

# PROJECT STUDY REPORT

IN SAN DIEGO COUNTY ON INTERSTATE 5 FROM CARMEL VALLEY RD OC TO 0.8 KM NORTH OF CARMEL VALLEY OC  
AND ON ROUTE 56 FROM CARMEL VALLEY RD OC TO 0.3  
KM EAST OF EL CAMINO REAL OC.

## CONSTRUCT DIRECT FREEWAY TO FREEWAY CONNECTORS.



**PROJECT LOCATION**

CONCURRENCE WITH SCOPE AND CONTENT:

*Majid Kharrati*  
 MAJID KHARRATI  
 DESIGN MANAGER  
 DESIGN

APPROVAL RECOMMENDED BY:

*Joseph R. Hull*  
 JOSEPH R. HULL  
 PROJECT MANAGER  
 PROGRAM/PROJECT MANAGEMENT

CONCURRENCE WITH SCOPE AND CONTENT:

*Eric Pahlke*  
 ERIC PAHLKE  
 DIRECTOR OF TRANSPORTATION  
 SANDAG

APPROVED BY:

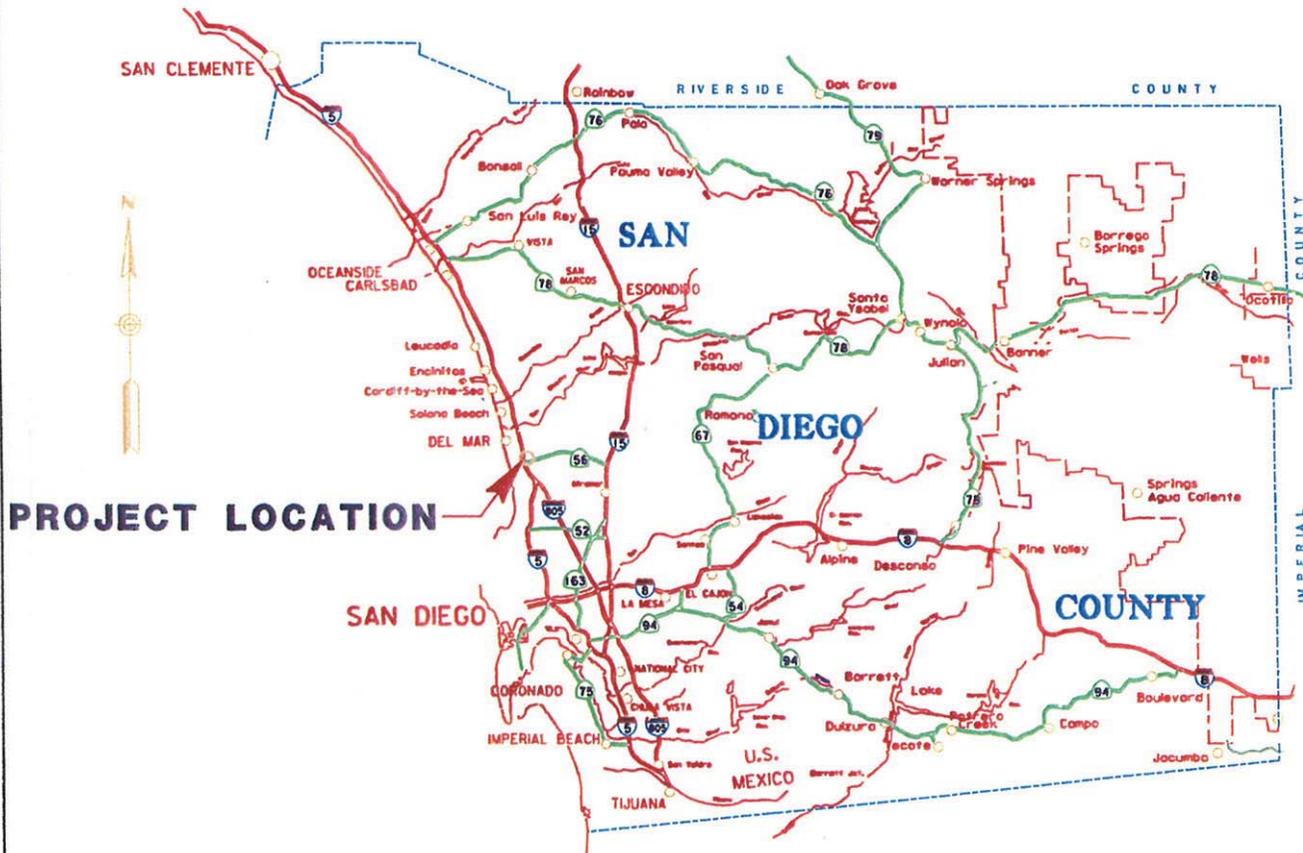
*Gary L. Gallegos*  
 GARY L. GALLEGOS  
 DISTRICT DIRECTOR  
 DISTRICT 11

**12-8-2K**  
DATE:

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**PROJECT LOCATION**

SUBMITTED BY:

MAJID KHARRATI  
DESIGN MANAGER  
DESIGN

CONCURRED BY:

RICHARD G. CHAVEZ  
SENIOR ENGINEER  
SANDAG

APPROVAL RECOMMENDED BY:

JOSEPH R. HULL  
PROJECT MANAGER  
PROGRAM/PROJECT MANAGEMENT

APPROVED BY:

GARY L. GALLEGOS  
DISTRICT DIRECTOR  
DISTRICT II

DATE:

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## PROJECT STUDY REPORT

### INTRODUCTION

This report covers a proposal to modify access between State Route 56 (SR-56) and Interstate 5 (I-5) (section north of the I-5/SR-56 interchange) in the City of San Diego. The proposals include construction of two connector ramps, one from southbound I-5 to eastbound SR-56 and the other from westbound SR-56 to northbound I-5. The dual freeway and truck bypass will be extended on I-5 to the Del Mar Heights Road Interchange. The northbound entrance ramp and the southbound exit ramp at Carmel Valley Road, the eastbound entrance ramp to SR-56 from El Camino Real, and all ramps at the Del Mar Heights Road Interchange will be realigned. The second proposal is to modify the existing configuration without the construction of connector ramps. The improvements include the addition of auxiliary lanes on I-5 and improvements to the SR-56/El Camino Real Interchange to improve the level of service based on year 2020 traffic.

The TEA-21 federal transportation legislation includes Federal Demonstration Grant funding that could be utilized for the Project Report/Environmental document (PR/ED) phase of the project (Project #1007). A total of \$300,000 of these grant funds are available for this project as shown in the 2000 Regional Transportation Improvement Program (RTIP-Caltrans project # 10). State Transportation Improvement Program (STIP) funding of \$60,000 is also shown as the required 20% match for the TEA-21 funds. The STIP funds are required to be "state only" dollars and are programmed in the 2002 fiscal year. Based on availability of other funding and establishing a lead agency for the environmental documentation phase, the PR/ED could begin sooner than the 2002 fiscal year. Design and construction for the project would be dependent on completion of the PR/ED phase. Based on a 2002 start of the PR/ED, design and construction would then be tentatively scheduled for the 2004/2005 and 2006/2007 fiscal years respectively.

The total cost of this HE11 project is estimated to vary between \$21 to \$137 million (2005 dollars). The project funding for design could be considered for programming in the 2002 STIP cycle. This project has tentatively been identified as a Category 3 project requiring new right of way and a new connection to an existing freeway.

This Project Study Report (PSR) was initiated at the request of the City of San Diego. The City of San Diego, in a letter dated August 22, 1997, requested that studies be initiated as a requirement of the completion of SR-56 between I-5 and I-15. Upon completion and approval of this PSR, the PR/ED phase of this project could begin. At this time it is anticipated that the PR/ED will begin during the 2001 fiscal year (July 1, 2001 -- June 30, 2002).

## **BACKGROUND**

I-5 is a principal north-south arterial for the western United States in the National Highway System, extending from the Mexican border at the south to the Canadian border at the north. Regionally, I-5 serves as the commuter link for the coastal communities of San Diego County. As such, this portion of I-5 carries a large percentage of commuter traffic as well as intraregional, interregional, and international traffic. The portion of I-5 covered in this report was originally constructed in 1953 and added to the California Freeway and Expressway System in 1959. It was widened to eight lanes in 1972.

SR-56 will serve as an east-west connector for I-5 and I-15. It is located in the northerly part of San Diego County and will connect the communities of Carmel Valley and Rancho Penasquitos. Completion of SR-56 will reduce traffic congestion on local streets and provide an east-west connection from I-5 to I-15, between SR-52 and SR-78. Two sections of SR-56 between I-5 and I-15 have been completed and are currently operational. These sections include approximately 3.4 kilometers (km) at the western end (SR-56 West) and approximately 3.1 km at eastern end (SR-56 East). The middle section, approximately 8.0 km, is currently in the Caltrans design phase and scheduled to be advertised for construction in late 2000/early 2001.

Most of the middle section will be within an area of the City of San Diego formerly known as the North City Future Urbanizing Area (NCFUA). Proposition A, the Managed Growth Initiative, requires a majority vote of the general public to change the zoning from “future” to “planned” urbanizing. This is known as the “phase shift”. Recent ballot

initiatives received the required majority vote for a “phase shift”. Now the entire area is a planned urbanizing area. Based on the SR-56 traffic study, implementation of the “phase shift” in the NCFUA requires that the SR-56/I-5 north direct connectors are built between 2015 and 2020, in order to maintain level of service D operating conditions in the SR-56/I-5 interchange area.

The portion of I-5 and SR-56 in the vicinity of this project is characterized by a mix of developed and undeveloped property adjacent to the freeway right of way (Exhibit 1). On I-5, business parks, residential, and commercial development define the surrounding area. On SR 56, residential, hotel, and open space areas lie to the north of the highway. To the south is the undeveloped Carmel Creek basin. The Carmel Valley Restoration and Enhancement Program (CVREP) was developed to reduce the urban runoff and associated sediments and prevent such from reaching Los Penasquitos Lagoon. It also provided biological mitigation for transportation projects in the Carmel Valley area (I-5/SR-56 interchange, Sr-56 West, El Camino Real).

SR-56 west was constructed as a four-lane freeway (with a 16.5 meter median to accommodate future widening for two additional lanes) from El Camino Real to 0.8 km east of Carmel Country Road. This section was opened to traffic in March 1995. A collector/distributor road was constructed between El Camino Real and Carmel Creek Road to reduce the weaving conflicts in this area. A barrier separates the through traffic on SR-56 from the entrance and exit ramp traffic.

On I-5, a project is being completed to widen I-5 and I-805 to reduce congestion, increase capacity, and improve motorist safety. The project extends from Genesee Avenue to Del Mar Heights Road. The project was separated into 3 stages. The first stage (Stage 1) included the construction of direct connectors from northbound I-5 to eastbound SR-56 ("NE" connector) and from westbound SR-56 to southbound I-5 ("WS" connector). This project was completed in October, 1998. The second stage (Stage 1b) is currently in construction to add high occupancy vehicle (HOV) lanes to the center median between the I-5/805 merge and Del Mar Heights Road. This project is scheduled for completion in mid 2000. The third stage (Stage 2) consists of adding four lanes in each direction to I-5 south of the SR-56 junction and 2 lanes north of the junction, between Carmel Valley Road and Del Mar Heights Road. A barrier will separate the new lanes from the existing freeway. The new lanes are for truck traffic and for motorists using SR-56 and the proposed interchange at Carmel Mountain Road. The proposed diamond interchange at Carmel Mountain Road will be added as part of this project. Construction advertisement is scheduled for late 2001. As a result of this project, the configuration of I-5 between SR-56 and Del Mar Heights Road will consist of 12-lanes plus 2-HOV lanes.

When the I-5/805 widening project is complete, the southern section of I-5 will be connected to SR-56 with direct freeway-to-freeway connectors. The section of I-5 north of SR-56 will use the Carmel Valley Road interchange to access SR-56. The barrier-separated truck bypass facility will end just north of the Carmel Valley Road Interchange resulting in a six-lane contiguous freeway. On northbound I-5, the two-truck lanes will continue to the Del Mar Heights Interchange. The 6<sup>th</sup> lane will exit at the Del Mar Heights exit ramp and the 5<sup>th</sup> lane will continue past Del Mar Heights Road. On

southbound I-5, the 5<sup>th</sup> lane begins north of Del Mar Heights Road and diverges at the truck bypass exit ramp. The 6<sup>th</sup> lane begins between Carmel Valley Road and Del Mar Heights Road. The interchange spacing between Carmel Valley Road and Del Mar Heights Road is approximately 1.9 kilometers.

Due to freeway congestion and excess traffic demand, a PSR is currently being completed to add two general purpose lanes and one HOV lane to northbound and southbound I-5 from Del Mar Heights Road to Encinitas Blvd. It will add one general purpose lane and one HOV lane from Encinitas Blvd. to Vandegrift Blvd. The PSR also shows the addition of auxiliary lanes, where necessary, to address weaving and merge problems on the corridor. The PSR has been completed and the project is awaiting the initiation of the PR/ED phase. Based on funding availability, the construction is scheduled to be completed by year 2020.

An additional lane is being studied for northbound I-5 between Del Mar Heights Road and Via De La Valle. The project study report was completed in October 1997. The project is programmed in the 1998 STIP with the Regional Improvement Program (STIP-RIP) with funds totaling \$6,100,000. The next stage will complete the PR/ED and the completion date has not yet been determined.

In addition to the freeway improvements, Caltrans, the Metropolitan Transit Development Board (MTDB), and the North County Transit Development Board (NCTD) are studying Traffic System Management (TSM), Intelligent Transportation Systems (ITS) improvement alternatives, Light Rail Transit (LRT) alignments, and/or

other transit-related improvements. These were part of the Major Investment Study (MIS) for the I-5 corridor. These improvements are intended to maximize the person-carrying capacity within the I-5 corridor.

### **NEED AND PURPOSE**

The existing I-5/SR-56 interchange has freeway-to-freeway connectors for vehicles travelling from westbound SR-56 to southbound I-5 and from northbound I-5 to eastbound SR-56. Vehicles wishing to access I-5 to the north from SR-56 or eastbound SR-56 from southbound I-5 utilize Carmel Valley Road and the associated entrance and exit ramps to make the connection between the two freeways.

Intersecting Lane Volume (ILV) analysis for the no-build alternative is included as Exhibits 20 and 22. The ILV analysis indicates that based on the existing configurations of the intersections at SR-56 and El Camino Real, the intersections will operate at an unacceptable level of service, using year 2020 no-build peak hour volumes. ILV analysis for the Carmel Valley interchange ramp terminal intersections showed acceptable levels of service using 2020 no build peak hour volumes.

The projected year 2020 volumes for westbound SR-56 to northbound I-5 are 1510 vehicles per hour (vph) in AM peak hour period and 800 vph in the PM (Exhibit 5 – Year 2020, I-5 Corridor Traffic for Alternative 1). For the connection from southbound I-5 to eastbound SR-56, the volumes are 1460 vph for the AM and 1270 vph for the PM. The

Highway Design Manual indicates that freeway-to-freeway connectors should be considered for volumes exceeding 1500 vph.

The TASAS Table B Accident Report for the 36-month period of January 1, 1996 through December 31, 1998 shows the following accident rates:

LOCATION	TOTAL (ACC)	ACTUAL (ACC/MVM)			EXPECTED (ACC/MVM)		
		F	F+I	TOTAL	F	F+I	TOTAL
Northbound I-5 K.P. 52.6/54.9	147	0.0	0.23	0.90	0.006	0.38	1.09
Southbound I-5 K.P. 52.6/54.9	174	0.006	0.29	1.06	0.006	0.38	1.09

F=Fatalities, I=Injuries

The accident rate for the I-5 mainlanes does not exceed the statewide average for similar types of facilities. As SR-56 is a new facility, there is no accident data available for this route.

The majority of accidents that have occurred within the study limits can be classified as rear-end accidents (53%) and hit object accidents (23%). The primary causes for these accidents is attributed to a variety of factors including speeding (41%) and many of accidents occurred in stop and go traffic conditions (41%). It appears from these statistics that many of the accidents are congested related and capacity increasing improvements are needed to reduce the number of accidents. Furthermore, it appears that the accidents were concentrated in areas where lane reductions occurred. This project

combined with other projects to widen Interstate 5 should reduce the number of accidents in these areas.

## **ALTERNATIVES**

### **ALTERNATIVE 1 – CONSTRUCT DIRECT FREEWAY-TO-FREEWAY**

#### **CONNECTOR RAMPS:**

This alternative proposes to construct connectors from westbound SR-56 to northbound I-5 (“WN” connector) and southbound I-5 to eastbound SR-56 (“SE” connector).

Improvements would include constructing two-lane direct connector structures, approach pavement sections, and auxiliary lanes on westbound SR-56 and northbound and southbound I-5. The truck bypass facilities on north and southbound I-5 would be realigned to the outside of the 5/56 connector structures and the bypasses and barrier separation would be extended to Del Mar Heights Road. Carmel Valley Road, the entrance ramp from El Camino Real to eastbound SR-56, the northbound entrance ramp and southbound exit ramp at Carmel Valley Road, and all ramps at the Del Mar Heights Road Interchange will be realigned to facilitate the alignment of the direct connectors (see Exhibits 13 and 14).

The total project cost for Alternative 1 is estimated at more than \$137 million (2005 dollars). The cost estimate is as follows (see Exhibit 28 for a detailed estimate):

	COST
<u>“0” Phase</u>	
Environmental Document/Project Report (includes R/W support)	\$ 2,028,800
<u>“1” Phase</u>	
Design	\$ 9,622,000
R/W and Utility Relocation	\$ 24,660,692
R/W Support	\$ 1,263,700
<u>“3” Phase</u>	
Roadway	\$ 55,584,076
Structures	\$ 31,567,114
<u>Construction Engineering</u>	<u>\$ 12,520,200</u>
<u>Total</u>	<u>\$137,246,582</u>
<u>Total Project (rounded)</u>	<u>\$137,247,000</u>

The direct connectors are proposed to be two-lane wide to accommodate the year 2020 traffic and to allow for passing on the structures. The minimum curve radii are 240 m for the “SE” connector and 201 m for the “WN” connector. A curve radius of 201 m corresponds with a design speed of 70 km/hr and 240m corresponds to a design speed of 77 km/hr. Both will require an advisory design exception, as the Highway Design Manual standard is 80 km/hr. A standard design would result in the connector structure crossing above two existing restaurants on the “WN” connector and a gas station on the “SE” connector. Using maximum grades for the profiles, the clearance over the restaurants would be inadequate resulting in complete property acquisition. Therefore, to avoid acquiring these properties, a small decrease in design speed was considered more feasible. The proposed design maximizes the radius without permanent damages to the restaurants, gas station, or their parking facilities. However, temporary construction

related impacts will be incurred at the restaurant properties. The design exception has been discussed with the Caltrans Headquarters Project Development Coordinator and the Federal Highway Administration Reviewer.

This project will extend the barrier-separated truck bypasses on northbound and southbound I-5 to the structure of the Del Mar Heights Interchange. The bypasses will contain the local interchange traffic from Del Mar Heights Road and Carmel Valley Road and the trucks on I-5. The freeway-to-freeway connectors will connect to the inner freeway. Extending the bypasses addresses the weaving concerns of having two local interchanges and a freeway-to-freeway interchange located in the same area. Based on current standards in the Highway Design Manual, separation between local interchanges should be 1.5 kilometers and freeway-to-freeway interchanges should be 3.0 kilometers. The separation between Carmel Valley Road/SR-56 and Del Mar Heights Road is 1.9 kilometers. With the addition of the direct connectors, the 3.0 kilometer mandatory design standard is not met resulting in inadequate weaving distance between the freeway-to-freeway and the local interchange ramps. Merging the direct connectors to the inner freeway eliminates the operational and weaving problems that this standard addresses. The Del Mar Heights and Carmel Valley interchange traffic are on the bypass facility and are separated by a barrier from the inner freeway. Therefore no weaving takes place between the local interchange traffic and the connector traffic.

Also of concern was the influence of trucks within the weaving sections on north and southbound I-5. On northbound I-5, where the existing speed differential between cars and trucks is approximately 30 km/hr, cars slow down to weave between trucks. Merging

the “WN” connector to the existing freeway with trucks in the outer lane would cause the faster moving connector traffic to slow, disrupting the merge and creating congestion. With the bypass facility, the trucks are on the bypass, eliminating the effects of the speed differential to the connector traffic.

Extending the truck bypasses requires realigning a portion of the truck bypass alignments that are completed as part of I-5 widening project. Currently the northbound bypass merges to the existing freeway just north of the Carmel Valley Undercrossing. On southbound I-5 the bypass is being designed, as part of stage 2 of the 5/805 widening project, to diverge from I-5 just north of the Carmel Valley Undercrossing. In order to connect the direct freeway-to-freeway connectors to the existing freeway section, the bypasses will be realigned around the connectors as they connect to I-5. The structures over Carmel Valley Road will remain intact. The truck bypasses will consist of two-3.6 meter lanes with 1.5 meter shoulder inside and 3.0 meter shoulders outside.

The northbound entrance ramp and southbound exit ramp at Carmel Valley Road and the northbound exit ramp, southbound loop ramp and southbound entrance ramp at Del Mar Heights Road will be realigned to accommodate the connectors and the truck bypass. All ramps will connect to bypass to eliminate conflicts and weaving with the connector traffic.

Auxiliary lanes are to be constructed on northbound I-5, southbound I-5, and on westbound SR-56 for connector ramps. The length of the auxiliary lanes varies from 400 to 800 m. A weaving analysis was performed to determine if the proposed weaving

length was adequate for year 2020 design year volumes (Exhibit 23). The analysis found that the freeway sections would operate at level of service D or better with the addition of the auxiliary lanes. In addition to the auxiliary lanes, a lane will be added on the northbound side of the I-5 main freeway to add capacity and improve weaving. The lane will begin at the Carmel Valley entrance ramp and continue past Del Mar Heights Road.

On eastbound SR-56, the existing "SE" connector was designed to intersect with the middle lane of the existing 3-lane collector/distributor roadway. The existing configuration of this roadway has a 2-lane entrance ramp from El Camino Real that uses both of the outer two lanes of the collector/distributor. With the construction of the connectors the 20 year projected volume of this ramp will be reduced so a two-lane ramp is no longer required. Therefore the proposed design eliminates the inside lane of the ramp and the connector merges to the middle lane of the collector/distributor.

A weaving analysis was performed on both the eastbound and westbound directions of SR-56. It determined that the proposed design is adequate for all weaving movements. For eastbound SR-56, placing the south to east connector at the west end of the collector/distributor minimizes the impacts to the freeway. The collector/distributor roadway section was built to separate the weaving traffic from the north to east connector traffic. For the year 2020 peak hour period, the north-east connector accounts for 3300 of the 5550 vehicles using this freeway section. Adding the connector traffic (1270) to the main freeway would cause the mainlanes to breakdown. With the addition of the south-east connector to the collector/distributor, the volume is 2250 on the three-lane collector/distributor roadway.

For westbound SR-56, the auxiliary lane is extended from the westbound exit ramp to the “WN” connector. Weaving is improved by increasing the auxiliary lane length to 750 meters and separating the “WN” connector traffic from the high volume accessing the “WS” connector. The El Camino Real exit ramp is reduced to one-lane since the volumes (860 AM/570 PM phv) do not require two-lanes.

On Carmel Valley Road, a lane will be eliminated at the intersection with El Camino Real to provide room for the placement of a column for the proposed “SE” connector. Other column locations would cause a decrease in the superelevation transition length on the “SE” connector structure. Elimination of a lane on Carmel Valley Road changes the lane configuration at the intersection. A straight move for access to the SR-56 entrance ramp will be eliminated. An ILV analysis for the El Camino Real Interchange revealed that removing this lane would not disrupt operations at the interchange (see Exhibit 21). The alignment of Carmel Valley Road will be changed to match the lane configuration at the intersection. The proposed design speed (50 km/hr) for Carmel Valley Road will be the same as existing.

Based on Advanced Planning Studies (APS – Exhibit 30), the proposed structures will be cast-in-place box girder bridges. Column spans will average between 65 to 75 meters in length. Column locations have been designed to minimize the impacts to adjacent properties and to traffic during and after construction. The existing “WS” and “NE” connectors required the construction of stone columns to mitigate for the potential of liquefaction at the column foundations. Therefore, it is assumed that special foundation

requirements, such as stone columns or large diameter shafts will be required for the columns of the “WN” connector, the “SE” connector, and the truck bypass structures. During the final design phase a detailed soils and foundations study will determine those requirements.

In the project area, the projected 2020-traffic demand will meet or exceed the capacity of I-5. Consequently, ramp metering at the Carmel Valley entrance ramp will remain and be relocated with the realignment of the ramp and a ramp meter will be added to the “WN” connector. The ramp meters will disperse traffic platoons, reduce potential merging and weaving issues, and maintain balanced traffic flow on northbound I-5.

Design exceptions are required for the following non-standard features:

- HDM topic 501.3 - 3 kilometer mandatory spacing between interchanges. The Carmel Valley Interchange connects with I-5 at the same point as the proposed 5/56 connectors. Del Mar Heights interchange is located approximately 1.9 kilometers north of the proposed connection point. This is a mandatory design exception requiring Caltrans Headquarters Design and Local Programs approval. Additionally, FHWA will require an Interstate Access Approval for adding connectors to an Interstate. The Mandatory Design Exception Fact Sheet must be approved prior to obtaining conceptual approval for access modification.
- HDM topic 302.1 - Proposed 1.2 meter shoulder at the bent location in the center median of I-5 for the “SE” connector. The standard for the inside shoulder on a freeway is 3 meters. This is a mandatory design exception requiring FHWA and Design and Local Programs approval.

- HDM topic 309.1 (3) - The clearance to the proposed safety shaped barrier is 1.2 meters at the bent location in the center median of I-5 for the “SE” connector. The standard clearance is 3 meters. This is a mandatory design exception requiring FHWA and Design and Local Programs approval.
- HDM topic 504.4 (2) - 70 km/hr design speed for the “WN” connector and 77 km/hr design speed for the “SE” connector. The standard is 80 km/hr. For the “WN” connector, a 201 meter radius curve was used to minimize impacts to an existing restaurant and restaurant site. For the “SE” connector, a 240 meter radius curve was used to minimize impacts to the gas station.
- HDM topic 504.4 (6) - non-standard taper of the “SE” connector at SR-56. Per the Highway Design Manual, the taper from 2 to 1 lanes should occur beyond the ramp merge point.
- HDM topic 202.5 (2) - 2/3 superelevation runoff within curve and 1/3 outside of curve for the “SE” connector. Reversing curves and column location restrictions prohibit the use of the standard transition length. However, it does meet the minimum requirement of 4% rate change per 20 meters for restrictive situations (per HDM topic 202.5 (3)).

Proposed structural section depths were calculated assuming a minimum R-value of 15 for the pavement design of the proposed improvements (see Exhibits 11 and 27). Slope ratios for the proposed cut and fill areas should be 1:2 (vertical: horizontal) or flatter.

The District Materials Lab has concurred with this recommendation. Retaining walls will be required for the area adjacent to southbound I-5, northbound I-5, and at the “SE” connector merge to eastbound SR-56. Due to the subsurface conditions found at the

existing “WS” and “NE” connectors, the Structures Department requested a study for special foundation considerations. Caltrans Roadway Geotechnical Engineering South made the determination that some of the walls will require deep foundations or special design shallow foundations. The cost for the foundation treatment has been included in the project estimate.

Maintenance pullouts should be included in the ultimate project. The pullouts should be located approximately every 400 m or where appropriate.

DESIGN OPTIONS: In order to alleviate the effects of weaving and to reduce the cost of the project, one design variation is to eliminate the northbound entrance and the southbound exit ramps at Carmel Valley Road or both ramps at El Camino Real. Once the connectors are built, the volumes at these ramps will be reduced substantially (see exhibit 3). The proximity to the Del Mar Heights, Carmel Creek, Carmel Country, and Carmel Mountain interchanges makes these ramps unnecessary to accommodate the traffic of the region. Furthermore, on SR-56, traffic from northbound I-5 diverges to Carmel Creek Road by an exit ramp at the west end of the collector-distributor. This move may be removed by extending the barrier to the end of the “NE” connector. Removing some of these ramps will eliminate merge points, reduce weaving conflicts, and improve the operation of the freeway and connectors. However, it is necessary to study the traffic and other related impacts on the local businesses and residences, which will be done during the PR/ED stage.

**ALTERNATIVE 2 – LOCAL STREET CONNECTION:**

This alternative proposes improvements to existing configuration of the I-5/SR-56 interchange to accommodate the traffic utilizing the connection of SR-56 between I-5 and I-15. Improvements to the ramps at El Camino Real and Carmel Valley Road are proposed to provide access to the northern section of I-5 (exhibits 16 and 17).

The total project cost for Alternative 2 is estimated at more than \$21 million (2005 dollars). The cost estimate is as follows (see Exhibit 29 for a detailed estimate):

	COST
<u>“0” Phase</u>	
Environmental Document/Project Report (includes R/W support)	\$ 116,000
<u>“1” Phase</u>	
Design	\$ 463,800
R/W and Utility Relocation	\$ 11,719,531
R/W Support	\$ 475,400
<u>“3” Phase</u>	
Roadway	\$ 8,545,499
Structures	\$ 0
<u>Construction Engineering</u>	<u>\$ 556,500</u>
<u>Total</u>	<u>\$ 21,876,730</u>
<u>Total Project (rounded)</u>	<u>\$ 21,877,000</u>

To analyze the traffic flow without the freeway to freeway connectors, a select-link traffic analysis was completed for the year 2020 design year traffic. The select-link analysis determines the destination of vehicles that travel through a designated “link” or segment of freeway, in this case I-5 and SR-56. The select-link analysis was used to determine if the absence of freeway-to-freeway connectors would result in redirections through the Carmel Valley community. The analysis showed that though some minor redirections would occur, that the majority of the traffic would utilize Carmel Valley

Road. Furthermore, the analysis showed that improvements to the ramps would further reduce the redirection through the community and result in minimal impacts to the community street system.

The select-link analysis was used in part to determine what improvements are necessary to accommodate the traffic volume wishing to access I-5. In addition, the Carmel Valley Road and El Camino Real interchanges were analyzed using the ILV method (exhibits 20 and 22). ILV's were completed for the year 2020 no-build alternative and the results show that improvements would be needed for the El Camino Real Interchange. The Carmel Valley Road Interchange is shown to operate below capacity (1500 ILV/hr), therefore, no improvements are shown for this interchange. To maintain flow at the El Camino Real Interchange it is proposed to add a through lane to the westbound exit ramp from SR-56 at the junction with El Camino Real.

In addition to ramp improvements, the lane configuration on southbound El Camino Real will be revised to add a through lane. The existing median will be altered to provide the additional lane at the intersection with the westbound exit ramp from SR-56. This improvement along with the improvement to the westbound exit ramp will improve the capacity of the El Camino Real Interchange and reduce the ILV below 1500.

A time study analysis (Exhibit 18) was conducted to compare the travel times for various routes for connecting between the two freeways, I-5 and SR-56. The analysis shows that the most direct route, along Carmel Valley Road, is the shortest and the least time consuming route for traveling between I-5 and SR-56. Based on current traffic volume

conditions, alternative routes add at least a minute or more to the travel time from I-5 to SR-56. These studies were conducted during both non-peak and peak hour conditions and included signals and ramp metering. The analysis shows that due to greater distance and travel times, travelers are dissuaded from seeking alternative routes through the local community.

Carmel Valley Road, between the SR-56 and I-5 interchanges, will not require widening for the 2020 design year traffic. As according to the City of San Diego's general plan, Carmel Valley Road is classified as a 6 lane prime arterial for this segment of roadway. According to the City of San Diego standards, the level of service D threshold for a roadway of this type is 55,000 ADT (average daily traffic). The year 2020 design year traffic projection is 60,000. The city's standard assumes that a large percentage of this volume will operate during the peak hour. However, since Carmel Valley Road accesses the beach and the Torrey Pines recreational areas, it is assumed that the peak hour percentages will be lower than normal and a more even distribution of traffic during day time period will be observed. Therefore less peak hour congestion will occur.

Furthermore, Caltrans ILV analysis shows that the two interchanges on both sides of this roadway segment operate at an acceptable level of service. Currently, signal timing along Carmel Valley Road, allows smooth traffic flow between El Camino Real and the ramps at I-5. In the future as the traffic volume increases, signal interconnection along Carmel Valley Road will be necessary to maintain this level of service.

Weaving analysis for the Alternative 2 was conducted to determine impacts to the freeway. The level of service D method was used and is included as exhibit 24. The

results of the analysis show that all segments of westbound and eastbound SR-56 will operate at level of service D or better. However, the results indicated that in the project area southbound and northbound I-5 would operate at unacceptable levels of service. On northbound I-5, the large volume of traffic on the freeway combined with the truck bypass merge degrade the operation of the freeway. To remedy this problem, it is proposed as part of this alternative to extend the second lane of the truck bypass facility north to the Del Mar Heights Road entrance ramp. In addition to extending the truck lane, an auxiliary lane is needed to improve the weaving. This lane is also proposed as part of this alternative, it will be added between the Carmel Valley Road entrance ramp and the Del Mar Heights Road exit ramp. These improvements will be completed concurrently with the future widening project to add two general purpose lanes from Del Mar Heights Road north to Encinitas Blvd. This will mitigate for the future weaving and will not degrade operations during the interim period by forcing another lane to end north of Del Mar Heights Road. The costs for the extension of the truck bypass facility to the north, and auxiliary lane between Carmel Valley Road and Del Mar Heights Road on I-5 are included in the alternative 2 cost estimate.

On southbound I-5, the large freeway volume (greater than 2200 vph per lane), degrade operations on the freeway. Freeway improvements are required to add capacity which are beyond the scope of this project alternative. These improvements may be added to the I-5 widening project which adds capacity to freeway from north of Del Mar Heights Rd. For the weaving, it is determined that with capacity improvements mentioned above, sufficient spacing exists between the ramps such that the existing configuration will operate effectively.

Besides the cost savings, the advantages of this alternative in comparison to alternative 1 include reduction of noise impacts, weaving conflicts, visual impacts, disruptions to traffic flow during construction, socioeconomic impacts due to ramp closures, utility relocations, and elimination of impacts to local businesses. Alternative 1 also would require a mandatory design exception for the distance between interchanges and an Interstate Access Approval from FHWA. This alternative would eliminate that design exception and the FHWA conceptual approval process.

### **ALTERNATIVE 3 - NO BUILD:**

This alternative would not accommodate the anticipated growth in the area or alleviate the anticipated congestion problems. Congestion and congestion-related problems may cause traffic to seek alternative parallel routes. In addition, the No Build Alternative could limit future developments and leave existing developments without needed transportation facilities.

### **OTHER ALTERNATIVES CONSIDERED BUT REJECTED**

Other alternatives were studied and listed below. These alternatives did not meet the project need and purpose and are rejected from further consideration.

Alternatives were considered that would align the proposed connector ramps either on the inside or outside of the truck bypass facilities without the barrier separation as proposed in Alternative 1. Speed differential between cars and trucks and the number of merges taking place in the vicinity of this project make these alternatives less than desirable. The number of merges in the project area would force the closure of ramps to reduce the weaving conflicts in the project area.

Other alternatives considered included having the “SE” connector going under rather over existing I-5 lanes, realigning I-5 to minimize the impacts on each side of the freeway, and using a single structure by connecting to the median in I-5 and SR-56.

These alternatives were rejected because of cost, impacts to existing traffic, and non-standard design.

### **COST/BENEFIT ANALYSIS**

A cost/benefit (C/B) analysis was completed for both alternatives and is attached as exhibit 31. The C/B ratio for Alternative 1 was calculated to be 0.7. For Alternative 2 the C/B ration was calculated to be 0.8. These alternatives could be implemented in two stages. Alternative 2 could be constructed as a near term improvement to improve flow between El Camino Real and the Carmel Valley Road/I-5 ramps and provide improved level of service on I-5. Alternative 1, providing freeway to freeway connectors to and from the north between SR-56 and I-5, could then be implemented at a later date.

### **SYSTEM PLANNING**

The April 1997 Transportation Concept Report (TCR) for I-5 is based on year 2020 traffic projections. The report classifies future I-5 between SR-56 and SR-78 as an eight-lane freeway with provisions for one additional through lane and one HOV lane in each direction. The TCR includes the discussion of connector ramps at the SR-56/I-5 junction saying that it would “improve the traffic flow in the area”. Based on current traffic projections, the Caltrans Advanced Planning Branch has indicated that 12-lanes and 2-HOV lanes will be required between Del Mar Heights Road and Encinitas Boulevard. This configuration will be part of the PSR to widen I-5 between Del Mar Heights Road and SR-78. This PSR for the direct freeway-to-freeway connectors will propose 12-

lanes, 2-HOV lanes, and 2-auxilliary lanes between Carmel Valley Road and Del Mar Heights Road. Therefore, the improvements proposed in this report are consistent with the planned improvements for the I-5 corridor.

The July 1990 Route Concept Report (RCR) for SR-56 is based on 2010 traffic projections. The report classifies SR-56 as a six-lane facility between I-5 and I-15. The original four-lane design of SR-56 between I-5 and Carmel Country Road provides for the future need of an additional lane in the median. The SR-56 middle project is being designed with 4-lanes and a median that will accommodate two additional lanes in the future. Therefore, the proposed project is consistent with the SR-56 July 1990 RCR.

This project is identified in the year 2020 Regional Transportation Plan (RTP) as one of the projects planned for next 20 years. The plan indicates a preliminary cost for this project (\$107 million) but does not identify a potential funding source for those improvements.

### **RIGHT OF WAY**

For Alternative 1, partial right of way acquisitions will be required along both east and west sides of I-5 and along the “WN” and “SE” connectors where the structures cross existing developed and undeveloped commercial property. 20 parcels are impacted and no full right of way acquisitions are required. Airspace easements will be acquired for the structure crossings. Construction easements are required for the properties below the “WN” connector, primarily for access to the work area. A portion of the work area falls

within the parking lot of an existing restaurant. A section of the parking lot would be closed for the duration of the construction of the connector structure. At the conclusion of construction the parking lot will be restored to its original condition and parking will be allowed below the connector structure.

Utility relocation would be required in areas where the proposed connector alignments and other project improvements impact existing utilities (see Exhibit 25). A telephone trunk-line located along the northbound side of I-5 is proposed to be relocated to El Camino Real and High Bluff Road, city streets that run parallel to I-5 and are east of the project. The costs associated with the relocation of existing utilities has been included in the project estimate. The estimated cost of utility relocation for the project is \$9,900,000 of which \$9,700,000 is for the telephone trunk-line. Right of way and utility impacts are shown in the attached data sheets, which are included as exhibit 26.

For alternative 2, 8 parcels will require partial right of way acquisition with the construction of the auxiliary lane on northbound I-5. The telephone trunk-line will require relocation (as in alternative 1) at a cost of \$9,700,000.

### **HAZARDOUS MATERIALS**

An Initial Site Assessment (ISA) for hazardous waste completed on July 30, 1999, identified a possible hazardous waste sites at a former gasoline station near the project area. However no right of way is required near the location of the site. The ISA also

indicated that aerial lead testing would be required for excavation along the shoulders of Interstate 5.

