

Skyline Retirement Center (PDS 2015-IC-15-022)

11330 Campo Rd (SR-94)

September 30, 2015

Draft Traffic Impact Study

Project Owner:

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Job #1520

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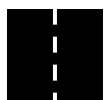
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Glossary of Terms and Acronyms

ADT	Average Daily Traffic
LOS	Level of Service
MPH	Miles per Hour
SANDAG	San Diego Association of Governments
TIS	Traffic Impact Study
V/C	Volume to Capacity Ratio



Executive Summary

Skyline Retirement Center (PDS 2015-IC-15-022)

The project is an assisted living facility on approximately 8 acres located at 11330 Campo Road (SR-94) in the Valle De Oro community of San Diego County, California. The project will consist of full-service senior living facility with up to 232 housing units divided between 85 retirement units and 147 congregate care units. Project access is proposed from a non-circulation element roadways that currently serve the Skyline Wesleyan Church parking lots. There are no new roadway connections proposed to Campo Road (SR-94). The applicant proposes to change the Conservation/Open Space Land Use Designation to Residential. This will require a General Plan Amendment and rezone.

The project trip generation was calculated using the San Diego Association of Governments (SANDAG) trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Based on SANDAG rates, the project is calculated to generate 708 Average Daily Trips (ADT), 32 AM peak hour trips (16 inbound and 16 outbound), and 54 PM peak hour trips (29 inbound and 25 outbound).

The project is calculated to have no near-term and no build-out traffic impacts; therefore, no mitigation measures are required. The project may contribute to potential cumulative impacts; therefore, it is proposed that the applicant participate in the TIF program. Based on the calculations included in this report, there is no anticipated change to existing LOS and forecasted build-out LOS for the study roadways due to project traffic. The calculations show that no changes are required to the County's Circulation Element build-out roadway network conditions. A summary of project impacts is shown in **Table E-1**.

TABLE E-1: SUMMARY OF PROJECT IMPACTS AND MITIGATION

Roadway Facility	Near-Term	Cumulative	Build-Out
Intersections	0	Potential (TIF as Mitigation)	0
Segments	0	Potential (TIF as Mitigation)	0
State Routes	0	Potential (TIF as Mitigation)	0
Ramps	0	Potential (TIF as Mitigation)	0

Note: To mitigate potential cumulative impacts, the County has established a Traffic Impact Fee (TIF) program.



1.0 Introduction

This report describes the existing roadway network in the vicinity of the project site and includes a review of the existing and proposed activities for weekday peak AM and PM periods, and daily traffic conditions when the project is completed. The format of this study includes the following chapters:

- 1.0 Introduction
- 2.0 Existing Conditions
- 3.0 Project Impact Analysis
- 4.0 General Plan Consistency and Build Out Analysis
- 5.0 Summary of Recommended Mitigation and Project Design Features
- 6.0 References
- 7.0 List of Preparers and Persons and Organizations Contacted

1.1 Purpose of the Report

The purpose of this traffic impact study is to determine and analyze potential traffic impacts for the proposed assisted living facility.

1.2 Project Location and Description

The project is an assisted living facility on approximately 8 acres of vacant land located at 11330 Campo Road (SR-94). The project site is generally located on the north side of Campo Road (SR-94) between Via Mercado and the Skyline Wesleyan Church. The project is called Skyline Retirement Center and will consist of full-service senior living facility with up to 232 housing units divided between 85 retirement units and 147 congregate care units. Project access is proposed from a non-circulation element roadways that currently serve the Skyline Wesleyan Church parking lots. There are no new roadway connections proposed to Campo Road (SR-94). The location of the project is shown in **Figure 1**. A map of the Traffic Impact Study (TIS) area is shown in **Figure 2**. A preliminary site plan is shown in **Figure 3**.

1.3 Planning Requirements

The applicant proposes to change the Conservation/Open Space Land Use Designation to Residential. This will require a General Plan Amendment and rezone.



Figure 1: Project Location

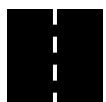
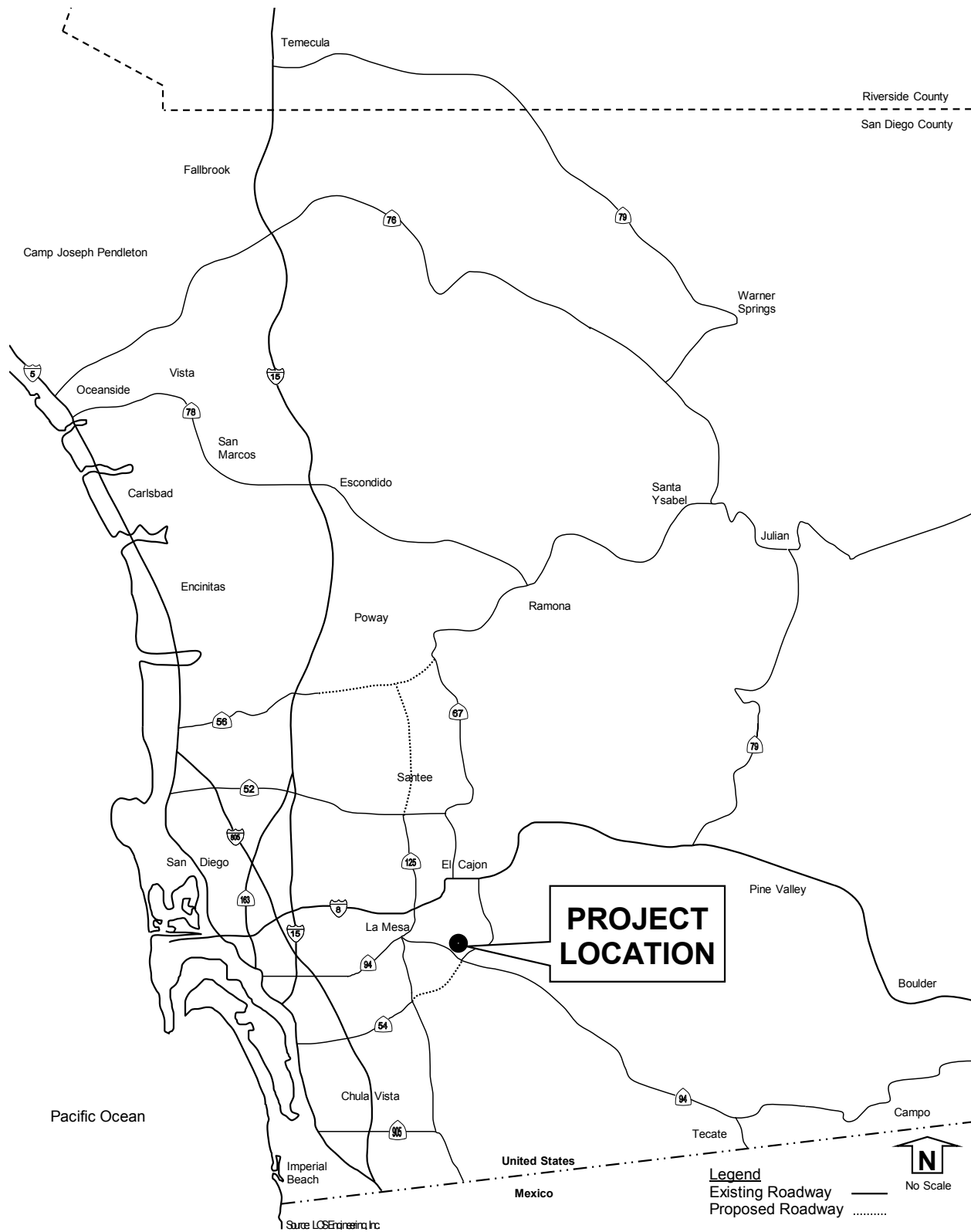
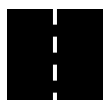
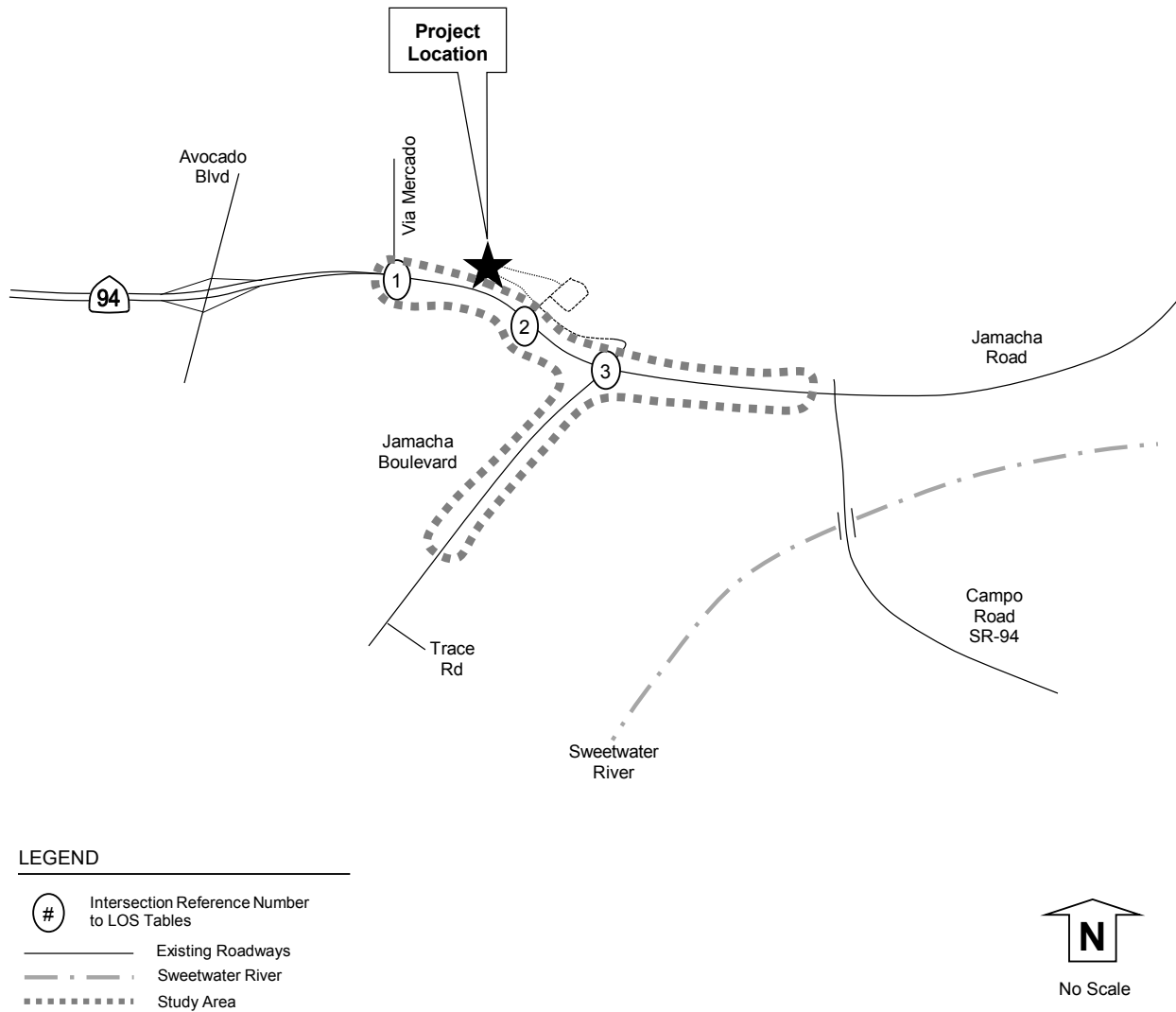
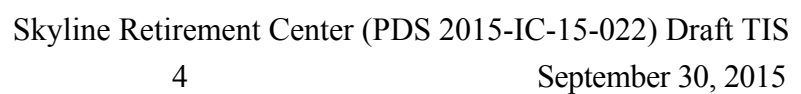


Figure 2: TIS Study Area





LOS Engineering, Inc.
Traffic and Transportation



1.4 Significance Criteria

This section describes traffic impact significance criteria applied to this project.

1.4.1 County of San Diego Guidelines for Determining Significance

Based on the San Diego County *Report Format & Content Requirements Transportation and Traffic*, dated August 24, 2011, a project may have the following allowable increases on congested roadway segments as shown in **Table 1** and on intersections as shown in **Table 2**.

TABLE 1: COUNTY OF SAN DIEGO SIGNIFICANT TRAFFIC IMPACT THRESHOLDS - 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.			

Source: County of San Diego *Guidelines for Determining Significance* Aug 2011

TABLE 2: COUNTY OF SAN DIEGO SIGNIFICANT TRAFFIC IMPACT THRESHOLDS - 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 <u>and</u> the number of trips on a critical movement, exceedance of either criteria result in a significant impact.		

Source: County of San Diego *Guidelines for Determining Significance* Aug 2011



A direct impact would occur when the significance criteria are exceeded. If the proposed project exceeds the values provided in the above table, then the individually proposed project would result in a direct traffic impact. Specific improvements to mitigate direct impacts must be identified.

A cumulative impact would occur when two conditions are met: 1) build-out of all near-term projects results in a cumulative traffic impact and 2) the amount of traffic generated by the individual proposed project contributes (even in a small part) to that cumulative impact. Both conditions must be met for an individual project to result in a cumulative traffic impact.

Potential mitigation measures may include traffic signal improvements (i.e. signal coordination), physical road improvements, street re-striping and parking prohibitions, fair-share contributions, and transportation demand management programs.

Along CALTRANS' freeways, County staff have identified measures of significance on page 23 of the *Report Format & Content Requirements Transportation and Traffic*, dated August 24, 2011. A project may have the following allowable increases on freeways as shown in **Table 3**.

TABLE 3: COUNTY OF SAN DIEGO SIGNIFICANT TRAFFIC IMPACT THRESHOLDS - FREEWAYS

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							

Source: County of San Diego *Guidelines for Determining Significance* Aug 2011



2.0 Existing Conditions

This section describes the study area street system, peak hour intersection volumes and daily roadway volumes.

2.1 Existing Transportation Conditions

In the vicinity of the project, only the study area roadways where a significant threshold may be exceeded due to project traffic were analyzed as part of this study. These roadways included:

Campo Road (SR-94) from Via Mercado to Jamacha Road is classified as a *Freeway/Expressway* on the San Diego County Mobility Element Network map (A copy from the San Diego County General Plan is included in **Appendix A**).

- a) Campo Road (SR-94) from Via Mercado to Jamacha Boulevard is constructed with raised median barrier and includes segments of 4 and 6 lanes and bike lanes in each direction. The 4 lane section extends east from Via Mercado and transitions into 6 lanes. The posted speed limit is 55 Miles Per Hour (MPH).
- b) Campo Road (SR-94) from Jamacha Boulevard to Jamacha Road is constructed with 6 lanes (3 each direction), bike lanes in each direction, and a raised median barrier.

Jamacha Boulevard from Trace Road to Campo Road (SR-94) is classified as a *4.1A Major Road* on the San Diego County Mobility Element Network map. This four-lane undivided roadway is generally with 2 travel lanes and a shoulder in each direction. The posted speed limit is 50 MPH.

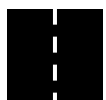
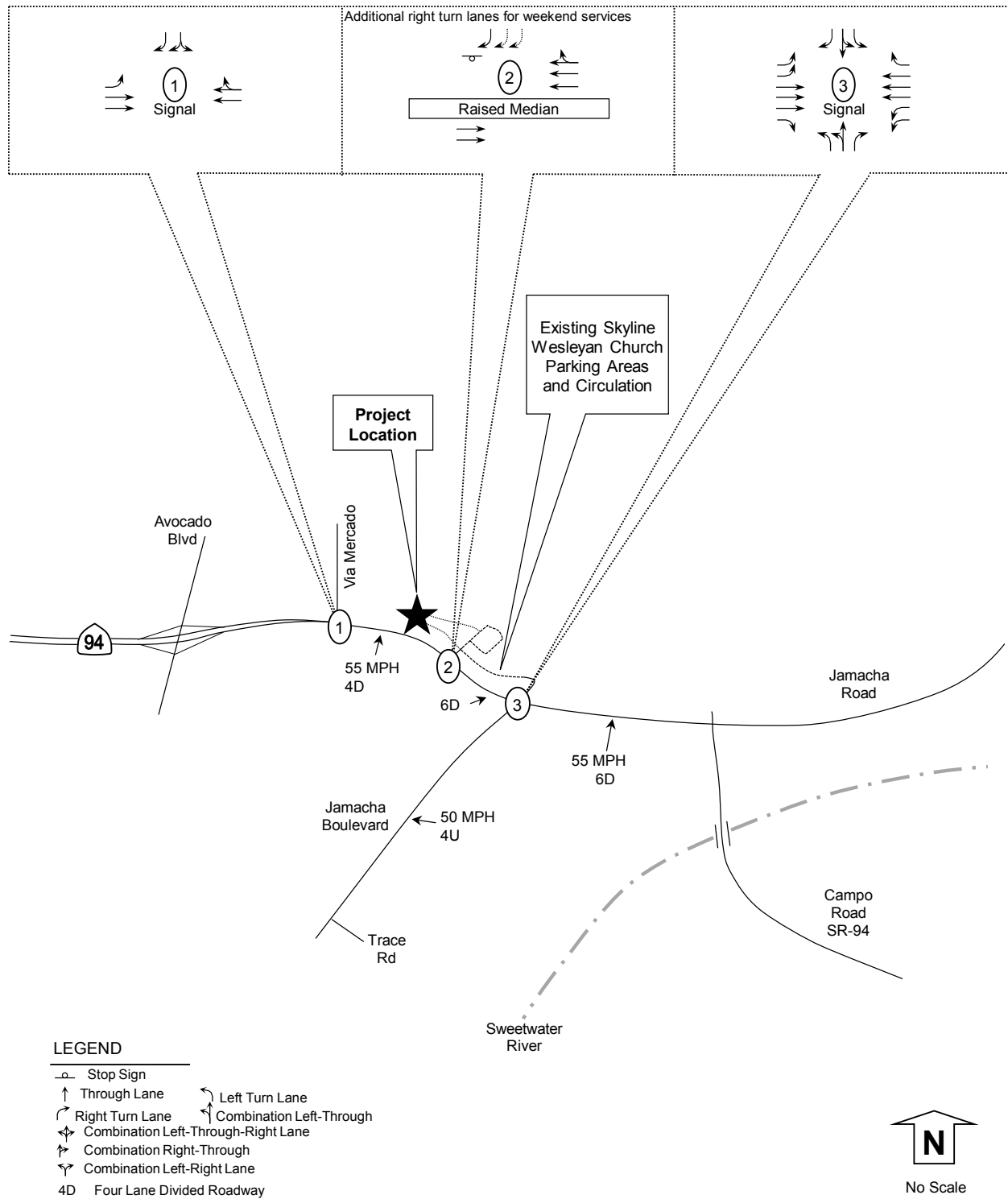
Skyline Church East Access is the north leg of Campo Road (SR-94)/Jamacha Blvd intersection and is not classified on the San Diego County Mobility Element Network map. This four-lane undivided roadway transitions to two lanes and into the Skyline Wesleyan Church parking area.

Skyline Church West Access is north of the Campo Road (SR-94) between Via Mercado and Jamacha Blvd and is not classified on the San Diego County Mobility Element Network map. This undivided roadway serves the Skyline Wesleyan Church parking area.

The existing roadway conditions are shown in **Figure 4**.



Figure 4: Existing Roadway Conditions



2.1.1 Existing Traffic Volumes and LOS Analyses

Existing AM and PM peak hour intersection volumes (with count dates) for the following intersections were collected for this study:

- 1) Campo Road (SR-94)/Via Mercado (Wednesday, 9/23/2015)
- 2) Campo Road (SR-94)/Skyline Wesleyan Church West Dwy (Wednesday, 9/23/2015)
- 3) Campo Road (SR-94)/Jamacha Boulevard (Wednesday, 9/23/2015)

Daily traffic volumes were collected for Jamacha Boulevard from Trace Rd to Campo Rd (SR-94) on Wednesday, 9/23/2015.

Campo Road (SR-94) daily volumes were obtained from Caltrans for the segments of:

- 1) Campo Road (SR-94) from Via Mercado to Jamacha Blvd (Caltrans 2014)
- 2) Campo Road (SR-94) from Jamacha Blvd to Jamacha Road (Caltrans 2014)

The existing AM, PM, and daily volumes are shown in **Figure 5**. Intersection and segment LOS are shown in **Tables 4 and 5**. The state route (SR-94) LOS shown in **Table 6** was calculated using segment capacities from SANDAG and peak hour directional volumes from Figure 5. Count data along with SANDAG capacities for Campo Road (SR-94) are included in **Appendix B**.

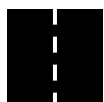


Figure 5: Existing Volumes

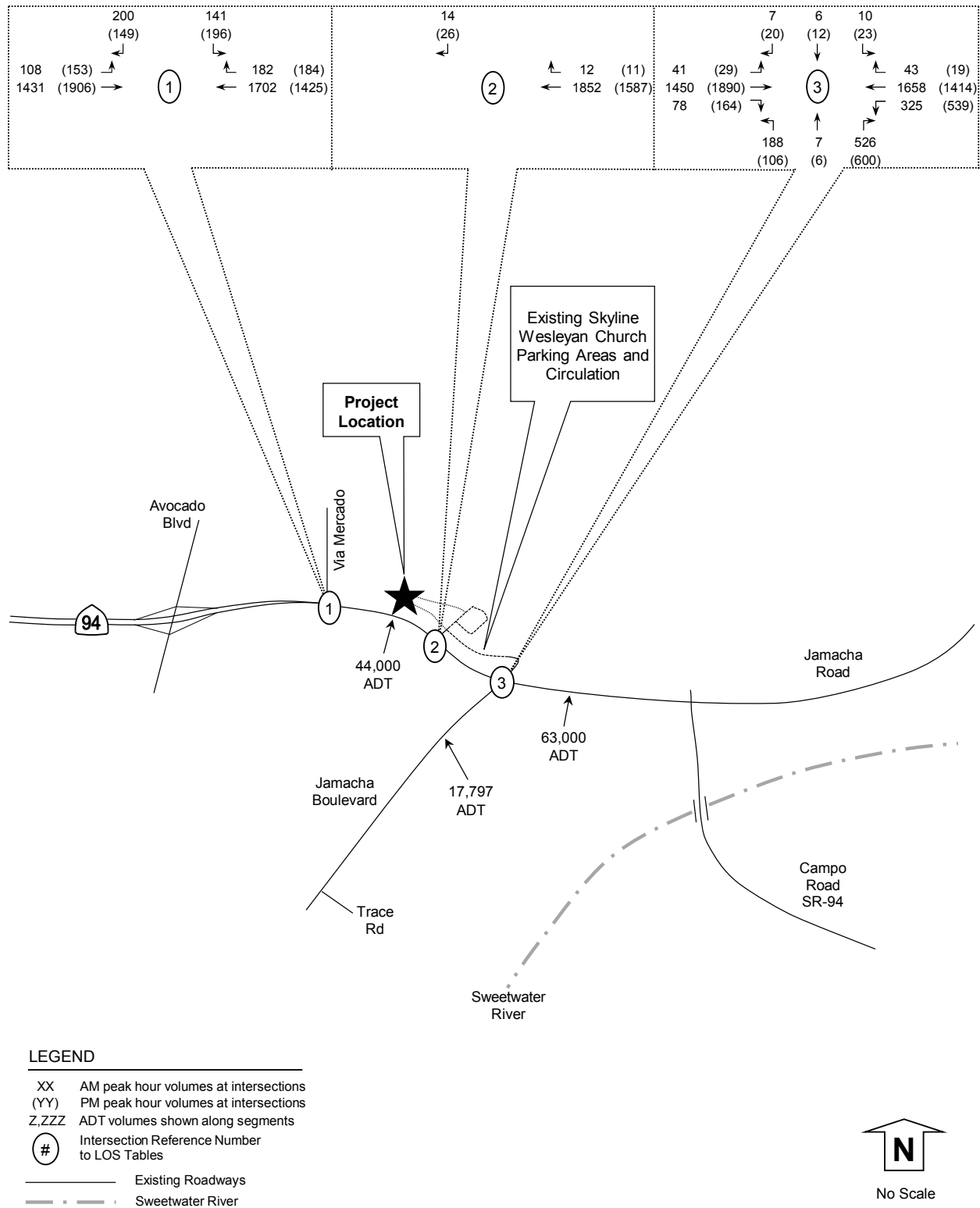


TABLE 4: EXISTING INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis) ¹	Movement	Peak Hour	Existing	
			Delay ²	LOS ³
1) Campo Rd at Via Mercado (S)	All	AM	27.6	C
	All	PM	26.1	C
2) Campo Rd at Church W. Dwy (U)	SB R	AM	14.5	B
	SB R	PM	13.4	B
3) Campo Rd at Jamacha Blvd (S)	All	AM	35.1	D
	All	PM	49.1	D

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in sec. 3) LOS: Level of Service

TABLE 5: EXISTING SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	County Mobility Element	Existing				
		Daily Volume	# of lanes	LOS E Capacity	V/C	LOS
Jamacha Boulevard						
From Trace Rd to Campo Rd (SR-94)	4.1A Major Rd (1)	17,797	4	34,200	0.52	B

Notes: (1) Capacity taken as 4.1B because raised median currently not constructed. Daily volumes is a 24 hour volume.

