Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project

Appendix I

Traffic Impact Study

for the

Public Review Draft Environmental Impact Report

PDS2004-3300-04-004 (MUP);
PDS2004-3310-04-001 (RP);
PDS2010-3813-10-002 (SPA);
Log No. 04-190-04

June 2020

Prepared for:

County of San Diego
Planning & Development Services
5510 Overland Avenue, Suite 310
San Diego, California 92123

TRAFFIC IMPACT STUDY

For The

Otay Hills Project
(P04-004, RP04-001)

Prepared For: The County of San Diego

Submitted To:
EnviroMINE, Inc.
3511 Camino Del Rio South, Suite 403
San Diego, CA 92108

Prepared By:
Bill E Darnell, P.E. (RCE 22338)
Darnell & Associates, Inc.
4411 Mercury Street, Suite 207A
San Diego, CA 92111

Signature: ______________________

Date Signed: December 4, 2017

Original: December 4, 2017

D&A Ref No: 170404

Darnell & ASSOCIATES, INC.
TRANSPORTATION PLANNING & TRAFFIC ENGINEERING

December 4, 2017

Travis Jokerst
EnviroMINE, Inc
3511 Camino Del Rio South, Suite 403
San Diego, CA 92108

D&A Ref. No: 170404

Subject: Traffic Impact Study for the Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project. Record ID: PDS204-3300-04-004 (MUP), PDS2004-3310-04-001 (RP); PDS2010-3813-10-002 (SPA), Environmental Log No.: 04-190-04 Project located at the end of Calzada de la Fuente in the Otay Mesa Area of the County of San Diego. APNs: 648-050-13 (por), 14(por); 648-080-13, 14(por); 648-040-39 (por); 40; 648-090-04 (por), Trust Account No.: 12-D-04-0032714

Dear Mr. Jokerst:

This report analyzes the traffic impacts associated with the proposed project on local roadway segments and intersections under the following conditions: Existing and Opening Day 2019 plus the project traffic generated by the implementation of Phase 4 of the project based on the maximum production scenarios for Phases 1 and 2 through Year 2040. The Year 2050 analysis will discuss trip generations of the proposed Otay Mesa Specific Plan Amendment to add 49.6 acres of Mixed Industrial add 216.7 acres of Conservation/Limited Use and decrease 266.3 acres of Rural Residential Land Uses resulting in a net increase of 2,328 daily vehicles to be added to the 2050 traffic forecasts.

If you have any questions, please feel free to contact this office.

Sincerely,

Darnell & Associates, Inc.

Bill E Darnell

Bill E. Darnell, P.E.
Firm Principal
RCE 22338

REGISTERED PROFESSIONAL ENGINEER
BILLY EVERETTE DARNELL
No. 22338
CIVIL
STATE OF CALIFORNIA

Date Signed 12/04/2017

BED/jam
170404 OtayHill-Rpt-(Dec 2017)/ 12/17

4411 Mercury Street / Suite 207 A / SAN DIEGO, CA 92111
PHONE: 619-233-9373 /E-mail: office@darnell-assoc.com

TRAFFIC IMPACT STUDY

FOR

OTAY HILLS PROJECT
(P04-004, RP04-001)

IN THE COUNTY OF SAN DIEGO

Submitted To:

EnviroMINE, Inc
3511 Camino Del Rio South, Suite 403
San Diego, CA 92108

Prepared by:

DARNELL & ASSOCIATES, INC
1144 Mercury Street, Suite 207A
San Diego, California 92111
619-233-9373

December 4, 2017

170404 OtayHill-Rpt-(Dec 2017)

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

APPENDIX A

- 24 Hour Machine Counts
- AM/PM Peak Hour Traffic Counts
- Excerpts from County of San Diego Public Road Standards
- Excerpts from County's Guidelines for Determining Significance
- Excerpts from Caltrans Guidelines for the Preparation of Traffic Impact Studies

APPENDIX B

- Existing - Synchro Analysis
- Existing + Project Phases 1&2 Conditions Synchro Analysis
- Existing + Project Phases 1-3 Conditions Synchro Analysis
-

APPENDIX C

- Opening Year 2019 Conditions Synchro Analysis
- Opening Year 2019 + Project Phases 1&2 Conditions Synchro Analysis

APPENDIX D

- Existing +Phases 1&2 Mitigated
- Existing +Phases 1&3 Mitigated
- Opening Year 2019 Mitigated
- Opening Year 2019 +Phases 1&2 Mitigated

APPENDIX E

- SANDAG Series 12 Base Forecast Model for Otay Mesa 2050

APPENDIX F

- Project Alternatives Use Appendix M from the March 18, 2014 Report.

SECTION I – INTRODUCTION

PROJECT DESCRIPTION

The project proposes to develop a hard rock quarry located east of Alta Road at the end of Calzada De La Fuente in the County of San Diego. Figure 1 shows the regional location of the project. Figure 2 shows the proposed for the project Specific Plan Amendment Areas and Figure 3 shows the project site plan.

The project is a proposal to establish a mineral resource recovery operation and associated activities to create much needed construction aggregates and materials to serve the economy of San Diego County for an approximate 90±year period. The project is located within a 438-acre ownership with extractive operations proposed on 110 acres of the site. The balance of the 438-acre ownership would be placed in biological open space prior to aggregate recovery activities. Approximately 86-million tons of mineral resource would be extracted from the site and over 60 million tons of inert debris would be received over a 120± year period. Annual production amounts for the project are anticipated to be between 0.6 and 1.6 million tons of aggregate per year.

The proposed mineral resource recovery project would consist of site preparation for the processing plant equipment and a phased extraction and backfilling operation. Ongoing backfilling of the site during the open pit extraction phase of the project will allow reclamation to progress concurrently with the extraction operation. Assuming a start date of 2019, the project timeline for the project can be summarized as follows:

- Phase 1: Site Preparation, 1 Year (2019-2020)
- Phase 2: Extraction to Natural Grade Elevation, 22 Years (2020-2042)
- Phase 3: Open Pit Extraction, 68 Years (2042-2100)
- Phase 4: Inert Debris Engineered Fill Operation (Landfill), 80 Years (2042 – 2135)

It should be noted that the variables used to prepare the project time line include assumptions that could change over time. That is particularly true for Phase 4, where the amount of inert debris that will be available to fill the proposed landfill is dependent upon variables that will change such as: (1) the regional economy which affects the rate of construction; (2) the level of recycling; and (3) the competition from other inert landfill sites.

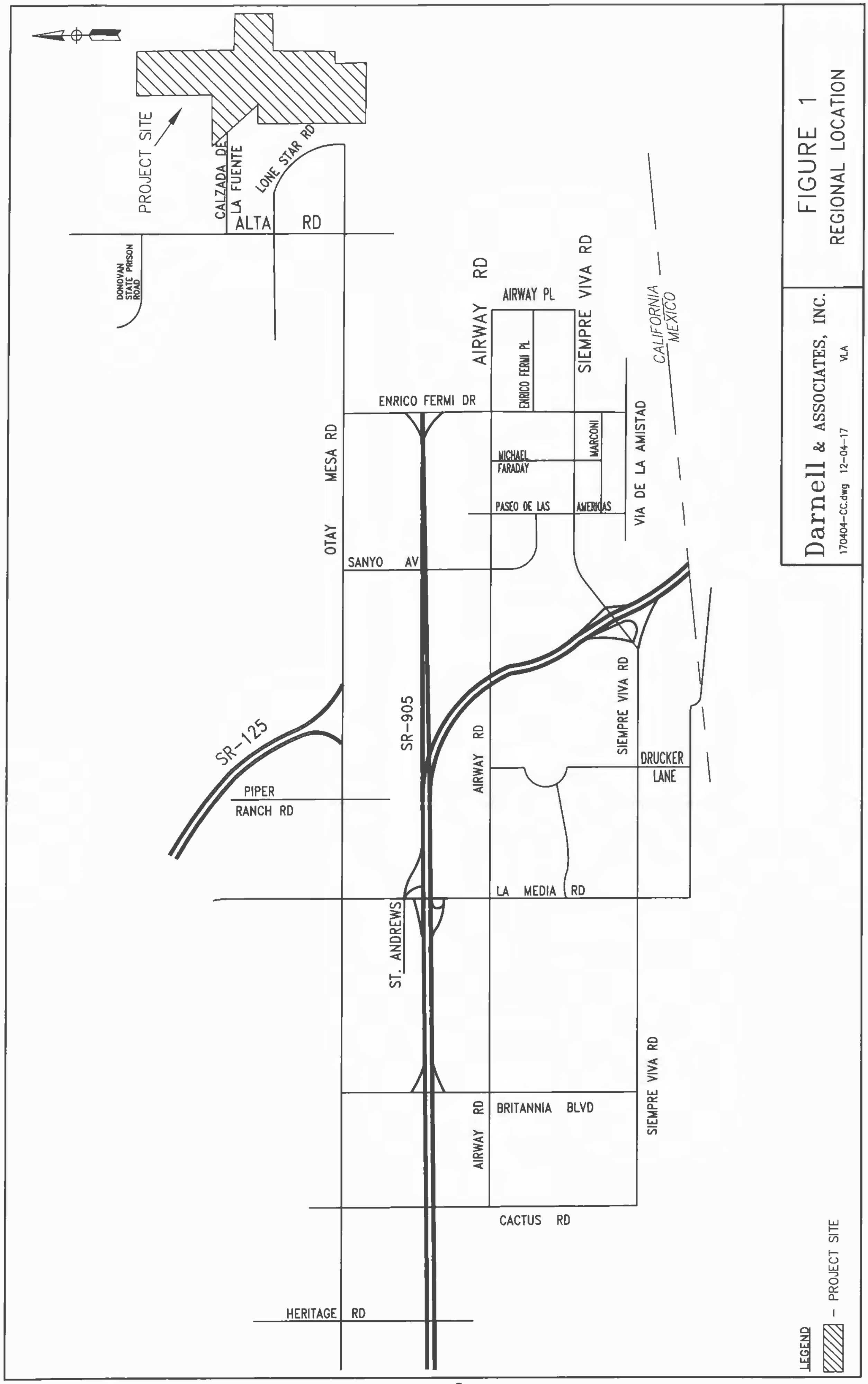
A more detailed description of the activities that will occur in each project phase is provided below:

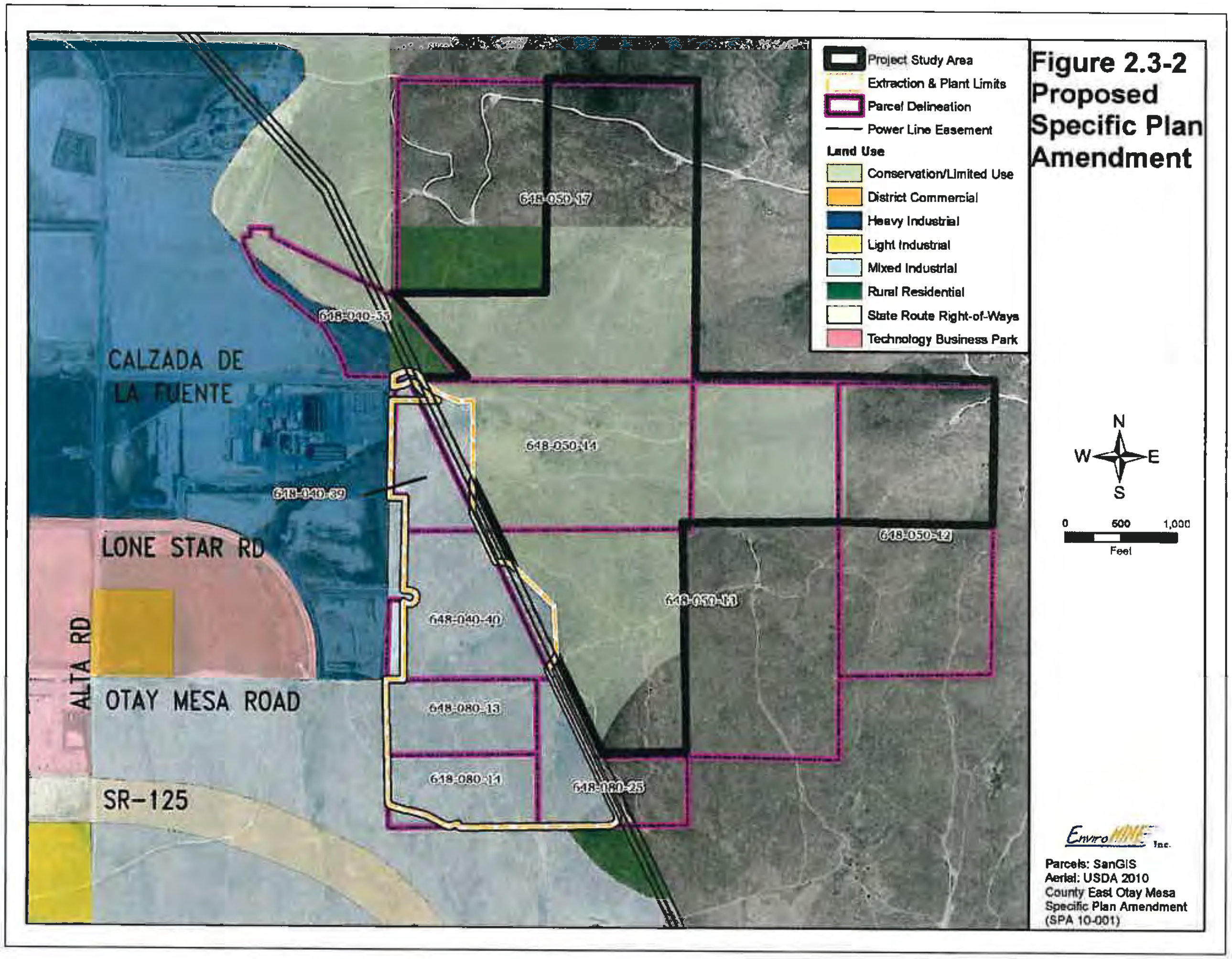
- **Phase 1: Site Preparation:** Phase 1 of the project involves site preparation activities prior to mining including initial grading to establish access routes, extending water and power service to the site, and grading pad areas for the processing plan location. Site preparation operations are located in the northern portion of the site.

- **Phase 2: Extraction to Natural Grade Elevation:** Phase 2 will involve commencement of extractive operations within the extraction footprint. This phase will consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site. Phase 2 is divided into three sub phases, with Phase 2a occurring in the north and ending with Phase 2c in the south.

- **Phase 3: Open Pit Extraction:** Phase 3 is the continuation of the mine operations from Phase 2 however the extraction of material will extend below the finished grade to form a sub-grade depression. Like Phase 2, Phase 3 is divided into sub phases (Phases 3a through 3d) which will progress in a north to south direction. Extraction operations that will occur during Phases 3b through 3d will extend to a maximum depth of approximately 500 feet from the existing grade.

- **Phase 4: Inert Debris Engineered Fill Operation (Landfill):** As extraction operations advance in Phase 3, the pit will be backfilled with inert fill material (fill dirt) on a phase-by-phase basis.


PROJECT SITE
CALZADA DE LA FUENTE
LONE STAR RD
ALTA RD
DONOVAN STATE PRISON ROAD
AIRWAY RD
AIRWAY PL
ENRICO FERMI PL
SIEMPRE VIVA RD
CALIFORNIA
MEXICO
ENRICO FERMI DR
OTAY MESA RD
MICHAEL FARADAY
MARCONI
VIA DE LA AMISTAD
PASEO DE LAS AMERICAS
SANYO AV
SR-905
SR-125
SIEMPRE VIVA RD
AIRWAY RD
DRUCKER LANE
PIPER RANCH RD
LA MEDIA RD
ST. ANDREWS
SIEMPRE VIVA RD
AIRWAY RD
BRITANNIA BLVD
CACTUS RD
HERITAGE RD
LEGEND
- PROJECT SITE
FIGURE 1
REGIONAL LOCATION
Darnell & ASSOCIATES, INC.
170404-CC.dwg 12-04-17 VLA



Darnell & ASSOCIATES, INC.
1704040-BB.dwg 8-18-17 VLA

FIGURE 2
OTAY MESA SPECIFIC PLAN
AMENDMENT AREA

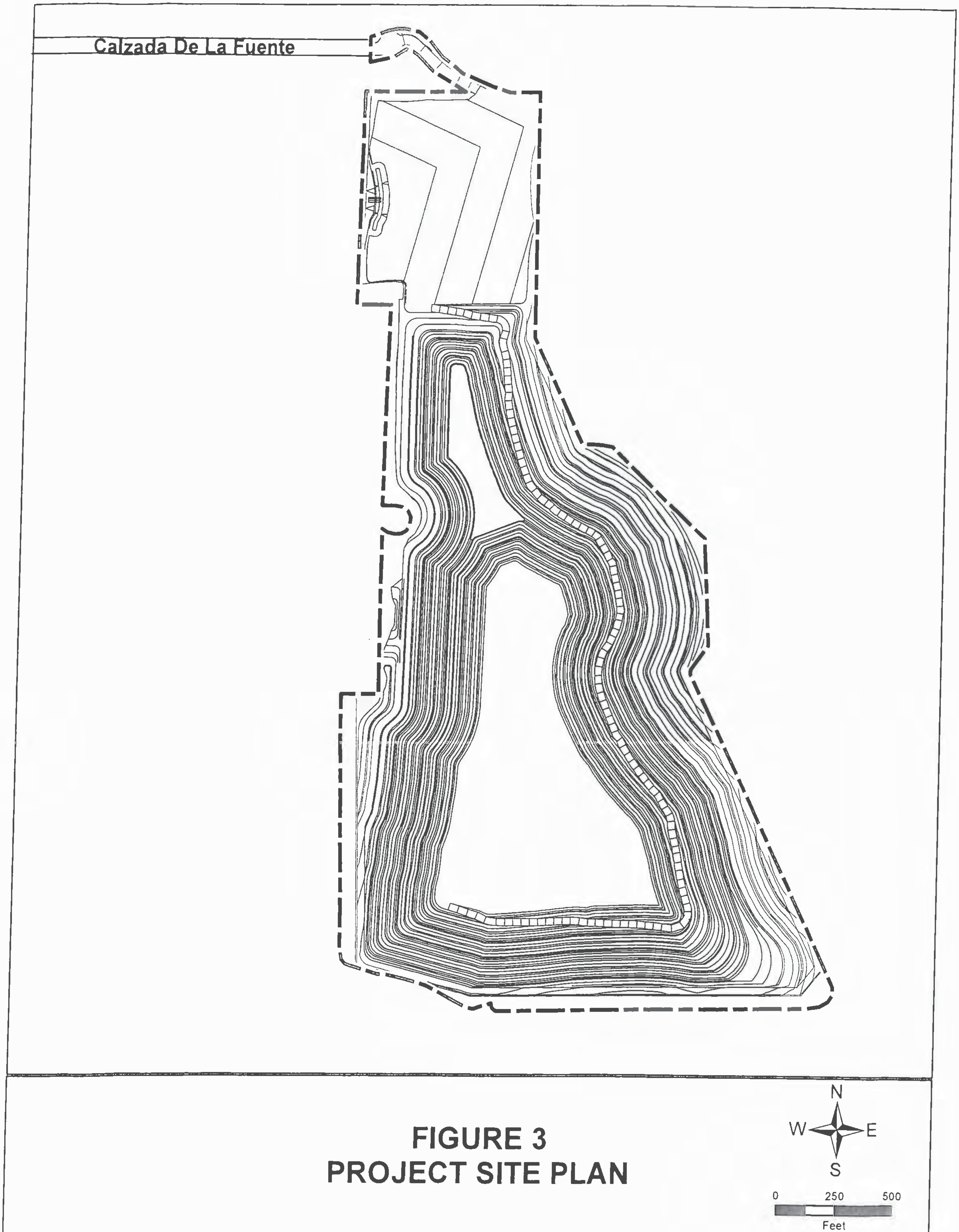


FIGURE 3
PROJECT SITE PLAN

As summarized in Section II, Phase 1 of the proposed project is estimated to generate 148 average daily passenger car equivalent (PCE) trips, 25 AM PCE trips, and 25 PM PCE trips.

Based on the average production scenario, Phase 2 and 3 (independently) are estimated to generate 1,332 average daily PCE trips, 83 AM PCE trips, and 97 PM PCE trips, and Phase 4 (independently) is estimated to generate 390 average daily PCE trips, 33 AM PCE trips, and 47 PM PCE trips.

Based on the maximum production scenario, Phase 2 and 3 (independently) are estimated to generate 2,154 average daily PCE trips, 127 AM PCE trips, and 141 PM PCE trips, and Phase 4 (independently) is estimated to generate 598 average daily PCE trips, 46 AM PCE trips, and 60 PM PCE trips.

Since the combination of Phases 1 and 2 generate the highest number of trips to occur thru to 2042, this report analyzes the project impacts associated with the addition of the traffic generated by the combination of Phases 1 and 2 of the proposed project, based on maximum production scenarios.

SANDAG/CALTRANS' PROJECTS

Caltrans currently proposes State Route 11 to be extended as a Toll road to the new Port of Entry. The following summarizes the project description and schedule for SR-11 project.

STATE ROUTE 11

The State Route 11 (SR-11) project will consist of constructing approximately two miles of a new four-lane toll highway from the proposed SR-905/SR-125 junction to the future Federal Port of Entry (POE) at east Otay Mesa in San Diego County. An environmental study for the SR-11 program has been completed. SR-11 was extended to Enrico Fermi Drive in February 2017. The design of the remainder SR-11 Toll Facility to construct a 4-lane Toll-way and connect to the future Otay Mesa East Port of Entry with Mexico is under design. Construction dates for the SR-11 and Otay Mesa East Port of Entry will not be established until funding for the project is secured. However, this project is a high priority project for the region. Caltrans has identified that the preferred interchange alternatives for the SR-11 include a full interchange at Enrico Fermi Drive and a one and one-half interchange at Siempre Viva Road. The SR-11 facility and the POE at the third border crossing were assumed to be constructed and operational under the 2050 conditions analysis. Planned State Route SR-11 is critical to accommodating the build out of future development of the entire Otay Mesa area. It should be noted that the SR-125 facility is an existing major transportation in the Otay Mesa area facility that was completed and opened to traffic in November 2007. SR-905 was just recently extended to Enrico Fermi Drive and opened to traffic in February 2017.

EAST OTAY MESA BUSINESS PARK SPECIFIC PLAN

The East Otay Mesa Business Park Specific Plan has been amended by SPA.14.002 on April 22, 2015 by the San Diego Board of Supervisors:

An application for a Specific Plan Amendment was submitted to address the land use concerns associated with long term use of the project site following the end of mining operations. The specific Plan Amendment would change the designation of approximately 36.3acres of Mixed Industrial Land to Conservation/Limited Use. These lands are found to the north and east of the proposed quarry site. In addition, approximately 85.7 acres of land currently designated Rural Residential would be designated Mixed Industrial. All of the Rural Residential conversion to Mixed Industrial is located within the proposed quarry footprint (see Figure2). Also, the SPA would change the designation of 184 acres of Rural Residential to Conservation/Limited Use. Table 1 shows the currently proposed changes in land use designation when compared to the current plan totals:

Table 1: Change in Zoning District Acreages			
Zone	Existing Plan (Acres)	Total Plan (Acres)	Net Change (Acres)
Mixed Industrial	670	715	+45
Rural Residential	314	47	-267
Conservation/Limited Use	243	464	+222

The Specific Plan Amendment is proposed to establish a long-term land use policy for the area planned for extractive operation, IDEFO, and subsequent industrial use. Through adoption of the proposed SPA, and approval of the MUP/RP, the property owner will have the land use entitlement to operate a rock quarry for the production of construction aggregate and associated processing activities and for operation of an IDEFO. In addition to the regulations adopted with the Specific Plan the rock quarry will be required to follow the requirements of the San Diego County Grading Ordinance (Chapter 87.700 et seq.), the California Surface Mining and Reclamation ACT (SMARA) (Division 2, Chapter 9, Section 2710 et seq.), and the California Integrated Waste Management Board's regulations relating to the operation of an IDEFO (Title 14, Natural Resources-Division 7, Chapter 3).

As mining operations are occurring, the site will be backfilled and reclaimed to pad areas. Post-mining land uses on these pads will be consistent with the underlying land use designation. The Reclamation Plan will therefore include all necessary steps to prepare the project site for uses permitted by the Mixed Industrial land use designation.

SCENARIOS STUDIED

The following traffic scenarios were analyzed in this report:

Existing (Year 2017) Conditions refers to that condition which exists on the ground today, including existing traffic counts and existing lane configurations at intersections and on roadway segments. The extension of SR-905 to Enrico Fermi Drive was completed and opened to traffic in February 2017. To account for the extension of SR-905 to Enrico Fermi Drive the study area was revised to reflect the SR-905 extension and new traffic counts were collected in March 2016.

Opening Year 2019 Conditions with Proposed Project (Maximum Production) refers to the Opening Year 2019 condition plus the traffic generated by the combination of Phases 1 and 2 of the proposed project based on the maximum production scenario.

Year 2050 Conditions refers to the conditions and traffic volumes that will exist under 2050 conditions per the East Otay Mesa Specific Plan. All roadway segments were assumed to be built out to their classifications as identified in the *East Otay Mesa Business Park Specific Plan*, as Amended by SPA 14-0002 approved by the County Board of Supervisors on April 22, 2015. Traffic forecasts for the year 2050 were based on the February 20, 2014 Traffic Forecasts prepared by SANDAG for the General Plan Update. This scenario assumes that the project site shown on Figure 2 is developed with 62acres of mixed industrial use and 254 acres of rural residential use.

Year 2050 with Proposed SPA refers to those conditions which include the 2050 roadway classifications; however, the 2050 traffic volumes were adjusted to include the project's proposed specific plan amendment to increase the mixed industrial land use within the project site by a net of 43 acres and decrease the rural residential land use within the project site by a net of 254 acres. This results in the project site consisting 105 acres of mixed industrial use and approximately211 acres of conservation/limited use.

LEVEL OF SERVICE

Level of Service (LOS) is a professional industry standard by which the operating conditions of a given roadway segment or intersection is measured. Level of Service is defined on a scale of A to F; where LOS A represents the best operating conditions and LOS F represents the worst operating conditions. LOS A facilities are characterized as having free flowing traffic conditions with no restrictions on maneuvering or operating speeds; traffic volumes are low and travel speeds are high. LOS F facilities are characterized as having forced flow with many stoppages and low operating speeds. Table 2 shows the delay, miles per hour (mph), and ADT ranges that are equivalent to each Level of Service. In general, the region-wide goal for an acceptable Level of Service on all roadway segments and intersections is "D."

Table 2 - Level of Service Ranges

Level of Service	Roadway Segments - Average Daily Traffic (ADT) Volume [1]	Signalized Intersections - Delay (Seconds/Vehicle)[2]	Unsignalized Intersections - Delay (Seconds/Vehicle)[2]
A	Less Than 1,900	Less Than or Equal to 10.0	Less Than or Equal to 10.0
B	1,901 to 4,100	10.1 to 20.0	10.1 to 15.0
C	4,101 to 7,100	20.1 to 35.0	15.1 to 25.0
D	7,101 to 10,900	35.1 to 55.0	25.1 to 35.0
E	10,901 to 16,200	55.1 to 80.0	35.1 to 50.0
F	Greater Than 16,200	Greater than 80.0	Greater than 50.0

[1] The volume ranges are based on the County of San Diego Circulation Element of a Light Collector, the average daily volume ranges for the other roadway classifications has been provided in Appendix A.
[2] The delay ranges shown are based on the 2000 Highway Capacity Manual (HCM).

ANALYSIS METHODOLOGY

The roadway segment daily LOS was determined by comparing the average daily traffic (ADT) volumes under all traffic conditions to the capacity of the roadway according to its roadway cross-section and classification. For the purpose of this report, the daily traffic volumes of the roadway segments in the vicinity of the project were compared to the County of San Diego Level of Service classification thresholds. The daily (24 hour) traffic count sheets, a copy of the "Summary of County of San Diego Public Road Standards" are included in Appendix A.

Synchro, Version 8, was utilized to analyze the morning and afternoon peak hour conditions of the intersections in the project vicinity. The signalized intersection methodology defines LOS based on delay using variables such as lane configuration, traffic volumes, and signal timings. The unsignalized intersection methodology defines LOS based on the longest delay experienced by any single movement. Since the Synchro program calculates the average delay per vehicle, there may be instances where the Synchro analysis will show a reduction in delay with the addition of more traffic. This phenomenon occurs when the additional traffic is added to a movement that experiences a shorter amount of delay, thereby decreasing the intersection's average delay per vehicle (i.e. a larger amount of vehicles will have to wait a shorter time while only a few vehicles have to wait an extended period of time). It should be noted that the Synchro program is based on the 2000 Highway Capacity Manual (HCM).

REPORT ORGANIZATION

Following this section, Section II examines the potential trips generated by the proposed project and it defines the trip distribution assumptions. Section III evaluates the Existing and Opening Year 2019 roadway characteristics and traffic conditions without the project. Section IV provides analysis of project's traffic impacts under Opening Year (2019) and Opening Year (2019) with project conditions and internal circulation, Section V analyzes the year 2050 Daily conditions. Section VI addresses the project's access, Section VII provides a summary of impacts and mitigation, Section VIII summarizes the report findings and conclusions.

SECTION II – PROJECT RELATED CONDITIONS

TRIP GENERATION

The trip generation potential for a project is estimated based on the proposed land use characteristics. In the San Diego area, there are three sources that provide standard trip generation rates for various land use types: (1) The City of San Diego's *Trip Generation Manual*, (2) The San Diego Association of Governments' (SANDAG's) *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, and (3) *The Institute of Transportation Engineers (ITE) Trip Generation Manual, 8th Edition*. None of these sources have published rates for a facility similar to the proposed Otay Hills Project; therefore, the trip generation potential for the project was estimated based on the anticipated operating characteristics of the project (i.e. number of employees, volume of material produced, etc.). Table 3 summarizes the trip generation rates used in this analysis for the proposed Otay Hills Project. Table 3 also shows the trip generation rates and summary for the employees of the rock quarry. It is estimated that about 15 employees would be working in the processing plant and approximately 20 truck drivers would be employed for transporting the production of and the import for the quarry.

Table 3 – Trip Generation Rates

Land Use/Activity	Daily	AM Peak Hour			PM Peak Hour		
		Total- % of Daily	%In	%Out	Total – % of Daily	%In	%Out
Phase 1 Trip Generation Rates							
Construction Workers	2.5 Trips / Employee	40%	100%	0%	40%	0%	100%
Vendors	2.0 Trips / Vendor	0%[a]	0%	0%	0%[a]	0%	0%
Equipment/Plant Deliveries	4 PCE Trips / Truck [b]	12.5%[c]	50%	50%	12.5%[c]	50%	50%
Phase 2 or 3 Trip Generation Rates							
Concrete Production/Asphalt Production/Recycle	4 PCE Trips / Truck [b]	5.9%[d]	50%	50%	5.9%[d]	50%	50%
CTB Production/Rock Sales	4 PCE Trips / Truck [b]	5.9%[d]	50%	50%	5.9%[d]	50%	50%
Sand Import/Cement Import-Concrete Production/Asphalt Production/Oil Import	4 PCE Trips / Truck [b]	4.2%[e]	50%	50%	4.2%[e]	50%	50%
Rock Sales/ Cement Import - CTB Production	4 PCE Trips / Truck [b]	4.2%[e]	50%	50%	4.2%[e]	50%	50%
Recycle Production & Import	4 PCE Trips / Truck [b]	5.9%[d]	50%	50%	5.9%[d]	50%	50%
Phase 4 Trip Generation Rates							
Land Filling Activities	4 PCE Trips / Truck [b]	5.9%[d]	50%	50%	5.9%[d]	50%	50%
Employee Trip Generation Rates (Phases 2, 3, or 4)							
Employee Trips – Processing Plant	2.5 Trips / Employee	5%	90%	10%	33%	10%	90%
Employee Trips – Truck Drivers	2.0 Trips / Employee	5%	90%	10%	33%	10%	90%

(a) Assumes that the Vendors deliver materials to the site during non-peak hours
(b) Assumes 2 Trips per Truck (1 inbound, 1 outbound), and that 1 Truck trip is equivalent to 2 passenger car equivalent (PCE) trips
(c) Assumes Trucks are distributed equally throughout an 8-hour day
(d) Assumes Trucks are distributed equally throughout a 17-hour day between 5:00 AM to 10:00 PM, the primary operation hours for the processing activities
(e) Assumes imports and internal rock sales occur 24 hours a day and that the trucks are distributed equally throughout the day.

The volume of material for production and import of concrete, asphalt, CTB, and rock that would occur during Phases 2 and 3 has been estimated for the average and maximum daily numbers based on the discussions with the client and is summarized as follows:

Average Daily Trip Generation

- The quarry production comprises of 1,000 cubic yards of concrete production along with 1,000 tons of asphalt production, 200 tons of CTB production, and 1,800 tons of rock sales;

- Sand import comprises of 375 and 100 tons of concrete and asphalt production, respectively;

- Cement import comprises of 250 and 6 tons of concrete and CTB production, respectively;

- Approximately 50 tons of oil would need to be imported to the site each day to support the proposed asphalt production; and

- Recycle comprises of 1,200 tons of recycling production and recycling import combined.

Maximum Daily Trip Generation

- The quarry production comprises of 1,500 cubic yards of concrete production along with 2,000 tons of asphalt production, 1000 tons of CTB production, and 3,000 tons of rock sales;

- Sand import comprises of 375 and 200 tons of concrete and asphalt production, respectively;

- Cement import comprises of 250 and 20 tons of concrete and CTB production, respectively;

- Approximately 100 tons of oil would need to be imported to the site each day to support the proposed asphalt production; and

- Recycle comprises 2,000 tons of recycling production and recycle import combined.

Table 4 shows the estimated number of trucks that would be required for each phase of development. It is possible that the number of truck trips shown in Table 4 will vary depending on product demand. The sum of the maximum daily trips represents a worst-case scenario and will not be exceeded.

The trip generation calculations for the average and maximum operating conditions are summarized in Table 5. It should be noted that the maximum operating conditions would occur in rare situations, thus the trip generation calculations for the maximum operating conditions summarized in Table 5 should be considered a worst-case impact assessment scenario.

As summarized in Table 5, Phase 1 of the proposed project is estimated to generate 148 average daily passenger car equivalent (PCE) trips, 25 AM PCE trips, and 25 PM PCE trips. Based on the average production scenario, Phase 2 and 3 (independently) are estimated to generate 1,332 average daily PCE trips, 83 AM PCE trips, and 97 PM PCE trips It should be noted that a portion of the trips generated during Phases 2 and 3 are internal trips, (i.e. 50% of the trips attributed to the rock sales all stay on-site), thus based on the average production scenario, Phase 2 and 3 (independently) are estimated to generate 1,196 external average daily PCE trips, 77 external AM PCE trips, and 91 external PM PCE trips. Based on the maximum production scenario, Phase 2 and 3 (independently) are estimated to generate 2,154 external average daily PCE trips, 127 external AM PCE trips, and 141 external PM PCE trips.

Table 4 – Estimation of Truck Trip Generation						
Activity	Average Daily No. of Units	Unit	Truck Capacity (Units / Truck)	Average Daily No. of Trucks	Max. Daily No. of Units	Max. Daily No. of Trucks
Estimation of Truck Trips for Phase 1						
Construction Workers	-	-	-	0	-	0
Vendors	-	-	-	0	-	0
Equipment/Plant Deliveries	-	-	-	20	-	20
Total Phase 1				**20**	-	**20**
Estimation of Truck Trips for Phase 2 and 3						
Quarry Production						
Concrete Production	1,000	Cubic Yards	8.4	119	1,500	179
Asphalt Production	1,000	Tons	27	37	2,000	74
CTB Production	200	Tons	27	8	1,000	37
Rock Sales	1,800	Tons	54	68	3,000	112
			Subtotal	**232**		**401**
Sand Import						
Concrete Production	375	Tons	27	14	375	14
Asphalt Production	100	Tons	27	4	200	7
			Subtotal	**18**		**21**
Cement Import						
Concrete Production	250	Tons	27	10	250	10
CTB Production	6	Tons	27	1	20	1
			Subtotal	**11**		**11**
Oil Import						
Asphalt Production	50	Tons	27	2	100	4
Subtotal				**2**		**4**
Recycle						
Recycle Production	600	Tons	27	23	1,000	37
Recycle Import	600	Tons	22	28	1,000	45
			Subtotal	**51**		**82**
			Total Phase 2 and 3	**314**		**519**
Estimation of Truck Trips for Phase 4						
Land Fill						
Infill Material	2,106	Tons	27	78	3,510	130
			Total Phase 4	**78**		**130**

Based on the average production scenario, Phase 4 (independently) is estimated to generate 390 average daily PCE trips, 33 AM PCE trips, and 47 PM PCE trips. Based on the maximum production scenario, Phase 4 (independently) is estimated to generate 598 average daily PCE trips, 46 AM PCE trips, and 60 PM PCE trips.

Table 5 – Trip Generation Calculations for Otay Hills

Land Use	Average Production								Maximum Production							
	Total # Units	Daily	AM Peak Hour			PM Peak Hour			Total # Units	Daily	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out			Total	In	Out	Total	In	Out
Phase 1 – Site Preparation																
Construction Workers	15 Workers	38	15	15	0	15	0	15	15 Workers	38	15	15	0	15	0	15
Vendors	15 Vendors	30	0	0	0	0	0	0	15 Vendors	30	0	0	0	0	0	0
Equipment/Plant Deliveries	20 Trucks	80	10	5	5	10	5	5	20 Trucks	80	10	5	5	10	5	5
Sub-Total Phase 1:		**148**	**25**	**20**	**5**	**25**	**5**	**20**		**148**	**25**	**20**	**5**	**25**	**5**	**20**
Phase 2 or 3 - Extraction																
Quarry Production																
Concrete Production	119 Trucks	476	28	14	14	28	14	14	179 Trucks	714	42	21	21	42	21	21
Asphalt Production	137 Trucks	148	9	5	4	9	4	5	74 Trucks	296	17	9	8	17	8	9
CTB Production	8 Trucks	32	2	1	1	2	1	1	37 Trucks	148	9	5	4	9	4	5
Rock Sales - External	34 Trucks	136	6	3	3	6	3	3	56 Trucks	222	9	5	4	9	4	5
Rock Sales – Internal (a)	34 Trucks	136	6	3	3	6	3	3	56 Trucks	222	9	5	4	9	4	5
Sub-Total Production	***232*** Trucks	***928***	***51***	***26***	***25***	***51***	***25***	***26***	***401*** Trucks	***1,602***	***86***	***45***	***41***	***86***	***42***	***44***
Sand Import																
Concrete Production	14 Trucks	56	2	1	1	2	1	1	14 Trucks	56	2	1	1	2	1	1
Asphalt Production	4 Trucks	15	1	1	0	1	0	1	7 Trucks	30	1	1	0	1	0	1
Sub-Total Sand Import	*18* Trucks	*71*	*3*	*2*	*1*	*3*	*1*	*2*	*21* Trucks	*86*	*3*	*2*	*1*	*3*	*1*	*2*
Cement Import																
Concrete Production	10 Trucks	40	2	1	1	2	1	1	10 Trucks	40	2	1	1	2	1	1
CTB Production	1 Trucks	4	0	0	0	0	0	0	1 Trucks	3	0	0	0	0	0	0
Sub-Total Cement Import	*11* Trucks	*44*	*2*	*1*	*1*	*2*	*1*	*1*	*11* Trucks	*43*	*2*	*1*	*1*	*2*	*1*	*1*
Oil Import																
Asphalt Production	2 Trucks	7	0	0	0	0	0	0	4 Trucks	15	1	1	0	1	0	1
Sub-Total Oil Import	*2* Trucks	***7***	***0***	***0***	***0***	***0***	***0***	***0***	*4* Trucks	*15*	*1*	*1*	*0*	*1*	*0*	*1*
Recycle																
Recycle Production	23 Trucks	92	5	3	2	5	2	3	37 Trucks	148	9	5	4	9	4	5
Recycle Import	28 Trucks	112	7	4	3	7	3	4	45 Trucks	182	11	6	5	11	5	6
Sub-Total Recycle	*51* Trucks	*204*	*12*	*7*	*5*	*12*	*5*	*7*	*82* Trucks	*330*	*20*	*11*	*9*	*20*	*9*	*11*
Sub-Total Phases 2 & 3	**314** Trucks	**1,254**	**68**	**36**	**32**	**68**	**32**	**36**	**519** Trucks	**2,076**	**112**	**60**	**52**	**112**	**53**	**59**
Phase 4 – Land Fill Operation																
Land Fill																
Infill Operation	78 Trucks	312	18	9	9	18	9	9	130 Trucks	520	31	16	15	31	16	15
Sub-Total Phase 4:		**312**	**18**	**9**	**9**	**18**	**9**	**9**		**520**	**31**	**16**	**15**	**31**	**16**	**15**
Employees for Phases 2, 3, or 4																
Processing Plant	15 Employees	38	2	2	0	2	0	2	15 Employees	38	2	2	0	2	0	2
Truck Drivers	20 Employees	40	13	12	1	27	14	13	20 Employees	40	13	12	1	27	14	13
Total Employee Trips	**35 Employees**	**78**	**15**	**14**	**1**	**29**	**14**	**15**	**35 Employees**	**78**	**15**	**14**	**1**	**29**	**14**	**15**
Trip Generation Totals w/Employee Trips																
Total Trip Generation for Phase 1	-	**148**	**25**	**20**	**5**	**25**	**5**	**20**	-	**148**	**25**	**20**	**5**	**25**	**5**	**20**
Total Trip Generation for Phase 2	-	**1,332**	**83**	**50**	**33**	**97**	**46**	**51**	-	**2,154**	**127**	**74**	**53**	**141**	**67**	**74**
Total Trip Generation for Phase 3	-	**1,332**	**83**	**50**	**33**	**97**	**46**	**51**	-	**2,154**	**127**	**74**	**53**	**141**	**67**	**74**
Total Trip Generation for Phase 4	-	**390**	**33**	**23**	**10**	**47**	**23**	**24**	-	**598**	**46**	**30**	**16**	**60**	**30**	**30**

See Table 2 for Trip Generation Rates and Table 3 for the Calculation of the Number of Truck Trips
(a) Half of the Rock Sales are generated internally within the project site, therefore these project trips will not exit the project site

The combination of Phases 1 and 2, per the maximum production scenario, are estimated to generate 2,302 average daily PCE trips, 152 AM PCE trips, and 166 PM PCE trips. Since the combination of Phases 1 and 2 generate the highest number of trips to occur between now and 2042, this report analyzes the project impacts associated with the addition of the traffic generated by the combination of Phases 1 and 2 of the proposed project, based on the maximum production scenario. Since Phases 2 and 3 will develop independently the Phase 1 and 2 analysis would also address Phases 1 and 3 impacts.

TRIP GENERATION FOR EAST OTAY MESA BUSINESS PARK SPECIFIC PLAN

The project site located east of Alta Road at the end of Calzada De La Fuente in the East Otay Mesa area of the County of San Diego within the East Otay Mesa Business Park Specific Plan (EOMSP) and includes Mixed Industrial Land Use and Rural Residential Land Use. As part of the project, the current East Otay Mesa Specific Plan will need to be amended to designate the quarry footprint as all Mixed Industrial. It would also be necessary to eliminate the Mixed Industrial designation from areas of the site that will not be affected by extractive operations and to designate those areas as Conservation/Limited Use. The proposed Specific Plan Amendment (SPA) would create a total of 105 acres of Mixed Industrial Land Use and 211 acres of Conservation/Limited Use. This is a net increase of 43 acres of Mixed Industrial Land Use and a net decrease of 254 acres of Rural Residential Land Use within the EOMSP.

Table 6 provides a summary of the trip generation calculations for the project site based on the existing Specific Plan land use designations and the proposed SPA land use designations. As shown in Table 6, the proposed SPA will result in an increase of 1,033 average daily trips over what was assumed in the East Otay Mesa Business Park Specific Plan.

Table 6 –
COMPARISON OF TRIP GENERATION RATES FROM THE PROJECT SITE PER USE SPECIFIED BY EOMSP AND PROPOSED SPA

Land Use	Trip Rate	No. of Units	Unit	Daily Trip Generation
Existing Use (per EOMSP)				
Mixed Industrial	90 Trips/Acre	62	Acres	5,580
Rural Residential	12 Trips/Acre	254	Acres	3,048
Conservation/Limited Use	1 Trip/Acre	0	Acres	0
Total	-	**316**	**Acres**	**8,628**
Proposed Use				
Mixed Industrial	90 Trips/Acre	105	Acres	9,450
Rural Residential	12 Trips/Acre	0	Acres	0
Conservation/Limited Use	1 Trip/Acre	211	Acres	211
Total	-	**316**	**Acres**	**9,661**
Net Difference				
Mixed Industrial	90 Trips/Acre	**43**	**Acres**	**3,870**
Rural Residential	12 Trips/Acre	**254**	**Acres**	**3,040**
Conservation/Limited Use	1 Trip/Acre	**211**	**Acres**	**211**
Total	-	**-0**	**Acres**	**1,033**

Source: Darnell & Associates 2017, The remaining 94 acres of the project site are located outside the EOMSP and would be part of the Otay hills Conservation Area.

The proposed SPA is proposed to establish a long-term land use policy for the area planned for extractive operations, Inert Debris Engineered Fill Operations (IDEFO), and subsequent industrial use. The proposed Otay Hills project will establish interim uses on the project site thru 2042 and future mixed Industrial and Residential uses.

TRIP DISTRIBUTION/TRIP ASSIGNMENT

As previously discussed, since Phases 1 plus 2 generate the highest number of trips, this traffic study focuses on the potential impacts that would be associated with the addition of the traffic generated by the combination of Phases 1 and 2 of the proposed project, based on the maximum production scenario. Therefore, only the traffic generated by Phases 1 and 2 of the proposed project were distributed and assigned to the adjacent roadway network.

Per the proposed project time line, based on Phase 1 of the project starting in the Year 2019 Phase 2 of the proposed project is not anticipated to start until around the Year 2020 and Phase 4 of the proposed project is not anticipated to start until around the Year 2020. However, in order to determine the project's potential direct impacts, the project traffic for Phases 1 thru 2 was distributed and assigned to the roadway network under Existing and Opening Year 2019 conditions.

The proposed project is anticipated to last for 120 ± years bringing the end of the project to approximately the Year 2142. At the end of the proposed project, the site could then be redeveloped per its proposed Specific Plan Amendment which would allow for a total of 83.0 acres of Mixed Industrial Land Use and 27.0 acres of Rural Residential Land Use and 216.7 Acres of Conservative Land Use. (This is a net increase of 53.4 acres of Mixed Industrial Land Use and 216.7 Acres of Conservative Land Use a net decrease of 270 acres of Rural Residential Land Use within the project site compared the existing Specific Plan land use designations.) Since the Year 2142 is to too far in the future to be able to predict what the traffic conditions would be with any kind of accuracy, this traffic study analyzes the potential impacts of the proposed Specific Plan Amendment under the Year 2050 conditions, the analysis year for the build out analysis provided in the County of San Diego's *East Otay Mesa Business Park Specific Plan (SPA 10-001).*

The trip distribution and project related traffic volumes for Phases 1 and 2 are illustrated in Figures 4 and 5.

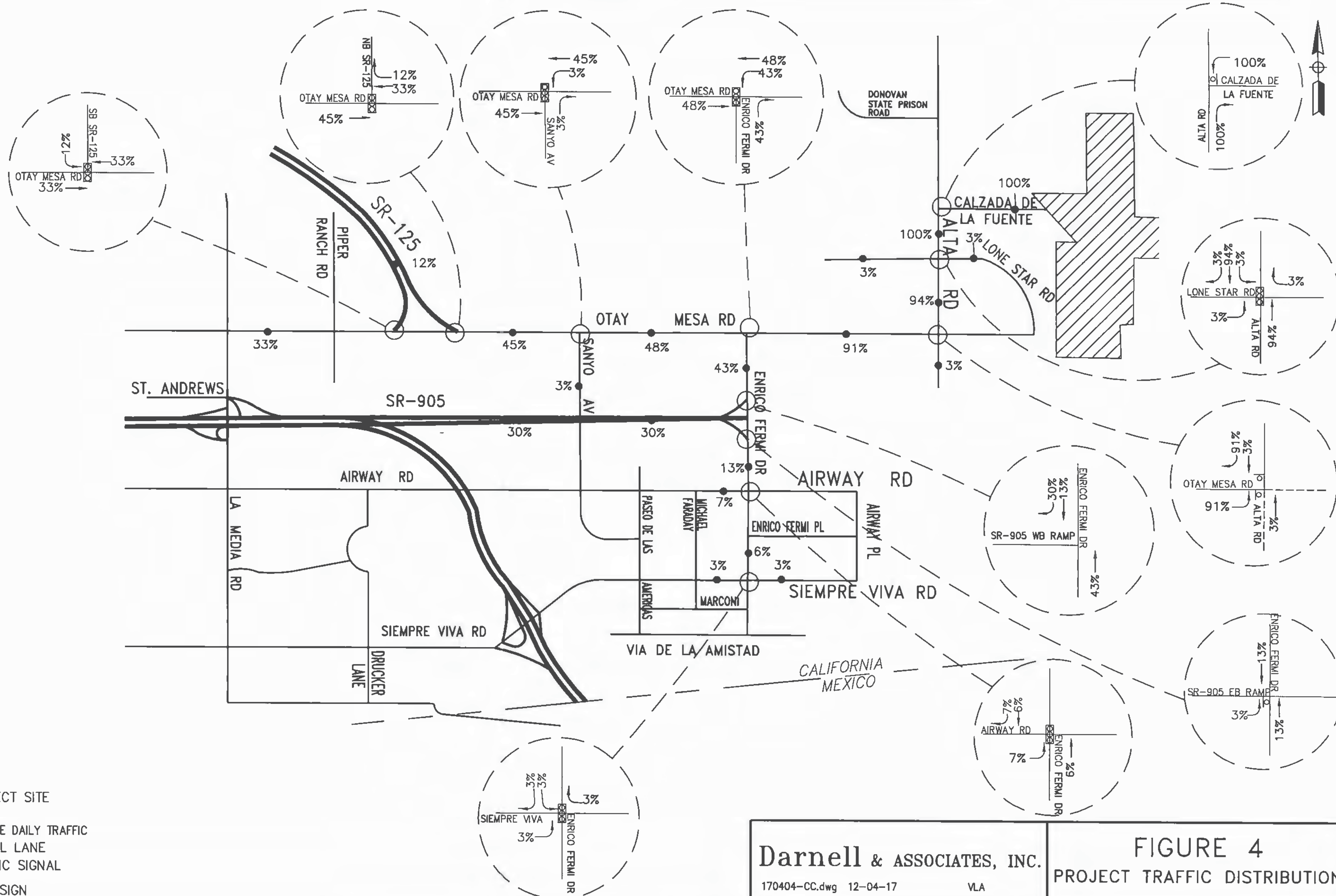
The impacts associated with the addition of project traffic are discussed in Sections IV and V.

STUDY AREA

To determine the study area for the project D&A utilized the County of San Diego's criteria which recommends the inclusion of all transportation facilities that receive 25 or more peak hour trips from the proposed project, and the City of San Diego's criteria which requires the analysis of all regionally significant arterial system segments and intersections where the proposed project will add 50 or more peak hour trips in either direction and all mainline freeway locations where the project will add 100 or more two-way peak hour trips. The County or City criteria was utilized dependent on the jurisdiction which the roadway segment or intersection or intersection was located in.

Based on the County, City of San Diego and Caltrans's criteria and a review of Figures 4 and 5, the study area for each scenario was determined. Tables 7 and 8 provide a summary of the roadway segments and intersections that need to be included in the analysis for each study scenario.

As illustrated in Tables 7 and 8, the project study area needs to include the segments and intersections along Otay Mesa Road between SR-125 and Alta Road, the segments and intersections along Alta Road between Calzada de la Fuente and Otay Mesa Road, the segment of Enrico Fermi Drive between Otay Mesa Road and Airway Road, and the Airway Road/Enrico Fermi Drive intersection.



LEGEND

- PROJECT SITE
- XX/YY - AM/PM
- ● Z,ZZZ - AVERAGE DAILY TRAFFIC
- TRAVEL LANE
- TRAFFIC SIGNAL
- o| - STOP SIGN

Darnell & ASSOCIATES, INC.

170404-CC.dwg 12-04-17 VLA

FIGURE 4

PROJECT TRAFFIC DISTRIBUTION

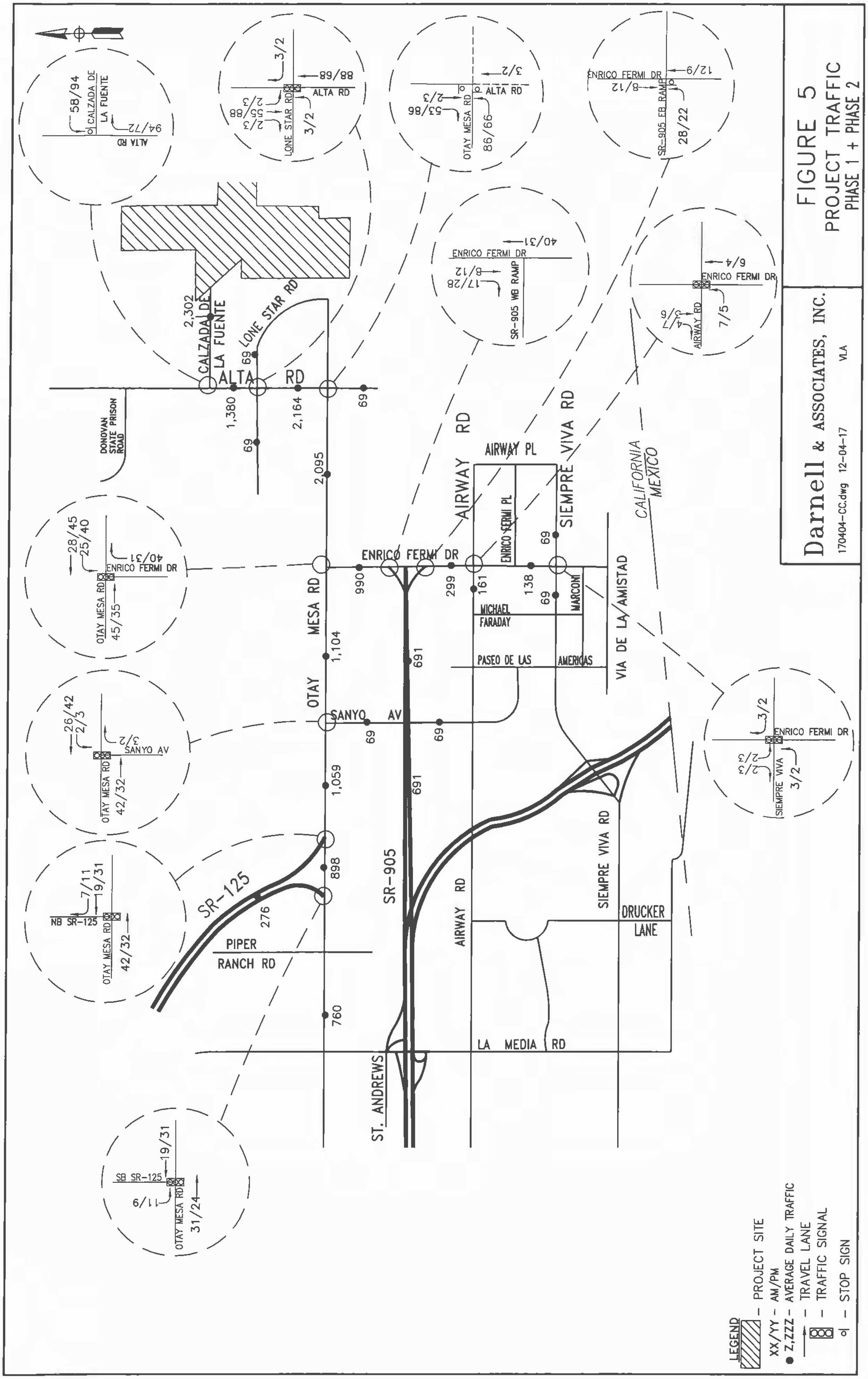


FIGURE 5
PROJECT TRAFFIC
PHASE 1 + PHASE 2
Darnell & ASSOCIATES, INC.
170404-CC.dwg 12-04-17
VLA
LEGEND
- PROJECT SITE
XX/YY - AM/PM
Z,ZZZ - AVERAGE DAILY TRAFFIC
- TRAVEL LANE
- TRAFFIC SIGNAL
- STOP SIGN
ALTA RD
CALZADA DE LA FUENTE
LONE STAR RD
DONOVAN STATE PRISON ROAD
OTAY MESA RD
ENRICO FERMI DR
AIRWAY RD
AIRWAY PL
ENRICO FERMI PL
SIEMPRE VIVA RD
MICHAEL FARADAY
PASEO DE LAS AMERICAS
MARCONI
VIA DE LA AMISTAD
CALIFORNIA
MEXICO
SANYO AV
SR-905
SR-125
PIPER RANCH RD
DRUCKER LANE
LA MEDIA RD
ST. ANDREWS
SR-905 WB RAMP
SR-905 EB RAMP
NB SR-125
SB SR-125
2,302
1,380
2,164
2,095
990
299
161
138
1,104
691
1,059
898
276
760

Table 7– Summary of Study Area Roadway Segments by Scenario			
Roadway Segment	Criteria Utilized to Determine Study Area	Peak Hour Trip Threshold	Scenario Where Analysis is Required
Otay Mesa Road			
SR-125 SB Ramp to SR-125 NB Ramp	County/City	25-two-way	Existing, 2050
Harvest Rd to Sanyo Ave	County/City	25-two-way	Existing, Cumulative, 2050
Sanyo Ave to Enrico Fermi Dr	County/City	25-two-way	Existing, Cumulative, 2050
East of Enrico Fermi Dr	County	25-two-way	Existing, Cumulative, 2050
West of Alta Rd	County	25-two-way	Existing, Cumulative, 2050
Airway Road			
Michael Faraday to Enrico Fermi Dr	County	25-two-way	Analysis not Required
Enrico Fermi Dr to Airway Pl	County	25-two-way	Analysis not Required
Siempre Viva Road			
Michael Faraday to Enrico Fermi Dr	City	50/direction	Analysis not Required
Enrico Fermi Dr to Airway Pl	County	25-two-way	Analysis not Required
SR-125			
North of Otay Mesa Rd	Caltrans	100-two-way	Analysis not Required
SR-905			
West of Enrico Fermi Dr	Caltrans	100-two-way	Analysis not Required
SR-11 /SR-905			
SR-905/SR-125 to Enrico Fermi Dr	Caltrans	100-two-way	Analysis not Required
Sanyo Avenue			
Otay Mesa Rd to Airway Rd	City	50/direction	Analysis not Required
Enrico Fermi Drive			
Otay Mesa Rd to Airway Rd	County	25-two-way	Existing, Cumulative, 2050
Airway Rd to Siempre Viva Rd	City	50/direction	Analysis not Required
Alta Road			
Donovan State Prison Rd to Calzada De La Fuente	County	25-two-way	Analysis is Not Required
Calzada De La Fuente to Lone Star Rd (Paseo De La Fuente)	County	25-two-way	Existing, Cumulative, 2050
Lone Star Rd (Paseo De La Fuente) to Otay Mesa Rd	County	25-two-way	Existing, Cumulative, 2050

Table 8 – Summary of Study Area Intersections by Scenario			
Intersection	Criteria Utilized to Determine Study Area	Peak Hour Trip Threshold	Scenario Where Analysis is Required
Otay Mesa Rd @ SR-125 SB	County	50/Directional	Analysis not Required
Otay Mesa Rd @ SR-125 NB	County	50/Directional	Analysis not Required
Otay Mesa Rd @ Sanyo Av	County	25-two-way	Existing, Cumulative, 2050
Otay Mesa Rd @ Enrico Fermi Dr	County	25-two-way	Existing, Cumulative, 2050
Otay Mesa Rd @ Alta Rd	County	25-two-way	Existing, Cumulative, 2050
Airway Rd @ Enrico Fermi Dr	County	25-two-way	Analysis not Required
Siempre Viva Rd @ Enrico Fermi Dr	County	25-two-way	Analysis not Required
Alta Rd @ Calzada De La Fuente	County	25-two-way	Existing, Cumulative, 2050
Alta Rd @ Lone Star Road (Paseo De La Fuente)	County	25-two-way	Existing, Cumulative, 2050
Enrico Fermi Drive @ SR-905 WB On Ramp	County/Caltrans	25-two-way	Existing, Cumulative, 2050
		100-two-way	Analysis not Required
Enrico Fermi Drive @ SR-905 EB Off Ramp	County/Caltrans	25-two-way	Existing, Cumulative, 2050
		100-two-way	Analysis not Required

SECTION III – EXISTING CONDITIONS

This section of the traffic study is intended to assess the existing conditions of the roadways within the vicinity of the project to determine travel flow difficulties, if any, that exist prior to adding the traffic generated by the proposed project. The existing conditions analysis establishes a base condition that is used to assess the other scenarios discussed in this report. Darnell & Associates, Inc (D&A) conducted a field review of the area surrounding the project in June 2017. Figures 6 illustrate the existing 2017 traffic volumes and Figure 7 depicts 2017/Opening Year 2019 roadway and intersection conditions in the project vicinity. Opening Year 2019 traffic volumes are presented on Figure 8.

EXISTING ROADWAY CHARACTERISTICS

The key segments analyzed in the study area are identified below:

State Route 905 (SR-905)) is a 6-lane freeway, opened in July 2012, that provides a direct east-west connection from I-805 to the Otay Mesa Port of Entry. The posted speed limit is 55 miles per hour (mph).

The State Route 905 (SR-905 is part of an ongoing effort to construct a transportation facility from Interstate 805 to the Otay Mesa Port of Entry (POE) at the IS – Mexico Border to provide for more efficient transportation of people, goods and services within the Otay Mesa region of San Diego. The corridor is being built in multiple phases, with Phase 1A and 1B, the main-lines of the freeway, is already constructed and open to traffic. Phase 2 improvements to the I-805/ SR-905 interchange have also been completed. Phase 3A has constructed the northbound connectors between SR-905 and SR-125. Construction of the freeway to freeway northbound connectors were completed in 2017. Based on the most current information available from Caltrans, funding for the subsequent Phase 3B, which will construct the southbound connectors between SR-905 and SR-125 and Phase 4, which will construct an interchange at Heritage Road, has not yet been secured.

In addition to the SR-905 construction discussed above, Caltrans has extended SR-905 to provide at grade connections of SR-905 at Enrico Fermi Drive. This improvement was opened to traffic in February 2017. The improvements provide two travel lanes in each direction.

Otay Mesa Road (SC-1120) is basically an east-west roadway located within the jurisdictions of the County and City of San Diego. The segment from SR-125 to approximately 1,200 feet east of Sanyo Avenue is located within both jurisdictions, with the centerline of the existing road as the boundary. The posted speed limit on this section of Otay Mesa Road is 55 mph.

The segment of Otay Mesa Road (Old Otay Mesa Road) just east of the SR-125 Southbound ramp is currently constructed to provide six (6) travel lanes (2 eastbound lanes and 4 westbound lanes). The segment of Otay Mesa Road (Old Otay Mesa Road) just west of Harvest Road is currently constructed to provide five (5) travel lanes (2 eastbound lanes and 3 westbound lanes). These segments of Otay Mesa Road (Old Otay Mesa Road) have the capacity equivalent to that of a modified 4-lane Major Arterial, approximately 47,000 ADT at LOS E (the half-way point between a 4-lane Major Road and a 6-lane Prime Arterial).

