

**PROJECT STUDY REPORT  
(Project Development Support)**

to

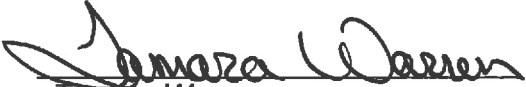
**Request Programming for Capital Support  
(Project Approval and Environmental Document Phase)  
in the STIP**

on Interstate 5 (I-5)

between Interstate 405 (I-405) (PM 21.3)

and State Route 55 (SR-55) (PM 30.3)

CONCURRED BY:

  
\_\_\_\_\_  
Tamara Warren  
Project Manager  
Orange County Transportation  
Authority

12-13-11  
Date

APPROVAL RECOMMENDED:


  
\_\_\_\_\_  
Constantino Stamation, P.E.  
Branch Chief, Project Studies

12/15/2011  
Date

  
\_\_\_\_\_  
Mike Varipapa, P.E.  
Project Manager

12/15/11  
Date

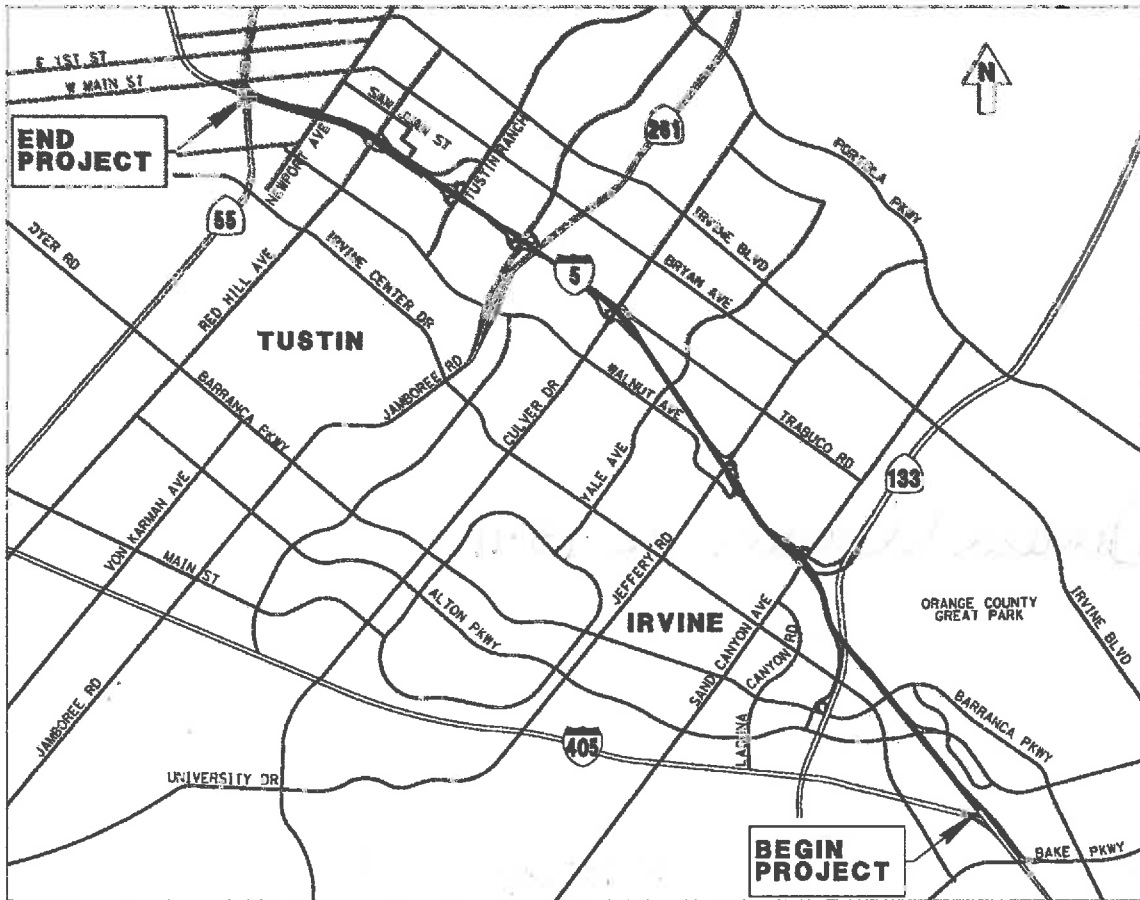
APPROVED:

  
\_\_\_\_\_  
For: Cindy Quon, P.E.  
DISTRICT DIRECTOR

12/28/11  
Date



## Vicinity Map



In Orange County  
on Interstate 5  
between Interstate 405 (I-405) (PM 21.3)  
and State Route 55 (SR-55) (PM 30.3)



This Project Study Report (Project Development Support) has been prepared under the direction of the following Registered Engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

  
Registered Civil Engineer

12/12/2011  
Date



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## **Attachments**

<b>Attachment 1</b>	Location Map
<b>Attachment 2</b>	TASAS Table B
<b>Attachment 3</b>	Lane Schematics
<b>Attachment 4</b>	Alternative 2A -Typical Sections, Key Map, Layouts & Profiles
<b>Attachment 5</b>	Alternative 2B - Typical Sections, Key Map, Layouts & Profiles
<b>Attachment 6</b>	Nonstandard Design Features
<b>Attachment 7</b>	Structures Location Maps
<b>Attachment 8</b>	Advance Planning Studies (APS) Checklist
<b>Attachment 9</b>	General Utility Plan
<b>Attachment 10</b>	Right-of-Way Data Sheet
<b>Attachment 11</b>	Project Cost Estimate
<b>Attachment 12</b>	Comments Regarding Alternatives 3A and 3B
<b>Attachment 13</b>	Preliminary Environmental Analysis Report (PEAR)
<b>Attachment 14</b>	Initial Site Assessment (ISA) Checklist
<b>Attachment 15</b>	Storm Water Data Report Cover
<b>Attachment 16</b>	Draft Cooperative Agreement

## **Supplemental Documents Available in Project Files**

- Geotechnical Memorandum
- Initial Site Assessment (ISA)
- Storm Water Data Report (SWDR)
- Traffic Study

## 1. INTRODUCTION

The Orange County Transportation Authority (OCTA) and the California Department of Transportation (Department) propose to improve Interstate 5 (I-5) between the El Toro "Y" area near Interstate 405 (I-405), and State Route 55 (SR-55), in the cities of Irvine and Tustin, as shown on the Location Map in Attachment 1. The proposed improvements include the addition of a general purpose lane in each direction on the mainline freeway through the project limits, plus additional ramp lanes and auxiliary lanes at some locations. See the cost estimate for specific work items included in this project.

<b>Project Limits</b>	12-Ora-5-PM 21.3/30.3
<b>Number of Alternatives</b>	3 (including No Build Alternative)
<b>Capital Outlay Support for PA/ED</b>	16.4 PYs (OCTA)
<b>Capital Construction Cost Range (excluding "No Build")</b>	\$230 million to \$452 million
<b>Right of Way Cost Range (excluding "No Build")</b>	\$10.7 million to \$63 million
<b>Funding Source</b>	STIP or Local Measure M2
<b>Type of Facility</b>	Freeway
<b>Number of Structures</b>	21
<b>Anticipated Environmental Document</b>	CEQA: Initial Study leading to Mitigated Negative Declaration NEPA: Environmental Assessment leading to Finding of No Significant Impact
<b>Project Category</b>	4

The remaining support, right of way and construction components of the project are preliminary estimates and are not for programming purposes. A Project Report will serve as the programming document for the remaining support and capital components of the project, and will serve as approval of the "selected" alternative.

## 2. BACKGROUND

Interstate 5 serves as an important north-south route traversing the western United States, from Mexico to Canada. Through Orange County, I-5 connects with all major routes on the State highway system, linking Orange County with San Diego County to the south, and Los Angeles County to the north. Through the project limits, I-5 serves activity areas in the cities of Irvine and

Tustin, and connects to Santa Ana and central Orange County.

Known as the Santa Ana Freeway through the project limits, I-5 was constructed as a 6-lane freeway in Orange County by the 1960s. In 1988, a construction project was initiated to add mixed-flow and HOV lanes, along with other improvements, through the project corridor. In the 1990s, HOV connectors were completed at the SR-55 and I-405 interchanges.

Through the project limits, I-5 has 4 to 5 general purpose lanes, plus a limited-access high occupancy vehicle (HOV) lane, in each direction. There are 12 interchanges within the project limits, and auxiliary lanes exist between most interchanges. The existing traffic volume for this corridor was approximately 348,000 vehicles per day, and is expected to increase to 456,000 vehicles per day by 2040. Congestion exists within this corridor in each direction for several hours each day during peak times. With projected increases in traffic volumes, this congestion will worsen.

Improvements to this portion of the I-5 corridor were identified as "Project B" in the Renewed Measure M program, which was developed by OCTA in partnership with the Department, and passed by Orange County voters in November 2006. OCTA's Long Range Transportation Plan (July 2006) also identified the need for improvements in this corridor. OCTA and the Department participated in the development of this specific project's Purpose and Need.

### **3. PURPOSE AND NEED STATEMENT**

#### **3.1 Need**

Currently the segment of the I-5 corridor within the project limits is experiencing congestion and long traffic delays due to demand exceeding capacity, primarily resulting from local, regional and interregional traffic demand. In addition, forecasted local and regional traffic demand is expected to increase by over 100,000 vehicles per day by the year 2040. Improvements are needed within the project limits due to the following issues:

- Future local and regional demand will exceed the capacity of the existing corridor. Forecasted traffic demand is expected to continue to increase to 456,000 vehicles by the year 2040.
- This corridor faces current and future operational deficiencies, including existing geometric deficiencies and general purpose and HOV system optimization needs. This corridor also experiences congestion at the ramps and freeway-to-freeway interchanges, due to high traffic volumes and weaving/merging issues.

#### **3.2 Purpose**

The purpose of the proposed project is to address existing and future traffic demand and to provide future mobility, while minimizing environmental and economic impacts. Due to right-of-way constraints in the study area, the challenge will be to see what improvements can be implemented, generally keeping within the existing right-of-way. The project will address congestion and enhance freeway operations as follows.

- Increase the capacity within the project limits along the I-5 corridor.
- Improve the capacity of the ramps within the project limits along the I-5 corridor.

- Improve operational deficiencies within the project limits along the I-5 corridor.
- Optimize utilization of the HOV system.

## 4. DEFICIENCIES

Between the El Toro “Y” interchange and SR-55, there is insufficient capacity on the I-5 freeway mainline, which results in existing unacceptable levels of service (LOS) E or F during the AM and PM peak hours. The 2040 design year forecast volumes indicate that peak hour congestion and delays are expected to worsen in the future.

The tables in this section present only those locations that were determined to operate at unacceptable levels of service. Full project traffic data is presented in the project’s Traffic Study (bounded separately).

### 4.1 Existing Facility

The project limits are from north of the I-5/I-405 interchange to south of the I-5/SR-55 interchange. This section of I-5 generally consists of four to five general purpose lanes in each direction and one HOV lane in each direction. In the northbound direction, outside of the project limits through the I-405 interchange, there are 3 general purpose lanes; a 4<sup>th</sup> general purpose lane is added at the Alton Parkway interchange; and north of SR-133, there are five general purpose lanes which continue through to the SR-55 interchange vicinity. In the southbound direction, outside the project limits there are 3 general purpose lanes at the I-405 interchange; a 4<sup>th</sup> lane drops at the Alton Parkway interchange, and 5 lanes exist from the SR-133 interchange to SR-55.

The existing congested conditions on this segment of I-5 are expected to worsen, with traffic volumes expected to increase by 27% by 2040. The existing facility operates at unacceptable levels of service; without additional capacity, levels of service will continue to degrade.

Auxiliary lanes are present between all entrance and exit ramps except between the Culver Drive and Jeffrey Road interchanges, in both directions. Existing geometric deficiencies include nonstandard weaving lengths and interchange spacing at some locations.

Lane balancing through the project limits was evaluated during the development of the project studies. Traffic analysis results indicated that providing a consistent number of lanes through the entire project limits was not required to provide acceptable levels of service based on future traffic demands.

Evaluations were also made to determine the logical termini for the project. Based on project studies, it was confirmed that the limits at the I-405 and SR-55 interchanges are rational from both transportation improvement and environmental standpoints. At project inception, the PDT agreed that the proposed improvements should match existing south of the SR-55 interchange, since the SR-55 interchange is being evaluated under separate studies.

### 4.2 Traffic Data

#### 4.2.1 Existing (2009) Traffic Data

Existing traffic volume data was assembled from the Department’s California Freeway Performance Measurement System (PeMS), the Department’s Traffic Volumes on the California State Highway System, City of Irvine traffic counts, and City of Tustin traffic counts. Additional

traffic counts were carried out for selected locations where no current data was available. Flow continuity balancing was carried out between freeway mainline sections and entrance and exit ramps. For intersections within close proximity of each other, such as at a freeway interchange, volume balancing was also carried out to ensure flow continuity.

The existing freeway mainline data represents average weekday volumes and speeds for typical 2009 conditions. As such, the volumes and speeds vary from the absolute highest peak condition. On an annual ADT basis, trucks and recreational vehicles are around 5.5 percent of the mainline traffic on this section of the I-5 according to the Department's 2009 Truck Traffic Report. Existing ramp data was assembled from PeMS counts and intersection counts at ramp-arterial junctions.

#### **4.2.2 No Build (2040) Traffic Data**

Design year 2040 volumes were projected and used as a basis of comparison for proposed improvements. For the freeway volumes, year 2035 traffic volumes were prepared by OCTA using the Orange County Traffic Analysis Model (OCTAM) Version 3.3. The volumes were produced using the OCTAM 3.3 year 2035 "constrained network," which generally includes committed and/or environmentally cleared highway improvements only, with one additional mainline freeway lane in each direction added within the project area. These demand volumes were then analyzed using the no-build freeway configuration.

Buildout condition traffic volumes for the study area interchanges were obtained from the City of Irvine's sub-area model, the Irvine Traffic Analysis Model (ITAM). This model includes the current land use projections of the City based on their current General Plan, and Orange County Projections (OCP) data for the surrounding areas.

Due to the difference between the OCTAM 3.3 horizon year of 2035 and the project study horizon year of 2040, volumes for the freeway mainline segments were increased by growth factoring to reflect 2040 conditions. Demographic data was evaluated based on the Orange County Projections 2006 (OCP-2006), and shows growth in population and employment in five-year intervals from 2005 to 2035, as OCP-2006 does not provide projections past 2035. Population growth in this area between 2005 and 2035 is anticipated to be around 23%, and employment growth is anticipated to be approximately 29%.

The OCTAM data indicates that freeway mainline volumes are anticipated to increase in the range of 18% to 34% between 2005 and 2035 within the study area. A growth increment for 2035 to 2040 was applied to these forecasts to give 2040 volumes and refinements were made consistent with the forecasts produced by the local sub-area models. As part of this report, the 2009 ADT volumes from PeMS were obtained, which are generally lower than the OCTAM 2005 ADT volumes and would cause the amount of growth on a percentage basis to appear higher. Therefore, the volume increase between 2009 and 2040 is between 30% and 52%, incorporating the growth indicated by the demographic data projections.

#### **4.2.3 Comparison of Existing vs. No Build Conditions**

The following tables provide an overview of the traffic analysis results for the existing condition and No Build alternative.

##### **4.2.3.1 Freeway mainline**

The design year (2040)/No Build Alternative is considered as the baseline to measure and compare the proposed improvement alternative for the design year, taken as 20 years after completion of construction. Tables 1 and 2 summarize the existing (2009) and design year/No



Build (2040) density and LOS results of the mainline and HOV analysis performed for the basic freeway segments along I-5. There are 18 occurrences of mainline segments at LOS E or F in the No Build condition compared with 3 for the existing condition. The number of occurrences of HOV lane volumes exceeding capacity increases from zero in the existing condition, to 8 in the No Build condition, although all segments in the No Build condition show HOV lane volumes exceeding the Department's preferred maximum volume of 1,600 vehicles per hour (vph).

#### **4.2.3.2 Ramps/Merge-Diverge/Weaving Analyses**

As presented in Tables 3 and 4, in the existing condition, only one ramp has a V/C ratio greater than 1.0; however, in the No Build Alternative, seven ramps are projected to have V/C ratios greater than 1.0.

The merge/diverge analysis results for existing condition and the No Build Alternative are given in Table 5, and the weaving analysis results for these conditions are summarized in Table 6. Nearly all interchange entrance and exit ramps, or a total 27 occurrences, and nearly all of the weaving segments, or a total of 16 occurrences, perform with LOS E or F in the No Build condition.

#### **4.2.3.3 Intersections**

An analysis of the existing intersection operations versus the No Build alternative is presented in Table 7. In the existing condition, 1 of the 33 intersections has a LOS E or F during the AM and/or PM peak hour. In the No Build (2040) condition, 10 of the 33 intersections are projected to operate at LOS E or F during the AM and/or PM peak hour. Therefore, 9 intersections in the existing condition would worsen to LOS E or F in the No Build (2040) condition. The worsening conditions under the 2040 No Build conditions will result in additional delay for motorists.

**Table 1—Freeway Mainline LOS Summary, Existing (2009) & No Build (2040) Conditions  
 AM Peak Hour**

Location	Lanes			Existing (2009)				No Build (2040)							
	HOV	GP	Aux	Mainline		HOV	LOS	Vol	V/C	Mainline		HOV	LOS	Vol	V/C
				Speed	Density					Speed	Density				
<b>NORTHBOUND</b>															
NB Mainline s/o Alton	1	4	0	7,490	63.2	32.9	D	930	0.42	8,860	< 53.3	> 45.0	F	1,890	.86
NB Mainline s/o Barranca	1	4	1	6,650	69.9	21.1	C	930	0.42	8,230	67.5	27.1	D	1,890	.86
NB Mainline s/o Rte. 133	1	4	1	6,650	69.9	21.1	C	980	0.45	8,230	67.5	27.1	D	2,240	1.02
NB Mainline s/o Sand Cyn	1	5	1	7,830	69.9	20.7	C	970	0.44	9,490	68.3	25.7	C	2,530	1.15
NB Mainline s/o Jeffrey	1	5	1	9,540	68.2	25.9	C	1,030	0.47	12,310	57.7	39.5	E	2,290	1.04
NB Mainline s/o Culver	1	5	0	8,900	65.3	30.3	D	1,120	0.51	12,210	< 53.3	> 45.0	F	2,060	.94
NB Mainline s/o Jamboree	1	5	1	10,140	66.9	28.1	D	1,240	0.56	13,590	< 53.3	> 45.0	F	2,140	.97
NB Mainline s/o Tustin Rch	1	5	1	9,870	67.5	27.1	D	1,300	0.59	13,160	< 53.3	> 45.0	F	2,290	1.04
NB Mainline s/o Red Hill	1	5	1	10,030	67.2	27.7	D	1,270	0.58	13,260	< 53.3	> 45.0	F	2,370	1.08
NB Mainline s/o Newport	1	5	0	10,310	57.3	40.0	E	1,260	0.57	13,020	< 53.3	> 45.0	F	2,370	1.08
NB Mainline s/o Rte. 55 NB	1	4	2	11,100	63.7	32.2	D	1,260	0.57	13,820	< 53.3	> 45.0	F	2,370	1.08
<b>SOUTHBOUND</b>															
SB Mainline s/o Alton	1	3	0	4,070	68.8	21.3	C	680	0.31	4,820	68.3	25.8	C	1,280	.58
SB Truck Bypass s/o Mainline	0	2	0	2,470	65.0	21.5	C	--	--	2,920	64.7	25.6	C	--	--
SB Mainline n/o Truck Bypass	1	3	1	6,410	68.3	25.7	C	680	0.31	7,510	63.7	32.2	D	1,280	.58
SB Mainline s/o Barranca	1	4	1	7,960	68.2	25.9	C	680	0.31	9,630	61.7	34.7	D	1,280	.58
SB Mainline s/o Rte. 133	1	4	1	7,890	68.3	25.7	C	870	0.40	9,630	61.7	34.7	D	2,170	.99
SB Mainline s/o Sand Cyn	1	5	1	8,360	69.7	22.2	C	870	0.40	10,140	66.9	28.1	D	1,810	.82
SB Mainline s/o Jeffrey	1	5	1	9,690	67.9	26.4	D	960	0.44	12,840	54.2	43.8	E	1,880	.85
SB Mainline s/o Culver	1	5	0	9,560	62.1	34.2	D	1,050	0.48	12,190	< 53.3	> 45.0	F	1,850	.84
SB Mainline s/o Jamboree	1	5	1	10,280	66.5	28.9	D	1,100	0.50	12,790	54.6	43.4	E	2,030	.92
SB Mainline s/o Tustin Rch	1	5	1*	10,480	65.9	29.4	D	1,120	0.51	12,950	53.4	44.9	E	2,210	1.00
SB Mainline s/o Red Hill	1	5	1	10,770	65.0	30.7	D	1,150	0.52	13,520	< 53.3	> 45.0	F	2,100	.95
SB Mainline s/o Newport	1	5	1	10,540	65.7	29.7	D	1,110	0.50	13,310	< 53.3	> 45.0	F	2,100	.95
SB Mainline s/o Rte. 55 SB	1	5	1	10,540	65.7	29.7	D	1,110	0.50	13,310	< 53.3	> 45.0	F	2,100	.95
SB Mainline s/o Rte. 55 NB	1	4	0	8,030	59.2	37.7	E	1,110	0.50	10,180	< 53.3	> 45.0	F	2,100	.95

**Notes**

LOS, density and speed derived using HCM methodology based on forecast demand volumes.

Bold = Level of service (LOS) "E" or "F" (mainline), or HOV lane exceeds 1,600 vph/ln (HOV)

\*In 2040, an additional short auxiliary lane will be in place that does not extend the entire length between interchanges; does not increase mainline capacity.

NB = northbound; SB = southbound

**Table 2—Freeway Mainline LOS Summary, Existing (2009) & No Build (2040) Conditions  
 PM Peak Hour**

Location	Lanes			Existing (2009)						No Build (2040)						
	HOV	GP	Aux	Mainline			HOV			Mainline			HOV			
				Speed	Density	LOS	Vol	V/C	Vol	V/C	Vol	Speed	Density	LOS	Vol	V/C
<b>NORTHBOUND</b>																
NB Mainline s/o Alton	1	4	0	6,500	67.8	26.6	D	930	0.42	7,690	61.8	34.5	D	1,880	.85	
NB Mainline s/o Barranca	1	4	1	7,530	69.0	24.2	C	930	0.42	9,210	63.9	32.0	D	1,880	.85	
NB Mainline s/o Rte. 133	1	4	1	7,530	69.0	24.2	C	1,030	0.47	9,210	63.9	32.0	D	2,490	1.13	
NB Mainline s/o Sand Cyn	1	5	1	8,550	69.5	22.8	C	1,130	0.51	10,980	64.2	31.7	D	2,230	1.01	
NB Mainline s/o Jeffrey	1	5	1	9,120	68.9	24.5	C	1,340	0.61	12,920	53.6	44.6	E	1,980	.90	
NB Mainline s/o Culver	1	5	0	8,560	66.5	28.9	D	1,370	0.62	12,010	< 53.3	> 45.0	F	1,950	.89	
NB Mainline s/o Jamboree	1	5	1	8,660	69.4	23.1	C	1,400	0.64	12,060	59.1	37.8	E	2,120	.96	
NB Mainline s/o Tustin Rch	1	5	1	8,500	69.6	22.6	C	1,470	0.67	11,750	60.8	35.8	E	2,310	1.05	
NB Mainline s/o Red Hill	1	5	1	8,580	69.5	22.9	C	1,490	0.68	12,390	57.2	40.1	E	2,170	.99	
NB Mainline s/o Newport	1	5	0	8,630	66.3	28.9	D	1,500	0.68	12,300	< 53.3	> 45.0	F	2,170	.99	
NB Mainline s/o Rte. 55 NB	1	4	2	9,480	68.3	25.7	C	1,500	0.68	13,160	< 53.3	> 45.0	F	2,170	.99	
<b>SOUTHBOUND</b>																
SB Mainline s/o Alton	1	3	0	4,310	69.6	22.6	C	1,000	0.45	5,100	67.1	27.7	D	1,800	.82	
SB Truck Bypass s/o Mainline	0	2	0	3,240	63.6	28.9	D	---	--	3,830	57.9	37.5	E	--	--	
SB Mainline n/o Truck Bypass	1	3	1	6,730	67.4	27.3	D	1,000	0.45	7,960	60.7	35.9	E	1,800	.82	
SB Mainline s/o Barranca	1	4	1	7,570	68.9	24.4	C	1,000	0.45	8,960	65.0	30.6	D	1,800	.82	
SB Mainline s/o Rte. 133	1	4	1	7,560	68.9	24.4	C	1,100	0.50	8,960	65.0	30.6	D	2,330	1.06	
SB Mainline s/o Sand Cyn	1	5	1	8,280	69.7	22.0	C	1,100	0.50	10,230	66.6	28.4	D	2,000	.91	
SB Mainline s/o Jeffrey	1	5	1	9,720	67.9	26.5	D	1,140	0.52	12,830	54.3	43.7	E	2,070	.94	
SB Mainline s/o Culver	1	5	0	9,810	60.7	35.9	E	1,240	0.56	12,890	< 53.3	> 45.0	F	2,120	.96	
SB Mainline s/o Jamboree	1	5	1	10,940	64.4	31.5	D	1,150	0.52	14,160	< 53.3	> 45.0	F	2,080	.95	
SB Mainline s/o Tustin Rch	1	5	1*	10,790	64.9	30.8	D	1,330	0.60	14,110	< 53.3	> 45.0	F	2,100	.95	
SB Mainline s/o Red Hill	1	5	1	11,510	62.0	34.4	D	1,360	0.62	14,630	< 53.3	> 45.0	F	2,190	1.00	
SB Mainline s/o Newport	1	5	1	11,380	62.6	33.7	D	1,340	0.61	14,370	< 53.3	> 45.0	F	2,190	1.00	
SB Mainline s/o Rte. 55 SB	1	5	1	11,380	62.6	33.7	D	1,340	0.61	14,370	< 53.3	> 45.0	F	2,190	1.00	
SB Mainline s/o Rte. 55 NB	1	4	0	9,230	< 53.3	> 45.0	F	1,340	0.61	11,690	< 53.3	> 45.0	F	2,190	1.00	

**Notes:**

LOS, density and speed derived using HCM methodology based on forecast demand volumes.

Bold = exceeds mainline performance criteria (LOS D), or HOV lane exceeds 1,600 vph/lane

\*In 2040, an additional short auxiliary lane will be in place that does not extend the entire length between interchanges; does not increase mainline capacity.

NB = northbound; SB = southbound

**Table 3—Ramp Volume and Capacity Summary, Existing (2009) & No Build (2040) Conditions Northbound Ramps**

Location	Ramp Configuration	Capacity	Existing (2009)			No Build (2040)				
			AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio	AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
Alton NB Off	1 lane	1,500	1,140	0.76	360	0.24	1,160	0.77	370	0.25
Alton NB Loop On	1 lane on (2 metered lanes)	1,500	80	0.05	410	0.27	90	0.06	630	0.42
Alton NB Direct On	2 lanes on (2 metered lanes), 1 aux.	1,800	220	0.12	980	0.54	440	0.24	1,260	0.70
Barranca NB HOV On	1 lane on	1,500	50	0.03	100	0.07	350	0.23	610	0.41
SR-133 (NB) Off	2 lanes, 1 aux.	3,000	340	0.11	810	0.27	430	0.14	1,020	0.34
SR-133 (NB) On	2 lanes on, 1 aux., 1 added mainline lane	4,000	1,510	0.38	1,930	0.48	1,980	0.50	2,530	0.63
Sand Canyon NB Off	2 lanes 1 aux.	2,250	640	0.28	560	0.25	740	0.33	740	0.33
Sand Canyon NB On	1 lane on (2 metered lanes)	1,500	410	0.27	930	0.62	690	0.46	1,560	1.04
SR-133 (SB) NB On	1 lane on, 1 aux.	2,000	2,000	1.00	410	0.21	2,630	1.32	870	0.44
Jeffrey NB Off	2 lanes, 1 aux.	2,250	1,150	0.51	940	0.42	1,160	0.52	1,420	0.63
Jeffrey NB Loop On	1 lane on (2 metered lanes)	1,500	280	0.19	230	0.15	330	0.22	270	0.18
Jeffrey NB Direct On	1 lane on (1 metered lane, 1 HOV bypass)	1,080	320	0.30	180	0.17	500	0.46	210	0.19
Culver NB Off	1 lane	1,500	370	0.25	620	0.41	380	0.25	630	0.42
Culver NB Loop On	1 lane on (2 metered lanes), 1 aux.	1,500	1,100	0.73	500	0.33	1,150	0.77	590	0.39
Culver NB Direct On	1 lane on (metered)	900	630	0.70	250	0.28	690	0.77	260	0.29
Jamboree NB Off	1 lane 1 aux.	1,500	1,470	0.98	1,320	0.88	1,620	1.08	1,340	0.89
Jamboree NB Loop On	1 lane on (1 metered lane, 1 HOV bypass), 1 aux.	1,080	650	0.60	730	0.68	670	0.62	740	0.69

Location	Ramp Configuration	Capacity	Existing (2009)			No Build (2040)			
			AM Peak Hour	V/C Ratio	PM Peak Hour	AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
Jamboree NB Direct On	1 lane on (1 metered lane, 1 HOV bypass)	1,080	610	0.56	500	670	0.46	480	0.44
Tustin Ranch NB Off	1 lane, 1 aux.	1,500	640	0.43	510	650	0.34	620	0.41
Tustin Ranch NB On	2 lanes on (2 metered lanes), 1 aux.	1,800	770	0.43	610	830	0.34	1,120	0.62
Red Hill NB Off	1 lane, 1 aux.	1,500	440	0.29	510	1,080	0.34	900	0.60
Red Hill NB On	1 lane on (2 metered lanes)	1,500	710	0.47	570	830	0.38	820	0.55
Newport NB On	1 lane on (2 metered lanes), 1 aux.	1,500	790	0.53	850	800	0.57	860	0.57
SR-55 (NB) NB Off	2 lanes 1 aux.	3,000	2,150	0.72	2,880	3,200	0.96	3,900	1.30
SR-55 (SB) NB Off	1 lane 1 aux.	2,000	1,200	0.60	920	1,500	0.46	1,150	0.58

Note

Bold text = V/C ratio exceeds 1.00

**Table 4—Ramp Volume and Capacity Summary, Existing (2009) & No Build (2040) Conditions Southbound Ramps**

Location	Ramp Configuration	Capacity	Existing (2009)			No Build (2040)				
			AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio	AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
Alton/Fortune SB On	1 lane on	1,500	130	0.09	820	0.55	230	0.15	970	0.65
CD/Truck Bypass Off	2 lanes 1 aux.	4,000	2,470	0.62	3,240	0.81	2,920	0.73	3,830	0.96
Alton/Fortune SB Off	2 lanes 1 aux.	2,250	1,550	0.69	840	0.37	2,120	0.94	1,000	0.44
Barranca SB HOV Off	1 lane	1,500	120	0.08	90	0.06	780	0.52	520	0.35
SR-133 (SB) On	2 lanes on 1 aux.	3,000	950	0.32	350	0.12	1,190	0.40	440	0.15
SR-133 (SB) Off	2 lanes 1 aux.	3,000	1,420	0.47	1,070	0.36	1,700	0.57	1,710	0.57
Sand Canyon SB On	1 lane on (2 metered lanes), 1 aux.	1,500	510	0.34	530	0.35	770	0.51	840	0.56
Sand Canyon SB Off	1 lane	1,500	1,060	0.71	570	0.38	1,740	1.16	830	0.55
SR-133 (NB) SB Off	2 lanes 1 aux.	3,000	1,140	0.38	1,440	0.48	1,370	0.46	2,280	0.76
Jeffrey SB On	1 lane on (1 metered lane, 1 HOV bypass), 1 aux.	1,080	800	0.74	660	0.61	1,190	1.10	810	0.75
Jeffrey SB Off	1 lane	1,500	490	0.33	850	0.57	610	0.41	940	0.63
Culver SB Direct On	1 lane on (metered)	900	300	0.33	350	0.39	380	0.42	360	0.40
Culver SB Loop On	1 lane on (metered)	900	500	0.56	230	0.26	630	0.70	280	0.31
Culver SB Off	2 lanes 1 aux.	2,250	1,570	0.70	1,620	0.72	1,580	0.70	1,960	0.87
Jamboree SB Direct On	1 lane on (1 metered lane, 1 HOV bypass)	1,080	310	0.29	890	0.82	410	0.38	1,030	0.95
Jamboree SB Loop On	1 lane on (1 metered lane, 1 HOV bypass), 1 aux.	1,080	640	0.59	490	0.45	650	0.60	550	0.51
Jamboree SB Off	1 lane 1 aux.	1,500	1,170	0.78	1,410	0.94	1,400	0.47	1,490	0.50

Location	Ramp Configuration	Capacity	Existing (2009)			No Build (2040)				
			AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio	AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
Tustin Ranch SB On	1 lane on (2 metered lanes), 1 aux.	1,500	640	0.43	360	0.24	740	0.49	580	0.39
Tustin Ranch SB Off	2 lanes, 1 aux.	2,250	960	0.43	1,110	0.49	1,490	0.66	1,120	0.50
Red Hill SB On	1 lane on (2 metered lanes), 1 aux.	1,500	840	0.56	810	0.54	1,050	0.70	920	0.61
Red Hill SB Off	1 lane 1 aux.	1,500	570	0.38	660	0.44	730	0.49	750	0.50
SR-55 (SB) SB On	2 lanes on 1 aux. 1 added mainline lane	4,000	2,510	0.63	2,150	0.54	3,130	0.78	2,680	0.67
Newport SB Off (1)	1 lane	1,500	190	0.13	250	0.17	260	0.17	270	0.18
SR-55 (NB) SB On	1 lane on	2,000	2,300	<b>1.15</b>	2,200	<b>1.10</b>	2,870	<b>1.44</b>	2,750	<b>1.38</b>
Newport SB Off (2)	1 lane 1 aux.	1,500	370	0.25	660	0.44	510	0.34	730	0.49

Note

Bold text = V/C ratio exceeds 1.00

**Table 5—Ramp Merge/Diverge Analysis, Existing (2009) & No Build (2040) Conditions**

Location	Existing (2009)						No Build (2040)									
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour						
	Volumes		LOS	Volumes		LOS	Volumes		LOS	Volumes		LOS				
	Fwy.	Ramp		Density	Fwy.		Ramp	Density		Fwy.	Ramp		Density	Fwy.	Ramp	
<b>I-5 at Alton</b>																
NB Merge (Loop)	6,350	80	26.3	C	6,140	410	28.2	D	7,700	90	31.0	D	7,320	630	34.1	D
<b>I-5 at Sand Canyon</b>																
NB Merge	7,190	640	27.9	C	7,990	930	32.3	D	8,990	690	33.1	D	10,490	1,560	45.4	F
SB Diverge	8,280	570	34.9	D	8,820	1,060	39.4	E	11,470	1,740	51.9	F	10,550	830	43.9	E <sup>1</sup>
<b>I-5 at Jeffrey</b>																
NB Merge (Loop)	8,300	280	26.8	C	8,150	230	25.9	C	11,380	330	37.9	F	11,530	270	38.0	F
NB Merge	8,580	320	28.1	D	8,380	180	26.3	C	11,710	500	40.5	F	11,800	210	38.6	F
SB Diverge	9,560	490	38.7	E	9,810	850	41.5	E	12,190	610	51.0	F	12,890	940	56.3	F
<b>I-5 at Culver</b>																
NB Diverge	8,900	370	35.9	E	8,560	620	36.1	E	12,210	380	51.1	F	12,210	630	51.1	F
NB Merge	9,510	630	28.7	D	8,410	250	23.2	C	12,340	690	38.6	F	11,470	260	31.7	D
SB Diverge	10,280	1,570	33.5	D <sup>1</sup>	10,940	1,620	35.9	F	12,790	1,580	42.1	F	14,160	1,960	52.5	F
SB Merge (Loop)	8,760	500	30.6	D	9,230	230	30.0	D	11,180	630	40.1	F	12,250	280	40.9	F
SB Merge	9,260	300	30.3	D	9,460	350	31.4	D	11,810	380	39.8	F	12,530	360	42.2	F
<b>I-5 at Jamboree</b>																
NB Diverge	10,140	1,470	32.5	D <sup>1</sup>	8,660	1,320	26.7	C	13,590	1,620	48.2	F	12,060	1,340	38.2	F
SB Merge	9,970	310	26.8	C	10,050	890	31.6	D	12,380	410	34.3	D	13,130	1,030	41.4	F
<b>I-5 at Red Hill</b>																
NB Merge	9,600	710	36.1	E	8,060	570	29.6	D	12,190	830	46.1	F	11,480	820	43.5	F
SB Diverge	10,540	570	28.9	D <sup>1</sup>	11,380	660	32.2	F	13,310	730	46.0	F	14,370	750	54.1	F
<b>I-5 at SR-55</b>																
SB Merge	5,730	2,300	43.3	E <sup>2</sup>	7,030	2,200	47.0	F	7,310	2,870	53.4	F	8,940	2,750	58.1	F



Notes

LOS criteria based on density (pc/mi/ln):

A	≤ 10	D	> 28 - 35
B	> 10 - 20	E	> 35
C	> 20 - 28	F	Demand exceeds capacity

**Bold text = exceeds performance criteria (LOS D)**

<sup>1</sup>Volume in right two lanes ( $V_{12}$ ) exceeds maximum desirable volume of 4,400 vph for diverge locations.

<sup>2</sup>Volume in right two lanes ( $VR_{12}$ ) exceeds maximum desirable volume of 4,600 vph for merge locations.

Ramp junctions not shown in the above table are evaluated as weave segments.

**Table 6—Weaving Section LOS Summary, Existing (2009) & No Build (2040) Conditions**

Location	Existing (2009)						No Build (2040)					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	Speed	Density	LOS	Speed	Density	LOS	Speed	Density	LOS	Speed	Density	LOS
<b>NORTHBOUND</b>												
Alton to SR 133 NB	68.9	21.5	C	61.5	27.3	C	66.8	27.4	C	59.0	34.7	D
SR 133 NB to Sand Canyon	58.1	23.9	C	56.2	27.3	C	56.8	29.8	D	54.4	36.2	E
SR 133 SB to Jeffrey	63.6	22.7	C	63.2	25.9	C	51.2	45.0	F	57.8	40.4	E
Jamboree to Tustin Ranch Road	53.9	34.2	D	54.9	29.0	D	53.1	45.8	F	53.8	44.0	F
Tustin Ranch Road to Red Hill	56.1	32.8	D	57.8	27.3	C	51.9	47.1	F	52.3	47.4	F
<b>SOUTHBOUND</b>												
SR 133 SB to Alton	48.4	36.3	E	58.3	28.9	D	43.9	48.8	F	55.6	35.9	E
Sand Canyon to SR 133 SB	55.4	27.2	C	58.3	25.6	C	52.8	34.8	D	52.4	35.4	E
Jeffrey to SR 133 NB	60.0	30.0	D	59.3	29.6	D	57.2	40.8	E	54.5	42.5	E
Tustin Ranch Road to Jamboree	53.9	36.1	E	54.2	36.9	E	51.5	46.6	F	51.8	50.3	F
Red Hill to Tustin Ranch Road	60.7	32.9	D	60.1	35.5	E	56.9	44.2	F	59.4	45.3	F

**Notes**

Bold text = exceeds performance criteria (LOS D)

Ramp junctions not shown in the above table are evaluated as merge/diverge locations

**Table 7—Intersection LOS Summary, Existing (2009) & No Build (2040) Conditions**

Location	2009 Existing				2040 No Build			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Enterprise & I-5 SB Ramps/Fortune	12.5	B	32.3	C	27.1	C	42.4	D
2. Enterprise & Alton Pkwy	25.4	C	26.7	C	27.0	C	31.0	C
3. I-5 NB Ramps & Alton Pkwy	19.3	B	4.4	A	20.7	C	6.7	A
4. Technology & Alton Pkwy	22.6	C	36.6	D	28.5	C	93.4	F
5. Barranca & I-5 HOV Ramps	11.4	B	15.0	B	13.9	B	18.1	B
6. Sand Canyon & Burt Rd	15.7	B	17.0	B	57.0	E	68.3	E
7. Sand Canyon & I-5 SB Ramps	24.8	C	13.8	B	41.9	D	40.9	D
8. Sand Canyon & Marine Way	5.6	A	3.2	A	4.8	A	129.3	F
9. Sand Canyon & I-5 NB Ramps	34.4	C	17.8	B	73.6	E	130.0	F
10. I-5 SB Ramps & Walnut*	0.0	A	0.0	A	14.3	B	18.8	B
11. Jeffrey & Walnut	31.7	C	34.0	C	43.7	D	50.4	D
12. Jeffrey & I-5 NB Ramps	13.6	B	16.7	B	14.3	B	21.6	C
13. Jeffrey & Roosevelt	19.8	B	16.4	B	65.3	E	44.6	D
14. Culver & Scottsdale	16.3	B	29.2	C	17.3	B	31.4	C
15. Culver & I-5 SB Ramps	12.6	B	15.9	B	12.8	B	26.2	C
16. Culver & Trabuco	12.8	B	10.3	B	21.2	C	36.1	D
17. I-5 NB Ramps & Trabuco	19.8	B	23.0	C	20.4	C	26.4	C
18. Jamboree & Michelle	33.4	C	32.1	C	79.6	E	38.4	D
19. Jamboree & I-5 SB Ramps	23.7	C	22.8	C	21.9	C	16.0	B
20. Jamboree & I-5 NB Ramps	21.0	C	23.4	C	15.8	B	18.0	B
21. Jamboree Rd & El Camino Real	32.3	C	35.0	D	36.3	D	37.9	D
22. Tustin Ranch & Walnut	24.6	C	35.7	D	38.3	D	34.7	C
23. Tustin Ranch & I-5 SB Ramps	16.8	B	16.7	B	96.1	F	12.8	B
24. Tustin Ranch & I-5 NB Ramps	8.5	A	11.5	B	17.2	B	14.6	B
25. Tustin Ranch & Auto Center	9.2	A	9.9	A	9.3	A	11.5	B
26. Red Hill & Nissan	24.7	C	33.1	C	23.3	C	28.2	C
27. Red Hill & I-5 SB Ramps	27.8	C	17.4	B	25.7	C	26.1	C
28. Red Hill & I-5 NB Ramps	10.2	B	12.0	B	27.4	C	19.2	B

Location	2009 Existing						2040 No Build					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	Delay	LOS		Delay	LOS		Delay	LOS		Delay	LOS	
29. Red Hill & El Camino Real	34.8	C		31.8	C		41.1	D		168.7	F	
30. Newport & Mitchell	15.7	B		17.1	B		12.5	B		18.7	B	
31. Newport & SB Off Ramp	17.0	B		27.6	C		24.8	C		108.1	F	
32. Newport & I-5 NB Ramp*	69.1	<b>F</b>		50.8	<b>F</b>		<b>535.4</b>	<b>F</b>		<b>170.0</b>	<b>F</b>	
33. Newport & El Camino Real	33.7	C		29.0	C		50.8	D		34.8	C	

Notes

\* Unsignalized Intersection (LOS based on delay of yield movement)  
 Bold text = exceeds performance criteria (LOS D)

#### 4.2.4 Accident Data

Accident data for I-5 within the project limits was requested from the Department for the most recent 36-month period. The Department provided accident data between January 1, 2006 and December 31, 2008 from the Traffic Accident Surveillance and Analysis System (TASAS). TASAS Table B (Selective Accident Rate Calculation and Accident Records) data were provided as shown in Attachment 2, and TASAS Selective Accident Retrieval (TSAR) Individual Accident Summary Tables were also provided. According to the Department, there were no Table C locations within the study corridor during the above time period.

Actual accident rates are compared with average accident rates for similar highway facilities throughout the State. Tables 8 and 9 present a summary of the mainline I-5 TASAS data for the northbound and southbound directions, respectively. Accident rates that are higher than the statewide average are shown as underlined bold text. Accidents in both directions were higher than the state average at various locations throughout the study area, with accident rates higher than the statewide average at more locations in the northbound direction than in the southbound direction.

**Table 8—TASAS Actual and Average Accident Rates  
 1/1/2006 through 12/31/2008, Northbound I-5**

Location	Actual			Average		
	Fatalities	Fatalities + Injuries	Total	Fatalities	Fatalities + Injuries	Total
Northbound I-5 PM 18.700-31.000	0.003	0.30	<b><u>1.13</u></b>	0.011	0.32	1.08
NB 5/405 On Collector PM 20.566	0.000	<b><u>0.08</u></b>	0.16	0.001	0.07	0.25
NB 5/405 On From EB Bake PM 20.706	0.000	<b><u>0.31</u></b>	0.47	0.004	0.20	0.70
NB 5/405 On Collector PM 20.707	0.000	0.06	0.19	0.001	0.07	0.25
NB HOV Connector to NB Rte 405 PM 20.801	0.000	0.00	0.06	0.005	0.20	0.60
NB 5/405 On From WB Bake PM 20.867	0.000	0.08	0.65	0.003	0.20	0.65
NB 5/405 On Collector PM 20.868	0.000	<b><u>0.14</u></b>	<b><u>0.34</u></b>	0.001	0.07	0.25
NB Off Ramp to NB Rte 405 PM 20.930	0.000	0.07	0.37	0.005	0.20	0.60
NB 5/405 On/Off Collector PM 21.301	<b><u>0.130</u></b>	<b><u>0.26</u></b>	<b><u>1.17</u></b>	0.001	0.07	0.25
NB From Lake Forest/Bake Pkwy PM 21.554	0.000	0.04	0.12	0.004	0.15	0.45
NB Off Collector PM 21.605	0.000	0.00	0.00	0.002	0.09	0.25
NB Off To Alton Parkway PM 21.991	0.000	<b><u>0.40</u></b>	0.19	0.002	0.09	0.30
NB On From EB Alton Pkwy PM 22.141	0.000	<b><u>0.44</u></b>	<b><u>2.19</u></b>	0.004	0.20	0.70
NB On From WB Alton Pkwy PM 22.331	0.000	<b><u>0.35</u></b>	0.58	0.003	0.20	0.65

Location	Actual			Average		
	Fatalities	Fatalities + Injuries	Total	Fatalities	Fatalities + Injuries	Total
NB On From Barranca Pkwy PM 22.762	0.000	0.00	0.00	0.002	0.26	0.75
NB On From Barranca Pkwy PM 22.976	0.000	0.00	0.16	0.002	0.26	0.75
NB Connector to NB Rte 133 PM 23.004	0.000	0.00	0.28	0.003	0.11	0.35
NB Off To Sand Canyon Avenue PM R23.960	0.000	<b><u>0.38</u></b>	0.95	0.002	0.36	1.10
NB On From Sand Canyon Avenue PM R24.127	0.000	0.11	<b><u>0.78</u></b>	0.002	0.26	0.75
NB Off To Jeffrey Road PM R24.801	0.000	0.29	1.08	0.004	0.42	1.20
NB On From NB Jeffrey Road PM R24.965	0.000	0.00	0.53	0.004	0.20	0.70
NB On From SB Jeffrey Road PM R25.191	0.000	0.00	<b><u>0.82</u></b>	0.003	0.20	0.65
NB Off Culver & Trabuco PM R26.389	0.000	0.13	0.80	0.004	0.28	0.95
NB On Trabuco & EB Culver PM R26.564	0.000	0.09	<b><u>0.76</u></b>	0.002	0.16	0.55
NB On From WB Culver Drive PM R26.747	0.000	0.16	<b><u>0.82</u></b>	0.003	0.20	0.65
NB Off To Jamboree Road PM 27.390	0.000	0.24	0.95	0.004	0.42	1.20
NB On From NB Jamboree Road PM 27.547	0.000	0.10	<b><u>0.71</u></b>	0.004	0.20	0.70
NB On From SB Jamboree Road PM 27.729	0.000	<b><u>0.43</u></b>	<b><u>1.82</u></b>	0.003	0.20	0.65
NB Off To Tustin Ranch Road PM 28.224	0.000	0.19	<b><u>1.31</u></b>	0.002	0.36	1.10
NB On From Tustin Ranch Road PM R28.417	0.000	0.14	<b><u>1.53</u></b>	0.002	0.26	0.75
NB Off To Red Hill Avenue PM R28.976	0.000	0.25	<b><u>1.25</u></b>	0.004	0.42	1.20
NB On From Red Hill Avenue PM R29.228	0.000	0.16	<b><u>0.81</u></b>	0.002	0.26	0.75
NB On From Newport Avenue PM 29.728	0.000	0.19	<b><u>0.84</u></b>	0.002	0.26	0.75
SB on From Rte 55 /4 <sup>th</sup> Street PM 29.864	0.000	0.12	<b><u>0.47</u></b>	0.004	0.15	0.45
NB Off To Rte 55/4 <sup>th</sup> Street PM 30.185	0.000	<b><u>0.15</u></b>	<b><u>0.58</u></b>	0.002	0.09	0.30
NB Off To 4 <sup>th</sup> Street PM 30.186	0.000	0.00	0.00	0.005	0.15	0.45
NB Off to SB Rte 55 PM 30.323	0.000	0.03	0.27	0.004	0.21	0.75
NB Off To 1 <sup>st</sup> /4 <sup>th</sup> Street PM 30.927	0.000	0.06	0.13	0.002	0.09	0.30

**Note**

Bold underlined text = actual rate is higher than average rate

**Table 9—TASAS Actual and Average Accident Rates through project limits  
 1/1/2006 through 12/31/2008, Southbound I-5**

Location	Actual			Average		
	Fatalities	Fatalities + Injuries	Total	Fatalities	Fatalities + Injuries	Total
Southbound I-5 PM 18.700-31.000	0.002	0.20	0.76	0.011	0.32	1.08
SB on From EB Bake Pkwy PM 20.745	0.000	0.00	0.00	0.003	0.20	0.65
SB 5/405 On/Off Collector PM 20.476	0.000	0.02	0.05	0.001	0.07	0.25
SB On From WB Bake Pkwy PM 20.949	0.000	<u>0.22</u>	0.67	0.004	0.20	0.70
SB 5/405 On/Off Collector PM 20.950	0.000	0.00	0.00	0.001	0.07	0.25
SB 5/405 On /Off Collector PM 21.118	0.000	0.04	0.08	0.001	0.07	0.25
SB 5/405 Off To Bake Pkwy PM 21.166	0.000	0.17	0.67	0.004	0.42	1.20
SB On From SB Rte 405 PM 21.182	0.000	0.02	0.05	0.003	0.11	0.35
SB Off To Lake Forest PM 21.194	0.000	0.00	0.00	0.005	0.20	0.60
SB Off To Bake Pkwy PM 21.195	0.000	<u>0.14</u>	<u>0.35</u>	0.002	0.09	0.25
SB On From Alton Pkwy PM 21.539	0.000	<u>0.22</u>	<u>1.11</u>	0.002	0.16	0.55
SB Off To Lake Forest/Bake Pkwy PM 21.773	0.000	0.04	1.06	0.004	0.42	1.20
SB Off To Alton Parkway PM 22.201	0.000	0.19	0.45	0.004	0.28	0.95
SB Off To Barranca Pkwy PM 22.763	0.000	0.00	0.00	0.004	0.42	1.20
SB Off To Barranca Pkwy PM 23.177	0.000	0.00	0.00	0.005	0.15	0.45
SB Connector to SB 133/Barranca PM R23.332	0.000	0.00	0.08	0.002	0.09	0.30
SB ON From Sand Canyon Avenue PM R23.772	0.000	0.17	0.34	0.002	0.26	0.75
SB Off To Sand Canyon Avenue PM R24.082	0.000	0.19	0.65	0.004	0.42	1.20
SB Connector To NB Rte 133 PM R24.227	0.000	0.00	0.13	0.005	0.20	0.60
SB On From Jeffrey & Walnut PM R24.736	0.000	0.00	0.12	0.002	0.16	0.55
SB Off Jeffrey & Walnut PM R24.873	0.000	0.00	0.29	0.004	0.28	0.95
SB On From EB Culver Dr PM R26.351	0.000	0.00	0.22	0.003	0.20	0.65
SB On From WB Culver Drive PM R26.634	0.000	0.00	0.00	0.004	0.20	0.70
SB Off To Culver Drive PM R26.865	0.000	0.14	0.71	0.004	0.42	1.20

Location	Actual			Average		
	Fatalities	Fatalities + Injuries	Total	Fatalities	Fatalities + Injuries	Total
SB On From NB Jamboree Road PM 27.498	0.000	<u>0.26</u>	<u>0.77</u>	0.003	0.20	0.65
SB On From SB Jamboree Road PM 27.641	0.000	0.12	<u>0.81</u>	0.004	0.20	0.70
SB Off To Jamboree Road PM 27.799	0.000	0.30	1.02	0.004	0.42	1.20
SB On From Tustin Ranch Road PM R28.301	0.000	0.00	0.14	0.002	0.26	0.80
SB Off To Tustin Ranch Road PM R28.456	0.000	0.21	0.93	0.004	0.42	1.20
SB On From Red Hill Avenue PM R28.981	0.000	0.25	0.74	0.002	0.26	0.75
SB Off To Red Hill Avenue PM R29.255	0.000	0.35	<u>1.24</u>	0.004	0.42	1.20
SB Off 5/55 To Newport PM 29.863	0.000	0.04	0.15	0.002	0.09	0.30
SB on From Rte 55 /4 <sup>th</sup> Street PM 29.864	0.000	0.12	<u>0.47</u>	0.004	0.15	0.45
SB Off To Newport Avenue PM 30.261	0.000	0.00	0.45	0.005	0.15	0.45
SB Off to SB Rte 55 PM 30.403	0.000	<u>0.17</u>	<u>0.58</u>	0.005	0.15	0.45
SB On From First Street PM 30.828	0.000	<u>0.29</u>	<u>0.79</u>	0.002	0.26	0.75

**Note**

Bold underlined text = actual rate is higher than average rate

During the study period, the most common type of collision was rear end (64.0%) and the second most common was sideswipe type (19.0%) in the northbound direction. These two collision types were the most common in the southbound direction also (56.4% rear end and 23.1% sideswipe). These types of collisions are common in congestion-related conditions, such as those within the study corridor. Full project traffic data is presented in the project's Traffic Study Report (separately bound).

## 5. CORRIDOR AND SYSTEM COORDINATION

The project is to study alternatives to improve north-south mobility on I-5 from the El Toro "Y" to SR-55 by providing additional capacity and operational traffic improvements. The portion of I-5 through the project limits is included in the following classifications:

- National Highway System (NHS)
- STRAtegiC Highway NETwork (STRAHNET)
- National Truck Network
- Subsystem of Highway for the movement of Extra Legal Loads (SHELL)
- Life Line Route



The I-5 Route Concept Report (April 2000) divides the freeway into various segments; this project's limits encompass Segments 6 and 7. The build alternatives are consistent with the Route Concept Report, which indicates that the freeway would be configured through the project limits as follows:

- Segment 6, from I-405 to SR-133: 4 general purpose lanes + 1 HOV lane in each direction
- Segment 7, from SR-133 to SR-55: 5 general purpose lanes + 1 HOV lane + auxiliary lanes in each direction

Improvements within the proposed project's limits are subject to the terms of cooperative agreements between the Department and the Transportation Corridor Agencies (TCA). TCA is a project stakeholder and has provided reviews of the proposed build alternatives.

## 5.1 Other Projects Within the Study Area

There are many projects within the study area for the proposed improvements along I-5. Coordination with the following projects will be required in future project development phases. In some cases, projects listed below may have an impact on the proposed project's scope.

- SOCMIS, OCTA: The South Orange County Major Investment Study was completed to identify the transportation challenges facing the southern portion of Orange County through 2030. A set of initial strategies was approved that addressed a variety of improvement categories, and the widening of I-5 through the proposed project's limits was included. The lane configurations for I-5 identified in the proposed project's build alternatives are consistent with the SOCMIS study.
- Continuous access HOV evaluations, OCTA and the Department: The Department and OCTA are evaluating the implementation of continuous access HOV lanes on freeways in Orange County on a route-by-route basis. A contract to complete a PSR, PA/ED, and PS&E for continuous access HOV implementation on I-5 that would include the proposed project's limits, was initiated in 2011. A build alternative has been developed that would be consistent with continuous access HOV lane usage.
- Fixed Guideway project, City of Irvine: The City of Irvine evaluated concepts for providing fixed guideway transit alternatives along Alton Parkway connecting the Great Park and the Irvine Spectrum. This project is not currently active.
- Barranca Parkway HOV Drop Ramps, OCTA: HOV drop ramps exist to and from Barranca Parkway at the north "leg" of I-5 at Barranca Parkway. Provision of the drop ramps to and from the south "leg" of I-5 will be addressed as part of a separate CMAQ project. The build alternatives included in this PSR(PDS) were designed to allow the future addition of the drop ramps to the south without requiring restriping of the freeway mainline.
- Great Park, City of Irvine: A 1300-acre park is in the process of being developed on the land formerly known as Marine Corps Air Station El Toro. This site is located north of I-5 and east of SR-133, near the south end of the proposed project's limits, in proximity to the I-405 interchange. In addition to open spaces, the park will provide botanical gardens, museums, dining and entertainment facilities, festival areas, a library, and sports complexes. The proposed project's improvements do not appear to impact the Great Park development plan.

- SR-133/Trabuco Interchange (EA 0G009), City of Irvine: A PSR for a new interchange on SR-133 at Trabuco Road has been drafted. The interchange would provide a connection from SR-133 in close proximity to the Great Park area. The completion of this project would be expected to result in traffic circulation changes at the I-5/Sand Canyon Road and I-5/Jeffrey Road interchanges. This project is currently on hold. The proposed project's build alternatives do not affect the SR-133/Trabuco Road interchange scope.
- I-5/SR-133 HOV Connectors, TCA: As part of the engineering analyses conducted for the construction of the SR-133 toll road in the mid-1990s, the feasibility of constructing direct HOV connectors between the northern leg of I-5 and the northern leg of SR-133, was evaluated. The direct connectors were anticipated to be accommodated by shifting the northbound I-5 lanes further to the north, in order to provide room in the middle of the I-5 freeway for the connectors. These connectors were not addressed in the EIR for the SR-133 freeway; however, TCA has included their cost in their long-range Capital Improvement Plan. One of the proposed build alternatives includes an option that does not accommodate the construction of the HOV Connectors as depicted in the engineering analyses from the 1990s.
- Metrolink Expansion Project, OCTA/SCRRA: A study is underway to evaluate the feasibility of adding a third track along the SCRRA right-of-way from south of the Irvine Station near the El Toro "Y" area, to Red Hill Avenue in Tustin. This could affect the number of tracks at the I-5 Overhead near Sand Canyon Avenue. At this time, it is expected that the existing I-5 Overhead bridge structure would not be modified to accommodate this potential future track.
- North Irvine Transportation Mitigation (NITM) Program, City of Irvine: The NITM Nexus Study was completed in 2003 to establish a funding mechanism for the transportation mitigation measures identified in the EIRs for development projects in the north Irvine area. Estimated project costs were updated in 2008. The following current and future NITM projects are within the proposed I-5 project area: those projects that have been programmed are included in the No Build alternative; the unprogrammed projects have been incorporated into the build alternatives, because they are expected to be constructed in advance of the design year with the completion of the Great Park development.

**Table 10—NITM Projects Included in Build Alternatives**

Location	Status	Improvements
I-5 at Sand Canyon Avenue (NB exit ramp) & Marine Way	PS&E in progress EA 0H0271	<ul style="list-style-type: none"> <li>• Add 3<sup>rd</sup> &amp; 4<sup>th</sup> NB &amp; SB Sand Canyon thru lanes</li> <li>• Widen NB exit ramp from 3 to 4 lanes</li> </ul>
I-5 at Sand Canyon Avenue (SB exit ramp)	PS&E in progress EA 0H0271	<ul style="list-style-type: none"> <li>• Widen SB exit ramp from 3 to 4 lanes</li> </ul>
I-5 at Alton Parkway (NB exit ramp)	Project not yet initiated	<ul style="list-style-type: none"> <li>• Restripe NB exit ramp to provide 2.5 left-turn lanes and 0.5 right-turn lane.</li> </ul>
I-5 mainline (Sand Canyon Avenue to Jeffrey Road)	Project not yet initiated	<ul style="list-style-type: none"> <li>• Add 6<sup>th</sup> I-5 NB &amp; SB general purpose lanes.</li> <li>• Add 2<sup>nd</sup> drop lane to SB Sand Canyon exit ramp</li> </ul>

Location	Status	Improvements
I-5 at Alton Parkway (SB exit ramp)	Project not yet initiated	• Add 2 <sup>nd</sup> auxiliary lane to SB exit ramp.
I-5 at Jamboree Road (NB exit ramp)	Project not yet initiated	• Add 2 <sup>nd</sup> auxiliary lane to NB exit ramp.
I-5 at Jamboree Road (SB exit ramp)	Construction in progress	• Add 2 <sup>nd</sup> auxiliary lane to SB exit ramp.
I-5 at Jeffrey Road (SB entrance ramp)	Project not yet initiated	• Convert SB entrance ramp HOV lane to a 2 <sup>nd</sup> metered mixed-flow lane.

- **Sand Canyon Road improvements (EA 0H027):** A PR/PSR was completed for this NITM project in 2006, and the PS&E is underway. The improvements include adding two lanes in each direction on Sand Canyon Avenue, adding a 4<sup>th</sup> lane to the southbound I-5 exit ramp to Sand Canyon Road, adding a 3<sup>rd</sup> lane to the northbound I-5 entrance ramp from Sand Canyon Road, and adding a 4<sup>th</sup> lane to the northbound I-5 exit ramp to Sand Canyon Road. These improvements have been included in the No Build alternative for the proposed project's analysis.
- **City of Irvine General Plan, Planning Areas 12 and 40:** In 2008, the City of Irvine approved amendments to the General Plan to change land use designations and to change zoning within Planning Areas 12 and 40. Planning Area 12 is located south of I-5 in the vicinity of the Sand Canyon Road interchange, and will include future medical and science developments. Planning Area 40 is located north of I-5, east of Jeffrey Road, and will include a mix of residential, multi-use, commercial, and institutional uses. A vesting tentative tract map for Planning Area 40 was approved in November 2010, and construction is currently underway on this site by The Irvine Company.
- **Jeffrey Open Space Trail (JOST) project:** East of the Jeffrey Road overcrossing structure, there is a plan to provide a bridge to link the Jeffrey Open Space Trail on the north and south sides of the freeway. Based on analysis of a concept exhibit provided by the City of Irvine, it appears that the proposed improvements will not conflict with the JOST alignment in the I-5/Jeffrey Road interchange vicinity.
- **I-5/Culver Drive Privacy Wall project (EA 0J300):** Two privately-funded soundwalls have been constructed along northbound I-5 at the Culver Drive interchange. The walls would be constructed along the northbound Culver Drive entrance ramp to northbound I-5, at the outside/north edge of shoulder; and along northbound I-5 at the outside/north edge of shoulder, beyond the gore of the hook exit ramp to Culver Drive/Trabuco Road. These wall segments would be impacted by either of the build alternatives described in this PSR(PDS).
- **Jamboree Road improvements (Project 1200000278/EA 0H000):** Jamboree Road will be widened from three lanes to four lanes in the northbound direction, from the entrance ramp to southbound I-5, to the entrance ramp to northbound I-5; and freeway exit ramp termini will also be widened by one lane. Construction of this project is in progress.
- **I-5 southbound at Jamboree Road (EA 0G990):** A second auxiliary lane along southbound I-5 approaching the exit ramp to Jamboree Road, will be added with implementation of this project. Construction is in progress.

- Newport Avenue Extension: This project will extend Newport Avenue from its existing terminus just north of the Metrolink right of way (parallel to Edinger Avenue) in Tustin, underneath the railroad right of way, to connect with its extension south of Edinger Avenue. This will close the gap in Newport Avenue, and provide connectivity to SR-55 near the intersection with Edinger Avenue, and will serve as an alternate north-south route to Red Hill Avenue. The completion of this project would be expected to result in traffic circulation changes in the project vicinity, and as a result, the completion of this project is assumed in the future traffic projections. The PS&E for this project is nearing completion, and construction funding is being sought.
- I-5/SR-55 (0G260): A PSR(PDS) was completed for this project in 2005. The scope of this project included evaluations to improve operations at four specific "chokepoint" locations in the interchange area. Options studied to improve operations at the First Street entrance ramp to southbound I-5, have been incorporated into the PA/ED phase of the project to add a second HOV lane on I-5 from SR-55 to SR-57 (EA 0C890). The chokepoint defined as "Area 4" is along I-5 from the entrance from Newport Avenue to northbound I-5, to the connector to northbound SR-55. No feasible alternatives were identified in the PSR(PDS) (for EA 0G260). This area is addressed in Alternative 2B Option 2 included in this PSR(PDS).
- I-5 from SR-55 to SR-57 (EA 0C890): This project will add a second HOV lane through the project limits. The PSR(PDS) for this project was completed in 2010, and the PA/ED phase is expected to begin in 2011. The scope of this project has been modified to include the reconfiguration of the 1<sup>st</sup> Street entrance ramp to southbound I-5, to improve operations north of the I-5/SR-55 interchange. The proposed project's improvements are consistent with the scope of project EA 0C890.
- SR-55 from I-405 to I-5 (EA 0J340): This project includes the widening of SR-55 to provide additional general purpose and/or auxiliary lanes in each direction between I-405 and I-5. A PSR(PDS) was completed in 2008, and the PA/ED phase is expected to start in 2011. This project does not affect the proposed project's build alternatives.

## 6. ALTERNATIVES

Two alternative concepts, with "subalternatives" and options, have been developed and studied.

- Alternative 1: No Build
- Alternative 2A: Add 1 general purpose lane in each direction, retaining the existing limited-access HOV configuration and generally using standard lane and shoulder widths
- Alternative 2B: Add 1 general purpose lane in each direction, implementing a continuous access HOV lane configuration and using nonstandard lane and shoulder widths to limit right-of-way impacts
  - Option 1: At the Newport Avenue interchange entrance ramp to northbound I-5, maintain the existing half-diamond ramp configuration.
  - Option 2: At the Newport Avenue interchange entrance ramp to northbound I-5, eliminate the existing half-diamond configuration, and instead provide a hook-ramp alignment from El Camino Real, at the existing Orange Street intersection.

- Option 3: At the SR-133, Sand Canyon Avenue and Jeffrey Road interchanges, braid the northbound entrance ramp from S133-N5 Conn/Sand Canyon Avenue and the northbound exit ramp to Jeffrey Road.
- Option 4: At the Sand Canyon Avenue and SR-133 interchanges, braid the entrance ramp from Sand Canyon Avenue and the S5-S133 Connector.

Alternative 1 was evaluated as a basis of comparison for the build alternatives. Alternatives 2A and 2B were developed as minimum build alternatives meeting the project's purpose and need. The alternatives were evaluated for right of way impacts, constructability, cost, impact to traffic, safety, and environmental impacts.

Transportation Systems Management/Transportation Demand Management (TSM/TDM) strategies were evaluated for inclusion in all build alternatives. Both Alternatives 2A and 2B would incorporate the following measures:

- Signal coordination along arterials at ramp terminal intersections
- Additional lanes on ramps to increase storage
- Incorporation of Master Plan of Arterial Highways (MPAH) improvements to improve operations

## 6.1 Alternative 1

### Alternative 1 – No Build:

The No Build alternative maintains I-5 in its present condition plus the following programmed improvements:

- Sand Canyon Avenue and Ramps Improvements (EA 0H0271): PS&E underway
- Jamboree Road improvements (EA 0J1501): Construction in progress.
- Jamboree Road southbound exit ramp improvements PS&E (EA 0G9901): Construction in progress.

The alternative assumes that no other improvements will be made within the project area. The No Build Alternative will not meet future traffic demand. There is no capital cost associated with this alternative.

## 6.2 Alternative 2

Alternative 2 adds one lane in each direction from I-405 to SR-55 in order to increase capacity and improve operational deficiencies within I-5 corridor. Two variations were considered to implement the additional lane, and these are both considered to be minimum build alternatives.

### 6.2.1 Alternative 2A: Add 1 GP Lane with Standard Lane & Shoulder Widths

Alternative 2A adds one general purpose lane in each direction on I-5, from I-405 to the SR-55 freeway-to-freeway interchange, generally maintaining full standard lanes and shoulders except at joins to existing nonstandard lanes and at isolated bridge column constraints. This will result in a total of 5 or 6 mainline lanes depending on the specific corridor location, as identified in the lane schematic exhibits in Attachment 3. The existing limited access HOV configuration would be maintained with this alternative. Implementation of this alternative would increase the freeway cross-section "footprint," which would require the realignment of the El Camino Real

and Nisson Road frontage roads between Browning Avenue and Newport Avenue. Additional auxiliary lanes would be included at the following locations, to improve freeway operations:

- NB mainline from Newport Avenue to I-5 NB to SR-55 NB connector
- NB mainline from Culver Drive to Jamboree Road
- SB mainline from Jeffrey Road to Sand Canyon Avenue
- SB mainline from Alton Parkway to I-5 SB Truck Bypass connector

To increase ramp capacities, additional ramp lanes would be provided at the following locations within the existing right of way:

- Alton Parkway NB exit ramp
- Jeffrey Road NB exit ramp
- Culver Drive NB entrance ramp
- Culver Drive SB direct entrance ramp
- Culver Drive SB loop entrance ramp
- Jamboree Road NB exit ramp
- Tustin Ranch Road SB exit ramp

In addition, the following ramp configurations would be modified with implementation of this alternative:

**Table 11—Revised Ramp Configurations  
 Alternative 2A**

Revised ramp configurations	Location
<u>2-lane entrance ramp</u> • 1 lane entering as an proposed mainline GP(5) lane • 1 lane entering as mainline GP(4) lane	• I-5 NB Truck Bypass connector
<u>2-lane entrance ramp</u> • 2 lanes entering as auxiliary lanes	• Jeffrey Road SB entrance ramp • Tustin Ranch Road SB entrance ramp
<u>2-lane exit</u> • 2 auxiliary lanes	• I-5 SB Truck Bypass connector • Jamboree Road NB exit ramp • I-5 NB to SR-55 NB connector
<u>2-lane exit</u> • 1 auxiliary lane • 1 choice lane	• Sand Canyon Avenue SB exit ramp • Tustin Ranch Road NB exit ramp • Red Hill Avenue NB exit ramp
<u>1-lane entrance ramp</u> • 1 lane entering as an auxiliary lane	• Culver Drive NB entrance ramp
<u>1-lane entrance ramp</u> • 1 lane entering to mainline GP lane	• I-5 SB to SR-55 NB connector

The Alternative 2A improvements would impact structures, retaining wall and soundwalls, and local streets.

- 17 structures will require modifications, 3 bridge replacements, 9 bridge widenings, and 5 tieback walls to support existing bridge abutments as identified in section 6.6.2.
- 26 existing retaining walls and/or soundwalls would be removed.
- 43 retaining walls and/or sound walls will be constructed as identified in Table 36.

- Jeffrey Road and Alton Parkway will be re-aligned vertically.
- El Camino Real and Nisson Road will be re-aligned horizontally.

Improvements under Alternative 2A would require additional right of way adjacent to Interstate 5 to accommodate the wider freeway footprint, as shown on the layout exhibits in Attachment 4 and identified in Table 35.

An advantage of this alternative is that standard lane and shoulder widths are utilized. Disadvantages include higher costs and more extensive right of way impacts than Alternative 2B.

The City of Tustin is opposed to Alternative 2A due to right-of-way impacts. TCA is in support of Alternative 2A, as it maintains access between local street interchanges and SR-133.

The estimated cost for Alternative 2A is \$452 million. The preliminary construction cost estimates are included in Attachment 11, and are broken out into the following four segments:

- Segment 1: I-405 to SR-133
- Segment 2: SR-133 to Jeffrey Road
- Segment 3: Jeffrey Road to Red Hill Avenue
- Segment 4: Red Hill Avenue to SR-55

#### **6.2.2 Alternative 2B: Add 1 GP Lane with Nonstandard Lane & Shoulder Widths and Continuous Access HOV**

This alternative provides the same mainline and ramp lane additions/configurations as Alternative 2A, but would utilize a narrower freeway typical section through the implementation of reduced lane and/or shoulder widths as shown in the exhibits in Attachment 5 in specific areas to reduce and/or eliminate right of way impacts. Also, this alternative presumes the use of continuous access HOV lanes, so no HOV buffer was considered. This narrower freeway section results in reduced right of way encroachments and maintaining the proposed freeway cross section within the existing freeway pavement section north of Browning Avenue. In addition, both Nisson Road and El Camino Real would be maintained along their existing alignments where they parallel the freeway near the north end of the project limits.

At the Newport Avenue interchange, two options were analyzed for the northbound entrance ramp. Option 1 maintains the existing northbound half-diamond configuration but reduces the existing weave length between Newport Avenue and the N5-N55 connector by approximately 220', while Option 2 would relocate the northbound entrance ramp to a hook ramp configuration from the El Camino Real/Orange Street intersection and increases the existing weave length by approximately 580'. The incorporation of Option 2, the hook ramp configuration, would modify traffic patterns in the area surrounding the ramp terminus. Traffic currently accesses the ramp directly from both northbound and southbound Newport Avenue; however, the change in ramp location would increase the number of northbound right-turns and southbound left-turns at the Newport Avenue/El Camino Real intersection. Although it appears that the existing intersection could be reconfigured within the existing right-of-way to accommodate the additional turn lanes, the City of Tustin's circulation element identifies that Newport Avenue is a six-lane arterial; to maintain the existing number of through lanes, additional right of way would be required. This should be evaluated in further detail if the hook ramp option is selected for further analysis in the next project development phase.

With Option 3, to remove the existing weave between the northbound entrance ramp from Sand Canyon Avenue/the southbound SR-133 connector to northbound I-5 and the northbound exit ramp to Jeffrey Road, a set of braided ramps was introduced. The northbound exit ramp to Jeffrey Road would be realigned to exit the freeway 1000' north of the northbound exit ramp

from Sand Canyon Avenue, and then would cross over the northbound entrance ramp from Sand Canyon Avenue/SR-133 SB to I-5 NB connector. The northbound entrance ramp from Sand Canyon Avenue would merge with the SR-133 SB to I-5 SB connector and then enter the freeway as a 2-lane entrance ramp. To minimize right-of-way impacts, this option does not maintain a connection between SR-133 SB to I-5 NB connector and Jeffrey Road. The analysis of diverted traffic should be evaluated during the PA/ED phase if Option 3 is considered to be viable during the PA/ED phase.

In order to eliminate the existing weave on southbound I-5 from Sand Canyon Avenue to SR-133, Option 4 includes the realignment of the southbound entrance ramp from Sand Canyon Avenue to enter the freeway beyond the I-5 SB to SR-133 SB connector exit from the I-5 freeway. The I-5 SB to SR-133 SB connector would be realigned to cross over the Sand Canyon Avenue SB exit ramp and then tie back to the existing grade before the SR-133 SB/Barranca Parkway exit ramp. To minimize right-of-way impacts, this option does not include a connection between Sand Canyon Avenue and SB SR-133.

All ramp lane additions and ramp configurations would be the same as proposed under Alternative 2A with the exception of Newport Avenue, Jeffrey Road, Sand Canyon Avenue, and SR-133 Interchange for Option 2, Option 3, and Option 4.

The Alternative 2B improvements would impact structures, retaining wall and soundwalls, and local streets as follows:

- 13 structures will require modifications, 2 bridge replacements, 7 bridge widenings, and 4 tieback walls to support existing bridge abutments as identified in section 6.6.2.
- 3 new structures will be required as identified in Section 6.6.2.
- 10 existing retaining walls and/or soundwalls would be removed.
- 37 retaining walls and/or sound walls will be constructed as identified in Table 37.
- The profile of Alton Parkway would be modified.

Improvements under Alternative 2B would require additional right of way adjacent to Interstate 5 as shown on the layout exhibits and identified in Tables 35. The Transportation Corridor Agencies, a project stakeholder, has opposed Alternative 2B Option 3 and Option 4, due to the removal of connections to SR-133. Additionally, the City of Irvine and The Irvine Company have expressed concern regarding traffic redistribution due to the removal of connections to SR-133 under Options 3 and 4.

An advantage of Option 1 is that the existing ramp configurations are maintained; no significant right of way impacts are associated with this Option. However, this Option does not increase the weaving distance between the Newport Avenue entrance ramp and the northbound SR-55 connector.

While Option 2 has right of way impacts associated with the hook entrance ramp alignment, the weaving distance between the Newport Avenue entrance ramp and the northbound SR-55 connector would be increased.

Benefits of Option 3 include the removal of a weaving movement between the Sand Canyon Avenue and Jeffrey Road interchanges. Disadvantages include high costs due to new bridge structures and walls, and the lack of connection between southbound SR-133 to northbound I-5 and Jeffrey Road. Another disadvantage of Option 3 is that it does not accommodate the



I-5/SR-133 HOV connectors as depicted in the engineering analyses conducted for the construction of the SR-133 toll road.

Option 4's benefits include the removal of the southbound weaving movement between Sand Canyon Avenue and southbound SR-133; however, traffic from Sand Canyon Avenue would not be able to access southbound SR-133. This option has a high cost due to new bridge structures and walls that would be required.

The estimated cost for Alternative 2B with Option 1 is \$230 million, the estimated cost for Alternative 2B with Option 2 (Newport Avenue hook entrance ramp to northbound I-5) is \$242 million, the estimated cost for Alternative 2B with Option 3 (NB Braided Ramps) is \$276 million, and the estimated cost for Alternative 2B with Option 4 (SB Braided Ramps) is \$258 million. The preliminary construction cost estimates are included in Attachment 11, and are broken out into the following segments, similar to Alternative 2A:

- Segment 1: I-405 to SR-133
- Segment 2: SR-133 to Jeffrey Road (Option 1, Option 3, and Option 4)
- Segment 3: Jeffrey Road to Red Hill Avenue
- Segment 4: Red Hill Avenue to SR-55 (Option 1 and Option 2)

### 6.3 Alternatives Considered but Withdrawn

Similar to Alternative 2B Options 3 and 4, additional braided ramp alternatives were studied to facilitate future weaving movements in the vicinity of the SR-133 freeway-to-freeway interchange:

**Alternative 3A:** From the Jeffrey Road interchange to the SR-133 interchange, the existing I-5 mainline section was maintained, and three sets of braided ramps were provided:

- **Braid #1:** With this braid, the existing weave between Jeffrey Road SB entrance ramp and the I-5 SB to SR-133 NB connector was eliminated. The Jeffrey Road SB exit ramp and I-5 SB to SR-133 NB connector was merged into a single 2-lane exit ramp that diverged from I-5 just north of Jeffrey Road. Also, the Jeffrey Road SB entrance ramp terminal was relocated from Walnut Avenue to Jeffrey Road. The Jeffrey Road SB entrance ramp crossed over the combined I-5 SB to SR-133 NB connector/Jeffrey Road SB exit ramp and then entered the freeway. To maintain the connection from Jeffrey Road to SR-133 NB, a ramp was provided from Walnut Avenue to the I-5 SB to SR-133 NB connector.
- **Braid #2:** To remove the existing weave between Sand Canyon Avenue/SR-133 SB and Jeffrey Road, the Jeffrey Road NB exit ramp was realigned to exit the freeway 1000' north of the Sand Canyon Avenue NB exit ramp and then crossed over the Sand Canyon NB entrance ramp/SR-133 SB to I-5 NB connector. The Sand Canyon NB entrance ramp merged onto the SR-133 SB to I-5 SB connector and then entered the freeway as a 2-lane entrance ramp. This braid is similar to Alternative 2B Option 3, but differs in that to maintain a connection from Sand Canyon Avenue to SR-133 SB, a ramp was provided to the Jeffrey Road NB exit ramp from the collector/combined entrance ramp of the Sand Canyon NB entrance ramp and the SR-133 SB to I-5 NB connector.
- **Braid #3:** In order to eliminate the existing weave on SB I-5 from Sand Canyon Avenue to SR-133, the Sand Canyon SB entrance ramp was realigned to enter the freeway after the I-5 SB to SR-133 SB connector exits the freeway. The I-5 SB to SR-133 SB connector was realigned to cross over the Sand Canyon Avenue SB exit ramp and then

tie back to the existing grade before the SR-133 SB/Barranca Parkway exit ramp. This braid is similar to Alternative 2B Option 4, but differs in that to maintain the movement from Sand Canyon Ave to SB SR-133, a ramp was provided that diverged from the Sand Canyon SB exit ramp at the SCRRA/Metrolink railroad and merged onto the I-5 SB to SR-133 SB connector after it exits I-5 SB.

Additional right of way was required along all of the braids and the freeway in both directions.

Alternative 3B: This alternative was similar to Alternative 3A, but to reduce the right of way encroachments, the following movements were eliminated to “tighten” up the geometry:

- Braid #1: Access to the SR-133 NB connector from Jeffrey Road SB entrance ramp.
- Braid #2: Access to the SR-133 SB/Barranca Parkway connector from the Sand Canyon Avenue SB entrance ramp.
- Braid #3: Access to the Jeffrey Road NB exit ramp from the SR-133 SB connector and the Sand Canyon Avenue NB entrance ramp.

Although additional right of way was required in similar locations to those areas impacted in Alternative 3A, the areas of impacts were reduced in size. Braids #2 and #3 were ultimately included in Alternative 2B as Options 3 and 4, respectively.

When Alternative 3A was presented to the City of Irvine and The Irvine Company, both of whom are project stakeholders, it was immediately met with strong opposition, due to the right-of-way impacts. As a result of this initial meeting, the PDT developed a similar alternative, Alternative 3B, which had lesser right-of-way impacts; however, ramp connections to SR-133 were removed in order to tighten the geometry of the braids. The Transportation Corridor Agencies, another stakeholder, opposed Alternative 3B due to the removal of connections to SR-133. The Department has expressed opposition to Alternative 3A and 3B Braid #1 due to operational-related concerns at the diverge of the southbound exit ramp to Jeffrey Road.

The project’s Traffic Study indicates that Alternative 2B is a viable alternative and meets the project’s purpose and need and provides acceptable levels of service and operational characteristics in the SR-133 vicinity, while keeping within the existing right-of-way. Because of this, and as a result of the strong opposition to Alternative 3A and Alternative 3B Braid #1, Alternative 3A and Alternative 3B Braid #1 have been withdrawn from further consideration as part of this project development phase.

Copies of written comments received regarding Alternatives 3A and 3B are included as Attachment 12.

## **6.4 Traffic Improvements for Build Alternatives**

### **6.4.1 Design Year (2040) Build Alternative 2 Freeway Operations**

Build Alternatives 2A and 2B generally represent the addition of one mainline general purpose lane in both the northbound and southbound directions between SR-55 and the I-405 interchange. Since Build Alternatives 2A and 2B result in what are effectively the same operational characteristics, they were not analyzed separately.

Table 12 provides a comparison of freeway mainline LOS between the No-Build Alternative and Alternative 2A/2B Option 1 and 2, and shows the level of improvement obtained by Alternative 2A/2B Option 1 and 2, and in Table 14, a detailed breakdown is presented of the density and LOS results of the mainline and HOV analysis performed for the basic freeway segments in the project limits. These tables show the level of improvement obtained by Alternative 2A/2B Option 1 and 2. As can be seen from this comparison, operational improvements occur between the I-405 interchange and the Newport Avenue interchange, which generally corresponds with the area in which a lane is added under the Build Alternatives.

Table 13 provides a comparison of freeway mainline LOS between the No-Build Alternative and Alternative 2B Options 3 and 4, and in Table 15, a detailed breakdown is presented of the density and LOS results of the mainline and HOV analysis performed for the basic freeway segments in the project limits. These tables show the level of improvement obtained by Alternative 2B Options 3 and 4. With Alternative 2B Options 3 and 4, only the segments of freeway in the vicinity of the Jeffrey and Sand Canyon interchange differ in geometry from Alternative 2A and Alternative 2B Option 1.

**Table 12—Freeway Mainline LOS Comparison, 2040 Conditions Alternative 2A/2B Options 1 & 2**

Location	AM Peak Hour LOS		PM Peak Hour LOS	
	2040 Alt 1 No Build	2040 Alt. 2A/2B Options 1 & 2	2040 Alt 1 No Build	2040 Alt. 2A/2B Options 1 & 2
<b>NORTHBOUND</b>				
NB Mainline s/o Alton	F	D	D	C
NB Mainline s/o Barranca	D	C	D	C
NB Mainline s/o Rte. 133 Jct.	D	C	D	C
NB Mainline s/o Sand Canyon	C	C	D	C
NB Mainline s/o Jeffrey	E	D	E	D
NB Mainline s/o Culver	F	E	F	E
NB Mainline s/o Jamboree	F	D	E	C
NB Mainline s/o Tustin Ranch	F	D	E	D
NB Mainline s/o Red Hill	F	D	E	D
NB Mainline s/o Newport	F	F	F	E
NB Mainline s/o Rte. 55 Jct.	F	F	F	F
<b>SOUTHBOUND</b>				
SB Mainline s/o Alton	C	C	D	D
SB Truck Bypass s/o Mainline	C	C	E	E
SB Mainline n/o Truck Bypass	D	C	E	C
SB Mainline s/o Barranca	D	D	D	C
SB Mainline s/o Rte. 133 Jct.	D	D	D	C
SB Mainline s/o Sand Canyon	D	C	D	C
SB Mainline s/o Jeffrey	E	D	E	D
SB Mainline s/o Culver	F	E	F	E
SB Mainline s/o Jamboree	E	D	F	E
SB Mainline s/o Tustin Ranch	E	D	F	D
SB Mainline s/o Red Hill	F	D	F	E
SB Mainline s/o Newport	F	D	F	E
SB Mainline s/o Rte. 55 SB	F	F	F	F
SB Mainline s/o Rte. 55 NB	F	E	F	F

**Notes**

Bold text = exceeds performance criteria (LOS D)

Shading = LOS improved compared to No Build

**Table 13: Mainline LOS Comparison, 2040 Conditions Alternative 2B Options 3 & 4**

Location	AM Peak Hour LOS			PM Peak Hour LOS		
	Existing	2040 Alt 1 No-Build	2040 Alt. 2B Options 3 & 4	Existing	2040 Alt 1 No-Build	2040 Alt. 2B Options 3 & 4
<b>OPTION 3 (NORTHBOUND)</b>						
NB Mainline s/o Sand Canyon	C	C	C	C	D	C
NB Mainline s/o Jeffrey	D	E	D	C	E	E
<b>OPTION 4 (SOUTHBOUND)</b>						
SB Mainline s/o Sand Canyon	C	D	C	C	D	C

**Table 14—Freeway Mainline LOS Summary, 2040 Conditions, Project Build Alternative 2A/2B Option 1 & 2**

Location	Lanes			AM Peak Hour						PM Peak Hour					
	HOV	GP	Aux	Mainline			HOV			Mainline			HOV		
				Vol	Speed	Density	LOS	V/C	Vol	Speed	Density	LOS	Vol	V/C	
<b>NORTHBOUND</b>															
NB Mainline s/o Alton	1	5	0	8,860	65.4	30.1	D	1,890	0.86	7,690	68.7	24.9	C	1,880	0.85
NB Mainline s/o Barranca	1	5	1	8,230	69.7	21.9	C	1,890	0.86	9,210	68.8	24.8	C	1,880	0.85
NB Mainline s/o Rte. 133	1	5	1	8,230	69.7	21.9	C	2,240	1.02	9,210	68.8	24.8	C	2,490	1.13
NB Mainline s/o Sand Cyn	1	6	1	9,490	69.8	21.6	C	2,530	1.15	10,980	68.4	25.5	C	2,230	1.01
NB Mainline s/o Jeffrey	1	6	1	12,310	65.7	29.7	D	2,290	1.04	12,920	63.8	32.1	D	1,980	0.90
NB Mainline s/o Culver	1	6	0	12,210	58.3	38.8	E	2,060	0.94	12,010	59.4	37.4	E	1,950	0.89
NB Mainline s/o Jamboree	1	6	2	13,590	66.7	28.3	D	2,140	0.97	12,060	69.0	24.3	C	2,120	0.96
NB Mainline s/o Tustin Rch	1	6	1	13,160	63.0	33.1	D	2,290	1.04	11,750	67.1	27.8	D	2,310	1.05
NB Mainline s/o Red Hill	1	6	1	13,260	62.6	33.6	D	2,370	1.08	12,390	65.5	30.0	D	2,170	0.99
NB Mainline s/o Newport	1	6	0	13,020	< 53.3	> 45.0	F	2,370	1.08	12,300	57.8	39.4	E	2,170	0.99
NB Mainline s/o Rte. 55	1	4	3	13,820	< 53.3	> 45.0	F	2,370	1.08	13,160	< 53.3	> 45.0	F	2,170	0.99
<b>SOUTHBOUND</b>															
SB Mainline s/o Alton	1	3	0	4,820	68.3	25.8	C	1,280	0.58	5,100	67.1	27.7	D	1,800	0.82
SB Truck Bypass s/o Mainline	0	2	0	2,920	64.7	25.6	C	--	--	3,830	57.9	37.5	E	--	--
SB Mainline n/o Truck Bypass	1	3	2	7,510	69.2	23.8	C	1,280	0.58	7,960	68.4	25.5	C	1,800	0.82
SB Mainline s/o Barranca	1	5	1	9,630	68.0	26.2	D	1,280	0.58	8,960	69.1	24.0	C	1,800	0.82
SB Mainline s/o Rte. 133	1	5	1	9,630	68.0	26.2	D	2,170	0.99	8,960	69.1	24.0	C	2,330	1.06
SB Mainline s/o Sand Cyn	1	6	1	10,140	69.4	23.2	C	2,170	0.99	10,230	69.3	23.4	C	2,330	1.06
SB Mainline s/o Jeffrey	1	6	2	12,840	68.0	26.2	D	1,810	0.82	12,830	68.0	26.2	D	2,000	0.91
SB Mainline s/o Culver	1	6	0	12,190	58.4	38.6	E	1,880	0.85	12,890	53.8	44.3	E	2,070	0.94
SB Mainline s/o Jamboree	1	6	1	12,790	64.3	31.6	D	1,850	0.84	14,160	58.7	38.3	E	2,120	0.96
SB Mainline s/o Tustin Rch	1	6	2	12,950	67.9	26.5	D	2,030	0.92	14,110	65.6	29.9	D	2,080	0.95
SB Mainline s/o Red Hill	1	6	1	13,520	61.6	34.8	D	2,210	1.00	14,630	56.2	41.3	E	2,100	0.95
SB Mainline s/o Newport	1	6	1	13,310	63.2	32.9	D	2,100	0.95	14,370	57.7	39.5	E	2,190	1.00
SB Mainline s/o Rte. 55 SB	1	6	1	13,310	< 53.3	> 45.0	F	2,100	0.95	14,370	< 53.3	> 45.0	F	2,190	1.00
SB Mainline s/o Rte. 55 NB	1	5	0	10,180	58.2	38.8	E	2,100	0.95	11,690	< 53.3	> 45.0	F	2,190	1.00

Bold = exceeds performance criteria (LOS D) on mainline; or HOV lane exceeds 1,600 vph/ln

**Table 15: Freeway Mainline LOS Summary – 2040 Conditions, Project Build Alternative 2B Options 3 & 4**

Location	Lanes			AM Peak Hour						PM Peak Hour					
	HOV	GP	Aux	Mainline			HOV			Mainline			HOV		
				Vol	Speed	Density	LOS	Vol	V/C	Vol	Speed	Density	LOS	Vol	V/C
<b>OPTION 3 (NORTHBOUND)</b>															
NB Mainline s/o Sand Cyn	1	61	1	9,490	69.8	21.6	C	2,530	1.15	10,980	68.4	25.5	C	2,230	1.01
NB Mainline s/o Jeffrey	1	6	0	11,307	62.9	33.3	D	2,290	1.04	11,796	60.6	36.1	E	1,980	0.90
<b>OPTION 4 (SOUTHBOUND)</b>															
SB Mainline s/o Sand Cyn	1	6	0	7,895	69.9	20.9	C	2,170	0.99	8,069	69.8	21.4	C	2,330	1.06

#### 6.4.2 Ramps/Merge-Diverge/Weaving Analysis

Ramp-freeway (i.e., on and off the freeway), merge, diverge, and weaving analyses were carried out to give operational performance measures based on density. A weaving analysis was performed for locations where the distance between an entrance ramp and the next exit ramp is less than 2,500 feet.

The ramp junction analysis for the No Build and Build Alternative 2A/2B Option 1, 2, 3, and 4 conditions are summarized in Tables 16 through 17. Build Alternative 2A/2B Option 1, 2, 3, and 4 improves five of these locations, which are highlighted.

The detail of the Build Alternative 2A and Alternative 2B Option 1 and 2 conditions are shown in Tables 16 and 17. Seven ramps of the 50 ramps are projected to experience V/C ratios greater than 1.0 in the design year in either the AM or PM peak period.

The detail of the Build Alternative 2B Option 3 and 4 conditions are shown in the Table 18. For the locations that differ from Build Alternative 2A and Alternative 2B Option 1, all ramps have V/C less than 1.0 except for the Sand Canyon Avenue northbound on-ramp during the PM peak hour.

**Table 16—Ramp Volume to Capacity Summary  
 No Build (Alt. 1) & Alt. 2A/2B Options 1 & 2 - Northbound Ramps**

Ramp Location (NB)	Alt 1 No Build		Alt. 2A/2B Option 1 & 2	
	AM Peak V/C Ratio	PM Peak V/C Ratio	AM Peak V/C Ratio	PM Peak V/C Ratio
Alton NB Off	0.77	0.25	0.77	0.25
Alton NB Loop On	0.06	0.42	0.06	0.42
Alton NB Direct On	0.24	0.70	0.24	0.70
Barranca NB HOV On	0.23	0.41	0.23	0.41
SR-133 NB Off	0.14	0.36	0.14	0.34
SR-133 NB On	0.50	0.63	0.50	0.63
Sand Canyon NB Off	0.33	0.33	0.33	0.33
Sand Canyon NB On	0.46	1.04	0.46	1.04
SR-133 (SB) NB On	1.32	0.44	1.32	0.44
Jeffrey NB Off	0.52	0.63	0.52	0.63
Jeffrey NB Loop On	0.22	0.18	0.22	0.18
Jeffrey NB Direct On	0.46	0.19	0.46	0.19
Culver NB Off	0.25	0.42	0.25	0.42
Culver NB Loop On	0.77	0.39	0.77	0.39
Culver NB Direct On	0.77	0.29	0.46	0.17
Jamboree NB Off	1.08	0.89	0.54	0.45
Jamboree NB Loop On	0.62	0.69	0.62	0.69
Jamboree NB Direct On	0.62	0.44	0.62	0.44
Tustin Ranch NB Off	0.43	0.41	0.29	0.28
Tustin Ranch NB On	0.46	0.62	0.46	0.62
Red Hill NB Off	0.72	0.60	0.48	0.40
Red Hill NB On	0.55	0.55	0.55	0.55
Newport NB On	0.53	0.57	0.53	0.57
SR-55 (NB) NB Off	1.07	1.30	0.80	0.98
SR-55 (SB) NB Off	0.75	0.58	0.75	0.58

**Table 17—Ramp Volume to Capacity Summary  
No Build (Alt. 1) & Alt. 2A/2B Options 1 & 2 - Southbound Ramps**

Ramp Location (SB)	Alt 1 No Build		Alt. 2A/2B Option 1 & 2	
	AM Peak V/C Ratio	PM Peak V/C Ratio	AM Peak V/C Ratio	PM Peak V/C Ratio
Alton/Fortune SB On	0.15	0.65	0.15	0.65
CD/Truck Bypass Off	0.73	0.96	0.73	0.96
Alton/Fortune SB off	0.94	0.44	0.94	0.44
Barranca SB HOV Off	0.52	0.35	0.52	0.35
SR-133 (SB) On	0.40	0.15	0.40	0.15
SR-133 (SB) Off	0.57	0.57	0.57	0.57
Sand Canyon SB On	0.51	0.56	0.51	0.56
Sand Canyon SB Off	<b>1.16</b>	0.55	0.77	0.37
SR-133 (NB) Off	0.46	0.76	0.46	0.76
Jeffrey SB On	1.10	0.75	0.66	0.45
Jeffrey SB Off	0.41	0.63	0.41	0.63
Culver SB Direct On	0.42	0.40	0.25	0.24
Culver SB Loop On	0.70	0.31	0.42	0.19
Culver SB Off	0.70	0.87	0.70	0.87
Jamboree SB Direct On	0.38	0.95	0.38	0.95
Jamboree SB Loop On	0.60	0.51	0.60	0.51
Jamboree SB Off	0.47	0.50	0.47	0.50
Tustin Ranch SB On	0.49	0.39	0.25	0.19
Tustin Ranch SB Off	0.66	0.50	0.66	0.50
Red Hill SB On	0.70	0.61	0.70	0.61
Red Hill SB Off	0.49	0.50	0.49	0.50
SR-55 (SB) SB On	0.78	0.67	0.78	0.67
Newport SB Off (1)	0.17	0.18	0.17	0.18
SR-55 (NB) SB On	<b>1.44</b>	<b>1.38</b>	<b>1.44</b>	<b>1.38</b>
Newport SB Off (2)	0.34	0.49	0.34	0.49

Note

Bold text = Exceeds 1.00 V/C

**Table 18—Ramp Volume to Capacity Summary  
No Build (Alt. 1) & Alt. 2B Options 3 & 4 - Ramps**

Location	Alt 1 No Build		Alt. 2B Option 3 & 4	
	AM Peak V/C Ratio	PM Peak V/C Ratio	AM Peak V/C Ratio	PM Peak V/C Ratio
<b>OPTION 3 (NORTHBOUND)</b>				
Jeffrey NB Off	0.52	0.63	0.44	0.51
Sand Canyon NB On	0.46	<b>1.04</b>	0.48	<b>1.06</b>
Sand Canyon/SR-133 (SB) NB CD On	<b>1.32</b>	0.44	0.83	0.62
<b>OPTION 4 (SOUTHBOUND)</b>				
Sand Canyon SB On	0.51	0.56	0.30	0.30
SR-133 (SB) SB Off	0.57	0.57	0.53	0.53

Note

Bold text = Exceeds 1.00 V/C



**Table 19—Ramp Volume and Capacity Summary  
2040 Conditions, Build Alternative 2A/2B Options 1 & 2 - Northbound Ramps**

Location (NB)	Ramp Configuration	Capacity	NORTHBOUND RAMPS			
			AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
Alton NB Off	1 lane	1,500	1,160	0.77	370	0.25
Alton NB Loop On	1 lane on (2 metered lanes)	1,500	90	0.06	630	0.42
Alton NB Direct On	2 lanes on (2 metered lanes), 1 aux.	1,800	440	0.24	1,260	0.70
Barranca NB HOV On	1 lane on	1,500	350	0.23	610	0.41
SR-133 (NB) Off	2 lanes, 1 aux.	3,000	430	0.14	1,020	0.34
SR-133 (NB) On	2 lanes on 1 aux., 1 added mainline lane	4,000	1,980	0.50	2,530	0.63
Sand Canyon NB Off	2 lanes, 1 aux.	2,250	740	0.33	740	0.33
Sand Canyon NB On	1 lane on (2 metered lanes)	1,500	690	0.46	1,560	1.04
SR-133 (SB) NB On	1 lane on, 1 aux.	2,000	2,630	1.32	870	0.44
Jeffrey NB Off	2 lanes, 1 aux.	2,250	1,160	0.52	1,420	0.63
Jeffrey NB Loop On	1 lane on (2 metered lanes)	1,500	330	0.22	270	0.18
Jeffrey NB Direct On	1 lane on (1 metered lane, 1 HOV bypass)	1,080	500	0.46	210	0.19
Culver NB Off	1 lane	1,500	380	0.25	630	0.42
Culver NB Loop On	1 lane on (2 metered lanes), 1 aux.	1,500	1,150	0.77	590	0.39
Culver NB Direct On	1 lane on (2 metered lanes), 1 aux.	1,500	690	0.46	260	0.17
Jamboree NB Off	2 lanes, 2 aux.	3,000	1,620	0.54	1,340	0.45
Jamboree NB Loop On	1 lane on (1 metered lane, 1 HOV bypass), 1 aux.	1,080	670	0.62	740	0.69
Jamboree NB Direct On	1 lane on (1 metered lane, 1 HOV bypass)	1,080	670	0.62	480	0.44
Tustin Ranch NB Off	2 lanes, 1 aux.	2,250	650	0.29	620	0.28
Tustin Ranch NB On	2 lanes on (2 metered lanes), 1 aux.	1,800	830	0.46	1,120	0.62
Red Hill NB Off	2 lanes, 1 aux.	2,250	1,080	0.48	900	0.40
Red Hill NB On	1 lane on (2 metered lanes)	1,500	830	0.55	820	0.55
Newport NB On	1 lane on (2 metered lanes), 1 aux.	1,500	800	0.53	860	0.57

Location (NB)	Ramp Configuration	Capacity	NORTHBOUND RAMPS			
			AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
SR-55 (NB) NB Off	2 lanes, 2 aux.	4,000	3,200	0.80	3,900	0.98
SR-55 (SB) NB Off	1 lane, 1 aux.	2,000	1,500	0.75	1,150	0.58

**Note**

Bold text = Exceeds 1.00 V/C

**Table 20—Ramp Volume and Capacity Summary  
 2040 Conditions, Project Build Alternative 2A/2B Options 1 & 2 - Southbound Ramps**

Location (SB)	Ramp Configuration	Capacity	SOUTHBOUND RAMPS			
			AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
Alton/Fortune SB On	1 lane on	1,500	230	0.15	970	0.65
CD/Truck Bypass Off	2 lanes, 2 aux.	4,000	2,920	0.73	3,830	0.96
Alton/Fortune SB Off	2 lanes, 1 aux.	2,250	2,120	0.94	1,000	0.44
Barranca SB HOV Off	1 lane	1,500	780	0.52	520	0.35
SR-133 (SB) On	2 lanes on, 1 aux.	3,000	1,190	0.40	440	0.15
SR-133 (SB) Off	2 lanes, 1 aux.	3,000	1,700	0.57	1,710	0.57
Sand Canyon SB On	1 lane on (2 metered lanes), 1 aux.	1,500	770	0.51	840	0.56
Sand Canyon SB Off	2 lanes, 1 aux.	2,250	1,740	0.77	830	0.37
SR-133 (NB) SB Off	2 lanes, 1 aux.	3,000	1,370	0.46	2,280	0.76
Jeffrey SB On	2 lanes on (2 metered lanes), 2 aux.	1,800	1,190	0.66	810	0.45
Jeffrey SB Off	1 lane	1,500	610	0.41	940	0.63
Culver SB Direct On	1 lane on (2 metered lanes)	1,500	380	0.25	360	0.24
Culver SB Loop On	1 lane on (2 metered lanes)	1,500	630	0.42	280	0.19
Culver SB Off	2 lanes, 1 aux.	2,250	1,580	0.70	1,960	0.87
Jamboree SB Direct On	1 lane on (1 metered lane, 1 HOV bypass)	1,080	410	0.38	1,030	0.95
Jamboree SB Loop On	1 lane on (1 metered lane, 1 HOV bypass), 1 aux.	1,080	650	0.60	550	0.51
Jamboree SB Off	2 lanes, 2 aux.	3,000	1,400	0.47	1,490	0.50
Tustin Ranch SB On	2 lane on (2 metered lanes), 2 aux.	3,000	740	0.25	580	0.19

Location (SB)	Ramp Configuration	Capacity	SOUTHBOUND RAMPS			
			AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
Tustin Ranch SB Off	2 lanes, 1 aux.	2,250	1,490	0.66	1,120	0.50
Red Hill SB On	1 lane on (2 metered lanes), 1 aux.	1,500	1,050	0.70	920	0.61
Red Hill SB Off	1 lane, 1 aux.	1,500	730	0.49	750	0.50
SR-55 (SB) SB On	2 lanes on 1 aux., 1 added mainline lane	4,000	3,130	0.78	2,680	0.67
Newport SB Off (1)	1 lane	1,500	260	0.17	270	0.18
SR-55 (NB) SB On	1 lane on 1 added mainline lane	2,000	2,870	<b>1.44</b>	2,750	<b>1.38</b>
Newport SB Off (2)	1 lane, 1 aux.	1,500	510	0.34	730	0.49

Note

Bold text = Exceeds 1.00 V/C

**Table 21—Ramp Volume and Capacity Summary  
 2040 Conditions, Project Build Alternative 2B Options 3 & 4 - Ramps**

Location	Ramp Configuration	RAMPS				
		Capacity	AM Peak Hour	V/C Ratio	PM Peak Hour	V/C Ratio
<b>OPTION 3 (NORTHBOUND)</b>						
Jeffrey NB Off	2 lanes, 1 aux.	2,250	991	.44	1,154	.51
Sand Canyon NB On	1 lane on, 2 metered lanes	1,500	718	.48	1,593	<b>1.06</b>
Sand Canyon/SR-133 (SB) NB CD On	2 lanes on, 2 aux.	4,000	3,303	.83	2,480	.62
<b>OPTION 4 (SOUTHBOUND)</b>						
Sand Canyon SB On	1 lane on (2 metered lanes), 1 aux.	1,500	448	.30	446	.30
SR-133 (SB) SB Off	2 lanes, 1 aux.	3,000	1,590	.53	1,590	.53

Note

Bold text = Exceeds 1.00 V/C

The 2040 merge/diverge analysis results for the Existing, No Build and Build Alternative 2A/2B Option 1 and 2 are given in Tables 22 and 24. The ramp-freeway junction improvements with Alternative 2A/2B Option 1 and 2 result in improved LOS at Alton Parkway, Sand Canyon Road, Jeffrey Road, Culver Drive, and Jamboree interchanges.

In the Newport Avenue northbound interchange area, two options are included. While Alternative 2B Option 1 maintains the existing half-diamond configuration, Alternative 2B Option 2 relocates the northbound on-ramp to El Camino Real (at Orange Street) as a hook-ramp configuration. The number of lanes on the ramp is equivalent for both options. As such, the above results of the ramp V/C analysis and the ramp merge analysis apply equally to both Option 1 and Option 2.

The 2040 merge/diverge analysis results for the Existing, No Build and Build Alternative 2B Option 3 and 4 are given in the Tables 23 and 25. As can be seen, the ramp-freeway junction improvements for Build Alternative 2B Options 3 and 4 results in degraded LOS at the similar ramp-freeway junctions, but this is the result of volumes exceeding HCM's default desirable maximum volumes, even though the densities at these locations are well below LOS F criteria.

**Table 22—Interchange Merge/Diverge LOS Comparison  
 Existing & 2040 Conditions, No Build and Alternative 2A/2B Options 1 & 2**

Location	AM Peak Hour			PM Peak Hour		
	Existing	2040 Alt 1 No Build	2040 Alt. 2A/2B Options 1 & 2	Existing	2040 Alt 1 No Build	2040 Alt. 2A/2B Options 1 & 2
<b>I-5 at Alton</b>						
NB Merge (Loop)	C	D	C	D	D	C
<b>I-5 at Sand Canyon</b>						
NB Merge	C	D	D	D	F	E*
SB Diverge	D	F	E*	E	E*	D
<b>I-5 at Jeffrey</b>						
NB Merge (Loop)	C	F	D	C	F	D
NB Merge	D	F	D	C	F	D
SB Diverge	E	F	E	E	F	E*
<b>I-5 at Culver</b>						
NB Diverge	E	F	E	E	F	E
NB Merge	D	F	D	C	D	C
SB Diverge	D*	F	D*	F	F	F
SB Merge (Loop)	D	F	D	D	F	D
SB Merge	D	F	D	D	F	E
<b>I-5 at Jamboree</b>						
NB Diverge	D*	F	F	C	F	A
SB Merge	C	D	D	D	F	E
<b>I-5 at Red Hill</b>						
NB Merge	E	F	F	D	F	F
SB Diverge	D*	F	F	F	F	F
<b>I-5 at SR-55</b>						
SB Merge	E*	F	F	F	F	F

**Notes**

Bold text = exceeds performance criteria (LOS D)

Shading = LOS improved compared to No Build

\*Volume in right two lanes exceeds maximum desirable volume of 4,400 vph (diverge) or 4,600 vph (merge).

Ramp junctions not shown in the above table are evaluated as weave segments

**Table 23—Interchange Merge/Diverge LOS Comparison  
 Existing & 2040 Conditions, No Build and Alternative 2A/2B Options 3 & 4**

Location	AM Peak Hour			PM Peak Hour		
	Existing	2040 No-Build	2040 Alt. 2B Options 3 & 4	Existing	2040 No-Build	2040 Alt. 2B Options 3 & 4
<b>OPTION 3 (NORTHBOUND)</b>						
I-5 at Sand Canyon						
NB Merge (includes Rte. 133 traffic volumes)	C	D	<b>F<sup>1</sup></b>	D	F	<b>F<sup>1</sup></b>
I-5 at Jeffrey						
NB Diverge	--	--	<b>B</b>	--	--	<b>C</b>
<b>OPTION 4 (SOUTHBOUND)</b>						
I-5 at Sand Canyon						
SB Merge	D	<b>F</b>	<b>B</b>	<b>E</b>	<b>E<sup>1</sup></b>	<b>B</b>

Notes

Bold text = exceeds performance criteria (LOS D)

Shading = LOS improved compared to No Build

\*Volume in right two lanes exceeds maximum desirable volume of 4,400 vph (diverge) or 4,600 vph (merge).

Ramp junctions not shown in the above table are evaluated as weave segments

**Table 24—Merge/Diverge Analysis  
 No Build (Alt 1) and Alt 2A/2B Option 1 & 2**

Location	No Build (Alt 1)				Alt 2A/2B Option 1 & 2			
	AM peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Den.	LOS	Den.	LOS	Den.	LOS	Den.	LOS
<b>I-5 at Alton</b>								
NB Merge (Loop)	31.0	D	34.1	D	23.2	C	26.9	C
<b>I-5 at Sand Canyon</b>								
NB Merge	33.1	D	45.4	F	28.3	D	39.3	E <sup>4</sup>
SB Diverge	51.9	F	43.9	E <sup>1</sup>	40.7	E <sup>1</sup>	33.0	D
<b>I-5 at Jeffrey</b>								
NB Merge (Loop)	37.9	F	38.0	F	31.4	D	31.3	D
NB Merge	40.5	F	38.6	F	33.7	D	31.8	D
SB Diverge	51.0	F	56.3	F	41.4	E	45.1	E <sup>1</sup>
<b>I-5 at Culver</b>								
NB Diverge	51.1	F	51.1	F	40.2	E	41.6	E
NB Merge	38.6	F	31.7	D	33.2	D	26.5	C
SB Diverge	42.1	F	52.5	F	34.8	D <sup>1</sup>	40.6	F
SB Merge (Loop)	40.1	F	40.9	F	33.6	D	33.8	D
SB Merge	39.8	F	42.2	F	33.4	D	35.1	E
<b>I-5 at Jamboree</b>								
NB Diverge	48.2	F	38.2	F	17.4	F <sup>3</sup>	8.0	A
SB Merge	34.3	D	41.4	F	28.9	D	35.5	E
<b>I-5 at Red Hill</b>								
NB Diverge	46.1	F	43.5	F	39.0	F	40.6	F
SB Merge	46.0	F	54.1	F	31.6	F	35.8	F
<b>I-5 at SR-55</b>								
SB Merge	53.4	F	58.1	F	44.8	F	49.5	F

**Notes**

- <sup>1</sup> Volume in right two lanes (V<sub>12</sub>) exceeds desirable volume of 4,400 vph for diverge locations.
- <sup>2</sup> Volume in eight two lanes (VR<sub>12</sub>) exceeds maximum desirable volume of 4,600 vph for merge locations
- <sup>3</sup> Volume approaching the diverge area exceeds capacity.

Ramp junctions not shown in the above table are evaluated as weave segments.

Shading = LOS improved compared to No Build

Den. = Density

**Table 25—Merge/Diverge Analysis  
 Alt 2B Option 3 & 4**

Location	AM Peak Hour				PM Peak Hour			
	Volumes		Density	LOS	Volumes		Density	LOS
	Fwy.	Ramp			Fwy.	Ramp		
<b>OPTION 3 (NORTHBOUND)</b>								
I-5 at Sand Canyon								
NB Merge (includes Rte. 133 traffic volumes)	8,004	3,303	24.1	F <sup>1</sup>	9,316	2,480	22.0	F <sup>1</sup>
I-5 at Jeffrey								
NB Diverge	8,995	991	18.2	B	10,470	1,154	22.8	C
<b>OPTION 4 (SOUTHBOUND)</b>								
I-5 at SR-133								
SB Diverge S5 to S133	9,037	1,590	19.9	B	9,213	1,590	20.3	C
I-5 at Sand Canyon								
SB Merge	7,447	448	18.2	B	7,623	446	18.6	B

**Notes**

<sup>1</sup> Volume in right two lanes (V<sub>12</sub>) exceeds desirable volume of 4,400 vph for diverge locations.

<sup>2</sup> Volume in eight two lanes (VR<sub>12</sub>) exceeds maximum desirable volume of 4,600 vph for merge locations

<sup>3</sup> Volume approaching the diverge area exceeds capacity.

Ramp junctions not shown in the above table are evaluated as weave segments.

Shading = LOS improved compared to No Build

Den. = Density



Nearly all interchange entry and exit ramps and nearly all of the weaving segments perform with LOS "E" or "F" in the No Build condition. A comparison of the LOS values show that the ramp-freeway junction improvements for Build Alternative 2A/2B result in improved LOS at many of the ramp-freeway junctions and many of the LOS "F" weaving segments in the No Build condition are improved to LOS "D" or "E" for Build Alternative 2A/2B. These improved conditions are highlighted.

**Table 26—Weaving Section Analysis, No Build (Alt 1) and Alt 2A/2B Option 1 & 2**

Location	No Build				Alt 2A/2B Option 1 & 2			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Den.	LOS	Den.	LOS	Den.	LOS	Den.	LOS
<b>Northbound</b>								
Alton to SR-133 NB	27.4	C	34.7	D	22.4	C	29.8	D
SR-133 NB to Sand Canyon	29.8	D	36.2	E	26.8	C	30.7	D
SR-133 SB to Jeffrey	45.0	F	40.4	E	40.6	E	35.2	E
Jamboree to Tustin Ranch	45.8	F	44.0	F	35.2	E	33.9	D
Tustin Ranch to Red Hill	47.1	F	47.4	F	34.6	D	34.8	D
<b>Southbound</b>								
SR-133 SB to Alton	48.8	F	25.9	E	43.2	F	29.2	D
Sand Canyon to SR-133 SB	34.8	D	25.4	E	30.9	D	31.5	D
Jeffrey to SR 133 NB	40.8	E	42.5	E	38.8	E	40.9	E
Tustin Ranch to Jamboree	46.6	F	50.3	F	32.8	D	34.7	D
Red Hill to Tustin Ranch	44.2	F	45.3	F	38.1	E	39.0	E

**Notes**

Bold text = exceeds performance criteria (LOS D)

Shading = LOS improved compared to No Build

Ramp junctions not shown in the above table are evaluated as merge/diverge locations

**6.4.3 Intersection Volumes and LOS Results**

The peak hour intersection levels of service were calculated using the HCM average vehicle delay calculations. The results of this analysis for the No Build Alternative and Build Alternatives 2A/2B Option 1 and 2 are presented in Table 27. Build Alternative 2A/2B Option 1 and 2 generally result in equivalent intersection operations due to identical lane configurations and traffic volumes at the intersections. LOS improvements from the No Build condition are highlighted.

In the No Build condition, 10 intersections experience LOS of E or F during the AM and/or PM peak hour, and Alternative 2A/2B Option 1 and 2 would improve 4 of those 10 intersections.

As noted, at the northbound on-ramp at Newport Boulevard, Option 2 relocates the northbound on-ramp to El Camino Real (at Orange Street) as a hook-ramp configuration. This relocation of the ramp will change traffic patterns through the Newport Boulevard/El Camino Real intersection; however three through lanes in each direction will need to be maintained on Newport Boulevard in accordance with the City of Tustin's Circulation Element.

Build Alternative 2B Options 3 and 4 result in different traffic volumes at the intersections than is the case with the other Build Alternatives due to the braided ramp configurations. A comparison of LOS to the No-Build Alternative is provided in Table 28. Build Alternative 2B Options 3 and 4 change the ramp lane configurations at the same intersections as do the other Build Alternatives.

**Table 27—Intersection LOS Analysis, No Build (Alt 1) and Alt 2A/2B Option 1**

Location	No Build (Alt 1)				Alt 2A/2B Option 1			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. Enterprise & I-5 SB Ramps/Fortune	27.1	C	42.4	D	22.3	C	49.5	D
2. Enterprise & Alton	27.0	C	31.0	C	28.1	C	30.4	C
3. I-5 NB Ramps & Alton	20.7	C	6.7	A	15.9	B	5.3	A
4. Technology & Alton	28.5	C	93.4	F	30.3	C	91.7	F
5. Barranca & I-5 HOV Ramps	13.9	B	18.1	B	13.9	B	18.1	B
6. Sand Canyon & Burt	57.0	E	68.3	E	62.5	E	67.9	E
7. Sand Canyon & I-5 SB Ramps	41.9	D	40.9	D	44.9	D	38.5	D
8. Sand Canyon & Marine	4.8	A	129.3	F	7.6	A	10.5	B
9. Sand Canyon & I-5 NB Ramps	73.6	E	130.0	F	63.0	E	76.1	E
10. I-5 SB ramps & Walnut	14.3	B	18.8	B	9.1	A	11.8	B
11. Jeffrey & Walnut	43.7	D	50.4	D	45.0	D	51.0	D
12. Jeffrey & I-5 NB Ramps	14.3	B	21.6	C	9.5	A	13.1	B
13. Jeffrey & Roosevelt	65.3	E	44.6	D	56.7	E	31.3	C
14. Culver & Scottsdale	17.3	B	31.4	C	13.5	B	29.9	C
15. Culver & I-5 SB Ramps	12.8	B	21.0	C	11.5	B	15.4	B
16. Culver & Trabuco	21.2	C	36.1	D	23.3	C	38.1	D
17. I-5 NB Ramps & Trabuco	20.4	C	26.4	C	17.8	B	18.0	B
18. Jamboree & Michelle	79.6	E	38.4	D	79.6	E	38.4	D
19. Jamboree & I-5 SB Ramps	21.9	C	16.0	B	21.9	C	16.0	B
20. Jamboree & I-5 NB Ramps	15.8	B	18.0	B	15.8	B	18.0	B
21. Jamboree & El Camino Real	36.3	D	37.9	D	36.3	D	37.9	D
22. Tustin Ranch & Walnut	38.3	D	34.7	C	42.3	D	41.4	D
23. Tustin Ranch & I-5 SB Ramps	96.1	F	12.8	B	52.1	D	11.5	B
24. Tustin Ranch & I-5 NB Ramps	17.2	B	14.6	B	19.4	B	19.6	B
25. Tustin Ranch & Auto Center	9.3	A	11.5	B	8.1	A	14.1	B
26. Red Hill & Nissan	23.3	C	28.2	C	23.3	C	28.2	C
27. Red Hill & I-5 SB Ramps	25.7	C	26.1	C	25.7	C	26.1	C
28. Red Hill & I-5 NB Ramps	27.4	C	19.2	B	27.4	C	19.2	B
29. Red Hill & El Camino Real	41.1	D	168.7	F	41.1	D	168.7	F
30. Newport & Mitchell	44.3	D	17.3	B	44.3	D	17.3	B
31. Newport & SB Off Ramp	101.6	F	212.7	F	535.4	F (B*)	170.0	F (A*)
32. Newport & I-5 NB Ramp*	535.4	F	170.0	F	45.5	D	17.1	B
33. Newport & El Camino Real	50.1	D	44.6	D	97.8	E	239.2	F

**Note**

\*Unsignalized intersection (LOS based on delay of yield movement; LOS with traffic signal control shown in parentheses)

Shading = LOS improved compared to No Build

**Table 28—Intersection LOS Analysis, No Build (Alt 1) and Alt 2B Option 2, 3, & 4**

Location	No Build (Alt 1)				Alt 2B Option 2, 3, & 4			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<b>OPTION 2 (NORTHBOUND)</b>								
33. Newport & El Camino Real	50.1	D	44.6	D	49	D	50.4	D
34. I-5 NB Ramp/Orange & El Camino Real	29.2	C	22.4	C	22	C	23.6	C
<b>OPTION 3 (NORTHBOUND)</b>								
9. Sand Canyon & I-5 NB Ramps	73.6	E	130	F	<b>60.6</b>	<b>E</b>	<b>93.7</b>	<b>F</b>
12. Jeffrey & I-5 NB Ramps	14.3	B	21.6	C	9.7	<b>A</b>	13	<b>B</b>
<b>OPTION 4 (SOUTHBOUND)</b>								
7. Sand Canyon & I-5 SB Ramps	41.9	D	40.9	D	51.1	D	16.9	<b>B</b>

**Note**

\*Unsignalized intersection (LOS based on delay of yield movement; LOS with traffic signal control shown in parentheses)  
 Shading = LOS improved compared to No Build

**6.4.4 Additional Conclusions**

The Traffic Study focuses on the mainline operational analysis on a segment-by-segment basis. It is recommended that subsequent traffic studies provide a quantification of system-wide performance both with and without proposed enhancements. Additionally, because the Traffic Study analysis evaluates the HOV lanes based on the existing buffer-separated configuration, it is recommended that subsequent studies also provide an evaluation of the HOV lanes based on a continuous-access configuration and integrate it with the analysis of the general purpose lanes.

**6.5 Nonstandard Design Features**

The proposed project will improve upon the existing facility. However, there are constraints, such as right-of-way and existing nonstandard design features, which do not make it feasible to propose an alternative that adheres to every Department highway design standard. Each of the build alternatives will require exceptions to both Mandatory and Advisory design standards during future project development phases.

A summary of the design exceptions required for each alternative are shown in Tables 29 and 30. The locations of design exceptions are indicated on Attachment 6.

**Table 29—Summary of Exceptions to Mandatory Design Standards**

ID No.	HDM Section No.	HDM Section Title	Description of Mandatory Standard	Ait. 2A	Ait. 2B
M1	202.2	Standards for Superelevation	Based on an emax selected by the designer for one of the conditions, superelevation rates from Table 202.2 shall be used within the given range of curve radii. If less than standard superelevation rates are approved (see Index 82.1), Figure 202.2 shall be used to determine superelevation based on the curve radius and maximum comfortable speed.		✓
M2	203.2	Standards for Curvature	Table 203.2 shall be the minimum radius of curve for specific design speeds.	✓	✓
M3	301.1	Traveled Way Width	The basic lane width for new construction on two-lane and multilane highways, ramps, collector roads, and other appurtenant roadways shall be 12 feet.	✓	✓
M4	302.1	Width	The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder.	✓	✓
M5	305.1 (3)(a)	Width	In areas where restrictive conditions prevail the minimum median width shall be 22 feet.	✓	✓
M6	309.1 (3)(a)	Horizontal Clearances	The minimum horizontal clearance to all objects, such as bridge rails and safety-shaped concrete barriers, as well as sand-filled barrels, metal beam guardrail, etc., on all freeway and expressway facilities, including auxiliary lanes, ramps, and collector roads, shall be equal to the standard shoulder width of the highway facility as stated in Table 302.1. A minimum clearance of 4 feet shall be provided where the standard shoulder width is less than 4 feet.	✓	✓
M7	309.1 (3)(b)	Horizontal Clearances	The minimum horizontal clearance to walls, such as abutment walls, retaining walls in cut locations, and noise barriers on all facilities, including auxiliary lanes, ramps and collector roads, shall not be less than 10 feet.	✓	✓
M8	501.3	Spacing	The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway interchanges and local street interchanges.	✓	✓
M9	504.3 (3)	Ramps	For new construction or major reconstruction of interchanges, the minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 feet.	✓	✓
M10	504.4 (4)(a)	Freeway-to-Freeway Connections	The width of shoulders on single-lane and two-lane (except as described below) freeway-to-freeway connectors shall be 5 feet on the left and 10 feet on the right. A single lane freeway-to-freeway connector that has been widened to two lanes solely to provide passing opportunities and not due to capacity requirements shall have a 5-foot left shoulder and at least a 5-foot right shoulder.	✓	✓

ID No.	HDM Section No.	HDM Section Title	Description of Mandatory Standard	Alt. 2A	Alt. 2B
M11	1102.2 (1)	Noise Barrier Location	Minimum lateral clearance to noise barriers shall be as provided in Topic 309.1, Horizontal Clearances, of this manual, but shall not be less than 10 feet.	✓	

**Table 30—Summary of Exceptions to Advisory Design Standards**

ID No.	HDM Section No.	HDM Section Title	Description of Advisory Standard	Alt. 2A	Alt. 2B
A1	201.7	Decision Sight Distance	On freeways and expressways the decision sight distance values in Table 201.7 should be used at lane drops and at exit ramp noses to interchanges, branch connections, roadside rests, vista points, and inspection stations.	✓	✓
A2	202.5 (1)	Superelevation Transition	A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort and pleasing appearance.	✓	✓
A3	202.5 (2)	Superelevation Transition	Two-thirds of the superelevation runoff should be on the tangent and one-third within the curve.	✓	✓
A4	203.5	Compound Curves	The shorter radius should be at least two-thirds the longer radius when the shorter radius is 1,000 feet or less. On one-way roads, the larger radius should follow the smaller radius.	✓	✓
A5	204.3	Standards for Grade	Minimum grades should be 0.5 percent in snow country and 0.3 percent at other locations.	✓	✓
A6	204.4	Vertical Curves	For algebraic grade differences of 2 percent and greater, and design speeds equal to or greater than 40 miles per hour, the minimum length of vertical curve in feet should be equal to $10V$ , where $V$ = design speed.	✓	✓
A7	305.1 (2)	Width	In city street conditions the minimum median width for multilane conventional highways should be 12 feet.	✓	✓
A8	310.2	Outer Separation	In urban areas and in mountainous terrain, the width of the outer separation should be a minimum of 26 feet from edge of traveled way to edge of traveled way.	✓	✓
A9	403.3	Angle of Intersection	When a right angle cannot be provided due to physical constraints, the interior angle should be designed as close to 90 degrees as is practical, but should not be less than 75 degrees. Mitigation should be considered for the affected intersection design features.	✓	✓
A10	502.2	Local Street Interchanges	The use of isolated off ramps or partial interchanges should be avoided because of the potential for wrong-way movements and added driver confusion.	✓	✓

ID No.	HDM Section No.	HDM Section Title	Description of Advisory Standard	Alt. 2A	Alt. 2B
A11	504.2 (2)	Freeway Entrances and Exits	Design of freeway entrances and exits should conform to the standard designs illustrated in Figure 504.2A-B (single lane), and Figure 504.3L (two-lane entrances and exits) and/or Figure 504.4 (diverging branch connections), as appropriate.	✓	
A12	504.2 (2)	Freeway Entrances and Exits	Contrasting surface treatment beyond the gore pavement should be provided on both entrance and exit ramps as shown on Figures 504.2A, 504.2B, and 504.3L.	✓	
A13	504.2 (4)(a)	Freeway Entrances and Exits	Decision sight distance given in Table 201.7 should be provided at freeway exits and branch connectors. At secondary exits on collector-distributor roads, a minimum of 600 feet of decision sight distance should be provided.	✓	✓
A14	504.2 (5)(a)	Freeway Entrances and Exits	Vertical curves located just beyond the exit nose should be designed with a minimum 50 miles per hour stopping sight distance.		✓
A15	504.3 (1)(d)	Ramps	The lane should be dropped using a taper of no less than 30 to 1.		✓
A16	504.3 (5)	Ramps	If the length of a single lane ramp exceeds 1,000 feet, an additional lane should be provided on the ramp to permit passing maneuvers.		✓
A17	504.3 (10)	Ramps	The minimum distance between successive exit ramps for guide signing should be 1,000 feet on the freeway and 600 feet on collector-distributor roads.	✓	✓
A18	504.8	Access Control	For new construction or major reconstruction, access rights should be acquired on the opposite side of the local road from ramp terminals to preclude the construction of future driveways or local roads within the ramp intersection.	✓	✓

## 6.6 Structures

### 6.6.1 Existing Structures

As shown in Attachment 7, there are a total of 21 existing bridge structures within the project limits. The majority of the existing bridge structures were constructed and/or widened in the 1990s. A list of existing structures is provided in Table 31.

**Table 31: Existing Bridge Structure Summary**

	Structure Name (Bridge Number)	Post Mile (Route 5)	Year Built	Existing Bridge Type
1	Alton Parkway OC (55-0629)	22.21	1984	CIP/PS Concrete Box Girder
2	Barranca Parkway OC (55-0665)	22.62	1990	CIP/PS Concrete Box Girder

	<b>Structure Name (Bridge Number)</b>	<b>Post Mile (Route 5)</b>	<b>Year Built</b>	<b>Existing Bridge Type</b>
3	N133-N5/5 Connector SEP (55-0659G)	23.12	1991	CIP/PS Concrete Box Girder
4	S133-S5 Connector SEP (55-0771F)	23.25	1998	CIP/PS Concrete Box Girder
5	N133/5 Separation (55-0772R)	23.18	1996	CIP/PS Concrete Box Girder
6	S133/5 Separation (55-0772L)	23.21	1996	CIP/PS Concrete Box Girder
7	Irvine OH (55-0002)	R23.58	1992	CIP/PS Concrete Box Girder
8	Sand Canyon Avenue UC (55-0201)	R23.94	1992	CIP/PS Concrete Box Girder
9	S133-N5 Connector SEP (55-0776F)	24.50	1998	CIP/PS Concrete Box Girder
10	S5-N133 Connector SEP (55-0775F)	R23.87	1998	CIP/PS Concrete Box Girder
11	Jeffrey Road OC (55-0215)	R24.99	1990	CIP/PS Concrete Box Girder
12	Yale Avenue OC (55-0638)	R25.83	1984 1991	CIP/PS Concrete Box Girder CIP/PS Concrete Box Girder
13	Culver Drive UC (55-0197)	R26.58	1979 1992	CIP Concrete Box Girder CIP/PS Concrete Box Girder
14	Peters Canyon (55-0663)	R27.24	1992	CIP/PS Concrete Box Girder
15	Jamboree Road Off Ramp OC (55-0763S)	27.50	1998	CIP/PS Concrete Box Girder
16	Route 5/261 Separation (55-0688)	27.44	1992	CIP/PS Concrete Box Girder
17	Jamboree Road UC (55-0656)	27.58	1991	CIP/PS Concrete Box Girder
18	El Modena – Irvine Channel (55-0655)	27.82	1992	CIP/PS Concrete Box Girder
19	Tustin Ranch Road OC (55-0657)	R28.25	1992	CIP/PS Concrete Box Girder
20	Red Hill Avenue UC (55-0193)	R29.09	1992	CIP/PS Concrete Box Girder
21	Newport Avenue UC (55-0940)	29.61	1995	CIP/PS Concrete Box Girder

CIP = Cast-in-place  
 OC = Overcrossing  
 PS = Prestressed  
 SEP = Separation  
 UC = Undercrossing

## 6.6.2 Structures for Build Alternatives

### **Structure Design Considerations**

In general, the structure types for all bridge replacement structures are assumed to be post-tensioned concrete box girders, which are common and offer standard bridge construction that provides a low maintenance structure at a reasonable cost.

For the proposed bridge widenings, the structure types are also assumed to be post-tensioned concrete box girders, which match the structure type of the existing bridge. The structure depth of the proposed widenings will also closely match that of the existing bridge. By using similar structure types and depths, there is a greater likelihood of deflection compatibility with the existing superstructure, which will minimize stress concentration along the deck closure pour and potential long-term maintenance problems.

In a few locations, due to limited existing vertical clearance, a cast-in-place post-tensioned concrete box girder structure type will not be feasible due to the limited space that would be available for falsework. In these locations, precast concrete girders may be used, or a cast-in-place post-tensioned concrete box girder that is cast-high-and-lowered into place could also be utilized.

### **Geotechnical Considerations**

Earth Mechanics Inc. (EMI), prepared a Geotechnical Memorandum as part of this study. Below is a brief summary of their conclusions and recommendations that were considered during the analysis of the proposed structures.

- **Seismic Design Criteria:** Based on California Seismic Hazard Map of 1996 (Mualchin, 1996), the Peak Ground Acceleration (PGA) along the alignment is between 0.3g to 0.4g. However, it should be noted that the San Joaquin Hills Blind Thrust Fault, which is the closest active fault to the project, is not included in the map and subsequently it has been added to the Department's fault database; therefore, design PGA will be likely higher than the mapped values. Seismic design criteria for the design of each structure would be developed using *Caltrans Seismic Design Criteria* (SDC) Version 1.5 (Caltrans, 2009). Based on EMI's preliminary evaluations, PGAs within the corridor vary between 0.5g and 0.7g, depending on the structure location.
- **Liquefaction:** According to seismic hazard zone maps, a section of I-5 between Jeffrey Road and SR-55 north is located within an area shown as potentially liquefiable. Based on the information provided in the CGS Seismic Hazard Zone Map, some of the structures included in the project have liquefaction hazard potential during seismic events. A more detailed study will be done during the next phase of the project to develop a site-specific liquefaction potential assessment at each of the structure locations.

### **Seismic Retrofit Considerations**

For the proposed bridge widening structures, the seismic evaluation and retrofit analysis of the existing bridge will be in accordance with the latest versions of the Department Seismic Design Criteria and applicable portions of Bridge Memo to Designers 20-4. During the Type Selection phase, further investigations should be conducted to determine if any structural deficiencies are present in the existing structure under seismic loading.

At this time, for the widening locations, a preliminary evaluation of the existing structure as-built plans was conducted to identify the anticipated seismic retrofit needs. Based on this preliminary evaluation, a seismic retrofit contingency has been included in the preliminary bridge cost



estimates for the following locations, all of which appear to require retrofit modifications to isolate the existing column flares from the bridge soffit:

- Irvine OH (55-0002)
- Sand Canyon Avenue UC (55-0201)
- Route 5/261 Separation (55-0688)
- Jamboree Road UC (55-0656)
- Red Hill Avenue UC (55-0193)

#### **Bridge Maintenance Recommendations**

The latest Department bridge maintenance reports have been reviewed for all existing structures within the project limits. The majority of the bridge structures did not have any maintenance work recommended by the inspector. For the few structures that did have recommend maintenance items, it was found that the items would no longer be necessary due to the proposed bridge widening and/or replacement.

Therefore, there are no maintenance work recommendations that appear to require consideration in the preliminary bridge cost estimates.

#### **Structure Improvements—Alternative 2A**

For Alternative 2A, the following structure improvements are proposed as shown in Table 32. Advance Planning Study Checklists are included as Attachment 8.

- 3 bridge replacements
- 9 bridge widenings
- 5 tieback walls to support existing bridge abutments

**Table 32: Alternative 2A—Structure Improvements**

Structure Name (Bridge Number)	Proposed Improvement	Proposed Bridge Type	Proposed Bridge Dimensions		
			W (ft)	L (ft)	A (ft <sup>2</sup> )
1 Alton Parkway OC (55-0629)	Replacement	CIP/PS Conc Box	129.75	312	40,482
2 Barranca Parkway OC (55-0665)	NB - Tieback wall at Abut 3 SB - Tieback Wall at Abut 1	N/A	N/A	N/A	N/A
3 N133-N5/5 Connector SEP (55-0659G)	None	N/A	N/A	N/A	N/A
4 S133-S5 Connector SEP (55-0771F)	None	N/A	N/A	N/A	N/A
5 N133/5 Separation (55-0772R)	None	N/A	N/A	N/A	N/A
6 S133/5 Separation (55-0772L)	None	N/A	N/A	N/A	N/A
7 Irvine OH (55-0002)	NB – Widening SB – Widening	PC/PS Conc Girder PC/PS Conc Girder	10.25 10.25	264 264	2,706 2,706
8 Sand Canyon Avenue UC (55-0201)	NB – None SB – Widening	N/A PC/PS Conc Girder*	N/A 10.25	N/A 222	N/A 2,276
9 S133-N5 Connector SEP (55-0776F)	None	N/A	N/A	N/A	N/A
10 S5-N133 Connector SEP (55-0775F)	None	N/A	N/A	N/A	N/A
11 Jeffrey Road OC (55-0215)	Replacement	CIP/PS Conc Box	124	336	41,664
12 Yale Avenue OC (55-0638)	NB – Tieback Wall at Abut 3 SB – Tieback Wall at Abut 1	N/A	N/A	N/A	N/A
13 Culver Drive UC (55-0197)	NB – Widening SB – Widening	CIP/PS Conc Box PC/PS Conc Girder*	17.0 47.2	182 169	3,094 7,977
14 Peters Canyon (55-0663)	NB – Widening SB – Widening	CIP/PS Conc Box CIP/PS Conc Box	22 10	92 92	2,024 920
15 Jamboree Road Off Ramp OC (55-0763S)	Replacement	CIP/PS Conc Box	41.5	216	8,964
16 Route 5/261 Separation (55-0688)	NB – Widening SB – Widening	PC/PS Conc Girder* PC/PS Conc Girder*	10 19.42	204.9 2 212	2,049 4,116
17 Jamboree Road UC (55-0656)	NB – Widening SB – Widening	PC/PS Conc Girder* PC/PS Conc Girder*	24.4 29.4	187 187	4,563 5,498
18 El Modena – Irvine Channel (55-0655)	NB – Widening SB – Widening	CIP/PS Conc Box CIP/PS Conc Box	10.7 20.5	110.8 94.8	1,181 1,946
19 Tustin Ranch Road OC (55-0657)	NB – None SB – Tieback Wall at Abut 1	N/A	N/A	N/A	N/A
20 Red Hill Avenue UC (55-0193)	NB – Widening SB – Widening	PC/PS Conc Girder* PC/PS Conc Girder*	10 10	176.2 176.2	1,762 1,762
21 Newport Avenue UC (55-0940)—Alt. 2A	NB – Widening SB – Widening	CIP/PS Conc Box CIP/PS Conc Box	10 10	111 111	1,110 1,110

\*CIP/PS Concrete Box Girder (cast-high-and-lowered-into-place) can be substituted to accommodate limited vertical clearance as required.

PC = Precast

**Structure Improvements—Alternative 2B**

For Alternative 2B, the following structure improvements are proposed as shown in Table 33, and Advance Planning Study Checklists are included as Attachment 8.

- 2 bridge replacements
- 7 bridge widenings
- 4 tieback walls to support existing bridge abutments
- 3 new bridges

**Table 33: Alternative 2B—Structure Improvements**

Structure Name (Bridge Number)		Proposed Improvement	Proposed Bridge Type	Proposed Bridge Dimensions		
				W (ft)	L (ft)	A (ft <sup>2</sup> )
1	Alton Parkway OC (55-0629)	Replacement	CIP/PS Conc Box	129.75	312	40,482
2	Barranca Parkway OC (55-0665)	NB - Tieback wall at Abut 3 SB - Tieback Wall at Abut 1	N/A	N/A	N/A	N/A
3	N133-N5/5 Connector SEP (55-0659G)	None	N/A	N/A	N/A	N/A
4	S133-S5 Connector SEP (55-0771F)	None	N/A	N/A	N/A	N/A
5	N133/5 Separation (55-0772R)	None	N/A	N/A	N/A	N/A
6	S133/5 Separation (55-0772L)	None	N/A	N/A	N/A	N/A
7	Irvine OH (55-0002)	NB – Widening SB – Widening	PC/PS Conc Girder Cantilevered Slab	6.25 6.25	264 264	1,650 1,650
7A	Irvine OH (55-New)	New Bridge	CIP/PS Conc Box	39.5	264	10,428
8	Sand Canyon Avenue UC (55-0201)	None	N/A	N/A	N/A	N/A
9	S133-N5 Connector SEP (55-0776F)	None	N/A	N/A	N/A	N/A
10	S5-N133 Connector SEP (55-0775F)	None	N/A	N/A	N/A	N/A
11	Jeffrey Road OC (55-0215)	NB - Tieback wall at Abut 3	N/A	N/A	N/A	N/A
11A	NB Jeffrey Road Off-Ramp SEP (55-new)	New Bridge	CIP/PS Conc Box	40	540	21,600
11B	S5-S133 Connector SEP (55-new)	New Bridge	CIP/PS Conc Box	42.5	585	24863
12	Yale Avenue OC (55-0638)	None	N/A	N/A	N/A	N/A
13	Culver Drive UC (55-0197)	NB – Widening SB – Widening	CIP/PS Conc Box PC/PS Conc Girder*	12 42.7	181.2 169	2,174 7,216
14	Peters Canyon (55-0663)	NB – Widening SB – Widening	CIP/PS Conc Box CIP/PS Conc Box	18 6.5	92 92.2	1,656 599
15	Jamboree Road Off Ramp OC (55-0763S)	Replacement	CIP/PS Conc Box	39.75	216	8,586
16	Route 5/261 Separation (55-0688)	NB – Widening SB – Widening	PC/PS Conc Girder* PC/PS Conc Girder*	6 24.7	204.9 209.7	1,230 5,180
17	Jamboree Road UC (55-0656)	NB – Widening SB – Widening	PC/PS Conc Girder* PC/PS Conc Girder*	20.7 25.4	187 187	3,871 4,750
18	El Modena – Irvine Channel (55-0655)	NB – Widening SB – Widening	Cantilevered Slab CIP/PS Conc Box	4.7 16.5	110.8 94.8	515 1,568
19	Tustin Ranch Road OC (55-0657)	NB – None SB – Tieback Wall at Abut 1	N/A	N/A	N/A	N/A
20	Red Hill Avenue UC (55-0193)	None	N/A	N/A	N/A	N/A

Structure Name (Bridge Number)		Proposed Improvement	Proposed Bridge Type	Proposed Bridge Dimensions		
				W (ft)	L (ft)	A (ft <sup>2</sup> )
21	Newport Avenue UC (55-0940)—Alt. 2B Option 1	None	N/A	N/A	N/A	N/A
	Newport Avenue UC (55-0940)—Alt. 2B Option 2	NB – Widening SB – None	PC/PS Conc Girder* N/A	30.6 N/A	116 N/A	3,550 N/A

\* CIP/PS Concrete Box Girder (cast-high-and-lowered-into-place) can be substituted to accommodate limited vertical clearance as required.

## 6.7 Utilities

Existing utilities that are impacted by the alternatives will be either protected in place or relocated during construction, as shown in Attachment 9. High-risk facilities, as defined by the Department, exist at various locations within the project limits, and will require positive identification in future project development phases. Additional utility investigations will be required for any build alternative. There are no known or expected longitudinal utility encroachments.

Following is a list of utility owners with known facilities in the project limits.

**Table 34: Utility Owners With Facilities In Project Limits**

Utility Owners Affected By Project	
AT&T Distribution	Metropolitan Water District of SC
AT&T Transmission	Orange County Sanitation Department
AT&T Transmission TCG	Qwest
City of Irvine	Southern California Edison
City of Santa Ana	Southern California Gas - Distribution
City of Tustin	Southern California Gas - Transmissions
County of Orange RDMD	Sprint
Cox Communications	TelePacific Communications
Irvine Ranch Water District	Time Warner Cable
Kinder Morgan	Time Warner Telecommunications
Level 3 Communications	Transportation Corridor Agencies
MCI (Verizon Business)	United Paradyne

With any build alternative, protection of existing utilities that cross under the freeway, including sewer, water, and telephone lines, will be required. Relocations may be required where retaining walls are proposed, and at ramp termini where lanes would be added. Typical facilities affected in these types of areas could include street lights, power poles, and gas distribution, sewer, telephone, fiber optic, and water lines.

The following high-risk facilities will require protection during construction of either build alternative:

- I-5 Mainline, at Irvine Overhead structure: Oil lines and 30" gas line
- I-5 Mainline, between Sand Canyon Ave and Jeffrey Rd: Overhead electrical transmission lines
- I-5 Mainline, south of Tustin Ranch Road: Oil lines
- I-5 Mainline, at Browning Ave: Overhead electrical transmission lines
- I-5 Mainline, at El Camino Way: 8" gas line

All of the utilities at the following locations will require relocation due to bridge replacements and associated street reconstruction:

Alton Parkway OC (Alternatives 2A & 2B)

- Electrical lines, power poles, and street lights
- Telephone lines
- Fiber optic lines
- 12", 16", and 18" water lines
- 8" gas line

Jeffrey Rd OC (Alternative 2A)

- Electrical lines, power poles, and street lights
- Telephone lines
- Fiber optic lines
- 16" and 24" water lines

In addition, multiple utility relocations will be required at the following frontage road locations in Tustin due to realignment in Alternative 2A and/or Option 2:

- Nisson Road, from Newport Avenue to Red Hill Avenue
- Nisson Road, from Red Hill Avenue to Tustin Ranch Road
- El Camino Real, from Orange Street to Red Hill Avenue
- El Camino Real, from Red Hill Avenue to Tustin Ranch Road
- El Camino Real, from Newport Avenue to Orange Street

## 6.8 Right-of-Way

Alternative 2A provides a standard typical section for the freeway, which results in the need for a larger area of right of way than Alternative 2B, which utilizes a nonstandard typical section to accomplish the project's purpose and need generally within the existing right of way.

The land uses adjacent to the freeway vary through the project limits. In general, from I-405 to the Sand Canyon Road interchange area, most of the adjacent uses are commercial. From Sand Canyon Road to north of Culver Drive, land uses are generally residential/multi-family residential, but also include Irvine High School along the southbound side of the freeway. In the Jamboree Road and Tustin Ranch Road interchange vicinity, there are multiple office, light industrial, and retail facilities, including a car dealership complex. North of Tustin Ranch Road to SR-55, there are frontage roads paralleling either side of the freeway, which provide access to several multi-family residential complexes, Tustin High School, restaurants, gas stations, and other retail and service facilities.

The preliminary estimated right-of-way for each alternative is listed below in Table 35, and is detailed in the Layout Plans in Attachments 4 and 5, and Right-of-Way Data Sheets for the build alternatives are provided in Attachment 10. The tables include the total right of way (ROW) area of the parcel, the amount of ROW impacted, and amount of temporary construction easement (TCE) required during construction. It is possible that condemnation and/or Relocation Assistance Program (RAP) would be required with Alternative 2A.

**Table 35—Summary of Preliminary Estimated Right-of-Way Needs**

<b>Build Alternative</b>	<b>Proposed Right of Way Impact</b>	<b>Temporary Construction Easements</b>	<b>No. of Parcels Impacted</b>	<b>No. of Buildings Impacted</b>
Alternative 2A	349,819 ft <sup>2</sup>	42,942 ft <sup>2</sup>	106	28
Alternative 2B – Option 1	13,396 ft <sup>2</sup>	19,218 ft <sup>2</sup>	24	---
Alternative 2B – Option 2	47,576 ft <sup>2</sup>	17,026 ft <sup>2</sup>	25	2
Alternative 2B – Option 3	13,396 ft <sup>2</sup>	19,736 ft <sup>2</sup>	26	---
Alternative 2B – Option 4	13,396 ft <sup>2</sup>	20,453 ft <sup>2</sup>	25	---

## 6.9 Transportation Management Plan (TMP)

This project will require a Transportation Management Plan (TMP), due to the expected impacts on traffic during construction as a result of typical construction conditions such as lane closures, ramp closures, and temporarily reduced lane widths. The TMP would identify methods to reduce delays to traffic and maintain traffic on I-5 and ramps, while providing a safe environment for both the construction work forces and the motoring public.

A traffic analysis should be performed to support the TMP, in order to specifically evaluate the potential impacts that the project improvements would have on traffic, and to identify the benefits of implementing various TMP elements, such as:

- Public Awareness Campaign
- Detour or Alternative Routes with signing
- Fixed and Portable Changeable Message Signs
- Traffic Signal Modifications
- Traffic Management Center (TMC)
- Highway Advisory Radio
- COZEEP/CHP Support
- Freeway Service Patrol
- Traffic Management Team
- TMP Coordination & Review
- Coordination with Local City during construction closures
- Advance Transportation Management Systems (ATMS)

With implementation of either Alternative 2A or 2B, it is expected that the same number of mainline lanes would be maintained during construction. Temporary partial and full freeway closures would likely be required for certain construction activities, such as freeway restriping, erection of overhead signs, demolition of existing bridges, and bridge falsework erection.

A preliminary transportation management cost is included in the estimates for Alternatives 2A and 2B.

## **6.10 Stage Construction and Temporary Detours**

The magnitude of the construction impacts will largely depend on the alternative chosen in subsequent phases of the project. In general, the widening of the freeway mainline could be accomplished by reducing existing lane widths to 11', shoulder widths to a minimum of 2' in constrained locations, and eliminating the HOV buffer. This would provide the required space to place temporary railing and construct the freeway widening. Where bridge replacements are required, construction of the new structures can be completed in multiple stages in order to maintain local street traffic during construction.

Short-term closures of existing ramps may be required for reconstruction. It is expected that these short-term closures could be minimized to night work and/or weekends, with detours provided. Consecutive entrance ramps or exit ramps would not be closed.

## **6.11 Railroad Involvement**

Metrolink crosses underneath I-5 at the Irvine Overhead structure, just south of Sand Canyon Avenue. In both alternatives, widening of the Irvine Overhead structure is proposed. Railroad activities are not anticipated to be significantly impacted during construction; however, coordination with OCTA/Southern California Regional Rail Authority will be required.

## **6.12 Drainage**

The proposed project is not anticipated to change the existing drainage patterns. All impacted inlets along the edge of pavement will either be capped or removed. Lateral drainage systems would be extended and tie to the new inlets, placed at the proposed edge of pavement. All existing impacted longitudinal drainage systems will be abandoned or removed, and replaced as required. At locations where the freeway will be widened, additional drainage flows are anticipated, and additional inlets may be required to maintain flooded widths within the shoulder areas.

Major existing drainage features in the project area include:

- Agua Chinon Channel: crosses the freeway as two double 9'x12' RCBs, south of Alton Parkway
- The Department concrete channel at SB Alton exit ramp and Jeffrey SB exit ramp
- Bee Canyon Channel: crosses the freeway as three 10'x10' RCBs, north of Barranca Parkway
- Marshburn Wash: crosses the freeway as a 108" RCP, south of Sand Canyon Avenue
- Central Irvine Channel: crosses Culver Drive as a double 8'x8.33' RCB, and then parallels the freeway on the north side, from Culver Drive to Peters Canyon Channel as a 24' wide rectangular open channel and enters Peters Canyon Channel as a 10'x24' RCB.
- Peters Canyon Channel: crosses the freeway as a 64' wide rectangular culvert, south of Jamboree Road

- El Modena Irvine Channel: crosses the freeway as a trapezoidal culvert with a bottom width of 67', north of Jamboree Road

All existing box culverts that traverse under the freeway will be extended as needed for the freeway widening. Impacts to existing drainage facilities may include:

- Relocating the existing 8'x4' RCB, located at the toe of the existing east Barranca Parkway OC abutment, to avoid possible impacts to the proposed freeway tieback wall.
- Converting the existing concrete ditch north of the SR-133 SB to I-5 SB connector to a closed system due to widening the southbound freeway.
- Reconstructing and converting a portion of the Department concrete channel to a closed system along the northbound I-5 between Sand Canyon Avenue and Jeffrey Road due to Alternative 2B Option 3 northbound braided ramps and the reconfigured northbound Jeffrey Road entrance ramp.
- Reconstructing approximately 400' of the Department concrete channel, from the northbound Jeffrey Road exit ramp Station 550+00 to 554+00, due to impacts from the ramp realignment.
- Converting the existing 12'x4' concrete trapezoidal channel to a closed system from I-5 Station 385+00 to 395+00, due to widening the northbound freeway.

## 6.13 Retaining Walls

Retaining walls will be required at the locations shown on the exhibits in Attachments 4 and 5 to retain embankment fill due to the freeway widening, ramp realignments and new freeway ramps, roadway approaches to overcrossing structures, and at structure abutments. Both the Department "standard" wall types and nonstandard walls, such as Mechanically Stabilized Earth (MSE) walls, will be evaluated for use based on site-specific conditions, cost, and constructability considerations. At structures, tieback walls will generally be required where cuts are needed below bridges.

For build alternatives, existing retaining walls will require removal in areas where the freeway will be widened. The extent of removal would be dependent on the alternative chosen for implementation. In these areas, new retaining walls are anticipated to be required at either the new edge of pavement or at the right-of-way line. The location of retaining walls required for each alternative are indicated in Table 36 and 37 below.

**Table 36: Alternative 2A – Walls**

No.	Location	Wall Type	Max Height
1	Lt "A" 451+00 to Lt "A" 452+50	Retaining Wall	20
2	Rt "A" 457+00 to Rt "A" 457+75	Retaining Wall	20
3	Rt "SC-2" 504+50 to Rt "SC-2" 507+75	Retaining Wall	16
4	Lt "A" 519+00 to Lt "A" 525+25	Retaining Wall	10
5	Lt "J" 805+70 to Lt "J" 809+20	Retaining Wall	30
6	Lt "A" 558+20 to Lt "A" 564+00	Retaining Wall	8
7	Lt "A" 564+00 to Lt "A" 601+49	Soundwall	16
8	Rt "A" 596+50 to Rt "A" 601+20	Soundwall on	12



No.	Location	Wall Type	Max Height
		Retaining Wall	5
9	Lt "A" 602+18 to Lt "A" 624+23	Soundwall on Retaining Wall	12
			4
10	Rt "A" 602+80 to Rt "A" 612+00	Soundwall on Retaining Wall	12
			8
11	Rt "A" 622+31 to Rt "CU-6" 635+28	Retaining Wall	18
12	Lt "CU-1" 627+25 to Lt "CU-1" 631+80	Soundwall	7
13	Rt "A" 632+70 to Rt "A" 639+00	Soundwall	16
14	Lt "A" 643+60 to Lt "A" 646+25	Retaining Wall	8
15	Rt "CU-5" 643+92 to Rt "A" 648+55	Retaining Wall	8
16	Rt "CU-4" 644+72 to Rt "A" 674+15	Retaining Wall	24
17	Lt "CU-3" 657+00 to Lt "A" 676+88	Retaining Wall	6
18	Lt "A" 677+79 to Lt "JA-1" 687+26	Retaining Wall	6
19	Rt "A" 677+40 to Rt "JA-6" 686+41	Retaining Wall	6
20	Rt "A" 685+23 to Rt "A" 686+62	Retaining Wall	4
21	Lt "JA-6" 685+18 to Lt "JA-6" 686+41	Retaining Wall	4
22	Rt "TR-3" 744+17 to Rt "RH-4" 773+81	Soundwall on Retaining Wall	16
			16
23	Lt "TR-2" 729+58 to Lt "RH-1" 773+59	Soundwall on Retaining Wall	26
			12
24	Lt "A" 768+67 to Lt "A" 773+91	Retaining Wall	20
25	Rt "A" 770+28 to Lt "A" 774+02	Retaining Wall	18
26	Lt "RH-2" 775+86 to Lt "A" 801+88	Soundwall on Retaining Wall	28
			10
27	Lt "A" 775+67 to Lt "A" 780+46	Soundwall on Retaining Wall	18
			10
28	Rt "A" 775+77 to Rt "A" 780+44	Soundwall on Retaining Wall	18
			10
29	Rt "RH-3" 775+79 to Rt "A" 801+10	Soundwall on Retaining Wall	28
			10
30	Lt "A" 802+99 to Lt "A" 807+31	Retaining Wall	16
31	Rt "A" 802+20 to Rt "A" 804+31	Retaining Wall	24
32	Rt "N-2" 804+08 to Rt "A" 825+00	Retaining Wall	22
33	Rt "A" 825+00 to Rt "A" 830+09	Soundwall	10
34	Lt "A" 821+26 to Lt "A" 828+11	Retaining Wall	28
35	Lt "A" 822+87 to Lt "A" 828+11	Soundwall on Retaining Wall	18
			12
36	Rt "B-2" 472+00 to Rt "A" 481+68	Retaining Wall	7

No.	Location	Wall Type	Max Height
37	Rt "A" 484+31 to Rt "A" 499+00	Retaining Wall	12
38	Lt "A" 408+50 to Lt "A" 426+00	Retaining Wall	6
39	Lt "B-4" 466+79 to Lt "A" 484+57	Retaining Wall	12
40	Lt "A" 487+20 to Lt "SC-1" 491+50	Retaining Wall	9
41	Lt "A" 498+00 to Lt "A" 502+44	Retaining Wall	8
42	Rt "B-3" 512+87 to Rt "B-3" 518+00	Retaining Wall	8
43	Rt "J-5" 555+08 to Rt "J-5" 560+12	Retaining Wall	8

**Table 37: Alternative 2B – Walls**

No.	Location	Wall Type	Max Height
1	Lt "A" 451+00 to Lt "A" 452+50	Retaining Wall	20
2	Lt "A" 457+00 to Lt "A" 457+50	Retaining Wall	20
3	Lt "A" 521+45 to Lt "A" 525+25	Retaining Wall	10
4	Rt "A" 625+05 to Rt "CU-6" 635+00	Retaining Wall	18
5	Rt "A" 632+69 to Rt "A" 638+97	Soundwall	16
6	Rt "CU-5" 643+91 to Rt "A" 648+54	Retaining Wall	8
7	Rt "CU-4" 646+12 to Rt "A" 663+00	Retaining Wall	24
8	Lt "CU-3" 656+20 to Lt "A" 676+87	Retaining Wall	6
9	Lt "A" 677+79 to Lt "JA-1" 687+28	Retaining Wall	6
10	Rt "A" 677+41 to Rt "JA-6" 686+42	Retaining Wall	6
11	Rt "A" 685+23 to Rt "A" 686+63	Retaining Wall	4
12	Lt "JA-6" 685+18 to Lt "JA-6" 686+42	Retaining Wall	4
13	Lt "RH-4" 770+28 to Lt "RH-4" 773+90	Retaining Wall	18
14 (Option 1)	Rt "N-2" 803+10 to Rt "A" 825+00	Retaining Wall	22
14 (Option 2)	Rt "A" 807+30 to Rt "A" 825+00	Retaining Wall	22
15	Rt "A" 825+00 to Rt "A" 833+16	Soundwall	10
16	Rt "B-2" 472+00 to Rt "A" 481+73	Retaining Wall	6
17	Rt "A" 484+36 to Rt "A" 499+00	Retaining Wall	11
18	Lt "A" 408+00 to Lt "A" 426+15	Retaining Wall	5
19 (Option 1)	Lt "B-4" 466+58 to Lt "A" 484+52	Retaining Wall	11
19 (Option 4)	Lt "SC-1" 465+84 to Lt "A-4" 480+63	Retaining Wall	26
20 (Option 1)	Lt "A" 487+16 to Lt "SC-1" 491+50	Retaining Wall	8

No.	Location	Wall Type	Max Height
20 (Option 4)	Rt "SC-1" 483+28 to Rt "SC-1" 488+00	Retaining Wall	18
21	Lt "TR" 729+54 to Lt "TR" 736+34	Retaining Wall	10
		Soundwall	12
22	Lt "SC-3" 504+72 to Lt "SC-3" 508+49	Retaining Wall	16
23 (Option 1)	Rt "J-5" 554+69 to Rt "J-5" 560+14	Retaining Wall	8
23 (Option 3)	Rt "J-5" 551+00 to Rt "J-5" 560+01	Retaining Wall	18
24 (Option 2)	Rt "N-2" 795+85 to Rt "N-2" 800+88	Soundwall on Retaining Wall	24
			6
25 (Option 2)	Lt "N-2" 794+26 to Lt "N-2" 795+20	Retaining Wall	28
26 (Option 2)	Rt "A" 795+24 to Rt "A" 798+97	Soundwall	10
27 (Option 3)	Rt "SC-3" 506+84 to Rt "SC-3" 516+85	Retaining Wall	20
28 (Option 3)	Lt "SC-3" 507+00 to Lt "SC-3" 512+89	Retaining Wall	20
29 (Option 3)	Lt "J-5" 516+12 to Lt "J-5" 519+54	Retaining Wall	22
30 (Option 3)	Rt "J-5" 516+12 to Rt "J-5" 519+54	Retaining Wall	22
31 (Option 3)	Lt "J-5" 524+93 to Lt "J-5" 531+95	Retaining Wall	30
32 (Option 3)	Rt "J-5" 524+93 to Rt "J-5" 534+00	Retaining Wall	30
33 (Option 3)	Rt "J-3" 561+00 to Rt "J-3" 564+00	Retaining Wall	20
34 (Option 4)	Lt "A-4" 463+00 to Lt "A-4" 467+30	Retaining Wall	36
35 (Option 4)	Rt "A-4" 466+00 to Rt "A-4" 467+30	Retaining Wall	36
36 (Option 4)	Lt "A-4" 473+15 to Lt "A-4" 479+00	Retaining Wall	24
37 (Option 4)	Rt "A-4" 473+15 to Rt "A-4" 479+00	Retaining Wall	24

## 6.14 Sound Walls

Sound walls exist intermittently throughout the project limits, mainly from the vicinity of the Jeffrey Road interchange, north to SR-55. For build alternatives, removal of existing noise walls could be required, depending on the alternative chosen for implementation. Locations and heights of new sound walls would be determined during the PA/ED phase based on the Noise Study Report and Noise Abatement Decision Report. The exhibits in Attachments 4 and 5 identify locations of existing sound walls that would be affected by the build alternatives. The location of the soundwalls required for each alternative can be found in the Section 6.13, Table 36 and 37.

In Alternative 2B Option 3, during the PA/ED phase, any required noise and visual evaluations should consider impacts to the planned residential development in this area that may be caused by the braided northbound exit ramp to Jeffrey Road.

## 6.15 Ramp Metering, Communication Systems & Electrical Design

Existing ramp metering and fiber optic communication systems will be impacted with the implementation of the build alternatives, due to the widening of the freeway mainline and widening of ramps at various locations. In addition, during construction, all communication systems are expected to remain operational. As a result, permanent and/or temporary communication system modifications will be required to maintain operation of the existing system. Affected elements include:

- Changeable Message Sign (CMS)
- Closed-caption television (CCTV)
- Loop Detectors
- Cabinets
- Transportation Management System (TMS)
- Adaptive ramp metering system (ARMS)
- Overhead sign structures for lane assignments on multi-lane ramps

Existing lighting systems would be impacted at the ramp gores and at termini of ramps where additional lanes would be provided, and replacement lighting would be required at these locations. Lighting would also be required for new overhead sign structures that are constructed due to the freeway widening. Traffic signal poles and equipment may also be impacted at ramp termini where additional lanes would be provided.

## 6.16 Overhead and Roadside Signs

All existing overhead signs and roadside signs that are impacted by the build alternatives would require removal, and new signs/overhead sign structures would be required beyond the new edge of pavement. Nighttime closures of the freeway and ramps may be anticipated during the installations of the overhead signs.

## 6.17 Planting and Irrigation

Existing planting and irrigation systems would be impacted by the freeway widening, and along ramps where additional lanes would be provided. Plantings would be replaced in accordance with current plant guidelines, and the irrigation systems would be upgraded to meet current standards for water conservation.

## 7. COMMUNITY INVOLVEMENT

The City of Irvine, City of Tustin, The Irvine Company, and the Transportation Corridor Agencies provided input to the development of the project alternatives. Following is a summary of each stakeholder's main concerns:

- City of Irvine: Opposed to any impacts to right-of-way.
- City of Tustin: Opposed to Alternative 2A, due to right-of-way impacts. More detailed traffic analysis of Option 2 (hook-ramp configuration at Newport Avenue interchange) will be needed during the PA/ED phase in order to better assess this option.
- The Irvine Company: Opposed to Alternative 3A and Alternative 3B Braid #1 due to right-of-way impacts.
- Transportation Corridor Agencies: Opposed to Alternative 2B Option 3, and Alternative 3B Braids #1 and #2, due to removal of movements to and from SR-133. Agreements will be needed to address any potential toll revenue loss due to construction staging impacts.

Formal public outreach and meetings will be organized in the PA/ED phase of this project.

## 8. ENVIRONMENTAL DETERMINATION/DOCUMENT

### 8.1 Environmental Status

A Preliminary Environmental Analysis Report (PEAR) was prepared for this project and is included as Attachment 13.

The study concluded that an Initial Study leading to a Mitigated Negative Declaration (IS/MND) would likely be the appropriate level of environmental documentation under California Environmental Quality Act (CEQA), and an Environmental Assessment with Finding of No Significant Impacts (EA/FONSI) will be the appropriate level of environmental documentation under the National Environmental Policy Act (NEPA). The findings of the environmental technical studies prepared during PA/ED will determine the level of environmental documentation that is required for CEQA/NEPA compliance.

OCTA will serve as the project sponsor, and the Department will be the lead agency and provide oversight under CEQA and NEPA, under the NEPA authority assigned to the Department by the U.S. Department of Transportation in Memorandum of Understanding 6004 and 6005, effective July 1, 2007.

### 8.2 Summary Statement from PEAR

The preliminary investigation of the proposed project is focused on potential impacts that may result from the build alternatives within the I-5 Widening Project Corridor. The preliminary assessment of resources in the area indicates that there is a potential for impacts within the following resource areas: air quality, biological resources, community, cultural resources, farmlands, hazardous waste/materials, noise, water quality and storm water run-off, transportation/traffic, utilities and services, and visual esthetics; however, none of the alternatives are anticipated to result in significant impacts and or substantial adverse effects if avoidance, minimization, and/or mitigation measures are implemented. Specific avoidance, minimization, and/or mitigation measures and related time and costs cannot be estimated at this

time because the technical studies have not been initiated; however, for purposes of the PEAR, it is assumed that avoidance, minimization, and/or mitigation would consist of those measures that minimize project-related impacts typically utilized for similar transportation projects. A discussion of notable impacts by alternative is provided below.

- Alternative 2A: Alternative 2A would have the largest footprint within the heavily urbanized northern portion of the project and would result in the largest amount of ROW acquisition. By virtue of this alternative having the largest ROW footprint, it would be reasonable to assume that this alternative would cost the most, be the most publically controversial, require the most avoidance, minimization and/or mitigation measures, have the highest potential to impact adjacent contaminated properties, and have the highest environmental risk when compared with Alternative 2B.
- Alternative 2B: Alternative 2B provides the same mainline and ramp lane additions/configurations as Alternative 2A, but it utilizes a narrower freeway typical section by reducing lane and/or shoulder widths and removes the HOV lane buffer through the use of Alternative 2B would be constructed entirely within existing Department ROW. By virtue that this alternative would provide the same level of capacity and operational improvements within existing heavily disturbed Department ROW, it would be reasonable to assume that this alternative would cost the least, would be the least publically controversial, require the least avoidance, minimization and/or mitigation measures, have the lowest potential to impact adjacent contaminated properties, and have a lower environmental risk when compared Alternative 2A.

All Build Alternatives: All of the alternatives would likely require the following permits/approvals as described below.

- CDFG Streambed Alteration Agreement, USACE Section 404 permit, and SWRCB Section 401 Water Quality Certification associated with widening of bridges at Peters Canyon Channel and El Modena-Irvine Channel. The project would also have to comply with the requirements of the RWQCB and the provisions of the NPDES Storm Water Discharge Permit issued for construction projects. The project is located within City and Department ROW; therefore, NPDES-Caltrans Statewide Permit (order No. 99-06-DWQ; NPDES No. CAS 000003) and construction General Permit (Order No. 2009-0009-DWQ; NPDES No. CAS 000002) apply to the project. Procedures and facilities would be incorporated into the proposed design of the build alternatives, as necessary, to control additional runoff. Due to the potential for shallow groundwater within the project corridor, it should also be anticipated that this project would require dewatering, and coverage must be obtained under Order No. R8-2009-0003, NPDES No. CAG998001 *General Waste Discharge Requirements for Discharges to Surface Waters which Pose an Insignificant (De Minimus) Threat to Water Quality*. Assuming dewatering would be required, site-specific groundwater contamination data would be needed to evaluate proper methods to manage and dispose of groundwater that might be removed during construction. Dewatering groundwater free of pollutants must be authorized under a regional dewatering NPDES permit. Dewatering any water containing pollutants cannot be discharged to a Waters of the U.S. or storm drain without specific authorization from the SARWQCB.
- The project would also have to comply with the requirements of SHPO under Section 106. In addition, technical studies will need to be completed for each of the resources to accurately identify impacts and to develop feasible avoidance, minimization, and/or mitigation measures.

Based on the potential effects of the build alternatives on the environment, as described within this PEAR, it is anticipated that an IS/MND pursuant to CEQA and an EA/FONSI pursuant to NEPA would be the appropriate environmental document type for this project.

Special considerations for all alternatives that may affect scope, cost, and schedule are the following: ROW, residential/business relocations, noise/soundwalls, architectural treatments/landscaping, potentially contaminated properties, ADL, ACMs, and Native American coordination.

Preparation of the following technical studies is recommended to assess the impacts of the project and to develop feasible avoidance, minimization, and/or mitigation measures:

#### Recommended Environmental Technical Studies

All recommended environmental technical studies must be submitted upon completion to the environmental branch for review and approval.

- Air Quality Report
- Archaeological Survey Report (ASR)
- Historic Property Survey Report (HPSR)
- Historic Resource Evaluation Report (HRER)
- Initial Site Assessment Update (ISA)
- Natural Environment Study (NES)
- Paleontological Identification Report/Paleontological Evaluation Report (PIR/PER)
- Relocation Impact Statement
- Traffic Impact/Circulation Study
- Noise Study Report (NSR)
- Visual Impact Assessment (VIA)
- Water Quality Assessment Report

#### Recommended Engineering Technical Studies

- Storm Water Data Report
- Noise Abatement Decision Report
- Location Hydraulic Study
- Geotechnical Study
- Transportation Management Plan and Ramp Closure Study, if warranted

### **8.3 Hazardous Waste Materials**

An Initial Site Assessment (ISA) was performed, including a site survey and database search. The ISA Checklist is included as Attachment 14. Recognized Environmental Conditions (RECs) were found in the project limits or immediately adjacent areas as follows:

- Groundwater contamination at 13 locations within the project vicinity
- Aerially deposited lead along the unpaved shoulders of project alignment
- Asbestos-containing materials in bridge joint compound materials along the project alignment
- Lead-based paint or other hazardous materials that may exceed hazardous waste criteria under CCR Title 22 on existing bridges, yellow traffic striping, and pavement marking materials
- PCB-containing liquids on pole-top transformers along the project location

- Agricultural chemicals along the project location where historic and current agricultural activities occur

Additional ISA work will be required when the project limits are refined during PA/ED. During PA/ED, the ISA will be updated to determine if new leaks/spills have affected the project area. Preliminary Site Investigations (PSIs) will be conducted for hazardous waste sites that may have resulted in surface, subsurface or groundwater contamination within the project area.

Soil sampling will be conducted for lead investigation of ADL in unpaved locations within the project limits. The analytical results of the soil sampling will determine the appropriate handling or reuse of the soil and disposal of surplus materials. Any yellow traffic striping and pavement marking materials affected by the project should be tested prior to removal, in accordance with the Department's requirements.

## 8.4 Water Quality

The Santa Ana Regional Water Quality Control Board (Region 8) has jurisdiction within the project limits, and defines the rainy season as October 1<sup>st</sup> through May 1<sup>st</sup>. The proposed project area is located within the Newport Bay Watershed, which is part of the East Coastal Plain Hydrologic Sub-Area (801.11). The project crosses two water bodies: Peters Canyon Channel and El Modena-Irvine Channel, both of which eventually drain to San Diego Creek, which ultimately discharges to Upper Newport Bay. Peters Canyon Channel is listed on the 303(d) list, for DDT and Toxaphene, which are not pollutants generated by roadway surfaces.

The corridor also crosses and is adjacent to smaller drainages and may impact other drainages due to their proximity. Most of these drainages within the study area are concrete-lined and are under the jurisdiction of the Orange County Flood Control District (OCFCD), United States Army Corps of Engineers, or SARWQCB.

The following water quality-related permits are expected to be required for this project:

- RWQCB Section 401 Water Certification
- USACE Section 404 permit
- CDFG 1601 Streambed Alteration Agreement

The project may also need to comply with:

- NPDES-Caltrans Statewide Permit (Order No. 99-06-DWQ, NPDES No. CAS 000003)
- NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS 000002). This permit also requires a risk level determination: the Newport Bay Watershed Sediment Risk Factor is "medium," and the Receiving Water Risk Factor is "high," making a combined risk level of 2 for the Newport Bay Watershed. For this risk level, compliance with the requirements in Attachment D of the General Permit is necessary.
- Coverage under SARWQCB Order No. R8-2003-0061, General Waste Discharge Requirements for Discharges to Surface Waters which Pose an Insignificant (De Minimum) Threat to Water Quality; for dewatering during construction.

### 8.4.1 BMPs

Several measures would be taken in order to avoid or reduce potential storm water impacts. As described in the Department's Storm Water Management Plan (SWMP), Best Management



Practices (BMPs) would be designed and implemented to reduce the discharge of pollutants from the Department's storm drain system to the Maximum Extent Practicable (MEP). Permanent Treatment BMPs proposed for this project include Biofiltration Strips/Swales, Detention Devices, Infiltration Devices, and Media Filters. Erosion control measures also would be used to address site soil stabilization and reduce deposition of sediments in adjacent surface waters. Typical measures would include the application of soil stabilizers such as hydroseeding, rock slope protection, velocity dissipation devices, flared end sections for culverts, and others. A plant list for the areas in which hydroseeding is proposed would be provided at the PS&E stage.

The treatment BMP strategy for this project is expected to be developed to treat 100% of Water Quality Volume/Water Quality Flow (WQV/WQF) generated from both existing and proposed impervious surfaces within the project limits.

There are no known or observed existing treatment BMPs within the project limits. At this time, it is not expected that additional right-of-way is required for the Treatment or Temporary Construction Site BMPs. The cost of storm water pollution prevention control has been included in the preliminary estimates of construction cost included in Attachment 11. The Storm Water Data Report cover is included in Attachment 15.

## 8.5 Special Considerations

The environmental document type and class of action determination is based on several key assumptions:

1. Project will minimize acquisition of right-of-way to the maximum extent feasible and no single-family residential displacements are required; and
2. No substantial public controversy is anticipated.

During the PA/ED phase, if it is determined that right-of-way acquisition cannot be minimized and would require a large displacement of residents, or if the project would result in project effects that would result in substantial public controversy, then a "Complex" EA or Environmental Impact Statement (EIS) may be required. An EIS would require compliance with the SAFETEA-LU 6002 Early Coordination process and could extend the overall schedule by approximately 12 to 18 months.

## 8.6 Permits

Following is a summary of permits that may be required for the project, in addition to CEQA and NEPA compliance requirements:

### Regional

- SARWQCB De Minimus Dewatering Permit
- SARWQCB Clean Water Act (CWA) Section 401 Water Quality Certification and/or Waste Discharge Requirement

### State

- California State Office of Historic Preservation Section 106 compliance with the national Historic Preservation Act
- California Department of Fish and Game Section 1601 Agreement

- NPDES—Caltrans Statewide Permit (Order No. 99-06-DWQ, NPDES No. CAS000003)
- NPDES—General Construction Permit (Order No. 99-08-DWQ, NPDES No. CAS000002)

Federal

- Federal Highway Administration; Clean Air Act, Transportation Conformity Determination
- USACE Clean Water Act Section 404 Permit

**9. FUNDING**

**9.1 Capital Cost**

This project is currently funded with an estimated \$300 million as part of the Measure M2 (local half-cent sales tax) Transportation Investment Plan, which is a 30-year program that began in 2011. Federal and other additional funding sources are expected to be sought for this project. This project is a candidate for programming PA/ED and PS&E capital outlay support in the State Transportation Improvement Program (STIP).

Additionally, depending on the outcome of future project development phases and the alternative chosen for implementation, it is possible that corridor improvements can be constructed in phases by freeway segment, which would allow flexibility in procuring funding at staggered times.

**Table 38—Capital Cost Estimate/Capital Outlay Estimate for the Alternative Identified for Programming in the STIP**

	Range for Total Cost
<b>Alternative 2A</b>	\$452
<b>Alternative 2B</b>	\$230 million to \$258 million

The level of detail available to develop these capital cost estimates is only accurate to within the above ranges, and is useful for long-range planning purposes only. The capital costs should not be used to program or commit capital funds. The Project Report will serve as the appropriate document from which the remaining support and capital components of the project will be programmed.

## 9.2 Capital Support Estimate for the Programmable Alternative in the STIP

Following is the capital support estimate for the PA/ED phase.

**Table 39—Capital Support Estimate**

Project Support Components for PA & ED Phase				
	Caltrans		OCTA/Consultant	TOTAL
	District	DES		
Estimated PYs	6.5	0.2	16.4	23.1
Estimated PS \$	\$1,140,000	\$35,000	\$0	\$1,175,000
Estimated PYE \$	\$0	\$0	\$6,600,000	\$6,600,000
<b>Total \$</b>	<b>\$1,140,000</b>	<b>\$35,000</b>	<b>\$6,600,000</b>	<b>\$7,775,000</b>

## 10. SCHEDULE

**Table 40—Schedule**

HQ Milestones	Delivery Date
Begin Environmental	September 2015
Circulate DED	February 2017
PA & ED	February 2018
Regular Right of Way	November 2020
Project PS&E	March 2021
Right of Way Certification	March 2021
Ready to List	March 2021
Approve Contract	July 2021
Contract Acceptance	April 2025
End Project	April 2025

## 11. FHWA COORDINATION

The proposed project is on an interstate highway system and, is new/reconstruction, greater than \$1 million, may have federal funding, and has mandatory design exceptions. Therefore, this is a High Profile Project (HPP) and would require FHWA oversight and review during the project development process. The project is subject to the FHWA/Caltrans revised stewardship agreement of September 2007 and amended in September 2010. During the PA/ED phase, this project will be subject to Section 6005 of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) NEPA Delegation Pilot Program.

Any projects \$500 million or more (including Capital Construction, Preliminary Engineering, and Capital Support for one of the alternatives at this phase) are considered major projects. Since the high estimated cost of this project is \$452 million, it may be subject to additional requirements if the cost increases. Therefore, this project, during the PA/ED phase, may require a "Major Project Agreement" to be executed between FHWA and Caltrans, and additional deliverables of "Finance Plans" and "Project Management Plans."

## 12. CONTACTS

### CALIFORNIA DEPARTMENT OF TRANSPORTATION DISTRICT 12

Constantino Stamation  
Branch Chief, Project Studies Unit (949) 724-2249  
Jason Ly  
Project Studies Unit (949) 724-2171  
Mike Varipapa  
Project Manager (949) 756-7607

### ORANGE COUNTY TRANSPORTATION AUTHORITY

Tamara Warren  
Project Manager (714) 560-5590  
Anup Kulkarni  
Traffic Modeling (714) 560-5867

### MARK THOMAS & COMPANY

Leonard Sequeira, P.E.  
Project Manager (949) 477-9000 ext. 101  
Karen Chapman, P.E.  
Design Manager (949) 477-9000 ext. 110  
Garrett Kaya, P.E.  
Design Engineer (949) 477-9000 ext. 104

### AUSTIN FOUST/STANTEC

Daryl Zerfass, T.E.  
Traffic Study (949) 923-6058

### EARTH MECHANICS, INC.

Amir Zand, P.E.  
Geotechnical Study (714) 751-3826

### PARSONS

Macie Cleary  
Environmental Manager (949) 333-4467

### 13. PROJECT REVIEWS

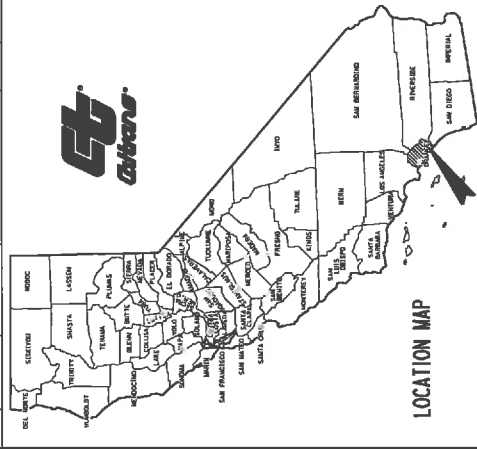
Project Manager	Mike Varipapa	Date	<u>November 2011</u>
District Environmental Plan	Smita Deshpande/Gabriela Jauregui	Date	<u>August 2011</u>
HQ Design Coordinator	Jim Deluca/David Cordova	Date	<u>June 2011</u>

**ATTACHMENT 1**  
**Location Map**

**STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION  
PROJECT PLANS FOR CONSTRUCTION ON  
STATE HIGHWAY  
IN ORANGE COUNTY IN IRVINE AND TUSTIN  
ON INTERSTATE 5  
FROM INTERSTATE 405 TO STATE ROUTE 55**

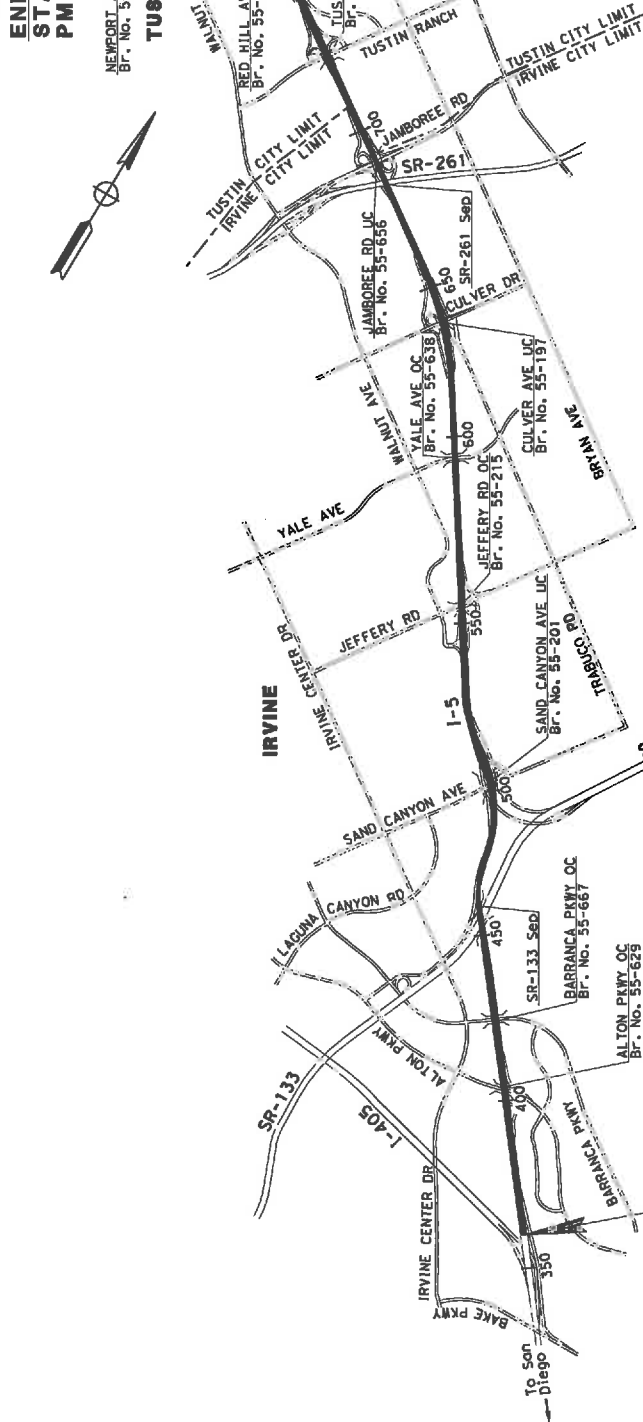
TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

DIST.	COUNTY	ROUTE	PSR MILEAGE TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oran	5	21.3/30.3	



**END WORK  
STA 835+00.00  
PM 30.3**

**SR-55 S&D**



**BEGIN WORK  
STA 365+00.00 PM 21.3**

**PROFESSIONAL ENGINEER**  
REGISTERED CIVIL ENGINEER

PROJECT ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_

PLANS APPROVAL DATE: \_\_\_\_\_  
THE STATE OF CALIFORNIA OR ITS  
OFFICE OF HIGHWAYS SHALL NOT BE  
RESPONSIBLE FOR THE ACCURACY OR  
COMPLETENESS OF OBTAINED COPIES OF THIS PLAN SHEET.

