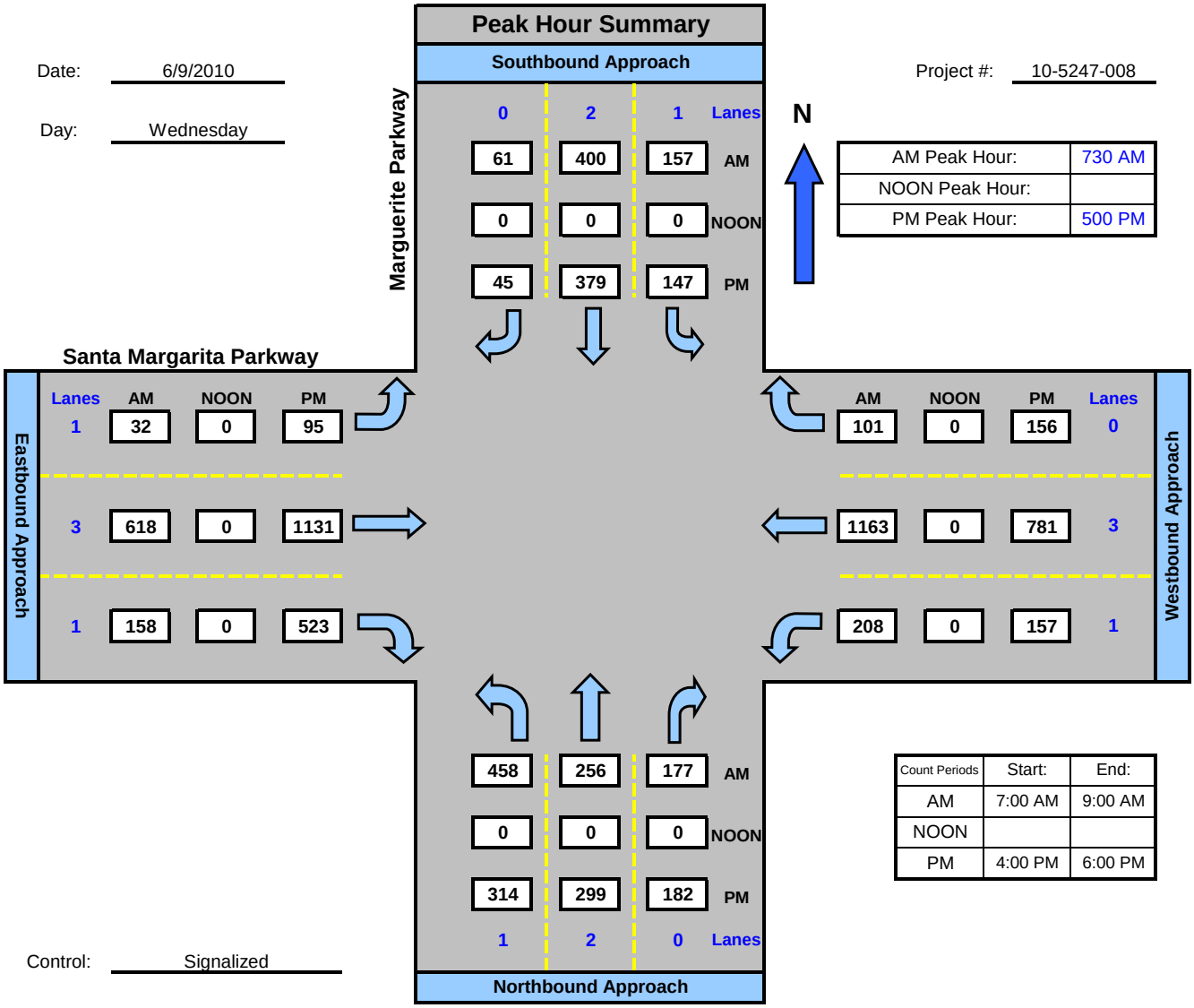
Control: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Marguerite Parkway and Santa Margarita Parkway , City of Lake Forest



Date: 6/9/2010

Day: Wednesday

Project #: 10-5247-008

AM Peak Hour:	730 AM
NOON Peak Hour:	
PM Peak Hour:	500 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Control: Signalized

Intersection Turning Movement

Prepared by:

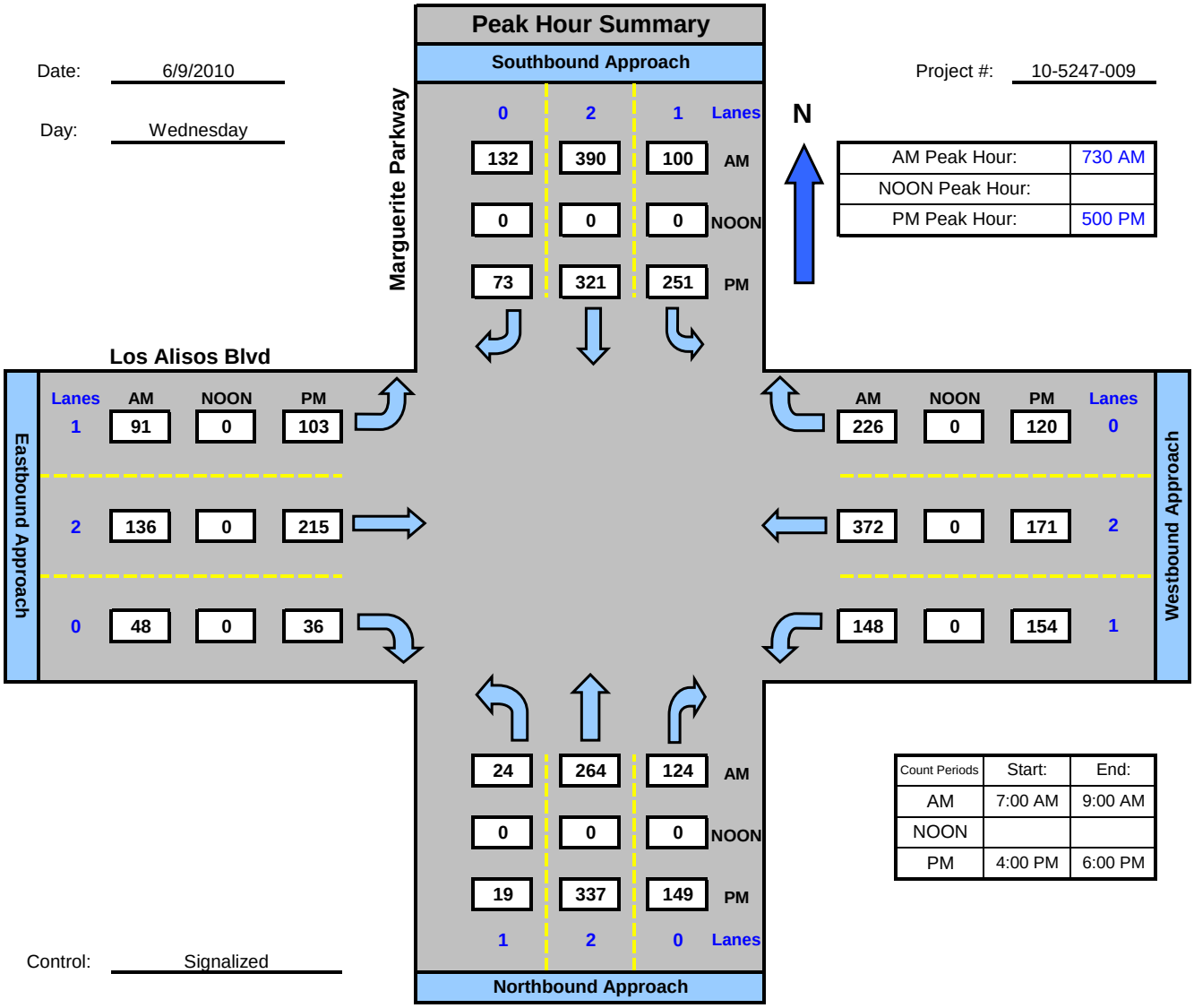
National Data & Surveying Services

Marguerite Parkway and Los Alisos Blvd , City of Lake Forest

Date: 6/9/2010

Day: Wednesday

Project #: 10-5247-009



AM Peak Hour:	730 AM
NOON Peak Hour:	
PM Peak Hour:	500 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Control: Signalized

Intersection Turning Movement

Prepared by:

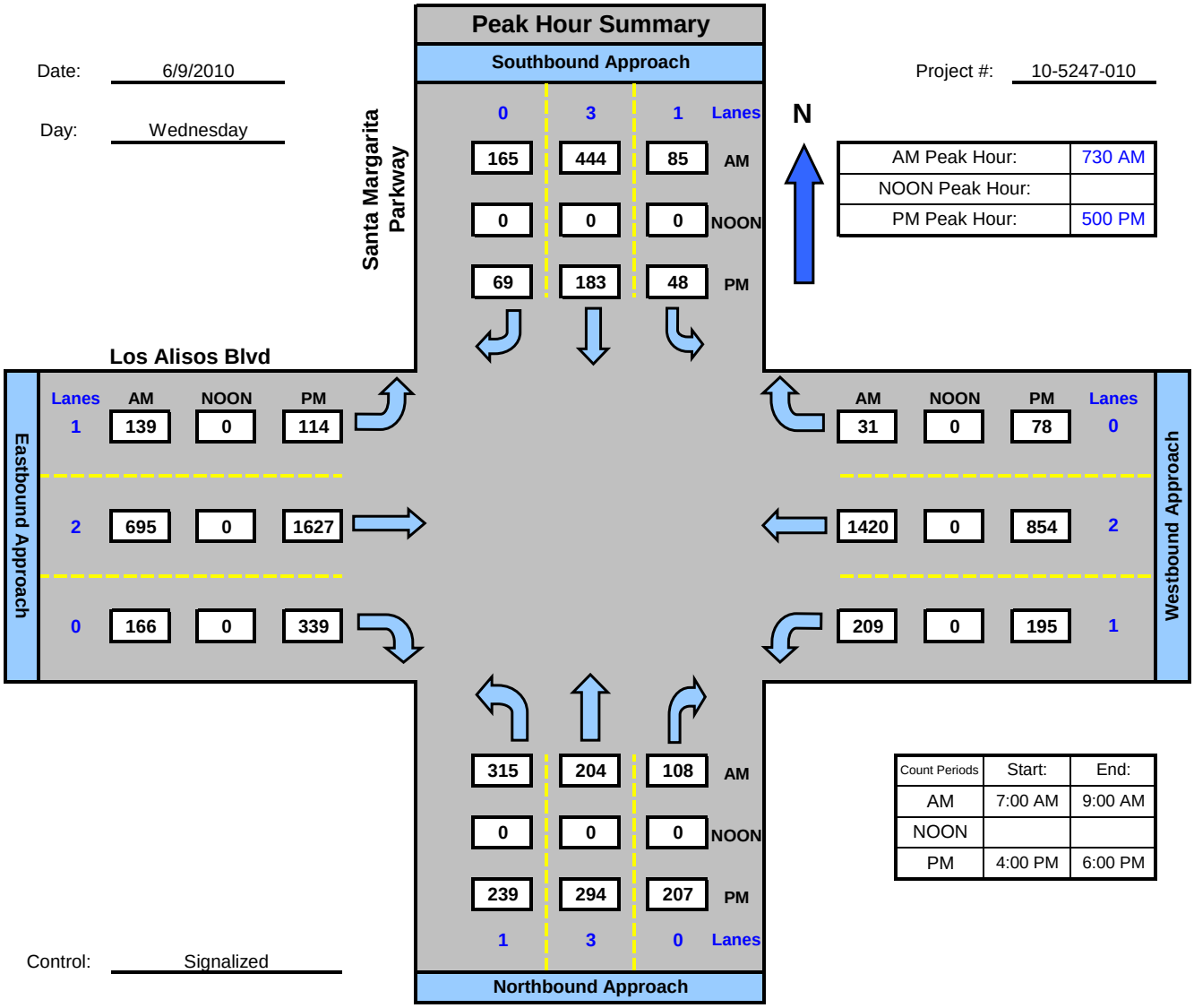
National Data & Surveying Services

Santa Margarita Parkway and Los Alisos Blvd , City of Lake Forest

Date: 6/9/2010

Day: Wednesday

Project #: 10-5247-010



AM Peak Hour:	730 AM
NOON Peak Hour:	
PM Peak Hour:	500 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

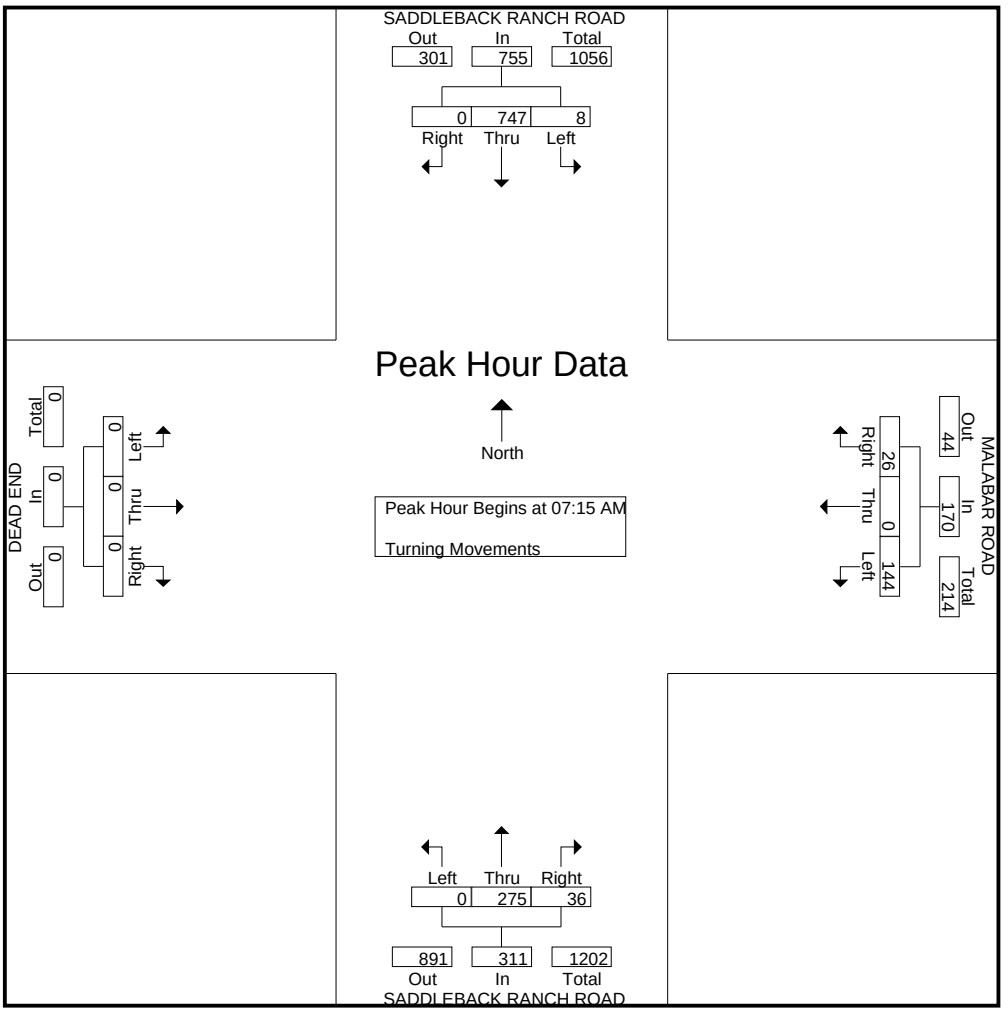
Control: Signalized

Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

City: LAKE FOREST
N-S Direction: SADDLEBACK RANCH ROAD
E-W Direction: MALABAR ROAD

File Name : H1209026
Site Code : 00000559
Start Date : 9/25/2012

	SADDLEBACK RANCH ROAD Southbound				MALABAR ROAD Westbound				SADDLEBACK RANCH ROAD Northbound				DEAD END Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	154	3	157	3	0	35	38	6	39	0	45	0	0	0	0	240
07:30 AM	0	196	1	197	6	0	**50**	**56**	10	58	0	68	0	0	0	0	321
07:45 AM	0	**205**	0	**205**	**10**	0	28	38	8	**93**	0	**101**	0	0	0	0	**344**
08:00 AM	0	192	**4**	196	7	0	31	38	**12**	85	0	97	0	0	0	0	331
Total Volume	0	747	8	755	26	0	144	170	36	275	0	311	0	0	0	0	1236
% App. Total	0	98.9	1.1		15.3	0	84.7		11.6	88.4	0		0	0	0		
PHF	.000	.911	.500	.921	.650	.000	.720	.759	.750	.739	.000	.770	.000	.000	.000	.000	.898



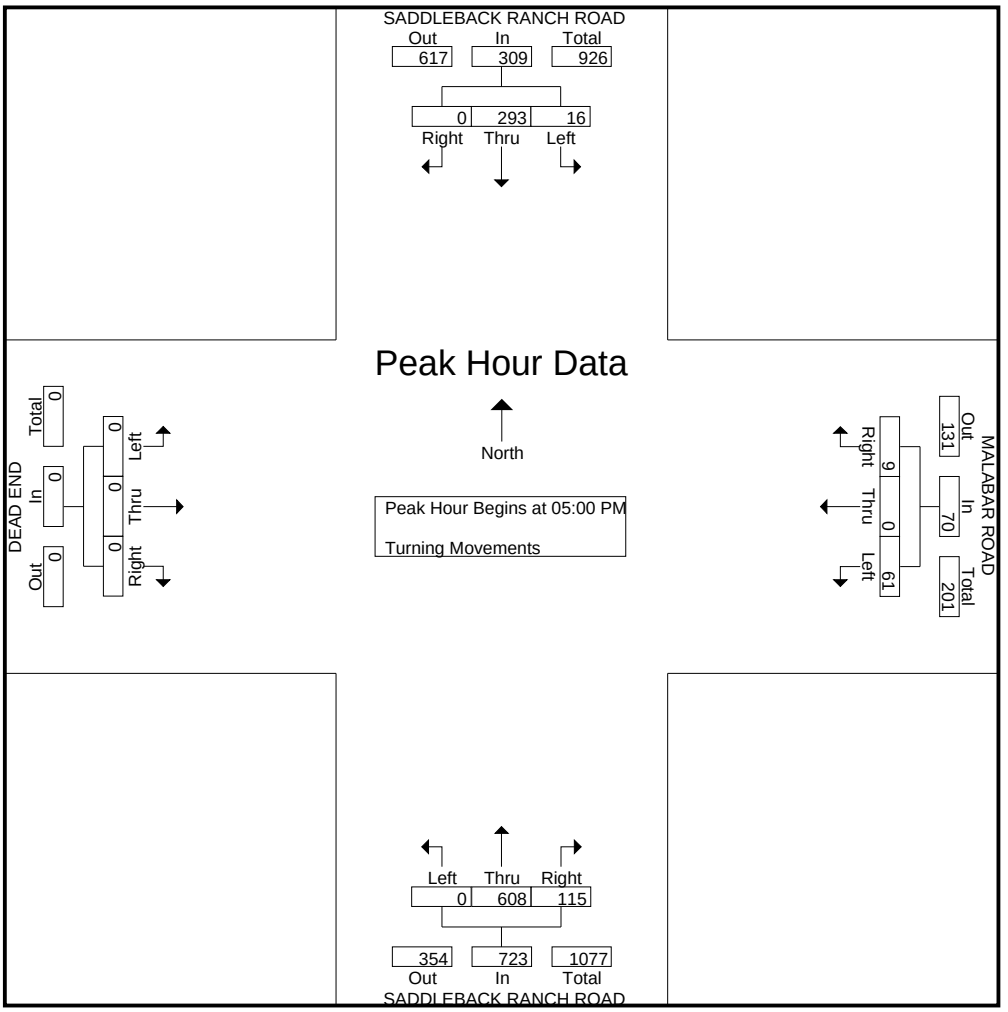
Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

#10

City: LAKE FOREST
N-S Direction: SADDLEBACK RANCH ROAD
E-W Direction: MALABAR ROAD

File Name : H1209026
Site Code : 00000559
Start Date : 9/25/2012
Page No : 3

	SADDLEBACK RANCH ROAD Southbound				MALABAR ROAD Westbound				SADDLEBACK RANCH ROAD Northbound				DEAD END Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	60	**5**	65	**3**	0	16	19	28	140	0	168	0	0	0	0	252
05:15 PM	0	**88**	5	**93**	2	0	13	15	**32**	147	0	179	0	0	0	0	**287**
05:30 PM	0	70	3	73	3	0	**19**	**22**	30	153	0	183	0	0	0	0	278
05:45 PM	0	75	3	78	1	0	13	14	25	**168**	0	**193**	0	0	0	0	285
Total Volume	0	293	16	309	9	0	61	70	115	608	0	723	0	0	0	0	1102
% App. Total	0	94.8	5.2		12.9	0	87.1		15.9	84.1	0		0	0	0		
PHF	.000	.832	.800	.831	.750	.000	.803	.795	.898	.905	.000	.937	.000	.000	.000	.000	.960



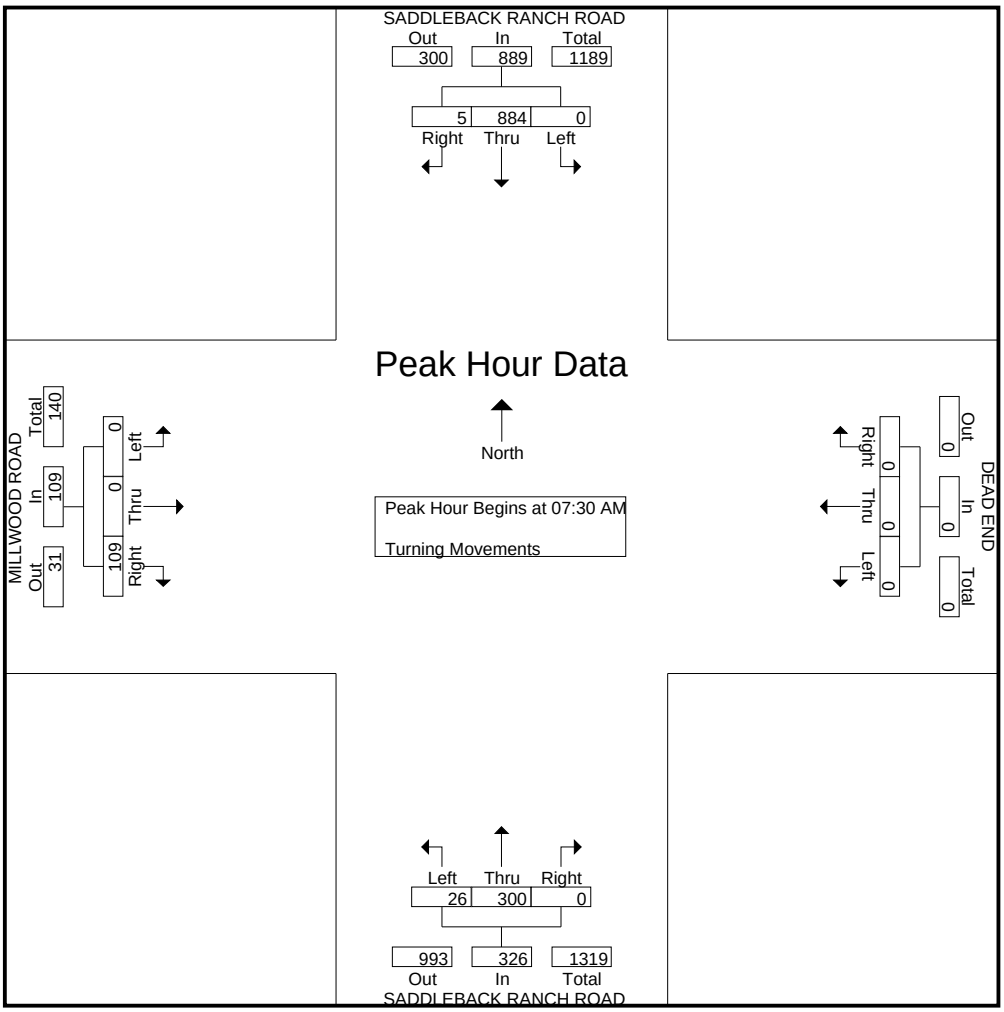
Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

#11

City: LAKE FOREST
N-S Direction: SADDLEBACK RANCH ROAD
E-W Direction: MILLWOOD ROAD

File Name : H1209025
Site Code : 00000057
Start Date : 9/27/2012
Page No : 2

	SADDLEBACK RANCH ROAD Southbound				DEAD END Westbound				SADDLEBACK RANCH ROAD Northbound				MILLWOOD ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	221	0	221	0	0	0	0	0	51	**8**	59	25	0	0	25	305
07:45 AM	**2**	228	0	230	0	0	0	0	0	**127**	5	**132**	**39**	0	0	**39**	**401**
08:00 AM	2	**235**	0	**237**	0	0	0	0	0	76	6	82	23	0	0	23	342
08:15 AM	1	200	0	201	0	0	0	0	0	46	7	53	22	0	0	22	276
Total Volume	5	884	0	889	0	0	0	0	0	300	26	326	109	0	0	109	1324
% App. Total	0.6	99.4	0		0	0	0		0	92	8		100	0	0		
PHF	.625	.940	.000	.938	.000	.000	.000	.000	.000	.591	.813	.617	.699	.000	.000	.699	.825



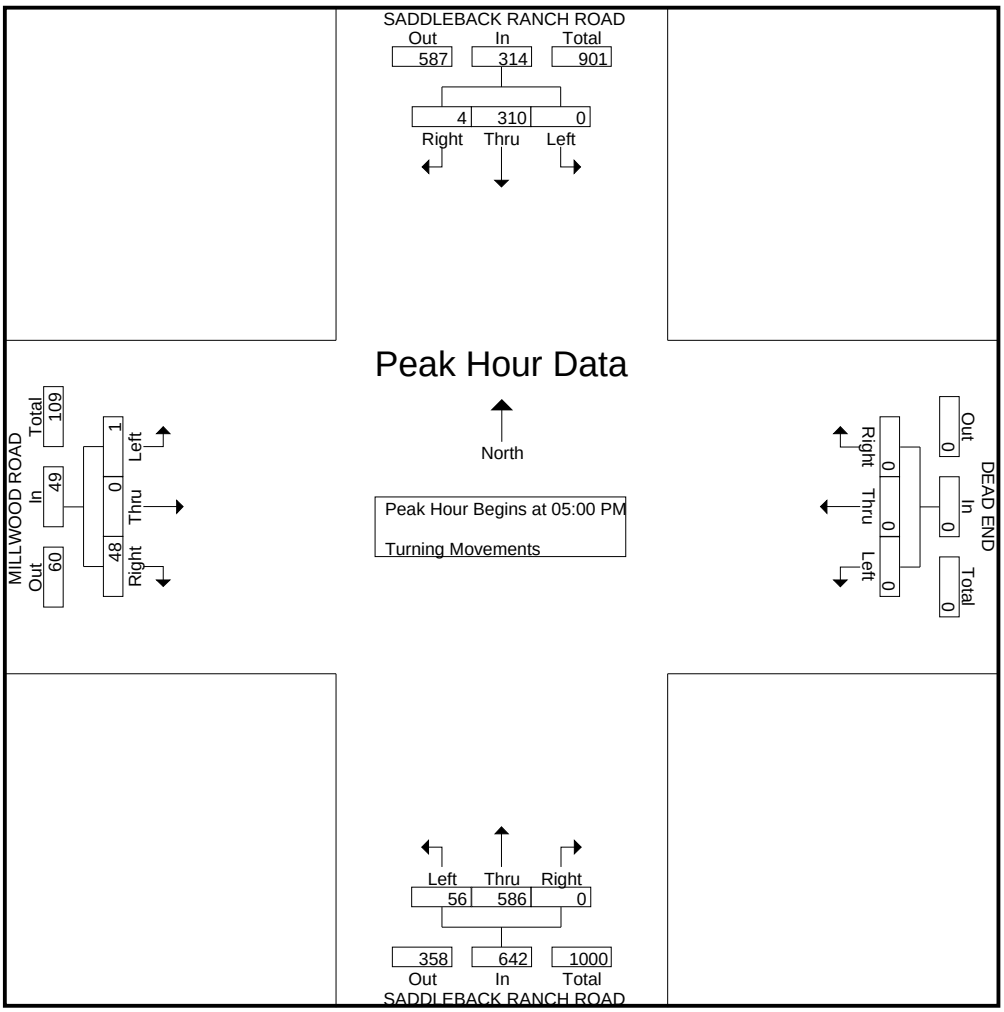
Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

#11

City: LAKE FOREST
N-S Direction: SADDLEBACK RANCH ROAD
E-W Direction: MILLWOOD ROAD

File Name : h1209036
Site Code : 00000000
Start Date : 10/2/2012
Page No : 2

	SADDLEBACK RANCH ROAD Southbound				DEAD END Westbound				SADDLEBACK RANCH ROAD Northbound				MILLWOOD ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	1	77	0	78	0	0	0	0	0	138	9	147	9	0	**1**	10	235
05:15 PM	1	73	0	74	0	0	0	0	0	**155**	11	166	9	0	0	9	249
05:30 PM	0	78	0	78	0	0	0	0	0	144	16	160	14	0	0	14	252
05:45 PM	**2**	**82**	0	**84**	0	0	0	0	0	149	**20**	**169**	**16**	0	0	**16**	**269**
Total Volume	4	310	0	314	0	0	0	0	0	586	56	642	48	0	1	49	1005
% App. Total	1.3	98.7	0		0	0	0		0	91.3	8.7		98	0	2		
PHF	.500	.945	.000	.935	.000	.000	.000	.000	.000	.945	.700	.950	.750	.000	.250	.766	.934

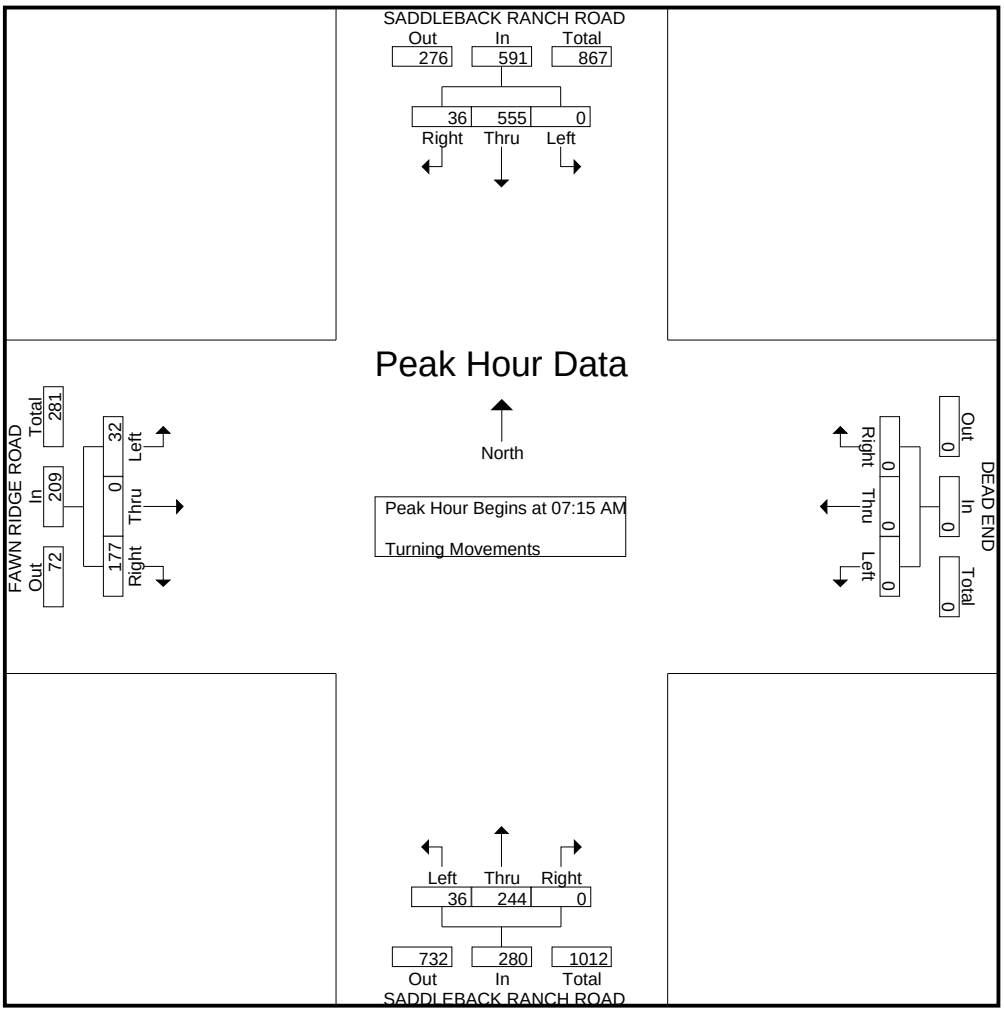


Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

City: LAKE FOREST
N-S Direction: SADDLEBACK RANCH ROAD
E-W Direction: FAWN RIDGE ROAD

File Name : H1209027
Site Code : 00005694
Start Date : 9/25/2012
Page No : 2

	SADDLEBACK RANCH ROAD Southbound				DEAD END Westbound				SADDLEBACK RANCH ROAD Northbound				FAWN RIDGE ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**17**	120	0	137	0	0	0	0	0	40	1	41	39	0	4	43	221
07:30 AM	4	140	0	144	0	0	0	0	0	42	5	47	**63**	0	**13**	**76**	267
07:45 AM	9	**154**	0	**163**	0	0	0	0	0	**117**	12	**129**	33	0	11	44	**336**
08:00 AM	6	141	0	147	0	0	0	0	0	45	**18**	63	42	0	4	46	256
Total Volume	36	555	0	591	0	0	0	0	0	244	36	280	177	0	32	209	1080
% App. Total	6.1	93.9	0		0	0	0		0	87.1	12.9		84.7	0	15.3		
PHF	.529	.901	.000	.906	.000	.000	.000	.000	.000	.521	.500	.543	.702	.000	.615	.688	.804



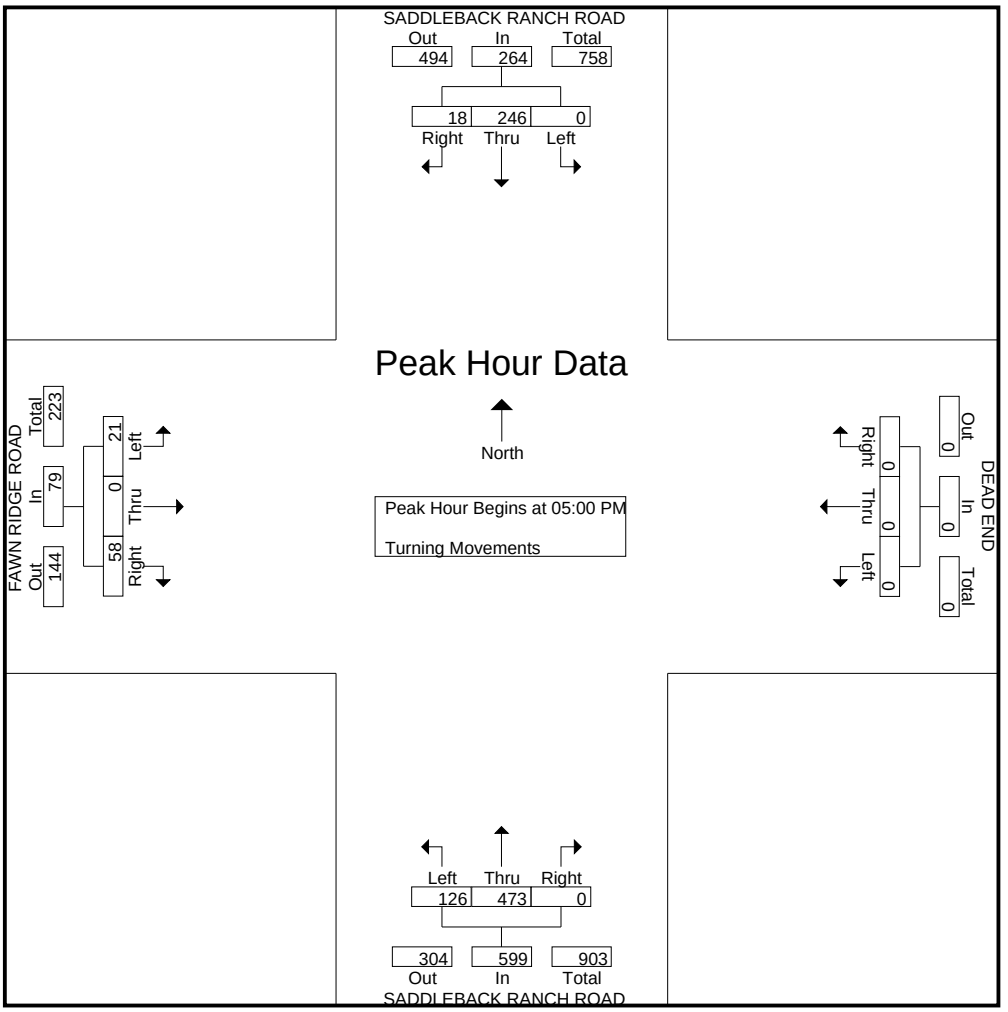
Transportation Studies, Inc.
2640 Walnut Avenue, Suite H
Tustin, CA. 92780

#12

City: LAKE FOREST
N-S Direction: SADDLEBACK RANCH ROAD
E-W Direction: FAWN RIDGE ROAD

File Name : H1209027
Site Code : 00005694
Start Date : 9/25/2012
Page No : 3

	SADDLEBACK RANCH ROAD Southbound				DEAD END Westbound				SADDLEBACK RANCH ROAD Northbound				FAWN RIDGE ROAD Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**6**	**65**	0	**71**	0	0	0	0	0	111	33	144	9	0	4	13	228
05:15 PM	3	61	0	64	0	0	0	0	0	113	22	135	16	0	**9**	**25**	224
05:30 PM	6	59	0	65	0	0	0	0	0	104	**36**	140	**17**	0	2	19	224
05:45 PM	3	61	0	64	0	0	0	0	0	**145**	35	**180**	16	0	6	22	**266**
Total Volume	18	246	0	264	0	0	0	0	0	473	126	599	58	0	21	79	942
% App. Total	6.8	93.2	0		0	0	0		0	79	21		73.4	0	26.6		
PHF	.750	.946	.000	.930	.000	.000	.000	.000	.000	.816	.875	.832	.853	.000	.583	.790	.885



Intersection Turning Movement

Prepared by:

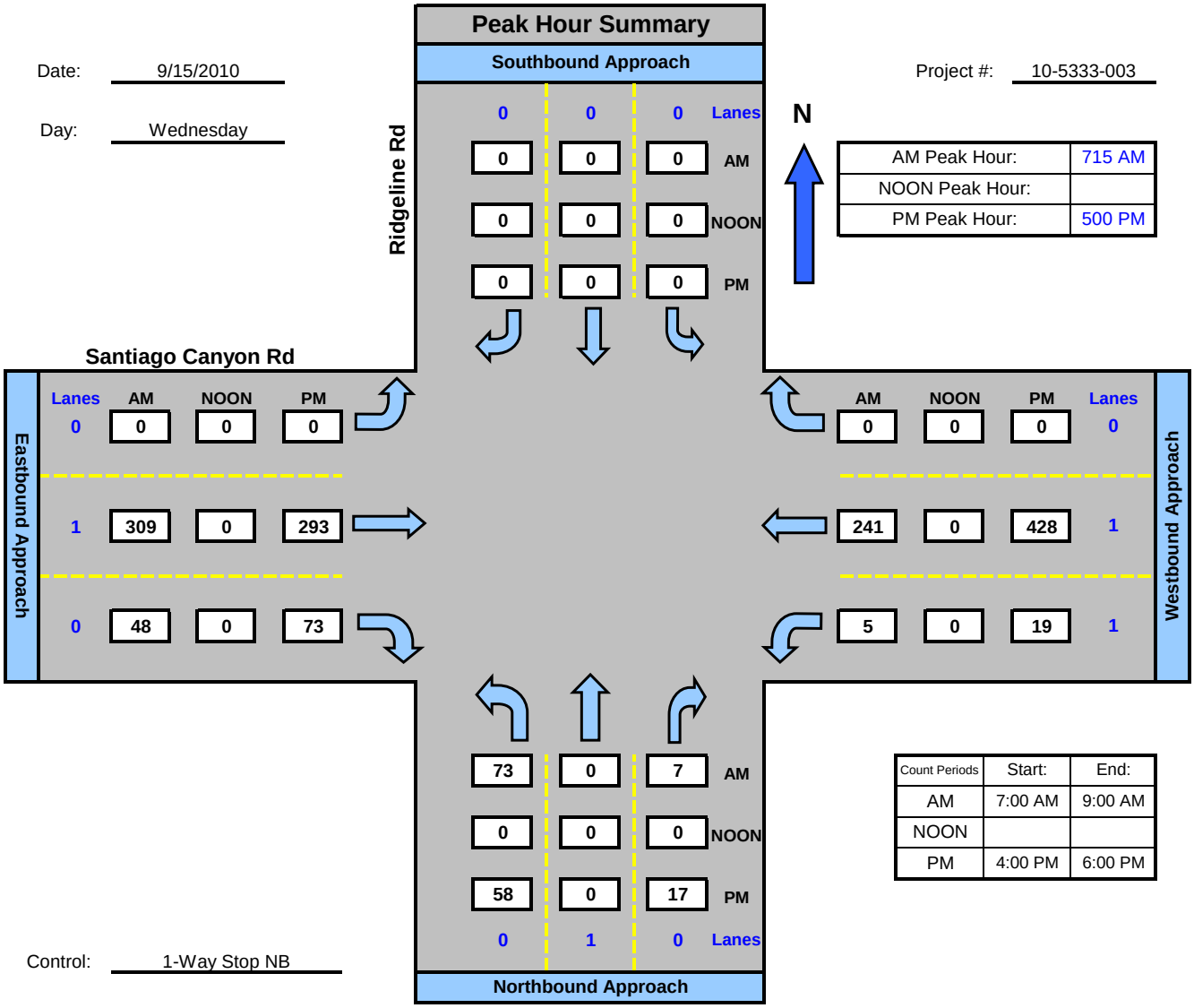
National Data & Surveying Services

Ridgeline Rd and Santiago Canyon Rd , City of Lake Forest

Date: 9/15/2010

Day: Wednesday

Project #: 10-5333-003



AM Peak Hour:	715 AM
NOON Peak Hour:	
PM Peak Hour:	500 PM

Count Periods	Start:	End:
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

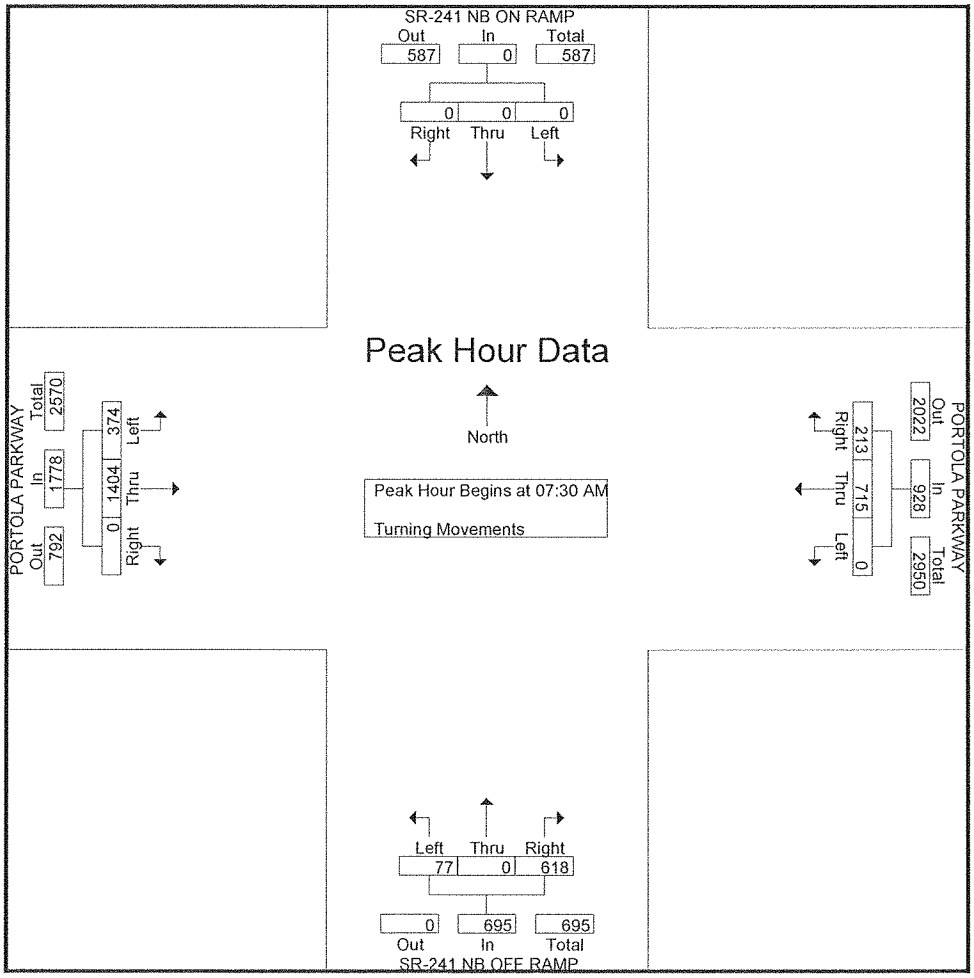
Control: 1-Way Stop NB

Transportation Studies, Inc.
2680 Walnut Avenue, Suite C
Tustin, CA. 92780

City: LAKE FOREST
N-S Direction: SR -241 NB ON - OFF RAMP
E-W Direction: PORTOLA PARKWAY

File Name : H1010018N
Site Code : 00005724
Start Date : 10/14/2010
Page No : 2

	SR-241 NB ON RAMP Southbound				PORTOLA PARKWAY Westbound				SR-241 NB OFF RAMP Northbound				PORTOLA PARKWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	50	**273**	0	**323**	104	0	16	120	0	234	94	328	771
07:45 AM	0	0	0	0	53	205	0	258	**194**	0	20	**214**	0	**433**	96	**529**	**1001**
08:00 AM	0	0	0	0	52	119	0	171	167	0	19	186	0	375	**100**	475	832
08:15 AM	0	0	0	0	**58**	118	0	176	153	0	**22**	175	0	362	84	446	797
Total Volume	0	0	0	0	213	715	0	928	618	0	77	695	0	1404	374	1778	3401
% App. Total	0	0	0		23	77	0		88.9	0	11.1		0	79	21		
PHF	.000	.000	.000	.000	.918	.655	.000	.718	.796	.000	.875	.812	.000	.811	.935	.840	.849

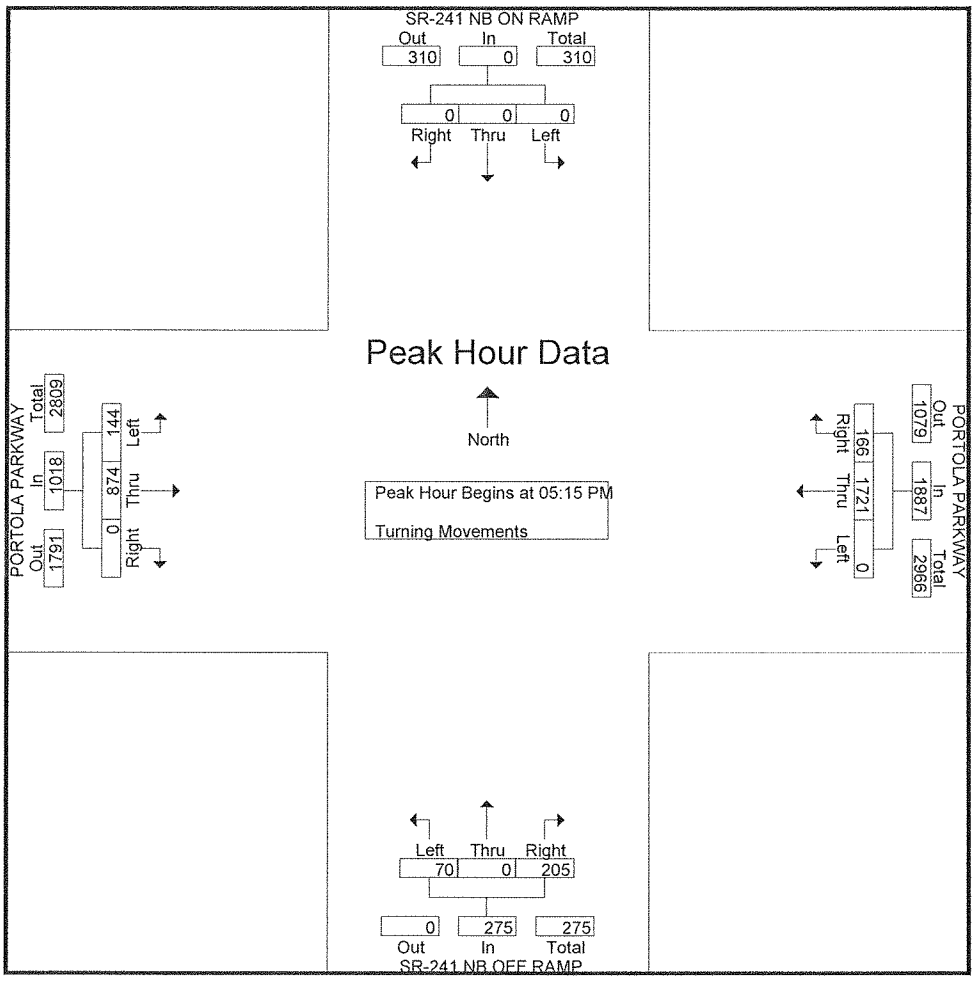


Transportation Studies, Inc.
2680 Walnut Avenue, Suite C
Tustin, CA. 92780

City: LAKE FOREST
N-S Direction: SR -241 NB ON - OFF RAMP
E-W Direction: PORTOLA PARKWAY

File Name : H1010018N
Site Code : 00005724
Start Date : 10/14/2010
Page No : 3

	SR-241 NB ON RAMP Southbound				PORTOLA PARKWAY Westbound				SR-241 NB OFF RAMP Northbound				PORTOLA PARKWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 06:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	0	0	0	0	44	432	0	476	46	0	18	64	0	214	36	250	790
05:30 PM	0	0	0	0	36	428	0	464	52	0	18	70	0	219	31	250	784
05:45 PM	0	0	0	0	**47**	**440**	0	**487**	**57**	0	**20**	**77**	0	**231**	38	**269**	**833**
06:00 PM	0	0	0	0	39	421	0	460	50	0	14	64	0	210	**39**	249	773
Total Volume	0	0	0	0	166	1721	0	1887	205	0	70	275	0	874	144	1018	3180
% App. Total	0	0	0		8.8	91.2	0		74.5	0	25.5		0	85.9	14.1		
PHF	.000	.000	.000	.000	.883	.978	.000	.969	.899	.000	.875	.893	.000	.946	.923	.946	.954

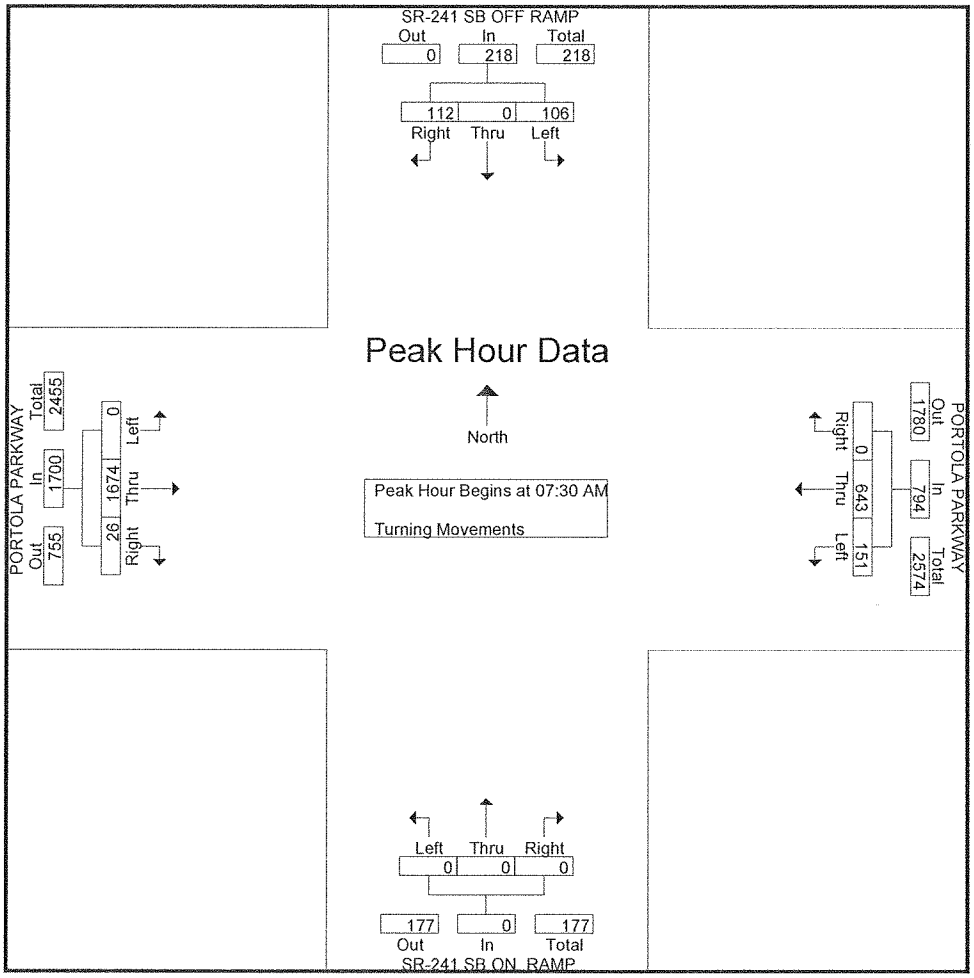


Transportation Studies, Inc.
2680 Walnut Avenue, Suite C
Tustin, CA. 92780

City: LAKE FOREST
N-S Direction: SR-241 SB ON-OFF RAMP
E-W Direction: PORTOLA PARKWAY

File Name : H1010018S
Site Code : 00001944
Start Date : 10/14/2010
Page No : 2

	SR-241 SB OFF RAMP Southbound				PORTOLA PARKWAY Westbound				SR-241 SB ON RAMP Northbound				PORTOLA PARKWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**40**	0	20	60	0	**246**	40	**286**	0	0	0	0	5	310	0	315	661
07:45 AM	29	0	**33**	**62**	0	177	**48**	225	0	0	0	0	7	**497**	0	**504**	**791**
08:00 AM	23	0	28	51	0	106	30	136	0	0	0	0	6	449	0	455	642
08:15 AM	20	0	25	45	0	114	33	147	0	0	0	0	**8**	418	0	426	618
Total Volume	112	0	106	218	0	643	151	794	0	0	0	0	26	1674	0	1700	2712
% App. Total	51.4	0	48.6		0	81	19		0	0	0		1.5	98.5	0		
PHF	.700	.000	.803	.879	.000	.653	.786	.694	.000	.000	.000	.000	.813	.842	.000	.843	.857

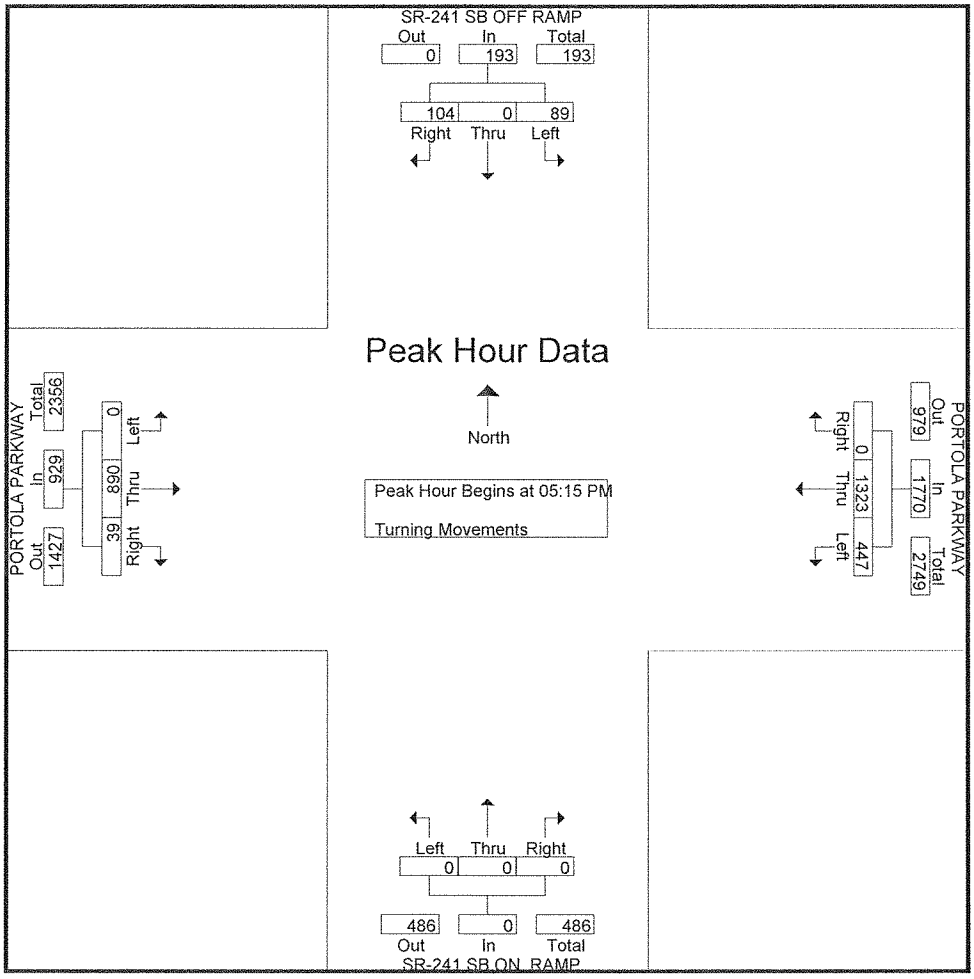


Transportation Studies, Inc.
2680 Walnut Avenue, Suite C
Tustin, CA. 92780

City: LAKE FOREST
N-S Direction: SR-241 SB ON-OFF RAMP
E-W Direction: PORTOLA PARKWAY

File Name : H1010018S
Site Code : 00001944
Start Date : 10/14/2010
Page No : 3

	SR-241 SB OFF RAMP Southbound				PORTOLA PARKWAY Westbound				SR-241 SB ON RAMP Northbound				PORTOLA PARKWAY Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 06:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	**30**	0	18	48	0	321	**118**	439	0	0	0	0	9	227	0	236	723
05:30 PM	24	0	**26**	**50**	0	334	109	443	0	0	0	0	**12**	219	0	231	**724**
05:45 PM	26	0	21	47	0	329	106	435	0	0	0	0	7	**234**	0	**241**	723
06:00 PM	24	0	24	48	0	**339**	114	**453**	0	0	0	0	11	210	0	221	722
Total Volume	104	0	89	193	0	1323	447	1770	0	0	0	0	39	890	0	929	2892
% App. Total	53.9	0	46.1		0	74.7	25.3		0	0	0		4.2	95.8	0		
PHF	.867	.000	.856	.965	.000	.976	.947	.977	.000	.000	.000	.000	.813	.951	.000	.964	.999



Transportation Studies, Inc.

2640 Walnut Avenue, Ste H

Tustin, CA. 92780

Location: : SADDLEBACK RANCH ROAD — Site: LAKE FOREST

Segment: : N/O GLENN RANCH ROAD — Date: 09/27/12

Client: : CITY OF LAKE FOR

Interval	NB				SB				Combined				Day: Thursday
Begin	AM		PM		AM		PM		AM		PM		
12:00	14	58	112	400	1	10	58	384	15	68	170	784	
12:15	17		108		1		60		18		168		
12:30	18		96		6		132		24		228		
12:45	9		84		2		134		11		218		
01:00	7	26	86	305	3	9	72	277	10	35	158	582	
01:15	6		50		2		63		8		113		
01:30	7		83		2		68		9		151		
01:45	6		86		2		74		8		160		
02:00	6	14	68	340	1	9	77	311	7	23	145	651	
02:15	3		74		3		76		6		150		
02:30	3		117		3		68		6		185		
02:45	2		81		2		90		4		171		
03:00	3	4	94	492	3	15	79	315	6	19	173	807	
03:15	0		175		2		66		2		241		
03:30	1		116		4		84		5		200		
03:45	0		107		6		86		6		193		
04:00	3	7	152	606	8	72	69	340	11	79	221	946	
04:15	0		122		14		84		14		206		
04:30	0		150		28		81		28		231		
04:45	4		182		22		106		26		288		
05:00	4	18	178	929	30	220	104	420	34	238	282	1,349	
05:15	4		248		47		98		51		346		
05:30	3		250		69		121		72		371		
05:45	7		253		74		97		81		350		
06:00	7	76	229	769	76	527	89	424	83	603	318	1,193	
06:15	17		200		109		91		126		291		
06:30	20		170		178		108		198		278		
06:45	32		170		164		136		196		306		
07:00	38	292	158	586	174	885	109	305	212	1,177	267	891	
07:15	45		150		184		74		229		224		
07:30	69		151		266		62		335		213		
07:45	140		127		261		60		401		187		
08:00	66	205	110	395	260	728	46	146	326	933	156	541	
08:15	49		110		180		38		229		148		
08:30	42		88		148		31		190		119		
08:45	48		87		140		31		188		118		
09:00	53	167	78	292	104	400	22	95	157	567	100	387	
09:15	30		82		94		23		124		105		
09:30	48		74		106		24		154		98		
09:45	36		58		96		26		132		84		
10:00	40	191	66	203	55	280	15	58	95	471	81	261	
10:15	49		58		71		16		120		74		
10:30	58		38		66		17		124		55		
10:45	44		41		88		10		132		51		
11:00	52	231	20	88	63	278	8	27	115	509	28	115	
11:15	46		26		78		8		124		34		
11:30	57		24		86		6		143		30		
11:45	76		18		51		5		127		23		
Totals	1,289		5,405		3,433		3,102		4,722		8,507		
Split%	27.3		63.5		72.7		36.5						
Day Totals		6,694				6,535				13,229			
Day Splits		50.6				49.4							
Peak Hour	07:30		05:15		07:15		06:15		07:15		05:15		
Volume	324		980		971		444		1,291		1,385		
Factor	0.58		0.97		0.91		0.82		0.80		0.93		

* Data File : D1209311

Prepared by NDS/ATD

Volumes for: Wednesday, June 09, 2010						City:	Lake Forest	Daily Totals NB	SB	EB	WB	Total
Location: Portoila Parkway S/o SR-241						Project:	10-5248-008	13,655	15,689	0	0	29,344

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	17		45					12:00	203		210				
00:15	13		20					12:15	215		223				
00:30	7		27					12:30	199		173				
00:45	10	47	24	116			163	12:45	278	895	197	803			1698
01:00	12		19					13:00	260		219				
01:15	9		8					13:15	226		212				
01:30	9		9					13:30	207		193				
01:45	4	34	11	47			81	13:45	199	892	215	839			1731
02:00	6		8					14:00	184		261				
02:15	7		11					14:15	246		250				
02:30	5		10					14:30	207		204				
02:45	4	22	4	33			55	14:45	202	839	262	977			1816
03:00	6		7					15:00	238		277				
03:15	2		5					15:15	327		304				
03:30	8		8					15:30	258		270				
03:45	4	20	8	28			48	15:45	184	1007	287	1138			2145
04:00	6		8					16:00	200		289				
04:15	14		5					16:15	187		346				
04:30	16		10					16:30	165		307				
04:45	18	54	17	40			94	16:45	198	750	382	1324			2074
05:00	36		20					17:00	175		347				
05:15	24		19					17:15	192		493				
05:30	37		41					17:30	187		482				
05:45	47	144	45	125			269	17:45	201	755	437	1759			2514
06:00	77		73					18:00	199		410				
06:15	72		74					18:15	191		408				
06:30	128		113					18:30	173		391				
06:45	186	463	146	406			869	18:45	164	727	349	1558			2285
07:00	214		196					19:00	198		304				
07:15	340		205					19:15	155		273				
07:30	361		243					19:30	146		247				
07:45	448	1363	273	917			2280	19:45	136	635	234	1058			1693
08:00	427		233					20:00	174		221				
08:15	369		144					20:15	179		170				
08:30	299		175					20:30	181		182				
08:45	255	1350	153	705			2055	20:45	115	649	181	754			1403
09:00	251		160					21:00	94		177				
09:15	200		123					21:15	97		188				
09:30	215		129					21:30	72		138				
09:45	196	862	132	544			1406	21:45	77	340	129	632			972
10:00	191		146					22:00	60		124				
10:15	161		118					22:15	42		121				
10:30	185		145					22:30	48		73				
10:45	184	721	157	566			1287	22:45	39	189	73	391			580
11:00	186		156					23:00	32		47				
11:15	208		195					23:15	32		66				
11:30	199		177					23:30	23		53				
11:45	200	793	192	720			1513	23:45	17	104	43	209			313
Total Vol.		5873		4247			**10120**			7782		11442			**19224**

					NB	SB	EB	WB	Total
				Daily Totals :	13,655	15,689	0	0	29,344
	AM				PM				
Split %	58.0%	42.0%	**34.5%**		40.5%	59.5%			**65.5%**
AM				**PM**					
Peak Hr.	07:30	07:15	**07:15**	**Peak Hr.**	14:45	17:15			**17:15**
Volume	1605	954	**2530**	**Volume**	1025	1822			**2601**
P.H.F.	0.896	0.874	**0.877**	**P.H.F.**	0.784	0.924			**0.949**
7 - 9 Vol.	2713	1622	**4335**	**4 - 6 Vol.**	1505	3083			**4588**
Peak Hr.	07:30	07:15	**07:15**	**Peak Hr.**	17:00	17:00			**17:00**
Volume	1605	954	**2530**	**Volume**	755	1759			**2514**
P.H.F.	0.896	0.874	**0.877**	**P.H.F.**	0.939	0.892			**0.918**

Prepared by NDS/ATD

Volumes for: Wednesday, June 09, 2010						City:	Lake Forest	Daily Totals NB	SB	EB	WB	Total
Location: Portola Parkway S/o Glenn Ranch Rd						Project:	10-5248-004	18,137	18,271	0	0	36,408

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	24		34					12:00	242		262				
00:15	16		33					12:15	234		236				
00:30	11		30					12:30	288		256				
00:45	9	60	20	117			177	12:45	331	1095	215	969			2064
01:00	12		25					13:00	311		264				
01:15	5		6					13:15	292		268				
01:30	4		14					13:30	221		232				
01:45	16	37	8	53			90	13:45	265	1089	253	1017			2106
02:00	1		16					14:00	230		261				
02:15	3		9					14:15	271		256				
02:30	7		6					14:30	241		303				
02:45	11	22	11	42			64	14:45	225	967	353	1173			2140
03:00	9		17					15:00	301		367				
03:15	9		6					15:15	422		290				
03:30	8		8					15:30	289		295				
03:45	16	42	11	42			84	15:45	252	1264	310	1262			2526
04:00	17		16					16:00	235		384				
04:15	16		16					16:15	218		362				
04:30	28		37					16:30	245		378				
04:45	50	111	39	108			219	16:45	252	950	417	1541			2491
05:00	43		25					17:00	293		532				
05:15	51		53					17:15	364		523				
05:30	80		75					17:30	279		485				
05:45	164	338	100	253			591	17:45	287	1223	477	2017			3240
06:00	103		100					18:00	276		441				
06:15	141		137					18:15	269		437				
06:30	242		195					18:30	268		365				
06:45	307	793	298	730			1523	18:45	244	1057	334	1577			2634
07:00	339		198					19:00	254		323				
07:15	384		212					19:15	228		271				
07:30	445		307					19:30	188		304				
07:45	656	1824	317	1034			2858	19:45	204	874	240	1138			2012
08:00	576		204					20:00	195		217				
08:15	507		207					20:15	210		209				
08:30	433		218					20:30	198		236				
08:45	386	1902	218	847			2749	20:45	175	778	172	834			1612
09:00	336		156					21:00	178		218				
09:15	262		178					21:15	152		203				
09:30	248		184					21:30	122		156				
09:45	235	1081	164	682			1763	21:45	89	541	136	713			1254
10:00	228		137					22:00	81		134				
10:15	197		165					22:15	61		106				
10:30	202		165					22:30	55		73				
10:45	211	838	172	639			1477	22:45	48	245	66	379			624
11:00	223		187					23:00	29		69				
11:15	223		195					23:15	25		48				
11:30	236		232					23:30	15		75				
11:45	234	916	264	878			1794	23:45	21	90	34	226			316
Total Vol.		7964		5425			**13389**			10173		12846			**23019**

					NB	SB	EB	WB	Total
				Daily Totals :	18,137	18,271	0	0	36,408
	AM				PM				
Split %	59.5%	40.5%	**36.8%**		44.2%	55.8%			**63.2%**
AM				**PM**					
Peak Hr.	07:30	07:15	**07:30**	**Peak Hr.**	15:00	17:00			**17:00**
Volume	2184	1040	**3219**	**Volume**	1264	2017			**3240**
P.H.F.	0.832	0.820	**0.827**	**P.H.F.**	0.749	0.948			**0.913**
7 - 9 Vol.	3726	1881	**5607**	**4 - 6 Vol.**	2173	3558			**5731**
Peak Hr.	07:30	07:15	**07:30**	**Peak Hr.**	17:00	17:00			**17:00**
Volume	2184	1040	**3219**	**Volume**	1223	2017			**3240**
P.H.F.	0.832	0.820	**0.827**	**P.H.F.**	0.840	0.948			**0.913**

Prepared by NDS/ATD

Volumes for: Wednesday, June 09, 2010						City:	Lake Forest	Daily Totals NB	SB	EB	WB	Total
Location: Portola Parkway N/o Glenn Ranch Rd						Project:	10-5248-005	21,259	22,329	0	0	43,588

AM Period	NB		SB	EB	WB		PM Period	NB		SB	EB	WB	
00:00	31		43				12:00	365		353			
00:15	23		39				12:15	310		327			
00:30	23		36				12:30	348		379			
00:45	16	93	31	149		242	12:45	359	1382	345	1404		2786
01:00	32		32				13:00	385		336			
01:15	12		15				13:15	342		349			
01:30	23		17				13:30	300		307			
01:45	16	83	11	75		158	13:45	294	1321	310	1302		2623
02:00	6		12				14:00	287		369			
02:15	9		9				14:15	292		338			
02:30	8		14				14:30	412		364			
02:45	11	34	71	106		140	14:45	294	1285	430	1501		2786
03:00	35		30				15:00	350		436			
03:15	23		23				15:15	412		344			
03:30	14		21				15:30	350		382			
03:45	19	91	42	116		207	15:45	300	1412	385	1547		2959
04:00	19		15				16:00	283		440			
04:15	18		29				16:15	265		461			
04:30	42		91				16:30	277		460			
04:45	58	137	110	245		382	16:45	308	1133	508	1869		3002
05:00	86		31				17:00	335		632			
05:15	100		52				17:15	391		652			
05:30	131		106				17:30	311		650			
05:45	143	460	168	357		817	17:45	341	1378	614	2548		3926
06:00	154		94				18:00	312		548			
06:15	205		104				18:15	310		543			
06:30	296		154				18:30	296		416			
06:45	361	1016	231	583		1599	18:45	265	1183	432	1939		3122
07:00	382		174				19:00	287		410			
07:15	424		196				19:15	235		361			
07:30	474		308				19:30	222		359			
07:45	618	1898	306	984		2882	19:45	225	969	352	1482		2451
08:00	625		227				20:00	209		313			
08:15	483		206				20:15	229		283			
08:30	495		228				20:30	215		335			
08:45	442	2045	246	907		2952	20:45	177	830	284	1215		2045
09:00	336		192				21:00	227		244			
09:15	322		202				21:15	173		227			
09:30	294		179				21:30	150		193			
09:45	287	1239	159	732		1971	21:45	94	644	166	830		1474
10:00	260		167				22:00	90		154			
10:15	239		177				22:15	63		143			
10:30	253		178				22:30	67		94			
10:45	253	1005	191	713		1718	22:45	63	283	77	468		751
11:00	267		222				23:00	30		77			
11:15	301		226				23:15	28		62			
11:30	319		264				23:30	37		81			
11:45	328	1215	287	999		2214	23:45	28	123	38	258		381
Total Vol.		9316		5966		**15282**			11943		16363		**28306**

			NB	SB	EB	WB	Total
		Daily Totals :	21,259	22,329	0	0	43,588
	AM			PM			
Split %	61.0%	39.0%	**35.1%**	42.2%	57.8%		**64.9%**

AM				PM			
Peak Hr.	07:45	11:45	**07:30**	**Peak Hr.**	14:30	17:00	**17:00**
Volume	2221	1346	**3247**	**Volume**	1468	2548	**3926**
P.H.F.	0.888	0.888	**0.879**	**P.H.F.**	0.891	0.977	**0.941**
7 - 9 Vol.	3943	1891	**5834**	**4 - 6 Vol.**	2511	4417	**6928**
Peak Hr.	07:45	07:30	**07:30**	**Peak Hr.**	17:00	17:00	**17:00**
Volume	2221	1047	**3247**	**Volume**	1378	2548	**3926**
P.H.F.	0.888	0.850	**0.879**	**P.H.F.**	0.881	0.977	**0.941**

Prepared by NDS/ATD

Volumes for: Wednesday, June 09, 2010	City:	Lake Forest	Daily Totals NB	SB	EB	WB	Total
Location: Marguerite Parkway S/o El Toro Rd	Project:	10-5248-010	6,540	6,916	0	0	13,456

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	15		12					12:00	78		80				
00:15	9		15					12:15	70		62				
00:30	4		8					12:30	53		77				
00:45	12	40	4	39			79	12:45	99	300	58	277			577
01:00	4		1					13:00	83		69				
01:15	6		8					13:15	86		80				
01:30	1		6					13:30	83		67				
01:45	4	15	4	19			34	13:45	73	325	74	290			615
02:00	2		4					14:00	73		79				
02:15	0		1					14:15	111		86				
02:30	3		6					14:30	90		88				
02:45	1	6	3	14			20	14:45	102	376	106	359			735
03:00	4		2					15:00	116		107				
03:15	1		1					15:15	146		133				
03:30	0		5					15:30	136		105				
03:45	3	8	2	10			18	15:45	121	519	118	463			982
04:00	5		8					16:00	115		124				
04:15	5		1					16:15	110		121				
04:30	7		12					16:30	113		116				
04:45	3	20	15	36			56	16:45	120	458	164	525			983
05:00	12		16					17:00	139		138				
05:15	22		15					17:15	141		193				
05:30	18		26					17:30	132		165				
05:45	38	90	42	99			189	17:45	142	554	178	674			1228
06:00	34		29					18:00	142		196				
06:15	62		41					18:15	152		167				
06:30	68		73					18:30	137		189				
06:45	98	262	97	240			502	18:45	138	569	142	694			1263
07:00	112		76					19:00	104		129				
07:15	135		130					19:15	95		125				
07:30	136		172					19:30	90		97				
07:45	180	563	174	552			1115	19:45	94	383	111	462			845
08:00	136		123					20:00	108		118				
08:15	131		117					20:15	82		124				
08:30	112		102					20:30	87		91				
08:45	100	479	92	434			913	20:45	80	357	83	416			773
09:00	94		70					21:00	76		70				
09:15	72		76					21:15	66		85				
09:30	78		79					21:30	51		61				
09:45	67	311	76	301			612	21:45	41	234	41	257			491
10:00	66		63					22:00	38		47				
10:15	67		64					22:15	38		54				
10:30	56		54					22:30	20		30				
10:45	63	252	66	247			499	22:45	20	116	21	152			268
11:00	55		56					23:00	16		22				
11:15	57		68					23:15	8		19				
11:30	82		82					23:30	14		13				
11:45	57	251	84	290			541	23:45	14	52	12	66			118
Total Vol.		2297		2281			**4578**			4243		4635			**8878**

	NB	SB	EB	WB	Total
Daily Totals :	6,540	6,916	0	0	13,456

	AM			PM		
Split %	50.2%	49.8%	**34.0%**	47.8%	52.2%	**66.0%**
AM				**PM**		
Peak Hr.	07:15	07:15	**07:15**	**Peak Hr.**	17:45	17:15	**17:45**
Volume	587	599	**1186**	**Volume**	573	732	**1303**
P.H.F.	0.815	0.861	**0.838**	**P.H.F.**	0.942	0.934	**0.964**
7 - 9 Vol.	1042	986	**2028**	**4 - 6 Vol.**	1012	1199	**2211**
Peak Hr.	07:15	07:15	**07:15**	**Peak Hr.**	17:00	17:00	**17:00**
Volume	587	599	**1186**	**Volume**	554	674	**1228**
P.H.F.	0.815	0.861	**0.838**	**P.H.F.**	0.975	0.873	**0.919**

Prepared by NDS/ATD

Volumes for: Wednesday, June 09, 2010			City:	Lake Forest	Daily Totals NB	SB	EB	WB	Total
Location:	Glenn Ranch Rd W/o Saddleback Ranch Rd		Project:	10-5248-002	0	0	6,993	6,719	13,712

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			19		10			12:00			77		85		
00:15			18		5			12:15			78		73		
00:30			9		11			12:30			74		73		
00:45			15	61	3	29	90	12:45			60	289	68	299	588
01:00			13		5			13:00			92		71		
01:15			8		1			13:15			71		100		
01:30			10		3			13:30			82		77		
01:45			4	35	3	12	47	13:45			87	332	77	325	657
02:00			1		2			14:00			125		64		
02:15			3		2			14:15			107		82		
02:30			1		1			14:30			112		100		
02:45			4	9	3	8	17	14:45			108	452	91	337	789
03:00			5		6			15:00			132		77		
03:15			6		2			15:15			154		68		
03:30			1		5			15:30			154		76		
03:45			1	13	6	19	32	15:45			137	577	89	310	887
04:00			2		6			16:00			147		73		
04:15			0		7			16:15			178		63		
04:30			4		22			16:30			151		80		
04:45			1	7	30	65	72	16:45			182	658	97	313	971
05:00			5		29			17:00			196		72		
05:15			5		45			17:15			275		94		
05:30			6		54			17:30			254		92		
05:45			5	21	61	189	210	17:45			237	962	89	347	1309
06:00			15		75			18:00			203		93		
06:15			12		106			18:15			237		96		
06:30			30		155			18:30			154		82		
06:45			40	97	167	503	600	18:45			173	767	84	355	1122
07:00			29		165			19:00			188		73		
07:15			32		235			19:15			133		70		
07:30			44		251			19:30			123		64		
07:45			48	153	305	956	1109	19:45			146	590	64	271	861
08:00			60		247			20:00			128		52		
08:15			59		206			20:15			131		66		
08:30			33		190			20:30			122		65		
08:45			65	217	179	822	1039	20:45			100	481	46	229	710
09:00			48		156			21:00			94		47		
09:15			60		134			21:15			86		27		
09:30			58		118			21:30			88		24		
09:45			43	209	95	503	712	21:45			68	336	18	116	452
10:00			48		69			22:00			61		22		
10:15			52		80			22:15			66		14		
10:30			56		85			22:30			35		9		
10:45			39	195	74	308	503	22:45			35	197	15	60	257
11:00			62		79			23:00			29		7		
11:15			60		89			23:15			21		7		
11:30			47		85			23:30			28		5		
11:45			74	243	67	320	563	23:45			14	92	4	23	115
Total Vol.			1260		3734		**4994**				5733		2985		**8718**

			Daily Totals :	NB	SB	EB	WB	Total
				0	0	6,993	6,719	13,712
	AM					**PM**		
Split %	25.2%	74.8%	**36.4%**			65.8%	34.2%	**63.6%**
AM				**PM**				
Peak Hr.	11:45	07:15	**07:15**	**Peak Hr.**		17:15	17:30	**17:15**
Volume	303	1038	**1222**	**Volume**		969	370	**1337**
P.H.F.	0.971	0.851	**0.865**	**P.H.F.**		0.881	0.964	**0.906**
7 - 9 Vol.	370	1778	**2148**	**4 - 6 Vol.**		1620	660	**2280**
Peak Hr.	08:00	07:15	**07:15**	**Peak Hr.**		17:00	16:45	**17:00**
Volume	217	1038	**1222**	**Volume**		962	355	**1309**
P.H.F.	0.835	0.851	**0.865**	**P.H.F.**		0.875	0.915	**0.887**

Prepared by NDS/ATD

Volumes for: Wednesday, June 09, 2010			City:	Lake Forest	Daily Totals				
					NB	SB	EB	WB	Total
Location:	Glenn Ranch Rd E/o Saddleback Ranch Rd		Project:	10-5248-003	0	0	3,198	3,034	6,232

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			6		3			12:00			36		35		
00:15			5		2			12:15			37		29		
00:30			2		3			12:30			28		36		
00:45			3	16	4	12	28	12:45			22	123	38	138	261
01:00			4		5			13:00			28		48		
01:15			4		3			13:15			52		35		
01:30			4		1			13:30			26		38		
01:45			2	14	1	10	24	13:45			36	142	53	174	316
02:00			1		1			14:00			50		62		
02:15			1		0			14:15			68		65		
02:30			0		0			14:30			82		35		
02:45			2	4	2	3	7	14:45			63	263	39	201	464
03:00			2		1			15:00			76		51		
03:15			0		0			15:15			54		55		
03:30			0		0			15:30			60		47		
03:45			0	2	1	2	4	15:45			44	234	52	205	439
04:00			0		1			16:00			67		40		
04:15			0		0			16:15			59		33		
04:30			3		5			16:30			78		38		
04:45			2	5	4	10	15	16:45			79	283	53	164	447
05:00			2		6			17:00			96		36		
05:15			5		11			17:15			105		49		
05:30			7		9			17:30			116		57		
05:45			4	18	16	42	60	17:45			92	409	42	184	593
06:00			10		25			18:00			83		44		
06:15			12		28			18:15			100		46		
06:30			49		34			18:30			55		39		
06:45			52	123	44	131	254	18:45			71	309	34	163	472
07:00			29		55			19:00			52		42		
07:15			47		64			19:15			38		37		
07:30			68		110			19:30			46		34		
07:45			76	220	180	409	629	19:45			54	190	32	145	335
08:00			63		76			20:00			36		42		
08:15			38		76			20:15			38		31		
08:30			27		79			20:30			33		45		
08:45			38	166	54	285	451	20:45			27	134	26	144	278
09:00			26		43			21:00			32		31		
09:15			34		34			21:15			30		27		
09:30			39		40			21:30			17		17		
09:45			27	126	37	154	280	21:45			21	100	23	98	198
10:00			30		28			22:00			12		13		
10:15			28		30			22:15			18		16		
10:30			23		37			22:30			9		12		
10:45			26	107	37	132	239	22:45			8	47	7	48	95
11:00			28		35			23:00			10		8		
11:15			29		43			23:15			6		3		
11:30			46		45			23:30			10		8		
11:45			29	132	34	157	289	23:45			5	31	4	23	54
Total Vol.			933		1347		**2280**				2265		1687		**3952**

					NB	SB	EB	WB	Total
				Daily Totals :	0	0	3,198	3,034	6,232
	AM				PM				
Split %	40.9%	59.1%	**36.6%**				57.3%	42.7%	**63.4%**
AM				**PM**					
Peak Hr.	07:15	07:30	**07:30**	**Peak Hr.**			17:00	13:30	**17:00**
Volume	254	442	**687**	**Volume**			409	218	**593**
P.H.F.	0.836	0.614	**0.671**	**P.H.F.**			0.881	0.838	**0.857**
7 - 9 Vol.	386	694	**1080**	**4 - 6 Vol.**			692	348	**1040**
Peak Hr.	07:15	07:30	**07:30**	**Peak Hr.**			17:00	16:45	**17:00**
Volume	254	442	**687**	**Volume**			409	195	**593**
P.H.F.	0.836	0.614	**0.671**	**P.H.F.**			0.881	0.855	**0.857**

Prepared by NDS/ATD

Volumes for: Wednesday, June 09, 2010	City:	Lake Forest	Daily Totals NB	SB	EB	WB	Total
Location: El Toro Rd W/o Marguerite Parkway	Project:	10-5248-007	0	0	5,245	5,105	10,350

AM Period	NB	SB	EB	WB		PM Period	NB	SB	EB	WB	
00:00			15	10		12:00			64	49	
00:15			15	8		12:15			57	57	
00:30			11	5		12:30			67	55	
00:45			12	53	6	29	82	12:45			68	256	59	220	476
01:00			3	4		13:00			59	63	
01:15			7	5		13:15			63	74	
01:30			10	4		13:30			80	56	
01:45			6	26	9	22	48	13:45			89	291	49	242	533
02:00			4	0		14:00			70	54	
02:15			4	1		14:15			87	51	
02:30			3	1		14:30			78	57	
02:45			4	15	1	3	18	14:45			75	310	89	251	561
03:00			2	3		15:00			99	71	
03:15			1	1		15:15			129	76	
03:30			4	2		15:30			88	69	
03:45			1	8	3	9	17	15:45			99	415	77	293	708
04:00			7	11		16:00			98	60	
04:15			1	8		16:15			94	65	
04:30			5	4		16:30			98	57	
04:45			4	17	13	36	53	16:45			126	416	72	254	670
05:00			4	15		17:00			150	56	
05:15			10	21		17:15			157	65	
05:30			7	25		17:30			138	68	
05:45			13	34	38	99	133	17:45			150	595	80	269	864
06:00			19	44		18:00			173	84	
06:15			15	65		18:15			140	80	
06:30			29	112		18:30			149	64	
06:45			38	101	158	379	480	18:45			113	575	69	297	872
07:00			50	142		19:00			109	58	
07:15			46	154		19:15			97	63	
07:30			48	205		19:30			92	44	
07:45			76	220	208	709	929	19:45			87	385	53	218	603
08:00			65	142		20:00			81	56	
08:15			48	139		20:15			68	55	
08:30			54	102		20:30			78	44	
08:45			60	227	109	492	719	20:45			64	291	56	211	502
09:00			45	92		21:00			70	49	
09:15			39	71		21:15			72	44	
09:30			35	78		21:30			60	26	
09:45			35	154	69	310	464	21:45			46	248	27	146	394
10:00			43	59		22:00			49	26	
10:15			45	62		22:15			56	17	
10:30			53	66		22:30			36	22	
10:45			41	182	57	244	426	22:45			30	171	10	75	246
11:00			33	52		23:00			19	18	
11:15			50	69		23:15			16	8	
11:30			51	72		23:30			14	12	
11:45			58	192	55	248	440	23:45			14	63	11	49	112
Total Vol.			1229	2580	**3809**				4016	2525	**6541**

		NB	SB	EB	WB	Total
	Daily Totals :	0	0	5,245	5,105	10,350

	AM				PM			
Split %	32.3%	67.7%	**36.8%**		61.4%	38.6%	**63.2%**	
AM				**PM**				
Peak Hr.	11:45	07:00	**07:15**	**Peak Hr.**	17:15	17:30	**17:45**	
Volume	246	709	**944**	**Volume**	618	312	**920**	
P.H.F.	0.918	0.852	**0.831**	**P.H.F.**	0.893	0.929	**0.895**	
7 - 9 Vol.	447	1201	**1648**	**4 - 6 Vol.**	1011	523	**1534**	
Peak Hr.	07:45	07:00	**07:15**	**Peak Hr.**	17:00	17:00	**17:00**	
Volume	243	709	**944**	**Volume**	595	269	**864**	
P.H.F.	0.799	0.852	**0.831**	**P.H.F.**	0.947	0.841	**0.939**	

Prepared by NDS/ATD

Volumes for: Wednesday, June 09, 2010	City:	Lake Forest	Daily Totals NB	SB	EB	WB	Total
Location: El Toro Rd S/o Glenn Ranch Rd	Project:	10-5248-006	6,356	6,053	0	0	12,409