LOS: Level of Service. V/C: Volume to Capacity ratio.

TABLE 6: EXISTING STATE ROUTE VOLUMES AND LEVEL OF SERVICE

Campo Road (SR-94)	AM			AM			PM			PM			Max	Max
	Vol	Cap	EB V/C	Vol	Cap	WB V/C	Vol	Cap	EB V/C	Vol	Cap	WB V/C	V/C	V/C LOS
Via Mercado to Jamacha Blvd	1572	2622	0.600	1884	5100	0.369	2102	2622	0.802	1609	5100	0.315	0.802	D
Jamacha Blvd to Jamacha Rd	1986	2984	0.666	2026	5100	0.397	2513	2984	0.842	1972	5100	0.387	0.842	D

Notes: LOS per SANDAG Table D.3 (LOS A <0.41; LOS B 0.42-0.62; LOS C 0.63-0.79; LOS D 0.80-0.92; LOS E 0.93-1.0; LOS F >1.0).

Max: Maximum between all shown peak periods. Vol: Volume. Cap: Capacity. V/C: Volume to Capacity Ratio

Under existing conditions, all study roadway elements were calculated to operate at LOS D or better. Intersection LOS calculations are included in **Appendix C**.

2.2 Existing Parking, Transit and On-site Circulation

The existing project site is vacant; therefore, no existing on-site parking and no on-site circulation exists. However, the site will connect with the existing Skyline Wesleyan Church roadways that currently connect with Campo Road (SR-94).

The Metropolitan Transit System shows Bus Routes 856 and 894 in the vicinity of the project site with bus stops at Campo Road/Jamacha Road (approximately 1 mile to the east) and Via Mercado/Calle Verde (approximately 0.4 miles to the west). A map and time tables are included in **Appendix D**.



3.0 Project Impact Analysis

This section describes the traffic analysis methodology.

3.1 Analysis and Methodology

The project study area was based on direction from County staff and guidelines as outlined in the County of San Diego *Guidelines for Determining Significance and Report Format and Content Requirements Transportation and Traffic* dated August 24, 2011.

The traffic analyses prepared for this study were based on the *2000 Highway Capacity Manual* (HCM) operations analysis using Level of Service (LOS) evaluation criteria. The operating conditions of the study intersections, roadway segments, and highway segments are measured using the HCM LOS designations, which range from A through F. LOS A represents the best operating condition and LOS F denotes the worst operating condition. The individual LOS criteria for each roadway component are described below.

3.1.1 Intersections

The study intersections were analyzed based on the **operational analysis** outlined in the 2000 HCM. This process defines LOS in terms of **average control delay** per vehicle, which is measured in seconds. LOS at the intersections were calculated using the computer software program Synchro 8.0. The HCM LOS for the range of delay by seconds for un-signalized and signalized intersections is described in **Table 7**.

TABLE 7: UN-SIGNALIZED AND SIGNALIZED INTERSECTION LEVEL OF SERVICE (HCM 2000)

Level of Service	Un-Signalized Average Control Delay (seconds/vehicle)	Signalized Average Control Delay (seconds/vehicle)
A	0-10	0-10
B	> 10-15	> 10-20
C	> 15-25	> 20-35
D	> 25-35	> 35-55
E	> 35-50	> 55-80
F	> 50	> 80

Source: Highway Capacity Manual 2000.

3.1.2 Street Segments

The street segments were analyzed based on the functional classification of the roadway using the County of San Diego *Average Daily Vehicle Trips* capacity lookup table. The roadway segment capacity and LOS standards used to analyze street segments are summarized in **Table 8**.



TABLE 8: STREET SEGMENT DAILY CAPACITY AND LOS (COUNTY OF SAN DIEGO GENERAL PLAN UPDATE)

Proposed GPU Road Classification		LOS A	LOS B	LOS C	LOS D	LOS E
Expressway	6.1	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial	6.2	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road w/raised median	4.1A	<14,800	<24,700	<29,600	<33,400	<37,000
Major Rd w/intermittent turn lanes	4.1B	<13,700	<22,800	<27,400	<30,800	<34,200
Boulevard w/raised median	4.2A	<18,000	<21,000	<24,000	<27,000	<30,000
Boulevard w/Intermittent turn lanes	4.2B	<16,800	<19,600	<22,500	<25,000	<28,000
Community Collector w/raised median	2.1A	<10,000	<11,700	<13,400	<15,000	<19,000
Community Collector w/cont. turn lane	2.1B	<3,000	<6,000	<9,500	<13,500	<19,000
Community Collector w/intermit. turn lane	2.1C	<3,000	<6,000	<9,500	<13,500	<19,000
Community Collector w/improvement opt.	2.1D	<3,000	<6,000	<9,500	<13,500	<19,000
Community Collector	2.1E	<1,900	<4,100	<7,100	<10,900	<16,200
Light Collector w/raised median	2.2A	<3,000	<6,000	<9,500	<13,500	<19,000
Light Collector w/continuous left turn lane	2.2B	<3,000	<6,000	<9,500	<13,500	<19,000
Light Collector w/intermittent turn lane	2.2C	<3,000	<6,000	<9,500	<13,500	<19,000
Light Collector w/ passing lane	2.2D	<3,000	<6,000	<9,500	<13,500	<19,000
Light Collector - no median	2.2E	<1,900	<4,100	<7,100	<10,900	<16,200
Light Collector w/ reduced shoulder	2.2F	<5,800	<6,800	<7,800	<8,700	<9,700
Minor Collector w/raised median	2.3A	<3,000	<6,000	<7,000	<8,000	<9,000
Minor Collector w/intermittent turn lane	2.3B	<3,000	<6,000	<7,000	<8,000	<9,000
Minor Collector – no median	2.3C	<1,900	<4,100	<6,000	<7,000	<8,000

Source: County of San Diego Public Road Standards, March, 2012.

3.1.3 State Routes

State Route 94 (Campo Road) was analyzed using the peak hour directional Volume to Capacity (V/C) ratio as implemented for the County's General Plan Update. The V/C for LOS is shown in **Table 9**. The SANDAG V/C LOS Table D.3 is included in **Appendix E**.

TABLE 9: STATE ROUTE LEVEL OF SERVICE

Measure of Effectiveness	LOS A	LOS B	LOS C	LOS D	LOS E
Volume/Capacity Ratio	<0.41	0.42-0.62	0.63-0.79	0.80-0.92	0.93-1.00

Source: SANDAG Table D.3.



3.2 Project Trip Generation

The project trip generation was calculated using SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Based on SANDAG rates, the project is calculated to generate 708 Average Daily Trips (ADT), 32 AM peak hour trips (16 inbound and 16 outbound), and 54 PM peak hour trips (29 inbound and 25 outbound) as shown in **Table 10**.

TABLE 10: PROJECT TRIP GENERATION

Proposed Land Use	Rate	Size & Units	ADT	%	Split	AM				PM			
						IN	OUT	%	Split	IN	OUT	%	Split
Retirement Community	4 /DU	85 DU	340	5%	0.4 0.6	7	10	7%	0.6 0.4	14	10	7%	0.6 0.4
Congregate Care Facility	2.5 /DU	147 DU	368	4%	0.6 0.4	9	6	8%	0.5 0.5	15	15	8%	0.5 0.5
Totals		232	708			16	16			29	25		

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

DU: Dwelling Unit; ADT-Average Daily Traffic; Split-percent inbound and outbound.

3.3 Project Trip Distribution and Assignment

The project distribution was based on a review of background traffic, population centers for visitors and employees, and nearby commercial/shopping centers as shown in **Figure 6**. The project trip assignment is shown in **Figure 7**.



Figure 6: Project Trip Distribution

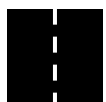
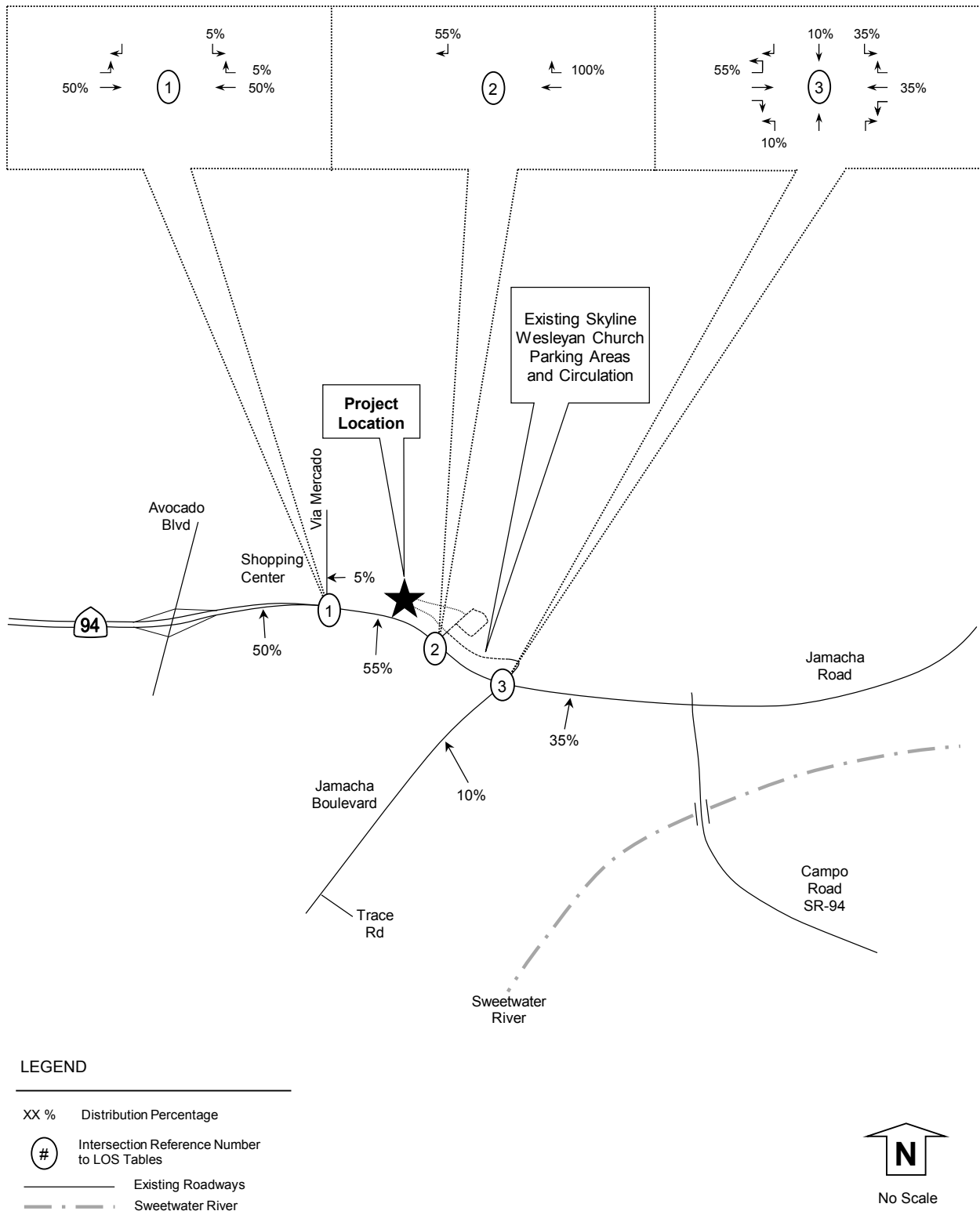
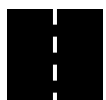
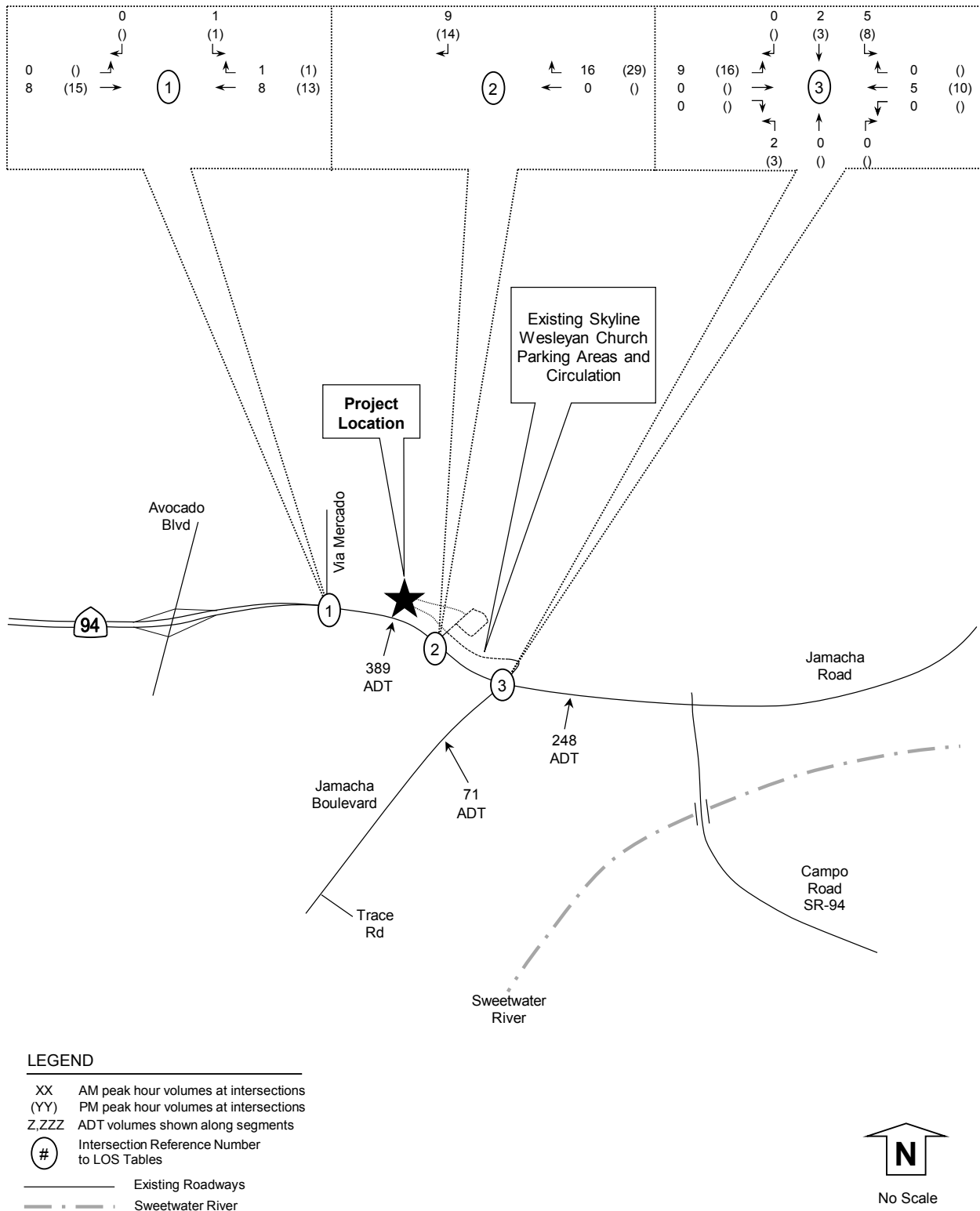


Figure 7: Project Trip Assignment



3.4 Existing + Project Conditions

This section will summarize the analysis for the addition of project traffic onto the existing background traffic for AM, PM, and daily traffic conditions. The peak hour intersection volumes and daily traffic volumes for this scenario of existing + project are shown in **Figure 8**. The LOS calculated for the intersections, street segments, and state route are shown in **Tables 11, 12, and 13**, respectively.

TABLE 11: EXISTING + PROJECT INTERSECTION LEVEL OF SERVICE

Intersection & (Analysis) ¹	Move-ment	Peak Hour	Existing		Existing + Project			Significant Impact? ⁵
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	
1) Campo Rd at Via Mercado (S)	All	AM	27.6	C	28.2	C	0.6	No
	All	PM	26.1	C	26.7	C	0.6	No
2) Campo Rd at Church W. Dwy (U)	SB R	AM	14.5	B	14.9	B	0.4	No
	SB R	PM	13.4	B	13.9	B	0.5	No
3) Campo Rd at Jamacha Blvd (S)	All	AM	35.1	D	35.3	D	0.2	No
	All	PM	49.1	D	49.5	D	0.4	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Significant impact based on SD County criteria as noted in Table 2.

TABLE 12: EXISTING + PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

TABLE 12: EXISTING + PROJECT ELEMENT RDT VOLUMES AND LEVEL OF SERVICE													
Segment	County Mobility Element	Existing				Project	Existing + Project					Change in V/C	Sig Direct Impact?
		Daily Volume	LOS E Capacity	V/C	LOS	Daily Volume	Daily Volume	LOS E Capacity	V/C	LOS			
Jamacha Boulevard													
From Trace Rd to Campo Rd (SR-94) 4.1A Major Rd (1)													
		17,797	34,200	0.520	B	71	17,868	34,200	0.522	B	0.002	No	

Notes: (1) Capacity taken as 4.1B because raised median currently not constructed. Daily volumes is a 24 hour volume.

LOS: Level of Service. V/C: Volume to Capacity ratio.

TABLE 13: EXISTING + PROJECT STATE ROUTE ADT VOLUMES AND LEVEL OF SERVICE

Campo Road (SR-94)	AM			AM			PM			PM			Max	
	Vol	Cap	EB V/C	Vol	Cap	WB V/C	Vol	Cap	EB V/C	Vol	Cap	WB V/C	V/C	V/C LOS
Via Mercado to Jamacha Blvd														
2015	1572	2622	0.600	1884	5100	0.369	2102	2622	0.802	1609	5100	0.315	0.802	D
Project	9			16			16			29			Delta=	0.006
2015 + Project	1581	2622	0.603	1900	5100	0.373	2118	2622	0.808	1638	5100	0.321	0.808	D
Jamacha Blvd to Jamacha Rd														
2015	1986	2984	0.666	2026	5100	0.397	2513	2984	0.842	1972	5100	0.387	0.842	D
Project	5			5			8			10			Delta=	0.003
2015 + Project	1991	2984	0.667	2031	5100	0.398	2521	2984	0.845	1982	5100	0.389	0.845	D

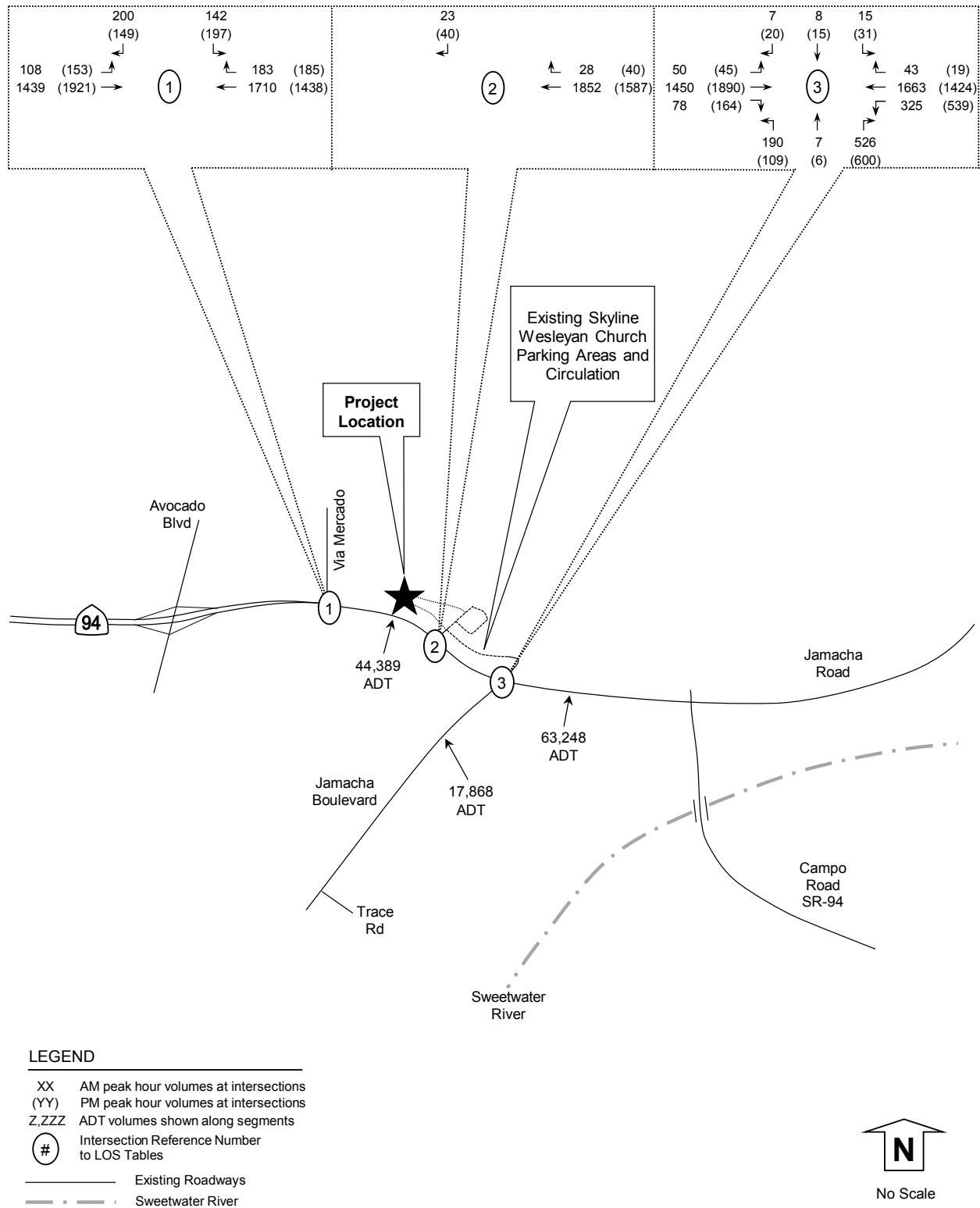
Notes: LOS per SANDAG Table D.3 (LOS A <0.41; LOS B 0.42-0.62; LOS C 0.63-0.79; LOS D 0.80-0.92; LOS E 0.93-1.0; LOS F >1.0).