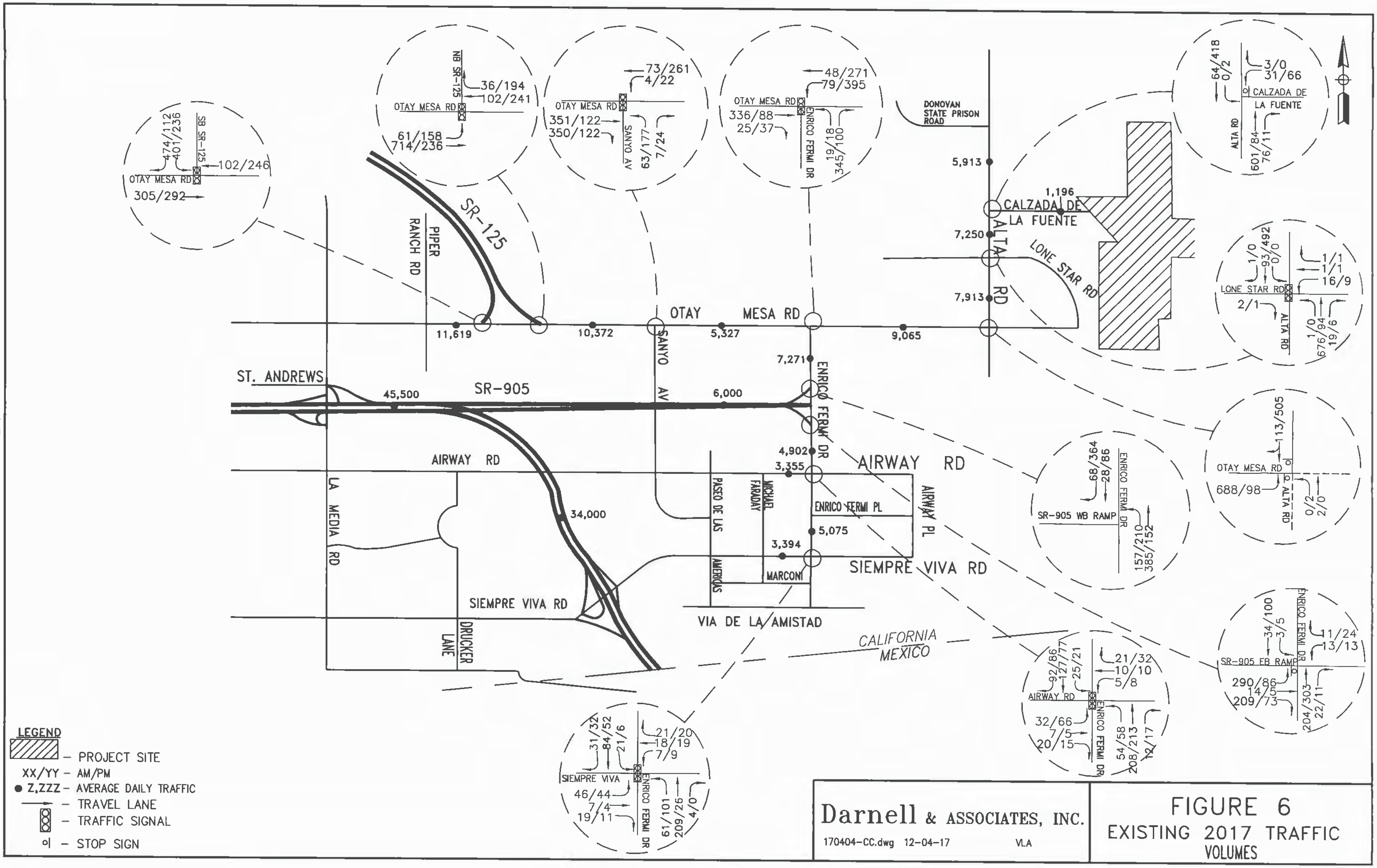


FIGURE 6
EXISTING 2017 TRAFFIC VOLUMES

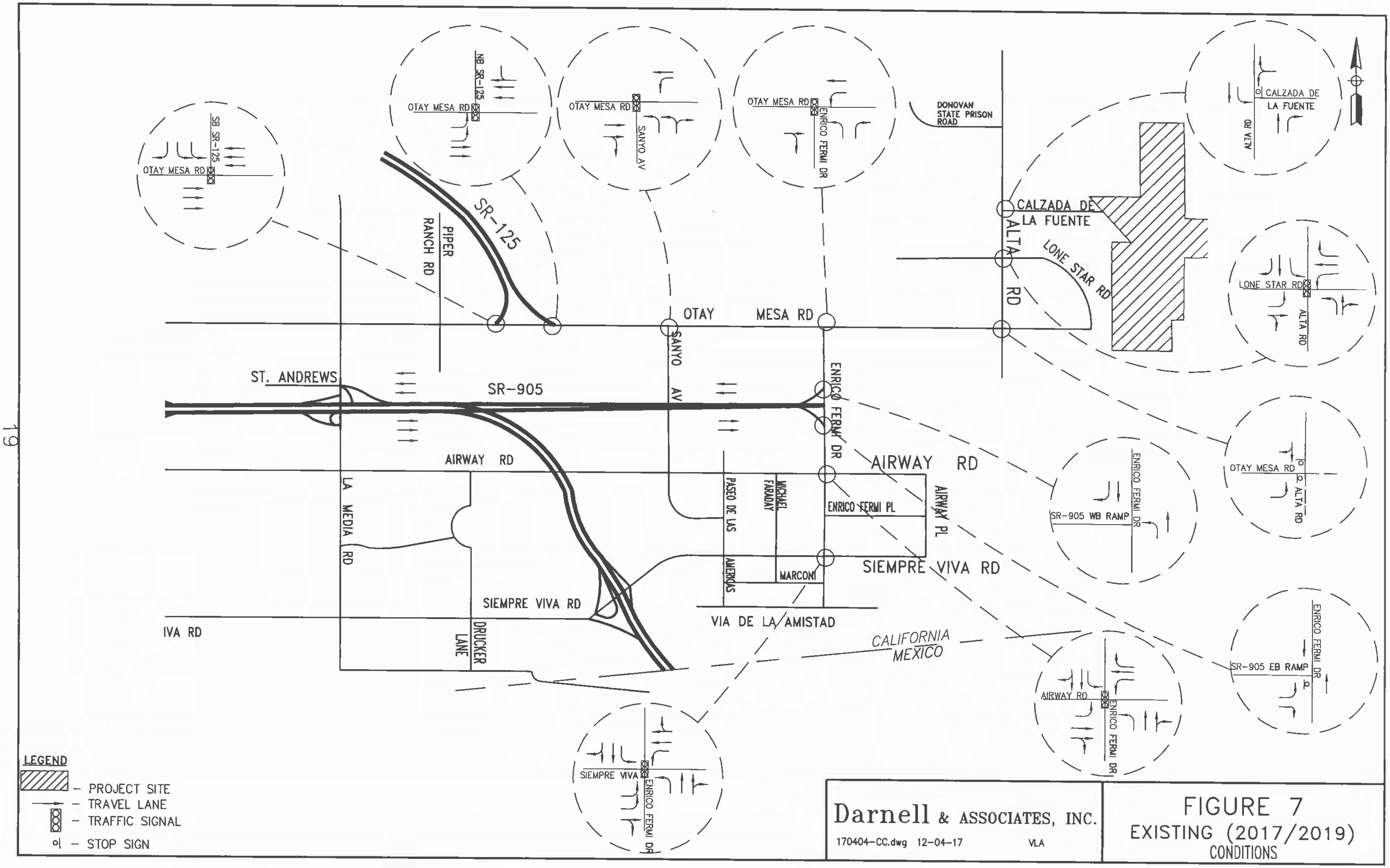


FIGURE 7
EXISTING (2017/2019)
CONDITIONS

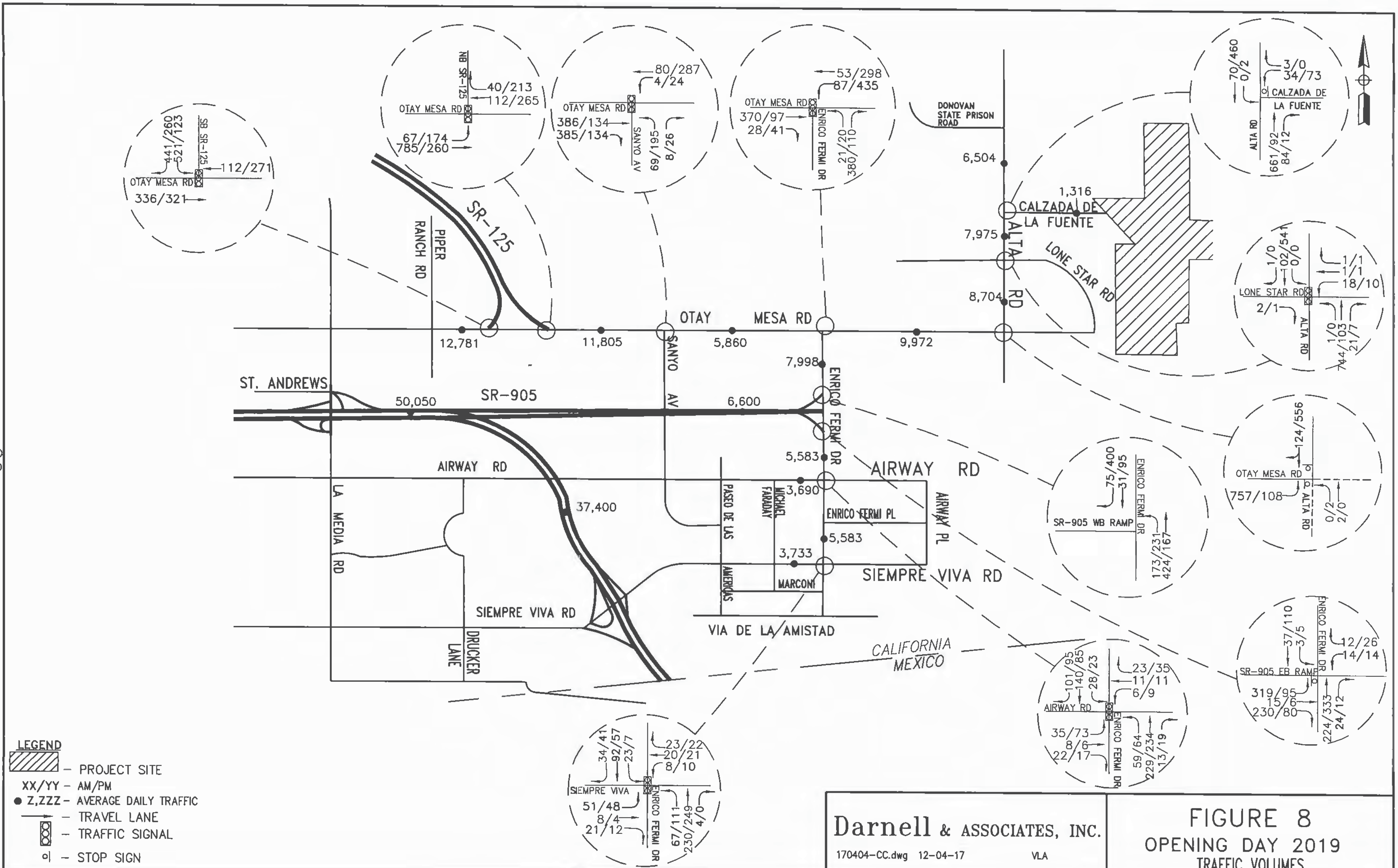


FIGURE 8
OPENING DAY 2019
TRAFFIC VOLUMES

The segment of Otay Mesa Road between Harvest Road and Sanyo Avenue is currently constructed to provide four (4) travel lanes (2 eastbound lanes and 2 westbound lanes). This segment of Otay Mesa Road (Old Otay Mesa Road) has the capacity equivalent to that of a 4-lane Major Road with a capacity of 37,000 ADT at LOS E.

The segment of Otay Mesa Road between Sanyo Avenue and Alta Road is basically a two-lane undivided roadway. This section of Otay Mesa Road has a varying pavement width of 40 to 58 feet. East of Sanyo Avenue the roadway is widened to provide one (1) lane westbound, a westbound left turn lane and two (2) eastbound travel lanes that reduces to one (1) lane in each direction at the City/County boundary and continues with one (1) lane in each direction to Enrico Fermi Drive. East of Enrico Fermi Drive the roadway is widened and striped to provide one (1) lane in each direction and a center left turn lane for 750 feet then reduces to one (1) lane in each direction within the existing 40 feet of pavement. The current capacity on the County two-lane segments of (Otay Mesa Road) is equivalent to that of a Light Collector, capacity of 16,200 ADT at LOS E. A Light Collector for the County has a cross section of 40 feet (40') curb to curb, and 60 feet (60') of right-of-way.

Based on the East Otay Mesa Specific Plan Amendment (SPA 10-001) approved by the Board of Supervisors September 15, 2010, the ultimate classification of the segment of Otay Mesa Road between Harvest Road and Enrico Fermi Drive is classified as a Prime Arterial. In the East Otay Mesa Specific Plan, this segment is a Prime Arterial with a capacity of 57,000 ADT at LOS E, with a modified cross section of 90 feet (90') curb to curb and 110 feet (110') of right-of-way. Between Enrico Fermi Drive and Alta Road, Otay Mesa Road is classified as a four-lane Major Road. A Major Road has a capacity of 37,000 ADT at LOS E, with a cross section of 78 feet (78') curb to curb and 98 feet (98') of right-of-way.

Enrico Fermi Drive (SA-1105) is constructed as a north-south facility. This roadway segment is split between County and City of San Diego jurisdictions. The segment north of Airway Road is under the County's jurisdiction and exists as a three-lane roadway just south of Otay Mesa Road and north of Airway Road. Some portion of this roadway segment currently exists as a two-lane roadway. For the purpose of analysis, the roadway segment under County's jurisdiction was analyzed as a Town Collector (capacity of 19,000 ADT at LOS E). The segment of Enrico Fermi Drive, south of Airway Road is under the County and City's jurisdiction and exists as a 4 lane Major Arterial (capacity of 40,000 ADT at LOS E).

Enrico Fermi Drive has the ultimate classification in the East Otay Mesa Specific Plan and County of San Diego Mobility Element as a four-lane Major facility with a capacity of 40,000 ADT at LOS E for the segment located within the City and a capacity of 37,000 ADT at LOS E for the segment located within the County. The cross section for a four-lane Major facility is 78 feet (78') curb to curb, within 98 feet (98') of right-of-way. Per the East Otay Mesa Specific Plan, the segment of Enrico Fermi Drive between Otay Mesa Road and SR-11 is classified as an Enhanced Major Road Facility that requires additional right-of-way to accommodate turn movements and freeway access from Otay Mesa Road to SR-11.

Alta Road (SR 1112) is constructed as a north-south facility. Between Otay Mesa Road and Lone Star Road the roadway is constructed to provide one (12) lane in each direction plus a left turn lane at Lone Star Road. The LOS E capacity of this roadway segment is 16,200 ADT. The majority of the roadway is generally constructed as a two (2)-lane (one lane each direction) undivided roadway with a capacity of a Light Collector, 16,200 ADT at LOS E. The segment of Alta Road between Lone Star Road and Calzada De La Fuente was widened to provide two (2) northbound travel lanes and two (2) southbound travel lanes and a painted median with a capacity of 28,000 ADT at LOS E.

Based on the County Circulation Element, the ultimate classification of Alta Road between Lone Star Road and Otay Mesa Road (Old Otay Mesa Road) is a modified four-lane Major Road with a bike trail on the east side of roadway, capacity of 37,000 ADT at LOS E. The ultimate classification of Alta Road between Lone Star Road and Donovan State Prison Road is a four-lane Industrial Collector with a center left turn lane, capacity of 34,200 ADT at LOS E with a modified cross section of 62 feet (62') curb to curb and 86 feet (86') of right-of-way.

From Donovan State Prison Road north to the Specific Plan Boundary, the roadway segment of Alta Road is classified as a four-lane Industrial Collector, capacity of 34,200 ADT at LOS E with a modified cross section of 58 feet (58') curb to curb and 84 feet (84') of right-of-way.

Calzada de la Fuente

Calzada de la Fuente is constructed as an east-west facility as a 2-lane Industrial/Commercial roadway with a LOS E capacity of 16,200 ADT.

KEY INTERSECTIONS

Figure 7 provides intersection configurations and traffic control for the key intersections for Existing 2017 and Opening Year 2019 conditions. Opening Day 2019 traffic volumes are presented on Figure 8. The key intersections analyzed include:

- Otay Mesa Road/SR-125 Southbound Ramp (signalized);
- Otay Mesa Road/SR-125 Northbound Ramp (signalized);
- Otay Mesa Road /Sanyo Avenue (signalized);
- Otay Mesa Road /Enrico Fermi Drive (signalized);
- Otay Mesa Road /Alta Road (all-way stop-controlled);
- Airway Road/Enrico Fermi Drive (signalized);
- Alta Road/Calzada De La Fuente (one-way stop-controlled);
- Alta Road/Lone Star Road (Paseo De La Fuente) (signalized);
- Enrico Fermi Drive at SR-905 westbound on ramp (uncontrolled); and
- Enrico Fermi Drive at SR-905 eastbound off ramp (one way stop controlled);
- Siempre Viva Road at Enrico Fermi Drive.

ROADWAY SEGMENT DAILY TRAFFIC

Existing twenty-four (24) machine counts were collected on the study area roadways in April 2017. The Existing 2017 daily traffic volumes utilized within this report are illustrated in Figure 7 and Opening Day 2019 traffic volumes were previously presented on Figure 8. Count summary sheets can be found in Appendix A.

INTERSECTION TRAFFIC COUNTS

Morning and afternoon peak hour turn counts for each of the key intersections as summarized below:

- Otay Mesa Rd/SR-125 SB Ramp;
- Otay Mesa Rd/SR-125 NB Ramp;
- Otay Mesa Rd/Sanyo Ave;
- Otay Mesa Rd/Enrico Fermi Dr;
- Otay Mesa Rd/Alta Rd;
- Airway Rd/Enrico Fermi Dr;
- Alta Rd/Calzada De La Fuente;
- Alta Rd/Lone Star Rd;
- Enrico Fermi Dr/SR-905 westbound on ramp; and
- Enrico Fermi Drive at SR-905 eastbound off ramp
- Siempre Viva Road at Enrico Fermi Drive.

EXISTING LEVEL OF SERVICE CONDITIONS

Existing – Roadway Segments

Table 9 summarizes the daily segment analysis for the existing conditions. As shown in Table 9, based on average daily conditions all key roadway segments currently operate at an acceptable LOS D or better.

Table 9 – Existing Conditions Roadway Segment Daily LOS Summary

Roadway Segment	Jurisdiction	Class	Capacity (LOS E)	ADT	LOS
Otay Mesa Road					
SR-125 SB Ramp to SR-125 NB Ramp	**County**/City/Caltrans	4M(m)	47,000 (a)	10,372	A
Harvest Rd to Sanyo Ave	**County**/City	4M	37,000	10,372	A
Sanyo Ave to Enrico Fermi Dr	County	2.2E	16,200	5,327	C
East of Enrico Fermi Dr	County	2.2C	19,000	9,065	C
West of Alta Rd	County	2.2E	16,200	9,065	D
Calzada De La Fuente					
East of Alta Rd	County	2-I/C	16,200	1,196	A
Alta Road					
Calzada De La Fuente to Lone Star Rd (Paseo De La Fuente)	County	2.2C	28,000	7,250	D
Lone Star Rd (Paseo De La Fuente) to Otay Mesa Rd	County	2.2E	19,000	7,913	D
Enrico Fermi Drive					
Otay Mesa Rd to SR-905	County	2.2C	19,000	7,271	C
SR-905 to Airway Rd	County	2.2C	19,000	4,902	C

City = Capacity of City segments is based on the upper limits of LOS E per the City of San Diego; County = Capacity of County segments is based on the upper limits of LOS E per the County of San Diego, **Bold** = Jurisdiction which capacity is based on; ADT= Average Daily Traffic; LOS= Level of Service; Class = Roadway Classification, v/c = Volume-to LOS E Capacity Ratio; 4M(m) = Modified 4-Lane Major Road; 4M = 4-Lane Major Arterial; 2.2E = Light Collector with no median; 2.2C = Light Collector with intermittent turn lanes; 2-I/C = 2-Lane Industrial/Commercial Collector, (a) Additional lanes may be provided to accommodate turning movements and freeway access; hence the roadway capacity 45,000 for City or 47,000 for County at LOS E (half-way between a 4-lane Major & 6-Lane Prime Arterial).

Existing – Intersections

Existing Intersection - Synchro Analysis

Table 10 illustrates the existing intersection levels of service summary under existing conditions. As can be seen from Table 10, all intersections currently operate at LOS B or better during both peak hours under existing conditions, except for Otay Mesa Road at Alta Road the operates at LOS D in the AM peak hour. A copy of the Synchro worksheets for the existing conditions can be found in Appendix A

Table 10 – Existing Conditions Intersection LOS Summary

Intersection	Jurisdiction	Traffic Control	Critical Move	AM Peak		PM Peak	
				Delay	LOS	Delay	LOS
Otay Mesa Rd (E-W) @ SR-125 SB (N-S)	**County**/City/SBX	Sig	Int.	13.6	B	12.1	B
Otay Mesa Rd (E-W) @ SR-125 NB (N-S)	**County**/City/SBX	Sig	Int.	4.1	A	7.2	A
Otay Mesa Rd (E-W) @Sanyo Av (N-S)	**County**/City	Sig	Int.	8.0	A	10.1	B
Otay Mesa Rd (E-W) @ Enrico Fermi Dr (N-S)	County	Sig	Int.	14.5	B	14.0	B
Otay Mesa Rd (E-W) @ Alta Rd (N-S)	County	AWSC	Int.	33.6	D	10.7	B
Enrico Fermi Dr (N-S) @ SR-905 WB on Ramp	Caltrans	uncontrolled	Int.	3.1	A	6.3	A
Enrico Fermi Dr (N-S) @ SR-905 EB off Ramp	Caltrans	OWSC	Int.	13.1	B	12.1	B
Alta Rd (N-S) @ Calzada De La Fuente (E-W)	County	OWSC	WB	14.8	B	13.5	B
Alta Rd (N-S) @ Lone Star Rd (E-W)	County	Sig	Int.	2.8	A	2.3	A
Airway Rd (E-W) @ Alta Rd (N-S)	**County**/City	Sig	Int.	14.9	B	13.5	B

Delay is measured in seconds/vehicle; LOS=Level of Service; sig=signalized; AWSC = All-Way Stop-Controlled, OWSC=One Way Stop Controlled; sig – Signalized; Int = Intersection; EB = Eastbound Approach; WB = Westbound Approach; NB = Northbound Approach; SB = Southbound Approach; E-W = East-West Roadway; N-S = North-South Roadway

SR-905 Mainline Operating Conditions

Table 11 summarizes the SR-905 mainline freeway operating conditions along SR-905 based on Caltrans peak hour criteria and existing traffic count data. Review of Table 11 shows the SR-905 mainline segments are currently operating at acceptable levels of service during the AM and PM peak hours.

Table 11 – Existing Freeway Mainline Operations

Intersection	Direction, Number of Lanes [a] & Capacity [b]			Existing Year 2017					
				Peak Hour Volume		V/C [c]		LOS [e]	
				AM	PM	AM	PM	AM	PM
SR-905 W/O Siempre Viva Road	WB	3M	6,000	1,512	1,953	0.38	0.49	A	B
	EB	3M + 1A	7,200	1,054	1,930	0.15	0.27	A	A
SR-905 to Enrico Fermi Drive	WB	2M	4,000	200	469	0.05	0.12	A	A
	EB	2M	4,000	407	142	0.10	0.04	A	A

Footnotes:
[a] "M" = Mainline, "A" = Auxiliary Lane; [b] Capacity =2,000 vehicles per hour (Mainline), 1,200 vehicles per hour (Auxiliary), [c] Volumes to Capacity ratio,
[d] " Δ" denotes the Project-induced increase in Volume to Capacity ratio, ([e])LOS = Level of Service

LOS	V/C
A =	< 0.41
B =	< 0.62
C =	< 0.80
D =	< 0.92
E =	< 1.0

SECTION IV – IMPACTS

POLICIES AND SIGNIFICANCE STANDARDS

The County of San Diego General Plan Mobility Element Policy M-2.1 requires development projects to provide associated road improvements necessary to achieve a level of service of "D" or higher on all Mobility Element roads except for those where a failing level of service has been accepted by the County pursuant to the criteria specifically identified in the accompany tect5 box (Criteria for Accepting a Road Classification with Level of Service "E"/"F"). When development is proposed on roads where a failing level of service has been accepted the policy requires feasible mitigation in the form of road improvements or a fair share contribution to a road improvement program, consistent with the Mobility Element road network.

To address project impacts the County of San Diego Guidelines for Determining Significance and Report Format and Content Requirements for Transportation and Traffic dated August 24, 2011 identifies criteria, guidelines and standards to determine if, a discretionary project which has a significant impact on roadways will be required, as a condition of approval, to make "improvements or other measures necessary to mitigate traffic impacts to avoid reduction in the existing Level of Service below 'D' on off-site and on-site abutting County of San Diego's Circulation Element roads. New development that would significantly impact congestion on roads at LOS 'E' or 'F', either currently or as a result of the project, will be denied unless improvements are scheduled to increase the LOS to 'D' or better or appropriate mitigation is provided. Appropriate mitigation would include a fair share contribution in the form of road improvements or a fair share contribution to an established program or project. If impacts cannot be mitigated, the project will be denied unless a specific statement of overriding findings is made pursuant to Section 15091(b) and 15093 of the State CEQA Guidelines."

LEVELS OF SIGNIFICANCE STANDARDS

The roadway segments and intersections in the vicinity of the proposed project are located in the jurisdiction of both the City and County of San Diego. The criteria for determining project significance depend on whether the roadway segment or intersection is located in the City or the County. Both the City's and the County's significance of impact criteria are discussed below.

City of San Diego

For projects deemed complete on or after January 1, 2007, the City of San Diego has adopted a modification in the significance criteria in the level of service thresholds for facilities operating at LOS E or F. Therefore, the study utilizes the adopted level of significance thresholds to assess the proposed project's traffic impact on any City roadway network operating at LOS E or F located within the City's jurisdiction. The City of San Diego's Significance Transportation Impact Measures and significance thresholds per California Environmental Quality Act (CEQA) that the City originally adopted in January 2007 and revised in January 2011 are summarized in Table 12. A copy of excerpts from the City of San Diego's Significance Determination Thresholds, originally adopted January 2007 and revised in January 2011 is provided in Appendix A. Since the City of San Diego considers LOS D to be an acceptable level of service, the City of San Diego's Significant Transportation Impact Measures were only applied to the segments and intersections located within the City of San Diego that were found to operate at LOS E or F.

County of San Diego

The *County of San Diego Guidelines for Determining Significance, dated August 24, 2011* was developed to evaluate the significance of traffic impacts on roadways and intersections which are currently operating at LOS E or F. A summary of the County's Guidelines is provided in Table 12.

<table>
<tr><th colspan="7">Table 12 – Measures of Significant Project Impacts</th></tr>
<tr><th colspan="7">City of San Diego</th></tr>
<tr><td rowspan="3">LOS w/Project</td><td colspan="6">Allowable Increase/Decrease Due to Project Impacts
(for projects deemed complete after January 1, 2007)</td></tr>
<tr><td colspan="2">Intersection</td><td colspan="4">Roadway Segments</td></tr>
<tr><td colspan="2">Delay (sec)</td><td>V/C</td><td colspan="3">Speed (mph)</td></tr>
<tr><td>E</td><td colspan="2">2.0</td><td>0.02</td><td colspan="3">1.0</td></tr>
<tr><td>F</td><td colspan="2">1.0</td><td>0.01</td><td colspan="3">0.5</td></tr>
<tr><th colspan="7">County of San Diego</th></tr>
<tr><td rowspan="3">LOS</td><td colspan="6">Allowable Increase on Congested Roads and Intersections</td></tr>
<tr><td colspan="2">Intersections</td><td colspan="3">Road Segments</td></tr>
<tr><td>Signalized</td><td>Unsignalized</td><td>2-Lane Road</td><td>4-Lane Road</td><td>6-Lane Road</td></tr>
<tr><td>LOS E</td><td>Delay of 2 seconds or less</td><td>20 or less peak hour trips on a critical movement</td><td>200 ADT</td><td>400 ADT</td><td>600 ADT</td></tr>
<tr><td>LOS F</td><td>Either a Delay of 1 second, or 5 peak hour trips or less on a critical movement</td><td>5 or less peak hour trips on a critical movement</td><td>100 ADT</td><td>200 ADT</td><td>300 ADT</td></tr>
<tr><td colspan="7">County Notes:
– A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues, which typically operate at LOS F. Also, if a project adds significant volume to a minor roadway approach, a gap study should be provided that details the headways between vehicles on the major roadway.
– By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes additional trips must mitigate a share of the cumulative impacts.
– The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.
– For determining significance at signalized intersection with LOS F conditions, the analysis must evaluate both the delay <u>and</u> the number of trips on a critical movement, exceedance of either criteria result in a significant impact.</td></tr>
<tr><td colspan="7">ADT = Average Daily Traffic; LOS = Level of Service, sec = Seconds of Delay per Vehicle</td></tr>
</table>

Roadway Segments

As shown in Table 12, per the County's Guidelines, "traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in Table [12], or

- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity."

As discussed on pages 13 and 14 of the *County of San Diego Guidelines for Determining Significance, First Modification February 19, 2010*, an increase of the daily thresholds established for roadway segments operating at LOS E would result in only one additional car every 2.4 minutes per lane while the thresholds established for roadway segments operating at LOS F would result in only one additional car every 4.8 minutes. Therefore, the thresholds identified in Table 12, in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact on the roadway.

The County guidelines also states that "For large projects, controversial projects and/or projects which are preparing Environmental Impact Reports, more detailed evaluations to verify the applicability of the significance thresholds for the individual project conditions may be necessary. Additional evaluations may include analysis of vehicle headways, speeds, average gaps, queues, delay, and/or other factors."

Two-Lane Highways

Intersection Spacing Over One (1) Mile

In the *County of San Diego Guidelines for Determining Significance, dated August 24, 2011* the County of San Diego established a higher capacity and a higher impact significance level for two-lane highways with signalized intersection spacing over one mile. Table 13 provides a summary of the level of service criteria and guidelines for significance for two-lane highways with intersection spacing over one-mile.

Table 13 – Measures of Significance on 2-Ln Hwys w/ Signalized Intersection Spacing > 1 Mile

Level of Service	LOS Criteria	Impact Significance Level
E	> 16,200 ADT	>325 ADT
F	> 22,900 ADT	>225 ADT

Note: Where detailed data is available, the Director of Public Works may also accept a detailed level of service analysis based upon the two-lane highway analysis procedures provided in the Chapter 20 Highway Capacity Manual

Intersection Spacing Less Than One (1) Mile

"Similar to the experience of drivers in urban areas with closely space intersections, the functionality of two-lane highway conditions with signalized intersection spacing under one-mile becomes constrained not due to the segment capacity but the intersection operations. Therefore, the assessment of operates of intersection on two-lane highways shall be guided by a Level of Service standard. Level of Service for purposes of this significance guideline is based upon the overall intersection operations similar - to Urban Street analysis in Chapter 15 Highway Capacity Manual." Impacts for the two-lane highways with signalized intersection under one mile of spacing will be determined by evaluating the intersection impact criteria identified in Table 14.

Table 14 – Measures of Significance on 2-Ln Hwys w/ Signalized Intersection Spacing < 1 Mile

Level of Service	Adjacent Signalized Intersection
E	Delay of 2 seconds
F	Delay of 1 second, or 5 peak hour trips on a critical movement

Notes:
– A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues which typically operate at LOS F.
– By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact.
– The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

It should be noted that per the *County of San Diego Guidelines for Determining Significance, dated August 24, 2011,* "impacts related to operational features on two-lane highways will be evaluated on a case-by-case basis based upon traffic flow patterns, geometrics, available sight distance, accident histories, and other factors."

Signalized Intersections

"Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection":

- "The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in Table [14]."

- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection."

As discussed on page 16 of the *County of San Diego Guidelines for Determining Significance, dated August 24, 2011*, an increase in delay of two seconds or less, the threshold established for signalized intersections operating at LOS E, "…is a small fraction of the typical cycle length for a signalized intersection that ranges between 60 and 120 seconds. The likelihood of increased queues forming due to the additional two seconds of delay is low." Thus, the increase in delay of two (2) seconds or less, on average, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact. Since small changes and disruptions to the traffic flow at a signalized intersection can have a greater effect on the overall intersection operation when the intersection is operating at LOS F, versus LOS E, a more stringent guideline of one (1) second of delay was established for intersections operating at LOS F.

The five (5)-peak hour trip threshold, established for the critical movement of a signalized intersection operating at LOS F, when spread out over the peak hour, results in an increase of one (1) vehicle every 12 minutes or 720 seconds. This increase would not be noticeable to the average driver because one additional vehicle during a 12-minute interval on average would clear the traffic signal cycles well within the 12-minute period. Further, even if all five (5) additional peak hour vehicles arrived at the same time, these trips would also, on average, clear the traffic cycle and the existing queue lengths would be re-established. Thus, the increase of five (5) peak hour trips to a critical movement at a signalized intersection, on average, would result in changes to traffic flow that would not be noticeable to the average driver and would thus not constitute a significant impact. (See page 17 of the County's *Guidelines for Determining Significance* provided in Appendix A.)

Unsignalized Intersections

"Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant impact at an unsignalized intersection as listed in Table [12] and described as text below:"

- "The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or

- The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or

- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or

- The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or

- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection."

As discussed on page 18 of the *County of San Diego Guidelines for Determining Significance, dated August 24, 2011,* the addition of 20 peak hour trips to a critical movement would result in an increase of one (1) vehicle every 3.0 minutes or 180 seconds. "Assuming the average wait time for a vehicle in the critical movement queue is less than 3.0 minutes, which is typical for LOS E conditions; this would not be noticeable to the average driver and would not be considered a significant impact." Five (5) – trips spread out over an hour would result in an increase of one (1) vehicle every 12.0 minutes or 720 seconds. "This typically exceeds the average wait time in the queue and would not be noticeable to the average driver." (See page 18 of the County's *Guidelines for Determining Significance* provided in Appendix A.)

Regionally Significant Arterials

For Regionally Significant Arterials (RSA), such as Otay Mesa Road Caltrans and the City of San Diego utilizes the *San Diego Traffic Engineers' Council (SANTEC)/Institute of Transportation Engineers (ITE) Guidelines For Traffic Impact studies (TIS) in the San Diego Region* to determine significance. A summary of the SANTEC/ITE Guidelines are provided in Table 15.

Table 15 – SANTEC/ITE Guidelines for Measures of Significant Project Impacts

LOS with Project	Allowable Change due to Project Impact					
	Freeways		Roadway Segments		Signalized Intersections	Ramps with > 15 min. delay
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E & F	0.01	1	0.02	1	2	2

V/C = Volume to Capacity Ratio

It should be noted that although Caltrans utilizes the SANTEC/ITE Guidelines summarized in Table 15 to determine significance on arterial roadway segments based on peak hour operating conditions, the City of San Diego still determines the project significance for the roadway segment based on average daily operating conditions and the change in volume-to-capacity ratio. With further analysis, however, the City of San Diego considers that even if an arterial roadway segment is determined to be impacted based on the average daily operating conditions, the impact would be less than significant and mitigation would not be required if the following conditions are satisfied:

1. The roadway segment is already built out to its community plan classification,

2. The signalized endpoints of the roadway segment operate acceptably, and

3. The HCM arterial analysis for the roadway segment operates acceptably.

It should be noted that the segment of Interim SR-905 (Otay Mesa Road) between La Media Road and Piper Ranch Road is currently only constructed to provide five (5) travel lanes (2 eastbound lanes and 3 westbound lanes) and is thus not yet constructed to its community plan classification of a 8-lane Major Roadway.

The segment of Interim SR-905 (Otay Mesa Road) from Piper Ranch Road to the SR-125 is located under the jurisdiction of the County, City, and Caltrans; however, the County of San Diego's roadway capacities and levels of significance have been utilized throughout this report to assess the impacts on this roadway segment. Since this roadway segment is a regionally significant arterial segment, the County considers that if the HCM arterial roadway segment operates acceptably and the signalized endpoints of the roadway segment also operate acceptably, then there is no significant impact and mitigation will not be required.

Caltrans

Caltrans Guide for the Preparation of Traffic Impact Studies, December 2002 requires that State highway facilities (i.e., freeway segments, signalized intersections, on-or off-ramps, etc.) maintain a target LOS at the transition between LOS C and LOS D. See Appendix A for excerpts from Caltrans traffic impact guidelines.

Definition of Direct and Cumulative Impact in the City of San Diego and the County of San Diego

The County's *Guidelines for Determining Significance* dated *August 24, 2011* was developed to evaluate the significance of traffic impacts on roadways and intersections which are currently operating at LOS E or F. It should be noted that the significance guidelines summarized in Table 10 are currently only utilized by the County of San Diego to determine if a project has a significant direct and/or future impact. A project is considered to have a significant cumulative impact if it adds any traffic to a roadway segment and/or intersection that operates at LOS E or F under cumulative conditions and the total cumulative traffic added to the roadway segment and/or intersection exceeds the value identified in Table 10.

Since the project is located in the County of San Diego, the traffic study is prepared in accordance with the guidelines provided by the County of San Diego. However, the City's significance thresholds will be utilized in analyzing the roadway segments and intersections located in the City of San Diego. The traffic study classifies direct and cumulative impacts based on CEQA and County requirements.

OPENING YEAR 2019 PLUS PROJECT LEVEL OF SERVICE CONDITIONS

This scenario addresses the traffic impact associated with the addition of traffic generated by Phases 1 plus Phase 2 project based on the maximum production scenario. The Opening Year 2019 traffic volumes were previously presented on Figure 8. These traffic volumes are estimated by increasing the 2017 volumes presented on Figure 7 by ten (10%) percent. Phase 1 plus Phase 2 project traffic presented on Figure 5 was then added to the Opening Year 2019 project traffic volumes previously presented on Figure 8 and the results are presented on Figure 9.

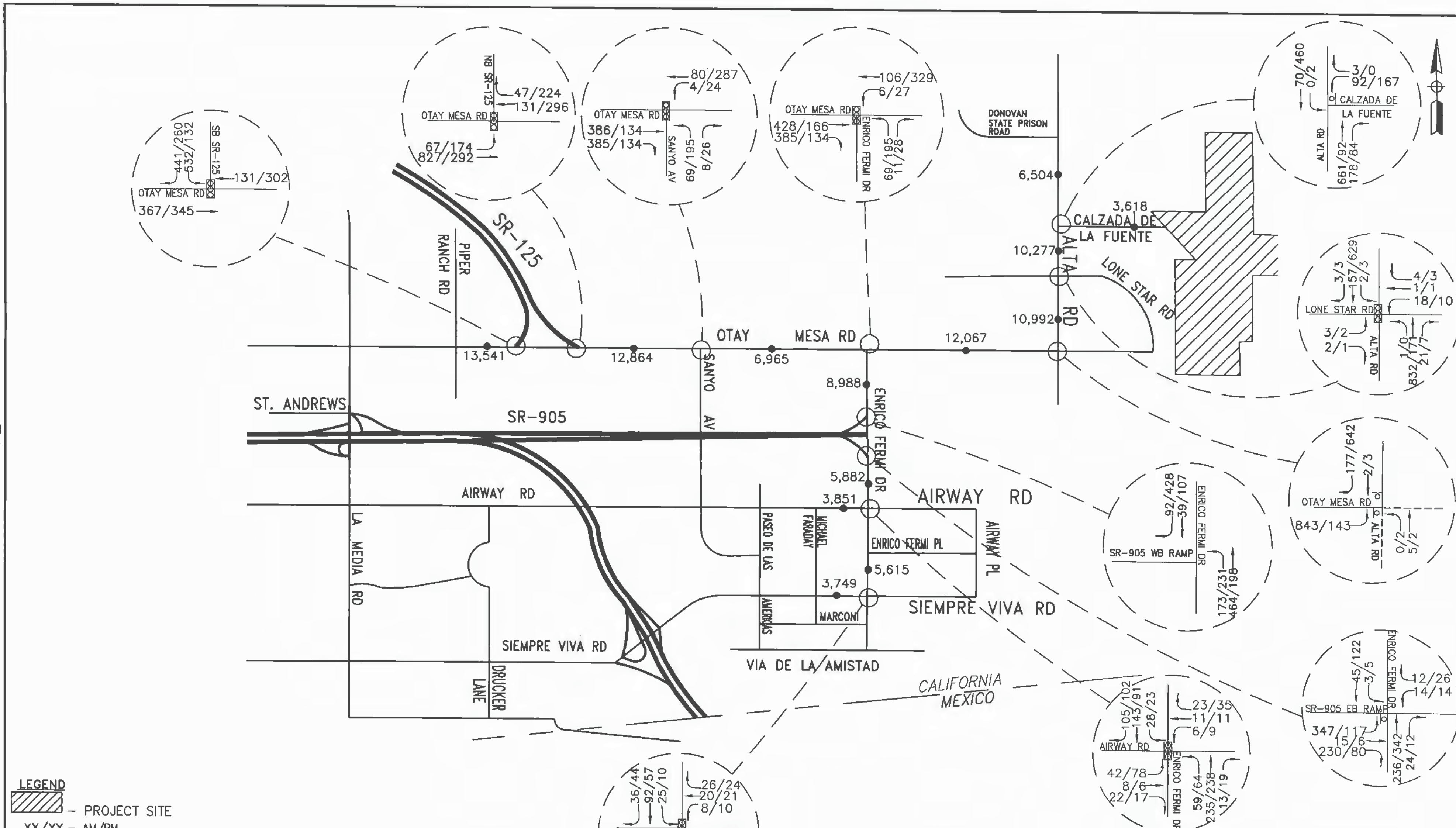
Opening Year 2019 Plus Project Phase 1 and 2 - Roadway Segments

Table 16 summarizes the daily roadway segment level of service analysis under Opening Year 2019 plus project (Phases 1 and 2) conditions based on the maximum production scenarios. As shown in Table 15, based on the maximum production scenario, all key roadway segments continue to operate at an acceptable LOS D or better under Opening Year 2019 plus project Phases 1 and 2 conditions except for Otay Mesa Road west of Alta Road, which operates at LOS E with the addition of Phase 1 plus 2 project traffic.

Opening Year 2019 Plus Project Phase 1 and 2 - Intersections

Opening Year 2019 Plus Project Phase 1 and 2 *Intersections - Synchro Analysis*

Table 17 summarizes the Opening Year 2019 plus project (Phases 1 and 2) conditions intersection level of service summary during the AM and PM peak hours for the maximum production scenarios, respectively. (A copy of the Synchro worksheets for Opening Year 2019 plus project (Phase 1 and 2) conditions can be found in Appendix C.) As shown in Table 16, all intersections continue to operate at an acceptable LOS C or better under Opening Year 2019 plus project (Phases 1 and 2) conditions for the maximum production scenarios, except Otay Mesa Road at Alta Road which operates at LOS F in the Am peak hour and LOS C in the PM peak hour. Further evaluation of the Synchro worksheets and Table 16 shows the eastbound left turn traffic causes the AM LOS F condition and the projects traffic is considered a significant impact. Therefore, mitigation of the projects impacts is required.



LEGEND

- PROJECT SITE
- XX/YY - AM/PM
- ● Z,ZZZ - AVERAGE DAILY TRAFFIC
- TRAVEL LANE
- TRAFFIC SIGNAL
- o| - STOP SIGN

Darnell & ASSOCIATES, INC.

170404-CC.dwg 12-04-17 VLA

FIGURE 9
OPENING DAY 2019 PLUS
PHASES 1 & 2 TRAFFIC VOLUMES

Table 16 – Opening Year 2019 + Project (Phases 1&2) Maximum Production Scenario Conditions Roadway Segment Daily LOS Summary

Roadway Segment	Jurisdiction	Class	Capacity (LOS E)	Opening Year 2019			Opening Year 2019 + Project (Phases 1&2)				
				ADT	V/C	LOS	Proj. Tr	ADT	V/C	LOS	Sig
Otay Mesa Road (Old Otay Mesa Road)											
SB SR-125 to NB SR-125	**County**/City/Caltrans	4M(m)	47,000(a)	12,275	0.272	A	760	13,035	0.273	A	No
Harvest Rd to Sanyo Ave	**County**/City	4M	37,000	11,805	0.319	A	1,056	12,861	0.347	A	No
Sanyo Ave to Enrico Fermi Dr	County	2.2C	16,200	5,805	0.358	C	1,104	6,909	0.430	C	No
East of Enrico Fermi Drive (1300 ft)	County	2.2E	19,000	9,972	0.524	D	2,095	12,067	0.635	D	No
West of Alta Rd (1300 ft)	County	2.2C	16,200	9,972	0.615	D	2,095	12,067	**0.745**	**E**	**Yes**
Calzada De La Fuente											
East of Alta Rd	County	2-I/C	16,200	1,316	0.08	A	2,302	3,618	0.223	A	No
Enrico Fermi Drive											
Otay Mesa Rd to SR-905	County	2.2C	16,200	7,998	0.421	C	990	8,988	0.555	C	No
SR-905 to Airway Rd	County	2.2C	19,000	5,392	0.284	B	299	5,691	0.300	B	
Alta Road											
Calzada De La Fuente to Lone Star	County	2.2C	19,000	7,975	0.42	C	2,302	10,277	0.541	C	No
Lone Star Rd (Paseo De La Fuente) to Otay Mesa Rd	County	2.2E	16,200	8,704	0.537	D	2,258	10,962	0.679	D	No

City = Capacity of City segments is based on the upper limits of LOS E per the City of San Diego; County = Capacity of County segments is based on the upper limits of LOS E per the County of San Diego, **Bold** = Jurisdiction which capacity is based on; ADT= Average Daily Traffic; LOS= Level of Service; Class = Roadway Classification, v/c = Volume-to LOS E Capacity Ratio; 4M(m) = Modified 4-Lane Major Road; 4M = 4-Lane Major Arterial; 2.2E = Light Collector with no median; 2.2C = Light Collector with intermittent turn lanes; 2-I/C = 2-Lane Industrial/Commercial Collector, (a) Additional lanes may be provided to accommodate turning movements and freeway access; hence the roadway capacity 45,000 for City or 47,000 for County at LOS E (half-way between a 4-lane Major & 6-Lane Prime Arterial).

Table 17 – Opening Year 2019 + Project (Phases 1 & 2) Intersection LOS Summary – Maximum Production Scenario

Intersections	Jurisdiction	Traffic Control	Critical Move	Opening Year 2019				Opening Year 2019 + Project (Phases 1&2) Maximum Production									
				AM Peak		PM Peak		AM Peak					PM Peak				
				Delay	LOS	Delay	LOS	Delay	LOS	Proj. Trips	Δ Delay	Sig.	Delay	LOS	Proj. Trips	Δ Delay	Sig.
Otay Mesa Rd (E-W) @ SR-125 SB (N-S)	County/City SBX	Sig	Int	13.8	B	17.3	B	14.0	B	61	0.2	No	17.5	A	64	0.2	No
Otay Mesa Rd (E-W) @ SR-125 NB (N-S)	County/City SBX	Sig	Int	4.1	A	7.3	A	3.9	A	68	0.2	No	6.8	A	74	-0.5	No
Otay Mesa Rd (E-W) @ Sanyo Av (N-S)	County/City	Sig	Int	7.9	A	10.4	B	8.0	A	23	0.1	No	11.3	B	37	0.9	No
Otay Mesa Rd (E-W) @ Enrico Fermi Dr (N-S)	County	Sig	Int	15.8	A	16.0	B	17.4	A	138	1.6	No	20.4	C	161	3.4	No
Otay Mesa Rd (E-W) @ Alta Rd (N-S)	County	AWSC	EB Int	**61.5** **54.1**	**F** **F**	9.4 11.9	A B	**118.5** **98.8**	**F** **F**	**86** **144**	**0.57** **44.7**	**Yes** **Yes**	10.9 16.6	B C	66 157	1.5 0.33	No No
Enrico Fermi Dr (N-S) @ SR-905 WB on Ramp	County/Caltrans	OWSC	Int	3.2	A	6.7	A	3.2	A	65	0.4	No	6.7	A	71	0.0	No
Enrico Fermi Dr (N-S) @ SR-905 EB off Ramp	County/Caltrans	OWSC	Int	14.4	B	11.4	B	16.1	C	48	1.7	No	14.0	B	46	3.6	No
Enrico Fermi Dr (N-S) @ Airway Rd (E-W)	County/City	Sig	Int	26.4	C	23.2	C	26.8	C	20	0.4	No	23.4	C	22	0.2	No
Alta Rd (N-S) @ Calzada De La Fuente (E-W)	County	OWSC	WB	16.1	C	14.4	B	18.8	C	152	2.7	No	17.8	C	166	3.4	No
Alta Rd (N-S) @Lone Star Rd/ Paseo De La Fuente (E-W)	County	Sig	Int	3.1	A	2.3	A	3.8	A	150	0.7	No	2.4	A	166	0.1	No

LOS=Level of Service; Delay is measured in seconds/vehicle; Sig=signalized; AWSC=All Way Stop Controlled; OWSC=One Way Stop Controlled;
Int = Intersection; EB = Eastbound Approach; WB = Westbound Approach; NB = Northbound Approach; SB = Southbound Approach; E-W = East-West Roadway; N-S = North-South Roadway;
Bold = Jurisdiction which significance criteria is based on; Δ Delay = Increase (decrease) in delay; Occasionally adding traffic to a critical movement optimizes the intersection resulting in a decrease in delay

33

SR-905 2019 Plus Project Operating Conditions

Table 17 summaries the SR-905 mainline freeway operating conditions based on Caltrans Peak Hour criteria. Review of Table 17 shows the SR-905 mainline freeway segments will operate at LOS B or better for Opening Day 2019 and 2019 Plus Project conditions. Further review of Table 17 identifies the project does not have a significant direct impact to SR-905 freeway segments analysis.

Table 18 – Opening Year 2019 Plus Project Mainline Operations

	Direction, Number of Lanes (a) & Capacity (b)			Existing Year 2019 (a)						Existing Year 2019 Plus Project						LOS [e]		Significant Impact	
				Peak Hour Volume (a)		V/C (c)/LOS (e)		LOS		Project Peak Hour Volume		2019 + Project Peak Hour Volumes		V/C (c)					
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
SR-905 W/O Siempre Viva Rd	WB	3M	6,000	1,420	2,063	0.24	0.34	A	B	17	28	1,427	2,091	0.24	0.35	A	B	NO	NO
	EB	3M +1A	7,200	1,051	805	0.15	0.25	A	A	86	66	1,137	871	0.16	0.12	A	A	NO	NO
SR-905 W/O Enrico Fermi Dr	WB	2M	4,000	220	516	0.04	0.13	A	A	17	28	237	544	0.06	0.14	A	A	NO	NO
	EB	2M	4,000	448	156	0.11	0.04	A	A	86	66	543	222	0.14	0.06	A	A	NO	NO

Footnotes:

a. "M" = Mainline, "A" = Auxiliary Lane; [b] Capacity =2,000 vehicles per hour (Mainline), 1,200 vehicles per hour (Auxiliary), [c] Volumes to Capacity ratio,

D " Δ" denotes the Project-induced increase in Volume to Capacity ratio, [e] LOS = Level of Service

(a) Existing volumes increased 10%

LOS V/C

A = <0.41

B = <0.62

C = <0.81

D = <0.92

E = <1.0

SECTION V – YEAR 2050 CONDITIONS

The 2050 roadway conditions and traffic forecast for the East Otay Mesa area are based on the East Otay Mesa Specific Plan Amendment (SPA 14-002) that was approved by the County Board of Supervisors on April 22, 2015. Descriptions of the roadway network and traffic volumes included in the East Otay Mesa Business Park Specific Plan are discussed in this section of the study.

EAST OTAY MESA SPECIFIC PLAN AMENDMENT (EOMSPA)

As discussed in Section I, the East Otay Mesa Specific Plan (SPA 10-001) that was approved by the County Board of Supervisors on April 22, 2015 is the most current approved amendment for East Otay Mesa. As previously noted in Section II, the proposed Otay Hills project site is currently zoned per the East Otay Mesa Business Park Specific Plan (EOMSP), SPA 14-002 to have 26.5 acres of Mixed Industrial Land Use and 83.5 acres of Rural Residential Land Use. As part of the project, the current East Otay Mesa Specific Plan will need to be amended to designate the quarry footprint as all Mixed Industrial. It would also be necessary to eliminate the Mixed Industrial designation from areas of the site that will not be affected by extractive operations and to designate those areas as Rural Residential. The proposed Specific Plan Amendment (SPA) would create a total of 85.7 acres of Mixed Industrial Land Use and 0.0 acres of Rural Residential Land Use and 216.7 acres of Conservation/Limited Use. This is a net increase of 53.4 acres of Mixed Industrial Land Use and a net decrease of 270 acres of Rural Residential Land Use and 216.7 Acres of Conservative Land Use within the EOMSPA.

Circulation Network

Figure 10 illustrates the circulation plan for the 2050 conditions in the East Otay Mesa area of the County of San Diego as identified in the East Otay Mesa Business Park Specific Plan (SPA 10-001). It should be noted that the proposed specific plan amendment that is being processed as part of the Otay Hills project to modify the land use designations does not propose any changes to the circulation network depicted in Figure 10.

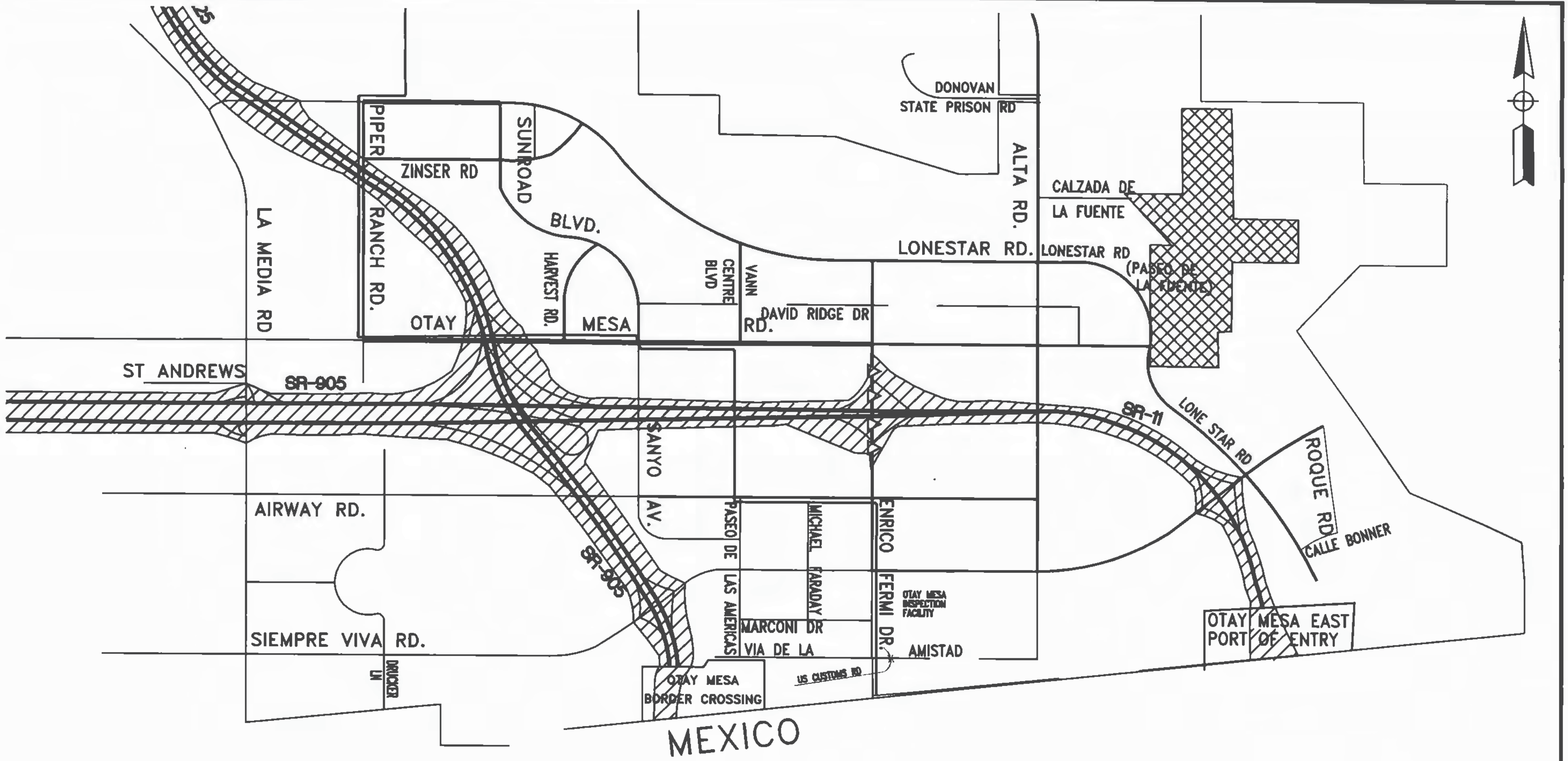
Year 2050 Traffic Forecasts

Traffic forecasts for the Year 2050 without the proposed Specific Plan Amendment were based on the SANDAG Series 12 2050 Model Base Forecasts. A copy of the Forecast Model is presented in Appendix E. Figure 11 depicts the Year 2050 daily traffic volumes based on the adopted East Otay Mesa Business Park Specific Plan.

The proposed Specific Plan Amendment will result in change in land use to permit an additional 53.4 acres of Mixed-Use Industrial Development and a reduction of 270 acres of Rural Residential Development and 216.7 acres of Conservation/Limited Use. The additional 53.4 acres of Mixed-Use Industrial Development will generate 4,806 daily trips, based on 90 trips per acre and the reduction of 270 acres of rural Residential Land Use will generate 3,240 fewer daily trips and the Conservation/Limited Use will generate 217 additional daily trips. These changes will result in 1,783 daily trips to be added to Future 2050 daily traffic volumes shown on Figure 12.

The additional traffic generated by the project site was then distributed to the Otay Mesa highway system presented on Figure 10. Figure 12 depicts the expected Year 2050 trip distribution for additional future project traffic resulting from approval of the proposed plan amendment. Also shown on Figure 12 is the Future 2050 daily project traffic.

The project traffic presented on Figure 12 was then added to the future 2050 traffic forecasts presented on Figure 11. The resulting Year 2050 plus project traffic is presented on Figure 13. The daily traffic volumes presented on Figure 11 and Figure 13 were then analyzed to determine if the proposed project creates any impacts.



LEGEND

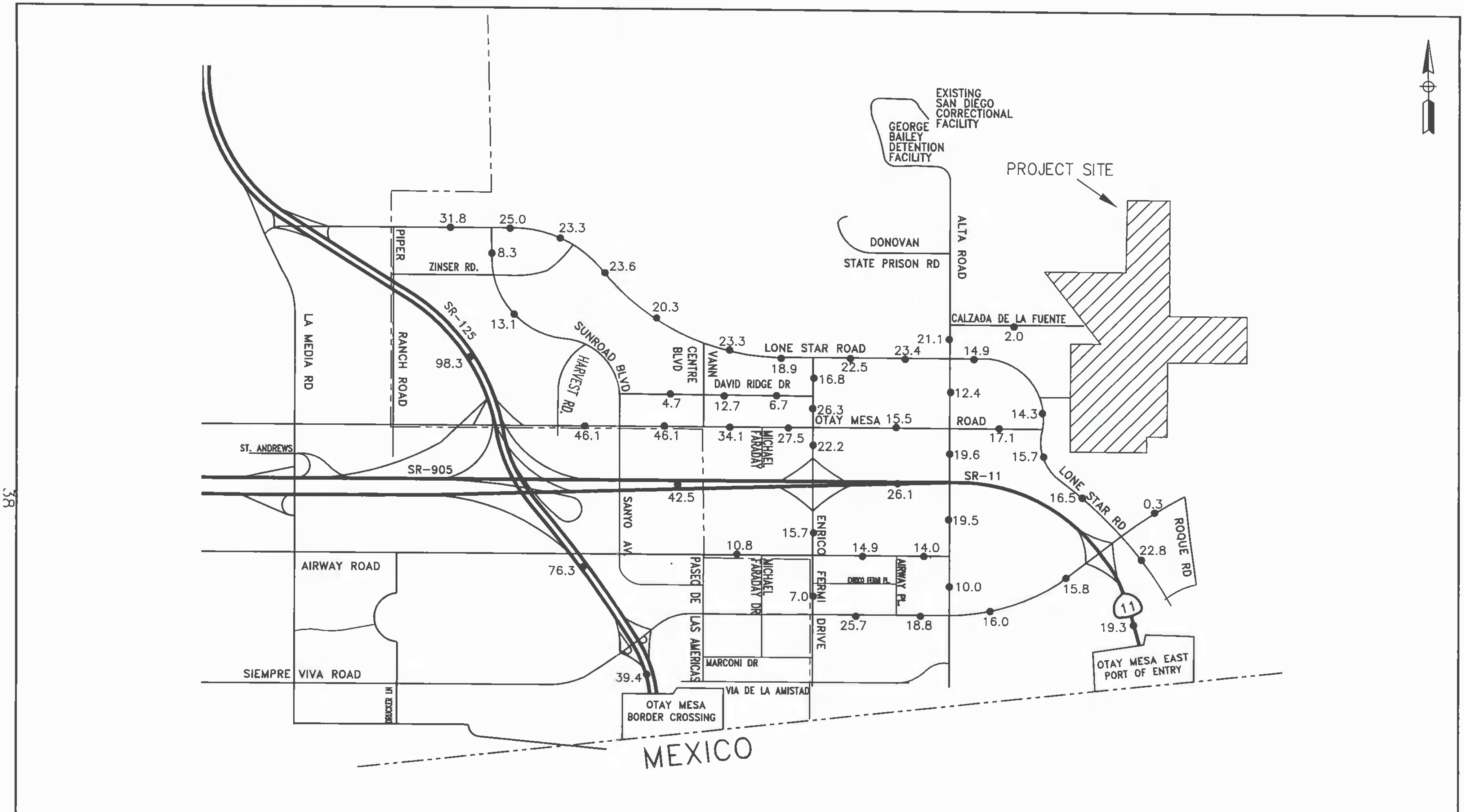
- PRIME ARTERIAL (C.E.)
- ENCHANCED MAJOR ROAD(C.E.)(REQUIRES ADDITIONAL RIGHT-OF-WAY TO ACCOMODATE TURN MOVEMENTS AND FREEWAY ACCESS FROM OTAY MESA ROAD TO SR-11)
- MAJOR ROAD (C.E.)
- 4-LANE COLLECTOR ROAD (C.E.)
- 4-LANE ROAD (S.P.)
- 2-LANE ROAD (S.P.)
- CITY ROAD/OTHER ROAD
- CITY/COUNTY BOUNDARY
- EAST OTAY MESA BOUNDARY
- FREEWAY RIGHT-OF-WAY
- PROJECT SITE

NOTE:
C.E. – CIRCULATION ELEMENT ROAD
S.P. – SPECIFIC PLAN ROAD

Darnell & ASSOCIATES, INC.