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	21		8					12:00	75		58				
00:15	8		14					12:15	76		65				
00:30	8		5					12:30	69		66				
00:45	17	54	1	28			82	12:45	89	309	46	235			544
01:00	6		4					13:00	76		60				
01:15	9		7					13:15	75		83				
01:30	7		7					13:30	90		62				
01:45	5	27	7	25			52	13:45	105	346	61	266			612
02:00	4		1					14:00	101		77				
02:15	2		1					14:15	130		71				
02:30	2		1					14:30	118		102				
02:45	2	10	1	4			14	14:45	99	448	116	366			814
03:00	6		2					15:00	126		112				
03:15	4		2					15:15	189		107				
03:30	2		3					15:30	141		103				
03:45	1	13	1	8			21	15:45	129	585	93	415			1000
04:00	3		4					16:00	119		98				
04:15	2		3					16:15	120		94				
04:30	6		13					16:30	113		102				
04:45	5	16	15	35			51	16:45	141	493	107	401			894
05:00	8		13					17:00	162		103				
05:15	15		19					17:15	164		121				
05:30	10		29					17:30	151		130				
05:45	16	49	24	85			134	17:45	145	622	130	484			1106
06:00	31		41					18:00	146		137				
06:15	44		53					18:15	144		135				
06:30	50		119					18:30	134		102				
06:45	65	190	151	364			554	18:45	115	539	95	469			1008
07:00	91		88					19:00	112		70				
07:15	96		153					19:15	91		91				
07:30	120		234					19:30	85		58				
07:45	145	452	206	681			1133	19:45	86	374	82	301			675
08:00	108		164					20:00	99		69				
08:15	95		115					20:15	88		65				
08:30	59		95					20:30	106		49				
08:45	68	330	103	477			807	20:45	71	364	64	247			611
09:00	68		84					21:00	76		47				
09:15	54		81					21:15	81		57				
09:30	42		86					21:30	53		28				
09:45	45	209	74	325			534	21:45	49	259	30	162			421
10:00	44		55					22:00	33		28				
10:15	64		67					22:15	40		25				
10:30	69		61					22:30	32		26				
10:45	62	239	69	252			491	22:45	27	132	15	94			226
11:00	52		63					23:00	16		16				
11:15	66		71					23:15	9		12				
11:30	68		83					23:30	16		15				
11:45	62	248	60	277			525	23:45	7	48	9	52			100
Total Vol.		1837		2561			**4398**			4519		3492			**8011**

				NB	SB	EB	WB	Total
			Daily Totals :	**6,356**	**6,053**	**0**	**0**	**12,409**
	AM				**PM**			
Split %	41.8%	58.2%	**35.4%**		56.4%	43.6%		**64.6%**
AM Peak Hr.	07:15	07:15	**07:15**	**PM Peak Hr.**	17:00	17:30		**17:15**
Volume	469	757	**1226**	**Volume**	622	532		**1124**
P.H.F.	0.809	0.809	**0.866**	**P.H.F.**	0.948	0.971		**0.986**
7 - 9 Vol.	782	1158	**1940**	**4 - 6 Vol.**	1115	885		**2000**
Peak Hr.	07:15	07:15	**07:15**	**Peak Hr.**	17:00	17:00		**17:00**
Volume	469	757	**1226**	**Volume**	622	484		**1106**
P.H.F.	0.809	0.809	**0.866**	**P.H.F.**	0.948	0.931		**0.970**

Appendix B

ICU LOS Worksheets

1. Saddleback Ranch Rd @ Glenn Ranch Rd

			AM PEAK HOUR		PM PEAK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	0	0	0	0.00	0	0.00
NBT	0	0	0	0.00	0	0.00
NBR	0	0	0	0.00	0	0.00
SBL	1	1700	213	0.13 *	97	0.06 *
SBT	0	0	0	0.00	0	0.00
SBR	2	3400	771	0.23	254	0.07
EBL	2	3400	137	0.04 *	657	0.19 *
EBT	2	3400	58	0.02	369	0.11
EBR	0	0	0	0.00	0	0.00
WBL	0	0	0	0.00	0	0.00
WBT	2	3400	298	0.09 *	83	0.02 *
WBR	0	0	194	0.00	121	0.00
RIGHT TURN ADJUSTMENT			SBR	0.07 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.38		0.32

*d = defacto right turn lane, f = free right turn lane

2. El Toro Rd @ Glenn Ranch Rd

			AM PEAK HOUR		PM PEAK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	210	0.12 *	114	0.07
NBT	1	1700	283	0.17	473	0.28 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	2	3400	521	0.15 *	375	0.11
SBR	d	1700	219	0.13	58	0.03
EBL	1	1700	39	0.02 *	275	0.16 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	209	0.12	135	0.08
WBL		0	0	0.00	0	0.00
WBT		0	0	0.00	0	0.00
WBR		0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.34		0.49

*d = defacto right turn lane, f = free right turn lane

3. Portola Pkwy @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	157	0.05		58	0.02	
NBT	3	5100	1558	0.31	*	930	0.18	*
NBR	1	1700	317	0.19		220	0.13	
SBL	2	3400	332	0.10	*	660	0.19	*
SBT	3	5100	649	0.13		1646	0.32	
SBR	1	1700	109	0.06		82	0.05	
EBL	1	1700	63	0.04		89	0.05	
EBT	2	3400	27	0.01	*	39	0.01	*
EBR	0	0	46	0.00		99	0.00	
WBL	2	3400	328	0.10	*	318	0.09	*
WBT	2	3400	57	0.02		25	0.01	
WBR	f	0	630	0.00		426	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.57			0.52	

*d = defacto right turn lane, f = free right turn lane

4. Marguerite Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1.5	2550	331	0.13	*	105	0.04	*
NBT	1.5	2550	14	0.01		37	0.01	
NBR	1	1700	260	0.15		452	0.27	
SBL	1	1700	2	0.00		10	0.01	
SBT	1.5	2550	1	0.00	*	38	0.01	*
SBR	1.5	2550	0	0.00		11	0.00	
EBL	2	3400	1	0.00		11	0.00	
EBT	2	3400	161	0.05	*	286	0.08	*
EBR	1	1700	100	0.06		291	0.17	
WBL	2	3400	456	0.13	*	385	0.11	*
WBT	2	3400	373	0.11		141	0.04	
WBR	0	0	5	0.00		6	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.36			0.29	

*d = defacto right turn lane, f = free right turn lane

5. Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	62	0.04 *	146	0.09
NBT	1	1700	258	0.15	507	0.30 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	378	0.22 *	288	0.17
SBR	0	0	12	0.00	11	0.00
EBL	0	0	15	0.00	9	0.00
EBT	1	1700	0	0.00	0	0.00
EBR	0	0	217	0.00	76	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.31		0.35

*d = defacto right turn lane, f = free right turn lane

6. Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	2	3400	588	0.17 *	349	0.10 *
NBT	4	6800	1287	0.19	660	0.10
NBR	d	1700	35	0.02	38	0.02
SBL	2	3400	32	0.01	250	0.07
SBT	3	5100	546	0.11 *	1148	0.23 *
SBR	1	1700	233	0.14	440	0.26
EBL	1	1700	297	0.17 *	222	0.13 *
EBT	3	5100	164	0.03	470	0.09
EBR	1	1700	379	0.22	590	0.35
WBL	1	1700	27	0.02	20	0.01
WBT	3	5100	543	0.11 *	200	0.04 *
WBR	1	1700	172	0.10	87	0.05
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.61		0.55

*d = defacto right turn lane, f = free right turn lane

7. Marguerite Pkwy @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	458	0.27	*	314	0.18	*
NBT	2	3400	256	0.08		299	0.09	
NBR	d	1700	177	0.10		182	0.11	
SBL	1	1700	157	0.09		147	0.09	
SBT	2	3400	400	0.12	*	379	0.11	*
SBR	d	1700	61	0.04		45	0.03	
EBL	1	1700	32	0.02	*	95	0.06	
EBT	3	5100	618	0.12		1131	0.22	*
EBR	1	1700	158	0.09		523	0.31	
WBL	1	1700	208	0.12		157	0.09	*
WBT	3	5100	1163	0.23	*	781	0.15	
WBR	d	1700	101	0.06		156	0.09	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.69			0.65	

*d = defacto right turn lane, f = free right turn lane

8. Marguerite Pkwy @ Los Alisos Blvd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	24	0.01		19	0.01	
NBT	2	3400	264	0.08	*	337	0.10	*
NBR	d	1700	124	0.07		149	0.09	
SBL	1	1700	100	0.06	*	251	0.15	*
SBT	2	3400	390	0.11		321	0.09	
SBR	d	1700	132	0.08		73	0.04	
EBL	1	1700	91	0.05	*	103	0.06	
EBT	2	3400	136	0.04		215	0.06	*
EBR	d	1700	48	0.03		36	0.02	
WBL	1	1700	148	0.09		154	0.09	*
WBT	2	3400	372	0.11	*	171	0.05	
WBR	d	1700	226	0.13		120	0.07	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.35			0.45	

*d = defacto right turn lane, f = free right turn lane

9. Los Alisos Blvd @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	139	0.08	*	114	0.07	
NBT	2	3400	695	0.20		1627	0.48	*
NBR	d	1700	166	0.10		339	0.20	
SBL	1	1700	209	0.12		195	0.11	*
SBT	2	3400	1420	0.42	*	854	0.25	
SBR	d	1700	31	0.02		78	0.05	
EBL	1	1700	85	0.05		48	0.03	
EBT	3	5100	444	0.09	*	183	0.04	*
EBR	d	1700	165	0.10		69	0.04	
WBL	1	1700	315	0.19	*	239	0.14	*
WBT	3	5100	204	0.04		294	0.06	
WBR	d	1700	108	0.06		207	0.12	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.83			0.82	

*d = defacto right turn lane, f = free right turn lane

10. Saddleback Ranch Rd @ Malabar Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	0	0	0	0.00		0	0.00	
NBT	1	1700	275	0.16		608	0.36	*
NBR	1	1700	36	0.02		115	0.07	
SBL	1	1700	8	0.00		16	0.01	*
SBT	1	1700	747	0.44	*	293	0.17	
SBR	0	0	0	0.00		0	0.00	
EBL	0	0	0	0.00		0	0.00	
EBT	0	0	0	0.00		0	0.00	
EBR	0	0	0	0.00		0	0.00	
WBL	0	0	144	0.00		61	0.00	
WBT	1	1700	0	0.10	*	0	0.04	*
WBR	0	0	26	0.00		9	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.59			0.46	

*d = defacto right turn lane, f = free right turn lane

11. Saddleback Ranch Rd @ Millwood Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	26	0.02 *	56	0.03 *
NBT	2	3400	300	0.09	586	0.17
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	884	0.52 *	310	0.18 *
SBR	1	1700	5	0.00	4	0.00
EBL	0	0	0	0.00	1	0.00
EBT	1	1700	0	0.06 *	0	0.03 *
EBR	0	0	109	0.00	48	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.65		0.29

*d = defacto right turn lane, f = free right turn lane

12. Saddleback Ranch Rd @ Fawn Ridge Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	36	0.02 *	126	0.07
NBT	1	1700	244	0.14	473	0.28 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	555	0.33 *	246	0.14
SBR	1	1700	36	0.02	18	0.01
EBL	1	1700	32	0.02 *	21	0.01 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	177	0.10	58	0.03
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT			EBR	0.06 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.48		0.34

*d = defacto right turn lane, f = free right turn lane

13. Ridgeline Rd @ Santiago Canyon Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	0	0	73	0.00		58	0.00	
NBT	1	1700	0	0.00		0	0.00	
NBR	d	1700	7	0.00		17	0.01	
SBL	0	0	0	0.00		0	0.00	
SBT	0	0	0	0.00		0	0.00	
SBR	0	0	0	0.00		0	0.00	
EBL	0	0	0	0.00		0	0.00	
EBT	1	1700	309	0.18	*	293	0.17	
EBR	d	1700	48	0.03		73	0.04	
WBL	1	1700	5	0.00	*	19	0.01	
WBT	1	1700	241	0.14		428	0.25	*
WBR	0	0	0	0.00		0	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.23			0.30	

*d = defacto right turn lane, f = free right turn lane

14. Portola Pkwy @ SR-241 Ramps

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	374	0.11		144	0.04	*
NBT	3	5100	1404	0.28	*	874	0.17	
NBR	f	0	26	0.00		39	0.00	
SBL	2	3400	151	0.04	*	447	0.13	
SBT	2	3400	643	0.19		1323	0.39	*
SBR	f	0	213	0.00		166	0.00	
EBL	1	1700	106	0.06	*	89	0.05	*
EBT	0	0	0	0.00		0	0.00	
EBR	f	0	112	0.00		104	0.00	
WBL	2	3400	77	0.02		70	0.02	
WBT	0	0	0	0.00		0	0.00	
WBR	f	0	618	0.00		205	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.43			0.53	

*d = defacto right turn lane, f = free right turn lane

1. Saddleback Ranch Rd @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	125	0.07		111	0.07	*
NBT	1	1700	24	0.01	*	21	0.01	
NBR	0	0	24	0.00		21	0.00	
SBL	1.5	2550	236	0.09	*	152	0.06	
SBT	0.5	850	9	0.01		30	0.04	*
SBR	f	0	806	0.00		277	0.00	
EBL	2	3400	148	0.04	*	696	0.20	*
EBT	2	3400	136	0.04		623	0.18	
EBR	0	0	49	0.00		152	0.00	
WBL	1	1700	9	0.01		30	0.02	
WBT	2	3400	512	0.15	*	250	0.07	*
WBR	d	1700	239	0.14		163	0.10	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.34			0.43	

*d = defacto right turn lane, f = free right turn lane

2. El Toro Rd @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	237	0.14	*	202	0.12	
NBT	1	1700	283	0.17		473	0.28	*
NBR	0	0	0	0.00		0	0.00	
SBL	0	0	0	0.00		0	0.00	
SBT	2	3400	521	0.15	*	375	0.11	
SBR	d	1700	221	0.13		64	0.04	
EBL	1	1700	44	0.03	*	279	0.16	*
EBT	0	0	0	0.00		0	0.00	
EBR	1	1700	283	0.17		194	0.11	
WBL		0	0	0.00		0	0.00	
WBT		0	0	0.00		0	0.00	
WBR		0	0	0.00		0	0.00	
RIGHT TURN ADJUSTMENT				0.03	*			
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.40			0.49	

*d = defacto right turn lane, f = free right turn lane

3. Portola Pkwy @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	157	0.05		58	0.02	
NBT	3	5100	1558	0.31	*	930	0.18	*
NBR	1	1700	369	0.22		390	0.23	
SBL	2	3400	408	0.12	*	905	0.27	*
SBT	3	5100	649	0.13		1646	0.32	
SBR	1	1700	109	0.06		82	0.05	
EBL	1	1700	63	0.04		89	0.05	
EBT	2	3400	37	0.01	*	70	0.02	*
EBR	0	0	46	0.00		99	0.00	
WBL	2	3400	470	0.14	*	432	0.13	*
WBT	2	3400	83	0.02		46	0.01	
WBR	f	0	835	0.00		591	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.63			0.65	

*d = defacto right turn lane, f = free right turn lane

4. Marguerite Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1.5	2550	331	0.13	*	105	0.04	*
NBT	1.5	2550	14	0.01		37	0.01	
NBR	1	1700	287	0.17		540	0.32	
SBL	1	1700	2	0.00		10	0.01	
SBT	1.5	2550	1	0.00	*	38	0.01	*
SBR	1.5	2550	0	0.00		11	0.00	
EBL	2	3400	1	0.00		11	0.00	
EBT	2	3400	161	0.05	*	286	0.08	*
EBR	1	1700	100	0.06		291	0.17	
WBL	2	3400	530	0.16	*	444	0.13	*
WBT	2	3400	373	0.11		141	0.04	
WBR	0	0	5	0.00		6	0.00	
RIGHT TURN ADJUSTMENT						NBR, EBR	0.24	*
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.39			0.55	

*d = defacto right turn lane, f = free right turn lane

5. Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	62	0.04 *	146	0.09
NBT	1	1700	263	0.15	511	0.30 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	380	0.22 *	294	0.17
SBR	0	0	12	0.00	11	0.00
EBL	0	0	15	0.00	9	0.00
EBT	1	1700	0	0.00	0	0.00
EBR	0	0	217	0.00	76	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.31		0.35

*d = defacto right turn lane, f = free right turn lane

6. Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	2	3400	588	0.17 *	349	0.10 *
NBT	4	6800	1304	0.19	717	0.11
NBR	d	1700	35	0.02	38	0.02
SBL	2	3400	32	0.01	250	0.07
SBT	3	5100	593	0.12 *	1186	0.23 *
SBR	1	1700	328	0.19	516	0.30
EBL	1	1700	332	0.20 *	335	0.20 *
EBT	3	5100	164	0.03	470	0.09
EBR	1	1700	379	0.22	590	0.35
WBL	1	1700	27	0.02	20	0.01
WBT	3	5100	543	0.11 *	200	0.04 *
WBR	1	1700	172	0.10	87	0.05
RIGHT TURN ADJUSTMENT			WBR		EBR, WBR	0.04 *
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.65		0.66

*d = defacto right turn lane, f = free right turn lane

7. Marguerite Pkwy @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	458	0.27	*	314	0.18	*
NBT	2	3400	272	0.08		349	0.10	
NBR	d	1700	177	0.10		182	0.11	
SBL	1	1700	173	0.10		160	0.09	
SBT	2	3400	442	0.13	*	413	0.12	*
SBR	d	1700	61	0.04		45	0.03	
EBL	1	1700	32	0.02	*	95	0.06	
EBT	3	5100	629	0.12		1139	0.22	*
EBR	1	1700	158	0.09		523	0.31	
WBL	1	1700	208	0.12		157	0.09	*
WBT	3	5100	1167	0.23	*	794	0.16	
WBR	d	1700	107	0.06		175	0.10	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.70			0.66	

*d = defacto right turn lane, f = free right turn lane

8. Marguerite Pkwy @ Los Alisos Blvd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	24	0.01		19	0.01	
NBT	2	3400	285	0.08	*	406	0.12	*
NBR	d	1700	124	0.07		149	0.09	
SBL	1	1700	116	0.07	*	264	0.16	*
SBT	2	3400	448	0.13		367	0.11	
SBR	d	1700	132	0.08		73	0.04	
EBL	1	1700	91	0.05	*	103	0.06	
EBT	2	3400	136	0.04		215	0.06	*
EBR	d	1700	48	0.03		36	0.02	
WBL	1	1700	148	0.09		154	0.09	*
WBT	2	3400	372	0.11	*	171	0.05	
WBR	d	1700	232	0.14		139	0.08	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.36			0.48	

*d = defacto right turn lane, f = free right turn lane

9. Los Alisos Blvd @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	153	0.09	*	158	0.09	
NBT	2	3400	695	0.20		1627	0.48	*
NBR	d	1700	166	0.10		339	0.20	
SBL	1	1700	209	0.12		195	0.11	*
SBT	2	3400	1420	0.42	*	854	0.25	
SBR	d	1700	31	0.02		78	0.05	
EBL	1	1700	85	0.05		48	0.03	
EBT	3	5100	455	0.09	*	191	0.04	*
EBR	d	1700	202	0.12		99	0.06	
WBL	1	1700	315	0.19	*	239	0.14	*
WBT	3	5100	208	0.04		307	0.06	
WBR	d	1700	108	0.06		207	0.12	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.84			0.82	

*d = defacto right turn lane, f = free right turn lane

10. Saddleback Ranch Rd @ Malabar Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	0	0	0	0.00		0	0.00	
NBT	1	1700	349	0.21		667	0.39	*
NBR	1	1700	36	0.02		115	0.07	
SBL	1	1700	8	0.00		16	0.01	*
SBT	1	1700	774	0.46	*	381	0.22	
SBR	0	0	0	0.00		0	0.00	
EBL	0	0	0	0.00		0	0.00	
EBT	0	0	0	0.00		0	0.00	
EBR	0	0	0	0.00		0	0.00	
WBL	0	0	144	0.00		61	0.00	
WBT	1	1700	0	0.10	*	0	0.04	*
WBR	0	0	26	0.00		9	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.61			0.49	

*d = defacto right turn lane, f = free right turn lane

11. Saddleback Ranch Rd @ Millwood Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	26	0.02 *	56	0.03 *
NBT	2	3400	374	0.11	645	0.19
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	911	0.54 *	398	0.23 *
SBR	1	1700	5	0.00	4	0.00
EBL	0	0	0	0.00	1	0.00
EBT	1	1700	0	0.06 *	0	0.03 *
EBR	0	0	109	0.00	48	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.67		0.34

*d = defacto right turn lane, f = free right turn lane

12. Saddleback Ranch Rd @ Fawn Ridge Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	36	0.02 *	126	0.07
NBT	1	1700	318	0.19	532	0.31 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	582	0.34 *	334	0.20
SBR	1	1700	36	0.02	18	0.01
EBL	1	1700	32	0.02 *	21	0.01 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	177	0.10	58	0.03
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT			EBR	0.06 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.49		0.37

*d = defacto right turn lane, f = free right turn lane

13. Ridgeline Rd @ Santiago Canyon Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	0	0	73	0.00	58	0.00
NBT	1	1700	0	0.00	0	0.00
NBR	d	1700	7	0.00	17	0.01
SBL	0	0	0	0.00	0	0.00
SBT	0	0	0	0.00	0	0.00
SBR	0	0	23	0.00	75	0.00
EBL	0	0	63	0.00	51	0.00
EBT	1	1700	309	0.18 *	293	0.17
EBR	d	1700	48	0.03	73	0.04
WBL	1	1700	5	0.00 *	19	0.01
WBT	1	1700	241	0.14	428	0.25 *
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.23		0.30

*d = defacto right turn lane, f = free right turn lane

14. Portola Pkwy @ SR-241 Ramps

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	2	3400	374	0.11 *	144	0.04 *
NBT	3	5100	1456	0.29	1044	0.20
NBR	f	0	26	0.00	39	0.00
SBL	2	3400	151	0.04	447	0.13
SBT	2	3400	785	0.23 *	1437	0.42 *
SBR	f	0	213	0.00	166	0.00
EBL	1	1700	106	0.06 *	89	0.05 *
EBT	0	0	0	0.00	0	0.00
EBR	f	0	112	0.00	104	0.00
WBL	2	3400	77	0.02	70	0.02
WBT	0	0	0	0.00	0	0.00
WBR	f	0	618	0.00	205	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.45		0.56

*d = defacto right turn lane, f = free right turn lane

15. Saddleback Ranch Rd @ Project Driveway 1

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	14	0.01 *	47	0.03
NBT	2	3400	393	0.12	697	0.21 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	2	3400	1009	0.30 *	431	0.13
SBR	0	0	2	0.00	8	0.00
EBL	1	1700	7	0.00	4	0.00
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	42	0.02	28	0.02
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT				0.01 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.37		0.26

*d = defacto right turn lane, f = free right turn lane

16. Project Driveway 2 @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	0.5	850	145	0.17 *	128	0.15 *
NBT	0.5	850	0	0.00	0	0.00
NBR	1	1700	28	0.02	24	0.01
SBL	0.5	850	20	0.02	13	0.02
SBT	0.5	850	0	0.00 *	0	0.00 *
SBR	f	0	111	0.00	72	0.00
EBL	1	1700	37	0.02 *	127	0.07
EBT	2	3400	303	0.09	492	0.14 *
EBR	0	0	56	0.00	178	0.00
WBL	1	1700	11	0.01	34	0.02 *
WBT	2	3400	504	0.15 *	242	0.07
WBR	0	0	7	0.00	22	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.39		0.36

*d = defacto right turn lane, f = free right turn lane

1. Saddleback Ranch Rd @ Glenn Ranch Rd

			AM PEAK HOUR		PM PEAK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	0	0	0	0.00	0	0.00
NBT	0	0	0	0.00	0	0.00
NBR	0	0	0	0.00	0	0.00
SBL	1	1700	220	0.13 *	70	0.04 *
SBT	0	0	0	0.00	0	0.00
SBR	2	3400	940	0.28	270	0.08
EBL	2	3400	150	0.04 *	700	0.21 *
EBT	2	3400	80	0.02	480	0.14
EBR	0	0	0	0.00	0	0.00
WBL	0	0	0	0.00	0	0.00
WBT	2	3400	390	0.11 *	150	0.04 *
WBR	0	0	180	0.00	120	0.00
RIGHT TURN ADJUSTMENT			SBR	0.12 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.45		0.34

*d = defacto right turn lane, f = free right turn lane

2. El Toro Rd @ Glenn Ranch Rd

			AM PEAK HOUR		PM PEAK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	200	0.12 *	150	0.09
NBT	1	1700	310	0.18	670	0.39 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	2	3400	740	0.22 *	450	0.13
SBR	d	1700	380	0.22	140	0.08
EBL	1	1700	80	0.05 *	460	0.27 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	220	0.13	90	0.05
WBL		0	0	0.00	0	0.00
WBT		0	0	0.00	0	0.00
WBR		0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.44		0.71

*d = defacto right turn lane, f = free right turn lane

3. Portola Pkwy @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	80	0.02		60	0.02	
NBT	3	5100	1400	0.27	*	790	0.15	*
NBR	1	1700	310	0.18		240	0.14	
SBL	2	3400	390	0.11	*	880	0.26	*
SBT	3	5100	580	0.11		1560	0.31	
SBR	1	1700	50	0.03		70	0.04	
EBL	1	1700	60	0.04		100	0.06	
EBT	2	3400	20	0.01	*	20	0.01	*
EBR	0	0	30	0.00		60	0.00	
WBL	2	3400	350	0.10	*	290	0.09	*
WBT	2	3400	50	0.01		20	0.01	
WBR	f	0	720	0.00		580	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.54			0.56	

*d = defacto right turn lane, f = free right turn lane

4. Marguerite Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1.5	2550	360	0.14	*	140	0.05	*
NBT	1.5	2550	10	0.00		40	0.02	
NBR	1	1700	240	0.14		550	0.32	
SBL	1	1700	10	0.01		10	0.01	
SBT	1.5	2550	10	0.00	*	40	0.02	*
SBR	1.5	2550	0	0.00		10	0.00	
EBL	2	3400	10	0.00		10	0.00	
EBT	2	3400	190	0.06	*	320	0.09	*
EBR	1	1700	210	0.12		430	0.25	
WBL	2	3400	570	0.17	*	400	0.12	*
WBT	2	3400	400	0.12		160	0.05	
WBR	0	0	10	0.00		10	0.00	
RIGHT TURN ADJUSTMENT						NBR, EBR	0.29	*
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.42			0.62	

*d = defacto right turn lane, f = free right turn lane

5. Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	50	0.03	*	110	0.06	
NBT	1	1700	480	0.28		940	0.55	*
NBR	0	0	0	0.00		0	0.00	
SBL	0	0	0	0.00		0	0.00	
SBT	1	1700	850	0.50	*	470	0.28	
SBR	0	0	30	0.00		30	0.00	
EBL	0	0	50	0.00		30	0.00	
EBT	1	1700	0	0.00		0	0.00	
EBR	0	0	220	0.00		50	0.00	
WBL	0	0	0	0.00		0	0.00	
WBT	0	0	0	0.00		0	0.00	
WBR	0	0	0	0.00		0	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.58			0.60	

*d = defacto right turn lane, f = free right turn lane

6. Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	510	0.15	*	440	0.13	*
NBT	4	6800	1580	0.23		970	0.14	
NBR	d	1700	20	0.01		40	0.02	
SBL	2	3400	50	0.01		410	0.12	
SBT	3	5100	590	0.12	*	1280	0.25	*
SBR	1	1700	350	0.21		630	0.37	
EBL	1	1700	310	0.18	*	340	0.20	*
EBT	3	5100	170	0.03		390	0.08	
EBR	1	1700	300	0.18		530	0.31	
WBL	1	1700	50	0.03		330	0.19	
WBT	3	5100	460	0.09	*	570	0.11	*
WBR	1	1700	240	0.14		650	0.38	
RIGHT TURN ADJUSTMENT			WBR	0.02	*	WBR, EBR	0.18	*
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.61			0.92	

*d = defacto right turn lane, f = free right turn lane

7. Marguerite Pkwy @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	480	0.28	*	360	0.21	*
NBT	2	3400	280	0.08		330	0.10	
NBR	d	1700	190	0.11		180	0.11	
SBL	1	1700	180	0.11		130	0.08	
SBT	2	3400	420	0.12	*	420	0.12	*
SBR	d	1700	40	0.02		90	0.05	
EBL	1	1700	20	0.01		90	0.05	
EBT	3	5100	700	0.14		1200	0.24	*
EBR	1	1700	150	0.09		550	0.32	
WBL	1	1700	210	0.12		160	0.09	*
WBT	3	5100	1280	0.25		850	0.17	
WBR	d	1700	90	0.05		170	0.10	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.71			0.71	

*d = defacto right turn lane, f = free right turn lane

8. Marguerite Pkwy @ Los Alisos Blvd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	50	0.03		70	0.04	
NBT	2	3400	270	0.08	*	360	0.11	*
NBR	d	1700	120	0.07		120	0.07	
SBL	1	1700	190	0.11	*	290	0.17	*
SBT	2	3400	450	0.13		380	0.11	
SBR	d	1700	230	0.14		140	0.08	
EBL	1	1700	110	0.06	*	160	0.09	
EBT	2	3400	160	0.05		250	0.07	*
EBR	d	1700	90	0.05		80	0.05	
WBL	1	1700	120	0.07		150	0.09	*
WBT	2	3400	380	0.11	*	210	0.06	
WBR	d	1700	220	0.13		190	0.11	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.41			0.49	

*d = defacto right turn lane, f = free right turn lane

9. Los Alisos Blvd @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	170	0.10		140	0.08	*
NBT	2	3400	1480	0.44	*	910	0.27	
NBR	d	1700	30	0.02		70	0.04	
SBL	1	1700	190	0.11	*	150	0.09	
SBT	2	3400	720	0.21		1660	0.49	*
SBR	d	1700	190	0.11		400	0.24	
EBL	1	1700	370	0.22	*	290	0.17	*
EBT	3	5100	210	0.04		400	0.08	
EBR	d	1700	80	0.05		160	0.09	
WBL	1	1700	90	0.05		30	0.02	
WBT	3	5100	550	0.11	*	220	0.04	*
WBR	d	1700	120	0.07		90	0.05	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.93			0.83	

*d = defacto right turn lane, f = free right turn lane

10. Saddleback Ranch Rd @ Malabar Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	0	0	0	0.00		0	0.00	
NBT	1	1700	280	0.16		610	0.36	*
NBR	1	1700	40	0.02		120	0.07	
SBL	1	1700	10	0.01		20	0.01	*
SBT	1	1700	750	0.44	*	300	0.18	
SBR	0	0	0	0.00		0	0.00	
EBL	0	0	0	0.00		0	0.00	
EBT	0	0	0	0.00		0	0.00	
EBR	0	0	0	0.00		0	0.00	
WBL	0	0	150	0.00		70	0.00	
WBT	1	1700	0	0.11	*	0	0.05	*
WBR	0	0	30	0.00		10	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.60			0.47	

*d = defacto right turn lane, f = free right turn lane

11. Saddleback Ranch Rd @ Millwood Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	30	0.02 *	60	0.04 *
NBT	2	3400	300	0.09	590	0.17
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	890	0.52 *	310	0.18 *
SBR	1	1700	10	0.01	10	0.01
EBL	0	0	0	0.00	10	0.00
EBT	1	1700	0	0.06 *	0	0.04 *
EBR	0	0	110	0.00	50	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.65		0.31

*d = defacto right turn lane, f = free right turn lane

12. Saddleback Ranch Rd @ Fawn Ridge Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	40	0.02 *	130	0.08
NBT	1	1700	250	0.15	480	0.28 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	560	0.33 *	250	0.15
SBR	1	1700	40	0.02	20	0.01
EBL	1	1700	40	0.02 *	30	0.02 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	180	0.11	60	0.04
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT			EBR	0.07 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.49		0.35

*d = defacto right turn lane, f = free right turn lane

13. Ridgeline Rd @ Santiago Canyon Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	0	0	60	0.00	80	0.00
NBT	1	1700	0	0.00	0	0.00
NBR	d	1700	10	0.01	20	0.01
SBL	0	0	0	0.00	0	0.00
SBT	0	0	0	0.00	0	0.00
SBR	0	0	0	0.00	0	0.00
EBL	0	0	0	0.00	0	0.00
EBT	1	1700	360	0.21 *	280	0.16
EBR	d	1700	70	0.04	90	0.05
WBL	1	1700	10	0.01 *	20	0.01
WBT	1	1700	270	0.16	430	0.25 *
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.27		0.30

*d = defacto right turn lane, f = free right turn lane

14. Portola Pkwy @ SR-241 Ramps

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	2	3400	590	0.17 *	310	0.09
NBT	3	5100	830	0.16	820	0.16 *
NBR	f	0	40	0.00	100	0.00
SBL	2	3400	200	0.06	900	0.26 *
SBT	2	3400	560	0.16 *	1000	0.29
SBR	f	0	250	0.00	80	0.00
EBL	1	1700	80	0.05 *	130	0.08 *
EBT	0	0	0	0.00	0	0.00
EBR	f	0	280	0.00	480	0.00
WBL	2	3400	110	0.03	30	0.01
WBT	0	0	0	0.00	0	0.00
WBR	f	0	1570	0.00	330	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.43		0.55

*d = defacto right turn lane, f = free right turn lane

1. Saddleback Ranch Rd @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	125	0.07		111	0.07	*
NBT	1	1700	24	0.01	*	21	0.01	
NBR	0	0	24	0.00		21	0.00	
SBL	1.5	2550	243	0.10	*	125	0.05	
SBT	0.5	850	9	0.01		30	0.04	*
SBR	f	0	975	0.00		293	0.00	
EBL	2	3400	161	0.05	*	739	0.22	*
EBT	2	3400	158	0.05		734	0.22	
EBR	0	0	49	0.00		152	0.00	
WBL	1	1700	9	0.01		30	0.02	
WBT	2	3400	604	0.18	*	317	0.09	*
WBR	d	1700	225	0.13		162	0.10	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.39			0.47	

*d = defacto right turn lane, f = free right turn lane

2. El Toro Rd @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	210	0.12	*	190	0.11	
NBT	1	1700	290	0.17		700	0.41	*
NBR	0	0	0	0.00		0	0.00	
SBL	0	0	0	0.00		0	0.00	
SBT	2	3400	790	0.23	*	450	0.13	
SBR	d	1700	330	0.19		160	0.09	
EBL	1	1700	120	0.07	*	420	0.25	*
EBT	0	0	0	0.00		0	0.00	
EBR	1	1700	260	0.15		130	0.08	
WBL		0	0	0.00		0	0.00	
WBT		0	0	0.00		0	0.00	
WBR		0	0	0.00		0	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.47			0.71	

*d = defacto right turn lane, f = free right turn lane

3. Portola Pkwy @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	100	0.03		60	0.02	
NBT	3	5100	1380	0.27	*	760	0.15	*
NBR	1	1700	320	0.19		360	0.21	
SBL	2	3400	460	0.14	*	1050	0.31	*
SBT	3	5100	570	0.11		1530	0.30	
SBR	1	1700	40	0.02		70	0.04	
EBL	1	1700	60	0.04		100	0.06	
EBT	2	3400	20	0.01	*	20	0.01	*
EBR	0	0	30	0.00		60	0.00	
WBL	2	3400	450	0.13	*	350	0.10	*
WBT	2	3400	50	0.01		20	0.01	
WBR	f	0	930	0.00		690	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.60			0.62	

*d = defacto right turn lane, f = free right turn lane

4. Marguerite Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1.5	2550	370	0.15	*	140	0.05	*
NBT	1.5	2550	10	0.00		40	0.02	
NBR	1	1700	240	0.14		580	0.34	
SBL	1	1700	10	0.01		10	0.01	
SBT	1.5	2550	10	0.00	*	40	0.02	*
SBR	1.5	2550	0	0.00		10	0.00	
EBL	2	3400	10	0.00		10	0.00	
EBT	2	3400	190	0.06	*	370	0.11	*
EBR	1	1700	210	0.12		420	0.25	
WBL	2	3400	610	0.18	*	420	0.12	*
WBT	2	3400	460	0.14		170	0.05	
WBR	0	0	10	0.00		10	0.00	
RIGHT TURN ADJUSTMENT						NBR, EBR	0.29	*
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.44			0.64	

*d = defacto right turn lane, f = free right turn lane

5. Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	40	0.02 *	110	0.06
NBT	1	1700	510	0.30	930	0.55 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	850	0.50 *	470	0.28
SBR	0	0	40	0.00	30	0.00
EBL	0	0	50	0.00	30	0.00
EBT	1	1700	0	0.00	0	0.00
EBR	0	0	220	0.00	50	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.57		0.60

*d = defacto right turn lane, f = free right turn lane

6. Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	2	3400	490	0.14 *	430	0.13 *
NBT	4	6800	1610	0.24	1010	0.15
NBR	d	1700	20	0.01	40	0.02
SBL	2	3400	50	0.01	400	0.12
SBT	3	5100	620	0.12 *	1260	0.25 *
SBR	1	1700	370	0.22	650	0.38
EBL	1	1700	310	0.18 *	370	0.22 *
EBT	3	5100	170	0.03	430	0.08
EBR	1	1700	300	0.18	510	0.30
WBL	1	1700	50	0.03	330	0.19
WBT	3	5100	500	0.10 *	570	0.11 *
WBR	1	1700	260	0.15	640	0.38
RIGHT TURN ADJUSTMENT			WBR	0.03 *	EBR, WBR	0.15 *
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.62		0.91

*d = defacto right turn lane, f = free right turn lane

7. Marguerite Pkwy @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	490	0.29	*	360	0.21	*
NBT	2	3400	280	0.08		330	0.10	
NBR	d	1700	190	0.11		190	0.11	
SBL	1	1700	190	0.11		130	0.08	
SBT	2	3400	420	0.12	*	420	0.12	*
SBR	d	1700	40	0.02		90	0.05	
EBL	1	1700	10	0.01		80	0.05	
EBT	3	5100	700	0.14		1200	0.24	*
EBR	1	1700	150	0.09		520	0.31	
WBL	1	1700	210	0.12		150	0.09	*
WBT	3	5100	1250	0.25		850	0.17	
WBR	d	1700	90	0.05		170	0.10	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.72			0.71	

*d = defacto right turn lane, f = free right turn lane

8. Marguerite Pkwy @ Los Alisos Blvd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	50	0.03		60	0.04	
NBT	2	3400	290	0.09	*	370	0.11	*
NBR	d	1700	120	0.07		120	0.07	
SBL	1	1700	200	0.12	*	300	0.18	*
SBT	2	3400	460	0.14		370	0.11	
SBR	d	1700	240	0.14		140	0.08	
EBL	1	1700	90	0.05	*	160	0.09	
EBT	2	3400	150	0.04		260	0.08	*
EBR	d	1700	90	0.05		70	0.04	
WBL	1	1700	120	0.07		150	0.09	*
WBT	2	3400	370	0.11	*	200	0.06	
WBR	d	1700	230	0.14		190	0.11	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.42			0.51	

*d = defacto right turn lane, f = free right turn lane

9. Los Alisos Blvd @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	170	0.10		140	0.08	*
NBT	2	3400	1500	0.44	*	900	0.26	
NBR	d	1700	30	0.02		70	0.04	
SBL	1	1700	200	0.12	*	170	0.10	
SBT	2	3400	720	0.21		1670	0.49	*
SBR	d	1700	180	0.11		390	0.23	
EBL	1	1700	380	0.22	*	290	0.17	*
EBT	3	5100	200	0.04		400	0.08	
EBR	d	1700	80	0.05		160	0.09	
WBL	1	1700	80	0.05		20	0.01	
WBT	3	5100	550	0.11	*	210	0.04	*
WBR	d	1700	140	0.08		90	0.05	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.94			0.83	

*d = defacto right turn lane, f = free right turn lane

10. Saddleback Ranch Rd @ Malabar Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	0	0	0	0.00		0	0.00	
NBT	1	1700	360	0.21		670	0.39	*
NBR	1	1700	40	0.02		120	0.07	
SBL	1	1700	10	0.01		20	0.01	*
SBT	1	1700	780	0.46	*	390	0.23	
SBR	0	0	0	0.00		0	0.00	
EBL	0	0	0	0.00		0	0.00	
EBT	0	0	0	0.00		0	0.00	
EBR	0	0	0	0.00		0	0.00	
WBL	0	0	150	0.00		70	0.00	
WBT	1	1700	0	0.11	*	0	0.05	*
WBR	0	0	30	0.00		10	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.62			0.50	

*d = defacto right turn lane, f = free right turn lane

11. Saddleback Ranch Rd @ Millwood Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	30	0.02 *	60	0.04 *
NBT	2	3400	380	0.11	650	0.19
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	920	0.54 *	400	0.24 *
SBR	1	1700	10	0.01	10	0.01
EBL	0	0	0	0.00	10	0.00
EBT	1	1700	0	0.06 *	0	0.04 *
EBR	0	0	110	0.00	50	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.67		0.37

*d = defacto right turn lane, f = free right turn lane

12. Saddleback Ranch Rd @ Fawn Ridge Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	40	0.02 *	130	0.08
NBT	1	1700	330	0.19	540	0.32 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	590	0.35 *	340	0.20
SBR	1	1700	40	0.02	20	0.01
EBL	1	1700	40	0.02 *	30	0.02 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	180	0.11	60	0.04
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT			EBR	0.07 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.51		0.39

*d = defacto right turn lane, f = free right turn lane

13. Ridgeline Rd @ Santiago Canyon Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	0	0	60	0.00	80	0.00
NBT	1	1700	0	0.00	0	0.00
NBR	d	1700	10	0.01	20	0.01
SBL	0	0	0	0.00	0	0.00
SBT	0	0	0	0.00	0	0.00
SBR	0	0	0	0.00	0	0.00
EBL	0	0	0	0.00	0	0.00
EBT	1	1700	360	0.21 *	300	0.18
EBR	d	1700	70	0.04	100	0.06
WBL	1	1700	10	0.01 *	20	0.01
WBT	1	1700	280	0.16	430	0.25 *
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.27		0.30

*d = defacto right turn lane, f = free right turn lane

14. Portola Pkwy @ SR-241 Ramps

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	2	3400	610	0.18 *	300	0.09
NBT	3	5100	850	0.17	890	0.17 *
NBR	f	0	40	0.00	100	0.00
SBL	2	3400	220	0.06	900	0.26 *
SBT	2	3400	630	0.19 *	1020	0.30
SBR	f	0	250	0.00	80	0.00
EBL	1	1700	100	0.06 *	180	0.11 *
EBT	0	0	0	0.00	0	0.00
EBR	f	0	270	0.00	450	0.00
WBL	2	3400	110	0.03	30	0.01
WBT	0	0	0	0.00	0	0.00
WBR	f	0	1540	0.00	340	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.48		0.59

*d = defacto right turn lane, f = free right turn lane

15. Saddleback Ranch Rd @ Project Driveway 1

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	14	0.01 *	47	0.03
NBT	2	3400	397	0.12	705	0.21 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	2	3400	1185	0.35 *	420	0.12
SBR	0	0	2	0.00	8	0.00
EBL	1	1700	7	0.00	4	0.00
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	42	0.02	28	0.02
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT				0.01 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.42		0.26

*d = defacto right turn lane, f = free right turn lane

16. Project Driveway 2 @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	0.5	850	145	0.17 *	128	0.15 *
NBT	0.5	850	0	0.00	0	0.00
NBR	1	1700	28	0.02	24	0.01
SBL	0.5	850	20	0.02	13	0.02
SBT	0.5	850	0	0.00 *	0	0.00 *
SBR	f	0	111	0.00	72	0.00
EBL	1	1700	37	0.02 *	127	0.07
EBT	2	3400	332	0.10	576	0.17 *
EBR	0	0	56	0.00	178	0.00
WBL	1	1700	11	0.01	34	0.02 *
WBT	2	3400	582	0.17 *	308	0.09
WBR	0	0	7	0.00	22	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.41		0.39

*d = defacto right turn lane, f = free right turn lane

1. Saddleback Ranch Rd @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C	PM PEAK HOUR VOL	V/C
NBL	0	0	0	0.00	0	0.00
NBT	0	0	0	0.00	0	0.00
NBR	0	0	0	0.00	0	0.00
SBL	1	1700	200	0.12 *	70	0.04 *
SBT	0	0	0	0.00	0	0.00
SBR	2	3400	750	0.22	280	0.08
EBL	2	3400	160	0.05 *	650	0.19 *
EBT	2	3400	140	0.04	640	0.19
EBR	0	0	0	0.00	0	0.00
WBL	0	0	0	0.00	0	0.00
WBT	2	3400	650	0.19 *	230	0.07 *
WBR	0	0	180	0.00	100	0.00
RIGHT TURN ADJUSTMENT			SBR	0.06 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.47		0.35

*d = defacto right turn lane, f = free right turn lane

2. El Toro Rd @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C	PM PEAK HOUR VOL	V/C
NBL	1	1700	200	0.12 *	150	0.09
NBT	2	3400	660	0.19	1020	0.30 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	2	3400	1030	0.30 *	580	0.17
SBR	1	1700	590	0.35	200	0.12
EBL	1	1700	130	0.08 *	580	0.34 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	210	0.12	140	0.08
WBL		0	0	0.00	0	0.00
WBT		0	0	0.00	0	0.00
WBR		0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.55		0.69

*d = defacto right turn lane, f = free right turn lane

3. Portola Pkwy @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	130	0.04		50	0.01	
NBT	3	5100	1750	0.34	*	880	0.17	*
NBR	1	1700	320	0.19		240	0.14	
SBL	2	3400	400	0.12	*	1000	0.29	*
SBT	3	5100	530	0.10		1920	0.38	
SBR	1	1700	20	0.01		80	0.05	
EBL	1	1700	50	0.03		70	0.04	
EBT	2	3400	20	0.01	*	20	0.01	*
EBR	0	0	30	0.00		90	0.00	
WBL	2	3400	370	0.11	*	360	0.11	*
WBT	2	3400	50	0.01		20	0.01	
WBR	f	0	740	0.00		660	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.63			0.63	

*d = defacto right turn lane, f = free right turn lane

4. Marguerite Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1.5	2550	520	0.20	*	110	0.04	*
NBT	1.5	2550	10	0.00		40	0.02	
NBR	1	1700	570	0.34		940	0.55	
SBL	1	1700	10	0.01		10	0.01	
SBT	1.5	2550	10	0.00	*	40	0.02	*
SBR	1.5	2550	0	0.00		10	0.00	
EBL	2	3400	10	0.00		10	0.00	
EBT	2	3400	250	0.07	*	640	0.19	*
EBR	1	1700	170	0.10		500	0.29	
WBL	2	3400	940	0.28	*	740	0.22	*
WBT	2	3400	750	0.22		270	0.08	
WBR	0	0	10	0.00		10	0.00	
RIGHT TURN ADJUSTMENT						NBR, EBR	0.40	*
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.60			0.92	

*d = defacto right turn lane, f = free right turn lane

5. Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	90	0.05	*	200	0.12	
NBT	2	3400	490	0.14		1230	0.36	*
NBR	0	0	0	0.00		0	0.00	
SBL	0	0	0	0.00		0	0.00	
SBT	2	3400	1180	0.35	*	560	0.16	
SBR	0	0	60	0.00		50	0.00	
EBL	0	0	40	0.00		50	0.00	
EBT	1	1700	0	0.00		0	0.00	
EBR	0	0	250	0.00		100	0.00	
WBL	0	0	0	0.00		0	0.00	
WBT	0	0	0	0.00		0	0.00	
WBR	0	0	0	0.00		0	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.45			0.41	

*d = defacto right turn lane, f = free right turn lane

6. Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	590	0.17		400	0.12	*
NBT	4	6800	1960	0.29	*	1140	0.17	
NBR	d	1700	20	0.01		50	0.03	
SBL	2	3400	70	0.02	*	570	0.17	
SBT	3	5100	590	0.12		1680	0.33	*
SBR	1	1700	430	0.25		860	0.51	
EBL	1	1700	450	0.26	*	480	0.28	*
EBT	3	5100	170	0.03		610	0.12	
EBR	1	1700	280	0.16		500	0.29	
WBL	1	1700	60	0.04		340	0.20	
WBT	3	5100	780	0.15	*	600	0.12	*
WBR	1	1700	380	0.22		750	0.44	
RIGHT TURN ADJUSTMENT			WBR	0.05	*	WBR	0.11	*
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.82			1.01	

*d = defacto right turn lane, f = free right turn lane

7. Marguerite Pkwy @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	500	0.29	*	430	0.25	*
NBT	2	3400	360	0.11		430	0.13	
NBR	d	1700	180	0.11		190	0.11	
SBL	1	1700	240	0.14		230	0.14	
SBT	2	3400	480	0.14	*	480	0.14	*
SBR	d	1700	40	0.02		100	0.06	
EBL	1	1700	20	0.01	*	80	0.05	
EBT	3	5100	700	0.14		1560	0.31	*
EBR	1	1700	160	0.09		630	0.37	
WBL	1	1700	210	0.12		150	0.09	*
WBT	3	5100	1740	0.34	*	880	0.17	
WBR	d	1700	200	0.12		240	0.14	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.83			0.84	

*d = defacto right turn lane, f = free right turn lane

8. Marguerite Pkwy @ Los Alisos Blvd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	50	0.03		50	0.03	
NBT	2	3400	450	0.13	*	570	0.17	*
NBR	d	1700	110	0.06		120	0.07	
SBL	1	1700	220	0.13	*	470	0.28	*
SBT	2	3400	610	0.18		560	0.16	
SBR	d	1700	300	0.18		160	0.09	
EBL	1	1700	200	0.12	*	240	0.14	*
EBT	2	3400	150	0.04		250	0.07	
EBR	d	1700	60	0.04		60	0.04	
WBL	1	1700	130	0.08		150	0.09	
WBT	2	3400	410	0.12	*	240	0.07	*
WBR	d	1700	390	0.23		220	0.13	
RIGHT TURN ADJUSTMENT			WBR	0.01	*			
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.56			0.71	

*d = defacto right turn lane, f = free right turn lane

9. Los Alisos Blvd @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	200	0.12		150	0.09	*
NBT	2	3400	1520	0.45	*	940	0.28	
NBR	d	1700	10	0.01		100	0.06	
SBL	1	1700	240	0.14	*	150	0.09	
SBT	2	3400	730	0.21		1700	0.50	*
SBR	d	1700	190	0.11		530	0.31	
EBL	1	1700	550	0.32	*	310	0.18	*
EBT	3	5100	240	0.05		450	0.09	
EBR	d	1700	70	0.04		200	0.12	
WBL	1	1700	80	0.05		20	0.01	
WBT	3	5100	550	0.11	*	280	0.05	*
WBR	d	1700	140	0.08		100	0.06	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				1.07			0.87	

*d = defacto right turn lane, f = free right turn lane

10. Saddleback Ranch Rd @ Malabar Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	0	0	0	0.00		0	0.00	
NBT	1	1700	280	0.16		610	0.36	*
NBR	1	1700	40	0.02		120	0.07	
SBL	1	1700	10	0.01		20	0.01	*
SBT	1	1700	750	0.44	*	300	0.18	
SBR	0	0	0	0.00		0	0.00	
EBL	0	0	0	0.00		0	0.00	
EBT	0	0	0	0.00		0	0.00	
EBR	0	0	0	0.00		0	0.00	
WBL	0	0	150	0.00		70	0.00	
WBT	1	1700	0	0.11	*	0	0.05	*
WBR	0	0	30	0.00		10	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.60			0.47	

*d = defacto right turn lane, f = free right turn lane

11. Saddleback Ranch Rd @ Millwood Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	30	0.02 *	60	0.04 *
NBT	2	3400	300	0.09	590	0.17
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	890	0.52 *	310	0.18 *
SBR	1	1700	10	0.01	10	0.01
EBL	0	0	0	0.00	10	0.00
EBT	1	1700	0	0.06 *	0	0.04 *
EBR	0	0	110	0.00	50	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.65		0.31

*d = defacto right turn lane, f = free right turn lane

12. Saddleback Ranch Rd @ Fawn Ridge Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	40	0.02 *	130	0.08
NBT	1	1700	250	0.15	480	0.28 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	560	0.33 *	250	0.15
SBR	1	1700	40	0.02	20	0.01
EBL	1	1700	40	0.02 *	30	0.02 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	180	0.11	60	0.04
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT			EBR	0.07 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.49		0.35

*d = defacto right turn lane, f = free right turn lane

13. Ridgeline Rd @ Santiago Canyon Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	0	0	110	0.00	90	0.00
NBT	1	1700	0	0.00	0	0.00
NBR	d	1700	10	0.01	20	0.01
SBL	0	0	0	0.00	0	0.00
SBT	0	0	0	0.00	0	0.00
SBR	0	0	0	0.00	0	0.00
EBL	0	0	0	0.00	0	0.00
EBT	1	1700	690	0.41 *	420	0.25
EBR	d	1700	70	0.04	90	0.05
WBL	1	1700	10	0.01 *	20	0.01
WBT	1	1700	430	0.25	690	0.41 *
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.47		0.46

*d = defacto right turn lane, f = free right turn lane

14. Portola Pkwy @ SR-241 Ramps

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	2	3400	570	0.17 *	300	0.09
NBT	3	5100	920	0.18	840	0.16 *
NBR	f	0	80	0.00	220	0.00
SBL	2	3400	230	0.07	1230	0.36 *
SBT	2	3400	500	0.15 *	1070	0.31
SBR	f	0	250	0.00	130	0.00
EBL	1	1700	220	0.13 *	130	0.08 *
EBT	0	0	0	0.00	0	0.00
EBR	f	0	280	0.00	470	0.00
WBL	2	3400	370	0.11	170	0.05
WBT	0	0	0	0.00	0	0.00
WBR	f	0	1860	0.00	410	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.50		0.65

*d = defacto right turn lane, f = free right turn lane

1. Saddleback Ranch Rd @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	125	0.07		111	0.07	*
NBT	1	1700	24	0.01	*	21	0.01	
NBR	0	0	24	0.00		21	0.00	
SBL	1.5	2550	223	0.09	*	125	0.05	
SBT	0.5	850	9	0.01		30	0.04	*
SBR	f	0	785	0.00		303	0.00	
EBL	2	3400	171	0.05	*	689	0.20	*
EBT	2	3400	218	0.06		894	0.26	
EBR	0	0	49	0.00		152	0.00	
WBL	1	1700	9	0.01		30	0.02	
WBT	2	3400	864	0.25	*	397	0.12	*
WBR	d	1700	225	0.13		142	0.08	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.45			0.48	

*d = defacto right turn lane, f = free right turn lane

2. El Toro Rd @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	230	0.14	*	180	0.11	
NBT	2	3400	450	0.13		1100	0.32	*
NBR	0	0	0	0.00		0	0.00	
SBL	0	0	0	0.00		0	0.00	
SBT	2	3400	1150	0.34	*	550	0.16	
SBR	1	1700	500	0.29		270	0.16	
EBL	1	1700	180	0.11	*	550	0.32	*
EBT	0	0	0	0.00		0	0.00	
EBR	1	1700	250	0.15		180	0.11	
WBL		0	0	0.00		0	0.00	
WBT		0	0	0.00		0	0.00	
WBR		0	0	0.00		0	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.64			0.69	

*d = defacto right turn lane, f = free right turn lane

3. Portola Pkwy @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	130	0.04		60	0.02	
NBT	3	5100	1730	0.34	*	860	0.17	*
NBR	1	1700	310	0.18		350	0.21	
SBL	2	3400	450	0.13	*	1140	0.34	*
SBT	3	5100	530	0.10		1860	0.36	
SBR	1	1700	20	0.01		70	0.04	
EBL	1	1700	60	0.04		70	0.04	
EBT	2	3400	20	0.01	*	30	0.01	*
EBR	0	0	30	0.00		90	0.00	
WBL	2	3400	450	0.13	*	400	0.12	*
WBT	2	3400	50	0.01		20	0.01	
WBR	f	0	940	0.00		770	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.66			0.69	

*d = defacto right turn lane, f = free right turn lane

4. Marguerite Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1.5	2550	510	0.20	*	110	0.04	*
NBT	1.5	2550	10	0.00		40	0.02	
NBR	1	1700	580	0.34		960	0.56	
SBL	1	1700	10	0.01		10	0.01	
SBT	1.5	2550	10	0.00	*	40	0.02	*
SBR	1.5	2550	0	0.00		10	0.00	
EBL	2	3400	10	0.00		10	0.00	
EBT	2	3400	260	0.08	*	730	0.21	*
EBR	1	1700	170	0.10		490	0.29	
WBL	2	3400	980	0.29	*	760	0.22	*
WBT	2	3400	860	0.25		270	0.08	
WBR	0	0	10	0.00		10	0.00	
RIGHT TURN ADJUSTMENT						NBR, EBR	0.39	*
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.62			0.93	

*d = defacto right turn lane, f = free right turn lane

5. Santiago Canyon Rd / El Toro Rd @ Ridgeline Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	1	1700	90	0.05	*	210	0.12	
NBT	2	3400	530	0.16		1250	0.37	*
NBR	0	0	0	0.00		0	0.00	
SBL	0	0	0	0.00		0	0.00	
SBT	2	3400	1200	0.35	*	580	0.17	
SBR	0	0	60	0.00		40	0.00	
EBL	0	0	40	0.00		40	0.00	
EBT	1	1700	0	0.00		0	0.00	
EBR	0	0	250	0.00		100	0.00	
WBL	0	0	0	0.00		0	0.00	
WBT	0	0	0	0.00		0	0.00	
WBR	0	0	0	0.00		0	0.00	
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.45			0.42	

*d = defacto right turn lane, f = free right turn lane

6. Portola Pkwy / Santa Margarita Pkwy @ El Toro Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C		PM PEAK HOUR VOL	V/C	
NBL	2	3400	580	0.17		410	0.12	*
NBT	4	6800	1950	0.29	*	1150	0.17	
NBR	d	1700	20	0.01		50	0.03	
SBL	2	3400	70	0.02	*	590	0.17	
SBT	3	5100	640	0.13		1700	0.33	*
SBR	1	1700	430	0.25		850	0.50	
EBL	1	1700	450	0.26	*	490	0.29	*
EBT	3	5100	180	0.04		670	0.13	
EBR	1	1700	280	0.16		490	0.29	
WBL	1	1700	60	0.04		340	0.20	
WBT	3	5100	830	0.16	*	600	0.12	*
WBR	1	1700	410	0.24		750	0.44	
RIGHT TURN ADJUSTMENT			WBR	0.06	*	WBR	0.11	*
CLEARANCE INTERVAL				0.05	*		0.05	*
TOTAL ICU				0.84			1.02	

*d = defacto right turn lane, f = free right turn lane

7. Marguerite Pkwy @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C	PM PEAK HOUR VOL	V/C
NBL	1	1700	500	0.29 *	450	0.26 *
NBT	2	3400	350	0.10	410	0.12
NBR	d	1700	180	0.11	190	0.11
SBL	1	1700	230	0.14	220	0.13
SBT	2	3400	500	0.15 *	490	0.14 *
SBR	d	1700	40	0.02	100	0.06
EBL	1	1700	20	0.01 *	80	0.05
EBT	3	5100	710	0.14	1560	0.31 *
EBR	1	1700	170	0.10	620	0.36
WBL	1	1700	220	0.13	150	0.09 *
WBT	3	5100	1730	0.34 *	880	0.17
WBR	d	1700	210	0.12	240	0.14
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.84		0.85

*d = defacto right turn lane, f = free right turn lane

8. Marguerite Pkwy @ Los Alisos Blvd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C	PM PEAK HOUR VOL	V/C
NBL	1	1700	50	0.03	50	0.03
NBT	2	3400	450	0.13 *	560	0.16 *
NBR	d	1700	110	0.06	120	0.07
SBL	1	1700	240	0.14 *	440	0.26 *
SBT	2	3400	620	0.18	570	0.17
SBR	d	1700	310	0.18	160	0.09
EBL	1	1700	230	0.14 *	260	0.15 *
EBT	2	3400	150	0.04	250	0.07
EBR	d	1700	50	0.03	70	0.04
WBL	1	1700	130	0.08	150	0.09
WBT	2	3400	410	0.12 *	240	0.07 *
WBR	d	1700	360	0.21	230	0.14
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.58		0.69

*d = defacto right turn lane, f = free right turn lane

9. Los Alisos Blvd @ Santa Margarita Pkwy

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	210	0.12	150	0.09 *
NBT	2	3400	1530	0.45 *	940	0.28
NBR	d	1700	10	0.01	90	0.05
SBL	1	1700	240	0.14 *	150	0.09
SBT	2	3400	740	0.22	1710	0.50 *
SBR	d	1700	190	0.11	510	0.30
EBL	1	1700	550	0.32 *	310	0.18 *
EBT	3	5100	250	0.05	460	0.09
EBR	d	1700	80	0.05	200	0.12
WBL	1	1700	90	0.05	20	0.01
WBT	3	5100	570	0.11 *	280	0.05 *
WBR	d	1700	170	0.10	100	0.06
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				1.07		0.87

*d = defacto right turn lane, f = free right turn lane

10. Saddleback Ranch Rd @ Malabar Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	0	0	0	0.00	0	0.00
NBT	1	1700	360	0.21	670	0.39 *
NBR	1	1700	40	0.02	120	0.07
SBL	1	1700	10	0.01	20	0.01 *
SBT	1	1700	780	0.46 *	390	0.23
SBR	0	0	0	0.00	0	0.00
EBL	0	0	0	0.00	0	0.00
EBT	0	0	0	0.00	0	0.00
EBR	0	0	0	0.00	0	0.00
WBL	0	0	150	0.00	70	0.00
WBT	1	1700	0	0.11 *	0	0.05 *
WBR	0	0	30	0.00	10	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.62		0.50

*d = defacto right turn lane, f = free right turn lane

11. Saddleback Ranch Rd @ Millwood Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	30	0.02 *	60	0.04 *
NBT	2	3400	380	0.11	650	0.19
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	920	0.54 *	400	0.24 *
SBR	1	1700	10	0.01	10	0.01
EBL	0	0	0	0.00	10	0.00
EBT	1	1700	0	0.06 *	0	0.04 *
EBR	0	0	110	0.00	50	0.00
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.67		0.37

*d = defacto right turn lane, f = free right turn lane

12. Saddleback Ranch Rd @ Fawn Ridge Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	40	0.02 *	130	0.08
NBT	1	1700	330	0.19	540	0.32 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	1	1700	590	0.35 *	340	0.20
SBR	1	1700	40	0.02	20	0.01
EBL	1	1700	40	0.02 *	30	0.02 *
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	180	0.11	60	0.04
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT			EBR	0.07 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.51		0.39

*d = defacto right turn lane, f = free right turn lane

13. Ridgeline Rd @ Santiago Canyon Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C	PM PEAK HOUR VOL	V/C
NBL	0	0	110	0.00	90	0.00
NBT	1	1700	0	0.00	0	0.00
NBR	d	1700	10	0.01	20	0.01
SBL	0	0	0	0.00	0	0.00
SBT	0	0	0	0.00	0	0.00
SBR	0	0	0	0.00	0	0.00
EBL	0	0	0	0.00	0	0.00
EBT	1	1700	700	0.41 *	430	0.25
EBR	d	1700	70	0.04	110	0.06
WBL	1	1700	10	0.01 *	20	0.01
WBT	1	1700	450	0.26	700	0.41 *
WBR	0	0	0	0.00	0	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.47		0.46

*d = defacto right turn lane, f = free right turn lane

14. Portola Pkwy @ SR-241 Ramps

	LANES	CAPACITY	AM PEAK HOUR VOL	V/C	PM PEAK HOUR VOL	V/C
NBL	2	3400	560	0.16 *	300	0.09
NBT	3	5100	910	0.18	880	0.17 *
NBR	f	0	90	0.00	210	0.00
SBL	2	3400	250	0.07	1200	0.35 *
SBT	2	3400	560	0.16 *	1080	0.32
SBR	f	0	260	0.00	130	0.00
EBL	1	1700	230	0.14 *	190	0.11 *
EBT	0	0	0	0.00	0	0.00
EBR	f	0	290	0.00	450	0.00
WBL	2	3400	360	0.11	170	0.05
WBT	0	0	0	0.00	0	0.00
WBR	f	0	1840	0.00	420	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.51		0.68

*d = defacto right turn lane, f = free right turn lane

15. Saddleback Ranch Rd @ Project Driveway 1

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	1	1700	14	0.01 *	47	0.03
NBT	2	3400	397	0.12	705	0.21 *
NBR	0	0	0	0.00	0	0.00
SBL	0	0	0	0.00	0	0.00
SBT	2	3400	975	0.29 *	430	0.13
SBR	0	0	2	0.00	8	0.00
EBL	1	1700	7	0.00	4	0.00
EBT	0	0	0	0.00	0	0.00
EBR	1	1700	42	0.02	28	0.02
WBL	0	0	0	0.00	0	0.00
WBT	0	0	0	0.00	0	0.00
WBR	0	0	0	0.00	0	0.00
RIGHT TURN ADJUSTMENT				0.01 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.36		0.26

*d = defacto right turn lane, f = free right turn lane

16. Project Driveway 2 @ Glenn Ranch Rd

	LANES	CAPACITY	AM PEAK HOUR VOL	AM PEAK HOUR V/C	PM PEAK HOUR VOL	PM PEAK HOUR V/C
NBL	0.5	850	145	0.17 *	128	0.15 *
NBT	0.5	850	0	0.00	0	0.00
NBR	1	1700	28	0.02	24	0.01
SBL	0.5	850	20	0.02	13	0.02
SBT	0.5	850	0	0.00 *	0	0.00 *
SBR	f	0	111	0.00	72	0.00
EBL	1	1700	37	0.02 *	127	0.07
EBT	2	3400	372	0.11	746	0.22 *
EBR	0	0	56	0.00	178	0.00
WBL	1	1700	11	0.01	34	0.02 *
WBT	2	3400	842	0.25 *	368	0.11
WBR	0	0	7	0.00	22	0.00
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.49		0.44

*d = defacto right turn lane, f = free right turn lane

Appendix C

Traffic Forecasts

City of Lake Forest
Portola Center Project
(Zones 13, 16 & 17)

Lake Forest Traffic Analysis Model (LFTAM)
Traffic Forecasts
2015 and 2030
No-Project and With-Project

Prepared by:

Austin-Foust Associates, Inc.
2223 E. Wellington Ave., Ste. 300
Santa Ana, CA 92701-3161
(714) 667-0496

June 29, 2011

CONTENTS

LAND USE AND TRIP GENERATION

Table 1

PORTOLA CENTER LAND USE AND TRIP GENERATION

Land Use	Amount/ Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	ADT
Zone 13								
Single Family Detached	81 DU	15	45	60	53	29	82	775
Park	.7 Acre	0	0	0	0	0	0	1
SUB-TOTAL		15	45	60	53	29	82	776
Zone 16								
Single Family Detached	223 DU	42	125	167	145	80	225	2,134
Park	1.1 Acre	0	0	0	0	0	0	2
SUB-TOTAL		42	125	167	145	80	225	2,136
Zone 17								
Single Family Detached	400 DU	76	224	300	260	144	404	3,828
Condominium	226 DU	38	113	151	102	75	177	1,842
Commercial (EQ)	10 TSF	22	14	36	63	69	132	1,520
Sports Park	8.3 Acre	0	0	0	28	34	62	447
SUB-TOTAL		136	351	487	453	322	775	7,637
Total								
Single Family Detached	704 DU	133	394	527	458	253	711	6,737
Condominium	226 DU	38	113	151	102	75	177	1,842
Commercial (EQ)	10 TSF	22	14	36	63	69	132	1,520
Park	1.8 Acre	0	0	0	0	0	0	3
Sports Park	8.3 Acre	0	0	0	28	34	62	447
TOTAL		193	521	714	651	431	1,082	10,549
Trip Rates								
Single Family Detached	DU	.19	.56	.75	.65	.36	1.01	9.57
Condominium	DU	.17	.50	.67	.45	.33	.78	8.15
Commercial (EQ)	TSF	.66	.07	.73	.15	.34	.49	6.12
Park	Acre	.01	.00	.01	.02	.02	.04	1.59
Sports Park	Acre	.01	.00	.01	3.40	4.10	7.50	53.80

Notes: 1) Trip rates from the 2005 Vacant Land Opportunities Study have been applied to the Portola Center uses.

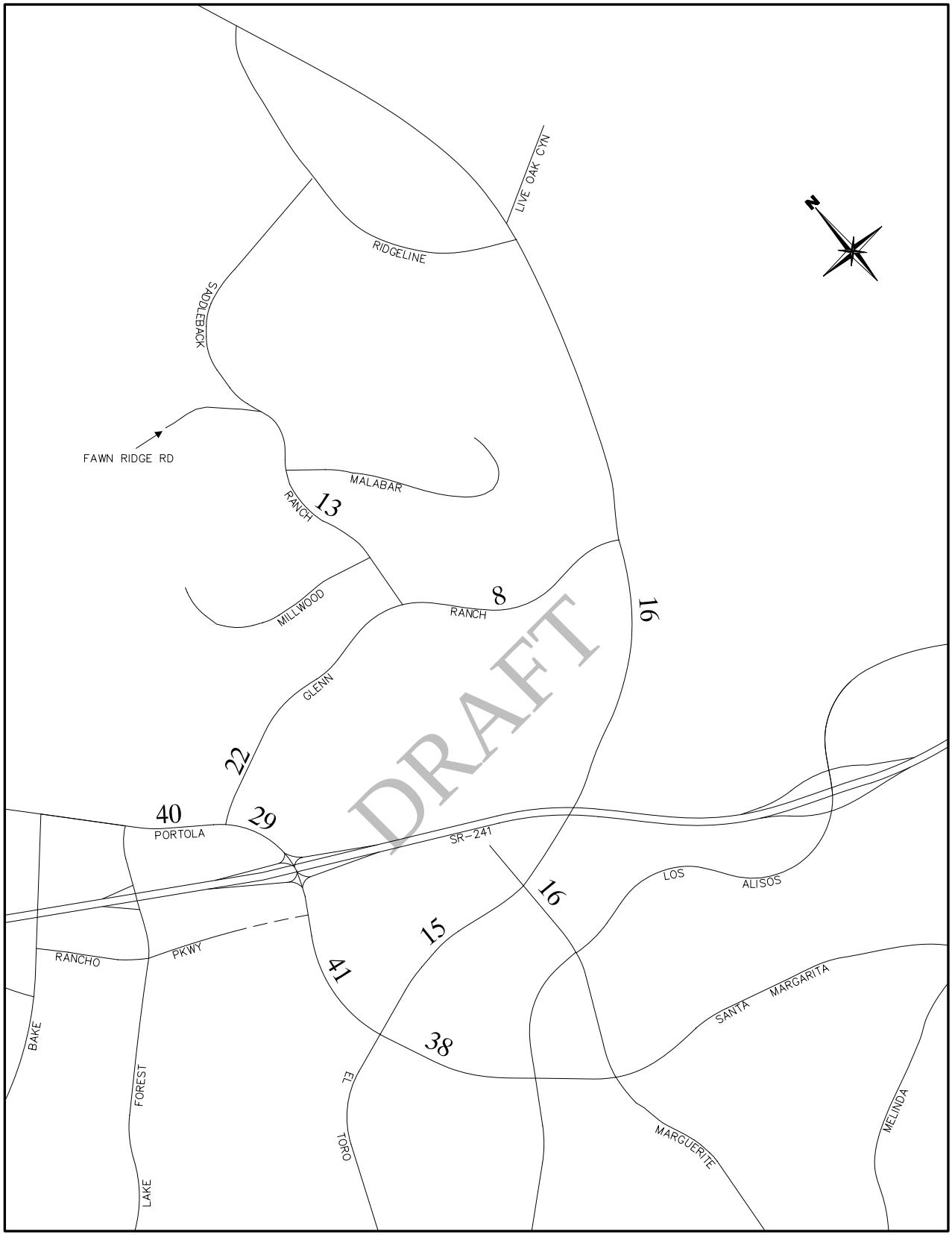
2) The land use-based trip rates for commercial use are based on the following equation:

LN(T) = A * LN(X) + B where X=land use amount (TSF) and T=daily trips

		Coefficients		- - AM Peak Hour - - Pk/ADT			- - PM Peak Hour - - Pk/ADT		
Land Use Type	Units	A	B	Ratio	In	Out	Ratio	In	Out
Commercial	TSF	.65	5.83	.024	61%	39%	.087	48%	52%

Abbreviations: ADT – average daily trips
DU – dwelling units
TSF – thousand square feet

ADT FIGURES



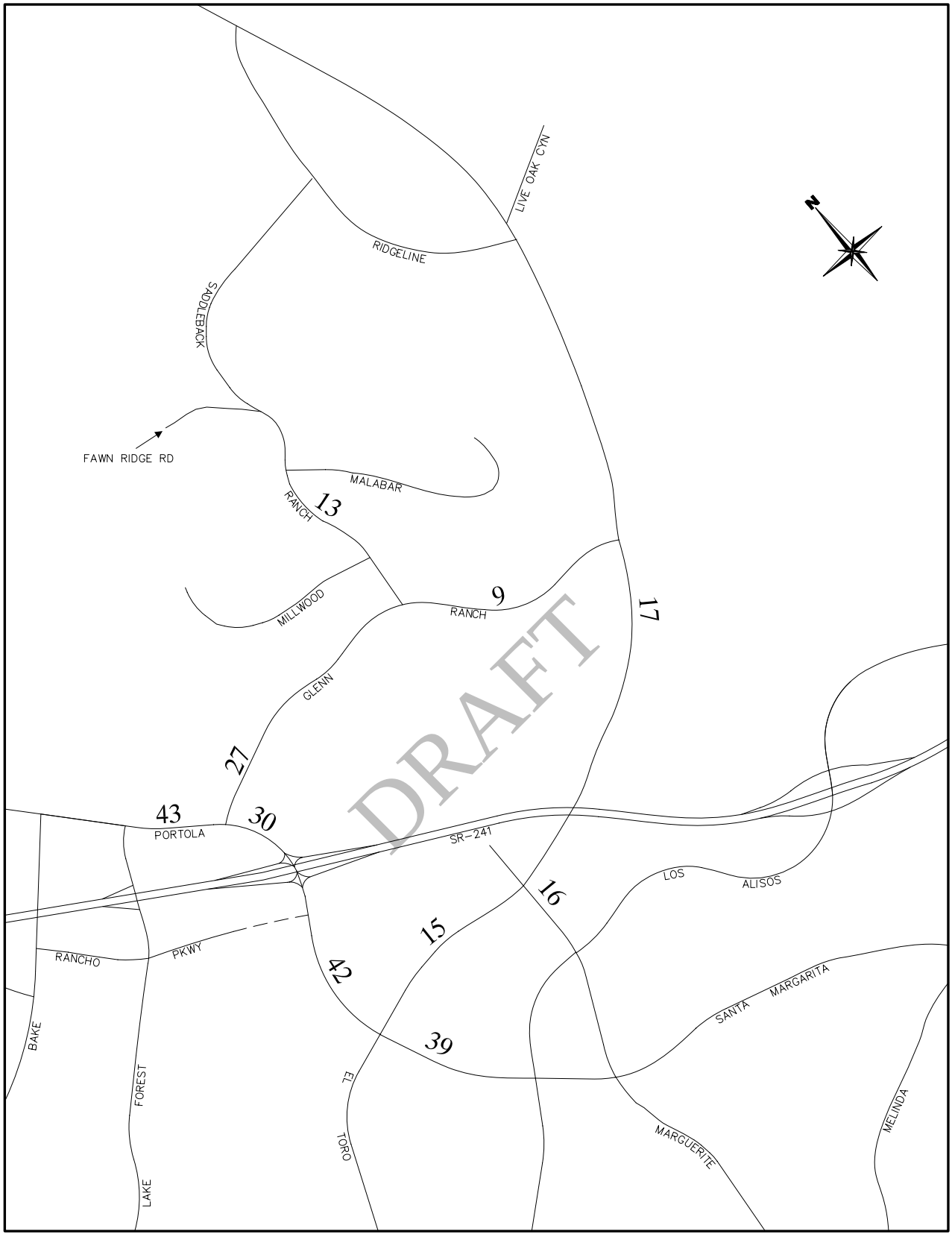
Legend

——— Existing Roadway

– – – – – Future Roadway

Figure 1

2015 ADT VOLUMES (000s)
- NO-PROJECT



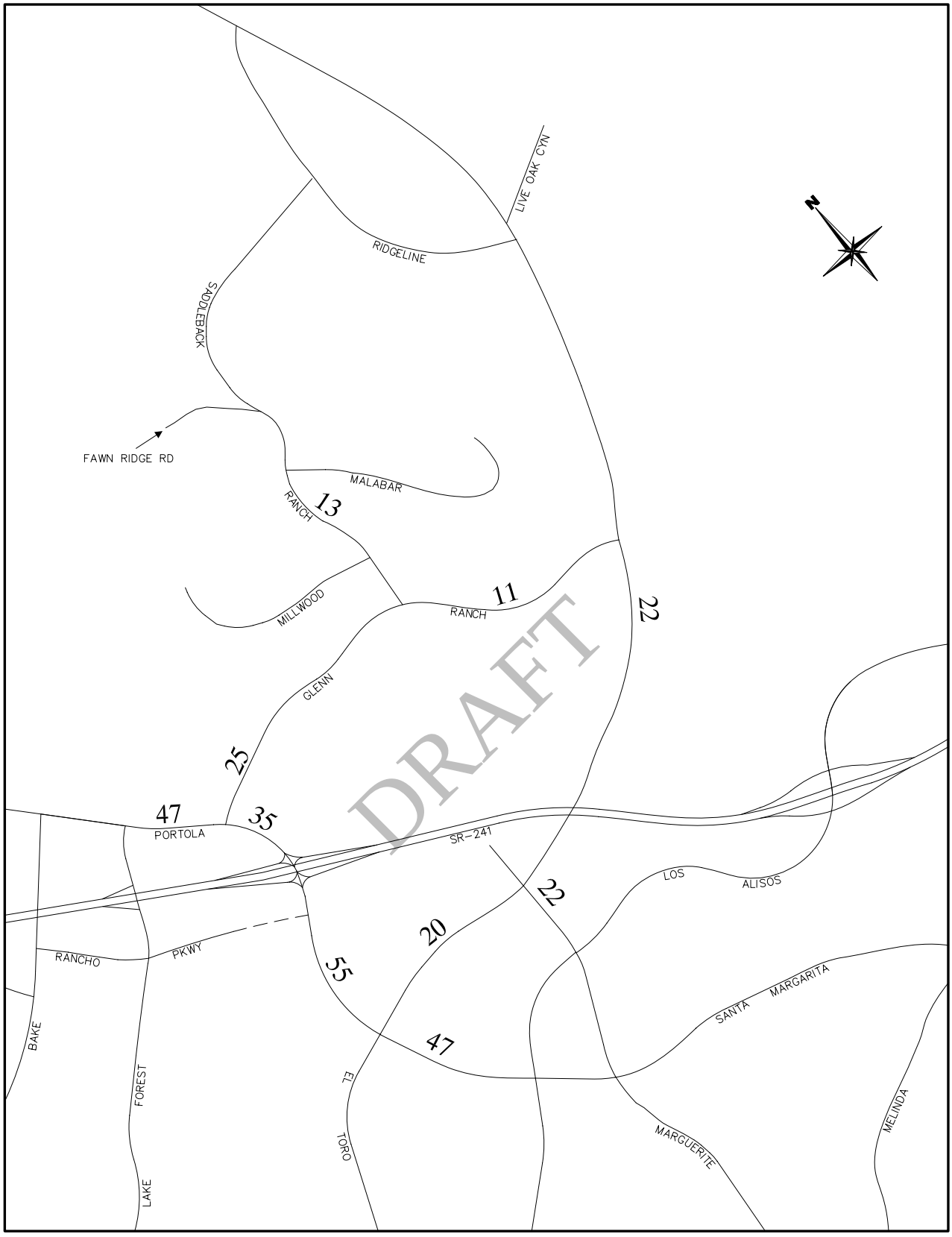
Legend

——— Existing Roadway

– – – – – Future Roadway

Figure 2

2015 ADT VOLUMES (000s)
- WITH-PROJECT



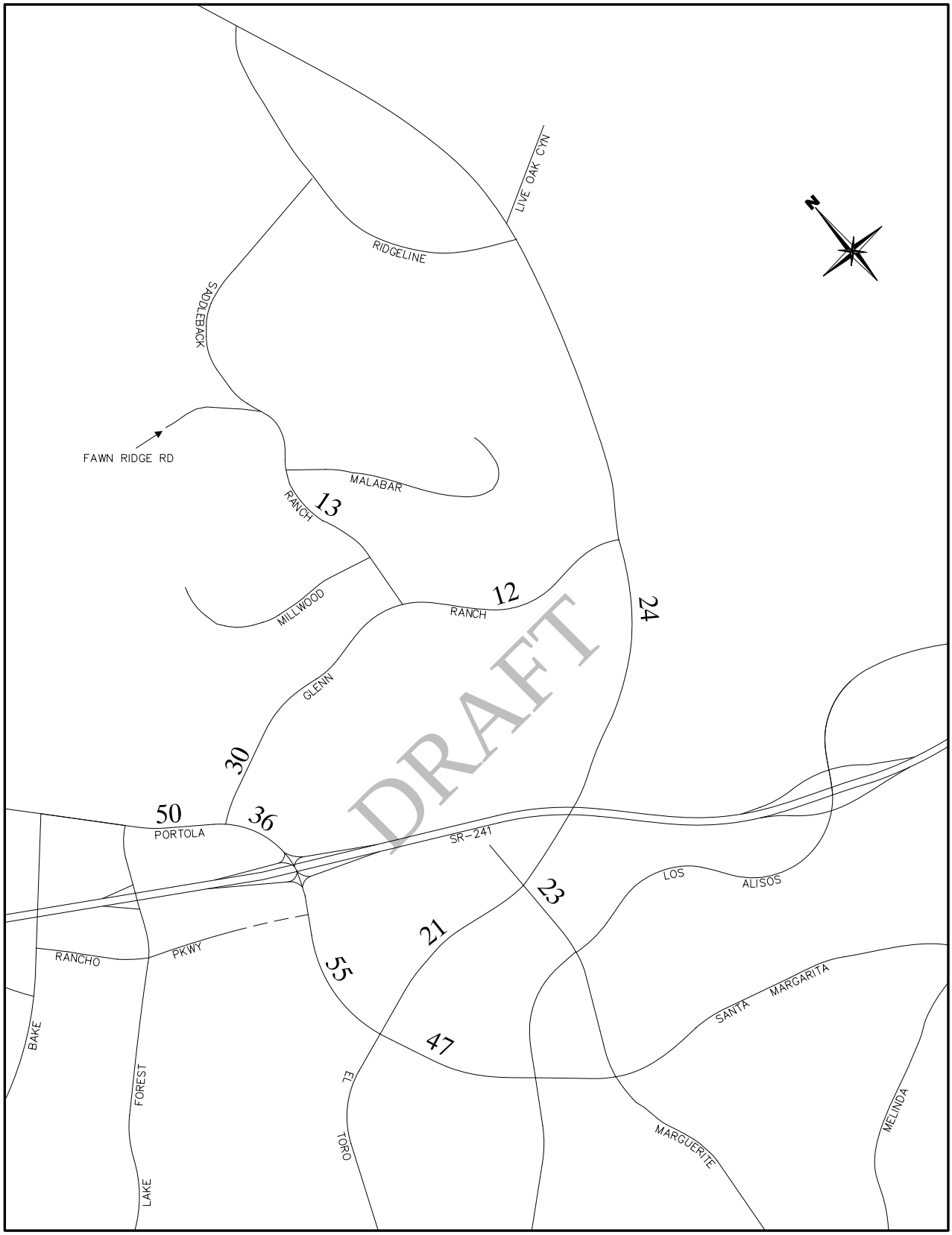
Legend

——— Existing Roadway

– – – – – Future Roadway

Figure 3

2030 ADT VOLUMES (000s)
- NO-PROJECT



Legend

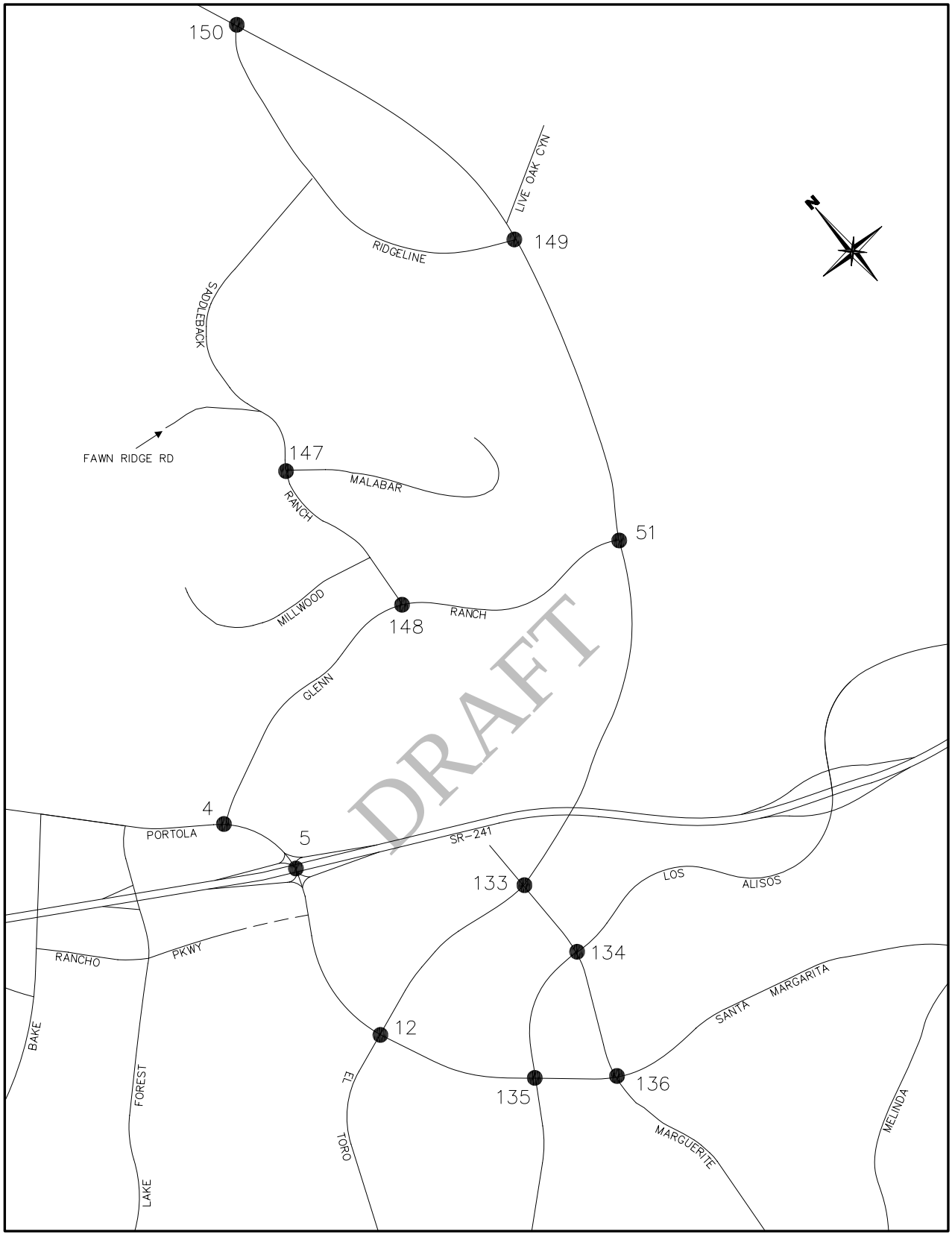
——— Existing Roadway

– – – – – Future Roadway

Figure 4

2030 ADT VOLUMES (000s)
- WITH-PROJECT

PEAK HOUR ICU SUMMARY TABLE



Legend

Existing Roadway

Future Roadway

Figure 5

INTERSECTION LOCATION MAP

Table 2

INTERSECTION ICU SUMMARY

	2015				2030			
	NO-PROJECT		WITH-PROJECT		NO-PROJECT		WITH-PROJECT	
INTERSECTION	AM	PM	AM	PM	AM	PM	AM	PM
4. Glenn Ranch & Portola	.54	.56	.60	.62	.63	.63	.66	.70
5. Portola & SR-241 Ramps	.43	.55	.48	.59	.50	.65	.51	.68
12. El Toro & Portola/Sta Margarita	.61	.83	.62	.86	.82	1.01	.84	1.02
51. El Toro & Glenn Ranch	.55	.71	.57	.71	.73	.99	.79	1.02
133. Marguerite & El Toro	.39	.63	.40	.65	.55	.93	.57	.94
134. Marguerite & Los Alisos	.48	.54	.49	.54	.67	.78	.69	.76
135. Sta Margarita & Los Alisos	.93	.83	.94	.83	1.07	.87	1.07	.87
136. Marguerite & Sta Margarita	.71	.71	.72	.71	.83	.84	.84	.85
148. Saddleback Ranch & Glenn Ranch	.45	.34	.64	.50	.47	.35	.68	.53
149. El Toro & Ridgeline	.73	.81	.74	.81	.97	1.04	.98	1.06
150. Santiago Cyn & Ridgeline	.31	.35	.31	.35	.53	.51	.53	.51