Max: Maximum between all shown peak periods. Vol: Volume. Cap: Capacity. V/C: Volume to Capacity Ratio

Under existing + project conditions, all study intersections and roadways were calculated to operate at LOS D or better. Intersection LOS calculations are included in **Appendix F**.



Figure 8: Existing + Project Volumes



3.5 Ramps

The project is not anticipated to add a significant amount of traffic to the on-ramps along SR-94; therefore, a ramp meter analysis is not provided.

3.6 Congestion Management Program

The Congestion Management Program (CMP), adopted in 2008 by the SANDAG Transportation Committee, is intended to determine if a large project (greater than 2,400 daily trips or 200 peak hour trips) will adversely impact the CMP transportation system. The project is calculated to generate less than 2,400 ADT and less than 200 peak hour trips; therefore, a CMP analysis is not warranted.

3.7 Hazards Due To An Existing Transportation Design Feature

The project has frontage along Campo Road (SR-94). Any required improvements will be constructed to maintain existing conditions as it relates to existing design features.

3.8 Hazards To Pedestrians or Bicyclists

The project has pedestrian access proposed to the western edge of the Skyline Wesleyan Church site. Any required improvements will be constructed to maintain existing conditions as it relates to pedestrian and bicyclists.

3.9 Public Transportation

Metropolitan Transit System Bus Route 856 and 894 in the vicinity of the project site with bus stops at Campo Road/Jamacha Road (approximately 1 mile to the east) and Via Mercado/Calle Verde (approximately 0.4 miles to the west).

3.10 Site Access

Project access is proposed through connections with existing roadways on the Skyline Wesleyan Church. Access to Campo Road (SR-94) will be through two existing connections: 1) a westerly right-in/right-out driveway, and 2) the signalize intersection of Campo Road (SR-94) at Jamacha Blvd (the Church access is the north leg of this intersection).



3.11 Near-Term Impact Summary Table

The project is calculated to have no direct impacts and the potential for cumulative impacts as summarized in **Table 14**.

TABLE 14: NEAR-TERM IMPACT SUMMARY TABLE

Roadway Facility	Direct Impacts	Cumulative Impacts
Intersections	0	Potential
Segments	0	Potential
State Routes	0	Potential
Ramps	0	Potential

Note: To mitigate potential cumulative impacts, the County has established a Traffic Impact Fee (TIF) program.



4.0 General Plan Consistency and Build-out Analysis

The project use is not consistent with the existing general plan. The project applicant proposes a General Plan Amendment and Rezone. Therefore, a build-out analysis is included.

4.1 Build-Out Traffic Volumes and LOS Analyses

Build-out conditions were analyzed using SANDAG's Series 12 Year 2050 forecasted volumes to be consistent with the San Diego County General Plan Update. The intersection lane configurations were modified to match the SANDAG lane segments as shown in the General Plan Update functional classification network. The 2050 segment volumes and segment functional classification network are included in **Appendix G**. Build-out roadway conditions are shown in **Figure 9**.

Intersection volumes were factored up from near-term turn moves using a 10% grown factor based on the increase between 2015 peak hour directional volumes and the 2050 peak hour directional volumes (calculations included in **Appendix H**).

Build-out year 2050 volumes are shown in **Figure 10**. Intersection, segment, and state route LOS are shown in **Tables 15, 16, and 17**, respectively.

TABLE 15: BUILD-OUT INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis) ¹	Movement	Peak Hour	Build-Out	
			Delay ²	LOS ³
1) Campo Rd at Via Mercado (S)	All	AM	25.3	C
	All	PM	20.1	C
2) Campo Rd at Church W. Dwy (U)	SB R	AM	15.7	C
	SB R	PM	14.3	B
3) Campo Rd at Jamacha Blvd (S)	All	AM	42.9	D
	All	PM	67.3	E

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service.

TABLE 16: BUILD-OUT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	County Mobility Element	Build-Out			
		Daily Volume	LOS E Capacity	V/C	LOS
Jamacha Boulevard					
From Trace Rd to Campo Rd (SR-94)	4.1A Major Rd	23,200	37,000	0.627	B

Notes: Daily volumes is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.



Figure 9: Build-Out Roadway Conditions

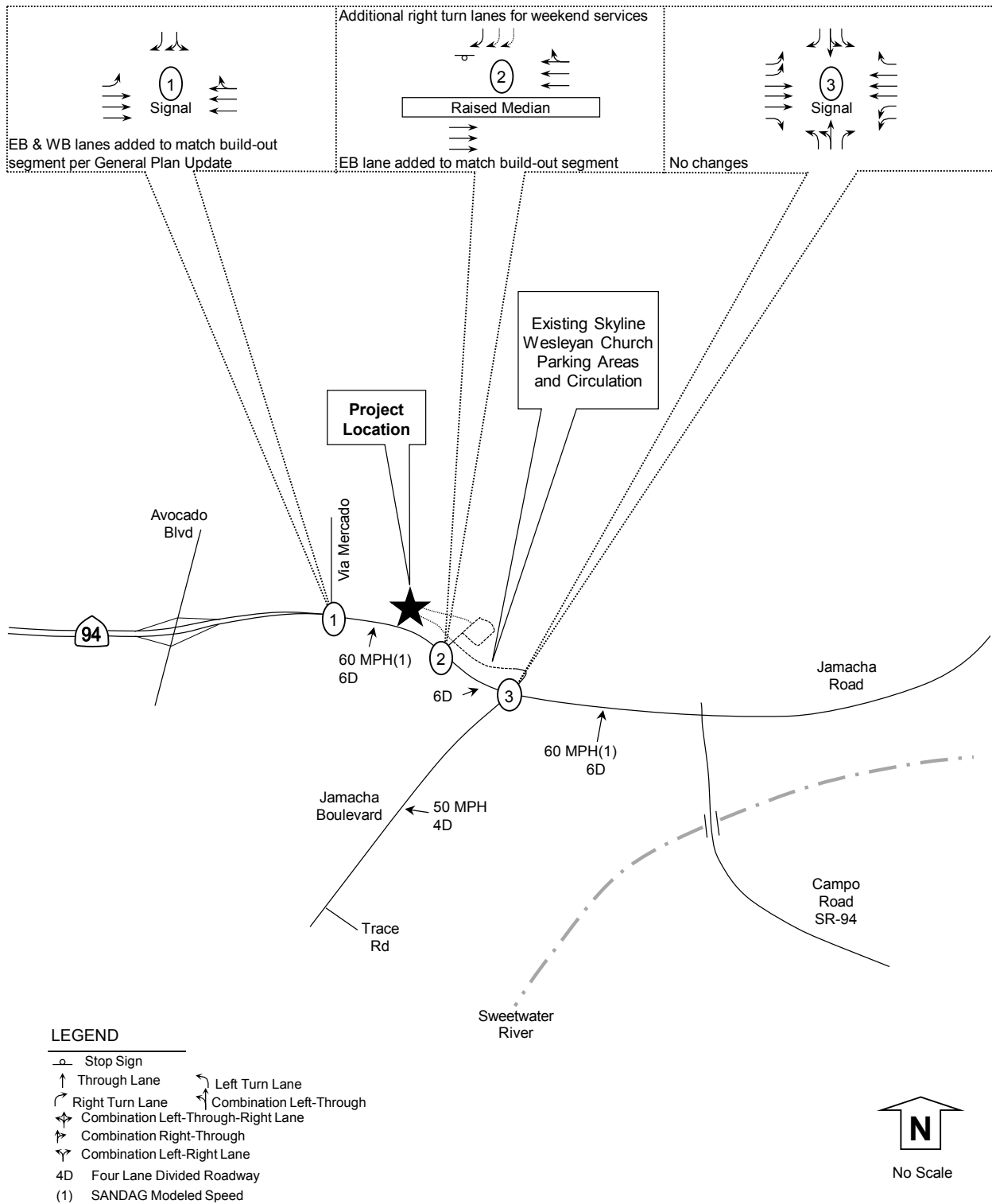


Figure 10: Build-Out Volumes

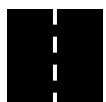
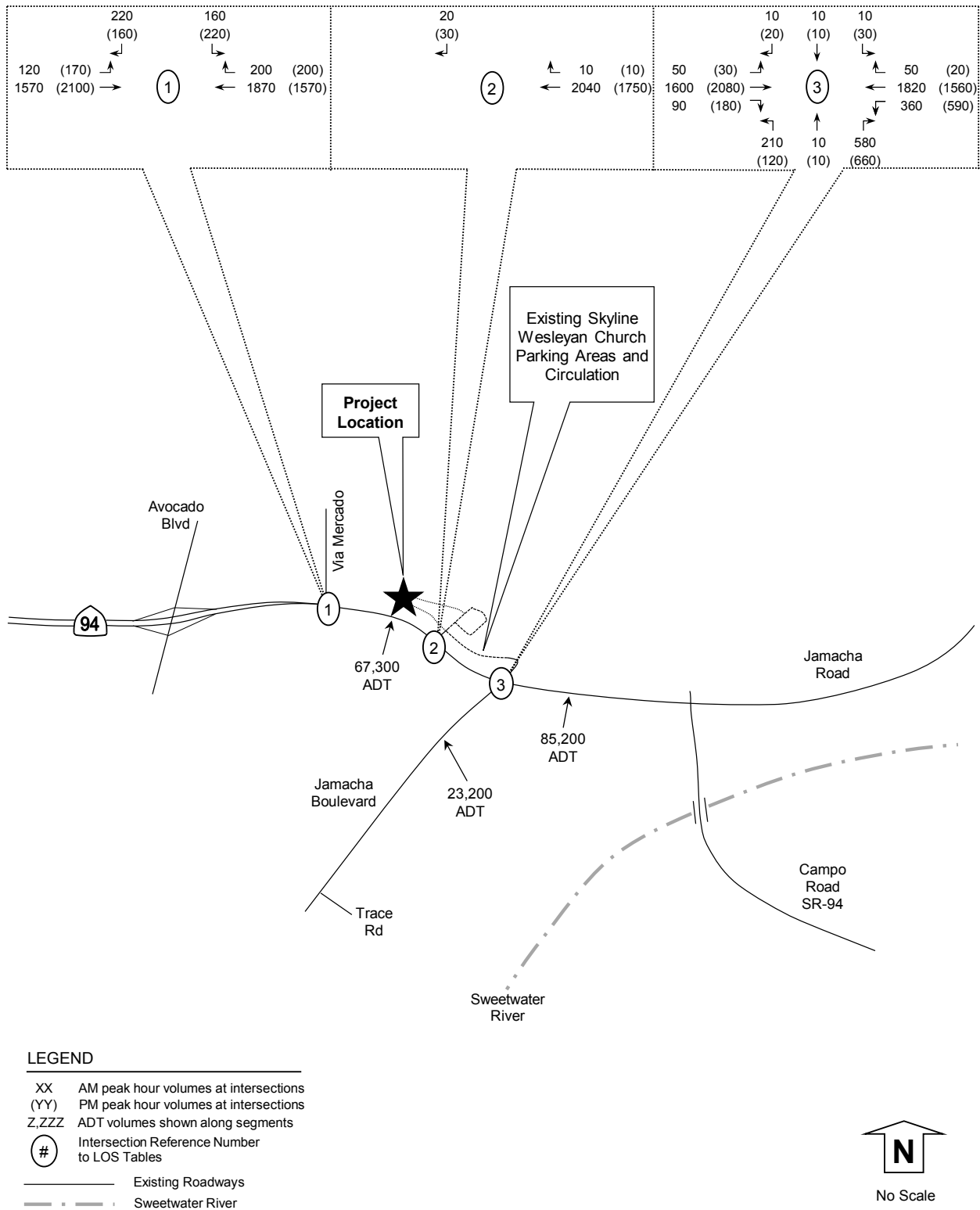


TABLE 17: BUILD-OUT STATE ROUTE VOLUMES AND LEVEL OF SERVICE

Campo Road (SR-94)	AM			AM			PM			PM			Max	
	Vol	Cap	EB V/C	Vol	Cap	WB V/C	Vol	Cap	EB V/C	Vol	Cap	WB V/C	V/C	Max V/C LOS
Via Mercado to Jamacha Blvd	2094	2622	0.799	1870	5100	0.367	1789	2622	0.682	2366	5100	0.464	0.799	D
Jamacha Blvd to Jamacha Rd	2809	2984	0.941	2259	5100	0.443	2261	2984	0.758	3057	5100	0.599	0.941	E

Notes: LOS per SANDAG Table D.3 (LOS A <0.41; LOS B 0.42-0.62; LOS C 0.63-0.79; LOS D 0.80-0.92; LOS E 0.93-1.0; LOS F >1.0).

Max: Maximum between all shown peak periods. Vol: Volume. Cap: Capacity. V/C: Volume to Capacity Ratio

Under build-out conditions, all study roadway elements were calculated to operate at LOS D or better, except for:

- 1) Intersection of Campo Rd (SR-94) at Jamacha Blvd (LOS E PM), and
- 2) Campo Rd (SR-94) from Jamacha Blvd (LOS E peak hour).

Intersection LOS calculations are included in **Appendix I**.

4.2 Build-Out + Project Traffic Volumes and LOS Analyses

Build-out plus project conditions were analyzed by adding the project traffic on top of SANDAG's Series 12 Year 2050 forecasted volumes for the study area roadways.

The build-out year 2050 plus project volumes are shown in **Figure 11**. Intersection, segment, and state route LOS are shown in **Tables 18, 19, and 20**, respectively.

TABLE 18: BUILD-OUT + PROJECT INTERSECTION LEVEL OF SERVICE

Intersection & (Analysis) ¹	Move-ment	Peak Hour	Build-Out		Build-Out + Project			Significant Impact? ⁵
			Delay ²	LOS ³	Delay ²	LOS ³	Delta ⁴	
1) Campo Rd at Via Mercado (S)	All	AM	25.3	C	25.9	C	0.6	No
	All	PM	20.1	C	20.5	C	0.4	No
2) Campo Rd at Church W. Dwy (U)	SB R	AM	15.7	C	16.2	C	0.5	No
	SB R	PM	14.3	B	15.0	B	0.7	No
3) Campo Rd at Jamacha Blvd (S)	All	AM	42.9	D	43.2	D	0.3	No
	All	PM	67.3	E	67.4	E	0.1	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Significant impact based on SD County criteria as noted in Table 2.

TABLE 19: BUILD-OUT + PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	County Mobility Element	Build-Out				Project Daily Volumes	Build-Out + Project				
		Daily Volume	LOS E Capacity	V/C	LOS		Daily Volume	LOS E Capacity	V/C	LOS	Built-Out Impact?
		Jamacha Boulevard									
From Trace Rd to Campo Rd (SR-94)	4.1A Major Rd	23,200	37,000	0.627	B	71	23,271	37,000	0.629	B	No

Notes: Daily volumes is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.



Figure 11: Build-Out + Project Volumes

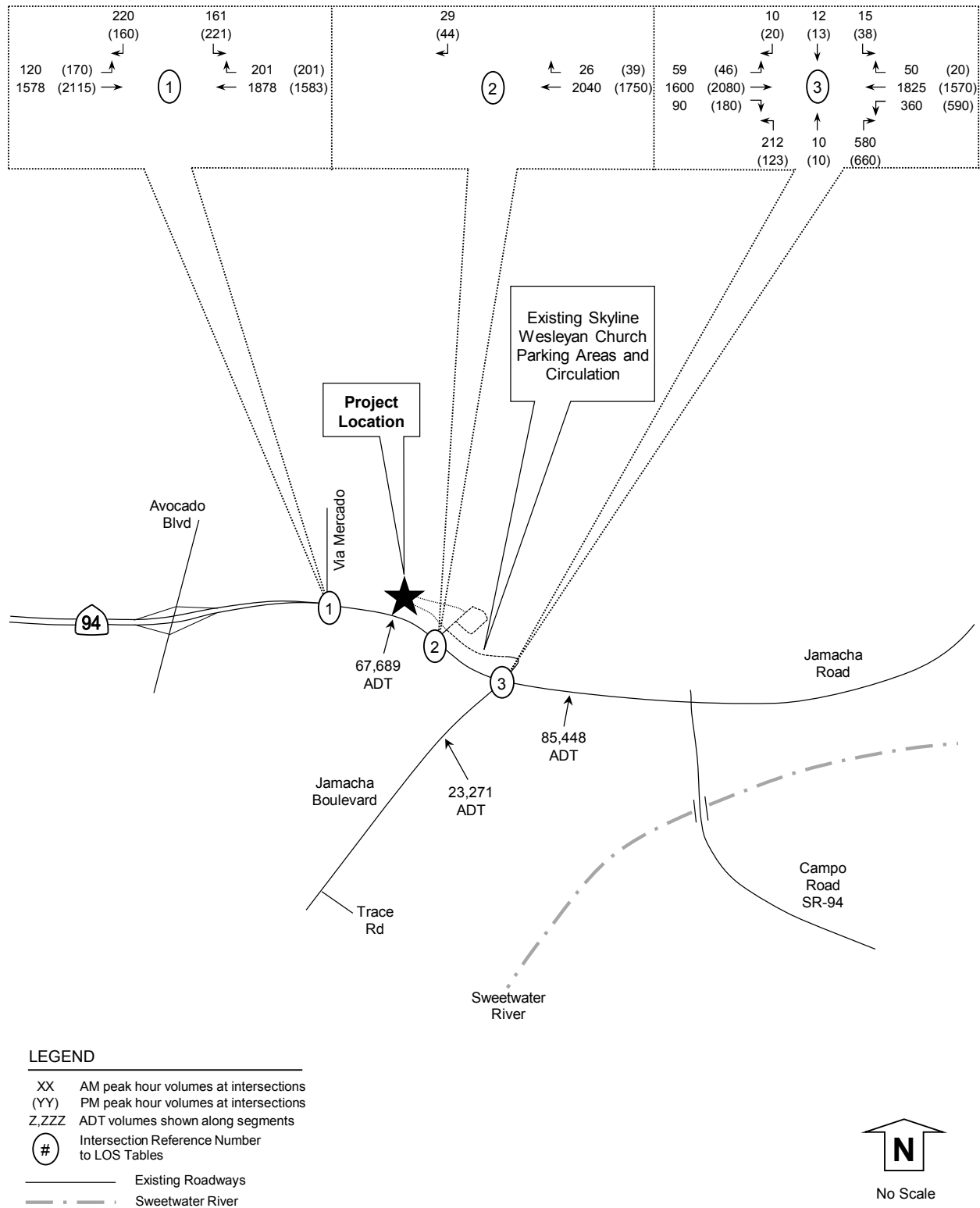


TABLE 20: BUILD-OUT + PROJECT STATE ROUTE VOLUMES AND LEVEL OF SERVICE

Campo Road (SR-94)	AM			AM			PM			PM			Max	Max
	Vol	Cap	EB V/C	Vol	Cap	WB V/C	Vol	Cap	EB V/C	Vol	Cap	WB V/C	V/C	V/C LOS
Via Mercado to Jamacha Blvd														
2050	2094	2622	0.799	1870	5100	0.367	1789	2622	0.682	2366	5100	0.464	0.799	D
Project	9			16			16			29			Delta=	0.003
2050 + Project	2103	2622	0.802	1886	5100	0.370	1805	2622	0.688	2395	5100	0.470	0.802	D
Jamacha Blvd to Jamacha Rd														
2050	2809	2984	0.941	2259	5100	0.443	2261	2984	0.758	3057	5100	0.599	0.941	E
Project	5			5			8			10			Delta=	0.002
2050 + Project	2814	2984	0.943	2264	5100	0.444	2269	2984	0.760	3067	5100	0.601	0.943	E

Notes: LOS per SANDAG Table D.3 (LOS A <0.41; LOS B 0.42-0.62; LOS C 0.63-0.79; LOS D 0.80-0.92; LOS E 0.93-1.0; LOS F >1.0).

Max: Maximum between all shown peak periods. Vol: Volume. Cap: Capacity. V/C: Volume to Capacity Ratio

Under build-out + project conditions, all study roadway elements were calculated to operate at LOS D or better, except for:

- 1) Intersection of Campo Rd (SR-94) at Jamacha Blvd (LOS E PM), and
- 2) Campo Rd (SR-94) from Jamacha Blvd (LOS E peak hour).

The project traffic does not exceed the County's significance thresholds for the above locations as follows:

- 1) Intersection of Campo Rd (SR-94) at Jamacha Blvd (project adds 0.1 seconds of additional delay at LOS E to which the County's criteria allows for up to 2 seconds of additional delay at LOS E), and
- 2) Campo Rd (SR-94) from Jamacha Blvd (project adds a V/C increase of 0.002 at LOS E to which the County's criteria allows for an increase in V/C of up to 0.010 at LOS E or F).

Therefore, the project is calculated to have no significant traffic impacts. Additionally, based on the above calculations, there is no anticipated change to the build-out LOS due to project traffic. Intersection LOS calculations are included in **Appendix J**.

4.3 Build-Out Impact Summary Table

The project is calculated to have no direct impacts and the potential for cumulative impacts as summarized in **Table 21**.

TABLE 21: BUILD-OUT IMPACT SUMMARY TABLE

Roadway Facility	Build-Out Impacts
Intersections	0
Segments	0
State Routes	0
Ramps	0



5.0 Summary of Recommended Mitigation and Project Design Features

The project is calculated to have no near-term nor build-out traffic impacts; therefore, no mitigation measures are required. The project may contribute to potential cumulative impacts; therefore, it is proposed that the applicant participate in the TIF program.

5.1 TIF Program

Because the proposed project is located within Valle De Oro TIF area, the project applicant would pay into the TIF program to mitigate any potential cumulative impacts. The County of San Diego has developed an overall programmatic solution that addresses existing and projected future road deficiencies in the unincorporated portion of San Diego County. This program includes the adoption of a 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 development conditions on the existing mobility element roadway network 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 project 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 30 years, will use funds from TransNET, state, and federal funding to improve freeways to projected level of service objectives in the RTP.

The proposed project is calculated to generate 708 ADT. These trips will be distributed on mobility element roadways in the County that were analyzed by the TIF program, some of which currently are projected to operate at inadequate levels of service. These project trips therefore contribute to a potential significant cumulative impact and mitigation is required. The potential growth represented by this project was included in the growth projections upon which the TIF project is based. The TIF cost is based on the year when building permits are pulled and type of building permit. The County will calculate the TIF when building permits are pulled.

5.2 Summary of Impacts

The project is calculated to have no near-term nor build-out traffic impacts; therefore, no mitigation measures are required. The project may contribute to potential cumulative impacts; therefore, it is proposed that the applicant participate in the TIF program. Based on the calculations included in this report, there is no anticipated change to existing LOS and forecasted build-out LOS for the study roadways due to project traffic. The calculations show that no changes are required to the County's Circulation Element build-out roadway network conditions.



6.0 References

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San Diego Association of Governments (SANDAG). April 2002. *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*. Print.

Trafficware Corporation, 2014. Synchro 8.0 computer software. CD ROM.

