

APPENDIX A

RECIRCULATED DRAFT EIR - ADDITIONAL TRAFFIC ANALYSIS

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1.1 BACKGROUND AND PURPOSE OF THE RECIRCULATED DRAFT EIR – ADDITIONAL TRAFFIC ANALYSIS

In October 2005, the University of California Santa Cruz (UC Santa Cruz) published the 2005-2020 Long Range Development Plan Draft Environmental Impact Report (Draft EIR), which assessed the potentially significant environmental impacts of the proposed UC Santa Cruz 2005 Long Range Development Plan (LRDP). The original public comment period of 63 days was extended 23 days, in response to requests from the City of Santa Cruz for a time extension, such that the Draft EIR was circulated for public review and comment for a period of 86 days ending on January 11, 2006.

In reviewing the comments received on the Draft EIR related to the traffic analysis, the University found that additional analysis was warranted to provide an evaluation of transportation and traffic impacts of the proposed project on Highway 17 and on Highway 1 south of Highway 17. To provide an opportunity for public review, pursuant to Section 15088.5 of the CEQA Guidelines the University is circulating the results of this additional analysis in this document titled Recirculated Draft EIR – Additional Traffic Analysis (“RDEIR”).

The analysis of the potentially significant impacts of the proposed LRDP on Highway 17 and Highway 1 south of Highway 17 is presented in Chapter 2 of this RDEIR. Section 2.3 in Chapter 2 analyzes, in light of the additional transportation and traffic analysis in Chapter 2, whether the analysis of and conclusions regarding the significance of impacts require recirculation of any other portions of the Draft EIR. The discussion in Section 2.3 concludes that recirculation of the entire Draft EIR is not required.

1.2 RELATION TO THE DRAFT EIR

Consistent with the requirements of Section 15087 of the CEQA Guidelines, this RDEIR provides additional transportation and traffic analysis and is being made available on March 20, 2006, for public review for a period of 45 days. The public review period ends on May 3, 2006. During this period, the general public, agencies, and organizations may submit written comments on the RDEIR to the lead agency. Pursuant to procedures set forth in CEQA Guidelines Section 15088.5(f)(2), reviewers are requested to limit their comments to the materials contained in this RDEIR.

As required under CEQA Guidelines Sections 15087 and 15088.5(d), the University has sent a Notice of Availability to all those who submitted comments on the Draft EIR (for whom contact information was submitted to the campus), to all organizations and members of the public who were on the University’s distribution list for the Draft EIR, and to any additional persons or organizations that have requested information about the EIR since the publication of the Draft EIR.

Copies of this RDEIR are available for review at the McHenry Library and the Science and Engineering Library on the campus and at the Central Branch of the Santa Cruz City/County Library in downtown Santa Cruz. Copies of the RDEIR may be purchased at Kinko’s Copies in downtown Santa Cruz and XpressIt! copy services on the main campus. The RDEIR is also available on the UC Santa Cruz web site at <http://lrpd.ucsc.edu>.

All written comments on this RDEIR should be addressed to:

2005 LRDP RDEIR Volume Comment
Physical Planning & Construction
UC Santa Cruz
1156 High Street
Santa Cruz, CA 95064

Comments on the RDEIR may also be submitted by email and should be addressed to lrpd-eir@ucsc.edu.

After close of the comment period, the University will consider all comments received on this RDEIR, prepare responses as required, and prepare the Final EIR. The Final EIR, which will consist of the Draft EIR, RDEIR, comments on the Draft EIR, comments on the RDEIR, responses to comments, and any text changes, will be considered by The Regents for certification if it is determined that the Final EIR has been completed in compliance with CEQA. Following certification of the EIR, The Regents will consider the 2005 LRDP for approval in summer or fall 2006.

Evaluation of Project Impacts on State Route 1 and State Route 17

This section supplements the traffic impact analysis contained in Section 4.14 of the Draft EIR. It describes the existing freeway system that serves the central portions of Santa Cruz County including UC Santa Cruz, and identifies potential impacts of campus growth under the 2005 LRDP on the regional freeways.

The Draft EIR analyzed project impacts at 45 on- and off-campus intersections in the city of Santa Cruz. That analysis included an evaluation of project impacts on the portion of State Route 1 (SR 1) closest to the project site which is from the intersection of SR 1 and Western Drive to the north to the intersection of SR 1 and SR 9/Water Street to the south. This RDEIR extends the evaluation of impacts to portions of SR 1 south of the SR 1 / SR 9 intersection, where SR 1 becomes a freeway. It also provides an analysis of impacts on State Route 17 (SR 17), which is also a freeway within the study area. The section includes the following components:

- An expanded description of the existing transportation setting, including the current levels of service along SR 1 and SR 17. It also describes future improvements along SR 1.
- An analysis of the potentially significant impacts of the proposed 2005 LRDP on freeway and ramp operations
- Proposed mitigation measures to reduce identified impacts

2.1 ENVIRONMENTAL SETTING

As discussed in the Draft EIR, local access to the campus is provided from two primary routes: Mission Street to Bay Street, and Mission Street to Highland to High Street to Bay Street. Mission Street is a portion of SR 1 within the City of Santa Cruz. Mission Street becomes a freeway south of its interchange with SR 17.

2.1.1 State Route 1

SR 1 connects the city of Santa Cruz to the cities of Half Moon Bay and San Francisco to the north, and provides access to the city of Monterey to the south. SR 1 connects to SR 17, the major route over the Santa Cruz mountains to San Jose, just south of Santa Cruz. SR 1 connects to SR 129 and SR 152 in Watsonville, providing a connection to Highway 101 to the east.

Within the city of Santa Cruz, SR 1 is generally aligned in an east-west direction. Although SR 1 is aligned east west through the City of Santa Cruz, Caltrans classifies the highway as a north-south facility. Therefore for purposes of this analysis, SR 1 / Mission Street is considered to run north south, and streets that intersect SR 1 (e.g., Morrissey Boulevard and Soquel Avenue) are considered to run east west. North of Western Drive (using the above convention), SR 1 is a conventional, two-lane highway with at-grade intersections. Between Western Drive and River Street, SR 1 is a two- to four-lane arterial street with signalized intersections and is also designated as Mission Street by the City. South of SR 9 / River Street, SR 1 is a four-lane freeway with grade-separated interchanges. Grade-separated interchanges on SR 1 in the vicinity of the project include the following: the SR 1 / SR 17 interchange (also known as the Fishhook), the Morrissey Boulevard interchange, the Soquel Avenue interchange, the 41st Avenue interchange, and the Bay/Porter Street interchange.

2.1.2 State Route 17

SR 17 is a four-lane, north-south highway connecting the Monterey Bay Area to Silicon Valley and the San Francisco Bay Area. South of SR 1, SR 17 becomes Ocean Street, an arterial street with at-grade, signalized intersections.

2.1.3 Extent of Study Area

The determination of which Caltrans' facilities to include in this study of the two state routes was based on the extent to which the project would potentially affect these facilities. Facilities that met any of the following Caltrans' criteria for traffic impact assessment were included in the study:

- Where the project adds over 100 peak hour trips irrespective of level of service at which the facility is operating;
- Where the facility is operating at Level of Service (LOS)¹ "C" or "D" and the project adds between 50 and 100 peak hour trips;
- Where the facility is operating at LOS E or F and the project adds between 1 and 49 peak hour trips.

The study area defined by these criteria encompasses about 8 miles of SR 1 between the SR 1 / SR 17 interchange and the Freedom Boulevard interchange. South of the Freedom Boulevard interchange, 2020 levels of service are acceptable even with the addition of project traffic. The project would add less than 30 trips to the freeway, and only a portion of these trips would affect any one interchange. On SR 17, the study area encompasses about 5.4 miles of the freeway northward from the interchange with SR 1 to Granite Creek Road. North of Granite Creek Road, the project would contribute between 8 and 46 trips to the freeway in 2020, and the 2020 levels of service on the freeway would be acceptable. Therefore, the study area was not extended further.

The impact assessment below focuses on both the mainline segments of the two freeways and the intersections of SR 1 ramps with surface streets at the Morrissey Boulevard interchange, the Soquel Avenue interchange, the 41st Avenue interchange, and the Bay/Porter Street interchange. These ramp intersections were selected for analysis because the project would contribute between 15 to 25 trips to the intersections and ramps that comprise each of these interchanges. South of Bay/Porter interchange, the project would contribute 1 to 11 trips to the interchanges at State Park Drive, Rio Del Mar, Freedom Boulevard, and Larkin Valley Road. The ramps that comprise these interchanges have year 2020 volume-to-capacity ratios that indicate they would operate within a LOS A through C. Therefore, the small number of project trips is unlikely to affect the LOS of the ramp intersections significantly.

A similar assessment to determine the need to study ramp intersections was performed on SR 17 ramps between Pasatiempo Drive and Granite Creek Road. The ramps that comprise these interchanges also have year 2020 volume-to-capacity ratios that indicate they would operate within a LOS A through C, and project trips are unlikely to significantly affect the ramp intersections.

Figure 2-1, *Study Area Facilities*, shows the study area, including the two freeways and the study interchanges.

2.1.4 Existing Traffic Volumes

Traffic volumes for freeway mainlines on both SR 1 and SR 17 were obtained from Caltrans (Traffic and Vehicle Data Systems Unit, 2004). Traffic counts were conducted in February 2006 during the AM and PM peak hours on SR 1 ramp intersections at the Morrissey Boulevard, Soquel Avenue, 41st Avenue, and

¹ See Section 2.1.2 below for the definitions of Levels of Service.

Bay/Porter interchanges.² Figure 2-2, *Existing Conditions*, shows the existing lane configurations and the peak hour volumes at each study ramp intersection.

2.1.5 Roadway Operating Conditions

LOS was calculated for each study freeway ramp junction (merge and diverge), weaving segments, and ramp intersections with surface streets to evaluate the quality of existing traffic conditions. LOS is a general measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. The general definitions for LOS grades for intersections are defined below.

- **LOS A** has free-flow travel with an excellent level of comfort and convenience and the freedom to maneuver, and very low delay is experienced at intersections.
- **LOS B** has stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in comfort, convenience, and maneuvering freedom and slight delays are experienced at intersections.
- **LOS C** has stable operating conditions, but the operation of individual users is significantly affected by the interaction with others in the traffic stream and more vehicles are stopped at intersections increasing the delays.
- **LOS D** has high-density, but stable flow. Users experience severe restriction in speed and freedom to maneuver, with poor levels of comfort and convenience and a large proportion of vehicles traveling through an intersection are required to stop.
- **LOS E** has operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult, with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions. High delays are experienced at intersections and many vehicles wait two or more cycle lengths to travel through the intersection.
- **LOS F** has forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points, with queued traffic traveling in a stop-and-go fashion. Extensive queues form at intersections and many vehicles are forced to wait multiple cycle lengths.

Consistent with the analysis in the Draft EIR and Caltrans' Guide for the Preparation of Traffic Impact Studies (2002), LOS was calculated for this RDEIR based on methodology contained in the *Highway Capacity Manual (HCM)* (Transportation Research Board 2000). The *HCM* methodology is the prevailing measurement standard used throughout the United States. The *HCM* methodologies and LOS definitions for intersections and freeway facilities are discussed below.

2.1.5.1 Freeway Facilities

The *HCM* provides guidance for determining the LOS for freeway facilities by comparing the number of passenger cars per mile per lane (i.e., density) to the thresholds summarized below for ramp junctions (merge and diverge), weaving sections, and the freeway mainline (travel lanes on the freeway).

² Traffic counts are available for review during regular business hours at the office of UC Santa Cruz, Physical Planning & Construction, Barn G, Santa Cruz.

Ramp Junctions. Ramp junctions include locations where on/off-ramps create a merge/diverge point. The *HCM* determines the LOS of ramp junctions by comparing the density (in passenger cars per mile per lane) to the thresholds shown in Table 2-1.

**Table 2-1
Ramp Junction Level of Service Definitions**

Level of Service	Density (pc/mi/ln)
A	≤ 10.0
B	10.1 – 20.0
C	20.1 – 28.0
D	28.1 – 35.0
E	> 35.0
F	*

*Demand exceeds capacity
 pc/mi/ln = passenger cars per mile per lane
 Source: *Highway Capacity Manual*, Transportation Research Board 2000.

Weaving Sections. Freeway weaving operations are analyzed between an on-ramp and the next off-ramp where an on-ramp or off-ramp results in the addition of an auxiliary lane. A traditional ramp merge/diverge analysis (such as is described above) is not valid for situations that result in the addition of an auxiliary lane. The *HCM* determines the LOS of freeway weaving sections by comparing the density (in passenger cars per mile per lane) to the thresholds shown in Table 2-2.

**Table 2-2
Freeway Weaving Section Level of Service Definitions**

Level of Service	Density (pc/mi/ln)
A	≤ 10.0
B	10.1 – 20.0
C	20.1 – 28.0
D	28.1 – 35.0
E	35.1 – 43.0
F	> 43.0

pc/mi/ln = passenger cars per mile per lane
 Source: *Highway Capacity Manual*, Transportation Research Board 2000.

Freeway Mainline. The *HCM* determines the LOS on freeway mainline segments by comparing the density (in passenger cars/mile/lane) to the thresholds shown in Table 2-3.

Table 2-3
Freeway Mainline Level of Service Definitions

Level of Service	Density (pc/mi/ln)
A	≤ 11.0
B	11.1 – 18.0
C	18.1 – 26.0
D	26.1 – 35.0
E	35.1 – 45.0
F	> 45.0

pc/mi/ln = passenger cars per mile per lane

Source: *Highway Capacity Manual*, Transportation Research Board 2000.

2.1.5.2 Ramp Intersections

The signalized and unsignalized study intersections adjacent (or immediately after the freeway ingress or egress) to ramp access and egress points were analyzed using the thresholds summarized below.

Signalized Intersections. The *HCM* provides guidance for determining the LOS at signalized intersections by comparing the average control delay (i.e., delay resulting from initial deceleration, queue move-up time, time actually stopped, and final acceleration) per vehicle at the intersection to the thresholds shown in Table 2-4.

Table 2-4
Signalized Intersection Level of Service Definitions

Level of Service	Average Control Delay (seconds/vehicle)
A	≤ 10.0
B	10.1 – 20.0
C	20.1 – 35.0
D	35.1 – 55.0
E	55.1 – 80.0
F	> 80.0

Source: *Highway Capacity Manual*, Transportation Research Board 2000.