**WEST TUCKER & COMPANY, INC.**  
18755 HOWLAND AVE SUITE 205  
IRVINE, CA 92606

OCTA  
550 S. MAIN ST  
ORANGE, CA 92663-1584

CONTRACT No.	PROJECT ID	PROJECT NUMBER & PHASE
00-000004	1200020052	1200020052K

**FOR PSR USE ONLY**

**ATTACHMENT 2**  
**TASAS Table B**



California Department of Transportation  
Table B - Selective Accident Rate Calculation

Location Description	Rate Group (RUS)	12293 MI H 36 mo. NORTH NA	No. of Accidents / Significance			ADT Main X-St	Total MV+ or MVM	Actual		Accident Rates Average								
			Tot	Fat	Inj			F+	Fat	F+	Tot	Fat	F+	Tot				
12 ORA 005 016.700 - 12 ORA 005 030.999 0001-0001 2006-01-01 2008-12-31			1922	6	503	509	1708	100	554	7	131.5	1771.49	0.003	.29	1.09	0.011	.32	1.08

Accident Rates expressed as: # of accidents / Million vehicle miles

+ denotes that Million Vehicles (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

Location Description	Rate Group (RUS)	No. of Accidents / Significance	No. of Accidents / Significance			Persons Killed Inj	ADT Main X-St	Total MV+ or MVM	Actual		Accident Rates Average		Tot				
			Tot	Fat	Inj				F+	Fat	F+						
12 ORA 005 018,700 - 12 ORA 005 030,999	12,293 M H	1286	3	334	337	1102	55	432	4	131.5	1771.49	0.002	.19	.73	0.011	.32	1.08
0001-0001 2006-01-01 2008-12-31	36 mo. SOUTH NA								464								

Accident Rates expressed as: # of accidents / Million vehicle miles

+ denotes that Million Vehicles (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

California Department of Transportation  
Table B - Selective Accident Rate Calculation

Location Description	Rate Group (RUS)	No. of Accidents / Significance							ADT Main X-St	Total MV+ or MVM	Actual F+I	Accident Rates Average			
		Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark				Tot	Fat	F+I	Tot
12 ORA 005 018.722 005/SB ON-AV CARLOTAVALENC 0001-0001 2006-01-01 2008-12-31 36 mo.	R 28 U	2	0	0	0	1	0	0	8.8	9.65 + 0.000	.00	.21	0.002	.16	.55
12 ORA 005 018.813 005/NB ON WB EL TORO RD 0001-0001 2006-01-01 2008-12-31 36 mo.	R 20 U	9	0	4	4	8	0	3	10.8	11.84 + 0.000	.34	.76	0.003	.20	.65
12 ORA 005 018.913 005/SB OFF CARLOTAVALENCIA 0001-0001 2006-01-01 2008-12-31 36 mo.	R 26 U	35	0	11	11	27	0	14	23.2	25.43 + 0.000	.43	1.38	0.004	.28	.95
12 ORA 005 019.499 005/NBOFF TO LAKE FOREST DR 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	31	0	15	15	31	1	5	10.9	11.95 + 0.000	1.26	2.60	0.004	.42	1.20
12 ORA 005 019.784 005/NB OFF TO BAKE PKWY/NB 40 0001-0001 2006-01-01 2008-12-31 36 mo.	R 06 U	4	0	2	2	4	0	1	28.0	30.69 + 0.000	.07	.13	0.005	.20	.60
12 ORA 005 019.798 005/SB ON FR EB LAKE FOREST 0001-0001 2006-01-01 2008-12-31 36 mo.	R 20 U	1	0	0	0	1	0	0	6.0	6.58 + 0.000	.00	.15	0.003	.20	.65
12 ORA 005 019.952 005/SEGNB ON/5/405 WB LKFRST 0001-0001 2006-01-01 2008-12-31 36 mo.	R 20 U	10	0	1	1	9	0	4	14.0	15.34 + 0.000	.07	.65	0.003	.20	.65
12 ORA 005 019.963 005/SEG NB 5/405 ON/OFF COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R 04 U	4	0	0	0	2	0	4	32.5	35.62 + 0.000	.00	.11	0.001	.07	.25
12 ORA 005 020.009 005/SB ON WB L.FOREST/CARLO 0001-0001 2006-01-01 2008-12-31 36 mo.	R 40 U	5	0	0	0	3	2	0	5.0	5.43 + 0.000	.00	.92	0.004	.20	.70
12 ORA 005 020.178 005/SEG SB 5/405 OFF TO LK FRST 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	22	0	9	9	18	0	7	24.0	26.30 + 0.000	.34	.84	0.004	.42	1.20
12 ORA 005 020.193 005/SB ON FROM BAKE PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 08 U	0	0	0	0	0	0	0	15.5	16.99 + 0.000	.00	.00	0.004	.15	.45
12 ORA 005 020.565 005/SEG NB OFF TO BAKE PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	9	0	2	2	8	1	2	32.0	35.07 + 0.000	.06	.26	0.004	.42	1.20

Accident Rates expressed as: # of accidents / Million vehicle miles

+ denotes that Million Vehicles (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

California Department of Transportation  
Table B - Selective Accident Rate Calculation

Location Description	Rate Group (RUS)	No. of Accidents / Significance							ADT Main X-St	Total MV+ or MVM	Actual			Accident Rates Average			Tot
		Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark			Fat	F+I	Fat	Fat	F+I		
12 ORA 005 020.566 005/SEG NB 5/405 ON COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R.04 U	3	0	2	2	3	0	1	22.9	25.10 +	0.000	.08	.12	0.001	.07	.25	
12 ORA 005 020.706 005/SEG NB 5/405 ON FR EB BAKE 0001-0001 2006-01-01 2008-12-31 36 mo.	R.40 U	3	0	2	2	1	0	0	5.8	6.36 +	0.000	.31	.47	0.004	.20	.70	
12 ORA 005 020.707 005/SEG NB 5/405 ON COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R.04 U	6	0	2	2	4	0	2	29.0	31.78 +	0.000	.06	.19	0.001	.07	.25	
12 ORA 005 020.745 005/SEG SB ON FR EB BAKE PKW 0001-0001 2006-01-01 2008-12-31 36 mo.	R.20 U	0	0	0	0	0	0	0	.9	1.03 +	0.000	.00	.00	0.003	.20	.65	
12 ORA 005 020.746 005/SEG SB 5/405 ON/OFF COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R.04 U	2	0	1	1	0	0	0	39.5	43.29 +	0.000	.02	.05	0.001	.07	.25	
12 ORA 005 020.801 005/NB HOV CONN TO NB RTE 405 0001-0001 2006-01-01 2008-12-31 36 mo.	R.06 U	1	0	0	0	1	0	1	16.0	17.54 +	0.000	.00	.06	0.005	.20	.60	
12 ORA 005 020.867 005/SEG NB 5/405 ON FR WB BAKE 0001-0001 2006-01-01 2008-12-31 36 mo.	R.20 U	17	0	2	2	13	5	7	24.0	26.30 +	0.000	.08	.65	0.003	.20	.65	
12 ORA 005 020.868 005/SEG NB 5/405 ON COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R.04 U	20	0	8	8	14	2	4	53.0	58.09 +	0.000	.14	.34	0.001	.07	.25	
12 ORA 005 020.930 005/NB OFF TO NB RTE 405 0001-0001 2006-01-01 2008-12-31 36 mo.	R.06 U	21	0	4	4	15	0	5	52.0	56.99 +	0.000	.07	.37	0.005	.20	.60	
12 ORA 005 020.949 005/SEG SB ON FR WB BAKE PKW 0001-0001 2006-01-01 2008-12-31 36 mo.	R.40 U	3	0	1	1	2	1	1	4.1	4.49 +	0.000	.22	.67	0.004	.20	.70	
12 ORA 005 020.950 005/SEG SB 5/405 ON/OFF COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R.04 U	0	0	0	0	0	0	0	38.5	42.20 +	0.000	.00	.00	0.001	.07	.25	
12 ORA 005 021.118 005/SEG SB 5/405 ON/OFF COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R.04 U	2	0	1	1	0	0	1	22.1	24.22 +	0.000	.04	.08	0.001	.07	.25	

Accident Rates expressed as: # of accidents / Million vehicle miles

+ denotes that Million Vehicles (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

Location Description	Rate Group (RUS)	No. of Accidents / Significance							ADT Main X-St	Total MV+ or MVM	Accident Rates			Actual F+	Fat	F+I	Tot
		Tot	Fat	Inj	F+	Multi Veh	Wet	Dark			Pers Kld Inj	Fat	Fat				
12 ORA 005 021.166 005/SEG SB 5/405 OFF TO BAKE PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	16	0	4	4	12	1	3	0	21.9	24.00 + 0.000	.17	.67	0.004	.42	1.20	
12 ORA 005 021.182 005/SB ON FR SB RTE 405 0001-0001 2006-01-01 2008-12-31 36 mo.	R 64 U	3	0	1	1	1	0	1	0	58.7	64.31 + 0.000	.02	.05	0.003	.11	.35	
12 ORA 005 021.194 005/SEG SB OFF TO LAKE FOREST 0001-0001 2006-01-01 2008-12-31 36 mo.	R 06 U	0	0	0	0	0	0	0	0	18.0	19.73 + 0.000	.00	.00	0.005	.20	.60	
12 ORA 005 021.195 005/SEG SB OF TO BAKE PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 58 U	5	0	2	2	4	0	2	0	13.0	14.25 + 0.000	.14	.35	0.002	.09	.25	
12 ORA 005 021.301 005/SEG NB 5/405 ON/OFF COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R 04 U	9 H99	1	1	2	6	0	3 H95	1	7.0	7.67 + 0.130	.26	1.17	0.001	.07	.25	
12 ORA 005 021.539 005/SB ON FROM ALTON PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 28 U	5	0	1	1	2	0	2	0	4.1	4.53 + 0.000	.22	1.11	0.002	.16	.55	
12 ORA 005 021.554 005/NB ON FR LK FOREST/BAKE PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 08 U	3	0	1	1	0	0	2	0	23.0	25.21 + 0.000	.04	.12	0.004	.15	.45	
12 ORA 005 021.605 005/SEG NB OFF COLL 0001-0001 2006-01-01 2008-12-31 36 mo.	R 58 U	0	0	0	0	0	0	0	0	1.6	1.70 + 0.000	.00	.00	0.002	.09	.25	
12 ORA 005 021.773 005/SB OFF TO LK FOREST/BAKE PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 34 U	5	0	1	1	3	0	2	0	24.0	26.30 + 0.000	.04	.19	0.002	.09	.30	
12 ORA 005 021.981 005/NB OFF TO ALTON PARKWAY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	8	0	3	3	6	0	1	0	6.9	7.53 + 0.000	.40	1.06	0.004	.42	1.20	
12 ORA 005 022.141 005/NB ON FR EB ALTON PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 40 U	5 H95	0	1	1	2	0	1	0	2.1	2.29 + 0.000	.44	2.19	0.004	.20	.70	
12 ORA 005 022.201 005/SB OFF TO ALTON PARKWAY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 26 U	7	0	3	3	4	0	4	0	14.3	15.71 + 0.000	.19	.45	0.004	.28	.95	

Accident Rates expressed as: # of accidents / Million vehicle miles

+ denotes that Million Vehicles (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

California Department of Transportation  
Table B - Selective Accident Rate Calculation

Location Description	Rate Group (RUS)	No. of Accidents / Significance							ADT Main X-St	Total MV+ or MVM	Fat	Accident Rates			
		Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark				Pers Klid Inj	Actual F+I	Tot	Fat
12 ORA 005 022.331 005/NB ON FR WB ALTON PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 20 U	5	0	3	3	4	1	1	7.9 .0	8.66 + 0.000	.35	.58	0.003	.20	.65
12 ORA 005 022.762 005/NB ON FR BARRANCA PKWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 12 U	0	0	0	0	0	0	0	1.0 .0	1.10 + 0.000	.00	.00	0.002	.26	.75
12 ORA 005 022.763 005/SB OFF TO BARRANCA PYWY 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	0	0	0	0	0	0	0	1.3 .0	1.40 + 0.000	.00	.00	0.004	.42	1.20
12 ORA 005 022.976 005/SEG NBON FR BARRANCA PK 0001-0001 2006-01-01 2008-12-31 36 mo.	R 12 U	1	0	0	0	0	0	0	5.8 .0	12.60 + 0.000	.00	.16	0.002	.26	.75
12 ORA 005 023.004 005/NB CONN TO NB RTE 133 0001-0001 2006-01-01 2008-12-31 36 mo.	R 64 U	2	0	0	0	0	0	0	6.5 .0	7.12 + 0.000	.00	.28	0.003	.11	.35
12 ORA 005 023.177 005/SEG SBOFF TO BARRANCA P 0001-0001 2006-01-01 2008-12-31 36 mo.	R 62 U	0	0	0	0	0	0	0	1.5 .0	1.64 + 0.000	.00	.00	0.005	.15	.45
12 ORA 005 R023.332 005/SB CONN TO SB133/BARNCA 0001-0001 2006-01-01 2008-12-31 36 mo.	R 34 U	1	0	0	0	0	0	0	12.1 .0	13.25 + 0.000	.00	.08	0.002	.09	.30
12 ORA 005 R023.772 005/SB ON FR SAND CYN AVE 0001-0001 2006-01-01 2008-12-31 36 mo.	R 12 U	2	0	1	1	2	0	2	5.4 .0	21.31 + 0.000	.17	.34	0.002	.26	.75
12 ORA 005 R023.860 005/NB OFF TO SAND CYN AVE 0001-0001 2006-01-01 2008-12-31 36 mo.	R 22 U	5	0	2	2	2	3	4	4.8 .0	5.28 + 0.000	.38	.95	0.002	.36	1.10
12 ORA 005 R024.082 005/SB OFF TO SAND CYN AVE 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	7	0	2	2	7	0	1	9.9 .0	10.80 + 0.000	.19	.65	0.004	.42	1.20
12 ORA 005 R024.127 005/NB ON FR SAND CYN AVE 0001-0001 2006-01-01 2008-12-31 36 mo.	R 12 U	7	0	1	1	7	0	2	8.2 .0	8.94 + 0.000	.11	.78	0.002	.26	.75
12 ORA 005 R024.227 005/SB CONN TO NB RTE 133 0001-0001 2006-01-01 2008-12-31 36 mo.	R 06 U	1	0	0	0	0	0	0	7.2 .0	7.94 + 0.000	.00	.13	0.005	.20	.60

Accident Rates expressed as: # of accidents / Million vehicle miles

+ denotes that Million Vehicles (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

Location Description	Rate Group (RUS)	No. of Accidents / Significance							ADT Main X-St	Total MV+ or MVM	Actual			Accident Rates		
		Tot	Fat	Inj	F+I	Multi Veh	Wet	Dark			Pers Kid Inj	Fat	F+I	Fat	F+I	Tot
12 ORA 005 R024.738 005/SB ON FR JEFFREY&WALNUT 0001-0001 2006-01-01 2008-12-31 36 mo.	R 28 U	1	0	0	0	1	0	0	7.6	15.92 + 0.000	.00	.12	0.002	.16	.55	
12 ORA 005 R024.801 005/NB OFF TO JEFFREY RD 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	15	0	4	4	14	0	3	12.7	13.93 + 0.000	.29	1.08	0.004	.42	1.20	
12 ORA 005 R024.873 005/SB OFF JEFFREY & WALNUT 0001-0001 2006-01-01 2008-12-31 36 mo.	R 26 U	3	0	0	0	1	0	1	9.4	10.30 + 0.000	.00	.29	0.004	.28	.95	
12 ORA 005 R024.965 005/NB ON FR NB JEFFREY RD 0001-0001 2006-01-01 2008-12-31 36 mo.	R 40 U	3	0	0	0	0	2	0	5.1	5.64 + 0.000	.00	.53	0.004	.20	.70	
12 ORA 005 R025.191 005/NB ON FR SB JEFFREY RD 0001-0001 2006-01-01 2008-12-31 36 mo.	R 20 U	3	0	0	0	2	0	0	3.3	3.65 + 0.000	.00	.82	0.003	.20	.65	
12 ORA 005 R026.351 005/SB ON FR EB CULVER DR 0001-0001 2006-01-01 2008-12-31 36 mo.	R 20 U	1	0	0	0	1	0	0	4.2	4.64 + 0.000	.00	.22	0.003	.20	.65	
12 ORA 005 R026.389 005/NB OFF CULVER & TRABUCC 0001-0001 2006-01-01 2008-12-31 36 mo.	R 26 U	6	0	1	1	3	1	6	6.9	7.51 + 0.000	.13	.80	0.004	.28	.95	
12 ORA 005 R026.564 005/NB ON TRABUC&EB CULVE 0001-0001 2006-01-01 2008-12-31 36 mo.	R 28 U	8	0	1	1	7	0	5	9.6	10.54 + 0.000	.09	.76	0.002	.16	.55	
12 ORA 005 R026.634 005/SB ON FR WB CULVER DR 0001-0001 2006-01-01 2008-12-31 36 mo.	R 40 U	0	0	0	0	0	0	0	3.0	3.31 + 0.000	.00	.00	0.004	.20	.70	
12 ORA 005 R026.747 005/NB ON FR WB CULVER DR 0001-0001 2006-01-01 2008-12-31 36 mo.	R 20 U	5	0	1	1	3	0	3	5.6	6.14 + 0.000	.16	.82	0.003	.20	.65	
12 ORA 005 R026.865 005/SB OFF TO CULVER DR 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	15	0	3	3	14	1	6	19.3	21.15 + 0.000	.14	.71	0.004	.42	1.20	
12 ORA 005 027.990 005/NB OFF TO JAMBOREE ROAD 0001-0001 2006-01-01 2008-12-31 36 mo.	R 10 U	16	0	4	4	15	0	3	15.4	16.91 + 0.000	.24	.95	0.004	.42	1.20	

Accident Rates expressed as: # of accidents / Million vehicle miles

\* denotes that Million Vehicles (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

California Department of Transportation  
Table B - Selective Accident Rate Calculation

Location Description	Rate Group (RUS)	No. of Accidents / Significance										ADT		Total		Actual			Accident Rates			Tot	Fat	F+J	Tot
		Tot	Fat	Inj	F+H	Multi Veh	Wet	Dark	Pers Kld Inj	Main X-St	MV+ or MVM	Fat	F+H	Fat	Fat	Average									
12 ORA 005 027.498 005/SB ON FR NB JAMBOREE RD 0001-0001 2006-01-01 2008-12-31	R 20 U	6	0	2	2	6	0	0	0	0	0	0	7.1	7.78 +	0.000	.26	.77	0.003	.20	.65					
12 ORA 005 027.547 005/NB ON FR NB JAMBOREE RD 0001-0001 2006-01-01 2008-12-31	R 40 U	7	0	1	1	6	1	3	0	0	1	9.1	9.93 +	0.000	.10	.71	0.004	.20	.70						
12 ORA 005 027.641 005/SB ON FR SB JAMBOREE RD 0001-0001 2006-01-01 2008-12-31	R 40 U	7	0	1	1	7	0	0	0	0	1	7.9	8.66 +	0.000	.12	.81	0.004	.20	.70						
12 ORA 005 027.728 005/NB ON FR SB JAMBOREE RD 0001-0001 2006-01-01 2008-12-31	R 20 U	17	0	4	4	9	3	8	0	0	4	8.5	9.34 +	0.000	.43	1.82	0.003	.20	.65						
12 ORA 005 027.799 005/SB OFF TO JAMBOREE ROAD 0001-0001 2006-01-01 2008-12-31	R 10 U	27	0	8	8	26	0	8	0	0	14	24.2	26.49 +	0.000	.30	1.02	0.004	.42	1.20						
12 ORA 005 028.224 005/NB OFF TO TUSTIN RCH RD 0001-0001 2006-01-01 2008-12-31	R 22 U	7	0	1	1	3	0	4	0	0	1	4.9	5.34 +	0.000	.19	1.31	0.002	.36	1.10						
12 ORA 005 R028.301 005/SB ON FR TUSTIN RNCH RD 0001-0001 2006-01-01 2008-12-31	R 24 U	1	0	0	0	0	0	0	0	0	0	6.4	7.04 +	0.000	.00	.14	0.002	.26	.80						
12 ORA 005 R028.417 005/NB ON FR TUSTIN RNCH RD 0001-0001 2006-01-01 2008-12-31	R 12 U	11	0	1	1	3	5	6	0	0	1	6.6	7.19 +	0.000	.14	1.53	0.002	.26	.75						
12 ORA 005 R028.456 005/SB OFF TO TUSTIN RNCH RD 0001-0001 2006-01-01 2008-12-31	R 10 U	13	0	3	3	8	0	3	0	0	3	12.8	13.99 +	0.000	.21	.93	0.004	.42	1.20						
12 ORA 005 R028.976 005/NB OFF TO RED HILL AVE 0001-0001 2006-01-01 2008-12-31	R 10 U	15	0	3	3	15	2	6	0	0	3	10.9	11.98 +	0.000	.25	1.25	0.004	.42	1.20						
12 ORA 005 R028.981 005/SB ON FR RED HILL AVE 0001-0001 2006-01-01 2008-12-31	R 12 U	9	0	3	3	6	2	3	0	0	3	11.0	12.09 +	0.000	.25	.74	0.002	.26	.75						
12 ORA 005 R028.228 005/NB ON FR RED HILL AVE 0001-0001 2006-01-01 2008-12-31	R 12 U	10	0	2	2	10	0	2	0	0	3	11.3	12.39 +	0.000	.16	.81	0.002	.26	.75						

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For Ramps RUS only considers R(Rural) U(Urban)



California Department of Transportation  
Table B - Selective Accident Rate Calculation

Location Description	Rate Group (RUS)	36 mo.	No. of Accidents / Significance							ADT Main X-St	Total MV+ or MV/M	Actual F+	Accident Rates		Tot	
			Tot	Fat	Inj	F+	Multi Veh	Wet	Dark				Fat	Average		
12 ORA 005 R029.255 005/SB OFF TO RED HILL AVE 0001-0001 2006-01-01 2008-12-31	R 10 U	36 mo.	14	0	4	4	13	1	2	0	10.3	.35	1.24	0.004	.42	1.20
12 ORA 005 029.728 005/NB ON FR NEWPORT AVE 0001-0001 2006-01-01 2008-12-31	R 12 U	36 mo.	9	0	2	2	7	0	5	0	9.8	.19	.84	0.002	.26	.75
12 ORA 005 029.863 005/SEG SBOFFS/55 TO NEWPORT 0001-0001 2006-01-01 2008-12-31	R 34 U	36 mo.	14	0	4	4	12	1	3	0	83.0	.04	.15	0.002	.09	.30
12 ORA 005 029.864 005/SB ON FR RTE55/4TH ST 0001-0001 2006-01-01 2008-12-31	R 08 U	36 mo.	15	0	4	4	13	1	1	0	29.5	.12	.47	0.004	.15	.45
12 ORA 005 030.185 005/NB OFF TO RTE55/4TH ST 0001-0001 2006-01-01 2008-12-31	R 34 U	36 mo.	18	0	5	5	10	11	0	30.0	.15	.55	.002	.09	.30	
12 ORA 005 030.186 005/SEG NBOFF TO 4TH STREET 0001-0001 2006-01-01 2008-12-31	R 62 U	36 mo.	0	0	0	0	0	0	0	4.5	.00	.00	.005	.15	.45	
12 ORA 005 030.261 005/SB OFF TO NEWPORT AVE 0001-0001 2006-01-01 2008-12-31	R 62 U	36 mo.	4	0	0	0	4	0	1	8.2	.00	.45	0.005	.15	.45	
12 ORA 005 030.323 005/NB OFF TO SB RTE 55 0001-0001 2006-01-01 2008-12-31	R 70 U	36 mo.	10	0	1	1	2	2	7	34.0	.03	.27	0.004	.21	.75	
12 ORA 005 030.403 005/SB OFF TO SB RTE 55 0001-0001 2006-01-01 2008-12-31	R 62 U	36 mo.	35	0	10	10	27	2	17	55.0	.17	.58	0.005	.15	.45	
12 ORA 005 030.828 005/SB ON FR FIRST STREET 0001-0001 2006-01-01 2008-12-31	R 12 U	36 mo.	11	0	4	4	9	1	3	12.7	.29	.79	0.002	.26	.75	
12 ORA 005 030.927 005/NB OFF TO 1ST/4TH ST 0001-0001 2006-01-01 2008-12-31	R 34 U	36 mo.	2	0	1	1	2	0	1	14.1	.06	.13	0.002	.09	.30	

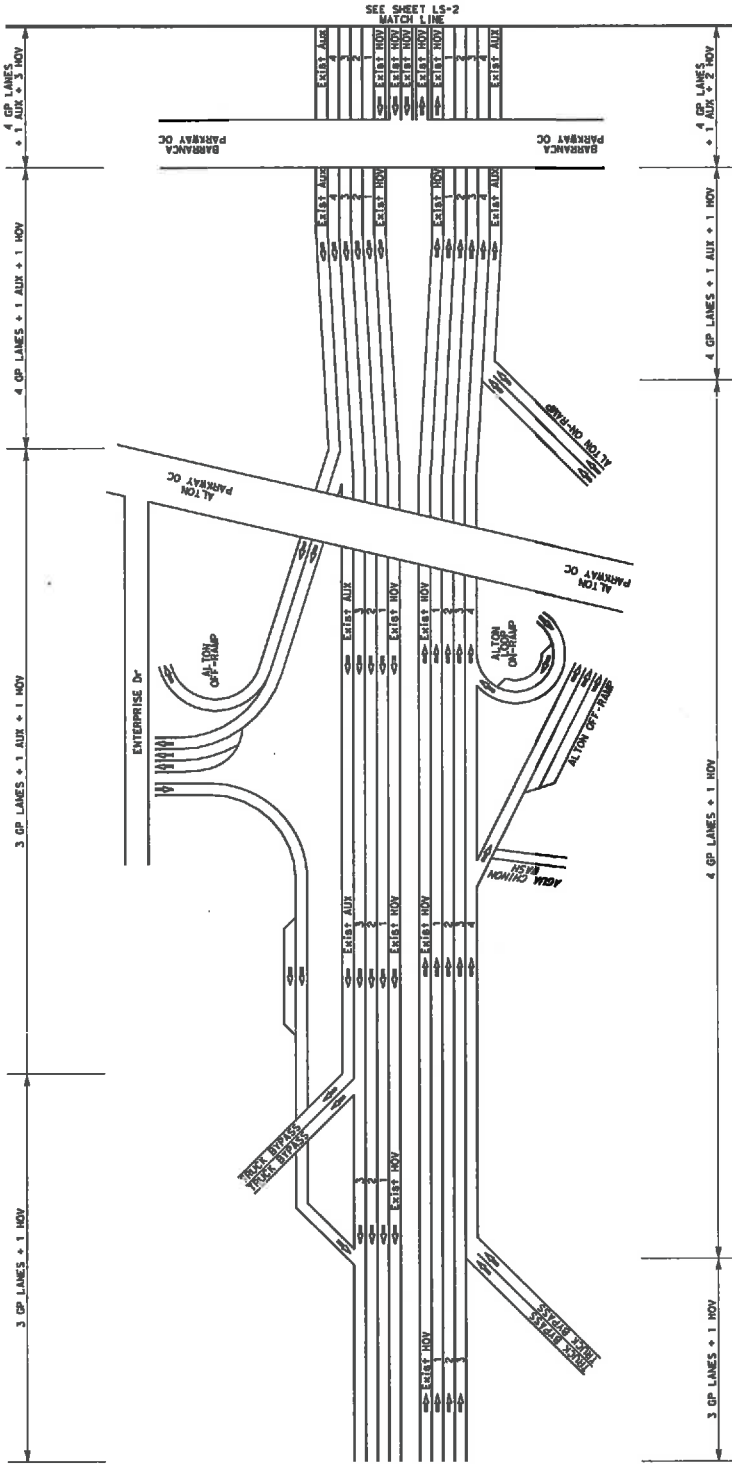
Accident Rates expressed as: # of accidents / Million vehicle miles

+ denotes that Million Vehicles (MV) used in accident rates instead (for intersections and ramps).

For Ramps RUS only considers R(Rural) U(Urban)

**ATTACHMENT 3**  
**Lane Schematics**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Orinda	5	21.3/30.3	



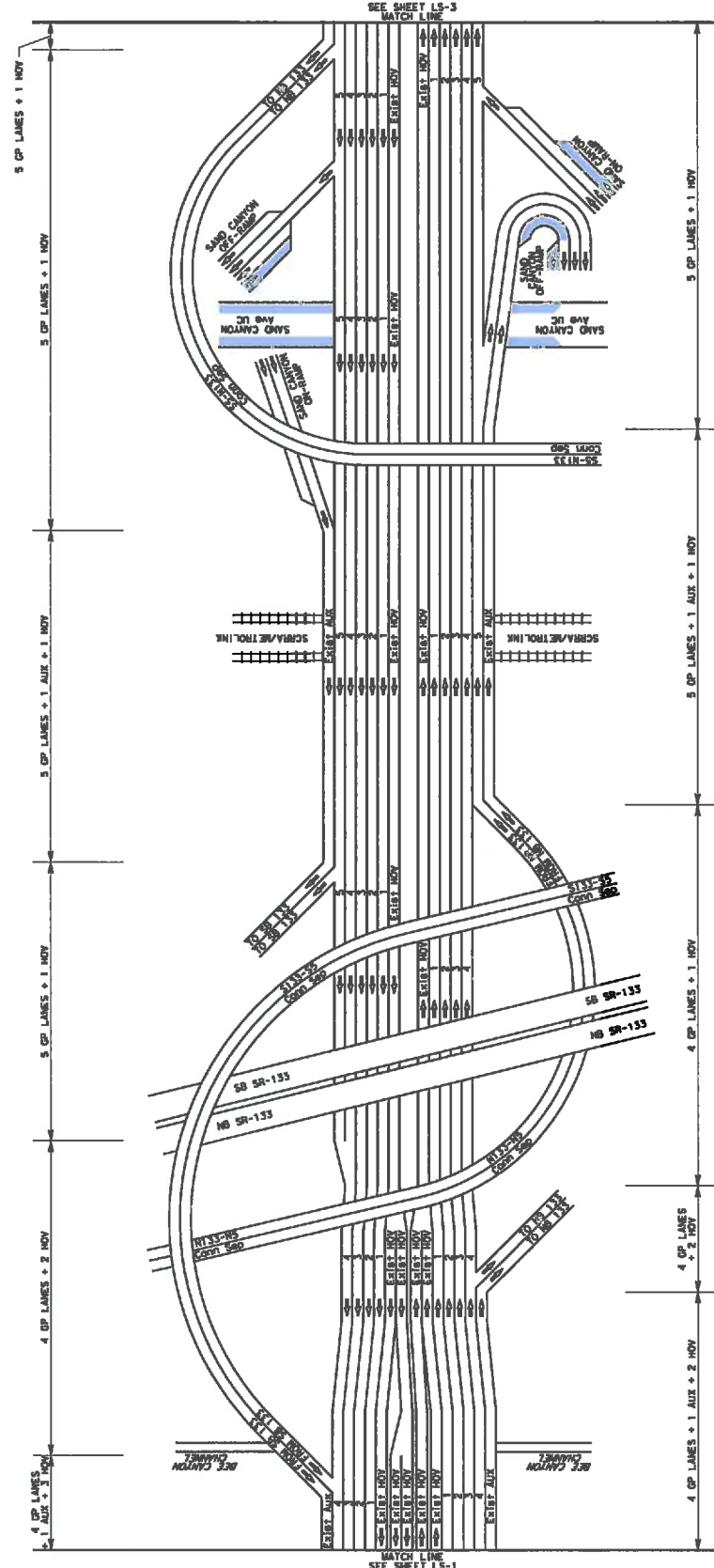
PROPOSED LANE  
 PROPOSED IMPROVEMENTS BY OTHERS

# LANE SCHEMATIC ALTERNATIVE 1 (NO BUILD)

NO SCALE  
 LS-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONCULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DESIGNED BY	REVISOR	DATE REVISED
<p><b>FOR PSR USE ONLY</b></p> <p>USERNAME: p2pkaya          DGN FILE: ... \Sheet1.dgn</p>					

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. PROJECT
12	OTO	5	21.3/30.3	3



SAND CANYON AVENUE & RAMP IMPROVEMENTS  
 FOR STATE EXCHANGE TO  
 APPROVED OCTOBER 2006

**LANE SCHEMATIC  
 ALTERNATIVE 1  
 (NO BUILD)  
 NO SCALE  
 LS-2**

PROJECT NUMBER & PHASE  
 1200020052K

UNIT 0000



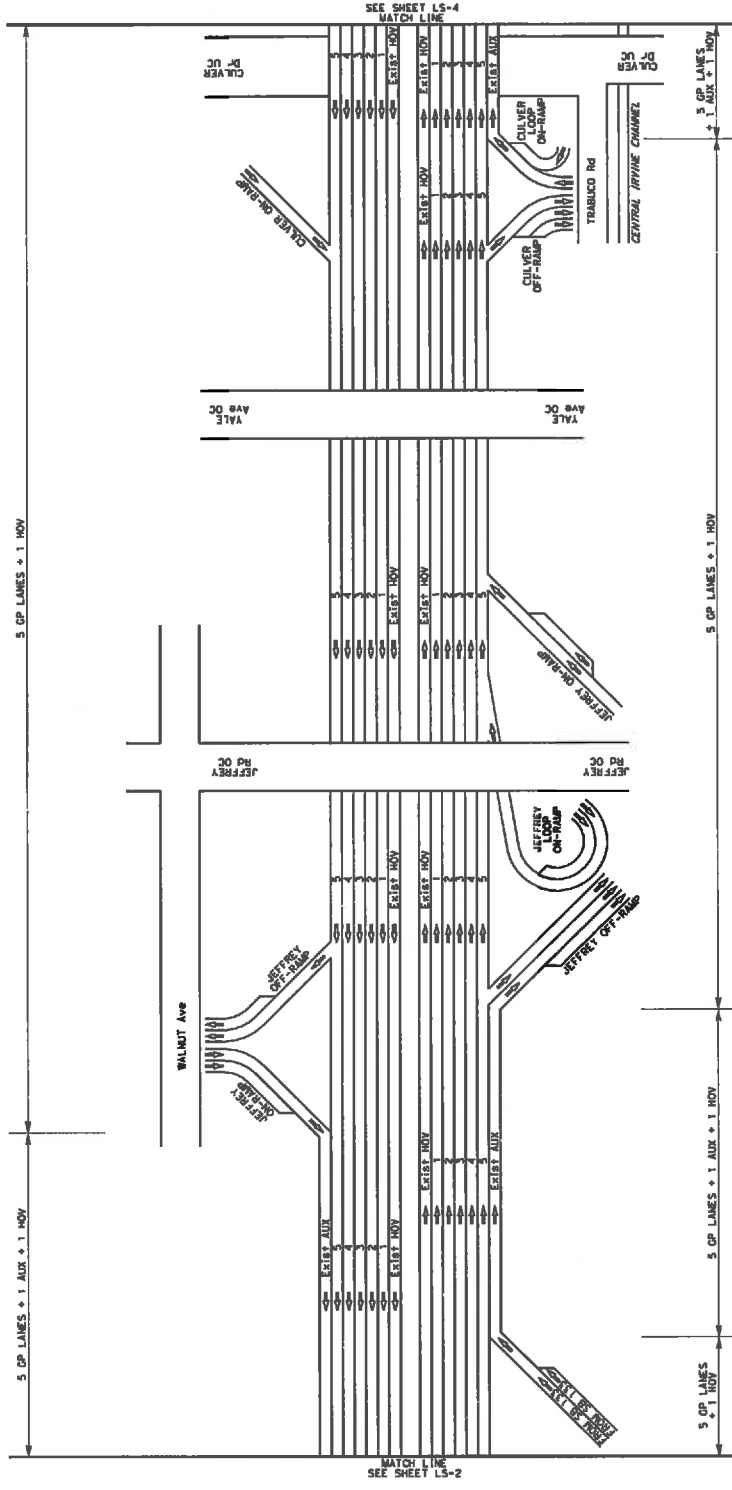
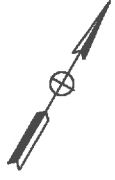
**FOR PSR USE ONLY**

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED

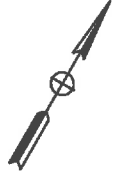
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	070	5	21.3/30.3	



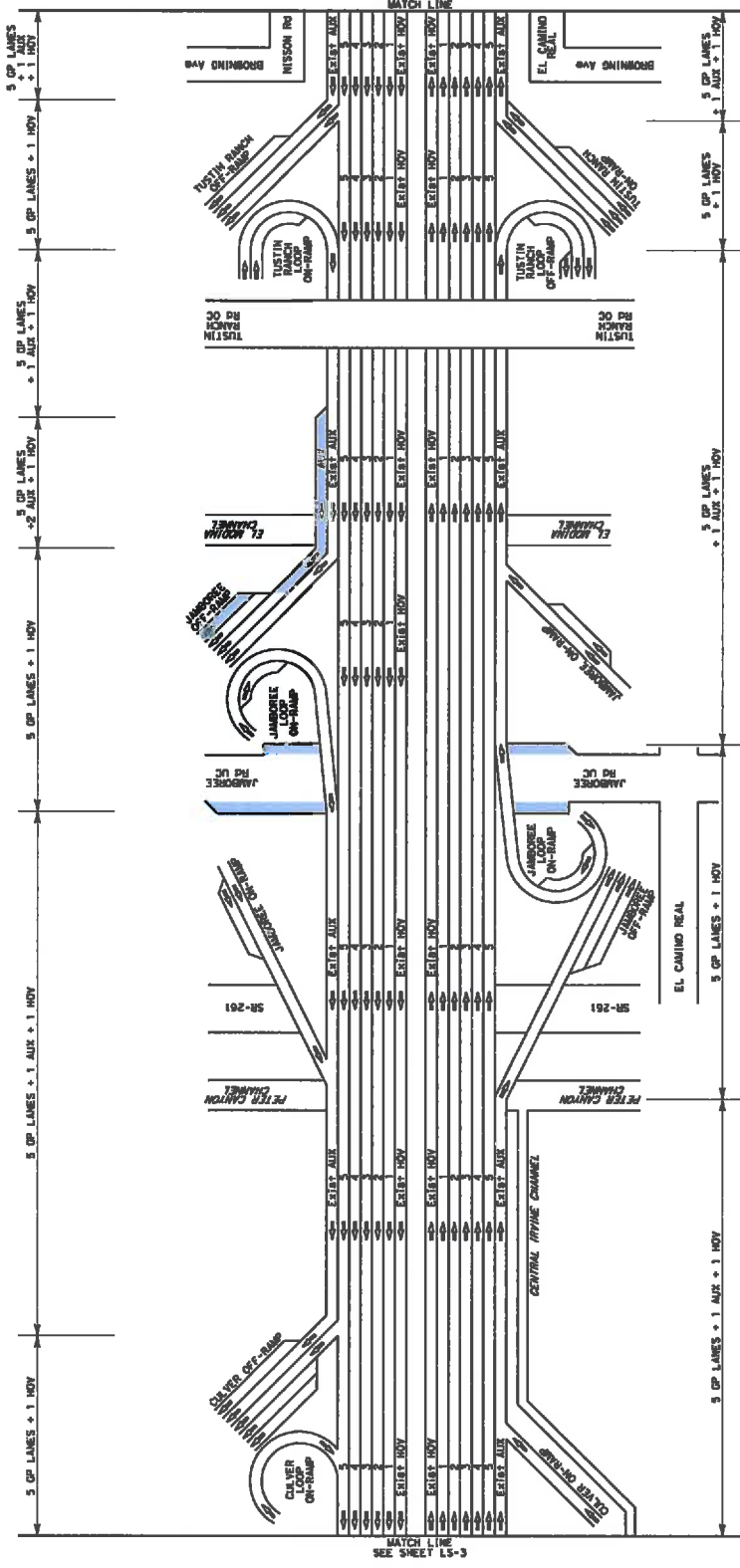
**LANE SCHEMATIC  
ALTERNATIVE 1  
(NO BUILD)**  
NO SCALE **LS-3**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED
<p><b>FOR PSR USE ONLY</b></p>					

DIST	COUNTY	ROUTE	TOTAL PROJECT	SHEET TOTAL	SHEET NO.
12	Orj	5	21.3/30.3		



JAMBORÉE ROAD EB EXIT RAMP IMPROVEMENTS  
 PLAN SHEET 12-2  
 2010



JAMBORÉE ROAD IMPROVEMENTS  
 PLAN SHEET 12-2  
 APPROVED OCTOBER 2009

# LANE SCHEMATIC ALTERNATIVE 1 (NO BUILD)

NO SCALE

LS-4

PROJECT NUMBER & PHASE  
 1200020052K

UNIT 0000



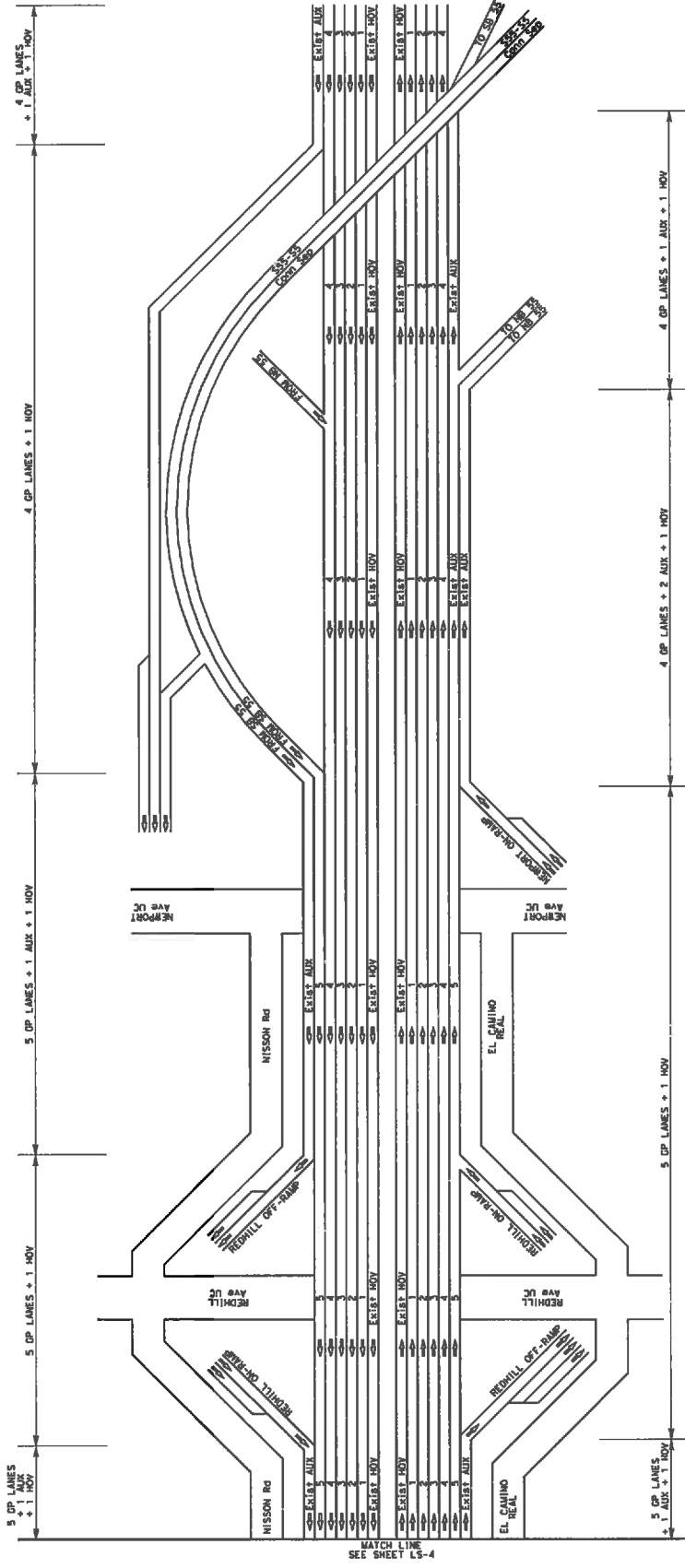
**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 DESIGNED BY  
 CHECKED BY  
 DATE REVISED  
 REVISOR



# LANE SCHEMATIC ALTERNATIVE 1 (NO BUILD)

NO SCALE  
LS-5

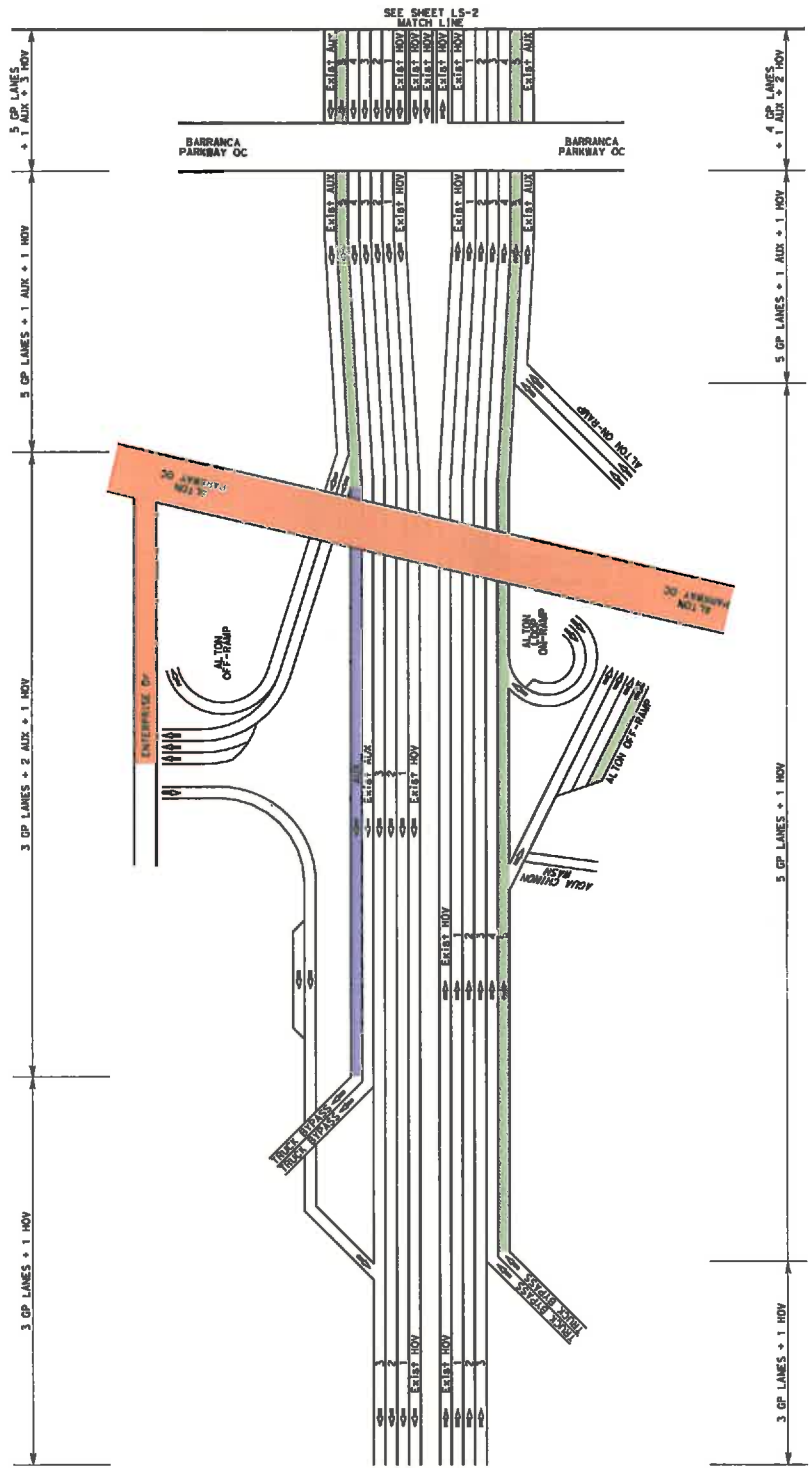


DIS#	COUNTY	ROUTE	EST. TOTAL PROJECT	SHEET NO.	NO. OF SHEETS
12	Orca	5	21.3/30.3		

**FOR PSR USE ONLY**

REVISION	DATE PLOTTED => 11/18/2011	LAST REVISION	00-00-00
DATE REVISED	CHECKED BY	DESIGNED BY	CALCULATED BY

DISP#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orca	5	21.3/30.3	



- PROPOSED LANE
- PROPOSED LANE
- PROPOSED AUXILIARY LANE
- PROPOSED INTERCHANGE IMPROVEMENT

**LANE SCHEMATIC  
ALTERNATIVE 2A**  
NO SCALE **LS-1**

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010 USERNAME p3kayg DOI FILE # ... \Sheet\LS-1\_2A\06732a-0d01.dgn

UNIT 0000

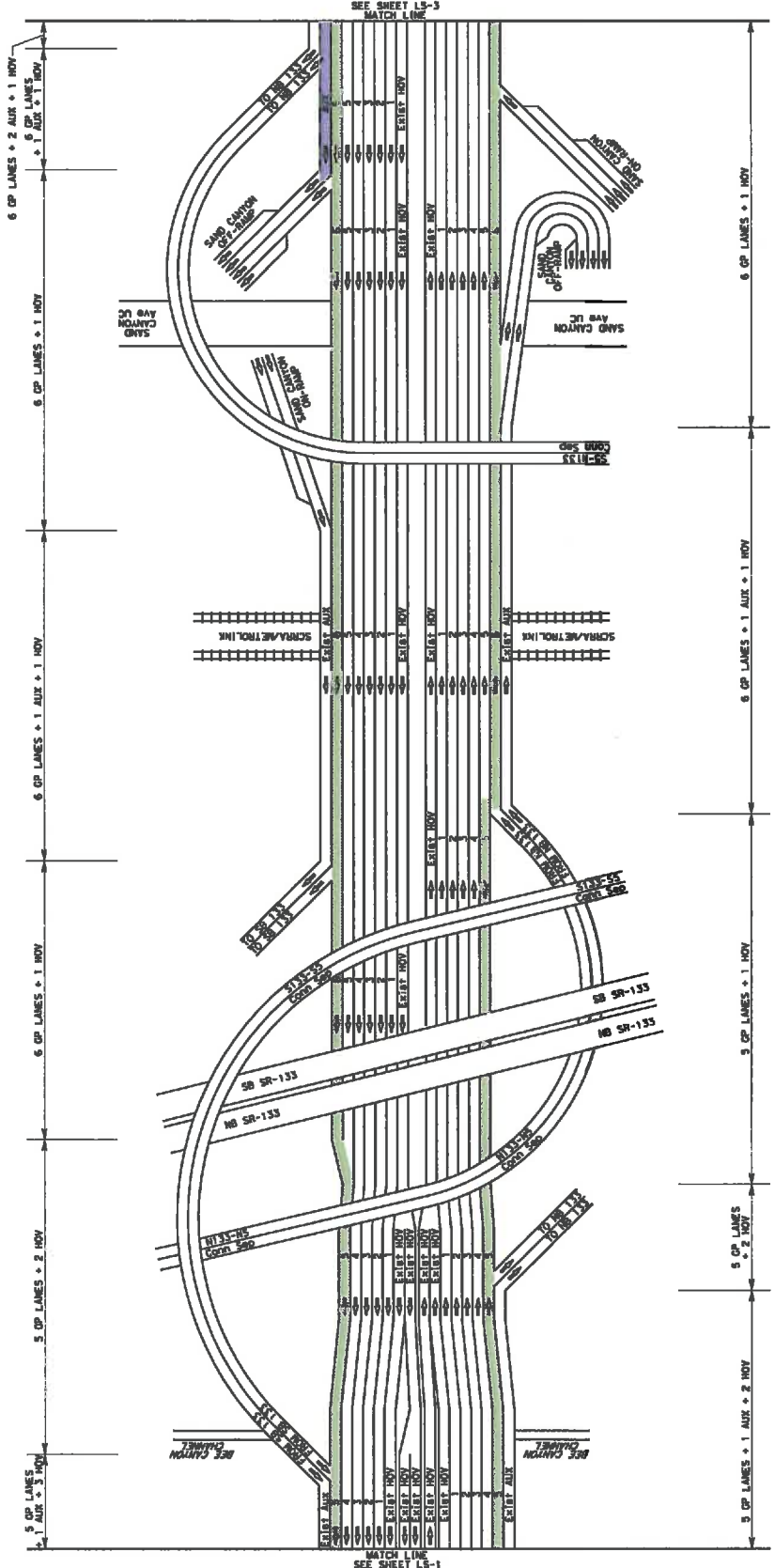
PROJECT NUMBER & PHASE

1200020052K

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR	DATE REVISED
		CHECKED BY		



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orco	5	21.3/30.3	



**LANE SCHEMATIC  
ALTERNATIVE 2A  
NO SCALE**

**LS-2**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000



**FOR PSR USE ONLY**

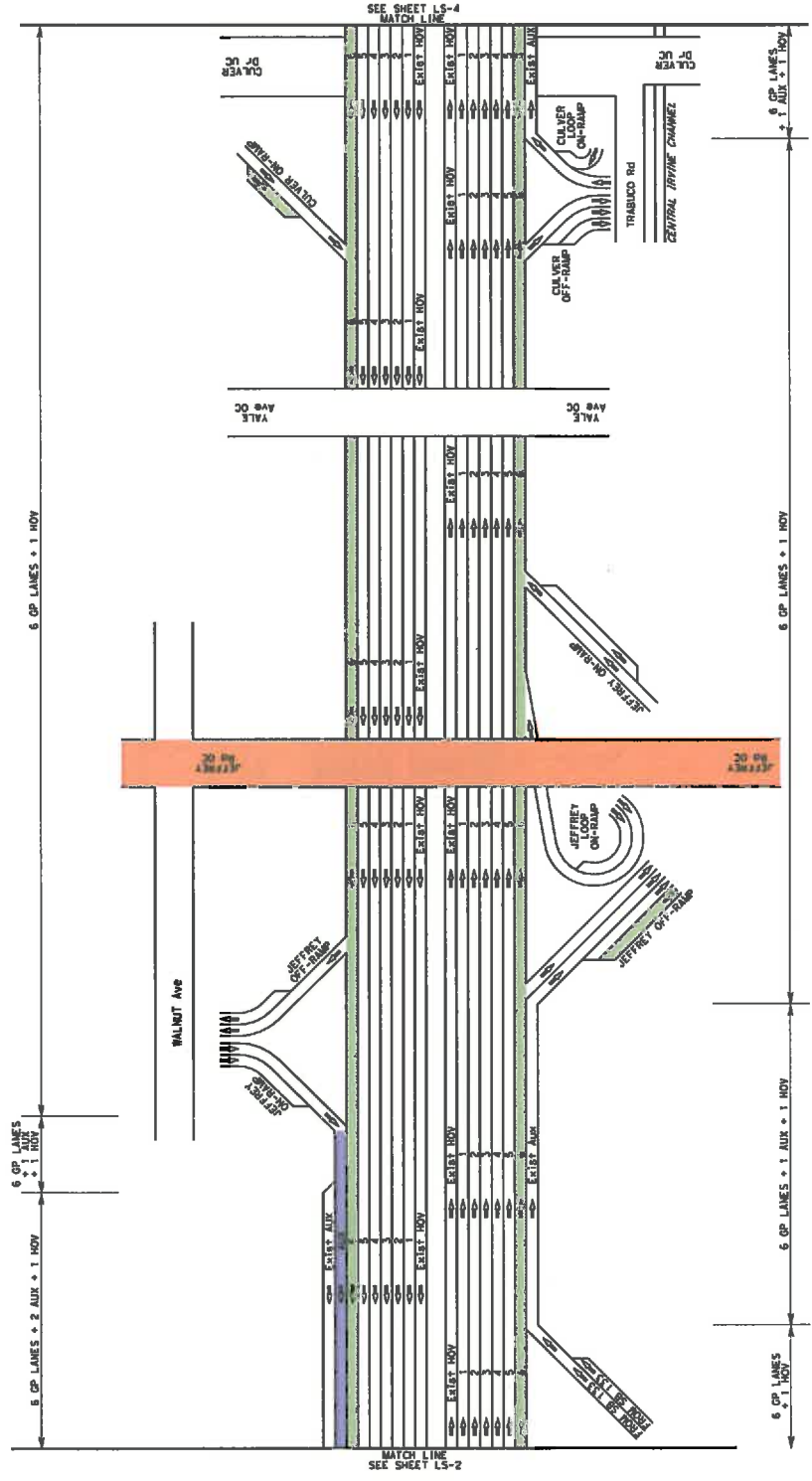
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	DESIGNED BY		



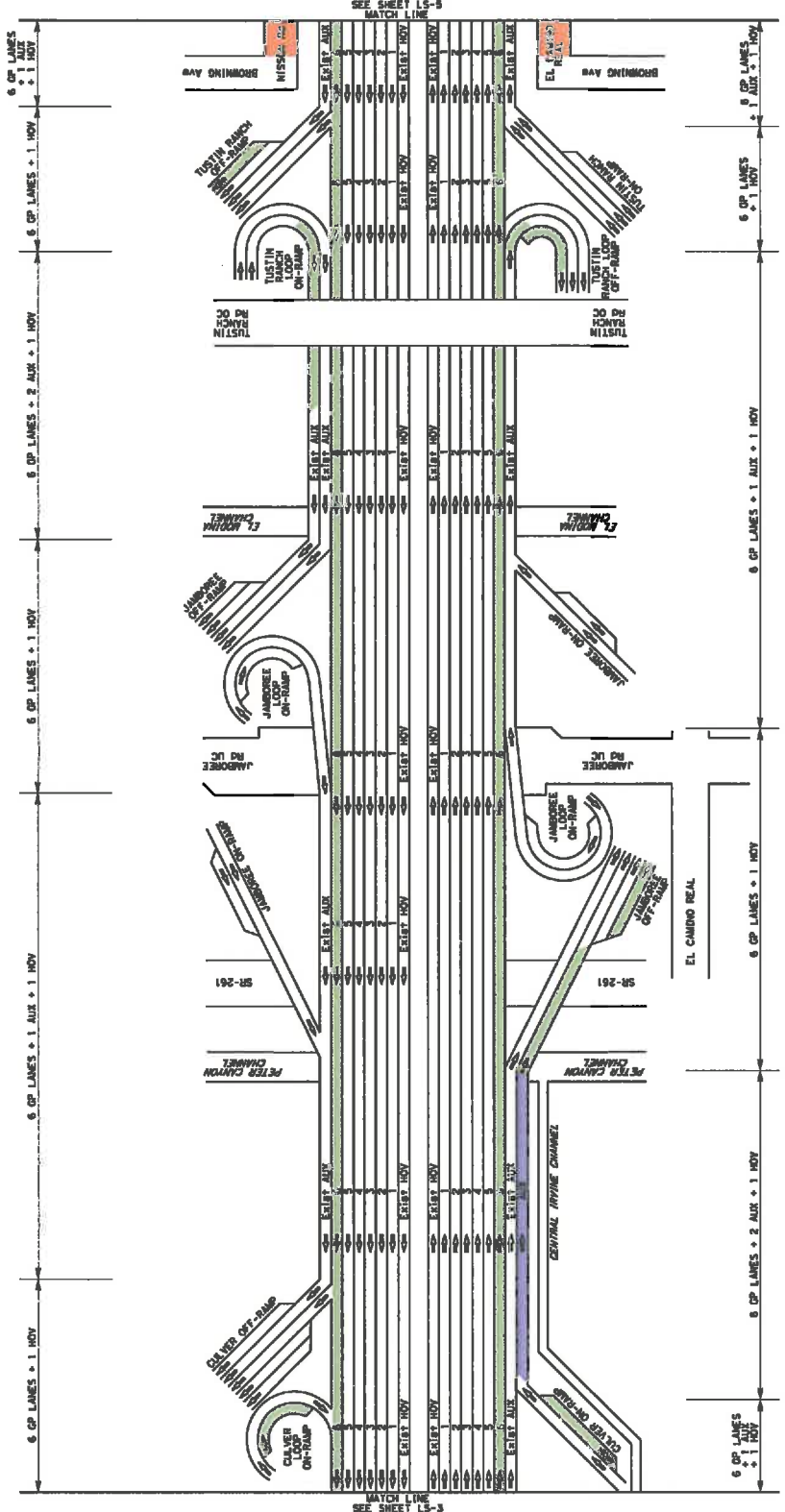
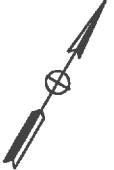
DATE	REVISION
00-00-00	DATE PLOTTED => 11/16/2011
12	070
5	21.3/30.3
ROUTE	PROJECT
5	21.3/30.3
COUNTY	SHEET TOTAL
070	NO. SHEETS
12	21.3/30.3



**LANE SCHEMATIC  
ALTERNATIVE 2A**  
NO SCALE **LS-3**

**FOR PSR USE ONLY**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. PROJECT SHEETS
12	Orco	5	21.3/30.3	



**LANE SCHEMATIC  
ALTERNATIVE 2A  
NO SCALE  
LS-4**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
15 IN INCHES

**FOR PSR USE ONLY**

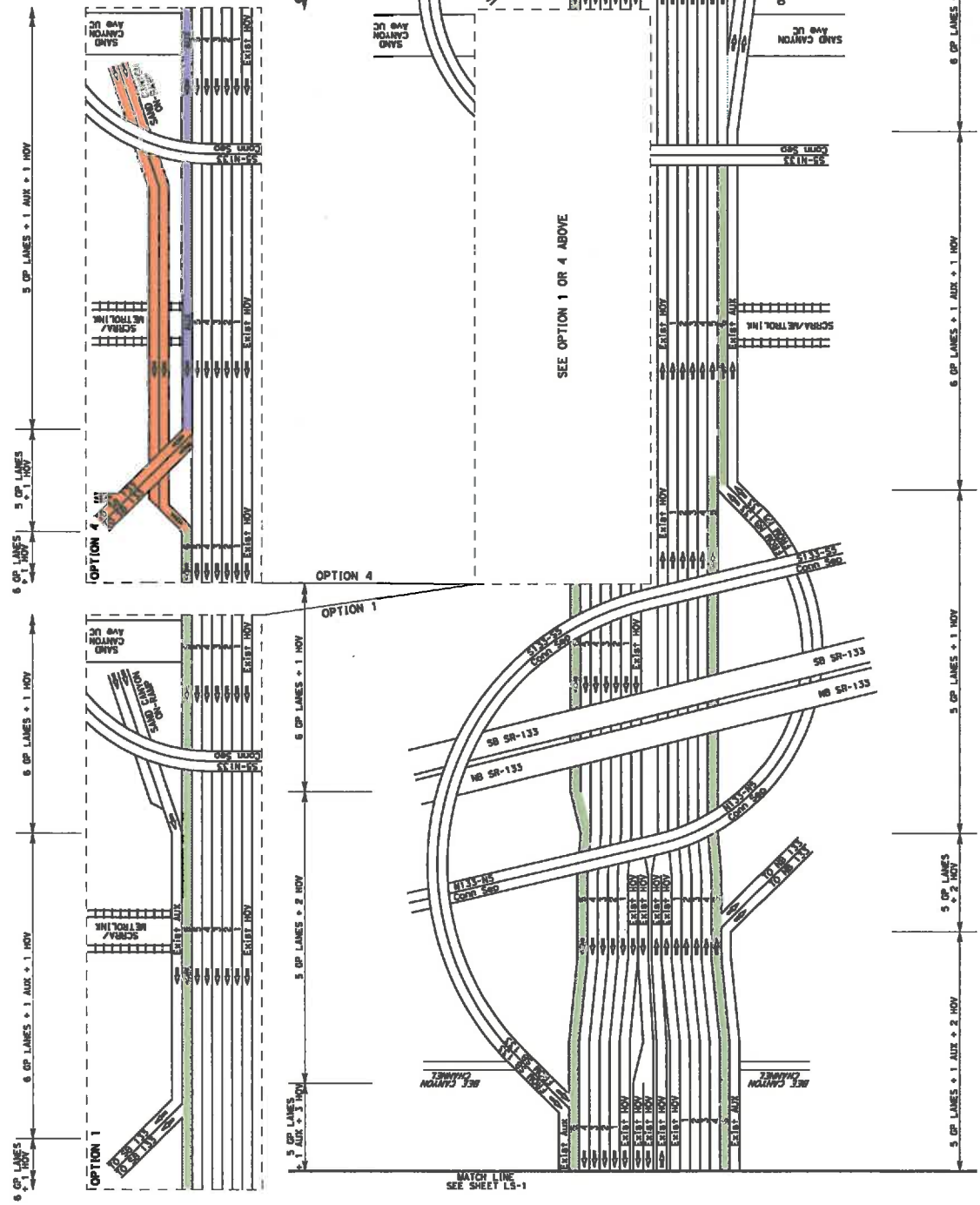
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
	DESIGNED BY		REVISD BY





DIST	COUNTY	ROUTE	TOTAL PROJECT MILES	SHEET TOTAL
12	Orco	5	21.3/30.3	NO. SHEETS



**LANE SCHEMATIC  
ALTERNATIVE 2B  
NO SCALE**

**LS-2**

PROJECT NUMBER & PHASE  
UNIT 0000

1200020052K

RELATIVE BORDER SCALE  
1/8" = 10'

FOR PSR USE ONLY

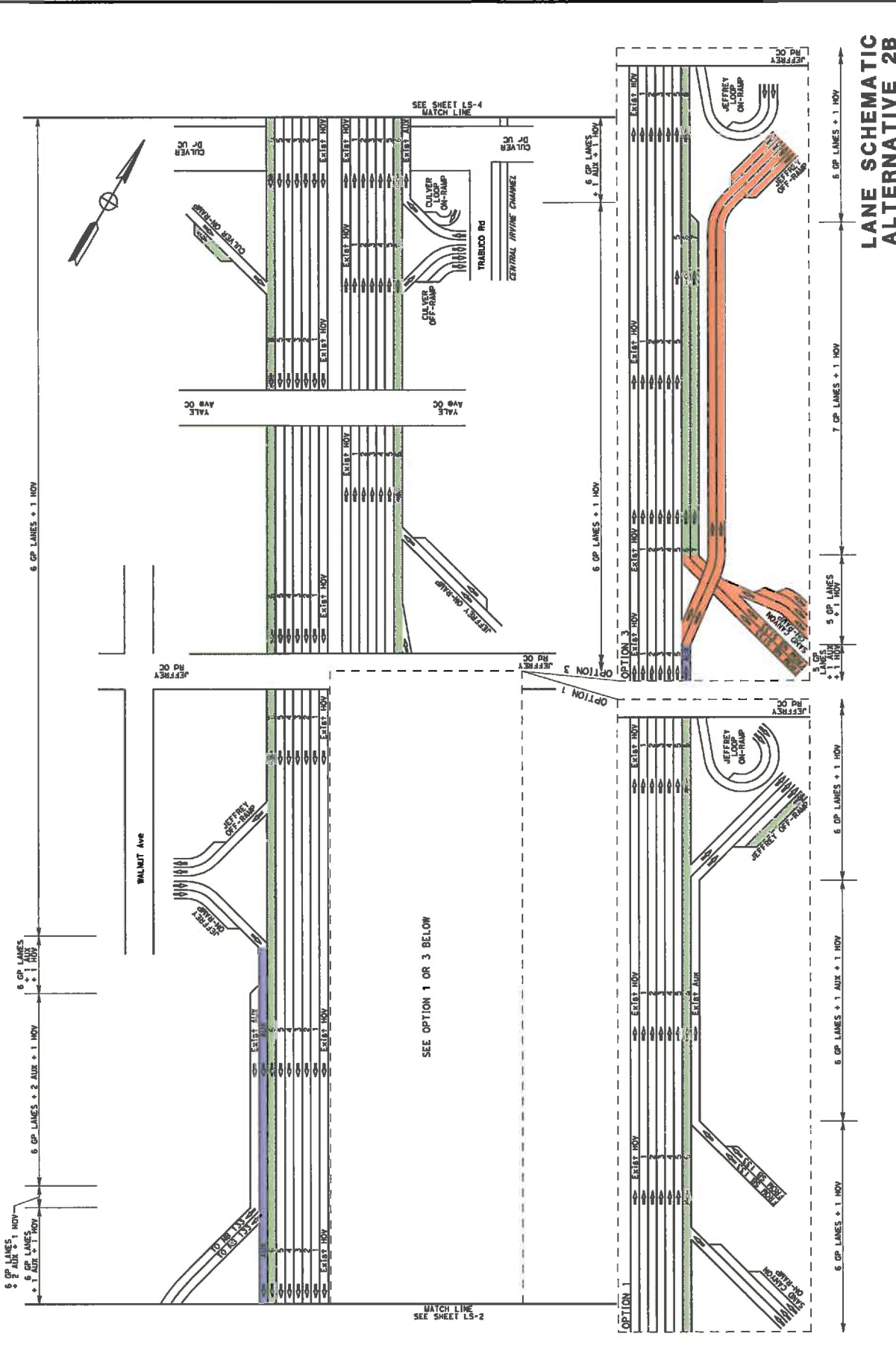
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

REVISOR: [ ] DATE REVISOR: [ ]  
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CALCULATED BY: [ ]

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LAST REVISION: 00-00-00  
DATE PLOTTED: 11/16/2011 12:21:48 PM

DIS#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Ora	5	21.3/30.3	



**LANE SCHEMATIC  
ALTERNATIVE 2B**  
NO SCALE **LS-3**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 12:21:48 PM  
LAST REVISION

UNIT 0000

RELATIVE BORDER SCALE  
1/8" IN INCHES

BORDER LAST REVISED 7/2/2010  
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PROJECT NUMBER & PHASE  
1200020052K

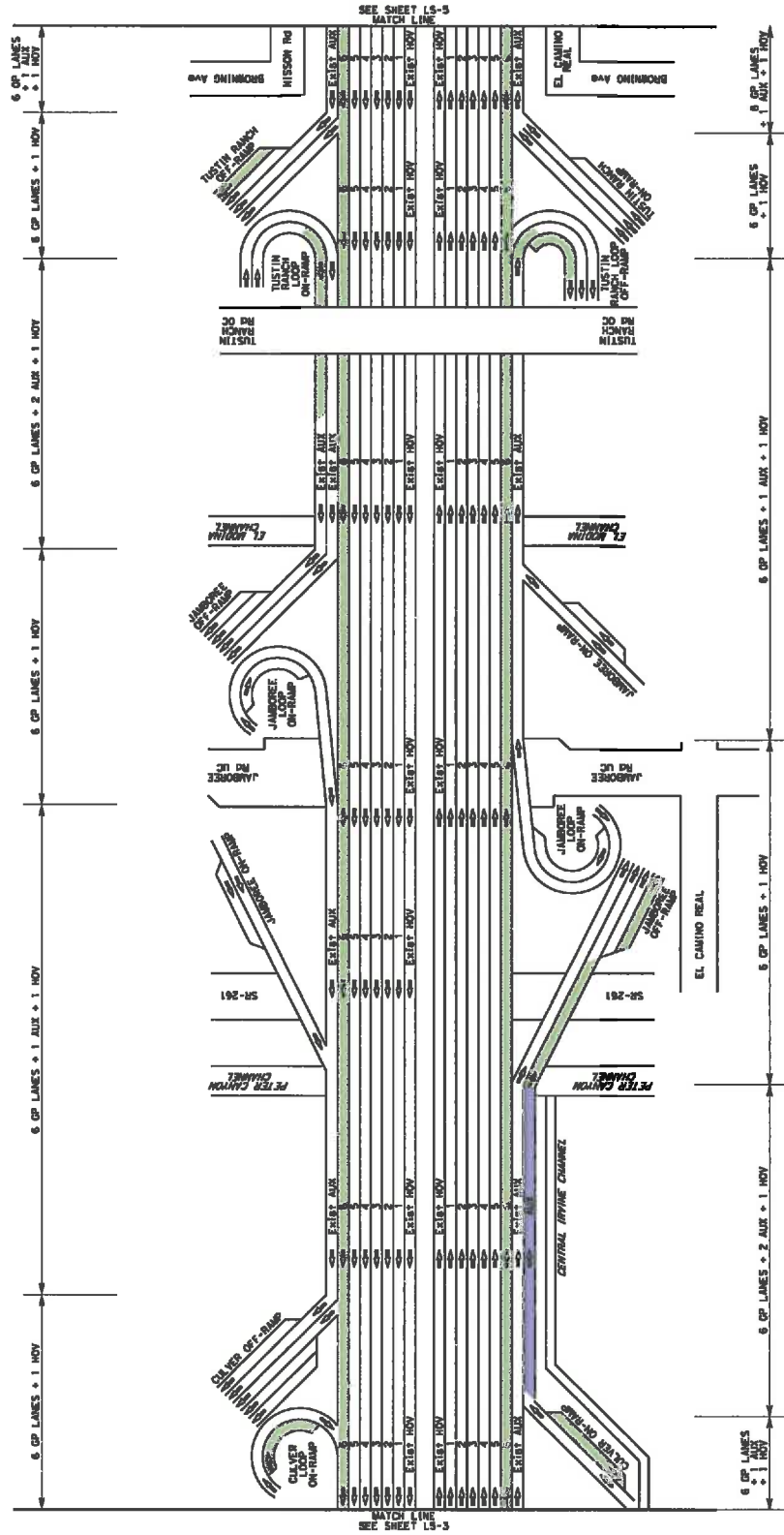
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DESIGNED BY	CHECKED BY
CALCULATED-	DESIGNED BY

CONSULTANT FUNCTIONAL SUPERVISOR





DIST	COUNTY	ROUTE	TOTAL PROJECT MILES	SHEET TOTAL
12	Orco	5	21.3/30.3	30



# LANE SCHEMATIC ALTERNATIVE 2B NO SCALE LS-4

PROJECT NUMBER & PHASE  
UNIT 0000

1200020052K

RELATIVE BORDER SCALE  
1/5 IN INCHES

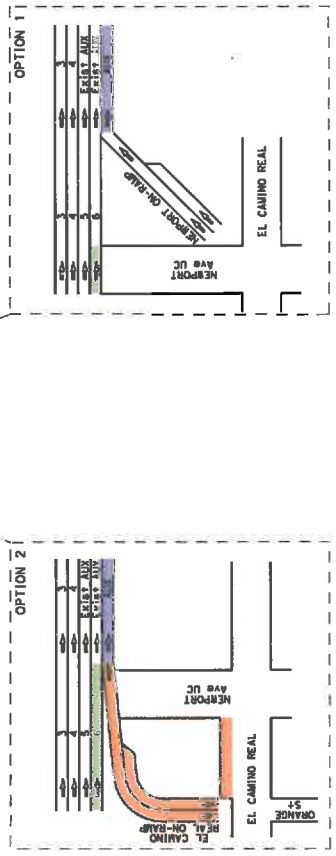
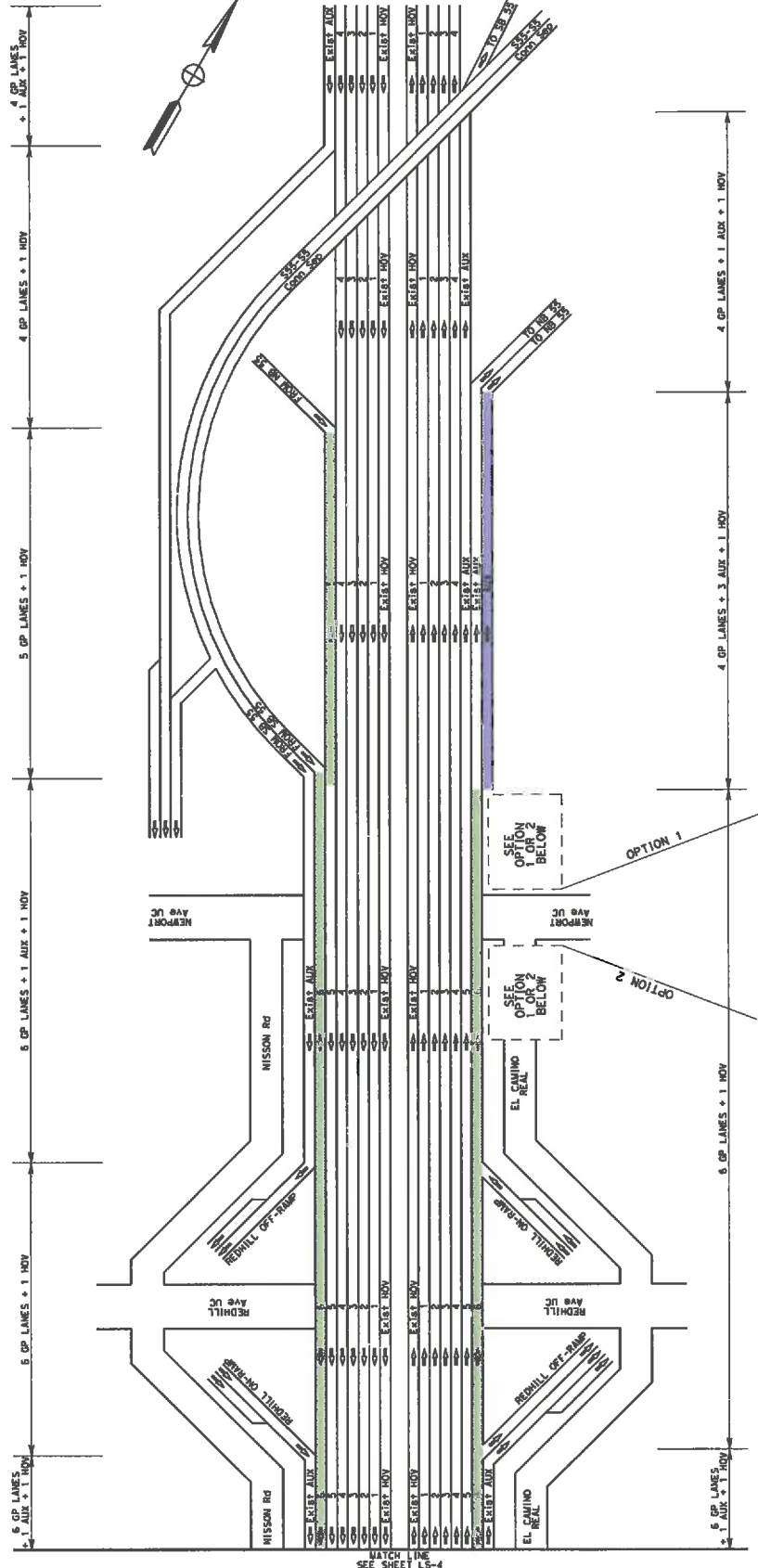
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
	DESIGNED BY		REVISOR



Dist*	County	Route	Project	Sheet No.	Total Sheets
12	Orj	5	21.3/30.3		



**LANE SCHEMATIC  
ALTERNATIVE 2B**  
NO SCALE

LS-5

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/27/2010  
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED



## **ATTACHMENT 4**

### **Alternative 2A**

#### **Typical Sections, Key Map, Layouts, Profiles**

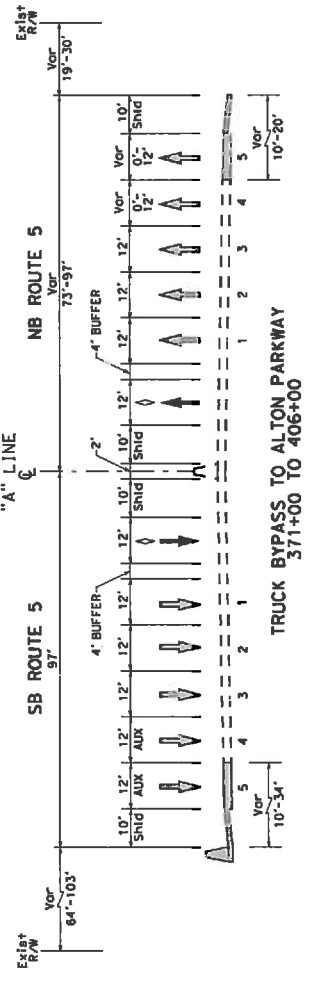
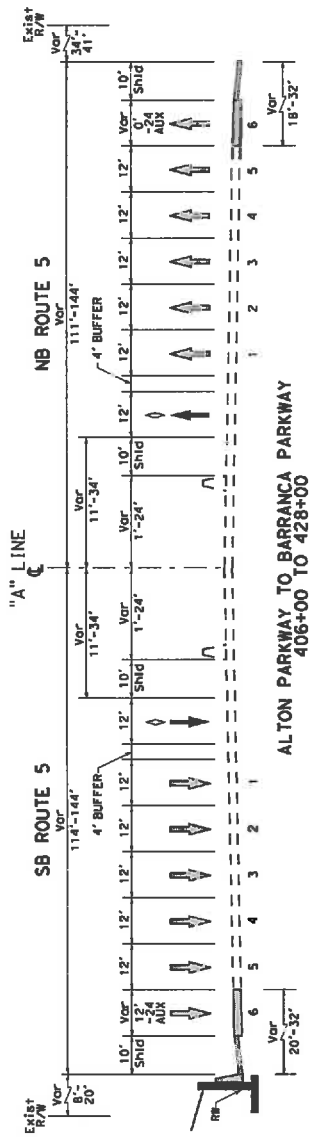
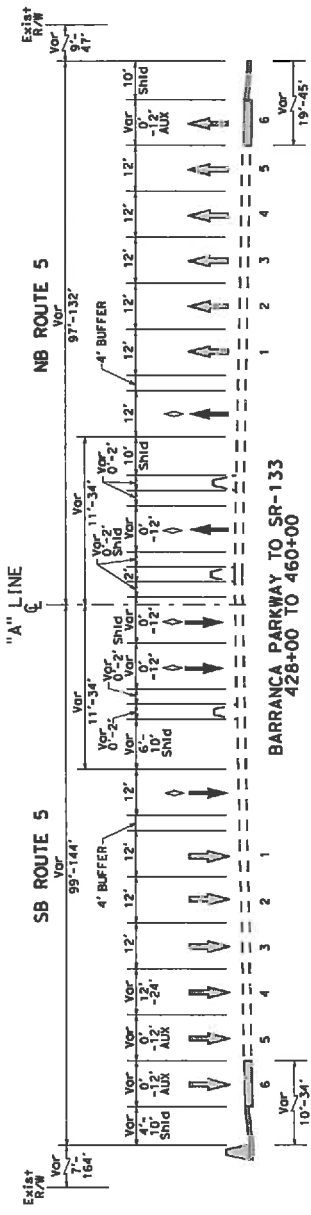
DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Or	5	21.3/30.3	

**NOTE:**

- 1. EDGE DRAINS NOT SHOWN.

**LEGEND:**

ROADWAY IMPROVEMENTS



**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2A**  
NO SCALE

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CHECKED BY  
DATE REVISSED  
REVISOR

RELATIVE BORDER SCALE  
15 IN INCHES

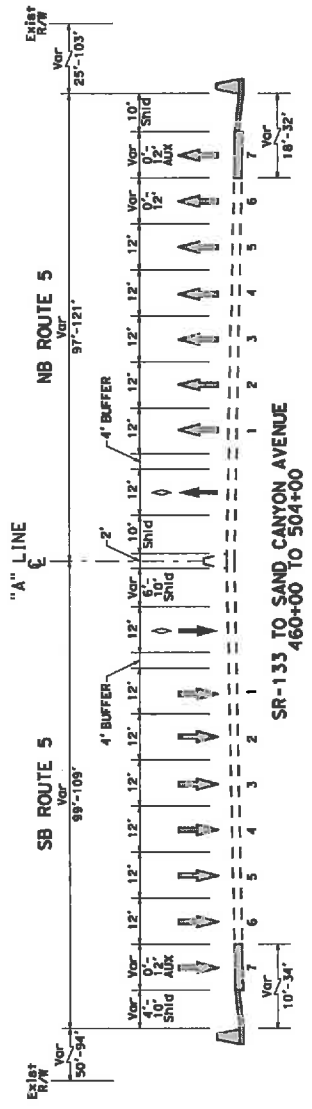
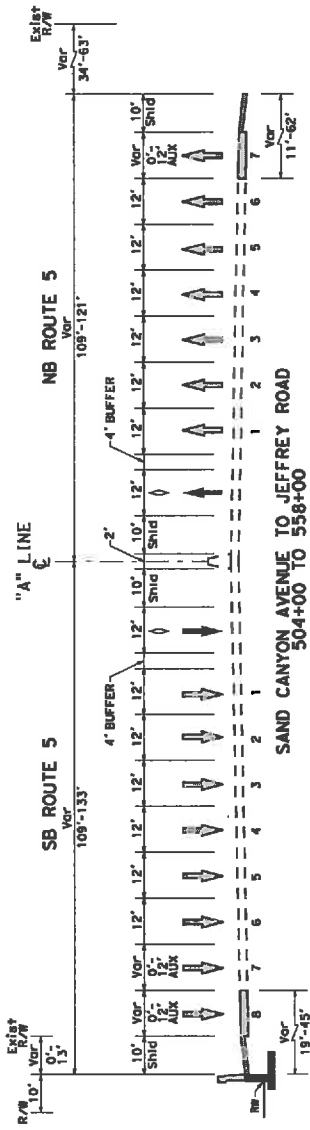
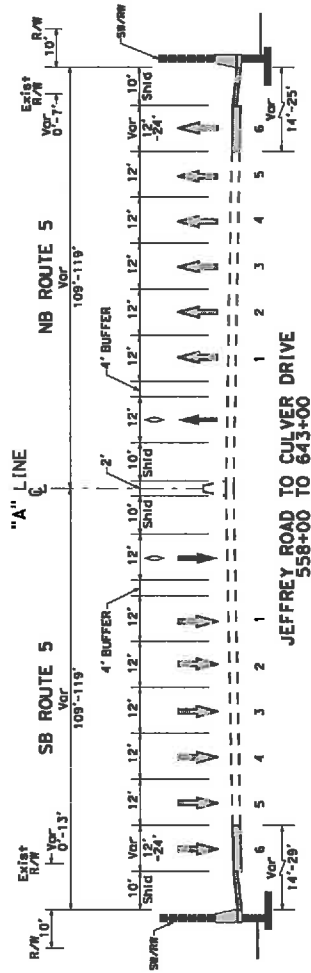
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

X-1

Dist#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	OTO	5	21.3/30.3	



**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2A  
NO SCALE**

**FOR PSR USE ONLY**

**X-2**

UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

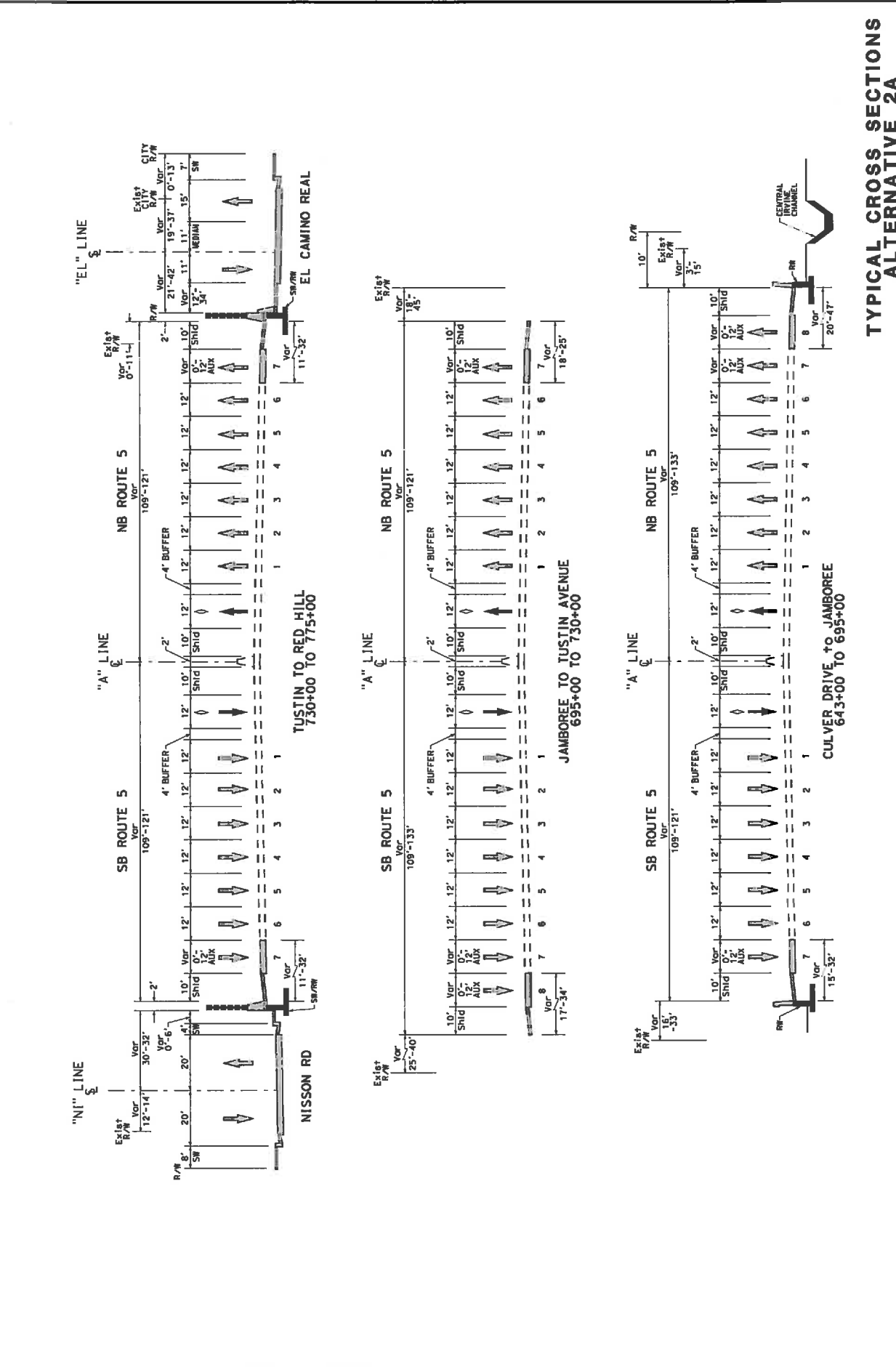
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	REVISOR	DATE REVISED
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DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orco	5	21.3/30.3	



**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2A**  
NO SCALE

**FOR PSR USE ONLY**

DIS#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	OCG	5	21.3/30.3		

DATE PLOTTED: 11/16/2011  
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**TYPICAL CROSS SECTIONS  
 ALTERNATIVE 2A**  
 NO SCALE  
**X-4**

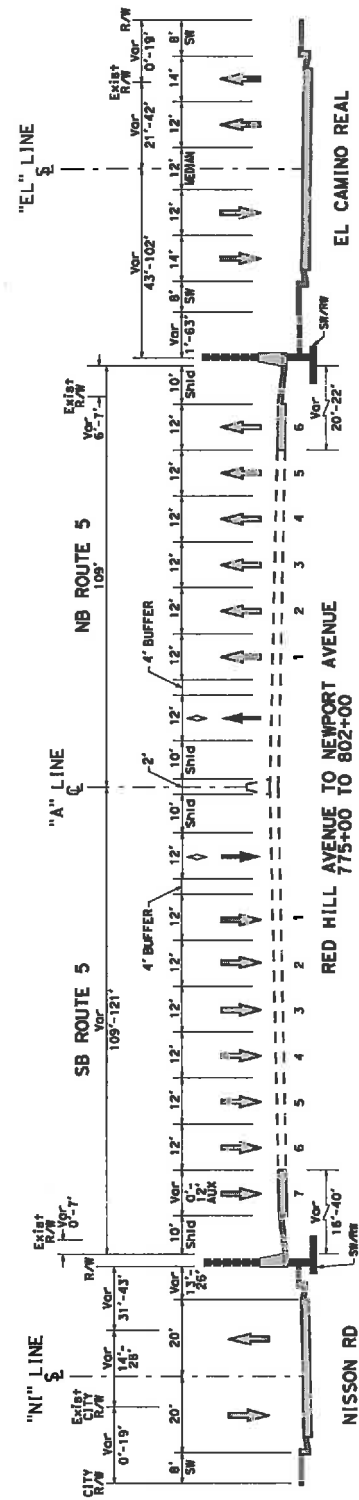
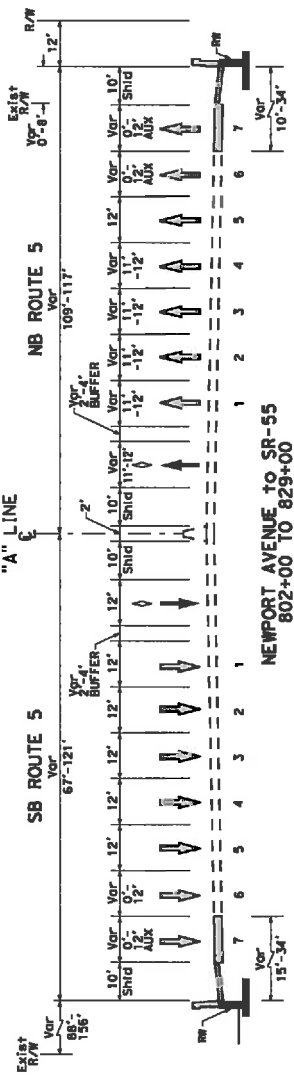
PROJECT NUMBER & PHASE  
 UNIT 0000

UNIT 0000

RELATIVE BORDER SCALE  
 15 IN INCHES

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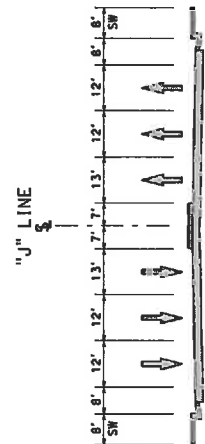
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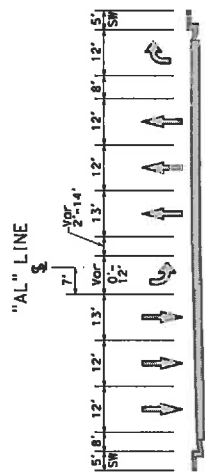
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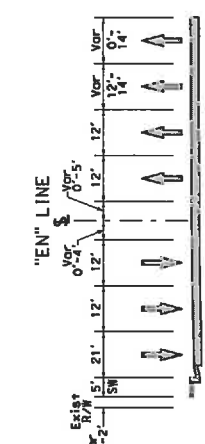
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12	Oro	5	21.3/30.3	



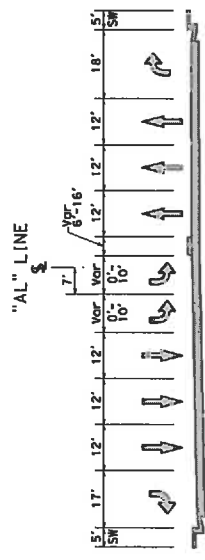
JEFFREY ROAD



ALTON PARKWAY



ENTERPRISE DR



ALTON PARKWAY

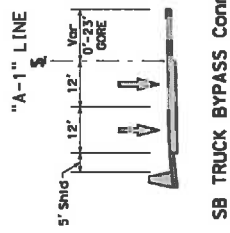
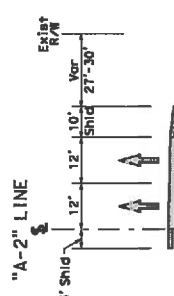
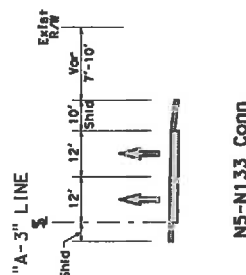
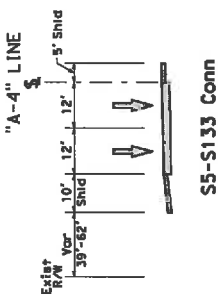
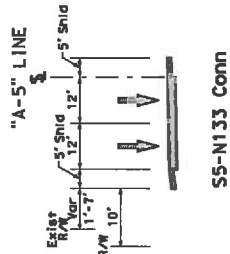
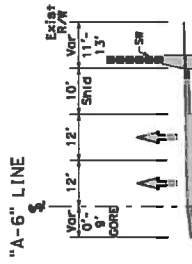
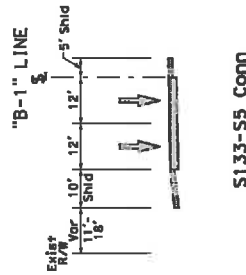
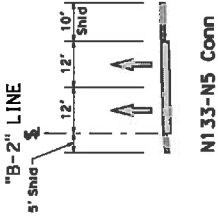
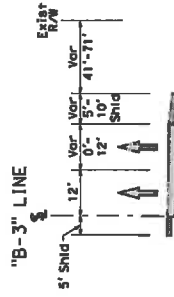
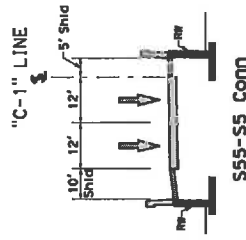
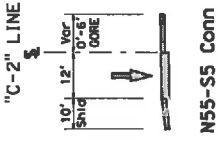
# TYPICAL CROSS SECTIONS ALTERNATIVE 2A NO SCALE

**X-5**

**FOR PSR USE ONLY**



DIS#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	OrCo	5	21.3/30.3	



**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2A**  
NO SCALE

X-6

PROJECT NUMBER & PHASE

1200020052K

UNIT 0000



RELATIVE BORDER SCALE  
15 IN INCHES

USBRIDGE #3 grcov  
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**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010

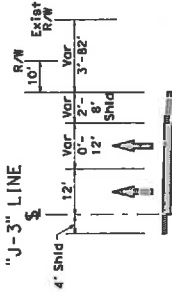


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CHECKED BY

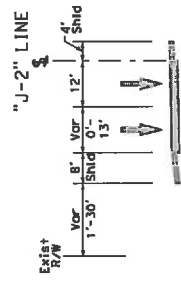
REVISOR  
DATE REVISED



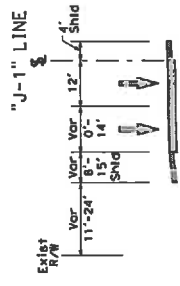
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12	Orca	5	21.3/30.3	



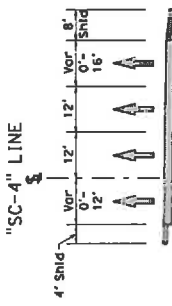
NB JEFFREY ON-RAMP



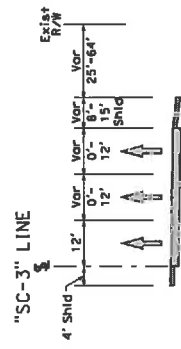
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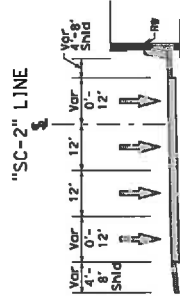
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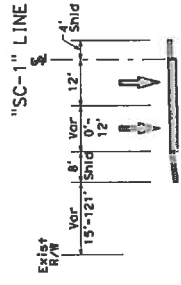
NB AND CANYON OFF-RAMP



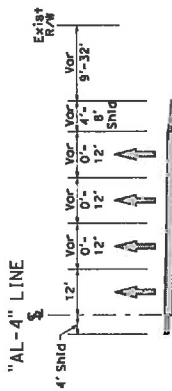
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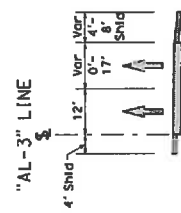
SB SAND CANYON OFF-RAMP



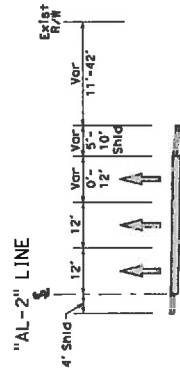
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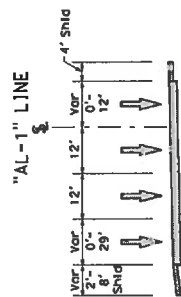
NB ALTON OFF-RAMP



NB ALTON LOOP ON-RAMP



NB ALTON ON-RAMP



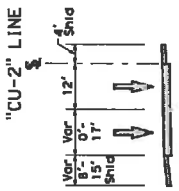
SB ALTON OFF-RAMP

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
<b>FOR PSR USE ONLY</b>					

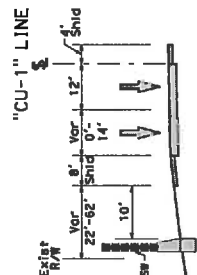
**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2A**  
NO SCALE

X-7

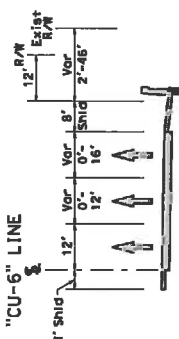
JOB#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	OTO	5	21.3/30.3	



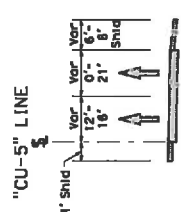
SB CULVER LOOP ON-RAMP



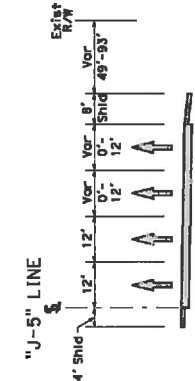
SB CULVER ON-RAMP



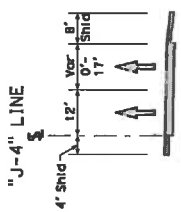
NB CULVER OFF-RAMP



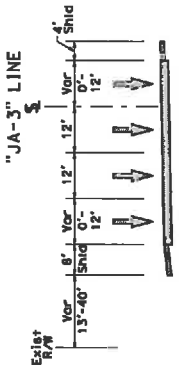
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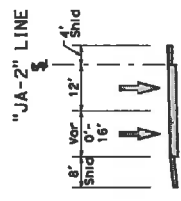
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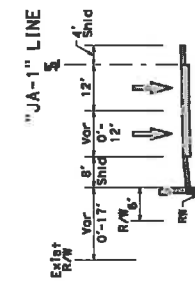
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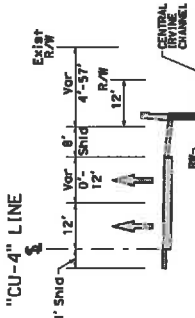
SB JAMBOREE OFF-RAMP



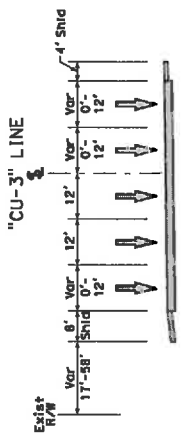
SB JAMBOREE LOOP ON-RAMP



SB JAMBOREE ON-RAMP



NB CULVER ON-RAMP



SB CULVER OFF-RAMP

TYPICAL CROSS SECTIONS  
ALTERNATIVE 2A  
NO SCALE

X-8

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DIS#	COUNTY	ROUTE	RS&T MILES TOTAL PROJECT	SHEET TOTAL PROJECT No.
12	Orco	5	21.3/30.3	

LAST REVISION 00-00-00  
DATE PLOTTED 11/16/2011 11:35:27 AM

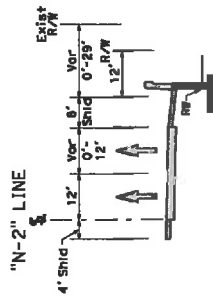
**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2A**  
NO SCALE  
**X-10**

PROJECT NUMBER & PHASE  
UNIT 0000

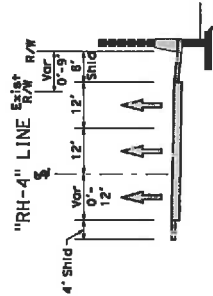
UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

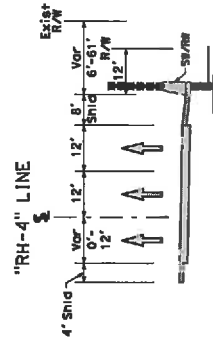
FOR PSR USE ONLY  
BORDER LAST REVISED 7/2/2010  
USERNAME g3 gncoc  
DGN FILE ... \Sheet\Alt\_2A\048702A-0010.dgn



NB NEWPORT ON-RAMP



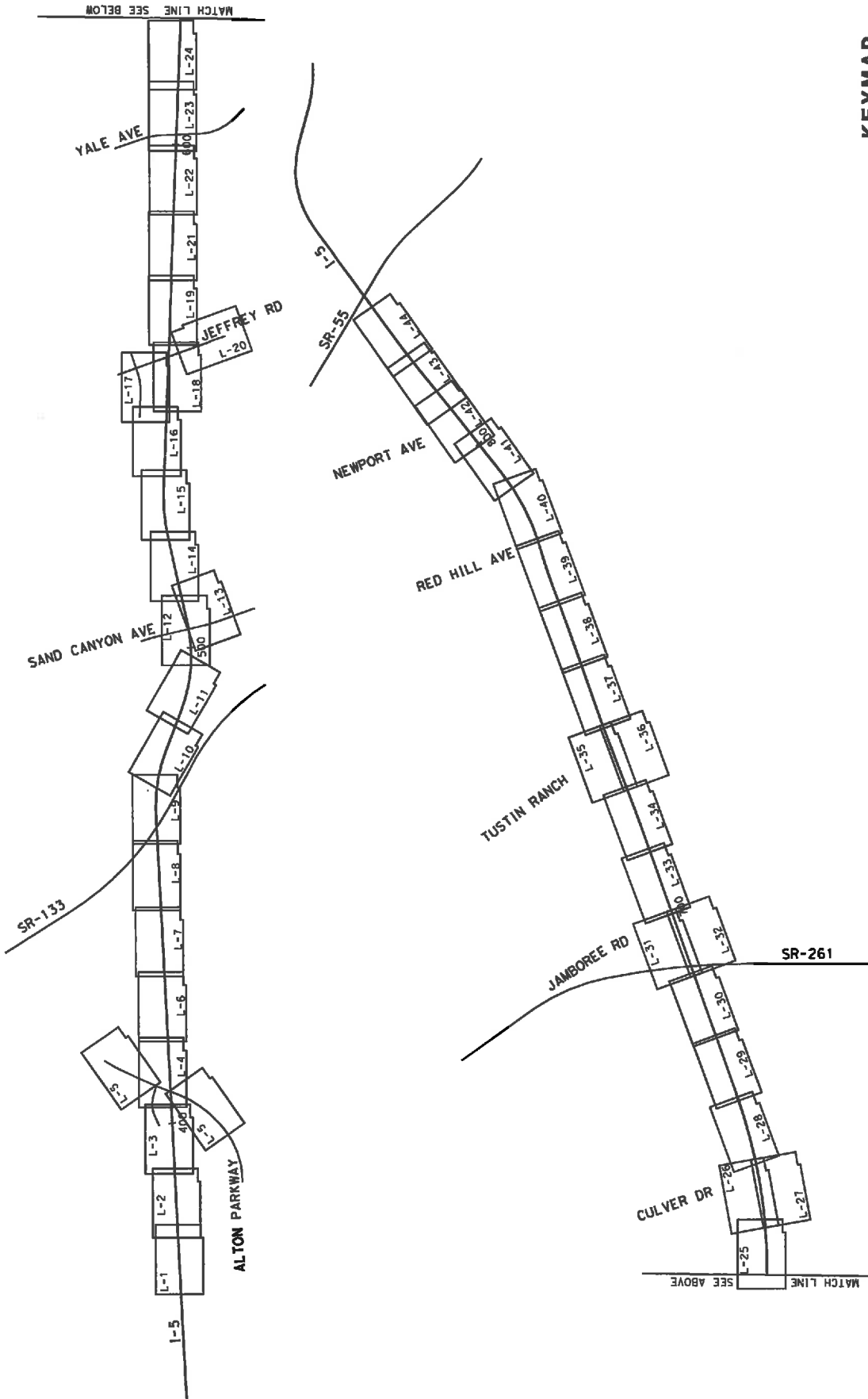
NB RED HILL OFF-RAMP



NB RED HILL OFF-RAMP

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	CHECKED BY	DATE REVISED	REVISOR

DIST	COUNTY	ROUTE	DATE	TOTAL PROJECT SHEETS
12	Orca	5	21.3/30.3	



**KEYMAP**  
**ALTERNATIVE 2A**  
 NO SCALE  
**K-1**

PROJECT NUMBER & PHASE: 1200020052K  
 UNIT: 0000  
 RELATIVE BORDER SCALE: 1" = 3"

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
DESIGNED BY	CALCULATED	DESIGNED BY	REVISOR

BORDER LAST REVISED 7/2/2010  
 USERNAME: psr0909  
 DGN FILE: ...\\shery\114\_2A\06702A-0001.dgn

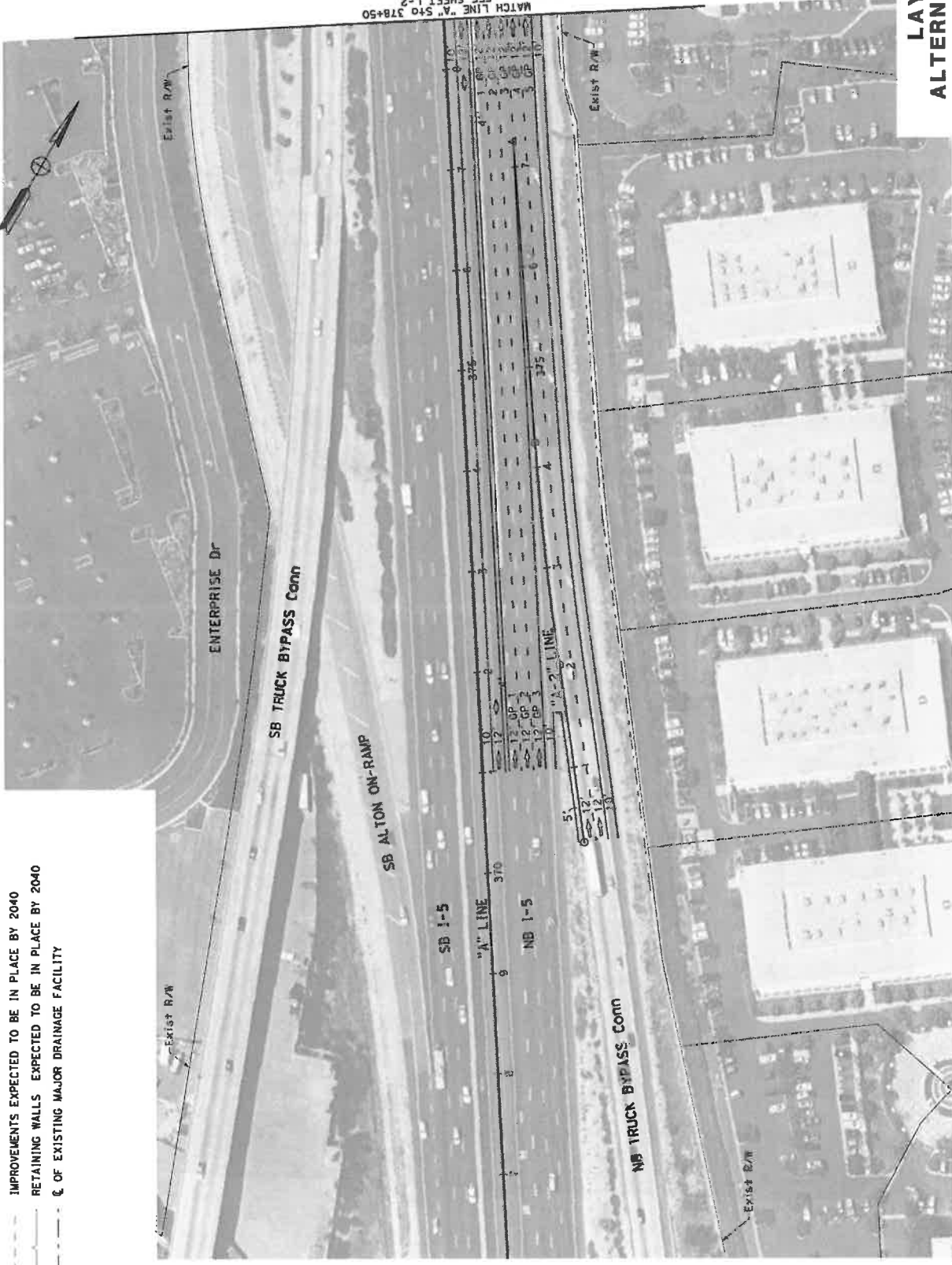
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\*

\*

DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Or	5	21.3/30.3	

- LEGEND**
- IMPROVEMENTS EXPECTED TO BE IN PLACE BY 2040
  - RETAINING WALLS EXPECTED TO BE IN PLACE BY 2040
  - C OF EXISTING MAJOR DRAINAGE FACILITY



MATCH LINE "A" S+0 378+50  
SEE SHEET L-2



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED

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BORDER LIST REVISED 7/2/2010 USERNAME: 80070 BOR FILE: ... \Server\11-2\106702A-eod01.dgn

RELATIVE BORDER SCALE  
15 IN INCHES

0 1 2 3

UNIT 0000

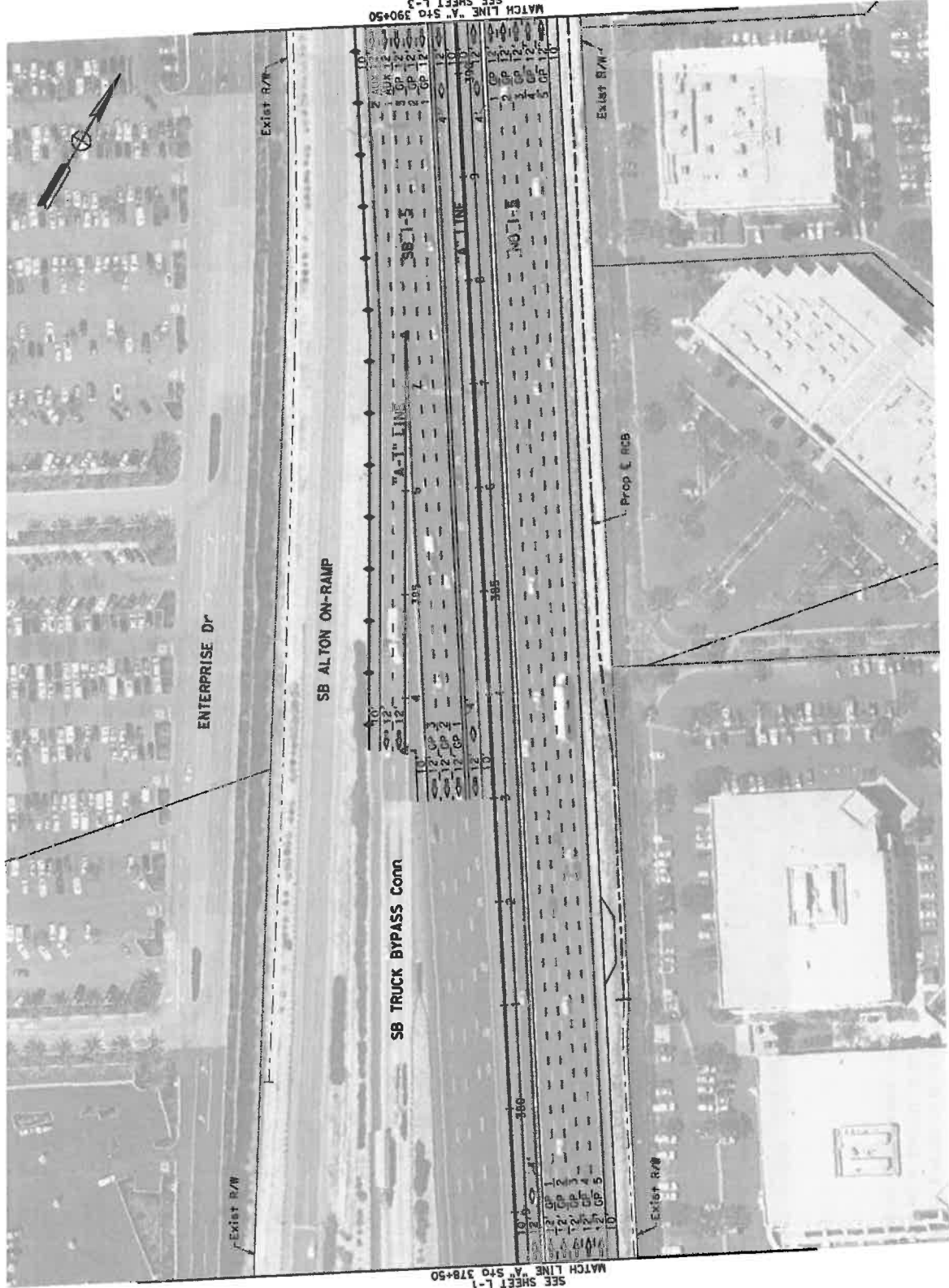
PROJECT NUMBER & PHASE

1200020052K

**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-1**

LAST REVISION  
DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 11:55:18 AM  
00-00-00

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Ord	5	21.3/30.3		



LAYOUT  
ALTERNATIVE 2A  
NO SCALE  
L-2

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE IS IN INCHES

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BORDER LAST REVISED 7/2/2010  
 USERNAME: p3 group  
 DOW FILE # ... \Spsheet\112\_2A\1067024-ec02.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



CONSULTANT FUNCTIONAL SUPERVISOR

CALCULATED-D  
DESIGNED BY

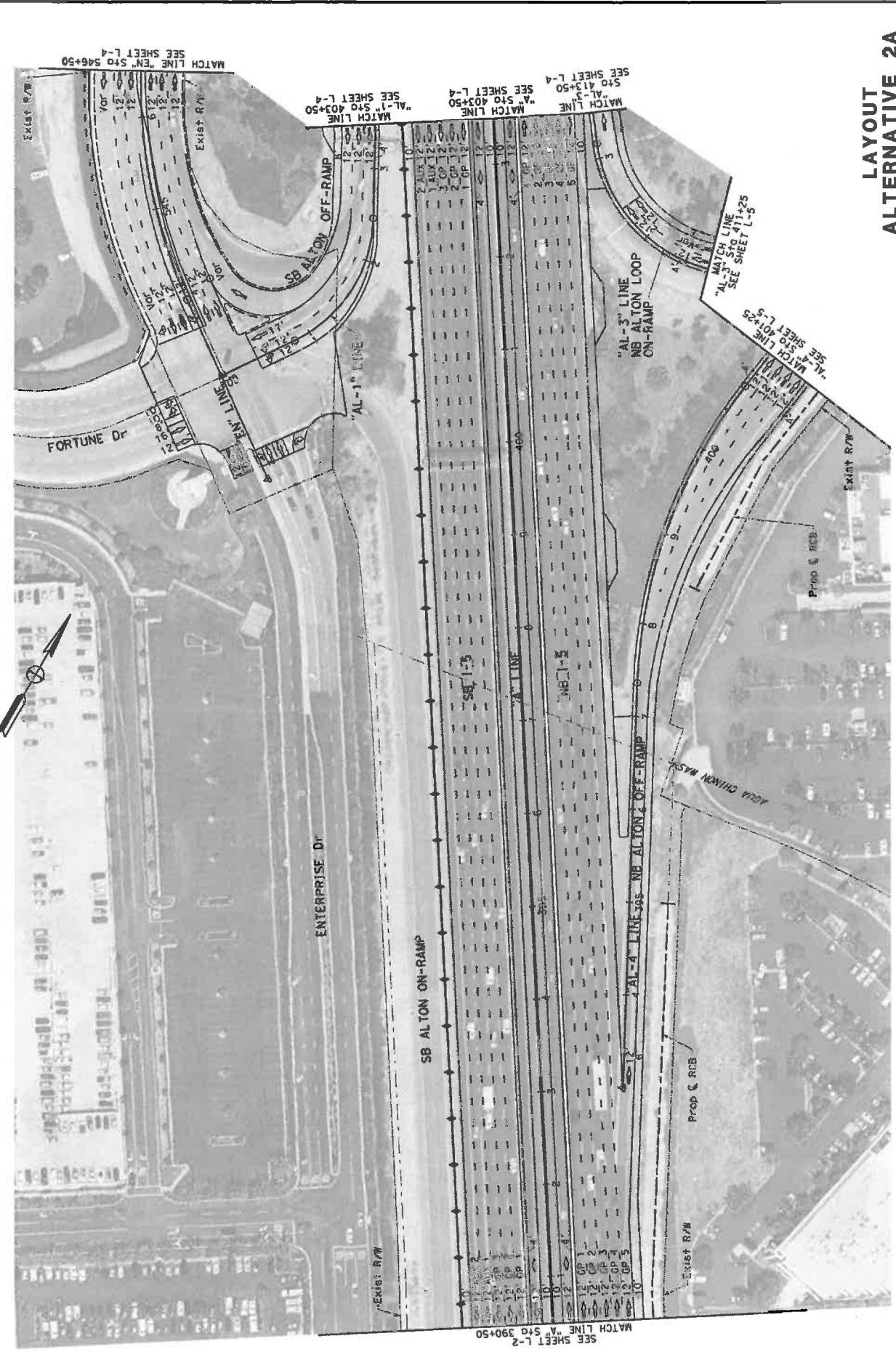
REVISOR

DATE REVISED

CHECKED BY

DATE PLOTTED: 11/16/2011  
 TIME PLOTTED: 11:55:48 AM

DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL PROJECT
12	Oro	5	21.3/30.3	NO. SHEETS



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED
		REVISOR		

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BORDER LAST REVISED 7/2/2010 USERNAME: s39kx00 DGN FILE # 9... \Sheet\A11\_2A\0657021-e003.dgn

RELATIVE BORDER SCALE IS IN INCHES



UNIT 0000

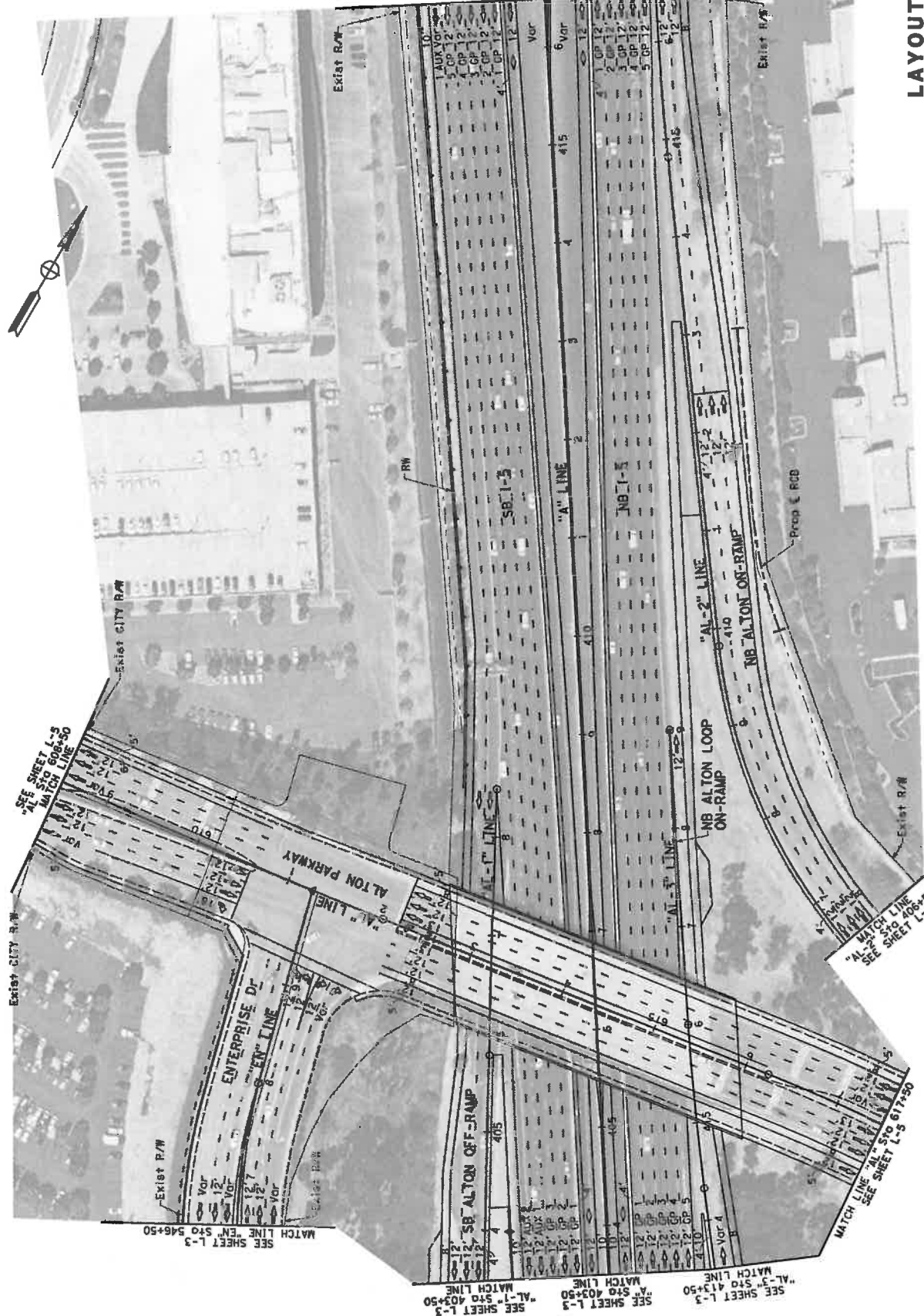
PROJECT NUMBER & PHASE

1200020052K

**LAYOUT ALTERNATIVE 2A**  
NO SCALE **L-3**



Dist	County	Route	Project	Sheet No.	Total Sheets
12	Orco	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-4**

PROJECT NUMBER & PHASE  
1200020052K

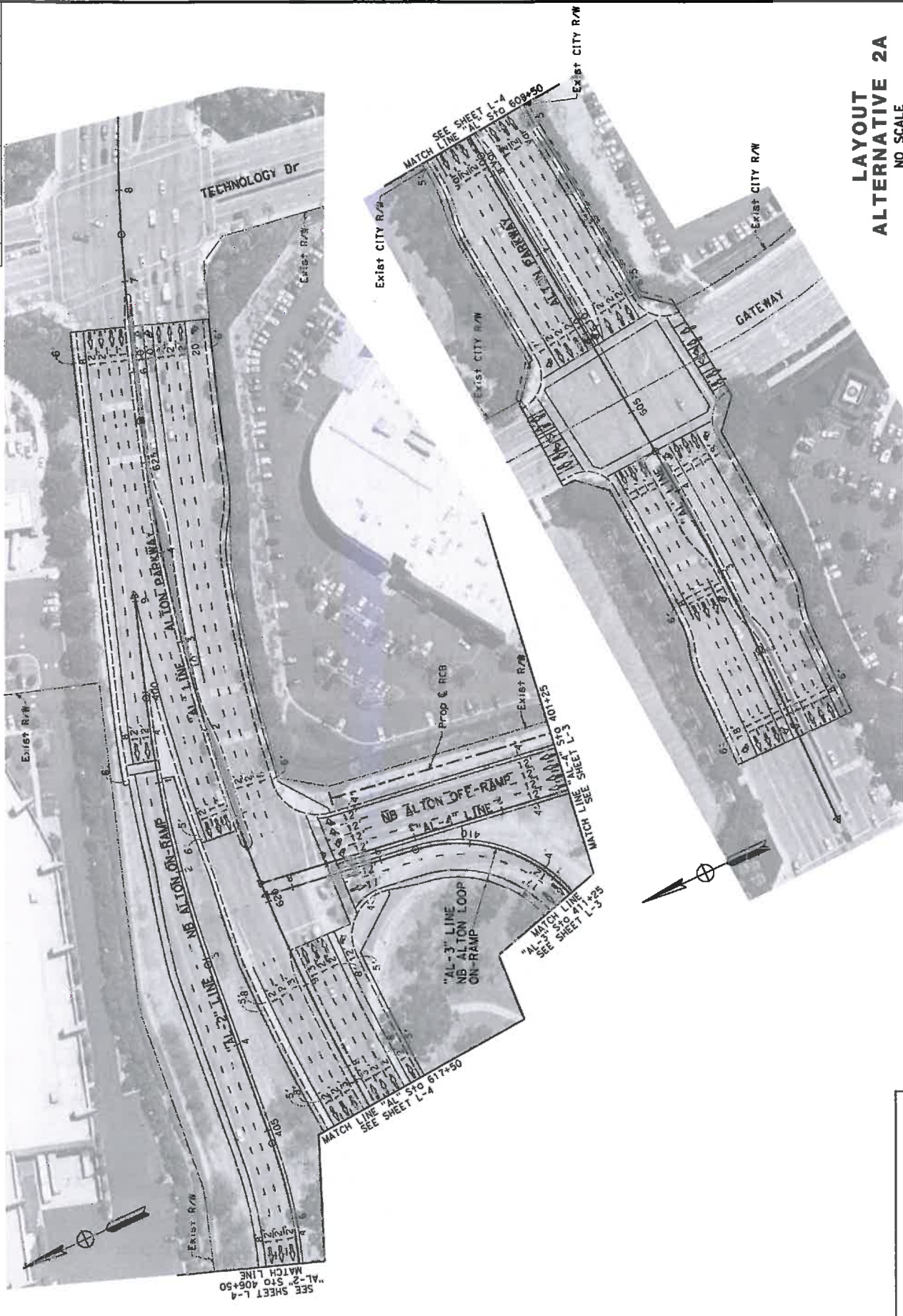
UNIT 0000

RELATIVE BORDER SCALE  
15 IN INCHES

BORDER LAST REVISED 7/2/2010  
USERNAME: p39000  
DOR FILE: \\...3\sheet\11.2\106702d-wd04.dgn

**FOR PSR USE ONLY**

POST MILES TOTAL PROJECT	21.3/30.3
SHEET TOTAL SHEETS	5
ROUTE	5
COUNTY	Oro
DIST	12



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE

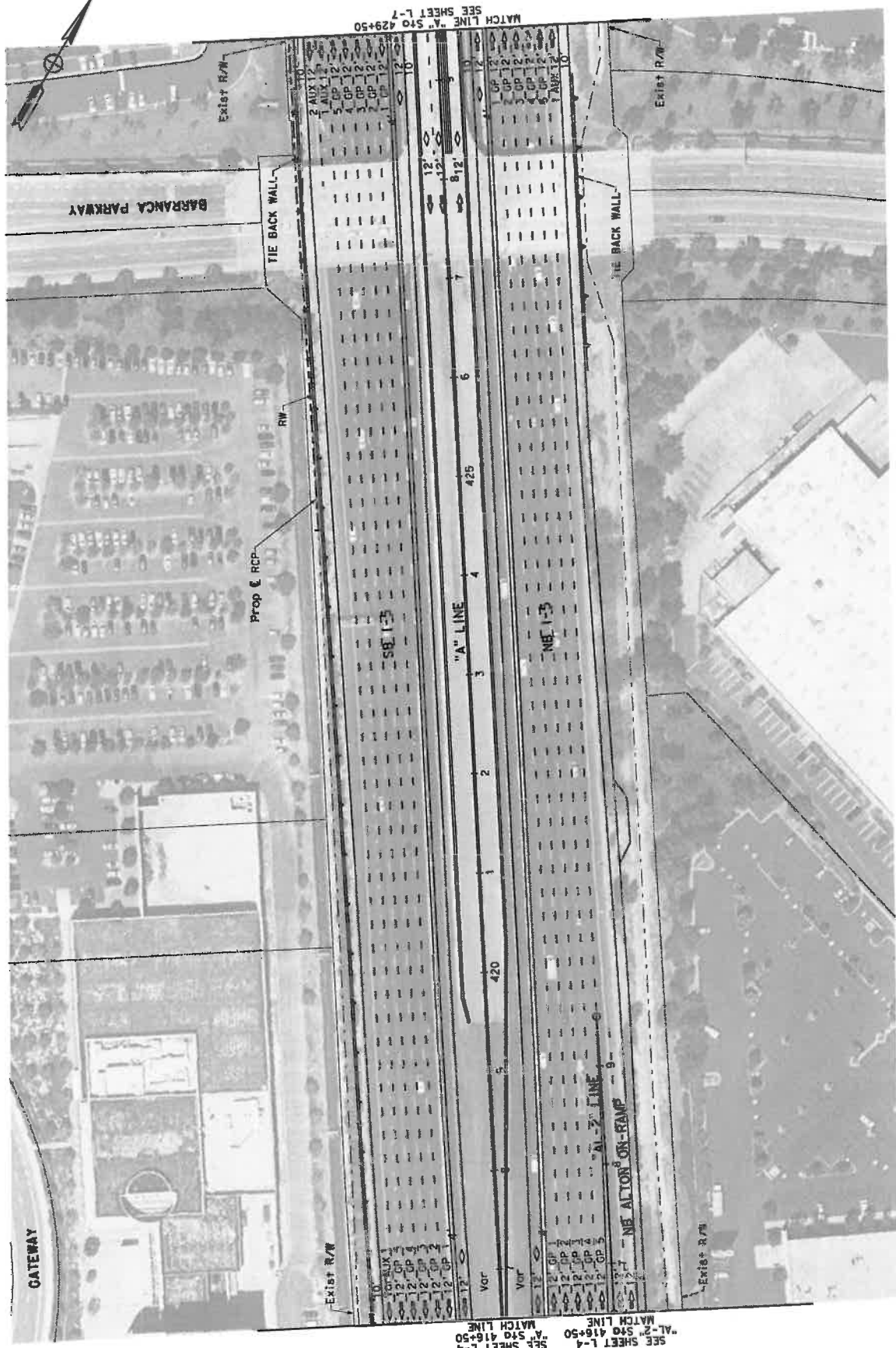
**L-5**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISID	REVISID BY
<p><b>FOR PSR USE ONLY</b></p>					
BORDER LAST REVISED 7/2/2010	USERNAME: g3k0v0	PROJECT NUMBER & PHASE			
DATE PLOTTED: 11/16/2011	1200020052K	UNIT 0000			
TIME PLOTTED: 11:56:13 AM	1200020052K	RELATIVE BORDER SCALE IS IN INCHES			
		0 1 2 3			



00-00-00 DATE PLOTTED: 11/16/2011 TIME PLOTTED: 11:56:13 AM

Dist	County	Route	Project Miles	Total Project	Sheet No.	Total Sheets
12	Orl	5	21.3/30.3			



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-6**

PROJECT NUMBER & PHASE  
UNIT 0000

UNIT 0000



RELATIVE BORDER SCALE  
IS IN INCHES

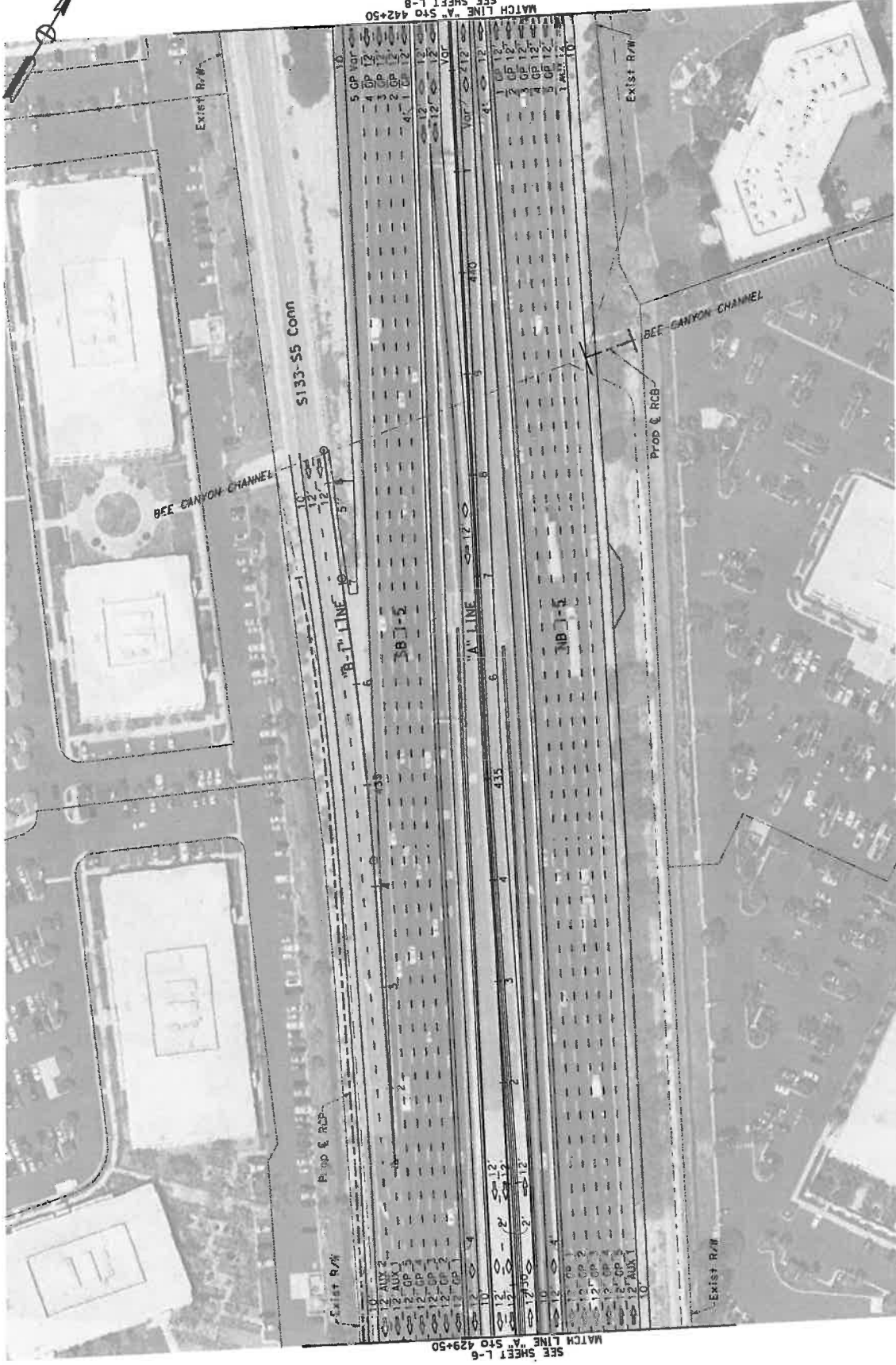
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USERNAME → gpro  
JOB FILE → ...Sheet\A1\_2A\ORLTO2A-e0006.dgn

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



MATCH LINE "A" STA 429+50  
SEE SHEET L-6

MATCH LINE "A" STA 442+50  
SEE SHEET L-8

**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTION L SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR

RELATIVE BORDER SCALE  
15 IN INCHES

UNIT 0000

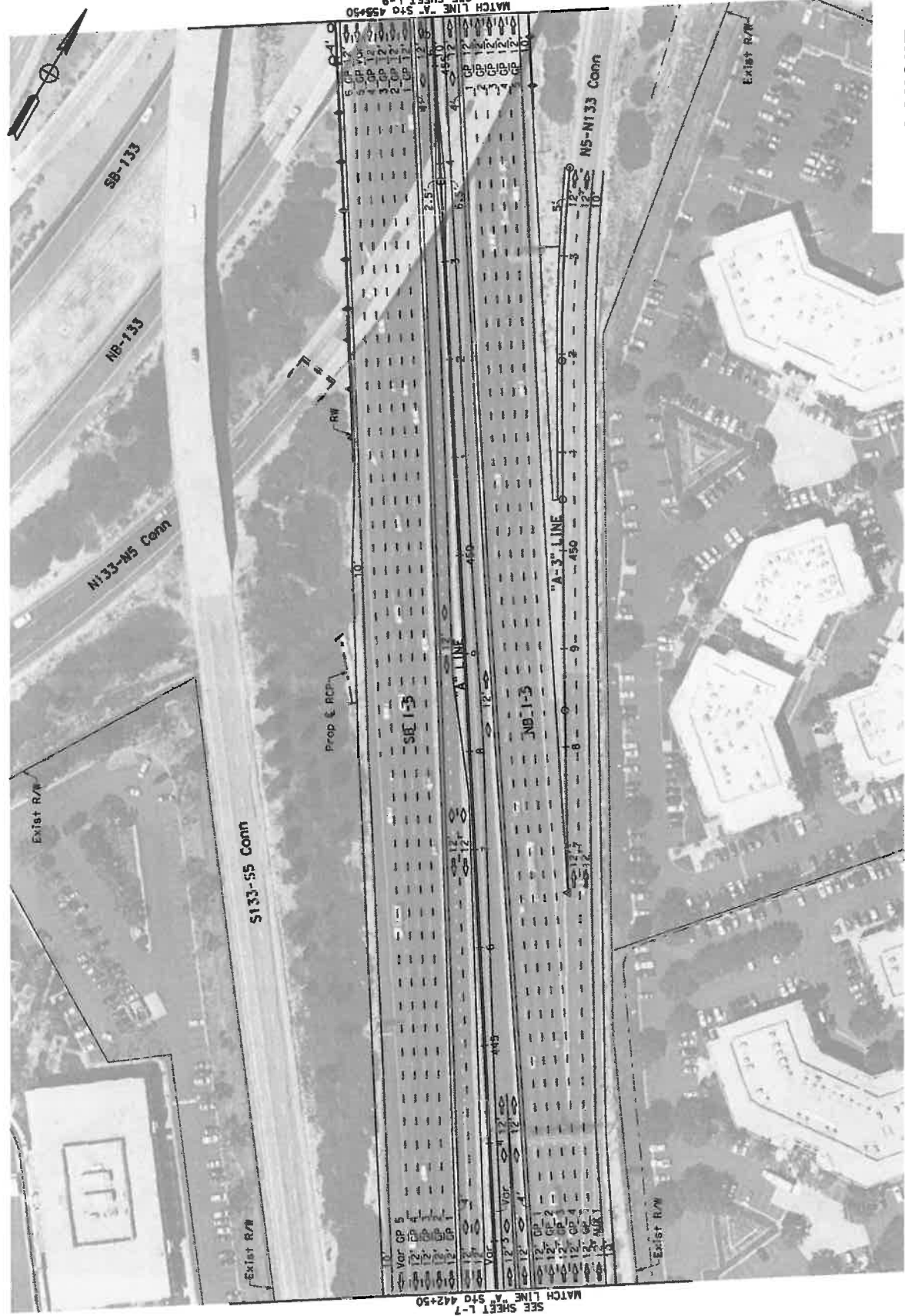
PROJECT NUMBER & PHASE

1200020052K

L-7

00-00-00  
DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 11:56:31 AM

Dist	County	Route	Post Mile	Sheet Total
12	Orca	5	21.3/30.3	30



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-8**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000

**FOR PSR USE ONLY**

BORDER LAST REVISED: 7/2/2010  
USERNAME: g3000  
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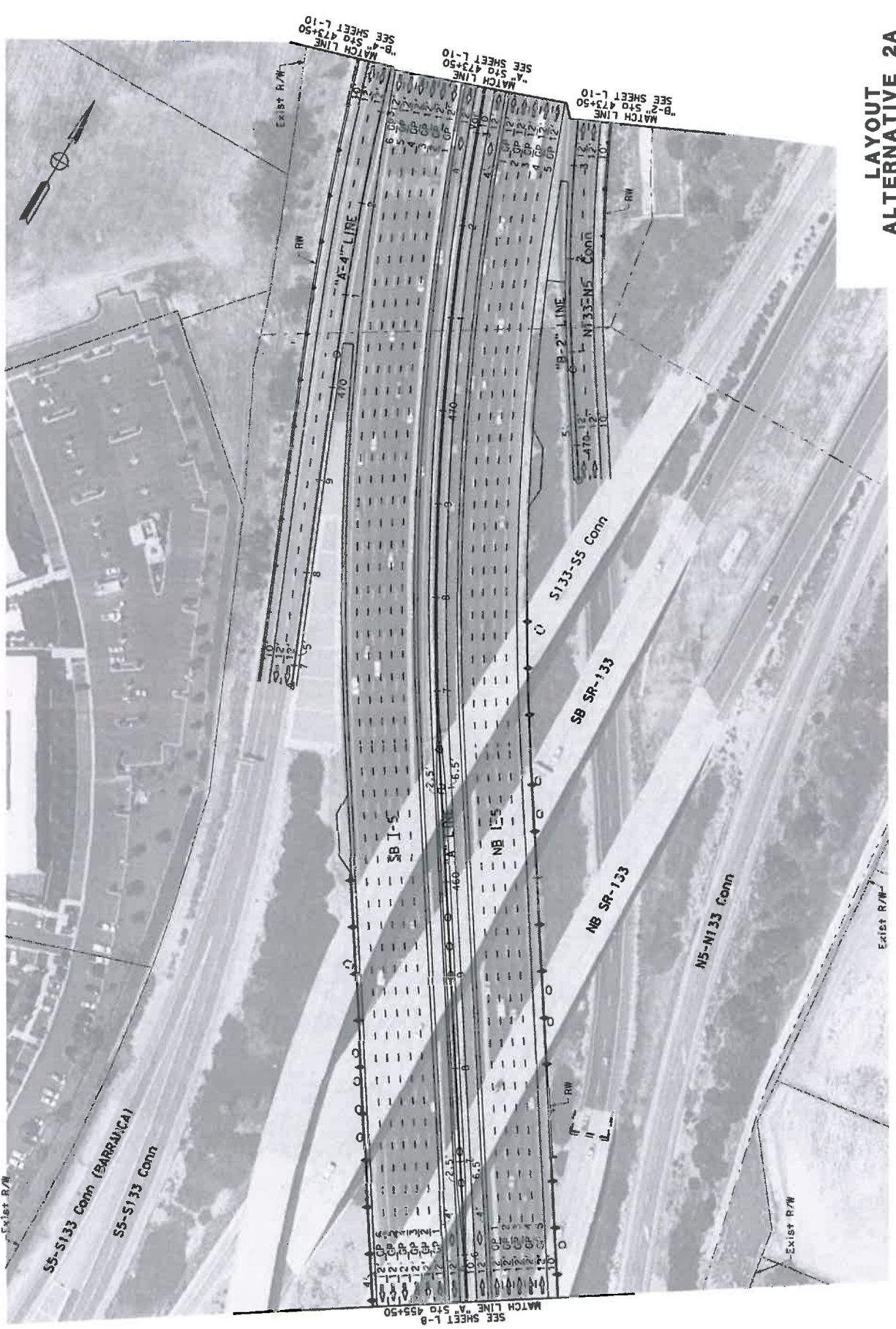
RELATIVE BORDER SCALE IS IN INCHES



DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 11:56:35 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	CHECKED BY	DESIGNED BY	REVISOR	DATE REVISED
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Orco	5	21.3/30.3	



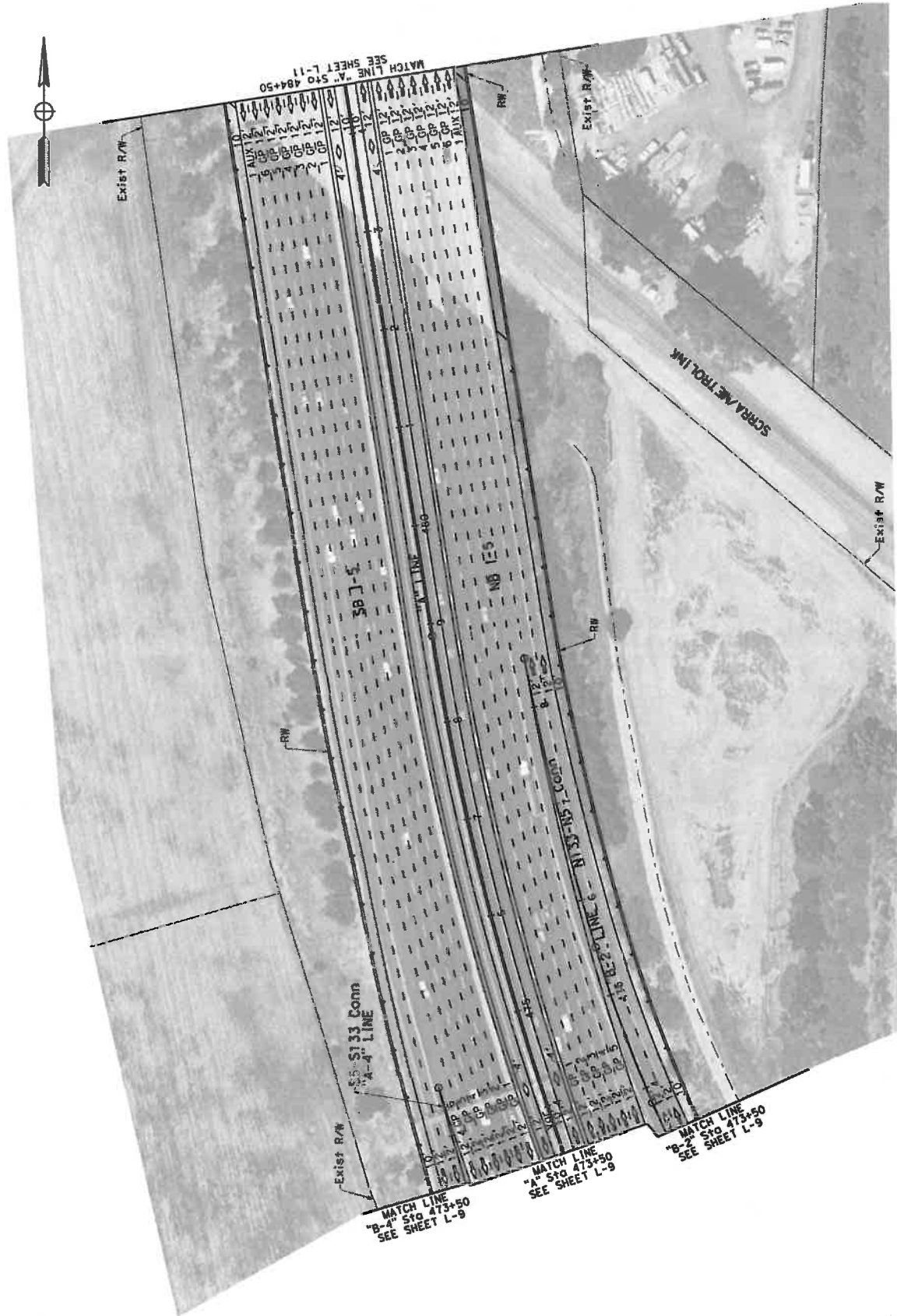
**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE **L-9**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
	CHECKED BY	DATE REVISED	

**FOR PSR USE ONLY**



Dist	County	Route	Project Miles	Sheet Count
12	Or	5	21.3/30.3	11



**LAYOUT  
ALTERNATIVE 2A  
NO SCALE  
L-10**

PROJECT NUMBER & PHASE  
UNIT 0000

1200020052K

RELATIVE BORDER SCALE  
IS IN INCHES

BORDER LAST REVISED 7/2/2010  
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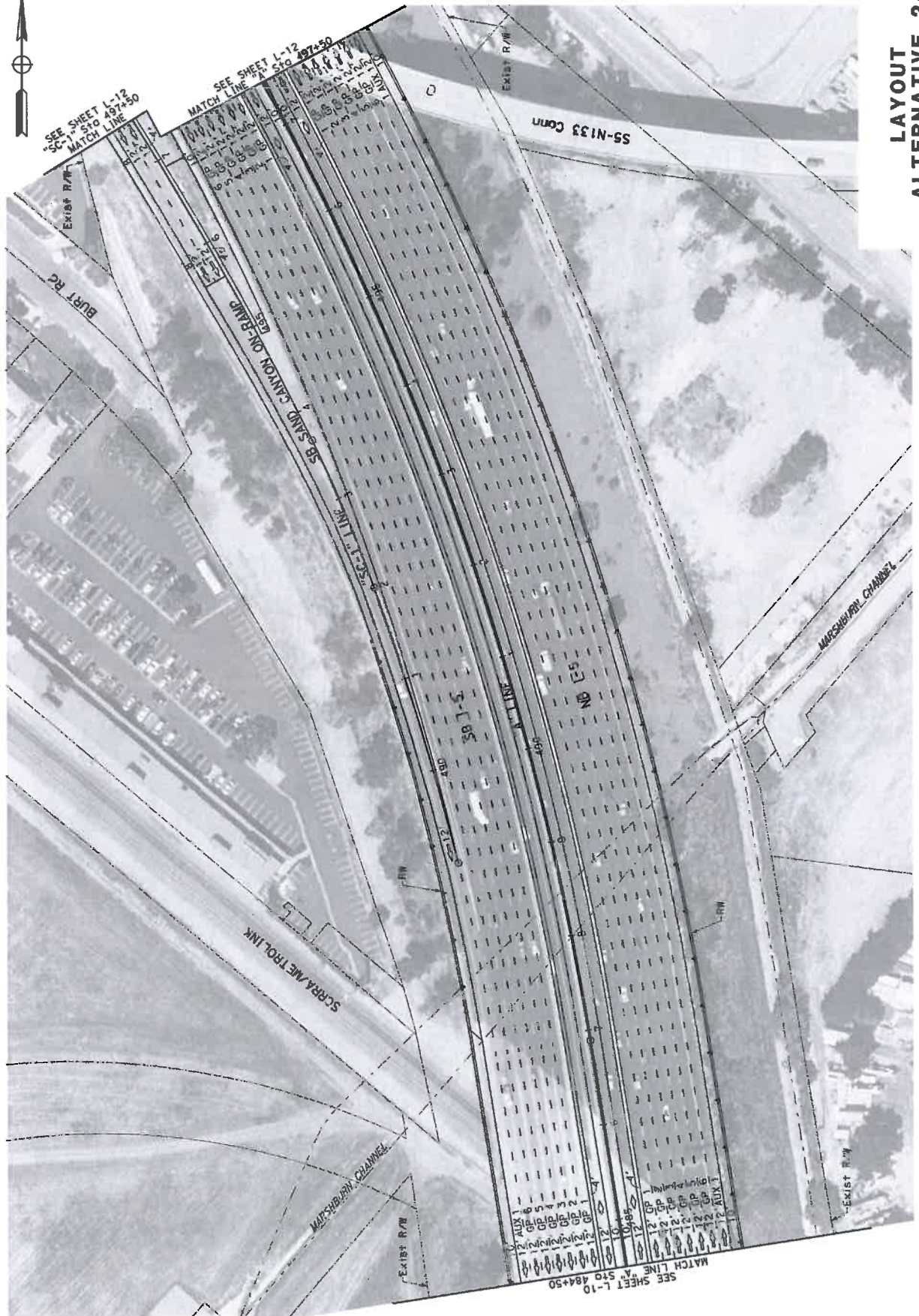
**FOR PSR USE ONLY**

DATE PLOTTED = 11/16/2011  
TIME PLOTTED = 11:59:56 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
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DIS#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE **L-11**

**FOR PSR USE ONLY**

ORDER L 1ST REVISED 7/2/2010  
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RELATIVE BORDER SCALE  
 IS IN INCHES



UNIT 0000

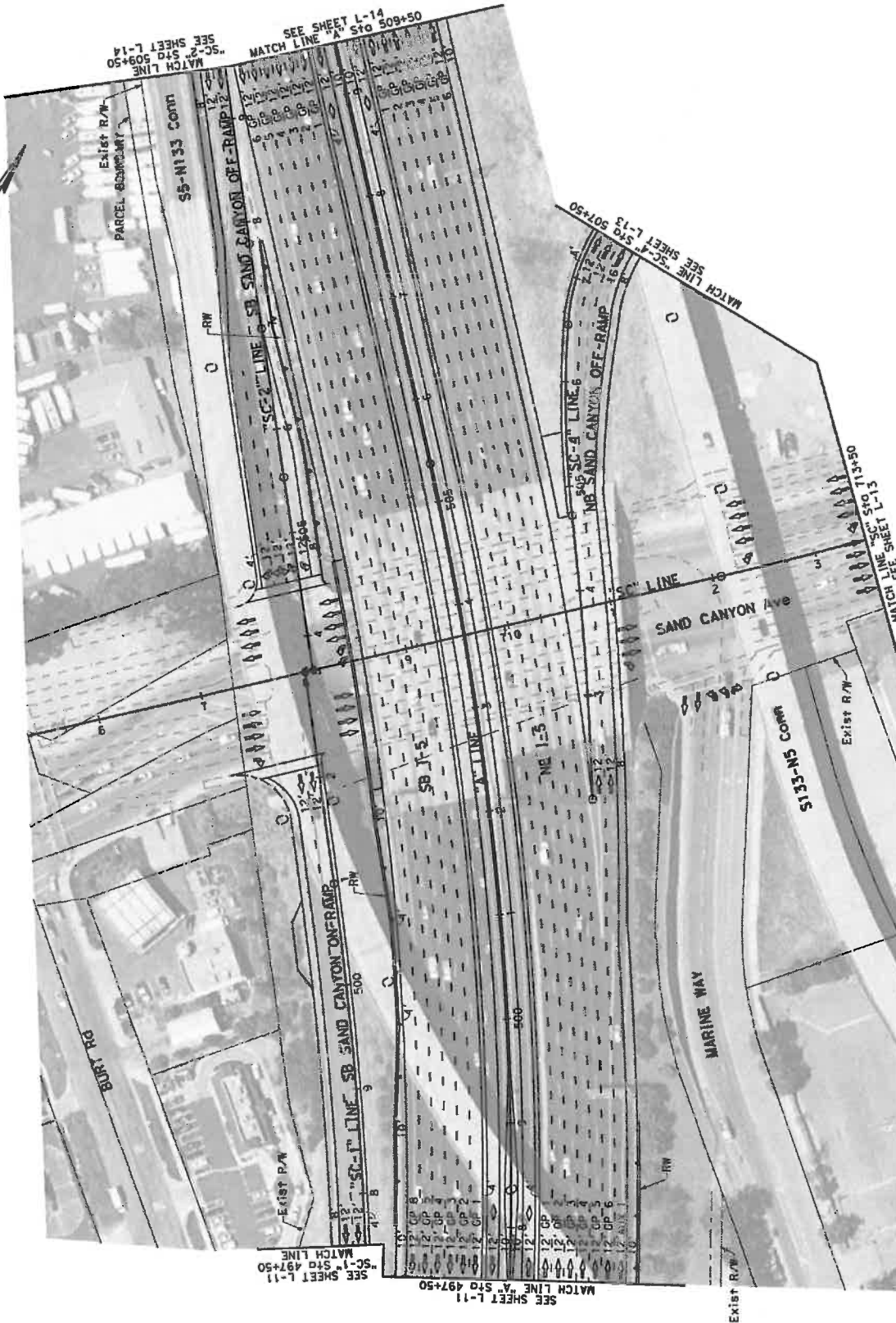
PROJECT NUMBER & PHASE

1200020052K

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
		CHECKED BY	DATE REVISED



Dist	County	Route	Project Miles	Sheet No.	Total Sheets
12	Or	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2A  
NO SCALE  
L-12**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

BORDER LAST REVISED 7/2/2010  
USERNAME g3\_grova  
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**FOR PSR USE ONLY**



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

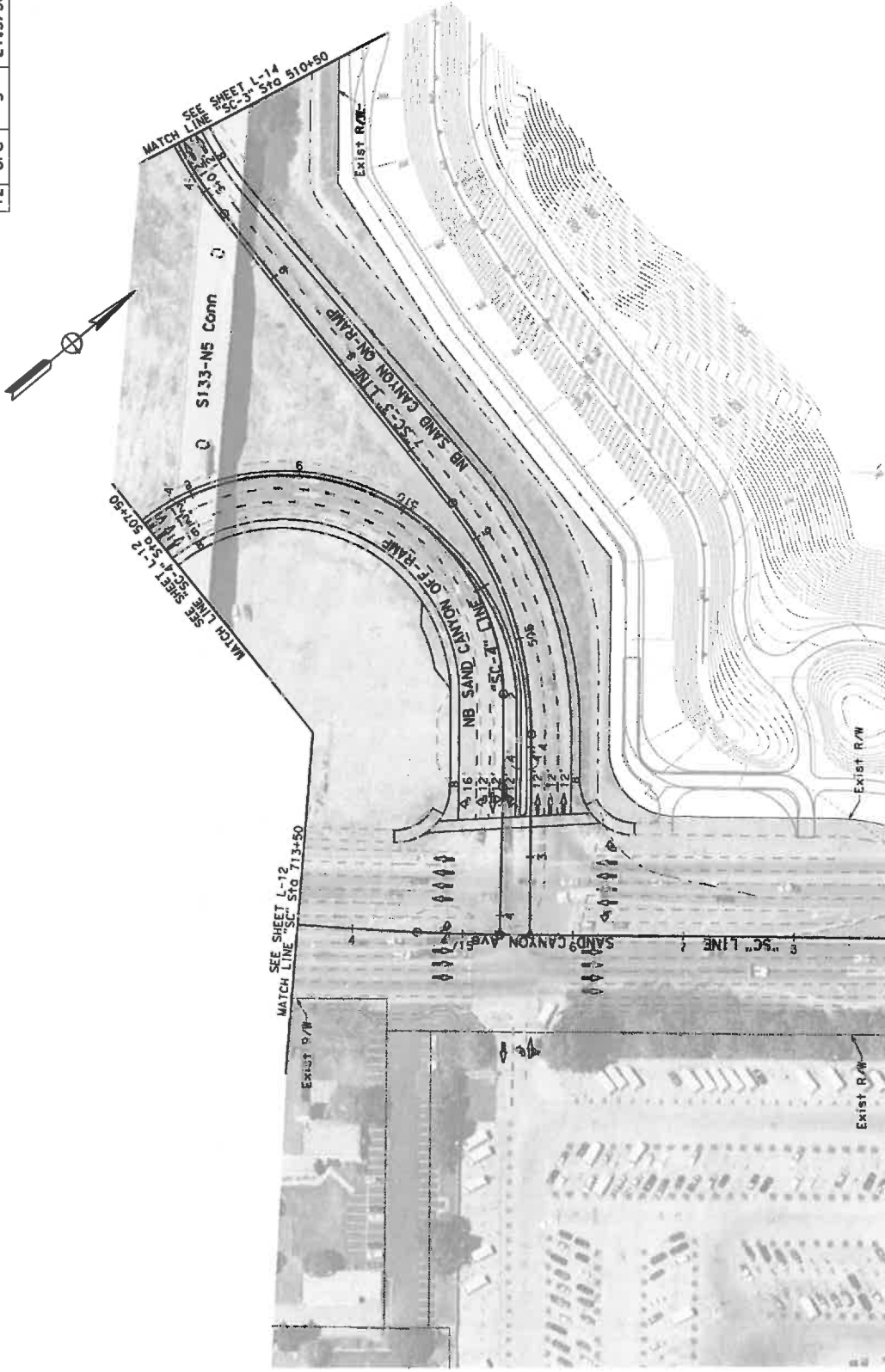
CONSULTANT FUNCTIONAL SUPERVISOR

DESIGNED BY  
CHECKED BY

REVISD BY  
DATE REVISD

00-00-00 DATE PLOTTED 11/16/2011 TIME PLOTTED 11:57:12 AM

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Or	5	21.3/30.3	



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-	DESIGNED BY	CHECKED BY	DATE REVISED	REVISED BY
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**FOR PSR USE ONLY**

BORDER L:ST REVISED 7/2/2010 USERNAME: g9kx00 DGN FILE # ... Sheet L-11\_2A\067024-e0013.dgn

RELATIVE BORDER SCALE 1" = 100 FEET



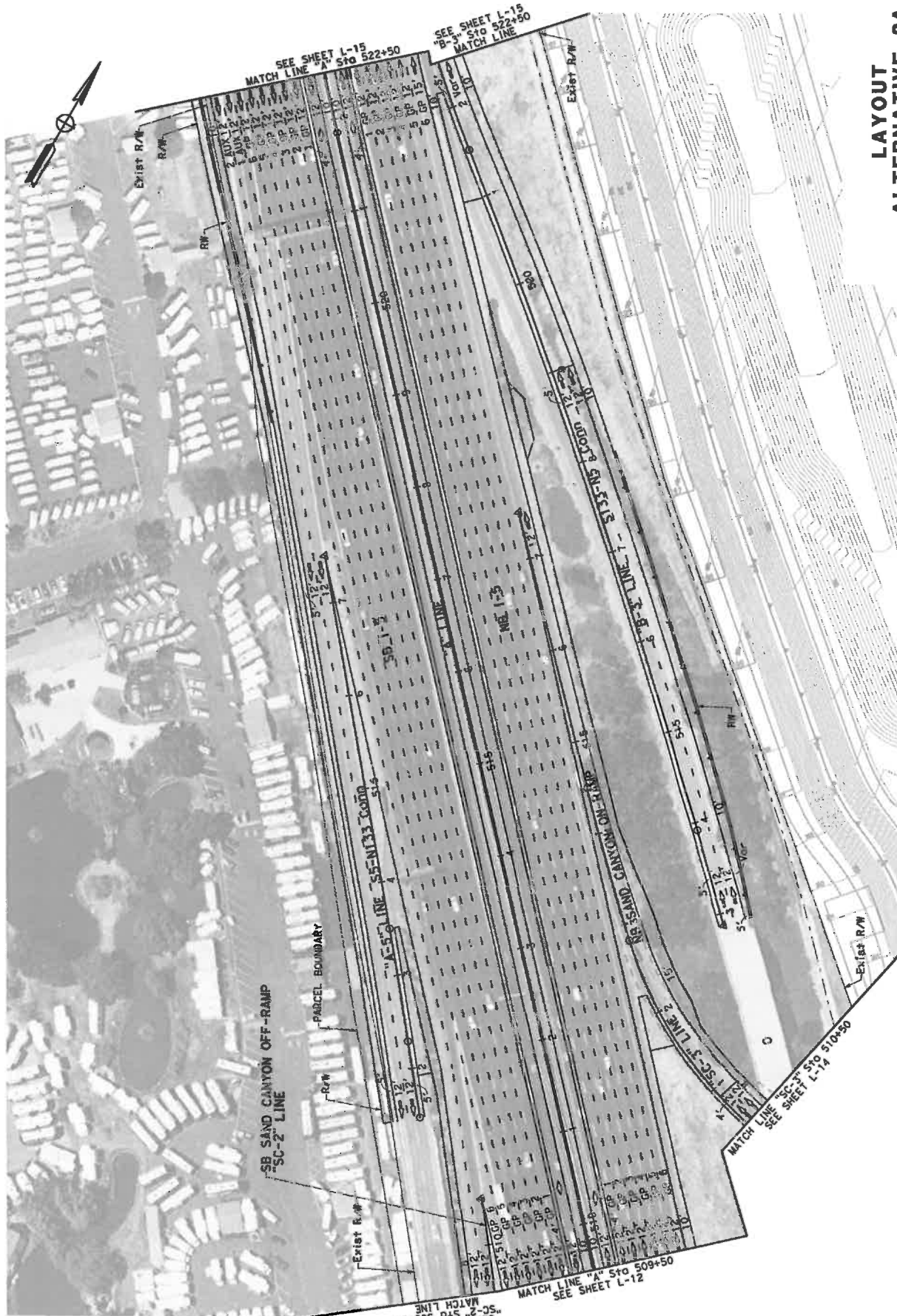
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

**LAYOUT ALTERNATIVE 2A**  
NO SCALE  
**L-13**

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orca	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-14**

PROJECT NUMBER & PHASE  
UNIT 0000  
1200020052K

RELATIVE BORDER SCALE  
IS IN INCHES  
0 1 2 3

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BORDER LAST REVISED 7/2/2010  
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
CHECKED BY  
DATE REVISED

DATE PLOTTED 11/16/2011  
TIME PLOTTED 11:57:30 AM



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR

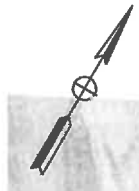
CALCULATED BY

DESIGNED BY

DATE REVISED

CHECKED BY

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3730.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-15**

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
CHECKED BY  
DATE REVISION  
REVISION BY

RELATIVE BORDER SCALE  
1/2 IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

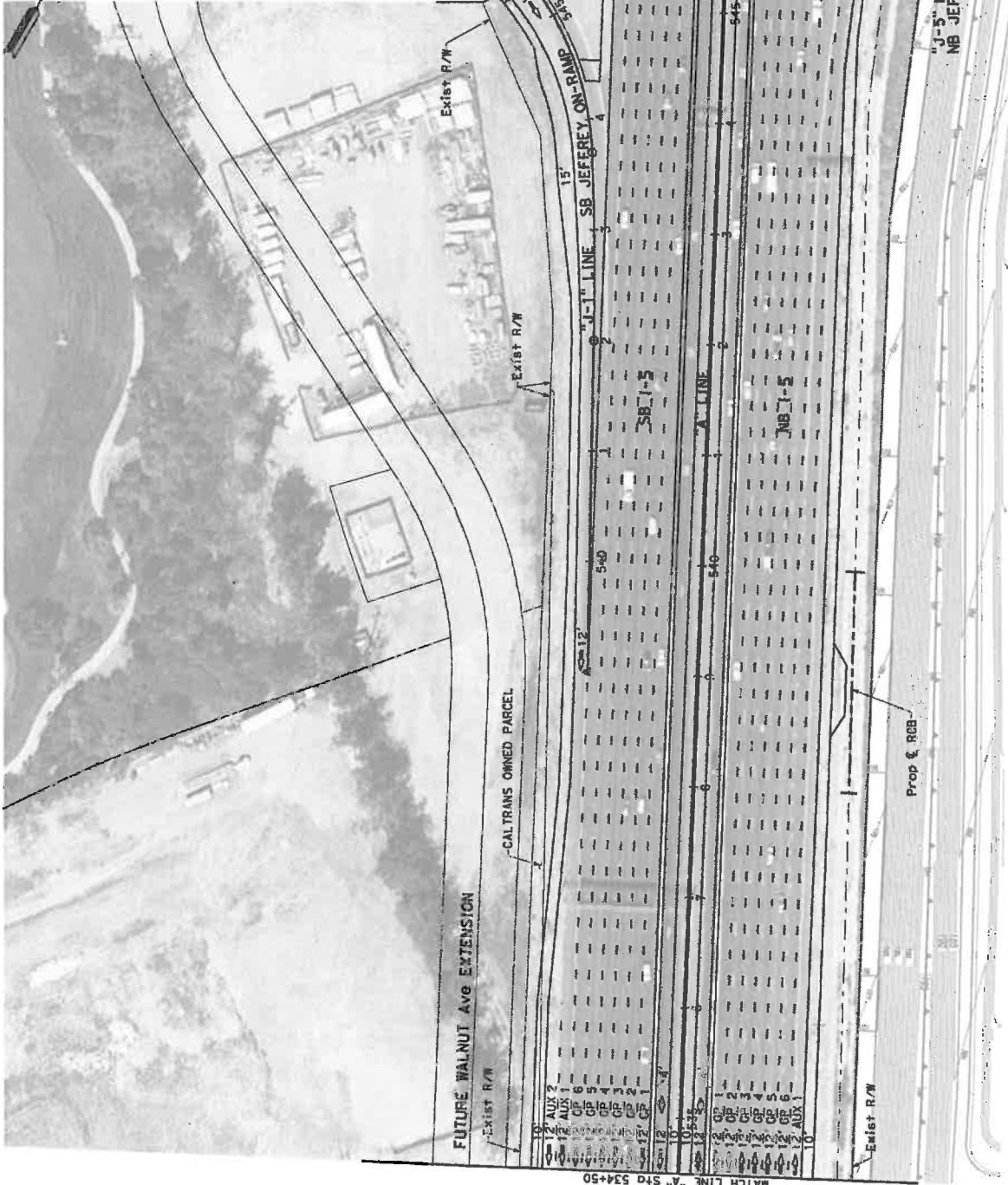
1200020052K

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 11:57:39 AM



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orco	5	21.3/30.3	

DATE PLOTTED = 11/16/2011  
 TIME PLOTTED = 11:57:48 AM



**LAYOUT  
 ALTERNATIVE 2A**  
 NO SCALE  
**L-16**

PROJECT NUMBER & PHASE  
 UNIT 0000

UNIT 0000

RELATIVE BORDER SCALE  
 1/8" = 15' IN INCHES

BORDER LAST REVISED 7/2/2010  
 USERNAME: s39000  
 DGN FILE: ...\\server\m11-2a\0467024-e0016.dgn

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR

1200020052K

DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	3



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE

L-17

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
15 IN. INCHES

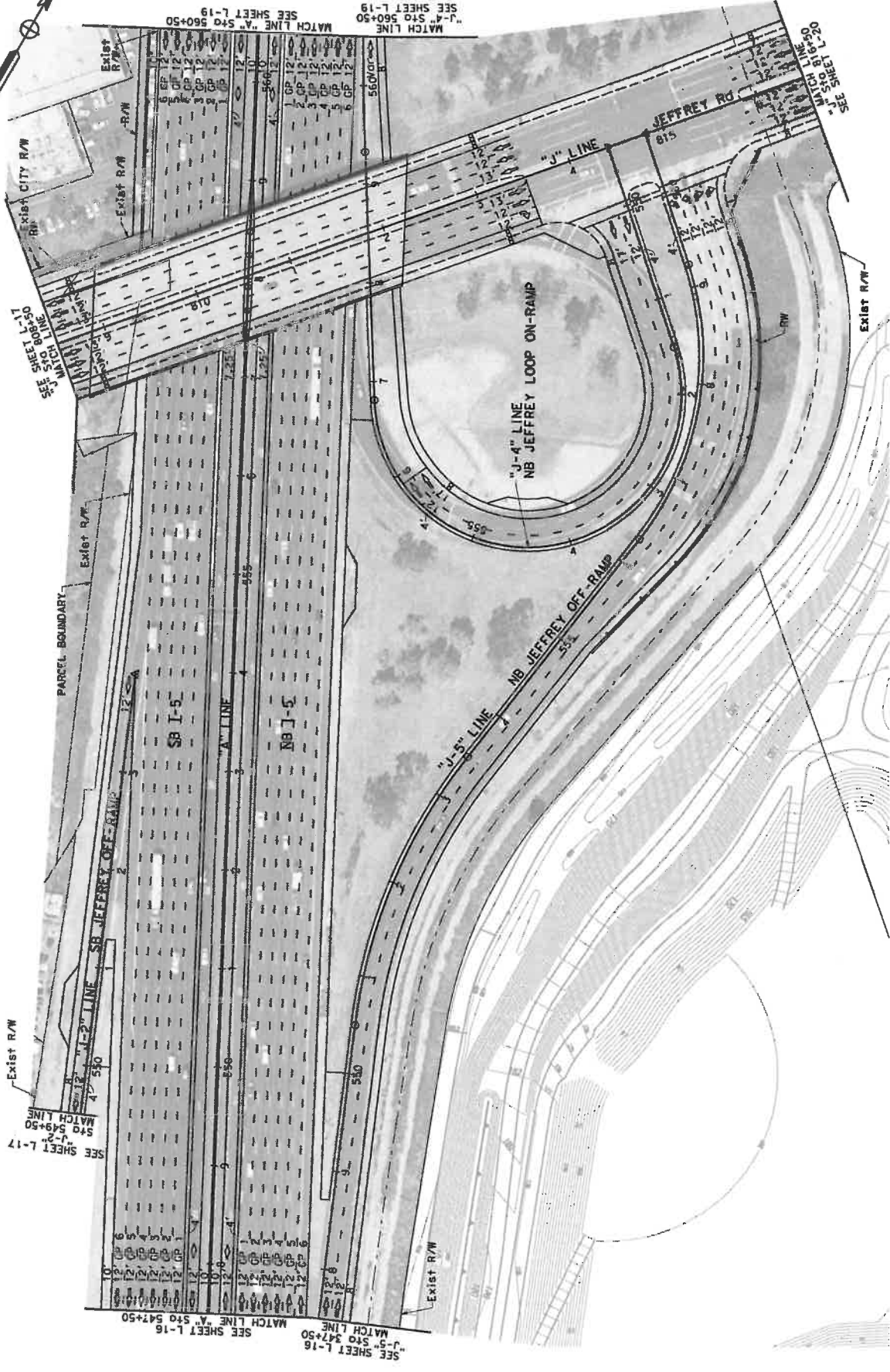
FOR PSR USE ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CHECKED BY  
DATE REVISION  
REVISION BY

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 11:57:17 AM

ORDER LAST REVISED 7/2/2010  
USERNAME => grego  
JOB FILE => \\snp\proj\11\_21\_06\1024-06017.dgn

Dist	County	Route	Sheet	Project	Sheet	Total
12	Orca	5	21.3/30.3			



**LAYOUT  
ALTERNATIVE 2A  
NO SCALE  
L-18**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

BORDER LAST REVISED 7/2/2010  
USERNAME g3g3020  
DWG FILE g3...Sheet\11.2A\0657024-e018.dgn

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

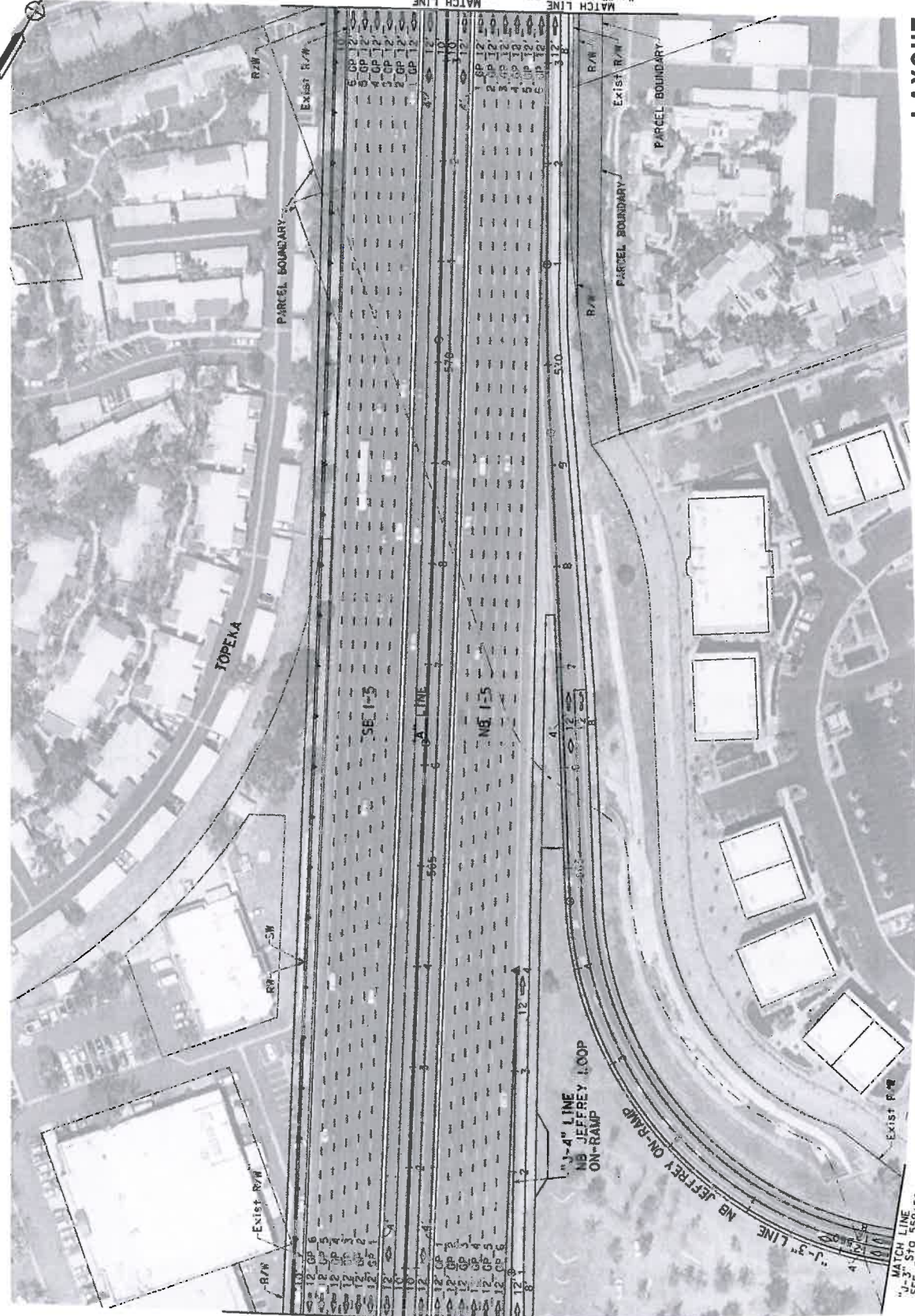
CONSULTANT FUNCTIONAL SUPERVISOR

CALCULATED-  
DESIGNED BY

REVISOR  
DATE REVISED



12	070	5	21.3/30.3
COUNTY		ROUTE	POST MILES TOTAL PROJECT
SHEET TOTAL		SHEETS	



MATCH LINE  
"J-4" S10 560+50  
SEE SHEET L-18

MATCH LINE  
"J-3" S10 559+50  
SEE SHEET L-20

MATCH LINE  
"J-3" S10 573+50  
SEE SHEET L-21

MATCH LINE  
"J-4" S10 573+50  
SEE SHEET L-21

EXIST R/W

EXIST R/W

EXIST R/W

EXIST R/W

EXIST R/W

EXIST R/W

EXIST R/W

EXIST R/W

EXIST R/W

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 11:58:17 AM

**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE

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CONSULTANT FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CALCULATED-  
CHECKED BY  
DATE RE-USED  
REVISOR BY

RELATIVE BORDER SCALE  
IS IN INCHES

UNIT 0000

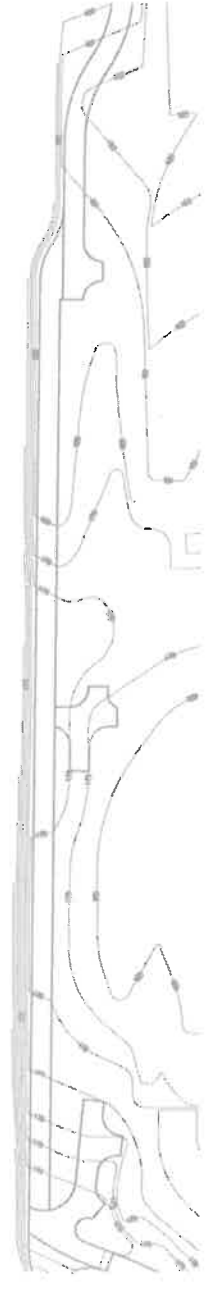
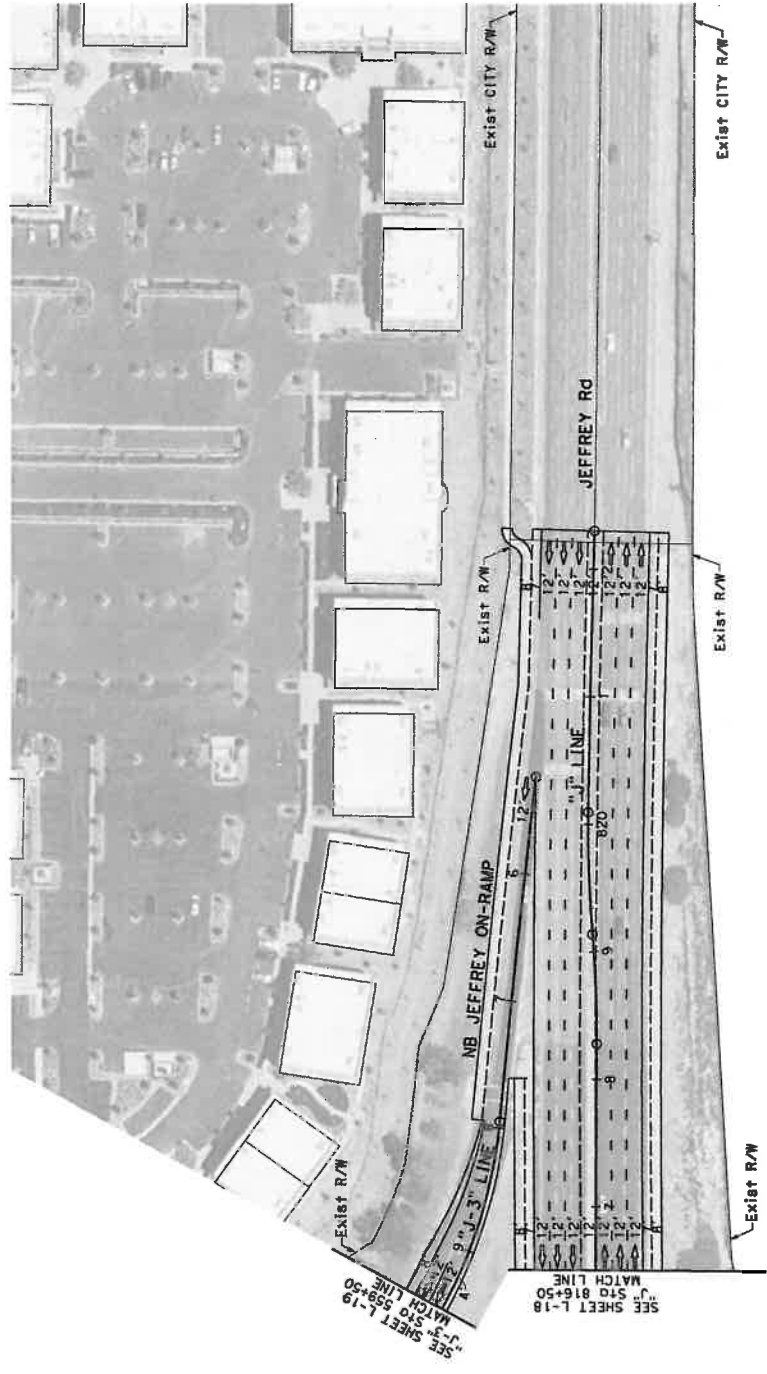
PROJECT NUMBER & PHASE

L-19

1200020052K



DIST	COUNTY	ROUTE	SHEET TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orc	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A  
NO SCALE  
L-20**

PROJECT NUMBER & PHASE  
UNIT 0000

1200020052K

RELATIVE BORDER SCALE  
15 IN INCHES

USERNAME: g3000  
JOB FILE: \\speer\11-21\0657024-0020.dgn

BORDER LAST REVISED 7/2/2010

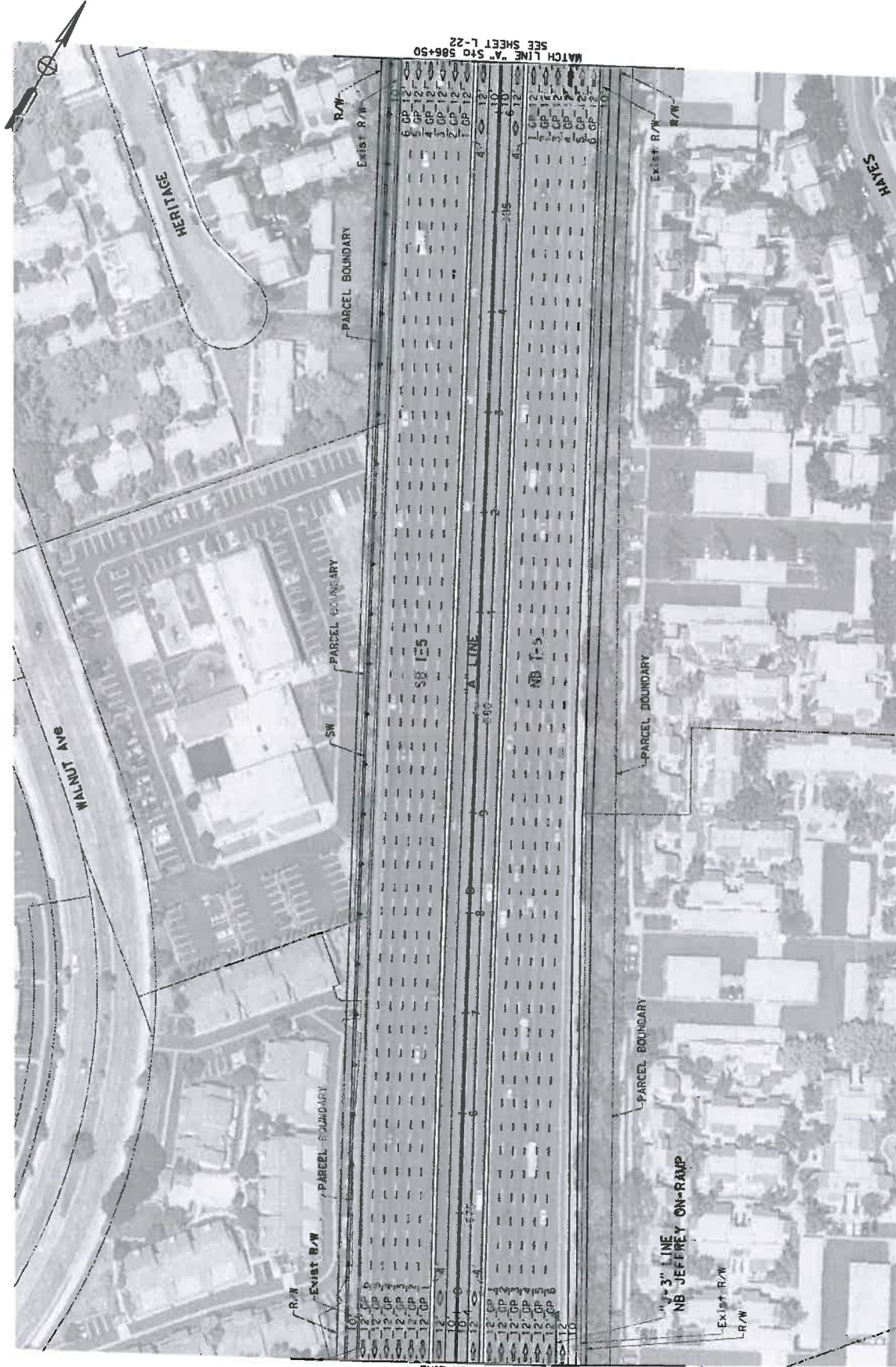
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TIME PLOTTED: 11:58:27 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED
		DESIGNED BY		



DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-21**

**FOR PSR USE ONLY**

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CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-  
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CHECKED BY  
DATE REVISED  
REVISOR

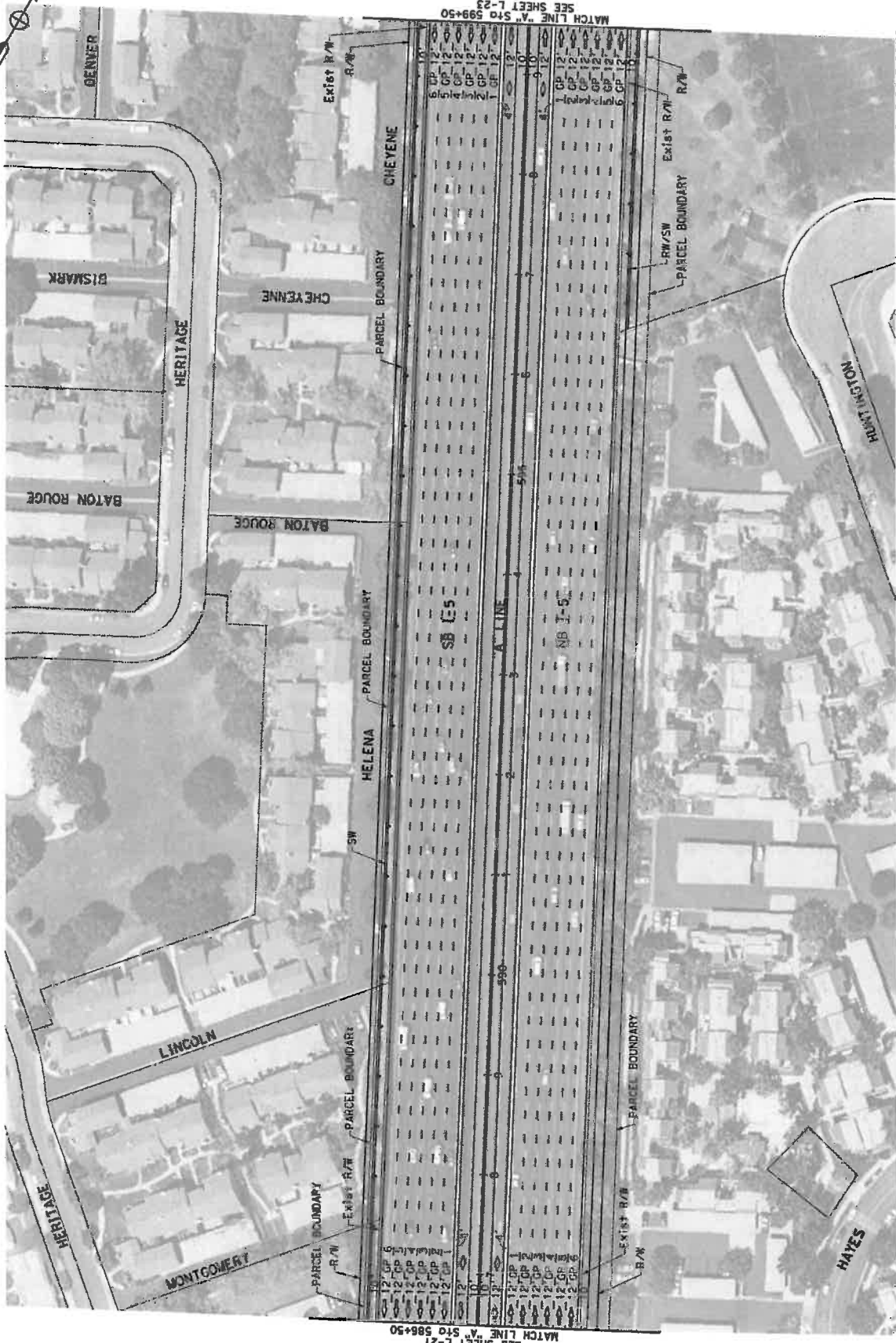
RELATIVE BORDER SCALE  
1" = 12' IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

Dist	County	Route	Post Mile	Sheet No.
12	Orca	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
L-22

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

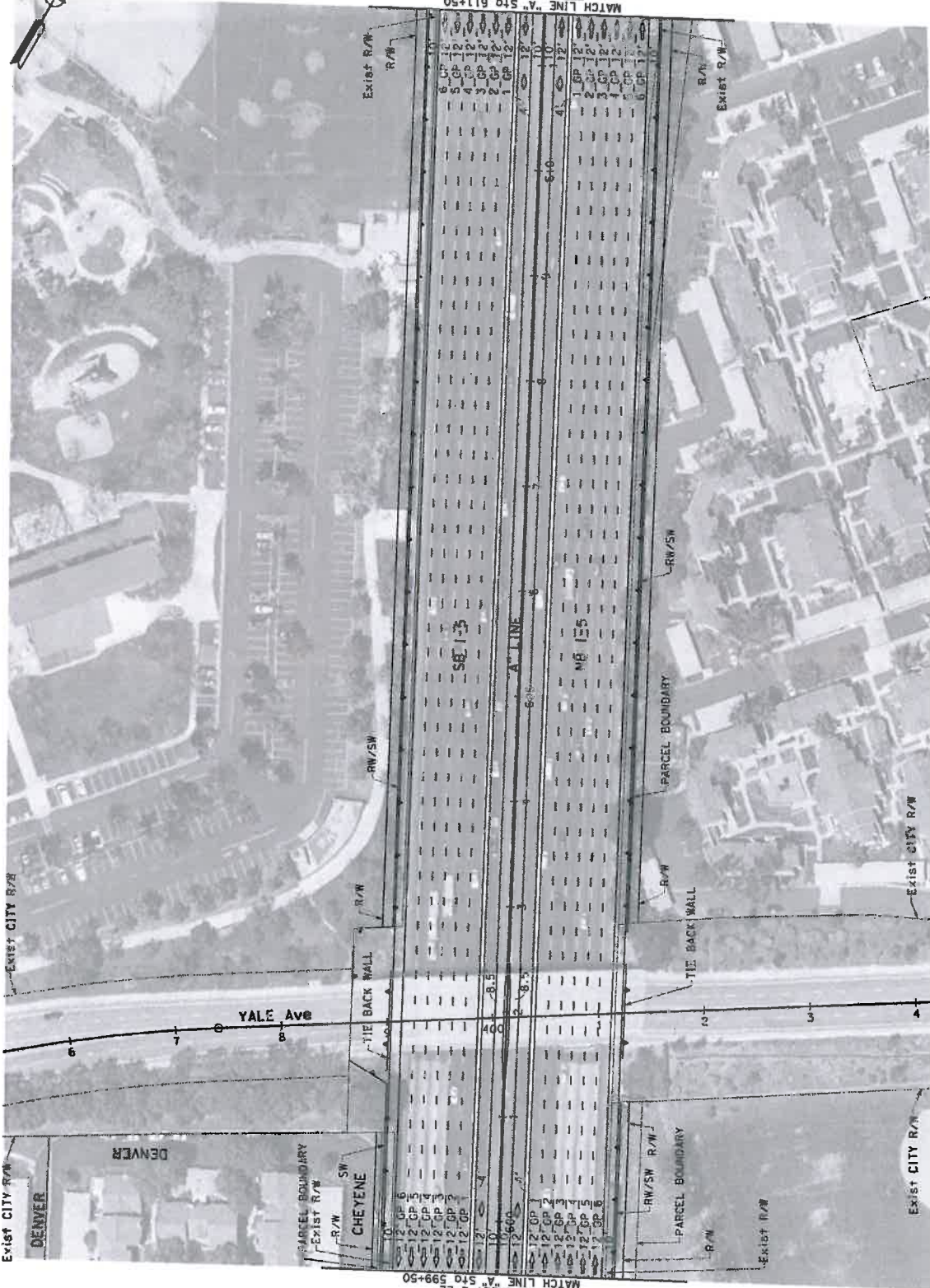
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
		DATE REVISED	



DOB#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Oro	5	21.37303	3



MATCH LINE "A" STA 599+50  
SEE SHEET L-22

MATCH LINE "A" STA 611+50  
SEE SHEET L-24

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
REVISOR	DESIGNED BY	REVISOR	DATE REVISED

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BORDER LAST REVISED 7/2/2010  
 USERNAME: s3000  
 DGN FILE: p:\s3000\11221\061021-e003.dgn

RELATIVE BORDER SCALE  
 15 IN. INCHES



UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

**LAYOUT  
 ALTERNATIVE 2A**  
 NO SCALE  
**L-23**

Dist	County	Route	Sheet	Total
12	Orca	5	21.3/30.3	30.3



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-24**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 CALCULATED BY  
 DESIGNED BY  
 REVISOR  
 DATE REVISOR  
 PROJECT NUMBER & PHASE  
 UNIT 0000  
 RELATIVE BORDER SCALE  
 IS IN INCHES  
 0 1 2 3  
 1200020052K