170404-CC.dwg 11-20-17 SN/JMM

FIGURE 10
ADOPTED CIRCULATION PLAN FOR EAST OTAY MESA
(2050 CONDITIONS)



LEGEND

- PROJECT SITE

Z,ZZZ - 2050 AVERAGE DAILY TRAFFIC

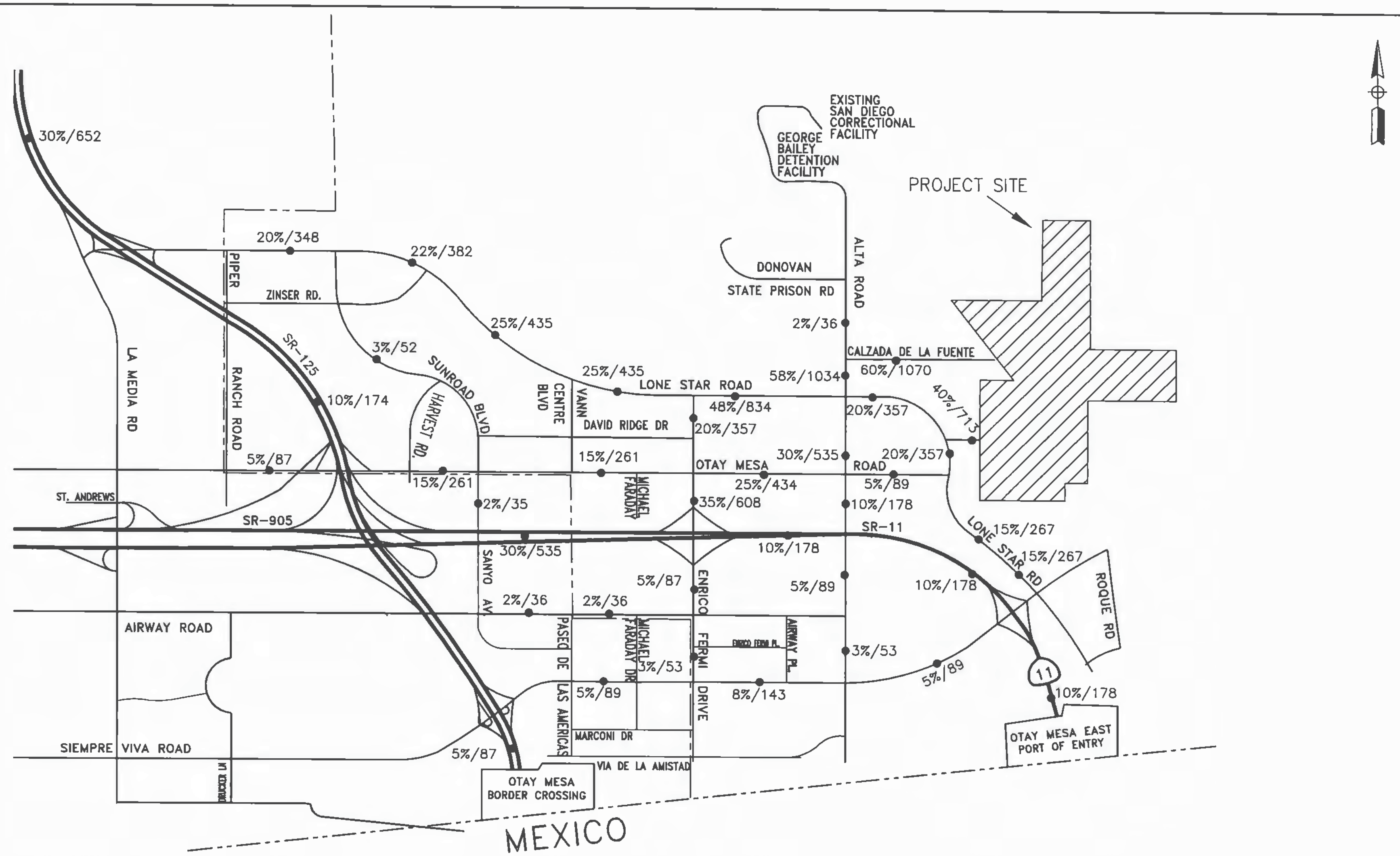
— - — - — CITY/COUNTY BOUNDY

Darnell & ASSOCIATES, INC.

170404-CC.dwg 12-04-17 VLA

FIGURE 11

YEAR 2050 DAILY TRAFFIC



LEGEND

- PROJECT SITE

XX%/YYY - TRIP DISTRIBUTION %/ DAILY TRAFFIC

- CITY/COUNTY BOUNDY

Darnell & ASSOCIATES, INC.

170404-CC.dwg 12-04-17 VLA/JAM

FIGURE 12

OTAY HILLS SPA YEAR 2050

ADDITIONAL DAILY TRAFFIC

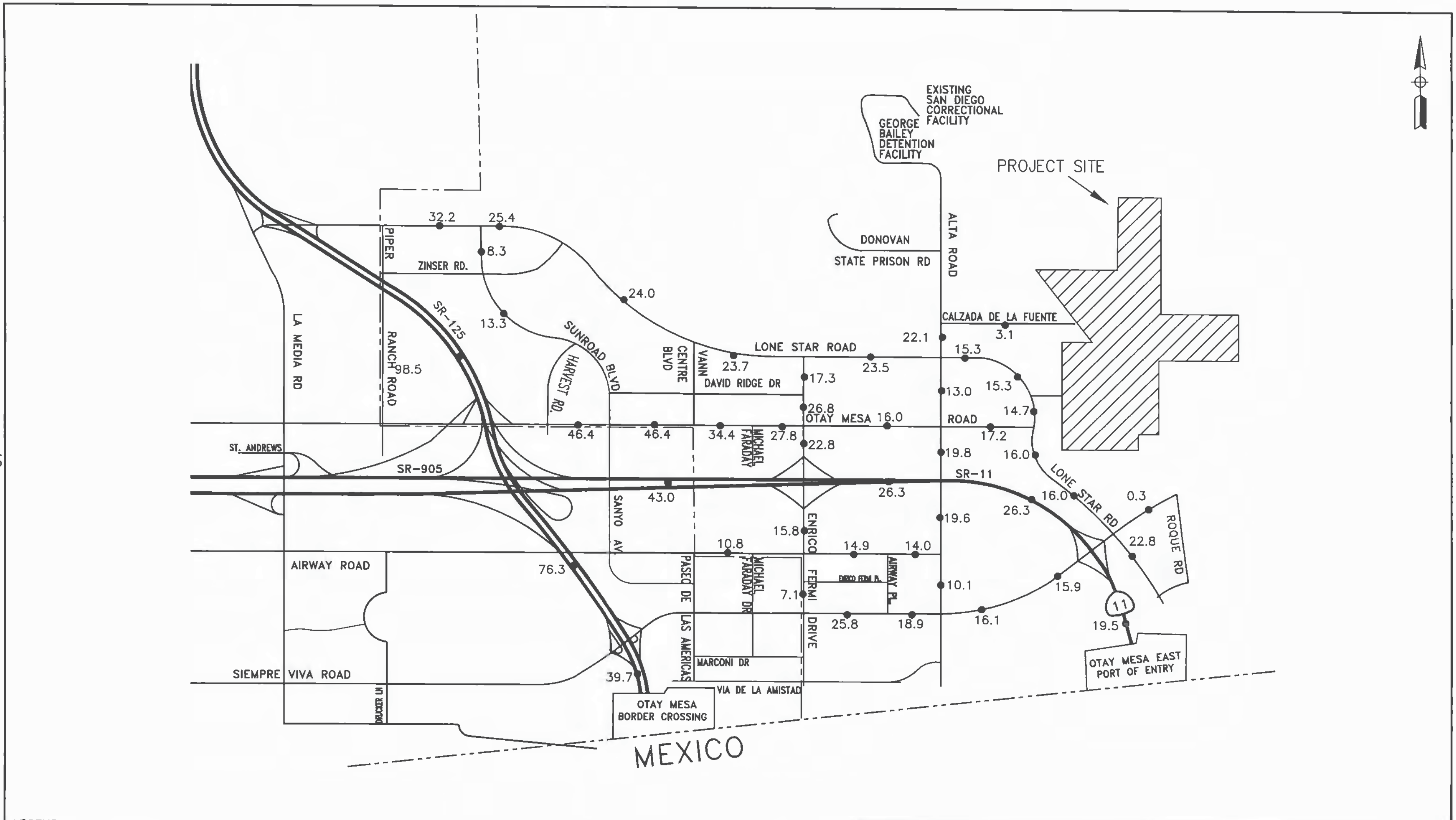


FIGURE 13
YEAR 2050 PLUS PROJECT DAILY TRAFFIC

Year 2050 Analysis

The Future 2050 daily traffic forecast presented on Figure 11 for the adopted East Otay Mesa Business Park Specific Plan. Figure 13 with the proposed Otay Hills projects were analyzed, based on the daily traffic volumes and the adopted circulation element shown on Figure 10. Table 19 presents the results of the analysis. Review of Table 19 shows all the roadway segments will operate at LOS D or better and will continue to operate at LOS D or better with the addition of project traffic.

This analysis concludes the proposed Otay Hills Specific Plan Amendment does not require any amendments to the East Otay Mesa Business Park Specific Plan (SPA 14-002) Dated April 22, 2015.

Table 19 – 2050 Segment Daily LOS Summary

Roadway Segment	Jurisdiction	Class	Capacity (LOS E)	2050 EOMSP			2050 + Proposed Otay Hills SPA					
				ADT	V/C	LOS	Proj. Tr	ADT	V/C	LOS	ΔV/C	Sig
Otay Mesa Rd												
SR-125 SB to SR-125 NB	County/City	6P	57,000	46,100	0.81	D	261	46,361	0.82	D	0.01	NO
Harvest Rd to Sanyo Ave	County/City	6P	57,000	46,100	0.81	D	261	46,361	0.82	D	0.01	NO
Sanyo Ave to Vann Centre	County/City	6P	57,000	46,100	0.81	D	261	46,361	0.82	D	0.01	NO
Vann Centre to Michael Faraday	County	6P	57,000	34,100	0.60	B	261	34,361	0.61	B	0.01	NO
Michael Faraday to Enrico Fermi Dr	County	6P	57,000	27,500	0.48	B	261	27,761	0.49	B	0.01	NO
East of Enrico Fermi Dr	County	4M	37,000	15,500	0.42	B	434	15,934	0.43	B	0.01	NO
West of Alta Rd	County	4M	37,000	15,500	0.42	B	434	15,934	0.43	B	0.01	NO
Calzada De La Fuente												
East of Alta Rd	County	2-I/C	16,200	2,000	0.13	B	1,070	3,070	0.19	C	0.06	NO
Lone Star Road												
Alta Road to Enrico Fermi Dr	County	4M	37,000	23,400	0.63	B	834	24,234	0.66	B	0.03	NO
West of Enrico Fermi Dr	County	4M	37,000	23,600	0.64	B	435	34,035	0.65	B	0.01	NO
West of Sunroad Blvd	County	4M	37,000	23,600	0.64	D	348	23,948	0.65	D	0.01	NO
Enrico Fermi Drive												
Lone Star Rd to Otay Mesa Rd	County	4M	37,000	26,300	0.71	C	357	26,657	0.72	C	0.01	NO
Otay Mesa Rd to SR-905	County	4M(m)	47,000(a)	22,200	0.47	B	608	22,808	0.49	B	0.02	NO
SR-905 TO Airway Rd	County	4M	37,000	15,700	0.42	B	87	15,787	0.43	B	0.01	NO
Airway Rd to Siempre Viva Rd	City	4M	40,000	7,000	0.18	A	53	7,053	0.18	A	0.0	NO
Alta Road												
Calzada De La Fuente to Lone Star Rd (Paseo De La Fuente)	County	4C	34,200	21,100	0.62	B	1,034	22,134	0.65	C	0.03	NO
Lone Star Rd (Paseo De La Fuente) to Otay Mesa Rd	County	4M	37,000	12,400	0.34	A	535	12,935	0.35	A	0.04	NO
South of Otay Mesa Rd	County	4M	37,000	19,500	0.53	A	89	19,589	0.53	B	0.0	NO

City = Capacity of City segments is based on the upper limits of LOS E per the City of San Diego; County = Capacity of County segments is based on the upper limits of LOS E per the County of San Diego;
Bold = Jurisdiction which capacity is based on; ADT= Average Daily Traffic; LOS= Level of Service; V/C = Volume-to LOS E Capacity Ratio
8-Fwy = 8-Lane Freeway; 4-Toll = 4-Lane Toll Facility; 6P = 6-Lane Prime Arterial; 4M(m)= 4-Lane Modified Major Arterial; 4M = 4-Lane Major Arterial; 4C = 4-Lane Collector;
2-I/C = 2-Lane Industrial/Commercial Collector
(a) Additional lanes may be provided to accommodate turning movements and freeway access; hence the roadway capacity was assumed to be 47,000 ADT at LOS E (half way between a 4M & 6P).
(b) Capacity is 2,300 vehicles per hour per lane, LOS is based on Caltrans District 11 & HCM procedures, See Appendix G for LOS calculations

SECTION VI – PROJECT ACCESS

The project proposes to take access off Alta Road via Calzada De La Fuente located north of the Otay Mesa Road/Lone Star Road intersection. Figure 14 depicts the project site plan and internal access roads and their connection to Calzada De La Fuente. At this time Calzada De La Fuente terminates at the project boundary. A cul-de-sac at the end of Calzada De La Fuente is proposed to terminate the public road prior to entering the project.

Review of Figure 14 shows that direct access to/from Calzada De La Fuente is provided such that the vehicles enter and exit the site without requiring any extensive turning movements.

Shown in previous Sections of the report, the Alta Road/Calzada De La Fuente intersection operates at an acceptable level of service under Existing, Opening Year 2019 and Opening Year 2019 plus project conditions with existing stop control of Calzada de la Fuente.

Also shown on Figure 14 is an existing cul-de-sac of the roadway serving the existing development to the west. The cul-de-sac shown has been constructed to terminate the existing roadway and is not proposed as a project access.

FIGURE 14
PROJECT SITE ACCESS

SECTION VII – SUMMARY OF MITIGATION MEASURES

TRANSPORTATION IMPACT FEE (TIF)

The County of San Diego has developed an overall programmatic solution that addresses existing and projected future road deficiencies in the unincorporated portions of San Diego County. This program includes the adoption of a Transportation Impact Fee (TIF) program to fund improvements to roadways necessary to mitigate potential cumulative impacts caused by traffic from future development. Based on SANDAG regional growth and land use forecasts, the SANDAG Regional Transportation Model was utilized to analyze projected build-out (year 2050) development conditions on the existing circulation element roadway throughout the unincorporated area of the County. Based on the results of the traffic modeling, funding necessary to construct transportation facilities that will mitigate cumulative impacts from new development was identified. Existing roadway deficiencies will be corrected through improvement projects funded by other public funding sources, such as TransNet, gas tax and grants. Potential cumulative impacts to the region's freeways have been addressed in SANDAG's Regional Transportation Plan (RTP). This plan, which considers freeway build out over the next 40 years, will use funds from TransNet, state and federal funding to improve freeways to projected level of service objectives in the RTP.

Full build out of the project is estimated to generate a total of 5,565 average daily driveway trips. These trips were distributed on the circulation element roadways in Otay Mesa of which currently are projected to operate at adequate levels of service. The potential growth represented by the proposed project was analyzed in Section V of the report. The traffic impacts to County Circulation Element Roadways was identified and considered to be to less than significant.

The County Board of Supervisors adopted the County of San Diego Traffic Impact Fee (TIF) program in April 2005. The latest TIF Ordinance Update was adopted by the Board of Supervisors effective on December 31, 2012. It should be noted that the actual traffic impact fees are subject to change as the TIF ordinance is updated annually as the fees are adjusted to reflect the engineering cost index. Compliance with the County TIF ordinance will mitigate any cumulative impact that the project has on the County roadway facilities located within the East Otay Mesa Specific Plan Area and the South TIF region. The project proposes to comply with the County's TIF to mitigate the project's local and regional cumulative impacts within the unincorporated area.

DIRECT IMPACTS

Direct Impacts – Roadway Segments

The project has a direct impact to Otay Mesa Road west of Alta Road.

Direct Impacts – Intersections

The project has a direct impact on the Otay Mesa/Alta Road intersection.

CUMULATIVE IMPACTS

The project is considered to be part of cumulative impacts. To mitigate projects cumulative impacts the Applicant agrees to participate in the County of San Diego Traffic Impact Fees (TIF) Program and will pay the current County TIF Fees at the time building permits are issued.

YEAR 2050 IMPACTS

Analysis of Year 2050 conditions was examined in Section V of this report. The analysis concluded that the Otay Hills Specific Plan Amendment does not create a significant impact on the Year 2050 conditions to require any amendments to the East Otay Mesa Business Park approved Circulation Element

MITIGATION MEASURES

To mitigate the projects direct impact to Otay Mesa Road requires Otay Mesa Road west of Alta Road to east of Enrico Drive to restripe the existing two (2) lane roadway to provide one (1) lane in each direction plus a continuous center turn lane, from Alta Road to Enrico Fermi Drive. With this improvement the Level of Service of the roadway will operate at LOS D.

To mitigate the projects direct impact to the Otay Mesa Road/Alta Road intersection requires the intersection to be signalized. With these improvements the Level of Service will operate at LOS B in the AM peak and LOS A in the PM peak hours. To mitigate the projects impacts does not require the addition of any traffic lanes at the intersection.

FUTURE IMPACTS

As shown in Section VI, the proposed Otay Hills Specific Plan Amendment does not have a significant impact under 2050 conditions in the County or City of San Diego.

PROJECT ACCESS IMPROVEMENTS

The project applicant for Otay Hills will be responsible for constructing a cul-de-sac at the eastern terminus of Calzada De La Fuente to provide access to the Otay Hills project site. The project will also construct a cul-de-sac at the end of Calzada de la Fuente as shown on Figure 14.

SECTION VIII – ALTERNATIVE PROJECT TRAFFIC ANALYSIS

The California Environmental Quality Act (CEQA) requires that a project consider a minimum of three (3) project alternatives, one of which is a No Project alternative. Therefore, to satisfy the requirements of CEQA, the Otay Hills Project developed the following five (5) project alternatives in addition to the proposed project:

- Alternative 1 – No Project/No Development Alternative
- Alternative 2 – No Project/Existing Plan Alternative
- Alternative 3 –Extraction to Natural Grade Alternative
- Alternative 4 – Extraction to 50-foot Depth Alternative
- Alternative 5 – Extraction to 200-foot Depth Alternative.

A brief description of each of the project alternatives is provided below. An illustration of the layout for Alternative 3, 4, and 5 is provided in Appendix F. Table 19 provides a summary of the trip generation associated with each of the project alternatives.

Alternative 1 – No Project/No Development Alternative: Alternative 1 assumes that the proposed project site would not be mined and would remain undeveloped. The no project/no development alternative will analyze the environmental impacts associated with the site being left in its baseline condition (natural) with no development occurring within the foreseeable future.

Alternative 2 – No Project/Existing Plan Alternative: With Alternative 2, future conditions assume that the site will be developed per the existing land uses approved with the East Otay Mesa Specific Plan. As was discussed in Section III, the project site is currently zoned per the East Otay Mesa Business Park Specific Plan (EOMSP) to have 26.5 acres of Mixed Industrial Land Use and 83.5 acres of Rural Residential Land Use. The Hillside Residential District along the eastern portion of the site allows for low-density (1 dwelling unit/ 20 acres) rural residential use. The Mixed Industrial District permits uses such as, wholesale storage and distribution, research services, and general industrial along with compatible commercial uses of construction sales and services, automotive and equipment uses, and custom manufacturing, to be built under its land use designation. The trip generation for Alternative 2 is shown in Table 18.

Alternative 3 – Extraction to Natural Grade: Alternative 3, the extraction to natural grade alternative would include the same operations and footprint as the proposed project. This alternative would consist of Phases 1 and 2 of the proposed project. The total anticipated production of the quarry under this alternative would have an estimated life of 20 years and would extract approximately 19 million tons of mineral resource from the site (the proposed project would extract approximately 86-million tons of mineral resource over a 120 ± year period). Annual production amounts are anticipated to be similar to the proposed project (i.e. between 0.6 and 1.6 million tons of aggregate per year).

Similar to the proposed project, the proposed construction aggregate operation would be developed in phases. The timing for Phases 1 and 2 could change in the future depending upon aggregate needs in southern San Diego County, such that the phases presented herein could change and/or more than one phase could be in use at any one time.

As discussed previously, Alternative 3 would include only Phases 1 and 2 of the proposed project. The Inert Debris Engineered Fill Operation (IDEFO) that was part of Phase 4 of the proposed project would be eliminated with the project Alternative 3, thus the Phase 2 trip generation from the proposed project would represent the maximum trip generation potential for the project Alternative 3. Table 3 summarizes the trip generation for the project Alternative 3. (For details on the trip generation calculations, please refer to Section III of this report.)

Table 20 –Project Alternatives Trip Generation Rates and Calculations Summary

Trip Generation Rates

Land Use/Activity	Daily Trip Rate	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
		Total % of Daily	% In	% Out	Total % of Daily	% In	% Out
Mixed Industrial	90 Trips/Acre	11%	90%	10%	12%	20%	80%
Rural Residential	12 Trips/Acre (a)	8%	30%	70%	10%	70%	30%

Trip Generation Calculations

Land Use	Average Production								Maximum Production							
	Total # Units	Daily	AM Peak Hour			PM Peak Hour			Total # Units	Daily	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out			Total	In	Out	Total	In	Out
Proposed Project (b)																
Proposed Project (Phases 3 & 4)	(b)	1,644	101	59	42	115	55	60	(b)	2,674	158	90	68	172	83	89
Alternative 1 – No Project/No Development																
No Development	-	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0
Difference btwn Alt 1: & Proposed Proj:	**-**	**(1,644)**	**(101)**	**(59)**	**(42)**	**(115)**	**(55)**	**(60)**	**-**	**(2,674)**	**(158)**	**(90)**	**(68)**	**(172)**	**(83)**	**(89)**
Alternative 2 – No Project/Existing Plan																
Mixed Industrial	26.5Acres	2,385	262	236	26	286	57	229	26.5Acres	2,385	262	236	26	286	57	229
Rural Residential	83.5 Acres	1,002	80	24	56	100	70	30	83.5 Acres	1,002	80	24	56	100	70	30
Total Alternative 2:	**110.0 Acres**	**3,387**	**342**	**260**	**82**	**386**	**127**	**259**	**110.0 Acres**	**3,387**	**342**	**260**	**82**	**386**	**127**	**259**
Difference btwn Alt 2: & Proposed Proj:	**-**	**1,743**	**241**	**201**	**40**	**271**	**72**	**199**	**-**	**713**	**184**	**170**	**14**	**214**	**44**	**170**
Alternative 3 – Extraction to Natural Grade (c)																
Extraction to Natural Grade (Phase 2)	(c)	1,332	83	50	33	97	46	51	(c)	2,154	127	74	53	141	67	74
Difference btwn Alt 3: & Proposed Proj:	**-**	**(312)**	**(18)**	**(9)**	**(9)**	**(18)**	**(9)**	**(9)**	**-**	**(520)**	**(31)**	**(16)**	**(15)**	**(31)**	**(16)**	**(15)**
Alternative 4 – Extraction to 50-foot Depth (d)																
Extraction to Natural Grade	(d)	1,644	101	59	42	115	55	60	(d)	2,674	158	90	68	172	83	89
Difference btwn Alt 4: & Proposed Proj:	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Alternative 5 – Extraction to 200-foot Depth (d)																
Extraction to Natural Grade	(d)	1,644	101	59	42	115	55	60	(d)	2,674	158	90	68	172	83	89
Difference btwn Alt 5: & Proposed Proj:	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**-**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

(a) Assumes one (1) dwelling unit per acre
(b) See Table 4 in Section III for details on the trip generation break down
(c) Alternative 3 would only extend out to Phase 2 of the proposed project. Thus, the Phase 2 trip generation from the proposed project would represent the maximum trip generation potential for Alternative 3. See Table 4 in Section III for details on the trip generation break down.
(d) Project Alternatives 4 and 5 will have the same daily average and maximum production levels as the proposed project, only the overall duration of project will vary per project alternative. Therefore, the daily and peak hour trip generation for Alternatives 4 and 5 are the exact same as the proposed project. See Table 4 in Section III for details on the trip generation break down.

Alternative 4 – Extraction to 50-Foot Depth: Alternative 4, the extraction to 50-foot depth alternative would include the same operations and footprint as the proposed project. This alternative would consist of three (3) phases. Phase 1 would include site preparation and the construction of the processing plant. This phase would be consistent with Phase 1 of the proposed project. Phase 2 would include extraction of material that will extend to a maximum pit floor elevation of 530 feet above mean sea level (AMSL). Extraction would progress in a north to south direction. Phase 3 will involve backfilling the pit with inert fill material to compact the material to form pad areas (IDEFO). Similar to the proposed project, the pit will be backfilled consecutively with extraction that occurs during Phase 2.

The total anticipated production of the quarry under this alternative would have an estimated life of 36 years and would extract approximately 35 million tons of mineral resource from the site (the proposed project would extract approximately 86-million tons of mineral resource over a 120 ± year period). Annual production amounts are anticipated to be similar to the proposed project (i.e. between 0.6 and 1.6 million tons of aggregate per year). Therefore, daily production would also be consistent with the proposed project.

Similar to the proposed project, the proposed construction aggregate operation would be developed in phases. The timing for Phases 1 through 3 could change in the future depending upon aggregate needs in southern San Diego County, such that the phases presented herein could change and/or more than one phase could be in use at any one time.

Since the daily production activities based on the average and maximum production scenarios will be the same for the project Alternative 4 as they are for the proposed project, the trip generation for project Alternative 4 is the same as the proposed project. Table 3 summarizes the trip generation for the project Alternative 4. (For details on the trip generation calculations, please refer to Section III of this report.)

Alternative 5 – Extraction to 200-Foot Depth: Alternative 5, the extraction to 200-foot depth alternative would include the same operations and footprint as the proposed project. This alternative would consist of four (4) phases. These phases would be consistent with Phases 1 through 4 of the proposed project, except that the ultimate pit depth would be reduced to approximately 200 feet below the existing grade (the proposed project would extend to a depth of approximately 500 feet below the existing grade). Phase 1 would include site preparation and the construction of the processing plant. Phase 2 will consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site. The natural grade elevation of the mesa (west of the site) ranges between 580 and 630 feet AMSL. Extraction would progress in a north to south direction. Extraction operations during Phase 3 would extend below the Phase 2 area, to a maximum pit floor elevation of 380 feet AMSL. Phase 4 will involve backfilling the pit with inert fill material to compact the material to form pad areas (IDEFO). Similar to the proposed project, the pit will be backfilled consecutively with extraction that occurs during Phase 3.

The total anticipated production of the quarry under this alternative would have an estimated life of 62 years and would extract approximately 60 million tons of mineral resource from the site (the proposed project would extract approximately 86-million tons of mineral resource over a 120 ± year period). Annual production amounts are anticipated to be similar to the proposed project (i.e. between 0.6 and 1.6 million tons of aggregate per year). Therefore, daily production would also be consistent with the proposed project.

Similar to the proposed project, the proposed construction aggregate operation would be developed in phases. The timing for Phases 1 through 4 could change in the future depending upon aggregate needs in southern San Diego County, such that the phases presented herein could change and/or more than one phase could be in use at any one time.

Since the daily production activities based on the average and maximum production scenarios will be the same for the project Alternative 5 as they are for the proposed project, the trip generation for project Alternative 5 is the same as the proposed project. Table 3 summarizes the trip generation for the project Alternative 5. (For details on the trip generation calculations, please refer to Section III of this report.)

SECTION IX – SUMMARY OF FINDINGS AND CONCLUSIONS

- The Otay Hills Project is a hard rock quarry located east of Alta Road at the end of Calzada De La Fuente in the County of San Diego. The project is a proposal to establish a mineral resource recovery operation and associated activities to create much needed construction aggregates and materials to serve the economy of San Diego County for an approximate 80-year period. The project is located within a 433.9-acre ownership with extractive operations proposed on 110 acres of the site. The balance of the 433.9-acre ownership would be placed in biological open space prior to aggregate recovery activities. Approximately 86-million tons of mineral resource would be extracted from the site and over 60 million tons of inert debris would be received over a 120± year period.

- The proposed mineral resource recovery project would consist of site preparation for the processing plant equipment and a phased extraction and backfilling operation. Ongoing backfilling of the site during the open pit extraction phase of the project will allow reclamation to progress concurrently with the extraction operation. The project is proposed to be subdivided into four (4) phases with Phase 1 (Site Preparation) anticipated to run from 2017 to 2019, Phase 2 (Extraction to Natural Grade Elevation) anticipated to extend for a 26 year period from the Years 2019 to 2042; Phase 3 (Open Pit Extraction) anticipated to last 75 years from 2042 to 2117, and Phase 4 (Inert Debris Engineered Fill Operation, Landfill) lasting around 92 years starting around the year 2043 and lasting until around the year 2135.

- It should be noted that the variables used to prepare the project time line include assumptions that could change over time. That is particularly true for Phase 4, where the amount of inert debris that will be available to fill the proposed landfill is dependent upon variables that will change such as: (1) the regional economy which affects the rate of construction; (2) the level of recycling; and (3) the competition from other inert landfill sites.

- Based on information provided by the applicant for the average and maximum production scenario, trip generation was estimated for each phase of the project. Phase 1 and Phase 2 are proposed to operate independently of all other phases (i.e. they will not overlap any other phase). However, there is a period of approximately 74 years where Phases 3 and 4 of the proposed project may overlap.

- Phase 1 of the proposed project is estimated to generate 148 average daily passenger car equivalent (PCE) trips, 25 AM PCE trips, and 25 PM PCE trips.

- Based on the average production scenario, Phase 2 and 3 (independently) are estimated to generate 1,332 average daily PCE trips, 83 AM PCE trips, and 97 PM PCE trips, and Phase 4 (independently) is estimated to generate 390 average daily PCE trips, 33 AM PCE trips, and 47 PM PCE trips. The combination of Phases 3 and 4, per the average production scenario, are estimated to generate 1,644 average daily PCE trips, 101 AM PCE trips, and 115 PM PCE trips.

- Based on the maximum production scenario, Phase 2 and 3 (independently) are estimated to generate 2,154 average daily PCE trips, 127 AM PCE trips, and 141 PM PCE trips, and Phase 4 (independently) is estimated to generate 598 average daily PCE trips, 46 AM PCE trips, and 60 PM PCE trips.

- Since the combination of Phases 1 and 2 generate the highest number of trips, this report analyzed the project impacts associated with the addition of the traffic generated by the combination of Phases 1 and 2 of the proposed projects based on the maximum production scenarios to identify projects impacts.

- Analysis of the projects direct impacts found the project has a direct impact at the Otay Mesa Road/ Alta Road intersection with traffic from Phases 1 plus 2 traffic. Mitigation of the impact requires the installation of traffic signal control at the existing intersection. Installation of the signal will result in the intersection operating at LOS A in the AM and LOS B in the PM peak hour.

- Analysis of Opening Year 2019 Plus Project direct impacts found the project has a direct impact to Otay Mesa Road west of Alta Road to the existing improved roadway east of Enrico Fermi Drive. To mitigate the projects direct impacts the applicant proposes restriping the existing two (2) lane section of Otay Mesa Road between Alta Road and Enrico Fermi Drive to provide a minimum one (1) lane in each direction plus a center turn lane to increase the LOS E capacity of the roadway to 19,000 vehicles per day.

- Analysis of the Future 2050 traffic forecasts with the addition of project traffic from the additional 53.4 acres of mixed use industrial and decrease in 270 acres of Rural Residential land use and the addition of 216.7 acres of Conservation/Limited Use found the proposed approval of the proposed Specific Plan Amendment will result in the addition of 1,783 additional trips from the project area to the 2050 traffic forecasts. Analysis of the additional traffic generated by the proposed plan amendment does not create any impacts to require any changes to the adopted East Otay Mesa Business Park Circulation Element.

- To mitigate the projects cumulative impacts the project will pay the County Traffic Impact Fees based on the Average Trip Generation presented on Table 4.

APPENDIX A

- 24 Hour Machine Counts
- AM/PM Peak Hour Traffic Counts
- Excerpts from County of San Diego Public Road Standards
- Excerpts from County's Guidelines for Determining Significance
- Excerpts from Caltrans Guidelines for the Preparation of Traffic Impact Studies

24 Hour Machine Counts

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

ENRICO FERMI - OTAY MESA TO 905 WB RAMP

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	9		9					12:00	58		59				
00:15	4		14					12:15	66		49				
00:30	2		15					12:30	61		44				
00:45	3	18	6	44			62	12:45	50	235	55	207			442
01:00	5		2					13:00	44		65				
01:15	2		4					13:15	42		68				
01:30	6		9					13:30	35		71				
01:45	6	19	4	19			38	13:45	28	149	111	315			464
02:00	5		9					14:00	36		130				
02:15	7		0					14:15	33		114				
02:30	14		10					14:30	28		112				
02:45	10	36	5	24			60	14:45	21	118	67	423			541
03:00	2		3					15:00	22		99				
03:15	6		6					15:15	26		76				
03:30	8		7					15:30	25		127				
03:45	11	27	3	19			46	15:45	30	103	120	422			525
04:00	5		3					16:00	35		170				
04:15	15		5					16:15	30		104				
04:30	21		5					16:30	28		108				
04:45	34	75	11	24			99	16:45	33	126	70	452			578
05:00	35		7					17:00	38		81				
05:15	83		7					17:15	30		72				
05:30	133		9					17:30	38		39				
05:45	89	340	17	40			380	17:45	31	137	49	241			378
06:00	46		34					18:00	33		71				
06:15	80		35					18:15	28		53				
06:30	105		58					18:30	21		56				
06:45	127	358	37	164			522	18:45	26	108	35	215			323
07:00	81		28					19:00	22		36				
07:15	99		15					19:15	15		38				
07:30	105		33					19:30	19		29				
07:45	111	396	38	114			510	19:45	20	76	27	130			206
08:00	66		25					20:00	11		33				
08:15	61		31					20:15	9		14				
08:30	50		28					20:30	12		13				
08:45	48	225	33	117			342	20:45	11	43	18	78			121
09:00	57		45					21:00	8		6				
09:15	63		51					21:15	9		13				
09:30	56		38					21:30	10		17				
09:45	51	227	52	186			413	21:45	5	32	18	54			86
10:00	48		44					22:00	4		79				
10:15	43		35					22:15	6		33				
10:30	87		51					22:30	5		27				
10:45	60	238	47	177			415	22:45	9	24	17	156			180
11:00	58		61					23:00	12		11				
11:15	69		57					23:15	5		8				
11:30	63		62					23:30	4		29				
11:45	44	234	45	225			459	23:45	5	26	7	55			81
Total Vol.		2193		1153			**3346**			1177		2748			**3925**

Daily Totals

NB	SB	EB	WB	Combined
3370	3901			**7271**

	AM			PM		
Split %	65.5%	34.5%	**46.0%**	30.0%	70.0%	**54.0%**
Peak Hour	06:30	10:45	**06:15**	12:00	15:30	**15:30**
Volume	412	227	**551**	235	521	**641**
P.H.F.	0.81	0.92	**0.84**	0.93	0.77	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

ENRICO FERMI - 905 EB RAMP TO AIRWAY

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	1		2					12:00	44		34				
00:15	2		2					12:15	51		40				
00:30	1		2					12:30	40		28				
00:45	0	4	4	10			14	12:45	35	170	26	128			298
01:00	1		4					13:00	33		33				
01:15	2		4					13:15	28		31				
01:30	3		2					13:30	35		28				
01:45	2	8	1	11			19	13:45	40	136	22	114			250
02:00	4		1					14:00	32		18				
02:15	5		2					14:15	28		20				
02:30	6		3					14:30	44		16				
02:45	3	18	2	8			26	14:45	65	169	19	73			242
03:00	2		4					15:00	77		22				
03:15	4		5					15:15	84		28				
03:30	4		10					15:30	65		15				
03:45	9	19	9	28			47	15:45	74	300	19	84			384
04:00	16		15					16:00	88		22				
04:15	22		12					16:15	61		20				
04:30	41		23					16:30	84		28				
04:45	35	114	22	72			186	16:45	69	302	30	100			402
05:00	16		6					17:00	88		25				
05:15	22		12					17:15	70		21				
05:30	32		18					17:30	68		33				
05:45	28	98	15	51			149	17:45	70	296	20	99			395
06:00	15		35					18:00	51		16				
06:15	12		23					18:15	68		19				
06:30	15		21					18:30	70		20				
06:45	16	58	19	98			156	18:45	54	243	11	66			309
07:00	28		22					19:00	44		15				
07:15	44		12					19:15	35		9				
07:30	68		21					19:30	28		12				
07:45	61	201	33	88			289	19:45	21	128	8	44			172
08:00	55		35					20:00	22		9				
08:15	68		41					20:15	26		10				
08:30	70		33					20:30	11		5				
08:45	91	284	38	147			431	20:45	18	77	4	28			105
09:00	88		35					21:00	9		5				
09:15	70		44					21:15	12		3				
09:30	65		35					21:30	5		3				
09:45	55	278	28	142			420	21:45	4	30	5	16			46
10:00	51		26					22:00	9		4				
10:15	40		22					22:15	4		2				
10:30	35		29					22:30	5		1				
10:45	33	159	35	112			271	22:45	3	21	1	8			29
11:00	28		35					23:00	2		0				
11:15	21		44					23:15	4		1				
11:30	19		41					23:30	5		2				
11:45	22	90	35	155			245	23:45	2	13	1	4			17
Total Vol.		1331		922			**2253**			1885		764			**2649**

Daily Totals

NB	SB	EB	WB	Combined
3216	1686			**4902**

	AM			PM		
	NB	SB	Total	NB	SB	Total
Split %	59.1%	40.9%	**46.0%**	71.2%	28.8%	**54.0%**
Peak Hour	08:30	10:45	**08:30**	15:15	12:00	**16:30**
Volume	319	155	**469**	311	128	**415**
P.H.F.	0.88	0.88	**0.91**	0.88	0.80	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

AIRWAY - SANYO TO PASEO DE LAS AMERICAS

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		1			12:00			25		77		
00:15			0		7			12:15			34		69		
00:30			1		2			12:30			38		87		
00:45			0	2	0	10	12	12:45			35	132	88	321	453
01:00			0		1			13:00			29		59		
01:15			0		2			13:15			36		66		
01:30			0		0			13:30			38		51		
01:45			0	0	0	3	3	13:45			36	139	41	217	356
02:00			1		1			14:00			43		54		
02:15			0		0			14:15			34		40		
02:30			0		0			14:30			38		55		
02:45			3	4	1	2	6	14:45			43	158	41	190	348
03:00			1		3			15:00			36		44		
03:15			1		1			15:15			22		35		
03:30			1		0			15:30			30		40		
03:45			0	3	1	5	8	15:45			45	133	51	170	303
04:00			5		0			16:00			28		55		
04:15			8		1			16:15			25		58		
04:30			6		2			16:30			44		55		
04:45			9	28	4	7	35	16:45			31	128	41	209	337
05:00			1		8			17:00			25		58		
05:15			1		14			17:15			33		40		
05:30			4		12			17:30			20		44		
05:45			8	14	18	52	66	17:45			15	93	41	183	276
06:00			12		12			18:00			15		40		
06:15			10		20			18:15			14		35		
06:30			12		15			18:30			21		44		
06:45			11	45	17	64	109	18:45			14	64	41	160	224
07:00			15		17			19:00			7		35		
07:15			20		25			19:15			13		40		
07:30			15		24			19:30			3		28		
07:45			42	92	21	87	179	19:45			2	25	22	125	150
08:00			22		33			20:00			6		26		
08:15			28		30			20:15			8		12		
08:30			33		38			20:30			6		8		
08:45			19	102	41	142	244	20:45			4	24	9	55	79
09:00			40		57			21:00			4		2		
09:15			31		75			21:15			2		2		
09:30			53		97			21:30			7		7		
09:45			33	157	106	335	492	21:45			2	15	7	18	33
10:00			31		54			22:00			2		7		
10:15			36		51			22:15			3		4		
10:30			39		62			22:30			3		4		
10:45			21	127	52	219	346	22:45			3	11	7	22	33
11:00			36		66			23:00			0		5		
11:15			41		62			23:15			0		1		
11:30			28		57			23:30			0		0		
11:45			20	125	81	266	391	23:45			0	0	4	10	10
Total Vol.				699		1192	**1891**					922		1680	**2602**

Daily Totals

NB	SB	EB	WB	Combined
		1621	2872	**4493**

	AM			PM		
Split %	37.0%	63.0%	**42.1%**	35.4%	64.6%	**57.9%**
Peak Hour	09:00	09:00	**09:00**	14:00	12:00	**12:00**
Volume	157	335	**492**	158	321	**453**
P.H.F.	0.74	0.79	**0.82**	0.92	0.91	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

AIRWAY - MICHAEL FARADAY TO ENRICO FERMI

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			0		0			12:00			17		34		
00:15			2		1			12:15			21		41		
00:30			0		1			12:30			29		63		
00:45			0	2	1	3	5	12:45			18	85	50	188	273
01:00			0		0			13:00			24		25		
01:15			0		2			13:15			27		44		
01:30			0		1			13:30			55		30		
01:45			0	0	1	4	4	13:45			22	128	51	150	278
02:00			0		2			14:00			22		64		
02:15			0		3			14:15			23		52		
02:30			0		2			14:30			42		34		
02:45			2	2	0	7	9	14:45			25	112	48	198	310
03:00			1		6			15:00			23		49		
03:15			0		4			15:15			11		35		
03:30			0		1			15:30			22		52		
03:45			0	1	0	11	12	15:45			27	83	46	182	265
04:00			1		4			16:00			24		39		
04:15			6		6			16:15			18		29		
04:30			3		11			16:30			19		44		
04:45			8	18	15	36	54	16:45			24	85	35	147	232
05:00			4		5			17:00			25		44		
05:15			0		11			17:15			34		41		
05:30			2		16			17:30			23		38		
05:45			4	10	32	64	74	17:45			22	104	30	153	257
06:00			6		14			18:00			9		42		
06:15			8		15			18:15			12		56		
06:30			4		5			18:30			19		52		
06:45			6	24	16	50	74	18:45			13	53	49	199	252
07:00			6		14			19:00			3		27		
07:15			7		28			19:15			5		40		
07:30			7		38			19:30			6		15		
07:45			5	25	25	105	130	19:45			1	15	25	107	122
08:00			17		49			20:00			1		5		
08:15			13		44			20:15			7		11		
08:30			27		29			20:30			4		13		
08:45			16	73	31	153	226	20:45			4	16	7	36	52
09:00			13		52			21:00			3		5		
09:15			29		38			21:15			3		1		
09:30			38		45			21:30			2		4		
09:45			23	103	47	182	285	21:45			1	9	6	16	25
10:00			19		18			22:00			4		0		
10:15			20		30			22:15			1		4		
10:30			22		47			22:30			0		3		
10:45			14	75	30	125	200	22:45			4	9	6	13	22
11:00			21		44			23:00			1		0		
11:15			30		15			23:15			2		0		
11:30			22		27			23:30			0		1		
11:45			4	77	25	111	188	23:45			0	3	2	3	6
Total Vol.				410		851	**1261**					702		1392	**2094**

Daily Totals

NB	SB	EB	WB	Combined
		1112	2243	**3355**

	AM EB	AM WB	AM Combined	PM EB	PM WB	PM Combined
Split %	32.5%	67.5%	**37.6%**	33.5%	66.5%	**62.4%**
Peak Hour	09:15	09:00	**09:00**	13:00	13:45	**13:30**
Volume	109	182	**285**	128	201	**319**
P.H.F.	0.72	0.88	**0.86**	0.58	0.79	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

ENRICO FERMI - AIRWAY TO SIEMPRE VIVA

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	2		1					12:00	54		46				
00:15	4		7					12:15	51		38				
00:30	0		8					12:30	40		44				
00:45	0	6	0	16			22	12:45	35	180	63	191			371
01:00	1		0					13:00	22		55				
01:15	1		0					13:15	41		62				
01:30	1		0					13:30	35		48				
01:45	2	5	1	1			6	13:45	40	138	52	217			355
02:00	1		0					14:00	55		33				
02:15	0		1					14:15	41		35				
02:30	2		6					14:30	48		41				
02:45	3	6	2	9			15	14:45	54	198	48	157			355
03:00	2		0					15:00	65		44				
03:15	1		2					15:15	51		22				
03:30	9		4					15:30	60		26				
03:45	5	17	8	14			31	15:45	68	244	38	130			374
04:00	11		8					16:00	88		22				
04:15	12		14					16:15	60		17				
04:30	35		25					16:30	81		33				
04:45	41	99	59	106			205	16:45	66	295	25	97			392
05:00	9		6					17:00	70		28				
05:15	11		9					17:15	61		26				
05:30	15		5					17:30	88		28				
05:45	12	47	4	24			71	17:45	62	281	22	104			385
06:00	26		20					18:00	55		18				
06:15	22		15					18:15	40		23				
06:30	18		17					18:30	35		25				
06:45	16	82	41	93			175	18:45	28	158	14	80			238
07:00	28		20					19:00	33		23				
07:15	44		10					19:15	31		26				
07:30	61		21					19:30	20		10				
07:45	60	193	33	84			277	19:45	15	99	20	79			178
08:00	51		39					20:00	11		8				
08:15	66		40					20:15	9		10				
08:30	68		35					20:30	10		6				
08:45	88	273	33	147			420	20:45	5	35	17	41			76
09:00	60		35					21:00	4		2				
09:15	77		40					21:15	9		7				
09:30	74		28					21:30	4		6				
09:45	54	265	22	125			390	21:45	2	19	4	19			38
10:00	41		26					22:00	3		4				
10:15	40		35					22:15	2		10				
10:30	35		41					22:30	1		8				
10:45	41	157	44	146			303	22:45	0	6	8	30			36
11:00	40		35					23:00	1		3				
11:15	35		41					23:15	2		1				
11:30	44		48					23:30	6		9				
11:45	48	167	44	168			335	23:45	2	11	3	16			27
Total Vol.		1317		933			**2250**			1664		1161			**2825**

Daily Totals

NB	SB	EB	WB	**Combined**
2981	2094			**5075**

	AM			PM		
Split %	58.5%	41.5%	**44.3%**	58.9%	41.1%	**55.7%**
Peak Hour	08:45	11:15	**08:30**	15:45	12:45	**15:45**
Volume	299	179	**436**	297	228	**407**
P.H.F.	0.85	0.93	**0.90**	0.78	0.90	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

SIEMPRE VIVA - PASEO DE LAS AMERICAS TO MICHAEL FARADAY

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		2			12:00			59		68		
00:15			4		4			12:15			58		62		
00:30			2		2			12:30			56		50		
00:45			4	11	0	8	19	12:45			49	222	41	221	443
01:00			0		0			13:00			48		35		
01:15			1		0			13:15			38		44		
01:30			7		0			13:30			36		68		
01:45			5	13	2	2	15	13:45			51	173	48	195	368
02:00			5		0			14:00			52		40		
02:15			0		1			14:15			48		55		
02:30			5		10			14:30			46		51		
02:45			8	18	0	11	29	14:45			44	190	40	186	376
03:00			7		11			15:00			35		51		
03:15			3		2			15:15			35		44		
03:30			8		3			15:30			30		40		
03:45			5	23	1	17	40	15:45			47	147	51	186	333
04:00			13		4			16:00			28		68		
04:15			12		2			16:15			21		51		
04:30			15		2			16:30			33		66		
04:45			13	53	1	9	62	16:45			26	108	51	236	344
05:00			5		8			17:00			37		55		
05:15			12		18			17:15			22		66		
05:30			13		11			17:30			21		41		
05:45			5	35	27	64	99	17:45			25	105	66	228	333
06:00			18		17			18:00			11		68		
06:15			14		30			18:15			16		50		
06:30			26		30			18:30			19		40		
06:45			19	77	30	107	184	18:45			11	57	33	191	248
07:00			21		15			19:00			7		41		
07:15			20		20			19:15			9		35		
07:30			41		16			19:30			24		28		
07:45			33	115	28	79	194	19:45			8	48	30	134	182
08:00			36		33			20:00			9		22		
08:15			30		31			20:15			3		19		
08:30			49		30			20:30			8		12		
08:45			56	171	41	135	306	20:45			4	24	11	64	88
09:00			57		38			21:00			3		8		
09:15			52		49			21:15			1		9		
09:30			41		70			21:30			2		10		
09:45			47	197	86	243	440	21:45			4	10	5	32	42
10:00			43		65			22:00			5		4		
10:15			50		66			22:15			3		5		
10:30			45		75			22:30			3		2		
10:45			42	180	49	255	435	22:45			0	11	2	13	24
11:00			45		94			23:00			3		4		
11:15			67		96			23:15			3		1		
11:30			49		80			23:30			1		5		
11:45			47	208	87	357	565	23:45			7	14	6	16	30
Total Vol.				1101		1287	**2388**					1109		1702	**2811**

Daily Totals

NB	SB	EB	WB	Combined
		2210	2989	**5199**

		AM				PM	
Split %		46.1%	53.9%	**45.9%**	39.5%	60.5%	**54.1%**
Peak Hour		11:15	11:00	**11:00**	12:00	17:15	**12:00**
Volume		222	357	**565**	222	241	**443**
P.H.F.		0.83	0.93	**0.87**	0.94	0.89	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

SIEMPRE VIVA - MICHAEL FARADAY TO ENRICO FERMI

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		1			12:00			32		30		
00:15			3		0			12:15			40		37		
00:30			1		2			12:30			38		28		
00:45			3	8	0	3	11	12:45			34	144	41	136	280
01:00			0		0			13:00			30		28		
01:15			2		0			13:15			23		35		
01:30			4		0			13:30			26		44		
01:45			5	11	1	1	12	13:45			31	110	41	148	258
02:00			5		0			14:00			36		38		
02:15			0		1			14:15			23		29		
02:30			4		3			14:30			29		41		
02:45			8	17	0	4	21	14:45			28	116	44	152	268
03:00			5		2			15:00			24		37		
03:15			3		2			15:15			26		45		
03:30			5		0			15:30			24		35		
03:45			6	19	1	5	24	15:45			31	105	44	161	266
04:00			13		1			16:00			16		39		
04:15			14		2			16:15			16		40		
04:30			11		1			16:30			14		41		
04:45			11	49	2	6	55	16:45			22	68	44	164	232
05:00			5		3			17:00			26		30		
05:15			8		11			17:15			11		33		
05:30			7		8			17:30			10		31		
05:45			5	25	12	34	59	17:45			14	61	44	138	199
06:00			14		16			18:00			9		35		
06:15			6		23			18:15			9		41		
06:30			17		22			18:30			6		44		
06:45			8	45	15	76	121	18:45			10	34	35	155	189
07:00			13		12			19:00			4		28		
07:15			10		15			19:15			8		31		
07:30			18		16			19:30			23		33		
07:45			20	61	22	65	126	19:45			5	40	28	120	160
08:00			21		21			20:00			4		15		
08:15			22		28			20:15			1		12		
08:30			28		33			20:30			8		6		
08:45			22	93	27	109	202	20:45			4	17	5	38	55
09:00			36		32			21:00			4		0		
09:15			33		33			21:15			1		2		
09:30			31		28			21:30			1		6		
09:45			34	134	28	121	255	21:45			2	8	0	8	16
10:00			29		35			22:00			4		8		
10:15			19		40			22:15			3		6		
10:30			37		33			22:30			3		4		
10:45			27	112	28	136	248	22:45			0	10	1	19	29
11:00			28		31			23:00			0		2		
11:15			46		38			23:15			3		1		
11:30			34		33			23:30			0		4		
11:45			32	140	45	147	287	23:45			6	9	5	12	21
Total Vol.				714		707	**1421**					722		1251	**1973**

Daily Totals

NB	SB	EB	WB	Combined
		1436	1958	**3394**

	AM			PM		
Split %	50.2%	49.8%	**41.9%**	36.6%	63.4%	**58.1%**
Peak Hour	11:15	11:00	**11:15**	12:00	14:30	**12:00**
Volume	144	147	**290**	144	167	**280**
P.H.F.	0.78	0.82	**0.86**	0.90	0.93	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

ALTA RD - N/O CALZADA DE LA FUENTE

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	3		14					12:00	28		28				
00:15	2		16					12:15	21		20				
00:30	0		10					12:30	35		25				
00:45	3	8	3	43			51	12:45	40	124	18	91			215
01:00	1		4					13:00	24		44				
01:15	1		1					13:15	49		42				
01:30	3		10					13:30	61		42				
01:45	1	6	0	15			21	13:45	35	169	113	241			410
02:00	0		7					14:00	19		126				
02:15	1		0					14:15	17		108				
02:30	2		1					14:30	19		89				
02:45	1	4	1	9			13	14:45	26	81	80	403			484
03:00	2		2					15:00	13		96				
03:15	9		3					15:15	22		83				
03:30	10		4					15:30	14		119				
03:45	10	31	3	12			43	15:45	12	61	124	422			483
04:00	6		6					16:00	16		196				
04:15	7		2					16:15	14		106				
04:30	8		7					16:30	19		81				
04:45	20	41	8	23			64	16:45	27	76	49	432			508
05:00	42		6					17:00	17		50				
05:15	98		2					17:15	24		38				
05:30	170		12					17:30	38		24				
05:45	125	435	19	39			474	17:45	20	99	48	160			259
06:00	47		57					18:00	8		50				
06:15	48		39					18:15	9		48				
06:30	88		62					18:30	12		49				
06:45	121	304	23	181			485	18:45	10	39	22	169			208
07:00	92		21					19:00	4		13				
07:15	122		20					19:15	6		21				
07:30	191		18					19:30	7		14				
07:45	183	588	16	75			663	19:45	6	23	11	59			82
08:00	71		14					20:00	4		25				
08:15	51		30					20:15	4		6				
08:30	46		14					20:30	1		11				
08:45	42	210	21	79			289	20:45	5	14	9	51			65
09:00	24		14					21:00	10		5				
09:15	37		35					21:15	33		14				
09:30	28		22					21:30	42		16				
09:45	23	112	24	95			207	21:45	16	101	29	64			165
10:00	22		20					22:00	8		120				
10:15	23		23					22:15	9		30				
10:30	29		25					22:30	5		29				
10:45	26	100	40	108			208	22:45	9	31	15	194			225
11:00	33		45					23:00	2		14				
11:15	25		23					23:15	4		2				
11:30	30		34					23:30	6		4				
11:45	28	116	27	129			245	23:45	7	19	7	27			46
Total Vol.		1955		808			**2763**			837		2313			**3150**

Daily Totals

NB	SB	EB	WB	Combined
2792	3121			**5913**

	AM			PM		
Split %	70.8%	29.2%	**46.7%**	26.6%	73.4%	**53.3%**
Peak Hour	07:00	06:00	**07:00**	12:45	15:30	**15:30**
Volume	588	181	**663**	174	545	**601**
P.H.F.	0.77	0.73	**0.79**	0.83	0.70	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

ALTA RD - CALZADA DE LA FUENTE TO LONE STAR

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	3		16					12:00	31		37				
00:15	4		15					12:15	34		26				
00:30	0		10					12:30	58		31				
00:45	3	10	5	46			56	12:45	42	165	31	125			290
01:00	1		4					13:00	41		55				
01:15	1		1					13:15	62		51				
01:30	5		10					13:30	64		51				
01:45	1	8	1	16			24	13:45	51	218	117	274			492
02:00	0		8					14:00	31		139				
02:15	3		0					14:15	29		114				
02:30	4		1					14:30	29		121				
02:45	11	18	1	10			28	14:45	45	134	92	466			600
03:00	1		3					15:00	14		112				
03:15	10		8					15:15	29		103				
03:30	11		9					15:30	15		177				
03:45	10	32	3	23			55	15:45	17	75	144	536			611
04:00	13		6					16:00	21		222				
04:15	8		3					16:15	22		124				
04:30	13		6					16:30	23		98				
04:45	35	69	9	24			93	16:45	28	94	53	497			591
05:00	55		5					17:00	21		64				
05:15	118		6					17:15	28		45				
05:30	185		12					17:30	46		34				
05:45	158	516	20	43			559	17:45	26	121	50	193			314
06:00	66		57					18:00	10		60				
06:15	79		41					18:15	12		53				
06:30	133		62					18:30	16		54				
06:45	184	462	22	182			644	18:45	15	53	29	196			249
07:00	135		22					19:00	7		26				
07:15	146		19					19:15	6		32				
07:30	202		36					19:30	9		16				
07:45	190	673	26	103			776	19:45	6	28	12	86			114
08:00	85		18					20:00	5		27				
08:15	63		34					20:15	5		11				
08:30	57		14					20:30	4		13				
08:45	45	250	25	91			341	20:45	5	19	8	59			78
09:00	37		16					21:00	11		6				
09:15	50		37					21:15	32		12				
09:30	39		23					21:30	44		18				
09:45	32	158	24	100			258	21:45	16	103	28	64			167
10:00	27		30					22:00	9		126				
10:15	28		31					22:15	13		29				
10:30	43		28					22:30	13		30				
10:45	40	138	41	130			268	22:45	17	52	18	203			255
11:00	35		54					23:00	7		15				
11:15	29		33					23:15	5		9				
11:30	31		39					23:30	9		39				
11:45	40	135	30	156			291	23:45	5	26	7	70			96
Total Vol.		2469		924			**3393**			1088		2769			**3857**

Daily Totals

NB	SB	EB	WB	Combined
3557	3693			**7250**

	AM			PM		
Split %	72.8%	27.2%	**46.8%**	28.2%	71.8%	**53.2%**
Peak Hour	07:00	06:00	**07:00**	13:00	15:30	**15:30**
Volume	673	182	**776**	218	667	**742**
P.H.F.	0.83	0.73	**0.82**	0.90	0.75	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

ALTA RD - LONE STAR TO OTAY MESA

AM Period	NB		SB		EB	WB		PM Period	NB		SB		EB	WB	
00:00	6		16					12:00	42		42				
00:15	6		19					12:15	41		39				
00:30	2		14					12:30	64		31				
00:45	5	19	7	56			75	12:45	51	198	37	149			347
01:00	2		5					13:00	51		60				
01:15	1		4					13:15	71		62				
01:30	7		9					13:30	69		56				
01:45	4	14	4	22			36	13:45	48	239	115	293			532
02:00	1		13					14:00	37		157				
02:15	8		2					14:15	33		125				
02:30	7		7					14:30	34		129				
02:45	11	27	4	26			53	14:45	46	150	90	501			651
03:00	2		4					15:00	18		123				
03:15	11		7					15:15	28		100				
03:30	11		10					15:30	20		178				
03:45	11	35	3	24			59	15:45	19	85	141	542			627
04:00	12		6					16:00	25		230				
04:15	8		4					16:15	24		131				
04:30	16		7					16:30	26		106				
04:45	41	77	8	25			102	16:45	32	107	56	523			630
05:00	57		8					17:00	24		64				
05:15	117		8					17:15	29		47				
05:30	196		14					17:30	50		36				
05:45	171	541	20	50			591	17:45	29	132	49	196			328
06:00	73		57					18:00	11		67				
06:15	97		47					18:15	12		53				
06:30	146		75					18:30	17		52				
06:45	193	509	25	204			713	18:45	17	57	36	208			265
07:00	139		22					19:00	7		25				
07:15	164		19					19:15	7		34				
07:30	204		35					19:30	6		19				
07:45	202	709	30	106			815	19:45	8	28	12	90			118
08:00	93		16					20:00	6		27				
08:15	69		22					20:15	6		12				
08:30	70		20					20:30	4		13				
08:45	62	294	25	83			377	20:45	5	21	10	62			83
09:00	42		27					21:00	10		6				
09:15	66		44					21:15	33		13				
09:30	43		36					21:30	44		17				
09:45	35	186	36	143			329	21:45	18	105	26	62			167
10:00	32		38					22:00	10		128				
10:15	40		36					22:15	13		31				
10:30	43		30					22:30	12		31				
10:45	45	160	39	143			303	22:45	16	51	21	211			262
11:00	49		68					23:00	8		15				
11:15	35		46					23:15	4		11				
11:30	35		45					23:30	9		37				
11:45	40	159	33	192			351	23:45	6	27	9	72			99
Total Vol.		2730		1074			**3804**			1200		2909			**4109**

Daily Totals

NB	SB	EB	WB	**Combined**
3930	3983			**7913**

	AM			PM		
Split %	71.8%	28.2%	**48.1%**	29.2%	70.8%	**51.9%**
Peak Hour	07:00	06:00	**07:00**	12:45	15:30	**15:30**
Volume	709	204	**815**	242	680	**768**
P.H.F.	0.87	0.68	**0.85**	0.86	0.74	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

OTAY MESA - 125 NB RAMP TO SANYO

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			3		11			12:00			80		72		
00:15			4		8			12:15			71		82		
00:30			5		6			12:30			103		67		
00:45			3	15	2	27	42	12:45			98	352	81	302	654
01:00			2		8			13:00			94		85		
01:15			1		5			13:15			114		88		
01:30			1		5			13:30			71		98		
01:45			3	7	3	21	28	13:45			129	408	98	369	777
02:00			1		9			14:00			82		138		
02:15			4		5			14:15			72		127		
02:30			6		1			14:30			80		136		
02:45			4	15	5	20	35	14:45			88	322	134	535	857
03:00			2		1			15:00			66		149		
03:15			10		3			15:15			60		97		
03:30			9		8			15:30			92		139		
03:45			7	28	1	13	41	15:45			75	293	89	474	767
04:00			14		3			16:00			63		174		
04:15			14		11			16:15			62		111		
04:30			19		11			16:30			80		107		
04:45			39	86	19	44	130	16:45			69	274	74	466	740
05:00			37		7			17:00			74		137		
05:15			77		16			17:15			80		61		
05:30			119		28			17:30			76		85		
05:45			147	380	13	64	444	17:45			49	279	72	355	634
06:00			84		37			18:00			45		86		
06:15			93		36			18:15			45		63		
06:30			127		49			18:30			31		51		
06:45			126	430	24	146	576	18:45			35	156	51	251	407
07:00			131		19			19:00			32		45		
07:15			165		42			19:15			27		48		
07:30			190		50			19:30			30		43		
07:45			223	709	40	151	860	19:45			15	104	40	176	280
08:00			132		35			20:00			22		21		
08:15			124		44			20:15			21		23		
08:30			116		41			20:30			16		26		
08:45			106	478	43	163	641	20:45			13	72	20	90	162
09:00			120		55			21:00			18		16		
09:15			100		57			21:15			33		11		
09:30			98		108			21:30			33		13		
09:45			72	390	65	285	675	21:45			18	102	21	61	163
10:00			72		65			22:00			11		62		
10:15			83		74			22:15			14		10		
10:30			73		85			22:30			17		11		
10:45			69	297	58	282	579	22:45			10	52	8	91	143
11:00			76		95			23:00			7		12		
11:15			75		87			23:15			5		2		
11:30			70		83			23:30			9		15		
11:45			85	306	71	336	642	23:45			6	27	39	68	95
Total Vol.				3141		1552	**4693**					2441		3238	**5679**

Daily Totals

NB	SB	EB	WB	Combined
		5582	4790	**10372**

	AM			PM		
Split %	66.9%	33.1%	**45.2%**	43.0%	57.0%	**54.8%**
Peak Hour	07:15	11:00	**07:15**	12:30	14:15	**13:45**
Volume	710	336	**877**	409	546	**862**
P.H.F.	0.80	0.88	**0.83**	0.90	0.92	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