Unsignalized Intersections. The *HCM* provides guidance for determining the LOS at unsignalized intersections by comparing the control delay per vehicle to the thresholds shown in Table 2-5.

Table 2-5
Unsignalized Intersection Level of Service Definitions

Level of Service	Average Control Delay (seconds/vehicle)
A	≤ 10.0
B	10.1 – 15.0
C	15.1 – 25.0
D	25.1 – 35.0
E	35.1 – 50.0
F	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board 2000.

As described in the 2000 *HCM*, the LOS for stop-controlled intersections is based on the average control delay for each individual movement. This analysis reports the LOS for the worst-case movement experienced by drivers traveling through the intersection. It is important to note that vehicles traveling through the intersection on the major street (i.e., the uncontrolled approaches) experience no delay, while vehicles traveling to/from side streets and yielding to major street traffic may experience substantial delay.

2.1.6 Existing Traffic Operations at Study Facilities

The existing traffic operations for the study freeway facilities and ramp intersections are discussed below. LOS calculations and modeling output are available for review during regular business hours at the office of UC Santa Cruz, Physical Planning & Construction, Barn G, Santa Cruz.

2.1.6.1 Freeway Facilities

Existing operations at study freeway facilities are summarized in Tables 2-6 and 2-7. As shown, all study freeway facilities on SR 17 operate at LOS D or better except for the southbound auxiliary lane (Pasatiempo Drive to SR 1 ramp), which currently operates at LOS F in the PM peak hour.

**Table 2-6
SR 17 Ramp Junction Levels of Service (Merge, Diverge and Weaving Areas)
Existing Conditions (Year 2004)**

	Existing Type	AM Peak Hour				PM Peak Hour			
		Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
SR 17 Northbound Ramps									
Northbound On from Hwy 1	Merge	1784	1222	26.7	C	995	1521	22.5	C
Northbound Off to Pasatiempo	Diverge	3006	244	27.6	C	2516	143	22.8	C
Northbound On from Pasatiempo	Merge	2762	83	26.2	C	2373	88	22.7	C
Northbound Off to El Rancho	Diverge	2845	35	26.2	C	2461	38	22.2	C
Northbound On from El Rancho	Merge	2810	16	26.1	C	2423	17	22.2	C
Northbound Off to Mt. Hermon	Diverge	2826	953	26	C	2440	1020	22.1	C
Northbound On from Mt. Hermon	Merge	1873	567	22.5	C	1420	605	18.8	B
Northbound Off to Granite Creek	Diverge	2440	370	22.4	C	2025	395	18.3	B
Northbound On from Granite Creek	Merge	2070	236	21.6	C	1630	252	17.8	B
SR 17 Southbound Ramps									
Southbound Off to Granite Creek	Diverge	2186	449	20	C	3538	479	32.1	D
Southbound On from Granite Creek	Merge	1737	362	19.8	B	3059	386	30.7	D
Southbound Off to Mt. Hermon	Diverge	2099	548	19.2	B	3445	575	31.3	D
Southbound On from Mt. Hermon	Merge	1551	465	10	B	2870	496	30	D

Table 2-6
SR 17 Ramp Junction Levels of Service (Merge, Diverge and Weaving Areas)
Existing Conditions (Year 2004)

	Existing Type	AM Peak Hour				PM Peak Hour			
		Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
Southbound Off to La Madrona	Diverge	2016	79	18.5	B	3366	84	30.5	D
Southbound On from La Madrona	Merge	1937	165	19.9	B	3282	176	30.9	D
Southbound Off to Pasatiempo	Diverge	2102	134	19.3	B	3458	260	31.4	D
Southbound Auxiliary Lane (Pasatiempo to Hwy 1 Ramp)	Weave	1968	1910	27.7	C	3198	3234	52.4	F
Southbound On from Hwy 1	Merge	500	1272	1.6	A	550	2100	8.1	A

Table 2-7
SR 1 Ramp Junction Levels of Service (Merge, Diverge and Weaving Areas)
Existing Conditions (Year 2004)

	Existing Type	AM Peak Hour				PM Peak Hour			
		Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
SR 1 Northbound Ramps									
Northbound Off from State Park Drive	Diverge	1790	476	16.4	B	3053	508	28.1	D
Northbound Loop On from State Park Drive	Merge	1314	193	14.9	B	2545	206	25.4	C
Northbound On from State Park Drive	Merge	1507	488	18.8	B	2751	521	29.6	D
Northbound Off Park Ave	Diverge	1802	315	16.5	B	3272	336	30.1	D
Northbound On from Park Avenue	Merge	1487	363	17.7	B	2936	388	30.1	D
Northbound Off to Bay/Porter Street	Diverge	1850	222	16.9	B	3324	451	30.6	D
Northbound On from Bay/Porter Street	Weave	1628	991	29.2	D	2873	771	47.5	F
Northbound Off to 41st Ave	Weave	2619	645	Same as above		3644	1104	Same as above	
Northbound Loop On from 41st Ave	Merge	1974	392	22	C	2540	607	28.5	D
Northbound On from 41st Ave	Merge	2366	257	24.3	C	3147	377	31.8	D
Northbound Off to Commercial Way	Diverge	2623	496	24.1	C	3524	519	32.4	D
Northbound Loop On from Commercial Way	Merge	2127	274	22.4	C	3005	292	29.9	D
Northbound On from Soquel Ave	Merge	2401	326	25.1	C	3297	348	32.8	D
Northbound Off to Morrissey Blvd	Diverge	2727	573	25.1	C	3645	659	33.6	D
Northbound On from Morrissey Blvd	Merge	2154	498	24.4	C	2986	515	31.5	D
Northbound Off to Emeline	Diverge	2652	158	24.4	C	3501	168	32.2	D

Table 2-7
SR 1 Ramp Junction Levels of Service (Merge, Diverge and Weaving Areas)
Existing Conditions (Year 2004)

Street	Existing Type	AM Peak Hour				PM Peak Hour			
		Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
SR 1 Southbound Ramps									
Southbound Off to Fairmount Ave	Diverge	3917	318	36.1	E	4686	195	43.2	F
Southbound On from Fairmount Ave	Merge	3599	261	34.7	D	4491	336	42.8	F
Southbound On from Morrissey Blvd	Merge	3860	415	38.1	F	4827	487	46.8	F
Southbound Off to Soquel Ave	Diverge	4275	791	39.4	F	5314	1317	49.1	F
Southbound On from Soquel Ave	Merge	3484	786	37.8	E	3997	786	42.1	F
Southbound Off to 41st Ave	Diverge	4270	447	39.4	F	4783	555	44.1	F
Southbound Loop On from 41st Ave	Merge	3823	193	36	E	4228	377	40.9	F
Southbound On from 41st Ave	Weave	4016	569	41.5	E	4605	669	50.8	F
Southbound Off to Bay/Porter Street	Weave	4585	648	Same as above		5274	767	Same as above	
Southbound On from Bay/Porter Street	Merge	3937	257	37.5	E	4507	629	45.2	F
Southbound Off to Park Ave	Diverge	4194	543	38.7	F	5136	580	47.4	F
Southbound On from Park Ave	Merge	3651	354	35.8	E	4556	378	43.6	F
Southbound Off to State Park Drive	Diverge	4005	665	36.9	E	4934	710	45.5	F
Southbound Loop On from State Park Drive	Merge	3340	291	30.7	D	4224	311	38.9	F
Southbound On from State Park Drive	Merge	3631	130	33.9	D	4535	139	41.6	F

All study freeway facilities on SR 1 in the northbound direction operate at LOS D or better during the peak hours under existing conditions, except for the weaving section between the Bay/Porter and 41st Avenue ramps in the PM peak, which currently operates at LOS F. However, all facilities in the southbound direction operate at LOS F in the PM peak hour, and most operate at E or F in the AM peak hour.

2.1.6.2 Ramp Intersections

The existing traffic operations during the AM and PM peak hours at the ramp intersections are shown in Table 2-8. All ramp intersections currently operate at LOS D or better except for the intersection of SR 1 Northbound Ramps and Commercial Way which is a stop-sign controlled intersection that operates at LOS F during the PM peak hour. This stop-sign controlled intersection does not currently meet warrants for the installation of a traffic signal.

**Table 2-8
Existing Conditions – Ramp Intersection Levels of Service**

Intersection	Control Type	Existing Conditions			
		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS
SR 1 NB Ramps / Morrissey Boulevard / Pacheco Avenue / Rooney St.	SC	23.0	C	22.2	C
SR 1 SB Ramps / Fairmount Avenue	SC	19.8	C	12.5	B
SR 1 SB On-Ramp / Morrissey Boulevard / Fairmount Avenue	Signal	20.6	C	17.6	B
SR 1 NB Ramps / Commercial Way	SC	32.3	D	181.4	F
Soquel Drive / Commercial Way / Paul Sweet Rd.	Signal	29.5	C	31.1	C
SR 1 SB Ramps / Soquel Avenue	Signal	37.4	D	47.3	D
SR 1 NB Off-Ramp / 41 st Avenue	Signal	10.7	B	13.9	B
SR 1 SB Off-Ramp / 41 st Avenue	Signal	31.0	C	51.3	D
SR 1 NB Ramps / Porter Street	Signal	21.9	C	29.4	C
SR 1 SB Ramps / Bay Avenue	Signal	25.9	C	35.4	D

SC – Stop-controlled (Delay is reported for worst-case approach)
Based on the 2000 Highway Capacity Manual
Delay reported in seconds

2.1.7 Future Improvements to Study Area Freeway Facilities

Three improvement projects have been identified by Caltrans and the Santa Cruz County Regional Transportation Commission for SR 1 within project limits. The first project, which would construct merge lanes at the SR1/SR17 interchange, is funded and has therefore been included in the year 2010 and 2020 freeway analysis in this document. The other two projects are not fully funded and have not been included in the evaluation of impacts, but are described below to allow the reader to see potential improvements that may be made to the freeway in the future.

2.1.7.1 SR 1/SR 17 Merge Lane Project

The purpose of this project is to improve merging conditions on several segments of SR 1 and SR 17 to improve both safety and operations. The extent of the improvement project is from the Pasatiempo Drive interchange on SR 17 to just north of the La Fonda overcrossing on SR 1. The project will include improvements at the SR 1/17 junction, and the Pasatiempo interchange, Emeline off-ramp, and Morrissey interchange.

In the northbound direction, the project will add an auxiliary lane between the Morrissey Boulevard northbound on-ramp and the northbound ramp connector between SR 1 and SR 17. The northbound Emeline Avenue ramp will remain in its current configuration. The northbound SR 1 to northbound SR 17 connector will be continued as an auxiliary lane to the northbound off-ramp at Pasatiempo Drive. In the southbound direction, the southbound SR 17 merge to southbound SR 1 will be eliminated. SR 1 will be widened to accommodate a third southbound lane that accommodates the southbound SR 17 traffic without merging. The third lane will be carried south past the Morrissey Boulevard interchange and merge back into the existing two-lane section just north of the La Fonda overcrossing. The Morrissey Boulevard ramps will remain in their existing configuration. Sound walls will also be constructed along the freeway mainline and ramps as part of this project.

The SR 1/SR 17 Merge Lane Project was first funded in the 1988 State Transportation Improvement Plan, and is expected to begin construction in 2006, with anticipated completion before 2010. This analysis assumes that the project will be completed by 2010.

2.1.7.2 SR 1 Soquel to Morrissey Merge Lanes Project

This project consists of new auxiliary lanes southbound and northbound between the Soquel Avenue and Morrissey Boulevard interchanges. The new auxiliary lanes will reduce merging and weaving conflicts on the freeway beyond the southern end of the Highway 1/17 Merge Lanes project. In addition, the La Fonda Avenue overcrossing will be rebuilt to accommodate the construction of the auxiliary lanes and the future widening of SR 1 for HOV lanes. The overcrossing will be improved to provide wider sidewalks and bike lanes. While this project is not funded, there is \$3.67 million identified for the project in the House version of the transportation reauthorization bill, now in Congressional Conference Committee.

2.1.7.3 SR 1 Widening/ HOV Lane Project

This long-term project, presently under environmental review, would widen SR 1 from the La Fonda overcrossing to State Park Drive to three lanes. The new lanes would be designated as High Occupancy Vehicle (HOV) lanes in the peak periods. This project would also add ramp metering to on-ramps. These new facilities would reduce congestion by improving ramp merge, diverge and weaving conditions as well as encourage carpooling and transit. Proposed funding through a sales tax measure was not passed by the voters in 2004, so funding for this project remains unknown.

2.2 IMPACTS AND MITIGATION MEASURES

2.2.1 Standards of Significance

The following standards of significance are based on Appendix G of the CEQA Guidelines, and are the same standards used in the Traffic, Circulation, and Parking section of the Draft EIR. For the purposes of this evaluation, an impact to transportation/traffic would be considered significant if the proposed project would:

- Cause an increase in the traffic that is substantial in relation to the existing traffic load and capacity of the street system (as indicated by LOS standards for congestion at intersections)
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways

2.2.2 Significance Thresholds

The following thresholds are used in this section to evaluate whether the project would cause an increase in traffic on study area freeway facilities and ramp intersections that is substantial in relation to the traffic load and capacity of these facilities. The determination of potentially significant impacts on freeway facilities and ramp intersections is based on the Caltrans Guide for the Preparation of Traffic Impact Studies (2002), which states:

“Caltrans endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D” on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS (e.g., LOS E or F), the existing measure of effectiveness should be maintained.”

The analysis in this RDEIR is based on a LOS D as the appropriate target level of service for the study freeway facilities and ramp intersections. This target LOS is consistent with City of Santa Cruz LOS standards for the arterial and expressway segments of SR 1 (Mission Street) within the city as well as

consistent with Caltrans’ long-range goals, as described in the following excerpt from the Transportation Concept Report for SR 1 (Caltrans 2005).

“The ability to provide capacity to accommodate rising volumes has become increasingly difficult in California. Historically, District 5 targeted a peak hour concept of LOS C or better for state highways. However, in each county, current operations, existing development patterns, environmental values, local plans, and/or projected growth are such that achieving even LOS D will require major improvements and concerted efforts to manage demand. In some segments, the California Coastal Act prohibits additional capacity.... The chart below (Table 2-9) summarizes the setting, major considerations and route concepts proposed for each segment of Route 1 in District 5.”