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7.0 List of Preparers and Persons and Organizations Contacted

7.1 List of Preparers

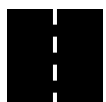
Justin Rasas, P.E. (RCE 60690), LOS Engineering, Inc. Author

7.2 Organizations Contacted

Hedy Levine, REC Consultants, inc. - Client

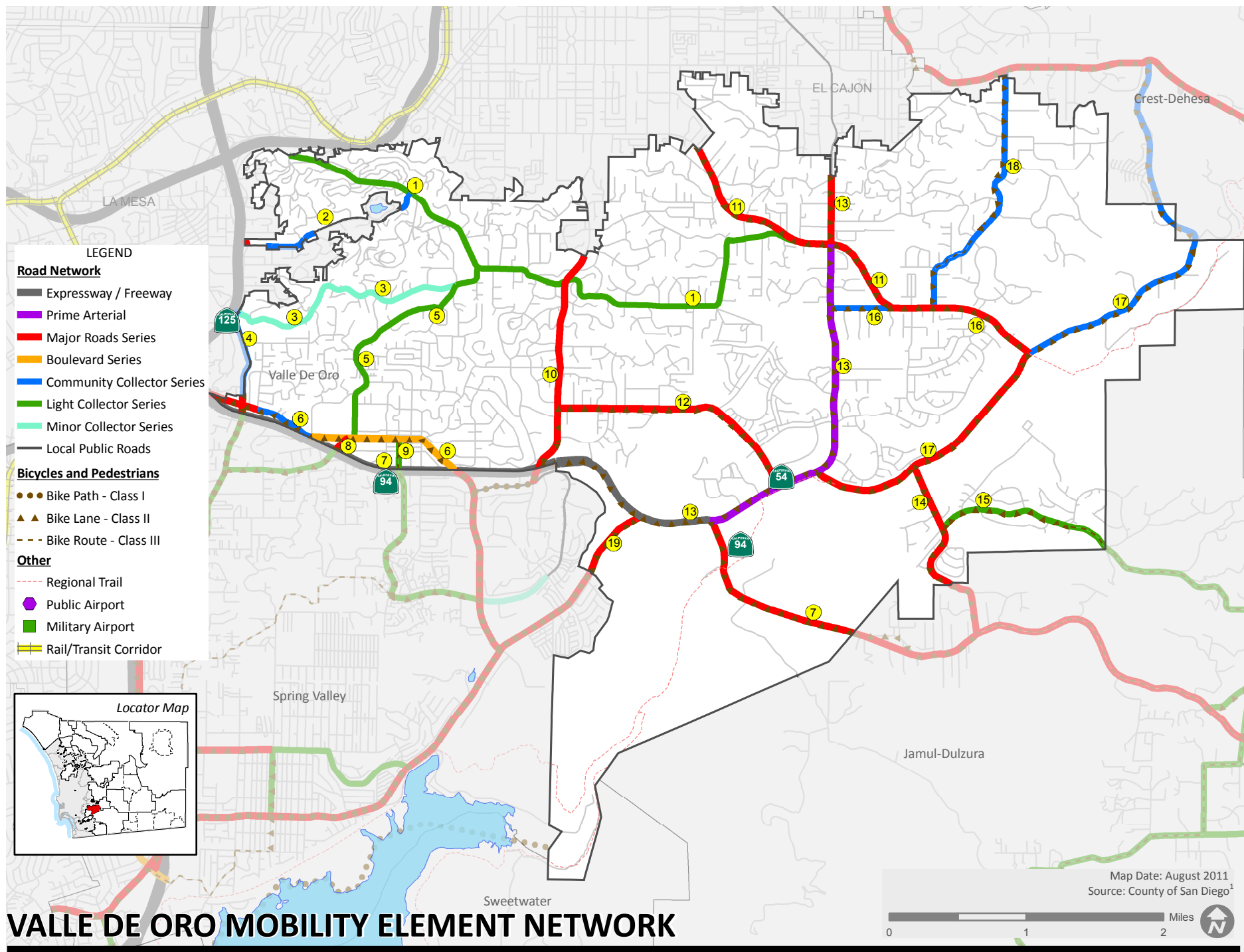
Mike Calandra, SANDAG

Will Brown, Pacific Technical Data – Data Collection Firm



Appendix A

County of San Diego Mobility Element Excerpts



Mobility Element Network—Valle de Oro Community Planning Area Matrix			
ID ^a	Road Segment	Designation/Improvement #.X = [# of lanes].[roadway classification][improvement]	Special Circumstances
1	Fuerte Drive (SC 2111/SA 920/SC 2060) <u>Segment:</u> La Mesa city limits to Chase Avenue	2.2E Light Collector	Accepted at LOS E <u>Segment:</u> Bancroft Drive to Avocado Boulevard
2	Lemon Avenue (SA 930) <u>Segment:</u> SR-125 to Fuerte Drive	2.1E Community Collector	None
3	Edgewood Drive / Grandview Drive (SC 2115) <u>Segment:</u> Bancroft Drive to Fuerte Drive	2.3B Minor Collector Road Intermittent Turn Lanes—Bancroft Drive to Resmar Road 2.1E Community Collector Resmar Road to Fuerte Drive	None
4	Bancroft Drive <u>Segment:</u> SR-94 to Edgewood Drive	2.1C Community Collector Intermittent Turn Lanes	None
5	Conrad Drive /Resmar Road (SC 2125) <u>Segment:</u> Campo Road to Grandview Drive	2.2E Community Collector	None
6	Campo Road (SC 2118) <u>Segment:</u> La Mesa city limits to SR-94	4.1B Major Road Intermittent Turn Lanes—La Mesa city limits to Camino Paz 2.1C Community Collector Intermittent Turn Lanes—Camino Paz to Rodgers Road 4.2B Boulevard Intermittent Turn Lanes—Rodgers Road to SR-94	Accepted at LOS F <u>Segment:</u> Kenwood Drive to Conrad Drive
7	State Route 94/Campo Road <u>Segment:</u> La Mesa city limits to Jamul/Dulzura Subregion boundary	Freeway/6.1 Expressway La Mesa city limits to Jamacha Road 4.1A Major Road and Interchange with Jamacha Road Raised Median—Jamacha Road / SR-54 to Jamul CPA boundary	Caltrans Facilities Programming Improvements to a four-lane conventional highway programmed in the 2030 RTP (Unconstrained Revenue scenario) Recommended Improvement Ramps to Jamacha Road interchange
8	Kenwood Drive (SC 2122) <u>Segment:</u> SR- 94 to Campo Road	4.1B Major Road Intermittent Turn Lanes	None



Mobility Element Network—Valle de Oro Community Planning Area Matrix			
ID ^a	Road Segment	Designation/Improvement #. #X = [# of lanes].[roadway classification][improvement]	Special Circumstances
9	Barcelona Street (SC 2110) <u>Segment:</u> Campo Road to SR- 94	2.2E Light Collector Intersection Improvements	None
10	Avocado Boulevard (SF 1398) <u>Segment:</u> SR-94 to El Cajon city limits	4.1B Major Road Intermittent Turn Lanes	None
11	Chase Avenue (SA 910.1) <u>Segment:</u> El Cajon city limits to Hillsdale Road	4.1B Major Road Intermittent Turn Lanes	None
12	Fury Lane (SC 2070/SA 921) <u>Segment:</u> Avocado Boulevard to Jamacha Road	4.1B Major Road Intermittent Turn Lanes—Avocado Boulevard to Wieghorst Way 4.1A Major Road Raised Median—Wieghorst Way to Jamacha Road	None
13	Jamacha Road (SF 1399) <u>Segment:</u> -SR-94 / Campo Road to El Cajon city limits	6.2 Prime Arterial SR 94/Campo Road to Chase Avenue 4.1A Major Road Raised Median—Chase Avenue to El Cajon city limits	Accepted at LOS F <u>Segment:</u> SR-94 / Campo Road to Fury Lane
14	Steele Canyon Road (SC 2050) <u>Segment:</u> Willow Glen Drive to Jamul/Dulzura Subregion boundary	4.1B Major Road Intermittent Turn Lanes	None
15	Jamul Drive (SC 2055) <u>Segment:</u> Steele Canyon Road to Jamul/Dulzura Subregion boundary	2.1C Light Collector Intermittent Turn Lanes	None
16	Hillsdale Road (SC 2030) <u>Segment:</u> Jamacha Road to Willow Glen Drive	2.1C Community Collector Intermittent Turn Lanes	None

Mobility Element Network—Valle de Oro Community Planning Area Matrix			
ID ^a	Road Segment	Designation/Improvement #. #X = [# of lanes].[roadway classification][improvement]	Special Circumstances
17	Willow Glen Drive (SF 1397) <u>Segment:</u> Jamacha Road to Camino de las Piedras	4.1B Major Road Intermittent Turn Lanes—Jamacha Road to Hillsdale Road 2.1D Community Collector Improvement Options [Unspecified Improvements]—Hillsdale Road to Camino de las Piedras	None
18	Vista Grande Road (SC 2030) <u>Segment:</u> Hillsdale Road to Dehesa Road	2.2E Light Collector	None
19	Jamacha Boulevard SF 1397) <u>Segment:</u> Spring Valley CPA boundary to SR-94 / Campo Road	4.1A Major Road Raised Median	Recommended Improvement Grade-separated interchange with SR-94/Campo Road

a. ID = Roadway segment on Figure M-A-22

Appendix B

Count Data and SANDAG SR-94 Segment Capacities

JAMACHA S-O SR-94

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB
00:00	18	37			12:00	125	121		
00:15	13	26			12:15	107	121		
00:30	9	31			12:30	113	139		
00:45	5	45	25	119	12:45	106	451	118	499
01:00	10	21			13:00	124	143		
01:15	6	27			13:15	151	111		
01:30	13	20			13:30	147	118		
01:45	6	35	18	86	13:45	156	578	104	476
02:00	4	10			14:00	111	164		
02:15	11	16			14:15	151	164		
02:30	8	15			14:30	144	129		
02:45	11	34	14	55	14:45	164	570	150	607
03:00	4	9			15:00	158	160		
03:15	5	14			15:15	182	166		
03:30	14	13			15:30	179	170		
03:45	13	36	8	44	15:45	161	680	180	676
04:00	11	9			16:00	121	198		
04:15	24	11			16:15	155	190		
04:30	24	16			16:30	181	151		
04:45	20	79	17	53	16:45	190	647	184	723
05:00	38	16			17:00	174	177		
05:15	32	22			17:15	182	196		
05:30	48	22			17:30	180	162		
05:45	68	186	31	91	17:45	179	715	170	705
06:00	73	31			18:00	160	158		
06:15	98	43			18:15	143	171		
06:30	141	47			18:30	148	133		
06:45	158	470	65	186	18:45	131	582	150	612
07:00	166	66			19:00	108	132		
07:15	218	148			19:15	106	127		
07:30	266	99			19:30	100	146		
07:45	235	885	111	424	19:45	77	391	123	528
08:00	145	121			20:00	87	132		
08:15	198	105			20:15	71	115		
08:30	184	88			20:30	60	103		
08:45	190	717	91	405	20:45	88	306	98	448
09:00	147	135			21:00	62	137		
09:15	121	95			21:15	43	105		
09:30	105	98			21:30	63	80		
09:45	107	480	70	398	21:45	42	210	73	395
10:00	80	76			22:00	50	48		
10:15	77	68			22:15	34	50		
10:30	118	65			22:30	39	49		
10:45	120	395	82	291	22:45	35	158	47	194
11:00	108	105			23:00	30	52		
11:15	91	114			23:15	37	43		
11:30	123	99			23:30	26	28		
11:45	119	441	102	420	23:45	20	113	35	158
Total Vol.	3803	2572			6375	5401	6021		11422
					Daily Totals				
					NB	SB	EB	WB	Combined
					9204	8593			17797
Split %	AM				PM				
	59.7%	40.3%		35.8%	47.3%	52.7%			64.2%
Peak Hour	07:00	11:45		07:15	16:30	15:30			16:45
Volume	885	483		1343	727	738			1445
P.H.F.	0.83	0.87		0.92	0.95	0.93			0.96

INTERSECTION TURNING MOVEMENT COUNTS

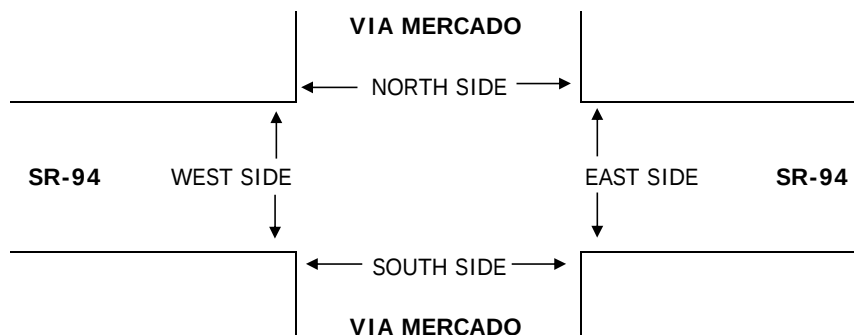
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 9/23/15 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	SAN DIEGO VIA MERCADO SR-94	PROJECT #: LOCATION #: CONTROL:	PDT15-0925-01 1 SIGNAL
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NOTES:	AM PM MD OTHER OTHER	▲ N S ▼	◀ W E ▶
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	NORTHBOUND VIA MERCADO			SOUTHBOUND VIA MERCADO			EASTBOUND SR-94			WESTBOUND SR-94			
LANES:	NL X	NT X	NR X	SL 1	ST X	SR 1	EL 1	ET 2	ER X	WL X	WT 2	WR 0	TOTAL

AM	7:00 AM				10		54	3	196			366	28	657
	7:15 AM				12		50	11	224			442	37	776
	7:30 AM				18		47	12	271			347	60	755
	7:45 AM				25		55	29	314			422	60	905
	8:00 AM				39		68	25	283			411	50	876
	8:15 AM				39		33	31	400			448	45	996
	8:30 AM				38		44	23	434			421	27	987
	8:45 AM				25		39	16	346			419	57	902
	VOLUMES	0	0	0	206	0	390	150	2,468	0	0	3,276	364	6,854
	APPROACH %	0%	0%	0%	35%	0%	65%	6%	94%	0%	0%	90%	10%	
PM	APP/DEPART	0	/	514	596	/	0	2,618	/	2,674	3,640	/	3,666	0
	BEGIN PEAK HR	7:45 AM												
	VOLUMES	0	0	0	141	0	200	108	1,431	0	0	1,702	182	3,764
	APPROACH %	0%	0%	0%	41%	0%	59%	7%	93%	0%	0%	90%	10%	
	PEAK HR FACTOR	0.000			0.797			0.842			0.955			0.945
	APP/DEPART	0	/	290	341	/	0	1,539	/	1,572	1,884	/	1,902	0
	4:00 PM				50		31	35	346			393	39	894
	4:15 PM				53		27	35	354			410	42	921
	4:30 PM				48		24	35	457			356	35	955
	4:45 PM				38		27	39	455			344	45	948
PM	5:00 PM				45		52	40	498			355	45	1,035
	5:15 PM				56		37	39	447			364	47	990
	5:30 PM				57		33	35	506			362	47	1,040
	5:45 PM				57		39	28	400			319	35	878
	VOLUMES	0	0	0	404	0	270	286	3,463	0	0	2,903	335	7,661
	APPROACH %	0%	0%	0%	60%	0%	40%	8%	92%	0%	0%	90%	10%	
	APP/DEPART	0	/	621	674	/	0	3,749	/	3,867	3,238	/	3,173	0
	BEGIN PEAK HR	4:45 PM												
	VOLUMES	0	0	0	196	0	149	153	1,906	0	0	1,425	184	4,013
	APPROACH %	0%	0%	0%	57%	0%	43%	7%	93%	0%	0%	89%	11%	
	PEAK HR FACTOR	0.000			0.889			0.951			0.979			0.965
	APP/DEPART	0	/	337	345	/	0	2,059	/	2,102	1,609	/	1,574	0



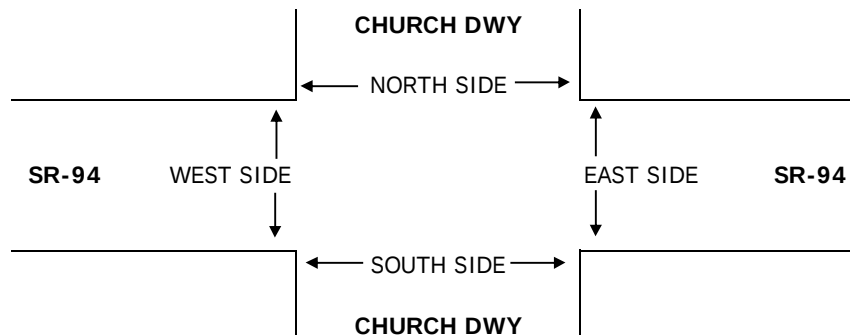
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 9/23/15 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	SAN DIEGO CHURCH DWY SR-94	PROJECT #: PDT15-0925-01 LOCATION #: 2 CONTROL: SIGNAL
NOTES:		AM PM MD OTHER OTHER	▲ N ◀ W E ▶ S ▼

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	CHURCH DWY			CHURCH DWY			SR-94			SR-94			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	X	X	X	X	X	3	X	2	X	X	3	0	

AM	7:00 AM						2		216			384	0	602
	7:15 AM						1		226			489	1	717
	7:30 AM						3		315			414	0	732
	7:45 AM						2		318			477	1	798
	8:00 AM						5		321			466	2	794
	8:15 AM						2		418			481	4	905
	8:30 AM						4		488			444	1	937
	8:45 AM						3		377			461	5	846
	VOLUMES	0	0	0	0	0	22	0	2,679	0	0	3,616	14	6,331
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	100%	0%	0%	100%	0%	
APP/DEPART	0	/	14	22	/	0	2,679	/	2,679	3,630	/	3,638	0	
BEGIN PEAK HR	8:00 AM													
VOLUMES	0	0	0	0	0	14	0	1,604	0	0	1,852	12	3,482	
APPROACH %	0%	0%	0%	0%	0%	100%	0%	100%	0%	0%	99%	1%		
PEAK HR FACTOR	0.000			0.700			0.822			0.961			0.929	
APP/DEPART	0	/	12	14	/	0	1,604	/	1,604	1,864	/	1,866	0	
PM	4:00 PM						2		384			432	3	821
	4:15 PM						4		419			468	6	897
	4:30 PM						4		519			400	3	926
	4:45 PM						5		505			381	6	897
	5:00 PM						3		529			399	3	934
	5:15 PM						11		501			401	1	914
	5:30 PM						7		549			406	1	963
	5:45 PM						8		455			334	5	802
	VOLUMES	0	0	0	0	0	44	0	3,861	0	0	3,221	28	7,154
	APPROACH %	0%	0%	0%	0%	0%	100%	0%	100%	0%	0%	99%	1%	
APP/DEPART	0	/	28	44	/	0	3,861	/	3,861	3,249	/	3,265	0	
BEGIN PEAK HR	4:45 PM													
VOLUMES	0	0	0	0	0	26	0	2,084	0	0	1,587	11	3,708	
APPROACH %	0%	0%	0%	0%	0%	100%	0%	100%	0%	0%	99%	1%		
PEAK HR FACTOR	0.000			0.591			0.949			0.982			0.963	
APP/DEPART	0	/	11	26	/	0	2,084	/	2,084	1,598	/	1,613	0	



INTERSECTION TURNING MOVEMENT COUNTS

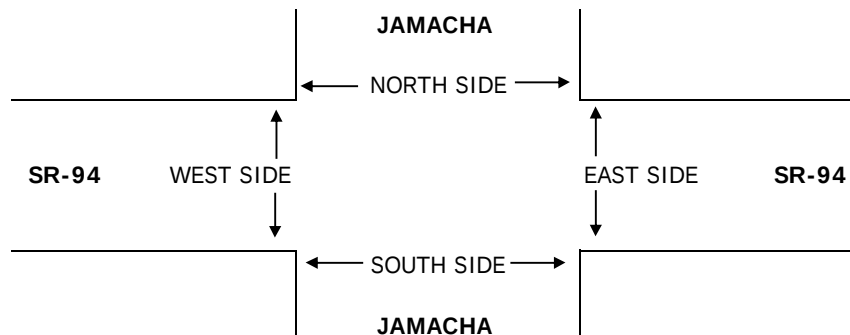
PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 9/23/15 WEDNESDAY	LOCATION: NORTH & SOUTH: EAST & WEST:	SAN DIEGO JAMACHA SR-94	PROJECT #: LOCATION #: CONTROL:	PDT15-0925-01 3 SIGNAL
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NOTES:	AM PM MD OTHER OTHER	▲ N S ▼	◀ W E ▶
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	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	JAMACHA			JAMACHA			SR-94			SR-94			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL

AM	7:00 AM	59	3	97	3	1	0	3	177	12	44	325	1	725
	7:15 AM	72	6	141	3	0	4	8	204	14	141	393	4	990
	7:30 AM	102	2	156	4	2	3	5	289	18	76	332	10	999
	7:45 AM	73	1	163	2	1	0	9	301	22	78	406	5	1,061
	8:00 AM	67	3	60	4	3	2	6	268	31	91	424	11	970
	8:15 AM	44	1	150	3	0	4	6	389	18	83	418	12	1,128
	8:30 AM	37	0	161	3	0	0	18	442	13	72	390	6	1,142
	8:45 AM	40	3	155	0	3	1	11	351	16	79	426	14	1,099
	VOLUMES	494	19	1,083	22	10	14	66	2,421	144	664	3,114	63	8,114
	APPROACH %	31%	1%	68%	48%	22%	30%	3%	92%	5%	17%	81%	2%	
PM	APP/DEPART	1,596	/	148	46	/	818	2,631	/	3,526	3,841	/	3,622	0
	BEGIN PEAK HR	8:00 AM												
	VOLUMES	188	7	526	10	6	7	41	1,450	78	325	1,658	43	4,339
	APPROACH %	26%	1%	73%	43%	26%	30%	3%	92%	5%	16%	82%	2%	
	PEAK HR FACTOR	0.910			0.639			0.829			0.963			0.950
	APP/DEPART	721	/	91	23	/	409	1,569	/	1,986	2,026	/	1,853	0
	4:00 PM	30	0	85	5	3	2	6	336	44	146	398	6	1,061
	4:15 PM	29	2	115	11	2	3	8	389	47	132	435	5	1,178
	4:30 PM	41	2	136	8	4	5	5	459	48	104	365	5	1,182
	4:45 PM	27	1	163	7	2	4	11	448	34	159	351	8	1,215
PM	5:00 PM	25	1	142	9	1	6	5	478	48	127	370	3	1,215
	5:15 PM	26	2	154	4	8	8	7	442	47	135	351	4	1,188
	5:30 PM	28	2	141	3	1	2	6	522	35	118	342	4	1,204
	5:45 PM	28	2	163	4	1	3	8	404	30	147	332	9	1,131
	VOLUMES	234	12	1,099	51	22	33	56	3,478	333	1,068	2,944	44	9,374
	APPROACH %	17%	1%	82%	48%	21%	31%	1%	90%	9%	26%	73%	1%	
	APP/DEPART	1,345	/	112	106	/	1,423	3,867	/	4,628	4,056	/	3,211	0
	BEGIN PEAK HR	4:45 PM												
	VOLUMES	106	6	600	23	12	20	29	1,890	164	539	1,414	19	4,822
	APPROACH %	15%	1%	84%	42%	22%	36%	1%	91%	8%	27%	72%	1%	
	PEAK HR FACTOR	0.932			0.688			0.925			0.952			0.992
	APP/DEPART	712	/	54	55	/	715	2,083	/	2,513	1,972	/	1,540	0



Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
11	94	SD	R	12.75	SWEETWATER SPRINGS BOULEVARD	5700	69000	68000	5100	59000	58000
11	94	SD	R	13.333	AVOCADO BOULEVARD	5100	59000	58000	3800	44500	44000
11	94	SD		14.33	JAMACHA BLVD	3800	44500	44000	5500	65000	63000
11	94	SD		14.86	JCT. RTE. 54 NORTH	5500	65000	63000	1500	17600	17300
11	94	SD		17.352	STEEL CANYON ROAD	1350	16400	16300	1400	17200	16700

SANDAG near-term calibration volumes and capacities used for General Plan Update modeling

Campo Road (SR-94)	AM			AM			PM			PM			Max	Max
	Vol	Cap	EB V/C	Vol	Cap	WB V/C	Vol	Cap	EB V/C	Vol	Cap	WB V/C	V/C	V/C LOS
Via Mercado to Unknown	1489	3300	0.451	1606	3702	0.434	1368	3300	0.415	1784	3702	0.482	0.482	B
Unknown to Zone Connector	1489	3300	0.451	1606	5100	0.315	1368	3300	0.415	1784	5100	0.350	0.451	B
Zone Connector to Ramp	1464	3300	0.444	1614	5100	0.316	1374	3300	0.416	1759	5100	0.345	0.444	B
Ramp to SR-54	1464	3300	0.444	1614	5100	0.316	1374	3300	0.416	1759	5100	0.345	0.444	B
SR-54 to Jamacha Blvd	1464	2622	0.558	1614	5100	0.316	1374	2622	0.524	1759	5100	0.345	0.558	B
Jamacha Blvd to Ramp SR-94 EB	2132	5100	0.418	1837	3558	0.516	1739	5100	0.341	2408	3558	0.677	0.677	C
Ramp to SR-54 EB to Ramp	2132	5100	0.418	1837	5100	0.360	1739	5100	0.341	2408	5100	0.472	0.472	B
Ramp to Unknown	2132	5100	0.418	1837	5100	0.360	1739	5100	0.341	2408	5100	0.472	0.472	B
Unknown to Jamacha Rd	2132	2984	0.714	1837	5100	0.360	1739	2984	0.583	2408	5100	0.472	0.714	C

Notes: LOS per SANDAG Table D.3 (LOS A <0.41; LOS B 0.42-0.62; LOS C 0.63-0.79; LOS D 0.80-0.92; LOS E 0.93-1.0; LOS F >1.0).