OTAY MESA - PIPPER RANCH TO 125 SB RAMP

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			5		8			12:00			85		94		
00:15			5		3			12:15			62		104		
00:30			8		5			12:30			81		103		
00:45			2	20	1	17	37	12:45			86	314	116	417	731
01:00			4		6			13:00			82		96		
01:15			0		7			13:15			106		129		
01:30			3		5			13:30			66		117		
01:45			2	9	4	22	31	13:45			93	347	115	457	804
02:00			1		8			14:00			97		126		
02:15			7		5			14:15			81		130		
02:30			5		5			14:30			84		134		
02:45			1	14	8	26	40	14:45			94	356	165	555	911
03:00			2		1			15:00			74		168		
03:15			6		4			15:15			73		124		
03:30			7		5			15:30			91		134		
03:45			3	18	6	16	34	15:45			90	328	137	563	891
04:00			10		11			16:00			86		160		
04:15			7		11			16:15			73		115		
04:30			14		19			16:30			89		108		
04:45			16	47	28	69	116	16:45			78	326	101	484	810
05:00			19		19			17:00			98		116		
05:15			34		33			17:15			99		91		
05:30			49		41			17:30			65		88		
05:45			76	178	51	144	322	17:45			46	308	90	385	693
06:00			37		46			18:00			60		100		
06:15			71		62			18:15			49		86		
06:30			58		86			18:30			34		50		
06:45			61	227	93	287	514	18:45			40	183	63	299	482
07:00			77		103			19:00			38		58		
07:15			72		117			19:15			29		61		
07:30			82		165			19:30			24		60		
07:45			92	323	132	517	840	19:45			21	112	66	245	357
08:00			64		135			20:00			33		43		
08:15			69		105			20:15			24		39		
08:30			60		119			20:30			23		45		
08:45			75	268	120	479	747	20:45			14	94	36	163	257
09:00			66		108			21:00			20		26		
09:15			71		97			21:15			29		25		
09:30			66		148			21:30			19		34		
09:45			62	265	105	458	723	21:45			22	90	33	118	208
10:00			55		92			22:00			16		43		
10:15			67		111			22:15			12		29		
10:30			64		112			22:30			12		20		
10:45			53	239	80	395	634	22:45			12	52	17	109	161
11:00			65		117			23:00			7		15		
11:15			71		122			23:15			7		7		
11:30			56		110			23:30			5		22		
11:45			72	264	95	444	708	23:45			7	26	38	82	108
Total Vol.				1872		2874	**4746**					2536		3877	**6413**

Daily Totals

NB	SB	EB	WB	Combined
		4408	6751	**11159**

	AM			PM		
Split %	39.4%	60.6%	**42.5%**	39.5%	60.5%	**57.5%**
Peak Hour	07:00	07:15	**07:15**	16:30	14:15	**14:15**
Volume	323	549	**859**	364	597	**930**
P.H.F.	0.88	0.83	**0.87**	0.92	0.89	**Err:504**

TUESDAY - APRIL 25, 2017 CITY: OTAY PROJECT: PTD17-0428-01

OTAY MESA - SANYO TO ENRICO FERMI

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		8			12:00			33		32		
00:15			1		4			12:15			30		41		
00:30			2		2			12:30			62		30		
00:45			2	6	2	16	22	12:45			40	165	39	142	307
01:00			1		2			13:00			47		52		
01:15			0		4			13:15			55		45		
01:30			1		2			13:30			47		48		
01:45			1	3	3	11	14	13:45			48	197	61	206	403
02:00			0		5			14:00			29		77		
02:15			0		3			14:15			36		85		
02:30			4		3			14:30			36		79		
02:45			3	7	1	12	19	14:45			40	141	73	314	455
03:00			2		1			15:00			29		64		
03:15			7		2			15:15			29		66		
03:30			2		5			15:30			24		98		
03:45			5	16	0	8	24	15:45			30	112	70	298	410
04:00			5		2			16:00			38		124		
04:15			6		7			16:15			33		60		
04:30			6		10			16:30			31		56		
04:45			14	31	7	26	57	16:45			34	136	49	289	425
05:00			26		2			17:00			38		54		
05:15			60		7			17:15			36		27		
05:30			85		15			17:30			42		31		
05:45			72	243	7	31	274	17:45			23	139	35	147	286
06:00			36		35			18:00			18		44		
06:15			43		21			18:15			12		37		
06:30			81		42			18:30			19		41		
06:45			84	244	12	110	354	18:45			14	63	24	146	209
07:00			71		9			19:00			8		20		
07:15			103		26			19:15			10		28		
07:30			122		25			19:30			5		29		
07:45			101	397	21	81	478	19:45			7	30	23	100	130
08:00			47		17			20:00			12		12		
08:15			44		18			20:15			7		17		
08:30			46		12			20:30			8		17		
08:45			44	181	22	69	250	20:45			10	37	12	58	95
09:00			36		28			21:00			7		8		
09:15			39		21			21:15			25		8		
09:30			30		47			21:30			21		9		
09:45			27	132	27	123	255	21:45			11	64	12	37	101
10:00			33		41			22:00			3		53		
10:15			31		31			22:15			9		6		
10:30			35		48			22:30			7		5		
10:45			32	131	39	159	290	22:45			3	22	5	69	91
11:00			25		52			23:00			4		7		
11:15			43		49			23:15			1		1		
11:30			39		42			23:30			8		15		
11:45			43	150	38	181	331	23:45			3	16	8	31	47
Total Vol.				1541		827	**2368**					1122		1837	**2959**

Daily Totals

NB	SB	EB	WB	**Combined**
		2663	2664	**5327**

	AM			PM		
Split %	65.1%	34.9%	**44.5%**	37.9%	62.1%	**55.5%**
Peak Hour	07:00	10:30	**07:00**	12:30	15:15	**15:15**
Volume	397	188	**478**	204	358	**479**
P.H.F.	0.81	0.90	**0.81**	0.82	0.72	**Err:504**

TUESDAY - APRIL 25, 2017 | CITY: OTAY | PROJECT: PTD17-0428-01

OTAY MESA - SANYO TO ENRICO FERMI

AM Period	NB	SB	EB		WB			PM Period	NB	SB	EB		WB		
00:00			1		8			12:00			33		32		
00:15			1		4			12:15			30		41		
00:30			2		2			12:30			62		30		
00:45			2	6	2	16	22	12:45			40	165	39	142	307
01:00			1		2			13:00			47		52		
01:15			0		4			13:15			55		45		
01:30			1		2			13:30			47		48		
01:45			1	3	3	11	14	13:45			48	197	61	206	403
02:00			0		5			14:00			29		77		
02:15			0		3			14:15			36		85		
02:30			4		3			14:30			36		79		
02:45			3	7	1	12	19	14:45			40	141	73	314	455
03:00			2		1			15:00			29		64		
03:15			7		2			15:15			29		66		
03:30			2		5			15:30			24		98		
03:45			5	16	0	8	24	15:45			30	112	70	298	410
04:00			5		2			16:00			38		124		
04:15			6		7			16:15			33		60		
04:30			6		10			16:30			31		56		
04:45			14	31	7	26	57	16:45			34	136	49	289	425
05:00			26		2			17:00			38		54		
05:15			60		7			17:15			36		27		
05:30			85		15			17:30			42		31		
05:45			72	243	7	31	274	17:45			23	139	35	147	286
06:00			36		35			18:00			18		44		
06:15			43		21			18:15			12		37		
06:30			81		42			18:30			19		41		
06:45			84	244	12	110	354	18:45			14	63	24	146	209
07:00			71		9			19:00			8		20		
07:15			103		26			19:15			10		28		
07:30			122		25			19:30			5		29		
07:45			101	397	21	81	478	19:45			7	30	23	100	130
08:00			47		17			20:00			12		12		
08:15			44		18			20:15			7		17		
08:30			46		12			20:30			8		17		
08:45			44	181	22	69	250	20:45			10	37	12	58	95
09:00			36		28			21:00			7		8		
09:15			39		21			21:15			25		8		
09:30			30		47			21:30			21		9		
09:45			27	132	27	123	255	21:45			11	64	12	37	101
10:00			33		41			22:00			3		53		
10:15			31		31			22:15			9		6		
10:30			35		48			22:30			7		5		
10:45			32	131	39	159	290	22:45			3	22	5	69	91
11:00			25		52			23:00			4		7		
11:15			43		49			23:15			1		1		
11:30			39		42			23:30			8		15		
11:45			43	150	38	181	331	23:45			3	16	8	31	47
Total Vol.				1541		827	**2368**					1122		1837	**2959**

	NB	SB	EB	WB	Combined
Daily Totals			2663	2664	**5327**

	AM			PM		
Split %	65.1%	34.9%	**44.5%**	37.9%	62.1%	**55.5%**
Peak Hour	07:00	10:30	**07:00**	12:30	15:15	**15:15**
Volume	397	188	**478**	204	358	**479**
P.H.F.	0.81	0.90	**0.81**	0.82	0.72	**Err:504**

AM/PM Peak Hour Traffic Counts

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	ALTA	LOCATION #:	1
TUESDAY	EAST & WEST:	CALZADA DE LA FUENTE	CONTROL:	1-WAY STOP (WB)

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W E ►
S ▼

	NORTHBOUND ALTA			SOUTHBOUND ALTA			EASTBOUND CALZADA DE LA FUENTE			WESTBOUND CALZADA DE LA FUENTE			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	1	0	0	2	X	X	X	X	0.5	X	0.5	
AM													
7:00 AM		101	34	0	17					1		2	155
7:15 AM		127	20	0	16					2		0	165
7:30 AM		190	12	0	16					18		1	237
7:45 AM		183	10	0	15					10		0	218
8:00 AM		67	17	0	14					1		0	99
8:15 AM		56	8	0	22					0		0	86
8:30 AM		48	11	2	11					1		1	74
8:45 AM		32	8	0	20					5		1	66
VOLUMES	0	804	120	2	131	0	0	0	0	38	0	5	1,100
APPROACH %	0%	87%	13%	2%	98%	0%	0%	0%	0%	88%	0%	12%	
APP/DEPART	924	/	809	133	/	169	0	/	122	43	/	0	0
BEGIN PEAK HR		7:00 AM											
VOLUMES	0	601	76	0	64	0	0	0	0	31	0	3	775
APPROACH %	0%	89%	11%	0%	100%	0%	0%	0%	0%	91%	0%	9%	
PEAK HR FACTOR		0.838			0.941			0.000			0.447		0.818
APP/DEPART	677	/	604	64	/	95	0	/	76	34	/	0	0
PM													
4:00 PM		20	4	2	191					33		0	250
4:15 PM		17	4	0	101					11		0	133
4:30 PM		21	3	0	81					18		0	123
4:45 PM		26	0	0	45					4		0	75
5:00 PM		19	4	0	49					14		0	86
5:15 PM		27	0	0	34					7		0	68
5:30 PM		41	6	0	24					9		0	80
5:45 PM		23	4	0	47					3		0	77
VOLUMES	0	194	25	2	572	0	0	0	0	99	0	0	892
APPROACH %	0%	89%	11%	0%	100%	0%	0%	0%	0%	100%	0%	0%	
APP/DEPART	219	/	194	574	/	671	0	/	27	99	/	0	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	0	84	11	2	418	0	0	0	0	66	0	0	581
APPROACH %	0%	88%	12%	0%	100%	0%	0%	0%	0%	100%	0%	0%	
PEAK HR FACTOR		0.913			0.544			0.000			0.500		0.581
APP/DEPART	95	/	84	420	/	484	0	/	13	66	/	0	0

U-TURNS	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES (AM)	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES (PM)	0	0	0	0	0

ALTA

NORTH SIDE

CALZADA DE LA FUENTE   WEST SIDE   EAST SIDE   CALZADA DE LA FUENTE

SOUTH SIDE

ALTA

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	[illegible]	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

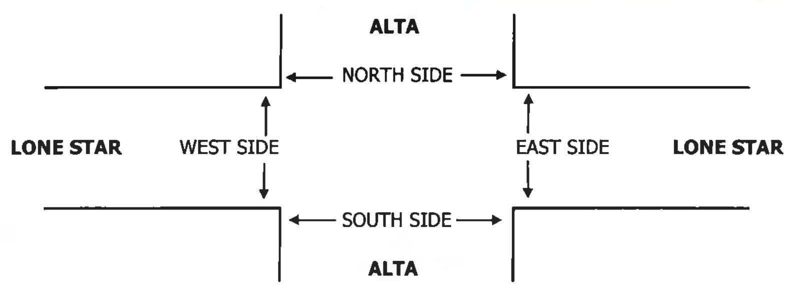
DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	ALTA	LOCATION #:	1
TUESDAY	EAST & WEST:	LONE STAR	CONTROL:	SIGNAL

NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ ◄ W E ► S ▼

	NORTHBOUND ALTA			SOUTHBOUND ALTA			EASTBOUND LONE STAR			WESTBOUND LONE STAR				U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	0	2	0	1	1	0	0	1	0	1	0	1		X	X	X	X	
AM																		
7:00 AM	0	134	3	0	17	0	0	0	0	4	0	1	159					0
7:15 AM	0	150	9	0	17	0	0	0	0	3	1	0	180					0
7:30 AM	0	202	2	0	33	0	0	0	0	6	0	0	243					0
7:45 AM	1	190	5	0	26	1	0	0	2	3	0	0	228					0
8:00 AM	0	83	3	1	14	0	0	0	0	1	0	2	104					0
8:15 AM	1	67	6	0	22	2	0	0	0	4	0	0	102					0
8:30 AM	0	58	4	0	11	1	0	0	0	5	0	0	79					0
8:45 AM	0	38	8	1	22	0	0	0	0	7	0	0	76					0
VOLUMES	2	922	40	2	162	4	0	0	2	33	1	3	1,171	0	0	0	0	0
APPROACH %	0%	96%	4%	1%	96%	2%	0%	0%	100%	89%	3%	8%						
APP/DEPART	964	/	925	168	/	197	2	/	42	37	/	7	0					
BEGIN PEAK HR		7:00 AM																
VOLUMES	1	676	19	0	93	1	0	0	2	16	1	1	810					
APPROACH %	0%	97%	3%	0%	99%	1%	0%	0%	100%	89%	6%	6%						
PEAK HR FACTOR		0.853			0.712			0.250			0.750		0.833					
APP/DEPART	696	/	677	94	/	111	2	/	19	18	/	3	0					
PM																		
4:00 PM	0	22	1	0	216	0	0	0	1	1	0	1	242					0
4:15 PM	0	23	2	0	126	0	0	0	0	2	0	0	153					0
4:30 PM	0	22	1	0	101	0	0	0	0	5	0	0	129					0
4:45 PM	0	27	2	0	49	0	0	0	0	1	1	0	80					0
5:00 PM	0	25	2	0	65	0	0	0	0	1	1	0	94					0
5:15 PM	0	26	0	1	39	0	0	0	0	2	0	0	68					0
5:30 PM	0	48	1	0	34	0	0	0	0	4	0	0	87					0
5:45 PM	0	28	1	0	48	0	0	0	0	0	0	0	77					0
VOLUMES	0	221	10	1	678	0	0	0	1	16	2	1	930	0	0	0	0	0
APPROACH %	0%	96%	4%	0%	100%	0%	0%	0%	100%	84%	11%	5%						
APP/DEPART	231	/	222	679	/	695	1	/	11	19	/	2	0					
BEGIN PEAK HR		4:00 PM																
VOLUMES	0	94	6	0	492	0	0	0	1	9	1	1	604					
APPROACH %	0%	94%	6%	0%	100%	0%	0%	0%	100%	82%	9%	9%						
PEAK HR FACTOR		0.862			0.569			0.250			0.550		0.624					
APP/DEPART	100	/	95	492	/	502	1	/	6	11	/	1	0					



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM															
7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM															
4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	PIPER RANCH	LOCATION #:	3
TUESDAY	EAST & WEST:	OTAY MESA	CONTROL:	SIGNAL

NOTES:

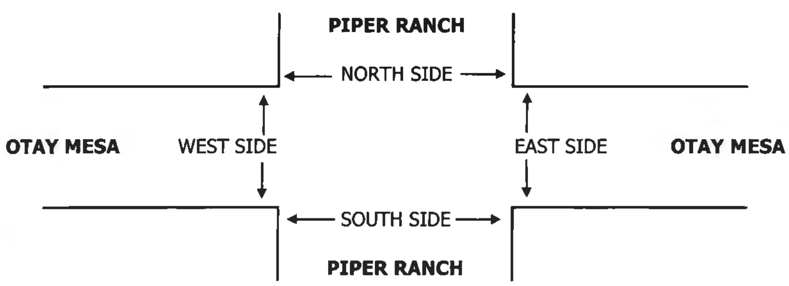
AM PM MD OTHER OTHER

N ◄ W E ► S

	NORTHBOUND PIPER RANCH			SOUTHBOUND PIPER RANCH			EASTBOUND OTAY MESA			WESTBOUND OTAY MESA			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	X	X	1.5	X	1.5	2	2	X	X	3	1	
AM 7:00 AM				15		34	25	54			74	20	222
7:15 AM				7		32	44	64			80	34	261
7:30 AM				10		21	47	71			129	29	307
7:45 AM				16		26	60	62			99	24	287
8:00 AM				14		34	48	50			90	33	269
8:15 AM				13		36	38	48			76	21	232
8:30 AM				11		24	39	44			75	21	214
8:45 AM				14		23	48	49			79	31	244
VOLUMES	0	0	0	100	0	230	349	442	0	0	702	213	2,036
APPROACH %	0%	0%	0%	30%	0%	70%	44%	56%	0%	0%	77%	23%	
APP/DEPART	0	/	562	330	/	0	791	/	542	915	/	932	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	0	0	0	47	0	113	199	247	0	0	398	120	1,124
APPROACH %	0%	0%	0%	29%	0%	71%	45%	55%	0%	0%	77%	23%	
PEAK HR FACTOR		0.000			0.833			0.914			0.820		0.915
APP/DEPART	0	/	319	160	/	0	446	/	294	518	/	511	0
PM 4:00 PM				25		55	27	57			127	29	320
4:15 PM				16		41	30	49			87	24	247
4:30 PM				23		52	29	57			89	22	272
4:45 PM				22		48	22	52			82	23	249
5:00 PM				26		94	27	64			87	29	327
5:15 PM				19		44	34	66			84	10	257
5:30 PM				17		47	24	45			72	15	220
5:45 PM				9		46	26	36			62	19	198
VOLUMES	0	0	0	157	0	427	219	426	0	0	690	171	2,090
APPROACH %	0%	0%	0%	27%	0%	73%	34%	66%	0%	0%	80%	20%	
APP/DEPART	0	/	390	584	/	0	645	/	583	861	/	1,117	0
BEGIN PEAK HR		4:30 PM											
VOLUMES	0	0	0	90	0	238	112	239	0	0	342	84	1,105
APPROACH %	0%	0%	0%	27%	0%	73%	32%	68%	0%	0%	80%	20%	
PEAK HR FACTOR		0.000			0.683			0.878			0.918		0.845
APP/DEPART	0	/	196	328	/	0	351	/	329	426	/	580	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM		1			1
8:00 AM					0
8:15 AM			1		1
8:30 AM					0
8:45 AM					0
AM TOTAL	0	1	1	0	2
4:00 PM					0
4:15 PM			1		1
4:30 PM			1		1
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
PM TOTAL	0	0	2	0	2



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

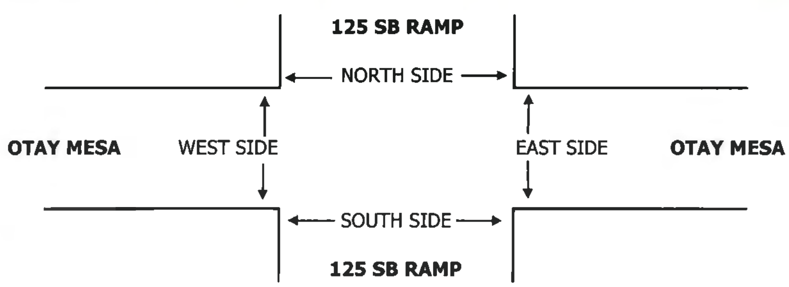
DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	125 SB RAMP	LOCATION #:	4
TUESDAY	EAST & WEST:	OTAY MESA	CONTROL:	SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W
E ►
S ▼

	NORTHBOUND 125 SB RAMP			SOUTHBOUND 125 SB RAMP			EASTBOUND OTAY MESA			WESTBOUND OTAY MESA				U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	X	X	X	2	X	1	X	3	X	X	3	X		X	X	X	X	
AM 7:00 AM				79		81		64			12		236					0
7:15 AM				105		90		67			22		284					0
7:30 AM				126		118		78			31		353					0
7:45 AM				160		104		77			26		367					0
8:00 AM				83		89		83			23		278					0
8:15 AM				74		74		59			21		228					0
8:30 AM				68		74		51			23		216					0
8:45 AM				53		78		62			29		222					0
VOLUMES	0	0	0	748	0	708	0	541	0	0	187	0	2,184	0	0	0	0	0
APPROACH %	0%	0%	0%	51%	0%	49%	0%	100%	0%	0%	100%	0%						
APP/DEPART	0	/	0	1,456	/	0	541	/	1,289	187	/	895	0					
BEGIN PEAK HR		7:15 AM																
VOLUMES	0	0	0	474	0	401	0	305	0	0	102	0	1,282					
APPROACH %	0%	0%	0%	54%	0%	46%	0%	100%	0%	0%	100%	0%						
PEAK HR FACTOR		0.000			0.829			0.919			0.823		0.873					
APP/DEPART	0	/	0	875	/	0	305	/	779	102	/	503	0					
PM 4:00 PM				22		69		80			89		260					0
4:15 PM				30		52		63			59		204					0
4:30 PM				31		58		79			52		220					0
4:45 PM				29		57		70			46		202					0
5:00 PM				31		58		87			60		236					0
5:15 PM				29		50		88			38		205					0
5:30 PM				51		56		63			38		208					0
5:45 PM				24		40		44			37		145					0
VOLUMES	0	0	0	247	0	440	0	574	0	0	419	0	1,680	0	0	0	0	0
APPROACH %	0%	0%	0%	36%	0%	64%	0%	100%	0%	0%	100%	0%						
APP/DEPART	0	/	0	687	/	0	574	/	821	419	/	859	0					
BEGIN PEAK HR		4:00 PM																
VOLUMES	0	0	0	112	0	236	0	292	0	0	246	0	886					
APPROACH %	0%	0%	0%	32%	0%	68%	0%	100%	0%	0%	100%	0%						
PEAK HR FACTOR		0.000			0.956			0.913			0.691		0.852					
APP/DEPART	0	/	0	348	/	0	292	/	404	246	/	482	0					



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	125 SB RAMP	LOCATION #:	4
TUESDAY	EAST & WEST:	OTAY MESA	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND 125 SB RAMP			SOUTHBOUND 125 SB RAMP			EASTBOUND OTAY MESA			WESTBOUND OTAY MESA			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	X	X	2	X	1	X	3	X	X	3	X	
AM 7:00 AM				79		81		64			12		236
7:15 AM				105		90		67			22		284
7:30 AM				126		118		78			31		353
7:45 AM				160		104		77			26		367
8:00 AM				83		89		83			23		278
8:15 AM				74		74		59			21		228
8:30 AM				68		74		51			23		216
8:45 AM				53		78		62			29		222
VOLUMES	0	0	0	748	0	708	0	541	0	0	187	0	2,184
APPROACH %	0%	0%	0%	51%	0%	49%	0%	100%	0%	0%	100%	0%	
APP/DEPART	0	/	0	1,456	/	0	541	/	1,289	187	/	895	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	0	0	0	474	0	401	0	305	0	0	102	0	1,282
APPROACH %	0%	0%	0%	54%	0%	46%	0%	100%	0%	0%	100%	0%	
PEAK HR FACTOR		0.000			0.829			0.919			0.823		0.873
APP/DEPART	0	/	0	875	/	0	305	/	779	102	/	503	0
PM 4:00 PM				22		69		80			89		260
4:15 PM				30		52		63			59		204
4:30 PM				31		58		79			52		220
4:45 PM				29		57		70			46		202
5:00 PM				31		58		87			60		236
5:15 PM				29		50		88			38		205
5:30 PM				51		56		63			38		208
5:45 PM				24		40		44			37		145
VOLUMES	0	0	0	247	0	440	0	574	0	0	419	0	1,680
APPROACH %	0%	0%	0%	36%	0%	64%	0%	100%	0%	0%	100%	0%	
APP/DEPART	0	/	0	687	/	0	574	/	821	419	/	859	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	0	0	0	112	0	236	0	292	0	0	246	0	886
APPROACH %	0%	0%	0%	32%	0%	68%	0%	100%	0%	0%	100%	0%	
PEAK HR FACTOR		0.000			0.956			0.913			0.691		0.852
APP/DEPART	0	/	0	348	/	0	292	/	404	246	/	482	0

U-TURNS					
	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0

125 SB RAMP

← NORTH SIDE →

OTAY MESA WEST SIDE EAST SIDE **OTAY MESA**

← SOUTH SIDE →

125 SB RAMP

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	125 NB RAMP	LOCATION #:	5
TUESDAY	EAST & WEST:	OTAY MESA	CONTROL:	SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◀ W E ▶
S ▼

	NORTHBOUND 125 NB RAMP			SOUTHBOUND 125 NB RAMP			EASTBOUND OTAY MESA			WESTBOUND OTAY MESA			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	X	X	X	X	X	2	2	X	X	2	1	
AM 7:00 AM							17	134			14	4	169
7:15 AM							14	160			23	10	207
7:30 AM							15	191			33	10	249
7:45 AM							14	225			27	9	275
8:00 AM							18	138			19	7	182
8:15 AM							14	119			24	9	166
8:30 AM							10	109			23	7	149
8:45 AM							14	101			28	7	150
VOLUMES	0	0	0	0	0	0	116	1,177	0	0	191	63	1,547
APPROACH %	0%	0%	0%	0%	0%	0%	9%	91%	0%	0%	75%	25%	
APP/DEPART	0	/	179	0	/	0	1,293	/	1,177	254	/	191	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	0	0	0	0	0	0	61	714	0	0	102	36	913
APPROACH %	0%	0%	0%	0%	0%	0%	8%	92%	0%	0%	74%	26%	
PEAK HR FACTOR		0.000			0.000			0.811			0.802		0.830
APP/DEPART	0	/	97	0	/	0	775	/	714	138	/	102	0
PM 4:00 PM							43	64			88	68	263
4:15 PM							50	67			47	49	213
4:30 PM							25	49			61	43	178
4:45 PM							40	56			45	34	175
5:00 PM							41	80			66	50	237
5:15 PM							57	69			45	31	202
5:30 PM							31	77			38	23	169
5:45 PM							29	42			35	31	137
VOLUMES	0	0	0	0	0	0	316	504	0	0	425	329	1,574
APPROACH %	0%	0%	0%	0%	0%	0%	39%	61%	0%	0%	56%	44%	
APP/DEPART	0	/	645	0	/	0	820	/	504	754	/	425	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	0	0	0	0	0	0	158	236	0	0	241	194	829
APPROACH %	0%	0%	0%	0%	0%	0%	40%	60%	0%	0%	55%	45%	
PEAK HR FACTOR		0.000			0.000			0.842			0.697		0.788
APP/DEPART	0	/	352	0	/	0	394	/	236	435	/	241	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM			1		1
8:45 AM					0
VOLUMES	0	0	1	0	1
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0

125 NB RAMP

NORTH SIDE

OTAY MESA WEST SIDE EAST SIDE **OTAY MESA**

SOUTH SIDE

125 NB RAMP

PEDESTRIAN CROSSINGS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

PEDESTRIAN ACTIVATIONS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

BICYCLE CROSSINGS

	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	SANYO	LOCATION #:	6
TUESDAY	EAST & WEST:	OTAY MESA	CONTROL:	SIGNAL

NOTES:

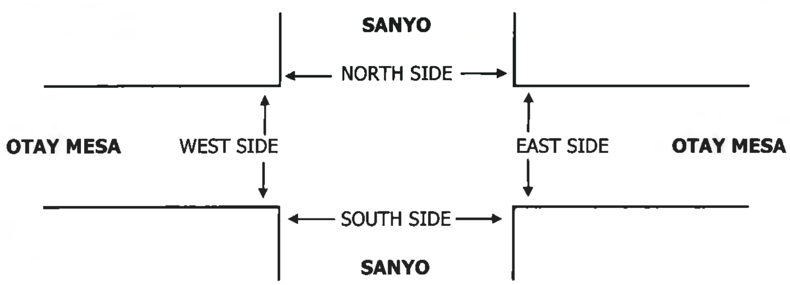
AM
PM
MD
OTHER
OTHER

N
◄ W
E ►
S

	NORTHBOUND SANYO			SOUTHBOUND SANYO			EASTBOUND OTAY MESA			WESTBOUND OTAY MESA			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	X	0.5	X	X	X	X	2	0	1	1	X	
7:00 AM	7		1					69	59	0	8		144
7:15 AM	14		0					95	64	1	17		191
7:30 AM	20		4					115	72	2	24		237
7:45 AM	15		2					96	126	1	19		259
8:00 AM	14		1					45	88	0	13		161
8:15 AM	18		0					40	77	4	14		153
8:30 AM	12		2					38	65	0	13		130
8:45 AM	15		0					39	59	1	21		135
AM VOLUMES	115	0	10	0	0	0	0	537	610	9	129	0	1,410
APPROACH %	92%	0%	8%	0%	0%	0%	0%	47%	53%	7%	93%	0%	
APP/DEPART	125	/	0	0	/	619	1,147	/	547	138	/	244	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	63	0	7	0	0	0	0	351	350	4	73	0	848
APPROACH %	90%	0%	10%	0%	0%	0%	0%	50%	50%	5%	95%	0%	
PEAK HR FACTOR		0.729			0.000			0.789			0.740		0.819
APP/DEPART	70	/	0	0	/	354	701	/	358	77	/	136	0
4:00 PM	54		4					26	28	11	109		232
4:15 PM	42		5					24	34	3	63		171
4:30 PM	49		7					49	24	3	50		182
4:45 PM	32		8					23	36	5	39		143
5:00 PM	85		12					22	49	0	46		214
5:15 PM	43		7					29	42	4	20		145
5:30 PM	55		1					38	36	1	26		157
5:45 PM	25		1					16	23	0	36		101
PM VOLUMES	385	0	45	0	0	0	0	227	272	27	389	0	1,345
APPROACH %	90%	0%	10%	0%	0%	0%	0%	45%	55%	6%	94%	0%	
APP/DEPART	430	/	0	0	/	299	499	/	272	416	/	774	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	177	0	24	0	0	0	0	122	122	22	261	0	728
APPROACH %	88%	0%	12%	0%	0%	0%	0%	50%	50%	8%	92%	0%	
PEAK HR FACTOR		0.866			0.000			0.836			0.590		0.784
APP/DEPART	201	/	0	0	/	144	244	/	146	283	/	438	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
AM VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
PM VOLUMES	0	0	0	0	0



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
AM TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
PM TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 4/25/17 TUESDAY	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
	NORTH & SOUTH:	SANYO	LOCATION #:	6
	EAST & WEST:	OTAY MESA	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

N ▲ ◄ W E ► S ▼

	NORTHBOUND SANYO			SOUTHBOUND SANYO			EASTBOUND OTAY MESA			WESTBOUND OTAY MESA			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	X	0.5	X	X	X	X	2	0	1	1	X	
AM 7:00 AM	7		1					69	59	0	8		144
7:15 AM	14		0					95	64	1	17		191
7:30 AM	20		4					115	72	2	24		237
7:45 AM	15		2					96	126	1	19		259
8:00 AM	14		1					45	88	0	13		161
8:15 AM	18		0					40	77	4	14		153
8:30 AM	12		2					38	65	0	13		130
8:45 AM	15		0					39	59	1	21		135
VOLUMES	115	0	10	0	0	0	0	537	610	9	129	0	1,410
APPROACH %	92%	0%	8%	0%	0%	0%	0%	47%	53%	7%	93%	0%	
APP/DEPART	125	/	0	0	/	619	1,147	/	547	138	/	244	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	63	0	7	0	0	0	0	351	350	4	73	0	848
APPROACH %	90%	0%	10%	0%	0%	0%	0%	50%	50%	5%	95%	0%	
PEAK HR FACTOR		0.729			0.000			0.789			0.740		0.819
APP/DEPART	70	/	0	0	/	354	701	/	358	77	/	136	0
PM 4:00 PM	54		4					26	28	11	109		232
4:15 PM	42		5					24	34	3	63		171
4:30 PM	49		7					49	24	3	50		182
4:45 PM	32		8					23	36	5	39		143
5:00 PM	85		12					22	49	0	46		214
5:15 PM	43		7					29	42	4	20		145
5:30 PM	55		1					38	36	1	26		157
5:45 PM	25		1					16	23	0	36		101
VOLUMES	385	0	45	0	0	0	0	227	272	27	389	0	1,345
APPROACH %	90%	0%	10%	0%	0%	0%	0%	45%	55%	6%	94%	0%	
APP/DEPART	430	/	0	0	/	299	499	/	272	416	/	774	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	177	0	24	0	0	0	0	122	122	22	261	0	728
APPROACH %	88%	0%	12%	0%	0%	0%	0%	50%	50%	8%	92%	0%	
PEAK HR FACTOR		0.866			0.000			0.836			0.590		0.784
APP/DEPART	201	/	0	0	/	144	244	/	146	283	/	438	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0

SANYO

← NORTH SIDE →

OTAY MESA WEST SIDE EAST SIDE **OTAY MESA**

← SOUTH SIDE →

SANYO

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	ENRICO FERMI	LOCATION #:	7
TUESDAY	EAST & WEST:	OTAY MESA	CONTROL:	SIGNAL

NOTES:

AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND ENRICO FERMI			SOUTHBOUND ENRICO FERMI			EASTBOUND OTAY MESA			WESTBOUND OTAY MESA			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	X	1	X	X	X	X	1	0	1	1	X	
AM													
7:00 AM	1		8					60	7	17	7		100
7:15 AM	6		83					89	4	9	11		202
7:30 AM	7		102					113	4	30	17		273
7:45 AM	4		102					93	9	25	14		247
8:00 AM	2		58					41	8	15	6		130
8:15 AM	6		56					25	9	26	12		134
8:30 AM	6		34					40	8	19	7		114
8:45 AM	6		44					26	7	25	16		124
VOLUMES	38	0	487	0	0	0	0	487	56	166	90	0	1,324
APPROACH %	7%	0%	93%	0%	0%	0%	0%	90%	10%	65%	35%	0%	
APP/DEPART	525	/	0	0	/	222	543	/	974	256	/	128	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	19	0	345	0	0	0	0	336	25	79	48	0	852
APPROACH %	5%	0%	95%	0%	0%	0%	0%	93%	7%	62%	38%	0%	
PEAK HR FACTOR		0.835			0.000			0.771			0.676		0.780
APP/DEPART	364	/	0	0	/	104	361	/	681	127	/	67	0
PM													
4:00 PM	7		25					23	8	158	112		333
4:15 PM	2		25					27	6	91	69		220
4:30 PM	4		23					15	13	91	50		196
4:45 PM	5		27					23	10	55	40		160
5:00 PM	6		24					18	13	60	40		161
5:15 PM	3		28					27	13	49	19		139
5:30 PM	7		29					35	4	20	25		120
5:45 PM	6		29					17	4	40	27		123
VOLUMES	40	0	210	0	0	0	0	185	71	564	382	0	1,452
APPROACH %	16%	0%	84%	0%	0%	0%	0%	72%	28%	60%	40%	0%	
APP/DEPART	250		0	0	/	635	256	/	395	946	/	422	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	18	0	100	0	0	0	0	88	37	395	271	0	909
APPROACH %	15%	0%	85%	0%	0%	0%	0%	70%	30%	59%	41%	0%	
PEAK HR FACTOR		0.922			0.000			0.947			0.617		0.682
APP/DEPART	118	/	0	0	/	432	125	/	188	666	/	289	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
AM TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
PM TOTAL	0	0	0	0	0

ENRICO FERMI

← NORTH SIDE →

OTAY MESA WEST SIDE ↕ EAST SIDE ↕ **OTAY MESA**

← SOUTH SIDE →

ENRICO FERMI

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	ALTA	LOCATION #:	8
TUESDAY	EAST & WEST:	OTAY MESA	CONTROL:	2-WAY STOP (NS)

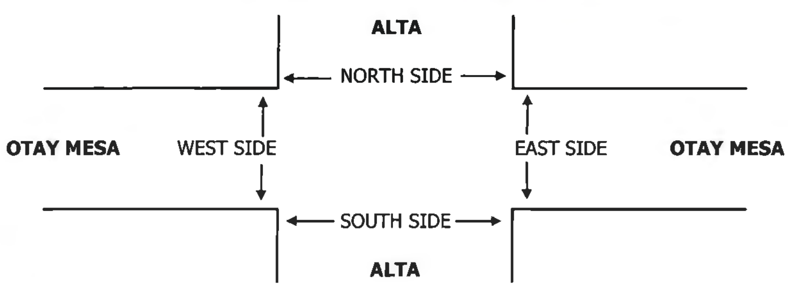
NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W E ►
S ▼

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	ALTA			ALTA			OTAY MESA			OTAY MESA			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	X	X	1	0	1	X	0	X	X	X	
AM 7:00 AM	0	1			0	22	133		0				156
7:15 AM	0	0			0	22	169		0				191
7:30 AM	0	0			0	39	195		0				234
7:45 AM	0	1			0	30	191		0				222
8:00 AM	0	2			0	15	89		0				106
8:15 AM	0	0			0	26	66		0				92
8:30 AM	0	0			0	17	62		0				79
8:45 AM	0	0			0	29	48		1				78
VOLUMES	0	4	0	0	0	200	953	0	1	0	0	0	1,158
APPROACH %	0%	100%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	
APP/DEPART	4	/	957	200	/	1	954	/	0	0	/	200	0
BEGIN PEAK HR		7:00 AM											
VOLUMES	0	2	0	0	0	113	688	0	0	0	0	0	803
APPROACH %	0%	100%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	
PEAK HR FACTOR		0.500			0.724			0.882			0.000		0.858
APP/DEPART	2	/	690	113	/	0	688	/	0	0	/	113	0
PM 4:00 PM	0	0			0	225	22		0				247
4:15 PM	1	0			0	123	23		0				147
4:30 PM	1	0			0	105	21		0				127
4:45 PM	0	0			0	52	32		0				84
5:00 PM	0	0			0	65	25		0				90
5:15 PM	0	0			0	41	26		0				67
5:30 PM	0	0			0	37	50		0				87
5:45 PM	0	0			0	51	28		0				79
VOLUMES	2	0	0	0	0	699	227	0	0	0	0	0	928
APPROACH %	100%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	
APP/DEPART	2	/	227	699	/	0	227	/	0	0	/	701	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	2	0	0	0	0	505	98	0	0	0	0	0	605
APPROACH %	100%	0%	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	
PEAK HR FACTOR		0.500			0.561			0.766			0.000		0.612
APP/DEPART	2	/	98	505	/	0	98	/	0	0	/	507	0

U-TURNS				
NB	SB	EB	WB	TTL
X	X	X	X	
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0
				0
				0
				0
				0
				0
				0
				0
				0
0	0	0	0	0



	PEDESTRIAN CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

	PEDESTRIAN ACTIVATIONS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

	BICYCLE CROSSINGS				
	NS	SS	ES	WS	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	ENRICO FERMI	LOCATION #:	9
TUESDAY	EAST & WEST:	905 WB RAMP	CONTROL:	NONE

NOTES:

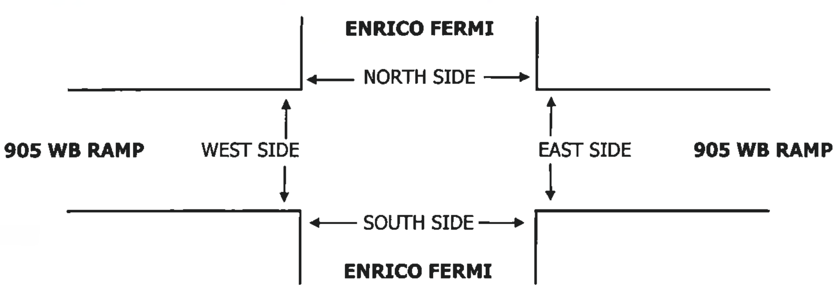
AM PM MD OTHER OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND ENRICO FERMI			SOUTHBOUND ENRICO FERMI			EASTBOUND 905 WB RAMP			WESTBOUND 905 WB RAMP			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	X	X	1	1	X	X	X	X	X	X	
AM													
7:00 AM	23	80			8	16							127
7:15 AM	29	95			3	10							137
7:30 AM	47	112			4	22							185
7:45 AM	39	115			10	23							187
8:00 AM	42	63			11	13							129
8:15 AM	36	61			10	22							129
8:30 AM	32	60			14	13							119
8:45 AM	50	48			16	28							142
VOLUMES	298	634	0	0	76	147	0	0	0	0	0	0	1,155
APPROACH %	32%	68%	0%	0%	34%	66%	0%	0%	0%	0%	0%	0%	
APP/DEPART	932	/	634	223	/	76	0	/	0	0	/	445	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	157	385	0	0	28	68	0	0	0	0	0	0	638
APPROACH %	29%	71%	0%	0%	29%	71%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR		0.852			0.727			0.000			0.000		0.853
APP/DEPART	542	/	385	96	/	28	0	/	0	0	/	225	0
PM													
4:00 PM	57	34			18	142							251
4:15 PM	48	43			15	86							192
4:30 PM	51	34			23	90							198
4:45 PM	54	41			30	46							171
5:00 PM	74	43			28	64							209
5:15 PM	56	36			20	41							153
5:30 PM	61	42			22	27							152
5:45 PM	41	48			16	35							140
VOLUMES	442	321	0	0	172	531	0	0	0	0	0	0	1,466
APPROACH %	58%	42%	0%	0%	24%	76%	0%	0%	0%	0%	0%	0%	
APP/DEPART	763	/	321	703	/	172	0	/	0	0	/	973	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	210	152	0	0	86	364	0	0	0	0	0	0	812
APPROACH %	58%	42%	0%	0%	19%	81%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR		0.953			0.703			0.000			0.000		0.809
APP/DEPART	362	/	152	450	/	86	0	/	0	0	/	574	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
AM TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
PM TOTAL	0	0	0	0	0



PEDESTRIAN CROSSINGS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

PEDESTRIAN ACTIVATIONS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

BICYCLE CROSSINGS

	NS	SS	ES	WS	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

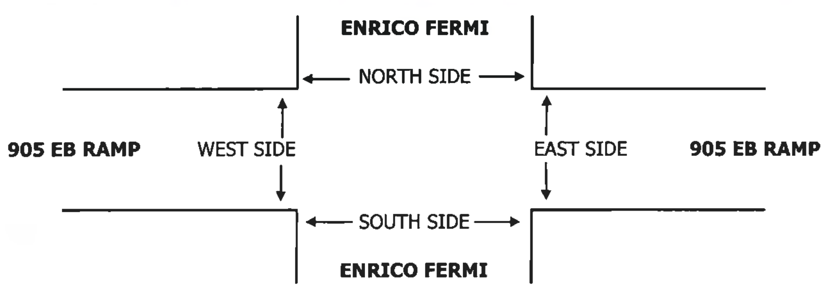
DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	ENRICO FERMI	LOCATION #:	10
TUESDAY	EAST & WEST:	905 EB RAMP	CONTROL:	2-WAY STOP (EW)

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W
E ►
S ▼

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
	ENRICO FERMI			ENRICO FERMI			905 EB RAMP			905 EB RAMP								
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	X	1	0	0	1	X	1	0	1	0.5	X	0.5		X	X	X	X	
AM																		
7:00 AM		26	2	1	8		76	1	22	1		1	138					0
7:15 AM		45	4	0	4		79	2	23	1		0	158					0
7:30 AM		50	4	0	5		100	3	45	1		3	211					0
7:45 AM		52	7	0	10		96	7	46	2		2	222					0
8:00 AM		48	9	3	8		53	3	60	5		4	193					0
8:15 AM		54	2	0	11		41	1	58	5		2	174					0
8:30 AM		66	11	2	14		31	1	35	7		2	169					0
8:45 AM		72	5	2	12		17	2	37	6		3	156					0
VOLUMES	0	413	44	8	72	0	493	20	326	28	0	17	1,421	0	0	0	0	0
APPROACH %	0%	90%	10%	10%	90%	0%	59%	2%	39%	62%	0%	38%						
APP/DEPART	457	/	923	80	/	426	839	/	72	45	/	0	0					
BEGIN PEAK HR		7:30 AM																
VOLUMES	0	204	22	3	34	0	290	14	209	13	0	11	800					
APPROACH %	0%	90%	10%	8%	92%	0%	57%	3%	41%	54%	0%	46%						
PEAK HR FACTOR		0.958			0.841			0.861			0.667		0.901					
APP/DEPART	226	/	505	37	/	256	513	/	39	24	/	0	0					
PM																		
4:00 PM		76	5	2	15		11	3	13	3		1	129					0
4:15 PM		67	6	0	17		20	0	9	5		2	126					0
4:30 PM		66	10	1	20		13	2	13	3		0	128					0
4:45 PM		69	3	1	29		24	2	17	1		6	152					0
5:00 PM		99	2	1	27		19	0	16	6		9	179					0
5:15 PM		66	5	2	26		18	2	24	4		4	151					0
5:30 PM		69	1	1	18		25	1	16	2		5	138					0
5:45 PM		62	2	1	15		23	0	10	4		1	118					0
VOLUMES	0	574	34	9	167	0	153	10	118	28	0	28	1,121	0	0	0	0	0
APPROACH %	0%	94%	6%	5%	95%	0%	54%	4%	42%	50%	0%	50%						
APP/DEPART	608	/	755	176	/	313	281	/	53	56	/	0	0					
BEGIN PEAK HR		4:45 PM																
VOLUMES	0	303	11	5	100	0	86	5	73	13	0	24	620					
APPROACH %	0%	96%	4%	5%	95%	0%	52%	3%	45%	35%	0%	65%						
PEAK HR FACTOR		0.777			0.875			0.932			0.617		0.866					
APP/DEPART	314	/	413	105	/	186	164	/	21	37	/	0	0					



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM															
7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM															
4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	SANYO	LOCATION #:	11
TUESDAY	EAST & WEST:	AIRWAY	CONTROL:	4-WAY STOP

NOTES:

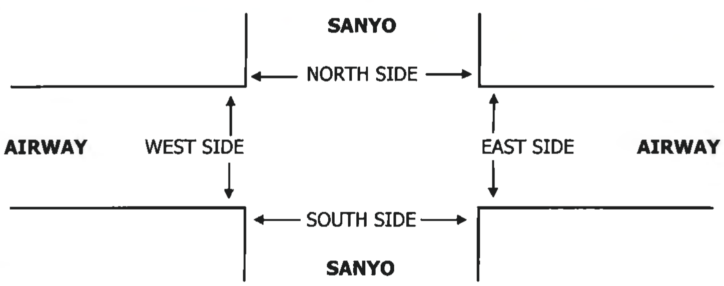
AM / PM / MD / OTHER / OTHER

N ▲ / ◄ W / E ► / S ▼

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	SANYO			SANYO			AIRWAY			AIRWAY			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0.5	0.5	0.5	0.5	1	0.5	1.5	0	1	1	1	
AM 7:00 AM	4	5	1	10	20	13	5	4	1	0	9	5	77
7:15 AM	0	7	1	11	23	12	3	5	6	2	9	11	90
7:30 AM	6	11	0	8	27	22	8	2	7	2	12	12	117
7:45 AM	5	4	5	20	37	38	5	19	5	2	11	11	162
8:00 AM	2	8	0	11	38	28	2	11	7	2	20	14	143
8:15 AM	5	10	2	14	26	29	3	11	9	0	19	13	141
8:30 AM	5	6	2	17	23	17	3	14	7	0	25	10	129
8:45 AM	11	5	0	9	23	19	3	7	9	2	32	12	132
VOLUMES	38	56	11	100	217	178	32	73	51	10	137	88	991
APPROACH %	36%	53%	10%	20%	44%	36%	21%	47%	33%	4%	58%	37%	
APP/DEPART	105	/	176	495	/	278	156	/	184	235	/	353	0
BEGIN PEAK HR		7:45 AM											
VOLUMES	17	28	9	62	124	112	13	55	28	4	75	48	575
APPROACH %	31%	52%	17%	21%	42%	38%	14%	57%	29%	3%	59%	38%	
PEAK HR FACTOR		0.794			0.784			0.828			0.882		0.887
APP/DEPART	54	/	89	298	/	156	96	/	126	127	/	204	0
PM 4:00 PM	14	11	5	9	15	19	15	11	19	4	36	13	171
4:15 PM	17	14	3	9	15	17	5	12	10	6	24	19	151
4:30 PM	14	11	4	18	22	8	11	18	6	3	31	20	166
4:45 PM	9	7	3	16	18	12	9	18	15	4	29	12	152
5:00 PM	6	34	0	12	22	7	24	8	17	4	31	15	180
5:15 PM	8	17	1	18	26	9	12	14	12	1	30	11	159
5:30 PM	13	12	2	5	21	15	15	11	9	0	29	11	143
5:45 PM	6	12	0	7	12	6	3	10	6	1	33	8	104
VOLUMES	87	118	18	94	151	93	94	102	94	23	243	109	1,226
APPROACH %	39%	53%	8%	28%	45%	28%	32%	35%	32%	6%	65%	29%	
APP/DEPART	223	/	321	338	/	268	290	/	214	375	/	423	0
BEGIN PEAK HR		4:30 PM											
VOLUMES	37	69	8	64	88	36	56	58	50	12	121	58	657
APPROACH %	32%	61%	7%	34%	47%	19%	34%	35%	30%	6%	63%	30%	
PEAK HR FACTOR		0.713			0.887			0.837			0.884		0.913
APP/DEPART	114	/	183	188	/	150	164	/	130	191	/	194	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
AM TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM				2	2
4:30 PM			1	3	4
4:45 PM				2	2
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
PM TOTAL	0	0	1	7	8



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	ENRICO FERMI	LOCATION #:	12
TUESDAY	EAST & WEST:	AIRWAY	CONTROL:	SIGNAL

NOTES:

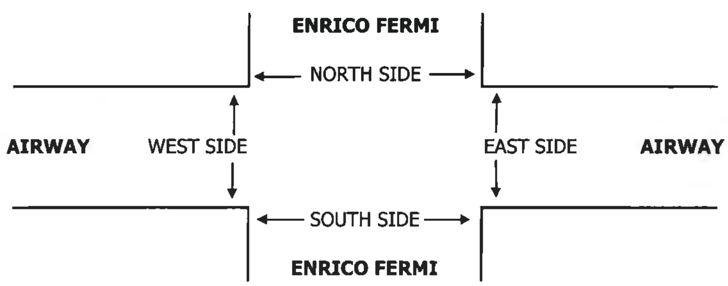
AM
PM
MD
OTHER
OTHER

N ▲ ◄ W E ► S ▼

	NORTHBOUND ENRICO FERMI			SOUTHBOUND ENRICO FERMI			EASTBOUND AIRWAY			WESTBOUND AIRWAY			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	1	1	
AM 7:00 AM	1	22	2	2	18	11	3	2	1	0	2	2	66
7:15 AM	8	40	0	2	7	21	2	2	1	0	2	5	90
7:30 AM	10	50	4	6	20	26	2	1	3	2	2	2	128
7:45 AM	8	53	1	8	24	28	4	1	0	1	0	3	131
8:00 AM	11	41	1	7	34	34	8	0	3	1	3	6	149
8:15 AM	9	47	5	7	34	24	7	1	5	1	1	5	146
8:30 AM	14	52	1	9	31	13	8	4	6	0	1	8	147
8:45 AM	20	68	5	2	28	21	9	2	6	3	5	2	171
VOLUMES	81	373	19	43	196	178	43	13	25	8	16	33	1,028
APPROACH %	17%	79%	4%	10%	47%	43%	53%	16%	31%	14%	28%	58%	
APP/DEPART	473	/	449	417	/	229	81	/	75	57	/	275	0
BEGIN PEAK HR		8:00 AM											
VOLUMES	54	208	12	25	127	92	32	7	20	5	10	21	613
APPROACH %	20%	76%	4%	10%	52%	38%	54%	12%	34%	14%	28%	58%	
PEAK HR FACTOR		0.737			0.813			0.819			0.900		0.896
APP/DEPART	274	/	261	244	/	152	59	/	44	36	/	156	0
PM 4:00 PM	19	60	7	3	17	11	15	3	3	1	6	8	153
4:15 PM	13	49	5	3	19	11	17	0	0	0	4	5	126
4:30 PM	26	58	0	2	23	10	14	0	3	2	4	8	150
4:45 PM	15	52	0	4	18	20	13	2	5	1	3	4	137
5:00 PM	13	69	5	6	25	25	20	0	0	1	3	11	178
5:15 PM	14	43	5	2	19	23	18	1	6	1	3	7	142
5:30 PM	16	49	7	9	15	18	15	2	4	5	1	10	151
5:45 PM	18	47	2	5	14	11	13	2	3	1	2	7	125
VOLUMES	134	427	31	34	150	129	125	10	24	12	26	60	1,162
APPROACH %	23%	72%	5%	11%	48%	41%	79%	6%	15%	12%	27%	61%	
APP/DEPART	592	/	612	313	/	186	159	/	75	98	/	289	0
BEGIN PEAK HR		4:45 PM											
VOLUMES	58	213	17	21	77	86	66	5	15	8	10	32	608
APPROACH %	20%	74%	6%	11%	42%	47%	77%	6%	17%	16%	20%	64%	
PEAK HR FACTOR		0.828			0.821			0.860			0.781		0.854
APP/DEPART	288	/	311	184	/	100	86	/	43	50	/	154	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM				1	1
8:00 AM				1	1
8:15 AM				1	1
8:30 AM					0
8:45 AM					0
AM TOTAL	0	0	0	3	3
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM				1	1
5:00 PM					0
5:15 PM				1	1
5:30 PM				3	3
5:45 PM				1	1
PM TOTAL	0	0	0	6	6



PEDESTRIAN CROSSINGS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM 7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
PM 4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

PEDESTRIAN ACTIVATIONS

	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

BICYCLE CROSSINGS

	NS	SS	ES	WS	TOTAL
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
TOTAL	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

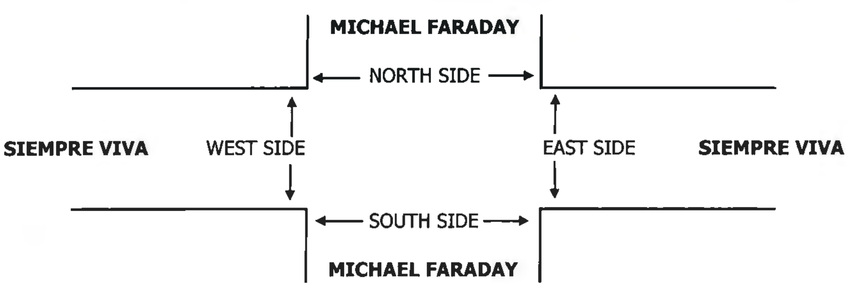
DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	MICHAEL FARADAY	LOCATION #:	13
TUESDAY	EAST & WEST:	SIEMPRE VIVA	CONTROL:	2-WAY STOP (NS)

NOTES:

	NORTHBOUND MICHAEL FARADAY			SOUTHBOUND MICHAEL FARADAY			EASTBOUND SIEMPRE VIVA			WESTBOUND SIEMPRE VIVA			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	0	1	1	1	2	0	1	2	0	
AM 7:00 AM	2	0	0	0	3	1	5	9	2	1	11	0	34
7:15 AM	1	1	1	0	3	8	7	9	3	1	10	0	44
7:30 AM	0	1	0	0	0	2	12	17	1	3	12	1	49
7:45 AM	3	1	0	0	1	2	2	18	7	1	21	1	57
8:00 AM	6	2	0	0	4	5	8	12	7	2	18	1	65
8:15 AM	5	4	1	1	4	6	9	18	2	3	23	0	76
8:30 AM	3	4	1	1	2	5	6	20	9	6	22	3	82
8:45 AM	9	6	0	0	5	11	9	24	10	4	24	2	104
VOLUMES	29	19	3	2	22	40	58	127	41	21	141	8	511
APPROACH %	57%	37%	6%	3%	34%	63%	26%	56%	18%	12%	83%	5%	
APP/DEPART	51	/	85	64	/	84	226	/	132	170	/	210	0
BEGIN PEAK HR		8:00 AM											
VOLUMES	23	16	2	2	15	27	32	74	28	15	87	6	327
APPROACH %	56%	39%	5%	5%	34%	61%	24%	55%	21%	14%	81%	6%	
PEAK HR FACTOR		0.683			0.688			0.779			0.871		0.786
APP/DEPART	41	/	54	44	/	58	134	/	78	108	/	137	0
PM 4:00 PM	17	3	2	0	5	7	9	12	8	1	36	1	101
4:15 PM	11	4	2	0	4	6	7	12	4	1	37	0	88
4:30 PM	12	5	0	0	4	16	12	13	7	2	40	0	111
4:45 PM	9	3	4	1	7	8	6	12	4	4	37	2	97
5:00 PM	17	4	2	0	4	12	10	19	5	4	25	0	102
5:15 PM	11	7	2	0	6	9	6	10	2	2	37	0	92
5:30 PM	5	5	0	0	1	4	2	8	6	2	34	2	69
5:45 PM	11	2	0	0	3	8	2	13	7	0	43	0	89
VOLUMES	93	33	12	1	34	70	54	99	43	16	289	5	749
APPROACH %	67%	24%	9%	1%	32%	67%	28%	51%	22%	5%	93%	2%	
APP/DEPART	138	/	92	105	/	93	196	/	112	310	/	452	0
BEGIN PEAK HR		4:30 PM											
VOLUMES	49	19	8	1	21	45	34	54	18	12	139	2	402
APPROACH %	64%	25%	11%	1%	31%	67%	32%	51%	17%	8%	91%	1%	
PEAK HR FACTOR		0.826			0.838			0.779			0.890		0.905
APP/DEPART	76	/	55	67	/	51	106	/	63	153	/	233	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM			1		1
7:15 AM		1			1
7:30 AM		1			1
7:45 AM			1		1
8:00 AM			2		2
8:15 AM			5	1	6
8:30 AM			1		1
8:45 AM			3		3
AM TOTAL	0	2	13	1	16
4:00 PM			5		5
4:15 PM			1		1
4:30 PM			4		4
4:45 PM			4		4
5:00 PM			7		7
5:15 PM					0
5:30 PM			1		1
5:45 PM					0
PM TOTAL	0	0	22	0	22



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	OTAY	PROJECT #:	PTD17-0428-01
4/25/17	NORTH & SOUTH:	ENRICO FERMI	LOCATION #:	14
TUESDAY	EAST & WEST:	SIEMPRE VIVA	CONTROL:	SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

N
◄ W
E ►
S

		NORTHBOUND ENRICO FERMI			SOUTHBOUND ENRICO FERMI			EASTBOUND SIEMPRE VIVA			WESTBOUND SIEMPRE VIVA			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	2	0	1	2	0	2	1	0	1	2	0	
AM	7:00 AM	6	17	0	1	13	5	6	0	2	0	2	3	55
AM	7:15 AM	7	39	0	0	6	0	5	1	1	0	4	7	70
AM	7:30 AM	10	48	0	2	7	5	11	2	1	2	3	9	100
AM	7:45 AM	13	38	0	5	11	5	13	2	2	0	5	7	101
AM	8:00 AM	12	41	1	3	18	6	9	1	1	1	4	4	101
AM	8:15 AM	16	51	0	9	23	7	9	2	6	1	2	4	130
AM	8:30 AM	22	56	0	3	22	5	13	1	4	3	5	3	137
AM	8:45 AM	11	61	3	6	21	13	15	3	8	2	7	10	160
AM	VOLUMES	97	351	4	29	121	46	81	12	25	9	32	47	854
AM	APPROACH %	21%	78%	1%	15%	62%	23%	69%	10%	21%	10%	36%	53%	
AM	APP/DEPART	452	/	479	196	/	155	118	/	45	88	/	175	0
AM	BEGIN PEAK HR		8:00 AM											
AM	VOLUMES	61	209	4	21	84	31	46	7	19	7	18	21	528
AM	APPROACH %	22%	76%	1%	15%	62%	23%	64%	10%	26%	15%	39%	46%	
AM	PEAK HR FACTOR		0.878			0.850			0.692			0.605		0.825
AM	APP/DEPART	274	/	276	136	/	110	72	/	32	46	/	110	0
PM	4:00 PM	21	62	0	0	16	7	10	4	4	2	6	8	140
PM	4:15 PM	27	48	0	0	11	9	11	0	4	3	4	4	121
PM	4:30 PM	22	66	0	5	10	13	12	0	2	1	3	3	137
PM	4:45 PM	31	50	0	1	15	8	11	0	1	3	6	5	131
PM	5:00 PM	18	53	1	1	15	11	22	2	3	4	1	2	133
PM	5:15 PM	19	49	0	0	15	10	11	1	0	3	8	6	122
PM	5:30 PM	12	61	0	0	10	12	12	1	2	1	5	3	119
PM	5:45 PM	31	51	0	0	10	6	13	0	1	2	5	2	121
PM	VOLUMES	181	440	1	7	102	76	102	8	17	19	38	33	1,024
PM	APPROACH %	29%	71%	0%	4%	55%	41%	80%	6%	13%	21%	42%	37%	
PM	APP/DEPART	622	/	575	185	/	138	127	/	16	90	/	295	0
PM	BEGIN PEAK HR		4:00 PM											
PM	VOLUMES	101	226	0	6	52	37	44	4	11	9	19	20	529
PM	APPROACH %	31%	69%	0%	6%	55%	39%	75%	7%	19%	19%	40%	42%	
PM	PEAK HR FACTOR		0.929			0.848			0.819			0.750		0.945
PM	APP/DEPART	327	/	290	95	/	72	59	/	10	48	/	157	0

U-TURNS

		NB	SB	EB	WB	TTL
		X	X	X	X	
AM	7:00 AM					0
AM	7:15 AM					0
AM	7:30 AM					0
AM	7:45 AM			1		1
AM	8:00 AM					0
AM	8:15 AM					0
AM	8:30 AM					0
AM	8:45 AM					0
AM	TOTAL	0	0	1	0	1
PM	4:00 PM					0
PM	4:15 PM			1		1
PM	4:30 PM			2		2
PM	4:45 PM					0
PM	5:00 PM			2		2
PM	5:15 PM			2		2
PM	5:30 PM			3		3
PM	5:45 PM					0
PM	TOTAL	0	0	10	0	10

ENRICO FERMI

NORTH SIDE

SIEMPRE VIVA WEST SIDE

EAST SIDE **SIEMPRE VIVA**

SOUTH SIDE

ENRICO FERMI

		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
AM	7:15 AM					0					0					0
AM	7:30 AM					0					0					0
AM	7:45 AM					0					0					0
AM	8:00 AM					0					0					0
AM	8:15 AM					0					0					0
AM	8:30 AM					0					0					0
AM	8:45 AM					0					0					0
AM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
PM	4:15 PM					0					0					0
PM	4:30 PM					0					0					0
PM	4:45 PM					0					0					0
PM	5:00 PM					0					0					0
PM	5:15 PM					0					0					0
PM	5:30 PM					0					0					0
PM	5:45 PM					0					0					0
PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Excerpts from County of San Diego Public Road Standards

PUBLIC ROAD STANDARDS

COUNTY OF SAN DIEGO
DEPARTMENT OF PUBLIC WORKS

March 3, 2010

SECTION 4

REQUIRED PUBLIC ROAD RIGHTS-OF-WAY IMPROVEMENTS

Section 4.1 CLASSIFICATION

There are two general classifications of public roads as defined in these Standards: Circulation Element roads and Non-Circulation Element roads. The former are roads which have been adopted by the Board of Supervisors as the Regional Circulation Network for the General Plan.