**Table 2-9
Route Concept for SR 1**

Segment	Limits	Considerations	Route Concept
SR 1	San Andreas Rd Larkin Valley Rd. to State Route 17	<ul style="list-style-type: none"> • 4-lane freeway • Heavy congestion with large interregional commuter component • Most heavily traveled 4-lane freeway in District 5 • Topography and existing development limiting options for alternative roadway alignments/geometrics 	Peak LOS D or better; 6-lane freeway; support inter-modal interconnectivity among highway, transit, rail, bicycle; install ITS elements to aid operations (loops, CCTV cameras, CMS ramp meters); pursue parallel passenger rail service.

Source: Transportation Concept Report, SR 1, Caltrans District 5, November 2005

The Caltrans route concept for SR 1 includes a peak hour LOS of D or better.

2.2.2.1 Freeway Facilities (Ramp Merge, Diverge and Weave Segments)

For purposes of this analysis, an impact on freeway ramp junctions (merge, diverge, and weaving) is considered to be significant when:

- The project causes the LOS to degrade from LOS D or better to LOS E or F, or from LOS E to LOS F; or
- The facility is at LOS E or F (i.e., below the target LOS) without the project, and the project changes the density measure of effectiveness (MOE)³ by more than 1.0 passenger car/mile/lane.

An increase in density of 1.0 passenger car/mile/lane or less is negligible because it would not be discernible to the freeway travelers. A density of 35 cars/mile/lane is the threshold for LOS E. A change in density of 1.0 equals a 2.8% change relative to this threshold. Because traffic volumes fluctuate substantially from day to day (often up to 10%), a small change (2.8% or less) in the density MOE is considered acceptable and is not considered a significant impact.

³ Measure of Effectiveness or MOE is a quantitative measurement of traffic performance, which is evaluated in terms of changes in average delay, density of vehicles per mile per lane, travel speed, etc.

2.2.2.2 Ramp Intersections

At ramp intersections with surface streets, the project would result in a significant adverse impact on traffic conditions if any of the following criteria are met:

- The peak hour level of service (LOS) at a signalized intersection degrades from an acceptable level (LOS D or better) to an unacceptable level (LOS E or F) due to the increase in traffic generated by the proposed project and the project increases the traffic volume at the intersection by more than three percent (3%), or
- The project increases the traffic volume by more than three percent (3%) at a signalized intersection that already operates at an unacceptable level (LOS E or F) without the project, or
- An unsignalized intersection meets the Caltrans peak hour signal warrant with the addition of project-generated traffic and the project increases the traffic volume by more than three percent (3%).

The above criteria are the same criteria used in the Draft EIR to analyze the impact of the project on the intersections along the segment of SR 1 within the city of Santa Cruz (Mission Street).

2.2.3 Analytical Method

2.2.3.1 Trip Generation

As discussed in the Draft EIR, project trip generation consists of the growth in traffic caused by the increase in population and employment anticipated by the year 2020 as a result of implementation of the proposed 2005 LRDP. Daily and peak hour trips for the 2020 LRDP conditions under the 2005 LRDP were calculated on the basis of trip generation rates derived from current traffic counts on the campus, adjusted as follows. Rates were derived separately for students, and faculty and staff. A 6 percent downward adjustment was applied to the existing campus trip generation rates for students to reflect the proposed 2005 LRDP's higher level of on-campus student housing compared to the existing level (50 percent for undergraduates compared to 44 percent in 2003-04, and 25 percent for graduate students compared to 16 in 2003-04). Trip generation estimates for the 2300 Delaware Avenue site use different rates for the site's different components. Rates that best reflect the type of use were selected for the estimates of trips. Trip generation for the administrative components of Buildings A and B are based on general office rates from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* (2003). These rates are based on the building's square footage. Trip generation for the research labs in Building C is based on the research and development center rate from the ITE trip generation manual, which uses the assignable square footage of the lab space. Trip generation for the receiving docks and printing facility were derived based on the description of the facilities' operation and anticipated deliveries, customers, and employees.

Trip generation estimates for the campus in 2020 conditions are shown in Table 2-10. In 2020, the campus is estimated to generate a total of 2,010 AM peak hour, 2,764 PM peak hour, and 34,173 daily trips. When existing trips (2003-04) are subtracted from this total, the growth in traffic due to implementation of the 2005 LRDP would be 558 AM peak hour, 724 PM peak hour, and 9,343 daily trips.

The project trip generation also includes the proposed occupancy of 2300 Delaware Avenue. The occupation of this existing facility is fully evaluated at a project level in Volume III of the Draft EIR, and is also included in the 2020 analysis as a component of the 2005 LRDP. Trip estimates for the 2300 Delaware Avenue site are also shown in Table 2-10. Operations at this site are estimated to generate a

total of 271 AM peak hour trips, 311 PM peak hour trips, and 1,782 daily trips.⁴ The traffic analysis includes trips between the 2300 Delaware Avenue site and the main campus. About 30 percent of the peak hour trips generated by the 2300 Delaware Avenue site is conservatively attributed to travel to and from the main campus.

**Table 2-10
Estimated Project Trip Generation (Year 2020)**

	Campus Population under the 2005 LRDP	AM Peak Trips			PM Peak Trips			Daily Trip Generation
		In	Out	Total	In	Out	Total	
Main Campus Trip Generation								
Actual Trip Counts in 2003-04		1,149	303	1,452	828	1,212	2,040	24,830
Students	21,000	1,232	347	1,579	869	1,303	2,172	26,846
UC employees	4,702	293	83	376	207	310	517	6,395
Non-UC Employees	250	16	4	20	11	17	28	340
Construction Workers	200	12	4	16	9	13	22	272
Visitors	250	15	4	19	10	16	26	320
Total Population/Trips in 2020	26,402	1,568	442	2,010	1,106	1,659	2,765	34,173
Main Campus Growth (2003/04 to 2020)		419	139	558	278	447	725	9,343
Trips from Main Campus to 2300 Delaware ^a		15	67	82	75	18	93	535
Adjusted Main Campus Growth (2003/04 to 2020)^a		404	72	476	203	429	632	8,808
2300 Delaware Avenue Trip Generation								
Facility Use/Building	Size	AM Peak Hour			PM Peak Hour			Daily Trip Generation
		In	Out	Total	In	Out	Total	
Admin Staff (Bldg. A & B)	57.0 KSF	78	11	89	14	71	85	630
Research Staff (Bldg. C)	92.0 KSF	95	19	114	15	84	99	746
Receiving Docks (Bldg. C)		20	15	34	15	20	34	145
Printing Facility (Bldg. C)	12.0 KSF	30	4	34	16	77	93	261
Total 2300 Delaware Avenue Trips		223	49	271	60	252	311	1,782
Trips from 2300 Delaware to Main Campus ^a	30%	67	15	82	18	75	93	535
Total Trip Generation (Main Campus + 2300 Delaware)^a		627	121	747	263	681	943	10,590

Source: Main campus trip generation is estimated from rates derived from existing campus gate counts. 2300 Delaware Avenue site trip generation derived from the following: administrative staff trip generation is based on Institute of Transportation Engineers' (ITE) rates for general office (7th Edition), research lab rates are from ITE Research and Development Center, and receiving dock and printing facility trip generation derived by Kimley-Horn and Associates, Inc.

KSF = 1,000's of square feet

Note: (a) The total trip generation for the main campus and 2300 Delaware Avenue reflects the trips between the two sites. It is estimated that 30% of the 2300 Delaware Avenue trips are to/from the Main Campus; therefore, the Main Campus trips are adjusted to reflect this interaction. Trips "In" to the 2300 Delaware Avenue facility would be trips "Out" of the Campus and vice versa. These trips were assigned to the routes between the 2300 Delaware property and the main campus, rather than being distributed over the City and regional road network. The total trip generation is the summation of the Adjusted Main Campus Growth and the Total 2300 Delaware Avenue Trips.

⁴ The campus population totals include the employees who would work at 2300 Delaware Avenue; therefore the trips associated with this site are included in the total reported in Table 2-10. The trips associated with 2300 Delaware Avenue are reported separately in Table 2-10 to allow for these trips to be distributed differently on the street network than the trips associated with the growth at the main campus.

2.2.3.2 Project Trip Distribution

As discussed in the Draft EIR, the trip distribution pattern for the proposed project was determined using the Association of Monterey Bay Area Governments (AMBAG) travel demand forecasting model developed in 2005. Project trips (generated by both the main campus and the 2300 Delaware Avenue site) were distributed to external gates (roadways at the perimeter of the study area such as SR 1 and SR 17, Empire Grade Road north, etc.) and to internal zones within the city of Santa Cruz. Figure 2-3, *Project Trip Distribution*, illustrates the distribution pattern assumed for on- and off-campus LRDP-related trips. As described above, 30 percent of the peak hour trips generated by the 2300 Delaware site are assumed to travel to and from the main campus. The remaining trips are assigned to the external “gates” (to the regional travel routes) and the internal Santa Cruz zones shown in Figure 2-3.

2.2.3.3 Traffic Forecasts

Since the planning horizon of the proposed 2005 LRDP is Year 2020, traffic conditions in 2020 with and without the implementation of the 2005 LRDP were analyzed. For 2300 Delaware Avenue Project, Year 2010 is the year of analysis. Therefore, travel demand forecasts were developed for the following scenarios.

- **2010 Without 2300 Delaware Avenue Project Scenario** – reflects growth in background traffic in the city of Santa Cruz and the region, and traffic generated by growth of the main campus between 2004 and 2010
- **2010 With 2300 Delaware Avenue Project Scenario** – includes full occupancy of 2300 Delaware Avenue as well as development proposed under the 2005 LRDP through 2010
- **2020 Without 2005 LRDP Project Scenario** – includes 2020 levels of development within the study area without any addition of traffic from growth of the main campus or 2300 Delaware Avenue.
- **2020 With 2005 LRDP Project Scenario** – includes full development proposed under the 2005 LRDP, including the full occupancy of 2300 Delaware Avenue, in combination with other growth in the city of Santa Cruz and the region

AM and PM peak hour forecasts were developed for freeway mainline and ramps, and ramp intersections for the years 2010 and 2020. Future mainline projections were based on annual growth rates derived from historical counts provided by Caltrans. SR 1 and SR 17 growth was equal to about one percent per year. Future ramp projections were based on annual growth rates derived from the AMBAG travel demand forecasting model. Ramp traffic growth rates equaled about 9 percent between 2004 and 2010 and about 12.5 percent total between 2004 and 2020. Annual growth rates were applied to mainline and ramp traffic counts published by Caltrans (Traffic and Vehicle Data Systems Unit 2004), or the actual ramp traffic counts conducted in February 2006 for those intersections that likely would be affected by a more substantial portion of the proposed project’s traffic. Project traffic was added to these baseline forecasts to reflect plus project conditions.

2.2.3.4 2020 With and Without 2005 LRDP Project Scenarios

The traffic volumes for 2020 conditions with and without the implementation of the 2005 LRDP and the resulting traffic operations are summarized below. Tables 2-11 and 2-12 summarize the peak hour LOS results under the 2020 With and Without 2005 LRDP Project Scenarios for SR 17 and SR 1. The output of traffic modeling performed for this RDEIR is available for review during regular business hours at the office of UC Santa Cruz, Physical Planning & Construction, Barn G, Santa Cruz.

Freeway Facilities

SR 17 Operations. As shown in Table 2-11, the following freeway facilities on SR 17 would operate at the unacceptable of service under the 2020 With and Without the 2005 LRDP Project Scenarios. The project will not cause the LOS to deteriorate from LOS E to F at any of these facilities.

- Merge point at southbound on-ramp from Granite Creek Road (PM)
- Diverge point at southbound off-ramp to Mt. Hermon Road (PM)
- Merge point at southbound on-ramp from Mt. Hermon Road (PM)
- Diverge point at southbound off-ramp to La Madrona (PM)
- Merge point at southbound on-ramp from La Madrona (PM)
- Diverge point at southbound off-ramp to Pasatiempo Drive (PM)
- Weave point at southbound auxiliary lane (AM and PM)

SR 1 Operations. As shown in Table 2-12, the following freeway facilities on SR 1 would operate unacceptably (LOS E or F) under the 2020 Without 2005 LRDP Project Scenario.

- Diverge point at northbound off-ramp to Park Avenue (PM)
- Diverge point at northbound off-ramp to Bay and Porter Streets (PM)
- Weave between northbound on-ramp from Bay and Porter Streets and off-ramp to 41st Avenue (AM and PM)
- Merge point at northbound on-ramp from 41st Avenue (PM)
- Diverge point at northbound off-ramp to Commercial Way (PM)
- Merge point at northbound on-ramp from Soquel Avenue (PM)
- Diverge point at northbound off-ramp to Morrissey Boulevard (PM)
- Merge point at southbound on-ramp from Fairmount Avenue (PM)
- Merge point at southbound on-ramp from Morrissey Boulevard (PM)
- Planned merge point on southbound SR 1 north of the La Fonda overcrossing as part of the SR 1 / SR 17 Merge Lane Project (PM and AM)
- Merge, diverge and weave points at southbound ramp junctions from the southbound off-ramp to Soquel Avenue to the southbound on-ramp from State Park Drive (AM and PM)
- Merge and diverge points at southbound ramp junctions from the southbound off-ramp to Rio Del Mar to the southbound off-ramp to Freedom Boulevard (PM)⁵

Under 2020 With the 2005 LRDP Project Scenario, two facilities would deteriorate from LOS E to LOS F; the remainder would operate at the same levels of service as without the project.

⁵ Southbound ramp junctions at the Rio Del Mar and Freedom Boulevard interchanges were included in the PM peak hour analysis because they operated at LOS E or F without the project.