### **TRAFFIC MANAGEMENT PLAN**

Stage construction will require the temporary off-peak closures of the SR-56, I-5, ramps and city streets and lane shifts to provide adequate work area for the construction of the facilities. Temporary K-rail will be used to protect the construction personnel and the traveling public. Some of the ramps may be closed for a longer duration where detouring traffic around a work area is not feasible. These closures will be for a maximum of three weeks in length and signing and detours will be used to direct the motoring public. To address the potential for minor congestion associated with the construction operations, the cost associated with the preparation of an appropriate traffic management plan has been included in the project estimate.

### **ENVIRONMENTAL CERTIFICATION**

Preliminary studies reveal that the Alternative 1 may have a substantial impact on the environment. Therefore, it is anticipated that an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) and an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) will be prepared. Estimated time to prepare the EIS/EIR is 36 to 42 months. The environmental certification for Alternative 2 is a Negative Declaration (CEQA) and a FONSI (NEPA).

## Biological Resources

The following analysis is based on information from past projects in the area, in-house data, and a preliminary review of the project site. No field surveys were conducted.

Therefore, additional species may be affected by the project. Surveys at the appropriate time of year must be conducted to fully assess impacts to biological resources.

The majority of the project area is landscaped with ornamental vegetation, although, there are patches on the I-5 slopes of revegetated coastal sage scrub, which is the habitat for the threatened California gnatcatcher (*Polioptila californica californica*). Sensitive plant species such as the Del Mar sand aster (*Corethrogyne filaginifolia* var. *linifolia*) may occur within the project limits. Consultations pursuant to Section 7 of the Endangered Species Act will be required if there are impacts to a listed species.

There are also areas that may be under the jurisdiction of the Army Corps of Engineers and the California Department of Fish and Game including roadside drainage and a sedimentation basin that contains cattails (*Typha* sp.) and willows (*Salix* spp.).

Mitigation for any impacts to sensitive species will be required pending coordination with the responsible resource agencies. Any slopes or graded areas within the project limits must be seeded with an appropriate erosion control mix. Because of the proximity of the project to Penasquitos Lagoon and Carmel Creek, indirect impacts must be considered for sensitive resources. It is likely that mitigation would be construction related and could include the use of Environmental Sensitive Areas (ESA) fencing and limitations on the

timing of construction. Also, vegetation clearing within the project limits may be limited to a time of year that is outside of the breeding season of sensitive, threatened or endangered species.

### **Visual Resources**

For Alternative 1, the proposed construction of elevated connector ramps at this interchange would, to a large extent, affect the visual quality of the area. The proposed retaining walls and ramp of the “WN” connector would cut into existing groves of various species of Eucalyptus interspersed with Torrey Pine (*Pinus torreyana*) and Brazilian Pepper (*Schinus terebinthifolious*). Minimal visual impacts, included the removal of trees planted in the SR-56 contract, would occur with Alternative 2.

Visual impacts of the connector structures may be adverse and, if pursued, would require further study. The visual study should address the removal of highway landscape, trees, the construction of retaining walls (including architectural features) and grading.

Alternative 1 would result in the loss of an existing visual amenity to both the viewers from the freeway and adjacent property owners. Although the loss of mature trees is an adverse impact, providing mitigation measures are implemented, this impact can be reduced to an acceptable level.

## Noise

A preliminary noise study was conducted to evaluate the potential noise impacts resulting from this project. This is a preliminary estimation of noise abatement measures and should not be considered conclusive or final. A more comprehensive noise study will be performed during environmental studies.

For Alternative 1, the proposed realignment for the southbound I-5 traffic will shift the major part of the truck traffic approximately 6 meters closer to the residences along Portofino Drive. Since the area is in a major cut section, the houses above are effectively shielded by the existing terrain and the noise wall at the top of the cut. The shift in traffic will not result in a noticeable noise increase for the residences above.

The northeast quadrant of I-5 and SR-56 consists of commercial office facilities that do not support outdoor activities. The proposed project will not appreciably increase the existing exterior noise level.

Another area of concern is the group of residences directly west of the southeast connector from I-5 to SR-56. For alternative 1, there will be more exposure to the traffic noise due to the high elevation of the structure for these residences. A 2 meter noise barrier on the I-5 southbound to SR-56 eastbound connector structure is suggested for mitigating the noise increase to homes adjacent to this connector structure.

Alternative 2 should not appreciably increase exterior noise levels. Noise studies will be completed during the environmental document phase to determine impacts, if any.

### **Water Quality**

There will be stormwater runoff from additional pavement and slope areas entering Carmel Valley Creek and the potential for degrading water quality. However, runoff entering into the creek would be handled by the engineering and hydraulic features of CVREP which was constructed with the SR-56 West project. CVREP was designed with built-in sediment basins and drop structures to reduce sediment flow into Los Penasquitos Lagoon and protect water quality. Should the water quality study indicate additional measures to be necessary, they will be incorporated into the project design.

### **Air Quality**

No potential serious impacts/issues have been identified. This project is not currently in the RTIP, although it is anticipated that it will be amended to include this project.

### **Cultural Resources**

An Archaeological Survey Report (ASR) would be required to cover lands not covered by the previous I-5/SR-56 and CVREP studies. A Historic Architectural Survey Report (HASR) would be required to cover those properties where right-of-way acquisition is required to construct the project. Also, a Historic Property Survey Report (HPSR) would be

required to summarize the above studies, define the project's Area of Potential Effects (APE), and get concurrence from FHWA and the State Historic Preservation Officer (SHPO) on those cultural resources located within the project limits that are eligible for listing in the National Register of Historic Places. The HPSR would also seek FHWA and SHPO concurrence on project effects to significant cultural resources, should any be identified within the APE.

### **Paleontology**

Sensitive geological formations (those that contain Paleontological remains) have been identified in the area for proposed cuts on the west side of I-5. A paleontological consultant would be needed to monitor construction activities on original ground throughout the project area.

### **Permits and Approvals**

Permits pursuant to Section 401 and 404 of the Clean Water Act may be required. An agreement pursuant to Section 1601 of the California Fish and Game Code may be required along with Section 7 consultation with the U.S. Fish and Wildlife Service. Also, a Coastal Development Permit may be required from the California Coastal Commission.

## **Socioeconomics**

Alternative 1 is not considered growth inducing but satisfies one of a series of incremental transportation improvements in the City of San Diego transportation phasing plan. The plan limits new development in Carmel Valley until certain transportation improvements are met. The project, together with other required services, will contribute to cumulative growth impacts. The City of San Diego approved Environmental Impact Report for Pacific Highlands discuss such secondary, negative impacts as visual, noise, and biological resources. The San Diego City Council has approved these projects and is responsible for ensuring appropriate mitigation.

No homes or business relocations would occur. The “WN” connector will cross over an undeveloped commercial zoned property. If a development permit is filed, a protection purchase for future right of way should be considered. Adjacent to the undeveloped commercial property is a restaurant's parking lot, which will be crossed over by the “WN” connector. The construction impact to this parking lot will need to be minimized.

Alternative 2 is not a listed Transportation Threshold Condition for Phase D of the Subarea III Transportation Phasing Plan, Alternatives A and B, amended September 13, 1988.

## **Environmental Document Type**

For Alternative 1, it is anticipated that an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) and an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) will be required for this alternative. There is no known opposition to this project at this time. A community action plan and /or close coordination with the Point Del Mar home owners association at the north-west quadrant of the Carmel Valley Road Interchange could be needed. The Carmel Valley Planning Group is in favor of the completion of this project. For Alternative 2, it is anticipated that Negative Declaration (CEQA) and a FONSI (NEPA) will be required for this alternative. The schedule to complete the PR/ED is estimated to be three years for Alternative 1 and one year for Alternative 2.

## **FUNDING AND SCHEDULING**

The project is included in the 2000 RTIP. TEA-21 Federal Demonstration Grant funding that could be utilized for the Project Report/Environmental document (PR/ED) phase of the project (Project #1007). A total of \$300,000 of these grant funds are available for this project. State Transportation Improvement Program (STIP) funding of \$60,000 is also shown as the required 20% match for the TEA-21 funds. The STIP funds are required to be "state only" dollars and are programmed in the 2002 fiscal year. Based on availability of other funding and establishing a lead agency for the environmental documentation phase, the PR/ED could begin sooner than the 2002 fiscal year.

## **PROJECT REVIEWS**

On June 13, 2000, Jim Deluca, Caltrans Headquarters Project Development Coordinator, and Jim Douglas, Caltrans Headquarters Geometrics Reviewer, reviewed this project.

Richard Chavez, SANDAG Senior Engineer has reviewed this project.

On July 28, 2000, FHWA Engineer, Jeff Lewis, reviewed this project and concurred that it is eligible for Federal funding. Per Caltrans/FHWA Stewardship Agreements, as discussed in Project Development Procedures Manual, Section 1-20.70 (Federal Government), this project is considered Full-Oversight – Coded (N).

#### **DISTRICT CONTACT**

For questions concerning this Project Study Report, contact Mike Powers at (619) 718- 7848 CALNET 8-718-7848 or Mohammad Ravanipour at (619) 688-6963, CALNET 8-688-6963

11-SD-5, 56  
K.P. R52.9/R53.7, 0.0/0.8  
17790K

This Project Study Report has been prepared under the direction of the following Registered Engineer. The registered Civil Engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions and decisions are based.

  
Registered Civil Engineer

12/1/00  
Date



## **LIST OF EXHIBITS**

1. Project Limits Map
2. Alternatives Matrix
3. Proposed Schedule
4. Existing I-5/SR-56 Corridor Traffic (2 sheets)
5. Year 2020 I-5/SR-56 Corridor Traffic for Alternative 1(2 sheets)
6. Year 2020 I-5/SR-56 Corridor Traffic for the Alternative 2(2 sheets)
7. Existing El Camino Real Interchange Traffic
8. 2020 El Camino Real Interchange Traffic – Alternative 1
9. 2020 El Camino Interchange Traffic – Alternative 2
10. 2020 Carmel Valley Interchange Traffic – Alternative 2
11. Typical Sections - Alternative 1 (7 sheets)
12. Typical Sections – Alternative 2
13. Site Plan – Alternative 1(2 sheets)
14. Horizontal Layouts – Alternative 1 (12 sheets)
15. Profiles (33 sheets, will be available upon request)
16. Site Plan – Alternative 2
17. Horizontal Layouts – Alternative 2 (8 sheets)
18. Traffic Time Study
19. 2020 El Camino Real Intersection Capacity Analysis AM/PM – Alternative 1 (2 sheets)
20. 2020 El Camino Real Intersection Capacity Analysis AM/PM – No-Build Alternative  
(2 sheets)
21. 2020 El Camino Real Intersection Capacity Analysis AM/PM – Alternative 2 (2  
sheets)

22. 2020 Carmel Valley Road Intersection Capacity Analysis – No Build Alternative (4 sheets)
23. Merge/Diverge/Weaving Analysis – Alternative 1 (4 sheets)
24. Merge/Diverge/Weaving Analysis – Alternative 2 (5 sheets)
25. Existing Utilities (13 sheets)
26. R/W and Utility Relocation Estimates (7 sheets)
27. Structural Section Recommendations (5 sheets)
28. Project Estimate (Alternative 1)
29. Project Estimate (Alternative 2)
30. Advanced Planning Study
31. Cost Benefit Analysis
32. Mitigation Cost Estimate

**LIST OF EXHIBITS → To View Click Name or Bookmark**

1. Project Limits Map → .pdf view only
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29. Project Estimate (Alternative 2)

- 30. Advanced Planning Study → .pdf view only
- 31. Cost Benefit Analysis → .pdf view only
- 32. Mitigation Cost Estimate → .pdf view only

**DOWNLOAD THE FOLLOWING FILES HERE:**

 **Indicates Microstation File**       **Indicates Excel File**  
 **Indicates Word File**

**Alternative 1:**

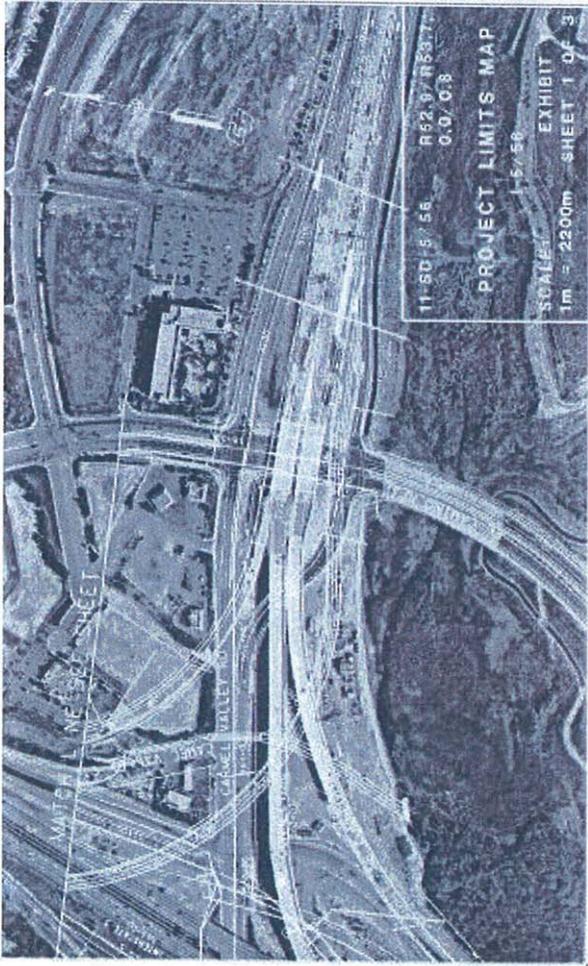
- Typical Sections (7 sheets) → 
- Site Plan & Horizontal Layouts (12 sheets) → 
- Profiles (33 sheets) → 

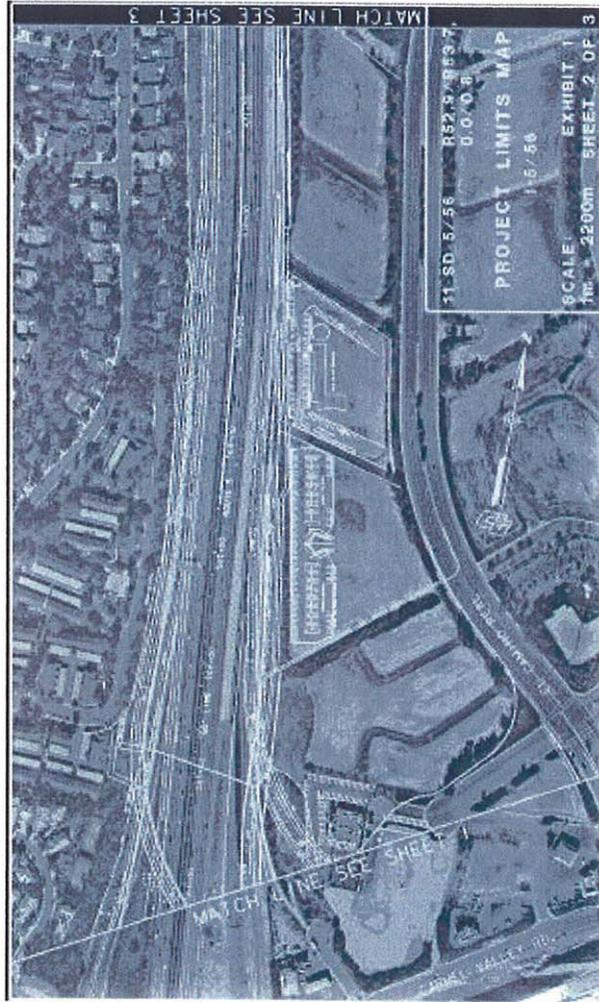
**Alternative 2:**

- Site Plan, Typical Sections & Horizontal Layouts (8 sheets) → 

**Files For Both Alternatives:**

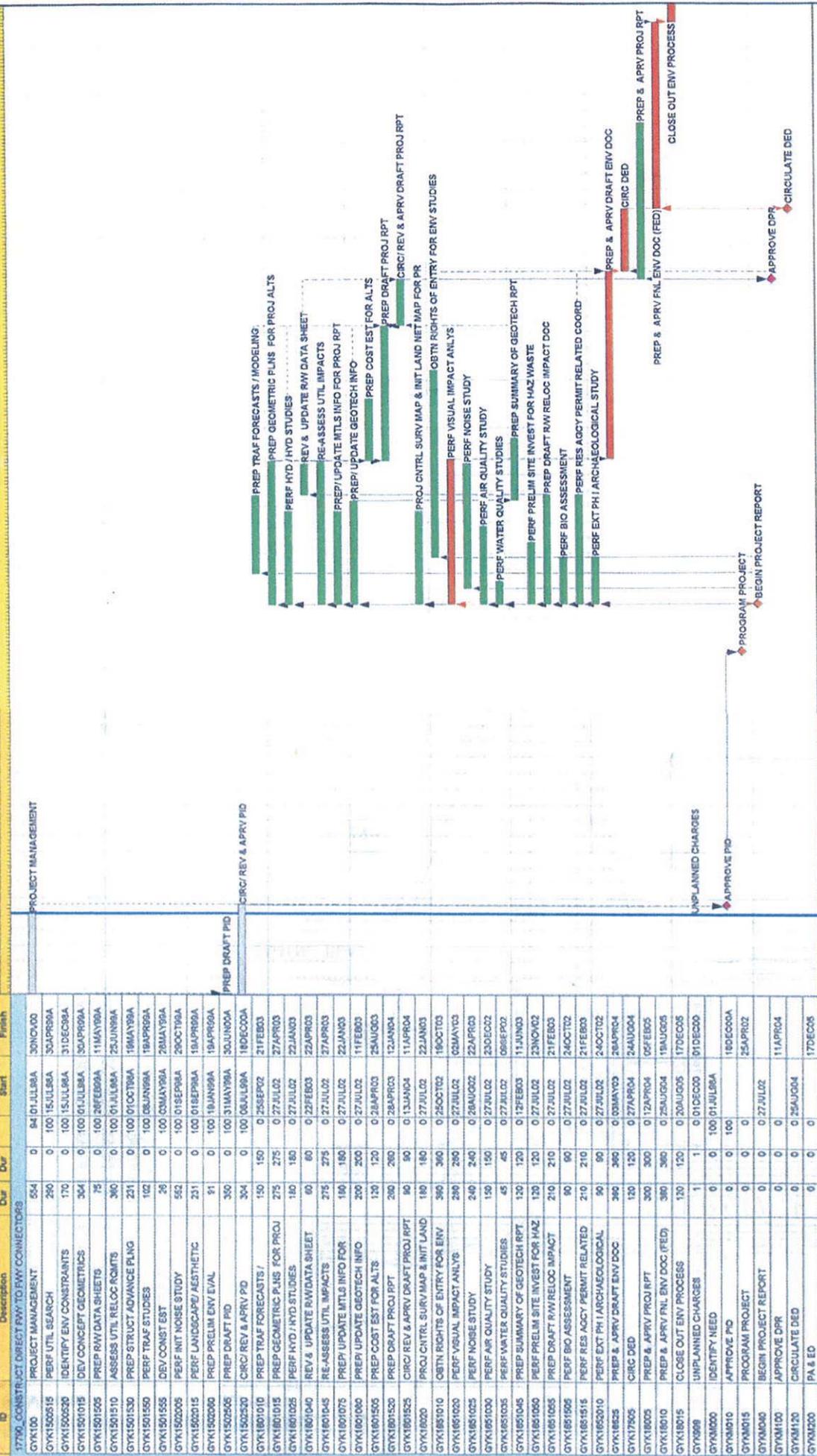
- PSR Text → 
- Existing Utilities (13 sheets) → 
- Exhibits 4-10, 19-24 → 
- Project Estimate (Alternative 1 & 2) → 







ISSUES	ALTERNATIVE 1 BARRIER SEPARATION	ALTERNATIVE 2 IMPROVE EXISTING ARTERIALS	ALTERNATIVE 3 NO-BUILD
COST	\$105 - \$110 MIL	\$10-\$15 MIL	0
ACCESS BETW FREEWAYS	DIRECT ACCESS	INDIRECT BY CITY STREETS	INDIRECT BY CITY STREETS
COMPATIBILITY W/ OTHER PROJECTS	IMPACT TO PROPOSED STRUCT SECT, RET. WALLS FOR EA #0301U1	COMPATIBLE	COMPATIBLE
TRAFFIC ON STREETS	IMPROVED CVR=54900	INCREASED QUEUES - MINOR REDIRECTION THRU COMMUNITY CVR=60200	INCREASED QUEUES - POSSIBLE REDIRECTION THRU COMMUNITY CVR=60200
TRAFFIC ON RAMPS	IMPROVED - POSSIBLE REMOVAL OF RAMPS AT CRML VLY AND EL CAM REAL CRML VLY: NBO=1900,SBOFF=2400 DL MAR HTS: NBOFF=14300,SBON=17800 EL CAM REAL: EBON=11000,WBOFF=9500	INCREASED QUEUES CRML VLY: NBO=9200,SBOFF=10700 DL MAR HTS: NBOFF=13300,SBON=10000, EL CAM REAL: EBON=19600,WBOFF=10300	INCREASED QUEUES CRML VLY: NBO=9200,SBOFF=10700 DL MAR HTS: NBOFF=13300,SBON=10000, EL CAM REAL: EBON=19600,WBOFF=10300
TRAFFIC ON CONNECTORS	"WN"=17800, "SE"=17200	NONE	NONE
WEAVING	IMPROVED WEAVING - NO CONFLICTS BETW CARS AND TRUCKS	IMPROVED WEAVING - SAME VOLUME	IMPROVED WEAVING - SAME VOLUME
WEAVING ANALYSIS	ADEQUATE AT ALL 4 CONNECTION POINTS MAIN LANE CAPACITY IS ADEQUATE ON ALL SECTIONS	ADEQUATE AT ALL 4 CONNECTION POINTS MAIN LANE CAPACITY IS INSUFFICIENT ON I-5 SOUTH	ADEQUATE AT ALL 4 CONNECTION POINTS MAIN LANE CAPACITY IS INSUFFICIENT ON I-5 SOUTH
INTERCHANGE SPACING	SB I-5: NO WEAVING CONFLICTS NB I-5: "WN" TO DEL MAR HTS OFFRAMP = 900M NO ACCESS TO SR-56 FROM DEL MAR HTS SB ONRAMPS	SB I-5:DEL MAR HTS ONRAMP TO CRML VLLY OFF=1100M NB I-5:CRML VLLY OFFRAMP TO DEL MAR HTS ON=1100M	SB I-5:DEL MAR HTS ONRAMP TO CRML VLLY OFF=1100M NB I-5:CRML VLLY OFFRAMP TO DEL MAR HTS ON=1100M
GEOMETRIC DESIGN EXCEPTIONS	CONNECTOR RADII, SUPERELEVATION TRANSITION LENGTHS, DIVERGE TAPER LENGTHS	NONE	NONE
UTILITIES	RELOCATE MAJOR PAC-BELL TRUNK LINE (\$7.6 MIL)	RELOCATE MAJOR PAC-BELL TRUNK LINE (\$7.6 MIL)	NONE
IMPACTS TO ADJACENT R/W	MAJOR R/W TAKES, IMPACTS TO EXIST/ FUTURE RESTAURANTS, IMPACTS TO PORTOFINO DR / SOUNDWALL IMPACTS TO EXISTING BUILDING ALONG NB I-5	NONE	NONE
NOISE	INCREASED IMPACTS TO PINK HOUSES, RELOCATION OF EXIST. SOUNDWALL ALONG PORTOFINO DR.	NONE	NONE
VISUAL	ADVERSE IMPACTS OF CONNECTOR STRUCTURES, REMOVAL OF TREES	NONE	NONE
TEMP. CONSTRUCTION IMPACTS	MAJOR - DETOURS, K-RAIL, LANE REDUCTIONS	MINOR - SHOULDER CLOSURES FOR OUTSIDE WIDENING	NONE



Start Date: 28/JUL/99  
 Finish Date: 17/DEC/05  
 Data Date: 01/DEC/00  
 Run Date: 18/DEC/00 14:33

Legend:  
 Green bar: Early Bar  
 Blue bar: Progress Bar  
 Red bar: Critical Activity

KC00 - JHGY  
 Interstate 5/State Route 56 F/F Connectors  
 17790K

Sheet 1 of 1

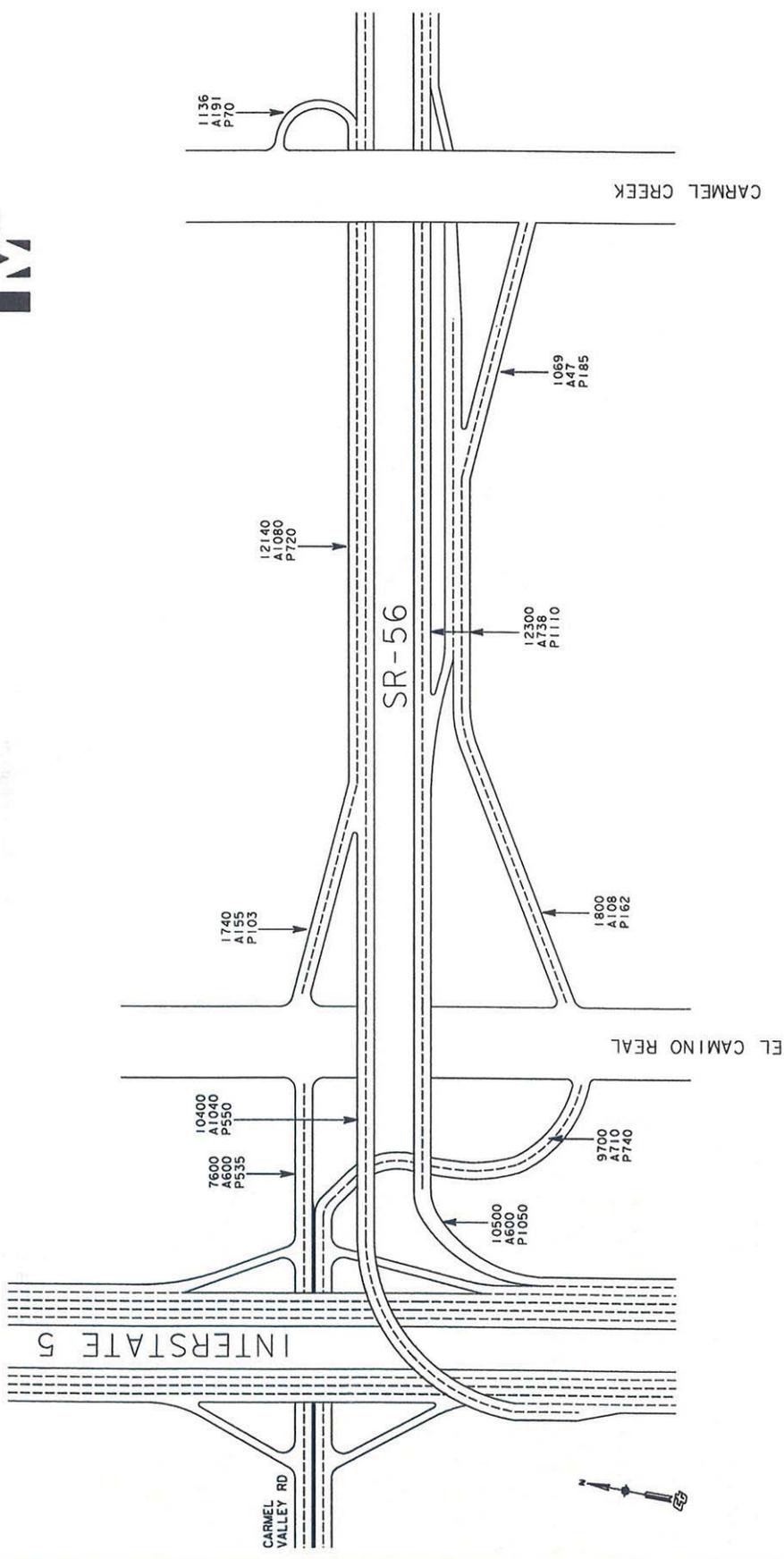
EXHIBIT 3

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER		CALCULATED/		DESIGNED BY		CHECKED BY		DATE		REVISID BY		DATE		REVISID	
PROJECT DEVELOPMENT		PROJECT ENGINEER		CALCULATED/		DESIGNED BY		CHECKED BY		DATE		REVISID BY		DATE		REVISID	



DIST	COUNTY	ROUTE	KILOMETERS PER POST MILE	TOTAL SHEETS	SHEET NO.
11	SD	5/56	0.0/0.8	1	2



**TRAFFIC VOLUMES  
EXISTING - YEAR 1998  
AM AND PM**

- LEGEND:**
- 10000 : AVERAGE DAILY TRAFFIC
  - A 1000 : AM PEAK PERIOD (vph)
  - P 1000 : PM PEAK PERIOD (vph)

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS  
FOR FULL SIZE PLANS ORIGINAL SCALE IS IN METERS

CU 00000

EA 000000

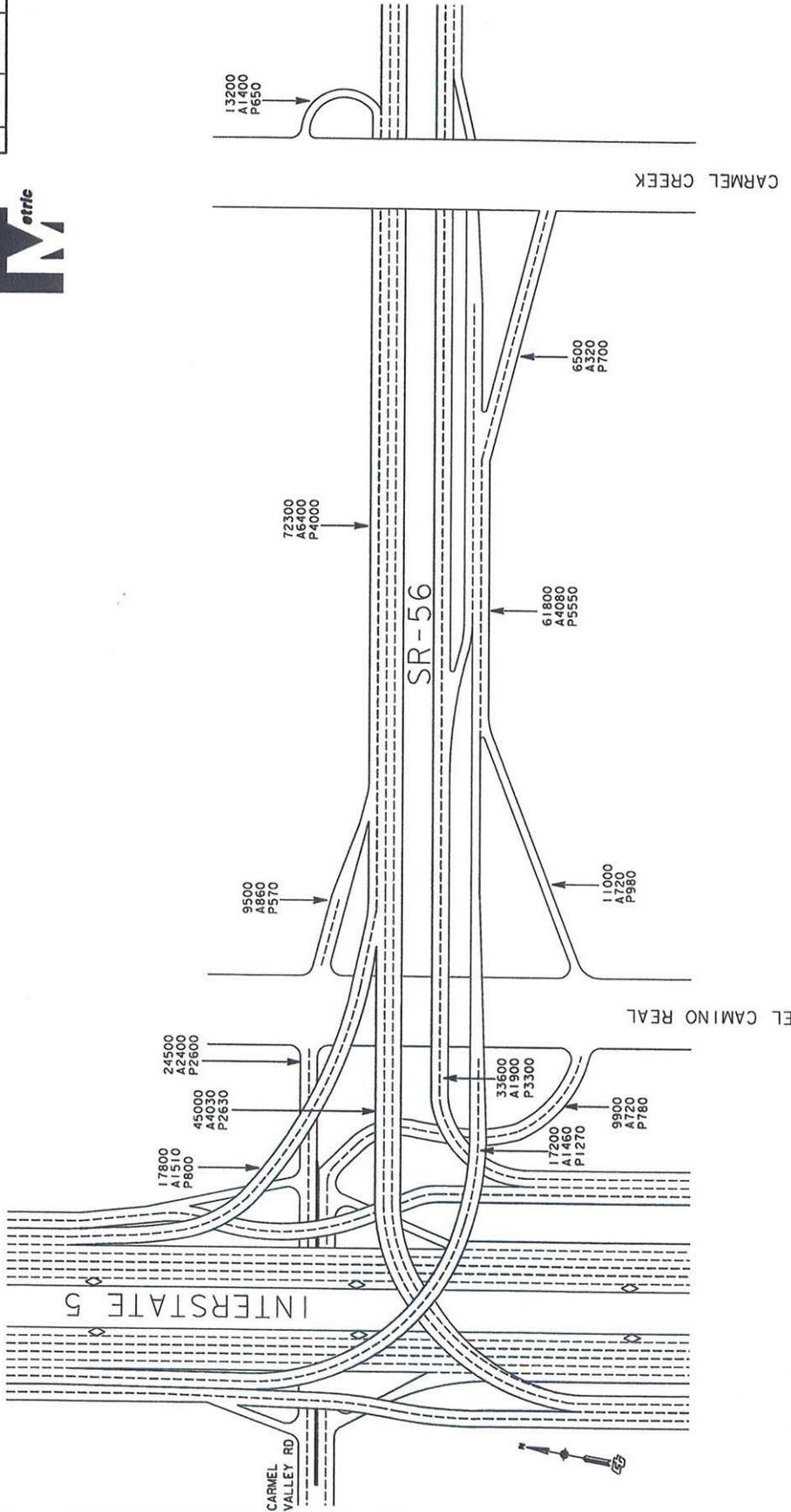
**EXHIBIT 4**  
NTS

00-00-00 DATE PLOTTED → DATE TIME PLOTTED → TIME





DIST	COUNTY	ROUTE	MILES PER POST MILE	SHEET NO.	TOTAL SHEETS
11	SD	5/56	RS2.9/RS3.7	2	2
			0.0/0.8		

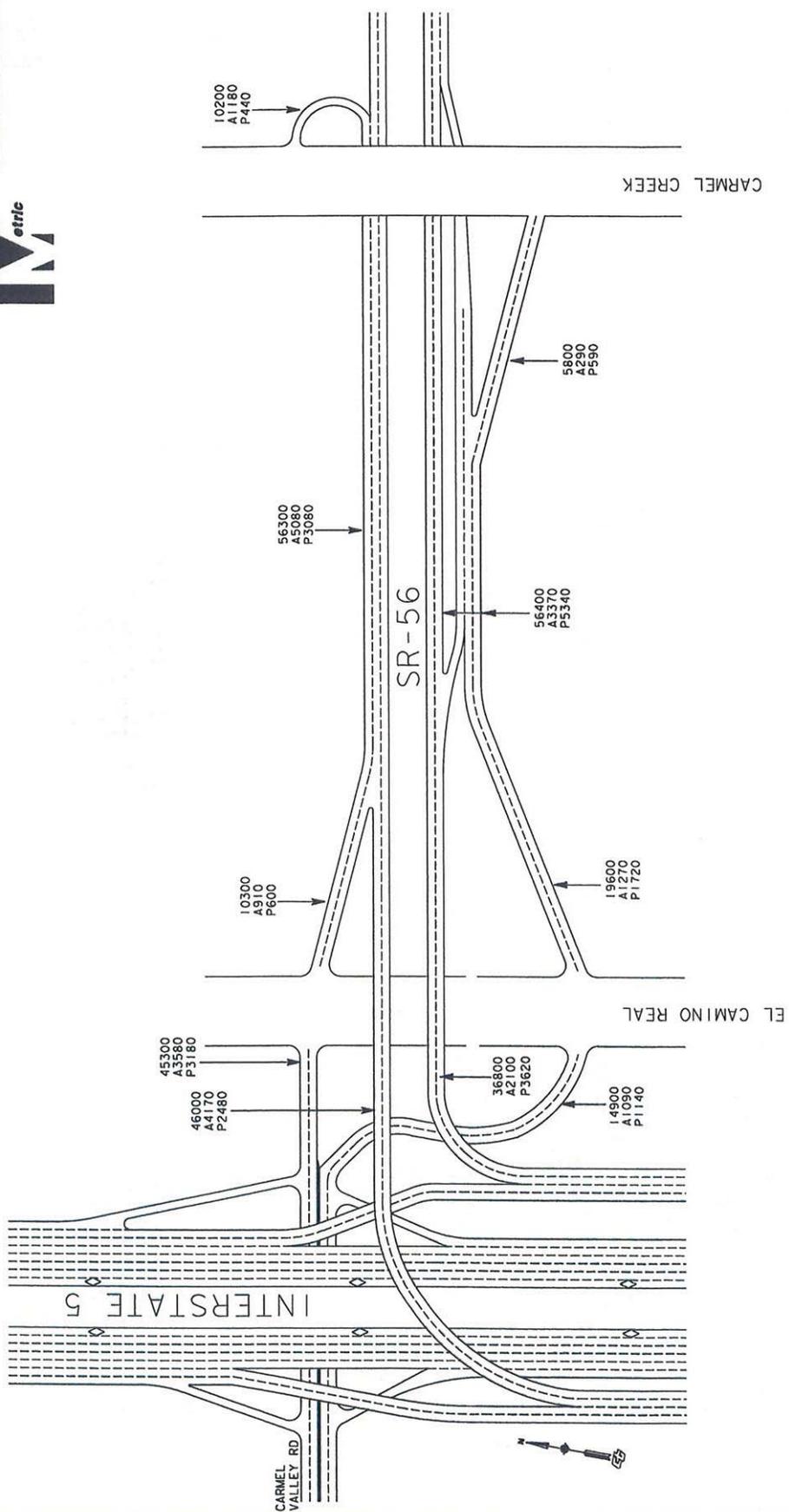


**TRAFFIC VOLUMES**  
**ALTERNATIVE 1**  
**YEAR 2020**  
**AM AND PM**

**LEGEND:**  
 10000 : AVERAGE DAILY TRAFFIC  
 A 1000 : AM PEAK PERIOD (vph)  
 P 1000 : PM PEAK PERIOD (vph)

**EXHIBIT 5**  
 NTS

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL	SHEET NO.	TOTAL SHEETS
11	50	5/56	RS2.9/RS3.7.	1	2



**TRAFFIC VOLUMES  
 NO BUILD  
 YEAR 2020  
 AM AND PM**

- LEGEND:**
- 10000 : AVERAGE DAILY TRAFFIC
  - A 1000 : AM PEAK PERIOD (vph)
  - P 1000 : PM PEAK PERIOD (vph)