Circulation Element Roads: Circulation Element roads are considered the regional backbone or skeleton road system. These roads provide for the vehicular movement of goods and services between various parts of the county.

Non-Circulation Element Roads: These roads feed vehicular traffic onto the Circulation Element system of roads. They provide access to residential neighborhoods and commercial and industrial areas.

Table No. 1 identifies specific road classifications and their normal expected carrying capacity in terms of vehicles per day at different levels of service. These capacities apply to road segments fully improved to County Standards, not those roads which are existing as partially improved or unimproved segments. The values shown are subject to adjustment based on the geometry of the roadway, side frictions, and other relevant factors as determined by the Director, Department of Public Works.

Section 4.2 ROAD CROSS-SECTIONS

Tables 2A and 2B are a listing of all road requirements. The data specified in Tables 2A and 2B are minimums and are subject to modification as further defined in this section.

Section 4.3 GENERAL NOTES

A. Additional right-of-way width may be required to accommodate slopes, drainage structures, bikeways, pathways, additional turning lanes and/or other required improvements.

B. Where a public road is entirely within a proposed project's boundary, the developer shall dedicate the right-of-way required in Tables 2A and 2B, consistent with the road classification. The developer shall also grade cut slopes and construct the ultimate fill slopes and improvements. Reduced improvements may be approved if the road does not connect with an adjacent fully improved road and if it is only needed for internal circulation within the project.

TABLE 1
AVERAGE DAILY VEHICLE TRIPS*

CIRCULATION ELEMENT ROADS			LEVELS OF SERVICE				
Road Classification		**# of Travel Lanes**	**A**	**B**	**C**	**D**	**E**
Expressway (6.1)		6	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial (6.2)		6	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	(4.1A)	4	<14,800	<24,700	<29,600	<33,400	<37,000
	w/ Intermittent Turn Lanes (4.1B)	4	<13,700	<22,800	<27,400	<30,800	<34,200
Collector		4	<13,700	<22,800	<27,400	<30,800	<34,200
Boulevard	w/ Raised Median (4.2A)	4	<18,000	<21,000	<24,000	<27,000	<30,000
	w/ Intermittent Turn Lanes (4.2B)	4	<16,800	<19,600	<22,500	<25,000	<28,000
Town Collector		2	<3,000	<6,000	<9,500	<13,500	<19,000
Community Collector	w/ Raised Median (2.1A)	2	<10,000	<11,700	<13,400	<15,000	<19,000
	w/ Continuous Left Turn Lane (2.1B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lane (2.1C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.1D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.1E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
Light Collector	w/ Raised Median (2.2A)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Continuous Left Turn Lane (2.2B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lane (2.2C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.2D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.2E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
		2	<1,900	<4,100	<7,100	<10,900	<16,200
	w/ Reduced Shoulder (2.2F)	2	<5,800	<6,800	<7,800	<8,700	<9,700
Rural Collector		2	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Light Collector		2	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Mountain		2	<1,900	<4,100	<7,100	<10,900	<16,200
Recreational Parkway		2	<1,900	<4,100	<7,100	<10,900	<16,200
Minor Collector	w/ Raised Median (2.3A)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	w/ Intermittent Turn Lane (2.3B)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	No Median (2.3C)	2	<1,900	<4,100	<6,000	<7,000	<8,000
NON-CIRCULATION ELEMENT ROADS**			**LEVELS OF SERVICE**				
Residential Collector		2	-	-	<4,500	-	-
Rural Residential Collector***		2	-	-	<4,500	-	-
Residential Road		2	-	-	<1,500	-	-
Rural Residential Road***		2	-	-	<1,500	-	-
Residential Cul-de-Sac or Loop Road		2	-	-	<200	-	-

* The values shown are subject to adjustment based on the geometry of the roadway, side frictions, and other relevant factors as determined by the Director, Department of Public Works.

** Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

*** Rural Residential Collectors and Rural Residential Roads are intended to serve areas with lot sizes of 2 acres or more which do not have a demand for on-street parking. On-street parking is not assured for these cross sections. Additional right-of-way is needed if on-street parking is in paved area.

**** See Tables 2A and 2B for roadway surfacing and right-of-way widths.

C. Where a public road is adjacent to the project's boundary, the developer shall construct any required curbs, gutters, ditches/ and/or sidewalks and a minimum of one-half of the surfacing width specified in Tables 2A and 2B for that particular road classification, but in no case less than 28 feet of paving and 40 feet of grading plus slopes.

D. Travel lanes are 12 feet wide unless otherwise specified.

Section 4.4 CIRCULATION ELEMENT ROADS – SUPPLEMENTAL INFORMATION

The following requirements supplement the minimum standards found in Tables 2A and 2B:

A. Access

It is intended that the roads identified on the County General Plan depict corridors for public mobility and access which are planned to meet the needs of the existing and anticipated population of San Diego County. It is intended that Circulation Element roads provide public mobility with minimum interference from local traffic as it accesses a General Plan road. Therefore, Circulation Element roads require access control to minimize traffic conflicts. Access control for each Circulation Element road classification shall be as follows:

1. Expressways

No lot or private road access allowed; only selected public road access with full grade separations.

2. Prime Arterials

Access is fully controlled with new development required to provide signalized intersections for ingress and egress. Residential lots are required to be served from interior residential roads.

3. Major Roads

Access is controlled with new development required to provide access roads, common driveways and signalized intersections. Residential lots are required to be served from interior residential roads.

4. Collector Roads/Rural Collector Roads

Access is controlled with new development required to provide common driveways, access roads and, on occasion, signalized intersections. Residential lots are required to be served from interior residential roads.

TABLE 2A: COUNTY OF SAN DIEGO - PUBLIC ROAD STANDARDS

ROAD CLASSIFICATION	# LANES / LANE WIDTH	MEDIAN WIDTH	ROAD SURFACING WIDTH	R.O.W. WIDTH	PAVED SHOULDERS (# / WIDTH)	PARKWAY WIDTH	MIN. CURVE RADIUS	MAX. DESIRABLE GRADE	MIN. DESIGN SPEED (MPH)
CLASSIC CIRCULATION ELEMENT ROAD CLASSIFICATIONS									
Expressway (6.1)	6 / 12'	34'	126'	146'	2 / 10'	10'	1,700'	6%	65
Prime Arterial (6.2)	6 / 12'	14'	102'	122'	2 / 8'	10'	1,700'	6%	65
Major Road (4.1A)	4 / 12'	14'	78'	98'	2 / 8'	10'	1,200'	7%	55
Collector	4 / 12'	-	64'	84'	2 / 8'	10'	1,200'	7%	55
Town Collector	2 / 12'	12'	54'	74'	2 / 8'	10'	500'	9%	40
Light Collector	2 / 12'	-	40'	60'	2 / 8'	10'	700'	9%	45
Rural Collector	2 / 12'	-	40'	84'	2 / 8'	22'	500'	12%	40
Rural Light Collector	2 / 12'	-	40'	60'	2 / 8'	10'	500'	12%	40
Rural Mountain	2 / 12'	-	40'	100'	2 / 8'	30'	500'	12%	40
Recreational Parkway	2 / 12'	-	40'	100'	2 / 8'	30'	400'	12%	25
MODERN CIRCULATION ELEMENT ROAD CLASSIFICATIONS									
Major Road									
* With Intermittent Turn Lanes (4.1B)	4 / 12'	-	64' - 78'	84' - 98'	2 / 8'	10'	1,200'	7%	55
Boulevard									
+++ With Raised Median (4.2A)	4 / 12'	14'	78'	106'	2 / 8'	14'	500'	9%	40
+++ With Intermittent Turn Lanes (4.2B)	4 / 12'	-	64' - 78'	92' - 106'	2 / 8'	14'	500'	9%	40
Community Collector									
** With Raised Median (2.1A)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45
** With Continuous Left Turn Lane (2.1B)	2 / 12'	14'	54'	74'	2 / 8'	10'	700'	9%	45
+++ With Intermittent Turn Lanes (2.1C)	2 / 12'	-	40' - 54'	60' - 74'	2 / 8'	10'	700'	9%	45
+++ With Passing Lane (2.1D)	2 / 12'	-	40'	84'	2 / 8'	10'	700'	9%	45
+ No Median (2.1E)	2 / 12'	-	40'	60'	2 / 8'	10'	700'	9%	45
Light Collector									
++ With Raised Median (2.2A)	2 / 12'	14'	54'	78'	2 / 8'	10'	500'	9%	40
++ With Continuous Left Turn Lane (2.2B)	2 / 12'	14'	54'	78'	2 / 8'	10'	500'	9%	40
+++ With Intermittent Turn Lanes (2.2C)	2 / 12'	-	40' - 54'	64' - 78'	2 / 8'	10'	500'	9%	40
+++ With Passing Lane (2.2D)	2 / 12'	-	40'	88'	2 / 8'	10'	500'	9%	40
++ No Median (2.2E)	2 / 12'	-	40'	64'	2 / 8'	10'	500'	9%	40
+++ With Reduced Shoulder (2.2F)	2 / 12'	-	40'	52'	2 / 2'	10'	500'	9%	40
Minor Collector									
+++ With Raised Median (2.3A)	2 / 12'	14'	54'	82'	2 / 8'	10'	350'	12%	35
+++ With Intermittent Turn Lanes (2.3B)	2 / 12'	-	40' - 54'	68' - 82'	2 / 8'	10'	350'	12%	35
+++ No Median (2.3C)	2 / 12'	-	40'	68'	2 / 8'	10'	350'	12%	35

NOTES:
1 Minimum longitudinal gradient shall be 1.0 percent for all road classificationis shown above
2 The maximum grade for a permanent cul-de-sac street turning area shall be 6 percent.
3 The maximum grade for a temporary cul-de-sac street turning area shall be that of the classification of the road being constructed.
4 For standards, see County Design Standard Drawing DS-2, DS-3, DS-4, and Section 4.5N of these Standards
5 Additional pavement and ROW may be required for CE Collectors (4 feet) and Light Collectors (12 feet) in Industrial/Commercial Zones.
6 CE roads needing additional turn lanes will require an additional 12 to 14 feet of pavement and ROW for each lane.
7 The maximum superelevation allowed on CE roads is 6%. Superelevation is not normally required on Non-CE roads.
8 CE roads designated with Bike Lanes will require an additional 10 feet of pavement and ROW. This may be increased to 12' for Collector Roads and above based upon the provisions in Section 7.3 of these standards.
9 The minimum curve radii, shown in the table above, are based on the design speed with 6% superelevation.
10 Interim roads are to be a minimum of 28 feet A.C. within a 40 feet graded roadbed. They may be larger if traffic volumes require more travel lanes.

LEGEND:
* Similar to existing Collector Road
** Similar to existing Town Collector
*** Similar to existing Rural Collector
+ Same as existing Light Collector
++ Similar to existing Rural Light Collector
+++ New Classification Standard

TABLE 2B: COUNTY OF SAN DIEGO - PUBLIC ROAD STANDARDS

NON-CIRCULATION ELEMENT ROAD CLASSIFICATIONS

ROAD CLASSIFICATION	# LANES / LANE WIDTH	MEDIAN WIDTH	R.O.W. WIDTH	ROAD SURFACING WIDTH	PAVED SHOULDERS (# / WIDTH)	PARKWAY WIDTH	MINIMUM CURVE RADIUS	MAXIMUM DESIRABLE GRADE	MINIMUM DESIGN SPEED (MPH)
Residential Collector	2 / 12'	-	60'	40'	2 / 8'	10'	300'	12%	30
Residential	2 / 12'	-	56'	36'	2 / 6'	10'	200'	15%	30
Residential Cul-de-sac	2 / 12'	-	52'	32'	2 / 4'	10'	200'	15%	30
Residential Loop	2 / 12'	-	52'	32'	2 / 4'	10'	200'	15%	30
Industrial/Commerical Collector	4 / 12'	-	88'	68'	2 / 10'	10'	300'	8%	30
Industrial/Commerical	2 / 16'	-	72'	52'	2 / 10'	10'	200'	8%	30
Industrial/Commercial Cul-de-sac	2 / 16'	-	72'	52'	2 / 10'	10'	200	8%	30
Frontage	2 / 12'	-	52' min	32' min	1 / 8'	10'	See above	See above	-
Alley	2 / 10'	-	20-30'	20-30'	None	None	50'	12%	n/a
Hillside Residential	See NOTE 4	-	-	-	-	-	-	-	-
Rural Collector *	2 / 12'	-	48'	28'	2 / 2'	10'	300'	12%	30
Rural Residential	2 / 12'	-	48'	28'	2 / 2'	10'	200'	15%	30

NOTES:
1 Minimum longitudinal gradient shall be 1.0 percent for all road classificationis shown above.
2 The maximum grade for a permanent cul-de-sac street turning area shall be 6 percent.
3 The maximum grade for a temporary cul-de-sac street turning area shall be that of the classification of the road being constructed.
4 For standards, see County Design Standard Drawing DS-2, DS-3, DS-4, and Section 4.5N of these Standards.
5 The minimum curve radii, shown in the table above, are based on the design speed with 6% superelevation.
6 Interim roads are to be a minimum of 28 feet A.C. within a 40 feet graded roadbed. They may be larger if traffic volumes require more travel lanes.

LEGEND: * Serves lots > 2 acres in size w/ no demand for on-street parking

5. Collector Roads/Rural Collector Roads

   Access is controlled with new development required to provide common driveways, access roads and, on occasion, signalized intersections. Residential lots are required to be served from interior residential roads.

6. Community Collector

   Access is controlled with new development required to provide common driveways, access roads and, on occasion, signalized intersections. Residential lots are required to be served from interior residential roads.

7. Boulevard

   Access is controlled with new development required to provide common driveways, access roads and, on occasion, signalized intersections. Residential lots are required to be served from interior residential roads.

8. Town Collector Roads

   Access is controlled with new development required to provide common driveways, access roads or signalized intersections. Residential lots are required to be served from interior residential roads. Commercial areas are required to provide driveway separation as identified in Section 6.1.C.2 as if the driveways were Non-Circulation Element roads.

9. Light Collector Roads/Rural Light Collector Roads

   Access is generally controlled, with subdivisions and commercial developments required to provide access roads and common driveways respectively. Residential lots are required to be served from interior residential roads, where possible.

10. Minor Collector

   Access is generally controlled. Lots in subdivisions are required to be served from interior residential roads. Commercial areas are required to be provided with common driveways for access.

10. Recreational Parkways/Rural Mountain Roads

   Access is generally controlled. Lots in subdivisions are required to be served from interior residential roads. Commercial areas are required to be provided with common driveways for access.

B. Intersections

Intersectional sight distance shall have priority over all other standards and shall be achieved within standard right-of-way.

In general, at the intersection of Circulation Element roads, the right-of-way and improvement requirements of each leg of the intersection may be changed to the next higher road classification or to a special intersection design based on a traffic analysis of the intersection.

In the event a subdivision creates traffic requiring the construction of additional turning lanes and other safety features at a designated intersection, the subdivider shall construct or reconstruct such intersection.

C. Additional Turn Lanes

1. Prime Arterial and Expressway, if not grade separated

   Where the left turn traffic volume is estimated to exceed 300 vehicles at peak hour, an additional 12 feet of right-of-way may be required for provision of a dual left turn lane. Minimum length of the additional left turn lane shall be 300 feet plus appropriate taper.

2. Major Road/Town Collector Road

   Where the left turn traffic volume at an intersection on the above Circulation Element road is estimated to exceed 300 vehicles at peak hour, an additional 12 feet of right-of-way shall be required for provision of a dual left turn lane. Minimum length of the additional left turn lane shall be 300 feet plus appropriate taper.

3. Community Collector with raised medians/Boulevards with raised medians

   Where the left turn traffic volume at an intersection on the above Circulation Element road is estimated to exceed 300 vehicles at peak hour, an additional 12 feet of right-of-way shall be required for provision of a dual left turn lane. Minimum length of the additional left turn lane shall be 300 feet plus appropriate taper.

4. Community Collector without raised medians/Boulevards without raised medians

   Where a the above Circulation Element road intersects another Circulation Element road or where a left turn lane is specified, an additional 14 feet of right-of-way shall be required to provide a left turn lane. Minimum length of the additional left turn lane shall be 250 feet plus appropriate taper.

5. Rural Collector/Rural Mountain Roads

   Where these roads intersect another Circulation Element road or where a left turn lane is specified, an additional 14 feet of right-of-way shall be required to provide a left turn lane. Minimum length of the additional left turn lane shall be 250 feet plus appropriate taper.

6. Light Collector/Rural Light Collector Roads/Minor Collector

Where these roads intersect another Circulation Element road or where a left turn lane is specified, an additional 14 feet of right-of-way shall be required to provide a left turn lane. Minimum length of the additional left turn lane shall be 200 feet plus appropriate taper.

D. Boulevards

Boulevards are four-lane roads with a wider parkway width (14 feet) that may be most suitable in village and town center areas with a high demand for pedestrian travel or rural areas with steep topography.

E. Town Collector Roads

Town collector roads are two lane divided roads to control access and turning movements in commercial or higher density residential areas. These roads are appropriate only in villages and rural villages and other multi-residential and commercial areas as determined by the Director or by the Board of Supervisors. This determination may be based upon existing and/or future traffic volumes, the number of existing and/or future access points (such as driveways and private streets), length of road and other similar factors.

F. Community Collector

Community Collectors are two-lane roads with variable right-of-way and improvement widths, as specified in Table 2A. Variations for the Community Collector include the provision of raised medians, continuous two-way left turn lanes, intermittent turn lanes, passing lanes and undivided two lanes roads. A right-of-way width of up to 84 feet may be obtained and may be most suitable for two-lane State highways where future passing lanes may be provided.

G Minor Collector

Minor Collectors are two-lane roads with variable right-of-way and improvement widths, as specified in Table 2A. Minimum median, shoulder and parkway widths are identified in Table 2A. Variations for the Minor Collector include the provision of raised medians, intermittent turn lanes, passing lanes and undivided two lanes roads. A wider right-of-way width of up to 82 feet may be obtained with an increased parkway width of 14 feet. The wider parkway width may be utilized in rural areas to improve visibility, improve tight curves and/or grade slopes. In villages and town centers the wider parkway may be utilized for landscape buffers and/or to enhance pedestrian and bicycle circulation.

H. Rural Collector and Rural Mountain Roads

Rural Collector and Rural Mountain roads are two lanes undivided roads preserving right-of-way of 84 feet and 100 feet respectively with additional right-of-way required at intersections. These roads are appropriate only in rural mountain areas with unique scenic and historic resources.

A Rural Collector road, or a Rural Mountain road, shall be designed with the traveled way placed within the right-of-way so as to minimize the physical impact on the terrain, vegetation, scenic features, and wildlife habitats. A developer shall construct, in accordance with standard drawings, any required dikes or curbs and gutters, and a minimum of 40 feet of pavement width. Where Rural Collector roads or Rural Mountain roads abut property zoned commercial, industrial, or multiple residential, appropriate commercial or industrial standards shall be constructed by the developer.

I. Recreational Parkway

Recreational Parkway is a road which serves rural recreational traffic. Such a road is to be designed for pleasure travel in keeping with the rural or recreational setting that it traverses and serves.

Recreational Parkways shall be designed and improved as follows:

1. Right-of-way width for a Recreational Parkway shall be a minimum of 100 feet, except where such a road is included in a publicly-owned recreational facility the right-of-way width will be adjusted to include only the roadbed width plus appurtenant facilities.

2. The pavement width shall be a minimum of 40 feet. When travel in opposite directions is to be separated to accommodate terrain or other important natural features, the surfaced traveled way shall be a minimum width of 24 feet for each direction.

   Increased pavement widths will be required in such cases where the Director finds that such an increase is necessary to provide for the safe and free flow of traffic to enhance the recreational and pleasure driving aspects of the Recreational Parkway.

3. View site parking and roadside stopping areas shall be an integral part of the design and function of a Recreational Parkway. Where appropriate, paved roadside stopping areas with parking shall be provided. Proposed parking and roadside stopping areas shall have been reviewed and approved by each appropriate public agency when such Recreational Parkway traverses a recreational facility possessed by such public agency.

J. Interim Road

Standards for this classification of road are specified in Table 2A, Note 10. The exception to the standard is at intersections. A 40-foot pavement width instead of 28-foot pavement width will be required along the road and shall extend a minimum of 200 feet with appropriate taper in each direction from the centerline of the street intersection. Appropriate graded width shall be provided. Interim roads larger than 28 ft. A.C. within 40 ft. graded roadbed may be required if the anticipated traffic volumes are greater than can be safely accommodated on the minimum size road.

Section 4.5 NON-CIRCULATION ELEMENT ROADS

A. Residential Collector Road

A residential collector road is provided to collect local traffic from adjacent residential lots. Such roads are not envisioned as providing for through traffic generating in one community and destined for another. They are designed to accommodate local traffic volumes of between 1,500 and 4,500 average daily trips. A residential collector shall be provided as follows:

1. Right-of-way width shall be 60 feet.

2. Pavement width between the curb faces shall be 40 feet.

3. Knuckles may not be used.

B. Rural Residential Collector

A rural residential collector is intended to serve an area with lot sizes of 2 acres or more where there is little demand for on-street parking. A rural residential collector road is provided to collect local traffic from adjacent residential lots. Such roads are not envisioned as providing for through traffic generating in one community and destined for another. They are designed to accommodate local traffic volumes of between 1,500 and 4,500 average daily trips. A rural residential collector shall be provided as follows:

1. Right-of-way width shall be 48 feet.

2. Pavement width between the curb faces shall be 28 feet.

3. On-street parking is prohibited.

4. Knuckles may not be used.

C. Residential Road

A residential road shall provide access to the residential lots it passes by and abuts. It is not to be used in those instances where a road may be expected to serve in the future as a residential collector road. This road shall be used in those instances where the projected average daily vehicular traffic is not expected to exceed 1,500 trips. A residential road shall be provided as follows:

1. Right-of-way width shall be 56 feet.

2. Pavement width between the curb faces shall be 36 feet.

3. Knuckles may be used following the criteria shown on the County Standard Drawing.

4. Residential roads which are temporarily dead-ended shall end in a temporary cul-de-sac as shown on the County Standard Drawings unless the length is 200 feet or less, in which case no temporary cul-de-sac will be required.

D. Rural Residential Road

A rural residential road is intended to serve an area with lot sizes of 2 acres or more where there is little demand for on-street parking. A rural residential road shall provide access to the residential lots it passes by and abuts. It is not to be used in those instances where a road may be expected to serve in the future as a residential collector road. This road shall be used in those instances where the projected average daily vehicular traffic is not expected to exceed 1,500 trips. A residential road shall be provided as follows:

1. Right-of-way width shall be 48 feet.
2. Pavement width between the curb faces shall be 28 feet.
3. On-street parking is prohibited.
4. Knuckles may be used following the criteria shown on the County Standard Drawings.
5. Residential roads which are temporarily dead-ended shall end in a temporary cul-de-sac as shown on the County Standard Drawings unless the length is 200 feet or less, in which case no temporary cul-de-sac will be required.

E. Residential Cul-De-Sac Road

A residential cul-de-sac is a dead-end road which provides access to adjacent residential lots. Residential cul-de-sac roads are to provide vehicular access where the projected average daily vehicular trips aree below 400. Residential cul-de-sacs roads shall be provided as follows:

1. Right-of-way width shall be 52 feet.
2. Pavement width between the curb faces shall be 32 feet.
3. Minimum radius of the cul-de-sac shall be 38 feet to curb within a 48 foot radius of right-of-way.
4. Knuckles may be used following the criteria shown on the County Standard Drawing.
5 Residential cul-de-sacs roads are not to exceed 600 feet in length.

F. Residential Loop Road

A residential loop road is a local purpose road which is to accommodate a maximum of 200 projected average daily vehicular trips. Residential loop roads shall be provided as follows:

1. Right-of-way width shall be 52 feet.

2. Pavement width between the curb faces shall be 32 feet.

3. Knuckles may be used following the criteria shown on the County Standard Drawing.

5. Loop roads in excess of 600 feet shall be constructed to residential or residential collector standards in accordance with projected average daily vehicle trips.

G. Industrial/Commercial Collector Road

This road shall provide access to abutting lots zoned for industrial or commercial purposes and also collect traffic from intersecting industrial roads, commercial roads, or collector roads, or roads which provide access to property which has an area of more than five acres and is zoned for commercial purposes, or which will be required to carry more than 4,500 average daily vehicular trips. Industrial/Commercial collector roads shall be provided as follows:

1. Right-of-way width shall be 88 feet.

2. Pavement width between the curb faces shall be 68 feet.

3. Knuckles may not be used.

H. Industrial/Commercial Road

This road shall provide access to abutting industrial/commercial lots where the projected average daily vehicular trips are less than 4,500. Industrial/Commercial roads shall be provided as follows:

1. Right-of-way width shall be 72 feet.

2. Pavement width between the curb faces shall be 52 feet.

3. Knuckles may be used following the criteria shown on the County Standard Drawing.

I. Industrial/Commercial Loop Road

An industrial/commercial loop road may be used in those instances where the projected average daily vehicular trips are less than 4,500. Industrial/Commercial loop roads shall be provided as follows:

1. Right-of-way width shall be 72 feet.

2. Pavement width between the curb faces shall be 52 feet.

3. Knuckles may be used following the criteria shown on the County Standard Drawing.

J. Industrial/Commercial Cul-De-Sac Road

An industrial/commercial cul-de-sac is a dead-end road which terminates in a cul-de-sac and provides access to abutting lots zoned for industrial or commercial purposes. Industrial/Commercial cul-de-sacs shall be used where the projected average daily vehicular trips do not exceed 1,000. Industrial/Commercial cul-de-sac roads shall be provided as follows:

1. Right-of-way width shall be 72 feet.
2. Pavement width between the curb faces shall be 52 feet.
3. The maximum length shall be 1,200 feet.
4. The cul-de-sac shall have a minimum 60 feet property line radius.
5. The cul-de-sac shall be paved to a radius of 50 feet.
6. Knuckles may be used following the criteria shown on the County Standard Drawing.

K. Half-Width Road (Boundary Road)

This road classification is for a road lying along a subdivision boundary for which only part of the right-of-way is to be presently dedicated and improved.

1. Right-of-Way

   a. When the half-width road is a residential street, residential collector road, industrial road, or commercial road, the minimum right-of-way width shall be 40 feet. In addition, the half-width road shall have a one-foot strip of land adjacent to and along the project boundary to which the access rights shall be waived.

   b. For all other roads, minimum right-of-way width for the half-width road shall be 40 feet or one-half of the ultimate right-of-way width, whichever is greater. In addition, the half-width road shall have a one-foot strip of land adjacent to and along the project boundary to which access rights shall be waived.

2. Surfaced roadbed shall be 28 feet in width, or one-half of the surfaced improvement that would be required for the development of the road at its ultimate width, whichever is greater.

L. Frontage Road

A frontage road is a road which is auxiliary to and located adjacent to a railroad, freeway, major highway, or arterial street, and which provides service to abutting property and adjacent areas and provides access control to the adjacent facility. A frontage road may be of any classification.

1. Right-of-way for the frontage road shall equal the standard right-of-way for whatever classification the frontage road is, less 4 to 1 0 feet, but in no event shall it be less than 52 feet.

2. Pavement width of the frontage road shall be equal to the improved width for whatever classification the frontage road is, less one 8 foot shoulder, but in no event shall the pavement width be less than 28 feet.

M. Alley

1. No new alleys shall be accepted into the County's maintained road system.

2. Alleys are to be privately maintained.

3. Existing alleys shall be as follows:

   a. Right-of-way shall be a minimum of 20 feet and a maximum of 30 feet in width.

   b. The intersection of an existing alley with a road shall provide adequate sight distance.

   c. Alleys shall not intersect.

   d. Pavement width shall be the full width of the right-of-way, except at intersections of roads, where curb returns with radii equal to the curb-to-property-line dimension shall be constructed.

   e. Pavement for alleys shall be portland cement concrete (P.C.C.).

N. Interim Road

Standards for this classification of road are specified in Table 2B, Note 6. The exception to the standard is at intersections. A 40-foot pavement width instead of 28-foot pavement width will be required along the road and shall extend a minimum of 200 feet with appropriate taper in each direction from the centerline of the street intersection. Appropriate graded width shall be provided. Interim roads larger than 28 ft. A.C. within 40 ft. graded roadbed may be required if the anticipated traffic volumes are greater than can be safely accommodated on the minimum size road.

O. Split-Level Road

A split-level road is a road of any classification providing the improvements and capacity provided in a normal road of the same classification but with each direction of traffic provided for at different elevations and separated by a median. Right-of-way shall be as follows:

1. The typical right-of-way section for a split-level road shall provide for the same parkway strip, parking lanes, traveled way, and turning lane area required for a normal road of the same classification and, in addition, shall provide:

   a. A shoulder, at least two feet in width, along the median (edge nearest centerline) of the lower roadway.

b. A strip at least four feet in width along the median edge of the upper roadway. In this strip the concrete curb or asphalt concrete dike, or approved barrier, shall be installed in those locations where they are required. Guardrail and/or retaining wall shall be required on the median side of the upper roadway when the difference in road level elevation exceeds 10 feet

c. An additional width sufficient to permit construction of the cut or fill slope without exceeding the safe slope angle determined from soil tests. In the case of vertical or near vertical cuts in rock material, an approved barrier shall be required on the median side of upper roadway. A shoulder at least 10 feet wide or an approach barrier shall be required on the median side of the lower roadway.

2. The width of the dedicated right-of-way shall not be less than the sum of the foregoing widths.

P. Hillside Residential Street

To encourage the orderly development of steep areas, certain deviations from the normal standards for subdivision streets will be permitted as shown on County Design Standard Drawings or as specified herein.

The narrower roadway sections provided in the hillside standards outlined below for category 1 hillside standards and category 2 hillside standards have a reduced capacity for traffic and on-road parking. Their use is therefore limited to residential roads in areas where the natural slope exceeds 15 percent and where at least 80 percent of the lots have a net area of not less than 20,000 square feet.

1. Category 1 hillside standards are identified as applying to those areas where the natural slope is between 15 and 20 percent.

   The method of determining the percent slope for a category 1 hillside development is as follows:

   a. Tabulate the cross-sections with slopes which are less than15 percent ~~or less~~.

   b. Tabulate the cross-sections with slopes which are 15 percent or greater but less than 20 percent.

   c. Add the lengths (L_1) for cross-sections computed in a. above.

   d. Add the lengths (L_2) for cross-sections computed in b. above.

   e. Perform calculation: L_2 - (L_1 + L_2) x 100 = "X" percent.

   f. If the "X" is 50 or greater, this meets category 1 hillside standards.

2. Category 2 hillside standards are identified as applying to those areas where the natural slope exceeds 20 percent.

SECTION 6

DESIGN STANDARDS

Section 6.1 INTERSECTIONS

A. Property line and curb return radii. The values below are provided for the majority of situations:

1. Commercial and Industrial General Plan Areas:

   a. Curb return radii shall be a minimum of 40 feet.

   b. Property line radii shall be a minimum of 30 feet.

2. Other General Plan Areas:

   a. Curb return radii shall be a minimum of 30 feet.

   b. Property line radii shall be a minimum of 20 feet.

3. Special routes identified to accommodate interstate trucks:

   a. Curb return radii shall be a minimum of 60 feet.

   b. Property line radii shall be a minimum of 50 feet.

B. Where the angle of intersection is less than 90 degrees, or where a sight distance problem may be anticipated, an increased property line radius may be required.

C. Minimum distance between roads entering into other roads shall be as follows:

1. Non-Circulation Element roads entering into other Non-Circulation Element roads shall have their centerlines separated by at least 200 feet.

2. Non-Circulation Element roads entering into a Circulation Element road shall have their centerlines separated by at least 300 feet.

3. Circulation Element roads entering into other Circulation Element roads shall have their centerlines separated by at least 600 feet.

E. The angle between centerlines of intersecting roads shall be as nearly a right angle as possible, but in no case less than 70 degrees or greater than 110 degrees. Where the angle between the centerlines is between 70 and 80 degrees or between 100 and 110 degrees, there shall be required on the acute angle corner of the intersection a taper to accommodate right-hand turning movements. Said taper shall be set back 5 feet at the exiting point of the curb return and extend 40 feet in such a manner as to safely allow completion of the right-hand turning movement.

F. Sight distance requirements at all intersections shall conform to the intersectional sight distance criteria as provided in Table 5:

TABLE 5

STANDARD CORNER SIGHT DISTANCE AT INTERSECTIONS

Design Speed, MPH	Minimum Corner Intersection Sight Distance in Feet*
60	600
50	500
40	400
30	300
20	200

*Corner sight distance measured along the direction of travel from a point on the minor road at least 10 feet from the edge of the major road pavement and measured from a height of eye of 3.5 feet on the minor road to a height of object of 4.25 feet on the major road (see County Road Standard Drawings DS-20A and DS-20B). The design speed used to determine the minimum sight distance requirement shall be the greater of the current prevailing speed (if known) and the minimum design speed of the respective road classification shown in Tables 2A and 2B. Additional corner intersection sight distance may be required for left turns at divided highways, left turns onto two-way highways with more than two lanes, or grades which exceed 3 percent, as per "AASHTO A Policy on Design of Highways and Streets".

G. The maximum grade at any intersection of two streets shall be 6 percent within the intersection and for at least 20 feet beyond the right-of-way of the intersecting street.

H. Where two road centerlines intersect, the lower classified road is not to intersect the primary road with a curve. Instead, the alignment of the lower classified road must intersect the primary road in a straight line for a length not less than the full width of the primary road's right-of-way.

I. Prior to the installation of a new traffic signal, traffic signal warrant analysis must be performed. The Californian Manual for Uniform Traffic Control Devices (CA MUTCD) should be consulted for procedures of conducting signal warrant analysis. The design and installation of the traffic signal and pavement markings should also conform to the CA MUTCD.

J. Roundabouts are also acceptable traffic control devices at intersections. Prior to placement of a roundabout a comprehensive engineering design prepared by a licensed civil engineer experienced in the design and construction of roundabouts must be prepared. A peer review of the roundabout design should also be provided prior to installation of a roundabout on a Circulation Element Road. "Roundabouts: An Informational Guide" published by the Federal Highway Administration should be consulted as a guide in the design of the roundabout. Striping and pavement markings for the roundabout should conform to the CA MUTCD.

Section 6.2 FUTURE ROAD EXTENSIONS

When any road is extended to a subdivision boundary for the purpose of providing a future connection to adjoining property, the subdivider shall submit an alignment and profile demonstrating the feasibility of such future extension.

The demonstration shall include a provision of acceptable sight distance for any intersecting street shown on the plan which is within the design sight distance of the subdivision boundary. Such demonstration shall also extend for a distance of ¼ mile from the subdivision boundary or longer if specific circumstances so dictate.

Section 6.3 GRADING

A. Roads shall be graded by the developer to full width of right-of-way with the following exceptions:

1. For Rural Collectors and Rural Mountain Roads, full grading may be required depending on expected ultimate traffic and/or special findings.

2. Grading for Recreational Parkways shall be minimized wherever possible. All embankments shall be contour graded to blend into the natural terrain and cut slopes are to be rounded. Graded slopes shall be as flat as possible and shall be planted in accordance with the surrounding natural flora.

3. The Director shall have the authority to modify full width grading requirements in areas where such modification would not compromise driver, cyclist, ~~or~~ pedestrian or equestrian safety or in any way be detrimental to the public. In any such case, slope rights for future grading and drainage facilities shall be dedicated.

   This requirement shall apply to all Circulation Element roads and to all other roads where the County has a legal interest (fee, road easement, rejected offer of dedication, irrevocable offer of dedication) or where improvement plans are required as a condition of approval of acceptance of the project.

B. Grading or excavating in an existing County road right-of-way shall not be permitted unless authorized by a valid permit.

C. Where required improvements extend beyond the public right-of-way and onto private land, the entity to provide such improvements shall acquire legal permission to trespass and construct the improvements. Permission is identified as a temporary construction easement or a letter signed by the owner of the private land or other documents acceptable to the Department of Public Works.

Section 6.4 PAVEMENT AND STRUCTURAL SECTION

A. Road Surface. The structural section shall be in accordance with San Diego County Standards and as approved by the County Materials Laboratory.

B. Design Criteria. Structural section design shall be based upon the highest Traffic Index (T.I.) expected to occur during a period of 20 years following construction; except that minimum. Traffic Indices shall be as shown in Table 6.

Excerpts from County's Guidelines for Determining Significance

COUNTY OF SAN DIEGO

GUIDELINES FOR DETERMINING SIGNIFICANCE

TRANSPORTATION AND TRAFFIC

LAND USE AND ENVIRONMENT GROUP

Department of Planning and Land Use
Department of Public Works

Second Revision
June 30, 2009

First Modification
February 19, 2010

EXPLANATION

These Guidelines for Determining Significance for Transportation and Traffic and information presented herein shall be used by County staff in their review of discretionary projects and environmental documents pursuant to the California Environmental Quality Act (CEQA). These Guidelines present a range of quantitative, qualitative, and performance levels for particular environmental effects. Normally, (in the absence of substantial evidence to the contrary), non-compliance with a particular standard stated in these Guidelines will usually mean the project will result in a significant effect, whereas compliance will normally mean the effect will be determined to be "less than significant." Section 15064(b) of the State CEQA Guidelines states:

> "The determination whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on factual and scientific data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting."

These Guidelines assist in providing a consistent, objective and predictable evaluation of significant effects. These Guidelines are not binding on any decision-maker and should not be substituted for the use of independent judgment to determine significance or the evaluation of evidence in the record. The County reserves the right to request further, project specific, information in its evaluation of a project's environmental effects and to modify these Guidelines in the event a scientific discovery or factual data alters the common application of a Guideline. In addition, evaluations to verify the applicability of the significance guidelines for individual project conditions may be necessary. Additional evaluations may include analysis of vehicle headways, speeds, average gaps, queues, delay, or other factors.

4.0 GUIDELINES FOR DETERMINING SIGNIFICANCE

The following significance guidelines should guide the evaluation of whether a significant impact to transportation and traffic will occur as a result of project implementation. A project will generally be considered to have a significant effect if it proposes any of the following, absent specific evidence to the contrary. Conversely, if a project does not propose any of the following, it will generally not be considered to have a significant effect on transportation and traffic, absent specific evidence of such an effect.

This section provides guidance for evaluating adverse environmental effects a project may have in relation to traffic and transportation. The guidelines for determining significance are organized into eight categories: road segments, intersections, two-lane highways, ramps, congestion management plan, hazards due to an existing transportation design feature, hazards to pedestrians or bicyclists, and public transportation.

<u>Land Development Projects</u>

Land Development projects are projects that may result in an increase in the density or intensity or use on a parcel or parcels of land. These projects include, but are not limited to subdivisions, use permits, rezones and general plan amendments. Land development projects, typically, require discretionary approval. Due to the increased intensity of uses, land development projects generate additional traffic onto the County's road network and can contribute towards traffic congestion. A traffic impact study is often required to fully assess potential traffic impacts that may result from implementation of the proposed project.

<u>Road Improvement Projects</u>

Road improvement projects are projects that can affect transportation system operations; including level of service and other performance measures. Projects may consist of increasing road capacity or improving the traffic operations on the County's road network. This section refers to stand alone road improvement projects that are not improvements associated with a proposed development. These projects are typically publicly initiated. Road improvement projects do not generate additional trips but, in some cases, may cause a redistribution of trips on the County's road network. Road improvement projects are typically one or more of the following; road widening, construction of new road, intersection improvements and operational improvements/road maintenance. Additional guidance on how to evaluate Publicly Initiated Road Improvement Projects is included as Attachment B of the Report Format and Content Requirements.

4.1 Road Segments

Pursuant to the County's General Plan Public Facilities Element (PFE Pg. XII-4-18), new development must provide improvements or other measures to mitigate traffic impacts to avoid:

(a) Reduction in Level of Service (LOS) below "C" for on-site Circulation Element roads;

(b) Reduction in LOS below "D" for off-site and on-site abutting Circulation Element roads; and

(c) "Significantly impacting congestion" on roads that operate at LOS "E" or "F". If impacts cannot be mitigated, the project cannot be approved unless a statement of overriding findings is made pursuant to the State CEQA Guidelines. The PFE, however, does not include specific guidelines for determining the amount of additional traffic that would "significantly impact congestion" on such roads.

The County has created the following guidelines to evaluate likely motor vehicle traffic impacts of a proposed project for road segments and intersections serving that project site, for purposes of determining whether the development would "significantly impact congestion" on the referenced LOS E and F roads. The guidelines are summarized in Table 1. The levels in Table 1 are based upon average operating conditions on County roadways. It should be noted that these levels only establish general guidelines, and that the specific project location must be taken into account in conducting an analysis of traffic impact from new development.

On-site Circulation Element Roads

PFE, Transportation, Policy 1.1 states that "new development shall provide needed roadway expansion and improvements on-site to meet demand created by the development, and to maintain a Level of Service C on Circulation Element Roads during peak traffic hours". Pursuant to this policy, a significant traffic impact would result if:

- ***The additional or redistributed ADT generated by the proposed land development project will cause on-site Circulation Element Roads to operate below LOS C during peak traffic hours except within the Otay Ranch and Harmony Grove Village plans as specified in the PFE, Implementation Measure 1.1.2.***

Off-site Circulation Element Roads

PFE, Transportation, Policy 1.1 also addresses offsite Circulation Element roads. It states, "new development shall provide off-site improvements designed to contribute to the overall achievement of a Level of Service D on Circulation Element Roads". Implementation Measure 1.1.3 addresses projects that would significantly impact congestion on roads at LOS E or F. It states that new development that would significantly impact congestion on roads operating at LOS E or F, either currently or as a result of the project, will be denied unless improvements are scheduled to attain a LOS to D or better or appropriate mitigation is provided. The following significance guidelines define a method for evaluating whether or not increased traffic volumes generated or redistributed from a proposed project will "significantly impact congestion" on County roads, operating at LOS E or F, either currently or as a result of the project.

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment:

- ***The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road or State Highway currently operating at LOS E or LOS F, or will cause a Circulation Element Road or State Highway to operate at a LOS E or LOS F as a result of the proposed project as identified in Table 1, or***

- ***The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.***

Table 1
Measures of Significant Project Impacts to Congestion on Circulation Element Road Segments: Allowable Increases on Congested Road Segments

Level of service	Two-lane road	Four-lane road	Six-lane road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

Notes:
1. **By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes additional trips must mitigate a share of the cumulative impacts.**
2. **The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.**

LOS E

The first significance criterion listed in Table 1 addresses roadways presently operating at LOS E. Based on these criteria, an impact from new development on an LOS E road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 200 ADT. Using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 25 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 2.4 minutes.

Therefore, the addition of 200 ADT, in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Significance criteria were also established for 4-lane and 6-lane roads operating at LOS E and are based upon the above 24 hour ADT significance criterion established for two-lane roads. The two-lane road criterion was doubled to determine impacts to four-lane roads and tripled to determine impacts to six-lane roads. This was considered to be conservative since the 24 hour per lane road capacity for a 4-lane road is more than double that of a two-lane road and the per lane capacity of a six-lane road is more than triple that of the two-lane road. For LOS E roads, the additional significance criteria are 400 ADT for a 4-lane road and 600 ADT for a 6-lane road.

Similar to the criteria for two-lane roads, 400 ADT for a 4-lane road and 600 ADT for a 6-lane road criteria would generate less than 25 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 2.4 minutes. The addition of 200 ADT per lane (400 ADT for a 4 lane road or 600 ADT for a 6 lane road), in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Road capacities based upon level of service for County roads can be found in the County's Public Road Standards, available online at http://www.sdcounty.ca.gov/dpw/land/rtelocs.html.

LOS F

The second significance criteria listed in Table 1 addresses roadways presently operating at LOS F. Under LOS F congested conditions, small changes and disruptions to the traffic flow on County Circulation Element Roads can have a greater effect on traffic operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic on LOS F roads more stringent significance criteria was established when compared to that for LOS E. Based on this guidance, an impact from new development on an LOS F road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 100. Again, using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 12.5 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 4.8 minutes.

The addition of 100 ADT, in most cases, would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. The same approach used to determine significance criteria for 4-lane and 6-lane roads operating at LOS E was used to determine appropriate significance criteria for four-lane and six-lane roads operating at LOS F. Based on this approach, the significance criteria for a four-lane road (200 ADT) and for a six-lane road (300 ADT) would generate less than 12.5 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 4.8 minutes. The addition of 100 per lane ADT (200 ADT for a 4-lane road and 300 ADT for a 6-lane road) would, in most cases, not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway.

In summary, under extremely congested LOS F conditions, small changes and disruptions to the traffic flow can significantly affect traffic operations and additional project traffic can increase the likelihood or frequency of these events. Therefore, the LOS F ADT significance criteria was set at 100 ADT (50% of the LOS E criterion) to provide a higher level of assurance that the traffic allowed under the criterion would not significantly impact traffic operation on the road segment.

Non-Circulation Element Residential Streets

Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots and not to carry through traffic, however, for projects that will substantially increase traffic volumes on residential streets, a comparison of the traffic volumes on the residential streets with the recommended design capacity must be provided. Recommended design capacities for residential non-Circulation Element streets are provided in the San Diego County Public and Private Road Standards. Traffic volume that exceeds the design capacity on residential streets may impact residences and should be analyzed on a case-by-case basis.

4.2 Intersections

This section provides guidance for evaluating adverse environmental effects a project may have on signalized and unsignalized intersections. Table 2 summarizes significant project impacts for signalized and unsignalized intersections.

Table 2
Measures of Significant Project Impacts to Congestion on Intersections: Allowable Increases on Congested Intersections

Level of Service	Signalized	Unsignalized
LOS E	Delay of 2 seconds or less	20 or less peak hour trips on a critical movement
LOS F	Either a Delay of 1 second, or 5 peak hour trips or less on a critical movement	5 or less peak hour trips on a critical movement

Notes:
1. A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues, which typically operate at LOS F. Also if a project adds significant volume to a minor roadway approach, a gap study should be provided that details the headways between vehicles on the major roadway.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact.
3. The County may also determine impacts have occurred on roads even when a project's direct or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.
4. For determining significance at signalized intersections with LOS F conditions, the analysis must evaluate both the delay and the number of trips on a critical movement, exceedance of either criteria result in a significant impact.

4.2.1 Signalized

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a signalized intersection:

- ***The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a signalized intersection currently operating at LOS E or LOS F, or will cause a signalized intersection to operate at a LOS E or LOS F as identified in Table 2.***

- ***Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.***

LOS E
The significance criterion for signalized intersections identified in Table 2 allows an increase in the overall delay at an intersection operating at LOS E of two seconds. This is consistent with the capacity limit contained in the SANDAG's CMP and guidelines established by the City of San Diego. A delay of two seconds is a small fraction of the typical cycle length for a signalized intersection that ranges between 60 and 120 seconds. The likelihood of increased queues forming due to the additional two seconds of delay is low. Therefore, an increased wait time of two seconds, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS E is 2 seconds.

LOS F
The primary significance criterion for signalized intersections operating at LOS F conditions was based upon increased delay at the intersection. Under LOS F congested conditions, small changes and disruptions to the traffic flow to signalized intersections can have a greater effect on overall intersection operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic at signalized intersections operating at LOS F, a more stringent guideline was established when compared to signalized intersection operating at LOS E. A significance guideline of an increased delay of 1 second was established for signalized intersections operating at LOS F. An increase in the overall delay at an intersection of one second, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS F is 1 second.

Signalized intersections operating at LOS F also have the potential for substantial queuing at specific turning movements that may detrimentally effect overall intersection and/or road segment operations. Thus, an increase of peak hour trips to a critical move was also established as a secondary significance criterion for signalized intersections. A critical movement would be a movement or a lane at an intersection that is experiencing queuing or substantial delay and is affecting the overall operation of the intersection. The increase in peak hour trips to a critical move is a measurement of how many cars can be added to an existing queue. The addition of more than five trips (peak hour) per critical movement will normally be considered a significant impact. This significance criterion was selected because the five or less additional trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver (5 peak hour trips equals one trip every 12 minutes or 720 seconds).

For LOS F intersections, the 5 peak hour trips to a critical movement would not be noticeable to the average driver since the one additional trip during the 12 minute interval on average would clear the traffic signal cycles well within the 12 minute period. It should also be noted that if the 5 additional peak hour trips arrived at the same time these trips would also clear the traffic cycle and existing queue lengths would be re-established.

4.2.2 Unsignalized

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant impact to an unsignalized intersection as listed in Table 2 and described as text below:

- ***The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or***

- ***The additional or redistributed ADT generated by the proposed project will add 21 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or***

- ***The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or***

- ***The additional or redistributed ADT generated by the proposed project will add 6 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or***

- ***Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.***

The operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or turn and/or through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. As noted in Table 2 on page 15, significance criteria for unsignalized intersections are based upon a minimum number of trips added to a critical movement at an unsignalized intersection.

LOS E

The significance guidelines for unsignalized intersections identify a minimum number of trips added to a critical movement at an unsignalized intersection. Since the operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves, the significance guidelines for unsignalized intersections were based upon the number of trips added to a critical movement. This guideline directly relates to the number of vehicles that can be added to an existing queue that forms at the intersection. A significance criteria of (21) twenty-one or more trips (peak hour) per critical movement was used for LOS E conditions. Although delays drivers experience under LOS E condition may be noticeable, they are not yet considered unacceptable. Twenty trips spread out over the peak hour would not likely cause the intersection delay or existing queue lengths to become unacceptable. The twenty trips (peak hour) would not be noticeable to the average driver.

The operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves. Therefore, the significance guidelines for unsignalized intersections are based upon the number of peak hour trips added to a critical movement at that intersection. This guideline examines the number of vehicles that may be added to an existing queue that forms at the intersection by the additional traffic generated by a project. In LOS E situations, the delays that drivers experience are noticeable, but are not considered excessive. A peak hour increase of twenty trips to the critical movement of an unsignalized intersection would be, on average, one additional car every 3.0 minutes or 180 seconds. Assuming the average wait time for a vehicle in the critical movement queue is less than 3.0 minutes, which is typical for LOS E condition, this would not be noticeable to the average driver and would not be considered a significant impact.

LOS F

For LOS F conditions, a significance level of 6 or more trips (peak hour) per critical movement was used. Five trips or less spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver. For example, 5 trips spread out over an hour would be one car every 12 minutes. This typically exceeds the average wait time in the queue and would not be noticeable to the average driver.

4.3 Two-Lane Highways

This section provides level of service impact guidelines for State highways and County arterials operating as two-lane highways.

Several designated County Circulation Element Roads are State highways that are managed and maintained by Caltrans. These highways include State Route 67, State Route 76, State Route 78, State Route 79 and State Route 94 and within the unincorporated area of the County most of these routes operate as two-lane highways. Caltrans has prepared a "Guide for the Preparation of Traffic Impact Studies" that should also be referenced when evaluating traffic impacts to the above Circulation Element Roads that are under the jurisdiction of Caltrans. Also, Caltrans District 11 local office should be consulted early to adequately scope the traffic study and ensure potential local district issues in the traffic impact study are addressed. While the "Guide for the Preparation of Traffic Impact Studies" provides guidance for scoping a traffic study to assess impacts on Caltrans facilities, it does not provide specific guidelines for determining when a significant traffic impact occurs; hence, the development of the following significance guidelines for two-lane highways.

In addition to the State Routes identified above, several County Circulation Element Roads, although designated as arterials, operate as two-lane highways. These include roadways that have passing opportunities for 40% or more along the length of the roadway and/or have few/limited access points and intersections along the length of the roadway. Examples would include sections of Old Highway 80, Old Highway 395 and Del Dios Highway. The Highway Capacity Manual (HCM) includes analysis criteria for assessment of LOS for two-lane highways. Section 2.2 of the County of San Diego's "Transportation and Traffic Report Format and Content Requirements" states that "The Director of Public Works may, based upon a review of the operational characteristics of the roadway, designate that a HCM analysis be used to determine the LOS for a two-lane County arterial in lieu of the LOS table provided in the County of San Diego Public Road Standards." Level of service tables for two-lane highways have also been established by the County of Riverside and the County of Sacramento.

4.3.1 Signalized Intersection Spacing Over One Mile

This section provides LOS impact significance levels for State highways and County arterials operating as two-lane highways with signalized intersection spacing over one mile. County arterials were addressed in section 4.1 and Table 1, however, those that operate as two-lane highways would have higher project contribution amounts and different LOS E and LOS F levels and are treated in this section.

Table 3
Measures of Significant Project Impacts to Congestion: Allowable Increases on Two-lane Highways with Signalized Intersection Spacing Over One Mile

Level of Service	LOS Criteria	Impact Significance Level
LOS E	> 16,200 ADT	>325 ADT
LOS F	> 22,900 ADT	>225 ADT
Note: **Where detailed data are available, the Director of Public Works may also accept a detailed level of service analysis based upon the two-lane highway analysis procedures provided in the Chapter 20 Highway Capacity Manual.**		

Two-lane highways with intersection spacing over one mile have minimal side friction and conform to the HCM assumptions for two-lane highways. Level of service criteria for LOS E and LOS F are provided in Table 3 based upon criteria established with the Counties of Riverside and Sacramento and concurred upon by Caltrans-District 11. These criteria are appropriate for use for most projects with the potential to affect two-lane highways, as road conditions for two-lane highways in these Counties are similar to those in the County of San Diego. The ADT based guidelines should be the first applied method of analysis, however, County staff may allow the use of HCM Chapter 20 methodology (average travel speed and/or percent time spent following) to provide a more detailed evaluation and to determine the overall level of service in certain cases, with the approval of the Director of Public Works. Where impacts to State Highways are involved, consultation with Caltrans is recommended.

LOS E

Impact significance levels are provided in Table 3 for two-lane highways with signalized intersection spacing over one mile. The first impact significance level addresses impacts from new development (both direct and cumulative impacts) on an LOS E road. In this scenario a significant impact would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 325. For most discretionary projects, the 325 ADT level would generate less than 35 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 1.7 minutes. The addition of 325 ADT would, in most cases, not be noticeable to the average driver on a two-lane highway which has higher speeds and reduced side friction compared to a typical arterial. The additional 325 ADT, therefore, would not constitute a significant impact on a two-lane highway operating at LOS E; however, the addition of more than 325 ADT would generally result in a significant impact.

LOS F

The second impact significance guideline concerns roadways presently operating at LOS F (for a 2-lane highway LOS F would not occur until ADT exceeds 22,900 trips per day. Under LOS F congested conditions, small changes and disruptions to the traffic flow on County Circulation Element Roads can have a greater affect on traffic operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic on LOS F roads, a more stringent guideline was established when compared to that for LOS E. The guideline for determining significance from new development (both direct and cumulative impacts) on a LOS F road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 225. For most discretionary projects, the 225 ADT level would generate less than 25 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 2.4 minutes. The addition of 225 ADT would, in most cases, not be noticeable to the average driver on a two-lane highway which has higher speeds and reduced side friction compared to a typical arterial. The addition 225 ADT or less would therefore not constitute a significant impact on a two-lane highway operating at LOS F. However, the addition of more than 225 ADT would be considered a significant impact.

4.3.2 Signalized Intersection Spacing Under One Mile

This section provides level of service impact guidelines for State highway segments and County arterials operating as two-lane highways with signalized intersection spacing under one mile. Typical examples of this type of roadway are those segments of two lane highways that traverse town centers. Similar to the experience of drivers in urban areas with closely spaced intersections, the functionality of two-lane highway conditions with signalized intersections spacing under one mile becomes constrained not due to the segment capacity but the intersection operations. Therefore the assessment of operations of intersections on two-lane highways shall be guided by a Level of Service standard. Level of Service for purposes of this significance guideline is based upon the overall intersection operations – similar to Urban Street analysis in Chapter 15 Highway Capacity Manual. For determining impact significance at the signalized intersection, Table 4 "Measures of Significant Project Impacts to Congestion on Intersections Allowable Increases on Congested Intersections" may be used as summarized below:

Table 4
Measures of Significant Project Impacts to Congestion: Allowable Increases on Two-lane Highways with Signalized Intersection Spacing Under One Mile

Level of Service	Signalized
LOS E	Delay of 2 seconds or less
LOS F	Delay of 1 second, or 5 peak hour trips or less on a critical movement

Notes:
1. A critical movement is an intersection movement (right turn, left turn, through-movement) that experiences excessive queues which typically operate at LOS F.
2. By adding proposed project trips to all other trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project is responsible for mitigating its share of the cumulative impact.
3. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

The second impact significance guideline (Table 4) concerns two-lane highways with signalized intersection spacing less than 1 mile. Two-lane highways with intersection spacing less than 1 mile operate similar to urban streets as identified in the HCM. Per the HCM, level Urban Streets have lower speeds with levels of service most characterized by the operation of the intersections along the highway/street. For two-lane highways with intersection spacing less than 1 mile, the level of service will be determined to be that of the intersections along the highway. Impacts to the highway will be determined by evaluating the intersection impact criteria identified in Table 4.

Impacts related to operational features on two-lane highways will be evaluated on a case-by-case basis based upon traffic flow patterns, geometrics, available sight distance, accident histories, and other factors. Coordination with County staff and Caltrans is recommended regarding any additional operational analysis that may be necessary.

4.4 Ramps

Additional or redistributed ADT generated by the proposed project may significantly increase congestion at a freeway ramp. Caltrans' "Guide for the Preparation of Traffic Impact Studies" states that an operational analysis based upon Caltrans' Highway Design Manual should be used in the evaluation of ramps and that Caltrans' Ramp Metering Guidelines should be used in the preparation of the operational analysis. However, specific criteria for the determination of an impact at a ramp are not provided in the above documents.

The CMP includes guidelines for the determination of traffic impacts at a ramp. These guidelines are summarized in Table 5. Table 5 may be used as a guide in determining significant increases in congestion on ramps and for identifying conflicts with the congestion management program. Other factors that may be considered include ramp metering, location (rural vs. urban), ramp design, and the proximity of adjacent intersections. Coordination with Caltrans and the local jurisdiction should be conducted to determine appropriate impact criteria for the specific ramps being assessed.

4.5 Congestion Management Program

Projects that generate over 2,400 ADT or 200 peak hour trips, must comply with the traffic study requirements of SANDAG's Congestion Management Program. Trip distributions for these projects must also use the current regional computer traffic model. Projects that must prepare a CMP analysis should also follow the CMP traffic impact analysis guidelines. These guidelines are summarized in Table 5.

Table 5
Measure of Significant Project Traffic Impacts for Circulation Element Roads, Signalized Intersections, and Ramps

Level of Service With Project	Allowable Change Due to Project Impact						
	Freeways		Roadway Segments*		Intersections**	Ramps**	Ramps with >15 min. delay
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)	Delay (min.)
E & F	0.01	1	0.02	1	2	-	2

* For County arterials, which are not identified in SANDAG's Regional Transportation Plan and Congestion Management Program as regionally significant arterials, significance may be measured based upon an increase in average daily trips. The allowable change in ADT due to project impacts in this instance would be identified in Table 1.

** Signalized Intersections

*** See the Report Format and Content Requirements for guidance on ramp metering analysis.

KEY

V/C	=	Volume to Capacity ratio
Speed	=	Speed measured in miles per hour
Delay	=	Average stopped delay per vehicle measured in seconds, or minutes
LOS	=	Level of Service
ADT	=	Average Daily Trips

4.6 Hazards Due to an Existing Transportation Design Feature

Many roadways and intersections in the County were designed and constructed prior to the adoption of current road design standards. The design of the roadways and intersections that were able to handle lower traffic volumes, may pose an increased risk if traffic volumes substantially increase along the road segment or at the intersection as a result of the proposed project. Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to an existing transportation design feature. Therefore, it is necessary to evaluate potential hazards to an existing transportation design feature.

The determination of significant hazards to an existing transportation design feature shall be on a case-by-case basis, considering the following factors:

- Design features/physical configurations of access roads may adversely affect the safe movement of all users along the roadway.

- The percentage or magnitude of increased traffic on the road due to the proposed project may affect the safety of the roadway.

- The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers, may result in conflicts with other users or stationary objects.

- Conformance of existing and proposed roads to the requirements of the private or public road standards, as applicable.

4.7 Hazards to Pedestrians or Bicyclists

Many roadways and intersections in the County do not currently have pedestrian or bicycle facilities. The roadways and intersections designed prior to adoption of current road standards may have conditions that may pose an increased risk if traffic volumes, pedestrian volumes, or bicycle volumes substantially increase along the road segment or at the intersection, as a result of the proposed project. Increased traffic generated or redistributed by a proposed project may cause a significant traffic operational impact to pedestrians or bicyclists. Therefore, it is necessary to evaluate potential hazards to pedestrians or bicyclists.

The determination of significant hazards to pedestrians or bicyclists shall be on a case-by-case basis, considering the following factors:

- Design features/physical configurations on a road segment or at an intersection that may adversely affect the visibility of pedestrians or bicyclists to drivers entering and exiting the site, and the visibility of cars to pedestrians and bicyclists.

- The amount of pedestrian activity at the project access points that may adversely affect pedestrian safety.

- The preclusion or substantial hindrance of the provision of a planned bike lane or pedestrian facility on a roadway adjacent to the project site.

- The percentage or magnitude of increased traffic on the road due to the proposed project that may adversely affect pedestrian and bicycle safety.

- The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers that may result in vehicle/pedestrian, vehicle/bicycle conflicts.

- Conformance of existing and proposed roads to the requirements of the private or public road standards, as applicable.

- The potential for a substantial increase in pedestrian or bicycle activity without the presence of adequate facilities.

4.8 Alternative Transportation

Alternative transportation (cycling, walking, and transit use) is addressed in the County's General Plan Public Facilities Element (PFE). The County's stated objective for alternative transportation is addressed by the PFE, Objective 4. Objective 4 asks for a "Reduction in the demand on the road system through increased public use of alternate forms of transportation and other means." Pursuant to Objective 4, Policies 4.1 – 4.4 establish a means for the County to meet the objective. As such, if a proposed project is not in conformance with the applicable alternative transportation policies in the PFE, a significant conflict with the County's alternative transportation policies may occur.

5.0 STANDARD MITIGATION AND PROJECT DESIGN CONSIDERATIONS

If a proposed project's traffic results in a significant traffic impact (per the criteria specified above), mitigation for the traffic impact must be proposed. If mitigation is infeasible or impractical, the technical, economic, and physical reasons for the infeasibility must be detailed to support a statement of overriding considerations under CEQA. Potential mitigation measures can include traffic signal improvements, physical road improvements, street re-striping and parking prohibitions, fair share contributions toward identified, funded and scheduled projects, and transportation demand management programs.

A variety of possible generalized mitigation measures are provided below. It should be recognized that a variety of improvements may be required to mitigate direct impacts depending on the extent of the project's impact. For example, a project may identify a direct impact to a road segment; however the entire segment may not need to be improved. Depending on the situation, frontage improvements or turn pockets may adequately mitigate the impact. However, analysis must be provided to demonstrate that with implementation of the proposed mitigation measure, conditions would either not change or not become worse with the implementation of the project. For example, travel time or queue lengths may need to be quantified to justify the adequacy of a proposed mitigation measure as being proportional to the project's significant impact. It should be noted that fair share contributions are not adequate to fully mitigate a direct impact because the construction of actual improvements must be in place prior to the project impact occurring. Consult with County staff, as necessary, for further information. Conceptual striping plans to ensure feasibility of the proposed mitigation measures may be required.

5.1 Traffic Signal Improvements

- New Signal (provided that it meets traffic signal warrants)
- Signal modifications including timing, coordination, phasing improvements, etc.