**Table 2-11
SR 17 Ramp Junction Levels of Service (Merge, Diverge, and Weaving Areas) – Year 2020**

	Existing Type	Future Type	Year 2020 Conditions (Without Project)								Year 2020 Conditions (Plus Project)							
			AM Peak Hour Volume				PM Peak Hour Volume				AM Peak Hour Volume				PM Peak Hour Volume			
			Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
Highway 17 Northbound Ramps																		
Northbound On from Hwy 1	Merge	Weave	2069	1418	27.6	C	1154	1764	26.5	C	2093	1418	27.8	C	1290	1764	27.4	C
Northbound Off to Pasatiempo	Diverge	Weave	3487	283	Same as above		2919	166	Same as above		3511	284	27.8	C	3055	174	Same as above	
Northbound On from Pasatiempo	Merge	Merge	3204	96	30.1	D	2753	102	263	C	3227	96	30.2	D	2881	102	27.4	C
Northbound Off to El Rancho	Diverge	Diverge	3300	41	30.4	D	2855	44	26.2	C	3323	50	30.6	D	2983	92	27.4	C
Northbound On from El Rancho	Merge	Merge	3260	19	29.9	D	2811	20	26.2	C	3274	19	30.0	D	2891	20	26.8	C
Northbound Off to Mt. Hermon	Diverge	Diverge	3278	1105	30.2	D	2830	1183	26.0	C	3292	1108	30.3	D	2910	1203	26.8	C
Northbound On from Mt. Herman	Merge	Merge	2173	658	25.8	C	1647	702	21.7	C	2184	658	25.9	C	1707	702	22.2	C
Northbound Off to Granite Creek	Diverge	Merge	2830	429	26	C	2349	458	21.5	C	2841	432	26.1	C	2409	472	22.1	C
Northbound On from Granite Creek	Merge	Merge	2401	274	24.7	C	1891	292	20.5	C	2409	274	24.7	C	1937	292	20.9	C
Highway 17 Southbound Ramps																		
Southbound Off to Granite Creek	Diverge	Diverge	2536	521	23.3	C	4104	556	34.8	D	2555	521	23.5	C	4112	556	34.9	D
Southbound On from Granite Creek	Merge	Merge	2015	420	22.6	C	3548	448	35.7	E	2034	426	22.8	C	3556	451	35.8	E
Southbound Off to Mt. Herman	Diverge	Diverge	2435	636	22.3	C	3996	667	36.8	E	2460	636	22.6	C	4007	667	36.9	E
Southbound On from Mt. Herman	Merge	Merge	1799	539	21.7	C	3329	575	35.0	E	1824	572	22.2	C	3340	588	35.0	E
Southbound Off to La Madrona	Diverge	Diverge	2339	92	21.5	C	3905	97	36.0	E	2397	92	22.0	C	3929	97	36.2	E
Southbound On from La Madrona	Merge	Merge	2247	191	22.7	C	3807	204	36.0	E	2305	2441	23.6	C	3831	226	36.3	E
Southbound Off to Pasatiempo	Diverge	Diverge	2438	155	22.4	C	4011	302	37.0	E	2246	155	23.4	C	4057	302	37.4	E
Southbound Auxiliary Lane (Pasatiempo to Hwy 1 Ramp)	Weave	Weave	2283	2216	35.2	E	3710	3751	63.6	F	2391	2233	36.0	E	3756	3758	64.6	F
Southbound On from Hwy 1	Merge	Merge	580	1476	3.9	A	638	2436	11.9	B	705	1633	6.2	A	691	2502	12.9	B

Table 2-12
SR 1 Ramp Junction Levels of Service (Merge, Diverge, and Weave Areas) – Year 2020

	Existing Type	Future Type	Year 2020 Conditions (Without Project)								Year 2020 Conditions (Plus Project)							
			AM Peak Hour Volume				PM Peak Hour Volume				AM Peak Hour Volume				PM Peak Hour Volume			
			Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
SR 1 Northbound Ramps																		
Northbound Off to Freedom Blvd.	Diverge	Diverge	1322	158	12.0	B	2776	161	25.5	C	1347	158	12.2	B	2786	161	25.6	C
Northbound On from Freedom Blvd.	Merge	Merge	1165	665	17.3	B	2615	676	29.6	D	1190	670	17.6	B	2625	679	29.7	D
Northbound Off to Rio Del Mar	Diverge	Diverge	1830	399	16.7	B	3291	406	30.3	D	1860	399	17.0	B	3304	406	30.4	D
Northbound On from Rio Del Mar	Merge	Merge	1430	623	19.2	B	2885	633	31.6	D	1460	623	19.5	B	2898	633	31.7	D
Northbound Off to State Park Dr.	Diverge	Diverge	2076	536	19.0	B	3541	572	32.6	D	2106	536	19.3	B	3554	572	32.7	D
Northbound Loop On from State Park Dr.	Merge	Merge	1541	217	17.0	B	2970	232	29.1	D	1571	220	17.3	B	2983	233	29.3	D
Northbound On from State Park Dr.	Merge	Merge	1758	549	21.4	C	302	586	33.9	D	1791	554	21.7	C	3216	588	34.0	D
Northbound Off Park Ave.	Diverge	Diverge	2307	354	21.2	C	3788	378	35.0	E	2345	354	21.5	C	3804	378	35.1	E
Northbound On from Park Ave.	Merge	Merge	1953	408	22.0	C	3410	437	34.4	D	1991	419	22.4	C	3426	442	34.6	D
Northbound Off to Bay/Porter St.	Diverge	Diverge	2361	205	21.7	C	3846	507	35.4	E	2410	250	22.1	C	3867	507	35.6	E
Northbound On from Bay/Porter St.	Weave	Weave	2111	115	37.2	E	3339	867	57.4	F	2160	1134	38.0	E	3360	875	57.8	F
Northbound Off to 41st Ave.	Weave	Weave	3126	726	Same as above		4206	1242	Same as above		3294	726	Same as above		4235	1242	Same as above	
Northbound Loop On from 41st Ave.	Merge	Merge	2501	441	26.8	C	2968	683	32.6	D	2569	474	27.7	C	2993	697	33.0	D
Northbound On from 41st Ave.	Merge	Merge	2942	289	29.4	D	3647	424	36.3	E	3043	289	30.2	D	3690	424	36.7	E
Northbound Off to Commercial Way	Diverge	Diverge	3231	558	29.7	D	4071	584	37.5	E	3332	558	30.7	D	4114	584	37.9	F
Northbound Loop On from Commercial Way	Merge	Merge	2673	380	27.2	C	3487	329	34.3	D	2774	310	28.1	D	3530	329	34.6	D
Northbound On from Soquel Ave.	Merge	Merge	2981	367	30.3	D	3816	392	37.5	E	3084	403	31.4	D	3859	407	38.0	F
Northbound Off to Morrissey Blvd.	Diverge	Diverge	3348	645	30.8	D	4207	741	38.8	F	3487	645	32.1	D	4265	741	39.3	F
Northbound On from Morrissey Blvd	Merge	Weave	2703	560	20.0	C	3466	579	25.3	C	2842	569	21.1	C	3524	587	25.8	C

Table 2-12
SR 1 Ramp Junction Levels of Service (Merge, Diverge, and Weave Areas) – Year 2020

	Existing Type	Future Type	Year 2020 Conditions (Without Project)								Year 2020 Conditions (Plus Project)							
			AM Peak Hour Volume				PM Peak Hour Volume				AM Peak Hour Volume				PM Peak Hour Volume			
			Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
Northbound Off to Emeline St.	Diverge	Weave	3263	178	Same as above		4045	189	Same as above		3411	187	Same as above		4111	189	Same as above	
SR 1 Southbound Ramps																		
Southbound Off to Fairmont Ave.	Diverge	Diverge (3Ln)	4544	358	27.1	C	5436	219	30.9	D	4574	361	27.3	C	5606	238	31.7	D
Southbound On from Fairmont Ave	Merge	Merge (3Ln)	4186	294	30.3	D	5216	378	38.7	F	4213	294	30.5	D	5367	378	39.7	F
Southbound On from Morrissey Blvd.	Merge	Merge (3Ln)	4480	467	28.3	D	5594	548	35.2	E	4507	467	28.4	D	5745	548	35.3	E
Southbound Merge North of La Fonda OC	N/A	Weave	3298	1649	41.4	F	4095	2047	51.2	F	3325	1649	41.6	F	4246	2047	52.5	F
Southbound Off to Soquel Ave.	Diverge	Diverge	4947	890	45.7	F	6142	1482	56.7	F	4974	899	45.9	F	6293	1531	58.1	F
Southbound On from Soquel Ave.	Merge	Merge	4057	884	43.4	F	4660	884	48.5	F	4075	884	43.5	F	4762	884	48.6	F
Southbound Off to 41st Ave.	Diverge	Diverge	4941	503	45.6	F	5545	624	51.2	F	4959	507	45.8	F	5647	648	52.2	F
Southbound Loop On from 41st Ave.	Merge	Merge	4439	217	41.4	F	4930	424	47.1	F	4453	217	41.5	F	4998	424	47.7	F
Southbound On from 41st Ave.	Weave	Weave	4656	640	50.1	F	5344	753	61.6	F	4670	640	50.3	F	5422	753	62.8	F
Southbound Off to Bay/Porter St.	Weave	Weave	5296	729	Same as above		6097	863	Same as above		5310	732	Same as above		6175	878	Same as above	
Southbound On from Bay/Porter St.	Merge	Merge	4567	289	43.0	F	5234	708	51.9	F	4578	289	43.1	F	5297	708	52.4	F
Southbound Off to Park Ave.	Diverge	Diverge	4856	611	44.8	F	5942	653	54.9	F	4867	613	44.9	F	6005	665	55.5	F
Southbound On from Park Ave.	Merge	Merge	4245	398	41.2	F	5289	425	50.2	F	4254	398	41.2	F	5340	425	50.6	F
Southbound Off to State Park Dr.	Diverge	Diverge	4643	748	42.8	F	5715	799	52.8	F	4652	750	42.9	F	5766	809	53.3	F
Southbound Loop On from State Park Dr.	Merge	Merge	3895	327	35.9	E	4916	350	45.4	F	3902	327	36.0	E	4957	350	45.7	F
Southbound On from State Park Dr.	Merge	Merge	4223	146	39.0	F	5266	156	47.9	F	4230	146	39.1	F	5307	156	48.2	F
Southbound Off to Rio Del Mar	Diverge	Diverge	4369	613	40.3	F	5422	565	50.1	F	4376	613	40.4	F	5463	573	50.4	F
Southbound On from Rio Del Mar	Merge	Merge	3756	437	37.4	E	4857	402	44.8	F	3763	437	37.4	E	4890	402	45.1	F
Southbound Off to Freedom Blvd.	Diverge	Diverge	4192	622	38.6	F	5259	574	48.5	F	4199	624	38.7	F	5292	577	48.9	F

Ramp Intersections

Table 2-13 summarizes the peak hour LOS results under the 2020 With and Without 2005 LRDP Project Scenarios at the ramp intersections. Peak hour traffic volumes in 2020 are displayed in Figures 2-4(a) and 2-4(b)

**Table 2-13
2020 Conditions – Ramp Intersection Levels of Service**

Intersection	Control Type	2020 Without Project				2020 Plus Project			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
State Route 1 NB Ramps / Morrissey Boulevard / Pacheco Avenue / Rooney Street	SC	34.0	D	32.6	D	33.3	D	34.1	D
State Route 1 SB Ramps / Fairmount Avenue	SC	29.4	D	14.4	B	29.6	D	14.8	B
State Route 1 SB On-Ramp / Morrissey Boulevard / Fairmount Avenue	Signal	23.1	C	19.4	B	23.1	C	19.8	B
State Route 1 NB Ramps / Commercial Way	SC	47.1	E	417.8	F	59.6	F	453.6	F
Soquel Drive / Commercial Way / Paul Sweet Rd.	Signal	33.4	C	33.3	C	33.6	C	33.3	C
State Route 1 SB Ramps / Soquel Avenue	Signal	38.8	D	57.8	E	38.8	D	57.8	E
State Route 1 NB Off-Ramp / 41 st Avenue	Signal	11.2	B	15.8	B	11.2	B	15.8	B
State Route 1 SB Off-Ramp / 41 st Avenue	Signal	34.3	C	85.4	F	34.9	C	89.3	F
State Route 1 NB Ramps / Porter Street	Signal	31.2	C	45.0	D	33.2	C	45.7	D
State Route 1 SB Ramps / Bay Avenue	Signal	27.4	C	48.0	D	27.5	C	48.9	D

SC – Stop-controlled (Delay is reported for worst-case approach)
Based on the 2000 Highway Capacity Manual
Delay reported is in seconds per vehicle.

As shown in Table 2-13, the following study intersections would operate unacceptably under both 2020 Without and With LRDP Project Scenarios.

- The stop-controlled SR 1 NB Ramps / Commercial Way intersection would operate at LOS E during the AM and LOS F during the PM peak hours under the 2020 Without LRDP Project Scenario. With the project, the LOS would deteriorate from E to F in the AM peak hour.
- The signalized State Route 1 SB Ramps / Soquel Avenue intersection would operate at LOS E during the PM peak hour under both scenarios.
- The signalized State Route 1 SB Off-Ramp / 41st Avenue intersection would operate at LOS F during the PM peak hour under both scenarios.

2.2.3.5 2010 With and Without 2300 Delaware Project Scenarios

The traffic volumes for 2010 conditions without the 2300 Delaware Avenue Project reflect growth in background traffic in the City of Santa Cruz and the region, as well as traffic generated by growth on the main campus between 2004 and 2010. Project traffic from the occupancy of the 2300 Delaware Avenue site is added to these background volumes. The resulting traffic operations are summarized below.

Freeway Facilities

SR 17 Operations. As shown in Table 2-14, all of the freeway facilities on SR 17 would operate acceptably under 2010 Without the 2300 Delaware Avenue Project conditions in the AM peak hour but during the PM peak hour the southbound weaving segment between Pasatiempo Drive and the SR 1 junction would operate at LOS F.

With the implementation of the 2300 Delaware Avenue Project, as shown in Table 2-14, the southbound weaving segment between Pasatiempo Drive and the SR 1 junction would continue to operate at LOS F.

SR 1 Operations. As shown in Table 2-15, the following freeway facilities on SR 1 would operate unacceptably (LOS E or F) under both the 2010 Without and With 2300 Delaware Avenue Project scenarios. The project would not cause the LOS to deteriorate from E to F at any of these facilities.

- Weave between northbound on-ramp from Bay and Porter Streets and off-ramp to 41st Avenue (PM)
- Diverge point at northbound off-ramp to Morrissey Boulevard (PM)
- Merge point at southbound on-ramp from Fairmount Avenue (PM)
- Planned merge point on southbound SR 1 north of the La Fonda overcrossing as part of the Highway 1/17 Merge Lane Project (AM and PM)
- Merge, diverge and weave points at southbound ramp junctions from the southbound off-ramp to Soquel Avenue to the southbound on-ramp from State Park Drive (AM and PM)

Ramp Intersections

Table 2-16 summarizes the peak hour LOS results under 2010 With and Without 2300 Delaware Avenue Project Scenarios at the ramp intersections. Peak hour traffic volumes in 2010 are displayed in Figures 2-5(a) and 2-5(b). The following study intersections would operate unacceptably under both 2010 Without and With 2300 Delaware Avenue Project.

The stop-controlled SR 1 NB Ramp/Commercial Way intersection would operate at LOS E during the AM and LOS F during the PM peak hour under both scenarios.