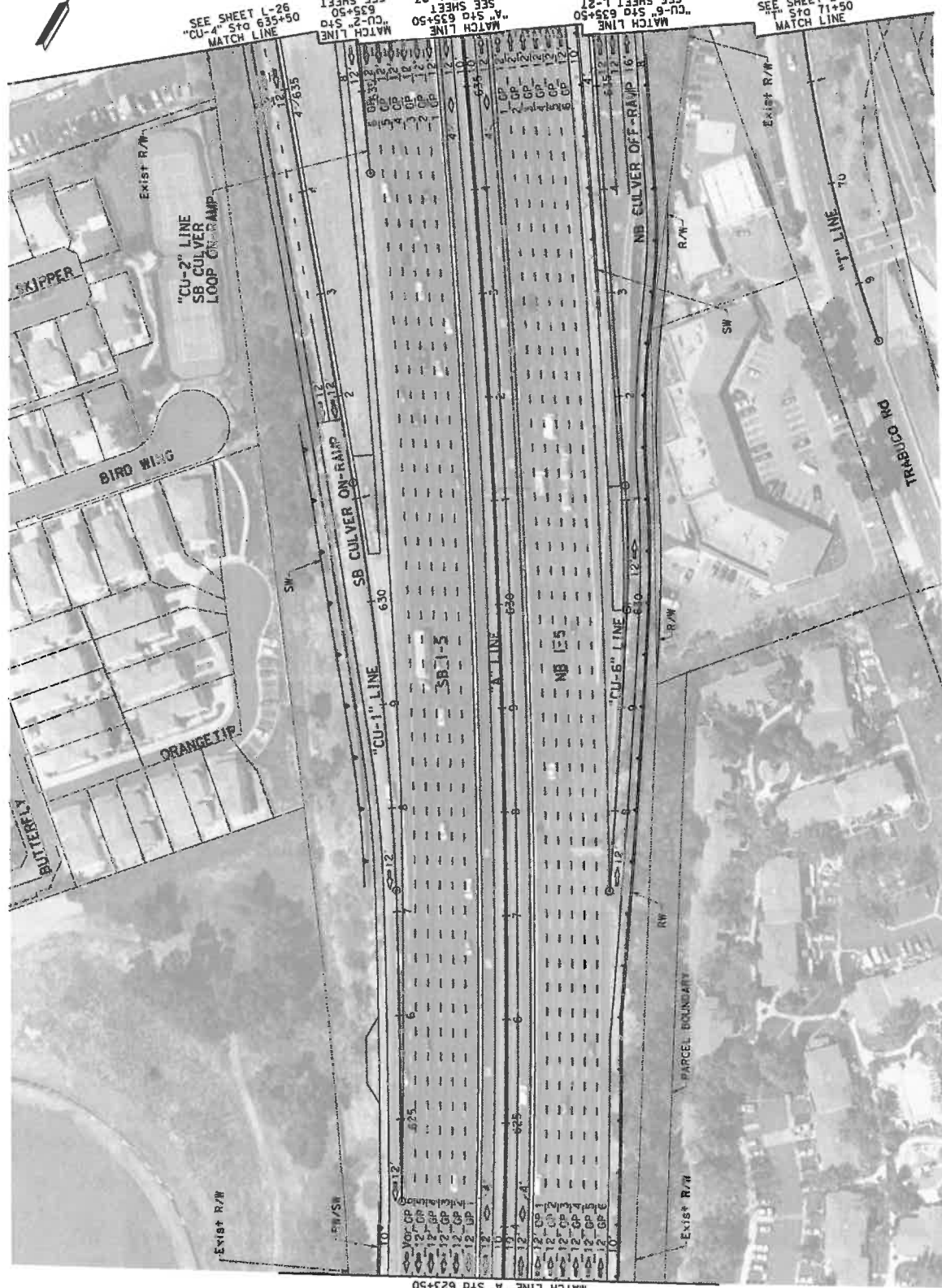
**FOR PSR USE ONLY**

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00-00-00  
 TIME PLOTTED #3 11/16/2011  
 DATE PLOTTED #3 11/16/2011



DATE	COUNTY	ROUTE	TOTAL PROJECT	SHEET TOTAL
12	Oro	5	21.3730.3	NO. SHEETS



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-25**

PROJECT NUMBER & PHASE  
UNIT 0000

RELATIVE BORDER SCALE  
10 IN. INCHES

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DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 11:59:11 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

CHECKED BY  
DESIGNED BY

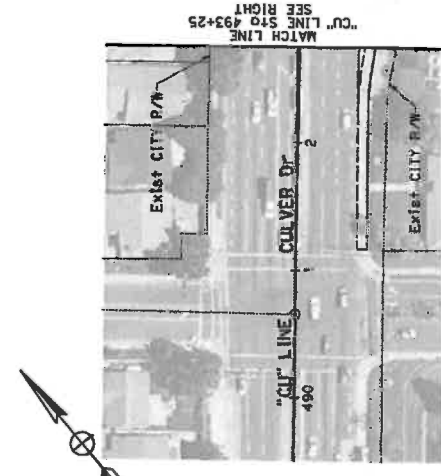
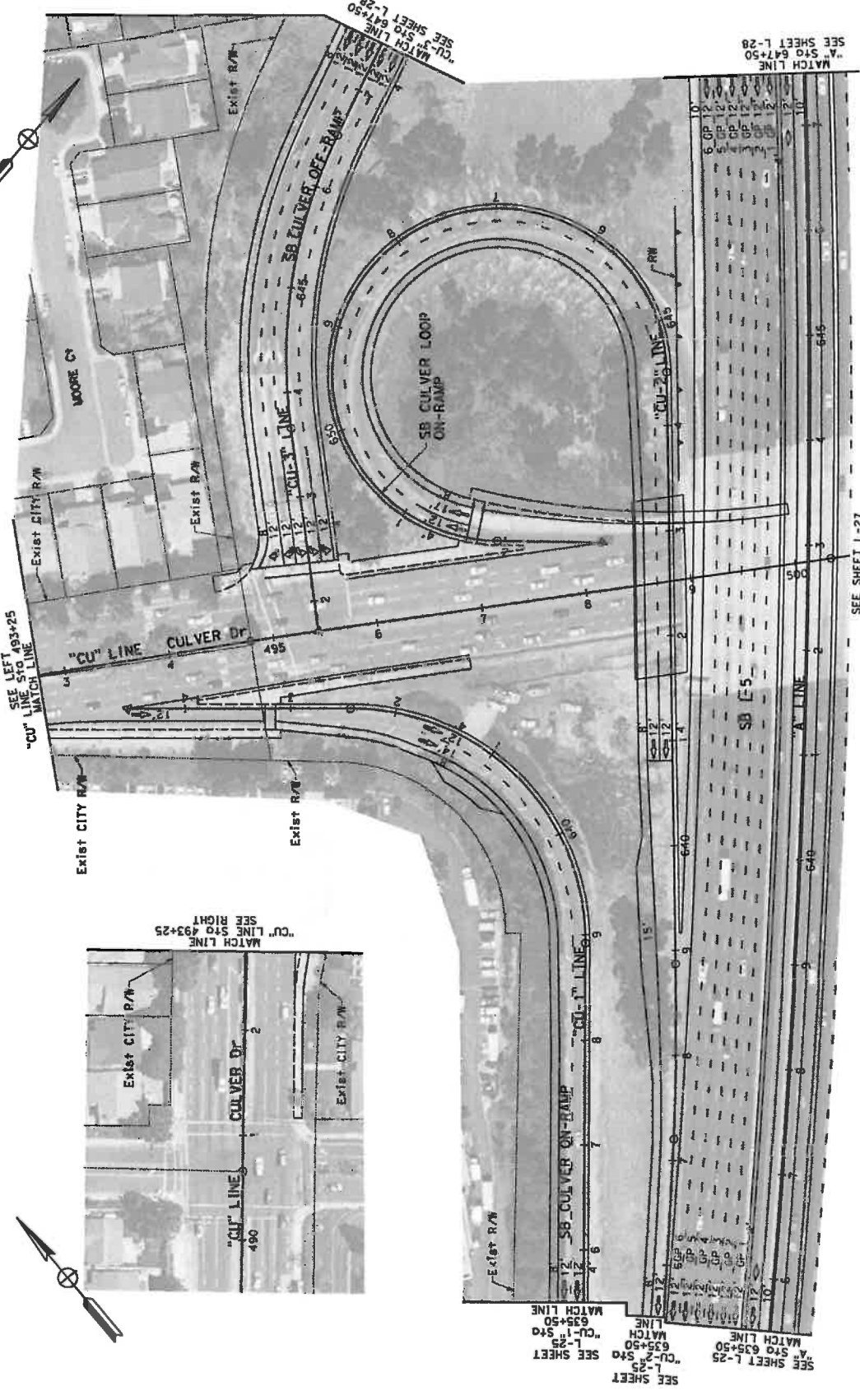
DATE REVISED  
REVISIONS

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
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BORDER LAST REVISED 7/2/2010

1200020052K

Dist	County	Route	Sheet Title	Sheet Total
12	Org	5	21.3/30.3	30



MATCH LINE  
 "A" S70 647+50  
 SEE SHEET L-28

SEE SHEET L-27

SEE SHEET L-25  
 "CU-2" S70  
 635+50  
 MATCH LINE  
 SEE SHEET L-25

SEE SHEET L-25  
 "CU-1" S70  
 635+50  
 MATCH LINE  
 SEE SHEET L-25

# LAYOUT ALTERNATIVE 2A NO SCALE

L-26

PROJECT NUMBER & PHASE

UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

LIBRARYNAME: s:\projects\112\_2010067024-mcd26.dgn  
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BORDER LAST REVISED 7/2/2010

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CONSULTANT FUNCTIONAL SUPERVISOR

DESIGNED BY

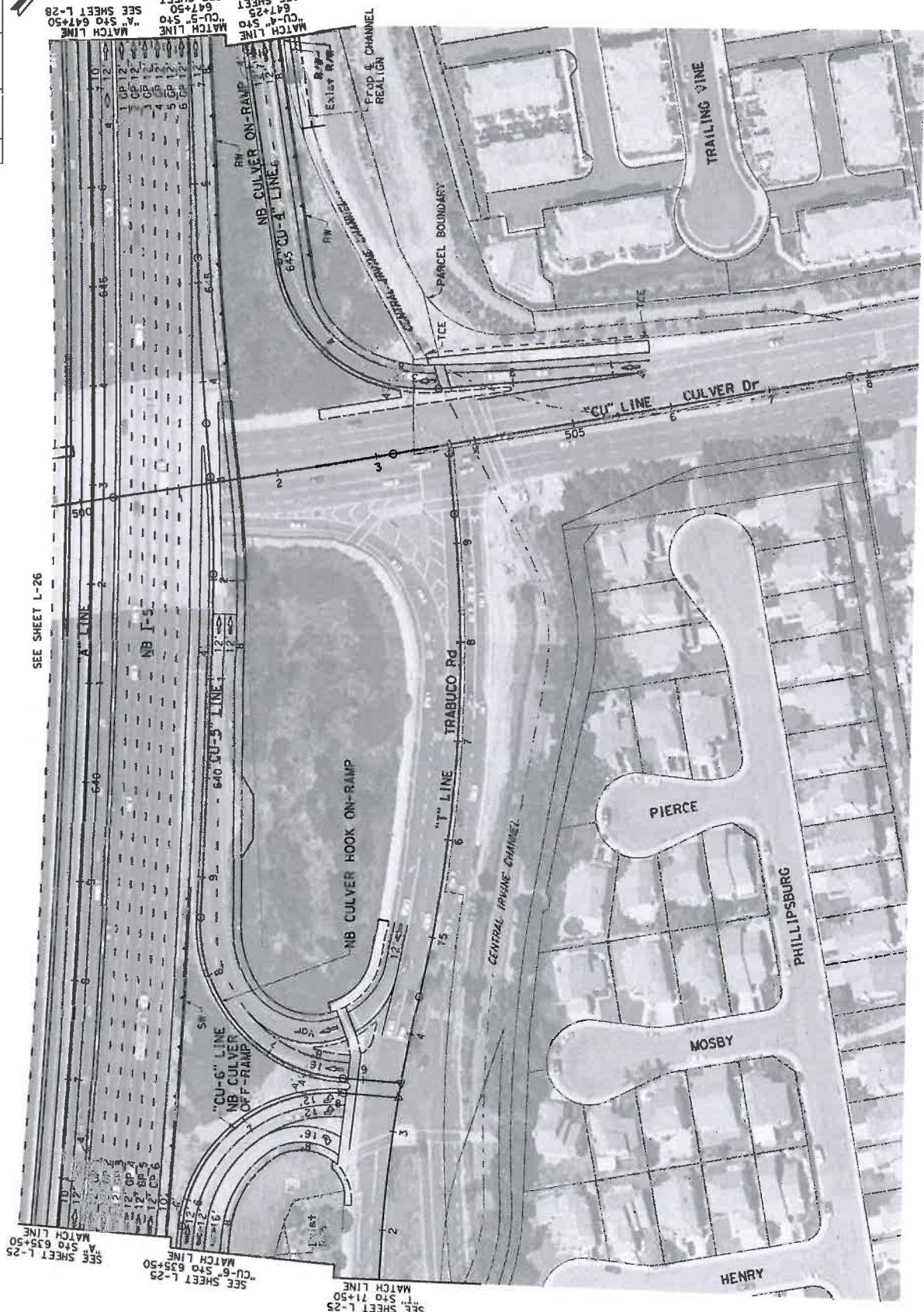
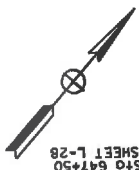
CALCULATED BY

CHECKED BY

REVISY BY

DATE REVISED

ROUTE	COUNTY	PROJECT TOTAL MILES	SHEET TOTAL SHEETS
5	070	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-27**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
1/8" = 15' IN INCHES

USERNAME: psr000  
DGN FILE: L-27.dwg

BORDER LAST REVISED 7/2/2010

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DESIGNED BY

REVISD BY

DATE REVISED



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	ORG	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-28**

PROJECT NUMBER & PHASE  
UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

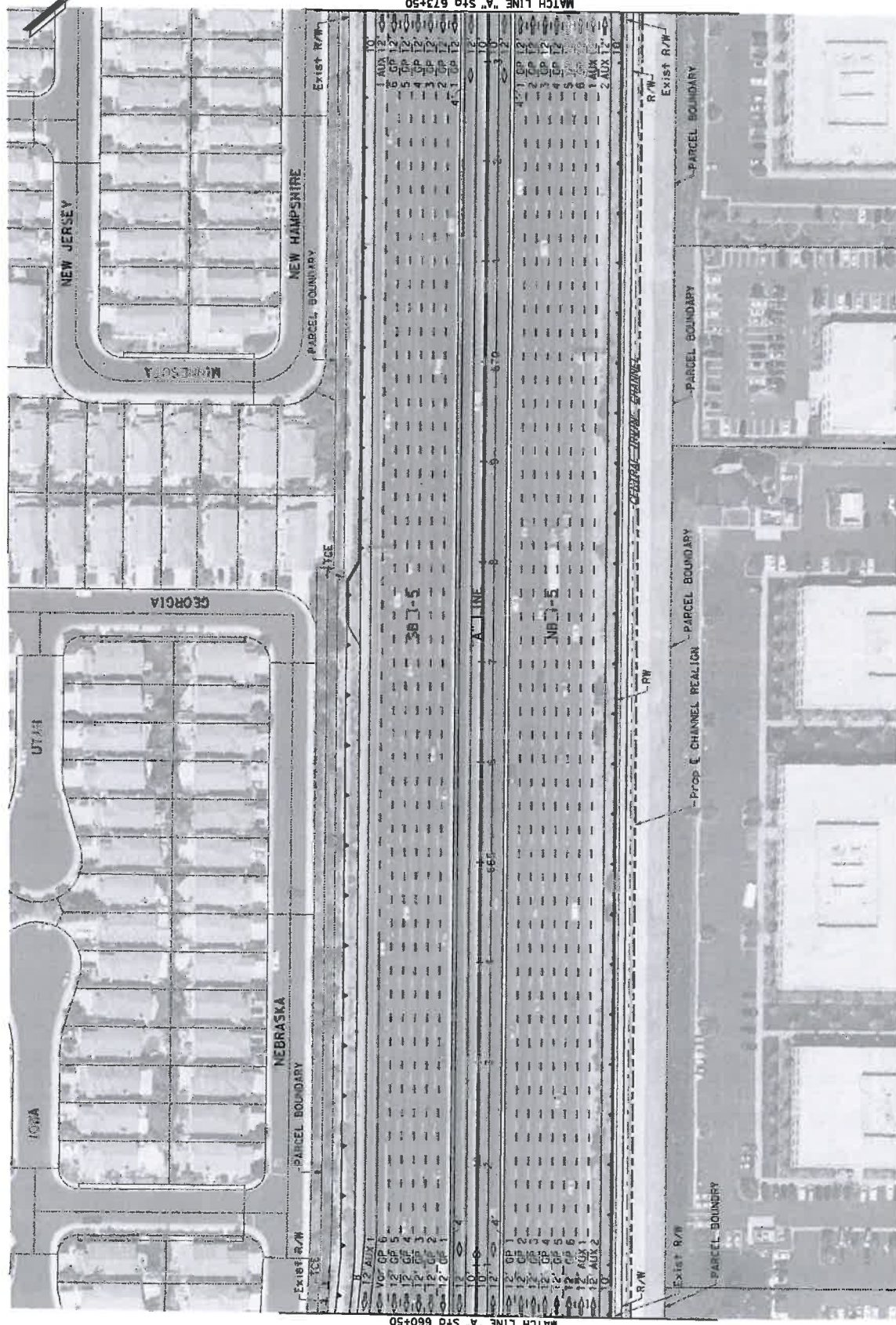
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TIME PLOTTED: 11:59:42 AM

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	CHECKED BY	DESIGNED BY	DATE REVISED
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Orto	5	21.3/30.3	



SEE SHEET L-28  
MATCH LINE A STD 660+50

SEE SHEET L-30  
MATCH LINE A STD 673+50

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
<p><b>FOR PSR USE ONLY</b></p> <p>BORDER LAST REVISED 7/2/2010 USERNAME: 13 2010 DDM FILE # ... \Sheet\11-2A\067024-e079.dgn</p>					

**LAYOUT ALTERNATIVE 2A**  
NO SCALE  
**L-29**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	OrG	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-30**

PROJECT NUMBER & PHASE  
UNIT 0000  
1200020052K

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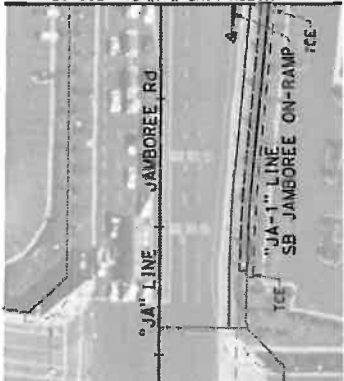
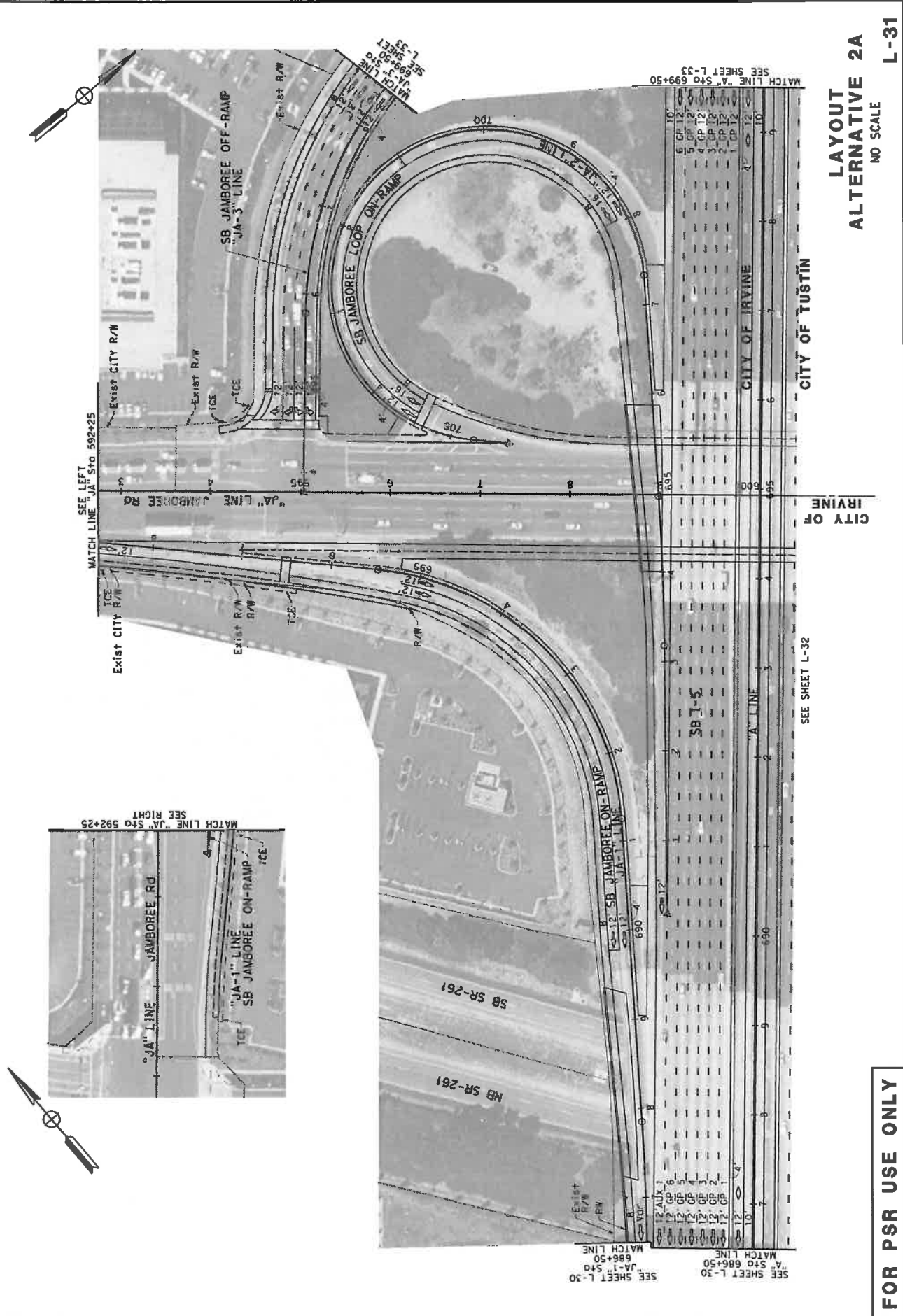
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
<b>CH2M HILL</b>					



POST MILES TOTAL PROJECT	21.3730.3
SHEET TOTAL SHEETS	12
COUNTY	070
ROUTE	5

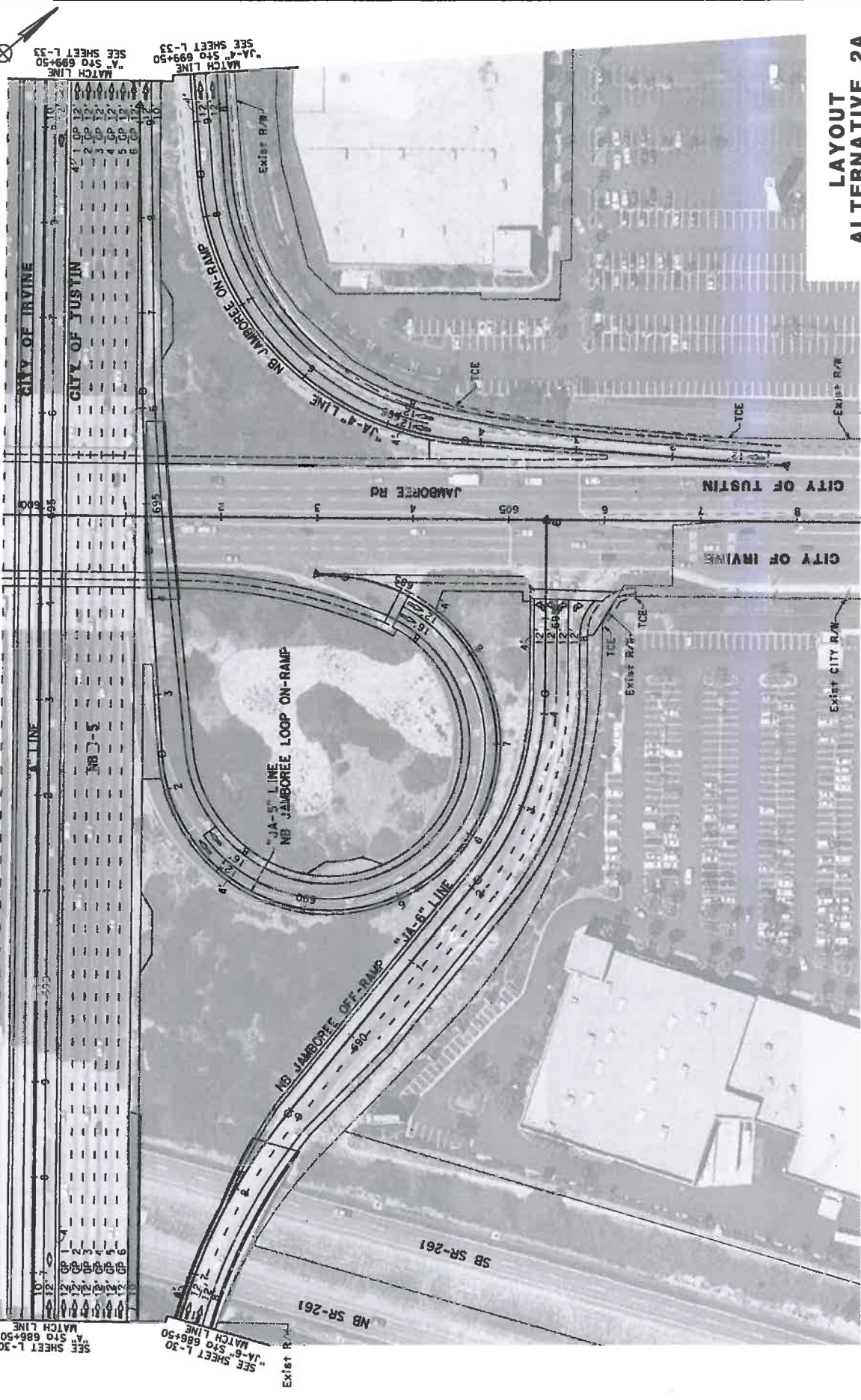
DATE REVISION	REVISION BY	CHECKED BY	DESIGNED BY	CONSULTANT FUNCTIONAL SUPERVISOR



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE

**FOR PSR USE ONLY**

DIST	COUNTY	ROUTE	PROJECT TOTAL SHEETS	SHEET TOTAL NO.
12	Orj	5	21.3/30.3	



SEE SHEET L-31

SEE SHEET L-30  
MATCH LINE  
A STA 686+50

SEE SHEET L-30  
MATCH LINE  
A STA 686+50

SEE SHEET L-33  
MATCH LINE  
A STA 699+50

**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-32**

**FOR PSR USE ONLY**

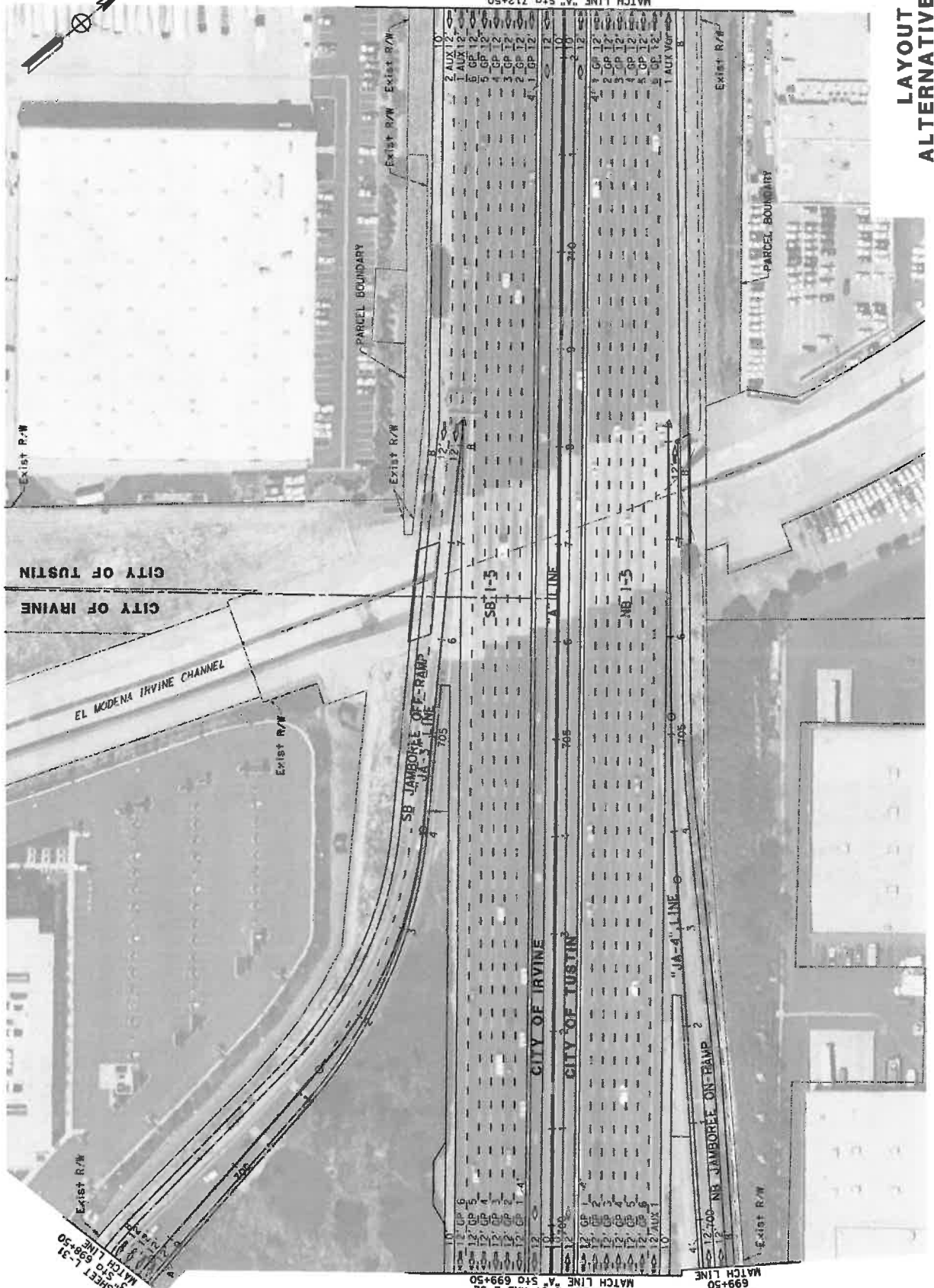
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR

RELATIVE BORDER SCALE  
IS IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE  
1200020052K

DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Orto	5	21.3/30.3	



SEE SHEET L-31  
 MATCH LINE A' STA 698+50  
 MATCH LINE B' STA 699+50

SEE SHEET L-31 AND L-32  
 MATCH LINE A' STA 699+50  
 MATCH LINE B' STA 700+50

SEE SHEET L-32  
 MATCH LINE A' STA 700+50  
 MATCH LINE B' STA 701+50

MATCH LINE A' STA 712+50  
 SEE SHEET L-34

**LAYOUT  
 ALTERNATIVE 2A**  
 NO SCALE  
**L-33**

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 CONSULTANT FUNCTIONAL SUPERVISOR  
 DESIGNED BY  
 CHECKED BY  
 DATE REVISION  
 REVISION BY

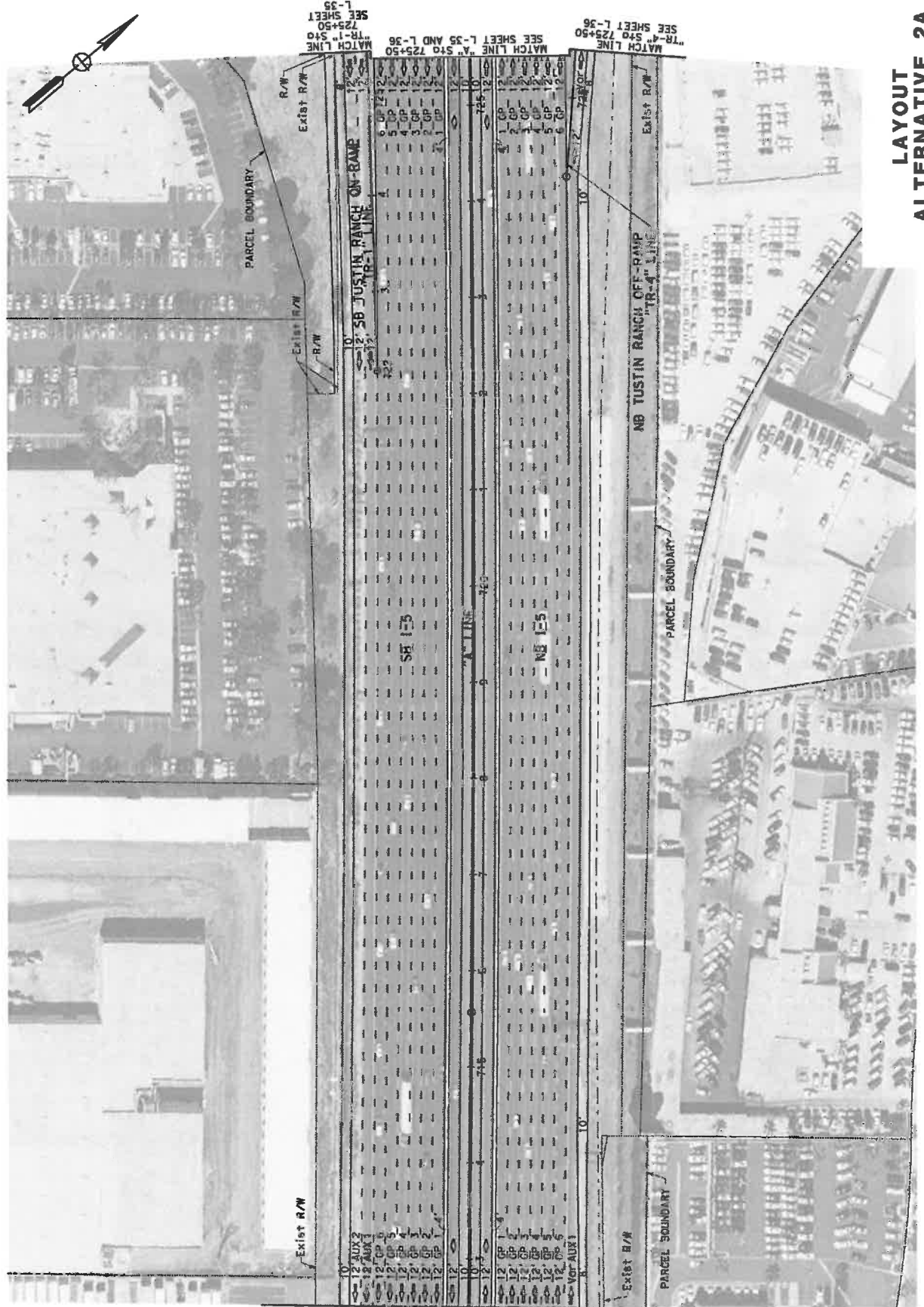
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 UNIT 0000  
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 IS IN INCHES  
 0 1 2 3

1200020052K

DATE PLOTTED => 11/16/2011  
 TIME PLOTTED => 12:00:29 PM



Dist	County	Route	Project Miles	Sheet No.
12	Orco	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-34**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000



RELATIVE BORDER SCALE  
IS IN INCHES

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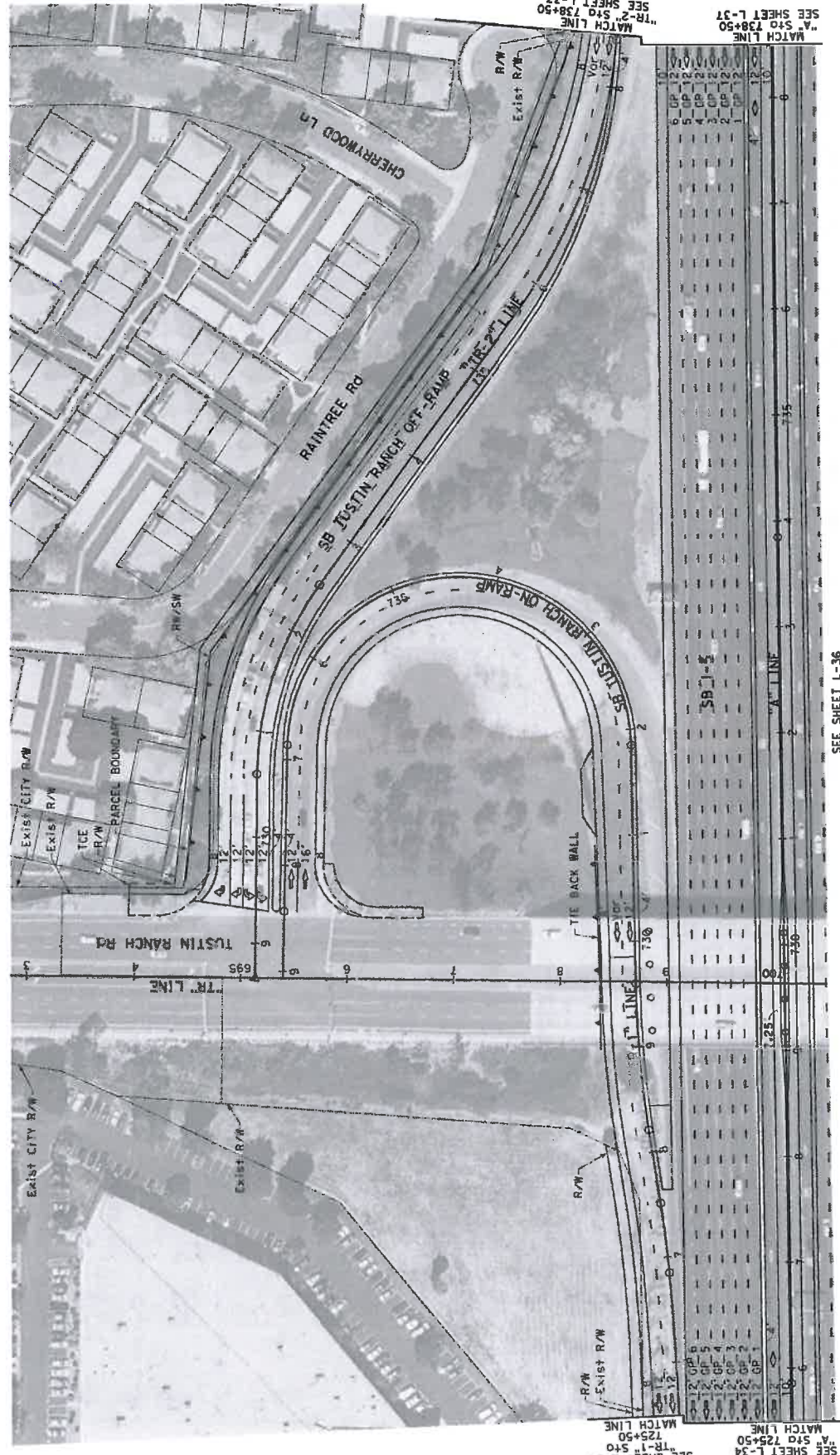
**FOR PSR USE ONLY**

BORDER LAST REVISED: 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
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Dist*	County	Route	Post Miles Total Project	Sheet No.	Total Sheets
12	Oro	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE

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 CONSULTANT: FUNCTIONAL SUPERVISOR  
 CALCULATED BY  
 CHECKED BY  
 DATE REVISED  
 REVISED BY  
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 RELATIVE BORDER SCALE IS IN INCHES  
 UNIT 0000  
 PROJECT NUMBER & PHASE  
 1200020052K  
 L-35

DATE PLOTTED => 11/16/2011  
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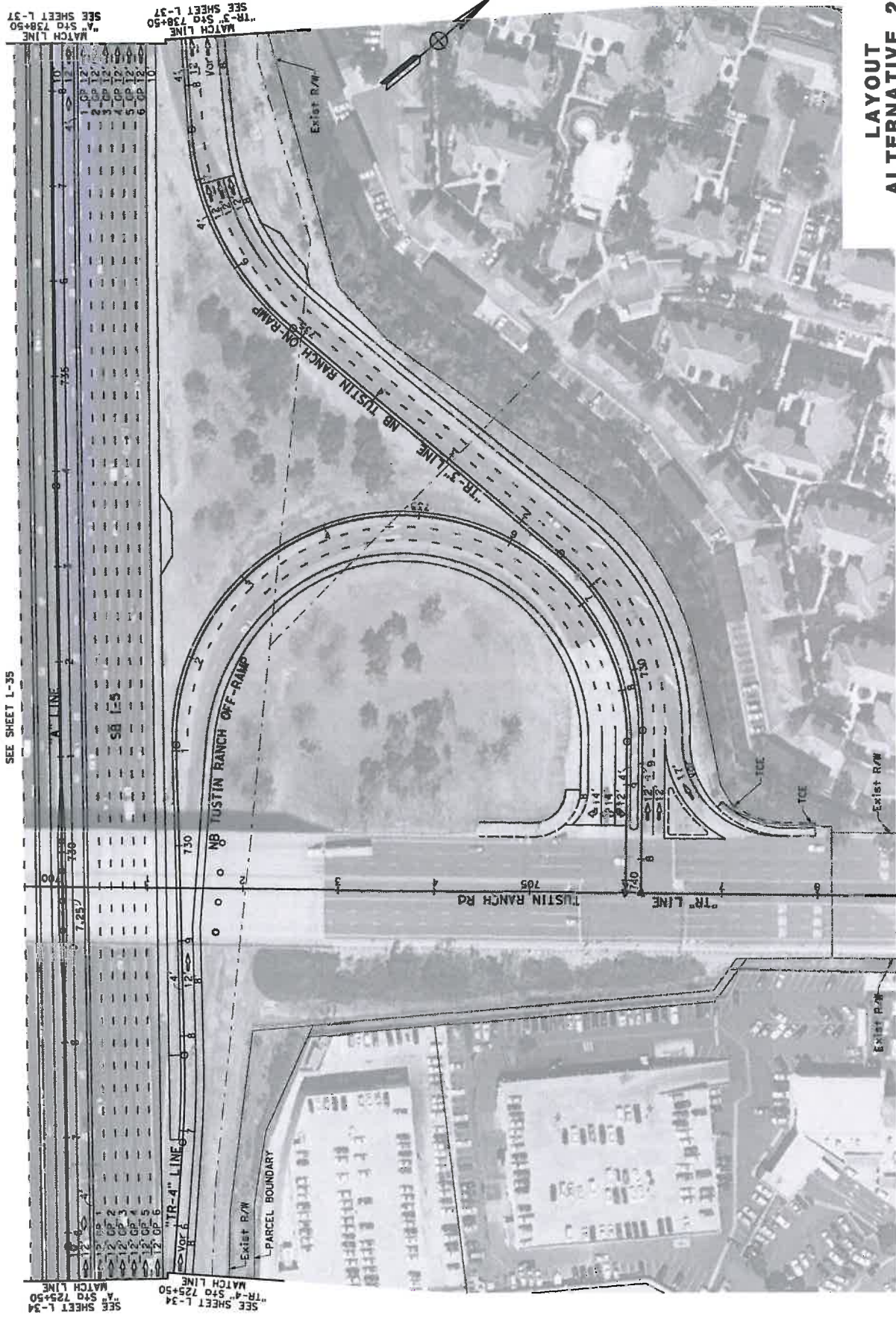
MATCH LINE  
 "A" STA 738+50  
 SEE SHEET L-37

MATCH LINE  
 "R-1" STA 725+50  
 SEE SHEET L-34

SEE SHEET L-36



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orca	5	21.3/30.3		



SEE SHEET L-35

SEE SHEET L-37

SEE SHEET L-34  
"TR-4" S70 725+50  
MATCH LINE

SEE SHEET L-37  
"TR-5" S70 738+50  
MATCH LINE

**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-36**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE IS IN INCHES: 0 1 2 3

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BORDER LAST REVISED 7/2/2010  
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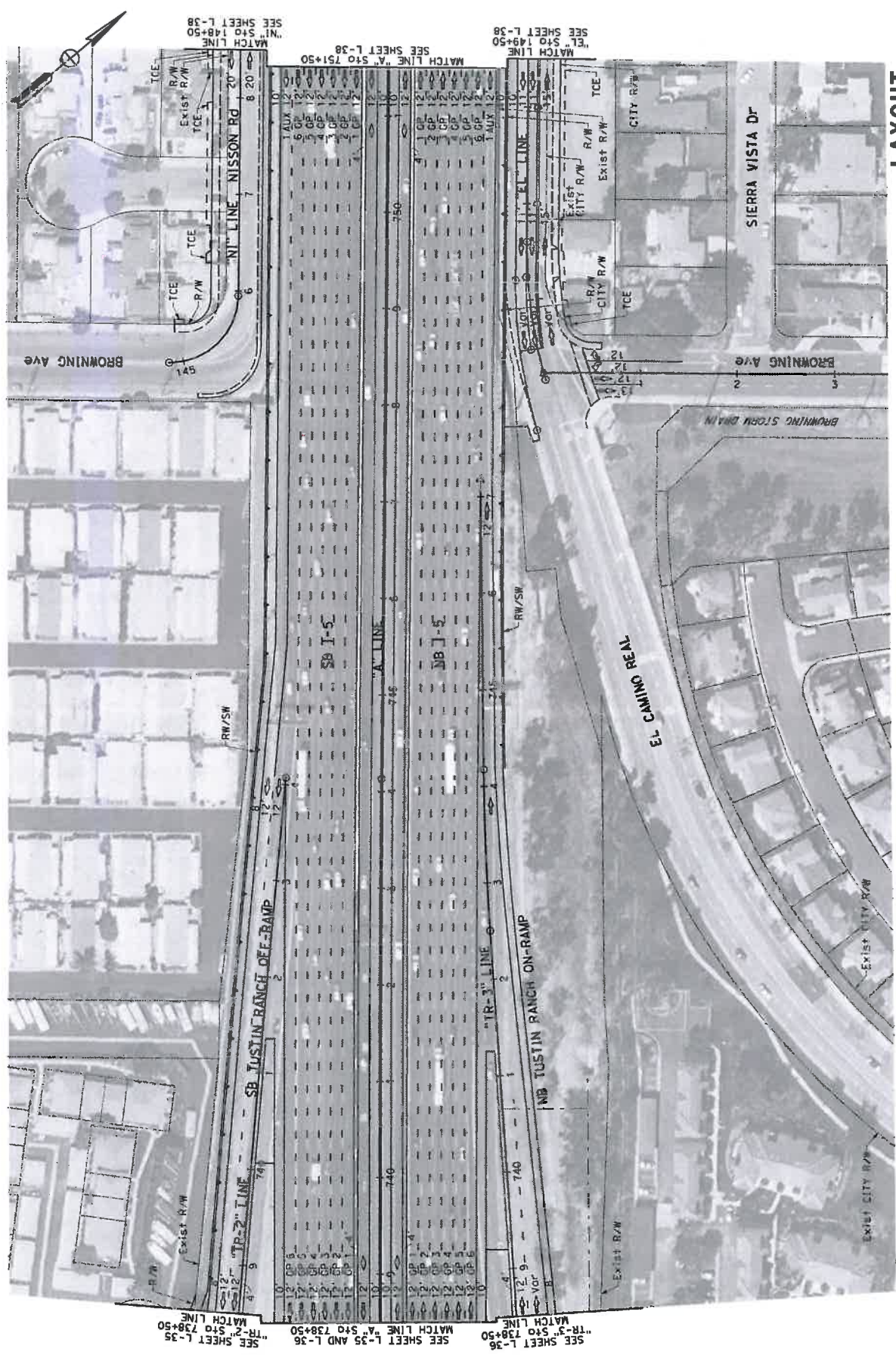
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Or	5	21.3/30.3	

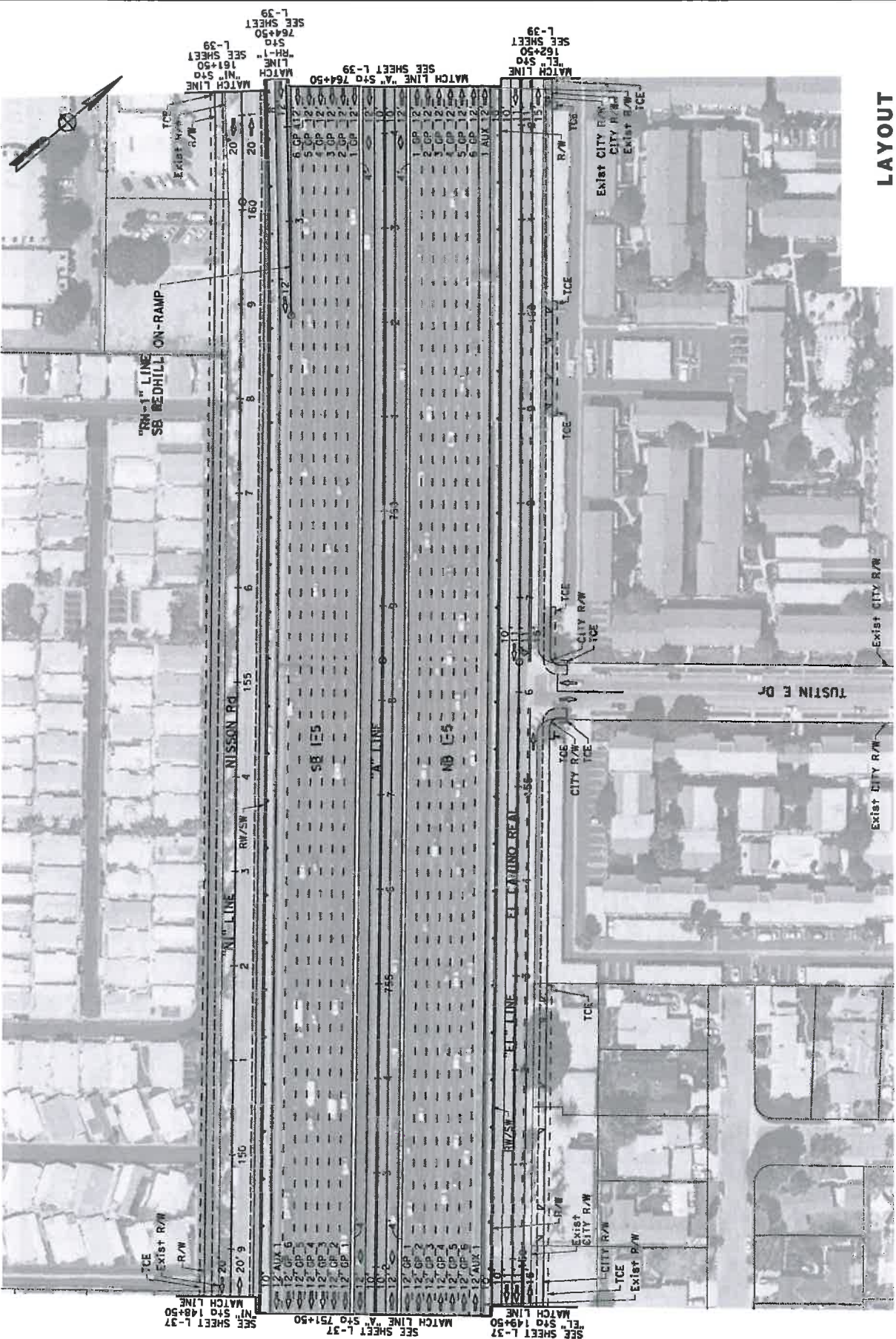


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED
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**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-37**



DIST	COUNTY	ROUTE	PROJECT	SHEET TOTAL
12	ORG	5	21.3/30.3	NO. SHEETS



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-38**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

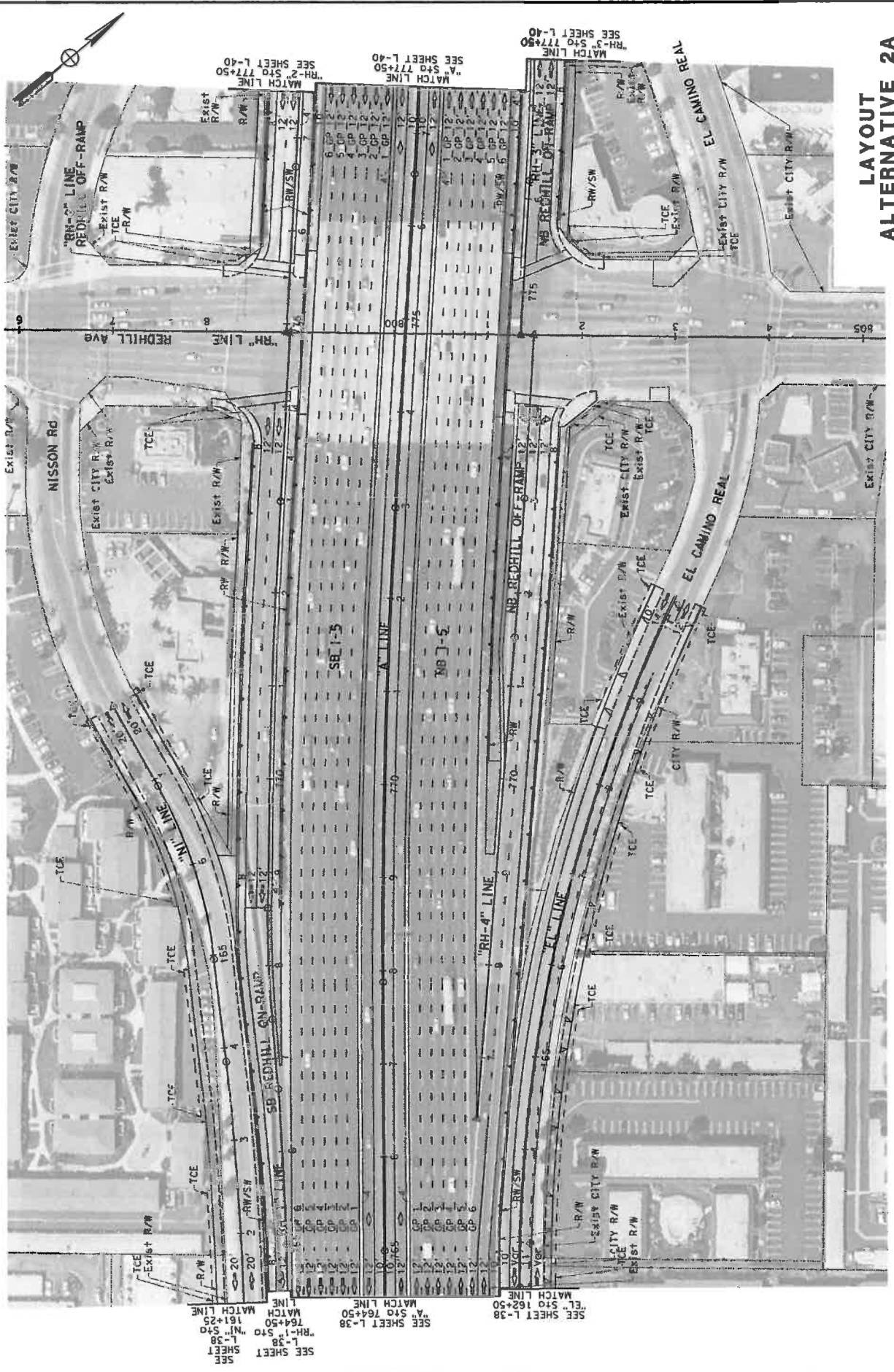
**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED



DIRT COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	070	5 21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE

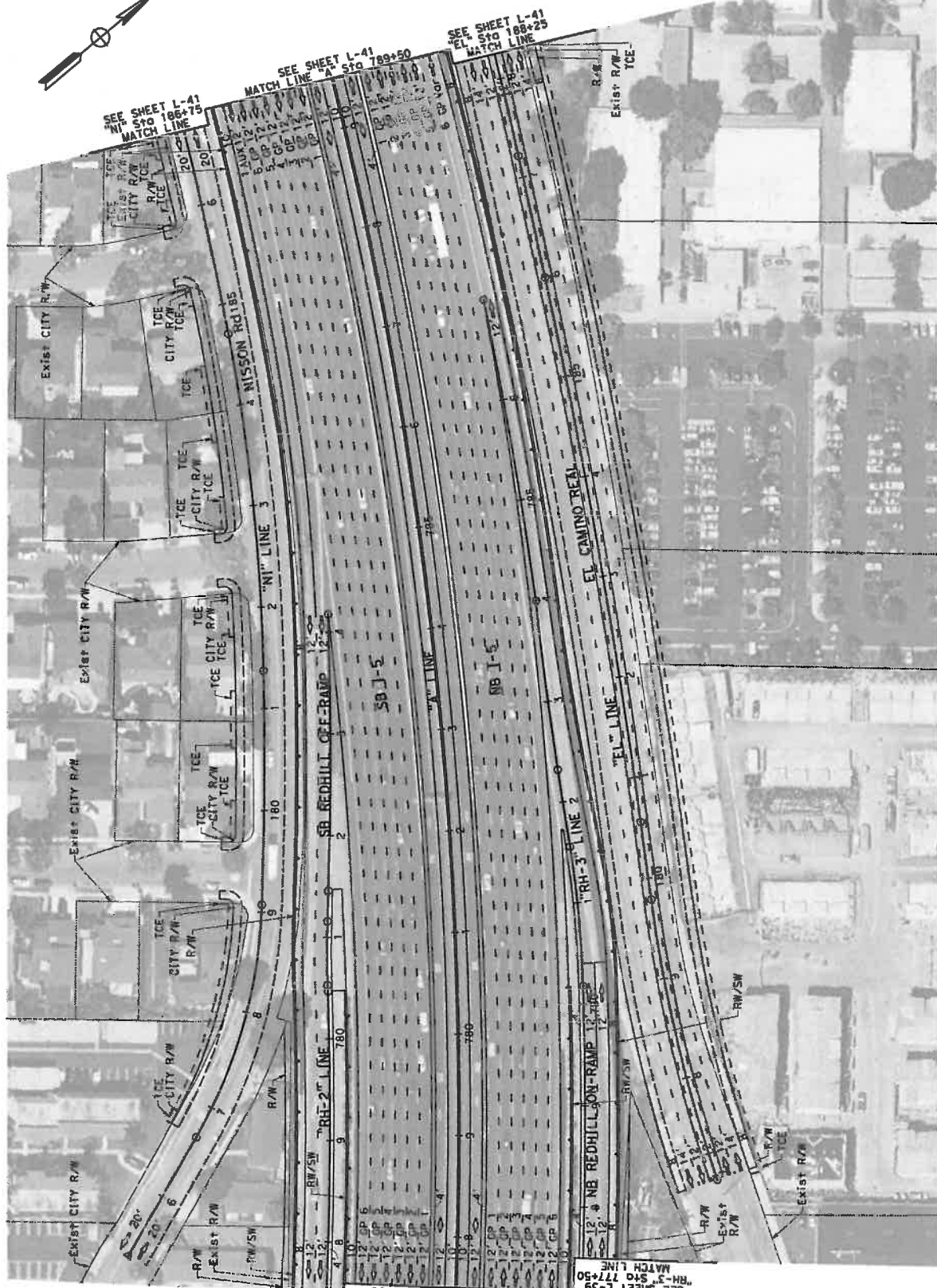
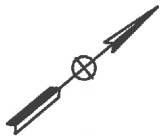
**FOR PSR USE ONLY**

L-39

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISION
BORDER LAST REVISED 7/2/2010 USERNAME: j3pkc00 DGN FILE #3... \Sheet\A11_2A\06\024-0039.dgn				



DIST	COUNTY	ROUTE	TOTAL PROJECT MILES	SHEET TOTAL
12	OrCo	5	21.3/30.3	3



**LAYOUT  
ALTERNATIVE 2A  
NO SCALE  
L-40**

PROJECT NUMBER & PHASE  
UNIT 0000  
1200020052K

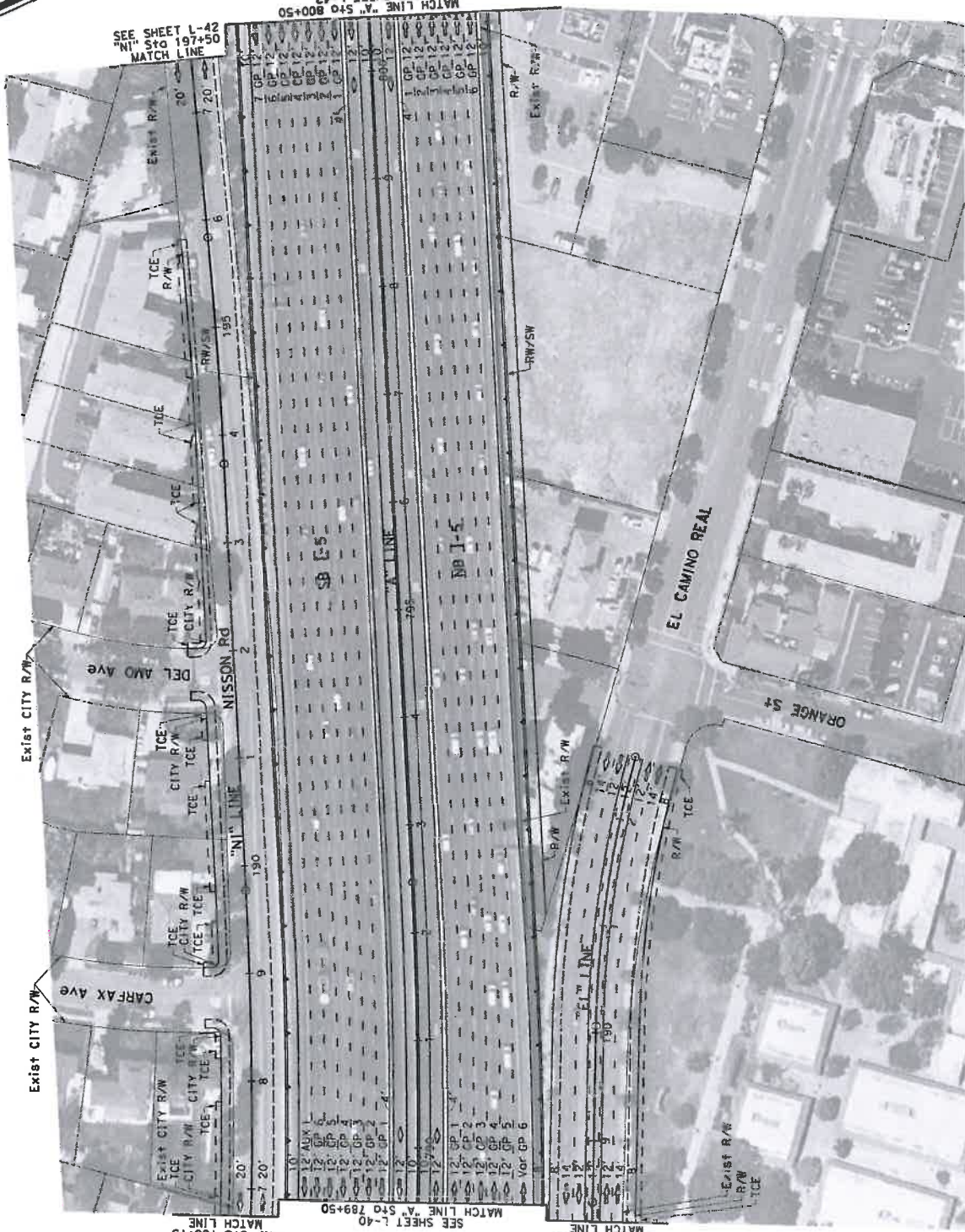
RELATIVE BORDER SCALE  
15 IN INCHES

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
	DESIGNED BY		

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Or	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE **L-41**

PROJECT NUMBER & PHASE  
UNIT 0000  
1200020052K

RELATIVE BORDER SCALE  
1" = 15' IN INCHES

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

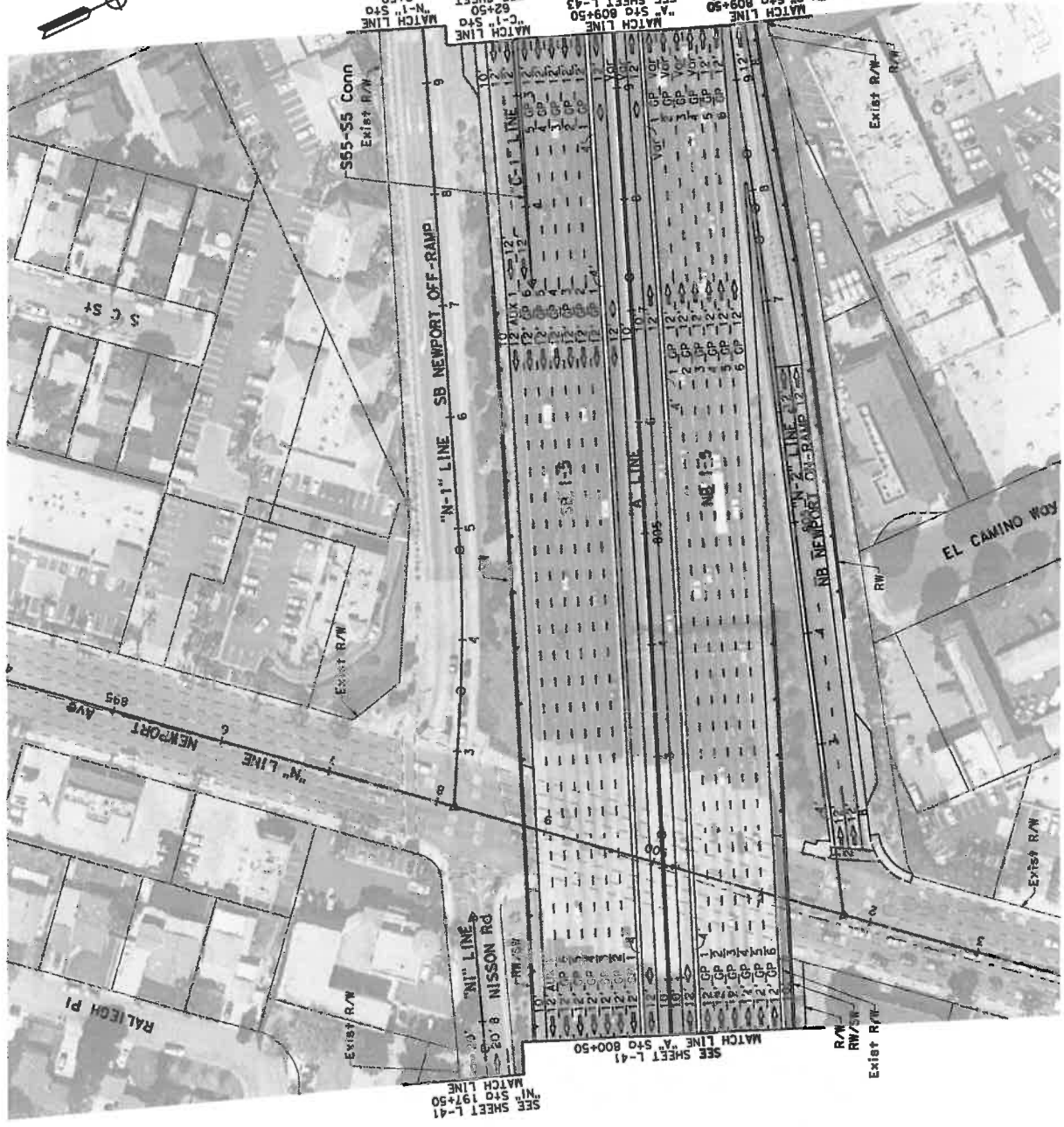
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REVISOR  
DATE REVISED

BORDER LAST REVISED 7/2/2010  
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DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 11:01:40 PM  
00-00-00

DIST	COUNTY	ROUTE	PROJECT TOTAL MILES	SHEET TOTAL SHEETS
12	ORG	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-42**

DATE PLOTTED = 11/19/2011  
TIME PLOTTED = 12:01:49 PM

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
1/8" = 10'

**FOR PSR USE ONLY**

USERNAME = g3000  
DWG FILE = ...\\psr\m11\_21\0617021-00042.dgn

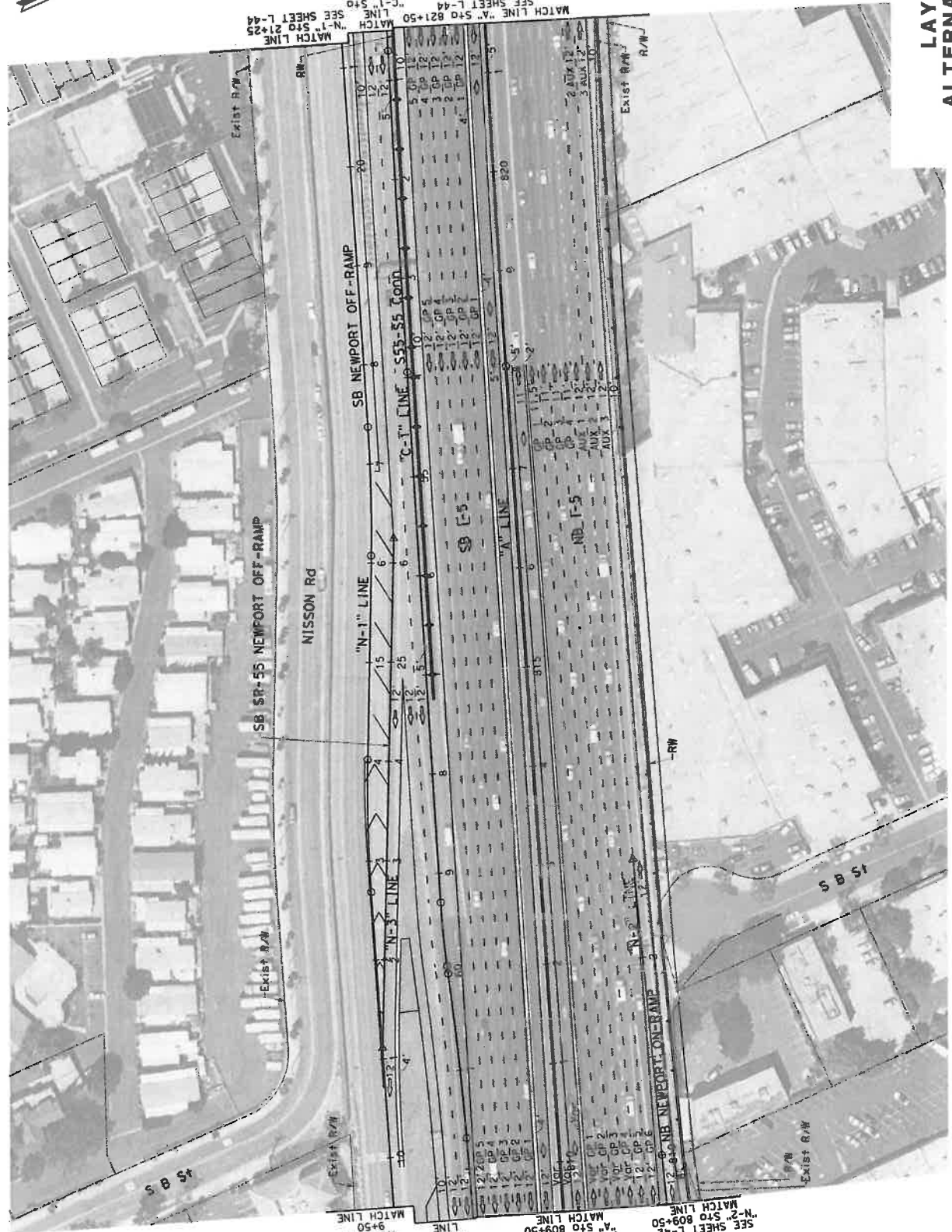
BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALC. ATD-B	DESIGNED BY	REVISY BY	DATE REVISED





DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO.
12	Oro	5	21.3730.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-43**

PROJECT NUMBER & PHASE  
UNIT 0000  
1200020052K

RELATIVE BORDER SCALE  
15 IN INCHES

USERNAME: s33000  
DGN FILE #3: ...SheetV11\_2A\067026-e003.dgn

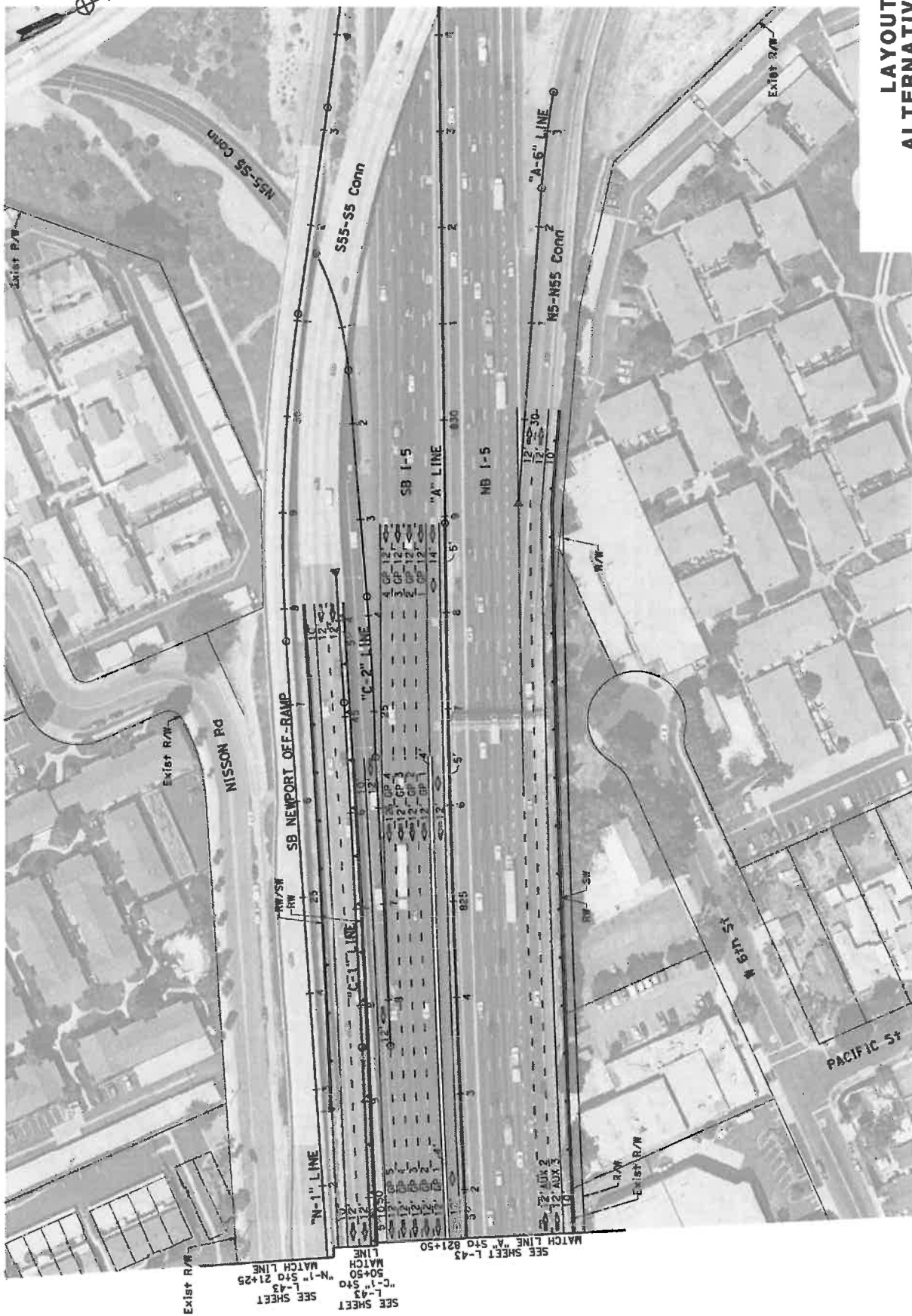
**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE RE-DESIGNED
		DESIGNED BY	REVISOR



Dist	County	Route	Sheet No.	Total Sheets
12	Orca	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2A**  
NO SCALE  
**L-44**

PROJECT NUMBER & PHASE  
UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

BORDER LAST REVISED 7/2/2010  
USERNAME #? BK000  
DWG FILE #? ... \Spsheet\11.25\1067026-ec044.dgn

**FOR PSR USE ONLY**



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

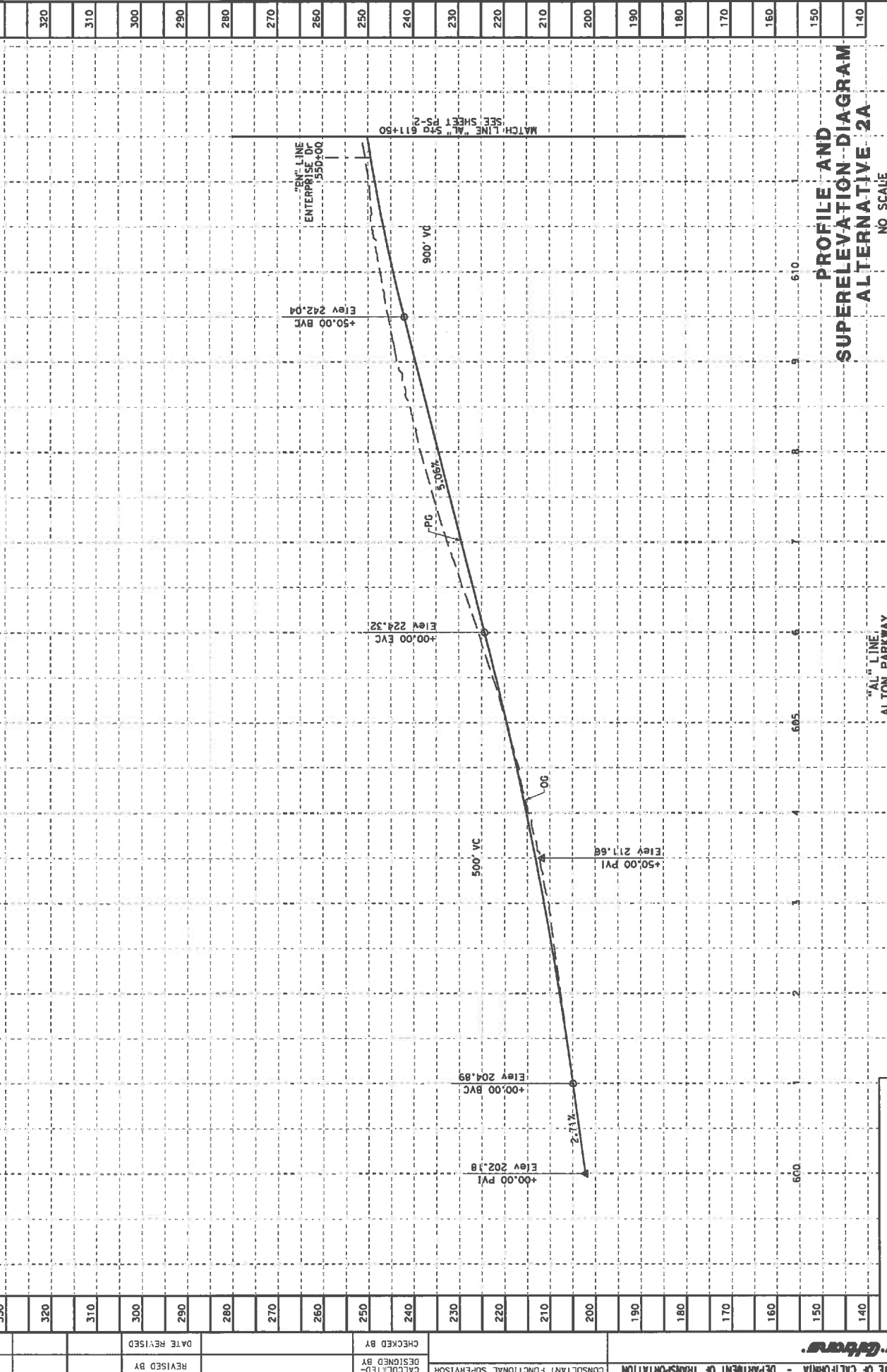
DESIGNED BY  
CHECKED BY

REVISY BY  
DATE REVISED

DATE PLOTTED #? 11/16/2011  
TIME PLOTTED #? 12:02:06 PM

Dist	County	Route	Post Miles	Total Project	Sheet	Total Sheets
12	Or	5	21.37	30.3		

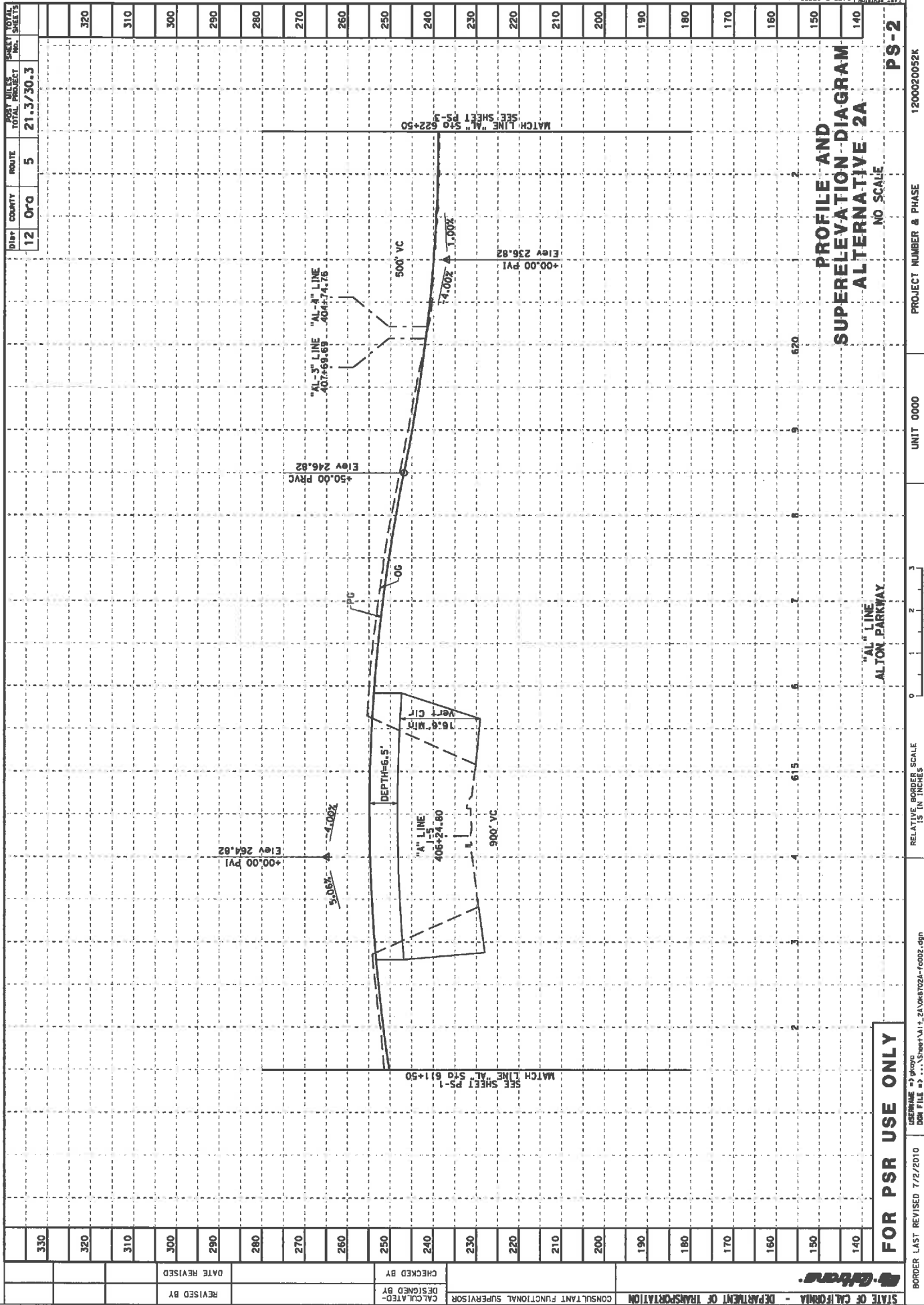
330						
320						
310						
300						
290						
280						
270						
260						
250						
240						
230						
220						
210						
200						
190						
180						
170						
160						
150						
140						



**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR

PROJECT NUMBER & PHASE  
UNIT 0000  
RELATIVE BORDER SCALE  
15 IN. TYPICAL  
1200020052K  
PS-1



**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 CAL. CAL. A.T.O.  
 DESIGNED BY  
 CHECKED BY  
 DATE REVISED  
 REVISOR  
 DATE REVISED

RELATIVE BORDER SCALE  
 15 IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

PS-2

**PROFILE AND SUPERELEVATION DIAGRAM  
 ALTERNATIVE 2A**  
 NO SCALE

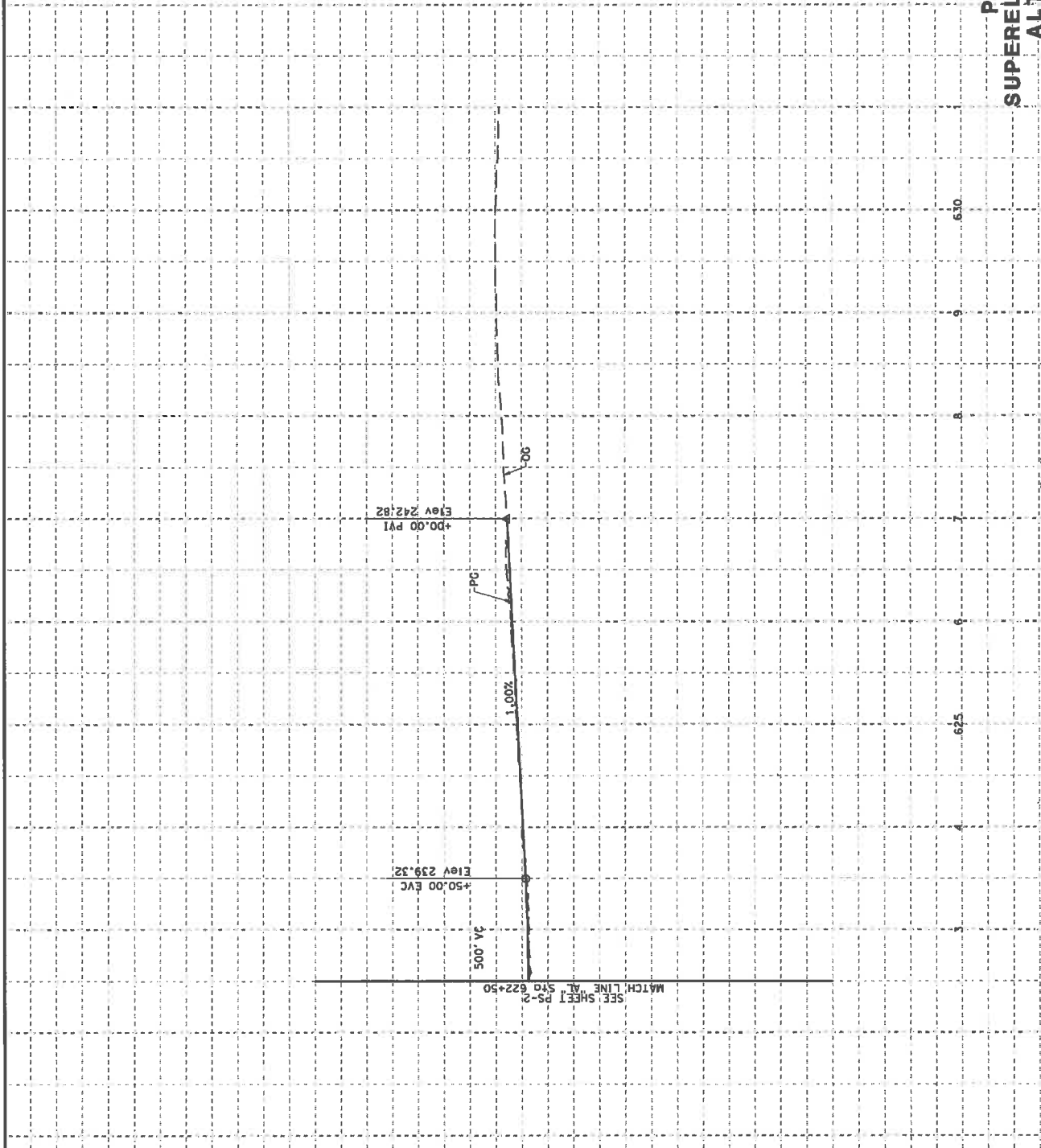
AL LINE  
 ALTON PARKWAY

DATE PLOTTED = 11/16/2011  
 TIME PLOTTED = 11:03:50 AM

SHEET TOTAL	TOTAL PROJECT	ROUTE	COUNTY	DIST.
21.3/30.3	5	12	Orco	5

140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Dist	County	Route	Post Miles Total Project	Sheet No.	Total Sheets
12	Or	5	21.37303	3	33



330					
320					
310					
300					
290					
280					
270					
260					
250					
240					
230					
220					
210					
200					
190					
180					
170					
160					
150					
140					

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT: FUNCTIONAL SUPERVISOR  
 DESIGNED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 REVISOR: \_\_\_\_\_  
 DATE REVISED: \_\_\_\_\_

PROJECT NUMBER & PHASE: 1200020052K  
 UNIT: 0000  
 RELATIVE BORDER SCALE: 15 IN INCHES  
 DATE PLOTTED: 11/16/2011 11:03:50 AM  
 PS-3

360	DATE REVISD	350	DIST COUNTY ROUTE PROJECT TOTAL SHEETS 12 OrG 5 21.3/30.3
350	REVISD BY	340	
340	DATE REVISD	330	
330	REVISD BY	320	
320	DATE REVISD	310	
310	REVISD BY	300	
300	DATE REVISD	290	
290	REVISD BY	280	
280	DATE REVISD	270	
270	REVISD BY	260	
260	DATE REVISD	250	
250	REVISD BY	240	
240	DATE REVISD	230	
230	REVISD BY	220	
220	DATE REVISD	210	
210	REVISD BY	200	
200	DATE REVISD	190	
190	REVISD BY	180	
180	DATE REVISD	170	
170	REVISD BY	160	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 CAL. CUL. ALTERED DESIGNED BY  
 CHECKED BY  
 DATE REVISD  
 REVISD BY

**FOR PSR USE ONLY**

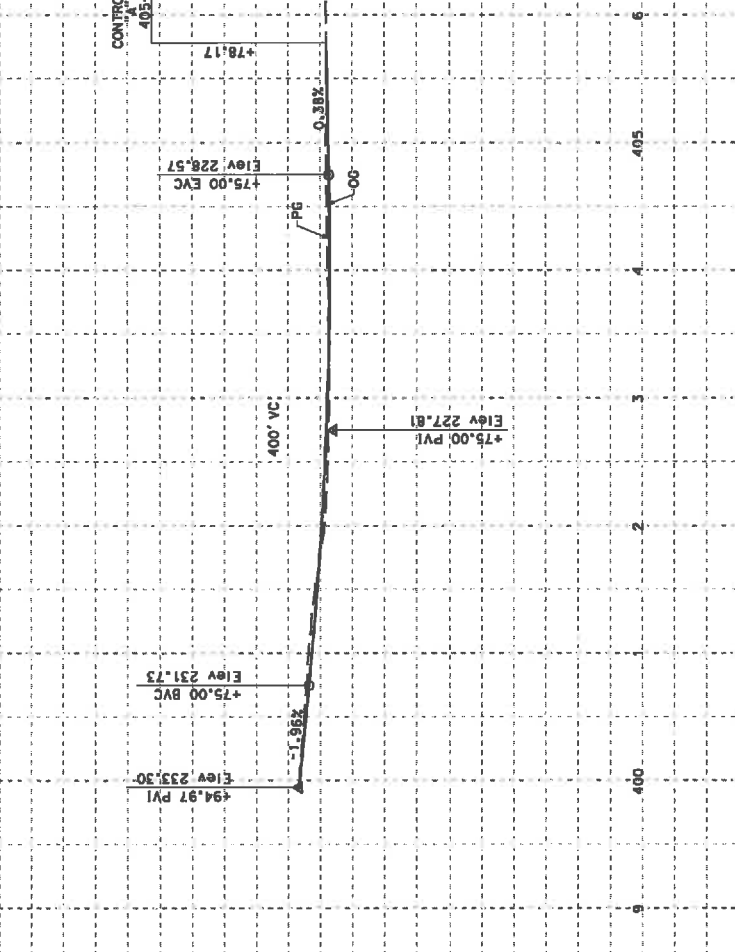
BORDER LAST REVISED 7/2/2010  
 USERNAME: gxy000  
 DOT FILE: ... \Sheet-V112\_2A\1065702A-r004.dgn

RELATIVE BORDER SCALE  
 IS IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K



**PROFILE AND SUPERELEVATION DIAGRAM  
ALTERNATIVE 2A**

NO. SCALE

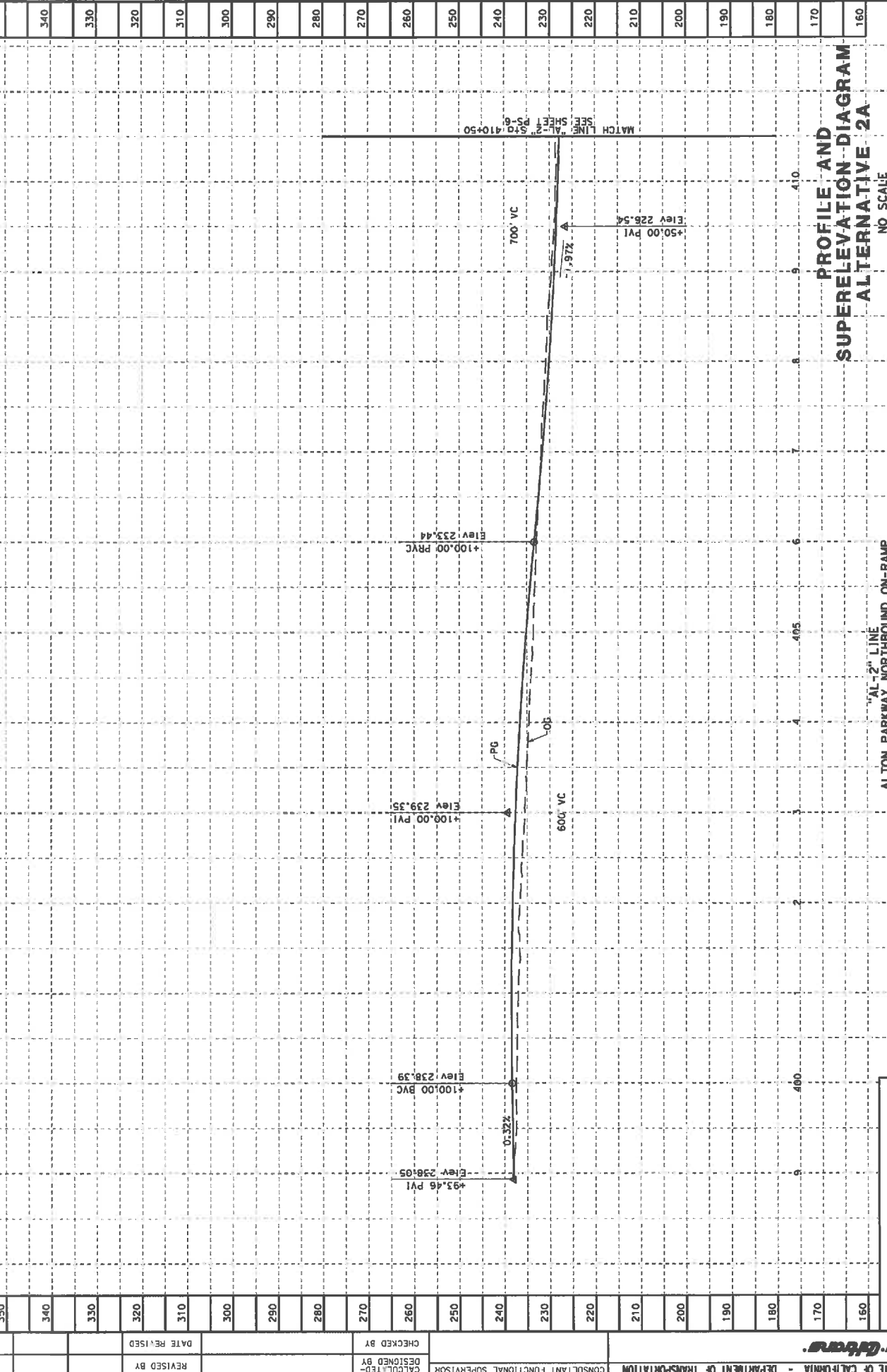
PS-4

LAST REVISION NO. 00-00  
 DATE PLOTTED: 11/16/2011 AM 11:03:51

POST MILES TOTAL PROJECT SHEET TOTAL SHEETS  
 12 070 5 21.3730.3

Dist. County Route 12 070 5

DATE REVISIONS



AL-2nd LINE  
 NORTHBOUND ON-RAMP

PROFILE AND SUPERELEVATION DIAGRAM  
 ALTERNATIVE 2A  
 NO. SCALE

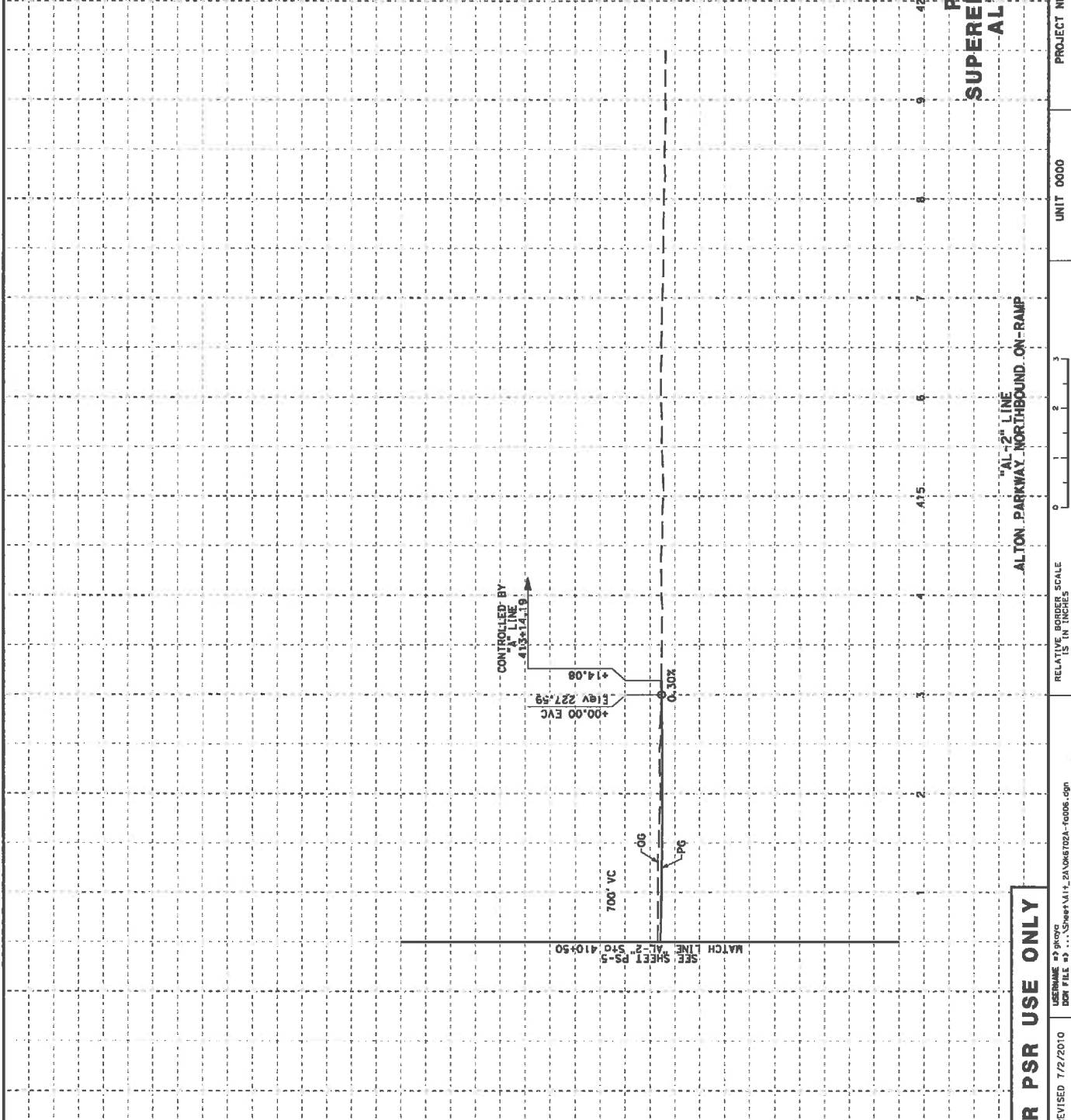
FOR PSR USE ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 DESIGNED BY  
 CHECKED BY  
 DATE REVISIONS

DATE PLOTTED => 11/16/2011  
 TIME PLOTTED => 11:05:51 AM  
 PROJECT NUMBER & PHASE  
 UNIT 0000  
 RELATIVE BORDER SCALE  
 1/8" = 1'-0"

PS-5

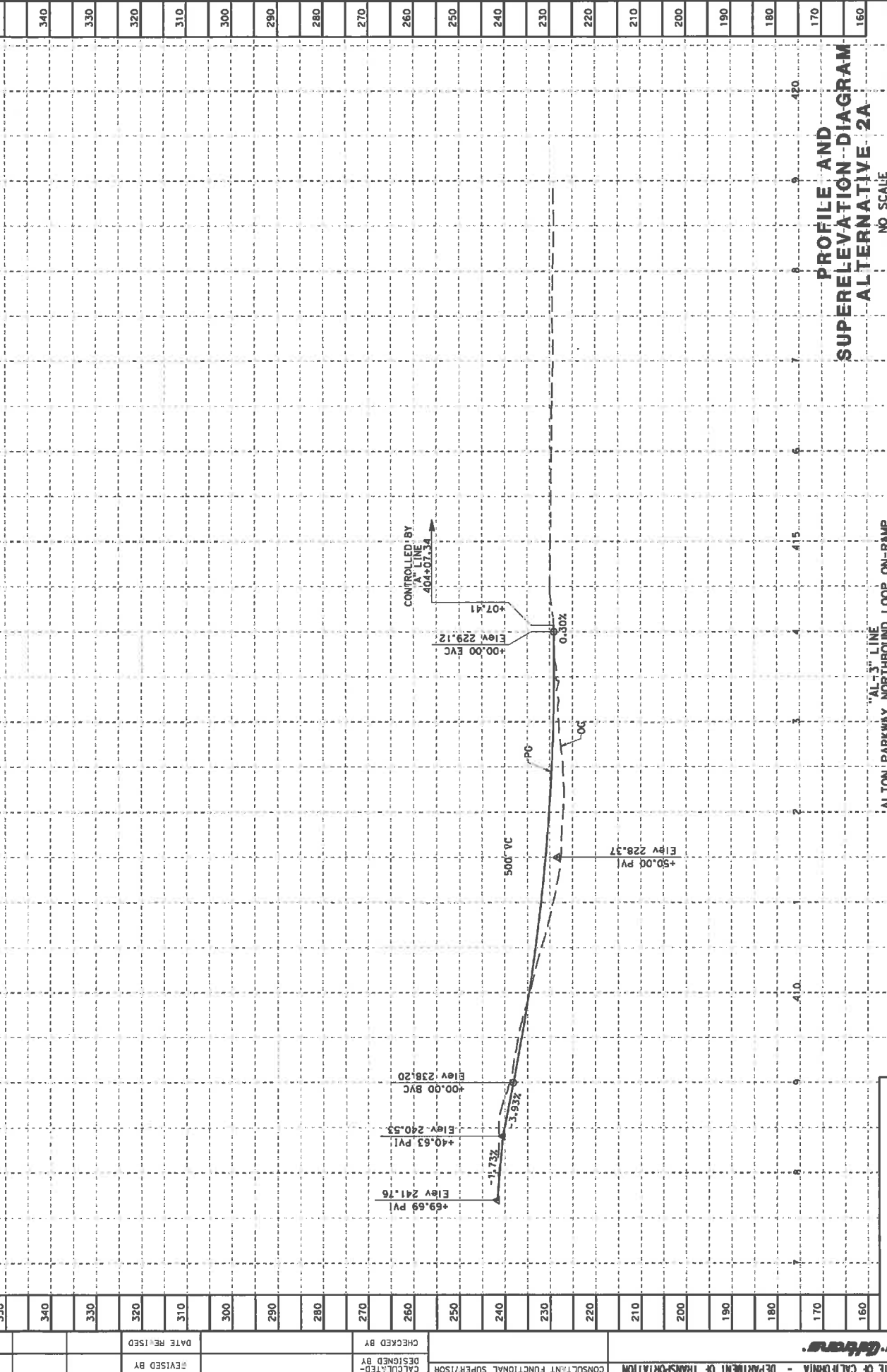
12	Orca	5	21.3/30.3	160
130				170
140				180
150				190
160				200
170				210
180				220
190				230
200				240
210				250
220				260
230				270
240				280
250				290
260				300
270				310
280				320
290				330
300				340
310				
320				
330				
340				



390				
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170				
160				



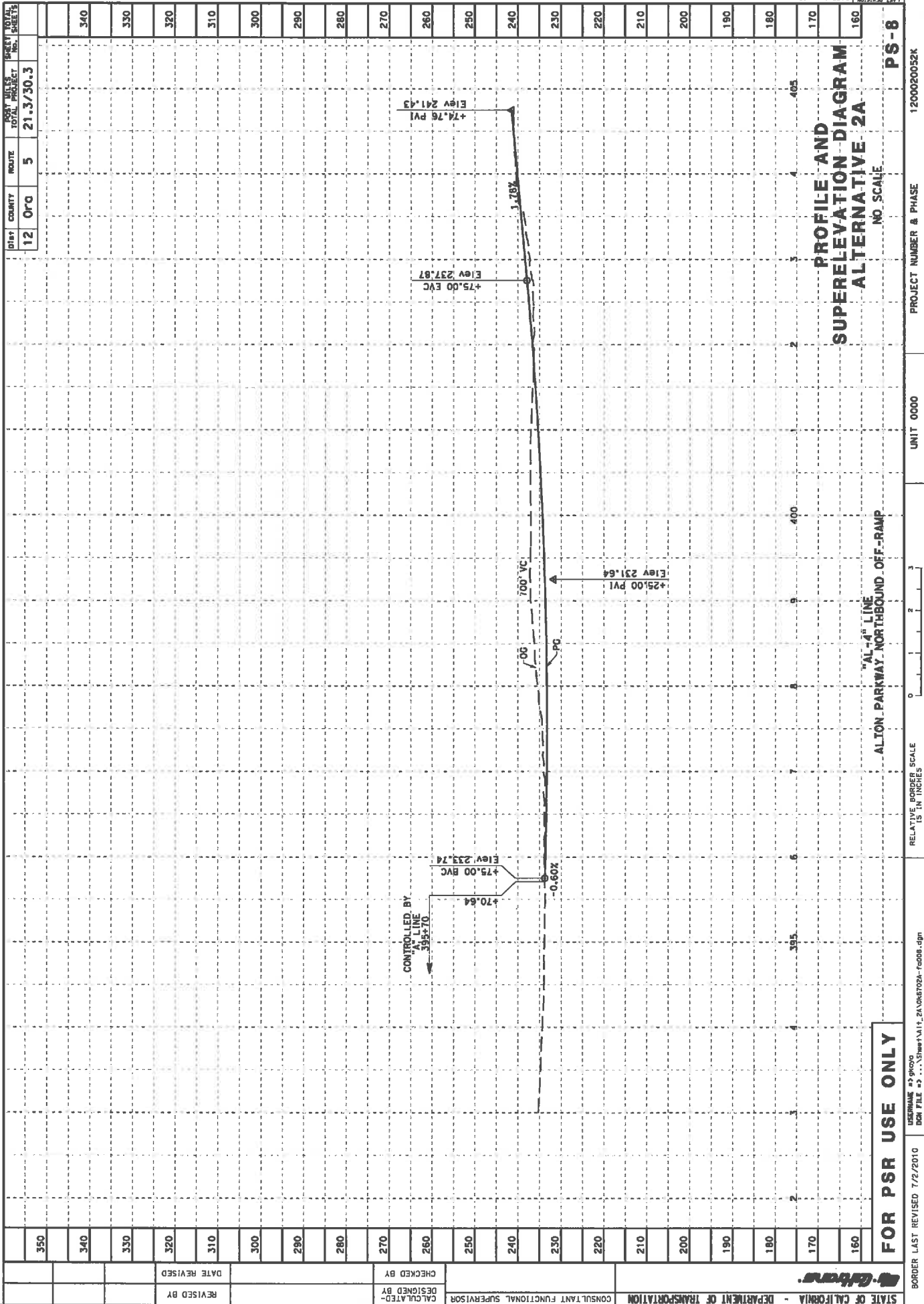
DIST. COUNTY		ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orco	5	21.37/30.3	



DATE PLOTTED → 11/17/2011		PROJECT NUMBER & PHASE		UNIT 0000		NO. SCALE	
TIME PLOTTED → 11:03:52 AM		1200020052K				PS-7	

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT: FUNCTIONAL SUPERVISOR  
DESIGNED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
DATE REVISION: \_\_\_\_\_  
REVISIONS: \_\_\_\_\_



**PROFILE AND SUPERELEVATION DIAGRAM  
ALTERNATIVE 2A**  
NO. SCALE

"AL-1" LINE  
ALTON PARKWAY NORTHBOUND OFF-RAMP

**FOR PSR USE ONLY**

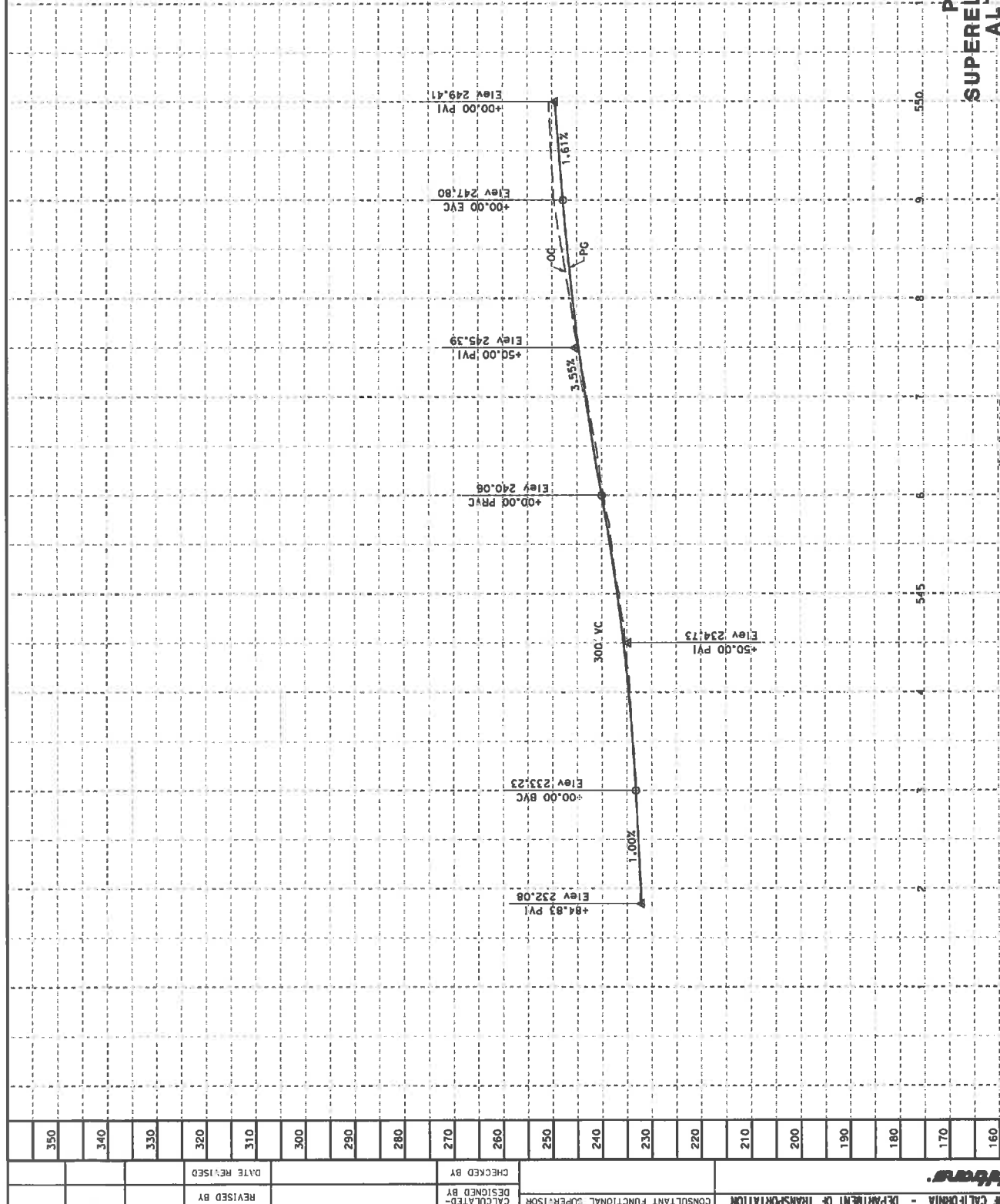
PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE IS IN INCHES

DATE PLOTTED: 11/16/2011  
DATE PLOTTED: 11/16/2011

12	07C	5	21.3/30.3	1200020052K
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350	340	330	320	310	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160	

Dist	County	Route	Post Miles Total Project	SHEET TOTAL No. SHEETS
12	Orca	5	21.3730.3	



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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 CALCULATED BY  
 CHECKED BY  
 DATE REVISION  
 REVISION BY

DATE PLOTTED => 11/16/2011  
 TIME PLOTTED => 11:03:53 AM

PROJECT NUMBER & PHASE: UNIT 0000

RELATIVE BORDER SCALE: 1/8" = 1' IN INCHES

PS-9

DATE PLOTTED = 11/16/2011  
 TIME PLOTTED = 11:03:54 AM  
 00-00-00

ROUTE 5  
 COUNTY ORG  
 DIST 12  
 POST MILES TOTAL PROJECT 21.3/30.3  
 SHEET TOTAL SHEETS 270

12 0rc 5 21.3/30.3

280  
 270  
 260  
 250  
 240  
 230  
 220  
 210  
 200  
 190  
 180  
 170  
 160  
 150  
 140  
 130  
 120  
 110  
 100  
 90

280  
 270  
 260  
 250  
 240  
 230  
 220  
 210  
 200  
 190  
 180  
 170  
 160  
 150  
 140  
 130  
 120  
 110  
 100  
 90

DATE REVISOR  
 DATE REVISOR  
 DATE REVISOR

CHECKED BY  
 DESIGNED BY  
 CALCULATED-  
 CONSULTANT FUNCTIONAL SUPERVISOR

FOR PSR USE ONLY  
 BORDER LAST REVISED 7/2/2010  
 USERNAME = gregg  
 DGN FILE = ...Sheet\A12\_2A\Ams7024-ratio.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE IS IN INCHES

0 1 2 3

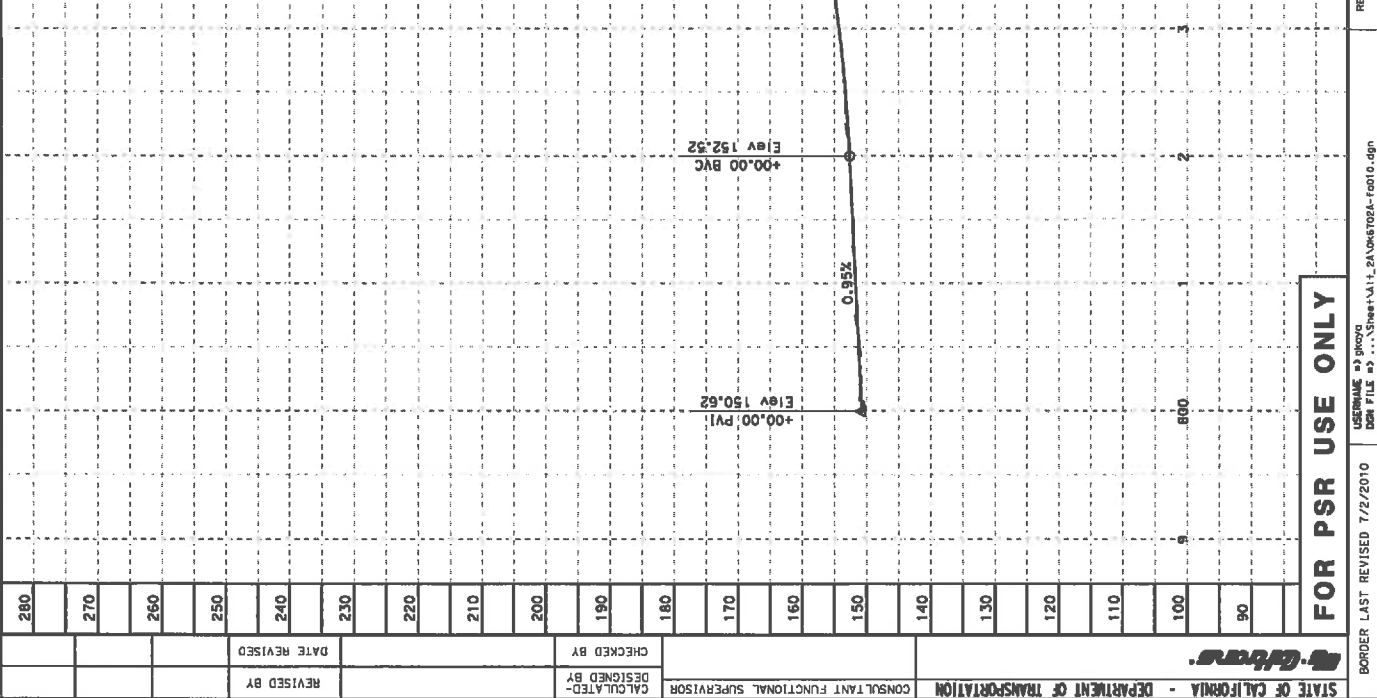
JEFFREY RD

NO SCALE

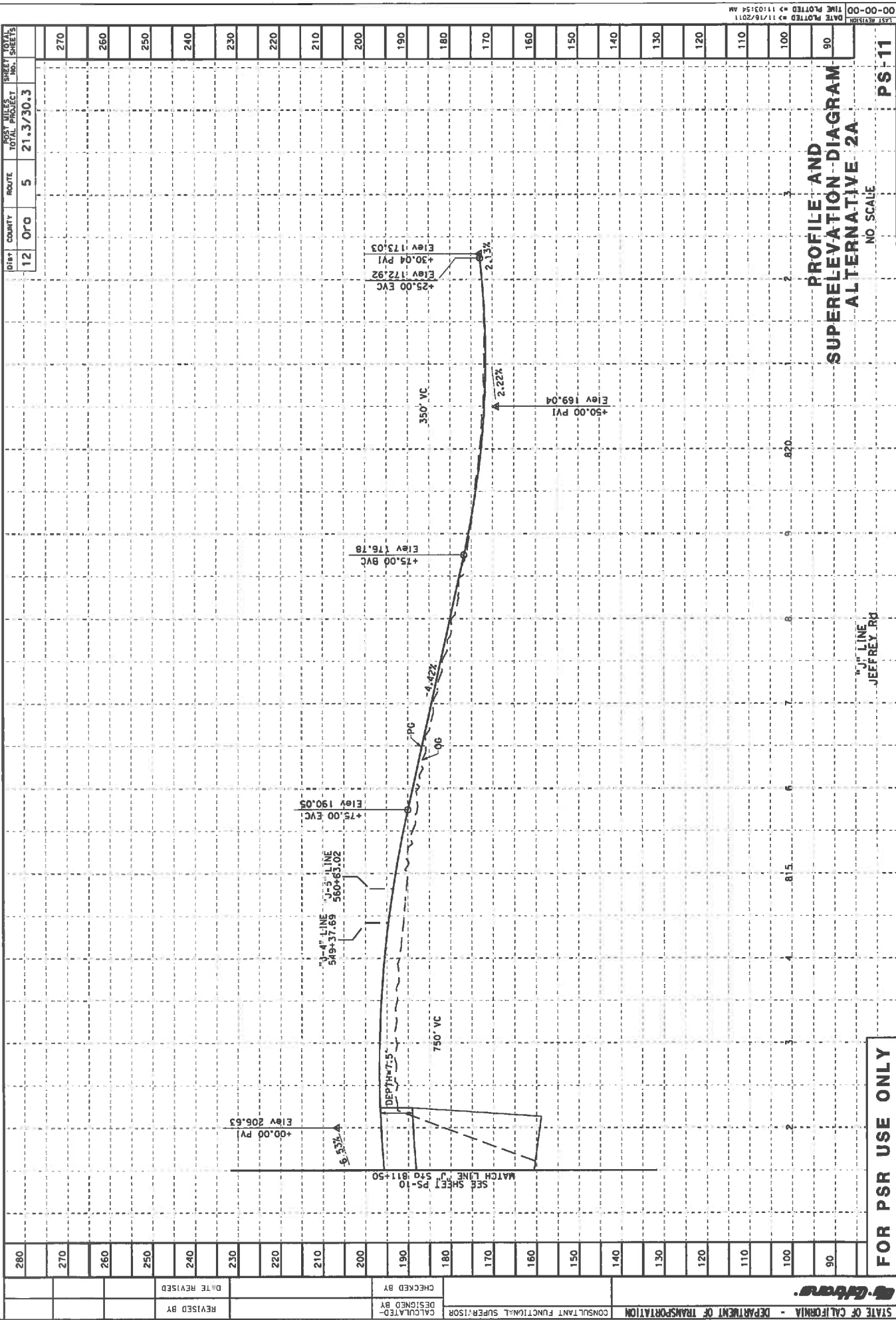
ALTERNATIVE 2A

PROFILE AND SUPERELEVATION DIAGRAM

PS-10



00-00-00  
 DATE PLOTTED = 11/16/2011  
 TIME PLOTTED = 11:03:54 AM



**PROFILE AND SUPERELEVATION DIAGRAM ALTERNATIVE 2A**  
 NO. SCALE

DATE REVISION	REVISIONS	DATE	COUNTY	ROUTE	TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
			12	0r0	5	21.3/30.3	

280	270	260	250	240	230	220	210	200	190	180	170	160	150	140	130	120	110	100	90
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----

**FOR PSR USE ONLY**

JEFFREY RD

PS-11

## **ATTACHMENT 5**

### **Alternative 2B**

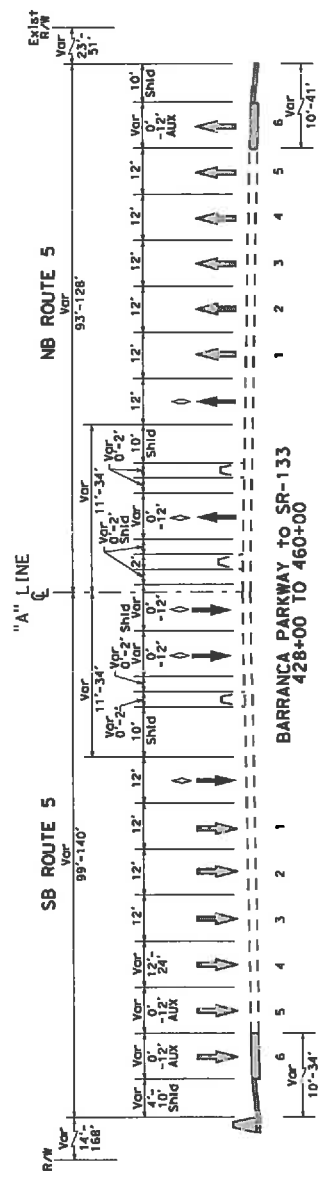
#### **Typical Sections, Key Map, Layouts, Profiles**

DIRT COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL PROJECT NO. SHEETS
12 Oro	5	21.3/30.3	

- NOTES:**
- EDGE DRAINS NOT SHOWN.
  - SEE ALTERNATIVE 2A FOR RAMP TYPICAL SECTIONS UNLESS OTHERWISE NOTED.

**LEGEND:**

ROADWAY IMPROVEMENTS



**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2B**  
NO SCALE

X-1

PROJECT NUMBER & PHASE

UNIT 0000

RELATIVE BORDER SCALE  
15 IN INCHES

FOR PSR USE ONLY

DATE REVISION

DESIGNED BY

CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

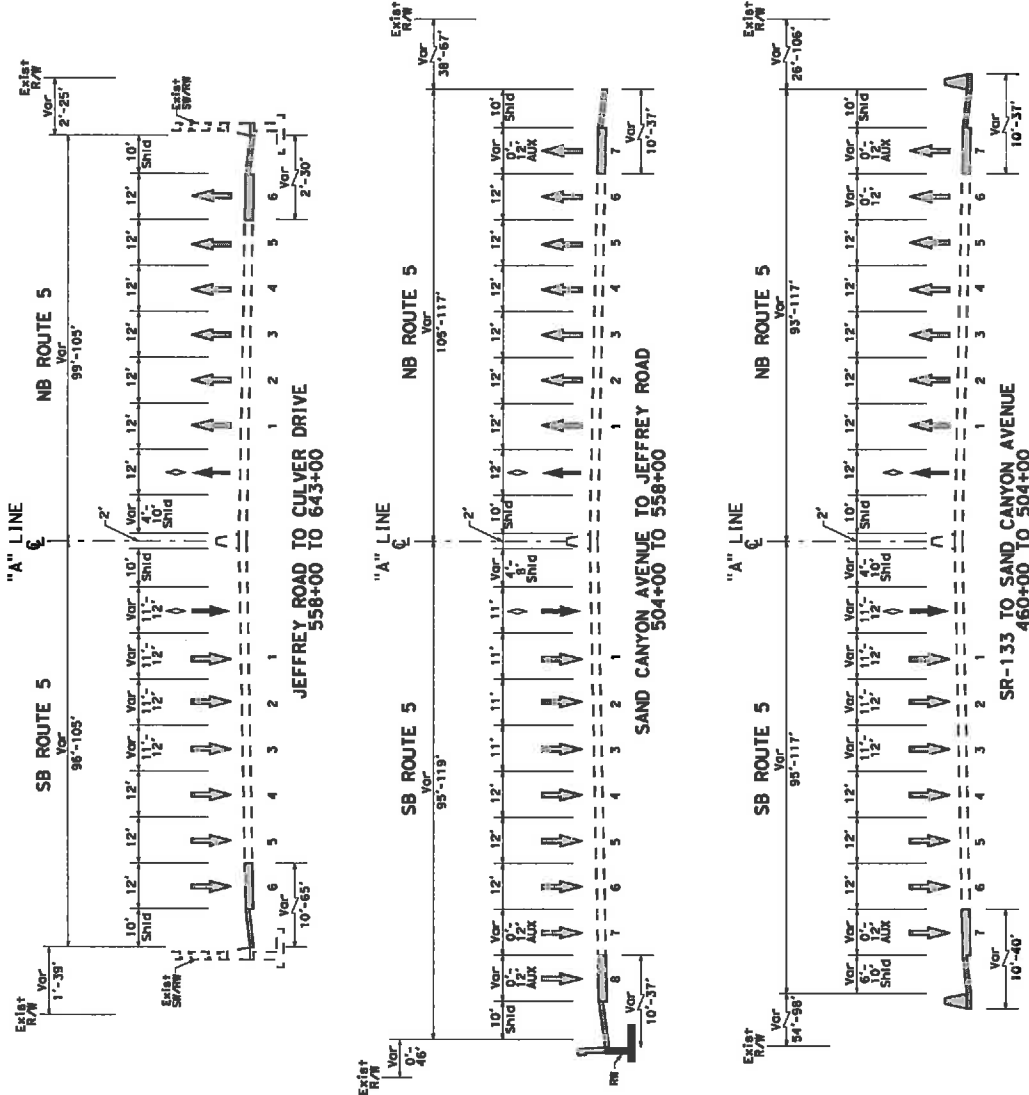
BORDER LAST REVISED 7/2/2010 USERNAME #2 gkaya DOW FILE #5 ... \Sheet\A11\_20\UM6102B-cad01.dgn

120002D052K

00-00-00 DATE PLOTTED => 11/16/2011



DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	070	5	21.3/30.3	



**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2B**  
NO SCALE

**X-2**

PROJECT NUMBER & PHASE

UNIT 0000

RELATIVE BORDER SCALE  
15 IN INCHES

DATE PLOTTED => 11/16/2011  
LAST REVISION

1200020052K

REVISY	DATE REVISY
DESIGNED BY	CHECKED BY
CONSULTANT FUNCTIONAL SUPERVISOR	

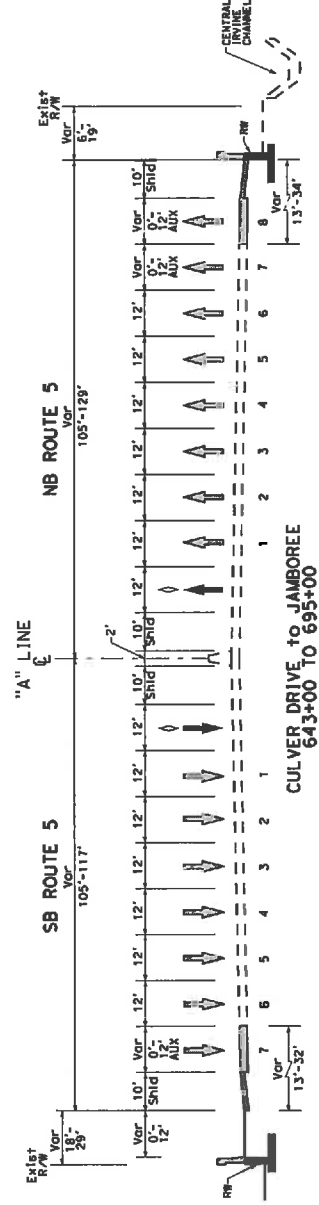
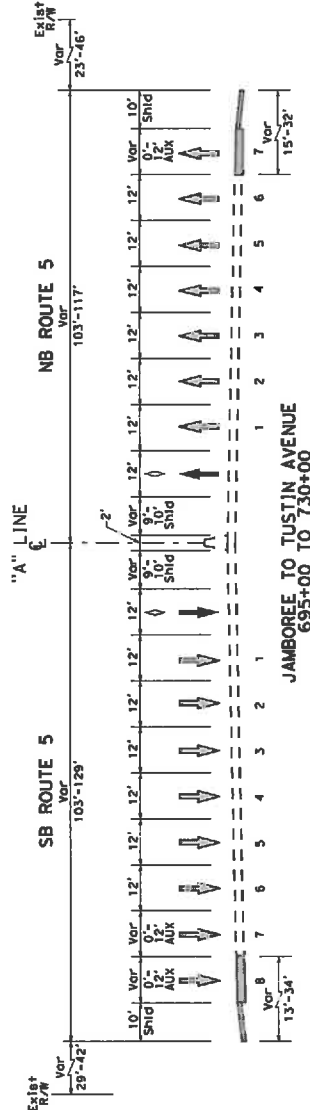
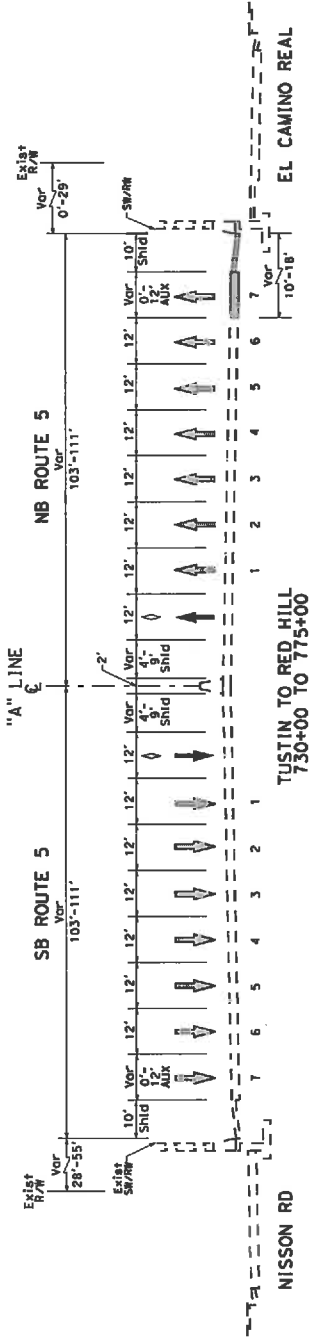
**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

DATE REVISY 7/2/2010  
REVISY

USERNAME => SMOG  
JOB FILE => \\S:\Sheet\111\_25\06702B-cd02.dgn

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Oro	5	21.3/30.3	



**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2B  
NO SCALE**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT: FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CHECKED BY  
DATE REVISION  
REVISIONS

RELATIVE BORDER SCALE  
1.5" IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

X-3

DIS+ COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12 OCO	5	21.3/30.3	

DATE PLOTTED => 11/16/2011  
 TIME PLOTTED => 10:46:08 AM  
 00-00-00

**TYPICAL CROSS SECTIONS  
 ALTERNATIVE 2B**  
 NO SCALE  
**X-4**

PROJECT NUMBER & PHASE  
 UNIT 0000

RELATIVE BORDER SCALE  
 15 IN INCHES

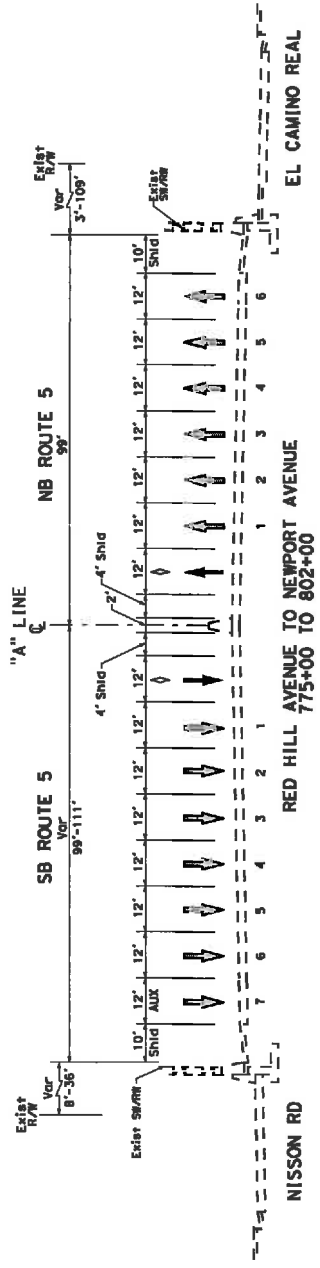
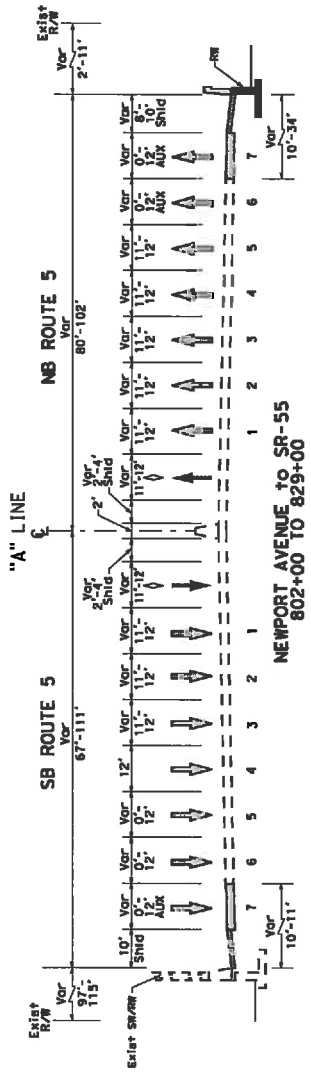
FOR PSR USE ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR

CHECKED BY  
 DESIGNED BY

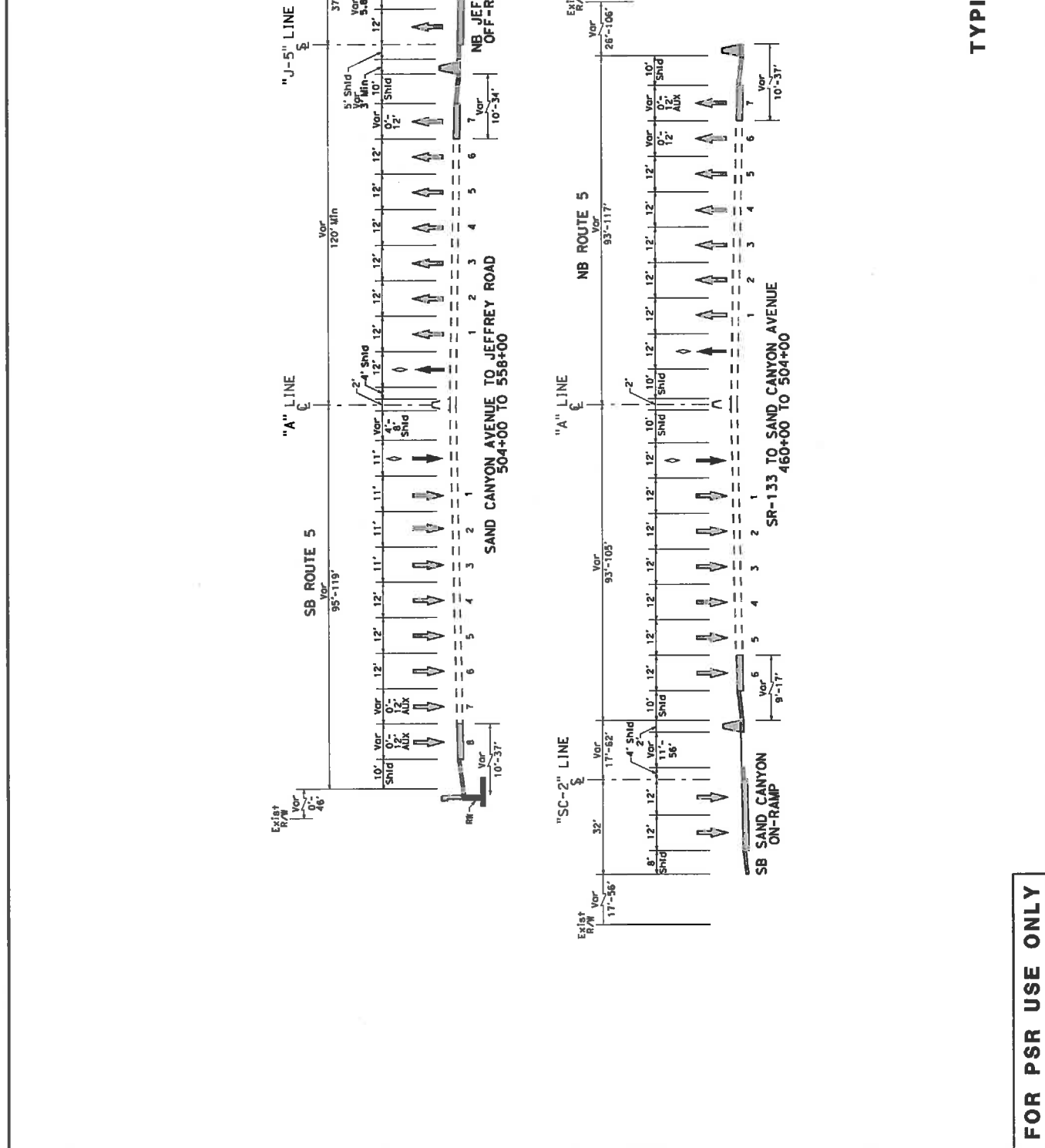
REVISOR  
 DATE REVISED

USERNAME => srgoo  
 D01 FILE => ... \Sheet\11\_26\068702B-cd04.dgn  
 BORDER LAST REVISED 7/2/2010



1200020052K

DATE	00-00-00
TIME PLOTTED	11/16/2011 10:46:08 AM
LAST REVISION	
PROJECT	1200020052K
ROUTE	5
COUNTY	Orco
POST MILES TOTAL PROJECT	21.3730.3
SHEET / TOTAL SHEETS	

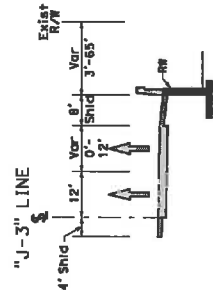


**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2B  
NO SCALE**

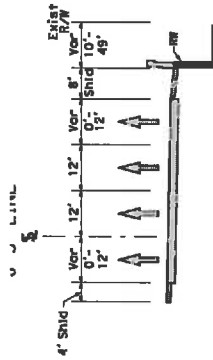
**X-5**

**FOR PSR USE ONLY**

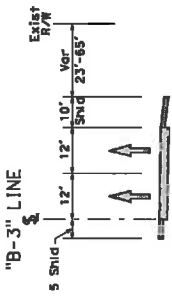
Dist	County	Route	Post Miles Total Project	Sheet Total Sheets
12	Orc	5	21.3/30.3	



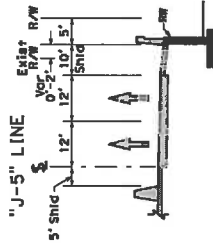
"J-3" LINE  
NB JEFFERY ON-RAMP  
(OPTION 3)



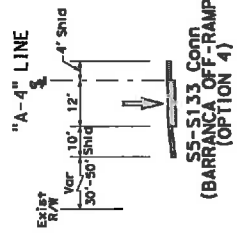
"J-5" LINE  
NB JEFFERY OFF-RAMP  
(OPTION 3)



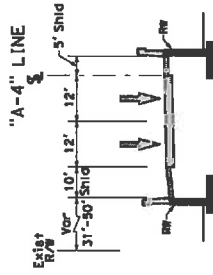
"B-3" LINE  
S133-N5 Conn  
(OPTION 3)



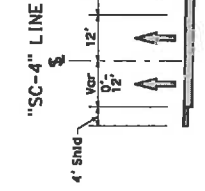
"J-5" LINE  
NB JEFFERY OFF-RAMP  
(OPTION 3)



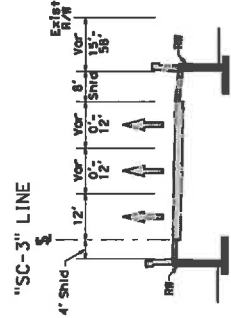
"A-4" LINE  
S5-S133 Conn  
(BARRIADA OFF-RAMP)  
(OPTION 4)



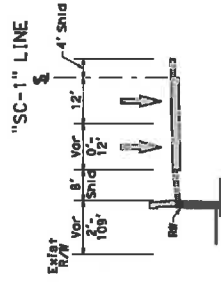
"A-4" LINE  
S5-S133 Conn  
(OPTION 4)



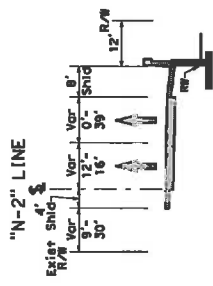
"SC-4" LINE  
NB SAND CANYON OFF-RAMP  
(OPTION 3)



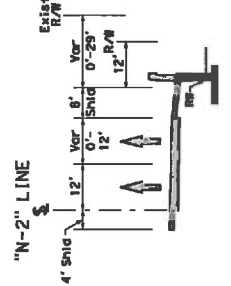
"SC-3" LINE  
NB SAND CANYON ON-RAMP  
(OPTION 3)



"SC-1" LINE  
SB SAND CANYON ON-RAMP  
(OPTION 4)



"N-2" LINE  
NB EL CAMINO REAL HOOK ON-RAMP  
(OPTION 2)



"N-2" LINE  
NB NEWPORT ON-RAMP  
(OPTION 1)

**TYPICAL CROSS SECTIONS  
ALTERNATIVE 2B**  
NO SCALE

X-6

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

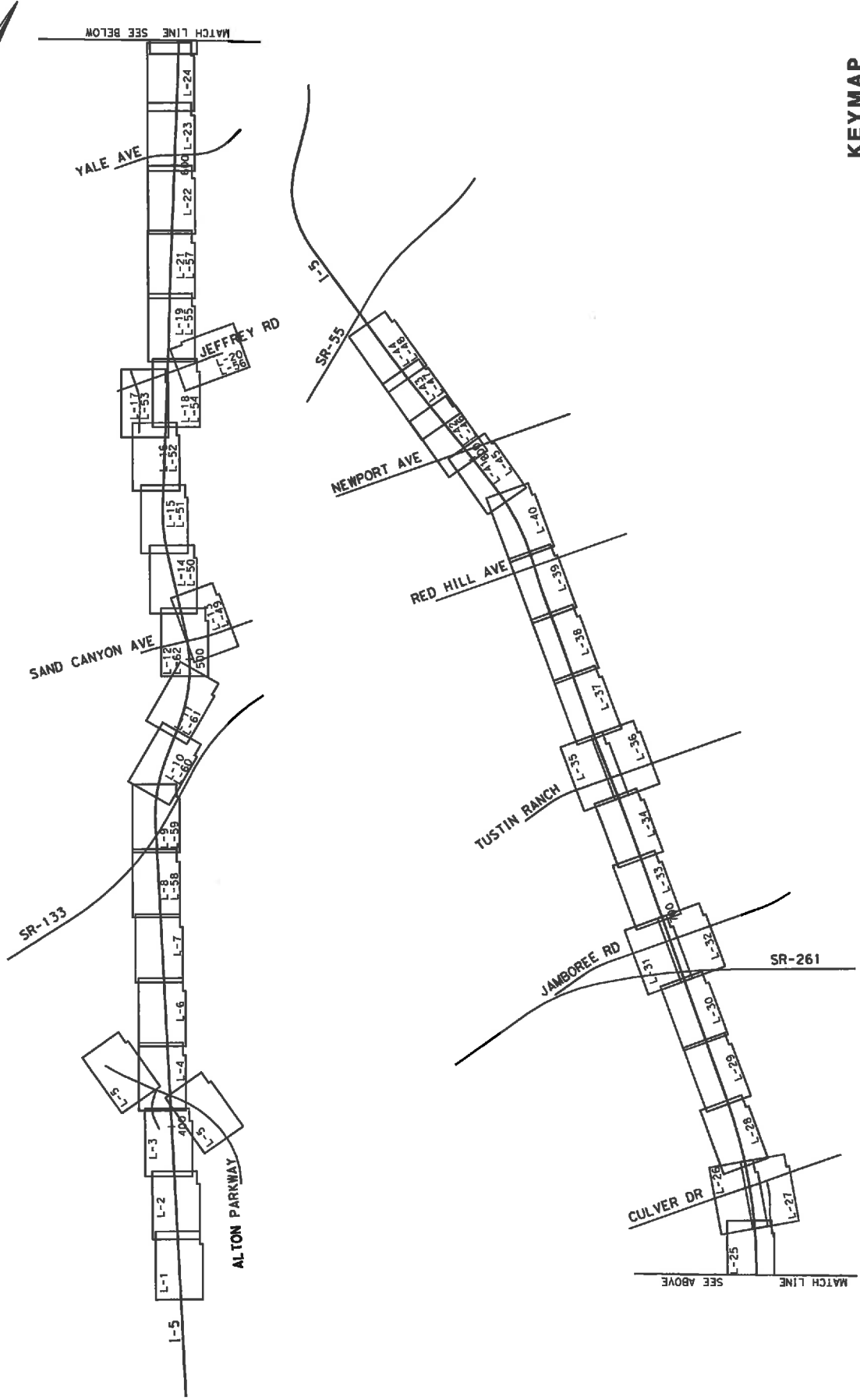
RELATIVE BORDER SCALE 15 IN INCHES

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR



Dist	County	Route	Miles	Project	Sheet No.	Total Sheets
12	Org	5	21.3/30.3			



**KEYMAP  
ALTERNATIVE 2B  
NO SCALE**

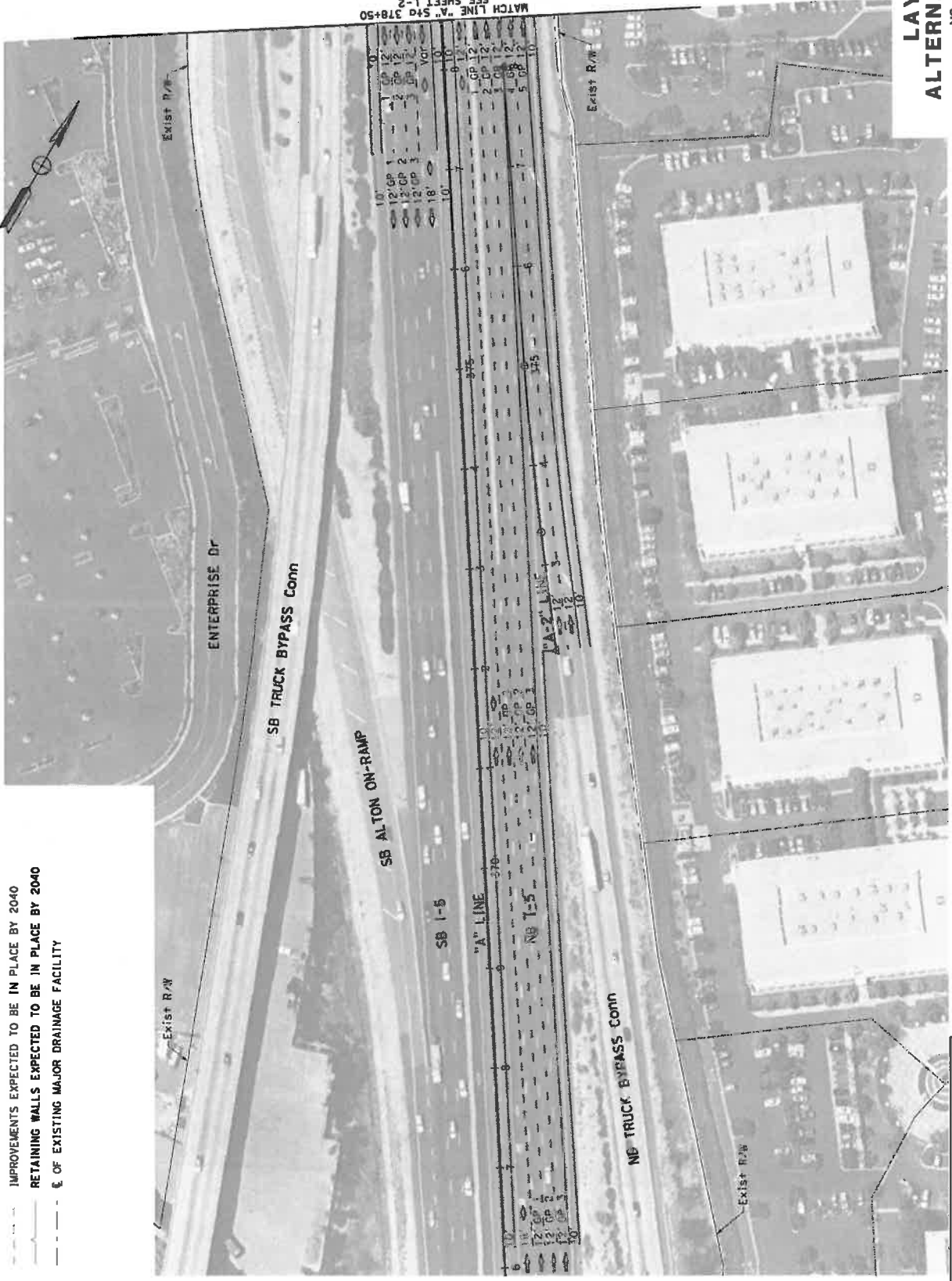
**FOR PSR USE ONLY**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1" = 1000'  
DATE PLOTTED: 11/16/2011 10:21:59 PM  
LAST REVISION: 00-00-00

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISION

POST MILES TOTAL PROJECT	21.3/30.3
SHEET TOTAL SHEETS	
DIST COUNTY ROUTE	12 ORG 5

- LEGEND**
- IMPROVEMENTS EXPECTED TO BE IN PLACE BY 2040
  - RETAINING WALLS EXPECTED TO BE IN PLACE BY 2040
  - EXISTING MAJOR DRAINAGE FACILITY



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-1**

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010 USERNAME pp2040a  
DOR FILE #3...Sheet\A11\_28\1\6703-ed01.dgn

RELATIVE BORDER SCALE  
1" = 100'

UNIT 0000

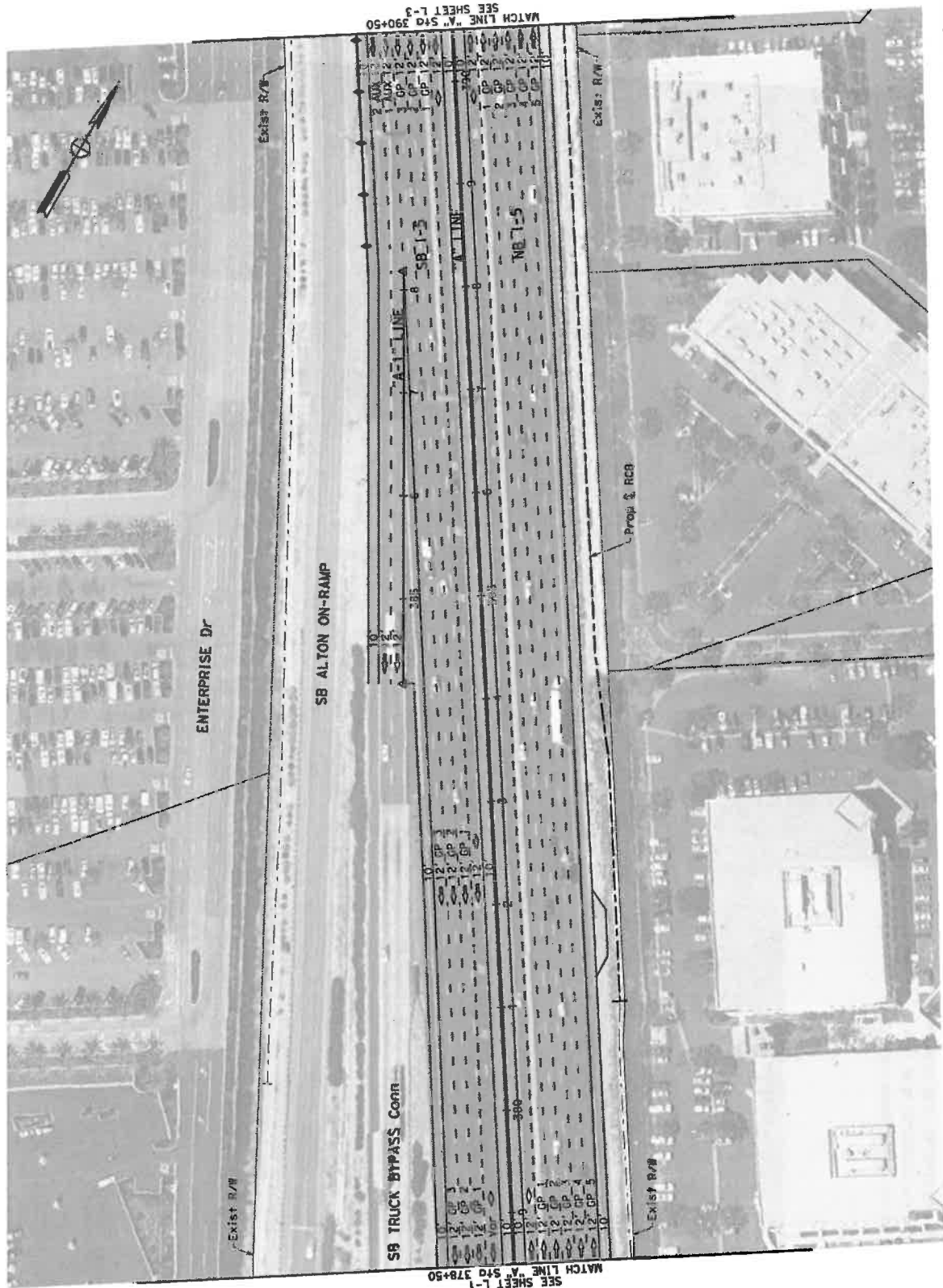
PROJECT NUMBER & PHASE

1200020052K

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR	DATE REVISOR	CHECKED BY
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	ORG	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**FOR PSR USE ONLY**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000

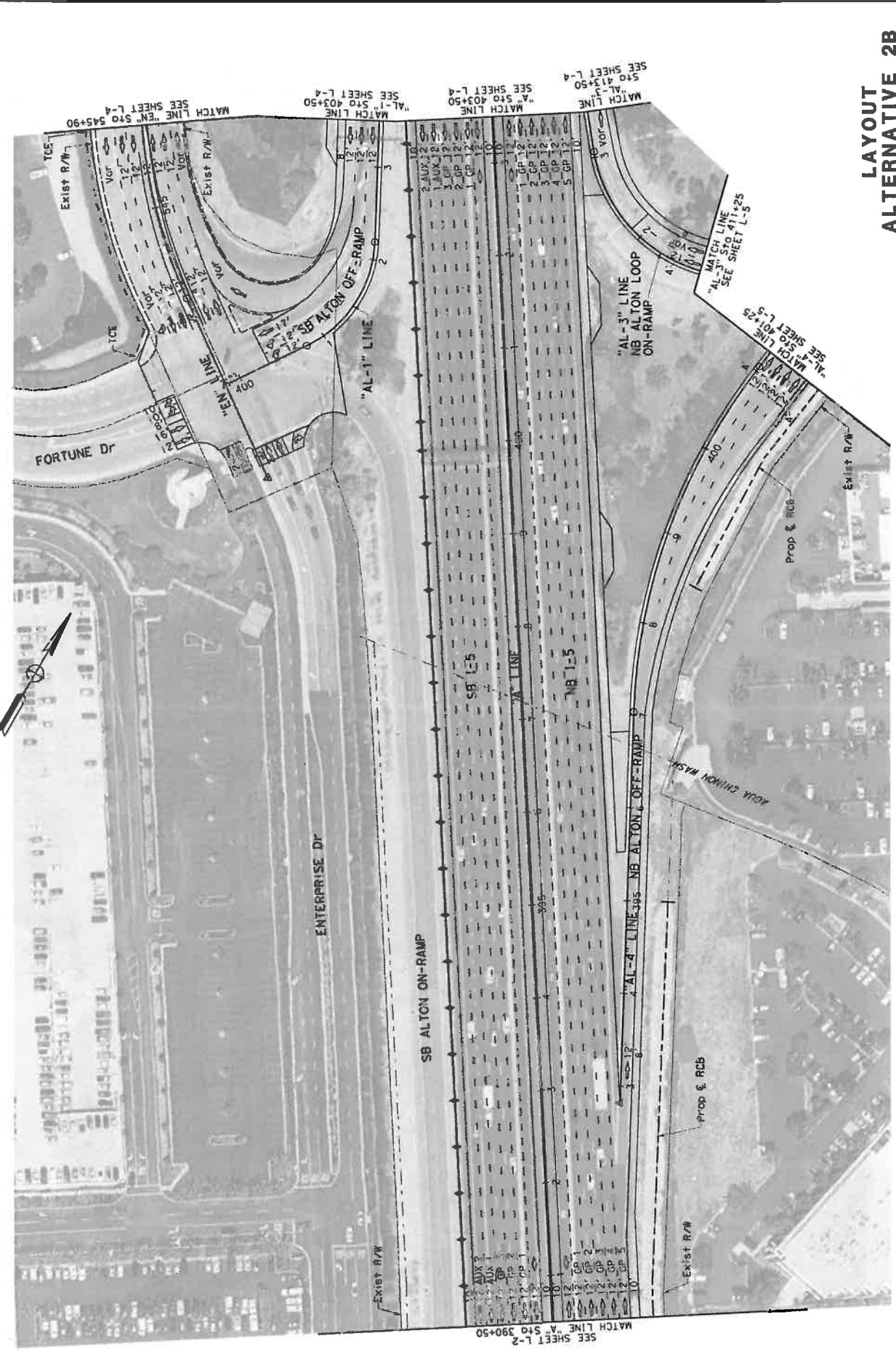
RELATIVE BORDER SCALE IS IN INCHES  
0 1 2 3

DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:46:36 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3730.3	



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-3**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR

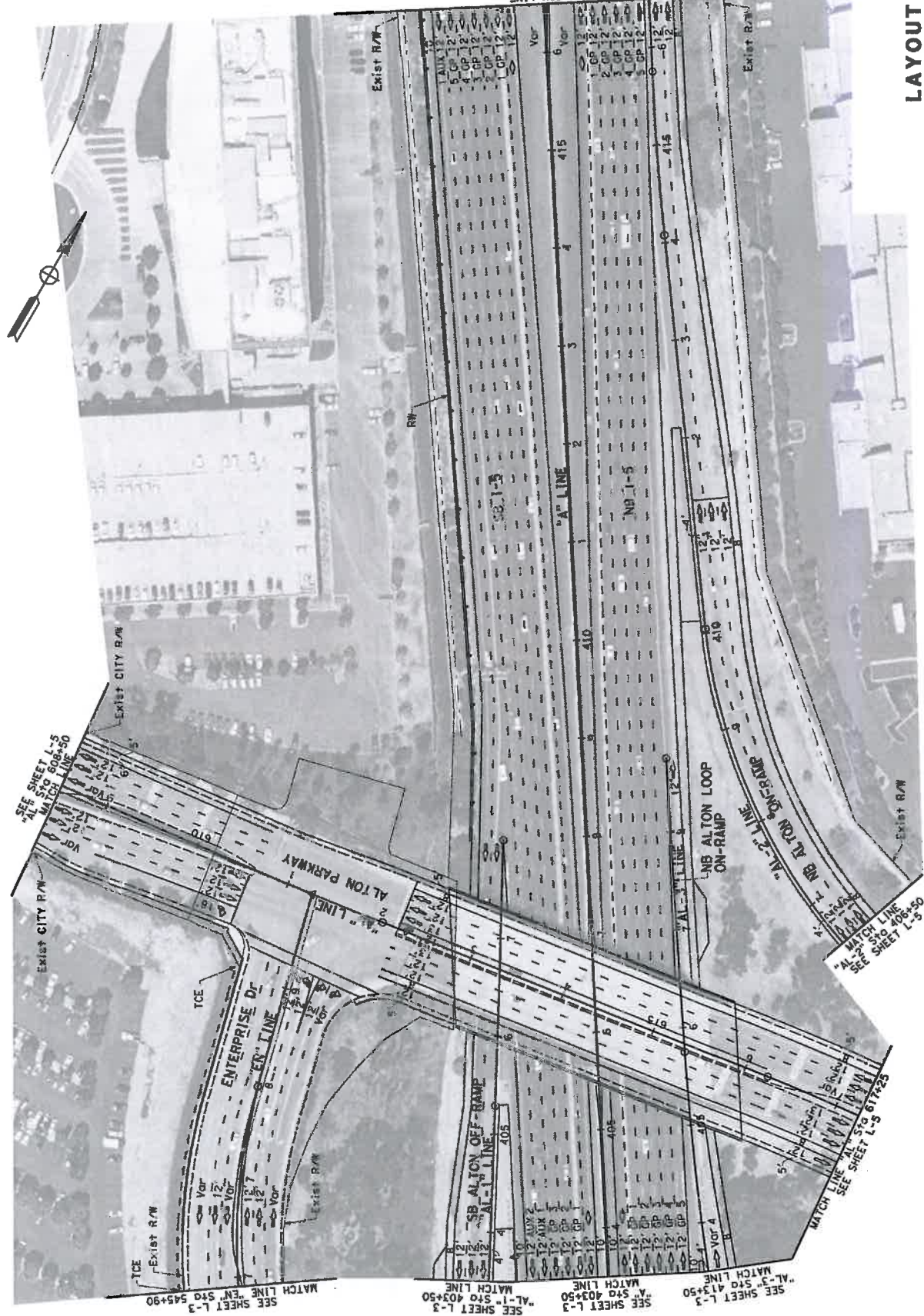
RELATIVE BORDER SCALE  
IS IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

Dist	County	Route	Sheet	Total Project	Sheet Total
12	Orca	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISD BY

BORDER LAST REVISED 7/2/2010  
USERNAME g3 g3070  
DOR FILE # ...Sheet\A12\_2B\068702B-ed004.dgn

RELATIVE BORDER SCALE  
IS IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

L-4

00-00-00  
DATE PLOTTED = 11/16/2011  
TIME PLOTTED = 3:10:46:54 AM



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orco	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-5**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALGULATED-  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR

RELATIVE BORDER SCALE  
1/8" = 10'

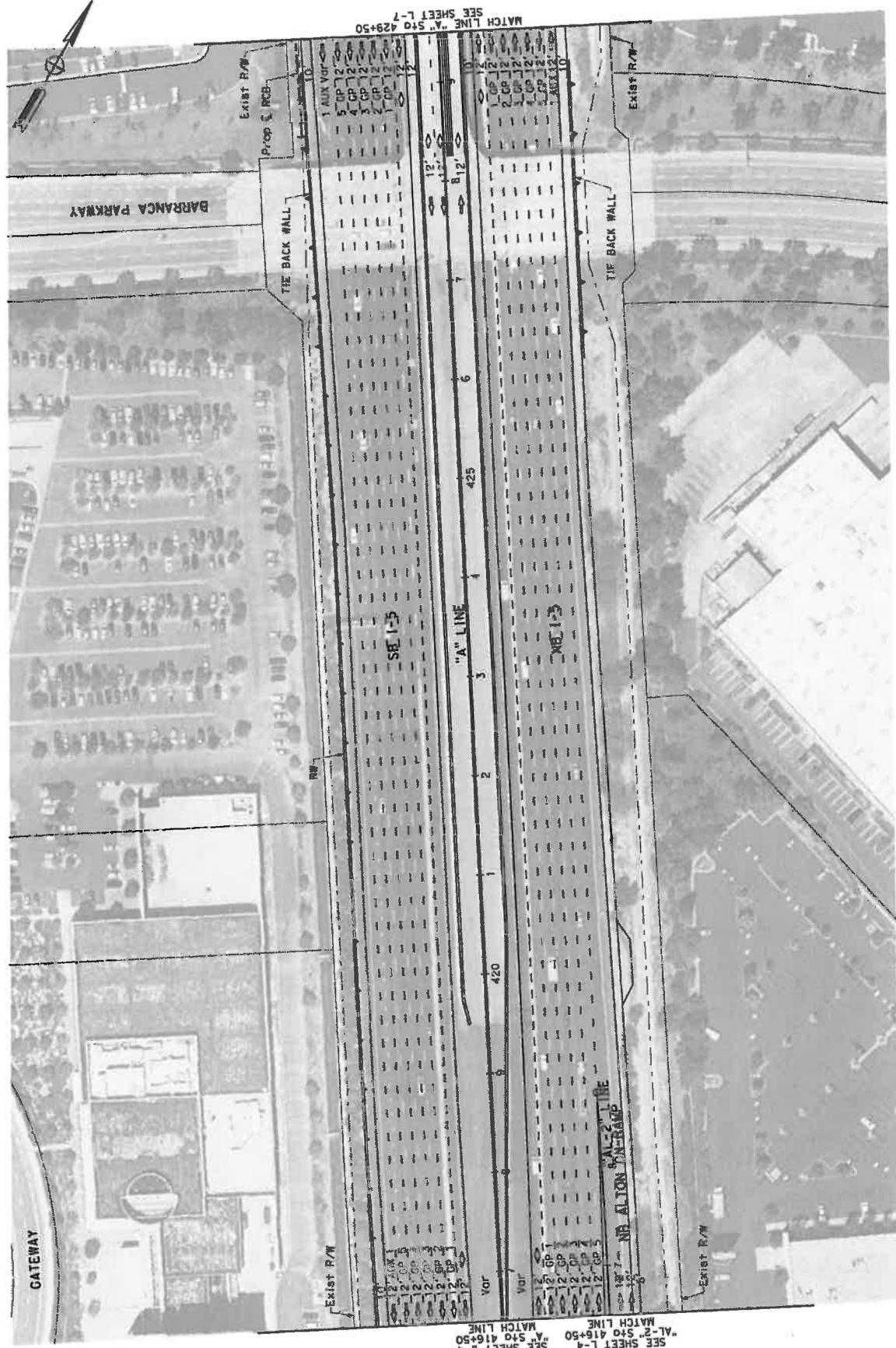
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 10:47:03 AM

DIST	COUNTY	ROUTE	TOTAL PROJECT SHEET NO.	SHEET NO.
12	Org	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-6**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

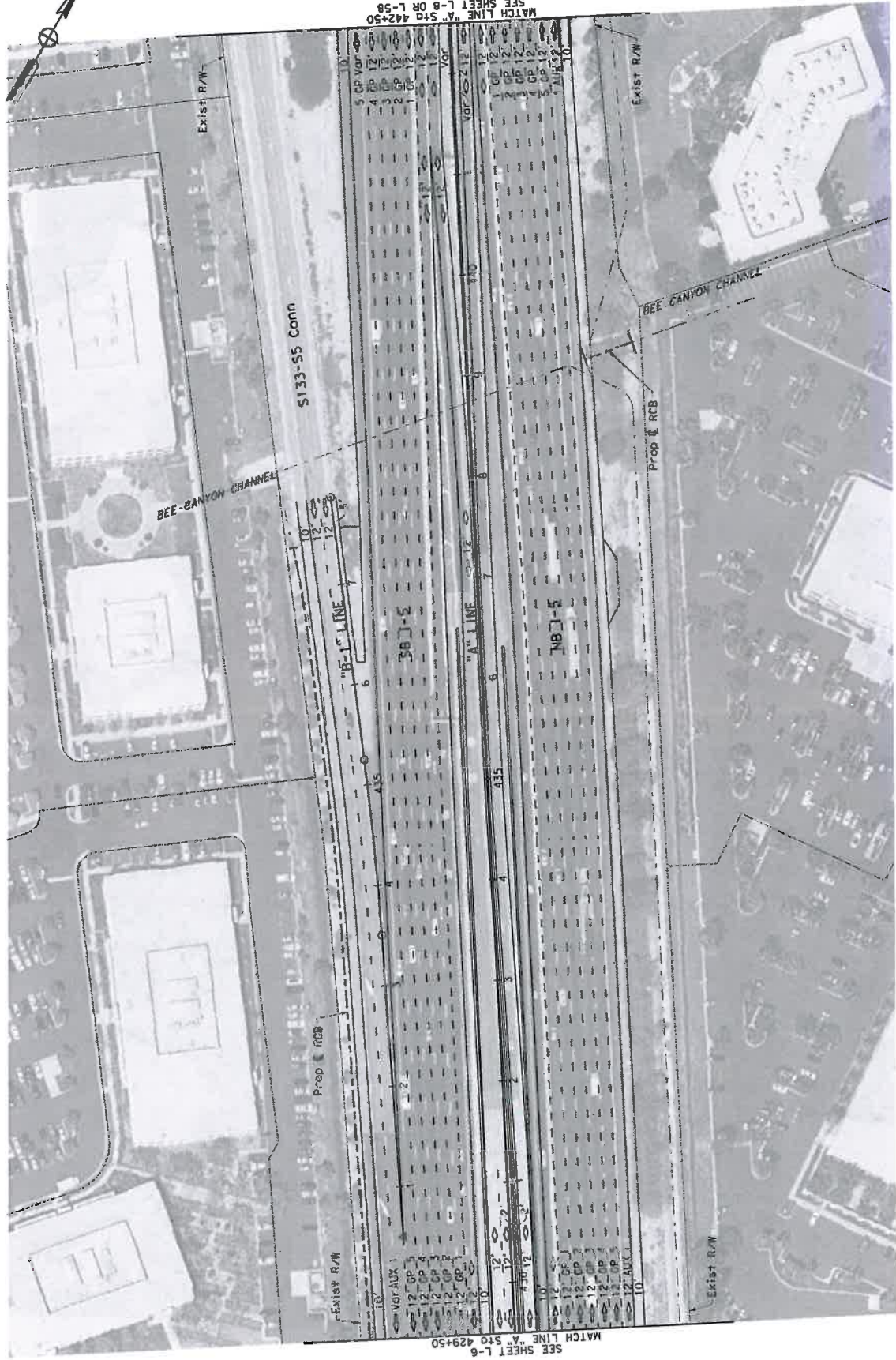
RELATIVE BORDER SCALE IS IN INCHES

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
 USERNAME g3g3g3  
 DON FILE # ...Sheet\11.2B\0687028-0006.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 CALCULATED BY  
 DESIGNED BY  
 CHECKED BY  
 DATE REVISED

POST MILES TOTAL PROJECT	21.3/30.3
ROUTE	5
COUNTY	Oro
DIST	12



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CHECKED BY  
DATE RE/ISED

RELATIVE BORDER SCALE  
1" = 100'

UNIT 0000

PROJECT NUMBER & PHASE

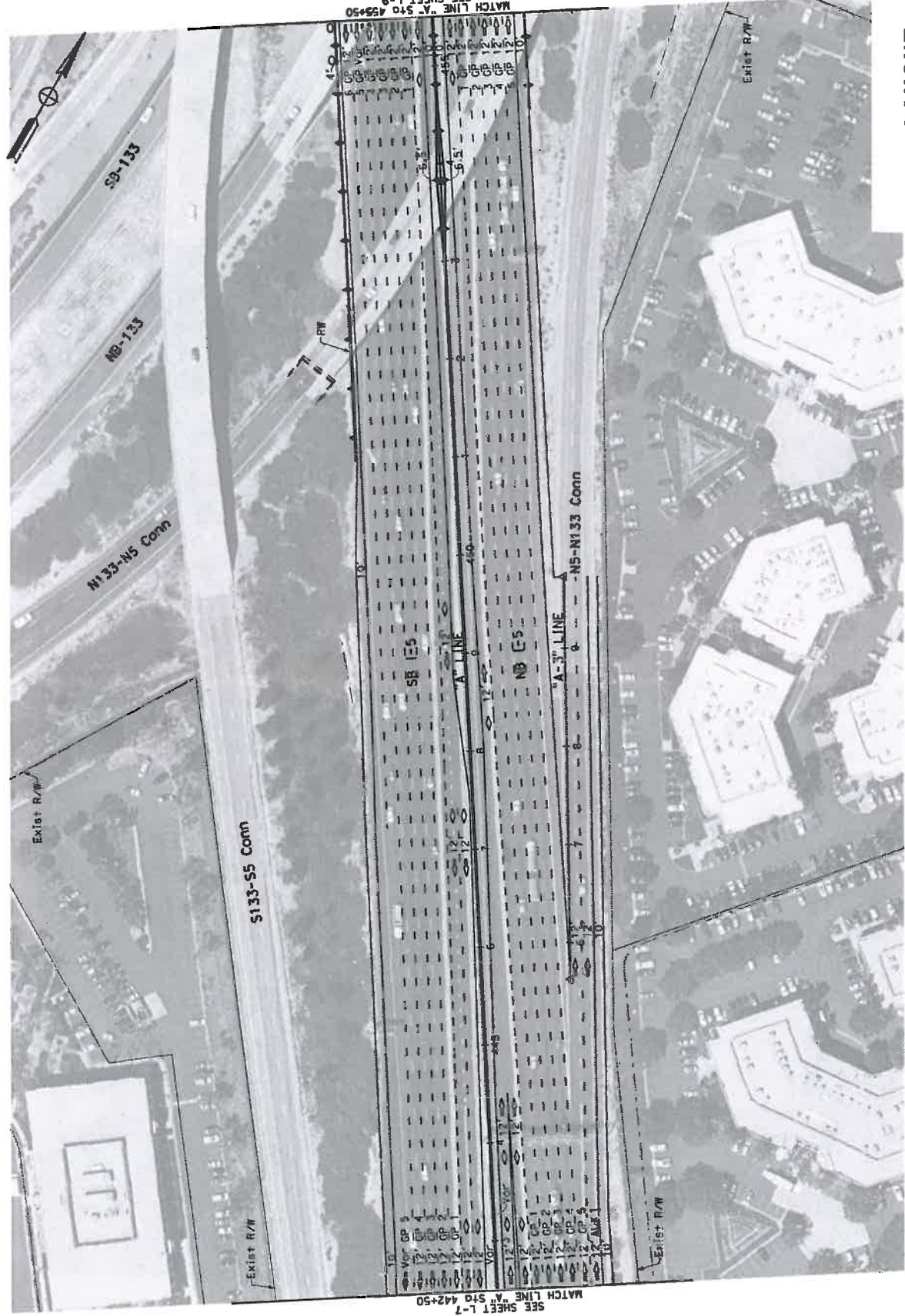
1200020052K

L-7

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 10:47:21 AM



Dist	County	Route	Sheet	Project	Sheet
12	Orca	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE  
L-8**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000

**FOR PSR USE ONLY**

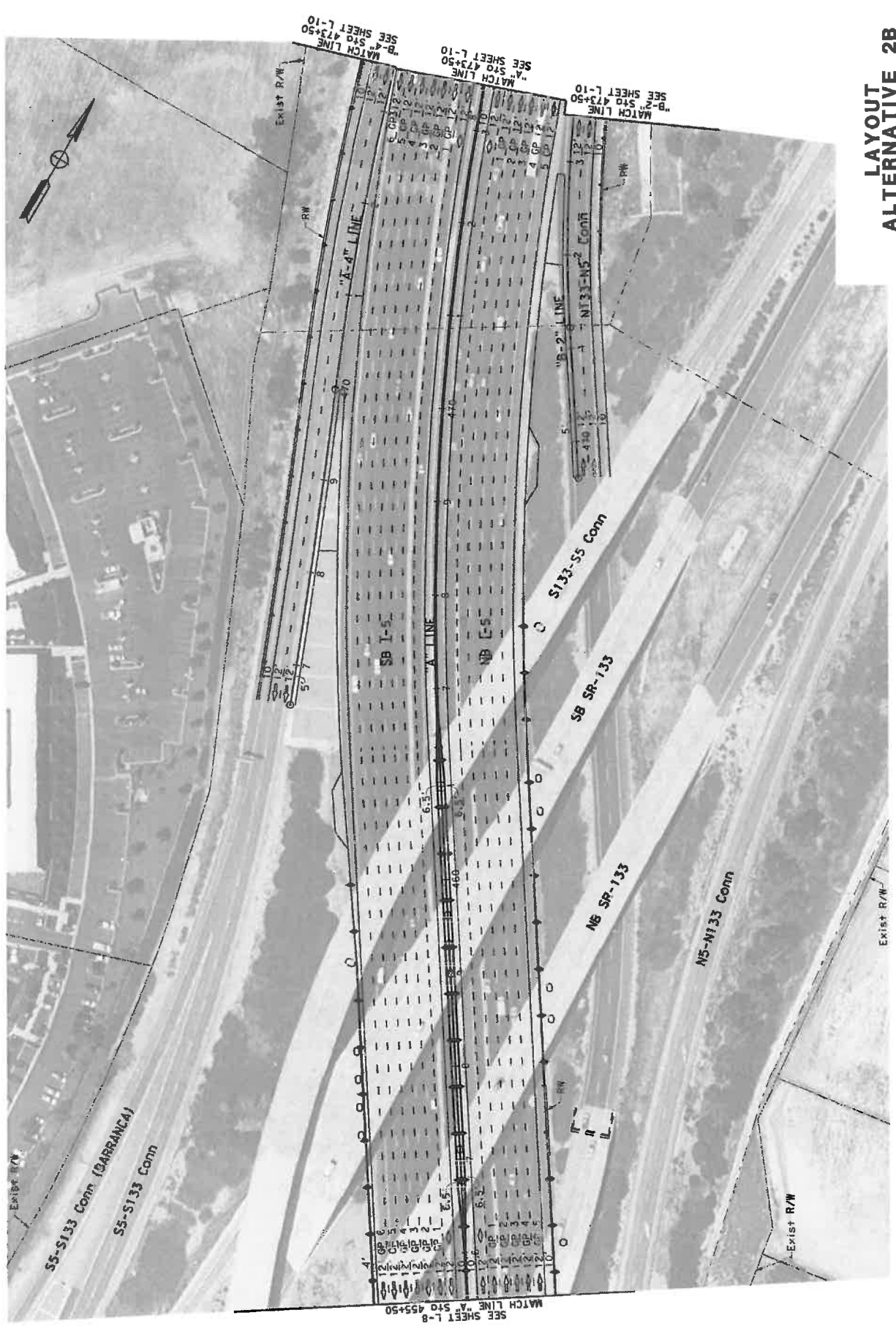
RELATIVE BORDER SCALE IS IN INCHES

BORDER LAST REVISED 7/2/2010  
USERNAME: p10290  
DWG FILE: ...Sheet\11.2B\061708-0000.cgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-D	DESIGNED BY	REVISOR	DATE REVISED



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Ora	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE **L-9**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTION: L SUPERVISOR  
CALCULATED BY: \_\_\_\_\_  
DESIGNED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
DATE REVISION: \_\_\_\_\_  
REVISION: \_\_\_\_\_

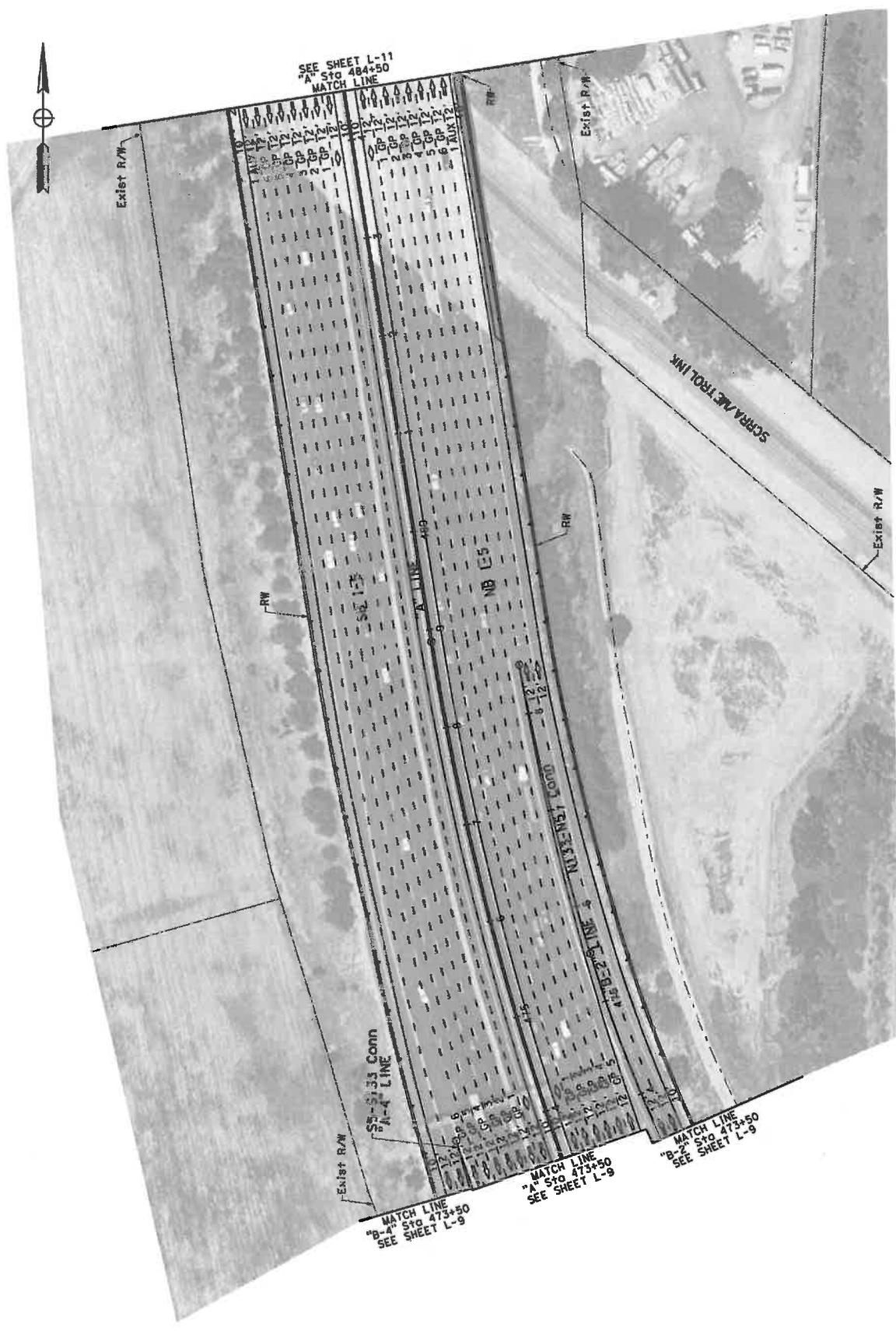
RELATIVE BORDER SCALE  
1" IS 10' INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

Dist	COUNTY	ROUTE	OSBY MILES TOTAL PROJECT	SHEET TOTAL NO.
12	Orc	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-10**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000



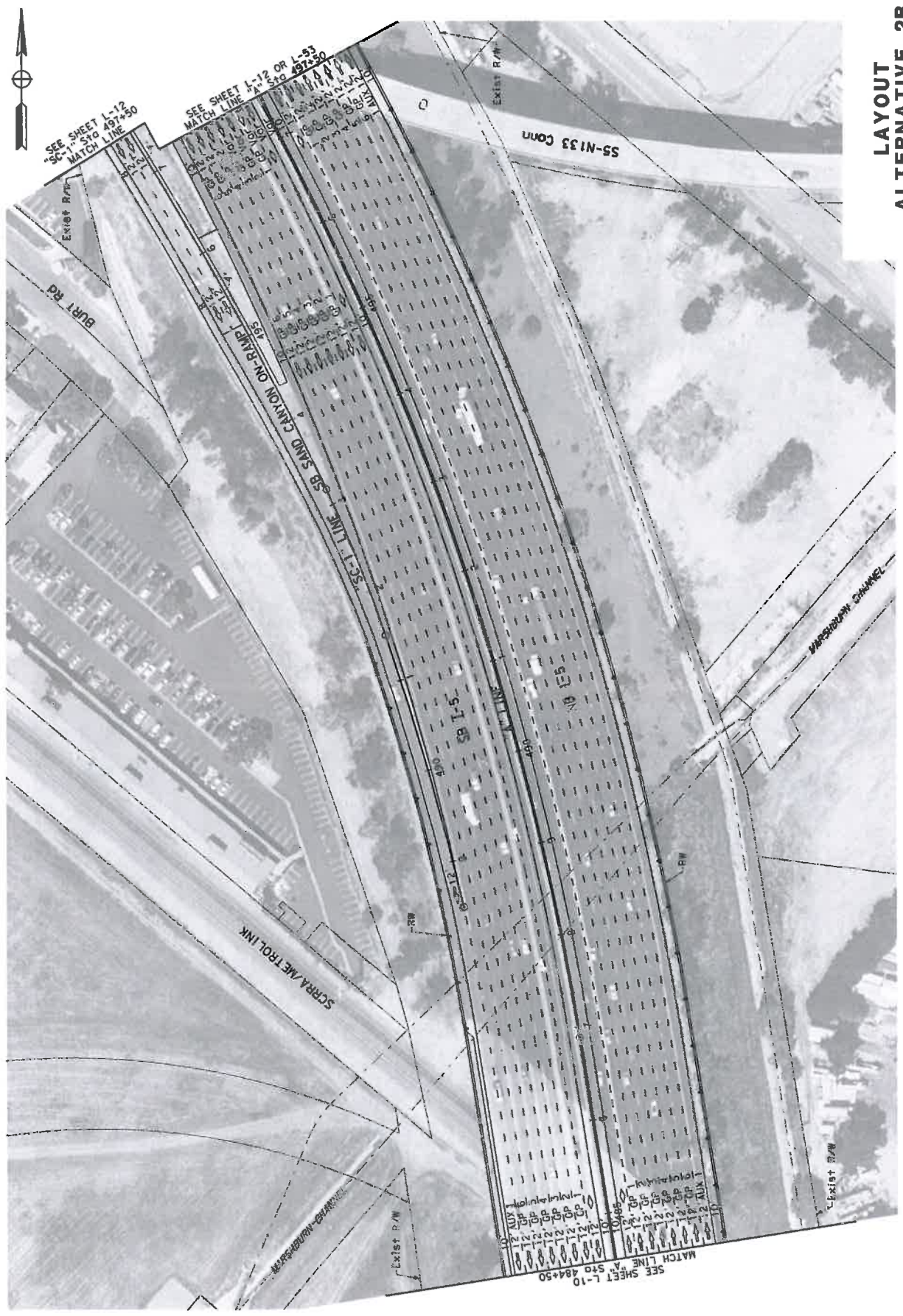
RELATIVE BORDER SCALE  
IS IN INCHES

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
CHECKED BY  
DATE REVISD

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME: g3000  
DRAW FILE: ...\\Server\112\_25\067028-wa010.dgn

POST MILES TOTAL PROJECT	SHEET TOTAL PROJECT NO.	SHEETS
12	070	5
21.3730.3		



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-11**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR

RELATIVE BORDER SCALE  
1" = 15' IN INCHES

UNIT 0000

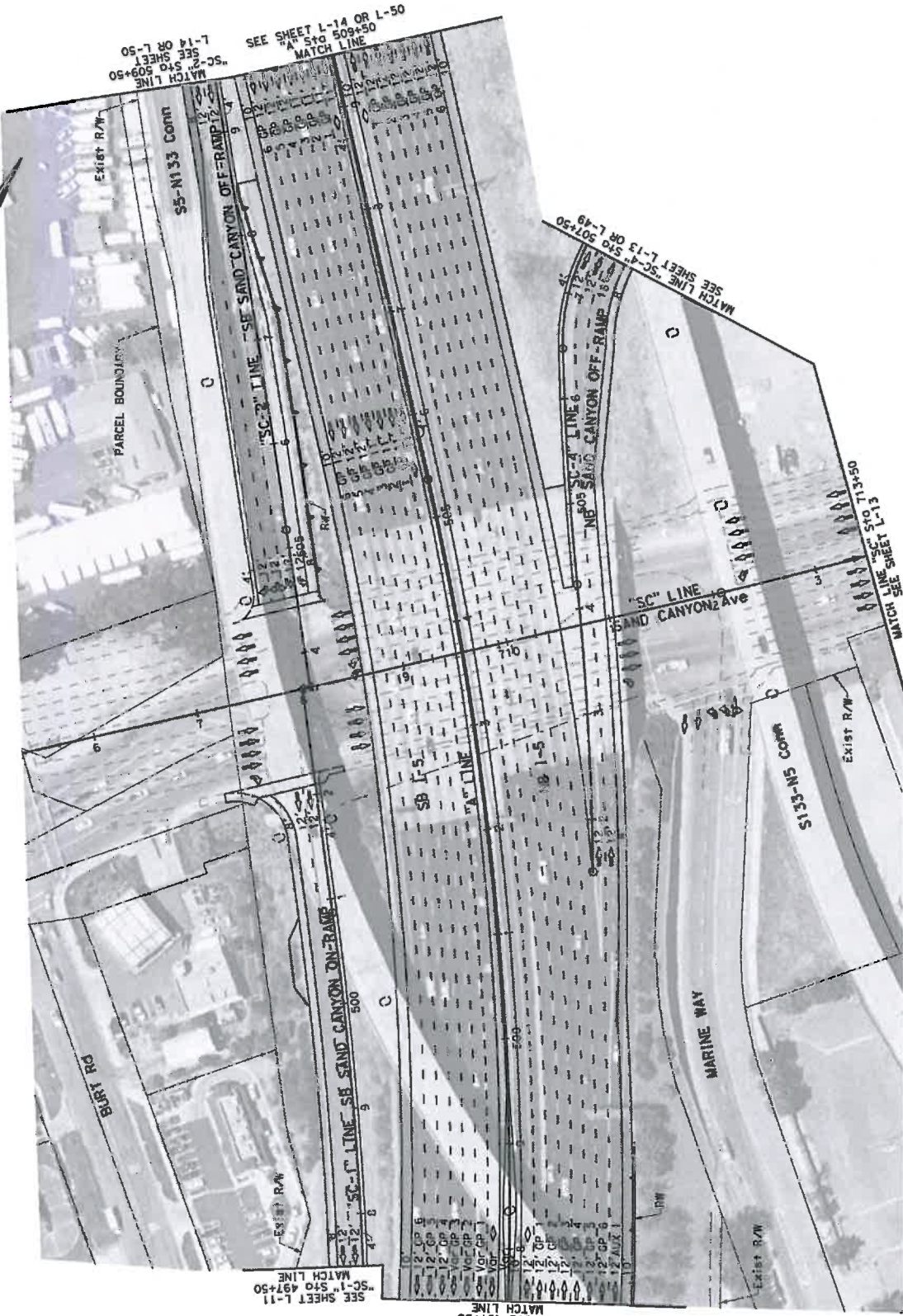
PROJECT NUMBER & PHASE

1200020052K

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 10:47:54 AM



Dist	County	Route	Post Miles Total Project	Sheet No.	Total Sheets
12	Orca	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE  
L-12**