ICU WORKSHEETS

4. Glenn Ranch & Portola

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04	100	.06
NBT	2	3400	20	.01*	20	.01*
NBR	0	0	30	.02	60	.04
SBL	2	3400	350	.10*	290	.09*
SBT	2	3400	50	.01	20	.01
SBR	f		720		580	
EBL	2	3400	390	.11*	880	.26*
EBT	3	5100	580	.11	1560	.31
EBR	1	1700	50	.03	70	.04
WBL	2	3400	80	.02	60	.02
WBT	3	5100	1400	.27*	790	.15*
WBR	1	1700	310	.18	240	.14
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION **.54** **.56**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04	100	.06
NBT	2	3400	20	.01*	20	.01*
NBR	0	0	30	.02	60	.04
SBL	2	3400	450	.13*	350	.10*
SBT	2	3400	50	.01	20	.01
SBR	f		930		690	
EBL	2	3400	460	.14*	1050	.31*
EBT	3	5100	570	.11	1530	.30
EBR	1	1700	40	.02	70	.04
WBL	2	3400	100	.03	60	.02
WBT	3	5100	1380	.27*	760	.15*
WBR	1	1700	320	.19	360	.21
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION **.60** **.62**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	70	.04
NBT	2	3400	20	.01*	20	.01*
NBR	0	0	30	.02	90	.05
SBL	2	3400	370	.11*	360	.11*
SBT	2	3400	50	.01	20	.01
SBR	f		740		660	
EBL	2	3400	400	.12*	1000	.29*
EBT	3	5100	530	.10	1920	.38
EBR	1	1700	20	.01	80	.05
WBL	2	3400	130	.04	50	.01
WBT	3	5100	1750	.34*	880	.17*
WBR	1	1700	320	.19	240	.14
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION **.63** **.63**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	60	.04	70	.04
NBT	2	3400	20	.01*	30	.02*
NBR	0	0	30	.02	90	.05
SBL	2	3400	450	.13*	400	.12*
SBT	2	3400	50	.01	20	.01
SBR	f		940		770	
EBL	2	3400	450	.13*	1140	.34*
EBT	3	5100	530	.10	1860	.36
EBR	1	1700	20	.01	70	.04
WBL	2	3400	130	.04	60	.02
WBT	3	5100	1730	.34*	860	.17*
WBR	1	1700	310	.18	350	.21
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for WBR

TOTAL CAPACITY UTILIZATION **.66** **.70**

5. Portola & SR-241 Ramps

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	590	.17*	310	.09
NBT	3	5100	830	.16	820	.16*
NBR	f		40		100	
SBL	2	3400	200	.06	900	.26*
SBT	2	3400	560	.16*	1000	.29
SBR	f		250		80	
EBL	1	1700	80	.05*	130	.08*
EBT	0	0	0		0	
EBR	f		280		480	
WBL	2	3400	110	.03	30	.01
WBT	0	0	0		0	
WBR	f		1570		330	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.43**		**.55**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	610	.18*	300	.09
NBT	3	5100	850	.17	890	.17*
NBR	f		40		100	
SBL	2	3400	220	.06	900	.26*
SBT	2	3400	630	.19*	1020	.30
SBR	f		250		80	
EBL	1	1700	100	.06*	180	.11*
EBT	0	0	0		0	
EBR	f		270		450	
WBL	2	3400	110	.03	30	.01
WBT	0	0	0		0	
WBR	f		1540		340	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.59**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	570	.17*	300	.09
NBT	3	5100	920	.18	840	.16*
NBR	f		80		220	
SBL	2	3400	230	.07	1230	.36*
SBT	2	3400	500	.15*	1070	.31
SBR	f		250		130	
EBL	1	1700	220	.13*	130	.08*
EBT	0	0	0		0	
EBR	f		280		470	
WBL	2	3400	370	.11	170	.05
WBT	0	0	0		0	
WBR	f		1860		410	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.50**		**.65**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	560	.16*	300	.09
NBT	3	5100	910	.18	880	.17*
NBR	f		90		210	
SBL	2	3400	250	.07	1200	.35*
SBT	2	3400	560	.16*	1080	.32
SBR	f		260		130	
EBL	1	1700	230	.14*	190	.11*
EBT	0	0	0		0	
EBR	f		290		450	
WBL	2	3400	360	.11	170	.05
WBT	0	0	0		0	
WBR	f		1840		420	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.51**		**.68**

12. El Toro & Portola/Sta Margarita

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	310	.18*	340	.20*
NBT	3	5100	170	.03	390	.08
NBR	f		300		530	
SBL	1	1700	50	.03	330	.19
SBT	3	5100	460	.09*	570	.11*
SBR	1	1700	240	.14	650	.38
EBL	2	3400	50	.01	410	.12
EBT	3	5100	590	.12*	1280	.25*
EBR	1	1700	350	.21	630	.37
WBL	2	3400	510	.15*	440	.13*
WBT	4	6800	1580	.23	970	.14
WBR	d	1700	20	.01	40	.02
Right Turn Adjustment			SBR	.02*	SBR	.09*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.61**		**.83**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	310	.18*	370	.22*
NBT	3	5100	170	.03	430	.08
NBR	f		300		510	
SBL	1	1700	50	.03	330	.19
SBT	3	5100	500	.10*	570	.11*
SBR	1	1700	260	.15	640	.38
EBL	2	3400	50	.01	400	.12
EBT	3	5100	620	.12*	1260	.25*
EBR	1	1700	370	.22	650	.38
WBL	2	3400	490	.14*	430	.13*
WBT	4	6800	1610	.24	1010	.15
WBR	d	1700	20	.01	40	.02
Right Turn Adjustment			SBR	.03*	SBR	.10*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.62**		**.86**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	450	.26*	480	.28*
NBT	3	5100	170	.03	610	.12
NBR	f		280		500	
SBL	1	1700	60	.04	340	.20
SBT	3	5100	780	.15*	600	.12*
SBR	1	1700	380	.22	750	.44
EBL	2	3400	70	.02*	570	.17
EBT	3	5100	590	.12	1680	.33*
EBR	1	1700	430	.25	860	.51
WBL	2	3400	590	.17	400	.12*
WBT	4	6800	1960	.29*	1140	.17
WBR	d	1700	20	.01	50	.03
Right Turn Adjustment			SBR	.05*	SBR	.11*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.82**		**1.01**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	450	.26*	490	.29*
NBT	3	5100	180	.04	670	.13
NBR	f		280		490	
SBL	1	1700	60	.04	340	.20
SBT	3	5100	830	.16*	600	.12*
SBR	1	1700	410	.24	750	.44
EBL	2	3400	70	.02*	590	.17
EBT	3	5100	640	.13	1700	.33*
EBR	1	1700	430	.25	850	.50
WBL	2	3400	580	.17	410	.12*
WBT	4	6800	1950	.29*	1150	.17
WBR	d	1700	20	.01	50	.03
Right Turn Adjustment			SBR	.06*	SBR	.11*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**1.02**

51. El Toro & Glenn Ranch

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	200	.12*	150	.09
NBT	1	1700	310	.18	670	.39*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	740	.33*	450	.17
SBR	0	0	380		140	
EBL	1	1700	80	.05*	460	.27*
EBT	0	0	0		0	
EBR	1	1700	220	.13	90	.05
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.55** **.71**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	210	.12*	190	.11
NBT	1	1700	290	.17	700	.41*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	790	.33*	450	.18
SBR	0	0	330		160	
EBL	1	1700	120	.07*	420	.25*
EBT	0	0	0		0	
EBR	1	1700	260	.15	130	.08
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.57** **.71**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	200	.12*	150	.09
NBT	1	1700	660	.39	1020	.60*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1030	.48*	580	.23
SBR	0	0	590		200	
EBL	1	1700	130	.08*	580	.34*
EBT	0	0	0		0	
EBR	1	1700	210	.12	140	.08
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.73** **.99**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	230	.14*	180	.11
NBT	1	1700	450	.26	1100	.65*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	1150	.49*	550	.24
SBR	0	0	500		270	
EBL	1	1700	180	.11*	550	.32*
EBT	0	0	0		0	
EBR	1	1700	250	.15	180	.11
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION **.79** **1.02**

133. Marguerite & El Toro

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		360	.11*	140	.04*
NBT	1.5	5100	10	.01	40	.02
NBR	1	1700	240	.14	550	.32
SBL	1	1700	10	.01	10	.01
SBT	1.5	5100	10	.00*	40	.01*
SBR	1.5		0		10	
EBL	2	3400	10	.00	10	.00
EBT	2	3400	190	.06*	320	.09*
EBR	1	1700	210	.12	430	.25
WBL	2	3400	570	.17*	400	.12*
WBT	2	3400	400	.12	160	.05
WBR	0	0	10		10	
Right Turn Adjustment					Multi	.32*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.39**		**.63**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		370	.11*	140	.04*
NBT	1.5	5100	10	.01	40	.02
NBR	1	1700	240	.14	580	.34
SBL	1	1700	10	.01	10	.01
SBT	1.5	5100	10	.00*	40	.01*
SBR	1.5		0		10	
EBL	2	3400	10	.00	10	.00
EBT	2	3400	190	.06*	370	.11*
EBR	1	1700	210	.12	420	.25
WBL	2	3400	610	.18*	420	.12*
WBT	2	3400	460	.14	170	.05
WBR	0	0	10		10	
Right Turn Adjustment					Multi	.32*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.40**		**.65**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		520	.15*	110	.03*
NBT	1.5	5100	10	.01	40	.02
NBR	1	1700	570	.34	940	.55
SBL	1	1700	10	.01	10	.01
SBT	1.5	5100	10	.00*	40	.01*
SBR	1.5		0		10	
EBL	2	3400	10	.00	10	.00
EBT	2	3400	250	.07*	640	.19*
EBR	1	1700	170	.10	500	.29
WBL	2	3400	940	.28*	740	.22*
WBT	2	3400	750	.22	270	.08
WBR	0	0	10		10	
Right Turn Adjustment					Multi	.43*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.55**		**.93**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1.5		510	.15*	110	.03*
NBT	1.5	5100	10	.01	40	.02
NBR	1	1700	580	.34	960	.56
SBL	1	1700	10	.01	10	.01
SBT	1.5	5100	10	.00*	40	.01*
SBR	1.5		0		10	
EBL	2	3400	10	.00	10	.00
EBT	2	3400	260	.08*	730	.21*
EBR	1	1700	170	.10	490	.29
WBL	2	3400	980	.29*	760	.22*
WBT	2	3400	860	.26	270	.08
WBR	0	0	10		10	
Right Turn Adjustment					Multi	.42*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.57**		**.94**

134. Marguerite & Los Alisos

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	70	.04
NBT	2	3400	270	.08*	360	.11*
NBR	d	1700	120	.07	120	.07
SBL	1	1700	190	.11*	290	.17*
SBT	2	3400	450	.13	380	.11
SBR	d	1700	230	.14	140	.08
EBL	1	1700	110	.06*	160	.09*
EBT	2	3400	160	.05	250	.07
EBR	d	1700	90	.05	80	.05
WBL	1	1700	120	.07	150	.09
WBT	2	3400	380	.18*	210	.12*
WBR	0	0	220		190	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.48**		**.54**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	60	.04
NBT	2	3400	290	.09*	370	.11*
NBR	d	1700	120	.07	120	.07
SBL	1	1700	200	.12*	300	.18*
SBT	2	3400	460	.14	370	.11
SBR	d	1700	240	.14	140	.08
EBL	1	1700	90	.05*	160	.09*
EBT	2	3400	150	.04	260	.08
EBR	d	1700	90	.05	70	.04
WBL	1	1700	120	.07	150	.09
WBT	2	3400	370	.18*	200	.11*
WBR	0	0	230		190	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.49**		**.54**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	50	.03
NBT	2	3400	450	.13*	570	.17*
NBR	d	1700	110	.06	120	.07
SBL	1	1700	220	.13*	470	.28*
SBT	2	3400	610	.18	560	.16
SBR	d	1700	300	.18	160	.09
EBL	1	1700	200	.12*	240	.14*
EBT	2	3400	150	.04	250	.07
EBR	d	1700	60	.04	60	.04
WBL	1	1700	130	.08	150	.09
WBT	2	3400	410	.24*	240	.14*
WBR	0	0	390		220	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.67**		**.78**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03	50	.03
NBT	2	3400	450	.13*	560	.16*
NBR	d	1700	110	.06	120	.07
SBL	1	1700	240	.14*	440	.26*
SBT	2	3400	620	.18	570	.17
SBR	d	1700	310	.18	160	.09
EBL	1	1700	230	.14*	260	.15*
EBT	2	3400	150	.04	250	.07
EBR	d	1700	50	.03	70	.04
WBL	1	1700	130	.08	150	.09
WBT	2	3400	410	.23*	240	.14*
WBR	0	0	360		230	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.69**		**.76**

135. Sta Margarita & Los Alisos

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	370	.22*	290	.17*
NBT	3	5100	210	.04	400	.08
NBR	d	1700	80	.05	160	.09
SBL	1	1700	90	.05	30	.02
SBT	3	5100	550	.11*	220	.04*
SBR	d	1700	120	.07	90	.05
EBL	1	1700	190	.11*	150	.09
EBT	2	3400	720	.21	1660	.49*
EBR	d	1700	190	.11	400	.24
WBL	1	1700	170	.10	140	.08*
WBT	2	3400	1480	.44*	910	.27
WBR	d	1700	30	.02	70	.04
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.93**		**.83**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	380	.22*	290	.17*
NBT	3	5100	200	.04	400	.08
NBR	d	1700	80	.05	160	.09
SBL	1	1700	80	.05	20	.01
SBT	3	5100	550	.11*	210	.04*
SBR	d	1700	140	.08	90	.05
EBL	1	1700	200	.12*	170	.10
EBT	2	3400	720	.21	1670	.49*
EBR	d	1700	180	.11	390	.23
WBL	1	1700	170	.10	140	.08*
WBT	2	3400	1500	.44*	900	.26
WBR	d	1700	30	.02	70	.04
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.94**		**.83**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	550	.32*	310	.18*
NBT	3	5100	240	.05	450	.09
NBR	d	1700	70	.04	200	.12
SBL	1	1700	80	.05	20	.01
SBT	3	5100	550	.11*	280	.05*
SBR	d	1700	140	.08	100	.06
EBL	1	1700	240	.14*	150	.09
EBT	2	3400	730	.21	1700	.50*
EBR	d	1700	190	.11	530	.31
WBL	1	1700	200	.12	150	.09*
WBT	2	3400	1520	.45*	940	.28
WBR	d	1700	10	.01	100	.06
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.07**		**.87**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	550	.32*	310	.18*
NBT	3	5100	250	.05	460	.09
NBR	d	1700	80	.05	200	.12
SBL	1	1700	90	.05	20	.01
SBT	3	5100	570	.11*	280	.05*
SBR	d	1700	170	.10	100	.06
EBL	1	1700	240	.14*	150	.09
EBT	2	3400	740	.22	1710	.50*
EBR	d	1700	190	.11	510	.30
WBL	1	1700	210	.12	150	.09*
WBT	2	3400	1530	.45*	940	.28
WBR	d	1700	10	.01	90	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**1.07**		**.87**

136. Marguerite & Sta Margarita

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	480	.28*	360	.21*
NBT	2	3400	280	.08	330	.10
NBR	d	1700	190	.11	180	.11
SBL	1	1700	180	.11	130	.08
SBT	2	3400	420	.12*	420	.12*
SBR	d	1700	40	.02	90	.05
EBL	1	1700	20	.01*	90	.05
EBT	3	5100	700	.14	1200	.24*
EBR	1	1700	150	.09	550	.32
WBL	1	1700	210	.12	160	.09*
WBT	3	5100	1280	.25*	850	.17
WBR	d	1700	90	.05	170	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.71**		**.71**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	490	.29*	360	.21*
NBT	2	3400	280	.08	330	.10
NBR	d	1700	190	.11	190	.11
SBL	1	1700	190	.11	130	.08
SBT	2	3400	420	.12*	420	.12*
SBR	d	1700	40	.02	90	.05
EBL	1	1700	10	.01*	80	.05
EBT	3	5100	700	.14	1200	.24*
EBR	1	1700	150	.09	520	.31
WBL	1	1700	210	.12	150	.09*
WBT	3	5100	1250	.25*	850	.17
WBR	d	1700	90	.05	170	.10
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.72**		**.71**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	500	.29*	430	.25*
NBT	2	3400	360	.11	430	.13
NBR	d	1700	180	.11	190	.11
SBL	1	1700	240	.14	230	.14
SBT	2	3400	480	.14*	480	.14*
SBR	d	1700	40	.02	100	.06
EBL	1	1700	20	.01*	80	.05
EBT	3	5100	700	.14	1560	.31*
EBR	1	1700	160	.09	630	.37
WBL	1	1700	210	.12	150	.09*
WBT	3	5100	1740	.34*	880	.17
WBR	d	1700	200	.12	240	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.83**		**.84**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	500	.29*	450	.26*
NBT	2	3400	350	.10	410	.12
NBR	d	1700	180	.11	190	.11
SBL	1	1700	230	.14	220	.13
SBT	2	3400	500	.15*	490	.14*
SBR	d	1700	40	.02	100	.06
EBL	1	1700	20	.01*	80	.05
EBT	3	5100	710	.14	1560	.31*
EBR	1	1700	170	.10	620	.36
WBL	1	1700	220	.13	150	.09*
WBT	3	5100	1730	.34*	880	.17
WBR	d	1700	210	.12	240	.14
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.84**		**.85**

148. Saddleback Ranch & Glenn Ranch

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	220	.13*	70	.04*
SBT	0	0	0		0	
SBR	2	3400	940	.28	270	.08
EBL	2	3400	150	.04*	700	.21*
EBT	2	3400	80	.02	480	.14
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3400	390	.11*	150	.04*
WBR	d	1700	180	.11	120	.07
Right Turn Adjustment			SBR	.12*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.45**		**.34**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	330		150	
NBT	1	1700	30	.23*	30	.14*
NBR	0	0	30		50	
SBL	0	0	220	{.13}*	80	{.05}*
SBT	1	1700	30	.15	30	.06
SBR	2	3400	960	.28	280	.08
EBL	2	3400	150	.04*	720	.21*
EBT	2	3400	100	.06	490	.24
EBR	0	0	90		310	
WBL	1	1700	30	.02	30	.02
WBT	2	3400	390	.11*	180	.05*
WBR	d	1700	180	.11	120	.07
Right Turn Adjustment			SBR	.08*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.64**		**.50**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	0	0	0		0	
NBR	0	0	0		0	
SBL	1	1700	200	.12*	70	.04*
SBT	0	0	0		0	
SBR	2	3400	750	.22	280	.08
EBL	2	3400	160	.05*	650	.19*
EBT	2	3400	140	.04	640	.19
EBR	0	0	0		0	
WBL	0	0	0		0	
WBT	2	3400	650	.19*	230	.07*
WBR	d	1700	180	.11	100	.06
Right Turn Adjustment			SBR	.06*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.47**		**.35**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	350		130	
NBT	1	1700	20	.24*	10	.12*
NBR	0	0	30		70	
SBL	0	0	210	{.12}*	80	{.05}*
SBT	1	1700	10	.13	20	.06
SBR	2	3400	790	.23	280	.08
EBL	2	3400	150	.04*	640	.19
EBT	2	3400	150	.06	640	.28*
EBR	0	0	70		310	
WBL	1	1700	40	.02	50	.03*
WBT	2	3400	610	.18*	260	.08
WBR	d	1700	180	.11	110	.06
Right Turn Adjustment			SBR	.05*		
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.68**		**.53**

149. El Toro & Ridgeline

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	50	.03*	110	.06
NBT	1	1700	380	.28	600	.55*
NBR	0	0	100		340	
SBL	1	1700	50	.03	120	.07*
SBT	1	1700	470	.28*	300	.18
SBR	0	0	10		10	
EBL	1	1700	20	.01	10	.01
EBT	1	1700	30	.15*	20	.04*
EBR	0	0	220		50	
WBL	1	1700	380	.22*	170	.10*
WBT	1	1700	20	.08	20	.05
WBR	0	0	120		60	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.73**		**.81**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	40	.02	110	.06
NBT	1	1700	400	.30*	590	.55*
NBR	0	0	110		340	
SBL	1	1700	30	.02*	120	.07*
SBT	1	1700	470	.29	300	.18
SBR	0	0	20		10	
EBL	1	1700	20	.01	10	.01
EBT	1	1700	30	.15*	20	.04*
EBR	0	0	220		50	
WBL	1	1700	380	.22*	170	.10*
WBT	1	1700	20	.08	20	.05
WBR	0	0	120		60	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.74**		**.81**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05*	200	.12
NBT	1	1700	380	.29	870	.72*
NBR	0	0	110		360	
SBL	1	1700	50	.03	140	.08*
SBT	1	1700	790	.48*	380	.24
SBR	0	0	30		20	
EBL	1	1700	20	.01	20	.01
EBT	1	1700	20	.16*	30	.08*
EBR	0	0	250		100	
WBL	1	1700	390	.23*	180	.11*
WBT	1	1700	30	.11	30	.06
WBR	0	0	160		70	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.97**		**1.04**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	90	.05*	210	.12
NBT	1	1700	400	.31	890	.74*
NBR	0	0	130		360	
SBL	1	1700	40	.02	140	.08*
SBT	1	1700	810	.49*	400	.24
SBR	0	0	30		10	
EBL	1	1700	20	.01	10	.01
EBT	1	1700	20	.16*	30	.08*
EBR	0	0	250		100	
WBL	1	1700	390	.23*	180	.11*
WBT	1	1700	30	.11	30	.05
WBR	0	0	160		60	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.98**		**1.06**

150. Santiago Cyn & Ridgeline

2015 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	20	.01
NBT	1	1700	270	.16	430	.25*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	360	.21*	280	.16
SBR	d	1700	70	.04	90	.05
EBL	0	0	60	{.04}*	80	{.05}*
EBT	1	1700	0	.04	0	.05
EBR	d	1700	10	.01	20	.01
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.31**		**.35**

2015 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	20	.01
NBT	1	1700	280	.16	430	.25*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	360	.21*	300	.18
SBR	d	1700	70	.04	100	.06
EBL	0	0	60	{.04}*	80	{.05}*
EBT	1	1700	0	.04	0	.05
EBR	d	1700	10	.01	20	.01
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.31**		**.35**

2030 No-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	20	.01
NBT	1	1700	430	.25	690	.41*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	690	.41*	420	.25
SBR	d	1700	70	.04	90	.05
EBL	0	0	110	{.06}*	90	{.05}*
EBT	1	1700	0	.06	0	.05
EBR	d	1700	10	.01	20	.01
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.51**

2030 With-Project

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	10	.01*	20	.01
NBT	1	1700	450	.26	700	.41*
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	1	1700	700	.41*	430	.25
SBR	d	1700	70	.04	110	.06
EBL	0	0	110	{.06}*	90	{.05}*
EBT	1	1700	0	.06	0	.05
EBR	d	1700	10	.01	20	.01
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				**.53**		**.51**

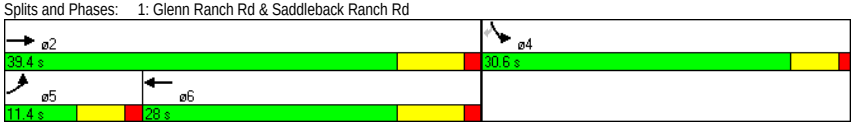
Appendix D

HCM LOS Worksheets

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Volume (vph)	137	58	298	213	771
Turn Type	Prot				Perm
Protected Phases	5	2	6	4	
Permitted Phases					4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	3.0	8.0	8.0	4.0	4.0
Minimum Split (s)	8.5	26.0	28.0	30.5	30.5
Total Split (s)	11.4	39.4	28.0	30.6	30.6
Total Split (%)	16.3%	56.3%	40.0%	43.7%	43.7%
Yellow Time (s)	4.0	5.5	5.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	-3.0	-1.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	Max	Max	None	None
Act Effct Green (s)	7.5	35.7	26.8	15.7	14.7
Actuated g/C Ratio	0.13	0.60	0.45	0.26	0.25
v/c Ratio	0.40	0.03	0.45	0.48	0.67
Control Delay	28.8	6.6	10.3	21.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	6.6	10.3	21.4	6.1
LOS	C	A	B	C	A
Approach Delay		22.2	10.3	9.4	
Approach LOS		C	B	A	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 59.5			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	137	58	298	194	213	771
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	5.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.94		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3330		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3330		1770	2787
Peak-hour factor, PHF	0.79	0.79	0.67	0.67	0.95	0.95
Adj. Flow (vph)	173	73	445	290	224	812
RTOR Reduction (vph)	0	0	131	0	0	526
Lane Group Flow (vph)	173	73	604	0	224	286
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	4.6	33.9	23.8		14.7	14.7
Effective Green, g (s)	6.1	36.9	26.8		15.7	14.7
Actuated g/C Ratio	0.10	0.61	0.44		0.26	0.24
Clearance Time (s)	5.5	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	346	2155	1473		459	676
v/s Ratio Prot	c0.05	0.02	c0.18		c0.13	
v/s Ratio Perm						0.10
v/c Ratio	0.50	0.03	0.41		0.49	0.42
Uniform Delay, d1	25.8	4.7	11.5		19.0	19.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.0	0.8		0.8	0.4
Delay (s)	26.9	4.8	12.4		19.9	19.8
Level of Service	C	A	B		B	B
Approach Delay (s)		20.4	12.4		19.8	
Approach LOS		C	B		B	

Intersection Summary				
HCM Average Control Delay	17.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	48.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	39	209	210	283	521
Turn Type		pm+ov	Prot		
Protected Phases	4	5	5	2	6
Permitted Phases		4			
Detector Phase	4	5	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0
Total Split (s)	20.0	17.0	17.0	40.0	23.0
Total Split (%)	33.3%	28.3%	28.3%	66.7%	38.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	None	None
Act Effct Green (s)	7.1	14.4	10.9	33.6	15.1
Actuated g/C Ratio	0.19	0.38	0.28	0.88	0.39
v/c Ratio	0.14	0.39	0.51	0.21	0.65
Control Delay	18.5	7.9	18.2	2.3	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.5	7.9	18.2	2.3	12.1
LOS	B	A	B	A	B
Approach Delay	9.5			9.1	12.1
Approach LOS	A			A	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 38.3			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 10.6		Intersection LOS: B	
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	39	209	210	283	521	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	1863	3382	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	1863	3382	
Peak-hour factor, PHF	0.84	0.84	0.82	0.82	0.81	0.81
Adj. Flow (vph)	46	249	256	345	643	270
RTOR Reduction (vph)	0	49	0	0	69	0
Lane Group Flow (vph)	46	200	256	345	844	0
Turn Type		pm+ov	Prot			
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	2.4	13.3	10.9	30.4	15.5	
Effective Green, g (s)	2.4	13.3	10.9	30.4	15.5	
Actuated g/C Ratio	0.06	0.33	0.27	0.75	0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	104	671	473	1388	1285	
v/s Ratio Prot	0.03	c0.08	c0.14	0.19	c0.25	
v/s Ratio Perm		0.05				
v/c Ratio	0.44	0.30	0.54	0.25	0.66	
Uniform Delay, d1	18.6	10.3	12.8	1.6	10.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	0.3	1.3	0.1	1.2	
Delay (s)	21.5	10.5	14.1	1.7	11.7	
Level of Service	C	B	B	A	B	
Approach Delay (s)	12.2			7.0	11.7	
Approach LOS	B			A	B	

Intersection Summary				
HCM Average Control Delay	10.2	HCM Level of Service		B
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	40.8	Sum of lost time (s)		12.0
Intersection Capacity Utilization	46.4%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	63	27	328	57	630	157	1558	317	332	649	109
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	13.0	36.0	20.0	14.0	37.0	37.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	14.4%	40.0%	22.2%	15.6%	41.1%	41.1%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	11.5	6.5	13.1	10.1	75.8	8.5	32.3	49.4	10.1	33.9	33.9
Actuated g/C Ratio	0.15	0.09	0.17	0.13	1.00	0.11	0.43	0.65	0.13	0.45	0.45
v/c Ratio	0.29	0.28	0.61	0.13	0.44	0.49	0.86	0.32	0.86	0.34	0.16
Control Delay	33.8	18.7	34.2	30.9	0.9	37.6	26.2	1.5	53.6	15.4	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	18.7	34.2	30.9	0.9	37.6	26.2	1.5	53.6	15.4	3.8
LOS	C	B	C	C	A	D	C	A	D	B	A
Approach Delay		25.7		13.3			23.2			25.9	
Approach LOS		C		B			C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 75.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	27	46	328	57	630	157	1558	317	332	649	109
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	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.91		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)	1770	3203		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3203		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.91	0.91	0.91	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	78	33	57	360	63	692	187	1855	377	391	764	128
RTOR Reduction (vph)	0	53	0	0	0	0	0	0	156	0	0	72
Lane Group Flow (vph)	78	37	0	360	63	692	187	1855	221	391	764	56
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	10.1	5.9		13.1	8.9	77.4	8.5	32.3	45.4	10.1	33.9	33.9
Effective Green, g (s)	10.1	5.9		13.1	8.9	77.4	8.5	32.3	45.4	10.1	33.9	33.9
Actuated g/C Ratio	0.13	0.08		0.17	0.11	1.00	0.11	0.42	0.59	0.13	0.44	0.44
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	231	244		581	407	1583	377	2122	1010	448	2227	693
v/s Ratio Prot	0.04			c0.10	0.02		0.05	c0.36	0.04	c0.11	0.15	
v/s Ratio Perm		0.01				c0.44			0.10			0.04
v/c Ratio	0.34	0.15		0.62	0.15	0.44	0.50	0.87	0.22	0.87	0.34	0.08
Uniform Delay, d1	30.6	33.4		29.8	30.9	0.0	32.4	20.7	7.6	33.0	14.4	12.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.3		2.0	0.2	0.9	1.0	4.3	0.1	16.9	0.1	0.1
Delay (s)	31.5	33.7		31.8	31.0	0.9	33.5	25.0	7.7	49.9	14.5	12.7
Level of Service	C	C		C	C	A	C	C	A	D	B	B
Approach Delay (s)		32.7			12.6			23.0			25.1	
Approach LOS		C			B			C			C	

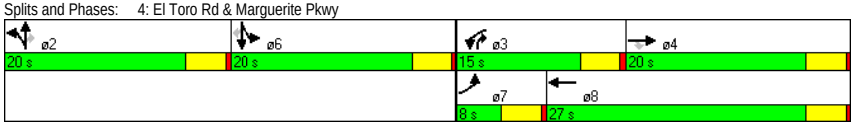
Intersection Summary					
HCM Average Control Delay		21.5	HCM Level of Service		C
HCM Volume to Capacity ratio		0.77			
Actuated Cycle Length (s)		77.4	Sum of lost time (s)		12.0
Intersection Capacity Utilization		65.6%	ICU Level of Service		C
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	1	161	100	456	373	331	14	260	2	1
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split	
Protected Phases	7	4		3	8	2	2	3	6	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	2	2	3	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	15.0	27.0	20.0	20.0	15.0	20.0	20.0
Total Split (%)	10.7%	26.7%	26.7%	20.0%	36.0%	26.7%	26.7%	20.0%	26.7%	26.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes		
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.1	8.0	8.0	11.4	22.3	10.7	10.7	25.6	5.9	5.9
Actuated g/C Ratio	0.09	0.18	0.18	0.26	0.51	0.24	0.24	0.58	0.13	0.13
v/c Ratio	0.00	0.30	0.31	0.64	0.26	0.51	0.28	0.30	0.02	0.01
Control Delay	23.0	18.4	7.5	22.1	9.1	20.4	15.2	1.5	21.0	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	18.4	7.5	22.1	9.1	20.4	15.2	1.5	21.0	21.0
LOS	C	B	A	C	A	C	B	A	C	C
Approach Delay		14.3			16.2		10.7			21.0
Approach LOS		B			B		B			C

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 43.9
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 14.0 — Intersection LOS: B
Intersection Capacity Utilization 43.3% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	161	100	456	373	5	331	14	260	2	1	0
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	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3532		1610	3241	1583	1770	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3532		1610	3241	1583	1770	3390	
Peak-hour factor, PHF	0.83	0.83	0.83	0.80	0.80	0.80	0.83	0.83	0.83	0.38	0.38	0.38
Adj. Flow (vph)	1	194	120	570	466	6	399	17	313	5	3	0
RTOR Reduction (vph)	0	0	92	0	1	0	0	0	177	0	0	0
Lane Group Flow (vph)	1	194	28	570	471	0	199	217	136	5	3	0
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.6	11.6	11.6	11.3	22.3		10.7	10.7	22.0	0.9	0.9	
Effective Green, g (s)	0.6	11.6	11.6	11.3	22.3		10.7	10.7	22.0	0.9	0.9	
Actuated g/C Ratio	0.01	0.23	0.23	0.22	0.44		0.21	0.21	0.44	0.02	0.02	
Clearance Time (s)	4.0	4.0	4.0	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	3.0	3.0	3.0	
Lane Grp Cap (vph)	41	813	364	768	1560		341	687	690	32	60	
v/s Ratio Prot	0.00	0.05		c0.17	c0.13		c0.12	0.07	0.04	c0.00	0.00	
v/s Ratio Perm			0.02						0.04			
v/c Ratio	0.02	0.24	0.08	0.74	0.30		0.58	0.32	0.20	0.16	0.05	
Uniform Delay, d1	24.7	15.9	15.2	18.2	9.1		17.9	16.8	8.8	24.4	24.4	
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	0.2	0.2	0.1	3.9	0.1		2.5	0.3	0.1	2.3	0.3	
Delay (s)	24.9	16.0	15.3	22.1	9.2		20.4	17.1	8.9	26.7	24.7	
Level of Service	C	B	B	C	A		C	B	A	C	C	
Approach Delay (s)		15.8			16.3			14.5			26.0	
Approach LOS		B			B			B			C	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	43.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	15	62	258	378
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	11.0	40.0	29.0
Total Split (%)	33.3%	18.3%	66.7%	48.3%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	8.1	7.3	19.8	14.5
Actuated g/C Ratio	0.22	0.20	0.53	0.39
v/c Ratio	0.55	0.24	0.34	0.61
Control Delay	7.5	20.3	5.4	14.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.5	20.3	5.4	14.4
LOS	A	C	A	B
Approach Delay	7.5		8.3	14.4
Approach LOS	A		A	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 37.2			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn

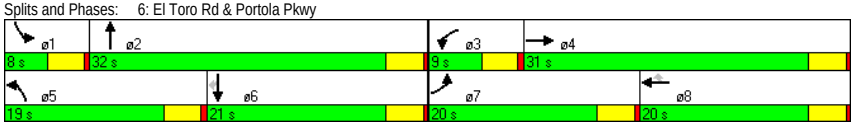
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	15	217	62	258	378	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.87		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1622		1770	1863	1855	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1622		1770	1863	1855	
Peak-hour factor, PHF	0.72	0.72	0.76	0.76	0.88	0.88
Adj. Flow (vph)	21	301	82	339	430	14
RTOR Reduction (vph)	237	0	0	0	2	0
Lane Group Flow (vph)	85	0	82	339	442	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	8.1		3.4	21.9	14.5	
Effective Green, g (s)	8.1		3.4	21.9	14.5	
Actuated g/C Ratio	0.21		0.09	0.58	0.38	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	346		158	1074	708	
v/s Ratio Prot	c0.05		c0.05	0.18	c0.24	
v/s Ratio Perm						
v/c Ratio	0.25		0.52	0.32	0.62	
Uniform Delay, d1	12.4		16.5	4.2	9.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.4		2.9	0.2	1.7	
Delay (s)	12.8		19.4	4.3	11.3	
Level of Service	B		B	A	B	
Approach Delay (s)	12.8			7.3	11.3	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	38.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	297	164	379	27	543	172	588	1287	32	546	233
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	31.0	0.0	9.0	20.0	20.0	19.0	32.0	8.0	21.0	21.0
Total Split (%)	25.0%	38.8%	0.0%	11.3%	25.0%	25.0%	23.8%	40.0%	10.0%	26.3%	26.3%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	16.0	30.1	78.5	5.0	15.4	15.4	15.0	30.4	4.0	16.0	16.0
Actuated g/C Ratio	0.20	0.38	1.00	0.06	0.20	0.20	0.19	0.39	0.05	0.20	0.20
v/c Ratio	0.99	0.10	0.32	0.32	0.73	0.54	1.02	0.60	0.24	0.68	0.54
Control Delay	79.8	17.1	0.6	43.7	34.5	16.9	73.5	20.7	40.0	32.7	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.8	17.1	0.6	43.7	34.5	16.9	73.5	20.7	40.0	32.7	7.5
LOS	E	B	A	D	C	B	E	C	D	C	A
Approach Delay		31.8			30.8			36.9		25.7	
Approach LOS		C			C			D		C	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 78.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 32.5		Intersection LOS: C	
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	297	164	379	27	543	172	588	1287	35	32	546	233
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		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)	1770	5085	1425	1770	5085	1583	3433	6382		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6382		3433	5085	1583
Peak-hour factor, PHF	0.83	0.83	0.83	0.75	0.75	0.75	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	358	198	457	36	724	229	668	1462	40	42	709	303
RTOR Reduction (vph)	0	0	0	0	0	112	0	22	0	0	0	237
Lane Group Flow (vph)	358	198	457	36	724	117	668	1480	0	42	709	66
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	16.0	30.1	81.8	2.9	17.0	17.0	15.0	30.4		2.4	17.8	17.8
Effective Green, g (s)	16.0	30.1	81.8	2.9	17.0	17.0	15.0	30.4		2.4	17.8	17.8
Actuated g/C Ratio	0.20	0.37	1.00	0.04	0.21	0.21	0.18	0.37		0.03	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	346	1871	1425	63	1057	329	630	2372		101	1107	344
v/s Ratio Prot	c0.20	0.04		0.02	c0.14		c0.19	c0.23		0.01	0.14	
v/s Ratio Perm			0.32			0.07						0.04
v/c Ratio	1.03	0.11	0.32	0.57	0.68	0.35	1.06	0.62		0.42	0.64	0.19
Uniform Delay, d1	32.9	17.0	0.0	38.8	29.9	27.7	33.4	21.0		39.0	29.1	26.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	57.6	0.0	0.6	11.9	1.9	0.7	52.9	0.5		2.8	1.3	0.3
Delay (s)	90.5	17.0	0.6	50.8	31.8	28.4	86.3	21.5		41.8	30.4	26.4
Level of Service	F	B	A	D	C	C	F	C		D	C	C
Approach Delay (s)		35.6			31.7			41.5			29.7	
Approach LOS		D			C			D			C	

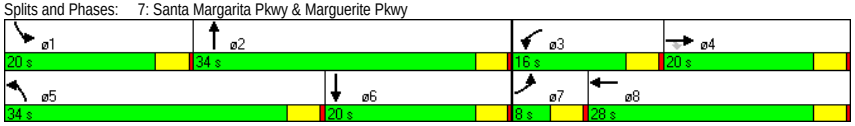
Intersection Summary					
HCM Average Control Delay		36.1	HCM Level of Service		D
HCM Volume to Capacity ratio		0.81			
Actuated Cycle Length (s)		81.8	Sum of lost time (s)		12.0
Intersection Capacity Utilization		67.6%	ICU Level of Service		C
Analysis Period (min)		15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	32	618	158	208	1163	458	256	157	400
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	8.0	20.0	20.0	16.0	28.0	34.0	34.0	20.0	20.0
Total Split (%)	8.9%	22.2%	22.2%	17.8%	31.1%	37.8%	37.8%	22.2%	22.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	16.0	16.0	12.0	27.2	30.0	31.8	13.4	15.2
Actuated g/C Ratio	0.04	0.18	0.18	0.13	0.30	0.34	0.36	0.15	0.17
v/c Ratio	0.53	0.88	0.45	0.98	0.88	1.00	0.43	0.67	0.82
Control Delay	66.6	48.4	8.5	95.3	36.8	68.5	16.2	48.5	42.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	48.4	8.5	95.3	36.8	68.5	16.2	48.5	42.9
LOS	E	D	A	F	D	E	B	D	D
Approach Delay		41.4			45.1		43.1		44.4
Approach LOS		D			D		D		D

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 89.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 43.6		Intersection LOS: D	
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



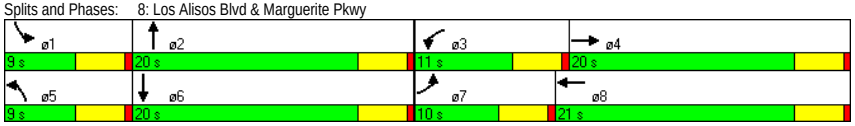
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	618	158	208	1163	101	458	256	177	157	400	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5025		1770	3322		1770	3469	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5025		1770	3322		1770	3469	
Peak-hour factor, PHF	0.77	0.77	0.77	0.89	0.89	0.89	0.77	0.77	0.77	0.88	0.88	0.88
Adj. Flow (vph)	42	803	205	234	1307	113	595	332	230	178	455	69
RTOR Reduction (vph)	0	0	165	0	71	0	0	115	0	0	51	0
Lane Group Flow (vph)	42	803	40	234	1349	0	595	447	0	178	473	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.4	17.6	17.6	12.0	27.2		30.0	31.8		13.4	15.2	
Effective Green, g (s)	2.4	17.6	17.6	12.0	27.2		30.0	31.8		13.4	15.2	
Actuated g/C Ratio	0.03	0.19	0.19	0.13	0.30		0.33	0.35		0.15	0.17	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	47	986	307	234	1505		585	1163		261	581	
v/s Ratio Prot	0.02	0.16		c0.13	c0.27		c0.34	0.13		0.10	c0.14	
v/s Ratio Perm			0.03									
v/c Ratio	0.89	0.81	0.13	1.00	0.90		1.02	0.38		0.68	0.81	
Uniform Delay, d1	44.1	35.0	30.3	39.4	30.5		30.4	22.1		36.7	36.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	91.2	5.2	0.2	58.8	7.4		41.6	0.2		7.2	8.6	
Delay (s)	135.3	40.3	30.5	98.2	37.8		72.0	22.4		43.8	45.0	
Level of Service	F	D	C	F	D		E	C		D	D	
Approach Delay (s)		42.2			46.4			47.9			44.7	
Approach LOS		D			D			D			D	

Intersection Summary					
HCM Average Control Delay		45.5	HCM Level of Service		D
HCM Volume to Capacity ratio		0.93			
Actuated Cycle Length (s)		90.8	Sum of lost time (s)		12.0
Intersection Capacity Utilization		79.8%	ICU Level of Service		D
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	91	136	148	372	24	264	100	390
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	10.0	20.0	11.0	21.0	9.0	20.0	9.0	20.0
Total Split (%)	16.7%	33.3%	18.3%	35.0%	15.0%	33.3%	15.0%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	6.1	12.7	7.1	16.3	5.1	11.7	5.1	17.7
Actuated g/C Ratio	0.12	0.24	0.13	0.31	0.10	0.22	0.10	0.33
v/c Ratio	0.59	0.28	0.84	0.68	0.18	0.57	0.72	0.53
Control Delay	39.9	14.1	58.8	16.0	27.6	16.5	54.6	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.9	14.1	58.8	16.0	27.6	16.5	54.6	14.5
LOS	D	B	E	B	C	B	D	B
Approach Delay		22.7		24.5		17.2		21.0
Approach LOS		C		C		B		C

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.9			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	136	48	148	372	226	24	264	124	100	390	132
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.94		1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3401		1770	3339		1770	3370		1770	3405	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3401		1770	3339		1770	3370		1770	3405	
Peak-hour factor, PHF	0.76	0.76	0.76	0.74	0.74	0.74	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	120	179	63	200	503	305	30	326	153	123	481	163
RTOR Reduction (vph)	0	36	0	0	161	0	0	92	0	0	91	0
Lane Group Flow (vph)	120	206	0	200	647	0	30	387	0	123	553	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.6	13.8		7.1	16.3		1.8	14.4		5.1	17.7	
Effective Green, g (s)	4.6	13.8		7.1	16.3		1.8	14.4		5.1	17.7	
Actuated g/C Ratio	0.08	0.24		0.13	0.29		0.03	0.26		0.09	0.31	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	144	832		223	965		56	860		160	1069	
v/s Ratio Prot	0.07	0.06		c0.11	c0.19		0.02	0.11		c0.07	c0.16	
v/s Ratio Perm												
v/c Ratio	0.83	0.25		0.90	0.67		0.54	0.45		0.77	0.52	
Uniform Delay, d1	25.5	17.1		24.3	17.7		26.9	17.7		25.1	15.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	31.9	0.2		33.6	1.8		9.5	0.4		19.6	0.4	
Delay (s)	57.4	17.3		57.9	19.5		36.4	18.0		44.7	16.3	
Level of Service	E	B		E	B		D	B		D	B	
Approach Delay (s)		30.6			27.1			19.1			20.8	
Approach LOS		C			C			B			C	

Intersection Summary					
HCM Average Control Delay	24.2	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.63				
Actuated Cycle Length (s)	56.4	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	54.2%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	85	444	315	204	139	695	209	1420
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	19.0	21.0	29.0	31.0	18.0	54.0	26.0	62.0
Total Split (%)	14.6%	16.2%	22.3%	23.8%	13.8%	41.5%	20.0%	47.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	13.2	17.0	25.0	28.8	14.0	51.6	20.4	58.0
Actuated g/C Ratio	0.10	0.13	0.19	0.22	0.11	0.40	0.16	0.45
v/c Ratio	0.71	1.16	1.06	0.31	1.01	0.82	0.86	1.04
Control Delay	77.3	127.6	116.6	30.4	125.0	35.7	80.4	67.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.3	127.6	116.6	30.4	125.0	35.7	80.4	67.3
LOS	E	F	F	C	F	D	F	E
Approach Delay		121.5		73.7		48.1		69.0
Approach LOS		F		E		D		E

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 74.7		Intersection LOS: E	
Intersection Capacity Utilization 91.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	444	165	315	204	108	139	695	166	209	1420	31
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	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.95		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4879		1770	4821		1770	3437		1770	3528	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4879		1770	4821		1770	3437		1770	3528	
Peak-hour factor, PHF	0.67	0.67	0.67	0.87	0.87	0.87	0.72	0.72	0.72	0.88	0.88	0.88
Adj. Flow (vph)	127	663	246	362	234	124	193	965	231	238	1614	35
RTOR Reduction (vph)	0	143	0	0	84	0	0	100	0	0	17	0
Lane Group Flow (vph)	127	766	0	362	274	0	193	1096	0	238	1632	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.2	17.0		25.0	28.8		14.0	51.6		20.4	58.0	
Effective Green, g (s)	13.2	17.0		25.0	28.8		14.0	51.6		20.4	58.0	
Actuated g/C Ratio	0.10	0.13		0.19	0.22		0.11	0.40		0.16	0.45	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	180	638		340	1068		191	1364		278	1574	
v/s Ratio Prot	0.07	c0.16		c0.20	c0.06		c0.11	0.32		c0.13	c0.46	
v/s Ratio Perm												
v/c Ratio	0.71	1.20		1.06	0.26		1.01	0.80		0.86	1.04	
Uniform Delay, d1	56.5	56.5		52.5	41.8		58.0	34.7		53.4	36.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.9	104.6		67.0	0.1		67.9	3.5		21.9	32.8	
Delay (s)	68.4	161.1		119.5	41.9		125.9	38.2		75.3	68.8	
Level of Service	E	F		F	D		F	D		E	E	
Approach Delay (s)		149.7			80.9			50.4			69.6	
Approach LOS		F			F			D			E	

Intersection Summary					
HCM Average Control Delay	82.4	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.04				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	91.0%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	144	26	275	36	8	747
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.77	0.77	0.92	0.92
Hourly flow rate (vph)	189	34	357	47	9	812
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.71					
vC, conflicting volume	1186	357			404	
vC1, stage 1 conf vol	357					
vC2, stage 2 conf vol	829					
vCu, unblocked vol	1057	357			404	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	49	95			99	
cM capacity (veh/h)	369	687			1155	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	224	357	47	9	812
Volume Left	189	0	0	9	0
Volume Right	34	0	47	0	0
cSH	398	1700	1700	1155	1700
Volume to Capacity	0.56	0.21	0.03	0.01	0.48
Queue Length 95th (ft)	84	0	0	1	0
Control Delay (s)	25.1	0.0	0.0	8.1	0.0
Lane LOS	D			A	
Approach Delay (s)	25.1	0.0		0.1	
Approach LOS	D				

Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	55.5%	ICU Level of Service		B
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	109	26	300	884	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.62	0.62	0.94	0.94
Hourly flow rate (vph)	0	156	42	484	940	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	1266	940	946			
vC1, stage 1 conf vol	940					
vC2, stage 2 conf vol	326					
vCu, unblocked vol	1266	940	946			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	41	94			
cM capacity (veh/h)	315	265	721			

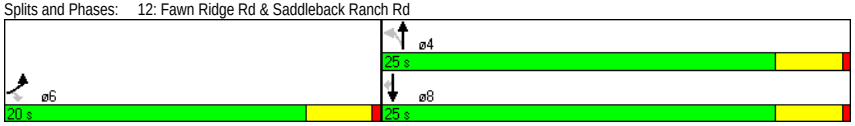
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	156	42	242	242	940	5
Volume Left	0	42	0	0	0	0
Volume Right	156	0	0	0	0	5
cSH	265	721	1700	1700	1700	1700
Volume to Capacity	0.59	0.06	0.14	0.14	0.55	0.00
Queue Length 95th (ft)	86	5	0	0	0	0
Control Delay (s)	36.4	10.3	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	36.4	0.8			0.0	
Approach LOS	E					

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	59.9%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	32	177	36	244	555	36
Turn Type		Perm	Perm			Perm
Protected Phases	6			4	8	
Permitted Phases		6	4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	25.0	25.0	25.0	25.0
Total Split (%)	44.4%	44.4%	55.6%	55.6%	55.6%	55.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.1	16.1	17.4	17.4	17.4	17.4
Actuated g/C Ratio	0.39	0.39	0.42	0.42	0.42	0.42
v/c Ratio	0.07	0.35	0.37	0.58	0.78	0.06
Control Delay	9.8	5.0	15.0	12.5	18.7	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	5.0	15.0	12.5	18.7	3.1
LOS	A	A	B	B	B	A
Approach Delay	5.7			12.8	17.8	
Approach LOS	A			B	B	

Intersection Summary			
Cycle Length: 45			
Actuated Cycle Length: 41.6			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 13.6		Intersection LOS: B	
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	32	177	36	244	555	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.23	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	428	1863	1863	1583
Peak-hour factor, PHF	0.69	0.69	0.54	0.54	0.91	0.91
Adj. Flow (vph)	46	257	67	452	610	40
RTOR Reduction (vph)	0	121	0	0	0	23
Lane Group Flow (vph)	46	136	67	452	610	17
Turn Type		Perm	Perm			Perm
Protected Phases	6			4	8	
Permitted Phases		6	4			8
Actuated Green, G (s)	16.1	16.1	17.4	17.4	17.4	17.4
Effective Green, g (s)	16.1	16.1	17.4	17.4	17.4	17.4
Actuated g/C Ratio	0.39	0.39	0.42	0.42	0.42	0.42
Clearance Time (s)	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
Lane Grp Cap (vph)	687	614	179	781	781	664
v/s Ratio Prot	0.03			0.24	c0.33	
v/s Ratio Perm		c0.09	0.16			0.01
v/c Ratio	0.07	0.22	0.37	0.58	0.78	0.03
Uniform Delay, d1	8.0	8.5	8.3	9.2	10.4	7.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.8	1.3	1.0	5.1	0.0
Delay (s)	8.2	9.3	9.6	10.3	15.5	7.1
Level of Service	A	A	A	B	B	A
Approach Delay (s)	9.2			10.2	15.0	
Approach LOS	A			B	B	

Intersection Summary				
HCM Average Control Delay	12.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	41.5	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	46.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	309	48	5	241	73	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.71	0.71
Hourly flow rate (vph)	336	52	6	277	103	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			388		650	362
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			388		650	362
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		76	99
cM capacity (veh/h)			1170		431	683

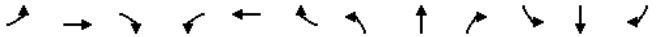
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	388	6	277	113
Volume Left	0	6	0	103
Volume Right	52	0	0	10
cSH	1700	1170	1700	446
Volume to Capacity	0.23	0.00	0.16	0.25
Queue Length 95th (ft)	0	0	0	25
Control Delay (s)	0.0	8.1	0.0	15.8
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		15.8
Approach LOS				C

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		30.3%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	106	112	77	618	374	1404	151	643	213
Turn Type	Prot	Free	Prot	Free	Prot		Prot		Free
Protected Phases	7		3		5	2	1	6	
Permitted Phases		Free		Free					Free
Detector Phase	7		3		5	2	1	6	
Switch Phase									
Minimum Initial (s)	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	8.0		8.0		8.0	20.0	8.0	20.0	
Total Split (s)	14.0	0.0	14.0	0.0	17.0	34.0	12.0	29.0	0.0
Total Split (%)	23.3%	0.0%	23.3%	0.0%	28.3%	56.7%	20.0%	48.3%	0.0%
Yellow Time (s)	3.5		3.5		3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5		0.5		0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	
Lead-Lag Optimize?									
Recall Mode	None		None		None	None	None	None	
Act Effct Green (s)	9.0	52.1	8.5	52.1	11.8	31.2	8.1	21.9	52.1
Actuated g/C Ratio	0.17	1.00	0.16	1.00	0.23	0.60	0.16	0.42	1.00
v/c Ratio	0.43	0.09	0.16	0.44	0.57	0.56	0.41	0.63	0.20
Control Delay	27.5	0.1	22.3	0.9	23.3	10.6	25.8	15.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	0.1	22.3	0.9	23.3	10.6	25.8	15.0	0.3
LOS	C	A	C	A	C	B	C	B	A
Approach Delay						13.3		13.5	
Approach LOS						B		B	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.1			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 47.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy



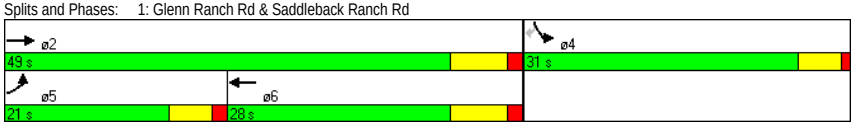
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	0	112	77	0	618	374	1404	26	151	643	213
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	0.97		1.00	0.97	0.91		0.97	0.95	1.00
Frt	1.00		0.85	1.00		0.85	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)	1770		1583	3433		1583	3433	5071		3433	3539	1583
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770		1583	3433		1583	3433	5071		3433	3539	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Adj. Flow (vph)	131	0	138	88	0	702	445	1671	31	219	932	309
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	131	0	138	88	0	702	445	1699	0	219	932	309
Turn Type	Prot		Free	Prot		Free	Prot			Prot		Free
Protected Phases	7			3			5	2		1	6	
Permitted Phases			Free			Free						Free
Actuated Green, G (s)	6.7		54.0	6.7		54.0	11.8	29.6		5.7	23.5	54.0
Effective Green, g (s)	6.7		54.0	6.7		54.0	11.8	29.6		5.7	23.5	54.0
Actuated g/C Ratio	0.12		1.00	0.12		1.00	0.22	0.55		0.11	0.44	1.00
Clearance Time (s)	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	
Lane Grp Cap (vph)	220		1583	426		1583	750	2780		362	1540	1583
v/s Ratio Prot	0.07			0.03			c0.13	c0.34		0.06	0.26	
v/s Ratio Perm			0.09			c0.44						0.20
v/c Ratio	0.60		0.09	0.21		0.44	0.59	0.61		0.60	0.61	0.20
Uniform Delay, d1	22.4		0.0	21.3		0.0	18.9	8.3		23.1	11.7	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.3		0.1	0.2		0.9	1.3	0.4		2.8	0.7	0.3
Delay (s)	26.7		0.1	21.5		0.9	20.2	8.7		25.9	12.4	0.3
Level of Service	C		A	C		A	C	A		C	B	A
Approach Delay (s)		13.0			3.2			11.1			11.8	
Approach LOS		B			A			B			B	

Intersection Summary				
HCM Average Control Delay	10.1	HCM Level of Service		B
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	54.0	Sum of lost time (s)		0.0
Intersection Capacity Utilization	47.9%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Volume (vph)	657	369	83	97	254
Turn Type	Prot				Perm
Protected Phases	5	2	6	4	
Permitted Phases					4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	3.0	8.0	8.0	4.0	4.0
Minimum Split (s)	8.5	26.0	28.0	30.5	30.5
Total Split (s)	21.0	49.0	28.0	31.0	31.0
Total Split (%)	26.3%	61.3%	35.0%	38.8%	38.8%
Yellow Time (s)	4.0	5.5	5.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	-3.0	-1.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	Max	Max	None	None
Act Effct Green (s)	17.0	45.5	24.4	12.0	11.0
Actuated g/C Ratio	0.26	0.69	0.37	0.18	0.17
v/c Ratio	0.76	0.15	0.17	0.31	0.38
Control Delay	30.8	4.6	9.3	24.6	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	4.6	9.3	24.6	4.9
LOS	C	A	A	C	A
Approach Delay		21.4	9.3	10.4	
Approach LOS		C	A	B	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 65.5			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



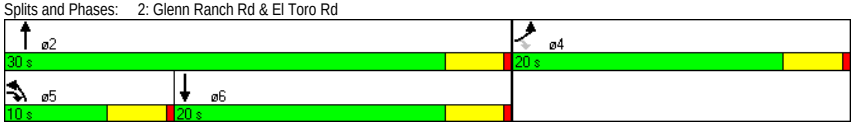
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	657	369	83	121	97	254
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	5.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.91		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3224		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3224		1770	2787
Peak-hour factor, PHF	0.97	0.97	0.93	0.93	0.98	0.98
Adj. Flow (vph)	677	380	89	130	99	259
RTOR Reduction (vph)	0	0	63	0	0	216
Lane Group Flow (vph)	677	380	156	0	99	43
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	15.5	42.4	21.4		10.9	10.9
Effective Green, g (s)	17.0	45.4	24.4		11.9	10.9
Actuated g/C Ratio	0.26	0.70	0.37		0.18	0.17
Clearance Time (s)	5.5	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	894	2460	1205		323	465
v/s Ratio Prot	c0.20	c0.11	0.05		c0.06	
v/s Ratio Perm						0.02
v/c Ratio	0.76	0.15	0.13		0.31	0.09
Uniform Delay, d1	22.2	3.4	13.5		23.1	23.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.7	0.1	0.2		0.5	0.1
Delay (s)	26.0	3.5	13.7		23.7	23.1
Level of Service	C	A	B		C	C
Approach Delay (s)		17.9	13.7		23.3	
Approach LOS		B	B		C	

Intersection Summary				
HCM Average Control Delay	18.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.36			
Actuated Cycle Length (s)	65.3	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	275	135	114	473	375
Turn Type		pm+ov	Prot		
Protected Phases	4	5	5	2	6
Permitted Phases		4			
Detector Phase	4	5	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	10.0	30.0	20.0
Total Split (%)	40.0%	20.0%	20.0%	60.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	None	None
Act Effct Green (s)	12.9	19.2	7.6	22.5	15.5
Actuated g/C Ratio	0.35	0.52	0.21	0.61	0.42
v/c Ratio	0.48	0.16	0.33	0.44	0.34
Control Delay	15.5	1.9	22.9	8.4	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	1.9	22.9	8.4	12.1
LOS	B	A	C	A	B
Approach Delay	11.1			11.2	12.1
Approach LOS	B			B	B

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 36.9			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 11.4		Intersection LOS: B	
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	275	135	114	473	375	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	1863	3468	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	1863	3468	
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.87	0.87
Adj. Flow (vph)	299	147	120	498	431	67
RTOR Reduction (vph)	0	97	0	0	24	0
Lane Group Flow (vph)	299	50	120	498	474	0
Turn Type		pm+ov	Prot			
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	8.9	13.1	4.2	21.3	13.1	
Effective Green, g (s)	8.9	13.1	4.2	21.3	13.1	
Actuated g/C Ratio	0.23	0.34	0.11	0.56	0.34	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	412	709	195	1039	1189	
v/s Ratio Prot	c0.17	0.01	0.07	c0.27	0.14	
v/s Ratio Perm		0.02				
v/c Ratio	0.73	0.07	0.62	0.48	0.40	
Uniform Delay, d1	13.5	8.5	16.2	5.1	9.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.2	0.0	5.7	0.4	0.2	
Delay (s)	19.8	8.5	21.9	5.5	9.8	
Level of Service	B	A	C	A	A	
Approach Delay (s)	16.1			8.6	9.8	
Approach LOS	B			A	A	

Intersection Summary				
HCM Average Control Delay	11.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	38.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	46.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	89	39	318	25	426	58	930	220	660	1646	82
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	8.0	25.0	20.0	25.0	42.0	42.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	8.9%	27.8%	22.2%	27.8%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	15.6	7.3	12.9	10.9	77.9	4.0	20.8	37.7	20.8	39.4	39.4
Actuated g/C Ratio	0.20	0.09	0.17	0.14	1.00	0.05	0.27	0.48	0.27	0.51	0.51
v/c Ratio	0.31	0.43	0.61	0.05	0.30	0.39	0.81	0.29	0.85	0.75	0.11
Control Delay	30.4	18.2	35.5	31.9	0.5	44.1	33.4	2.6	38.2	18.9	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.4	18.2	35.5	31.9	0.5	44.1	33.4	2.6	38.2	18.9	3.4
LOS	C	B	D	C	A	D	C	A	D	B	A
Approach Delay		23.0		16.0			28.3			23.7	
Approach LOS		C		B			C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 77.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 23.7		Intersection LOS: C	
Intersection Capacity Utilization 63.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	39	99	318	25	426	58	930	220	660	1646	82
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	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.89		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)	1770	3158		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3158		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.91	0.91	0.91	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	110	48	122	349	27	468	69	1107	262	776	1936	96
RTOR Reduction (vph)	0	93	0	0	0	0	0	0	150	0	0	49
Lane Group Flow (vph)	110	77	0	349	27	468	69	1107	112	776	1936	47
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	14.2	9.8		12.9	8.5	81.2	3.1	21.7	34.6	20.8	39.4	39.4
Effective Green, g (s)	14.2	9.8		12.9	8.5	81.2	3.1	21.7	34.6	20.8	39.4	39.4
Actuated g/C Ratio	0.17	0.12		0.16	0.10	1.00	0.04	0.27	0.43	0.26	0.49	0.49
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	310	381		545	370	1583	131	1359	753	879	2467	768
v/s Ratio Prot	0.06			c0.10	0.01		0.02	0.22	0.02	c0.23	c0.38	
v/s Ratio Perm		0.02				c0.30			0.05			0.03
v/c Ratio	0.35	0.20		0.64	0.07	0.30	0.53	0.81	0.15	0.88	0.78	0.06
Uniform Delay, d1	29.5	32.2		32.0	32.8	0.0	38.3	27.9	14.3	29.0	17.4	11.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3		2.6	0.1	0.5	3.8	3.9	0.1	10.4	1.7	0.0
Delay (s)	30.2	32.4		34.5	32.9	0.5	42.1	31.7	14.4	39.4	19.1	11.1
Level of Service	C	C		C	C	A	D	C	B	D	B	B
Approach Delay (s)		31.5			15.6			29.1			24.4	
Approach LOS		C			B			C			C	

Intersection Summary					
HCM Average Control Delay	24.7	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	81.2	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	63.5%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	11	286	291	385	141	105	37	452	10	38	11
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8	2	2	3	6	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	2	2	3	6	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	10.0	22.0	20.0	20.0	10.0	20.0	20.0	20.0
Total Split (%)	11.4%	28.6%	28.6%	14.3%	31.4%	28.6%	28.6%	14.3%	28.6%	28.6%	28.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes			
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.5	10.3	10.3	6.8	22.0	7.6	7.6	13.2	7.1	7.1	7.1
Actuated g/C Ratio	0.11	0.26	0.26	0.17	0.55	0.19	0.19	0.33	0.18	0.18	0.18
v/c Ratio	0.03	0.37	0.51	0.71	0.08	0.18	0.15	0.56	0.06	0.13	0.07
Control Delay	22.0	15.5	5.6	31.9	9.4	19.4	18.0	3.9	19.5	18.5	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	15.5	5.6	31.9	9.4	19.4	18.0	3.9	19.5	18.5	10.8
LOS	C	B	A	C	A	B	B	A	B	B	B
Approach Delay		10.7			25.7		7.4			17.3	
Approach LOS		B			C		A			B	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 40			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 49.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	286	291	385	141	6	105	37	452	10	38	11
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	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	0.91
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3519		1610	3294	1583	1770	3377	1441
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3519		1610	3294	1583	1770	3377	1441
Peak-hour factor, PHF	0.86	0.86	0.86	0.93	0.93	0.93	0.97	0.97	0.97	0.51	0.51	0.51
Adj. Flow (vph)	13	333	338	414	152	6	108	38	466	20	75	22
RTOR Reduction (vph)	0	0	234	0	3	0	0	0	341	0	2	18
Lane Group Flow (vph)	13	333	104	414	155	0	54	92	125	20	75	2
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.6	14.2	14.2	6.8	20.4		5.5	5.5	12.3	3.5	3.5	3.5
Effective Green, g (s)	0.6	14.2	14.2	6.8	20.4		5.5	5.5	12.3	3.5	3.5	3.5
Actuated g/C Ratio	0.01	0.31	0.31	0.15	0.44		0.12	0.12	0.27	0.08	0.08	0.08
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	45	1092	489	507	1561		193	394	423	135	257	110
v/s Ratio Prot	0.00	c0.09		c0.12	0.04		0.03	0.03	c0.04	0.01	c0.02	
v/s Ratio Perm			0.07						0.04			0.00
v/c Ratio	0.29	0.30	0.21	0.82	0.10		0.28	0.23	0.29	0.15	0.29	0.01
Uniform Delay, d1	22.5	12.1	11.8	19.0	7.5		18.4	18.3	13.4	19.9	20.1	19.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.2	0.2	9.8	0.0		0.8	0.3	0.4	0.5	0.6	0.1
Delay (s)	26.0	12.3	12.0	28.8	7.5		19.2	18.6	13.8	20.4	20.7	19.7
Level of Service	C	B	B	C	A		B	B	B	C	C	B
Approach Delay (s)		12.4			22.9			15.0			20.5	
Approach LOS		B			C			B			C	

Intersection Summary					
HCM Average Control Delay	16.7	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.42				
Actuated Cycle Length (s)	46.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	49.2%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	9	146	507	288
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	16.0	40.0	24.0
Total Split (%)	33.3%	26.7%	66.7%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	9.3	11.6	24.1	17.4
Actuated g/C Ratio	0.29	0.36	0.74	0.54
v/c Ratio	0.18	0.25	0.41	0.38
Control Delay	7.8	15.3	3.9	11.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.8	15.3	3.9	11.3
LOS	A	B	A	B
Approach Delay	7.8		6.5	11.3
Approach LOS	A		A	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 32.4			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 39.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn

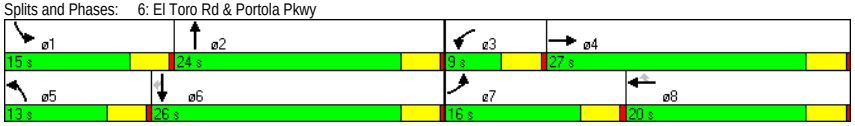
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	9	76	146	507	288	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	0.99	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1630		1770	1863	1853	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1630		1770	1863	1853	
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.80	0.80
Adj. Flow (vph)	10	83	162	563	360	14
RTOR Reduction (vph)	75	0	0	0	3	0
Lane Group Flow (vph)	18	0	162	563	371	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	3.0		4.5	19.9	11.4	
Effective Green, g (s)	3.0		4.5	19.9	11.4	
Actuated g/C Ratio	0.10		0.15	0.64	0.37	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	158		258	1200	684	
v/s Ratio Prot	c0.01		c0.09	c0.30	0.20	
v/s Ratio Perm						
v/c Ratio	0.11		0.63	0.47	0.54	
Uniform Delay, d1	12.7		12.4	2.8	7.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		4.7	0.3	0.9	
Delay (s)	13.1		17.1	3.1	8.6	
Level of Service	B		B	A	A	
Approach Delay (s)	13.1			6.2	8.6	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	30.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	222	470	590	20	200	87	349	660	250	1148	440
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	16.0	27.0	0.0	9.0	20.0	20.0	13.0	24.0	15.0	26.0	26.0
Total Split (%)	21.3%	36.0%	0.0%	12.0%	26.7%	26.7%	17.3%	32.0%	20.0%	34.7%	34.7%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	11.9	21.2	67.6	5.0	8.9	8.9	9.0	21.0	9.9	21.9	21.9
Actuated g/C Ratio	0.18	0.31	1.00	0.07	0.13	0.13	0.13	0.31	0.15	0.32	0.32
v/c Ratio	0.80	0.33	0.47	0.19	0.38	0.36	0.86	0.39	0.54	0.76	0.62
Control Delay	48.9	19.4	1.1	34.0	28.5	9.9	49.6	18.6	31.2	24.4	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	19.4	1.1	34.0	28.5	9.9	49.6	18.6	31.2	24.4	8.7
LOS	D	B	A	C	C	A	D	B	C	C	A
Approach Delay		16.1			23.6			28.9		21.6	
Approach LOS		B			C			C		C	

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 67.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	222	470	590	20	200	87	349	660	38	250	1148	440
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		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)	1770	5085	1425	1770	5085	1583	3433	6355		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6355		3433	5085	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.79	0.79	0.79	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	249	528	663	25	253	110	392	742	43	272	1248	478
RTOR Reduction (vph)	0	0	0	0	0	92	0	27	0	0	0	261
Lane Group Flow (vph)	249	528	663	25	253	18	392	758	0	272	1248	217
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	11.9	21.2	70.0	1.9	11.2	11.2	9.0	21.0		9.9	21.9	21.9
Effective Green, g (s)	11.9	21.2	70.0	1.9	11.2	11.2	9.0	21.0		9.9	21.9	21.9
Actuated g/C Ratio	0.17	0.30	1.00	0.03	0.16	0.16	0.13	0.30		0.14	0.31	0.31
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	301	1540	1425	48	814	253	441	1907		486	1591	495
v/s Ratio Prot	c0.14	0.10		0.01	0.05		c0.11	0.12		0.08	c0.25	
v/s Ratio Perm			c0.47			0.01						0.14
v/c Ratio	0.83	0.34	0.47	0.52	0.31	0.07	0.89	0.40		0.56	0.78	0.44
Uniform Delay, d1	28.1	19.0	0.0	33.6	26.0	25.0	30.0	19.5		28.0	21.9	19.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.8	0.1	1.1	9.8	0.2	0.1	19.1	0.1		1.4	2.6	0.6
Delay (s)	44.8	19.1	1.1	43.4	26.2	25.1	49.1	19.6		29.4	24.5	19.8
Level of Service	D	B	A	D	C	C	D	B		C	C	B
Approach Delay (s)		15.3			27.0			29.4			24.0	
Approach LOS		B			C			C			C	

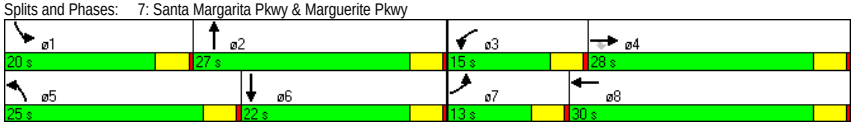
Intersection Summary					
HCM Average Control Delay		23.0	HCM Level of Service		C
HCM Volume to Capacity ratio		0.69			
Actuated Cycle Length (s)		70.0	Sum of lost time (s)		8.0
Intersection Capacity Utilization		61.6%	ICU Level of Service		B
Analysis Period (min)		15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	95	1131	523	157	781	314	299	147	379
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	13.0	28.0	28.0	15.0	30.0	25.0	27.0	20.0	22.0
Total Split (%)	14.4%	31.1%	31.1%	16.7%	33.3%	27.8%	30.0%	22.2%	24.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	8.5	24.1	24.1	10.9	28.8	20.1	22.8	13.2	15.9
Actuated g/C Ratio	0.10	0.28	0.28	0.13	0.33	0.23	0.26	0.15	0.18
v/c Ratio	0.62	0.90	0.75	0.84	0.63	0.89	0.55	0.66	0.76
Control Delay	55.1	41.4	13.6	69.7	24.3	58.8	21.0	47.3	38.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.1	41.4	13.6	69.7	24.3	58.8	21.0	47.3	38.8
LOS	E	D	B	E	C	E	C	D	D
Approach Delay		33.8			30.8		35.9		40.9
Approach LOS		C			C		D		D

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 87			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 34.4		Intersection LOS: C	
Intersection Capacity Utilization 73.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



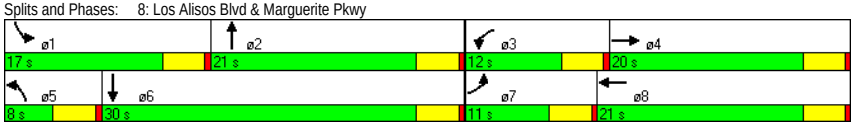
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	1131	523	157	781	156	314	299	182	147	379	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	4958		1770	3338		1770	3483	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	4958		1770	3338		1770	3483	
Peak-hour factor, PHF	0.89	0.89	0.89	0.85	0.85	0.85	0.86	0.86	0.86	0.83	0.83	0.83
Adj. Flow (vph)	107	1271	588	185	919	184	365	348	212	177	457	54
RTOR Reduction (vph)	0	0	339	0	105	0	0	135	0	0	37	0
Lane Group Flow (vph)	107	1271	249	185	998	0	365	425	0	177	474	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	7.0	24.9	24.9	10.9	28.8		20.1	22.8		13.2	15.9	
Effective Green, g (s)	7.0	24.9	24.9	10.9	28.8		20.1	22.8		13.2	15.9	
Actuated g/C Ratio	0.08	0.28	0.28	0.12	0.33		0.23	0.26		0.15	0.18	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	141	1442	449	220	1626		405	867		266	631	
v/s Ratio Prot	0.06	c0.25		c0.10	c0.20		c0.21	0.13		0.10	c0.14	
v/s Ratio Perm			0.16									
v/c Ratio	0.76	0.88	0.55	0.84	0.61		0.90	0.49		0.67	0.75	
Uniform Delay, d1	39.6	30.0	26.7	37.6	24.8		32.9	27.6		35.2	34.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.6	6.7	1.5	24.1	0.7		22.6	0.4		6.2	5.0	
Delay (s)	60.2	36.7	28.2	61.7	25.5		55.5	28.0		41.4	39.1	
Level of Service	E	D	C	E	C		E	C		D	D	
Approach Delay (s)		35.4			30.7			38.8			39.7	
Approach LOS		D			C			D			D	

Intersection Summary					
HCM Average Control Delay	35.4	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.89				
Actuated Cycle Length (s)	87.8	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	73.2%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	103	215	154	171	19	337	251	321
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	11.0	20.0	12.0	21.0	8.0	21.0	17.0	30.0
Total Split (%)	15.7%	28.6%	17.1%	30.0%	11.4%	30.0%	24.3%	42.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.0	10.1	8.1	13.6	4.0	12.4	12.9	27.9
Actuated g/C Ratio	0.12	0.17	0.14	0.23	0.07	0.21	0.22	0.47
v/c Ratio	0.61	0.50	0.75	0.40	0.17	0.67	0.78	0.28
Control Delay	42.3	23.2	49.1	15.5	32.4	20.0	40.8	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	23.2	49.1	15.5	32.4	20.0	40.8	9.4
LOS	D	C	D	B	C	C	D	A
Approach Delay		28.8		27.1		20.5		21.7
Approach LOS		C		C		C		C

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 59.5			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 24.0		Intersection LOS: C	
Intersection Capacity Utilization 56.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	215	36	154	171	120	19	337	149	251	321	73
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.94		1.00	0.95		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)	1770	3464		1770	3320		1770	3377		1770	3441	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3464		1770	3320		1770	3377		1770	3441	
Peak-hour factor, PHF	0.81	0.81	0.81	0.86	0.86	0.86	0.89	0.89	0.89	0.84	0.84	0.84
Adj. Flow (vph)	127	265	44	179	199	140	21	379	167	299	382	87
RTOR Reduction (vph)	0	30	0	0	94	0	0	112	0	0	41	0
Lane Group Flow (vph)	127	279	0	179	245	0	21	434	0	299	428	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.4	10.9		8.1	13.6		0.7	15.7		12.9	27.9	
Effective Green, g (s)	5.4	10.9		8.1	13.6		0.7	15.7		12.9	27.9	
Actuated g/C Ratio	0.08	0.17		0.13	0.21		0.01	0.25		0.20	0.44	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	150	594		225	710		19	834		359	1509	
v/s Ratio Prot	0.07	c0.08		c0.10	c0.07		0.01	c0.13		c0.17	0.12	
v/s Ratio Perm												
v/c Ratio	0.85	0.47		0.80	0.34		1.11	0.52		0.83	0.28	
Uniform Delay, d1	28.7	23.7		26.9	21.2		31.4	20.7		24.3	11.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	33.3	0.6		17.4	0.3		242.0	0.6		15.1	0.1	
Delay (s)	62.0	24.3		44.4	21.5		273.5	21.3		39.5	11.5	
Level of Service	E	C		D	C		F	C		D	B	
Approach Delay (s)		35.3			29.4			30.6			22.4	
Approach LOS		D			C			C			C	

Intersection Summary					
HCM Average Control Delay	28.5	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	63.6	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	56.9%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	48	183	239	294	114	1627	195	854
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	15.0	20.0	24.0	29.0	23.0	85.0	21.0	83.0
Total Split (%)	10.0%	13.3%	16.0%	19.3%	15.3%	56.7%	14.0%	55.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.5	13.0	20.0	25.7	15.3	81.0	17.0	82.8
Actuated g/C Ratio	0.06	0.09	0.14	0.17	0.10	0.55	0.12	0.56
v/c Ratio	0.54	0.66	1.07	0.54	0.70	1.08	1.04	0.51
Control Delay	84.1	57.8	135.7	36.3	83.1	71.9	136.5	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.1	57.8	135.7	36.3	83.1	71.9	136.5	19.8
LOS	F	E	F	D	F	E	F	B
Approach Delay		62.0		68.4		72.5		40.0
Approach LOS		E		E		E		D

Intersection Summary			
Cycle Length: 150			
Actuated Cycle Length: 147.1			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 62.5		Intersection LOS: E	
Intersection Capacity Utilization 98.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

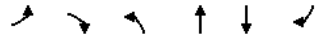
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	183	69	239	294	207	114	1627	339	195	854	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.94		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)	1770	4876		1770	4770		1770	3448		1770	3495	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4876		1770	4770		1770	3448		1770	3495	
Peak-hour factor, PHF	0.77	0.77	0.77	0.93	0.93	0.93	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	62	238	90	257	316	223	128	1828	381	214	938	86
RTOR Reduction (vph)	0	63	0	0	171	0	0	153	0	0	34	0
Lane Group Flow (vph)	62	265	0	257	368	0	128	2056	0	214	990	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	8.2	13.0		20.8	25.6		15.3	81.0		17.0	82.7	
Effective Green, g (s)	8.2	13.0		20.8	25.6		15.3	81.0		17.0	82.7	
Actuated g/C Ratio	0.06	0.09		0.14	0.17		0.10	0.55		0.12	0.56	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	98	429		249	826		183	1890		204	1956	
v/s Ratio Prot	0.04	c0.05		c0.15	0.08		0.07	c0.60		c0.12	0.28	
v/s Ratio Perm												
v/c Ratio	0.63	0.62		1.03	0.45		0.70	1.09		1.05	0.51	
Uniform Delay, d1	68.3	65.0		63.5	54.7		64.0	33.4		65.4	20.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.6	2.6		65.6	0.4		11.1	49.0		76.5	0.2	
Delay (s)	80.9	67.7		129.1	55.1		75.1	82.4		141.9	20.2	
Level of Service	F	E		F	E		E	F		F	C	
Approach Delay (s)		69.8			79.0			82.0			41.2	
Approach LOS		E			E			F			D	

Intersection Summary					
HCM Average Control Delay	69.9	HCM Level of Service		E	
HCM Volume to Capacity ratio	1.03				
Actuated Cycle Length (s)	147.8	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	98.2%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	61	9	608	115	16	293
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	76	11	647	122	19	353
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.94					
vC, conflicting volume	1038	647			769	
vC1, stage 1 conf vol	647					
vC2, stage 2 conf vol	392					
vCu, unblocked vol	1006	647			769	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	98			98	
cM capacity (veh/h)	455	471			845	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	88	647	122	19	353
Volume Left	76	0	0	19	0
Volume Right	11	0	122	0	0
cSH	457	1700	1700	845	1700
Volume to Capacity	0.19	0.38	0.07	0.02	0.21
Queue Length 95th (ft)	18	0	0	2	0
Control Delay (s)	14.7	0.0	0.0	9.4	0.0
Lane LOS	B			A	
Approach Delay (s)	14.7	0.0		0.5	
Approach LOS	B				

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	42.6%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	48	56	586	310	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	1	62	59	617	330	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	756	330	334			
vC1, stage 1 conf vol	330					
vC2, stage 2 conf vol	426					
vCu, unblocked vol	756	330	334			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	91	95			
cM capacity (veh/h)	521	666	1222			

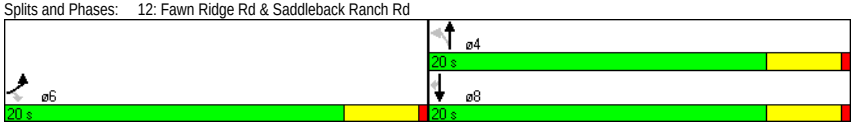
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	64	59	308	308	330	4
Volume Left	1	59	0	0	0	0
Volume Right	62	0	0	0	0	4
cSH	662	1222	1700	1700	1700	1700
Volume to Capacity	0.10	0.05	0.18	0.18	0.19	0.00
Queue Length 95th (ft)	8	4	0	0	0	0
Control Delay (s)	11.0	8.1	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	11.0	0.7			0.0	
Approach LOS	B					

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	33.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	21	58	126	473	246	18
Turn Type		Perm	Perm			Perm
Protected Phases	6			4	8	
Permitted Phases		6	4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.0	16.0	14.6	14.6	14.6	14.6
Actuated g/C Ratio	0.41	0.41	0.38	0.38	0.38	0.38
v/c Ratio	0.04	0.10	0.37	0.81	0.38	0.03
Control Delay	7.6	3.1	11.6	22.6	10.4	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	3.1	11.6	22.6	10.4	4.3
LOS	A	A	B	C	B	A
Approach Delay	4.3			20.3	10.0	
Approach LOS	A			C	B	

Intersection Summary			
Cycle Length: 40			
Actuated Cycle Length: 38.7			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 34.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	21	58	126	473	246	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.59	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1099	1863	1863	1583
Peak-hour factor, PHF	0.79	0.79	0.83	0.83	0.93	0.93
Adj. Flow (vph)	27	73	152	570	265	19
RTOR Reduction (vph)	0	43	0	0	0	12
Lane Group Flow (vph)	27	30	152	570	265	7
Turn Type		Perm	Perm			Perm
Protected Phases	6			4	8	
Permitted Phases		6	4			8
Actuated Green, G (s)	16.0	16.0	14.7	14.7	14.7	14.7
Effective Green, g (s)	16.0	16.0	14.7	14.7	14.7	14.7
Actuated g/C Ratio	0.41	0.41	0.38	0.38	0.38	0.38
Clearance Time (s)	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
Lane Grp Cap (vph)	732	654	417	708	708	601
v/s Ratio Prot	0.02			c0.31	0.14	
v/s Ratio Perm		c0.02	0.14			0.00
v/c Ratio	0.04	0.05	0.36	0.81	0.37	0.01
Uniform Delay, d1	6.8	6.8	8.6	10.7	8.7	7.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.5	6.6	0.3	0.0
Delay (s)	6.9	6.9	9.2	17.4	9.0	7.5
Level of Service	A	A	A	B	A	A
Approach Delay (s)	6.9			15.6	8.9	
Approach LOS	A			B	A	

Intersection Summary				
HCM Average Control Delay	13.1	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	34.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	293	73	19	428	58	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.85	0.85	0.75	0.75
Hourly flow rate (vph)	305	76	22	504	77	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			381		891	343
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			381		891	343
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		75	97
cM capacity (veh/h)			1177		307	699

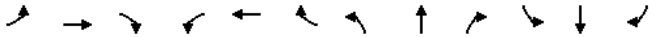
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	381	22	504	100
Volume Left	0	22	0	77
Volume Right	76	0	0	23
cSH	1700	1177	1700	351
Volume to Capacity	0.22	0.02	0.30	0.28
Queue Length 95th (ft)	0	1	0	29
Control Delay (s)	0.0	8.1	0.0	19.3
Lane LOS		A		C
Approach Delay (s)	0.0	0.3		19.3
Approach LOS				C

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization		33.4%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBR	WBL	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	89	104	70	205	144	874	447	1323	166
Turn Type	Prot	Free	Prot	Free	Prot		Prot		Free
Protected Phases	7		3		5	2	1	6	
Permitted Phases		Free		Free					Free
Detector Phase	7		3		5	2	1	6	
Switch Phase									
Minimum Initial (s)	4.0		4.0		4.0	4.0	4.0	4.0	
Minimum Split (s)	8.0		8.0		8.0	20.0	8.0	20.0	
Total Split (s)	12.0	0.0	12.0	0.0	10.0	31.0	17.0	38.0	0.0
Total Split (%)	20.0%	0.0%	20.0%	0.0%	16.7%	51.7%	28.3%	63.3%	0.0%
Yellow Time (s)	3.5		3.5		3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5		0.5		0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag					Lead	Lag	Lead	Lag	
Lead-Lag Optimize?									
Recall Mode	None		None		None	None	None	None	
Act Effct Green (s)	7.8	47.6	7.5	47.6	6.6	21.1	11.6	31.4	47.6
Actuated g/C Ratio	0.16	1.00	0.16	1.00	0.14	0.44	0.24	0.66	1.00
v/c Ratio	0.32	0.07	0.14	0.15	0.32	0.43	0.55	0.58	0.11
Control Delay	25.9	0.1	22.6	0.2	25.6	10.3	21.1	8.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	0.1	22.6	0.2	25.6	10.3	21.1	8.8	0.1
LOS	C	A	C	A	C	B	C	A	A
Approach Delay						12.4		10.9	
Approach LOS						B		B	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 47.6			
Natural Cycle: 40			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 11.0		Intersection LOS: B	
Intersection Capacity Utilization 55.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy



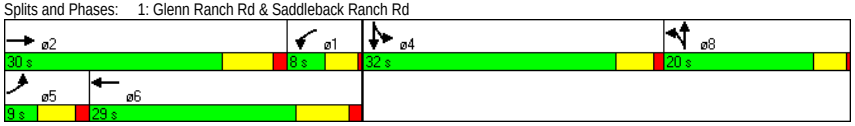
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	0	104	70	0	205	144	874	39	447	1323	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00		1.00	0.97		1.00	0.97	0.91		0.97	0.95	1.00
Frt	1.00		0.85	1.00		0.85	1.00	0.99		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)	1770		1583	3433		1583	3433	5053		3433	3539	1583
Flt Permitted	0.95		1.00	0.95		1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770		1583	3433		1583	3433	5053		3433	3539	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.89	0.89	0.89	0.95	0.95	0.95	0.98	0.98	0.98
Adj. Flow (vph)	92	0	107	79	0	230	152	920	41	456	1350	169
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	92	0	107	79	0	230	152	953	0	456	1350	169
Turn Type	Prot		Free	Prot		Free	Prot			Prot		Free
Protected Phases	7			3			5	2		1	6	
Permitted Phases			Free			Free						Free
Actuated Green, G (s)	3.9		50.1	3.9		50.1	4.4	22.6		11.6	29.8	50.1
Effective Green, g (s)	3.9		50.1	3.9		50.1	4.4	22.6		11.6	29.8	50.1
Actuated g/C Ratio	0.08		1.00	0.08		1.00	0.09	0.45		0.23	0.59	1.00
Clearance Time (s)	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	
Lane Grp Cap (vph)	138		1583	267		1583	302	2279		795	2105	1583
v/s Ratio Prot	c0.05			0.02			0.04	0.19		c0.13	c0.38	
v/s Ratio Perm			0.07			0.15						0.11
v/c Ratio	0.67		0.07	0.30		0.15	0.50	0.42		0.57	0.64	0.11
Uniform Delay, d1	22.5		0.0	21.8		0.0	21.8	9.3		17.1	6.6	0.0
Progression Factor	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.5		0.1	0.6		0.2	1.3	0.1		1.0	0.7	0.1
Delay (s)	34.0		0.1	22.4		0.2	23.1	9.4		18.1	7.3	0.1
Level of Service	C		A	C		A	C	A		B	A	A
Approach Delay (s)		15.8			5.9			11.3			9.2	
Approach LOS		B			A			B			A	

Intersection Summary				
HCM Average Control Delay	9.9	HCM Level of Service		A
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	50.1	Sum of lost time (s)		8.0
Intersection Capacity Utilization	55.6%	ICU Level of Service		B
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	148	136	9	512	125	24	236	9	806
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	9.0	30.0	8.0	29.0	20.0	20.0	32.0	32.0	0.0
Total Split (%)	10.0%	33.3%	8.9%	32.2%	22.2%	22.2%	35.6%	35.6%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	None	None	
Act Effct Green (s)	5.2	33.9	4.1	25.9	10.7	10.7	13.1	12.1	68.4
Actuated g/C Ratio	0.08	0.50	0.06	0.38	0.16	0.16	0.19	0.18	1.00
v/c Ratio	0.72	0.14	0.12	0.85	0.49	0.18	0.40	0.43	0.54
Control Delay	52.4	11.0	38.9	28.7	35.2	18.7	29.1	30.7	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	11.0	38.9	28.7	35.2	18.7	29.1	30.7	1.3
LOS	D	B	D	C	D	B	C	C	A
Approach Delay		29.4		28.8		30.6		8.0	
Approach LOS		C		C		C		A	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 68.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 20.9		Intersection LOS: C	
Intersection Capacity Utilization 50.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	136	49	9	512	239	125	24	24	236	9	806
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.96		1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3433	3399		1770	3370		1770	1723		1681	1691	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3433	3399		1770	3370		1770	1723		1681	1691	1583
Peak-hour factor, PHF	0.79	0.79	0.79	0.67	0.67	0.67	0.92	0.92	0.92	0.95	0.95	0.95
Adj. Flow (vph)	187	172	62	13	764	357	136	26	26	248	9	848
RTOR Reduction (vph)	0	30	0	0	51	0	0	23	0	0	0	0
Lane Group Flow (vph)	187	204	0	13	1070	0	136	29	0	129	128	848
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	3.6	30.8		0.6	26.3		8.8	8.8		12.1	12.1	72.3
Effective Green, g (s)	5.1	33.8		0.6	29.3		8.8	8.8		13.1	12.1	72.3
Actuated g/C Ratio	0.07	0.47		0.01	0.41		0.12	0.12		0.18	0.17	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	242	1589		15	1366		215	210		305	283	1583
v/s Ratio Prot	0.05	0.06		0.01	c0.32		0.08	0.02		0.08	0.08	
v/s Ratio Perm												c0.54
v/c Ratio	0.77	0.13		0.87	0.78		0.63	0.14		0.42	0.45	0.54
Uniform Delay, d1	33.0	10.9		35.8	18.7		30.2	28.4		26.2	27.1	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.2	0.2		162.9	4.6		6.0	0.3		0.9	1.2	1.3
Delay (s)	47.2	11.1		198.7	23.3		36.2	28.7		27.2	28.3	1.3
Level of Service	D	B		F	C		D	C		C	C	A
Approach Delay (s)		27.1			25.3			34.1			7.4	
Approach LOS		C			C			C			A	

Intersection Summary					
HCM Average Control Delay	19.2	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	72.3	Sum of lost time (s)		4.0	
Intersection Capacity Utilization	50.3%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	44	283	237	283	521
Turn Type		pm+ov	Prot		
Protected Phases	4	5	5	2	6
Permitted Phases		4			
Detector Phase	4	5	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0
Total Split (s)	20.0	13.0	13.0	40.0	27.0
Total Split (%)	33.3%	21.7%	21.7%	66.7%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	None	None
Act Effct Green (s)	7.1	13.4	9.8	32.3	14.9
Actuated g/C Ratio	0.19	0.36	0.26	0.87	0.40
v/c Ratio	0.15	0.52	0.62	0.21	0.64
Control Delay	17.6	9.6	27.2	2.4	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	9.6	27.2	2.4	10.4
LOS	B	A	C	A	B
Approach Delay	10.7			13.7	10.4
Approach LOS	B			B	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 37.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 47.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	44	283	237	283	521	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	1863	3381	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	1863	3381	
Peak-hour factor, PHF	0.84	0.84	0.82	0.82	0.81	0.81
Adj. Flow (vph)	52	337	289	345	643	273
RTOR Reduction (vph)	0	82	0	0	78	0
Lane Group Flow (vph)	52	255	289	345	838	0
Turn Type		pm+ov	Prot			
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	2.4	12.2	9.8	29.1	15.3	
Effective Green, g (s)	2.4	12.2	9.8	29.1	15.3	
Actuated g/C Ratio	0.06	0.31	0.25	0.74	0.39	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	108	649	439	1372	1310	
v/s Ratio Prot	0.03	c0.10	c0.16	0.19	c0.25	
v/s Ratio Perm		0.06				
v/c Ratio	0.48	0.39	0.66	0.25	0.64	
Uniform Delay, d1	17.9	10.7	13.3	1.7	9.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	0.4	3.6	0.1	1.0	
Delay (s)	21.3	11.1	16.9	1.8	10.9	
Level of Service	C	B	B	A	B	
Approach Delay (s)	12.5			8.7	10.9	
Approach LOS	B			A	B	

Intersection Summary				
HCM Average Control Delay	10.5	HCM Level of Service		B
HCM Volume to Capacity ratio	0.65			
Actuated Cycle Length (s)	39.5	Sum of lost time (s)		12.0
Intersection Capacity Utilization	47.9%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	63	37	470	83	835	157	1558	369	408	649	109
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	10.0	32.0	20.0	18.0	40.0	40.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	11.1%	35.6%	22.2%	20.0%	44.4%	44.4%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	8.8	6.8	15.2	13.2	77.8	6.1	28.2	47.5	13.7	35.9	35.9
Actuated g/C Ratio	0.11	0.09	0.20	0.17	1.00	0.08	0.36	0.61	0.18	0.46	0.46
v/c Ratio	0.39	0.31	0.77	0.15	0.58	0.70	1.00	0.39	0.79	0.33	0.16
Control Delay	38.7	20.8	39.2	30.3	1.6	52.1	49.5	1.9	42.9	14.5	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	20.8	39.2	30.3	1.6	52.1	49.5	1.9	42.9	14.5	3.4
LOS	D	C	D	C	A	D	D	A	D	B	A
Approach Delay		28.5		16.0			41.3			23.4	
Approach LOS		C		B			D			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 77.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 29.5		Intersection LOS: C	
Intersection Capacity Utilization 71.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

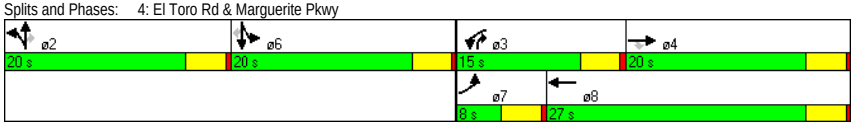
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	37	46	470	83	835	157	1558	369	408	649	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.92		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)	1770	3245		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3245		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.91	0.91	0.91	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	78	46	57	516	91	918	187	1855	439	480	764	128
RTOR Reduction (vph)	0	53	0	0	0	0	0	0	196	0	0	70
Lane Group Flow (vph)	78	50	0	516	91	918	187	1855	243	480	764	58
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	7.4	5.4		15.2	13.2	78.6	6.1	28.3	43.5	13.7	35.9	35.9
Effective Green, g (s)	7.4	5.4		15.2	13.2	78.6	6.1	28.3	43.5	13.7	35.9	35.9
Actuated g/C Ratio	0.09	0.07		0.19	0.17	1.00	0.08	0.36	0.55	0.17	0.46	0.46
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	167	223		664	594	1583	266	1831	957	598	2323	723
v/s Ratio Prot	0.04			c0.15	0.03		0.05	c0.36	0.05	c0.14	0.15	
v/s Ratio Perm		0.02				c0.58			0.10			0.04
v/c Ratio	0.47	0.22		0.78	0.15	0.58	0.70	1.01	0.25	0.80	0.33	0.08
Uniform Delay, d1	33.7	34.6		30.1	27.9	0.0	35.4	25.1	9.1	31.2	13.6	12.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.5		5.7	0.1	1.6	8.2	24.3	0.1	7.7	0.1	0.0
Delay (s)	35.8	35.1		35.8	28.0	1.6	43.5	49.5	9.3	38.8	13.7	12.1
Level of Service	D	D		D	C	A	D	D	A	D	B	B
Approach Delay (s)		35.4			14.7			41.9			22.4	
Approach LOS		D			B			D			C	

Intersection Summary					
HCM Average Control Delay		29.4	HCM Level of Service		C
HCM Volume to Capacity ratio		0.85			
Actuated Cycle Length (s)		78.6	Sum of lost time (s)		12.0
Intersection Capacity Utilization		71.8%	ICU Level of Service		C
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	1	161	100	530	373	331	14	287	2	1
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split	
Protected Phases	7	4		3	8	2	2	3	6	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	2	2	3	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	15.0	27.0	20.0	20.0	15.0	20.0	20.0
Total Split (%)	10.7%	26.7%	26.7%	20.0%	36.0%	26.7%	26.7%	20.0%	26.7%	26.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes		
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.1	8.0	8.0	11.4	22.3	10.7	10.7	25.6	5.9	5.9
Actuated g/C Ratio	0.09	0.18	0.18	0.26	0.51	0.24	0.24	0.58	0.13	0.13
v/c Ratio	0.00	0.30	0.31	0.75	0.26	0.51	0.28	0.32	0.02	0.01
Control Delay	23.0	18.4	7.5	25.3	9.1	20.4	15.2	1.6	21.0	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	18.4	7.5	25.3	9.1	20.4	15.2	1.6	21.0	21.0
LOS	C	B	A	C	A	C	B	A	C	C
Approach Delay		14.3			18.5		10.4			21.0
Approach LOS		B			B		B			C

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 43.9			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 45.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



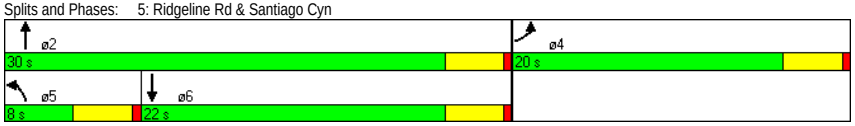
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	161	100	530	373	5	331	14	287	2	1	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3532		1610	3241	1583	1770	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3532		1610	3241	1583	1770	3390	
Peak-hour factor, PHF	0.83	0.83	0.83	0.80	0.80	0.80	0.83	0.83	0.83	0.38	0.38	0.38
Adj. Flow (vph)	1	194	120	662	466	6	399	17	346	5	3	0
RTOR Reduction (vph)	0	0	92	0	1	0	0	0	195	0	0	0
Lane Group Flow (vph)	1	194	28	662	471	0	199	217	151	5	3	0
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.6	11.6	11.6	11.3	22.3		10.7	10.7	22.0	0.9	0.9	
Effective Green, g (s)	0.6	11.6	11.6	11.3	22.3		10.7	10.7	22.0	0.9	0.9	
Actuated g/C Ratio	0.01	0.23	0.23	0.22	0.44		0.21	0.21	0.44	0.02	0.02	
Clearance Time (s)	4.0	4.0	4.0	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	3.0	3.0	3.0	
Lane Grp Cap (vph)	41	813	364	768	1560		341	687	690	32	60	
v/s Ratio Prot	0.00	0.05		c0.19	c0.13		c0.12	0.07	0.05	c0.00	0.00	
v/s Ratio Perm			0.02						0.05			
v/c Ratio	0.02	0.24	0.08	0.86	0.30		0.58	0.32	0.22	0.16	0.05	
Uniform Delay, d1	24.7	15.9	15.2	18.9	9.1		17.9	16.8	8.9	24.4	24.4	
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	0.2	0.2	0.1	9.8	0.1		2.5	0.3	0.2	2.3	0.3	
Delay (s)	24.9	16.0	15.3	28.7	9.2		20.4	17.1	9.0	26.7	24.7	
Level of Service	C	B	B	C	A		C	B	A	C	C	
Approach Delay (s)		15.8			20.6			14.3			26.0	
Approach LOS		B			C			B			C	

Intersection Summary					
HCM Average Control Delay	17.8	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	50.5	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	45.4%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	15	62	263	380
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	8.0	30.0	22.0
Total Split (%)	40.0%	16.0%	60.0%	44.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	8.4	5.0	17.5	13.7
Actuated g/C Ratio	0.27	0.16	0.55	0.43
v/c Ratio	0.49	0.29	0.34	0.55
Control Delay	5.9	23.4	5.5	12.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.9	23.4	5.5	12.2
LOS	A	C	A	B
Approach Delay	5.9		9.0	12.2
Approach LOS	A		A	B

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 31.6			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 48.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn



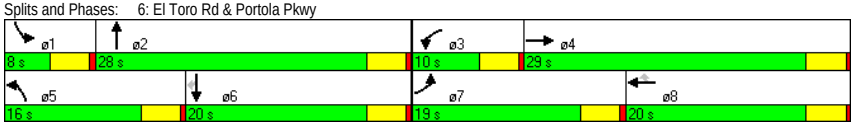
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	15	217	62	263	380	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.87		1.00	1.00	1.00	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1622		1770	1863	1855	
Flt Permitted	1.00		0.95	1.00	1.00	
Satd. Flow (perm)	1622		1770	1863	1855	
Peak-hour factor, PHF	0.72	0.72	0.76	0.76	0.88	0.88
Adj. Flow (vph)	21	301	82	346	432	14
RTOR Reduction (vph)	250	0	0	0	2	0
Lane Group Flow (vph)	72	0	82	346	444	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	5.6		1.9	19.6	13.7	
Effective Green, g (s)	5.6		1.9	19.6	13.7	
Actuated g/C Ratio	0.17		0.06	0.59	0.41	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	274		101	1100	765	
v/s Ratio Prot	c0.04		c0.05	0.19	c0.24	
v/s Ratio Perm						
v/c Ratio	0.26		0.81	0.31	0.58	
Uniform Delay, d1	12.0		15.5	3.4	7.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.5		37.2	0.2	1.1	
Delay (s)	12.5		52.7	3.6	8.6	
Level of Service	B		D	A	A	
Approach Delay (s)	12.5			13.0	8.6	
Approach LOS	B			B	A	

Intersection Summary			
HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	33.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	332	164	379	27	543	172	588	1304	32	593	328
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	19.0	29.0	0.0	10.0	20.0	20.0	16.0	28.0	8.0	20.0	20.0
Total Split (%)	25.3%	38.7%	0.0%	13.3%	26.7%	26.7%	21.3%	37.3%	10.7%	26.7%	26.7%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	15.0	28.1	73.6	5.9	14.9	14.9	12.0	26.9	4.0	15.6	15.6
Actuated g/C Ratio	0.20	0.38	1.00	0.08	0.20	0.20	0.16	0.37	0.05	0.21	0.21
v/c Ratio	1.11	0.10	0.32	0.25	0.70	0.52	1.19	0.65	0.22	0.71	0.70
Control Delay	111.2	16.2	0.6	37.1	31.4	14.8	134.0	21.8	37.0	31.4	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	111.2	16.2	0.6	37.1	31.4	14.8	134.0	21.8	37.0	31.4	13.0
LOS	F	B	A	D	C	B	F	C	D	C	B
Approach Delay		45.5			27.7			56.0		25.2	
Approach LOS		D			C			E		C	

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 73.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 41.9		Intersection LOS: D	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	332	164	379	27	543	172	588	1304	35	32	593	328
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		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)	1770	5085	1425	1770	5085	1583	3433	6383		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6383		3433	5085	1583
Peak-hour factor, PHF	0.83	0.83	0.83	0.75	0.75	0.75	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	400	198	457	36	724	229	668	1482	40	42	770	426
RTOR Reduction (vph)	0	0	0	0	0	117	0	5	0	0	0	270
Lane Group Flow (vph)	400	198	457	36	724	112	668	1517	0	42	770	156
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	15.0	28.1	76.9	3.5	16.6	16.6	12.0	26.9		2.4	17.3	17.3
Effective Green, g (s)	15.0	28.1	76.9	3.5	16.6	16.6	12.0	26.9		2.4	17.3	17.3
Actuated g/C Ratio	0.20	0.37	1.00	0.05	0.22	0.22	0.16	0.35		0.03	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	345	1858	1425	81	1098	342	536	2233		107	1144	356
v/s Ratio Prot	c0.23	0.04		0.02	c0.14		c0.19	c0.24		0.01	0.15	
v/s Ratio Perm			0.32			0.07						0.10
v/c Ratio	1.16	0.11	0.32	0.44	0.66	0.33	1.25	0.68		0.39	0.67	0.44
Uniform Delay, d1	31.0	16.1	0.0	35.8	27.6	25.4	32.5	21.3		36.5	27.2	25.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	99.2	0.0	0.6	3.9	1.4	0.6	125.8	0.8		2.4	1.6	0.9
Delay (s)	130.1	16.1	0.6	39.6	29.0	26.0	158.2	22.2		38.9	28.8	26.5
Level of Service	F	B	A	D	C	C	F	C		D	C	C
Approach Delay (s)		52.6			28.7			63.7			28.3	
Approach LOS		D			C			E			C	

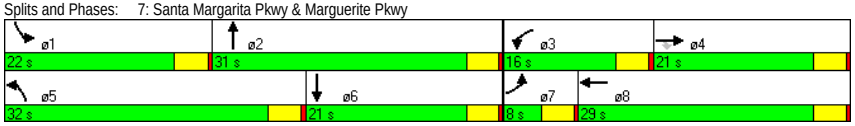
Intersection Summary					
HCM Average Control Delay		47.2	HCM Level of Service		D
HCM Volume to Capacity ratio		0.87			
Actuated Cycle Length (s)		76.9	Sum of lost time (s)		12.0
Intersection Capacity Utilization		70.5%	ICU Level of Service		C
Analysis Period (min)		15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	32	629	158	208	1167	458	272	173	442
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	8.0	21.0	21.0	16.0	29.0	32.0	31.0	22.0	21.0
Total Split (%)	8.9%	23.3%	23.3%	17.8%	32.2%	35.6%	34.4%	24.4%	23.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	16.9	16.9	12.0	28.1	28.0	30.0	14.6	16.6
Actuated g/C Ratio	0.04	0.19	0.19	0.13	0.31	0.31	0.34	0.16	0.19
v/c Ratio	0.53	0.85	0.44	0.99	0.90	1.07	0.47	0.68	0.87
Control Delay	66.8	45.2	8.1	96.3	39.7	91.3	18.3	47.4	49.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.8	45.2	8.1	96.3	39.7	91.3	18.3	47.4	49.9
LOS	E	D	A	F	D	F	B	D	D
Approach Delay		38.9			47.6		55.2		49.2
Approach LOS		D			D		E		D

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 89.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 47.8		Intersection LOS: D	
Intersection Capacity Utilization 81.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



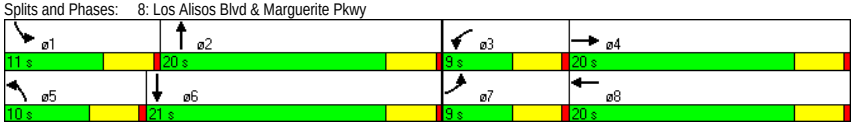
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	629	158	208	1167	107	458	272	177	173	442	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5021		1770	3330		1770	3475	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5021		1770	3330		1770	3475	
Peak-hour factor, PHF	0.77	0.77	0.77	0.89	0.89	0.89	0.77	0.77	0.77	0.88	0.88	0.88
Adj. Flow (vph)	42	817	205	234	1311	120	595	353	230	197	502	69
RTOR Reduction (vph)	0	0	163	0	11	0	0	115	0	0	12	0
Lane Group Flow (vph)	42	817	42	234	1420	0	595	468	0	197	559	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.4	18.5	18.5	12.0	28.1		28.0	30.0		14.6	16.6	
Effective Green, g (s)	2.4	18.5	18.5	12.0	28.1		28.0	30.0		14.6	16.6	
Actuated g/C Ratio	0.03	0.20	0.20	0.13	0.31		0.31	0.33		0.16	0.18	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	47	1033	321	233	1549		544	1097		284	633	
v/s Ratio Prot	0.02	0.16		c0.13	c0.28		c0.34	0.14		0.11	c0.16	
v/s Ratio Perm			0.03									
v/c Ratio	0.89	0.79	0.13	1.00	0.92		1.09	0.43		0.69	0.88	
Uniform Delay, d1	44.2	34.5	29.7	39.5	30.4		31.5	23.8		36.1	36.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	91.2	4.2	0.2	60.1	8.9		66.6	0.3		7.1	13.7	
Delay (s)	135.5	38.7	29.9	99.6	39.2		98.2	24.1		43.3	50.0	
Level of Service	F	D	C	F	D		F	C		D	D	
Approach Delay (s)		40.8			47.7			61.5			48.3	
Approach LOS		D			D			E			D	

Intersection Summary					
HCM Average Control Delay		49.7	HCM Level of Service		D
HCM Volume to Capacity ratio		0.97			
Actuated Cycle Length (s)		91.1	Sum of lost time (s)		12.0
Intersection Capacity Utilization		81.1%	ICU Level of Service		D
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	91	136	148	372	24	285	116	448
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	9.0	20.0	9.0	20.0	10.0	20.0	11.0	21.0
Total Split (%)	15.0%	33.3%	15.0%	33.3%	16.7%	33.3%	18.3%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	5.2	14.2	5.2	14.2	6.0	12.7	7.1	17.3
Actuated g/C Ratio	0.10	0.27	0.10	0.27	0.11	0.24	0.13	0.33
v/c Ratio	0.69	0.25	1.14	0.77	0.15	0.56	0.60	0.61
Control Delay	51.6	13.0	145.5	19.6	26.2	17.1	38.4	17.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	13.0	145.5	19.6	26.2	17.1	38.4	17.2
LOS	D	B	F	B	C	B	D	B
Approach Delay		25.8		44.3		17.6		20.7
Approach LOS		C		D		B		C

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay: 29.4		Intersection LOS: C	
Intersection Capacity Utilization 56.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



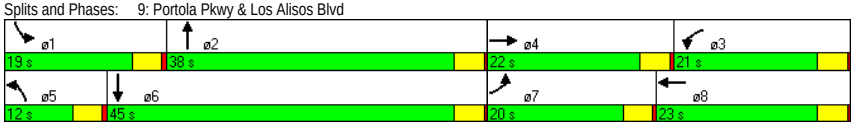
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	136	48	148	372	232	24	285	124	116	448	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.94		1.00	0.95		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)	1770	3401		1770	3335		1770	3378		1770	3418	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3401		1770	3335		1770	3378		1770	3418	
Peak-hour factor, PHF	0.76	0.76	0.76	0.74	0.74	0.74	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	120	179	63	200	503	314	30	352	153	143	553	163
RTOR Reduction (vph)	0	47	0	0	164	0	0	82	0	0	44	0
Lane Group Flow (vph)	120	195	0	200	653	0	30	423	0	143	672	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.2	14.2		5.2	14.2		2.1	14.2		5.2	17.3	
Effective Green, g (s)	5.2	14.2		5.2	14.2		2.1	14.2		5.2	17.3	
Actuated g/C Ratio	0.09	0.26		0.09	0.26		0.04	0.26		0.09	0.32	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	168	881		168	864		68	875		168	1079	
v/s Ratio Prot	0.07	0.06		c0.11	c0.20		0.02	0.13		c0.08	c0.20	
v/s Ratio Perm												
v/c Ratio	0.71	0.22		1.19	0.76		0.44	0.48		0.85	0.62	
Uniform Delay, d1	24.1	16.0		24.8	18.7		25.8	17.2		24.4	16.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.4	0.1		129.9	3.8		4.5	0.4		31.6	1.1	
Delay (s)	37.5	16.1		154.7	22.5		30.3	17.6		56.1	17.1	
Level of Service	D	B		F	C		C	B		E	B	
Approach Delay (s)		23.2			48.5			18.3			23.6	
Approach LOS		C			D			B			C	

Intersection Summary					
HCM Average Control Delay	31.7	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.79				
Actuated Cycle Length (s)	54.8	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	56.0%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	85	455	315	208	153	695	209	1420
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	22.0	21.0	23.0	12.0	38.0	19.0	45.0
Total Split (%)	20.0%	22.0%	21.0%	23.0%	12.0%	38.0%	19.0%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	12.2	18.0	17.0	22.8	8.0	34.1	14.9	41.0
Actuated g/C Ratio	0.12	0.18	0.17	0.23	0.08	0.34	0.15	0.41
v/c Ratio	0.59	0.94	1.20	0.31	1.49	0.93	0.90	1.13
Control Delay	52.3	49.1	156.1	23.7	289.4	41.6	78.4	94.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.3	49.1	156.1	23.7	289.4	41.6	78.4	94.9
LOS	D	D	F	C	F	D	E	F
Approach Delay		49.5		89.8		78.9		92.8
Approach LOS		D		F		E		F

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.49			
Intersection Signal Delay: 79.2		Intersection LOS: E	
Intersection Capacity Utilization 92.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	85	455	202	315	208	108	153	695	166	209	1420	31
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	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.95		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4851		1770	4825		1770	3437		1770	3528	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4851		1770	4825		1770	3437		1770	3528	
Peak-hour factor, PHF	0.67	0.67	0.67	0.87	0.87	0.87	0.72	0.72	0.72	0.88	0.88	0.88
Adj. Flow (vph)	127	679	301	362	239	124	212	965	231	238	1614	35
RTOR Reduction (vph)	0	170	0	0	83	0	0	109	0	0	18	0
Lane Group Flow (vph)	127	810	0	362	280	0	212	1087	0	238	1631	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.2	18.0		17.0	22.8		8.0	34.1		14.9	41.0	
Effective Green, g (s)	12.2	18.0		17.0	22.8		8.0	34.1		14.9	41.0	
Actuated g/C Ratio	0.12	0.18		0.17	0.23		0.08	0.34		0.15	0.41	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	216	873		301	1100		142	1172		264	1446	
v/s Ratio Prot	0.07	c0.17		c0.20	0.06		c0.12	0.32		0.13	c0.46	
v/s Ratio Perm												
v/c Ratio	0.59	0.93		1.20	0.25		1.49	0.93		0.90	1.13	
Uniform Delay, d1	41.5	40.4		41.5	31.6		46.0	31.8		41.8	29.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	15.6		118.5	0.1		255.2	12.4		30.9	66.9	
Delay (s)	45.6	56.0		160.0	31.8		301.2	44.1		72.7	96.4	
Level of Service	D	E		F	C		F	D		E	F	
Approach Delay (s)		54.8			95.8			82.8			93.4	
Approach LOS		D			F			F			F	

Intersection Summary					
HCM Average Control Delay	82.5	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.14				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	92.8%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	144	26	349	36	8	774
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.77	0.77	0.92	0.92
Hourly flow rate (vph)	189	34	453	47	9	841
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.68					
vC, conflicting volume	1312	453			500	
vC1, stage 1 conf vol	453					
vC2, stage 2 conf vol	859					
vCu, unblocked vol	1222	453			500	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	45	94			99	
cM capacity (veh/h)	342	607			1064	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	224	453	47	9	841
Volume Left	189	0	0	9	0
Volume Right	34	0	47	0	0
cSH	367	1700	1700	1064	1700
Volume to Capacity	0.61	0.27	0.03	0.01	0.49
Queue Length 95th (ft)	96	0	0	1	0
Control Delay (s)	29.0	0.0	0.0	8.4	0.0
Lane LOS	D			A	
Approach Delay (s)	29.0	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	109	26	374	911	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.62	0.62	0.94	0.94
Hourly flow rate (vph)	0	156	42	603	969	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	1355	969	974			
vC1, stage 1 conf vol	969					
vC2, stage 2 conf vol	385					
vCu, unblocked vol	1355	969	974			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	39	94			
cM capacity (veh/h)	301	253	703			

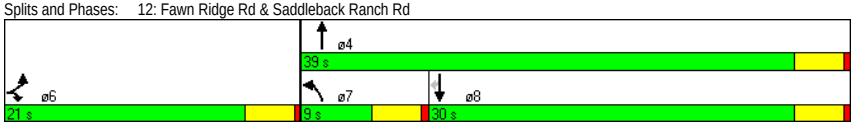
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	156	42	302	302	969	5
Volume Left	0	42	0	0	0	0
Volume Right	156	0	0	0	0	5
cSH	253	703	1700	1700	1700	1700
Volume to Capacity	0.61	0.06	0.18	0.18	0.57	0.00
Queue Length 95th (ft)	92	5	0	0	0	0
Control Delay (s)	39.5	10.4	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	39.5	0.7			0.0	
Approach LOS	E					

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	32	177	36	318	582	36
Turn Type		Prot	Prot			Perm
Protected Phases	6	6	7	4	8	
Permitted Phases						8
Detector Phase	6	6	7	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	21.0	21.0	9.0	39.0	30.0	30.0
Total Split (%)	35.0%	35.0%	15.0%	65.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	17.6	17.6	5.2	26.2	21.5	21.5
Actuated g/C Ratio	0.34	0.34	0.10	0.50	0.41	0.41
v/c Ratio	0.08	0.36	0.38	0.63	0.83	0.06
Control Delay	16.0	4.6	32.3	12.0	25.8	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	4.6	32.3	12.0	25.8	5.2
LOS	B	A	C	B	C	A
Approach Delay	6.3			14.1	24.6	
Approach LOS	A			B	C	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	32	177	36	318	582	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	1863	1863	1583
Peak-hour factor, PHF	0.69	0.69	0.54	0.54	0.91	0.91
Adj. Flow (vph)	46	257	67	589	640	40
RTOR Reduction (vph)	0	173	0	0	0	20
Lane Group Flow (vph)	46	84	67	589	640	20
Turn Type		Prot	Prot			Perm
Protected Phases	6	6	7	4	8	
Permitted Phases						8
Actuated Green, G (s)	17.7	17.7	2.6	28.2	21.6	21.6
Effective Green, g (s)	17.7	17.7	2.6	28.2	21.6	21.6
Actuated g/C Ratio	0.33	0.33	0.05	0.52	0.40	0.40
Clearance Time (s)	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
Lane Grp Cap (vph)	581	520	85	975	747	634
v/s Ratio Prot	0.03	c0.05	0.04	c0.32	c0.34	
v/s Ratio Perm						0.01
v/c Ratio	0.08	0.16	0.79	0.60	0.86	0.03
Uniform Delay, d1	12.5	12.8	25.4	9.0	14.7	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.7	37.0	1.1	9.5	0.0
Delay (s)	12.7	13.5	62.4	10.0	24.3	9.8
Level of Service	B	B	E	B	C	A
Approach Delay (s)	13.4			15.4	23.4	
Approach LOS	B			B	C	

Intersection Summary				
HCM Average Control Delay	18.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	53.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	48.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	309	48	5	241	73	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.87	0.87	0.71	0.71
Hourly flow rate (vph)	336	52	6	277	103	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			388		650	362
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			388		650	362
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		76	99
cM capacity (veh/h)			1170		431	683

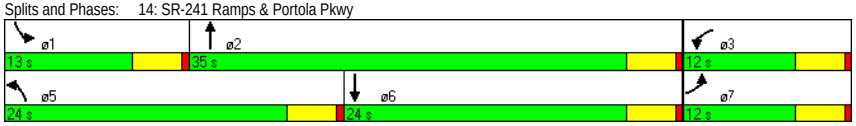
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	388	6	277	113
Volume Left	0	6	0	103
Volume Right	52	0	0	10
cSH	1700	1170	1700	446
Volume to Capacity	0.23	0.00	0.16	0.25
Queue Length 95th (ft)	0	0	0	25
Control Delay (s)	0.0	8.1	0.0	15.8
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		15.8
Approach LOS				C

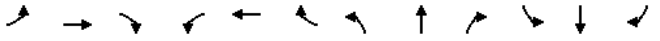
Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	106	77	374	1456	151	785
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	12.0	12.0	24.0	35.0	13.0	24.0
Total Split (%)	20.0%	20.0%	40.0%	58.3%	21.7%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	7.8	7.3	12.6	32.8	8.4	23.9
Actuated g/C Ratio	0.15	0.14	0.23	0.61	0.16	0.45
v/c Ratio	0.51	0.19	0.55	0.56	0.41	0.72
Control Delay	32.4	24.2	22.1	10.2	25.2	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	24.2	22.1	10.2	25.2	17.3
LOS	C	C	C	B	C	B
Approach Delay				12.6		18.6
Approach LOS				B		B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 53.7			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	0	0	77	0	0	374	1456	0	151	785	0
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	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.81	0.81	0.81	0.88	0.88	0.88	0.84	0.84	0.84	0.69	0.69	0.69
Adj. Flow (vph)	131	0	0	88	0	0	445	1733	0	219	1138	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	131	0	0	88	0	0	445	1733	0	219	1138	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.8			5.8			12.5	31.4		6.3	25.2	
Effective Green, g (s)	5.8			5.8			12.5	31.4		6.3	25.2	
Actuated g/C Ratio	0.10			0.10			0.23	0.57		0.11	0.45	
Clearance Time (s)	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	
Lane Grp Cap (vph)	185			359			773	2877		390	1607	
v/s Ratio Prot	c0.07			0.03			c0.13	0.34		0.06	c0.32	
v/s Ratio Perm												
v/c Ratio	0.71			0.25			0.58	0.60		0.56	0.71	
Uniform Delay, d1	24.0			22.8			19.1	7.9		23.3	12.2	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.7			0.4			1.0	0.4		1.9	1.5	
Delay (s)	35.7			23.2			20.2	8.3		25.1	13.6	
Level of Service	D			C			C	A		C	B	
Approach Delay (s)		35.7			23.2			10.7			15.5	
Approach LOS		D			C			B			B	

Intersection Summary				
HCM Average Control Delay	13.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	48.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	42	14	393	1009	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	46	15	427	1097	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				485		
pX, platoon unblocked						
vC, conflicting volume	1342	549	1099			
vC1, stage 1 conf vol	1098					
vC2, stage 2 conf vol	244					
vCu, unblocked vol	1342	549	1099			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	90	98			
cM capacity (veh/h)	269	479	631			

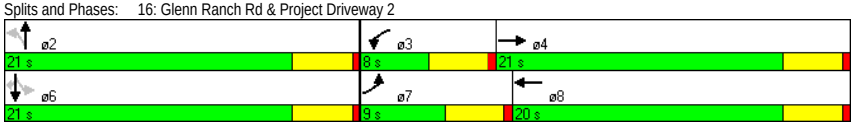
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	8	46	15	214	214	731	368
Volume Left	8	0	15	0	0	0	0
Volume Right	0	46	0	0	0	0	2
cSH	269	479	631	1700	1700	1700	1700
Volume to Capacity	0.03	0.10	0.02	0.13	0.13	0.43	0.22
Queue Length 95th (ft)	2	8	2	0	0	0	0
Control Delay (s)	18.8	13.3	10.8	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	14.1		0.4			0.0	
Approach LOS	B						

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	37	303	11	504	145	0	20	0	111
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	9.0	21.0	8.0	20.0	21.0	21.0	21.0	21.0	21.0
Total Split (%)	18.0%	42.0%	16.0%	40.0%	42.0%	42.0%	42.0%	42.0%	42.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	5.2	13.3	4.1	11.6	17.6	17.6		17.6	17.6
Actuated g/C Ratio	0.13	0.33	0.10	0.29	0.44	0.44		0.44	0.44
v/c Ratio	0.18	0.33	0.07	0.55	0.26	0.03		0.04	0.16
Control Delay	21.1	9.8	21.2	14.8	11.5	0.1		10.3	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	21.1	9.8	21.2	14.8	11.5	0.1		10.3	3.7
LOS	C	A	C	B	B	A		B	A
Approach Delay		10.8		14.9		9.7		4.7	
Approach LOS		B		B		A		A	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 40.4			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 11.8		Intersection LOS: B	
Intersection Capacity Utilization 42.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



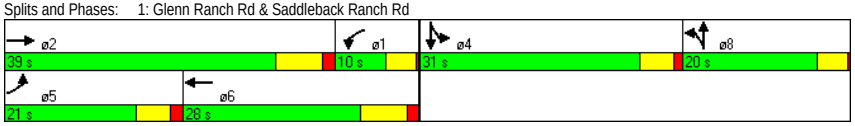
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	303	56	11	504	7	145	0	28	20	0	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3456		1770	3532		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00			0.74	1.00
Satd. Flow (perm)	1770	3456		1770	3532		1384	1583			1374	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	329	61	12	548	8	158	0	30	22	0	121
RTOR Reduction (vph)	0	32	0	0	2	0	0	18	0	0	0	72
Lane Group Flow (vph)	40	358	0	12	554	0	158	12	0	0	22	49
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	1.6	13.2		0.6	12.2		17.6	17.6			17.6	17.6
Effective Green, g (s)	1.6	13.2		0.6	12.2		17.6	17.6			17.6	17.6
Actuated g/C Ratio	0.04	0.30		0.01	0.28		0.41	0.41			0.41	0.41
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	65	1051		24	993		561	642			557	642
v/s Ratio Prot	c0.02	0.10		0.01	c0.16			0.01				
v/s Ratio Perm							c0.11				0.02	0.03
v/c Ratio	0.62	0.34		0.50	0.56		0.28	0.02			0.04	0.08
Uniform Delay, d1	20.6	11.7		21.3	13.3		8.7	7.7			7.8	7.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	16.1	0.2		15.4	0.7		1.3	0.1			0.1	0.2
Delay (s)	36.7	11.9		36.7	14.0		9.9	7.8			7.9	8.1
Level of Service	D	B		D	B		A	A			A	A
Approach Delay (s)		14.2			14.5			9.6			8.1	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM Average Control Delay	13.0	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.41				
Actuated Cycle Length (s)	43.4	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	42.2%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	696	623	30	250	111	21	152	30	277
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	21.0	39.0	10.0	28.0	20.0	20.0	31.0	31.0	0.0
Total Split (%)	21.0%	39.0%	10.0%	28.0%	20.0%	20.0%	31.0%	31.0%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	None	None	
Act Effct Green (s)	17.4	42.6	6.0	24.6	10.8	10.8	12.5	11.5	78.9
Actuated g/C Ratio	0.22	0.54	0.08	0.31	0.14	0.14	0.16	0.15	1.00
v/c Ratio	0.95	0.43	0.24	0.40	0.50	0.18	0.35	0.37	0.18
Control Delay	56.0	15.3	43.7	19.8	41.5	22.1	34.3	35.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	15.3	43.7	19.8	41.5	22.1	34.3	35.8	0.2
LOS	E	B	D	B	D	C	C	D	A
Approach Delay		34.5		21.4		36.1		14.0	
Approach LOS		C		C		D		B	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 78.9			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 28.6		Intersection LOS: C	
Intersection Capacity Utilization 54.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



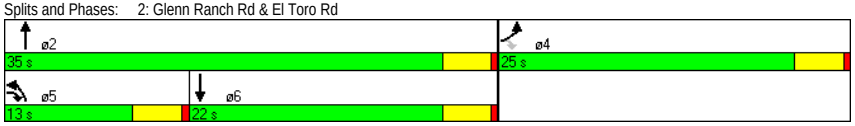
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	696	623	152	30	250	163	111	21	21	152	30	277
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.97		1.00	0.94		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	3435		1770	3330		1770	1723		1681	1713	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	3435		1770	3330		1770	1723		1681	1713	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.93	0.93	0.93	0.92	0.92	0.92	0.98	0.98	0.98
Adj. Flow (vph)	718	642	157	32	269	175	121	23	23	155	31	283
RTOR Reduction (vph)	0	16	0	0	67	0	0	20	0	0	0	0
Lane Group Flow (vph)	718	783	0	32	377	0	121	26	0	93	93	283
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	15.9	39.6		2.1	24.3		9.0	9.0		11.5	11.5	82.2
Effective Green, g (s)	17.4	42.6		2.1	27.3		9.0	9.0		12.5	11.5	82.2
Actuated g/C Ratio	0.21	0.52		0.03	0.33		0.11	0.11		0.15	0.14	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	727	1780		45	1106		194	189		256	240	1583
v/s Ratio Prot	c0.21	c0.23		0.02	c0.11		c0.07	0.01		c0.06	0.05	
v/s Ratio Perm												0.18
v/c Ratio	0.99	0.44		0.71	0.34		0.62	0.14		0.36	0.39	0.18
Uniform Delay, d1	32.3	12.4		39.7	20.7		35.0	33.1		31.3	32.1	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	30.0	0.8		41.4	0.8		6.1	0.3		0.9	1.0	0.2
Delay (s)	62.3	13.1		81.1	21.5		41.1	33.4		32.2	33.2	0.2
Level of Service	E	B		F	C		D	C		C	C	A
Approach Delay (s)		36.4			25.5			39.0			13.1	
Approach LOS		D			C			D			B	

Intersection Summary					
HCM Average Control Delay	30.4	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.56				
Actuated Cycle Length (s)	82.2	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	54.8%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	279	194	202	473	375
Turn Type		pm+ov	Prot		
Protected Phases	4	5	5	2	6
Permitted Phases		4			
Detector Phase	4	5	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0
Total Split (s)	25.0	13.0	13.0	35.0	22.0
Total Split (%)	41.7%	21.7%	21.7%	58.3%	36.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	None	None
Act Effct Green (s)	13.2	26.3	9.0	24.9	11.8
Actuated g/C Ratio	0.28	0.57	0.19	0.54	0.25
v/c Ratio	0.60	0.22	0.62	0.50	0.56
Control Delay	20.2	2.5	31.2	9.7	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.2	2.5	31.2	9.7	17.1
LOS	C	A	C	A	B
Approach Delay	12.9			16.1	17.1
Approach LOS	B			B	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 46.4			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 49.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	279	194	202	473	375	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.98	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	1863	3461	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	1863	3461	
Peak-hour factor, PHF	0.92	0.92	0.95	0.95	0.87	0.87
Adj. Flow (vph)	303	211	213	498	431	74
RTOR Reduction (vph)	0	86	0	0	24	0
Lane Group Flow (vph)	303	125	213	498	481	0
Turn Type		pm+ov	Prot			
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	13.2	22.2	9.0	24.9	11.9	
Effective Green, g (s)	13.2	22.2	9.0	24.9	11.9	
Actuated g/C Ratio	0.29	0.48	0.20	0.54	0.26	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	507	900	346	1006	893	
v/s Ratio Prot	c0.17	0.03	c0.12	c0.27	0.14	
v/s Ratio Perm		0.05				
v/c Ratio	0.60	0.14	0.62	0.50	0.54	
Uniform Delay, d1	14.2	6.6	17.0	6.7	14.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.9	0.1	3.2	0.4	0.6	
Delay (s)	16.1	6.7	20.2	7.0	15.4	
Level of Service	B	A	C	A	B	
Approach Delay (s)	12.2			11.0	15.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM Average Control Delay	12.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	46.1	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	49.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	89	70	432	46	591	58	930	390	905	1646	82
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	9.0	20.0	20.0	30.0	41.0	41.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	10.0%	22.2%	22.2%	33.3%	45.6%	45.6%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	13.9	8.0	15.1	13.5	81.2	5.0	16.0	35.1	26.0	39.0	39.0
Actuated g/C Ratio	0.17	0.10	0.19	0.17	1.00	0.06	0.20	0.43	0.32	0.48	0.48
v/c Ratio	0.36	0.50	0.74	0.09	0.41	0.33	1.10	0.56	0.97	0.79	0.12
Control Delay	34.5	21.1	39.5	31.3	0.8	42.0	93.9	10.6	49.6	22.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	21.1	39.5	31.3	0.8	42.0	93.9	10.6	49.6	22.2	3.7
LOS	C	C	D	C	A	D	F	B	D	C	A
Approach Delay		25.8		17.8			68.2			31.0	
Approach LOS		C		B			E			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 81.2			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 38.0		Intersection LOS: D	
Intersection Capacity Utilization 74.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

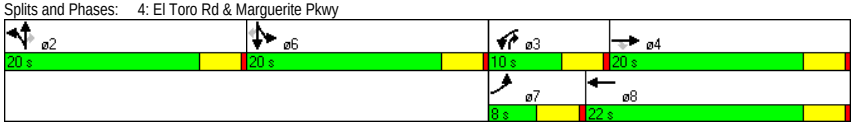
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	70	99	432	46	591	58	930	390	905	1646	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.91		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)	1770	3228		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3228		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.81	0.81	0.81	0.91	0.91	0.91	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	110	86	122	475	51	649	69	1107	464	1065	1936	96
RTOR Reduction (vph)	0	98	0	0	0	0	0	0	155	0	0	51
Lane Group Flow (vph)	110	110	0	475	51	649	69	1107	309	1065	1936	45
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	12.5	9.7		15.1	12.3	83.7	3.9	16.9	32.0	26.0	39.0	39.0
Effective Green, g (s)	12.5	9.7		15.1	12.3	83.7	3.9	16.9	32.0	26.0	39.0	39.0
Actuated g/C Ratio	0.15	0.12		0.18	0.15	1.00	0.05	0.20	0.38	0.31	0.47	0.47
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	264	374		619	520	1583	160	1027	681	1066	2369	738
v/s Ratio Prot	0.06			c0.14	0.01		0.02	c0.22	0.08	c0.31	0.38	
v/s Ratio Perm		0.03				c0.41			0.11			0.03
v/c Ratio	0.42	0.29		0.77	0.10	0.41	0.43	1.08	0.45	1.00	0.82	0.06
Uniform Delay, d1	32.3	33.9		32.6	30.9	0.0	38.8	33.4	19.3	28.8	19.3	12.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.4		5.7	0.1	0.8	1.9	51.5	0.5	27.1	2.3	0.0
Delay (s)	33.4	34.3		38.3	31.0	0.8	40.7	84.9	19.8	56.0	21.6	12.3
Level of Service	C	C		D	C	A	D	F	B	E	C	B
Approach Delay (s)		34.0			17.3			64.7			33.1	
Approach LOS		C			B			E			C	

Intersection Summary					
HCM Average Control Delay	38.5	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	83.7	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	74.6%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	11	286	291	444	141	105	37	540	10	38	11
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8	2	2	3	6	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	2	2	3	6	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	10.0	22.0	20.0	20.0	10.0	20.0	20.0	20.0
Total Split (%)	11.4%	28.6%	28.6%	14.3%	31.4%	28.6%	28.6%	14.3%	28.6%	28.6%	28.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes			
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.5	10.3	10.3	6.8	22.0	7.6	7.6	13.2	7.1	7.1	7.1
Actuated g/C Ratio	0.11	0.26	0.26	0.17	0.55	0.19	0.19	0.33	0.18	0.18	0.18
v/c Ratio	0.03	0.37	0.51	0.82	0.08	0.18	0.15	0.62	0.06	0.13	0.07
Control Delay	22.0	15.5	5.6	38.7	9.4	19.4	18.0	4.4	19.5	18.5	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.0	15.5	5.6	38.7	9.4	19.4	18.0	4.4	19.5	18.5	10.8
LOS	C	B	A	D	A	B	B	A	B	B	B
Approach Delay		10.7			31.4		7.3			17.3	
Approach LOS		B			C		A			B	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 40			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



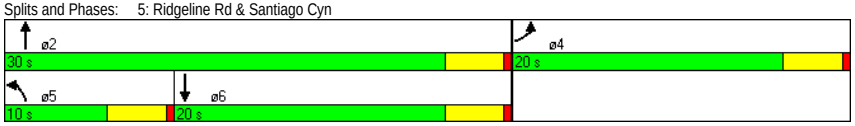
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	286	291	444	141	6	105	37	540	10	38	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	0.91
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3519		1610	3294	1583	1770	3377	1441
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3519		1610	3294	1583	1770	3377	1441
Peak-hour factor, PHF	0.86	0.86	0.86	0.93	0.93	0.93	0.97	0.97	0.97	0.51	0.51	0.51
Adj. Flow (vph)	13	333	338	477	152	6	108	38	557	20	75	22
RTOR Reduction (vph)	0	0	234	0	3	0	0	0	408	0	2	18
Lane Group Flow (vph)	13	333	104	477	155	0	54	92	149	20	75	2
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.6	14.2	14.2	6.8	20.4		5.5	5.5	12.3	3.5	3.5	3.5
Effective Green, g (s)	0.6	14.2	14.2	6.8	20.4		5.5	5.5	12.3	3.5	3.5	3.5
Actuated g/C Ratio	0.01	0.31	0.31	0.15	0.44		0.12	0.12	0.27	0.08	0.08	0.08
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	45	1092	489	507	1561		193	394	423	135	257	110
v/s Ratio Prot	0.00	c0.09		c0.14	0.04		0.03	0.03	c0.05	0.01	c0.02	
v/s Ratio Perm			0.07						0.04			0.00
v/c Ratio	0.29	0.30	0.21	0.94	0.10		0.28	0.23	0.35	0.15	0.29	0.01
Uniform Delay, d1	22.5	12.1	11.8	19.4	7.5		18.4	18.3	13.6	19.9	20.1	19.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.5	0.2	0.2	25.9	0.0		0.8	0.3	0.5	0.5	0.6	0.1
Delay (s)	26.0	12.3	12.0	45.3	7.5		19.2	18.6	14.1	20.4	20.7	19.7
Level of Service	C	B	B	D	A		B	B	B	C	C	B
Approach Delay (s)		12.4			35.9			15.1			20.5	
Approach LOS		B			D			B			C	

Intersection Summary					
HCM Average Control Delay	20.7	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.46				
Actuated Cycle Length (s)	46.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	54.7%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	9	146	511	294
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	30.0	20.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	7.7	7.7	23.3	14.9
Actuated g/C Ratio	0.25	0.25	0.77	0.49
v/c Ratio	0.20	0.36	0.40	0.42
Control Delay	6.6	20.6	4.4	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.6	20.6	4.4	10.6
LOS	A	C	A	B
Approach Delay	6.6		8.0	10.6
Approach LOS	A		A	B

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 30.2			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 8.7		Intersection LOS: A	
Intersection Capacity Utilization 39.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn



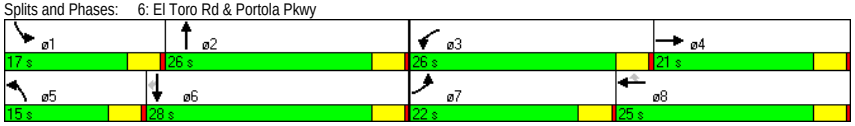
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	9	76	146	511	294	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1630		1770	1863	1854	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1630		1770	1863	1854	
Peak-hour factor, PHF	0.92	0.92	0.90	0.90	0.80	0.80
Adj. Flow (vph)	10	83	162	568	368	14
RTOR Reduction (vph)	75	0	0	0	2	0
Lane Group Flow (vph)	18	0	162	568	380	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	3.2		4.4	21.1	12.7	
Effective Green, g (s)	3.2		4.4	21.1	12.7	
Actuated g/C Ratio	0.10		0.14	0.65	0.39	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	161		241	1217	729	
v/s Ratio Prot	c0.01		c0.09	c0.30	0.20	
v/s Ratio Perm						
v/c Ratio	0.11		0.67	0.47	0.52	
Uniform Delay, d1	13.3		13.3	2.8	7.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		7.2	0.3	0.7	
Delay (s)	13.6		20.4	3.1	8.2	
Level of Service	B		C	A	A	
Approach Delay (s)	13.6			6.9	8.2	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	7.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	32.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	335	470	590	20	200	87	349	717	250	1186	516
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	22.0	21.0	0.0	26.0	25.0	25.0	15.0	26.0	17.0	28.0	28.0
Total Split (%)	24.4%	23.3%	0.0%	28.9%	27.8%	27.8%	16.7%	28.9%	18.9%	31.1%	31.1%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	18.0	26.6	78.2	6.7	9.2	9.2	11.0	23.9	11.1	24.0	24.0
Actuated g/C Ratio	0.23	0.34	1.00	0.09	0.12	0.12	0.14	0.31	0.14	0.31	0.31
v/c Ratio	0.92	0.31	0.47	0.17	0.42	0.39	0.81	0.43	0.56	0.83	0.66
Control Delay	61.2	20.8	1.1	35.8	34.2	11.3	47.9	22.0	35.9	31.0	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.2	20.8	1.1	35.8	34.2	11.3	47.9	22.0	35.9	31.0	7.2
LOS	E	C	A	D	C	B	D	C	D	C	A
Approach Delay		22.2			27.8			30.2		25.4	
Approach LOS		C			C			C		C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 78.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 68.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	335	470	590	20	200	87	349	717	38	250	1186	516
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		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)	1770	5085	1425	1770	5085	1583	3433	6359		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6359		3433	5085	1583
Peak-hour factor, PHF	0.89	0.89	0.89	0.79	0.79	0.79	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	376	528	663	25	253	110	392	806	43	272	1289	561
RTOR Reduction (vph)	0	0	0	0	0	94	0	27	0	0	0	371
Lane Group Flow (vph)	376	528	663	25	253	16	392	822	0	272	1289	190
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	18.0	26.6	80.7	3.1	11.7	11.7	11.0	23.9		11.1	24.0	24.0
Effective Green, g (s)	18.0	26.6	80.7	3.1	11.7	11.7	11.0	23.9		11.1	24.0	24.0
Actuated g/C Ratio	0.22	0.33	1.00	0.04	0.14	0.14	0.14	0.30		0.14	0.30	0.30
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	395	1676	1425	68	737	230	468	1883		472	1512	471
v/s Ratio Prot	c0.21	0.10		0.01	0.05		c0.11	0.13		0.08	c0.25	
v/s Ratio Perm			c0.47			0.01						0.12
v/c Ratio	0.95	0.32	0.47	0.37	0.34	0.07	0.84	0.44		0.58	0.85	0.40
Uniform Delay, d1	30.9	20.2	0.0	37.8	31.0	29.8	34.0	23.0		32.6	26.7	22.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	32.9	0.1	1.1	3.3	0.3	0.1	12.4	0.2		1.7	4.9	0.6
Delay (s)	63.8	20.3	1.1	41.2	31.3	29.9	46.3	23.1		34.3	31.6	23.2
Level of Service	E	C	A	D	C	C	D	C		C	C	C
Approach Delay (s)		22.6			31.6			30.5			29.7	
Approach LOS		C			C			C			C	

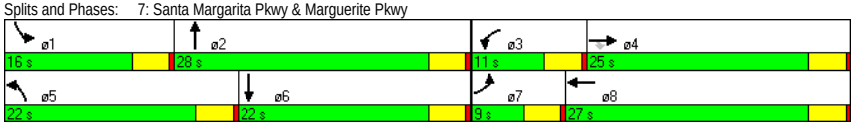
Intersection Summary					
HCM Average Control Delay	27.9	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.75				
Actuated Cycle Length (s)	80.7	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	68.6%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	95	1139	523	157	794	314	349	160	413
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	9.0	25.0	25.0	11.0	27.0	22.0	28.0	16.0	22.0
Total Split (%)	11.3%	31.3%	31.3%	13.8%	33.8%	27.5%	35.0%	20.0%	27.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	5.0	21.0	21.0	7.0	23.0	17.7	22.0	11.3	15.7
Actuated g/C Ratio	0.06	0.27	0.27	0.09	0.30	0.23	0.28	0.15	0.20
v/c Ratio	0.93	0.93	0.78	1.16	0.72	0.90	0.57	0.75	0.74
Control Delay	109.0	41.1	15.3	154.7	23.8	58.1	18.6	51.2	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.0	41.1	15.3	154.7	23.8	58.1	18.6	51.2	33.4
LOS	F	D	B	F	C	E	B	D	C
Approach Delay		37.1			42.1		33.3		38.0
Approach LOS		D			D		C		D

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 77.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.16			
Intersection Signal Delay: 37.8		Intersection LOS: D	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



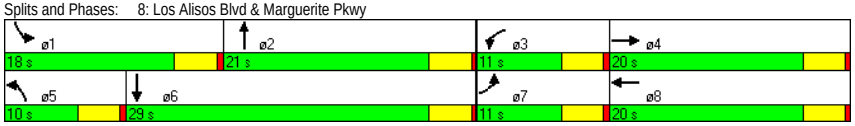
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	95	1139	523	157	794	175	314	349	182	160	413	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	4947		1770	3357		1770	3487	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	4947		1770	3357		1770	3487	
Peak-hour factor, PHF	0.89	0.89	0.89	0.85	0.85	0.85	0.86	0.86	0.86	0.83	0.83	0.83
Adj. Flow (vph)	107	1280	588	185	934	206	365	406	212	193	498	54
RTOR Reduction (vph)	0	0	327	0	119	0	0	130	0	0	36	0
Lane Group Flow (vph)	107	1280	261	185	1021	0	365	488	0	193	516	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	5.0	21.0	21.0	7.0	23.0		17.7	22.1		11.3	15.7	
Effective Green, g (s)	5.0	21.0	21.0	7.0	23.0		17.7	22.1		11.3	15.7	
Actuated g/C Ratio	0.06	0.27	0.27	0.09	0.30		0.23	0.29		0.15	0.20	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	114	1380	429	160	1470		405	959		258	707	
v/s Ratio Prot	0.06	c0.25		c0.10	0.21		c0.21	0.15		0.11	c0.15	
v/s Ratio Perm			0.16									
v/c Ratio	0.94	0.93	0.61	1.16	0.69		0.90	0.51		0.75	0.73	
Uniform Delay, d1	36.0	27.5	24.6	35.2	24.1		29.0	23.1		31.7	28.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	64.4	10.9	2.4	119.4	1.4		22.6	0.4		11.2	3.9	
Delay (s)	100.4	38.4	27.0	154.6	25.5		51.6	23.5		42.9	32.7	
Level of Service	F	D	C	F	C		D	C		D	C	
Approach Delay (s)		38.4			43.5			34.0			35.4	
Approach LOS		D			D			C			D	

Intersection Summary					
HCM Average Control Delay	38.4	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.89				
Actuated Cycle Length (s)	77.4	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	74.3%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	103	215	154	171	19	406	264	367
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	11.0	20.0	11.0	20.0	10.0	21.0	18.0	29.0
Total Split (%)	15.7%	28.6%	15.7%	28.6%	14.3%	30.0%	25.7%	41.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.0	10.2	7.1	12.8	5.9	13.7	13.6	29.5
Actuated g/C Ratio	0.12	0.17	0.12	0.21	0.10	0.23	0.22	0.49
v/c Ratio	0.62	0.51	0.87	0.45	0.12	0.71	0.79	0.31
Control Delay	43.8	23.8	69.4	16.6	29.4	21.4	40.9	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	23.8	69.4	16.6	29.4	21.4	40.9	9.5
LOS	D	C	E	B	C	C	D	A
Approach Delay		29.6		34.1		21.7		21.3
Approach LOS		C		C		C		C

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 60.7			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	103	215	36	154	171	139	19	406	149	264	367	73
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.93		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)	1770	3464		1770	3301		1770	3397		1770	3451	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3464		1770	3301		1770	3397		1770	3451	
Peak-hour factor, PHF	0.81	0.81	0.81	0.86	0.86	0.86	0.89	0.89	0.89	0.84	0.84	0.84
Adj. Flow (vph)	127	265	44	179	199	162	21	456	167	314	437	87
RTOR Reduction (vph)	0	30	0	0	107	0	0	110	0	0	40	0
Lane Group Flow (vph)	127	279	0	179	254	0	21	513	0	314	484	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.4	11.1		7.1	12.8		1.1	17.0		13.6	29.5	
Effective Green, g (s)	5.4	11.1		7.1	12.8		1.1	17.0		13.6	29.5	
Actuated g/C Ratio	0.08	0.17		0.11	0.20		0.02	0.26		0.21	0.46	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	148	593		194	652		30	891		371	1571	
v/s Ratio Prot	0.07	c0.08		c0.10	0.08		0.01	c0.15		c0.18	0.14	
v/s Ratio Perm												
v/c Ratio	0.86	0.47		0.92	0.39		0.70	0.58		0.85	0.31	
Uniform Delay, d1	29.3	24.2		28.6	22.6		31.7	20.8		24.6	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	35.8	0.6		43.1	0.4		52.7	0.9		16.1	0.1	
Delay (s)	65.1	24.8		71.7	23.0		84.4	21.7		40.7	11.3	
Level of Service	E	C		E	C		F	C		D	B	
Approach Delay (s)		36.5			39.1			23.7			22.3	
Approach LOS		D			D			C			C	

Intersection Summary					
HCM Average Control Delay	28.9	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	64.8	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	59.6%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	48	191	239	307	158	1627	195	854
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	15.0	20.0	24.0	29.0	28.0	86.0	20.0	78.0
Total Split (%)	10.0%	13.3%	16.0%	19.3%	18.7%	57.3%	13.3%	52.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.5	13.5	20.0	26.1	19.4	82.0	16.0	78.6
Actuated g/C Ratio	0.06	0.09	0.14	0.18	0.13	0.56	0.11	0.53
v/c Ratio	0.54	0.70	1.07	0.54	0.76	1.07	1.11	0.54
Control Delay	84.4	54.6	136.7	36.9	82.7	68.6	156.7	22.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.4	54.6	136.7	36.9	82.7	68.6	156.7	22.7
LOS	F	D	F	D	F	E	F	C
Approach Delay		58.8		68.5		69.7		45.9
Approach LOS		E		E		E		D

Intersection Summary			
Cycle Length: 150			
Actuated Cycle Length: 147.5			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 62.4		Intersection LOS: E	
Intersection Capacity Utilization 99.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

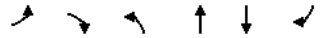
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	191	99	239	307	207	158	1627	339	195	854	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.94		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)	1770	4824		1770	4778		1770	3448		1770	3495	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4824		1770	4778		1770	3448		1770	3495	
Peak-hour factor, PHF	0.77	0.77	0.77	0.93	0.93	0.93	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	62	248	129	257	330	223	178	1828	381	214	938	86
RTOR Reduction (vph)	0	93	0	0	171	0	0	152	0	0	37	0
Lane Group Flow (vph)	62	284	0	257	382	0	178	2057	0	214	987	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	8.2	14.3		20.0	26.1		19.4	82.0		16.0	78.6	
Effective Green, g (s)	8.2	14.3		20.0	26.1		19.4	82.0		16.0	78.6	
Actuated g/C Ratio	0.06	0.10		0.13	0.18		0.13	0.55		0.11	0.53	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	98	465		239	841		232	1907		191	1852	
v/s Ratio Prot	0.04	c0.06		c0.15	0.08		0.10	c0.60		c0.12	0.28	
v/s Ratio Perm												
v/c Ratio	0.63	0.61		1.08	0.45		0.77	1.08		1.12	0.53	
Uniform Delay, d1	68.6	64.3		64.2	54.7		62.3	33.2		66.2	22.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.6	2.4		79.6	0.4		14.1	45.6		101.2	0.3	
Delay (s)	81.2	66.7		143.8	55.1		76.3	78.7		167.3	23.1	
Level of Service	F	E		F	E		E	E		F	C	
Approach Delay (s)		68.7			83.3			78.5			48.1	
Approach LOS		E			F			E			D	

Intersection Summary					
HCM Average Control Delay	70.7	HCM Level of Service	E		
HCM Volume to Capacity ratio	1.03				
Actuated Cycle Length (s)	148.3	Sum of lost time (s)	16.0		
Intersection Capacity Utilization	99.1%	ICU Level of Service	F		
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	61	9	667	115	16	381
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	76	11	710	122	19	459
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.84					
vC, conflicting volume	1207	710			832	
vC1, stage 1 conf vol	710					
vC2, stage 2 conf vol	498					
vCu, unblocked vol	1152	710			832	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	97			98	
cM capacity (veh/h)	407	434			801	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	88	710	122	19	459
Volume Left	76	0	0	19	0
Volume Right	11	0	122	0	0
cSH	410	1700	1700	801	1700
Volume to Capacity	0.21	0.42	0.07	0.02	0.27
Queue Length 95th (ft)	20	0	0	2	0
Control Delay (s)	16.1	0.0	0.0	9.6	0.0
Lane LOS	C			A	
Approach Delay (s)	16.1	0.0		0.4	
Approach LOS	C				

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	48	56	645	398	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	1	62	59	679	423	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				871		
pX, platoon unblocked						
vC, conflicting volume	881	423	428			
vC1, stage 1 conf vol	423					
vC2, stage 2 conf vol	457					
vCu, unblocked vol	881	423	428			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	89	95			
cM capacity (veh/h)	477	579	1128			

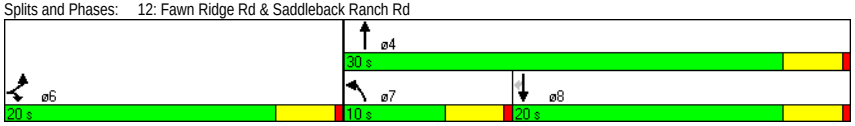
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	64	59	339	339	423	4
Volume Left	1	59	0	0	0	0
Volume Right	62	0	0	0	0	4
cSH	577	1128	1700	1700	1700	1700
Volume to Capacity	0.11	0.05	0.20	0.20	0.25	0.00
Queue Length 95th (ft)	9	4	0	0	0	0
Control Delay (s)	12.0	8.4	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	12.0	0.7			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	21	58	126	532	334	18
Turn Type		Prot	Prot			Perm
Protected Phases	6	6	7	4	8	
Permitted Phases						8
Detector Phase	6	6	7	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	10.0	30.0	20.0	20.0
Total Split (%)	40.0%	40.0%	20.0%	60.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.3	16.3	6.1	21.6	14.0	14.0
Actuated g/C Ratio	0.35	0.35	0.13	0.47	0.30	0.30
v/c Ratio	0.04	0.12	0.65	0.73	0.63	0.04
Control Delay	11.9	4.6	38.0	15.3	20.3	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	4.6	38.0	15.3	20.3	6.5
LOS	B	A	D	B	C	A
Approach Delay	6.5			19.6	19.6	
Approach LOS	A			B	B	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 46			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 38.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	21	58	126	532	334	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	1863	1863	1583
Peak-hour factor, PHF	0.79	0.79	0.83	0.83	0.93	0.93
Adj. Flow (vph)	27	73	152	641	359	19
RTOR Reduction (vph)	0	48	0	0	0	13
Lane Group Flow (vph)	27	25	152	641	359	6
Turn Type		Prot	Prot			Perm
Protected Phases	6	6	7	4	8	
Permitted Phases						8
Actuated Green, G (s)	16.2	16.2	4.6	22.6	14.0	14.0
Effective Green, g (s)	16.2	16.2	4.6	22.6	14.0	14.0
Actuated g/C Ratio	0.35	0.35	0.10	0.48	0.30	0.30
Clearance Time (s)	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
Lane Grp Cap (vph)	613	548	174	900	557	474
v/s Ratio Prot	0.02	c0.02	0.09	c0.34	0.19	
v/s Ratio Perm						0.00
v/c Ratio	0.04	0.05	0.87	0.71	0.64	0.01
Uniform Delay, d1	10.2	10.2	20.8	9.5	14.2	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2	35.0	2.7	2.6	0.0
Delay (s)	10.3	10.3	55.8	12.2	16.8	11.5
Level of Service	B	B	E	B	B	B
Approach Delay (s)	10.3			20.6	16.5	
Approach LOS	B			C	B	

Intersection Summary				
HCM Average Control Delay	18.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	46.8	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	38.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	293	73	19	428	58	17
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.85	0.85	0.75	0.75
Hourly flow rate (vph)	305	76	22	504	77	23
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			381		891	343
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			381		891	343
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		75	97
cM capacity (veh/h)			1177		307	699

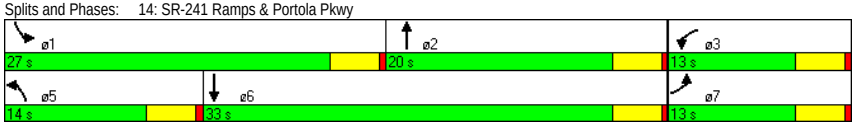
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	381	22	504	100
Volume Left	0	22	0	77
Volume Right	76	0	0	23
cSH	1700	1177	1700	351
Volume to Capacity	0.22	0.02	0.30	0.28
Queue Length 95th (ft)	0	1	0	29
Control Delay (s)	0.0	8.1	0.0	19.3
Lane LOS		A		C
Approach Delay (s)	0.0	0.3		19.3
Approach LOS				C

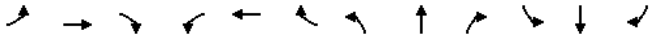
Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization		33.4%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	89	70	144	1044	447	1437
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	13.0	13.0	14.0	20.0	27.0	33.0
Total Split (%)	21.7%	21.7%	23.3%	33.3%	45.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	8.1	7.9	8.2	21.1	12.8	31.0
Actuated g/C Ratio	0.16	0.15	0.16	0.41	0.25	0.60
v/c Ratio	0.33	0.15	0.28	0.53	0.54	0.69
Control Delay	26.2	22.7	23.6	13.5	20.9	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.2	22.7	23.6	13.5	20.9	13.9
LOS	C	C	C	B	C	B
Approach Delay				14.7		15.5
Approach LOS				B		B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 51.5			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	89	0	0	70	0	0	144	1044	0	447	1437	0
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	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.97	0.97	0.97	0.89	0.89	0.89	0.95	0.95	0.95	0.98	0.98	0.98
Adj. Flow (vph)	92	0	0	79	0	0	152	1099	0	456	1466	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	92	0	0	79	0	0	152	1099	0	456	1466	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.9			5.9			6.0	22.7		12.8	29.5	
Effective Green, g (s)	5.9			5.9			6.0	22.7		12.8	29.5	
Actuated g/C Ratio	0.11			0.11			0.11	0.43		0.24	0.55	
Clearance Time (s)	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	
Lane Grp Cap (vph)	196			379			386	2162		823	1955	
v/s Ratio Prot	c0.05			0.02			0.04	0.22		c0.13	c0.41	
v/s Ratio Perm												
v/c Ratio	0.47			0.21			0.39	0.51		0.55	0.75	
Uniform Delay, d1	22.3			21.6			22.0	11.3		17.8	9.1	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8			0.3			0.7	0.2		0.8	1.6	
Delay (s)	24.1			21.9			22.7	11.4		18.6	10.8	
Level of Service	C			C			C	B		B	B	
Approach Delay (s)		24.1			21.9			12.8			12.6	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM Average Control Delay	13.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	53.4	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	58.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	28	47	697	431	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	30	51	758	468	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				504		
pX, platoon unblocked						
vC, conflicting volume	954	239	477			
vC1, stage 1 conf vol	473					
vC2, stage 2 conf vol	481					
vCu, unblocked vol	954	239	477			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	96	95			
cM capacity (veh/h)	454	763	1081			

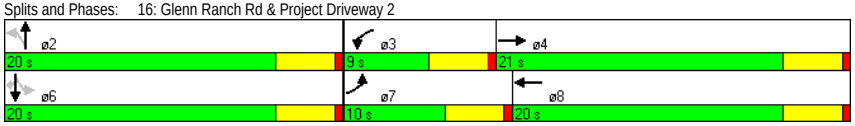
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	4	30	51	379	379	312	165
Volume Left	4	0	51	0	0	0	0
Volume Right	0	30	0	0	0	0	9
cSH	454	763	1081	1700	1700	1700	1700
Volume to Capacity	0.01	0.04	0.05	0.22	0.22	0.18	0.10
Queue Length 95th (ft)	1	3	4	0	0	0	0
Control Delay (s)	13.0	9.9	8.5	0.0	0.0	0.0	0.0
Lane LOS	B	A	A				
Approach Delay (s)	10.3		0.5			0.0	
Approach LOS	B						

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	29.3%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	127	492	34	242	128	0	13	0	72
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	21.0	9.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	20.0%	42.0%	18.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	6.2	15.5	5.1	11.1	16.4	16.4		16.4	16.4
Actuated g/C Ratio	0.14	0.36	0.12	0.26	0.38	0.38		0.38	0.38
v/c Ratio	0.55	0.56	0.18	0.32	0.26	0.03		0.03	0.12
Control Delay	31.5	11.8	22.2	13.4	13.5	0.1		11.5	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	31.5	11.8	22.2	13.4	13.5	0.1		11.5	4.5
LOS	C	B	C	B	B	A		B	A
Approach Delay		14.9		14.4		11.4		5.5	
Approach LOS		B		B		B		A	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 43.3			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 13.8		Intersection LOS: B	
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



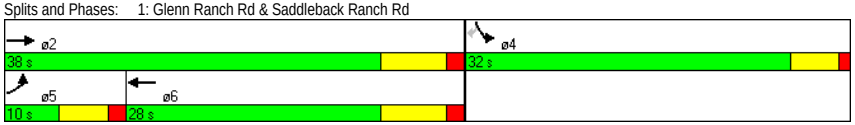
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	127	492	178	34	242	22	128	0	24	13	0	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3398		1770	3495		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.74	1.00
Satd. Flow (perm)	1770	3398		1770	3495		1394	1583			1379	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	535	193	37	263	24	139	0	26	14	0	78
RTOR Reduction (vph)	0	73	0	0	14	0	0	17	0	0	0	50
Lane Group Flow (vph)	138	655	0	37	273	0	139	9	0	0	14	28
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	4.5	15.5		1.7	12.7		16.4	16.4			16.4	16.4
Effective Green, g (s)	4.5	15.5		1.7	12.7		16.4	16.4			16.4	16.4
Actuated g/C Ratio	0.10	0.34		0.04	0.28		0.36	0.36			0.36	0.36
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	175	1155		66	973		501	569			496	569
v/s Ratio Prot	c0.08	c0.19		0.02	0.08			0.01				
v/s Ratio Perm							c0.10				0.01	0.02
v/c Ratio	0.79	0.57		0.56	0.28		0.28	0.02			0.03	0.05
Uniform Delay, d1	20.1	12.3		21.6	12.9		10.4	9.4			9.4	9.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	20.6	0.6		10.4	0.2		1.4	0.1			0.1	0.2
Delay (s)	40.7	12.9		32.0	13.0		11.8	9.5			9.6	9.7
Level of Service	D	B		C	B		B	A			A	A
Approach Delay (s)		17.4			15.2			11.4			9.7	
Approach LOS		B			B			B			A	

Intersection Summary					
HCM Average Control Delay	15.7	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.47				
Actuated Cycle Length (s)	45.6	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	46.4%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Volume (vph)	150	80	390	220	940
Turn Type	Prot				Perm
Protected Phases	5	2	6	4	
Permitted Phases					4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	3.0	8.0	8.0	4.0	4.0
Minimum Split (s)	8.5	26.0	28.0	30.5	30.5
Total Split (s)	10.0	38.0	28.0	32.0	32.0
Total Split (%)	14.3%	54.3%	40.0%	45.7%	45.7%
Yellow Time (s)	4.0	5.5	5.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	-3.0	-1.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	Max	Max	None	None
Act Effct Green (s)	6.1	34.4	26.6	18.8	17.8
Actuated g/C Ratio	0.10	0.56	0.43	0.31	0.29
v/c Ratio	0.48	0.04	0.40	0.44	0.80
Control Delay	33.2	8.1	11.0	19.0	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	33.2	8.1	11.0	19.0	12.0
LOS	C	A	B	B	B
Approach Delay		24.5	11.0	13.3	
Approach LOS		C	B	B	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 61.3			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 56.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	150	80	390	180	220	940
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	5.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.95		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3371		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3371		1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	87	424	196	239	1022
RTOR Reduction (vph)	0	0	103	0	0	467
Lane Group Flow (vph)	163	87	517	0	239	555
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	3.5	32.6	23.6		17.8	17.8
Effective Green, g (s)	5.0	35.6	26.6		18.8	17.8
Actuated g/C Ratio	0.08	0.57	0.43		0.30	0.29
Clearance Time (s)	5.5	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	275	2019	1437		533	795
v/s Ratio Prot	c0.05	0.02	c0.15		0.14	
v/s Ratio Perm						c0.20
v/c Ratio	0.59	0.04	0.36		0.45	0.70
Uniform Delay, d1	27.7	5.9	12.1		17.6	19.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.4	0.0	0.7		0.6	2.7
Delay (s)	31.1	5.9	12.8		18.2	22.6
Level of Service	C	A	B		B	C
Approach Delay (s)		22.4	12.8		21.8	
Approach LOS		C	B		C	

Intersection Summary				
HCM Average Control Delay	19.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.51			
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	56.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	80	220	200	310	740
Turn Type		pm+ov	Prot		
Protected Phases	4	5	5	2	6
Permitted Phases		4			
Detector Phase	4	5	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0
Total Split (s)	20.0	14.0	14.0	40.0	26.0
Total Split (%)	33.3%	23.3%	23.3%	66.7%	43.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	None	None
Act Effct Green (s)	8.0	16.3	9.7	36.0	19.8
Actuated g/C Ratio	0.18	0.36	0.22	0.81	0.44
v/c Ratio	0.27	0.39	0.57	0.22	0.77
Control Delay	21.1	9.6	26.7	3.3	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	9.6	26.7	3.3	14.8
LOS	C	A	C	A	B
Approach Delay	12.7			12.5	14.8
Approach LOS	B			B	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 44.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 13.9		Intersection LOS: B	
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd

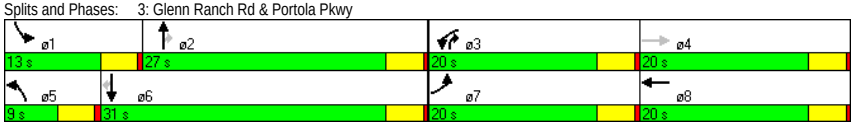
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	80	220	200	310	740	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.95	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	1863	3359	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	1863	3359	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	239	217	337	804	413
RTOR Reduction (vph)	0	40	0	0	97	0
Lane Group Flow (vph)	87	199	217	337	1120	0
Turn Type		pm+ov	Prot			
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	4.6	14.3	9.7	33.8	20.1	
Effective Green, g (s)	4.6	14.3	9.7	33.8	20.1	
Actuated g/C Ratio	0.10	0.31	0.21	0.73	0.43	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	175	624	370	1357	1455	
v/s Ratio Prot	c0.05	0.07	c0.12	0.18	c0.33	
v/s Ratio Perm		0.06				
v/c Ratio	0.50	0.32	0.59	0.25	0.77	
Uniform Delay, d1	19.8	12.3	16.5	2.1	11.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.2	0.3	2.4	0.1	2.5	
Delay (s)	22.0	12.6	18.9	2.2	13.7	
Level of Service	C	B	B	A	B	
Approach Delay (s)	15.1			8.7	13.7	
Approach LOS	B			A	B	

Intersection Summary				
HCM Average Control Delay	12.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	46.4	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	58.1%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	60	20	350	50	720	80	1400	310	390	580	50
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	9.0	27.0	20.0	13.0	31.0	31.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	0.0%	11.3%	33.8%	25.0%	16.3%	38.8%	38.8%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	7.8	6.2	12.3	10.9	62.8	5.1	23.4	39.7	9.2	29.6	29.6
Actuated g/C Ratio	0.12	0.10	0.20	0.17	1.00	0.08	0.37	0.63	0.15	0.47	0.47
v/c Ratio	0.30	0.16	0.57	0.09	0.49	0.31	0.80	0.30	0.85	0.26	0.07
Control Delay	30.5	17.6	27.1	24.1	1.1	33.2	23.8	1.6	46.9	12.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	17.6	27.1	24.1	1.1	33.2	23.8	1.6	46.9	12.7	4.9
LOS	C	B	C	C	A	C	C	A	D	B	A
Approach Delay		24.6		10.2			20.4			25.4	
Approach LOS		C		B			C			C	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 62.8			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy



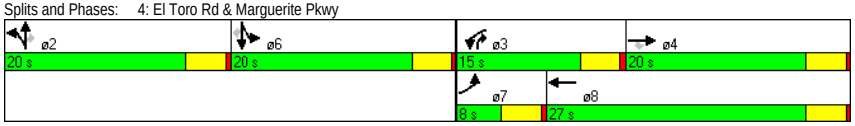
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	20	30	350	50	720	80	1400	310	390	580	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.91		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)	1770	3221		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3221		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	22	33	380	54	783	87	1522	337	424	630	54
RTOR Reduction (vph)	0	31	0	0	0	0	0	0	148	0	0	30
Lane Group Flow (vph)	65	24	0	380	54	783	87	1522	189	424	630	24
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	5.0	3.6		12.3	10.9	65.4	3.9	24.3	36.6	9.2	29.6	29.6
Effective Green, g (s)	5.0	3.6		12.3	10.9	65.4	3.9	24.3	36.6	9.2	29.6	29.6
Actuated g/C Ratio	0.08	0.06		0.19	0.17	1.00	0.06	0.37	0.56	0.14	0.45	0.45
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	135	177		646	590	1583	205	1889	983	483	2301	716
v/s Ratio Prot	0.04			0.11	0.02		0.03	c0.30	0.04	c0.12	0.12	
v/s Ratio Perm		0.01				c0.49			0.08			0.02
v/c Ratio	0.48	0.13		0.59	0.09	0.49	0.42	0.81	0.19	0.88	0.27	0.03
Uniform Delay, d1	29.0	29.4		24.2	23.1	0.0	29.7	18.4	7.1	27.5	11.2	10.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	0.3		1.4	0.1	1.1	1.4	2.6	0.1	16.3	0.1	0.0
Delay (s)	31.6	29.8		25.6	23.1	1.1	31.1	21.0	7.2	43.9	11.2	10.0
Level of Service	C	C		C	C	A	C	C	A	D	B	A
Approach Delay (s)		30.8			9.7			19.1			23.7	
Approach LOS		C			A			B			C	

Intersection Summary					
HCM Average Control Delay	18.0	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.69				
Actuated Cycle Length (s)	65.4	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	64.8%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	10	190	210	570	400	360	10	240	10	10
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split	
Protected Phases	7	4		3	8	2	2	3	6	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	2	2	3	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	15.0	27.0	20.0	20.0	15.0	20.0	20.0
Total Split (%)	10.7%	26.7%	26.7%	20.0%	36.0%	26.7%	26.7%	20.0%	26.7%	26.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes		
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.2	8.5	8.5	11.5	23.0	11.0	11.0	25.4	6.1	6.1
Actuated g/C Ratio	0.09	0.18	0.18	0.25	0.49	0.23	0.23	0.54	0.13	0.13
v/c Ratio	0.04	0.32	0.48	0.74	0.26	0.52	0.27	0.27	0.05	0.02
Control Delay	25.3	20.0	7.7	27.7	10.3	22.7	17.0	1.6	23.4	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	20.0	7.7	27.7	10.3	22.7	17.0	1.6	23.4	22.9
LOS	C	C	A	C	B	C	B	A	C	C
Approach Delay		13.8			20.4		12.6			23.1
Approach LOS		B			C		B			C

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 46.9			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	190	210	570	400	10	360	10	240	10	10	0
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	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3526		1610	3237	1583	1770	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3526		1610	3237	1583	1770	3390	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	207	228	620	435	11	391	11	261	11	11	0
RTOR Reduction (vph)	0	0	176	0	2	0	0	0	150	0	0	0
Lane Group Flow (vph)	11	207	52	620	444	0	195	207	111	11	11	0
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.6	12.1	12.1	11.5	23.0		11.0	11.0	22.5	2.1	2.1	
Effective Green, g (s)	0.6	12.1	12.1	11.5	23.0		11.0	11.0	22.5	2.1	2.1	
Actuated g/C Ratio	0.01	0.23	0.23	0.22	0.44		0.21	0.21	0.43	0.04	0.04	
Clearance Time (s)	4.0	4.0	4.0	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	3.0	3.0	3.0	
Lane Grp Cap (vph)	39	813	363	749	1539		336	676	676	71	135	
v/s Ratio Prot	0.00	0.06		c0.18	c0.13		c0.12	0.06	0.04	c0.01	0.00	
v/s Ratio Perm			0.03						0.03			
v/c Ratio	0.28	0.25	0.14	0.83	0.29		0.58	0.31	0.16	0.15	0.08	
Uniform Delay, d1	25.8	16.6	16.2	19.7	9.6		18.8	17.6	9.3	24.4	24.4	
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	3.9	0.2	0.2	7.5	0.1		2.5	0.3	0.1	1.0	0.3	
Delay (s)	29.8	16.8	16.4	27.2	9.7		21.3	17.9	9.4	25.5	24.6	
Level of Service	C	B	B	C	A		C	B	A	C	C	
Approach Delay (s)		16.9			19.8			15.6			25.0	
Approach LOS		B			B			B			C	

Intersection Summary					
HCM Average Control Delay	18.0	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	52.7	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	48.2%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	50	50	480	850
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	21.0	9.0	54.0	45.0
Total Split (%)	28.0%	12.0%	72.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	9.4	5.4	39.9	35.5
Actuated g/C Ratio	0.16	0.09	0.69	0.61
v/c Ratio	0.65	0.33	0.41	0.84
Control Delay	15.2	36.7	5.2	20.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	15.2	36.7	5.2	20.5
LOS	B	D	A	C
Approach Delay	15.2		8.2	20.5
Approach LOS	B		A	C

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 58			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn

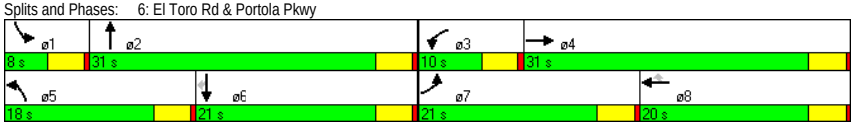
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	220	50	480	850	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.89		1.00	1.00	1.00	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1642		1770	1863	1854	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1642		1770	1863	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	239	54	522	924	33
RTOR Reduction (vph)	188	0	0	0	2	0
Lane Group Flow (vph)	105	0	54	522	955	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	9.3		2.5	41.9	35.4	
Effective Green, g (s)	9.3		2.5	41.9	35.4	
Actuated g/C Ratio	0.16		0.04	0.71	0.60	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	258		75	1319	1109	
v/s Ratio Prot	c0.06		c0.03	0.28	c0.52	
v/s Ratio Perm						
v/c Ratio	0.41		0.72	0.40	0.86	
Uniform Delay, d1	22.5		28.0	3.5	9.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		28.0	0.2	7.0	
Delay (s)	23.5		56.0	3.7	16.9	
Level of Service	C		E	A	B	
Approach Delay (s)	23.5			8.6	16.9	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	59.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	310	170	300	50	460	240	510	1580	50	590	350
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	21.0	31.0	0.0	10.0	20.0	20.0	18.0	31.0	8.0	21.0	21.0
Total Split (%)	26.3%	38.8%	0.0%	12.5%	25.0%	25.0%	22.5%	38.8%	10.0%	26.3%	26.3%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	16.5	28.1	75.4	5.9	13.3	13.3	14.0	28.9	4.0	15.5	15.5
Actuated g/C Ratio	0.22	0.37	1.00	0.08	0.18	0.18	0.19	0.38	0.05	0.21	0.21
v/c Ratio	0.87	0.10	0.23	0.39	0.56	0.64	0.87	0.70	0.30	0.61	0.61
Control Delay	54.4	17.2	0.4	43.4	31.1	20.6	47.2	22.5	40.5	30.4	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	17.2	0.4	43.4	31.1	20.6	47.2	22.5	40.5	30.4	7.9
LOS	D	B	A	D	C	C	D	C	D	C	A
Approach Delay		25.5			28.6			28.4		23.0	
Approach LOS		C			C			C		C	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 75.4			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	170	300	50	460	240	510	1580	20	50	590	350
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		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)	1770	5085	1425	1770	5085	1583	3433	6396		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6396		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	337	185	326	54	500	261	554	1717	22	54	641	380
RTOR Reduction (vph)	0	0	0	0	0	124	0	13	0	0	0	297
Lane Group Flow (vph)	337	185	326	54	500	137	554	1726	0	54	641	83
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	16.5	28.1	78.7	3.4	15.0	15.0	14.0	28.9		2.3	17.2	17.2
Effective Green, g (s)	16.5	28.1	78.7	3.4	15.0	15.0	14.0	28.9		2.3	17.2	17.2
Actuated g/C Ratio	0.21	0.36	1.00	0.04	0.19	0.19	0.18	0.37		0.03	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	371	1816	1425	76	969	302	611	2349		100	1111	346
v/s Ratio Prot	c0.19	0.04		0.03	c0.10		c0.16	c0.27		0.02	0.13	
v/s Ratio Perm			0.23			0.09						0.05
v/c Ratio	0.91	0.10	0.23	0.71	0.52	0.45	0.91	0.73		0.54	0.58	0.24
Uniform Delay, d1	30.4	16.9	0.0	37.2	28.6	28.2	31.7	21.6		37.7	27.5	25.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	25.1	0.0	0.4	26.7	0.5	1.1	17.1	1.2		5.8	0.7	0.4
Delay (s)	55.5	16.9	0.4	63.9	29.1	29.3	48.8	22.8		43.5	28.2	25.7
Level of Service	E	B	A	E	C	C	D	C		D	C	C
Approach Delay (s)		25.9			31.4			29.1			28.1	
Approach LOS		C			C			C			C	