The signalized SR 1 SB Off-Ramp / 41st Avenue intersection would operate at LOS E during the PM peak hour under both scenarios.

**Table 2-14
SR 17 Ramp Junction Levels of Service (Merge, Diverge and Weaving Areas) – Year 2010**

	Existing Type	Future Type	Year 2010 Conditions (Without Project)								Year 2010 Conditions (Plus Project)							
			AM Peak Hour Volume				PM Peak Hour Volume				AM Peak Hour Volume				PM Peak Hour Volume			
			Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
SR 17 Northbound Ramps																		
Northbound On from SR 1	Merge	Merge	1891	1295	24.6	C	1055	1612	23.3	C	1898	1295	24.7	C	1090	1612	23.5	C
Northbound Off to Pasatiempo	Diverge	Diverge	3186	259	Same as above		2667	152	Same as above		3193	259	Same as above		2702	154	Same as above	
Northbound On from Pasatiempo	Merge	Merge	2928	88	27.7	C	2515	93	23.9	C	2935	88	27.7	C	2548	93	24.5	C
Northbound Off to El Rancho	Diverge	Diverge	3016	37	27.7	C	2609	40	23.6	C	3023	40	27.8	C	2642	52	24.3	C
Northbound On from El Rancho	Merge	Merge	2979	17	27.5	C	2568	18	23.8	C	2983	17	27.6	C	2589	18	24.3	C
Northbound Off to Mt. Hermon	Diverge	Diverge	2996	1010	27.6	C	2586	1081	23.4	C	3000	1011	27.6	C	2607	1087	23.9	C
Northbound On from Mt. Hermon	Merge	Merge	1985	601	23.7	C	1505	641	19.8	B	1988	601	23.8	C	1520	641	20.1	C
Northbound Off to Granite Creek	Diverge	Diverge	2586	392	23.7	C	2147	419	19.4	B	2589	393	23.8	C	2162	422	19.8	B
Northbound On from Granite Creek	Merge	Merge	2194	250	22.8	C	1728	267	18.8	B	2196	250	22.8	C	1740	267	19.1	B
SR 17 Southbound Ramps																		
Southbound Off to Granite Creek	Diverge	Diverge	2317	476	21.3	C	3750	508	34.0	D	2322	476	21.3	C	3751	508	34.6	D
Southbound On from Granite Creek	Merge	Merge	1841	384	20.8	C	3243	409	32.4	D	1846	385	20.9	C	3244	410	32.8	D
Southbound Off to Mt. Hermon	Diverge	Diverge	2225	581	20.4	C	3652	610	33.1	D	2231	581	20.5	C	3654	610	33.7	D
Southbound On from Mt. Hermon	Merge	Merge	1644	493	20.0	C	3042	526	32.0	D	1650	501	20.1	C	3044	528	32.1	D
Southbound Off to La Madrona	Diverge	Diverge	2137	84	19.6	B	3568	89	32.9	D	2151	84	19.7	B	3572	89	32.9	D
Southbound On from La Madrona	Merge	Merge	2053	175	21.0	C	3479	187	33.1	D	2067	188	21.2	C	3483	190	33.1	D
Southbound Off to Pasatiempo	Diverge	Diverge	2228	142	20.4	C	3665	276	33.8	D	2255	142	20.7	C	3672	276	33.8	D
Southbound Auxiliary Lane (Pasatiempo to SR 1 Ramp)	Weave	Weave	2086	2025	30.0	D	3390	3428	56.6	F	2113	2029	30.5	D	3397	3429	56.7	F
Southbound On from SR 1	Merge	Merge	530	1348	2.4	A	583	2226	9.8	A	561	1387	3.0	A	591	2237	10.0	A

**Table 2-15
SR 1 Ramp Junction Levels of Service (Merge, Diverge and Weaving Areas) – Year 2010**

	Existing Type	Future Type	Year 2010 Conditions (Without Project)								Year 2010 Conditions (Plus Project)							
			AM Peak Hour Volume				PM Peak Hour Volume				AM Peak Hour Volume				PM Peak Hour Volume			
			Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
SR 1 Northbound Ramps																		
Northbound Off to Freedom Blvd.	Diverge	Diverge	1243	153	11.3	B	2537	156	23.3	C	1247	153	11.3	B	2537	156	23.3	C
Northbound On from Freedom Blvd.	Merge	Merge	1090	644	16.5	B	2381	655	27.5	C	1094	645	16.6	B	2381	655	27.5	C
Northbound Off to Rio Del Mar	Diverge	Diverge	1734	387	15.8	B	3036	393	27.9	C	1739	387	15.9	B	3036	393	27.9	C
Northbound On from Rio Del Mar	Merge	Merge	1347	604	18.4	B	2642	614	29.4	D	1353	605	18.4	B	2642	615	29.4	D
Northbound Off from State Park Drive	Diverge	Diverge	1897	519	17.4	B	3236	554	29.8	D	1905	519	17.4	B	3237	554	29.8	D
Northbound Loop On from State Park Drive	Merge	Merge	1379	210	15.6	B	2682	225	26.7	C	1387	211	15.7	B	2683	225	26.7	C
Northbound On from State Park Drive	Merge	Merge	1589	532	19.9	B	2907	568	31.2	D	1598	533	19.9	B	2908	569	31.3	D
Northbound Off Park Ave	Diverge	Diverge	2121	343	19.4	B	3475	366	32	D	2131	343	19.5	B	3477	366	32.0	D
Northbound On from Park Avenue	Merge	Merge	1778	396	20.4	C	3109	423	31.8	D	1788	399	20.5	C	3111	424	31.8	D
Northbound Off to Bay/Porter Street	Diverge	Diverge	2173	242	19.9	B	3532	492	32.5	D	2186	242	20.0	C	3535	492	32.6	D
Northbound On from Bay/Porter Street	Weave	Weave	1931	1080	34.4	D	3040	840	52.7	F	1944	1084	34.6	D	3043	841	52.7	F
Northbound Off to 41st Ave	Weave	Weave	3011	703	Same as above		3880	1203	Same as above		3028	703	Same as above		3884	1203	Same as above	
Northbound Loop On from 41st Ave	Merge	Merge	2308	427	25.1	C	2677	662	30.0	D	2325	435	25.3	C	2681	664	30.1	D
Northbound On from 41st Ave	Merge	Merge	2736	280	27.6	C	3339	411	33.7	D	2761	280	27.8	C	3345	411	33.7	D
Northbound Off to Commercial Way	Diverge	Diverge	3016	541	27.7	C	3750	566	34.5	D	3041	541	28.0	C	3756	566	34.6	D
Northbound Loop On from Commercial Way	Merge	Merge	2475	299	25.5	C	3184	318	31.6	D	2500	299	25.7	C	3190	318	31.7	D
Northbound On from Soquel Ave	Merge	Merge	2774	355	28.5	D	3502	379	34.8	D	2799	364	28.7	D	3508	382	34.8	D
Northbound Off to Morrissey Blvd	Diverge	Diverge	3129	625	28.8	D	3881	718	35.8	E	3163	625	29.1	D	3890	718	35.8	E
Northbound On from Morrissey Blvd	Merge	Weave	2505	543	18.6	B	3163	561	23.1	C	2539	548	19.0	B	3172	563	23.1	C
Northbound Off to Emeline Street	Diverge	Weave	3047	172	Same as above		3725	183	Same as above		3086	172	Same as above		3736	183	Same as above	
SR 1 Southbound Ramps																		
Southbound Off to Fairmount Ave	Diverge	Diverge (3 Ln)	4152	347	25.2	C	4967	213	28.9	D	4161	348	25.3	C	5011	218	29.1	D
Southbound On from Fairmount Ave	Merge	Merge (3 Ln)	3805	284	27.7	C	4755	366	35.4	E	3813	284	27.8	C	4794	366	35.6	E

**Table 2-15
SR 1 Ramp Junction Levels of Service (Merge, Diverge and Weaving Areas) – Year 2010**

	Existing Type	Future Type	Year 2010 Conditions (Without Project)								Year 2010 Conditions (Plus Project)							
			AM Peak Hour Volume				PM Peak Hour Volume				AM Peak Hour Volume				PM Peak Hour Volume			
			Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS	Mainline	Ramp	Density	LOS
Southbound On from Morrissey Blvd	Merge	Merge (3 Ln)	4090	452	26.2	C	5121	531	32.0	D	4098	452	26.3	C	5160	531	32.2	D
Southbound Merge North of La Fonda OC	N/A	Merge	3028	1514	38.1	F	3768	1884	47.2	F	3036	1514	38.1	F	3807	1884	47.5	F
Southbound Off to Soquel Ave	Diverge	Diverge	4542	862	41.9	F	5652	1436	52.2	F	4550	865	42.0	F	5691	1449	52.6	F
Southbound On from Soquel Ave	Merge	Merge	3680	857	40.0	F	4216	857	44.5	F	3685	857	40.0	F	4242	857	44.7	F
Southbound Off to 41st Ave	Diverge	Diverge	4537	487	41.8	F	5073	605	46.8	F	4542	488	41.9	F	5099	611	47.1	F
Southbound Loop On from 41st Ave	Merge	Merge	4049	210	38.1	E	4468	411	43.2	F	4053	210	38.1	E	4488	411	43.3	F
Southbound On from 41st Ave	Weave	Weave	4260	620	45.5	F	4879	729	55.8	F	4264	620	45.6	F	4899	729	56.1	F
Southbound Off to Bay/Porter Street	Weave	Weave	4880	706	Same as above		5608	836	Same as above		4884	707	Same as above		5628	840	Same as above	
Southbound On from Bay/Porter Street	Merge	Merge	4174	280	39.7	F	4772	686	47.9	F	4177	280	39.7	F	4788	686	48.0	F
Southbound Off to Park Ave	Diverge	Diverge	4454	592	41.1	F	5458	632	50.4	F	4457	593	41.1	F	5474	635	50.5	F
Southbound On from Park Ave	Merge	Merge	3862	375	37.8	E	4826	412	46.2	F	3864	375	37.8	E	4839	412	46.3	F
Southbound Off to State Park Drive	Diverge	Diverge	4237	725	39.1	F	5238	774	48.4	F	4239	726	39.1	F	5251	777	48.5	F
Southbound Loop On from State Park Drive	Merge	Merge	3512	317	32.3	D	4464	339	41.2	F	3513	317	32.3	D	4474	339	41.3	F
Southbound On from State Park Drive	Merge	Merge	3829	142	35.7	E	4803	152	43.9	F	3830	142	35.7	E	4813	152	44.0	F
Southbound Off to Rio Del Mar	Diverge	Diverge	3971	594	36.6	E	4954	605	45.7	F	3972	594	36.6	E	4964	606	45.8	F
Southbound On from Rio Del Mar	Merge	Merge	3377	423	34.1	D	4349	431	42.3	F	3378	423	34.1	D	4358	431	42.4	F
Southbound Off to Freedom Blvd.	Diverge	Diverge	3800	603	35.0	E	4780	615	44.1	F	3801	604	35.0	E	4789	617	44.2	F
Southbound On from Freedom Blvd.	Merge (3 Ln)	Merge (3 Ln)	3197	140	19.3	B	4165	142	24.2	C	3197	140	19.3	B	4172	142	24.2	C

Table 2-16
2010 Conditions – Ramp Intersection Levels of Service

Intersection	Control Type	2010 without 2300 Delaware Avenue Project				2010 With 2300 Delaware Avenue Project			
		AM Peak		PM Peak		AM Peak		PM Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
SR 1 NB Ramps / Morrissey Boulevard / Pacheco Avenue / Rooney Street	SC	30.6	D	29.0	D	30.3	D	29.0	D
SR 1 SB Ramps / Fairmount Avenue	SC	25.7	D	13.7	B	25.7	D	13.8	B
SR 1 SB On-Ramp / Morrissey Boulevard / Fairmount Avenue	Signal	22.2	C	18.7	B	22.2	C	18.7	B
SR 1 NB Ramps / Commercial Way	SC	41.7	E	332.8	F	43.2	E	336.0	F
Soquel Drive / Commercial Way / Paul Sweet Rd.	Signal	31.9	C	32.5	C	31.9	C	32.5	C
SR 1 SB Ramps / Soquel Avenue	Signal	38.4	D	53.6	D	38.4	D	53.6	D
SR 1 NB Off-Ramp / 41 st Avenue	Signal	11.0	B	15.1	B	11.0	B	15.1	B
SR 1 SB Off-Ramp / 41 st Avenue	Signal	33.1	C	72.9	E	33.2	C	73.6	E
SR 1 NB Ramps / Porter Street	Signal	27.5	C	38.8	D	27.8	C	38.8	D
SR 1 SB Ramps / Bay Avenue	Signal	26.9	C	43.2	D	26.9	C	43.3	D

SC – Stop-controlled (Delay is reported for worst-case approach)
Based on the 2000 Highway Capacity Manual

2.2.4 2005 LRDP Impacts and Mitigation Measures

This section presents the impacts of the 2005 LRDP on the two study area freeways, and associated mitigation measures. Tables 2-17 and 2-18 summarize the impacts of the project on the SR 17 and SR 1 freeways, based on the significance criteria described earlier.

LRDP Impact TRA-6: Campus growth under the 2005 LRDP would contribute to unacceptable freeway LOS operations.

Significance: Significant

LRDP Mitigation TRA-6A: The Campus shall implement LRDP Mitigation TRA-2B.⁶

LRDP Mitigation TRA-6B: UC Santa Cruz shall contribute its “fair share” (as defined below) of the cost of the needed improvements as identified by the state at the five significantly affected freeway facilities.

Residual Significance: Significant and unavoidable

The implementation of the 2005 LRDP would add vehicle-trips to freeway facilities and ramp intersections in the study area.

⁶ Draft EIR, page 4-14-43. LRDP Mitigation TRA-2B: UC Santa Cruz shall expand its existing Transportation Demand Management programs with the objectives of increasing sustainable transportation modes (use of modes other than single-occupant vehicles) above 55 percent during the planning horizon of the 2005 LRDP and reducing peak hour traffic volumes. Potential measures that the Campus will consider for achieving this objective are listed in Table 4.14-18 of the Draft EIR.

Table 2-17 summarizes the results of the analysis for SR 17. The traffic associated with the proposed 2005 LRDP would not cause any ramp junction to degrade from a LOS D or better to a LOS E or F or from LOS E to F. Furthermore, although the project would cause a change in the MOE (density) on SR 17 facilities that are at LOS E or F without the project, the increase in density would be so minimal as to be unnoticeable to drivers and would not be significant.