PROJECT NUMBER & PHASE  
UNIT 0000  
1200020052K

RELATIVE BORDER SCALE  
1/8" = 1'

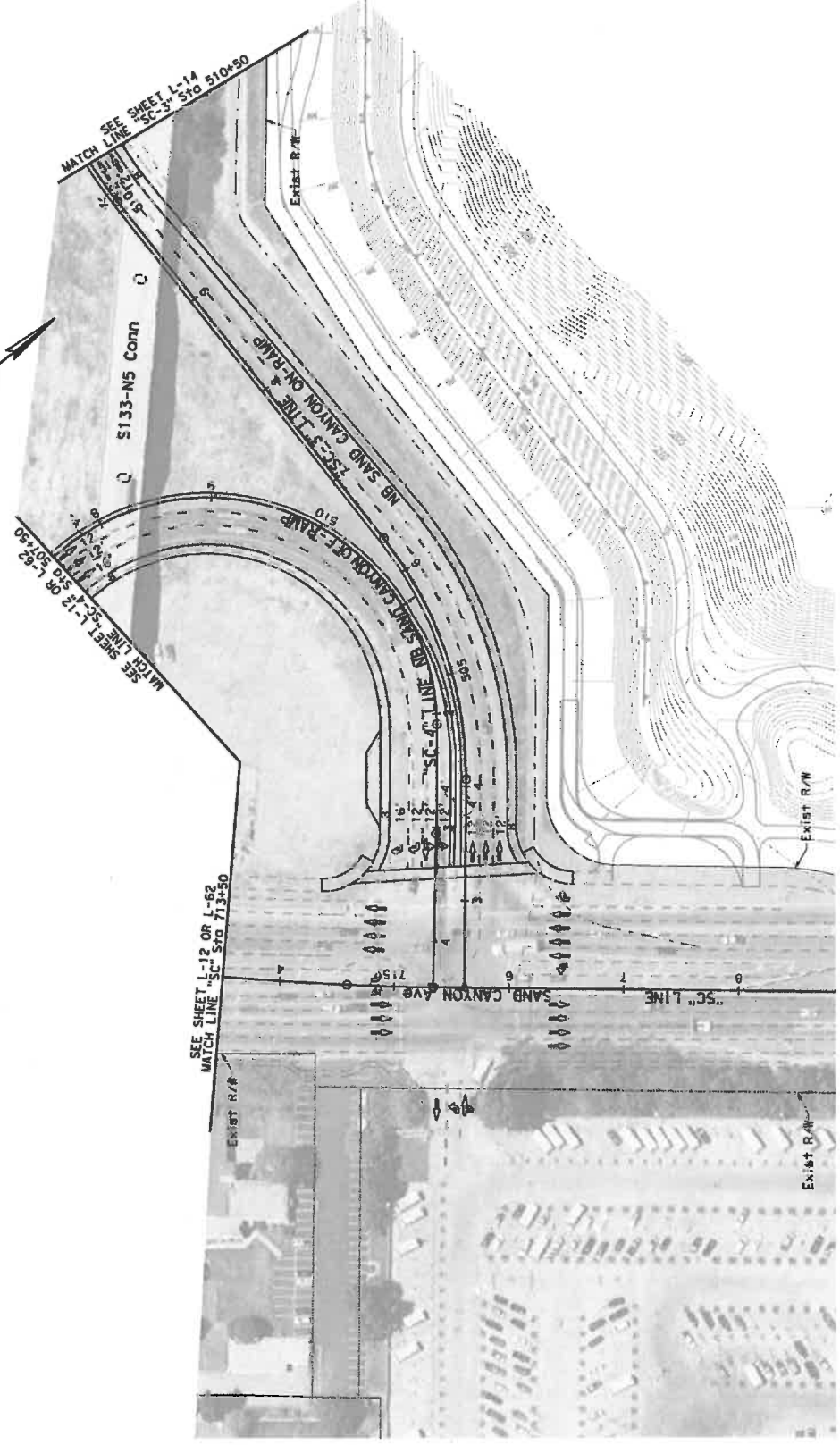
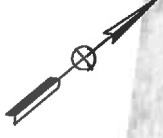
DATE PLOTTED => 11/16/2011  
DATE REVISION

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
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DWG FILE => ...\\spw\1112\06067026-w012.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Oro	5	21.3/30.3		



LAST REVISION  
DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 10:48:11 AM

**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-13**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
1/8" = 10' IN INCHES

USERNAME => gpc03  
DWG FILE # => \\sheet\111\_2R\06702B-e0013.dgn

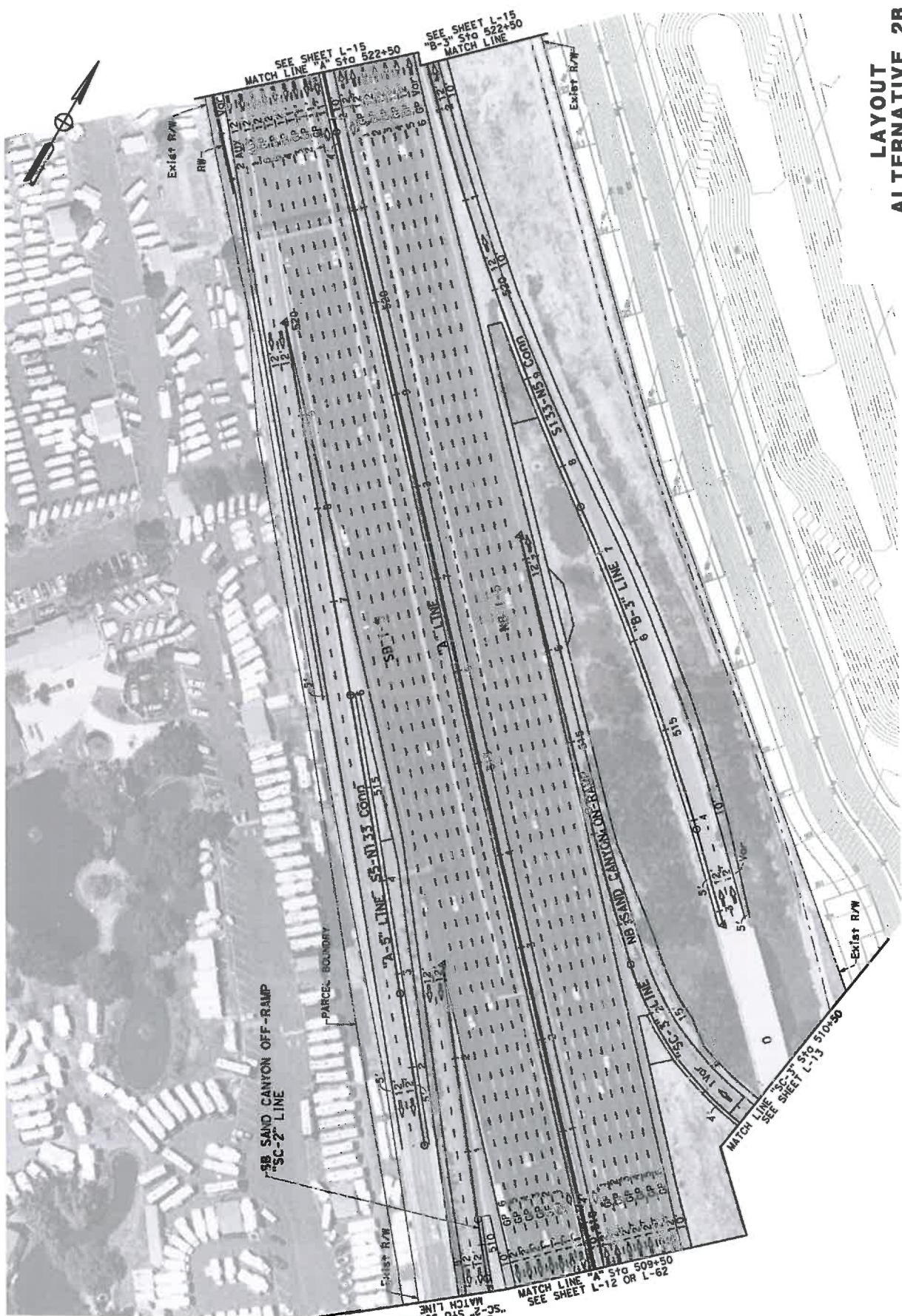
**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
	DESIGNED BY		REVISED BY



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orco	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-14**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 CALCULATED BY  
 DESIGNED BY  
 CHECKED BY  
 DATE REVISED  
 REVISOR

BORDER LAST REVISED 7/2/2010  
 USERNAME g9070  
 DON FILE ... \Sheet\112\_2B\067028-wd014.dgn

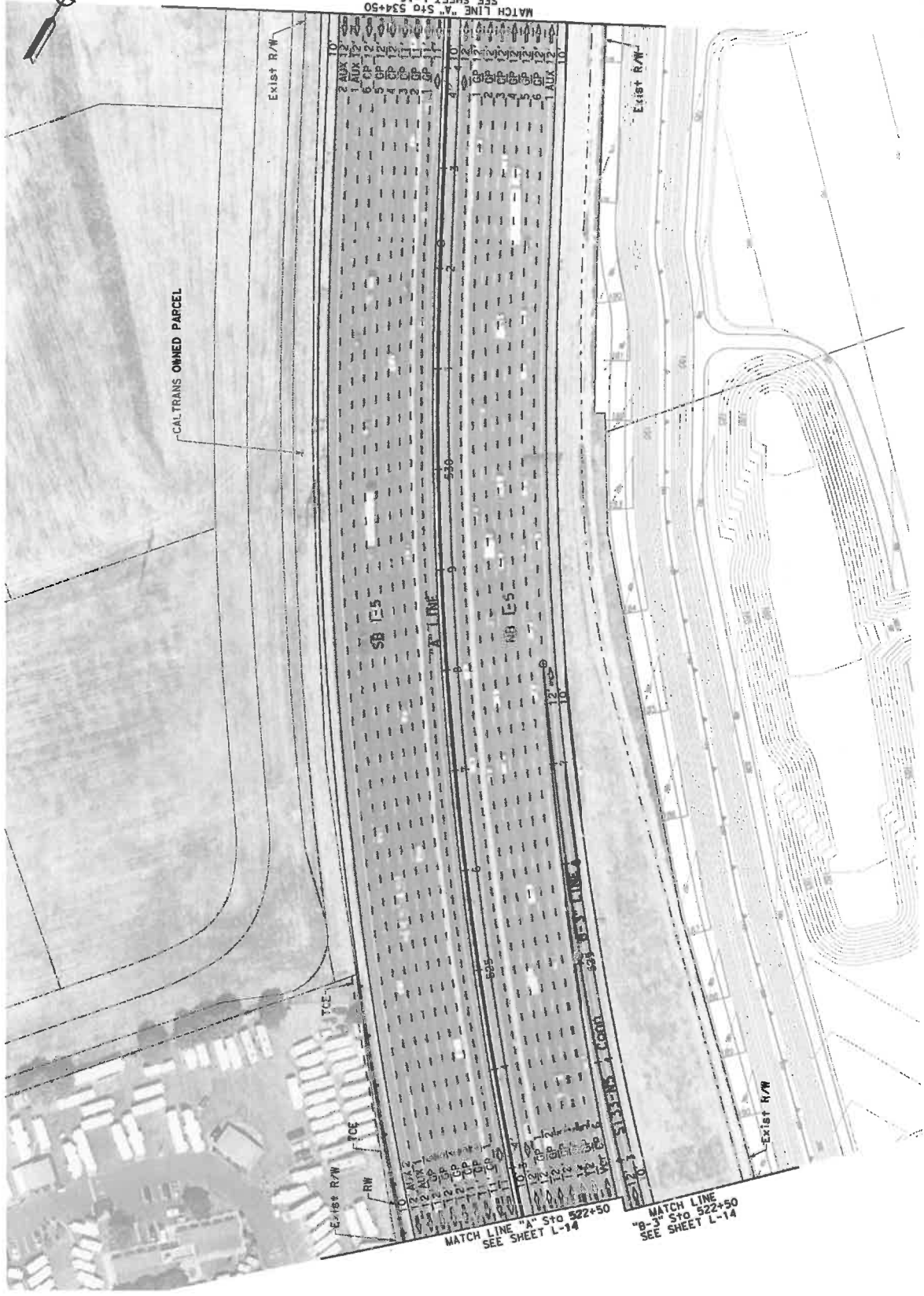
RELATIVE BORDER SCALE  
 IS IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

DIR#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Orca	5	21.3/30.3	



MATCH LINE "A" Sta 534+50  
SEE SHEET L-16

MATCH LINE "A" Sta 522+50  
SEE SHEET L-14

MATCH LINE "B-3" Sta 522+50  
SEE SHEET L-14

**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-15**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED

BORDER L15T REVISED 7/2/2010  
 USORNAME # 96000  
 DOT FILE # ... Sheet\A14\_2B\067028-e0015.dgn

RELATIVE BORDER SCALE  
 15 IN TYPICAL

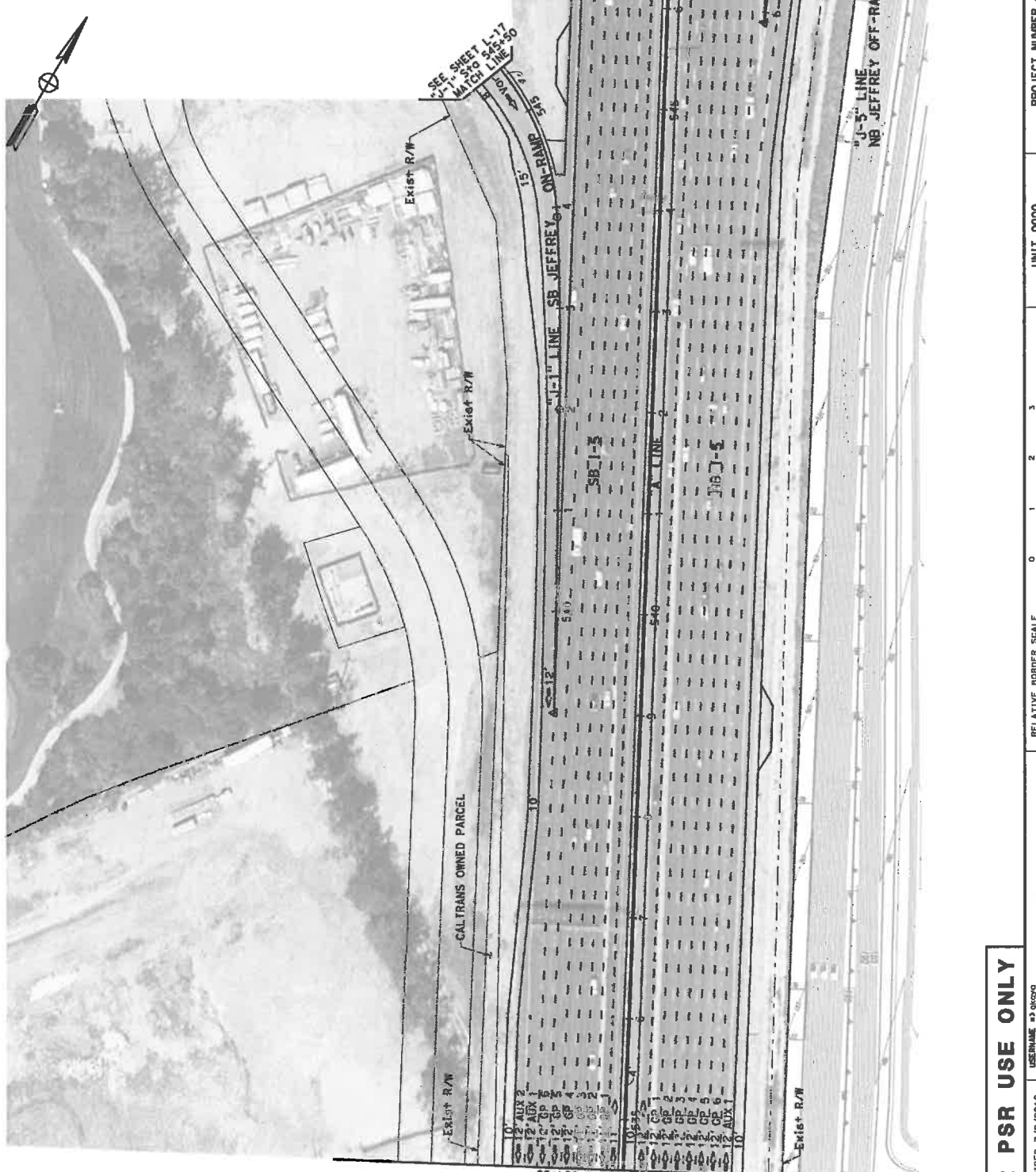
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K



DIST	COUNTY	ROUTE	PROJECT TOTAL MILES	SHEET NO.	TOTAL SHEETS
12	Orco	5	21.3/30.3	3	3



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE  
L-16**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE IS IN INCHES  
0 1 2 3

**FOR PSR USE ONLY**

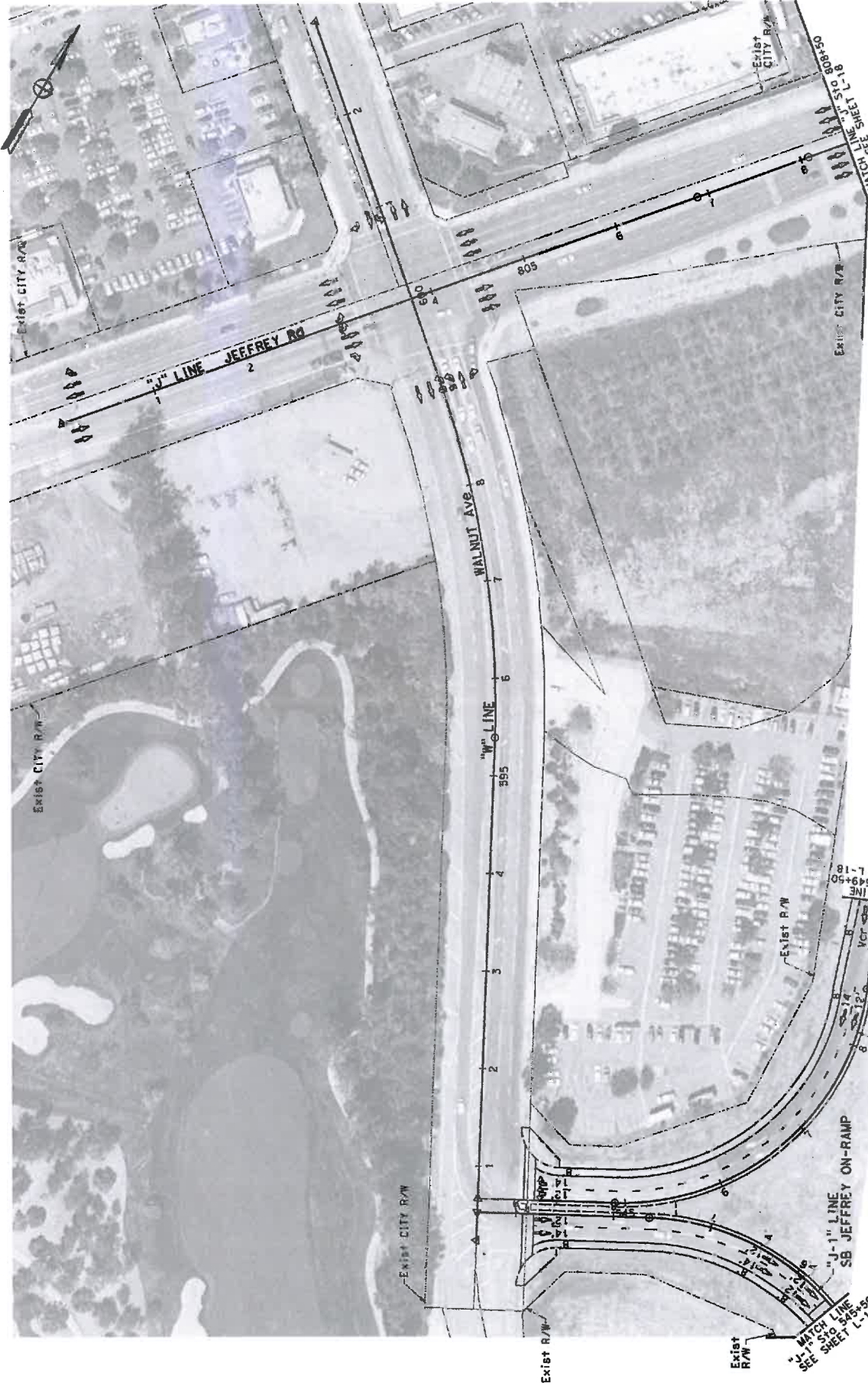
BORDER LAST REVISED 7/2/2010  
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 DGN FILE: ...Sheet\A11\_2B\061702B-m016.dgn

LAST REVISION DATE PLOTTED: 11/16/2011 10:48:37 AM  
 00-00-00

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
		DESIGNED BY	REVISD BY



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. OF TOTAL SHEETS
12	Oro	5	21.3730.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-17**

PROJECT NUMBER & PHASE  
UNIT 0000

UNIT 0000

RELATIVE BORDER SCALE  
15 IN INCHES

RELATIVE BORDER SCALE  
15 IN INCHES

USERNAME: 28.06702B-0017.dgn  
BORDER LAST REVISED: 7/2/2010

FOR PSR USE ONLY

1200020052K

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED

00-00-00  
DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:08:47 AM

DIST	COUNTY	ROUTE	PROJECT TOTAL SHEETS	SHEET NO.
12	Orco	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-18**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1/8" = 1'-0"

**FOR PSR USE ONLY**



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

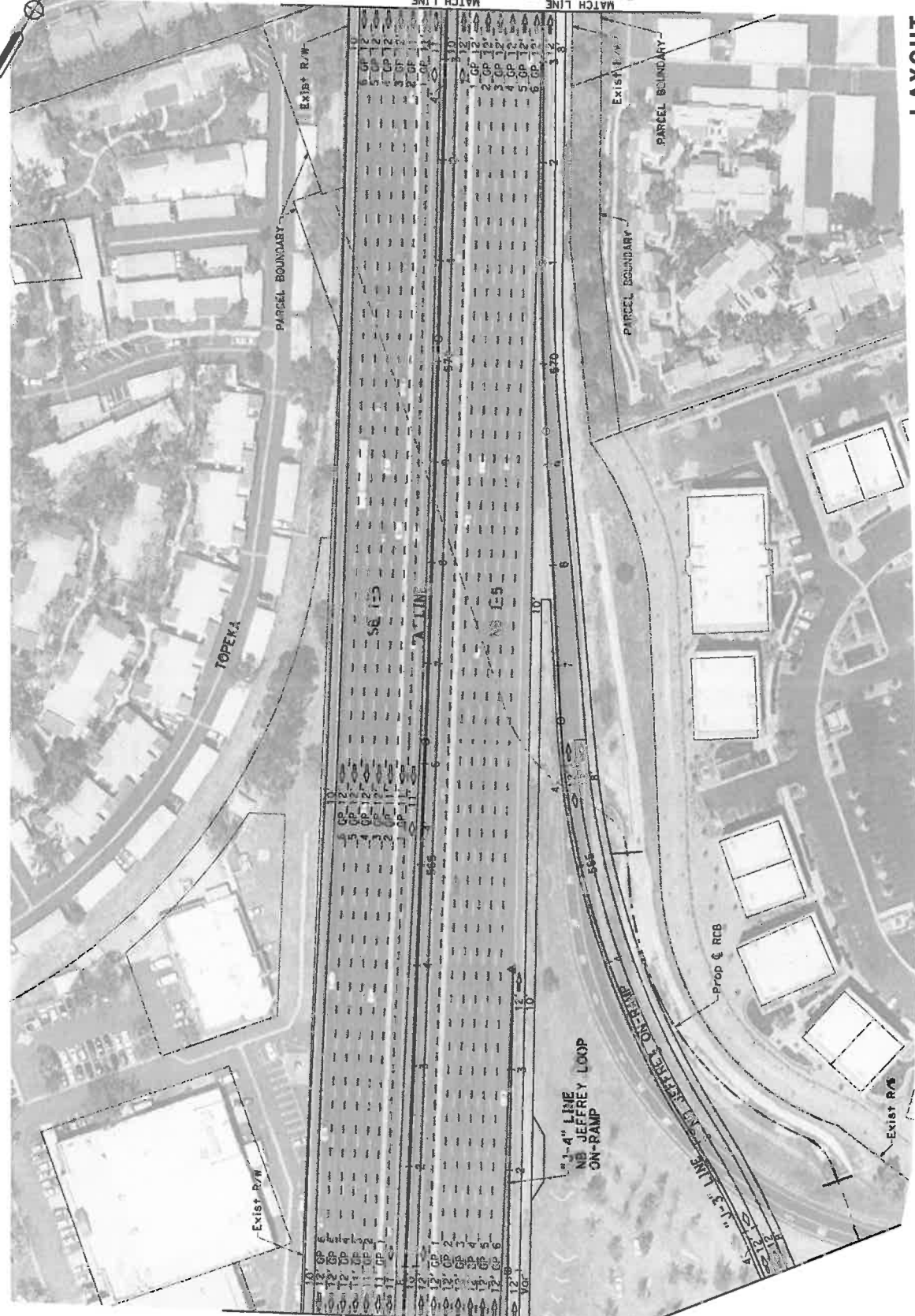
DESIGNED BY  
CHECKED BY

REVISOR  
DATE REVISED

DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:48:57 AM



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010 USERNAME: psr-cv-0 DGN FILE # ... Sheet\11\_2B.dwg\topb-0013.dgn

RELATIVE BORDER SCALE 1" = 15' IN INCHES



UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

**L-19**

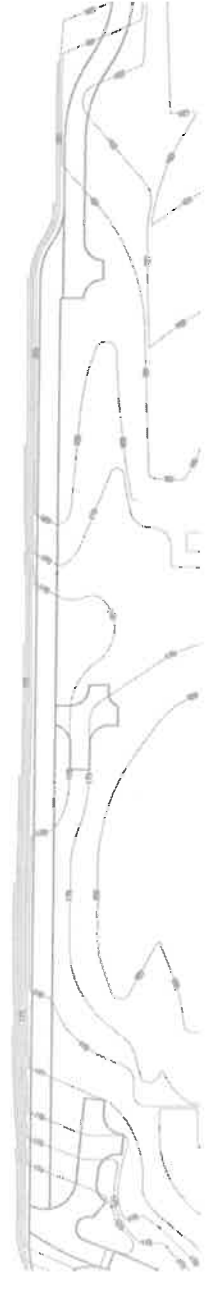
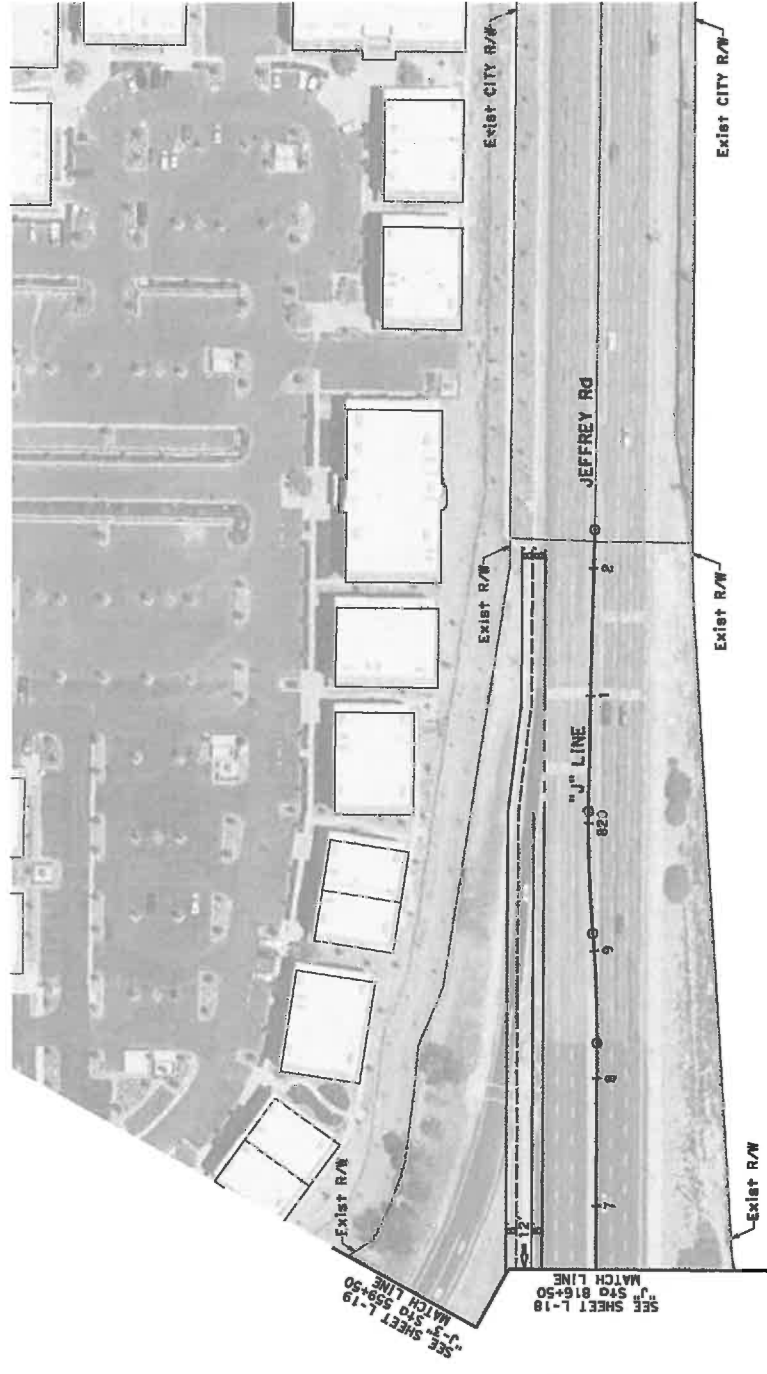
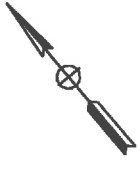
SEE SHEET L-18  
"J-4" STD 560+50  
MATCH LINE

SEE SHEET L-21  
"A" STD 573+50  
MATCH LINE

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 10:49:37 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISION
		DESIGNED BY	REVISION

Dist	County	Route	Sheet Miles Total Project	Sheet No.	Total Sheets
12	Orca	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE  
L-20**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000



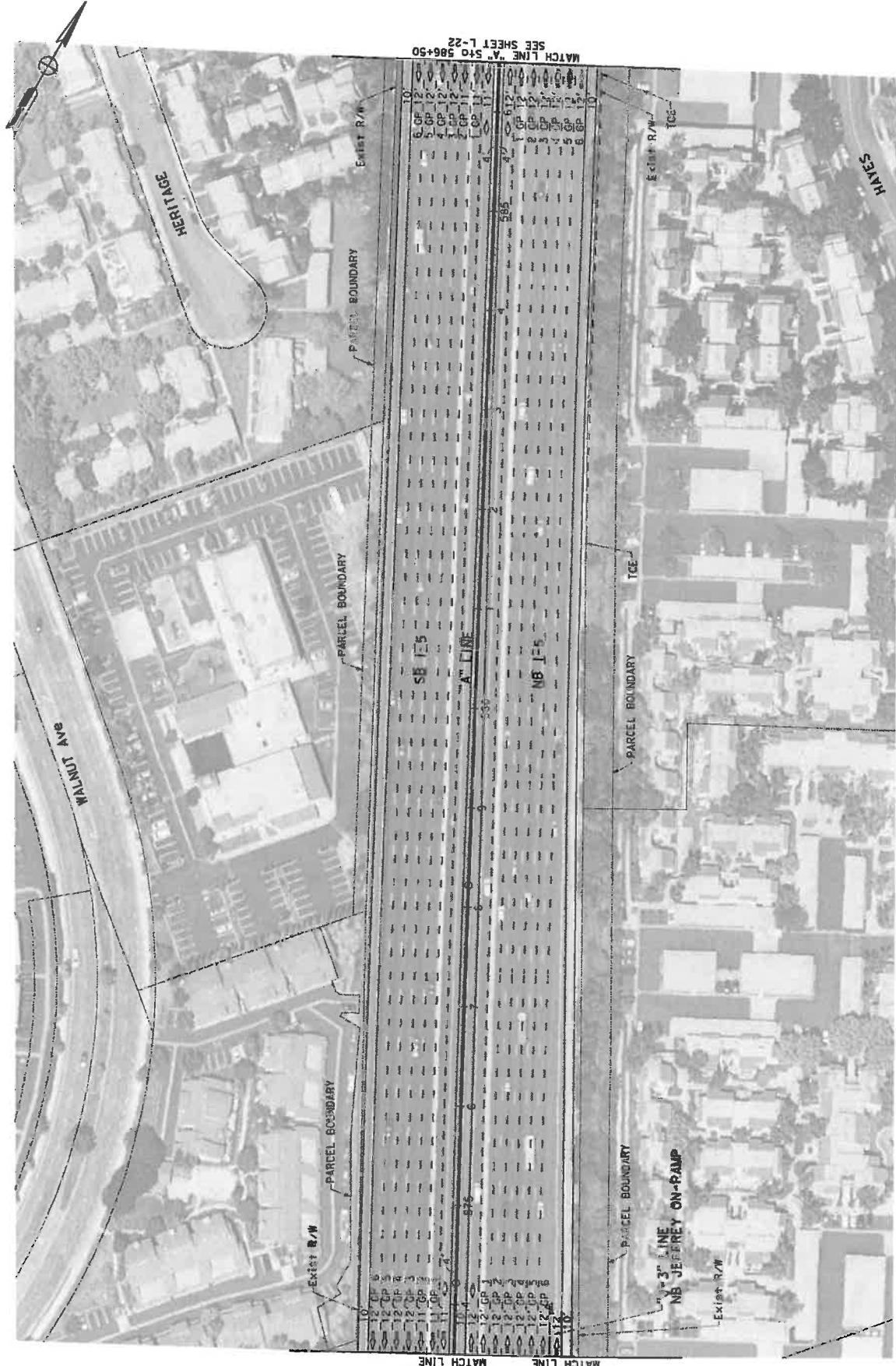
RELATIVE BORDER SCALE  
IS IN INCHES

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
 USERNAME: p3group  
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED- DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



SEE SHEET L-19 SEE SHEET L-19  
 MATCH LINE  
 U-3 S+0 573+50 A S+0 573+50  
 MATCH LINE

MATCH LINE "A" S+0 586+50  
 SEE SHEET L-22

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
		CHECKED BY	DATE REVISED

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010 USERNAME \*\*pkaya DON FILE #3 ... \Sheet\112\_28\046702B-eod21.dgn

RELATIVE BORDER SCALE IS IN INCHES

0 1 2 3

UNIT 0000

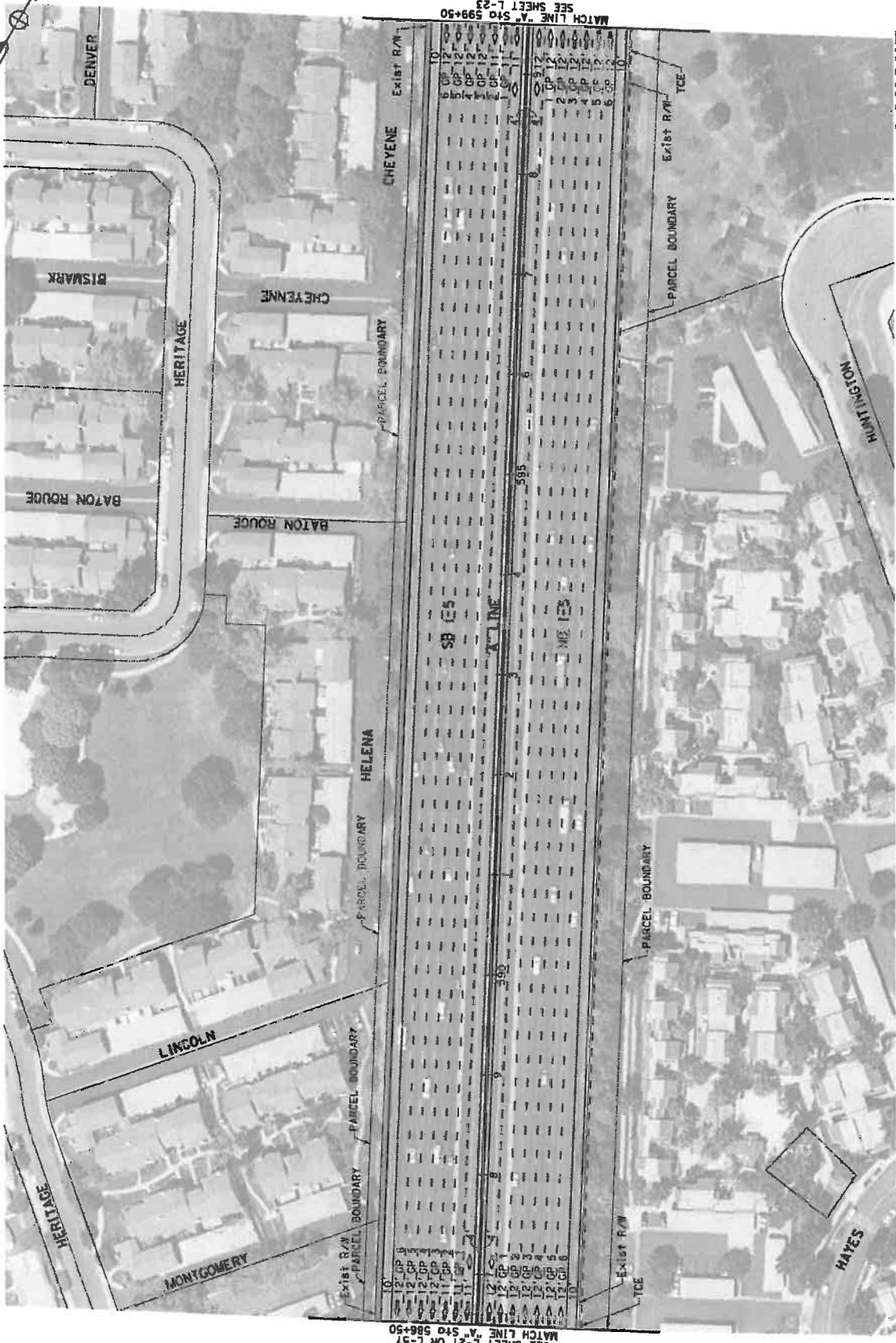
PROJECT NUMBER & PHASE

1200020052K

**LAYOUT ALTERNATIVE 2B**  
 NO SCALE  
**L-21**



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	ORG	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE  
L-22**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE IS IN INCHES

DATE REVISION 00-00-00

DATE PLOTTED 11/16/2011  
TIME PLOTTED 10:49:34 AM

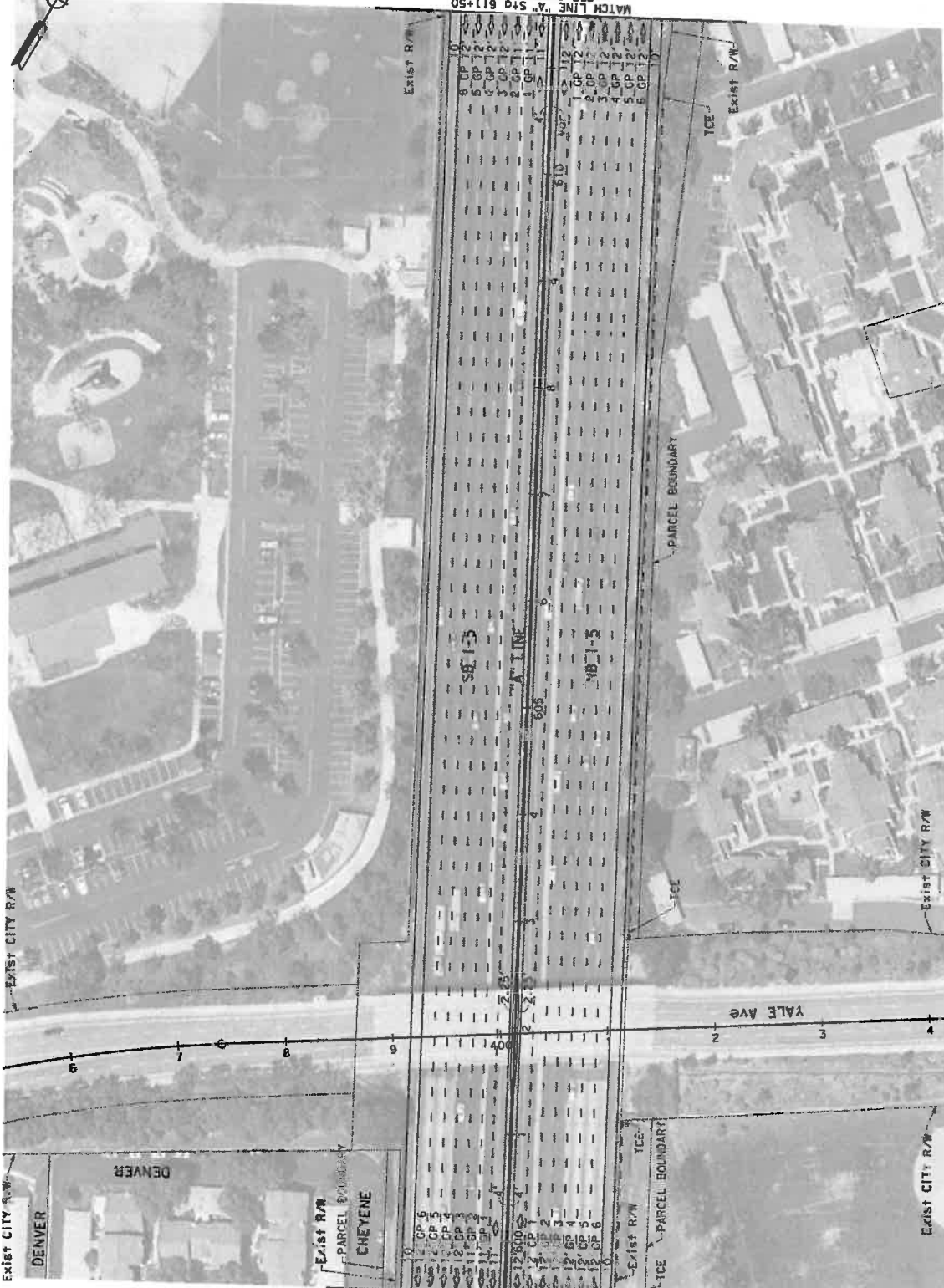
**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME g9000  
JOB FILE 4 ... \Sheet\112\_2B\112\_2B-0022.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR	DATE REVISION
		CHECKED BY		



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-23**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE 1/8 IN INCHES

USERNAME: s38c10 BOR FILE #... Sheet111\_28\068702B-0623.dgn

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-	DESIGNED BY	CHECKED BY	DATE REVISED	REVISD BY
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Dist	County	Route	Sheet No.	Total Project No.	Total Sheets
12	Orca	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
L-24

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000



RELATIVE BORDER SCALE IS IN INCHES

USERNAME: g3030  
DGN FILE: ...Sheet\112\_2B\061702B-e0024.dgn

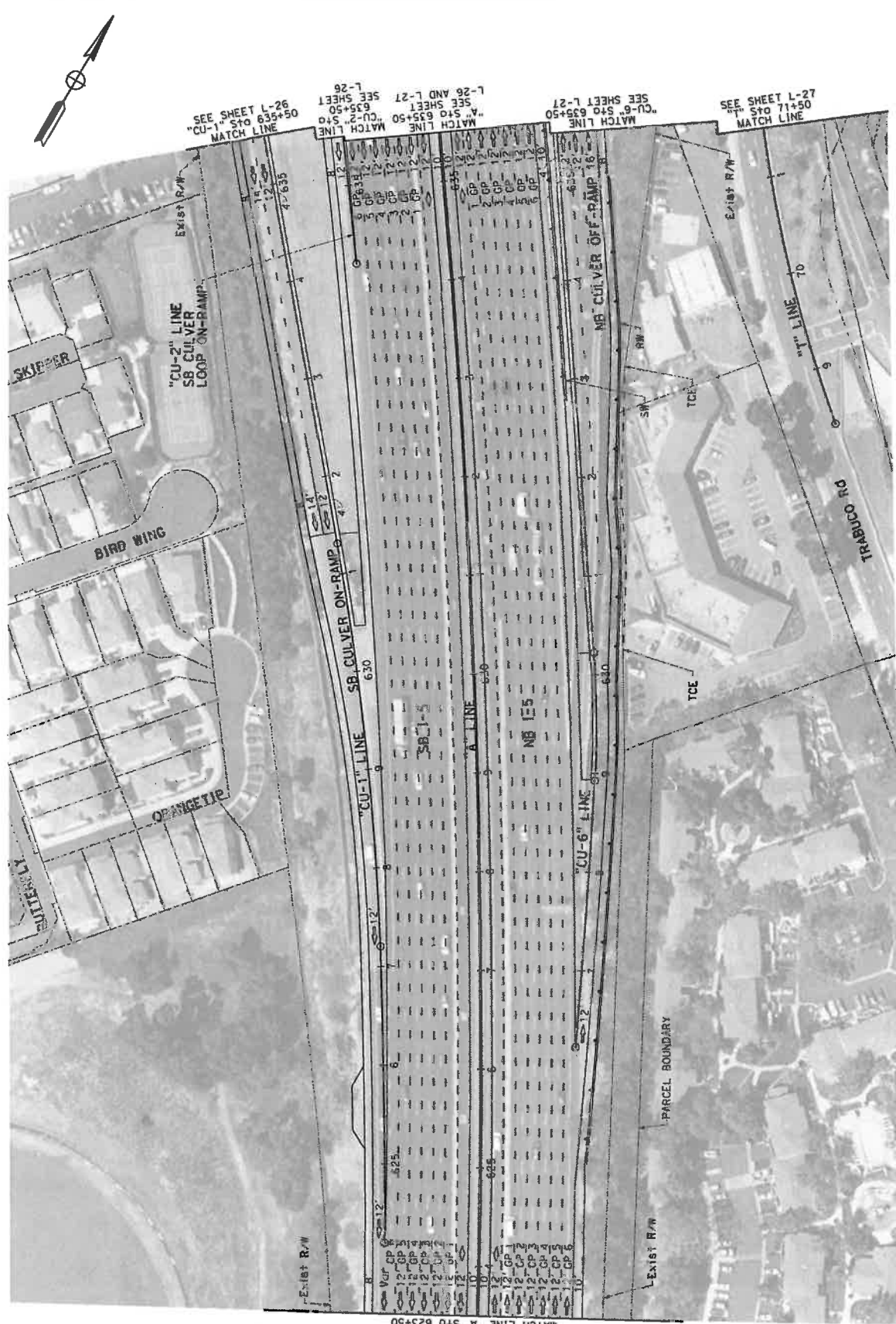
BORDER LAST REVISED 7/2/2010

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISY BY	DATE REVISED
		CHECKED BY		



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-25**

PROJECT NUMBER & PHASE  
UNIT 0000

RELATIVE HORSE SCALE  
1/8" = 10'

DATE PLOTTED >> 11/16/2011  
TIME PLOTTED >> 10:50:01 AM

LAST REVISION

1200020052K

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTION: SUPERVISOR

DESIGNED BY

CHECKED BY

DATE REISED

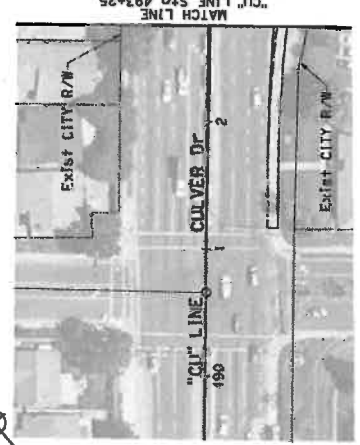
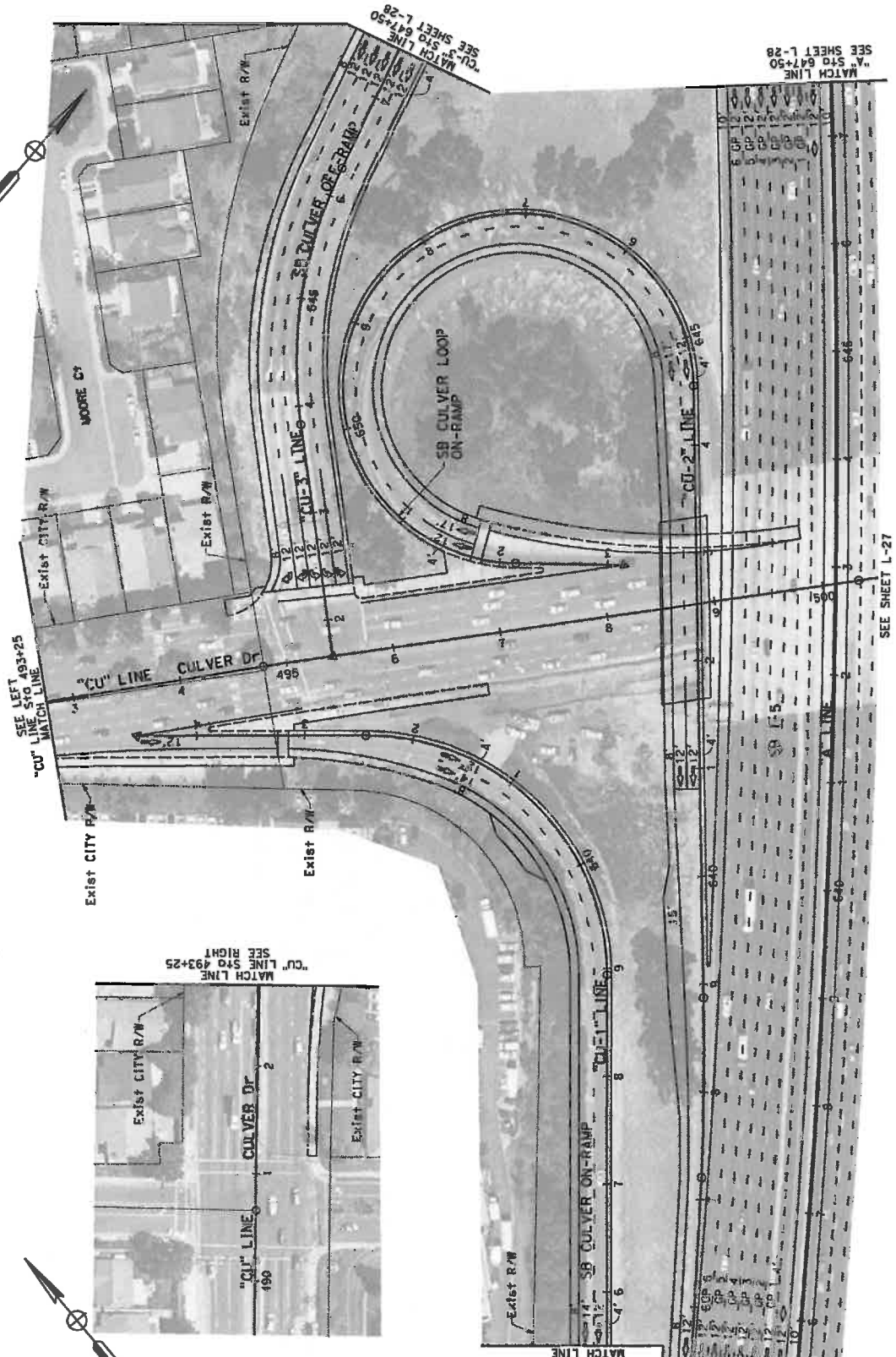
REVISD BY

USERNAME >> gkog  
JOB FILE >> ... \sheet\11\_25\06102B-e005.dgn

BORDER LAST REVISED 7/2/2010



Dist	County	Route	Project	Sheet No.	Total Sheets
12	Orc	5	21.3/30.3		



SEE LEFT 193+25  
"CU" LINE S/O  
MATCH LINE

"CU" LINE  
CULVER DR

"CU" LINE S/O 493+25  
MATCH LINE  
SEE RIGHT

"CU-3" S/O 647+50  
MATCH LINE  
SEE SHEET L-28

"A" S/O 647+50  
MATCH LINE  
SEE SHEET L-28

SEE SHEET L-27

SEE SHEET L-25  
"CU-2" S/O 635+50  
MATCH LINE  
SEE SHEET L-25  
"CU-1" S/O 635+50  
MATCH LINE  
SEE SHEET L-25

**LAYOUT  
ALTERNATIVE 2B  
NO SCALE  
L-26**

PROJECT NUMBER & PHASE: UNIT 0000 PROJECT NUMBER & PHASE: 1200020052K

**FOR PSR USE ONLY**

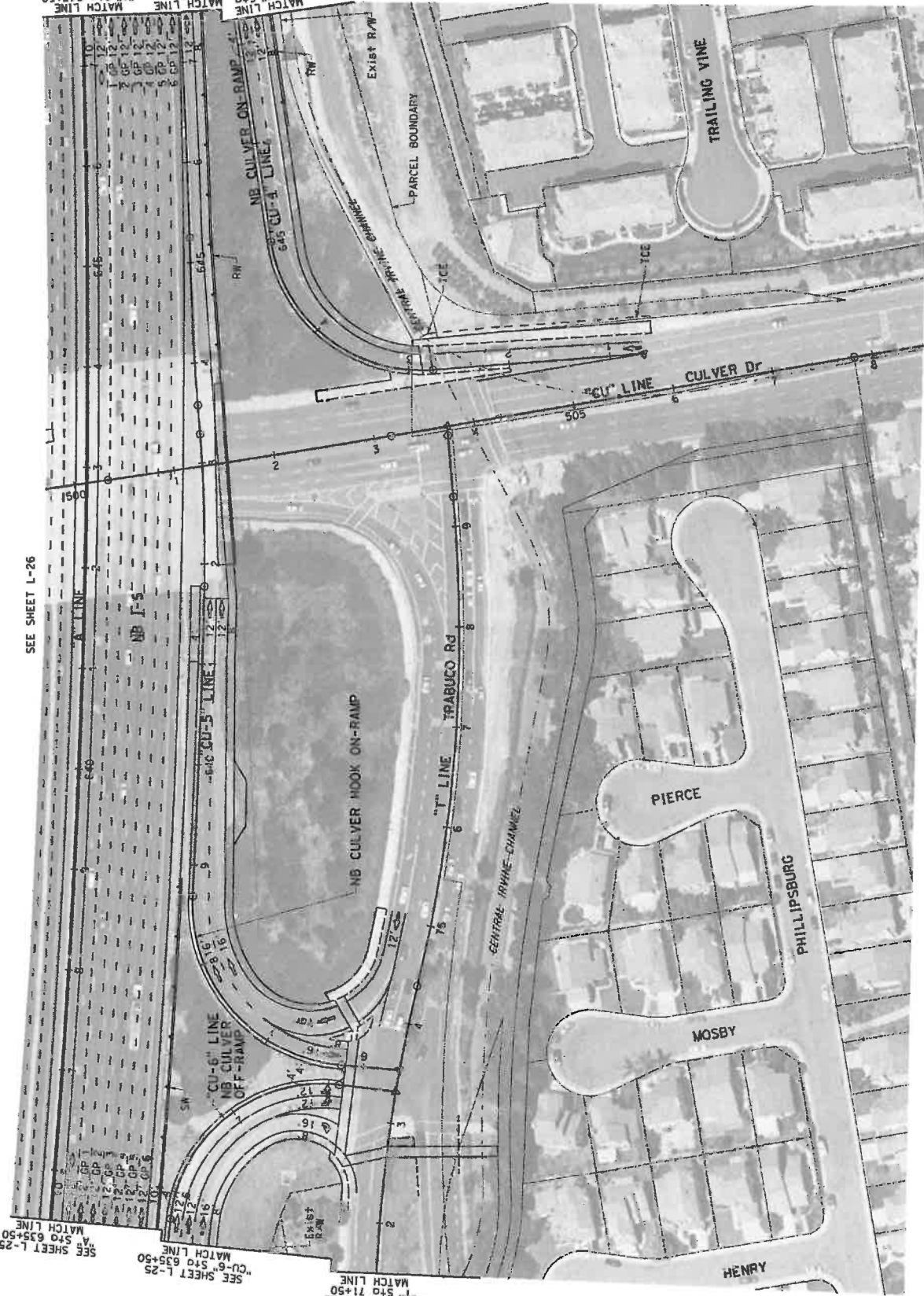
USERNAME: g3040  
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BORDER LAST REVISED: 7/2/2010

RELATIVE BORDER SCALE  
IS 1/4" INCHES

0 1 2 3

POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	070	5
ROUTE	21-3730.3	



SEE SHEET L-26

SEE SHEET L-25  
MATCH LINE  
"A" STA 635+50  
"A" STA 634+50

SEE SHEET L-25  
MATCH LINE  
"A" STA 635+50  
"A" STA 634+50

SEE SHEET L-25  
MATCH LINE  
"A" STA 71+50  
"A" STA 70+50

SEE SHEET L-28  
MATCH LINE  
"A" STA 647+50  
"A" STA 646+50

SEE SHEET L-28  
MATCH LINE  
"A" STA 647+50  
"A" STA 646+50

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
	DESIGNED BY	REVISOR	REVISION

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BORDER LAST REVISED 7/2/2010  
 USERNAME: g3900a  
 DGN FILE #2: \\sherrv114\_28\0667028-0027.dgn

RELATIVE BORDER SCALE  
 15 IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

**LAYOUT  
 ALTERNATIVE 2B  
 NO SCALE**

**L-27**



Dist	County	Route	Sheet	Total Project	Sheet Total
12	Orca	5	21.3/30.3		



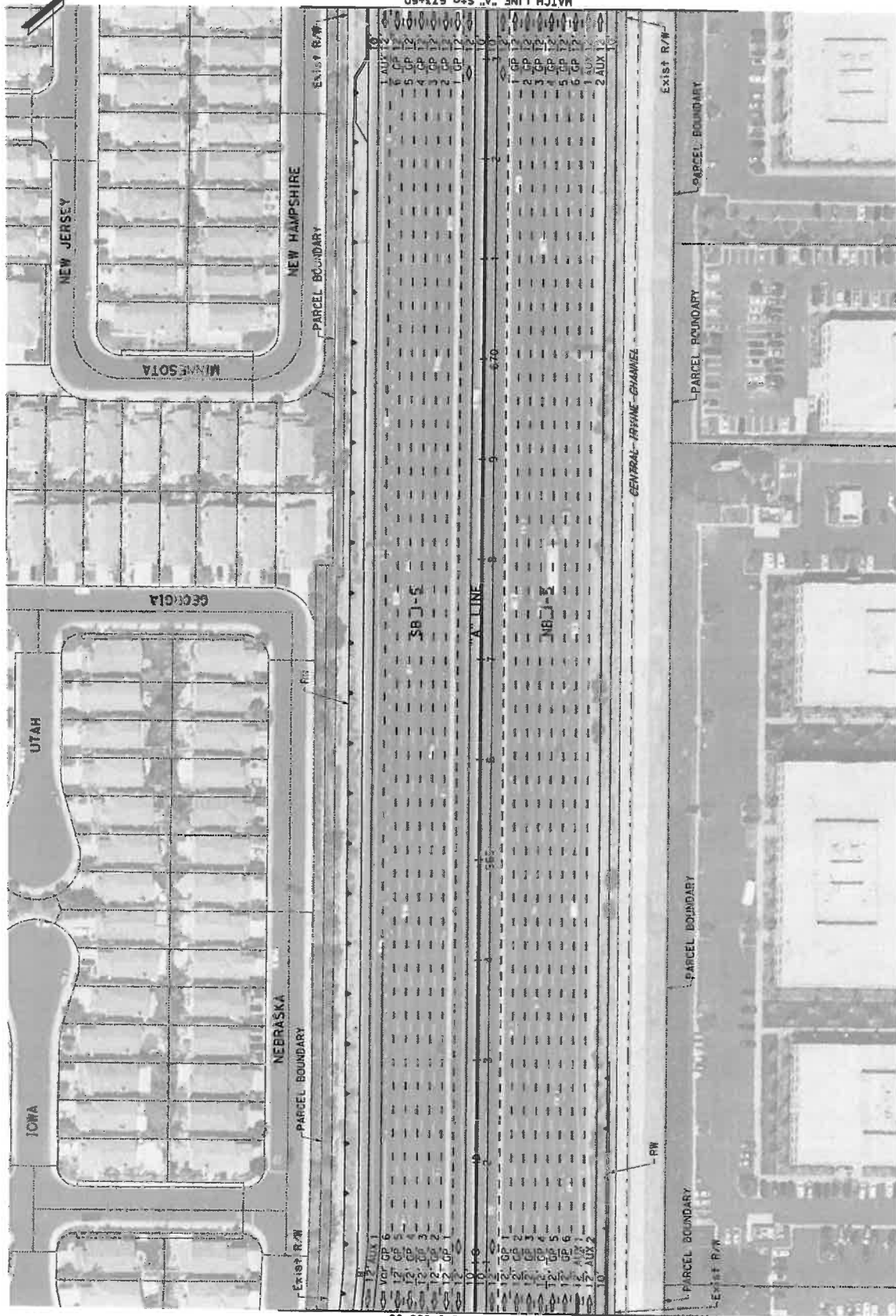
**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-28**

**FOR PSR USE ONLY**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT 0000  
RELATIVE BORDER SCALE IS IN INCHES: 0 1 2 3  
DATE PLOTTED: 11/16/2011  
LAST MODIFIED: 10/19/10 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR	DATE REVISED
BORDER LAST REVISED 7/2/2010 USERNAME: g9090 DON FILE: ...Sheet\412_B0\0687003-00208.dgn		CHECKED BY DESIGNED BY REVISOR		

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



SEE SHEET L-28  
MATCH LINE "A" S+O 660+50

SEE SHEET L-30  
MATCH LINE "A" S+O 673+50

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
		DESIGNED BY	REVISOR

**FOR PSR USE ONLY**

ORDER LAST REVISED 7/2/2010  
 USERNAME: g3g00a  
 DGN FILE: \\smev\m1\28\_0667c1b-6029.dgn

RELATIVE BORDER SCALE  
 1/8" = 1'

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

**LAYOUT  
 ALTERNATIVE 2B**  
 NO SCALE  
**L-29**

Dist	County	Route	Sheet Miles Total Project	Sheet No.	Sheet Total
12	Org	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-30**

PROJECT NUMBER & PHASE 120020052K  
UNIT 0000

RELATIVE BORDER SCALE IS IN INCHES

**FOR PSR USE ONLY**

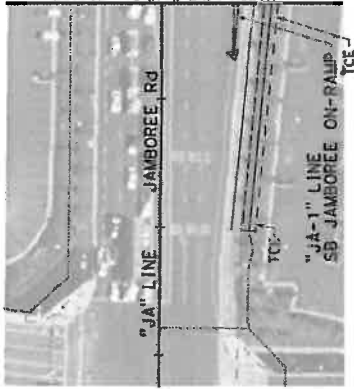
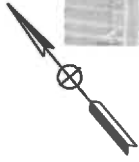
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BORDER LAST REVISED 7/2/2010

LAST REVISION DATE PLOTTED 11/16/2011 10:50:48 AM 00-00-00

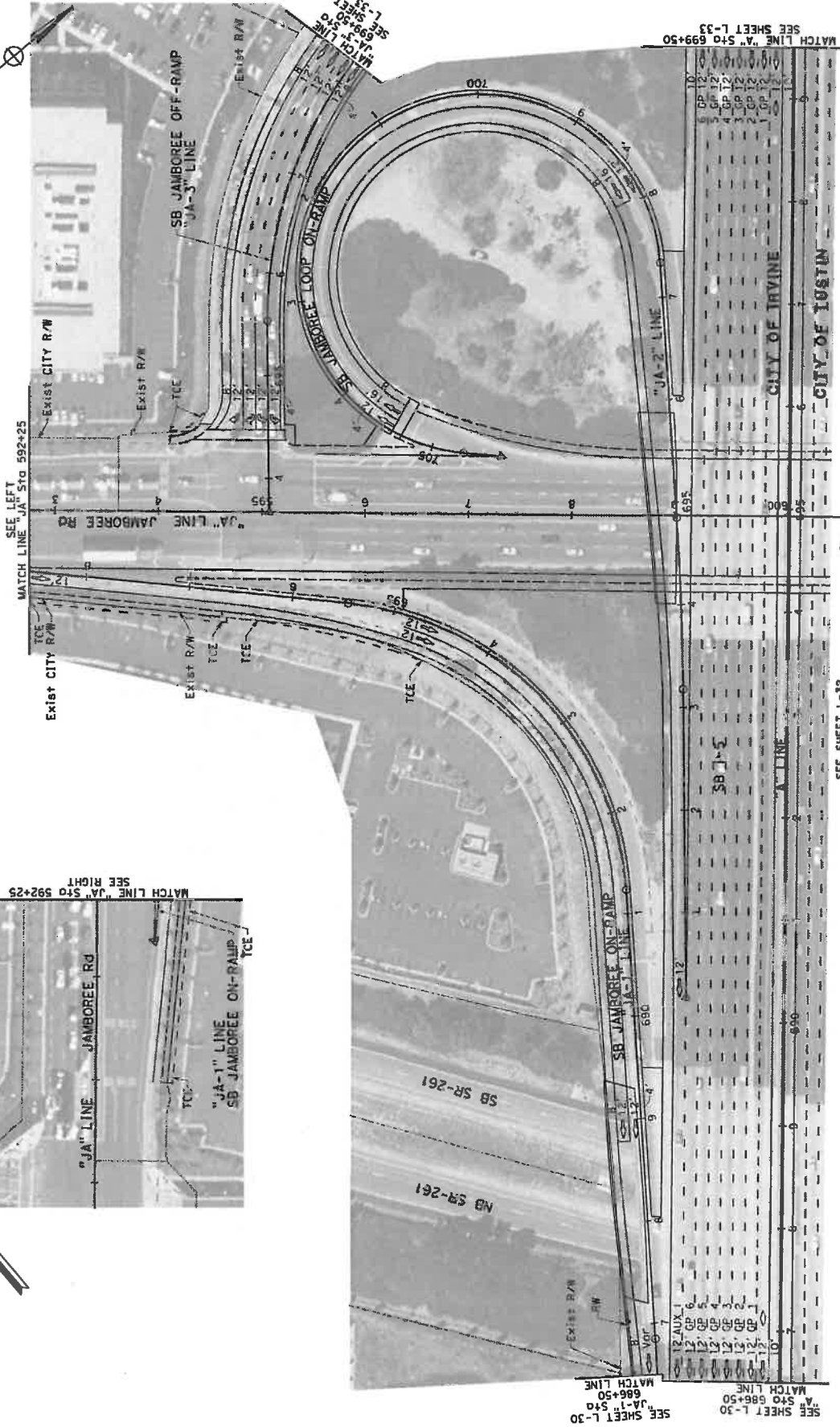
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR	DATE REVISED
		CHECKED BY		
		DESIGNED BY		

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Or	5	21.3/30.3		



SEE LEFT  
MATCH LINE "JA" STA 592+25  
SEE RIGHT

SEE LEFT  
MATCH LINE "JA" STA 592+25



SEE SHEET L-30  
"JA-1" STA  
686+50  
MATCH LINE

SEE SHEET L-30  
"A" STA 699+50  
MATCH LINE

SEE SHEET L-32

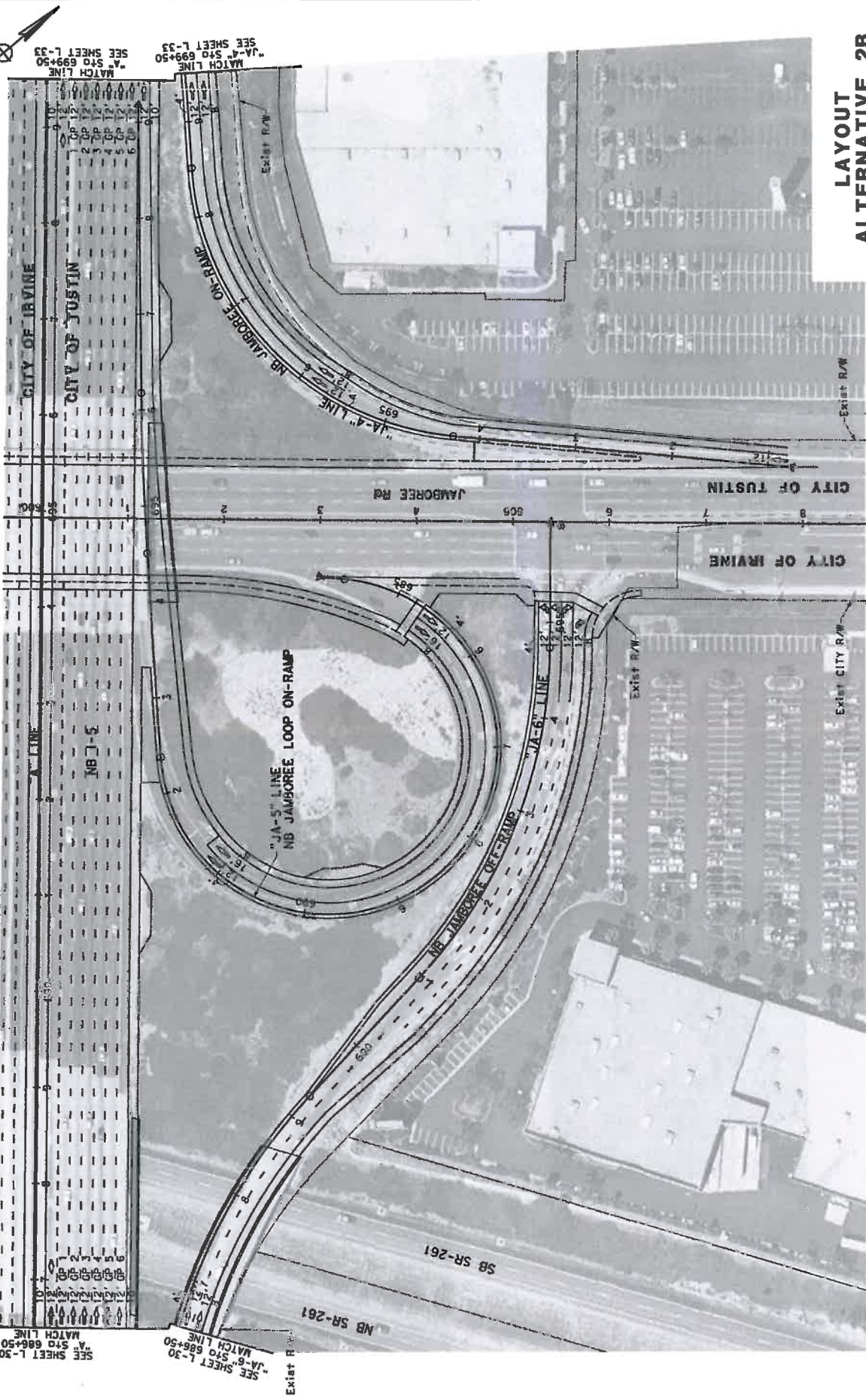
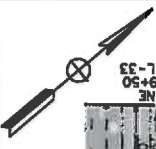
**FOR PSR USE ONLY**

**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-31**



Dist	County	Route	Sheet No.	Total Sheets
12	Orco	5	21.3/30.3	



SEE SHEET L-31

SEE SHEET L-30  
MATCH LINE  
"A" STA 686+50

SEE SHEET L-30  
MATCH LINE  
"A" STA 686+50

SEE SHEET L-33  
MATCH LINE  
"A" STA 699+50

SEE SHEET L-33  
MATCH LINE  
"A" STA 699+50

**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-32**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

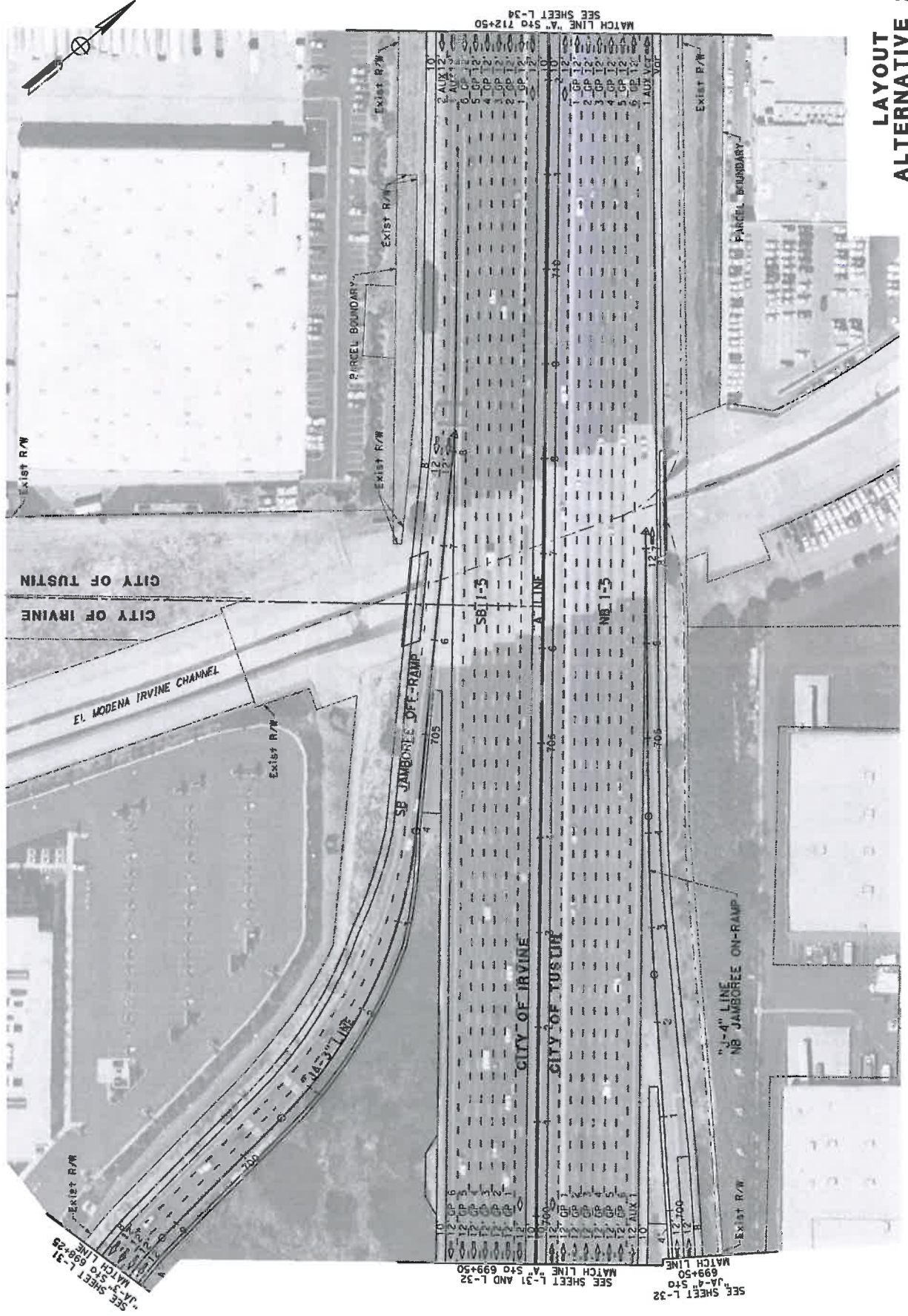
RELATIVE BORDER SCALE IS IN INCHES

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME: jg2020  
DWG FILE: ...Sheet\11\_2B\WORKBOOK-0001.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Orco	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE **L-33**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISD
	DESIGNED BY		

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010 USERNAME: jpkayo DOR FILE # ... Sheet L-33\_28064702P-e0033.dgn

RELATIVE BORDER SCALE 1/8" = 1'

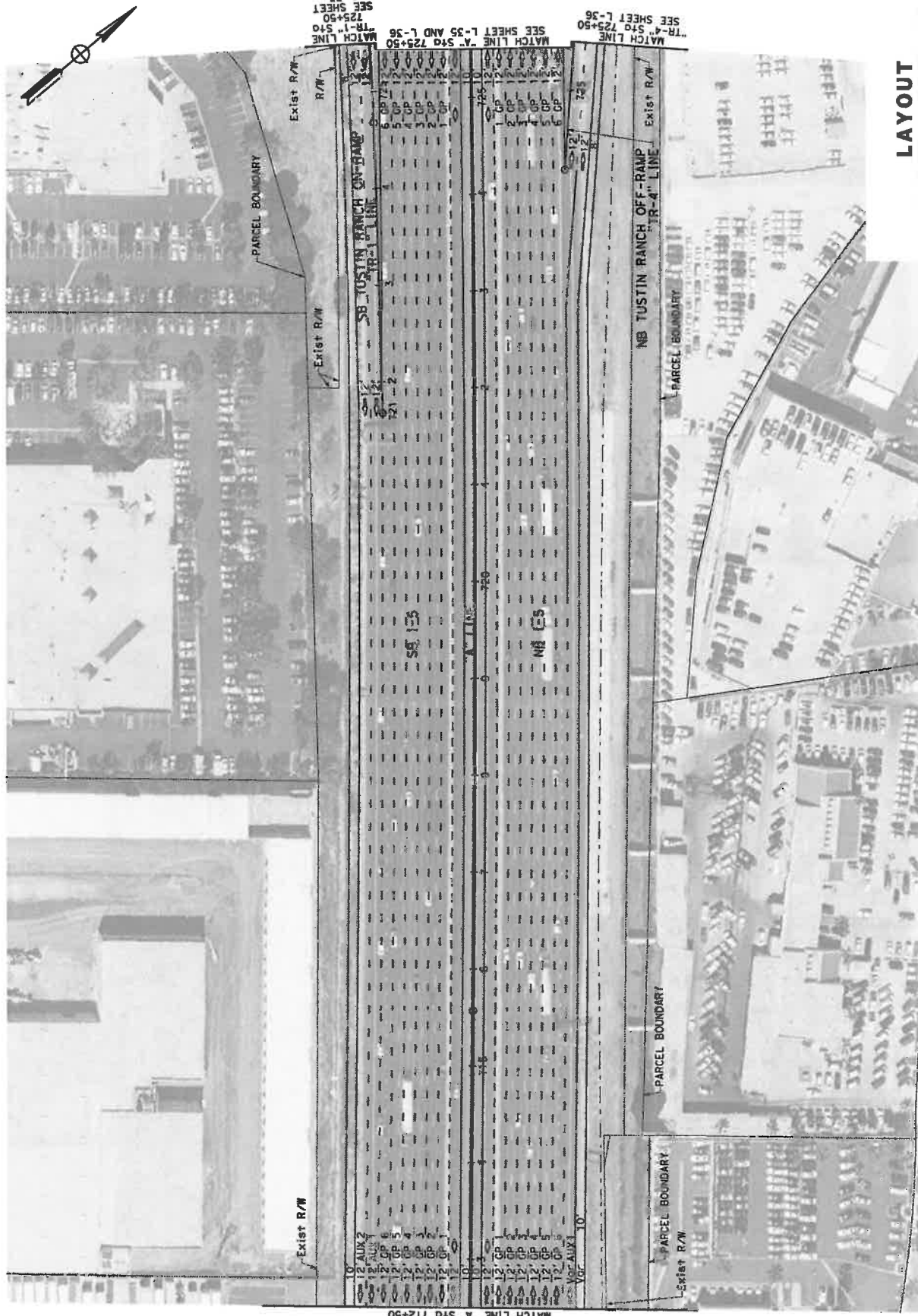
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K



DIST	COUNTY	ROUTE	BOY MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	OrC	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-34**

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
 USERNAME: g9070  
 DGN FILE: ...Sheet111\_801067028-ec034.dgn

RELATIVE BORDER SCALE  
IS IN INCHES



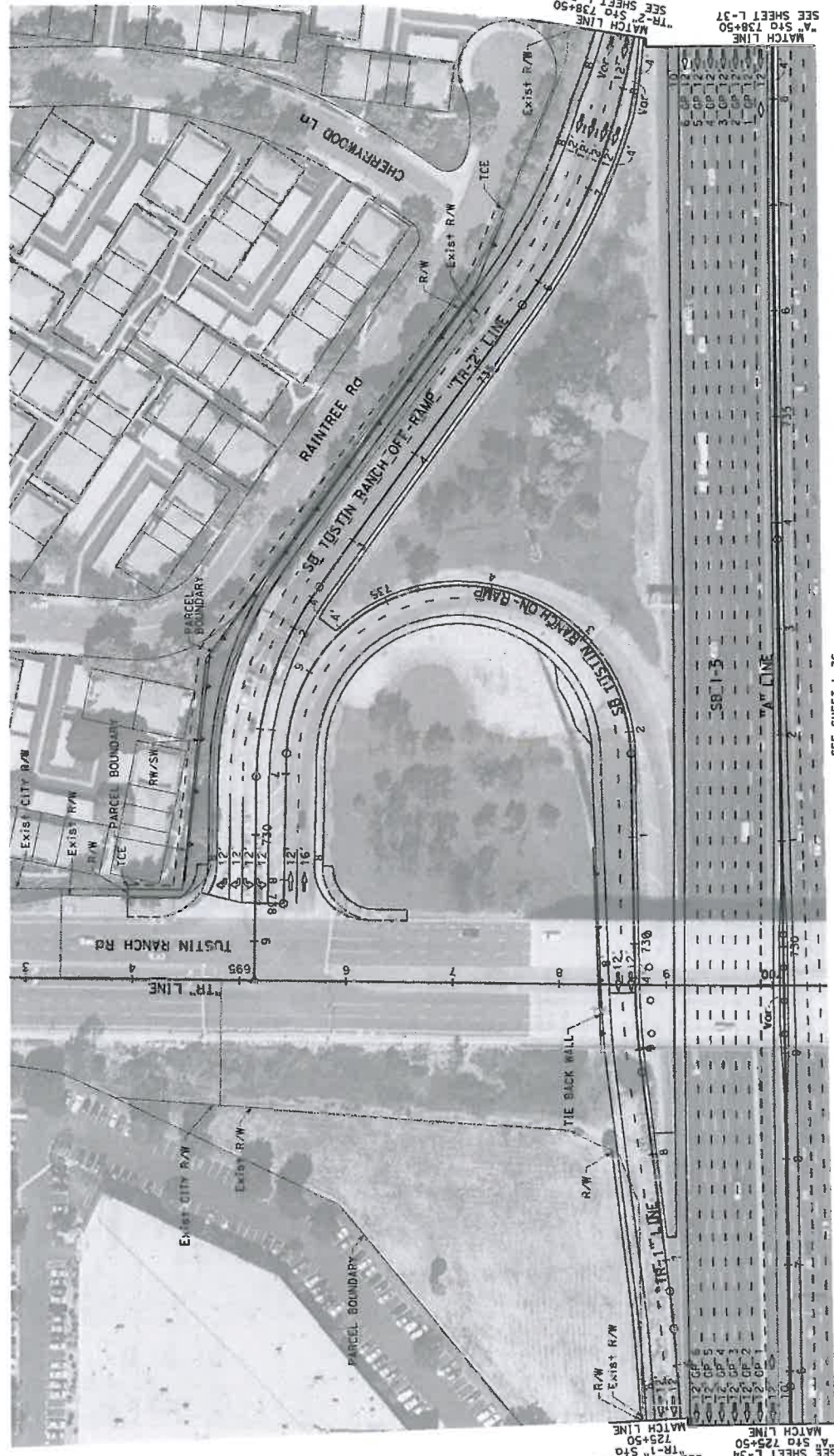
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
DATE REVISION	CHECKED BY	DATE REVISION	REVISOR

Dist	County	Route	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Oro	5	21.3730.3	



SEE SHEET L-36

**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE **L-35**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR BY

RELATIVE BORDER SCALE  
1/8" = 15' IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

00-00-00  
DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 10:51:32 AM

Dist	County	Route	Project Miles	Project No.	Sheet No.	Total Sheets
12	Orca	5	21.3/30.3			

SEE SHEET L-35

SEE SHEET L-37  
"TR-3" S+D 738+50  
MATCH LINE

SEE SHEET L-34  
"TR-4" S+D 725+50  
MATCH LINE

SEE SHEET L-36  
"TR-5" S+D 730+50  
MATCH LINE

SEE SHEET L-38  
"TR-6" S+D 735+50  
MATCH LINE

SEE SHEET L-39  
"TR-7" S+D 740+50  
MATCH LINE

SEE SHEET L-40  
"TR-8" S+D 745+50  
MATCH LINE

SEE SHEET L-41  
"TR-9" S+D 750+50  
MATCH LINE

SEE SHEET L-42  
"TR-10" S+D 755+50  
MATCH LINE

SEE SHEET L-43  
"TR-11" S+D 760+50  
MATCH LINE

SEE SHEET L-44  
"TR-12" S+D 765+50  
MATCH LINE

SEE SHEET L-45  
"TR-13" S+D 770+50  
MATCH LINE

SEE SHEET L-46  
"TR-14" S+D 775+50  
MATCH LINE

SEE SHEET L-47  
"TR-15" S+D 780+50  
MATCH LINE

SEE SHEET L-48  
"TR-16" S+D 785+50  
MATCH LINE

SEE SHEET L-49  
"TR-17" S+D 790+50  
MATCH LINE

SEE SHEET L-50  
"TR-18" S+D 795+50  
MATCH LINE

SEE SHEET L-51  
"TR-19" S+D 800+50  
MATCH LINE

SEE SHEET L-52  
"TR-20" S+D 805+50  
MATCH LINE

SEE SHEET L-53  
"TR-21" S+D 810+50  
MATCH LINE

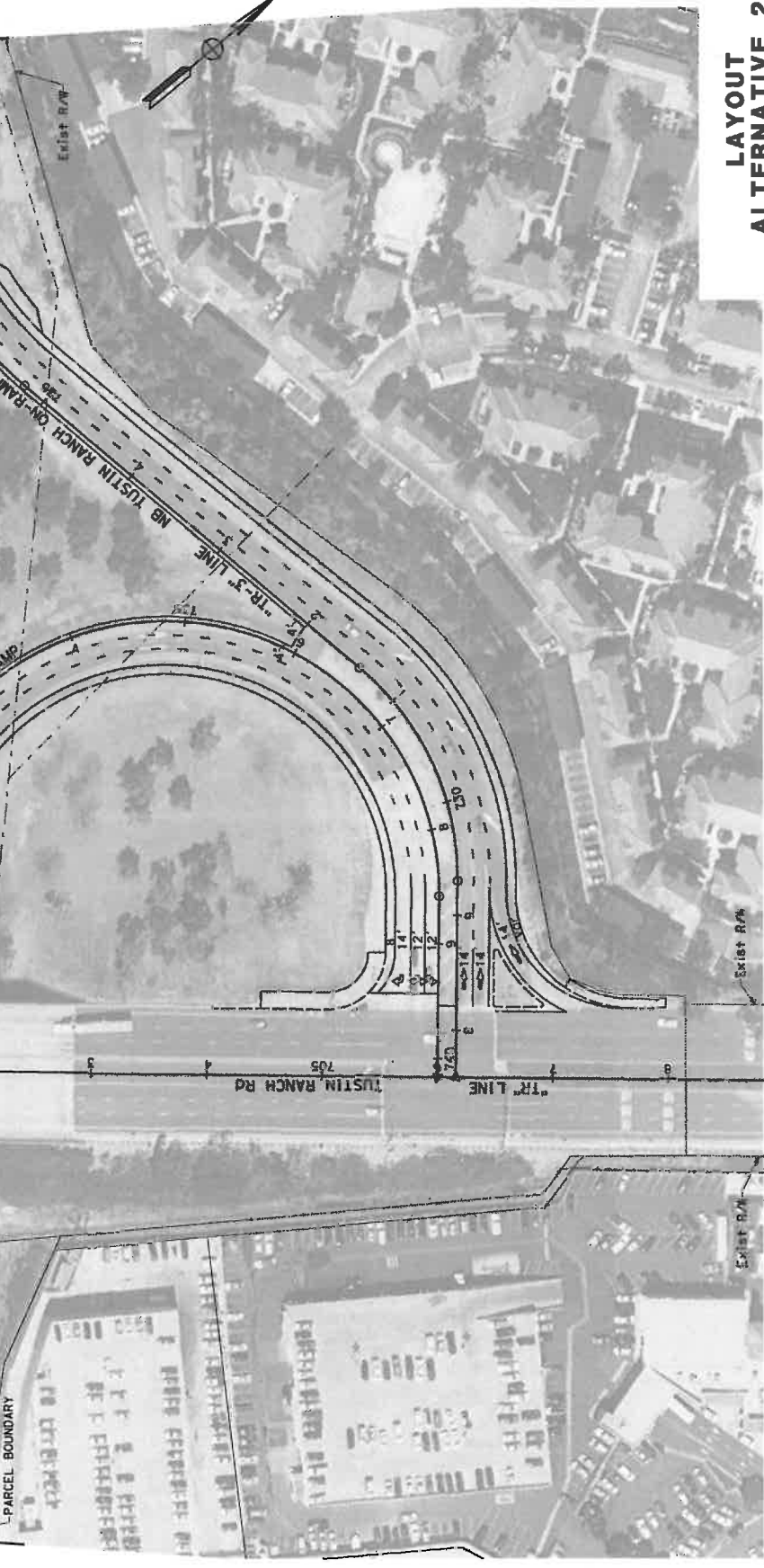
SEE SHEET L-54  
"TR-22" S+D 815+50  
MATCH LINE

SEE SHEET L-55  
"TR-23" S+D 820+50  
MATCH LINE

SEE SHEET L-56  
"TR-24" S+D 825+50  
MATCH LINE

SEE SHEET L-57  
"TR-25" S+D 830+50  
MATCH LINE

SEE SHEET L-58  
"TR-26" S+D 835+50  
MATCH LINE



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE**

**L-36**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1/8" = 100'

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME: s390790  
DWG FILE: ...\\Share1\A11\_2B\060702B-ep036.dgn

00-00-00 DATE PLOTTED: 11/16/2011 10:51:41 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT: FUNCTIONAL SUPERVISOR

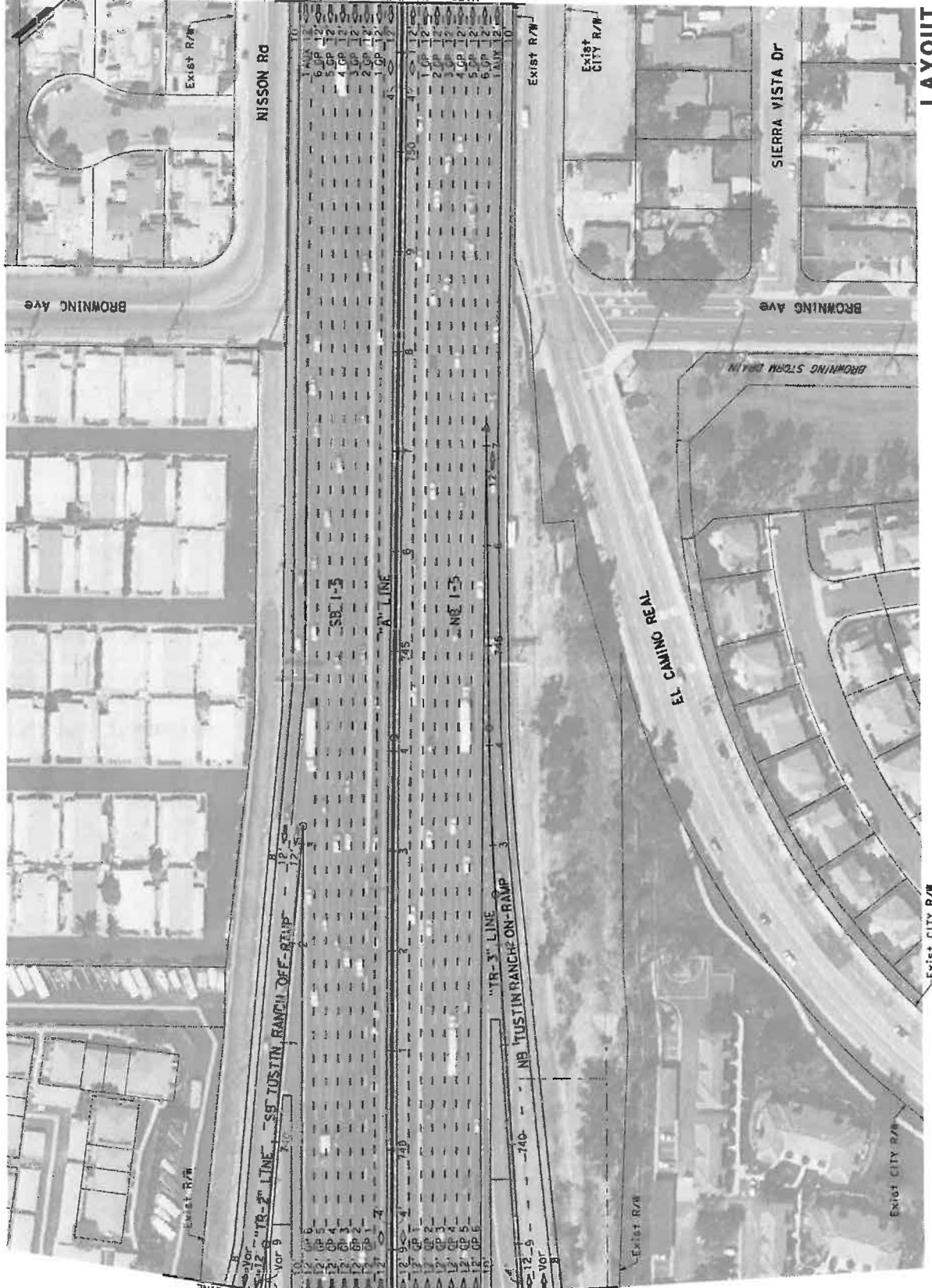
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DESIGNED BY: \_\_\_\_\_

REVISOR: \_\_\_\_\_  
DATE REVISED: \_\_\_\_\_





DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO.
12	Oro	5	21.3/30.3	



**LAYOUT ALTERNATIVE 2B**  
NO SCALE  
**L-37**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000



RELATIVE BORDER SCALE 1/8" = 15' IN INCHES

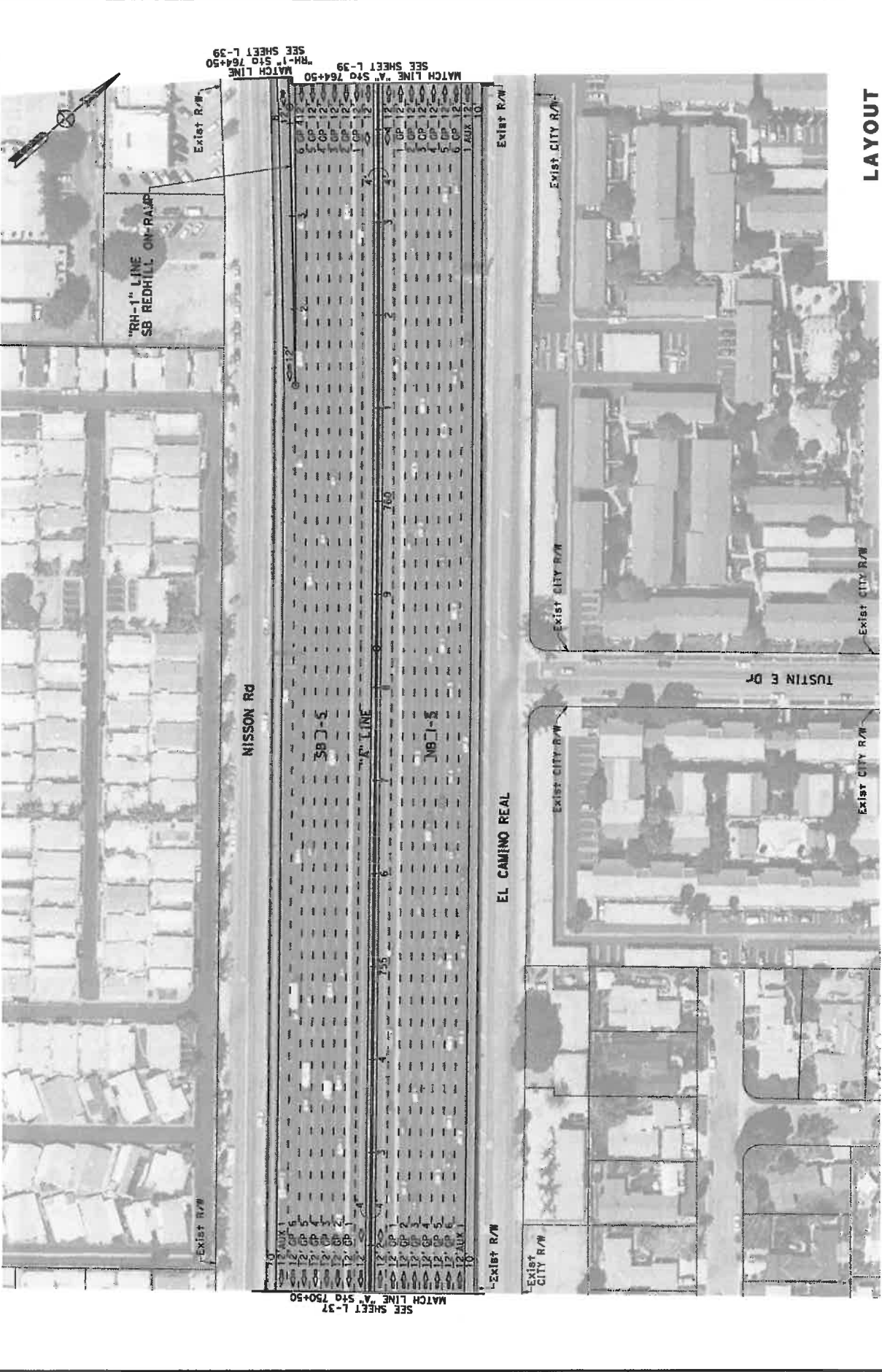
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**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
		DESIGNED BY	

Dist	County	Route	Sheet Titles	Sheet No.	Total Sheets
12	Ord	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE  
L-38**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE IS IN INCHES: 0 1 2 3

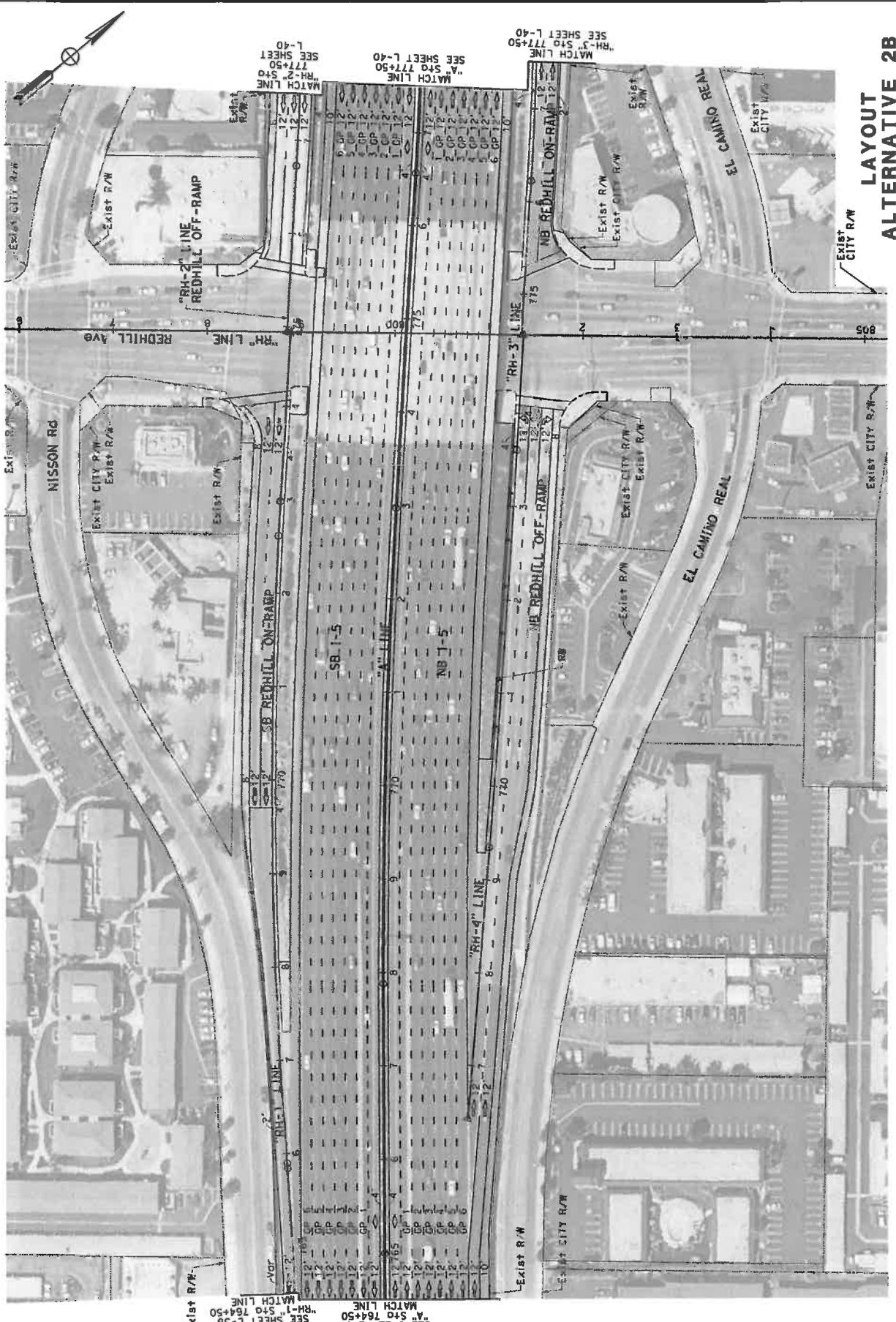
**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME: 09020  
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DATE PLOTTED: 11/16/2011 10:51:58 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
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DATE	DESIGNER	CHECKED BY	DATE RE/ISED
12	Orto	5	21.3/30.3
POST MILES TOTAL PROJECT		SHEET TOTAL SHEETS	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE

**FOR PSR USE ONLY**

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

L-39



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR

DESIGNED BY

CHECKED BY

REVISOR

DATE RE/ISED

USBRNAME 11-20-00

FOR FILE #3 ... \sheet\11\_20\_00\6702b-e0039.dgn

BORDER LAST REVISED 7/2/2010

RELATIVE BORDER SCALE

1/8" = 1'

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

L-39

NO SCALE

ALTERNATIVE 2B

LAYOUT

L-39

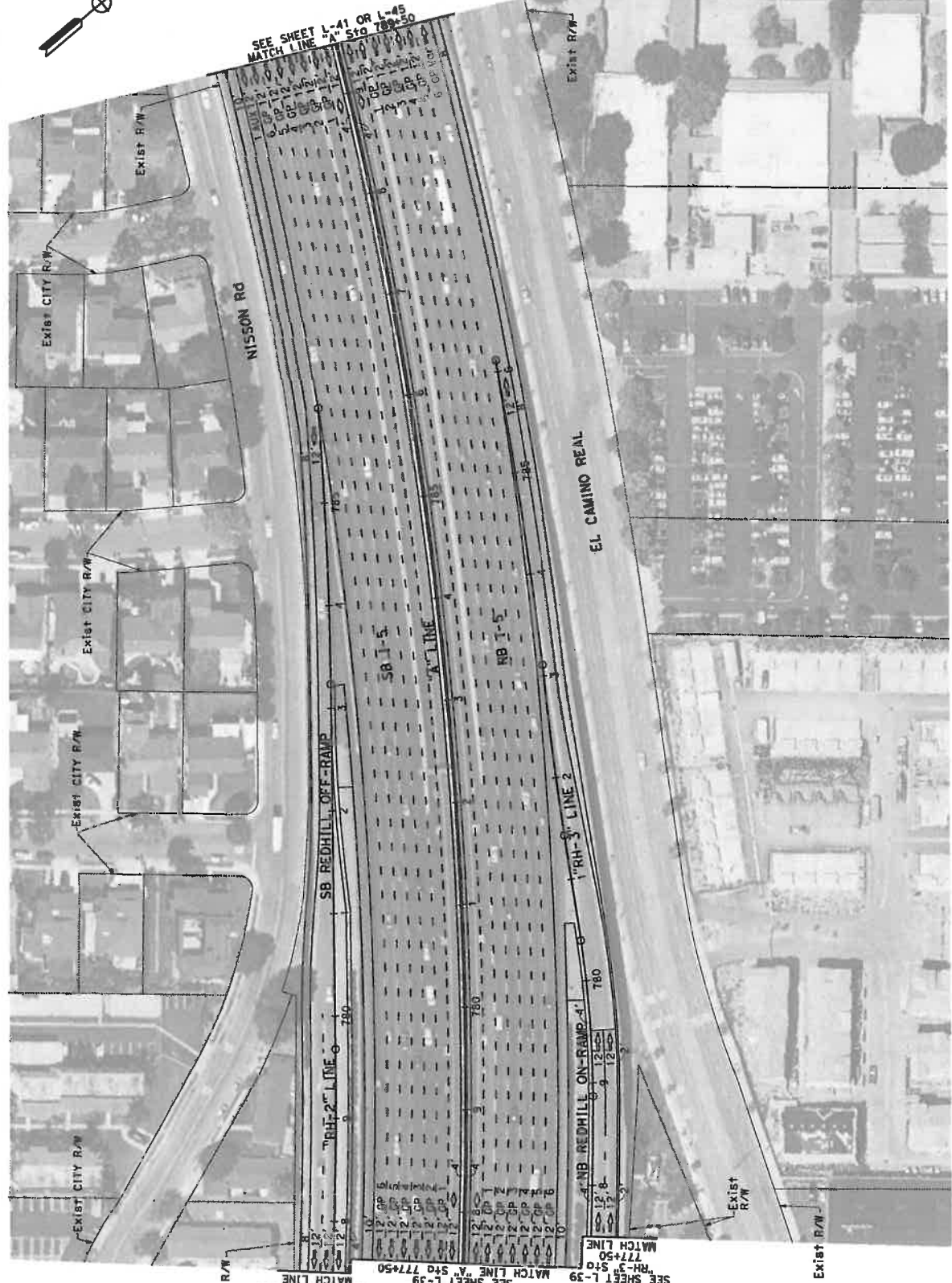
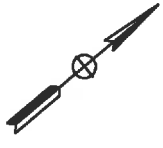
DATE PLOTTED => 11/16/2011

TIME PLOTTED => 10:52:07 AM

00-00-00



Dist	County	Route	Sheet Title	Project No.	Sheet No.
12	Org	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-40**

PROJECT NUMBER & PHASE  
UNIT 0000

1200020052K

RELATIVE BORDER SCALE  
IS IN INCHES

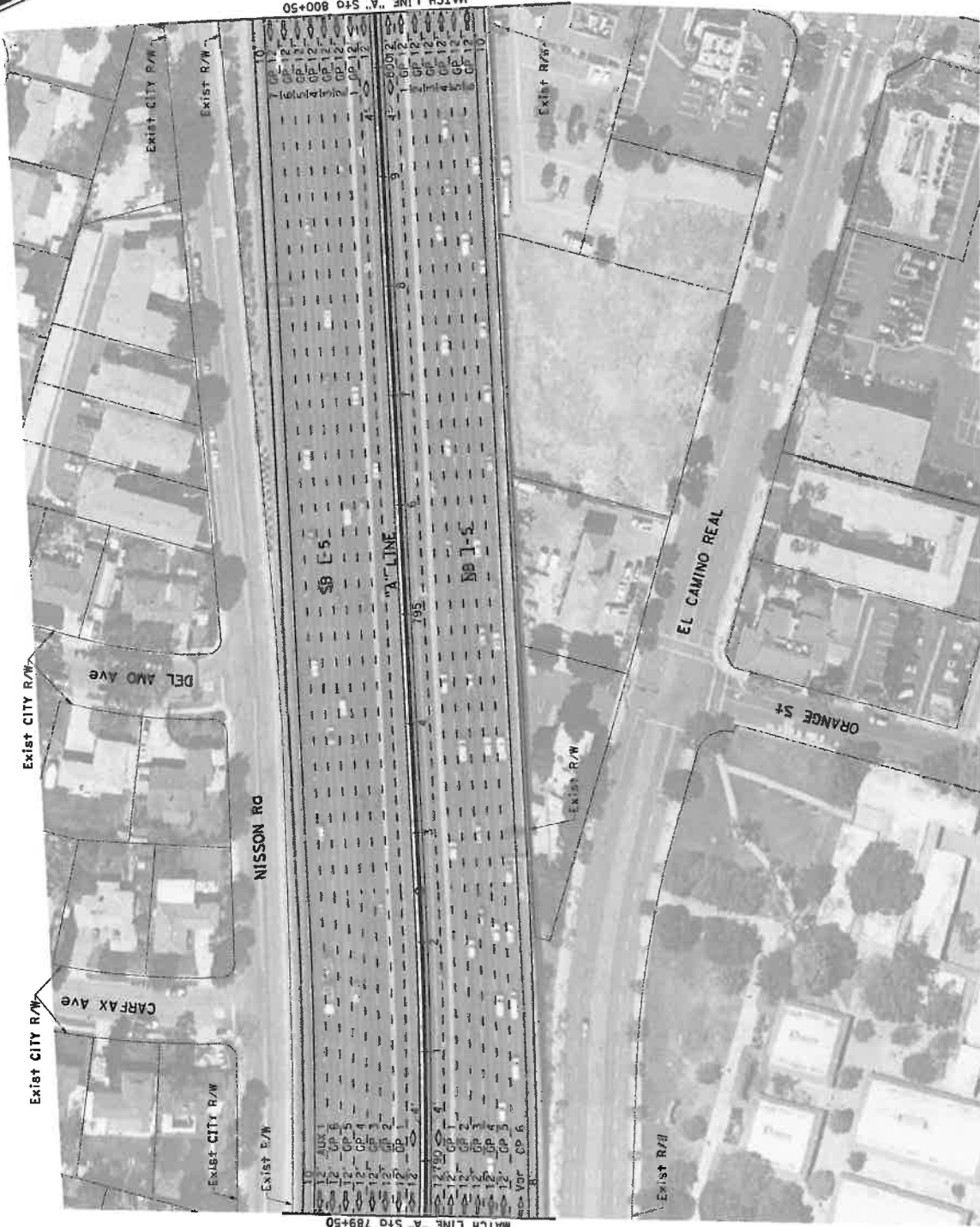
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**FOR PSR USE ONLY**

00-00-00 DATE PLOTTED: 11/18/2011  
11:52:17 AM

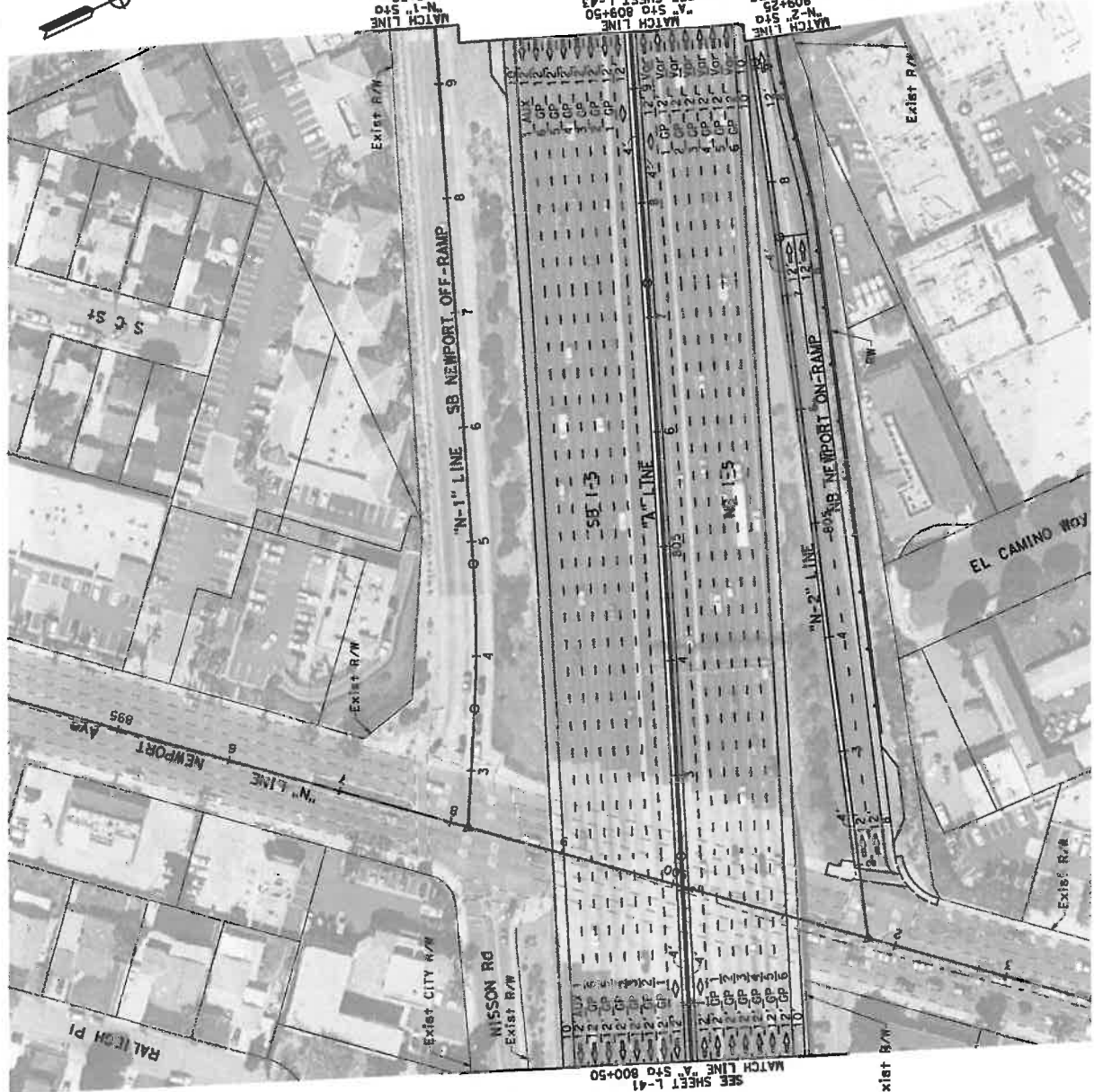
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
--	----------------------------------	---------------	-------------	------------	--------------	---------

JOB#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orco	5	21.3/30.3		



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-41**

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Ord	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE  
**L-42**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE IS IN INCHES

BORDER LAST REVISED 7/2/2010  
 USERNAME: g30700  
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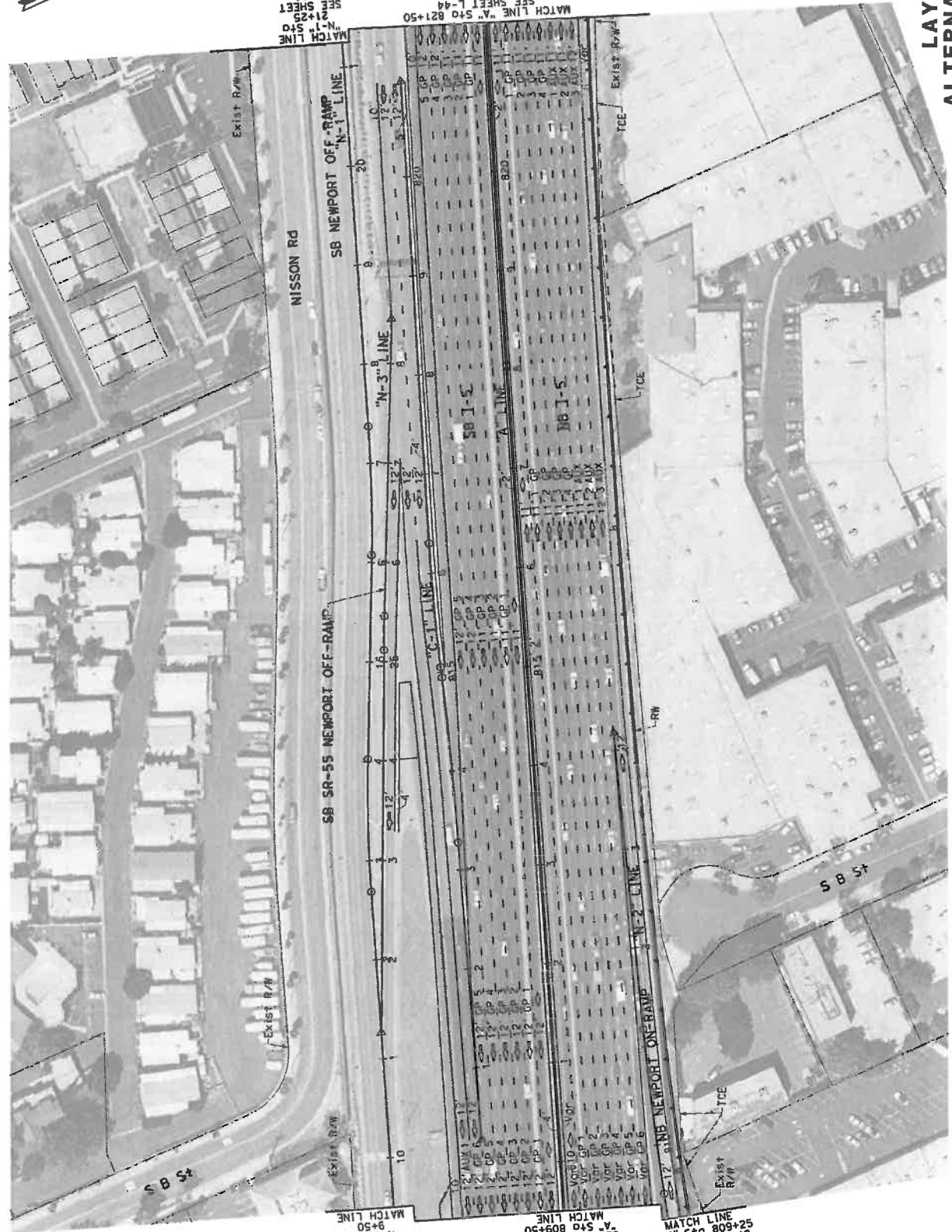
**FOR PSR USE ONLY**

00-00-00 DATE PLOTTED: 11/16/2011 TIME PLOTTED: 10:52:34 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED



DBST COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12 Oro	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B**  
NO SCALE **L-43**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR

RELATIVE BORDER SCALE  
1/8" = 10'

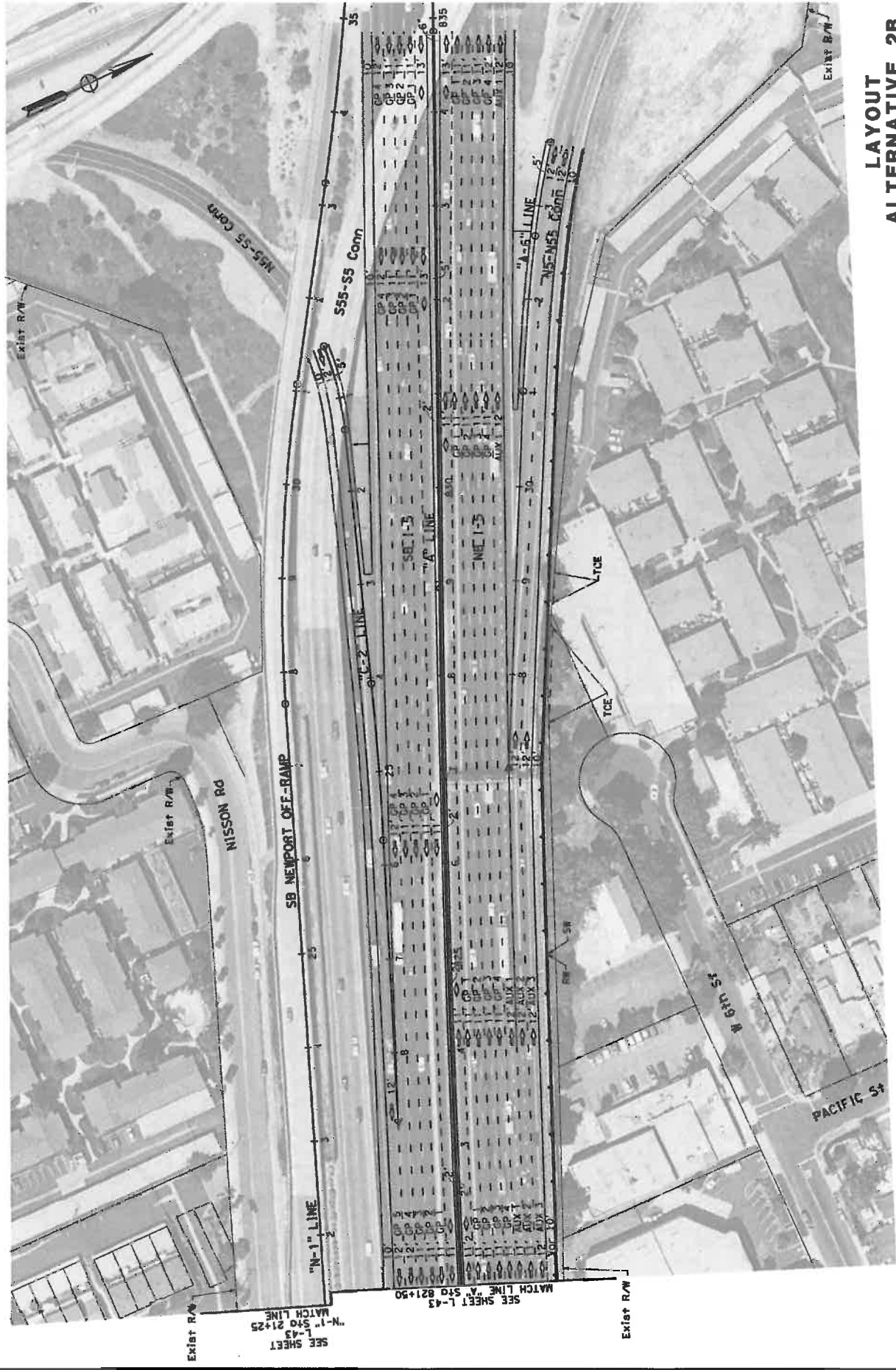
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K



Dist	County	Route	Project	Sheet No.
12	Orl	5	21.3/30.3	



**LAYOUT  
ALTERNATIVE 2B  
NO SCALE  
L-44**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISY

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME g3g300  
DGN FILE ... \Shwrt\11.25\0657028-wd44.dgn

RELATIVE BORDER SCALE  
IS IN INCHES

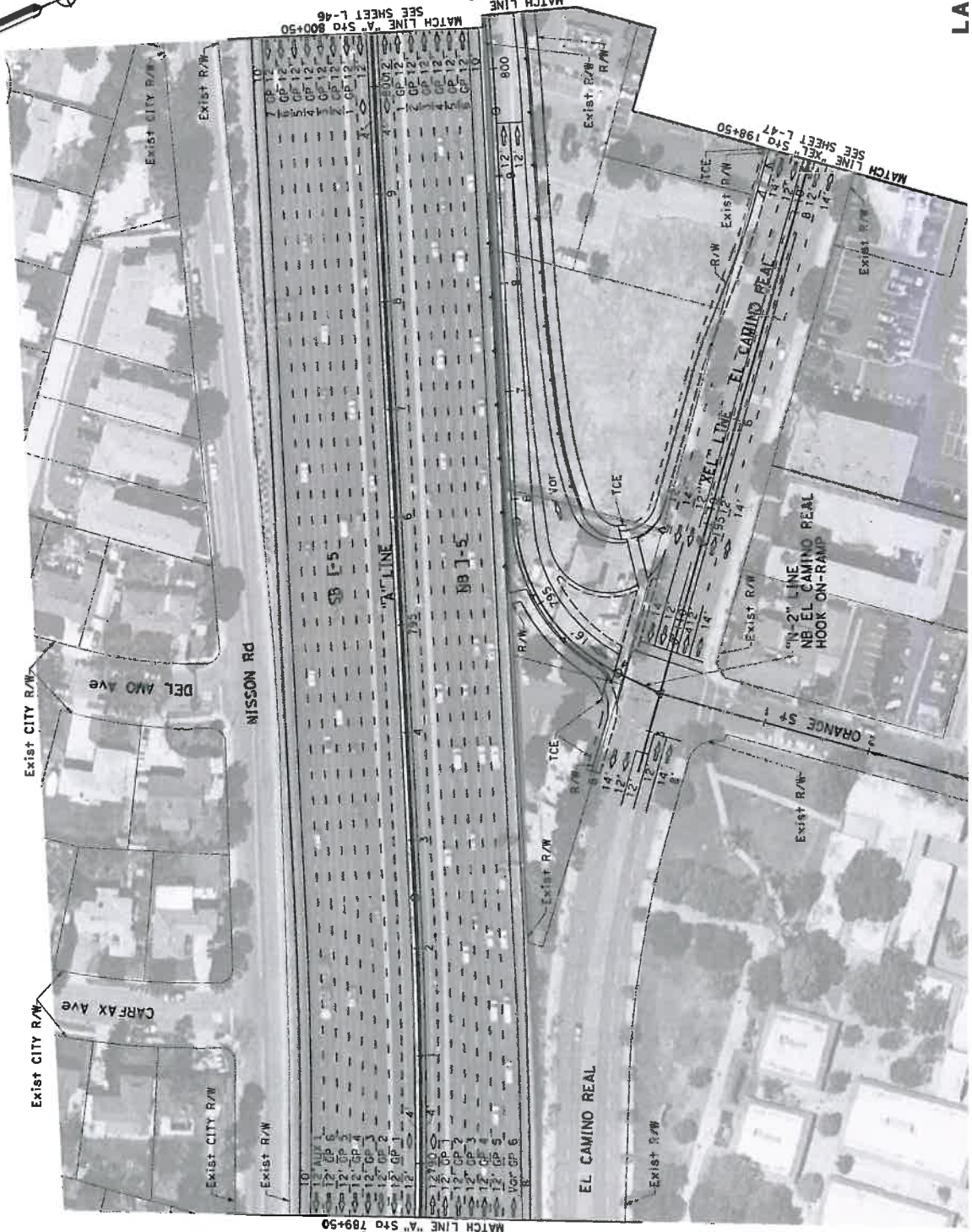


UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Oro	5	21.3/30.3		



**LAYOUT  
(OPTION 2)  
ALTERNATIVE 2B**  
NO SCALE  
**L-45**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION | CONSULTANT FUNCTION: L SUPERVISOR | CALCULATED BY: | CHECKED BY: | DATE REVISED: | REVISIONS: | PROJECT NUMBER & PHASE: 1200020052K | UNIT 0000 | RELATIVE BORDER SCALE: 1" = 15' IN INCHES | BORDER LAST REVISED: 7/2/2010 | USERNAME: psr000 | DON TITLE: ... | DATE PLOTTED: 11/16/2011 | TIME PLOTTED: 10:52:59 AM



DIST	COUNTY	ROUTE	DATE	TOTAL SHEETS
12	ORG	5	21.3/30.3	

**LAYOUT  
(OPTION 2)  
ALTERNATIVE 2B**  
NO SCALE  
**L-46**

PROJECT NUMBER & PHASE  
1200020052K

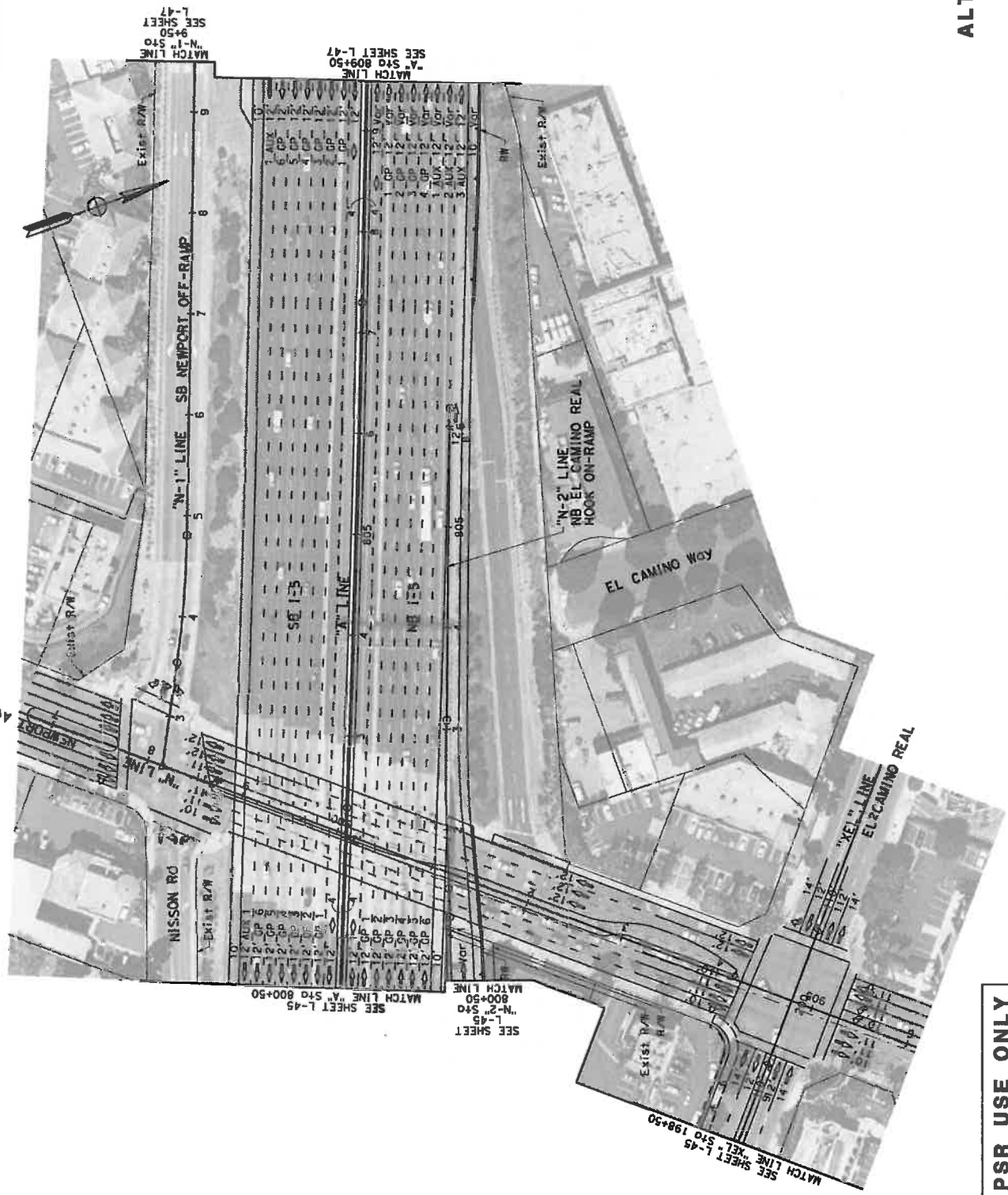
UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

USERNAME: gncvca  
DON FILE: ...\\Server1\1\_2B\062708-00016.dgn

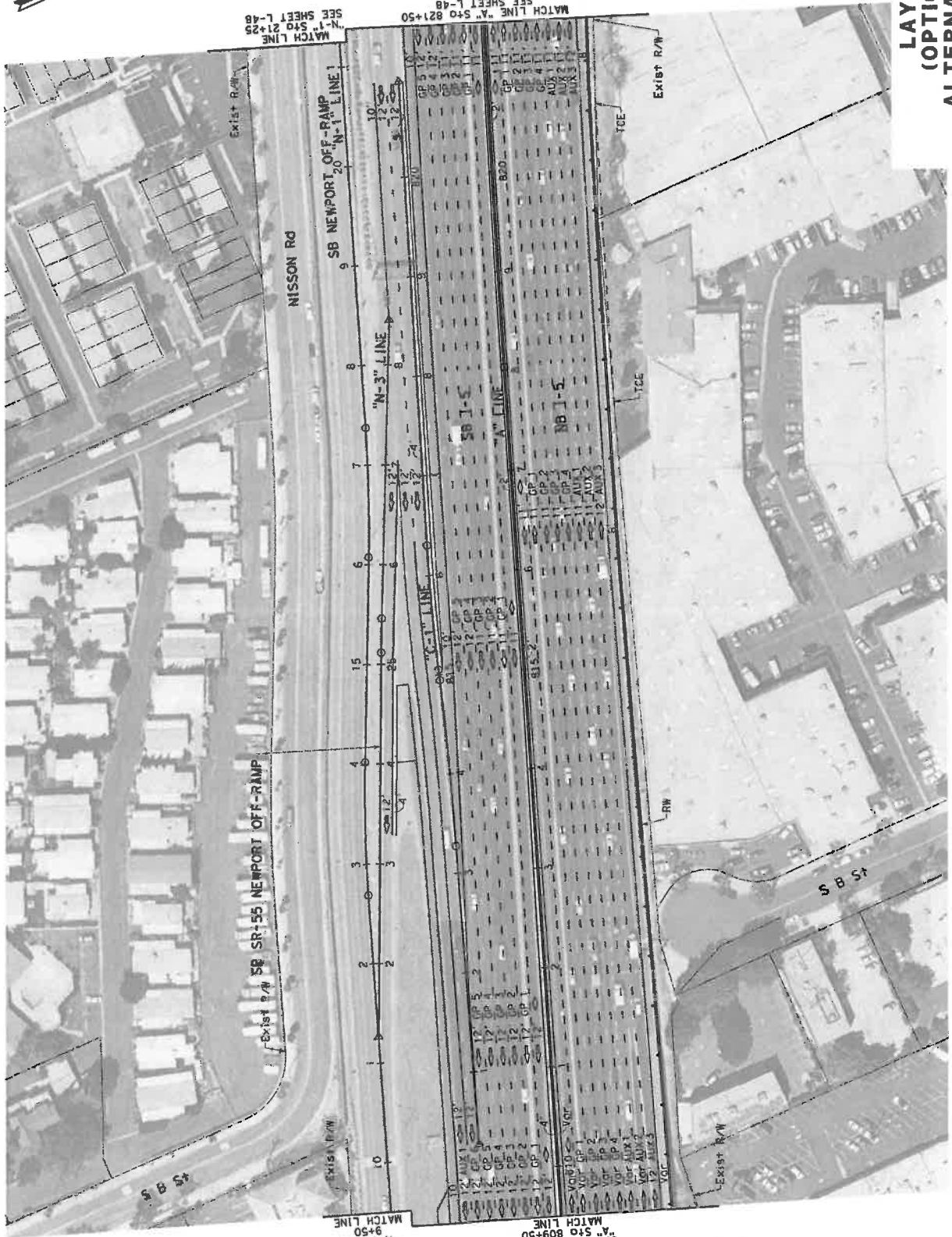
BORDER LAST REVISED 7/2/2010

**FOR PSR USE ONLY**



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR
		DATE REVISED	
		CHECKED BY	
		REVISIONS	

DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Oro	5	21.3/30.3		



**LAYOUT  
(OPTION 2)  
ALTERNATIVE 2B**  
NO SCALE  
L-47

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME: s30aya  
JOB FILE # ... \Sheet\11\_25\068702B-0007.dgn

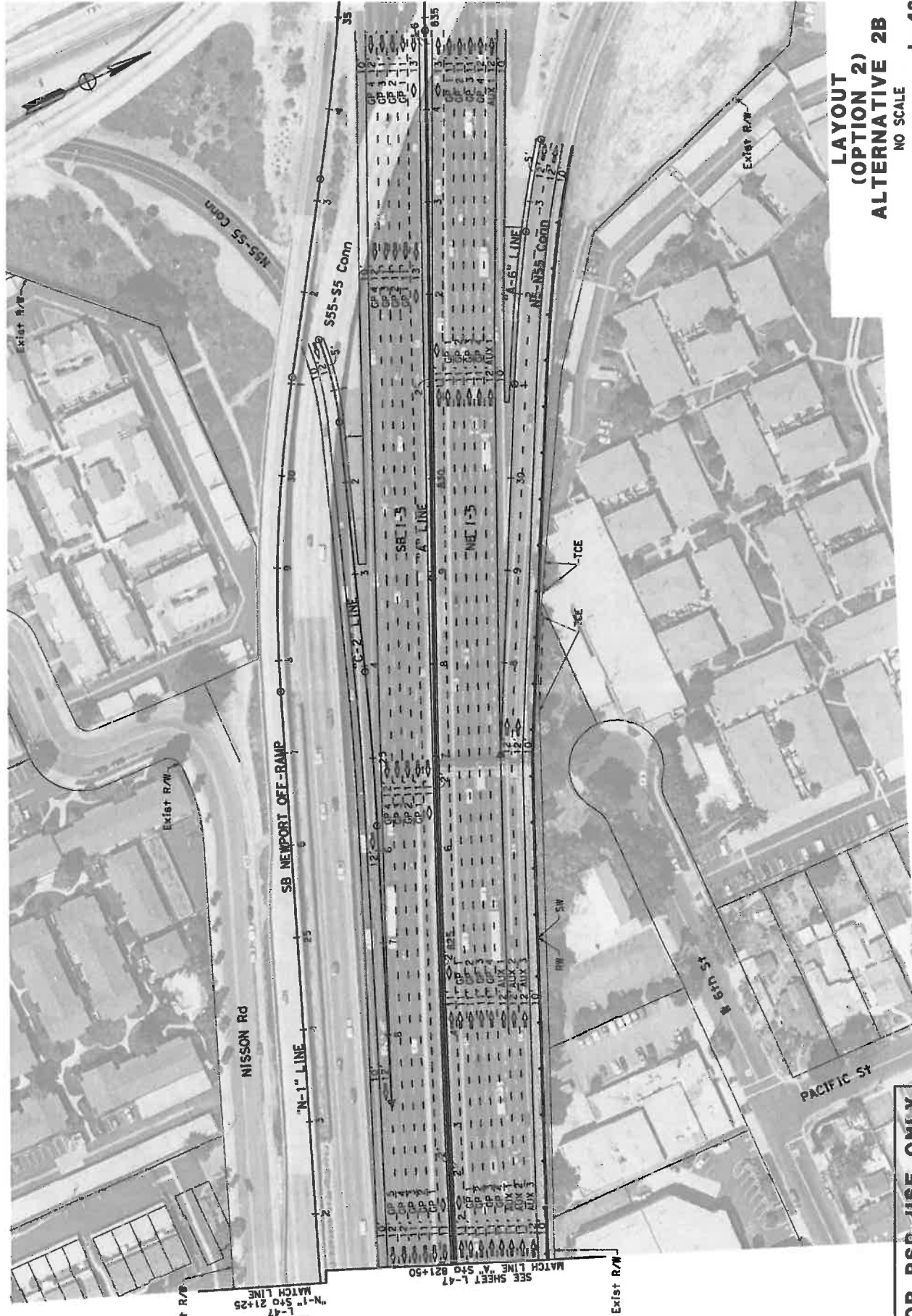
RELATIVE BORDER SCALE  
1" = 100'

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

Dist	County	Route	Post Miles	Sheet	Total
12	Orca	5	21.3/30.3	30	30



LAYOUT  
(OPTION 2)  
ALTERNATIVE 2B  
NO SCALE  
L-48

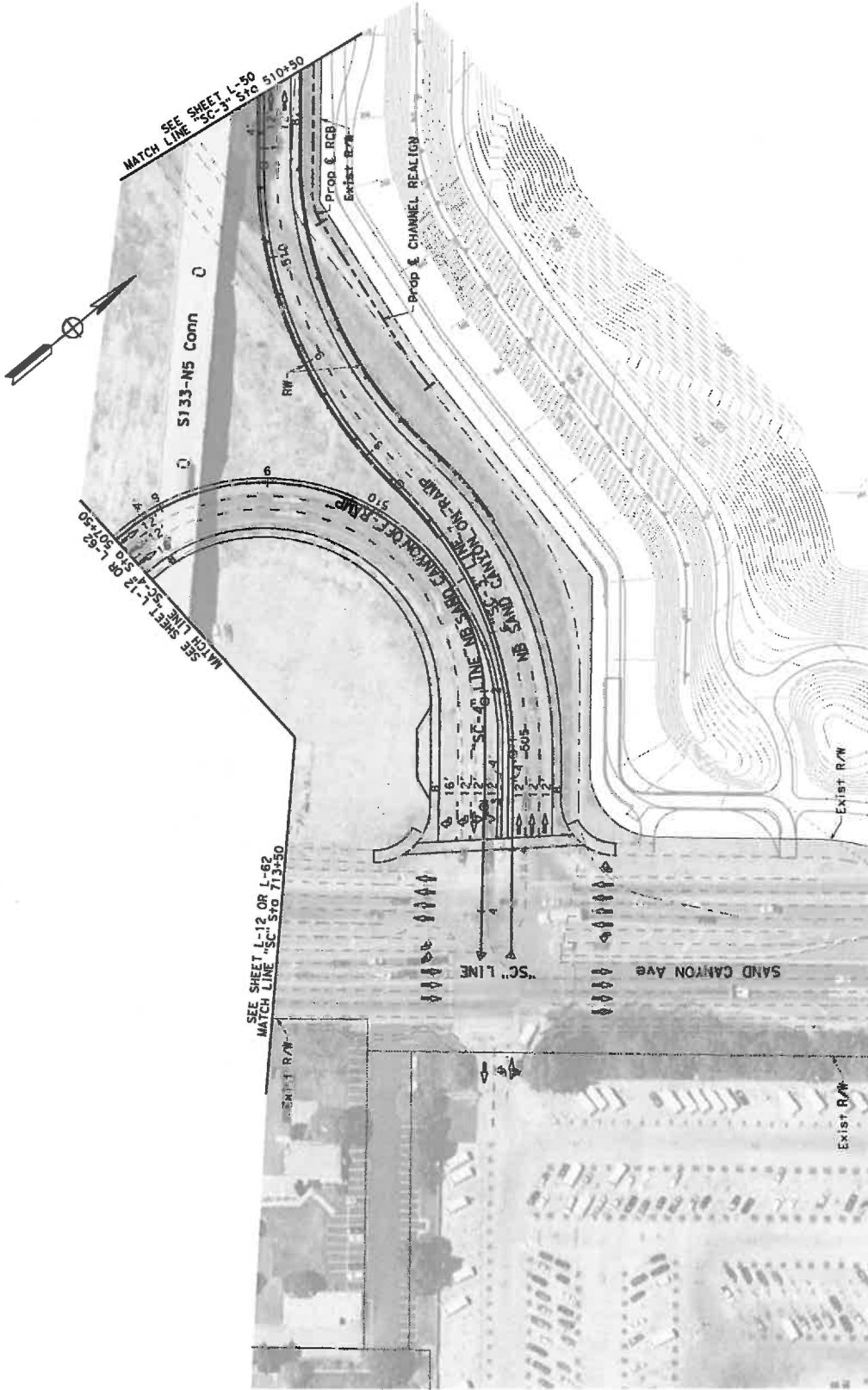
PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1" = 100'

**FOR PSR USE ONLY**

DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:53:23 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	DATE REVISED

DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Oro	5	21.3/30.3		



**LAYOUT  
(OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE

**L-49**

PROJECT NUMBER & PHASE  
UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:53:31 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTION: L SUPERVISOR

CHECKED BY

DESIGNED BY

REVISOR

DATE RE-USED

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTION: L SUPERVISOR

CHECKED BY

DESIGNED BY

REVISOR

DATE RE-USED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTION: L SUPERVISOR

DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:53:31 AM

PROJECT NUMBER & PHASE  
UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

L-49

ALTERNATIVE 2B  
(OPTION 3)  
LAYOUT

NO SCALE

PROJECT NUMBER & PHASE  
UNIT 0000

RELATIVE BORDER SCALE  
IS IN INCHES

DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:53:31 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTION: L SUPERVISOR

CHECKED BY

DESIGNED BY

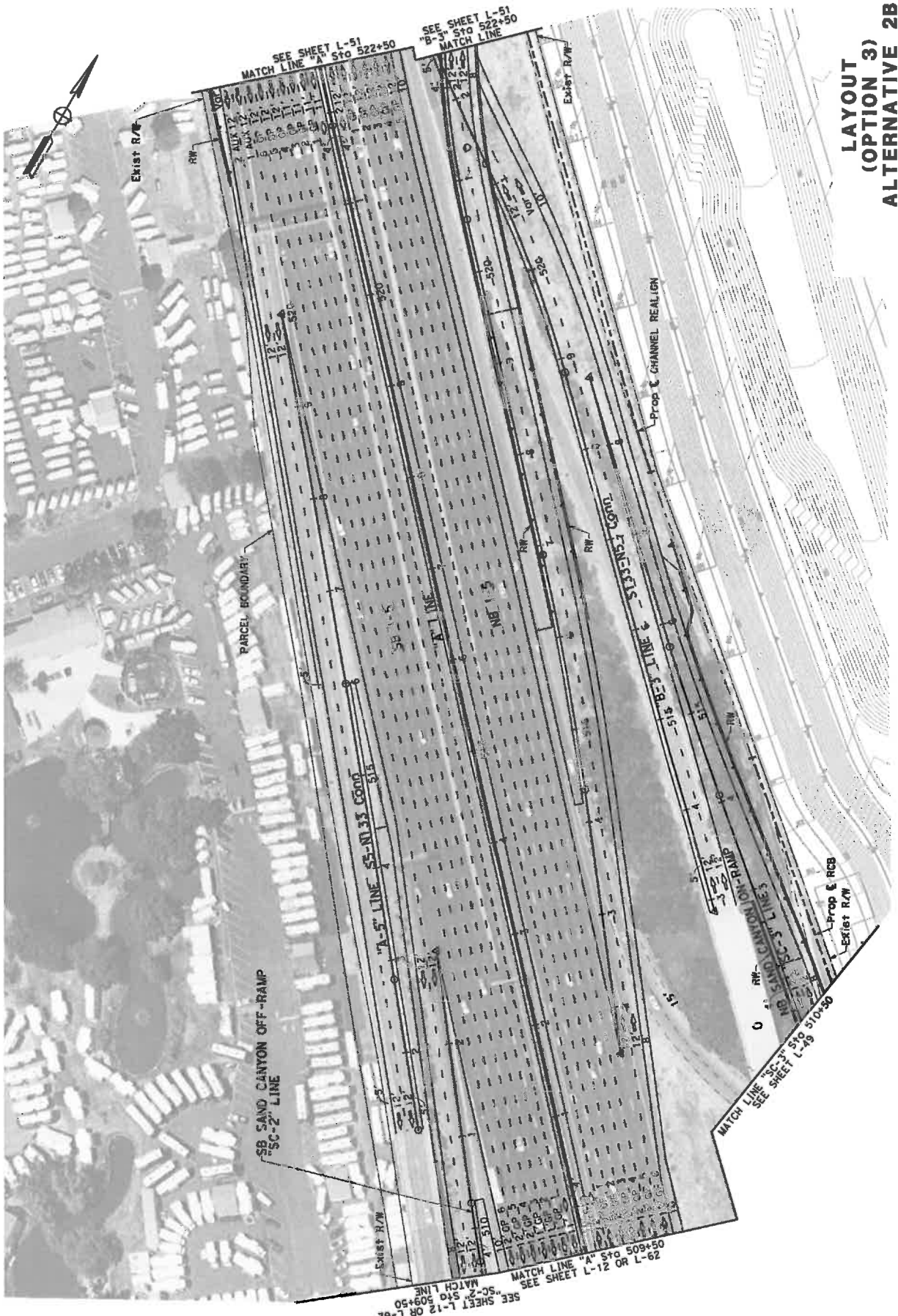
REVISOR

DATE RE-USED

**FOR PSR USE ONLY**



Dist	County	Route	Sheet Title	Project No.	Total Sheets
12	Ord	5	21.3/30.3		



**LAYOUT  
(OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE  
**L-50**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1" = 100'

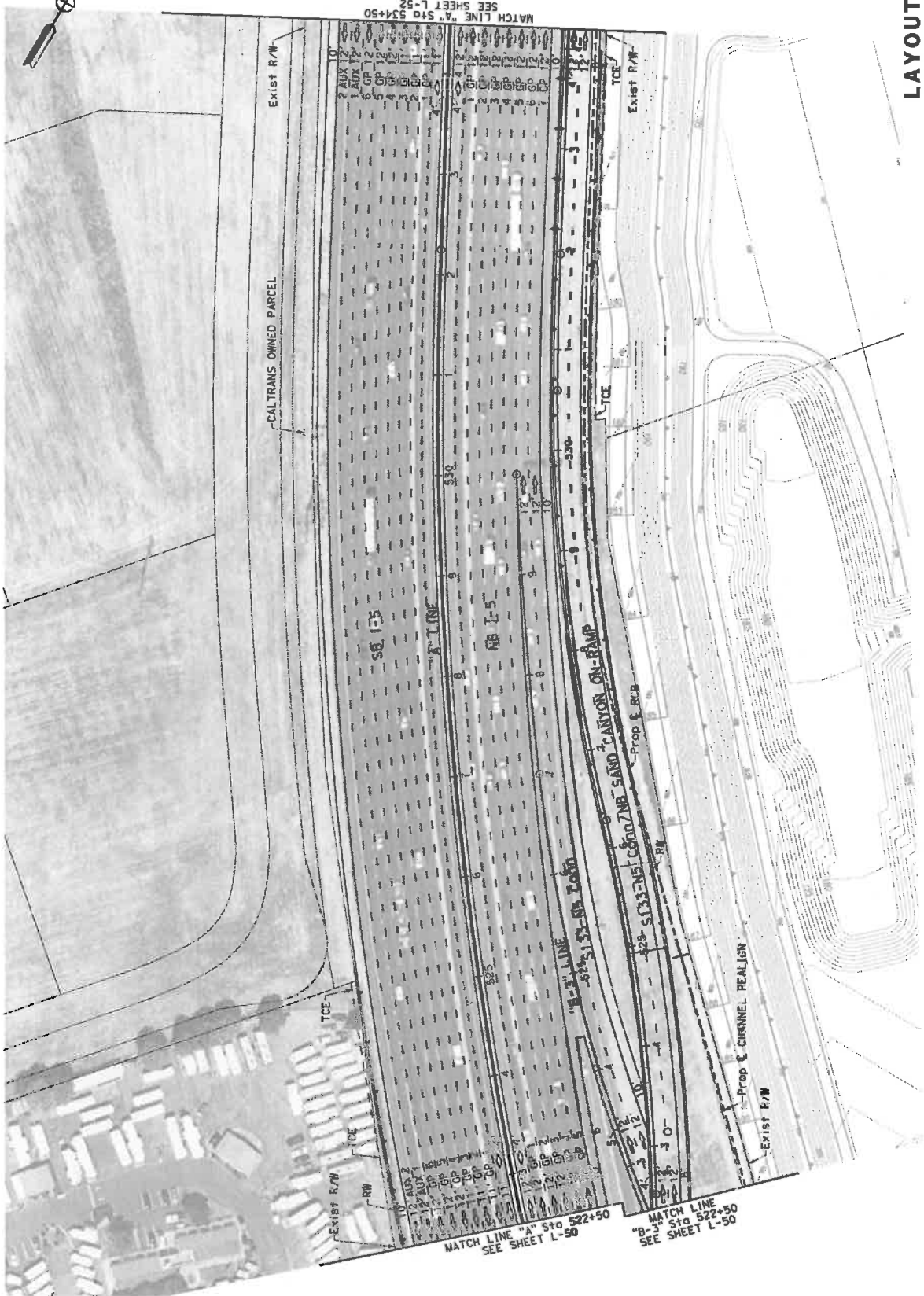
DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:53:40 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISOR

**FOR PSR USE ONLY**

USERNAME: g3020  
DOR FILE: ...Sheet112\_20067028-wd030.dgn  
BORDER LAST REVISED: 7/2/2010

POST MILES TOTAL PROJECT	ROUTE	COUNTY	SHEET NO.	TOTAL SHEETS
12	5	Oro	21	30



**LAYOUT  
(OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE **L-51**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
CHECKED BY  
DESIGNED BY  
DATE REVISION  
REVISOR

RELATIVE BORDER SCALE  
1" = 15' IN INCHES



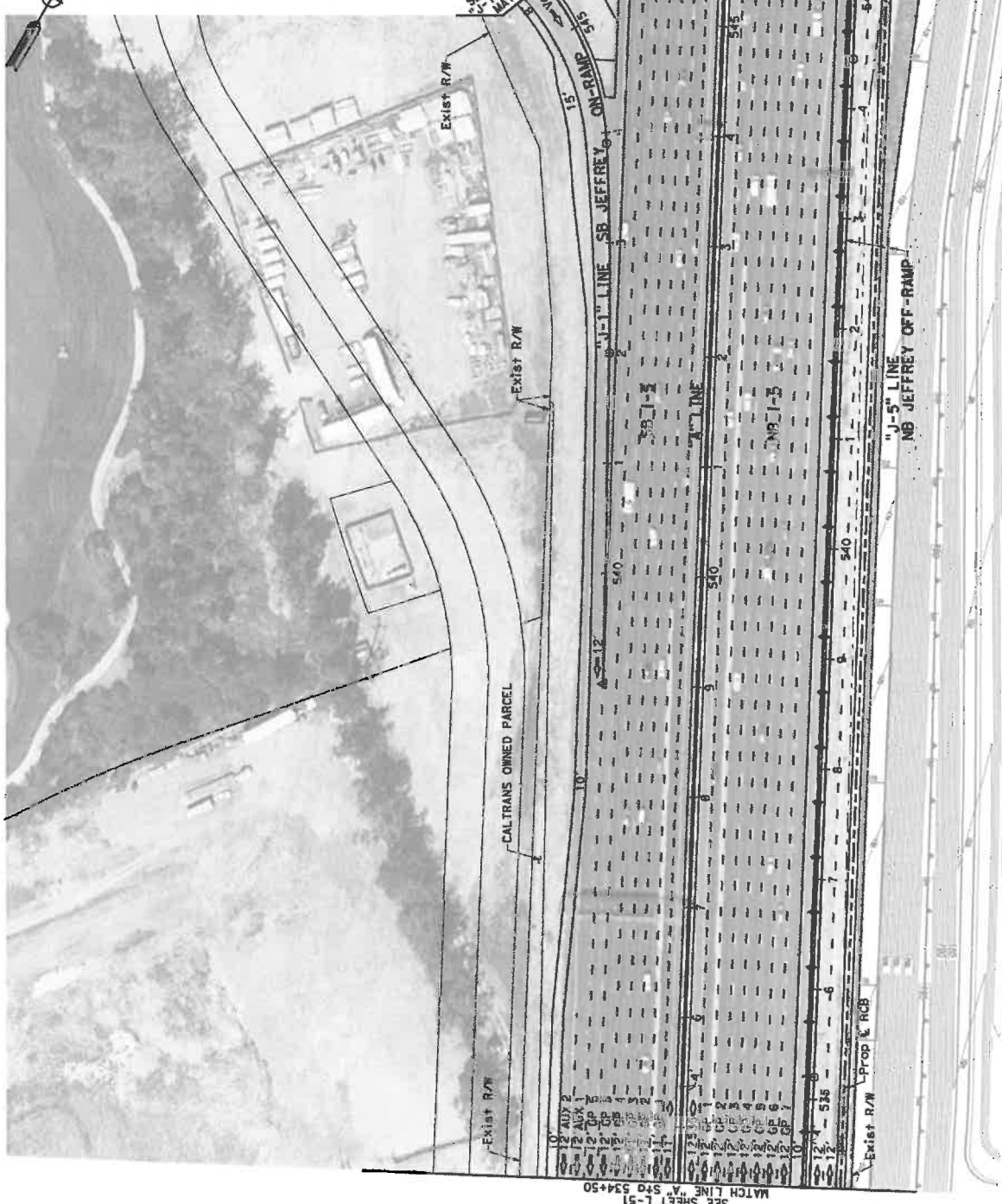
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K



Dist	County	Route	Post Mile	Sheet No.
12	Orca	5	21.3/30.3	



**LAYOUT  
(OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE L-52

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000



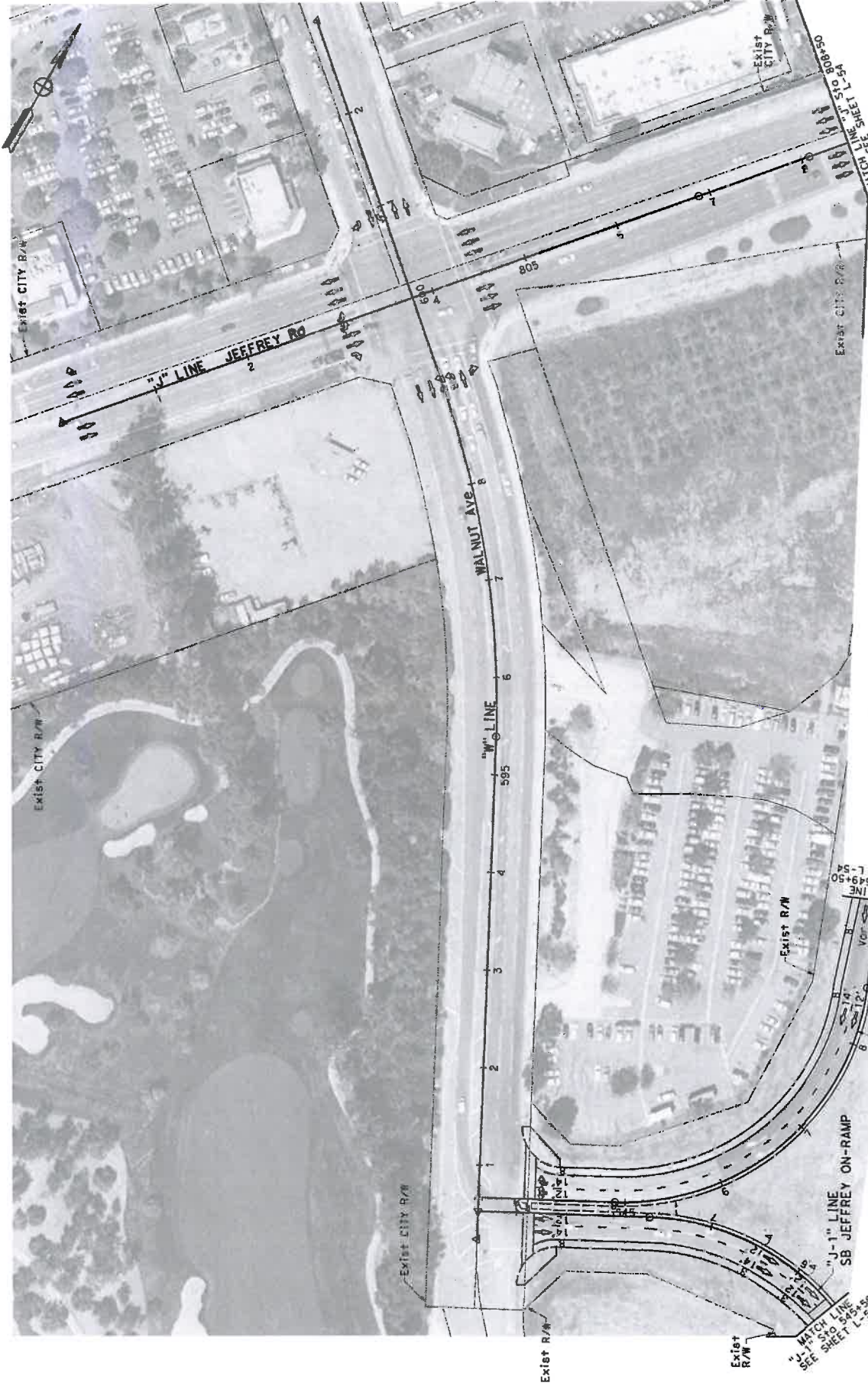
**FOR PSR USE ONLY**

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LAST REVISION DATE PLOTTED: 11/16/2011 TIME PLOTTED: 10:53:58 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	CHECKED BY	DESIGNED BY	DATE REVISED

DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Oro	5	21.3/30.3	



**LAYOUT  
(OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE **L-53**

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
15 IN INCHES

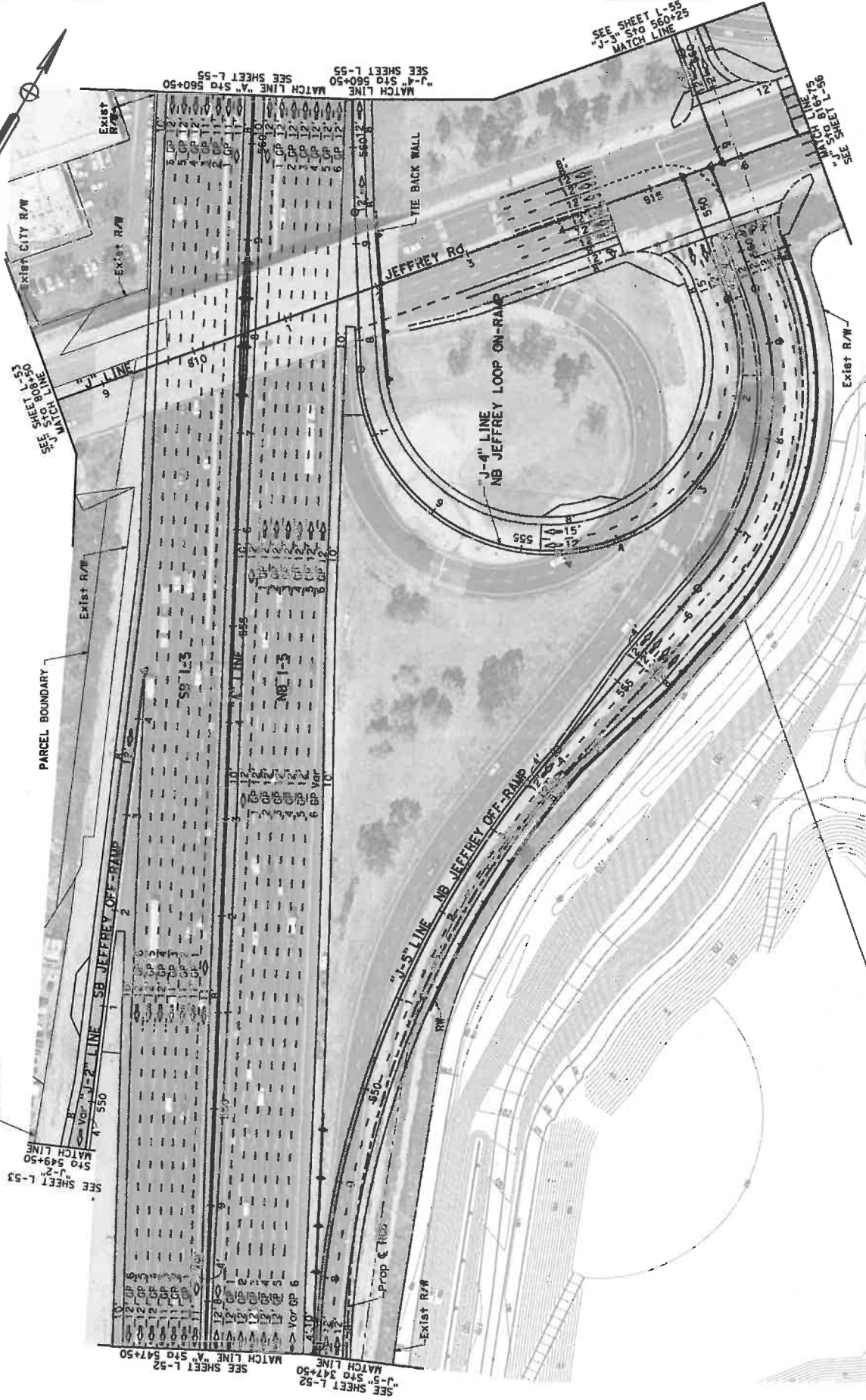
DATE REVISION  
TIME PLOTTED => 11/16/2011 10:54:07 AM

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTION L SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
REVISOR  
DATE REVISION

BORDER LAST REVISED 7/2/2010  
USERNAME => g0070  
DGN FILE => ... \Sheet\11-28\_086719B-0003.dgn

Dist	County	Route	Sheet Title	Project No.	Sheet No.
12	Ord	5	21.3/30.3		



**LAYOUT  
(OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE  
**L-54**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000



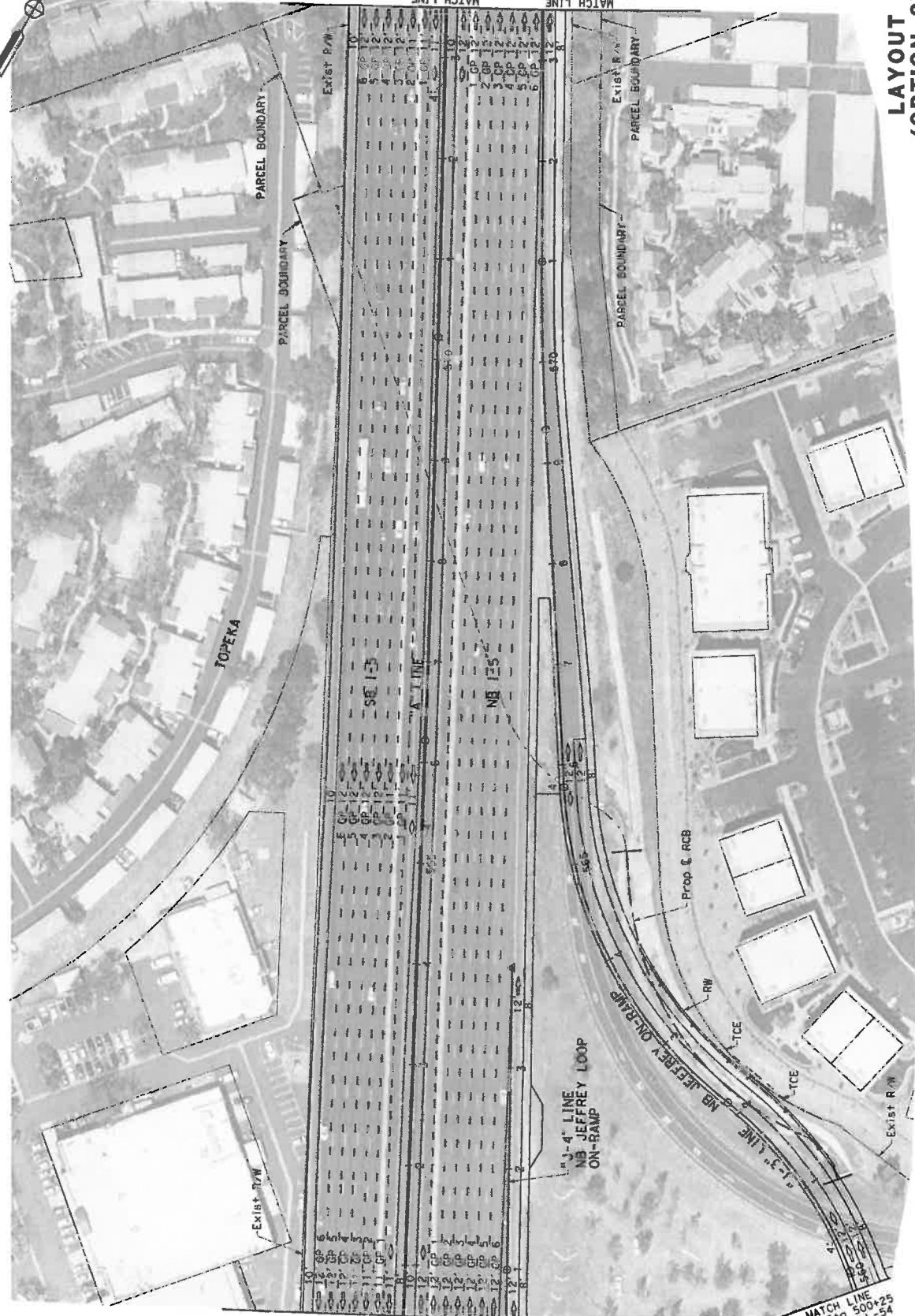
**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	CHECKED BY	DATE REVISED	REVISOR



DIRT COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	070	5 21.3/30.3	



SEE SHEET L-54  
"J-4" S+D 560+50  
MATCH LINE  
SEE SHEET L-54

SEE SHEET L-54  
"J-3" S+D 500+25  
MATCH LINE  
SEE SHEET L-54

SEE SHEET L-57  
"A" S+D 573+50  
MATCH LINE  
SEE SHEET L-57



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR

DESIGNED BY

CHECKED BY

REVISOR

DATE REVISED

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010

USERNAME: r3000  
DGN FILE: \\... \Sheet\11\_29\_06\702B-wc\75.dgn

RELATIVE BORDER SCALE  
1/8" = 15' IN INCHES



UNIT 0000

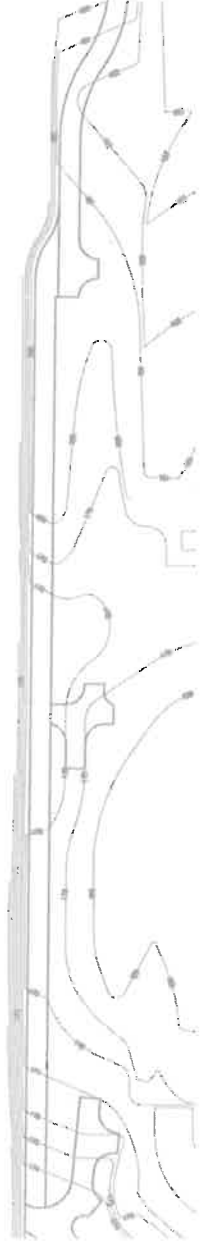
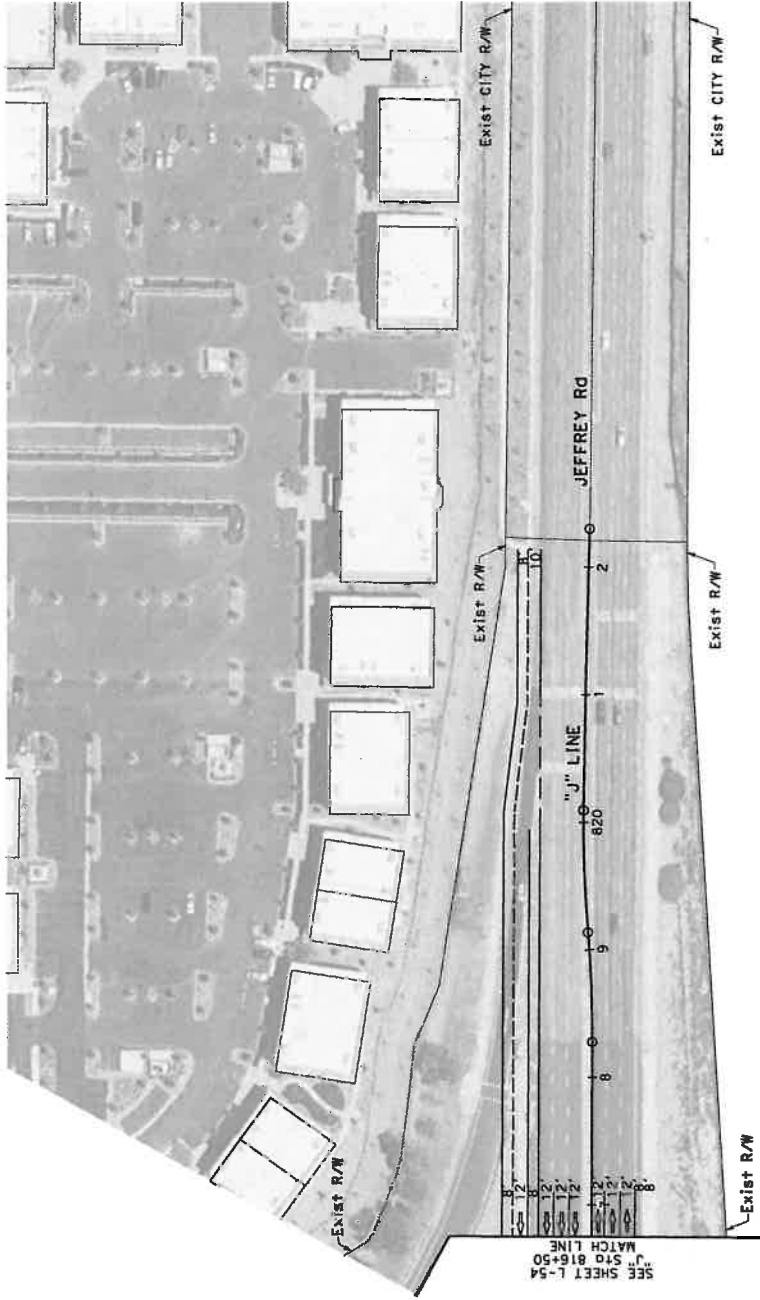
PROJECT NUMBER & PHASE

1200020052K

**LAYOUT  
(OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE

**L-55**

Dist	County	Route	Post Miles Total Project	Sheet No.	Total Sheets
12	Org	5	21.3/30.3		



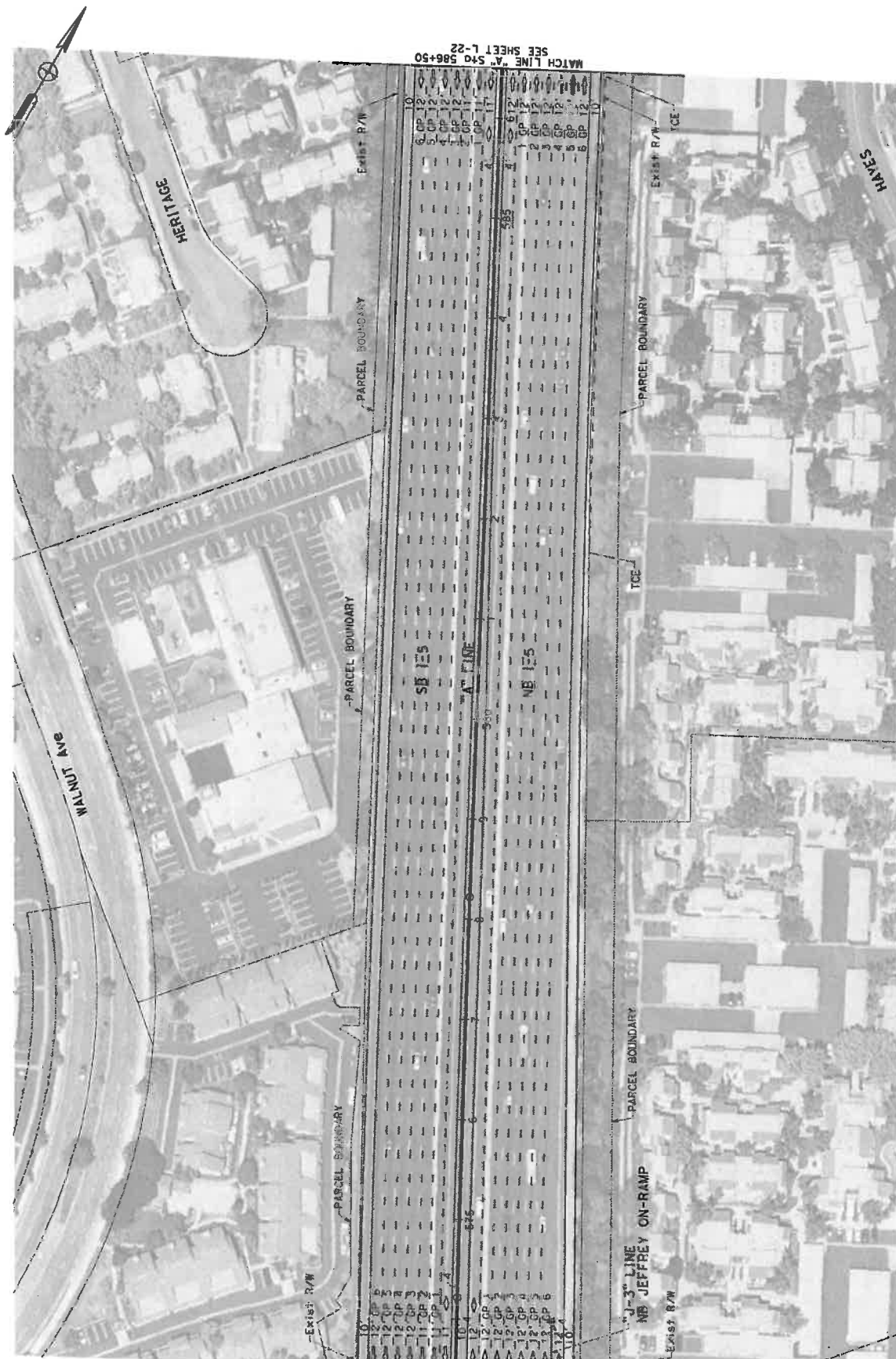
**LAYOUT  
(OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE  
**L-56**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT 0000  
RELATIVE BORDER SCALE IS IN INCHES: 0 1 2 3  
FOR PSR USE ONLY

DATE PLOTTED: 11/17/2011 10:54:38 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
BORDER LAST REVISED 7/2/2010 USERNAME: groyo DGN FILE: ...Sheet111_2B_V061702B-0005.dgn						

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orco	5	21.3/30.3	



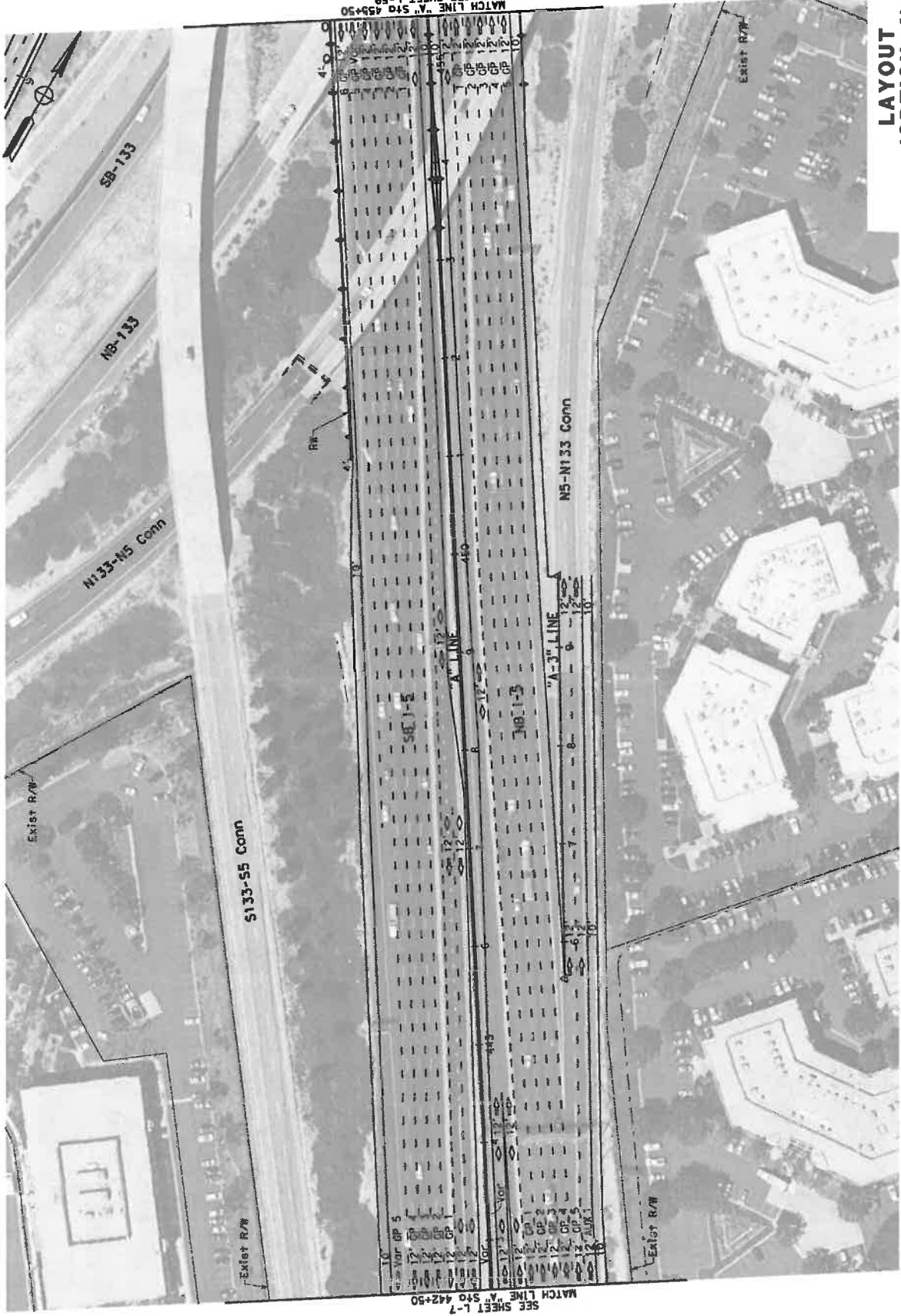
**LAYOUT (OPTION 3)  
ALTERNATIVE 2B**  
NO SCALE  
**L-57**

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-	DESIGNED BY	REVISOR	DATE REVISED
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Dist:	County	Route	Project	Sheet No.	Total Sheets
12	Org	5	21.3/30.3		



**LAYOUT  
(OPTION 4)  
ALTERNATIVE 2B**  
NO SCALE  
**L-58**

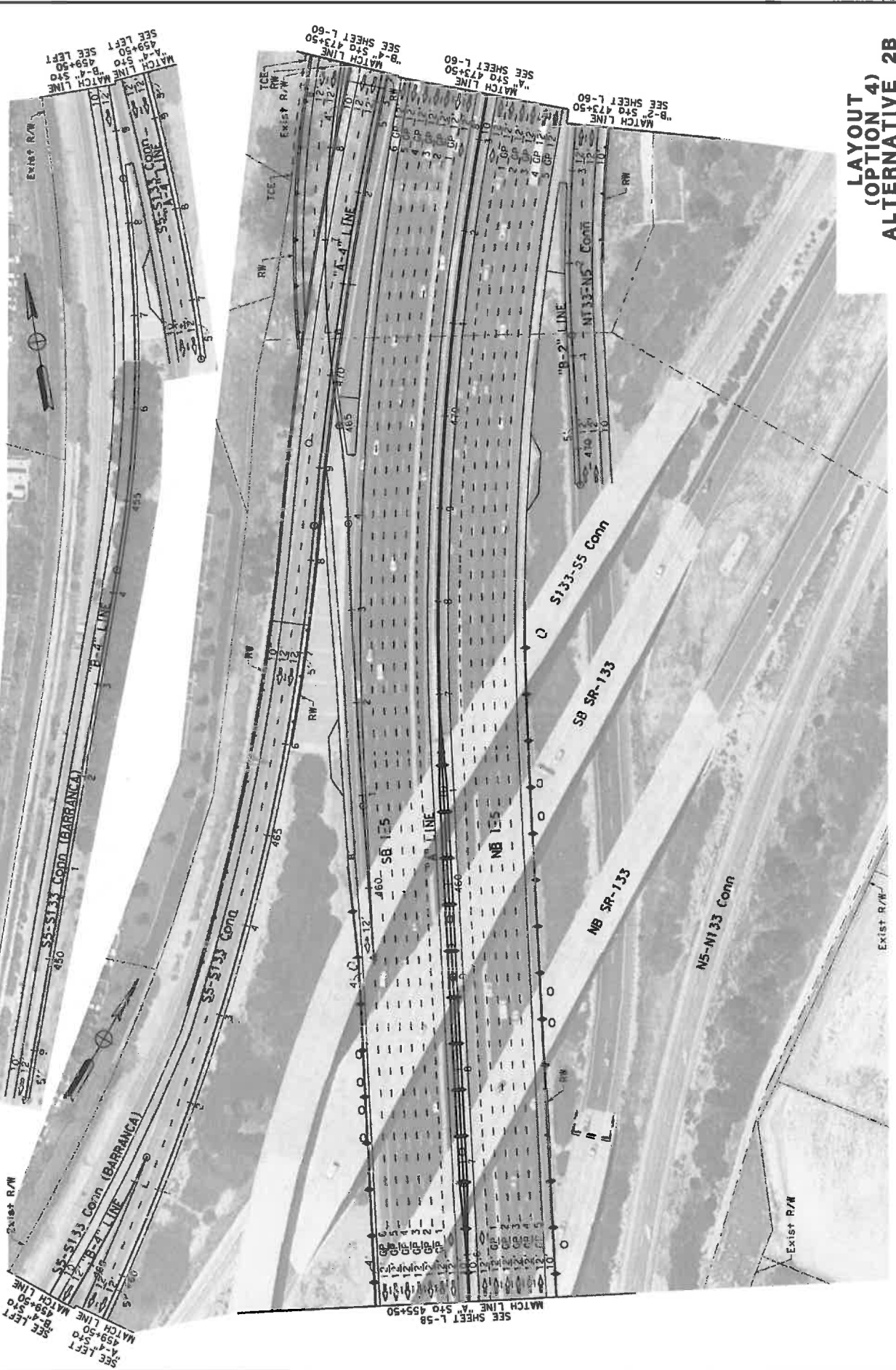
DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:54:57 AM

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: IS IN INCHES  
FOR PSR USE ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR	DATE REVISION
		CHECKED BY		

BORDER LAST REVISED 7/2/2010  
USER NAME: g3g3g3  
DWG FILE: ...Sweat11.2b\0617028-ec056.dgn

DATE	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orca	5	21.3/30.3	



**LAYOUT (OPTION 4) ALTERNATIVE 2B**  
NO SCALE L-59

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
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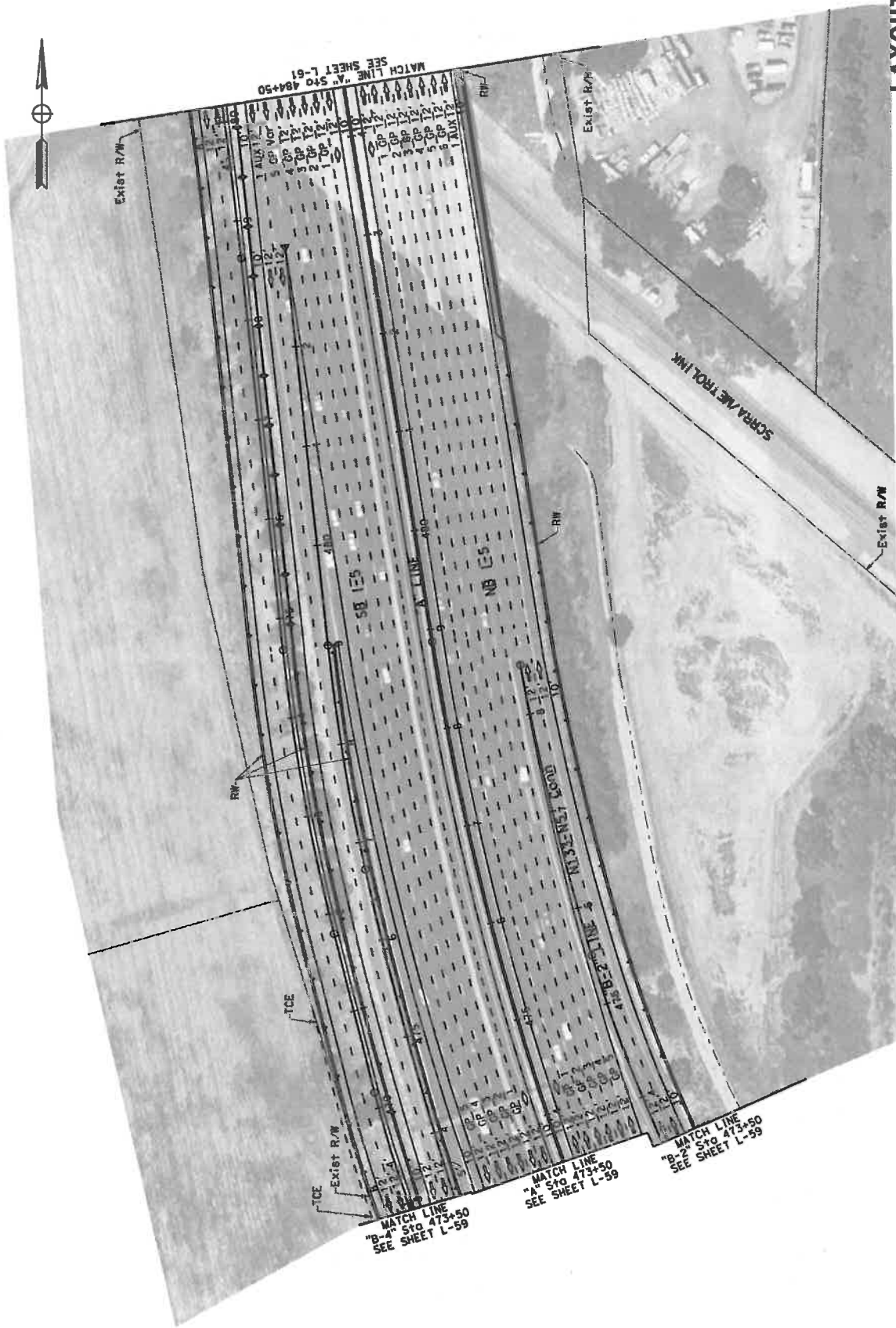
RELATIVE BORDER SCALE  
 15 IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	ORG	5	21.3/30.3		



**LAYOUT  
(OPTION 4)  
ALTERNATIVE 2B**  
NO SCALE  
**L-60**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000



RELATIVE BORDER SCALE  
IS IN INCHES

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
REVISOR BY  
DATE REVISOR BY

**FOR PSR USE ONLY**



DATE PLOTTED: 11/16/2011  
TIME PLOTTED: 10:55:16 AM

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL PROJECT NO.
12	Oro	5	21.3/30.3	



**LAYOUT (OPTION 4) ALTERNATIVE 2B**  
NO SCALE  
**L-61**

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
 USRWAVE # 3 gkaya  
 DSR FILE # ... \Sheet\Alt\_2B\Sheet2B-0001.dgn

RELATIVE BORDER SCALE IS IN INCHES  
 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