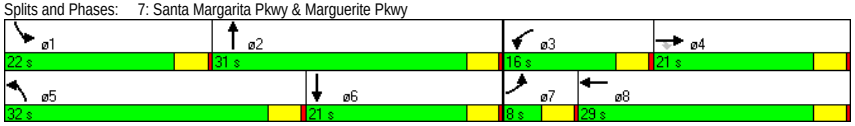
Intersection Summary					
HCM Average Control Delay		28.7	HCM Level of Service		C
HCM Volume to Capacity ratio		0.75			
Actuated Cycle Length (s)		78.7	Sum of lost time (s)		12.0
Intersection Capacity Utilization		66.0%	ICU Level of Service		C
Analysis Period (min)		15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	20	700	150	210	1280	480	280	180	420
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	8.0	21.0	21.0	16.0	29.0	32.0	31.0	22.0	21.0
Total Split (%)	8.9%	23.3%	23.3%	17.8%	32.2%	35.6%	34.4%	24.4%	23.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	16.3	16.3	12.0	29.3	27.2	28.4	14.3	15.5
Actuated g/C Ratio	0.05	0.19	0.19	0.14	0.34	0.31	0.33	0.16	0.18
v/c Ratio	0.27	0.80	0.38	0.93	0.85	0.94	0.42	0.67	0.77
Control Delay	50.0	41.5	8.3	83.2	32.8	57.8	15.8	46.3	40.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	41.5	8.3	83.2	32.8	57.8	15.8	46.3	40.1
LOS	D	D	A	F	C	E	B	D	D
Approach Delay		35.9			39.5		37.0		41.8
Approach LOS		D			D		D		D

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 87.1			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 38.5		Intersection LOS: D	
Intersection Capacity Utilization 82.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



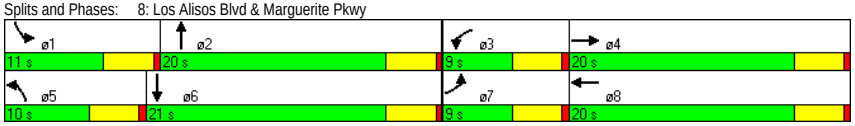
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	700	150	210	1280	90	480	280	190	180	420	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5035		1770	3324		1770	3494	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5035		1770	3324		1770	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	761	163	228	1391	98	522	304	207	196	457	43
RTOR Reduction (vph)	0	0	129	0	61	0	0	130	0	0	33	0
Lane Group Flow (vph)	22	761	34	228	1428	0	522	381	0	196	467	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	1.5	18.8	18.8	12.0	29.3		27.3	28.5		14.3	15.5	
Effective Green, g (s)	1.5	18.8	18.8	12.0	29.3		27.3	28.5		14.3	15.5	
Actuated g/C Ratio	0.02	0.21	0.21	0.13	0.33		0.30	0.32		0.16	0.17	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	30	1067	332	237	1646		539	1057		282	604	
v/s Ratio Prot	0.01	0.15		c0.13	c0.28		c0.29	0.11		0.11	c0.13	
v/s Ratio Perm			0.02									
v/c Ratio	0.73	0.71	0.10	0.96	0.87		0.97	0.36		0.70	0.77	
Uniform Delay, d1	43.9	32.9	28.6	38.6	28.3		30.7	23.5		35.6	35.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	63.0	2.3	0.1	47.6	5.1		30.5	0.2		7.2	6.1	
Delay (s)	106.8	35.2	28.7	86.2	33.5		61.2	23.7		42.8	41.5	
Level of Service	F	D	C	F	C		E	C		D	D	
Approach Delay (s)		35.7			40.5			42.7			41.9	
Approach LOS		D			D			D			D	

Intersection Summary					
HCM Average Control Delay	40.2	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	89.6	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	82.9%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	110	160	120	380	50	270	190	450
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	9.0	20.0	9.0	20.0	10.0	20.0	11.0	21.0
Total Split (%)	15.0%	33.3%	15.0%	33.3%	16.7%	33.3%	18.3%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	5.1	12.2	5.1	12.2	6.0	11.8	7.1	17.6
Actuated g/C Ratio	0.10	0.23	0.10	0.23	0.11	0.22	0.13	0.33
v/c Ratio	0.70	0.32	0.76	0.69	0.27	0.50	0.86	0.58
Control Delay	52.4	12.5	58.6	16.4	27.8	14.8	62.3	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	12.5	58.6	16.4	27.8	14.8	62.3	13.4
LOS	D	B	E	B	C	B	E	B
Approach Delay		24.7		23.4		16.2		24.1
Approach LOS		C		C		B		C

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	160	90	120	380	220	50	270	120	190	450	230
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3348		1770	3345		1770	3376		1770	3360	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3348		1770	3345		1770	3376		1770	3360	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	174	98	130	413	239	54	293	130	207	489	250
RTOR Reduction (vph)	0	70	0	0	170	0	0	90	0	0	155	0
Lane Group Flow (vph)	120	202	0	130	482	0	54	333	0	207	584	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.1	12.3		5.1	12.3		3.3	13.8		7.1	17.6	
Effective Green, g (s)	5.1	12.3		5.1	12.3		3.3	13.8		7.1	17.6	
Actuated g/C Ratio	0.09	0.23		0.09	0.23		0.06	0.25		0.13	0.32	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	166	758		166	758		108	858		231	1089	
v/s Ratio Prot	0.07	0.06		c0.07	c0.14		0.03	0.10		c0.12	c0.17	
v/s Ratio Perm												
v/c Ratio	0.72	0.27		0.78	0.64		0.50	0.39		0.90	0.54	
Uniform Delay, d1	23.9	17.3		24.1	19.0		24.7	16.8		23.2	15.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.4	0.2		21.0	1.8		3.6	0.3		32.6	0.5	
Delay (s)	38.3	17.5		45.1	20.7		28.3	17.1		55.9	15.5	
Level of Service	D	B		D	C		C	B		E	B	
Approach Delay (s)		23.9			24.8			18.3			24.3	
Approach LOS		C			C			B			C	

Intersection Summary					
HCM Average Control Delay	23.3	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	54.3	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	60.1%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	370	210	90	550	170	1480	190	720
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	36.0	37.0	19.0	20.0	28.0	64.0	20.0	56.0
Total Split (%)	25.7%	26.4%	13.6%	14.3%	20.0%	45.7%	14.3%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	32.0	12.2	35.8	16.0	19.3	60.0	16.0	56.7
Actuated g/C Ratio	0.23	0.09	0.26	0.11	0.14	0.43	0.11	0.40
v/c Ratio	0.99	0.63	0.22	1.08	0.76	1.07	1.02	0.66
Control Delay	96.4	51.4	43.5	106.8	77.3	83.2	129.5	29.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.4	51.4	43.5	106.8	77.3	83.2	129.5	29.9
LOS	F	D	D	F	E	F	F	C
Approach Delay		76.6		99.3		82.6		47.1
Approach LOS		E		F		F		D

Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 75.4		Intersection LOS: E	
Intersection Capacity Utilization 99.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	210	80	90	550	120	170	1480	30	190	720	190
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	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.97		1.00	1.00		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)	1770	4875		1770	4949		1770	3529		1770	3428	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4875		1770	4949		1770	3529		1770	3428	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	228	87	98	598	130	185	1609	33	207	783	207
RTOR Reduction (vph)	0	73	0	0	106	0	0	17	0	0	113	0
Lane Group Flow (vph)	402	242	0	98	622	0	185	1625	0	207	877	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	32.0	12.2		35.8	16.0		19.3	60.0		16.0	56.7	
Effective Green, g (s)	32.0	12.2		35.8	16.0		19.3	60.0		16.0	56.7	
Actuated g/C Ratio	0.23	0.09		0.26	0.11		0.14	0.43		0.11	0.41	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	405	425		453	566		244	1512		202	1388	
v/s Ratio Prot	c0.23	0.05		0.06	c0.13		0.10	c0.46		c0.12	0.26	
v/s Ratio Perm												
v/c Ratio	0.99	0.57		0.22	1.10		0.76	1.07		1.02	0.63	
Uniform Delay, d1	53.9	61.4		41.0	62.0		58.1	40.0		62.0	33.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	42.6	1.8		0.2	67.6		12.6	46.1		69.9	0.9	
Delay (s)	96.4	63.1		41.3	129.6		70.7	86.1		131.9	34.3	
Level of Service	F	E		D	F		E	F		F	C	
Approach Delay (s)		81.8			119.1			84.5			51.1	
Approach LOS		F			F			F			D	

Intersection Summary					
HCM Average Control Delay	81.6	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.05				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	99.5%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	150	30	280	40	10	750
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.77	0.77	0.92	0.88
Hourly flow rate (vph)	197	39	364	52	11	852
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.70					
vC, conflicting volume	1238	364			416	
vC1, stage 1 conf vol	364					
vC2, stage 2 conf vol	874					
vCu, unblocked vol	1127	364			416	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	43	94			99	
cM capacity (veh/h)	346	681			1143	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	237	364	52	11	852
Volume Left	197	0	0	11	0
Volume Right	39	0	52	0	0
cSH	377	1700	1700	1143	1700
Volume to Capacity	0.63	0.21	0.03	0.01	0.50
Queue Length 95th (ft)	103	0	0	1	0
Control Delay (s)	29.3	0.0	0.0	8.2	0.0
Lane LOS	D			A	
Approach Delay (s)	29.3	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	110	30	300	890	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.62	0.62	0.94	0.94
Hourly flow rate (vph)	0	157	48	484	947	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	1286	947	957			
vC1, stage 1 conf vol	947					
vC2, stage 2 conf vol	339					
vCu, unblocked vol	1286	947	957			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	40	93			
cM capacity (veh/h)	312	262	714			

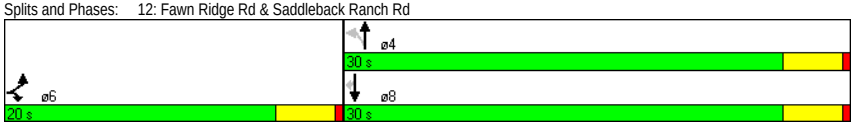
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	157	48	242	242	947	11
Volume Left	0	48	0	0	0	0
Volume Right	157	0	0	0	0	11
cSH	262	714	1700	1700	1700	1700
Volume to Capacity	0.60	0.07	0.14	0.14	0.56	0.01
Queue Length 95th (ft)	88	5	0	0	0	0
Control Delay (s)	37.4	10.4	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	37.4	0.9			0.0	
Approach LOS	E					

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	180	40	250	560	40
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	30.0	30.0	30.0	30.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.2	16.2	18.7	18.7	18.7	18.7
Actuated g/C Ratio	0.38	0.38	0.43	0.43	0.43	0.43
v/c Ratio	0.09	0.35	0.39	0.57	0.76	0.06
Control Delay	11.3	4.6	14.6	11.9	16.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	4.6	14.6	11.9	16.8	2.7
LOS	B	A	B	B	B	A
Approach Delay	5.8			12.2	15.9	
Approach LOS	A			B	B	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 43.1			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 47.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	180	40	250	560	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.23	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	436	1863	1863	1583
Peak-hour factor, PHF	0.69	0.69	0.54	0.54	0.91	0.91
Adj. Flow (vph)	58	261	74	463	615	44
RTOR Reduction (vph)	0	145	0	0	0	25
Lane Group Flow (vph)	58	116	74	463	615	19
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Actuated Green, G (s)	16.2	16.2	18.7	18.7	18.7	18.7
Effective Green, g (s)	16.2	16.2	18.7	18.7	18.7	18.7
Actuated g/C Ratio	0.38	0.38	0.44	0.44	0.44	0.44
Clearance Time (s)	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
Lane Grp Cap (vph)	668	598	190	812	812	690
v/s Ratio Prot	0.03	c0.07		0.25	c0.33	
v/s Ratio Perm			0.17			0.01
v/c Ratio	0.09	0.19	0.39	0.57	0.76	0.03
Uniform Delay, d1	8.6	9.0	8.2	9.1	10.2	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.7	1.3	1.0	4.1	0.0
Delay (s)	8.8	9.7	9.5	10.1	14.3	6.9
Level of Service	A	A	A	B	B	A
Approach Delay (s)	9.5			10.0	13.8	
Approach LOS	A			A	B	

Intersection Summary				
HCM Average Control Delay	11.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	47.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	360	70	10	270	60	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	391	76	11	293	65	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			467		745	429
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			467		745	429
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		83	98
cM capacity (veh/h)			1094		378	626

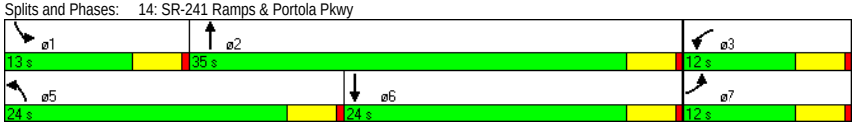
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	467	11	293	76
Volume Left	0	11	0	65
Volume Right	76	0	0	11
cSH	1700	1094	1700	401
Volume to Capacity	0.27	0.01	0.17	0.19
Queue Length 95th (ft)	0	1	0	17
Control Delay (s)	0.0	8.3	0.0	16.1
Lane LOS		A		C
Approach Delay (s)	0.0	0.3		16.1
Approach LOS				C

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		33.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	80	110	590	830	200	560
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	12.0	12.0	24.0	35.0	13.0	24.0
Total Split (%)	20.0%	20.0%	40.0%	58.3%	21.7%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	7.6	7.5	14.1	25.0	8.3	14.0
Actuated g/C Ratio	0.17	0.17	0.31	0.55	0.18	0.31
v/c Ratio	0.29	0.21	0.60	0.32	0.34	0.56
Control Delay	23.8	21.4	17.2	8.7	21.2	16.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	21.4	17.2	8.7	21.2	16.5
LOS	C	C	B	A	C	B
Approach Delay				12.2		17.7
Approach LOS				B		B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 45.3			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy



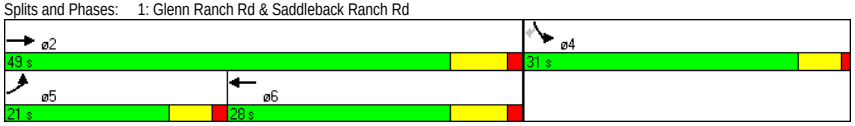
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	0	0	110	0	0	590	830	0	200	560	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0			4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	0	0	120	0	0	641	902	0	217	609	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	87	0	0	120	0	0	641	902	0	217	609	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.4			5.4			14.1	23.5		6.1	15.5	
Effective Green, g (s)	5.4			5.4			14.1	23.5		6.1	15.5	
Actuated g/C Ratio	0.11			0.11			0.30	0.50		0.13	0.33	
Clearance Time (s)	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	
Lane Grp Cap (vph)	203			394			1030	2543		446	1167	
v/s Ratio Prot	c0.05			0.03			c0.19	0.18		0.06	c0.17	
v/s Ratio Perm												
v/c Ratio	0.43			0.30			0.62	0.35		0.49	0.52	
Uniform Delay, d1	19.4			19.1			14.2	7.1		19.0	12.8	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5			0.4			1.2	0.1		0.8	0.4	
Delay (s)	20.8			19.5			15.3	7.2		19.8	13.2	
Level of Service	C			B			B	A		B	B	
Approach Delay (s)		20.8			19.5			10.6			14.9	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM Average Control Delay	12.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	47.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	46.7%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Volume (vph)	700	480	150	70	270
Turn Type	Prot				Perm
Protected Phases	5	2	6	4	
Permitted Phases					4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	3.0	8.0	8.0	4.0	4.0
Minimum Split (s)	8.5	26.0	28.0	30.5	30.5
Total Split (s)	21.0	49.0	28.0	31.0	31.0
Total Split (%)	26.3%	61.3%	35.0%	38.8%	38.8%
Yellow Time (s)	4.0	5.5	5.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	-3.0	-1.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	Max	Max	None	None
Act Effct Green (s)	17.2	45.5	24.3	11.3	10.3
Actuated g/C Ratio	0.27	0.70	0.37	0.17	0.16
v/c Ratio	0.84	0.21	0.22	0.25	0.42
Control Delay	34.4	4.7	9.6	23.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	4.7	9.6	23.9	5.0
LOS	C	A	A	C	A
Approach Delay		22.3	9.6	8.9	
Approach LOS		C	A	A	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 64.9			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 41.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



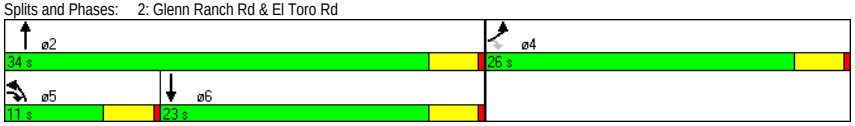
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	700	480	150	120	70	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	5.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.93		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3304		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3304		1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	761	522	163	130	76	293
RTOR Reduction (vph)	0	0	75	0	0	246
Lane Group Flow (vph)	761	522	218	0	76	47
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	15.7	42.4	21.2		10.3	10.3
Effective Green, g (s)	17.2	45.4	24.2		11.3	10.3
Actuated g/C Ratio	0.27	0.70	0.37		0.17	0.16
Clearance Time (s)	5.5	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	913	2483	1236		309	444
v/s Ratio Prot	c0.22	c0.15	0.07		c0.04	
v/s Ratio Perm						0.02
v/c Ratio	0.83	0.21	0.18		0.25	0.11
Uniform Delay, d1	22.4	3.4	13.6		23.0	23.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.6	0.2	0.3		0.4	0.1
Delay (s)	29.0	3.6	13.9		23.4	23.4
Level of Service	C	A	B		C	C
Approach Delay (s)		18.7	13.9		23.4	
Approach LOS		B	B		C	

Intersection Summary				
HCM Average Control Delay	18.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	460	90	150	670	450
Turn Type		pm+ov	Prot		
Protected Phases	4	5	5	2	6
Permitted Phases		4			
Detector Phase	4	5	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0
Total Split (s)	26.0	11.0	11.0	34.0	23.0
Total Split (%)	43.3%	18.3%	18.3%	56.7%	38.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	None	None
Act Effct Green (s)	18.6	29.9	7.2	26.3	15.0
Actuated g/C Ratio	0.35	0.56	0.14	0.50	0.28
v/c Ratio	0.81	0.10	0.68	0.79	0.63
Control Delay	28.3	2.1	43.3	19.9	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	28.3	2.1	43.3	19.9	18.0
LOS	C	A	D	B	B
Approach Delay	24.0			24.2	18.0
Approach LOS	C			C	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 53.1			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 67.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	460	90	150	670	450	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	1863	3413	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	1863	3413	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	500	98	163	728	489	152
RTOR Reduction (vph)	0	50	0	0	52	0
Lane Group Flow (vph)	500	48	163	728	589	0
Turn Type		pm+ov	Prot			
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	18.6	25.8	7.2	26.2	15.0	
Effective Green, g (s)	18.6	25.8	7.2	26.2	15.0	
Actuated g/C Ratio	0.35	0.49	0.14	0.50	0.28	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	624	893	241	924	970	
v/s Ratio Prot	c0.28	0.01	0.09	c0.39	0.17	
v/s Ratio Perm		0.02				
v/c Ratio	0.80	0.05	0.68	0.79	0.61	
Uniform Delay, d1	15.4	7.1	21.7	11.0	16.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.3	0.0	7.3	4.5	1.1	
Delay (s)	22.7	7.1	29.0	15.5	17.4	
Level of Service	C	A	C	B	B	
Approach Delay (s)	20.2			18.0	17.4	
Approach LOS	C			B	B	

Intersection Summary				
HCM Average Control Delay	18.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	67.4%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	100	20	290	20	580	60	790	240	880	1560	70
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	8.0	20.0	20.0	30.0	42.0	42.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	8.9%	22.2%	22.2%	33.3%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	14.6	6.4	12.1	7.9	73.3	4.1	16.1	32.3	24.9	39.0	39.0
Actuated g/C Ratio	0.20	0.09	0.17	0.11	1.00	0.06	0.22	0.44	0.34	0.53	0.53
v/c Ratio	0.31	0.26	0.56	0.06	0.40	0.34	0.77	0.31	0.82	0.63	0.09
Control Delay	29.9	16.1	33.1	32.2	0.8	41.4	34.1	3.1	30.7	15.2	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	16.1	33.1	32.2	0.8	41.4	34.1	3.1	30.7	15.2	3.5
LOS	C	B	C	C	A	D	C	A	C	B	A
Approach Delay		23.8		12.0			27.7			20.3	
Approach LOS		C		B			C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 73.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 20.6		Intersection LOS: C	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

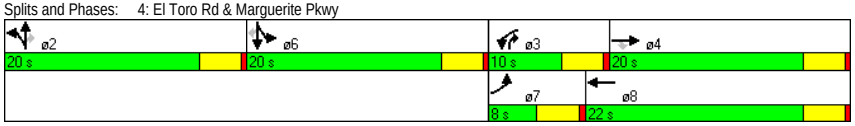
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	20	60	290	20	580	60	790	240	880	1560	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.89		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)	1770	3143		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3143		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	22	65	315	22	630	65	859	261	957	1696	76
RTOR Reduction (vph)	0	59	0	0	0	0	0	0	161	0	0	37
Lane Group Flow (vph)	109	28	0	315	22	630	65	859	100	957	1696	39
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	13.0	6.6		12.1	5.7	76.8	3.0	17.2	29.3	24.9	39.1	39.1
Effective Green, g (s)	13.0	6.6		12.1	5.7	76.8	3.0	17.2	29.3	24.9	39.1	39.1
Actuated g/C Ratio	0.17	0.09		0.16	0.07	1.00	0.04	0.22	0.38	0.32	0.51	0.51
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	300	270		541	263	1583	134	1139	686	1113	2589	806
v/s Ratio Prot	0.06			c0.09	0.01		0.02	c0.17	0.02	c0.28	0.33	
v/s Ratio Perm		0.01				c0.40			0.04			0.02
v/c Ratio	0.36	0.10		0.58	0.08	0.40	0.49	0.75	0.15	0.86	0.66	0.05
Uniform Delay, d1	28.2	32.4		30.0	33.1	0.0	36.1	27.8	15.6	24.3	13.9	9.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.2		1.6	0.1	0.7	2.8	2.9	0.1	6.8	0.6	0.0
Delay (s)	29.0	32.5		31.6	33.3	0.7	38.9	30.7	15.6	31.1	14.5	9.5
Level of Service	C	C		C	C	A	D	C	B	C	B	A
Approach Delay (s)		30.6			11.5			27.8			20.2	
Approach LOS		C			B			C			C	

Intersection Summary					
HCM Average Control Delay	20.7	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.70				
Actuated Cycle Length (s)	76.8	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	65.3%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	10	320	430	400	160	140	40	550	10	40	10
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8	2	2	3	6	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	2	2	3	6	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	10.0	22.0	20.0	20.0	10.0	20.0	20.0	20.0
Total Split (%)	11.4%	28.6%	28.6%	14.3%	31.4%	28.6%	28.6%	14.3%	28.6%	28.6%	28.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes			
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.6	10.9	10.9	6.9	22.7	8.2	8.2	13.8	6.8	6.8	6.8
Actuated g/C Ratio	0.11	0.27	0.27	0.17	0.56	0.20	0.20	0.34	0.17	0.17	0.17
v/c Ratio	0.03	0.37	0.61	0.76	0.09	0.24	0.18	0.65	0.04	0.08	0.04
Control Delay	22.8	15.4	6.0	35.1	9.0	20.0	18.2	4.7	20.6	19.9	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	15.4	6.0	35.1	9.0	20.0	18.2	4.7	20.6	19.9	13.1
LOS	C	B	A	D	A	B	B	A	C	B	B
Approach Delay		10.2			27.3		8.2			18.9	
Approach LOS		B			C		A			B	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 40.9			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 56.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	320	430	400	160	10	140	40	550	10	40	10
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	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	0.91
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3508		1610	3285	1583	1770	3379	1441
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3508		1610	3285	1583	1770	3379	1441
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	348	467	435	174	11	152	43	598	11	43	11
RTOR Reduction (vph)	0	0	319	0	5	0	0	0	426	0	1	9
Lane Group Flow (vph)	11	348	148	435	180	0	76	119	172	11	43	1
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.6	14.8	14.8	6.9	21.1		5.9	5.9	12.8	3.2	3.2	3.2
Effective Green, g (s)	0.6	14.8	14.8	6.9	21.1		5.9	5.9	12.8	3.2	3.2	3.2
Actuated g/C Ratio	0.01	0.32	0.32	0.15	0.45		0.13	0.13	0.27	0.07	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	44	1119	501	506	1582		203	414	433	121	231	99
v/s Ratio Prot	0.00	c0.10		c0.13	0.05		0.05	0.04	c0.06	0.01	c0.01	
v/s Ratio Perm			0.09						0.05			0.00
v/c Ratio	0.25	0.31	0.29	0.86	0.11		0.37	0.29	0.40	0.09	0.19	0.01
Uniform Delay, d1	22.9	12.1	12.1	19.5	7.4		18.8	18.5	13.9	20.4	20.6	20.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	0.2	0.3	13.6	0.0		1.2	0.4	0.6	0.3	0.4	0.0
Delay (s)	25.9	12.3	12.4	33.1	7.5		19.9	18.9	14.5	20.8	21.0	20.3
Level of Service	C	B	B	C	A		B	B	B	C	C	C
Approach Delay (s)		12.5			25.5			15.6			20.8	
Approach LOS		B			C			B			C	

Intersection Summary					
HCM Average Control Delay	17.3	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.44				
Actuated Cycle Length (s)	46.8	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	56.2%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	30	110	940	470
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	40.0	30.0
Total Split (%)	33.3%	16.7%	66.7%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	7.6	7.2	32.4	23.3
Actuated g/C Ratio	0.19	0.18	0.82	0.59
v/c Ratio	0.24	0.38	0.67	0.50
Control Delay	12.1	26.4	8.2	10.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.1	26.4	8.2	10.1
LOS	B	C	A	B
Approach Delay	12.1		10.1	10.1
Approach LOS	B		B	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 39.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 10.2		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn

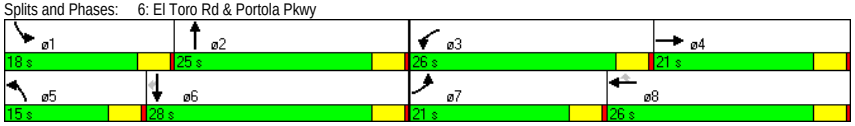
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	50	110	940	470	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.92		1.00	1.00	0.99	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1675		1770	1863	1847	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1675		1770	1863	1847	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	54	120	1022	511	33
RTOR Reduction (vph)	49	0	0	0	3	0
Lane Group Flow (vph)	38	0	120	1022	541	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	3.6		4.7	30.3	21.6	
Effective Green, g (s)	3.6		4.7	30.3	21.6	
Actuated g/C Ratio	0.09		0.11	0.72	0.52	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	144		199	1347	952	
v/s Ratio Prot	c0.02		0.07	c0.55	0.29	
v/s Ratio Perm						
v/c Ratio	0.26		0.60	0.76	0.57	
Uniform Delay, d1	17.9		17.7	3.6	7.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		5.1	2.5	0.8	
Delay (s)	18.9		22.8	6.1	7.7	
Level of Service	B		C	A	A	
Approach Delay (s)	18.9			7.8	7.7	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	41.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	340	390	530	330	570	650	440	970	410	1280	630
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	21.0	21.0	0.0	26.0	26.0	26.0	15.0	25.0	18.0	28.0	28.0
Total Split (%)	23.3%	23.3%	0.0%	28.9%	28.9%	28.9%	16.7%	27.8%	20.0%	31.1%	31.1%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	17.0	18.2	90.0	20.8	22.0	22.0	11.0	21.2	13.8	24.0	24.0
Actuated g/C Ratio	0.19	0.20	1.00	0.23	0.24	0.24	0.12	0.24	0.15	0.27	0.27
v/c Ratio	1.11	0.41	0.40	0.88	0.50	1.19	1.14	0.72	0.85	1.03	0.94
Control Delay	117.8	33.1	0.9	56.7	30.9	123.0	125.0	33.6	53.4	64.9	35.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	117.8	33.1	0.9	56.7	30.9	123.0	125.0	33.6	53.4	64.9	35.5
LOS	F	C	A	E	C	F	F	C	D	E	D
Approach Delay		42.4			75.0			61.3		54.9	
Approach LOS		D			E			E		D	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 58.7		Intersection LOS: E	
Intersection Capacity Utilization 83.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	390	530	330	570	650	440	970	40	410	1280	630
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		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)	1770	5085	1425	1770	5085	1583	3433	6370		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6370		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	370	424	576	359	620	707	478	1054	43	446	1391	685
RTOR Reduction (vph)	0	0	0	0	0	207	0	31	0	0	0	307
Lane Group Flow (vph)	370	424	576	359	620	500	478	1066	0	446	1391	378
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	17.0	18.2	90.0	20.8	22.0	22.0	11.0	21.2		13.8	24.0	24.0
Effective Green, g (s)	17.0	18.2	90.0	20.8	22.0	22.0	11.0	21.2		13.8	24.0	24.0
Actuated g/C Ratio	0.19	0.20	1.00	0.23	0.24	0.24	0.12	0.24		0.15	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	334	1028	1425	409	1243	387	420	1500		526	1356	422
v/s Ratio Prot	c0.21	0.08		0.20	0.12		c0.14	0.17		0.13	c0.27	
v/s Ratio Perm			c0.40			c0.32						0.24
v/c Ratio	1.11	0.41	0.40	0.88	0.50	1.29	1.14	0.71		0.85	1.03	0.90
Uniform Delay, d1	36.5	31.2	0.0	33.4	29.3	34.0	39.5	31.6		37.1	33.0	31.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	81.5	0.3	0.9	18.7	0.3	149.5	87.3	1.6		12.1	31.2	21.0
Delay (s)	118.0	31.5	0.9	52.1	29.6	183.5	126.8	33.2		49.1	64.2	52.8
Level of Service	F	C	A	D	C	F	F	C		D	E	D
Approach Delay (s)		42.0			98.9			61.6			58.5	
Approach LOS		D			F			E			E	

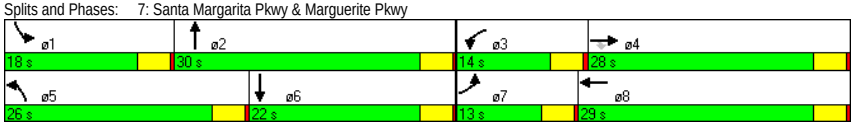
Intersection Summary					
HCM Average Control Delay	65.5	HCM Level of Service		E	
HCM Volume to Capacity ratio	1.09				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	83.8%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	90	1200	550	160	850	360	330	130	420
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	13.0	28.0	28.0	14.0	29.0	26.0	30.0	18.0	22.0
Total Split (%)	14.4%	31.1%	31.1%	15.6%	32.2%	28.9%	33.3%	20.0%	24.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	8.3	24.0	24.0	10.0	28.0	21.2	25.7	11.5	16.0
Actuated g/C Ratio	0.10	0.27	0.27	0.11	0.32	0.24	0.29	0.13	0.18
v/c Ratio	0.58	0.93	0.76	0.86	0.65	0.91	0.50	0.61	0.79
Control Delay	52.7	44.6	13.6	75.5	24.9	59.9	18.8	47.2	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	44.6	13.6	75.5	24.9	59.9	18.8	47.2	37.2
LOS	D	D	B	E	C	E	B	D	D
Approach Delay		35.7			31.7		35.8		39.3
Approach LOS		D			C		D		D

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 87.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 35.2		Intersection LOS: D	
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



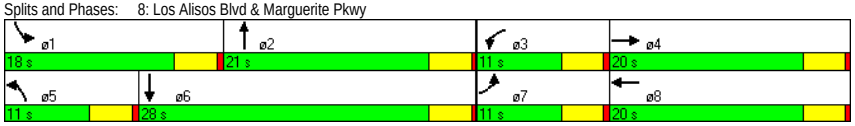
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	1200	550	160	850	170	360	330	180	130	420	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	4958		1770	3352		1770	3445	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	4958		1770	3352		1770	3445	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	1304	598	174	924	185	391	359	196	141	457	98
RTOR Reduction (vph)	0	0	348	0	116	0	0	128	0	0	74	0
Lane Group Flow (vph)	98	1304	250	174	993	0	391	427	0	141	481	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	7.0	25.0	25.0	10.0	28.0		21.2	25.7		11.5	16.0	
Effective Green, g (s)	7.0	25.0	25.0	10.0	28.0		21.2	25.7		11.5	16.0	
Actuated g/C Ratio	0.08	0.28	0.28	0.11	0.32		0.24	0.29		0.13	0.18	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	140	1441	449	201	1574		425	977		231	625	
v/s Ratio Prot	0.06	c0.26		c0.10	c0.20		c0.22	0.13		0.08	c0.14	
v/s Ratio Perm			0.16									
v/c Ratio	0.70	0.90	0.56	0.87	0.63		0.92	0.44		0.61	0.77	
Uniform Delay, d1	39.6	30.5	26.9	38.4	25.7		32.7	25.4		36.2	34.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.2	8.4	1.5	29.9	0.8		25.0	0.3		4.7	5.8	
Delay (s)	53.8	38.8	28.4	68.4	26.5		57.7	25.7		40.9	40.2	
Level of Service	D	D	C	E	C		E	C		D	D	
Approach Delay (s)		36.4			32.2			38.9			40.3	
Approach LOS		D			C			D			D	

Intersection Summary					
HCM Average Control Delay	36.4	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.91				
Actuated Cycle Length (s)	88.2	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	79.8%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	160	250	150	210	70	360	290	380
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	11.0	20.0	11.0	20.0	11.0	21.0	18.0	28.0
Total Split (%)	15.7%	28.6%	15.7%	28.6%	15.7%	30.0%	25.7%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.1	10.4	7.1	10.4	6.7	12.4	13.6	23.8
Actuated g/C Ratio	0.12	0.17	0.12	0.17	0.11	0.21	0.23	0.40
v/c Ratio	0.83	0.54	0.78	0.60	0.38	0.65	0.78	0.39
Control Delay	62.4	21.0	55.9	16.5	32.8	20.9	39.3	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.4	21.0	55.9	16.5	32.8	20.9	39.3	11.8
LOS	E	C	E	B	C	C	D	B
Approach Delay		34.5		27.2		22.4		21.6
Approach LOS		C		C		C		C

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 59.6			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 64.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	250	80	150	210	190	70	360	120	290	380	140
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3411		1770	3287		1770	3407		1770	3396	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3411		1770	3287		1770	3407		1770	3396	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	272	87	163	228	207	76	391	130	315	413	152
RTOR Reduction (vph)	0	66	0	0	158	0	0	92	0	0	85	0
Lane Group Flow (vph)	174	293	0	163	277	0	76	429	0	315	480	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.1	10.4		7.1	10.4		3.9	14.2		13.6	23.9	
Effective Green, g (s)	7.1	10.4		7.1	10.4		3.9	14.2		13.6	23.9	
Actuated g/C Ratio	0.12	0.17		0.12	0.17		0.06	0.23		0.22	0.39	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	205	579		205	558		113	789		393	1324	
v/s Ratio Prot	c0.10	c0.09		0.09	0.08		0.04	c0.13		c0.18	0.14	
v/s Ratio Perm												
v/c Ratio	0.85	0.51		0.80	0.50		0.67	0.54		0.80	0.36	
Uniform Delay, d1	26.6	23.1		26.4	23.1		28.1	20.7		22.6	13.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.4	0.7		18.8	0.7		14.6	0.8		11.2	0.2	
Delay (s)	53.0	23.8		45.2	23.8		42.7	21.5		33.8	13.5	
Level of Service	D	C		D	C		D	C		C	B	
Approach Delay (s)		33.3			29.6			24.2			20.7	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM Average Control Delay	26.1	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.66				
Actuated Cycle Length (s)	61.3	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	64.0%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	290	400	30	220	140	910	150	1660
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	29.0	38.0	11.0	20.0	16.0	74.0	27.0	85.0
Total Split (%)	19.3%	25.3%	7.3%	13.3%	10.7%	49.3%	18.0%	56.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	25.0	29.6	12.3	12.8	12.0	74.8	18.2	81.0
Actuated g/C Ratio	0.17	0.20	0.08	0.09	0.08	0.51	0.12	0.55
v/c Ratio	1.05	0.55	0.22	0.67	1.05	0.59	0.74	1.08
Control Delay	121.6	41.8	65.0	54.1	151.3	25.7	82.1	71.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	121.6	41.8	65.0	54.1	151.3	25.7	82.1	71.5
LOS	F	D	E	D	F	C	F	E
Approach Delay		69.0		55.1		41.4		72.2
Approach LOS		E		E		D		E

Intersection Summary			
Cycle Length: 150			
Actuated Cycle Length: 146.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 62.7		Intersection LOS: E	
Intersection Capacity Utilization 102.1%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

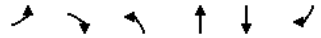
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	400	160	30	220	90	140	910	70	150	1660	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.99		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)	1770	4867		1770	4863		1770	3501		1770	3436	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4867		1770	4863		1770	3501		1770	3436	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	315	435	174	33	239	98	152	989	76	163	1804	435
RTOR Reduction (vph)	0	128	0	0	81	0	0	35	0	0	182	0
Lane Group Flow (vph)	315	481	0	33	256	0	152	1030	0	163	2057	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	25.0	29.6		9.8	14.4		12.0	74.8		18.2	81.0	
Effective Green, g (s)	25.0	29.6		9.8	14.4		12.0	74.8		18.2	81.0	
Actuated g/C Ratio	0.17	0.20		0.07	0.10		0.08	0.50		0.12	0.55	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	298	971		117	472		143	1765		217	1875	
v/s Ratio Prot	c0.18	c0.10		0.02	c0.05		c0.09	0.29		0.09	c0.60	
v/s Ratio Perm												
v/c Ratio	1.06	0.50		0.28	0.54		1.06	0.58		0.75	1.10	
Uniform Delay, d1	61.7	52.8		66.0	63.9		68.2	25.9		62.9	33.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	68.0	0.4		1.3	1.3		93.0	0.5		13.6	52.7	
Delay (s)	129.7	53.2		67.3	65.1		161.2	26.4		76.5	86.4	
Level of Service	F	D		E	E		F	C		E	F	
Approach Delay (s)		79.2			65.3			43.2			85.8	
Approach LOS		E			E			D			F	

Intersection Summary					
HCM Average Control Delay	72.5	HCM Level of Service		E	
HCM Volume to Capacity ratio	1.00				
Actuated Cycle Length (s)	148.4	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	102.1%	ICU Level of Service		G	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	70	10	610	120	20	300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	88	12	649	128	24	361
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.94					
vC, conflicting volume	1059	649			777	
vC1, stage 1 conf vol	649					
vC2, stage 2 conf vol	410					
vCu, unblocked vol	1028	649			777	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	97			97	
cM capacity (veh/h)	449	470			840	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	100	649	128	24	361
Volume Left	88	0	0	24	0
Volume Right	12	0	128	0	0
cSH	451	1700	1700	840	1700
Volume to Capacity	0.22	0.38	0.08	0.03	0.21
Queue Length 95th (ft)	21	0	0	2	0
Control Delay (s)	15.2	0.0	0.0	9.4	0.0
Lane LOS	C			A	
Approach Delay (s)	15.2	0.0		0.6	
Approach LOS	C				

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	50	60	590	310	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	13	65	63	621	330	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	767	330	340			
vC1, stage 1 conf vol	330					
vC2, stage 2 conf vol	437					
vCu, unblocked vol	767	330	340			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	90	95			
cM capacity (veh/h)	515	666	1215			

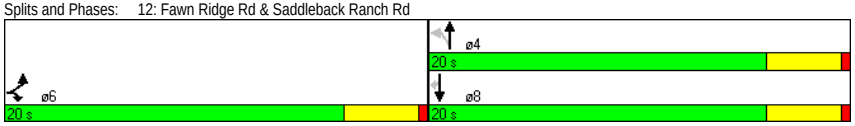
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	78	63	311	311	330	11
Volume Left	13	63	0	0	0	0
Volume Right	65	0	0	0	0	11
cSH	635	1215	1700	1700	1700	1700
Volume to Capacity	0.12	0.05	0.18	0.18	0.19	0.01
Queue Length 95th (ft)	10	4	0	0	0	0
Control Delay (s)	11.5	8.1	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	11.5	0.7			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	60	130	480	250	20
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.0	16.0	14.7	14.7	14.7	14.7
Actuated g/C Ratio	0.41	0.41	0.38	0.38	0.38	0.38
v/c Ratio	0.05	0.11	0.38	0.82	0.38	0.04
Control Delay	7.7	3.1	11.8	23.2	10.5	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	3.1	11.8	23.2	10.5	4.2
LOS	A	A	B	C	B	A
Approach Delay	4.6			20.7	10.0	
Approach LOS	A			C	A	

Intersection Summary			
Cycle Length: 40			
Actuated Cycle Length: 38.8			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 35.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	60	130	480	250	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.58	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1089	1863	1863	1583
Peak-hour factor, PHF	0.79	0.79	0.83	0.83	0.93	0.93
Adj. Flow (vph)	38	76	157	578	269	22
RTOR Reduction (vph)	0	45	0	0	0	14
Lane Group Flow (vph)	38	31	157	578	269	8
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Actuated Green, G (s)	16.0	16.0	14.7	14.7	14.7	14.7
Effective Green, g (s)	16.0	16.0	14.7	14.7	14.7	14.7
Actuated g/C Ratio	0.41	0.41	0.38	0.38	0.38	0.38
Clearance Time (s)	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
Lane Grp Cap (vph)	732	654	414	708	708	601
v/s Ratio Prot	c0.02	0.02		c0.31	0.14	
v/s Ratio Perm			0.14			0.01
v/c Ratio	0.05	0.05	0.38	0.82	0.38	0.01
Uniform Delay, d1	6.8	6.8	8.7	10.8	8.7	7.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.6	7.2	0.3	0.0
Delay (s)	6.9	6.9	9.3	18.0	9.0	7.5
Level of Service	A	A	A	B	A	A
Approach Delay (s)	6.9			16.2	8.9	
Approach LOS	A			B	A	

Intersection Summary				
HCM Average Control Delay	13.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	35.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

13: Santiago Cyn & Ridgeline Rd

Timing Plan: PM Peak

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	280	90	20	430	80	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	304	98	22	467	87	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			402		864	353
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			402		864	353
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		73	97
cM capacity (veh/h)			1156		318	690

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	402	22	467	109
Volume Left	0	22	0	87
Volume Right	98	0	0	22
cSH	1700	1156	1700	357
Volume to Capacity	0.24	0.02	0.27	0.30
Queue Length 95th (ft)	0	1	0	32
Control Delay (s)	0.0	8.2	0.0	19.4
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		19.4
Approach LOS				C

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		35.0%	ICU Level of Service A
Analysis Period (min)		15	

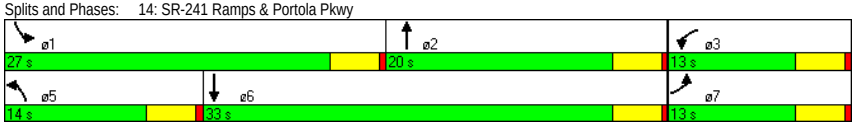
14: SR-241 Ramps & Portola Pkwy

Timing Plan: PM Peak

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	130	30	310	820	900	1000
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	13.0	13.0	14.0	20.0	27.0	33.0
Total Split (%)	21.7%	21.7%	23.3%	33.3%	45.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	8.5	7.3	9.6	14.9	19.7	25.0
Actuated g/C Ratio	0.16	0.14	0.18	0.28	0.38	0.48
v/c Ratio	0.49	0.07	0.54	0.62	0.76	0.64
Control Delay	29.9	22.8	25.4	20.0	19.7	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	22.8	25.4	20.0	19.7	13.1
LOS	C	C	C	B	B	B
Approach Delay				21.5		16.3
Approach LOS				C		B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.5			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	0	0	30	0	0	310	820	0	900	1000	0
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	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	0	0	33	0	0	337	891	0	978	1087	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	141	0	0	33	0	0	337	891	0	978	1087	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.3			6.3			9.6	14.9		19.7	25.0	
Effective Green, g (s)	6.3			6.3			9.6	14.9		19.7	25.0	
Actuated g/C Ratio	0.12			0.12			0.18	0.28		0.37	0.47	
Clearance Time (s)	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	
Lane Grp Cap (vph)	211			409			623	1432		1278	1672	
v/s Ratio Prot	c0.08			0.01			0.10	0.18		c0.28	c0.31	
v/s Ratio Perm												
v/c Ratio	0.67			0.08			0.54	0.62		0.77	0.65	
Uniform Delay, d1	22.3			20.7			19.7	16.5		14.6	10.6	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.8			0.1			1.0	0.8		2.8	0.9	
Delay (s)	30.1			20.8			20.6	17.4		17.4	11.5	
Level of Service	C			C			C	B		B	B	
Approach Delay (s)		30.1			20.8			18.3			14.3	
Approach LOS		C			C			B			B	

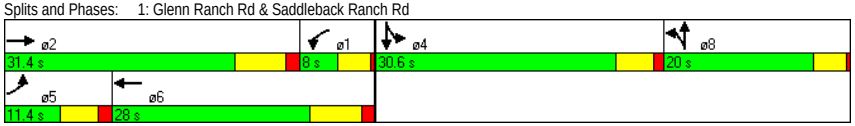
Intersection Summary				
HCM Average Control Delay	16.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	58.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	161	158	9	604	125	24	243	9	975
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	11.4	31.4	8.0	28.0	20.0	20.0	30.6	30.6	0.0
Total Split (%)	12.7%	34.9%	8.9%	31.1%	22.2%	22.2%	34.0%	34.0%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	C-Max	C-Max	
Act Effct Green (s)	9.4	37.8	4.0	26.0	12.0	12.0	26.6	25.6	90.0
Actuated g/C Ratio	0.10	0.42	0.04	0.29	0.13	0.13	0.30	0.28	1.00
v/c Ratio	0.49	0.15	0.13	0.81	0.58	0.21	0.28	0.28	0.67
Control Delay	43.3	14.5	45.0	30.8	45.8	21.8	26.2	27.1	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	14.5	45.0	30.8	45.8	21.8	26.2	27.1	2.3
LOS	D	B	D	C	D	C	C	C	A
Approach Delay		27.1		31.0		39.2		7.3	
Approach LOS		C		C		D		A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:SBTL, Start of Green, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 19.8 — Intersection LOS: B
Intersection Capacity Utilization 52.9% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	158	49	9	604	225	125	24	24	243	9	975
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.96		1.00	0.96		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3433	3414		1770	3395		1770	1723		1681	1691	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3433	3414		1770	3395		1770	1723		1681	1691	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	175	172	53	10	657	245	136	26	26	264	10	1060
RTOR Reduction (vph)	0	27	0	0	127	0	0	23	0	0	0	0
Lane Group Flow (vph)	175	198	0	10	775	0	136	29	0	137	137	1060
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	7.9	34.8		0.8	26.2		12.0	12.0		22.4	22.4	90.0
Effective Green, g (s)	9.4	37.8		0.8	29.2		12.0	12.0		23.4	22.4	90.0
Actuated g/C Ratio	0.10	0.42		0.01	0.32		0.13	0.13		0.26	0.25	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	359	1434		16	1101		236	230		437	421	1583
v/s Ratio Prot	0.05	0.06		0.01	0.23		0.08	0.02		0.08	0.08	
v/s Ratio Perm												c0.67
v/c Ratio	0.49	0.14		0.62	0.70		0.58	0.13		0.31	0.33	0.67
Uniform Delay, d1	38.0	16.1		44.5	26.6		36.6	34.4		26.8	27.6	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.0	0.2		57.6	3.8		3.4	0.3		1.9	2.0	2.3
Delay (s)	39.1	16.3		102.0	30.4		40.0	34.6		28.7	29.7	2.3
Level of Service	D	B		F	C		D	C		C	C	A
Approach Delay (s)		26.2			31.2			38.5			7.8	
Approach LOS		C			C			D			A	

Intersection Summary

HCM Average Control Delay	20.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	52.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	120	260	210	290	790
Turn Type		pm+ov	Prot		
Protected Phases	4	5	5	2	6
Permitted Phases		4			
Detector Phase	4	5	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0
Total Split (s)	20.0	13.0	13.0	40.0	27.0
Total Split (%)	33.3%	21.7%	21.7%	66.7%	45.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	None	None
Act Effct Green (s)	9.2	19.6	9.4	35.9	21.0
Actuated g/C Ratio	0.19	0.40	0.19	0.73	0.43
v/c Ratio	0.39	0.43	0.67	0.23	0.80
Control Delay	23.1	10.7	35.3	4.2	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.1	10.7	35.3	4.2	17.3
LOS	C	B	D	A	B
Approach Delay	14.6			17.3	17.3
Approach LOS	B			B	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 49.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 16.8		Intersection LOS: B	
Intersection Capacity Utilization 60.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	120	260	210	290	790	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	1863	3383	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	1863	3383	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	283	228	315	859	359
RTOR Reduction (vph)	0	36	0	0	71	0
Lane Group Flow (vph)	130	247	228	315	1147	0
Turn Type		pm+ov	Prot			
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	7.3	16.7	9.4	34.6	21.2	
Effective Green, g (s)	7.3	16.7	9.4	34.6	21.2	
Actuated g/C Ratio	0.15	0.33	0.19	0.69	0.42	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	259	657	333	1292	1437	
v/s Ratio Prot	c0.07	0.07	c0.13	0.17	c0.34	
v/s Ratio Perm		0.09				
v/c Ratio	0.50	0.38	0.68	0.24	0.80	
Uniform Delay, d1	19.6	12.6	18.9	2.8	12.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	0.4	5.7	0.1	3.2	
Delay (s)	21.2	13.0	24.6	2.9	15.7	
Level of Service	C	B	C	A	B	
Approach Delay (s)	15.6			12.0	15.7	
Approach LOS	B			B	B	

Intersection Summary				
HCM Average Control Delay	14.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	60.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	60	20	450	50	930	100	1380	320	460	570	40
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	10.0	32.0	20.0	18.0	40.0	40.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	11.1%	35.6%	22.2%	20.0%	44.4%	44.4%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	8.1	6.2	14.6	13.0	74.2	6.1	27.5	46.2	14.0	37.9	37.9
Actuated g/C Ratio	0.11	0.08	0.20	0.18	1.00	0.08	0.37	0.62	0.19	0.51	0.51
v/c Ratio	0.34	0.18	0.72	0.09	0.64	0.39	0.80	0.31	0.77	0.24	0.05
Control Delay	37.1	20.4	35.8	28.9	2.0	39.2	25.9	1.7	39.7	12.3	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	20.4	35.8	28.9	2.0	39.2	25.9	1.7	39.7	12.3	4.7
LOS	D	C	D	C	A	D	C	A	D	B	A
Approach Delay		29.4		13.6			22.4			23.8	
Approach LOS		C		B			C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 74.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 20.0		Intersection LOS: C	
Intersection Capacity Utilization 69.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	20	30	450	50	930	100	1380	320	460	570	40
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	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.91		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)	1770	3221		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3221		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	22	33	489	54	1011	109	1500	348	500	620	43
RTOR Reduction (vph)	0	31	0	0	0	0	0	0	153	0	0	22
Lane Group Flow (vph)	65	24	0	489	54	1011	109	1500	195	500	620	21
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	5.3	3.7		14.6	13.0	76.8	4.6	28.5	43.1	14.0	37.9	37.9
Effective Green, g (s)	5.3	3.7		14.6	13.0	76.8	4.6	28.5	43.1	14.0	37.9	37.9
Actuated g/C Ratio	0.07	0.05		0.19	0.17	1.00	0.06	0.37	0.56	0.18	0.49	0.49
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	122	155		653	599	1583	206	1887	971	626	2509	781
v/s Ratio Prot	0.04			0.14	0.02		0.03	c0.29	0.04	c0.15	0.12	
v/s Ratio Perm		0.01				c0.64			0.09			0.01
v/c Ratio	0.53	0.15		0.75	0.09	0.64	0.53	0.79	0.20	0.80	0.25	0.03
Uniform Delay, d1	34.6	35.0		29.4	26.9	0.0	35.0	21.5	8.3	30.1	11.2	10.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.4	0.5		4.7	0.1	2.0	2.4	2.4	0.1	7.1	0.1	0.0
Delay (s)	39.0	35.5		34.1	27.0	2.0	37.5	23.9	8.4	37.1	11.3	10.0
Level of Service	D	D		C	C	A	D	C	A	D	B	A
Approach Delay (s)		37.4			13.0			21.9			22.3	
Approach LOS		D			B			C			C	

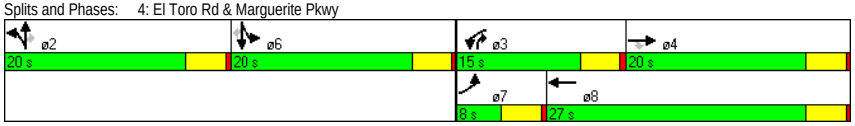
Intersection Summary					
HCM Average Control Delay	19.5	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.70				
Actuated Cycle Length (s)	76.8	Sum of lost time (s)		4.0	
Intersection Capacity Utilization	69.3%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	10	190	210	610	460	370	10	240	10	10
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split	
Protected Phases	7	4		3	8	2	2	3	6	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	2	2	3	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	15.0	27.0	20.0	20.0	15.0	20.0	20.0
Total Split (%)	10.7%	26.7%	26.7%	20.0%	36.0%	26.7%	26.7%	20.0%	26.7%	26.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes		
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.2	8.6	8.6	11.5	23.1	11.1	11.1	25.5	6.1	6.1
Actuated g/C Ratio	0.09	0.18	0.18	0.24	0.49	0.24	0.24	0.54	0.13	0.13
v/c Ratio	0.04	0.32	0.48	0.79	0.30	0.53	0.28	0.27	0.05	0.02
Control Delay	25.3	20.1	7.7	30.4	10.5	22.9	17.0	1.6	23.5	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.3	20.1	7.7	30.4	10.5	22.9	17.0	1.6	23.5	23.0
LOS	C	C	A	C	B	C	B	A	C	C
Approach Delay		13.9			21.8		12.8			23.3
Approach LOS		B			C		B			C

Intersection Summary

Cycle Length: 75
Actuated Cycle Length: 47.1
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 17.7 — Intersection LOS: B
Intersection Capacity Utilization 49.6% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	190	210	610	460	10	370	10	240	10	10	0
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	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3528		1610	3237	1583	1770	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3528		1610	3237	1583	1770	3390	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	207	228	663	500	11	402	11	261	11	11	0
RTOR Reduction (vph)	0	0	175	0	2	0	0	0	149	0	0	0
Lane Group Flow (vph)	11	207	53	663	509	0	201	212	112	11	11	0
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.6	12.2	12.2	11.5	23.1		11.1	11.1	22.6	2.1	2.1	
Effective Green, g (s)	0.6	12.2	12.2	11.5	23.1		11.1	11.1	22.6	2.1	2.1	
Actuated g/C Ratio	0.01	0.23	0.23	0.22	0.44		0.21	0.21	0.43	0.04	0.04	
Clearance Time (s)	4.0	4.0	4.0	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	3.0	3.0	3.0	
Lane Grp Cap (vph)	39	816	365	746	1541		338	679	676	70	135	
v/s Ratio Prot	0.00	0.06		c0.19	c0.14		c0.12	0.07	0.04	c0.01	0.00	
v/s Ratio Perm			0.03						0.03			
v/c Ratio	0.28	0.25	0.14	0.89	0.33		0.59	0.31	0.16	0.16	0.08	
Uniform Delay, d1	25.9	16.6	16.2	20.1	9.8		18.9	17.7	9.3	24.5	24.5	
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	3.9	0.2	0.2	12.5	0.1		2.8	0.3	0.1	1.1	0.3	
Delay (s)	29.9	16.8	16.4	32.5	9.9		21.7	17.9	9.5	25.6	24.7	
Level of Service	C	B	B	C	A		C	B	A	C	C	
Approach Delay (s)		16.9			22.7			15.8			25.2	
Approach LOS		B			C			B			C	

Intersection Summary

HCM Average Control Delay	19.6	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.54				
Actuated Cycle Length (s)	52.9	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	49.6%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	50	40	510	850
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	8.0	55.0	47.0
Total Split (%)	26.7%	10.7%	73.3%	62.7%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	9.7	4.5	39.2	35.4
Actuated g/C Ratio	0.17	0.08	0.68	0.61
v/c Ratio	0.65	0.32	0.44	0.85
Control Delay	16.2	39.6	5.5	20.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.2	39.6	5.5	20.4
LOS	B	D	A	C
Approach Delay	16.2		8.0	20.4
Approach LOS	B		A	C

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 57.8			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 70.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn

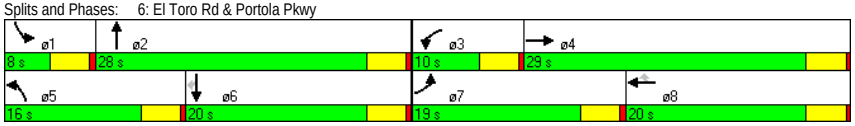
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	220	40	510	850	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.89		1.00	1.00	0.99	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1642		1770	1863	1852	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1642		1770	1863	1852	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	239	43	554	924	43
RTOR Reduction (vph)	177	0	0	0	2	0
Lane Group Flow (vph)	116	0	43	554	965	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	9.6		1.9	41.2	35.3	
Effective Green, g (s)	9.6		1.9	41.2	35.3	
Actuated g/C Ratio	0.16		0.03	0.70	0.60	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	268		57	1305	1112	
v/s Ratio Prot	c0.07		0.02	c0.30	c0.52	
v/s Ratio Perm						
v/c Ratio	0.43		0.75	0.42	0.87	
Uniform Delay, d1	22.1		28.2	3.7	9.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.1		42.7	0.2	7.3	
Delay (s)	23.3		70.9	4.0	17.1	
Level of Service	C		E	A	B	
Approach Delay (s)	23.3			8.8	17.1	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	58.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	310	170	300	50	500	260	490	1610	50	620	370
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	19.0	29.0	0.0	10.0	20.0	20.0	16.0	28.0	8.0	20.0	20.0
Total Split (%)	25.3%	38.7%	0.0%	13.3%	26.7%	26.7%	21.3%	37.3%	10.7%	26.7%	26.7%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	15.1	27.0	71.7	5.9	13.7	13.7	12.0	26.3	4.0	14.9	14.9
Actuated g/C Ratio	0.21	0.38	1.00	0.08	0.19	0.19	0.17	0.37	0.06	0.21	0.21
v/c Ratio	0.91	0.10	0.23	0.37	0.56	0.65	0.92	0.75	0.28	0.64	0.65
Control Delay	59.8	16.3	0.4	40.1	28.8	19.7	55.3	23.3	37.8	29.3	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.8	16.3	0.4	40.1	28.8	19.7	55.3	23.3	37.8	29.3	10.3
LOS	E	B	A	D	C	B	E	C	D	C	B
Approach Delay		27.5			26.5			30.7		23.0	
Approach LOS		C			C			C		C	

Intersection Summary			
Cycle Length: 75			
Actuated Cycle Length: 71.7			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 27.8		Intersection LOS: C	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	170	300	50	500	260	490	1610	20	50	620	370
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		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)	1770	5085	1425	1770	5085	1583	3433	6396		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6396		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	337	185	326	54	543	283	533	1750	22	54	674	402
RTOR Reduction (vph)	0	0	0	0	0	129	0	13	0	0	0	282
Lane Group Flow (vph)	337	185	326	54	543	154	533	1759	0	54	674	120
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	15.1	27.0	75.1	3.5	15.4	15.4	12.0	26.3		2.3	16.6	16.6
Effective Green, g (s)	15.1	27.0	75.1	3.5	15.4	15.4	12.0	26.3		2.3	16.6	16.6
Actuated g/C Ratio	0.20	0.36	1.00	0.05	0.21	0.21	0.16	0.35		0.03	0.22	0.22
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	356	1828	1425	82	1043	325	549	2240		105	1124	350
v/s Ratio Prot	c0.19	0.04		0.03	c0.11		c0.16	c0.28		0.02	0.13	
v/s Ratio Perm			0.23			0.10						0.08
v/c Ratio	0.95	0.10	0.23	0.66	0.52	0.47	0.97	0.79		0.51	0.60	0.34
Uniform Delay, d1	29.6	16.0	0.0	35.2	26.6	26.3	31.4	21.9		35.8	26.3	24.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	33.7	0.0	0.4	17.5	0.5	1.1	30.9	1.9		4.2	0.9	0.6
Delay (s)	63.3	16.0	0.4	52.7	27.0	27.4	62.3	23.7		40.1	27.1	25.2
Level of Service	E	B	A	D	C	C	E	C		D	C	C
Approach Delay (s)		28.8			28.7			32.7			27.1	
Approach LOS		C			C			C			C	

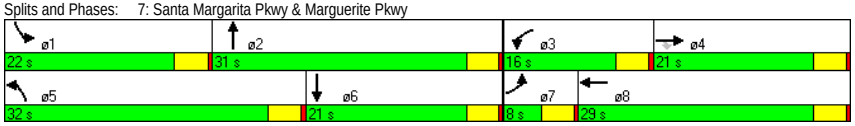
Intersection Summary					
HCM Average Control Delay		30.1	HCM Level of Service		C
HCM Volume to Capacity ratio		0.78			
Actuated Cycle Length (s)		75.1	Sum of lost time (s)		12.0
Intersection Capacity Utilization		67.2%	ICU Level of Service		C
Analysis Period (min)		15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	10	700	150	210	1250	490	280	190	420
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	8.0	21.0	21.0	16.0	29.0	32.0	31.0	22.0	21.0
Total Split (%)	8.9%	23.3%	23.3%	17.8%	32.2%	35.6%	34.4%	24.4%	23.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	16.4	16.4	12.0	30.8	27.8	28.5	14.8	15.5
Actuated g/C Ratio	0.05	0.19	0.19	0.14	0.35	0.32	0.32	0.17	0.18
v/c Ratio	0.14	0.80	0.38	0.94	0.80	0.95	0.42	0.69	0.77
Control Delay	45.2	41.8	8.3	84.8	29.1	59.4	16.0	47.1	40.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	41.8	8.3	84.8	29.1	59.4	16.0	47.1	40.3
LOS	D	D	A	F	C	E	B	D	D
Approach Delay		36.0			36.7		38.1		42.3
Approach LOS		D			D		D		D

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 87.7			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 37.8		Intersection LOS: D	
Intersection Capacity Utilization 82.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



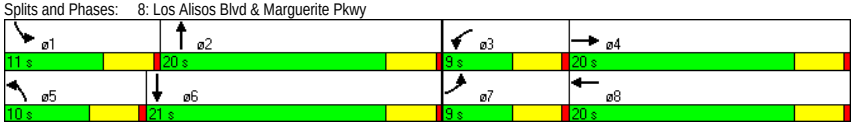
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	700	150	210	1250	90	490	280	190	190	420	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.94		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5034		1770	3324		1770	3494	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5034		1770	3324		1770	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	761	163	228	1359	98	533	304	207	207	457	43
RTOR Reduction (vph)	0	0	128	0	60	0	0	130	0	0	33	0
Lane Group Flow (vph)	11	761	35	228	1397	0	533	381	0	207	467	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	0.8	19.6	19.6	12.0	30.8		27.7	28.5		14.8	15.6	
Effective Green, g (s)	0.8	19.6	19.6	12.0	30.8		27.7	28.5		14.8	15.6	
Actuated g/C Ratio	0.01	0.22	0.22	0.13	0.34		0.30	0.31		0.16	0.17	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	16	1096	341	234	1706		539	1042		288	600	
v/s Ratio Prot	0.01	0.15		c0.13	c0.28		c0.30	0.11		0.12	c0.13	
v/s Ratio Perm			0.02									
v/c Ratio	0.69	0.69	0.10	0.97	0.82		0.99	0.37		0.72	0.78	
Uniform Delay, d1	44.9	32.9	28.6	39.3	27.5		31.4	24.2		36.1	36.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	80.1	1.9	0.1	51.2	3.2		35.5	0.2		8.3	6.3	
Delay (s)	125.0	34.8	28.7	90.5	30.7		67.0	24.4		44.4	42.3	
Level of Service	F	C	C	F	C		E	C		D	D	
Approach Delay (s)		34.8			38.8			46.1			42.9	
Approach LOS		C			D			D			D	

Intersection Summary					
HCM Average Control Delay	40.4	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	90.9	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	82.9%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	90	150	120	370	50	290	200	460
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	9.0	20.0	9.0	20.0	10.0	20.0	11.0	21.0
Total Split (%)	15.0%	33.3%	15.0%	33.3%	16.7%	33.3%	18.3%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	5.1	11.7	5.1	14.0	6.0	12.0	7.2	17.8
Actuated g/C Ratio	0.10	0.22	0.10	0.27	0.11	0.23	0.14	0.34
v/c Ratio	0.56	0.32	0.75	0.62	0.27	0.51	0.89	0.58
Control Delay	41.6	12.5	57.5	14.5	27.8	15.1	67.2	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	12.5	57.5	14.5	27.8	15.1	67.2	13.3
LOS	D	B	E	B	C	B	E	B
Approach Delay		20.4		21.7		16.5		25.2
Approach LOS		C		C		B		C

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.3			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 21.8		Intersection LOS: C	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	150	90	120	370	230	50	290	120	200	460	240
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.94		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3340		1770	3336		1770	3384		1770	3357	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3340		1770	3336		1770	3384		1770	3357	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	98	163	98	130	402	250	54	315	130	217	500	261
RTOR Reduction (vph)	0	69	0	0	171	0	0	90	0	0	162	0
Lane Group Flow (vph)	98	192	0	130	481	0	54	355	0	217	599	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	3.8	12.7		5.1	14.0		3.2	13.8		7.2	17.8	
Effective Green, g (s)	3.8	12.7		5.1	14.0		3.2	13.8		7.2	17.8	
Actuated g/C Ratio	0.07	0.23		0.09	0.26		0.06	0.25		0.13	0.32	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	123	774		165	852		103	852		233	1090	
v/s Ratio Prot	0.06	0.06		c0.07	c0.14		0.03	0.10		c0.12	c0.18	
v/s Ratio Perm												
v/c Ratio	0.80	0.25		0.79	0.56		0.52	0.42		0.93	0.55	
Uniform Delay, d1	25.1	17.2		24.3	17.7		25.1	17.1		23.6	15.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	29.0	0.2		21.6	0.9		4.7	0.3		40.4	0.6	
Delay (s)	54.1	17.3		45.9	18.6		29.8	17.5		63.9	15.8	
Level of Service	D	B		D	B		C	B		E	B	
Approach Delay (s)		27.4			23.1			18.8			26.5	
Approach LOS		C			C			B			C	

Intersection Summary					
HCM Average Control Delay	24.1	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.61				
Actuated Cycle Length (s)	54.8	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	59.6%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	380	200	80	550	170	1500	200	720
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	34.0	37.0	17.0	20.0	28.0	66.0	20.0	58.0
Total Split (%)	24.3%	26.4%	12.1%	14.3%	20.0%	47.1%	14.3%	41.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	30.0	11.9	34.1	16.0	19.3	62.0	16.0	58.7
Actuated g/C Ratio	0.21	0.08	0.24	0.11	0.14	0.44	0.11	0.42
v/c Ratio	1.09	0.62	0.20	1.09	0.76	1.05	1.07	0.63
Control Delay	123.0	50.9	44.6	107.3	77.3	75.2	141.3	28.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	123.0	50.9	44.6	107.3	77.3	75.2	141.3	28.5
LOS	F	D	D	F	E	E	F	C
Approach Delay		92.4		100.8		75.4		49.0
Approach LOS		F		F		E		D

Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 75.8		Intersection LOS: E	
Intersection Capacity Utilization 101.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	380	200	80	80	550	140	170	1500	30	200	720	180
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	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.97		1.00	1.00		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)	1770	4867		1770	4931		1770	3529		1770	3433	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4867		1770	4931		1770	3529		1770	3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	413	217	87	87	598	152	185	1630	33	217	783	196
RTOR Reduction (vph)	0	73	0	0	124	0	0	17	0	0	105	0
Lane Group Flow (vph)	413	231	0	87	626	0	185	1646	0	217	874	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	30.0	11.9		34.1	16.0		19.3	62.0		16.0	58.7	
Effective Green, g (s)	30.0	11.9		34.1	16.0		19.3	62.0		16.0	58.7	
Actuated g/C Ratio	0.21	0.09		0.24	0.11		0.14	0.44		0.11	0.42	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	379	414		431	564		244	1563		202	1439	
v/s Ratio Prot	c0.23	0.05		0.05	c0.13		0.10	c0.47		c0.12	0.25	
v/s Ratio Perm												
v/c Ratio	1.09	0.56		0.20	1.11		0.76	1.05		1.07	0.61	
Uniform Delay, d1	55.0	61.5		42.1	62.0		58.1	39.0		62.0	31.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	72.5	1.6		0.2	71.7		12.6	38.2		84.4	0.7	
Delay (s)	127.5	63.2		42.4	133.7		70.7	77.2		146.4	32.4	
Level of Service	F	E		D	F		E	E		F	C	
Approach Delay (s)		100.2			124.2			76.6			53.1	
Approach LOS		F			F			E			D	

Intersection Summary					
HCM Average Control Delay	82.8	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.07				
Actuated Cycle Length (s)	140.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	101.6%	ICU Level of Service		G	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	150	30	360	40	10	780
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.77	0.77	0.92	0.92
Hourly flow rate (vph)	197	39	468	52	11	848
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.69					
vC, conflicting volume	1337	468			519	
vC1, stage 1 conf vol	468					
vC2, stage 2 conf vol	870					
vCu, unblocked vol	1265	468			519	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	41	93			99	
cM capacity (veh/h)	336	595			1047	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	237	468	52	11	848
Volume Left	197	0	0	11	0
Volume Right	39	0	52	0	0
cSH	362	1700	1700	1047	1700
Volume to Capacity	0.65	0.28	0.03	0.01	0.50
Queue Length 95th (ft)	111	0	0	1	0
Control Delay (s)	31.9	0.0	0.0	8.5	0.0
Lane LOS	D			A	
Approach Delay (s)	31.9	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	110	30	380	920	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.62	0.62	0.94	0.94
Hourly flow rate (vph)	0	157	48	613	979	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	1382	979	989			
vC1, stage 1 conf vol	979					
vC2, stage 2 conf vol	403					
vCu, unblocked vol	1382	979	989			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	37	93			
cM capacity (veh/h)	295	250	694			

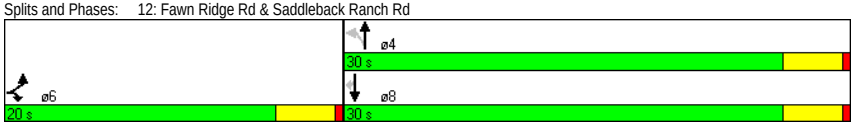
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	157	48	306	306	979	11
Volume Left	0	48	0	0	0	0
Volume Right	157	0	0	0	0	11
cSH	250	694	1700	1700	1700	1700
Volume to Capacity	0.63	0.07	0.18	0.18	0.58	0.01
Queue Length 95th (ft)	96	6	0	0	0	0
Control Delay (s)	41.1	10.6	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	41.1	0.8			0.0	
Approach LOS	E					

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	180	40	330	590	40
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	30.0	30.0	30.0	30.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.2	16.2	19.5	19.5	19.5	19.5
Actuated g/C Ratio	0.37	0.37	0.44	0.44	0.44	0.44
v/c Ratio	0.09	0.36	0.42	0.74	0.78	0.06
Control Delay	11.6	5.3	16.2	15.8	17.6	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	5.3	16.2	15.8	17.6	2.7
LOS	B	A	B	B	B	A
Approach Delay	6.4			15.9	16.7	
Approach LOS	A			B	B	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 43.9			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	180	40	330	590	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.21	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	395	1863	1863	1583
Peak-hour factor, PHF	0.69	0.69	0.54	0.54	0.91	0.91
Adj. Flow (vph)	58	261	74	611	648	44
RTOR Reduction (vph)	0	135	0	0	0	24
Lane Group Flow (vph)	58	126	74	611	648	20
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Actuated Green, G (s)	16.2	16.2	19.5	19.5	19.5	19.5
Effective Green, g (s)	16.2	16.2	19.5	19.5	19.5	19.5
Actuated g/C Ratio	0.37	0.37	0.45	0.45	0.45	0.45
Clearance Time (s)	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
Lane Grp Cap (vph)	656	587	176	831	831	706
v/s Ratio Prot	0.03	c0.08		0.33	c0.35	
v/s Ratio Perm			0.19			0.01
v/c Ratio	0.09	0.22	0.42	0.74	0.78	0.03
Uniform Delay, d1	8.9	9.4	8.2	10.0	10.3	6.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.8	1.6	3.4	4.7	0.0
Delay (s)	9.2	10.2	9.9	13.4	14.9	6.8
Level of Service	A	B	A	B	B	A
Approach Delay (s)	10.1			13.0	14.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM Average Control Delay	13.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	48.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	360	70	10	280	60	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	391	76	11	304	65	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			467		755	429
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			467		755	429
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		82	98
cM capacity (veh/h)			1094		372	626

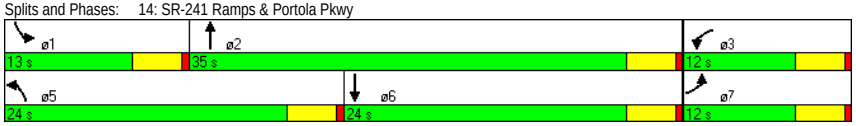
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	467	11	304	76
Volume Left	0	11	0	65
Volume Right	76	0	0	11
cSH	1700	1094	1700	395
Volume to Capacity	0.27	0.01	0.18	0.19
Queue Length 95th (ft)	0	1	0	18
Control Delay (s)	0.0	8.3	0.0	16.3
Lane LOS		A		C
Approach Delay (s)	0.0	0.3		16.3
Approach LOS				C

Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		33.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	100	110	610	850	220	630
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	12.0	12.0	24.0	35.0	13.0	24.0
Total Split (%)	20.0%	20.0%	40.0%	58.3%	21.7%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	7.7	7.7	14.9	27.2	8.6	15.4
Actuated g/C Ratio	0.16	0.16	0.31	0.57	0.18	0.32
v/c Ratio	0.38	0.22	0.62	0.32	0.39	0.60
Control Delay	26.4	22.5	18.0	8.6	22.6	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	22.5	18.0	8.6	22.6	17.3
LOS	C	C	B	A	C	B
Approach Delay				12.5		18.7
Approach LOS				B		B

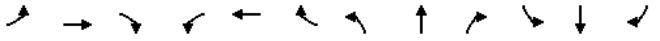
Intersection Summary		
Cycle Length: 60		
Actuated Cycle Length: 47.7		
Natural Cycle: 45		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.62		
Intersection Signal Delay: 15.6	Intersection LOS: B	
Intersection Capacity Utilization 50.4%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy



14: SR-241 Ramps & Portola Pkwy

Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	0	0	110	0	0	610	850	0	220	630	0
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	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	0	0	120	0	0	663	924	0	239	685	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	109	0	0	120	0	0	663	924	0	239	685	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	5.6			5.6			14.9	25.6		6.2	16.9	
Effective Green, g (s)	5.6			5.6			14.9	25.6		6.2	16.9	
Actuated g/C Ratio	0.11			0.11			0.30	0.52		0.13	0.34	
Clearance Time (s)	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	
Lane Grp Cap (vph)	201			389			1035	2635		431	1211	
v/s Ratio Prot	c0.06			0.03			c0.19	0.18		0.07	c0.19	
v/s Ratio Perm												
v/c Ratio	0.54			0.31			0.64	0.35		0.55	0.57	
Uniform Delay, d1	20.7			20.1			14.9	7.0		20.3	13.3	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0			0.5			1.4	0.1		1.5	0.6	
Delay (s)	23.7			20.6			16.3	7.1		21.8	13.9	
Level of Service	C			C			B	A		C	B	
Approach Delay (s)		23.7			20.6			10.9			15.9	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM Average Control Delay	13.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	50.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

15: Project Driveway 1 & Saddleback Ranch Rd

Timing Plan: AM Peak

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	42	14	397	1185	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	46	15	432	1288	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				485		
pX, platoon unblocked						
vC, conflicting volume	1535	645	1290			
vC1, stage 1 conf vol	1289					
vC2, stage 2 conf vol	246					
vCu, unblocked vol	1535	645	1290			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	89	97			
cM capacity (veh/h)	214	415	533			

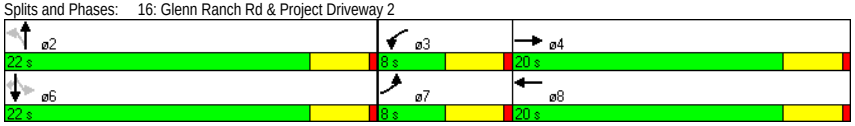
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	8	46	15	216	216	859	432
Volume Left	8	0	15	0	0	0	0
Volume Right	0	46	0	0	0	0	2
cSH	214	415	533	1700	1700	1700	1700
Volume to Capacity	0.04	0.11	0.03	0.13	0.13	0.51	0.25
Queue Length 95th (ft)	3	9	2	0	0	0	0
Control Delay (s)	22.5	14.7	11.9	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	15.9		0.4			0.0	
Approach LOS	C						

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	42.8%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	37	332	11	582	145	0	20	0	111
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	20.0	8.0	20.0	22.0	22.0	22.0	22.0	22.0
Total Split (%)	16.0%	40.0%	16.0%	40.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	4.1	14.0	4.1	12.6	18.5	18.5		18.5	18.5
Actuated g/C Ratio	0.10	0.33	0.10	0.30	0.44	0.44		0.44	0.44
v/c Ratio	0.23	0.36	0.07	0.60	0.26	0.03		0.04	0.16
Control Delay	24.0	10.6	21.6	15.5	11.3	0.1		10.0	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	24.0	10.6	21.6	15.5	11.3	0.1		10.0	3.5
LOS	C	B	C	B	B	A		A	A
Approach Delay		11.7		15.6		9.5		4.5	
Approach LOS		B		B		A		A	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 42			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 44.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	332	56	11	582	7	145	0	28	20	0	111
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
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3462		1770	3533		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00			0.74	1.00
Satd. Flow (perm)	1770	3462		1770	3533		1384	1583			1374	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	361	61	12	633	8	158	0	30	22	0	121
RTOR Reduction (vph)	0	28	0	0	2	0	0	18	0	0	0	72
Lane Group Flow (vph)	40	394	0	12	639	0	158	12	0	0	22	49
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	1.3	14.0		0.7	13.4		18.4	18.4			18.4	18.4
Effective Green, g (s)	1.3	14.0		0.7	13.4		18.4	18.4			18.4	18.4
Actuated g/C Ratio	0.03	0.31		0.02	0.30		0.41	0.41			0.41	0.41
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	51	1075		27	1050		565	646			561	646
v/s Ratio Prot	c0.02	0.11		0.01	c0.18			0.01				
v/s Ratio Perm							c0.11				0.02	0.03
v/c Ratio	0.78	0.37		0.44	0.61		0.28	0.02			0.04	0.08
Uniform Delay, d1	21.8	12.1		22.0	13.6		8.9	8.0			8.0	8.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	53.8	0.2		11.2	1.0		1.2	0.1			0.1	0.2
Delay (s)	75.6	12.3		33.2	14.6		10.2	8.0			8.2	8.4
Level of Service	E	B		C	B		B	A			A	A
Approach Delay (s)		17.8			14.9			9.8			8.4	
Approach LOS		B			B			A			A	

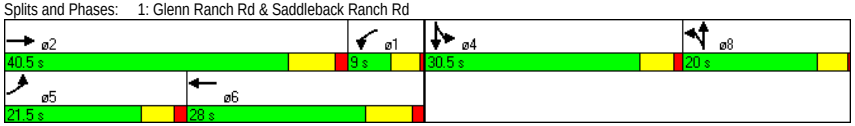
Intersection Summary					
HCM Average Control Delay	14.5	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.43				
Actuated Cycle Length (s)	45.1	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	44.3%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	739	734	30	317	111	21	125	30	293
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	21.5	40.5	9.0	28.0	20.0	20.0	30.5	30.5	0.0
Total Split (%)	21.5%	40.5%	9.0%	28.0%	20.0%	20.0%	30.5%	30.5%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	C-Max	Max	None	Max	None	None	None	None	
Act Effct Green (s)	34.5	57.1	5.0	24.0	12.0	12.0	13.4	12.4	100.0
Actuated g/C Ratio	0.34	0.57	0.05	0.24	0.12	0.12	0.13	0.12	1.00
v/c Ratio	0.68	0.49	0.37	0.57	0.57	0.20	0.37	0.40	0.20
Control Delay	34.2	16.3	58.1	26.4	51.3	24.8	41.8	43.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	16.3	58.1	26.4	51.3	24.8	41.8	43.5	0.3
LOS	C	B	E	C	D	C	D	D	A
Approach Delay		24.5		28.3		44.0		15.0	
Approach LOS		C		C		D		B	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 5:EBL, Start of Green, Master Intersection
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 24.7 — Intersection LOS: C
Intersection Capacity Utilization 57.8% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	739	734	152	30	317	162	111	21	21	125	30	293
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	3448		1770	3360		1770	1723		1681	1717	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	3448		1770	3360		1770	1723		1681	1717	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	803	798	165	33	345	176	121	23	23	136	33	318
RTOR Reduction (vph)	0	12	0	0	109	0	0	20	0	0	0	0
Lane Group Flow (vph)	803	951	0	33	412	0	121	26	0	84	85	318
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	31.5	52.6		3.0	22.6		12.0	12.0		12.4	12.4	100.0
Effective Green, g (s)	33.0	55.6		3.0	25.6		12.0	12.0		13.4	12.4	100.0
Actuated g/C Ratio	0.33	0.56		0.03	0.26		0.12	0.12		0.13	0.12	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1133	1917		53	860		212	207		225	213	1583
v/s Ratio Prot	c0.23	c0.28		0.02	c0.12		c0.07	0.01		c0.05	0.05	
v/s Ratio Perm												0.20
v/c Ratio	0.71	0.50		0.62	0.48		0.57	0.12		0.37	0.40	0.20
Uniform Delay, d1	29.3	13.6		47.9	31.5		41.6	39.3		39.5	40.4	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.8	0.9		20.6	1.9		3.7	0.3		1.0	1.2	0.3
Delay (s)	33.1	14.5		68.5	33.5		45.2	39.6		40.5	41.6	0.3
Level of Service	C	B		E	C		D	D		D	D	A
Approach Delay (s)		23.0			35.6			43.7			14.4	
Approach LOS		C			D			D			B	

Intersection Summary

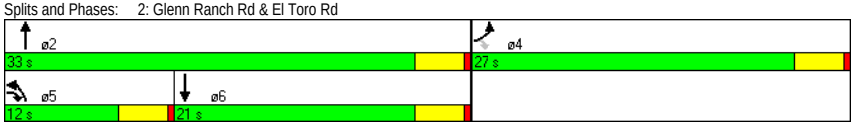
HCM Average Control Delay	25.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	57.8%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Volume (vph)	420	130	190	700	450
Turn Type		pm+ov	Prot		
Protected Phases	4	5	5	2	6
Permitted Phases		4			
Detector Phase	4	5	5	2	6
Switch Phase					
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0
Total Split (s)	27.0	12.0	12.0	33.0	21.0
Total Split (%)	45.0%	20.0%	20.0%	55.0%	35.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag
Lead-Lag Optimize?		Yes	Yes		Yes
Recall Mode	None	None	None	None	None
Act Effct Green (s)	17.8	30.2	8.2	26.6	14.2
Actuated g/C Ratio	0.34	0.57	0.16	0.51	0.27
v/c Ratio	0.76	0.15	0.75	0.81	0.68
Control Delay	25.0	2.5	45.6	21.3	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.0	2.5	45.6	21.3	19.3
LOS	C	A	D	C	B
Approach Delay	19.7			26.5	19.3
Approach LOS	B			C	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 52.6			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 22.5		Intersection LOS: C	
Intersection Capacity Utilization 66.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	420	130	190	700	450	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	
Frt	1.00	0.85	1.00	1.00	0.96	
Flt Protected	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1583	1770	1863	3400	
Flt Permitted	0.95	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1583	1770	1863	3400	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	457	141	207	761	489	174
RTOR Reduction (vph)	0	56	0	0	60	0
Lane Group Flow (vph)	457	85	207	761	603	0
Turn Type		pm+ov	Prot			
Protected Phases	4	5	5	2	6	
Permitted Phases		4				
Actuated Green, G (s)	17.8	26.0	8.2	26.5	14.3	
Effective Green, g (s)	17.8	26.0	8.2	26.5	14.3	
Actuated g/C Ratio	0.34	0.50	0.16	0.51	0.27	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	602	908	278	944	930	
v/s Ratio Prot	c0.26	0.01	0.12	c0.41	0.18	
v/s Ratio Perm		0.04				
v/c Ratio	0.76	0.09	0.74	0.81	0.65	
Uniform Delay, d1	15.3	6.9	21.1	10.8	16.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.5	0.0	10.3	5.1	1.6	
Delay (s)	20.8	7.0	31.4	15.9	18.3	
Level of Service	C	A	C	B	B	
Approach Delay (s)	17.6			19.2	18.3	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	52.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	100	20	350	20	690	60	760	360	1050	1530	70
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	9.0	20.0	20.0	30.0	41.0	41.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	10.0%	22.2%	22.2%	33.3%	45.6%	45.6%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	15.4	6.4	13.5	8.5	75.8	5.1	15.8	33.4	26.3	39.2	39.2
Actuated g/C Ratio	0.20	0.08	0.18	0.11	1.00	0.07	0.21	0.44	0.35	0.52	0.52
v/c Ratio	0.30	0.27	0.62	0.06	0.47	0.28	0.78	0.43	0.96	0.63	0.09
Control Delay	29.9	16.4	34.2	32.2	1.0	39.4	35.6	3.2	45.3	16.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.9	16.4	34.2	32.2	1.0	39.4	35.6	3.2	45.3	16.5	3.7
LOS	C	B	C	C	A	D	D	A	D	B	A
Approach Delay		23.9		12.5			25.9			27.6	
Approach LOS		C		B			C			C	