Table 2-18 summarizes the results of the analysis for SR 1. The traffic associated with the proposed project would result in significant impacts at five locations on SR 1. At two locations, the project traffic would cause the LOS to decline from LOS E to LOS F. At three locations where the LOS would be F without the project, the project would significantly change the MOE by increasing the density by more than 1 passenger car/mile/lane.

Specifically, the project would result in significant impacts at the following locations on SR 1:

- Merge point on southbound SR 1 north of the La Fonda overcrossing planned as part of the Highway 1/17 Merge Lane Project (PM)
- Diverge at southbound off-ramp to Soquel Avenue (PM)
- Diverge point at northbound off-ramp to Commercial Way (PM)
- Merge point at northbound on-ramp from Soquel Avenue (PM)
- Weave point at southbound on-ramp from 41st Avenue and southbound off-ramp to Bay/Porter Street (PM)

With respect to the ramp intersections, as shown in Table 2-13, the project would not degrade the LOS from an acceptable to unacceptable level at any of the study ramp intersections. At those ramp intersections that would be at LOS E or F even without the project, with one exception, the project would not increase traffic volumes by more than three percent (3%). The exception is the intersection of State Route 1 NB Ramps / Commercial Way. This intersection is a stop-controlled intersection where the minor stop-controlled movement operates at LOS F. The project would contribute 3.2% of the increase in traffic volume at this intersection under the 2020 With LRDP Project Scenario, but would not cause the intersection to meet the warrant for the installation of a traffic signal. Therefore, based on the significance criteria listed above, the intersection would not be significantly affected by the project.

To mitigate the project's impact on SR 1 facilities, the University will implement LRDP Mitigation TRA-2, which is a suite of transportation demand management measures (listed in Table 2-19 below, which is Table 4.14-18, reprinted from Draft EIR page 4.14-48) to reduce the number of single occupancy trips to the campus.

In addition, improvements could be made to SR 1 facilities that would also reduce the impact related to traffic congestion on SR-1. As discussed in Section 2.1.7, in addition to the SR1/SR17 Merge Lane Project, Caltrans has identified two other improvement projects along SR 1. Should those projects be implemented, they would improve highway operations at the five locations that would be affected by the project. Should those not be implemented, localized improvements that could be made to address the impacts at the five significantly affected locations would include:

- Construction of auxiliary lanes between successive on and off-ramps without additional freeway mainline lanes. Auxiliary lanes add capacity to the freeway and improve merging conditions at on-ramps. Auxiliary lanes are less expensive to build than adding mainline lanes on the freeway.
- Improving ramp acceleration and deceleration areas. Where on-ramps merge onto the mainline, or where the mainline diverges onto an off-ramp, operations can be improved by lengthening the merge or diverge area. This requires either re-striping the lanes or minor roadway widening.

**Table 2-17
SR 17 Ramp Junctions (Merge, Diverge and Weaving Areas) – Impact Summary**

	2010 AM Peak Volume				2010 PM Peak Volume				2020 AM Peak Volume				2020 PM Peak Volume			
	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.
	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?
SR 17 Northbound Ramps																
Northbound On from Hwy 1	C	C	0.1	NO	C	C	0.2	NO	C	C	0.2	NO	C	C	0.9	NO
Northbound Off to Pasatiempo	C	C	0.1	NO	C	C	0.2	NO	C	C	0.2	NO	C	C	0.9	NO
Northbound On from Pasatiempo	C	C	0.0	NO	C	C	0.6	NO	D	D	0.1	NO	C	C	1.1	NO
Northbound Off to El Rancho	C	C	0.1	NO	C	C	0.7	NO	D	D	0.2	NO	C	C	1.2	NO
Northbound On from El Rancho	C	C	0.1	NO	C	C	0.5	NO	D	D	0.1	NO	C	C	0.6	NO
Northbound Off to Mt. Hermon	C	C	0.0	NO	C	C	0.5	NO	D	D	0.1	NO	C	C	0.8	NO
Northbound On from Mt. Hermon	C	C	0.1	NO	B	C	0.3	NO	C	C	0.1	NO	C	C	0.5	NO
Northbound Off to Granite Creek	C	C	0.1	NO	B	B	0.4	NO	C	C	0.1	NO	C	C	0.6	NO
Northbound On from Granite Creek	C	C	0.0	NO	B	B	0.3	NO	C	C	0.0	NO	C	C	0.4	NO
SR 17 Southbound Ramps																
Southbound Off to Granite Creek	C	C	0.0	NO	D	D	0.6	NO	C	C	0.2	NO	D	D	0.1	NO
Southbound On from Granite Creek	C	C	0.1	NO	D	D	0.4	NO	C	C	0.2	NO	E	E	0.1	NO
Southbound Off to Mt. Hermon	C	C	0.1	NO	D	D	0.6	NO	C	C	0.3	NO	E	E	0.1	NO
Southbound On from Mt. Hermon	C	C	0.1	NO	D	D	0.1	NO	C	C	0.5	NO	E	E	0.0	NO
Southbound Off to La Madrona	B	B	0.1	NO	D	D	0.0	NO	C	C	0.5	NO	E	E	0.2	NO
Southbound On from La Madrona	C	C	0.2	NO	D	D	0.0	NO	C	C	0.9	NO	E	E	0.3	NO
Southbound Off to Pasatiempo	C	C	0.3	NO	D	D	0.0	NO	C	C	1.0	NO	E	E	0.4	NO
Southbound Auxiliary Lane (Pasatiempo to Hwy 1 Ramp)	D	D	0.5	NO	F	F	0.1	NO	E	E	0.8	NO	F	F	1.0	NO
Southbound On from SR 1	A	A	0.6	NO	A	A	0.2	NO	A	A	2.3	NO	B	B	1.0	NO

[1] A significant impact occurs when the project causes a level of service to change from a LOS A through D to a LOS E or F, or for a segment operating at LOS E or F without the project, if the project causes a change in the measure of effectiveness (density) of more than 1.0 passenger cars/per lane/mile. An increase below this level is considered negligible

Table 2-18
SR 1 Ramp Junctions (Merge, Diverge and Weaving Areas) – Impact Summary

	2010 AM Peak				2010 PM Peak				2020 AM Peak				2020 PM Peak			
	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.
	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?
SR 1 Northbound Ramps																
Northbound Off to Freedom Blvd.	B	B	0.0	NO	C	C	0.0	NO	B	B	0.2	NO	C	C	0.1	NO
Northbound On from Freedom Blvd.	B	B	0.1	NO	C	C	0.0	NO	B	B	0.3	NO	D	D	0.1	NO
Northbound Off to Rio Del Mar	B	B	0.1	NO	C	C	0.0	NO	B	B	0.3	NO	D	D	0.1	NO
Northbound On from Rio Del Mar	B	B	0.0	NO	D	D	0.0	NO	B	B	0.3	NO	D	D	0.1	NO
Northbound Off from State Park Drive	B	B	0.0	NO	D	D	0.0	NO	B	B	0.3	NO	D	D	0.1	NO
Northbound Loop On from State Park Drive	B	B	0.1	NO	C	C	0.0	NO	B	B	0.3	NO	D	D	0.2	NO
Northbound On from State Park Drive	B	B	0.0	NO	D	D	0.1	NO	C	C	0.3	NO	D	D	0.1	NO
Northbound Off Park Ave	B	B	0.1	NO	D	D	0.0	NO	C	C	0.3	NO	E	E	0.1	NO
Northbound On from Park Avenue	C	C	0.1	NO	D	D	0.0	NO	C	C	0.4	NO	D	D	0.2	NO
Northbound Off to Bay/Porter Street	B	C	0.1	NO	D	D	0.1	NO	C	C	0.4	NO	E	E	0.2	NO
Northbound On from Bay/Porter Street	D	D	0.2	NO	F	F	0.0	NO	E	E	0.8	NO	F	F	0.4	NO
Northbound Off to 41st Ave	D	D	0.2	NO	F	F	0.0	NO	E	E	0.8	NO	F	F	0.4	NO
Northbound Loop On from 41st Ave	C	C	0.2	NO	D	D	0.1	NO	C	C	0.9	NO	D	D	0.4	NO
Northbound On from 41st Ave	C	C	0.2	NO	D	D	0.0	NO	D	D	0.8	NO	E	E	0.4	NO
Northbound Off to Commercial Way	C	C	0.3	NO	D	D	0.1	NO	D	D	1.0	NO	E	F	0.4	YES
Northbound Loop On from Commercial Way	C	C	0.2	NO	D	D	0.1	NO	C	D	0.9	NO	D	D	0.3	NO
Northbound On from Soquel Ave	D	D	0.2	NO	D	D	0.0	NO	D	D	1.1	NO	E	F	0.5	YES
Northbound Off to Morrissey Blvd	D	D	0.3	NO	E	E	0.0	NO	D	D	1.3	NO	F	F	0.5	NO
Northbound On from Morrissey Blvd	B	B	0.4	NO	C	C	0.0	NO	C	C	1.1	NO	C	C	0.5	NO
Northbound Off to Emeline Street	B	B	0.4	NO	C	C	0.0	NO	C	C	1.1	NO	C	C	0.5	NO
SR 1 Southbound Ramps																
Southbound Off to Fairmount Ave	C	C	0.1	NO	D	D	0.2	NO	C	C	0.2	NO	D	D	0.8	NO
Southbound On from Fairmount Ave	C	C	0.1	NO	E	E	0.2	NO	D	D	0.2	NO	F	F	1.0	NO
Southbound On from Morrissey Blvd	C	C	0.1	NO	D	D	0.2	NO	D	D	0.1	NO	E	E	0.1	NO
Southbound Merge North of La Fonda OC	F	F	0.0	NO	F	F	0.3	NO	F	F	0.2	NO	F	F	1.3	YES
Southbound Off to Soquel Ave	F	F	0.1	NO	F	F	0.4	NO	F	F	0.2	NO	F	F	1.4	YES
Southbound On from Soquel Ave	F	F	0.0	NO	F	F	0.2	NO	F	F	0.1	NO	F	F	0.1	NO

**Table 2-18
SR 1 Ramp Junctions (Merge, Diverge and Weaving Areas) – Impact Summary**

	2010 AM Peak				2010 PM Peak				2020 AM Peak				2020 PM Peak			
	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.	LOS	LOS	Change	Sig.
	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?	W/O	Plus	in MOE [1]	Impact?
Southbound Off to 41st Ave	F	F	0.1	NO	F	F	0.3	NO	F	F	0.2	NO	F	F	1.0	NO
Southbound Loop On from 41st Ave	E	E	0.0	NO	F	F	0.1	NO	F	F	0.1	NO	F	F	0.6	NO
SB On from 41st Ave/SB Off to Bay/Porter Street	F	F	0.1	NO	F	F	0.3	NO	F	F	0.2	NO	F	F	1.2	YES
Southbound On from Bay/Porter Street	F	F	0.0	NO	F	F	0.1	NO	F	F	0.1	NO	F	F	0.5	NO
Southbound Off to Park Ave	F	F	0.0	NO	F	F	0.1	NO	F	F	0.1	NO	F	F	0.6	NO
Southbound On from Park Ave	E	E	0.0	NO	F	F	0.1	NO	F	F	0.0	NO	F	F	0.4	NO
Southbound Off to State Park Drive	F	F	0.0	NO	F	F	0.1	NO	F	F	0.1	NO	F	F	0.5	NO
Southbound Loop On from State Park Drive	D	D	0.0	NO	F	F	0.1	NO	E	E	0.1	NO	F	F	0.3	NO
Southbound On from State Park Drive	E	E	0.0	NO	F	F	0.1	NO	F	F	0.1	NO	F	F	0.3	NO
Southbound Off to Rio Del Mar	E	E	0.0	NO	F	F	0.1	NO	F	F	0.1	NO	F	F	0.3	NO
Southbound On from Rio Del Mar	D	D	0.0	NO	F	F	0.1	NO	E	E	0.0	NO	F	F	0.3	NO
Southbound Off to Freedom Blvd.	E	E	0.0	NO	F	F	0.1	NO	F	F	0.1	NO	F	F	0.4	NO
Southbound On from Freedom Blvd.	B	B	0.0	NO	C	C	0.0	NO	C	C	0.1	NO	C	C	0.1	NO

[1] A significant impact occurs when the project causes a level of service to change from a LOS A through D to a LOS E or F or, for a segment operating at LOS E or F without the project, if the project causes a change in the measure of effectiveness (density) of more than 1.0 passenger cars/per lane/mile. An increase below this level is considered negligible.

**Table 2-19
Potential Transportation Demand Management Measures**

Implementation Level 1	Implementation Level 2
Continue to expand Commuter Vanpool Program	Replace monthly/annual parking fee with “pay at exit” use-based parking fees that encourage off-peak travel.
Expand Bike Shuttle hours of operation and increase frequency of service, as needed.	Implement reduced on-campus parking fees for arrivals and departures occurring during off-peak hours.
Institute regular shuttle service between Marine Science Campus, 2300 Delaware Avenue and the main campus.	Work with local agencies to implement a series of off-campus bike circulation improvements (bike boulevards, secure bike parking at major transit stops, etc.)
Introduce Car sharing program for staff, faculty and students 21 years of age or older.	Extend Carsharing program to include students 18 years of age or older
Work with local agencies to provide additional secure bike parking and/or “bike stations” at or near off-campus transit stops.	Consolidate campus meeting facilities in high-access areas of the campus, or establish secondary off-campus meeting facilities.
Institute rideshare campaign to promote carpooling among campus commuters, including UCSC-specific ride-matching program provided by Commute Solutions.	Work with appropriate agencies to identify and develop a Westside Santa Cruz multi-modal hub, to connect Westside shuttle service with expanded automobile and bike parking and (ultimately) regional access via the adjoining rail right-of-way.
Institute “Commuter Counseling” services through the TAPS Sales Office.	Work with appropriate agencies to identify and develop Westside and Eastside Santa Cruz remote Park & Ride facilities with transit service.
Where feasible, implement a 4-day/ 10 hours or 9-day/80 hour work schedule for staff.	Explore opportunities to construct new student/staff housing along off-campus transit corridors.
Where feasible, promote increases use of telecommuting options for students, staff and faculty.	Work with appropriate agencies to implement ITS program for the Campus Transit system to provide real-time vehicle location and time-to-arrival information at major on-campus bus stops.
	Encourage SCMTD to implement ITS program for the Campus Transit system to provide real-time vehicle location and time-to-arrival information at major bus stops on-and off-campus.