5.2 Physical Road Improvements

- Turn Restrictions
- New Roadway
- Curve Realignment
- Roadway widening to add lanes or shoulders
- Provision of pathway or sidewalk
- Extension of truncated street
- Shoulder provisions for bicycle-lanes
- Redesign of freeway on- and off-ramps
- Median construction/modification to restrict access
- Flaring of intersections to add turn lanes
- Provision of passing lanes or turnouts
- Acceleration and deceleration lanes

- Removal of obstructions (vegetation, rock outcroppings, utilities, etc.)
- Roundabouts

5.3 Street Re-striping and Parking Restrictions

- Re-striping to add lanes with or without parking removal or restrictions
- Protected left-turn pockets, or free right turn lanes
- Parking restrictions, daily or during peak hours
- Bicycle lanes and or sharrows

5.4 Fair Share Contributions

- Payment of the County's Traffic Impact Fee for mitigation of cumulative impacts within the unincorporated County (Refer to Section 2.2 of these Guidelines for discussion of how the TIF mitigates cumulative impacts)
- Contribution of funds to approved projects identified in the County's Capital Improvement Program Plan
- Agreement between an applicant and a City or non-County agency to contribute a fair share payment towards the construction of a specific traffic improvement found adequate by the County for impacts outside of the jurisdiction of the unincorporated County (Refer to Section 5.0 of the Report Format and Content Requirements for additional discussion of impacts outside of the County's jurisdiction).

5.5 Transportation Demand Management*

- Flexible or staggered work hours
- Properly pricing parking
- Transit incentives and improvements including subsidized transit passes, bus turnouts, or bus shelters/benches
- Carpool, vanpool programs and participation in a computerized matching system
- Incentives to promote bicycle and walk trip modal split

* Implementation of these measures will require monitoring on an on-going basis.

5.6 Traffic Safety/Hazards to Pedestrians or Bicyclists

If traffic safety or pedestrian/bicycle safety impacts are present, then conditions are placed on a project prior to approval to address those concerns. Often, compliance with County of San Diego Public or Private Road Standards will provide sufficient mitigation for an identified impact. However, site specific mitigation measures, such as the improvement of sight distance along the frontage of a project, will be imposed as a condition of approval. Conceptual striping plans to ensure feasibility of the proposed mitigation measures may be required.

Projects that would generate a high demand for pedestrian traffic such as schools, shopping centers, and large office parks may be required to provide pedestrian and bicycle routes to the facilities to accommodate the pedestrian demand.

Bicycle lanes and routes designated on the County's General Plan/Circulation Element must be specified and existing facilities identified. Provisions to provide/accommodate the ultimate right-of-way needed to construct designated bike lanes must be incorporated into the proposed project. Construction of bicycle lanes may be based upon the demand and connections to existing facilities in the area.

5.7 Alternative Transportation

Alternative transportation is addressed in the County's General Plan Public Facilities Element (PFE), Policies 4.1 – 4.4. The PFE identifies several viable ways of promoting alternative transportation and to reduce demand on the road system. However, many of these solutions are programmatic in nature and cannot typically be implemented by an individual project. Program level solutions include establishing incentive programs for employers to encourage their employees to use alternative transportation and coordinating the planning and development of transit centers with other jurisdictions and public transportation agencies. Project level solutions include identifying the need for transit improvements for large scale projects and conditioning new development on the dedication and construction of bikeways as indicated in the Circulation Element's Bicycle Network.

5.8 Project Phasing

If a proposed project will be developed in phases and the county agrees that phased implementation of mitigation measures is a feasible option, the traffic analysis will need to identify impacts and associated mitigation according to each phase of development. The implementation of mitigation measures would be timed with each project phase to address the impacts that each phase of development would create. The traffic analysis will need to evaluate each phase separately in order to justify the mitigation that will be implemented at each phase. For example, if a project proposes to construct in phases (stages) or with interim uses before full build out, then the traffic study shall detail the projects traffic impacts and needed mitigation for each phase (stage) as it comes online and identify appropriate mitigation at each stage. This level of analysis will allow County staff to draft road and frontage improvement conditions in conjunction with actual project improvements via phasing or stages.

Excerpts from Caltrans Guidelines for the Preparation of Traffic Impact Studies

GUIDE FOR THE PREPARATION

OF

TRAFFIC IMPACT STUDIES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

December 2002

PREFACE

The California Department of Transportation (Caltrans) has developed this "Guide for the Preparation of Traffic Impact Studies" in response to a survey of cities and counties in California. The purpose of that survey was to improve the Caltrans local development review process (also known as the Intergovernmental Review/California Environmental Quality Act or IGR/CEQA process). The survey indicated that approximately 30 percent of the respondents were not aware of what Caltrans required in a traffic impact study (TIS).

In the early 1990s, the Caltrans District 6 office located in Fresno identified a need to provide better quality and consistency in the analysis of traffic impacts generated by local development and land use change proposals that effect State highway facilities. At that time, District 6 brought together both public and private sector expertise to develop a traffic impact study guide. The District 6 guide has proven to be successful at promoting consistency and uniformity in the identification and analysis of traffic impacts generated by local development and land use changes.

The guide developed in Fresno was adapted for statewide use by a team of Headquarters and district staff. The guide will provide consistent guidance for Caltrans staff who review local development and land use change proposals as well as inform local agencies of the information needed for Caltrans to analyze the traffic impacts to State highway facilities. The guide will also benefit local agencies and the development community by providing more expeditious review of local development proposals.

Even though sound planning and engineering practices were used to adapt the Fresno TIS guide, it is anticipated that changes will occur over time as new technologies and more efficient practices become available. To facilitate these changes, Caltrans encourages all those who use this guide to contact their nearest district office (i.e., IGR/CEQA Coordinator) to coordinate any changes with the development team.

ACKNOWLEDGEMENTS

The District 6 traffic impact study guide provided the impetus and a starting point for developing the statewide guide. Special thanks is given to Marc Birnbaum for recognizing the need for a TIS guide and for his valued experience and vast knowledge of land use planning to significantly enhance the effort to adapt the District 6 guide for statewide use. Randy Treece from District 6 provided many hours of coordination, research and development of the original guide and should be commended for his diligent efforts. Sharri Bender Ehlert of District 6 provided much of the technical expertise in the adaptation of the District 6 guide and her efforts are greatly appreciated.

A special thanks is also given to all those Cities, Counties, Regional Agencies, Congestion Management Agencies, Consultants, and Caltrans Employees who reviewed the guide and provided input during the development of this Guide for the Preparation of Traffic Impact Studies.

TABLE OF CONTENTS

I. INTRODUCTION

Caltrans desires to provide a safe and efficient State transportation system for the citizens of California pursuant to various Sections of the California Streets and Highway Code. This is done in partnership with local and regional agencies through procedures established by the California Environmental Quality Act (CEQA) and other land use planning processes. The intent of this guide is to provide a starting point and a consistent basis in which Caltrans evaluates traffic impacts to State highway facilities. The applicability of this guide for local streets and roads (non-State highways) is at the discretion of the effected jurisdiction.

Caltrans reviews federal, State, and local agency development projects[1], and land use change proposals for their potential impact to State highway facilities. The primary objectives of this guide is to provide:

- guidance in determining if and when a traffic impact study (TIS) is needed,
- consistency and uniformity in the identification of traffic impacts generated by local land use proposals,
- consistency and equity in the identification of measures to mitigate the traffic impacts generated by land use proposals,
- lead agency[2] officials with the information necessary to make informed decisions regarding the existing and proposed transportation infrastructure (see Appendix A, Minimum Contents of a TIS)
- TIS requirements early in the planning phase of a project (i.e., initial study, notice of preparation, or earlier) to eliminate potential delays later,
- a quality TIS by agreeing to the assumptions, data requirements, study scenarios, and analysis methodologies prior to beginning the TIS, and
- early coordination during the planning phases of a project to reduce the time and cost of preparing a TIS.

II. WHEN A TRAFFIC IMPACT STUDY IS NEEDED

The level of service[3] (LOS) for operating State highway facilities is based upon measures of effectiveness (MOEs). These MOEs (see Appendix "C-2") describe the measures best suited for analyzing State highway facilities (i.e., freeway segments, signalized intersections, on- or off-ramps, etc.). Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3") on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing MOE should be maintained.

---

[1] "Project" refers to activities directly undertaken by government, financed by government, or requiring a permit or other approval from government as defined in Section 21065 of the Public Resources Code and Section 15378 of the California Code of Regulations.

[2] "Lead Agency" refers to the public agency that has the principal responsibility for carrying out or approving a project. Defined in Section 21165 of the Public Resources Code, the "California Environmental Quality Act, and Section 15367 of the California Code of Regulations.

[3] "Level of service" as defined in the latest edition of the Highway Capacity Manual, Transportation Research Board, National Research Council.

A. Trip Generation Thresholds

The following criterion is a starting point in determining when a TIS is needed. When a project:

1. Generates over 100 peak hour trips assigned to a State highway facility
2. Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS "C" or "D").
3. Generates 1 to 49 peak hour trips assigned to a State highway facility – the following are examples that may require a full TIS or some lesser analysis[4]:
    a. Affected State highway facilities experiencing significant delay; unstable or forced traffic flow conditions (LOS "E" or "F").
    b. The potential risk for a traffic incident is significantly increased (i.e., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points, etc.).
    c. Change in local circulation networks that impact a State highway facility (i.e., direct access to State highway facility, a non-standard highway geometric design, etc.).

Note: A traffic study may be as simple as providing a traffic count to as complex as a microscopic simulation. The appropriate level of study is determined by the particulars of a project, the prevailing highway conditions, and the forecasted traffic.

B. Exceptions

Exceptions require consultation between the lead agency, Caltrans, and those preparing the TIS. When a project's traffic impact to a State highway facility can clearly be anticipated without a study and all the parties involved (lead agency, developer, and the Caltrans district office) are able to negotiate appropriate mitigation, a TIS may not be necessary.

C. Updating An Existing Traffic Impact Study

A TIS requires updating when the amount or character of traffic is significantly different from an earlier study. Generally a TIS requires updating every two years. A TIS may require updating sooner in rapidly developing areas and not as often in slower developing areas. In these cases, consultation with Caltrans is strongly recommended.

III. SCOPE OF TRAFFIC IMPACT STUDY

Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended before commencing work on the study to establish the appropriate scope. At a minimum, the TIS should include the following:

A. Boundaries of the Traffic Impact Study

All State highway facilities impacted in accordance with the criteria in Section II should be studied. Traffic impacts to local streets and roads can impact intersections with State highway facilities. In these cases, the TIS should include an analysis of adjacent local facilities, upstream and downstream, of the intersection (i.e., driveways, intersections, and interchanges) with the State highway.

[4] A "lesser analysis" may include obtaining traffic counts, preparing signal warrants, or a focused TIS, etc.

B. Traffic Analysis Scenarios

Caltrans is interested in the effects of general plan updates and amendments as well as the effects of specific project entitlements (i.e., site plans, conditional use permits, sub-divisions, rezoning, etc.) that have the potential to impact a State highway facility. The complexity or magnitude of the impacts of a project will normally dictate the scenarios necessary to analyze the project. Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended to determine the appropriate scenarios for the analysis. The following scenarios should be addressed in the TIS when appropriate:

1. When only a general plan amendment or update is being sought, the following scenarios are required:
   a) Existing Conditions - Current year traffic volumes and peak hour LOS analysis of effected State highway facilities.
   b) Proposed Project Only with Select Zone[5] Analysis - Trip generation and assignment for build-out of general plan.
   c) General Plan Build-out Only - Trip assignment and peak hour LOS analysis. Include current land uses and other pending general plan amendments.
   d) General Plan Build-out Plus Proposed Project - Trip assignment and peak hour LOS analysis. Include proposed project and other pending general plan amendments.

2. When a general plan amendment is not proposed and a proposed project is seeking specific entitlements (i.e., site plans, conditional use permits, sub-division, rezoning, etc.), the following scenarios must be analyzed in the TIS:
   a) Existing Conditions - Current year traffic volumes and peak hour LOS analysis of effected State highway facilities.
   b) Proposed Project Only - Trip generation, distribution, and assignment in the year the project is anticipated to complete construction.
   c) Cumulative Conditions (Existing Conditions Plus Other Approved and Pending Projects Without Proposed Project) - Trip assignment and peak hour LOS analysis in the year the project is anticipated to complete construction.
   d) Cumulative Conditions Plus Proposed Project (Existing Conditions Plus Other Approved and Pending Projects Plus Proposed Project) - Trip assignment and peak hour LOS analysis in the year the project is anticipated to complete construction.
   e) Cumulative Conditions Plus Proposed Phases (Interim Years) - Trip assignment and peak hour LOS analysis in the years the project phases are anticipated to complete construction.
3. In cases where the circulation element of the general plan is not consistent with the land use element or the general plan is outdated and not representative of current or future forecasted conditions, all scenarios from Sections III. B. 1. and 2. should be utilized with the exception of duplicating of item 2.a.

[5] "Select zone" analysis represents a project only traffic model run, where the project's trips are distributed and assigned along a loaded highway network. This procedure isolates the specific impact on the State highway network.

IV. TRAFFIC DATA

Prior to any fieldwork, consultation between the lead agency, Caltrans, and those preparing the TIS is recommended to reach consensus on the data and assumptions necessary for the study. The following elements are a starting point in that consideration.

A. Trip Generation

The latest edition of the Institute of Transportation Engineers' (ITE) TRIP GENERATION report should be used for trip generation forecasts. Local trip generation rates are also acceptable if appropriate validation is provided to support them.

1. Trip Generation Rates – When the land use has a limited number of studies to support the trip generation rates or when the Coefficient of Determination (R^2) is below 0.75, consultation between the lead agency, Caltrans and those preparing the TIS is recommended.
2. Pass-by Trips[6] – Pass-by trips are only considered for retail oriented development. Reductions greater than 15% requires consultation and acceptance by Caltrans. The justification for exceeding a 15% reduction should be discussed in the TIS.
3. Captured Trips[7] – Captured trip reductions greater than 5% requires consultation and acceptance by Caltrans. The justification for exceeding a 5% reduction should be discussed in the TIS.
4. Transportation Demand Management (TDM) – Consultation between the lead agency and Caltrans is essential before applying trip reduction for TDM strategies.

NOTE: Reasonable reductions to trip generation rates are considered when adjacent State highway volumes are sufficient (at least 5000 ADT) to support reductions for the land use.

B. Traffic Counts

Prior to field traffic counts, consultation between the lead agency, Caltrans and those preparing the TIS is recommended to determine the level of detail (e.g., location, signal timing, travel speeds, turning movements, etc.) required at each traffic count site. All State highway facilities within the boundaries of the TIS should be considered. Common rules for counting vehicular traffic include but are not limited to:

1. Vehicle counts should be conducted on Tuesdays, Wednesdays, or Thursdays during weeks not containing a holiday and conducted in favorable weather conditions.
2. Vehicle counts should be conducted during the appropriate peak hours (see peak hour discussion below).
3. Seasonal and weekend variations in traffic should also be considered where appropriate (i.e., recreational routes, tourist attractions, harvest season, etc.).

C. Peak Hours

To eliminate unnecessary analysis, consultation between the lead agency, Caltrans and those preparing the TIS is recommended during the early planning stages of a project. In general, the TIS should include a morning (a.m.) and an evening (p.m.) peak hour analyses. Other peak hours (e.g., 11:30 a.m. to 1:30 p.m., weekend, holidays, etc.) may also be required to determine the significance of the traffic impacts generated by a project.

---

[6] "Pass-by" trips are made as intermediate stops between an origin and a primary trip destination (i.e., home to work, home to shopping, etc.).

[7] "Captured Trips" are trips that do not enter or leave the driveways of a project's boundary within a mixed-use development.

D. Travel Forecasting (Transportation Modeling)

The local or regional traffic model should reflect the most current land use and planned improvements (i.e., where programming or funding is secured). When a general plan build-out model is not available, the closest forecast model year to build-out should be used. If a traffic model is not available, historical growth rates and current trends can be used to project future traffic volumes. The TIS should clearly describe any changes made in the model to accommodate the analysis of a proposed project.

V. TRAFFIC IMPACT ANALYSIS METHODOLOGIES

Typically, the traffic analysis methodologies for the facility types indicated below are used by Caltrans and will be accepted without prior consultation. When a State highway has saturated flows, the use of a micro-simulation model is encouraged for the analysis (please note however, the micro-simulation model must be calibrated and validated for reliable results). Other analysis methods may be accepted, however, consultation between the lead agency, Caltrans and those preparing the TIS is recommended to agree on the data necessary for the analysis.

A. Freeway Segments – Highway Capacity Manual (HCM)*, operational analysis
B. Weaving Areas – Caltrans Highway Design Manual (HDM)
C. Ramps and Ramp Junctions – HCM*, operational analysis or Caltrans HDM, Caltrans Ramp Metering Guidelines (most recent edition)
D. Multi-Lane Highways – HCM*, operational analysis
E. Two-lane Highways – HCM*, operational analysis
F. Signalized Intersections[8] – HCM*, Highway Capacity Software**, operational analysis, TRAFFIX™**, Synchro**, see footnote 8
G. Unsignalized Intersections – HCM*, operational analysis, Caltrans Traffic Manual for signal warrants if a signal is being considered
H. Transit – HCM*, operational analysis
I. Pedestrians – HCM*
J. Bicycles – HCM*
K. Caltrans Criteria/Warrants – Caltrans Traffic Manual (stop signs, traffic signals, freeway lighting, conventional highway lighting, school crossings)
L. Channelization – Caltrans guidelines for Reconstruction of Intersections, August 1985, Ichiro Fukutome

*The most current edition of the Highway Capacity Manual, Transportation Research Board, National Research Council, should be used.

****NOTE**: Caltrans does not officially advocate the use of any special software. However, consistency with the HCM is advocated in most but not all cases. The Caltrans local development review units utilize the software mentioned above. If different software or analytical techniques are used for the TIS then consultation between the lead agency, Caltrans and those preparing the TIS is recommended. Results that are significantly different than those produced with the analytical techniques above should be challenged.

---

[8] The procedures in the Highway Capacity Manual "do not explicitly address operations of closely spaced signalized intersections. Under such conditions, several unique characteristics must be considered, including spill-back potential from the downstream intersection to the upstream intersection, effects of downstream queues on upstream saturation flow rate, and unusual platoon dispersion or compression between intersections. An example of such closely spaced operations is signalized ramp terminals at urban interchanges. Queue interactions between closely spaced intersections may seriously distort the procedures in" the HCM.

VI. MITIGATION MEASURES

The TIS should provide the nexus [Nollan v. California Coastal Commission, 1987, 483 U.S. 825 (108 S.Ct. 314)] between a project and the traffic impacts to State highway facilities. The TIS should also establish the rough proportionality [Dolan v. City of Tigard, 1994, 512 U.S. 374 (114 S. Ct. 2309)] between the mitigation measures and the traffic impacts. One method for establishing the rough proportionality or a project proponent's equitable responsibility for a project's impacts is provided in Appendix "B." Consultation between the lead agency, Caltrans and those preparing the TIS is recommended to reach consensus on the mitigation measures and who will be responsible.

Mitigation measures must be included in the traffic impact analysis. This determines if a project's impacts can be eliminated or reduced to a level of insignificance. Eliminating or reducing impacts to a level of insignificance is the standard pursuant to CEQA and the National Environmental Policy Act (NEPA). The lead agency is responsible for administering the CEQA review process and has the principal authority for approving a local development proposal or land use change. Caltrans, as a responsible agency, is responsible for reviewing the TIS for errors and omissions that pertain to State highway facilities. However, the authority vested in the lead agency under CEQA does not take precedence over other authorities in law.

If the mitigation measures require work in the State highway right-of-way an encroachment permit from Caltrans will be required. This work will also be subject to Caltrans standards and specifications. Consultation between the lead agency, Caltrans and those preparing the TIS early in the planning process is strongly recommended to expedite the review of local development proposals and to reduce conflicts and misunderstandings in both the local agency CEQA review process as well as the Caltrans encroachment permit process.

APPENDIX "A"

MINIMUM CONTENTS

OF A

TRAFFIC IMPACT STUDY

MINIMUM CONTENTS OF TRAFFIC IMPACT STUDY REPORT

I. EXECUTIVE SUMMARY

II. TABLE OF CONTENTS

A. List of Figures (Maps)
B. List of Tables

III. INTRODUCTION

A. Description of the proposed project
B. Location of project
C. Site plan including all access to State highways (site plan, map)
D. Circulation network including all access to State highways (vicinity map)
E. Land use and zoning
F. Phasing plan including proposed dates of project (phase) completion
G. Project sponsor and contact person(s)
H. References to other traffic impact studies

IV. TRAFFIC ANALYSIS

A. Clearly stated assumptions
B. Existing and projected traffic volumes (including turning movements), facility geometry (including storage lengths), and traffic controls (including signal phasing and multi-signal progression where appropriate) (figure)
C. Project trip generation including references (table)
D. Project generated trip distribution and assignment (figure)
E. LOS and warrant analyses - existing conditions, cumulative conditions, and full build of general plan conditions with and without project

V. CONCLUSIONS AND RECOMMENDATIONS

A. LOS and appropriate MOE quantities of impacted facilities with and without mitigation measures
B. Mitigation phasing plan including dates of proposed mitigation measures
C. Define responsibilities for implementing mitigation measures
D. Cost estimates for mitigation measures and financing plan

VI. APPENDICES

A. Description of traffic data and how data was collected
B. Description of methodologies and assumptions used in analyses
C. Worksheets used in analyses (i.e., signal warrant, LOS, traffic count information, etc.)

APPENDIX "B"

METHODOLOGY FOR

CALCULATING EQUITABLE

MITIGATION MEASURES

METHOD FOR CALCULATING EQUITABLE MITIGATION MEASURES

The methodology below is neither intended as, nor does it establish, a legal standard for determining equitable responsibility and cost of a project's traffic impact, the intent is to provide:

1. A starting point for early discussions to address traffic mitigation equitably.
2. A means for calculating the equitable share for mitigating traffic impacts.
3. A means for establishing rough proportionality [Dolan v. City of Tigard, 1994, 512 U.S. 374 (114 S. Ct. 2309)].

The formulas should be used when:

- A project has impacts that do not immediately warrant mitigation, but their cumulative effects are significant and will require mitigating in the future.
- A project has an immediate impact and the lead agency has assumed responsibility for addressing operational improvements

NOTE: This formula is not intended for circumstances where a project proponent will be receiving a substantial benefit from the identified mitigation measures. In these cases, (e.g., mid-block access and signalization to a shopping center) the project should take full responsibility to toward providing the necessary infrastructure.

EQUITABLE SHARE RESPONSIBILITY: **Equation C-1**
NOTE: $T_E < T_B$, see explanation for T_B below.

$$P = \frac{T}{T_B - T_E}$$

Where:

P = The equitable share for the proposed project's traffic impact.
T = The vehicle trips generated by the project during the peak hour of adjacent State highway facility in vehicles per hour, vph.
T_B = The forecasted traffic volume on an impacted State highway facility at the time of general plan build-out (e.g., 20 year model or the furthest future model date feasible), vph.
T_E = The traffic volume existing on the impacted State highway facility plus other approved projects that will generate traffic that has yet to be constructed/opened, vph.

EQUITABLE COST: **Equation C-2**

$$C = P\,(C_T)$$

Where:

C = The equitable cost of traffic mitigation for the proposed project, ($). (Rounded to nearest one thousand dollars)
P = The equitable share for the project being considered.
C_T = The total cost estimate for improvements necessary to mitigate the forecasted traffic demand on the impacted State highway facility in question at general plan build-out, ($).

NOTES

1. Once the equitable share responsibility and equitable cost has been established on a per trip basis, these values can be utilized for all projects on that State highway facility until the forecasted general plan build-out model is revised.
2. Truck traffic should be converted to passenger car equivalents before utilizing these equations (see the Highway Capacity Manual for converting to passenger car equivalents).

3. If the per trip cost is not used for all subsequent projects, then the equation below will be necessary to determine the costs for individual project impact and will require some additional accounting.

Equation C-2.A

$$C = P\,(C_T - C_C)$$

Where:

C = Same as equation C-2.
P = Same as equation C-2.
C_T = Same as equation C-2.
C_C = The combined dollar contributions paid and committed prior to current project's contribution. This is necessary to provide the appropriate cost proportionality. Example: For the first project to impact the State highway facility in question since the total cost (C_T) estimate for improvements necessary to mitigate the forecasted traffic demand, C_C would be equal to zero. For the second project however, C would equal $P_2(C_T - C_1)$ and for the third project to come along C would equal $P_3[C_T - (C_1 + C_2)]$ and so on until build-out or the general plan build-out was recalculated.

APPENDIX “C”

MEASURES OF EFFECTIVENESS

BY

FACILITY TYPE

MEASURES OF EFFECTIVENESS BY FACILITY TYPE

TYPE OF FACILITY	MEASURE OF EFFECTIVENESS (MOE)
Basic Freeway Segments	Density (pc/mi/ln)
Ramps	Density (pc/mi/ln)
Ramp Terminals	Delay (sec/veh)
Multi-Lane Highways	Density (pc/mi/ln)
Two-Lane Highways	Percent-Time-Following Average Travel Speed (mi/hr)
Signalized Intersections	Control Delay per Vehicle (sec/veh)
Unsignalized Intersections	Average Control Delay per Vehicle (sec/veh)
Urban Streets	Average Travel Speed (mi/hr)

Measures of effectiveness for level of service definitions located in the most recent version of the Highway Capacity Manual, Transportation Research Board, National Research Council.

Transition between LOS "C" and LOS "D" Criteria

(Reference Highway Capacity Manual)

BASIC FREEWAY SEGMENTS @ 65 mi/hr

LOS	Maximum Density (pc/mi/ln)	Minimum Speed (mph)	Maximum v/c	Maximum Service Flow Rate (pc/hr/ln)
A	11	65.0	0.30	710
B	18	65.0	0.50	1170
C	26	64.6	0.71	1680
D	35	59.7	0.89	2090
E	45	52.2	1.00	2350

SIGNALIZED INTERSECTIONS and RAMP TERMINALS

LOS	Control Delay per Vehicle (sec/veh)
A	≤ 10
B	> 10 - 20
C	> 20 - 35
D	> 35 - 55
E	> 55 - 80
F	> 80

MULTI-LANE HIGHWAYS @ 55 mi/hr

LOS	Maximum Density (pc/mi/ln)	Minimum Speed (mph)	Maximum v/c	Maximum Service Flow Rate (pc/hr/ln)
A	11	55.0	0.29	600
B	18	55.0	0.47	990
C	26	54.9	0.68	1430
D	35	52.9	0.88	1850
E	41	51.2	1.00	2100

▪▪▪▪▪ Dotted line represents the transition between LOS "C" and LOS "D"

TWO-LANE HIGHWAYS

LOS	Percent Time-Spent-Following	Average Travel Speed (mi/hr)
A	≤ 35	> 55
B	> 35 - 50	> 50 - 55
C	> 50 - 65	> 45 - 50
D	> 65 - 80	> 40 - 45
E	> 80	≤ 40

URBAN STREETS

Urban Street Class	I	II	III	IV
Range of FFS	55 to 45 mi/hr	45 to 35 mi/hr	35 to 30 mi/hr	35 to 25 mi/hr
Typical FFS	50 mi/hr	40 mi/hr	35 mi/hr	30 mi/hr
LOS	Average Travel Speed (mi/hr)			
A	> 42	> 35	> 30	> 25
B	> 34 - 42	> 28 - 35	> 24 - 30	> 19 - 25
C	> 27 - 34	> 22 - 28	> 18 - 24	> 13 - 19
D	> 21 - 27	> 17 - 22	> 14 - 18	> 9 - 13
E	> 16 - 21	> 13 - 17	> 10 - 14	> 7 - 9
F	≤ 16	≤ 13	≤ 10	≤ 7

▪▪▪▪▪ Dotted line represents the transition between LOS "C" and LOS "D"

GRAY DAVIS
Governor

MARIA CONTRERAS-SWEET
Secretary
Business, Transportation and Housing Agency

JEFF MORALES
Director
California Department of Transportation

RANDELL H. IWASAKI
Deputy Director
Maintenance and Operations

BRIAN J. SMITH
Deputy Director
Planning and Modal Programs

JOHN A. (Jack) BODA
Chief
Division of Traffic Operations

JOAN SOLLENBERGER
Chief
Division of Transportation Planning

Additional copies of these guidelines can be copied from the internet at,
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/

APPENDIX B

- Existing - Synchro Analysis
- Existing + Project Phases 1& 2 Conditions - Synchro Analysis
- Existing + Project Phases 1-3 Conditions - Synchro Analysis

- Existing - Synchro Analysis

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	31	3	601	76	0	64
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)	34	3	653	83	0	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	723	653			736	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	636	559			651	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	99			100	
cM capacity (veh/h)	398	476			842	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	37	653	83	0	70
Volume Left	34	0	0	0	0
Volume Right	3	0	83	0	0
cSH	403	1700	1700	1700	1700
Volume to Capacity	0.09	0.38	0.05	0.00	0.04
Queue Length 95th (ft)	8	0	0	0	0
Control Delay (s)	14.8	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	14.8	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	66	0	84	11	2	418
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)	72	0	91	12	2	454
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked						
vC, conflicting volume	550	91			103	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	91			103	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	100			100	
cM capacity (veh/h)	495	966			1489	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	72	91	12	2	454
Volume Left	72	0	0	2	0
Volume Right	0	0	12	0	0
cSH	495	1700	1700	1489	1700
Volume to Capacity	0.14	0.05	0.01	0.00	0.27
Queue Length 95th (ft)	13	0	0	0	0
Control Delay (s)	13.5	0.0	0.0	7.4	0.0
Lane LOS	B			A	
Approach Delay (s)	13.5	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	0	16	1	1	1	676	93	1
Turn Type	NA	Perm	NA	Perm	Perm	NA	NA	Perm
Protected Phases	4		8			2	6	
Permitted Phases		8		8	2			6
Detector Phase	4	8	8	8	2	2	6	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)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	39.4	39.4	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 38.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↑	↱	↰	↱		↰	↑	↱
Volume (vph)	0	0	2	16	1	1	1	676	19	0	93	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	4.5			4.5	4.5
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt		0.85		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1583		1770	1863	1583	1770	1855			1863	1583
Flt Permitted		1.00		1.00	1.00	1.00	0.69	1.00			1.00	1.00
Satd. Flow (perm)		1583		1863	1863	1583	1288	1855			1863	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)	0	0	2	17	1	1	1	735	21	0	101	1
RTOR Reduction (vph)	0	2	0	0	0	1	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	17	1	0	1	755	0	0	101	1
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)		0.9		0.9	0.9	0.9	32.3	32.3			32.3	32.3
Effective Green, g (s)		0.9		0.9	0.9	0.9	32.3	32.3			32.3	32.3
Actuated g/C Ratio		0.02		0.02	0.02	0.02	0.77	0.77			0.77	0.77
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	4.5			4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		33		39	39	33	985	1419			1425	1211
v/s Ratio Prot		0.00			0.00			c0.41			0.05	
v/s Ratio Perm				c0.01		0.00	0.00					0.00
v/c Ratio		0.00		0.44	0.03	0.00	0.00	0.53			0.07	0.00
Uniform Delay, d1		20.2		20.4	20.2	20.2	1.2	2.0			1.2	1.2
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		7.6	0.3	0.0	0.0	0.4			0.0	0.0
Delay (s)		20.2		28.0	20.5	20.2	1.2	2.3			1.2	1.2
Level of Service		C		C	C	C	A	A			A	A
Approach Delay (s)		20.2			27.2			2.3			1.2	
Approach LOS		C			C			A			A	

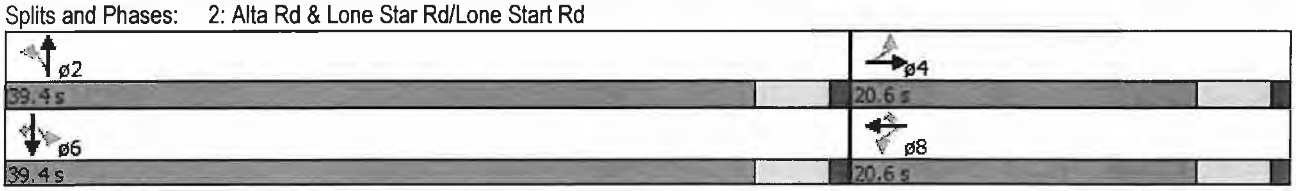
Intersection Summary			
HCM 2000 Control Delay	2.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	9.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBT	SBT
Lane Configurations						
Volume (vph)	0	9	1	1	94	492
Turn Type	NA	Perm	NA	Perm	NA	NA
Protected Phases	4		8		2	6
Permitted Phases		8		8		
Detector Phase	4	8	8	8	2	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 32.9
Natural Cycle: 45
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd



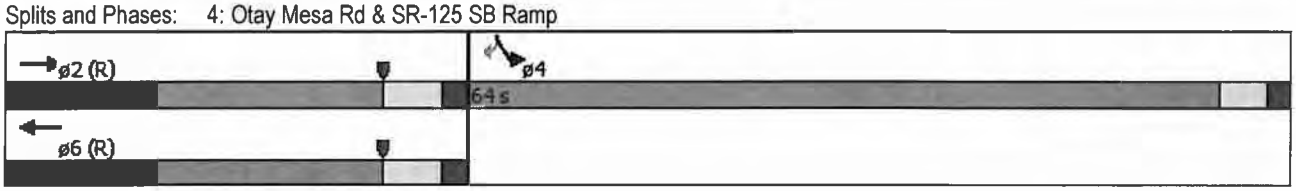
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	1	9	1	1	0	94	6	0	492	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5		4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00	1.00		1.00			1.00	
Frt		0.85		1.00	1.00	0.85		0.99			1.00	
Flt Protected		1.00		0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)		1583		1770	1863	1583		1845			1863	
Flt Permitted		1.00		1.00	1.00	1.00		1.00			1.00	
Satd. Flow (perm)		1583		1863	1863	1583		1845			1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1	10	1	1	0	102	7	0	535	0
RTOR Reduction (vph)	0	1	0	0	0	1	0	2	0	0	0	0
Lane Group Flow (vph)	0	0	0	10	1	0	0	107	0	0	535	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)		0.9		0.9	0.9	0.9		26.6			26.6	
Effective Green, g (s)		0.9		0.9	0.9	0.9		26.6			26.6	
Actuated g/C Ratio		0.02		0.02	0.02	0.02		0.73			0.73	
Clearance Time (s)		4.5		4.5	4.5	4.5		4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		39		45	45	39		1344			1357	
v/s Ratio Prot		0.00			0.00			0.06			c0.29	
v/s Ratio Perm				c0.01		0.00						
v/c Ratio		0.00		0.22	0.02	0.00		0.08			0.39	
Uniform Delay, d1		17.4		17.5	17.4	17.4		1.4			1.9	
Progression Factor		1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0		2.5	0.2	0.0		0.0			0.2	
Delay (s)		17.4		20.0	17.6	17.4		1.5			2.1	
Level of Service		B		B	B	B		A			A	
Approach Delay (s)		17.4			19.5			1.5			2.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	36.5	Sum of lost time (s)	9.0
Intersection Capacity Utilization	40.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Volume (vph)	305	102	474	401
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Volume (vph)	0	305	102	0	474	401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	332	111	0	515	436
RTOR Reduction (vph)	0	0	0	0	0	181
Lane Group Flow (vph)	0	332	111	0	515	255
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.07	0.02		0.15	
v/s Ratio Perm						c0.16
v/c Ratio		0.22	0.07		0.26	0.28
Uniform Delay, d1		26.7	25.6		10.2	10.3
Progression Factor		0.67	0.92		1.00	1.00
Incremental Delay, d2		0.3	0.1		0.3	0.7
Delay (s)		18.3	23.6		10.5	11.1
Level of Service		B	C		B	B
Approach Delay (s)		18.3	23.6		10.7	
Approach LOS		B	C		B	

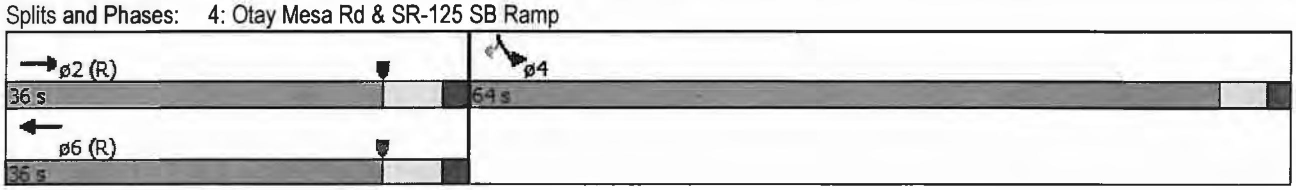
Intersection Summary			
HCM 2000 Control Delay	13.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Volume (vph)	292	246	112	236
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	292	246	0	112	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	317	267	0	122	257
RTOR Reduction (vph)	0	0	0	0	0	107
Lane Group Flow (vph)	0	317	267	0	122	150
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.06	0.05		0.04	
v/s Ratio Perm						c0.09
v/c Ratio		0.21	0.18		0.06	0.16
Uniform Delay, d1		26.7	26.4		9.0	9.6
Progression Factor		0.73	0.92		1.00	1.00
Incremental Delay, d2		0.3	0.3		0.1	0.4
Delay (s)		19.8	24.6		9.0	9.9
Level of Service		B	C		A	A
Approach Delay (s)		19.8	24.6		9.6	
Approach LOS		B	C		A	

Intersection Summary			
HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	29.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	61	714	102	36
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp

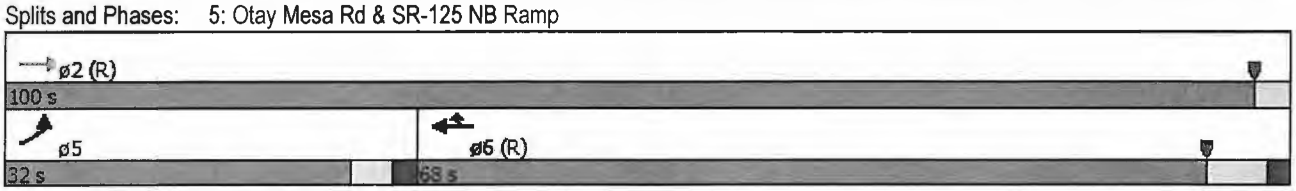
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	61	714	102	36	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.99	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4769	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4769	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	776	111	39	0	0
RTOR Reduction (vph)	0	0	1	6	0	0
Lane Group Flow (vph)	66	776	116	27	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	6.2	100.0	81.9	81.9		
Effective Green, g (s)	6.2	100.0	81.9	81.9		
Actuated g/C Ratio	0.06	1.00	0.82	0.82		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	212	3539	3905	1115		
v/s Ratio Prot	0.02		0.02			
v/s Ratio Perm		c0.22		0.02		
v/c Ratio	0.31	0.22	0.03	0.02		
Uniform Delay, d1	44.9	0.0	1.7	1.7		
Progression Factor	1.24	1.00	1.00	1.00		
Incremental Delay, d2	0.8	0.1	0.0	0.0		
Delay (s)	56.6	0.1	1.7	1.7		
Level of Service	E	A	A	A		
Approach Delay (s)		4.6	1.7		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	158	236	241	194
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp



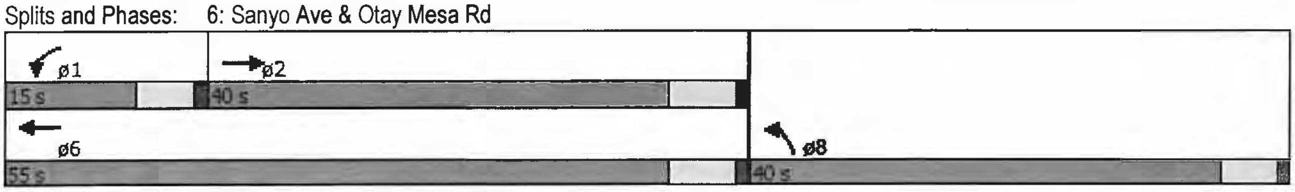
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↰	↑↑	↑↑↑↱	↱		
Volume (vph)	158	236	241	194	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.96	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4602	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4602	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	257	262	211	0	0
RTOR Reduction (vph)	0	0	23	24	0	0
Lane Group Flow (vph)	172	257	342	84	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	10.4	100.0	77.7	77.7		
Effective Green, g (s)	10.4	100.0	77.7	77.7		
Actuated g/C Ratio	0.10	1.00	0.78	0.78		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	357	3539	3575	1058		
v/s Ratio Prot	c0.05		c0.07			
v/s Ratio Perm		0.07		0.06		
v/c Ratio	0.48	0.07	0.10	0.08		
Uniform Delay, d1	42.3	0.0	2.7	2.6		
Progression Factor	0.69	1.00	1.00	1.00		
Incremental Delay, d2	1.0	0.0	0.1	0.1		
Delay (s)	30.3	0.0	2.7	2.8		
Level of Service	C	A	A	A		
Approach Delay (s)		12.2	2.8		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	29.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	351	4	73	63
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 30.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	351	350	4	73	63	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3274		1770	1863	3404	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3274		1770	1863	3404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	382	380	4	79	68	8
RTOR Reduction (vph)	171	0	0	0	7	0
Lane Group Flow (vph)	591	0	4	79	69	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	15.2		0.5	21.0	3.9	
Effective Green, g (s)	15.2		0.5	21.0	3.9	
Actuated g/C Ratio	0.42		0.01	0.58	0.11	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1374		24	1080	366	
v/s Ratio Prot	c0.18		0.00	c0.04	c0.02	
v/s Ratio Perm						
v/c Ratio	0.43		0.17	0.07	0.19	
Uniform Delay, d1	7.4		17.6	3.3	14.7	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		1.2	0.0	0.1	
Delay (s)	7.7		18.8	3.4	14.8	
Level of Service	A		B	A	B	
Approach Delay (s)	7.7			4.1	14.8	
Approach LOS	A			A	B	

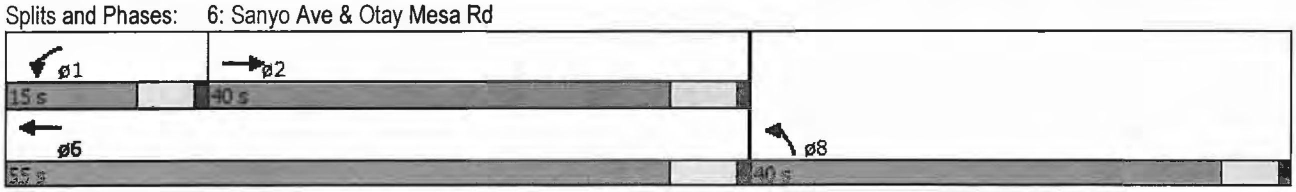
Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	36.2	Sum of lost time (s)	16.6
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	122	22	261	177
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 31
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	122	122	22	261	177	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3274		1770	1863	3399	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3274		1770	1863	3399	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	133	133	24	284	192	26
RTOR Reduction (vph)	88	0	0	0	15	0
Lane Group Flow (vph)	178	0	24	284	203	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	12.1		0.7	18.1	6.1	
Effective Green, g (s)	12.1		0.7	18.1	6.1	
Actuated g/C Ratio	0.34		0.02	0.51	0.17	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1115		34	949	584	
v/s Ratio Prot	0.05		0.01	c0.15	c0.06	
v/s Ratio Perm						
v/c Ratio	0.16		0.71	0.30	0.35	
Uniform Delay, d1	8.2		17.3	5.0	12.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		42.4	0.2	0.1	
Delay (s)	8.2		59.7	5.2	13.1	
Level of Service	A		E	A	B	
Approach Delay (s)	8.2			9.5	13.1	
Approach LOS	A			A	B	

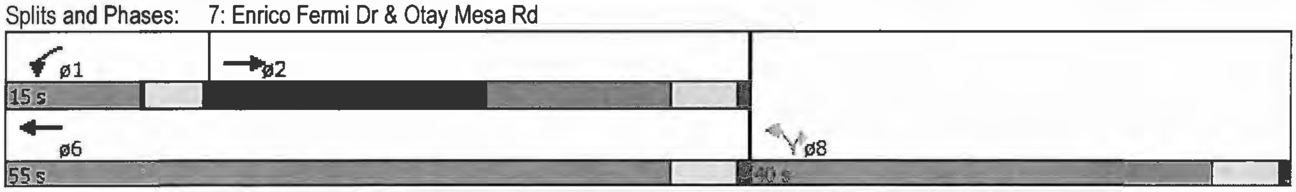
Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	35.5	Sum of lost time (s)	16.6
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	336	79	48	19	345
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	15.0	55.0	40.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%	42.1%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 44.1
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd



Movement	[illegible]	[illegible]	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	336	25	79	48	19	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1845		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	365	27	86	52	21	375
RTOR Reduction (vph)	3	0	0	0	0	313
Lane Group Flow (vph)	389	0	86	52	21	62
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	16.4		4.1	25.3	7.4	7.4
Effective Green, g (s)	16.4		4.1	25.3	7.4	7.4
Actuated g/C Ratio	0.37		0.09	0.57	0.17	0.17
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	676		162	1054	293	262
v/s Ratio Prot	c0.21		c0.05	0.03		
v/s Ratio Perm					0.01	c0.04
v/c Ratio	0.58		0.53	0.05	0.07	0.24
Uniform Delay, d1	11.4		19.4	4.3	15.7	16.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3		1.7	0.0	0.0	0.2
Delay (s)	12.6		21.1	4.4	15.8	16.4
Level of Service	B		C	A	B	B
Approach Delay (s)	12.6			14.8	16.3	
Approach LOS	B			B	B	

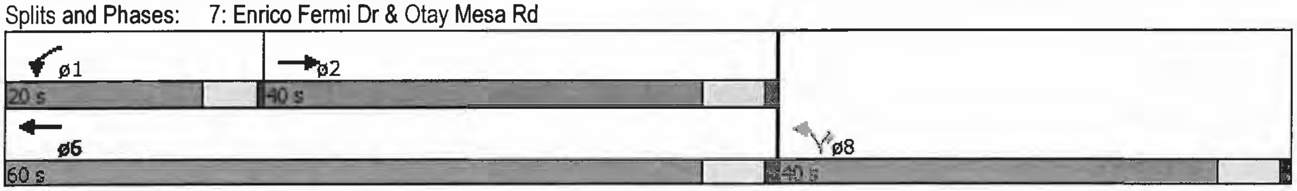
Intersection Summary			
HCM 2000 Control Delay	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	44.7	Sum of lost time (s)	16.8
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	88	395	271	18	100
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	20.0	60.0	40.0	40.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%	40.0%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 47.3
Natural Cycle: 105
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	88	37	395	271	18	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1789		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1789		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	40	429	295	20	109
RTOR Reduction (vph)	18	0	0	0	0	97
Lane Group Flow (vph)	118	0	429	295	20	12
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	10.1		16.0	30.9	5.5	5.5
Effective Green, g (s)	10.1		16.0	30.9	5.5	5.5
Actuated g/C Ratio	0.21		0.33	0.64	0.11	0.11
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	373		585	1189	201	179
v/s Ratio Prot	c0.07		c0.24	0.16		
v/s Ratio Perm					c0.01	0.01
v/c Ratio	0.32		0.73	0.25	0.10	0.07
Uniform Delay, d1	16.2		14.3	3.8	19.2	19.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6		4.1	0.1	0.1	0.1
Delay (s)	16.8		18.4	3.9	19.3	19.2
Level of Service	B		B	A	B	B
Approach Delay (s)	16.8			12.5	19.2	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	16.8
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	688	0	0	2	0	113
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	748	0	0	2	0	123

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	748	2	123
Volume Left (vph)	748	0	0
Volume Right (vph)	0	0	123
Hadj (s)	0.23	0.03	-0.57
Departure Headway (s)	4.5	6.0	5.1
Degree Utilization, x	0.93	0.00	0.18
Capacity (veh/h)	794	585	687
Control Delay (s)	37.7	9.0	9.2
Approach Delay (s)	37.7	9.0	9.2
Approach LOS	E	A	A

Intersection Summary			
Delay	33.6		
Level of Service	D		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	98	0	2	0	0	505
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	0	2	0	0	549

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	107	2	549
Volume Left (vph)	107	2	0
Volume Right (vph)	0	0	549
Hadj (s)	0.23	0.23	-0.57
Departure Headway (s)	5.2	4.9	3.6
Degree Utilization, x	0.15	0.00	0.55
Capacity (veh/h)	630	688	975
Control Delay (s)	9.1	7.9	11.1
Approach Delay (s)	9.1	7.9	11.1
Approach LOS	A	A	B

Intersection Summary			
Delay	10.7		
Level of Service	B		
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	157	385	28	68
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)	0	0	171	418	30	74
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	827	67	104			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	827	67	104			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	89			
cM capacity (veh/h)	302	996	1487			

Direction, Lane #	NB 1	SB 1
Volume Total	589	104
Volume Left	171	0
Volume Right	0	74
cSH	1487	1700
Volume to Capacity	0.11	0.06
Queue Length 95th (ft)	10	0
Control Delay (s)	3.1	0.0
Lane LOS	A	
Approach Delay (s)	3.1	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	210	152	86	364
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)	0	0	228	165	93	396
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	913	291	489			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	913	291	489			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	79			
cM capacity (veh/h)	239	748	1074			

Direction, Lane #	NB 1	SB 1
Volume Total	393	489
Volume Left	228	0
Volume Right	0	396
cSH	1074	1700
Volume to Capacity	0.21	0.29
Queue Length 95th (ft)	20	0
Control Delay (s)	6.3	0.0
Lane LOS	A	
Approach Delay (s)	6.3	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	290	14	209	13	0	11	0	204	22	3	34	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	315	15	227	14	0	12	0	222	24	3	37	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	289	289	37	512	277	234	37			246		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	289	289	37	512	277	234	37			246		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	52	98	78	96	100	99	100			100		
cM capacity (veh/h)	652	619	1035	361	629	805	1574			1320		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	315	242	14	12	246	40
Volume Left	315	0	14	0	0	3
Volume Right	0	227	0	12	24	0
cSH	652	993	361	805	1700	1320
Volume to Capacity	0.48	0.24	0.04	0.01	0.14	0.00
Queue Length 95th (ft)	66	24	3	1	0	0
Control Delay (s)	15.6	9.8	15.4	9.5	0.0	0.6
Lane LOS	C	A	C	A		A
Approach Delay (s)	13.1		12.7		0.0	0.6
Approach LOS	B		B			

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱	↰		↱		↑↱			↰↓	
Volume (veh/h)	86	5	73	13	0	24	0	303	11	5	100	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	5	79	14	0	26	0	329	12	5	109	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	481	461	109	537	455	335	109			341		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	481	461	109	537	455	335	109			341		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	80	99	92	97	100	96	100			100		
cM capacity (veh/h)	475	495	945	412	499	707	1482			1218		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	93	85	14	26	341	114
Volume Left	93	0	14	0	0	5
Volume Right	0	79	0	26	12	0
cSH	475	893	412	707	1700	1218
Volume to Capacity	0.20	0.09	0.03	0.04	0.20	0.00
Queue Length 95th (ft)	18	8	3	3	0	0
Control Delay (s)	14.4	9.5	14.1	10.3	0.0	0.4
Lane LOS	B	A	B	B		A
Approach Delay (s)	12.1		11.6		0.0	0.4
Approach LOS	B		B			

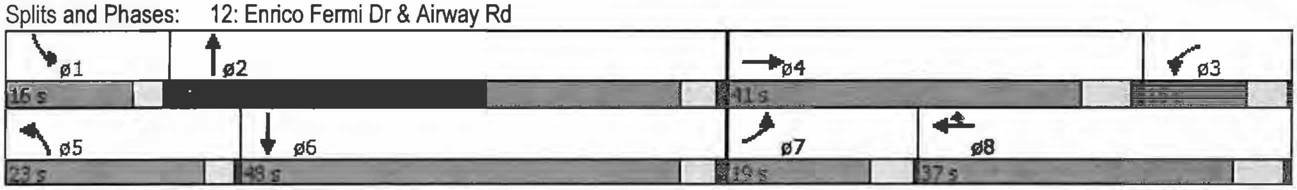
Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↰	↑↱	↰	↑	↱	↰	↑↱	↰	↑↱
Volume (vph)	32	7	5	10	21	54	208	25	127
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	19.0	41.0	15.0	37.0	37.0	23.0	55.0	16.0	48.0
Total Split (%)	15.0%	32.3%	11.8%	29.1%	29.1%	18.1%	43.3%	12.6%	37.8%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

Cycle Length: 127
Actuated Cycle Length: 41.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↱		↰	↑↱	
Volume (vph)	32	7	20	5	10	21	54	208	12	25	127	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3150		1770	1863	1583	1770	3510		1770	3316	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3150		1770	1863	1583	1770	3510		1770	3316	
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)	35	8	22	5	11	23	59	226	13	27	138	100
RTOR Reduction (vph)	0	21	0	0	0	21	0	2	0	0	51	0
Lane Group Flow (vph)	35	9	0	5	11	2	59	237	0	27	187	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	0.7	3.5		1.2	4.0	4.0	2.5	27.3		0.7	25.5	
Effective Green, g (s)	0.7	3.5		1.2	4.0	4.0	2.5	27.3		0.7	25.5	
Actuated g/C Ratio	0.01	0.07		0.02	0.08	0.08	0.05	0.53		0.01	0.49	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	24	213		41	144	122	85	1857		24	1638	
v/s Ratio Prot	c0.02	0.00		c0.00	c0.01		c0.03	c0.07		0.02	0.06	
v/s Ratio Perm						0.00						
v/c Ratio	1.46	0.04		0.12	0.08	0.01	0.69	0.13		1.12	0.11	
Uniform Delay, d1	25.4	22.5		24.7	22.1	22.0	24.2	6.1		25.4	7.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	347.8	0.1		1.3	0.3	0.1	17.9	0.0		225.0	0.0	
Delay (s)	373.2	22.6		26.0	22.4	22.0	42.1	6.2		250.4	7.0	
Level of Service	F	C		C	C	C	D	A		F	A	
Approach Delay (s)		211.4			22.6			13.3			31.8	
Approach LOS		F			C			B			C	

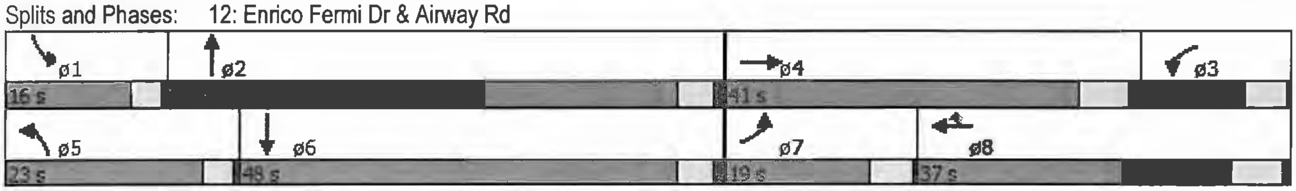
Intersection Summary			
HCM 2000 Control Delay	40.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	18.9
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	66	5	8	10	32	58	213	21	77
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	19.0	41.0	15.0	37.0	37.0	23.0	55.0	16.0	48.0
Total Split (%)	15.0%	32.3%	11.8%	29.1%	29.1%	18.1%	43.3%	12.6%	37.8%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

Cycle Length: 127
Actuated Cycle Length: 47.1
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↱		↰	↑↱	
Volume (vph)	66	5	15	8	10	32	58	213	17	21	77	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3135		1770	1863	1583	1770	3501		1770	3260	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3135		1770	1863	1583	1770	3501		1770	3260	
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)	72	5	16	9	11	35	63	232	18	23	84	93
RTOR Reduction (vph)	0	14	0	0	0	32	0	4	0	0	54	0
Lane Group Flow (vph)	72	7	0	9	11	3	63	246	0	23	123	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.6	7.6		1.6	4.6	4.6	4.2	26.9		0.7	23.4	
Effective Green, g (s)	4.6	7.6		1.6	4.6	4.6	4.2	26.9		0.7	23.4	
Actuated g/C Ratio	0.08	0.14		0.03	0.08	0.08	0.08	0.48		0.01	0.42	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	146	427		50	153	130	133	1690		22	1369	
v/s Ratio Prot	c0.04	0.00		c0.01	c0.01		c0.04	c0.07		0.01	0.04	
v/s Ratio Perm						0.00						
v/c Ratio	0.49	0.02		0.18	0.07	0.02	0.47	0.15		1.05	0.09	
Uniform Delay, d1	24.4	20.8		26.4	23.6	23.5	24.7	8.0		27.5	9.7	
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	0.0		1.7	0.2	0.1	1.0	0.0		206.7	0.0	
Delay (s)	25.4	20.8		28.1	23.8	23.6	25.7	8.0		234.2	9.8	
Level of Service	C	C		C	C	C	C	A		F	A	
Approach Delay (s)		24.4			24.4			11.6			35.6	
Approach LOS		C			C			B			D	

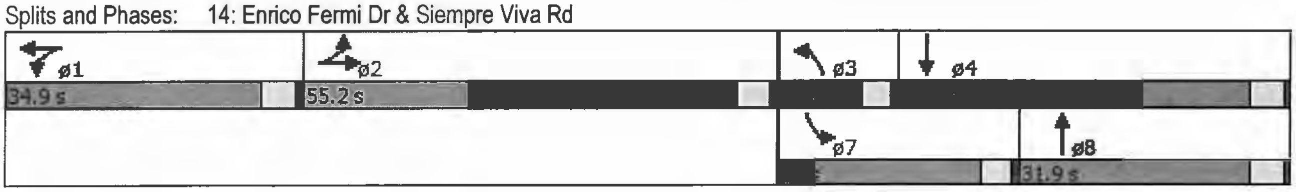
Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	55.7	Sum of lost time (s)	18.9
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	46	7	7	18	61	209	21	84
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 87.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱		↰	↑↱		↰	↑↱		↰	↑↱	
Volume (vph)	46	7	19	7	18	21	61	209	4	21	84	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		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)	3433	1660		1770	3255		1770	3530		1770	3395	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1660		1770	3255		1770	3530		1770	3395	
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)	50	8	21	8	20	23	66	227	4	23	91	34
RTOR Reduction (vph)	0	19	0	0	21	0	0	0	0	0	16	0
Lane Group Flow (vph)	50	10	0	8	22	0	66	231	0	23	109	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.2	10.2		8.1	8.1		6.2	53.6		2.3	49.7	
Effective Green, g (s)	10.2	10.2		8.1	8.1		6.2	53.6		2.3	49.7	
Actuated g/C Ratio	0.11	0.11		0.09	0.09		0.07	0.57		0.02	0.53	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	375	181		153	282		117	2027		43	1808	
v/s Ratio Prot	c0.01	0.01		0.00	c0.01		c0.04	c0.07		0.01	0.03	
v/s Ratio Perm												
v/c Ratio	0.13	0.06		0.05	0.08		0.56	0.11		0.53	0.06	
Uniform Delay, d1	37.6	37.2		39.1	39.2		42.2	9.0		45.0	10.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.4		0.3	0.3		3.7	0.1		6.3	0.1	
Delay (s)	38.0	37.6		39.4	39.4		45.9	9.2		51.2	10.6	
Level of Service	D	D		D	D		D	A		D	B	
Approach Delay (s)		37.9			39.4			17.3			16.9	
Approach LOS		D			D			B			B	

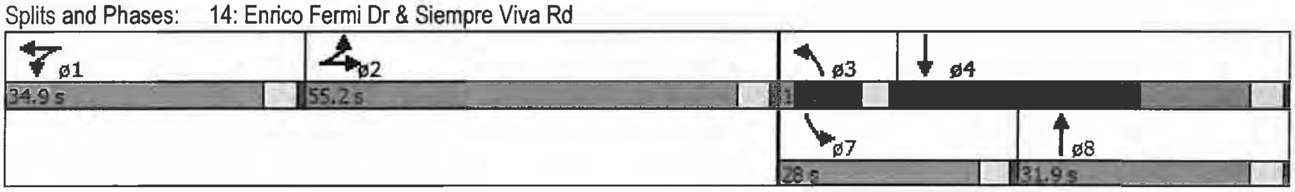
Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	93.3	Sum of lost time (s)	19.1
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	44	4	9	19	101	226	6	52
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 91.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	4	11	9	19	20	101	226	0	6	52	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1653		1770	3268		1770	3539		1770	3320	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1653		1770	3268		1770	3539		1770	3320	
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)	48	4	12	10	21	22	110	246	0	7	57	40
RTOR Reduction (vph)	0	11	0	0	20	0	0	0	0	0	20	0
Lane Group Flow (vph)	48	5	0	10	23	0	110	246	0	7	77	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	10.4		8.4	8.4		10.0	59.2		0.9	50.1	
Effective Green, g (s)	10.4	10.4		8.4	8.4		10.0	59.2		0.9	50.1	
Actuated g/C Ratio	0.11	0.11		0.09	0.09		0.10	0.60		0.01	0.51	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	364	175		151	280		180	2137		16	1697	
v/s Ratio Prot	c0.01	0.00		0.01	c0.01		c0.06	c0.07		0.00	0.02	
v/s Ratio Perm												
v/c Ratio	0.13	0.03		0.07	0.08		0.61	0.12		0.44	0.05	
Uniform Delay, d1	39.7	39.3		41.2	41.2		42.1	8.3		48.3	12.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2		0.4	0.3		4.3	0.1		6.8	0.1	
Delay (s)	40.2	39.5		41.6	41.5		46.4	8.4		55.1	12.0	
Level of Service	D	D		D	D		D	A		E	B	
Approach Delay (s)		40.0			41.6			20.1			14.9	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