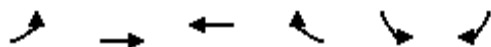
Max: Maximum between all shown peak periods. Vol: Volume. Cap: Capacity. V/C: Volume to Capacity Ratio

Appendix C

Existing LOS Calculations

AM Existing
1: SR-94 Campo Rd & Via Mercado

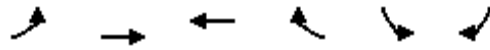
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	108	1431	1702	182	141	200
Ideal Flow (vphpl)	1700	1900	1900	1700	1700	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	0.95
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3539	3488		1533	1346
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3539	3488		1533	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	1555	1850	198	153	217
RTOR Reduction (vph)	0	0	9	0	20	112
Lane Group Flow (vph)	117	1555	2039	0	209	29
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.0	64.0	53.0		18.0	18.0
Effective Green, g (s)	7.0	64.0	53.0		18.0	18.0
Actuated g/C Ratio	0.08	0.71	0.59		0.20	0.20
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	123	2516	2054		306	269
v/s Ratio Prot	c0.07	0.44	c0.58		c0.14	
v/s Ratio Perm						0.02
v/c Ratio	0.95	0.62	0.99		0.68	0.11
Uniform Delay, d1	41.3	6.7	18.3		33.4	29.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	65.7	0.5	18.0		11.7	0.8
Delay (s)	107.1	7.2	36.4		45.1	30.2
Level of Service	F	A	D		D	C
Approach Delay (s)		14.1	36.4		39.4	
Approach LOS		B	D		D	
Intersection Summary						
HCM 2000 Control Delay			27.6		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.92			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			82.8%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

AM Existing
2: SR-94 Campo Rd & Skyline Church W. Dwy

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Volume (veh/h)	0	1604	1852	12	0	14
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1743	2013	13	0	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		1219				
pX, platoon unblocked					0.74	
vC, conflicting volume	2026				2891	678
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2026				2854	678
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	96
cM capacity (veh/h)	276				10	395
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	872	872	805	805	416	15
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	13	15
cSH	1700	1700	1700	1700	1700	395
Volume to Capacity	0.51	0.51	0.47	0.47	0.24	0.04
Queue Length 95th (ft)	0	0	0	0	0	3
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.5
Lane LOS						B
Approach Delay (s)	0.0		0.0			14.5
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			47.7%		ICU Level of Service	A
Analysis Period (min)			15			

AM Existing

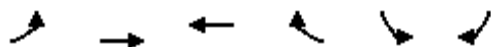
3: Jamacha Blvd & SR-94 Campo Rd

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	1450	78	325	1658	43	188	7	526	10	6	7
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.99	1.00
Satd. Flow (prot)	3072	5085	1386	3072	5085	1386	1504	1691	1403	1504	1750	1396
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.99	1.00
Satd. Flow (perm)	3072	5085	1386	3072	5085	1386	1504	1691	1403	1504	1750	1396
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)	45	1576	85	353	1802	47	204	8	572	11	7	8
RTOR Reduction (vph)	0	0	58	0	0	26	0	0	262	0	0	0
Lane Group Flow (vph)	45	1576	27	353	1802	21	106	106	310	9	9	8
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	2.4	29.0	29.0	13.6	40.2	40.2	17.0	17.0	30.6	16.0	16.0	16.0
Effective Green, g (s)	2.4	29.0	29.0	13.6	40.2	40.2	17.0	17.0	30.6	16.0	16.0	16.0
Actuated g/C Ratio	0.03	0.32	0.32	0.15	0.44	0.44	0.19	0.19	0.33	0.17	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	80	1609	438	456	2231	608	279	313	529	262	305	243
v/s Ratio Prot	0.01	c0.31		0.11	c0.35		0.07	0.06	c0.09	c0.01	0.01	
v/s Ratio Perm			0.02			0.01			0.13			0.01
v/c Ratio	0.56	0.98	0.06	0.77	0.81	0.03	0.38	0.34	0.59	0.03	0.03	0.03
Uniform Delay, d1	44.1	31.0	21.8	37.5	22.3	14.6	32.7	32.4	25.2	31.4	31.4	31.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.8	17.5	0.1	8.0	2.2	0.0	3.9	2.9	1.7	0.2	0.2	0.3
Delay (s)	52.8	48.5	21.9	45.5	24.6	14.7	36.6	35.3	26.9	31.6	31.5	31.6
Level of Service	D	D	C	D	C	B	D	D	C	C	C	C
Approach Delay (s)		47.3			27.7			29.4			31.6	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			35.1				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			91.6				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			78.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

PM Existing
1: SR-94 Campo Rd & Via Mercado

HCM Signalized Intersection Capacity Analysis

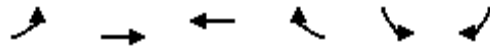


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	153	1906	1425	184	196	149
Ideal Flow (vphpl)	1700	1900	1900	1700	1700	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	0.95
Frt	1.00	1.00	0.98		0.97	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1583	3539	3479		1553	1346
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1583	3539	3479		1553	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	166	2072	1549	200	213	162
RTOR Reduction (vph)	0	0	11	0	11	82
Lane Group Flow (vph)	166	2072	1738	0	259	23
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	11.0	61.6	46.6		20.0	20.0
Effective Green, g (s)	11.0	61.6	46.6		20.0	20.0
Actuated g/C Ratio	0.12	0.69	0.52		0.22	0.22
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	194	2433	1809		346	300
v/s Ratio Prot	0.10	c0.59	c0.50		c0.17	
v/s Ratio Perm						0.02
v/c Ratio	0.86	0.85	0.96		0.75	0.08
Uniform Delay, d1	38.5	10.6	20.6		32.5	27.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	28.9	3.1	13.1		13.8	0.5
Delay (s)	67.4	13.6	33.7		46.3	28.0
Level of Service	E	B	C		D	C
Approach Delay (s)		17.6	33.7		41.2	
Approach LOS		B	C		D	
Intersection Summary						
HCM 2000 Control Delay			26.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.92			
Actuated Cycle Length (s)			89.6		Sum of lost time (s)	12.0
Intersection Capacity Utilization			80.2%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

PM Existing

2: SR-94 Campo Rd & Skyline Church W. Dwy

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Volume (veh/h)	0	2084	1587	11	0	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2265	1725	12	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		1219				
pX, platoon unblocked					0.35	
vC, conflicting volume	1737				2864	581
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1737				2613	581
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	358				7	457
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	1133	1133	690	690	357	28
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	12	28
cSH	1700	1700	1700	1700	1700	457
Volume to Capacity	0.67	0.67	0.41	0.41	0.21	0.06
Queue Length 95th (ft)	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.4
Lane LOS						B
Approach Delay (s)	0.0		0.0			13.4
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			60.9%		ICU Level of Service	B
Analysis Period (min)			15			

PM Existing
3: Jamacha Blvd & SR-94 Campo Rd

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	29	1890	164	539	1414	19	106	6	600	23	12	20
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	3072	5085	1382	3072	5085	1383	1504	1695	1407	1504	1742	1395
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (perm)	3072	5085	1382	3072	5085	1383	1504	1695	1407	1504	1742	1395
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)	32	2054	178	586	1537	21	115	7	652	25	13	22
RTOR Reduction (vph)	0	0	109	0	0	9	0	0	151	0	0	0
Lane Group Flow (vph)	32	2054	69	586	1537	12	61	61	501	19	19	22
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	2.4	47.0	47.0	26.6	71.2	71.2	16.0	16.0	42.6	16.0	16.0	16.0
Effective Green, g (s)	2.4	47.0	47.0	26.6	71.2	71.2	16.0	16.0	42.6	16.0	16.0	16.0
Actuated g/C Ratio	0.02	0.39	0.39	0.22	0.59	0.59	0.13	0.13	0.35	0.13	0.13	0.13
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	60	1965	534	672	2977	809	197	223	539	197	229	183
v/s Ratio Prot	0.01	c0.40		0.19	0.30		0.04	0.04	c0.20	0.01	0.01	
v/s Ratio Perm			0.05			0.01			0.15			c0.02
v/c Ratio	0.53	1.05	0.13	0.87	0.52	0.02	0.31	0.27	0.93	0.10	0.08	0.12
Uniform Delay, d1	59.0	37.3	24.1	45.9	15.0	10.5	47.8	47.6	38.0	46.4	46.4	46.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.8	33.3	0.1	12.0	0.2	0.0	4.0	3.0	22.4	1.0	0.7	1.3
Delay (s)	67.9	70.6	24.2	57.8	15.1	10.5	51.8	50.6	60.4	47.4	47.1	47.9
Level of Service	E	E	C	E	B	B	D	D	E	D	D	D
Approach Delay (s)		66.9			26.7			59.0			47.5	
Approach LOS		E			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			49.1									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			121.6									Sum of lost time (s) 16.0
Intersection Capacity Utilization			91.9%									ICU Level of Service F
Analysis Period (min)			15									
c Critical Lane Group												

Appendix D

Transit Service Near Project



CASH FARES / Tarifas en efectivo

Exact fare, please / Favor de pagar la cantidad exacta	
Day Pass (Regional) / Pase diario (Regional) Compass Card required (\$2) / Se requiere un Compass Card (\$2)	\$5.00
One-Way Fare / Tarifa de una dirección	\$2.25
Senior (60+)/Disabled/Medicare <i>Mayores de 60 años/Discapacitados/Medicare</i>	\$1.10*
Children 5 & under / Niños de 5 años o menos Up to two children ride free per paying adult / Máximo dos niños viajan gratis por cada adulto	FREE / GRATIS
MONTHLY PASSES / Pases mensual	
Adult / Adulto	\$72.00
Senior (60+)/Disabled/Medicare <i>Mayores de 60 años/Discapacitados/Medicare</i>	\$18.00*
Youths (18 and under) <i>Jóvenes (18 años o menos)</i>	\$36.00*

*I.D. required for discount fare or pass.
*Se requiere identificación para tarifas o pases de descuento.

DAY PASS (REGIONAL) / Pase diario (Regional)

All passes are sold on Compass Card, which can be reloaded and reused for up to five years. Compass Cards are available for \$2 at select outlets. A \$5 Day Pass requires a Compass Card. A paper Day Pass can be purchased on board buses for an additional \$2 fee.

Todos los pases se venden en el Compass Card, el cual puede ser recargado y reutilizado por hasta cinco años. Compass Cards están disponibles por \$2 en selectas sucursales. Un pase de un día por \$5 requiere un Compass Card. Un pase de un día de papel se puede obtener a bordo los autobuses por un costo adicional de \$2.

DIRECTORY / Directorio

Regional Transit Information <i>Información de transporte público regional</i>	511 or/ó (619) 233-3004			
TTY/TDD (teletype for hearing impaired) <i>Teletipo para sordos</i>	(619) 234-5005 or/ó (888) 722-4889			
InfoExpress (24-hour info via Touch-Tone phone) <i>Información las 24 horas (via teléfono de teclas)</i>	(619) 685-4900			
Customer Service / Suggestions <i>Servicio al cliente / Sugerencias</i>	(619) 557-4555			
SafeWatch	(619) 557-4500			
Lost & Found <i>Objetos extraviados</i>	<table><tr><td>Mon - Sat (619) 448-2720 or/ó (800) 858-0291</td><td>936 Sunday (619) 427-5660 or/ó (800) 409-3310</td><td>856 Sunday (877) 841-3278</td></tr></table>	Mon - Sat (619) 448-2720 or/ó (800) 858-0291	936 Sunday (619) 427-5660 or/ó (800) 409-3310	856 Sunday (877) 841-3278
Mon - Sat (619) 448-2720 or/ó (800) 858-0291	936 Sunday (619) 427-5660 or/ó (800) 409-3310	856 Sunday (877) 841-3278		

The Transit Store
1st & Broadway, Downtown San Diego
M–F 9am–5pm

For MTS online trip planning
Planificación de viajes por Internet www.sdmmts.com

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit www.sdmmts.com.
Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en The Transit Store, o visita a www.sdmmts.com.

Thank you for riding MTS! ¡Gracias por viajar con MTS!

Effective JANUARY 27, 2013 *

856

SDSU – Rancho SD / Cuyamaca College

via College Grove / Spring Valley

936

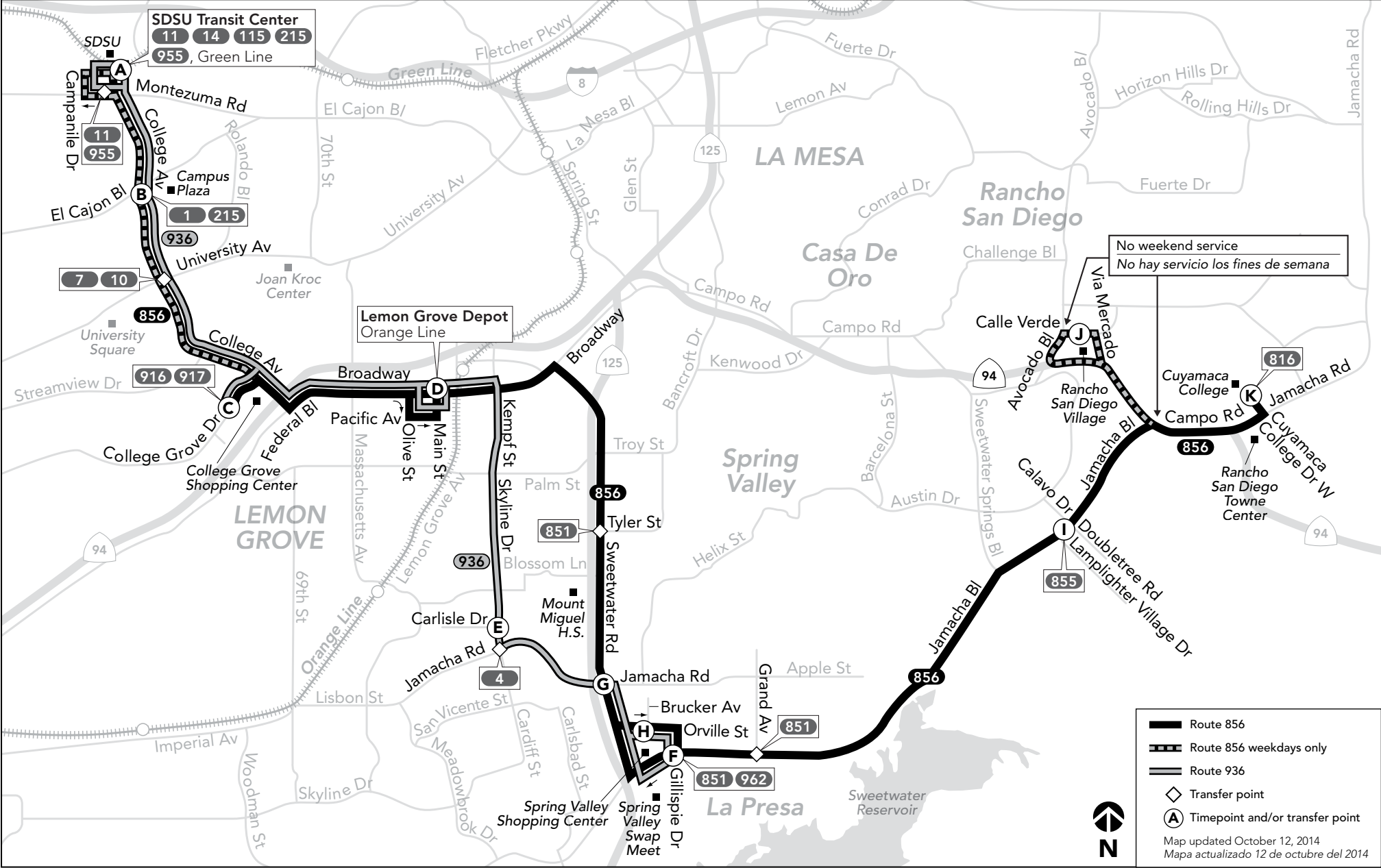
SDSU – Spring Valley

via College Grove / Skyline Dr.

- DESTINATIONS
- College Grove Center
 - Cuyamaca College
 - Lemon Grove Depot
 - SDSU
 - Spring Valley Shopping Center
 - Spring Valley Swap Meet



Alternative formats available upon request. Please call: (619) 557-4555 / Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555



The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.
Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.

Route 856 & 936 – Sunday / domingo											SDSU ➡ Lemon Grove ➡ Spring Valley ➡ Rancho San Diego										
Rancho San Diego ➡ Spring Valley ➡ Lemon Grove ➡ SDSU											SDSU ➡ Lemon Grove ➡ Spring Valley ➡ Rancho San Diego										
Route	(K) Cuyamaca College DEPART	(J) Rancho San Diego Village	(I) Jamacha Bl. Rd. DEPART	(G) Jamacha Rd. & Sweetwater	(F) Gillispie Dr. & Jamacha Bl. DEPART	(E) Skyline Dr. & Carlisle Dr.	(D) Lemon Grove Depot (Broadway)	(C) College Grove Center	(B) College Av. & El Cajon Bl.	(A) SDSU T.C. ARRIVE	Route	(A) SDSU T.C. DEPART	(B) College Av. & El Cajon Bl.	(C) College Grove Center	(D) Lemon Grove Depot (Main St)	(E) Skyline Dr. & Carlisle Dr.	(F) Gillispie Dr. & Jamacha Bl. ARRIVE	(H) Orville & Brucker	(I) Jamacha Bl. & Lamplighter Village Dr.	(J) Rancho San Diego Village	(K) Cuyamaca College ARRIVE
936	–	–	–	–	5:15a	5:21a	5:30a	5:39a	5:45a	5:52a	936	6:07a	6:11a	6:20a	6:30a	6:37a	6:43a	–	–	–	–
936	–	–	–	–	6:15	6:21	6:30	6:39	6:45	6:52	936	7:07	7:11	7:20	7:30	7:37	7:43	–	–	–	–
856A	6:27a	–	6:36a	6:46a	–	–	7:00	7:10	–	–	856A	–	–	7:34	7:45	–	–	7:57a	8:06a	–	8:15a
936	–	–	–	–	7:14	7:20	7:30	7:40	7:47	7:55	936	8:07	8:11	8:20	8:30	8:37	8:43	–	–	–	–
856A	7:42	–	7:51	8:01	–	–	8:15	8:25	–	–	856A	–	–	8:34	8:45	–	–	8:57	9:06	–	9:15
936	–	–	–	–	8:14	8:20	8:30	8:40	8:47	8:55	936	9:04	9:08	9:18	9:30	9:37	9:43	–	–	–	–
856A	8:42	–	8:51	9:01	–	–	9:15	9:25	–	–	856A	–	–	9:32	9:45	–	–	9:58	10:08	–	10:17
936	–	–	–	–	9:13	9:20	9:30	9:41	9:48	9:56	936	10:04	10:08	10:18	10:30	10:37	10:43	–	–	–	–
856A	9:38	–	9:47	10:00	–	–	10:15	10:26	–	–	856A	–	–	10:32	10:45	–	–	10:58	11:08	–	11:17
936	–	–	–	–	10:13	10:20	10:30	10:41	10:48	10:56	936	11:04	11:08	11:18	11:30	11:37	11:43	–	–	–	–
856A	10:38	–	10:47	11:00	–	–	11:15	11:26	–	–	856A	–	–	11:32	11:45	–	–	11:58	12:08p	–	12:17p
936	–	–	–	–	11:13	11:20	11:30	11:41	11:48	11:56	936	11:34	11:38	11:48	12:00p	12:07p	12:13p	–	–	–	–
936	–	–	–	–	11:43	11:50	12:00p	12:11p	12:18p	12:26p	936	12:04p	12:08p	12:18p	12:30p	12:37	12:43	–	–	–	–
856A	11:38	–	11:47	12:00p	–	–	12:15	12:26	–	–	856A	–	–	12:32	12:45	–	–	12:58p	1:08	–	1:17
936	–	–	–	–	12:13p	12:20p	12:30	12:41	12:48	12:56	936	12:34	12:38	12:48	1:00	1:07	1:13	–	–	–	–
936	–	–	–	–	12:43	12:50	1:00	1:11	1:18	1:26	936	1:04	1:08	1:18	1:30	1:37	1:43	–	–	–	–
856A	12:38p	–	12:47p	1:00	–	–	1:15	1:26	–	–	856A	–	–	1:32	1:45	–	–	1:58	2:08	–	2:17
936	–	–	–	–	1:13	1:20	1:30	1:41	1:48	1:56	936	1:34	1:38	1:48	2:00	2:07	2:13	–	–	–	–
936	–	–	–	–	1:43	1:50	2:00	2:11	2:18	2:26	936	2:04	2:08	2:18	2:30	2:37	2:43	–	–	–	–
856A	1:38	–	1:47	2:00	–	–	2:15	2:26	–	–	856A	–	–	2:32	2:45	–	–	2:58	3:08	–	3:17
936	–	–	–	–	2:13	2:20	2:30	2:41	2:48	2:56	936	2:34	2:38	2:48	3:00	3:07	3:13	–	–	–	–
936	–	–	–	–	2:43	2:50	3:00	3:11	3:18	3:26	936	3:04	3:08	3:18	3:30	3:37	3:43	–	–	–	–
856A	2:38	–	2:47	3:00	–	–	3:15	3:26	–	–	856A	–	–	3:32	3:45	–	–	3:58	4:08	–	4:17
936	–	–	–	–	3:13	3:20	3:30	3:41	3:48	3:56	936	3:34	3:38	3:48	4:00	4:07	4:13	–	–	–	–
936	–	–	–	–	3:43	3:50	4:00	4:11	4:18	4:26	936	4:04	4:08	4:18	4:30	4:37	4:43	–	–	–	–
856A	3:38	–	3:47	4:00	–	–	4:15	4:26	–	–	856A	–	–	4:32	4:45	–	–	4:58	5:08	–	5:17
936	–	–	–	–	4:13	4:20	4:30	4:41	4:48	4:56	936	4:34	4:38	4:48	5:00	5:07	5:13	–	–	–	–
856A	4:38	–	4:47	5:00	–	–	5:15	5:26	–	–	936	5:04	5:08	5:18	5:30	5:37	5:43	–	–	–	–
936	–	–	–	–	5:13	5:20	5:30	5:41	5:48	5:56	856A	–	–	5:32	5:45	–	–	5:58	6:08	–	6:17
856A	5:38	–	5:47	6:00	–	–	6:15	6:26	–	–	936	6:04	6:08	6:18	6:30	6:37	6:43	–	–	–	–
936	–	–	–	–	6:14	6:20	6:30	6:40	6:46	6:53	856A	–	–	6:34	6:45	–	–	6:57	7:06	–	7:15
936	–	–	–	–	7:14	7:20	7:30	7:40	7:46	7:53	936	7:17	7:21	7:30	7:40	7:46	7:51	–	–	–	–