- Implementation of ramp metering at on-ramps throughout the corridor. Ramp metering will improve the flow of traffic on the mainline lanes as well as improve operations of the ramp merge points.

Pursuant to LRDP Mitigation TRA-6B, the University will pay its fair share of the cost of needed improvements to these facilities as identified by the state. As stated in the Draft EIR, “Fair Share” is defined to mean that the University has agreed to negotiate for a contribution to the identified improvement pursuant to procedures similar to those described in Government Code Sections 54999 et seq. for contributions to utilities. In addition, in each case a fair-share payment is agreed upon, the University will pay its fair share only if the applicable jurisdiction has established and implemented a mechanism for collecting funds from any other developers and entities contributing to the identified impacts, and providing that the jurisdiction builds the identified improvements. It should be noted that because of the City of Marina versus California State University lawsuit that is currently pending in the California Supreme Court, there is uncertainty regarding whether the University can legally fund certain off-campus infrastructure improvements that are not within the jurisdiction of the University. Therefore, it is possible the fair share mitigation measures proposed herein may need to be modified in response to the ultimate decision in that case.

The types of improvements identified above would provide acceptable operations at the five significantly affected freeway facilities. However, because the improvements are the responsibility of other jurisdictions that may elect not to implement the mitigation measures identified in this EIR, the feasibility and/or implementation of LRDP Mitigation TRA-6B cannot be guaranteed by the University. Furthermore, detailed planning, environmental, and engineering standards for these improvements have not yet been completed. Therefore, the University must consider this impact significant and unavoidable.

2.2.5 2300 Delaware Avenue Project Impacts and Mitigation Measures

DA Impact TRA-4: Implementation of the 2300 Delaware Avenue Project would not contribute to unacceptable freeway LOS operations and unacceptable LOS at ramp intersections.

Significance: Less than significant

LRDP Mitigation: Mitigation not required

Residual Significance: Not Applicable

The 2300 Delaware Avenue Project would not cause a significant impact on freeway operations or ramp intersections. As shown in Tables 2-17 and 2-18, with the addition of traffic associated with the proposed 2300 Delaware Avenue Project, in 2010 the LOS on SR 1 and SR 17 would not change to unacceptable levels. At those locations where the LOS would be LOS E or F even without the project, the project traffic would not increase the density by more than 1.

With respect to the ramp intersections, the project would add traffic to the worst movement at the stop-controlled intersection of State Route 1 NB Ramps / Commercial Way. However, this intersection does not meet warrants for the installation of a traffic signal under either of the 2010 scenarios and the project would not increase the traffic at the intersection by more than three percent (3%). Therefore, the impact would be less than significant. No mitigation measures are required.

2.3 IMPLICATIONS OF THE TRAFFIC ANALYSIS FOR OTHER SECTIONS OF THE DRAFT EIR

Increased traffic in any area can potentially cause localized air quality and noise impacts. Therefore, the results of the traffic analysis of freeway facilities presented above were examined for the potential of this traffic to result in air quality and noise impacts in the same portion of the study area. For reasons presented below, there would be no significant air quality and noise impacts associated with 2005 LRDP-related traffic on the two regional freeway facilities; therefore there is no need to revise and recirculate the air quality and noise sections of the Draft EIR.

2.3.1 Traffic-Related Air Quality Impacts

Vehicular sources can affect air quality at two levels: (1) criteria pollutants emitted by vehicles can cause air quality of the air basin to degrade, and (2) carbon monoxide (CO) “hot spots” or exceedances can develop at congested intersections as a result of emissions from slow moving or stopped traffic. Regional emissions of criteria pollutants from vehicle trips to and from the campus were estimated for the proposed LRDP and reported in the Draft EIR. Those estimates took into account travel by LRDP-related vehicles on regional freeway facilities. No further evaluation of that impact is necessary.

With respect to CO hot spot analysis, the Draft EIR evaluated localized air quality impacts from emissions of CO at six of the worst congested intersections, and determined that the project in conjunction with other traffic in 2020 would not cause a CO exceedance at any of the six intersections.

According to the MBUAPCD CEQA Guidelines, CO impacts should be estimated if the project causes the LOS at a study intersection to degrade from LOS D to E or F, or in cases where the intersection LOS is already E or F, the project increases the volume-to-capacity ratio by more than 0.05 or increases the delay by more than 10 seconds. As the analysis presented in Section 2.2 above shows, traffic associated with the 2005 LRDP would not cause the LOS at any of the intersections to degrade from an acceptable LOS D to E or F. For intersections that would be at LOS E or F without the project, the project would not increase the delay by more than 10 seconds, except at the ramp intersection of SR 1 northbound ramp and Commercial Way. At that intersection, the project would increase the delay by 12.5 seconds in the AM peak hour and by 35.8 seconds in the PM peak hour. A quantitative assessment of this ramp intersection for potential CO hot spots was determined not to be necessary because a comparison of the total traffic volumes at this intersection with the six worst congested intersections evaluated in the Draft EIR shows that the traffic volumes at this intersection would be substantially lower. Because the CO analysis with much higher traffic volumes showed no CO impact at the six intersections studied in the Draft EIR, it is reasonable to conclude that with the substantially lower traffic volumes at this intersection, there is no potential for a CO exceedance.

2.3.2 Traffic-Related Noise Impacts

The Draft EIR evaluated the potential impacts from project-related increases in noise levels along city streets leading to the campus. Noise impacts were determined to be significant if the project caused the noise levels to exceed noise standards for single-family residential (60 dBA CNEL); for multi-family residential (65 dBA CNEL), or for schools and parks (70 dBA CNEL) or resulted in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. The following criteria were used to define a substantial permanent increase in noise:

- A 3 dBA or greater increase if CNEL for the Without Project scenario is equal to or greater than 65 dBA
- A 5 dBA or greater increase if CNEL for the Without Project scenario is 50–65 dBA
- A 10 dBA or greater increase if CNEL for the Without Project scenario is < 50 dBA

As the traffic analysis above shows, the proposed project would cause an increase in traffic along both freeways and at ramp intersections. Based on existing and future (2020) traffic volumes on the two freeways, even without the proposed project, noise levels in residential areas adjacent to the highway are in excess of 65 dBA CNEL. With the addition of project traffic, the increase in noise would be less than 3 decibels and therefore there would be a less-than-significant impact on noise from project traffic on freeway mainline segments.

With respect to highway interchanges where project-related traffic could increase traffic volumes on on- and off-ramps and at ramp intersections, all of the interchanges on SR 1 and SR 17 were examined to determine whether or not noise-sensitive land uses were present near the interchanges. With the exception of the Morrissey Boulevard interchange where residential uses are present near the freeway off-ramps, along Fairmont Avenue, and along Morrissey Boulevard, no noise sensitive uses are present near the other SR 1 interchanges or SR 17 interchanges. Noise analyses were conducted in this vicinity to assess whether significant noise impacts would occur as a result of the addition of project traffic.

Traffic volumes under Existing conditions, 2020 Without LRDP Project conditions, and 2020 With LRDP Project conditions at the Morrissey Boulevard southbound off- and on-ramps and on Fairmont Avenue and Morrissey Boulevard were input in the TNM noise model to estimate Existing, 2020 Without LRDP

Project, and 2020 With LRDP Project noise levels at five sensitive receptors adjacent to the southern portion of the interchange (Figure 2-6). The results of the analysis are shown in Table 2-20 below. As the table shows, although the noise levels would increase above existing conditions due to growth in traffic, the incremental traffic added by the project at the ramp intersections would result in a noise increase of 1 decibel or less; this increase would not be perceptible in these settings. Therefore, the impact would be less than significant.

**Table 2-20
Changes in Noise Levels at Study Locations (in dBA Leq)**

Conditions	Receptor 1	Receptor 2	Receptor 3	Receptor 4	Receptor 5
Existing Conditions	65.1	64.3	72.9	75.9	66.4
2020 Without LRDP Project Conditions	66.1	65.1	73.3	76.3	66.9
2020 With LRDP Project Conditions	66.1	65.1	73.3	76.3	66.9

2.4 REFERENCES

California Department of Transportation (Caltrans). 1996. *Traffic Manual*.

California Department of Transportation (Caltrans). 2004. *Traffic and Vehicle Data Systems Unit, 2004*.

California Department of Transportation (Caltrans). 2005. *Transportation Concept Report – State Route 1*.

Institute of Transportation Engineers. 1997. *Trip Generation*.

Santa Cruz County Regional Transportation Commission (SCCRTC). 2006. *Highway 1/17 Merge Lane Project Fact Sheet and Overview*.



Interchanges

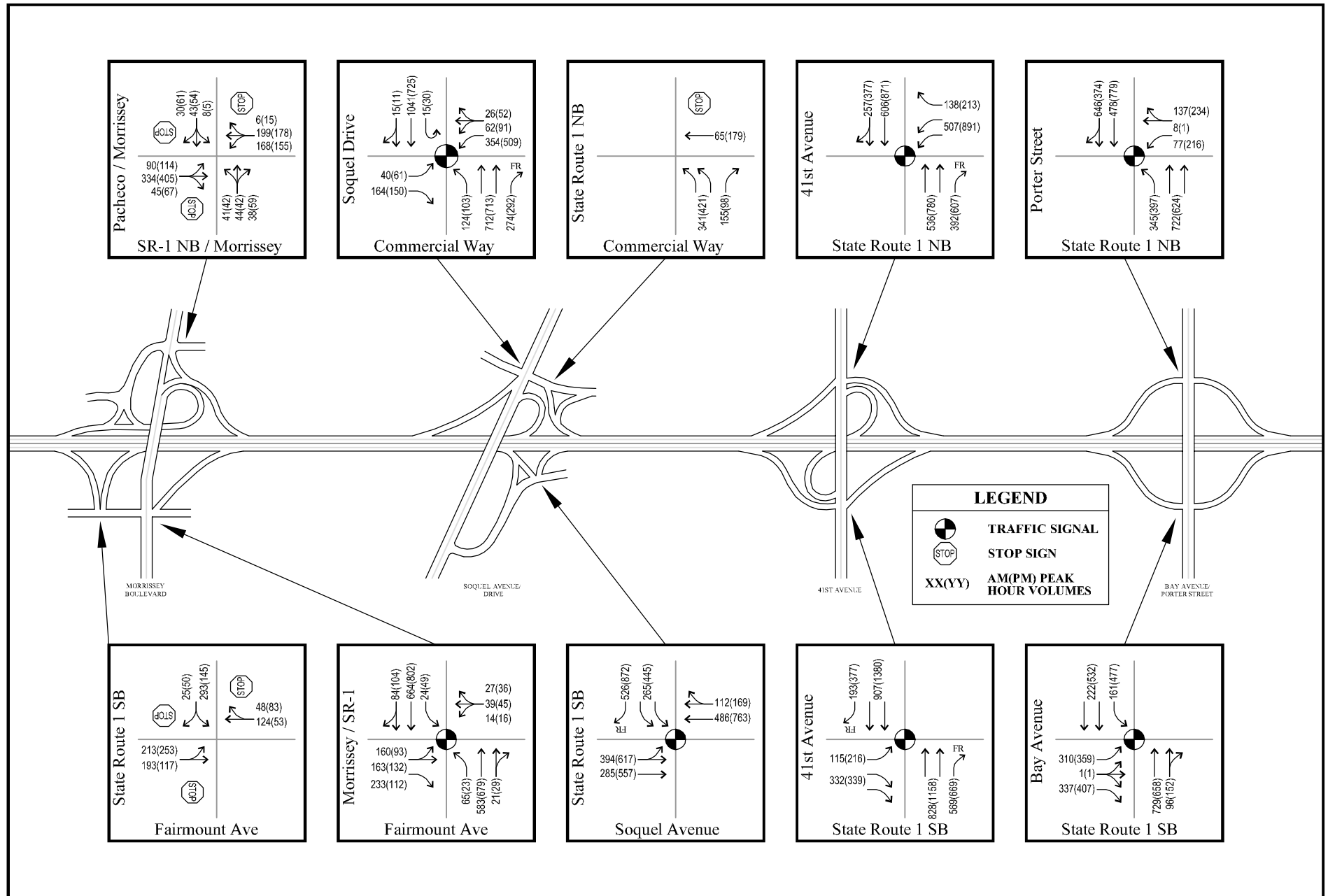
- ① SR1/SR17
- ② Morrissey Boulevard
- ③ Soquel Avenue
- ④ 41st Avenue
- ⑤ Bay/Porter
- ⑥ Park Avenue
- ⑦ State Park Interchange
- ⑧ Rio Del Mar Boulevard
- ⑨ Freedom Boulevard
- ⑩ Pasatiempo Drive
- ⑪ Mt. Hermon Road
- ⑫ Granite Creek Road

Scale:
1" = 1 mile

Study Area Facilities

March 2006
28649607
UC Santa Cruz LRDPEIR
Santa Cruz, California





Source: Kimley Horn and Associates, Inc.