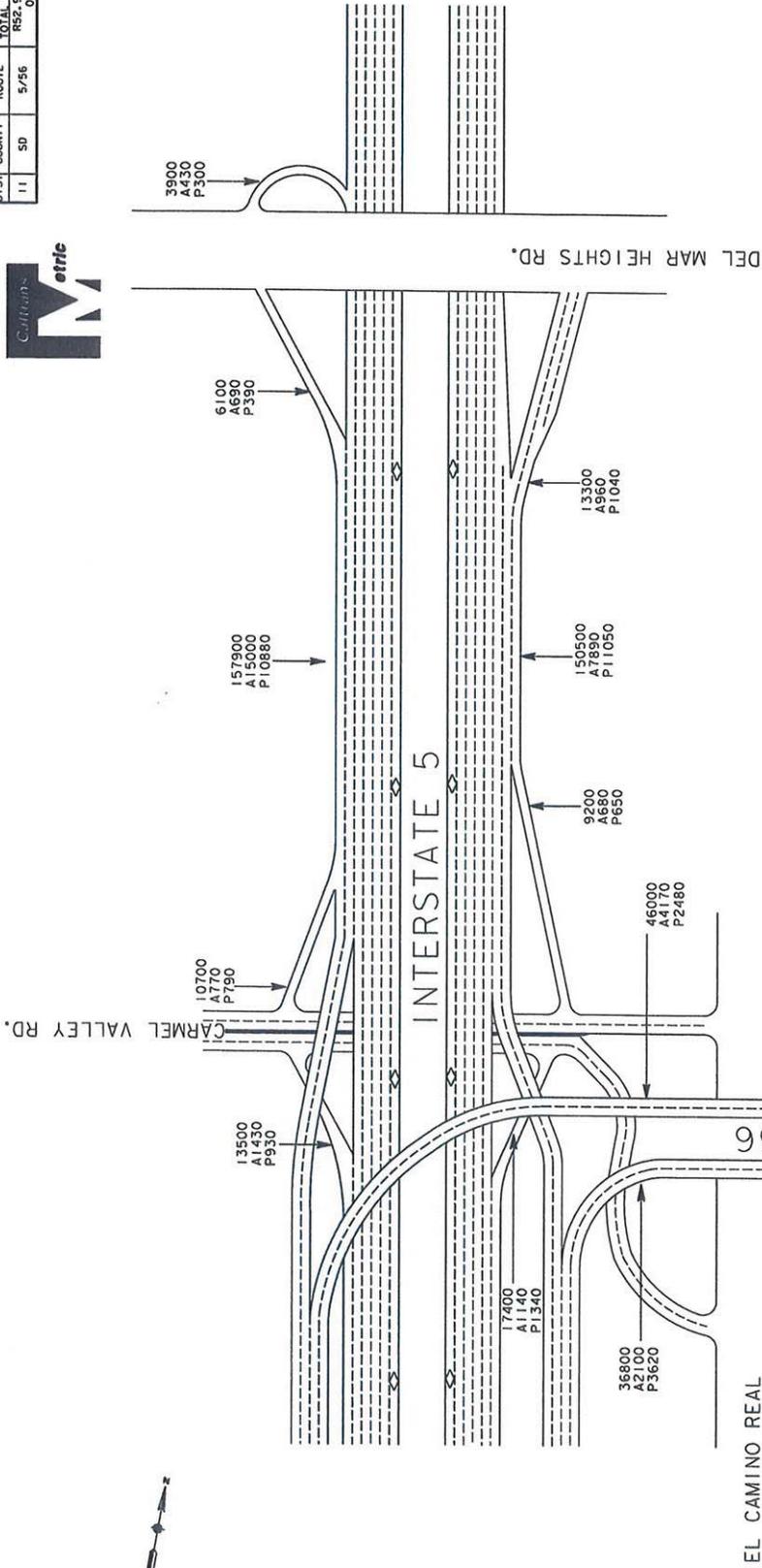
**EXHIBIT 6**  
 NTS

CU 00000 EA 000000

FOR REDUCED PLANS ORIGINAL SCALE IS IN METERS  
 USERNAME: J. ROYCE  
 JOB FILE: 000000

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT DEVELOPMENT	PROJECT ENGINEER	CHECKED BY	DATE	REVISOR

DIST	COUNTY	ROUTE	DATE	NO. SHEETS	TOTAL SHEETS
11	SD	5/56	RS2, 9/RS3, 7, O, O/O, B	2	2



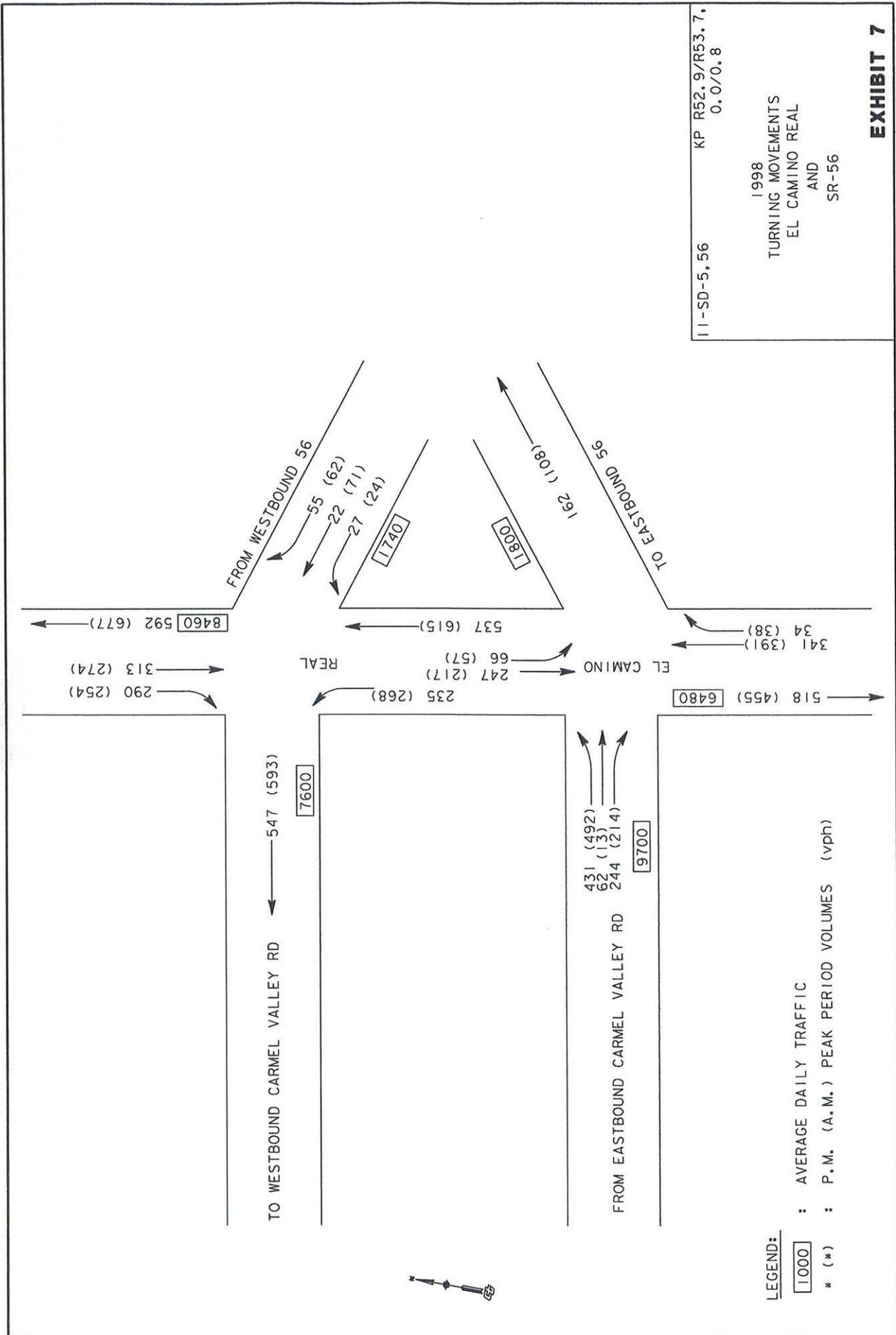
**EXHIBIT 6**  
NTS

CU 00000 EA 000000

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS  
 0 20 40 60 80  
 USERNAME -> PUSER  
 DON FILE -> REQUEST

DATE PLOTTED -> 01/11/00  
 TIME PLOTTED -> 09:16

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT DEVELOPMENT	PROJECT ENGINEER	DATE	REVISD BY	DATE REVISD
Metric		DESIGNED BY	DATE	REVISD BY	DATE REVISD
CHECKED BY		DATE	REVISD BY	DATE REVISD	



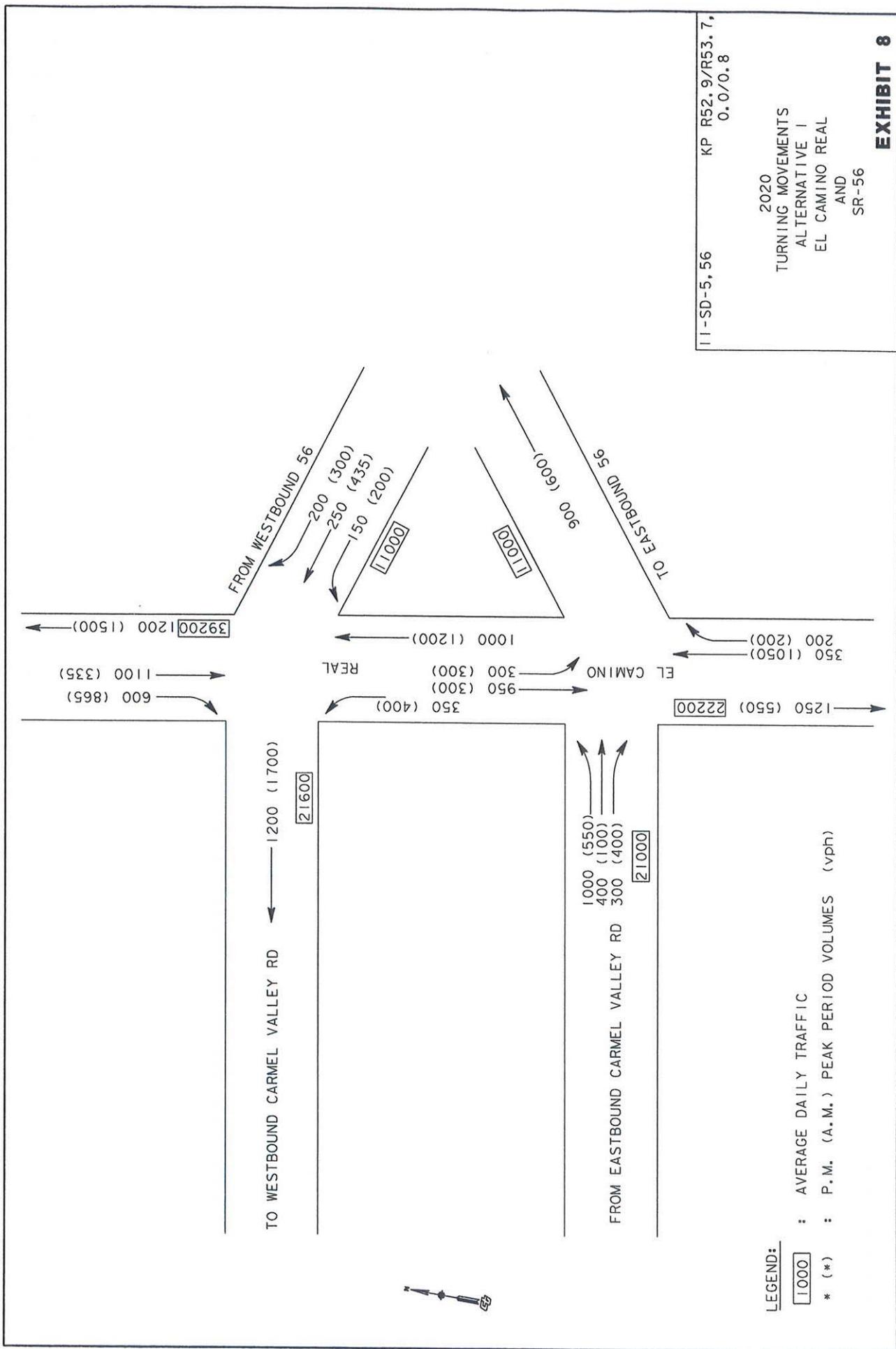
11-SD-5, 56 KP R52.9/R53.7,  
0.0/0.8

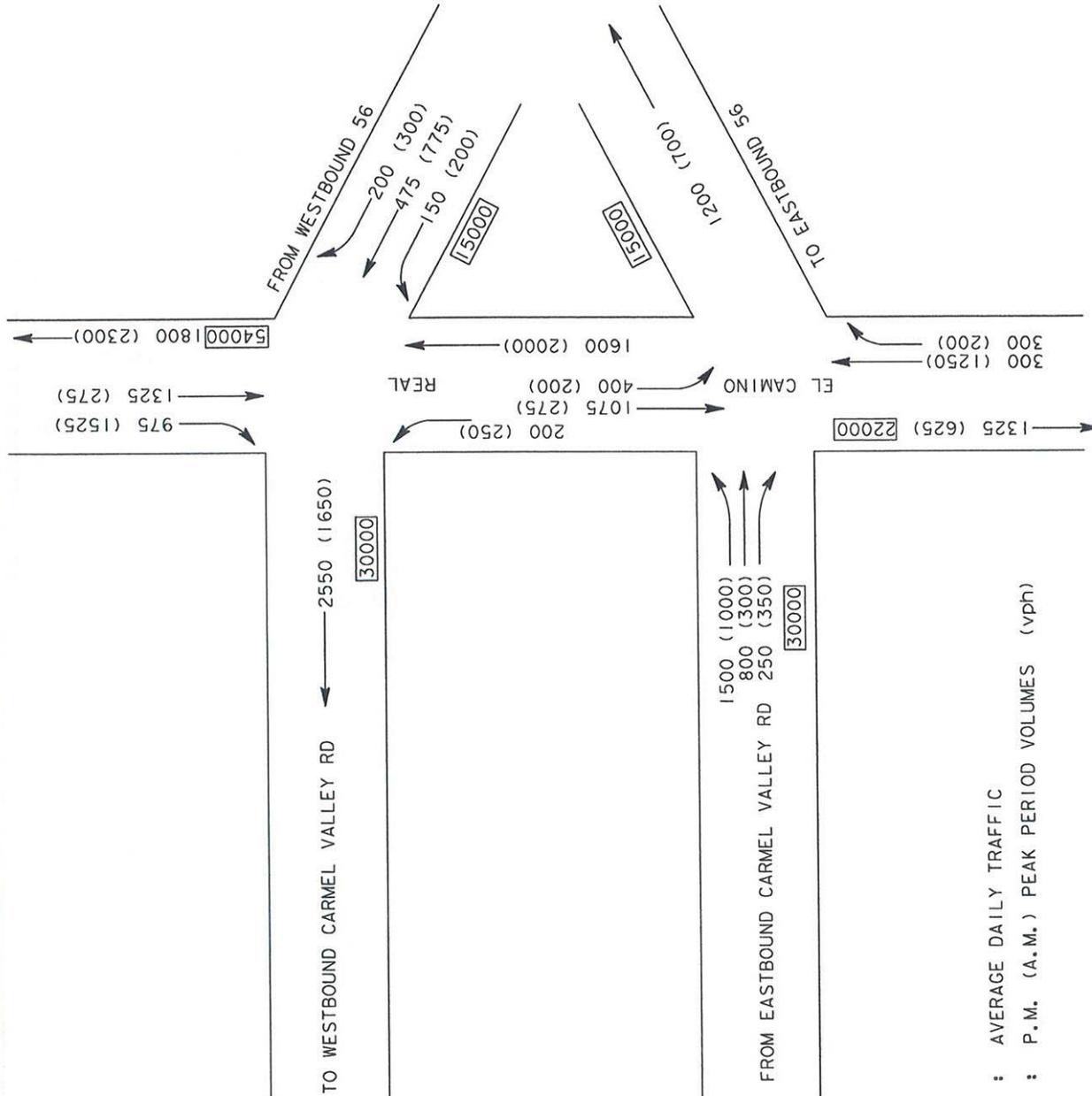
1998  
TURNING MOVEMENTS  
EL CAMINO REAL  
AND  
SR-56

**EXHIBIT 7**

**LEGEND:**  
 [1000] : AVERAGE DAILY TRAFFIC  
 \* (\*) : P.M. (A.M.) PEAK PERIOD VOLUMES (vph)



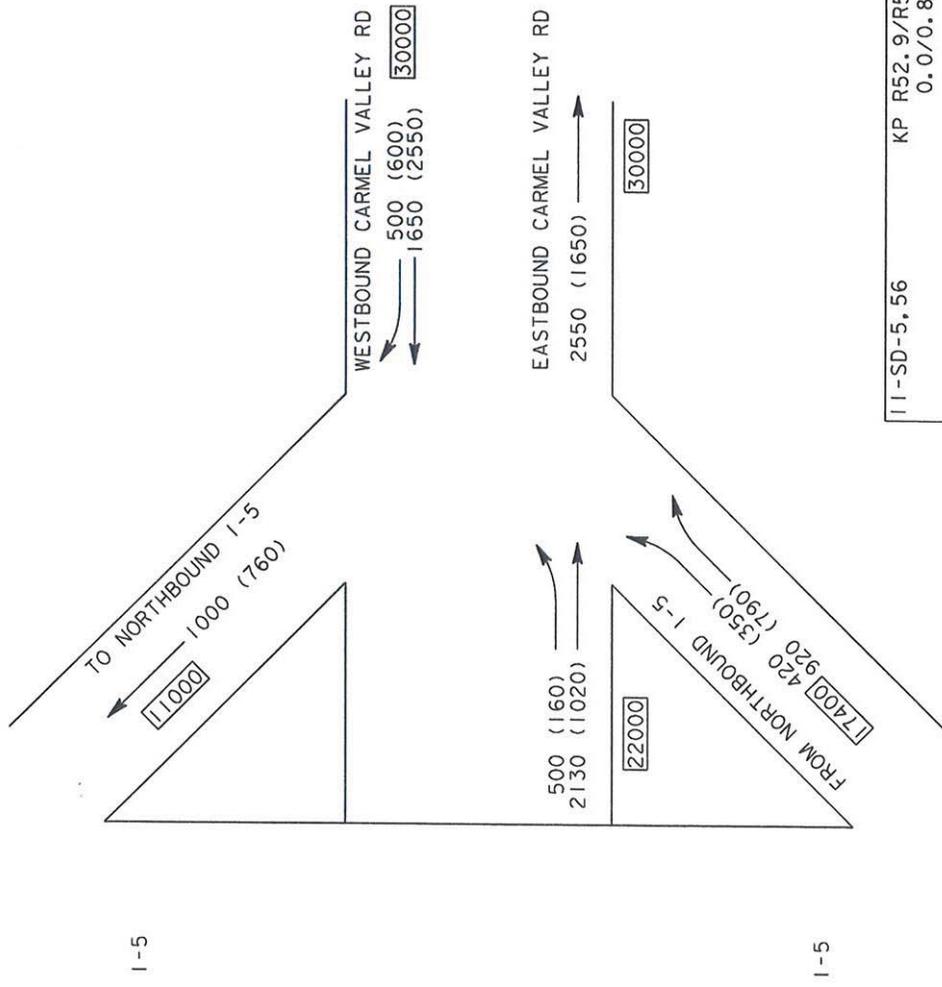
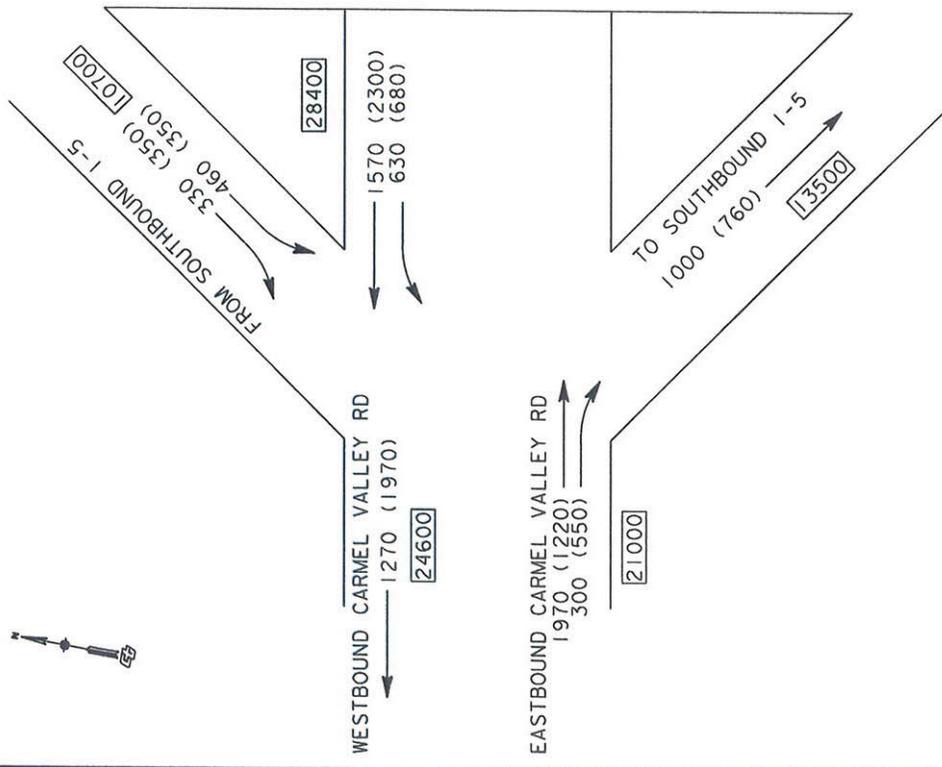




**LEGEND:**  
 [ ] : AVERAGE DAILY TRAFFIC  
 \* ( \* ) : P.M. (A.M.) PEAK PERIOD VOLUMES (vph)

11-SD-5, 56 KP R52.9/R53.7, 0.0/0.8  
 2020  
 TURNING MOVEMENTS  
 ALTERNATIVE 2  
 EL CAMINO REAL  
 AND  
 SR-56

**EXHIBIT 9**



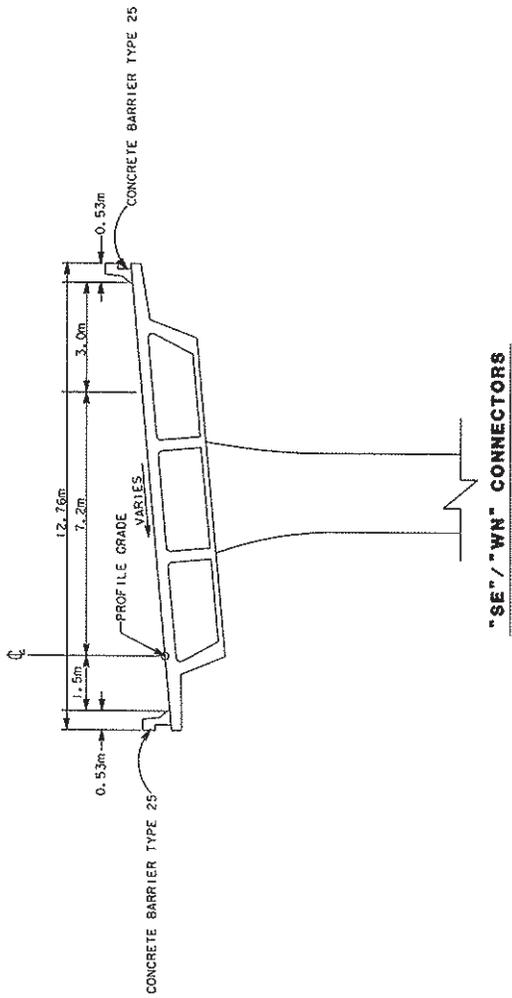
11-SD-5.56 KP R52.9/R53.7,  
0.0/0.8

**LEGEND:**  
 [1000] : AVERAGE DAILY TRAFFIC  
 \* (\*) : P.M. (A.M.) PEAK PERIOD VOLUMES (vph)

2020  
 TURNING MOVEMENTS  
 NO BUILD  
 CARMEL VALLEY RD/I-5  
 INTERCHANGE



DIST	COUNTY	ROUTE	ALLOCATION	PROJECT	SHEET
11	SD	5.56	R52.9/R53.7	0.070.B	3
					7



**EXHIBIT 11**  
**BRIDGE ELEVATION**  
NTS

CU 00000 EA 000000

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS

80

60

40

20

0

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER	DATE	REVISOR
DESIGNED BY	CHECKED BY	DATE	REVISOR
DATE	REVISOR	DATE	REVISOR

DATE PLOTTED - 05/14/00  
TIME PLOTTED - 05:14:00





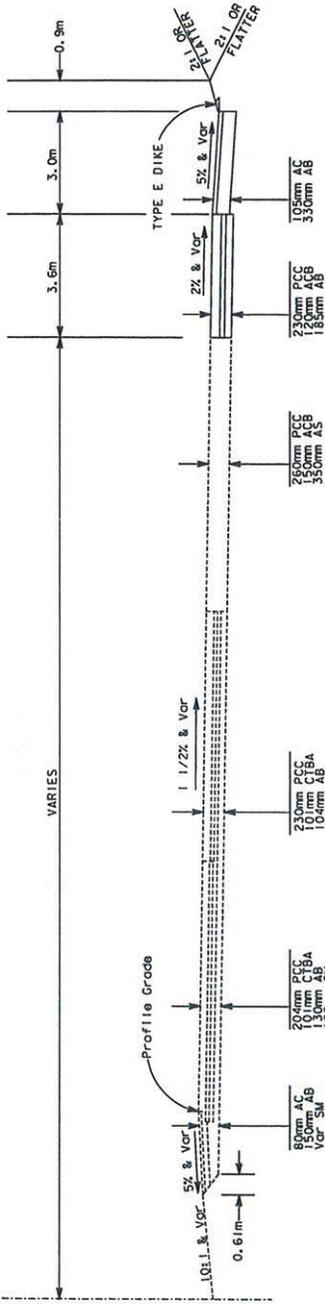




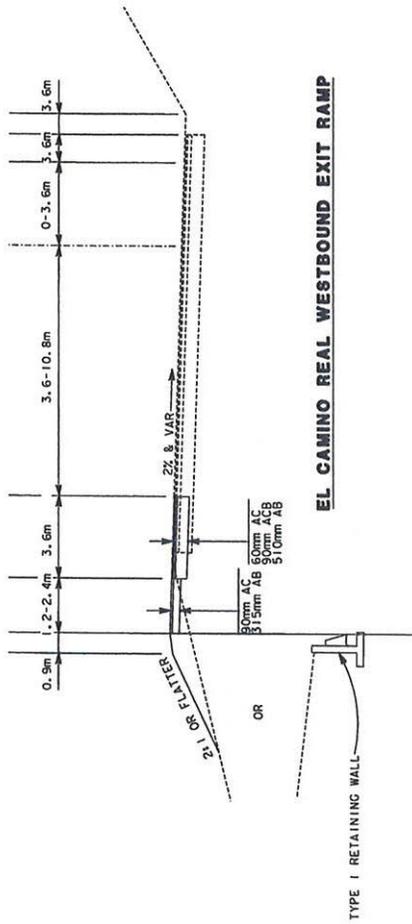
DIST COUNTY	ROUTE	PROJECT	SHEET
11 30	5.56	R32.9/R33.7	1
		0.070.8	1



INTERSTATE 5



INTERSTATE 5



EL CAMINO REAL WESTBOUND EXIT RAMP

EXHIBIT 12  
TYPICAL SECTION  
ALTERNATIVE 2

NTS

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER	DESIGNED BY	CHECKED BY	DATE	REVISOR	DATE
PROJECT DEVELOPMENT						

USERNAME -> SUSER  
SHEET FILE -> S:\Users\m17758\17758\121215-00

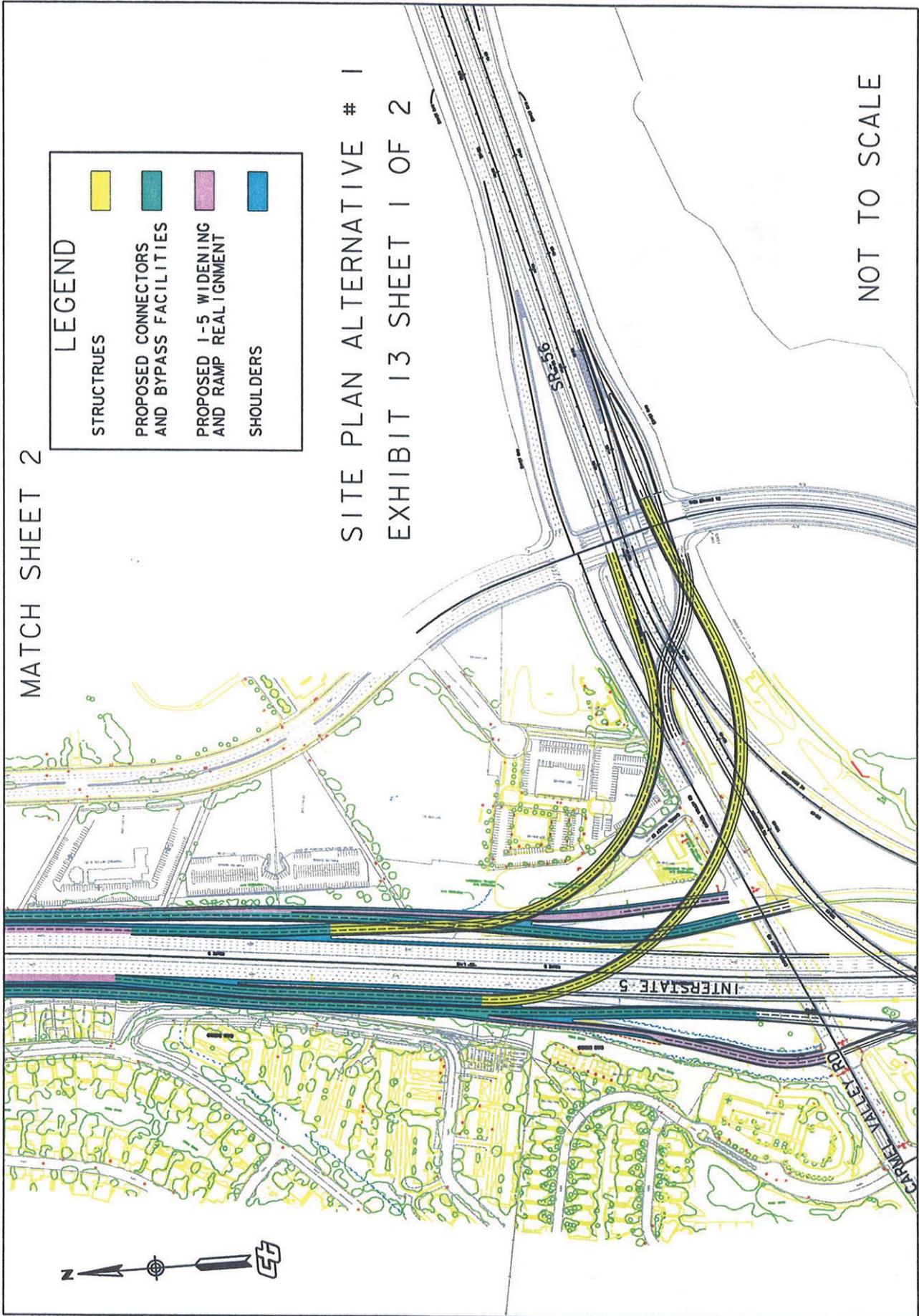
00-00-00  
DATE PLOTTED -> 07 SEP 2000  
TIME PLOTTED -> 08:55:14

MATCH SHEET 2

LEGEND	
	STRUCTURES
	PROPOSED CONNECTORS AND BYPASS FACILITIES
	PROPOSED I-5 WIDENING AND RAMP REALIGNMENT
	SHOULDERS

SITE PLAN ALTERNATIVE # 1  
EXHIBIT 13 SHEET 1 OF 2

NOT TO SCALE





**LEGEND**

STRUCTURES	
PROPOSED CONNECTORS AND BYPASS FACILITIES	
PROPOSED 1-5 WIDENING AND RAMP REALIGNMENT	
SHOULDERS	



SITE PLAN ALTERNATIVE # 1  
 EXHIBIT 13 SHEET 2 OF 2  
 NOT TO SCALE

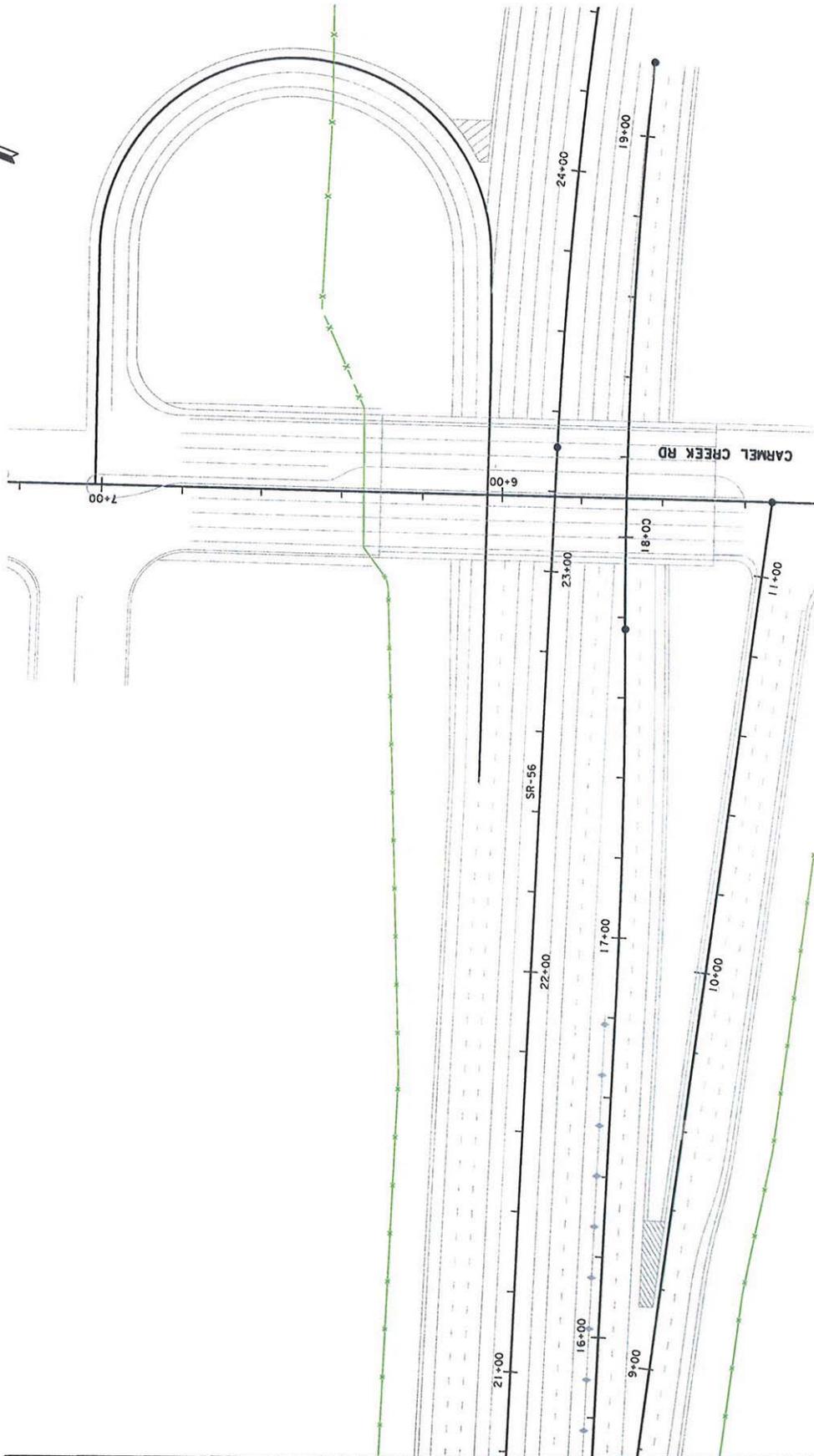
MATCH SHEET 1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
CALCULATED/DESIGNED BY		CHECKED BY	
DATE	REVISOR	DATE	REVISOR

**McGraw Hill** PROJECT DEVELOPMENT

MATCH LINE SEE SHEET 2

NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



DIST	COUNTY	ROUTE	ALLOWED POST MILEAGE	TOTAL PROJECT SHEET NO.	TOTAL SHEETS
11	SD	5.56	0.67/0.8	1	12

**LAYOUT EXHIBIT 14**  
SCALE: 1:1000

CU 11275  
USER: \*\*\*\*\*  
DON FILE: \*\*\*\*\*

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS  
0 20 40 60 80

EA 030171



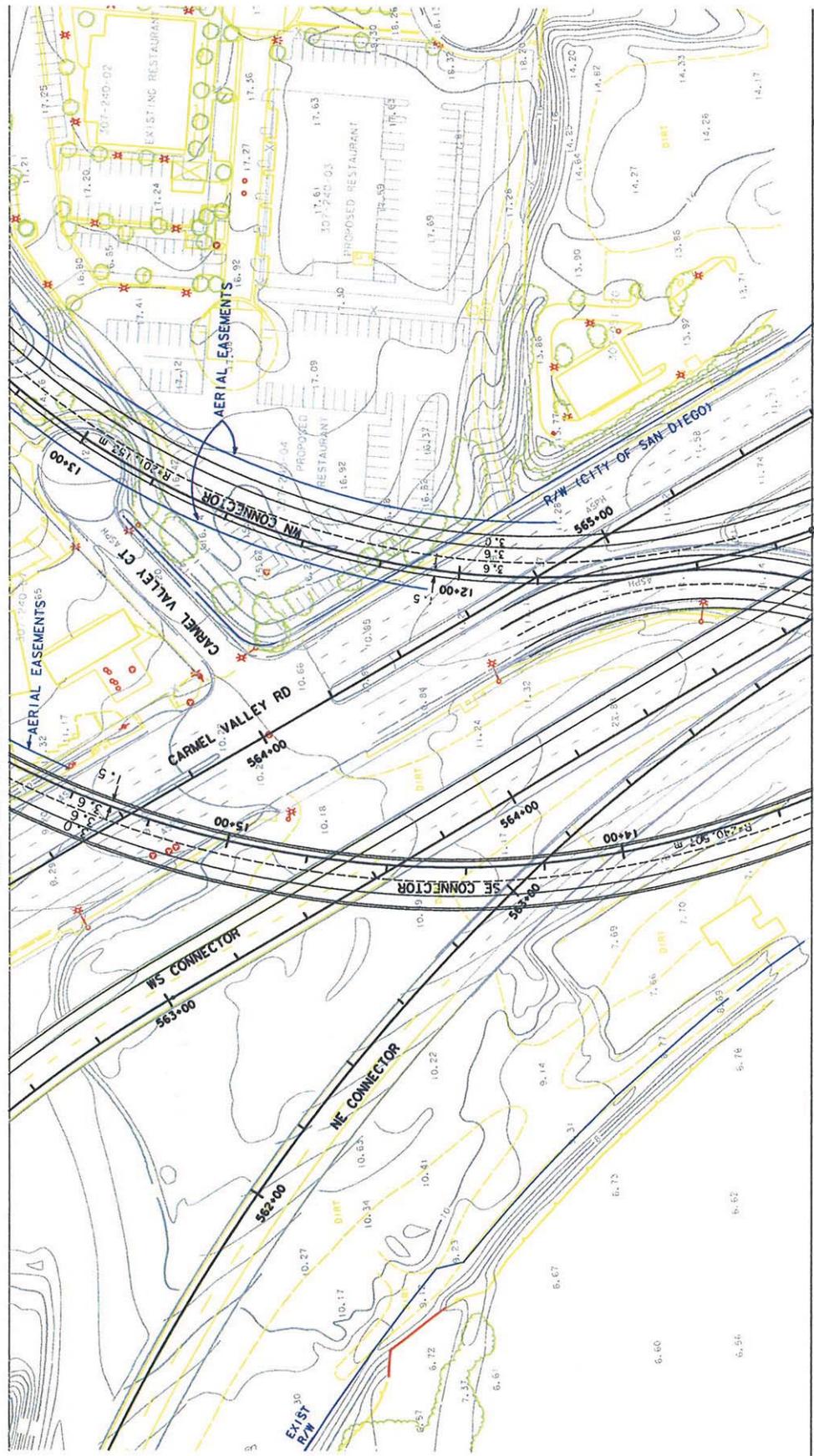


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER		CALCULATED/DESIGNED BY		CHECKED BY		DATE REVISID BY		DATE REVISID BY	
CHITONS PROJECT DEVELOPMENT											

NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

MATCH LINE SEE SHEET 5

MATCH LINE SEE SHEET 3



DIST	COUNTY	ROUTE	STATION	POST MILE	SHEET NO.	TOTAL SHEETS
11	SD	5.56	0+00	0.670	4	12



LAYOUT EXHIBIT 14

SCALE: 1:1000

CU 11275

EA030171

FOR REVISED PLANS ORIGINAL SCALE 1:5 IN MILLIMETERS

USERNAME -> \*\*\*\*\* DON FILE -> \*\*\*\*\*

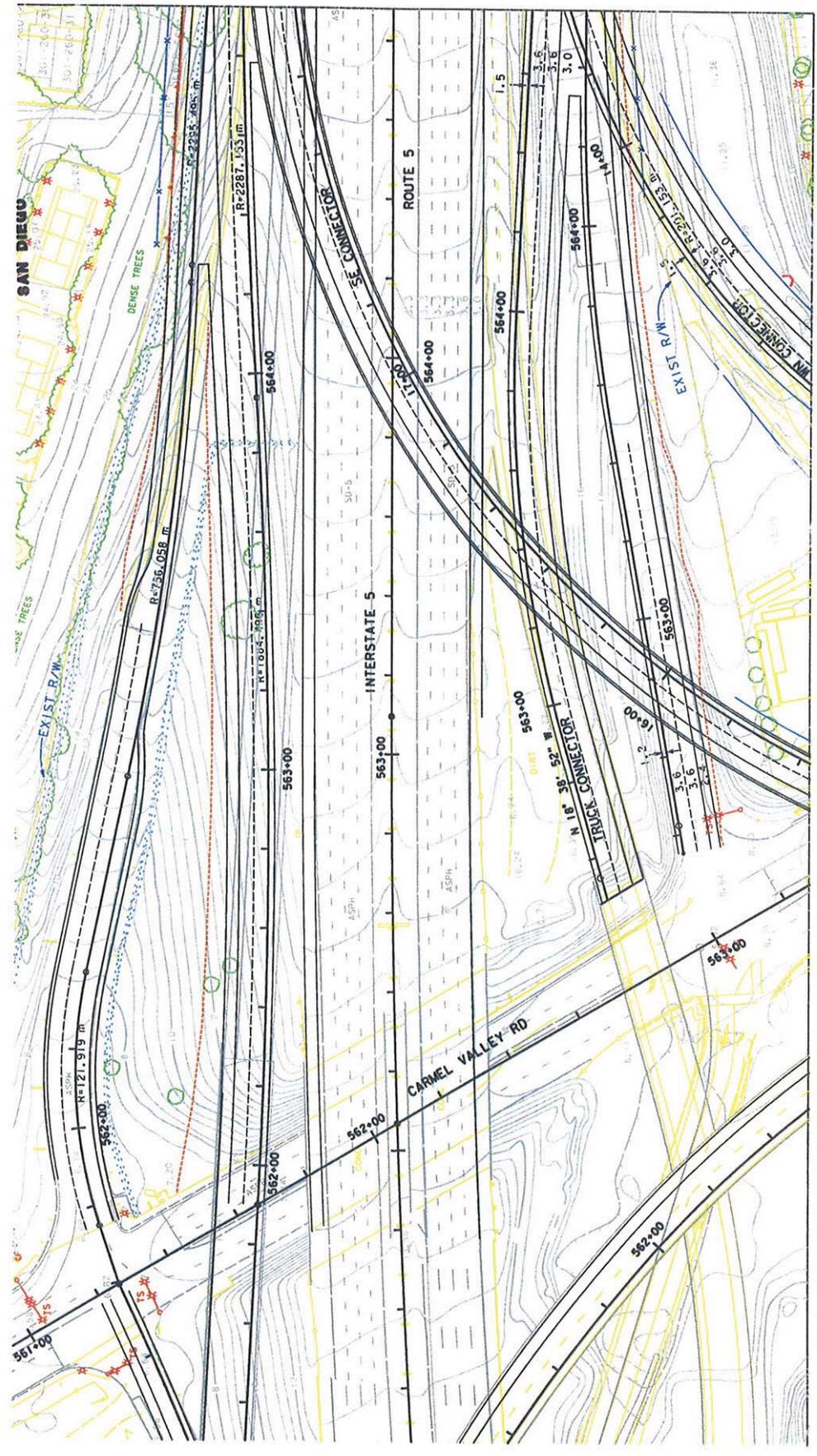
TIME PLOTTED -> \*\*\*\*\*

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER	DATE	REVISOR	DATE
<b>McGraw Hill</b> PROJECT DEVELOPMENT		CHECKED BY		DATE
		DESIGNED BY		DATE
		DATE REVISOR		DATE
		DATE REVISOR		DATE

NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



DIST	COUNTY	ROUTE	KILOMETER POST MILE	TOTAL SHEETS
11	SD	5, 56	0, 070, 8	12



MATCH LINE SEE SHEET 4

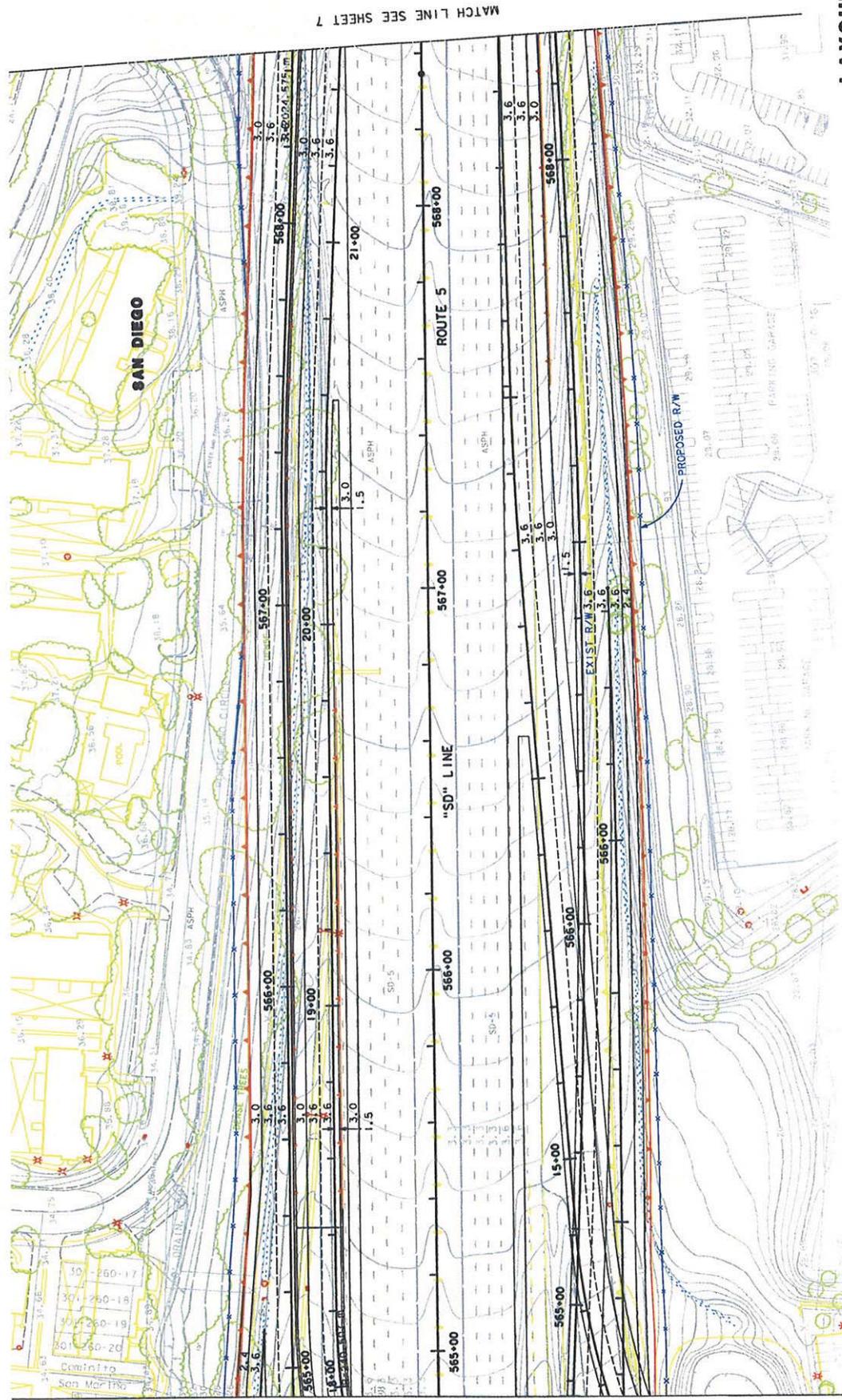
LAYOUT EXHIBIT 14  
SCALE: 1:1000

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS	0	20	40	60	80
CU 11275	EA 030171	USERNAME -> *****	DN FILE -> *****	*****	*****

NOTES:  
 ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



DIST	COUNTY	ROUTE	LOCAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
11	SD	5.56	R 52.97/RS3.7	6	12
			0.070.8		

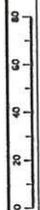


**LAYOUT EXHIBIT 14**

SCALE: 1:1000

CU 11275

USERNAME: \\\\sds\user\jessica...  
 DON FILE: \\\\sds\user\jessica...



FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS

EA 030171

00-00-00

TIME PLOTTED: 03/08/2008 09:55:55

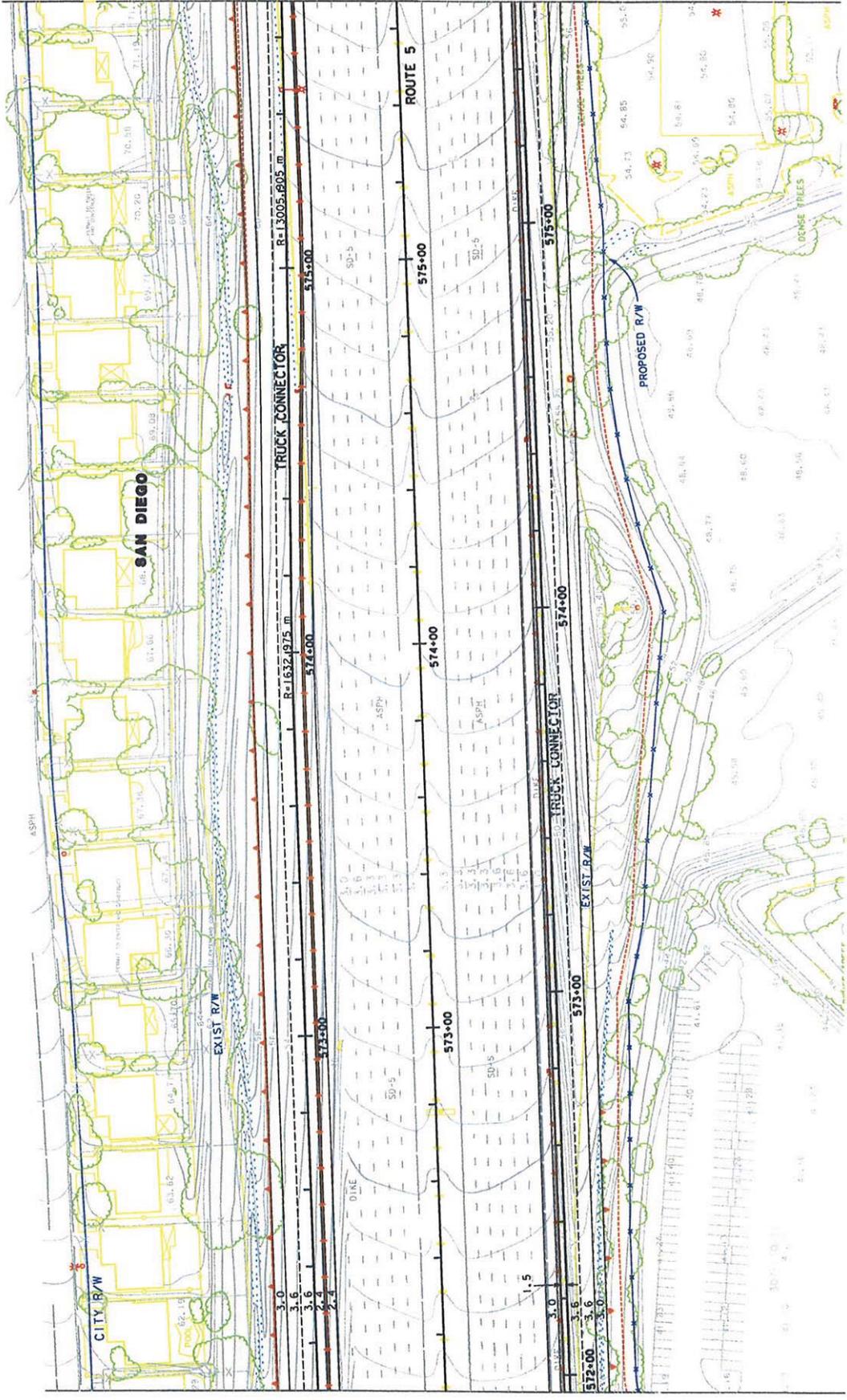


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
CALCULATED/DESIGNED BY		CHECKED BY	
REVISED BY		DATE REVISED	
DATE		DATE	

NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



DIST	COUNTY	ROUTE	LOCATION PER FOOT	SHEET NO.	TOTAL SHEETS
11	SD	5.56	R 52.97/RS3.7	8	12



MATCH LINE SEE SHEET 9

MATCH LINE SEE SHEET 7

# LAYOUT EXHIBIT 14

SCALE: 1"=100'

EA 030171  
CU 11275  
USER: USER  
DGN FILE: DGN

FOR REVIEW: PLANS ORIGINAL  
SCALE: 1"=100' METERS

0 20 40 60 80

00-00-00  
TIME PLOTTED: 08/08/2011 10:00:00









**Exhibit 15 - Profiles**

**Available upon request**

MATCH SHEET 2

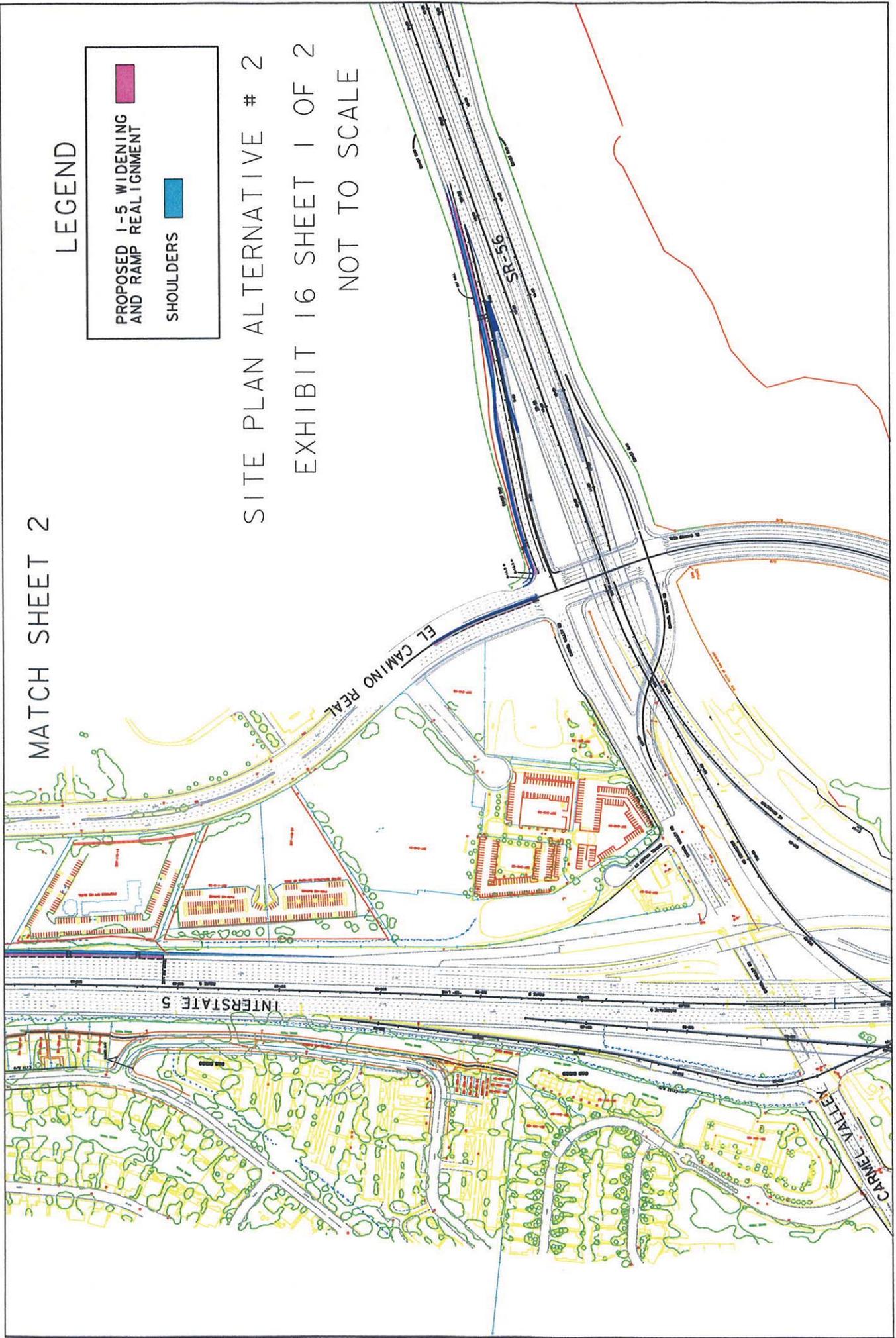
LEGEND

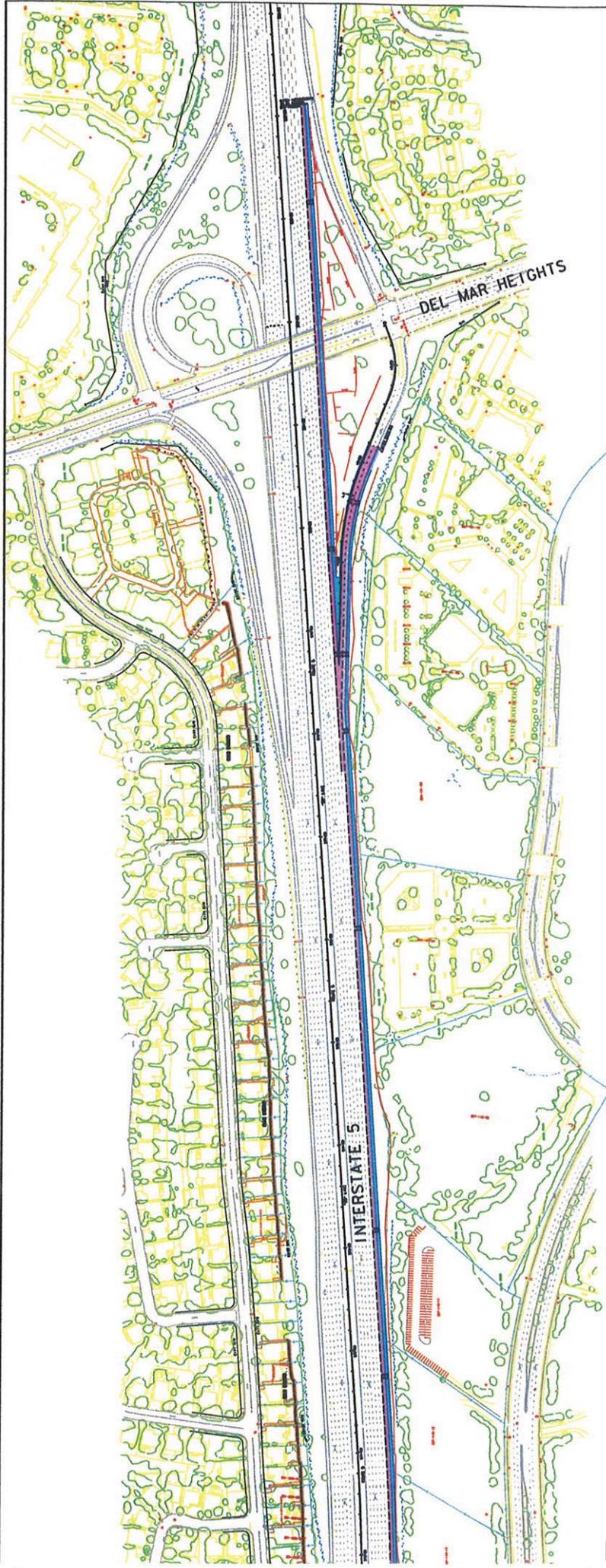
	PROPOSED 1-5 WIDENING AND RAMP REALIGNMENT
	SHOULDERS

SITE PLAN ALTERNATIVE # 2

EXHIBIT 16 SHEET 1 OF 2

NOT TO SCALE





LEGEND

PROPOSED I-5 WIDENING AND RAMP REALIGNMENT	
SHOULDERS	

SITE PLAN ALTERNATIVE # 2

EXHIBIT 16 SHEET 2 OF 2

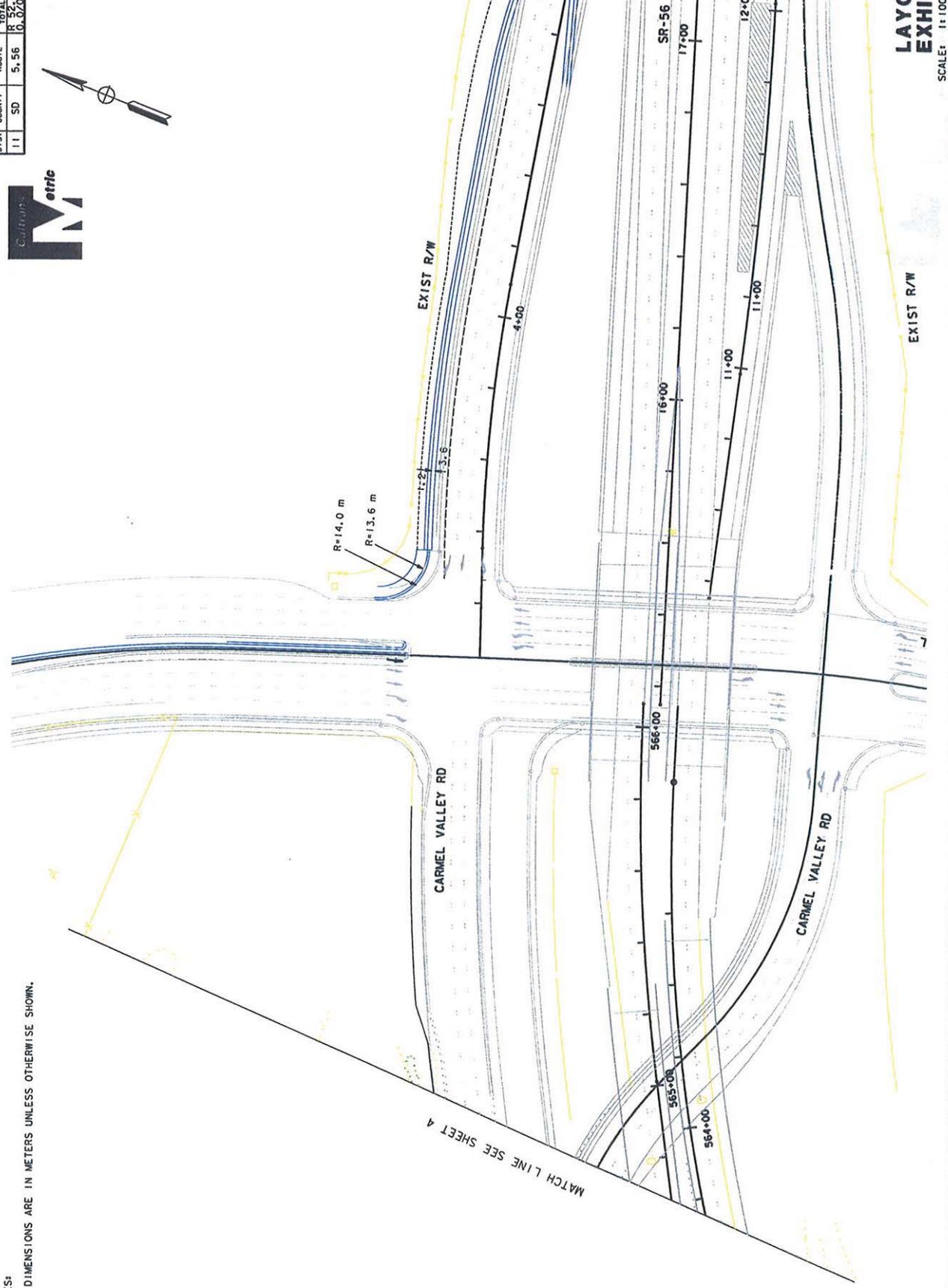
NOT TO SCALE

MATCH SHEET 1



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
Urban Project Development		DESIGNED BY	DATE
CHECKED BY		REVISOR	DATE
DATE		DATE	DATE

NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



DIST	COUNTY	ROUTE	KILOMETER POST MILE	TOTAL SHEETS
11	SD	5, 56	10.024	7
			10.024	2
			10.024	2



LAYOUT EXHIBIT 17  
SCALE: 1:1000

EA030171  
CU 11275  
USER: USER  
DON FILE: DON  
FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS  
0 20 40 60 80  
TIME PLOTTED: 00-00-00



PROJECT ENGINEER	DATE	REVISY	DATE
CHECKED BY	DATE	REVISY	DATE
DESIGNED BY	DATE	REVISY	DATE
CALCULATED BY	DATE	REVISY	DATE

NOTES:  
 ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



DIST	COUNTY	ROUTE	SECTION	POST MILE	SHEET NO.	TOTAL SHEETS
11	SD	5.56	10.020	7.4	4	8



**LAYOUT EXHIBIT 17**  
 SCALE: 1:1000

CU 11275  
 EA 030171

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS  
 USERNAME -> \*\*\*\*\*  
 DGN FILE -> \*\*\*\*\*

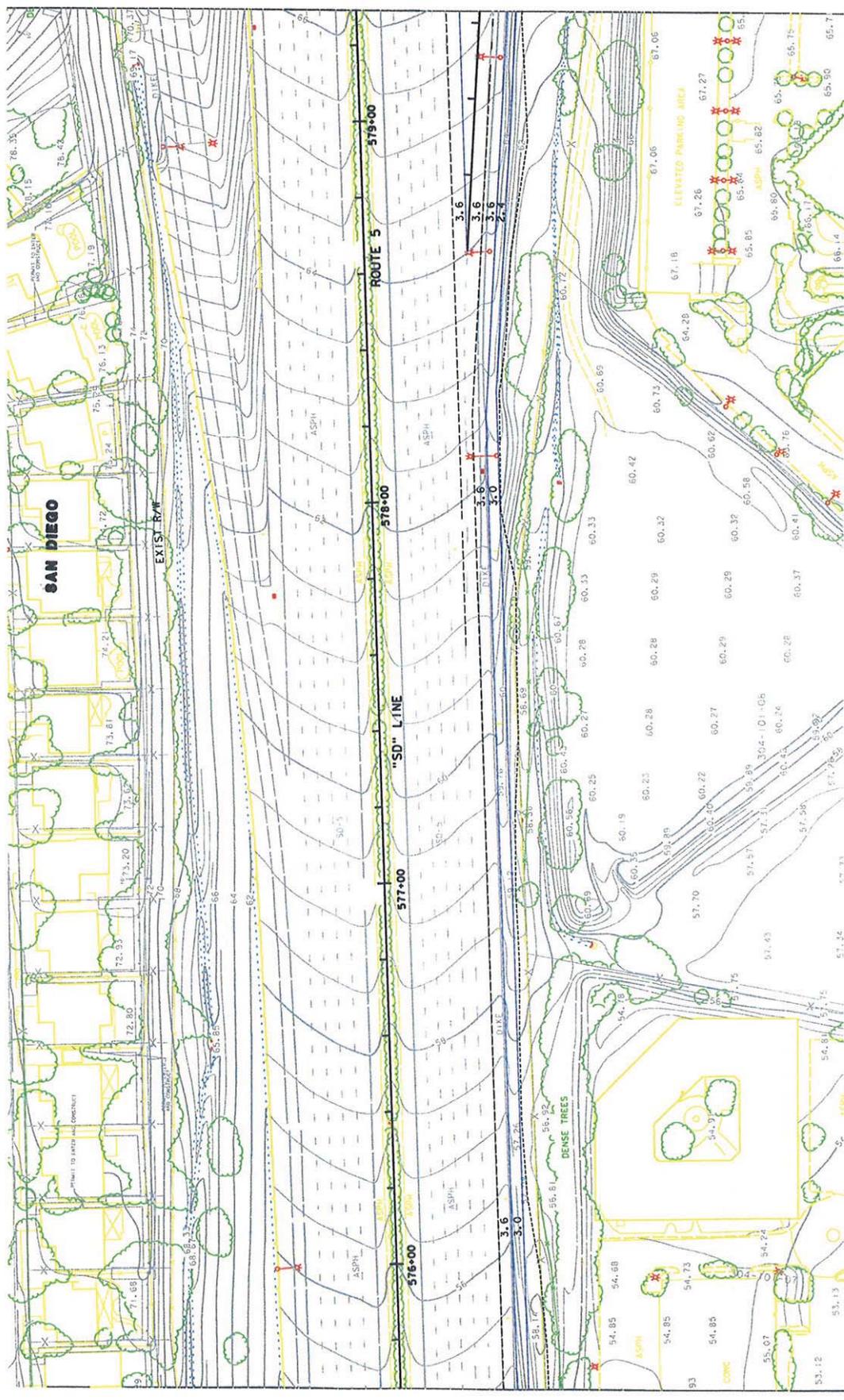
0 20 40 60 80

DATE PLOTTED -> \*\*\*\*\*  
 TIME PLOTTED -> \*\*\*\*\*



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
CALCULATED/DESIGNED BY		CHECKED BY	
DATE	REVISY BY	DATE	REVISY

NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



**LAYOUT EXHIBIT 17**  
SCALE: 1:1000

EA 030171  
CU 11275  
USERNAME -> \*\*\*\*\*  
DON FILE -> \*\*\*\*\*

FOR REVISIONS ORIGINAL SCALE 1:5 IN MILLIMETERS

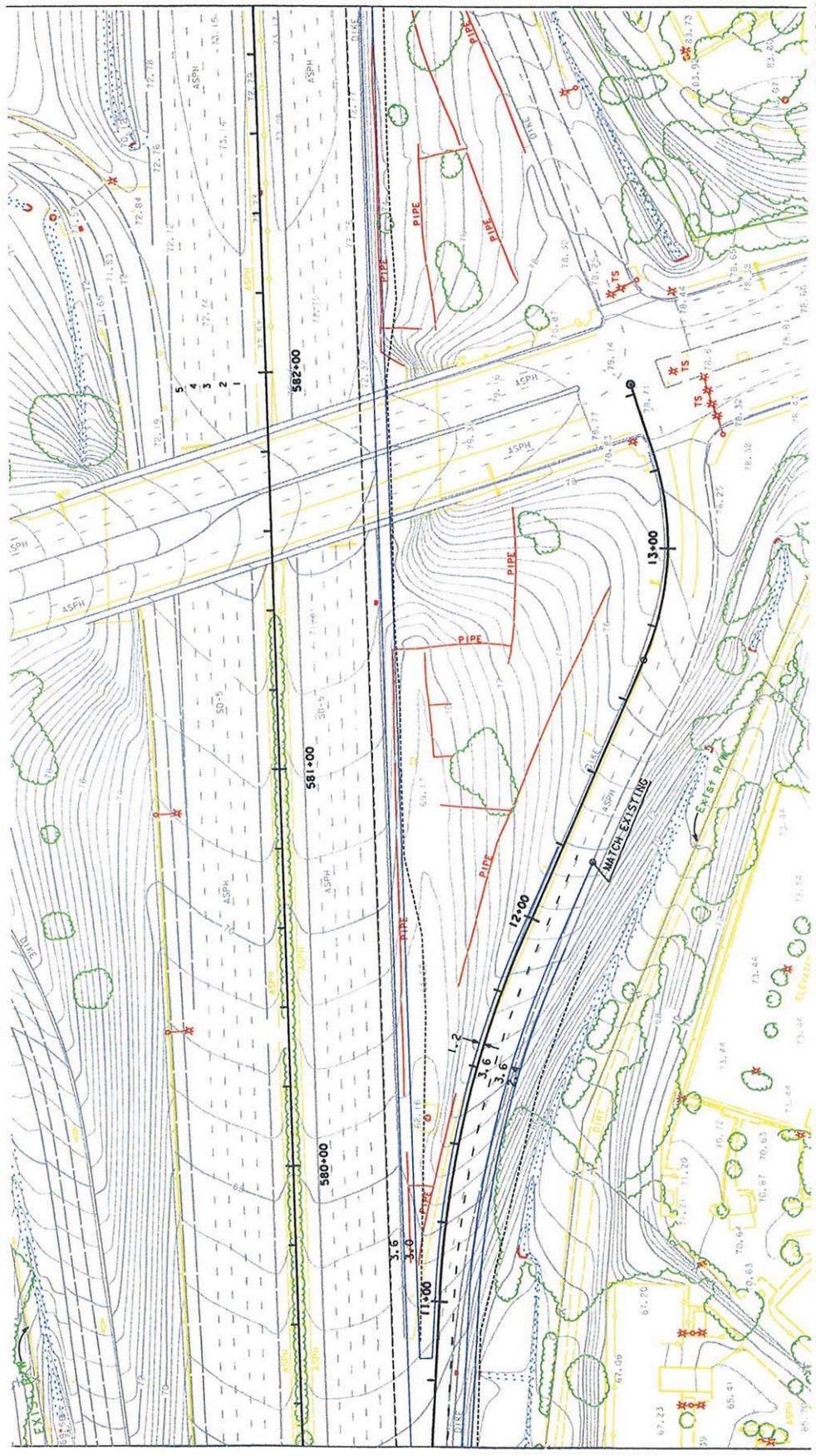
0 20 40 60 80

00-00-00  
TIME PLOTTED -> \*\*\*\*\*

DIST	COUNTY	ROUTE	KILOMETER POST MILE	TOTAL SHEET NO.
11	SD	5.56	10.070.8	8

NOTES:  
 ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

DIST	COUNTY	ROUTE	TO CORNER	FROM CORNER	SHEET NO.	TOTAL SHEETS
11	SD	5, 56	R52, 9/R53, 1	0, 0, 0, 8	7	8



MATCH LINE SEE SHEET 6

MATCH LINE SEE SHEET 8

**LAYOUT EXHIBIT 17**

SCALE: 1:1000

CU 11275

USERNAME: \3\ADMINISTRATOR  
 DGN FILE: \3\PROJECTS\SD\56\56000.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS

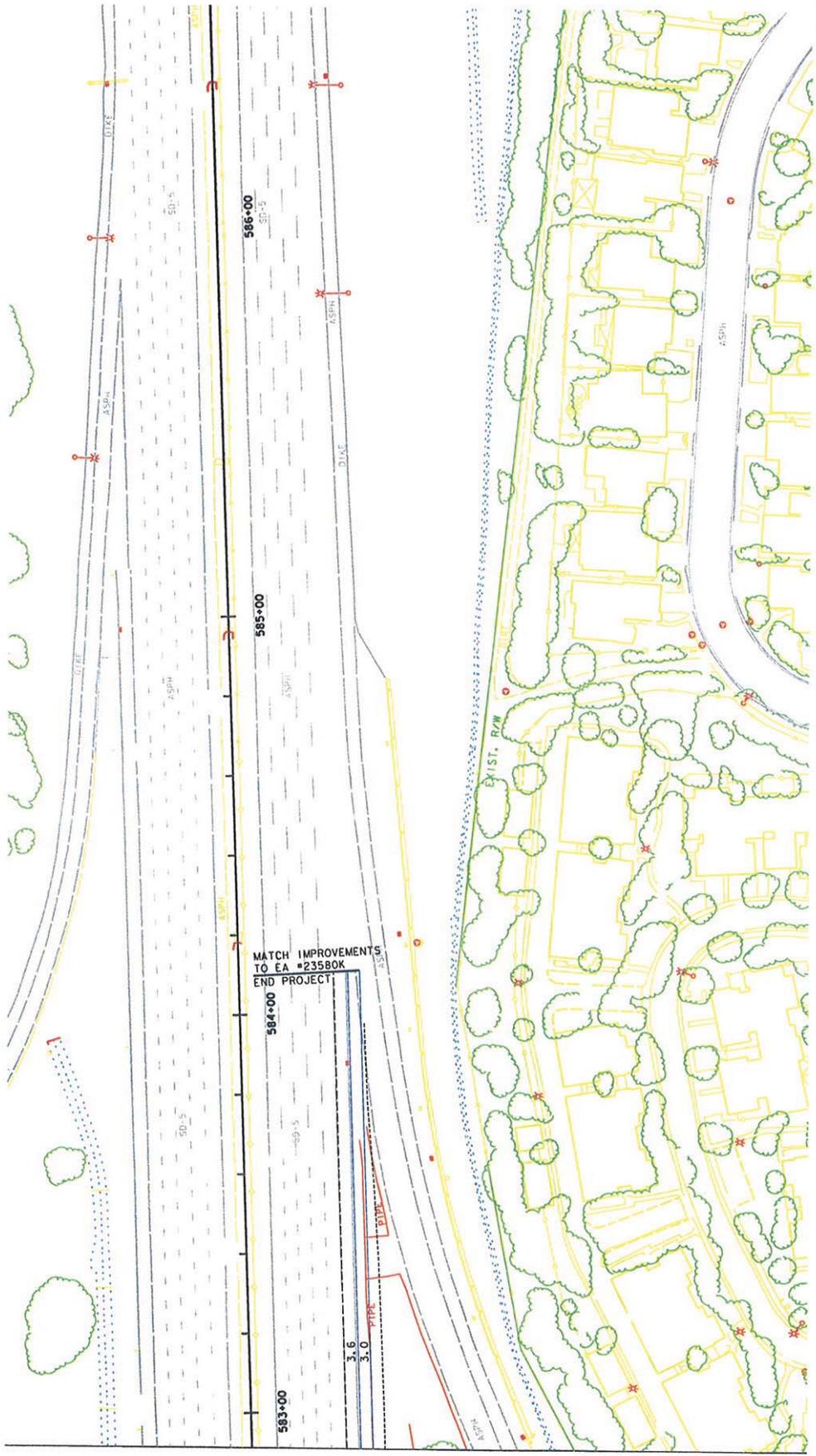
EA 030171

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER		CALCULATED/DESIGNED BY		CHECKED BY		DATE	
Caltion's PROJECT DEVELOPMENT		PROJECT ENGINEER		DESIGNED BY		CHECKED BY		DATE	
REVISOR		REVISOR		REVISOR		REVISOR		DATE	
DATE		DATE		DATE		DATE		DATE	

NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



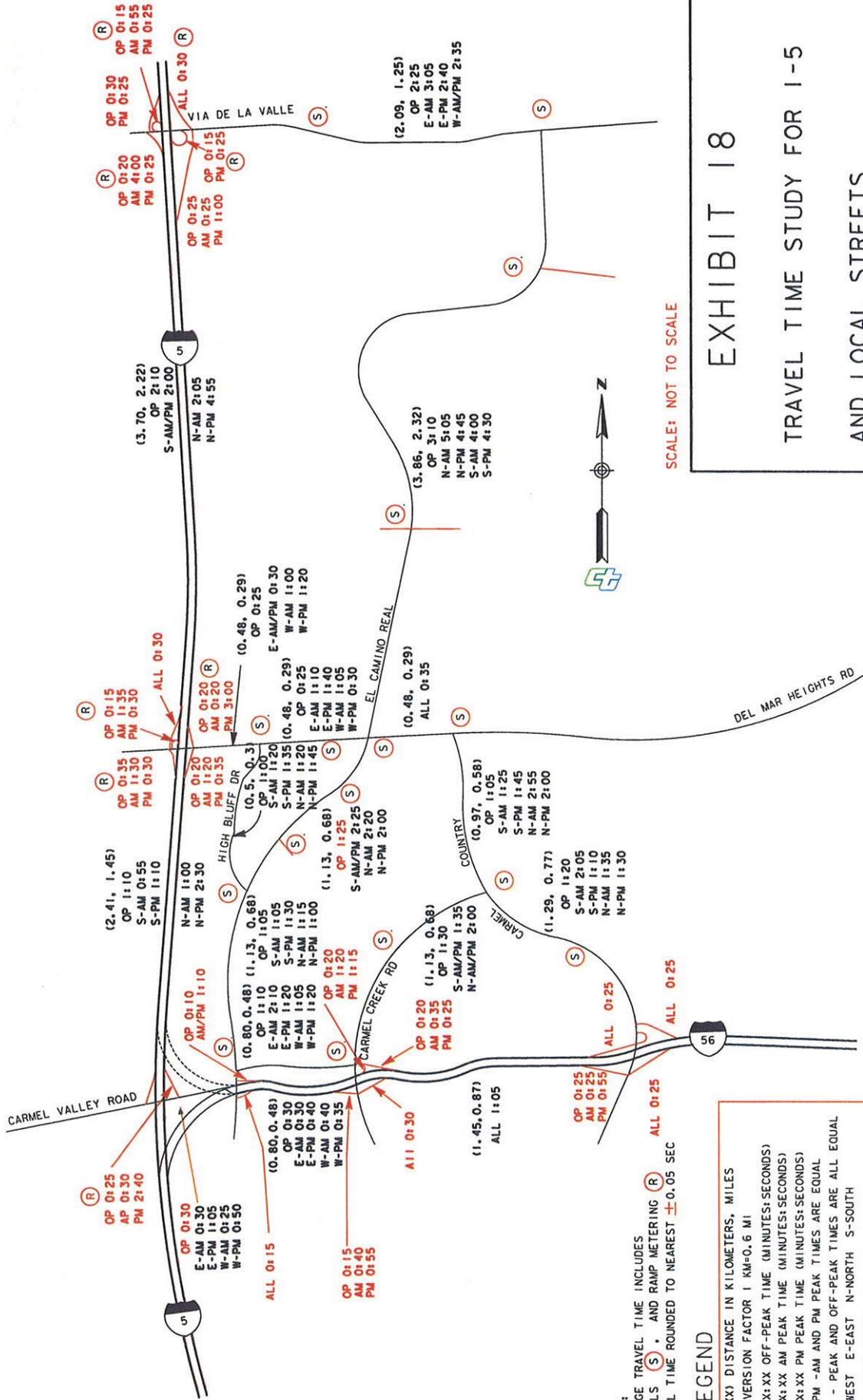
DIST	COUNTY	ROUTE	CALCULATED/DESIGNED BY	TOTAL PROJECT SHEETS
11	SD	5/56	KP 32-9-0-07	8
			RP 33.4-0-5	8



MATCH LINE SEE SHEET 7

LAYOUT EXHIBIT 17  
SCALE: 1:1000

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS  
SCALE: 1:1000  
CU 11275  
EA 030171



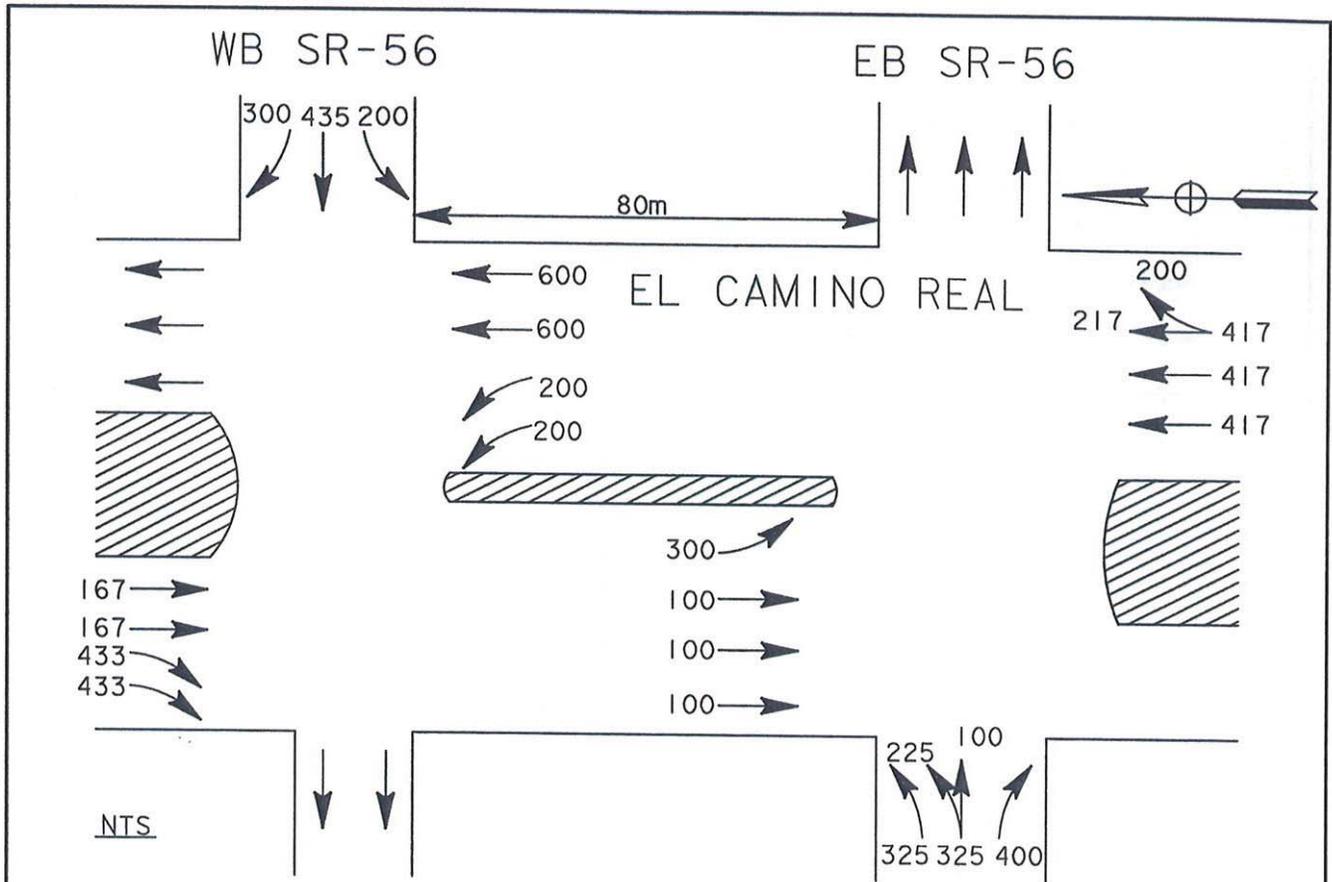
SCALE: NOT TO SCALE

# EXHIBIT 18

## TRAVEL TIME STUDY FOR I-5 AND LOCAL STREETS

NOTES:  
 AVERAGE TRAVEL TIME INCLUDES SIGNALS (S) AND RAMP METERING (R)  
 TRAVEL TIME ROUNDED TO NEAREST ±0.05 SEC

**LEGEND**  
 (X.XX) DISTANCE IN KILOMETERS, MILES  
 CONVERSION FACTOR 1 KM=0.6 MI  
 OP X:XX OFF-PEAK TIME (MINUTES:SECONDS)  
 AM X:XX AM PEAK TIME (MINUTES:SECONDS)  
 PM X:XX PM PEAK TIME (MINUTES:SECONDS)  
 AM/PM -AM AND PM PEAK TIMES ARE EQUAL  
 ALL - PEAK AND OFF-PEAK TIMES ARE ALL EQUAL  
 W- WEST E-EAST N-NORTH S-SOUTH  
 (R) - RAMP METER  
 (S) - SIGNAL



		1	PHASE
		4	
		3	
		2	

ILV = 1477

YEAR 2020 A.M. PEAK

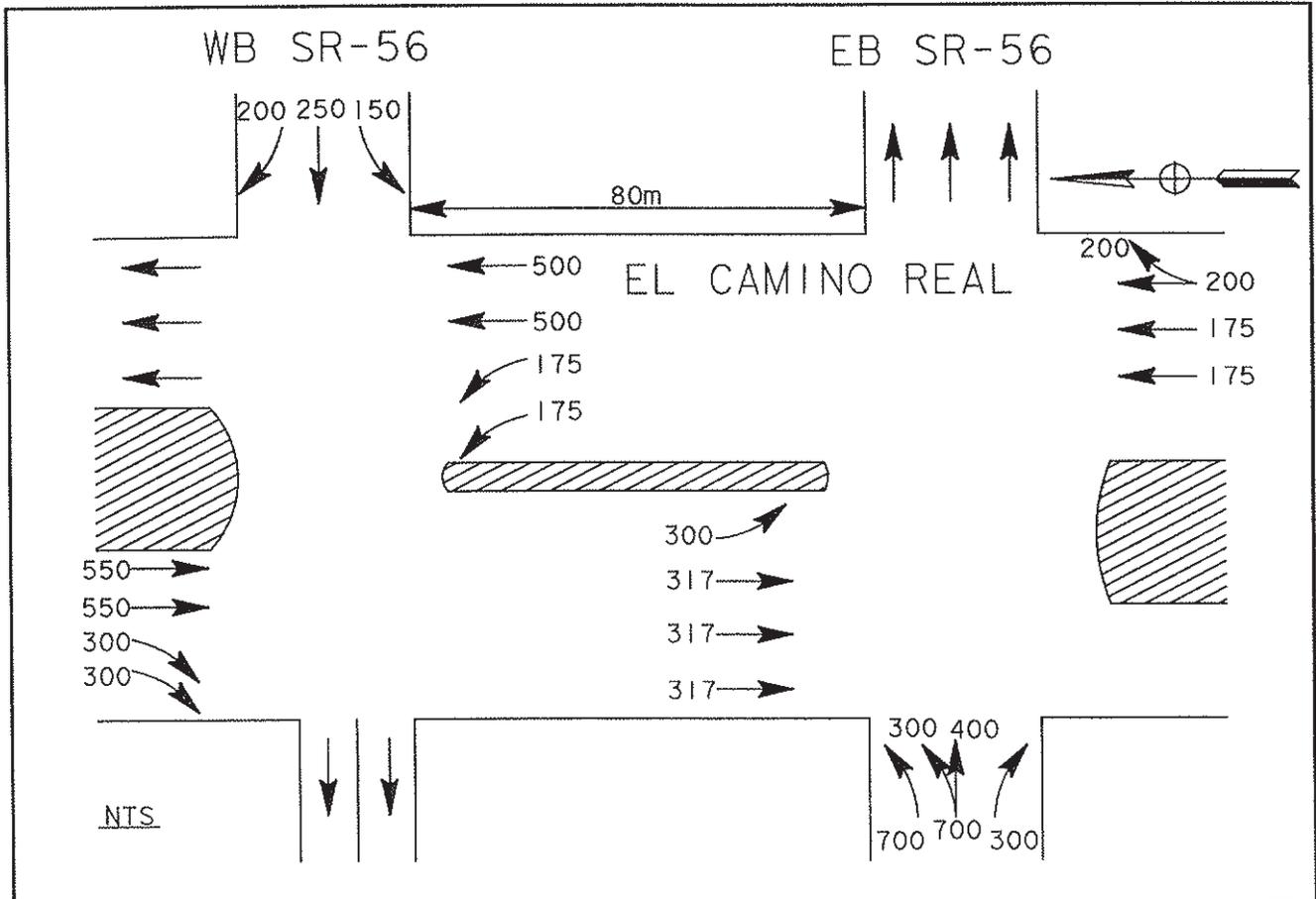
11-SD-5,56

KP R52.9/R53.7  
0.0/0.8

EL CAMINO REAL AT  
SR-56  
INTERSECTION CAPACITY ANALYSIS  
ALTERNATIVE 1

SHEET 1 OF 2

EXHIBIT 19



			PHASE 1
			PHASE 4
			PHASE 3
			PHASE 2

ILV = 1417

YEAR 2020 P.M. PEAK

11-SD-5, 56

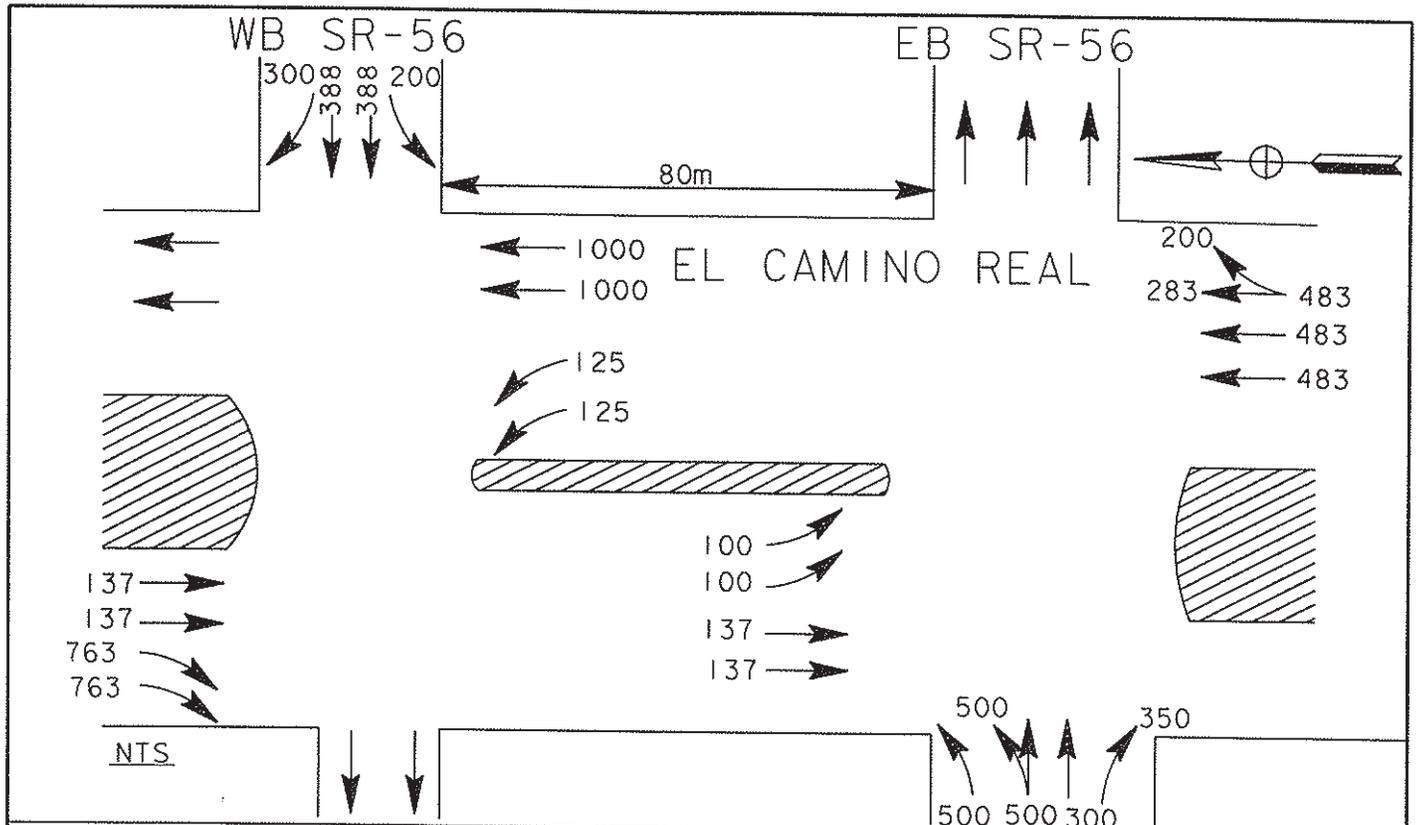
KP R52.9/R53.7  
0.0/0.8

EL CAMINO REAL AT  
SR-56

INTERSECTION CAPACITY ANALYSIS  
ALTERNATIVE 1

SHEET 2 OF 2

EXHIBIT 19



<p>300 388 388 200</p> <p>388</p>	<p>100 100</p> <p>100</p>	3
<p>137 137 163 163</p> <p>163</p>	<p>137 137</p> <p>137</p>	4
<p>500 500</p> <p>500 500</p> <p>500</p>	<p>500 500 300 350</p> <p>500</p>	1
<p>500 500 125 125</p> <p>500</p>	<p>200 283 483 483 483</p> <p>483</p>	2

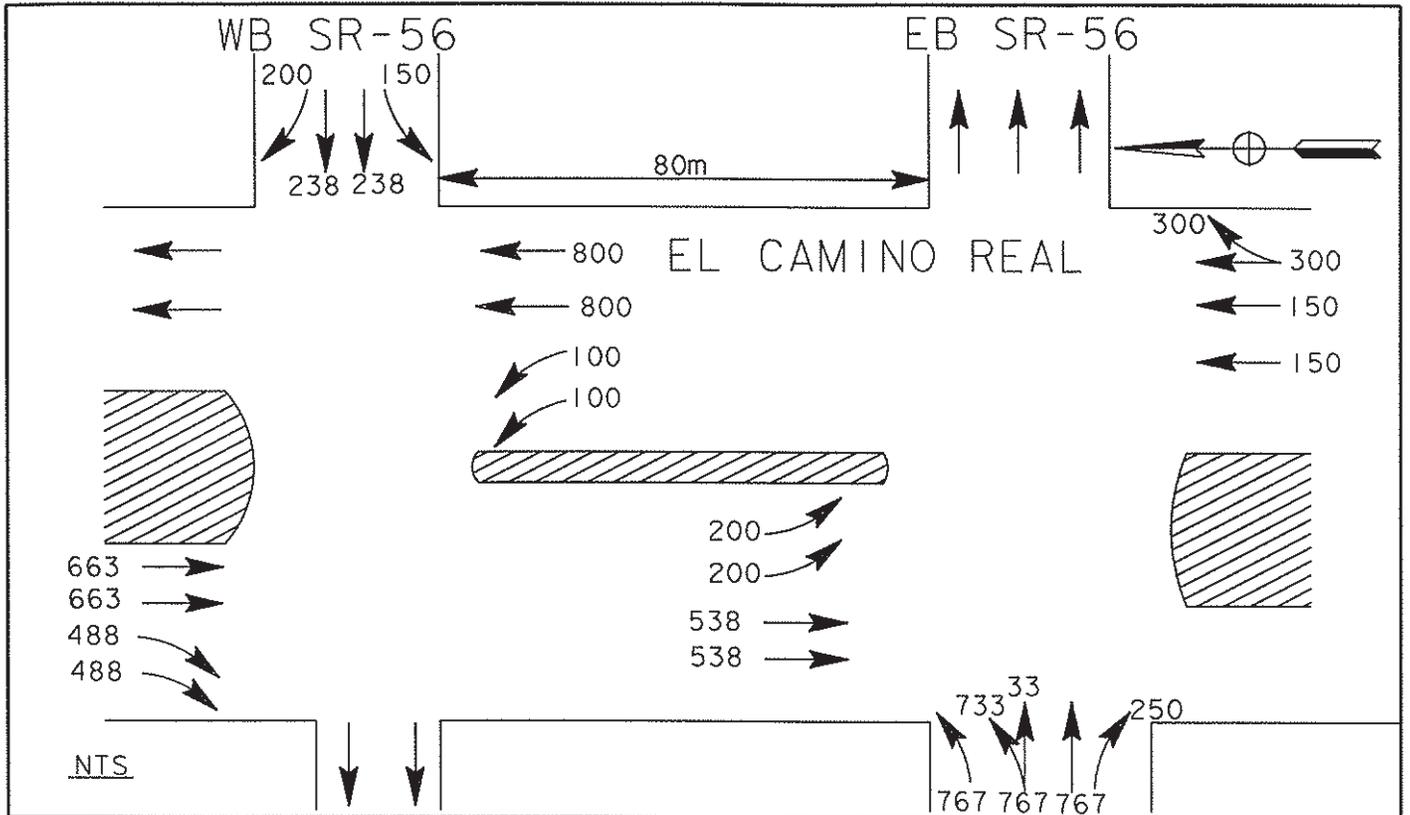
ILV = 1551

YEAR 2020 A.M. PEAK

11-SD-5.56

KP R52.9/R53.7  
0.0/0.8

EL CAMINO REAL AT  
SR-56  
INTERSECTION CAPACITY ANALYSIS  
NO-BUILD ALTERNATIVE



		3
		4
		1
		2

ILV = 1818

YEAR 2020 P.M. PEAK

11-SD-5,56

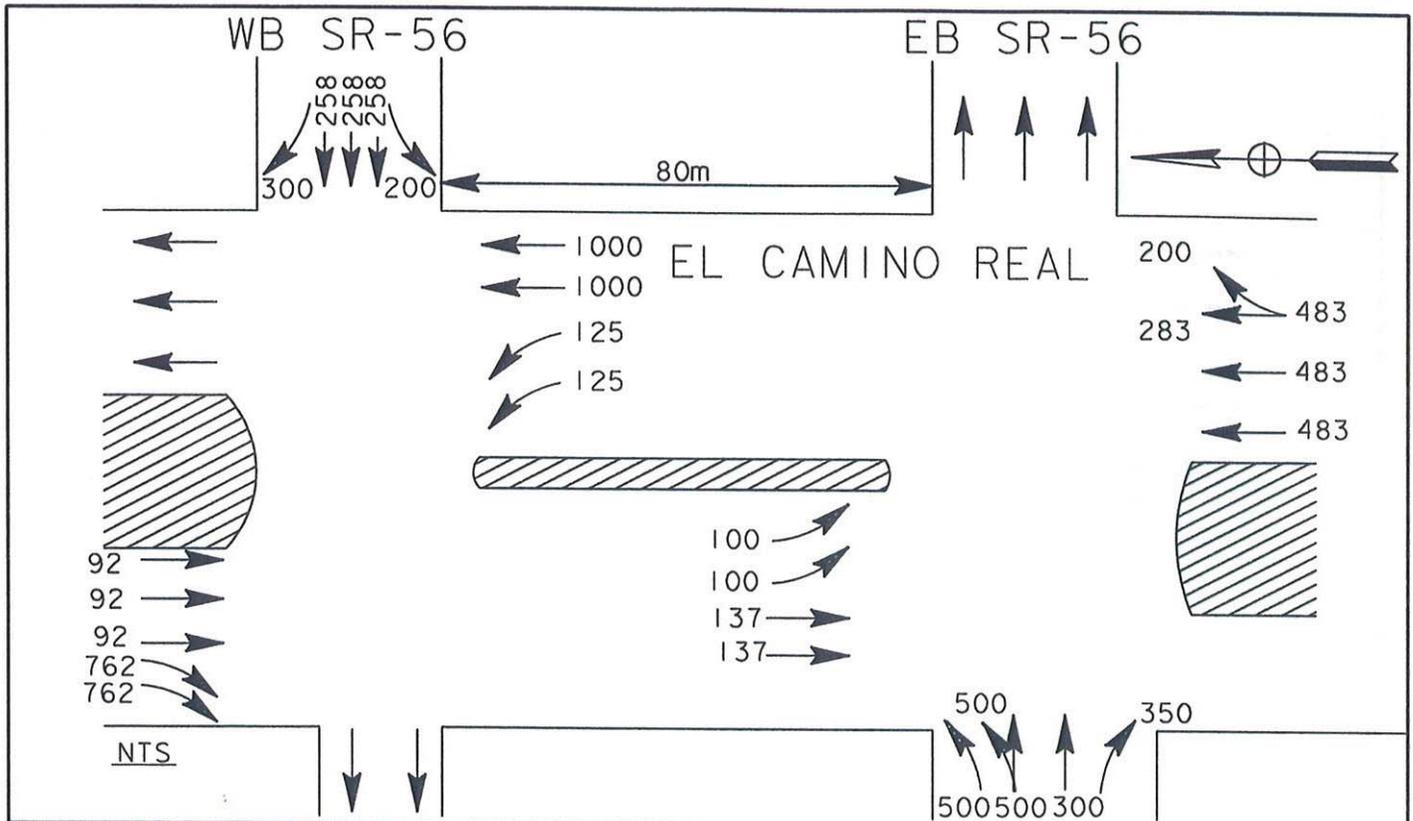
KP R52.9/R53.7  
0.0/0.8

EL CAMINO REAL AT  
SR-56

INTERSECTION CAPACITY ANALYSIS  
NO-BUILD ALTERNATIVE

SHEET 2 OF 2

EXHIBIT 20



			4 PHASE
			5 PHASE
			3 PHASE
			2 PHASE
			1 PHASE

ILV = 1462

YEAR 2020 A.M. PEAK

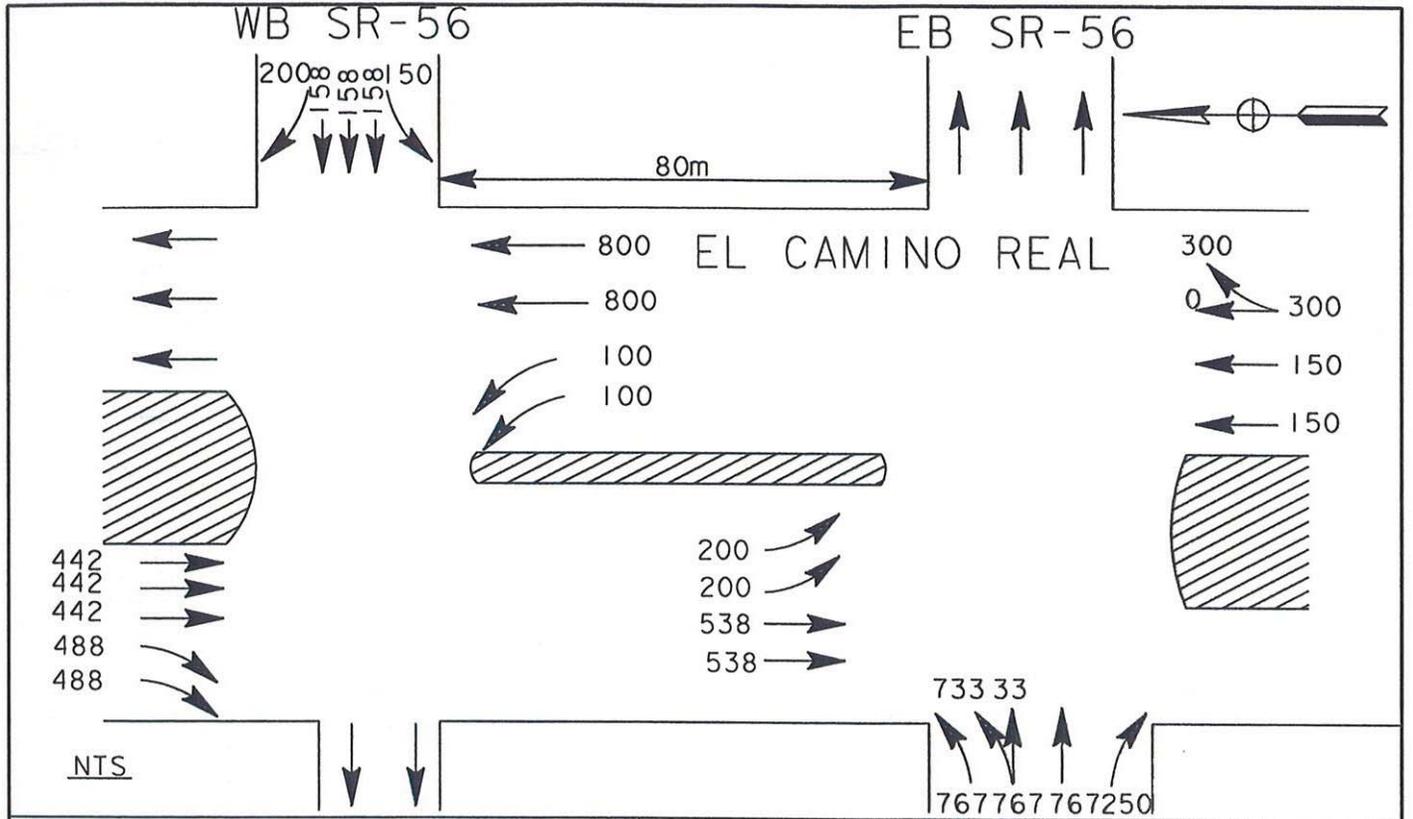
11-SD-5,56

KP R52.9/R53.7  
0.0/0.8

EL CAMINO REAL AT  
SR-56  
INTERSECTION CAPACITY ANALYSIS  
ALTERNATIVE # 2

SHEET 1 OF 2

EXHIBIT 21



		3
		4
		2
		1
		5

ILV = 1538

YEAR 2020 P.M. PEAK

11-SD-5.56 KP R52.9/R53.7  
0.0/0.8

EL CAMINO REAL AT SR-56

INTERSECTION CAPACITY ANALYSIS

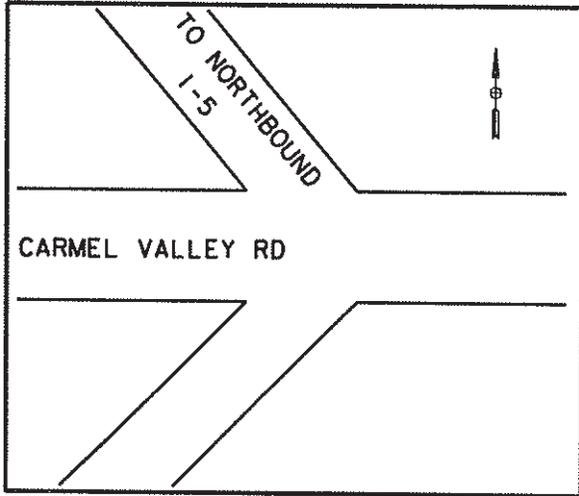
ALTERNATIVE # 2

SHEET 2 OF 2 EXHIBIT 21

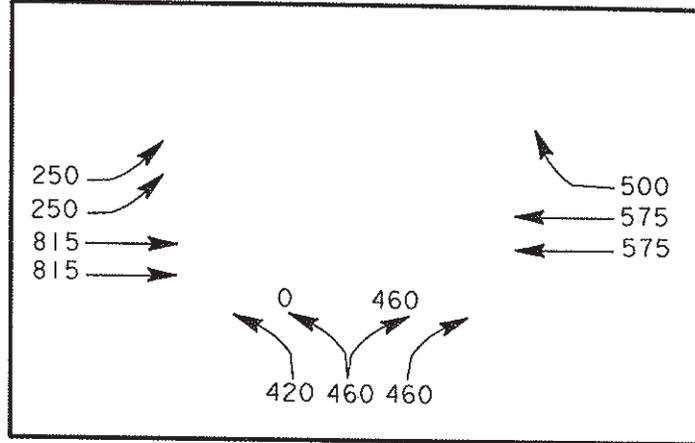
# SIGNALIZED INTERSECTION CAPACITY ANALYSIS - ILV's

11-SD-5, 56  
 KP R52.9/R53.7  
 0.0/0.8  
 EA: 17790K

INTERSECTION: NB RAMPS AT CVR



PROJECTED TRAFFIC FLOWS:



TIME: PM PEAK, 2020

LANE VOLUMES (ILV/HR):

PHASE 1	PHASE 2	PHASE 3	PHASE 4

CRITICAL LANE VOLUMES (ILV/HR):

PHASE 1	PHASE 2	PHASE 3	PHASE 4
250	575	460	



NO SCALE

TOTAL OPERATING LEVEL (ILV/HR):

$\Sigma$
1285

- < 1200 ILV/HR
- > 1200 BUT < 1500 ILV/HR
- > 1500 ILV/HR (CAPACITY)

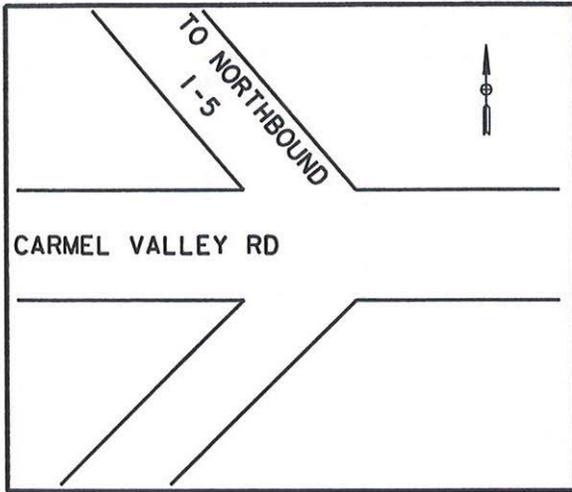
EXHIBIT 22  
 SHEET 1 OF 4  
 I-5 INTERCHANGE AT  
 CARMEL VALLEY RD

PM PEAK HOUR  
 YEAR 2020 - NO BUILD

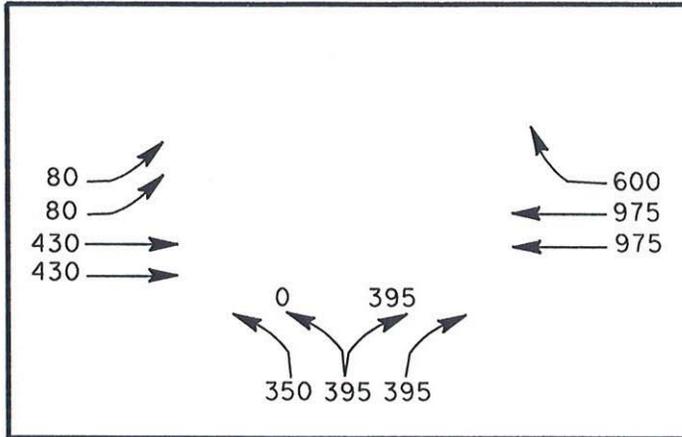
# SIGNALIZED INTERSECTION CAPACITY ANALYSIS - ILV's

11-SD-5, 56  
 KP R52.9/R53.7  
 0.0/0.8  
 EA: 17790K

INTERSECTION: NB RAMPS AT CVR



PROJECTED TRAFFIC FLOWS:



TIME: PM PEAK, 2020

LANE VOLUMES (ILV/HR):

PHASE 1	PHASE 2	PHASE 3	PHASE 4

CRITICAL LANE VOLUMES (ILV/HR):

PHASE 1	PHASE 2	PHASE 3	PHASE 4
975	80	395	



NO SCALE

TOTAL OPERATING LEVEL (ILV/HR):

Σ
1450

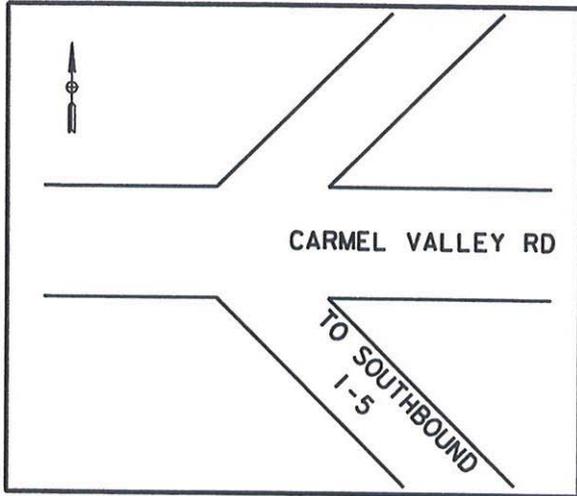
- < 1200 ILV/HR
- > 1200 BUT < 1500 ILV/HR
- > 1500 ILV/HR (CAPACITY)

EXHIBIT 22  
 SHEET 2 OF 4  
 I-5 INTERCHANGE AT  
 CARMEL VALLEY RD  
  
 AM PEAK HOUR  
 YEAR 2020 - NO BUILD

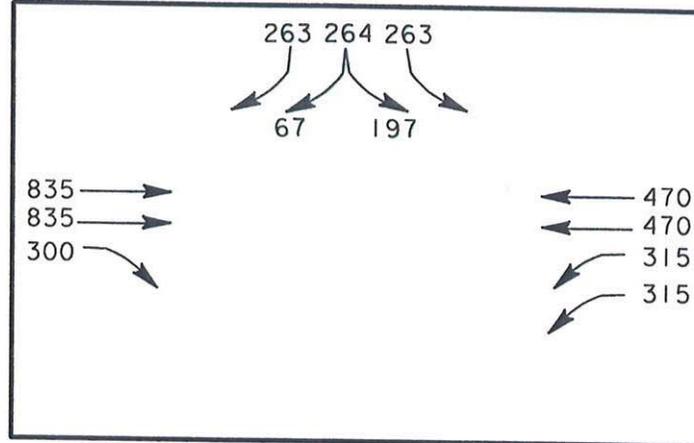
# SIGNALIZED INTERSECTION CAPACITY ANALYSIS - ILV'S

11-SD-5, 56  
 KP R52.9/R53.7  
 0.0/0.8  
 EA: 17790K

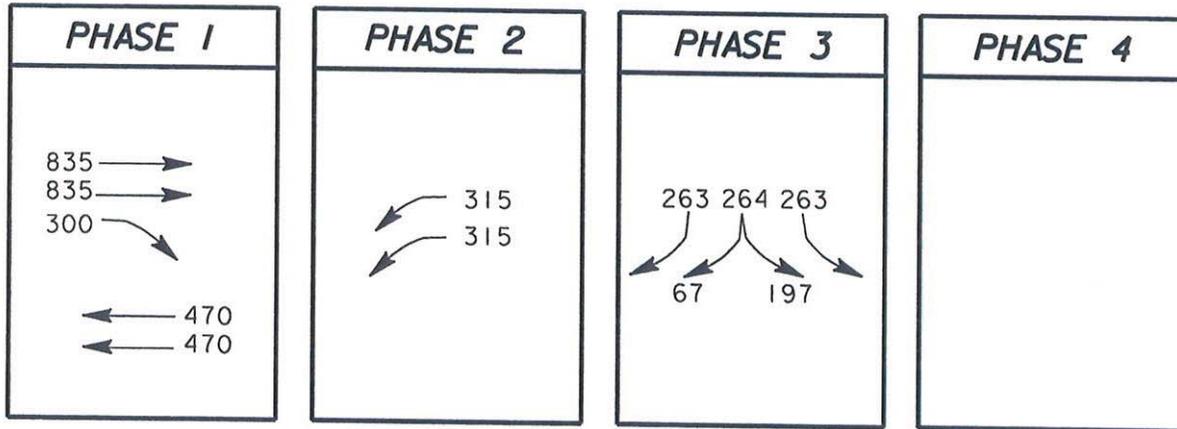
INTERSECTION: SB RAMPS AT CVR



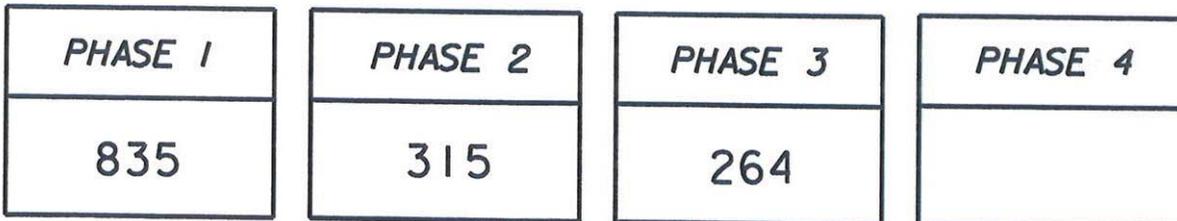
PROJECTED TRAFFIC FLOWS:



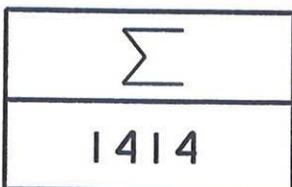
LANE VOLUMES (ILV/HR):



CRITICAL LANE VOLUMES (ILV/HR):



TOTAL OPERATING LEVEL (ILV/HR):



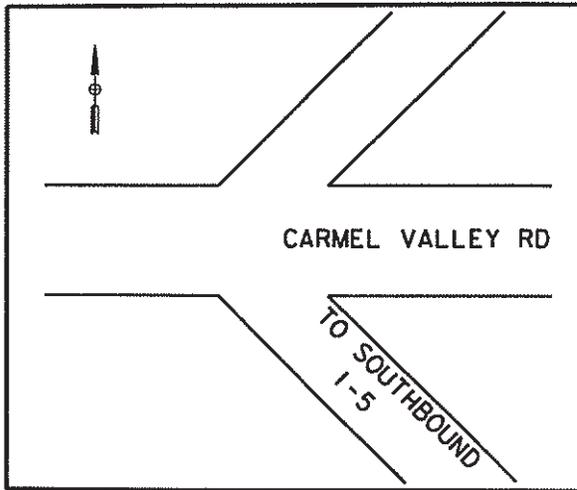
- < 1200 ILV/HR
- > 1200 BUT < 1500 ILV/HR
- > 1500 ILV/HR (CAPACITY)

EXHIBIT 22  
 SHEET 3 OF 4  
 I-5 INTERCHANGE AT  
 CARMEL VALLEY RD  
 PM PEAK HOUR  
 YEAR 2020 - NO BUILD

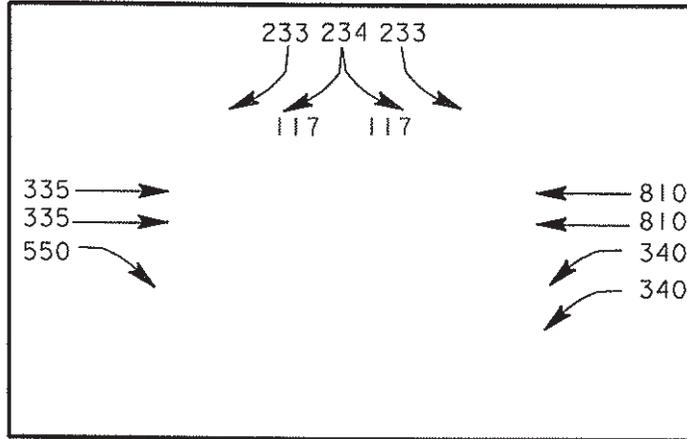
# SIGNALIZED INTERSECTION CAPACITY ANALYSIS - ILV'S

11-SD-5, 56  
 KP R52.9/R53.7  
 0.0/0.8  
 EA: 17790K

INTERSECTION: SB RAMPS AT CVR

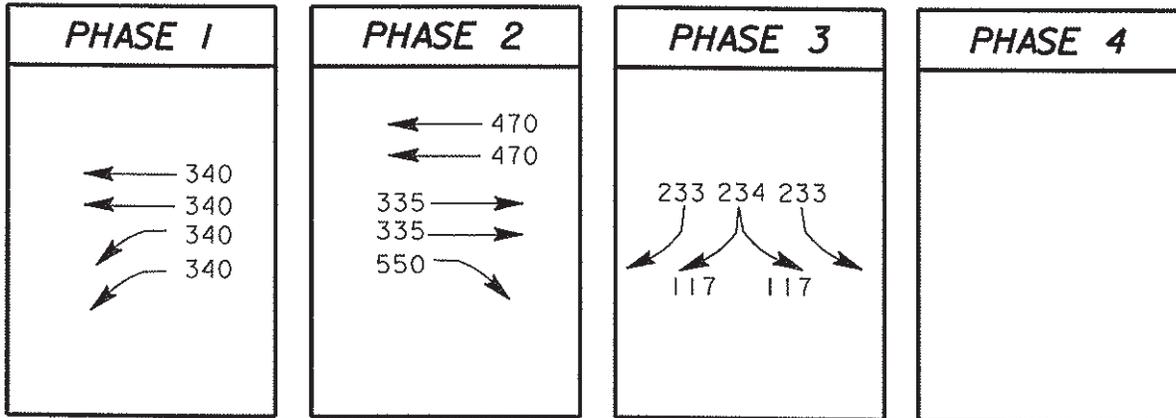


PROJECTED TRAFFIC FLOWS:

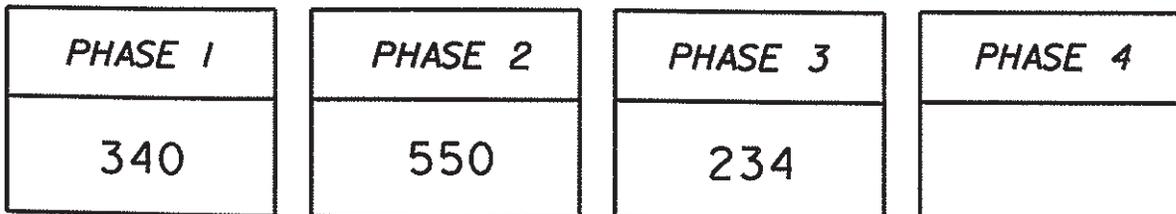


TIME: AM PEAK

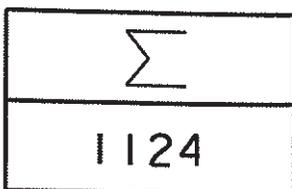
LANE VOLUMES (ILV/HR):



CRITICAL LANE VOLUMES (ILV/HR):



TOTAL OPERATING LEVEL (ILV/HR):

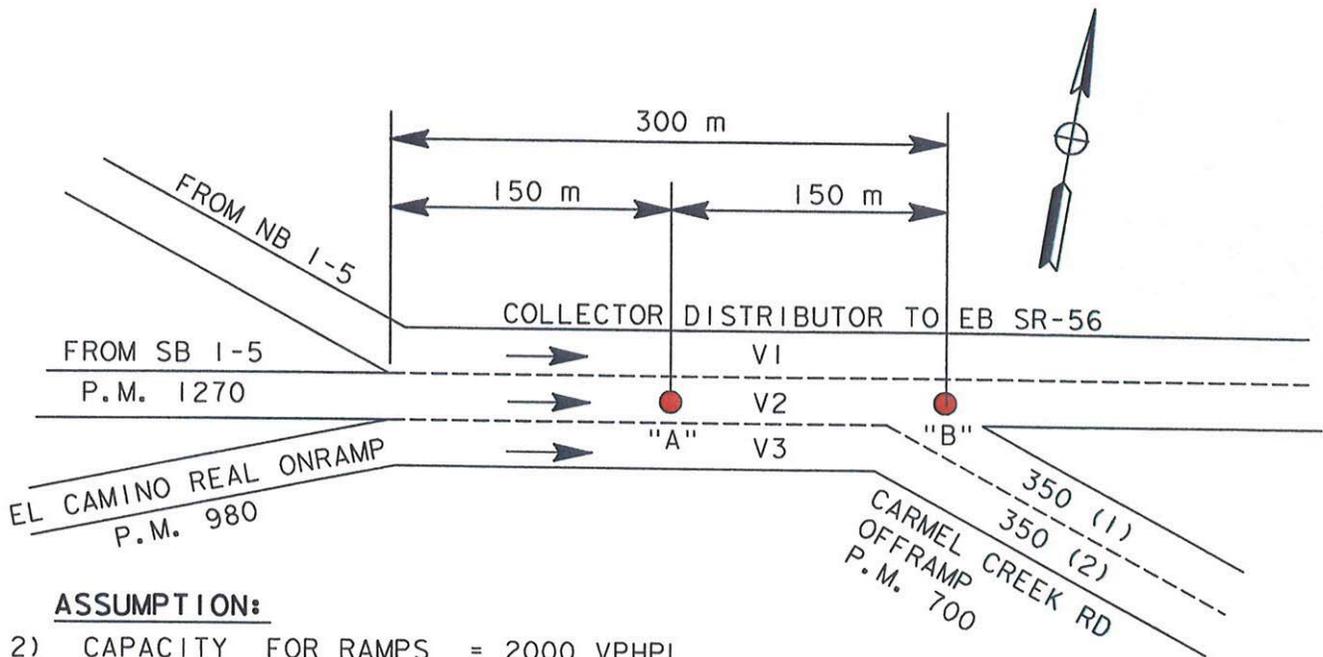


- < 1200 ILV/HR
- > 1200 BUT < 1500 ILV/HR
- > 1500 ILV/HR (CAPACITY)

EXHIBIT 22  
 SHEET 4 OF 4

I-5 INTERCHANGE AT  
 CARMEL VALLEY RD

AM PEAK HOUR  
 YEAR 2020 - NO BUILD



**ASSUMPTION:**

- 2) CAPACITY FOR RAMPS = 2000 VPHPL
- 3) 100% TRAFFIC VOLUME FROM NB 1-5 WILL GET OFF AT CARMEL CREEK IN WORST CASE

**MERGE ANALYSIS AT POINT "A"- WORST CASE**

FROM TRAFFIC BULLETIN NO. 4:

V2 @ A:

SB 1-5 CONNECTOR TRAFFIC IN RIGHT LANE (FIG. 5) =  $60\% \times 1270 = 762$  VPH  
 ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) =  $80\% \times 980 = 784$  VPH  
 OFF-RAMP (1) TRAFFIC IN RIGHT LANE (FIG. 5) =  $76\% \times 350 = 266$  VPH  
 OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $24\% \times 350 = 84$  VPH  
 THUS,  $V2 @ A = 762 + 784 + 266 + 84 = 1896$  VPH

V3 @ A:

ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) =  $20\% \times 980 = 196$  VPH  
 OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $76\% \times 350 = 266$  VPH  
 THUS,  $V3 @ A = 196 + 266 = 462$  VPH

**CONCLUSIONS:**

WEAVE VOLUME IN LANE 2 @ A =  $1896 < 2000 \Rightarrow$  OK  
 WEAVE VOLUME IN LANE 3 @ A =  $462 < 2000 \Rightarrow$  OK

**MERGE ANALYSIS AT POINT "B"**

V2 @ B:

SB 1-5 CONNECTOR TRAFFIC IN RIGHT LANE (FIG. 5) =  $30\% \times 1270 = 381$  VPH  
 ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) =  $68\% \times 980 = 666$  VPH  
 OFF-RAMP (1) TRAFFIC IN RIGHT LANE (FIG. 5) =  $100\% \times 350 = 350$  VPH  
 THUS,  $V2 @ B = 381 + 666 + 350 = 1397$  VPH

V3 @ B:

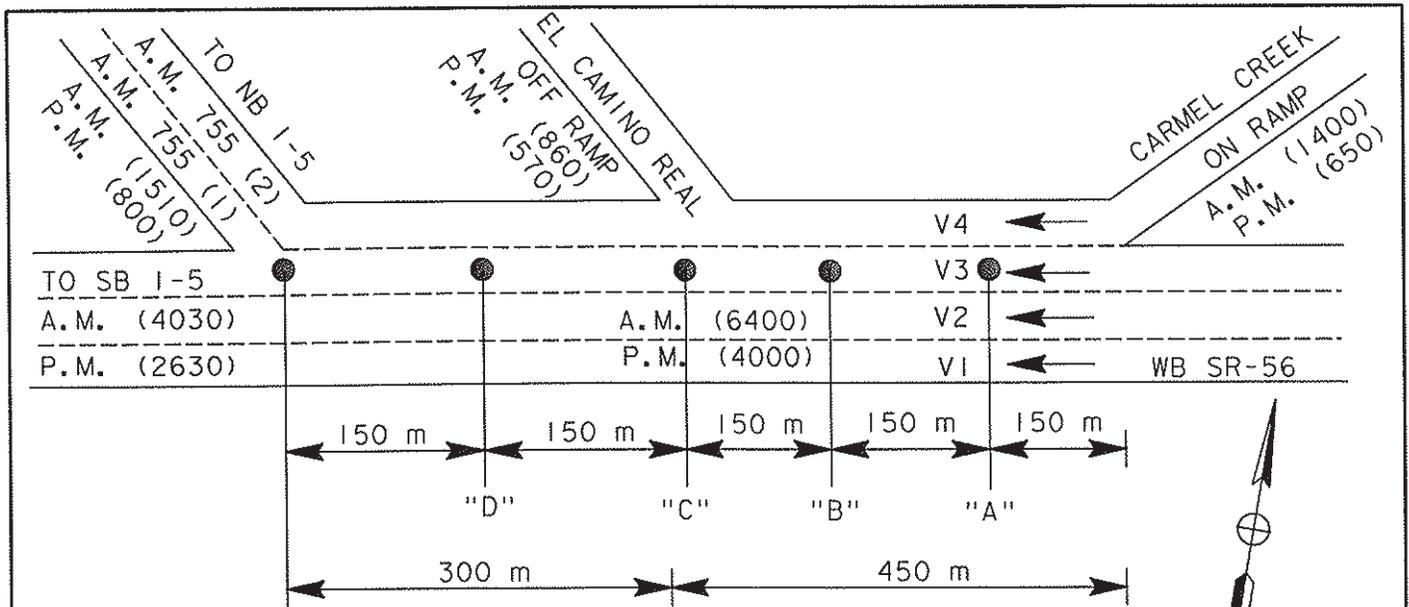
OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $100\% \times 350 = 350$  VPH  
 THUS,  $V3 @ B = 350$  VPH

**CONCLUSIONS:**

WEAVE VOLUME IN LANE 2 @ B =  $1397 < 2000 \Rightarrow$  OK  
 WEAVE VOLUME IN LANE 3 @ B =  $350 < 2000 \Rightarrow$  OK

11-SD-5, 56 P.M. R52.9/R53.7, 0.0/0.8

EB MERGE/DIVERGE ANALYSIS  
 ON SR-56 COLLECTOR DISTRIBUTOR  
 FROM SB 1-5 AND NB 1-5  
 TO CARMEL CREEK RD.  
 YEAR 2020 PM PEAK HOUR  
 ALTERNATIVE 1



**ASSUMPTION:**

- 1) CAPACITY FOR FREEWAY = 2200 VPHPL
- 2) CAPACITY FOR RAMPS = 2000 VPHPL

**MERGE ANALYSIS AT POINT "B"- WORST CASE (WEAVING)**

THRU TRAFFIC = 6400 - (1400+860+1510) = 2630 VPH

FROM TRAFFIC BULLETIN NO. 4:

THRU TRAFFIC IN RIGHT LANE (FIG. 2) = 6% x 2630 = 158 VPH

**V3 @ B:**

ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 62% x 1400 = 868 VPH

NBI-5 CONNECTOR (1) TRAFFIC IN RIGHT LANE (FIG. 5) = 79% x 755 = 596 VPH

NBI-5 CONNECTOR (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 19% x 755 = 143 VPH

THUS, V3 @ B = 158 + 868 + 596 + 143 = 1766 VPH

**V4 @ B:**

ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 23% x 1400 = 322 VPH

OFF-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 100% x 860 = 860 VPH

NBI-5 CONNECTOR (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 60% x 755 = 453 VPH

THUS, V4 @ B = 322 + 860 + 453 = 1635 VPH

**CONCLUSIONS:**

WEAVE VOLUME IN LANE 3 = 1766 < 2000 => OK

WEAVE VOLUME IN LANE 4 = 1635 < 2000 => OK

WEAVE VOLUME IN LANE 1,2 = (6400 - (1766 + 1635)) / 2 = 1500 VPH < 2200 VPH => OK

11-SD-5, 56 P.M. R52.9/R53.7, 0.0/0.8

WB MERGE/DIVERGE ANALYSIS

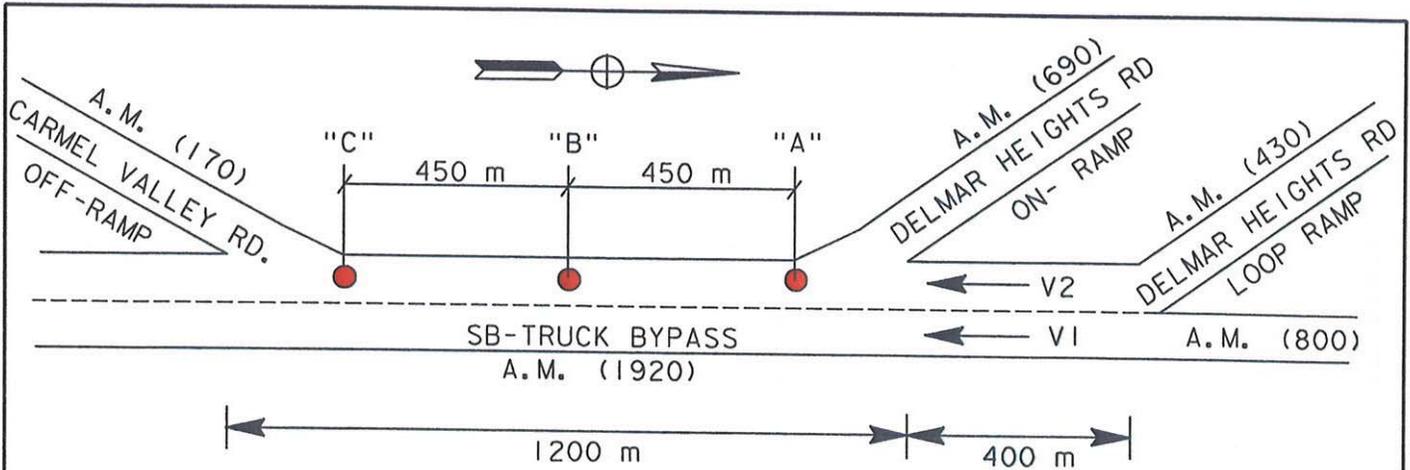
ON SR-56 FROM

CARMEL CREEK TO

I-5

YEAR 2020 AM PEAK HOUR

ALTERNATIVE I



**ASSUMPTIONS**

- 1) CAPACITY FOR FREEWAY = 2200 VPHPL
- 2) CAPACITY FOR RAMP MERGE/DIVERGE = 2000 VPHPL

**MERGE ANALYSIS AT POINT "A" - WORST CASE (WEAVING)**

V2 @ "A"

CALCULATE THROUGH VOLUME (VT) + OTHER VOLUMES IN RIGHT LANE

$$VT = (V \text{ total} - V \text{ ramps within } 1200 \text{ m}) \times \%(\text{TRAFFIC BULLETIN NO. 4, FIG. 2})$$

$$VT = (1920 - 690 - 170) \times 20\% = 1060 \times 20\% = 212 \text{ VPH}$$

ONRAMP TRAFFIC IN RIGHT LANE (FIG. 5) =  $690 \times 100\% = 690 \text{ VPH}$

% OFFRAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 16%, BUT SINCE THE % IN THE RIGHT LANE IS LESS THAN THAT OF THE THROUGH TRAFFIC, THIS TRAFFIC SHOULD BE ASSUMED TO BE THROUGH TRAFFIC.

RECALCULATE THRU TRAFFIC:

$$VT = 1060 + 170 = 1230 \text{ VPH}$$

% IN RIGHT LANE: 20%

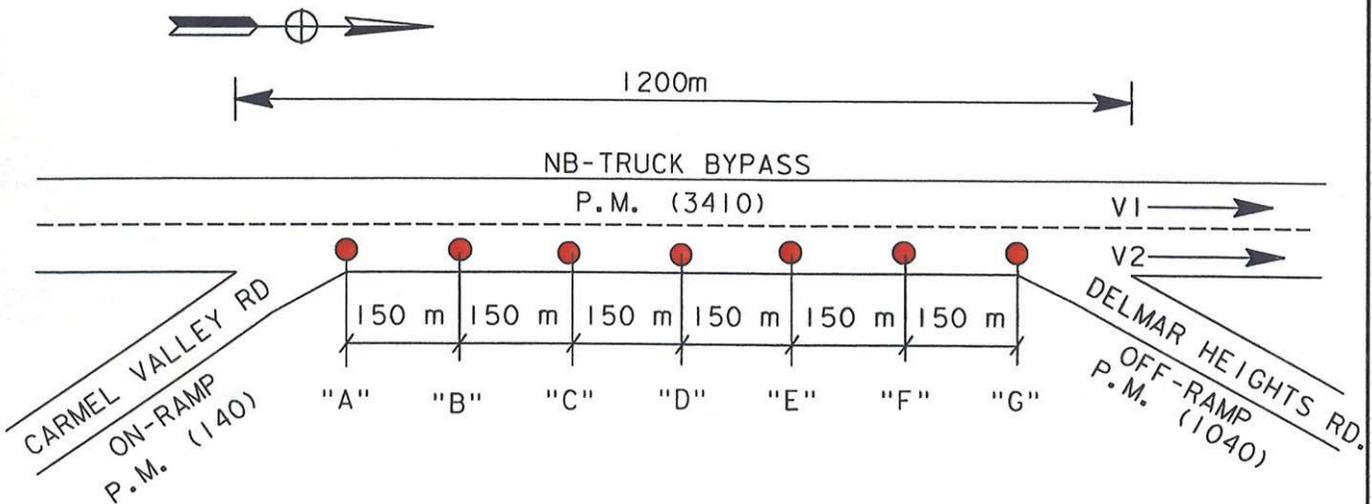
$$\text{THRU TRAFFIC IN RIGHT LANE} = 20\% \times 1230 = 246 \text{ VPH}$$

$$V2 \text{ @ "A"} = 246 + 690 = 936 \text{ VPH}$$

**CONCLUSIONS**

RAMP MERGE VOLUME IN LANE 2 = 936 VPLPH < 2000 VPLPH => O.K.

11-SD-5.56 P.M. R52.9/R53.7  
 SB MERGE/DIVERGE ANALYSIS  
 ON I-5 FROM  
 SR-56 TO DEL MAR HEIGHTS RD.  
 YEAR 2020 AM PEAK HOUR  
 ALTERNATIVE I  
 SHEET 3 OF 4 EXHIBIT 23



**ASSUMPTIONS**

- 1) CAPACITY FOR FREEWAY = 2200 VPHPL
- 2) CAPACITY FOR RAMP MERGE/DIVERGE = 2000 VPHPL

**MERGE ANALYSIS AT POINT "C" - WORST CASE (THRU LANE)**

V2 @ "C"

CALCULATE THROUGH VOLUME (VT) + OTHER VOLUMES IN RIGHT LANE

$$VT = (V \text{ total} - V \text{ ramps within } 1200 \text{ m}) \times \%(\text{TRAFFIC BULLETIN NO. 4, FIG. 2})$$

$$VT = (3410 - 140 - 1040) \times 30\% = 2230 \times 30\% = 669 \text{ VPH}$$

$$\text{ONRAMP TRAFFIC IN RIGHT LANE (FIG. 5)} = 140 \times 30\% = 42 \text{ VPH}$$

$$\text{OFFRAMP TRAFFIC IN RIGHT LANE (FIG. 5)} = 1040 \times 46\% = 478 \text{ VPH}$$

$$V2 \text{ @ "C"} = 669 + 42 + 478 = 1189 \text{ VPH}$$

$$\text{TRAFFIC VOLUME IN LANE 1} = 3410 - 1189 = 2221 \text{ VPH}$$

**CONCLUSIONS**

RAMP MERGE VOLUME IN LANE 1 = 2221 VPH ~ 2200 VPH => O.K.

RAMP MERGE VOLUME IN LANE 2 = 1189 VPH < 2000 VPH => O.K.

**MERGE ANALYSIS AT POINT "G" - WORST CASE (WEAVING)**

V2 @ "G"

CALCULATE THROUGH VOLUME (VT) + OTHER VOLUMES IN RIGHT LANE

$$VT = (V \text{ total} - V \text{ ramps within } 1200 \text{ m}) \times \%(\text{TRAFFIC BULLETIN NO. 4, FIG. 2})$$

$$VT = (3410 - 140 - 1040) \times 30\% = 2230 \times 30\% = 669 \text{ VPH}$$

% ONRAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 10%, BUT SINCE THE % IN THE RIGHT LANE IS LESS THAN THAT OF THE THROUGH TRAFFIC, THIS TRAFFIC SHOULD BE ASSUMED TO BE THROUGH TRAFFIC.

RECALCULATE THRU TRAFFIC:

$$VT = 2230 + 140 = 2370 \text{ VPH}$$

% IN RIGHT LANE (FIG. 2): 30%

$$\text{THRU TRAFFIC IN RIGHT LANE} = 30\% \times 2370 = 711 \text{ VPH}$$

$$\text{OFFRAMP TRAFFIC IN RIGHT LANE (FIG. 5)} = 1040 \times 100\% = 1040 \text{ VPH}$$

$$V2 \text{ @ "G"} = 711 + 1040 = 1751 \text{ VPH}$$

$$\text{TRAFFIC VOLUME IN LANE 1} = 3410 - 1751 = 1659 \text{ VPH}$$

**CONCLUSIONS**

RAMP MERGE VOLUME IN LANE 1 =  
= 1659 VPH < 2200 VPH => O.K.

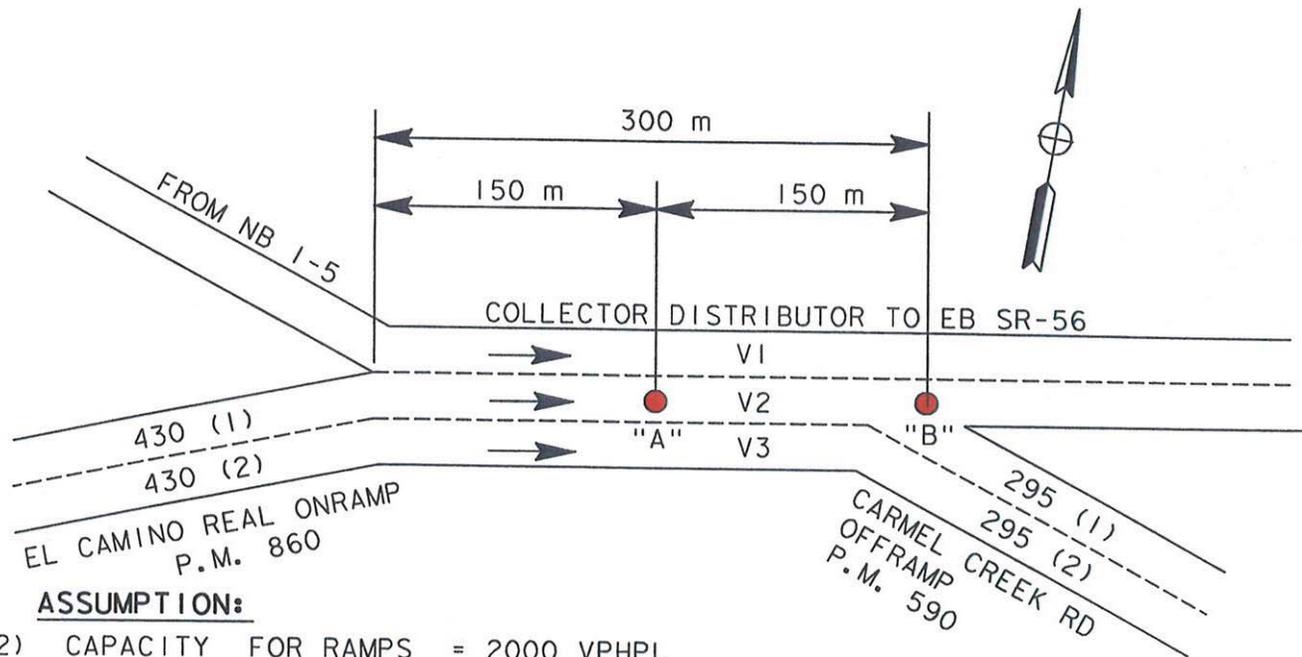
RAMP MERGE VOLUME IN LANE 2 =  
= 1751 VPH < 2200 VPH => O.K.

11-SD-5,56 P.M. R52.9/R53.7

**NB MERGE/DIVERGE ANALYSIS  
ON I-5 FROM  
SR-56 TO DEL MAR HEIGHTS RD.  
YEAR 2020 PM PEAK HOUR**

ALTERNATIVE I

SHEET 4 OF 4                      EXHIBIT 23



**ASSUMPTION:**

- 2) CAPACITY FOR RAMPS = 2000 VPHPL
- 3) 100% TRAFFIC VOLUME ON NB 1-5 WILL GET OFF CARMEL CREEK IN WORST CASE

**MERGE ANALYSIS AT POINT "A"- WORST CASE**

FROM TRAFFIC BULLETIN NO. 4:

V2 @ A:

ON-RAMP (1) TRAFFIC IN RIGHT LANE (FIG. 5) =  $20\% \times 430 = 86$  VPH  
 ON-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $80\% \times 430 = 344$  VPH  
 OFF-RAMP (1) TRAFFIC IN RIGHT LANE (FIG. 5) =  $76\% \times 295 = 224$  VPH  
 OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $24\% \times 295 = 71$  VPH  
 THUS, V2 @ A =  $86 + 344 + 224 + 71 = 725$  VPH

V3 @ A:

ON-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $20\% \times 430 = 86$  VPH  
 OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $76\% \times 295 = 224$  VPH  
 THUS, V3 @ A =  $86 + 224 = 310$  VPH

**CONCLUSIONS:**

WEAVE VOLUME IN LANE 2 @ A =  $725 < 2000 \Rightarrow$  OK  
 WEAVE VOLUME IN LANE 3 @ A =  $310 < 2000 \Rightarrow$  OK

**MERGE ANALYSIS AT POINT "B"**

V2 @ B:

ON-RAMP (1) TRAFFIC IN RIGHT LANE (FIG. 5) =  $20\% \times 430 = 86$  VPH  
 ON-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $68\% \times 430 = 292$  VPH  
 OFF-RAMP (1) TRAFFIC IN RIGHT LANE (FIG. 5) =  $100\% \times 295 = 295$  VPH  
 THUS, V2 @ B =  $86 + 292 + 295 = 673$  VPH

V3 @ B:

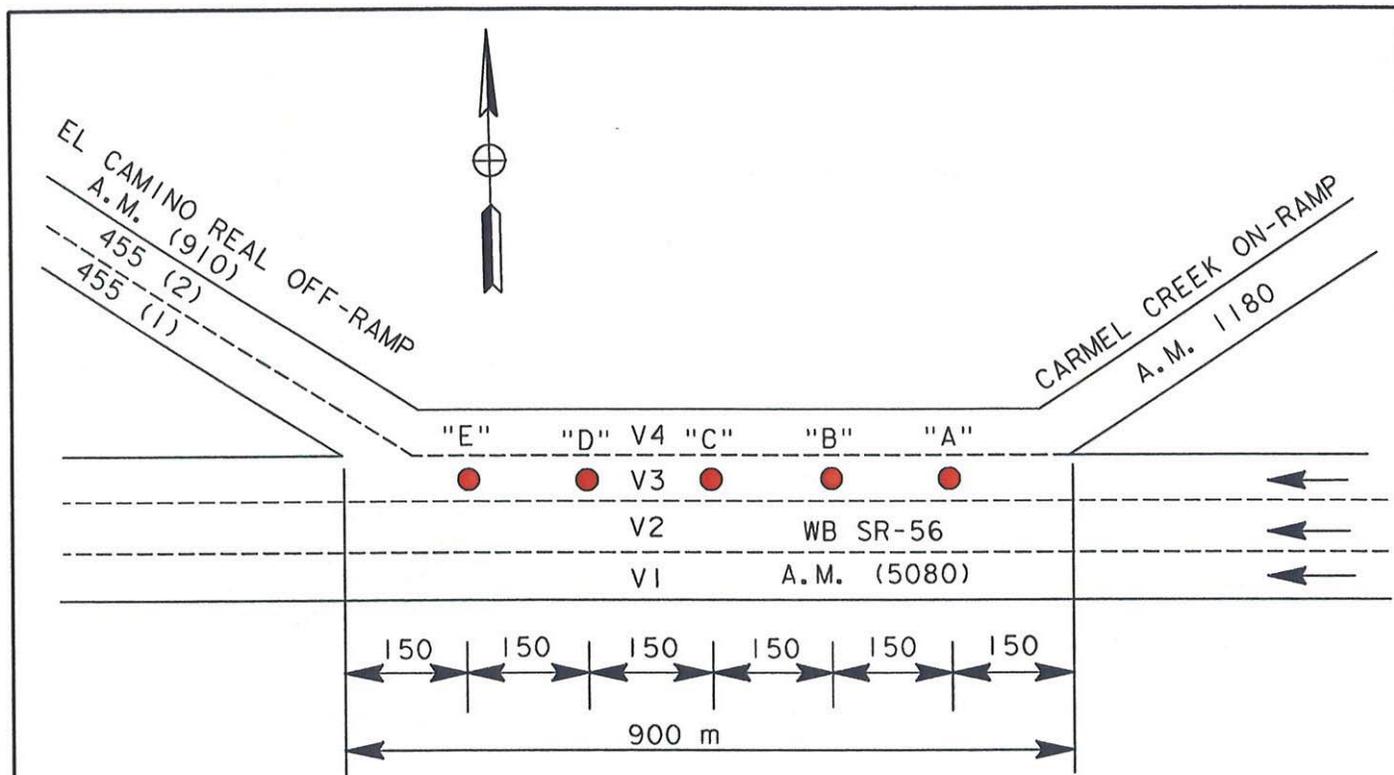
OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $100\% \times 295 = 295$  VPH  
 THUS, V3 @ B =  $295$  VPH

**CONCLUSIONS:**

WEAVE VOLUME IN LANE 2 @ B =  $673 < 2000 \Rightarrow$  OK  
 WEAVE VOLUME IN LANE 3 @ B =  $295 < 2000 \Rightarrow$  OK

11-SD-5,56 P.M. R52.9/R53.7,0.0/0.8

EB MERGE/DIVERGE ANALYSIS  
 ON SR-56 COLLECTOR DISTRIBUTOR  
 FROM SB 1-5 AND NB 1-5  
 TO CARMEL CREEK RD.  
 YEAR 2020 PM PEAK HOUR  
 ALTERNATIVE 2



**ASSUMPTION:**

- 1) CAPACITY FOR FREEWAY = 2200 VPHPL
- 2) CAPACITY FOR RAMPS = 2000 VPHPL

**MERGE ANALYSIS AT POINT "B"- WORST CASE (WEAVING)**

**V3 @ B:**

FROM TRAFFIC BULLETIN NO. 4:

THRU TRAFFIC IN RIGHT LANE (FIG. 2) =  $6\% \times 2990 = 179$  VPH  
 ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) =  $58\% \times 1180 = 684$  VPH  
 OFF-RAMP (1) TRAFFIC IN RIGHT LANE (FIG. 5) =  $63\% \times 455 = 287$  VPH  
 OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $20\% \times 455 = 91$  VPH  
 THUS,  $V3 @ B = 179 + 684 + 287 + 91 = 1241$  VPH

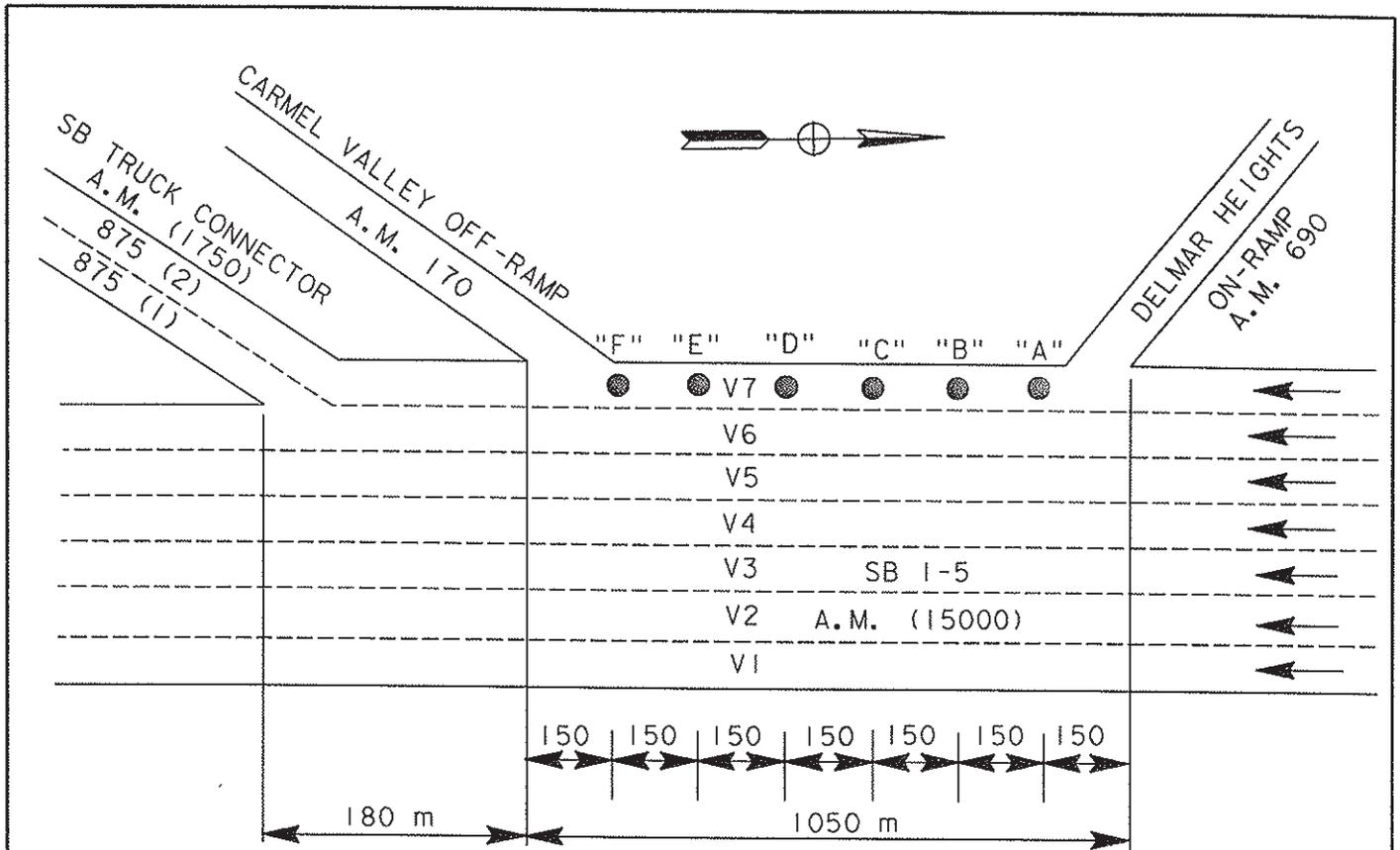
**V4 @ B:**

ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) =  $32\% \times 1180 = 378$  VPH  
 OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) =  $43\% \times 455 = 196$  VPH  
 THUS,  $V4 @ B = 378 + 196 = 574$  VPH

**CONCLUSIONS:**

WEAVE VOLUME IN LANE 3 =  $1241 < 2000 \Rightarrow$  OK  
 WEAVE VOLUME IN LANE 4 =  $574 < 2000 \Rightarrow$  OK  
 WEAVE VOLUME IN LANE 1,2 =  $(5080 - (1241 + 574)) / 2$   
 $= 3266 / 2 = 1633$  VPH  $< 2200$  VPH  $\Rightarrow$  OK

11-SD-SR56 K.P. R52.9/R53.7 0.0/0.8  
 WB MERGE/DIVERGE ANALYSIS  
 ON SR-56 FROM  
 CARMEL CREEK ONRAMP  
 TO EL CAMINO REAL OFF-RAMP  
 YEAR 2020 AM PEAK HOUR  
 ALTERNATIVE 2  
 SHEET 2 OF 5 EXHIBIT 24