A = Route 856A does not serve Rancho San Diego Village on route to Lemon Grove. Route 856A no ofrece servicio a Rancho San Diego Village en camino hacia y desde Cuyamaca College

Route 856 & 936 – Monday through Friday / lunes a viernes

Rancho San Diego ➡ Spring Valley ➡ Lemon Grove ➡ SDSU

Route	(K) Cuyamaca College DEPART	(J) Rancho San Diego Village	(I) Jamacha Bl. & Doubletree Rd.	(G) Jamacha Rd. & Sweetwater	(F) Gillispie Dr. & Jamacha Bl. DEPART	(E) Skyline Dr. & Carlisle Dr.	(D) Lemon Grove Depot (Broadway)	(C) College Grove Center	(B) College Av. & El Cajon Bl.	(A) SDSU T.C. ARRIVE
856	—	4:28a	4:33a	4:45a	—	—	4:58a	5:07a	5:13a	5:20a
936	—	—	—	—	4:58a	5:05a	5:15	5:24	5:30	5:37
856	—	5:00	5:05	5:17	—	—	5:30	5:39	5:45	5:52
936	—	—	—	—	5:28	5:35	5:45	5:54	6:00	6:07
856	—	5:30	5:35	5:47	—	—	6:00	6:09	6:15	6:22
936	—	—	—	—	5:58	6:05	6:15	6:24	6:30	6:37
856	5:51a	5:58	6:03	6:16	—	—	6:30	6:39	6:45	6:52
936	—	—	—	—	6:28	6:35	6:45	6:55	7:01	7:08
856	—	6:26	6:31	6:45	—	—	7:00	7:10	7:16	7:24
936	—	—	—	—	6:58	7:05	7:15	7:25	7:31	7:38
856	6:48	6:56	7:01	7:15	—	—	7:30	7:40	7:46	7:54
936	—	—	—	—	7:28	7:35	7:45	7:56	8:03	8:11
856	7:18	7:26	7:31	7:45	—	—	8:00	8:10	8:16	8:24
936	—	—	—	—	7:58	8:05	8:15	8:26	8:33	8:41
856	7:48	7:56	8:01	8:15	—	—	8:30	8:40	8:46	8:54
936	—	—	—	—	8:28	8:35	8:45	8:56	9:03	9:11
856	8:18	8:26	8:31	8:45	—	—	9:00	9:11	9:18	9:26
936	—	—	—	—	8:58	9:05	9:15	9:26	9:33	9:41
856	8:48	8:56	9:01	9:15	—	—	9:30	9:41	9:48	9:56
936	—	—	—	—	9:28	9:35	9:45	9:56	10:03	10:11
856	9:18	9:26	9:31	9:45	—	—	10:00	10:11	10:18	10:26
936	—	—	—	—	9:58	10:05	10:15	10:26	10:33	10:41
856	9:48	9:56	10:01	10:15	—	—	10:30	10:41	10:48	10:56
936	—	—	—	—	10:28	10:35	10:45	10:56	11:03	11:11
856	10:18	10:26	10:31	10:45	—	—	11:00	11:11	11:18	11:26
936	—	—	—	—	10:58	11:05	11:15	11:26	11:33	11:41
856	10:48	10:56	11:01	11:15	—	—	11:30	11:41	11:48	11:56
936	—	—	—	—	11:28	11:35	11:45	11:56	12:03p	12:11p
856	11:18	11:26	11:31	11:45	—	—	12:00p	12:11p	12:18	12:26
936	—	—	—	—	11:58	12:05p	12:15	12:26	12:33	12:41
856	11:48	11:56	12:01p	12:15p	—	—	12:30	12:41	12:48	12:56
936	—	—	—	—	12:28p	12:35	12:45	12:56	1:03	1:11
856	12:18p	12:26p	12:31	12:45	—	—	1:00	1:11	1:18	1:26
936	—	—	—	—	12:58	1:05	1:15	1:26	1:33	1:41
856	12:47	12:55	1:00	1:14	—	—	1:30	1:41	1:48	1:56
936	—	—	—	—	1:28	1:35	1:45	1:56	2:03	2:11
856	1:17	1:25	1:30	1:44	—	—	2:00	2:11	2:18	2:26
936	—	—	—	—	1:58	2:05	2:15	2:26	2:33	2:41
856	1:46	1:54	1:59	2:13	—	—	2:30	2:41	2:48	2:56
936	—	—	—	—	2:28	2:35	2:45	2:56	3:03	3:11
856	2:16	2:24	2:29	2:43	—	—	3:00	3:11	3:18	3:26
936	—	—	—	—	2:58	3:05	3:15	3:26	3:33	3:41
856	2:45	2:53	2:58	3:13	—	—	3:30	3:41	3:48	3:56
936	—	—	—	—	3:28	3:35	3:45	3:56	4:03	4:11
856	3:15	3:23	3:28	3:43	—	—	4:00	4:11	4:18	4:26
936	—	—	—	—	3:58	4:05	4:15	4:27	4:34	4:42
856	3:45	3:53	3:58	4:13	—	—	4:30	4:41	4:48	4:56
936	—	—	—	—	4:28	4:35	4:45	4:57	5:04	5:12
856	4:16	4:24	4:29	4:44	—	—	5:00	5:12	5:19	5:27
936	—	—	—	—	4:58	5:05	5:15	5:27	5:34	5:42
856	4:46	4:54	4:59	5:14	—	—	5:30	5:42	5:49	5:57
936	—	—	—	—	5:28	5:35	5:45	5:56	6:03	6:11
856	5:16	5:24	5:29	5:44	—	—	6:00	6:12	6:19	6:27
936	—	—	—	—	5:58	6:05	6:15	6:26	6:33	6:41
856	5:53	6:01	6:06	6:19	—	—	6:33	6:44	6:51	6:59
936	—	—	—	—	6:28	6:35	6:45	6:56	7:03	7:11
856	6:23	6:31	6:36	6:49	—	—	7:03	7:14	7:21	7:29
936	—	—	—	—	7:00	7:06	7:15	7:24	7:30	7:37
856	7:08	7:15	7:20	7:32	—	—	7:45	7:54	8:00	8:07
936	—	—	—	—	7:30	7:36	7:45	7:54	8:00	8:07
936	—	—	—	—	7:58	8:04	8:13	8:22	8:28	8:35
856	8:08	8:15	8:20	8:32	—	—	8:45	8:54	9:00	9:07
936	—	—	—	—	8:45	8:51	9:00	9:09	9:15	9:22
856	9:16	9:23	9:28	9:40	—	—	9:53	10:02	10:08	10:15

SDSU ➡ Lemon Grove ➡ Spring Valley ➡ Rancho San Diego

Route	(A) SDSU T.C. DEPART	(B) College Av. & Cajon Bl. El	(C) College Grove Center	(D) Lemon Grove Depot (Main St.)	(E) Skyline Dr. & Carlisle Dr.	(F) Gillispie Dr. & Jamacha Bl. ARRIVE	(H) Orville St & Brucker Av.	(I) Jamacha Bl. & Lamplighter Village Dr.	(J) Rancho San Diego Village	(K) Cuyamaca College ARRIVE
856	5:38a	5:42a	5:50a	6:00a	—	—	6:11a	6:22a	6:27a	6:38a
936	5:53	5:57	6:05	6:15	6:22a	6:29a	—	—	—	—
856	6:08	6:12	6:20	6:30	—	—	6:41	6:52	6:57	7:08
936	6:23	6:27	6:35	6:45	6:52	6:59	—	—	—	—
856	6:38	6:42	6:50	7:00	—	—	7:11	7:22	7:27	7:38
936	6:53	6:57	7:05	7:15	7:22	7:29	—	—	—	—
856	7:07	7:11	7:20	7:30	—	—	7:41	7:52	7:57	8:08
936	7:21	7:25	7:34	7:45	7:52	7:59	—	—	—	—
856	7:37	7:41	7:50	8:00	—	—	8:11	8:22	8:27	8:38
936	7:51	7:55	8:04	8:15	8:22	8:29	—	—	—	—
856	8:05	8:09	8:19	8:30	—	—	8:41	8:52	8:57	9:09
936	8:20	8:24	8:34	8:45	8:52	8:59	—	—	—	—
856	8:35	8:39	8:49	9:00	—	—	9:11	9:22	9:27	9:39
936	8:50	8:54	9:04	9:15	9:22	9:29	—	—	—	—
856	9:05	9:09	9:19	9:30	—	—	9:41	9:52	9:57	10:09
936	9:20	9:24	9:34	9:45	9:52	10:00	—	—	—	—
856	9:35	9:39	9:49	10:00	—	—	10:11	10:22	10:27	10:39
936	9:50	9:54	10:04	10:15	10:22	10:30	—	—	—	—
856	10:05	10:09	10:19	10:30	—	—	10:41	10:52	10:57	11:09
936	10:20	10:24	10:34	10:45	10:52	11:00	—	—	—	—
856	10:35	10:39	10:49	11:00	—	—	11:11	11:22	11:27	11:39
936	10:50	10:54	11:04	11:15	11:22	11:30	—	—	—	—
856	11:05	11:09	11:19	11:30	—	—	11:41	11:52	11:57	12:09p
936	11:20	11:24	11:34	11:45	11:52	12:00p	—	—	—	—
856	11:34	11:38	11:48	12:00p	—	—	12:13p	12:24p	12:29p	12:41
936	11:49	11:53	12:03p	12:15	12:23p	12:32	—	—	—	—
856	12:04p	12:08p	12:18	12:30	—	—	12:43	12:54	12:59	1:11
936	12:19	12:23	12:33	12:45	12:53	1:02	—	—	—	—
856	12:34	12:38	12:48	1:00	—	—	1:13	1:24	1:29	1:41
936	12:49	12:53	1:03	1:15	1:23	1:32	—	—	—	—
856	1:04	1:08	1:18	1:30	—	—	1:43	1:54	1:59	2:11
936	1:19	1:23	1:33	1:45	1:53	2:02	—	—	—	—
856	1:34	1:38	1:48	2:00	—	—	2:13	2:24	2:29	2:41
936	1:49	1:53	2:03	2:15	2:23	2:32	—	—	—	—
856	2:04	2:08	2:18	2:30	—	—	2:45	2:57	3:03	3:16
936	2:19	2:23	2:33	2:45	2:53	3:02	—	—	—	—
856	2:34	2:38	2:48	3:00	—	—	3:15	3:27	3:33	3:46
936	2:49	2:53	3:03	3:15	3:23	3:32	—	—	—	—
856	3:04	3:08	3:18	3:30	—	—	3:45	3:57	4:03	4:16
936	3:19	3:23	3:33	3:45	3:53	4:02	—	—	—	—
856	3:34	3:38	3:48	4:00	—	—	4:15	4:27	4:33	4:46
936	3:49	3:53	4:03	4:15	4:23	4:32	—	—	—	—
856	4:04	4:08	4:18	4:30	—	—	4:45	4:57	5:03	5:16
936	4:19	4:23	4:33	4:45	4:53	5:02	—	—	—	—
856	4:34	4:38	4:48	5:00	—	—	5:14	5:26	5:32	5:44
936	4:48	4:52	5:02	5:15	5:23	5:32	—	—	—	—
856	5:04	5:08	5:18	5:30	—	—	5:44	5:56	6:02	6:14
936	5:18	5:22	5:32	5:45	5:53	6:02	—	—	—	—
856	5:35	5:39	5:48	6:00	—	—	6:13	6:24	6:29	6:40
936	5:50	5:54	6:03	6:15	6:22	6:30	—	—	—	—
856	6:05	6:09	6:18	6:30	—	—	6:43	6:54	6:59	7:10
936	6:20	6:24	6:33	6:45	6:52	7:00	—	—	—	—
856	6:36	6:40	6:49	7:00	—	—	7:12	7:22	7:27	7:38
936	6:50	6:54	7:03	7:15	7:22	7:30	—	—	—	—
856	7:06	7:10	7:19	7:30	—	—	7:42	7:52	7:57	8:08
936	7:21	7:25	7:34	7:45	7:52	8:00	—	—	—	—
936	7:51	7:55	8:04	8:15	8:22	8:30	—	—	—	—
856	8:06	8:10	8:19	8:30	—	—	8:42	8:52	8:57	9:08
936	8:22	8:26	8:35	8:45	8:52	8:59	—	—	—	—
936	8:52	8:56	9:05	9:15	9:22	9:29	—	—	—	—
856	9:22	9:26	9:35	9:45	—	—	9:57	10:07	10:12	—
936	9:37	9:41	9:50	10:00	10:07	10:14	—	—	—	—
856	10:23	10:27	10:36	10:46	—	—	10:58	11:08	11:13	—

CASH FARES / Tarifas en efectivo

Exact fare, please / Favor de pagar la cantidad exacta		
Upon payment of fare, a Day Pass will be issued to complete your trip. <i>Sobre el pago de la tarifa, un Pase Diario se le expedirá para completar su viaje.</i>	One Way Trip, One Zone <i>Viaje sencillo, una zona</i>	One Way Trip, Two Zones <i>Viaje sencillo, dos zonas</i>
Adult / Adulto	\$5.00	\$10.00
Senior (60+)/Disabled/Medicare <i>Mayores de 60 años/Discapacitados/Medicare</i>	\$2.50*	\$5.00*
Children 5 & under <i>Niños de 5 años o menos</i>	FREE* GRATIS*	FREE* GRATIS*

PRE-PAID / Tarifas prepagadas

Exact fare, please / Favor de pagar la cantidad exacta		
	One Way Trip, One Zone <i>Viaje sencillo, una zona</i>	One Way Trip, Two Zones <i>Viaje sencillo, dos zonas</i>
Passenger with Monthly/14-Day/Juror Pass <i>Pasajero con pase mensual, de 14 días, o de jurado</i>	Pass plus \$4 upgrade <i>Pase más extra de \$4</i>	Pass plus \$8 upgrade <i>Pase más extra de \$8</i>
Senior (60+)/Disabled/Medicare with Monthly Pass <i>Mayores de 60 años/Discapacitados/Medicare con pase mensual</i>	Pass plus \$2 upgrade <i>Pase más extra de \$2</i>	Pass plus \$4 upgrade <i>Pase más extra de \$4</i>

* I.D. required for discount fare or pass.
* Se requiere identificación para tarifas o pases de descuento.

DIRECTORY / Directorio

Regional Transit Information <i>Información de transporte público regional</i>	511 or/ó (619) 233-3004
Rural: Reservations & Information <i>Rural: reservaciones e información</i>	(800) 858-0291
TTY/TDD (teletype for hearing impaired) <i>Teletipo para sordos</i>	(619) 234-5005 or/ó (888) 722-4889
InfoExpress (24-hour info via Touch-Tone phone) <i>Información las 24 horas (vía teléfono de teclas)</i>	(619) 685-4900
Customer Service / Suggestions <i>Servicio al cliente / Sugerencias</i>	(619) 557-4555
SafeWatch	(619) 557-4500
Lost & Found <i>Objetos extraviados</i>	(619) 448-2720
	(619) 234-1060
The Transit Store	1st & Broadway, Downtown San Diego M–F 9am–5pm

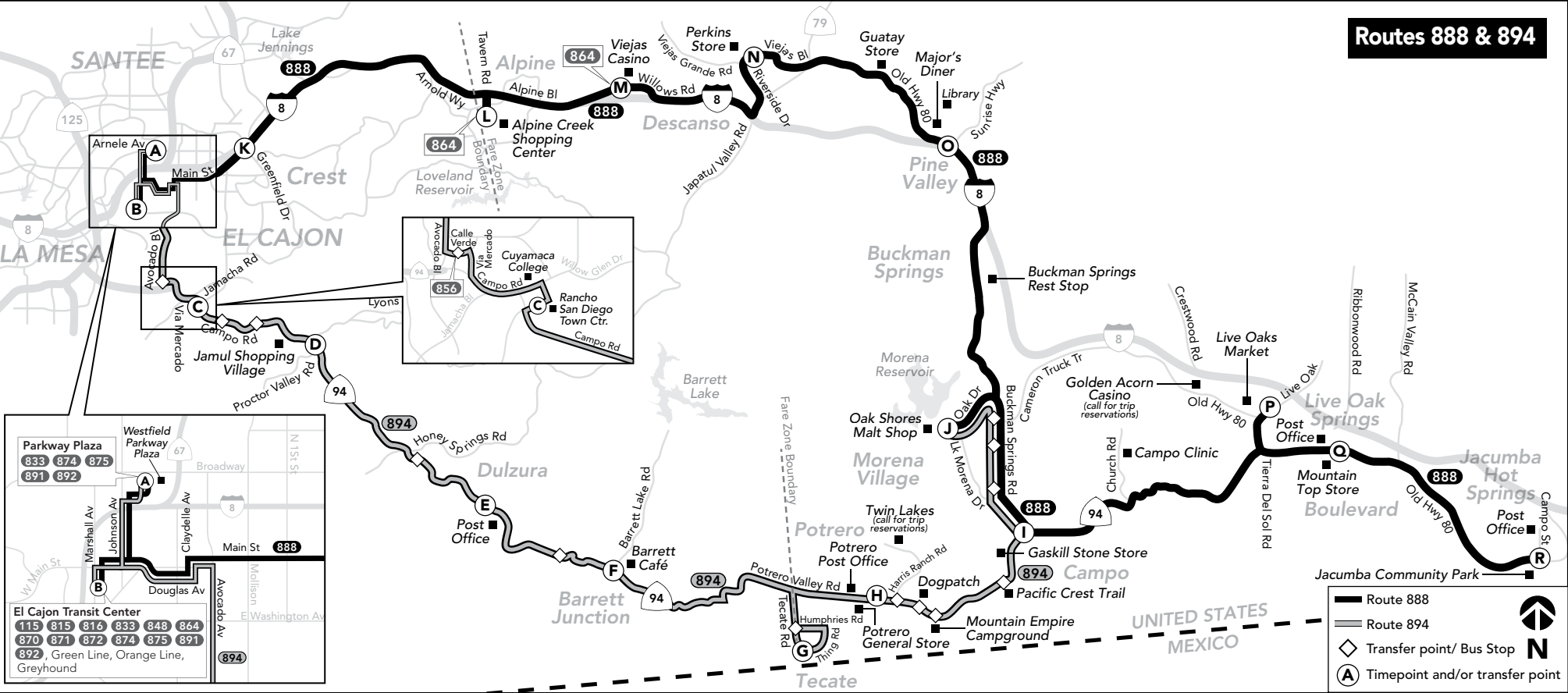
For MTS online trip planning
Planificación de viajes por Internet

www.sdmts.com

For more information on riding MTS services, pick up a Rider's Guide on a bus or at The Transit Store, or visit www.sdmts.com.
Para obtener más información sobre el uso de los servicios de MTS, recoja un 'Rider's Guide' en un autobús o en The Transit Store, o visita a www.sdmts.com.

Thank you for riding MTS! ¡Gracias por viajar con MTS!

The schedules and other information shown in this timetable are subject to change. MTS does not assume responsibility for errors in timetables nor for any inconvenience caused by delayed buses.
Los horarios e información que se indican en este itinerario están sujetos a cambios. MTS no asume responsabilidad por errores en los itinerarios, ni por ningún perjuicio que se origine por los autobuses demorados.