Intersection Summary

Cycle Length: 90			
Actuated Cycle Length: 75.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 23.9		Intersection LOS: C	
Intersection Capacity Utilization 71.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	20	60	350	20	690	60	760	360	1050	1530	70
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	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.89		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)	1770	3143		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3143		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	22	65	380	22	750	65	826	391	1141	1663	76
RTOR Reduction (vph)	0	60	0	0	0	0	0	0	242	0	0	38
Lane Group Flow (vph)	109	27	0	380	22	750	65	826	149	1141	1663	38
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	13.9	6.6		13.5	6.2	79.1	3.8	16.7	30.2	26.3	39.2	39.2
Effective Green, g (s)	13.9	6.6		13.5	6.2	79.1	3.8	16.7	30.2	26.3	39.2	39.2
Actuated g/C Ratio	0.18	0.08		0.17	0.08	1.00	0.05	0.21	0.38	0.33	0.50	0.50
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	311	262		586	277	1583	165	1074	684	1141	2520	784
v/s Ratio Prot	0.06			c0.11	0.01		0.02	c0.16	0.04	c0.33	0.33	
v/s Ratio Perm		0.01				c0.47			0.06			0.02
v/c Ratio	0.35	0.10		0.65	0.08	0.47	0.39	0.77	0.22	1.00	0.66	0.05
Uniform Delay, d1	28.6	33.5		30.6	33.8	0.0	36.5	29.4	16.5	26.4	15.0	10.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2		2.5	0.1	1.0	1.6	3.4	0.2	26.6	0.6	0.0
Delay (s)	29.3	33.7		33.1	33.9	1.0	38.1	32.8	16.7	53.0	15.6	10.3
Level of Service	C	C		C	C	A	D	C	B	D	B	B
Approach Delay (s)		31.3			12.2			28.1			30.3	
Approach LOS		C			B			C			C	

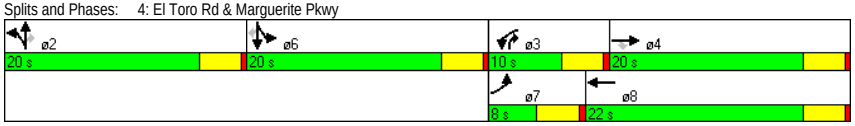
Intersection Summary

HCM Average Control Delay	26.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	79.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	10	370	420	420	170	140	40	580	10	40	10
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8	2	2	3	6	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	2	2	3	6	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	10.0	22.0	20.0	20.0	10.0	20.0	20.0	20.0
Total Split (%)	11.4%	28.6%	28.6%	14.3%	31.4%	28.6%	28.6%	14.3%	28.6%	28.6%	28.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes			
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.6	11.6	11.6	6.9	23.4	8.2	8.2	13.8	6.8	6.8	6.8
Actuated g/C Ratio	0.11	0.28	0.28	0.17	0.56	0.20	0.20	0.33	0.16	0.16	0.16
v/c Ratio	0.03	0.41	0.59	0.81	0.10	0.24	0.18	0.70	0.04	0.08	0.04
Control Delay	23.0	15.5	5.7	39.1	9.0	20.3	18.4	6.5	20.9	20.1	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	15.5	5.7	39.1	9.0	20.3	18.4	6.5	20.9	20.1	13.2
LOS	C	B	A	D	A	C	B	A	C	C	B
Approach Delay		10.5			30.1		9.5			19.2	
Approach LOS		B			C		A			B	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 41.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 59.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	370	420	420	170	10	140	40	580	10	40	10
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	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	0.91
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3509		1610	3285	1583	1770	3379	1441
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3509		1610	3285	1583	1770	3379	1441
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	402	457	457	185	11	152	43	630	11	43	11
RTOR Reduction (vph)	0	0	308	0	4	0	0	0	413	0	1	9
Lane Group Flow (vph)	11	402	149	457	192	0	76	119	217	11	43	1
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.6	15.5	15.5	6.9	21.8		5.9	5.9	12.8	3.2	3.2	3.2
Effective Green, g (s)	0.6	15.5	15.5	6.9	21.8		5.9	5.9	12.8	3.2	3.2	3.2
Actuated g/C Ratio	0.01	0.33	0.33	0.15	0.46		0.12	0.12	0.27	0.07	0.07	0.07
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	43	1155	517	499	1610		200	408	427	119	228	97
v/s Ratio Prot	0.00	c0.11		c0.13	0.05		0.05	0.04	c0.07	0.01	c0.01	
v/s Ratio Perm			0.09						0.06			0.00
v/c Ratio	0.26	0.35	0.29	0.92	0.12		0.38	0.29	0.51	0.09	0.19	0.01
Uniform Delay, d1	23.2	12.2	11.9	20.0	7.4		19.1	18.9	14.7	20.8	20.9	20.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.1	0.2	0.3	21.5	0.0		1.2	0.4	0.9	0.3	0.4	0.0
Delay (s)	26.4	12.3	12.2	41.5	7.4		20.3	19.3	15.6	21.1	21.3	20.7
Level of Service	C	B	B	D	A		C	B	B	C	C	C
Approach Delay (s)		12.4			31.2			16.6			21.2	
Approach LOS		B			C			B			C	

Intersection Summary					
HCM Average Control Delay	19.2	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.49				
Actuated Cycle Length (s)	47.5	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	59.5%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	30	110	930	470
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	40.0	30.0
Total Split (%)	33.3%	16.7%	66.7%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	7.6	7.2	32.1	23.0
Actuated g/C Ratio	0.19	0.18	0.81	0.58
v/c Ratio	0.24	0.37	0.67	0.50
Control Delay	12.0	26.2	8.0	10.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	12.0	26.2	8.0	10.1
LOS	B	C	A	B
Approach Delay	12.0		9.9	10.1
Approach LOS	B		A	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 39.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 10.1		Intersection LOS: B	
Intersection Capacity Utilization 60.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn

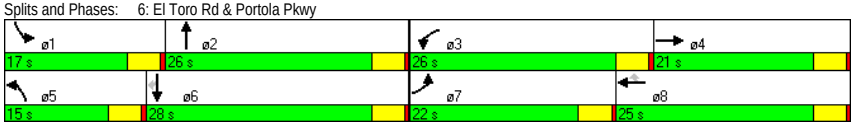
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	50	110	930	470	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.92		1.00	1.00	0.99	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1675		1770	1863	1847	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1675		1770	1863	1847	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	54	120	1011	511	33
RTOR Reduction (vph)	49	0	0	0	3	0
Lane Group Flow (vph)	38	0	120	1011	541	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	3.6		4.7	30.0	21.3	
Effective Green, g (s)	3.6		4.7	30.0	21.3	
Actuated g/C Ratio	0.09		0.11	0.72	0.51	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	145		200	1344	946	
v/s Ratio Prot	c0.02		0.07	c0.54	0.29	
v/s Ratio Perm						
v/c Ratio	0.26		0.60	0.75	0.57	
Uniform Delay, d1	17.8		17.6	3.5	7.0	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		4.8	2.4	0.8	
Delay (s)	18.7		22.3	6.0	7.8	
Level of Service	B		C	A	A	
Approach Delay (s)	18.7			7.7	7.8	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	8.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	41.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	370	430	510	330	570	640	430	1010	400	1260	650
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	22.0	21.0	0.0	26.0	25.0	25.0	15.0	26.0	17.0	28.0	28.0
Total Split (%)	24.4%	23.3%	0.0%	28.9%	27.8%	27.8%	16.7%	28.9%	18.9%	31.1%	31.1%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	18.0	18.2	90.0	20.8	21.0	21.0	11.0	22.0	13.0	24.0	24.0
Actuated g/C Ratio	0.20	0.20	1.00	0.23	0.23	0.23	0.12	0.24	0.14	0.27	0.27
v/c Ratio	1.14	0.45	0.39	0.88	0.52	1.22	1.11	0.72	0.88	1.01	0.95
Control Delay	125.2	33.6	0.8	56.7	32.0	135.5	116.2	33.1	58.1	60.9	36.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	125.2	33.6	0.8	56.7	32.0	135.5	116.2	33.1	58.1	60.9	36.7
LOS	F	C	A	E	C	F	F	C	E	E	D
Approach Delay		46.7			80.3			57.2		53.6	
Approach LOS		D			F			E		D	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay: 59.2		Intersection LOS: E	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	430	510	330	570	640	430	1010	40	400	1260	650
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		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)	1770	5085	1425	1770	5085	1583	3433	6372		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6372		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	467	554	359	620	696	467	1098	43	435	1370	707
RTOR Reduction (vph)	0	0	0	0	0	202	0	30	0	0	0	322
Lane Group Flow (vph)	402	467	554	359	620	494	467	1111	0	435	1370	385
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	18.0	18.2	90.0	20.8	21.0	21.0	11.0	22.0		13.0	24.0	24.0
Effective Green, g (s)	18.0	18.2	90.0	20.8	21.0	21.0	11.0	22.0		13.0	24.0	24.0
Actuated g/C Ratio	0.20	0.20	1.00	0.23	0.23	0.23	0.12	0.24		0.14	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	354	1028	1425	409	1187	369	420	1558		496	1356	422
v/s Ratio Prot	c0.23	0.09		0.20	0.12		c0.14	0.17		0.13	c0.27	
v/s Ratio Perm			c0.39			c0.31						0.24
v/c Ratio	1.14	0.45	0.39	0.88	0.52	1.34	1.11	0.71		0.88	1.01	0.91
Uniform Delay, d1	36.0	31.5	0.0	33.4	30.1	34.5	39.5	31.1		37.7	33.0	32.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	89.9	0.3	0.8	18.7	0.4	170.2	77.9	1.6		15.9	27.0	23.7
Delay (s)	125.9	31.9	0.8	52.1	30.5	204.7	117.4	32.7		53.6	60.0	55.7
Level of Service	F	C	A	D	C	F	F	C		D	E	E
Approach Delay (s)		46.3			107.5			57.3			57.7	
Approach LOS		D			F			E			E	

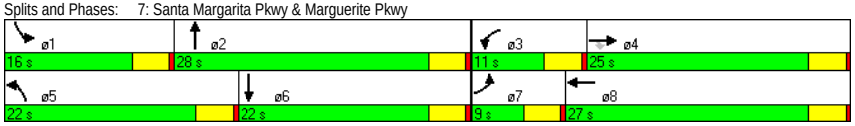
Intersection Summary					
HCM Average Control Delay		66.9	HCM Level of Service		E
HCM Volume to Capacity ratio		1.05			
Actuated Cycle Length (s)		90.0	Sum of lost time (s)		8.0
Intersection Capacity Utilization		85.4%	ICU Level of Service		E
Analysis Period (min)		15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	80	1200	520	150	850	360	330	130	420
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	9.0	25.0	25.0	11.0	27.0	22.0	28.0	16.0	22.0
Total Split (%)	11.3%	31.3%	31.3%	13.8%	33.8%	27.5%	35.0%	20.0%	27.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	5.0	21.0	21.0	7.0	24.9	18.0	22.9	10.3	15.2
Actuated g/C Ratio	0.06	0.27	0.27	0.09	0.32	0.23	0.30	0.13	0.20
v/c Ratio	0.76	0.94	0.74	1.01	0.65	0.95	0.50	0.59	0.74
Control Delay	76.8	43.1	12.3	114.9	21.8	65.4	16.5	42.7	30.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.8	43.1	12.3	114.9	21.8	65.4	16.5	42.7	30.8
LOS	E	D	B	F	C	E	B	D	C
Approach Delay		35.7			33.7		36.5		33.2
Approach LOS		D			C		D		C

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 77.3			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 35.0		Intersection LOS: C	
Intersection Capacity Utilization 79.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



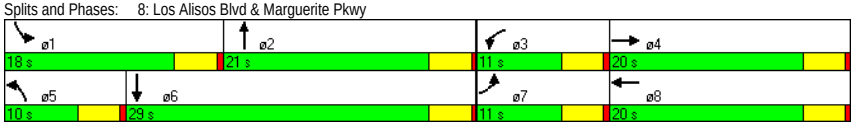
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1200	520	150	850	170	360	330	190	130	420	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	4958		1770	3345		1770	3445	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	4958		1770	3345		1770	3445	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	1304	565	163	924	185	391	359	207	141	457	98
RTOR Reduction (vph)	0	0	332	0	116	0	0	134	0	0	72	0
Lane Group Flow (vph)	87	1304	233	163	993	0	391	432	0	141	483	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	3.9	21.8	21.8	7.0	24.9		18.0	22.9		10.3	15.2	
Effective Green, g (s)	3.9	21.8	21.8	7.0	24.9		18.0	22.9		10.3	15.2	
Actuated g/C Ratio	0.05	0.28	0.28	0.09	0.32		0.23	0.29		0.13	0.19	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	89	1421	442	159	1583		408	982		234	671	
v/s Ratio Prot	0.05	c0.26		c0.09	c0.20		c0.22	0.13		0.08	c0.14	
v/s Ratio Perm			0.15									
v/c Ratio	0.98	0.92	0.53	1.03	0.63		0.96	0.44		0.60	0.72	
Uniform Delay, d1	37.0	27.2	23.7	35.5	22.6		29.6	22.3		31.9	29.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	87.1	9.6	1.1	78.1	0.8		33.5	0.3		4.3	3.7	
Delay (s)	124.1	36.8	24.9	113.6	23.4		63.1	22.7		36.2	33.1	
Level of Service	F	D	C	F	C		E	C		D	C	
Approach Delay (s)		37.3			35.0			39.2			33.7	
Approach LOS		D			C			D			C	

Intersection Summary					
HCM Average Control Delay	36.5	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.93				
Actuated Cycle Length (s)	78.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	79.3%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	160	260	150	200	60	370	300	370
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	11.0	20.0	11.0	20.0	10.0	21.0	18.0	29.0
Total Split (%)	15.7%	28.6%	15.7%	28.6%	14.3%	30.0%	25.7%	41.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	7.1	10.5	7.1	10.5	5.9	12.6	13.9	24.8
Actuated g/C Ratio	0.12	0.17	0.12	0.17	0.10	0.21	0.23	0.41
v/c Ratio	0.84	0.55	0.78	0.58	0.37	0.66	0.80	0.37
Control Delay	63.9	21.8	57.1	16.1	34.1	21.2	41.1	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.9	21.8	57.1	16.1	34.1	21.2	41.1	11.1
LOS	E	C	E	B	C	C	D	B
Approach Delay		35.6		27.4		22.6		22.2
Approach LOS		D		C		C		C

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 60.1			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	260	70	150	200	190	60	370	120	300	370	140
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3427		1770	3280		1770	3409		1770	3394	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3427		1770	3280		1770	3409		1770	3394	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	283	76	163	217	207	65	402	130	326	402	152
RTOR Reduction (vph)	0	58	0	0	158	0	0	92	0	0	84	0
Lane Group Flow (vph)	174	301	0	163	266	0	65	440	0	326	470	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.1	10.5		7.1	10.5		3.4	14.3		13.9	24.8	
Effective Green, g (s)	7.1	10.5		7.1	10.5		3.4	14.3		13.9	24.8	
Actuated g/C Ratio	0.11	0.17		0.11	0.17		0.06	0.23		0.22	0.40	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	203	582		203	557		97	789		398	1362	
v/s Ratio Prot	c0.10	c0.09		0.09	0.08		0.04	c0.13		c0.18	0.14	
v/s Ratio Perm												
v/c Ratio	0.86	0.52		0.80	0.48		0.67	0.56		0.82	0.35	
Uniform Delay, d1	26.9	23.3		26.7	23.2		28.6	21.0		22.8	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	28.1	0.8		20.0	0.6		16.7	0.9		12.4	0.2	
Delay (s)	55.0	24.1		46.7	23.8		45.3	21.8		35.1	13.0	
Level of Service	D	C		D	C		D	C		D	B	
Approach Delay (s)		34.2			30.2			24.4			21.2	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM Average Control Delay	26.6	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.67				
Actuated Cycle Length (s)	61.8	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	64.5%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	290	400	20	210	140	900	170	1670
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	30.0	39.0	11.0	20.0	16.0	71.0	29.0	84.0
Total Split (%)	20.0%	26.0%	7.3%	13.3%	10.7%	47.3%	19.3%	56.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	26.0	36.0	6.6	12.5	12.0	72.1	19.9	80.0
Actuated g/C Ratio	0.18	0.25	0.05	0.09	0.08	0.49	0.14	0.55
v/c Ratio	1.00	0.46	0.28	0.66	1.05	0.60	0.77	1.09
Control Delay	110.7	36.0	77.3	53.2	150.8	27.5	81.7	76.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.7	36.0	77.3	53.2	150.8	27.5	81.7	76.1
LOS	F	D	E	D	F	C	F	E
Approach Delay		61.5		54.7		43.1		76.5
Approach LOS		E		D		D		E

Intersection Summary			
Cycle Length: 150			
Actuated Cycle Length: 146.6			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 63.9		Intersection LOS: E	
Intersection Capacity Utilization 101.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	400	160	20	210	90	140	900	70	170	1670	390
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	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.95		1.00	0.99		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)	1770	4867		1770	4856		1770	3501		1770	3439	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4867		1770	4856		1770	3501		1770	3439	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	315	435	174	22	228	98	152	978	76	185	1815	424
RTOR Reduction (vph)	0	121	0	0	81	0	0	36	0	0	179	0
Lane Group Flow (vph)	315	488	0	22	245	0	152	1018	0	185	2060	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	26.0	36.0		4.2	14.2		12.0	72.1		19.9	80.0	
Effective Green, g (s)	26.0	36.0		4.2	14.2		12.0	72.1		19.9	80.0	
Actuated g/C Ratio	0.18	0.24		0.03	0.10		0.08	0.49		0.13	0.54	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	311	1182		50	465		143	1703		238	1856	
v/s Ratio Prot	c0.18	0.10		0.01	c0.05		c0.09	0.29		0.10	c0.60	
v/s Ratio Perm												
v/c Ratio	1.01	0.41		0.44	0.53		1.06	0.60		0.78	1.11	
Uniform Delay, d1	61.1	47.2		70.8	63.8		68.1	27.6		62.0	34.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	54.3	0.2		6.1	1.1		93.0	0.6		14.7	57.7	
Delay (s)	115.4	47.4		76.9	64.9		161.1	28.1		76.7	91.8	
Level of Service	F	D		E	E		F	C		E	F	
Approach Delay (s)		70.6			65.6			44.9			90.7	
Approach LOS		E			E			D			F	

Intersection Summary					
HCM Average Control Delay	73.9	HCM Level of Service		E	
HCM Volume to Capacity ratio	1.02				
Actuated Cycle Length (s)	148.2	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	101.8%	ICU Level of Service		G	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	70	10	670	120	20	390
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	88	12	713	128	24	470
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.87					
vC, conflicting volume	1231	713			840	
vC1, stage 1 conf vol	713					
vC2, stage 2 conf vol	518					
vCu, unblocked vol	1192	713			840	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	97			97	
cM capacity (veh/h)	400	432			795	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	100	713	128	24	470
Volume Left	88	0	0	24	0
Volume Right	12	0	128	0	0
cSH	404	1700	1700	795	1700
Volume to Capacity	0.25	0.42	0.08	0.03	0.28
Queue Length 95th (ft)	24	0	0	2	0
Control Delay (s)	16.8	0.0	0.0	9.7	0.0
Lane LOS	C			A	
Approach Delay (s)	16.8	0.0		0.5	
Approach LOS	C				

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	50	60	650	400	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	13	65	63	684	426	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				871		
pX, platoon unblocked						
vC, conflicting volume	894	426	436			
vC1, stage 1 conf vol	426					
vC2, stage 2 conf vol	468					
vCu, unblocked vol	894	426	436			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	89	94			
cM capacity (veh/h)	471	577	1120			

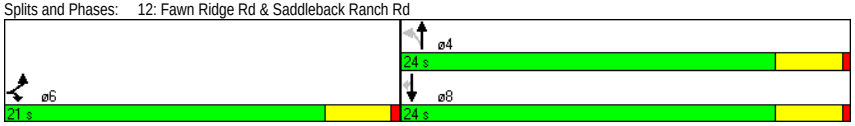
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	78	63	342	342	426	11
Volume Left	13	63	0	0	0	0
Volume Right	65	0	0	0	0	11
cSH	556	1120	1700	1700	1700	1700
Volume to Capacity	0.14	0.06	0.20	0.20	0.25	0.01
Queue Length 95th (ft)	12	4	0	0	0	0
Control Delay (s)	12.5	8.4	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	12.5	0.7			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	60	130	540	340	20
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	21.0	21.0	24.0	24.0	24.0	24.0
Total Split (%)	46.7%	46.7%	53.3%	53.3%	53.3%	53.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	17.1	17.1	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.40	0.40	0.42	0.42	0.42	0.42
v/c Ratio	0.05	0.11	0.43	0.84	0.47	0.03
Control Delay	9.2	3.5	13.1	23.6	11.3	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	3.5	13.1	23.6	11.3	3.9
LOS	A	A	B	C	B	A
Approach Delay	5.4			21.5	10.9	
Approach LOS	A			C	B	

Intersection Summary			
Cycle Length: 45			
Actuated Cycle Length: 43.1			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 17.0		Intersection LOS: B	
Intersection Capacity Utilization 38.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	60	130	540	340	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.47	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	876	1863	1863	1583
Peak-hour factor, PHF	0.79	0.79	0.83	0.83	0.93	0.93
Adj. Flow (vph)	38	76	157	651	366	22
RTOR Reduction (vph)	0	46	0	0	0	13
Lane Group Flow (vph)	38	30	157	651	366	9
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Actuated Green, G (s)	17.1	17.1	17.9	17.9	17.9	17.9
Effective Green, g (s)	17.1	17.1	17.9	17.9	17.9	17.9
Actuated g/C Ratio	0.40	0.40	0.42	0.42	0.42	0.42
Clearance Time (s)	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
Lane Grp Cap (vph)	704	630	365	776	776	659
v/s Ratio Prot	c0.02	0.02		c0.35	0.20	
v/s Ratio Perm			0.18			0.01
v/c Ratio	0.05	0.05	0.43	0.84	0.47	0.01
Uniform Delay, d1	8.0	8.0	8.9	11.3	9.1	7.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.8	7.9	0.5	0.0
Delay (s)	8.1	8.1	9.7	19.2	9.6	7.4
Level of Service	A	A	A	B	A	A
Approach Delay (s)	8.1			17.3	9.4	
Approach LOS	A			B	A	

Intersection Summary				
HCM Average Control Delay	14.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.46			
Actuated Cycle Length (s)	43.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	38.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	300	100	20	430	80	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	326	109	22	467	87	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			435		891	380
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			435		891	380
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		72	97
cM capacity (veh/h)			1125		307	667

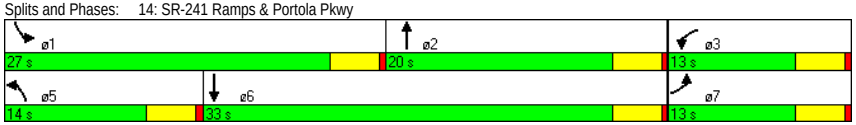
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	435	22	467	109
Volume Left	0	22	0	87
Volume Right	109	0	0	22
cSH	1700	1125	1700	344
Volume to Capacity	0.26	0.02	0.27	0.32
Queue Length 95th (ft)	0	1	0	33
Control Delay (s)	0.0	8.3	0.0	20.2
Lane LOS		A		C
Approach Delay (s)	0.0	0.4		20.2
Approach LOS				C

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		35.0%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	180	30	300	890	900	1020
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	13.0	13.0	14.0	20.0	27.0	33.0
Total Split (%)	21.7%	21.7%	23.3%	33.3%	45.0%	55.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	8.7	7.0	9.4	15.2	20.2	26.1
Actuated g/C Ratio	0.15	0.12	0.17	0.27	0.36	0.46
v/c Ratio	0.71	0.08	0.57	0.70	0.79	0.68
Control Delay	41.3	22.9	26.8	22.2	21.8	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	22.9	26.8	22.2	21.8	14.3
LOS	D	C	C	C	C	B
Approach Delay				23.4		17.8
Approach LOS				C		B

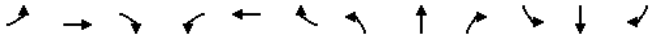
Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 56.3			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 21.1		Intersection LOS: C	
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy



14: SR-241 Ramps & Portola Pkwy

Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	0	0	30	0	0	300	890	0	900	1020	0
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	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	0	0	33	0	0	326	967	0	978	1109	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	196	0	0	33	0	0	326	967	0	978	1109	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	8.7			8.7			9.3	15.2		20.2	26.1	
Effective Green, g (s)	8.7			8.7			9.3	15.2		20.2	26.1	
Actuated g/C Ratio	0.16			0.16			0.17	0.27		0.36	0.47	
Clearance Time (s)	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	
Lane Grp Cap (vph)	274			532			569	1378		1236	1646	
v/s Ratio Prot	c0.11			0.01			0.09	0.19		c0.28	c0.31	
v/s Ratio Perm												
v/c Ratio	0.72			0.06			0.57	0.70		0.79	0.67	
Uniform Delay, d1	22.5			20.2			21.6	18.4		16.1	11.7	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.6			0.0			1.4	1.6		3.5	1.1	
Delay (s)	31.1			20.3			23.0	20.0		19.6	12.8	
Level of Service	C			C			C	C		B	B	
Approach Delay (s)		31.1			20.3			20.8			16.0	
Approach LOS		C			C			C			B	

Intersection Summary				
HCM Average Control Delay	18.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	62.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

15: Project Driveway 1 & Saddleback Ranch Rd

Timing Plan: PM Peak

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	28	47	705	420	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	30	51	766	457	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				504		
pX, platoon unblocked						
vC, conflicting volume	946	233	465			
vC1, stage 1 conf vol	461					
vC2, stage 2 conf vol	485					
vCu, unblocked vol	946	233	465			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	96	95			
cM capacity (veh/h)	456	769	1092			

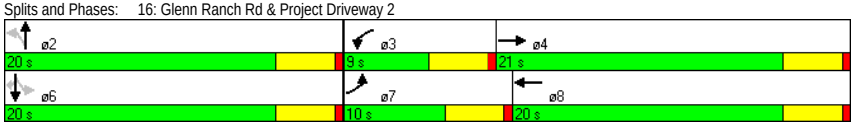
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	4	30	51	383	383	304	161
Volume Left	4	0	51	0	0	0	0
Volume Right	0	30	0	0	0	0	9
cSH	456	769	1092	1700	1700	1700	1700
Volume to Capacity	0.01	0.04	0.05	0.23	0.23	0.18	0.09
Queue Length 95th (ft)	1	3	4	0	0	0	0
Control Delay (s)	13.0	9.9	8.5	0.0	0.0	0.0	0.0
Lane LOS	B	A	A				
Approach Delay (s)	10.3		0.5			0.0	
Approach LOS	B						

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	29.5%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	127	576	34	308	128	0	13	0	72
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	21.0	9.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	20.0%	42.0%	18.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	6.1	16.1	5.1	11.7	16.4	16.4		16.4	16.4
Actuated g/C Ratio	0.14	0.37	0.12	0.27	0.37	0.37		0.37	0.37
v/c Ratio	0.56	0.62	0.18	0.38	0.27	0.03		0.03	0.12
Control Delay	32.1	13.1	22.3	14.2	13.7	0.1		11.6	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	32.1	13.1	22.3	14.2	13.7	0.1		11.6	4.5
LOS	C	B	C	B	B	A		B	A
Approach Delay		15.8		14.9		11.5		5.6	
Approach LOS		B		B		B		A	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 43.8			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 48.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



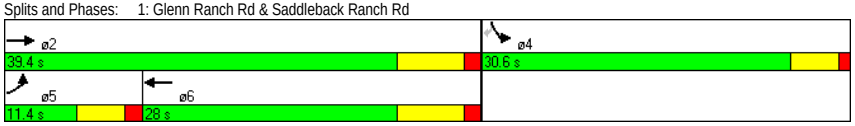
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	127	576	178	34	308	22	128	0	24	13	0	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3414		1770	3504		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.74	1.00
Satd. Flow (perm)	1770	3414		1770	3504		1394	1583			1379	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	626	193	37	335	24	139	0	26	14	0	78
RTOR Reduction (vph)	0	57	0	0	11	0	0	17	0	0	0	50
Lane Group Flow (vph)	138	762	0	37	348	0	139	9	0	0	14	28
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	4.6	16.1		1.8	13.3		16.4	16.4			16.4	16.4
Effective Green, g (s)	4.6	16.1		1.8	13.3		16.4	16.4			16.4	16.4
Actuated g/C Ratio	0.10	0.35		0.04	0.29		0.35	0.35			0.35	0.35
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	176	1187		69	1007		494	561			488	561
v/s Ratio Prot	c0.08	c0.22		0.02	0.10			0.01				
v/s Ratio Perm							c0.10				0.01	0.02
v/c Ratio	0.78	0.64		0.54	0.35		0.28	0.02			0.03	0.05
Uniform Delay, d1	20.4	12.7		21.8	13.1		10.7	9.7			9.8	9.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	20.1	1.2		7.8	0.2		1.4	0.1			0.1	0.2
Delay (s)	40.4	13.9		29.6	13.3		12.1	9.8			9.9	10.0
Level of Service	D	B		C	B		B	A			A	A
Approach Delay (s)		17.7			14.8			11.8			10.0	
Approach LOS		B			B			B			A	

Intersection Summary					
HCM Average Control Delay	15.9	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.51				
Actuated Cycle Length (s)	46.3	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	48.7%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Volume (vph)	160	140	650	200	750
Turn Type	Prot				Perm
Protected Phases	5	2	6	4	
Permitted Phases					4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	3.0	8.0	8.0	4.0	4.0
Minimum Split (s)	8.5	26.0	28.0	30.5	30.5
Total Split (s)	11.4	39.4	28.0	30.6	30.6
Total Split (%)	16.3%	56.3%	40.0%	43.7%	43.7%
Yellow Time (s)	4.0	5.5	5.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	-3.0	-1.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	Max	Max	None	None
Act Effct Green (s)	7.5	35.8	24.2	16.0	15.0
Actuated g/C Ratio	0.13	0.60	0.40	0.27	0.25
v/c Ratio	0.41	0.07	0.60	0.46	0.75
Control Delay	29.1	6.6	14.1	20.9	11.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	6.6	14.1	20.9	11.7
LOS	C	A	B	C	B
Approach Delay		18.6	14.1	13.6	
Approach LOS		B	B	B	

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 59.8			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 57.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	160	140	650	180	200	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	5.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3424		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3424		1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	174	152	707	196	217	815
RTOR Reduction (vph)	0	0	107	0	0	387
Lane Group Flow (vph)	174	152	796	0	217	428
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	6.0	32.7	21.2		15.0	15.0
Effective Green, g (s)	7.5	35.7	24.2		16.0	15.0
Actuated g/C Ratio	0.13	0.60	0.41		0.27	0.25
Clearance Time (s)	5.5	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	431	2116	1388		474	700
v/s Ratio Prot	c0.05	0.04	c0.23		0.12	
v/s Ratio Perm						c0.15
v/c Ratio	0.40	0.07	0.57		0.46	0.61
Uniform Delay, d1	24.0	5.0	13.8		18.2	19.8
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.1	1.7		0.7	1.6
Delay (s)	24.7	5.1	15.5		18.9	21.4
Level of Service	C	A	B		B	C
Approach Delay (s)		15.5	15.5		20.8	
Approach LOS		B	B		C	

Intersection Summary				
HCM Average Control Delay	17.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	57.5%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	130	210	200	660	1030	590
Turn Type		pm+ov	Prot			Perm
Protected Phases	4	5	5	2	6	
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0	20.0
Total Split (s)	20.0	14.0	14.0	40.0	26.0	26.0
Total Split (%)	33.3%	23.3%	23.3%	66.7%	43.3%	43.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	9.5	20.2	9.7	36.2	20.9	20.9
Actuated g/C Ratio	0.19	0.41	0.20	0.73	0.42	0.42
v/c Ratio	0.41	0.35	0.62	0.28	0.75	0.62
Control Delay	23.4	10.6	31.4	4.1	18.0	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.4	10.6	31.4	4.1	18.0	4.4
LOS	C	B	C	A	B	A
Approach Delay	15.5			10.4	13.0	
Approach LOS	B			B	B	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 49.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	130	210	200	660	1030	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	228	217	717	1120	641
RTOR Reduction (vph)	0	11	0	0	0	373
Lane Group Flow (vph)	141	217	217	717	1120	268
Turn Type		pm+ov	Prot			Perm
Protected Phases	4	5	5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	7.6	17.3	9.7	34.8	21.1	21.1
Effective Green, g (s)	7.6	17.3	9.7	34.8	21.1	21.1
Actuated g/C Ratio	0.15	0.34	0.19	0.69	0.42	0.42
Clearance Time (s)	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
Lane Grp Cap (vph)	267	669	341	2444	1482	663
v/s Ratio Prot	c0.08	0.06	c0.12	0.20	c0.32	
v/s Ratio Perm		0.07				0.17
v/c Ratio	0.53	0.32	0.64	0.29	0.76	0.40
Uniform Delay, d1	19.7	12.2	18.7	3.0	12.5	10.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.3	3.9	0.1	2.2	0.4
Delay (s)	21.6	12.5	22.6	3.1	14.7	10.7
Level of Service	C	B	C	A	B	B
Approach Delay (s)	16.0			7.6	13.2	
Approach LOS	B			A	B	

Intersection Summary				
HCM Average Control Delay	11.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	50.4	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	56.8%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	50	20	370	50	740	130	1750	320	400	530	20
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	12.0	35.0	20.0	15.0	38.0	38.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	13.3%	38.9%	22.2%	16.7%	42.2%	42.2%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	7.7	6.2	13.4	12.1	73.9	7.6	31.3	48.8	11.1	34.9	34.9
Actuated g/C Ratio	0.10	0.08	0.18	0.16	1.00	0.10	0.42	0.66	0.15	0.47	0.47
v/c Ratio	0.29	0.18	0.65	0.09	0.51	0.40	0.88	0.30	0.84	0.24	0.03
Control Delay	36.5	20.4	34.0	28.7	1.2	36.5	27.7	1.5	49.2	13.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.5	20.4	34.0	28.7	1.2	36.5	27.7	1.5	49.2	13.3	6.3
LOS	D	C	C	C	A	D	C	A	D	B	A
Approach Delay		28.4		12.8			24.4			28.3	
Approach LOS		C		B			C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 73.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

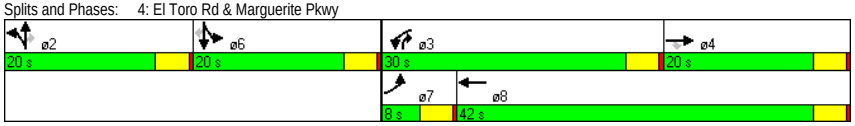
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	20	30	370	50	740	130	1750	320	400	530	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.91		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)	1770	3221		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3221		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	22	33	402	54	804	141	1902	348	435	576	22
RTOR Reduction (vph)	0	31	0	0	0	0	0	0	142	0	0	12
Lane Group Flow (vph)	54	24	0	402	54	804	141	1902	206	435	576	10
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	5.0	3.7		13.4	12.1	75.6	7.6	31.4	44.8	11.1	34.9	34.9
Effective Green, g (s)	5.0	3.7		13.4	12.1	75.6	7.6	31.4	44.8	11.1	34.9	34.9
Actuated g/C Ratio	0.07	0.05		0.18	0.16	1.00	0.10	0.42	0.59	0.15	0.46	0.46
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	117	158		608	566	1583	345	2112	1022	504	2347	731
v/s Ratio Prot	0.03			c0.12	0.02		0.04	c0.37	0.04	c0.13	0.11	
v/s Ratio Perm		0.01				c0.51			0.09			0.01
v/c Ratio	0.46	0.15		0.66	0.10	0.51	0.41	0.90	0.20	0.86	0.25	0.01
Uniform Delay, d1	34.0	34.4		29.0	27.1	0.0	31.9	20.6	7.1	31.5	12.4	11.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.4		2.7	0.1	1.2	0.8	5.7	0.1	14.2	0.1	0.0
Delay (s)	36.9	34.9		31.7	27.2	1.2	32.7	26.4	7.2	45.7	12.4	11.0
Level of Service	D	C		C	C	A	C	C	A	D	B	B
Approach Delay (s)		35.9			12.0			24.0			26.4	
Approach LOS		D			B			C			C	

Intersection Summary					
HCM Average Control Delay	21.6	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.75				
Actuated Cycle Length (s)	75.6	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	72.4%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	10	250	170	940	750	520	10	570	10	10
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split	
Protected Phases	7	4		3	8	2	2	3	6	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	2	2	3	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	30.0	42.0	20.0	20.0	30.0	20.0	20.0
Total Split (%)	8.9%	22.2%	22.2%	33.3%	46.7%	22.2%	22.2%	33.3%	22.2%	22.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes		
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	10.8	10.8	26.3	39.7	16.2	16.2	45.1	6.1	6.1
Actuated g/C Ratio	0.06	0.16	0.16	0.38	0.57	0.23	0.23	0.65	0.09	0.09
v/c Ratio	0.05	0.49	0.46	0.78	0.41	0.75	0.39	0.50	0.07	0.04
Control Delay	35.3	30.6	9.0	26.2	10.2	41.6	25.8	2.2	33.4	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	30.6	9.0	26.2	10.2	41.6	25.8	2.2	33.4	32.5
LOS	D	C	A	C	B	D	C	A	C	C
Approach Delay		22.2			19.1		17.3			32.9
Approach LOS		C			B		B			C

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 69.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	250	170	940	750	10	520	10	570	10	10	0
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	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3532		1610	3235	1583	1770	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3532		1610	3235	1583	1770	3390	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	272	185	1022	815	11	565	11	620	11	11	0
RTOR Reduction (vph)	0	0	150	0	1	0	0	0	250	0	0	0
Lane Group Flow (vph)	11	272	35	1022	825	0	282	294	370	11	11	0
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.7	14.1	14.1	26.3	39.7		16.2	16.2	42.5	2.4	2.4	
Effective Green, g (s)	0.7	14.1	14.1	26.3	39.7		16.2	16.2	42.5	2.4	2.4	
Actuated g/C Ratio	0.01	0.19	0.19	0.35	0.53		0.22	0.22	0.57	0.03	0.03	
Clearance Time (s)	4.0	4.0	4.0	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	3.0	3.0	3.0	
Lane Grp Cap (vph)	32	665	298	1204	1870		348	699	897	57	108	
v/s Ratio Prot	0.00	0.08		c0.30	c0.23		c0.18	0.09	0.14	c0.01	0.00	
v/s Ratio Perm			0.02						0.09			
v/c Ratio	0.34	0.41	0.12	0.85	0.44		0.81	0.42	0.41	0.19	0.10	
Uniform Delay, d1	36.9	26.8	25.3	22.5	10.8		27.9	25.4	9.2	35.4	35.3	
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	6.3	0.4	0.2	5.8	0.2		13.3	0.4	0.3	1.7	0.4	
Delay (s)	43.3	27.2	25.5	28.3	11.0		41.2	25.8	9.5	37.0	35.7	
Level of Service	D	C	C	C	B		D	C	A	D	D	
Approach Delay (s)		26.9			20.6			21.0			36.3	
Approach LOS		C			C			C			D	

Intersection Summary					
HCM Average Control Delay	21.6	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.69				
Actuated Cycle Length (s)	75.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	64.8%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	40	90	490	1180
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	40.0	30.0
Total Split (%)	33.3%	16.7%	66.7%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	9.4	6.3	31.3	24.0
Actuated g/C Ratio	0.19	0.13	0.63	0.49
v/c Ratio	0.64	0.44	0.24	0.79
Control Delay	13.4	31.6	4.4	16.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.4	31.6	4.4	16.7
LOS	B	C	A	B
Approach Delay	13.4		8.6	16.7
Approach LOS	B		A	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 49.3			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn

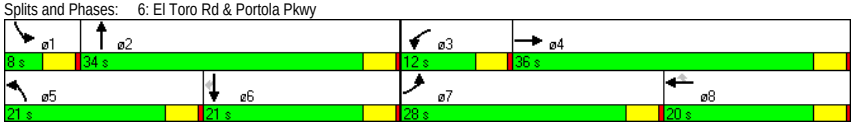
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	250	90	490	1180	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.88		1.00	1.00	0.99	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1634		1770	3539	3514	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1634		1770	3539	3514	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	272	98	533	1283	65
RTOR Reduction (vph)	178	0	0	0	6	0
Lane Group Flow (vph)	137	0	98	533	1342	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	9.4		4.4	32.4	24.0	
Effective Green, g (s)	9.4		4.4	32.4	24.0	
Actuated g/C Ratio	0.19		0.09	0.65	0.48	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	308		156	2302	1693	
v/s Ratio Prot	c0.08		c0.06	0.15	c0.38	
v/s Ratio Perm						
v/c Ratio	0.44		0.63	0.23	0.79	
Uniform Delay, d1	17.9		21.9	3.6	10.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		7.7	0.1	2.6	
Delay (s)	18.9		29.6	3.6	13.5	
Level of Service	B		C	A	B	
Approach Delay (s)	18.9			7.7	13.5	
Approach LOS	B			A	B	

Intersection Summary				
HCM Average Control Delay	12.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	49.8	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	67.2%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	450	170	280	60	780	380	590	1960	70	590	430
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	28.0	36.0	0.0	12.0	20.0	20.0	21.0	34.0	8.0	21.0	21.0
Total Split (%)	31.1%	40.0%	0.0%	13.3%	22.2%	22.2%	23.3%	37.8%	8.9%	23.3%	23.3%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	24.0	34.6	89.3	7.3	16.0	16.0	17.0	30.9	4.0	16.3	16.3
Actuated g/C Ratio	0.27	0.39	1.00	0.08	0.18	0.18	0.19	0.35	0.04	0.18	0.18
v/c Ratio	1.03	0.09	0.21	0.45	0.93	1.07	0.98	0.97	0.49	0.69	0.71
Control Delay	83.0	18.9	0.3	49.2	54.3	91.5	68.5	43.4	53.2	38.5	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	18.9	0.3	49.2	54.3	91.5	68.5	43.4	53.2	38.5	11.0
LOS	F	B	A	D	D	F	E	D	D	D	B
Approach Delay		45.2			65.7			49.2		28.6	
Approach LOS		D			E			D		C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 89.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay: 48.2		Intersection LOS: D	
Intersection Capacity Utilization 87.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	170	280	60	780	380	590	1960	20	70	590	430
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		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)	1770	5085	1425	1770	5085	1583	3433	6398		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6398		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	185	304	65	848	413	641	2130	22	76	641	467
RTOR Reduction (vph)	0	0	0	0	0	103	0	1	0	0	0	364
Lane Group Flow (vph)	489	185	304	65	848	310	641	2151	0	76	641	103
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	24.0	34.6	90.9	6.2	16.8	16.8	17.0	30.9		3.2	17.1	17.1
Effective Green, g (s)	24.0	34.6	90.9	6.2	16.8	16.8	17.0	30.9		3.2	17.1	17.1
Actuated g/C Ratio	0.26	0.38	1.00	0.07	0.18	0.18	0.19	0.34		0.04	0.19	0.19
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	467	1936	1425	121	940	293	642	2175		121	957	298
v/s Ratio Prot	c0.28	0.04		0.04	0.17		c0.19	c0.34		0.02	0.13	
v/s Ratio Perm			0.21			c0.20						0.07
v/c Ratio	1.05	0.10	0.21	0.54	0.90	1.06	1.00	0.99		0.63	0.67	0.35
Uniform Delay, d1	33.5	18.1	0.0	41.0	36.2	37.1	36.9	29.8		43.3	34.3	32.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	54.5	0.0	0.3	4.5	11.7	69.0	34.9	16.5		9.8	1.8	0.7
Delay (s)	88.0	18.1	0.3	45.5	48.0	106.0	71.8	46.4		53.0	36.1	32.8
Level of Service	F	B	A	D	D	F	E	D		D	D	C
Approach Delay (s)		47.5			65.9			52.2			35.9	
Approach LOS		D			E			D			D	

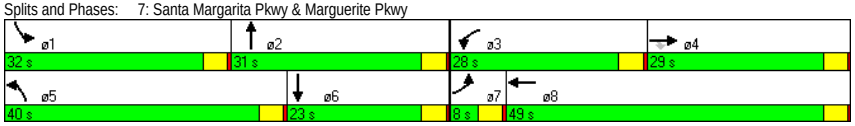
Intersection Summary					
HCM Average Control Delay		51.3	HCM Level of Service	D	
HCM Volume to Capacity ratio		1.00			
Actuated Cycle Length (s)		90.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization		87.2%	ICU Level of Service	E	
Analysis Period (min)		15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	20	700	160	210	1740	500	360	240	480
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	8.0	29.0	29.0	28.0	49.0	40.0	31.0	32.0	23.0
Total Split (%)	6.7%	24.2%	24.2%	23.3%	40.8%	33.3%	25.8%	26.7%	19.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	26.3	26.3	19.5	45.1	36.0	33.2	21.9	19.0
Actuated g/C Ratio	0.03	0.23	0.23	0.17	0.39	0.31	0.28	0.19	0.16
v/c Ratio	0.36	0.67	0.35	0.77	1.03	0.99	0.54	0.79	0.94
Control Delay	73.1	45.1	8.0	64.3	59.4	78.4	27.5	62.0	69.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	45.1	8.0	64.3	59.4	78.4	27.5	62.0	69.4
LOS	E	D	A	E	E	E	C	E	E
Approach Delay		39.0			59.9		52.0		67.1
Approach LOS		D			E		D		E

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 116.8			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 55.5		Intersection LOS: E	
Intersection Capacity Utilization 97.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



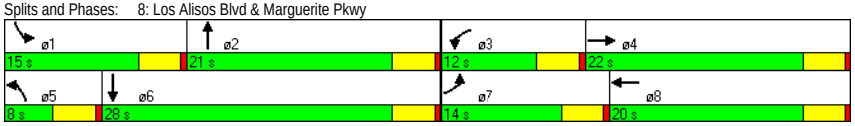
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	700	160	210	1740	200	500	360	180	240	480	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5007		1770	3362		1770	3499	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5007		1770	3362		1770	3499	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	761	174	228	1891	217	543	391	196	261	522	43
RTOR Reduction (vph)	0	0	133	0	124	0	0	130	0	0	34	0
Lane Group Flow (vph)	22	761	41	228	1984	0	543	457	0	261	531	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	27.9	27.9	19.5	45.1		36.0	33.2		21.9	19.1	
Effective Green, g (s)	2.3	27.9	27.9	19.5	45.1		36.0	33.2		21.9	19.1	
Actuated g/C Ratio	0.02	0.24	0.24	0.16	0.38		0.30	0.28		0.18	0.16	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	34	1197	373	291	1906		538	942		327	564	
v/s Ratio Prot	0.01	0.15		c0.13	c0.40		c0.31	0.14		0.15	c0.15	
v/s Ratio Perm			0.03									
v/c Ratio	0.65	0.64	0.11	0.78	1.04		1.01	0.49		0.80	0.94	
Uniform Delay, d1	57.7	40.7	35.6	47.5	36.7		41.2	35.5		46.2	49.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	35.3	1.1	0.1	12.9	32.2		41.1	0.4		12.7	24.3	
Delay (s)	93.0	41.8	35.7	60.4	68.9		82.4	35.9		58.9	73.5	
Level of Service	F	D	D	E	E		F	D		E	E	
Approach Delay (s)		41.9			68.1			58.3			68.9	
Approach LOS		D			E			E			E	

Intersection Summary					
HCM Average Control Delay		61.3	HCM Level of Service		E
HCM Volume to Capacity ratio		1.02			
Actuated Cycle Length (s)		118.5	Sum of lost time (s)		16.0
Intersection Capacity Utilization		97.0%	ICU Level of Service		F
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	200	150	130	410	50	450	220	610
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	14.0	22.0	12.0	20.0	8.0	21.0	15.0	28.0
Total Split (%)	20.0%	31.4%	17.1%	28.6%	11.4%	30.0%	21.4%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	10.0	19.2	7.8	14.4	4.0	14.3	10.8	24.7
Actuated g/C Ratio	0.15	0.29	0.12	0.22	0.06	0.22	0.16	0.38
v/c Ratio	0.81	0.22	0.67	0.85	0.50	0.73	0.82	0.68
Control Delay	53.9	15.3	47.5	23.1	49.5	25.3	52.8	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	15.3	47.5	23.1	49.5	25.3	52.8	15.4
LOS	D	B	D	C	D	C	D	B
Approach Delay		34.1		26.5		27.3		22.7
Approach LOS		C		C		C		C

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 65.7			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 26.3		Intersection LOS: C	
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



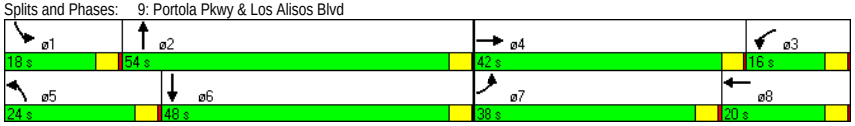
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	150	60	130	410	390	50	450	110	220	610	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.93		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3388		1770	3280		1770	3435		1770	3364	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3388		1770	3280		1770	3435		1770	3364	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	217	163	65	141	446	424	54	489	120	239	663	326
RTOR Reduction (vph)	0	43	0	0	302	0	0	84	0	0	192	0
Lane Group Flow (vph)	217	185	0	141	568	0	54	525	0	239	797	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.0	19.2		6.2	15.4		2.3	16.2		10.8	24.7	
Effective Green, g (s)	10.0	19.2		6.2	15.4		2.3	16.2		10.8	24.7	
Actuated g/C Ratio	0.15	0.28		0.09	0.23		0.03	0.24		0.16	0.36	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	259	951		160	738		60	814		279	1215	
v/s Ratio Prot	c0.12	c0.05		0.08	c0.17		0.03	0.15		c0.14	c0.24	
v/s Ratio Perm												
v/c Ratio	0.84	0.19		0.88	0.77		0.90	0.65		0.86	0.66	
Uniform Delay, d1	28.4	18.7		30.7	24.8		32.9	23.5		28.0	18.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.4	0.1		39.0	4.9		81.0	1.8		21.9	1.3	
Delay (s)	48.8	18.8		69.7	29.7		113.9	25.3		49.9	19.6	
Level of Service	D	B		E	C		F	C		D	B	
Approach Delay (s)		33.5			35.3			32.5			25.5	
Approach LOS		C			D			C			C	

Intersection Summary					
HCM Average Control Delay	30.9	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.76				
Actuated Cycle Length (s)	68.4	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	78.1%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	550	240	80	550	200	1520	240	730
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	38.0	42.0	16.0	20.0	24.0	54.0	18.0	48.0
Total Split (%)	29.2%	32.3%	12.3%	15.4%	18.5%	41.5%	13.8%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	34.0	21.5	30.6	16.0	18.7	50.0	14.0	45.3
Actuated g/C Ratio	0.26	0.17	0.24	0.12	0.14	0.38	0.11	0.35
v/c Ratio	1.29	0.39	0.21	1.03	0.85	1.22	1.37	0.76
Control Delay	185.9	42.5	38.7	85.5	82.6	140.3	237.5	34.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	185.9	42.5	38.7	85.5	82.6	140.3	237.5	34.7
LOS	F	D	D	F	F	F	F	C
Approach Delay		134.2		80.6		133.6		76.6
Approach LOS		F		F		F		E

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.37			
Intersection Signal Delay: 110.1		Intersection LOS: F	
Intersection Capacity Utilization 113.2%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	550	240	70	80	550	140	200	1520	10	240	730	190
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	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.97		1.00	1.00		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)	1770	4913		1770	4931		1770	3536		1770	3429	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4913		1770	4931		1770	3536		1770	3429	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	598	261	76	87	598	152	217	1652	11	261	793	207
RTOR Reduction (vph)	0	58	0	0	122	0	0	6	0	0	124	0
Lane Group Flow (vph)	598	279	0	87	628	0	217	1657	0	261	876	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	34.0	21.5		29.3	16.8		18.7	50.0		14.0	45.3	
Effective Green, g (s)	34.0	21.5		29.3	16.8		18.7	50.0		14.0	45.3	
Actuated g/C Ratio	0.26	0.16		0.22	0.13		0.14	0.38		0.11	0.35	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	460	808		396	633		253	1352		189	1188	
v/s Ratio Prot	c0.34	0.06		0.05	c0.13		c0.12	c0.47		c0.15	0.26	
v/s Ratio Perm												
v/c Ratio	1.30	0.34		0.22	0.99		0.86	1.23		1.38	0.74	
Uniform Delay, d1	48.4	48.4		41.4	56.9		54.8	40.4		58.4	37.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	150.2	0.3		0.3	33.6		23.8	108.2		200.9	2.4	
Delay (s)	198.6	48.7		41.7	90.5		78.5	148.6		259.3	39.9	
Level of Service	F	D		D	F		E	F		F	D	
Approach Delay (s)		144.6			85.5			140.5			85.3	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM Average Control Delay	117.8	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.19				
Actuated Cycle Length (s)	130.8	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	113.2%	ICU Level of Service		H	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	150	30	280	40	10	750
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.77	0.77	0.92	0.92
Hourly flow rate (vph)	197	39	364	52	11	815
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.71					
vC, conflicting volume	1201	364			416	
vC1, stage 1 conf vol	364					
vC2, stage 2 conf vol	837					
vCu, unblocked vol	1081	364			416	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	46	94			99	
cM capacity (veh/h)	364	681			1143	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	237	364	52	11	815
Volume Left	197	0	0	11	0
Volume Right	39	0	52	0	0
cSH	395	1700	1700	1143	1700
Volume to Capacity	0.60	0.21	0.03	0.01	0.48
Queue Length 95th (ft)	94	0	0	1	0
Control Delay (s)	26.8	0.0	0.0	8.2	0.0
Lane LOS	D			A	
Approach Delay (s)	26.8	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	56.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	110	30	300	890	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.62	0.62	0.94	0.94
Hourly flow rate (vph)	0	157	48	484	947	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	1286	947	957			
vC1, stage 1 conf vol	947					
vC2, stage 2 conf vol	339					
vCu, unblocked vol	1286	947	957			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	40	93			
cM capacity (veh/h)	312	262	714			

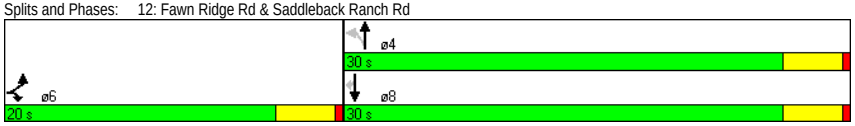
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	157	48	242	242	947	11
Volume Left	0	48	0	0	0	0
Volume Right	157	0	0	0	0	11
cSH	262	714	1700	1700	1700	1700
Volume to Capacity	0.60	0.07	0.14	0.14	0.56	0.01
Queue Length 95th (ft)	88	5	0	0	0	0
Control Delay (s)	37.4	10.4	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	37.4	0.9			0.0	
Approach LOS	E					

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	180	40	250	560	40
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	30.0	30.0	30.0	30.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.2	16.2	18.7	18.7	18.7	18.7
Actuated g/C Ratio	0.38	0.38	0.43	0.43	0.43	0.43
v/c Ratio	0.09	0.35	0.39	0.57	0.76	0.06
Control Delay	11.3	4.6	14.6	11.9	16.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	4.6	14.6	11.9	16.8	2.7
LOS	B	A	B	B	B	A
Approach Delay	5.8			12.2	15.9	
Approach LOS	A			B	B	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 43.1			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 12.5		Intersection LOS: B	
Intersection Capacity Utilization 47.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	180	40	250	560	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.23	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	436	1863	1863	1583
Peak-hour factor, PHF	0.69	0.69	0.54	0.54	0.91	0.91
Adj. Flow (vph)	58	261	74	463	615	44
RTOR Reduction (vph)	0	145	0	0	0	25
Lane Group Flow (vph)	58	116	74	463	615	19
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Actuated Green, G (s)	16.2	16.2	18.7	18.7	18.7	18.7
Effective Green, g (s)	16.2	16.2	18.7	18.7	18.7	18.7
Actuated g/C Ratio	0.38	0.38	0.44	0.44	0.44	0.44
Clearance Time (s)	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
Lane Grp Cap (vph)	668	598	190	812	812	690
v/s Ratio Prot	0.03	c0.07		0.25	c0.33	
v/s Ratio Perm			0.17			0.01
v/c Ratio	0.09	0.19	0.39	0.57	0.76	0.03
Uniform Delay, d1	8.6	9.0	8.2	9.1	10.2	6.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.7	1.3	1.0	4.1	0.0
Delay (s)	8.8	9.7	9.5	10.1	14.3	6.9
Level of Service	A	A	A	B	B	A
Approach Delay (s)	9.5			10.0	13.8	
Approach LOS	A			A	B	

Intersection Summary				
HCM Average Control Delay	11.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	42.9	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	47.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	690	10	430	110
Turn Type		Prot		
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	32.0	8.0	40.0	20.0
Total Split (%)	53.3%	13.3%	66.7%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	Min	None	None	None
Act Effct Green (s)	35.9	4.1	37.4	9.0
Actuated g/C Ratio	0.71	0.08	0.74	0.18
v/c Ratio	0.63	0.08	0.34	0.41
Control Delay	11.6	24.8	4.8	22.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.6	24.8	4.8	22.5
LOS	B	C	A	C
Approach Delay	11.6		5.2	22.5
Approach LOS	B		A	C

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 50.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 53.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Santiago Cyn & Ridgeline Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	690	70	10	430	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.99		1.00	1.00	0.99	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	1840		1770	1863	1761	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	1840		1770	1863	1761	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	750	76	11	467	120	11
RTOR Reduction (vph)	4	0	0	0	7	0
Lane Group Flow (vph)	822	0	11	467	124	0
Turn Type			Prot			
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	34.8		0.7	39.5	7.4	
Effective Green, g (s)	34.8		0.7	39.5	7.4	
Actuated g/C Ratio	0.63		0.01	0.72	0.13	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1166		23	1340	237	
v/s Ratio Prot	c0.45		0.01	c0.25	c0.07	
v/s Ratio Perm						
v/c Ratio	0.70		0.48	0.35	0.52	
Uniform Delay, d1	6.7		26.9	2.9	22.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.0		14.8	0.2	2.1	
Delay (s)	8.6		41.8	3.0	24.2	
Level of Service	A		D	A	C	
Approach Delay (s)	8.6			3.9	24.2	
Approach LOS	A			A	C	

Intersection Summary				
HCM Average Control Delay	8.5	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	53.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	220	370	570	920	230	500
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	19.0	19.0	21.0	29.0	12.0	20.0
Total Split (%)	31.7%	31.7%	35.0%	48.3%	20.0%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	11.7	11.7	13.7	17.8	7.8	11.9
Actuated g/C Ratio	0.24	0.24	0.28	0.36	0.16	0.24
v/c Ratio	0.57	0.50	0.65	0.55	0.46	0.64
Control Delay	24.2	19.7	20.5	13.9	24.5	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	19.7	20.5	13.9	24.5	21.7
LOS	C	B	C	B	C	C
Approach Delay				16.4		22.6
Approach LOS				B		C

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 49.7			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 52.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy

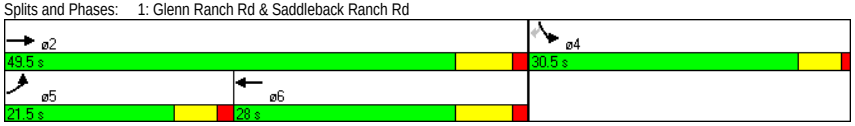
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	0	0	370	0	0	570	920	0	230	500	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0			4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	239	0	0	402	0	0	620	1000	0	250	543	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	239	0	0	402	0	0	620	1000	0	250	543	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.7			11.7			13.7	17.8		7.8	11.9	
Effective Green, g (s)	11.7			11.7			13.7	17.8		7.8	11.9	
Actuated g/C Ratio	0.24			0.24			0.28	0.36		0.16	0.24	
Clearance Time (s)	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	
Lane Grp Cap (vph)	420			815			954	1836		543	854	
v/s Ratio Prot	c0.14			0.12			c0.18	c0.20		0.07	0.15	
v/s Ratio Perm												
v/c Ratio	0.57			0.49			0.65	0.54		0.46	0.64	
Uniform Delay, d1	16.6			16.2			15.7	12.5		18.8	16.8	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8			0.5			1.5	0.3		0.6	1.6	
Delay (s)	18.3			16.7			17.2	12.9		19.5	18.3	
Level of Service	B			B			B	B		B	B	
Approach Delay (s)		18.3			16.7			14.5			18.7	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM Average Control Delay		16.2	HCM Level of Service		B
HCM Volume to Capacity ratio		0.57			
Actuated Cycle Length (s)		49.3	Sum of lost time (s)		8.0
Intersection Capacity Utilization		52.3%	ICU Level of Service		A
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Volume (vph)	650	640	230	70	280
Turn Type	Prot				Perm
Protected Phases	5	2	6	4	
Permitted Phases					4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	3.0	8.0	8.0	4.0	4.0
Minimum Split (s)	8.5	26.0	28.0	30.5	30.5
Total Split (s)	21.5	49.5	28.0	30.5	30.5
Total Split (%)	26.9%	61.9%	35.0%	38.1%	38.1%
Yellow Time (s)	4.0	5.5	5.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	-3.0	-1.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	Max	Max	None	None
Act Effct Green (s)	17.6	46.0	24.3	11.3	10.3
Actuated g/C Ratio	0.27	0.70	0.37	0.17	0.16
v/c Ratio	0.77	0.28	0.27	0.25	0.44
Control Delay	30.5	4.9	12.0	24.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	4.9	12.0	24.1	5.1
LOS	C	A	B	C	A
Approach Delay		17.8	12.0	8.9	
Approach LOS		B	B	A	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 65.4			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 42.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



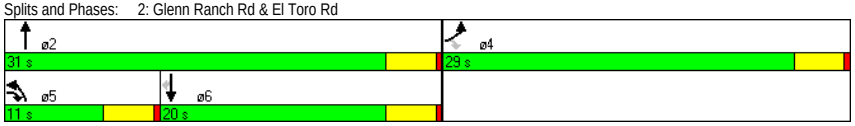
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	650	640	230	100	70	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	5.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.95		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3378		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3378		1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	707	696	250	109	76	304
RTOR Reduction (vph)	0	0	63	0	0	256
Lane Group Flow (vph)	707	696	296	0	76	48
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	16.1	42.9	21.3		10.3	10.3
Effective Green, g (s)	17.6	45.9	24.3		11.3	10.3
Actuated g/C Ratio	0.27	0.70	0.37		0.17	0.16
Clearance Time (s)	5.5	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	927	2491	1259		307	440
v/s Ratio Prot	c0.21	c0.20	0.09		c0.04	
v/s Ratio Perm						0.02
v/c Ratio	0.76	0.28	0.24		0.25	0.11
Uniform Delay, d1	21.9	3.6	14.1		23.3	23.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.8	0.3	0.4		0.4	0.1
Delay (s)	25.6	3.8	14.5		23.7	23.6
Level of Service	C	A	B		C	C
Approach Delay (s)		14.8	14.5		23.6	
Approach LOS		B	B		C	

Intersection Summary				
HCM Average Control Delay	16.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	42.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	580	140	150	1020	580	200
Turn Type		pm+ov	Prot			Perm
Protected Phases	4	5	5	2	6	
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0	20.0
Total Split (s)	29.0	11.0	11.0	31.0	20.0	20.0
Total Split (%)	48.3%	18.3%	18.3%	51.7%	33.3%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	22.7	33.9	7.1	25.6	14.4	14.4
Actuated g/C Ratio	0.40	0.60	0.13	0.45	0.26	0.26
v/c Ratio	0.88	0.16	0.73	0.69	0.70	0.38
Control Delay	32.6	4.3	48.6	15.5	24.0	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	4.3	48.6	15.5	24.0	5.4
LOS	C	A	D	B	C	A
Approach Delay	27.1			19.7	19.2	
Approach LOS	C			B	B	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 56.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 21.6		Intersection LOS: C	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	580	140	150	1020	580	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	630	152	163	1109	630	217
RTOR Reduction (vph)	0	22	0	0	0	161
Lane Group Flow (vph)	630	130	163	1109	630	56
Turn Type		pm+ov	Prot			Perm
Protected Phases	4	5	5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	22.7	29.8	7.1	25.6	14.5	14.5
Effective Green, g (s)	22.7	29.8	7.1	25.6	14.5	14.5
Actuated g/C Ratio	0.40	0.53	0.13	0.45	0.26	0.26
Clearance Time (s)	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
Lane Grp Cap (vph)	714	950	223	1609	911	408
v/s Ratio Prot	c0.36	0.02	0.09	c0.31	0.18	
v/s Ratio Perm		0.07				0.04
v/c Ratio	0.88	0.14	0.73	0.69	0.69	0.14
Uniform Delay, d1	15.6	6.7	23.7	12.2	18.9	16.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4	0.1	11.6	1.2	2.3	0.2
Delay (s)	27.9	6.8	35.3	13.4	21.2	16.2
Level of Service	C	A	D	B	C	B
Approach Delay (s)	23.8			16.2	19.9	
Approach LOS	C			B	B	

Intersection Summary				
HCM Average Control Delay	19.4	HCM Level of Service		B
HCM Volume to Capacity ratio	0.78			
Actuated Cycle Length (s)	56.3	Sum of lost time (s)		8.0
Intersection Capacity Utilization	67.0%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	70	20	360	20	660	50	880	240	1000	1920	80
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	8.0	20.0	20.0	30.0	42.0	42.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	8.9%	22.2%	22.2%	33.3%	46.7%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	14.6	6.5	13.5	9.3	76.2	4.0	16.1	33.7	26.2	41.9	41.9
Actuated g/C Ratio	0.19	0.09	0.18	0.12	1.00	0.05	0.21	0.44	0.34	0.55	0.55
v/c Ratio	0.22	0.34	0.64	0.05	0.45	0.30	0.89	0.31	0.92	0.75	0.10
Control Delay	30.2	14.2	35.0	30.8	0.9	41.4	42.4	3.1	39.6	17.9	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	14.2	35.0	30.8	0.9	41.4	42.4	3.1	39.6	17.9	3.5
LOS	C	B	C	C	A	D	D	A	D	B	A
Approach Delay		20.4		13.3			34.3			24.7	
Approach LOS		C		B			C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 76.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 72.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

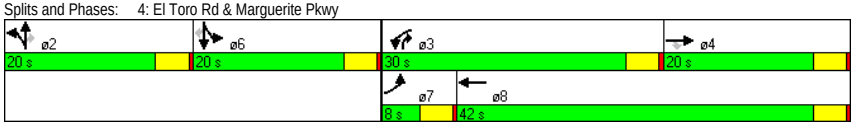
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	20	90	360	20	660	50	880	240	1000	1920	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.88		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)	1770	3106		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3106		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	22	98	391	22	717	54	957	261	1087	2087	87
RTOR Reduction (vph)	0	90	0	0	0	0	0	0	159	0	0	42
Lane Group Flow (vph)	76	30	0	391	22	717	54	957	102	1087	2087	45
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	13.2	6.7		13.5	7.0	80.4	2.3	18.0	31.5	26.2	41.9	41.9
Effective Green, g (s)	13.2	6.7		13.5	7.0	80.4	2.3	18.0	31.5	26.2	41.9	41.9
Actuated g/C Ratio	0.16	0.08		0.17	0.09	1.00	0.03	0.22	0.39	0.33	0.52	0.52
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	291	259		576	308	1583	98	1138	699	1119	2650	825
v/s Ratio Prot	0.04			c0.11	0.01		0.02	0.19	0.02	c0.32	c0.41	
v/s Ratio Perm		0.01				c0.45			0.04			0.03
v/c Ratio	0.26	0.12		0.68	0.07	0.45	0.55	0.84	0.15	0.97	0.79	0.05
Uniform Delay, d1	29.3	34.1		31.4	33.7	0.0	38.5	29.8	15.8	26.7	15.6	9.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.2		3.2	0.1	0.9	6.6	5.8	0.1	20.2	1.6	0.0
Delay (s)	29.8	34.3		34.6	33.8	0.9	45.1	35.6	15.9	47.0	17.2	9.5
Level of Service	C	C		C	C	A	D	D	B	D	B	A
Approach Delay (s)		32.6			13.2			31.9			26.9	
Approach LOS		C			B			C			C	

Intersection Summary					
HCM Average Control Delay	25.6	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	80.4	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	72.5%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	10	640	500	740	270	110	40	940	10	40	10
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8	2	2	3	6	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	2	2	3	6	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	30.0	42.0	20.0	20.0	30.0	20.0	20.0	20.0
Total Split (%)	8.9%	22.2%	22.2%	33.3%	46.7%	22.2%	22.2%	33.3%	22.2%	22.2%	22.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes			
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.1	16.4	16.4	26.7	46.9	8.1	8.1	34.1	6.5	6.5	6.5
Actuated g/C Ratio	0.06	0.25	0.25	0.40	0.70	0.12	0.12	0.51	0.10	0.10	0.10
v/c Ratio	0.05	0.80	0.68	0.59	0.12	0.31	0.26	0.97	0.06	0.13	0.07
Control Delay	34.5	35.0	7.7	20.1	6.3	33.6	30.5	31.1	32.0	31.3	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	35.0	7.7	20.1	6.3	33.6	30.5	31.1	32.0	31.3	18.8
LOS	C	D	A	C	A	C	C	C	C	C	B
Approach Delay		23.2			16.3		31.2			29.5	
Approach LOS		C			B		C			C	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 66.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 89.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



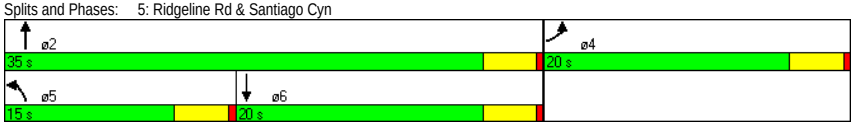
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	640	500	740	270	10	110	40	940	10	40	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	0.91
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3520		1610	3294	1583	1770	3379	1441
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3520		1610	3294	1583	1770	3379	1441
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	696	543	804	293	11	120	43	1022	11	43	11
RTOR Reduction (vph)	0	0	395	0	2	0	0	0	275	0	1	9
Lane Group Flow (vph)	11	696	148	804	302	0	60	103	747	11	43	1
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.7	19.8	19.8	26.7	45.8		6.6	6.6	33.3	3.7	3.7	3.7
Effective Green, g (s)	0.7	19.8	19.8	26.7	45.8		6.6	6.6	33.3	3.7	3.7	3.7
Actuated g/C Ratio	0.01	0.27	0.27	0.37	0.63		0.09	0.09	0.46	0.05	0.05	0.05
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	33	963	431	1259	2215		146	299	724	90	172	73
v/s Ratio Prot	0.00	c0.20		0.23	0.09		0.04	0.03	c0.38	0.01	c0.01	
v/s Ratio Perm			0.09						0.09			0.00
v/c Ratio	0.33	0.72	0.34	0.64	0.14		0.41	0.34	1.03	0.12	0.25	0.01
Uniform Delay, d1	35.8	24.0	21.3	19.1	5.5		31.3	31.1	19.8	33.0	33.2	32.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.9	2.7	0.5	1.1	0.0		1.9	0.7	41.8	0.6	0.8	0.0
Delay (s)	41.7	26.7	21.8	20.1	5.5		33.1	31.8	61.6	33.6	34.0	32.8
Level of Service	D	C	C	C	A		C	C	E	C	C	C
Approach Delay (s)		24.7			16.1			57.5			33.7	
Approach LOS		C			B			E			C	

Intersection Summary					
HCM Average Control Delay		33.0	HCM Level of Service		C
HCM Volume to Capacity ratio		0.87			
Actuated Cycle Length (s)		72.8	Sum of lost time (s)		16.0
Intersection Capacity Utilization		89.2%	ICU Level of Service		E
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	50	200	1230	560
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	15.0	35.0	20.0
Total Split (%)	36.4%	27.3%	63.6%	36.4%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	8.3	10.5	27.6	17.5
Actuated g/C Ratio	0.21	0.27	0.71	0.45
v/c Ratio	0.37	0.45	0.53	0.42
Control Delay	10.1	19.0	5.3	12.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	10.1	19.0	5.3	12.6
LOS	B	B	A	B
Approach Delay	10.1		7.2	12.6
Approach LOS	B		A	B

Intersection Summary			
Cycle Length: 55			
Actuated Cycle Length: 38.7			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 8.9		Intersection LOS: A	
Intersection Capacity Utilization 49.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn



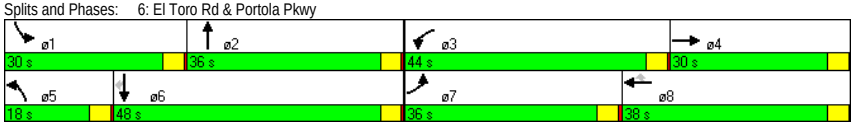
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	50	100	200	1230	560	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.91		1.00	1.00	0.99	
Flt Protected	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	1667		1770	3539	3496	
Flt Permitted	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	1667		1770	3539	3496	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	109	217	1337	609	54
RTOR Reduction (vph)	94	0	0	0	10	0
Lane Group Flow (vph)	69	0	217	1337	653	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	5.5		7.2	26.7	15.5	
Effective Green, g (s)	5.5		7.2	26.7	15.5	
Actuated g/C Ratio	0.14		0.18	0.66	0.39	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	228		317	2351	1348	
v/s Ratio Prot	c0.04		0.12	c0.38	0.19	
v/s Ratio Perm						
v/c Ratio	0.30		0.68	0.57	0.48	
Uniform Delay, d1	15.6		15.4	3.6	9.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.8		6.0	0.3	0.3	
Delay (s)	16.4		21.4	4.0	9.6	
Level of Service	B		C	A	A	
Approach Delay (s)	16.4			6.4	9.6	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	480	610	500	340	600	750	400	1140	570	1680	860
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	36.0	30.0	0.0	44.0	38.0	38.0	18.0	36.0	30.0	48.0	48.0
Total Split (%)	25.7%	21.4%	0.0%	31.4%	27.1%	27.1%	12.9%	25.7%	21.4%	34.3%	34.3%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	32.0	32.4	140.0	33.6	34.0	34.0	14.0	32.0	26.0	44.0	44.0
Actuated g/C Ratio	0.23	0.23	1.00	0.24	0.24	0.24	0.10	0.23	0.19	0.31	0.31
v/c Ratio	1.29	0.56	0.38	0.87	0.53	1.34	1.27	0.89	0.97	1.14	1.14
Control Delay	190.3	50.8	0.8	71.5	47.9	188.6	190.8	60.3	85.7	115.5	99.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	190.3	50.8	0.8	71.5	47.9	188.6	190.8	60.3	85.7	115.5	99.7
LOS	F	D	A	E	D	F	F	E	F	F	F
Approach Delay		77.2			115.1			93.2		105.7	
Approach LOS		E			F			F		F	

Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.34			
Intersection Signal Delay: 99.5		Intersection LOS: F	
Intersection Capacity Utilization 100.4%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	480	610	500	340	600	750	400	1140	50	570	1680	860
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		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)	1770	5085	1425	1770	5085	1583	3433	6368		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6368		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	522	663	543	370	652	815	435	1239	54	620	1826	935
RTOR Reduction (vph)	0	0	0	0	0	226	0	5	0	0	0	323
Lane Group Flow (vph)	522	663	543	370	652	589	435	1288	0	620	1826	612
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	32.0	32.4	140.0	33.6	34.0	34.0	14.0	32.0		26.0	44.0	44.0
Effective Green, g (s)	32.0	32.4	140.0	33.6	34.0	34.0	14.0	32.0		26.0	44.0	44.0
Actuated g/C Ratio	0.23	0.23	1.00	0.24	0.24	0.24	0.10	0.23		0.19	0.31	0.31
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	405	1177	1425	425	1235	384	343	1456		638	1598	498
v/s Ratio Prot	c0.29	0.13		0.21	0.13		c0.13	0.20		0.18	0.36	
v/s Ratio Perm			c0.38			c0.37						c0.39
v/c Ratio	1.29	0.56	0.38	0.87	0.53	1.53	1.27	0.88		0.97	1.14	1.23
Uniform Delay, d1	54.0	47.5	0.0	51.1	46.0	53.0	63.0	52.2		56.6	48.0	48.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	147.5	0.6	0.8	17.4	0.4	253.4	141.8	6.8		28.5	72.2	119.7
Delay (s)	201.5	48.2	0.8	68.5	46.4	306.4	204.8	59.0		85.1	120.2	167.7
Level of Service	F	D	A	E	D	F	F	E		F	F	F
Approach Delay (s)		79.6			166.2			95.7			126.9	
Approach LOS		E			F			F			F	

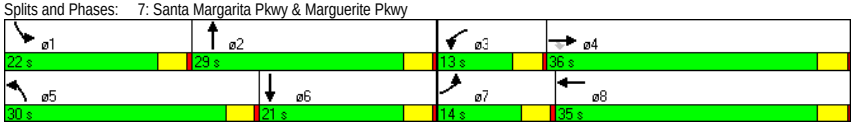
Intersection Summary					
HCM Average Control Delay		119.6	HCM Level of Service		F
HCM Volume to Capacity ratio		1.30			
Actuated Cycle Length (s)		140.0	Sum of lost time (s)		12.0
Intersection Capacity Utilization		100.4%	ICU Level of Service		G
Analysis Period (min)		15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	80	1560	630	150	880	430	430	230	480
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	14.0	36.0	36.0	13.0	35.0	30.0	29.0	22.0	21.0
Total Split (%)	14.0%	36.0%	36.0%	13.0%	35.0%	30.0%	29.0%	22.0%	21.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.0	32.0	32.0	9.0	34.1	26.0	26.1	16.9	17.0
Actuated g/C Ratio	0.09	0.32	0.32	0.09	0.34	0.26	0.26	0.17	0.17
v/c Ratio	0.55	1.04	0.79	1.03	0.66	1.02	0.66	0.84	0.94
Control Delay	56.5	68.3	15.2	124.8	25.0	83.9	27.1	64.2	58.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	68.3	15.2	124.8	25.0	83.9	27.1	64.2	58.7
LOS	E	E	B	F	C	F	C	E	E
Approach Delay		53.1			36.8		50.4		60.3
Approach LOS		D			D		D		E

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 49.8		Intersection LOS: D	
Intersection Capacity Utilization 92.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1560	630	150	880	240	430	430	190	230	480	100
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	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	4922		1770	3376		1770	3448	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	4922		1770	3376		1770	3448	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	1696	685	163	957	261	467	467	207	250	522	109
RTOR Reduction (vph)	0	0	353	0	159	0	0	141	0	0	83	0
Lane Group Flow (vph)	87	1696	332	163	1059	0	467	533	0	250	548	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	7.7	32.8	32.8	9.0	34.1		26.0	26.1		16.9	17.0	
Effective Green, g (s)	7.7	32.8	32.8	9.0	34.1		26.0	26.1		16.9	17.0	
Actuated g/C Ratio	0.08	0.33	0.33	0.09	0.34		0.26	0.26		0.17	0.17	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	135	1655	515	158	1665		457	874		297	582	
v/s Ratio Prot	0.05	c0.33		c0.09	0.22		c0.26	0.16		0.14	c0.16	
v/s Ratio Perm			0.21									
v/c Ratio	0.64	1.02	0.64	1.03	0.64		1.02	0.61		0.84	0.94	
Uniform Delay, d1	45.2	34.0	29.0	45.9	28.1		37.4	32.9		40.7	41.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.1	28.7	2.8	80.2	0.8		47.8	1.3		18.9	23.7	
Delay (s)	55.3	62.7	31.8	126.1	28.9		85.2	34.1		59.6	65.1	
Level of Service	E	E	C	F	C		F	C		E	E	
Approach Delay (s)		53.8			40.4			55.0			63.5	
Approach LOS		D			D			E			E	

Intersection Summary					
HCM Average Control Delay	52.4	HCM Level of Service		D	
HCM Volume to Capacity ratio	1.01				
Actuated Cycle Length (s)	100.8	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	92.1%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	240	250	150	240	50	570	470	560
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	18.0	20.0	18.0	20.0	11.0	21.0	31.0	41.0
Total Split (%)	20.0%	22.2%	20.0%	22.2%	12.2%	23.3%	34.4%	45.6%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	14.0	14.6	12.0	12.6	6.6	17.0	26.6	41.2
Actuated g/C Ratio	0.16	0.17	0.14	0.15	0.08	0.20	0.31	0.48
v/c Ratio	0.91	0.53	0.66	0.75	0.39	0.97	0.94	0.46
Control Delay	72.3	30.5	49.2	27.0	47.9	55.8	56.9	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.3	30.5	49.2	27.0	47.9	55.8	56.9	14.0
LOS	E	C	D	C	D	E	E	B
Approach Delay		48.8		32.5		55.2		31.0
Approach LOS		D		C		E		C

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 86.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 40.2		Intersection LOS: D	
Intersection Capacity Utilization 86.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	250	60	150	240	220	50	570	120	470	560	160
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.93		1.00	0.97		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)	1770	3437		1770	3285		1770	3447		1770	3421	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3437		1770	3285		1770	3447		1770	3421	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	261	272	65	163	261	239	54	620	130	511	609	174
RTOR Reduction (vph)	0	50	0	0	188	0	0	94	0	0	85	0
Lane Group Flow (vph)	261	287	0	163	312	0	54	656	0	511	698	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.0	14.6		12.0	12.6		4.1	18.7		26.6	41.2	
Effective Green, g (s)	14.0	14.6		12.0	12.6		4.1	18.7		26.6	41.2	
Actuated g/C Ratio	0.16	0.17		0.14	0.14		0.05	0.21		0.30	0.47	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	282	571		242	471		83	733		536	1603	
v/s Ratio Prot	c0.15	0.08		0.09	c0.09		0.03	c0.19		c0.29	0.20	
v/s Ratio Perm												
v/c Ratio	0.93	0.50		0.67	0.66		0.65	0.89		0.95	0.44	
Uniform Delay, d1	36.4	33.3		36.1	35.6		41.2	33.6		30.0	15.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	34.2	0.7		7.2	3.5		16.8	13.4		27.4	0.2	
Delay (s)	70.7	34.0		43.3	39.1		58.0	47.0		57.4	15.8	
Level of Service	E	C		D	D		E	D		E	B	
Approach Delay (s)		50.0			40.1			47.7			32.2	
Approach LOS		D			D			D			C	

Intersection Summary					
HCM Average Control Delay	40.7	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.88				
Actuated Cycle Length (s)	87.9	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	86.0%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	310	450	20	280	150	940	150	1700
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	29.0	39.0	10.0	20.0	16.0	74.0	27.0	85.0
Total Split (%)	19.3%	26.0%	6.7%	13.3%	10.7%	49.3%	18.0%	56.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	25.0	31.8	11.3	14.2	12.0	74.7	18.3	81.0
Actuated g/C Ratio	0.17	0.21	0.08	0.10	0.08	0.50	0.12	0.55
v/c Ratio	1.13	0.59	0.16	0.74	1.13	0.63	0.74	1.15
Control Delay	145.6	40.4	65.6	57.7	174.3	26.7	82.8	99.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	145.6	40.4	65.6	57.7	174.3	26.7	82.8	99.9
LOS	F	D	E	E	F	C	F	F
Approach Delay		74.4		58.1		45.3		98.9
Approach LOS		E		E		D		F

Intersection Summary			
Cycle Length: 150			
Actuated Cycle Length: 148.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 77.8		Intersection LOS: E	
Intersection Capacity Utilization 110.4%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

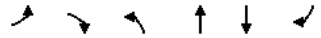
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	450	200	20	280	100	150	940	100	150	1700	530
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.96		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	4851		1770	4884		1770	3488		1770	3413	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4851		1770	4884		1770	3488		1770	3413	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	337	489	217	22	304	109	163	1022	109	163	1848	576
RTOR Reduction (vph)	0	158	0	0	89	0	0	50	0	0	243	0
Lane Group Flow (vph)	337	548	0	22	324	0	163	1081	0	163	2181	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	25.0	31.8		9.0	15.8		12.0	74.7		18.3	81.0	
Effective Green, g (s)	25.0	31.8		9.0	15.8		12.0	74.7		18.3	81.0	
Actuated g/C Ratio	0.17	0.21		0.06	0.11		0.08	0.50		0.12	0.54	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	295	1030		106	515		142	1739		216	1845	
v/s Ratio Prot	c0.19	c0.11		0.01	c0.07		c0.09	0.31		0.09	c0.64	
v/s Ratio Perm												
v/c Ratio	1.14	0.53		0.21	0.63		1.15	0.62		0.75	1.18	
Uniform Delay, d1	62.4	52.4		67.0	64.2		68.9	27.3		63.6	34.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	96.6	0.5		1.0	2.4		120.8	0.7		13.9	87.8	
Delay (s)	159.0	52.9		68.0	66.6		189.7	28.0		77.5	122.2	
Level of Service	F	D		E	E		F	C		E	F	
Approach Delay (s)		87.2			66.7			48.3			119.3	
Approach LOS		F			E			D			F	

Intersection Summary					
HCM Average Control Delay	91.7	HCM Level of Service	F		
HCM Volume to Capacity ratio	1.07				
Actuated Cycle Length (s)	149.8	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	110.4%	ICU Level of Service	H		
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	70	10	610	120	20	300
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	88	12	649	128	24	361
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.94					
vC, conflicting volume	1059	649			777	
vC1, stage 1 conf vol	649					
vC2, stage 2 conf vol	410					
vCu, unblocked vol	1028	649			777	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	97			97	
cM capacity (veh/h)	449	470			840	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	100	649	128	24	361
Volume Left	88	0	0	24	0
Volume Right	12	0	128	0	0
cSH	451	1700	1700	840	1700
Volume to Capacity	0.22	0.38	0.08	0.03	0.21
Queue Length 95th (ft)	21	0	0	2	0
Control Delay (s)	15.2	0.0	0.0	9.4	0.0
Lane LOS	C			A	
Approach Delay (s)	15.2	0.0		0.6	
Approach LOS	C				

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	50	60	590	310	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	13	65	63	621	330	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	767	330	340			
vC1, stage 1 conf vol	330					
vC2, stage 2 conf vol	437					
vCu, unblocked vol	767	330	340			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	90	95			
cM capacity (veh/h)	515	666	1215			

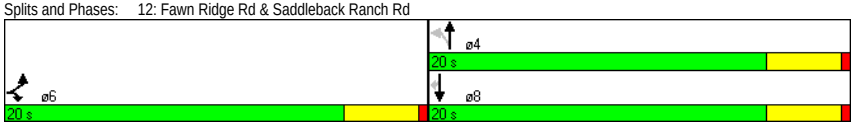
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	78	63	311	311	330	11
Volume Left	13	63	0	0	0	0
Volume Right	65	0	0	0	0	11
cSH	635	1215	1700	1700	1700	1700
Volume to Capacity	0.12	0.05	0.18	0.18	0.19	0.01
Queue Length 95th (ft)	10	4	0	0	0	0
Control Delay (s)	11.5	8.1	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	11.5	0.7			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	60	130	480	250	20
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.0	16.0	14.7	14.7	14.7	14.7
Actuated g/C Ratio	0.41	0.41	0.38	0.38	0.38	0.38
v/c Ratio	0.05	0.11	0.38	0.82	0.38	0.04
Control Delay	7.7	3.1	11.8	23.2	10.5	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	3.1	11.8	23.2	10.5	4.2
LOS	A	A	B	C	B	A
Approach Delay	4.6			20.7	10.0	
Approach LOS	A			C	A	

Intersection Summary			
Cycle Length: 40			
Actuated Cycle Length: 38.8			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 35.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	60	130	480	250	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.58	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1089	1863	1863	1583
Peak-hour factor, PHF	0.79	0.79	0.83	0.83	0.93	0.93
Adj. Flow (vph)	38	76	157	578	269	22
RTOR Reduction (vph)	0	45	0	0	0	14
Lane Group Flow (vph)	38	31	157	578	269	8
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Actuated Green, G (s)	16.0	16.0	14.7	14.7	14.7	14.7
Effective Green, g (s)	16.0	16.0	14.7	14.7	14.7	14.7
Actuated g/C Ratio	0.41	0.41	0.38	0.38	0.38	0.38
Clearance Time (s)	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
Lane Grp Cap (vph)	732	654	414	708	708	601
v/s Ratio Prot	c0.02	0.02		c0.31	0.14	
v/s Ratio Perm			0.14			0.01
v/c Ratio	0.05	0.05	0.38	0.82	0.38	0.01
Uniform Delay, d1	6.8	6.8	8.7	10.8	8.7	7.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	0.6	7.2	0.3	0.0
Delay (s)	6.9	6.9	9.3	18.0	9.0	7.5
Level of Service	A	A	A	B	A	A
Approach Delay (s)	6.9			16.2	8.9	
Approach LOS	A			B	A	