**ASSUMPTION:**

- 1) CAPACITY FOR FREEWAY = 2200 VPHPL
- 2) CAPACITY FOR RAMPS = 2000 VPHPL

THRU TRAFFIC = 15000 - (1750+170+690) = 12390 VPH  
 AVERAGE THRU TRAFFIC/LANE = 12390 / 6 = 2065 VPH => OK  
 4 LANE THRU TRAFFIC EQUIVALENT = 12390 - 4400 = 7990 VPH

**MERGE ANALYSIS AT POINT "F"- WORST CASE (WEAVING)**

FROM TRAFFIC BULLETIN NO. 4:

V6 @ F:

THRU TRAFFIC IN RIGHT LANE (FIG. 2) = 10% x 7990 = 799 VPH  
 CONNECTOR (1) TRAFFIC IN RIGHT LANE (FIG. 5) = 95% x 875 = 831 VPH  
 CONNECTOR (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 19% x 875 = 166 VPH  
 ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = (3% x 690+60%x214) = 149 VPH  
 THUS, V6 @ F = 799 + 831 + 166 + 149 = 1945 VPH

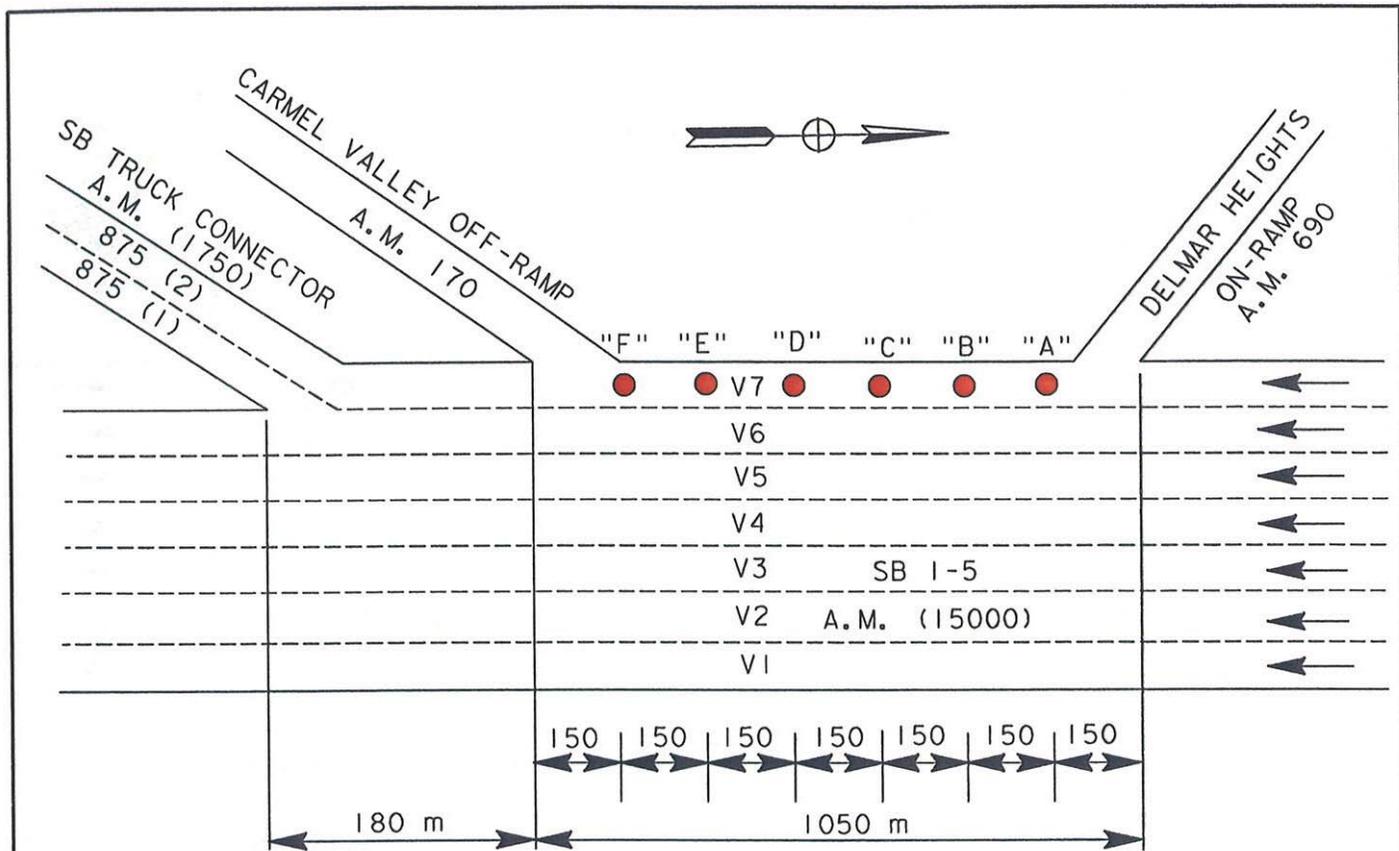
V7 @ F:

CONNECTOR (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 76% x 875 = 665 VPH  
 ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 11% x 690 = 76 VPH  
 OFF-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 100% x 170 = 170 VPH  
 THUS, V7 @ F = 665 + 76 + 170 = 911 VPH

**CONCLUSIONS:**

WEAVE VOLUME IN LANE 3,4,5 = (7990 - (1945 + 911)) / 3 = 5134 / 3 = 1711 VPH  
 => 1711 VPH < 2200 VPH => OK  
 WEAVE VOLUME IN LANE 6 = 1945 < 2000 => OK  
 WEAVE VOLUME IN LANE 7 = 911 < 2000 => OK

11-SD-5,56 P.M. R52.9/R53.7,0.0/0.8  
 SB MERGE/DIVERGE ANALYSIS  
 ON I-5 FROM  
 DELMAR HEIGHTS ONRAMP  
 TO SB TRUCK CONNECTOR  
 YEAR 2020 AM PEAK HOUR  
 ALTERNATIVE 2  
 SHEET 3 OF 5 EXHIBIT 24



**ASSUMPTION:**

- 1) CAPACITY FOR FREEWAY = 2200 VPHPL
- 2) CAPACITY FOR RAMPS = 2000 VPHPL

THRU TRAFFIC = 15000 - (1750+170+690) = 12390 VPH  
 AVERAGE THRU TRAFFIC/LANE = 12390 / 6 = 2065 VPH => OK  
 4 LANE THRU TRAFFIC EQUIVALENT = 12390 - 4400 = 7990 VPH

**MERGE ANALYSIS AT POINT "A"- WORST CASE (THRU LANE)**

FROM TRAFFIC BULLETIN NO. 4:

V6 @ A:

THRU TRAFFIC IN RIGHT LANE (FIG. 2) = 10% x 7990 = 799 VPH  
 CONNECTOR (1) TRAFFIC IN RIGHT LANE (FIG. 5) = 16% x 875 = 140 VPH  
 CONNECTOR (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 8% x 875 = 70 VPH  
 THUS, V6 @ A = 799 + 140 + 70 = 1009 VPH

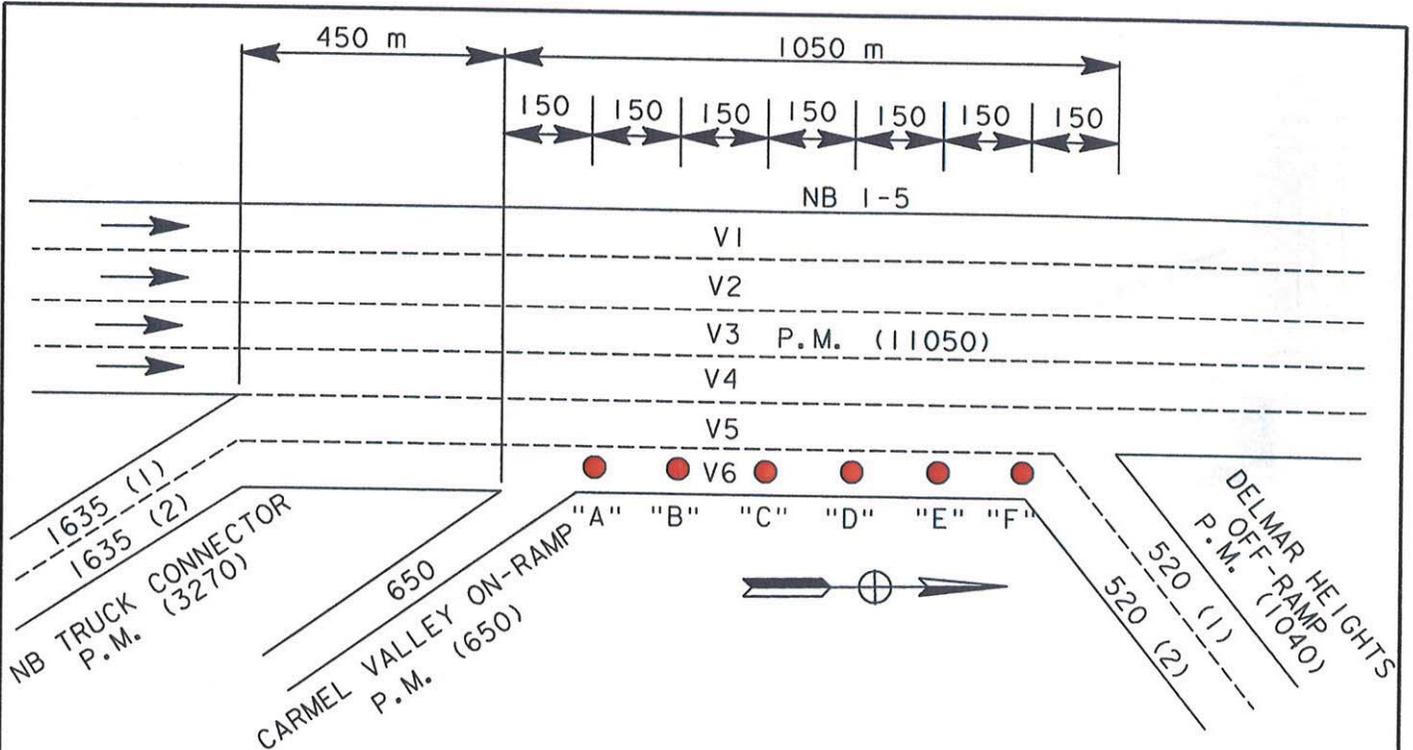
V7 @ A:

CONNECTOR (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 8% x 875 = 70 VPH  
 ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 100% x 690 = 690 VPH  
 OFF-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 29% x 170 = 49 VPH  
 THUS, V7 @ A = 70 + 690 + 49 = 809 VPH

**CONCLUSIONS:**

WEAVE VOLUME IN LANE 3, 4, 5 = (7990 - (1009 + 809)) / 3 = 6172 / 3 = 2057 VPH  
 => 2057 VPH < 2200 VPH => OK  
 WEAVE VOLUME IN LANE 4 = 1009 < 2000 => OK  
 WEAVE VOLUME IN LANE 5 = 809 < 2000 => OK

11-SD-5,56 P.M. R52.9/R53.7,0.0/0.8  
 SB MERGE/DIVERGE ANALYSIS  
 ON I-5 FROM  
 DELMAR HEIGHTS ONRAMP  
 TO SB TRUCK CONNECTOR  
 YEAR 2020 AM PEAK HOUR  
 ALTERNATIVE 2  
 SHEET 4 OF 5 EXHIBIT 24



**ASSUMPTION:**

- 1) CAPACITY FOR FREEWAY = 2200 VPHPL
- 2) CAPACITY FOR RAMPS = 2000 VPHPL
- 3) IT IS ASSUMED THAT SINCE LANE 1 OF THE TRUCK CONNECTOR IS A THRU LANE, IS ON UPHILL GRADE AND HAS A LARGE PERCENTAGE OF TRUCKS, THAT 60% OF THE TRAFFIC WILL REMAIN IN THAT LANE THROUGH THE WEAVING AREA.

THRU TRAFFIC = 11050 - (3270+650+1040) = 6090 VPH

**MERGE ANALYSIS AT POINT "C"- WORST CASE (WEAVING)**

**V5 @ C:**

CONNECTOR (1) TRAFFIC:  $V$  (Thru traffic) = 60% x 1635 = 981 VPH  
 CONNECTOR (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 24% x 1635 = 392 VPH  
 ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 48% x 650 = 312 VPH  
 OFF-RAMP (1) TRAFFIC IN RIGHT LANE (FIG. 5) = 63% x 520 = 328 VPH  
 OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 20% x 520 = 104 VPH  
 THUS, V5 @ C = 981 + 392 + 312 + 328 + 104 = 2117 VPH

**V6 @ C:**

CONNECTOR (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 8% x 1635 = 131 VPH  
 ON-RAMP TRAFFIC IN RIGHT LANE (FIG. 5) = 25% x 650 = 163 VPH  
 OFF-RAMP (2) TRAFFIC IN RIGHT LANE (FIG. 5) = 43% x 520 = 224 VPH  
 THUS, V6 @ C = 131 + 163 + 224 = 518 VPH

**CONCLUSIONS:**

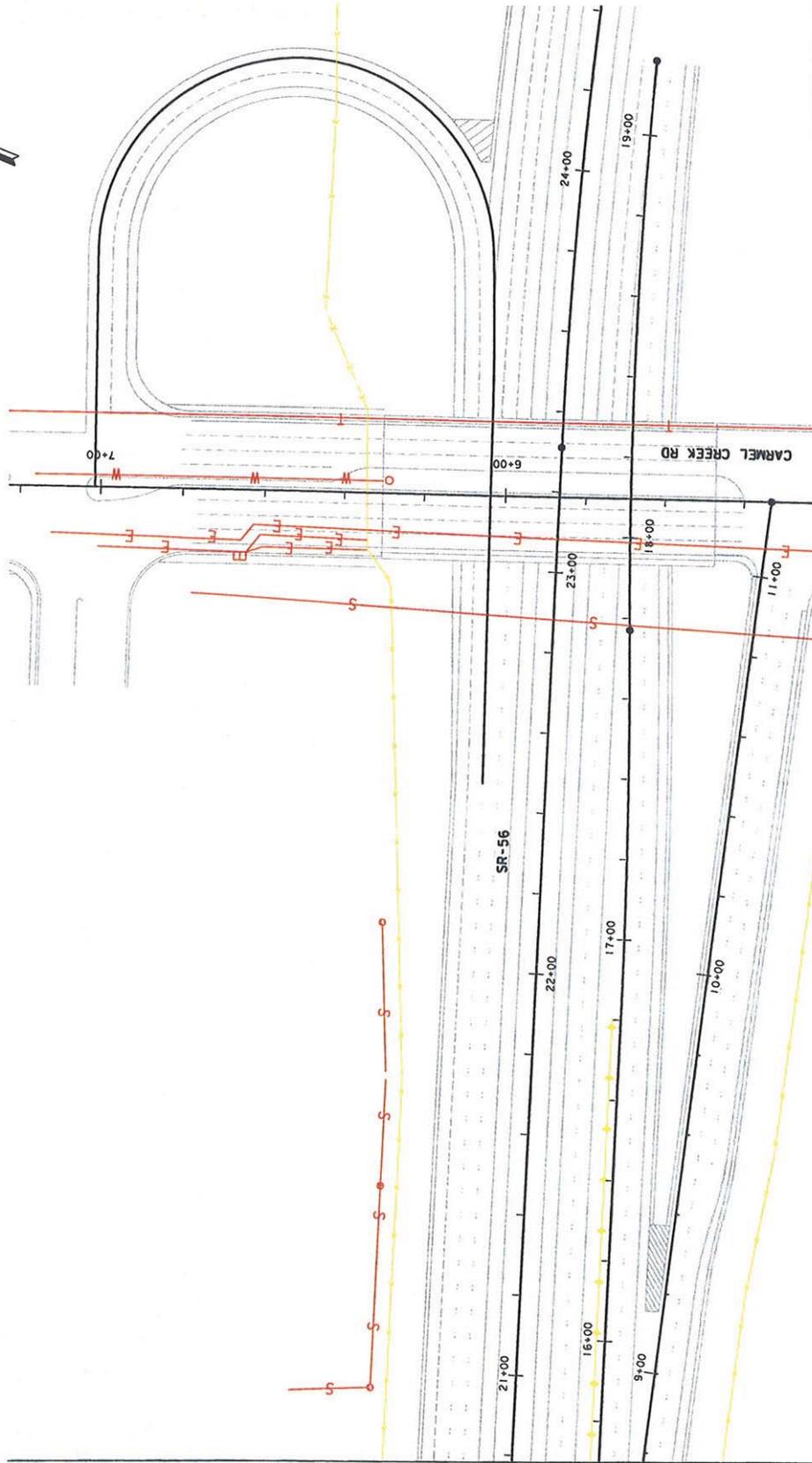
WEAVE VOLUME IN LANE 5 = 2117 > 2000 => NO GOOD  
 WEAVE VOLUME IN LANE 6 = 518 < 2000 => OK  
 WEAVE VOLUME IN LANE 1, 2, 3, 4 = (11050 - (2117 + 518)) / 4 = 8415 / 4 = 2104 VPH  
 = 2104 VPH < 2200 VPH => OK

11-SD-5, 805 K.P. R52.9/R53.7, 0.0/0.8  
**NB MERGE/DIVERGE ANALYSIS**  
**ON I-5 FROM**  
**NB TRUCK CONNECTOR TO**  
**DELMAR HEIGHTS OFFRAMP**  
**YEAR 2020 AM/PM PEAK HOUR**  
**ALTERNATIVE 2**  
 SHEET 5 OF 5 EXHIBIT 24

DIST	COUNTY	ROUTE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
11	SD	5, 56	R52, 37/153, 7, 1	1	13
			0, 070, 8		



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



MATCH LINE SEE SHEET 2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER		DATE	REVISOR
M. C. METRIC PROJECT DEVELOPMENT		DESIGNED BY	CHECKED BY	DATE	REVISION

# EXHIBIT 25 EXISTING UTILITIES

SCALE: 1" = 1000'

CU 11275 EA 030171

USERNAME -> \*\*\*\*\*  
DON FILE -> \*\*\*\*\*

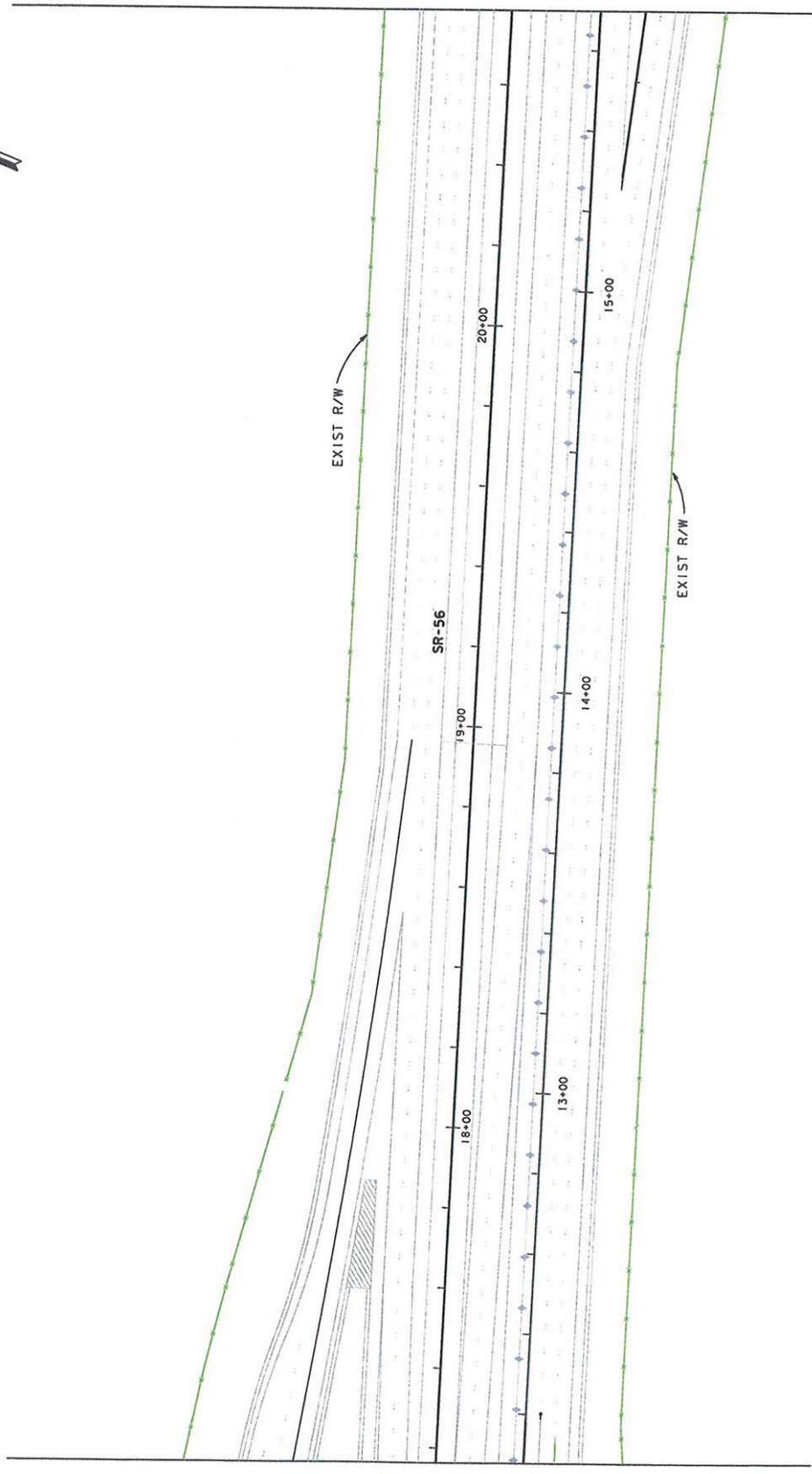
FOR REVISION PLANS ORIGINAL  
SCALE IS IN MILLIMETERS

0 20 40 60 80

DIST	COUNTY	ROUTE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
11	SD	5, 56	R52-37/RS-3, 7, 8	2	13



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



MATCH LINE SEE SHEET 1

MATCH LINE SEE SHEET 3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
Gibbs PROJECT DEVELOPMENT		DESIGNED BY	
CHECKED BY		DATE	
REVISOR		DATE	
DATE		DATE	

**EXHIBIT 25  
EXISTING UTILITIES**

SCALE: 1:1000

CU 11275

EA 030171

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS

USER: USER

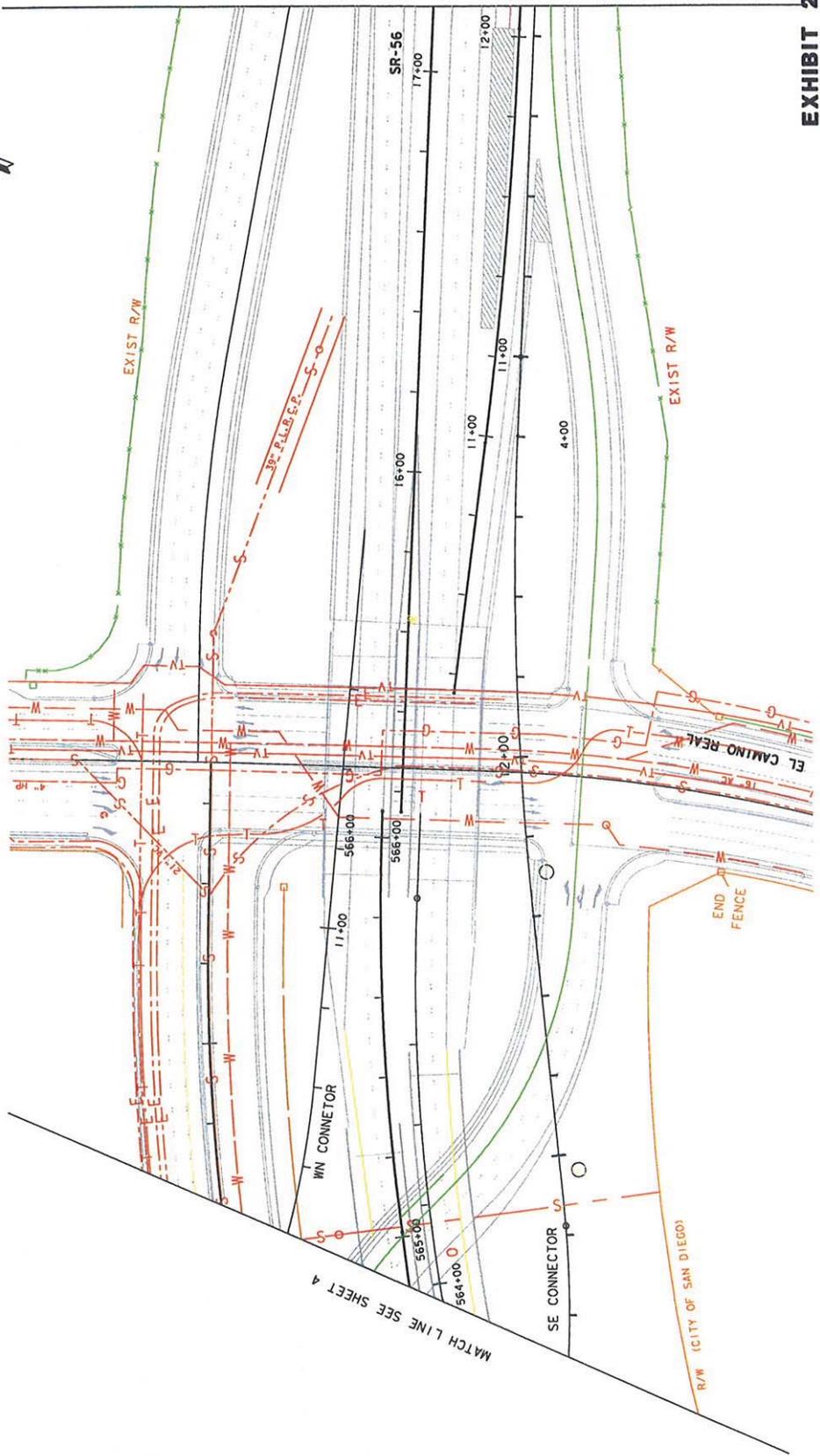
DATE: 00-00-00

TIME PLOTTED: 00:00:00

DIST	COUNTY	ROUTE	TOTAL SHEETS	POST SHEETS	TOTAL SHEETS
11	SD	5,56	102	85	13



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



MATCH LINE SEE SHEET 2

MATCH LINE SEE SHEET 4

# EXHIBIT 25 EXISTING UTILITIES

SCALE: 1:1000

CU 11275

USERNAME: \* \* \* \* \*  
DON FILE: \* \* \* \* \*



FOR REDUCED PLANS, ORIGINAL SCALE 1:500, MULTIPLE USE

EA 030171

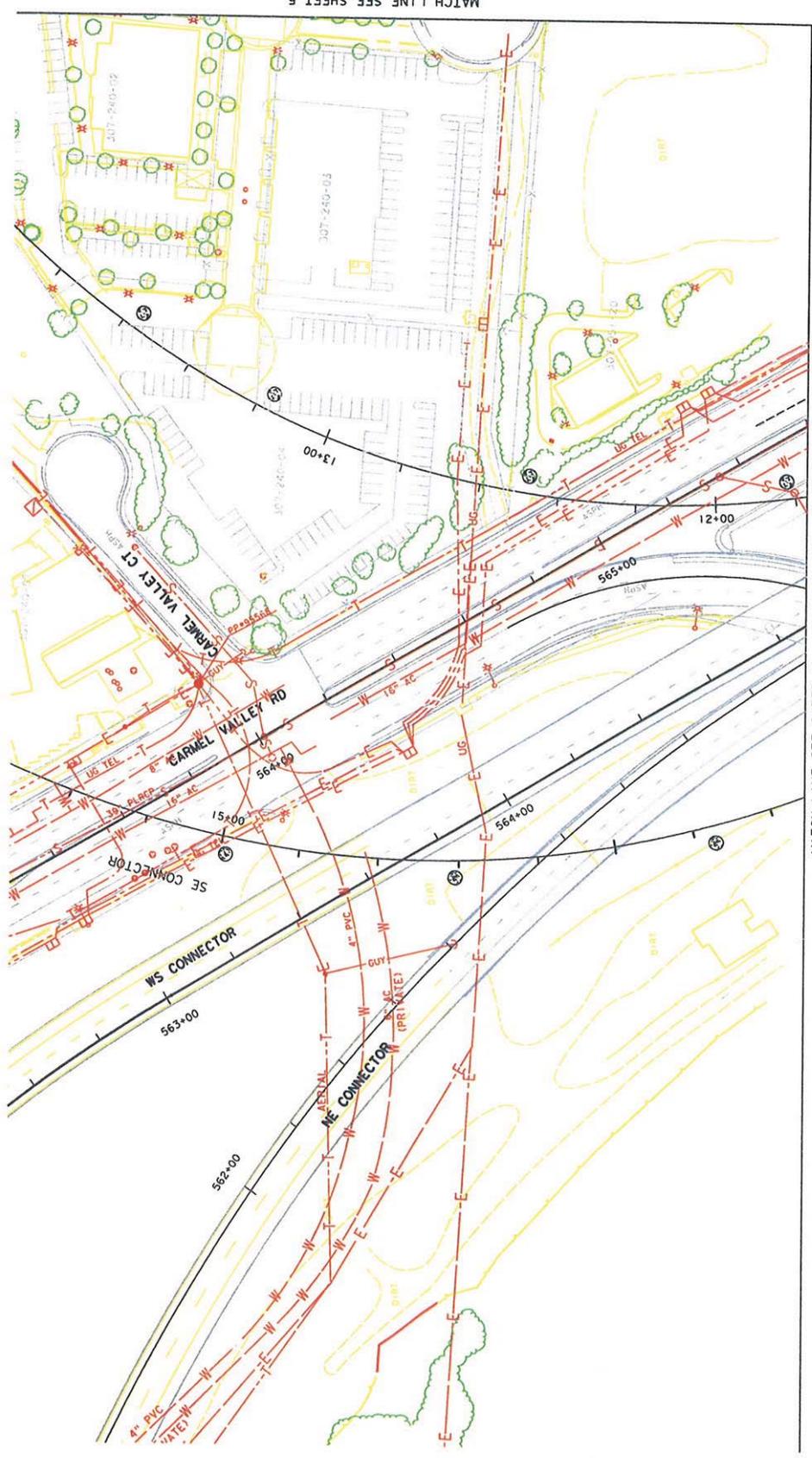
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER		DATE	
CALCULATED/DESIGNED BY		CHECKED BY		DATE	
REVISOR		REVISION		DATE	

McGraw Hill Construction

DIST	COUNTY	ROUTE	5.56	STATION	0+00 TO 13+00
11	SD				



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



MATCH LINE SEE SHEET 5

MATCH LINE SEE SHEET 3

**EXHIBIT 25**  
**EXISTING UTILITIES**  
SCALE: 1:1000

EA 030171  
CU 11275

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS  
0 20 40 60 80  
USERNAME -> \*\*\*\*\*  
DGN FILE -> \*\*\*\*\*

00-00-00 TIME PLOTTED -> \*\*\*\*\*

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
Gibson PROJECT DEVELOPMENT		DESIGNED BY	DATE
		CHECKED BY	DATE
		DATE REVISID	DATE



DATE	REVISOR	DESCRIPTION

NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

PROJECT ENGINEER	
DESIGNED BY	
CHECKED BY	
DATE	
REVISOR	
DATE	
REVISOR	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	
PROJECT DEVELOPMENT	

FOR REDUCED PLANS ORIGINAL SCALE 15 IN MILLIMETERS

SCALE 1:1000

EA 030171

CU 11275

USERNAME -> \*\*\*\*\*

DN FILE -> \*\*\*\*\*

TIME PLOTTED -> \*\*\*\*\*

00-00-00

EA 030171

SCALE 1:1000

EXISTING UTILITIES

EXHIBIT 25

MATCH LINE SEE SHEET 7

MATCH LINE SEE SHEET 5

ROUTE 5

SD L LINE

PARKING GARAGE

PARKING GARAGE

PARKING GARAGE

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18+00

17+00

16+00

15+00

14+00

13+00

12+00

11+00

10+00

9+00

8+00

7+00

6+00

5+00

4+00

3+00

2+00

1+00

0+00

San Diego

301-260-17

301-260-18

301-260-19

301-260-20

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301-260-219

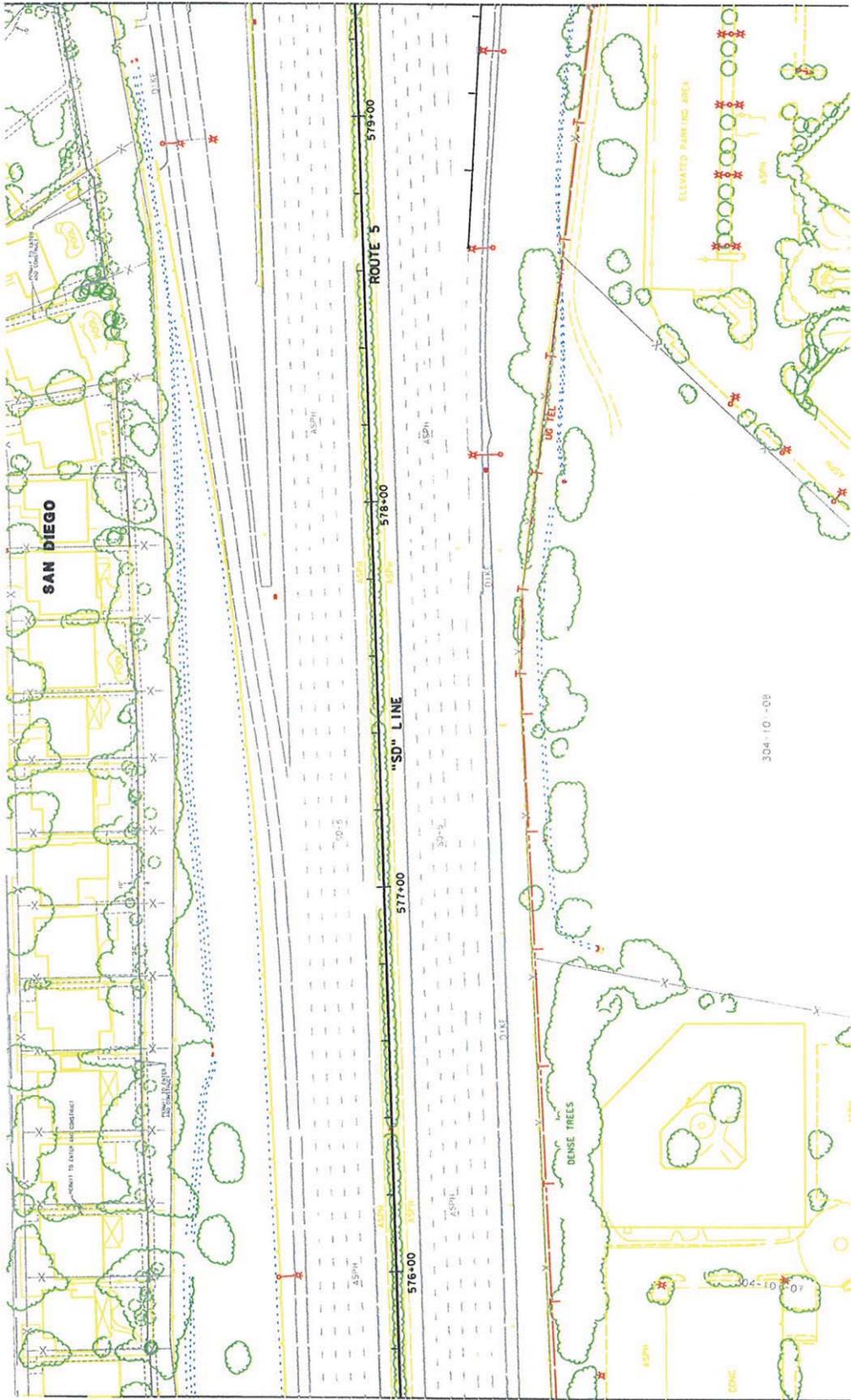




DIST	COUNTY	ROUTE	LOCAL PROJECT NO.	SHEET NO.	TOTAL SHEETS
11	SD	5, 56	RS2-97RS3.7	9	13



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



MATCH LINE SEE SHEET 10

MATCH LINE SEE SHEET 8

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
Gibson PROJECT DEVELOPMENT		DESIGNED BY	
DATE	REVISD BY	DATE	REVISD BY

**EXHIBIT 25**  
**EXISTING UTILITIES**  
SCALE: 1:1000

EA 030171

USE NAME -> \*\*\*\*\*  
DCN FILE -> \*\*\*\*\*

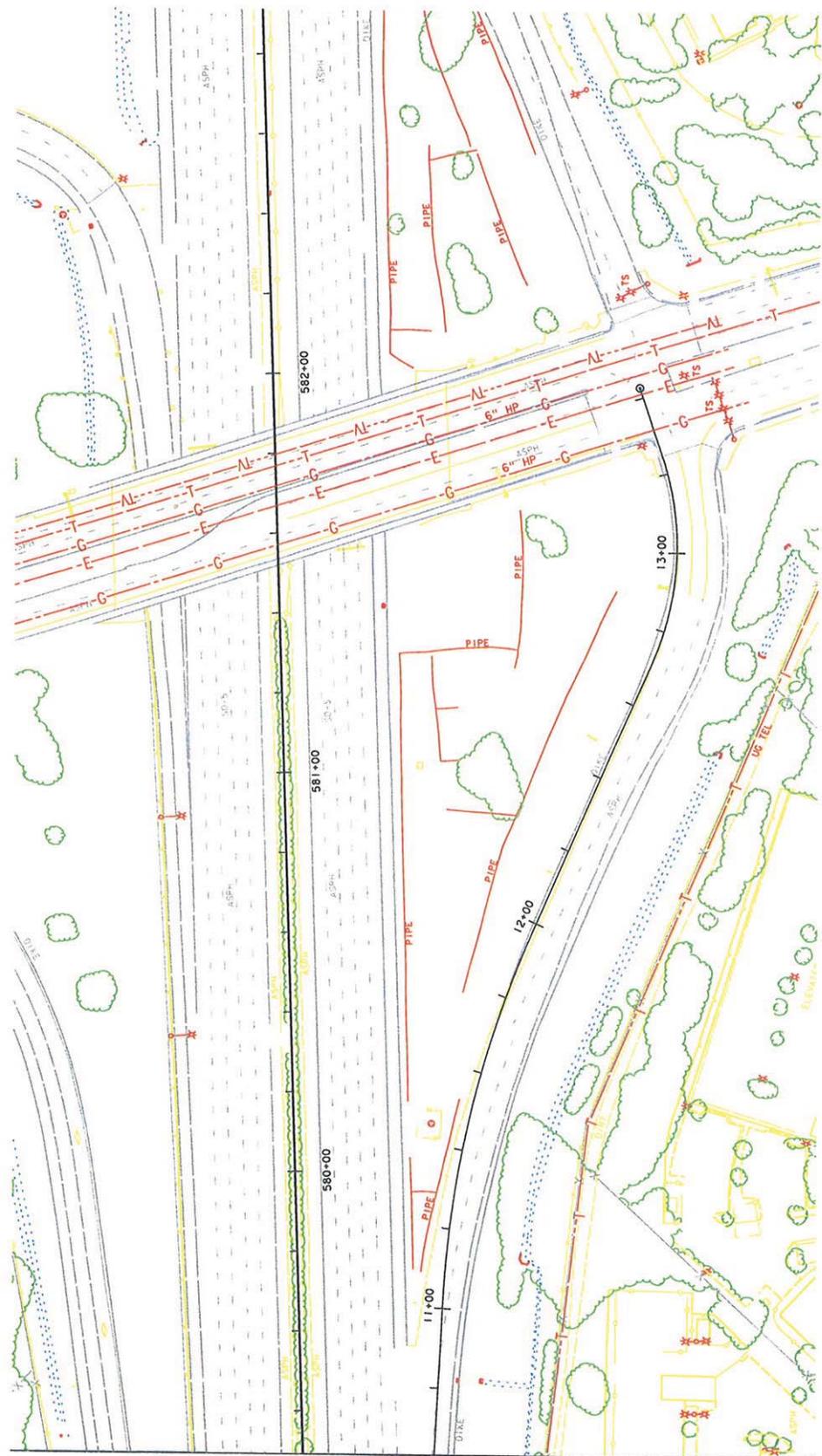
SCALE: 1:1000  
0 20 40 60 80

DATE PLOTTED -> \*\*\*\*\*

DIST	COUNTY	ROUTE	ALONG-LEAD DIST.	SHEET NO.	TOTAL SHEETS
11	SD	5, 56	0-07.0.8	10	13



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



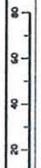
MATCH LINE SEE SHEET 9

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER	DATE	REVISOR	DATE
San Joaquin PROJECT DEVELOPMENT				
CHECKED BY	DESIGNED BY	DATE	REVISOR	DATE