Alternative formats available upon request. Please call: (619) 557-4555 / Formato alternativo disponible al preguntar. Favor de llamar: (619) 557-4555

Route 888 – Westbound (Jacumba to El Cajon) Monday and Friday only / solo lunes y viernes

Jacumba Hot Springs - Old Hwy. 80 & Campo St DEPART	Boulevard - 39335 Old Hwy. 80	Live Oak Springs - Royal Rd (L.O. Market)	Campo - Cameron Corners	Lake Morena (Malt Shop)	Pine Valley - 28870 Old Hwy. 80 (Major's Diner)	Descanso - Viejas Bl. & Riverside Dr. (Perkin's Store)	Viejas Casino - Willows Rd.	Alpine Creek Shopping Ctr. - Arnold Way & Tavern Rd.	El Cajon - E. Main St. & Greenfield Dr.	El Cajon Transit Center	Westfield Parkway Plaza ARRIVE
9:40a	9:50a	10:00a	10:30a	10:40a	11:00a	11:17a	11:24a	11:30a	11:45a	12:00p	12:10p

Route 888 – Eastbound (El Cajon to Jacumba) Monday and Friday only / solo lunes y viernes

Westfield Parkway Plaza DEPART	El Cajon Transit Center	El Cajon - E. Main St. & Greenfield Dr.	Alpine Creek Shopping Ctr. - Arnold Way & Tavern Rd.	Viejas Casino - Willows Rd.	Descanso - Viejas Bl. & Riverside Dr. (Perkin's Store)	Pine Valley - 28870 Old Hwy. 80 (Major's Diner)	Lake Morena (Malt Shop)	Campo - Cameron Corners	Live Oak Springs - Royal Rd (L.O. Market)	Boulevard - 39335 Old Hwy. 80	Jacumba Hot Springs - Old Hwy. 80 & Campo St ARRIVE
4:10p	4:20p	4:36p	4:54p	5:02p	5:12p	5:26p	5:46p	5:57p	6:21p	6:28p	6:38p

Route 894 – Westbound (Morena Village to El Cajon) Monday through Friday / lunes a viernes

Lake Morena (Malt Shop) DEPART	Campo - Cameron Corners	Potrero (Potrero Canyon Park)	Tecate - Tecate Rd. & Thing Rd.	Barrett Junction - Hwy. 94 & Barrett Lake Rd.	Dulzura	Jamul (AM/PM Mini Mart)	Rancho San Diego Town Center	El Cajon Transit Center	Westfield Parkway Plaza ARRIVE
—	5:39a	6:00a	6:15a	6:23a	6:32a	6:50a	7:00a	7:23a	7:33a
6:42a	6:54	7:15	7:30	7:38	7:47	8:05	8:15	8:38	8:48
—	10:54	11:15	11:30	11:39	11:48	12:06p	12:16p	12:41p	12:52p
—	2:54p	3:15p	3:30p	3:39p	3:48p	4:06	4:16	4:41	4:52

Route 894 – Eastbound (El Cajon to Morena Village) Monday through Friday / lunes a viernes

Westfield Parkway Plaza DEPART	El Cajon Transit Center	Rancho San Diego Town Center	Jamul (AM/PM Mini Mart)	Dulzura	Barrett Junction - Hwy. 94 & Barrett Lake Rd.	Tecate - Tecate Rd. & Thing Rd.	Potrero (Potrero Canyon Park)	Campo - Cameron Corners	Lake Morena (Malt Shop) ARRIVE
8:20a	8:30a	8:51a	8:59a	9:19a	9:28a	9:41a	9:53a	10:17a	—
11:35	11:45	12:06p	12:14p	12:34p	12:43p	12:56p	1:08p	1:32p	—
2:50p	3:00p	3:21	3:29	3:49	3:58	4:13	4:27	4:54	5:14p
5:35	5:45	6:06	6:14	6:34	6:43	6:56	7:09	7:33	—

Effective SEPTEMBER 1, 2013

RURAL SERVICE

888 Jacumba Hot Springs - El Cajon via Alpine

891 Borrego Springs - El Cajon via Shelter Valley / Ramona

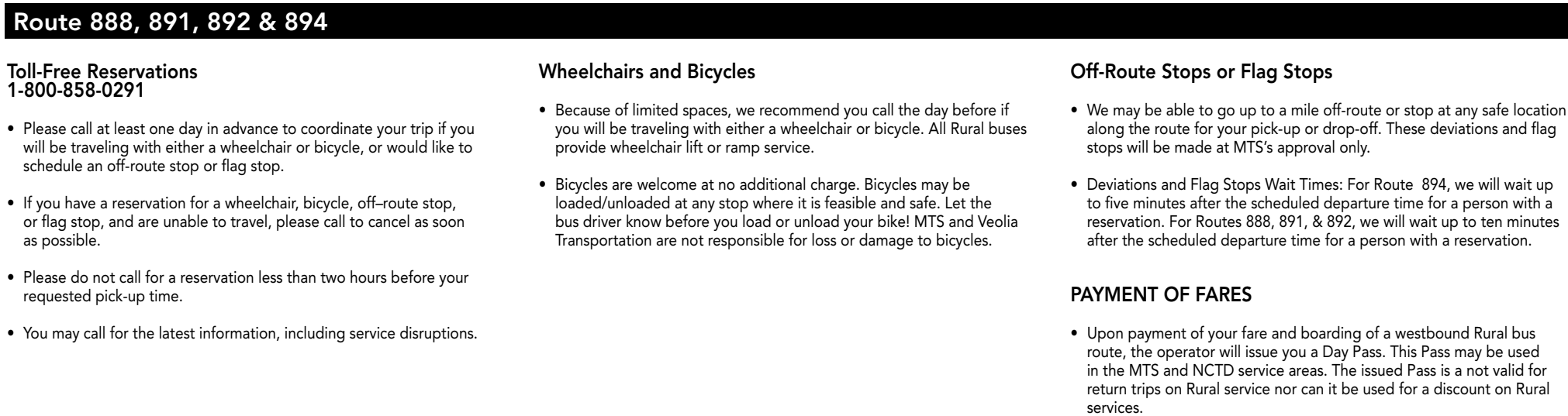
892 Borrego Springs - El Cajon via Ranchita / Ramona

894 Morena Village - El Cajon via Tecate / Campo

MTS Metropolitan Transit System

Trolley Connections El Cajon

Accessibility icons: wheelchair, bicycle



- *Favor de llamar al menos un día por adelantado para coordinar su viaje si estará viajando con silla de ruedas o bicicleta, o si quisiera reservar una parada no en la ruta o una parada a petición.*
- *Si tiene una reservación para una silla de ruedas, bicicleta, parada no en la ruta, o una parada a petición, favor de llamar para cancelar lo más pronto posible.*
- *Favor de no llamar para una reservación menos de dos horas antes de la hora que va a necesitar nuestro servicio.*
- *Puede llamar para la información más reciente, incluyendo interrupciones de servicio.*

- Debido a espacios limitados, recomendamos que llame el día antes si viajara con silla de ruedas o bicicleta. Todos los autobuses rurales ofrecen servicio de rampa o elevador para sillas de ruedas.
- Bicicletas son bienvenidas sin costo adicional. Bicicletas pueden subirse/bajarse en cualquier parada donde es factible y seguro. ¡Avisese al chofer antes de cargar o descargar la bicicleta! MTS y Veolia Transportation no son responsable por pérdidas o daños a las bicicletas.

- Es posible que podamos viajar hasta una milla retirado de la ruta o parar en cualquier ubicación segura a lo largo de la ruta para recogerlo/dejarlo. Estos desvíos se realizarán solo bajo la aprobación de MTS.
- Tiempo de espera para las desviaciones y paradas a petición de parte: Para la ruta 894, esperaremos hasta cinco minutos después de la hora de partida indicada para una persona con una reservación. Para las rutas 888, 891 y 892, esperaremos hasta diez minutos después de la hora de partida indicada para una persona con una reservación.

- Al pagar su tarifa y subir a un autobús rural en dirección oeste, el chofer proporcionará un Pase Diario. Este pase puede ser utilizado en las áreas de servicio MTS y NCTD. El pase proporcionado no es válido para viajes de retorno en servicio rural tampoco puede utilizarse para un descuento en servicios rurales.

Appendix E

SANDAG State Route V/C Capacities

To determine potential trip reductions associated with TDM mitigation measures, the Trip Reduction Guidelines (available from SANDAG) should be followed. The Guidelines provide standard methodology for estimating the vehicle trip reductions associated with specific congestion mitigation strategies as identified in the CMS Toolbox, including TDM strategies.

Screen Check

As part of the first draft of a TIS, the preparer must ensure that all required elements have been included. This screen check procedure will help reduce the number of submittals, and will encourage early dialogue between the reviewer and the preparer. The local agency reviewer will check the study for completeness, and strive to return all incomplete submittals within seven working days. A pre-submittal conference is encouraged to determine which elements are not required for the TIS.

Table D.5 contains the TIS Screen Check.

The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A LOS¹ definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort and convenience, and safety. LOS definitions can generally be categorized as follows:

Table D.3
LOS Definitions (Generally used by Caltrans)

LOS	D/C ²	Congestion/Delay	Traffic Description
<i>(Used for freeways, expressways and conventional highways³)</i>			
"A"	<0.41	None	Free flow
"B"	0.42-0.62	None	Free to stable flow, light to moderate volumes.
"C"	0.63-0.79	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted
"D"	0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability, and psychological comfort extremely poor
<i>(Used for conventional highways)</i>			
"F"	>1.00	Considerable	Forced or breakdown. Delay measured in average flow, travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle
<i>(Used for freeways and expressways)</i>			
"F0"	1.01-1.25	Considerable 0-1 hour delay	Forced flow, heavy congestion, long queues form behind breakdown points, stop and go
"F1"	1.26-1.35	Severe 1-2 hour delay	Very heavy congestion, very long queues
"F2"	1.36-1.45	Very severe 2-3 hour delay	Extremely heavy congestion, longer queues, more numerous breakdown points, longer stop periods
"F3"	>1.46	Extremely severe 3+ hours of delay	Gridlock

¹ LOS generally can be calculated using "Table 3.1. LOS Criteria for Basic Freeway Sections" from the latest *Highway Capacity Manual*. However, contact Caltrans for more specific information on determining existing "free-flow" freeway speeds.

² Demand/Capacity ratio used for forecasts (V/C ratio used for operational analysis, where V = volume)

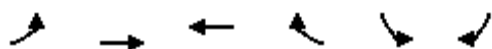
³ Arterial LOS is based upon average "free-flow" travel speeds, and should refer to definitions in Table 11.1 in the HCM.

Appendix F

Existing + Project LOS Calculations

AM Existing + Project
1: SR-94 Campo Rd & Via Mercado

HCM Signalized Intersection Capacity Analysis

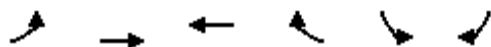


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	108	1439	1710	183	142	200
Ideal Flow (vphpl)	1700	1900	1900	1700	1700	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	0.95
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	3539	3488		1533	1346
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	3539	3488		1533	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	117	1564	1859	199	154	217
RTOR Reduction (vph)	0	0	9	0	20	112
Lane Group Flow (vph)	117	1564	2049	0	210	29
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	7.0	64.0	53.0		18.0	18.0
Effective Green, g (s)	7.0	64.0	53.0		18.0	18.0
Actuated g/C Ratio	0.08	0.71	0.59		0.20	0.20
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	123	2516	2054		306	269
v/s Ratio Prot	c0.07	0.44	c0.59		c0.14	
v/s Ratio Perm						0.02
v/c Ratio	0.95	0.62	1.00		0.69	0.11
Uniform Delay, d1	41.3	6.7	18.4		33.4	29.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	65.7	0.5	19.1		11.9	0.8
Delay (s)	107.1	7.2	37.6		45.3	30.2
Level of Service	F	A	D		D	C
Approach Delay (s)		14.2	37.6		39.5	
Approach LOS		B	D		D	
Intersection Summary						
HCM 2000 Control Delay			28.2		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.92			
Actuated Cycle Length (s)			90.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			83.1%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

AM Existing + Project

2: SR-94 Campo Rd & Skyline Church W. Dwy

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Volume (veh/h)	0	1604	1852	28	0	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1743	2013	30	0	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		1219				
pX, platoon unblocked					0.74	
vC, conflicting volume	2043				2900	686
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2043				2865	686
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	94
cM capacity (veh/h)	272				10	390
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	872	872	805	805	433	25
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	30	25
cSH	1700	1700	1700	1700	1700	390
Volume to Capacity	0.51	0.51	0.47	0.47	0.25	0.06
Queue Length 95th (ft)	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	14.9
Lane LOS						B
Approach Delay (s)	0.0		0.0			14.9
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			47.7%		ICU Level of Service	A
Analysis Period (min)			15			

AM Existing + Project

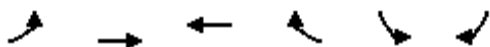
3: Jamacha Blvd & SR-94 Campo Rd

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	1450	78	325	1663	43	190	7	526	15	8	7
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	3072	5085	1386	3072	5085	1386	1504	1691	1402	1504	1743	1396
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (perm)	3072	5085	1386	3072	5085	1386	1504	1691	1402	1504	1743	1396
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	1576	85	353	1808	47	207	8	572	16	9	8
RTOR Reduction (vph)	0	0	58	0	0	27	0	0	255	0	0	0
Lane Group Flow (vph)	54	1576	27	353	1808	20	108	107	317	12	13	8
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	3.2	29.0	29.0	12.8	38.6	38.6	17.0	17.0	29.8	16.0	16.0	16.0
Effective Green, g (s)	3.2	29.0	29.0	12.8	38.6	38.6	17.0	17.0	29.8	16.0	16.0	16.0
Actuated g/C Ratio	0.04	0.32	0.32	0.14	0.43	0.43	0.19	0.19	0.33	0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	108	1624	442	433	2161	589	281	316	521	265	307	245
v/s Ratio Prot	0.02	c0.31		0.11	c0.36		0.07	0.06	c0.09	c0.01	0.01	
v/s Ratio Perm			0.02			0.01			0.14			0.01
v/c Ratio	0.50	0.97	0.06	0.82	0.84	0.03	0.38	0.34	0.61	0.05	0.04	0.03
Uniform Delay, d1	43.0	30.5	21.5	37.9	23.3	15.2	32.3	32.0	25.6	31.1	31.0	31.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	15.8	0.1	11.2	3.0	0.0	3.9	2.9	2.0	0.3	0.3	0.2
Delay (s)	46.6	46.3	21.5	49.1	26.3	15.2	36.3	34.9	27.6	31.4	31.3	31.2
Level of Service	D	D	C	D	C	B	D	C	C	C	C	C
Approach Delay (s)		45.1			29.7			29.8			31.3	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			35.3				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			90.8				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			78.3%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

PM Existing + Project
1: SR-94 Campo Rd & Via Mercado

HCM Signalized Intersection Capacity Analysis

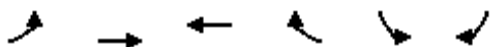


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	153	1921	1438	185	197	149
Ideal Flow (vphpl)	1700	1900	1900	1700	1700	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	0.95
Frt	1.00	1.00	0.98		0.97	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1583	3539	3479		1553	1346
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1583	3539	3479		1553	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	166	2088	1563	201	214	162
RTOR Reduction (vph)	0	0	11	0	11	82
Lane Group Flow (vph)	166	2088	1753	0	260	23
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	11.0	61.9	46.9		20.0	20.0
Effective Green, g (s)	11.0	61.9	46.9		20.0	20.0
Actuated g/C Ratio	0.12	0.69	0.52		0.22	0.22
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	193	2436	1814		345	299
v/s Ratio Prot	0.10	c0.59	c0.50		c0.17	
v/s Ratio Perm						0.02
v/c Ratio	0.86	0.86	0.97		0.75	0.08
Uniform Delay, d1	38.7	10.6	20.7		32.7	27.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	30.1	3.2	13.9		14.2	0.5
Delay (s)	68.8	13.8	34.6		46.8	28.2
Level of Service	E	B	C		D	C
Approach Delay (s)		17.9	34.6		41.6	
Approach LOS		B	C		D	
Intersection Summary						
HCM 2000 Control Delay			26.7		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.92			
Actuated Cycle Length (s)			89.9		Sum of lost time (s)	12.0
Intersection Capacity Utilization			80.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

PM Existing + Project

2: SR-94 Campo Rd & Skyline Church W. Dwy

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑↑			↑
Volume (veh/h)	0	2084	1587	40	0	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	2265	1725	43	0	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		1219				
pX, platoon unblocked					0.35	
vC, conflicting volume	1768				2879	597
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1768				2657	597
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	90
cM capacity (veh/h)	349				6	446
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	SB 1
Volume Total	1133	1133	690	690	388	43
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	43	43
cSH	1700	1700	1700	1700	1700	446
Volume to Capacity	0.67	0.67	0.41	0.41	0.23	0.10
Queue Length 95th (ft)	0	0	0	0	0	8
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	13.9
Lane LOS						B
Approach Delay (s)	0.0		0.0			13.9
Approach LOS						B
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			60.9%		ICU Level of Service	B
Analysis Period (min)			15			

PM Existing + Project

3: Jamacha Blvd & SR-94 Campo Rd

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	1890	164	539	1424	19	109	6	600	31	15	20
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	3072	5085	1382	3072	5085	1383	1504	1694	1407	1504	1736	1395
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (perm)	3072	5085	1382	3072	5085	1383	1504	1694	1407	1504	1736	1395
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)	49	2054	178	586	1548	21	118	7	652	34	16	22
RTOR Reduction (vph)	0	0	109	0	0	9	0	0	140	0	0	0
Lane Group Flow (vph)	49	2054	69	586	1548	12	63	62	512	24	26	22
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	3.2	47.0	47.0	25.8	69.6	69.6	16.0	16.0	41.8	16.0	16.0	16.0
Effective Green, g (s)	3.2	47.0	47.0	25.8	69.6	69.6	16.0	16.0	41.8	16.0	16.0	16.0
Actuated g/C Ratio	0.03	0.39	0.39	0.21	0.58	0.58	0.13	0.13	0.35	0.13	0.13	0.13
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	81	1978	537	656	2929	796	199	224	533	199	229	184
v/s Ratio Prot	0.02	c0.40		0.19	0.30		0.04	0.04	c0.20	c0.02	0.01	
v/s Ratio Perm			0.05			0.01			0.16			0.02
v/c Ratio	0.60	1.04	0.13	0.89	0.53	0.02	0.32	0.28	0.96	0.12	0.11	0.12
Uniform Delay, d1	58.2	36.9	23.7	46.2	15.6	10.9	47.4	47.2	38.7	46.2	46.2	46.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.1	31.0	0.1	14.5	0.2	0.0	4.1	3.0	29.2	1.2	1.0	1.3
Delay (s)	70.3	67.9	23.8	60.7	15.8	11.0	51.6	50.2	67.9	47.4	47.2	47.5
Level of Service	E	E	C	E	B	B	D	D	E	D	D	D
Approach Delay (s)		64.5			27.9			65.1			47.4	
Approach LOS		E			C			E			D	
Intersection Summary												
HCM 2000 Control Delay			49.5				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			120.8				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			91.9%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

Appendix G

SANDAG Series 12 Year 2050 Volumes and Segment Functional Classification

SANDAG Series 12 County of San Diego General Plan Update 2050 Base Forecast

Valle de Oro

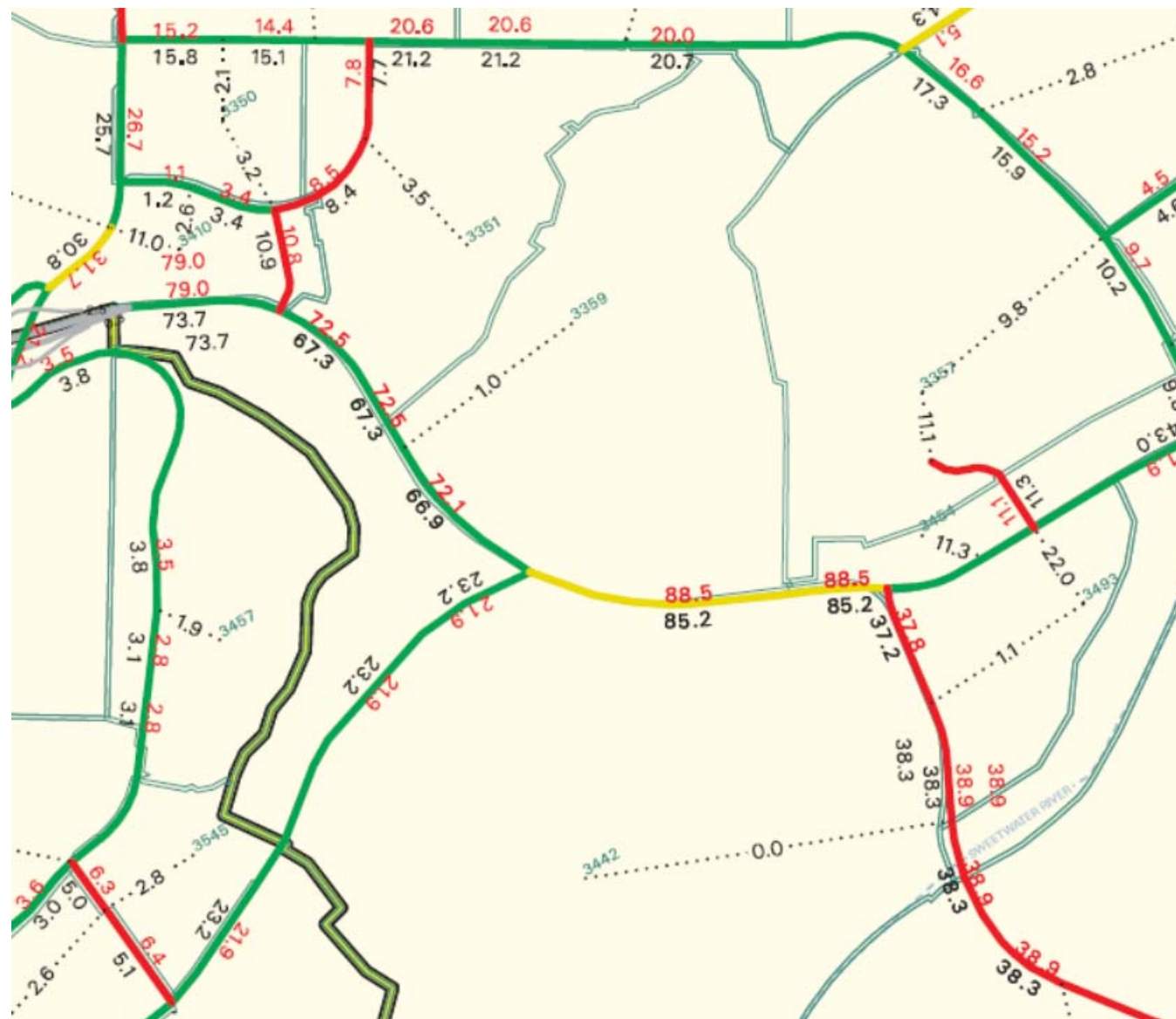
Model Run 6/12/15
2050hyb4 - April 2015
October 2010 LU Map Inputs
2050 RC Network
2050 Revenue Constrained

Levels of Service:

-  LOS A - D
-  LOS E
-  LOS F
-  Not Applicable

Forecasted Volumes:

-  Adjusted Volume
-  Unadjusted Volume
-  Traffic Analysis Zone



Horizon Year 2050 Volumes and Capacities (2050hyb4)

Campo Road (SR-94)	AM			AM			PM			PM			Max	Max
	Vol	Cap	EB V/C	Vol	Cap	WB V/C	Vol	Cap	EB V/C	Vol	Cap	WB V/C	V/C	V/C LOS
Via Mercado to Unknown	2122	5100	0.416	1863	5178	0.360	1782	5100	0.349	2397	5178	0.463	0.463	B
Unknown to Zone Connector	2122	5100	0.416	1863	5100	0.365	1782	5100	0.349	2397	5100	0.470	0.470	B
Zone Connector to Ramp	2094	5100	0.411	1870	5100	0.367	1789	5100	0.351	2366	5100	0.464	0.464	B
Ramp to SR-54	2094	5100	0.411	1870	5100	0.367	1789	5100	0.351	2366	5100	0.464	0.464	B
SR-54 to Jamacha Blvd	2094	2622	0.799	1870	5100	0.367	1789	2622	0.682	2366	5100	0.464	0.799	D
Jamacha Blvd to Ramp SR-94 EB	2809	5100	0.551	2259	3558	0.635	2261	5100	0.443	3057	3558	0.859	0.859	D
Ramp to SR-54 EB to Ramp	2809	5100	0.551	2259	5100	0.443	2261	5100	0.443	3057	5100	0.599	0.599	B
Ramp to Unknown	2809	5100	0.551	2259	5100	0.443	2261	5100	0.443	3057	5100	0.599	0.599	B
Unknown to Jamacha Rd	2809	2984	0.941	2259	5100	0.443	2261	2984	0.758	3057	5100	0.599	0.941	E

Notes: LOS per SANDAG Table D.3 (LOS A <0.41; LOS B 0.42-0.62; LOS C 0.63-0.79; LOS D 0.80-0.92; LOS E 0.93-1.0; LOS F >1.0).