Intersection Summary				
HCM Average Control Delay	13.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	35.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	420	20	690	90
Turn Type		Prot		
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0
Total Split (s)	25.0	20.0	45.0	20.0
Total Split (%)	38.5%	30.8%	69.2%	30.8%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	Min	None	None	None
Act Effct Green (s)	30.3	6.4	32.2	8.5
Actuated g/C Ratio	0.67	0.14	0.72	0.19
v/c Ratio	0.45	0.09	0.56	0.35
Control Delay	8.4	20.5	7.1	18.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	8.4	20.5	7.1	18.5
LOS	A	C	A	B
Approach Delay	8.4		7.5	18.5
Approach LOS	A		A	B

Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 45			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 49.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Santiago Cyn & Ridgeline Rd

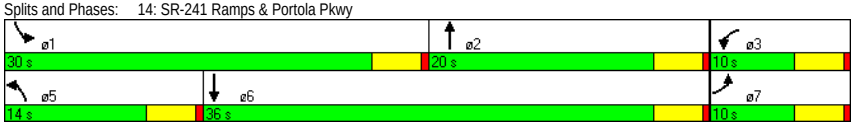
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	420	90	20	690	90	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.98		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	1818		1770	1863	1745	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	1818		1770	1863	1745	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	457	98	22	750	98	22
RTOR Reduction (vph)	7	0	0	0	14	0
Lane Group Flow (vph)	548	0	22	750	106	0
Turn Type			Prot			
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	29.1		1.2	34.3	6.9	
Effective Green, g (s)	29.1		1.2	34.3	6.9	
Actuated g/C Ratio	0.59		0.02	0.70	0.14	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1075		43	1299	245	
v/s Ratio Prot	0.30		0.01	c0.40	c0.06	
v/s Ratio Perm						
v/c Ratio	0.51		0.51	0.58	0.43	
Uniform Delay, d1	5.9		23.7	3.8	19.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.4		9.9	0.6	1.2	
Delay (s)	6.3		33.6	4.4	20.6	
Level of Service	A		C	A	C	
Approach Delay (s)	6.3			5.2	20.6	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	49.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	130	170	300	840	1230	1070
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	10.0	10.0	14.0	20.0	30.0	36.0
Total Split (%)	16.7%	16.7%	23.3%	33.3%	50.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	6.0	6.0	9.4	15.2	25.0	30.8
Actuated g/C Ratio	0.10	0.10	0.16	0.26	0.43	0.53
v/c Ratio	0.77	0.52	0.59	0.69	0.91	0.62
Control Delay	57.5	31.3	27.8	22.6	26.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.5	31.3	27.8	22.6	26.8	11.5
LOS	E	C	C	C	C	B
Approach Delay				24.0		19.7
Approach LOS				C		B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 58.3			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 22.8		Intersection LOS: C	
Intersection Capacity Utilization 68.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	0	0	170	0	0	300	840	0	1230	1070	0
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	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	0	0	185	0	0	326	913	0	1337	1163	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	141	0	0	185	0	0	326	913	0	1337	1163	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	6.0			6.0			9.4	15.2		25.0	30.8	
Effective Green, g (s)	6.0			6.0			9.4	15.2		25.0	30.8	
Actuated g/C Ratio	0.10			0.10			0.16	0.26		0.43	0.53	
Clearance Time (s)	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	
Lane Grp Cap (vph)	182			354			554	1328		1475	1873	
v/s Ratio Prot	c0.08			0.05			0.09	0.18		c0.39	c0.33	
v/s Ratio Perm												
v/c Ratio	0.77			0.52			0.59	0.69		0.91	0.62	
Uniform Delay, d1	25.4			24.7			22.6	19.4		15.5	9.6	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.4			1.4			1.6	1.5		8.3	0.6	
Delay (s)	43.8			26.1			24.2	20.9		23.8	10.3	
Level of Service	D			C			C	C		C	B	
Approach Delay (s)		43.8			26.1			21.7			17.5	
Approach LOS		D			C			C			B	

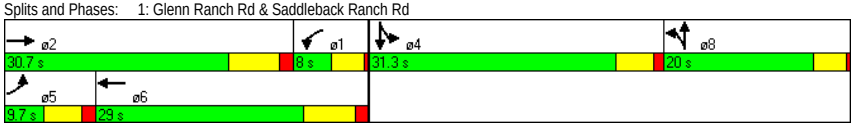
Intersection Summary					
HCM Average Control Delay	20.1	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.76				
Actuated Cycle Length (s)	58.2	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	68.5%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	171	218	9	864	125	24	223	9	785
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	9.7	30.7	8.0	29.0	20.0	20.0	31.3	31.3	0.0
Total Split (%)	10.8%	34.1%	8.9%	32.2%	22.2%	22.2%	34.8%	34.8%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	C-Max	C-Max	
Act Effct Green (s)	8.8	37.1	4.0	25.9	12.0	12.0	27.3	26.3	90.0
Actuated g/C Ratio	0.10	0.41	0.04	0.29	0.13	0.13	0.30	0.29	1.00
v/c Ratio	0.56	0.20	0.13	1.06	0.58	0.21	0.25	0.26	0.54
Control Delay	47.6	17.0	45.0	70.9	45.8	21.8	25.2	26.1	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	17.0	45.0	70.9	45.8	21.8	25.2	26.1	1.3
LOS	D	B	D	E	D	C	C	C	A
Approach Delay		28.9		70.6		39.2		6.9	
Approach LOS		C		E		D		A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:SBTL, Start of Green, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 38.2 — Intersection LOS: D
Intersection Capacity Utilization 59.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	171	218	49	9	864	225	125	24	24	223	9	785
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3433	3442		1770	3429		1770	1723		1681	1692	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3433	3442		1770	3429		1770	1723		1681	1692	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	186	237	53	10	939	245	136	26	26	242	10	853
RTOR Reduction (vph)	0	18	0	0	127	0	0	23	0	0	0	0
Lane Group Flow (vph)	186	272	0	10	1057	0	136	29	0	126	126	853
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	7.3	34.1		0.8	26.1		12.0	12.0		23.1	23.1	90.0
Effective Green, g (s)	8.8	37.1		0.8	29.1		12.0	12.0		24.1	23.1	90.0
Actuated g/C Ratio	0.10	0.41		0.01	0.32		0.13	0.13		0.27	0.26	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	1419		16	1109		236	230		450	434	1583
v/s Ratio Prot	0.05	0.08		0.01	c0.31		0.08	0.02		0.07	0.07	
v/s Ratio Perm												c0.54
v/c Ratio	0.55	0.19		0.62	0.95		0.58	0.13		0.28	0.29	0.54
Uniform Delay, d1	38.7	16.9		44.5	29.8		36.6	34.4		26.1	26.9	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.0	0.3		57.6	17.8		3.4	0.3		1.5	1.7	1.3
Delay (s)	40.7	17.2		102.0	47.6		40.0	34.6		27.6	28.6	1.3
Level of Service	D	B		F	D		D	C		C	C	A
Approach Delay (s)		26.4			48.1			38.5			7.4	
Approach LOS		C			D			D			A	

Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0	
Intersection Capacity Utilization	59.9%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	180	250	230	450	1150	500
Turn Type		pm+ov	Prot			Perm
Protected Phases	4	5	5	2	6	
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	1.0	1.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0	20.0
Total Split (s)	20.0	15.0	15.0	45.0	30.0	30.0
Total Split (%)	30.8%	23.1%	23.1%	69.2%	46.2%	46.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	11.6	26.4	10.8	39.8	25.0	25.0
Actuated g/C Ratio	0.19	0.44	0.18	0.67	0.42	0.42
v/c Ratio	0.57	0.38	0.78	0.21	0.84	0.55
Control Delay	28.8	12.3	44.5	4.4	23.1	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.8	12.3	44.5	4.4	23.1	3.9
LOS	C	B	D	A	C	A
Approach Delay	19.2			18.0	17.3	
Approach LOS	B			B	B	

Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 59.5			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd

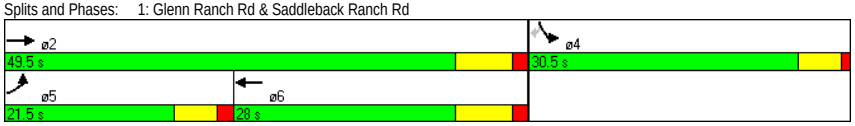
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	180	250	230	450	1150	500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	196	272	250	489	1250	543
RTOR Reduction (vph)	0	9	0	0	0	314
Lane Group Flow (vph)	196	263	250	489	1250	229
Turn Type		pm+ov	Prot			Perm
Protected Phases	4	5	5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	11.6	22.4	10.8	39.8	25.0	25.0
Effective Green, g (s)	11.6	22.4	10.8	39.8	25.0	25.0
Actuated g/C Ratio	0.20	0.38	0.18	0.67	0.42	0.42
Clearance Time (s)	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
Lane Grp Cap (vph)	346	704	322	2371	1489	666
v/s Ratio Prot	c0.11	0.07	c0.14	0.14	c0.35	
v/s Ratio Perm		0.10				0.14
v/c Ratio	0.57	0.37	0.78	0.21	0.84	0.34
Uniform Delay, d1	21.6	13.4	23.1	3.8	15.4	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.3	11.1	0.0	4.3	0.3
Delay (s)	23.7	13.7	34.3	3.8	19.7	12.0
Level of Service	C	B	C	A	B	B
Approach Delay (s)	17.9			14.1	17.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM Average Control Delay	16.7	HCM Level of Service		B
HCM Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	59.4	Sum of lost time (s)		12.0
Intersection Capacity Utilization	64.5%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Volume (vph)	650	640	230	70	280
Turn Type	Prot				Perm
Protected Phases	5	2	6	4	
Permitted Phases					4
Detector Phase	5	2	6	4	4
Switch Phase					
Minimum Initial (s)	3.0	8.0	8.0	4.0	4.0
Minimum Split (s)	8.5	26.0	28.0	30.5	30.5
Total Split (s)	21.5	49.5	28.0	30.5	30.5
Total Split (%)	26.9%	61.9%	35.0%	38.1%	38.1%
Yellow Time (s)	4.0	5.5	5.5	4.0	4.0
All-Red Time (s)	1.5	1.5	1.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	-3.0	-1.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	Max	Max	None	None
Act Effct Green (s)	17.6	46.0	24.3	11.3	10.3
Actuated g/C Ratio	0.27	0.70	0.37	0.17	0.16
v/c Ratio	0.77	0.28	0.27	0.25	0.44
Control Delay	30.5	4.9	12.0	24.1	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	4.9	12.0	24.1	5.1
LOS	C	A	B	C	A
Approach Delay		17.8	12.0	8.9	
Approach LOS		B	B	A	

Intersection Summary			
Cycle Length: 80			
Actuated Cycle Length: 65.4			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 15.3		Intersection LOS: B	
Intersection Capacity Utilization 42.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	650	640	230	100	70	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	5.0
Lane Util. Factor	0.97	0.95	0.95		1.00	0.88
Frt	1.00	1.00	0.95		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3378		1770	2787
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3378		1770	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	707	696	250	109	76	304
RTOR Reduction (vph)	0	0	63	0	0	256
Lane Group Flow (vph)	707	696	296	0	76	48
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	16.1	42.9	21.3		10.3	10.3
Effective Green, g (s)	17.6	45.9	24.3		11.3	10.3
Actuated g/C Ratio	0.27	0.70	0.37		0.17	0.16
Clearance Time (s)	5.5	7.0	7.0		5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	927	2491	1259		307	440
v/s Ratio Prot	c0.21	c0.20	0.09		c0.04	
v/s Ratio Perm						0.02
v/c Ratio	0.76	0.28	0.24		0.25	0.11
Uniform Delay, d1	21.9	3.6	14.1		23.3	23.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.8	0.3	0.4		0.4	0.1
Delay (s)	25.6	3.8	14.5		23.7	23.6
Level of Service	C	A	B		C	C
Approach Delay (s)		14.8	14.5		23.6	
Approach LOS		B	B		C	

Intersection Summary				
HCM Average Control Delay	16.3	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	65.2	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	42.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	60	20	450	50	940	130	1730	310	450	530	20
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	12.0	34.0	20.0	16.0	38.0	38.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	0.0%	13.3%	37.8%	22.2%	17.8%	42.2%	42.2%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	8.1	6.2	14.6	13.0	75.1	7.6	30.3	48.9	12.1	34.8	34.8
Actuated g/C Ratio	0.11	0.08	0.19	0.17	1.00	0.10	0.40	0.65	0.16	0.46	0.46
v/c Ratio	0.34	0.19	0.73	0.09	0.65	0.41	0.92	0.29	0.88	0.24	0.03
Control Delay	37.2	20.4	36.4	28.9	2.0	37.0	31.6	1.5	52.3	13.7	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	20.4	36.4	28.9	2.0	37.0	31.6	1.5	52.3	13.7	6.3
LOS	D	C	D	C	A	D	C	A	D	B	A
Approach Delay		29.5		13.7			27.6			30.9	
Approach LOS		C		B			C			C	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 75.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 75.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	20	30	450	50	940	130	1730	310	450	530	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	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.91		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)	1770	3221		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3221		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	22	33	489	54	1022	141	1880	337	489	576	22
RTOR Reduction (vph)	0	31	0	0	0	0	0	0	140	0	0	12
Lane Group Flow (vph)	65	24	0	489	54	1022	141	1880	197	489	576	10
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	5.4	3.7		14.6	12.9	76.7	7.5	30.3	44.9	12.1	34.9	34.9
Effective Green, g (s)	5.4	3.7		14.6	12.9	76.7	7.5	30.3	44.9	12.1	34.9	34.9
Actuated g/C Ratio	0.07	0.05		0.19	0.17	1.00	0.10	0.40	0.59	0.16	0.46	0.46
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	125	155		653	595	1583	336	2009	1009	542	2314	720
v/s Ratio Prot	0.04			0.14	0.02		0.04	c0.37	0.04	c0.14	0.11	
v/s Ratio Perm		0.01				c0.65			0.09			0.01
v/c Ratio	0.52	0.15		0.75	0.09	0.65	0.42	0.94	0.20	0.90	0.25	0.01
Uniform Delay, d1	34.4	35.0		29.3	26.9	0.0	32.6	22.3	7.4	31.7	12.8	11.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.9	0.5		4.7	0.1	2.0	0.8	8.9	0.1	18.2	0.1	0.0
Delay (s)	38.3	35.5		34.0	27.0	2.0	33.4	31.1	7.5	49.9	12.9	11.5
Level of Service	D	D		C	C	A	C	C	A	D	B	B
Approach Delay (s)		37.0			12.9			27.9			29.5	
Approach LOS		D			B			C			C	

Intersection Summary

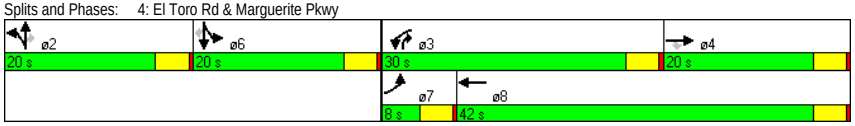
HCM Average Control Delay	23.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	76.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	75.8%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Volume (vph)	10	260	170	980	860	510	10	580	10	10
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split	
Protected Phases	7	4		3	8	2	2	3	6	6
Permitted Phases			4					2		
Detector Phase	7	4	4	3	8	2	2	3	6	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	8.0	20.0	20.0	30.0	42.0	20.0	20.0	30.0	20.0	20.0
Total Split (%)	8.9%	22.2%	22.2%	33.3%	46.7%	22.2%	22.2%	33.3%	22.2%	22.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes		
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	11.0	11.0	26.3	40.0	16.2	16.2	45.1	6.1	6.1
Actuated g/C Ratio	0.06	0.16	0.16	0.38	0.58	0.23	0.23	0.65	0.09	0.09
v/c Ratio	0.06	0.51	0.46	0.82	0.47	0.74	0.38	0.51	0.07	0.04
Control Delay	35.4	30.7	8.9	28.0	10.8	41.0	25.8	2.4	33.5	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	30.7	8.9	28.0	10.8	41.0	25.8	2.4	33.5	32.6
LOS	D	C	A	C	B	D	C	A	C	C
Approach Delay		22.4			19.9		17.0			33.1
Approach LOS		C			B		B			C

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 69.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 19.4		Intersection LOS: B	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	260	170	980	860	10	510	10	580	10	10	0
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	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3533		1610	3235	1583	1770	3390	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3533		1610	3235	1583	1770	3390	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	283	185	1065	935	11	554	11	630	11	11	0
RTOR Reduction (vph)	0	0	150	0	1	0	0	0	249	0	0	0
Lane Group Flow (vph)	11	283	35	1065	945	0	277	288	381	11	11	0
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.7	14.4	14.4	26.3	40.0		16.2	16.2	42.5	2.4	2.4	
Effective Green, g (s)	0.7	14.4	14.4	26.3	40.0		16.2	16.2	42.5	2.4	2.4	
Actuated g/C Ratio	0.01	0.19	0.19	0.35	0.53		0.22	0.22	0.56	0.03	0.03	
Clearance Time (s)	4.0	4.0	4.0	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	3.0	3.0	3.0	
Lane Grp Cap (vph)	32	677	303	1199	1877		346	696	893	56	108	
v/s Ratio Prot	0.00	0.08		c0.31	c0.27		c0.17	0.09	0.15	c0.01	0.00	
v/s Ratio Perm			0.02						0.09			
v/c Ratio	0.34	0.42	0.12	0.89	0.50		0.80	0.41	0.43	0.20	0.10	
Uniform Delay, d1	37.1	26.8	25.2	23.1	11.3		28.0	25.5	9.4	35.5	35.4	
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	6.3	0.4	0.2	8.3	0.2		12.5	0.4	0.3	1.7	0.4	
Delay (s)	43.4	27.2	25.4	31.4	11.5		40.5	25.9	9.7	37.2	35.8	
Level of Service	D	C	C	C	B		D	C	A	D	D	
Approach Delay (s)		26.9			22.0			20.8			36.5	
Approach LOS		C			C			C			D	

Intersection Summary					
HCM Average Control Delay	22.3	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	75.3	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	65.9%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	40	90	530	1200
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	10.0	40.0	30.0
Total Split (%)	33.3%	16.7%	66.7%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	9.5	6.2	31.6	24.3
Actuated g/C Ratio	0.19	0.12	0.64	0.49
v/c Ratio	0.64	0.44	0.26	0.79
Control Delay	13.6	31.8	4.5	17.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	13.6	31.8	4.5	17.0
LOS	B	C	A	B
Approach Delay	13.6		8.4	17.0
Approach LOS	B		A	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 49.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 14.1		Intersection LOS: B	
Intersection Capacity Utilization 67.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn

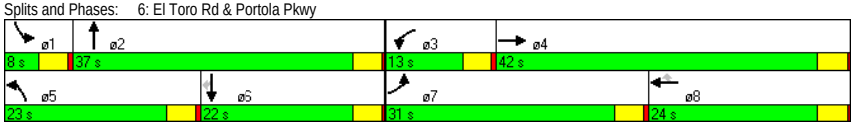
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	250	90	530	1200	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.88		1.00	1.00	0.99	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1634		1770	3539	3514	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1634		1770	3539	3514	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	272	98	576	1304	65
RTOR Reduction (vph)	178	0	0	0	5	0
Lane Group Flow (vph)	137	0	98	576	1364	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	9.5		4.4	32.7	24.3	
Effective Green, g (s)	9.5		4.4	32.7	24.3	
Actuated g/C Ratio	0.19		0.09	0.65	0.48	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	309		155	2305	1701	
v/s Ratio Prot	c0.08		c0.06	0.16	c0.39	
v/s Ratio Perm						
v/c Ratio	0.44		0.63	0.25	0.80	
Uniform Delay, d1	18.0		22.1	3.6	10.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.0		8.1	0.1	2.8	
Delay (s)	19.0		30.3	3.7	13.7	
Level of Service	B		C	A	B	
Approach Delay (s)	19.0			7.6	13.7	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	12.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	67.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	450	180	280	60	830	410	580	1950	70	640	430
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	31.0	42.0	0.0	13.0	24.0	24.0	23.0	37.0	8.0	22.0	22.0
Total Split (%)	31.0%	42.0%	0.0%	13.0%	24.0%	24.0%	23.0%	37.0%	8.0%	22.0%	22.0%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	27.0	40.9	99.7	8.0	20.0	20.0	19.0	34.3	4.0	17.7	17.7
Actuated g/C Ratio	0.27	0.41	1.00	0.08	0.20	0.20	0.19	0.34	0.04	0.18	0.18
v/c Ratio	1.02	0.09	0.21	0.45	0.88	1.08	0.96	0.97	0.55	0.77	0.73
Control Delay	83.7	19.3	0.3	54.0	50.4	97.0	68.3	45.7	62.7	45.6	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.7	19.3	0.3	54.0	50.4	97.0	68.3	45.7	62.7	45.6	12.7
LOS	F	B	A	D	D	F	E	D	E	D	B
Approach Delay		45.3			65.3			50.9		34.3	
Approach LOS		D			E			D		C	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 99.7			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 50.0		Intersection LOS: D	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	180	280	60	830	410	580	1950	20	70	640	430
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		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)	1770	5085	1425	1770	5085	1583	3433	6398		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6398		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	196	304	65	902	446	630	2120	22	76	696	467
RTOR Reduction (vph)	0	0	0	0	0	95	0	13	0	0	0	356
Lane Group Flow (vph)	489	196	304	65	902	351	630	2129	0	76	696	111
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	27.0	40.9	101.3	6.9	20.8	20.8	19.0	34.3		3.2	18.5	18.5
Effective Green, g (s)	27.0	40.9	101.3	6.9	20.8	20.8	19.0	34.3		3.2	18.5	18.5
Actuated g/C Ratio	0.27	0.40	1.00	0.07	0.21	0.21	0.19	0.34		0.03	0.18	0.18
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	472	2053	1425	121	1044	325	644	2166		108	929	289
v/s Ratio Prot	c0.28	0.04		0.04	0.18		c0.18	c0.33		0.02	0.14	
v/s Ratio Perm			0.21			c0.22						0.07
v/c Ratio	1.04	0.10	0.21	0.54	0.86	1.08	0.98	0.98		0.70	0.75	0.38
Uniform Delay, d1	37.1	18.7	0.0	45.7	38.9	40.2	40.9	33.2		48.6	39.2	36.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	51.0	0.0	0.3	4.5	7.6	73.3	29.7	15.4		18.7	3.4	0.8
Delay (s)	88.2	18.7	0.3	50.2	46.4	113.6	70.6	48.6		67.3	42.6	37.2
Level of Service	F	B	A	D	D	F	E	D		E	D	D
Approach Delay (s)		47.4			67.8			53.6			42.1	
Approach LOS		D			E			D			D	

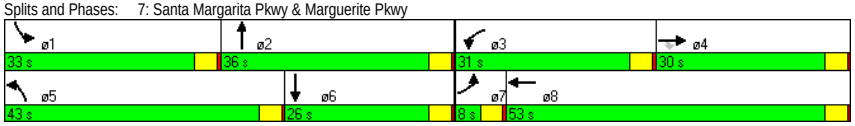
Intersection Summary					
HCM Average Control Delay	53.6	HCM Level of Service		D	
HCM Volume to Capacity ratio	1.00				
Actuated Cycle Length (s)	101.3	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	88.9%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	20	710	170	220	1730	500	350	230	500
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	8.0	30.0	30.0	31.0	53.0	43.0	36.0	33.0	26.0
Total Split (%)	6.2%	23.1%	23.1%	23.8%	40.8%	33.1%	27.7%	25.4%	20.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	28.1	28.1	21.6	49.1	39.0	38.2	22.6	21.7
Actuated g/C Ratio	0.03	0.22	0.22	0.17	0.39	0.31	0.30	0.18	0.17
v/c Ratio	0.39	0.68	0.37	0.79	1.02	0.99	0.51	0.79	0.92
Control Delay	81.7	49.3	8.3	69.1	59.5	81.2	27.5	67.7	69.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.7	49.3	8.3	69.1	59.5	81.2	27.5	67.7	69.7
LOS	F	D	A	E	E	F	C	E	E
Approach Delay		42.3			60.4		53.6		69.1
Approach LOS		D			E		D		E

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 126.5			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.02			
Intersection Signal Delay: 57.0		Intersection LOS: E	
Intersection Capacity Utilization 97.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



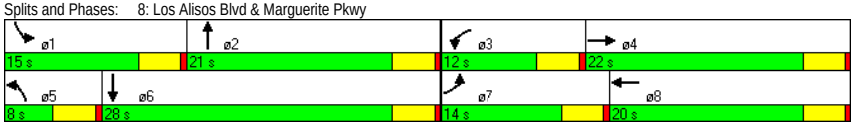
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	710	170	220	1730	210	500	350	180	230	500	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.95		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5003		1770	3359		1770	3500	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5003		1770	3359		1770	3500	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	22	772	185	239	1880	228	543	380	196	250	543	43
RTOR Reduction (vph)	0	0	142	0	130	0	0	126	0	0	33	0
Lane Group Flow (vph)	22	772	43	239	1978	0	543	450	0	250	553	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.3	29.8	29.8	21.6	49.1		39.0	38.2		22.6	21.8	
Effective Green, g (s)	2.3	29.8	29.8	21.6	49.1		39.0	38.2		22.6	21.8	
Actuated g/C Ratio	0.02	0.23	0.23	0.17	0.38		0.30	0.30		0.18	0.17	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	32	1182	368	298	1916		538	1001		312	595	
v/s Ratio Prot	0.01	0.15		c0.14	c0.40		c0.31	0.13		0.14	c0.16	
v/s Ratio Perm			0.03									
v/c Ratio	0.69	0.65	0.12	0.80	1.03		1.01	0.45		0.80	0.93	
Uniform Delay, d1	62.6	44.5	38.8	51.2	39.5		44.6	36.5		50.6	52.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	47.1	1.3	0.1	14.3	29.5		41.1	0.3		13.7	20.9	
Delay (s)	109.7	45.8	39.0	65.6	69.0		85.7	36.8		64.4	73.3	
Level of Service	F	D	D	E	E		F	D		E	E	
Approach Delay (s)		46.0			68.7			60.5			70.6	
Approach LOS		D			E			E			E	

Intersection Summary					
HCM Average Control Delay	63.1	HCM Level of Service		E	
HCM Volume to Capacity ratio	1.01				
Actuated Cycle Length (s)	128.2	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	97.6%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	230	150	130	410	50	450	240	620
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	14.0	22.0	12.0	20.0	8.0	21.0	15.0	28.0
Total Split (%)	20.0%	31.4%	17.1%	28.6%	11.4%	30.0%	21.4%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	10.1	19.2	7.8	14.4	4.0	14.3	11.1	24.9
Actuated g/C Ratio	0.15	0.29	0.12	0.22	0.06	0.22	0.17	0.38
v/c Ratio	0.93	0.21	0.67	0.84	0.50	0.73	0.88	0.69
Control Delay	71.7	15.9	47.6	23.0	49.7	25.4	60.6	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.7	15.9	47.6	23.0	49.7	25.4	60.6	15.6
LOS	E	B	D	C	D	C	E	B
Approach Delay		45.8		26.6		27.4		24.8
Approach LOS		D		C		C		C

Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 65.9			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 79.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy



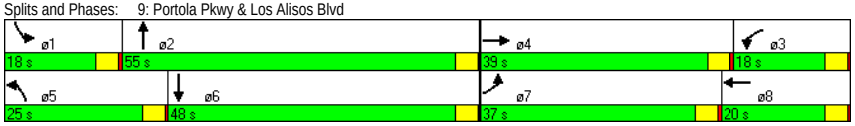
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	150	50	130	410	360	50	450	110	240	620	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.93		1.00	0.97		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3407		1770	3291		1770	3435		1770	3362	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3407		1770	3291		1770	3435		1770	3362	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	163	54	141	446	391	54	489	120	261	674	337
RTOR Reduction (vph)	0	36	0	0	280	0	0	84	0	0	197	0
Lane Group Flow (vph)	250	181	0	141	557	0	54	525	0	261	814	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.1	19.2		6.2	15.3		2.3	16.1		11.1	24.9	
Effective Green, g (s)	10.1	19.2		6.2	15.3		2.3	16.1		11.1	24.9	
Actuated g/C Ratio	0.15	0.28		0.09	0.22		0.03	0.23		0.16	0.36	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	261	954		160	734		59	806		286	1220	
v/s Ratio Prot	c0.14	c0.05		0.08	c0.17		0.03	0.15		c0.15	c0.24	
v/s Ratio Perm												
v/c Ratio	0.96	0.19		0.88	0.76		0.92	0.65		0.91	0.67	
Uniform Delay, d1	29.0	18.8		30.8	24.9		33.1	23.7		28.3	18.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	43.7	0.1		39.0	4.5		86.4	1.9		31.3	1.4	
Delay (s)	72.7	18.9		69.8	29.5		119.4	25.6		59.6	19.8	
Level of Service	E	B		E	C		F	C		E	B	
Approach Delay (s)		47.7			35.3			33.2			27.9	
Approach LOS		D			D			C			C	

Intersection Summary					
HCM Average Control Delay	33.8	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.79				
Actuated Cycle Length (s)	68.6	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	79.4%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	550	250	90	570	210	1530	240	740
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	37.0	39.0	18.0	20.0	25.0	55.0	18.0	48.0
Total Split (%)	28.5%	30.0%	13.8%	15.4%	19.2%	42.3%	13.8%	36.9%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	33.0	12.9	36.1	16.0	19.6	51.0	14.0	45.4
Actuated g/C Ratio	0.25	0.10	0.28	0.12	0.15	0.39	0.11	0.35
v/c Ratio	1.33	0.64	0.20	1.07	0.85	1.20	1.37	0.77
Control Delay	202.5	48.8	38.2	94.5	81.7	133.4	237.5	34.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	202.5	48.8	38.2	94.5	81.7	133.4	237.5	34.9
LOS	F	D	D	F	F	F	F	C
Approach Delay		144.9		88.4		127.2		76.5
Approach LOS		F		F		F		E

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 130			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.37			
Intersection Signal Delay: 110.8		Intersection LOS: F	
Intersection Capacity Utilization 114.5%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	550	250	80	90	570	170	210	1530	10	240	740	190
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	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.97		1.00	1.00		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)	1770	4900		1770	4910		1770	3536		1770	3431	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4900		1770	4910		1770	3536		1770	3431	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	598	272	87	98	620	185	228	1663	11	261	804	207
RTOR Reduction (vph)	0	72	0	0	149	0	0	6	0	0	124	0
Lane Group Flow (vph)	598	287	0	98	656	0	228	1668	0	261	887	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	33.0	12.9		36.1	16.0		19.6	51.0		14.0	45.4	
Effective Green, g (s)	33.0	12.9		36.1	16.0		19.6	51.0		14.0	45.4	
Actuated g/C Ratio	0.25	0.10		0.28	0.12		0.15	0.39		0.11	0.35	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	449	486		492	604		267	1387		191	1198	
v/s Ratio Prot	c0.34	0.06		0.06	c0.13		0.13	c0.47		c0.15	0.26	
v/s Ratio Perm												
v/c Ratio	1.33	0.59		0.20	1.09		0.85	1.20		1.37	0.74	
Uniform Delay, d1	48.5	56.0		35.9	57.0		53.8	39.5		58.0	37.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	164.0	1.9		0.2	62.1		22.4	98.3		194.7	2.5	
Delay (s)	212.5	57.9		36.1	119.1		76.2	137.8		252.7	39.6	
Level of Service	F	E		D	F		E	F		F	D	
Approach Delay (s)		154.5			110.1			130.4			83.4	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM Average Control Delay	119.5	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.24				
Actuated Cycle Length (s)	130.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	114.5%	ICU Level of Service		H	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	150	30	360	40	10	780
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.76	0.76	0.77	0.77	0.92	0.92
Hourly flow rate (vph)	197	39	468	52	11	848
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.69					
vC, conflicting volume	1337	468			519	
vC1, stage 1 conf vol	468					
vC2, stage 2 conf vol	870					
vCu, unblocked vol	1265	468			519	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	41	93			99	
cM capacity (veh/h)	336	595			1047	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	237	468	52	11	848
Volume Left	197	0	0	11	0
Volume Right	39	0	52	0	0
cSH	362	1700	1700	1047	1700
Volume to Capacity	0.65	0.28	0.03	0.01	0.50
Queue Length 95th (ft)	111	0	0	1	0
Control Delay (s)	31.9	0.0	0.0	8.5	0.0
Lane LOS	D			A	
Approach Delay (s)	31.9	0.0		0.1	
Approach LOS	D				

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	110	30	380	920	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.70	0.70	0.62	0.62	0.94	0.94
Hourly flow rate (vph)	0	157	48	613	979	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	1382	979	989			
vC1, stage 1 conf vol	979					
vC2, stage 2 conf vol	403					
vCu, unblocked vol	1382	979	989			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	37	93			
cM capacity (veh/h)	295	250	694			

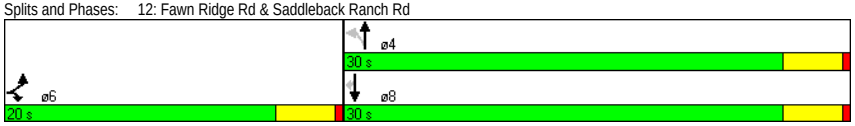
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	157	48	306	306	979	11
Volume Left	0	48	0	0	0	0
Volume Right	157	0	0	0	0	11
cSH	250	694	1700	1700	1700	1700
Volume to Capacity	0.63	0.07	0.18	0.18	0.58	0.01
Queue Length 95th (ft)	96	6	0	0	0	0
Control Delay (s)	41.1	10.6	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	41.1	0.8			0.0	
Approach LOS	E					

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	180	40	330	590	40
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	30.0	30.0	30.0	30.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.2	16.2	19.5	19.5	19.5	19.5
Actuated g/C Ratio	0.37	0.37	0.44	0.44	0.44	0.44
v/c Ratio	0.09	0.36	0.42	0.74	0.78	0.06
Control Delay	11.6	5.3	16.2	15.8	17.6	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	5.3	16.2	15.8	17.6	2.7
LOS	B	A	B	B	B	A
Approach Delay	6.4			15.9	16.7	
Approach LOS	A			B	B	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 43.9			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 14.4		Intersection LOS: B	
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	180	40	330	590	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.21	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	395	1863	1863	1583
Peak-hour factor, PHF	0.69	0.69	0.54	0.54	0.91	0.91
Adj. Flow (vph)	58	261	74	611	648	44
RTOR Reduction (vph)	0	135	0	0	0	24
Lane Group Flow (vph)	58	126	74	611	648	20
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Actuated Green, G (s)	16.2	16.2	19.5	19.5	19.5	19.5
Effective Green, g (s)	16.2	16.2	19.5	19.5	19.5	19.5
Actuated g/C Ratio	0.37	0.37	0.45	0.45	0.45	0.45
Clearance Time (s)	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
Lane Grp Cap (vph)	656	587	176	831	831	706
v/s Ratio Prot	0.03	c0.08		0.33	c0.35	
v/s Ratio Perm			0.19			0.01
v/c Ratio	0.09	0.22	0.42	0.74	0.78	0.03
Uniform Delay, d1	8.9	9.4	8.2	10.0	10.3	6.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.8	1.6	3.4	4.7	0.0
Delay (s)	9.2	10.2	9.9	13.4	14.9	6.8
Level of Service	A	B	A	B	B	A
Approach Delay (s)	10.1			13.0	14.4	
Approach LOS	B			B	B	

Intersection Summary				
HCM Average Control Delay	13.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.52			
Actuated Cycle Length (s)	43.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	48.9%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	700	10	450	110
Turn Type		Prot		
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	37.0	8.0	45.0	20.0
Total Split (%)	56.9%	12.3%	69.2%	30.8%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	Min	None	Min	None
Act Effct Green (s)	36.7	4.3	38.0	9.4
Actuated g/C Ratio	0.71	0.08	0.74	0.18
v/c Ratio	0.64	0.07	0.35	0.40
Control Delay	11.0	27.2	4.8	23.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	11.0	27.2	4.8	23.6
LOS	B	C	A	C
Approach Delay	11.0		5.3	23.6
Approach LOS	B		A	C

Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 51.4			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 10.2		Intersection LOS: B	
Intersection Capacity Utilization 54.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Santiago Cyn & Ridgeline Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	700	70	10	450	110	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.99		1.00	1.00	0.99	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	1840		1770	1863	1761	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	1840		1770	1863	1761	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	761	76	11	489	120	11
RTOR Reduction (vph)	4	0	0	0	6	0
Lane Group Flow (vph)	833	0	11	489	125	0
Turn Type			Prot			
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	35.4		0.7	40.1	7.5	
Effective Green, g (s)	35.4		0.7	40.1	7.5	
Actuated g/C Ratio	0.64		0.01	0.72	0.13	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1172		22	1344	238	
v/s Ratio Prot	c0.45		0.01	c0.26	c0.07	
v/s Ratio Perm						
v/c Ratio	0.71		0.50	0.36	0.52	
Uniform Delay, d1	6.7		27.3	2.9	22.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.1		16.8	0.2	2.1	
Delay (s)	8.8		44.0	3.1	24.5	
Level of Service	A		D	A	C	
Approach Delay (s)	8.8			4.0	24.5	
Approach LOS	A			A	C	

Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	55.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	230	360	560	910	250	560
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	19.0	19.0	21.0	29.0	12.0	20.0
Total Split (%)	31.7%	31.7%	35.0%	48.3%	20.0%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	11.9	11.9	13.8	18.7	7.9	12.8
Actuated g/C Ratio	0.23	0.23	0.27	0.37	0.16	0.25
v/c Ratio	0.60	0.49	0.65	0.53	0.51	0.69
Control Delay	25.5	20.0	21.0	13.7	25.8	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	20.0	21.0	13.7	25.8	22.6
LOS	C	C	C	B	C	C
Approach Delay				16.5		23.6
Approach LOS				B		C

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 50.9			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 19.7		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	230	0	0	360	0	0	560	910	0	250	560	0
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	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	250	0	0	391	0	0	609	989	0	272	609	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	250	0	0	391	0	0	609	989	0	272	609	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.9			11.9			13.8	18.7		7.9	12.8	
Effective Green, g (s)	11.9			11.9			13.8	18.7		7.9	12.8	
Actuated g/C Ratio	0.24			0.24			0.27	0.37		0.16	0.25	
Clearance Time (s)	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	
Lane Grp Cap (vph)	417			809			938	1883		537	897	
v/s Ratio Prot	c0.14			0.11			c0.18	0.19		0.08	c0.17	
v/s Ratio Perm												
v/c Ratio	0.60			0.48			0.65	0.53		0.51	0.68	
Uniform Delay, d1	17.2			16.6			16.2	12.4		19.5	17.0	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3			0.5			1.6	0.3		0.8	2.1	
Delay (s)	19.5			17.1			17.8	12.7		20.3	19.1	
Level of Service	B			B			B	B		C	B	
Approach Delay (s)		19.5			17.1			14.6			19.4	
Approach LOS		B			B			B			B	

Intersection Summary					
HCM Average Control Delay	16.7	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	50.5	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	54.2%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	42	14	397	975	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	46	15	432	1060	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				485		
pX, platoon unblocked						
vC, conflicting volume	1307	531	1062			
vC1, stage 1 conf vol	1061					
vC2, stage 2 conf vol	246					
vCu, unblocked vol	1307	531	1062			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	91	98			
cM capacity (veh/h)	281	493	652			

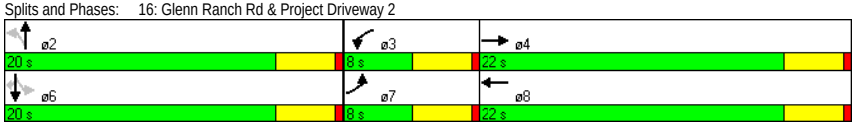
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	8	46	15	216	216	707	355
Volume Left	8	0	15	0	0	0	0
Volume Right	0	46	0	0	0	0	2
cSH	281	493	652	1700	1700	1700	1700
Volume to Capacity	0.03	0.09	0.02	0.13	0.13	0.42	0.21
Queue Length 95th (ft)	2	8	2	0	0	0	0
Control Delay (s)	18.2	13.1	10.7	0.0	0.0	0.0	0.0
Lane LOS	C	B	B				
Approach Delay (s)	13.8		0.4			0.0	
Approach LOS	B						

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		37.0%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	37	372	11	842	145	0	20	0	111
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	22.0	8.0	22.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	16.0%	44.0%	16.0%	44.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	4.1	17.3	4.1	15.9	16.3	16.3		16.3	16.3
Actuated g/C Ratio	0.10	0.40	0.10	0.37	0.38	0.38		0.38	0.38
v/c Ratio	0.24	0.33	0.07	0.71	0.30	0.04		0.04	0.18
Control Delay	24.5	9.1	21.8	15.6	13.6	0.1		11.6	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	24.5	9.1	21.8	15.6	13.6	0.1		11.6	4.1
LOS	C	A	C	B	B	A		B	A
Approach Delay		10.3		15.7		11.5		5.2	
Approach LOS		B		B		B		A	

Intersection Summary		
Cycle Length: 50		
Actuated Cycle Length: 43.1		
Natural Cycle: 50		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.71		
Intersection Signal Delay: 12.9	Intersection LOS: B	
Intersection Capacity Utilization 51.5%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	372	56	11	842	7	145	0	28	20	0	111
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
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3470		1770	3535		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00			0.74	1.00
Satd. Flow (perm)	1770	3470		1770	3535		1384	1583			1374	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	404	61	12	915	8	158	0	30	22	0	121
RTOR Reduction (vph)	0	23	0	0	1	0	0	19	0	0	0	78
Lane Group Flow (vph)	40	442	0	12	922	0	158	11	0	0	22	43
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	1.4	17.3		0.7	16.6		16.3	16.3			16.3	16.3
Effective Green, g (s)	1.4	17.3		0.7	16.6		16.3	16.3			16.3	16.3
Actuated g/C Ratio	0.03	0.37		0.02	0.36		0.35	0.35			0.35	0.35
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	54	1297		27	1267		487	557			484	557
v/s Ratio Prot	c0.02	0.13		0.01	c0.26			0.01				
v/s Ratio Perm							c0.11				0.02	0.03
v/c Ratio	0.74	0.34		0.44	0.73		0.32	0.02			0.05	0.08
Uniform Delay, d1	22.3	10.4		22.6	12.9		11.0	9.8			9.9	10.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	41.8	0.2		11.2	2.1		1.8	0.1			0.2	0.3
Delay (s)	64.1	10.6		33.8	15.0		12.7	9.8			10.1	10.3
Level of Service	E	B		C	B		B	A			B	B
Approach Delay (s)		14.8			15.2			12.3			10.2	
Approach LOS		B			B			B			B	

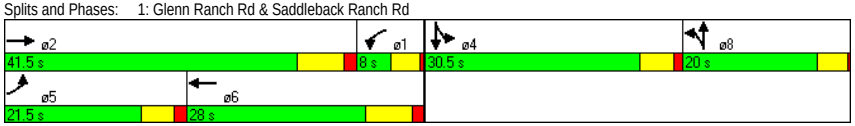
Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Configurations								
Volume (vph)	689	894	30	397	21	125	30	303
Turn Type	Prot		Prot			Split		Free
Protected Phases	5	2	1	6	8	4	4	
Permitted Phases								Free
Detector Phase	5	2	1	6	8	4	4	
Switch Phase								
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	30.5	30.5	
Total Split (s)	21.5	41.5	8.0	28.0	20.0	30.5	30.5	0.0
Total Split (%)	21.5%	41.5%	8.0%	28.0%	20.0%	30.5%	30.5%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	C-Max	Max	None	Max	None	None	None	
Act Effct Green (s)	32.9	56.1	4.0	24.0	13.7	13.4	12.4	100.0
Actuated g/C Ratio	0.33	0.56	0.04	0.24	0.14	0.13	0.12	1.00
v/c Ratio	0.66	0.58	0.46	0.64	0.68	0.37	0.40	0.21
Control Delay	34.9	18.6	68.2	30.2	52.8	41.8	43.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	18.6	68.2	30.2	52.8	41.8	43.5	0.3
LOS	C	B	E	C	D	D	D	A
Approach Delay		25.1		32.2	52.8		14.7	
Approach LOS		C		C	D		B	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 5:EBL, Start of Green, Master Intersection
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 26.3 — Intersection LOS: C
Intersection Capacity Utilization 60.4% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	689	894	152	30	397	142	111	21	21	125	30	303
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.97	1.00
Satd. Flow (prot)	3433	3462		1770	3400			1764		1681	1717	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.97	1.00
Satd. Flow (perm)	3433	3462		1770	3400			1764		1681	1717	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	749	972	165	33	432	154	121	23	23	136	33	329
RTOR Reduction (vph)	0	10	0	0	94	0	0	6	0	0	0	0
Lane Group Flow (vph)	749	1127	0	33	492	0	0	161	0	84	85	329
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	29.8	51.5		2.4	22.6			13.7		12.4	12.4	100.0
Effective Green, g (s)	31.3	54.5		2.4	25.6			13.7		13.4	12.4	100.0
Actuated g/C Ratio	0.31	0.54		0.02	0.26			0.14		0.13	0.12	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0			4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	1075	1887		42	870			242		225	213	1583
v/s Ratio Prot	c0.22	c0.33		0.02	c0.14			c0.09		c0.05	0.05	
v/s Ratio Perm												0.21
v/c Ratio	0.70	0.60		0.79	0.57			0.67		0.37	0.40	0.21
Uniform Delay, d1	30.2	15.3		48.5	32.4			41.0		39.5	40.4	0.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	3.7	1.4		62.3	2.7			6.7		1.0	1.2	0.3
Delay (s)	33.9	16.8		110.8	35.0			47.7		40.5	41.6	0.3
Level of Service	C	B		F	D			D		D	D	A
Approach Delay (s)		23.6			39.1			47.7			14.1	
Approach LOS		C			D			D			B	

Intersection Summary

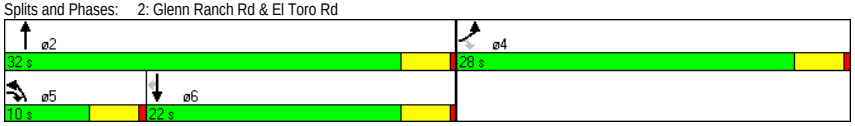
HCM Average Control Delay	26.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	60.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	550	180	180	1100	550	270
Turn Type		pm+ov	Prot			Perm
Protected Phases	4	5	5	2	6	
Permitted Phases		4				6
Detector Phase	4	5	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	8.0	20.0	20.0	20.0
Total Split (s)	28.0	10.0	10.0	32.0	22.0	22.0
Total Split (%)	46.7%	16.7%	16.7%	53.3%	36.7%	36.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead		Lag	Lag
Lead-Lag Optimize?		Yes	Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	21.4	31.6	6.1	25.0	14.9	14.9
Actuated g/C Ratio	0.39	0.58	0.11	0.46	0.27	0.27
v/c Ratio	0.86	0.21	0.99	0.74	0.62	0.45
Control Delay	31.0	4.5	95.8	15.8	20.8	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	4.5	95.8	15.8	20.8	5.1
LOS	C	A	F	B	C	A
Approach Delay	24.4			27.1	15.7	
Approach LOS	C			C	B	

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 54.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 23.1		Intersection LOS: C	
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Glenn Ranch Rd & El Toro Rd



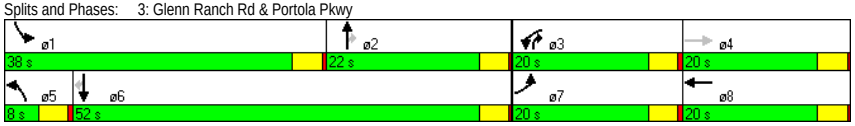
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	550	180	180	1100	550	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	3539	3539	1583
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	1770	3539	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	598	196	196	1196	598	293
RTOR Reduction (vph)	0	38	0	0	0	213
Lane Group Flow (vph)	598	158	196	1196	598	80
Turn Type		pm+ov	Prot			Perm
Protected Phases	4	5	5	2	6	
Permitted Phases		4				6
Actuated Green, G (s)	21.4	27.5	6.1	25.0	14.9	14.9
Effective Green, g (s)	21.4	27.5	6.1	25.0	14.9	14.9
Actuated g/C Ratio	0.39	0.51	0.11	0.46	0.27	0.27
Clearance Time (s)	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
Lane Grp Cap (vph)	696	917	198	1626	969	434
v/s Ratio Prot	c0.34	0.02	c0.11	c0.34	0.17	
v/s Ratio Perm		0.08				0.05
v/c Ratio	0.86	0.17	0.99	0.74	0.62	0.18
Uniform Delay, d1	15.1	7.3	24.1	12.0	17.3	15.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.3	0.1	60.4	1.8	1.2	0.2
Delay (s)	25.4	7.4	84.5	13.8	18.4	15.3
Level of Service	C	A	F	B	B	B
Approach Delay (s)	21.0			23.7	17.4	
Approach LOS	C			C	B	

Intersection Summary				
HCM Average Control Delay	21.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.80			
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	67.5%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	70	30	400	20	770	60	860	350	1140	1860	70
Turn Type	Prot		Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7		3	8		5	2	3	1	6	
Permitted Phases		4			Free			2			6
Detector Phase	7	4	3	8		5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	0.0	8.0	22.0	20.0	38.0	52.0	52.0
Total Split (%)	20.0%	20.0%	20.0%	20.0%	0.0%	8.0%	22.0%	20.0%	38.0%	52.0%	52.0%
Yellow Time (s)	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	None	None	None	None	None
Act Effct Green (s)	16.2	7.2	15.0	12.1	90.3	4.0	18.0	37.1	34.0	49.7	49.7
Actuated g/C Ratio	0.18	0.08	0.17	0.13	1.00	0.04	0.20	0.41	0.38	0.55	0.55
v/c Ratio	0.24	0.41	0.76	0.05	0.53	0.43	0.92	0.46	0.96	0.72	0.08
Control Delay	35.1	22.4	45.7	36.1	1.3	51.9	51.5	6.7	45.8	17.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	22.4	45.7	36.1	1.3	51.9	51.5	6.7	45.8	17.9	3.1
LOS	D	C	D	D	A	D	D	A	D	B	A
Approach Delay		27.1		16.8			39.1			27.9	
Approach LOS		C		B			D			C	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 90.3			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 28.1		Intersection LOS: C	
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Glenn Ranch Rd & Portola Pkwy



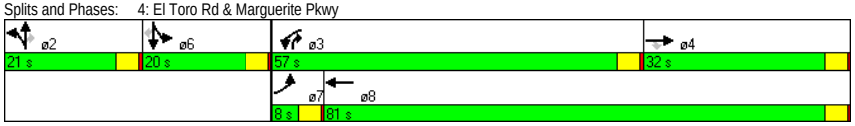
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	30	90	400	20	770	60	860	350	1140	1860	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	0.89		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)	1770	3142		3433	3539	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3142		3433	3539	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	33	98	435	22	837	65	935	380	1239	2022	76
RTOR Reduction (vph)	0	69	0	0	0	0	0	0	189	0	0	36
Lane Group Flow (vph)	76	62	0	435	22	837	65	935	191	1239	2022	40
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		Perm
Protected Phases	7			3	8		5	2	3	1	6	
Permitted Phases		4				Free			2			6
Actuated Green, G (s)	15.0	9.6		15.1	9.7	93.6	3.2	18.9	34.0	34.0	49.7	49.7
Effective Green, g (s)	15.0	9.6		15.1	9.7	93.6	3.2	18.9	34.0	34.0	49.7	49.7
Actuated g/C Ratio	0.16	0.10		0.16	0.10	1.00	0.03	0.20	0.36	0.36	0.53	0.53
Clearance Time (s)	4.0	4.0		4.0	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	3.0	3.0	3.0
Lane Grp Cap (vph)	284	322		554	367	1583	117	1027	643	1247	2700	841
v/s Ratio Prot	0.04			c0.13	0.01		0.02	c0.18	0.05	c0.36	0.40	
v/s Ratio Perm		0.02				c0.53			0.07			0.03
v/c Ratio	0.27	0.19		0.79	0.06	0.53	0.56	0.91	0.30	0.99	0.75	0.05
Uniform Delay, d1	34.5	38.5		37.7	37.8	0.0	44.5	36.5	21.3	29.7	17.1	10.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.3		7.2	0.1	1.3	5.6	11.8	0.3	23.8	1.2	0.0
Delay (s)	35.0	38.7		44.9	37.9	1.3	50.1	48.3	21.5	53.5	18.3	10.6
Level of Service	C	D		D	D	A	D	D	C	D	B	B
Approach Delay (s)		37.4			16.6			41.0			31.2	
Approach LOS		D			B			D			C	

Intersection Summary					
HCM Average Control Delay		30.5	HCM Level of Service		C
HCM Volume to Capacity ratio		0.86			
Actuated Cycle Length (s)		93.6	Sum of lost time (s)		12.0
Intersection Capacity Utilization		77.2%	ICU Level of Service		D
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	10	730	490	760	270	110	40	960	10	40	10
Turn Type	Prot		Perm	Prot		Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8	2	2	3	6	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	2	2	3	6	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	8.0	32.0	32.0	57.0	81.0	21.0	21.0	57.0	20.0	20.0	20.0
Total Split (%)	6.2%	24.6%	24.6%	43.8%	62.3%	16.2%	16.2%	43.8%	15.4%	15.4%	15.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag			Lead			
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			Yes			
Recall Mode	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	4.0	28.1	28.1	53.2	83.8	9.7	9.7	63.8	6.9	6.9	6.9
Actuated g/C Ratio	0.04	0.25	0.25	0.48	0.75	0.09	0.09	0.57	0.06	0.06	0.06
v/c Ratio	0.09	0.89	0.76	0.51	0.12	0.43	0.36	0.99	0.10	0.21	0.10
Control Delay	56.3	54.7	18.0	22.5	4.9	59.3	52.5	40.7	53.4	53.0	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	54.7	18.0	22.5	4.9	59.3	52.5	40.7	53.4	53.0	27.9
LOS	E	D	B	C	A	E	D	D	D	D	C
Approach Delay		40.1			17.8		42.6			49.2	
Approach LOS		D			B		D			D	

Intersection Summary			
Cycle Length: 130			
Actuated Cycle Length: 111.8			
Natural Cycle: 130			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 34.3		Intersection LOS: C	
Intersection Capacity Utilization 93.0%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: El Toro Rd & Marguerite Pkwy



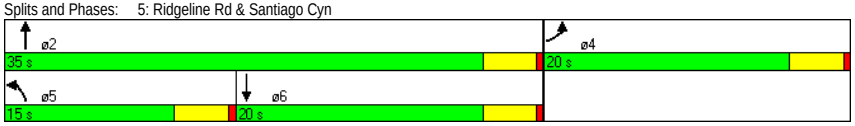
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	730	490	760	270	10	110	40	960	10	40	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95		0.91	0.91	1.00	1.00	0.91	0.91
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3520		1610	3294	1583	1770	3379	1441
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.97	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3520		1610	3294	1583	1770	3379	1441
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	793	533	826	293	11	120	43	1043	11	43	11
RTOR Reduction (vph)	0	0	296	0	1	0	0	0	164	0	1	10
Lane Group Flow (vph)	11	793	237	826	303	0	60	103	879	11	43	0
Turn Type	Prot		Perm	Prot			Split		pm+ov	Split		Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	0.8	31.4	31.4	53.2	83.8		9.7	9.7	62.9	5.7	5.7	5.7
Effective Green, g (s)	0.8	31.4	31.4	53.2	83.8		9.7	9.7	62.9	5.7	5.7	5.7
Actuated g/C Ratio	0.01	0.27	0.27	0.46	0.72		0.08	0.08	0.54	0.05	0.05	0.05
Clearance Time (s)	4.0	4.0	4.0	4.0	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	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	24	958	429	1574	2543		135	275	858	87	166	71
v/s Ratio Prot	0.00	c0.22		0.24	0.09		0.04	0.03	c0.47	0.01	c0.01	
v/s Ratio Perm			0.15						0.09			0.00
v/c Ratio	0.46	0.83	0.55	0.52	0.12		0.44	0.37	1.02	0.13	0.26	0.01
Uniform Delay, d1	57.4	39.8	36.3	22.4	4.9		50.6	50.3	26.6	52.8	53.1	52.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.2	6.0	1.5	0.3	0.0		2.3	0.9	37.0	0.7	0.8	0.0
Delay (s)	70.6	45.7	37.8	22.7	4.9		52.9	51.1	63.5	53.4	54.0	52.5
Level of Service	E	D	D	C	A		D	D	E	D	D	D
Approach Delay (s)		42.8			17.9			61.9			53.6	
Approach LOS		D			B			E			D	

Intersection Summary					
HCM Average Control Delay	41.6	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.92				
Actuated Cycle Length (s)	116.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	93.0%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Volume (vph)	40	210	1250	580
Turn Type		Prot		
Protected Phases	4	5	2	6
Permitted Phases				
Detector Phase	4	5	2	6
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	20.0	15.0	35.0	20.0
Total Split (%)	36.4%	27.3%	63.6%	36.4%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag		Lead		Lag
Lead-Lag Optimize?		Yes		Yes
Recall Mode	None	None	None	None
Act Effct Green (s)	8.1	10.7	27.8	17.6
Actuated g/C Ratio	0.21	0.28	0.72	0.45
v/c Ratio	0.35	0.47	0.54	0.42
Control Delay	9.6	19.0	5.2	12.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.6	19.0	5.2	12.6
LOS	A	B	A	B
Approach Delay	9.6		7.2	12.6
Approach LOS	A		A	B

Intersection Summary			
Cycle Length: 55			
Actuated Cycle Length: 38.7			
Natural Cycle: 55			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 49.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 5: Ridgeline Rd & Santiago Cyn



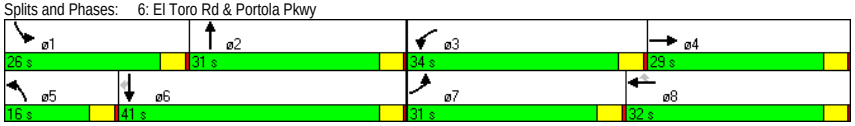
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	40	100	210	1250	580	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	0.95	0.95	
Frt	0.90		1.00	1.00	0.99	
Flt Protected	0.99		0.95	1.00	1.00	
Satd. Flow (prot)	1659		1770	3539	3505	
Flt Permitted	0.99		0.95	1.00	1.00	
Satd. Flow (perm)	1659		1770	3539	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	109	228	1359	630	43
RTOR Reduction (vph)	95	0	0	0	8	0
Lane Group Flow (vph)	57	0	228	1359	665	0
Turn Type			Prot			
Protected Phases	4		5	2	6	
Permitted Phases						
Actuated Green, G (s)	5.3		7.3	26.9	15.6	
Effective Green, g (s)	5.3		7.3	26.9	15.6	
Actuated g/C Ratio	0.13		0.18	0.67	0.39	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	219		321	2368	1360	
v/s Ratio Prot	c0.03		c0.13	c0.38	0.19	
v/s Ratio Perm						
v/c Ratio	0.26		0.71	0.57	0.49	
Uniform Delay, d1	15.7		15.5	3.6	9.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.6		7.2	0.3	0.3	
Delay (s)	16.3		22.7	3.9	9.6	
Level of Service	B		C	A	A	
Approach Delay (s)	16.3			6.6	9.6	
Approach LOS	B			A	A	

Intersection Summary			
HCM Average Control Delay	8.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	490	670	490	340	600	750	410	1150	590	1700	850
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		Perm
Protected Phases	7	4		3	8		5	2	1	6	
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	6
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	20.0
Total Split (s)	31.0	29.0	0.0	34.0	32.0	32.0	16.0	31.0	26.0	41.0	41.0
Total Split (%)	25.8%	24.2%	0.0%	28.3%	26.7%	26.7%	13.3%	25.8%	21.7%	34.2%	34.2%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	27.0	27.1	120.0	27.9	28.0	28.0	12.0	27.0	22.0	37.0	37.0
Actuated g/C Ratio	0.22	0.23	1.00	0.23	0.23	0.23	0.10	0.22	0.18	0.31	0.31
v/c Ratio	1.34	0.63	0.37	0.90	0.55	1.38	1.30	0.89	1.02	1.18	1.14
Control Delay	206.0	45.4	0.8	69.7	42.5	204.3	197.5	51.6	89.2	124.9	96.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	206.0	45.4	0.8	69.7	42.5	204.3	197.5	51.6	89.2	124.9	96.3
LOS	F	D	A	E	D	F	F	D	F	F	F
Approach Delay		79.9			119.8			88.8		110.5	
Approach LOS		E			F			F		F	

Intersection Summary			
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.38			
Intersection Signal Delay: 101.9		Intersection LOS: F	
Intersection Capacity Utilization 101.1%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	670	490	340	600	750	410	1150	50	590	1700	850
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		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)	1770	5085	1425	1770	5085	1583	3433	6368		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6368		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	533	728	533	370	652	815	446	1250	54	641	1848	924
RTOR Reduction (vph)	0	0	0	0	0	222	0	39	0	0	0	325
Lane Group Flow (vph)	533	728	533	370	652	593	446	1265	0	641	1848	599
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8						6
Actuated Green, G (s)	27.0	27.1	120.0	27.9	28.0	28.0	12.0	27.0		22.0	37.0	37.0
Effective Green, g (s)	27.0	27.1	120.0	27.9	28.0	28.0	12.0	27.0		22.0	37.0	37.0
Actuated g/C Ratio	0.22	0.23	1.00	0.23	0.23	0.23	0.10	0.22		0.18	0.31	0.31
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	398	1148	1425	412	1187	369	343	1433		629	1568	488
v/s Ratio Prot	c0.30	0.14		0.21	0.13		c0.13	0.20		0.19	0.36	
v/s Ratio Perm			c0.37			c0.37						c0.38
v/c Ratio	1.34	0.63	0.37	0.90	0.55	1.61	1.30	0.88		1.02	1.18	1.23
Uniform Delay, d1	46.5	42.0	0.0	44.7	40.5	46.0	54.0	45.0		49.0	41.5	41.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	168.8	1.2	0.8	21.6	0.5	285.1	154.9	6.8		40.8	87.3	119.3
Delay (s)	215.3	43.1	0.8	66.2	41.0	331.1	208.9	51.8		89.8	128.8	160.8
Level of Service	F	D	A	E	D	F	F	D		F	F	F
Approach Delay (s)		81.7			174.8			91.8			130.2	
Approach LOS		F			F			F			F	

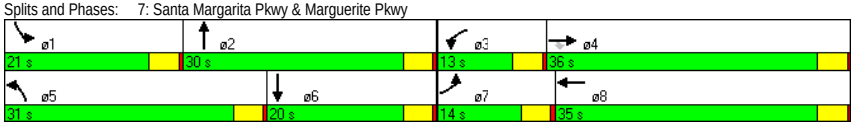
Intersection Summary					
HCM Average Control Delay	122.0	HCM Level of Service		F	
HCM Volume to Capacity ratio	1.32				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	101.1%	ICU Level of Service		G	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	80	1560	620	150	880	450	410	220	490
Turn Type	Prot		Perm	Prot		Prot		Prot	
Protected Phases	7	4		3	8	5	2	1	6
Permitted Phases			4						
Detector Phase	7	4	4	3	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	14.0	36.0	36.0	13.0	35.0	31.0	30.0	21.0	20.0
Total Split (%)	14.0%	36.0%	36.0%	13.0%	35.0%	31.0%	30.0%	21.0%	20.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.0	32.0	32.0	9.0	34.1	27.0	26.9	16.1	16.0
Actuated g/C Ratio	0.09	0.32	0.32	0.09	0.34	0.27	0.27	0.16	0.16
v/c Ratio	0.55	1.04	0.77	1.03	0.66	1.02	0.62	0.84	1.01
Control Delay	56.5	68.3	12.9	124.8	25.0	84.6	25.6	65.8	74.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	68.3	12.9	124.8	25.0	84.6	25.6	65.8	74.3
LOS	E	E	B	F	C	F	C	E	E
Approach Delay		52.7			36.8		50.9		72.0
Approach LOS		D			D		D		E

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 51.5		Intersection LOS: D	
Intersection Capacity Utilization 93.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 7: Santa Margarita Pkwy & Marguerite Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1560	620	150	880	240	450	410	190	220	490	100
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	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	4922		1770	3371		1770	3449	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	4922		1770	3371		1770	3449	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	1696	674	163	957	261	489	446	207	239	533	109
RTOR Reduction (vph)	0	0	368	0	159	0	0	139	0	0	84	0
Lane Group Flow (vph)	87	1696	306	163	1059	0	489	514	0	239	558	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	7.7	32.8	32.8	9.0	34.1		27.0	26.9		16.1	16.0	
Effective Green, g (s)	7.7	32.8	32.8	9.0	34.1		27.0	26.9		16.1	16.0	
Actuated g/C Ratio	0.08	0.33	0.33	0.09	0.34		0.27	0.27		0.16	0.16	
Clearance Time (s)	4.0	4.0	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		3.0	3.0	
Lane Grp Cap (vph)	135	1655	515	158	1665		474	900		283	547	
v/s Ratio Prot	0.05	c0.33		c0.09	0.22		c0.28	0.15		0.14	c0.16	
v/s Ratio Perm			0.19									
v/c Ratio	0.64	1.02	0.59	1.03	0.64		1.03	0.57		0.84	1.02	
Uniform Delay, d1	45.2	34.0	28.4	45.9	28.1		36.9	32.0		41.1	42.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	10.1	28.7	1.8	80.2	0.8		49.7	0.9		20.0	43.6	
Delay (s)	55.3	62.7	30.3	126.1	28.9		86.6	32.8		61.1	86.0	
Level of Service	E	E	C	F	C		F	C		E	F	
Approach Delay (s)		53.5			40.4			55.9			79.2	
Approach LOS		D			D			E			E	

Intersection Summary					
HCM Average Control Delay	54.7	HCM Level of Service		D	
HCM Volume to Capacity ratio	1.03				
Actuated Cycle Length (s)	100.8	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	93.5%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	260	250	150	240	50	560	440	570
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	17.0	20.0	17.0	20.0	11.0	24.0	29.0	42.0
Total Split (%)	18.9%	22.2%	18.9%	22.2%	12.2%	26.7%	32.2%	46.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	13.0	14.1	11.6	12.6	6.6	18.8	24.9	41.4
Actuated g/C Ratio	0.15	0.17	0.14	0.15	0.08	0.22	0.29	0.48
v/c Ratio	1.04	0.56	0.68	0.75	0.39	0.87	0.92	0.46
Control Delay	106.0	30.3	50.9	26.5	47.7	39.5	57.0	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.0	30.3	50.9	26.5	47.7	39.5	57.0	13.7
LOS	F	C	D	C	D	D	E	B
Approach Delay		64.3		32.4		40.1		29.9
Approach LOS		E		C		D		C

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 85.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.04			
Intersection Signal Delay: 39.2		Intersection LOS: D	
Intersection Capacity Utilization 85.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 8: Los Alisos Blvd & Marguerite Pkwy

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	250	70	150	240	230	50	560	120	440	570	160
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	0.93		1.00	0.97		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)	1770	3423		1770	3279		1770	3446		1770	3423	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3423		1770	3279		1770	3446		1770	3423	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	272	76	163	261	250	54	609	130	478	620	174
RTOR Reduction (vph)	0	59	0	0	196	0	0	92	0	0	84	0
Lane Group Flow (vph)	283	289	0	163	315	0	54	647	0	478	710	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.0	14.1		11.6	12.7		4.0	20.5		24.9	41.4	
Effective Green, g (s)	13.0	14.1		11.6	12.7		4.0	20.5		24.9	41.4	
Actuated g/C Ratio	0.15	0.16		0.13	0.15		0.05	0.24		0.29	0.48	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	264	554		236	478		81	811		506	1627	
v/s Ratio Prot	c0.16	0.08		0.09	c0.10		0.03	c0.19		c0.27	0.21	
v/s Ratio Perm												
v/c Ratio	1.07	0.52		0.69	0.66		0.67	0.80		0.94	0.44	
Uniform Delay, d1	37.0	33.4		36.0	35.1		40.9	31.4		30.4	15.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	75.8	0.9		8.4	3.3		18.8	5.5		26.6	0.2	
Delay (s)	112.8	34.3		44.5	38.4		59.7	36.9		57.0	15.3	
Level of Service	F	C		D	D		E	D		E	B	
Approach Delay (s)		69.5			39.9			38.4			31.0	
Approach LOS		E			D			D			C	

Intersection Summary					
HCM Average Control Delay	41.7	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.87				
Actuated Cycle Length (s)	87.1	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	85.4%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	310	460	20	280	150	940	150	1710
Turn Type	Prot		Prot		Prot		Prot	
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	31.0	41.0	10.0	20.0	15.0	72.0	27.0	84.0
Total Split (%)	20.7%	27.3%	6.7%	13.3%	10.0%	48.0%	18.0%	56.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	27.0	32.9	12.3	14.2	11.0	72.7	18.3	80.0
Actuated g/C Ratio	0.18	0.22	0.08	0.10	0.07	0.49	0.12	0.54
v/c Ratio	1.04	0.58	0.15	0.74	1.24	0.64	0.74	1.16
Control Delay	119.5	40.0	63.9	57.7	210.4	28.3	82.8	104.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.5	40.0	63.9	57.7	210.4	28.3	82.8	104.1
LOS	F	D	E	E	F	C	F	F
Approach Delay		65.4		58.0		51.4		102.7
Approach LOS		E		E		D		F

Intersection Summary			
Cycle Length: 150			
Actuated Cycle Length: 148.2			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.24			
Intersection Signal Delay: 79.4		Intersection LOS: E	
Intersection Capacity Utilization 110.0%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 9: Portola Pkwy & Los Alisos Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	460	200	20	280	100	150	940	90	150	1710	510
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	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.96		1.00	0.99		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)	1770	4854		1770	4884		1770	3493		1770	3417	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	4854		1770	4884		1770	3493		1770	3417	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	337	500	217	22	304	109	163	1022	98	163	1859	554
RTOR Reduction (vph)	0	156	0	0	89	0	0	46	0	0	238	0
Lane Group Flow (vph)	337	561	0	22	324	0	163	1074	0	163	2175	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	27.0	32.9		10.0	15.9		11.0	72.7		18.3	80.0	
Effective Green, g (s)	27.0	32.9		10.0	15.9		11.0	72.7		18.3	80.0	
Actuated g/C Ratio	0.18	0.22		0.07	0.11		0.07	0.48		0.12	0.53	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	319	1065		118	518		130	1694		216	1824	
v/s Ratio Prot	c0.19	c0.12		0.01	c0.07		c0.09	0.31		0.09	c0.64	
v/s Ratio Perm												
v/c Ratio	1.06	0.53		0.19	0.62		1.25	0.63		0.75	1.19	
Uniform Delay, d1	61.5	51.6		66.1	64.1		69.5	28.7		63.6	35.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	66.0	0.5		0.8	2.4		162.4	0.8		13.9	92.4	
Delay (s)	127.5	52.1		66.9	66.5		231.8	29.5		77.5	127.3	
Level of Service	F	D		E	E		F	C		E	F	
Approach Delay (s)		76.2			66.5			55.2			124.2	
Approach LOS		E			E			E			F	

Intersection Summary					
HCM Average Control Delay	93.5	HCM Level of Service	F		
HCM Volume to Capacity ratio	1.07				
Actuated Cycle Length (s)	149.9	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	110.0%	ICU Level of Service	H		
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	70	10	670	120	20	390
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.80	0.80	0.94	0.94	0.83	0.83
Hourly flow rate (vph)	88	12	713	128	24	470
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.87					
vC, conflicting volume	1231	713			840	
vC1, stage 1 conf vol	713					
vC2, stage 2 conf vol	518					
vCu, unblocked vol	1190	713			840	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	97			97	
cM capacity (veh/h)	400	432			795	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	100	713	128	24	470
Volume Left	88	0	0	24	0
Volume Right	12	0	128	0	0
cSH	404	1700	1700	795	1700
Volume to Capacity	0.25	0.42	0.08	0.03	0.28
Queue Length 95th (ft)	24	0	0	2	0
Control Delay (s)	16.8	0.0	0.0	9.7	0.0
Lane LOS	C			A	
Approach Delay (s)	16.8	0.0		0.5	
Approach LOS	C				

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	46.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	50	60	650	400	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.77	0.77	0.95	0.95	0.94	0.94
Hourly flow rate (vph)	13	65	63	684	426	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	894	426	436			
vC1, stage 1 conf vol	426					
vC2, stage 2 conf vol	468					
vCu, unblocked vol	894	426	436			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	89	94			
cM capacity (veh/h)	471	577	1120			

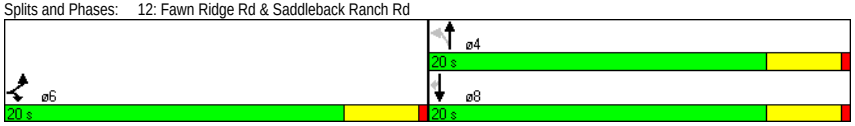
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	78	63	342	342	426	11
Volume Left	13	63	0	0	0	0
Volume Right	65	0	0	0	0	11
cSH	556	1120	1700	1700	1700	1700
Volume to Capacity	0.14	0.06	0.20	0.20	0.25	0.01
Queue Length 95th (ft)	12	4	0	0	0	0
Control Delay (s)	12.5	8.4	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	12.5	0.7			0.0	
Approach LOS	B					

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	38.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	60	130	540	340	20
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Detector Phase	6	6	4	4	8	8
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	None	None	None	None
Act Effct Green (s)	16.0	16.0	15.5	15.5	15.5	15.5
Actuated g/C Ratio	0.41	0.41	0.39	0.39	0.39	0.39
v/c Ratio	0.05	0.11	0.46	0.89	0.50	0.03
Control Delay	7.7	3.1	14.2	30.2	11.9	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	3.1	14.2	30.2	11.9	4.2
LOS	A	A	B	C	B	A
Approach Delay	4.6			27.1	11.5	
Approach LOS	A			C	B	

Intersection Summary			
Cycle Length: 40			
Actuated Cycle Length: 39.5			
Natural Cycle: 45			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 20.5		Intersection LOS: C	
Intersection Capacity Utilization 38.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 12: Fawn Ridge Rd & Saddleback Ranch Rd



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	30	60	130	540	340	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1583	1770	1863	1863	1583
Flt Permitted	0.95	1.00	0.47	1.00	1.00	1.00
Satd. Flow (perm)	1770	1583	873	1863	1863	1583
Peak-hour factor, PHF	0.79	0.79	0.83	0.83	0.93	0.93
Adj. Flow (vph)	38	76	157	651	366	22
RTOR Reduction (vph)	0	45	0	0	0	13
Lane Group Flow (vph)	38	31	157	651	366	9
Turn Type		Prot	Perm			Perm
Protected Phases	6	6		4	8	
Permitted Phases			4			8
Actuated Green, G (s)	16.0	16.0	15.5	15.5	15.5	15.5
Effective Green, g (s)	16.0	16.0	15.5	15.5	15.5	15.5
Actuated g/C Ratio	0.41	0.41	0.39	0.39	0.39	0.39
Clearance Time (s)	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
Lane Grp Cap (vph)	717	641	343	731	731	621
v/s Ratio Prot	c0.02	0.02		c0.35	0.20	
v/s Ratio Perm			0.18			0.01
v/c Ratio	0.05	0.05	0.46	0.89	0.50	0.01
Uniform Delay, d1	7.1	7.1	8.9	11.2	9.1	7.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.1	1.0	13.1	0.5	0.0
Delay (s)	7.3	7.3	9.9	24.3	9.6	7.3
Level of Service	A	A	A	C	A	A
Approach Delay (s)	7.3			21.5	9.5	
Approach LOS	A			C	A	

Intersection Summary				
HCM Average Control Delay	16.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	39.5	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	38.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	430	20	700	90
Turn Type		Prot		
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	8.0	20.0	20.0
Total Split (s)	32.0	8.0	40.0	20.0
Total Split (%)	53.3%	13.3%	66.7%	33.3%
Yellow Time (s)	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	Min	None	Min	None
Act Effct Green (s)	31.0	4.3	32.3	8.5
Actuated g/C Ratio	0.69	0.10	0.72	0.19
v/c Ratio	0.47	0.13	0.57	0.35
Control Delay	7.3	24.5	7.1	18.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	7.3	24.5	7.1	18.6
LOS	A	C	A	B
Approach Delay	7.3		7.6	18.6
Approach LOS	A		A	B

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 44.8			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 8.3		Intersection LOS: A	
Intersection Capacity Utilization 49.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 13: Santiago Cyn & Ridgeline Rd

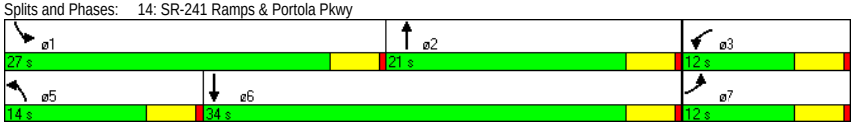
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	430	110	20	700	90	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frt	0.97		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	1811		1770	1863	1745	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	1811		1770	1863	1745	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	467	120	22	761	98	22
RTOR Reduction (vph)	11	0	0	0	16	0
Lane Group Flow (vph)	576	0	22	761	104	0
Turn Type			Prot			
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	29.6		0.6	34.2	6.7	
Effective Green, g (s)	29.6		0.6	34.2	6.7	
Actuated g/C Ratio	0.61		0.01	0.70	0.14	
Clearance Time (s)	4.0		4.0	4.0	4.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	1096		22	1303	239	
v/s Ratio Prot	0.32		0.01	c0.41	c0.06	
v/s Ratio Perm						
v/c Ratio	0.53		1.00	0.58	0.44	
Uniform Delay, d1	5.6		24.1	3.7	19.4	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.5		191.9	0.7	1.3	
Delay (s)	6.0		216.0	4.4	20.6	
Level of Service	A		F	A	C	
Approach Delay (s)	6.0			10.4	20.6	
Approach LOS	A			B	C	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	48.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	WBL	NBL	NBT	SBL	SBT
Lane Configurations						
Volume (vph)	190	170	300	880	1200	1080
Turn Type	Prot	Prot	Prot		Prot	
Protected Phases	7	3	5	2	1	6
Permitted Phases						
Detector Phase	7	3	5	2	1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	8.0	20.0
Total Split (s)	12.0	12.0	14.0	21.0	27.0	34.0
Total Split (%)	20.0%	20.0%	23.3%	35.0%	45.0%	56.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead	Lag	Lead	Lag
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	8.0	7.6	9.4	16.1	23.0	29.6
Actuated g/C Ratio	0.14	0.13	0.16	0.27	0.39	0.50
v/c Ratio	0.86	0.42	0.59	0.69	0.98	0.66
Control Delay	61.5	27.0	28.1	22.3	39.8	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	27.0	28.1	22.3	39.8	13.3
LOS	E	C	C	C	D	B
Approach Delay				23.8		27.3
Approach LOS				C		C

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 59.1			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 27.9		Intersection LOS: C	
Intersection Capacity Utilization 71.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 14: SR-241 Ramps & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	0	0	170	0	0	300	880	0	1200	1080	0
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	
Lane Util. Factor	1.00			0.97			0.97	0.91		0.97	0.95	
Frt	1.00			1.00			1.00	1.00		1.00	1.00	
Flt Protected	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770			3433			3433	5085		3433	3539	
Flt Permitted	0.95			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770			3433			3433	5085		3433	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	207	0	0	185	0	0	326	957	0	1304	1174	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	207	0	0	185	0	0	326	957	0	1304	1174	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7			3			5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	8.0			8.0			9.4	16.1		23.0	29.7	
Effective Green, g (s)	8.0			8.0			9.4	16.1		23.0	29.7	
Actuated g/C Ratio	0.14			0.14			0.16	0.27		0.39	0.50	
Clearance Time (s)	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	
Lane Grp Cap (vph)	240			465			546	1385		1336	1778	
v/s Ratio Prot	c0.12			0.05			0.09	0.19		c0.38	c0.33	
v/s Ratio Perm												
v/c Ratio	0.86			0.40			0.60	0.69		0.98	0.66	
Uniform Delay, d1	25.0			23.3			23.1	19.3		17.8	10.9	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	25.8			0.6			1.8	1.5		19.0	0.9	
Delay (s)	50.8			23.9			24.9	20.8		36.7	11.9	
Level of Service	D			C			C	C		D	B	
Approach Delay (s)		50.8			23.9			21.8			25.0	
Approach LOS		D			C			C			C	

Intersection Summary					
HCM Average Control Delay	25.2	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.81				
Actuated Cycle Length (s)	59.1	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	71.8%	ICU Level of Service		C	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	28	47	705	430	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	30	51	766	467	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	None	
Median storage veh)				2		
Upstream signal (ft)				480		
pX, platoon unblocked						
vC, conflicting volume	957	238	476			
vC1, stage 1 conf vol	472					
vC2, stage 2 conf vol	485					
vCu, unblocked vol	957	238	476			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	96	95			
cM capacity (veh/h)	453	763	1082			

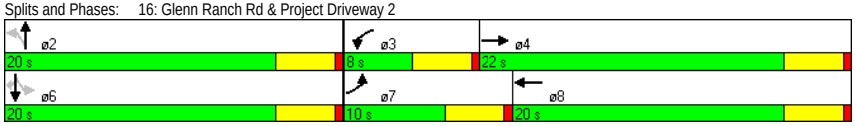
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	4	30	51	383	383	312	164
Volume Left	4	0	51	0	0	0	0
Volume Right	0	30	0	0	0	0	9
cSH	453	763	1082	1700	1700	1700	1700
Volume to Capacity	0.01	0.04	0.05	0.23	0.23	0.18	0.10
Queue Length 95th (ft)	1	3	4	0	0	0	0
Control Delay (s)	13.0	9.9	8.5	0.0	0.0	0.0	0.0
Lane LOS	B	A	A				
Approach Delay (s)	10.3		0.5			0.0	
Approach LOS	B						

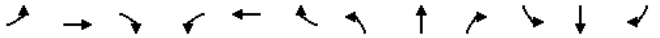
Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		29.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	127	746	34	368	128	0	13	0	72
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	22.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	20.0%	44.0%	16.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	6.1	17.6	4.1	12.8	16.2	16.2		16.2	16.2
Actuated g/C Ratio	0.14	0.39	0.09	0.29	0.36	0.36		0.36	0.36
v/c Ratio	0.57	0.72	0.23	0.42	0.28	0.04		0.03	0.12
Control Delay	33.1	15.5	24.8	14.6	13.9	0.1		11.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	33.1	15.5	24.8	14.6	13.9	0.1		11.7	4.5
LOS	C	B	C	B	B	A		B	A
Approach Delay		17.6		15.4		11.7		5.6	
Approach LOS		B		B		B		A	

Intersection Summary		
Cycle Length: 50		
Actuated Cycle Length: 44.8		
Natural Cycle: 50		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.72		
Intersection Signal Delay: 15.9	Intersection LOS: B	
Intersection Capacity Utilization 53.4%	ICU Level of Service A	
Analysis Period (min) 15		

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	127	746	178	34	368	22	128	0	24	13	0	72
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
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3437		1770	3509		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.74	1.00
Satd. Flow (perm)	1770	3437		1770	3509		1394	1583			1379	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	138	811	193	37	400	24	139	0	26	14	0	78
RTOR Reduction (vph)	0	41	0	0	9	0	0	17	0	0	0	51
Lane Group Flow (vph)	138	963	0	37	415	0	139	9	0	0	14	27
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	4.6	17.6		1.4	14.4		16.2	16.2			16.2	16.2
Effective Green, g (s)	4.6	17.6		1.4	14.4		16.2	16.2			16.2	16.2
Actuated g/C Ratio	0.10	0.37		0.03	0.31		0.34	0.34			0.34	0.34
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	173	1282		53	1071		478	543			473	543
v/s Ratio Prot	c0.08	c0.28		0.02	0.12			0.01				
v/s Ratio Perm							c0.10				0.01	0.02
v/c Ratio	0.80	0.75		0.70	0.39		0.29	0.02			0.03	0.05
Uniform Delay, d1	20.8	12.9		22.7	12.9		11.3	10.2			10.3	10.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	22.0	2.5		33.1	0.2		1.5	0.1			0.1	0.2
Delay (s)	42.8	15.4		55.8	13.2		12.8	10.3			10.4	10.5
Level of Service	D	B		E	B		B	B			B	B
Approach Delay (s)		18.7			16.6			12.4			10.5	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM Average Control Delay	17.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	47.2	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	53.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

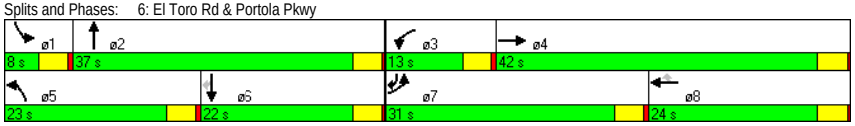
Appendix E

HCM Mitigated LOS Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	450	180	280	60	830	410	580	1950	70	640	430
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		pm+ov
Protected Phases	7	4		3	8		5	2	1	6	7
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	7
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0
Total Split (s)	31.0	42.0	0.0	13.0	24.0	24.0	23.0	37.0	8.0	22.0	31.0
Total Split (%)	31.0%	42.0%	0.0%	13.0%	24.0%	24.0%	23.0%	37.0%	8.0%	22.0%	31.0%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	27.0	41.0	99.3	8.0	20.0	20.0	19.0	33.9	4.0	17.3	48.3
Actuated g/C Ratio	0.27	0.41	1.00	0.08	0.20	0.20	0.19	0.34	0.04	0.17	0.49
v/c Ratio	1.02	0.09	0.21	0.45	0.88	1.08	0.96	0.98	0.55	0.79	0.60
Control Delay	82.5	19.3	0.3	53.9	49.9	95.9	67.3	48.3	62.5	46.4	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.5	19.3	0.3	53.9	49.9	95.9	67.3	48.3	62.5	46.4	22.3
LOS	F	B	A	D	D	F	E	D	E	D	C
Approach Delay		44.7			64.6			52.7		38.3	
Approach LOS		D			E			D		D	

Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 99.3			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 51.3		Intersection LOS: D	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	180	280	60	830	410	580	1950	20	70	640	430
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		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)	1770	5085	1425	1770	5085	1583	3433	6398		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6398		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	489	196	304	65	902	446	630	2120	22	76	696	467
RTOR Reduction (vph)	0	0	0	0	0	94	0	1	0	0	0	3
Lane Group Flow (vph)	489	196	304	65	902	352	630	2141	0	76	696	464
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			Free			8						6
Actuated Green, G (s)	27.0	41.0	101.0	6.9	20.9	20.9	19.0	33.9		3.2	18.1	45.1
Effective Green, g (s)	27.0	41.0	101.0	6.9	20.9	20.9	19.0	33.9		3.2	18.1	45.1
Actuated g/C Ratio	0.27	0.41	1.00	0.07	0.21	0.21	0.19	0.34		0.03	0.18	0.45
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	473	2064	1425	121	1052	328	646	2147		109	911	770
v/s Ratio Prot	c0.28	0.04		0.04	0.18		c0.18	c0.33		0.02	0.14	0.16
v/s Ratio Perm			0.21			c0.22						0.13
v/c Ratio	1.03	0.09	0.21	0.54	0.86	1.07	0.98	1.00		0.70	0.76	0.60
Uniform Delay, d1	37.0	18.5	0.0	45.5	38.6	40.0	40.8	33.5		48.4	39.4	21.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	50.4	0.0	0.3	4.5	7.0	70.2	29.0	18.6		17.6	3.9	1.3
Delay (s)	87.4	18.6	0.3	50.0	45.7	110.2	69.8	52.1		66.1	43.3	22.5
Level of Service	F	B	A	D	D	F	E	D		E	D	C
Approach Delay (s)		47.0			66.2			56.1			36.8	
Approach LOS		D			E			E			D	