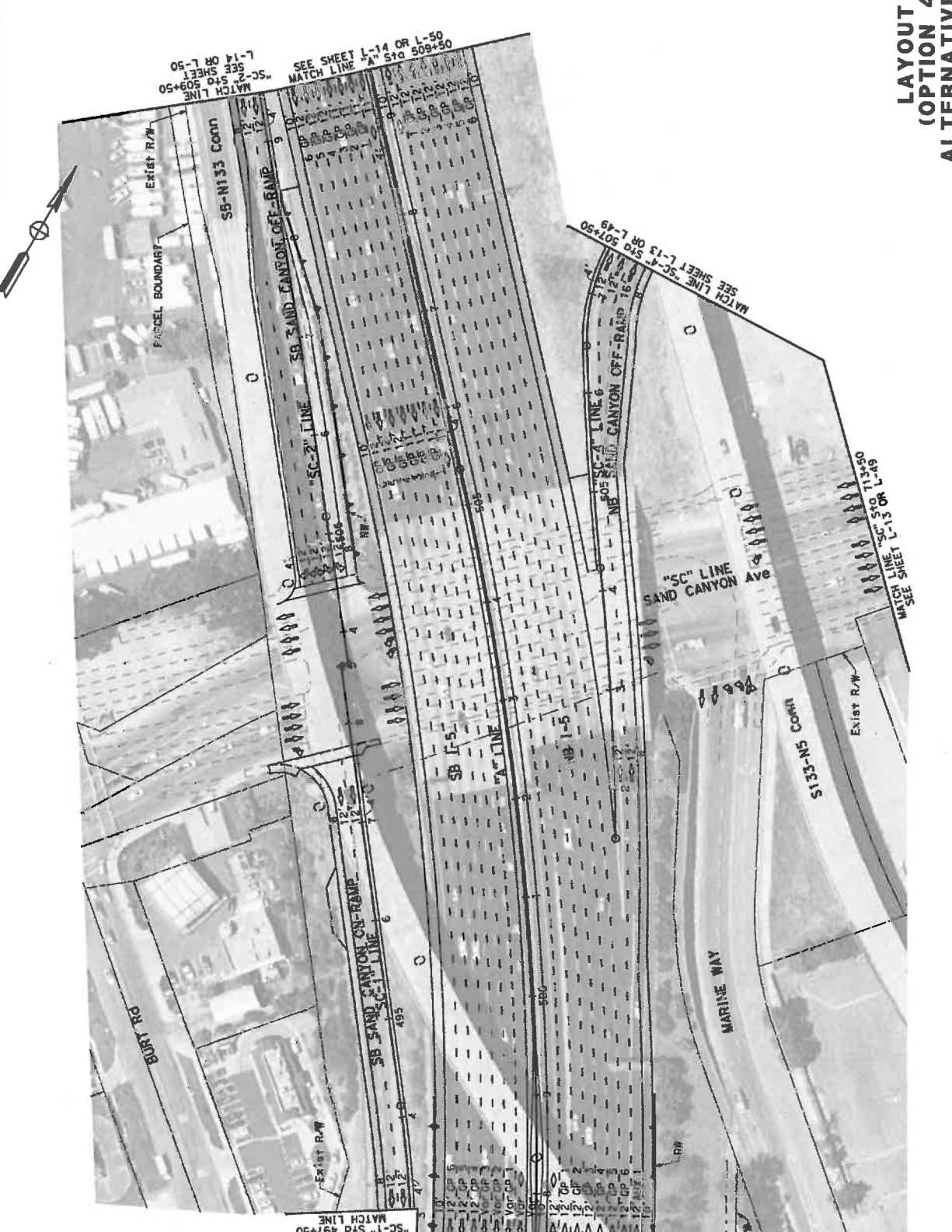
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 TIME PLOTTED => 10:55:24 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR BY	DATE REVISED
<b>CH2M HILL</b>					



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orco	5	21.3/30.3	3

DATE REVISION  
DATE PLOTTED = 11/16/2011 10:55:32 AM



**LAYOUT  
(OPTION 4)  
ALTERNATIVE 2B**  
NO SCALE  
**L-62**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

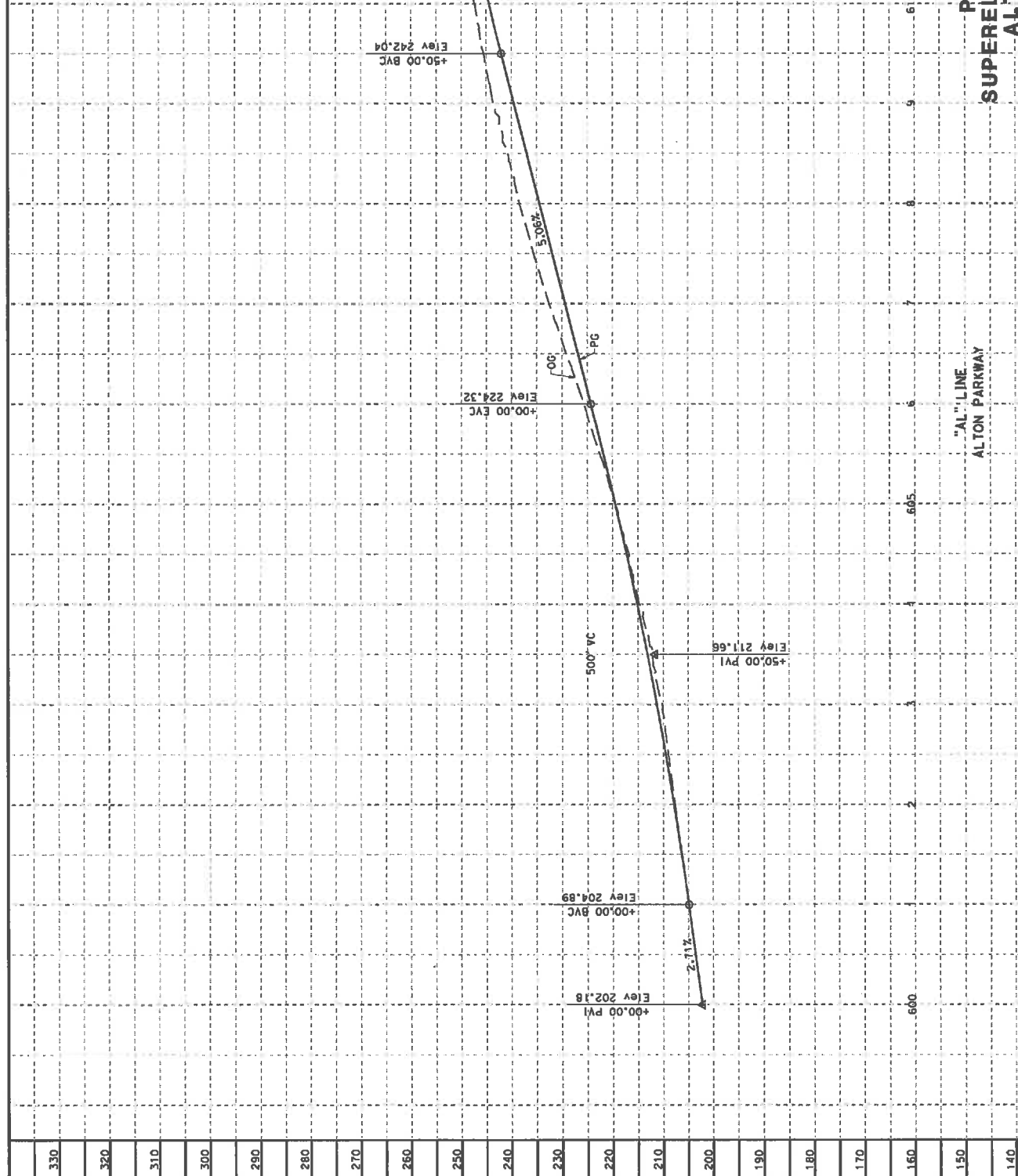
RELATIVE BORDER SCALE  
IS IN INCHES

FOR PSR USE ONLY

BORDER LAST REVISED 7/2/2010  
USERNAME = greg  
DGN FILE = ...\\Server\112\_20\_005702B-0002.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISION

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orca	5	21.3730.3	330



**PROFILE AND SUPERELEVATION DIAGRAM**  
**ALTERNATIVE 2B**  
 NO. SCALE

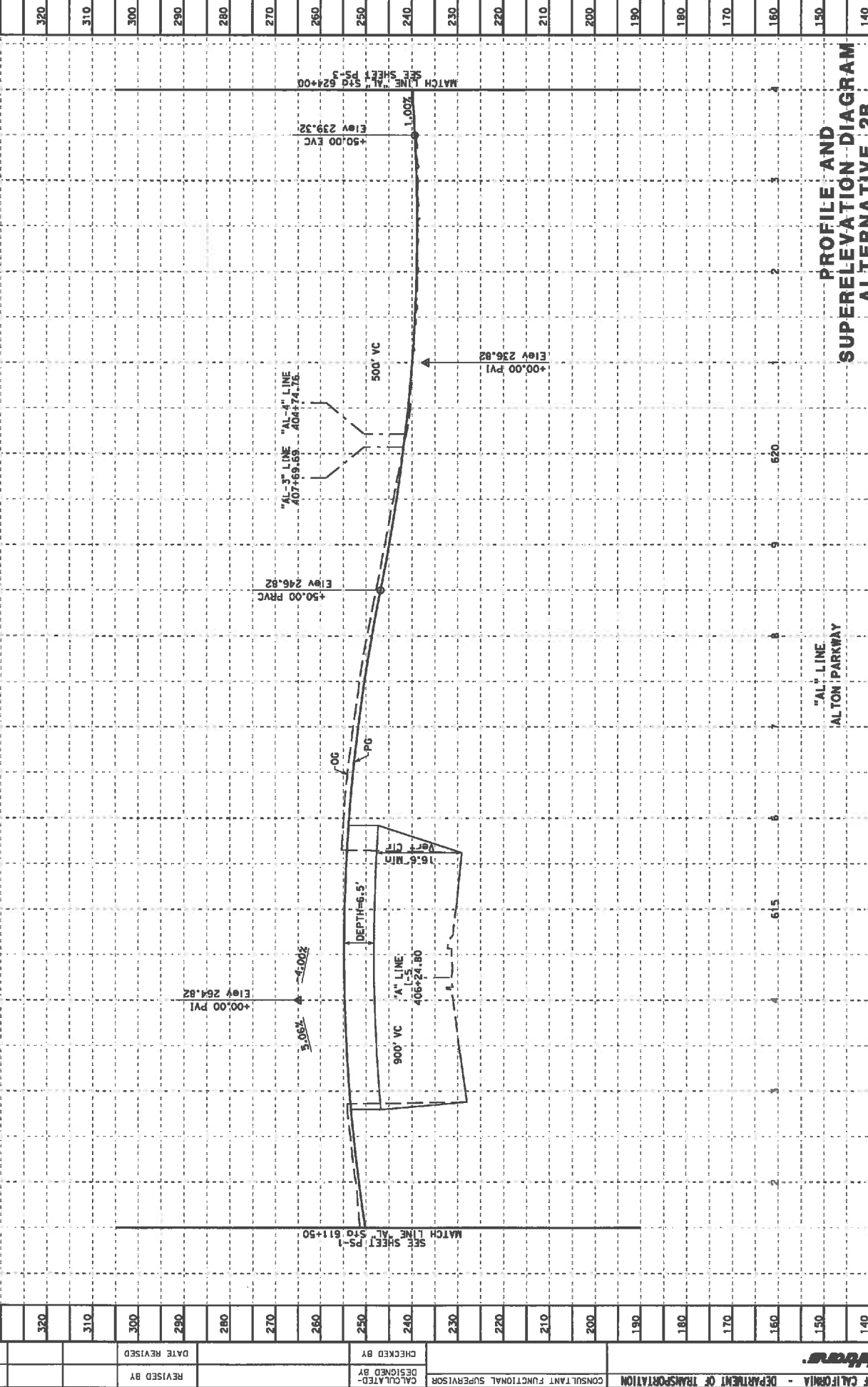
**PS-1**

**FOR PSR USE ONLY**



Dist: 12 COUNTY: ORG 5 ROUTE: 21.3/30.3 SHEET TOTAL PROJECT SHEETS: 330

330	320	310	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160	150	140
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----



**PROFILE AND SUPERELEVATION DIAGRAM ALTERNATIVE 2B**

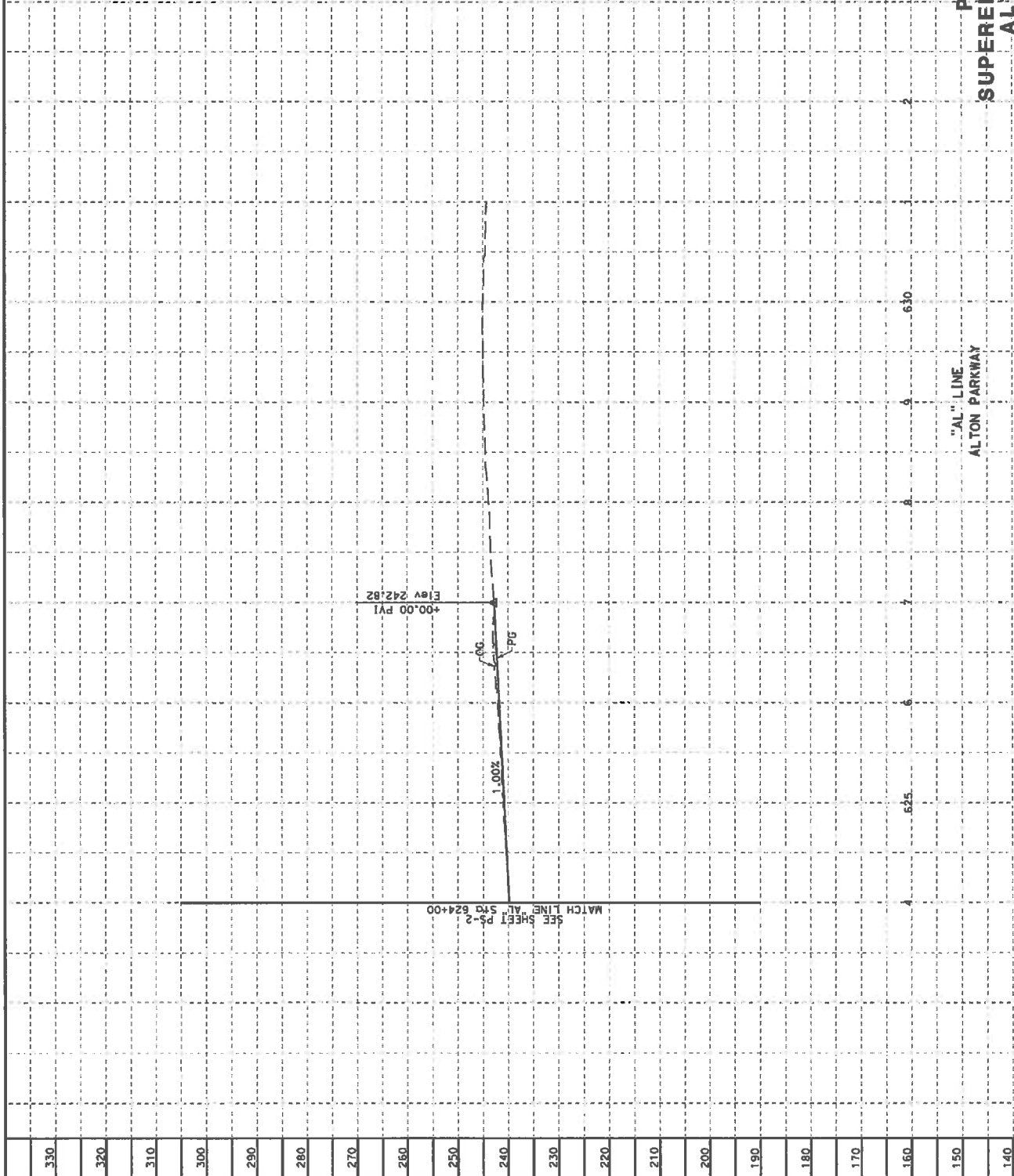
ALTON PARKWAY

**FOR PSR USE ONLY**

NO. SCALE

PS-2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orinda	5	21.3730.3		330



**PROFILE AND SUPERELEVATION DIAGRAM  
ALTERNATIVE 2B**  
NO. SCALE

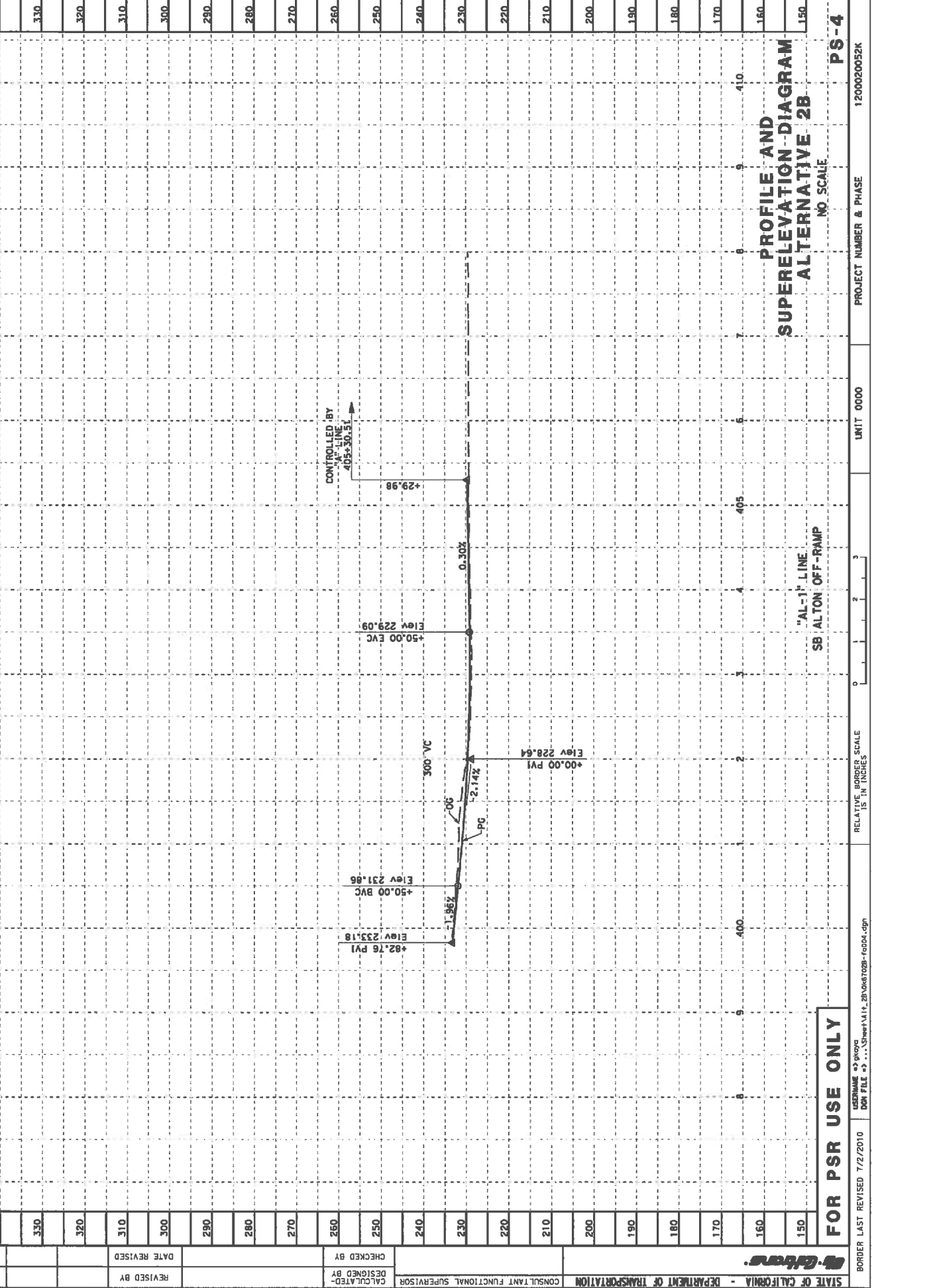
**FOR PSR USE ONLY**

**PS-3**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISIED	REVISIED BY
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Dist	County	Route	Post Miles Total Project	Sheet Total
12	Org	5	21.3/30.3	340

340	330	320	310	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160	150	



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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

CONSULTANT FUNCTIONAL SUPERVISOR

DESIGNED BY

CHECKED BY

DATE REVISED

REVISOR

REVISIONS

NO. SCALE

PROJECT NUMBER & PHASE

UNIT 0000

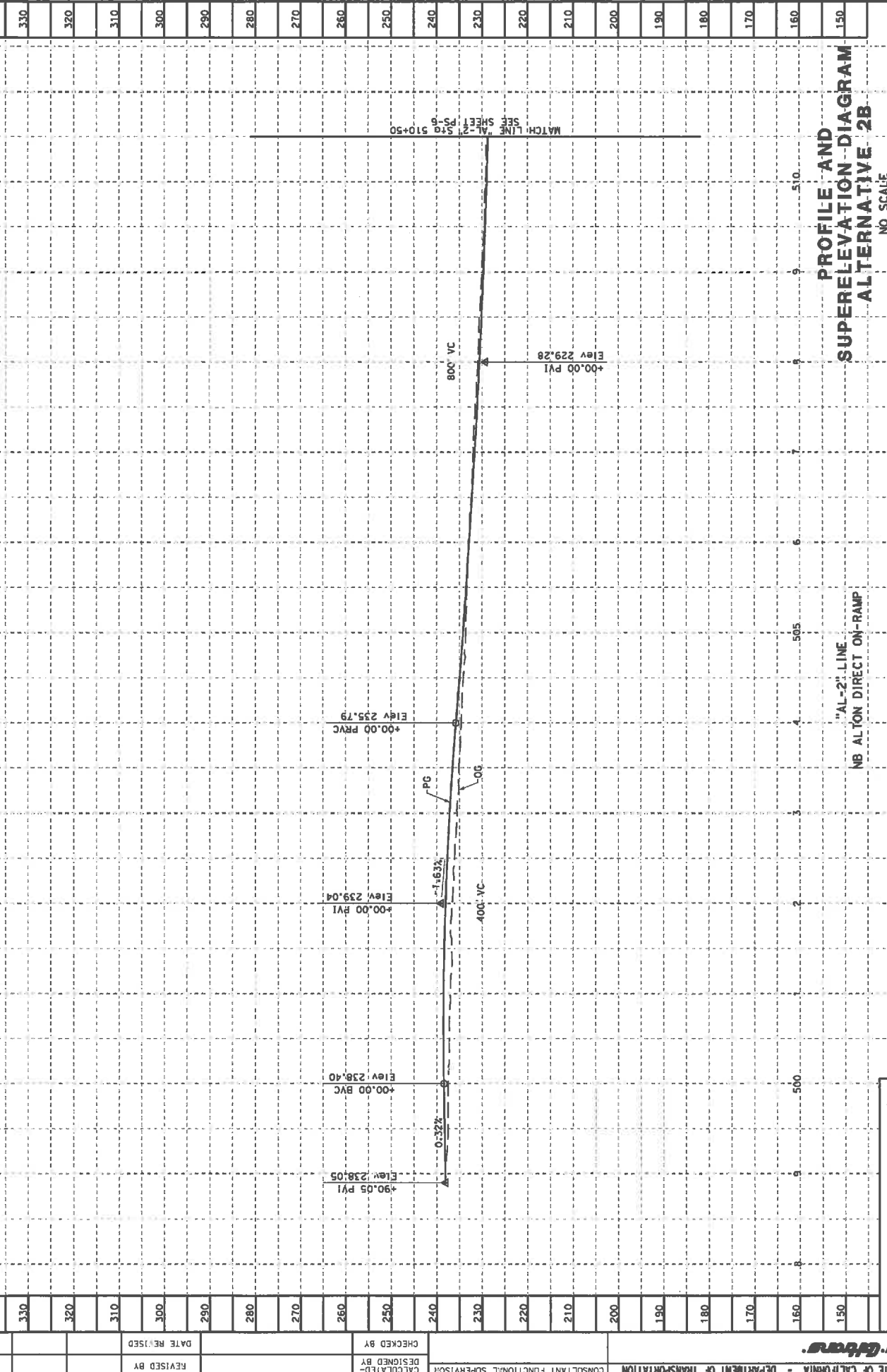
1200020052K

PS-4

DATE PLOTTED => 11/16/2011  
 TIME PLOTTED => 10:55:42 AM

POST MILES TOTAL PROJECT 21.3730.3  
 COUNTY ORO 5  
 ROUTE 5

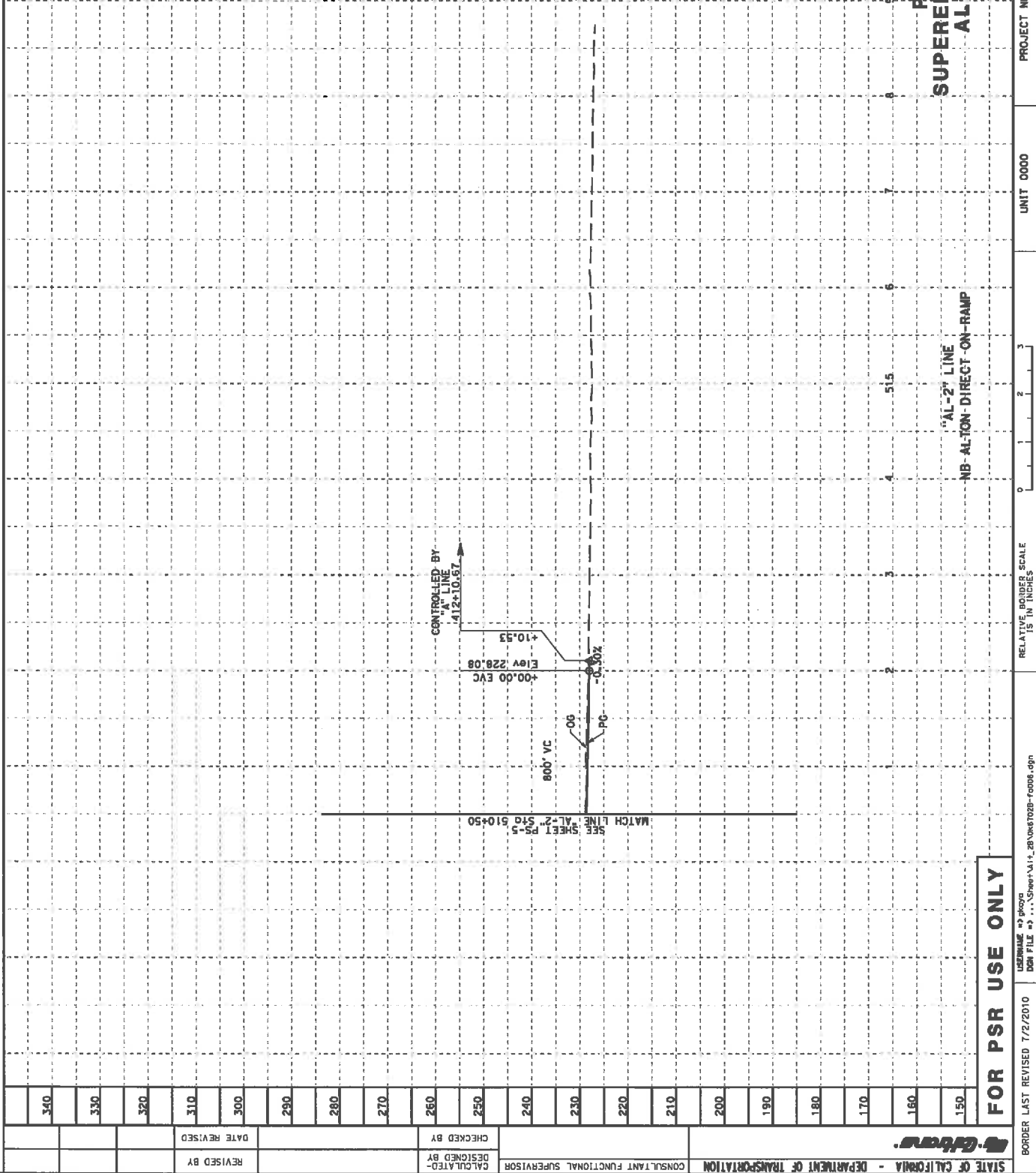
SHEET TOTAL SHEETS



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 CONSULTANT FUNCTIONAL SUPERVISOR  
 CHECKED BY  
 DESIGNED BY  
 CALCULATED BY  
 DATE REVISIONS  
 REVISIONS

UNIT 0000 PROJECT NUMBER & PHASE PS-5  
 RELATIVE BORDER SCALE 1/8" = 1'-0" IN INCHES  
 USER: 11/16/2011 10:55:42 AM  
 USERNAME: jgk  
 DOC FILE # 11/16/2011 10:55:42 AM

Dist	County	Route	Post Miles Total Project	Sheet Total Sheets
12	Oro	5	21.3/30.3	



340				
330				
320				
310				
300				
290				
280				
270				
260				
250				
240				
230				
220				
210				
200				
190				
180				
170				
160				
150				

DATE PLOTTED => 11/16/2011  
TIME PLOTTED => 10:55:43 AM

**FOR PSR USE ONLY**

**PROFILE AND SUPERELEVATION DIAGRAM ALTERNATIVE 2B**  
NO SCALE

PROJECT NUMBER & PHASE 1200020052K

UNIT 0000

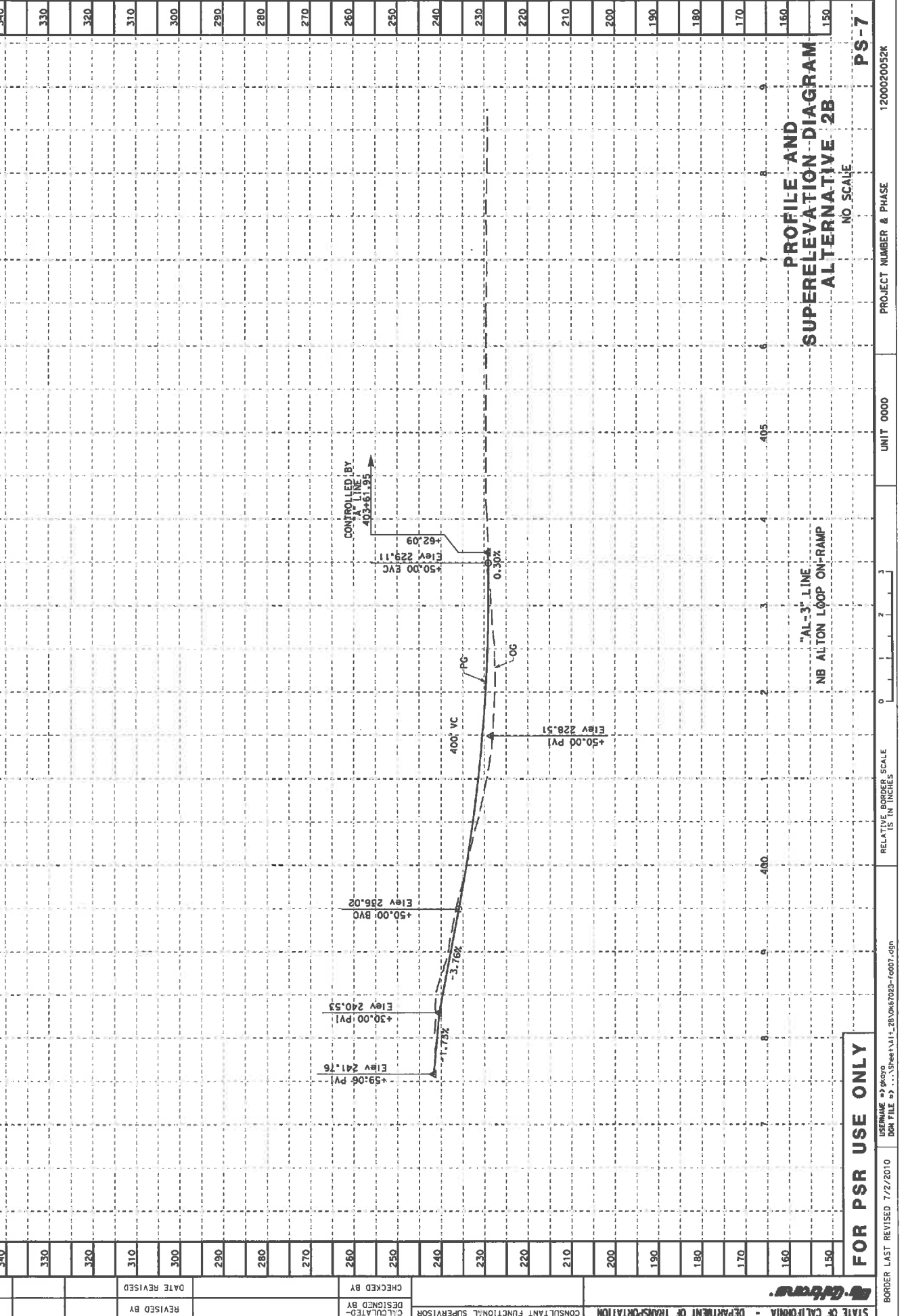
RELATIVE BORDER SCALE IS IN INCHES

BORDER LAST REVISED 7/2/2010  
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PS-6

DS#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Or	5	21.3/30.3	340	340

340					
330					
320					
310					
300					
290					
280					
270					
260					
250					
240					
230					
220					
210					
200					
190					
180					
170					
160					
150					

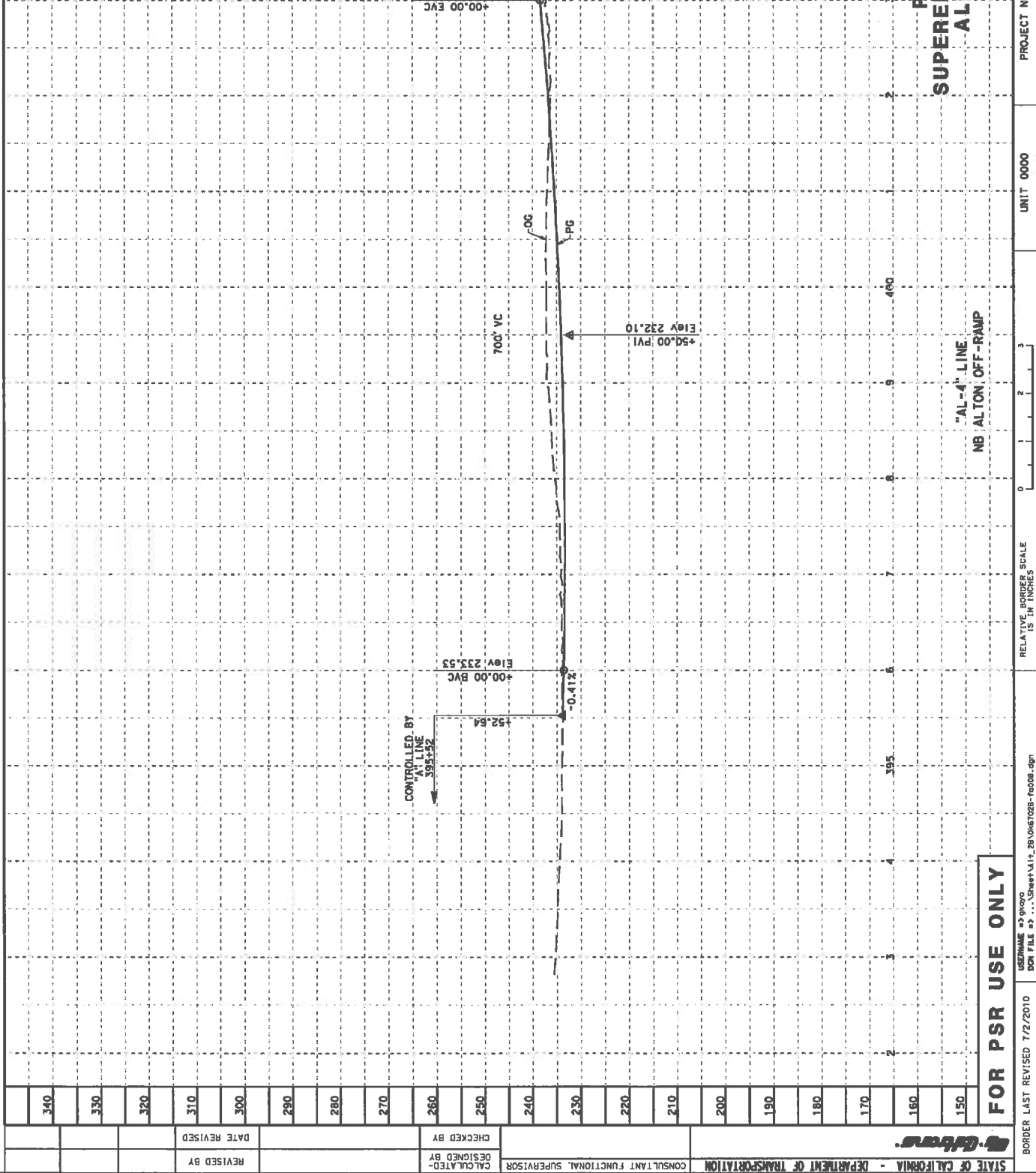


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 CALCULATED BY  
 CHECKED BY  
 DESIGNED BY  
 DATE REVISED  
 REVISIONS

DATE PLOTTED => 11/16/2011 10:55:43 AM  
 00-00-00  
 PS-7  
 PROJECT NUMBER & PHASE  
 UNIT 0000  
 RELATIVE BORDER SCALE  
 IS IN INCHES  
 FOR PSR USE ONLY  
 USERNAME => gmac  
 JOB FILE # => \\snet\11\_20\067023-6007.dgn  
 BORDER LAST REVISED 7/2/2010  
 1200020052K



Dist	County	Route	Post Miles Total Project	Sheet No.	Total Sheets
12	Orco	5	21.3/30.3		340



**PROFILE AND SUPERELEVATION DIAGRAM  
ALTERNATIVE 2B**  
NO. SCALE

"AL-4" LINE  
NB ALTON OFF-RAMP

PS-8

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000

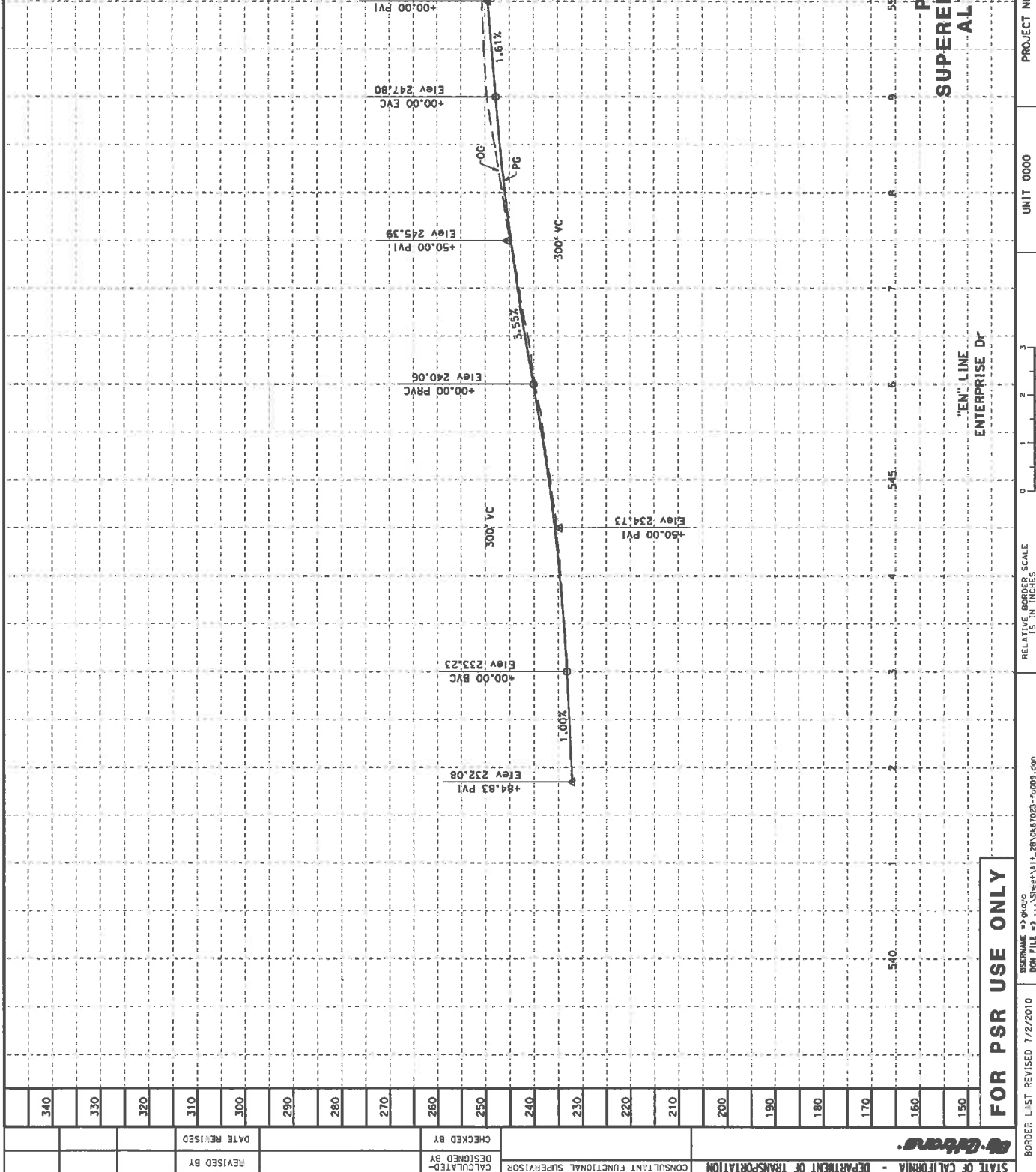
RELATIVE BORDER SCALE IS 1/4" INCHES

**FOR PSR USE ONLY**

USERNAME: g9020  
DGN FILE: ...Sheet112\_2B (067028-Fc008-dgn)

BORDER LAST REVISED: 7/2/2010

JOB#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orj	5	21.37/30.3	340



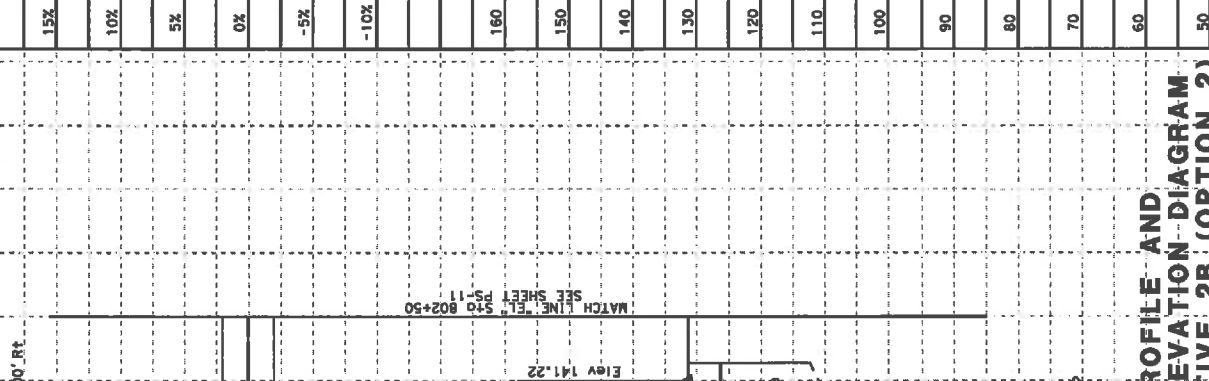
**PROFILE AND SUPERELEVATION DIAGRAM  
ALTERNATIVE 2B  
NO. SCALE**

**FOR PSR USE ONLY**

PROJECT NUMBER & PHASE  
UNIT 0000

PS-9  
1200020052K

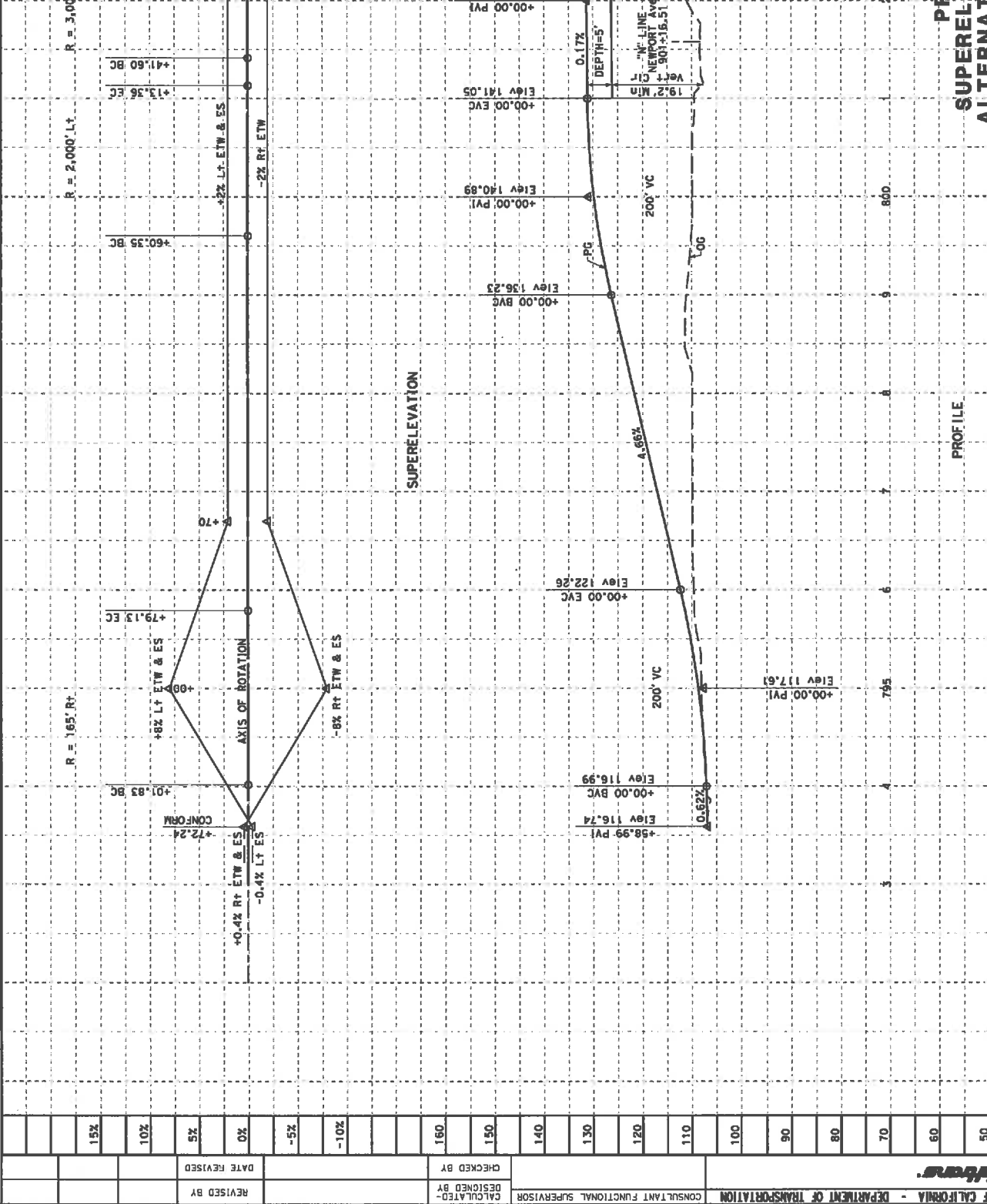
DIS#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orco	5	21.3/30.3		



**PROFILE AND SUPERELEVATION DIAGRAM**  
**ALTERNATIVE 2B (OPTION 2)**  
 NO. SCALE  
 PS-10

PROJECT NUMBER & PHASE: 1200020052  
 UNIT: 0000  
 RELATIVE BORDER SCALE: 1/8" = 1'

ALTERNATIVE 2B (OPTION 2)  
 NO SCALE



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BORDER LAST REVISED 7/2/2010  
 USERNAME: g1979  
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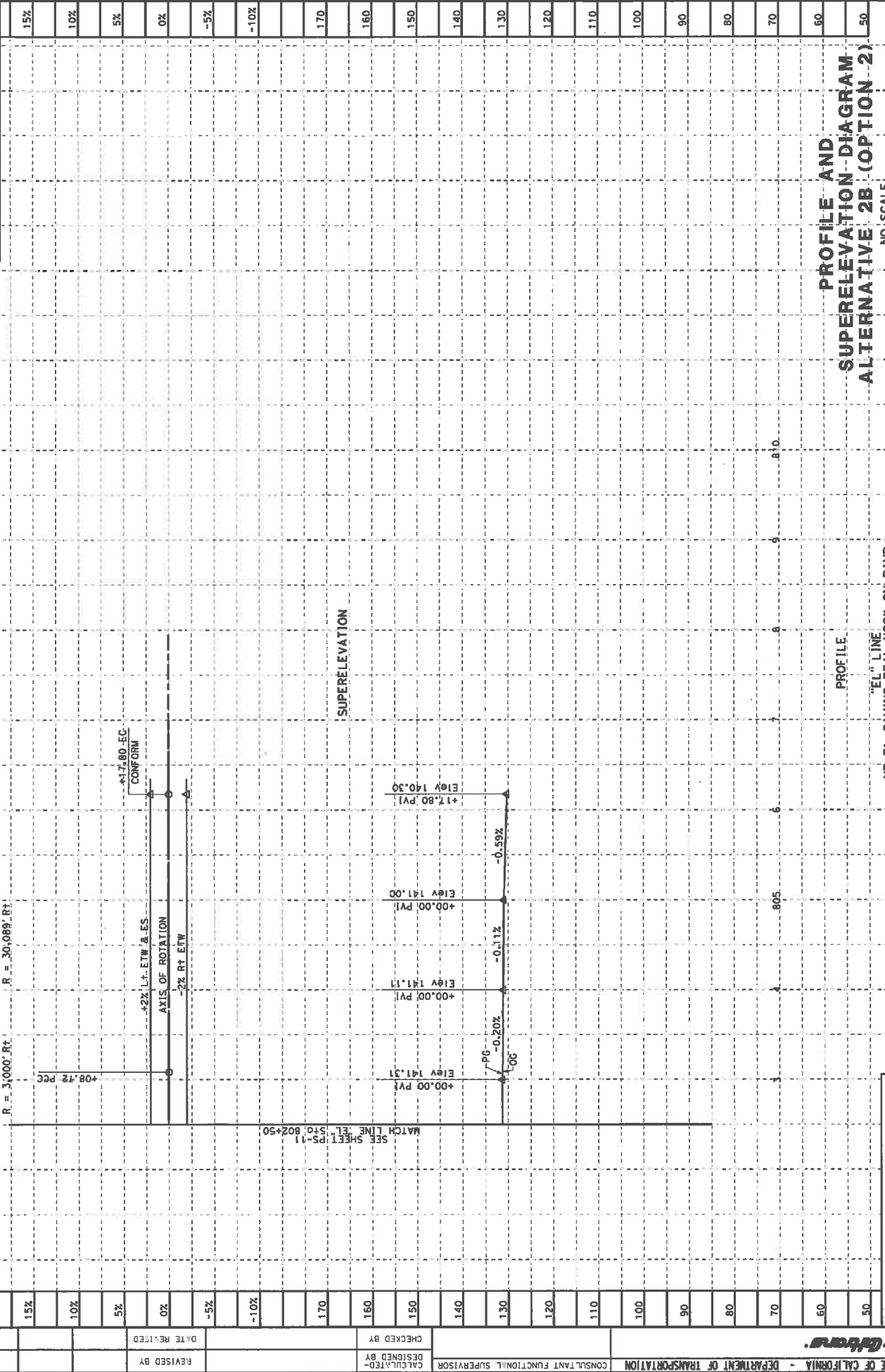
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 CHECKED BY  
 DESIGNED BY  
 REVISOR  
 DATE REVISED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
 DESIGNED BY  
 CHECKED BY  
 DATE REVISED  
 REVISED BY

12 070 5 21.3730.3  
 COUNTY ROUTE TOTAL PROJECT NO.

15%  
10%  
5%  
0%  
-5%  
-10%  
170  
160  
150  
140  
130  
120  
110  
100  
90  
80  
70  
60  
50

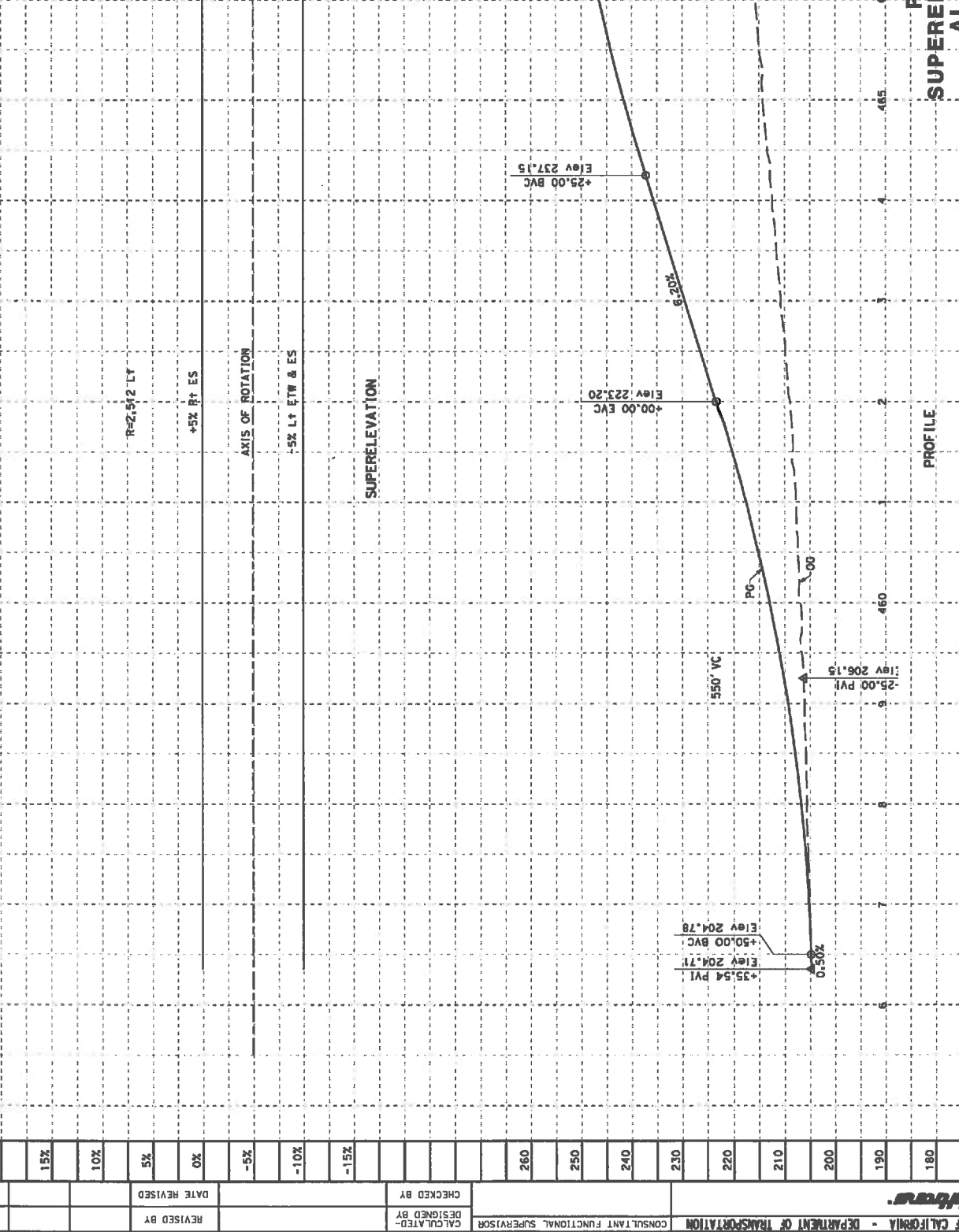
15%  
10%  
5%  
0%  
-5%  
-10%  
170  
160  
150  
140  
130  
120  
110  
100  
90  
80  
70  
60  
50



FOR PSR USE ONLY  
 USER: 9/2/2010  
 BOR FILE # ...  
 DATE PLOTTED: 11/16/2011 10:55:45 AM  
 PS-11  
 PROJECT NUMBER & PHASE  
 UNIT 0000  
 RELATIVE BORDER SCALE  
 15 IN. INCHES  
 0 1 2 3

Dist	County	Route	Project	Sheet
12	Or	5	21.3/30.3	3

15%	10%	5%	0%	-5%	-10%	-15%	260	250	240	230	220	210	200	190	180
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**PROFILE AND SUPERELEVATION DIAGRAM - ALTERNATIVE 2B**  
NO. SCALE

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000

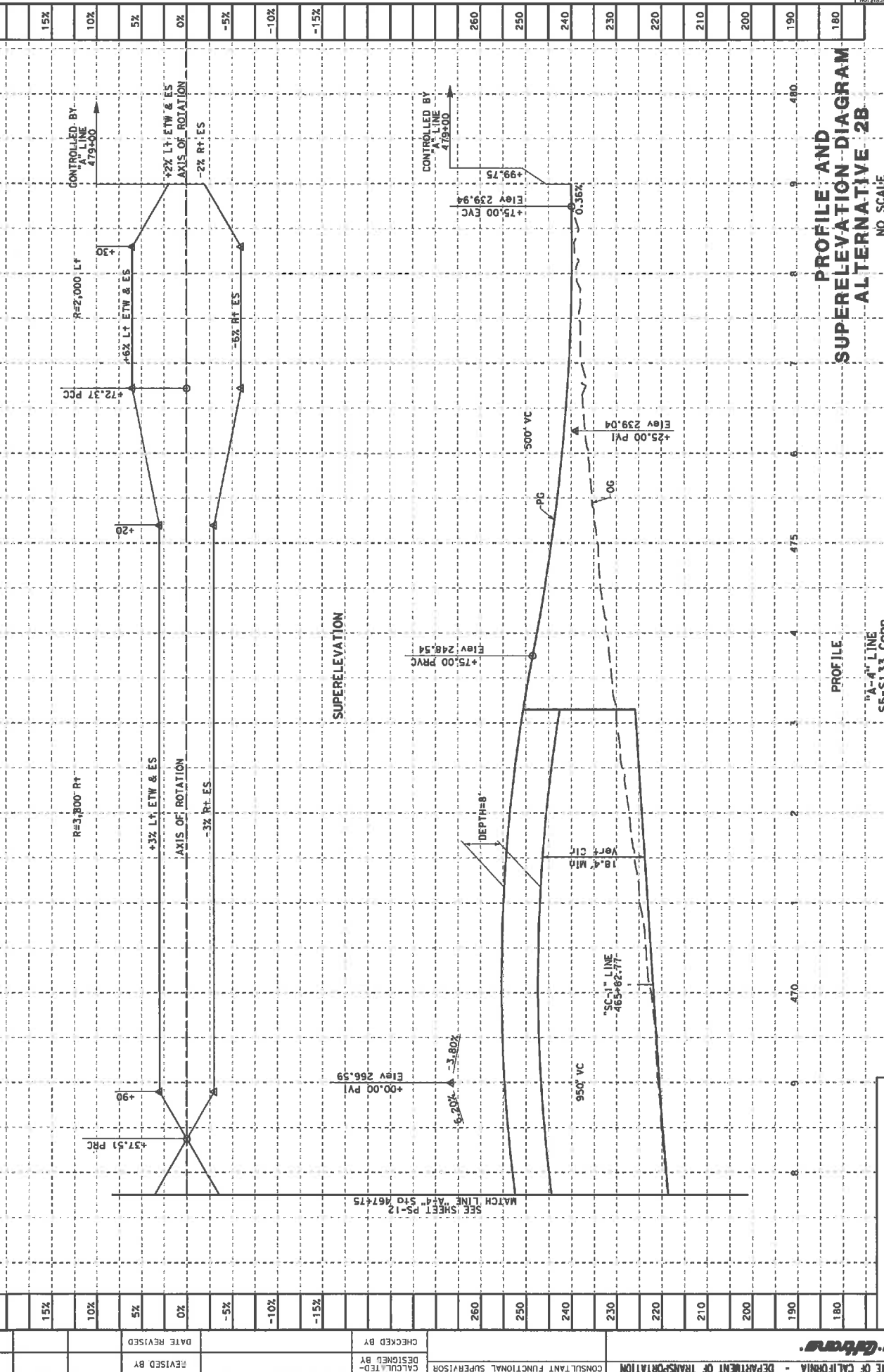
RELATIVE BORDER SCALE IS IN INCHES

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
DESIGNED BY  
CHECKED BY  
DATE REVISOR  
REVISOR

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DIR#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	OTO	5	21.3/30.3		

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DATE REVISD

REVISD BY

DATE REVISD

PROJECT NUMBER & PHASE

UNIT 0000

RELATIVE BORDER SCALE

1" = 10' IN INCHES

NO. SCALE

PS-13

120020052K

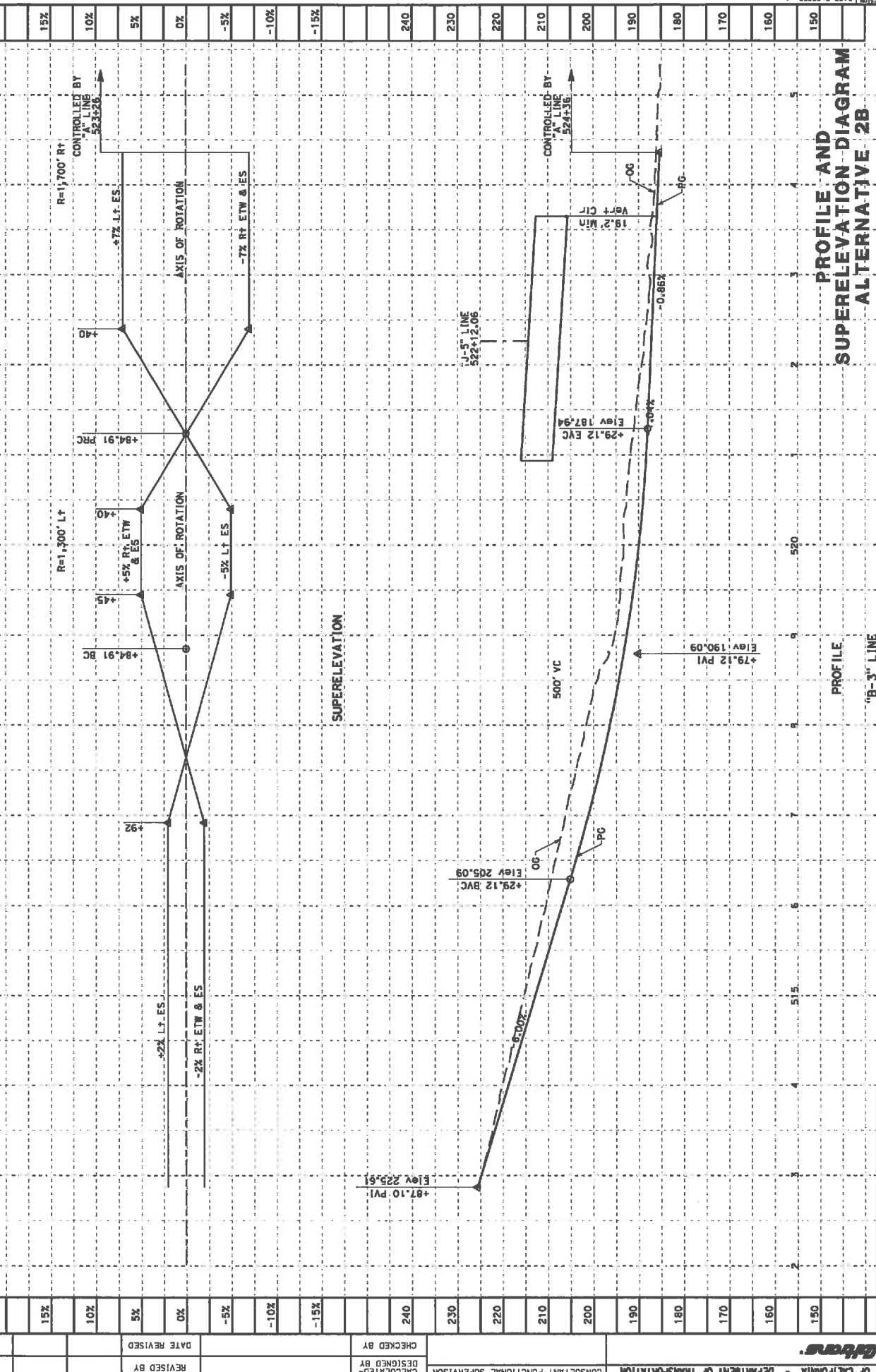
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 CONSULTANT FUNCTIONAL SUPERVISOR  
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 REVISIONS

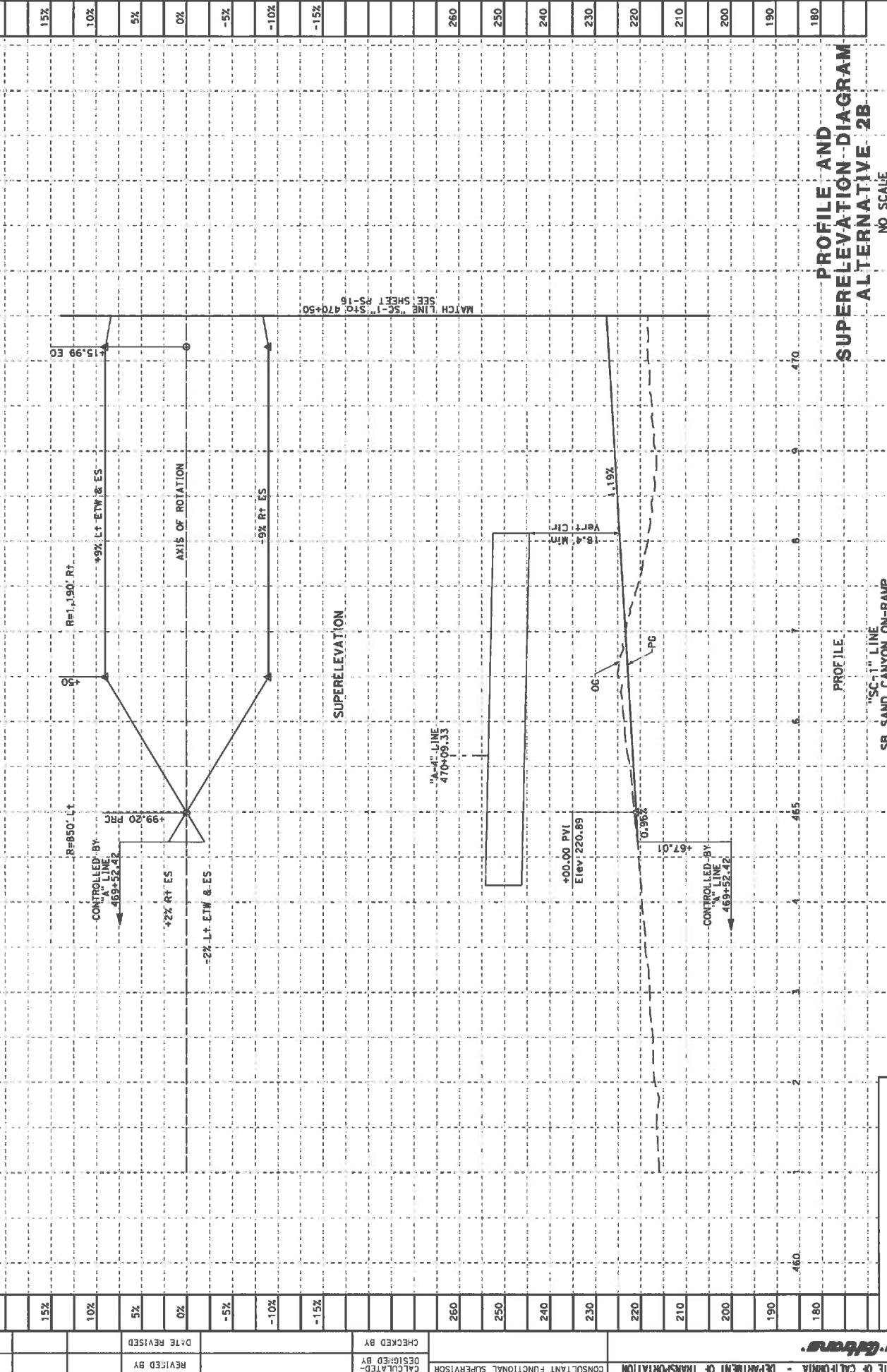
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 220  
 210  
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 FOR PSR USE ONLY  
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 CONSULTANT FUNCTIONAL SUPERVISOR  
 DESIGNED BY  
 CHECKED BY  
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 DATE REVISOR  
 REVISIONS

Dist	County	Route	Post Miles Total Project	Sheet No.
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
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 DATE REVISIONS  
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 DATE REVISIONS

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RELATIVE BORDER SCALE  
 15 IN INCHES

UNIT 0000 PROJECT NUMBER & PHASE

1200020052K

PS+15

NO. SCALE

PROFILE AND SUPERELEVATION DIAGRAM  
 ALTERNATIVE 2B

SB SAND CANYON ON-RAMP  
 SC-11 LINE

PROFILE

VERT. CURV. 18.4 MIN. 1.19%

+00.00 PVI Elev: 220.89

CONTROLLED BY 4% LINE 469+52.42

CONTROLLED BY 4% LINE 469+52.42

470.93

470

465

460

455

450

445

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435

430

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420

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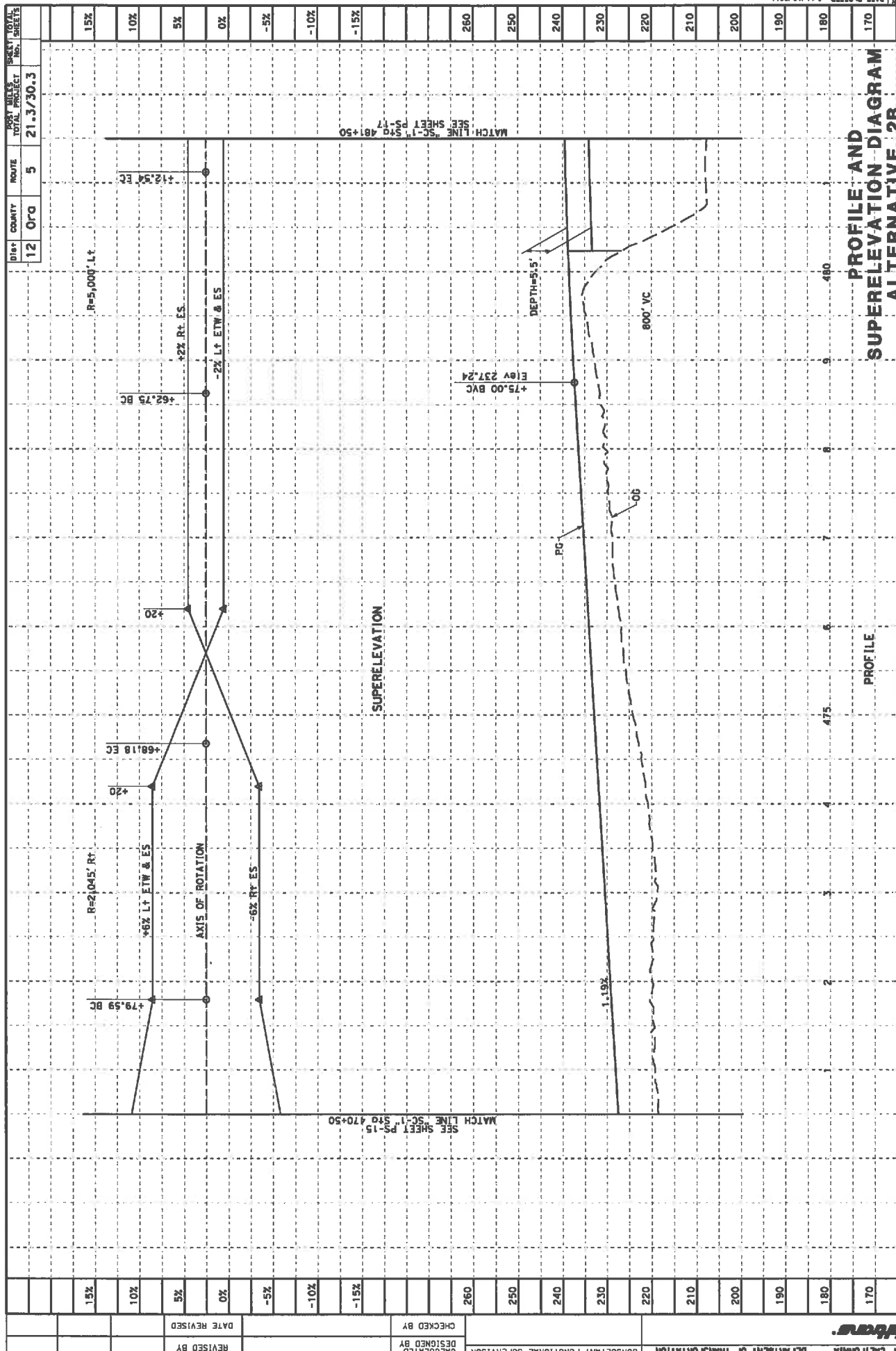
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Dist	County	Route	Dist Miles	Total Project	Total Sheets
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REVISION	DATE	REVISION

CHECKED BY  
 DESIGNED BY  
 CALCULATED BY  
 CONSULTANT FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR

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 DON FILE → ...Sheet\11\_25\067028-Fo016.dgn

RELATIVE BORDER SCALE  
 IS IN INCHES

UNIT 0000

PROJECT NUMBER & PHASE  
 1200020052K

NO. SCALE  
 PS-16

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 TIME PLOTTED → 10:55:47 AM

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 TIME PLOTTED → 10:55:47 AM

DATE PLOTTED → 11/16/2011  
 TIME PLOTTED → 10:55:47 AM

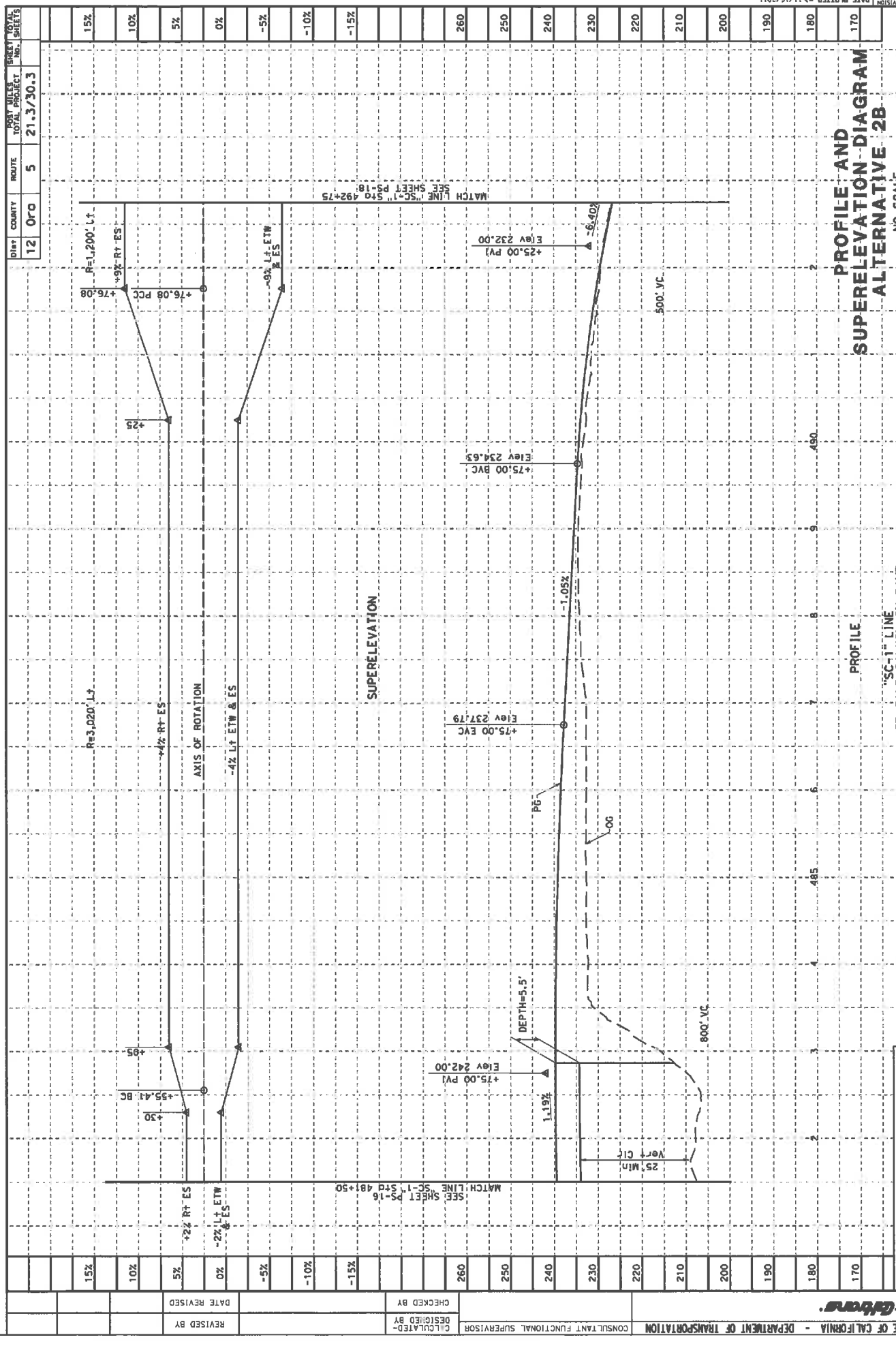
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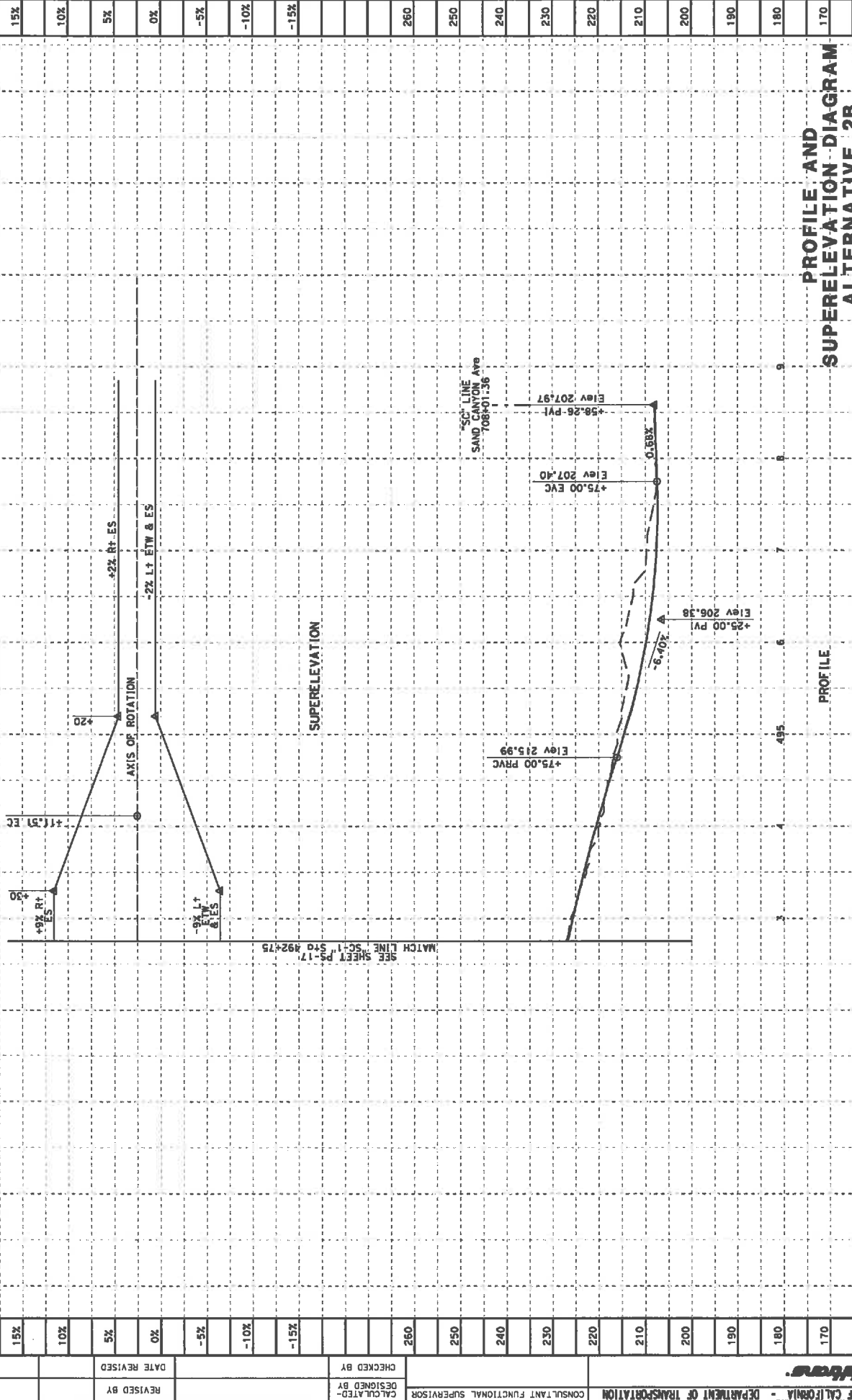
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DATE PLOTTED → 11/16/2011  
 TIME PLOTTED → 10:55:47 AM



15%	
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REVISOR DATE REVISOR  
 DESIGNED BY  
 CHECKED BY  
 CAL. QUALIFIED SUPERVISOR

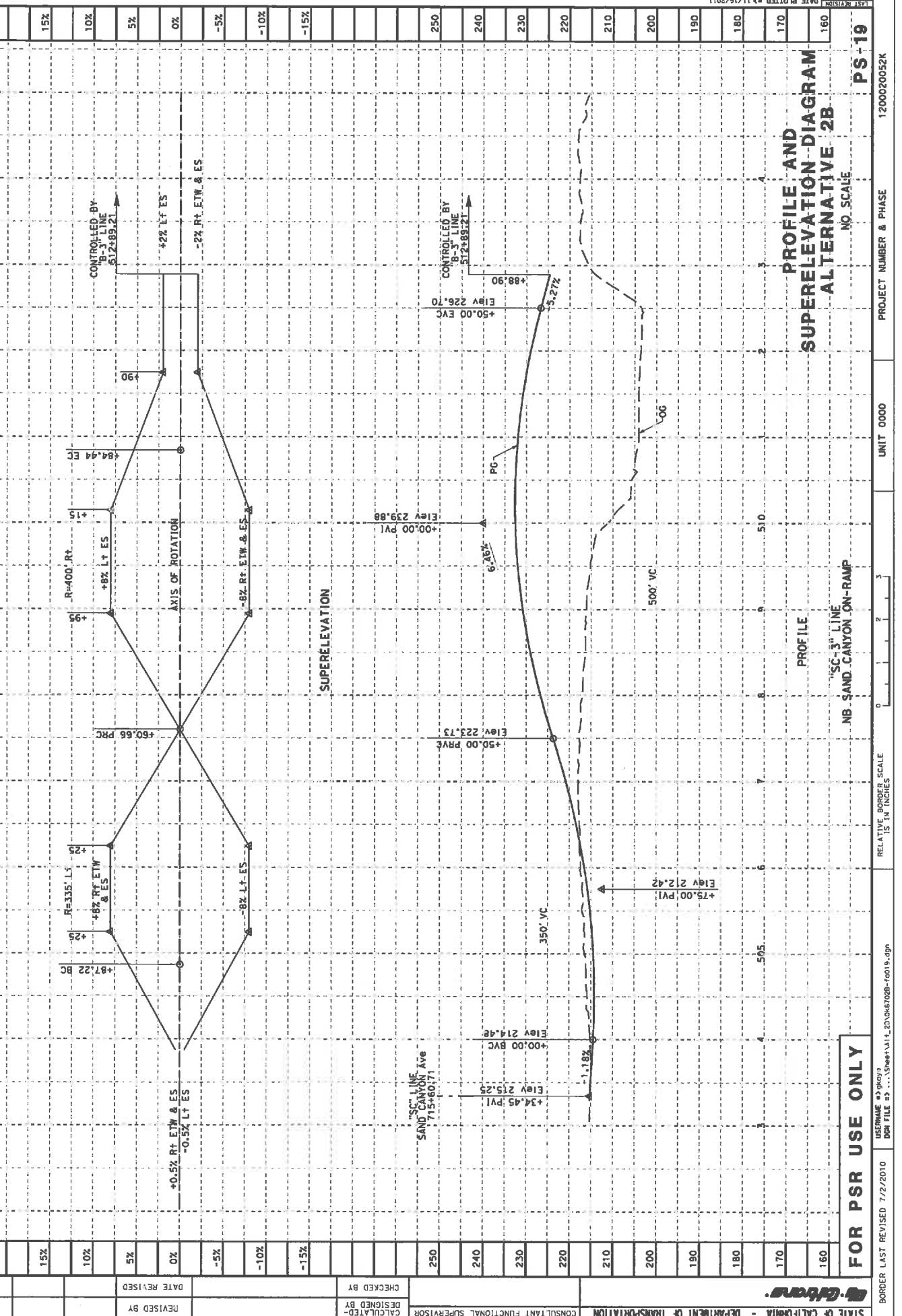


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 SUPRELEVATION  
 PROFILE  
 "SC-1" LINE  
 SB SAND CANYON ON-RAMP  
 NO. SCALE  
 PROJECT NUMBER & PHASE  
 UNIT 0000  
 RELATIVE BORDER SCALE IS IN INCHES  
 DATE PLOTTED 11/16/2011 10:55:55 AM  
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DATE: 11/16/2011  
 TIME PLOTTED: 10:25:58 AM  
 SHEET TOTAL: 21.3/30.3  
 COUNTY: Oro  
 ROUTE: 5

DATE: 7/2/2010  
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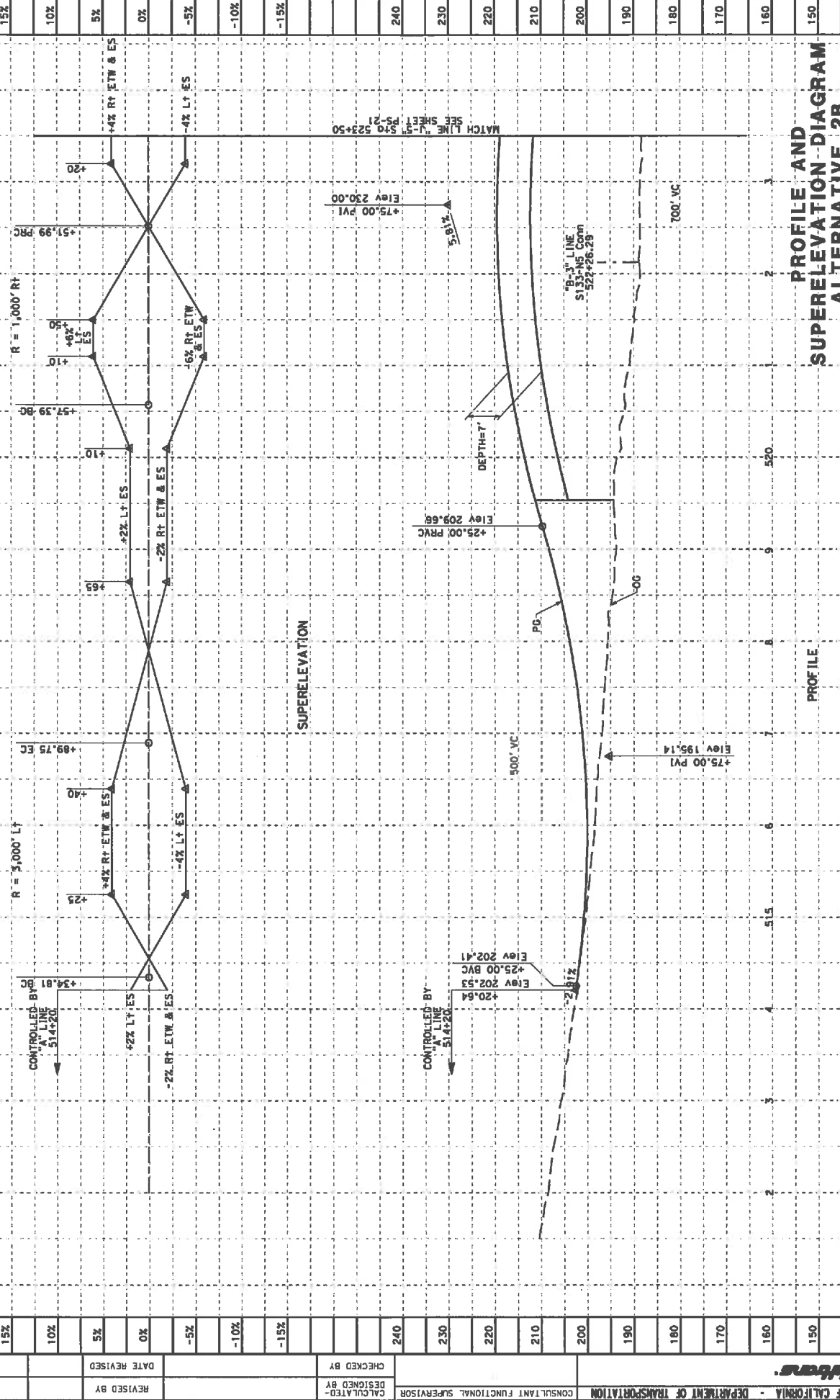


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 FOR PSR USE ONLY  
 PS-19



DATE: 12/08/11  
 COUNTY: ORG 5  
 ROUTE: 5  
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 SHEET NO.: 15

DATE PLOTTED: 11/16/2011  
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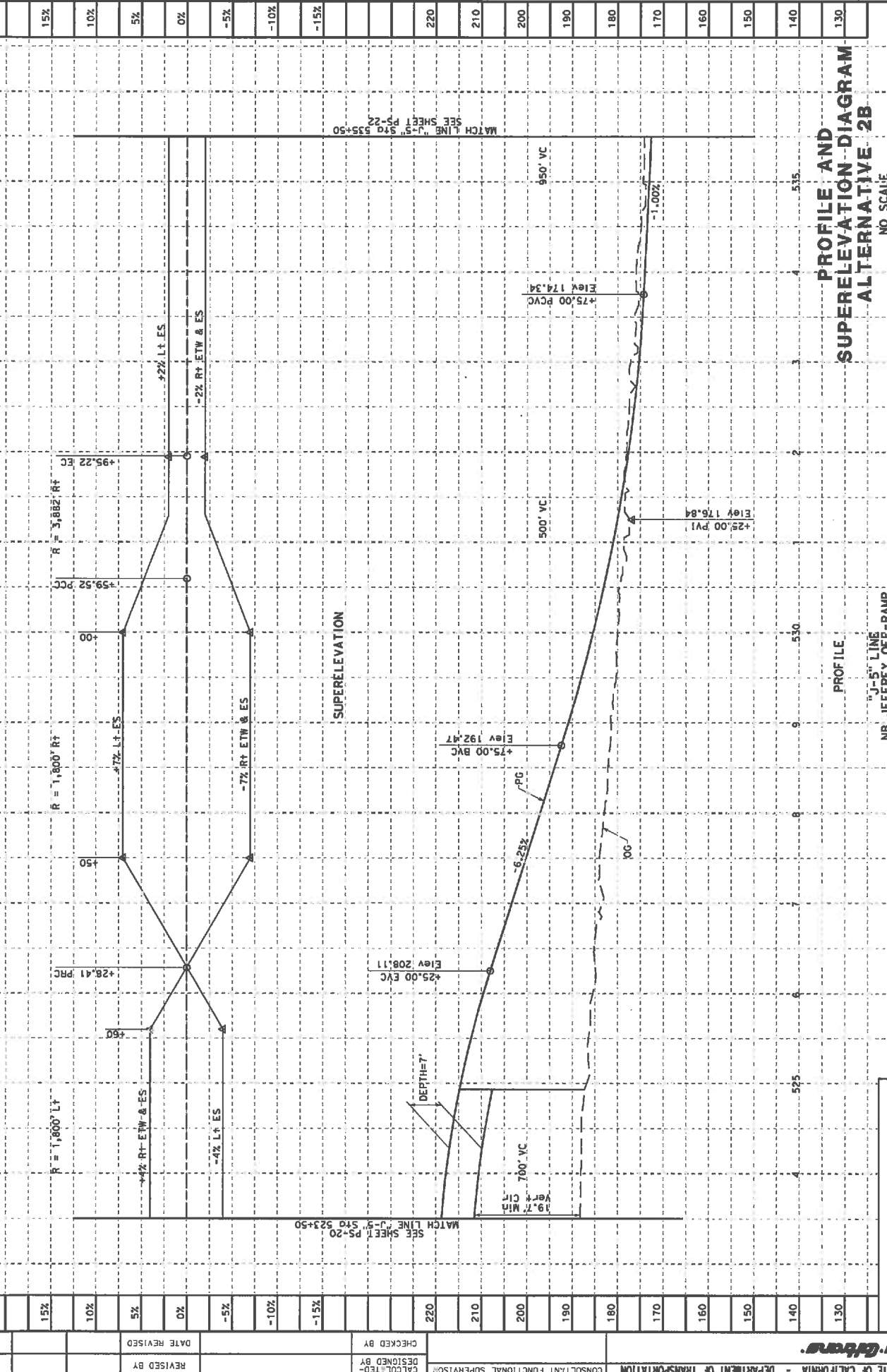
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NO. SCALE  
 PROFILE AND SUPERELEVATION DIAGRAM  
 ALTERNATIVE 2B  
 NB - JEFFREY OFF-RAMP  
 PS-20

DATE	12	ROUTE	5	POST MILES TOTAL PROJECT	21.3730.3	SHEET NO.	21	TOTAL SHEETS	30
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15%	10%	5%	0%	-5%	-10%	-15%	220	210	200	190	180	170	160	150	140	130
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CONSULTANT FUNCTIONAL SUPERVISOR

DESIGNED BY

CHECKED BY

DATE REVISION

DATE REVISION

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

PS-21

NO. SCALE

ALTERNATIVE 2B

SUPERELEVATION DIAGRAM

PROFILE

J-5' LINE

NB JEFFREY OFF-RAMP

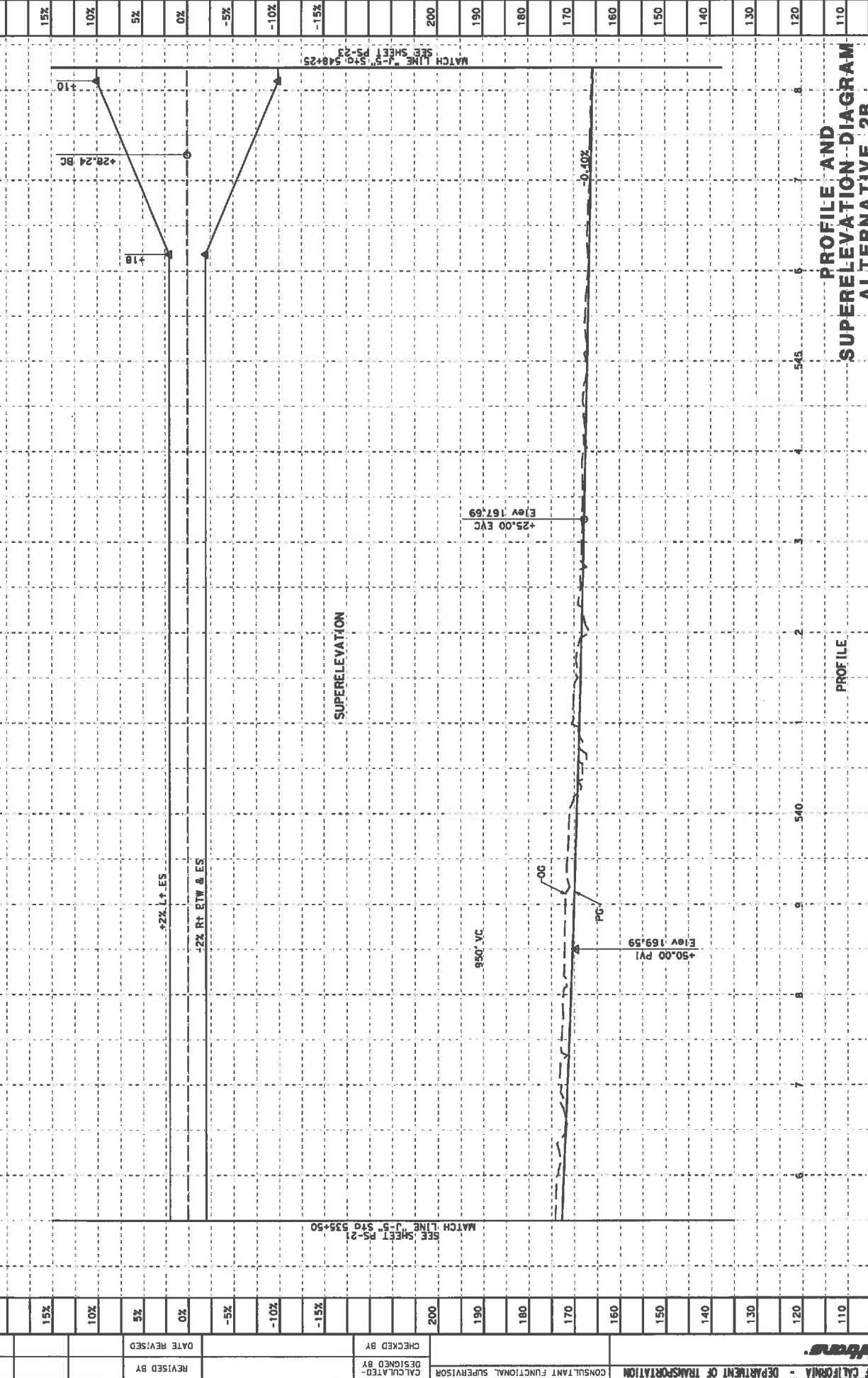
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0 1 2 3

DATE PLOTTED => 11/16/2011 10:55:57 AM

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DIS#	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
12	Orco	5	21.3/30.3	



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 DATE REVISED  
 REVISOR

DATE PLOTTED = 11/16/2011  
 TIME PLOTTED = 10:55:57 AM

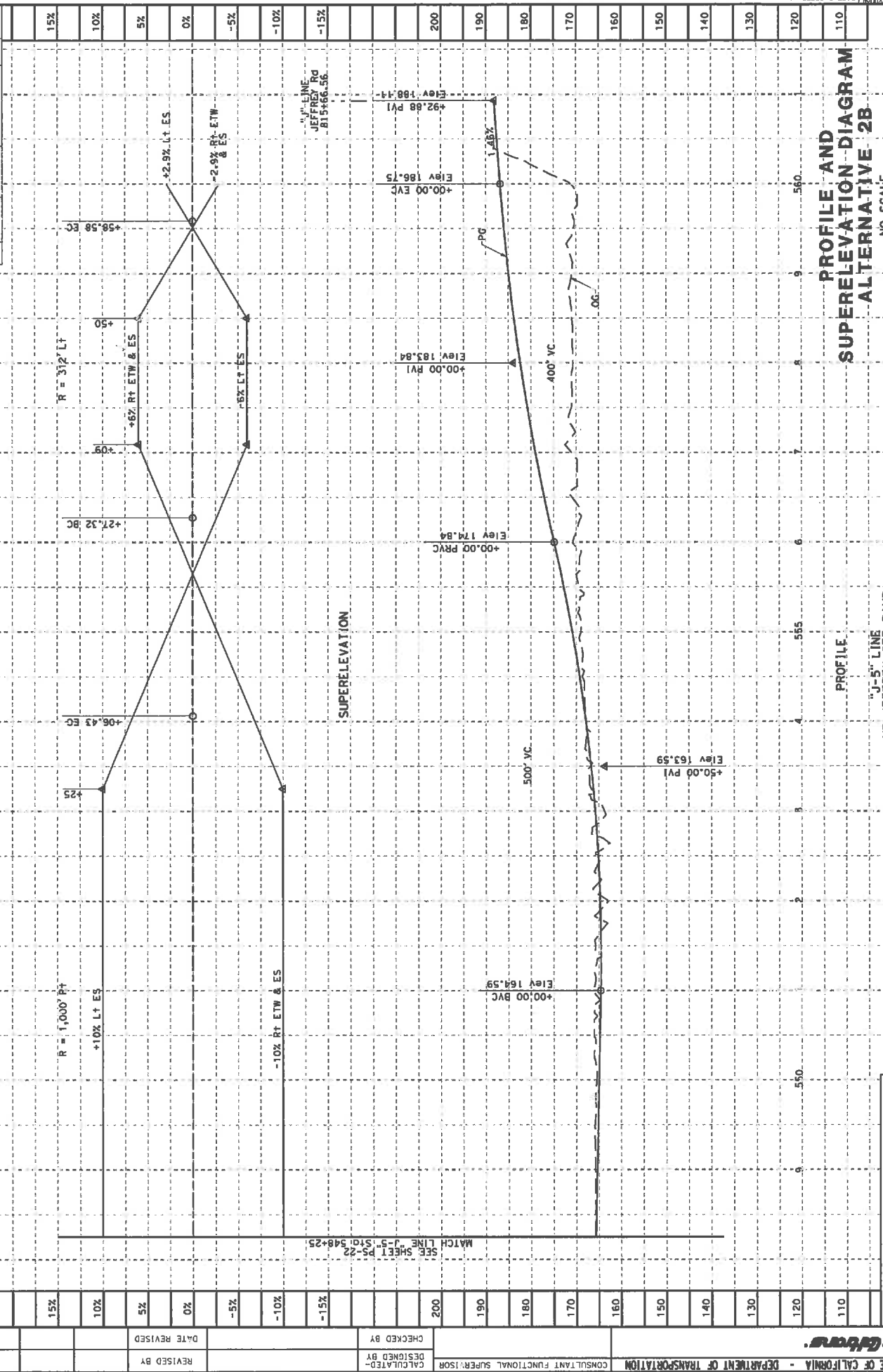
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 NO. SCALE: PS-22

**PROFILE AND SUPERELEVATION DIAGRAM - ALTERNATIVE 2B**

"J-5" LINE NB. JEFFREY OFF-RAMP

DATE REVISIONS	REVISIONS	CHECKED BY	DESIGNED BY	DATE REVISIONS	REVISIONS

12	Oro	5	21.3/30.3	12	Oro	5	21.3/30.3
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SEE SHEET PS-22  
 MATCH LINE J-5" STD 548+25

**PROFILE AND SUPERELEVATION DIAGRAM ALTERNATIVE 2B**  
 NO. SCALE

**ATTACHMENT 6**  
**Nonstandard Design Features**

Highway Design Manual Standards Checklist  
Summary

ID	Section No.	Section Title	Paragraph No.	Text	Alt 2A	Alt 2B
M1	202.2	Standards for Superelevation		Based on an emax selected by the designer for one of the conditions, superelevation rates from Table 202.2 shall be used within the given range of curve radii. If less than standard superelevation rates are approved (see Index 82.1), Figure 202.2 shall be used to determine superelevation based on the curve radius and maximum comfortable speed.		✓
M2	203.2	Standards for Curvature		Table 203.2 shall be the minimum radius of curve for specific design speeds.	✓	✓
M3	301.1	Traveled Way Width		The basic lane width for new construction on two-lane and multilane highways, ramps, collector roads, and other appurtenant roadways shall be 12 feet.	✓	✓
M4	302.1	Width		The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder.	✓	✓
M5	305.1	Width	(3)(a) Facilities under Restrictive Conditions	In areas where restrictive conditions prevail the minimum median width shall be 22 feet.	✓	✓
M6	309.1	Horizontal Clearances	(3)(a)	The minimum horizontal clearance to all objects, such as bridge rails and safety-shaped concrete barriers, as well as sand-filled barrels, metal beam guardrail, etc., on all freeway and expressway facilities, including auxiliary lanes, ramps, and collector roads, shall be equal to the standard shoulder width of the highway facility as stated in Table 302.1. A minimum clearance of 4 feet shall be provided where the standard shoulder width is less than 4 feet.	✓	✓
M7			(3)(b)	The minimum horizontal clearance to walls, such as abutment walls, retaining walls in cut locations, and noise barriers on all facilities, including auxiliary lanes, ramps and collector roads, shall not be less than 10 feet.	✓	✓
M8	501.3	Spacing		The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway interchanges and local street interchanges.	✓	✓
M9	504.3	Ramps	(3) Location and Design of Ramp Intersections on the Crossroads	For new construction or major reconstruction of interchanges, the minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 feet.	✓	✓
M10	504.4	Freeway-to-Freeway Connections	(4)(a) Shoulder Width	The width of shoulders on single-lane and two-lane (except as described below) freeway-to-freeway connectors shall be 5 feet on the left and 10 feet on the right. A single lane freeway-to-freeway connector that has been widened to two lanes solely to provide passing opportunities and not due to capacity requirements shall have a 5-foot left shoulder and at least a 5-foot right shoulder.	✓	✓
M11	1102.2	Noise Barrier Location	(1) Reduction at the Source	Minimum lateral clearance to noise barriers shall be as provided in Topic 309.1, Horizontal Clearances, of this manual, but shall not be less than 10 feet.	✓	
A1	201.7	Decision Sight Distance		On freeways and expressways the decision sight distance values in Table 201.7 should be used at lane drops and at off-ramp noses to interchanges, branch connections, roadside rests, vista points, and inspection stations.	✓	✓
A2	202.5	Superelevation Transition	(1) General.	A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort and pleasing appearance.	✓	✓
A3			(2) Runoff.	Two-thirds of the superelevation runoff should be on the tangent and one-third within the curve.	✓	✓

ID	Section No.	Section Title	Paragraph No.	Text	Alt 2A	Alt 2B
A4	203.5	Compound Curves		the shorter radius should be at least two-thirds the longer radius when the shorter radius is 1,000 feet or less. On one-way roads, the larger radius should follow the smaller radius.	✓	✓
A5	204.3	Standards for Grade		Minimum grades should be 0.5 percent in snow country and 0.3 percent at other locations.	✓	✓
A6	204.4	Vertical Curves		For algebraic grade differences of 2 percent and greater, and design speeds equal to or greater than 40 miles per hour, the minimum length of vertical curve in feet should be equal to 10V, where V = design speed.	✓	✓
A7	305.1	Width	(2) Conventional Highways.	In city street conditions the minimum median width for multilane conventional highways should be 12 feet.	✓	✓
A8	310.2	Outer Separation		In urban areas and in mountainous terrain, the width of the outer separation should be a minimum of 26 feet from edge of traveled way to edge of traveled way.	✓	✓
A9	403.3	Angle of Intersection		When a right angle cannot be provided due to physical constraints, the interior angle should be designed as close to 90 degrees as is practical, but should not be less than 75 degrees. Mitigation should be considered for the affected intersection design features.	✓	✓
A10	502.2	Local Street Interchanges		The use of isolated off ramps or partial interchanges should be avoided because of the potential for wrong-way movements and added driver confusion.	✓	✓
A11	504.2	Freeway Entrances and Exits	(2) Standard Designs.	Design of freeway entrances and exits should conform to the standard designs illustrated in Figure 504.2A-B (single lane), and Figure 504.3L (two-lane entrances and exits) and/or Figure 504.4 (diverging branch connections), as appropriate.	✓	
A12				Contrasting surface treatment beyond the gore pavement should be provided on both entrance and exit ramps as shown on Figures 504.2A, 504.2B, and 504.3L.	✓	
A13			(4)(a) Freeway Exit	Decision sight distance given in Table 201.7 should be provided at freeway exits and branch connectors. At secondary exits on collector-distributor roads, a minimum of 600 feet of decision sight distance should be provided.	✓	✓
A14			(5)(a) Freeway Exits	Vertical curves located just beyond the exit nose should be designed with a minimum 50 miles per hour stopping sight distance.		✓
A15	504.3	Ramps	(1)(d) Lane Drops	the lane should be dropped using a taper of no less than 30 to 1.		✓
A16			(5) Single-lane Ramps.	If the length of a single lane ramp exceeds 1,000 feet, an additional lane should be provided on the ramp to permit passing maneuvers.		✓
A17			(10) Distance Between Successive Exits.	The minimum distance between successive exit ramps for guide signing should be 1,000 feet on the freeway and 600 feet on collector-distributor roads.	✓	✓
A18	504.8	Access Control		For new construction or major reconstruction, access rights should be acquired on the opposite side of the local road from ramp terminals to preclude the construction of future driveways or local roads within the ramp intersection.	✓	✓



Highway Design Manual Standards Checklist

Alternative 2A

ID	Section No.	Section Title	Paragraph No.	Text	Facility	Location	Standard	Proposed Condition	Existing Condition
M2	203.2	Standards for Curvature		Table 203.2 shall be the minimum radius of curve for specific design speeds.	Ramp	NB Alton Off Ramp	850' (50mph)	550' (40mph)	600' (41mph)
						NB Sand Canyon On Ramp	850' (50mph)	430' (35mph)	400' (34mph)
						SB Jeffrey On Ramp	850' (50mph)	270' (28mph)	250' (27mph)
						SB Jeffrey Off Ramp	850' (50mph)	300' (30mph)	250' (27mph)
						NB Jeffrey Off Ramp	850' (50mph)	550' (40mph)	550' (40mph)
M3	301.1	Traveled Way Width		The basic lane width for new construction on two-lane and multilane highways, ramps, collector roads, and other appurtenant roadways shall be 12 feet.	Mainline	NB Sta "A" 807+00 to "A" 818+00 (Inside 4 GP lanes)	12'	11' min	11' min
						SB Sta "A" 826+50 to "A" 829+00 (Inside 1 GP lane)	12'	11' min	11' min
M4	302.1	Width		The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder.	Mainline	NB Sta "A" 807+00 to "A" 818+00	10'	5' Lt	5' Lt
						SB Sta "A" 450+00 to "A" 470+50	10'	4' Rt	10' Rt
						SB Sta "A" 450+00 to "A" 479+00	10'	6' Lt	10' Lt
						SB Sta "A" 499+00 to "A" 502+00	10'	4' Rt	10' Rt
						SB Sta "A" 807+30 to "A" 818+30	10'	5' Lt	5' Lt
					Ramp	S5-N133 Conn	10' Rt	5' Rt	5' Rt
M5	305.1	Width	(3)(a) Facilities under Restrictive Conditions	In areas where restrictive conditions prevail the minimum median width shall be 22 feet.	Mainline	Sta "A" 450+00 to "A" 479+00	22'	18' min	22'
						Sta "A" 807+00 to "A" 818+00	22'	12' min	12'
M6	309.1	Horizontal Clearances	(3)(a)	The minimum horizontal clearance to all objects, such as bridge rails and safety-shaped concrete barriers, as well as sand-filled barrels, metal beam guardrail, etc., on all freeway and expressway facilities, including auxiliary lanes, ramps, and collector roads, shall be equal to the standard shoulder width of the highway facility as stated in Table 302.1. A minimum clearance of 4 feet shall be provided where the standard shoulder width is less than 4 feet.	Mainline	NB Sta "A" 807+00 to "A" 818+00	10'	5' Lt	5' Lt
						SB Sta "A" 450+00 to "A" 470+50	10'	4' Rt	10' Rt
						SB Sta "A" 450+00 to "A" 479+00	10'	6' Lt	10' Lt
						SB Sta "A" 499+00 to "A" 502+00	10'	6' Rt	10' Rt
						SB Sta "A" 807+30 to "A" 818+30	10'	5' Lt	5' Lt
			Ramp	S5-N133 Conn	10' Rt	5' Rt	5' Rt		
M7			(3)(b)	The minimum horizontal clearance to walls, such as abutment walls, retaining walls in cut locations, and noise barriers on all facilities, including auxiliary lanes, ramps and collector roads, shall not be less than 10 feet.	Mainline	RW @ SB Sta "A" 451+00 to "A" 452+50	10'	4'	10'
						RW/SW @ NB Tustin Ranch On Ramp	10'	8'	8'
						RW/SW @ SB Tustin Ranch Off Ramp	10'	8'	10'
						RW/SW @ SB Red Hill Off Ramp	10'	8'	8'
						RW/SW @ SB Red Hill On-Ramp	10'	8'	8'
						RW/SW @ NB Red Hill On Ramp	10'	8'	8'
Ramp	RW @ SB Sand Canyon Off Ramp	10'	4'-8'	8'					
M8	501.3	Spacing		The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway interchanges and local street interchanges.	Mainline	I-405 to Alton	2 miles	0.87 miles	0.87 miles
						Alton to Barranca	1 mile	0.42 miles	0.42 miles
						Barranca to SR-133	2 miles	0.57 miles	0.57 miles
						SR-133 to Sand Canyon	2 miles	0.87 miles	0.87 miles
						Culver to Jamboree	1 mile	0.98 miles	0.98 miles
						Jamboree to Tustin Ranch	1 mile	0.66 miles	0.66 miles
						Tustin Ranch to Red Hill	1 mile	0.85 miles	0.85 miles
						Red Hill to Newport	1 mile	0.51 miles	0.51 miles
						Newport to SR-55	2 miles	0.66 miles	0.66 miles
M9	504.3	Ramps	(3) Location and Design of Ramp Intersections on the Crossroads	For new construction or major reconstruction of interchanges, the minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 feet.	Ramp	SB Sand Canyon Off Ramp/Burt Road	400'	160'	160'
						SB Sand Canyon On Ramp/Burt Road	400'	160'	160'
						SB Culver Off Ramp/Scottsdale Drive	400'	330'	330'
						SB Jamboree Off Ramp/Michelle Drive	400'	340'	340'
						NB Tustin Ranch On Ramp/Auto Center Drive	400'	276'	276'
						NB Red Hill On Ramp/El Camino Real	400'	70'	70'
						NB Red Hill Off Ramp/El Camino Real	400'	75'	75'
						SB Red Hill On Ramp/Nisson Road	400'	110'	110'
						SB Red Hill Off Ramp/Nisson Road	400'	120'	120'

Highway Design Manual Standards Checklist

Alternative 2A

ID	Section No.	Section Title	Paragraph No.	Text	Facility	Location	Standard	Proposed Condition	Existing Condition
M10	504.4	Freeway-to-Freeway Connections	(4)(a) Shoulder Width	The width of shoulders on single-lane and two-lane (except as described below) freeway-to-freeway connectors shall be 5 feet on the left and 10 feet on the right. A single lane freeway-to-freeway connector that has been widened to two lanes solely to provide passing opportunities and not due to capacity requirements shall have a 5-foot left shoulder and at least a 5-foot right shoulder.	Ramp	55-N133 Conn	10' Rt	5' Rt	5' Rt
M11	1102.2	Noise Barrier Location	(1) Reduction at the Source	Minimum lateral clearance to noise barriers shall be as provided in Topic 309.1, Horizontal Clearances, of this manual, but shall not be less than 10 feet.	Mainline	RW/SW @ NB Sta "TR-3" 744+17 to "RH-4" 773+81	10'	8'	10', 8' @ N5-N55 Conn
						RW/SW @ SB Sta "TR-2" 729+58 to "RH-1" 773+59	10'	8'	8'
						RW/SW @ SB Sta "RH-2" 775+86 to "A" 801+88	10'	8'	8'
						RW/SW @ NB Sta "RH-3" 775+79 to "A" 801+10	10'	8'	10'
A1	201.7	Decision Sight Distance		On freeways and expressways the decision sight distance values in Table 201.7 should be used at lane drops and at off-ramp noses to interchanges, branch connections, roadside rests, vista points, and inspection stations.	Mainline	SB Culver Off Ramp	1260' (80 mph)	1050' (65 mph)	1260' (80 mph)
						NB Jamboree Off Ramp	1260' (80 mph)	810' (52 mph)	1260' (80 mph)
						SB Tustin Ranch Off Ramp	1260' (80 mph)	729' (48 mph)	1260' (80 mph)
						NB Red Hill Off Ramp	1260' (80 mph)	747' (49 mph)	1260' (80 mph)
						SB Red Hill Off Ramp	1260' (80 mph)	511' (35 mph)	580' (60 mph)
						N5-N55 Conn	1260' (80 mph)	778' (51 mph)	750' (70 mph)
A2	202.5	Superelevation Transition	(1) General.	A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort and pleasing appearance.	Ramp	NB Culver Off Ramp	Follow Fig. 202.5A	18% per Sta	18% per Sta
						NB Culver On Ramp	Follow Fig. 202.5A	14% per Sta	14% per Sta
A3			(2) Runoff.	Two-thirds of the superelevation runoff should be on the tangent and one-third within the curve.	Ramp	SB Culver On Ramp (Loop)	2/3 runoff on tangent and 1/3 runoff on curve	5/6 runoff on tangent and 1/6 runoff on curve	5/6 runoff on tangent and 1/6 runoff on curve
						NB Jamboree On Ramp (Loop)	2/3 runoff on tangent and 1/3 runoff on curve	Runoff on curve	Existing info not available
						SB Jamboree On Ramp (Loop)	2/3 runoff on tangent and 1/3 runoff on curve	Runoff on curve	Existing info not available
A4	203.5	Compound Curves		The shorter radius should be at least two-thirds the longer radius when the shorter radius is 1,000 feet or less. On one-way roads, the larger radius should follow the smaller radius.	Ramp	NB Sand Canyon Off Ramp	Larger radius follows smaller radius and Smaller radius 2/3 larger radius	R=200' follows R=1000'	No PCC at this location
A5	204.3	Standards for Grade		Minimum grades should be 0.5 percent in snow country and 0.3 percent at other locations.	Mainline	Sta "A" 399+50 to "A" 410+75	0.3% min	0.12%	0.12%
						Sta "A" 414+50 to "A" 437+00	0.3% min	0.24%	0.24%
						Sta "A" 699+00 to "A" 705+05	0.3% min	0.24%	0.24%
						Sta "A" 818+75 to "A" 825+82.54	0.3% min	0.19%	0.19%
					Ramp	SB Alton Off Ramp	0.3% min	0.09%	0.05%
						NB Alton On Ramp (Direct)	0.3% min	0.14%	0.08%
NB Alton On Ramp (Loop)	0.3% min	0.01%	0.20%						
A6	204.4	Vertical Curves		For algebraic grade differences of 2 percent and greater, and design speeds equal to or greater than 40 miles per hour, the minimum length of vertical curve in feet should be equal to 10V, where V = design speed.	Ramp	SB Alton Off Ramp	500' (DS=50mph)	400'	200'
						NB Alton On Ramp (Loop)	500' (DS=50mph)	400'	300'
					Local Street	Enterprise	500' (DS=50mph)	300'	200'
						Jeffrey	500' (DS=50mph)	400'	440'
						500' (DS=50mph)	350'	475'	
A7	305.1	Width	(2) Conventional Highways.	In city street conditions the minimum median width for multilane conventional highways should be 12 feet.	Local Street	Alton Parkway	12'	10' min	10' min
						Jeffrey Road	12'	8' min	8' min
A8	310.2	Outer Separation		In urban areas and in mountainous terrain, the width of the outer separation should be a minimum of 26 feet from edge of traveled way to edge of traveled way.	Mainline	El Camino Real	26'	22' min	20' min
A9	403.3	Angle of Intersection		When a right angle cannot be provided due to physical constraints, the interior angle should be designed as close to 90 degrees as is practical, but should not be less than 75 degrees. Mitigation should be considered for the affected intersection design features.	Ramp	NB Newport On Ramp	75°	67°	65°

Highway Design Manual Standards Checklist

Alternative 2A

ID	Section No.	Section Title	Paragraph No.	Text	Facility	Location	Standard	Proposed Condition	Existing Condition
A10	502.2	Local Street Interchanges		The use of isolated off ramps or partial interchanges should be avoided because of the potential for wrong-way movements and added driver confusion.	Mainline	Barranca Interchange	No isolated off ramps or partial interchanges	Partial interchange (NB HOV on and SB HOV off only)	Partial interchange (NB HOV on and SB HOV off only)
						Newport Interchange	No isolated off ramps or partial interchanges	Partial interchange (NB On and SB off only)	Partial interchange (NB On and SB off only)
A11	504.2	Freeway Entrances and Exits	(2) Standard Designs.	Design of freeway entrances and exits should conform to the standard designs illustrated in Figure 504.2A-B (single lane), and Figure 504.3L (two-lane entrances and exits) and/or Figure 504.4 (diverging branch connections), as appropriate.	Ramp	S133-N5 Conn	Conform to Fig 504.2A	Converges faster than Fig	Converges faster than Fig
					NB Jeffrey On Ramp (Direct)	Conform to Fig 504.2A	Converges faster than Fig	Converges faster than Fig	
A12				Contrasting surface treatment beyond the gore pavement should be provided on both entrance and exit ramps as shown on Figures 504.2A, 504.2B, and 504.3L.	Ramp	SB Sand Canyon Off Ramp	Provide contrasting pavement per Figures	Contrasting pavement not provided	Contrasting pavement present
A13			(4)(a) Freeway Exit	Decision sight distance given in Table 201.7 should be provided at freeway exits and branch connectors. At secondary exits on collector-distributor roads, a minimum of 600 feet of decision sight distance should be provided.	Mainline	SB Culver Off Ramp	1260' (80 mph)	1050' (65 mph)	1260' (80 mph)
						NB Jamboree Off Ramp	1260' (80 mph)	810' (52 mph)	1260' (80 mph)
						SB Tustin Ranch Off Ramp	1260' (80 mph)	729' (48 mph)	1260' (80 mph)
						NB Red Hill Off Ramp	1260' (80 mph)	747' (49 mph)	1260' (80 mph)
						SB Red Hill Off Ramp	1260' (80 mph)	511' (35 mph)	580' (60 mph)
						N5-N55 Conn	1260' (80 mph)	778' (51 mph)	750' (70 mph)
A14			(5)(a) Freeway Exits	Vertical curves located just beyond the exit nose should be designed with a minimum 50 miles per hour stopping sight distance.	May be required. To Be Determined at PA/ED with additional survey.				
A17	504.3	Ramps	(10) Distance Between Successive Exits.	The minimum distance between successive exit ramps for guide signing should be 1,000 feet on the freeway and 600 feet on collector-distributor roads.	Mainline	S5-N133 Conn to SB Sand Canyon Off Ramp	1000'	700'	850'
A18	504.8	Access Control		For new construction or major reconstruction, access rights should be acquired on the opposite side of the local road from ramp terminals to preclude the construction of future driveways or local roads within the ramp intersection.	Ramp	SB Alton Off Ramp	Acquire access control	No access control	No access control

Highway Design Manual Standards Checklist

Alternative 2B

ID	Section No.	Section Title	Paragraph No.	Text	Facility	Location	Standard	Proposed Condition	Existing Condition
M1	202.2	Standards for Superelevation		Based on an emax selected by the designer for one of the conditions, superelevation rates from Table 202.2 shall be used within the given range of curve radii. If less than standard superelevation rates are approved (see Index 82.1), Figure 202.2 shall be used to determine superelevation based on the curve radius and maximum comfortable speed.	Ramp	NB El Camino On Ramp (Option 2 Only)	12%	8%	New facility
						NB Jeffrey Off Ramp (Option 3 Only)	10%	emax=6%, 54mph	New facility location
							7%	emax=4%, 65mph	New facility location
							12%	emax=6%, 32mph	New facility location
						NB Sand Canyon On-Ramp (Option 3 Only)	12%	emax=8%, 34mph	New facility location
							12%	emax=8%, 34mph	New facility location
S133-N5 Conn (Option 3 Only)	9%	emax=5%, 60mph	New facility location						
M2	203.2	Standards for Curvature		Table 203.2 shall be the minimum radius of curve for specific design speeds.	Ramp	NB Alton On Ramp (Direct)	850' (50mph)	580' (41mph)	600' (41mph)
						NB Alton Off Ramp	850' (50mph)	640' (43mph)	600' (41mph)
						NB Sand Canyon On Ramp	850' (50mph)	345' (31mph)	400' (34mph)
						NB Sand Canyon On Ramp (Option 3 Only)	850' (50mph)	400' (34mph)	400' (34mph)
						SB Jeffrey On Ramp	850' (50mph)	250' (27mph)	250' (27mph)
						SB Jeffrey Off Ramp	850' (50mph)	250' (27mph)	250' (27mph)
						NB Jeffrey On Ramp (Direct) (Option 3 Only)	850' (50mph)	425' (35mph)	400' (34mph)
M3	301.1	Traveled Way Width		The basic lane width for new construction on two-lane and multilane highways, ramps, collector roads, and other appurtenant roadways shall be 12 feet.	Mainline	NB Sta "A" 809+00 to "A" 824+00 (HOV and Inside 6 GP lanes)	12'	11' min	12'
						NB Sta "A" 824+00 to "A" 831+50 (HOV and Inside 4 GP lanes)	12'	11' min	11' min
						SB Sta "A" 495+00 to "A" 565+00 (HOV and Inside 3 GP lanes)	12'	11' min	12'
						SB Sta "A" 565+00 to "A" 620+00 (HOV and Inside 2 GP lanes)	12'	11' min	12'
						SB Sta "A" 812+00 to "A" 831+50 (HOV and Inside 3 GP lanes)	12'	11' min	11' min
M4	302.1	Width		The shoulder widths given in Table 302.1 shall be the minimum continuous usable width of paved shoulder.	Mainline	NB Sta "A" 516+40 to "A" 553+00 (Option 3 Only)	10'	4' Lt	10'
						NB Sta "A" 577+40 to "A" 615+85	10'	4' Lt	10' Lt
						NB Sta "A" 727+30 to "A" 834+85	10'	2' Lt	5' Lt min
						NB Sta "A" 809+50 to "A" 830+50	10'	8' Rt	10' Rt
						SB Sta "A" 450+00 to "A" 461+40	10'	4' Rt	10' Rt
						SB Sta "A" 495+30 to "A" 619+80	10'	4' Lt	10' Lt
						SB Sta "A" 727+30 to "A" 834+85	10'	2' Lt	5' Lt min
					Ramp	S5-N133 Conn	10' Rt	5' Rt	5' Rt
M5	305.1	Width	(3)(a) Facilities under Restrictive Conditions	In areas where restrictive conditions prevail the minimum median width shall be 22 feet.	Mainline	Sta "A" 495+00 to "A" 620+00	22'	10' min	22' min
						Sta "A" 727+00 to "A" 835+00	22'	6' min	12' min
M6	309.1	Horizontal Clearances	(3)(a)	The minimum horizontal clearance to all objects, such as bridge rails and safety-shaped concrete barriers, as well as sand-filled barrels, metal beam guardrail, etc., on all freeway and expressway facilities, including auxiliary lanes, ramps, and collector roads, shall be equal to the standard shoulder width of the highway facility as stated in Table 302.1. A minimum clearance of 4 feet shall be provided where the standard shoulder width is less than 4 feet.	Mainline	NB Sta "A" 577+40 to "A" 615+85	10'	4' Lt	10' Lt
						NB Sta "A" 727+30 to "A" 834+85	10'	2' Lt	5' Lt min
						NB Sta "A" 809+50 to "A" 830+50	10'	8' Rt	10' Rt
						SB Sta "A" 451+00 to "A" 460+00	10'	4' Rt	10' Rt
						SB Sta "A" 495+30 to "A" 619+80	10'	4' Lt	10' Lt
					SB Sta "A" 727+30 to "A" 834+85	10'	2' Lt	5' Lt min	
					Ramp	S5-N133 Conn	10' Rt	5' Rt	5' Rt
M7			(3)(b)	The minimum horizontal clearance to walls, such as abutment walls, retaining walls in cut locations, and noise barriers on all facilities, including auxiliary lanes, ramps and collector roads, shall not be less than 10 feet.	Mainline	RW @ SB Sta "A" 451+00 to "A" 452+50	10'	4'	10'
						Ramp	RW @ S5/S133 Conn (Option 4 Only)	10'	8'
					Ramp	RW @ SB Sand Canyon Off Ramp	10'	4'	4'

**Highway Design Manual Standards Checklist  
Alternative 2B**

ID	Section No.	Section Title	Paragraph No.	Text	Facility	Location	Standard	Proposed Condition	Existing Condition
M8	501.3	Spacing		The minimum interchange spacing shall be one mile in urban areas, two miles in rural areas, and two miles between freeway-to-freeway interchanges and local street interchanges.	Mainline	I-405 to Alton	2 miles	0.87 miles	0.87 miles
						Alton to Barranca	1 mile	0.42 miles	0.42 miles
						Barranca to SR-133	2 miles	0.57 miles	0.57 miles
						SR-133 to Sand Canyon	2 miles	0.87 miles	0.87 miles
						Culver to Jamboree	1 mile	0.98 miles	0.98 miles
						Jamboree to Tustin Ranch	1 mile	0.66 miles	0.66 miles
						Tustin Ranch to Red Hill	1 mile	0.85 miles	0.85 miles
						Red Hill to Newport	1 mile	0.51 miles	0.51 miles
						Newport to SR-55	2 miles	0.66 miles	0.66 miles
M9	504.3	Ramps	(3) Location and Design of Ramp Intersections on the Crossroads	For new construction or major reconstruction of interchanges, the minimum distance (curb return to curb return) between ramp intersections and local road intersections shall be 400 feet.	Ramp	SB Sand Canyon Off Ramp/Burt Road	400'	160'	160'
						SB Sand Canyon On Ramp/Burt Road	400'	160'	160'
						SB Culver Off Ramp/Scottsdale Drive	400'	330'	330'
						SB Jamboree Off Ramp/Michelle Drive	400'	340'	340'
						NB Tustin Ranch On Ramp/Auto Center Drive	400'	276'	276'
						NB Red Hill On Ramp/El Camino Real	400'	70'	70'
						NB Red Hill Off Ramp/El Camino Real	400'	75'	75'
						SB Red Hill On Ramp/Nisson Road	400'	110'	110'
						SB Red Hill Off Ramp/Nisson Road	400'	120'	120'
M10	504.4	Freeway-to-Freeway Connections	(4)(a) Shoulder Width	The width of shoulders on single-lane and two-lane (except as described below) freeway-to-freeway connectors shall be 5 feet on the left and 10 feet on the right. A single lane freeway-to-freeway connector that has been widened to two lanes solely to provide passing opportunities and not due to capacity requirements shall have a 5-foot left shoulder and at least a 5-foot right shoulder.	Ramp	S5-N133 Conn	10' Rt	5' Rt	5' Rt
A1	201.7	Decision Sight Distance		On freeways and expressways the decision sight distance values in Table 201.7 should be used at lane drops and at off-ramp noses to interchanges, branch connections, roadside rests, vista points, and inspection stations.	Ramp	S5-S133 Conn (Option 4 Only)	1260' (80 mph)	996' (60 mph)	1260' (80 mph)
						SB Culver Off Ramp	1260' (80mph)	65mph	1260' (80 mph)
						NB Jamboree Off Ramp	1260' (80mph)	47mph	1260' (80 mph)
						N5-N55 Conn	1260' (80mph)	58mph	750' (70 mph)
A2	202.5	Superelevation Transition	(1) General	A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort and pleasing appearance.	Ramp	S5-S133 Conn (Option 4 Only)	Follow Fig. 202.5A	6% per Sta	Follows figure
						NB Sand Canyon On-Ramp (Option 3 Only)	Follow Fig. 202.5A	6% per Sta	New facility location
						NB Jeffrey Off Ramp (Option 3 Only)	Follow Fig. 202.5A	6% per Sta	New facility location
						NB Culver Off Ramp	Follow Fig. 202.5A	18% per Sta	18% per Sta
						NB Culver On Ramp	Follow Fig. 202.5A	14% per Sta	14% per Sta
						A3			(2) Runoff
NB Jeffrey Off Ramp (Option 3 Only)	2/3 runoff on tangent and 1/3 runoff on curve	Runoff on curve	New facility location						
SB Culver On Ramp (Loop)	2/3 runoff on tangent and 1/3 runoff on curve	1/2 runoff on tangent and 1/2 runoff on curve	New facility location						
NB Jamboree On (Loop)	2/3 runoff on tangent and 1/3 runoff on curve	5/6 runoff on tangent and 1/6 runoff on curve	5/6 runoff on tangent and 1/6 runoff on curve						
SB Jamboree On (Loop)	2/3 runoff on tangent and 1/3 runoff on curve	Runoff on curve	Existing info not available						
NB El Camino On Ramp (Option 2 Only)	2/3 runoff on tangent and 1/3 runoff on curve	Runoff on curve	Existing info not available						

Highway Design Manual Standards Checklist

Alternative 2B

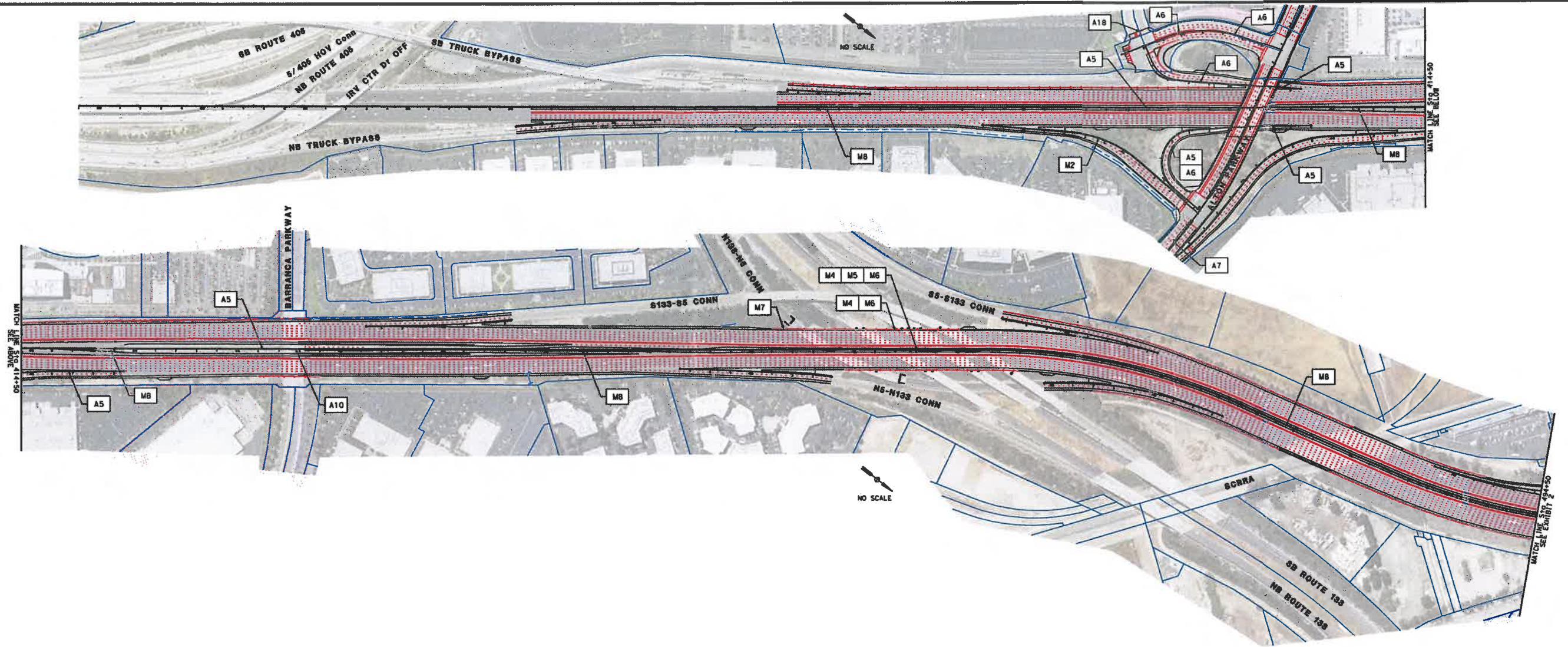
ID	Section No.	Section Title	Paragraph No.	Text	Facility	Location	Standard	Proposed Condition	Existing Condition
A4	203.5	Compound Curves		The shorter radius should be at least two-thirds the longer radius when the shorter radius is 1,000 feet or less. On one-way roads, the larger radius should follow the smaller radius.	Ramp	NB Sand Canyon Off Ramp	Larger radius follows smaller radius and Smaller radius 2/3 larger radius	R=200' follows R=1000'	No PCC at this location
A5	204.3	Standards for Grade		Minimum grades should be 0.5 percent in snow country and 0.3 percent at other locations.	Mainline	Sta "A" 399+50 to "A" 410+75	0.3% min	0.12%	0.12%
						Sta "A" 414+50 to "A" 437+00	0.3% min	0.24%	0.24%
						Sta "A" 699+00 to "A" 705+05	0.3% min	0.24%	0.24%
						Sta "A" 818+75 to "A" 825+82.54	0.3% min	0.19%	0.19%
					Ramp	SB Alton Off Ramp	0.3% min	0.06%	0.05%
						NB Alton On Ramp (Direct)	0.3% min	0.16%	0.08%
						NB Alton On Ramp (Loop)	0.3% min	0.01%	0.20%
					NB Alton Off Ramp	0.3% min	0.08%	0.96%	
A6	204.4	Vertical Curves		For algebraic grade differences of 2 percent and greater, and design speeds equal to or greater than 40 miles per hour, the minimum length of vertical curve in feet should be equal to 10V, where V = design speed.	Ramp	SB Alton Off Ramp	500'	400'	200'
						NB Alton On Ramp (Loop)	500'	400'	300'
						SB Sand Canyon On Ramp (Option 4 Only)	500'	300'	New facility location
					Local Street	Enterprise	500'	300'	200'
							500'	300'	100'
					NB Sand Canyon On Ramp (Option 3 Only)	500'	350'	New facility location	
A7	305.1	Width	(2) Conventional Highways.	In city street conditions the minimum median width for multilane conventional highways should be 12 feet.	Local Street	Alton Parkway	12'	10' min	10'
A8	310.2	Outer Separation		In urban areas and in mountainous terrain, the width of the outer separation should be a minimum of 26 feet from edge of traveled way to edge of traveled way.	Mainline	El Camino Real	26'	22' min	20' min
A9	403.3	Angle of Intersection		When a right angle cannot be provided due to physical constraints, the interior angle should be designed as close to 90 degrees as is practical, but should not be less than 75 degrees. Mitigation should be considered for the affected intersection design features.	Ramp	NB Newport On Ramp	75°	67°	65°
A10	502.2	Local Street Interchanges		The use of isolated off ramps or partial interchanges should be avoided because of the potential for wrong-way movements and added driver confusion.	Mainline	Barranca Interchange	No isolated off ramps or partial interchanges	Partial interchange (NB HOV on and SB HOV off only)	Partial interchange (NB HOV on and SB HOV off only)
						Newport Interchange	No isolated off ramps or partial interchanges	Partial interchange (NB On and SB off only)	Partial interchange (NB On and SB off only)
A13	504.2	Freeway Entrances and Exits	(4)(a) Freeway Exit	Decision sight distance given in Table 201.7 should be provided at freeway exits and branch connectors. At secondary exits on collector-distributor roads, a minimum of 600 feet of decision sight distance should be provided.	Ramp	S5-S133 Conn (Option 4 Only)	1260' (80 mph)	996' (60 mph)	1260' (80 mph)
						SB Culver Off Ramp	1260' (80mph)	65mph	1260' (80 mph)
						NB Jamboree Off Ramp	1260' (80mph)	47mph	1260' (80 mph)
						N5-N55 Conn	1260' (80mph)	58mph	750' (70 mph)
A14			(5)(a) Freeway Exits	Vertical curves located just beyond the exit nose should be designed with a minimum 50 miles per hour stopping sight distance.	Ramp	NB Jeffrey Off Ramp (Option 3 Only)	50 mph	38 mph	New facility location



Highway Design Manual Standards Checklist

Alternative 2B

ID	Section No.	Section Title	Paragraph No.	Text	Facility	Location	Standard	Proposed Condition	Existing Condition
A15	504.3	Ramps	(1)(d) Lane Drops	the lane should be dropped using a taper of no less than 30 to 1.	Ramp	NB Newport On Ramp	30:1	15:1	15:1
A16			(5) Single-lane Ramps.	If the length of a single lane ramp exceeds 1,000 feet, an additional lane should be provided on the ramp to permit passing maneuvers.	Ramp	S5-S133 (Barranca) Off Ramp (Option 4 Only)	Add passing lane	No passing lane	No passing lane
A17			(10) Distance Between Successive Exits.	The minimum distance between successive exit ramps for guide signing should be 1,000 feet on the freeway and 600 feet on collector-distributor roads.	Mainline	S5-N133 Conn to SB Sand Canyon Off Ramp	1000'	700'	850'
A18	504.8	Access Control		For new construction or major reconstruction, access rights should be acquired on the opposite side of the local road from ramp terminals to preclude the construction of future driveways or local roads within the ramp intersection.	Ramp	NB El Camino On Ramp (Option 2 Only)	Acquire access control	Acquisition not anticipated	New facility
						SB Alton Off Ramp	Acquire access control	No access control	No access control



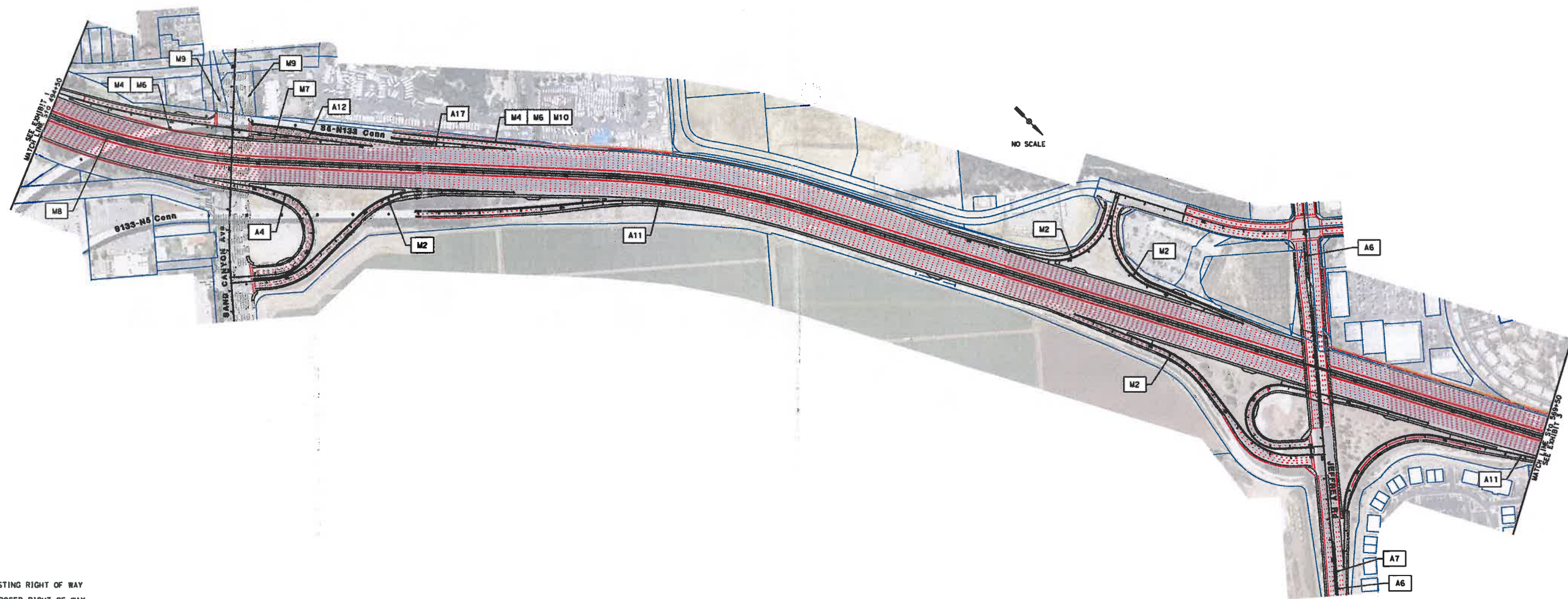
**LEGEND**  
 — EXISTING RIGHT OF WAY  
 — PROPOSED RIGHT OF WAY

**DESIGN EXCEPTION LOCATIONS**  
 PRELIMINARY DRAFT, SUBJECT TO CHANGE - NOT APPROVED BY CALTRANS

**I-5 PSR (PDS)**  
 ALTERNATIVE 2A - FULL STANDARD FREEWAY SECTION  
 (EXHIBIT 1 OF 4: I-405 TO SR-133)

NOVEMBER 2011

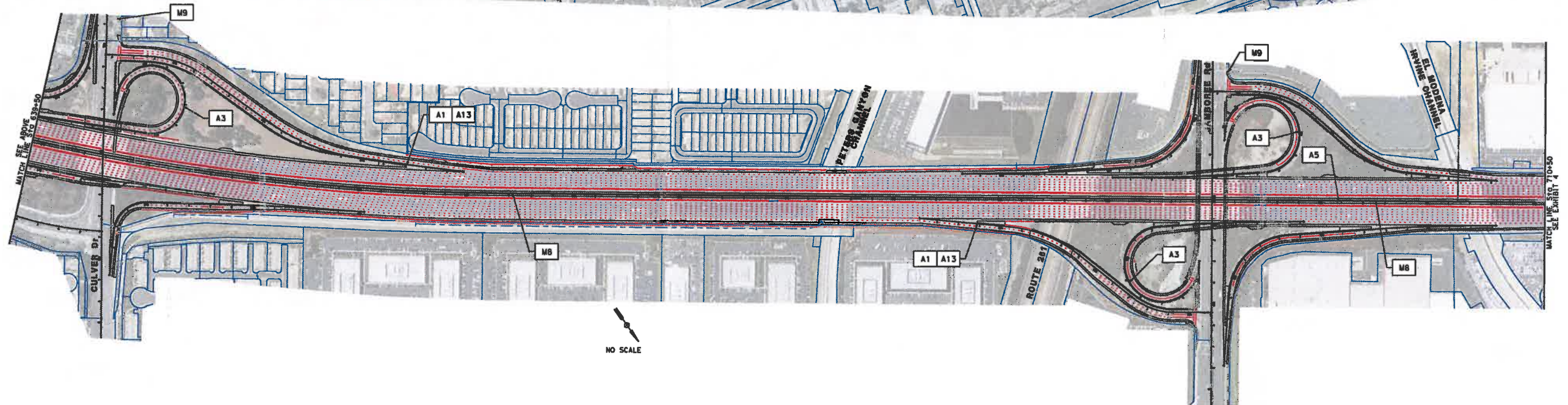
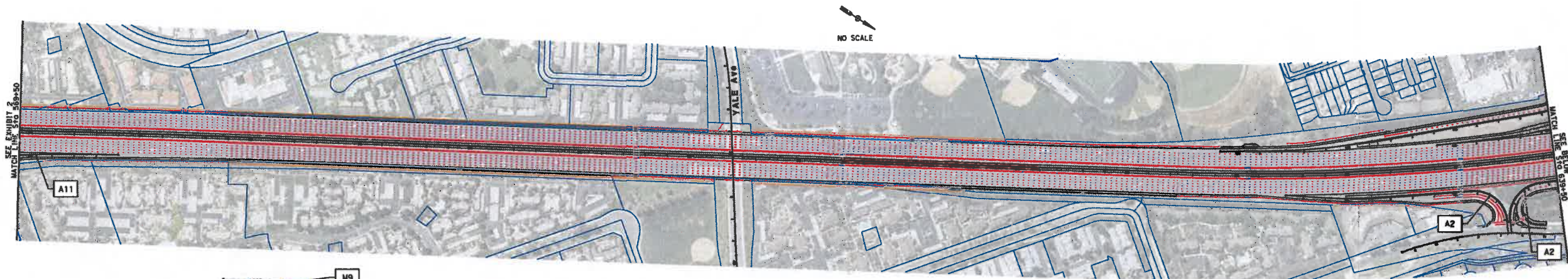




**LEGEND**

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- - - PROPOSED RIGHT OF WAY



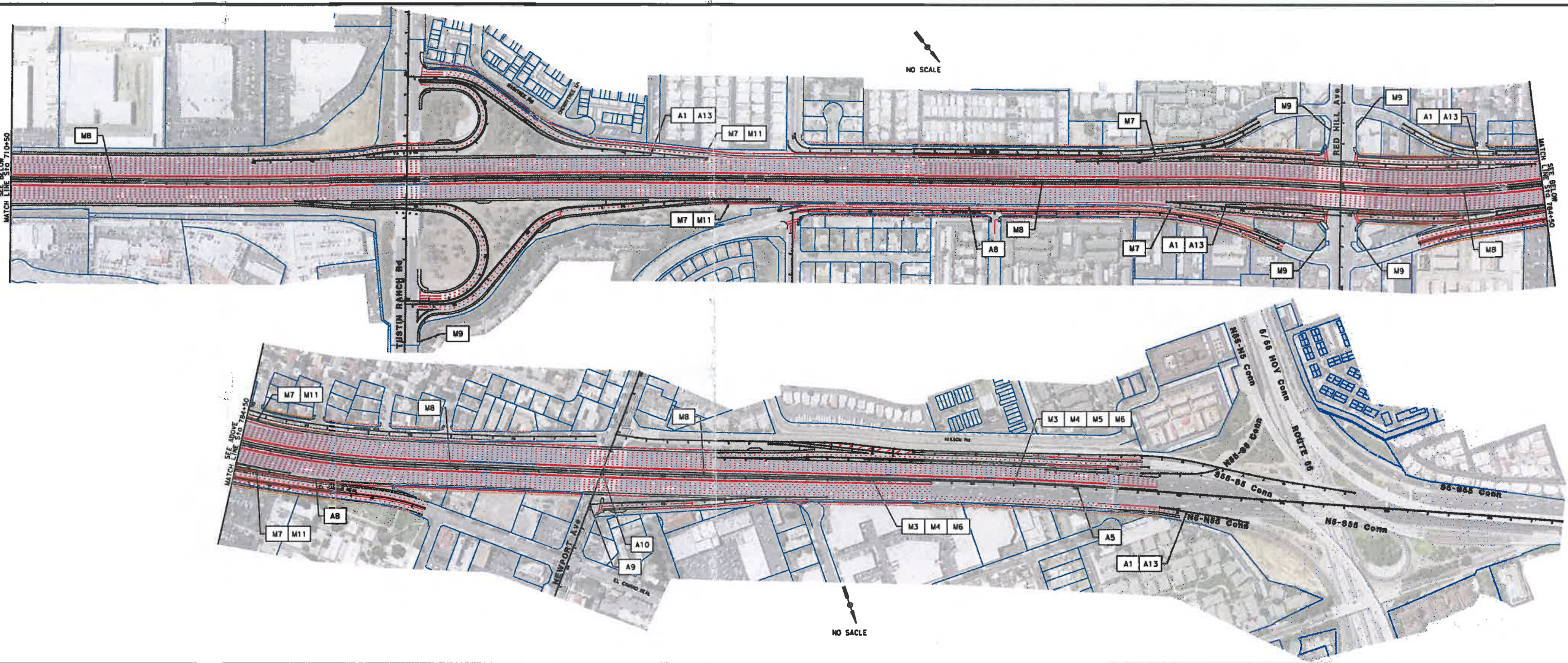


**LEGEND**  
 — EXISTING RIGHT OF WAY  
 — PROPOSED RIGHT OF WAY

**DESIGN EXCEPTION LOCATIONS**  
**PRELIMINARY DRAFT, SUBJECT TO CHANGE - NOT APPROVED BY CALTRANS**

**I-5 PSR (PDS)**  
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 (EXHIBIT 3 OF 41 YALE AVE TO JAMBORÉE RD)



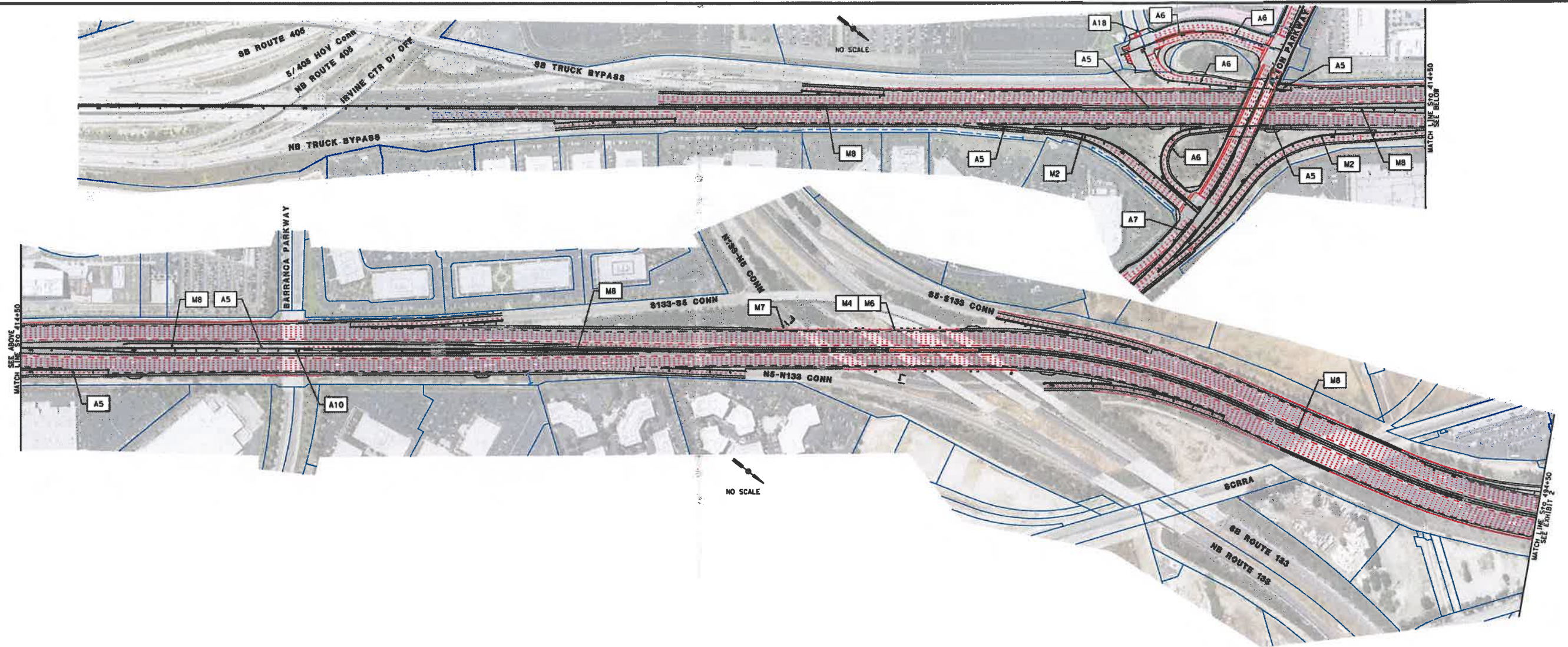


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 — PROPOSED RIGHT OF WAY

**DESIGN EXCEPTION LOCATIONS  
 PRELIMINARY DRAFT, SUBJECT TO CHANGE - NOT APPROVED BY CALTRANS**

**I-5 PSR (PDS)**  
 ALTERNATIVE 2A - FULL STANDARD FREEWAY SECTION  
 (EXHIBIT 4 OF 41 TUSTIN RANCH RD TO SR-55)



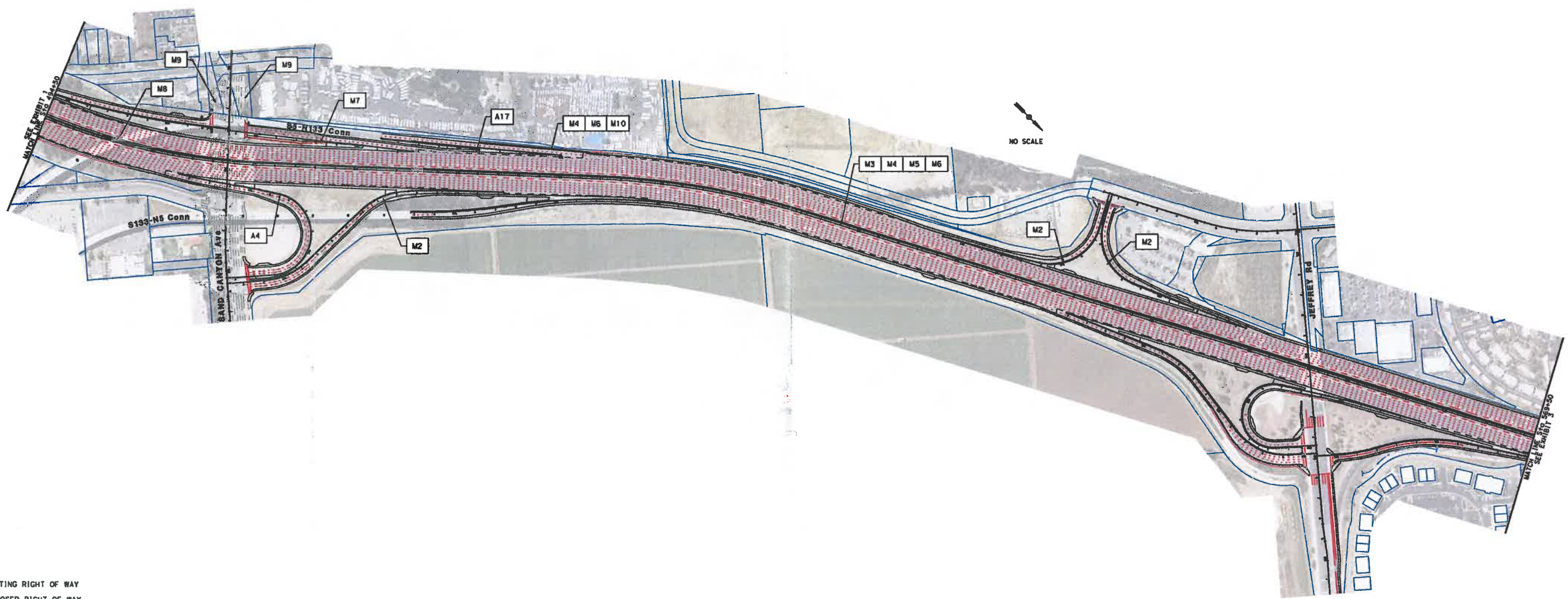


**LEGEND**  
 — EXISTING RIGHT OF WAY  
 — PROPOSED RIGHT OF WAY

**DESIGN EXCEPTION LOCATIONS**  
 PRELIMINARY DRAFT, SUBJECT TO CHANGE - NOT APPROVED BY CALTRANS

**I-5 PSR (PDS)**  
 ALTERNATIVE 2B - NON-STANDARD FREEWAY SECTION  
 (EXHIBIT 1 OF 5: I-405 TO SR-133)





**LEGEND**

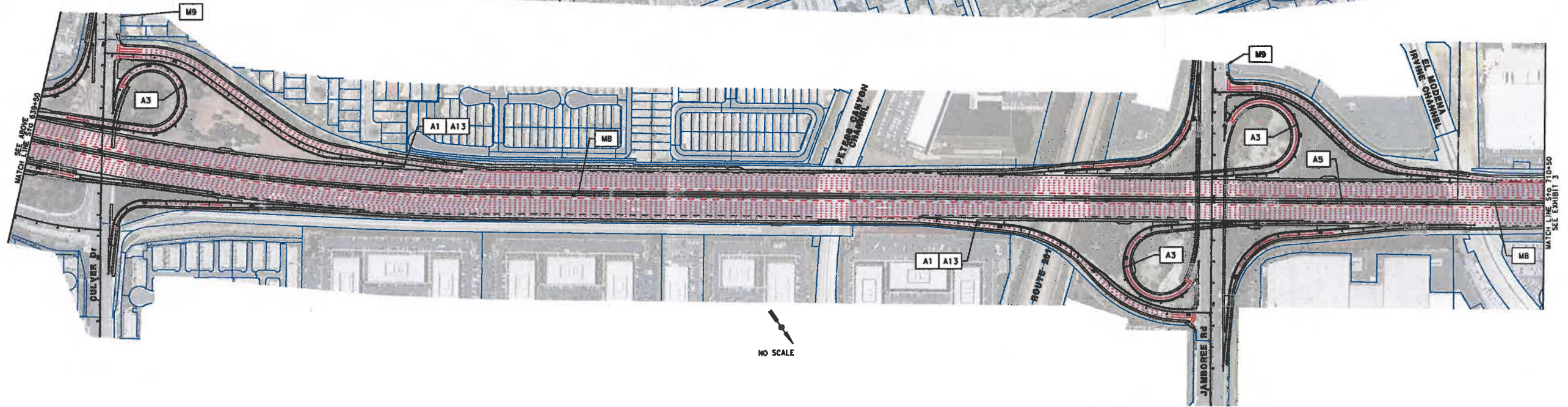
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY

**DESIGN EXCEPTION LOCATIONS**  
**PRELIMINARY DRAFT, SUBJECT TO CHANGE - NOT APPROVED BY CALTRANS**

**I-5 PSR (PDS)**

ALTERNATIVE 2B - NON-STANDARD FREEWAY SECTION  
 (EXHIBIT 2 OF 51 SAND CANYON Ave TO JEFFREY Rd)





**LEGEND**  
 ——— EXISTING RIGHT OF WAY  
 - - - PROPOSED RIGHT OF WAY

NO SCALE

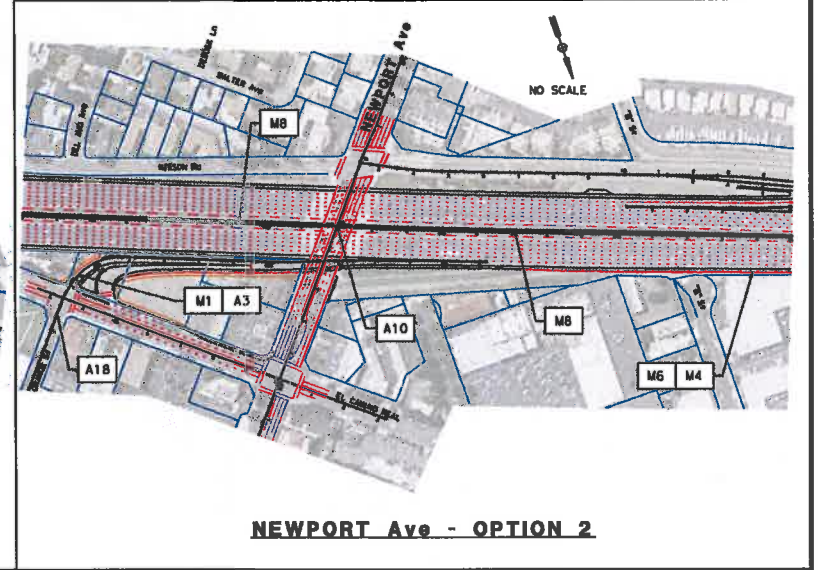
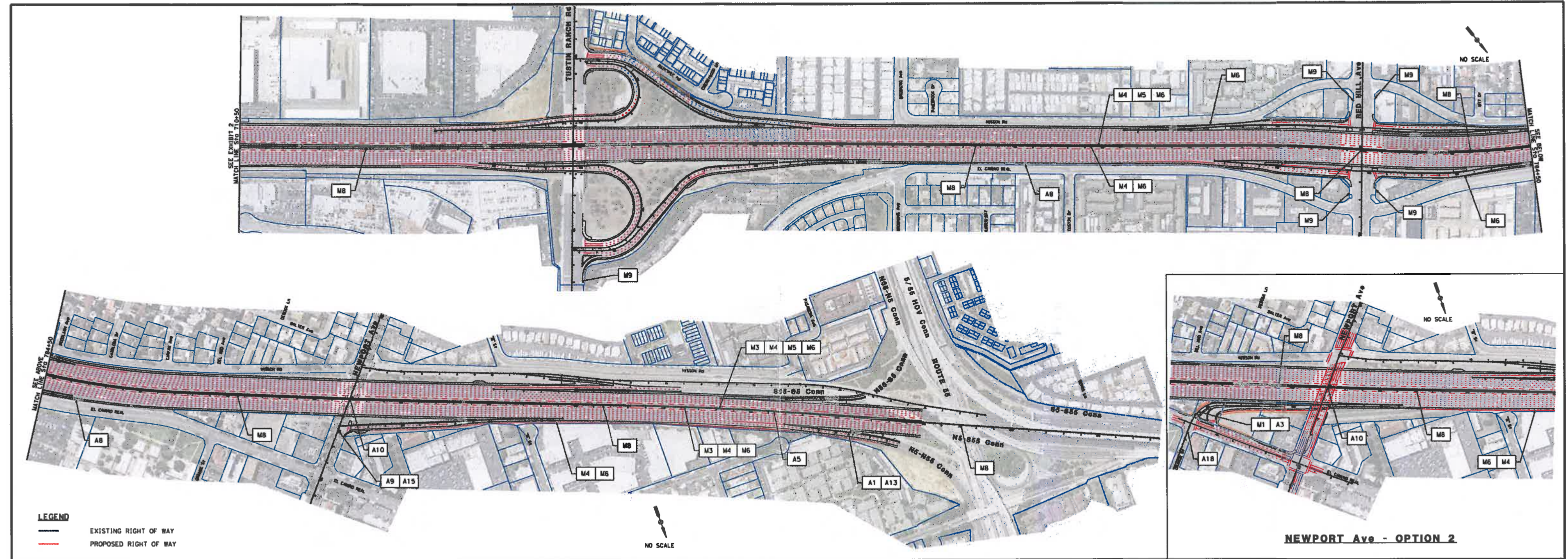
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**DESIGN EXCEPTION LOCATIONS**  
**PRELIMINARY DRAFT, SUBJECT TO CHANGE - NOT APPROVED BY CALTRANS**

NOVEMBER 2011

**I-5 PSR (PDS)**  
 ALTERNATIVE 2B - NON-STANDARD FREEWAY SECTION  
 (EXHIBIT 3 OF 51 YALE AVE TO JAMBOREE RD)

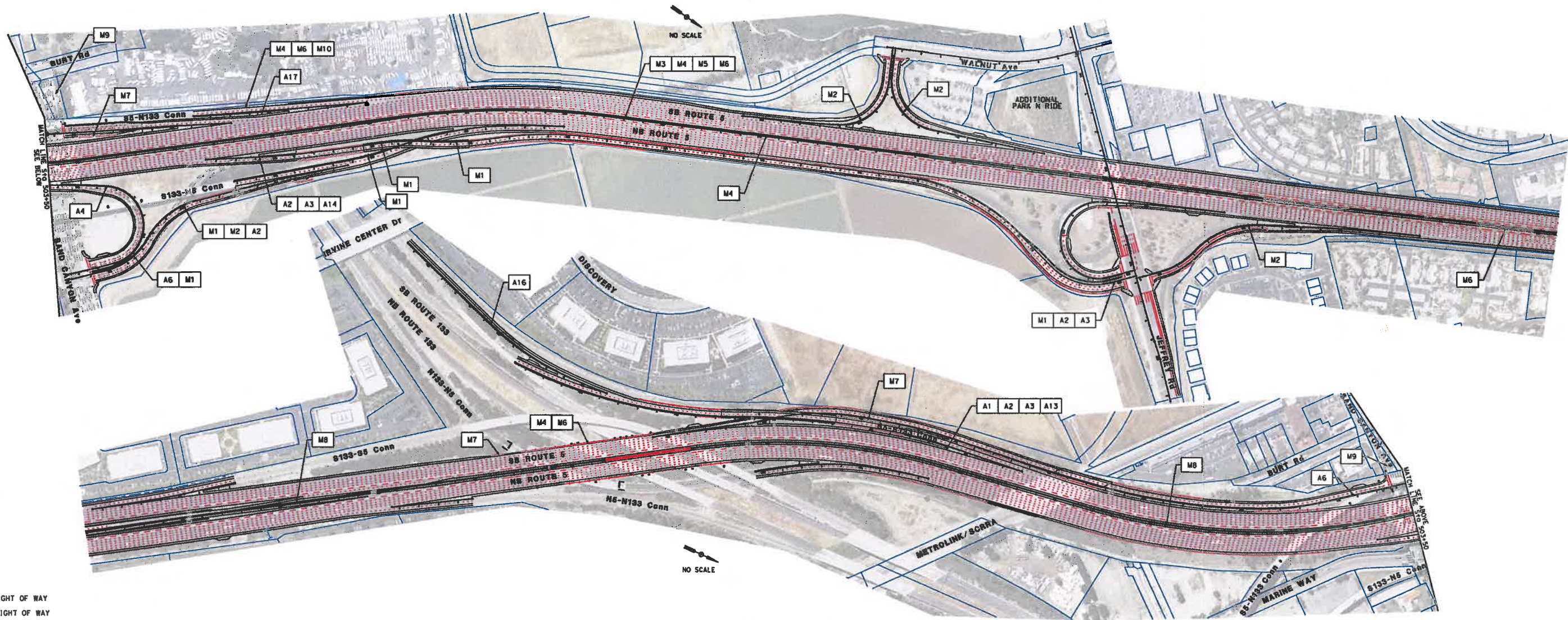




**DESIGN EXCEPTION LOCATIONS**  
**PRELIMINARY DRAFT, SUBJECT TO CHANGE - NOT APPROVED BY CALTRANS**

**I-5 PSR (PDS)**  
 ALTERNATIVE 2B - NON-STANDARD FREEWAY SECTION  
 (EXHIBIT 4 OF 51 TUSTIN RANCH RD TO SR-55)





**LEGEND**  
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 - - - - PROPOSED RIGHT OF WAY

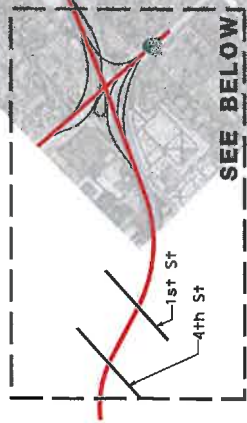
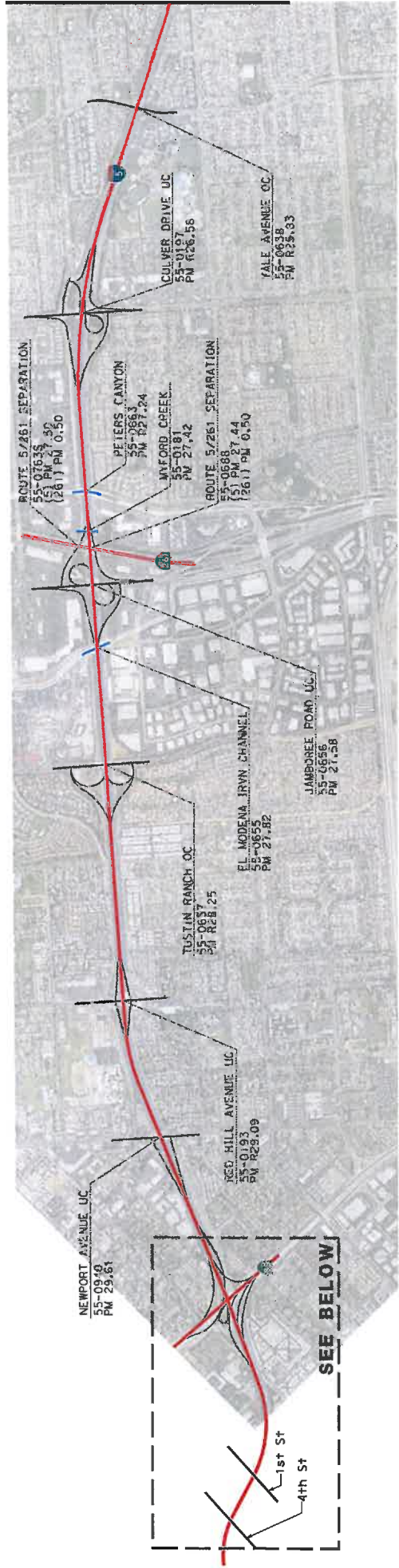
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 PRELIMINARY DRAFT, SUBJECT TO CHANGE - NOT APPROVED BY CALTRANS

**I-5 PSR (PDS)**  
 ALTERNATIVE 2B - NON-STANDARD FREEWAY SECTION (OPTION 3-4)  
 (EXHIBIT 5 OF 51 JEFFREY Rd/SAND CANYON Ave BRAIDS)

NOVEMBER 2011

**ATTACHMENT 7**  
**Structures Location Maps**





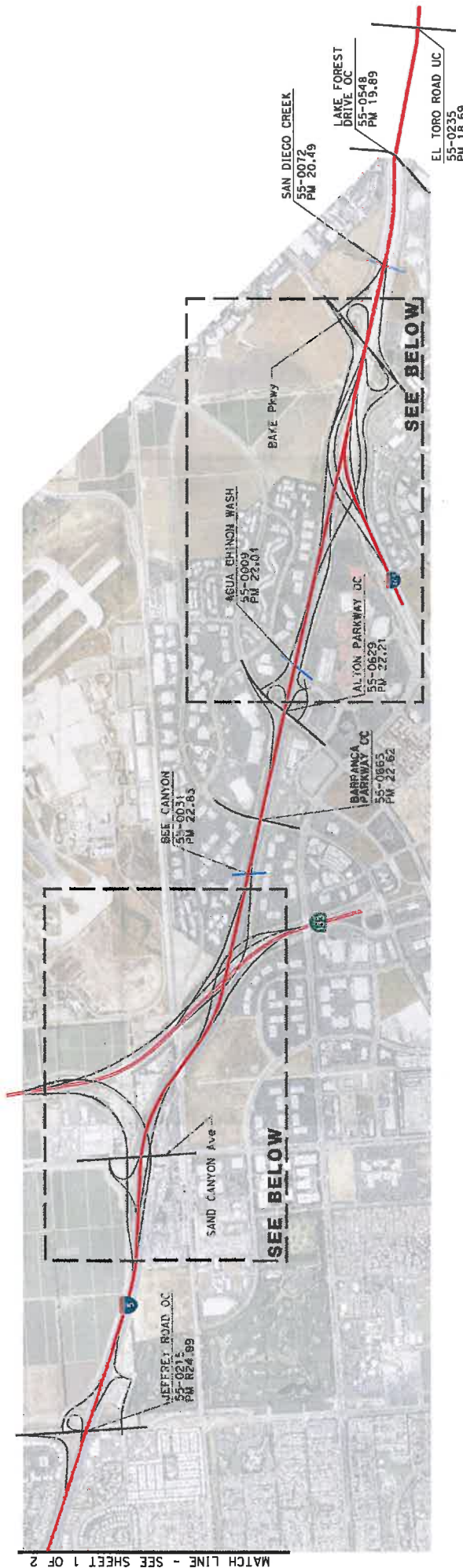
I-5/SR-55 INTERCHANGE



# I-5 PSR(PDS) PROJECT CORRIDOR

SHEET 1 OF 2

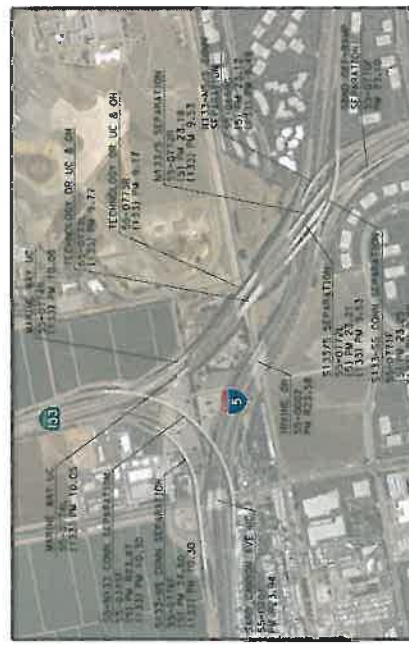




MATCH LINE - SEE SHEET 1 OF 2



EL TORO "Y" INTERCHANGE



I-5/SR-133 INTERCHANGE



NO SCALE



I-5 PSR(PDS) PROJECT CORRIDOR

SHEET 2 OF 2

**ATTACHMENT 8**  
**Advance Planning Studies Checklist**

# Consultant Prepared Advance Planning Study (APS) Checklist

Date: 11/24/10	Consultant Firm (for structures): MTS	Phone No: 949-477-9000
Designed by: Kevin Michalski		Phone No: 949-477-9000
EA: 0K670K	County: Orange	Rte: 5
KP(PM) PM 21.3 – 30.3		
Project Description: PSR/PDS for Widening of Interstate 5 between Route 405 ("El Toro Y") and Route 55		
Bridge No(s): 55-0629 55-0665 55-0002 55-0201 55-0215 55-0638 55-0197 55-0663 55-0763S 55-0688 55-0656 55-0655 55-0657 55-0193 55-0940	Bridge Name(s): Alton Parkway OC (Replace) Barranca Parkway OC (Modify) Irvine OH (Widen) Sand Canyon Avenue UC (Widen) Jeffrey Road OC (Replace) Yale Avenue OC (Modify) Culver Drive UC (Widen) Peters Canyon (Widen) Jamboree Road Off Ramp OC (Replace) Route 5/261 Separation (Widen) Jamboree Road UC (Widen) El Modena – Irvine Channel (Widen) Tustin Ranch Road OC (Modify) Red Hill Avenue UC (Widen) Newport Avenue UC (Widen)	
Total number of bridges in project: 15		APS Alternative Letter or Number (if more than one): 2A
Purpose of this APS:                      Initial APS Cost & Feasibility <input checked="" type="checkbox"/> Revised scope <input type="checkbox"/> Update cost <input type="checkbox"/>		

## Part A Items to collect and considerations prior to beginning the APS

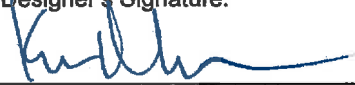
All items listed in Part A are to be made available and submitted if requested by the Liaison Engineer.  
(Mark N/A if not applicable)

- Preliminary profile grade of proposed structure.
- Typical section of the proposed structure. (Including barrier type, sidewalks, cross slope %, etc.)
- Grades or spot elevations of roadway below the structure. (*Survey not completed at this time*)
- Typical section of roadway below the structure. (Including shoulders, gutters, embankment slope.)
- Site map: including horizontal alignment of new structure and the roadway below, topo, contours, etc.
- Stage construction or detour plan for traffic on the structure.  
(number of lanes to remain open, Temp Railing, etc.)
- Stage construction or detour plan for the roadway below the structure.  
(falsework openings for each stage and any restrictions.)
- "As Built" plans for existing structures.
- Future widening plans of upper and lower roadway (verify with Route Concept Report).
- Site aerial photograph (at the proposed structure).
- Environmental and/or permit requirements (areas of potential impact, construction windows, etc.)
- Overhead and underground utility plans

- Any other information that you feel is necessary to complete the study. (Other concerns that may affect the APS: local agency requirements such as aesthetics, improvements in vicinity of structure, airspace usage, other obstructions, etc.)

### Part B Considerations during the APS design and cost estimate preparation

1. Has this project been discussed with:   
the OSFP Liaison Engineer? Yes  No   
the Caltrans District Project Manager? Yes  No   
the roadway consultant? Yes  No
- 
2. Have the Caltrans Structures Maintenance records been reviewed? Yes  No   
If the records recommend any work for the structure, is it included in the APS? Yes  No
- 
3. Are there special aesthetic considerations? Yes  No
- 
4. (Widenings and Modifications)  
Has this project been reviewed for seismic retrofit requirements? Yes  No   
Are seismic retrofit requirements included in the APS? Yes  No
- 
5. Any special Railroad requirements? Yes  No   
Shoofly required? Yes  No   
Cost of shoofly included as a separate item in the project cost estimate? Yes  No
- 
6. Any special foundation requirements, including scour critical work, special excavation such as Type A, Type D, and/or hazardous or contaminated material? Yes  No
- 
7. Any special construction requirements, including limited site accessibility or seasonal work? Yes  No
- 
8. Other items to be included in the cost such as slope paving, approach slabs, and/or adjacent retaining walls? Yes  No
- 
9. Remove existing bridge?  
Total Deck Area:  
28,280 sqft (*Existing bridge*) [55-0629]  
1,320 sqft (*Existing NB & SB overhangs*) [55-0002]  
666 sqft (*Existing SB overhang*) [55-0201]  
34,320 sqft (*Existing bridge*) [55-0215]  
963 sqft (*Existing NB & SB overhangs*) [55-0197]  
552 sqft (*Existing NB & SB overhangs*) [55-0663] Yes  No   
7,668 sqft (*Existing bridge*) [55-0763S]  
1,244 sqft (*Existing NB & SB overhangs*) [55-0688]  
1,194 sqft (*Existing NB & SB overhangs*) [55-0656]  
616 sqft (*Existing NB & SB overhangs*) [55-0655]  
1,056 sqft (*Existing NB & SB overhangs*) [55-0193]  
664 sqft (*Existing NB & SB overhangs*) [55-0940]  
78,543 sqft
- 
10. Any other unusual or special requirements? Yes  No
- 
11. Provide and attach a consultant prepared Design Memo to summarize and document any important assumptions, discussions, decisions, unusual items, local agency requirements such as aesthetics, improvements in vicinity of the structure, airspace usage, other obstructions, or any items noted above. Summary attached? Yes  No

Designer: (Printed Name) Kevin Michalski, P.E.	Designer's Signature: 	Date: 11/29/10
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# Consultant Prepared Advance Planning Study (APS) Checklist

Date: 11/14/11	Consultant Firm (for structures): MTS	Phone No: 949-477-9000
Designed by: Kevin Michalski		Phone No: 949-477-9000
EA: 0K670K	County: Orange	Rte: 5
KP(PM) PM 21.3 – 30.3		
Project Description: PSR/PDS for Widening of Interstate 5 between Route 405 ("El Toro Y") and Route 55		
Bridge No(s): 55-0629 55-0665 55-0002 55-New 55-0215 55-New 55-New 55-0197 55-0663 55-0763S 55-0688 55-0656 55-0655 55-0657 55-0940	Bridge Name(s): Alton Parkway OC (Replace) Barranca Parkway OC (Modify) Irvine OH (Widen) Irvine OH Jeffrey Road OC (Modify) NB Jeffrey Road Off-Ramp SEP S5-S133 Connector SEP Culver Drive UC (Widen) Peters Canyon (Widen) Jamboree Road Off Ramp OC (Replace) Route 5/261 Separation (Widen) Jamboree Road UC (Widen) El Modena – Irvine Channel (Widen) Tustin Ranch Road OC (Modify) Newport Avenue UC (Widen) – [Alternative 2B-2 only]	
Total number of bridges in project: 15		APS Alternative Letter or Number (if more than one): 2B
Purpose of this APS:                      Initial APS Cost & Feasibility <input checked="" type="checkbox"/> Revised scope <input type="checkbox"/> Update cost <input type="checkbox"/>		

## Part A Items to collect and considerations prior to beginning the APS

All items listed in Part A are to be made available and submitted if requested by the Liaison Engineer.  
(Mark N/A if not applicable)


- Preliminary profile grade of proposed structure.
- Typical section of the proposed structure. (Including barrier type, sidewalks, cross slope %, etc.)
- Grades or spot elevations of roadway below the structure. (**Survey not completed at this time**)
- Typical section of roadway below the structure. (Including shoulders, gutters, embankment slope.)
- Site map: including horizontal alignment of new structure and the roadway below, topo, contours, etc.
- Stage construction or detour plan for traffic on the structure.  
(number of lanes to remain open, Temp Railing, etc.)
- Stage construction or detour plan for the roadway below the structure.  
(falsework openings for each stage and any restrictions.)
- "As Built" plans for existing structures.
- Future widening plans of upper and lower roadway (verify with Route Concept Report).
- Site aerial photograph (at the proposed structure).
- Environmental and/or permit requirements (areas of potential impact, construction windows, etc.)



- Overhead and underground utility plans
- Any other information that you feel is necessary to complete the study. (Other concerns that may affect the APS: local agency requirements such as aesthetics, improvements in vicinity of structure, airspace usage, other obstructions, etc.)