- Existing + Project Phases 1& 2 Conditions - Synchro Analysis

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	89	3	601	170	0	64
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)	97	3	653	185	0	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	723	653			838	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	610	530			742	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	76	99			100	
cM capacity (veh/h)	400	479			755	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	100	653	185	0	70
Volume Left	97	0	0	0	0
Volume Right	3	0	185	0	0
cSH	402	1700	1700	1700	1700
Volume to Capacity	0.25	0.38	0.11	0.00	0.04
Queue Length 95th (ft)	24	0	0	0	0
Control Delay (s)	16.9	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	16.9	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	160	0	84	83	2	418
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)	174	0	91	90	2	454
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked						
vC, conflicting volume	550	91			182	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	91			182	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	65	100			100	
cM capacity (veh/h)	495	966			1394	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	174	91	90	2	454
Volume Left	174	0	0	2	0
Volume Right	0	0	90	0	0
cSH	495	1700	1700	1394	1700
Volume to Capacity	0.35	0.05	0.05	0.00	0.27
Queue Length 95th (ft)	39	0	0	0	0
Control Delay (s)	16.2	0.0	0.0	7.6	0.0
Lane LOS	C			A	
Approach Delay (s)	16.2	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	3	0	16	1	4	1	764	2	148	3
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	4	4	8	8	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	4.0
Minimum Split (s)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	20.6	39.4	39.4	39.4	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%	65.7%
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)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Min	Min	Min	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 42
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	0	2	16	1	4	1	764	19	2	148	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	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		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1856		1770	1863	1583
Flt Permitted	1.00	1.00		1.00	1.00	1.00	0.66	1.00		0.29	1.00	1.00
Satd. Flow (perm)	1863	1583		1863	1863	1583	1220	1856		539	1863	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)	3	0	2	17	1	4	1	830	21	2	161	3
RTOR Reduction (vph)	0	2	0	0	0	4	0	1	0	0	0	1
Lane Group Flow (vph)	3	0	0	17	1	0	1	850	0	2	161	2
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	2.2	2.2		2.2	2.2	2.2	33.6	33.6		33.6	33.6	33.6
Effective Green, g (s)	2.2	2.2		2.2	2.2	2.2	33.6	33.6		33.6	33.6	33.6
Actuated g/C Ratio	0.05	0.05		0.05	0.05	0.05	0.75	0.75		0.75	0.75	0.75
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
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)	91	77		91	91	77	915	1392		404	1397	1187
v/s Ratio Prot		0.00			0.00			c0.46			0.09	
v/s Ratio Perm	0.00			c0.01		0.00	0.00			0.00		0.00
v/c Ratio	0.03	0.00		0.19	0.01	0.00	0.00	0.61		0.00	0.12	0.00
Uniform Delay, d1	20.3	20.3		20.4	20.3	20.3	1.4	2.6		1.4	1.5	1.4
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	0.1	0.0		1.0	0.0	0.0	0.0	0.8		0.0	0.0	0.0
Delay (s)	20.4	20.3		21.4	20.3	20.3	1.4	3.4		1.4	1.6	1.4
Level of Service	C	C		C	C	C	A	A		A	A	A
Approach Delay (s)		20.4			21.2			3.4			1.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	2	0	9	1	3	162	3	580	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		8		6		6
Detector Phase	4	4	8	8	8	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)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	20.6	39.4	39.4	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
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)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Min	Min	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 35.3
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↑	↱		↱		↰	↑	↱
Volume (vph)	2	0	1	9	1	3	0	162	6	3	580	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85		0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583		1852		1770	1863	1583
Flt Permitted	1.00	1.00		1.00	1.00	1.00		1.00		0.64	1.00	1.00
Satd. Flow (perm)	1863	1583		1863	1863	1583		1852		1196	1863	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)	2	0	1	10	1	3	0	176	7	3	630	3
RTOR Reduction (vph)	0	1	0	0	0	3	0	2	0	0	0	1
Lane Group Flow (vph)	2	0	0	10	1	0	0	181	0	3	630	2
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	0.9	0.9		0.9	0.9	0.9		29.0		29.0	29.0	29.0
Effective Green, g (s)	0.9	0.9		0.9	0.9	0.9		29.0		29.0	29.0	29.0
Actuated g/C Ratio	0.02	0.02		0.02	0.02	0.02		0.75		0.75	0.75	0.75
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5		4.5	4.5	4.5
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)	43	36		43	43	36		1380		891	1388	1180
v/s Ratio Prot		0.00			0.00			0.10			c0.34	
v/s Ratio Perm	0.00			c0.01		0.00				0.00		0.00
v/c Ratio	0.05	0.00		0.23	0.02	0.00		0.13		0.00	0.45	0.00
Uniform Delay, d1	18.6	18.6		18.7	18.6	18.6		1.4		1.3	1.9	1.3
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.0		2.8	0.2	0.0		0.0		0.0	0.2	0.0
Delay (s)	19.0	18.6		21.4	18.8	18.6		1.4		1.3	2.1	1.3
Level of Service	B	B		C	B	B		A		A	A	A
Approach Delay (s)		18.9			20.6			1.4			2.1	
Approach LOS		B			C			A			A	

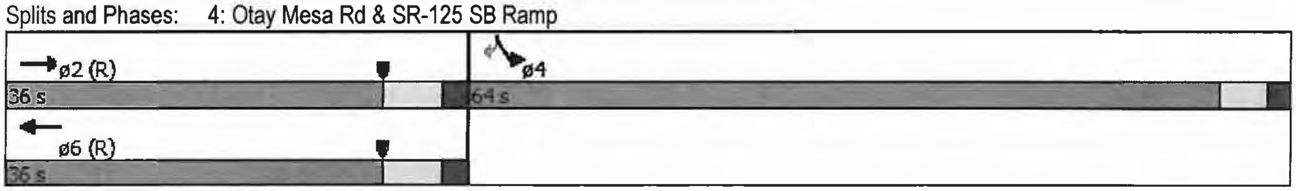
Intersection Summary			
HCM 2000 Control Delay	2.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	38.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations	↑↑↑	↑↑↑	↰↰	↱
Volume (vph)	336	121	485	401
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Volume (vph)	0	336	121	0	485	401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	365	132	0	527	436
RTOR Reduction (vph)	0	0	0	0	0	181
Lane Group Flow (vph)	0	365	132	0	527	255
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.07	0.03		0.15	
v/s Ratio Perm						c0.16
v/c Ratio		0.25	0.09		0.26	0.28
Uniform Delay, d1		26.9	25.7		10.2	10.3
Progression Factor		0.66	0.92		1.00	1.00
Incremental Delay, d2		0.4	0.1		0.3	0.7
Delay (s)		18.3	23.8		10.5	11.1
Level of Service		B	C		B	B
Approach Delay (s)		18.3	23.8		10.8	
Approach LOS		B	C		B	

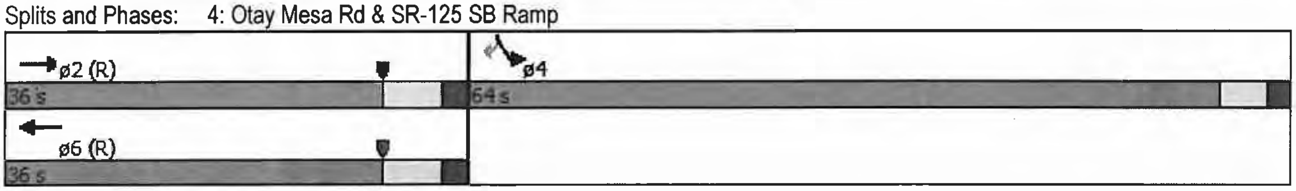
Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Volume (vph)	316	277	121	236
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Volume (vph)	0	316	277	0	121	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	343	301	0	132	257
RTOR Reduction (vph)	0	0	0	0	0	107
Lane Group Flow (vph)	0	343	301	0	132	150
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.07	0.06		0.04	
v/s Ratio Perm						c0.09
v/c Ratio		0.23	0.20		0.07	0.16
Uniform Delay, d1		26.8	26.6		9.0	9.6
Progression Factor		0.72	0.92		1.00	1.00
Incremental Delay, d2		0.4	0.3		0.1	0.4
Delay (s)		19.7	24.7		9.1	9.9
Level of Service		B	C		A	A
Approach Delay (s)		19.7	24.7		9.6	
Approach LOS		B	C		A	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	61	756	121	43
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 100

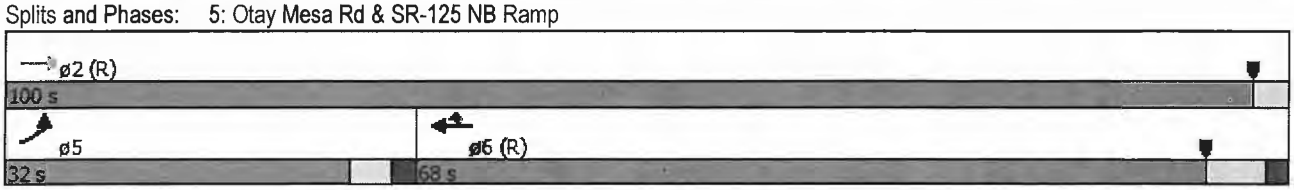
Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection

Natural Cycle: 40

Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp



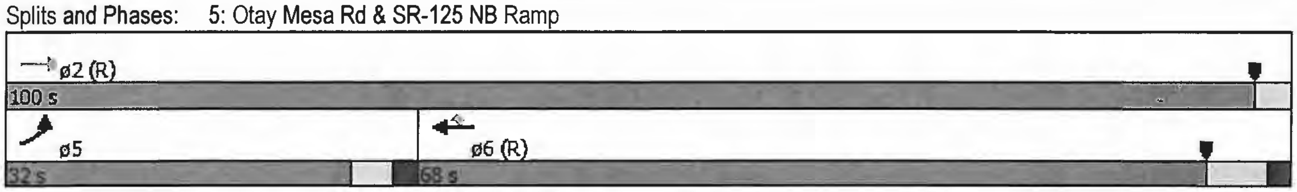
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↰	↑↑	↑↑↑↱	↱		
Volume (vph)	61	756	121	43	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.99	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4770	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4770	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	822	132	47	0	0
RTOR Reduction (vph)	0	0	1	7	0	0
Lane Group Flow (vph)	66	822	138	33	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	6.2	100.0	81.9	81.9		
Effective Green, g (s)	6.2	100.0	81.9	81.9		
Actuated g/C Ratio	0.06	1.00	0.82	0.82		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	212	3539	3906	1115		
v/s Ratio Prot	0.02		0.03			
v/s Ratio Perm		c0.23		0.02		
v/c Ratio	0.31	0.23	0.04	0.03		
Uniform Delay, d1	44.9	0.0	1.7	1.7		
Progression Factor	1.21	1.00	1.00	1.00		
Incremental Delay, d2	0.8	0.2	0.0	0.0		
Delay (s)	55.2	0.2	1.7	1.7		
Level of Service	E	A	A	A		
Approach Delay (s)		4.2	1.7		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	158	268	272	205
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	158	268	272	205	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.96	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4617	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4617	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	291	296	223	0	0
RTOR Reduction (vph)	0	0	23	26	0	0
Lane Group Flow (vph)	172	291	378	92	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	10.4	100.0	77.7	77.7		
Effective Green, g (s)	10.4	100.0	77.7	77.7		
Actuated g/C Ratio	0.10	1.00	0.78	0.78		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	357	3539	3587	1058		
v/s Ratio Prot	c0.05		c0.08			
v/s Ratio Perm		0.08		0.07		
v/c Ratio	0.48	0.08	0.11	0.09		
Uniform Delay, d1	42.3	0.0	2.7	2.7		
Progression Factor	0.69	1.00	1.00	1.00		
Incremental Delay, d2	1.0	0.0	0.1	0.2		
Delay (s)	30.2	0.0	2.8	2.8		
Level of Service	C	A	A	A		
Approach Delay (s)		11.3	2.8		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	393	6	99	63
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 32.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	393	350	6	99	63	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3289		1770	1863	3392	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3289		1770	1863	3392	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	427	380	7	108	68	11
RTOR Reduction (vph)	147	0	0	0	10	0
Lane Group Flow (vph)	660	0	7	108	69	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	16.7		0.6	22.6	3.9	
Effective Green, g (s)	16.7		0.6	22.6	3.9	
Actuated g/C Ratio	0.44		0.02	0.60	0.10	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1453		28	1113	349	
v/s Ratio Prot	c0.20		0.00	c0.06	c0.02	
v/s Ratio Perm						
v/c Ratio	0.45		0.25	0.10	0.20	
Uniform Delay, d1	7.4		18.4	3.2	15.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		1.7	0.0	0.1	
Delay (s)	7.6		20.1	3.3	15.6	
Level of Service	A		C	A	B	
Approach Delay (s)	7.6			4.3	15.6	
Approach LOS	A			A	B	

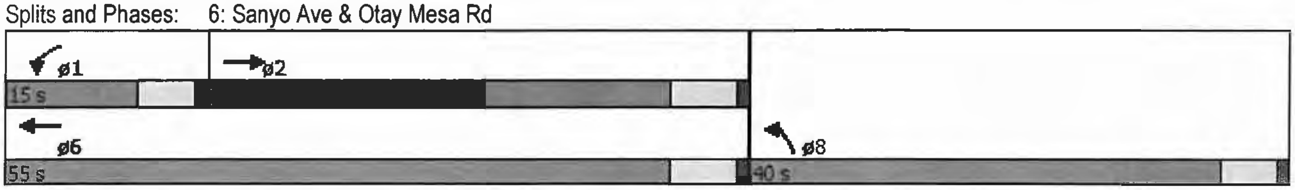
Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.8	Sum of lost time (s)	16.6
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	154	25	303	177
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 31.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	154	122	25	303	177	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3304		1770	1863	3397	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3304		1770	1863	3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	167	133	27	329	192	28
RTOR Reduction (vph)	86	0	0	0	17	0
Lane Group Flow (vph)	214	0	27	329	203	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	12.7		0.7	18.7	6.2	
Effective Green, g (s)	12.7		0.7	18.7	6.2	
Actuated g/C Ratio	0.35		0.02	0.52	0.17	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1159		34	962	581	
v/s Ratio Prot	0.06		0.02	c0.18	c0.06	
v/s Ratio Perm						
v/c Ratio	0.18		0.79	0.34	0.35	
Uniform Delay, d1	8.2		17.7	5.1	13.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		71.5	0.3	0.1	
Delay (s)	8.2		89.1	5.4	13.4	
Level of Service	A		F	A	B	
Approach Delay (s)	8.2			11.7	13.4	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	36.2	Sum of lost time (s)	16.6
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	381	104	76	19	385
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	15.0	55.0	40.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%	42.1%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary

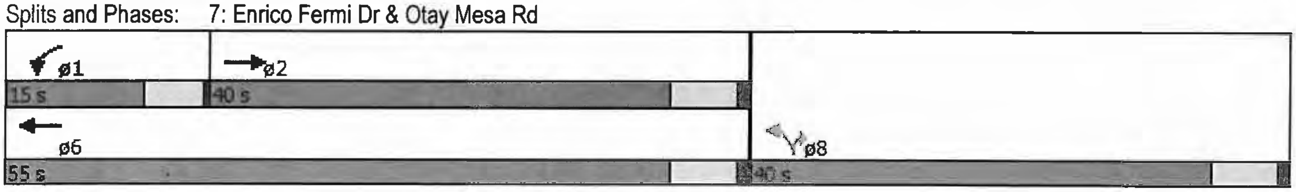
Cycle Length: 95

Actuated Cycle Length: 49.6

Natural Cycle: 95

Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	381	25	104	76	19	385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1847		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1847		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	414	27	113	83	21	418
RTOR Reduction (vph)	2	0	0	0	0	355
Lane Group Flow (vph)	439	0	113	83	21	63
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	18.8		6.4	30.0	7.5	7.5
Effective Green, g (s)	18.8		6.4	30.0	7.5	7.5
Actuated g/C Ratio	0.38		0.13	0.61	0.15	0.15
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	701		228	1129	268	239
v/s Ratio Prot	c0.24		c0.06	0.04		
v/s Ratio Perm					0.01	c0.04
v/c Ratio	0.63		0.50	0.07	0.08	0.26
Uniform Delay, d1	12.5		20.0	4.0	18.0	18.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.8		0.6	0.0	0.0	0.2
Delay (s)	14.3		20.7	4.1	18.1	18.8
Level of Service	B		C	A	B	B
Approach Delay (s)	14.3			13.6	18.7	
Approach LOS	B			B	B	

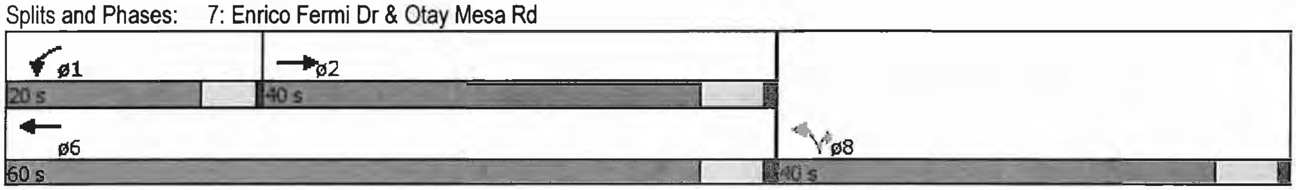
Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	49.5	Sum of lost time (s)	16.8
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	123	435	316	18	131
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	20.0	60.0	40.0	40.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%	40.0%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 48.2
Natural Cycle: 105
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	123	37	435	316	18	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1805		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1805		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	134	40	473	343	20	142
RTOR Reduction (vph)	12	0	0	0	0	126
Lane Group Flow (vph)	162	0	473	343	20	16
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	11.0		16.0	31.8	5.6	5.6
Effective Green, g (s)	11.0		16.0	31.8	5.6	5.6
Actuated g/C Ratio	0.22		0.32	0.64	0.11	0.11
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	401		573	1199	200	179
v/s Ratio Prot	c0.09		c0.27	0.18		
v/s Ratio Perm					c0.01	0.01
v/c Ratio	0.40		0.83	0.29	0.10	0.09
Uniform Delay, d1	16.4		15.4	3.8	19.6	19.6
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8		9.0	0.2	0.1	0.1
Delay (s)	17.2		24.4	4.0	19.7	19.7
Level of Service	B		C	A	B	B
Approach Delay (s)	17.2			15.8	19.7	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	16.8
Intersection Capacity Utilization	50.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	774	0	0	5	2	166
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	841	0	0	5	2	180

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	841	5	183
Volume Left (vph)	841	0	0
Volume Right (vph)	0	0	180
Hadj (s)	0.23	0.03	-0.56
Departure Headway (s)	4.7	6.1	5.2
Degree Utilization, x	1.0	0.01	0.27
Capacity (veh/h)	767	572	685
Control Delay (s)	79.5	9.2	10.1
Approach Delay (s)	79.5	9.2	10.1
Approach LOS	F	A	B

Intersection Summary			
Delay	66.8		
Level of Service	F		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	164	0	2	2	3	591
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	178	0	2	2	3	642

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	178	4	646
Volume Left (vph)	178	2	0
Volume Right (vph)	0	0	642
Hadj (s)	0.23	0.13	-0.56
Departure Headway (s)	5.5	5.2	3.9
Degree Utilization, x	0.27	0.01	0.69
Capacity (veh/h)	601	638	907
Control Delay (s)	10.5	8.2	15.1
Approach Delay (s)	10.5	8.2	15.1
Approach LOS	B	A	C

Intersection Summary			
Delay	14.1		
Level of Service	B		
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	157	425	36	85
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)	0	0	171	462	39	92
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	889	85	132			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	889	85	132			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	88			
cM capacity (veh/h)	277	974	1454			

Direction, Lane #	NB 1	SB 1
Volume Total	633	132
Volume Left	171	0
Volume Right	0	92
cSH	1454	1700
Volume to Capacity	0.12	0.08
Queue Length 95th (ft)	10	0
Control Delay (s)	3.0	0.0
Lane LOS	A	
Approach Delay (s)	3.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	210	183	98	392
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)	0	0	228	199	107	426
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	975	320	533			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	975	320	533			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	78			
cM capacity (veh/h)	217	721	1035			

Direction, Lane #	NB 1	SB 1
Volume Total	427	533
Volume Left	228	0
Volume Right	0	426
cSH	1035	1700
Volume to Capacity	0.22	0.31
Queue Length 95th (ft)	21	0
Control Delay (s)	6.2	0.0
Lane LOS	A	
Approach Delay (s)	6.2	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱	↰		↱		↱			↰	
Volume (veh/h)	318	14	209	13	0	11	0	216	22	3	42	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	346	15	227	14	0	12	0	235	24	3	46	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	311	311	46	534	299	247	46			259		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	311	311	46	534	299	247	46			259		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	45	97	78	96	100	98	100			100		
cM capacity (veh/h)	631	602	1024	348	612	792	1562			1306		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	346	242	14	12	259	49
Volume Left	346	0	14	0	0	3
Volume Right	0	227	0	12	24	0
cSH	631	981	348	792	1700	1306
Volume to Capacity	0.55	0.25	0.04	0.02	0.15	0.00
Queue Length 95th (ft)	83	24	3	1	0	0
Control Delay (s)	17.4	9.9	15.8	9.6	0.0	0.5
Lane LOS	C	A	C	A		A
Approach Delay (s)	14.3		13.0		0.0	0.5
Approach LOS	B		B			

Intersection Summary				
Average Delay	9.5			
Intersection Capacity Utilization	Err%	ICU Level of Service		H
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰		↱	↰		↱		↱			↰	
Volume (veh/h)	108	5	73	13	0	24	0	312	11	5	112	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	5	79	14	0	26	0	339	12	5	122	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	504	484	122	560	478	345	122			351		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504	484	122	560	478	345	122			351		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	74	99	91	96	100	96	100			100		
cM capacity (veh/h)	459	481	929	397	484	698	1466			1208		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	117	85	14	26	351	127
Volume Left	117	0	14	0	0	5
Volume Right	0	79	0	26	12	0
cSH	459	877	397	698	1700	1208
Volume to Capacity	0.26	0.10	0.04	0.04	0.21	0.00
Queue Length 95th (ft)	25	8	3	3	0	0
Control Delay (s)	15.5	9.5	14.4	10.4	0.0	0.4
Lane LOS	C	A	B	B		A
Approach Delay (s)	13.0		11.8		0.0	0.4
Approach LOS	B		B			

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	39	7	5	10	21	54	214	25	130
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	19.0	41.0	15.0	37.0	37.0	23.0	55.0	16.0	48.0
Total Split (%)	15.0%	32.3%	11.8%	29.1%	29.1%	18.1%	43.3%	12.6%	37.8%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

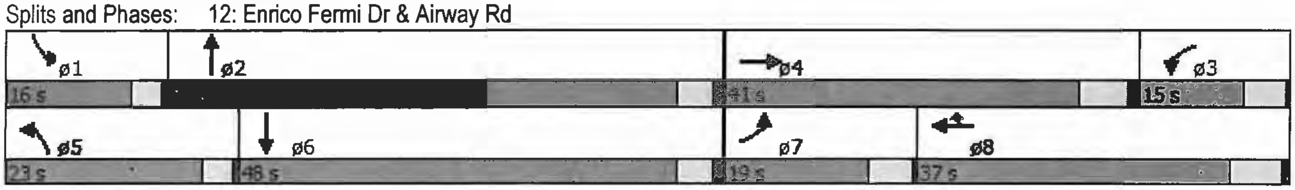
Cycle Length: 127

Actuated Cycle Length: 44.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↱		↰	↑↱	
Volume (vph)	39	7	20	5	10	21	54	214	12	25	130	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3150		1770	1863	1583	1770	3511		1770	3314	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3150		1770	1863	1583	1770	3511		1770	3314	
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)	42	8	22	5	11	23	59	233	13	27	141	104
RTOR Reduction (vph)	0	20	0	0	0	21	0	2	0	0	58	0
Lane Group Flow (vph)	42	10	0	5	11	2	59	244	0	27	187	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	2.0	5.4		1.3	4.7	4.7	4.7	28.0		0.7	24.0	
Effective Green, g (s)	2.0	5.4		1.3	4.7	4.7	4.7	28.0		0.7	24.0	
Actuated g/C Ratio	0.04	0.10		0.02	0.09	0.09	0.09	0.52		0.01	0.44	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	65	313		42	161	137	153	1810		22	1464	
v/s Ratio Prot	c0.02	0.00		0.00	c0.01		c0.03	c0.07		c0.02	0.06	
v/s Ratio Perm						0.00						
v/c Ratio	0.65	0.03		0.12	0.07	0.01	0.39	0.13		1.23	0.13	
Uniform Delay, d1	25.8	22.1		25.9	22.8	22.7	23.4	6.8		26.8	9.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.3	0.1		1.3	0.2	0.1	0.6	0.0		269.8	0.0	
Delay (s)	41.1	22.1		27.2	23.0	22.7	24.0	6.9		296.6	9.0	
Level of Service	D	C		C	C	C	C	A		F	A	
Approach Delay (s)		33.2			23.4			10.2			37.5	
Approach LOS		C			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	54.3	Sum of lost time (s)	18.9
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	71	5	8	10	32	58	217	21	83
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	19.0	41.0	15.0	37.0	37.0	23.0	55.0	16.0	48.0
Total Split (%)	15.0%	32.3%	11.8%	29.1%	29.1%	18.1%	43.3%	12.6%	37.8%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

Cycle Length: 127
Actuated Cycle Length: 47.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd

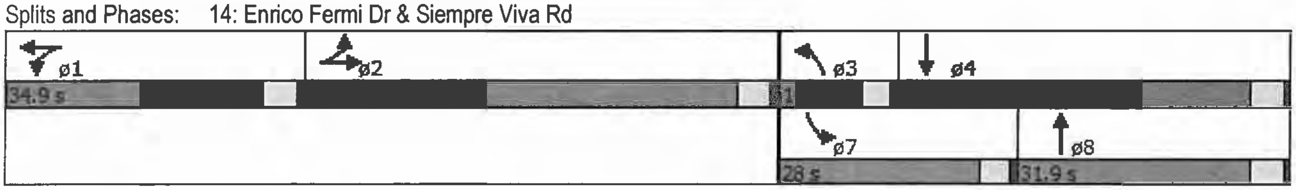
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↱		↰	↑	↱	↰	↑↑↱		↰	↑↑↱	
Volume (vph)	71	5	15	8	10	32	58	217	17	21	83	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3135		1770	1863	1583	1770	3502		1770	3258	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3135		1770	1863	1583	1770	3502		1770	3258	
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)	77	5	16	9	11	35	63	236	18	23	90	101
RTOR Reduction (vph)	0	14	0	0	0	32	0	4	0	0	59	0
Lane Group Flow (vph)	77	7	0	9	11	3	63	250	0	23	132	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.7	7.6		1.7	4.6	4.6	4.2	27.0		0.7	23.5	
Effective Green, g (s)	4.7	7.6		1.7	4.6	4.6	4.2	27.0		0.7	23.5	
Actuated g/C Ratio	0.08	0.14		0.03	0.08	0.08	0.08	0.48		0.01	0.42	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	148	426		53	153	130	132	1691		22	1369	
v/s Ratio Prot	c0.04	0.00		c0.01	c0.01		c0.04	c0.07		0.01	0.04	
v/s Ratio Perm						0.00						
v/c Ratio	0.52	0.02		0.17	0.07	0.02	0.48	0.15		1.05	0.10	
Uniform Delay, d1	24.5	20.9		26.4	23.7	23.6	24.8	8.0		27.6	9.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.0		1.5	0.2	0.1	1.0	0.0		206.7	0.0	
Delay (s)	26.0	20.9		27.9	23.9	23.7	25.8	8.1		234.3	9.8	
Level of Service	C	C		C	C	C	C	A		F	A	
Approach Delay (s)		24.9			24.4			11.6			33.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	55.9	Sum of lost time (s)	18.9
Intersection Capacity Utilization	32.6%	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)	49	7	7	18	61	209	23	84
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 87.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱		↰	↑↱		↰	↑↱		↰	↑↱	
Volume (vph)	49	7	19	7	18	24	61	209	4	23	84	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		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)	3433	1660		1770	3239		1770	3530		1770	3389	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1660		1770	3239		1770	3530		1770	3389	
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)	53	8	21	8	20	26	66	227	4	25	91	36
RTOR Reduction (vph)	0	19	0	0	24	0	0	0	0	0	17	0
Lane Group Flow (vph)	53	10	0	8	22	0	66	231	0	25	110	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.2	10.2		8.1	8.1		6.2	53.6		2.4	49.8	
Effective Green, g (s)	10.2	10.2		8.1	8.1		6.2	53.6		2.4	49.8	
Actuated g/C Ratio	0.11	0.11		0.09	0.09		0.07	0.57		0.03	0.53	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	374	181		153	280		117	2025		45	1806	
v/s Ratio Prot	c0.02	0.01		0.00	c0.01		c0.04	c0.07		0.01	0.03	
v/s Ratio Perm												
v/c Ratio	0.14	0.06		0.05	0.08		0.56	0.11		0.56	0.06	
Uniform Delay, d1	37.6	37.3		39.1	39.2		42.3	9.1		45.0	10.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.4		0.3	0.3		3.7	0.1		8.2	0.1	
Delay (s)	38.2	37.7		39.5	39.5		46.0	9.2		53.1	10.6	
Level of Service	D	D		D	D		D	A		D	B	
Approach Delay (s)		38.0			39.5			17.4			17.6	
Approach LOS		D			D			B			B	

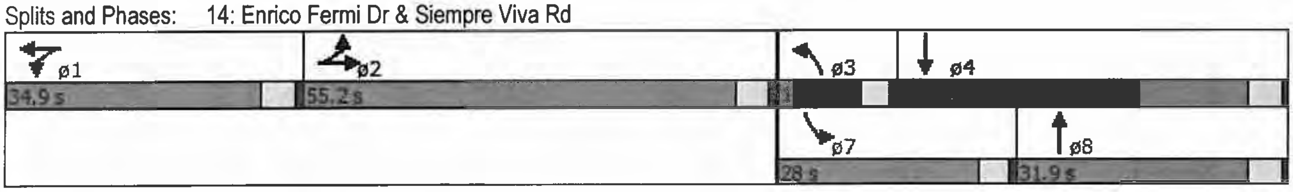
Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	19.1
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	46	4	9	19	101	226	9	52
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 91.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱		↰	↑↱		↰	↑↱		↰	↑↱	
Volume (vph)	46	4	11	9	19	22	101	226	0	9	52	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1653		1770	3256		1770	3539		1770	3311	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1653		1770	3256		1770	3539		1770	3311	
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)	50	4	12	10	21	24	110	246	0	10	57	43
RTOR Reduction (vph)	0	11	0	0	22	0	0	0	0	0	21	0
Lane Group Flow (vph)	50	5	0	10	23	0	110	246	0	10	79	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	10.4		8.4	8.4		10.0	59.1		1.0	50.1	
Effective Green, g (s)	10.4	10.4		8.4	8.4		10.0	59.1		1.0	50.1	
Actuated g/C Ratio	0.11	0.11		0.09	0.09		0.10	0.60		0.01	0.51	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	364	175		151	279		180	2134		18	1692	
v/s Ratio Prot	c0.01	0.00		0.01	c0.01		c0.06	c0.07		0.01	0.02	
v/s Ratio Perm												
v/c Ratio	0.14	0.03		0.07	0.08		0.61	0.12		0.56	0.05	
Uniform Delay, d1	39.7	39.3		41.2	41.3		42.1	8.3		48.3	12.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2		0.4	0.3		4.3	0.1		19.4	0.1	
Delay (s)	40.2	39.5		41.6	41.6		46.4	8.4		67.7	12.0	
Level of Service	D	D		D	D		D	A		E	B	
Approach Delay (s)		40.1			41.6			20.1			17.1	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

- Existing + Project Phases 1-3 Conditions - Synchro Analysis

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	142	3	601	244	0	64
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)	154	3	653	265	0	70
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	723	653			918	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	622	544			843	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	61	99			100	
cM capacity (veh/h)	399	477			702	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	158	653	265	0	70
Volume Left	154	0	0	0	0
Volume Right	3	0	265	0	0
cSH	400	1700	1700	1700	1700
Volume to Capacity	0.39	0.38	0.16	0.00	0.04
Queue Length 95th (ft)	46	0	0	0	0
Control Delay (s)	19.7	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	19.7	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	234	0	84	150	2	418
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)	254	0	91	163	2	454
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked						
vC, conflicting volume	550	91			254	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	91			254	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	49	100			100	
cM capacity (veh/h)	495	966			1311	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	254	91	163	2	454
Volume Left	254	0	0	2	0
Volume Right	0	0	163	0	0
cSH	495	1700	1700	1311	1700
Volume to Capacity	0.51	0.05	0.10	0.00	0.27
Queue Length 95th (ft)	72	0	0	0	0
Control Delay (s)	19.7	0.0	0.0	7.8	0.0
Lane LOS	C			A	
Approach Delay (s)	19.7	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	5	0	16	1	6	1	834	3	197	4
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	4	4	8	8	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	4.0
Minimum Split (s)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	20.6	39.4	39.4	39.4	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%	65.7%
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)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Min	Min	Min	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 46.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	0	2	16	1	6	1	834	19	3	197	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	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		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1856		1770	1863	1583
Flt Permitted	1.00	1.00		1.00	1.00	1.00	0.62	1.00		0.26	1.00	1.00
Satd. Flow (perm)	1863	1583		1863	1863	1583	1163	1856		484	1863	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)	5	0	2	17	1	7	1	907	21	3	214	4
RTOR Reduction (vph)	0	2	0	0	0	7	0	1	0	0	0	1
Lane Group Flow (vph)	5	0	0	17	1	0	1	927	0	3	214	3
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	2.2	2.2		2.2	2.2	2.2	38.2	38.2		38.2	38.2	38.2
Effective Green, g (s)	2.2	2.2		2.2	2.2	2.2	38.2	38.2		38.2	38.2	38.2
Actuated g/C Ratio	0.04	0.04		0.04	0.04	0.04	0.77	0.77		0.77	0.77	0.77
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
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)	82	70		82	82	70	899	1435		374	1440	1224
v/s Ratio Prot		0.00			0.00			c0.50			0.11	
v/s Ratio Perm	0.00			c0.01		0.00	0.00			0.01		0.00
v/c Ratio	0.06	0.00		0.21	0.01	0.00	0.00	0.65		0.01	0.15	0.00
Uniform Delay, d1	22.6	22.6		22.8	22.6	22.6	1.3	2.5		1.3	1.4	1.3
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	0.3	0.0		1.3	0.1	0.0	0.0	1.0		0.0	0.0	0.0
Delay (s)	22.9	22.6		24.0	22.6	22.6	1.3	3.5		1.3	1.5	1.3
Level of Service	C	C		C	C	C	A	A		A	A	A
Approach Delay (s)		22.8			23.6			3.5			1.5	
Approach LOS		C			C			A			A	

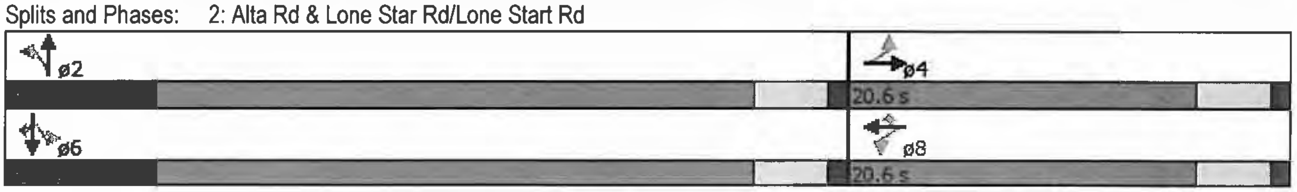
Intersection Summary			
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	49.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	4	0	9	1	5	225	5	650	5
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		8		6		6
Detector Phase	4	4	8	8	8	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)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	20.6	39.4	39.4	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
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)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Min	Min	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 36.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	4	0	1	9	1	5	0	225	6	5	650	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	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		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583		1855		1770	1863	1583
Flt Permitted	1.00	1.00		1.00	1.00	1.00		1.00		0.60	1.00	1.00
Satd. Flow (perm)	1863	1583		1863	1863	1583		1855		1123	1863	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)	4	0	1	10	1	5	0	245	7	5	707	5
RTOR Reduction (vph)	0	1	0	0	0	5	0	1	0	0	0	1
Lane Group Flow (vph)	4	0	0	10	1	0	0	251	0	5	707	4
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	0.9	0.9		0.9	0.9	0.9		30.1		30.1	30.1	30.1
Effective Green, g (s)	0.9	0.9		0.9	0.9	0.9		30.1		30.1	30.1	30.1
Actuated g/C Ratio	0.02	0.02		0.02	0.02	0.02		0.75		0.75	0.75	0.75
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5		4.5	4.5	4.5
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)	41	35		41	41	35		1395		845	1401	1191
v/s Ratio Prot		0.00			0.00			0.14			c0.38	
v/s Ratio Perm	0.00			c0.01		0.00				0.00		0.00
v/c Ratio	0.10	0.00		0.24	0.02	0.00		0.18		0.01	0.50	0.00
Uniform Delay, d1	19.2	19.1		19.2	19.1	19.1		1.4		1.2	2.0	1.2
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	0.0		3.1	0.2	0.0		0.1		0.0	0.3	0.0
Delay (s)	20.2	19.1		22.3	19.4	19.1		1.5		1.2	2.3	1.2
Level of Service	C	B		C	B	B		A		A	A	A
Approach Delay (s)		20.0			21.1			1.5			2.2	
Approach LOS		B			C			A			A	

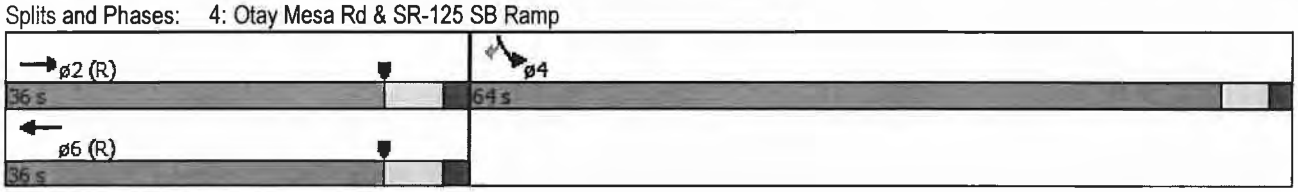
Intersection Summary			
HCM 2000 Control Delay	2.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

	→	←	↘	↙
Lane Group	EBT	WBT	SBL	SBR
Lane Configurations	↑↑↑	↑↑↑	↰↰	↱
Volume (vph)	360	139	494	401
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Volume (vph)	0	360	139	0	494	401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	391	151	0	537	436
RTOR Reduction (vph)	0	0	0	0	0	181
Lane Group Flow (vph)	0	391	151	0	537	255
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.08	0.03		0.16	
v/s Ratio Perm						c0.16
v/c Ratio		0.26	0.10		0.27	0.28
Uniform Delay, d1		27.1	25.8		10.3	10.3
Progression Factor		0.66	0.92		1.00	1.00
Incremental Delay, d2		0.4	0.1		0.3	0.7
Delay (s)		18.3	23.9		10.6	11.1
Level of Service		B	C		B	B
Approach Delay (s)		18.3	23.9		10.8	
Approach LOS		B	C		B	

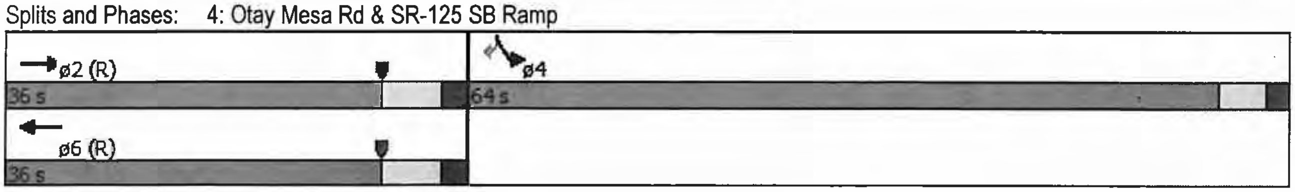
Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations	↑↑↑	↑↑↑	↰↰	↱
Volume (vph)	338	301	129	236
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp



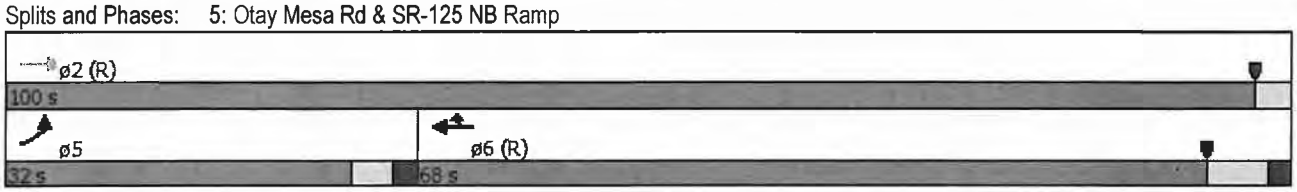
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Volume (vph)	0	338	301	0	129	236
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	367	327	0	140	257
RTOR Reduction (vph)	0	0	0	0	0	106
Lane Group Flow (vph)	0	367	327	0	140	151
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.07	0.06		0.04	
v/s Ratio Perm						c0.10
v/c Ratio		0.25	0.22		0.07	0.16
Uniform Delay, d1		26.9	26.7		9.0	9.6
Progression Factor		0.71	0.92		1.00	1.00
Incremental Delay, d2		0.4	0.3		0.1	0.4
Delay (s)		19.6	24.9		9.1	9.9
Level of Service		B	C		A	A
Approach Delay (s)		19.6	24.9		9.6	
Approach LOS		B	C		A	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	61	790	139	49
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp



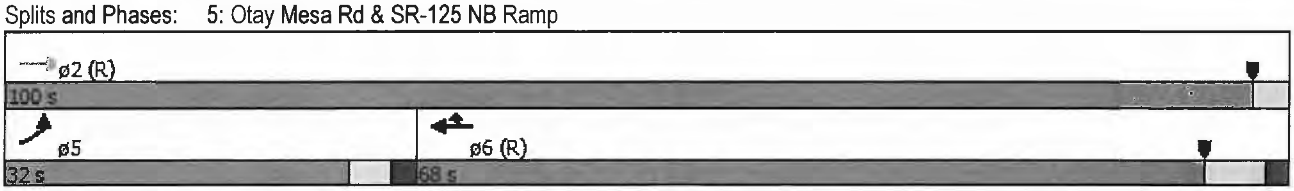
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	61	790	139	49	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.99	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4774	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4774	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	859	151	53	0	0
RTOR Reduction (vph)	0	0	1	8	0	0
Lane Group Flow (vph)	66	859	157	38	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	6.2	100.0	81.9	81.9		
Effective Green, g (s)	6.2	100.0	81.9	81.9		
Actuated g/C Ratio	0.06	1.00	0.82	0.82		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	212	3539	3909	1115		
v/s Ratio Prot	0.02		0.03			
v/s Ratio Perm		c0.24		0.03		
v/c Ratio	0.31	0.24	0.04	0.03		
Uniform Delay, d1	44.9	0.0	1.7	1.7		
Progression Factor	1.20	1.00	1.00	1.00		
Incremental Delay, d2	0.8	0.2	0.0	0.1		
Delay (s)	54.6	0.2	1.7	1.7		
Level of Service	D	A	A	A		
Approach Delay (s)		4.0	1.7		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	3.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	158	299	296	214
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↰	↑↑	↑↑↑↱	↱		
Volume (vph)	158	299	296	214	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.96	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4626	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4626	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	172	325	322	233	0	0
RTOR Reduction (vph)	0	0	24	28	0	0
Lane Group Flow (vph)	172	325	405	98	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	10.4	100.0	77.7	77.7		
Effective Green, g (s)	10.4	100.0	77.7	77.7		
Actuated g/C Ratio	0.10	1.00	0.78	0.78		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	357	3539	3594	1058		
v/s Ratio Prot	c0.05		c0.09			
v/s Ratio Perm		0.09		0.07		
v/c Ratio	0.48	0.09	0.11	0.09		
Uniform Delay, d1	42.3	0.0	2.7	2.7		
Progression Factor	0.69	1.00	1.00	1.00		
Incremental Delay, d2	1.0	0.1	0.1	0.2		
Delay (s)	30.1	0.1	2.8	2.9		
Level of Service	C	A	A	A		
Approach Delay (s)		10.5	2.8		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	6.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	427	7	123	63
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 33.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	427	350	7	123	63	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3300		1770	1863	3385	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3300		1770	1863	3385	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	464	380	8	134	68	13
RTOR Reduction (vph)	132	0	0	0	12	0
Lane Group Flow (vph)	712	0	8	134	69	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	17.9		0.6	23.8	3.9	
Effective Green, g (s)	17.9		0.6	23.8	3.9	
Actuated g/C Ratio	0.46		0.02	0.61	0.10	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1514		27	1136	338	
v/s Ratio Prot	c0.22		0.00	c0.07	c0.02	
v/s Ratio Perm						
v/c Ratio	0.47		0.30	0.12	0.21	
Uniform Delay, d1	7.3		19.0	3.2	16.1	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		2.2	0.1	0.1	
Delay (s)	7.6		21.2	3.2	16.2	
Level of Service	A		C	A	B	
Approach Delay (s)	7.6			4.3	16.2	
Approach LOS	A			A	B	

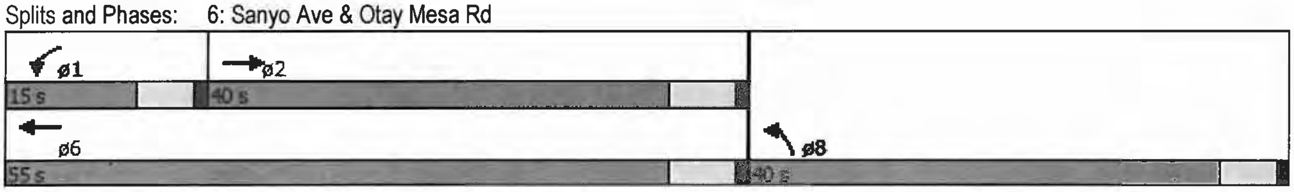
Intersection Summary			
HCM 2000 Control Delay	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	39.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	185	27	337	177
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 34.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↱		↰	↑	↰↰	
Volume (vph)	185	122	27	337	177	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.94		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3328		1770	1863	3394	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3328		1770	1863	3394	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	133	29	366	192	30
RTOR Reduction (vph)	89	0	0	0	17	0
Lane Group Flow (vph)	245	0	29	366	205	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	12.5		0.8	18.6	8.0	
Effective Green, g (s)	12.5		0.8	18.6	8.0	
Actuated g/C Ratio	0.33		0.02	0.49	0.21	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1097		37	914	716	
v/s Ratio Prot	0.07		0.02	c0.20	c0.06	
v/s Ratio Perm						
v/c Ratio	0.22		0.78	0.40	0.29	
Uniform Delay, d1	9.2		18.5	6.1	12.6	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		63.9	0.3	0.1	
Delay (s)	9.3		82.3	6.5	12.6	
Level of Service	A		F	A	B	
Approach Delay (s)	9.3			12.0	12.6	
Approach LOS	A			B	B	

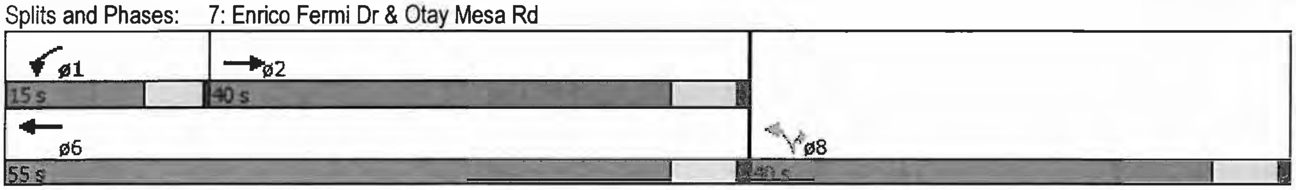
Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	37.9	Sum of lost time (s)	16.6
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	417	127	101	19	417
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	15.0	55.0	40.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%	42.1%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 55.6
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd



Movement	[illegible]	[illegible]	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	417	25	127	101	19	417
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1849		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1849		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	453	27	138	110	21	453
RTOR Reduction (vph)	2	0	0	0	0	350
Lane Group Flow (vph)	478	0	138	110	21	103
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	20.8		9.0	34.6	8.3	8.3
Effective Green, g (s)	20.8		9.0	34.6	8.3	8.3
Actuated g/C Ratio	0.38		0.16	0.63	0.15	0.15
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	700		290	1174	267	239
v/s Ratio Prot	c0.26		c0.08	0.06		
v/s Ratio Perm					0.01	c0.07
v/c Ratio	0.68		0.48	0.09	0.08	0.43
Uniform Delay, d1	14.3		20.8	4.0	20.0	21.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.9		0.4	0.0	0.0	0.5
Delay (s)	17.1		21.3	4.0	20.1	21.6
Level of Service	B		C	A	C	C
Approach Delay (s)	17.1			13.6	21.5	
Approach LOS	B			B	C	

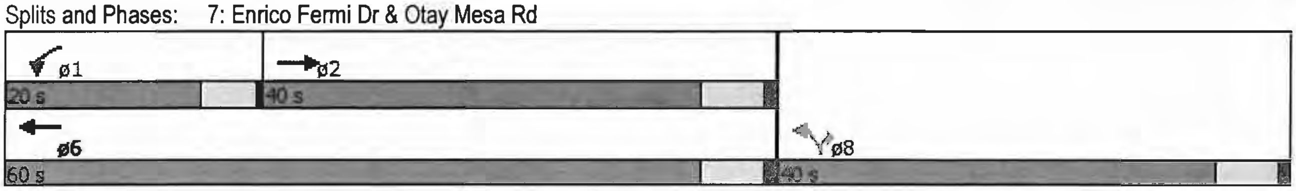
Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	54.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	155	467	352	18	160
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	20.0	60.0	40.0	40.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%	40.0%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 51.1
Natural Cycle: 115
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	155	37	467	352	18	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1814		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1814		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	168	40	508	383	20	174
RTOR Reduction (vph)	10	0	0	0	0	150
Lane Group Flow (vph)	198	0	508	383	20	24
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	11.6		15.5	31.9	6.9	6.9
Effective Green, g (s)	11.6		15.5	31.9	6.9	6.9
Actuated g/C Ratio	0.23		0.31	0.63	0.14	0.14
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	414		540	1169	240	215
v/s Ratio Prot	c0.11		c0.29	0.21		
v/s Ratio Perm					0.01	c0.01
v/c Ratio	0.48		0.94	0.33	0.08	0.11
Uniform Delay, d1	17.0		17.2	4.4	19.2	19.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		24.6	0.2	0.1	0.1
Delay (s)	18.0		41.8	4.6	19.2	19.3
Level of Service	B		D	A	B	B
Approach Delay (s)	18.0			25.8	19.3	
Approach LOS	B			C	B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	50.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	841	0	0	7	3	214
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	914	0	0	8	3	233

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	914	8	236
Volume Left (vph)	914	0	0
Volume Right (vph)	0	0	233
Hadj (s)	0.23	0.03	-0.56
Departure Headway (s)	4.8	6.2	5.2
Degree Utilization, x	1.0	0.01	0.34
Capacity (veh/h)	743	562	675
Control Delay (s)	129.8	9.3	10.9
Approach Delay (s)	129.8	9.3	10.9
Approach LOS	F	A	B

Intersection Summary			
Delay	104.8		
Level of Service	F		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	224	0	2	4	5	658
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	243	0	2	4	5	715

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	243	7	721
Volume Left (vph)	243	2	0
Volume Right (vph)	0	0	715
Hadj (s)	0.23	0.10	-0.56
Departure Headway (s)	5.7	5.6	4.1
Degree Utilization, x	0.39	0.01	0.82
Capacity (veh/h)	592	601	861
Control Delay (s)	12.3	8.6	22.9
Approach Delay (s)	12.3	8.6	22.9
Approach LOS	B	A	C

Intersection Summary			
Delay	20.1		
Level of Service	C		
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	157	457	42	101
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)	0	0	171	497	46	110
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	939	101	155			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	939	101	155			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	88			
cM capacity (veh/h)	258	955	1425			

Direction, Lane #	NB 1	SB 1
Volume Total	667	155
Volume Left	171	0
Volume Right	0	110
cSH	1425	1700
Volume to Capacity	0.12	0.09
Queue Length 95th (ft)	10	0
Control Delay (s)	3.0	0.0
Lane LOS	A	
Approach Delay (s)	3.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	210	212	108	414
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)	0	0	228	230	117	450
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	1029	342	567			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1029	342	567			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	77			
cM capacity (veh/h)	200	700	1005			

Direction, Lane #	NB 1	SB 1
Volume Total	459	567
Volume Left	228	0
Volume Right	0	450
cSH	1005	1700
Volume to Capacity	0.23	0.33
Queue Length 95th (ft)	22	0
Control Delay (s)	6.1	0.0
Lane LOS	A	
Approach Delay (s)	6.1	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	340	14	209	13	0	11	0	226	22	3	48	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	370	15	227	14	0	12	0	246	24	3	52	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	328	328	52	551	316	258	52			270		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	328	328	52	551	316	258	52			270		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	40	97	78	96	100	98	100			100		
cM capacity (veh/h)	614	589	1015	338	598	781	1554			1294		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	370	242	14	12	270	55
Volume Left	370	0	14	0	0	3
Volume Right	0	227	0	12	24	0
cSH	614	971	338	781	1700	1294
Volume to Capacity	0.60	0.25	0.04	0.02	0.16	0.00
Queue Length 95th (ft)	100	25	3	1	0	0
Control Delay (s)	19.3	9.9	16.1	9.7	0.0	0.5
Lane LOS	C	A	C	A		A
Approach Delay (s)	15.6		13.2		0.0	0.5
Approach LOS	C		B			

Intersection Summary			
Average Delay	10.3		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	128	5	73	13	0	24	0	321	11	5	122	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	139	5	79	14	0	26	0	349	12	5	133	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	524	504	133	580	498	355	133			361		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	524	504	133	580	498	355	133			361		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	69	99	91	96	100	96	100			100		
cM capacity (veh/h)	444	468	917	384	472	689	1452			1198		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	139	85	14	26	361	138
Volume Left	139	0	14	0	0	5
Volume Right	0	79	0	26	12	0
cSH	444	864	384	689	1700	1198
Volume to Capacity	0.31	0.10	0.04	0.04	0.21	0.00
Queue Length 95th (ft)	33	8	3	3	0	0
Control Delay (s)	16.7	9.6	14.7	10.4	0.0	0.4
Lane LOS	C	A	B	B		A
Approach Delay (s)	14.1		11.9		0.0	0.4
Approach LOS	B		B			

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	44	7	5	10	21	54	218	25	134
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	20.0	41.0	16.0	37.0	37.0	23.0	56.0	17.0	50.0
Total Split (%)	15.4%	31.5%	12.3%	28.5%	28.5%	17.7%	43.1%	13.1%	38.5%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

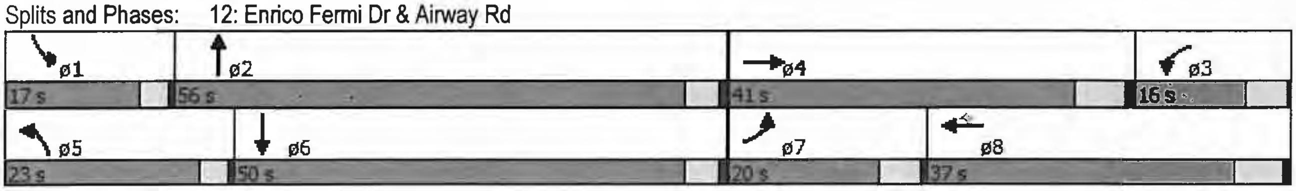
Cycle Length: 130

Actuated Cycle Length: 44.4

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	44	7	20	5	10	21	54	218	12	25	134	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3150		1770	1863	1583	1770	3512		1770	3312	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3150		1770	1863	1583	1770	3512		1770	3312	
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)	48	8	22	5	11	23	59	237	13	27	146	109
RTOR Reduction (vph)	0	20	0	0	0	21	0	2	0	0	61	0
Lane Group Flow (vph)	48	10	0	5	11	2	59	248	0	27	194	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	2.1	5.4		1.4	4.7	4.7	4.7	28.1		0.7	24.1	
Effective Green, g (s)	2.1	5.4		1.4	4.7	4.7	4.7	28.1		0.7	24.1	
Actuated g/C Ratio	0.04	0.10		0.03	0.09	0.09	0.09	0.52		0.01	0.44	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	68	312		45	160	136	152	1810		22	1464	
v/s Ratio Prot	c0.03	0.00		0.00	c0.01		c0.03	c0.07		c0.02	0.06	
v/s Ratio Perm						0.00						
v/c Ratio	0.71	0.03		0.11	0.07	0.01	0.39	0.14		1.23	0.13	
Uniform Delay, d1	25.9	22.2		25.9	22.9	22.8	23.5	6.9		26.9	9.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	23.7	0.1		1.1	0.2	0.1	0.6	0.0		269.8	0.0	
Delay (s)	49.6	22.2		27.0	23.1	22.8	24.1	6.9		296.7	9.0	
Level of Service	D	C		C	C	C	C	A		F	A	
Approach Delay (s)		39.1			23.4			10.2			36.6	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	24.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	18.9
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	76	5	8	10	32	58	221	21	87
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	19.0	41.0	15.0	37.0	37.0	23.0	55.0	16.0	48.0
Total Split (%)	15.0%	32.3%	11.8%	29.1%	29.1%	18.1%	43.3%	12.6%	37.8%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

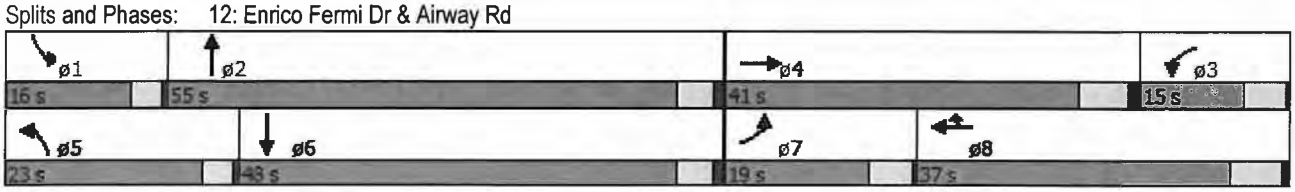
Cycle Length: 127

Actuated Cycle Length: 49.6

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	5	15	8	10	32	58	221	17	21	87	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3135		1770	1863	1583	1770	3502		1770	3258	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3135		1770	1863	1583	1770	3502		1770	3258	
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)	83	5	16	9	11	35	63	240	18	23	95	107
RTOR Reduction (vph)	0	13	0	0	0	30	0	4	0	0	63	0
Lane Group Flow (vph)	83	8	0	9	11	5	63	254	0	23	139	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.3	10.1		1.8	7.6	7.6	3.9	27.0		0.7	23.8	
Effective Green, g (s)	4.3	10.1		1.8	7.6	7.6	3.9	27.0		0.7	23.8	
Actuated g/C Ratio	0.07	0.17		0.03	0.13	0.13	0.07	0.46		0.01	0.41	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	130	541		54	242	205	118	1616		21	1325	
v/s Ratio Prot	c0.05	0.00		c0.01	c0.01		c0.04	c0.07		0.01	0.04	
v/s Ratio Perm						0.00						
v/c Ratio	0.64	0.01		0.17	0.05	0.02	0.53	0.16		1.10	0.10	
Uniform Delay, d1	26.3	20.1		27.6	22.3	22.2	26.4	9.1		28.9	10.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.3	0.0		1.5	0.1	0.1	2.3	0.0		228.1	0.0	
Delay (s)	33.7	20.1		29.1	22.4	22.3	28.7	9.2		257.0	10.8	
Level of Service	C	C		C	C	C	C	A		F	B	
Approach Delay (s)		30.9			23.4			13.0			36.0	
Approach LOS		C			C			B			D	

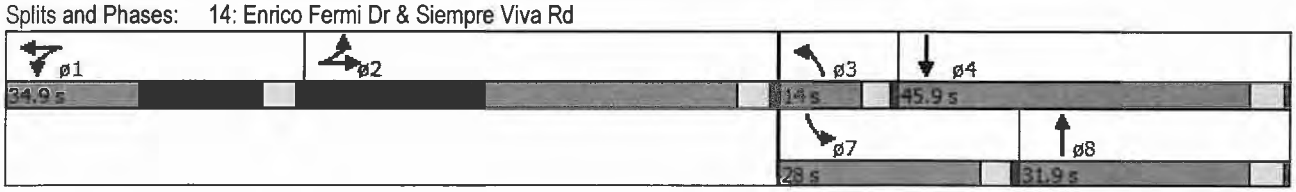
Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	58.5	Sum of lost time (s)	18.9
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	51	7	7	18	61	209	24	84
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 90.3
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↑↱		↰	↑↑↱		↰	↑↑↱		↰	↑↑↱	
Volume (vph)	51	7	19	7	18	26	61	209	4	24	84	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.91		1.00	1.00		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)	3433	1660		1770	3230		1770	3530		1770	3386	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1660		1770	3230		1770	3530		1770	3386	
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)	55	8	21	8	20	28	66	227	4	26	91	37
RTOR Reduction (vph)	0	19	0	0	25	0	0	0	0	0	18	0
Lane Group Flow (vph)	55	10	0	8	23	0	66	231	0	26	110	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.1	10.1		10.4	10.4		6.1	53.2		2.5	49.6	
Effective Green, g (s)	10.1	10.1		10.4	10.4		6.1	53.2		2.5	49.6	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.06	0.56		0.03	0.52	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	363	175		193	352		113	1970		46	1762	
v/s Ratio Prot	c0.02	0.01		0.00	c0.01		c0.04	c0.07		0.01	0.03	
v/s Ratio Perm												
v/c Ratio	0.15	0.06		0.04	0.07		0.58	0.12		0.57	0.06	
Uniform Delay, d1	38.7	38.3		38.0	38.1		43.4	9.9		45.9	11.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.4		0.2	0.2		4.9	0.1		9.1	0.1	
Delay (s)	39.3	38.7		38.2	38.3		48.2	10.1		55.0	11.4	
Level of Service	D	D		D	D		D	B		D	B	
Approach Delay (s)		39.1			38.3			18.6			18.8	
Approach LOS		D			D			B			B	

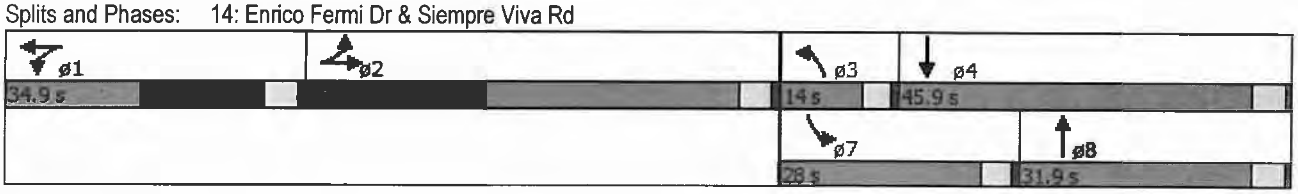
Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.14		
Actuated Cycle Length (s)	95.3	Sum of lost time (s)	19.1
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↰↰	↱	↰	↑↱	↰	↑↱	↰	↑↱
Volume (vph)	48	4	9	19	101	226	11	52
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Pnase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 94.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↰	↱		↰	↑↱		↰	↑↱		↰	↑↱	
Volume (vph)	48	4	11	9	19	24	101	226	0	11	52	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1653		1770	3246		1770	3539		1770	3302	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1653		1770	3246		1770	3539		1770	3302	
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)	52	4	12	10	21	26	110	246	0	12	57	46
RTOR Reduction (vph)	0	11	0	0	23	0	0	0	0	0	23	0
Lane Group Flow (vph)	52	5	0	10	24	0	110	246	0	12	80	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	10.4		10.8	10.8		9.9	58.7		1.0	49.8	
Effective Green, g (s)	10.4	10.4		10.8	10.8		9.9	58.7		1.0	49.8	
Actuated g/C Ratio	0.10	0.10		0.11	0.11		0.10	0.59		0.01	0.50	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	357	171		191	350		175	2077		17	1644	
v/s Ratio Prot	c0.02	0.00		0.01	c0.01		c0.06	c0.07		0.01	0.02	
v/s Ratio Perm												
v/c Ratio	0.15	0.03		0.05	0.07		0.63	0.12		0.71	0.05	
Uniform Delay, d1	40.8	40.3		40.0	40.1		43.3	9.2		49.4	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		0.3	0.2		5.0	0.1		72.3	0.1	
Delay (s)	41.3	40.5		40.3	40.3		48.3	9.3		121.7	13.0	
Level of Service	D	D		D	D		D	A		F	B	
Approach Delay (s)		41.1			40.3			21.3			24.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX C

- Opening Year 2019 Conditions - Synchro Analysis
- Opening Year 2019 Plus Phases 1 & 2