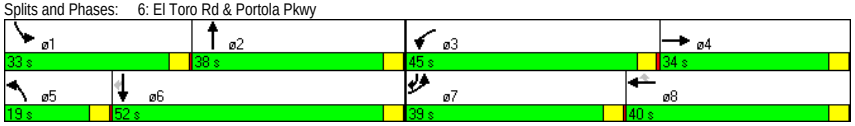
Intersection Summary					
HCM Average Control Delay	53.2	HCM Level of Service		D	
HCM Volume to Capacity ratio	1.00				
Actuated Cycle Length (s)	101.0	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	88.9%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	490	670	490	340	600	750	410	1150	590	1700	850
Turn Type	Prot		Free	Prot		Perm	Prot		Prot		pm+ov
Protected Phases	7	4		3	8		5	2	1	6	7
Permitted Phases			Free			8					6
Detector Phase	7	4		3	8	8	5	2	1	6	7
Switch Phase											
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	8.0	20.0	8.0
Total Split (s)	39.0	34.0	0.0	45.0	40.0	40.0	19.0	38.0	33.0	52.0	39.0
Total Split (%)	26.0%	22.7%	0.0%	30.0%	26.7%	26.7%	12.7%	25.3%	22.0%	34.7%	26.0%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	None	None	None	None
Act Effct Green (s)	35.0	35.5	150.0	35.5	36.0	36.0	15.0	34.0	29.0	48.0	87.0
Actuated g/C Ratio	0.23	0.24	1.00	0.24	0.24	0.24	0.10	0.23	0.19	0.32	0.58
v/c Ratio	1.29	0.61	0.37	0.88	0.53	1.33	1.30	0.90	0.97	1.14	1.00
Control Delay	192.8	54.5	0.8	77.4	51.6	184.7	205.4	65.5	86.9	115.0	59.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	192.8	54.5	0.8	77.4	51.6	184.7	205.4	65.5	86.9	115.0	59.8
LOS	F	D	A	E	D	F	F	E	F	F	E
Approach Delay		79.6			115.8			101.1		94.8	
Approach LOS		E			F			F		F	

Intersection Summary			
Cycle Length: 150			
Actuated Cycle Length: 150			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.33			
Intersection Signal Delay: 97.4		Intersection LOS: F	
Intersection Capacity Utilization 101.1%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 6: El Toro Rd & Portola Pkwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	670	490	340	600	750	410	1150	50	590	1700	850
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	4.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	0.97	0.86		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		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)	1770	5085	1425	1770	5085	1583	3433	6368		3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1425	1770	5085	1583	3433	6368		3433	5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	533	728	533	370	652	815	446	1250	54	641	1848	924
RTOR Reduction (vph)	0	0	0	0	0	235	0	4	0	0	0	8
Lane Group Flow (vph)	533	728	533	370	652	580	446	1300	0	641	1848	916
Parking (#/hr)			0									
Turn Type	Prot		Free	Prot		Perm	Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			Free			8						6
Actuated Green, G (s)	35.0	35.5	150.0	35.5	36.0	36.0	15.0	34.0		29.0	48.0	83.0
Effective Green, g (s)	35.0	35.5	150.0	35.5	36.0	36.0	15.0	34.0		29.0	48.0	83.0
Actuated g/C Ratio	0.23	0.24	1.00	0.24	0.24	0.24	0.10	0.23		0.19	0.32	0.55
Clearance Time (s)	4.0	4.0		4.0	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		3.0	3.0	3.0
Lane Grp Cap (vph)	413	1203	1425	419	1220	380	343	1443		664	1627	918
v/s Ratio Prot	c0.30	0.14		0.21	0.13		c0.13	0.20		0.19	c0.36	0.23
v/s Ratio Perm			c0.37			c0.37						0.35
v/c Ratio	1.29	0.61	0.37	0.88	0.53	1.53	1.30	0.90		0.97	1.14	1.00
Uniform Delay, d1	57.5	51.0	0.0	55.2	49.7	57.0	67.5	56.4		60.0	51.0	33.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	147.9	0.9	0.8	19.2	0.5	250.0	154.9	8.1		26.3	69.3	28.8
Delay (s)	205.4	51.9	0.8	74.5	50.1	307.0	222.4	64.4		86.3	120.3	62.2
Level of Service	F	D	A	E	D	F	F	E		F	F	E
Approach Delay (s)		82.3			169.0			104.7			98.2	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM Average Control Delay	111.0	HCM Level of Service	F		
HCM Volume to Capacity ratio	1.26				
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	101.1%	ICU Level of Service	G		
Analysis Period (min)	15				

c Critical Lane Group

Appendix F

ICU and HCM Worksheets at Saddleback Ranch Road/Glenn Ranch Road

1. Saddleback Ranch Rd @ Glenn Ranch Rd						
			AM PEAK HOUR		PM PEAK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	125	0.07	111	0.07
NBT	1	1700	24	0.01 *	21	0.01 *
NBR	0	0	24	0.00	21	0.00
SBL	0.5	850	243	0.29 *	125	0.15 *
SBT	0.5	850	9	0.01	30	0.04
SBR	2	3400	975	0.29	293	0.09
EBL	2	3400	161	0.05 *	739	0.22 *
EBT	2	3400	158	0.05	734	0.22
EBR	0	0	49	0.00	152	0.00
WBL	1	1700	9	0.01	30	0.02
WBT	2	3400	604	0.18 *	317	0.09 *
WBR	d	1700	225	0.13	162	0.10
RIGHT TURN ADJUSTMENT			SBR	0.02 *		
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.60		0.52

*d = defacto right turn lane, f = free right turn lane

1. Saddleback Ranch Rd @ Glenn Ranch Rd						
			AM PEAK HOUR		PM PEAK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	125	0.07	111	0.07
NBT	1	1700	24	0.01 *	21	0.01 *
NBR	0	0	24	0.00	21	0.00
SBL	0.5	850	223	0.26 *	125	0.15 *
SBT	0.5	850	9	0.01	30	0.04
SBR	2	3400	785	0.23	303	0.09
EBL	2	3400	171	0.05 *	689	0.20 *
EBT	2	3400	218	0.06	894	0.26
EBR	0	0	49	0.00	152	0.00
WBL	1	1700	9	0.01	30	0.02
WBT	2	3400	864	0.25 *	397	0.12 *
WBR	d	1700	225	0.13	142	0.08
			SBR			
CLEARANCE INTERVAL				0.05 *		0.05 *
TOTAL ICU				0.62		0.53

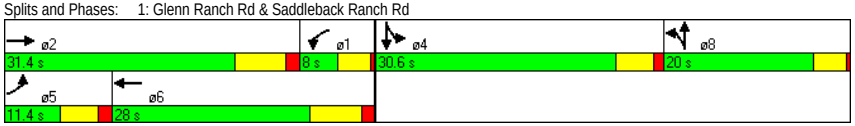
*d = defacto right turn lane, f = free right turn lane

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	161	158	9	604	125	24	243	9	975
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	11.4	31.4	8.0	28.0	20.0	20.0	30.6	30.6	0.0
Total Split (%)	12.7%	34.9%	8.9%	31.1%	22.2%	22.2%	34.0%	34.0%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	C-Max	C-Max	
Act Effct Green (s)	9.4	37.8	4.0	26.0	12.0	12.0	26.6	25.6	90.0
Actuated g/C Ratio	0.10	0.42	0.04	0.29	0.13	0.13	0.30	0.28	1.00
v/c Ratio	0.49	0.15	0.13	0.81	0.58	0.21	0.28	0.28	0.67
Control Delay	43.3	14.5	45.0	30.8	45.8	21.8	26.2	27.1	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	14.5	45.0	30.8	45.8	21.8	26.2	27.1	2.3
LOS	D	B	D	C	D	C	C	C	A
Approach Delay		27.1		31.0		39.2		7.3	
Approach LOS		C		C		D		A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:SBTL, Start of Green, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 19.8 — Intersection LOS: B
Intersection Capacity Utilization 52.9% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	158	49	9	604	225	125	24	24	243	9	975
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.96		1.00	0.96		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3433	3414		1770	3395		1770	1723		1681	1691	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3433	3414		1770	3395		1770	1723		1681	1691	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	175	172	53	10	657	245	136	26	26	264	10	1060
RTOR Reduction (vph)	0	27	0	0	127	0	0	23	0	0	0	0
Lane Group Flow (vph)	175	198	0	10	775	0	136	29	0	137	137	1060
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	7.9	34.8		0.8	26.2		12.0	12.0		22.4	22.4	90.0
Effective Green, g (s)	9.4	37.8		0.8	29.2		12.0	12.0		23.4	22.4	90.0
Actuated g/C Ratio	0.10	0.42		0.01	0.32		0.13	0.13		0.26	0.25	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	359	1434		16	1101		236	230		437	421	1583
v/s Ratio Prot	0.05	0.06		0.01	0.23		0.08	0.02		0.08	0.08	
v/s Ratio Perm												c0.67
v/c Ratio	0.49	0.14		0.62	0.70		0.58	0.13		0.31	0.33	0.67
Uniform Delay, d1	38.0	16.1		44.5	26.6		36.6	34.4		26.8	27.6	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.0	0.2		57.6	3.8		3.4	0.3		1.9	2.0	2.3
Delay (s)	39.1	16.3		102.0	30.4		40.0	34.6		28.7	29.7	2.3
Level of Service	D	B		F	C		D	C		C	C	A
Approach Delay (s)		26.2			31.2			38.5			7.8	
Approach LOS		C			C			D			A	

Intersection Summary

HCM Average Control Delay	20.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	0.0	
Intersection Capacity Utilization	52.9%	ICU Level of Service	A	
Analysis Period (min)	15			

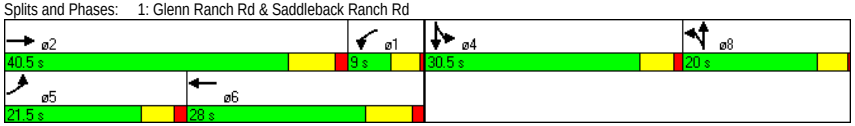
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	739	734	30	317	111	21	125	30	293
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	21.5	40.5	9.0	28.0	20.0	20.0	30.5	30.5	0.0
Total Split (%)	21.5%	40.5%	9.0%	28.0%	20.0%	20.0%	30.5%	30.5%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	C-Max	Max	None	Max	None	None	None	None	
Act Effct Green (s)	34.5	57.1	5.0	24.0	12.0	12.0	13.4	12.4	100.0
Actuated g/C Ratio	0.34	0.57	0.05	0.24	0.12	0.12	0.13	0.12	1.00
v/c Ratio	0.68	0.49	0.37	0.57	0.57	0.20	0.37	0.40	0.20
Control Delay	34.2	16.3	58.1	26.4	51.3	24.8	41.8	43.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	16.3	58.1	26.4	51.3	24.8	41.8	43.5	0.3
LOS	C	B	E	C	D	C	D	D	A
Approach Delay		24.5		28.3		44.0		15.0	
Approach LOS		C		C		D		B	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 5:EBL, Start of Green, Master Intersection
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 24.7 — Intersection LOS: C
Intersection Capacity Utilization 57.8% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	739	734	152	30	317	162	111	21	21	125	30	293
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	3433	3448		1770	3360		1770	1723		1681	1717	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	3433	3448		1770	3360		1770	1723		1681	1717	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	803	798	165	33	345	176	121	23	23	136	33	318
RTOR Reduction (vph)	0	12	0	0	109	0	0	20	0	0	0	0
Lane Group Flow (vph)	803	951	0	33	412	0	121	26	0	84	85	318
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	31.5	52.6		3.0	22.6		12.0	12.0		12.4	12.4	100.0
Effective Green, g (s)	33.0	55.6		3.0	25.6		12.0	12.0		13.4	12.4	100.0
Actuated g/C Ratio	0.33	0.56		0.03	0.26		0.12	0.12		0.13	0.12	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1133	1917		53	860		212	207		225	213	1583
v/s Ratio Prot	c0.23	c0.28		0.02	c0.12		c0.07	0.01		c0.05	0.05	
v/s Ratio Perm												0.20
v/c Ratio	0.71	0.50		0.62	0.48		0.57	0.12		0.37	0.40	0.20
Uniform Delay, d1	29.3	13.6		47.9	31.5		41.6	39.3		39.5	40.4	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.8	0.9		20.6	1.9		3.7	0.3		1.0	1.2	0.3
Delay (s)	33.1	14.5		68.5	33.5		45.2	39.6		40.5	41.6	0.3
Level of Service	C	B		E	C		D	D		D	D	A
Approach Delay (s)		23.0			35.6			43.7			14.4	
Approach LOS		C			D			D			B	

Intersection Summary

HCM Average Control Delay	25.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	57.8%	ICU Level of Service	B	
Analysis Period (min)	15			

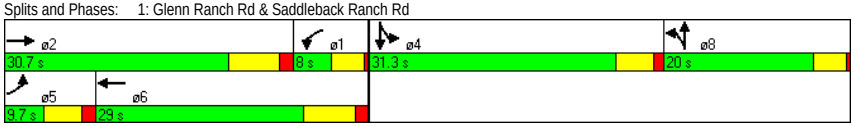
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	171	218	9	864	125	24	223	9	785
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	9.7	30.7	8.0	29.0	20.0	20.0	31.3	31.3	0.0
Total Split (%)	10.8%	34.1%	8.9%	32.2%	22.2%	22.2%	34.8%	34.8%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	C-Max	C-Max	
Act Effct Green (s)	8.8	37.1	4.0	25.9	12.0	12.0	27.3	26.3	90.0
Actuated g/C Ratio	0.10	0.41	0.04	0.29	0.13	0.13	0.30	0.29	1.00
v/c Ratio	0.56	0.20	0.13	1.06	0.58	0.21	0.25	0.26	0.54
Control Delay	47.6	17.0	45.0	70.9	45.8	21.8	25.2	26.1	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	17.0	45.0	70.9	45.8	21.8	25.2	26.1	1.3
LOS	D	B	D	E	D	C	C	C	A
Approach Delay		28.9		70.6		39.2		6.9	
Approach LOS		C		E		D		A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 4:SBTL, Start of Green, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.06
Intersection Signal Delay: 38.2 — Intersection LOS: D
Intersection Capacity Utilization 59.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	171	218	49	9	864	225	125	24	24	223	9	785
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3433	3442		1770	3429		1770	1723		1681	1692	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3433	3442		1770	3429		1770	1723		1681	1692	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	186	237	53	10	939	245	136	26	26	242	10	853
RTOR Reduction (vph)	0	18	0	0	127	0	0	23	0	0	0	0
Lane Group Flow (vph)	186	272	0	10	1057	0	136	29	0	126	126	853
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	7.3	34.1		0.8	26.1		12.0	12.0		23.1	23.1	90.0
Effective Green, g (s)	8.8	37.1		0.8	29.1		12.0	12.0		24.1	23.1	90.0
Actuated g/C Ratio	0.10	0.41		0.01	0.32		0.13	0.13		0.27	0.26	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	1419		16	1109		236	230		450	434	1583
v/s Ratio Prot	0.05	0.08		0.01	c0.31		0.08	0.02		0.07	0.07	
v/s Ratio Perm												c0.54
v/c Ratio	0.55	0.19		0.62	0.95		0.58	0.13		0.28	0.29	0.54
Uniform Delay, d1	38.7	16.9		44.5	29.8		36.6	34.4		26.1	26.9	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.0	0.3		57.6	17.8		3.4	0.3		1.5	1.7	1.3
Delay (s)	40.7	17.2		102.0	47.6		40.0	34.6		27.6	28.6	1.3
Level of Service	D	B		F	D		D	C		C	C	A
Approach Delay (s)		26.4			48.1			38.5			7.4	
Approach LOS		C			D			D			A	

Intersection Summary

HCM Average Control Delay	28.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0	
Intersection Capacity Utilization	59.9%	ICU Level of Service	B	
Analysis Period (min)	15			

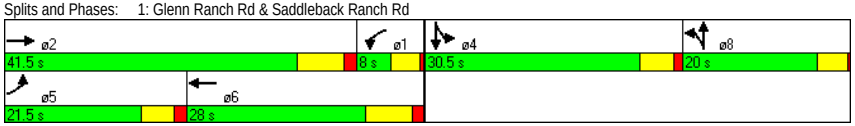
c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Configurations								
Volume (vph)	689	894	30	397	21	125	30	303
Turn Type	Prot		Prot			Split		Free
Protected Phases	5	2	1	6	8	4	4	
Permitted Phases								Free
Detector Phase	5	2	1	6	8	4	4	
Switch Phase								
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	30.5	30.5	
Total Split (s)	21.5	41.5	8.0	28.0	20.0	30.5	30.5	0.0
Total Split (%)	21.5%	41.5%	8.0%	28.0%	20.0%	30.5%	30.5%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	C-Max	Max	None	Max	None	None	None	
Act Effct Green (s)	32.9	56.1	4.0	24.0	13.7	13.4	12.4	100.0
Actuated g/C Ratio	0.33	0.56	0.04	0.24	0.14	0.13	0.12	1.00
v/c Ratio	0.66	0.58	0.46	0.64	0.68	0.37	0.40	0.21
Control Delay	34.9	18.6	68.2	30.2	52.8	41.8	43.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	18.6	68.2	30.2	52.8	41.8	43.5	0.3
LOS	C	B	E	C	D	D	D	A
Approach Delay		25.1		32.2	52.8		14.7	
Approach LOS		C		C	D		B	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 5:EBL, Start of Green, Master Intersection
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 26.3 — Intersection LOS: C
Intersection Capacity Utilization 60.4% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	689	894	152	30	397	142	111	21	21	125	30	303
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	0.97	1.00
Satd. Flow (prot)	3433	3462		1770	3400			1764		1681	1717	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	0.97	1.00
Satd. Flow (perm)	3433	3462		1770	3400			1764		1681	1717	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	749	972	165	33	432	154	121	23	23	136	33	329
RTOR Reduction (vph)	0	10	0	0	94	0	0	6	0	0	0	0
Lane Group Flow (vph)	749	1127	0	33	492	0	0	161	0	84	85	329
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	29.8	51.5		2.4	22.6			13.7		12.4	12.4	100.0
Effective Green, g (s)	31.3	54.5		2.4	25.6			13.7		13.4	12.4	100.0
Actuated g/C Ratio	0.31	0.54		0.02	0.26			0.14		0.13	0.12	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0			4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	1075	1887		42	870			242		225	213	1583
v/s Ratio Prot	c0.22	c0.33		0.02	c0.14			c0.09		c0.05	0.05	
v/s Ratio Perm												0.21
v/c Ratio	0.70	0.60		0.79	0.57			0.67		0.37	0.40	0.21
Uniform Delay, d1	30.2	15.3		48.5	32.4			41.0		39.5	40.4	0.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	1.00
Incremental Delay, d2	3.7	1.4		62.3	2.7			6.7		1.0	1.2	0.3
Delay (s)	33.9	16.8		110.8	35.0			47.7		40.5	41.6	0.3
Level of Service	C	B		F	D			D		D	D	A
Approach Delay (s)		23.6			39.1			47.7			14.1	
Approach LOS		C			D			D			B	

Intersection Summary

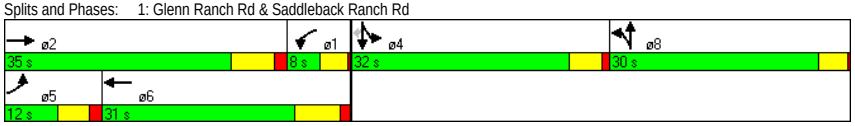
HCM Average Control Delay	26.4	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	60.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	161	158	9	604	125	24	9	975
Turn Type	Prot		Prot		Split			Perm
Protected Phases	5	2	1	6	8	8	4	
Permitted Phases								4
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.5	26.0	8.0	31.0	30.0	30.0	31.0	31.0
Total Split (s)	12.0	35.0	8.0	31.0	30.0	30.0	32.0	32.0
Total Split (%)	11.4%	33.3%	7.6%	29.5%	28.6%	28.6%	30.5%	30.5%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Max	None	Max	None	None	None	None
Act Effct Green (s)	8.1	37.9	4.0	27.3	12.0	12.0	21.8	21.8
Actuated g/C Ratio	0.09	0.44	0.05	0.32	0.14	0.14	0.25	0.25
v/c Ratio	0.55	0.15	0.12	0.75	0.55	0.20	0.61	0.83
Control Delay	46.3	14.6	46.7	26.8	44.4	22.3	35.1	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.3	14.6	46.7	26.8	44.4	22.3	35.1	14.4
LOS	D	B	D	C	D	C	D	B
Approach Delay		28.4		27.0		38.3	18.6	
Approach LOS		C		C		D	B	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 86.3			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 24.0		Intersection LOS: C	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	161	158	49	9	604	225	125	24	24	243	9	975
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			5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00			1.00	0.88
Frt	1.00	0.96		1.00	0.96		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	3433	3414		1770	3395		1770	1723			1777	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (perm)	3433	3414		1770	3395		1770	1723			1777	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	175	172	53	10	657	245	136	26	26	264	10	1060
RTOR Reduction (vph)	0	23	0	0	124	0	0	23	0	0	0	583
Lane Group Flow (vph)	175	202	0	10	778	0	136	29	0	0	274	477
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												4
Actuated Green, G (s)	6.6	34.9		0.7	27.5		12.0	12.0			21.8	21.8
Effective Green, g (s)	8.1	37.9		0.7	30.5		12.0	12.0			21.8	21.8
Actuated g/C Ratio	0.09	0.42		0.01	0.34		0.13	0.13			0.24	0.24
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	311	1447		14	1158		238	231			433	680
v/s Ratio Prot	c0.05	0.06		0.01	c0.23		c0.08	0.02			0.15	
v/s Ratio Perm												c0.17
v/c Ratio	0.56	0.14		0.71	0.67		0.57	0.13			0.63	0.70
Uniform Delay, d1	39.0	15.8		44.3	25.2		36.3	34.1			30.2	30.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	2.3	0.2		100.1	3.1		3.3	0.3			3.0	3.3
Delay (s)	41.3	16.0		144.4	28.3		39.6	34.3			33.2	34.1
Level of Service	D	B		F	C		D	C			C	C
Approach Delay (s)		27.0			29.6			38.1			33.9	
Approach LOS		C			C			D			C	

Intersection Summary					
HCM Average Control Delay	31.8	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	89.4	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	75.8%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	739	734	30	317	111	21	30	293
Turn Type	Prot		Prot		Split			Perm
Protected Phases	5	2	1	6	8	8	4	
Permitted Phases								4
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.5	26.0	8.0	31.0	30.0	30.0	31.0	31.0
Total Split (s)	33.0	54.0	10.0	31.0	30.0	30.0	31.0	31.0
Total Split (%)	26.4%	43.2%	8.0%	24.8%	24.0%	24.0%	24.8%	24.8%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	C-Max	Max	None	Max	None	None	None	None
Act Effct Green (s)	49.3	74.3	5.9	27.0	13.9	13.9	17.8	17.8
Actuated g/C Ratio	0.39	0.59	0.05	0.22	0.11	0.11	0.14	0.14
v/c Ratio	0.59	0.47	0.39	0.62	0.62	0.22	0.66	0.47
Control Delay	34.0	17.2	71.8	35.1	65.9	31.2	62.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.0	17.2	71.8	35.1	65.9	31.2	62.5	7.0
LOS	C	B	E	D	E	C	E	A
Approach Delay		24.8		37.3		56.3	26.2	
Approach LOS		C		D		E	C	

Intersection Summary			
Cycle Length: 125			
Actuated Cycle Length: 125			
Offset: 0 (0%), Referenced to phase 5:EBL, Start of Green, Master Intersection			
Natural Cycle: 125			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 29.2		Intersection LOS: C	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd

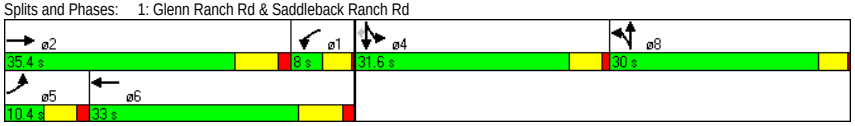
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	739	734	152	30	317	162	111	21	21	125	30	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00			1.00	0.88
Frt	1.00	0.97		1.00	0.95		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	3433	3448		1770	3360		1770	1723			1791	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (perm)	3433	3448		1770	3360		1770	1723			1791	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	803	798	165	33	345	176	121	23	23	136	33	318
RTOR Reduction (vph)	0	10	0	0	113	0	0	20	0	0	0	273
Lane Group Flow (vph)	803	953	0	33	408	0	121	26	0	0	169	45
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												4
Actuated Green, G (s)	46.2	69.7		3.6	25.6		13.9	13.9			17.8	17.8
Effective Green, g (s)	47.7	72.7		3.6	28.6		13.9	13.9			17.8	17.8
Actuated g/C Ratio	0.38	0.58		0.03	0.23		0.11	0.11			0.14	0.14
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	1310	2005		51	769		197	192			255	397
v/s Ratio Prot	c0.23	0.28		0.02	c0.12		c0.07	0.01			c0.09	
v/s Ratio Perm												0.02
v/c Ratio	0.61	0.48		0.65	0.53		0.61	0.13			0.66	0.11
Uniform Delay, d1	31.2	15.1		60.1	42.3		53.0	50.1			50.8	46.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	2.1	0.8		24.8	2.6		5.6	0.3			6.3	0.1
Delay (s)	33.3	15.9		84.9	44.9		58.6	50.4			57.1	46.9
Level of Service	C	B		F	D		E	D			E	D
Approach Delay (s)		23.9			47.3			56.3			50.4	
Approach LOS		C			D			E			D	

Intersection Summary					
HCM Average Control Delay	34.4	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	125.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	61.0%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	171	218	9	864	125	24	9	785
Turn Type	Prot		Prot		Split			Perm
Protected Phases	5	2	1	6	8	8	4	
Permitted Phases								4
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.5	26.0	8.0	31.0	30.0	30.0	31.0	31.0
Total Split (s)	10.4	35.4	8.0	33.0	30.0	30.0	31.6	31.6
Total Split (%)	9.9%	33.7%	7.6%	31.4%	28.6%	28.6%	30.1%	30.1%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Max	None	Max	None	None	None	None
Act Effct Green (s)	6.5	38.7	4.1	29.5	13.3	13.3	19.9	19.9
Actuated g/C Ratio	0.08	0.45	0.05	0.34	0.15	0.15	0.23	0.23
v/c Ratio	0.72	0.19	0.12	0.92	0.50	0.18	0.62	0.73
Control Delay	58.6	16.5	48.4	37.0	40.4	20.6	37.7	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	16.5	48.4	37.0	40.4	20.6	37.7	10.3
LOS	E	B	D	D	D	C	D	B
Approach Delay		33.0		37.1		34.9	16.6	
Approach LOS		C		D		C	B	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 86.5			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 76.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



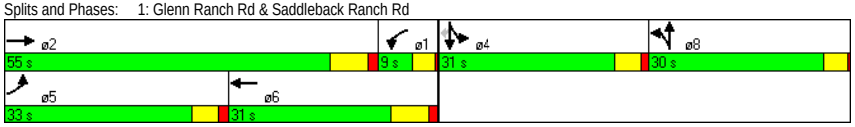
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	171	218	49	9	864	225	125	24	24	223	9	785
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00			1.00	0.88
Frt	1.00	0.97		1.00	0.97		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	3433	3442		1770	3429		1770	1723			1777	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (perm)	3433	3442		1770	3429		1770	1723			1777	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	186	237	53	10	939	245	136	26	26	242	10	853
RTOR Reduction (vph)	0	15	0	0	119	0	0	22	0	0	0	536
Lane Group Flow (vph)	186	275	0	10	1065	0	136	30	0	0	252	317
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												4
Actuated Green, G (s)	5.0	35.7		0.7	29.9		13.3	13.3			19.9	19.9
Effective Green, g (s)	6.5	38.7		0.7	32.9		13.3	13.3			19.9	19.9
Actuated g/C Ratio	0.07	0.43		0.01	0.37		0.15	0.15			0.22	0.22
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	249	1487		14	1259		263	256			395	619
v/s Ratio Prot	c0.05	0.08		0.01	c0.31		c0.08	0.02			c0.14	
v/s Ratio Perm												0.11
v/c Ratio	0.75	0.19		0.71	0.85		0.52	0.12			0.64	0.51
Uniform Delay, d1	40.7	15.7		44.4	26.0		35.2	33.1			31.6	30.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	11.5	0.3		100.1	7.1		1.7	0.2			3.4	0.7
Delay (s)	52.3	16.0		144.5	33.1		36.9	33.3			35.0	31.3
Level of Service	D	B		F	C		D	C			C	C
Approach Delay (s)		30.2			34.1			35.9			32.1	
Approach LOS		C			C			D			C	

Intersection Summary					
HCM Average Control Delay	32.8	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	89.6	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	76.3%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	689	894	30	397	111	21	30	303
Turn Type	Prot		Prot		Split			Perm
Protected Phases	5	2	1	6	8	8	4	
Permitted Phases								4
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.5	26.0	8.0	31.0	30.0	30.0	31.0	31.0
Total Split (s)	33.0	55.0	9.0	31.0	30.0	30.0	31.0	31.0
Total Split (%)	26.4%	44.0%	7.2%	24.8%	24.0%	24.0%	24.8%	24.8%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	C-Max	Max	None	Max	None	None	None	None
Act Effct Green (s)	48.0	73.6	5.0	27.0	15.2	15.2	17.8	17.8
Actuated g/C Ratio	0.38	0.59	0.04	0.22	0.12	0.12	0.14	0.14
v/c Ratio	0.57	0.56	0.46	0.70	0.56	0.20	0.66	0.48
Control Delay	34.8	19.9	79.6	40.4	60.3	29.0	62.5	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	19.9	79.6	40.4	60.3	29.0	62.5	7.0
LOS	C	B	E	D	E	C	E	A
Approach Delay		25.8		42.5		51.7	25.8	
Approach LOS		C		D		D	C	

Intersection Summary			
Cycle Length: 125			
Actuated Cycle Length: 125			
Offset: 0 (0%), Referenced to phase 5:EBL, Start of Green, Master Intersection			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 30.4		Intersection LOS: C	
Intersection Capacity Utilization 61.2%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd

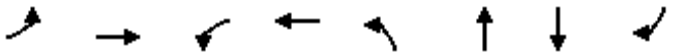


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	689	894	152	30	397	142	111	21	21	125	30	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00			1.00	0.88
Frt	1.00	0.98		1.00	0.96		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	3433	3462		1770	3400		1770	1723			1791	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (perm)	3433	3462		1770	3400		1770	1723			1791	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	749	972	165	33	432	154	121	23	23	136	33	329
RTOR Reduction (vph)	0	8	0	0	97	0	0	20	0	0	0	282
Lane Group Flow (vph)	749	1129	0	33	489	0	121	26	0	0	169	47
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												4
Actuated Green, G (s)	44.9	69.0		3.0	25.6		15.2	15.2			17.8	17.8
Effective Green, g (s)	46.4	72.0		3.0	28.6		15.2	15.2			17.8	17.8
Actuated g/C Ratio	0.37	0.58		0.02	0.23		0.12	0.12			0.14	0.14
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	1274	1994		42	778		215	210			255	397
v/s Ratio Prot	c0.22	0.33		0.02	c0.14		c0.07	0.01			c0.09	
v/s Ratio Perm												0.02
v/c Ratio	0.59	0.57		0.79	0.63		0.56	0.12			0.66	0.12
Uniform Delay, d1	31.6	16.7		60.7	43.4		51.8	49.0			50.8	46.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	2.0	1.2		62.3	3.8		3.3	0.3			6.3	0.1
Delay (s)	33.6	17.8		122.9	47.2		55.1	49.2			57.1	46.9
Level of Service	C	B		F	D		E	D			E	D
Approach Delay (s)		24.1			51.3			53.5			50.4	
Approach LOS		C			D			D			D	

Intersection Summary					
HCM Average Control Delay	35.1	HCM Level of Service		D	
HCM Volume to Capacity ratio	0.61				
Actuated Cycle Length (s)	125.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	61.2%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

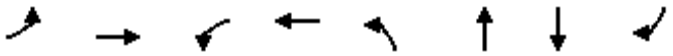
Appendix G

Queuing Worksheets at Project Driveway 2/Glenn Ranch Road



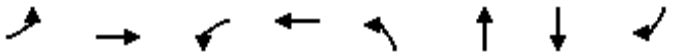
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	20	416	12	634	158	30	14	57
v/c Ratio	0.11	0.38	0.07	0.58	0.25	0.03	0.02	0.08
Control Delay	20.6	11.1	20.0	14.4	9.8	0.1	8.6	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.6	11.1	20.0	14.4	9.8	0.1	8.6	3.8
Queue Length 50th (ft)	4	30	2	56	18	0	1	0
Queue Length 95th (ft)	21	72	15	121	69	0	11	17
Internal Link Dist (ft)		1357		1316		261	257	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	180	1432	180	1438	637	954	629	755
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.29	0.07	0.44	0.25	0.03	0.02	0.08

Intersection Summary



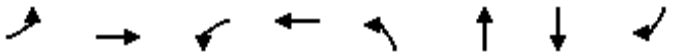
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	65	816	37	344	139	26	10	36
v/c Ratio	0.25	0.68	0.17	0.30	0.25	0.03	0.02	0.06
Control Delay	21.4	14.3	21.6	11.6	12.8	0.1	11.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.4	14.3	21.6	11.6	12.8	0.1	11.3	5.5
Queue Length 50th (ft)	13	61	7	24	18	0	1	0
Queue Length 95th (ft)	46	143	32	64	66	0	10	15
Internal Link Dist (ft)		1396		1277		449	283	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	262	1484	219	1393	552	826	544	647
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.55	0.17	0.25	0.25	0.03	0.02	0.06

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	20	460	12	917	158	30	14	57
v/c Ratio	0.12	0.34	0.07	0.68	0.29	0.03	0.03	0.09
Control Delay	21.1	9.4	20.5	14.0	12.3	0.1	10.3	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.1	9.4	20.5	14.0	12.3	0.1	10.3	4.5
Queue Length 50th (ft)	4	31	3	81	23	0	2	0
Queue Length 95th (ft)	21	75	15	174	75	0	12	18
Internal Link Dist (ft)		1477		1195		377	414	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	173	1545	173	1554	544	868	537	653
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.30	0.07	0.59	0.29	0.03	0.03	0.09

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	65	1001	37	409	139	26	10	36
v/c Ratio	0.32	0.74	0.23	0.35	0.27	0.03	0.02	0.06
Control Delay	24.6	16.0	24.5	12.6	13.5	0.1	11.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.6	16.0	24.5	12.6	13.5	0.1	11.6	5.5
Queue Length 50th (ft)	15	85	9	44	23	0	2	0
Queue Length 95th (ft)	48	#192	33	73	66	0	10	15
Internal Link Dist (ft)		1275		1398		342	415	
Turn Bay Length (ft)	100		100					
Base Capacity (vph)	205	1486	164	1390	519	744	511	609
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.67	0.23	0.29	0.27	0.03	0.02	0.06

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

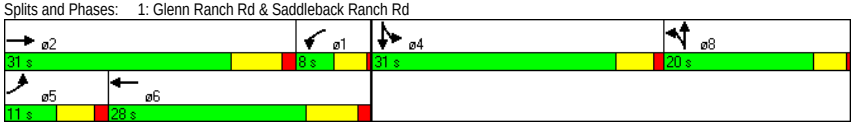
Appendix H

HCM LOS Worksheets for Dual Project Driveways to the Northeast site

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	178	148	9	570	138	10	239	4	1024
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	11.0	31.0	8.0	28.0	20.0	20.0	31.0	31.0	0.0
Total Split (%)	12.2%	34.4%	8.9%	31.1%	22.2%	22.2%	34.4%	34.4%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	None	None	
Act Effct Green (s)	7.1	34.2	4.1	24.4	11.2	11.2	13.4	12.4	72.3
Actuated g/C Ratio	0.10	0.47	0.06	0.34	0.15	0.15	0.19	0.17	1.00
v/c Ratio	0.57	0.13	0.10	0.66	0.55	0.13	0.43	0.45	0.70
Control Delay	41.2	10.8	39.3	20.1	37.4	16.3	30.4	32.0	2.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	10.8	39.3	20.1	37.4	16.3	30.4	32.0	2.6
LOS	D	B	D	C	D	B	C	C	A
Approach Delay		25.0		20.3		33.2		8.1	
Approach LOS		C		C		C		A	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 72.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



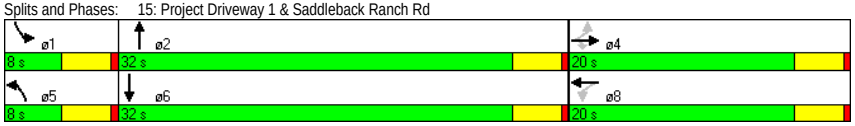
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	178	148	54	9	570	202	138	10	24	239	4	1024
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.96		1.00	0.96		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	3433	3397		1770	3400		1770	1666		1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	3433	3397		1770	3400		1770	1666		1681	1688	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	193	161	59	10	620	220	150	11	26	260	4	1113
RTOR Reduction (vph)	0	32	0	0	119	0	0	22	0	0	0	0
Lane Group Flow (vph)	193	188	0	10	721	0	150	15	0	133	131	1113
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	5.6	31.2		0.6	24.7		11.2	11.2		12.4	12.4	75.4
Effective Green, g (s)	7.1	34.2		0.6	27.7		11.2	11.2		13.4	12.4	75.4
Actuated g/C Ratio	0.09	0.45		0.01	0.37		0.15	0.15		0.18	0.16	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	323	1541		14	1249		263	247		299	278	1583
v/s Ratio Prot	0.06	0.06		0.01	0.21		0.08	0.01		0.08	0.08	
v/s Ratio Perm												c0.70
v/c Ratio	0.60	0.12		0.71	0.58		0.57	0.06		0.44	0.47	0.70
Uniform Delay, d1	32.8	11.9		37.3	19.1		29.9	27.6		27.7	28.5	0.0
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	0.2		100.1	1.9		3.0	0.1		1.1	1.3	2.6
Delay (s)	35.7	12.1		137.4	21.1		32.8	27.7		28.7	29.8	2.6
Level of Service	D	B		F	C		C	C		C	C	A
Approach Delay (s)		23.1			22.5			31.8			7.7	
Approach LOS		C			C			C			A	

Intersection Summary					
HCM Average Control Delay	16.0	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.70				
Actuated Cycle Length (s)	75.4	Sum of lost time (s)		0.0	
Intersection Capacity Utilization	51.6%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	5	0	44	52	0	14	358	4	1170
Turn Type	Perm		Perm	Perm		Prot		Prot	
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	8.0	32.0	8.0	32.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	13.3%	53.3%	13.3%	53.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		7.4	7.4	7.5	7.5	4.2	30.9	4.2	30.9
Actuated g/C Ratio		0.18	0.18	0.18	0.18	0.10	0.76	0.10	0.76
v/c Ratio		0.02	0.15	0.18	0.02	0.08	0.15	0.02	0.47
Control Delay		16.8	7.9	18.2	0.1	22.2	3.9	21.5	5.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		16.8	7.9	18.2	0.1	22.2	3.9	21.5	5.7
LOS		B	A	B	A	C	A	C	A
Approach Delay		8.7			14.6		4.6		5.8
Approach LOS		A			B		A		A

Intersection Summary			
Cycle Length: 60			
Actuated Cycle Length: 40.7			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 5.9		Intersection LOS: A	
Intersection Capacity Utilization 49.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Project Driveway 1 & Saddleback Ranch Rd



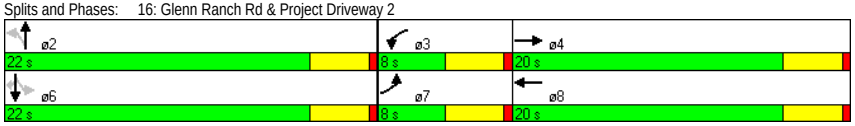
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	0	44	52	0	13	14	358	18	4	1170	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770	1583		1770	3513		1770	3538	
Flt Permitted		0.91	1.00	0.91	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1693	1583	1693	1583		1770	3513		1770	3538	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	0	48	57	0	14	15	389	20	4	1272	2
RTOR Reduction (vph)	0	0	43	0	13	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	5	5	57	1	0	15	405	0	4	1274	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		4.4	4.4	4.4	4.4		0.6	28.8		0.6	28.8	
Effective Green, g (s)		4.4	4.4	4.4	4.4		0.6	28.8		0.6	28.8	
Actuated g/C Ratio		0.10	0.10	0.10	0.10		0.01	0.63		0.01	0.63	
Clearance Time (s)		4.0	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	3.0	
Lane Grp Cap (vph)		163	152	163	152		23	2209		23	2225	
v/s Ratio Prot					0.00		c0.01	0.12		0.00	c0.36	
v/s Ratio Perm		0.00	0.00	c0.03								
v/c Ratio		0.03	0.03	0.35	0.01		0.65	0.18		0.17	0.57	
Uniform Delay, d1		18.8	18.8	19.4	18.7		22.5	3.6		22.4	4.9	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1	1.3	0.0		50.9	0.0		3.6	0.4	
Delay (s)		18.8	18.8	20.7	18.8		73.4	3.6		25.9	5.3	
Level of Service		B	B	C	B		E	A		C	A	
Approach Delay (s)		18.8			20.3			6.1			5.4	
Approach LOS		B			C			A			A	

Intersection Summary					
HCM Average Control Delay		6.5	HCM Level of Service		A
HCM Volume to Capacity ratio		0.55			
Actuated Cycle Length (s)		45.8	Sum of lost time (s)		12.0
Intersection Capacity Utilization		49.1%	ICU Level of Service		A
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	18	327	11	580	145	0	13	0	52
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	20.0	8.0	20.0	22.0	22.0	22.0	22.0	22.0
Total Split (%)	16.0%	40.0%	16.0%	40.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	4.1	12.3	4.1	12.3	18.3	18.3		18.3	18.3
Actuated g/C Ratio	0.10	0.31	0.10	0.31	0.46	0.46		0.46	0.46
v/c Ratio	0.11	0.38	0.07	0.58	0.25	0.03		0.02	0.08
Control Delay	20.6	11.1	20.0	14.4	9.8	0.1		8.6	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	20.6	11.1	20.0	14.4	9.8	0.1		8.6	3.8
LOS	C	B	B	B	A	A		A	A
Approach Delay		11.5		14.5		8.3		4.8	
Approach LOS		B		B		A		A	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 40			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 37.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



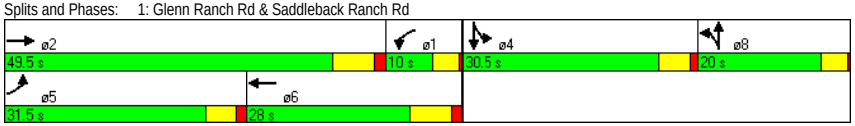
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	327	56	11	580	4	145	0	28	13	0	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3461		1770	3536		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.74	1.00
Satd. Flow (perm)	1770	3461		1770	3536		1394	1583			1374	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	355	61	12	630	4	158	0	30	14	0	57
RTOR Reduction (vph)	0	29	0	0	1	0	0	17	0	0	0	33
Lane Group Flow (vph)	20	387	0	12	633	0	158	13	0	0	14	24
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	0.6	12.3		0.6	12.3		18.3	18.3			18.3	18.3
Effective Green, g (s)	0.6	12.3		0.6	12.3		18.3	18.3			18.3	18.3
Actuated g/C Ratio	0.01	0.28		0.01	0.28		0.42	0.42			0.42	0.42
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	25	985		25	1007		591	671			582	671
v/s Ratio Prot	c0.01	0.11		0.01	c0.18			0.01				
v/s Ratio Perm							c0.11				0.01	0.02
v/c Ratio	0.80	0.39		0.48	0.63		0.27	0.02			0.02	0.04
Uniform Delay, d1	21.2	12.4		21.1	13.5		8.1	7.2			7.2	7.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	95.2	0.3		13.8	1.2		1.1	0.1			0.1	0.1
Delay (s)	116.4	12.7		35.0	14.7		9.2	7.3			7.3	7.4
Level of Service	F	B		C	B		A	A			A	A
Approach Delay (s)		17.5			15.1			8.9			7.4	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM Average Control Delay	14.6	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.42				
Actuated Cycle Length (s)	43.2	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	37.5%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	794	697	30	299	122	9	99	13	324
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	31.5	49.5	10.0	28.0	20.0	20.0	30.5	30.5	0.0
Total Split (%)	28.6%	45.0%	9.1%	25.5%	18.2%	18.2%	27.7%	27.7%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	C-Max	Max	None	Max	None	None	None	None	
Act Effct Green (s)	46.3	68.3	5.9	24.0	13.1	13.1	12.8	11.8	110.0
Actuated g/C Ratio	0.42	0.62	0.05	0.22	0.12	0.12	0.12	0.11	1.00
v/c Ratio	0.60	0.44	0.35	0.57	0.63	0.15	0.31	0.34	0.22
Control Delay	29.8	14.6	60.4	29.5	59.3	22.5	40.0	41.8	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.8	14.6	60.4	29.5	59.3	22.5	40.0	41.8	0.9
LOS	C	B	E	C	E	C	D	D	A
Approach Delay		21.9		31.4		52.0		11.2	
Approach LOS		C		C		D		B	

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 5:EBL, Start of Green, Master Intersection			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 59.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	794	697	170	30	299	148	122	9	21	99	13	324
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.97		1.00	0.95		1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3433	3435		1770	3363		1770	1668		1681	1704	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3433	3435		1770	3363		1770	1668		1681	1704	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	863	758	185	33	325	161	133	10	23	108	14	352
RTOR Reduction (vph)	0	13	0	0	112	0	0	20	0	0	0	0
Lane Group Flow (vph)	863	930	0	33	374	0	133	13	0	60	62	352
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	42.2	62.7		3.6	22.6		13.1	13.1		10.6	10.6	110.0
Effective Green, g (s)	43.7	65.7		3.6	25.6		13.1	13.1		11.6	10.6	110.0
Actuated g/C Ratio	0.40	0.60		0.03	0.23		0.12	0.12		0.11	0.10	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1364	2052		58	783		211	199		177	164	1583
v/s Ratio Prot	c0.25	0.27		0.02	c0.11		c0.08	0.01		0.04	c0.04	
v/s Ratio Perm												0.22
v/c Ratio	0.63	0.45		0.57	0.48		0.63	0.06		0.34	0.38	0.22
Uniform Delay, d1	26.7	12.2		52.4	36.4		46.1	43.0		45.6	46.6	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.86	0.86	1.00
Incremental Delay, d2	2.2	0.7		12.2	2.1		6.0	0.1		1.1	1.5	0.3
Delay (s)	28.9	13.0		64.6	38.5		52.2	43.1		40.4	41.5	0.3
Level of Service	C	B		E	D		D	D		D	D	A
Approach Delay (s)		20.6			40.2			50.4			10.8	
Approach LOS		C			D			D			B	

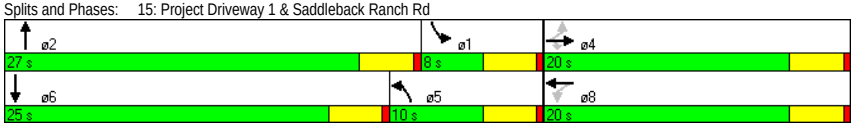
Intersection Summary					
HCM Average Control Delay	24.1	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.56				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	59.1%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	3	0	29	34	0	50	782	15	373
Turn Type	Perm		Perm	Perm		Prot		Prot	
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	10.0	27.0	8.0	25.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	36.4%	18.2%	49.1%	14.5%	45.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lag	Lead	Lag	Lead
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		6.7	6.7	7.0	7.0	7.9	46.8	5.5	39.6
Actuated g/C Ratio		0.12	0.12	0.13	0.13	0.14	0.85	0.10	0.72
v/c Ratio		0.01	0.14	0.16	0.02	0.21	0.31	0.09	0.16
Control Delay		20.0	10.2	22.1	0.1	22.2	1.9	24.3	6.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		20.0	10.2	22.1	0.1	22.2	1.9	24.3	6.4
LOS		B	B	C	A	C	A	C	A
Approach Delay		11.1			17.4		3.0		7.1
Approach LOS		B			B		A		A

Intersection Summary

Cycle Length: 55
Actuated Cycle Length: 55
Offset: 14 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.31
Intersection Signal Delay: 4.8 Intersection LOS: A
Intersection Capacity Utilization 45.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 15: Project Driveway 1 & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	0	29	34	0	9	50	782	60	15	373	6
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	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770	1583		1770	3502		1770	3530	
Flt Permitted		1.00	1.00	1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1863	1583	1863	1583		1770	3502		1770	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	0	32	37	0	10	54	850	65	16	405	7
RTOR Reduction (vph)	0	0	30	0	9	0	0	5	0	0	2	0
Lane Group Flow (vph)	0	3	2	37	1	0	54	910	0	16	410	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		3.4	3.4	3.4	3.4		7.2	38.8		0.8	32.4	
Effective Green, g (s)		3.4	3.4	3.4	3.4		7.2	38.8		0.8	32.4	
Actuated g/C Ratio		0.06	0.06	0.06	0.06		0.13	0.71		0.01	0.59	
Clearance Time (s)		4.0	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	3.0	
Lane Grp Cap (vph)		115	98	115	98		232	2471		26	2079	
v/s Ratio Prot					0.00		c0.03	c0.26		0.01	0.12	
v/s Ratio Perm		0.00	0.00	c0.02								
v/c Ratio		0.03	0.02	0.32	0.01		0.23	0.37		0.62	0.20	
Uniform Delay, d1		24.2	24.2	24.7	24.2		21.4	3.2		26.9	5.3	
Progression Factor		1.00	1.00	1.00	1.00		1.05	0.61		1.00	1.00	
Incremental Delay, d2		0.1	0.1	1.6	0.0		0.4	0.3		36.3	0.2	
Delay (s)		24.3	24.3	26.3	24.2		22.8	2.3		63.2	5.5	
Level of Service		C	C	C	C		C	A		E	A	
Approach Delay (s)		24.3			25.9			3.5			7.6	
Approach LOS		C			C			A			A	

Intersection Summary

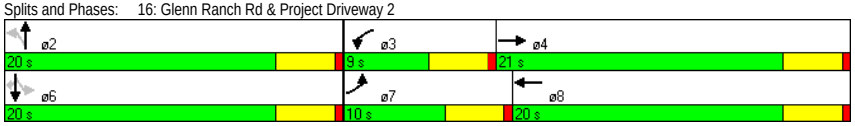
HCM Average Control Delay	5.9	HCM Level of Service	A		
HCM Volume to Capacity ratio	0.34				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A		
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	60	573	34	302	128	0	9	0	33
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	10.0	21.0	9.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	20.0%	42.0%	18.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	6.0	14.0	5.1	13.7	16.5	16.5		16.5	16.5
Actuated g/C Ratio	0.14	0.34	0.12	0.33	0.40	0.40		0.40	0.40
v/c Ratio	0.25	0.68	0.17	0.30	0.25	0.03		0.02	0.06
Control Delay	21.4	14.3	21.6	11.6	12.8	0.1		11.3	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	21.4	14.3	21.6	11.6	12.8	0.1		11.3	5.5
LOS	C	B	C	B	B	A		B	A
Approach Delay		14.8		12.6		10.8		6.8	
Approach LOS		B		B		B		A	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 41.7			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 13.5		Intersection LOS: B	
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



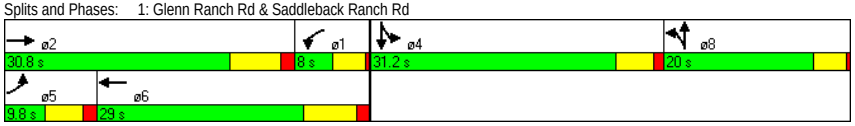
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	573	178	34	302	15	128	0	24	9	0	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.96		1.00	0.99		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3414		1770	3515		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.74	1.00
Satd. Flow (perm)	1770	3414		1770	3515		1399	1583			1379	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	623	193	37	328	16	139	0	26	10	0	36
RTOR Reduction (vph)	0	61	0	0	7	0	0	16	0	0	0	23
Lane Group Flow (vph)	65	755	0	37	337	0	139	10	0	0	10	13
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	2.0	14.0		1.7	13.7		16.5	16.5			16.5	16.5
Effective Green, g (s)	2.0	14.0		1.7	13.7		16.5	16.5			16.5	16.5
Actuated g/C Ratio	0.05	0.32		0.04	0.31		0.37	0.37			0.37	0.37
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	80	1081		68	1089		522	591			515	591
v/s Ratio Prot	c0.04	c0.22		0.02	0.10			0.01				
v/s Ratio Perm							c0.10				0.01	0.01
v/c Ratio	0.81	0.70		0.54	0.31		0.27	0.02			0.02	0.02
Uniform Delay, d1	20.9	13.2		20.9	11.6		9.6	8.7			8.7	8.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	44.4	2.0		8.6	0.2		1.2	0.1			0.1	0.1
Delay (s)	65.4	15.2		29.5	11.8		10.9	8.8			8.8	8.8
Level of Service	E	B		C	B		B	A			A	A
Approach Delay (s)		18.9			13.5			10.6			8.8	
Approach LOS		B			B			B			A	

Intersection Summary					
HCM Average Control Delay	16.3	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.44				
Actuated Cycle Length (s)	44.2	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	48.6%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	188	208	9	830	138	10	219	4	834
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	20.0	30.5	30.5	
Total Split (s)	9.8	30.8	8.0	29.0	20.0	20.0	31.2	31.2	0.0
Total Split (%)	10.9%	34.2%	8.9%	32.2%	22.2%	22.2%	34.7%	34.7%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	None	None	
Act Effct Green (s)	5.9	34.0	4.1	25.4	11.1	11.1	13.0	12.0	71.6
Actuated g/C Ratio	0.08	0.47	0.06	0.35	0.16	0.16	0.18	0.17	1.00
v/c Ratio	0.72	0.17	0.10	0.84	0.55	0.13	0.40	0.43	0.57
Control Delay	50.9	12.4	39.1	26.5	37.1	16.2	29.8	31.5	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	12.4	39.1	26.5	37.1	16.2	29.8	31.5	1.5
LOS	D	B	D	C	D	B	C	C	A
Approach Delay		28.5		26.6		33.0		7.6	
Approach LOS		C		C		C		A	

Intersection Summary			
Cycle Length: 90			
Actuated Cycle Length: 71.6			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 59.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



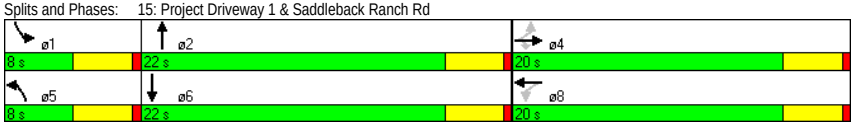
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	188	208	54	9	830	202	138	10	24	219	4	834
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.97		1.00	0.97		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	3433	3429		1770	3435		1770	1666		1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	3433	3429		1770	3435		1770	1666		1681	1688	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	204	226	59	10	902	220	150	11	26	238	4	907
RTOR Reduction (vph)	0	20	0	0	116	0	0	22	0	0	0	0
Lane Group Flow (vph)	204	265	0	10	1006	0	150	15	0	121	121	907
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	4.4	31.0		0.6	25.7		11.1	11.1		12.0	12.0	74.7
Effective Green, g (s)	5.9	34.0		0.6	28.7		11.1	11.1		13.0	12.0	74.7
Actuated g/C Ratio	0.08	0.46		0.01	0.38		0.15	0.15		0.17	0.16	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	271	1561		14	1320		263	248		293	271	1583
v/s Ratio Prot	0.06	0.08		0.01	c0.29		0.08	0.01		0.07	0.07	
v/s Ratio Perm												c0.57
v/c Ratio	0.75	0.17		0.71	0.76		0.57	0.06		0.41	0.45	0.57
Uniform Delay, d1	33.7	12.0		37.0	20.0		29.6	27.3		27.5	28.3	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.2	0.2		100.1	4.2		3.0	0.1		0.9	1.2	1.5
Delay (s)	44.9	12.3		137.1	24.2		32.6	27.4		28.4	29.5	1.5
Level of Service	D	B		F	C		C	C		C	C	A
Approach Delay (s)		25.9			25.2			31.5			7.3	
Approach LOS		C			C			C			A	

Intersection Summary					
HCM Average Control Delay	18.8	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	74.7	Sum of lost time (s)		4.0	
Intersection Capacity Utilization	59.1%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	5	0	44	52	0	14	358	4	960
Turn Type	Perm		Perm	Perm		Prot		Prot	
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	8.0	22.0	8.0	22.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	16.0%	44.0%	16.0%	44.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Min	None	Min
Act Effct Green (s)		7.0	7.0	7.1	7.1	4.1	25.4	4.1	25.4
Actuated g/C Ratio		0.20	0.20	0.20	0.20	0.12	0.72	0.12	0.72
v/c Ratio		0.01	0.14	0.16	0.02	0.07	0.16	0.02	0.41
Control Delay		12.8	6.4	14.2	0.1	17.5	4.6	16.8	5.9
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		12.8	6.4	14.2	0.1	17.5	4.6	16.8	5.9
LOS		B	A	B	A	B	A	B	A
Approach Delay		7.0			11.4		5.0		5.9
Approach LOS		A			B		A		A

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 35.3			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 6.0		Intersection LOS: A	
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Project Driveway 1 & Saddleback Ranch Rd



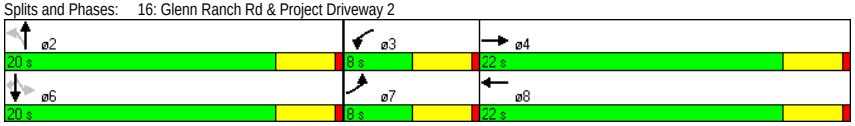
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	0	44	52	0	13	14	358	18	4	960	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770	1583		1770	3513		1770	3538	
Flt Permitted		0.93	1.00	0.93	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1733	1583	1733	1583		1770	3513		1770	3538	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	0	48	57	0	14	15	389	20	4	1043	2
RTOR Reduction (vph)	0	0	43	0	13	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	5	5	57	1	0	15	404	0	4	1045	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		4.3	4.3	4.3	4.3		0.6	23.4		0.6	23.4	
Effective Green, g (s)		4.3	4.3	4.3	4.3		0.6	23.4		0.6	23.4	
Actuated g/C Ratio		0.11	0.11	0.11	0.11		0.01	0.58		0.01	0.58	
Clearance Time (s)		4.0	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	3.0	
Lane Grp Cap (vph)		185	169	185	169		26	2040		26	2054	
v/s Ratio Prot					0.00		c0.01	0.11		0.00	c0.30	
v/s Ratio Perm		0.00	0.00	c0.03								
v/c Ratio		0.03	0.03	0.31	0.01		0.58	0.20		0.15	0.51	
Uniform Delay, d1		16.1	16.1	16.6	16.1		19.7	4.0		19.6	5.0	
Progression Factor		1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1	0.1	1.0	0.0		27.4	0.0		2.7	0.2	
Delay (s)		16.2	16.2	17.6	16.1		47.1	4.1		22.3	5.2	
Level of Service		B	B	B	B		D	A		C	A	
Approach Delay (s)		16.2			17.3			5.6			5.3	
Approach LOS		B			B			A			A	

Intersection Summary					
HCM Average Control Delay	6.3	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.48				
Actuated Cycle Length (s)	40.3	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	43.3%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	18	367	11	840	145	0	13	0	52
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	22.0	8.0	22.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	16.0%	44.0%	16.0%	44.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	4.1	15.9	4.1	15.9	16.2	16.2		16.2	16.2
Actuated g/C Ratio	0.10	0.38	0.10	0.38	0.39	0.39		0.39	0.39
v/c Ratio	0.12	0.34	0.07	0.68	0.29	0.03		0.03	0.09
Control Delay	21.1	9.4	20.5	14.0	12.3	0.1		10.3	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	21.1	9.4	20.5	14.0	12.3	0.1		10.3	4.5
LOS	C	A	C	B	B	A		B	A
Approach Delay		9.9		14.1		10.4		5.6	
Approach LOS		A		B		B		A	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 41.5			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 44.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



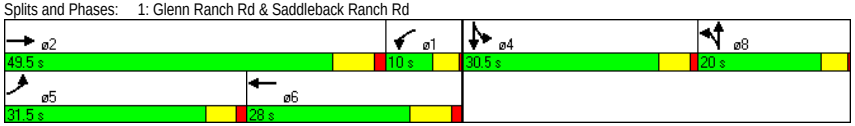
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	18	367	56	11	840	4	145	0	28	13	0	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3469		1770	3537		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.74	1.00
Satd. Flow (perm)	1770	3469		1770	3537		1394	1583			1374	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	399	61	12	913	4	158	0	30	14	0	57
RTOR Reduction (vph)	0	25	0	0	1	0	0	19	0	0	0	36
Lane Group Flow (vph)	20	435	0	12	916	0	158	11	0	0	14	21
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	0.7	15.9		0.7	15.9		16.2	16.2			16.2	16.2
Effective Green, g (s)	0.7	15.9		0.7	15.9		16.2	16.2			16.2	16.2
Actuated g/C Ratio	0.02	0.35		0.02	0.35		0.36	0.36			0.36	0.36
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	28	1231		28	1255		504	572			497	572
v/s Ratio Prot	c0.01	0.13		0.01	c0.26			0.01				
v/s Ratio Perm							c0.11				0.01	0.01
v/c Ratio	0.71	0.35		0.43	0.73		0.31	0.02			0.03	0.04
Uniform Delay, d1	22.0	10.7		21.9	12.6		10.3	9.2			9.2	9.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	60.5	0.2		10.2	2.2		1.6	0.1			0.1	0.1
Delay (s)	82.5	10.8		32.1	14.8		11.9	9.3			9.3	9.4
Level of Service	F	B		C	B		B	A			A	A
Approach Delay (s)		13.8			15.0			11.5			9.4	
Approach LOS		B			B			B			A	

Intersection Summary					
HCM Average Control Delay	14.0	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.52				
Actuated Cycle Length (s)	44.8	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	44.7%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT	SBR
Lane Configurations								
Volume (vph)	744	857	30	379	9	99	13	334
Turn Type	Prot		Prot			Split		Free
Protected Phases	5	2	1	6	8	4	4	
Permitted Phases								Free
Detector Phase	5	2	1	6	8	4	4	
Switch Phase								
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	28.0	20.0	30.5	30.5	
Total Split (s)	31.5	49.5	10.0	28.0	20.0	30.5	30.5	0.0
Total Split (%)	28.6%	45.0%	9.1%	25.5%	18.2%	27.7%	27.7%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	C-Max	Max	None	Max	None	None	None	
Act Effct Green (s)	45.0	67.0	5.9	24.0	14.3	12.8	11.8	110.0
Actuated g/C Ratio	0.41	0.61	0.05	0.22	0.13	0.12	0.11	1.00
v/c Ratio	0.58	0.53	0.35	0.66	0.71	0.31	0.34	0.23
Control Delay	30.1	16.8	60.4	34.1	60.5	40.0	41.6	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.1	16.8	60.4	34.1	60.5	40.0	41.6	1.0
LOS	C	B	E	C	E	D	D	A
Approach Delay		22.4		35.6	60.5		11.0	
Approach LOS		C		D	E		B	

Intersection Summary			
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 5:EBL, Start of Green, Master Intersection			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 25.1		Intersection LOS: C	
Intersection Capacity Utilization 61.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	744	857	170	30	379	128	122	9	21	99	13	334
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00		0.95	0.95	1.00
Frt	1.00	0.98		1.00	0.96			0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.96		0.95	0.96	1.00
Satd. Flow (prot)	3433	3451		1770	3405			1757		1681	1704	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.95	0.96	1.00
Satd. Flow (perm)	3433	3451		1770	3405			1757		1681	1704	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	809	932	185	33	412	139	133	10	23	108	14	363
RTOR Reduction (vph)	0	11	0	0	97	0	0	5	0	0	0	0
Lane Group Flow (vph)	809	1106	0	33	454	0	0	161	0	60	62	363
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	41.0	61.5		3.6	22.6			14.3		10.6	10.6	110.0
Effective Green, g (s)	42.5	64.5		3.6	25.6			14.3		11.6	10.6	110.0
Actuated g/C Ratio	0.39	0.59		0.03	0.23			0.13		0.11	0.10	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0			4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	1326	2024		58	792			228		177	164	1583
v/s Ratio Prot	c0.24	c0.32		0.02	c0.13			c0.09		0.04	c0.04	
v/s Ratio Perm												0.23
v/c Ratio	0.61	0.55		0.57	0.57			0.71		0.34	0.38	0.23
Uniform Delay, d1	27.1	13.8		52.4	37.4			45.8		45.6	46.6	0.0
Progression Factor	1.00	1.00		1.00	1.00			1.00		0.86	0.85	1.00
Incremental Delay, d2	2.1	1.1		12.2	3.0			9.5		1.1	1.5	0.3
Delay (s)	29.2	14.9		64.6	40.4			55.3		40.3	41.3	0.3
Level of Service	C	B		E	D			E		D	D	A
Approach Delay (s)		20.9			41.7			55.3			10.5	
Approach LOS		C			D			E			B	

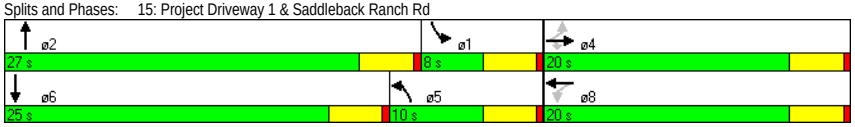
Intersection Summary					
HCM Average Control Delay	25.0	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.56				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	61.0%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	3	0	29	34	0	50	782	15	383
Turn Type	Perm		Perm	Perm		Prot		Prot	
Protected Phases		4			8	5	2	1	6
Permitted Phases	4		4	8					
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	8.0	20.0	8.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	10.0	27.0	8.0	25.0
Total Split (%)	36.4%	36.4%	36.4%	36.4%	36.4%	18.2%	49.1%	14.5%	45.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lag	Lead	Lag	Lead
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		6.7	6.7	7.0	7.0	7.8	46.8	5.5	39.7
Actuated g/C Ratio		0.12	0.12	0.13	0.13	0.14	0.85	0.10	0.72
v/c Ratio		0.01	0.14	0.16	0.02	0.21	0.31	0.09	0.17
Control Delay		20.0	10.2	22.1	0.1	21.5	1.7	24.3	6.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		20.0	10.2	22.1	0.1	21.5	1.7	24.3	6.4
LOS		B	B	C	A	C	A	C	A
Approach Delay		11.1			17.4		2.8		7.0
Approach LOS		B			B		A		A

Intersection Summary

Cycle Length: 55
Actuated Cycle Length: 55
Offset: 13 (24%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.31
Intersection Signal Delay: 4.7 — Intersection LOS: A
Intersection Capacity Utilization 45.4% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 15: Project Driveway 1 & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	0	29	34	0	9	50	782	60	15	383	6
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	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt		1.00	0.85	1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1770	1583	1770	1583		1770	3502		1770	3530	
Flt Permitted		1.00	1.00	1.00	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1863	1583	1863	1583		1770	3502		1770	3530	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	0	32	37	0	10	54	850	65	16	416	7
RTOR Reduction (vph)	0	0	30	0	9	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	3	2	37	1	0	54	910	0	16	422	0
Turn Type	Perm		Perm	Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8								
Actuated Green, G (s)		3.4	3.4	3.4	3.4		7.1	38.8		0.8	32.5	
Effective Green, g (s)		3.4	3.4	3.4	3.4		7.1	38.8		0.8	32.5	
Actuated g/C Ratio		0.06	0.06	0.06	0.06		0.13	0.71		0.01	0.59	
Clearance Time (s)		4.0	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	3.0	
Lane Grp Cap (vph)		115	98	115	98		228	2471		26	2086	
v/s Ratio Prot					0.00		c0.03	c0.26		0.01	0.12	
v/s Ratio Perm		0.00	0.00	c0.02								
v/c Ratio		0.03	0.02	0.32	0.01		0.24	0.37		0.62	0.20	
Uniform Delay, d1		24.2	24.2	24.7	24.2		21.5	3.2		26.9	5.2	
Progression Factor		1.00	1.00	1.00	1.00		1.01	0.53		1.00	1.00	
Incremental Delay, d2		0.1	0.1	1.6	0.0		0.4	0.3		36.3	0.2	
Delay (s)		24.3	24.3	26.3	24.2		22.1	2.0		63.2	5.4	
Level of Service		C	C	C	C		C	A		E	A	
Approach Delay (s)		24.3			25.9			3.2			7.6	
Approach LOS		C			C			A			A	

Intersection Summary

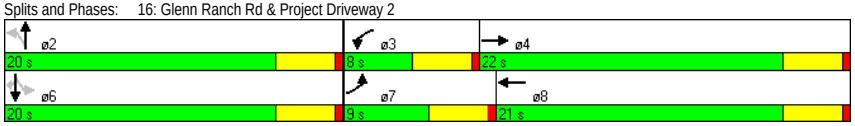
HCM Average Control Delay	5.7	HCM Level of Service		A	
HCM Volume to Capacity ratio	0.34				
Actuated Cycle Length (s)	55.0	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	45.4%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	60	743	34	362	128	0	9	0	33
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	9.0	22.0	8.0	21.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	18.0%	44.0%	16.0%	42.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	5.1	16.7	4.1	14.5	16.3	16.3		16.3	16.3
Actuated g/C Ratio	0.12	0.38	0.09	0.33	0.37	0.37		0.37	0.37
v/c Ratio	0.32	0.74	0.23	0.35	0.27	0.03		0.02	0.06
Control Delay	24.6	16.0	24.5	12.6	13.5	0.1		11.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	24.6	16.0	24.5	12.6	13.5	0.1		11.6	5.5
LOS	C	B	C	B	B	A		B	A
Approach Delay		16.5		13.6		11.4		6.8	
Approach LOS		B		B		B		A	

Intersection Summary			
Cycle Length: 50			
Actuated Cycle Length: 43.9			
Natural Cycle: 50			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 15.0		Intersection LOS: B	
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	743	178	34	362	15	128	0	24	9	0	33
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
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3437		1770	3518		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.75	1.00			0.74	1.00
Satd. Flow (perm)	1770	3437		1770	3518		1399	1583			1379	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	808	193	37	393	16	139	0	26	10	0	36
RTOR Reduction (vph)	0	42	0	0	6	0	0	17	0	0	0	23
Lane Group Flow (vph)	65	959	0	37	403	0	139	9	0	0	10	13
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	2.8	16.7		1.4	15.3		16.3	16.3			16.3	16.3
Effective Green, g (s)	2.8	16.7		1.4	15.3		16.3	16.3			16.3	16.3
Actuated g/C Ratio	0.06	0.36		0.03	0.33		0.35	0.35			0.35	0.35
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	107	1237		53	1160		491	556			484	556
v/s Ratio Prot	c0.04	c0.28		0.02	0.11			0.01				
v/s Ratio Perm							c0.10				0.01	0.01
v/c Ratio	0.61	0.78		0.70	0.35		0.28	0.02			0.02	0.02
Uniform Delay, d1	21.3	13.2		22.3	11.8		10.8	9.8			9.8	9.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	9.4	3.1		33.1	0.2		1.4	0.1			0.1	0.1
Delay (s)	30.7	16.3		55.4	12.0		12.3	9.9			9.9	9.9
Level of Service	C	B		E	B		B	A			A	A
Approach Delay (s)		17.2			15.6			11.9			9.9	
Approach LOS		B			B			B			A	

Intersection Summary					
HCM Average Control Delay	16.1	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	46.4	Sum of lost time (s)		8.0	
Intersection Capacity Utilization	53.3%	ICU Level of Service		A	
Analysis Period (min)	15				
c Critical Lane Group					

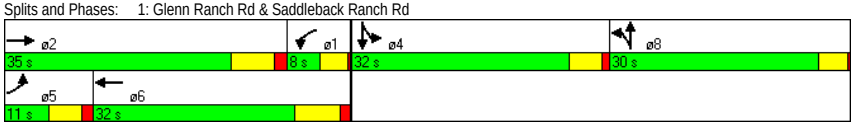
Appendix I

HCM LOS Worksheets with Full Access to Northeast Site at La Quinta/Malabar Road Stub Street

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	174	229	9	895	140	10	207	4	779
Turn Type	Prot		Prot		Split		Split		Free
Protected Phases	5	2	1	6	8	8	4	4	
Permitted Phases									Free
Detector Phase	5	2	1	6	8	8	4	4	
Switch Phase									
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.5	26.0	8.0	31.0	30.0	30.0	31.0	31.0	
Total Split (s)	11.0	35.0	8.0	32.0	30.0	30.0	32.0	32.0	0.0
Total Split (%)	10.5%	33.3%	7.6%	30.5%	28.6%	28.6%	30.5%	30.5%	0.0%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0	
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0	
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	-1.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0	4.0
Lead/Lag	Lead	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	Max	None	Max	None	None	None	None	
Act Effct Green (s)	7.1	38.4	4.1	28.5	12.0	12.0	13.3	12.2	77.1
Actuated g/C Ratio	0.09	0.50	0.05	0.37	0.16	0.16	0.17	0.16	1.00
v/c Ratio	0.60	0.18	0.11	0.80	0.55	0.13	0.40	0.43	0.54
Control Delay	45.0	12.8	42.6	25.3	39.2	16.9	32.5	34.2	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	12.8	42.6	25.3	39.2	16.9	32.5	34.2	1.3
LOS	D	B	D	C	D	B	C	C	A
Approach Delay		25.1		25.5		34.9		8.1	
Approach LOS		C		C		C		A	

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 77.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	229	54	9	895	138	140	10	24	207	4	779
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	5.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frt	1.00	0.97		1.00	0.98		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	3433	3438		1770	3468		1770	1666		1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	3433	3438		1770	3468		1770	1666		1681	1688	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	249	59	10	973	150	152	11	26	225	4	847
RTOR Reduction (vph)	0	15	0	0	113	0	0	22	0	0	0	0
Lane Group Flow (vph)	189	293	0	10	1010	0	152	15	0	115	114	847
Turn Type	Prot			Prot			Split			Split		Free
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												Free
Actuated Green, G (s)	5.6	35.3		0.6	28.8		12.0	12.0		12.2	12.2	80.1
Effective Green, g (s)	7.1	38.3		0.6	31.8		12.0	12.0		13.2	12.2	80.1
Actuated g/C Ratio	0.09	0.48		0.01	0.40		0.15	0.15		0.16	0.15	1.00
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	304	1644		13	1377		265	250		277	257	1583
v/s Ratio Prot	0.06	0.09		0.01	c0.29		0.09	0.01		0.07	0.07	
v/s Ratio Perm												c0.53
v/c Ratio	0.62	0.18		0.77	0.73		0.57	0.06		0.42	0.44	0.54
Uniform Delay, d1	35.2	11.9		39.7	20.5		31.7	29.2		30.0	30.9	0.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.9	0.2		128.6	3.5		3.0	0.1		1.0	1.2	1.3
Delay (s)	39.1	12.2		168.3	24.0		34.7	29.3		31.0	32.1	1.3
Level of Service	D	B		F	C		C	C		C	C	A
Approach Delay (s)		22.4			25.3			33.6			7.7	
Approach LOS		C			C			C			A	

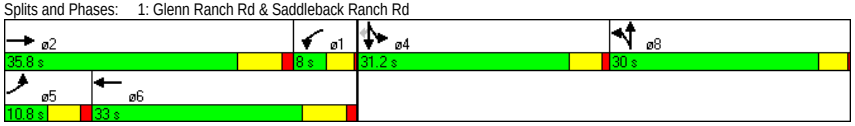
Intersection Summary					
HCM Average Control Delay	18.8	HCM Level of Service		B	
HCM Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	80.1	Sum of lost time (s)		4.0	
Intersection Capacity Utilization	58.5%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	174	229	9	895	140	10	4	779
Turn Type	Prot		Prot		Split			Perm
Protected Phases	5	2	1	6	8	8	4	
Permitted Phases								4
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	3.0	8.0	4.0	8.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.5	26.0	8.0	31.0	30.0	30.0	31.0	31.0
Total Split (s)	10.8	35.8	8.0	33.0	30.0	30.0	31.2	31.2
Total Split (%)	10.3%	34.1%	7.6%	31.4%	28.6%	28.6%	29.7%	29.7%
Yellow Time (s)	4.0	5.5	3.5	5.5	3.5	3.5	4.0	4.0
All-Red Time (s)	1.5	1.5	0.5	1.5	0.5	0.5	1.0	1.0
Lost Time Adjust (s)	-1.5	-3.0	0.0	-3.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	Max	None	Max	None	None	None	None
Act Effct Green (s)	6.9	38.9	4.0	29.4	12.7	12.7	18.9	18.9
Actuated g/C Ratio	0.08	0.46	0.05	0.35	0.15	0.15	0.22	0.22
v/c Ratio	0.68	0.19	0.12	0.85	0.58	0.14	0.58	0.75
Control Delay	53.9	15.3	46.4	30.5	43.7	18.0	36.1	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.9	15.3	46.4	30.5	43.7	18.0	36.1	11.5
LOS	D	B	D	C	D	B	D	B
Approach Delay		30.0		30.6		38.6	16.8	
Approach LOS		C		C		D	B	

No SB Free Right-Turns

Intersection Summary			
Cycle Length: 105			
Actuated Cycle Length: 85			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 25.9		Intersection LOS: C	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Glenn Ranch Rd & Saddleback Ranch Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	229	54	9	895	138	140	10	24	207	4	779
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			5.0	5.0
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	1.00			1.00	0.88
Frt	1.00	0.97		1.00	0.98		1.00	0.89			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	3433	3438		1770	3468		1770	1666			1776	2787
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (perm)	3433	3438		1770	3468		1770	1666			1776	2787
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	249	59	10	973	150	152	11	26	225	4	847
RTOR Reduction (vph)	0	16	0	0	118	0	0	22	0	0	0	518
Lane Group Flow (vph)	189	292	0	10	1005	0	152	15	0	0	229	329
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												4
Actuated Green, G (s)	5.4	35.8		0.7	29.6		12.7	12.7			18.8	18.8
Effective Green, g (s)	6.9	38.8		0.7	32.6		12.7	12.7			18.8	18.8
Actuated g/C Ratio	0.08	0.44		0.01	0.37		0.14	0.14			0.21	0.21
Clearance Time (s)	5.5	7.0		4.0	7.0		4.0	4.0			5.0	5.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	269	1516		14	1285		255	240			379	595
v/s Ratio Prot	c0.06	0.09		0.01	c0.29		c0.09	0.01			c0.13	
v/s Ratio Perm												0.12
v/c Ratio	0.70	0.19		0.71	0.78		0.60	0.06			0.60	0.55
Uniform Delay, d1	39.5	15.0		43.6	24.5		35.2	32.5			31.2	30.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	8.1	0.3		100.1	4.8		3.7	0.1			2.7	1.1
Delay (s)	47.6	15.3		143.7	29.3		39.0	32.6			34.0	32.0
Level of Service	D	B		F	C		D	C			C	C
Approach Delay (s)		27.6			30.3			37.7			32.4	
Approach LOS		C			C			D			C	

Intersection Summary					
HCM Average Control Delay	31.1	HCM Level of Service		C	
HCM Volume to Capacity ratio	0.69				
Actuated Cycle Length (s)	88.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	75.0%	ICU Level of Service		D	
Analysis Period (min)	15				
c Critical Lane Group					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	170	76	244	30	24	802
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.62	0.62	0.88	0.88
Hourly flow rate (vph)	205	92	394	48	27	911
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						519
pX, platoon unblocked	0.61					
vC, conflicting volume	1359	394			442	
vC1, stage 1 conf vol	394					
vC2, stage 2 conf vol	966					
vCu, unblocked vol	1270	394			442	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	30	86			98	
cM capacity (veh/h)	292	655			1118	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	296	394	48	27	911
Volume Left	205	0	0	27	0
Volume Right	92	0	48	0	0
cSH	353	1700	1700	1118	1700
Volume to Capacity	0.84	0.23	0.03	0.02	0.54
Queue Length 95th (ft)	190	0	0	2	0
Control Delay (s)	51.0	0.0	0.0	8.3	0.0
Lane LOS	F			A	
Approach Delay (s)	51.0	0.0		0.2	
Approach LOS	F				

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	100	30	274	916	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.63	0.63	0.86	0.86
Hourly flow rate (vph)	11	114	48	435	1065	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	TWLTL	
Median storage veh)					2	
Upstream signal (ft)				872		
pX, platoon unblocked						
vC, conflicting volume	1378	1065	1077			
vC1, stage 1 conf vol	1065					
vC2, stage 2 conf vol	313					
vCu, unblocked vol	1378	1065	1077			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	48	93			
cM capacity (veh/h)	274	218	643			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	125	48	217	217	1065	12
Volume Left	11	48	0	0	0	0
Volume Right	114	0	0	0	0	12
cSH	223	643	1700	1700	1700	1700
Volume to Capacity	0.56	0.07	0.13	0.13	0.63	0.01
Queue Length 95th (ft)	77	6	0	0	0	0
Control Delay (s)	40.1	11.0	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	40.1	1.1			0.0	
Approach LOS	E					

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	45	14	298	945	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	49	15	324	1027	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				485		
pX, platoon unblocked						
vC, conflicting volume	1221	515	1029			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1221	515	1029			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	90	98			
cM capacity (veh/h)	168	505	671			

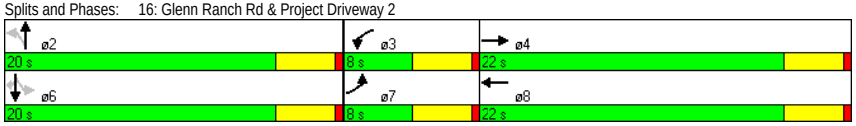
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	54	15	162	162	685	345
Volume Left	5	15	0	0	0	0
Volume Right	49	0	0	0	0	2
cSH	421	671	1700	1700	1700	1700
Volume to Capacity	0.13	0.02	0.10	0.10	0.40	0.20
Queue Length 95th (ft)	11	2	0	0	0	0
Control Delay (s)	14.8	10.5	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	14.8	0.5			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		36.2%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	37	367	11	840	147	0	20	0	56
Turn Type	Prot		Prot		Perm		Perm		Perm
Protected Phases	7	4	3	8		2		6	
Permitted Phases					2		6		6
Detector Phase	7	4	3	8	2	2	6	6	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	8.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	8.0	22.0	8.0	22.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	16.0%	44.0%	16.0%	44.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	4.1	17.3	4.1	15.9	16.3	16.3		16.3	16.3
Actuated g/C Ratio	0.10	0.40	0.10	0.37	0.38	0.38		0.38	0.38
v/c Ratio	0.24	0.33	0.07	0.70	0.31	0.04		0.04	0.10
Control Delay	24.5	9.0	21.8	15.6	13.7	0.1		11.6	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay	24.5	9.0	21.8	15.6	13.7	0.1		11.6	4.8
LOS	C	A	C	B	B	A		B	A
Approach Delay		10.3		15.7		11.5		6.6	
Approach LOS		B		B		B		A	

Intersection Summary		
Cycle Length: 50		
Actuated Cycle Length: 43.1		
Natural Cycle: 50		
Control Type: Actuated-Uncoordinated		
Maximum v/c Ratio: 0.70		
Intersection Signal Delay: 13.2	Intersection LOS: B	
Intersection Capacity Utilization 51.6%	ICU Level of Service A	
Analysis Period (min) 15		

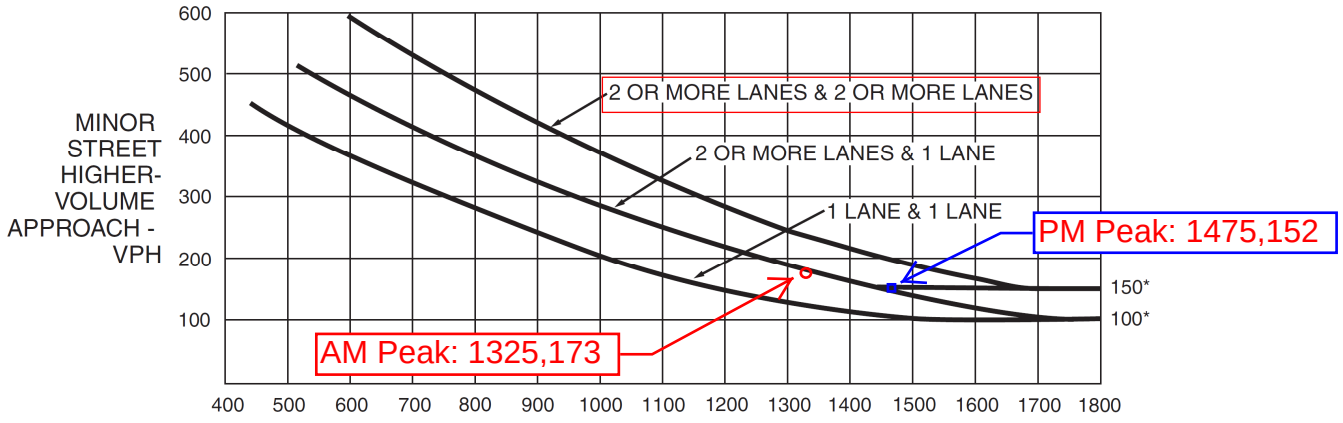
Splits and Phases: 16: Glenn Ranch Rd & Project Driveway 2



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	367	57	11	840	7	147	0	28	20	0	56
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
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frt	1.00	0.98		1.00	1.00		1.00	0.85			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.95	1.00
Satd. Flow (prot)	1770	3468		1770	3535		1770	1583			1770	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.74	1.00			0.74	1.00
Satd. Flow (perm)	1770	3468		1770	3535		1384	1583			1374	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	399	62	12	913	8	160	0	30	22	0	61
RTOR Reduction (vph)	0	24	0	0	1	0	0	19	0	0	0	40
Lane Group Flow (vph)	40	437	0	12	920	0	160	11	0	0	22	21
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	1.4	17.3		0.7	16.6		16.3	16.3			16.3	16.3
Effective Green, g (s)	1.4	17.3		0.7	16.6		16.3	16.3			16.3	16.3
Actuated g/C Ratio	0.03	0.37		0.02	0.36		0.35	0.35			0.35	0.35
Clearance Time (s)	4.0	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	3.0
Lane Grp Cap (vph)	54	1296		27	1267		487	557			484	557
v/s Ratio Prot	c0.02	0.13		0.01	c0.26			0.01				
v/s Ratio Perm							c0.12				0.02	0.01
v/c Ratio	0.74	0.34		0.44	0.73		0.33	0.02			0.05	0.04
Uniform Delay, d1	22.3	10.4		22.6	12.9		11.0	9.8			9.9	9.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2	41.8	0.2		11.2	2.1		1.8	0.1			0.2	0.1
Delay (s)	64.1	10.5		33.8	15.0		12.8	9.8			10.1	10.0
Level of Service	E	B		C	B		B	A			B	A
Approach Delay (s)		14.8			15.2			12.3			10.0	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Figure 4C-3. Warrant 3, Peak Hour



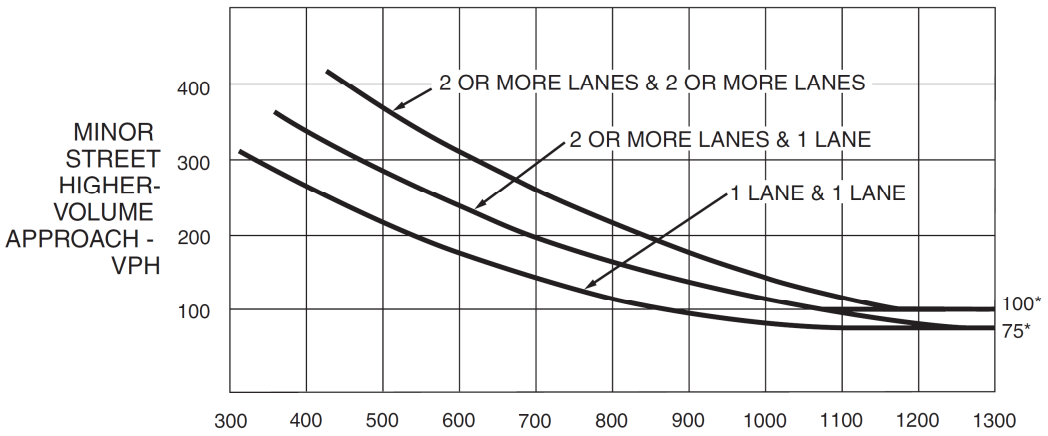
*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

---

n/a

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☐ NO ☐** n/a

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More				Hour
Both Approaches - Major Street						
Higher Approach - Minor Street						

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☐ No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐ No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☒ NO ☐**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☒ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☒ No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☒ No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☒ No ☐

PART B **SATISFIED YES ☒ NO ☐**

APPROACH LANES	One	2 or More	PM Hour
Both Approaches - Major Street		X	1475
Higher Approach - Minor Street		X	152

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☒ No ☐
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐ No ☐ n/a

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.