**Part B Considerations during the APS design and cost estimate preparation**

1. Has this project been discussed with:   
the OSFP Liaison Engineer? Yes  No   
the Caltrans District Project Manager? Yes  No   
the roadway consultant? Yes  No
- 
2. Have the Caltrans Structures Maintenance records been reviewed? Yes  No   
If the records recommend any work for the structure, is it included in the APS? Yes  No
- 
3. Are there special aesthetic considerations? Yes  No
- 
4. (Widenings and Modifications)  
Has this project been reviewed for seismic retrofit requirements? Yes  No   
Are seismic retrofit requirements included in the APS? Yes  No
- 
5. Any special Railroad requirements? *Irvine OH – Coordination w/ SCRRRA (Metrolink)* Yes  No   
Shoofly required? Yes  No   
Cost of shoofly included as a separate item in the project cost estimate? Yes  No
- 
6. Any special foundation requirements, including scour critical work, special excavation such as Type A, Type D, and/or hazardous or contaminated material? Yes  No
- 
7. Any special construction requirements, including limited site accessibility or seasonal work? Yes  No
- 
8. Other items to be included in the cost such as slope paving, approach slabs, and/or adjacent retaining walls? Yes  No
- 
9. Remove existing bridge?  
Total Deck Area:  
28,280 sqft (*Existing bridge*) [55-0629]  
1,320 sqft (*Existing NB & SB overhangs*) [55-0002]  
963 sqft (*Existing NB & SB overhangs*) [55-0197]  
552 sqft (*Existing NB & SB overhangs*) [55-0663]  
7,668 sqft (*Existing bridge*) [55-0763S] Yes  No   
1,244 sqft (*Existing NB & SB overhangs*) [55-0688]  
1,194 sqft (*Existing NB & SB overhangs*) [55-0656]  
616 sqft (*Existing NB & SB overhangs*) [55-0655]  
332 sqft (*Existing NB overhang*) [55-0940] – *Alt. 2B-2 only*  
42,169 sqft
- 
10. Any other unusual or special requirements? Yes  No
- 
11. Provide and attach a consultant prepared Design Memo to summarize and document any important assumptions, discussions, decisions, unusual items, local agency requirements such as aesthetics, improvements in vicinity of the structure, airspace usage, other obstructions, or any items noted above. Summary attached? Yes  No

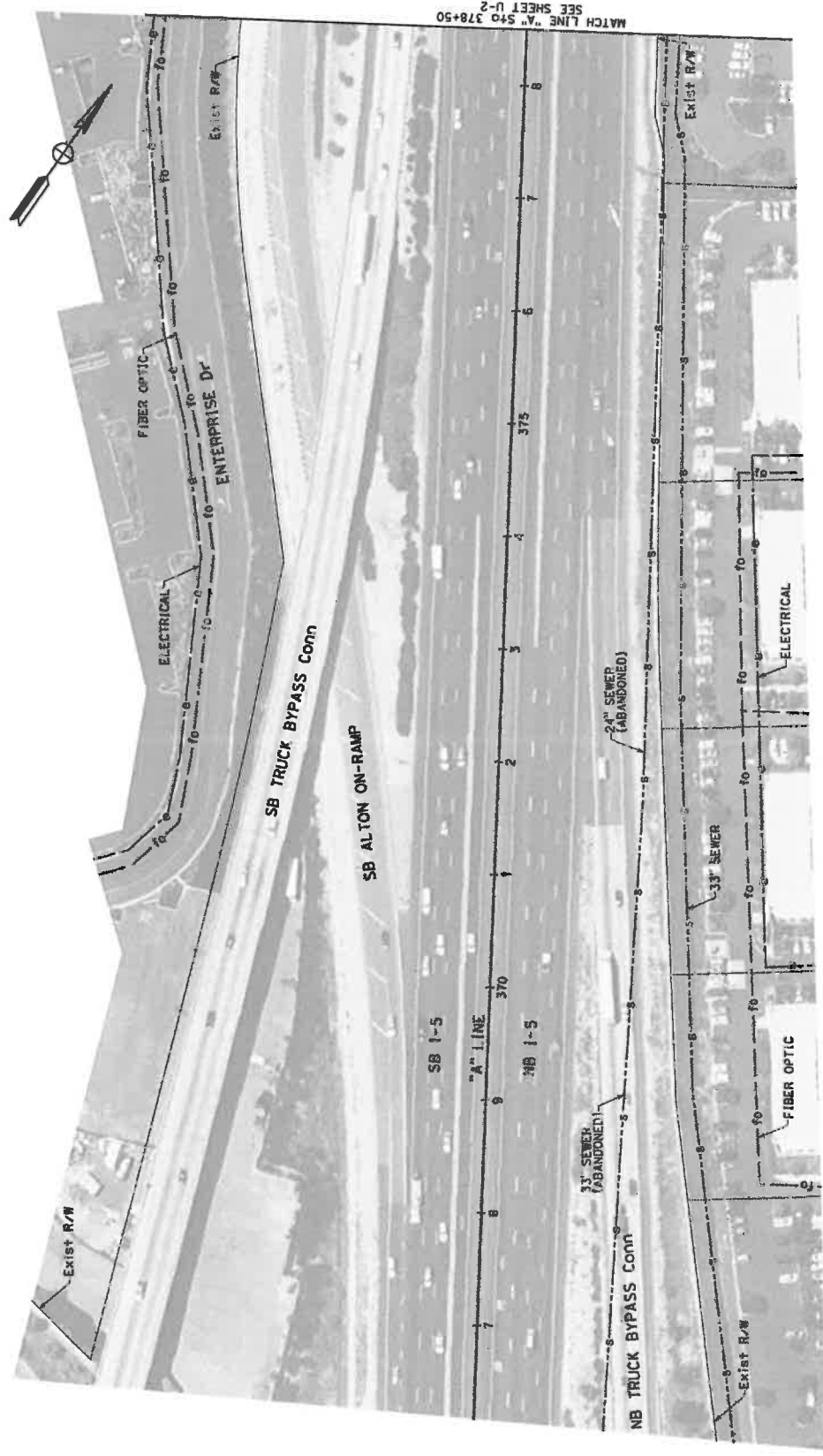
Designer: (Printed Name) Kevin Michalski, P.E.	Designer's Signature: 	Date: 
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## **ATTACHMENT 9**

### **General Utility Plan**

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DESIGNED BY								NO. SHEETS	
CHECKED BY									

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED	REVISY BY
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MATCH LINE "A" STA 378+50  
 SEE SHEET U-2

DIST	COUNTY	ROUTE	DATE PROJECT	SHEET NO.	TOTAL SHEETS
12	Orca	5	21.3/30.3		



SEE SHEET U-1  
MATCH LINE "A" STD 370+50

SEE SHEET U-3  
MATCH LINE "A" STD 390+50



**UTILITY**  
NO SCALE

U-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION CONSULTANT FUNCTIONAL SUPERVISOR

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RELATIVE BORDER SCALE  
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UNIT 0000

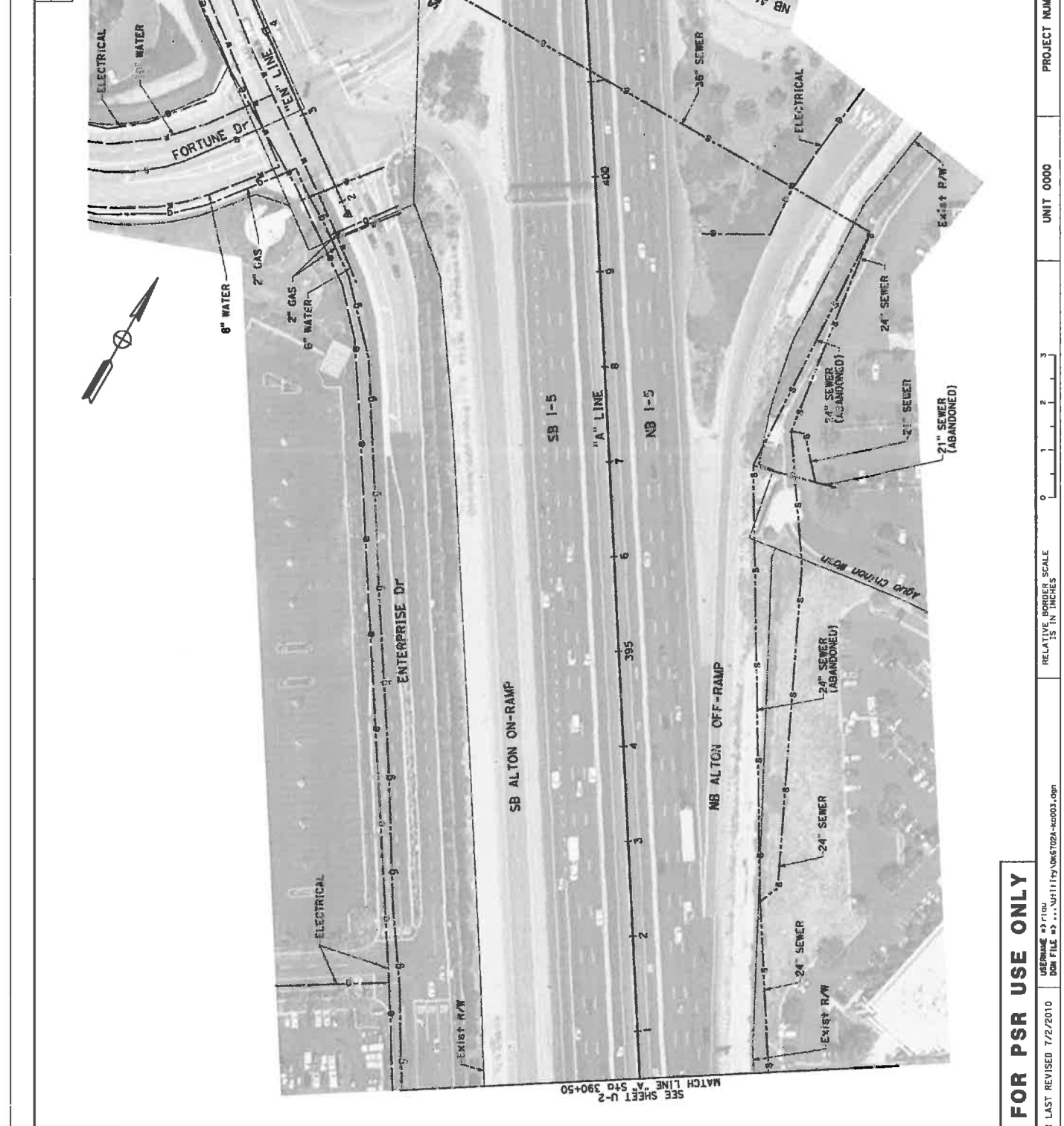
PROJECT NUMBER & PHASE

1200020052K

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
DESIGNED BY			

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTALS NO. SHEETS
12	Ora	5	21.3/30.3	



REVISIONS	DATE REVISION	CHECKED BY	DESIGNED BY	CALCULATED BY	CONSULTANT FUNCTIONAL SUPERVISOR

**FOR PSR USE ONLY**

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UNIT 0000

PROJECT NUMBER & PHASE

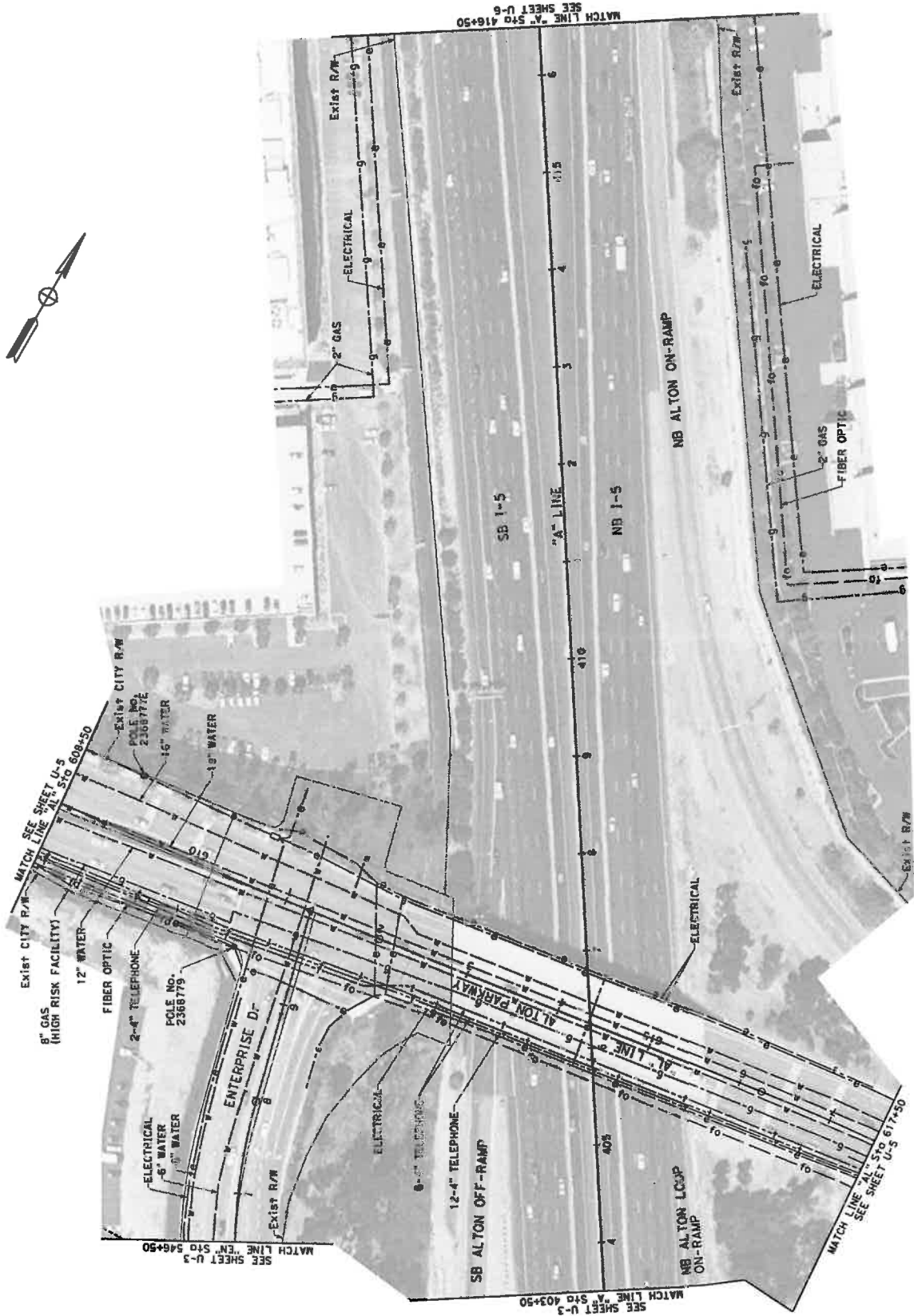
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**U-3**



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MATCH LINE "A" STA 416+50  
SEE SHEET U-6

**FOR PSR USE ONLY**

**UTILITY**  
NO SCALE

**U-4**

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 STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 CONSULTANT FUNCTIONAL SUPERVISOR  
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 DESIGNED BY  
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 PROJECT NUMBER & PHASE  
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**UTILITY**  
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1200020052K

PROJECT NUMBER & PHASE

UNIT 0000

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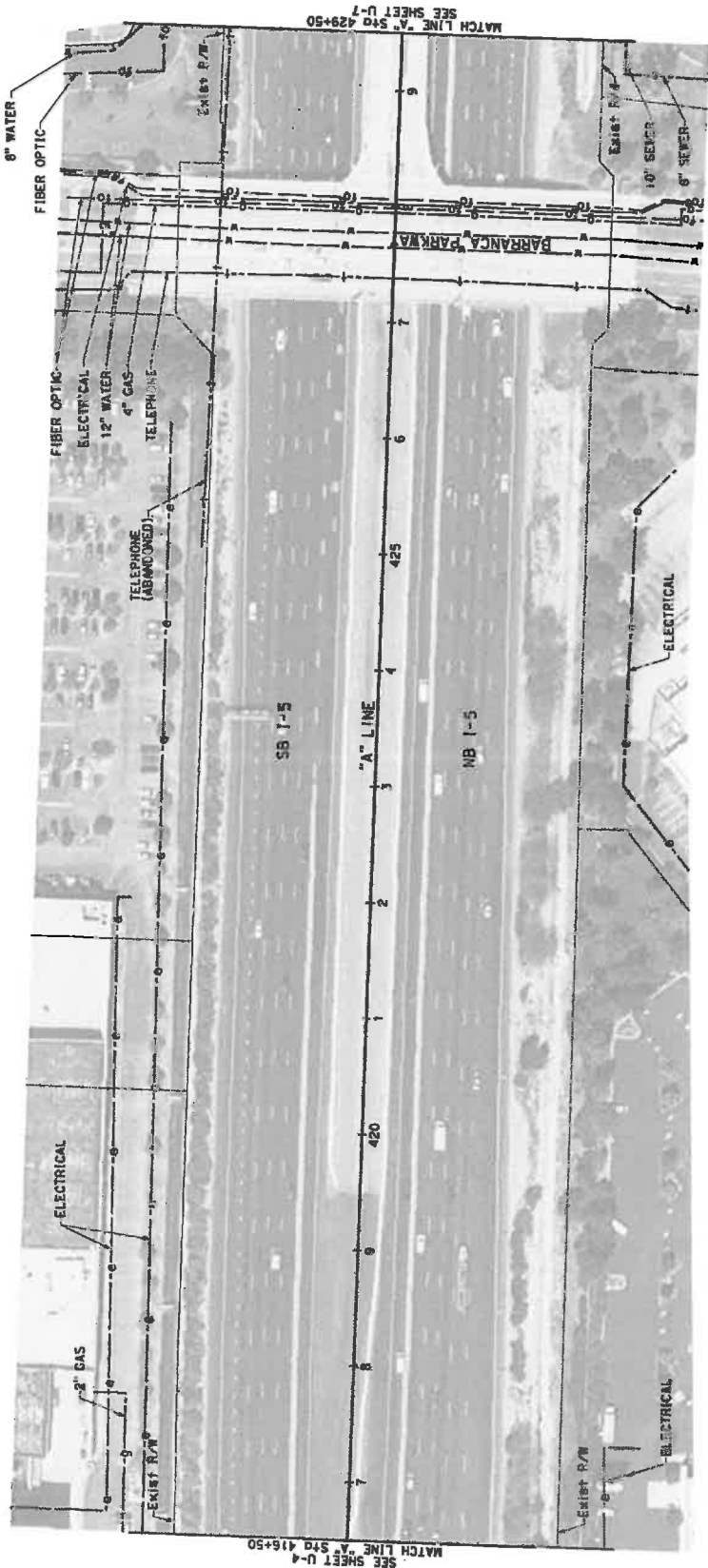
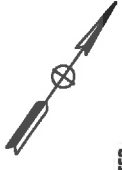
BORDER LAST REVISED 7/2/2010

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	DATE REVISED

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ROUTE	5
COUNTY	Orinda
CITY	12

SHEET NO.	21
TOTAL SHEETS	30
PROJECT NO.	30.3



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UTILITY  
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PROJECT NUMBER & PHASE  
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UNIT 0000

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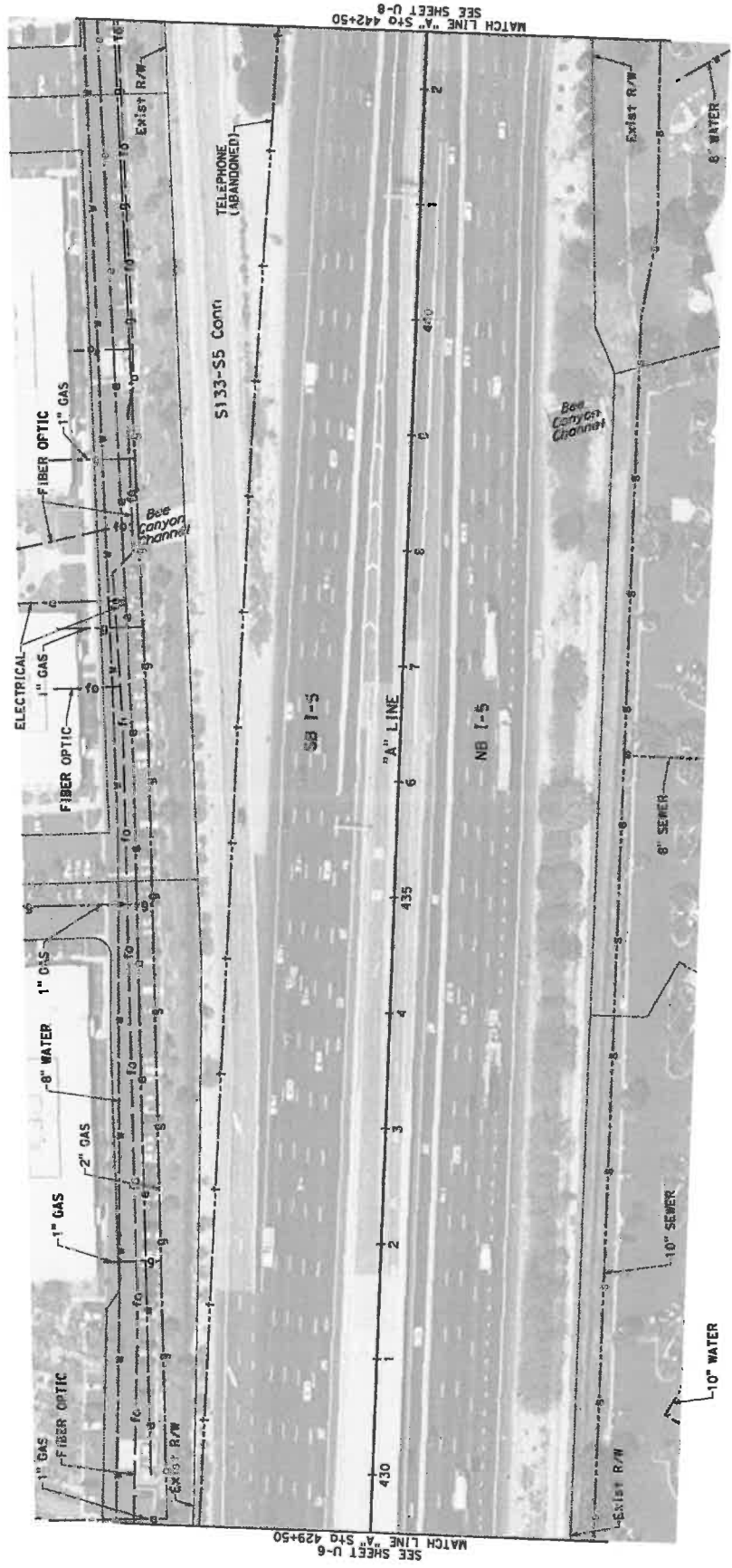
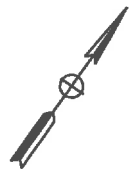
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**FOR PSR USE ONLY**

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DESIGNED BY	REVISOR	REVISION	DATE

Dist	County	Route	Sheet No.	Total Project	Sheet No.
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UTILITY  
NO SCALE

**FOR PSR USE ONLY**

U-7

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

PROJECT NUMBER & PHASE

UNIT 0000

3

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IS IN INCHES

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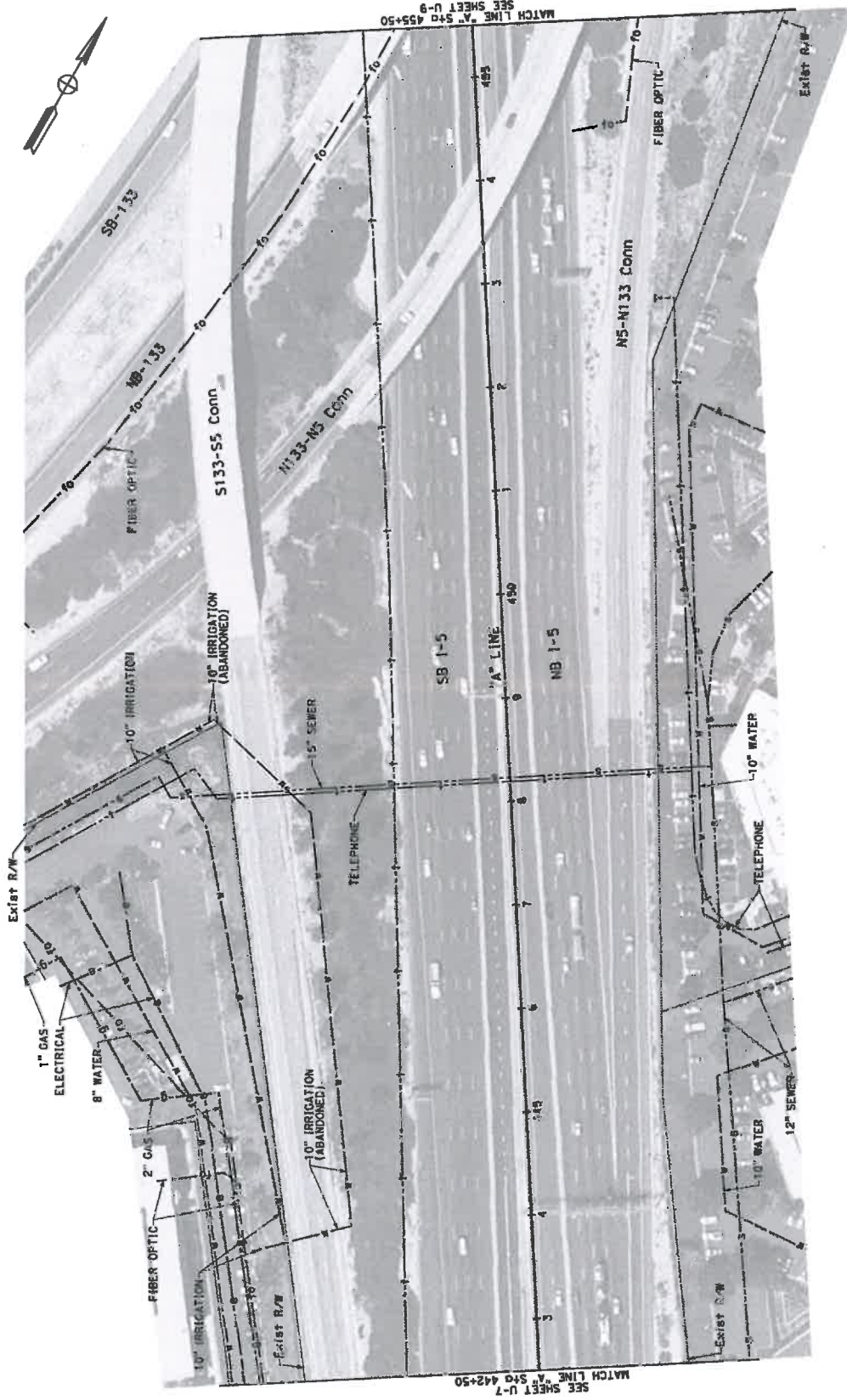
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REVISY BY  
DATE REVISED

DESIGNED BY  
CHECKED BY

CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-  
DESIGNED BY

DATE	12	COUNTY	Ora	ROUTE	5	POST MILE	21.3/30.3	SHEET NO.	
								TOTAL SHEETS	



MATCH LINE "A" STA 455+50  
SEE SHEET U-9

MATCH LINE "A" STA 442+50  
SEE SHEET U-7

**UTILITY**  
NO SCALE  
**U-8**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000



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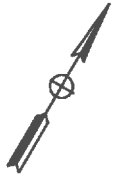
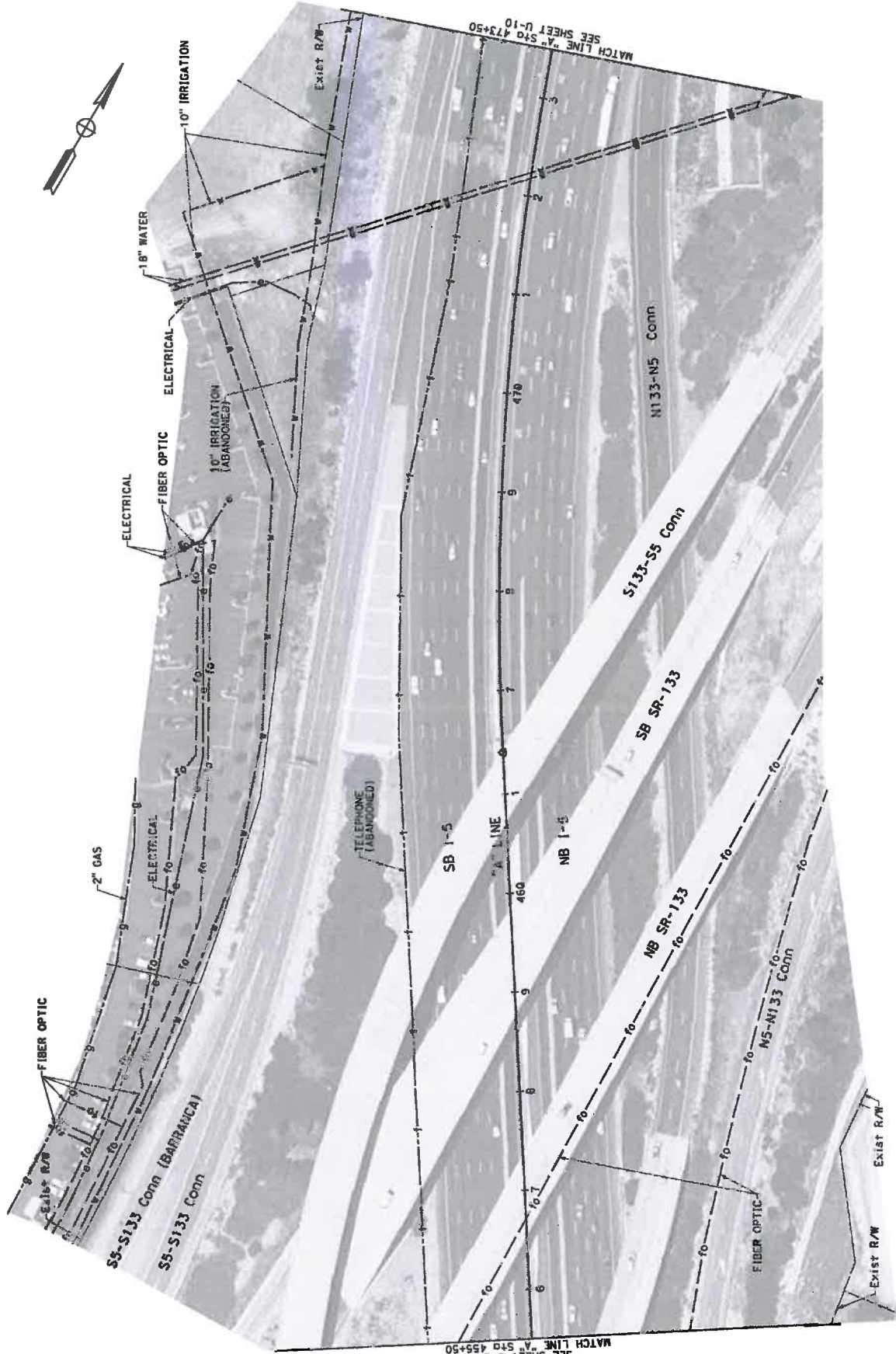
**FOR PSR USE ONLY**

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Ora	5	21.3/30.3	



**UTILITY**  
NO SCALE

U-9

PROJECT NUMBER & PHASE

UNIT 0000

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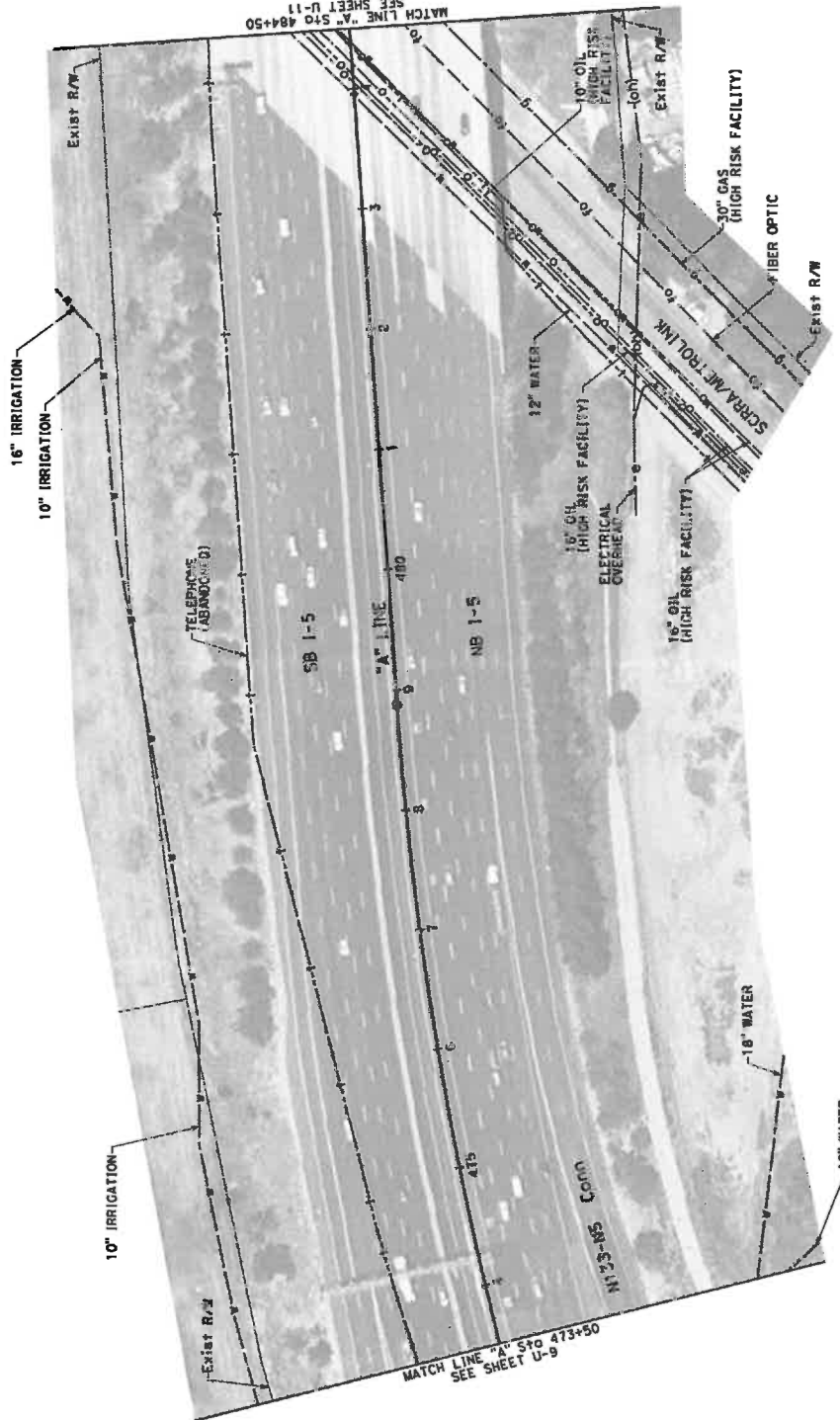
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USERNAME: s3r1cm  
DWG FILE: ...\\NT11\y0k6702a-r0009.dgn

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
	DESIGNED BY		



Dist	County	Route	Sheet No.	Sheet Title	Sheet No.
12	Orca	5	21.3/30.3		



DATE PLOTTED 09/29/2011  
TIME PLOTTED 09:16:27 AM

UTILITY  
NO SCALE  
U-10

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000



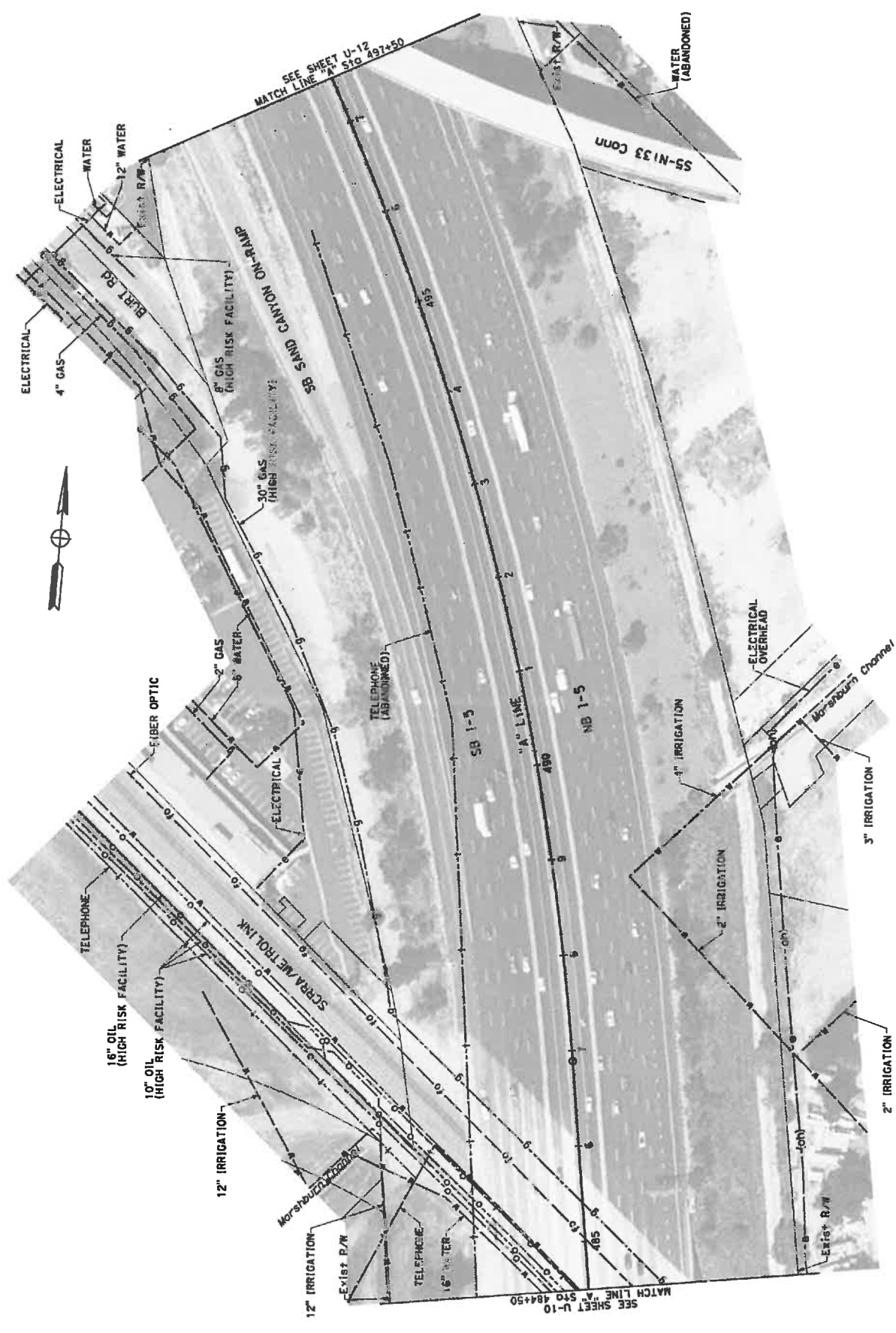
RELATIVE BORDER SCALE  
15 IN INCHES

BORDER LAST REVISED 7/27/2010  
USERNAME 09090  
DWG FILE 09...U1117\061028-0010.dgn

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR

DATE	COUNTY	ROUTE	TOTAL PROJECT MILES	SHEET NO. OF SHEETS
12	Orj	5	21.3/30.3	



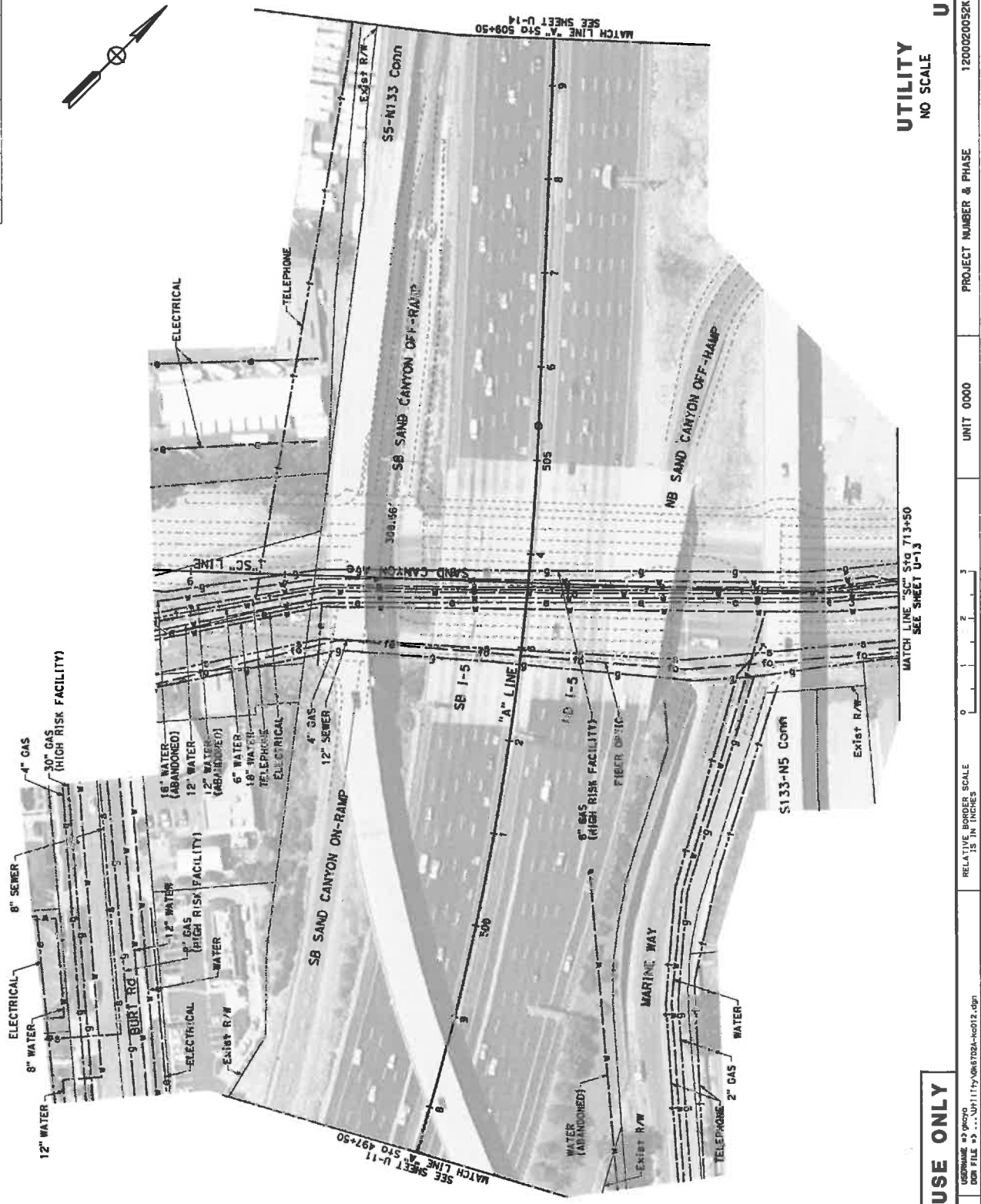
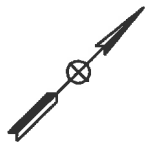
**UTILITY**  
NO SCALE

**FOR PSR USE ONLY**

**U-11**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-	DESIGNED BY	CHECKED BY	DATE REVISD

DATE	12	COUNTY	Orco	ROUTE	5	PROJECT TOTAL SHEETS	21,3/30,3
------	----	--------	------	-------	---	----------------------	-----------



**UTILITY**  
**NO SCALE**

**U-12**

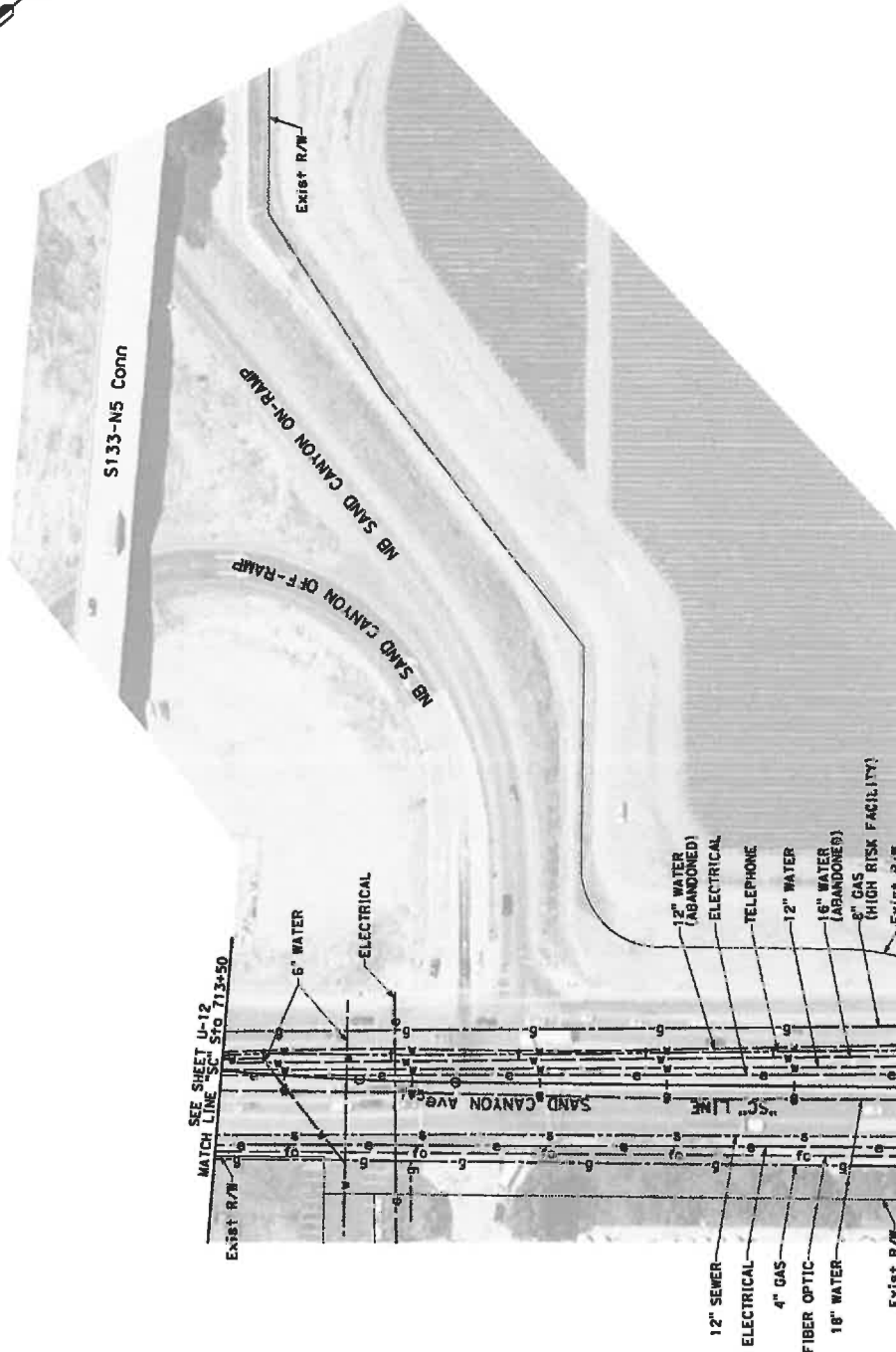
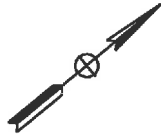
PROJECT NUMBER & PHASE: UNIT 0000  
 RELATIVE BORDER SCALE: 1" = 15' IN INCHES  
 DATE PLOTTED: 03/29/2011  
 TIME PLOTTED: 9:22:02 AM

**FOR PSR USE ONLY**

BORDER LAST REVISED: 7/22/2010  
 USDSNAME: 03 0000  
 DWF FILE: ... \PH11\7\06102A-h012.dwg

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CALCULATED BY	REVISIONS
				DATE REVISION

DIST	COUNTY	ROUTE	TOTAL SHEETS	SHEET NO.
12	Ora	5	21.3/30.3	3



REVISIONS	DATE REVISION	BY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
 USERNAME: b3r10u  
 DGN FILE: ...Utility\060702A-rd013.dgn

RELATIVE BORDER SCALE  
 IS IN INCHES



UNIT 0000

PROJECT NUMBER & PHASE

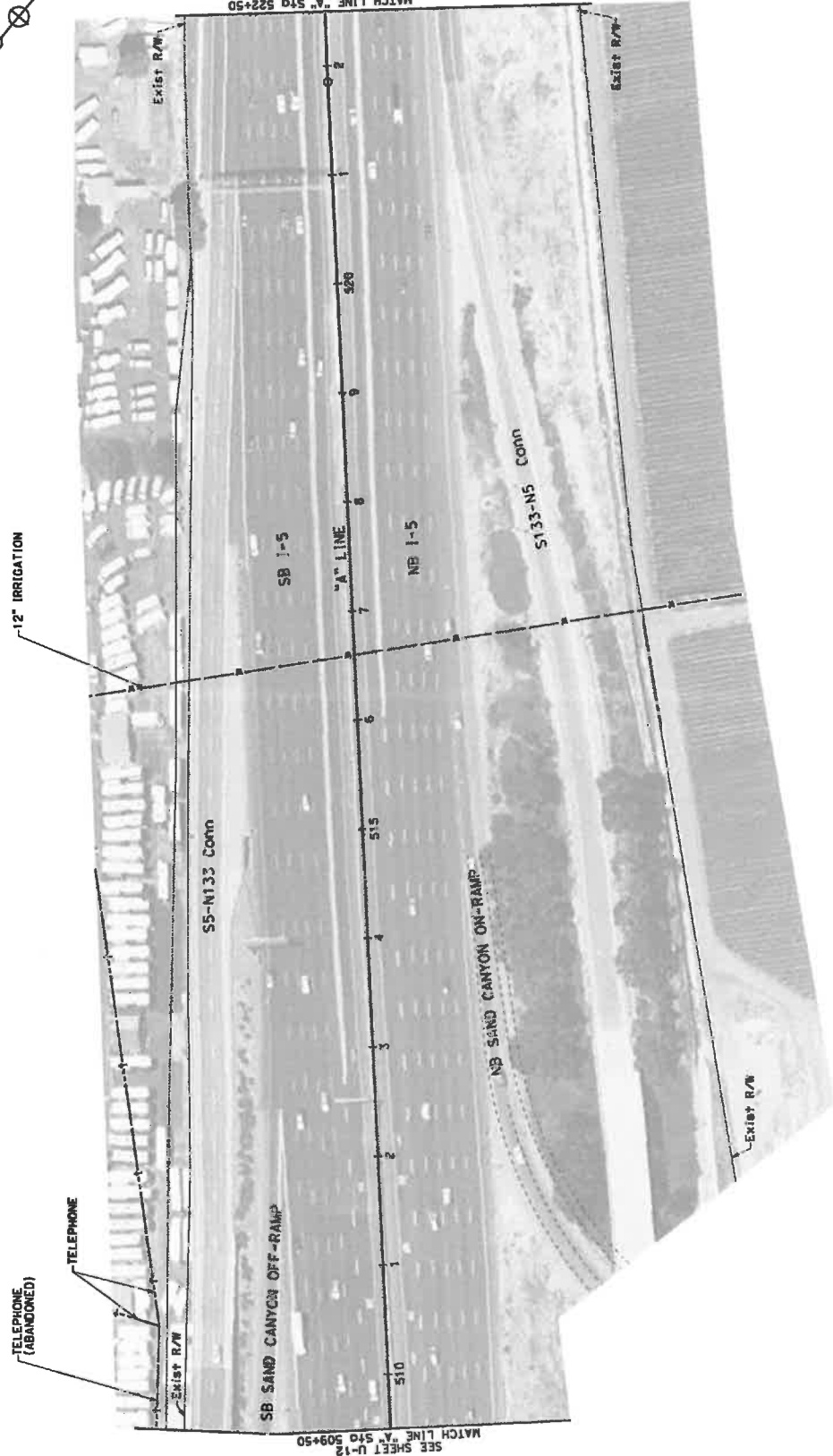
1200020052K

UTILITY  
 NO SCALE

U-13



DIST	COUNTY	ROUTE	TOTAL MILEAGE PROJECT	SHEET NO. OF TOTAL SHEETS
12	Ora	5	21.3/30.3	



MATCH LINE "A" Sta 522+50  
SEE SHEET U-15

SEE SHEET U-12  
MATCH LINE "A" Sta 509+50

**UTILITY**  
NO SCALE

**U-14**

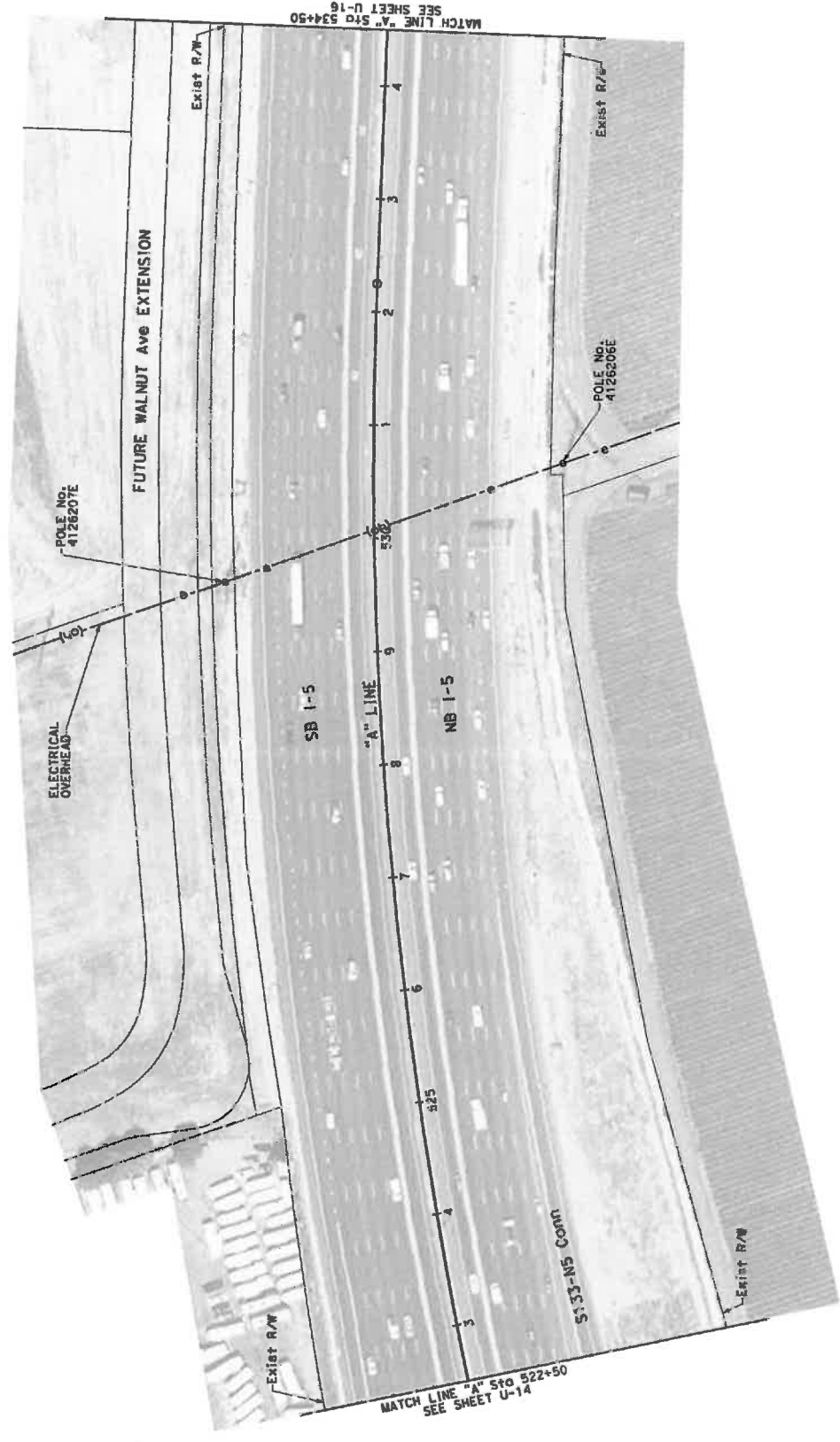
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PROJECT NUMBER & PHASE: UNIT 0000  
RELATIVE BORDER SCALE: 1" = 15' IN INCHES  
1200020052K

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME = psr  
DWG FILE = ...\\p111p\061024\0014.dwg

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Ora	5	21.3/30.3	



MATCH LINE "A" Sta 534+50  
SEE SHEET U-16

MATCH LINE "A" Sta 522+50  
SEE SHEET U-14

LAST REVISION  
DATE PLOTTED => 4/29/2011  
TIME PLOTTED => 9:37:30 AM

**UTILITY**  
NO SCALE  
**U-15**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000



RELATIVE BORDER SCALE  
1" IS IN INCHES

BORDER LAST REVISED 7/2/2010  
USERNAME => pkyo  
DGN FILE => ... \UT11\tyuk6to2a-k0015.dgn

**FOR PSR USE ONLY**

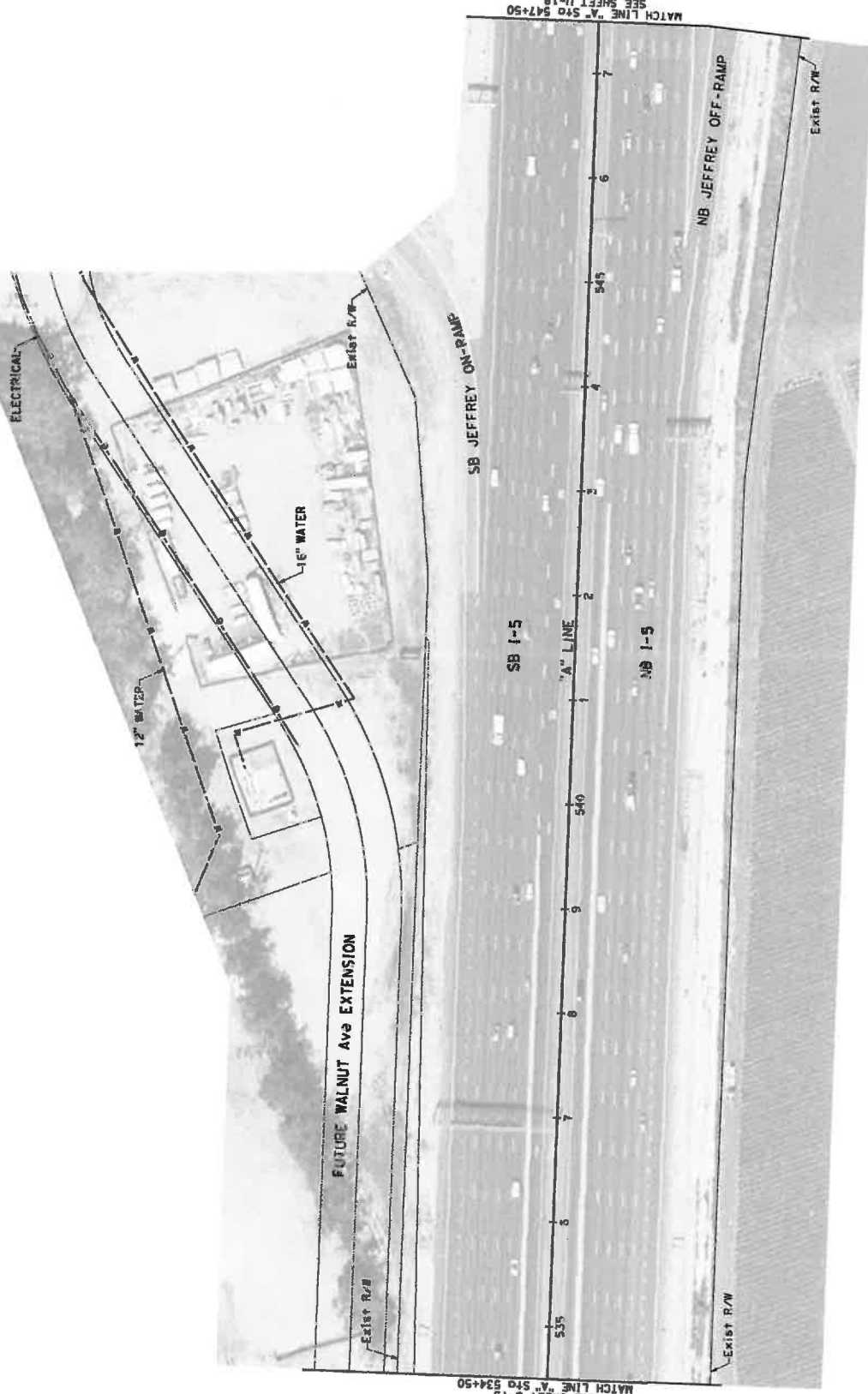


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

CALCULATED-  
DESIGNED BY  
CHECKED BY

REVISOR BY  
DATE REVISED

DATE	COUNTY	ROUTE	PROJECT TOTAL PROJECT	PROJECT SHEETS
12	Or	5	21.3/30.3	3



**UTILITY**  
NO SCALE  
**U-16**

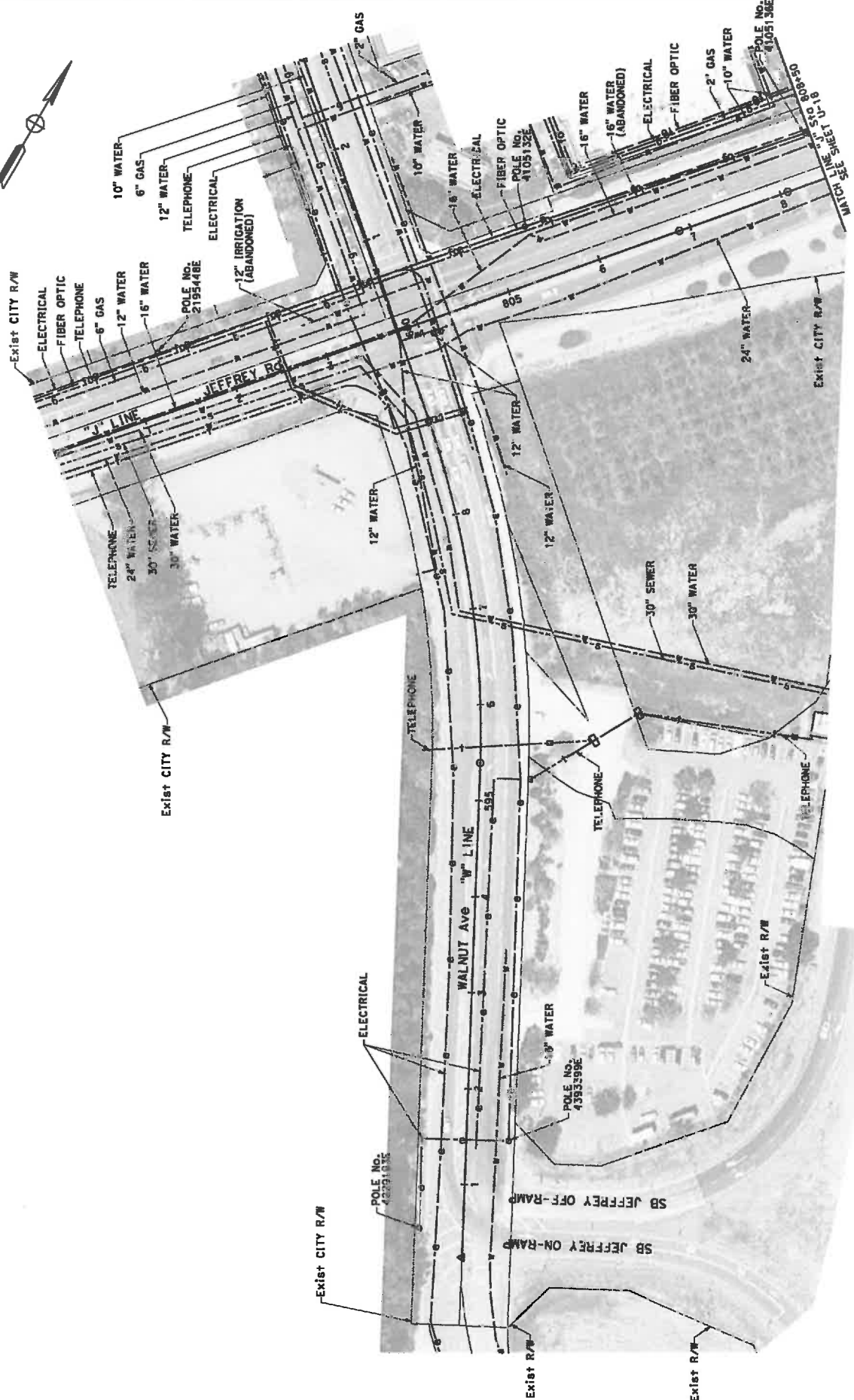
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UNIT: 0000  
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DATE PLOTTED: 12/29/2011 9:44:27 AM  
LAST PLOTTED: 12/29/2011 9:44:27 AM

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME: g3030  
JOB FILE: ...\\H111\p\06102A-hcb16.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISION

Dist	County	Route	Sheet
12	Or	5	21.3/30.3



**UTILITY**  
NO SCALE

**FOR PSR USE ONLY**

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

U-17

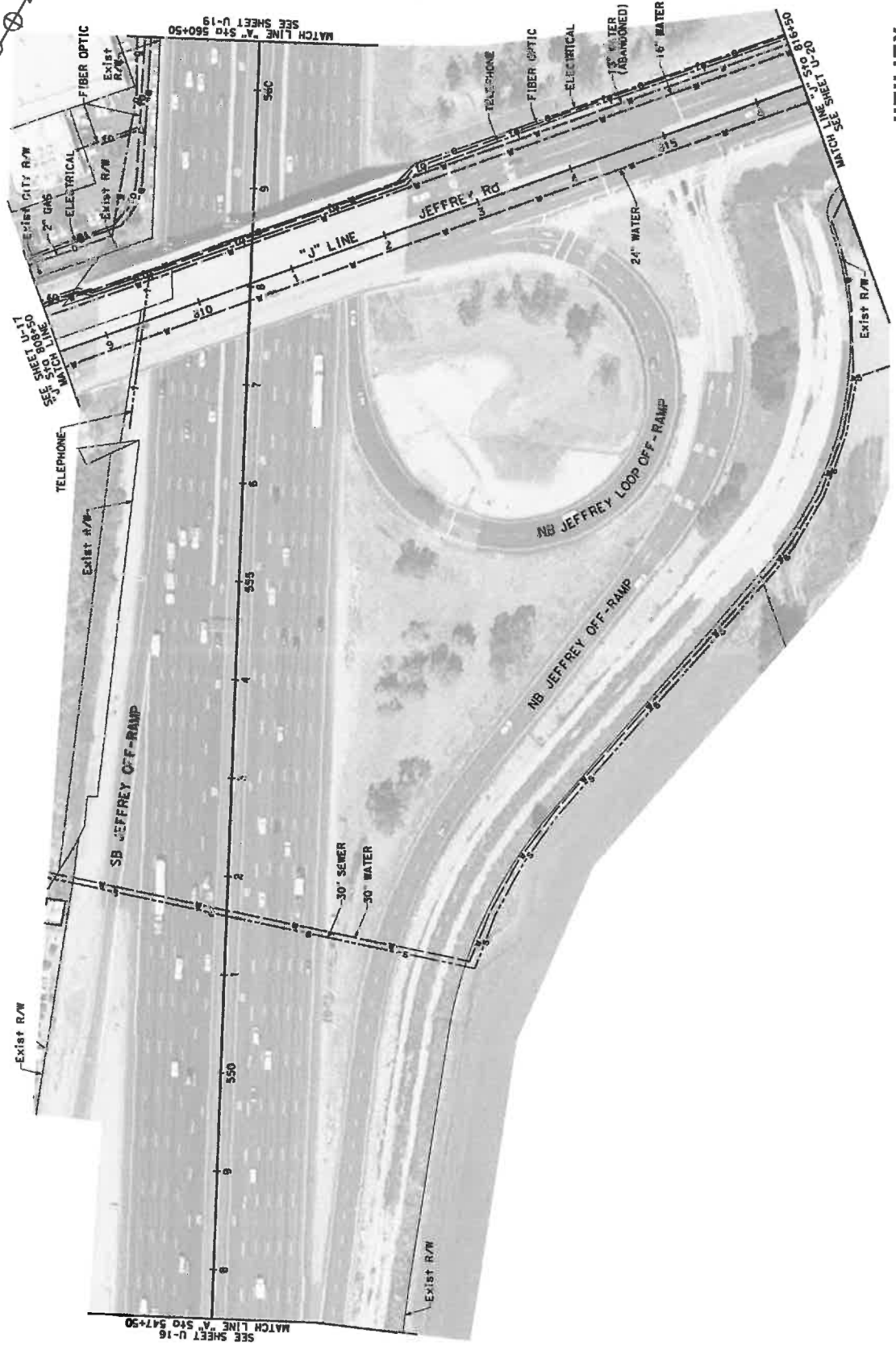
RELATIVE BORDER SCALE  
IS IN INCHES

0 1 2 3

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DISY	COUNTY	ROUTE	PROJECT	SHEET NO.	TOTAL SHEETS
12	OFO	5	21.3/30.3		



**UTILITY**  
NO SCALE

**U-18**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1" = 15' IN INCHES  
DATE PLOTTED: 04/29/2011  
TIME PLOTTED: 10:22:19 AM  
RVP: 66122:01

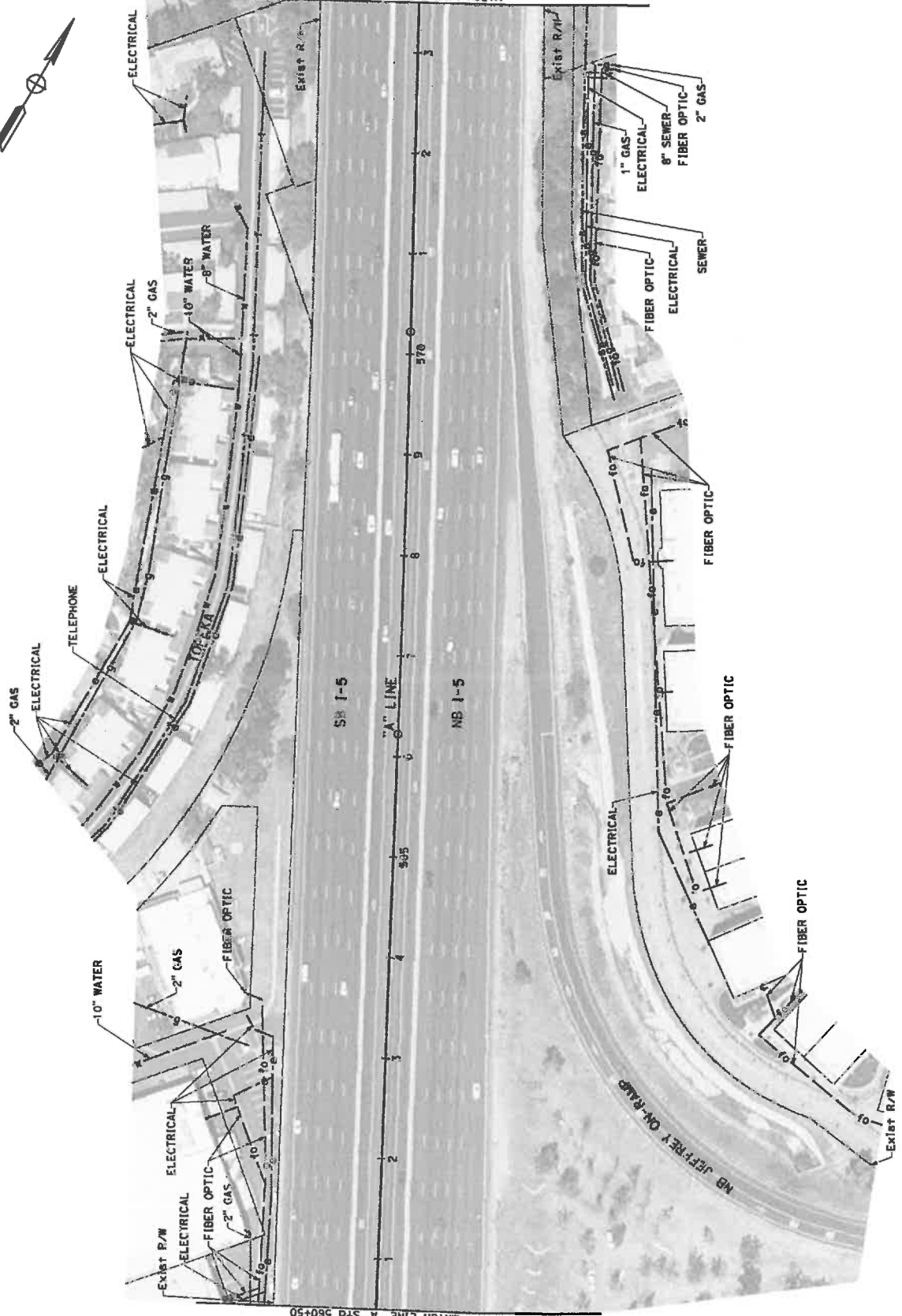
**FOR PSR USE ONLY**

BORDER LAST REVISED: 7/22/2010  
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED BY  
DESIGNED BY  
CHECKED BY  
DATE REVISED





Dist	County	Route	Sheet	Sheet	Sheet
12	Or	5	21.3/30.3	21.3/30.3	21.3/30.3



SEE SHEET U-18  
MATCH LINE "A" STA 560+50

MATCH LINE "A" STA 573+50  
SEE SHEET U-21

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
 USERNAME: s2 g0010  
 DOW FILE: ... \utility\uk6702a-r0019.dgn

RELATIVE BORDER SCALE  
IS IN INCHES

0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

**UTILITY**  
NO SCALE

**U-19**

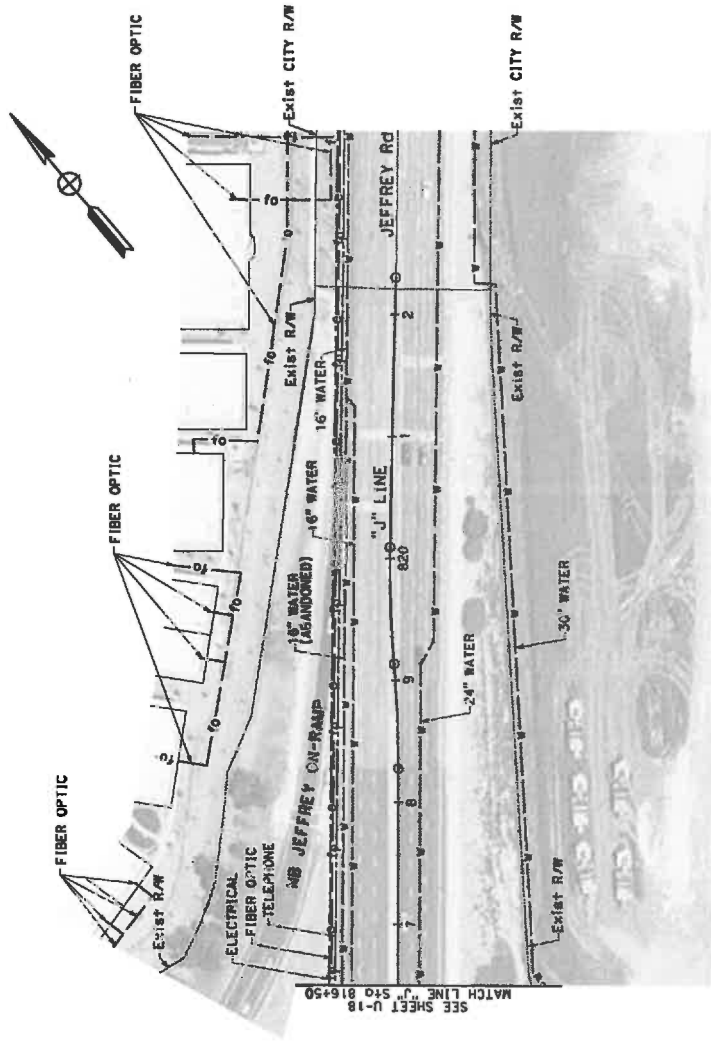
DATE PLOTTED = 4/29/2011  
 TIME PLOTTED = 10:35:09 AM  
 00-00-00

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED- DESIGNED BY	CHECKED BY	REVISOR	DATE REVISED



Dist	County	Route	Sheet No.	Project No.
12	Ora	5	21.3/30.3	

DATE PLOTTED = 4/29/2011  
 TIME PLOTTED = 10:39:15 AM  
 U-20



UTILITY  
 NO SCALE  
 U-20

PROJECT NUMBER & PHASE  
 1200020052K

UNIT 0000



RELATIVE BORDER SCALE  
 1/8" = 15' IN INCHES

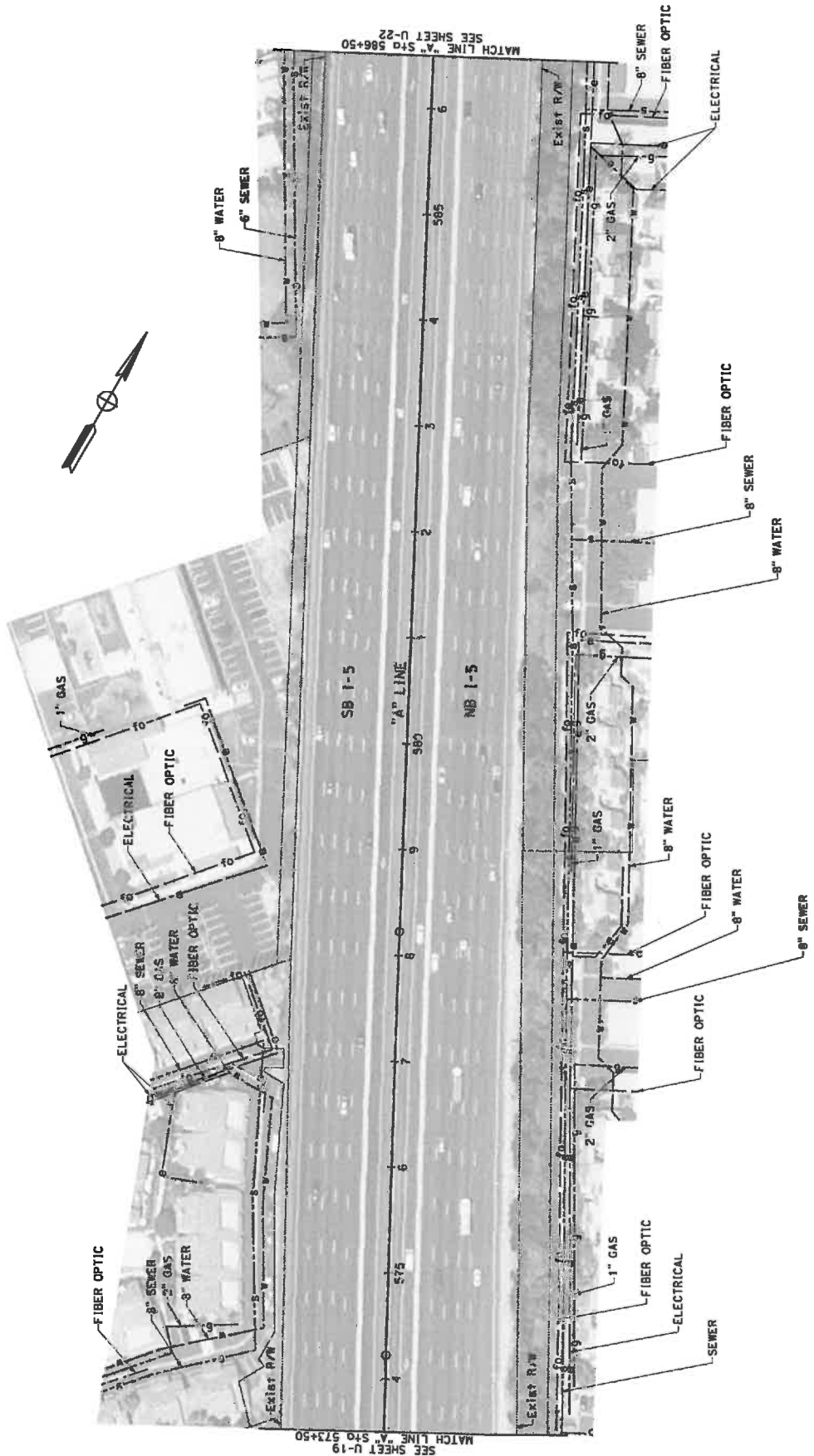
BORDER LAST REVISED 7/2/2010  
 USERNAME: g30303  
 DGN FILE: \\...\\H11157\06102A-u020.dgn

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO. OF TOTAL SHEETS
12	Ora	5	21.3/30.3	



MATCH LINE "A" STA 573+50  
SEE SHEET U-19

MATCH LINE "A" STA 586+50  
SEE SHEET U-22

**FOR PSR USE ONLY**

**UTILITY**  
NO SCALE

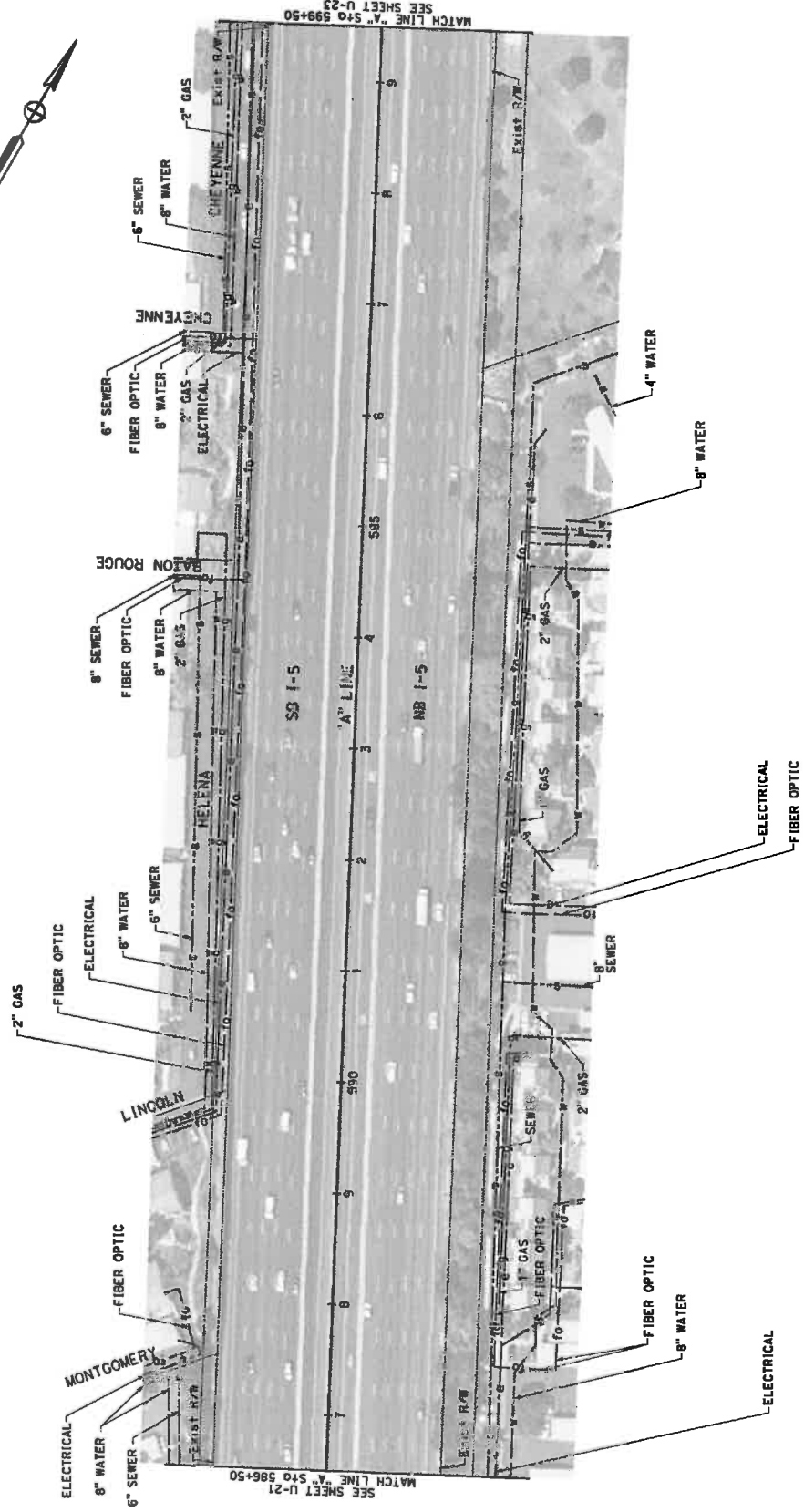
**U-21**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISED BY

BORDER LAST REVISED 7/2/2010  
USERNAME: s20000  
DWG FILE: ...UTILITY\OR02A-k021.dgn  
RELATIVE BORDER SCALE  
IS IN INCHES  
0 1 2 3  
UNIT 0000  
PROJECT NUMBER & PHASE  
1200020052K

LAST REVISION  
DATE PLOTTED 4/29/2011  
LINE PLOTTED 10:45:28 AM  
00-00-00

DIST	COUNTY	ROUTE	POST MILE	SHEET NO.	TOTAL SHEETS
12	Or	5	21.3/30.3		



MATCH LINE "A" STA 599+50  
SEE SHEET U-23

MATCH LINE "A" STA 586+50  
SEE SHEET U-21

UTILITY  
NO SCALE

U-22

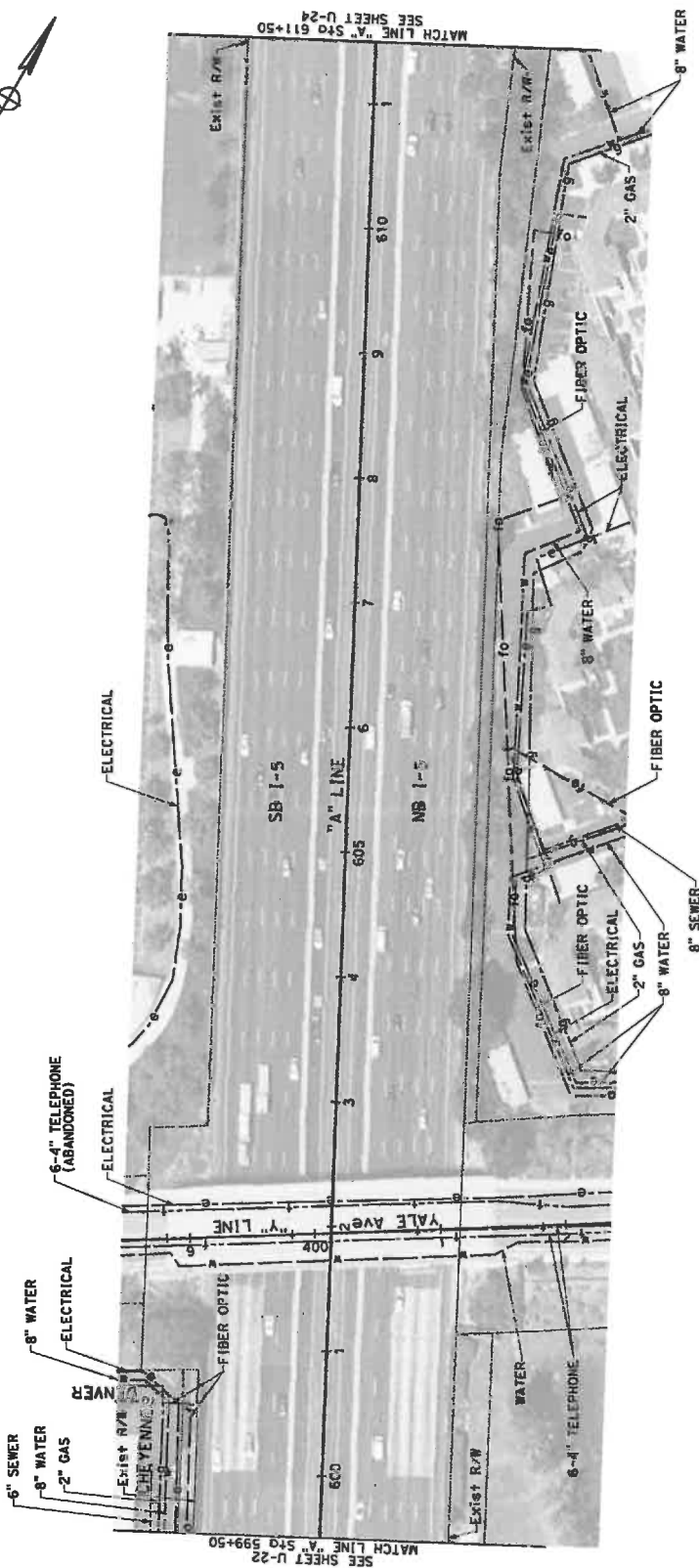
PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1/8" = 10' IN INCHES  
DATE REVISION: 7/2/2010  
USER: ...  
FILE: ...

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISION
DESIGNED BY	CALCULATED BY	REVISOR	REVISION

DATE PLOTTED: 5/2/2011 10:50:54 AM

Dist	County	ROUTE	POST MILE PROJECT	SHEET NO./TOTAL SHEETS
12	Oro	5	21.3/30.3	



SEE SHEET U-22  
MATCH LINE "A" STA 599+50

SEE SHEET U-24  
MATCH LINE "A" STA 611+50

**FOR PSR USE ONLY**

**UTILITY**  
NO SCALE

**U-23**

BORDER LAST REVISED 7/2/2010  
USERNAME: r3710u  
DWG FILE: ...UTILITY\AK67024-K6023.dwg

RELATIVE BORDER SCALE  
IS IN INCHES



UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

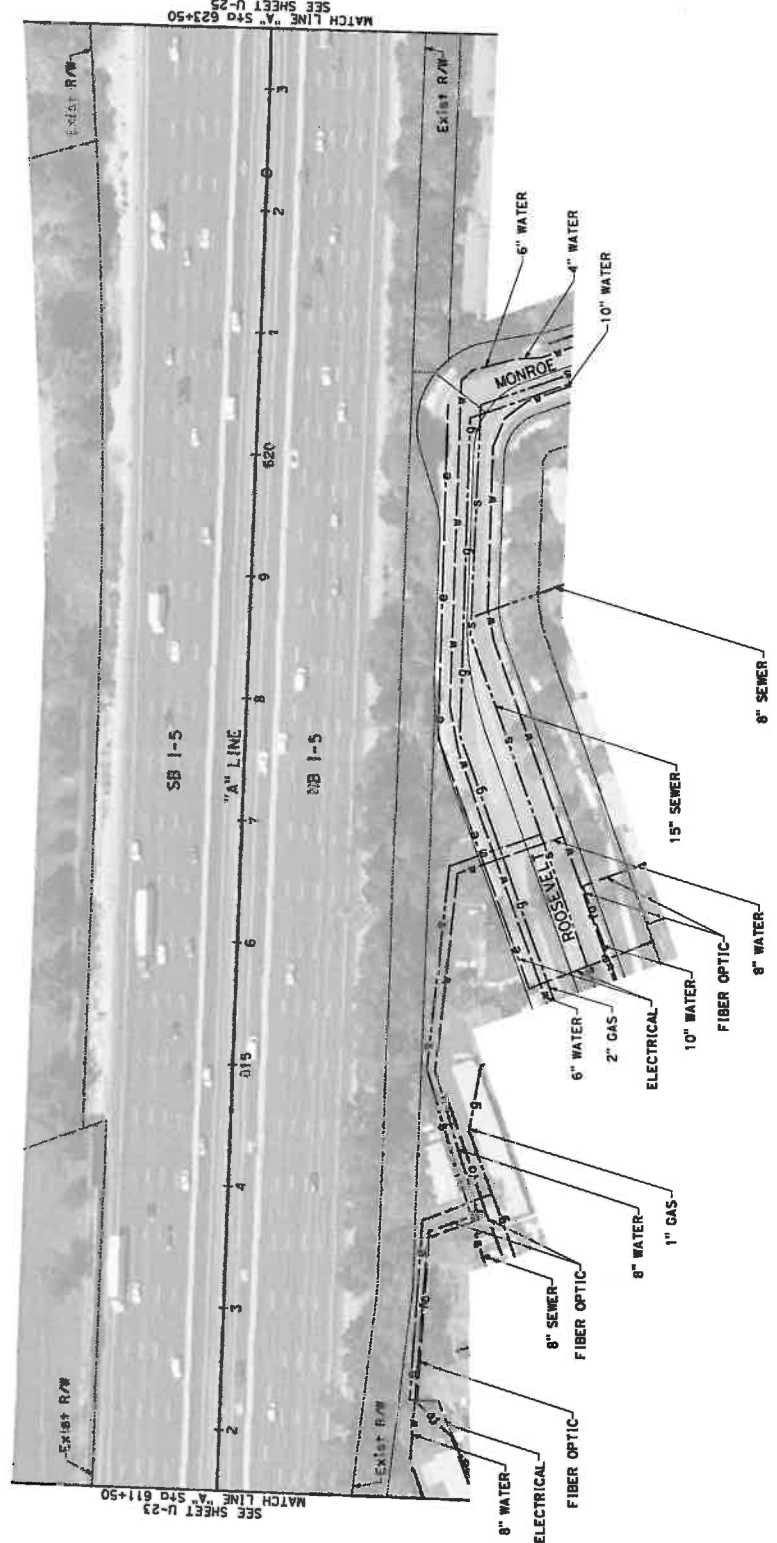
00-00-00

DATE PLOTTED => 5/2/2011  
TIME PLOTTED => 10:54:48 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR	DATE REVISED
		CHECKED BY		



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orco	5	21.3/30.3		



SEE SHEET U-23  
MATCH LINE "A" STD 611+50

SEE SHEET U-25  
MATCH LINE "A" STD 623+50

**UTILITY**  
NO SCALE

**U-24**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
1" = 15' IN INCHES

BORDER LAST REVISED 7/22/2010  
USERNAME: s3r1m  
DWG FILE: ...\\H1119\67024-h0024.dwg

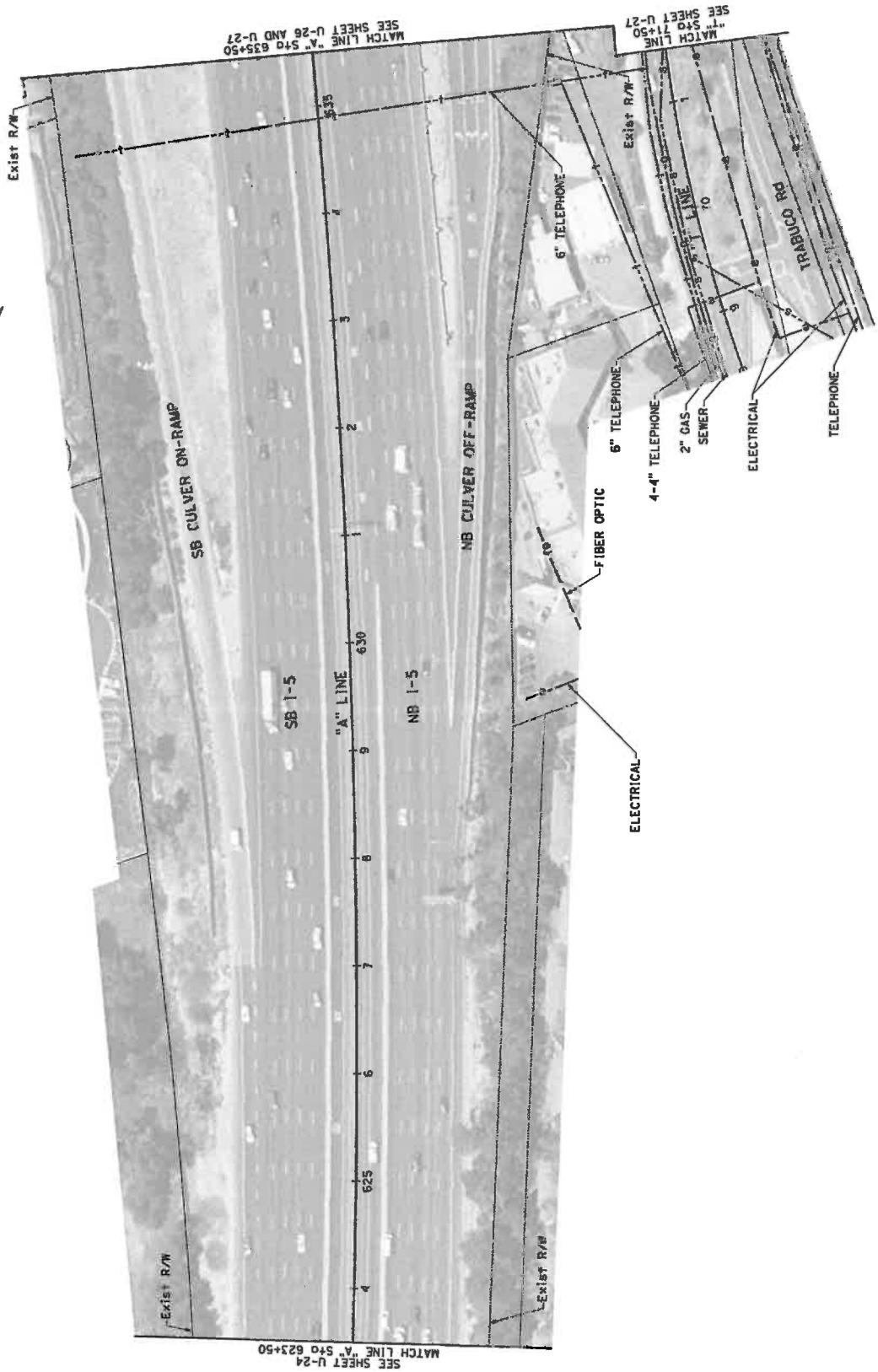
DATE PLOTTED: 05/2/2011 10:59:14 AM  
00-00-00

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	CHECKED BY	DATE REVISED

DIST	COUNTY	ROUTE	TOTAL PROJECT MILES	SHEET NO. OF TOTAL SHEETS
12	Orj	5	21.3/30.3	



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DESIGNED BY	REVISOR	DATE REVISOR

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
 USERNAME: r100  
 DON FILE: ...UTILITY\06T02A-10025.dgn

RELATIVE BORDER SCALE IS IN INCHES



UNIT 0000

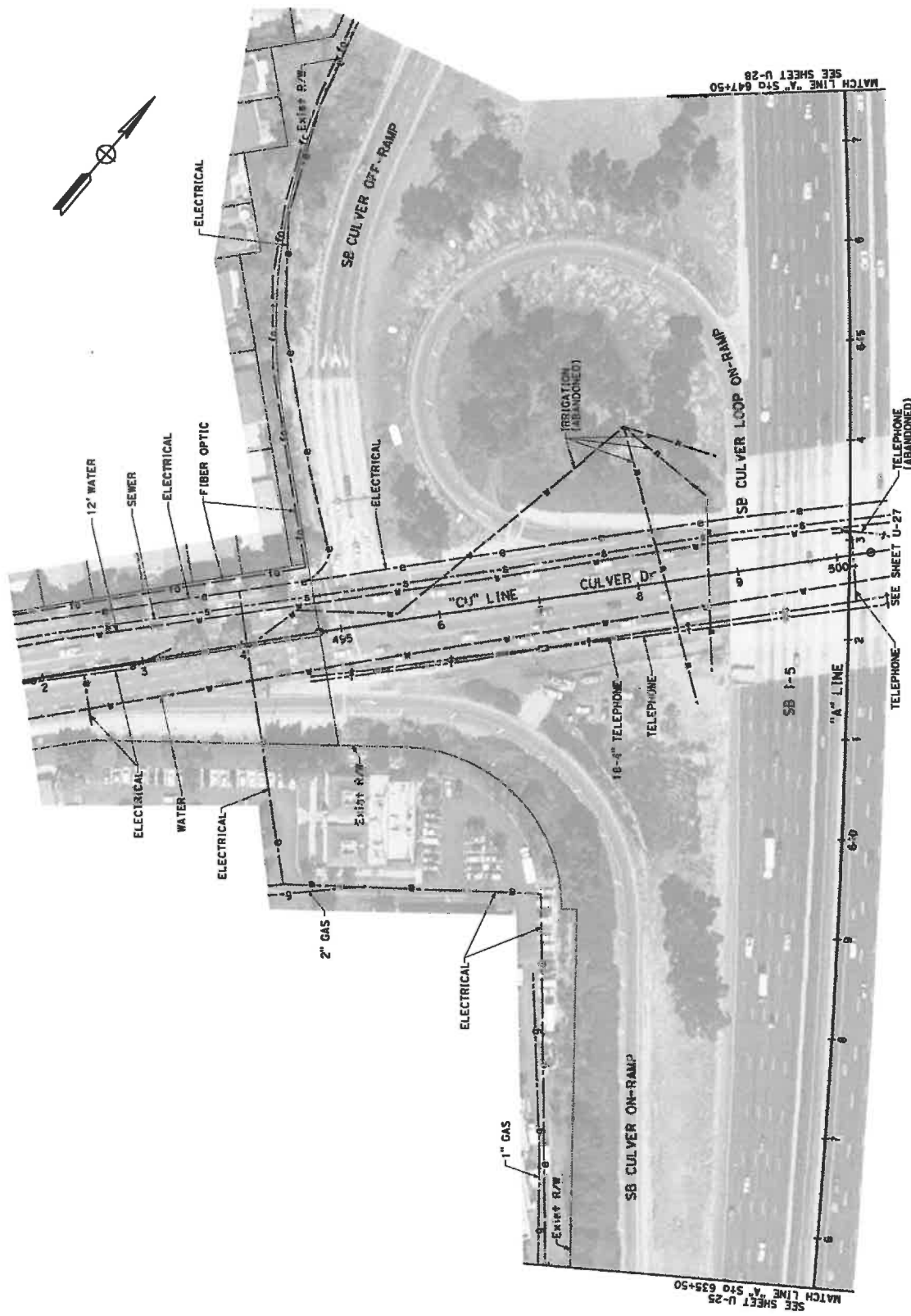
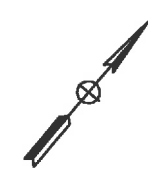
PROJECT NUMBER & PHASE

1200020052K

**UTILITY**  
NO SCALE  
**U-25**

DATE	PROJECT	SHEET	TOTAL SHEETS
12/03/2011	12 ORC	5	21.3/30.3

DATE PLOTTED: 05/2/2011 11:04:03 AM



UTILITY  
NO SCALE  
U-26

PROJECT NUMBER & PHASE

UNIT 0000

RELATIVE BORDER SCALE  
1" = 15' IN INCHES

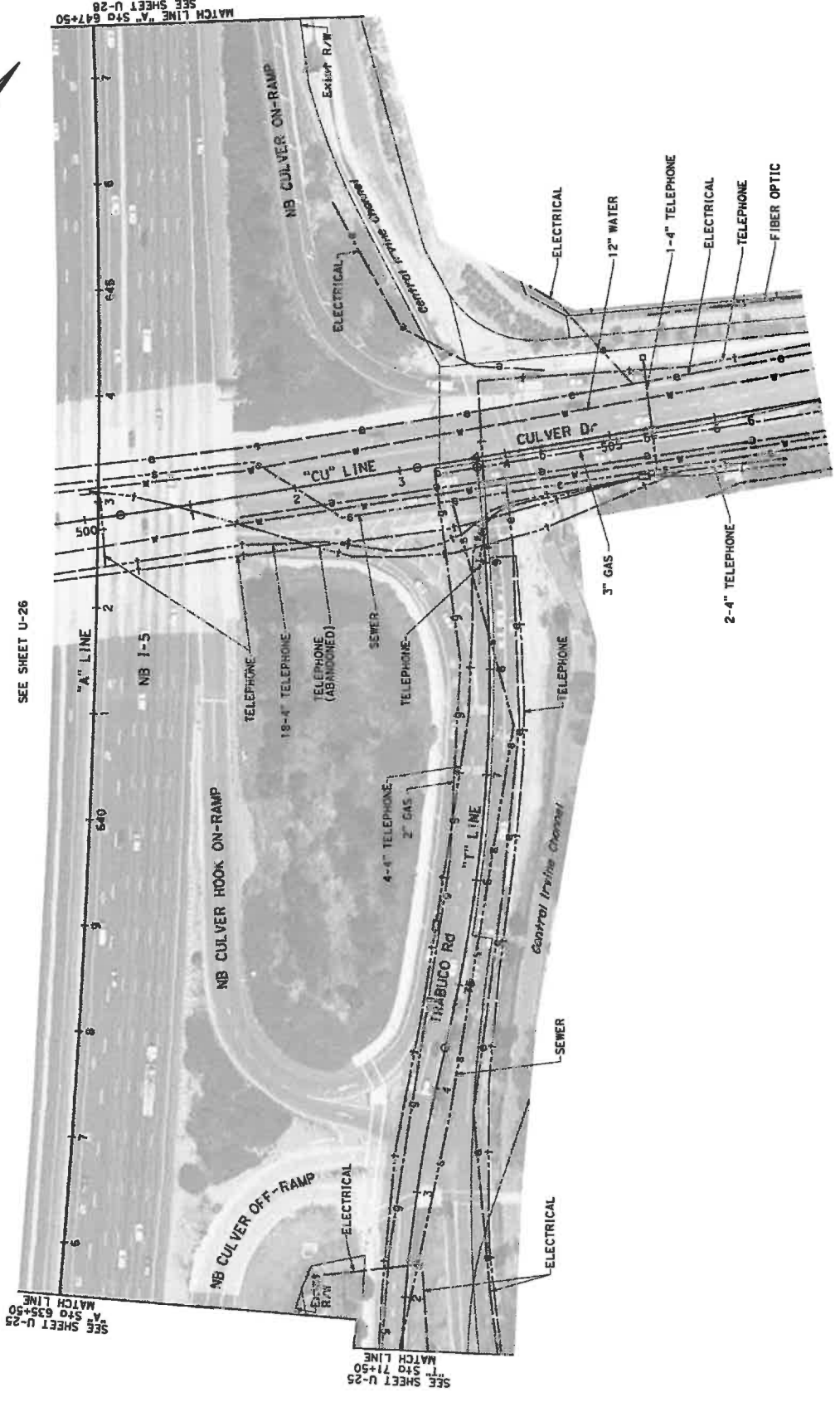
USERNAME: p100  
DOM FILE #3 ... \Utilities\065702A-hd026.dgn

BORDER LAST REVISED 7/2/2010

**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
12	Ora	5	21.3/30.3	



SEE SHEET U-25  
MATCH LINE  
A 540 635+50

SEE SHEET U-26

SEE SHEET U-25  
MATCH LINE  
T 540 71+50

MATCH LINE "A" 540 647+50  
SEE SHEET U-28

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-D	DESIGNED BY	REVISOR	DATE REVISED
		CHECKED BY			

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
 USERNAME: d31104  
 DGN FILE: ...UTILITY\UK8Y02A-K0027.dgn

RELATIVE BORDER SCALE  
 15 IN INCHES

0 1 2 3

UNIT 0000

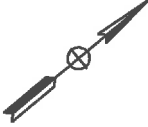
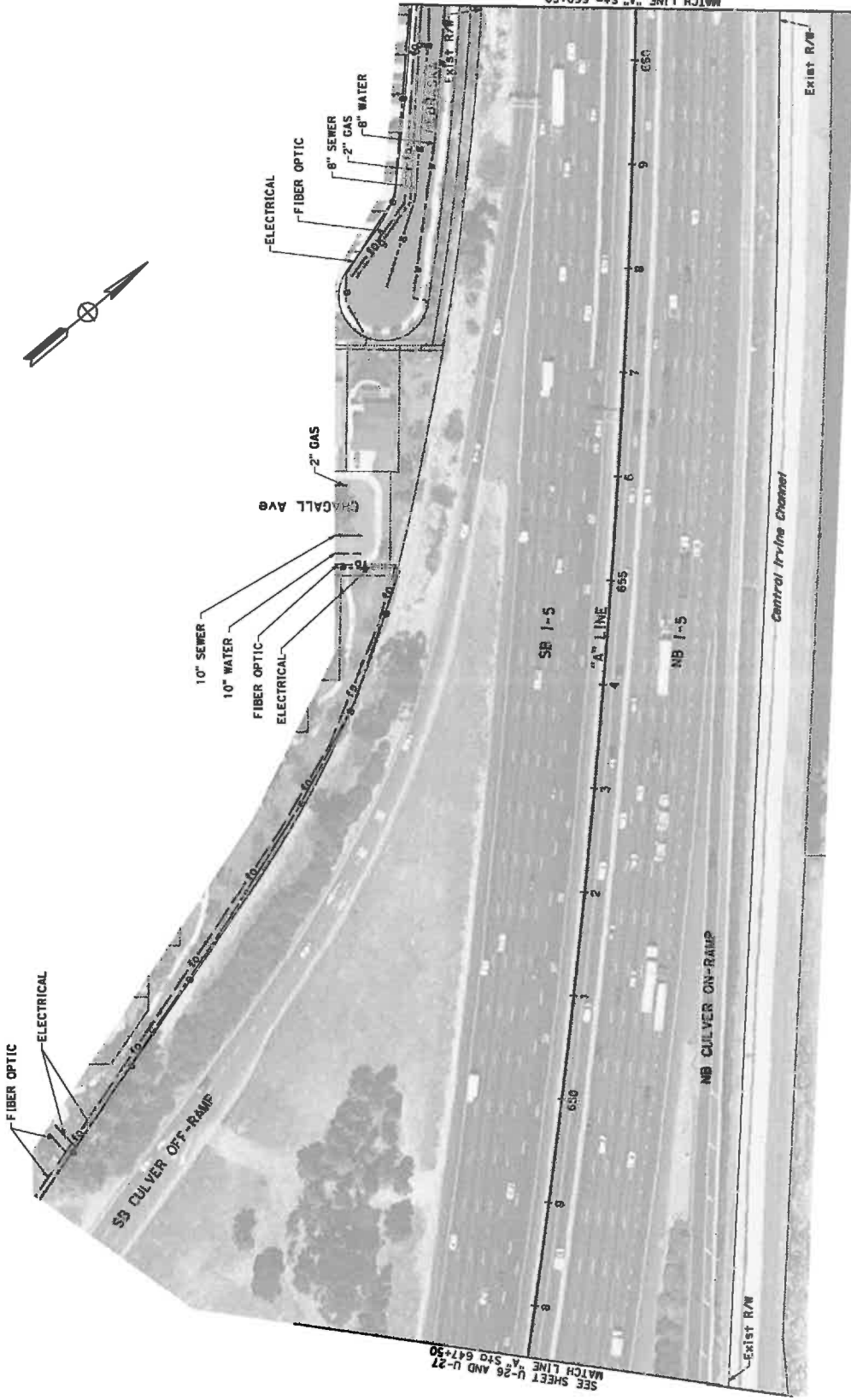
PROJECT NUMBER & PHASE

1200020052K

**UTILITY**  
 NO SCALE  
**U-27**

DATE	12	COUNTY	070	ROUTE	5	PROJECT TOTAL SHEETS	21	SHEET NO.	30	SHEET TOTAL	33
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DATE PLOTTED = 5/2/2011  
 TIME PLOTTED = 11:10:05 AM  
 U-28



UTILITY  
 NO SCALE

U-28

PROJECT NUMBER & PHASE 1200020052K  
 UNIT 0000  
 RELATIVE BORDER SCALE 15 IN INCHES  
 USER: ...\\H1111\...\\06702A-0008L.dgn

FOR PSR USE ONLY

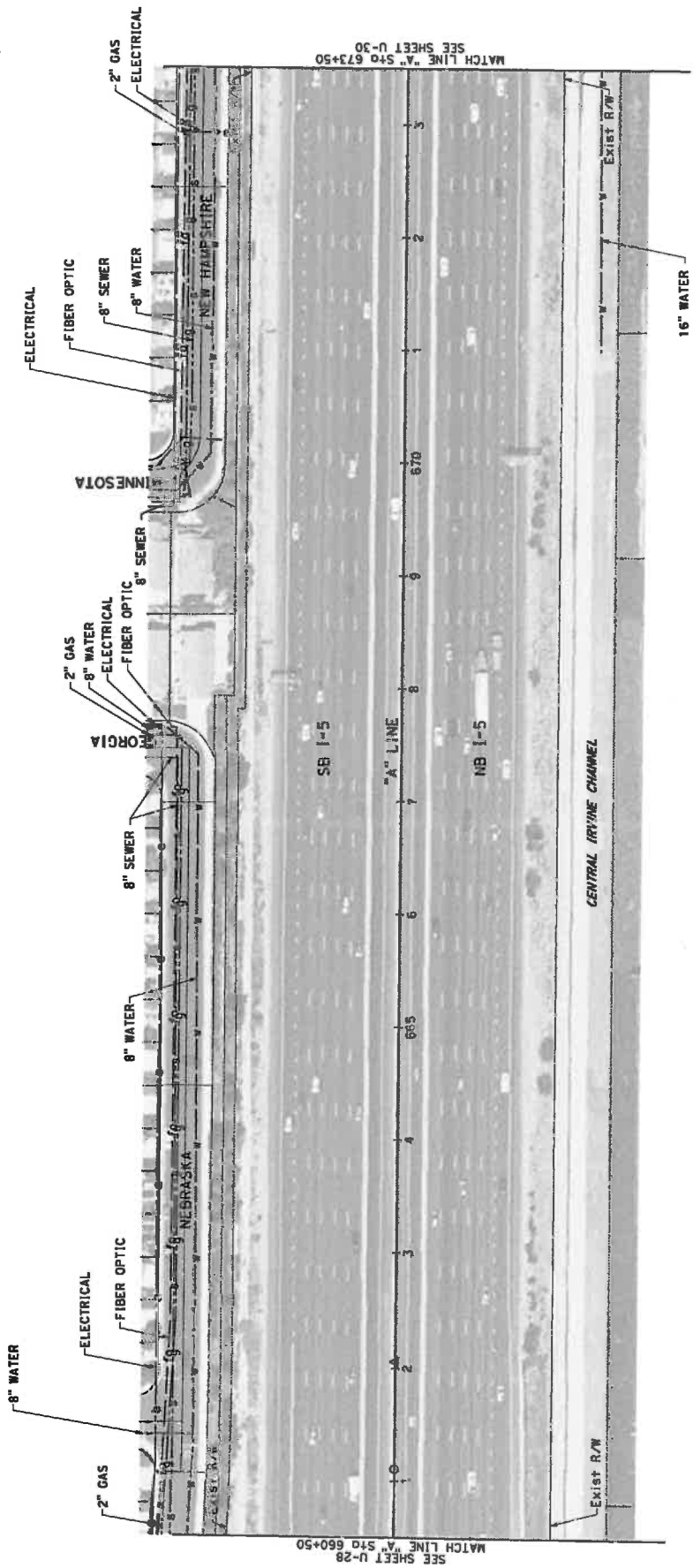
BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
	DESIGNED BY	REVISOR	





Dist	County	Route	Sheet No.	Sheet Title
12	Ora	5	21.3/30.3	UTILITY PROJECT



SEE SHEET U-28  
MATCH LINE "A" STD 660+50

SEE SHEET U-30  
MATCH LINE "A" STD 673+50

**FOR PSR USE ONLY**

**UTILITY  
NO SCALE**

**U-29**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISED BY

BORDER LAST REVISED 7/2/2010  
USERNAME: \\\\...\\utility\k06102a-k029.dgn  
DOM FILE: ...

RELATIVE BORDER SCALE  
IS IN INCHES

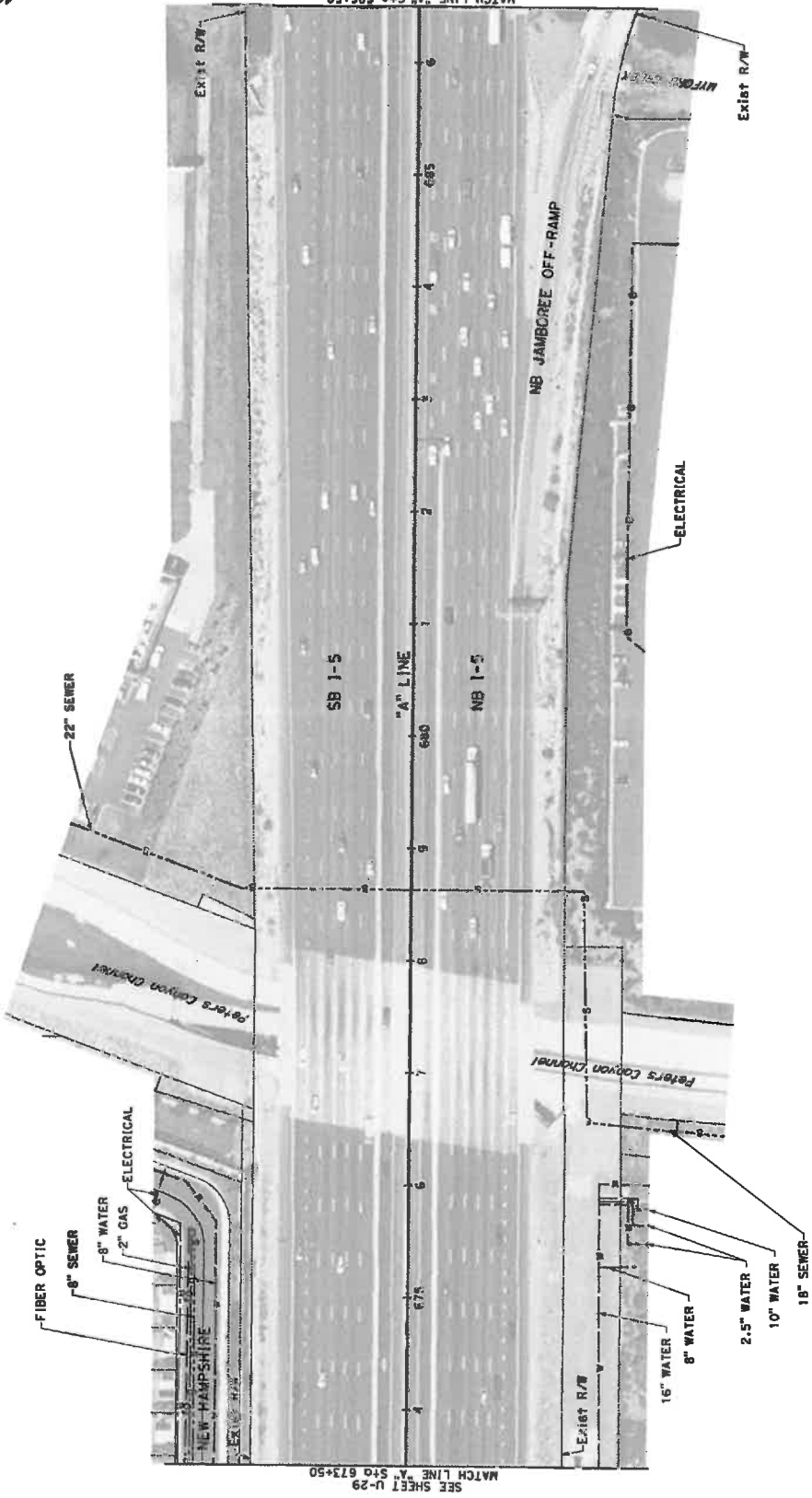
UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

LPT NUMBER DATE PLOTTED # 5/2/2011  
TIME PLOTTED # 11:21:21 AM  
00-00-00

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	OTO	5	21.3/30.3		



SEE SHEET U-29  
MATCH LINE A' STD 673+50

SEE SHEET U-31 AND U-32  
MATCH LINE A' STD 686+50

DATE PLOTTED = 5/2/2011  
TIME PLOTTED = 11:15:35 AM

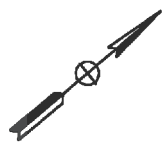
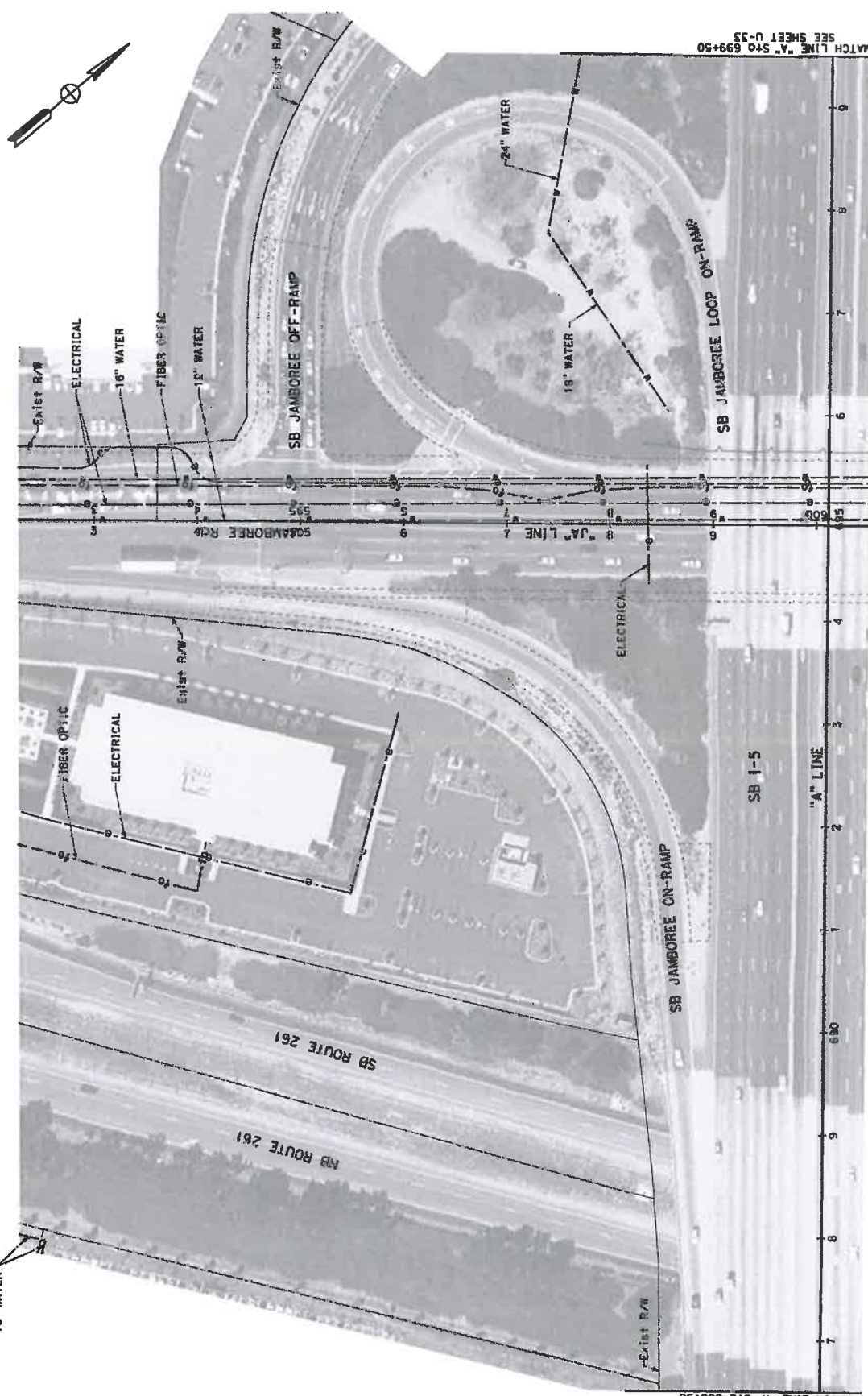
**UTILITY**  
NO SCALE  
**U-30**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1" = 15' IN INCHES  
BORDER LAST REVISED: 7/2/2010  
USERNAME: rplou  
JOB FILE # : ... \HR\1119\68702A-hcd30.dgn

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED

Dist	County	Route	Sheet No.	Project No.
12	Orca	5	21.3/30.3	



SEE SHEET U-32

**UTILITY**  
NO SCALE

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010 USERNAME: rpfou DOW FILE # 2...Utility\DWG\102A-10031.dgn

RELATIVE BORDER SCALE IS IN INCHES

0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE

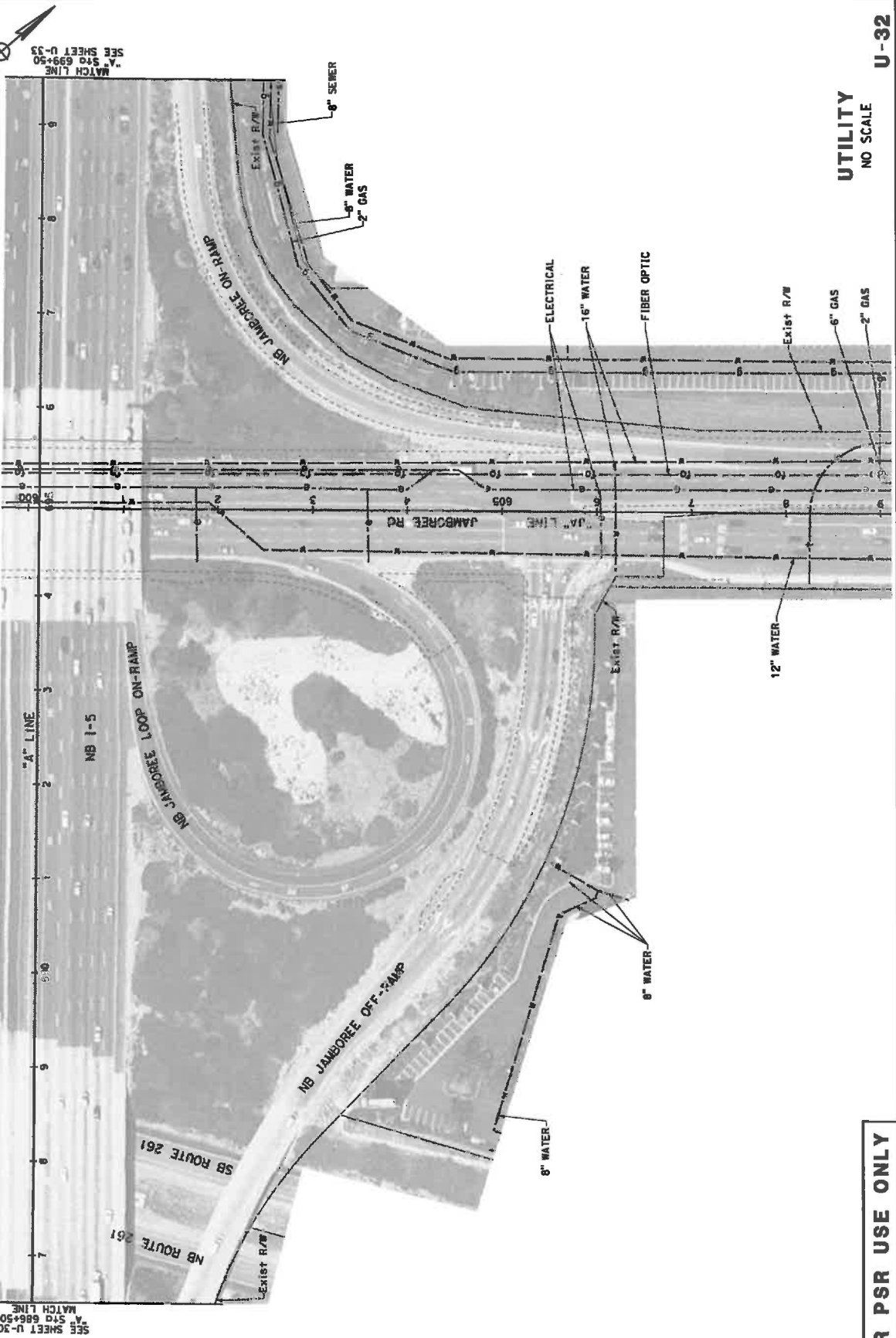
120020032K

**U-31**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR	DATE REVISED
		CHECKED BY		



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	OTO	5	21.3/30.3		



SEE SHEET U-31

SEE SHEET U-30  
A. STD 686+50  
MATCH LINE

SEE SHEET U-33  
A. STD 699+50  
MATCH LINE

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
DATE FILED: ... \UTILITY\06705A-10032.dgn

RELATIVE BORDER SCALE  
1" IS 10' IN INCHES



UNIT 0000

PROJECT NUMBER & PHASE

1200020052K

UTILITY  
NO SCALE

U-32

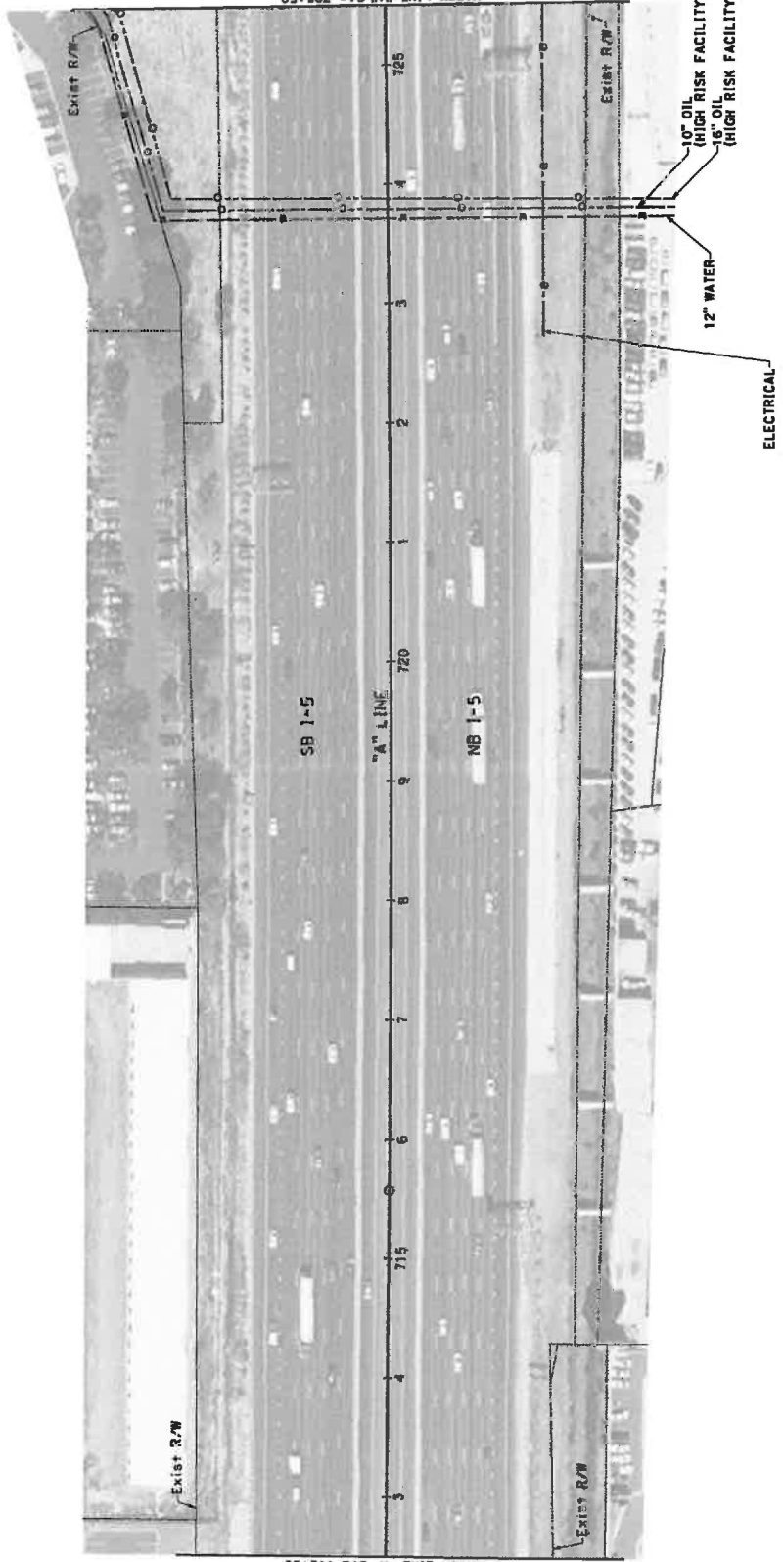
LAST REVISION  
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TIME PLOTTED: 3:11:19 PM  
00-00-00

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED- DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
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DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orinda	5	21.3/30.3		



SEE SHEET U-33  
MATCH LINE "A" STA 712+50

SEE SHEET U-34  
MATCH LINE "A" STA 729+50

ELECTRICAL

12" WATER

10" OIL (HIGH RISK FACILITY)  
8" OIL (HIGH RISK FACILITY)

**UTILITY**  
NO SCALE

**U-34**

PROJECT NUMBER & PHASE  
1200020052K

UNIT 0000

RELATIVE BORDER SCALE  
1" = 15' IN INCHES

0 1 2 3

DATE PLOTTED = 5/2/2011  
TIME PLOTTED = 11:24:19 AM

FOR PSR USE ONLY  
C:\Users\p17101\Documents\Utility\06702A-00034.dgn

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION



CONSULTANT FUNCTIONAL SUPERVISOR

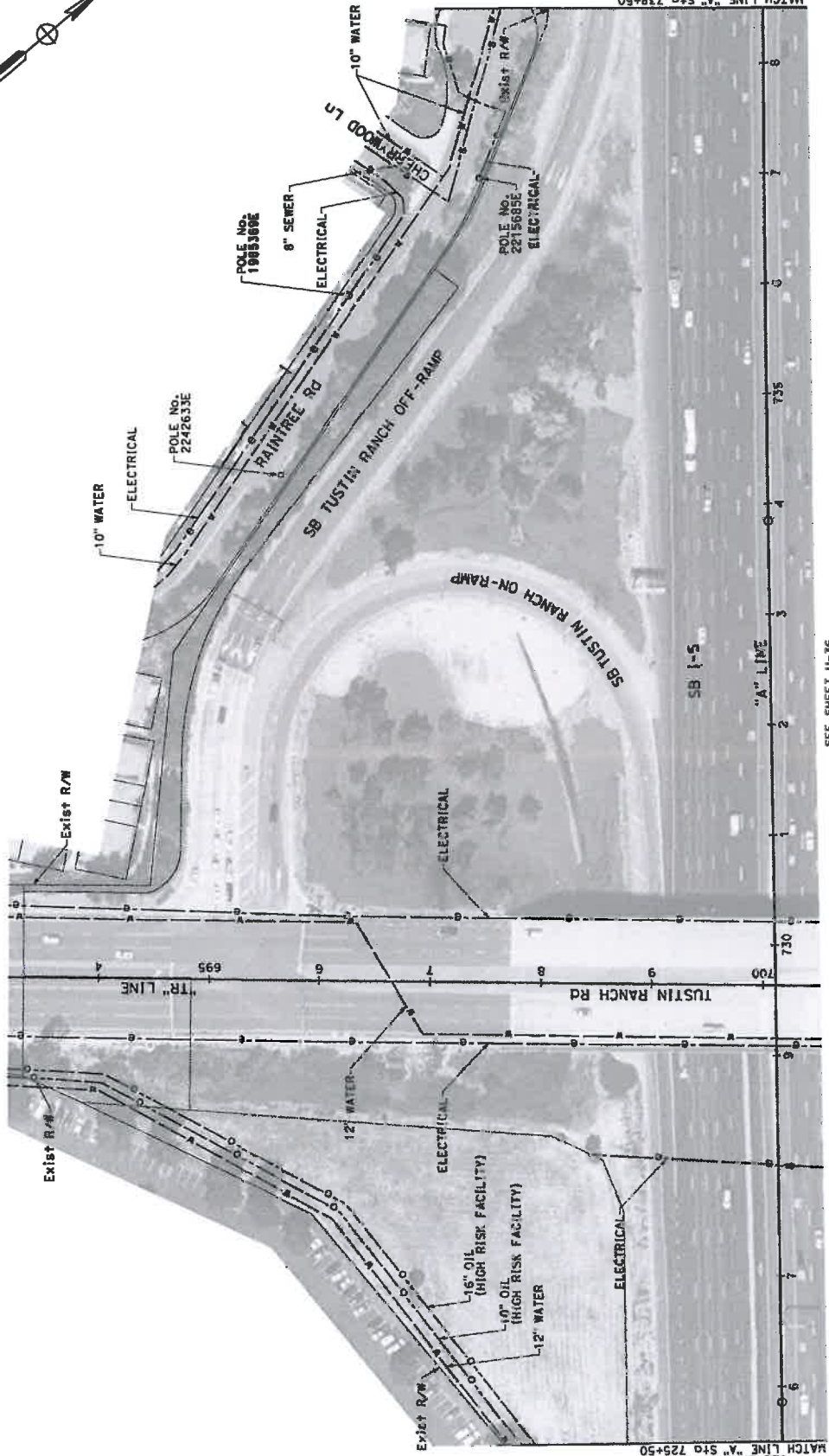
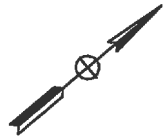
CHECKED BY

DESIGNED BY

DATE REVISED

REVISED BY

DIST	COUNTY	ROUTE	POST MILEAGE TOTAL PROJECT	SHEET NO. TOTAL SHEETS
12	Or	5	21.3/30.3	



MATCH LINE "A" Sta 738+50  
SEE SHEET U-37

MATCH LINE "A" Sta 729+50  
SEE SHEET U-34

SEE SHEET U-36

UTILITY  
NO SCALE

**FOR PSR USE ONLY**

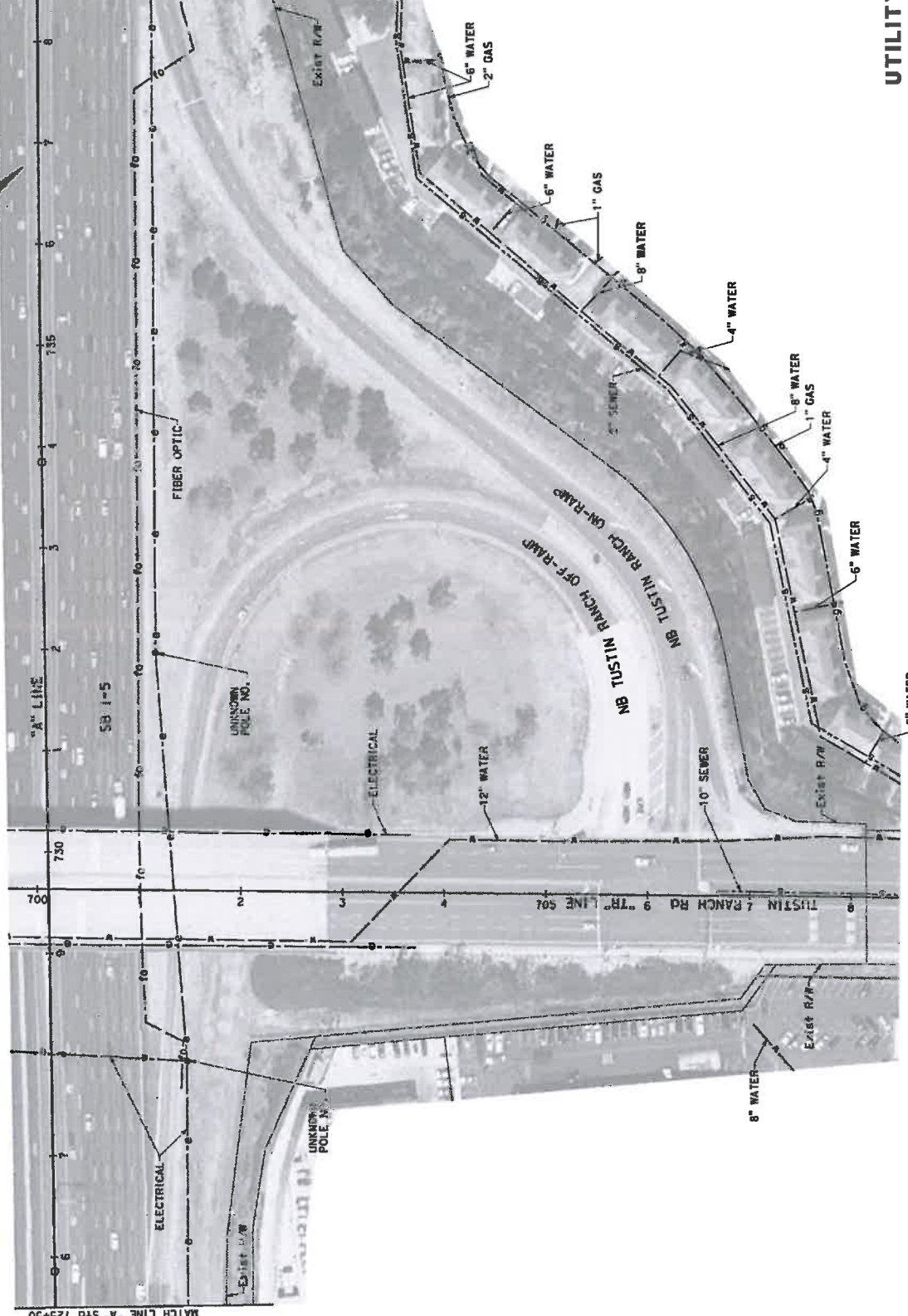
**U-35**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISED BY

DATE PLOTTED => 11/26/13 AM  
1200020052K  
PROJECT NUMBER & PHASE  
UNIT 0000  
RELATIVE BORDER SCALE IS IN INCHES  
0 1 2 3  
1200020052K  
DATE PLOTTED => 11/26/13 AM

DIST	COUNTY	ROUTE	TOTAL PROJECT SHEETS	SHEET NO.
12	OTO	5	21.3/30.3	

MATCH LINE "A" STD 125+50  
SEE SHEET U-34



SEE SHEET U-35

MATCH LINE "A" STD 125+50  
SEE SHEET U-34

UTILITY  
NO SCALE

U-36

PROJECT NUMBER & PHASE

UNIT 0000

RELATIVE BORDER SCALE  
15 IN INCHES

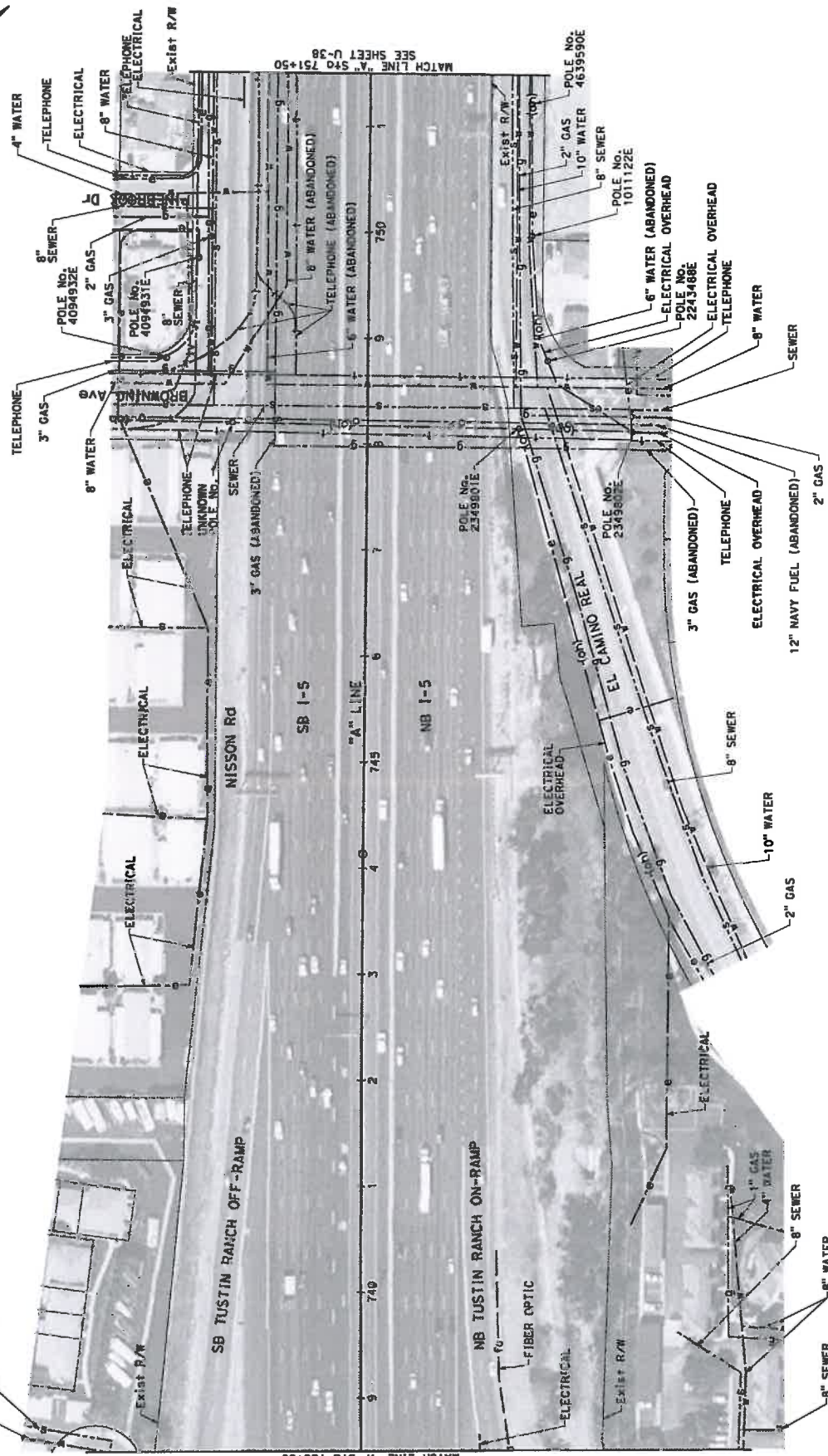
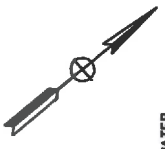
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TIME PLOTTED 11:28:45 AM

FOR PSR USE ONLY  
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR	DATE REVISED



DATE	COUNTY	ROUTE	SHEET TOTAL PROJECT SHEETS
12 Oct	Or	5	21.3/30.3



SEE SHEET U-35 AND U-36  
MATCH LINE A-SIG 738+50

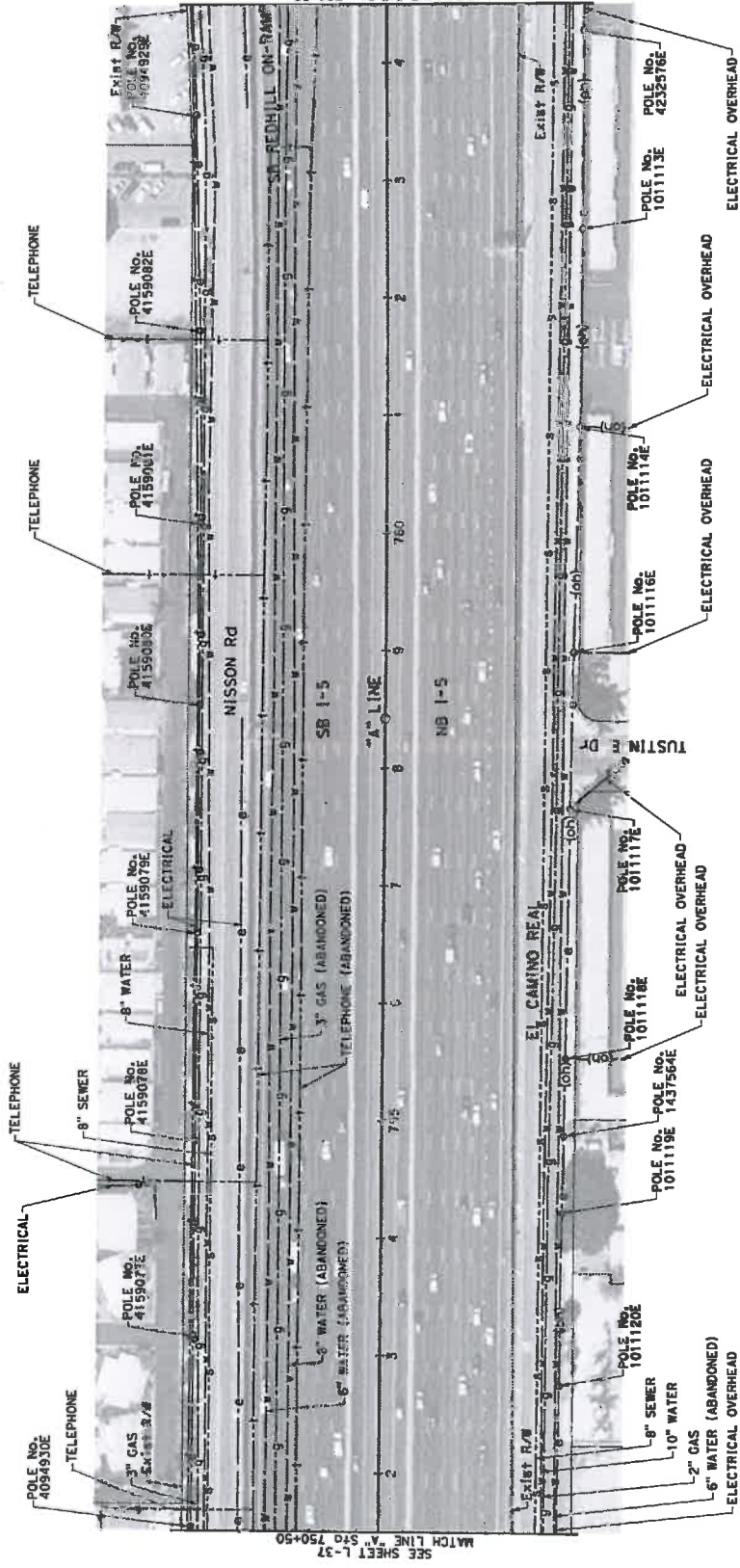
SEE SHEET U-37 AND U-38  
MATCH LINE A-SIG 751+50

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CHECKED BY	DESIGNED BY	REVISOR	DATE REVISED
<p><b>FOR PSR USE ONLY</b></p> <p>USERNAME: #37100 DGN FILE: #3...UTIL\PSR\K02A-K0037.dgn</p>					

**UTILITY**  
NO SCALE  
**U-37**

BORDER LAST REVISED 7/2/2010  
RELATIVE BORDER SCALE IS IN INCHES  
UNIT 0000  
PROJECT NUMBER & PHASE 1200020052K

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
12	Orca	5	21.3/30.3		



SEE SHEET L-37  
MATCH LINE "A" STA 750+50

SEE SHEET L-39  
MATCH LINE "A" STA 764+50

**UTILITY**  
NO SCALE  
**U-38**

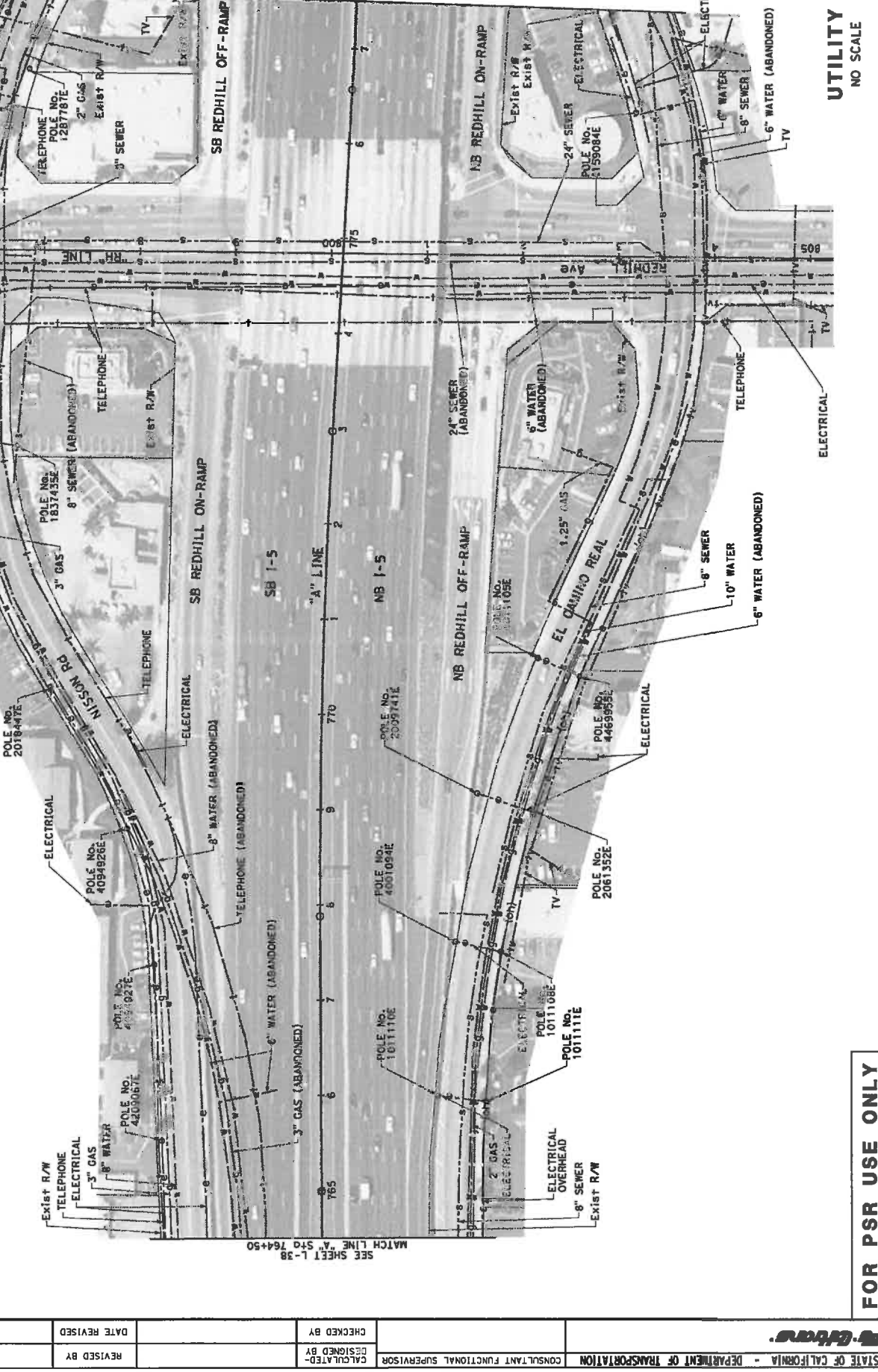
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DATE REVISION 00-00-00  
PROJECT NUMBER & PHASE 1200020052K  
UNIT 0000  
RELATIVE BORDER SCALE 1/8" = 10' INCHES  
FOR PSR USE ONLY  
USORNAME: psr\_fcgs  
JOB FILE # ...\\H111\york6702a-n6038.dgn  
BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	REVISOR BY	DATE REVISED



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

FOR PSR USE ONLY  
BORDER LAST REVISED 7/2/2010  
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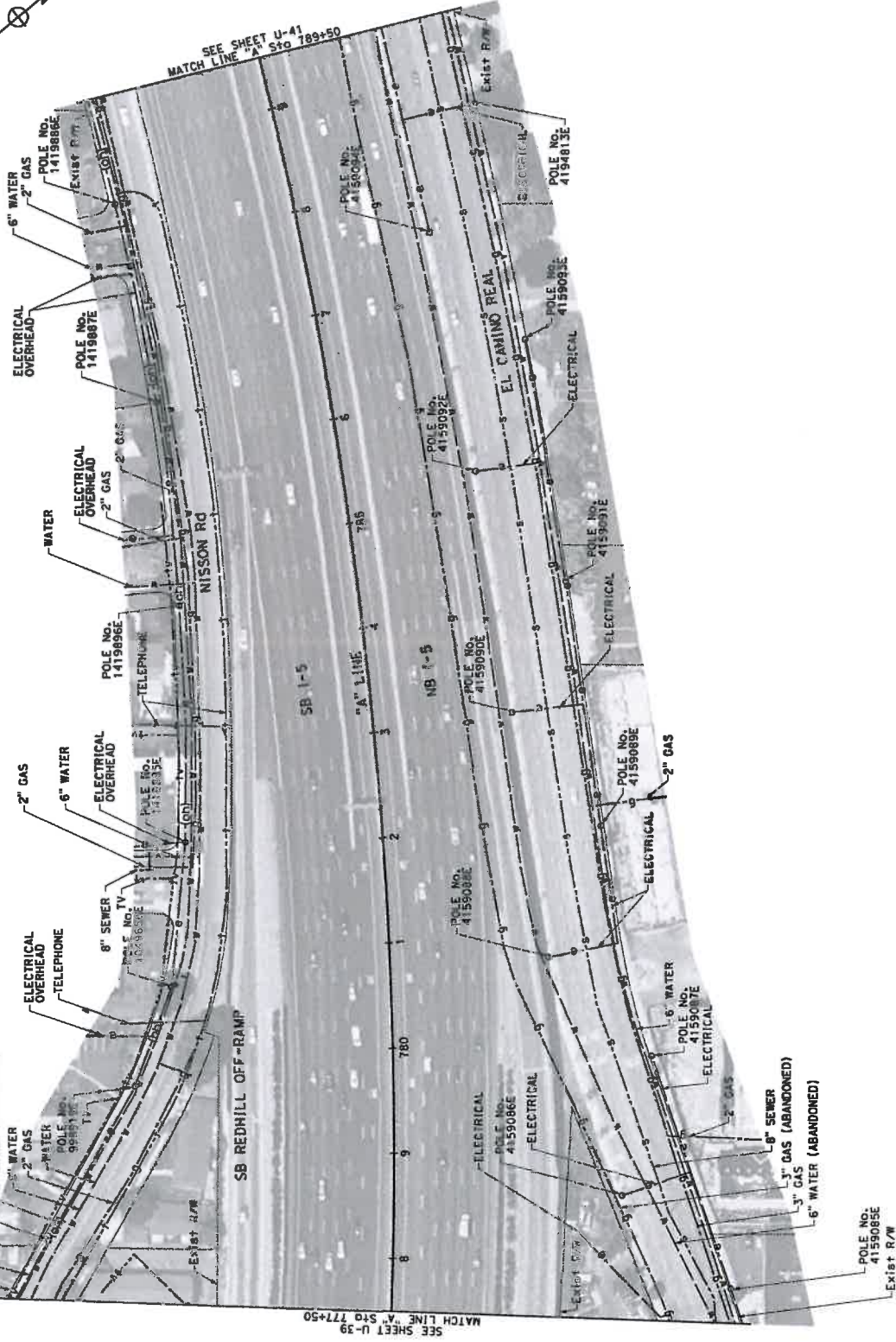


REVISIONS:  
 1. DATE: 7/2/2010, BY: [Signature], DESCRIPTION: [Description]  
 2. DATE: [Date], BY: [Signature], DESCRIPTION: [Description]  
 3. DATE: [Date], BY: [Signature], DESCRIPTION: [Description]

DATE PLOTTED: 5/2/2011  
DATE PLOTTED: 5/2/2011  
SHEET TOTAL: 12  
SHEET NO.: 5

DATE	21.3/30.3
ROUTE	5
COUNTY	070
DIST	12

PROJECT NO.	1200020052K
SHEET NO.	U-40
TOTAL SHEETS	1



**UTILITY**  
**NO SCALE**  
**U-40**

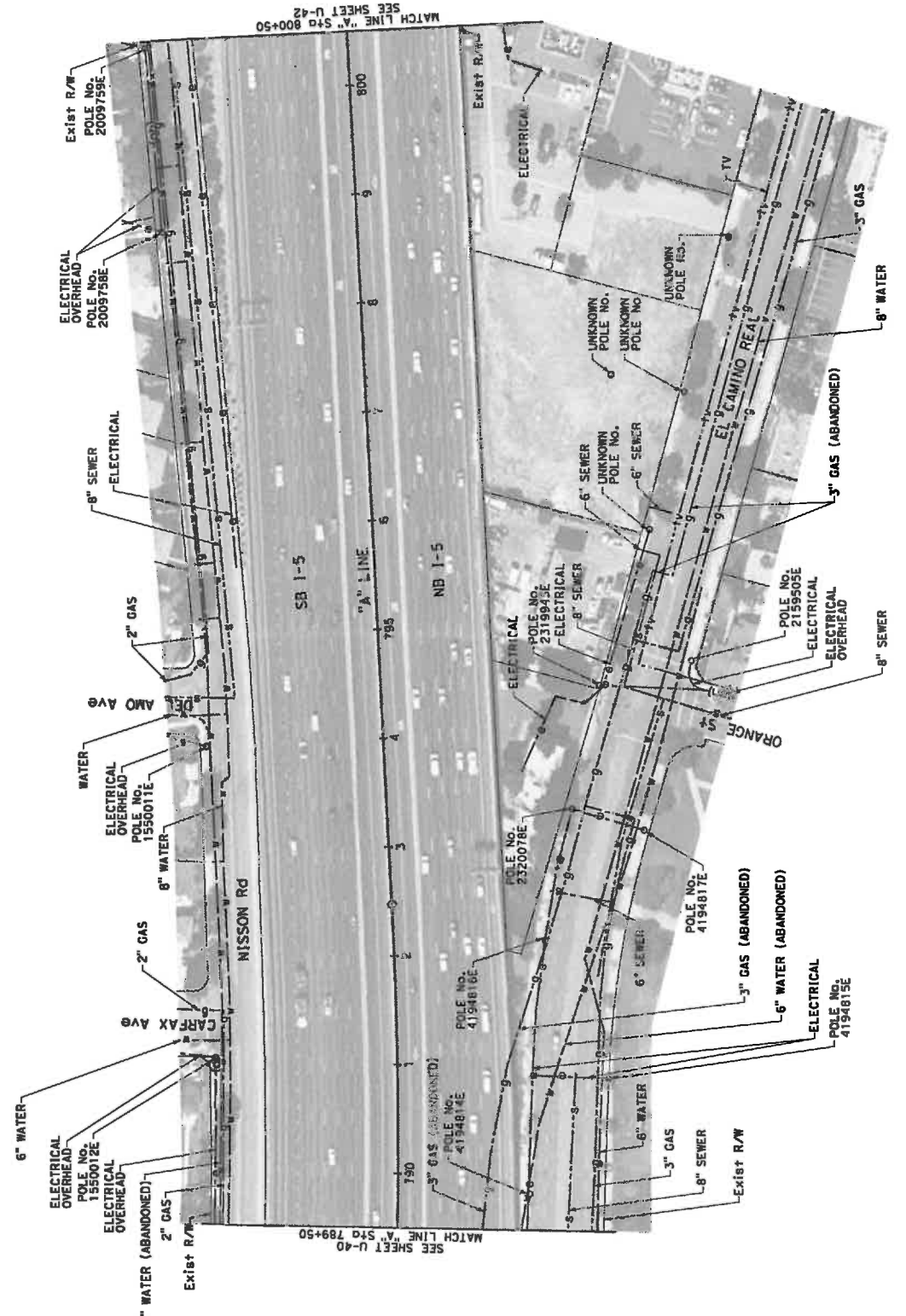
PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 1" = 15' IN INCHES

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010  
USERNAME: r100  
JOB FILE: ...\\H111\p\617029-ho40.dgn

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED

DIST	COUNTY	ROUTE	SHEET NO. IN PROJECT	SHEET TOTAL
12	Or	5	21.3/30.3	30



MATCH LINE "A" STA 800+50  
SEE SHEET U-42

SB 1-5

"A" LINE

NB 1-5

NISSON Rd

DEL AMO AVE

CARFAX AVE

ORANGE ST

EL CAMINO REAL

MATCH LINE "A" STA 789+50  
SEE SHEET U-40

**UTILITY**  
NO SCALE

**FOR PSR USE ONLY**

**U-41**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR  
CALCULATED-DRAWN BY  
DESIGNED BY  
CHECKED BY  
DATE REVISED  
REVISOR

BORDER LAST REVISED 7/2/2010  
USERNAME: r2p10m  
DWG FILE: ...UTILITY\NR6702A-nc041.dgn

RELATIVE BORDER SCALE  
1" IS 15' IN INCHES

0

1

2

3

UNIT 0000

PROJECT NUMBER & PHASE

1200020052X



DIST	COUNTY	ROUTE	SHEET NO.	TOTAL SHEETS
12	Orf	5	21.3/30.3	3

LAST NUMBER: 00-00-00 DATE PLOTTED: 05/2/2011 TIME PLOTTED: 1:20:38 PM

**UTILITY**  
NO SCALE  
**U-42**

PROJECT NUMBER & PHASE  
UNIT 0000

RELATIVE BORDER SCALE  
1" = 15' IN INCHES

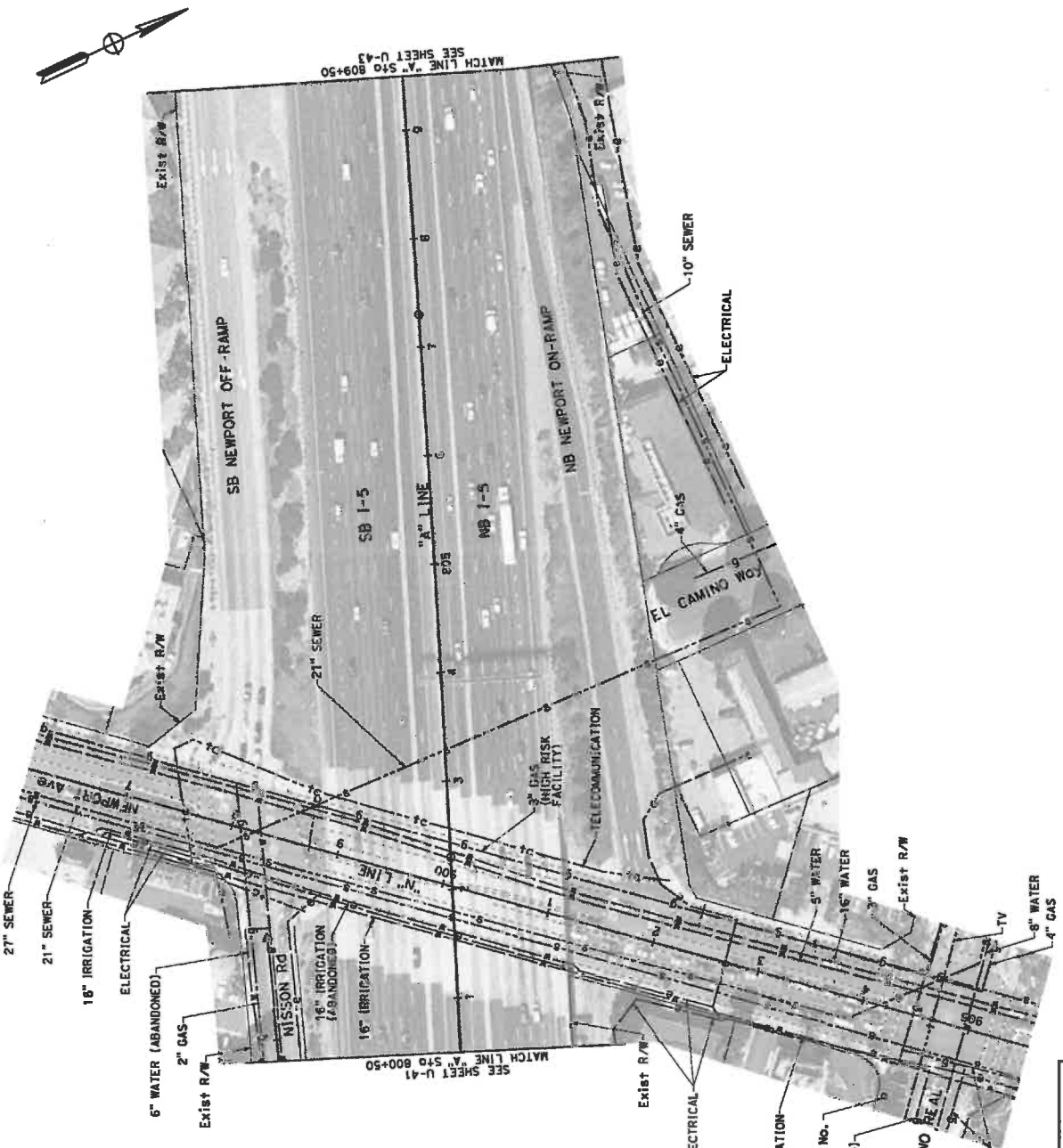
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FOR PSR USE ONLY

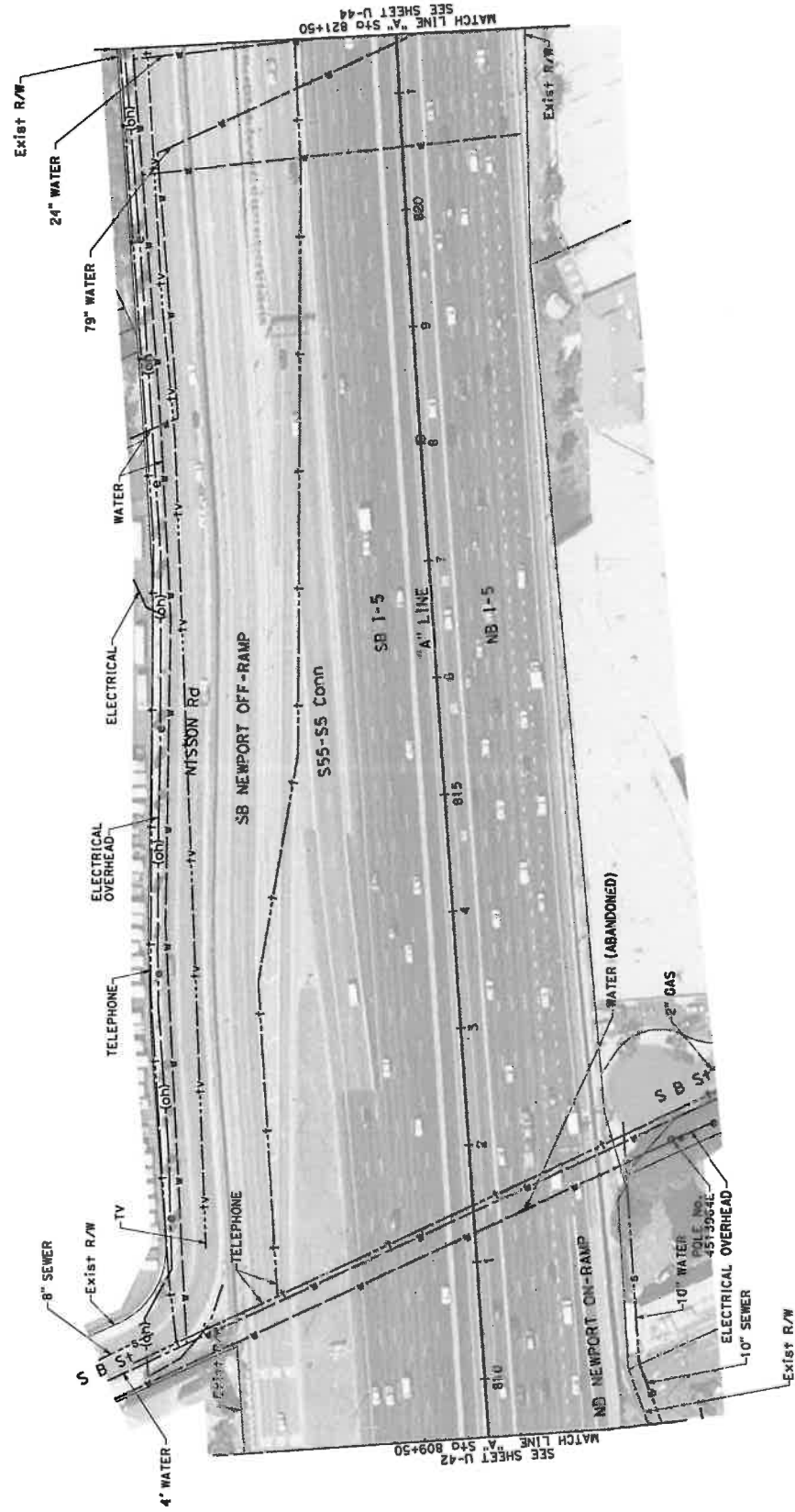
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DOR FILE: ...

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
CONSULTANT FUNCTIONAL SUPERVISOR

REVISIONS	DATE REVISION	CHECKED BY	DESIGNED BY	CALCULATED BY



Dist	County	Route	Sheet Count	Sheet Project	Sheet Total
12	Ora	5	21	3/30.3	



SEE SHEET U-42  
MATCH LINE "A" S+0 809+50

SEE SHEET U-44  
MATCH LINE "A" S+0 821+50

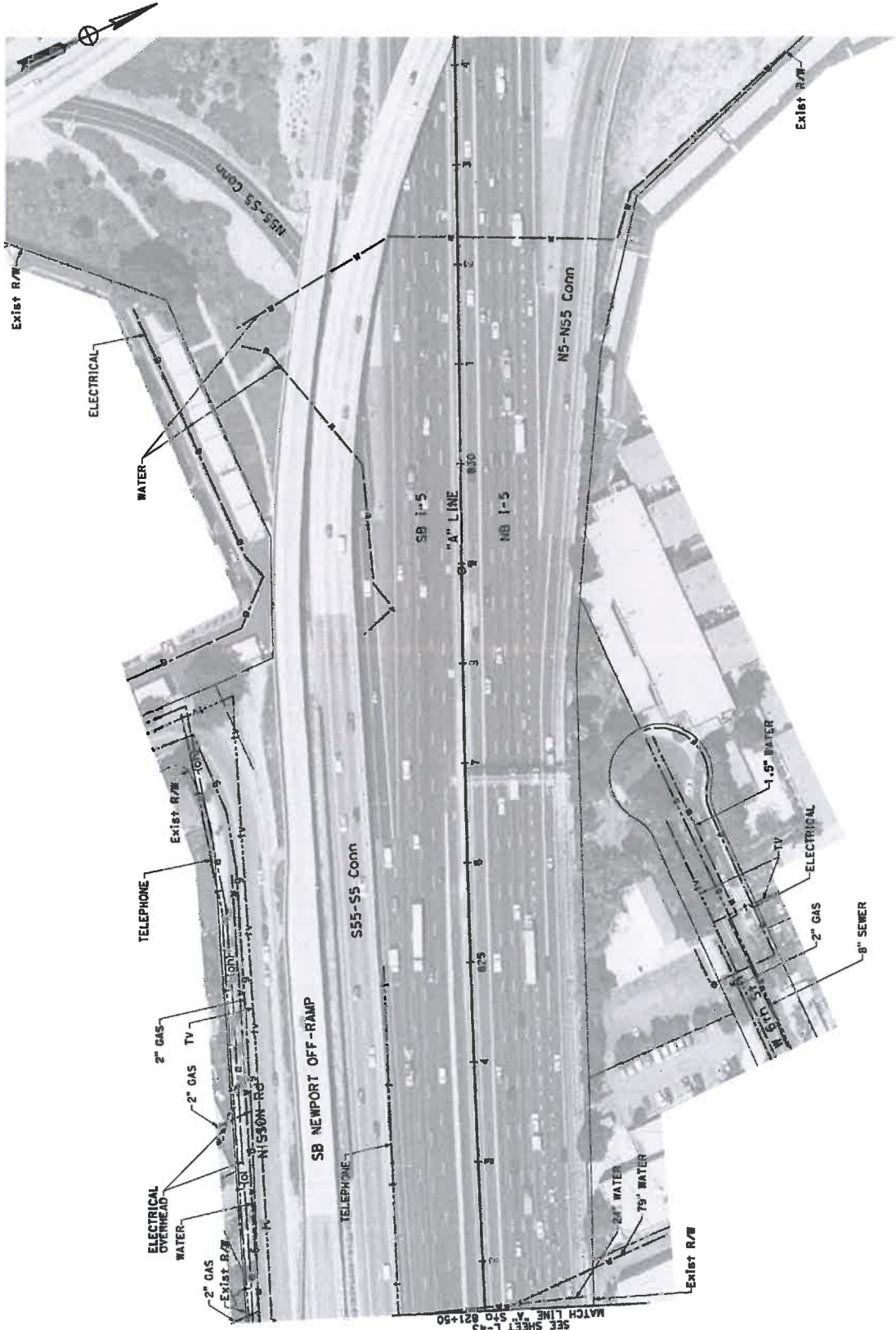
**FOR PSR USE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	CHECKED BY	DATE REVISED
USER: <b>g.davis</b> DATE: 7/2/2010    FILE: ...Utility\OR6702A-R043.dgn BORDER LAST REVISED 7/2/2010				



DRY#	COUNTY	ROUTE	DATE	TOTAL PROJECT	NO. SHEETS
12	Orca	5	21.3/30.3		

DATE PLOTTED = 5/2/2011  
TIME PLOTTED = 1:28:25 PM



**UTILITY**  
NO SCALE  
**U-44**

PROJECT NUMBER & PHASE: 1200020052K  
UNIT: 0000  
RELATIVE BORDER SCALE: 15" IN INCHES  
USERNAME: spf100  
JOB FILE #3: ...\\H111\FY068709A-00044.dgn

**FOR PSR USE ONLY**

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	CONSULTANT FUNCTIONAL SUPERVISOR	CALCULATED BY	DESIGNED BY	CHECKED BY	DATE REVISED

**ATTACHMENT 10**  
**Right-of-Way Data Sheet**

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATA SHEET**

EXHIBIT  
 4-EX-1 (REV 03/2004)  
 Alternative 2A  
 Page 1 of 4

(Form #)

To: Constantino Stamation, Chief  
 Project Studies Unit  
 Caltrans District 12

Date November 2011  
 Dist 12 Co Ora Rte 5 P/M (K/P) 21.3/30,3  
 Project No. 1200020052  
 Project Description Add general purpose lane on Interstate 5 (I-5) between  
Interstate 405 (I-405) and State Route 55 (SR-55)

Subject: Right of Way Data

Alternate No. 2A

This Alternate meets the design criteria for a Design/Build project: Yes  No

1. Right of Way Cost Estimate: to be entered into PMCS COST RW 1-5 Screens.

	Current Value Future Use	Escalation Rate	Escalated Value
<b>A. Total Acquisition Cost</b>			\$ <u>40,454,383</u>
Acquisition, including Excess Lands, damages, and Goodwill.	\$ <u>39,276,100</u>	<u>3</u> %	\$ <u>40,454,383</u>
Project Permit Fees.			\$ <u>0</u>
<b>B. Utility Relocation (State Share)</b>	\$ <u>3,638,000</u>	<u>3</u> %	\$ <u>3,747,140</u>
<b>C. Relocation Assistance</b>	\$ <u>5,000,000</u>	<u>3</u> %	\$ <u>5,150,000</u>
<b>D. Clearance/Demolition</b>	\$ <u>2,500,000</u>	<u>3</u> %	\$ <u>2,575,000</u>
<b>E. Title and Escrow</b>	\$ <u>4,000,000</u>	<u>3</u> %	\$ <u>4,120,000</u>
<b>F. Total Estimated Cost</b>	\$ <u>54,414,100</u>		\$ <u>56,046,523</u>
<b>G. Construction Contract Work</b>	\$ <u>0</u>		

*(these are the construction costs that are to be included in the projects PS&E)*

2. Current Date of Right of Way Certification N/A

3. Parcel Data: To be entered into PMCS EVNT RW Screen.

Type	3A	Dual/Appr	3C	Utilities	3D	RR Involvements	3E
X				U4-1		None	<u>N/A</u>
A	<u>5</u>			-2		C&M Agrmt	<u>N/A</u>
B	<u>16</u>			-3	<u>12</u>	Svc Contract	<u>N/A</u>
C	<u>31</u>	<u>10</u>		-4		Design	<u>N/A</u>
D	<u>54</u>	<u>18</u>		U5-7	<u>6</u>	Const.	<u>1</u>
E	<u>1</u>			-8	<u>12</u>	Lic/RE/Clauses	<u>N/A</u>
F				-9	<u>6</u>		
Total	<u>106</u>					Misc R/W Work	
						RAP Displ	<u>N/A</u>
						Clear/Demo	<u>N/A</u>
						Const Permits	<u>N/A</u>
						Condemnation	<u>N/A</u>
						Excess	<u>N/A</u>

Areas: R/W 392,761 sq. ft. No. Excess Parcels           
 Entered PMCS Screens          by           
 Entered AGRE Screen (Railroad data only)          by

(Form #)

4. Are there any major items of construction contract work? Yes  No  (If "Yes," explain.)

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.). No right of way required.

**Right-of-way required for project includes:**

- Portion of Traveland USA in City of Irvine
- Vegetated and parking areas of several apartment communities in City of Irvine
- Portion of the Orange Tree Square Shopping Center on Jeffrey Road/Walnut Avenue
- Portion of OCFCD's property near Central Irvine Channel
- Portion of undeveloped parcel and drainage easement near SB Ramps at Tustin Ranch Road in City of Tustin
- Partial takes of several residences for reconstruction of El Camino Real and Nissan Road in City of Tustin
- Portion of parking lot at a former Sizzler Restaurant on Newport Avenue in City of Tustin
- Temporary Construction Easements (TCEs) for construction of retaining/sound walls and curb/sidewalks

6. Is there an effect on assessed valuation? Yes  Not Significant  No  (If "Yes," explain.)

7. Are there utility facilities or rights of way affected?

Yes  No  (If "Yes," attach Utility Information Sheet, Exhibit 4-EX-5.)

The following checked items may seriously impact lead time for utility relocation:

- Longitudinal policy conflict(s)
- Environmental concerns impacting acquisition or potential easements
- Power lines operating in excess of 50 KV and substations

(See attached Exhibit 4-EX-5 for explanation)

8. Are Railroad facilities or rights of way affected?

Yes  No  (If "Yes," attach Railroad Information Sheet, Exhibit 4-EX-6.)

(Form #)

9. Were any previously unidentified sites with hazardous waste and/or material found?

Yes  No  (If "Yes," attach memorandum per R/E Manual, Chapter 4, Section 4.01.10.00.)

10. Are RAP displacements required? Yes  No  (If "Yes," provide the following information.)

No. of single family \_\_\_\_\_ No. of business/nonprofit \_\_\_\_\_

No. of multi-family \_\_\_\_\_ No. of farms \_\_\_\_\_

Based on Draft/Final Relocation Impact Statement/Study dated N/A, it is anticipated that sufficient replacement housing (will/will not) be available without Last Resort Housing.

11. Are there Material Borrow and/or Disposal Sites required? Yes  No  (If "Yes," explain.)

12. Are there potential relinquishments and/or abandonments? Yes  No  (If "Yes," explain.)

13. Are there any existing and/or potential airspace sites? Yes  No  (If "Yes," explain.)



STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATA SHEET (Cont.)**

EXHIBIT  
4-EX-1 (REV 03/2004)  
Alternative 2A  
Page 4 of 4

(Form #)

14. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if district proposes less than PMCS lead time and/or if significant pressures for project advancement are anticipated.)

Based on the R/W requirements on Page 1 of this Data Sheet, R/W will require a lead time of 9-18 months from the date regular appraisals can begin to project certification.

In any event, RW Maps will require 12 months from Final Maps to project certification.

15. It is anticipated that Caltrans staff will perform all Right of Way work? Yes  No  (If "No," discuss.)

Evaluation Prepared By:

Right of Way: Name Ryan Lau Date November 2011

Railroad: Name Ryan Lau Date November 2011

Utilities: Name Ryan Lau Date November 2011

Recommended for Approval:

Karen Chapman, PE  
Mark Thomas & Company, Inc.

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates, and assumptions are reasonable and proper subject to the limiting conditions set forth, and I find this Data Sheet complete and current.

\_\_\_\_\_  
District Division Chief/Regional Manager  
Right of Way

\_\_\_\_\_  
Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**UTILITY INFORMATION SHEET**

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2A  
Page 1 of 2

(Form #)

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1. Name of utility companies involved in project:

- Cox Communications (Cox)
- AT&T Distribution (AT&T)
- Qwest
- Southern California Edison (SCE)
- Time Warner Cable (TWC)
- Transportation Corridor Agencies (TCA)
- Kinder Morgan
- Verizon
- Southern California Gas (SCG)
- Irvine Ranch Water District (IRWD)
- Orange County Sanitation District (OCSD)
- Metropolitan Water District of Orange County (MWD)

2. Types of facilities and agreements required:

- Cox Fiber Optic Lines – NTO
- AT&T Telephone Lines – NTO
- Qwest Fiber Optic Lines – NTO
- SCE Electrical Lines – NTO
- TWC Fiber Optic Lines – NTO
- TCA Fiber Optic Lines – NTO
- Kinder Morgan Oil Pipelines - NTO
- Verizon Fiber Optic Lines - NTO
- SCE Gas Lines – NTO
- IRWD Sewer and Water Lines – NTO
- OCSD Sewer Lines – NTO
- MWD Water Lines - NTO

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? Explain.  
No

Disposition of longitudinal encroachment(s):

- Relocation required.
- Exception to policy needed.
- Other. Explain.

4. Additional information concerning utility involvements on this project, i.e., long lead time materials, growing or species seasons, customer service seasons (no transmission tower relocations in summer).

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**UTILITY INFORMATION SHEET**

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2A  
Page 2 of 2

(Form #)

5. PMCS Input Information

Total estimated cost of State's obligation for utility relocation on this project

\$ 3,747,140

**Note:** Total estimated cost to include any Department obligation to relocate longitudinal encroachments in access controlled right of way and acquire and necessary utility easements.

Utility Involvements

U4-1	<u>                    </u>	U5-7	<u>6</u>
-2	<u>                    </u>	-8	<u>12</u>
-3	<u>12</u>	-9	<u>6</u>
-4	<u>                    </u>		

Prepared By:

Ryan Lau

Right of Way Utility Estimator

November 2011

Date

(Form #)

1. Describe railroad facilities or right of way affected.

**Irvine Overhead (55-0002) will need to be widened by approximately 10' in each direction over the SCRRA/Metrolink RR. This structure grade separates Interstate 5 from the rail facility at approximate station 484+00.**

2. When branch lines or spurs are affected, would acquisition and/or payment of damages to businesses and/or industries served by the railroad facility be more cost effective than construction of a facility to perpetuate the rail service? Yes \_\_\_\_\_ No  X  (If "Yes," explain.)

3. Discuss types of agreements and right required from the railroads. Are grade crossings requiring service contracts or grade separations requiring construct and maintenance agreements involved?

**Flaggers may be required to construct certain portions of the widened Irvine OH.**

4. Remarks (non-operating railroad right of way involved?):

5. PMCS Input Information

<u>Railroad Involvements</u>	
None	<u> N/A </u>
C&M Agreement	<u> N/A </u>
Service Contract	<u> N/A </u>
Design	<u> N/A </u>
Const.	<u> 1 </u>
Lic/RE/Clauses	<u> N/A </u>

Prepared By:

Ryan Lau

Right of Way Railroad Coordinator

November 2011

Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATA SHEET**

EXHIBIT  
 4-EX-1 (REV 03/2004)  
 Alternative 2B-Option 1  
 Page 1 of 4

(Form #)

To: Constantino Stamation, Chief  
 Project Studies Unit  
 Caltrans District 12

Date November 2011  
 Dist 12 Co Ora Rte 5 P/M (K/P) 21.3/30.3  
 Project No. 1200020052  
 Project Description Add general purpose lane on Interstate 5 (I-5) between  
Interstate 405 (I-405) and State Route 55 (SR-55)  
 Alternate No. 2B - Option 1

Subject: Right of Way Data

This Alternate meets the design criteria for a Design/Build project: Yes  No

1. Right of Way Cost Estimate: to be entered into PMCS COST RW 1-5 Screens.

	Current Value Future Use	Escalation Rate	Escalated Value
<b>A. Total Acquisition Cost</b>			\$ <u>3,359,242</u>
Acquisition, including Excess Lands, damages, and Goodwill.	\$ <u>3,261,400</u>	<u>3</u> %	\$ <u>3,359,242</u>
Project Permit Fees.			\$ <u>0</u>
<b>B. Utility Relocation (State Share)</b>	\$ <u>3,506,000</u>	<u>3</u> %	\$ <u>3,611,180</u>
<b>C. Relocation Assistance</b>	\$ <u>0</u>	<u>3</u> %	\$ <u>0</u>
<b>D. Clearance/Demolition</b>	\$ <u>1,500,000</u>	<u>3</u> %	\$ <u>1,545,000</u>
<b>E. Title and Escrow</b>	\$ <u>1,000,000</u>	<u>3</u> %	\$ <u>1,030,000</u>
<b>F. Total Estimated Cost</b>	\$ <u>9,267,400</u>		\$ <u>9,545,422</u>
<b>G. Construction Contract Work</b>	\$ <u>0</u>		

*(these are the construction costs that are to be included in the projects PS&E)*

2. Current Date of Right of Way Certification N/A

3. Parcel Data: To be entered into PMCS EVNT RW Screen.

Type	3A	Dual/Appr	3C	Utilities	3D	RR Involvements	3E
X				U4-1		None	N/A
A				-2		C&M Agrmt	N/A
B	<u>3</u>			-3	<u>12</u>	Svc Contract	N/A
C				-4		Design	N/A
D				U5-7	<u>6</u>	Const.	<u>1</u>
E	<u>1</u>			-8	<u>12</u>	Lic/RE/Clauses	N/A
F				-9	<u>6</u>		
Total	<u>4</u>					Misc R/W Work	
						RAP Displ	N/A
						Clear/Demo	N/A
						Const Permits	N/A
						Condemnation	N/A
						Excess	N/A

Areas: R/W 32,614 sq. ft. No. Excess Parcels       

Entered PMCS Screens        /        /        by       

Entered AGRE Screen (Railroad data only)        /        /        by



(Form #)

4. Are there any major items of construction contract work? Yes  No  (If "Yes," explain.)

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.). No right of way required.

**Right-of-way required for project includes:**

- Portion of undeveloped parcel and drainage easement near SB Ramps at Tustin Ranch Road in City of Tustin
- Temporary Construction Easements (TCEs) for construction of retaining/sound walls and curb/sidewalks

6. Is there an effect on assessed valuation? Yes  Not Significant  No  (If "Yes," explain.)

7. Are there utility facilities or rights of way affected?

Yes  No  (If "Yes," attach Utility Information Sheet, Exhibit 4-EX-5.)

The following checked items may seriously impact lead time for utility relocation:

- Longitudinal policy conflict(s)
- Environmental concerns impacting acquisition or potential easements
- Power lines operating in excess of 50 KV and substations

(See attached Exhibit 4-EX-5 for explanation)

8. Are Railroad facilities or rights of way affected?

Yes  No  (If "Yes," attach Railroad Information Sheet, Exhibit 4-EX-6.)

(Form #)

9. Were any previously unidentified sites with hazardous waste and/or material found?

Yes  No  (If "Yes," attach memorandum per R/E Manual, Chapter 4, Section 4.01.10.00.)

10. Are RAP displacements required? Yes  No  (If "Yes," provide the following information.)

No. of single family \_\_\_\_\_ No. of business/nonprofit \_\_\_\_\_

No. of multi-family \_\_\_\_\_ No. of farms \_\_\_\_\_

Based on Draft/Final Relocation Impact Statement/Study dated N/A, it is anticipated that sufficient replacement housing (will/will not) be available without Last Resort Housing.

11. Are there Material Borrow and/or Disposal Sites required? Yes  No  (If "Yes," explain.)

12. Are there potential relinquishments and/or abandonments? Yes  No  (If "Yes," explain.)

13. Are there any existing and/or potential airspace sites? Yes  No  (If "Yes," explain.)

(Form #)

14. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if district proposes less than PMCS lead time and/or if significant pressures for project advancement are anticipated.)

Based on the R/W requirements on Page 1 of this Data Sheet, R/W will require a lead time of 9-18 months from the date regular appraisals can begin to project certification.

In any event, RW Maps will require 12 months from Final Maps to project certification.

15. It is anticipated that Caltrans staff will perform all Right of Way work? Yes  No  (If "No," discuss.)

Evaluation Prepared By:

Right of Way:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>
Railroad:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>
Utilities:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>

Recommended for Approval:

Karen Chapman, PE  
Mark Thomas & Company, Inc.

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates, and assumptions are reasonable and proper subject to the limiting conditions set forth, and I find this Data Sheet complete and current.

\_\_\_\_\_  
District Division Chief/Regional Manager  
Right of Way

\_\_\_\_\_  
Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**UTILITY INFORMATION SHEET**

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2B-Option 1  
Page 1 of 2

(Form #)

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1. Name of utility companies involved in project:

- Cox Communications (Cox)
- AT&T Distribution (AT&T)
- Qwest
- Southern California Edison (SCE)
- Time Warner Cable (TWC)
- Transportation Corridor Agencies (TCA)
- Kinder Morgan
- Verizon
- Southern California Gas (SCG)
- Irvine Ranch Water District (IRWD)
- Orange County Sanitation District (OCSD)
- Metropolitan Water District of Orange County (MWD)

2. Types of facilities and agreements required:

- Cox Fiber Optic Lines – NTO
- AT&T Telephone Lines – NTO
- Qwest Fiber Optic Lines – NTO
- SCE Electrical Lines – NTO
- TWC Fiber Optic Lines – NTO
- TCA Fiber Optic Lines – NTO
- Kinder Morgan Oil Pipelines - NTO
- Verizon Fiber Optic Lines - NTO
- SCE Gas Lines – NTO
- IRWD Sewer and Water Lines – NTO
- OCSD Sewer Lines – NTO
- MWD Water Lines - NTO

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? Explain.

No

Disposition of longitudinal encroachment(s):

- Relocation required.
- Exception to policy needed.
- Other. Explain.

4. Additional information concerning utility involvements on this project, i.e., long lead time materials, growing or species seasons, customer service seasons (no transmission tower relocations in summer).

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
UTILITY INFORMATION SHEET

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2B-Option 1  
Page 2 of 2

(Form #)

5. PMCS Input Information

Total estimated cost of State's obligation for utility relocation on this project

\$ 3,611,180

Note: Total estimated cost to include any Department obligation to relocate longitudinal encroachments in access controlled right of way and acquire and necessary utility easements.

Utility Involvements

U4-1	<u>        </u>	U5-7	<u>6</u>
-2	<u>        </u>	-8	<u>12</u>
-3	<u>12</u>	-9	<u>6</u>
-4	<u>        </u>		

Prepared By:

Ryan Lau

Right of Way Utility Estimator

November 2011

Date



(Form #)

1. Describe railroad facilities or right of way affected.

**Irvine Overhead (55-0002) will need to be widened by approximately 6' in each direction over the SCRRRA/Metrolink RR. This structure grade separates Interstate 5 from the rail facility at approximate station 484+00.**

2. When branch lines or spurs are affected, would acquisition and/or payment of damages to businesses and/or industries served by the railroad facility be more cost effective than construction of a facility to perpetuate the rail service? Yes \_\_\_\_\_ No  X  (If "Yes," explain.)

3. Discuss types of agreements and right required from the railroads. Are grade crossings requiring service contracts or grade separations requiring construct and maintenance agreements involved?

**Flaggers may be required to construct certain portions of the widened Irvine OH.**

4. Remarks (non-operating railroad right of way involved?):

5. PMCS Input Information

<u>Railroad Involvements</u>	
None	<u> N/A </u>
C&M Agreement	<u> N/A </u>
Service Contract	<u> N/A </u>
Design	<u> N/A </u>
Const.	<u> 1 </u>
Lic/RE/Clauses	<u> N/A </u>

Prepared By:

Ryan Lau

Right of Way Railroad Coordinator

November 2011

Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATA SHEET**

EXHIBIT  
 4-EX-1 (REV 03/2004)  
 Alternative 2B-Option 2  
 Page 1 of 4

(Form #)

To: Constantino Stamation, Chief  
 Project Studies Unit  
 Caltrans District 12

Date November 2011  
 Dist 12 Co Ora Rte 5 P/M (K/P) 21.3/30.3  
 Project No. 1200020052  
 Project Description Add general purpose lane on Interstate 5 (I-5) between  
Interstate 405 (I-405) and State Route 55 (SR-55)  
w/ a hook ramp at El Camino Real/Newport Blvd

Subject: Right of Way Data

Alternate No. 2B - Option 2

This Alternate meets the design criteria for a Design/Build project: Yes  No

1. Right of Way Cost Estimate: to be entered into PMCS COST RW 1-5 Screens.

	Current Value Future Use	Escalation Rate	Escalated Value
<b>A. Total Acquisition Cost</b>			\$ <u>8,479,887</u>
Acquisition, including Excess Lands, damages, and Goodwill.	\$ <u>8,232,900</u>	<u>3</u> %	\$ <u>8,479,887</u>
Project Permit Fees.			\$ <u>0</u>
<b>B. Utility Relocation (State Share)</b>	\$ <u>3,520,000</u>	<u>3</u> %	\$ <u>3,625,600</u>
<b>C. Relocation Assistance</b>	\$ <u>500,000</u>	<u>3</u> %	\$ <u>515,000</u>
<b>D. Clearance/Demolition</b>	\$ <u>1,500,000</u>	<u>3</u> %	\$ <u>1,545,000</u>
<b>E. Title and Escrow</b>	\$ <u>1,500,000</u>	<u>3</u> %	\$ <u>1,545,000</u>
<b>F. Total Estimated Cost</b>	\$ <u>15,252,900</u>		\$ <u>15,710,487</u>
<b>G. Construction Contract Work</b>	\$ <u>0</u>		

*(these are the construction costs that are to be included in the projects PS&E)*

2. Current Date of Right of Way Certification N/A

3. Parcel Data: To be entered into PMCS EVNT RW Screen.

Type	3A	Dual/Appr	3C	Utilities	3D	RR Involvements	3E
X				U4-1		None	<u>N/A</u>
A				-2		C&M Agrmt	<u>N/A</u>
B	<u>3</u>			-3	<u>12</u>	Svc Contract	<u>N/A</u>
C	<u>3</u>	<u>1</u>		-4		Design	<u>N/A</u>
D	<u>6</u>	<u>2</u>		U5-7	<u>6</u>	Const.	<u>1</u>
E	<u>1</u>			-8	<u>12</u>	Lic/RE/Clauses	<u>N/A</u>
F				-9	<u>6</u>		
Total	<u>13</u>					Misc R/W Work	
						RAP Displ	<u>N/A</u>
						Clear/Demo	<u>N/A</u>
						Const Permits	<u>N/A</u>
						Condemnation	<u>N/A</u>
						Excess	<u>N/A</u>

Areas: R/W 82,329 sq. ft. No. Excess Parcels

Entered PMCS Screens / / by

Entered AGRE Screen (Railroad data only) / / by

(Form #)

4. Are there any major items of construction contract work? Yes  No  (If "Yes," explain.)

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.). No right of way required.

**Right-of-way required for project includes:**

- Portion of undeveloped parcel and drainage easement near SB Ramps at Tustin Ranch Road in City of Tustin
- Several partial takes near the Newport Avenue/El Camino Real Intersection in the City of Tustin including a portion of parking lot at a former Sizzler Restaurant, a car wash, animal hospital, and an empty lot
- Temporary Construction Easements (TCEs) for construction of retaining/sound walls and curb/sidewalks

6. Is there an effect on assessed valuation? Yes  Not Significant  No  (If "Yes," explain.)

7. Are there utility facilities or rights of way affected?

Yes  No  (If "Yes," attach Utility Information Sheet, Exhibit 4-EX-5.)

The following checked items may seriously impact lead time for utility relocation:

- Longitudinal policy conflict(s)
- Environmental concerns impacting acquisition or potential easements
- Power lines operating in excess of 50 KV and substations

(See attached Exhibit 4-EX-5 for explanation)

8. Are Railroad facilities or rights of way affected?

Yes  No  (If "Yes," attach Railroad Information Sheet, Exhibit 4-EX-6.)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATA SHEET (Cont.)**

EXHIBIT  
4-EX-1 (REV 03/2004)  
Alternative 2B-Option 2  
Page 3 of 4

(Form #)

9. Were any previously unidentified sites with hazardous waste and/or material found?

Yes  No  (If "Yes," attach memorandum per R/E Manual, Chapter 4, Section 4.01.10.00.)

10. Are RAP displacements required? Yes  No  (If "Yes," provide the following information.)

No. of single family \_\_\_\_\_ No. of business/nonprofit 2

No. of multi-family \_\_\_\_\_ No. of farms \_\_\_\_\_

Based on Draft/Final Relocation Impact Statement/Study dated N/A, it is anticipated that sufficient replacement housing (will/will not) be available without Last Resort Housing.

11. Are there Material Borrow and/or Disposal Sites required? Yes  No  (If "Yes," explain.)

12. Are there potential relinquishments and/or abandonments? Yes  No  (If "Yes," explain.)

13. Are there any existing and/or potential airspace sites? Yes  No  (If "Yes," explain.)

(Form #)

14. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if district proposes less than PMCS lead time and/or if significant pressures for project advancement are anticipated.)

Based on the R/W requirements on Page 1 of this Data Sheet, R/W will require a lead time of 9-18 months from the date regular appraisals can begin to project certification.

In any event, RW Maps will require 12 months from Final Maps to project certification.

15. It is anticipated that Caltrans staff will perform all Right of Way work? Yes  No  (If "No," discuss.)

Evaluation Prepared By:

Right of Way:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>
Railroad:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>
Utilities:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>

Recommended for Approval:

Karen Chapman, PE  
Mark Thomas & Company, Inc.

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates, and assumptions are reasonable and proper subject to the limiting conditions set forth, and I find this Data Sheet complete and current.