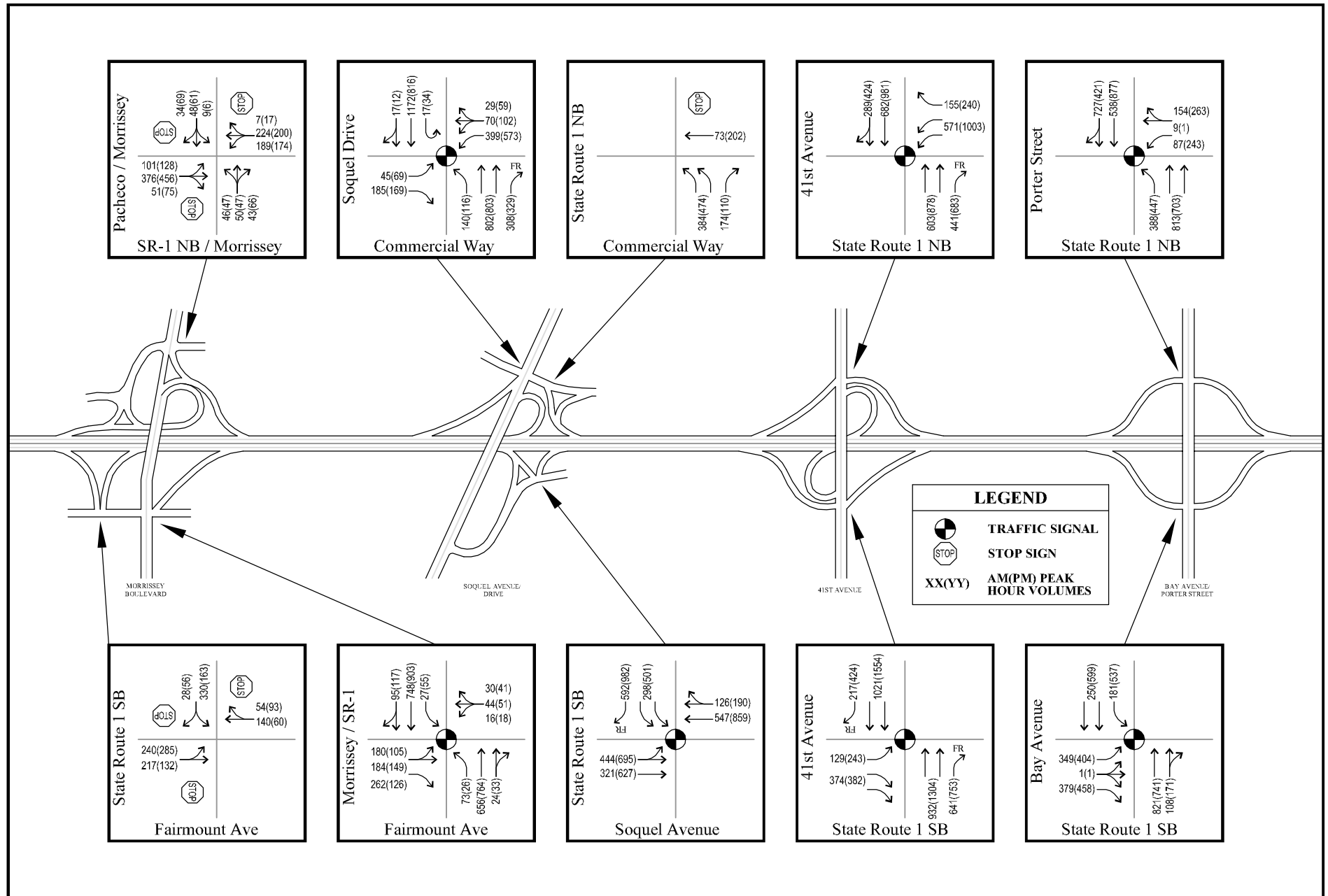
EXISTING CONDITIONS

March 2006
28649607

UC Santa Cruz LRDP EIR
Santa Cruz, California



FIGURE 2-2



Source: Kimley Horn and Associates, Inc.

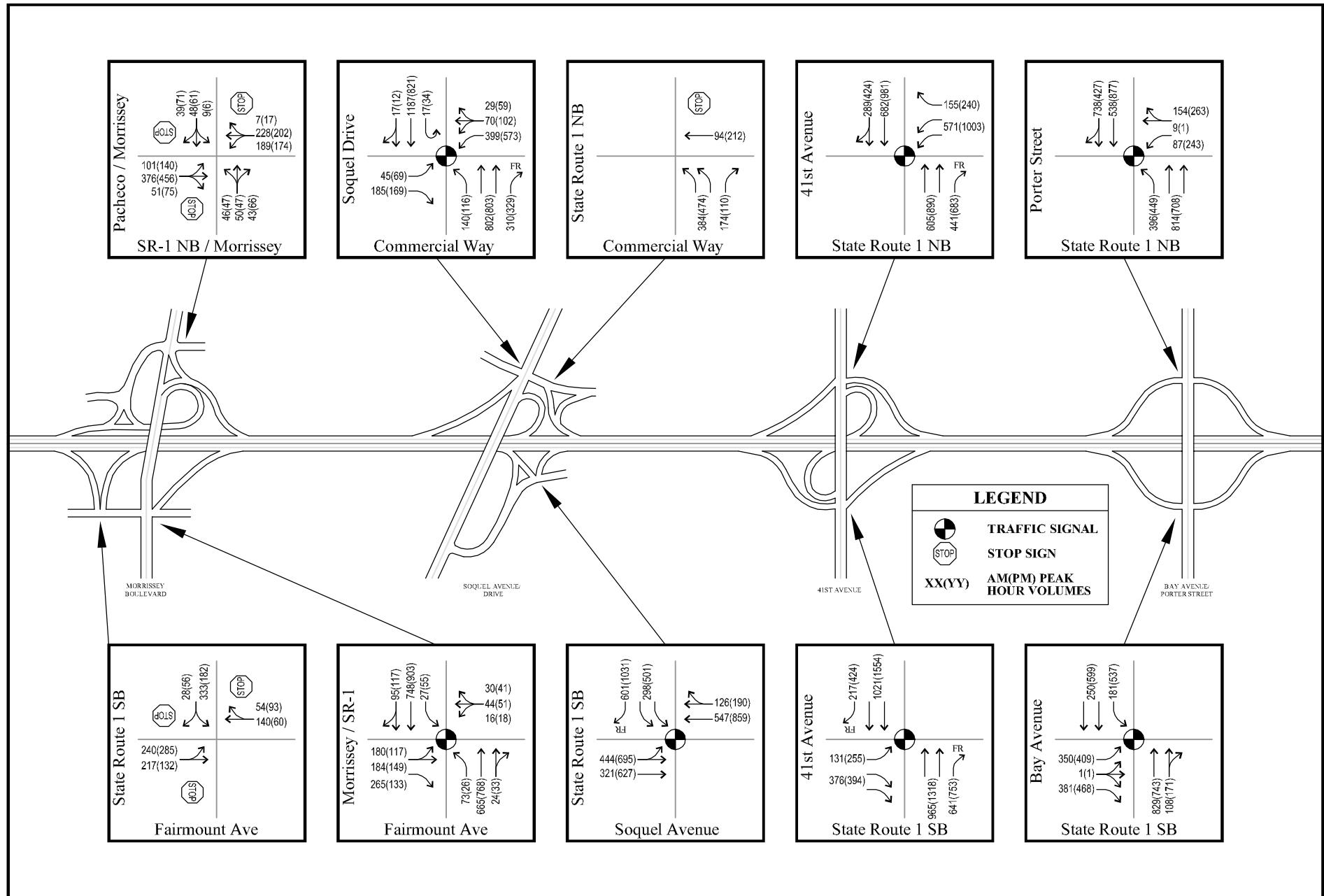
2020 NO PROJECT

March 2006
28649607

UC Santa Cruz LRDP EIR
Santa Cruz, California



FIGURE 2-4(a)



Source: Kimley Horn and Associates, Inc.

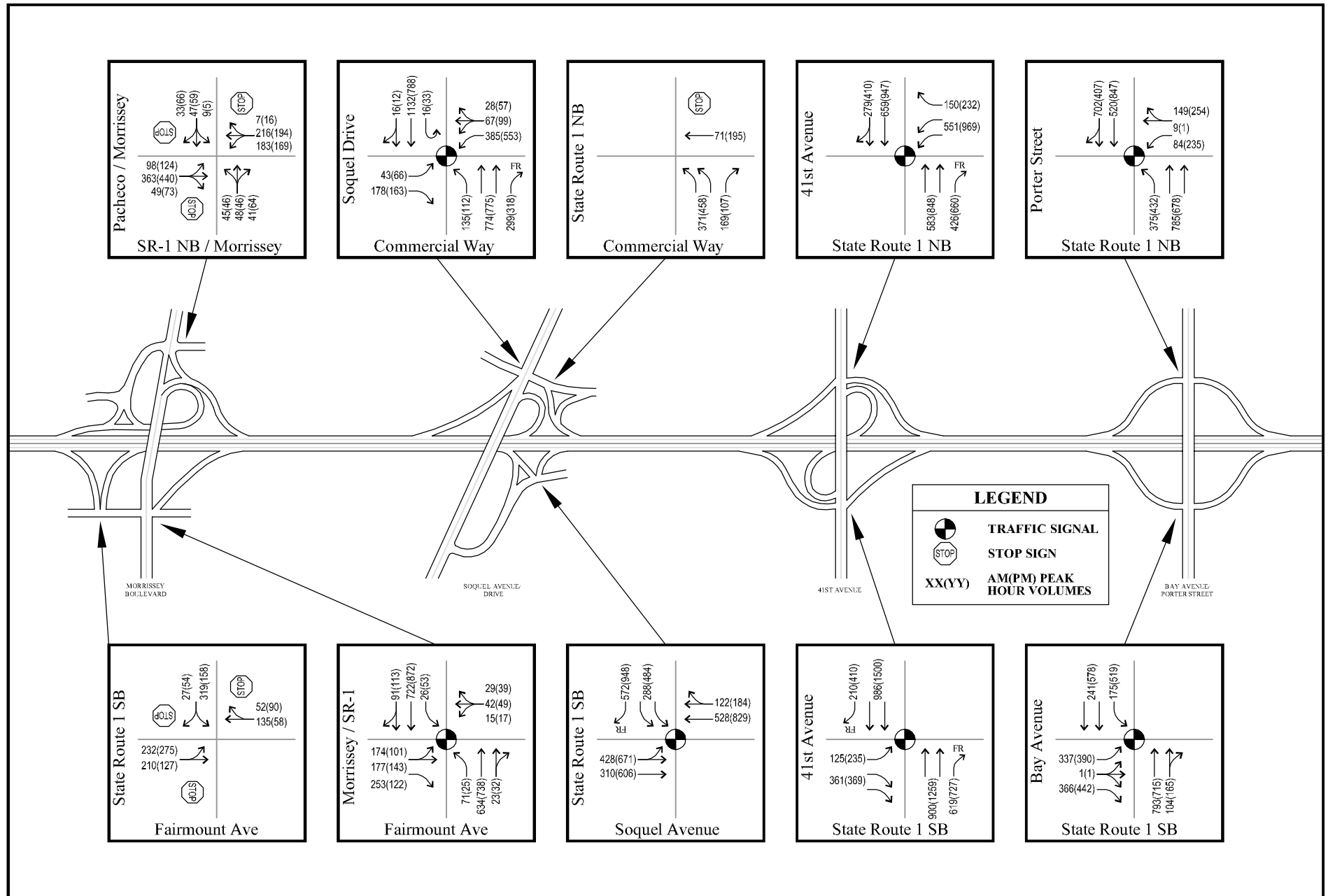
2020 PLUS PROJECT

March 2006
28649607

UC Santa Cruz LRDP EIR
Santa Cruz, California



FIGURE 2-4(b)



Source: Kimley Horn and Associates, Inc.

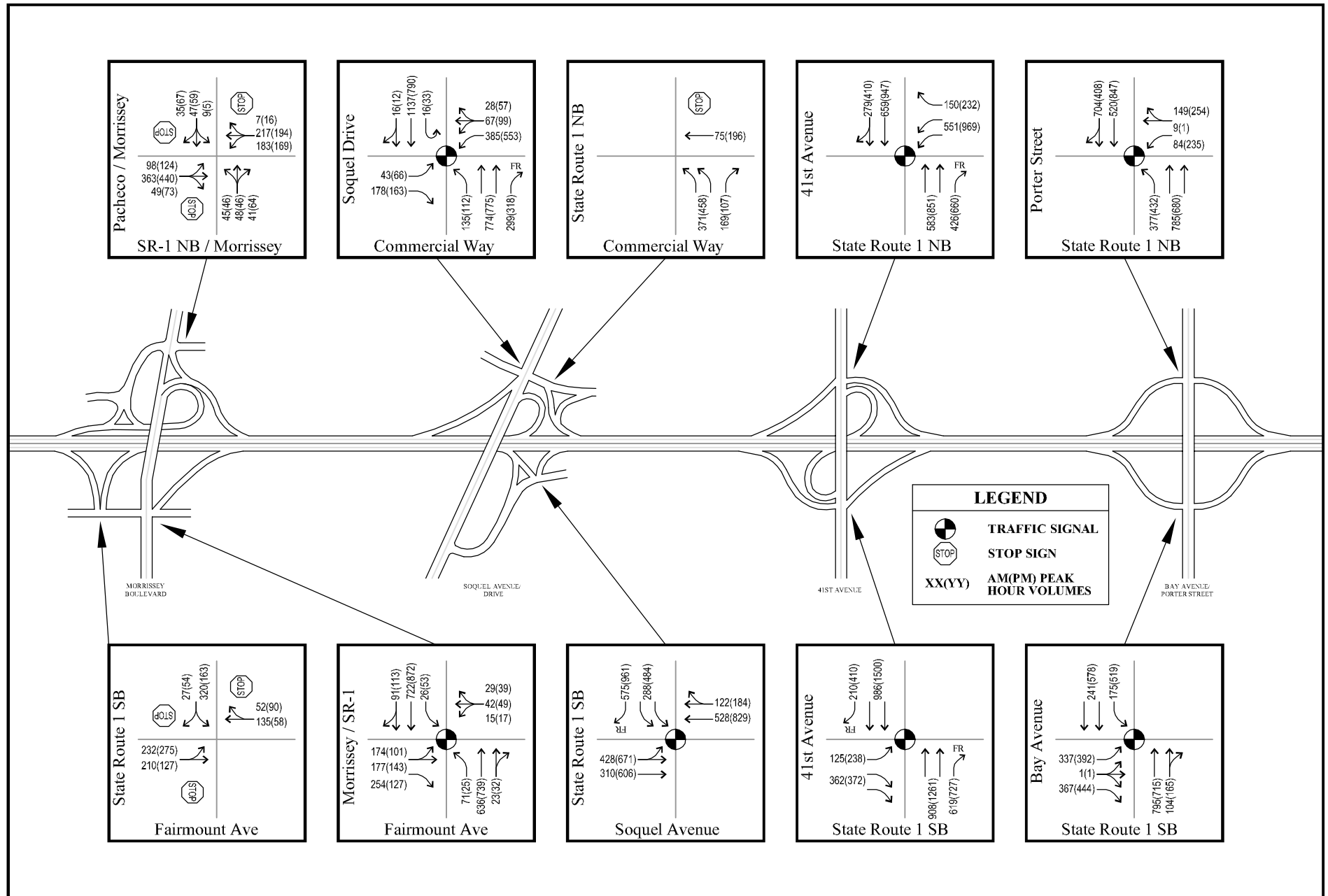
2010 NO PROJECT

March 2006
28649607

UC Santa Cruz LRDP EIR
Santa Cruz, California



FIGURE 2-5(a)



Source: Kimley Horn and Associates, Inc.

2010 PLUS PROJECT

March 2006
28649607

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FIGURE 2-5(b)

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Legend:

R Noise Sensitive Receptor Location

**MODELED NOISE RECEPTOR LOCATIONS
AT MORRISSEY BLVD INTERCHANGE**

MARCH 2006
28649607

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Santa Cruz, California



FIGURE 2-6