- Opening Year 2019 Conditions - Synchro Analysis

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	34	3	661	84	0	70
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)	37	3	718	91	0	76
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked	0.85	0.85			0.85	
vC, conflicting volume	795	718			810	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	665	575			683	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	99			100	
cM capacity (veh/h)	359	437			769	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	40	718	91	0	76
Volume Left	37	0	0	0	0
Volume Right	3	0	91	0	0
cSH	364	1700	1700	1700	1700
Volume to Capacity	0.11	0.42	0.05	0.00	0.04
Queue Length 95th (ft)	9	0	0	0	0
Control Delay (s)	16.1	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	16.1	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	73	0	92	12	2	460
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)	79	0	100	13	2	500
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked						
vC, conflicting volume	604	100			113	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604	100			113	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	100			100	
cM capacity (veh/h)	461	956			1476	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	79	100	13	2	500
Volume Left	79	0	0	2	0
Volume Right	0	0	13	0	0
cSH	461	1700	1700	1476	1700
Volume to Capacity	0.17	0.06	0.01	0.00	0.29
Queue Length 95th (ft)	15	0	0	0	0
Control Delay (s)	14.4	0.0	0.0	7.4	0.0
Lane LOS	B			A	
Approach Delay (s)	14.4	0.0		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	WBL	WBT	WBR	NBT	SBT
Lane Configurations						
Volume (vph)	0	10	1	1	103	541
Turn Type	NA	Perm	NA	Perm	NA	NA
Protected Phases	4		8		2	6
Permitted Phases		8		8		
Detector Phase	4	8	8	8	2	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 34.3
Natural Cycle: 50
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	2	18	1	1	1	744	21	0	102	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5	4.5	4.5			4.5	4.5
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Frt		0.85		1.00	1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected		1.00		0.95	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)		1583		1770	1863	1583	1770	1855			1863	1583
Flt Permitted		1.00		1.00	1.00	1.00	0.69	1.00			1.00	1.00
Satd. Flow (perm)		1583		1863	1863	1583	1277	1855			1863	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)	0	0	2	20	1	1	1	809	23	0	111	1
RTOR Reduction (vph)	0	2	0	0	0	1	0	1	0	0	0	0
Lane Group Flow (vph)	0	0	0	20	1	0	1	831	0	0	111	1
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)		1.0		1.0	1.0	1.0	34.0	34.0			34.0	34.0
Effective Green, g (s)		1.0		1.0	1.0	1.0	34.0	34.0			34.0	34.0
Actuated g/C Ratio		0.02		0.02	0.02	0.02	0.77	0.77			0.77	0.77
Clearance Time (s)		4.5		4.5	4.5	4.5	4.5	4.5			4.5	4.5
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		35		42	42	35	986	1433			1439	1223
v/s Ratio Prot		0.00			0.00			c0.45			0.06	
v/s Ratio Perm				c0.01		0.00	0.00					0.00
v/c Ratio		0.00		0.48	0.02	0.00	0.00	0.58			0.08	0.00
Uniform Delay, d1		21.0		21.2	21.0	21.0	1.1	2.1			1.2	1.1
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2		0.0		8.3	0.2	0.0	0.0	0.6			0.0	0.0
Delay (s)		21.0		29.5	21.3	21.0	1.1	2.6			1.2	1.1
Level of Service		C		C	C	C	A	A			A	A
Approach Delay (s)		21.0			28.8			2.6			1.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	44.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Configurations								
Volume (vph)	0	18	1	1	1	744	102	1
Turn Type	NA	Perm	NA	Perm	Perm	NA	NA	Perm
Protected Phases	4		8			2	6	
Permitted Phases		8		8	2			6
Detector Phase	4	8	8	8	2	2	6	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)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	39.4	39.4	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Min	Min	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 40.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	1	10	1	1	0	103	7	0	541	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5		4.5	4.5	4.5		4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00	1.00		1.00			1.00	
Frt		0.85		1.00	1.00	0.85		0.99			1.00	
Flt Protected		1.00		0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)		1583		1770	1863	1583		1844			1863	
Flt Permitted		1.00		1.00	1.00	1.00		1.00			1.00	
Satd. Flow (perm)		1583		1863	1863	1583		1844			1863	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1	11	1	1	0	112	8	0	588	0
RTOR Reduction (vph)	0	1	0	0	0	1	0	2	0	0	0	0
Lane Group Flow (vph)	0	0	0	11	1	0	0	118	0	0	588	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)		0.9		0.9	0.9	0.9		28.0			28.0	
Effective Green, g (s)		0.9		0.9	0.9	0.9		28.0			28.0	
Actuated g/C Ratio		0.02		0.02	0.02	0.02		0.74			0.74	
Clearance Time (s)		4.5		4.5	4.5	4.5		4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		37		44	44	37		1362			1376	
v/s Ratio Prot		0.00			0.00			0.06			c0.32	
v/s Ratio Perm				c0.01		0.00						
v/c Ratio		0.00		0.25	0.02	0.00		0.09			0.43	
Uniform Delay, d1		18.1		18.2	18.1	18.1		1.4			1.9	
Progression Factor		1.00		1.00	1.00	1.00		1.00			1.00	
Incremental Delay, d2		0.0		3.0	0.2	0.0		0.0			0.2	
Delay (s)		18.1		21.1	18.3	18.1		1.4			2.1	
Level of Service		B		C	B	B		A			A	
Approach Delay (s)		18.1			20.7			1.4			2.1	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	37.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Volume (vph)	336	112	521	441
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	336	112	0	521	441
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	365	122	0	566	479
RTOR Reduction (vph)	0	0	0	0	0	199
Lane Group Flow (vph)	0	365	122	0	566	280
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.07	0.02		0.16	
v/s Ratio Perm						c0.18
v/c Ratio		0.25	0.08		0.28	0.30
Uniform Delay, d1		26.9	25.6		10.4	10.5
Progression Factor		0.67	0.92		1.00	1.00
Incremental Delay, d2		0.4	0.1		0.4	0.8
Delay (s)		18.4	23.6		10.7	11.4
Level of Service		B	C		B	B
Approach Delay (s)		18.4	23.6		11.0	
Approach LOS		B	C		B	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Volume (vph)	321	271	123	260
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↰↰	↱
Volume (vph)	0	321	271	0	123	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	349	295	0	134	283
RTOR Reduction (vph)	0	0	0	0	0	118
Lane Group Flow (vph)	0	349	295	0	134	165
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.07	0.06		0.04	
v/s Ratio Perm						c0.10
v/c Ratio		0.23	0.20		0.07	0.18
Uniform Delay, d1		26.8	26.5		9.0	9.7
Progression Factor		0.73	0.92		1.00	1.00
Incremental Delay, d2		0.4	0.3		0.1	0.4
Delay (s)		19.9	24.7		9.1	10.1
Level of Service		B	C		A	B
Approach Delay (s)		19.9	24.7		9.8	
Approach LOS		B	C		A	

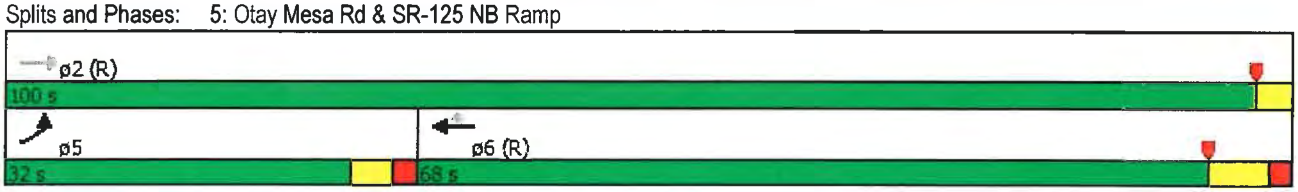
Intersection Summary			
HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	67	785	112	40
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	67	785	112	40	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.99	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4772	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4772	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	853	122	43	0	0
RTOR Reduction (vph)	0	0	1	7	0	0
Lane Group Flow (vph)	73	853	127	30	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	6.4	100.0	81.7	81.7		
Effective Green, g (s)	6.4	100.0	81.7	81.7		
Actuated g/C Ratio	0.06	1.00	0.82	0.82		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	219	3539	3898	1112		
v/s Ratio Prot	0.02		0.03			
v/s Ratio Perm		c0.24		0.02		
v/c Ratio	0.33	0.24	0.03	0.03		
Uniform Delay, d1	44.8	0.0	1.7	1.7		
Progression Factor	1.23	1.00	1.00	1.00		
Incremental Delay, d2	0.9	0.2	0.0	0.0		
Delay (s)	55.9	0.2	1.7	1.8		
Level of Service	E	A	A	A		
Approach Delay (s)		4.6	1.7		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	174	260	265	213
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	174	260	265	213	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.96	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4601	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4601	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	283	288	232	0	0
RTOR Reduction (vph)	0	0	26	27	0	0
Lane Group Flow (vph)	189	283	376	91	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	10.8	100.0	77.3	77.3		
Effective Green, g (s)	10.8	100.0	77.3	77.3		
Actuated g/C Ratio	0.11	1.00	0.77	0.77		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	370	3539	3556	1052		
v/s Ratio Prot	c0.06		c0.08			
v/s Ratio Perm		0.08		0.07		
v/c Ratio	0.51	0.08	0.11	0.09		
Uniform Delay, d1	42.1	0.0	2.8	2.8		
Progression Factor	0.69	1.00	1.00	1.00		
Incremental Delay, d2	1.2	0.0	0.1	0.2		
Delay (s)	30.1	0.0	2.9	2.9		
Level of Service	C	A	A	A		
Approach Delay (s)		12.1	2.9		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	386	4	80	69
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 32.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd

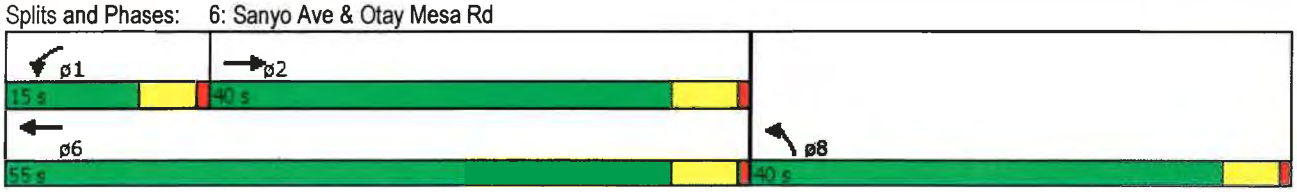
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	386	385	4	80	69	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3274		1770	1863	3404	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3274		1770	1863	3404	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	420	418	4	87	75	9
RTOR Reduction (vph)	161	0	0	0	8	0
Lane Group Flow (vph)	677	0	4	87	76	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	17.4		0.5	23.2	3.9	
Effective Green, g (s)	17.4		0.5	23.2	3.9	
Actuated g/C Ratio	0.45		0.01	0.60	0.10	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1483		23	1125	345	
v/s Ratio Prot	c0.21		0.00	c0.05	c0.02	
v/s Ratio Perm						
v/c Ratio	0.46		0.17	0.08	0.22	
Uniform Delay, d1	7.2		18.7	3.2	15.9	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		1.3	0.0	0.1	
Delay (s)	7.5		20.1	3.2	16.0	
Level of Service	A		C	A	B	
Approach Delay (s)	7.5			3.9	16.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	38.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	134	24	287	195
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 33.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	134	134	24	287	195	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3274		1770	1863	3400	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3274		1770	1863	3400	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	146	26	312	212	28
RTOR Reduction (vph)	100	0	0	0	13	0
Lane Group Flow (vph)	192	0	26	312	227	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	11.7		0.8	17.8	8.1	
Effective Green, g (s)	11.7		0.8	17.8	8.1	
Actuated g/C Ratio	0.31		0.02	0.48	0.22	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1029		38	891	740	
v/s Ratio Prot	0.06		0.01	c0.17	c0.07	
v/s Ratio Perm						
v/c Ratio	0.19		0.68	0.35	0.31	
Uniform Delay, d1	9.3		18.1	6.1	12.2	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		33.5	0.3	0.1	
Delay (s)	9.4		51.6	6.4	12.3	
Level of Service	A		D	A	B	
Approach Delay (s)	9.4			9.8	12.3	
Approach LOS	A			A	B	

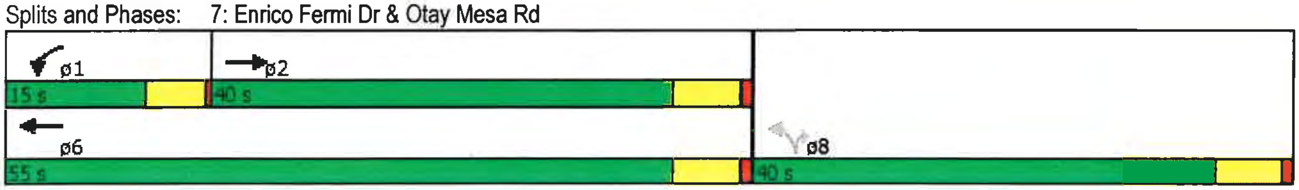
Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	37.2	Sum of lost time (s)	16.6
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	370	87	53	21	380
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	15.0	55.0	40.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%	42.1%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 48.4
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	370	28	87	53	21	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1845		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1845		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	402	30	95	58	23	413
RTOR Reduction (vph)	3	0	0	0	0	348
Lane Group Flow (vph)	429	0	95	58	23	65
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	17.8		5.9	28.5	7.5	7.5
Effective Green, g (s)	17.8		5.9	28.5	7.5	7.5
Actuated g/C Ratio	0.37		0.12	0.59	0.16	0.16
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	684		217	1106	276	247
v/s Ratio Prot	c0.23		c0.05	0.03		
v/s Ratio Perm					0.01	c0.04
v/c Ratio	0.63		0.44	0.05	0.08	0.26
Uniform Delay, d1	12.4		19.5	4.1	17.3	17.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9		0.5	0.0	0.0	0.2
Delay (s)	14.3		20.0	4.1	17.4	18.0
Level of Service	B		C	A	B	B
Approach Delay (s)	14.3			14.0	18.0	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	97	435	298	20	110
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	20.0	60.0	40.0	40.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%	40.0%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 47.6
Natural Cycle: 105
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	97	41	435	298	20	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1787		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1787		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	45	473	324	22	120
RTOR Reduction (vph)	18	0	0	0	0	106
Lane Group Flow (vph)	132	0	473	324	22	14
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	10.3		16.0	31.1	5.5	5.5
Effective Green, g (s)	10.3		16.0	31.1	5.5	5.5
Actuated g/C Ratio	0.21		0.33	0.64	0.11	0.11
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	378		582	1192	200	179
v/s Ratio Prot	c0.07		c0.27	0.17		
v/s Ratio Perm					c0.01	0.01
v/c Ratio	0.35		0.81	0.27	0.11	0.08
Uniform Delay, d1	16.3		14.9	3.8	19.4	19.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		8.1	0.1	0.1	0.1
Delay (s)	17.0		23.0	4.0	19.4	19.3
Level of Service	B		C	A	B	B
Approach Delay (s)	17.0			15.3	19.4	
Approach LOS	B			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	48.6	Sum of lost time (s)	16.8
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	757	0	0	2	0	124
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	823	0	0	2	0	135

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	823	2	135
Volume Left (vph)	823	0	0
Volume Right (vph)	0	0	135
Hadj (s)	0.23	0.03	-0.57
Departure Headway (s)	4.5	6.0	5.2
Degree Utilization, x	1.0	0.00	0.20
Capacity (veh/h)	790	582	687
Control Delay (s)	61.5	9.1	9.5
Approach Delay (s)	61.5	9.1	9.5
Approach LOS	F	A	A

Intersection Summary			
Delay	54.1		
Level of Service	F		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	108	0	2	0	0	556
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	117	0	2	0	0	604

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	117	2	604
Volume Left (vph)	117	2	0
Volume Right (vph)	0	0	604
Hadj (s)	0.23	0.23	-0.57
Departure Headway (s)	5.3	5.0	3.7
Degree Utilization, x	0.17	0.00	0.62
Capacity (veh/h)	613	672	956
Control Delay (s)	9.4	8.0	12.4
Approach Delay (s)	9.4	8.0	12.4
Approach LOS	A	A	B

Intersection Summary			
Delay	11.9		
Level of Service	B		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	173	424	31	75
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)	0	0	188	461	34	82
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	911	74	115			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	911	74	115			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	87			
cM capacity (veh/h)	265	987	1474			

Direction, Lane #	NB 1	SB 1
Volume Total	649	115
Volume Left	188	0
Volume Right	0	82
cSH	1474	1700
Volume to Capacity	0.13	0.07
Queue Length 95th (ft)	11	0
Control Delay (s)	3.2	0.0
Lane LOS	A	
Approach Delay (s)	3.2	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↰	↱	
Volume (veh/h)	0	0	231	167	95	400
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)	0	0	251	182	103	435
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	1004	321	538			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1004	321	538			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	76			
cM capacity (veh/h)	203	720	1030			

Direction, Lane #	NB 1	SB 1
Volume Total	433	538
Volume Left	251	0
Volume Right	0	435
cSH	1030	1700
Volume to Capacity	0.24	0.32
Queue Length 95th (ft)	24	0
Control Delay (s)	6.7	0.0
Lane LOS	A	
Approach Delay (s)	6.7	0.0
Approach LOS		

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	319	15	230	14	0	12	0	224	24	3	37	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	347	16	250	15	0	13	0	243	26	3	40	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	316	316	40	561	303	257	40			270		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316	316	40	561	303	257	40			270		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	44	97	76	95	100	98	100			100		
cM capacity (veh/h)	625	598	1031	324	608	782	1569			1294		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	347	266	15	13	270	43
Volume Left	347	0	15	0	0	3
Volume Right	0	250	0	13	26	0
cSH	625	987	324	782	1700	1294
Volume to Capacity	0.56	0.27	0.05	0.02	0.16	0.00
Queue Length 95th (ft)	85	27	4	1	0	0
Control Delay (s)	17.7	10.0	16.6	9.7	0.0	0.6
Lane LOS	C	A	C	A		A
Approach Delay (s)	14.4		13.4		0.0	0.6
Approach LOS	B		B			

Intersection Summary			
Average Delay	9.6		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	95	80	0	333	110	0
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)	103	87	0	362	120	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				1318		
pX, platoon unblocked						
vC, conflicting volume	482	120	120			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	482	120	120			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	91	100			
cM capacity (veh/h)	544	932	1468			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	103	87	362	120
Volume Left	103	0	0	0
Volume Right	0	87	0	0
cSH	544	932	1700	1700
Volume to Capacity	0.19	0.09	0.21	0.07
Queue Length 95th (ft)	17	8	0	0
Control Delay (s)	13.2	9.3	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	11.4		0.0	0.0
Approach LOS	B			

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	35	8	6	11	23	59	229	28	140
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	20.0	41.0	16.0	37.0	37.0	23.0	56.0	17.0	50.0
Total Split (%)	15.4%	31.5%	12.3%	28.5%	28.5%	17.7%	43.1%	13.1%	38.5%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 44.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑	↱	↰	↑↱		↰	↑↱	
Volume (vph)	35	8	22	6	11	23	59	229	13	28	140	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3153		1770	1863	1583	1770	3511		1770	3316	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3153		1770	1863	1583	1770	3511		1770	3316	
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)	38	9	24	7	12	25	64	249	14	30	152	110
RTOR Reduction (vph)	0	22	0	0	0	23	0	2	0	0	61	0
Lane Group Flow (vph)	38	11	0	7	12	2	64	261	0	30	201	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	1.9	5.4		1.3	4.8	4.8	4.7	28.1		0.7	24.1	
Effective Green, g (s)	1.9	5.4		1.3	4.8	4.8	4.7	28.1		0.7	24.1	
Actuated g/C Ratio	0.03	0.10		0.02	0.09	0.09	0.09	0.52		0.01	0.44	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	61	312		42	164	139	152	1813		22	1469	
v/s Ratio Prot	c0.02	0.00		c0.00	c0.01		c0.04	c0.07		c0.02	0.06	
v/s Ratio Perm						0.00						
v/c Ratio	0.62	0.04		0.17	0.07	0.02	0.42	0.14		1.36	0.14	
Uniform Delay, d1	25.9	22.1		26.0	22.8	22.6	23.6	6.9		26.8	9.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.4	0.1		1.9	0.2	0.1	0.7	0.0		320.4	0.0	
Delay (s)	39.3	22.2		27.9	23.0	22.7	24.2	6.9		347.2	9.0	
Level of Service	D	C		C	C	C	C	A		F	A	
Approach Delay (s)		31.3			23.6			10.3			43.8	
Approach LOS		C			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	54.4	Sum of lost time (s)	18.9
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	73	6	9	11	35	64	234	23	85
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	19.0	41.0	15.0	37.0	37.0	23.0	55.0	16.0	48.0
Total Split (%)	15.0%	32.3%	11.8%	29.1%	29.1%	18.1%	43.3%	12.6%	37.8%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

Cycle Length: 127
Actuated Cycle Length: 49.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	73	6	17	9	11	35	64	234	19	23	85	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3157		1770	1863	1583	1770	3499		1770	3259	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3157		1770	1863	1583	1770	3499		1770	3259	
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)	79	7	18	10	12	38	70	254	21	25	92	103
RTOR Reduction (vph)	0	15	0	0	0	33	0	4	0	0	61	0
Lane Group Flow (vph)	79	10	0	10	12	5	70	271	0	25	134	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.2	10.0		1.8	7.6	7.6	4.0	26.9		0.8	23.7	
Effective Green, g (s)	4.2	10.0		1.8	7.6	7.6	4.0	26.9		0.8	23.7	
Actuated g/C Ratio	0.07	0.17		0.03	0.13	0.13	0.07	0.46		0.01	0.41	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	127	540		54	242	206	121	1611		24	1322	
v/s Ratio Prot	c0.04	0.00		c0.01	c0.01		c0.04	c0.08		0.01	0.04	
v/s Ratio Perm						0.00						
v/c Ratio	0.62	0.02		0.19	0.05	0.02	0.58	0.17		1.04	0.10	
Uniform Delay, d1	26.3	20.1		27.6	22.2	22.2	26.4	9.2		28.8	10.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.6	0.0		1.7	0.1	0.1	4.1	0.0		197.1	0.0	
Delay (s)	33.0	20.1		29.2	22.3	22.2	30.5	9.3		225.9	10.8	
Level of Service	C	C		C	C	C	C	A		F	B	
Approach Delay (s)		29.9			23.4			13.6			35.2	
Approach LOS		C			C			B			D	

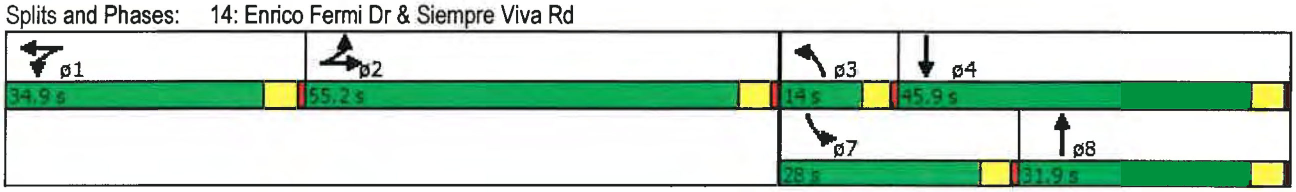
Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	58.4	Sum of lost time (s)	18.9
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	51	8	8	20	67	230	23	92
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 87.7
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	8	21	8	20	23	67	230	4	23	92	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		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)	3433	1662		1770	3257		1770	3531		1770	3396	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1662		1770	3257		1770	3531		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)	55	9	23	9	22	25	73	250	4	25	100	37
RTOR Reduction (vph)	0	20	0	0	23	0	0	0	0	0	16	0
Lane Group Flow (vph)	55	12	0	9	24	0	73	254	0	25	121	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.2	10.2		8.1	8.1		6.6	54.0		2.4	49.8	
Effective Green, g (s)	10.2	10.2		8.1	8.1		6.6	54.0		2.4	49.8	
Actuated g/C Ratio	0.11	0.11		0.09	0.09		0.07	0.58		0.03	0.53	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	373	180		152	281		124	2032		45	1802	
v/s Ratio Prot	c0.02	0.01		0.01	c0.01		c0.04	c0.07		0.01	0.04	
v/s Ratio Perm												
v/c Ratio	0.15	0.06		0.06	0.09		0.59	0.12		0.56	0.07	
Uniform Delay, d1	37.9	37.5		39.4	39.4		42.3	9.1		45.2	10.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.4		0.4	0.3		4.5	0.1		8.2	0.1	
Delay (s)	38.4	38.0		39.7	39.8		46.8	9.2		53.3	10.8	
Level of Service	D	D		D	D		D	A		D	B	
Approach Delay (s)		38.2			39.8			17.6			17.3	
Approach LOS		D			D			B			B	

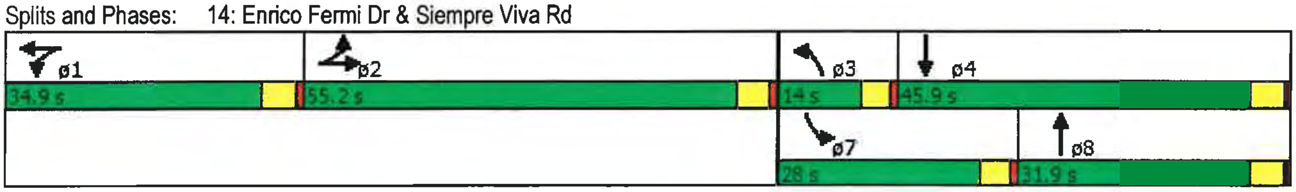
Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.15		
Actuated Cycle Length (s)	93.8	Sum of lost time (s)	19.1
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	48	4	10	21	111	249	7	57
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 94.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	4	12	10	21	22	111	249	0	7	57	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1649		1770	3268		1770	3539		1770	3316	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1649		1770	3268		1770	3539		1770	3316	
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)	52	4	13	11	23	24	121	271	0	8	62	45
RTOR Reduction (vph)	0	12	0	0	21	0	0	0	0	0	23	0
Lane Group Flow (vph)	52	5	0	11	26	0	121	271	0	8	84	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	10.4		10.8	10.8		9.9	58.8		0.9	49.8	
Effective Green, g (s)	10.4	10.4		10.8	10.8		9.9	58.8		0.9	49.8	
Actuated g/C Ratio	0.10	0.10		0.11	0.11		0.10	0.59		0.01	0.50	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	357	171		191	352		175	2080		15	1651	
v/s Ratio Prot	c0.02	0.00		0.01	c0.01		c0.07	c0.08		0.00	0.03	
v/s Ratio Perm												
v/c Ratio	0.15	0.03		0.06	0.07		0.69	0.13		0.53	0.05	
Uniform Delay, d1	40.8	40.3		40.0	40.1		43.6	9.2		49.3	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		0.3	0.2		9.1	0.1		17.0	0.1	
Delay (s)	41.3	40.5		40.3	40.3		52.7	9.3		66.3	13.0	
Level of Service	D	D		D	D		D	A		E	B	
Approach Delay (s)		41.1			40.3			22.7			16.7	
Approach LOS		D			D			C			B	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

- Opening Year 2019 Plus Phases 1 & 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	92	3	661	178	0	70
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)	100	3	718	193	0	76
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked	0.83	0.83			0.83	
vC, conflicting volume	795	718			912	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	645	553			787	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	99			100	
cM capacity (veh/h)	360	440			686	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	103	718	193	0	76
Volume Left	100	0	0	0	0
Volume Right	3	0	193	0	0
cSH	362	1700	1700	1700	1700
Volume to Capacity	0.28	0.42	0.11	0.00	0.04
Queue Length 95th (ft)	29	0	0	0	0
Control Delay (s)	18.8	0.0	0.0	0.0	0.0
Lane LOS	C				
Approach Delay (s)	18.8	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	167	0	92	84	2	460
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)	182	0	100	91	2	500
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			684			
pX, platoon unblocked						
vC, conflicting volume	604	100			191	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604	100			191	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	61	100			100	
cM capacity (veh/h)	460	956			1382	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	182	100	91	2	500
Volume Left	182	0	0	2	0
Volume Right	0	0	91	0	0
cSH	460	1700	1700	1382	1700
Volume to Capacity	0.39	0.06	0.05	0.00	0.29
Queue Length 95th (ft)	46	0	0	0	0
Control Delay (s)	17.8	0.0	0.0	7.6	0.0
Lane LOS	C			A	
Approach Delay (s)	17.8	0.0		0.0	
Approach LOS	C				

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Volume (vph)	3	0	18	1	4	1	832	2	157	3
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		4		8			2		6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	4	4	8	8	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	4.0
Minimum Split (s)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	20.6	39.4	39.4	39.4	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%	65.7%
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)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Min	Min	Min	Min	Min

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 47
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	0	2	18	1	4	1	832	21	2	157	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	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		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583	1770	1856		1770	1863	1583
Flt Permitted	1.00	1.00		1.00	1.00	1.00	0.65	1.00		0.26	1.00	1.00
Satd. Flow (perm)	1863	1583		1863	1863	1583	1209	1856		484	1863	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)	3	0	2	20	1	4	1	904	23	2	171	3
RTOR Reduction (vph)	0	2	0	0	0	4	0	1	0	0	0	1
Lane Group Flow (vph)	3	0	0	20	1	0	1	926	0	2	171	2
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	2.3	2.3		2.3	2.3	2.3	38.5	38.5		38.5	38.5	38.5
Effective Green, g (s)	2.3	2.3		2.3	2.3	2.3	38.5	38.5		38.5	38.5	38.5
Actuated g/C Ratio	0.05	0.05		0.05	0.05	0.05	0.77	0.77		0.77	0.77	0.77
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
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)	86	73		86	86	73	934	1434		374	1440	1223
v/s Ratio Prot		0.00			0.00			c0.50			0.09	
v/s Ratio Perm	0.00			c0.01		0.00	0.00			0.00		0.00
v/c Ratio	0.03	0.00		0.23	0.01	0.00	0.00	0.65		0.01	0.12	0.00
Uniform Delay, d1	22.7	22.7		22.9	22.7	22.7	1.3	2.6		1.3	1.4	1.3
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	0.2	0.0		1.4	0.1	0.0	0.0	1.0		0.0	0.0	0.0
Delay (s)	22.9	22.7		24.3	22.7	22.7	1.3	3.6		1.3	1.4	1.3
Level of Service	C	C		C	C	C	A	A		A	A	A
Approach Delay (s)		22.8			24.0			3.6			1.4	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	49.8	Sum of lost time (s)	9.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBT	SBR
Lane Configurations									
Volume (vph)	2	0	10	1	3	171	3	629	3
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		4		8		2		6	
Permitted Phases	4		8		8		6		6
Detector Phase	4	4	8	8	8	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)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Total Split (s)	20.6	20.6	20.6	20.6	20.6	39.4	39.4	39.4	39.4
Total Split (%)	34.3%	34.3%	34.3%	34.3%	34.3%	65.7%	65.7%	65.7%	65.7%
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)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag									
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	Min	Min	Min	Min

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 36.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated

Splits and Phases: 2: Alta Rd & Lone Star Rd/Lone Start Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	0	1	10	1	3	0	171	7	3	629	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5		4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85		0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1583		1770	1863	1583		1851		1770	1863	1583
Flt Permitted	1.00	1.00		1.00	1.00	1.00		1.00		0.64	1.00	1.00
Satd. Flow (perm)	1863	1583		1863	1863	1583		1851		1184	1863	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)	2	0	1	11	1	3	0	186	8	3	684	3
RTOR Reduction (vph)	0	1	0	0	0	3	0	1	0	0	0	1
Lane Group Flow (vph)	2	0	0	11	1	0	0	193	0	3	684	2
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	0.9	0.9		0.9	0.9	0.9		30.1		30.1	30.1	30.1
Effective Green, g (s)	0.9	0.9		0.9	0.9	0.9		30.1		30.1	30.1	30.1
Actuated g/C Ratio	0.02	0.02		0.02	0.02	0.02		0.75		0.75	0.75	0.75
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5		4.5		4.5	4.5	4.5
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)	41	35		41	41	35		1392		890	1401	1191
v/s Ratio Prot		0.00			0.00			0.10			c0.37	
v/s Ratio Perm	0.00			c0.01		0.00				0.00		0.00
v/c Ratio	0.05	0.00		0.27	0.02	0.00		0.14		0.00	0.49	0.00
Uniform Delay, d1	19.1	19.1		19.2	19.1	19.1		1.4		1.2	1.9	1.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0		3.5	0.2	0.0		0.0		0.0	0.3	0.0
Delay (s)	19.6	19.1		22.7	19.4	19.1		1.4		1.2	2.2	1.2
Level of Service	B	B		C	B	B		A		A	A	A
Approach Delay (s)		19.5			21.8			1.4			2.2	
Approach LOS		B			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	2.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Volume (vph)	367	131	532	441
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp

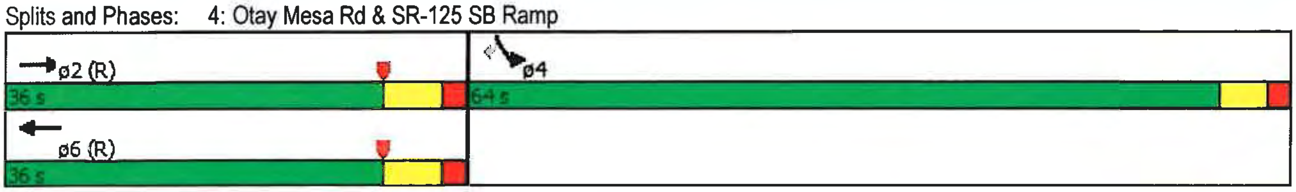
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	367	131	0	532	441
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	399	142	0	578	479
RTOR Reduction (vph)	0	0	0	0	0	199
Lane Group Flow (vph)	0	399	142	0	578	280
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.08	0.03		0.17	
v/s Ratio Perm						c0.18
v/c Ratio		0.27	0.10		0.29	0.30
Uniform Delay, d1		27.1	25.7		10.4	10.5
Progression Factor		0.67	0.92		1.00	1.00
Incremental Delay, d2		0.4	0.1		0.4	0.8
Delay (s)		18.5	23.8		10.8	11.4
Level of Service		B	C		B	B
Approach Delay (s)		18.5	23.8		11.0	
Approach LOS		B	C		B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBT	SBL	SBR
Lane Configurations				
Volume (vph)	345	302	132	260
Turn Type	NA	NA	Prot	Perm
Protected Phases	2	6	4	
Permitted Phases				4
Detector Phase	2	6	4	4
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	27.0	31.7	21.7	21.7
Total Split (s)	36.0	36.0	64.0	64.0
Total Split (%)	36.0%	36.0%	64.0%	64.0%
Yellow Time (s)	4.7	4.7	3.6	3.6
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7	6.7	5.6	5.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	Max	Max

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated

Splits and Phases: 4: Otay Mesa Rd & SR-125 SB Ramp



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	345	302	0	132	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.7	6.7		5.6	5.6
Lane Util. Factor		0.91	0.91		0.97	1.00
Frt		1.00	1.00		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		5085	5085		3433	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		5085	5085		3433	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	375	328	0	143	283
RTOR Reduction (vph)	0	0	0	0	0	106
Lane Group Flow (vph)	0	375	328	0	143	177
Turn Type		NA	NA		Prot	Perm
Protected Phases		2	6		4	
Permitted Phases						4
Actuated Green, G (s)		29.3	29.3		58.4	58.4
Effective Green, g (s)		29.3	29.3		58.4	58.4
Actuated g/C Ratio		0.29	0.29		0.58	0.58
Clearance Time (s)		6.7	6.7		5.6	5.6
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1489	1489		2004	924
v/s Ratio Prot		c0.07	0.06		0.04	
v/s Ratio Perm						c0.11
v/c Ratio		0.25	0.22		0.07	0.19
Uniform Delay, d1		27.0	26.7		9.0	9.7
Progression Factor		0.72	0.92		1.00	1.00
Incremental Delay, d2		0.4	0.3		0.1	0.5
Delay (s)		19.8	24.8		9.1	10.2
Level of Service		B	C		A	B
Approach Delay (s)		19.8	24.8		9.8	
Approach LOS		B	C		A	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.21		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.3
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	67	827	131	47
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	67	827	131	47	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.99	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4767	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4767	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	899	142	51	0	0
RTOR Reduction (vph)	0	0	1	8	0	0
Lane Group Flow (vph)	73	899	149	35	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	6.4	100.0	81.7	81.7		
Effective Green, g (s)	6.4	100.0	81.7	81.7		
Actuated g/C Ratio	0.06	1.00	0.82	0.82		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	219	3539	3894	1112		
v/s Ratio Prot	0.02		0.03			
v/s Ratio Perm		c0.25		0.03		
v/c Ratio	0.33	0.25	0.04	0.03		
Uniform Delay, d1	44.8	0.0	1.7	1.7		
Progression Factor	1.21	1.00	1.00	1.00		
Incremental Delay, d2	0.9	0.2	0.0	0.1		
Delay (s)	55.0	0.2	1.7	1.8		
Level of Service	D	A	A	A		
Approach Delay (s)		4.3	1.8		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Configurations				
Volume (vph)	174	292	296	224
Turn Type	Prot	NA	NA	Perm
Protected Phases	5		6	
Permitted Phases		2		6
Detector Phase	5	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.2	20.5	28.7	28.7
Total Split (s)	32.0	100.0	68.0	68.0
Total Split (%)	32.0%	100.0%	68.0%	68.0%
Yellow Time (s)	3.2	3.0	4.7	4.7
All-Red Time (s)	2.0	0.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.2	3.0	6.7	6.7
Lead/Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes
Recall Mode	None	C-Max	C-Max	C-Max

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow, Master Intersection
Natural Cycle: 40
Control Type: Actuated-Coordinated

Splits and Phases: 5: Otay Mesa Rd & SR-125 NB Ramp

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	174	292	296	224	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.2	3.0	6.7	6.7		
Lane Util. Factor	0.97	0.95	0.86	0.86		
Frt	1.00	1.00	0.96	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	3433	3539	4617	1362		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	3433	3539	4617	1362		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	189	317	322	243	0	0
RTOR Reduction (vph)	0	0	26	29	0	0
Lane Group Flow (vph)	189	317	410	100	0	0
Turn Type	Prot	NA	NA	Perm		
Protected Phases	5		6			
Permitted Phases		2		6		
Actuated Green, G (s)	10.8	100.0	77.3	77.3		
Effective Green, g (s)	10.8	100.0	77.3	77.3		
Actuated g/C Ratio	0.11	1.00	0.77	0.77		
Clearance Time (s)	5.2	3.0	6.7	6.7		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	370	3539	3568	1052		
v/s Ratio Prot	c0.06		c0.09			
v/s Ratio Perm		0.09		0.07		
v/c Ratio	0.51	0.09	0.11	0.09		
Uniform Delay, d1	42.1	0.0	2.8	2.8		
Progression Factor	0.68	1.00	1.00	1.00		
Incremental Delay, d2	1.2	0.0	0.1	0.2		
Delay (s)	29.9	0.0	2.9	3.0		
Level of Service	C	A	A	A		
Approach Delay (s)		11.2	2.9		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	11.9
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	428	6	106	69
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary

Cycle Length: 95
Actuated Cycle Length: 33.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	428	385	6	106	69	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3288		1770	1863	3393	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3288		1770	1863	3393	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	465	418	7	115	75	12
RTOR Reduction (vph)	143	0	0	0	11	0
Lane Group Flow (vph)	740	0	7	115	76	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	18.2		0.6	24.1	4.0	
Effective Green, g (s)	18.2		0.6	24.1	4.0	
Actuated g/C Ratio	0.46		0.02	0.61	0.10	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1518		26	1139	344	
v/s Ratio Prot	c0.23		0.00	c0.06	c0.02	
v/s Ratio Perm						
v/c Ratio	0.49		0.27	0.10	0.22	
Uniform Delay, d1	7.4		19.2	3.2	16.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.3		2.0	0.0	0.1	
Delay (s)	7.7		21.2	3.2	16.4	
Level of Service	A		C	A	B	
Approach Delay (s)	7.7			4.2	16.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	39.4	Sum of lost time (s)	16.6
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL
Lane Configurations				
Volume (vph)	166	27	329	195
Turn Type	NA	Prot	NA	Prot
Protected Phases	2	1	6	8
Permitted Phases				
Detector Phase	2	1	6	8
Switch Phase				
Minimum Initial (s)	6.0	4.0	6.0	4.0
Minimum Split (s)	24.0	9.3	24.0	23.3
Total Split (s)	40.0	15.0	55.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%
Yellow Time (s)	5.0	4.3	5.0	4.3
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.3	6.0	5.3
Lead/Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		
Recall Mode	None	None	None	None

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 34.4

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Sanyo Ave & Otay Mesa Rd

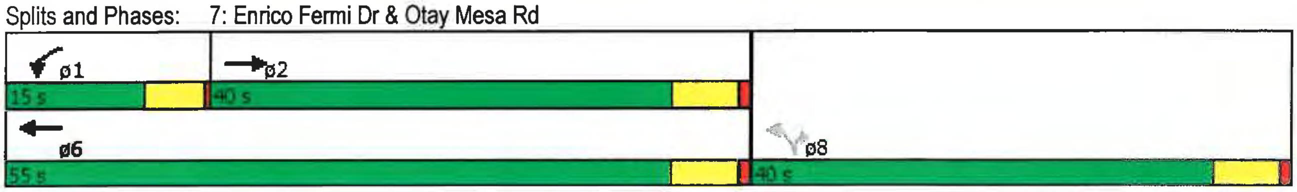
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	166	134	27	329	195	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		5.3	6.0	5.3	
Lane Util. Factor	0.95		1.00	1.00	0.97	
Frt	0.93		1.00	1.00	0.98	
Flt Protected	1.00		0.95	1.00	0.96	
Satd. Flow (prot)	3301		1770	1863	3398	
Flt Permitted	1.00		0.95	1.00	0.96	
Satd. Flow (perm)	3301		1770	1863	3398	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	180	146	29	358	212	30
RTOR Reduction (vph)	98	0	0	0	15	0
Lane Group Flow (vph)	228	0	29	358	227	0
Turn Type	NA		Prot	NA	Prot	
Protected Phases	2		1	6	8	
Permitted Phases						
Actuated Green, G (s)	12.4		0.8	18.5	8.2	
Effective Green, g (s)	12.4		0.8	18.5	8.2	
Actuated g/C Ratio	0.33		0.02	0.49	0.22	
Clearance Time (s)	6.0		5.3	6.0	5.3	
Vehicle Extension (s)	3.5		2.0	3.5	2.0	
Lane Grp Cap (vph)	1077		37	906	733	
v/s Ratio Prot	0.07		0.02	c0.19	c0.07	
v/s Ratio Perm						
v/c Ratio	0.21		0.78	0.40	0.31	
Uniform Delay, d1	9.3		18.5	6.2	12.5	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1		63.9	0.3	0.1	
Delay (s)	9.4		82.4	6.5	12.6	
Level of Service	A		F	A	B	
Approach Delay (s)	9.4			12.2	12.6	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	11.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	38.0	Sum of lost time (s)	16.6
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	415	112	81	21	420
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	15.0	55.0	40.0	40.0
Total Split (%)	42.1%	15.8%	57.9%	42.1%	42.1%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary
Cycle Length: 95
Actuated Cycle Length: 53.3
Natural Cycle: 95
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	415	28	112	81	21	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1847		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1847		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	30	122	88	23	457
RTOR Reduction (vph)	2	0	0	0	0	346
Lane Group Flow (vph)	479	0	122	88	23	111
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	20.9		6.7	32.4	8.6	8.6
Effective Green, g (s)	20.9		6.7	32.4	8.6	8.6
Actuated g/C Ratio	0.39		0.13	0.61	0.16	0.16
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	728		223	1138	287	256
v/s Ratio Prot	c0.26		c0.07	0.05		
v/s Ratio Perm					0.01	c0.07
v/c Ratio	0.66		0.55	0.08	0.08	0.43
Uniform Delay, d1	13.1		21.7	4.2	18.8	20.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	2.2		1.5	0.0	0.0	0.4
Delay (s)	15.4		23.2	4.2	18.9	20.4
Level of Service	B		C	A	B	C
Approach Delay (s)	15.4			15.3	20.4	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	53.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations					
Volume (vph)	132	475	343	20	141
Turn Type	NA	Prot	NA	Perm	Perm
Protected Phases	2	1	6		
Permitted Phases				8	8
Detector Phase	2	1	6	8	8
Switch Phase					
Minimum Initial (s)	6.0	4.0	6.0	4.0	4.0
Minimum Split (s)	40.0	15.0	40.0	40.0	40.0
Total Split (s)	40.0	20.0	60.0	40.0	40.0
Total Split (%)	40.0%	20.0%	60.0%	40.0%	40.0%
Yellow Time (s)	5.0	4.3	5.0	5.0	5.0
All-Red Time (s)	1.0	0.5	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	4.8	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	Min	None	Min	None	None

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 48.5
Natural Cycle: 115
Control Type: Actuated-Uncoordinated

Splits and Phases: 7: Enrico Fermi Dr & Otay Mesa Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	132	41	475	343	20	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		4.8	6.0	6.0	6.0
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00
Frt	0.97		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	1803		1770	1863	1770	1583
Flt Permitted	1.00		0.95	1.00	0.95	1.00
Satd. Flow (perm)	1803		1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	45	516	373	22	153
RTOR Reduction (vph)	13	0	0	0	0	136
Lane Group Flow (vph)	175	0	516	373	22	17
Turn Type	NA		Prot	NA	Perm	Perm
Protected Phases	2		1	6		
Permitted Phases					8	8
Actuated Green, G (s)	11.2		16.0	32.0	5.6	5.6
Effective Green, g (s)	11.2		16.0	32.0	5.6	5.6
Actuated g/C Ratio	0.23		0.32	0.65	0.11	0.11
Clearance Time (s)	6.0		4.8	6.0	6.0	6.0
Vehicle Extension (s)	3.5		2.0	3.5	2.0	2.0
Lane Grp Cap (vph)	407		570	1201	199	178
v/s Ratio Prot	c0.10		c0.29	0.20		
v/s Ratio Perm					c0.01	0.01
v/c Ratio	0.43		0.91	0.31	0.11	0.10
Uniform Delay, d1	16.5		16.1	3.9	19.8	19.7
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9		17.5	0.2	0.1	0.1
Delay (s)	17.3		33.6	4.1	19.9	19.8
Level of Service	B		C	A	B	B
Approach Delay (s)	17.3			21.2	19.8	
Approach LOS	B			C	B	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	49.6	Sum of lost time (s)	16.8
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	843	0	0	5	2	177
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	916	0	0	5	2	192

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	916	5	195
Volume Left (vph)	916	0	0
Volume Right (vph)	0	0	192
Hadj (s)	0.23	0.03	-0.56
Departure Headway (s)	4.7	6.2	5.2
Degree Utilization, x	1.0	0.01	0.28
Capacity (veh/h)	762	570	685
Control Delay (s)	118.1	9.2	10.3
Approach Delay (s)	118.1	9.2	10.3
Approach LOS	F	A	B

Intersection Summary			
Delay	98.8		
Level of Service	F		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	174	0	2	2	3	642
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	189	0	2	2	3	698

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total (vph)	189	4	701
Volume Left (vph)	189	2	0
Volume Right (vph)	0	0	698
Hadj (s)	0.23	0.13	-0.56
Departure Headway (s)	5.6	5.3	3.9
Degree Utilization, x	0.29	0.01	0.76
Capacity (veh/h)	590	622	701
Control Delay (s)	10.9	8.4	18.2
Approach Delay (s)	10.9	8.4	18.2
Approach LOS	B	A	C

Intersection Summary			
Delay	16.6		
Level of Service	C		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	173	464	39	92
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)	0	0	188	504	42	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	973	92	142			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	973	92	142			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	87			
cM capacity (veh/h)	243	965	1440			

Direction, Lane #	NB 1	SB 1
Volume Total	692	142
Volume Left	188	0
Volume Right	0	100
cSH	1440	1700
Volume to Capacity	0.13	0.08
Queue Length 95th (ft)	11	0
Control Delay (s)	3.2	0.0
Lane LOS	A	
Approach Delay (s)	3.2	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	231	198	107	428
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)	0	0	251	215	116	465
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					791	
pX, platoon unblocked						
vC, conflicting volume	1066	349	582			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1066	349	582			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	75			
cM capacity (veh/h)	184	694	993			

Direction, Lane #	NB 1	SB 1
Volume Total	466	582
Volume Left	251	0
Volume Right	0	465
cSH	993	1700
Volume to Capacity	0.25	0.34
Queue Length 95th (ft)	25	0
Control Delay (s)	6.6	0.0
Lane LOS	A	
Approach Delay (s)	6.6	0.0
Approach LOS		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	347	15	230	14	0	12	0	236	24	3	45	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	377	16	250	15	0	13	0	257	26	3	49	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	338	338	49	583	325	270	49			283		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	338	338	49	583	325	270	49			283		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	38	97	75	95	100	98	100			100		
cM capacity (veh/h)	604	582	1020	312	591	769	1558			1280		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	377	266	15	13	283	52
Volume Left	377	0	15	0	0	3
Volume Right	0	250	0	13	26	0
cSH	604	975	312	769	1700	1280
Volume to Capacity	0.62	0.27	0.05	0.02	0.17	0.00
Queue Length 95th (ft)	108	28	4	1	0	0
Control Delay (s)	20.3	10.1	17.1	9.8	0.0	0.5
Lane LOS	C	B	C	A		A
Approach Delay (s)	16.1		13.7		0.0	0.5
Approach LOS	C		B			

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	117	6	80	14	0	26	0	342	12	6	122	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	127	7	87	15	0	28	0	372	13	7	133	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1318				
pX, platoon unblocked												
vC, conflicting volume	552	530	133	614	524	378	133			385		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552	530	133	614	524	378	133			385		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	70	99	91	96	100	96	100			99		
cM capacity (veh/h)	424	452	917	360	456	668	1452			1174		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	127	93	15	28	385	139
Volume Left	127	0	15	0	0	7
Volume Right	0	87	0	28	13	0
cSH	424	855	360	668	1700	1174
Volume to Capacity	0.30	0.11	0.04	0.04	0.23	0.01
Queue Length 95th (ft)	31	9	3	3	0	0
Control Delay (s)	17.1	9.7	15.4	10.6	0.0	0.4
Lane LOS	C	A	C	B		A
Approach Delay (s)	14.0		12.3		0.0	0.4
Approach LOS	B		B			

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	42	8	6	11	23	59	235	28	143
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	20.0	41.0	16.0	37.0	37.0	23.0	56.0	17.0	50.0
Total Split (%)	15.4%	31.5%	12.3%	28.5%	28.5%	17.7%	43.1%	13.1%	38.5%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 44.6
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	8	22	6	11	23	59	235	13	28	143	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3153		1770	1863	1583	1770	3512		1770	3314	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3153		1770	1863	1583	1770	3512		1770	3314	
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)	46	9	24	7	12	25	64	255	14	30	155	114
RTOR Reduction (vph)	0	22	0	0	0	23	0	2	0	0	64	0
Lane Group Flow (vph)	46	11	0	7	12	2	64	267	0	30	205	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	2.1	5.5		1.4	4.8	4.8	4.8	28.3		0.7	24.2	
Effective Green, g (s)	2.1	5.5		1.4	4.8	4.8	4.8	28.3		0.7	24.2	
Actuated g/C Ratio	0.04	0.10		0.03	0.09	0.09	0.09	0.52		0.01	0.44	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	67	316		45	163	138	155	1813		22	1463	
v/s Ratio Prot	c0.03	0.00		c0.00	c0.01		c0.04	c0.08		c0.02	0.06	
v/s Ratio Perm						0.00						
v/c Ratio	0.69	0.04		0.16	0.07	0.02	0.41	0.15		1.36	0.14	
Uniform Delay, d1	26.0	22.3		26.1	23.0	22.8	23.7	6.9		27.0	9.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.7	0.1		1.6	0.2	0.1	0.7	0.0		320.4	0.0	
Delay (s)	46.8	22.3		27.7	23.2	22.9	24.3	7.0		347.4	9.2	
Level of Service	D	C		C	C	C	C	A		F	A	
Approach Delay (s)		36.5			23.7			10.3			43.1	
Approach LOS		D			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	18.9
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	78	6	9	11	35	64	238	23	91
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.8	30.0	10.8	36.0	36.0	7.5	8.6	7.5	36.6
Total Split (s)	19.0	41.0	15.0	37.0	37.0	23.0	55.0	16.0	48.0
Total Split (%)	15.0%	32.3%	11.8%	29.1%	29.1%	18.1%	43.3%	12.6%	37.8%
Yellow Time (s)	4.3	5.0	4.3	5.0	5.0	3.0	3.6	3.0	3.6
All-Red Time (s)	0.5	1.0	0.5	1.0	1.0	0.5	1.0	0.5	1.0
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)	4.8	6.0	4.8	6.0	6.0	3.5	4.6	3.5	4.6
Lead/Lag	Lead	Lead	Lag	Lag	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	Min	None	Min

Intersection Summary

Cycle Length: 127
Actuated Cycle Length: 49.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated

Splits and Phases: 12: Enrico Fermi Dr & Airway Rd

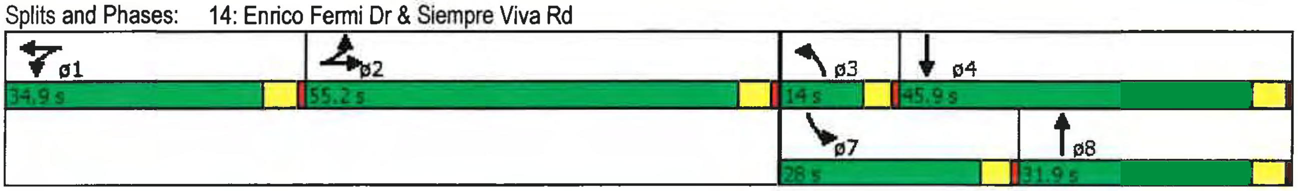
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	6	17	9	11	35	64	238	19	23	91	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3157		1770	1863	1583	1770	3499		1770	3259	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3157		1770	1863	1583	1770	3499		1770	3259	
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)	85	7	18	10	12	38	70	259	21	25	99	111
RTOR Reduction (vph)	0	15	0	0	0	33	0	4	0	0	66	0
Lane Group Flow (vph)	85	10	0	10	12	5	70	276	0	25	144	0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	4.3	10.1		1.8	7.6	7.6	4.0	27.1		0.8	23.9	
Effective Green, g (s)	4.3	10.1		1.8	7.6	7.6	4.0	27.1		0.8	23.9	
Actuated g/C Ratio	0.07	0.17		0.03	0.13	0.13	0.07	0.46		0.01	0.41	
Clearance Time (s)	4.8	6.0		4.8	6.0	6.0	3.5	4.6		3.5	4.6	
Vehicle Extension (s)	2.0	3.5		3.0	3.5	3.5	2.0	3.0		2.0	3.0	
Lane Grp Cap (vph)	129	543		54	241	204	120	1615		24	1326	
v/s Ratio Prot	c0.05	0.00		c0.01	c0.01		c0.04	c0.08		0.01	0.04	
v/s Ratio Perm						0.00						
v/c Ratio	0.66	0.02		0.19	0.05	0.02	0.58	0.17		1.04	0.11	
Uniform Delay, d1	26.5	20.2		27.7	22.4	22.3	26.5	9.2		29.0	10.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.9	0.0		1.7	0.1	0.1	4.6	0.1		197.1	0.0	
Delay (s)	35.4	20.2		29.4	22.5	22.4	31.1	9.3		226.1	10.8	
Level of Service	D	C		C	C	C	C	A		F	B	
Approach Delay (s)		31.9			23.6			13.7			33.7	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	58.7	Sum of lost time (s)	18.9
Intersection Capacity Utilization	33.7%	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)	54	8	8	20	67	230	25	92
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 90.7
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	8	21	8	20	26	67	230	4	25	92	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		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)	3433	1662		1770	3242		1770	3531		1770	3390	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1662		1770	3242		1770	3531		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)	59	9	23	9	22	28	73	250	4	27	100	39
RTOR Reduction (vph)	0	21	0	0	25	0	0	0	0	0	18	0
Lane Group Flow (vph)	59	11	0	9	25	0	73	254	0	27	121	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.1	10.1		10.4	10.4		6.5	53.5		2.5	49.5	
Effective Green, g (s)	10.1	10.1		10.4	10.4		6.5	53.5		2.5	49.5	
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.07	0.56		0.03	0.52	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	362	175		192	352		120	1976		46	1755	
v/s Ratio Prot	c0.02	0.01		0.01	c0.01		c0.04	c0.07		0.02	0.04	
v/s Ratio Perm												
v/c Ratio	0.16	0.07		0.05	0.07		0.61	0.13		0.59	0.07	
Uniform Delay, d1	38.9	38.5		38.2	38.3		43.3	10.0		46.0	11.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.5		0.2	0.2		5.9	0.1		11.7	0.1	
Delay (s)	39.5	39.0		38.4	38.5		49.2	10.1		57.8	11.6	
Level of Service	D	D		D	D		D	B		E	B	
Approach Delay (s)		39.3			38.5			18.8			19.1	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.16		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	19.1
Intersection Capacity Utilization	32.2%	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)	50	4	10	21	111	249	10	57
Turn Type	Split	NA	Split	NA	Prot	NA	Prot	NA
Protected Phases	2	2	1	1	3	8	7	4
Permitted Phases								
Detector Phase	2	2	1	1	3	8	7	4
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0	10.0	4.0	10.0
Minimum Split (s)	31.9	31.9	34.9	34.9	8.5	31.9	8.5	31.9
Total Split (s)	55.2	55.2	34.9	34.9	14.0	31.9	28.0	45.9
Total Split (%)	36.8%	36.8%	23.3%	23.3%	9.3%	21.3%	18.7%	30.6%
Yellow Time (s)	3.9	3.9	3.9	3.9	3.4	3.9	3.4	3.9
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.9	4.9	4.9	4.9	4.4	4.9	4.4	4.9
Lead/Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max

Intersection Summary
Cycle Length: 150
Actuated Cycle Length: 94.2
Natural Cycle: 110
Control Type: Actuated-Uncoordinated

Splits and Phases: 14: Enrico Fermi Dr & Siempre Viva Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	4	12	10	21	24	111	249	0	10	57	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Lane Util. Factor	0.97	1.00		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.92		1.00	1.00		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	1649		1770	3258		1770	3539		1770	3308	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	1649		1770	3258		1770	3539		1770	3308	
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	4	13	11	23	26	121	271	0	11	62	48
RTOR Reduction (vph)	0	12	0	0	23	0	0	0	0	0	24	0
Lane Group Flow (vph)	54	5	0	11	26	0	121	271	0	11	86	0
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	2	2		1	1		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	10.4	10.4		10.8	10.8		9.9	58.8		1.0	49.9	
Effective Green, g (s)	10.4	10.4		10.8	10.8		9.9	58.8		1.0	49.9	
Actuated g/C Ratio	0.10	0.10		0.11	0.11		0.10	0.59		0.01	0.50	
Clearance Time (s)	4.9	4.9		4.9	4.9		4.4	4.9		4.4	4.9	
Vehicle Extension (s)	6.2	6.2		5.4	5.4		2.0	2.5		2.0	5.9	
Lane Grp Cap (vph)	356	171		190	351		175	2078		17	1649	
v/s Ratio Prot	c0.02	0.00		0.01	c0.01		c0.07	c0.08		0.01	0.03	
v/s Ratio Perm												
v/c Ratio	0.15	0.03		0.06	0.07		0.69	0.13		0.65	0.05	
Uniform Delay, d1	40.8	40.3		40.1	40.2		43.6	9.2		49.4	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.6	0.2		0.3	0.2		9.1	0.1		49.2	0.1	
Delay (s)	41.4	40.5		40.4	40.4		52.7	9.4		98.6	13.0	
Level of Service	D	D		D	D		D	A		F	B	
Approach Delay (s)		41.2			40.4			22.8			20.8	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	100.1	Sum of lost time (s)	19.1
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX E

- SANDAG Series 12 Base Forecast Model for Otay Mesa 2050

E-1

SANDAG Series 12
County of San Diego
General Plan Update
2050 Base Forecast

East Otay

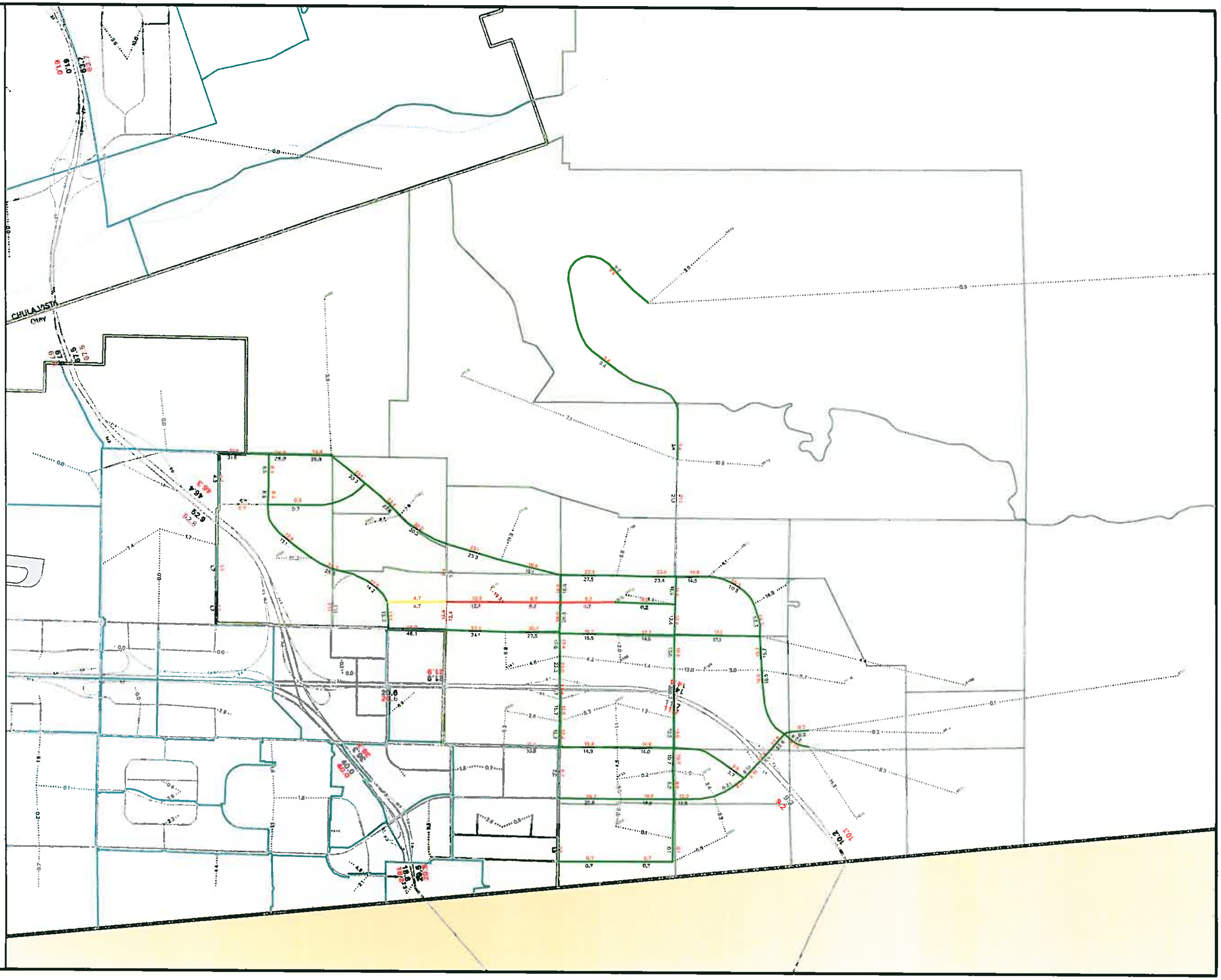
Model Run 10/29/13
2050hyb1 - October 2010 LU Map
2050 Network, 2050 Unincorporated LU,
2030 Incorporat
2050 Revenue Constrained

Levels of Service:

- LOS A - D
- LOS E
- LOS F
- Not Applicable

Forecasted Volumes:

- Adjusted Volume
- Unadjusted Volume
- Traffic Analysis Zone



Feet 0 700 1,400
Meters 84 293 420

SANDAG
San Diego's Regional Planning Agency

February 20, 2014