\_\_\_\_\_  
District Division Chief/Regional Manager  
Right of Way

\_\_\_\_\_  
Date



STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**UTILITY INFORMATION SHEET**

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2B-Option 2  
Page 1 of 2

(Form #)

1. Name of utility companies involved in project:

- Cox Communications (Cox)
- AT&T Distribution (AT&T)
- Qwest
- Southern California Edison (SCE)
- Time Warner Cable (TWC)
- Transportation Corridor Agencies (TCA)
- Kinder Morgan
- Verizon
- Southern California Gas (SCG)
- Irvine Ranch Water District (IRWD)
- Orange County Sanitation District (OCSD)
- Metropolitan Water District of Orange County (MWD)

2. Types of facilities and agreements required:

- Cox Fiber Optic Lines – NTO
- AT&T Telephone Lines – NTO
- Qwest Fiber Optic Lines – NTO
- SCE Electrical Lines – NTO
- TWC Fiber Optic Lines – NTO
- TCA Fiber Optic Lines – NTO
- Kinder Morgan Oil Pipelines - NTO
- Verizon Fiber Optic Lines - NTO
- SCE Gas Lines – NTO
- IRWD Sewer and Water Lines – NTO
- OCSD Sewer Lines – NTO
- MWD Water Lines - NTO

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? Explain.

No

Disposition of longitudinal encroachment(s):

- Relocation required.
- Exception to policy needed.
- Other. Explain.

4. Additional information concerning utility involvements on this project, i.e., long lead time materials, growing or species seasons, customer service seasons (no transmission tower relocations in summer).

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**UTILITY INFORMATION SHEET**

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2B-Option 2  
Page 2 of 2

(Form #)

5. PMCS Input Information

Total estimated cost of State's obligation for utility relocation on this project

\$ 3,625,600

**Note:** Total estimated cost to include any Department obligation to relocate longitudinal encroachments in access controlled right of way and acquire and necessary utility easements.

<u>Utility Involvements</u>	
U4-1 _____	U5-7 <u>6</u>
-2 _____	-8 <u>12</u>
-3 <u>12</u>	-9 <u>6</u>
-4 _____	

Prepared By:

Ryan Lau

Right of Way Utility Estimator

November 2011

Date

(Form #)

1. Describe railroad facilities or right of way affected.

**Irvine Overhead (55-0002) will need to be widened by approximately 6' in each direction over the SCRRRA/Metrolink RR. This structure grade separates Interstate 5 from the rail facility at approximate station 484+00.**

2. When branch lines or spurs are affected, would acquisition and/or payment of damages to businesses and/or industries served by the railroad facility be more cost effective than construction of a facility to perpetuate the rail service? Yes \_\_\_\_\_ No  X  (If "Yes," explain.)

3. Discuss types of agreements and right required from the railroads. Are grade crossings requiring service contracts or grade separations requiring construct and maintenance agreements involved?

**Flaggers may be required to construct certain portions of the widened Irvine OH.**

4. Remarks (non-operating railroad right of way involved?):

5. PMCS Input Information

<u>Railroad Involvements</u>	
None	<u> N/A </u>
C&M Agreement	<u> N/A </u>
Service Contract	<u> N/A </u>
Design	<u> N/A </u>
Const.	<u> 1 </u>
Lic/RE/Clauses	<u> N/A </u>

Prepared By:

\_\_\_\_\_  
Right of Way Railroad Coordinator

\_\_\_\_\_  
Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATA SHEET**

EXHIBIT  
 4-EX-1 (REV 03/2004)  
 Alternative 2B-Option 3  
 Page 1 of 4

(Form #)

To: Constantino Stamation, Chief  
 Project Studies Unit  
 Caltrans District 12

Date November 2011  
 Dist 12 Co Ora Rte 5 P/M (K/P) 21.3/30.3  
 Project No. 1200020052  
 Project Description Add general purpose lane on Interstate 5 (I-5) between  
Interstate 405 (I-405) and State Route 55 (SR-55)  
w/ NB braided ramps at Sand Canyon/Jeffrey  
 Alternate No. 2B - Option 3

Subject: Right of Way Data

This Alternate meets the design criteria for a Design/Build project: Yes  No

1. Right of Way Cost Estimate: to be entered into PMCS COST RW 1-5 Screens.

	Current Value Future Use	Escalation Rate	Escalated Value
<b>A. Total Acquisition Cost</b>			\$ <u>3,412,596</u>
Acquisition, including Excess Lands, damages, and Goodwill.	\$ <u>3,313,200</u>	<u>3</u> %	\$ <u>3,412,596</u>
Project Permit Fees.			\$ <u>0</u>
<b>B. Utility Relocation (State Share)</b>	\$ <u>4,000,000</u>	<u>3</u> %	\$ <u>4,120,000</u>
<b>C. Relocation Assistance</b>	\$ <u>0</u>	<u>3</u> %	\$ <u>0</u>
<b>D. Clearance/Demolition</b>	\$ <u>1,500,000</u>	<u>3</u> %	\$ <u>1,545,000</u>
<b>E. Title and Escrow</b>	\$ <u>1,000,000</u>	<u>3</u> %	\$ <u>1,030,000</u>
<b>F. Total Estimated Cost</b>	\$ <u>9,813,200</u>		\$ <u>9,813,200</u>
<b>G. Construction Contract Work</b>	\$ <u>0</u>		

*(these are the construction costs that are to be included in the projects PS&E)*

2. Current Date of Right of Way Certification N/A

3. Parcel Data: To be entered into PMCS EVNT RW Screen.

Type	3A	Dual/Appr	3C	Utilities	3D	RR Involvements	3E
X				U4-1		None	<u>N/A</u>
A				-2		C&M Agrmt	<u>N/A</u>
B	<u>3</u>			-3	<u>12</u>	Svc Contract	<u>N/A</u>
C				-4		Design	<u>N/A</u>
D				U5-7	<u>6</u>	Const.	<u>1</u>
E	<u>1</u>			-8	<u>12</u>	Lic/RE/Clauses	<u>N/A</u>
F				-9	<u>6</u>		
Total	<u>4</u>					<b>Misc R/W Work</b>	
						RAP Displ	<u>N/A</u>
						Clear/Demo	<u>N/A</u>
						Const Permits	<u>N/A</u>
						Condemnation	<u>N/A</u>
						Excess	<u>N/A</u>

Areas: R/W 33,132 sq. ft. No. Excess Parcels

Entered PMCS Screens /// by

Entered AGRE Screen (Railroad data only) /// by

(Form #)

4. Are there any major items of construction contract work? Yes  No  (If "Yes," explain.)

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.). No right of way required.

**Right-of-way required for project includes:**

- Portion of undeveloped parcel and drainage easement near SB Ramps at Tustin Ranch Road in City of Tustin
- Temporary Construction Easements (TCEs) for construction of retaining/sound walls and curb/sidewalks

6. Is there an effect on assessed valuation? Yes  Not Significant  No  (If "Yes," explain.)

7. Are there utility facilities or rights of way affected?

Yes  No  (If "Yes," attach Utility Information Sheet, Exhibit 4-EX-5.)

The following checked items may seriously impact lead time for utility relocation:

- Longitudinal policy conflict(s)
- Environmental concerns impacting acquisition or potential easements
- Power lines operating in excess of 50 KV and substations

(See attached Exhibit 4-EX-5 for explanation)

8. Are Railroad facilities or rights of way affected?

Yes  No  (If "Yes," attach Railroad Information Sheet, Exhibit 4-EX-6.)

(Form #)

9. Were any previously unidentified sites with hazardous waste and/or material found?

Yes  No  (If "Yes," attach memorandum per R/E Manual, Chapter 4, Section 4.01.10.00.)

10. Are RAP displacements required? Yes  No  (If "Yes," provide the following information.)

No. of single family \_\_\_\_\_ No. of business/nonprofit \_\_\_\_\_

No. of multi-family \_\_\_\_\_ No. of farms \_\_\_\_\_

Based on Draft/Final Relocation Impact Statement/Study dated N/A, it is anticipated that sufficient replacement housing (will/will not) be available without Last Resort Housing.

11. Are there Material Borrow and/or Disposal Sites required? Yes  No  (If "Yes," explain.)

12. Are there potential relinquishments and/or abandonments? Yes  No  (If "Yes," explain.)

13. Are there any existing and/or potential airspace sites? Yes  No  (If "Yes," explain.)



(Form #)

14. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if district proposes less than PMCS lead time and/or if significant pressures for project advancement are anticipated.)

Based on the R/W requirements on Page 1 of this Data Sheet, R/W will require a lead time of 9-18 months from the date regular appraisals can begin to project certification.

In any event, RW Maps will require 12 months from Final Maps to project certification.

15. It is anticipated that Caltrans staff will perform all Right of Way work? Yes  No  (If "No," discuss.)

Evaluation Prepared By:

Right of Way:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>
Railroad:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>
Utilities:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>

Recommended for Approval:

Karen Chapman, PE  
Mark Thomas & Company, Inc.

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates, and assumptions are reasonable and proper subject to the limiting conditions set forth, and I find this Data Sheet complete and current.

\_\_\_\_\_  
District Division Chief/Regional Manager  
Right of Way

\_\_\_\_\_  
Date

**UTILITY INFORMATION SHEET**

(Form #)

1. Name of utility companies involved in project:

- Cox Communications (Cox)
- AT&T Distribution (AT&T)
- Qwest
- Southern California Edison (SCE)
- Time Warner Cable (TWC)
- Transportation Corridor Agencies (TCA)
- Kinder Morgan
- Verizon
- Southern California Gas (SCG)
- Irvine Ranch Water District (IRWD)
- Orange County Sanitation District (OCSD)
- Metropolitan Water District of Orange County (MWD)

2. Types of facilities and agreements required:

- Cox Fiber Optic Lines – NTO
- AT&T Telephone Lines – NTO
- Qwest Fiber Optic Lines – NTO
- SCE Electrical Lines – NTO
- TWC Fiber Optic Lines – NTO
- TCA Fiber Optic Lines – NTO
- Kinder Morgan Oil Pipelines - NTO
- Verizon Fiber Optic Lines - NTO
- SCE Gas Lines – NTO
- IRWD Sewer and Water Lines – NTO
- OCSD Sewer Lines – NTO
- MWD Water Lines - NTO

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? Explain.

No

Disposition of longitudinal encroachment(s):

- Relocation required.
- Exception to policy needed.
- Other. Explain.

4. Additional information concerning utility involvements on this project, i.e., long lead time materials, growing or species seasons, customer service seasons (no transmission tower relocations in summer).

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**UTILITY INFORMATION SHEET**

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2B-Option 3  
Page 2 of 2

(Form #)

5. PMCS Input Information

Total estimated cost of State's obligation for utility relocation on this project

\$ 4,000,000

**Note:** Total estimated cost to include any Department obligation to relocate longitudinal encroachments in access controlled right of way and acquire and necessary utility easements.

Utility Involvements

U4-1	<u>                    </u>	U5-7	<u>    6    </u>
-2	<u>                    </u>	-8	<u>    12   </u>
-3	<u>    12   </u>	-9	<u>    6    </u>
-4	<u>                    </u>		

Prepared By:

Ryan Lau

Right of Way Utility Estimator

November 2011

Date

**RAILROAD INFORMATION SHEET**

(Form #)

1. Describe railroad facilities or right of way affected.

**Irvine Overhead (55-0002) will need to be widened by approximately 6' in each direction over the SCRRR/Metrolink RR. This structure grade separates Interstate 5 from the rail facility at approximate station 484+00.**

2. When branch lines or spurs are affected, would acquisition and/or payment of damages to businesses and/or industries served by the railroad facility be more cost effective than construction of a facility to perpetuate the rail service? Yes \_\_\_\_\_ No  X  (If "Yes," explain.)

3. Discuss types of agreements and right required from the railroads. Are grade crossings requiring service contracts or grade separations requiring construct and maintenance agreements involved?

**Flaggers may be required to construct certain portions of the widened Irvine OH.**

4. Remarks (non-operating railroad right of way involved?):

5. PMCS Input Information

<u>Railroad Involvements</u>	
None	<u> N/A </u>
C&M Agreement	<u> N/A </u>
Service Contract	<u> N/A </u>
Design	<u> N/A </u>
Const.	<u> 1 </u>
Lic/RE/Clauses	<u> N/A </u>

Prepared By:

Ryan Lau

Right of Way Railroad Coordinator

November 2011

Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**RIGHT OF WAY DATA SHEET**

EXHIBIT  
 4-EX-1 (REV 03/2004)  
 Alternative 2B-Option 4  
 Page 1 of 4

(Form #)

To: Constantino Stamation, Chief  
 Project Studies Unit  
 Caltrans District 12

Date November 2011  
 Dist 12 Co Ora Rte 5 P/M (K/P) 21.3/30.3  
 Project No. 1200020052  
 Project Description Add general purpose lane on Interstate 5 (I-5) between  
Interstate 405 (I-405) and State Route 55 (SR-55)  
w/ SB braided ramps at Sand Canyon/SR-133

Subject: Right of Way Data

Alternate No. 2B - Option 4

This Alternate meets the design criteria for a Design/Build project: Yes  No

**1. Right of Way Cost Estimate:** to be entered into PMCS COST RW 1-5 Screens.

	Current Value Future Use	Escalation Rate	Escalated Value
<b>A. Total Acquisition Cost</b>			\$ <u>3,486,447</u>
Acquisition, including Excess Lands, damages, and Goodwill.	\$ <u>3,384,900</u>	<u>3</u> %	\$ <u>3,486,447</u>
Project Permit Fees.			\$ <u>0</u>
<b>B. Utility Relocation (State Share)</b>	\$ <u>4,000,000</u>	<u>3</u> %	\$ <u>4,120,000</u>
<b>C. Relocation Assistance</b>	\$ <u>0</u>	<u>3</u> %	\$ <u>0</u>
<b>D. Clearance/Demolition</b>	\$ <u>1,500,000</u>	<u>3</u> %	\$ <u>1,545,000</u>
<b>E. Title and Escrow</b>	\$ <u>1,000,000</u>	<u>3</u> %	\$ <u>1,030,000</u>
<b>F. Total Estimated Cost</b>	\$ <u>9,986,447</u>		\$ <u>9,986,447</u>
<b>G. Construction Contract Work</b>	\$ <u>0</u>		

*(these are the construction costs that are to be included in the projects PS&E)*

**2. Current Date of Right of Way Certification** N/A

**3. Parcel Data:** To be entered into PMCS EVNT RW Screen.

Type	3A	Dual/Appr	3C	Utilities	3D	RR Involvements	3E
X				U4-1		None	<u>N/A</u>
A				-2		C&M Agrmt	<u>N/A</u>
B	<u>3</u>			-3	<u>12</u>	Svc Contract	<u>N/A</u>
C				-4		Design	<u>N/A</u>
D				U5-7	<u>6</u>	Const.	<u>1</u>
E	<u>1</u>			-8	<u>12</u>	Lic/RE/Clauses	<u>N/A</u>
F				-9	<u>6</u>		
Total	<u>4</u>					Misc R/W Work	
						RAP Displ	<u>N/A</u>
						Clear/Demo	<u>N/A</u>
						Const Permits	<u>N/A</u>
						Condemnation	<u>N/A</u>
						Excess	<u>N/A</u>

Areas: R/W 33,849 sq. ft. No. Excess Parcels         
 Entered PMCS Screens       /      /       by         
 Entered AGRE Screen (Railroad data only)       /      /       by

(Form #)

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4. Are there any major items of construction contract work? Yes  No  (If "Yes," explain.)

5. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.). No right of way required.

**Right-of-way required for project includes:**

- Portion of undeveloped parcel and drainage easement near SB Ramps at Tustin Ranch Road in City of Tustin
- Temporary Construction Easements (TCEs) for construction of retaining/sound walls and curb/sidewalks

6. Is there an effect on assessed valuation? Yes  Not Significant  No  (If "Yes," explain.)

7. Are there utility facilities or rights of way affected?

Yes  No  (If "Yes," attach Utility Information Sheet, Exhibit 4-EX-5.)

The following checked items may seriously impact lead time for utility relocation:

- Longitudinal policy conflict(s)
- Environmental concerns impacting acquisition or potential easements
- Power lines operating in excess of 50 KV and substations

(See attached Exhibit 4-EX-5 for explanation)

8. Are Railroad facilities or rights of way affected?

Yes  No  (If "Yes," attach Railroad Information Sheet, Exhibit 4-EX-6.)

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(Form #)

9. Were any previously unidentified sites with hazardous waste and/or material found?

Yes  No  (If "Yes," attach memorandum per R/E Manual, Chapter 4, Section 4.01.10.00.)

10. Are RAP displacements required? Yes  No  (If "Yes," provide the following information.)

No. of single family \_\_\_\_\_ No. of business/nonprofit \_\_\_\_\_

No. of multi-family \_\_\_\_\_ No. of farms \_\_\_\_\_

Based on Draft/Final Relocation Impact Statement/Study dated N/A, it is anticipated that sufficient replacement housing (will/will not) be available without Last Resort Housing.

11. Are there Material Borrow and/or Disposal Sites required? Yes  No  (If "Yes," explain.)

12. Are there potential relinquishments and/or abandonments? Yes  No  (If "Yes," explain.)

13. Are there any existing and/or potential airspace sites? Yes  No  (If "Yes," explain.)

(Form #)

14. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if district proposes less than PMCS lead time and/or if significant pressures for project advancement are anticipated.)

Based on the R/W requirements on Page 1 of this Data Sheet, R/W will require a lead time of 9-18 months from the date regular appraisals can begin to project certification.

In any event, RW Maps will require 12 months from Final Maps to project certification.

15. It is anticipated that Caltrans staff will perform all Right of Way work? Yes  No  (If "No," discuss.)

Evaluation Prepared By:

Right of Way:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>
Railroad:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>
Utilities:	Name <u>Ryan Lau</u>	Date <u>November 2011</u>

Recommended for Approval:

Karen Chapman, PE  
Mark Thomas & Company, Inc.

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates, and assumptions are reasonable and proper subject to the limiting conditions set forth, and I find this Data Sheet complete and current.

\_\_\_\_\_  
District Division Chief/Regional Manager  
Right of Way

\_\_\_\_\_  
Date

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**UTILITY INFORMATION SHEET**

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2B-Option 4  
Page 1 of 2

(Form #)

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1. Name of utility companies involved in project:

- Cox Communications (Cox)
- AT&T Distribution (AT&T)
- Qwest
- Southern California Edison (SCE)
- Time Warner Cable (TWC)
- Transportation Corridor Agencies (TCA)
- Kinder Morgan
- Verizon
- Southern California Gas (SCG)
- Irvine Ranch Water District (IRWD)
- Orange County Sanitation District (OCSD)
- Metropolitan Water District of Orange County (MWD)

2. Types of facilities and agreements required:

- Cox Fiber Optic Lines – NTO
- AT&T Telephone Lines – NTO
- Qwest Fiber Optic Lines – NTO
- SCE Electrical Lines – NTO
- TWC Fiber Optic Lines – NTO
- TCA Fiber Optic Lines – NTO
- Kinder Morgan Oil Pipelines - NTO
- Verizon Fiber Optic Lines - NTO
- SCE Gas Lines – NTO
- IRWD Sewer and Water Lines – NTO
- OCSD Sewer Lines – NTO
- MWD Water Lines - NTO

3. Is any facility a longitudinal encroachment in existing or proposed access controlled right of way? Explain.  
No

Disposition of longitudinal encroachment(s):

- Relocation required.
- Exception to policy needed.
- Other. Explain.

4. Additional information concerning utility involvements on this project, i.e., long lead time materials, growing or species seasons, customer service seasons (no transmission tower relocations in summer).

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STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION  
**UTILITY INFORMATION SHEET**

EXHIBIT  
4-EX-5 (REV 03/2004)  
Alternative 2B-Option 4  
Page 2 of 2

(Form #)

5. PMCS Input Information

Total estimated cost of State's obligation for utility relocation on this project

\$ 4,000,000

**Note:** Total estimated cost to include any Department obligation to relocate longitudinal encroachments in access controlled right of way and acquire and necessary utility easements.

Utility Involvements

U4-1	<u>                    </u>	U5-7	<u>6</u>
-2	<u>                    </u>	-8	<u>12</u>
-3	<u>12</u>	-9	<u>6</u>
-4	<u>                    </u>		

Prepared By:

Ryan Lau

Right of Way Utility Estimator

November 2011

Date

**RAILROAD INFORMATION SHEET**

(Form #)

1. Describe railroad facilities or right of way affected.

**Irvine Overhead (55-0002) will need to be widened by approximately 6' in each direction over the SCRRR/Metrolink RR. This structure grade separates Interstate 5 from the rail facility at approximate station 484+00.**

2. When branch lines or spurs are affected, would acquisition and/or payment of damages to businesses and/or industries served by the railroad facility be more cost effective than construction of a facility to perpetuate the rail service? Yes \_\_\_\_\_ No  X  (If "Yes," explain.)

3. Discuss types of agreements and right required from the railroads. Are grade crossings requiring service contracts or grade separations requiring construct and maintenance agreements involved?

**Flaggers may be required to construct certain portions of the widened Irvine OH.**

4. Remarks (non-operating railroad right of way involved?):

5. PMCS Input Information

<u>Railroad Involvements</u>	
None	<u> N/A </u>
C&M Agreement	<u> N/A </u>
Service Contract	<u> N/A </u>
Design	<u> N/A </u>
Const.	<u> 1 </u>
Lic/RE/Clauses	<u> N/A </u>

Prepared By:

Ryan Lau

Right of Way Railroad Coordinator

November 2011

Date

**ATTACHMENT 11**  
**Project Cost Estimate Summary**



**PROJECT COST ESTIMATE SUMMARY**

December 2011

<b>I-5 (I-405 to SR-55) Corridor Cost Estimate Summary</b>					
<b>Segment Cost (in millions)</b>					
<b>Alternative</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
		<b>I-405 to SR-133</b>	<b>SR-133 to Jeffrey</b>	<b>Jeffrey to Red Hill</b>	<b>Red Hill to SR-55</b>
<b>1</b>	<b>No Build</b>	-	-	-	-
<b>2A</b>	<b>2A</b> Add 1 NB & SB lane Full Standard Design Features	\$51	\$94	\$252	\$55
<b>2B</b>	<b>2B-Option 1</b> Add 1 NB & SB lane Reduced Standard Design Features NB on-ramp at Newport Ave	\$48	\$63	\$95	\$24
	<b>2B-Option 2</b> Add 1 NB & SB lane Reduced Standard Design Features NB hook on-ramp at El Camino Real	-	-	-	\$36
	<b>2B-Option 3</b> Add 1 NB & SB lane Reduced Standard Design Features NB Braid: Sand Canyon to Jeffrey	-	\$109	-	-
	<b>2B-Option 4</b> Add 1 NB & SB lane Reduced Standard Design Features SB Braid: Sand Canyon to SR-133	-	\$91	-	-

<b>Alternative</b>	<b>Total Cost</b>
	<b>(in millions)</b>
2A-Option 1	\$452
2B-Option 1	\$230
2B-Option 2	\$242
2B-Option 3	\$276
2B-Option 4	\$258

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 1  
December 2011

12-ORA-5  
PM 21.3-30.3

**Alternative:** **Alternative 2A - Segment 1**

**Limits:** **I-5 From I-405 to SR-133  
(El Toro Y)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Full Standard Design Features  
Ramp Improvements**

**Project Costs:**

ROADWAY ITEMS	\$39,200,000
STRUCTURE ITEMS	\$10,300,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$49,500,000</u>
<u>RIGHT OF WAY</u>	<u>\$1,200,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$51,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices.

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 1  
December 2011

12-ORA-5  
PM 21.3-30.3

## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	67,500	CY	\$25	\$1,687,500	
Clearing & Grubbing	1	LS	\$300,000	\$300,000	
Unsuitable Material/ADL (10% Road Ex.)	6,750	CY	\$40	\$270,000	
				<b>Subtotal Earthwork</b>	<b>\$2,257,500</b>
<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	28,700	Ton	\$70	\$2,009,000	
Asphalt Treated Permeable Base (ATPB)	3,800	CY	\$125	\$475,000	
Class 2 Aggregate Base	19,800	CY	\$40	\$792,000	
Class 2 Asphalt Concrete	61,900	Ton	\$50	\$3,095,000	
Edge Drain	11,900	LF	\$10	\$119,000	
				<b>Subtotal Structural Section Items</b>	<b>\$6,490,000</b>
<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
10' x 5' RCB	1,330	CY	\$725	\$964,250	
4' x 3' RCB	160	CY	\$725	\$116,000	
5' x 3' RCB	120	CY	\$725	\$87,000	
42" RCP	93	CY	\$725	\$67,425	
Remove Channel	2,400	LF	\$25	\$60,000	
Remove Culvert	410	LF	\$75	\$30,750	
Misc Drainage Improvement	1	LS	\$1,900,000	\$1,900,000	
				<b>Subtotal Drainage</b>	<b>\$3,225,425</b>
<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$1,320,000	\$1,320,000	
SWPPP Preparation	1	LS	\$2,000	\$2,000	
Permanent Treatment BMPs	1	LS	\$672,000	\$672,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$400,000	\$400,000	
Environmental Compliance	1	LS	\$380,000	\$380,000	
Landscape	1	LS	\$500,000	\$500,000	
Barrier	4,100	LF	\$55	\$225,500	
MBGR	2,670	LF	\$30	\$80,100	
Retaining Wall (H<10')	9,170	SF	\$100	\$917,000	
Retaining Wall (H>10' / on piles)	0	SF	\$150	\$0	
Soundwall	0	SF	\$30	\$0	
SWRW (Soundwall portion)	0	SF	\$20	\$0	
SWRW (Retaining Wall portion)	0	SF	\$150	\$0	
Tie Back Wall	5,200	SF	\$150	\$780,000	
Potential Soundwall	1	LS	\$800,000	\$800,000	
Remove Retaining Wall and Soundwall	0	LF	\$65	\$0	
Sidewalk	1,320	CY	\$525	\$693,000	
Curb and Gutter	710	CY	\$525	\$372,750	
				<b>Subtotal Specialty Items</b>	<b>\$7,442,350</b>
<b>SUBTOTAL SECTIONS 1-4</b>					<b>\$19,415,275</b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 1  
December 2011

12-ORA-5  
PM 21.3-30.3

<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$2,700,000	\$2,700,000	
Traffic Signal	5	EA	\$250,000	\$1,250,000	
Lighting/Sign Illumination	1	LS	\$400,000	\$400,000	
Transportation Management Plan	1	LS	\$1,900,000	\$1,900,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$200,000	\$200,000	
Staging	1	LS	\$1,000,000	\$1,000,000	
Fiber Optic Communication System	1	LS	\$1,200,000	\$1,200,000	
Roadside Signs	1	LS	\$100,000	\$100,000	
Overhead Sign Structure (include removal of exist)	9	EA	\$200,000	\$1,800,000	
<b>Subtotal Traffic Items</b>					<b><u>\$10,850,000</u></b>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$19,415,275	x	5%	\$970,764	
<b>TOTAL MINOR ITEMS</b>					<b><u>\$970,764</u></b>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$19,415,275				
Minor Items	\$970,764				
Subtotal Sections 1-6	\$20,386,039	x	10%	\$2,038,604	
<b>TOTAL MOBILIZATION</b>					<b><u>\$2,038,604</u></b>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$19,415,275				
Minor Items	\$970,764				
Sum	\$20,386,039	x	5%	\$1,019,302	
Contingencies					
Subtotal Sections 1-5	\$19,415,275				
Minor Items	\$970,764				
Sum	\$20,386,039	x	25%	\$5,096,510	
<b>TOTAL ROADWAY ADDITIONS</b>					<b><u>\$6,115,812</u></b>
<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>					<b><u>\$39,190,454</u></b>
<b>USE</b>					<b><u>\$39,200,000</u></b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 1  
December 2011

12-ORA-5  
PM 21.3-30.3

## II. STRUCTURES ITEMS

### BRIDGES

	<u>Bridge 1</u>
Bridge Name	Alton OC
Structure Type	CIP/PS
Width - (ft)	130
Span Lengths - (ft)	312
Total Area - (sf)	40,482
Unit Cost (\$/sf)	\$255
Total Cost for Structure	<u>\$10,322,910</u>

Subtotal Bridge Items \$10,322,910

SUBTOTAL STRUCTURES ITEMS \$10,322,910

Railroad Related Costs \_\_\_\_\_

SUBTOTAL RAILROAD ITEMS \$0

TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items) \$10,322,910  
USE \$10,300,000

## III. RIGHT OF WAY

	<u>Current Values</u> <u>Year 2010</u>	<u>Escalation</u> <u>Rates</u>	<u>Escalated</u> <u>Values</u>
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (4,549 sf @ \$100/sf)	\$454,900	3.00%	\$527,354
B. Utility Relocation (State share)	\$506,000	3.00%	\$586,593
C. Relocation Assistance	\$0	3.00%	\$0
D. Clearance/Demolition	\$100,000	3.00%	\$115,927
E. Title and Escrow Fees	\$0	3.00%	\$0
F. Construction Contract Work	\$0		\$0
TOTAL RIGHT OF WAY ITEMS (Escalated Value)			\$1,229,874
		USE	\$1,200,000

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

**Alternative:** **Alternative 2A - Segment 2**

**Limits:** **I-5 From SR-133 to Jeffrey Road  
(SR-133/Sand Canyon/Jeffrey Ramps)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Full Standard Design Features  
Ramp Improvements**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$71,500,000
TOTAL STRUCTURE ITEMS	\$13,300,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$84,800,000</u>
<u>RIGHT OF WAY</u>	<u>\$9,300,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$94,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices



# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	112,100	CY	\$25	\$2,802,500	
Clearing & Grubbing	1	LS	\$400,000	\$400,000	
Unsuitable Material/ADL (10% Road Ex.)	11,210	CY	\$40	\$448,400	
				<b>Subtotal Earthwork</b>	<b>\$3,650,900</b>
<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	48,700	Ton	\$70	\$3,409,000	
Asphalt Treated Permeable Base (ATPB)	10,200	CY	\$125	\$1,275,000	
Class 2 Aggregate Base	29,800	CY	\$40	\$1,192,000	
Class 2 Asphalt Concrete	100,000	Ton	\$50	\$5,000,000	
Edge Drain	27,900	LF	\$10	\$279,000	
				<b>Subtotal Structural Section Items</b>	<b>\$11,155,000</b>
<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
42" RCP	85	CY	\$725	\$61,625	
3 - 10' x 10' RCB	170	CY	\$725	\$123,250	
7' x 3' RCB	92	CY	\$725	\$66,700	
42" RCP	10	CY	\$725	\$7,250	
Remove Channel	270	LF	\$25	\$6,750	
Remove Culvert	750	LF	\$75	\$56,250	
Misc Drainage Improvement	1	LS	\$3,500,000	\$3,500,000	
				<b>Subtotal Drainage</b>	<b>\$3,821,825</b>
<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$1,650,000	\$1,650,000	
SWPPP Preparation	1	LS	\$2,500	\$2,500	
Permanent Treatment BMPs	1	LS	\$840,000	\$840,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$400,000	\$400,000	
Environmental Compliance	1	LS	\$700,000	\$700,000	
Landscape	1	LS	\$1,000,000	\$1,000,000	
Barrier	10,300	LF	\$55	\$566,500	
MBGR	15,100	LF	\$30	\$453,000	
Retaining Wall (H<10')	23,900	SF	\$100	\$2,390,000	
Retaining Wall (H>10' / on piles)	56,700	SF	\$150	\$8,505,000	
Soundwall	16,000	SF	\$30	\$480,000	
SWRW (Soundwall portion)	0	SF	\$20	\$0	
SWRW (Retaining Wall portion)	0	SF	\$150	\$0	
Tie Back Wall	0	SF	\$150	\$0	
Potential Soundwall	1	LS	\$1,000,000	\$1,000,000	
Remove Retaining Wall and Soundwall	2,960	LF	\$65	\$192,400	
Sidewalk	1,740	CY	\$525	\$913,500	
Curb and Gutter	670	CY	\$525	\$351,750	
				<b>Subtotal Specialty Items</b>	<b>\$19,744,650</b>
<b>SUBTOTAL SECTIONS 1-4</b>					<b>\$38,372,375</b>

## PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 2

12-ORA-5

December 2011

PM 21.3-30.3

<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$3,375,000	\$3,375,000	
Traffic Signal	5	EA	\$250,000	\$1,250,000	
Lighting/Sign Illumination	1	LS	\$500,000	\$500,000	
Transportation Management Plan	1	LS	\$2,400,000	\$2,400,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$200,000	\$200,000	
Staging	1	LS	\$1,600,000	\$1,600,000	
Fiber Optic Communication System	1	LS	\$1,500,000	\$1,500,000	
Roadside Signs	1	LS	\$125,000	\$125,000	
Overhead Sign Structure (include removal of exist)	20	EA	\$200,000	\$4,000,000	
				<b>Subtotal Traffic Items</b>	<b><u>\$15,050,000</u></b>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$38,372,375	x	5%	\$1,918,619	
				<b>TOTAL MINOR ITEMS</b>	<b><u>\$1,918,619</u></b>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$38,372,375				
Minor Items	\$1,918,619				
Subtotal Sections 1-6	\$40,290,994	x	10%	\$4,029,099	
				<b>TOTAL MOBILIZATION</b>	<b><u>\$4,029,099</u></b>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$38,372,375				
Minor Items	\$1,918,619				
Sum	\$40,290,994	x	5%	\$2,014,550	
Contingencies					
Subtotal Sections 1-5	\$38,372,375				
Minor Items	\$1,918,619				
Sum	\$40,290,994	x	25%	\$10,072,748	
				<b>TOTAL ROADWAY ADDITIONS</b>	<b><u>\$12,087,298</u></b>
				<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>	<b><u>\$71,457,391</u></b>
				<b>USE</b>	<b><u>\$71,500,000</u></b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

## II. STRUCTURES ITEMS

	<b><u>BRIDGES</u></b>			
	<u>Bridge 1</u>	<u>Bridge 2</u>	<u>Bridge 3</u>	<u>Bridge 4</u>
Bridge Name	Irvine OH (NB)	Irvine OH (SB)	Sand Canyon UC	Jeffrey Road OC
Structure Type	CIP/PS	CIP/PS	CIP/PS	CIP/PS
Width - (ft)	10	10	10	124
Span Lengths - (ft)	264	264	222	336
Total Area - (sf)	2,706	2,706	2,276	41,664
Unit Cost (\$/sf)	\$305	\$305	\$320	\$255
Total Cost for Structure	\$825,330	\$825,330	\$728,160	\$10,624,320
<b>Subtotal Bridge Items</b>				<b>\$13,003,140</b>
<b>SUBTOTAL STRUCTURES ITEMS</b>				<b>\$13,003,140</b>
Railroad Related Costs				\$250,000
<b>SUBTOTAL RAILROAD ITEMS</b>				<b>\$250,000</b>
<b>TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items)</b>				<b>\$13,253,140</b>
<b>USE</b>				<b>\$13,300,000</b>

## III. RIGHT OF WAY

	Current Values Year 2010	Escalation Rates	Escalated Values
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (47,919 sf @ \$100/sf)	\$4,791,900	3.00%	\$5,555,125
B. Utility Relocation (State share)	\$1,008,000	3.00%	\$1,168,548
C. Relocation Assistance	\$1,000,000	3.00%	\$1,159,274
D. Clearance/Demolition	\$200,000	3.00%	\$231,855
E. Title and Escrow Fees	\$1,000,000	3.00%	\$1,159,274
F. Construction Contract Work			\$0
<b>TOTAL RIGHT OF WAY ITEMS (Escalated Value)</b>			<b>\$9,274,077</b>
<b>USE</b>			<b>\$9,300,000</b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 3  
December 2011

12-ORA-5  
PM 21.3-30.3

**Alternative:** **Alternative 2A - Segment 3**

**Limits:** **I-5 From Jeffrey Road to Red Hill Avenue  
(North Irvine)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Full Standard Design Features  
Ramp Improvements**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$194,800,000
TOTAL STRUCTURE ITEMS	\$13,200,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$208,000,000</u>
<u>RIGHT OF WAY</u>	<u>\$43,500,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$252,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 3  
December 2011

12-ORA-5  
PM 21.3-30.3

## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	192,000	CY	\$25	\$4,800,000	
Clearing & Grubbing	1	LS	\$500,000	\$500,000	
Unsuitable Material/ADL (10% Road Ex.)	19,200	CY	\$40	\$768,000	
				<b>Subtotal Earthwork</b>	<b>\$6,068,000</b>
<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	82,400	Ton	\$70	\$5,768,000	
Asphalt Treated Permeable Base (ATPB)	16,800	CY	\$125	\$2,100,000	
Class 2 Aggregate Base	50,800	CY	\$40	\$2,032,000	
Class 2 Asphalt Concrete	169,800	Ton	\$50	\$8,490,000	
Edge Drain	43,600	LF	\$10	\$436,000	
				<b>Subtotal Structural Section Items</b>	<b>\$18,826,000</b>
<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Conc Rect. Channel (B=24', H=9')	7,110	CY	\$725	\$5,154,750	
24' x 10' RCB	1,710	CY	\$725	\$1,239,750	
5 - 4' x 4' RCB	73	CY	\$725	\$52,925	
Remove Channel	1,950	LF	\$25	\$48,750	
Remove Culvert	370	LF	\$75	\$27,750	
Misc Drainage Improvement	1	LS	\$9,700,000	\$9,700,000	
				<b>Subtotal Drainage</b>	<b>\$16,223,925</b>
<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$2,970,000	\$2,970,000	
SWPPP Preparation	1	LS	\$4,500	\$4,500	
Permanent Treatment BMPs	1	LS	\$1,512,000	\$1,512,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$400,000	\$400,000	
Environmental Compliance	1	LS	\$2,000,000	\$2,000,000	
Landscape	1	LS	\$1,000,000	\$1,000,000	
Barrier	23,200	LF	\$55	\$1,276,000	
MBGR	5,820	LF	\$30	\$174,600	
Retaining Wall (H<10')	26,500	SF	\$100	\$2,650,000	
Retaining Wall (H>10' / on piles)	94,500	SF	\$150	\$14,175,000	
Soundwall	57,700	SF	\$30	\$1,731,000	
SWRW (Soundwall portion)	155,000	SF	\$20	\$3,100,000	
SWRW (Retaining Wall portion)	260,800	SF	\$150	\$39,120,000	
Tie Back Wall	3,600	SF	\$150	\$540,000	
Potential Soundwall	1	LS	\$1,800,000	\$1,800,000	
Remove Retaining Wall and Soundwall	17,200	LF	\$65	\$1,118,000	
Sidewalk	4,930	CY	\$525	\$2,588,250	
Curb and Gutter	1,250	CY	\$525	\$656,250	
				<b>Subtotal Specialty Items</b>	<b>\$77,115,600</b>
<b>SUBTOTAL SECTIONS 1-4</b>					<b>\$118,233,525</b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 3

12-ORA-5

December 2011

PM 21.3-30.3

<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$6,075,000	\$6,075,000	
Traffic Signal	9	EA	\$250,000	\$2,250,000	
Lighting/Sign Illumination	1	LS	\$1,500,000	\$1,500,000	
Transportation Management Plan	1	LS	\$1,900,000	\$1,900,000	
Ramp Metering	1	LS	\$200,000	\$200,000	
Crash Cushions	1	LS	\$400,000	\$400,000	
Staging	1	LS	\$2,100,000	\$2,100,000	
Fiber Optic Communication System	1	LS	\$2,700,000	\$2,700,000	
Roadside Signs	1	LS	\$225,000	\$225,000	
Overhead Sign Structure (include removal of exist)	18	EA	\$200,000	\$3,600,000	
				<b>Subtotal Traffic Items</b>	<b><u>\$20,950,000</u></b>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$118,233,525	x	5%	\$5,911,676	
				<b>TOTAL MINOR ITEMS</b>	<b><u>\$5,911,676</u></b>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$118,233,525				
Minor Items	\$5,911,676				
Subtotal Sections 1-6	\$124,145,201	x	10%	\$12,414,520	
				<b>TOTAL MOBILIZATION</b>	<b><u>\$12,414,520</u></b>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$118,233,525				
Minor Items	\$5,911,676				
Sum	\$124,145,201	x	5%	\$6,207,260	
Contingencies					
Subtotal Sections 1-5	\$118,233,525				
Minor Items	\$5,911,676				
Sum	\$124,145,201	x	25%	\$31,036,300	
				<b>TOTAL ROADWAY ADDITIONS</b>	<b><u>\$37,243,560</u></b>
				<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>	<b><u>\$194,753,282</u></b>
				<b>USE</b>	<b><u>\$194,800,000</u></b>



# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 3  
December 2011

12-ORA-5  
PM 21.3-30.3

## II. STRUCTURES ITEMS

### BRIDGES

	<u>Bridge 1</u>	<u>Bridge 2</u>	<u>Bridge 3</u>	<u>Bridge 4</u>	<u>Bridge 5</u>
Bridge Name	Culver UC (NB)	Culver UC (SB)	Peters Canyon (NB)	Peters Canyon (SB)	Jamboree Off OC
Structure Type	CIP/PS	CIP/PS	CIP/PS	CIP/PS	CIP/PS
Width - (ft)	17	47	22	10	42
Span Lengths - (ft)	182	169	92	92	216
Total Area - (sf)	3,094	7,977	2,024	920	8,964
Unit Cost (\$/sf)	\$280	\$295	\$280	\$305	\$255
Total Cost for Structure	\$866,320	\$2,353,156	\$566,720	\$280,600	\$2,285,820

	<u>Bridge 6</u>	<u>Bridge 7</u>	<u>Bridge 8</u>	<u>Bridge 9</u>	<u>Bridge 10</u>
Bridge Name	5/261 Sep (NB)	5/261 Sep (SB)	Jamboree UC (NB)	Jamboree UC (SB)	El Modena (NB)
Structure Type	CIP/PS	CIP/PS	CIP/PS	CIP/PS	CIP/PS
Width - (ft)	10	19	24	29	11
Span Lengths - (ft)	205	212	187	187	111
Total Area - (sf)	2,049	4,116	4,563	5,498	1,181
Unit Cost (\$/sf)	\$320	\$295	\$295	\$295	\$305
Total Cost for Structure	\$655,744	\$1,214,214	\$1,346,026	\$1,621,851	\$360,244

	<u>Bridge 11</u>	<u>Bridge 12</u>	<u>Bridge 13</u>
Bridge Name	El Modena (SB)	Red Hill UC (NB)	Red Hill UC (SB)
Structure Type	CIP/PS	CIP/PS	CIP/PS
Width - (ft)	20	10	10
Span Lengths - (ft)	95	176	176
Total Area - (sf)	1,946	1,762	1,762
Unit Cost (\$/sf)	\$280	\$320	\$320
Total Cost for Structure	\$544,768	\$563,840	\$563,840

**Subtotal Bridge Items**     \$13,223,143

**SUBTOTAL STRUCTURES ITEMS**     \$13,223,143

Railroad Related Costs

**SUBTOTAL RAILROAD ITEMS**     \$0

**TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items)**     \$13,223,143

**USE**     \$13,200,000

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 3  
December 2011

12-ORA-5  
PM 21.3-30.3

### III. RIGHT OF WAY

	Current Values Year 2010	Escalation Rates	Escalated Values
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (294,363 sf @ \$100/sf)	\$29,436,300	3.00%	\$34,124,739
B. Utility Relocation (State share)	\$1,122,000	3.00%	\$1,300,706
C. Relocation Assistance	\$3,000,000	3.00%	\$3,477,822
D. Clearance/Demolition	\$2,000,000	3.00%	\$2,318,548
E. Title and Escrow Fees	\$2,000,000	3.00%	\$2,318,548
F. Construction Contract Work			\$0
<b>TOTAL RIGHT OF WAY ITEMS (Escalated Value)</b>			<b>\$43,540,363</b>
		<b>USE</b>	<b>\$43,500,000</b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

**Alternative:** **Alternative 2A - Segment 4**

**Limits:** **I-5 From Red Hill Avenue to SR-55  
(Tustin)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Full Standard Design Features  
Ramp Improvements**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$45,300,000
TOTAL STRUCTURE ITEMS	\$700,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$46,000,000</u>
<u>RIGHT OF WAY</u>	<u>\$9,000,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$55,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices.

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	23,400	CY	\$25	\$585,000	
Clearing & Grubbing	1	LS	\$100,000	\$100,000	
Unsuitable Material/ADL (10% Road Ex.)	2,340	CY	\$40	\$93,600	

**Subtotal Earthwork      \$778,600**

<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	10,100	Ton	\$70	\$707,000	
Asphalt Treated Permeable Base (ATPB)	2,230	CY	\$125	\$278,750	
Class 2 Aggregate Base	5,980	CY	\$40	\$239,200	
Class 2 Asphalt Concrete	20,400	Ton	\$50	\$1,020,000	
Edge Drain	7,630	LF	\$10	\$76,300	

**Subtotal Structural Section Items      \$2,321,250**

<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Remove Channel	0	LF	\$25	\$0	
Remove Culvert	0	LF	\$75	\$0	
Misc Drainage Improvement	1	LS	\$2,300,000	\$2,300,000	

**Subtotal Drainage      \$2,300,000**

<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$660,000	\$660,000	
SWPPP Preparation	1	LS	\$1,000	\$1,000	
Permanent Treatment BMPs	1	LS	\$336,000	\$336,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$430,000	\$430,000	
Environmental Compliance	1	LS	\$460,000	\$460,000	
Landscape	1	LS	\$200,000	\$200,000	
Barrier	4,440	LF	\$55	\$244,200	
MBGR	1,420	LF	\$30	\$42,600	
Retaining Wall (H<10')	0	SF	\$100	\$0	
Retaining Wall (H>10' / on piles)	65,500	SF	\$150	\$9,825,000	
Soundwall	5,100	SF	\$30	\$153,000	
SWRW (Soundwall portion)	25,400	SF	\$20	\$508,000	
SWRW (Retaining Wall portion)	53,100	SF	\$150	\$7,965,000	
Tie Back Wall	0	SF	\$150	\$0	
Potential Soundwall	1	LS	\$400,000	\$400,000	
Remove Retaining Wall and Soundwall	5,620	LF	\$65	\$365,300	
Sidewalk	150	CY	\$525	\$78,750	
Curb and Gutter	96	CY	\$525	\$50,400	

**Subtotal Specialty Items      \$22,019,250**

**SUBTOTAL SECTIONS 1-4      \$27,419,100**

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$1,350,000	\$1,350,000	
Traffic Signal	2	EA	\$250,000	\$500,000	
Lighting/Sign Illumination	1	LS	\$200,000	\$200,000	
Transportation Management Plan	1	LS	\$1,100,000	\$1,100,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$100,000	\$100,000	
Staging	1	LS	\$600,000	\$600,000	
Fiber Optic Communication System	1	LS	\$600,000	\$600,000	
Roadside Signs	1	LS	\$50,000	\$50,000	
Overhead Sign Structure (include removal of exist)	2	EA	\$200,000	\$400,000	
					<b>Subtotal Traffic Items</b>
					<b><u>\$5,000,000</u></b>
 <b>Section 6 Minor Items</b>					
Subtotal Sections 1-5	\$27,419,100	x	5%	\$1,370,955	
					<b>TOTAL MINOR ITEMS</b>
					<b><u>\$1,370,955</u></b>
 <b>Section 7 Roadway Mobilization</b>					
Subtotal Sections 1-5	\$27,419,100				
Minor Items	\$1,370,955				
Subtotal Sections 1-6	\$28,790,055	x	10%	\$2,879,006	
					<b>TOTAL MOBILIZATION</b>
					<b><u>\$2,879,006</u></b>
 <b>Section 8 Roadway Additions</b>					
Supplemental					
Subtotal Sections 1-5	\$27,419,100				
Minor Items	\$1,370,955				
Sum	\$28,790,055	x	5%	\$1,439,503	
Contingencies					
Subtotal Sections 1-5	\$27,419,100				
Minor Items	\$1,370,955				
Sum	\$28,790,055	x	25%	\$7,197,514	
					<b>TOTAL ROADWAY ADDITIONS</b>
					<b><u>\$8,637,017</u></b>
					<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>
					<b><u>\$45,306,077</u></b>
					<b>USE</b>
					<b><u>\$45,300,000</u></b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2A - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

## II. STRUCTURES ITEMS

### BRIDGES

	<u>Bridge 1</u>	<u>Bridge 2</u>
	<u>Newport UC (NB)</u>	<u>Newport UC (SB)</u>
Bridge Name		
Structure Type	<u>CIP/PS</u>	<u>CIP/PS</u>
Width - (ft)	<u>10</u>	<u>10</u>
Span Lengths - (ft)	<u>111</u>	<u>111</u>
Total Area - (sf)	<u>1,110</u>	<u>1,110</u>
Unit Cost (\$/sf)	<u>\$305</u>	<u>\$305</u>
Total Cost for Structure	<u>\$338,550</u>	<u>\$338,550</u>

Subtotal Bridge Items \$677,100

SUBTOTAL STRUCTURES ITEMS \$677,100

Railroad Related Costs \_\_\_\_\_

SUBTOTAL RAILROAD ITEMS \$0

TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items) \$677,100

USE \$700,000

## III. RIGHT OF WAY

	<u>Current Values</u>	<u>Escalation</u>	<u>Escalated</u>
	<u>Year 2010</u>	<u>Rates</u>	<u>Values</u>
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (45,930 sf @ \$100/sf)	<u>\$4,593,000</u>	3.00%	<u>\$5,324,546</u>
B. Utility Relocation (State share)	<u>\$1,002,000</u>	3.00%	<u>\$1,161,593</u>
C. Relocation Assistance	<u>\$1,000,000</u>	3.00%	<u>\$1,159,274</u>
D. Clearance/Demolition	<u>\$200,000</u>	3.00%	<u>\$231,855</u>
E. Title and Escrow Fees	<u>\$1,000,000</u>	3.00%	<u>\$1,159,274</u>
F. Construction Contract Work			<u>\$0</u>
<b>TOTAL RIGHT OF WAY ITEMS (Escalated Value)</b>			<u>\$9,036,541</u>
		USE	<u>\$9,000,000</u>



# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 1  
December 2011

12-ORA-5  
PM 21.3-30.3

**Alternative:** **Alternative 2B - Segment 1**

**Limits:** **I-5 From I-405 to SR-133  
(El Toro Y)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Non-Standard Design Features  
Ramp Improvements**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$36,900,000
TOTAL STRUCTURE ITEMS	\$10,300,000
<b>SUBTOTAL CONSTRUCTION COSTS</b>	<b>\$47,200,000</b>
<b>RIGHT OF WAY</b>	<b>\$1,200,000</b>
<b>TOTAL PROJECT COST</b>	<b>\$48,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices.

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 1  
December 2011

12-ORA-5  
PM 21.3-30.3

## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	64,100	CY	\$25	\$1,602,500	
Clearing & Grubbing	1	LS	\$300,000	\$300,000	
Unsuitable Material/ADL (10% Road Ex.)	6,410	CY	\$40	\$256,400	
<b>Subtotal Earthwork</b>					<b>\$2,158,900</b>

<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	27,500	Ton	\$70	\$1,925,000	
Asphalt Treated Permeable Base (ATPB)	3,500	CY	\$125	\$437,500	
Class 2 Aggregate Base	19,100	CY	\$40	\$764,000	
Class 2 Asphalt Concrete	59,500	Ton	\$50	\$2,975,000	
Edge Drain	12,900	LF	\$10	\$129,000	
<b>Subtotal Structural Section Items</b>					<b>\$6,230,500</b>

<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
10' x 5' RCB	1,330	CY	\$725	\$964,250	
4' x 3' RCB	160	CY	\$725	\$116,000	
42" RCP	41	CY	\$725	\$29,725	
Remove Channel	2,210	LF	\$25	\$55,250	
Remove Culvert	290	LF	\$75	\$21,750	
Misc Drainage Improvement	1	LS	\$1,800,000	\$1,800,000	
<b>Subtotal Drainage</b>					<b>\$2,986,975</b>

<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$640,000	\$640,000	
SWPPP Preparation	1	LS	\$2,000	\$2,000	
Permanent Treatment BMPs	1	LS	\$672,000	\$672,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$400,000	\$400,000	
Environmental Compliance	1	LS	\$360,000	\$360,000	
Landscape	1	LS	\$500,000	\$500,000	
Barrier	4,010	LF	\$55	\$220,550	
MBGR	2,670	LF	\$30	\$80,100	
Retaining Wall (H<10')	8,180	SF	\$100	\$818,000	
Retaining Wall (H>10' / on piles)	0	SF	\$150	\$0	
Soundwall	0	SF	\$30	\$0	
SW/RW (Soundwall portion)	0	SF	\$20	\$0	
SW/RW (Retaining Wall portion)	0	SF	\$150	\$0	
Tie Back Wall	5,200	SF	\$150	\$780,000	
Potential Soundwall	1	LS	\$800,000	\$800,000	
Remove Retaining Wall and Soundwall	0	LF	\$65	\$0	
Sidewalk	1,320	CY	\$525	\$693,000	
Curb and Gutter	710	CY	\$525	\$372,750	
<b>Subtotal Specialty Items</b>					<b>\$6,638,400</b>

**SUBTOTAL SECTIONS 1-4** **\$18,014,775**

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 1  
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<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$2,700,000	\$2,700,000	
Traffic Signal	4	EA	\$250,000	\$1,000,000	
Lighting/Sign Illumination	1	LS	\$400,000	\$400,000	
Transportation Management Plan	1	LS	\$1,900,000	\$1,900,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$200,000	\$200,000	
Staging	1	LS	\$1,000,000	\$1,000,000	
Fiber Optic Communication System	1	LS	\$1,200,000	\$1,200,000	
Roadside Signs	1	LS	\$100,000	\$100,000	
Overhead Sign Structure (include removal of exist)	9	EA	\$200,000	\$1,800,000	
				<b>Subtotal Traffic Items</b>	<b><u>\$10,400,000</u></b>
 <u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$18,014,775	x	5%	\$900,739	
				<b>TOTAL MINOR ITEMS</b>	<b><u>\$900,739</u></b>
 <u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$18,014,775				
Minor Items	\$900,739				
Subtotal Sections 1-6	\$18,915,514	x	10%	\$1,891,551	
				<b>TOTAL MOBILIZATION</b>	<b><u>\$1,891,551</u></b>
 <u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$18,014,775				
Minor Items	\$900,739				
Sum	\$18,915,514	x	5%	\$945,776	
Contingencies					
Subtotal Sections 1-5	\$18,014,775				
Minor Items	\$900,739				
Sum	\$18,915,514	x	25%	\$4,728,878	
				<b>TOTAL ROADWAY ADDITIONS</b>	<b><u>\$5,674,654</u></b>
				<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>	<b><u>\$36,881,719</u></b>
				USE	<b><u>\$36,900,000</u></b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 1  
December 2011

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## II. STRUCTURES ITEMS

### BRIDGES

	<u>Bridge 1</u>
Bridge Name	Alton OC
Structure Type	CIP/PS
Width - (ft)	130
Span Lengths - (ft)	312
Total Area - (sf)	40,482
Unit Cost (\$/sf)	\$255
Total Cost for Structure	\$10,322,910

Subtotal Bridge Items \$10,322,910

SUBTOTAL STRUCTURES ITEMS \$10,322,910

Railroad Related Costs \_\_\_\_\_

SUBTOTAL RAILROAD ITEMS \$0

TOTAL STRUCTURES ITEMS (Subtotal Structures, Walls, Culvert, and Railroad Items) \$10,322,910

USE \$10,300,000

## III. RIGHT OF WAY

	Current Values Year 2010	Escalation Rates	Escalated Values
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (4,549 sf @ \$100/sf)	\$454,900	3.00%	\$527,354
B. Utility Relocation (State share)	\$506,000	3.00%	\$586,593
C. Relocation Assistance	\$0	3.00%	\$0
D. Clearance/Demolition	\$100,000	3.00%	\$115,927
E. Title and Escrow Fees	\$0	3.00%	\$0
F. Construction Contract Work			\$0
TOTAL RIGHT OF WAY ITEMS (Escalated Value)			\$1,229,874
		USE	\$1,200,000

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 1 - Seg 2  
December 2011

12-ORA-5  
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**Alternative:** **Alternative 2B - Option 1 - Segment 2**

**Limits:** **I-5 From SR-133 to Jeffrey Road  
(SR-133/Sand Canyon/Jeffrey Ramps)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Non-Standard Design Features  
Ramp Improvements**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$59,100,000
TOTAL STRUCTURE ITEMS	\$1,000,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$60,100,000</u>
<u>RIGHT OF WAY</u>	<u>\$2,600,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$63,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices.

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 1 - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	82,400	CY	\$25	\$2,060,000	
Clearing & Grubbing	1	LS	\$400,000	\$400,000	
Unsuitable Material/ADL (10% Road Ex.)	8,240	CY	\$40	\$329,600	
<b>Subtotal Earthwork</b>					<b>\$2,789,600</b>

<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	36,800	Ton	\$70	\$2,576,000	
Asphalt Treated Permeable Base (ATPB)	9,100	CY	\$125	\$1,137,500	
Class 2 Aggregate Base	21,200	CY	\$40	\$848,000	
Class 2 Asphalt Concrete	73,700	Ton	\$50	\$3,685,000	
Edge Drain	27,900	LF	\$10	\$279,000	
<b>Subtotal Structural Section Items</b>					<b>\$8,525,500</b>

<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
42" RCP	85	CY	\$725	\$61,625	
3 - 10' x 10' RCB	170	CY	\$725	\$123,250	
3 - 14' x 9' RCB	1,700	CY	\$725	\$1,232,500	
Remove Channel	410	LF	\$25	\$10,250	
Remove Culvert	650	LF	\$75	\$48,750	
Misc Drainage Improvement	1	LS	\$3,000,000	\$3,000,000	
<b>Subtotal Drainage</b>					<b>\$4,476,375</b>

<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$800,000	\$800,000	
SWPPP Preparation	1	LS	\$2,500	\$2,500	
Permanent Treatment BMPs	1	LS	\$840,000	\$840,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$400,000	\$400,000	
Environmental Compliance	1	LS	\$600,000	\$600,000	
Landscape	1	LS	\$1,000,000	\$1,000,000	
Barrier	10,100	LF	\$55	\$555,500	
MBGR	15,100	LF	\$30	\$453,000	
Retaining Wall (H<10')	12,500	SF	\$100	\$1,250,000	
Retaining Wall (H>10' / on piles)	44,000	SF	\$150	\$6,600,000	
Soundwall	0	SF	\$30	\$0	
SW/RW (Soundwall portion)	0	SF	\$20	\$0	
SW/RW (Retaining Wall portion)	0	SF	\$150	\$0	
Tie Back Wall	0	SF	\$150	\$0	
Potential Soundwall	1	LS	\$1,000,000	\$1,000,000	
Remove Retaining Wall and Soundwall	3,610	LF	\$65	\$234,650	
Sidewalk	400	CY	\$525	\$210,000	
Curb and Gutter	150	CY	\$525	\$78,750	
<b>Subtotal Specialty Items</b>					<b>\$14,324,400</b>

**SUBTOTAL SECTIONS 1-4    \$30,115,875**



# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 1 - Seg 2  
December 2011

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<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$3,375,000	\$3,375,000	
Traffic Signal	4	EA	\$250,000	\$1,000,000	
Lighting/Sign Illumination	1	LS	\$500,000	\$500,000	
Transportation Management Plan	1	LS	\$2,400,000	\$2,400,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$200,000	\$200,000	
Staging	1	LS	\$1,600,000	\$1,600,000	
Fiber Optic Communication System	1	LS	\$1,500,000	\$1,500,000	
Roadside Signs	1	LS	\$125,000	\$125,000	
Overhead Sign Structure (include removal of exist)	20	EA	\$200,000	\$4,000,000	
					<b>Subtotal Traffic Items</b>
					<b>\$14,800,000</b>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$30,115,875	x	5%	\$1,505,794	
					<b>TOTAL MINOR ITEMS</b>
					<b>\$1,505,794</b>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$30,115,875				
Minor Items	\$1,505,794				
Subtotal Sections 1-6	\$31,621,669	x	10%	\$3,162,167	
					<b>TOTAL MOBILIZATION</b>
					<b>\$3,162,167</b>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$30,115,875				
Minor Items	\$1,505,794				
Sum	\$31,621,669	x	5%	\$1,581,083	
Contingencies					
Subtotal Sections 1-5	\$30,115,875				
Minor Items	\$1,505,794				
Sum	\$31,621,669	x	25%	\$7,905,417	
					<b>TOTAL ROADWAY ADDITIONS</b>
					<b>\$9,486,501</b>
					<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>
					<b>\$59,070,336</b>
					USE
					<b>59,100,000</b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 1 - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

## II. STRUCTURES ITEMS

### BRIDGES

	<u>Bridge 1</u>	<u>Bridge 2</u>
	Irvine OH (NB)	Irvine OH (SB)
Bridge Name	<u>CIP/PS</u>	<u>CIP/PS</u>
Structure Type	<u>6</u>	<u>6</u>
Width - (ft)	<u>264</u>	<u>264</u>
Span Lengths - (ft)	<u>1,650</u>	<u>1,650</u>
Total Area - (sf)	<u>\$305</u>	<u>\$150</u>
Unit Cost (\$/sf)	<u>\$503,250</u>	<u>\$247,500</u>
Total Cost for Structure		

Subtotal Bridge Items \$750,750

**SUBTOTAL STRUCTURES ITEMS \$750,750**

Railroad Related Costs \$250,000

**SUBTOTAL RAILROAD ITEMS \$250,000**

**TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items) \$1,000,750**

**USE \$1,000,000**

## III. RIGHT OF WAY

	<u>Current Values</u>	<u>Escalation</u>	<u>Escalated</u>
	<u>Year 2010</u>	<u>Rates</u>	<u>Values</u>
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (530 sf @ \$100/sf)	<u>\$53,000</u>	3.00%	<u>\$61,442</u>
B. Utility Relocation (State share)	<u>\$1,000,000</u>	3.00%	<u>\$1,159,274</u>
C. Relocation Assistance	<u>\$0</u>	3.00%	<u>\$0</u>
D. Clearance/Demolition	<u>\$200,000</u>	3.00%	<u>\$231,855</u>
E. Title and Escrow Fees	<u>\$1,000,000</u>	3.00%	<u>\$1,159,274</u>
F. Construction Contract Work			<u>\$0</u>
<b>TOTAL RIGHT OF WAY ITEMS (Escalated Value)</b>			<b><u>\$2,611,844</u></b>
		<b>USE</b>	<b><u>\$2,600,000</u></b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 3 - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

**Alternative:** **Alternative 2B - Option 3 - Segment 2**

**Limits:** **I-5 From SR-133 to Jeffrey Road  
(SR-133/Sand Canyon/Jeffrey Ramps)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Non-Standard Design Features  
NB Braid: NB Jeffrey Off-Ramp/S133-N5 Conn Sep**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$100,100,000
TOTAL STRUCTURE ITEMS	\$6,100,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$106,200,000</u>
<u>RIGHT OF WAY</u>	<u>\$2,700,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$109,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 3 - Seg 2  
December 2011

12-ORA-5  
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## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	94,900	CY	\$25	\$2,372,500	
Clearing & Grubbing	1	LS	\$400,000	\$400,000	
Unsuitable Material/ADL (10% Road Ex.)	9,490	CY	\$40	\$379,600	
<b>Subtotal Earthwork</b>					<b>\$3,152,100</b>

<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	41,500	Ton	\$70	\$2,905,000	
Asphalt Treated Permeable Base (ATPB)	10,200	CY	\$125	\$1,275,000	
Class 2 Aggregate Base	23,900	CY	\$40	\$956,000	
Class 2 Asphalt Concrete	83,000	Ton	\$50	\$4,150,000	
Edge Drain	27,900	LF	\$10	\$279,000	
<b>Subtotal Structural Section Items</b>					<b>\$9,565,000</b>

<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
42" RCP	85	CY	\$725	\$61,625	
3 - 10' x 10' RCB	170	CY	\$725	\$123,250	
Conc Trap. Channel (B=4', H=3', Z=1')	60	CY	\$725	\$43,500	
Conc Trap. Channel (B=5', H=5', Z=1')	420	CY	\$725	\$304,500	
Conc Rec. Channel (B=8', H=5')	140	CY	\$725	\$101,500	
3 - 7' x 10' RCB	1,320	CY	\$725	\$957,000	
4 - 7' x 10' RCB	1,190	CY	\$725	\$862,750	
3' - 14' x 9'	9,210	CY	\$725	\$6,677,250	
Remove Channel	5,250	LF	\$25	\$131,250	
Remove Culvert	650	LF	\$75	\$48,750	
Misc Drainage Improvement	1	LS	\$5,000,000	\$5,000,000	
<b>Subtotal Drainage</b>					<b>\$14,311,375</b>

<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$1,800,000	\$1,800,000	
SWPPP Preparation	1	LS	\$2,500	\$2,500	
Permanent Treatment BMPs	1	LS	\$840,000	\$840,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$400,000	\$400,000	
Environmental Compliance	1	LS	\$1,000,000	\$1,000,000	
Landscape	1	LS	\$1,000,000	\$1,000,000	
Barrier	17,000	LF	\$55	\$935,000	
MBGR	15,100	LF	\$30	\$453,000	
Retaining Wall (H<10')	8,100	SF	\$100	\$810,000	
Retaining Wall (H>10' / on piles)	144,000	SF	\$150	\$21,600,000	
Soundwall	0	SF	\$30	\$0	
SW/RW (Soundwall portion)	0	SF	\$20	\$0	
SW/RW (Retaining Wall portion)	0	SF	\$150	\$0	
Tie Back Wall	3,610	SF	\$150	\$541,500	
Potential Soundwall	1	LS	\$1,000,000	\$1,000,000	
Remove Retaining Wall and Soundwall	400	LF	\$65	\$26,000	
Sidewalk	410	CY	\$525	\$215,250	
Curb and Gutter	150	CY	\$525	\$78,750	
<b>Subtotal Specialty Items</b>					<b>\$31,002,000</b>

**SUBTOTAL SECTIONS 1-4** **\$58,030,475**

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 3 - Seg 2  
December 2011

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<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$3,375,000	\$3,375,000	
Traffic Signal	4	EA	\$250,000	\$1,000,000	
Lighting/Sign Illumination	1	LS	\$500,000	\$500,000	
Transportation Management Plan	1	LS	\$2,400,000	\$2,400,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$200,000	\$200,000	
Staging	1	LS	\$1,600,000	\$1,600,000	
Fiber Optic Communication System	1	LS	\$1,500,000	\$1,500,000	
Roadside Signs	1	LS	\$125,000	\$125,000	
Overhead Sign Structure (include removal of exist)	20	EA	\$200,000	\$4,000,000	
					<b>Subtotal Traffic Items</b>
					<b>\$14,800,000</b>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$58,030,475	x	5%	\$2,901,524	
					<b>TOTAL MINOR ITEMS</b>
					<b>\$2,901,524</b>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$58,030,475				
Minor Items	\$2,901,524				
Subtotal Sections 1-6	\$60,931,999	x	10%	\$6,093,200	
					<b>TOTAL MOBILIZATION</b>
					<b>\$6,093,200</b>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$58,030,475				
Minor Items	\$2,901,524				
Sum	\$60,931,999	x	5%	\$3,046,600	
Contingencies					
Subtotal Sections 1-5	\$58,030,475				
Minor Items	\$2,901,524				
Sum	\$60,931,999	x	25%	\$15,233,000	
					<b>TOTAL ROADWAY ADDITIONS</b>
					<b>\$18,279,600</b>
					<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>
					<b>\$100,104,798</b>
					<b>USE</b>
					<b>100,100,000</b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 3 - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

## II. STRUCTURES ITEMS

	<u>BRIDGES</u>		
	<u>Bridge 1</u>	<u>Bridge 2</u>	<u>Bridge 3</u>
	Irvine OH (NB)	Irvine OH (SB)	N5 Jeffrey Off-Ramp
Bridge Name	CIP/PS	CIP/PS	CIP/PS
Structure Type	6	6	40
Width - (ft)	264	264	521
Span Lengths - (ft)	1,650	1,650	20,840
Total Area - (sf)	\$305	\$150	\$245
Unit Cost (\$/sf)	\$503,250	\$247,500	\$5,105,800
Total Cost for Structure			
		<b>Subtotal Bridge Items</b>	<b>\$5,856,550</b>
		<b>SUBTOTAL STRUCTURES ITEMS</b>	<b>\$5,856,550</b>
Railroad Related Costs		<b>\$250,000</b>	
		<b>SUBTOTAL RAILROAD ITEMS</b>	<b>\$250,000</b>
		<b>TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items)</b>	<b>\$6,106,550</b>
		<b>USE</b>	<b>\$6,100,000</b>

## III. RIGHT OF WAY

	<u>Current Values</u>	<u>Escalation</u>	<u>Escalated</u>
	<u>Year 2010</u>	<u>Rates</u>	<u>Values</u>
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (1,048 sf @ \$100/sf)	\$104,800	3.00%	\$121,492
B. Utility Relocation (State share)	\$1,000,000	3.00%	\$1,159,274
C. Relocation Assistance	\$0	3.00%	\$0
D. Clearance/Demolition	\$200,000	3.00%	\$231,855
E. Title and Escrow Fees	\$1,000,000	3.00%	\$1,159,274
F. Construction Contract Work			\$0
			<b>\$2,671,895</b>
		<b>TOTAL RIGHT OF WAY ITEMS (Escalated Value)</b>	<b>\$2,671,895</b>
		<b>USE</b>	<b>\$2,700,000</b>



# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 4 - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

**Alternative:** **Alternative 2B - Option 4 - Segment 2**

**Limits:** **I-5 From SR-133 to Jeffrey Road  
(SR-133/Sand Canyon/Jeffrey Ramps)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Non-Standard Design Features  
SB Braid: SB Sand Canyon On-Ramp/S5-S133 Conn Sep**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$78,300,000
TOTAL STRUCTURE ITEMS	\$9,400,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$87,700,000</u>
<u>RIGHT OF WAY</u>	<u>\$2,800,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$91,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices.

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 4 - Seg 2  
December 2011

12-ORA-5  
PM 21.3-30.3

## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	97,800	CY	\$25	\$2,445,000	
Clearing & Grubbing	1	LS	\$400,000	\$400,000	
Unsuitable Material/ADL (10% Road Ex.)	9,780	CY	\$40	\$391,200	
<b>Subtotal Earthwork</b>					<b>\$3,236,200</b>

<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	41,500	Ton	\$70	\$2,905,000	
Asphalt Treated Permeable Base (ATPB)	10,200	CY	\$125	\$1,275,000	
Class 2 Aggregate Base	23,900	CY	\$40	\$956,000	
Class 2 Asphalt Concrete	83,000	Ton	\$50	\$4,150,000	
Edge Drain	27,900	LF	\$10	\$279,000	
<b>Subtotal Structural Section Items</b>					<b>\$9,585,000</b>

<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
42" RCP	85	CY	\$725	\$61,625	
3 - 10' x 10' RCB	170	CY	\$725	\$123,250	
3 - 14' x 9' RCB	1,700	CY	\$725	\$1,232,500	
Remove Channel	410	LF	\$25	\$10,250	
Remove Culvert	650	LF	\$75	\$48,750	
Misc Drainage Improvement	1	LS	\$3,900,000	\$3,900,000	
<b>Subtotal Drainage</b>					<b>\$5,376,375</b>

<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$1,400,000	\$1,400,000	
SWPPP Preparation	1	LS	\$2,500	\$2,500	
Permanent Treatment BMPs	1	LS	\$840,000	\$840,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$400,000	\$400,000	
Environmental Compliance	1	LS	\$780,000	\$780,000	
Landscape	1	LS	\$1,000,000	\$1,000,000	
Barrier	15,100	LF	\$55	\$830,500	
MBGR	15,100	LF	\$30	\$453,000	
Retaining Wall (H<10')	9,500	SF	\$100	\$950,000	
Retaining Wall (H>10' / on piles)	108,000	SF	\$150	\$16,200,000	
Soundwall	0	SF	\$30	\$0	
SW/RW (Soundwall portion)	0	SF	\$20	\$0	
SW/RW (Retaining Wall portion)	0	SF	\$150	\$0	
Tie Back Wall	3,610	SF	\$150	\$541,500	
Potential Soundwall	1	LS	\$1,000,000	\$1,000,000	
Remove Retaining Wall and Soundwall	400	LF	\$65	\$26,000	
Sidewalk	400	CY	\$525	\$210,000	
Curb and Gutter	150	CY	\$525	\$78,750	
<b>Subtotal Specialty Items</b>					<b>\$25,012,250</b>

**SUBTOTAL SECTIONS 1-4** **\$43,189,825**

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 4 - Seg 2  
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PM 21.3-30.3

<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$3,375,000	\$3,375,000	
Traffic Signal	4	EA	\$250,000	\$1,000,000	
Lighting/Sign Illumination	1	LS	\$500,000	\$500,000	
Transportation Management Plan	1	LS	\$2,400,000	\$2,400,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$200,000	\$200,000	
Staging	1	LS	\$1,600,000	\$1,600,000	
Fiber Optic Communication System	1	LS	\$1,500,000	\$1,500,000	
Roadside Signs	1	LS	\$125,000	\$125,000	
Overhead Sign Structure (include removal of exist)	20	EA	\$200,000	\$4,000,000	
				<b>Subtotal Traffic Items</b>	<b><u>\$14,800,000</u></b>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$43,189,825	x	5%	\$2,159,491	
				<b>TOTAL MINOR ITEMS</b>	<b><u>\$2,159,491</u></b>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$43,189,825				
Minor Items	\$2,159,491				
Subtotal Sections 1-6	\$45,349,316	x	10%	\$4,534,932	
				<b>TOTAL MOBILIZATION</b>	<b><u>\$4,534,932</u></b>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$43,189,825				
Minor Items	\$2,159,491				
Sum	\$45,349,316	x	5%	\$2,267,466	
Contingencies					
Subtotal Sections 1-5	\$43,189,825				
Minor Items	\$2,159,491				
Sum	\$45,349,316	x	25%	\$11,337,329	
				<b>TOTAL ROADWAY ADDITIONS</b>	<b><u>\$13,604,795</u></b>
				<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>	<b><u>\$78,289,043</u></b>
				<b>USE</b>	<b><u>78,300,000</u></b>

## PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 4 - Seg 2  
December 2011

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### II. STRUCTURES ITEMS

	<u>BRIDGES</u>		
	<u>Bridge 1</u>	<u>Bridge 2</u>	
	<u>Irvine OH (NB)</u>	<u>Irvine OH (SB)</u>	<u>S5/S193 Connector</u>
Bridge Name			
Structure Type	<u>CIP/PS</u>	<u>CIP/PS</u>	<u>CIP/PS</u>
Width - (ft)	<u>6</u>	<u>40</u>	<u>43</u>
Span Lengths - (ft)	<u>264</u>	<u>264</u>	<u>585</u>
Total Area - (sf)	<u>1,650</u>	<u>10,428</u>	<u>24,863</u>
Unit Cost (\$/sf)	<u>\$305</u>	<u>\$245</u>	<u>\$245</u>
Total Cost for Structure	<u>\$503,250</u>	<u>\$2,554,860</u>	<u>\$6,091,313</u>
		<b>Subtotal Bridge Items</b>	<u><b>\$9,149,423</b></u>
		<b>SUBTOTAL STRUCTURES ITEMS</b>	<u><b>\$9,149,423</b></u>
Railroad Related Costs		<u>\$250,000</u>	
		<b>SUBTOTAL RAILROAD ITEMS</b>	<u><b>\$250,000</b></u>
		<b>TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items)</b>	<u><b>\$9,399,423</b></u>
		<b>USE</b>	<u><b>\$9,400,000</b></u>

### III. RIGHT OF WAY

	<u>Current Values</u>	<u>Escalation</u>	<u>Escalated</u>
	<u>Year 2010</u>	<u>Rates</u>	<u>Values</u>
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (1,765 sf @ \$100/sf)	<u>\$176,500</u>	3.00%	<u>\$204,612</u>
B. Utility Relocation (State share)	<u>\$1,000,000</u>	3.00%	<u>\$1,159,274</u>
C. Relocation Assistance	<u>\$0</u>	3.00%	<u>\$0</u>
D. Clearance/Demolition	<u>\$200,000</u>	3.00%	<u>\$231,855</u>
E. Title and Escrow Fees	<u>\$1,000,000</u>	3.00%	<u>\$1,159,274</u>
F. Construction Contract Work			<u>\$0</u>
		<b>TOTAL RIGHT OF WAY ITEMS (Escalated Value)</b>	<u><b>\$2,755,015</b></u>
		<b>USE</b>	<u><b>\$2,800,000</b></u>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 3  
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Alternative:

**Alternative 2B - Segment 3**

Limits:

**I-5 From Jeffrey Road to Red Hill Avenue  
(North Irvine)**

Proposed Improvements (Scope):

**One General Purpose Lane in each direction  
Non-Standard Design Features  
Ramp Improvements**

## Project Costs:

TOTAL ROADWAY ITEMS	\$79,400,000
TOTAL STRUCTURE ITEMS	\$10,600,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$90,000,000</u>
<u>RIGHT OF WAY</u>	<u>\$5,400,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$95,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices.

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 3  
December 2011

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## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	121,000	CY	\$25	\$3,025,000	
Clearing & Grubbing	1	LS	\$500,000	\$500,000	
Unsuitable Material/ADL (10% Road Ex.)	12,100	CY	\$40	\$484,000	
<b>Subtotal Earthwork</b>					<b>\$4,009,000</b>

<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	49,900	Ton	\$70	\$3,493,000	
Asphalt Treated Permeable Base (ATPB)	12,200	CY	\$125	\$1,525,000	
Class 2 Aggregate Base	28,800	CY	\$40	\$1,152,000	
Class 2 Asphalt Concrete	100,000	Ton	\$50	\$5,000,000	
Edge Drain	43,600	LF	\$10	\$436,000	
<b>Subtotal Structural Section Items</b>					<b>\$11,606,000</b>

<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
5 - 4' x 4' RCB	73	CY	\$725	\$52,925	
Remove Channel	0	LF	\$25	\$0	
Remove Culvert	50	LF	\$75	\$3,750	
Misc Drainage Improvement	1	LS	\$3,900,000	\$3,900,000	
<b>Subtotal Drainage</b>					<b>\$3,956,675</b>

<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$1,440,000	\$1,440,000	
SWPPP Preparation	1	LS	\$4,500	\$4,500	
Permanent Treatment BMPs	1	LS	\$1,512,000	\$1,512,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$400,000	\$400,000	
Environmental Compliance	1	LS	\$780,000	\$780,000	
Landscape	1	LS	\$1,000,000	\$1,000,000	
Barrier	7,530	LF	\$55	\$414,150	
MBGR	5,820	LF	\$30	\$174,600	
Retaining Wall (H<10')	25,100	SF	\$100	\$2,510,000	
Retaining Wall (H>10' / on piles)	55,300	SF	\$150	\$8,295,000	
Soundwall	10,200	SF	\$30	\$306,000	
SW/RW (Soundwall portion)	8,540	SF	\$20	\$170,800	
SW/RW (Retaining Wall portion)	6,170	SF	\$150	\$925,500	
Tie Back Wall	2,000	SF	\$150	\$300,000	
Potential Soundwall	1	LS	\$1,800,000	\$1,800,000	
Remove Retaining Wall and Soundwall	3,040	LF	\$65	\$197,600	
Sidewalk	920	CY	\$525	\$483,000	
Curb and Gutter	300	CY	\$525	\$157,500	
<b>Subtotal Specialty Items</b>					<b>\$21,170,650</b>

**SUBTOTAL SECTIONS 1-4** **\$40,742,325**



# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 3  
December 2011

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<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$6,075,000	\$6,075,000	
Traffic Signal	7	EA	\$200,000	\$1,400,000	
Lighting/Sign Illumination	1	LS	\$1,500,000	\$1,500,000	
Transportation Management Plan	1	LS	\$1,900,000	\$1,900,000	
Ramp Metering	1	LS	\$200,000	\$200,000	
Crash Cushions	1	LS	\$400,000	\$400,000	
Staging	1	LS	\$2,100,000	\$2,100,000	
Fiber Optic Communication System	1	LS	\$2,100,000	\$2,100,000	
Roadside Signs	1	LS	\$225,000	\$225,000	
Overhead Sign Structure (include removal of exist)	18	EA	\$200,000	\$3,600,000	
					<b>Subtotal Traffic Items</b>
					<b><u>\$19,500,000</u></b>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$40,742,325	x	5%	\$2,037,116	
					<b>TOTAL MINOR ITEMS</b>
					<b><u>\$2,037,116</u></b>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$40,742,325				
Minor Items	\$2,037,116				
Subtotal Sections 1-6	\$42,779,441	x	10%	\$4,277,944	
					<b>TOTAL MOBILIZATION</b>
					<b><u>\$4,277,944</u></b>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$40,742,325				
Minor Items	\$2,037,116				
Sum	\$42,779,441	x	5%	\$2,138,972	
Contingencies					
Subtotal Sections 1-5	\$40,742,325				
Minor Items	\$2,037,116				
Sum	\$42,779,441	x	25%	\$10,694,860	
					<b>TOTAL ROADWAY ADDITIONS</b>
					<b><u>\$12,833,832</u></b>
					<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>
					<b><u>\$79,391,218</u></b>
					<b>USE</b>
					<b><u>\$79,400,000</u></b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 3  
December 2011

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## II. STRUCTURES ITEMS

### BRIDGES

	<u>Bridge 1</u>	<u>Bridge 2</u>	<u>Bridge 3</u>	<u>Bridge 4</u>	<u>Bridge 5</u>
Bridge Name	Culver UC (NB)	Culver UC (SB)	Peters Canyon (NB)	Peters Canyon (SB)	Jamboree Off OC
Structure Type	CIP/PS	CIP/PS	CIP/PS	CIP/PS	CIP/PS
Width - (ft)	12	43	18	7	40
Span Lengths - (ft)	181	169	92	92	216
Total Area - (sf)	2,174	7,216	1,656	599	8,586
Unit Cost (\$/sf)	\$305	\$295	\$280	\$305	\$255
Total Cost for Structure	\$663,192	\$2,128,809	\$463,680	\$182,787	\$2,189,430

	<u>Bridge 6</u>	<u>Bridge 7</u>	<u>Bridge 8</u>	<u>Bridge 9</u>	<u>Bridge 10</u>
Bridge Name	5/261 Sep (NB)	5/261 Sep (SB)	Jamboree UC (NB)	Jamboree UC (SB)	El Modena (NB)
Structure Type	CIP/PS	CIP/PS	CIP/PS	CIP/PS	CIP/PS
Width - (ft)	6	25	21	25	5
Span Lengths - (ft)	205	210	187	187	111
Total Area - (sf)	1,230	5,187	3,871	4,750	515
Unit Cost (\$/sf)	\$320	\$295	\$295	\$295	\$150
Total Cost for Structure	\$393,600	\$1,530,165	\$1,141,916	\$1,401,191	\$77,283

	<u>Bridge 11</u>
Bridge Name	El Modena (SB)
Structure Type	CIP/PS
Width - (ft)	17
Span Lengths - (ft)	95
Total Area - (sf)	1,568
Unit Cost (\$/sf)	\$280
Total Cost for Structure	\$438,900

Subtotal Bridge Items \$10,610,952

SUBTOTAL STRUCTURES ITEMS \$10,610,952

Railroad Related Costs

SUBTOTAL RAILROAD ITEMS \$0

TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items) \$10,610,952

USE \$10,600,000

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Seg 3  
December 2011

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### III. RIGHT OF WAY

	Current Values Year 2010	Escalation Rates	Escalated Values
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (26,551 sf @ \$100/sf)	\$2,655,100	3.00%	\$3,077,989
B. Utility Relocation (State share)	\$1,000,000	3.00%	\$1,159,274
C. Relocation Assistance	\$0	3.00%	\$0
D. Clearance/Demolition	\$1,000,000	3.00%	\$1,159,274
E. Title and Escrow Fees	\$0	3.00%	\$0
F. Construction Contract Work			\$0
<b>TOTAL RIGHT OF WAY ITEMS (Escalated Value)</b>			<b>\$5,396,537</b>
		<b>USE</b>	<b>\$5,400,000</b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 1 - Seg 4  
December 2011

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PM 21.3-30.3

**Alternative:** **Alternative 2B-Option 1 - Segment 4**

**Limits:** **I-5 From Red Hill Avenue to SR-55  
(Tustin)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Full Standard Design Features  
NB On-Ramp at Newport Avenue**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$22,000,000
TOTAL STRUCTURE ITEMS	\$0
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$22,000,000</u>
<u>RIGHT OF WAY</u>	<u>\$1,500,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$24,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices.

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 1 - Seg 4  
December 2011

12-ORA-5  
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## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	16,000	CY	\$25	\$400,000	
Clearing & Grubbing	1	LS	\$100,000	\$100,000	
Unsuitable Material/ADL (10% Road Ex.)	1,600	CY	\$40	\$64,000	
<b>Subtotal Earthwork</b>					<b>\$564,000</b>

<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	6,930	Ton	\$70	\$485,100	
Asphalt Treated Permeable Base (ATPB)	1,710	CY	\$125	\$213,750	
Class 2 Aggregate Base	3,970	CY	\$40	\$158,800	
Class 2 Asphalt Concrete	13,900	Ton	\$50	\$695,000	
Edge Drain	8,580	LF	\$10	\$85,800	
<b>Subtotal Structural Section Items</b>					<b>\$1,638,450</b>

<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Remove Channel	0	LF	\$25	\$0	
Remove Culvert	0	LF	\$75	\$0	
Misc Drainage Improvement	1	LS	\$1,100,000	\$1,100,000	
<b>Subtotal Drainage</b>					<b>\$1,100,000</b>

<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$320,000	\$320,000	
SWPPP Preparation	1	LS	\$1,000	\$1,000	
Permanent Treatment BMPs	1	LS	\$336,000	\$336,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$200,000	\$200,000	
Environmental Compliance	1	LS	\$220,000	\$220,000	
Landscape	1	LS	\$200,000	\$200,000	
Barrier	2,180	LF	\$55	\$119,900	
MBGR	1,420	LF	\$30	\$42,600	
Retaining Wall (H<10')	0	SF	\$100	\$0	
Retaining Wall (H>10' / on piles)	40,700	SF	\$150	\$6,105,000	
Soundwall	8,200	SF	\$30	\$246,000	
SWRW (Soundwall portion)	0	SF	\$20	\$0	
SWRW (Retaining Wall portion)	0	SF	\$150	\$0	
Tie Back Wall	0	SF	\$150	\$0	
Potential Soundwall	1	LS	\$400,000	\$400,000	
Remove Retaining Wall and Soundwall	2,170	LF	\$65	\$141,050	
Sidewalk	0	CY	\$525	\$0	
Curb and Gutter	0	CY	\$525	\$0	
<b>Subtotal Specialty Items</b>					<b>\$8,631,550</b>

**SUBTOTAL SECTIONS 1-4** **\$11,934,000**

## PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 1 - Seg 4

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<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$1,350,000	\$1,350,000	
Traffic Signal	0	EA	\$200,000	\$0	
Lighting/Sign Illumination	1	LS	\$200,000	\$200,000	
Transportation Management Plan	1	LS	\$1,100,000	\$1,100,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$100,000	\$100,000	
Staging	1	LS	\$600,000	\$600,000	
Fiber Optic Communication System	1	LS	\$600,000	\$600,000	
Roadside Signs	1	LS	\$50,000	\$50,000	
Overhead Sign Structure (include removal of exist)	2	EA	\$200,000	\$400,000	
<b>Subtotal Traffic Items</b>					<b><u>\$4,500,000</u></b>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$11,934,000	x	5%	\$596,700	
<b>TOTAL MINOR ITEMS</b>					<b><u>\$596,700</u></b>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$11,934,000				
Minor Items	\$596,700				
Subtotal Sections 1-6	\$12,530,700	x	10%	\$1,253,070	
<b>TOTAL MOBILIZATION</b>					<b><u>\$1,253,070</u></b>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$11,934,000				
Minor Items	\$596,700				
Sum	\$12,530,700	x	5%	\$626,535	
<u>Contingencies</u>					
Subtotal Sections 1-5	\$11,934,000				
Minor Items	\$596,700				
Sum	\$12,530,700	x	25%	\$3,132,675	
<b>TOTAL ROADWAY ADDITIONS</b>					<b><u>\$3,759,210</u></b>
<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>					<b><u>\$22,042,980</u></b>
<b>USE</b>					<b><u>22,000,000</u></b>



# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 1 - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

## II. STRUCTURES ITEMS

SUBTOTAL STRUCTURES ITEMS           \$0          

Railroad Related Costs

SUBTOTAL RAILROAD ITEMS           \$0          

TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items)           \$0            
USE           \$0          

## III. RIGHT OF WAY

	Current Values Year 2010	Escalation Rates	Escalated Values
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (984 sf @ \$100/sf)	\$98,400	3.00%	\$114,073
B. Utility Relocation (State share)	\$1,000,000	3.00%	\$1,159,274
C. Relocation Assistance	\$0	3.00%	\$0
D. Clearance/Demolition	\$200,000	3.00%	\$231,855
E. Title and Escrow Fees	\$0	3.00%	\$0
F. Construction Contract Work			\$0
<b>TOTAL RIGHT OF WAY ITEMS (Escalated Value)</b>			<b>\$1,505,201</b>
		USE	<b>\$1,500,000</b>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 2 - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

**Alternative:** **Alternative 2B-Option 2 - Segment 4**

**Limits:** **I-5 From Red Hill Avenue to SR-55  
(Tustin)**

**Proposed Improvements (Scope):** **One General Purpose Lane in each direction  
Non-Standard Design Features  
NB Hook Ramp at El Camino Real**

**Project Costs:**

TOTAL ROADWAY ITEMS	\$26,500,000
TOTAL STRUCTURE ITEMS	\$1,000,000
<u>SUBTOTAL CONSTRUCTION COSTS</u>	<u>\$27,500,000</u>
<u>RIGHT OF WAY</u>	<u>\$8,400,000</u>
<b>TOTAL PROJECT COST</b>	<b>\$36,000,000</b>

Prepared By: C. Diaz

Date: Dec 2011

Reviewed By: G. Kaya

Date: Dec 2011

The project cost estimates reflect Year 2011 dollars and are based on recent bid prices.

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 2 - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

## I. ROADWAY ITEMS

<u>Section 1 Earthwork</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Roadway Excavation	18,000	CY	\$25	\$450,000	
Clearing & Grubbing	1	LS	\$100,000	\$100,000	
Unsuitable Material/ADL (10% Road Ex.)	1,800	CY	\$40	\$72,000	
<b>Subtotal Earthwork</b>					<b>\$622,000</b>

<u>Section 2 Structural Section*</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Asphalt Concrete (Type B)	8,510	Ton	\$70	\$595,700	
Asphalt Treated Permeable Base (ATPB)	1,910	CY	\$125	\$238,750	
Class 2 Aggregate Base	5,080	CY	\$40	\$203,200	
Class 2 Asphalt Concrete	17,300	Ton	\$50	\$865,000	
Edge Drain	8,580	LF	\$10	\$85,800	
<b>Subtotal Structural Section Items</b>					<b>\$1,988,450</b>

<u>Section 3 Drainage</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Remove Channel	0	LF	\$25	\$0	
Remove Culvert	0	LF	\$75	\$0	
Misc Drainage Improvement	1	LS	\$1,300,000	\$1,300,000	
<b>Subtotal Drainage</b>					<b>\$1,300,000</b>

<u>Section 4 Specialty Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Water Pollution Control	1	LS	\$520,000	\$520,000	
SWPPP Preparation	1	LS	\$1,000	\$1,000	
Permanent Treatment BMPs	1	LS	\$336,000	\$336,000	
Resident Engineer Office Fund	1	LS	\$300,000	\$300,000	
Hazardous Waste Mitigation Work	1	LS	\$200,000	\$200,000	
Environmental Compliance	1	LS	\$260,000	\$260,000	
Landscape	1	LS	\$200,000	\$200,000	
Barrier	0	LF	\$55	\$0	
MBGR	1,770	LF	\$30	\$53,100	
Retaining Wall (H<10')	600	SF	\$100	\$60,000	
Retaining Wall (H>10' / on piles)	43,300	SF	\$150	\$6,495,000	
Soundwall	8,200	SF	\$30	\$246,000	
SWRW (Soundwall portion)	3,800	SF	\$20	\$76,000	
SWRW (Retaining Wall portion)	8,900	SF	\$150	\$1,335,000	
Tie Back Wall	0	SF	\$150	\$0	
Potential Soundwall	1	LS	\$400,000	\$400,000	
Remove Retaining Wall and Soundwall	2,170	LF	\$65	\$141,050	
Sidewalk	230	CY	\$525	\$120,750	
Curb and Gutter	61	CY	\$525	\$32,025	
<b>Subtotal Specialty Items</b>					<b>\$10,775,925</b>

**SUBTOTAL SECTIONS 1-4** **\$14,686,375**

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 2 - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

<u>Section 5 Traffic Items</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Item Cost</u>	<u>Section Cost</u>
Traffic Delineation Items	1	LS	\$1,350,000	\$1,350,000	
Traffic Signal	2	EA	\$200,000	\$400,000	
Lighting/Sign Illumination	1	LS	\$200,000	\$200,000	
Transportation Management Plan	1	LS	\$1,100,000	\$1,100,000	
Ramp Metering	1	LS	\$100,000	\$100,000	
Crash Cushions	1	LS	\$100,000	\$100,000	
Staging	1	LS	\$600,000	\$600,000	
Fiber Optic Communication System	1	LS	\$600,000	\$600,000	
Roadside Signs	1	LS	\$50,000	\$50,000	
Overhead Sign Structure (include removal of exist)	2	LS	\$200,000	\$400,000	
					<b>Subtotal Traffic Items</b>
					<u>\$4,900,000</u>
<u>Section 6 Minor Items</u>					
Subtotal Sections 1-5	\$14,686,375	x	5%	\$734,319	
					<b>TOTAL MINOR ITEMS</b>
					<u>\$734,319</u>
<u>Section 7 Roadway Mobilization</u>					
Subtotal Sections 1-5	\$14,686,375				
Minor Items	\$734,319				
Subtotal Sections 1-6	\$15,420,694	x	10%	\$1,542,069	
					<b>TOTAL MOBILIZATION</b>
					<u>\$1,542,069</u>
<u>Section 8 Roadway Additions</u>					
Supplemental					
Subtotal Sections 1-5	\$14,686,375				
Minor Items	\$734,319				
Sum	\$15,420,694	x	5%	\$771,035	
Contingencies					
Subtotal Sections 1-5	\$14,686,375				
Minor Items	\$734,319				
Sum	\$15,420,694	x	25%	\$3,855,173	
					<b>TOTAL ROADWAY ADDITIONS</b>
					<u>\$4,626,208</u>
					<b>TOTAL ROADWAY ITEMS (Subtotal Sections 1-8)</b>
					<u>\$26,488,971</u>
					<b>USE</b>
					<u>\$26,500,000</u>

# PROJECT COST ESTIMATE SUMMARY

Alt 2B - Option 2 - Seg 4  
December 2011

12-ORA-5  
PM 21.3-30.3

## II. STRUCTURES ITEMS

### BRIDGES

	<u>Bridge 1</u>
Bridge Name	Newport UC (NB)
Structure Type	CIP/PS
Width - (ft)	31
Span Lengths - (ft)	116
Total Area - (sf)	3,550
Unit Cost (\$/sf)	\$295
Total Cost for Structure	\$1,047,132

Subtotal Bridge Items \$1,047,132

SUBTOTAL STRUCTURES ITEMS \$1,047,132

Railroad Related Costs \_\_\_\_\_

SUBTOTAL RAILROAD ITEMS \$0

TOTAL STRUCTURES ITEMS (Subtotal Structures and Railroad Items) \$1,047,132

USE \$1,000,000

## III. RIGHT OF WAY

	Current Values Year 2010	Escalation Rates	Escalated Values
A. Acquisition, including excess lands, damages to remainder(s), and Goodwill (50,699 sf @ \$100/sf)	\$5,069,900	3.00%	\$5,877,404
B. Utility Relocation (State share)	\$1,014,000	3.00%	\$1,175,504
C. Relocation Assistance	\$500,000	3.00%	\$579,637
D. Clearance/Demolition	\$200,000	3.00%	\$231,855
E. Title and Escrow Fees	\$500,000	3.00%	\$579,637
F. Construction Contract Work			\$0
TOTAL RIGHT OF WAY ITEMS (Escalated Value)			\$8,444,036
		USE	\$8,400,000

**ATTACHMENT 12**  
**Comments Regarding Alternatives 3A & 3B**





**RECEIVED**

MAR 08 2010

PLANNING & PROGRAMMING

March 4, 2010

Wendy Garcia  
Senior Transportation Analyst  
Orange County Transportation Authority  
P.O. Box 14184  
Orange, CA 92863-1584

Dear Ms. Garcia,

Thank you for inviting the City of Irvine to your coordination meeting for the I-5 Project Study Report (SR-55 to El Toro "Y") Project on February 24.

As discussed at the meeting, the City of Irvine does not support widening of the I-5 through Irvine that would require right of way acquisition. The North Irvine Transportation Mitigation (NITM) Program includes a fair share improvement to add one lane to the I-5 mainline between Jeffrey and Sand Canyon; however this improvement is proposed within existing Caltrans right of way and does not include any property acquisition.

City staff would be happy to meet with you to coordinate on improvements that could be supported by the Irvine City Council. Please feel free to contact me at (949) 724-7347 or [kberg@ci.irvine.ca.us](mailto:kberg@ci.irvine.ca.us) if you have any questions.

Sincerely,

Katie Berg-Curtis  
Project Development Administrator

cc: Shohreh Dupuis, Manager of Transit & Transportation  
Gary Slater, Caltrans, District 12  
Tamara Warren, OCTA

## Karen Chapman

---

**From:** John Boslet [mailto:JBoslet@irvinecompany.com]  
**Sent:** Thursday, February 03, 2011 10:14 AM  
**To:** Tamara Warren; Kurt Brotcke  
**Cc:** Leonard Sequeira; Shohreh Dupuis; Katie Berg-Curtis; Paul Hernandez  
**Subject:** I-5 PSR

Tammy,

As a follow up to our discussion last week, I have looked at two documents of important relevance.

First, attached is a copy of the I5 PSR scope of work. The first paragraph of the PSR objective states that the "The goal of the proposed improvements involves constructing the project generally within existing rights of way". I suppose one could argue about interpreting "generally" but we believe that the intent was to limit right of way impacts to insignificant. Alternatives 3A and 3B are not insignificant right of way impact alternatives. As such these alternatives should be identified as "rejected alternatives" that do not meet the Project's Purpose and Need.

The PSR scope of work objective further states "Specific improvements will be subject to approved plans developed in cooperation with the California Department of Transportation (Caltrans), local jurisdictions and affected communities" The City of Irvine has stated on a number of times that the right of way impacts associated with Alternatives 3A and 3B are unacceptable. In addition, although not discussed last week, I assume that the City does not support the modifications to the Jeffrey/I5 interchange included in these two alternatives. The Irvine Company ("the affected community") does not support these alternatives. As such these alternatives should be identified as "rejected alternatives" that do not meet the Project's Purpose and Need.

The PSR scope of work approach for Geometric Development states that "The Consultant shall identify early potential constraints, allowing the development of alternatives that will avoid or minimize negative environmental impacts." Alternatives 3A and 3B fail to meet that requirement as they result in significant environmental impacts to water quality basins, noise berms/walls and regional bike trails within PA 40 between Jeffrey and Sand Canyon. The right of way map impact maps that we have been provided for these two alternatives fail to address how these basins, berms/walls and trails will be mitigated and whether replacing these features would have a direct impact on residential development that has been approved and will most certainly be existing prior to the I5 widening proceeding. The final PSR needs to address these impact issues for both right of way and construction costs.

The second document of importance is the Renewed Measure M Transportation Investment Plan. Project B is the subject I5 widening project. The description of Project B basically repeats the language noted above in the PSR scope of work regarding "generally within existing right of way" and "subject to approved plans in cooperation with local jurisdictions and affected communities". As such, we believe the Alternatives 3A and 3B are not consistent with the Project Description of the Expenditure Plan and thus would not be eligible for Measure M Renewal funds.

As I stated at our meeting, if this PSR is approved and Alternatives 3A and 3B are defined as "viable alternatives" to be carried forward to the next phase, the Company would need to notify potential homebuyers of such as part of the Disclosure Statement provided during escrow. This Disclosure Statement might need to go as far as suggest that their home might be taken by this widening since you have not demonstrated how the Project could replace the water quality basins, noise walls and trails along the I5 without taking some homes. I hope you can thus understand why I am so concerned about this matter. This is particularly troubling since Alternatives 3A and 3B do not provide any freeway operational betterment based on your own traffic study in comparison to Alternative 2 and since the costs of Alternatives 3A and 3B would be significantly higher than Alternative 2.

I should also note that while this email has emphasized the unacceptable impacts along the north side of I5 within PA 40, we also have concerns regarding the right of way impacts on the south side of I5 associated with the proposal to relocate the planned extension of Walnut Avenue which impacts an approved parcel map in this area.

In summary, we request that Alternatives 3A and 3B be identified in the PSR as “rejected alternatives” which do not meet the Purpose and Need for the Project. If you disagree, please let me know so that this issue can be elevated to the OCTA/Caltrans executive level. Thank you.

**John F. Boslet**  
Vice President, Transportation  
Irvine Company

550 Newport Center Dr. | Newport Beach, California | 92660-7011  
Phone 949.720.2329 | Fax 949.720.2450 | Cell 949.633.2329  
[jboslet@irvinecompany.com](mailto:jboslet@irvinecompany.com)



**Please consider the environment before printing**

**ATTACHMENT 13**  
**Preliminary Environmental Analysis Report (PEAR)**

# Santa Ana Freeway (I-5) Improvement Project

On Interstate 5 (I-5) between Interstate 405 (I-405)  
and State Route 55 (SR-55)

ORANGE COUNTY, CALIFORNIA  
12-ORA-5-PM 21.3/30.3  
(EA 0K670K)

Project Number 1200020052



## Preliminary Environmental Analysis Report

*Prepared for*

**Orange County Transportation Authority**

*Prepared by*

**PARSONS**

November 2011



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## ATTACHMENTS

- A PEAR Environmental Checklist
- B Project Alternative Layouts
- C Schedule



## ACRONYMS AND ABBREVIATIONS

ACM	Asbestos-containing materials
ADL	Aerially deposited lead
ADT	Average Daily Traffic
APN	Assessor's Parcel Number
ASR	Archaeological Survey Report
ASTM	American Society of Testing and Materials
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
CGS	California Geological Survey
CSS	Context Sensitive Solutions
CAA	Clean Air Act
CIA	Community Impact Assessment
CNDDDB	California Natural Diversity Database
CRHR	California Register of Historical Resources
DLRP	Department of Land Resource Protection
EA	Environmental Assessment
ECR	Environmental Commitment Record
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMI	Earthquakes and Megacities Initiative
EO	Executive Order
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highways Administration
FOE	Finding of Effect
GP	General Purpose
GRO	Gasoline Range Organics
HHS	Health and Human Services
HOV	High Occupancy Vehicle
HPSR	Historic Property Survey Report
HRER	Historic Resources Evaluation Report
I-5	Interstate 5
I-405	Interstate 405
ISA	Initial Site Assessment
JD	Jurisdictional Delineation
JP5	jet fuel
LOMR	Letter of Map Revision
LBP	lead-based paint
MMRP	Mitigation Monitoring Reporting Plan
MTBE	methyl tertiary butyl ether
MOA	Memorandum of Agreement
NADR	Noise Abatement Decision Report
NB	northbound
NES	Natural Environment Study
NITM	North Irvine Transportation Mitigation

NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
OC	overcrossing
OCTA	Orange County Transportation Authority
OH	Overhead
PA/ED	Project Approval/Environmental Document
PCB	polychlorinated biphenyl
PDT	Project Development Team
PEAR	Preliminary Environmental Analysis Report
PID	project initiation documents
PGA	Peak Ground Acceleration
PIR/PER	Paleontological Identification Report/Paleontological Evaluation Report
PMP	Paleontological Monitoring Plan
PRC	Public Resources Code
PR/PSR	Project Report/Project Study Report
PS&E	Plans, Specifications, and Estimates
REC	Recognized Environmental Condition
RIS	Relocation Impact Statement
ROW	Right-of-Way
RTIP	Regional Transportation Improvement Program
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SARWQCB	Santa Ana Regional Water Quality Control Board
SB	southbound
SCAB	South Coast Air Basin
SCAWMD	South Coast Air Quality Management District
SCRRA	South California Regional Rail Authority
SDC	Caltrans Seismic Design Criteria
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SOCMIS	South Orange County Major Investment Study
SR	State Route
SWDR	Storm Water Data Report
SWRCB	State Water Resources Control Board
TAME	tert-amyl methyl ether
TBA	tertiary butyl alcohol
TBA	tert-butanol
TCA	Transportation Corridor Agencies
TCWG	Transportation Conformity Working Group
TDML	Total Daily Maximum Load
TMP	Traffic Management Plan
TPH	total petroleum hydrocarbons
UC	undercrossing
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USDA	United States Department of Agriculture
VIA	Visual Impact Assessment
VOC	volatile organic compounds
WMA	Watershed Management Area



## PRELIMINARY ENVIRONMENTAL ANALYSIS REPORT

### 1. Project Information

County Orange Route Interstate 5 PM 21.3 to 30.3

**Project Title:** Santa Ana Freeway (I-5) Improvement Project from Interstate 405 (I-405) to State Route 55 (SR-55)

**OCTA Project Manager:** Wendy Garcia Phone # (714) 560-5738

**Consultant Design Manager:** Surafael Teshale Phone # (949) 333-4540

**Consultant Environmental Manager:** Macie Cleary Phone # (949) 333-4467

**Consultant Environmental Planner:** Jason Walsh Phone # (949) 333-4546

### 2. Project Description

The California Department of Transportation (Caltrans or Department) and the Orange County Transportation Authority (OCTA) propose to add capacity to Interstate 5 (I-5) between Interstate 405 (I-405) and State Route 55 (SR-55) to reduce congestion and improve freeway operations within the I-5 corridor. Figure 1 is a project vicinity map.

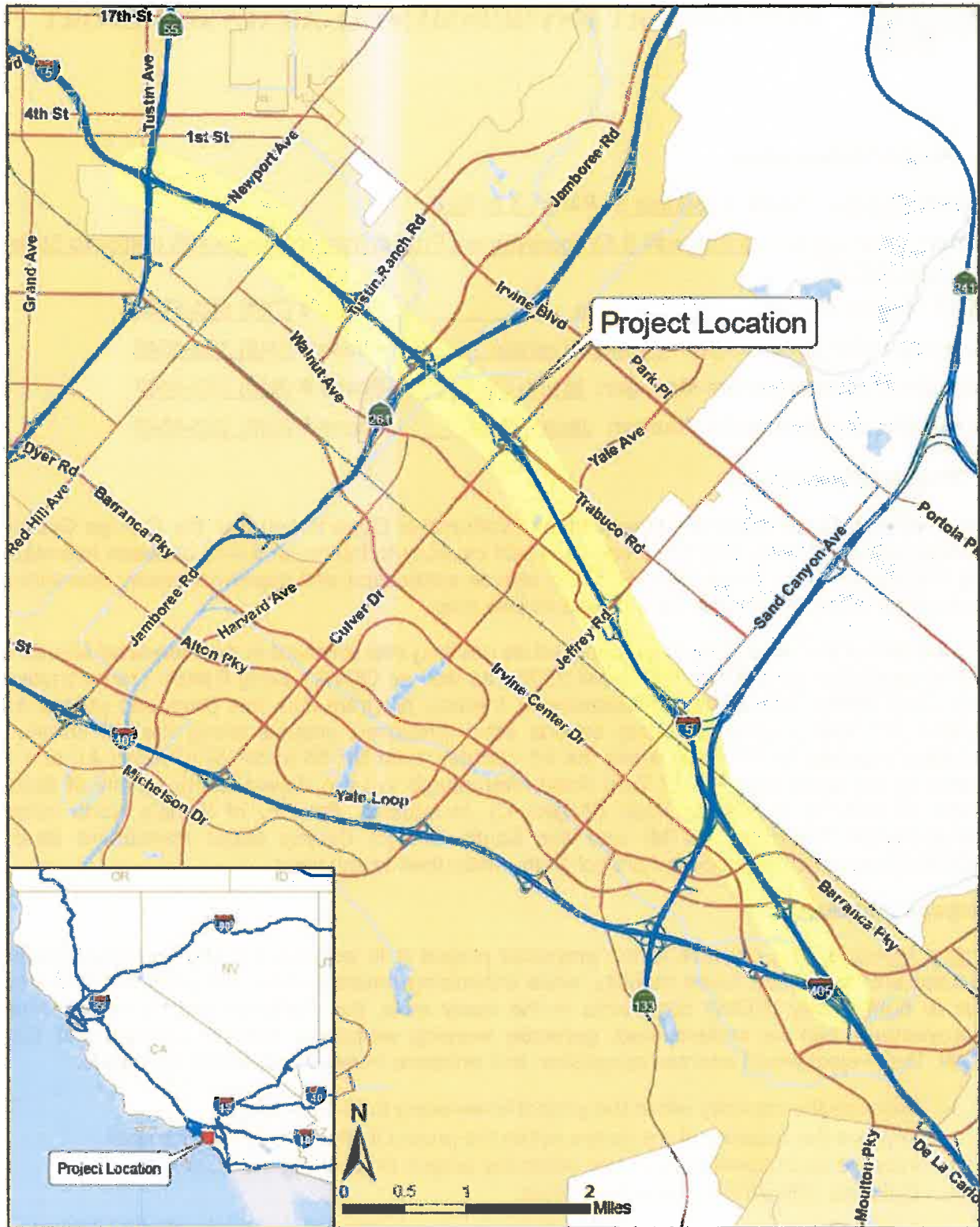
This portion of the I-5 corridor was identified as needing improvement in the *Renewed Measure M Transportation Investment Plan* (April 2006), as well as OCTA's Long Range Transportation Plan (July 2006). The Renewed Measure M freeway program lists this proposed project as "Project B." This project is among several other proposed projects along the I-5 corridor, including a project to the north along the I-5 corridor, from SR-55 to SR-57 (Project A), and a project to the south from the El Toro Road interchange in Lake Forest to the vicinity of State Route 73 (SR-73) in Mission Viejo (Project C). In addition, the City of Irvine's North Irvine Transportation Mitigation (NITM) and the South Orange County Major Investment Study (SOCMIS) included the proposed project limits within their study areas.

#### Purpose and Need

**Project Purpose:** The purpose of the proposed project is to address existing and future traffic demand and to provide future mobility, while minimizing environmental and economic impacts. Due to right-of-way (ROW) constraints in the study area, the challenge will be to see what improvements can be implemented, generally keeping within the existing Caltrans and City ROW. The project would address congestion and enhance freeway operations as follows:

- Increase the capacity within the project limits along the I-5 corridor.
- Improve the capacity of the ramps within the project limits along the I-5 corridor.
- Improve operational deficiencies within the project limits along the I-5 corridor.
- Optimize utilization of the HOV system.

### Figure 1 Project Vicinity Map



Source: StreetMap USA, 2008

**Project Need:** Currently, the segment of the I-5 corridor within the project limits is experiencing congestion and long traffic delays due to demand exceeding capacity, primarily resulting from local, regional, and interregional traffic demand. In addition, forecasted local and regional traffic demand is expected to increase by approximately 84,000 vehicles per day by the year 2035. Improvements are needed within the project limits due to the following issues:

- Future local and regional demand will exceed the capacity of the existing corridor.
- Forecasted traffic demand is expected to continue to increase to 440,000 vehicles per day by the year 2035.

This corridor faces current and future operational deficiencies, including existing geometric deficiencies and general purpose and high-occupancy vehicle (HOV) system optimization needs. This corridor also experiences congestion at the ramps and freeway-to-freeway interchanges due to high traffic volumes and weaving/merging issues.

### **Alternatives**

Two alternative concepts, with "subalternatives" and options, have been developed and studied:

- Alternative 1: No Build;
- Alternative 2A: Add 1 general purpose lane in each direction, retaining the existing limited-access HOV configuration and generally using standard lane and shoulder widths;
- Alternative 2B: Add 1 general purpose lane in each direction, implementing a continuous access HOV lane configuration and using nonstandard lane and shoulder widths to limit right-of-way impacts;
  - Option 1: At the Newport Avenue interchange entrance ramp to northbound I-5, maintain the existing half-diamond configuration.
  - Option 2: At the Newport Avenue interchange entrance ramp to northbound I-5, eliminate the existing half-diamond configuration, and instead provide a hook-ramp alignment from El Camino Real, at the existing Orange Street intersection.
  - Option 3: At the SR-133, Sand Canyon Avenue and Jeffrey Road interchanges, braid the northbound entrance ramp from SR-133-N5 Conn/Sand Canyon Avenue and the northbound exit ramp to Jeffrey Road.
  - Option 4: At the Sand Canyon Avenue and SR-133 interchanges, braid the entrance ramp from Sand Canyon Avenue and the S5-S133 Connector.

Alternative 1 was evaluated as a basis of comparison for the build alternatives. Alternatives 2A and 2B were developed as minimum build alternatives meeting the project's purpose and need. The alternatives were evaluated for right of way impacts, constructability, cost, impact to traffic, safety, and environmental impacts.

Transportation Systems Management/Transportation Demand Management (TSM/TDM) strategies were evaluated for inclusion in all build alternatives. Both Alternatives 2A and 2B would incorporate the following measures:

- Signal coordination along arterials at ramp terminal intersections.
- Additional lanes on ramps to increase storage.

- Incorporation of Master Plan of Arterial Highways (MPAH) improvements to improve operations.

**Alternative 1 – No Build:** The No Build Alternative would maintain I-5 in its present condition, plus the following programmed improvements:

- Sand Canyon Avenue and Ramps Improvements Project Report (PR)/Project Study Report (PSR) (EA 0H0270): Approved October 2006.
- Jamboree Road Improvements PR/PSR (EA 0J1500): Approved October 2009.
- Jamboree Road Southbound Exit Ramp Improvements Plans, Specifications, and Estimates (PS&E) (EA 0G9901): Approval expected 2010.

The alternative assumes that no other improvements would be made within the project area. The No Build Alternative would not meet future traffic demand. There is no capital cost associated with this alternative.

**Alternative 2A – 1 GP Lane with Standard Lane and Shoulder Widths (see Attachment B: Sheets 1-12):** Alternative 2A would add one general purpose (GP) lane in each direction on I-5, from I-405 to the SR-55 interchange, generally maintaining full standard lanes and shoulders. This alternative would increase the freeway cross-section "footprint," which would require realignment of the El Camino Real and Nisson Road frontage roads between Browning Avenue and Newport Avenue.

Additional auxiliary lanes would be included at the following locations:

- NB mainline from Newport Avenue to I-5 NB to SR-55 NB connector
- NB mainline from Culver Drive to Jamboree Road
- Southbound (SB) mainline from Jeffrey Road to Sand Canyon Avenue
- SB mainline from Alton Parkway to I-5 SB Truck Bypass connector

Additional ramp lanes would be provided at the following locations within the existing ROW:

- Alton Parkway NB off-ramp
- Jeffrey Road NB off-ramp
- Culver Drive NB on-ramp
- Culver Drive SB direct on-ramp
- Culver Drive SB loop on-ramp
- Jamboree Road NB off-ramp
- Tustin Ranch Road SB off-ramp

The following ramp configurations would be modified with implementation of this alternative:

Revised Ramp Configurations	Location
2-lane on-ramp with 1 lane entering as an auxiliary lane and 1 lane entering as mainline GP lane	I-5 NB Truck Bypass connector
2-lane exit, with 2 auxiliary lanes	I-5 SB Truck Bypass connector Jamboree Road NB off-ramp I-5 NB to SR-55 NB connector
2-lane exit, with 1 auxiliary lane and 1 optional lane	Sand Canyon Avenue SB off-ramp Tustin Ranch Road NB off-ramp



Revised Ramp Configurations	Location
	Red Hill Avenue NB off-ramp
2-lane entrance ramp, with 2 lanes entering as auxiliary lanes	Jeffrey Road SB on-ramp Tustin Ranch Road SB on-ramp
1-lane entrance ramp, with 1 lane entering as an auxiliary lane	Culver Drive NB on-ramp
1-lane entrance ramp, with 1 lane entering as a mainline GP lane	I-5 SB to SR-55 NB connector

The following bridges would require widening or replacement with Alternative 2A:

Type of Work	Locations
Widening	55-0940 – Newport Avenue UC (Option 1 and 2)
	55-0193 – Red Hill Avenue UC
	55-0655 – El Modena IRVN Channel
	55-0656 – Jamboree Road UC
	55-0688 – Route 5/261 Sep
	55-0663 – Peters Canyon
	55-0197 – Culver Drive UC
	55-0201 – Sand Canyon Avenue UC
Replacement	55-0002 – Irvine OH
	55-0763S – 5/261 Sep
	55-0215 – Jeffrey Road OC
	55-0771F – S133-S5 Conn Sep
	55-0772L – S133/5 Sep
	55-0772R – N133/5 Sep
	55-0659G – N133-N5/5 Conn Sep
55-0629 – Alton Parkway OC	

Improvements under Alternative 2A would require additional ROW adjacent to I-5 to accommodate the wider freeway footprint.

The estimated cost for Alternative 2A is \$452 million.

**Alternative 2B – 1 GP Lane with Nonstandard Lane and Shoulder Widths and Continuous Access HOV (see Attachment B: Sheets 13-23):** This alternative would provide the same mainline and ramp lane additions/configurations as Alternative 2A, but it would utilize a narrower freeway typical section with reduced lane and/or shoulder widths in specific areas to reduce and/or eliminate ROW impacts. Also, this alternative presumes the use of continuous access HOV lanes, so no HOV buffer was considered.

- Option 1 (see Attachment B: Sheet 24): At the Newport Avenue interchange, two options were analyzed for the northbound entrance ramp. Option 1 maintains the existing northbound half-diamond configuration, while Option 2 would relocate the northbound entrance ramp to a hook ramp configuration from the El Camino Real/Orange Street intersection.
- Option 2 (see Attachment B: Sheet 25): The incorporation of Option 2, the hook ramp configuration, would modify traffic patterns in the area surrounding the ramp terminus.

Traffic currently accesses the ramp directly from both northbound and southbound Newport Avenue; however, the change in ramp location would increase the number of northbound right-turns and southbound left-turns at the Newport Avenue/El Camino Real intersection. Although it appears that the existing intersection could be reconfigured within the existing ROW to accommodate the additional turn lanes, the City of Tustin's circulation element identifies that Newport Avenue is a six-lane arterial; to maintain the existing number of through lanes, additional right of way would be required. This should be evaluated in further detail if the hook ramp option is selected for further analysis in the next project development phase.

- Option 3 (see Attachment B: Sheets 27 and 28): With Option 3, to remove the existing weave between the northbound entrance ramp from Sand Canyon Avenue/the southbound SR-133 connector to northbound I-5 and the northbound exit ramp to Jeffrey Road, a set of braided ramps was introduced. The northbound exit ramp to Jeffrey Road would be realigned to exit the freeway 1000' north of the northbound exit ramp from Sand Canyon Avenue, and then would cross over the northbound entrance ramp from Sand Canyon Avenue/SR-133 SB to I-5 NB connector. The northbound entrance ramp from Sand Canyon Avenue would merge with the SR-133 SB to I-5 SB connector and then enter the freeway as a 2-lane entrance ramp. To minimize right-of-way impacts, this option does not maintain a connection between SR-133 SB to I-5 NB connector and Jeffrey Road.
- Option 4 (see Attachment B: Sheets 26 and 27): In order to eliminate the existing weave on southbound I-5 from Sand Canyon Avenue to SR-133, Option 4 includes the realignment of the southbound entrance ramp from Sand Canyon Avenue to enter the freeway beyond the I-5 SB to SR-133 SB connector exit from the I-5 freeway. The I-5 SB to SR-133 SB connector would be realigned to cross over the Sand Canyon Avenue SB exit ramp and then tie back to the existing grade before the SR-133 SB/Barranca Parkway exit ramp. To minimize right-of-way impacts, this option does not include a connection between Sand Canyon Avenue and SB SR-133.

All ramp lane additions and ramp configurations would be the same as proposed under Alternative 2A with the exceptions of Newport Avenue, Jeffrey Road, Sand Canyon Avenue, and SR-133 interchange for Option 2, Option 3, and Option 4.

The following bridges would require widening or replacement with Alternative 2B:

Type of Work	Locations
Widening	55-0655 – El Modena IRVN Channel 55-0656 – Jamboree Road UC 55-0688 – Route 5/261 Sep 55-0663 – Peters Canyon 55-0197 – Culver Drive UC 55-0002 – Irvine OH
Replacement	55-0763S – 5/261 Sep 55-0629 – Alton Parkway OC

Type of Work	Locations
New	<ul style="list-style-type: none"> <li>– Separation at Jeffrey Road NB off-ramp and SR-133 SB to I-5 NB connector/Sand Canyon Avenue NB on-ramp (Options 3 and 4).</li> <li>– Separation at Sand Canyon Avenue SB on-ramp and SCRRA (Metrolink) railroad (Options 3 and 4).</li> <li>– Separation at I-5 SB to SR-133 SB connector and Sand Canyon Avenue SB on-ramp(Options 3 and 4).</li> </ul>

Improvements under Alternative 2B would require additional ROW adjacent to I-5 at three locations: (1) along the Jamboree Road SB direct on-ramp, (2) with the Newport Avenue Interchange Option 2 between El Camino Real and NB I-5 from south of Orange Street to south of Newport Avenue and (3) Option 3 and 4 Along the Jeffrey Road off-ramp braid, from south of Jeffrey Road to north of Sand Canyon Avenue.

The estimated cost for Alternative 2B Option 1 is \$230 million.

The estimated cost for Alternative 2B Option 2 is \$242 million.

The estimated cost for Alternative 2B Option 3 is \$276 million.

The estimated cost for Alternative 2B Option 4 is \$258 million.

**Alternatives Considered and Withdrawn**

Similar to Alternative 2B Options 3 and 4, additional braided ramp alternatives were studied to facilitate future weaving movements in the vicinity of the SR-133 freeway-to-freeway interchange:

Alternative 3A: From the Jeffrey Road interchange to the SR-133 interchange, the existing I-5 mainline section was maintained, and three sets of braided ramps were provided:

- **Braid #1:** With this braid, the existing weave between Jeffrey Road SB entrance ramp and the I-5 SB to SR-133 NB connector was eliminated. The Jeffrey Road SB exit ramp and I-5 SB to SR-133 NB connector was merged into a single 2-lane exit ramp that diverged from I-5 just north of Jeffrey Road. Also, the Jeffrey Road SB entrance ramp terminal was relocated from Walnut Avenue to Jeffrey Road. The Jeffrey Road SB entrance ramp crossed over the combined I-5 SB to SR-133 NB connector/Jeffrey Road SB exit ramp and then entered the freeway. To maintain the connection from Jeffrey Road to SR-133 NB, a ramp was provided from Walnut Avenue to the I-5 SB to SR-133 NB connector.
- **Braid #2:** To remove the existing weave between Sand Canyon Avenue/SR-133 SB and Jeffrey Road, the Jeffrey Road NB exit ramp was realigned to exit the freeway 1000' north of the Sand Canyon Avenue NB exit ramp and then crossed over the Sand Canyon Avenue NB entrance ramp/SR-133 SB to I-5 NB connector. The Sand Canyon Avenue NB entrance ramp merged onto the SR-133 SB to I-5 SB connector and then entered the freeway as a 2-lane entrance ramp. This braid is similar to Alternative 2B Option 3, but differs in that to maintain a connection from Sand Canyon Avenue to SR-133 SB, a ramp was provided to the Jeffrey Road NB exit ramp from the

collector/combined entrance ramp of the Sand Canyon Avenue NB entrance ramp and the SR-133 SB to I-5 NB connector.

- **Braid #3:** In order to eliminate the existing weave on SB I-5 from Sand Canyon Avenue to SR-133, the Sand Canyon Avenue SB entrance ramp was realigned to enter the freeway after the I-5 SB to SR-133 SB connector exits the freeway. The I-5 SB to SR-133 SB connector was realigned to cross over the Sand Canyon Avenue SB exit ramp and then tie back to the existing grade before the SR-133 SB/Barranca Parkway exit ramp. This braid is similar to Alternative 2B Option 4, but differs in that to maintain the movement from Sand Canyon Avenue to SB SR-133, a ramp was provided that diverged from the Sand Canyon Avenue SB exit ramp at the SCRRA/Metrolink railroad and merged onto the I-5 SB to SR-133 SB connector after it exits I-5 SB.

Additional ROW was required along all of the braids and the freeway in both directions.

Alternative 3B: This alternative was similar to Alternative 3A, but to reduce the ROW encroachments, the following movements were eliminated to “tighten” up the geometry:

- **Braid #1:** Access to the SR-133 NB connector from Jeffrey Road SB entrance ramp.
- **Braid #2:** Access to the SR-133 SB/Barranca Parkway connector from the Sand Canyon Avenue SB entrance ramp.
- **Braid #3:** Access to the Jeffrey Road NB exit ramp from the SR-133 SB connector and the Sand Canyon Avenue NB entrance ramp.

Although additional ROW was required in similar locations to those areas impacted in Alternative 3A, the areas of impacts were reduced in size. Braids #2 and #3 were ultimately included in Alternative 2B as Options 3 and 4, respectively.

When Alternative 3A was presented to the City of Irvine and The Irvine Company, both of whom are project stakeholders, it was immediately met with strong opposition, due to the ROW impacts. As a result of this initial meeting, the Project Development Team (PDT) developed a similar alternative, Alternative 3B, that had lesser ROW impacts; however, ramp connections to SR-133 were removed in order to tighten the geometry of the braids. The Transportation Corridor Agencies (TCA), another stakeholder, opposed Alternative 3B due to the removal of connections to SR-133. Caltrans has expressed opposition to Alternative 3A and 3B Braid #1 due to operational-related concerns at the diverge of the southbound exit ramp to Jeffrey Road.

The Traffic Study prepared for the project indicates that Alternative 2B is a viable alternative that meets the project’s purpose and need and provides acceptable levels of service and operational characteristics in the SR-133 vicinity, while keeping within the existing ROW. Because of this, and as a result of the strong opposition to Alternative 3A and Alternative 3B Braid #1 have been withdrawn from further consideration at this time.

### 3. Anticipated Environmental Approval

CEQA		NEPA	
<b>Environmental Determination</b>			
Statutory Exemption	<input type="checkbox"/>		
Categorical Exemption	<input type="checkbox"/>	Categorical Exclusion	<input type="checkbox"/>
<b>Environmental Document</b>			
Initial Study or Focused Initial Study with Negative Declaration or Mitigated ND	<input checked="" type="checkbox"/>	Environmental Assessment with Finding of No Significant Impact	<input checked="" type="checkbox"/>
Environmental Impact Report	<input type="checkbox"/>	Environmental Impact Statement	<input type="checkbox"/>
CEQA Lead Agency (if determined):		Caltrans, District 12	
Estimated length of time (months) to obtain environmental approval:		24-30 Months	
Estimated person hours to complete identified tasks:		N/A Oversight Project	

The proposed environmental document type is an Initial Study (IS)/Mitigated Negative Declaration (MND) pursuant to the California Environmental Quality Act (CEQA) and an Environmental Assessment (EA)/Finding of No Significant Impact (FONSI) pursuant to the National Environmental Policy Act (NEPA). The CEQA document determination is based on a preliminary review of the CEQA Checklist. The NEPA class of action determination will likely be a "Routine EA" based on (1) The alternatives are not in multiple locations; (2) There is no known debate regarding purpose or need; (3) There is no known public controversy; (4) There are no known logical termini or independent utility issues; (5) An individual Section 4(f) determination is not anticipated; (6) No endangered species issues are anticipated; and (7) Neither numerous cumulative impacts nor high mitigation costs are anticipated.

It is estimated that approval of the Santa Ana Freeway Improvement Project IS/MND EA/FONSI and the supporting technical studies recommended within this Preliminary Environmental Assessment Report (PEAR) will require 24-30 months to complete. Caltrans District 12 will be the Lead Agency for CEQA and NEPA; NEPA authority is assigned in accordance with Section 6005 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) (United States Code [U.S.C.] 327[a][2][A]).

### 4. Special Environmental Considerations

No special processes for any of the project alternatives were identified that may affect project delivery or require unusual, exceptional, or extended environmental processes.

### 5. Anticipated Environmental Commitments

The following environmental commitment measures are based on typical requirements to minimize project-related impacts for similar transportation projects:

- **Cultural Resources** – Environmental commitments for cultural resources to avoid, minimize, and/or mitigate potential impacts will be discussed and included in the Project Approval/Environmental Document (PA/ED) phase of the project. If cultural resource materials are discovered during construction, work within and around the immediate vicinity of the discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. If human remains are discovered during construction, work will be halted in accordance with State Health and Safety Code

7050.5, and the County Coroner shall be contacted. Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner will contact the Native American Heritage Commission and the District Native American Heritage Coordinator to identify the Most Likely Descendant to ensure the respectful treatment and disposition of the remains.

- **Paleontological Resources** – Based on the General Plans for the cities of Tustin and Irvine, it is anticipated that the project area will be found to have a low sensitivity for paleontological resources. If it is determined that the areas within the project area have a high sensitivity for paleontological resources, preparation of a Paleontological Monitoring Plan (PMP) would be required. If necessary, preparation of the PMP will be prepared by a qualified principle paleontologist in accordance with Department requirements and will include costs for field monitoring, fossil recovery, analysis, and curation.
- **Hazardous Waste/Materials** – If avoidance of areas containing regulated hazardous waste/materials is not possible, then characterization and/or remediation of contaminated areas will be required prior to ROW acquisition or will be acquired in accordance with Department policy regarding acquisition of contaminated properties. While this would be the responsibility of the existing property owners during the property acquisition stage, such a scenario could present schedule concerns. It is also likely that soils adjacent to/and within the existing and proposed freeway ROW could contain aerially deposited lead (ADL), and soils within current/former agricultural areas may contain herbicides, pesticides, and/or fungicides. Asbestos-containing materials (ACMs) and lead-based paint (LBP) could be present within bridges and/or buildings that are to be demolished and/or renovated by the project. Soil testing and tests to identify and quantify ACM and LBP will be required during the PA/ED phase to allow for any special handling requirements regarding disposal or reuse of soil or ACM and LBP abatement to be incorporated into the project's environmental commitment record (ECR).
- **Noise** – Soundwalls may be required and are considered high-cost abatement measures. All acoustically feasible soundwalls identified in the project Noise Study Report (NSR) will be evaluated for reasonableness in a Noise Abatement Decision Report (NADR). All recommended reasonable and feasible walls in the NADR will be evaluated and included in the project cost estimates.
- **ROW Relocations** – ROW impacts and business relocations will be subject to the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 *Code of Federal Regulations*, Part 24. Acquisitions and relocations will be processed through the Department's Relocation Assistance Program; costs associated with relocation assistance will be included in the project cost estimates.
- **Traffic** – To allow flexibility in the construction staging design, ramp and bridge closure studies will be included in the project cost estimates and schedule during the environmental process. Ramp/bridge closure studies are required if ramp or local street closures occur for 10 or more consecutive days. These studies will assess economic impacts to traffic-dependent businesses that could be affected during construction.
- **Visual/Aesthetics** – Modification of the existing interchanges, bridges, and structures will require the incorporation of landscaping and aesthetic treatments during final design. Simulations from key viewpoints will be included in the Visual Impact Assessment (VIA) during the PA/ED phase. Costs for landscaping and other visual enhancements will be included in the project cost estimates.



- **Water Quality/Hydrology** – To avoid potential water quality impacts, temporary and permanent best management practices (BMPs) will be required to address stormwater discharges. Typically, BMPs account for 4 percent or greater of the total project construction cost and will be included in the project cost estimates. Additional consideration will be given to improving water quality within the El Modena-Irvine Channel due to its impaired water body status.

## 6. Permits and Approvals

In addition to NEPA and CEQA compliance requirements, and depending upon the build alternative selected, the project may trigger the permits listed in Table 1 below.

**Table 1. Potential Project Permits/Approvals**

Agency	Permit/Authority	Purpose	Estimated Time Frame	Alternatives Impacted
<b>Federal</b>				
Federal Highway Administration (FHWA); Caltrans	Clean Air Act, Transportation Conformity Determination	If federal funding is involved, a Conformity Determination may be required pursuant to Clean Air Act regulations.	90 days	All
Army Corps of Engineers (USACE)	Clean Water Act (CWA) Section 404 Permit	A Section 404 permit is required if the project requires dredge or fill within wetlands or other waters of the United States under jurisdiction of USACE.	2 to 6 months for a Nationwide Permit or 6 months to 1 year for an Individual Permit	All
<b>State</b>				
California State Office of Historic Preservation	Section 106 compliance with the National Historic Preservation Act	If the action may have an effect on properties listed on or eligible for listing in the National Register of Historic Places (NRHP).	3 to 6 months	All
California Department of Fish and Game (CDFG)	Section 1602 Agreement	A streambed alteration agreement will likely be required for work in Peters Canyon channel and El Modena Channel.	2 to 4 months	All
State Water Resources Control Board (SWRCB)	National Pollutant Discharge Elimination System (NPDES)- Caltrans Statewide Permit (order No. 99-06-DWQ; NPDES No. CAS 000003) and construction General Permit (Order No. 2009-0009-DWQ; NPDES No. CAS 000002)	Compliance with the Construction General Permit (Order No. 2009-0009-DWQ; NPDES No. CAS 000002) is triggered for Caltrans projects that would impact greater than 1-acre of land within California and require preparation of a Stormwater Pollution Prevention Plan (SWPPP). Compliance with the Caltrans Statewide Permit (Order No. 99-06-DWQ; NPDES No. CAS 000003) is necessary to conform to Caltrans MS4/WDRs).	30 days	All

Agency	Permit/Authority	Purpose	Estimated Time Frame	Alternatives Impacted
Santa Ana Regional Water Quality Control Board (SARWQCB)	CWA Section 401 Water Quality Certification and/or Waste Discharge Requirement (WDR)	A Section 401 water quality certification is required for discharges to USACE jurisdictional waters. A WDR is required to discharge to waters of the State.	4 to 8 months	All

## 7. Level of Effort: Risks and Assumptions

The environmental document type and class of action determination is based on several key assumptions: (1) Project will minimize acquisition of ROW to the maximum extent feasible and no single-family residential displacements are required; and (2) No substantial public controversy is anticipated. During the PA/ED phase, if it is determined that ROW acquisition cannot be minimized and would require a large displacement of residents or if the project would result in project effects that would result in substantial public controversy, then a “Complex” EA or Environmental Impact Statement (EIS) may be required. The preparation of a complex EA or EIS could extend the overall schedule by approximately 12 to 18 months. The preparation of an EIS would require compliance with the SAFETEA-LU 6002 Early Coordination process.

Some of the previously discussed permits also bring associated risks. To address these potential concerns, early coordination with regulatory agency staff is highly recommended. In terms of Section 106 compliance, it is unknown what archaeological resources may be discovered during the PA/ED stage of the project. Depending upon what resources are found, extended Phase I archaeological surveys may be required and require additional coordination and approvals from the State Historic Preservation Officer (SHPO). The SHPO office has been understaffed; this condition could affect the project schedule.

Finally, because numerous hazardous material/waste sites are located within 300 feet of the project footprint, there is a potential that contamination might be discovered on one or more of the affected parcels. While it is the Department’s policy to avoid acquisition of contaminated property, and the Department would likely not be responsible for site remediation and associated costs, such a discovery would trigger regulatory agency involvement, compliance with applicable regulations, and associated schedule implications. Pre-tests and assessments should be conducted during the PA/ED phase to determine whether the parcels to be acquired are contaminated and to ensure that the appropriate avoidance, minimization, and/or mitigation measures are incorporated into the ECR and final environmental document.

## 8. PEAR Technical Summaries

### 8.1 Land Use

#### 8.1.1 Existing Land Use

Various land uses and structures, including single-family homes, multiple-family dwellings, office and commercial complexes, and agricultural fields, are located adjacent to I-5. In the City of Irvine, south of the I-5 between Jeffrey Road and Sand Canyon Avenue, the project is located adjacent to a unique preservation land use zone that the City of Irvine has designated for “permanent preservation in a natural state with little or no modification” (City of Irvine, *Parks and Recreation Element*, 2006). The City of Irvine also has a tree ordinance related to the historic eucalyptus windrows that cross the city and the project area. As geometric development of the project continues during the PA/ED phase, potential tree removals should be coordinated with the City of Irvine to ensure compliance with related city code(s).

Residential and commercial land uses are located generally in the northern end of the project area, and commercial/retail facilities are located toward the southern end of the project area. North of I-5 and between Jeffrey Road and Sand Canyon Avenue is currently an area of agricultural fields that separates the predominantly commercial/residential northern area and southern commercial/retail area. Commercial uses in the project area include office complexes, major retail outlets, and shopping malls. There are no major industrial facilities in the vicinity of the project; however, there is one small Industrial zone (i.e., a Public Storage facility attached to a strip commercial center) in the City of Tustin, adjacent to NB I-5 between the SR-55/I-5 interchange and the Newport Avenue off-ramp. In the City of Irvine, there is a Medical Research/Industrial zone located adjacent to SB I-5 between Sand Canyon Avenue and the SR-133/I-5 interchange. Two large commercial centers are adjacent to the project; both are located in the City of Irvine and include the Market Place, which is located north of I-5 and is bisected by Jamboree Road, and the Irvine Spectrum, which is located at the El Toro "Y" interchange.

#### 8.1.2 Potential ROW Acquisition and Relocation Impacts

Depending on the build alternative, the proposed improvements would require acquisition of ROW from various land uses as described in Table 2. Public facilities include properties containing infrastructure facilities, such as drainage channels and local roads. ROW acquisitions for the proposed project would be implemented in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970.

Temporary easements would be required from various properties along the project corridor to accommodate construction of the proposed project improvements. These improvements may include construction of potential new soundwalls and retaining walls and/or modification of existing soundwalls.

Potential relocations or demolition of existing buildings within some areas are anticipated under Alternative 2A, and Alternative 2B, Option 1 and Option 2..

Table 2 shows the estimated number of affected properties associated with anticipated ROW acquisition for Alternative 2A and Alternative 2B, Option 1 through 4. Preliminary ROW analysis indicates that Alternative 2A would require acquisition from 93 properties. Preliminary ROW analysis also indicates that Alternative 2B Option 1 would require substantially fewer ROW acquisitions, affecting only 3 properties and Option 2 would require 6 potential acquisitions. Alternative 2B Options 3 and 4 would require no ROW acquisition. More precise determination of potential ROW acquisitions including temporary impacts associated with temporary construction easements will be made during the PA/ED phase and other subsequent phases of project development.

Based on the ROW acquisition needs described above, a Relocation Impact Document will be required during the PA/ED phase. Full acquisition of existing structures/units would result if all or a substantial portion of a property is within the potential ROW, rendering it uninhabitable or economically unviable. Commercial buildings could be salvaged if only a portion of the structure must be demolished to accommodate the project, and the use can remain economically viable.

It is anticipated that 10 or more displacements may be required, and a Relocation Impact Statement (RIS) will be prepared during the PA/ED phase. Due to the urbanized nature of the areas along the I-5 corridor, replacement housing and comparable commercial sites in areas where displacement would likely occur are assumed available. Adequacy of the displacement area for relocation, as well as the number and types of relocation, would be analyzed in the RIS as part of the PA/ED phase of the project.

**Table 2. Number of Affected Properties<sup>1</sup> by Land Use**

Land Use	Alternative 2A	Alternative 2B			
		Option 1	Option 2	Option 3	Option 4
Commercial	21	0	3	0	0
Freeway/Public Road	3	0	0	0	0
Freeway/Community Commercial	2	0	0	0	0
Freeway/Preservation <sup>2</sup>	1	0	0	0	0
Freeway/Research/Industrial	1	0	0	0	0
High-Density Residential	21	0	0	0	0
Industrial	2	1	1	0	0
Low-Density Residential	9	0	0	0	0
Medium-High-Density Residential	16	0	0	0	0
Medium-High-Density Residential/Community Commercial	2	0	0	0	0
Mobile Home Park	1	0	0	0	0
Planned Community Residential	4	2	2	0	0
Public Drainage	1	0	0	0	0
Public/Institutional	5	0	0	0	0
Recreation/Institutional/Educational	1	0	0	0	0
Research & Industrial	3	0	0	0	0
<b>Grand Total</b>	<b>93</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>0</b>

<sup>1</sup> Whether an acquisition will be full or partial will be determined during subsequent phases of project development.

## 8.2 Growth

### 8.2.1 Existing Setting

The project area is built out, with the exception of undeveloped lands located near SR-133, as described in Section 8.3. According to the Southern California Association of Governments (SCAG) 2008 Integrated Growth Forecast, population growth between 2003 and 2035 has been projected for the cities along the project corridor and ranges from an increase of 5.6 percent in the City of Lake Forest to 51.1 percent in City of Irvine. Due to the urbanized nature of the project area, the project would not facilitate any growth beyond what is already planned by each city (SCAG, 2008).

### 8.2.2 Potential Growth-Related Impacts

Within a 1-mile radius of the project corridor, the project is unlikely to induce growth. The additional GP lane would improve the flow of traffic by increasing capacity to accommodate existing demand; however, some redistribution of trips from parallel roadways back to the freeway can be expected. Further traffic analysis will be performed during the PA/ED phase of the project.

The undeveloped areas along I-5, between Jeffrey Road and Sand Canyon Avenue, and along SR-133 in Irvine have been zoned for future residential development; thus, any additional growth in these areas would not be related to this widening project. Because the project does not propose a new alignment and does not provide new access to the surrounding areas, there would be no growth-related impacts to the existing project area.

No substantial direct or indirect growth-related impacts are anticipated as a result of the proposed project. Further growth analysis will be performed during the PA/ED phase through the Caltrans First Cut Screening Analysis. Although not anticipated, a Growth Impact Study will be completed as part of the PA/ED phase as applicable, pending the results of the First Cut Screening Analysis.

### **8.3 Farmlands**

#### **8.3.1 Existing Agricultural Setting**

The project corridor crosses a highly urbanized area of Orange County, with little open space and few opportunities for agricultural use. To the north of the SR-133/I-5 interchange between Sand Canyon Avenue and Jeffrey Road, the land is currently used for agricultural purposes. The California Department of Conservation, Division of Land Resource Protection (DLRP), has designated this area as Prime Farmlands; however, according to the City of Irvine General Plan, the current agricultural land is planned for future residential use (California Department of Conservation, 2008; City of Irvine, *Land Use Element*, 2006).

Agricultural preserve lands, as defined by the California Land Conservation Act (California Department of Conservation, 2006), are not located in the project area.

#### **8.3.2 Potential Farmland Impacts**

Based on the preliminary engineering completed to date neither Alternative 2A nor Alternative 2B would result in a permanent conversion of prime or unique farmlands; however, Alternative 2B Option 3 would temporary require 850 square feet of the designated farmlands north of I-5, between Jeffrey Road and Sand Canyon Avenue, to accommodated construction. During the PA/ED phase, coordination would be required with the United States Department of Agriculture's (USDA) National Resource Conservation Service (NRCS) and the California Department of Conservation. Although it is not anticipated at this time, if it is determined during the PA/ED Phase that acquisition and/or permanent conversion is necessary, further coordination and completion of Form AD-1086 would be required. It is recommended that the impacts and coordination be documented in the farmlands section of the environmental document.

### **8.4 Community Impacts**

#### **8.4.1 Existing Social and Economic Conditions**

The project study area includes the cities of Lake Forest, Laguna Woods, Irvine, Santa Ana, and Tustin. These cities and communities, and especially areas adjacent to I-5, are considered highly urbanized. Various land uses occur along the project corridor, including industrial, residential, commercial, schools, parks, and public facilities.

The socioeconomic characteristics of the surrounding communities are characterized using 2000 U.S. Census data. Table 3 provides the racial and ethnic profile of the U.S. Census tracts<sup>1</sup>

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<sup>1</sup> Census Tract (CT) 524.04; CT 524.10; CT 524.18; CT 525.02; CT 525.05; CT 525.17; CT 525.18; CT 525.24; CT 525.25; CT 525.26; CT 525.27; CT 626.21; CT 744.08; CT 754.03; CT 755.05; CT 755.07; CT 755.12; CT 755.13; CT 755.14.

that intersect the project study area, along with the racial and ethnic profile for Orange County to provide a comparison with the demographics of the region. The project limits include 19 census tracts.

**Table 3. Racial and Ethnic Composition**

Race/Ethnicity	Project Area <sup>1</sup>		Orange County	
	Number	Percent	Number	Percent
<i>Total Population</i>	106,569	100	2,846,289	100
White	53,853	60.53	1,455,470	51.1
Black or African American	2,297	2.58	40,153	1.4
American Indian & Alaska Native	523	0.59	8,735	0.3
Asian	17,178	19.31	383,977	13.5
Native Hawaiian & Other Pacific Islander	264	0.3	8,005	0.3
Some other race	10,539	11.85	4,215	0.1
Two or more races	4,316	4.85	69,283	2.4
Hispanic or Latino (any race)	22,203	24.96	876,451	30.8

<sup>1</sup> Based on analysis of 19 census tracts in the I-5 corridor.

Source: U.S. Census, 2000.

The largest racial/ethnic group for both the project area and Orange County is white, comprising more than half of each respective population at 60.53 percent and 51.1 percent, respectively. The next two largest populations in the project area are the Asian and Hispanic or Latino groups, at 19.31 percent and 24.96 percent, respectively.

According to 2000 U.S. Census data, the approximate average household size in Orange County and the project area census tracts are 3 persons. Federal poverty thresholds for 2009 establish \$18,310 as the income threshold for a 3-person household (HHS, 2009). Based on these data, approximately 7.3 percent of the population within the census tracts examined live below the poverty line, as opposed to approximately 8.7 percent in Orange County.

#### 8.4.2 Potential Community Impacts

##### Community Character and Cohesion

I-5 acts as a physical barrier dividing portions of the cities within the project area. Widening the freeway would not create a new barrier or further impede community cohesion. Impacts on community cohesion could result if the project results in a decrease in mobility in local communities and neighborhoods; this may be the case during prolonged temporary closures of local streets during construction or construction of cul-de-sacs as part of local street improvements. Based on review of the preliminary engineering, no complex community issues were identified that would substantially affect community character and cohesion. Potential project effects on community character and cohesion will be discussed in the Community Character and Cohesion section of the environmental document and/or within the Community Impact Assessment (CIA) if required, as described below.

##### Relocations

As previously discussed in Section 8.1, ROW acquisition would likely be required for this project. Depending on the alternative, the proposed improvements could require acquisition of ROW and/or temporary construction easements from various land uses adjacent to the corridor, including single-family residential, multiple-family dwelling, commercial, public parks, and existing public facilities. Public facilities include properties containing infrastructure facilities,



such as drainage channels and local roads. Any ROW acquisition and or residential and business relocations would be subject to the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 Code of Federal Regulations (CFR), Part 24. Acquisitions and relocations would be processed through the Department's Relocation Assistance Program; costs associated with relocation assistance should be included in the project cost estimates. This PEAR recommends the preparation of a RIS to document potential ROW acquisition/ easement effects on property owners. Due to the urbanized nature of the areas along the I-5 corridor, replacement housing and comparable commercial sites in areas where displacement would likely occur are assumed available.

Temporary easements that would be required from various land uses along the project corridor are required to accommodate construction of potential new soundwalls and retaining walls, or allow modification of existing soundwalls. Temporary construction easements are not likely to require relocations or demolition of existing buildings.

To address short-term economic impacts to businesses due to traffic inconveniences during construction, this PEAR also recommends a Traffic Management Plan (TMP), which should ensure that access to all businesses within the construction zone is maintained to the greatest extent feasible. The TMP should also include ramp closure studies if the project requires simultaneous closure of consecutive ramps or closure of ramps for 10 or more consecutive days.

A summary of preliminary ROW impacts of the build alternatives is shown in Table 2 in Section 8.1. More precise determination of potential ROW acquisitions and temporary easements will be identified during the PA/ED phase and other subsequent phases of project development. Potential ROW effects and findings of the RIS should be incorporated within the community impacts analysis as feasible.

#### Environmental Justice Populations

The potential for environmental justice populations to occur within the 19 project area census tracts was examined based on the following: (1) a census tract having a minority population greater than the average minority population for the project area census tracts; or (2) the percentage of the population living below the poverty line is greater than the average percentage of the population living below the poverty line in project area census tracts.

Thirteen (13) of the project area census tracts meet these criteria and will require additional consideration and analysis during project PA/ED phase. The census tracts with minority or low-income populations include: 524.04, 524.10, 524.18, 525.02, 525.05, 525.17, 525.18, 525.24, 525.25, 525.26, 525.27, 626.21, 744.08, 754.03, 755.05, 755.07, 755.12, 755.13, and 755.14. These tracts are located along the length of the project alignment in the cities of Santa Ana, Tustin, and Irvine. Further analysis of environmental justice populations and related project effects should be discussed within the environmental justice section of the environmental document and/or within the CIA, as described below.

#### Public Facilities and Services Section 4(f)/6(f) Lands

The proposed project is located adjacent to various public facilities, which include drainage/storm channels, public parks, schools, and utilities and could affect access for emergency services. Public parks and schools located adjacent to I-5 consist of the following:

- Heritage Park
- Orchard Park
- Oak Creek Golf Course

- Irvine High School
- Walnut Trail/Atchison, Topeka, and Santa Fe Trail
- Alton Avenue to Orange Street Bike Trail
- Peters Canyon Wash Trail
- Tustin Branch Trail
- Benjamin F. Beswick Elementary School
- Tustin High School
- St Jeanne de Lestonnac School
- Marjorie Veeh Elementary School
- C.C. Lambert Elementary School
- Park Magnolia
- Coralwood Park
- Orchard Park
- Racquet Club Park
- Cedar Grove Park
- Frontier Park
- Camino Real Park
- Utt Middle School
- Harvard Square Park
- W.R. Nelson Elementary School
- Utt Park

The proposed project may affect public facilities and services if ROW is required from the various properties. The project would also likely result in temporary construction-related effects on the various properties associated with detours, ramp-closures, changes in access, and utility relocations. Additionally, project ROW acquisition requirements and easements may result in a use of Section 4(f) eligible properties. None of the park and recreation areas adjacent to the project area are categorized as Section 6(f) resources (NPS, 2010). Additionally, an evaluation of potential project effects on Section 4(f) resources will be completed during the PA/ED process. Although not anticipated at this time, if the project would result in constructive, temporary or permanent use of a Section 4(f) eligible property, a Section 4(f) analysis should be prepared.

Permanent and/or temporary effects on utilities and service systems that are either adjacent to I-5 or that traverse the proposed project have been identified in a preliminary utility investigation and could be affected during construction of the project. Potentially affected utilities include underground and overhead power transmission lines (including high-voltage overhead lines), gas, water, sewer, telephone, oil pipelines, and fiber-optic lines.

Potential impacts to utilities and service systems will be identified during the PA/ED and PS&E phases of the project, and appropriate mitigation measures will be defined in conjunction with each affected utility company. If utility relocations are necessary, then areas where the relocation would occur should be evaluated as part of the project. Measures to minimize utility service disruptions should be implemented to minimize impacts to the community.

Temporary impacts to public services could also occur during construction of the proposed project by way of delayed service response times. Coordination and communication with each potentially affected emergency service would reduce potential impacts during construction. Because the project would reduce congestion along I-5 and on local streets, the project would result in a beneficial effect to these services.

At this time, there are no known complex community related issues and preparation of a CIA would not be required. The environmental document community impact section will document the specific project effects of each project alternatives on corridor communities within 0.5-mile on either side of I-5. The environmental document community impact section should discuss ROW relocation, environmental justice, community character and cohesion, socioeconomic factors, and impacts to public facilities and services as necessary. If during the PA/ED phase of the project complex community issues are identified, preparation of a CIA, consistent with Caltrans guidance provided in the Caltrans Standard Environmental Reference and the Caltrans Handbook Volume 4, should be prepared to evaluate complex community issues in detail.

## **8.5 Visual/Aesthetics**

### **8.5.1 Existing Visual Environment and Scenic Resources**

The project freeway segment is not a designated scenic highway, nor is the project located within the vicinity of scenic resources. Sensitive receptors in the project area consist of residences along I-5 and frequent commuters, as well as users of public parks.

### **8.5.2 Potential Visual Impacts**

The widening of I-5 is within an urban area and would include new and replacement landscaping and visual treatments as required. The proposed project would result in changes to views from residences, commercial properties, and from the freeway resulting from construction of new soundwalls and/or relocation/modification of existing soundwalls, improvements to interchanges and overcrossings, and modification of existing highway facilities such as overhead signs and lighting. The changes could also result in increased shading of areas, intrusion from concrete structures, and increased glare. With incorporation of CSS, landscaping and other structural visual minimization measures, the project would not likely result in a substantial change in visual/aesthetics of the project corridor in comparison to the existing urbanized condition. It is recommended that a VIA be completed during the PA/ED phase to assess potential changes in the visual environment within the project corridor.

## **8.6 Cultural Resources**

### **8.6.1 Cultural Resource Setting and Sensitivity**

The National Historic Preservation Act of 1966, as amended, and its implementing regulations known as Section 106, requires federal agencies to take into account the effects of their undertaking on historic properties (36 CFR Section 800.1). A "historic property" means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) (36 CFR Section 800.15(l)(1)). Section 15064.5(b) of the CEQA Guidelines states a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. PRC 5020.1(j) defines a "historical resource" as including, but not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California (PRC 5020.1(j)). Properties formally determined eligible for, or listed in, the NRHP are included in the California Register of Historical Resources (CRHR) (5024.1(d)(1)).

On January 25, 2010, a search of the California Historical Resources Information System (CHRIS) records was completed at the South Central Coastal Information Center located at California State University at Fullerton. The search was conducted to identify potential historic architectural and archaeological sites within 0.5-mile of the project limits. Four archaeological

sites were identified within the project limits. Two archaeological sites are located within 0.5-mile of the proposed project limits, but they are not located within the project study area. In addition, two non-unique archeological resources (isolates) are located within 0.5-mile from the project limits, but are also not located within the project study area.

Because of the urbanized nature of the project area, such sites are likely to have been previously disturbed. During the PA/ED phase, a qualified archaeologist will perform detailed surveys to determine the exact location and eligibility of any cultural resources in the affected area.

### Built Resources

Seven historic architectural resources have been evaluated within 0.5-mile of the project limits. These resources are described as follows:

- Metrolink Railroad; Burlington Northern Santa Fe (BNSF) (formerly Atchison, Topeka & Santa Fe) Railway, T8s, R7W, Section 32, T9S, R7W, Sections 4,5,9, and 10, and a portion of the Rancho Boca de la Playa land grant. Previously determined ineligible for listing in the NRHP due to lack of integrity.
- Eucalyptus windrows, Assessor's Parcel Number (APN) 466-342-02, 466-341-01, and 104-410-61. Windrows are protected by the City of Irvine municipal code and may be considered historical resources for the purposes of CEQA (CEQA Guidelines Section 15064.5(a)).
- Arts Building, which is located at 150-158 W. Main Street, Tustin. The Arts Building is listed in the NRHP; therefore, it is listed in the CRHR (PRC 5024.1(d)(1)) and is considered to be a historic property and a historical resource.
- Sherman Stevens Building, which is located at 228 W. Main Street, Tustin. The Sherman Stevens Building is listed in the NRHP; therefore, it is listed in the CRHR, and is considered to be a historic property and a historical resource.
- Irvine Bean Growers Association Building, which is located at 14972 Sand Canyon Avenue, Irvine. The Bean Growers Association Building is listed in the NRHP; therefore, it is listed in the CRHR, and is considered to be a historic property and a historical resource.
- Irvine Blacksmith Shop, which is located at 14952 Sand Canyon Avenue, Irvine. The Irvine Blacksmith Shop is listed in the NRHP; therefore, it is listed in the CRHR, and is considered to be a historic property and a historical resource.
- Old Town Irvine, which is located on Sand Canyon Avenue, Irvine. Old Town Irvine is listed in the NRHP; therefore, it is listed in the CRHR, and is considered to be a historic property and a historical resource.

### Native American Resources

The immediate project area is assumed to have a low sensitivity to Native American resources due to the urbanized nature of areas adjacent to the I-5 corridor and the results of the records search. In addition, no tribal lands are identified within the project study area. Coordination with the Native American Heritage Commission would be required during cultural resource studies to determine potential impacts to Native American resources.

#### 8.6.2 Potential Cultural Resource Impacts

Given the recorded presence of historic resources in the project area and the potential for ROW acquisition, impacts to cultural resources could occur. However, based on CHRIS records search and field review of the built resources, no substantial effects on cultural resources by any of the proposed alternatives are anticipated at this time. Further studies would be required to determine impacts to cultural resources. If the project is found to have potential impacts to sensitive cultural resources, additional coordination and documentation would be required.

Preparation of a Historic Property Survey Report (HPSR), including an Archaeological Survey Report (ASR) and Historical Resources Evaluation Report (HRER), consistent with the requirements of the January 2004 Programmatic Agreement, is recommended.

A Finding of Effect (FOE) document may be required if it is determined that the project may affect resources listed in or eligible for listing in the NRHP or the CRHR. If it is determined that the proposed project would result in an adverse effect on a historic property, a Memorandum of Agreement (MOA) will be required and a minimum of 6-12 months should be provided to allow sufficient time for review and approval of the FOE and MOA various studies and consultation with the SHPO.

### **8.7 Paleontological Resources**

The immediate project area is assumed to have a low sensitivity for paleontological resources based on the cultural elements of the City of Irvine and Tustin General Plan Cultural Resource Elements and due to the urbanized nature of areas adjacent to the I-5 corridor; however, a PIR/PER should be prepared during the PA/ED phase to document paleontological sensitivity and include avoidance and minimization measures and/or preparation of a PMP, as necessary.

### **8.8 Hydrology and Floodplains**

#### **8.8.1 Hydrologic Setting**

Based on a review of the latest Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (Nos. 06059C0 "277J", "281J", "283J", "284J", "292J" and "313J"), most of the project alignment is not located within a base floodplain zone as defined by FEMA. The base floodplain zones that traverse the project segment occur within both natural and existing concrete-lined waterways/floodways. Table 4 lists the floodways from south to north that cross the project segment.

**Table 4. Existing Floodways in the Project Area**

Borrego Canyon Wash
Mashburn Wash
Peters Canyon Channel
El Modena-Irvine Channel

Because the project area is heavily urbanized, and because drainage facilities exist to accommodate offsite water flows, flooding caused by sheet-flow type conditions are not expected to occur.

#### **8.8.2 Potential Hydrology and Floodplain Impacts**

Floodplain impacts and an increased risk in flooding as a result of the project are not expected. Based on preliminary design, all of the build alternatives would likely require work in project area floodways. Changes to the hydraulic characteristics of each floodway and temporary construction work within these channels would be designed to the standards of the Orange County Flood Control District and FEMA. A bridge hydrology report would be prepared which

would identify measures to prevent any substantial increases in surface water elevations in each channel.

When there is encroachment on a floodway, it is required that a Conditional Letter of Map Revision (LOMR) be completed and submitted to FEMA during the design phase of the project. The preparation of a Location Hydraulic Study is recommended to determine if there is an increase in the base floodplain as a result of the proposed improvements. If there are minimal or no impacts, then a Summary Floodplain Encroachment Report would be completed. If there is a substantial encroachment, then a Floodplain Evaluation Report would be necessary. Flood control measures would be incorporated into the design to prevent any substantive increases in water surface elevations. Coordination with FEMA is recommended throughout the design and construction processes to verify the need for and expedite the processing of the LOMRs. Coordination with the Orange County Flood Control District is recommended during the design and construction processes to expedite project approval and minimize impacts to the floodways. No substantial effect on flood plains or hydrology by any of the proposed alternatives is anticipated at this time. A Water Quality Assessment Report is recommended to document potential project impacts related to floodplains and hydrology.

## **8.9 Water Quality and Stormwater Runoff**

### **8.9.1 Existing Watershed and Surface Water Resources**

The proposed project is located in the Lower Santa Ana River Hydrologic Area (801.11) within the Newport Bay Watershed. Within this watershed, the proposed project crosses two water bodies – Peters Canyon Channel and El Modena-Irvine Channel. Both of these water bodies eventually drain to San Diego Creek, which outlets to Upper Newport Bay.

The corridor also crosses or is adjacent to smaller drainages (e.g., Agua Chinon Channel, Bee Canyon Channel, and Central Irvine Channel) and may impact other drainages due to their proximity. Most of these drainages within the study area are concrete lined and are under the jurisdiction of the Orange County Flood Control District, United States Army Corps of Engineers (USACE), or Santa Ana Regional Water Quality Control Board (SARWQCB).

#### Basin Plans and Water Quality Standards

Water resources along the project area are under the jurisdiction of the SARWQCB. The project area is within the Newport Bay Watershed Management Area (WMA).

The southern limit of the project study area is just north of where I-5 passes under the Irvine Center Drive off-ramp overcrossing (Post Mile [PM] 21.3); the northern limit of the project study area is immediately before I-5 crosses SR-55 (PM 30.3). During the PA/ED phase of the project, the project drainage design should be evaluated to assess whether there are any downstream effects to Newport Bay.

The SARWCB has adopted the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan), which sets forth water quality objectives for constituents that could potentially cause an adverse impact on the beneficial uses of water. A water quality control program has been established for each WMA, as well as a region-wide water quality control program. These programs establish Total Daily Maximum Loads (TDMLs) for each WMA, which are allowable pollutant loading from all contributing sources. These water quality objectives are intended to provide reasonable water quality protection for the beneficial uses listed for each water body.

Several Federal Clean Water Act Section 303d listed “impaired water bodies” are found either within or downstream from the project area. These 303d listed resources include Peters Canyon



Channel, San Diego Creek, and Newport Bay. San Diego Creek and Newport Bay have established TDMLs for the following:

- Newport Bay (Lower): Nutrients, pathogens, pesticides (agriculture), pesticides (contaminated sediments).
- Newport Bay (Upper): Nutrients, pathogens, pesticides (agriculture), and pesticides (unknown nonpoint source).
- Newport Bay (Ecological Reserve): Sedimentation/siltation (agriculture), sedimentation/siltation (channel erosion), sedimentation/siltation (construction/land development), and sedimentation/siltation (erosion/siltation).
- San Diego Creek Reach 1: Nutrients, pesticides and sedimentation/siltation (source unknown).
- San Diego Creek Reach 2: Nutrients (agriculture), nutrients (groundwater loadings), nutrients (urban runoff/storm sewers), sedimentation/siltation (agriculture), sedimentation/siltation (channel erosion), sedimentation/siltation (construction/land development), sedimentation/siltation (erosion/siltation), and unknown toxicity (unknown nonpoint source).

#### 8.9.2 Potential Water Quality Impacts

Bridge widening would be required to accommodate the proposed project over two surface water crossings. Table 5 provides the location of these surface water crossing improvements and a summary of the expected work.

**Table 5. Surface Water Crossing Improvements**

Approximate Post Mile	Water Body	Proposed Work near Water Body
R27.3	Peters Canyon Channel	Freeway Widening
27.8	El Modena-Irvine Channel	Freeway Widening

Runoff from the existing I-5 roadway surface is a potential source of pollutants. The addition of lanes proposed by the project would increase impervious surface area, which would result in an incremental increase in stormwater runoff. Given the urbanized nature of the study area, this additional increase is not anticipated to be substantial relative to the total amount of runoff from other developed areas; however, it is anticipated to result in a potential increase in pollutants. Increases in specific pollutants may result in a variance from a TDML, depending on the WMA.

The proposed project could also result in water quality impacts to stormwater runoff during construction activities. The project would be conducted in accordance with all applicable water quality requirements of the Section 401 permit issued by SARWQCB and the provisions of the National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities. Implementation of BMPs would minimize erosion of exposed soils and resultant sediment and surface contaminant loading into the storm drain system and downstream water bodies. Consequently, the proposed improvements are not expected to violate water quality or waste discharge standards. Stormwater BMPs would be applied to control pollutants from highway runoff. Operational impacts would be minimized by implementation of Caltrans-approved Treatment BMPs, as outlined in the Caltrans Project Planning and Design Guide (July 2010).

The project is located within City and Department ROW; therefore, NPDES-Caltrans Statewide Permit (order No. 99-06-DWQ; NPDES No. CAS 000003) and construction General Permit (Order No. 2009-0009-DWQ; NPDES No. CAS 000002) apply to the project. Procedures and facilities would be incorporated into the proposed design of the build alternatives, as necessary, to control additional runoff. With incorporation of mitigation, the additional runoff created by the proposed improvements would not be expected to exceed the capacity of available stormwater drainage systems.

It is anticipated that this project would require dewatering, and coverage must be obtained under Order No. R8-2009-0003, NPDES No. CAG998001 *General Waste Discharge Requirements for Discharges to Surface Waters which Pose an Insignificant (De Minimus) Threat to Water Quality*. Assuming dewatering would be required, site-specific groundwater contamination data would be needed to evaluate proper methods to manage and dispose of groundwater that might be removed during construction. Dewatering groundwater free of pollutants must be authorized under a regional dewatering NPDES permit. Dewatering any water containing pollutants cannot be discharged to a water of the U.S. or storm drain without specific authorization from the SARWQCB.

Although the project crosses several 303d impaired water bodies, no substantial project effects on water quality or effects on water quality associated with storm water run-off is anticipated for any of the project alternatives with compliance with RWQCB and ACOE permits, as required. A Water Quality Assessment Report is recommended to document potential project impacts related to water quality and stormwater runoff. A Storm Water Data Report (SWDR) would also be required for this project during the PA/ED phase. A Storm Water Pollution Prevention Plan (SWPPP) would be prepared prior to construction because it would have a large disturbance area (greater than 1-acre).

## **8.10 Geology and Soils**

### **8.10.1 Geologic Setting**

The project corridor is near the middle part of the Tustin Plain. The Tustin Plain is relatively flat and slopes gently to the southwest from Loma Ridge to the flatter terrain near the coast. The project corridor crosses the toe of an apron of coalesced alluvial fan surfaces consisting of erosional deposits derived from small local southwesterly trending drainages dissecting Loma Ridge, such as Santiago Creek, Peters Canyon, Hicks Canyon, Bee Canyon, Agua Chinon Canyon, and Borrego Canyon. The southern margin of the plain is traversed by San Diego Creek, which flows westerly and northerly around the San Joaquin Hills and into Upper Newport Bay.

Elevations along the project corridor gradually descend northerly from approximately 300 feet elevation near Bake Parkway to a low point of approximately 75 feet elevation along Peters Canyon Wash (near Jamboree Road) and then rise northward to approximately 120 feet to 130 feet near First Street at the north end of the project. The project corridor is considered as flat terrain; therefore no major landslide hazard is anticipated. The California Geological Survey (CGS) Seismic Hazard Zone reports (CGS, 1998, 2000) for the El Toro and Tustin quadrangles also do not identify any landslide hazard areas within the corridor.

The site area is in the seismically active southern California region, but there has been little historical earthquake activity in the project area. The Tustin Plain is among the most quiescent areas in the Los Angeles region. There are fewer earthquakes in the Tustin Plain-western Santa Ana Mountains region than anywhere else in the Los Angeles Basin-northern Peninsular Ranges area.

The principal active faults are the Whittier-Elsinore fault system in the Puente Hills and east of the Santa Ana Mountains, and the Newport-Inglewood Structural Zone along the coast. Other major

faults, such as the Cristianitos, Mission Viejo, and Aliso faults, are not considered active. The California Division of Mines and Geology has not identified any Alquist-Priolo Earthquake Fault Zones at or in proximity to the site. The active and potentially active faults of most significance to the site are listed on Table 6, along with estimates of their maximum earthquakes (EMI, 2010).

**Table 6. Seismic Design Parameters**

Fault Name	Maximum Earthquake	Distance from Site (miles)	Slip Rate (mm/yr)	Fault Type <sup>1</sup>
San Joaquin Hills	6.6	1	0.5	RE
Compton-Los Alamitos	6.6	5	1.5	RE
Peralta Hills	6.2	3	0.1	RE
Newport-Inglewood	7.5	5	1.0	ST
Whittier-Elsinore	7.6	5.5	5	ST
Palos Verdes	7.3	15	3.0	ST

Note: ST = strike-slip, RE = reverse (thrust)

### Soils

Subsurface materials along the project alignment are mostly a sequence of sand, silt, and clay layers. Predominant soil textures are Silty Sand, Silty and Sandy Clay, and Clayey Sand (EMI, 2010).

### Groundwater

Groundwater is generally at shallow to moderate depths along the project corridor. Depths range from 5 feet to 80 feet. It should be noted that groundwater levels are subject to seasonal and long-term fluctuations due to factors such as climate change and urbanization, and they will be verified during site-specific explorations during the PA/ED and subsequent project phases.

## 8.10.2 Potential Seismic Impacts

### Seismicity

Based on California Seismic Hazard Map of 1996 (Mualchin, 1996), the Peak Ground Acceleration (PGA) along the alignment is between 0.3g to 0.4g. However, it should be noted that the San Joaquin Hills Blind Thrust Fault, which is the closest active fault to the project, is not included in this map and, subsequently, it has been added to the Caltrans fault database; therefore, design PGA would likely be higher than the mapped values. Seismic design criteria for design of each structure would be developed using Caltrans Seismic Design Criteria (SDC) Version 1.6 (Caltrans, 2009). Based on preliminary evaluations, PGAs for the south end of the alignment could be more than 0.6g at some structure locations based on the new criteria.

Based on the foundation types shown on the as-built drawings and preliminary assessment of the subsurface conditions along the project alignment, pile foundation would likely be used for new structures. Due to the project site's seismicity, high vertical and lateral load demand on the bridge foundations and the presence of fine-grained soils at shallow depths, shallow foundations are not likely suitable for new bridge structures. A site specific geotechnical report will be completed during final design for the preferred alternative and will make engineering recommendations to ensure no substantial seismic effects on any of the project alternatives.

## Liquefaction

Liquefaction is a phenomenon whereby saturated granular soils lose their inherent shear strength due to increased pore water pressures, which may be induced by cyclic loading such as that caused by an earthquake. Low-density granular soils, shallow groundwater, and long-duration/high-acceleration seismic shaking cause liquefaction. Based on the preliminary study, liquefaction hazard along project alignment was evaluated using CGS's Seismic Hazard Zone maps and reports (CGS 1998, 2000, 2001a, and 2001b). The corridor falls within seismic hazard zones of Tustin and El Toro quadrangles. The I-5 corridor, from just south of SR-55 to Jeffrey Road, is within an area shown as potentially liquefiable and includes areas of high groundwater (less than 40 feet deep) that are prone to liquefaction.

No substantial effects on any of the project alternatives, resulting from liquefaction associated with seismic events anticipated with incorporation of the recommendations from the site specific geotechnical report for the preferred alternative during final design. Additional project-level geotechnical study is recommended during PA/ED and subsequent project phases to determine the composition of soils and the presence of fill within the immediate project area. The geotechnical study would address in detail the likelihood for liquefaction and expansive soils, and the results would be incorporated into the design process for compliance with Caltrans and federal seismic design standards.

### **8.11 Hazardous Wastes/Materials**

#### 8.11.1 Potential Hazardous Waste Sites

A preliminary Initial Site Assessment (ISA) was prepared for this project that provided a list of Recognized Environmental Conditions (RECs) within the project area and identified potential hazardous waste issues. An update to the preliminary Initial Site Assessment will be required during the PA/ED stage for a full assessment of hazardous waste-related impacts. Available information for the site and surroundings was collected and evaluated to identify RECs. According to the American Society for Testing and Materials (ASTM) Standard Practice E 1527-05, the term REC means "the presence or likely presence of hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property."

Based on the definition of an REC in the ASTM Standard Practice E 1527-05, the following RECs were identified or discovered for the project site:

- The United States Marine Corps Air Station near El Toro has six open site assessments. Groundwater contamination may have migrated to the project footprint. Groundwater contaminants may include gasoline, benzene, total benzene, toluene, ethylbenzene, toluene (BTEX), methyl tertiary butyl ether (MTBE), jet fuel (JP5), aviation gasoline, total petroleum hydrocarbons (TPH) as JP5; tertiary butyl alcohol (TBA), volatile organic compounds (VOCs) including trichloroethene, and perchlorate. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- Tustin Chevrolet, located at 16 Auto Center Drive in Tustin, has ongoing subsurface investigation activities to determine the extent of groundwater contamination at this location. Groundwater is known to be contaminated with gasoline and many of its additives. Groundwater may have migrated to the project footprint. As a result, soil and

groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.

- Tustin Lexus, located at 45 Auto Center Drive in Tustin, has ongoing subsurface investigation activities to determine the extent of groundwater contamination at this location. Groundwater is known to be contaminated with MTBE. Groundwater may have migrated to the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- Dynachem, a Division of Morton Thiokol, and the Shipley Company, LLC, have been located at 2631 Michelle Drive in Tustin. This site has a Land Use Covenant that restricts future land use to industrial/commercial uses only. Groundwater contaminated with VOCs may have migrated to the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- Cardlock Fuel #5, Southern Counties Oil Company, and Chevron #9-3742 have been located at 13922 Newport Avenue in Tustin. This site is undergoing remediation efforts. Groundwater samples have detectable concentrations of MTBE, tert-amyl methyl ether (TAME), and TBA. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- Ultramar has been located at 14001 Newport Avenue in Tustin. Groundwater samples have been contaminated with MTBE and BTEX. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- ARCO #1077 has been located at 13742 Red Hill Avenue in Tustin. This facility has ongoing groundwater monitoring activities. Groundwater samples collected are contaminated with gasoline range organics (GRO), TBA, benzene, and MTBE. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- Mobil #18-H7Q has been located at 13872 Red Hill Avenue in Tustin. Groundwater monitoring is ongoing. The latest groundwater sampling results indicate elevated concentrations of TPH-g, benzene, MTBE, and TBA. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- A Shell Station has been located at 13891 Red Hill Avenue in Tustin. Groundwater monitoring is ongoing. Elevated concentrations of benzene, MTBE, and TBA have been detected in groundwater samples. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- ARCO #3045 has been located at 14231 Red Hill Avenue in Tustin. Groundwater sampling continues today. Detectable levels of TPHg, benzene, MTBE, and TBA have

been found in groundwater samples. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.

- Exxon #7-3525 has been located at 14781 Sand Canyon Avenue in Irvine. Groundwater monitoring is ongoing. Groundwater has detectable levels of benzene, TPHg, MTBE, and TBA. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- Tesoro Refining & Marketing/Technology has been located at 51 Technology Drive in Irvine. Historically, groundwater had concentrations of benzene, MTBE, and TBA over the respective maximum contaminant levels for these constituents. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- Shell (3714-0104) has been located at 4162 Trabuco Road in Irvine. Groundwater has detectable levels of benzene, MTBE, and TBA. Contaminated groundwater may be located within the project footprint. As a result, soil and groundwater samples should be taken in areas around this parcel where excavation or intrusion into potentially contaminated soils or groundwater may occur.
- ADL may be present along the shoulders of I-5 within the project footprint. It is recommended that soil sampling be conducted for ADL in areas along the shoulders of the project alignment.
- ACMs are suspected to be present in bridge joint compound materials within the project footprint. ACMs may also be present in structures identified for acquisition. ACM materials that may be disturbed during construction activities should be managed according to Cal-OSHA regulations (Title 8, California Code of Regulations [CCR], Section 1529).
- Paint used on existing bridges, yellow traffic striping, and pavement marking materials may contain LBP or other hazardous materials and may exceed hazardous waste criteria under CCR Title 22 and require disposal in a Class I disposal site. LBP may also be present in structures identified for acquisition. It is recommended that paint be tested for LBP prior to removal to determine proper disposal methods.
- Pole-top transformers with polychlorinated biphenyl (PCB)-containing liquids may be present within the project footprint. It is recommended that the pole-top transformers be properly managed if they are to be removed or relocated.

#### 8.11.2 Potential Hazardous Waste/Materials Impacts

Based on preliminary design, the project build alternatives may affect the RECs discussed above and other properties with the potential to contain hazardous waste/materials as described in the ISA (see Parsons, 2011). Additional investigation will be required during the PA/ED phase to assess acquisition and worker exposure risk, and to incorporate all required avoidance, minimization, and/or mitigation measures into the environmental document during the PA/ED phase. An update to the preliminary ISA will be required during the PA/ED phase, which will assess hazardous waste and materials-related impacts as the preliminary project design advances and ROW requirements are refined. If it is found that the project will encroach on a potentially contaminated property, preliminary site investigations and/or remediation of these sites will be required prior to acquisition and construction of the project. Additional site

investigations should be completed during the PAVED phase to ensure that any measures to minimize potential effects on the environment can be incorporated into the ECR for the project and the ISA updated.

It is assumed that hazardous and potentially hazardous materials used in or encountered during construction, and the transport and disposal of these hazardous materials would be conducted in accordance with applicable federal, state, and local requirements so that potential risks are reduced. Mitigation measures would be developed, as needed, in consultation with regulatory agencies.

## **8.12 Traffic/Transportation**

### **8.12.1 Existing Transportation System**

Within the limits of the project study area, I-5 has generally three to five GP lanes, one HOV lane, and various auxiliary lanes in each direction. Table 7 shows the Future (2040) No Build Freeway Mainline Lane Summary and Operational Characteristics within the project I-5 Widening Project Corridor. Tables 8 and 9 show the Future Mainline Lane Summary and Operational Characteristics for the proposed Alternatives within the I-5 Widening Project Corridor. It should be noted the mainline operational characteristics shown in Tables 9 are for Alternative 2B Options 3 and 4. Trucks make up approximately 5 percent of total volume throughout the entire project area based on department truck count data for year 2007. This corridor also contains several major local street arterials (Austin-Foust Associates, 2010), which include:

- Alton Parkway
- Barranca Parkway
- Jeffrey Road
- Culver Drive
- Tustin Ranch Road
- Red Hill Avenue
- Newport Avenue

### **8.12.2 Potential Transportation Impacts**

This project would have several long-term benefits to regional and local traffic. The project would reduce congestion along I-5 and would thereby reduce the vehicle miles traveled on local streets by redistributing traffic to the widened freeway. This redistribution would result in additional traffic on those arterials with interchanges to the freeway; however, the proposed interchange improvements, combined with the improved freeway operations, would reduce interchange queues on the mainline.

The purpose of the improvements is to resolve/reduce traffic constraints along the I-5 corridor by constructing an additional travel lane and additional auxiliary lane, where necessary, and improving interchanges within the project area. Proposed improvements are intended to ease traffic congestion and to improve circulation and access to and from Orange County. Proposed improvements are designed to accommodate existing and forecasted traffic on the freeway (see Tables 7 through 9).



**Table 7. No Build Future (2040) Freeway Mainline Lanes Summary and Operational Characteristics**

Location	Lanes			AM Peak Hour						PM Peak Hour					
	HOV	GP	Aux	Mainline				HOV		Mainline				HOV	
				Vol	Speed	Density	LOS	Vol	V/C	Vol	Speed	Density	LOS	Vol	V/C
<b>NORTHBOUND</b>															
NB Mainline s/o Alton	1	4	0	8,860	<53.3	>45.0	F	1,880	.86	7,690	61.8	34.5	D	1,880	.86
NB Mainline s/o Barranca	1	4	1	8,230	67.5	27.1	D	1,890	.86	9,210	68.9	32.0	D	1,880	.86
NB Mainline s/o Rte. 153	1	4	1	8,230	67.5	27.1	D	2,240	1.02	9,210	68.9	32.0	D	2,490	1.13
NB Mainline s/o Sand Cyn	1	5	1	9,490	68.3	25.7	C	2,530	1.14	10,980	64.2	31.7	D	2,330	1.01
NB Mainline s/o Jeffrey	1	5	1	12,310	57.7	39.5	E	2,290	1.04	12,920	58.6	44.6	E	1,980	.90
NB Mainline s/o Culver	1	5	0	12,210	<53.3	>45.0	F	2,060	.94	12,010	<53.3	>45.0	F	1,950	.89
NB Mainline s/o Jamboree	1	5	1	13,590	<53.3	>45.0	F	2,140	.97	12,060	59.1	37.8	E	2,120	.96
NB Mainline s/o Tustin Rch	1	5	1	13,160	<53.3	>45.0	F	2,290	1.04	11,750	60.8	35.8	E	2,310	1.05
NB Mainline s/o Red Hill	1	5	1	13,260	<53.3	>45.0	F	2,370	1.08	12,390	57.2	40.1	E	2,170	.99
NB Mainline s/o Newport	1	5	0	13,020	<53.3	>45.0	F	2,370	1.08	12,300	<53.3	>45.0	F	2,170	.99
NB Mainline s/o Rte. 55	1	4	2	13,820	<53.3	>45.0	F	2,370	1.08	13,160	<53.3	>45.0	F	2,170	.99
<b>SOUTHBOUND</b>															
SB Mainline s/o Alton	1	3	0	4,820	68.3	25.8	C	1,280	.58	5,100	67.1	27.7	D	1,800	.82
SB Truck Bypass s/o Mainline	0	2	0	2,920	64.7	25.6	C	--	--	3,830	57.9	37.5	E	--	--
SB Mainline s/o Truck Bypass	1	3	1	7,510	63.7	32.2	D	1,280	.58	7,960	60.7	35.9	E	1,800	.82
SB Mainline s/o Barranca	1	4	1	9,690	61.7	34.7	D	1,280	.58	8,960	65.0	30.6	D	1,800	.82
SB Mainline s/o Rte. 153	1	4	1	9,690	61.7	34.7	D	2,170	.99	8,960	65.0	30.6	D	2,330	1.06
SB Mainline s/o Sand Cyn	1	5	1	10,140	58.9	28.1	D	1,810	.82	10,230	66.6	28.4	D	2,090	.91
SB Mainline s/o Jeffrey	1	5	1	12,840	54.2	43.8	E	1,880	.85	12,830	54.3	43.7	E	2,070	.94
SB Mainline s/o Culver	1	5	0	12,190	<53.3	>45.0	F	1,850	.84	12,890	<53.3	>45.0	F	2,120	.96
SB Mainline s/o Jamboree	1	5	1	12,790	54.6	43.4	E	2,030	.92	14,160	<53.3	>45.0	F	2,080	.95
SB Mainline s/o Tustin Rch	1	5	1+1 <sup>1</sup>	12,950	53.4	44.9	E	2,210	1.00	14,110	<53.3	>45.0	F	2,190	.95
SB Mainline s/o Red Hill	1	5	1	13,520	<53.3	>45.0	F	2,100	.95	14,630	<53.3	>45.0	F	2,190	1.00
SB Mainline s/o Newport	1	5	1	13,310	<53.3	>45.0	F	2,100	.95	14,370	<53.3	>45.0	F	2,190	1.00
SB Mainline s/o Rte. 55 SB	1	5	1	13,310	<53.3	>45.0	F	2,100	.95	14,370	<53.3	>45.0	F	2,190	1.00
SB Mainline s/o Rte. 55 NB	1	4	0	10,130	<53.3	>45.0	F	2,100	.95	11,690	<53.3	>45.0	F	2,190	1.00

<sup>1</sup> Bold = Level of service (LOS) "E" or "F" (mainline), or HOV lane exceeds 1,600 vph/ln (HOV)  
<sup>2</sup> Short auxiliary lane not extending the entire length between interchanges - does not increase mainline capacity.

**Table 8. Alternatives 2A and 2B Future (2040) Freeway Mainline Lanes Summary and Operational Characteristics**

Location	Lanes			AM Peak Hour						PM Peak Hour					
	HOV	GP	Aux	Mainline				HOV		Mainline				HOV	
				Vol	Speed	Density	LOS	Vol	V/C	Vol	Speed	Density	LOS	Vol	V/C
<b>NORTHBOUND</b>															
NB Mainline s/o Alton	1	3	0	8,860	65.4	30.1	D	1,890	.86	7,690	68.7	24.9	C	1,880	.85
NB Mainline s/o Barranca	1	5	1	8,230	69.7	21.9	C	1,890	.86	9,210	68.8	24.8	C	1,880	.85
NB Mainline s/o Rte. 153	1	5	1	8,230	69.7	21.9	C	2,240	1.02	9,210	68.8	24.8	C	2,490	1.13
NB Mainline s/o Sand Cyn	1	6	1	9,490	69.8	21.6	C	2,330	1.15	10,980	68.4	23.5	C	2,330	1.01
NB Mainline s/o Jeffrey	1	6	1	12,310	65.7	29.7	D	2,290	1.04	12,920	62.8	32.1	D	1,980	.90
NB Mainline s/o Culver	1	6	0	12,210	58.3	38.8	E	2,060	.94	12,010	59.4	37.4	E	1,950	.89
NB Mainline s/o Jamboree	1	6	2	13,590	66.7	28.3	D	2,140	.97	12,060	69.0	24.3	C	2,120	.95
NB Mainline s/o Tustin Rch	1	6	1	13,160	68.0	33.1	D	2,290	1.04	11,750	67.1	27.8	D	2,310	1.05
NB Mainline s/o Red Hill	1	6	1	13,260	62.6	33.6	D	2,370	1.08	12,390	65.5	30.0	D	2,170	.99
NB Mainline s/o Newport	1	6	0	13,020	<53.3	>45.0	F	2,370	1.08	12,300	57.8	39.4	E	2,170	.99
NB Mainline s/o Rte. 55	1	4	3	13,820	<53.3	>45.0	F	2,370	1.08	13,160	<53.3	>45.0	F	2,170	.99
<b>SOUTHBOUND</b>															
SB Mainline s/o Alton	1	3	0	4,820	68.3	25.8	C	1,280	.58	5,100	67.1	27.7	D	1,800	.82
SB Truck Bypass s/o Mainline	0	2	0	2,920	64.7	25.6	C	--	--	3,830	57.9	37.5	E	--	--
SB Mainline s/o Truck Bypass	1	3	2	7,510	69.2	23.8	C	1,280	.58	7,960	69.4	25.5	C	1,800	.82
SB Mainline s/o Barranca	1	5	1	9,690	68.0	26.2	D	1,280	.58	8,960	69.1	24.0	C	1,800	.82
SB Mainline s/o Rte. 153	1	5	1	9,690	68.0	26.2	D	2,170	.99	8,960	69.1	24.0	C	2,330	1.06
SB Mainline s/o Sand Cyn	1	6	1	10,140	69.4	23.2	C	2,170	.99	10,230	69.3	23.4	C	2,330	1.06
SB Mainline s/o Jeffrey	1	6	2	12,840	68.0	26.2	D	1,810	.82	12,830	68.0	26.2	D	2,090	.91
SB Mainline s/o Culver	1	6	0	12,190	58.4	38.6	E	1,880	.85	12,890	58.7	44.3	E	2,070	.94
SB Mainline s/o Jamboree	1	6	1	12,790	64.3	31.6	D	1,850	.84	14,160	58.7	38.5	E	2,120	.96
SB Mainline s/o Tustin Rch	1	6	2	12,950	67.9	26.5	D	2,030	.92	14,110	65.6	29.9	D	2,080	.95
SB Mainline s/o Red Hill	1	6	1	13,520	61.6	34.8	D	2,210	1.00	14,630	56.2	41.3	E	2,190	.95
SB Mainline s/o Newport	1	6	1	13,310	63.2	32.9	D	2,100	.95	14,370	57.7	39.5	E	2,190	1.00
SB Mainline s/o Rte. 55 SB	1	6	1	13,310	<53.3	>45.0	F	2,100	.95	14,370	<53.3	>45.0	F	2,190	1.00
SB Mainline s/o Rte. 55 NB	1	5	0	10,130	58.2	38.8	E	2,100	.95	11,690	<53.3	>45.0	F	2,190	1.00

<sup>1</sup> Bold = Level of service (LOS) "E" or "F" (mainline), or HOV lane exceeds 1,600 vph/ln (HOV)  
<sup>2</sup> Short auxiliary lane not extending the entire length between interchanges - does not increase mainline capacity.

**Table 9. Alternative 2B Options 3 & 4 Future (2040) Freeway Mainline Lanes Summary and Operational Characteristics**

Location	Lanes			AM Peak Hour					PM Peak Hour						
				Mainline				HOV		Mainline				HOV	
	HOV	GP	Aux	Vol	Speed	Density	LOS	Vol	V/C	Vol	Speed	Density	LOS	Vol	V/C
<b>OPTION 3 (NORTHBOUND)</b>															
NB Mainline s/o Sand Cyn	1	6 <sup>2</sup>	1	9,490	69.8	21.6	C	2,530	1.15	10,980	65.4	25.5	C	2,230	1.01
NB Mainline s/o Jeffrey	1	6	0	11,307	62.9	33.3	D	2,290	1.04	11,796	60.6	36.1	E	1,980	.90
<b>OPTION 4 (SOUTHBOUND)</b>															
SB Mainline w/o Sand Cyn	1	5	1 <sup>1</sup>	7,895	69.9	20.9	C	2,170	.99	8,069	69.8	21.4	C	2,330	1.06
Bold = Level of service (LOS) "E" or "F" (mainline), or HOV lane exceeds 1,500 vph/m (HOV) <sup>1</sup> Short auxiliary lane not extending the entire length between interchanges - does not increase mainline capacity. <sup>2</sup> 6" lane becomes an auxiliary lane for the NB Jeffrey off-ramp.  LOS, density and speed derived using HCM methodology based on forecast demand volumes. Data represents segment analysis without influence of downstream queuing.  Note: Locations not shown above have volumes and geometry equivalent to 2040 Conditions with Alternative 2a/2b															

During construction, adverse effects to traffic and local circulation may result. These adverse effects may be the result of lane closures along I-5 to accommodate construction equipment or ramp closures during interchange improvements.

Temporary lane closures could substantially increase the amount of delay within the project corridor during construction and could result in additional regional traffic utilizing local streets. Temporary lane closures should be implemented during non-peak hours, nights, or weekends to minimize the potential for adverse effects on local circulation during construction.

Ramp closures have the potential to affect businesses, especially businesses that are considered "freeway dependent." Freeway-dependent businesses include gas stations and fast-food restaurants and other commercial operations that are located near interchange systems. If prolonged closures of interchange ramps are required, then a Ramp Closure Study is recommended to address the impacts related to access and essential services of the businesses. Coordination with essential and emergency services is recommended during preparation of the Traffic Management Plan (TMP) or Ramp Closure Study to minimize service disruptions. Socioeconomic effects will be considered in the community impacts assessment recommended in Section 8.4.

This PEAR recommends preparation of a Traffic Impact Study/Circulation Report and Ramp Closure Study and TMP, as required, will be prepared during the PA/ED phase to assess temporary construction impacts and long-term traffic operational impacts. Results of the Traffic Impact Analysis/Circulation Report will also be utilized as the foundation for the air quality and noise technical studies and to ensure that the project has been adequately scoped for the design year.

### 8.13 Air Quality

#### 8.13.1 Air Quality Setting

The project area is located in the South Coast Air Basin (SCAB) and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The United States Environmental Protection Agency (EPA) has designated the SCAB as follows: "extreme" for 1-hour ozone (O<sub>3</sub>), requiring attainment with the federal O<sub>3</sub> standard by 2010; "Severe - 17" for 8-hour O<sub>3</sub>, requiring attainment with the federal O<sub>3</sub> standard by 2021, "serious" for particulate matter less than 10 microns in diameter (PM<sub>10</sub>), requiring attainment with federal standards by 2006,

“Nonattainment” for carbon monoxide (CO), and “Nonattainment” for particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>), with attainment likely by 2014.

In 2007, EPA redesignated the SCAB as an attainment area for CO and approved a revision in the State Implementation Plan (SIP) for the SCAB as meeting the Clean Air Act (CAA) requirements for the maintenance plan for CO.