County of San Diego General Plan Update Functional Class Network

Valle de Oro

2050hyb4 - April 2015
October 2010 LU Map Inputs
2050 RC Network
Network Build 06/05/15

Functional Classifications:

-  Freeway
-  Prime
-  Major
-  Collector
-  Local Collector
-  Rural Collector
-  Local
-  Freeway Connector
-  Ramp
-  Zone Connector
-  Light & Commuter Rail
-  Zone Boundary
-  Community Plan Areas

Intersection Controls:

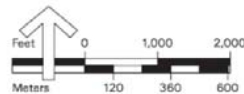
-  Signal
-  All-Way Stop
-  One-Way Stop
-  Ramp Meter
-  Rail Crossing

Speeds and Lanes:

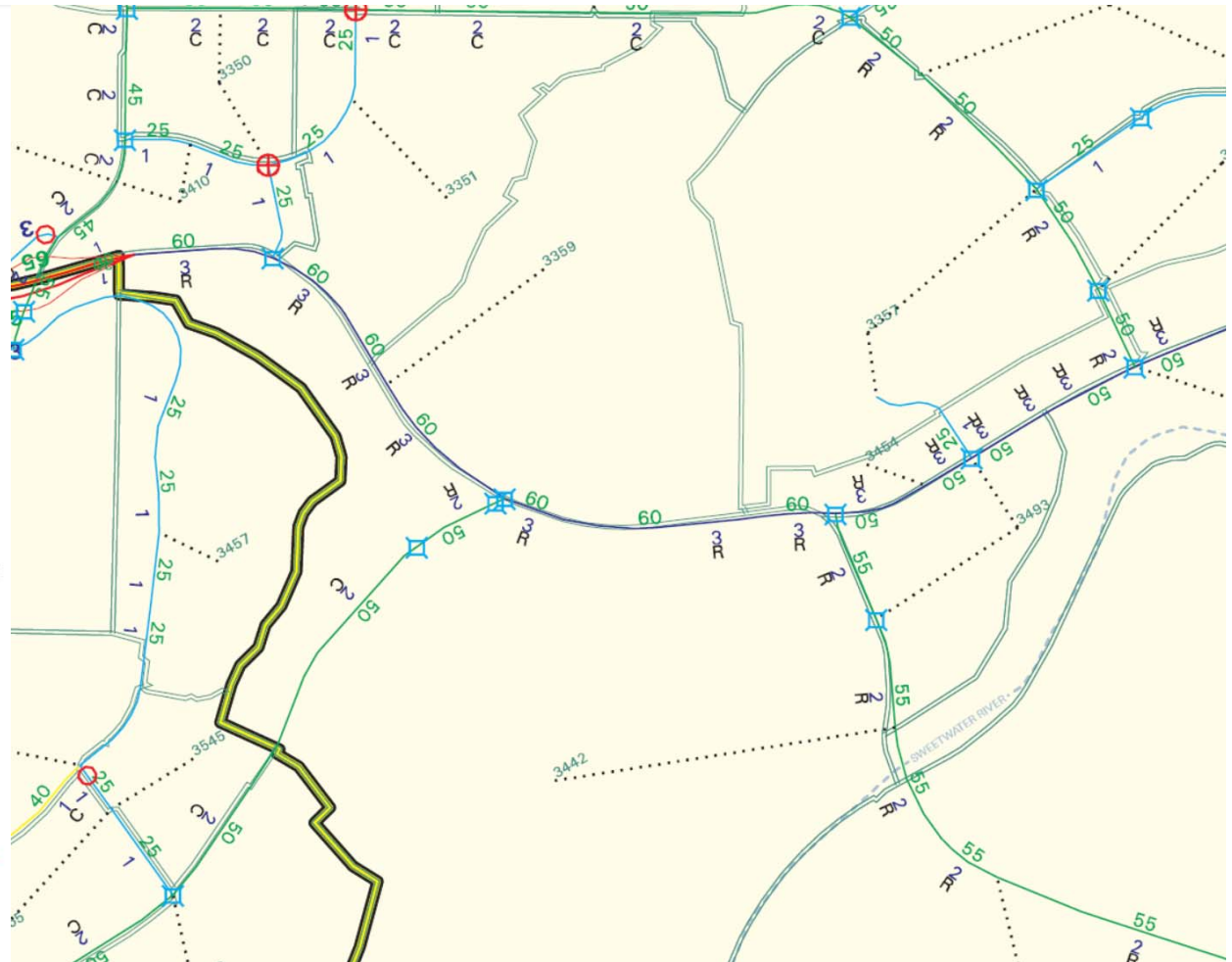
-  Adjusted Speed
-  Modeled Speed
-  Lanes
-  Lane Imbalance
-  Traffic Analysis Zone
-  Median Type

Median Type:

- R Raised Median
- C Continuous Left Turn Lane
- No Median



June 5, 2015



Appendix H

Build-Out Peak Hour Volume Growth Factor

PEAK HOUR GROWTH FACTOR CALCULATIONS BETWEEN 2015 AND 2050

<u>Via Mercado to Jamacha Blvd</u>	AM Peak Hour Volumes				PM Peak Hour Volumes			
2015 Actual Volumes	1572	EB	1884	WB	(2102)	EB	(1609)	WB
2050 SANDAG Volumes	2094	EB	1870	WB	(1789)	EB	(2366)	WB
	24.9%		-0.7%		-17.5%		32.0%	9.7%

<u>Jamacha Blvd to Jamacha Rd</u>	AM Peak Hour Volumes				PM Peak Hour Volumes			
2015 Actual Volumes	1986	EB	2026	WB	(2513)	EB	(1972)	WB
2050 SANDAG Volumes	2089	EB	2259	WB	(2261)	EB	(3057)	WB
	4.9%		10.3%		-11.1%		35.5%	9.9%

Average of all above 9.8%

Rounded: 10.0%

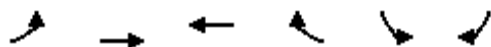
Appendix I

Build-Out LOS Calculations

AM Build-Out

1: SR-94 Campo Rd & Via Mercado

HCM Signalized Intersection Capacity Analysis

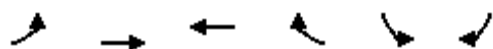


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	120	1570	1870	200	160	220
Ideal Flow (vphpl)	1700	1900	1900	1700	1700	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	0.91		1.00	0.95
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	5085	5012		1534	1346
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	5085	5012		1534	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	1707	2033	217	174	239
RTOR Reduction (vph)	0	0	20	0	27	112
Lane Group Flow (vph)	130	1707	2230	0	231	43
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	6.0	39.0	29.0		18.0	18.0
Effective Green, g (s)	6.0	39.0	29.0		18.0	18.0
Actuated g/C Ratio	0.09	0.60	0.45		0.28	0.28
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	146	3051	2236		424	372
v/s Ratio Prot	c0.08	0.34	c0.44		c0.15	
v/s Ratio Perm						0.03
v/c Ratio	0.89	0.56	1.00		0.55	0.12
Uniform Delay, d1	29.2	7.8	18.0		20.0	17.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	43.7	0.2	18.3		5.0	0.6
Delay (s)	72.9	8.1	36.2		25.0	18.2
Level of Service	E	A	D		C	B
Approach Delay (s)		12.6	36.2		22.4	
Approach LOS		B	D		C	
Intersection Summary						
HCM 2000 Control Delay			25.3		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.83			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			72.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

AM Build-Out

2: SR-94 Campo Rd & Skyline Church W. Dwy

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↑↑↑↑	↑↑↑↱			↱	
Volume (veh/h)	0	1760	2040	10	0	20	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	1913	2217	11	0	22	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (ft)		1219					
pX, platoon unblocked					0.80		
vC, conflicting volume	2228				2861	745	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	2228				2447	745	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	94	
cM capacity (veh/h)	230				21	357	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	638	638	638	887	887	454	22
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	11	22
cSH	1700	1700	1700	1700	1700	1700	357
Volume to Capacity	0.38	0.38	0.38	0.52	0.52	0.27	0.06
Queue Length 95th (ft)	0	0	0	0	0	0	5
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	15.7
Lane LOS							C
Approach Delay (s)	0.0			0.0			15.7
Approach LOS							C
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			49.6%		ICU Level of Service		A
Analysis Period (min)			15				

AM Build-Out

3: Jamacha Blvd & SR-94 Campo Rd

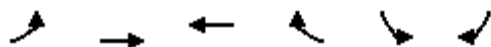
HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	1600	90	360	1820	50	210	10	580	10	10	10
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3072	5085	1386	3072	5085	1386	1504	1693	1402	1504	1762	1396
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3072	5085	1386	3072	5085	1386	1504	1693	1402	1504	1762	1396
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	1739	98	391	1978	54	228	11	630	11	11	11
RTOR Reduction (vph)	0	0	66	0	0	30	0	0	263	0	0	0
Lane Group Flow (vph)	54	1739	32	391	1978	24	119	120	367	10	12	11
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	3.2	30.0	30.0	12.8	39.6	39.6	16.0	16.0	28.8	16.0	16.0	16.0
Effective Green, g (s)	3.2	30.0	30.0	12.8	39.6	39.6	16.0	16.0	28.8	16.0	16.0	16.0
Actuated g/C Ratio	0.04	0.33	0.33	0.14	0.44	0.44	0.18	0.18	0.32	0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	108	1680	457	433	2217	604	265	298	506	265	310	245
v/s Ratio Prot	0.02	c0.34		0.13	c0.39		0.08	0.07	c0.10	0.01	0.01	
v/s Ratio Perm			0.02			0.02			0.16			c0.01
v/c Ratio	0.50	1.04	0.07	0.90	0.89	0.04	0.45	0.40	0.73	0.04	0.04	0.04
Uniform Delay, d1	43.0	30.4	20.8	38.4	23.6	14.7	33.5	33.2	27.5	31.0	31.0	31.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.6	31.6	0.1	21.7	5.0	0.0	5.4	4.0	5.1	0.3	0.2	0.3
Delay (s)	46.6	62.0	20.9	60.1	28.6	14.7	38.9	37.2	32.6	31.3	31.3	31.4
Level of Service	D	E	C	E	C	B	D	D	C	C	C	C
Approach Delay (s)		59.4			33.4			34.1			31.3	
Approach LOS		E			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			42.9			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			90.8			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			84.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

PM Build-Out

1: SR-94 Campo Rd & Via Mercado

HCM Signalized Intersection Capacity Analysis

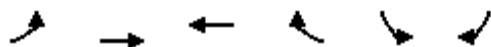


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	170	2100	1570	200	220	160
Ideal Flow (vphpl)	1700	1900	1900	1700	1700	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	0.91		1.00	0.95
Frt	1.00	1.00	0.98		0.97	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1583	5085	4999		1554	1346
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1583	5085	4999		1554	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	2283	1707	217	239	174
RTOR Reduction (vph)	0	0	25	0	14	83
Lane Group Flow (vph)	185	2283	1899	0	286	30
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	9.7	39.7	26.0		17.0	17.0
Effective Green, g (s)	9.7	39.7	26.0		17.0	17.0
Actuated g/C Ratio	0.15	0.61	0.40		0.26	0.26
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	237	3120	2008		408	353
v/s Ratio Prot	0.12	c0.45	c0.38		c0.18	
v/s Ratio Perm						0.02
v/c Ratio	0.78	0.73	0.95		0.70	0.08
Uniform Delay, d1	26.5	8.8	18.7		21.6	18.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	15.3	0.9	10.0		9.6	0.5
Delay (s)	41.7	9.7	28.7		31.2	18.4
Level of Service	D	A	C		C	B
Approach Delay (s)		12.1	28.7		27.7	
Approach LOS		B	C		C	
Intersection Summary						
HCM 2000 Control Delay			20.1		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.86			
Actuated Cycle Length (s)			64.7		Sum of lost time (s)	12.0
Intersection Capacity Utilization			72.6%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

PM Build-Out

2: SR-94 Campo Rd & Skyline Church W. Dwy

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↑↑↑↑	↑↑↑↓			↗	
Volume (veh/h)	0	2290	1750	10	0	30	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	2489	1902	11	0	33	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (ft)		1219					
pX, platoon unblocked					0.66		
vC, conflicting volume	1913				2737	639	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1913				1827	639	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	92	
cM capacity (veh/h)	306				45	418	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	830	830	830	761	761	391	33
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	11	33
cSH	1700	1700	1700	1700	1700	1700	418
Volume to Capacity	0.49	0.49	0.49	0.45	0.45	0.23	0.08
Queue Length 95th (ft)	0	0	0	0	0	0	6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	14.3
Lane LOS							B
Approach Delay (s)	0.0			0.0			14.3
Approach LOS							B
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			47.6%		ICU Level of Service		A
Analysis Period (min)			15				

PM Build-Out

3: Jamacha Blvd & SR-94 Campo Rd

HCM Signalized Intersection Capacity Analysis

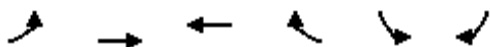
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	2080	180	590	1560	20	120	10	660	30	10	20
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	3072	5085	1380	3072	5085	1380	1504	1698	1409	1504	1726	1394
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (perm)	3072	5085	1380	3072	5085	1380	1504	1698	1409	1504	1726	1394
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)	33	2261	196	641	1696	22	130	11	717	33	11	22
RTOR Reduction (vph)	0	0	104	0	0	8	0	0	111	0	0	0
Lane Group Flow (vph)	33	2261	92	641	1696	14	70	71	606	22	22	22
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	3.0	56.0	56.0	37.6	90.6	90.6	16.0	16.0	53.6	16.0	16.0	16.0
Effective Green, g (s)	3.0	56.0	56.0	37.6	90.6	90.6	16.0	16.0	53.6	16.0	16.0	16.0
Actuated g/C Ratio	0.02	0.40	0.40	0.27	0.64	0.64	0.11	0.11	0.38	0.11	0.11	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	65	2011	545	815	3253	882	169	191	573	169	195	157
v/s Ratio Prot	0.01	c0.44		0.21	0.33		0.05	0.04	c0.28	0.01	0.01	
v/s Ratio Perm			0.07			0.01			0.15			c0.02
v/c Ratio	0.51	1.12	0.17	0.79	0.52	0.02	0.41	0.37	1.06	0.13	0.11	0.14
Uniform Delay, d1	68.6	42.8	27.7	48.3	13.8	9.3	58.4	58.1	44.0	56.5	56.4	56.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.1	63.1	0.1	5.0	0.2	0.0	7.3	5.5	53.9	1.6	1.2	1.9
Delay (s)	74.7	105.9	27.9	53.3	13.9	9.3	65.8	63.6	97.9	58.1	57.6	58.5
Level of Service	E	F	C	D	B	A	E	E	F	E	E	E
Approach Delay (s)		99.4			24.6			92.5			58.1	
Approach LOS		F			C			F			E	
Intersection Summary												
HCM 2000 Control Delay			67.3									
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			141.6									
Intersection Capacity Utilization			99.7%									
Analysis Period (min)			15									
c Critical Lane Group												

Appendix J

Build-Out + Project LOS Calculations

AM Build-Out + Project
1: SR-94 Campo Rd & Via Mercado

HCM Signalized Intersection Capacity Analysis

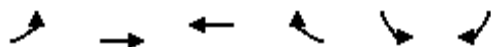


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	120	1578	1878	201	161	220
Ideal Flow (vphpl)	1700	1900	1900	1700	1700	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	0.91		1.00	0.95
Frt	1.00	1.00	0.99		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1583	5085	5012		1534	1346
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1583	5085	5012		1534	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	1715	2041	218	175	239
RTOR Reduction (vph)	0	0	20	0	27	112
Lane Group Flow (vph)	130	1715	2239	0	232	43
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	6.0	39.0	29.0		18.0	18.0
Effective Green, g (s)	6.0	39.0	29.0		18.0	18.0
Actuated g/C Ratio	0.09	0.60	0.45		0.28	0.28
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	146	3051	2236		424	372
v/s Ratio Prot	c0.08	0.34	c0.45		c0.15	
v/s Ratio Perm						0.03
v/c Ratio	0.89	0.56	1.00		0.55	0.12
Uniform Delay, d1	29.2	7.8	18.0		20.0	17.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	43.7	0.2	19.4		5.0	0.6
Delay (s)	72.9	8.1	37.4		25.0	18.2
Level of Service	E	A	D		C	B
Approach Delay (s)		12.7	37.4		22.5	
Approach LOS		B	D		C	
Intersection Summary						
HCM 2000 Control Delay			25.9		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.83			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	12.0
Intersection Capacity Utilization			73.2%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

AM Build-Out + Project

2: SR-94 Campo Rd & Skyline Church W. Dwy

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↑↑↑↑	↑↑↑↓			↗	
Volume (veh/h)	0	1760	2040	26	0	29	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	1913	2217	28	0	32	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (ft)		1219					
pX, platoon unblocked					0.80		
vC, conflicting volume	2246				2869	753	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	2246				2453	753	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	91	
cM capacity (veh/h)	226				20	352	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	638	638	638	887	887	472	32
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	28	32
cSH	1700	1700	1700	1700	1700	1700	352
Volume to Capacity	0.38	0.38	0.38	0.52	0.52	0.28	0.09
Queue Length 95th (ft)	0	0	0	0	0	0	7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	16.2
Lane LOS							C
Approach Delay (s)	0.0			0.0			16.2
Approach LOS							C
Intersection Summary							
Average Delay			0.1				
Intersection Capacity Utilization			50.0%		ICU Level of Service		A
Analysis Period (min)			15				

AM Build-Out + Project

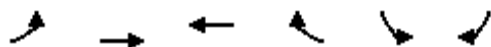
3: Jamacha Blvd & SR-94 Campo Rd

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	1600	90	360	1825	50	212	10	580	15	12	10
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.99	1.00
Satd. Flow (prot)	3072	5085	1386	3072	5085	1386	1504	1693	1402	1504	1758	1396
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.99	1.00
Satd. Flow (perm)	3072	5085	1386	3072	5085	1386	1504	1693	1402	1504	1758	1396
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)	64	1739	98	391	1984	54	230	11	630	16	13	11
RTOR Reduction (vph)	0	0	66	0	0	30	0	0	253	0	0	0
Lane Group Flow (vph)	64	1739	32	391	1984	24	120	121	377	14	15	11
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	3.2	30.0	30.0	12.8	39.6	39.6	16.0	16.0	28.8	16.0	16.0	16.0
Effective Green, g (s)	3.2	30.0	30.0	12.8	39.6	39.6	16.0	16.0	28.8	16.0	16.0	16.0
Actuated g/C Ratio	0.04	0.33	0.33	0.14	0.44	0.44	0.18	0.18	0.32	0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	108	1680	457	433	2217	604	265	298	506	265	309	245
v/s Ratio Prot	0.02	c0.34		0.13	c0.39		0.08	0.07	c0.10	c0.01	0.01	
v/s Ratio Perm			0.02			0.02			0.16			0.01
v/c Ratio	0.59	1.04	0.07	0.90	0.89	0.04	0.45	0.41	0.74	0.05	0.05	0.04
Uniform Delay, d1	43.2	30.4	20.8	38.4	23.7	14.7	33.5	33.2	27.7	31.1	31.1	31.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.4	31.6	0.1	21.7	5.1	0.0	5.5	4.1	5.9	0.4	0.3	0.3
Delay (s)	51.6	62.0	20.9	60.1	28.8	14.7	39.0	37.3	33.6	31.5	31.4	31.4
Level of Service	D	E	C	E	C	B	D	D	C	C	C	C
Approach Delay (s)		59.5			33.5			34.8			31.4	
Approach LOS		E			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			43.2				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			90.8				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			84.9%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

PM Build-Out + Project
1: SR-94 Campo Rd & Via Mercado

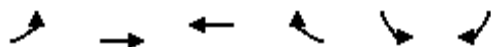
HCM Signalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	170	2115	1583	201	221	160
Ideal Flow (vphpl)	1700	1900	1900	1700	1700	1700
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.91	0.91		1.00	0.95
Frt	1.00	1.00	0.98		0.97	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1583	5085	5000		1554	1346
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1583	5085	5000		1554	1346
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	185	2299	1721	218	240	174
RTOR Reduction (vph)	0	0	25	0	14	83
Lane Group Flow (vph)	185	2299	1914	0	287	30
Turn Type	Prot	NA	NA		Prot	Perm
Protected Phases	7	4	8		6	
Permitted Phases						6
Actuated Green, G (s)	9.7	39.7	26.0		17.0	17.0
Effective Green, g (s)	9.7	39.7	26.0		17.0	17.0
Actuated g/C Ratio	0.15	0.61	0.40		0.26	0.26
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	237	3120	2009		408	353
v/s Ratio Prot	0.12	c0.45	c0.38		c0.18	
v/s Ratio Perm						0.02
v/c Ratio	0.78	0.74	0.95		0.70	0.08
Uniform Delay, d1	26.5	8.8	18.8		21.6	18.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	15.3	0.9	11.0		9.8	0.5
Delay (s)	41.7	9.7	29.7		31.3	18.4
Level of Service	D	A	C		C	B
Approach Delay (s)		12.1	29.7		27.8	
Approach LOS		B	C		C	
Intersection Summary						
HCM 2000 Control Delay			20.5		HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.87			
Actuated Cycle Length (s)			64.7		Sum of lost time (s)	12.0
Intersection Capacity Utilization			72.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

PM Build-Out + Project
2: SR-94 Campo Rd & Skyline Church W. Dwy

HCM Unsignalized Intersection Capacity Analysis



Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations		↑↑↑↑	↑↑↑↓			↗	
Volume (veh/h)	0	2290	1750	39	0	44	
Sign Control		Free	Free		Stop		
Grade		0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	0	2489	1902	42	0	48	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None	None				
Median storage veh)							
Upstream signal (ft)		1219					
pX, platoon unblocked					0.66		
vC, conflicting volume	1945				2753	655	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1945				1840	655	
tC, single (s)	4.1				6.8	6.9	
tC, 2 stage (s)							
tF (s)	2.2				3.5	3.3	
p0 queue free %	100				100	88	
cM capacity (veh/h)	297				44	409	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1
Volume Total	830	830	830	761	761	423	48
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	42	48
cSH	1700	1700	1700	1700	1700	1700	409
Volume to Capacity	0.49	0.49	0.49	0.45	0.45	0.25	0.12
Queue Length 95th (ft)	0	0	0	0	0	0	10
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	15.0
Lane LOS							B
Approach Delay (s)	0.0			0.0			15.0
Approach LOS							B
Intersection Summary							
Average Delay			0.2				
Intersection Capacity Utilization			47.6%		ICU Level of Service		A
Analysis Period (min)			15				

PM Build-Out + Project
3: Jamacha Blvd & SR-94 Campo Rd

HCM Signalized Intersection Capacity Analysis

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	2080	180	590	1570	20	123	10	660	38	13	20
Ideal Flow (vphpl)	1700	1900	1700	1700	1900	1700	1700	1900	1700	1700	1900	1700
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.95	0.95	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (prot)	3072	5085	1380	3072	5085	1380	1504	1698	1409	1504	1726	1394
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.96	1.00	0.95	0.98	1.00
Satd. Flow (perm)	3072	5085	1380	3072	5085	1380	1504	1698	1409	1504	1726	1394
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	2261	196	641	1707	22	134	11	717	41	14	22
RTOR Reduction (vph)	0	0	104	0	0	8	0	0	101	0	0	0
Lane Group Flow (vph)	50	2261	92	641	1707	14	72	73	616	27	28	22
Confl. Peds. (#/hr)	5		5	5		5			5	5		
Confl. Bikes (#/hr)			2			2			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	pm+ov	Split	NA	Perm
Protected Phases	7	4		3	8		2	2	3	6	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	4.0	56.0	56.0	36.8	88.8	88.8	16.0	16.0	52.8	16.0	16.0	16.0
Effective Green, g (s)	4.0	56.0	56.0	36.8	88.8	88.8	16.0	16.0	52.8	16.0	16.0	16.0
Actuated g/C Ratio	0.03	0.40	0.40	0.26	0.63	0.63	0.11	0.11	0.37	0.11	0.11	0.11
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	87	2022	548	802	3207	870	170	192	568	170	196	158
v/s Ratio Prot	0.02	c0.44		0.21	0.34		0.05	0.04	c0.28	c0.02	0.02	
v/s Ratio Perm			0.07			0.01			0.15			0.02
v/c Ratio	0.57	1.12	0.17	0.80	0.53	0.02	0.42	0.38	1.08	0.16	0.14	0.14
Uniform Delay, d1	67.6	42.4	27.4	48.6	14.5	9.7	58.1	57.8	44.0	56.3	56.2	56.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.9	60.6	0.1	5.6	0.2	0.0	7.6	5.6	62.5	2.0	1.5	1.8
Delay (s)	76.4	103.0	27.5	54.2	14.6	9.7	65.7	63.4	106.5	58.3	57.7	58.0
Level of Service	E	F	C	D	B	A	E	E	F	E	E	E
Approach Delay (s)		96.6			25.3			99.5			58.0	
Approach LOS		F			C			F			E	
Intersection Summary												
HCM 2000 Control Delay			67.4									
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			140.8									
Intersection Capacity Utilization			99.7%									
Analysis Period (min)			15									
c Critical Lane Group												