### 8.13.2 Potential Air Quality Impacts

The proposed project is a capacity-increasing project within an area designated nonattainment and maintenance for federal air quality standards. The project would result in higher average daily traffic (ADT) within the project corridor than under the No Build Alternative. Potential improvements to the I-5 corridor would be designed to reduce congestion and improve traffic flow during project operation within the study area; therefore, the improvements could yield air quality benefits.

The proposed project is not an exempt Table 1 or Table 2 project, and both regional and project-level air quality conformity determination is required and will be documented in the Air Quality Technical Study. At the regional level, the proposed improvements must be included in a future conforming Regional Transportation Improvement Program (RTIP) and Regional Transportation Plan (RTP). At the project level, coordination with the interagency Transportation Conformity Working Group (TCWG) is required to assess conformity for particulate matter. This coordination will determine whether the proposed project is a “Project of Air Quality Concern” and if quantitative analysis is required. A project-level conformity determination from the Federal Highway Administration (FHWA) is required prior to approval of the final environmental document.

During construction, it is likely that construction activities could produce emissions that would temporarily exceed the SCAQMD construction thresholds. Air quality impacts associated with construction activities would be temporary and would be minimized through compliance with SCAQMD requirements. In addition, the project will require demolition/renovation of structures (e.g., bridges, buildings). Prior to the approval of the final environmental document, the affected structures will be evaluated for ACMs and LBP. If present, measures will be incorporated into the project ECR/Mitigation Monitoring and Reporting Plan (MMRP) to ensure that all ACM and/or LBP is abated/contained in accordance with State and federal law to minimize potential release to the environment and worker/public exposure. With proper SCAQMD construction requirements and proper notification, containment and disposal, no substantial construction related effects on air quality are anticipated at this time. This PEAR recommends preparation of an Air Quality Technical Study based on the traffic report and anticipated construction activities and phasing to document the potential construction and operational effect on air quality associated with the proposed alternatives.

## **8.14 Noise and Vibration**

### 8.14.1 Noise Setting and Sensitive Receptors

Soundwalls exist intermittently along the project corridor. A general survey of these barriers indicates that they are mostly concentrated in areas adjacent to single-family residences; however, several sensitive land uses are not protected by soundwalls. On the SB side of I-5, these sensitive land uses include a small gap in the soundwall at the baseball field for Irvine High School and the fields at Heritage Park located between Walnut Avenue and I-5. There are also gaps in the soundwalls where multi-family residential units are located adjacent to NB I-5, south of the Culver Drive off-ramp at Trabuco Road and also south of the Red Hill Avenue off-ramp at El Camino Real.

### 8.14.2 Potential Noise Impacts

The proposed project is a Type I project that would add an additional GP lane and auxiliary lanes as required in the NB and SB directions within the project limits. A detailed noise study will be completed per Caltrans' latest Traffic Noise Analysis Protocol and FHWA guidelines to determine if there would be a noise impact due to the project. Prior to start of the noise study, a work plan will be submitted to Caltrans Environmental Engineering for their approval. The noise study will assess the potential noise impact at all first-row noise-sensitive receptors at locations with and without existing barriers. It is anticipated that the proposed alternative would result in a permanent increase in freeway noise levels due to the additional GP and auxiliary lanes and related volumes, and changes in roadway geometry. Elevated noise levels would also be experienced during construction activities. Residences and other noise-sensitive land uses adjacent to the freeway would be particularly sensitive to increases in noise levels. An NSR will be prepared to summarize the analysis results and any feasible abatement measures, as well as the reasonable allowances. All receptors and proposed noise barriers will be graphically depicted on project alignment plans and aerials to present their location.

If it is determined that the project would result in a noise impact, noise abatement will be considered and documented in a NADR. As discussed in the NADR, where reasonable and feasible, new soundwalls would be constructed to attenuate the noise impact. If existing soundwalls are removed to accommodate the proposed widening of the freeway, they will be replaced. The NADR will be completed, and its findings will be incorporated into the draft environmental document prior to circulation.

## 8.15 Biological Environment

### 8.15.1 Natural Environment Setting and Sensitive Biological Resources

The northern and middle portions of the I-5 project corridor are mostly urbanized, whereas the southern portion, south of Jeffrey Road, is partially urbanized and includes some agricultural and undeveloped lands. Vegetation along the corridor includes ornamental plants, ruderal plants, and agricultural lands. Open space to the north of Jeffrey Road is generally restricted to parks and major drainages.

Based on a review of the California Natural Diversity Database (CNDDDB), sensitive plant and animal species potentially occurring within a 1-mile radius of the project freeway segment include the following:

- Chaparral sand-verbena (*Abronia villosa var. aurita*): CNPS List 1B.1
- Western pond turtle (*Actinemys marmorata*): CDFG-SC
- Burrowing owl (*Athene cunicularia*): CDFG-SC
- Southern tarplant (*Centromadia parryi ssp. Australis*): CNPS list 1B.1
- Mexican long-tongued bat (*Choeronycteris Mexicana*): CDFG-SC
- Western mastiff bat (*Eumops perotis californicus*): CDFG-SC
- Yellow-breasted chat (*Icteria virens*): CDFG-SC
- Allen's pentachaeta (*Pentachaeta aurea ssp. allenii*): CNPS List 1B.1
- Coast horned lizard (*Phrynosoma blainvillii*): CDFG-SC
- Coastal California gnatcatcher (*Polioptila californica californica*): Federally threatened and CDFG-SC
- San Bernardino Aster (*Symphotrichum defoliatum*): CNPS List 1B.2
- Least Bell's vireo (*Vireo bellii pusillus*): Federally and state endangered

### 8.15.2 Potential Biological Resource Impacts

Due to the urbanized nature of the northern portion of the project area, it is not anticipated that any sensitive plant or animal species is likely to occur to the north of Jeffrey Road. It is possible, though unlikely, that sensitive species may occur in less urbanized areas to the south of Jeffrey Road. As discussed below in Section 8.15, all channels within existing or proposed ROW are concrete lined and devoid of vegetation.

This PEAR recommends preparation of a Natural Environment Study (NES). Any focused plant or animal surveys will be determined based on their potential for occurrence based on detailed literature and database search, a field review, vegetation/habitat assessment of the project area, and coordination with California Department of Fish and Game (CDFG) and United States Fish and Wildlife Service (USFWS), as applicable.

Removal of mature trees, shrubs, or vegetation may affect nesting birds, and removal of these during the nesting season should be avoided as feasible. Additionally, during construction there is a potential to transport/spread invasive species on equipment or import within construction materials. Consistent with Executive Order (EO) 13112, invasive species measures during construction and the planting of native vegetation to limit the spread of invasive species is recommended. Coordination with appropriate biological regulatory agencies, such as CDFG and USFWS, is recommended to facilitate the assessment of impacts on biological resources.

## **8.16 Wetlands and Waters of the U.S.**

### 8.16.1 Existing Wetland and Jurisdictional Resources

The project is located within the Newport Bay Watershed. The project crosses two water bodies: El Modena-Irvine Channel and Peters Canyon Channel.

Based on a windshield survey and air photo review, there is a potential for wetlands to occur within channels with natural bottoms. All channels within the project limits are concrete lined within the project footprint. Additionally, the National Wetlands Inventory (NWI) indicated that there are Riverine-type wetlands located north and south of I-5 within El Modena-Irvine Channel and Mashburn Wash. The NWI also indicated that there are Riverine and emergent freshwater wetlands in Peters Canyon Wash to the north and south of I-5, respectively. As previously discussed, El Modena-Irvine and Peters Canyon Channels are completely concrete lined within the existing and proposed ROW. Peters Canyon Wash becomes a natural bottom approximately 500 feet south of the Department's ROW.

### 8.16.2 Potential Wetland and Jurisdictional Waters Impacts

Resources under the jurisdiction of USACE would include wetlands and Waters of the U.S., including tributaries. All of the previously discussed channels drain to San Diego Creek and then to Newport Bay, and they will likely be considered jurisdictional by USACE. This PEAR recommends that a jurisdictional delineation report be completed and submitted to USACE for an approved Jurisdictional Determination (JD). A significant nexus determination would be made within the JD to support the determination regarding which drainages and tributaries are to be considered jurisdictional under USACE and potential downstream effects to Waters of the U.S. Coordination with USACE and SARWQCB is recommended to determine the type of permits and related requirements for any proposed improvements within these areas. Areas considered jurisdictional USACE are often also jurisdictional under Section 1602 of the California Fish and Game Code, and coordination with CDFG will also be required.

Although not anticipated at this time, a wetland delineation report is recommended, as required, based on potential project effects to natural bottom channels or other areas containing wetland



vegetation. Information from the wetland delineation report will be incorporated into the JD report. During project development, wetlands should be avoided and treatment BMPs will be incorporated to minimize water quality effects on wetlands and/or jurisdictional waters.

All of the project alternatives would require widening of the bridges over Peters Canyon Channel and El Modena-Irvine Channel. These improvements will require coordination with USACE and permits, as applicable, pursuant to the Clean Water Act. A Section 404 (Dredge and Fill) permit will likely be required for the proposed widening within these channels. If permanent improvements exceed the established thresholds for a nationwide Section 404 permit, the project may require an individual Section 404 permit. At this time, impacts are not expected to exceed 5 acres, and the NEPA-404 integrated process is not anticipated.

## **8.17 Energy and Climate Change**

### **8.17.1 Energy**

Construction of the proposed project may require a large amount of energy through the consumption of nonrenewable fossil fuels. The use of construction equipment, hauling of materials, and out-of-direction detours resulting from potential lane and ramp closures are the sources of temporary energy consumption. Improvements as part of the project would relieve congestion and reduce out-of-direction travel. By reducing the amount of out-of-direction travel, the project would have a long-term benefit to direct energy consumption. Improved traffic flow would improve vehicle fuel efficiency and reduce routine vehicle maintenance by reducing wear and tear from stop-and-go conditions. According to the FHWA Technical Advisory 6640.8A, a detailed energy study, including computations, is only required for large-scale projects with potentially substantial energy impacts. Balancing the short-term energy use during construction and the long-term energy savings, the proposed project should not result in any substantial energy impacts; therefore, a separate energy study is not recommended. A discussion of energy impacts is recommended within the environmental document. Potential energy-saving project features should be considered during project design. Energy-saving features may include energy-efficient lighting, reduced grades, energy- and water-efficient landscaping design, and long-life pavement.

### **8.17.2 Climate Change**

According to *Recommendations by the Association of Environmental Professionals on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents* (AEP March 5, 2007), an individual project does not generate enough greenhouse gas (GHG) emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHGs. It is noted that the assessment of GHG impacts should include a discussion of key variables that are likely to change dramatically during the design life of the proposed project. These include increasing vehicle fuel economy; near-zero carbon vehicles that may come into the market during the design life of this project; the recently adopted low-carbon transportation fuel standard in California; and changes in driver behavior as the U.S. economy and oil prices change. The primary purpose of the project is to reduce congestion. By reducing the length of time that vehicles are idling in traffic queues and improving the flow of traffic and access control, it is anticipated that carbon dioxide equivalent (CO<sub>2</sub>e) emissions would be reduced. This PEAR recommends that a quantitative analysis for CO<sub>2</sub>e emissions, using the EMFAC model, be prepared during the PA/ED stage as a component of the Air Quality Technical Study.

### **8.18 Cumulative Impacts**

The proposed project would require the development of a list of projects for consideration and analysis of cumulative project effects. The list of projects provided below should likely be included, but it is not all inclusive and should include transportation and major development projects within 1-mile of the I-5 corridor within the project limits.

- **SOCMIS:** The South Orange County Major Investment Study was completed to identify the transportation challenges facing the southern portion of Orange County through 2030. A set of initial strategies was approved that addressed a variety of improvement categories, and the widening of I-5 through the proposed project's limits was included. The lane configurations for I-5 identified in the proposed project's build alternatives are consistent with the SOCMIS study.
- **Continuous access HOV evaluations:** Caltrans and OCTA are evaluating the implementation of continuous access HOV lanes on freeways in Orange County on a route-by-route basis. A contract to complete a PSR, PA/ED, and PS&E for continuous access HOV implementation on I-5 that would include the proposed project's limits is expected to be initiated in 2011. A build alternative has been developed that would be consistent with continuous access HOV lane usage.
- **Barranca Parkway HOV Drop Ramps:** HOV drop ramps exist to and from Barranca Parkway at the north "leg" of I-5 at Barranca Parkway. Provision of the drop ramps to and from the south "leg" of I-5 will be addressed as part of a separate CMAQ project. The build alternatives included in this PSR (PDS) were designed to allow the future addition of the drop ramps to the south without requiring restriping of the freeway mainline.
- **Great Park:** A 1300-acre park is in the process of being developed on the land formerly known as Marine Corps Air Station El Toro. This site is located north of I-5 and east of SR-133, near the south end of the proposed project's limits, in proximity to the I-405 interchange. In addition to open spaces, the park will provide botanical gardens, museums, dining and entertainment facilities, festival areas, a library, and sports complexes. The proposed project's improvements do not appear to impact the Great Park development plan.
- **SR-133/Trabuco Interchange (EA 0G009):** A PSR for a new interchange on SR-133 at Trabuco Road has been drafted. The interchange would provide a connection from SR-133 in close proximity to the Great Park area. The completion of this project would be expected to result in traffic circulation changes at the I-5/Sand Canyon Avenue and I-5/Jeffrey Road interchanges. This project is currently on hold. The proposed project's build alternatives do not affect the SR-133/Trabuco Road interchange scope.
- **TCA Cooperative Agreements/Non-Competition Zones:** Improvements within the proposed project's limits are subject to the terms of cooperative agreements between the Caltrans and the TCA. TCA is a project stakeholder and has provided reviews of the proposed build alternatives.
- **I-5/SR-133 HOV Connectors:** As part of the engineering analyses conducted for the construction of the SR-133 toll road in the mid-1990s, the feasibility of constructing direct HOV connectors between the northern leg of I-5 and the northern leg of SR-133



was evaluated. The direct connectors were anticipated to be accommodated by shifting the northbound I-5 lanes further to the north, in order to provide room in the middle of the I-5 freeway for the connectors. These connectors were not addressed in the EIR for the SR-133 freeway; however, TCA has included their cost in their long-range Capital Improvement Plan.

- **Metrolink Expansion Project:** A study is underway to evaluate the feasibility of adding a third track along the SCRRA right-of-way from south of the Irvine Station near the El Toro “Y” area, to Red Hill Avenue in Tustin. This could affect the number of tracks at the I-5 Overhead near Sand Canyon Avenue. At this time, it is expected that the existing I-5 Overhead bridge structure would not be modified to accommodate this potential future track.
- **North Irvine Transportation Mitigation (NITM) Program:** The NITM Nexus Study was completed in 2003 to establish a funding mechanism for the transportation mitigation measures identified in the EIRs for development projects in the north Irvine area. Estimated project costs were updated in 2008. Current and future NITM projects are within the proposed I-5 project area are shown in Table 10. Projects that have been programmed are included in the No Build alternative, as previously discussed. With the completion of the Great Park development, the unprogrammed projects are expected to be constructed in advance of the design year and have been incorporated into the build alternatives.

**Table 10. NITM Projects Included in Build Alternatives**

Location	Status	Improvements
I-5 at Sand Canyon Avenue (NB exit ramp) & Marine Way	PS&E in progress EA 0H0271	• Add 3 <sup>rd</sup> & 4 <sup>th</sup> NB & SB Sand Canyon Avenue thru lanes • Widen NB exit ramp from 3 to 4 lanes
I-5 at Sand Canyon Avenue (SB exit ramp)	PS&E in progress EA 0H0271	• Widen SB exit ramp from 3 to 4 lanes
I-5 at Alton Parkway (NB exit ramp)	Project not yet initiated	• Restripe NB exit ramp to provide 2.5 left-turn lanes and 0.5 right-turn lane.
I-5 mainline (Sand Canyon Avenue to Jeffrey Road)	Project not yet initiated	• Add 6 <sup>th</sup> I-5 NB & SB general purpose lanes. • Add 2 <sup>nd</sup> drop lane to SB Sand Canyon Avenue exit ramp
I-5 at Alton Parkway (SB exit ramp)	Project not yet initiated	• Add 2 <sup>nd</sup> auxiliary lane to SB exit ramp.
I-5 at Jamboree Road (NB exit ramp)	Project not yet initiated	• Add 2 <sup>nd</sup> auxiliary lane to NB exit ramp.

- **Sand Canyon Road improvements (EA 0H027):** A PR/PSR was completed for this NITM project in 2006, and the PS&E is underway. The improvements include adding two lanes in each direction on Sand Canyon Avenue, adding a 4<sup>th</sup> lane to the southbound I-5 exit ramp to Sand Canyon Avenue, adding a 3<sup>rd</sup> lane to the northbound I-5 entrance ramp from Sand Canyon Avenue, and adding a 4<sup>th</sup> lane to the northbound I-5 exit ramp to Sand Canyon Avenue. These improvements have been included in the No Build alternative for the proposed project’s analysis.

- City of Irvine General Plan, Planning Areas 12 and 40: In 2008, the City of Irvine approved amendments to the General Plan to change land use designations and to change zoning within Planning Areas 12 and 40. Planning Area 12 is located south of I-5 in the vicinity of the Sand Canyon Avenue interchange, and will include future medical and science developments. Planning Area 40 is located north of I-5, east of Jeffrey Road, and will include a mix of residential, multi-use, commercial, and institutional uses. A vesting tentative tract map for Planning Area 40 was approved in November 2010, and construction is currently underway on this site by The Irvine Company.
- I-5/Culver Drive Privacy Wall project (EA 0J300): Two privately-funded soundwalls have been constructed along northbound I-5 at the Culver Drive interchange. The walls would be constructed along the northbound Culver Drive entrance ramp to northbound I-5, at the outside/north edge of shoulder; and along northbound I-5 at the outside/north edge of shoulder, beyond the gore of the hook exit ramp to Culver Drive/Trabuco Road. These wall segments would be impacted by either of the build alternatives described in this PSR/PDS.
- Jamboree Road improvements (Project 1200000278/EA 0H000): Jamboree Road will be widened from three lanes to four lanes in the northbound direction, from the entrance ramp to southbound I-5, to the entrance ramp to northbound I-5; and freeway exit ramp termini will also be widened by one lane. Construction of this project is expected to begin in 2011.
- I-5 southbound at Jamboree Road (EA 0G990): A second auxiliary lane along southbound I-5 approaching the exit ramp to Jamboree Road, will be added with implementation of this project. The PS&E has been completed, and is awaiting final approvals for construction.
- Newport Avenue Extension: This project will extend Newport Avenue from its existing terminus just north of the Metrolink right of way (parallel to Edinger Avenue) in Tustin, underneath the railroad right of way, to connect with its extension south of Edinger Avenue. This will close the gap in Newport Avenue, and provide connectivity to SR-55 near the intersection with Edinger Avenue, and will serve as an alternate north-south route to Red Hill Avenue. The completion of this project would be expected to result in traffic circulation changes in the project vicinity, and as a result, the completion of this project is assumed in the future traffic projections. The PS&E for this project is complete, and construction funding is being sought.
- I-5/SR-55 (0G260): A PSR/PDS was completed for this project in 2005. The scope of this project included evaluations to improve operations at four specific "chokepoint" locations in the interchange area. Options studied to improve operations at the First Street entrance ramp to southbound I-5, have been incorporated into the PA/ED phase of the project to add a second HOV lane on I-5 from SR-55 to SR-57 (EA 0C890). The chokepoint defined as "Area 4" is along I-5 from the entrance from Newport Avenue to northbound I-5, to the connector to northbound SR-55. No feasible alternatives were identified in the PSR/PDS (for EA 0G260). This area is addressed in "Option 2" of the build alternatives included in this PSR/PDS.

- I-5 from SR-55 to SR-57 (EA 0C890): This project will add a second HOV lane through the project limits. The PSR/PDS for this project was completed in 2010, and the PA/ED phase is expected to begin in 2011. The scope of this project has been modified to include the reconfiguration of the 1st Street entrance ramp to southbound I-5, to improve operations north of the I-5/SR-55 interchange. The proposed project's improvements are consistent with the scope of project EA 0C890.
- SR-55 from I-405 to I-5 (EA 0J340): This project includes the widening of SR-55 to provide additional general purpose and/or auxiliary lanes in each direction between I-405 and I-5. A PSR/PDS was completed in 2008, and the PA/ED phase is expected to start in 2011. This project does not affect the proposed project's build alternatives.

### **8.19 Context-Sensitive Design**

Caltrans uses Context-Sensitive Solutions (CSS) as its approach to plan, design, construct, maintain, and operate its transportation system. CSS uses innovative and inclusive approaches that integrate and balance community, aesthetic, historic, and environmental values with transportation safety, maintenance, and performance goals and is reached through a collaborative, interdisciplinary approach involving all stakeholders. To ensure that CSS is fully integrated into the project development process, careful, imaginative, and early planning is required, along with continuous community involvement. Early agency coordination for each resource area, as well as early outreach to the community, will help to ensure a successful CSS outcome. CSS is an integral component of the project initiation documents (PID) stage and is coordinated by the PDT.

### **9. Summary Statement for PSR**

The preliminary investigation of the proposed project is focused on potential impacts that may result from the build alternatives within the I-5 Widening Project Corridor. The preliminary assessment of resources in the area indicates that there is a potential for impacts within the following resource areas: air quality, biological resources, community, cultural resources, farmlands, hazardous waste/materials, noise, water quality and storm water run-off. transportation/traffic, utilities and services, and visual esthetics; however, none of the alternatives are anticipated to result in significant impacts and or substantial adverse effects if avoidance, minimization, and/or mitigation measures are implemented. Specific avoidance, minimization, and/or mitigation measures and related time and costs cannot be estimated at this time because the technical studies have not been initiated; however, for purposes of this PEAR, it is assumed that avoidance, minimization, and/or mitigation would consist of those measures that minimize project-related impacts typically utilized for similar transportation projects. A discussion of notable impacts by alternative is provided below.

**Alternative 2A:** Alternative 2A would have the largest footprint within the heavily urbanized northern portion of the project and would result in the largest amount of ROW acquisition. By virtue of this alternative having the largest ROW footprint, it would be reasonable to assume that this alternative would cost the most, be the most publically controversial, require the most avoidance, minimization and/or mitigation measures, have the highest potential to impact adjacent contaminated properties, and have the highest environmental risk when compared with Alternative 2B.

**Alternative 2B:** Alternative 2B provides the same mainline and ramp lane additions/configurations as Alternative 2A, but it utilizes a narrower freeway typical section by reducing lane and/or shoulder widths and removes the HOV lane buffer through the use of

continuous-access HOV lanes. Unless Option 2, 3 or 4 were selected for this alternative, Alternative 2B would be constructed entirely within existing Department ROW. By virtue that this alternative would provide the same level of capacity and operational improvements within existing heavily disturbed Department ROW, it would be reasonable to assume that this alternative would cost the least, would be the least publically controversial, require the least avoidance, minimization and/or mitigation measures, have the lowest potential to impact adjacent contaminated properties, and have a lower environmental risk when compared Alternative 2A.

**All Build Alternatives:** All of the alternatives would likely require the following permits/approvals as described below.

- CDFG Streambed Alteration Agreement, USACE Section 404 permit, and SWRCB Section 401 Water Quality Certification associated with widening of bridges at Peters Canyon Channel and El Modena-Irvine Channel. The project would also have to comply with the requirements of the RWQCB and the provisions of the NPDES Storm Water Discharge Permit issued for construction projects. The project is located within City and Department ROW; therefore, NPDES-Caltrans Statewide Permit (order No. 99-06-DWQ; NPDES No. CAS 000003) and construction General Permit (Order No. 2009-0009-DWQ; NPDES No. CAS 000002) apply to the project. Procedures and facilities would be incorporated into the proposed design of the build alternatives, as necessary, to control additional runoff. Due to the potential for shallow groundwater within the project corridor, it should also be anticipated that this project would require dewatering, and coverage must be obtained under Order No. R8-2009-0003, NPDES No. CAG998001 *General Waste Discharge Requirements for Discharges to Surface Waters which Pose an Insignificant (De Minimus) Threat to Water Quality*. Assuming dewatering would be required, site-specific groundwater contamination data would be needed to evaluate proper methods to manage and dispose of groundwater that might be removed during construction. Dewatering groundwater free of pollutants must be authorized under a regional dewatering NPDES permit. Dewatering any water containing pollutants cannot be discharged to a Waters of the U.S. or storm drain without specific authorization from the SARWQCB.
- The project would also have to comply with the requirements of SHPO under Section 106. In addition, technical studies will need to be completed for each of the resources to accurately identify impacts and to develop feasible avoidance, minimization, and/or mitigation measures.

Based on the potential effects of the build alternatives on the environment, as described within this PEAR, it is anticipated that an IS/MND pursuant to CEQA and an EA/FONSI pursuant to NEPA would be the appropriate environmental document type for this project.

Special considerations for all alternatives that may affect scope, cost, and schedule are the following: ROW, residential/business relocations, noise/soundwalls, architectural treatments/landscaping, potentially contaminated properties, ADL, ACMs, and Native American coordination.

Preparation of the following technical studies is recommended to assess the impacts of the project and to develop feasible avoidance, minimization, and/or mitigation measures:

### **Recommended Environmental Technical Studies**

All recommended environmental technical studies must be submitted upon completion to the environmental branch for review and approval.

- Air Quality Report
- Archaeological Survey Report (ASR)
- Historic Property Survey Report (HPSR)
- Historic Resource Evaluation Report (HRER)
- Initial Site Assessment Update (ISA)
- Natural Environment Study (NES)
- Paleontological Identification Report/Paleontological Evaluation Report (PIR/PER)
- Relocation Impact Statement
- Traffic Impact/Circulation Study
- Noise Study Report (NSR)
- Visual Impact Assessment (VIA)
- Water Quality Assessment Report

### **Recommended Engineering Technical Studies**

- Storm Water Data Report
- Noise Abatement Decision Report
- Location Hydraulic Study
- Geotechnical Study
- Traffic Management Plan and Ramp Closure Study, if warranted

### **10. Disclaimer**

This PEAR provides information to support programming of the proposed project. It is not an environmental determination or document. Preliminary analysis and determinations are based on the project description provided in the PSR-Project Development Support. The estimates and conclusions in the PEAR are approximate and are based on cursory analyses of probable effects. A re-evaluation of the PEAR will be needed for changes in project scope or alternatives, or in environmental laws, regulations, or guidelines.

**11. List of Preparers**


Cultural Resources specialist Carrie Chasteen	Date: 10/6/2011
Biologist Jason Walsh	Date: 10/11/2011
Community Impacts specialist Lincoln Walker	Date: 11/12/2011
Noise and Vibration specialist Thanh Luc	Date: 10/22/2011
Air Quality specialist Nasrin Behmanesh	Date: 10/6/2011
Paleontology specialist/liaison Carrie Chasteen	Date: 10/6/2011
Water Quality specialist Chris Hinds	Date: 11/10/2011
Hydrology and Floodplain specialist Chris Hinds	Date: 11/10/2011
Hazardous Waste/Materials specialist Angela Schnaap	Date: 11/12/2011
Visual/Aesthetics specialist Jeff Lormand	Date: 10/6/2011
Energy and Climate Change specialist Jason Walsh	Date: 10/11/2011
Other: Technical Editor Ryan Todaro	Date: 11/15/2010
PEAR Preparer Jason Walsh	Date: 01/14/2011

**12. Review and Approval**

I confirm that environmental cost, scope, and schedule have been satisfactorily completed and that the PEAR meets all Caltrans requirements. In addition, if the project is scoped as an EA or EIS, I verify that the HQ DEA Coordinator has concurred in the Class of Action.

  
 \_\_\_\_\_  
 Environmental Branch Chief

Date: Dec 5, 2011

  
 \_\_\_\_\_  
 Project Manager

Date: Dec. 12, 2011

### **13. References**

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## **Attachment A: PEAR Environmental Checklist**

## Attachment A: PEAR Environmental Studies Checklist

Rev. 11/08

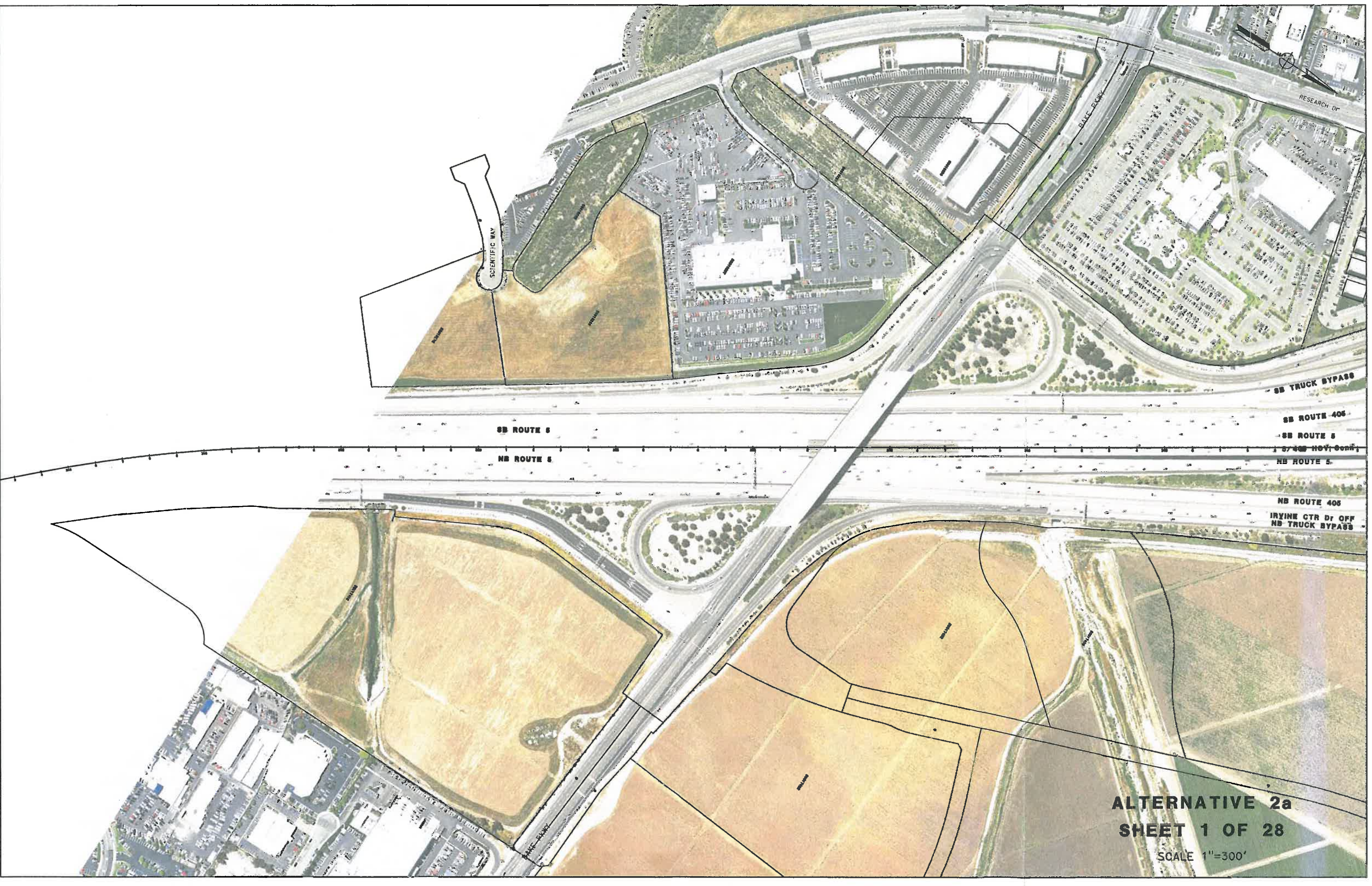
<b>Environmental Studies for PA&amp;ED Checklist</b>					
	Not anticipated	Memo to file	Report required	Risk* L M H	Comments
Land Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Growth	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Farmlands/Timberlands	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Community Impacts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M	
Community Character and Cohesion	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M	
Relocations	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	
Environmental Justice	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M	
Utilities/Emergency Services	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
Visual/Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
Cultural Resources:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Archaeological Survey Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Historic Resources Evaluation Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Historic Property Survey Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Historic Resource Compliance Report	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Section 106 / PRC 5024 & 5024.5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Native American Coordination	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Finding of Effect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Data Recovery Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Memorandum of Agreement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Other: NA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Hydrology and Floodplain	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
Water Quality and Stormwater Runoff	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	
Geology, Soils, Seismic and Topography	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Paleontology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
PER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
PMP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Hazardous Waste/Materials:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	
ISA (Additional)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	H	
PSI	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M	
Other:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Air Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
Noise and Vibration	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M	
Energy and Climate Change	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Biological Environment	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Natural Environment Study	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	L	
Section 7:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Formal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Informal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
No effect	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
Section 10	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
USFWS Consultation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	
NMFS Consultation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L	
Species of Concern (CNPS, USFS, BLM, S, F)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L	

## Environmental Studies for PA&ED Checklist

	Not anticipated	Memo to file	Report required	Risk*			Comments
				L	M	H	
Wetlands & Other Waters/Delineation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L			
404(b)(1) Alternatives Analysis	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
Invasive Species	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	L			
Wild & Scenic River Consistency	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
Coastal Management Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
HMMP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
DFG Consistency Determination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
2081	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
Other:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
Cumulative Impacts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M			
Context Sensitive Solutions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M			
Section 4(f) Evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	M			
<b>Permits:</b>							
401 Certification Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M			
404 Permit Coordination, IP, NWP, or LOP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M			
1602 Agreement Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M			
Local Coastal Development Permit Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
State Coastal Development Permit Coordination	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
NPDES Coordination	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	M			
US Coast Guard (Section 10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
TRPA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			
BCDC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	L			

## **Attachment B: Project Alternative Layouts**





SCIENTIFIC WAY

RESEARCH DR

BIKE PATH

SB TRUCK BYPASS

SB ROUTE 405

SB ROUTE 5

SB ROUTE 5

NB ROUTE 5

SB ROUTE 5

NB ROUTE 5

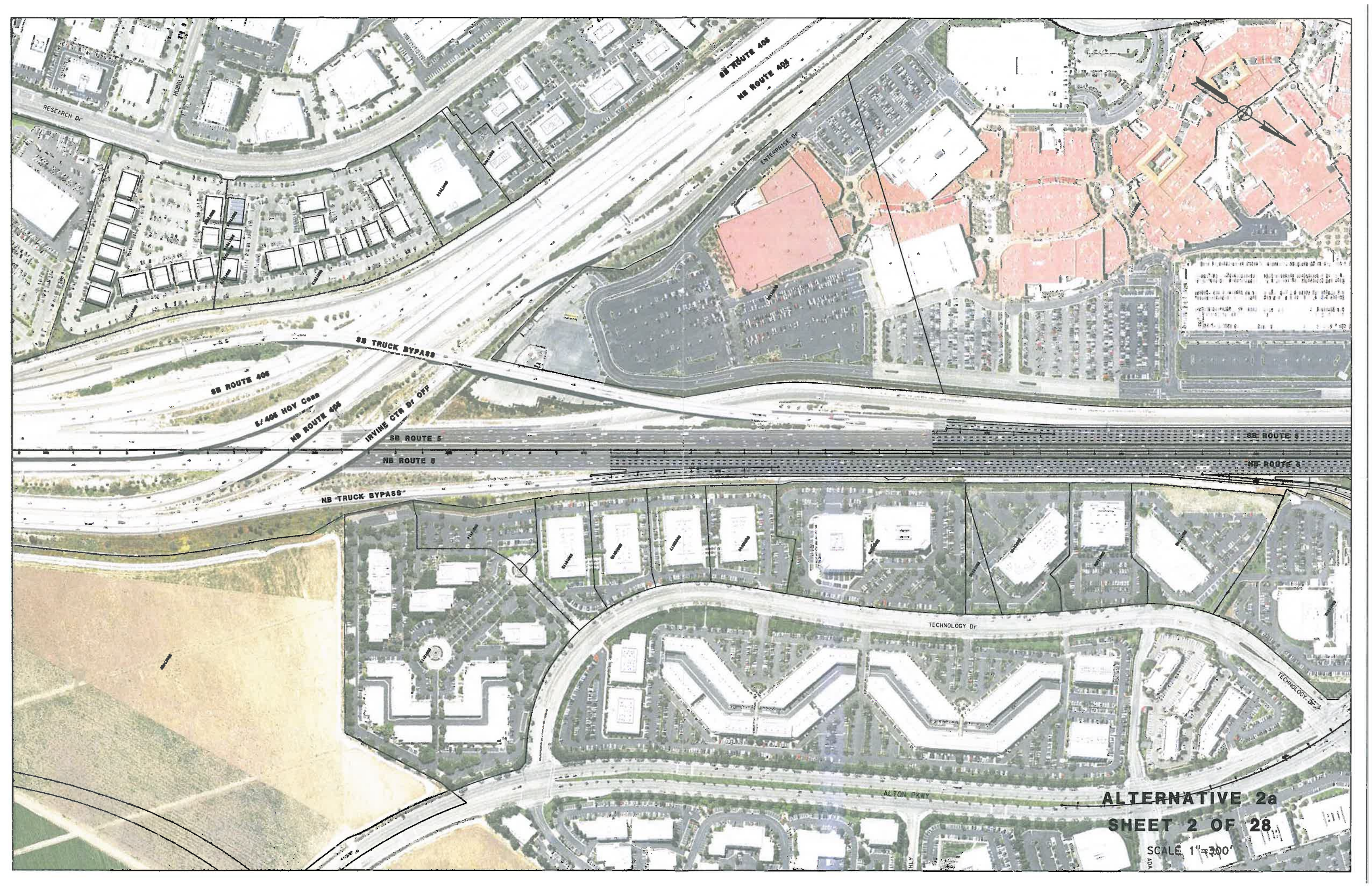
NB ROUTE 405

IRVINE CTR DR OFF NB TRUCK BYPASS

**ALTERNATIVE 2a**  
**SHEET 1 OF 28**

SCALE 1"=300'



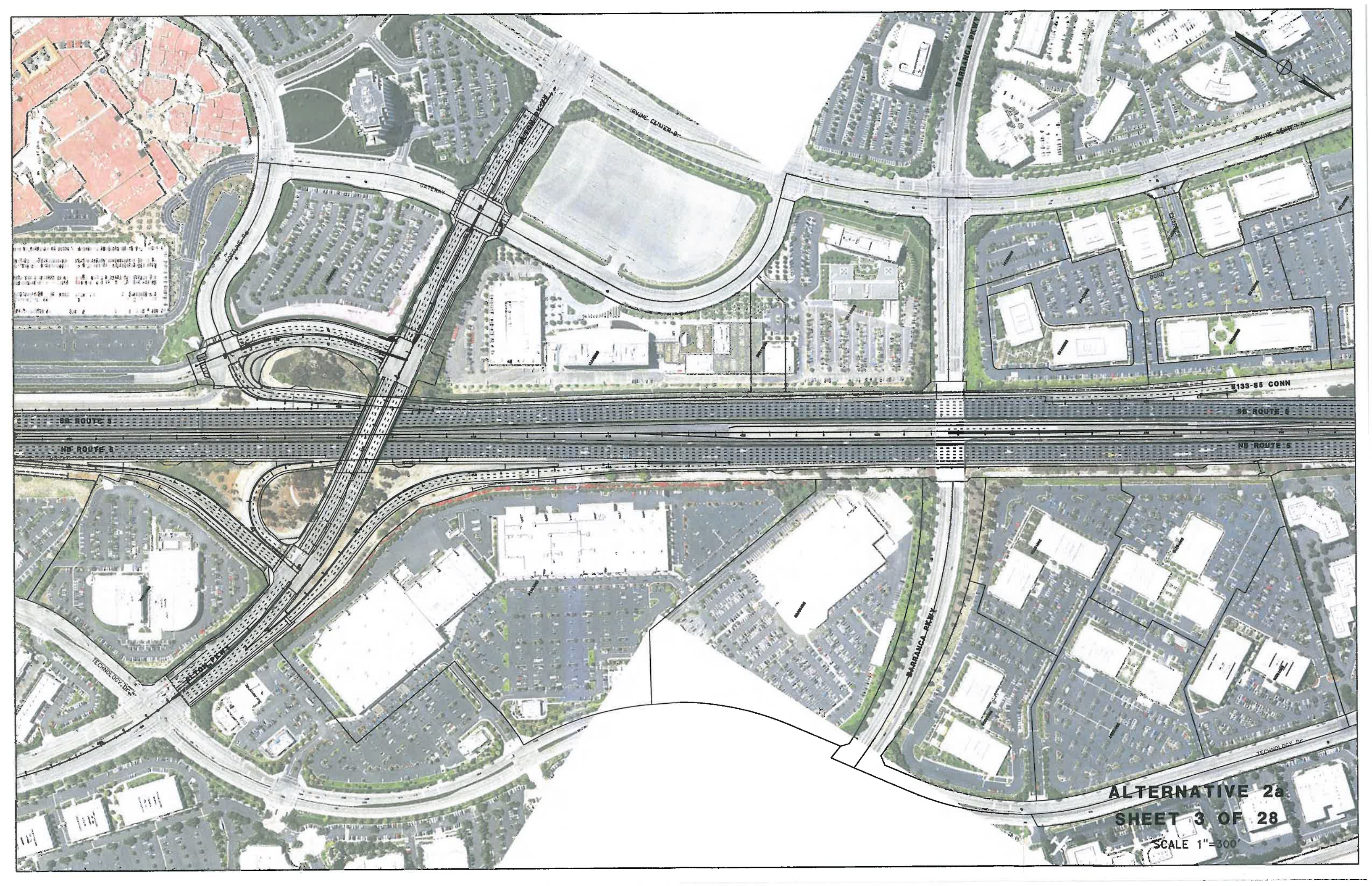


**ALTERNATIVE 2a**

**SHEET 2 OF 28**

SCALE 1"=300'

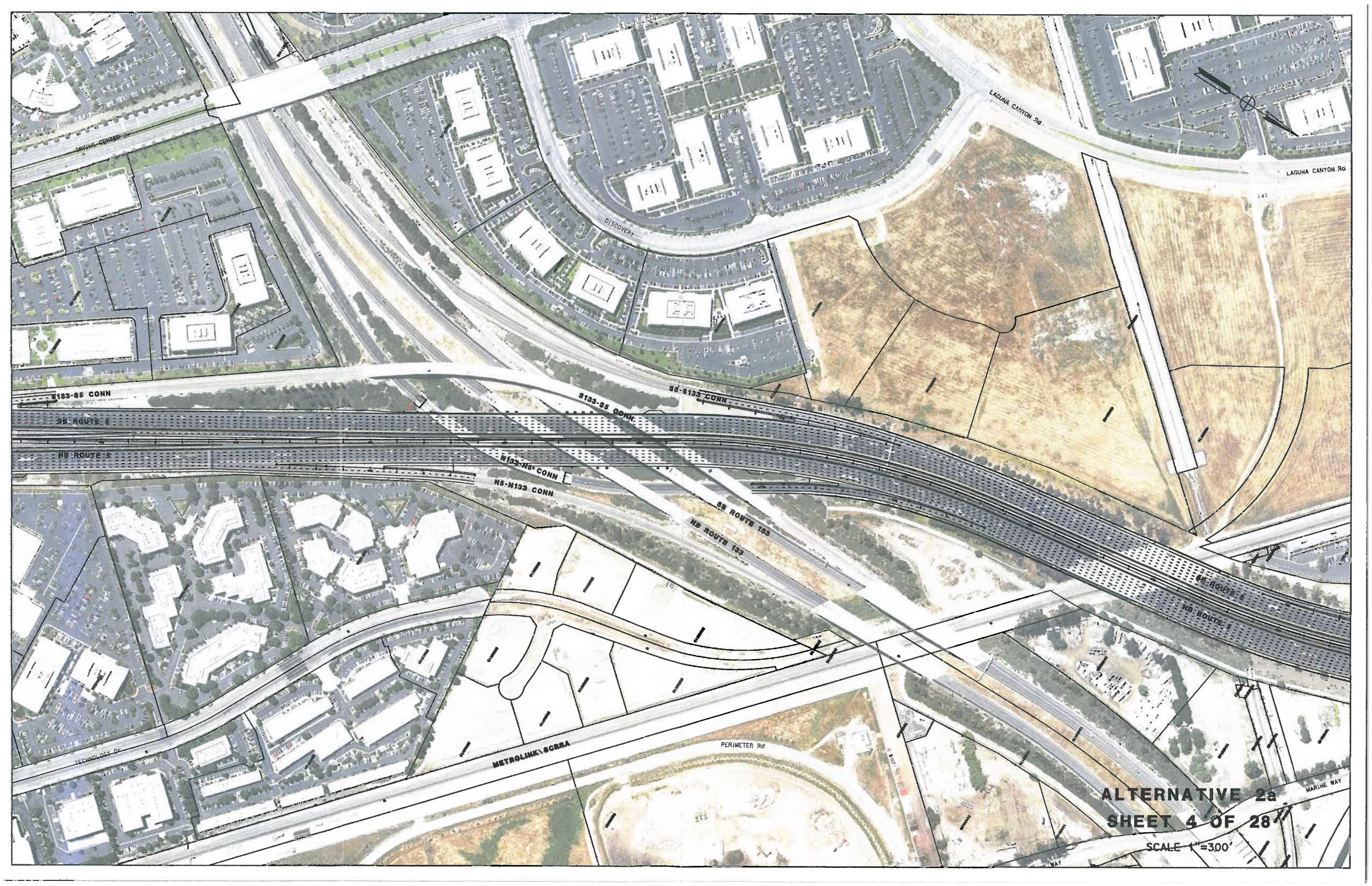




PROJECT NO. 15-0000-0001  
SHEET NO. 3 OF 28  
DATE: 08/14/15  
SCALE: 1"=300'

**ALTERNATIVE 2a**  
**SHEET 3 OF 28**  
SCALE 1"=300'

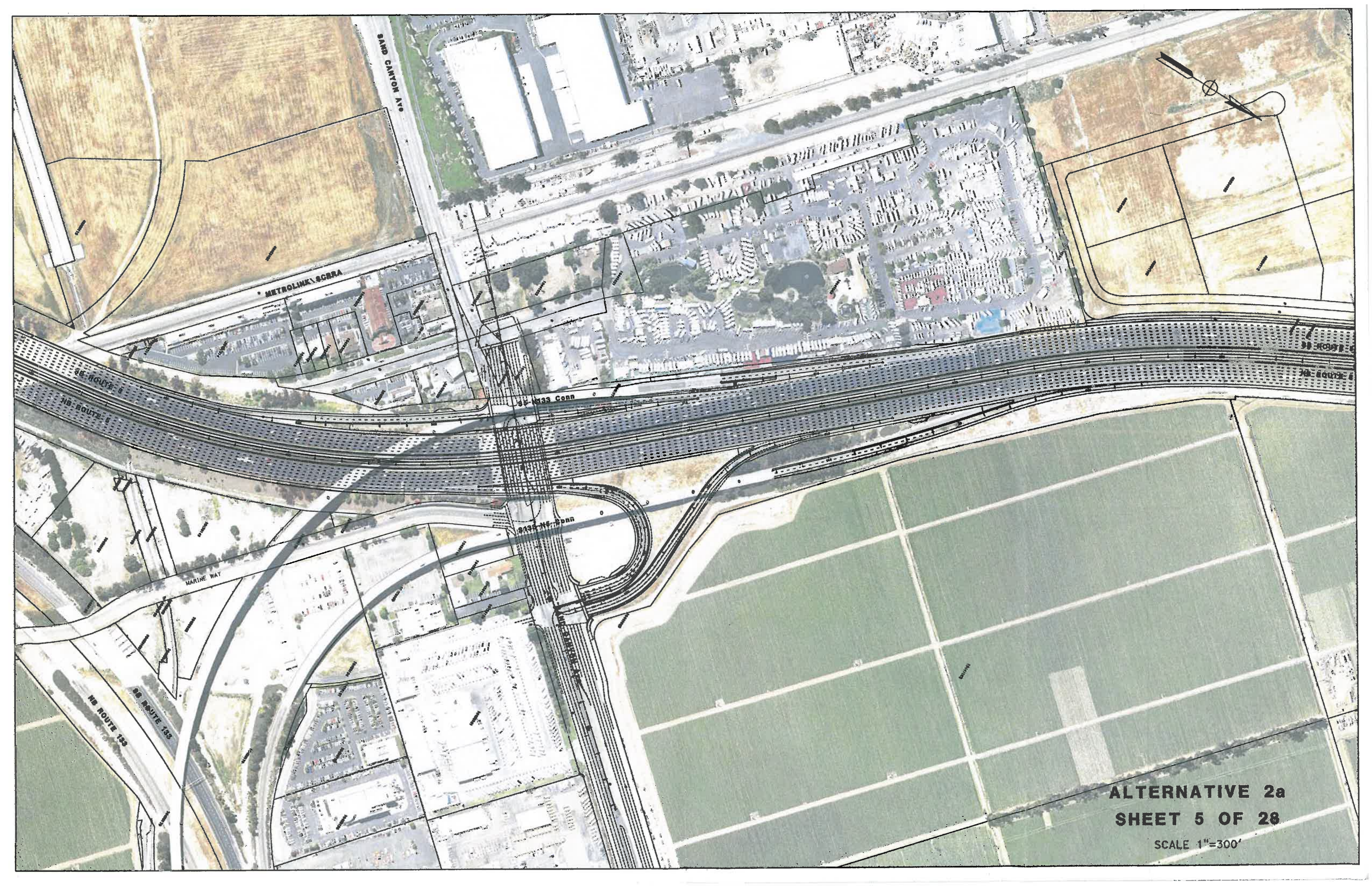




**ALTERNATIVE 2a**  
**SHEET 4 OF 28**

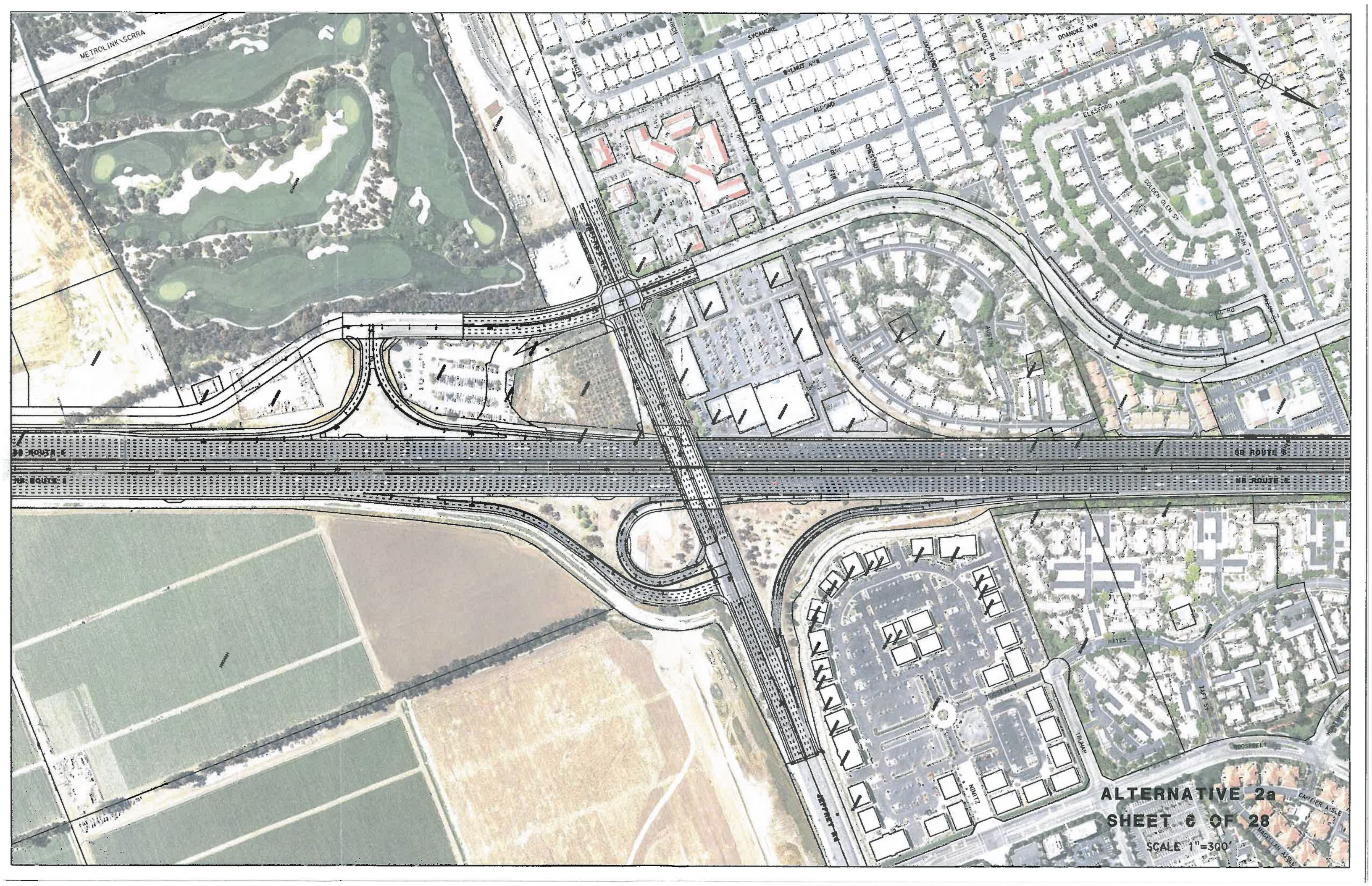
SCALE 1"=300'





**ALTERNATIVE 2a**  
**SHEET 5 OF 28**  
SCALE 1"=300'





METROLINK/SCRRA



SB ROUTE 6

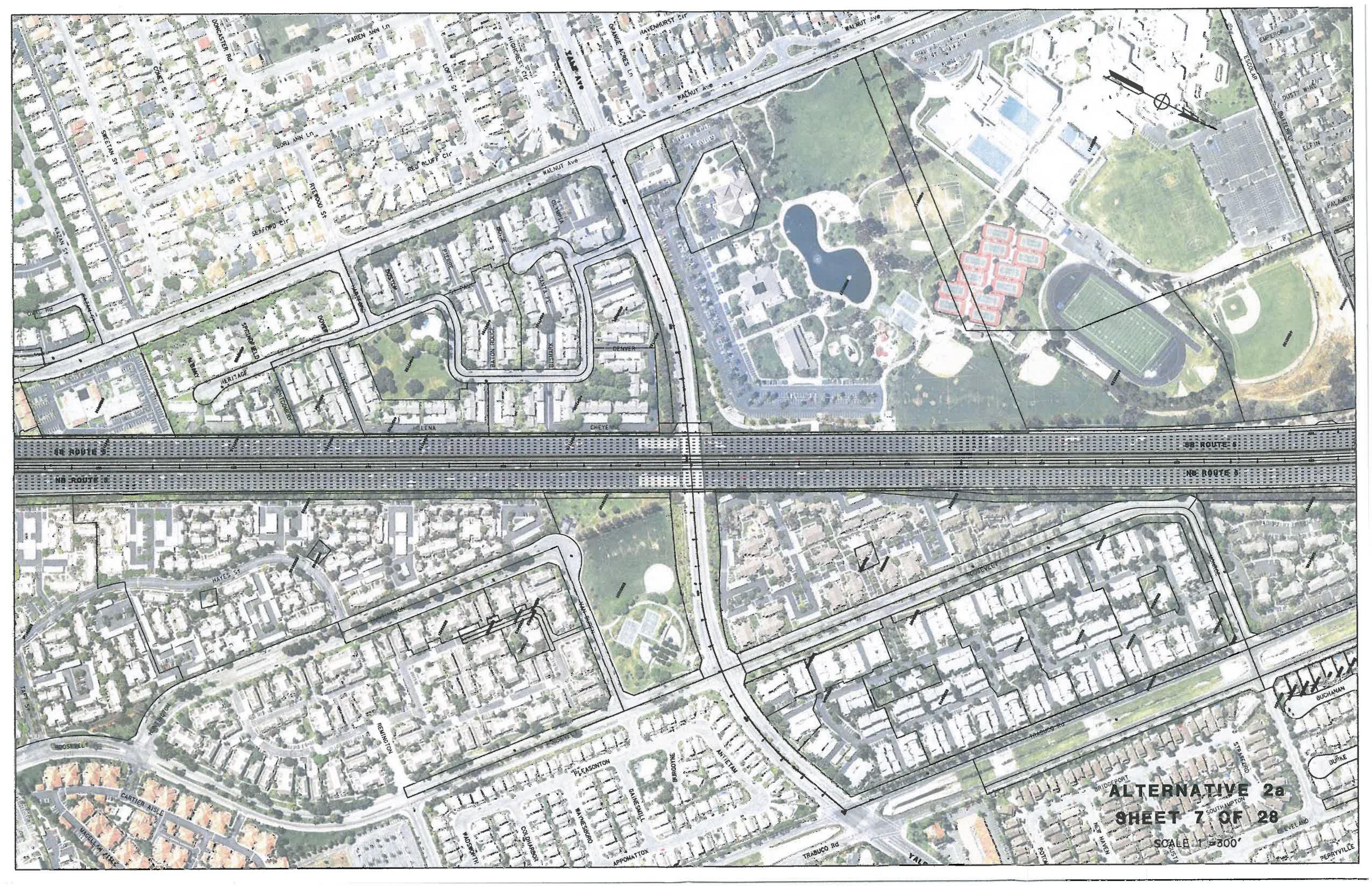
NB ROUTE 6

ALTERNATIVE 2a

SHEET 6 OF 28

SCALE 1"=300'





SR ROUTE 3

SR ROUTE 3

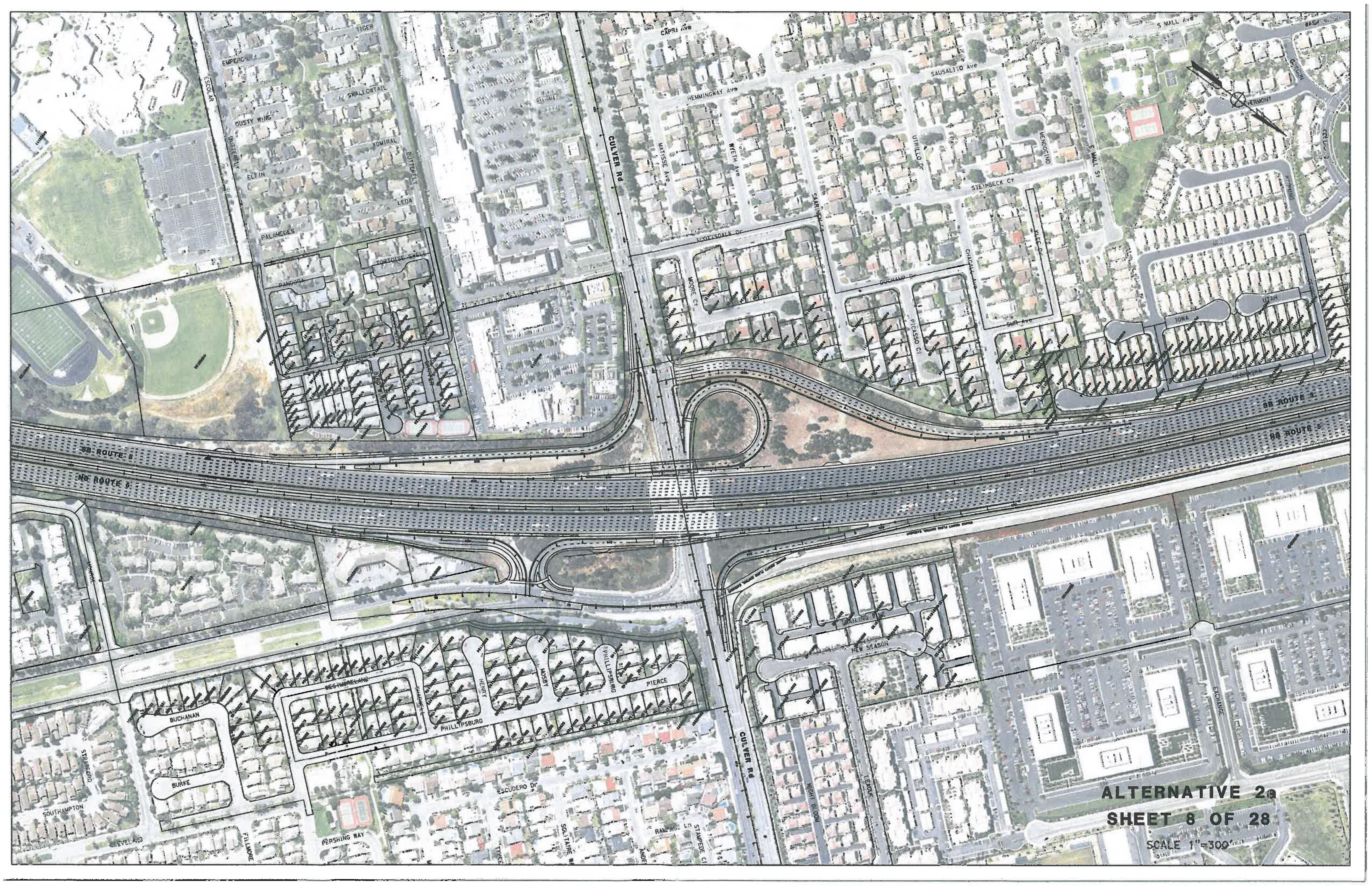
NB ROUTE 3

NB ROUTE 3

**ALTERNATIVE 2a**  
**SHEET 7 OF 28**  
SCALE 1" = 300'

KAREN ANN LN  
LORI ANN LN  
REDFLUFF CIR  
WALNUT AVE  
YALE AVE  
HAYENHURST CIR  
WALNUT AVE  
DUNCAN RD  
SWEET AN ST  
KAZAN ST  
SEAFORD CIR  
PIREOD ST  
HELENA  
CHEYENNE  
SPRINGFIELD  
DOVER  
BAYTON POLICE  
STANLEY  
DENVER  
HELENA  
CHEYENNE  
WALNUT AVE  
YALE AVE  
ESCOLAR  
DUSTY WIND  
BUTTERBY  
ELFIN  
PALMEDO  
SR ROUTE 3  
NB ROUTE 3  
SR ROUTE 3  
NB ROUTE 3  
HAYES ST  
REMINOTON  
PLEASANTON  
BURGOYNE  
ANTETAN  
TRABUCCO RD  
YALE  
BUCHANAN  
BURKE  
CARTIER AISLE  
MAGELLAN AVE  
WIDENORTH  
COLLINSBORO  
WAINESBORO  
APPOMATTOX  
BRIDGEPORT  
SOUTHAMPTON  
CLEVELAND  
PERRYVILLE



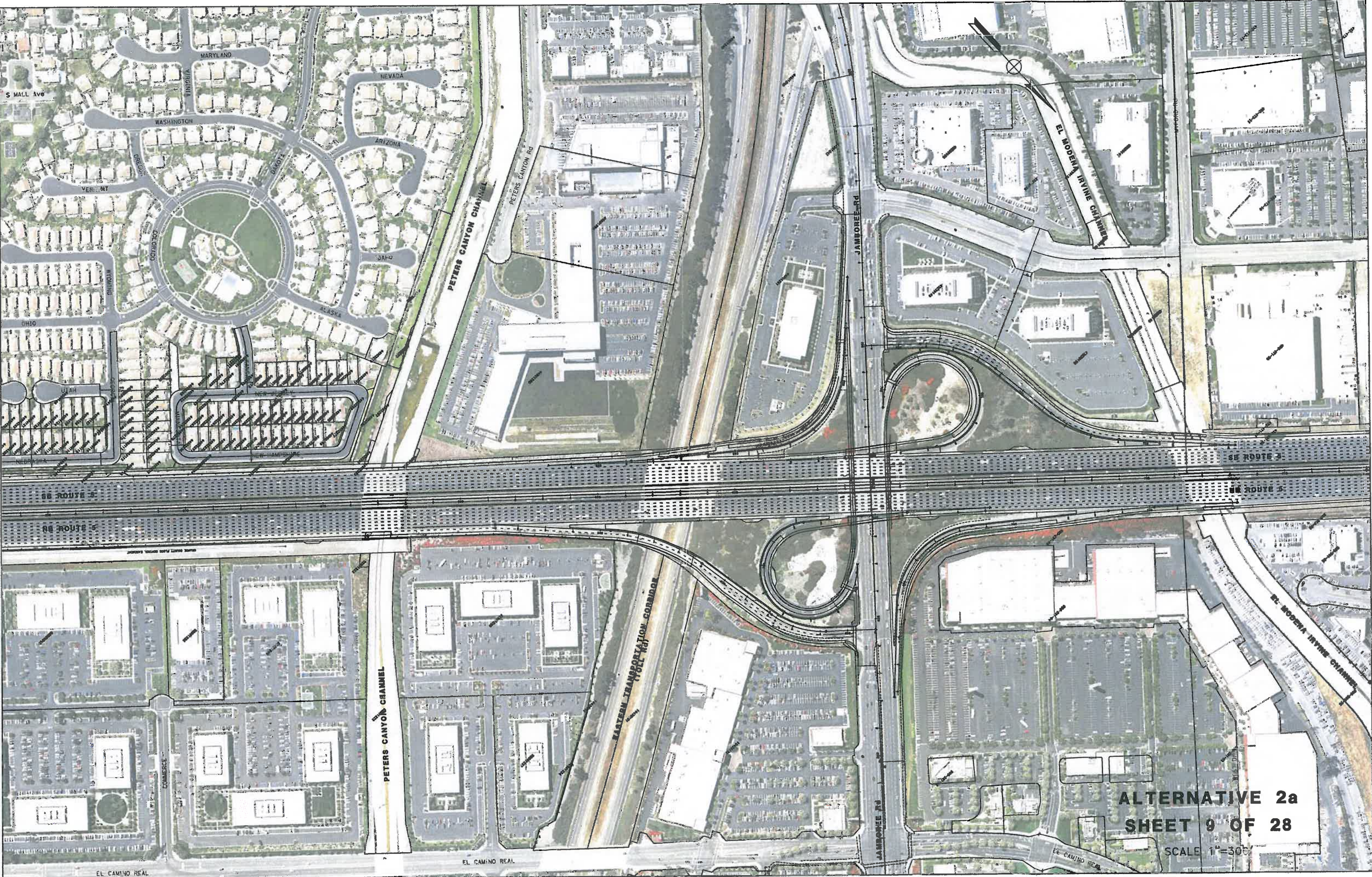


ALTERNATIVE 2a

SHEET 8 OF 28

SCALE 1"=300'





**ALTERNATIVE 2a**  
**SHEET 9 OF 28**

SCALE 1"=30'

EL CAMINO REAL

EL CAMINO REAL

EL CAMINO REAL

JAMBORRE RD

PETERS CANYON CHANNEL

EASTERN TRANSPORTATION CORRIDOR

PETERS CANYON CHANNEL

PETERS CANYON RD

JAMBORRE RD

EL MODENA IRVINE CHANNEL

SE ROUTE 3

NE ROUTE 3

S MALL Ave

WASHINGTON

VERMONT

DAKOTA

ALASKA

OHIO

UTAH

NEBRASKA

COMMERCE

EL CAMINO REAL

JAMBORRE RD

EL MODENA IRVINE CHANNEL

SE ROUTE 3

NE ROUTE 3

S MALL Ave

MARYLAND

WASHINGTON

NEVADA

ARIZONA

VERMONT

DAKOTA

ALASKA

OHIO

UTAH

NEBRASKA

COMMERCE

EL CAMINO REAL

JAMBORRE RD

EL MODENA IRVINE CHANNEL

SE ROUTE 3

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NEBRASKA

COMMERCE

EL CAMINO REAL

JAMBORRE RD

EL MODENA IRVINE CHANNEL

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NE ROUTE 3

S MALL Ave

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NEBRASKA

COMMERCE

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JAMBORRE RD

EL MODENA IRVINE CHANNEL

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JAMBORRE RD

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COMMERCE

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JAMBORRE RD

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NE ROUTE 3

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NEBRASKA

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EL CAMINO REAL

JAMBORRE RD

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NEBRASKA

COMMERCE

EL CAMINO REAL

JAMBORRE RD

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EL CAMINO REAL

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NE ROUTE 3

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NEBRASKA

COMMERCE

EL CAMINO REAL

JAMBORRE RD

EL MODENA IRVINE CHANNEL

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COMMERCE

EL CAMINO REAL

JAMBORRE RD

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JAMBORRE RD

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OHIO

UTAH

NEBRASKA

COMMERCE

EL CAMINO REAL

JAMBORRE RD

EL MODENA IRVINE CHANNEL

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NE ROUTE 3

S MALL Ave

MARYLAND

WASHINGTON

NEVADA

ARIZONA

VERMONT

DAKOTA

ALASKA

OHIO

UTAH

NEBRASKA

COMMERCE

EL CAMINO REAL

JAMBORRE RD

EL MODENA IRVINE CHANNEL

MARYLAND

WASHINGTON

NEVADA

ARIZONA

VERMONT

DAKOTA

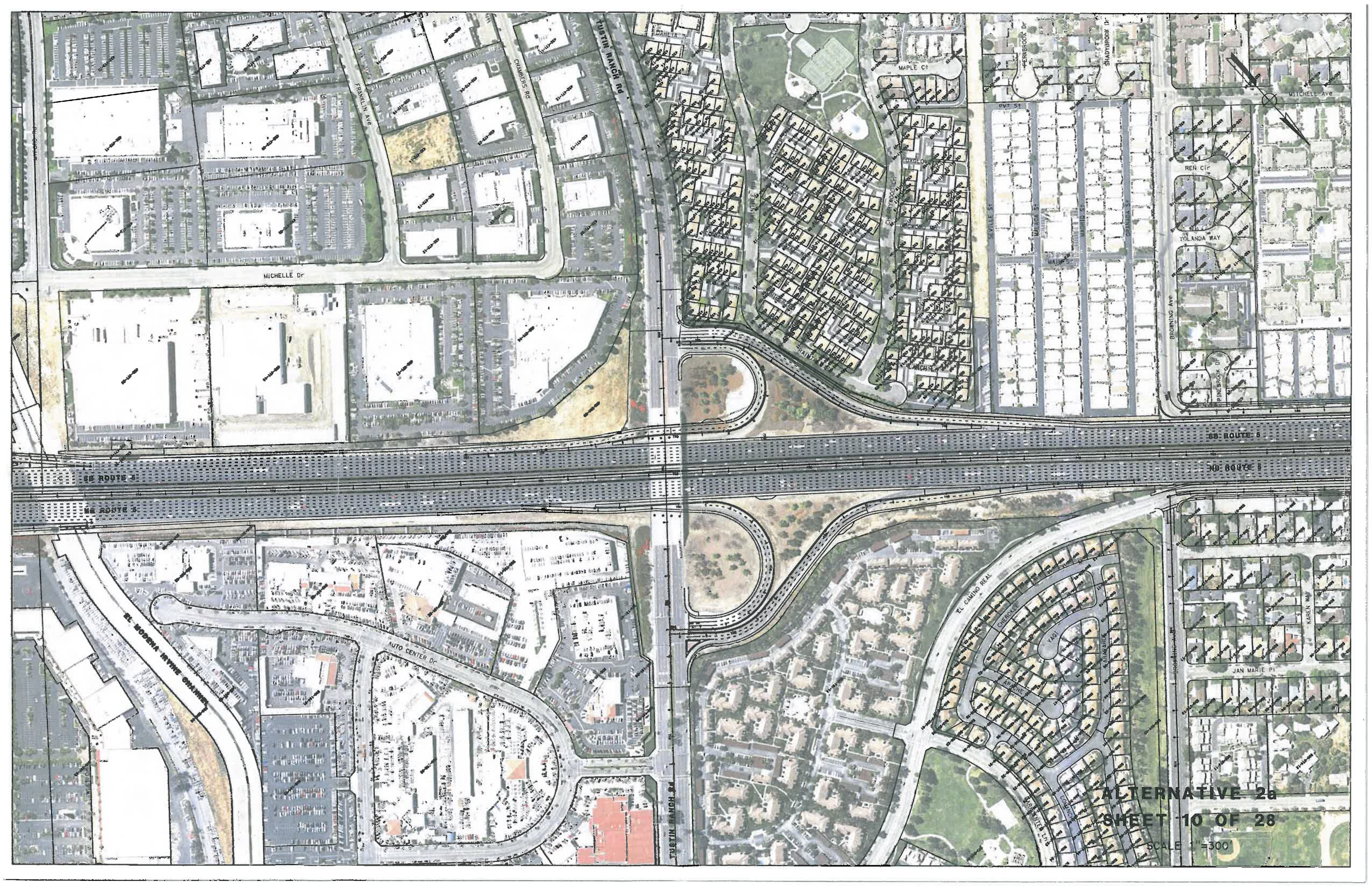
ALASKA

OHIO

UTAH

NEBRASK





SB ROUTE 5

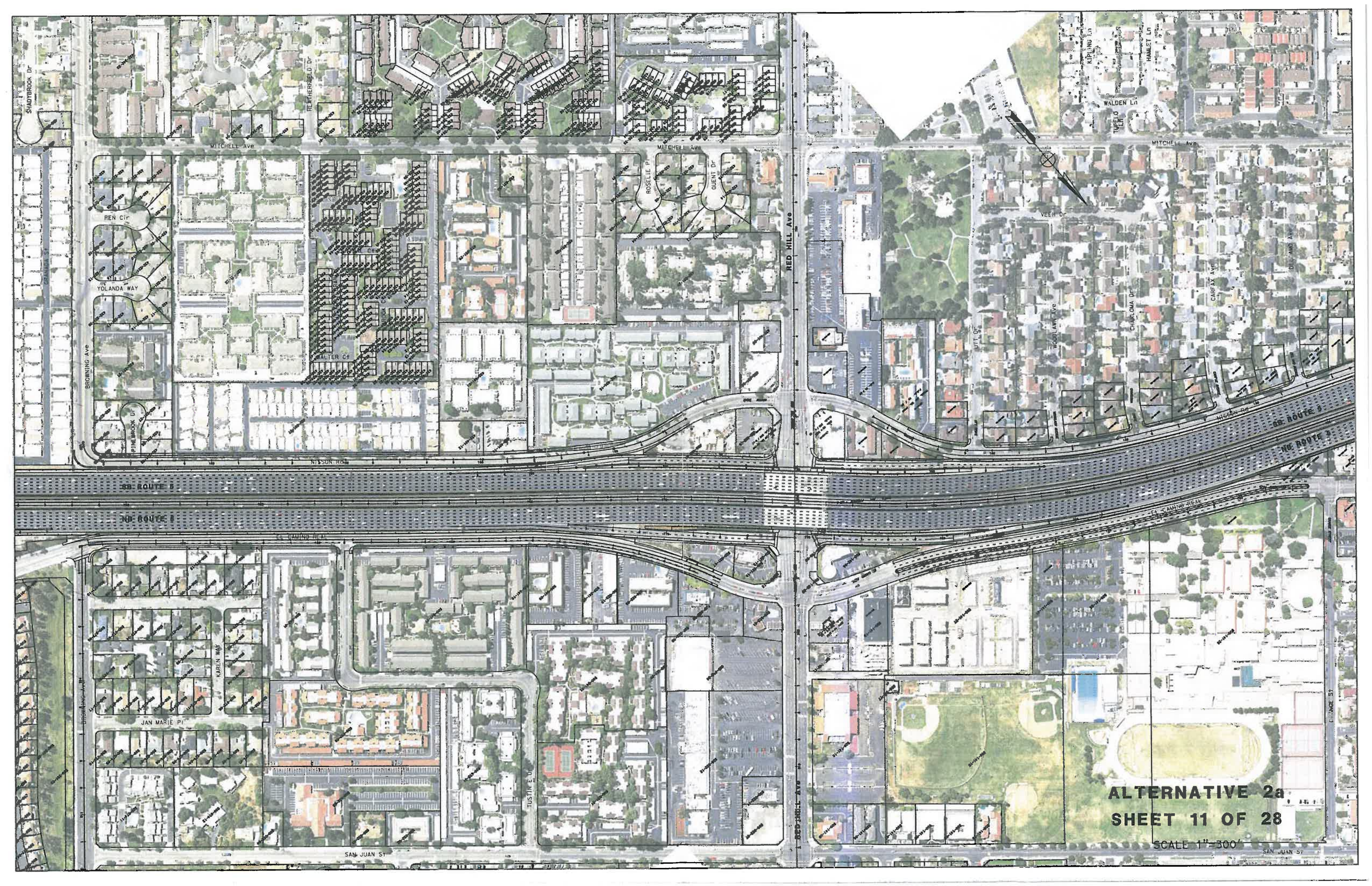
NB ROUTE 5

ALTERNATIVE 2a

SHEET 10 OF 28

SCALE = 1" = 300'





**ALTERNATIVE 2a**  
**SHEET 11 OF 28**

SCALE 1"=300'

SHADYBROOK DR

MITCHELL AVE

MITCHELL AVE

MITCHELL AVE

REN CIR

YOLANDA WAY

ROSELE PI

OLEANT DR

VEEH DR

BROMMING AVE

WALTER CT

ROSELE PI

OLEANT DR

WITT DR

WOODLAW AVE

CHARLOMA DR

CARFAX AVE

BELVA AVE

SR ROUTE 3

SR ROUTE 3

EL CAMINO REAL

EL CAMINO REAL

SR ROUTE 3

SR ROUTE 3

BROMMING AVE

KAREN WAY

JAN MARIE PI

JUSTICE DR

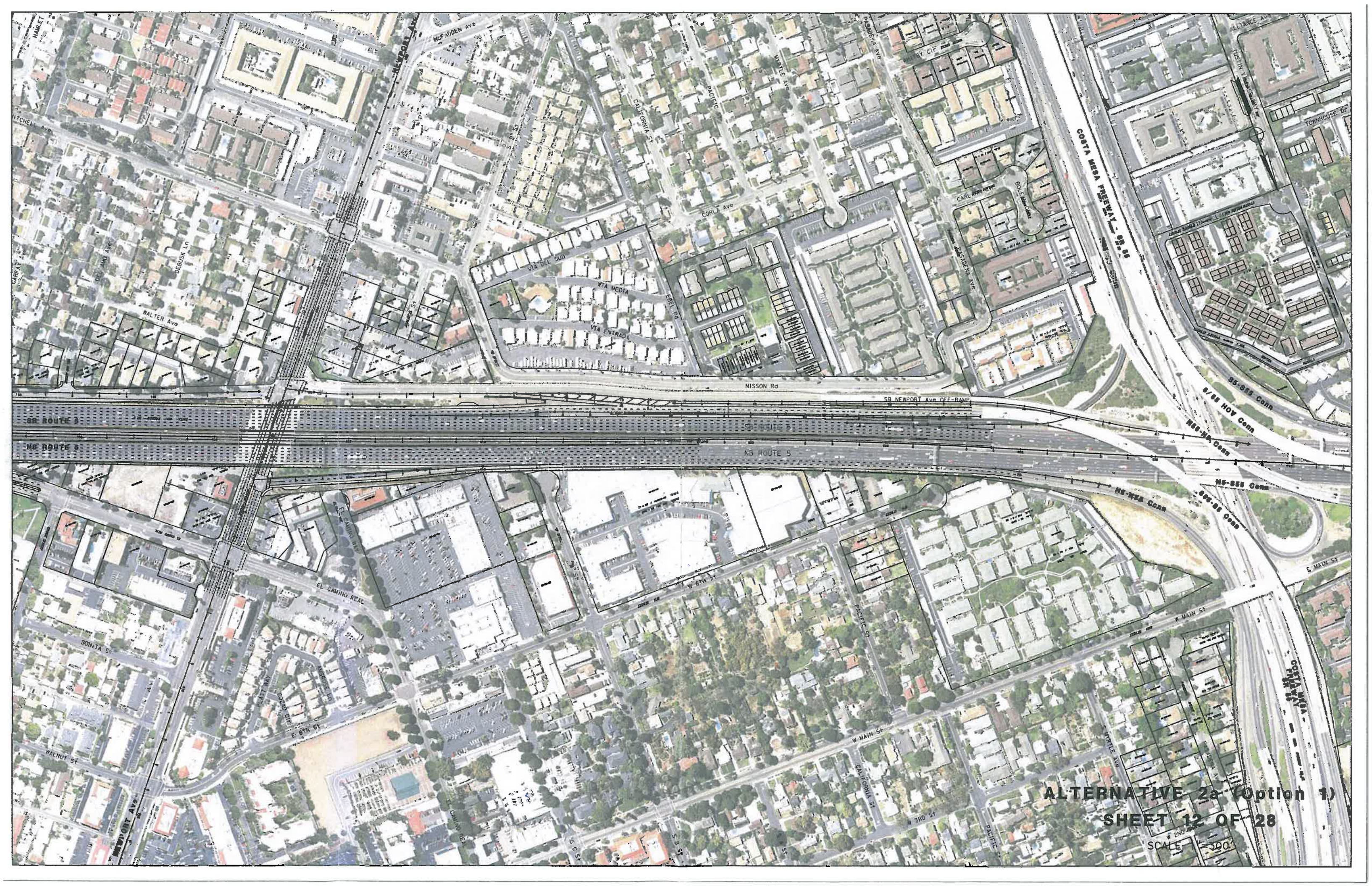
RED HILL AVE

CHANCE ST

SAN JUAN ST

SAN JUAN ST

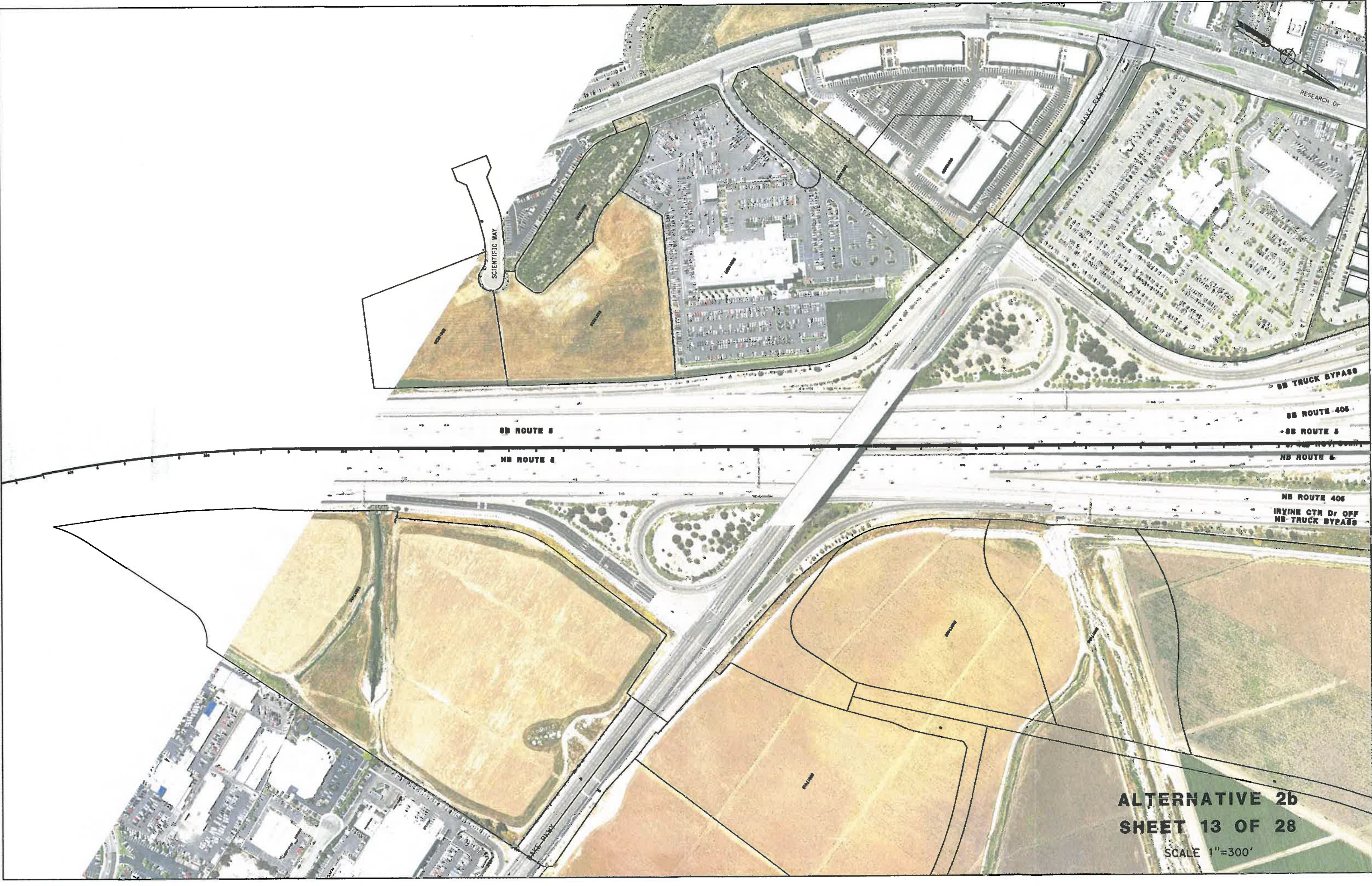




ALTERNATIVE 2a (Option 1)  
SHEET 12 OF 28

SCALE 1" = 300'





SCIENTIFIC WAY

RESEARCH DR

SB TRUCK BYPASS

SB ROUTE 406

SB ROUTE 5

NB ROUTE 5

NB ROUTE 406

IRVINE CTR Dr OFF NB TRUCK BYPASS

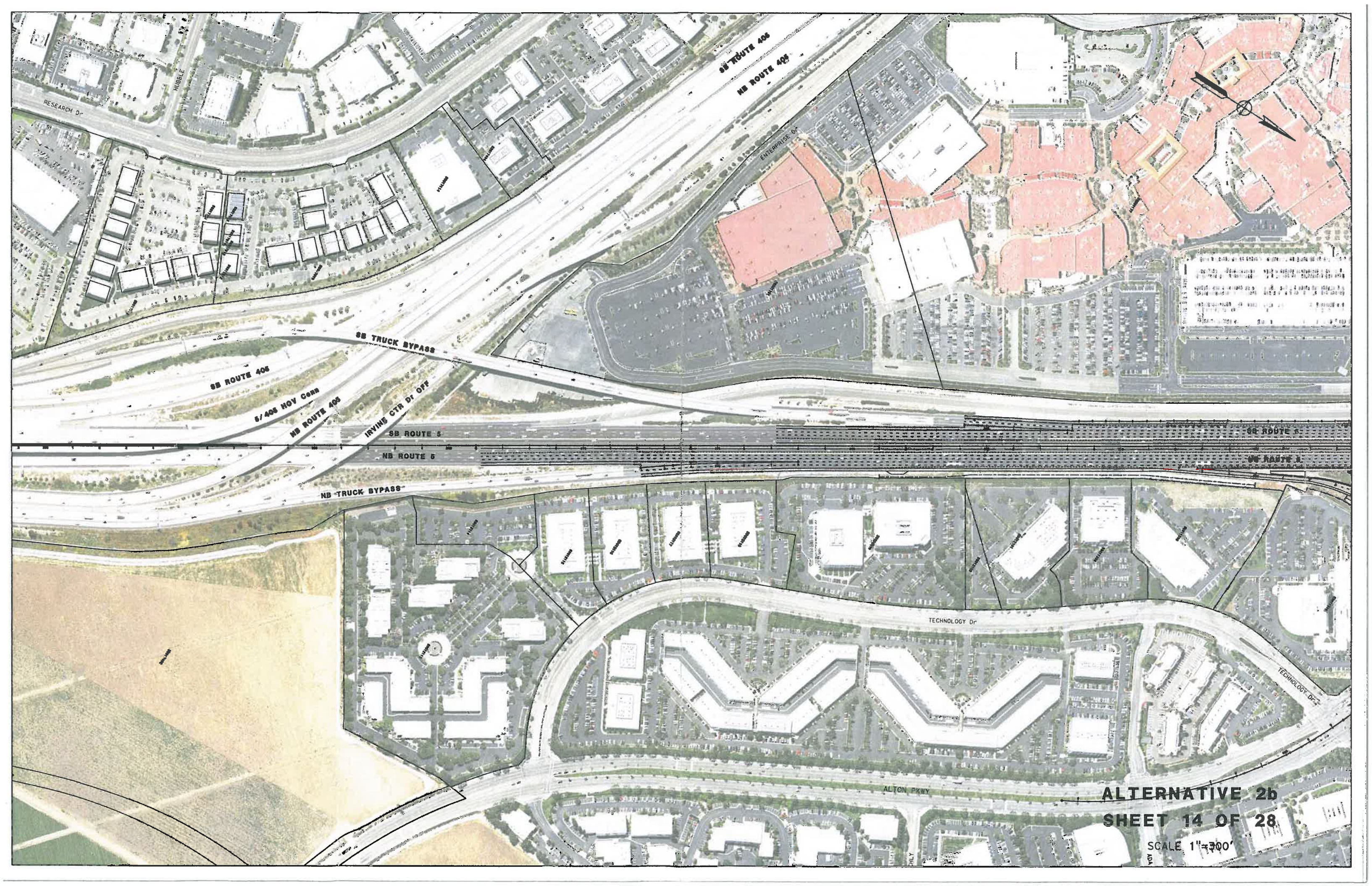
SB ROUTE 5

NB ROUTE 5

**ALTERNATIVE 2b**  
**SHEET 13 OF 28**

SCALE 1"=300'

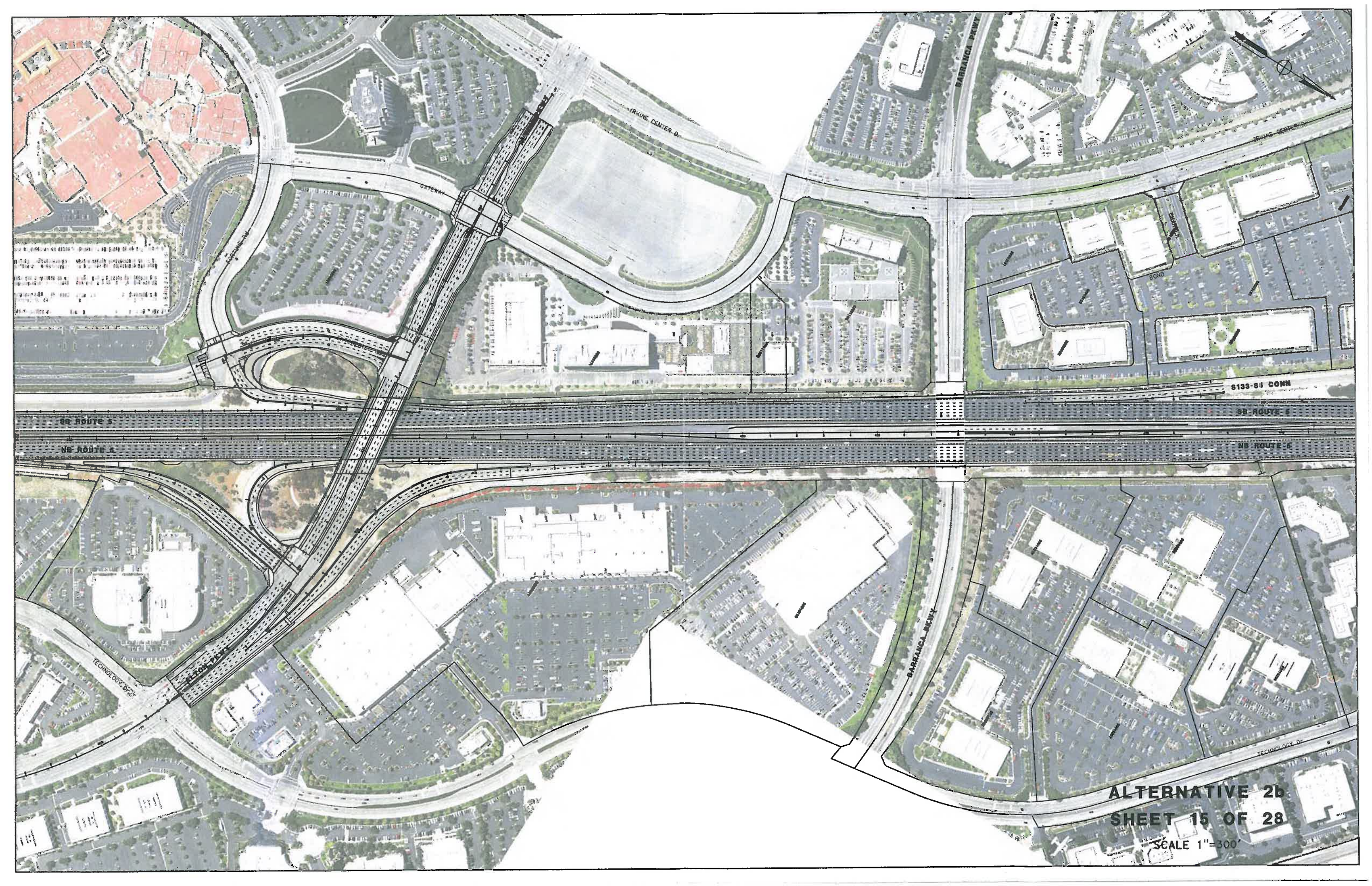




**ALTERNATIVE 2b**  
**SHEET 14 OF 28**

SCALE 1"=300'

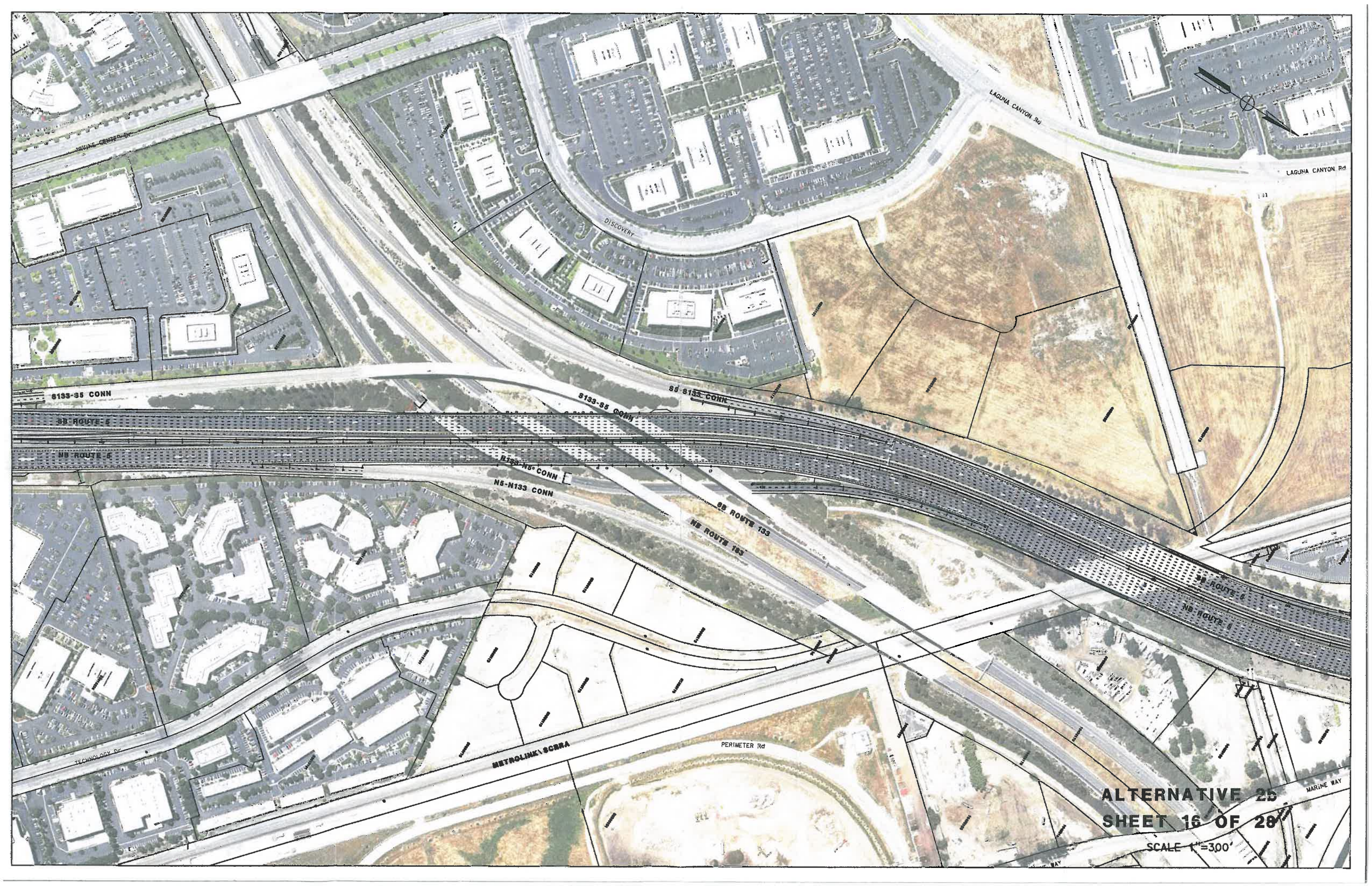




IRVINE CENTER DR  
GATEWAY  
BARRANCA PKWY  
TECHNOLOGY DR  
BOND  
6133-85 CONN  
SB ROUTE 5  
NB ROUTE 5  
SB ROUTE 5  
NB ROUTE 5  
BARRANCA PKWY  
TECHNOLOGY DR

**ALTERNATIVE 2b**  
**SHEET 15 OF 28**  
SCALE 1"=300'

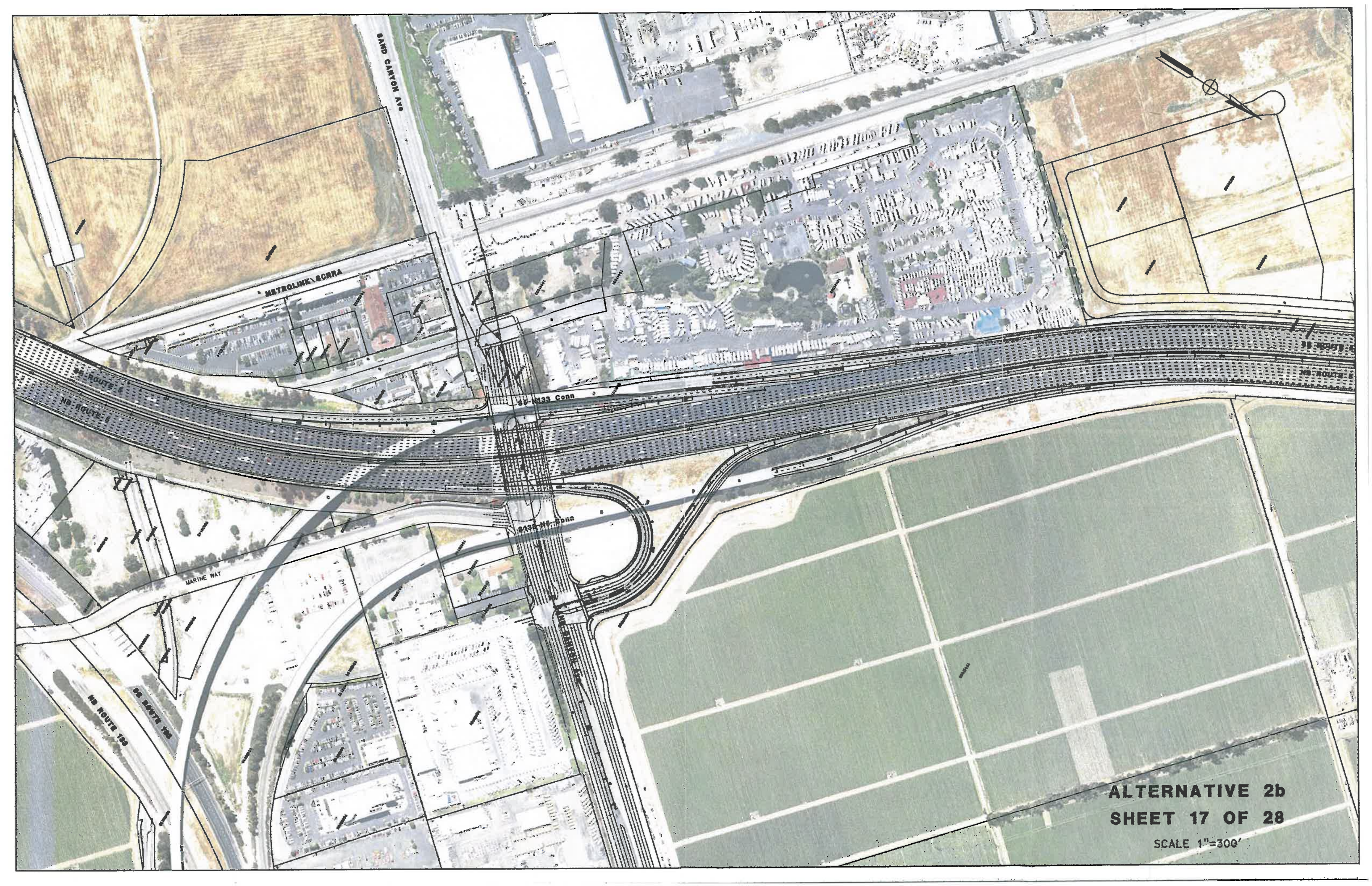




ALTERNATIVE 25  
SHEET 16 OF 28

SCALE 1"=300'





METROLINK SCRRRA

95-133 Conn

9435-145 Conn

MARINE WAY

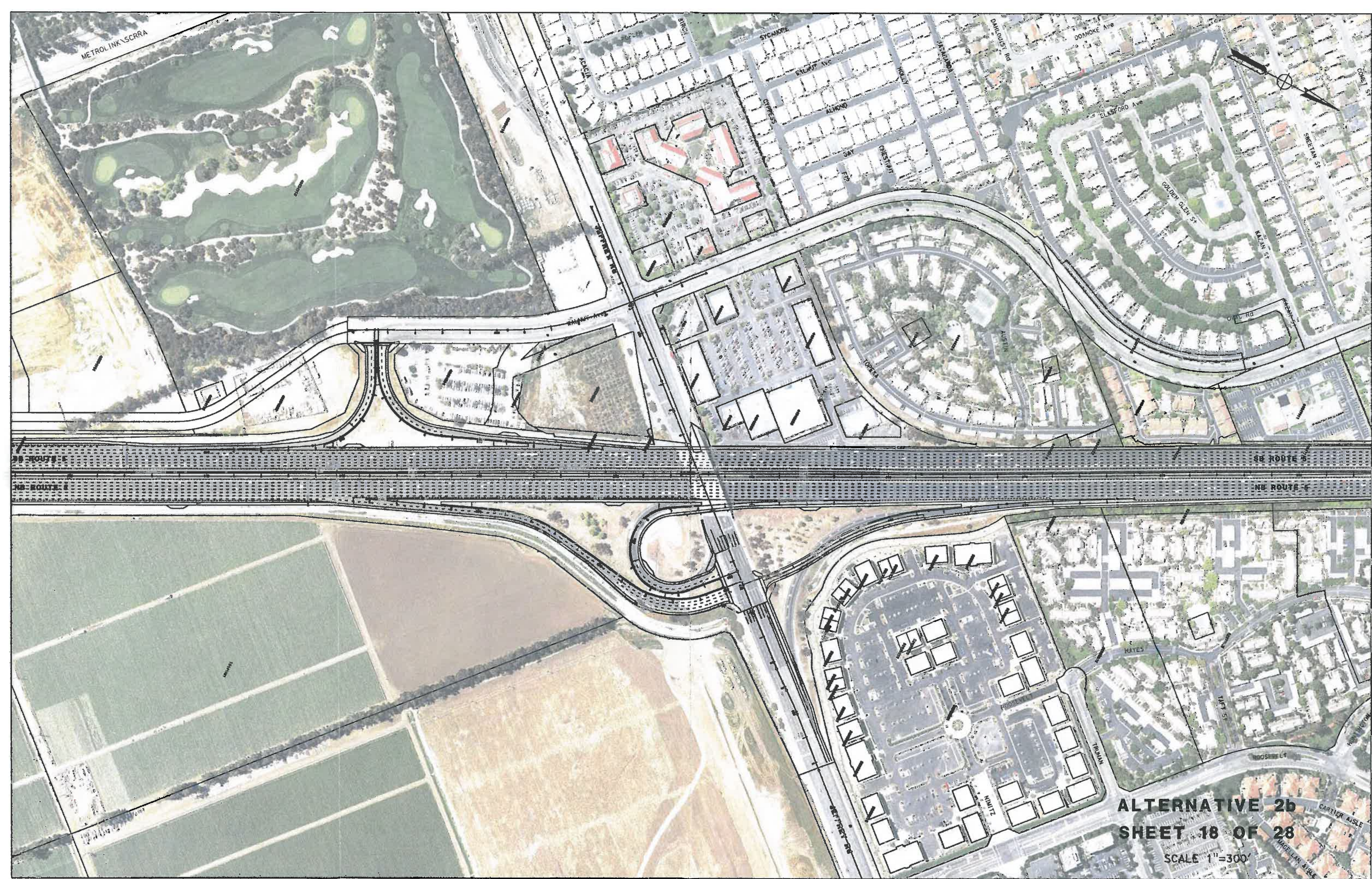
SB ROUTE 158

NB ROUTE 158

ALTERNATIVE 2b  
SHEET 17 OF 28

SCALE 1"=300'



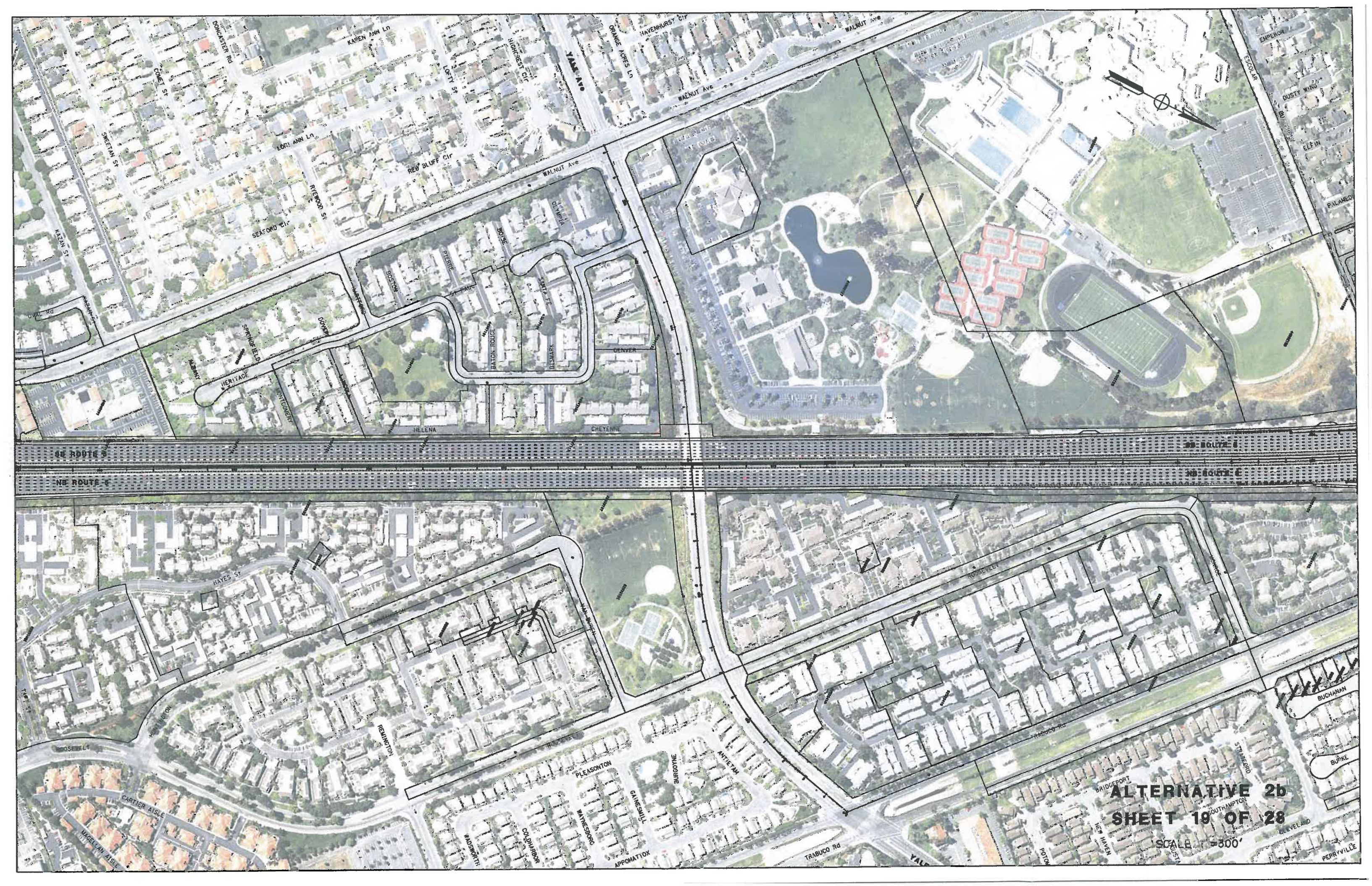


METROLINK SCRRRA



**ALTERNATIVE 2b**  
**SHEET 18 OF 28**  
SCALE 1"=300'





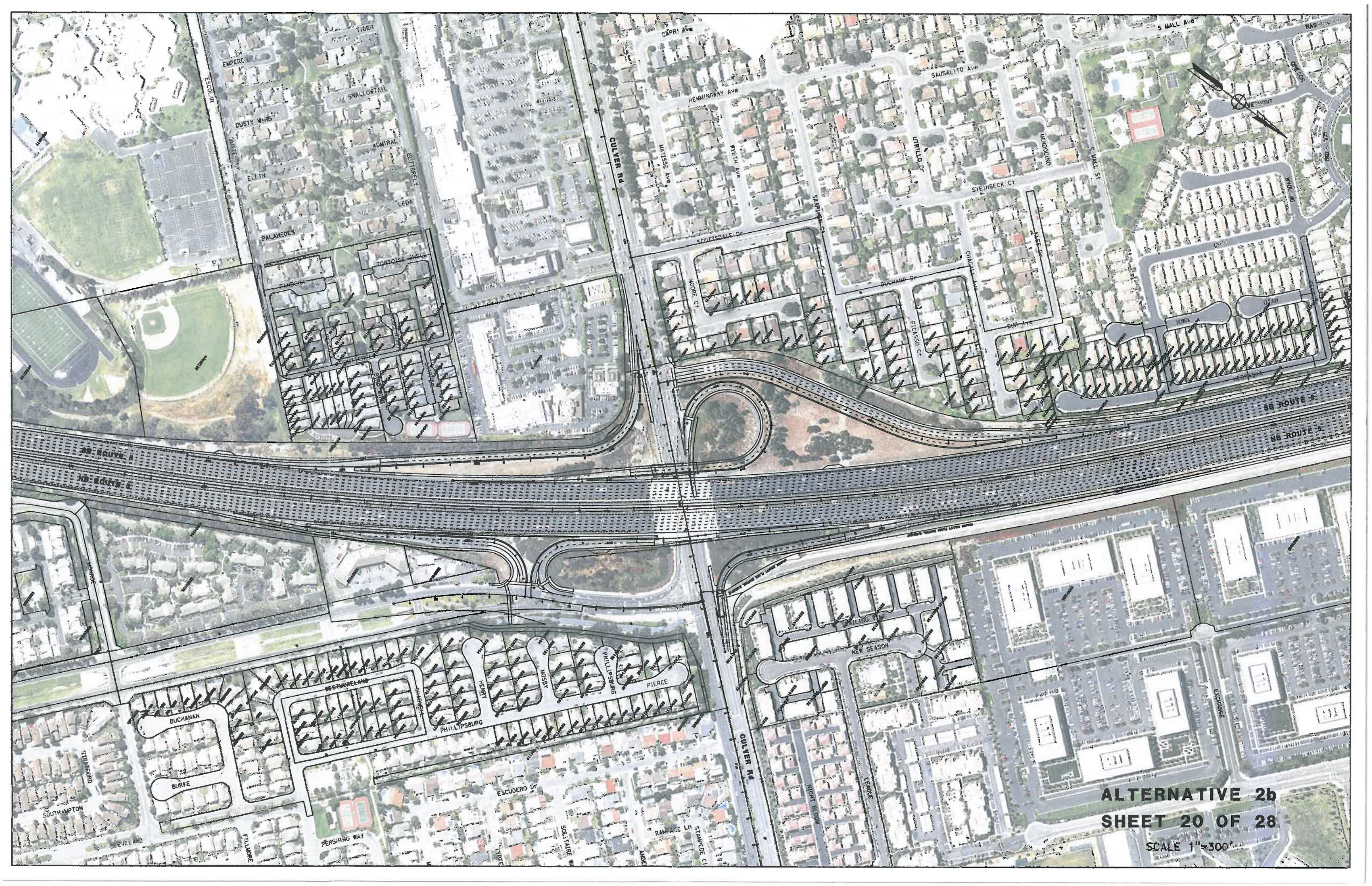
4E ROUTE 6  
4B ROUTE 6  
4A ROUTE 6  
3B ROUTE 6  
3A ROUTE 6  
2B ROUTE 6  
2A ROUTE 6  
1B ROUTE 6  
1A ROUTE 6

**ALTERNATIVE 2b**  
**SHEET 19 OF 28**

SCALE 1" = 500'

Map labels include street names: KAREN ANN LN, HAYENHURST CIR, WALNUT AVE, YALE AVE, ORNIE AVENUE LN, DONKLESTER RD, SHERMAN ST, KAZAN ST, SWEET ST, LORI ANN LN, RED BLUFF CIR, SEAFORD CIR, RYWOOD ST, HIGHEST CIR, WALNUT AVE, OVAL RD, HERITAGE, SPRINGFIELD, DOVER, BAYON ROUGE, ELLSWORTH, DENVER, CHEYENNE, HELENA, HAYES ST, REMINGTON, PLEASANTON, BURGOYNE, ANTIETAM, BRIDGEPORT, SOUTHAMPTON, CLEVELAND, PERRVILLE, BUCHANAN, BURL, TRABUCO RD, POTOMAC, NEW HAVEN, WINDSOR, COQUON, WAREBORO, GAYNESWILL, APPOMATOX, CARTIER AISLE, MARGELAN AISLE, ROOSEVELT, WASHINGTON, THROUGH RD, POTOMAC, NEW HAVEN, CLEVELAND, PERRVILLE, BUCHANAN, BURL, BRIDGEPORT, SOUTHAMPTON, CLEVELAND, PERRVILLE.

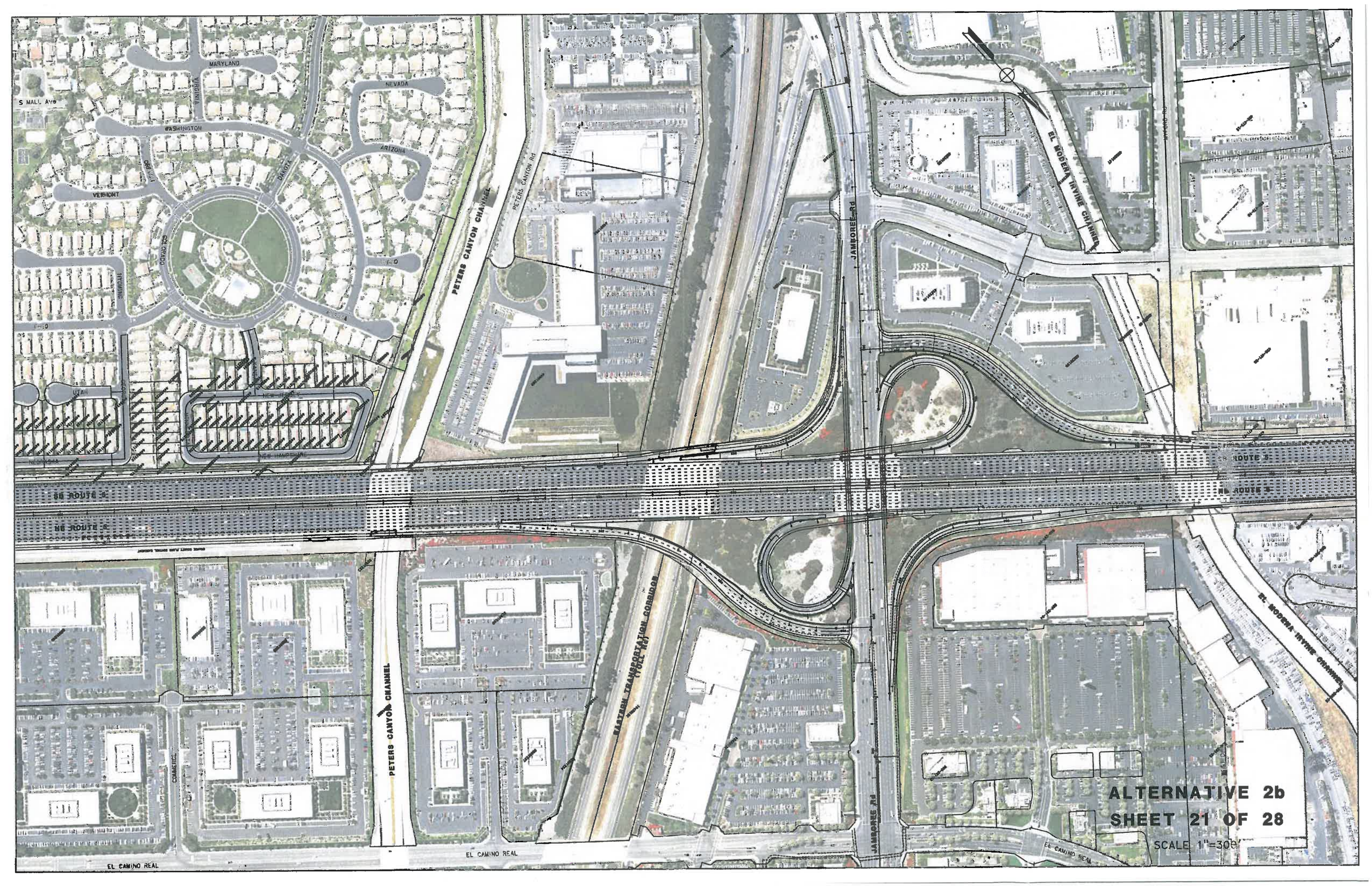




**ALTERNATIVE 2b**  
**SHEET 20 OF 28**

SCALE 1"=300'

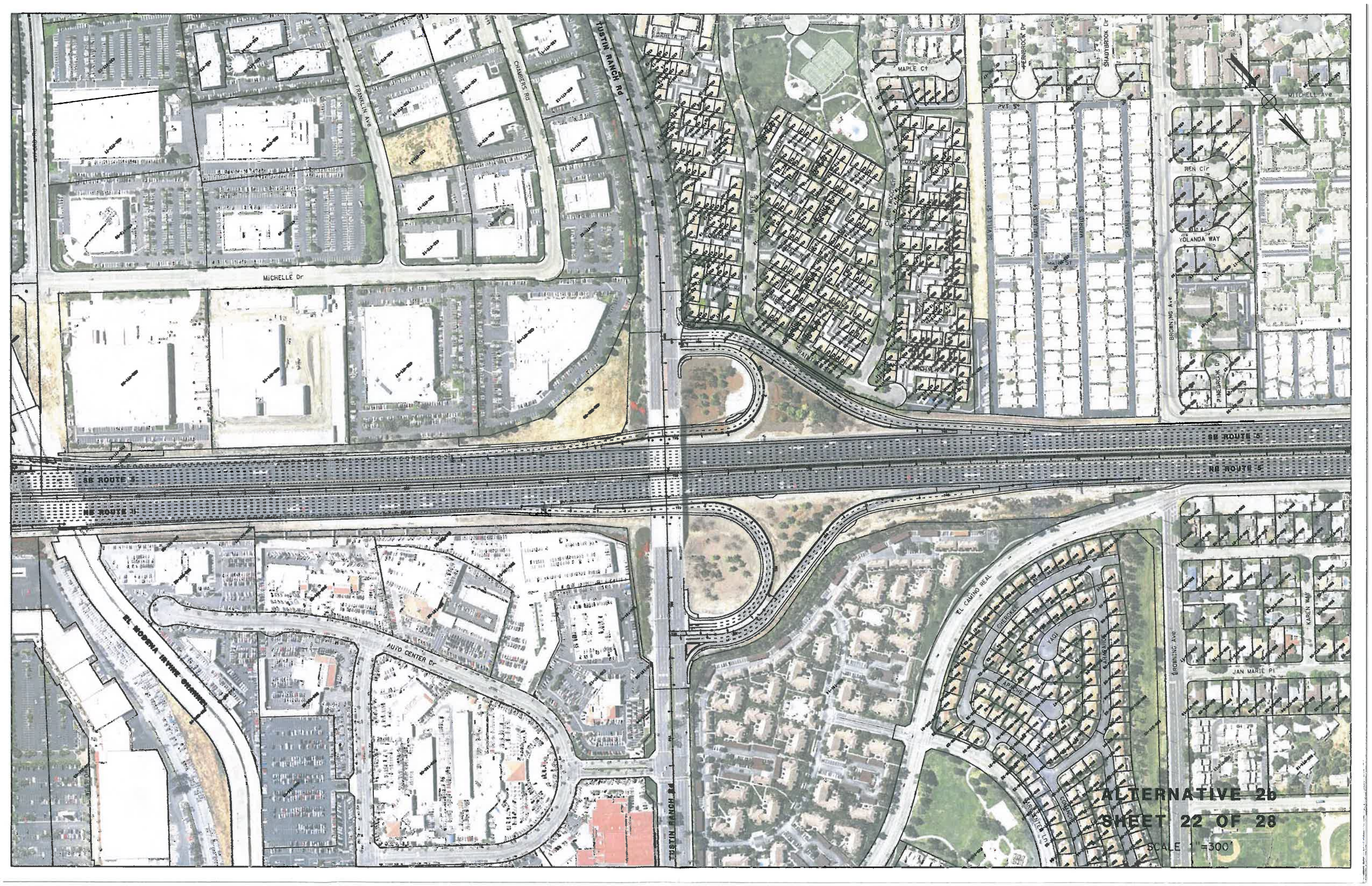




**ALTERNATIVE 2b**  
**SHEET 21 OF 28**

SCALE 1"=300'





ALTERNATIVE 2b  
SHEET 22 OF 28

SCALE = 300'

MICHELLE Dr

CHAMBERS Rd

JUSTIN RANCH Rd

MAPLE Ct

OXLEY Dr

HEPBROOK Dr

SHADYBROOK Dr

REN Cir

YOLANDA WAY

BROWNING Ave

PINEBURCK Dr

MICHELL Ave

SE ROUTE 5

NE ROUTE 5

SE ROUTE 5

NE ROUTE 5

EL MODENA CENTER CENTER

AUTO CENTER Dr

JUSTIN RANCH Rd

EL CAMINO REAL

EMERSON

YAO

APACHE

COMING

BERNARD Ln

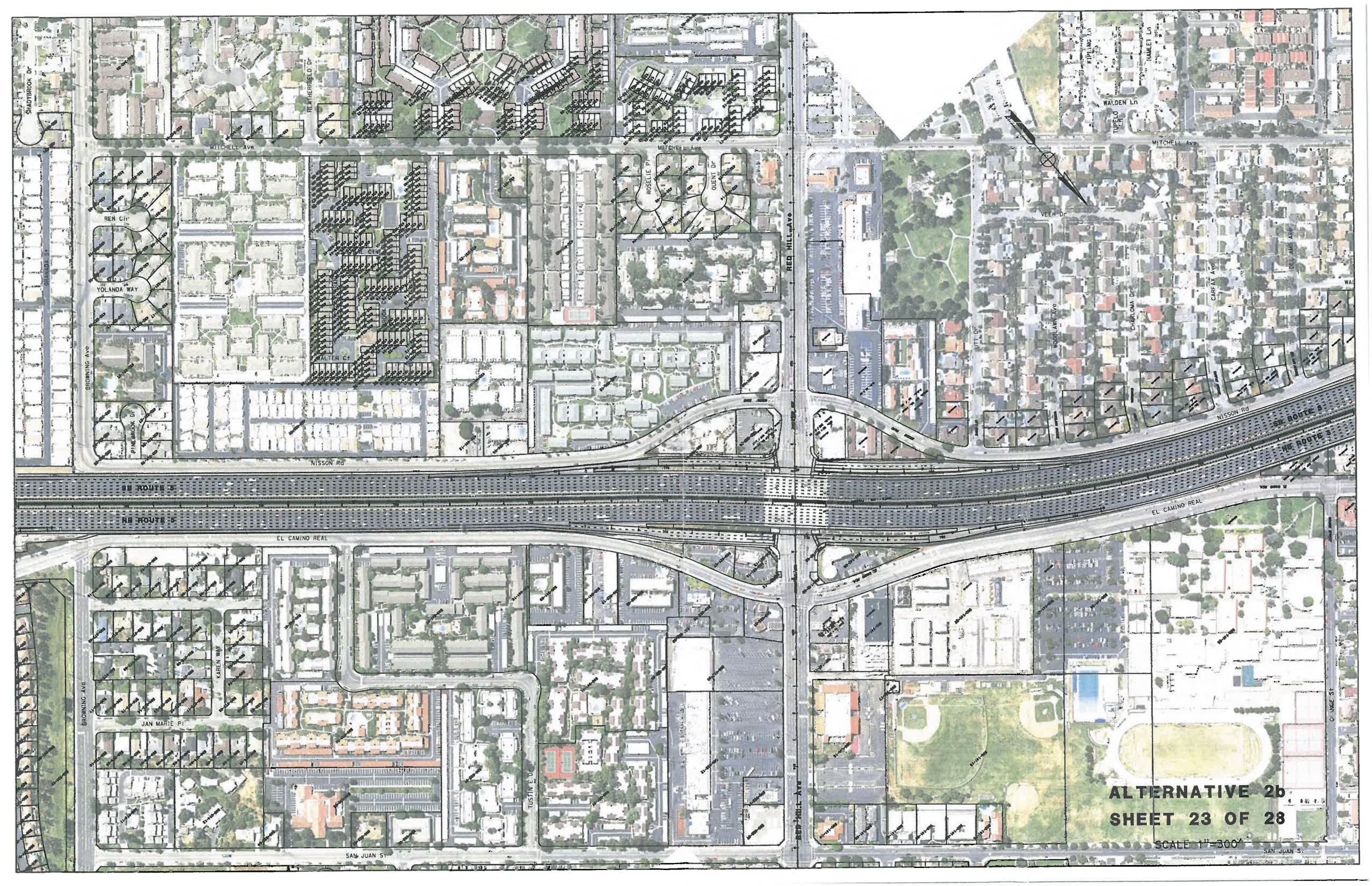
BROWNING Ave

JAN MARIE Pl

KAREN WAY

SHAMON





**ALTERNATIVE 2b**  
**SHEET 23 OF 28**

SCALE 1"=300'

SHADYBROOK DR

MITCHELL AVE

MITCHELL AVE

MITCHELL AVE

REN CIR

YOLANDA WAY

ROSELIE PL

QUEANT DR

VEEH DR

BROWNING AVE

WALTER CT

RED HILL AVE

WOODLAWN AVE

CHAPLAIN DR

CARFAX AVE

PINEBROOK DR

NISSON RD

NISSON RD

SB ROUTE 5

NB ROUTE 5

EL CAMINO REAL

EL CAMINO REAL

BROWNING AVE

KAREN WAY

JAN MARIE PL

JUSTIN E DR

RED HILL AVE

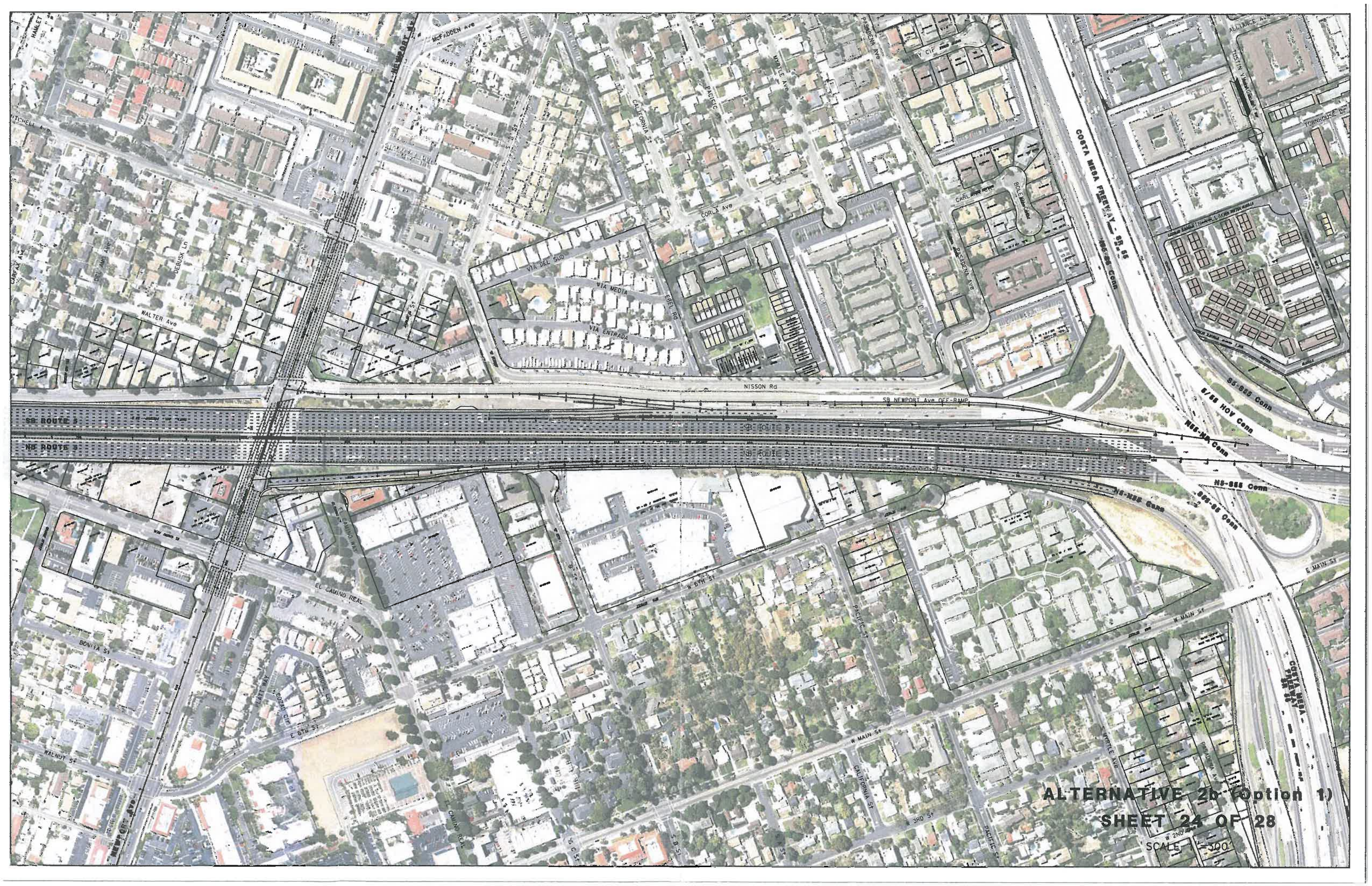
EL CAMINO REAL

SAN JUAN ST

SAN JUAN ST

CUNCE ST

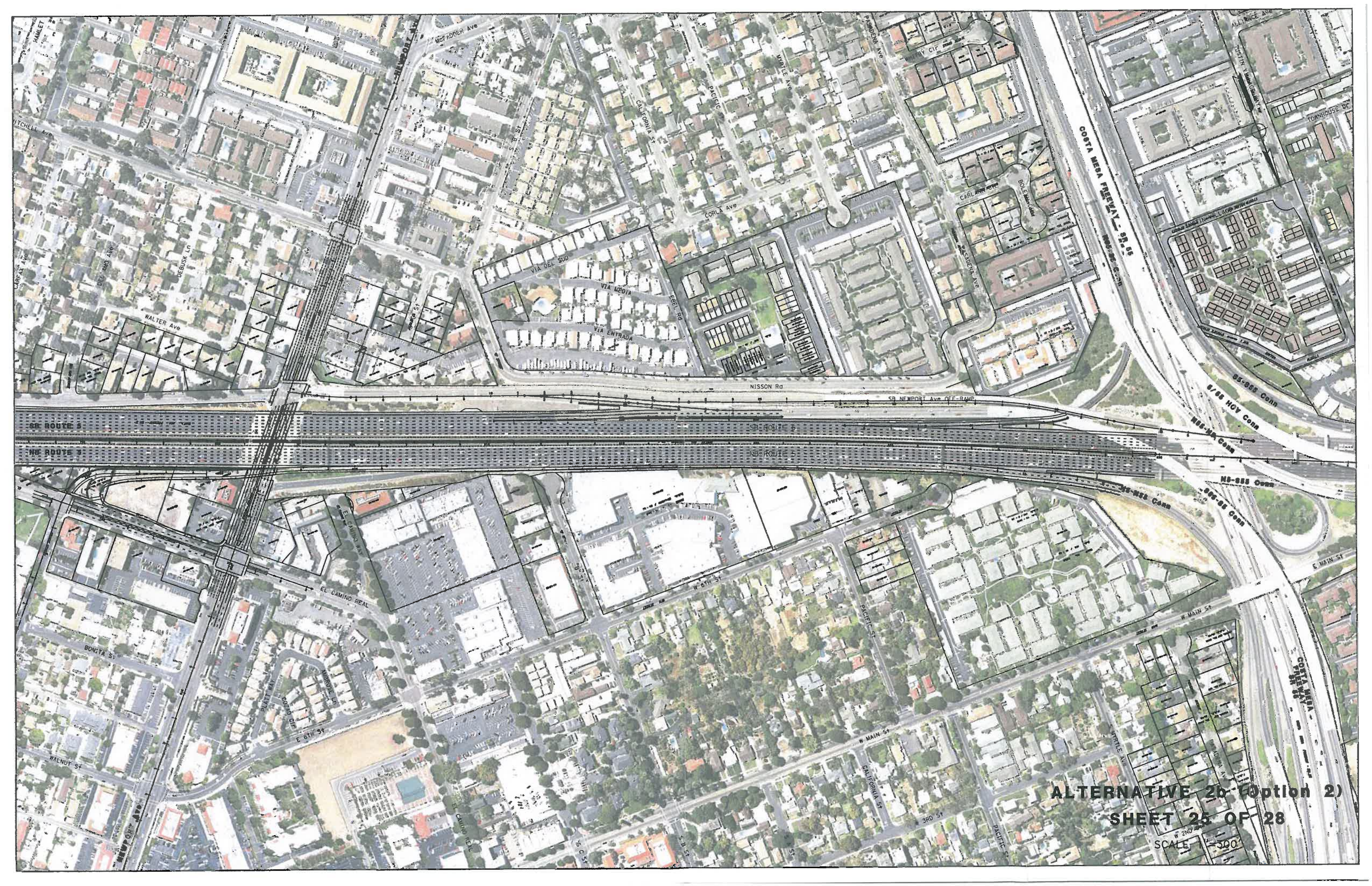




**ALTERNATIVE 2b (Option 1)**  
**SHEET 24 OF 28**

SCALE 1" = 300'





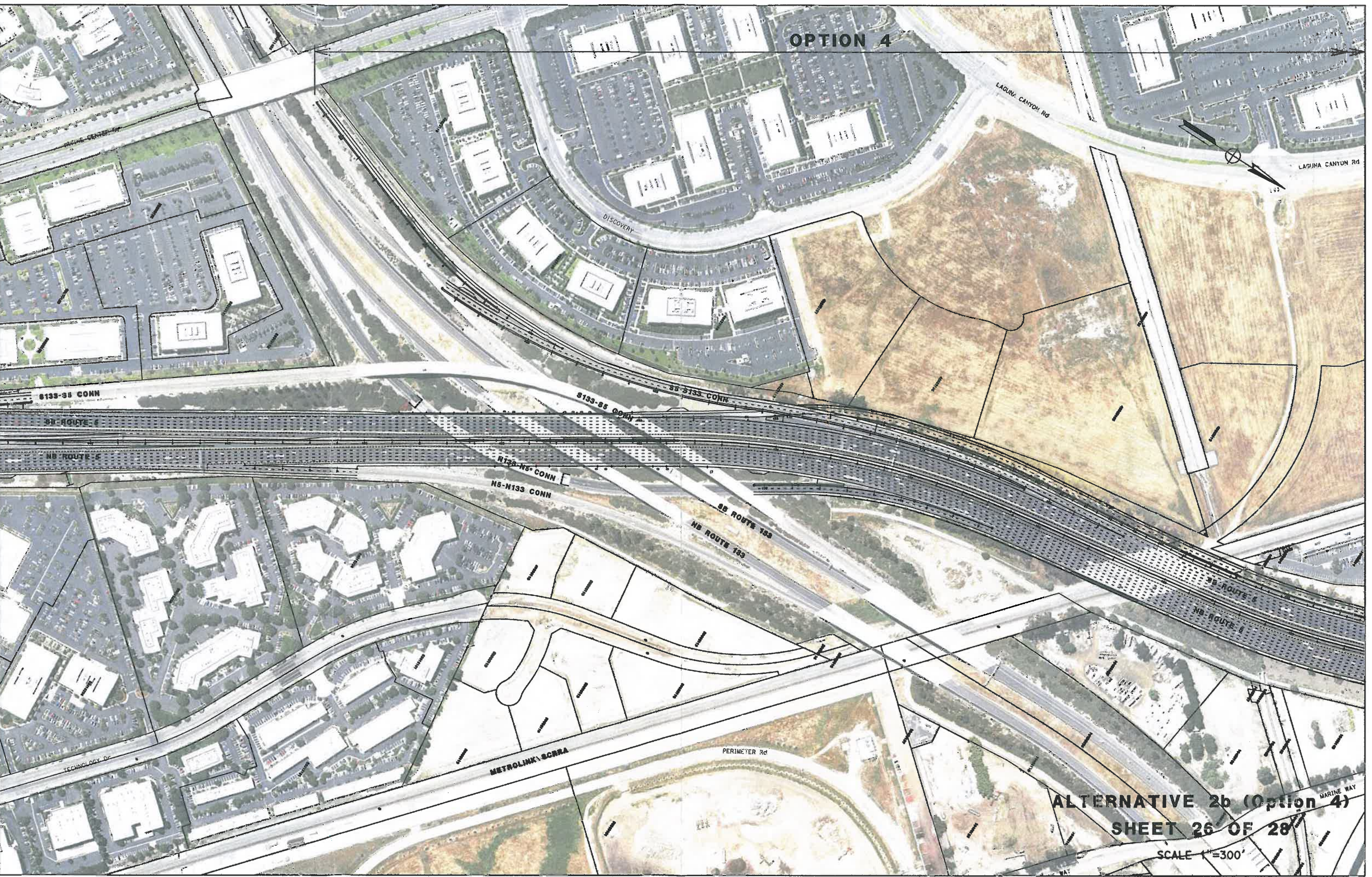
ALTERNATIVE 2b (Option 2)

SHEET 25 OF 28

SCALE 1"=300'



**OPTION 4**



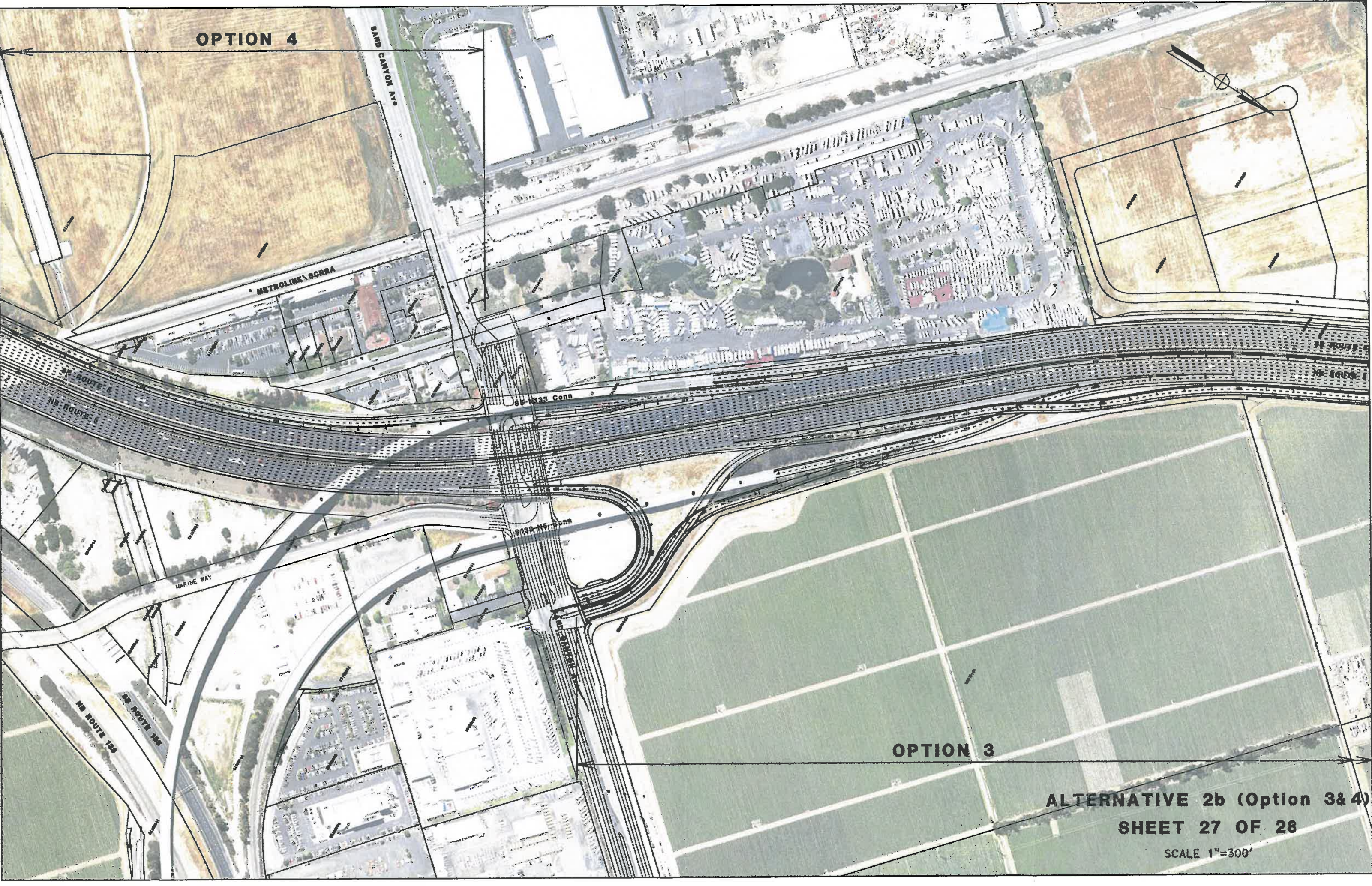
**ALTERNATIVE 2b (Option 4)**

**SHEET 26 OF 28**

SCALE 1"=300'



OPTION 4



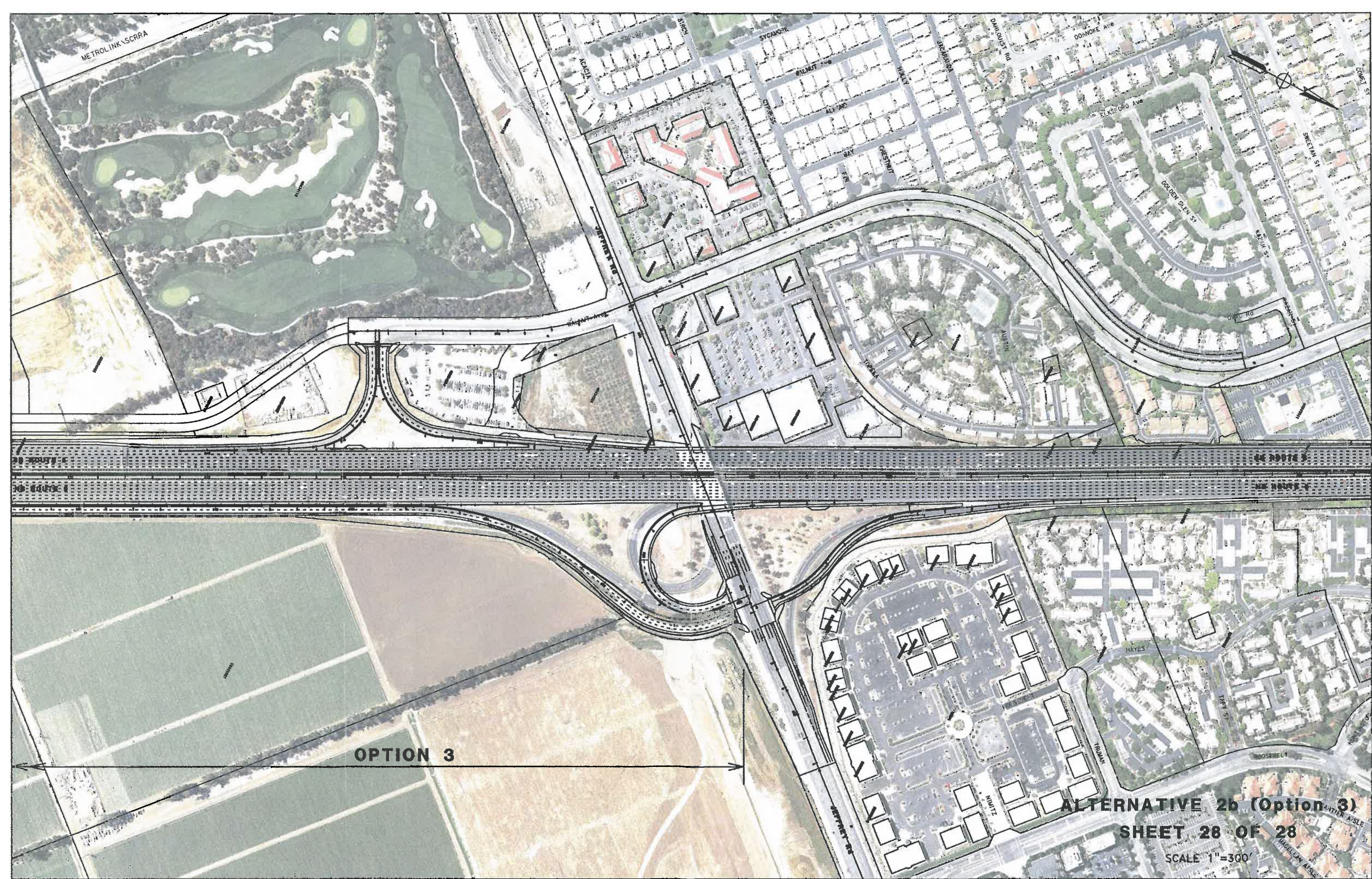
OPTION 3

ALTERNATIVE 2b (Option 3&4)

SHEET 27 OF 28

SCALE 1"=300'





METROLINK/SCRRA



OPTION 3

ALTERNATIVE 2b (Option 3)

SHEET 28 OF 28







SCALE 1"=300'



## Attachment C: Schedule

ID	Task Name	Duration	Start	Finish	Predecessors	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
						Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
1	Begin Environmental	0 days	Mon 9/14/15	Mon 9/14/15							9/14														
2	DED/Preliminary Engineering	365 days	Mon 9/14/15	Fri 2/3/17	1																				
3	Final ED	260 days	Mon 2/6/17	Fri 2/2/18	2																				
4	RW Acquisiton	730 days	Mon 2/5/18	Fri 11/20/20	3																				
5	Project PS&E	803 days	Mon 2/5/18	Wed 3/3/21	3																				
6	RW Certification	0 days	Wed 3/3/21	Wed 3/3/21	5																				
7	Ready to List	0 days	Wed 3/3/21	Wed 3/3/21	6																				
8	Bidding Process	90 days	Thu 3/4/21	Wed 7/7/21	7																				
9	Approve Contract	0 days	Wed 7/7/21	Wed 7/7/21	8																				
10	Construction	980 days	Thu 7/8/21	Wed 4/9/25	9																				
11	Contract Acceptance	0 days	Wed 4/9/25	Wed 4/9/25	10																				
12	End Project	0 days	Wed 4/9/25	Wed 4/9/25	11																				

Project: Project Milestones  
Date: Thu 11/10/11

Task		Progress		Summary		External Tasks		Deadline	
Split		Milestone		Project Summary		External Milestone			

**ATTACHMENT 14**  
**Initial Site Assessment (ISA) Checklist**

## Initial Site Assessment (ISA) Checklist

### Project Information

District 12 County ORA Route 5 Post Mile PM 21.0 – 30.0 EA 0K670K

Description: The Orange County Transportation Authority, in partnership with Caltrans, is developing a set of alternatives to add new lanes to reduce freeway congestion within the vicinity of the Costa Mesa Freeway (State Route 55) interchange to the vicinity of the El Toro "Y" interchange in the cities of Tustin and Irvine. These alternatives are being analyzed with symmetrical and asymmetrical widening (shifted centerline) in order to reduce right-of-way impacts.

Is the project on the HW Study Minimal-Risk Projects List (HW1)? NO

Project Manager (OCTA) Wendy Garcia phone# 714.560.5738

Project Engineer Surafael Teshale phone # 949.333.4540

### Project Screening

Attach the project location map to this checklist to show location of all known and/or potential HW sites identified.

1. Project Features: New R/W? YES Excavation? YES Railroad Involvement? NO  
Structure demolition/modification? YES Subsurface utility relocation? YES

2. Project Setting Approximately Newport Avenue in Tustin to the I-405 exchange in Irvine.

Rural or Urban Urban

Current land uses I-5, SR-133 and I-405.

Adjacent land uses industrial, commercial, and residential

(industrial, light industry, commercial, agricultural, residential, etc.)

3. Check federal, State, and local environmental and health regulatory agency records as necessary, to see if any known hazardous waste site is in or near the project area. If a known site is identified, show its location on the attached map and attach additional sheets, as needed, to provide pertinent information for the proposed project.

4. Conduct Field Inspection. Date July 14, 2010 Use the attached map to locate potential or known HW sites.

#### STORAGE STRUCTURES / PIPELINES:

Underground tanks NO Surface tanks NO

Sumps NO Ponds NO

Drums NO Basins NO

Transformers YES Landfill NO

Other None identified



## Initial Site Assessment (ISA) Checklist

(Continued)

CONTAMINATION: (spills, leaks, illegal dumping, etc.)

Surface staining NO Oil sheen NO

Odors NO Vegetation damage NO

Other Possible ADL contamination along roadside

HAZARDOUS MATERIALS: (asbestos, lead, etc.)

Buildings NO Spray-on fireproofing NO

Pipe wrap NO Friable tile NO

Acoustical plaster NO Serpentine NO

Paint: Paint used on structures that may be acquired and for lane striping may contain lead-based paint (LBP) or other hazardous materials and may exceed hazardous water criteria under Title 22, California Code of Regulations, and require disposal in a Class I disposal site.

Other ACM testing for structures that may be acquired and for expansion joint compound materials on bridges/overcrossings. If sampling has not been previously conducted, then ACM may be present on these structures.

5. Additional record search, as necessary, of subsequent land uses that could have resulted in a hazardous waste site. Use the attached map to show the location of potential hazardous waste sites.

6. Other comments and/or observations: For item #3 and 5, see the attached ISA. Several sites identified in the database report constituted RECs for the project. Hazardous materials have migrated into the project footprint; however, as long as construction activities do not affect contaminated soil or contaminated groundwater, no remedial activities on the part of OCTA are required.

### ISA Determination

Does the project have potential hazardous waste involvement? Yes If there is known or potential hazardous waste involvement, is additional ISA work needed before task orders can be prepared for the Investigation? Yes If "YES," explain; then give an estimate of additional time required:

LBP, ACM, and ADL surveys should all be conducted if they have not been already as parts of other projects. LBP and ACM surveys should take approximately 4 to 6 weeks (for sampling and report generation). ADL surveys would take approximately 4 to 6 weeks (for sampling and report generations).

A brief memo should be prepared to transmit the ISA conclusions to the Project Manager and Project Engineer.

ISA Conducted by Angela K. Schnapp Date July 14, 2010

**ATTACHMENT 15**  
**Storm Water Data Report Cover**

Long Form - Storm Water Data Report



Dist-County-Route: 12-ORA-5  
 Post Mile Limits: PM21.3/30.3 (KP 34.3/48.7)  
 Project Type: Highway Widening  
 Project ID (or EA): 1200020052 (EA 0K670K)  
 Program Identification: 12/840  
 Phase:  PID  
            PA/ED  
            PS&E

Regional Water Quality Control Board(s): Santa Ana Regional Water Quality Control Board (Region 8)

Is the Project required to consider Treatment BMPs? Yes  No   
 If yes, can Treatment BMPs be incorporated into the project? Yes  No

If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date: \_\_\_\_\_

Total Disturbed Soil Area: 342 acres Risk Level: 2  
 Estimated: Construction Start Date: July 2021 Construction Completion Date: April 2025  
 Notification of Construction (NOC) Date to be submitted: June 2021

Erosivity Waiver Yes  Date: \_\_\_\_\_ No   
 Notification of ADL reuse (if Yes, provide date) Yes  Date: June 2021 No   
 Separate Dewatering Permit (if yes, permit number) Yes  Permit # To be Determined No

*This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.*

Richard S Bottcher 11-07-2011  
 [Richard S Bottcher], Registered Project Engineer/Landscape Architect Date

*I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:*

Mike Varipapa 12/16/11  
 (Mike Varipapa), Project Manager Date

Deborah Prochnow 12/22/11  
 (Deborah Prochnow), Designated Maintenance Representative Date

Eric Dickson 12/16/11  
 (Eric Dickson), Designated Landscape Architect Representative Date

[Stamp Required for PS&E only] Grace Pina-Garrett 12/16/11  
 (Grace Pina-Garrett), District/Regional Design SW Coordinator or Designee Date

**ATTACHMENT 16**  
**Draft Cooperative Agreement**



**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

### **COOPERATIVE AGREEMENT**

This agreement, effective on \_\_\_\_\_, is between the State of California, acting through its Department of Transportation, referred to as CALTRANS, and:

ORANGE COUNTY TRANSPORTATION AUTHORITY, a political subdivision of the State of California, referred to as OCTA.

For the purpose of this agreement, the term PARTNERS collectively refers to CALTRANS and OCTA (all signatory parties to this agreement). The term PARTNER refers to any one of those signatory parties individually.

### **RECITALS**

1. California Streets and Highways Code sections 114 and 130 authorize PARTNERS to enter into a cooperative agreement for performance of work within the State Highway System (SHS) right of way.
2. This agreement outlines the terms and conditions of cooperation between PARTNERS to provide IQA to PROJECT for operational improvement to the I-5 generally between Route 405 to State Route 55 within the Cities of Irvine and Tustin in the County of Orange.

For the purpose of this agreement, operational improvement on I-5 that includes addition of general purpose, auxiliary lanes and interchange reconfiguration will be referred to as PROJECT. All responsibilities assigned in this agreement to provide IQA to PROJECT will be referred to as OBLIGATIONS.

3. This agreement is separate from and does not modify or replace any other cooperative agreement or memorandum of understanding between PARTNERS regarding PROJECT.
4. No PROJECT deliverables have been completed prior to this agreement.
5. The estimated date for OBLIGATION COMPLETION is March 1, 2018.
6. In this agreement capitalized words represent defined terms and acronyms. The Definitions section contains a complete definition for each capitalized term.
7. From this point forward, PARTNERS define in this agreement the terms and conditions under which they will accomplish OBLIGATIONS.

**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

### **RESPONSIBILITIES**

8. OCTA is SPONSOR for 100% of PROJECT.
9. CALTRANS will provide IQA for the portions of WORK within existing and proposed SHS right of way. CALTRANS retains the right to reject noncompliant WORK, protect public safety, preserve property rights, and ensure that all WORK is in the best interest of the SHS. As NEPA and CEQA lead agency, CALTRANS will perform Quality Control Program (QCP) process review for environmental documentation.
10. OCTA may provide IQA for the portions of WORK outside existing and proposed SHS right of way.
11. OCTA is the only FUNDING PARTNER for this agreement. OCTA's funding commitment is defined in the FUNDING SUMMARY.
12. CALTRANS is the CEQA lead agency for PROJECT.
13. CALTRANS is the NEPA lead agency for PROJECT.
14. OCTA is IMPLEMENTING AGENCY for PA&ED.

### **SCOPE**

#### **Scope: General**

15. PARTNERS will perform all OBLIGATIONS in accordance with federal and California laws, regulations, and standards; FHWA STANDARDS; and CALTRANS STANDARDS.
16. IMPLEMENTING AGENCY for a PROJECT COMPONENT will provide a Quality Management Plan (QMP) for that component as part of the PROJECT MANAGEMENT PLAN.
17. Any PARTNER may, at its own expense, have representatives observe any OBLIGATIONS performed by another PARTNER. Observation does not constitute authority over those OBLIGATIONS.
18. Each PARTNER will ensure that all of its personnel participating in OBLIGATIONS are appropriately qualified, and if necessary licensed, to perform the tasks assigned to them.
19. PARTNERS will invite each other to participate in the selection and retention of any consultants who participate in OBLIGATIONS.

**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

20. If WORK is done under contract (not completed by a PARTNER's own employees) and is governed by the California Labor Code's definition of "public works" (section 1720(a)(a)), that PARTNER will conform to sections 1720 – 1815 of the California Labor Code and all applicable regulations and coverage determinations issued by the Director of Industrial Relations.
21. IMPLEMENTING AGENCY for each PROJECT COMPONENT included in this agreement will be available to help resolve problems generated by that component for the entire duration of PROJECT.
22. CALTRANS will issue, upon proper application, the encroachment permits required for WORK within SHS right of way.

Contractors and/or agents, and utility owners will not perform WORK without an encroachment permit issued in their name.

23. If any PARTNER discovers unanticipated cultural, archaeological, paleontological, or other protected resources during WORK, all WORK in that area will stop and that PARTNER will notify all PARTNERS within 24 hours of discovery. WORK may only resume after a qualified professional has evaluated the nature and significance of the discovery and a plan is approved for its removal or protection.
24. PARTNERS will hold all administrative draft and administrative final reports, studies, materials, and documentation relied upon, produced, created, or utilized for PROJECT in confidence to the extent permitted by law. Where applicable, the provisions of California Government Code section 6254.5(e) will govern the disclosure of such documents in the event that PARTNERS share said documents with each other.

PARTNERS will not distribute, release, or share said documents with anyone other than employees, agents, and consultants who require access to complete PROJECT without the written consent of the PARTNER authorized to release them, unless required or authorized to do so by law.

25. If any PARTNER receives a public records request, pertaining to OBLIGATIONS, that PARTNER will notify PARTNERS within five (5) working days of receipt and make PARTNERS aware of any disclosed public records. PARTNERS will consult with each other prior to the release of any public documents related to the PROJECT.
26. If HM-1 or HM-2 is found during a PROJECT COMPONENT, IMPLEMENTING AGENCY for that PROJECT COMPONENT will immediately notify PARTNERS.
27. CALTRANS, independent of PROJECT, is responsible for any HM-1 found within the existing SHS right of way. CALTRANS will undertake HM MANAGEMENT ACTIVITIES related to HM-1 with minimum impact to PROJECT schedule.



**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

28. If HM-1 is found within PROJECT limits and outside the existing SHS right of way, responsibility for such HM-1 rests with the owner(s) of the parcel(s) on which the HM-1 is found. OCTA, in concert with the local agency having land use jurisdiction over the parcel(s), will ensure that HM MANAGEMENT ACTIVITIES related to HM-1 are undertaken with minimum impact to PROJECT schedule.
29. If HM-2 is found within PROJECT limits, the public agency responsible for the advertisement, award, and administration (AAA) of the PROJECT construction contract will be responsible for HM MANAGEMENT ACTIVITIES related to HM-2.
30. CALTRANS' acquisition or acceptance of title to any property on which any HM-1 or HM-2 is found will proceed in accordance with CALTRANS' policy on such acquisition.
31. PARTNERS will comply with all of the commitments and conditions set forth in the environmental documentation, environmental permits, approvals, and applicable agreements as those commitments and conditions apply to each PARTNER's responsibilities in this agreement.
32. IMPLEMENTING AGENCY for each PROJECT COMPONENT will furnish PARTNERS with written quarterly progress reports during the implementation of OBLIGATIONS in that component.
33. Upon OBLIGATION COMPLETION, ownership or title to all materials and equipment constructed or installed for the operations and/or maintenance of the SHS within SHS right of way as part of WORK become the property of CALTRANS.  
  
CALTRANS will not accept ownership or title to any materials or equipment constructed or installed outside SHS right of way.
34. IMPLEMENTING AGENCY for a PROJECT COMPONENT will accept, reject, compromise, settle, or litigate claims of any non-agreement parties hired to do WORK in that component.
35. PARTNERS will confer on any claim that may affect OBLIGATIONS or PARTNERS' liability or responsibility under this agreement in order to retain resolution possibilities for potential future claims. No PARTNER will prejudice the rights of another PARTNER until after PARTNERS confer on claim.
36. PARTNERS will maintain, and will ensure that any party hired by PARTNERS to participate in OBLIGATIONS will maintain, a financial management system that conforms to Generally Accepted Accounting Principles (GAAP), and that can properly accumulate and segregate incurred PROJECT costs, and provide billing and payment support.

**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

37. PARTNERS will comply with the appropriate federal cost principles and administrative requirements outlined in the Applicable Cost Principles and Administrative Requirements table below. These principles and requirements apply to all funding types included in this agreement.

<b>Applicable Cost Principles and Administration Requirements</b>		
The federal cost principles and administrative requirements associated with each organization type apply to that organization.		
<b>Organization Type</b>	<b>Cost Principles</b>	<b>Administrative Requirements</b>
Federal Governments	2 CFR Part 225	OMB A-102
State and Local Government	2 CFR, Part 225	49 CFR, Part 18
Educational Institutions	2 CFR, Part 220	2 CFR, Part 215
Non-Profit Organizations	2 CFR, Part 230	2 CFR, Part 215
For Profit Organizations	48 CFR, Chapter 1, Part 31	49 CFR, Part 18
<b>CFR (Code of Federal Regulations)</b>		
<b>OMB (Office of Management and Budget)</b>		
<b>Related URLs:</b>		
• Various OMB Circular:	<a href="http://www.whitehouse.gov/omb/grants_circulars">http://www.whitehouse.gov/omb/grants_circulars</a>	
• Code of Federal Regulations:	<a href="http://www.gpoaccess.gov/CFR">http://www.gpoaccess.gov/CFR</a>	

38. PARTNERS will maintain and make available to each other all OBLIGATIONS-related documents, including financial data, during the term of this agreement.
39. PARTNERS will retain all OBLIGATIONS-related records for three (3) years after the final voucher.
40. PARTNERS have the right to audit each other in accordance with generally accepted governmental audit standards.

CALTRANS, the state auditor, FHWA, and OCTA will have access to all OBLIGATIONS-related records of each PARTNER, and any party hired by a PARTNER to participate in OBLIGATIONS, for audit, examination, excerpt, or transcription.

The examination of any records will take place in the offices and locations where said records are generated and/or stored and will be accomplished during reasonable hours of operation. The auditing PARTNER will be permitted to make copies of any OBLIGATIONS-related records needed for the audit.

The audited PARTNER will review the draft audit, findings, and recommendations, and provide written comments within 30 calendar days of receipt.

**This agreement is not approvable.**  
**Please coordinate with the HQ Office of Cooperative Agreements for review.**

Upon completion of the final audit, PARTNERS have 30 days to refund or invoice as necessary in order to satisfy the obligation of the audit.

Any audit dispute not resolved by PARTNERS is subject to dispute resolution. Any costs arising out of the dispute resolution process will be paid within 30 calendar days of the final audit or dispute resolution findings.

41. Any PARTNER that hires another party to participate in OBLIGATIONS will conduct a pre-award audit of that party in accordance with the *Local Assistance Procedures Manual*.
42. If WORK stops for any reason, IMPLEMENTING AGENCY will place all facilities impacted by WORK in a safe and operable condition acceptable to CALTRANS.
43. If WORK stops for any reason, each PARTNER will continue to implement all of its applicable commitments and conditions included in the PROJECT environmental documentation, permits, agreements, or approvals that are in effect at the time that WORK stops, as they apply to each PARTNER's responsibilities in this agreement, in order to keep PROJECT in environmental compliance until WORK resumes.
44. Each PARTNER accepts responsibility to complete the activities that it selected on the SCOPE SUMMARY. Activities marked with "N/A" on the SCOPE SUMMARY are not included in the scope of this agreement.

#### **Scope: Environmental Permits, Approvals and Agreements**

45. Each PARTNER identified in the Environmental Permits table below accepts the responsibility to complete the assigned activities.

<b>Environmental Permits</b>						
<b>Permit</b>	<b>Coordinate</b>	<b>Prepare</b>	<b>Obtain</b>	<b>Implement</b>	<b>Renew</b>	<b>Amend</b>
404 USACOE	CT	OCTA	CALTRANS	OCTA	OCTA	OCTA
401 RWQCB	CT	OCTA	CALTRANS	OCTA	OCTA	OCTA
NPDES SWRCB	CT	OCTA	CALTRANS	OCTA	OCTA	OCTA
FESA Section 7 USFWS	CT	OCTA	CALTRANS	OCTA	CALTRANS	CALTRANS
1602 DFG	CT	OCTA	CALTRANS	OCTA	OCTA	OCTA
2080.1 DFG	CT	OCTA	CALTRANS	OCTA	OCTA	OCTA
2081 DFG	CT	OCTA	CALTRANS	OCTA	OCTA	OCTA



**This agreement is not approvable.**  
**Please coordinate with the HQ Office of Cooperative Agreements for review.**

**Scope: Project Approval and Environmental Document (PA&ED)**

46. CALTRANS is the CEQA lead agency for PROJECT. CALTRANS will determine the type of environmental documentation required and will cause that documentation to be prepared.
47. Any PARTNER involved in the preparation of CEQA environmental documentation will follow the CALTRANS STANDARDS that apply to the CEQA process including, but not limited to, the guidance provided in the Standard Environmental Reference available at [www.dot.ca.gov/ser](http://www.dot.ca.gov/ser).
48. Pursuant to SAFETEA-LU Section 6004 and/or 6005, CALTRANS is the NEPA lead agency for PROJECT. CALTRANS will assume responsibility for NEPA compliance and will cause that documentation to be prepared.
49. Any PARTNER involved in the preparation of NEPA environmental documentation will follow FHWA STANDARDS that apply to the NEPA process including, but not limited to, the guidance provided in the FHWA Environmental Guidebook available at [www.dot.ca.gov/ser/index.htm](http://www.dot.ca.gov/ser/index.htm).
50. OCTA / OCTA Contracted Consultants will prepare the appropriate CEQA environmental documentation to meet CEQA requirements.
51. OCTA / OCTA Contracted Consultants will prepare the appropriate NEPA environmental documentation to meet NEPA requirements.
52. Any PARTNER preparing any portion of the CEQA environmental documentation, including any studies and reports, will submit that portion of the documentation to the CEQA lead agency for the QCP review, comment, and approval at appropriate stages of development prior to public availability.
53. Any PARTNER preparing any portion of the NEPA environmental documentation (including, but not limited to, studies, reports, public notices, and public meeting materials, determinations, administrative drafts, and final environmental documents) will submit that portion of the documentation to CALTRANS for the QCP review, comment, and approval prior to public availability.
54. OCTA will prepare, publicize, and circulate all CEQA-related public notices and will submit said notices to the CEQA lead agency for review, comment, and approval prior to publication and circulation.

**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

55. OCTA will prepare, publicize, and circulate all NEPA-related public notices, and Caltrans will submit any Federal Register notices to FHWA for publication. OCTA will submit all notices to CALTRANS for review, comment, and approval prior to publication and circulation.

CALTRANS will work with the appropriate federal agency to publish notices in the Federal Register.

56. The CEQA lead agency will attend all CEQA-related public meetings.
57. OCTA will plan, schedule, prepare materials for, and host all CEQA-related public hearings/meetings and will submit all materials to the CEQA lead agency for review, comment, and approval.
58. The NEPA lead agency will attend all NEPA-related public meetings.
59. OCTA will plan, schedule, prepare materials for, and host all NEPA-related public hearings/meetings. OCTA will submit all materials to CALTRANS for CALTRANS' review, comment, and approval.
60. If a PARTNER who is not the CEQA or NEPA lead agency holds a public meeting about PROJECT, that PARTNER must clearly state its role in PROJECT and the identity of the CEQA and NEPA lead agencies on all meeting publications. All meeting publications must also inform the attendees that public comments collected at the meetings are not part of the CEQA or NEPA public review process.

That PARTNER will submit all meeting advertisements, agendas, exhibits, handouts, and materials to the CEQA and/or NEPA lead agency for review, comment, and approval. If that PARTNER makes any changes to the materials, it will allow the lead agency to review, comment, and approve those changes.

The CEQA lead agency maintains final editorial control with respect to text or graphics. The NEPA lead agency has final approval authority with respect to text or graphics.

61. The PARTNER preparing the environmental documentation, including the studies and reports, will ensure that qualified personnel remain available to help resolve environmental issues and perform any necessary work to ensure that PROJECT remains in environmental compliance.

**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

**COST**

**Cost: General**

62. The cost of any awards, judgments, or settlements generated by OBLIGATIONS is an OBLIGATIONS COST.
63. CALTRANS, independent of PROJECT, will pay all costs for HM MANAGEMENT ACTIVITIES related to HM-1 found within the existing SHS right of way.
64. Independent of PROJECT, all costs for HM MANAGEMENT ACTIVITIES related to HM-1 found within PROJECT limits and outside the existing SHS right of way will be the responsibility of the owner(s) of the parcel(s) where the HM-1 is located.
65. HM MANAGEMENT ACTIVITIES costs related to HM-2 are CONSTRUCTION SUPPORT and CONSTRUCTION CAPITAL costs.
66. The cost to comply with and implement the commitments set forth in the environmental documentation is an OBLIGATIONS COST.
67. The cost to ensure that PROJECT remains in environmental compliance is an OBLIGATIONS COST.
68. The cost of any legal challenges to the CEQA or NEPA environmental process or documentation is an OBLIGATIONS COST.
69. Independent of OBLIGATIONS COST, CALTRANS will fund the cost of its own IQA for WORK done within existing or proposed future SHS right of way.
70. Independent of OBLIGATIONS COST, OCTA will fund the cost of its own IQA for WORK done outside existing or proposed future SHS right of way.
71. CALTRANS will provide encroachment permits to PARTNERS, their contractors, consultants and agents, at no cost.
72. Fines, interest, or penalties levied against a PARTNER will be paid, independent of OBLIGATIONS cost, by the PARTNER whose actions or lack of action caused the levy. That PARTNER will indemnify and defend each other PARTNER.

**This agreement is not approvable.  
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73. The cost of any engineering support performed by CALTRANS includes all direct and applicable indirect costs. CALTRANS calculates indirect costs based solely on the type of funds used to pay support costs. State and federal funds are subject the current Program Functional Rate. Local funds are subject to the current Program Functional Rate and the current Administration Rate. Caltrans periodically adjusts the Program Functional Rate and the Administration Rate.
74. If CALTRANS reimburses OCTA for any costs later determined to be unallowable, OCTA will reimburse those funds.
75. The cost to place PROJECT right of way in a safe and operable condition and meet all environmental commitments is an OBLIGATIONS cost.
76. Because IMPLEMENTING AGENCY is responsible for managing the scope, cost, and schedule of a project component, if there are insufficient funds available in this agreement to place the right of way in a safe and operable condition, the appropriate IMPLEMENTING AGENCY accepts responsibility to fund these activities until such time as PARTNERS amend this agreement.

That IMPLEMENTING AGENCY may request reimbursement for these costs during the amendment process.

77. If there are insufficient funds in this agreement to implement applicable commitments and conditions included in the PROJECT environmental documentation, permits, agreements, and/or approvals that are in effect at a time that WORK stops, each PARTNER implementing commitments or conditions accepts responsibility to fund these activities, as they apply to each PARTNER's responsibilities, until such time are PARTNERS amend this agreement.

Each PARTNER may request reimbursement for these costs during the amendment process.

78. PARTNERS will pay invoices within 30 calendar days of receipt of invoice.

**Cost: Environmental Permits, Approvals and Agreements**

79. The cost of coordinating, obtaining, complying with, implementing, and if necessary renewing and amending resource agency permits, agreements, and/or approvals is an OBLIGATIONS COST.

**Cost: Project Approval and Environmental Document (PA&ED)**

80. The cost to prepare, publicize, and circulate all CEQA and NEPA-related public notices are an OBLIGATIONS COST.



**This agreement is not approvable.  
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81. The cost to plan, schedule, prepare, materials for, and host all CEQA and NEPA-related public hearings is an OBLIGATIONS COST.

### **SCHEDULE**

82. PARTNERS will manage the schedule for OBLIGATIONS through the work plan included in the PROJECT MANAGEMENT PLAN. Partners will convene a partnering/team building session at the start of the project to establish the mission statement, goals and objectives and schedule commitments for the project.

### **GENERAL CONDITIONS**

83. PARTNERS understand that this agreement is in accordance with and governed by the Constitution and laws of the State of California. This agreement will be enforceable in the State of California. Any PARTNER initiating legal action arising from this agreement will file and maintain that legal action in the Superior Court of the county in which the CALTRANS district office that is signatory to this agreement resides, or in the Superior Court of the county in which PROJECT is physically located.
84. All OBLIGATIONS of CALTRANS under the terms of this agreement are subject to the appropriation of resources by the Legislature, the State Budget Act authority, and the allocation of funds by the California Transportation Commission.
85. Any PARTNER performing IQA does so for its own benefit. No one can assign liability to that PARTNER due to its IQA activities.
86. Neither OCTA nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by CALTRANS and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon CALTRANS under this agreement.

It is understood and agreed that CALTRANS and/or its agents will fully defend, indemnify, and save harmless OCTA and all of its officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortuous, contractual, inverse condemnation, or other theories or assertions of liability occurring by reason of anything done or omitted to be done by CALTRANS and/or its agents under this agreement. (L.I.42).

**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

87. Neither CALTRANS nor any officer or employee thereof is responsible for any injury, damage, or liability occurring by reason of anything done or omitted to be done by OCTA and/or its agents under or in connection with any work, authority, or jurisdiction conferred upon OCTA under this agreement.

It is understood and agreed that OCTA and/or its agents will fully defend, indemnify, and save harmless CALTRANS and all of its officers and employees from all claims, suits, or actions of every name, kind, and description brought forth under, but not limited to, tortious, contractual, inverse condemnation, or other theories or assertions of liability occurring by reason of anything done or omitted to be done by OCTA and/or its agents under this agreement. (L.1.4)

88. PARTNERS do not intend this agreement to create a third party beneficiary or define duties, obligations, or rights in parties not signatory to this agreement. PARTNERS do not intend this agreement to affect their legal liability by imposing any standard of care for fulfilling OBLIGATIONS different from the standards imposed by law.
89. PARTNERS will not assign or attempt to assign OBLIGATIONS to parties not signatory to this agreement.
90. PARTNERS will not interpret any ambiguity contained in this agreement against each other. PARTNERS waive the provisions of California Civil Code section 1654.
91. A waiver of a PARTNER's performance under this agreement will not constitute a continuous waiver of any other provision. An amendment made to any article or section of this agreement does not constitute an amendment to or negate all other articles or sections of this agreement.
92. A delay or omission to exercise a right or power due to a default does not negate the use of that right or power in the future when deemed necessary.
93. If any PARTNER defaults in its OBLIGATIONS, a non-defaulting PARTNER will request in writing that the default be remedied within 30 calendar days. If the defaulting PARTNER fails to do so, the non-defaulting PARTNER may initiate dispute resolution.
94. PARTNERS will first attempt to resolve agreement disputes at the PROJECT team level. If they cannot resolve the dispute themselves, the CALTRANS district director and the executive officer of OCTA will attempt to negotiate a resolution. If PARTNERS do not reach a resolution, PARTNERS' legal counsel will initiate mediation. PARTNERS agree to participate in mediation in good faith and will share equally in its costs.

**This agreement is not approvable.  
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Neither the dispute nor the mediation process relieves PARTNERS from full and timely performance of OBLIGATIONS in accordance with the terms of this agreement. However, if any PARTNER stops fulfilling OBLIGATIONS, any other PARTNER may seek equitable relief to ensure that OBLIGATIONS continue.

Except for equitable relief, no PARTNER may file a civil complaint until after mediation, or 45 calendar days after filing the written mediation request, whichever occurs first.

PARTNERS will file any civil complaints in the Superior Court of the county in which the CALTRANS district office signatory to this agreement resides. The prevailing PARTNER will be entitled to an award of all costs, fees, and expenses, including reasonable attorney fees as a result of litigating a dispute under this agreement or to enforce the provisions of this article including equitable relief.

95. PARTNERS maintain the ability to pursue alternative or additional dispute remedies if a previously selected remedy does not achieve resolution.
96. If any provisions in this agreement are deemed to be, or are in fact, illegal, inoperative, or unenforceable, those provisions do not render any or all other agreement provisions invalid, inoperative, or unenforceable, and PARTNERS will automatically sever those provisions from this agreement.
97. PARTNERS intend this agreement to be their final expression and supersede any oral understanding or writings pertaining to OBLIGATIONS.
98. If during performance of WORK additional activities or environmental documentation is necessary to keep PROJECT in environmental compliance, PARTNERS will amend this agreement to include completion of those additional tasks.
99. PARTNERS will execute a formal written amendment if there are any changes to OBLIGATIONS.
100. This agreement will terminate upon OBLIGATION COMPLETION or an amendment to terminate this agreement, whichever occurs first.

However, all indemnification, document retention, audit, claims, environmental commitment, legal challenge, and ownership articles will remain in effect until terminated or modified in writing by mutual agreement.

101. The following documents are attached to, and made an express part of this agreement: SCOPE SUMMARY, FUNDING SUMMARY.

**This agreement is not approvable.  
Please coordinate with the HQ Office of Cooperative Agreements for review.**

## **DEFINITIONS**

**CALTRANS** – The California Department of Transportation

**CALTRANS STANDARDS** – CALTRANS policies and procedures, including, but not limited to, the guidance provided in the *Guide to Capital Project Delivery Workplan Standards* (previously known as WBS Guide) available at <http://www.dot.ca.gov/hq/projmgmt/guidance.htm>.

**CEQA (California Environmental Quality Act)** – The act (California Public Resources Code, sections 21000 et seq.) that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those significant impacts, if feasible.

**CFR (Code of Federal Regulations)** – The general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

**COOPERATIVE AGREEMENT CLOSURE STATEMENT** – A document signed by PARTNERS that verifies the completion of all OBLIGATIONS included in this agreement and in all amendments to this agreement.

**COST** – The responsibility for cost responsibilities in this agreement can take one of three assignments:

- **OBLIGATIONS COST** – A cost associated with fulfilling OBLIGATIONS that will be funded as part of this agreement. The responsibility is defined by the funding commitments in this agreement.
- **PROJECT COST** – A cost associated with PROJECT that can be funded outside of OBLIGATIONS. A PROJECT COST may not necessarily be part of this agreement. This responsibility is defined by the PARTNERS' funding commitments at the time the cost is incurred.
- **PARTNER cost** – A cost that is the responsibility of a specific PARTNER, independent of PROJECT.

**FHWA** – Federal Highway Administration

**FHWA STANDARDS** – FHWA regulations, policies and procedures, including, but not limited to, the guidance provided at [www.fhwa.dot.gov/topics.htm](http://www.fhwa.dot.gov/topics.htm).

**FUNDING PARTNER** – A PARTNER that commits a defined dollar amount to fulfill OBLIGATIONS. Each FUNDING PARTNER accepts responsibility to provide the funds identified on the FUNDING SUMMARY under its name.



**This agreement is not approvable.**  
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**FUNDING SUMMARY** – The table that designates an agreement’s funding sources, types of funds, and the PROJECT COMPONENT in which the funds are to be spent. Funds listed on the FUNDING SUMMARY are “not-to-exceed” amounts for each FUNDING PARTNER.

**GAAP (Generally Accepted Accounting Principles)** – Uniform minimum standards and guidelines for financial accounting and reporting issued by the Federal Accounting Standards Advisory Board that serve to achieve some level of standardization. See <http://www.fasab.gov/accepted.html>.

**HM-1** – Hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law whether it is disturbed by PROJECT or not.

**HM-2** – Hazardous material (including, but not limited to, hazardous waste) that may require removal and disposal pursuant to federal or state law only if disturbed by PROJECT.

**HM MANAGEMENT ACTIVITIES** – Management activities related to either HM-1 or HM-2 including, without limitation, any necessary manifest requirements and disposal facility designations.

**IMPLEMENTING AGENCY** – The PARTNER responsible for managing the scope, cost, and schedule of a PROJECT COMPONENT to ensure the completion of that component.

**IQA (Independent Quality Assurance)** – Ensuring that IMPLEMENTING AGENCY’s quality assurance activities result in WORK being developed in accordance with the applicable standards and within an established Quality Management Plan (QMP). IQA does not include any work necessary to actually develop or deliver WORK or any validation by verifying or rechecking work performed by another partner.

**NEPA (National Environmental Policy Act of 1969)** – The federal act that establishes a national policy for the environment and a process to disclose the adverse impacts of projects with a federal nexus.

**OBLIGATION COMPLETION** – PARTNERS have fulfilled all OBLIGATIONS included in this agreement, and all amendments to this agreement, and have signed a COOPERATIVE AGREEMENT CLOSURE STATEMENT.

**OBLIGATIONS** – All responsibilities included in this agreement.

**OBLIGATIONS COST** – See COST.

**OMB (Office of Management and Budget)** – The federal office that oversees preparation of the federal budget and supervises its administration in Executive Branch agencies.

**PA&ED (Project Approval and Environmental Document)** – See PROJECT COMPONENT.

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**PARTNER** – Any individual signatory party to this agreement.

**PARTNERS** – The term that collectively references all of the signatory agencies to this agreement. This term only describes the relationship between these agencies to work together to achieve a mutually beneficial goal. It is not used in the traditional legal sense in which one PARTNER's individual actions legally bind the other partners.

**PROJECT** – The undertaking to Operational improvement that includes addition of general purpose, HOV, Auxilliary lanes and interchange reconfiguration.

**PROJECT COMPONENT** – A distinct portion of the planning and project development process of a capital project as outlined in California Government Code, section 14529(b).

- **PID (Project Initiation Document)** – The activities required to deliver the project initiation document for PROJECT.
- **PA&ED (Project Approval and Environmental Document)** – The activities required to deliver the project approval and environmental documentation for PROJECT.
- **PS&E (Plans, Specifications, and Estimate)** – The activities required to deliver the plans, specifications, and estimate for PROJECT.
- **R/W (Right of Way) SUPPORT** –The activities required to obtain all property interests for PROJECT.
- **R/W (Right of Way) CAPITAL** – The funds for acquisition of property rights for PROJECT.
- **CONSTRUCTION SUPPORT** – The activities required for the administration, acceptance, and final documentation of the construction contract for PROJECT.
- **CONSTRUCTION CAPITAL** – The funds for the construction contract.

**PROJECT COST** – See COST.

**PROJECT MANAGEMENT PLAN** – A group of documents used to guide a project's execution and control throughout that project's lifecycle.

**QMP (Quality Management Plan)** – An integral part of the Project Management Plan that describes IMPLEMENTING AGENCY's quality policy and how it will be used.

**SAFETEA-LU** – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

**SCOPE SUMMARY** – The attachment in which each PARTNER designates its commitment to specific scope activities within each PROJECT COMPONENT as outlined by the *Guide to Capital Project Delivery Workplan Standards* (previously known as WBS Guide) available at <http://www.dot.ca.gov/hq/projmgmt/guidance.htm>.

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**SHS (State Highway System)** – All highways, right of way, and related facilities acquired, laid out, constructed, improved, or maintained as a state highway pursuant to constitutional or legislative authorization.

**SPONSOR** – Any PARTNER that accepts the responsibility to establish scope of PROJECT and the obligation to secure financial resources to fund PROJECT. SPONSOR is responsible for adjusting the PROJECT scope to match committed funds or securing additional funds to fully fund the PROJECT scope. If a PROJECT has more than one SPONSOR, funding adjustments will be made by percentage (as outlined in Responsibilities). Scope adjustments must be developed through the project development process and must be approved by CALTRANS as the owner/operator of the SHS.

**WORK** – All scope activities included in this agreement.

### **CONTACT INFORMATION**

The information provided below indicates the primary contact data for each PARTNER to this agreement. PARTNERS will notify each other in writing of any personnel or location changes. Contact information changes do not require an amendment to this agreement.

The primary agreement contact person for CALTRANS is:  
Mike Varipapa, Project Manager  
3347 Michelson Drive, Suite 100  
Irvine, California 92612-8894  
Office Phone: (949) 756-7607

The primary agreement contact person for OCTA is:  
Tamara Warren, Project Manager  
550 South Main Street  
Orange, California 92863-1584  
Office Phone: (714) 560-5590  
Email: [twarren@octa.net](mailto:twarren@octa.net)

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**SIGNATURES**

PARTNERS declare that:

1. Each PARTNER is an authorized legal entity under California state law.
2. Each PARTNER has the authority to enter into this agreement.
3. The people signing this agreement have the authority to do so on behalf of their public agencies.

STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION

ORANGE COUNTY TRANSPORTATION  
AUTHORITY

APPROVED

APPROVED

By: \_\_\_\_\_  
ADNAN MAIAH, P.E.  
Acting Deputy District Director  
Capital Projects Outlay Program

By: \_\_\_\_\_  
WILL KEMPTON  
Chief Executive Officer

CERTIFIED AS TO FUNDS:

By: \_\_\_\_\_  
JIM BEIL, P.E.  
Executive Director, Capital Programs

By: \_\_\_\_\_  
NEDA SABER  
District Budget Manager

APPROVED AS TO FORM AND PROCEDURE

By: \_\_\_\_\_  
KENNARD R. SMART, JR  
General Counsel



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**SCOPE SUMMARY**

4	5	6	7	8	Description	CALTRANS	OCTA	N/A
2	160				Perform Preliminary Engineering Studies and Draft Project Report	X	X	
		05			Updated Project information		X	
		10			Engineering Studies		X	
		15			Draft Project Report		X	
		20			Engineering and Land Net Surveys		X	
		30			Environmental Study Request (ESR)		X	
		40			NEPA Delegation	X		
		45			Base Maps and Plan Sheets for Project Report and Environmental Studies		X	
2	165				Perform Environmental Studies and Prepare Draft Environmental Document	X	X	
		05			Environmental Scoping of Alternatives Identified for Studies in Project Initiation Document	X		
		10			General Environmental Studies	X	X	
			15		Community Impact Analysis, Land Use, and Growth Studies		X	
			20		Visual Impact Assessment and Scenic Resource Evaluation		X	
			25		Noise Study		X	
			30		Air Quality Study		X	
			35		Water Quality Studies		X	
			40		Energy Studies		X	
			45		Summary of Geotechnical Report		X	
			55		Draft Right of Way Relocation Impact Document		X	
			60		Location Hydraulic and Floodplain Study Report		X	
			65		Paleontology Study		X	
			70		Wild and Scenic Rivers Coordination		X	
			75		Environmental Commitments Record		X	
			80		Hazardous Waste Initial Site Assessments/Investigations		X	
			85		Hazardous Waste Preliminary Site Investigations		X	
			99		Other Environmental Studies		X	
		15			Biological Studies		X	
		20			Cultural Resource Studies		X	
			05		Archaeological Survey		X	
				05	Area of Potential Effects/Study Area Maps		X	
				10	Native American Consultation		X	
				15	Records and Literature Search		X	
				20	Field Survey		X	
				25	Archaeological, Survey Report		X	
				99	Other Archaeological Survey Products		X	

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			10		Extended Phase I Archaeological Studies		X	
				05	Native American Consultation		X	
				10	Extended Phase I Proposal		X	
				15	Extended Phase I Field Investigation		X	
				20	Extended Phase I Materials Analysis		X	
				25	Extended Phase I Report		X	
				99	Other Phase I Archaeological Study Products		X	
			15		Phase II Archaeological Studies		X	
				05	Native American Consultation		X	
				10	Phase II Proposal		X	
				15	Phase II Field Investigation		X	
				20	Phase II Materials Analysis		X	
				25	Phase II Report		X	
				99	Other Phase II Archaeological Study Products		X	
			20		Historical and Architectural Resource Studies		X	
				05	Preliminary Area of Potential Effects/Study Area Maps for Architecture		X	
				10	Historic Resources Evaluation Report - Archaeology		X	
				15	Historic Resource Evaluation Report - Architecture (HRER)		X	
				20	Bridge Evaluation		X	
				99	Other Historical and Architectural Resource Study Products		X	
			25		Cultural Resource Compliance Consultation Documents		X	
				05	Final Area of Potential Effects/Study Area Maps		X	
				10	PRC 5024.5 Consultation		X	
				15	Historic Property Survey Report/Historic Resources Compliance Report		X	
				20	Finding of Effect		X	
				25	Archaeological Data Recovery Plan/Treatment Plan		X	
				30	Memorandum of Agreement		X	
				99	Other Cultural Resources Compliance Consultation Products		X	
		25			Draft Environmental Document or Categorical Exemption/Exclusion	X	X	
			10		Section 4(F) Evaluation	X		
			20		Environmental Quality Control and Other Reviews	X		
			25		Approval to Circulate Resolution	X		
			30		Environmental Coordination		X	
			99		Other Draft Environmental Document Products		X	
		30			NEPA Delegation	X		
2	170				Permits, Agreements, and Route Adoptions during PA&ED component	X	X	
		05			Required permits	X		
		15			Railroad Agreements		X	
		20			Freeway Agreements		X	
		25			Agreement for Material Sites		X	
		30			Executed Maintenance Agreement	X		
		40			Route Adoptions			X
		45			MOU From Tribal Employment Rights Office (TERO)		X	
		55			NEPA Delegation	X		

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2	175			Circulate Draft Environmental Document and Select Preferred Project Alternative Identification	X	X	
		05		DED Circulation		X	
		10		Public Hearing		X	
		15		Public Comment Responses and Correspondence		X	
		20		Project Preferred Alternative	X		
		25		NEPA Delegation	X		
2	180			Prepare and Approve Project Report and Final Environmental Document	X	X	
		05		Final Project Report	X	X	
			05	Updated Draft Project Report		X	
			10	Approved Project Report	X		
			15	Updated Storm Water Data Report		X	
			99	Other Project Report Products		X	
		10		Final Environmental Document	X	X	
			05	Approved Final Environmental Document	X		
			05	Draft Final Environmental Document Review	X		
			10	Revised Draft Final Environmental Document	X		
			15	Section 4(F) Evaluation	X		
			20	Findings	X		
			25	Statement of Overriding Considerations	X		
			30	CEQA Certification	X		
			40	Section 106 Consultation and MOA	X		
			45	Section 7 Consultation	X		
			50	Final Section 4(F) Statement	X		
			55	Floodplain Only Practicable Alternative Finding	X		
			60	Wetlands Only Practicable Alternative Finding	X		
			65	Section 404 Compliance	X		
			70	Mitigation Measures	X		
			10	Public Distribution of Final Environmental Document and Respond To Comments	X		
			15	Final Right of Way Relocation Impact Document	X		
			99	Other Final Environmental Document Products		X	
		15		Completed Environmental Document	X	X	
			05	Record of Decision (NEPA)	X		
			10	Notice of Determination (CEQA)	X		
			20	Environmental Commitments Record		X	
			99	Other Completed Environmental Document Products		X	
		20		NEPA Delegation	X		

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**FUNDING SUMMARY**

Funding Source	Funding Partner	Fund Type	PA&ED	Subtotal Support	Subtotal Capital	Subtotal Funds Type
LOCAL	OCTA	Measure	\$0	\$0	\$0	\$0
		Subtotals by Component	\$0	\$0	\$0	\$0