**EXHIBIT 25**  
**EXISTING UTILITIES**  
SCALE: 1:1000

EA 030171  
CU 11275

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS  
SCALE IS IN MILLIMETERS



USERNAME -> \*\*\*\*\*  
DGN FILE -> \*\*\*\*\*

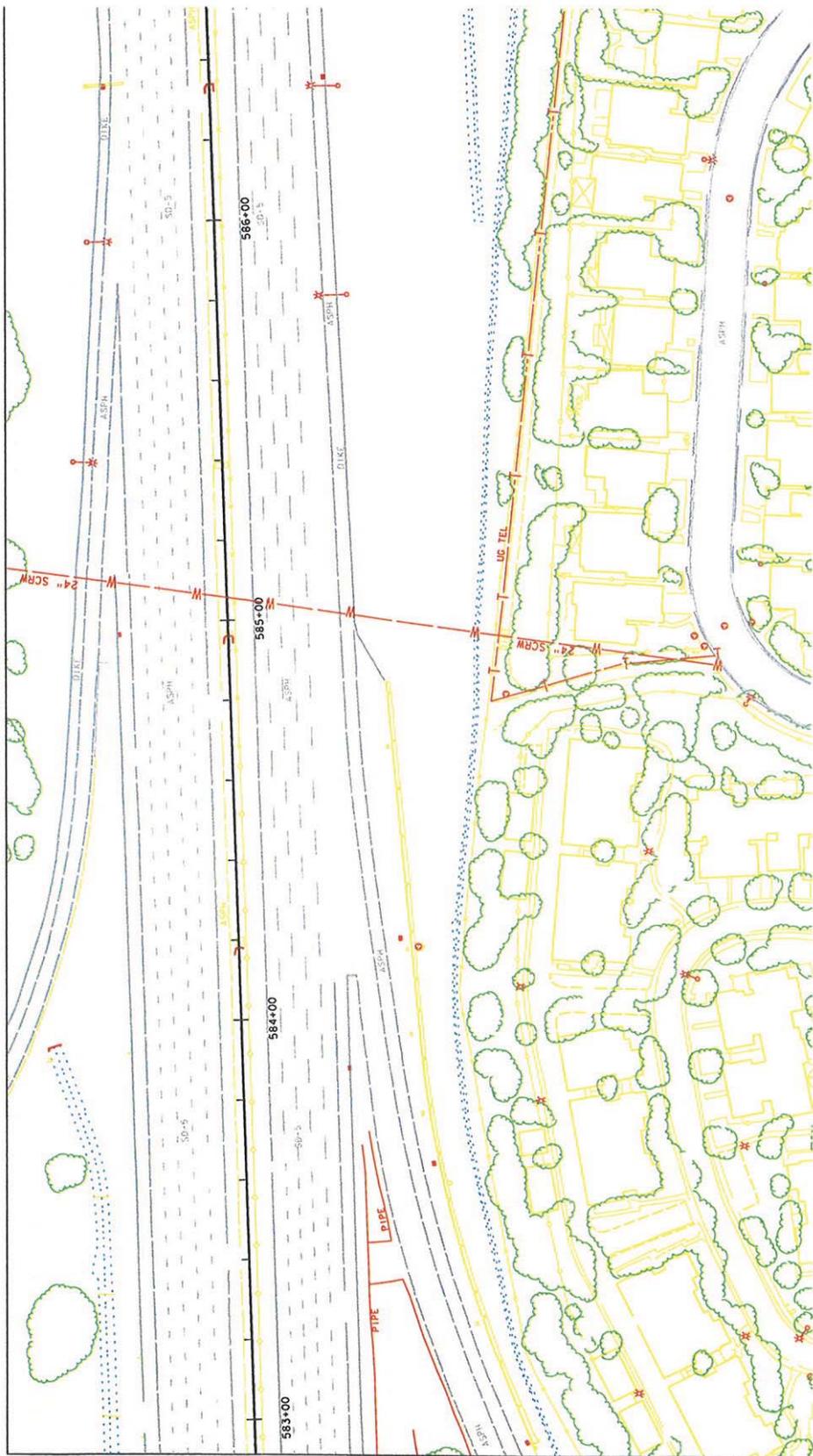
00-00-00 TIME PLOTTED -> \*\*\*\*\*

DIST	COUNTY	ROUTE	KILOMETER POST MILE	TOTAL SHEETS	TOTAL SHEETS
11	SD	5, 56	10, 670, 853.71	11	13



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.

MATCH LINE SEE SHEET 13



MATCH LINE SEE SHEET 10

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
CALCULATED/DESIGNED BY		CHECKED BY	
DATE	REVISED BY	DATE	REVISED BY

**EXHIBIT 25  
EXISTING UTILITIES**

SCALE: 1:1000

CU 11275 EA 030171

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS

0 20 40 60 80

USERNAME -> #####USER#####  
DCN FILE -> #####DCN#####

00-00-00 TIME PLOTTED -> #####SYTIME#####

DIST	COUNTY	ROUTE	TOTAL SHEETS	POST SHEET	TOTAL SHEETS
11	SD	5, 56	10	853, 7, 12	13



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



MATCH LINE SEE SHEET 13

MATCH LINE SEE SHEET 10

**EXHIBIT 25**  
**EXISTING UTILITIES**  
SCALE: 1:1000

EA 030171  
CU 11275

USERNAME: "3"#####  
DGN FILE: "#####"

FOR REDUCED PLANE ORIGINAL  
SCALE IS IN MILLIMETERS

00-00-00 TIME PLOTTED -> #####

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
Gibson PROJECT DEVELOPMENT		DESIGNED BY	CHECKED BY
DATE	REVISOR	DATE	DATE

DIST	COUNTY	ROUTE	KILOMETERS PER POST MILE	TOTAL PROJECT SHEETS	TOTAL SHEETS
11	SD	5.56	0.67/1.0	13	13



NOTES:  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.



MATCH LINE SEE SHEET 12

MATCH LINE SEE SHEET 11

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER	
CALCULATED/DESIGNED BY		CHECKED BY	
DATE		DATE REVISED	

FOR REQUIRED PLANT ORIGINAL SCALE IS IN MILLIMETERS

FOR REQUIRED PLANT ORIGINAL SCALE IS IN MILLIMETERS

USERNAME -> \*\*\*\*\* DON FILE -> \*\*\*\*\*

CU 11275

EA 030171

### EXHIBIT 25 EXISTING UTILITIES

SCALE: 1:1000

TIME PLOTTED -> \*\*\*\*\*

State of California

Business and Transportation Agency

**MEMORANDUM**

To: JOE HULL  
 Project Manager  
 Program Management Room 152 MS 27  
 Attn: Mike Powers

Date: 4-28-99  
 File: 11-SD-5/56  
 K.P.: R52.9/R53.7  
 E.A.: 17790K

From: DEPARTMENT OF TRANSPORTATION - District 11

Subject: Right of Way Data - Route 5 and 56- Direct Connector Ramps.

1. R/W Cost Estimate:

A) Acquisition, including Excess Land Purchase, Damages to Remainders & Goodwill Loss		\$ 4,503,000
B) Acquisition of Offsite Mitigation		\$ -0-
C) Utility Relocation (State share)		\$ 9,900,000*
D) Clearance Cost		\$ 20,000
E) RAP and/or Last Resort Housing Costs		\$ -0-
F) Title and Escrow Costs		\$ 8,300
	R/W Estimate	\$14,431,300
G) Condemnation Settlements	30 %	\$ 1,351,000
H) Design Appreciation Factor	30 %	\$ 1,351,000
(Items G & H applied to items A + B)		
	Total R/W Estimate	<u>\$17,133,300</u>

(Excluding Item #8 - Hazardous Waste)

I) Total R/W Estimate: Escalated		<u>\$24,660,692</u>
J) Construction Contract Work	\$ -0-	

2. Parcel Data:

	Type	Du.App.	G/W App.	Utilities	RR Involvements	
X	--			U4-1 ---	None	XX
A	--			-2 ---	C&M Agree	--
B	5	--	--	-3 ---	Service Cont	--
C	11	--		-4 4	Lic/Re/Clauses	--
D	4	1	2	U5-7 7	Misc R/W Work:	
E	XXXX	XXXX	XXXX	-8 ---	Rap Displ	-0-
F	XXXX			-9 4	Clear/Demo	2
					Const Permits	--
Total	20		No. Excess Parcels	-0-	Escalation Rate	20%

Areas: R/W 20,762 m<sup>2</sup> Excess -----

Ent PMCS 1. EVENT RW SCREEN(All Data) 2/1 5/19/99  
 2. AGRE SCREEN(Railroad Data Only) / / /

REMARKS: \* Pacific Bell relocations will take approximately one year to complete and need to be completed prior to project construction. Involved are the trunk lines to Los Angeles within their own easement with 7,700 LF of conflict.

R/W Support cost estimate: \$71,000 (for " 0" phase only)

File: 11-SD-5/56  
K.P.: R52.9/R53.7  
E.A.: 17790K

3. Are there major items of construction contract work?  
Yes\_\_\_ No X Not determined at this time \_\_\_ (If yes, explain.)
4. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, goodwill, etc.). None required \_\_\_\_ Commercial-Industrial zoned land with few imp. in the take area. Open space on condo land. Air-space impacts on restaurants.
5. Is there an effect on assessed valuation? (If yes, explain.)  
Yes\_\_\_ No X Not Significant \_\_\_
6. Are utility facilities or rights of way affected?  
Yes X No\_\_\_ Not determined at this time\_\_\_ (If yes, explain.)  
City water and sewer, SDG&E underground lines, and phone trunk line to L.A.
7. A. Are railroad facilities or rights of way affected?  
Yes\_\_\_ No X (If yes, explain.)  
B. Name(s) of railroad(s) \_\_\_\_\_  
C. When branch lines or spurs are affected, would acquisition and/or payment of damages to businesses and/or industries served by the railroad facilities be more cost effective than construction of a facility to perpetuate the rail service? (See Procedural Handbook Vol. 4a, Chap. 440 for detail.) Yes\_\_\_, No\_\_\_ (If yes, explain.)
8. Were any previously unidentified sites with hazardous wastes and/or material found? Yes\_\_\_ None Evident X  
(If yes, attach memorandum per RWP Vol. 1, Sec. 101.026)
9. Are RAP displacements required?  
Yes\_\_\_ No X (If yes, provide the following information.)  
  
No. of single family \_\_\_ No. of business/nonprofit \_\_\_  
No. of multi-family \_\_\_ No. of farm \_\_\_  
  
Based on \_\_\_\_\_ Relocation Impact Statement/Study dated \_\_\_\_\_, it is anticipated that sufficient housing (will/will not) be available without Last Resort Housing.
10. Are there material borrow and/or disposal sites required?  
Yes\_\_\_ No X Not determined at this time \_\_\_ (If yes, explain.)
11. Are there potential relinquishments and/or abandonments?  
Yes\_\_\_ No X (If yes, explain.)
12. Are there existing and/or potential Airspace sites?  
Yes\_\_\_ No X (If yes, explain.)

File: 11-SD-5/56  
K.P.: R52.9/R53.7  
E.A.: 17790K

- 13. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if District proposes less than formula lead time and/or if significant pressures for project advancement are anticipated.) PYPSCAN lead time 6 months. Minimum Right of Way lead time requested from receipt of final maps to certification 4 months.  
[ ] See attached.
- 14. Is it anticipated that all Right of Way work will be performed by Caltrans staff? Yes X No      (If no, explain.)

ASSUMPTIONS & LIMITING CONDITIONS

- [ ] The mapping did not provide sufficient detail to determine the limits of the right of way required.
- [ ] The transportation facilities have not been sufficiently designed so our estimator could determine the damages to any of the remainder parcels affected by the project.
- [ ] Additional right of way requirements are anticipated, but are not defined due to preliminary nature of early design requirements.
- [ ] See attached

Evaluations prepared by:

1.	R/W	Signature	<u>Murray Wilson</u>	Date	<u>4, 29, 99</u>
			Murray Wilson		
2.	Railroad	Signature	<u>Sandra L. Durbin</u>	Date	<u>4, 29, 99</u>
			Sandra L. Durbin		
3.	Utilities	Signature	<u>Amy Lamott</u>	Date	<u>4, 30, 99</u>
			Amy Lamott		
4.	Proj. Coord.	Signature	<u>Sue Isaak</u>	Date	<u>5/11/99</u>
			Sue Isaak		

I have personally reviewed the R/W Data Sheet and 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.

DOUGLAS B. ARRICK  
District Division Chief  
Right of Way Division

By: Janet Schaffer  
JANET SCHAFFER, Chief  
Program/Project Coordination Branch  
Right of Way Division

## WORKSHEET KEY

EA: 17790K

Rte5/56 Connector Ramps

Escalation Factor: 1.2

Acq Begin:

Utilitiy Escalt'n Factor: 1.03

Cert Date: 12/00/04

5/14/99

20 parcels

Amount

Prior \$

\$ Left

FY1 \$

\$ Left

Factor

\$ for FY2

FY2 \$

\$ Left

Factor

\$ for FY3

FY3 \$

\$ Left

Factor

\$ for FY4

FY4 \$

Left

Factor

\$ for FY5

FY5 \$

Left

Factor

\$ for FY6

	Title	Acq	Util	RAP	Demo
	\$ 8,300	\$ 5,854,000	\$ 9,900,000	\$ -	\$ 20,000
	0	0	0	0	0
	\$ 8,300	\$ 5,854,000	\$ 9,900,000	\$ -	\$ 20,000
00	\$ -	\$ -	\$ -	\$ -	\$ -
	\$ 8,300	\$ 5,854,000	\$ 9,900,000	\$ -	\$ 20,000
	0	1.2	1.03	0	0
	\$ 8,300	\$ 7,024,800	\$ 10,197,000	\$ -	\$ 20,000
		\$ -	\$ -		
02	\$ 8,300	\$ 7,024,800	\$ 10,197,000	\$ -	\$ 20,000
	0	1.2	1.03	0	0
	\$ 8,300	\$ 8,429,760	\$ 10,502,910	\$ -	\$ 20,000
03	\$ 8,300	\$ 8,429,760	\$ 10,502,910	\$ -	\$ 20,000
	0	1.20	1.03	0	0
	\$ 8,300	\$ 10,115,712	\$ 10,817,997	\$ -	\$ 20,000
04	\$ 8,300	\$ 10,115,712	\$ 10,817,997	\$ -	\$ 20,000
	0	1.2	1.03	0	0
	\$ 8,300	\$ 12,138,854	\$ 11,142,537	\$ -	\$ 20,000
05	\$ 8,300	\$ 12,138,854	\$ 11,142,537	\$ -	\$ 20,000
	0	1	1	0	0
	\$ 8,300	\$ 12,138,854	\$ 11,142,537	\$ -	\$ 20,000

Add design factor \$ in the last FY for acquisition.

PLUS + \$ 1,351,000

\*\*\*\*\* LAST FY \$ = \$ 13,489,854 \*\*\*\*\*

Escalated Acquisition \$

RW	\$ 4,503,000
Mitigation	\$ -
Condemn.	\$ 1,351,000
Total	\$ 5,854,000

Unescalated Acquisition \$

Design factor \$ 1,351,000

T	A	U	R	D
8,300	\$ 13,489,854	11,142,537	-	20,000
=	24,660,692			



File: 11-SD-5/56  
K.P.: R52.9/R53.7  
E.A.: 17790K

- 3. Are there major items of construction contract work?  
Yes \_\_\_ No X Not determined at this time \_\_\_ (If yes, explain.)
- 4. Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, goodwill, etc.). None required \_\_\_\_ Commercial-Industrial zoned land with few imp. in the take area.
- 5. Is there an effect on assessed valuation? (If yes, explain.)  
Yes \_\_\_ No X Not Significant \_\_\_
- 6. Are utility facilities or rights of way affected?  
Yes X No \_\_\_ Not determined at this time \_\_\_ (If yes, explain.)  
City water and sewer, SDG&E underground lines, and phone trunk line to L.A.
- 7. A. Are railroad facilities or rights of way affected?  
Yes \_\_\_ No X (If yes, explain.)  
B. Name(s) of railroad(s) \_\_\_\_\_  
C. When branch lines or spurs are affected, would acquisition and/or payment of damages to businesses and/or industries served by the railroad facilities be more cost effective than construction of a facility to perpetuate the rail service? (See Procedural Handbook Vol. 4a, Chap. 440 for detail.) Yes \_\_\_, No \_\_\_ (If yes, explain.)
- 8. Were any previously unidentified sites with hazardous wastes and/or material found? Yes \_\_\_ None Evident X  
(If yes, attach memorandum per RWPH Vol. 1, Sec. 101.026)
- 9. Are RAP displacements required?  
Yes \_\_\_ No X (If yes, provide the following information.)  
  
No. of single family \_\_\_ No. of business/nonprofit \_\_\_  
No. of multi-family \_\_\_ No. of farm \_\_\_
- Based on \_\_\_\_\_ Relocation Impact Statement/Study dated \_\_\_\_\_, it is anticipated that sufficient housing (will/will not) be available without Last Resort Housing.
- 10. Are there material borrow and/or disposal sites required?  
Yes \_\_\_ No X Not determined at this time \_\_\_ (If yes, explain.)
- 11. Are there potential relinquishments and/or abandonments?  
Yes \_\_\_ No X (If yes, explain.)
- 12. Are there existing and/or potential Airspace sites?  
Yes \_\_\_ No X (If yes, explain.)

File: 11-SD-5/56  
K.P.: R52.9/R53.7  
E.A.: 17790K

- 13. Indicate the anticipated Right of Way schedule and lead time requirements. (Discuss if District proposes less than formula lead time and/or if significant pressures for project advancement are anticipated.) PYPSCAN lead time 22 months. Minimum Right of Way lead time requested from receipt of final maps to certification 18 months.  
[ ] See attached.
- 14. Is it anticipated that all Right of Way work will be performed by Caltrans staff? Yes X No      (If no, explain.)

**ASSUMPTIONS & LIMITING CONDITIONS**

- [ ] The mapping did not provide sufficient detail to determine the limits of the right of way required.
- [ ] The transportation facilities have not been sufficiently designed so our estimator could determine the damages to any of the remainder parcels affected by the project.
- [ ] Additional right of way requirements are anticipated, but are not defined due to preliminary nature of early design requirements.
- [ ] See attached

**Evaluations prepared by:**

1.	R/W	Signature	<u>Murray Wilson</u>	Date	<u>4, 19, 2000</u>
			Murray Wilson		
2.	Railroad	Signature	<u>Sandra L. Durbin</u>	Date	<u>4, 19, 00</u>
			Sandra L. Durbin		
3.	Utilities	Signature	<u>Amy Lamott</u>	Date	<u>4, 19, 00</u>
			Amy Lamott		
4.	Proj. Coord.	Signature	<u>Sue Isaak</u>	Date	<u>4, 19, 00</u>
			Sue Isaak		

I have personally reviewed the R/W Data Sheet and 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.

DOUGLAS B. ARRICK  
District Division Chief  
Right of Way Division

By:

JANET SCHAFFER, Chief  
Program/Project Coordination Branch  
Right of Way Division

**M E M O R A N D U M**

**To** : MAJID KHARRATI  
Design Manager  
Design Branch

**Date** : March 5, 1999

**File** : 11-SD-5, 56  
KP 52.9/53.7  
0.0/0.8  
11-17790K

**From** : **DEPARTMENT OF TRANSPORTATION -- DISTRICT 11**  
**Materials Engineering Branch**

**Subject:** Structural Section Recommendations

In accordance with your request dated January 18, 1999, we have developed structural section recommendations for the subject project.

A meeting held on March 4, 1999 with Michael Powers of your staff clarified questions we had regarding the requested information.

In the design of the structural sections we have used a design R (Resistance) value of 15 for the existing subgrade soils which is based on the previous projects in the vicinity. The R-value may be higher from Carmel Valley Road to the north but since we have recommended concrete pavements for the I-5 widening, the 15 R-value would result in the same structural section for an R-value up to 40.

Based on an R-value of 15 and the Traffic Indices furnished the following are our recommendations:

- Based on a TI of 14.5 for I-5 the design TI for the auxiliary lane widening would be 20% of the 14.5 ESAL or a TI of 12.0 which was used in the design.
- Recommend using PCCP for the I-5 widening as all other lanes are concrete.
- Recommend using PCCP for the structural section approaching the SR-56 connectors from SB I-5 to match existing roadway.
- Recommend Asphalt concrete structural section for the eastern ends of the SR 56 connectors to match existing roadway.

Refer to Table I for structural sections.

Majid Kharrati  
March 5, 1999  
Page 2

If there are any questions, please contact me at 467-4050.

JOHN A. LA BAR  
District Materials Engineer

JLB:js

cc: DRSchmoldt  
MPowers  
JHull  
Project File

**TABLE 1-1**

11-SD-5, 56  
 KP 52.9/53.7  
 0.0/0.8  
 EA 11-17790K  
 March, 1999.

**STRUCTURAL SECTION DESIGN - mm**

LOCATION OR LINE	R-VALUE DESIGN	TRAF. INDEX	PCC	AC SURF.	AC BASE	CLASS 2 AB	CLASS 4 AS*	TOTAL THICK.
<b>INTERSTATE 5</b>								
Lane Addition:	15	12.0	230		120	185		535
Shoulder - Alternate 1	15	7.5		105		375		480
Shoulder - Alternate 2	15	7.5		105		135	270	510
<b>CONNECTORS</b>								
SB I-5 to EB 56	15	11.0	230		120	185		535
Shoulder - Alternate 1	15	7.0		105		330		435
Shoulder - Alternate 2	15	7.0		105		105	240	450
WB 56 to NB I-5	15	11.0	230		120	185		535
Shoulder - Alternate 1	15	7.0		105		330		435
Shoulder - Alternate 2	15	7.0		105		105	240	450

\* Class 4 ASB: R-Value = 60 Min.

**TABLE 1-2**

11-SD-5,56  
 KP 52.9/53.7  
 0.0/0.8  
 EA 11-17790K  
 March, 1999.

**STRUCTURAL SECTION DESIGN - mm**

LOCATION OR LINE	R-VALUE DESIGN	TRAF. INDEX	PCC	AC SURF.	AC BASE	CLASS 2 AB	CLASS 4 AS*	TOTAL THICK.
<b>CONNECTORS (CONT'D)</b>								
SR-56 Conn. To EB 56 - Alt. 1	15	11.0		60	105	570		735
SR-56 Conn. To EB 56 - Alt. 2	15	11.0		60	105	180	420	765
Shoulder - Alternate 1	15	7.0		105		330		435
Shoulder - Alternate 2	15	7.0		105		105	240	450
SR 56 WB to 56 Conn. - Alt. 1	15	11.0		60	105	570		735
SR 56 WB to 56 Conn. - Alt. 2	15	11.0		60	105	180	420	765
Shoulder - Alternate 1	15	7.0		105		330		435
Shoulder - Alternate 2	15	7.0		105		105	240	450

\* Class 4 ASB: R-Value = 60 Min.

**TABLE 1-3**

11-SD-5,56  
 KP 52.9/53.7  
 0.0/0.8  
 EA 11-17790K  
 March, 1999.

**STRUCTURAL SECTION DESIGN - mm**

LOCATION OR LINE	R-VALUE DESIGN	TRAF. INDEX	PCC	AC SURF.	AC BASE	CLASS 2 AB	CLASS 4 AS*	TOTAL THICK.
<b>RAMPS AND SHOULDERS</b>								
NB I-5 to Carmel Val Rd - Alt. 1	15	10.0		60	90	510		660
NB I-5 to Carmel Val Rd - Alt. 2	15	10.0		60	90	165	375	690
Shoulder - Alternate 1	15	6.5		90		315		405
Shoulder - Alternate 2	15	6.5		90		105	225	420
NB I-5 to Del Mar Hts Rd - Alt. 1	15	10.0		60	90	510		660
NB I-5 to Del Mar Hts Rd - Alt. 2	15	10.0		60	90	165	375	690
Shoulder - Alternate 1	15	6.5		90		315		405
Shoulder - Alternate 2	15	6.5		90		105	225	420

\* Class 4 ASB: R-Value = 60 Min.

DISTRICT 11  
PROJECT COST ESTIMATE SUMMARY

Type of Estimate : PSR

11-SD-5/56  
K.P. R53.9/R53.7(I-5  
0.0/0.8(RTE 56)  
EA 17790K

Program Code : HE11

Project Description IN SANDIEGO COUNTY ON INTERSTATE 5 FROM CARMEL VALLEY ROAD TO 0.80 KM  
NORTH OF CARMELL VALLEY ROAD AND ON ROUTE 56 FROM CARMEL VALLEY ROAD  
OVERCROSSING TO 0.30 KM EAST OF EL CAMINO REAL.

Limits : K.P.R52.9/R53.7(I-5), 0.0/0.8(RTE 56)

Proposed Improvement BUILD DIRRECT FREEWAY TO FREEWAY CONNECTORS

Alternative : 1

	Current <sup>1</sup>	Escalated <sup>2</sup>
ROADWAY ITEMS	\$ 47,942,514	\$ 55,578,514
STRUCTURE ITEMS	\$ <u>27,230,069</u>	\$ <u>31,567,114</u>
SUBTOTAL CONSTRUCTION COST	\$ 75,172,583	\$ 87,145,628
RIGHT OF WAY	\$ <u>17,133,100</u>	\$ <u>24,660,692</u>
<b>TOTAL CAPITAL COST</b>	<b>\$ 92,306,000</b>	<b>\$ 111,807,000</b>
PR/ED SUPPORT	\$ 1,750,000	\$ 2,028,800
PS&E SUPPORT	\$ 8,300,000	\$ 9,622,000
RIGHT OF WAY SUPPORT	\$ 1,090,000	\$ 1,263,700
CONSTRUCTION SUPPORT	\$ <u>10,800,000</u>	\$ <u>12,520,200</u>
TOTAL SUPPORT COST	\$ 21,940,000	\$ 25,434,700
<b>TOTAL PROJECT COST</b>	<b>\$ 114,246,000</b>	<b>\$ 137,242,000</b>

\*ESCALATED PROJECT COST FY 00/2005

<sup>1</sup> Year of PSR=	2000
<sup>2</sup> Year of Construction=	<u>2005</u>
	5

Reviewed by District O.E.

Leon G. Edmonds	Date	x6735
	Phone	

Approved by Project Manager

Joseph R. Hull	Date	x3633
	Phone	

\* Escalated Cost is calculated at 3.0% for inflation compounded annually to construction year  
(Only escalate projects that **have not** been programmed)

Revise 9/12/00 MDR

<b>Section</b>	<b>Cost</b>
Earthwork _____	\$ 2,647,350
Structural Section _____	\$ 2,094,660
Drainage _____	\$ 3,788,175
Specialty Items _____	\$ 15,154,560
Environmental _____	\$ 1,126,787
Traffic Items _____	\$ 4,499,699
Detours _____	\$ 0
Minor Items _____	\$ 1,465,562
Overhead _____	\$ 3,294,445
Supplemental Work _____	\$ 1,720,522
Roadway Mobilization _____	\$ 3,419,644
State Furnished _____	\$ 182,000
Contingencies _____	\$ 8,549,110
<b>TOTAL ROADWAY ITEMS*</b> _____	<b>\$ 47,942,514</b>

Estimate Prepared By	_____	x7848
	M. Powers	Date
		Phone
Estimate Reviewed By	_____	x6963
	M. Ravanipour	Date
		Phone

\*Verify that total equals total on Page 8

**Section 1 EARTHWORK**

	Unit	Quantity		Unit Price (\$)	=	Cost
190101 Roadway Excavation	m3	288,650	x	10.00	=	\$2,886,500
198050 Embankment	m3	8,650	x		=	\$0
198001 Imported Borrow	m3	0	x		=	\$0
160101 Clearing & Grubbing	LS	1	x	30,000.00	=	\$30,000
170101 Develop Water Supply	LS	1	x	25,000.00	=	\$25,000
Removal or Relocation of Existing Facilities	LS		x		=	\$0
SUBTOTAL EARTHWORK						\$ 2,941,500
OVERHEAD						\$ 294,150
TOTAL EARTHWORK						\$ 2,647,350

**Section 2 STRUCTURAL SECTION**

	Unit	Quantity		Unit Price (\$)	=	Cost
401000 PCC Pavement (___ Depth)	m3	7,900	x	150.00	=	\$1,185,000
390102 Asphalt Concrete (Type A)	tonne	2,400	x	60.00	=	\$144,000
390155 with Asphalt Price Index	tonne		x		=	\$0
390108 Asphalt Concrete Base (Type A)	tonne	5,100	x	50.00	=	\$255,000
390171 with asphalt Price Index	tonne		x		=	\$0
390128 RAC- Type G	tonne		x		=	\$0
390163 with Asphalt Price Index	tonne		x		=	\$0
260201 Class 2 Aggregate Base	m3	21,000	x	35.00	=	\$735,000
250401 Class 4 Aggregate Subbase	m3		x		=	\$0
XXXXXX Minor Concrete _____	m3		x		=	\$0
731502 Minor Concrete (Misc Const)	m3		x		=	\$0
3940XX Place AC Dike Type E	m	1,400	x	6.00	=	\$8,400
150771 Remove AC Dike	m		x		=	\$0
420201 Grind Existing Pavement	m2		x		=	\$0
XXXXXX Remove Concrete	m3		x		=	\$0
390095 Replace AC Surfacing	m2		x		=	\$0
XXXXXX Place AC (Misc Area)	m2		x		=	\$0
1531XX Cold Plane ___mm	m2		x		=	\$0
1531XX Cold Plane ___mm	m2		x		=	\$0
68XXXX Permeable Material Blanket	m		x		=	\$0
68XXXX Edgedrains	m		x		=	\$0
SUBTOTAL STRUCTURAL SECTION						\$ 2,327,400
OVERHEAD						\$ 232,740
TOTAL STRUCTURAL SECTION						\$ 2,094,660

**Section 3 DRAINAGE**

	Unit	Quantity		Unit Price (\$)	=	Cost
Project Drainage	LS	1	x	4,209,083.00	=	\$4,209,083
6XXXXX ___ mm Type of Pipe	m		x		=	\$0

6XXXXX ___ mm Type of Pipe	m		x	=	\$0
6XXXXX ___ mm Type of Pipe	m		x	=	\$0
6XXXXX ___ mm Type of Pipe	m		x	=	\$0
510502 Minor Concrete (minor structure)	m3		x	=	\$0
152604 Modify Inlet	EA		x	=	\$0
72XXXX Rock Slope Protection Type___	m3		x	=	\$0
729010 Rock Slope Protection Fabric	m2		x	=	\$0
721XXX Concrete _____ Lining	m3		x	=	\$0

SUBTOTAL DRAINAGE \$ 4,209,083  
 OVERHEAD \$ 420,908  
 TOTAL DRAINAGE \$ 3,788,175

**Section 4 SPECIALTY ITEMS**

	Unit	Quantity		Unit Price (\$)	Cost
Retaining Wall	m2	23,100		700.00	\$16,170,000
518201 Masonry Block Wall	m2		x	=	\$0
51800X Sound Wall	m2		x	=	\$0
72XXXX Slope Protection (Type _)	HA		x	=	\$0
839704 Concrete Barriers (Type 60 D)	m	2,500		150.00	\$375,000
833125 Concrete Barriers (Type 25)	m	1,600	x	150.00	\$240,000
839XXX Cable Railing	m		x	=	\$0
800391Chain Link Fence 1.80m CL	m	1,780	x	30.00	\$53,400
839XXX Crash Cushions (Type _____)	EA		x	=	\$0
Hazardous Waste Work	LS		x	=	\$0
192037 Structure Excavation (Ret.Wall)	m3		x	=	\$0
193013 Structure Backfill (Ret. Wall)	m3		x	=	\$0
193031 Pervious Backfill Material (Ret. Wall)	m3		x	=	\$0
520103 Bar Reinf. Steel (Ret. Wall)	KG		x	=	\$0
510133 Class 2 Concrete (Ret. Wall)	m3		x	=	\$0

SUBTOTAL SPECIALTY \$ 16,838,400  
 OVERHEAD \$ 1,683,840  
 TOTAL SPECIALTY \$ 15,154,560

**Section 5 ENVIRONMENTAL**

**5A - Environmental & Landscape**

	Unit	Quantity		Unit Price (\$)	=	Cost
208000 Irrigation System	LS	1	x	83,600.00	=	\$83,600
Biological Resources	LS	1	x	10,000.00	=	\$10,000
Noise Abatement	LS	1	x	200,000.00	=	\$200,000
Cultural Resources Assessment	LS	1	x	2,000.00	=	\$2,000
204037 Planting	HA	1	x	86,485.00	=	\$86,485
204099 Plant Establishment	LS	1	x	100,000.00	=	\$100,000
Eucalyptus Replacement	EA	324	x	25.00	=	\$8,100
Pinus Torreyana Replacement	EA	100	x	225.00	=	\$22,500
20XXXX Erosion Control (Type ____)	HA		x		=	\$0
Vine Planting	m	1,610	x	32.81	=	\$52,824
Biological Mitigation	LS		x		=	\$0
Extend Plant Establishment (_ Years)	LS		x		=	\$0
Texture Wall Treatment	m2	4,700	x	86.08	=	\$404,576

**5B - NPDES**

074019 Prepare SWPPP	LS	1	x	10,000.00	=	\$10,000
074020 Water Pollution Control	LS	1	x	120,000.00	=	\$120,000
074023 Temporary Erosion Control	HA	4.80	x	8,000.00	=	\$38,400
074027 Temp. Erosion Control Blanket	m2		x		=	\$0
203561 Jute Mesh	m2		x		=	\$0
074033A Temp. Construction Entrance	EA	4	x	800.00	=	\$3,200
074032A Temporary Concrete Washout	EA	4	x	1,200.00	=	\$4,800
074031A Temporary Gravel Bags	EA	1,500	x	5.00	=	\$7,500
074028 Temporary Fiber Rolls	m	2,800	x	30.00	=	\$84,000
074029 Temporary Silt Fence	m	1,400	x	10.00	=	\$14,000

SUBTOTAL ENVIRONMENTAL \$ 1,251,985  
 OVERHEAD \$ 125,199  
 TOTAL ENVIRONMENTAL \$ 1,126,787

Estimate Reviewed By	S. Glasgow	Date	Environmental Branch Chief	x6715 Phone
Estimate Reviewed By	S. Alvarez	Date	District Landscape Architect	x2542 Phone
Estimate Reviewed By	C. Tesoro	Date	NPDES	x3626 Phone

**Section 6 TRAFFIC ITEMS**

**6A - Traffic Electrical**

	Unit	Quantity		Unit Price (\$)	=	Cost
86055X Lighting & Sign Illumination	LS	1	x	360,000.00	=	\$360,000
Traffic Monitoring System	EA	2	x	50,000.00	=	\$100,000
8602XX Traffic Signals & Lighting	LS		x		=	\$0
560213 Furnish Overhead Sign Structures	LS		x		=	\$0
560219 Install Overhead Sign Structures	LS	1	x	620,000.00	=	\$620,000
CMS System	EA	1	x	150,000.00	=	\$150,000
Modify Traffic Signals	LS	1	x	100,000.00	=	\$100,000
53C Conduit(F/O)	m	1,600	x	60.00	=	\$96,000
2-103C Conduit(F/O)	m	4,000	x	160.00	=	\$640,000
Splice Enclosure	EA	8	x	2,000.00	=	\$16,000
Fiber Optic Vault	EA	10	x	3,500.00	=	\$35,000
FOA	m	9,600	x	22.00	=	\$211,200
FOC	m	3,840	x	16.00	=	\$61,440
Enclosure for HUB	EA	1	x	80,000.00	=	\$80,000
FDU	EA	20	x	1,500.00	=	\$30,000
CCTV Pole, Cabinet, Foundation	EA	5	x	9,000.00	=	\$45,000
Traffic Signal Cabinet Foundation	EA	4	x	8,000.00	=	\$32,000
CCTV Assembly	EA	5	x	40,000.00	=	\$200,000
Field Elements	EA	18	x	2,500.00	=	\$45,000
HUB Assembly	EA	1	x	220,000.00	=	\$220,000
Installation Cost(F/O Equip.)	LS	1	x	220,000.00	=	\$220,000
XXXXXX Fiber Optic Conduit System	LS		x		=	\$0
8611XX Ramp Metering System	EA	4	x	70,000.00	=	\$280,000
8611XX Ramp Metering System & TMS	EA	1	x	80,000.00	=	\$80,000
XXXXXX Interconnection Facilities	LS		x		=	\$0
860810 Inductive Loop Detectors	LS		x		=	\$0
86093X Traffic Monitoring Stations	LS		x		=	\$0

**6B - Traffic Signing and Striping**

566011 Ground Mounted Signs	EA	40	x	400.00	=	\$16,000
568016 Overhead Sign Panels	EA	13	x	5,000.00	=	\$65,000
840656 Permanent Pavement Delineation	m	12,892	x	5.50	=	\$70,906
832001 Metal Beam Guard Railing	m		x		=	\$0
120159 Temporary Pavement Delineation	m	21,820	x	6.00	=	\$130,920
120090 Construction Area Signs	LS	1	x	19,000.00	=	\$19,000
129000 Temporary Railing "Type K"	m	6,660	x	60.00	=	\$399,600
129100 Temporary Crash Cushions Modules	EA	216	x	300.00	=	\$64,800
Guardrail	m	718	x	100.00	=	\$71,800
120152 Temporary Pavement Markings	m2		x		=	\$0
840515 Thermoplastic Pavement Marking	m2		x		=	\$0
120199A Traffic Plastic Drums	EA		x		=	\$0
120120 Type III Barricades	EA		x		=	\$0

**6C - Traffic Management Plan**

066063 Public Information	LS	1	x	80,000.00	=	\$80,000
066061 COZEEP	LS	1	x	120,000.00	=	\$120,000
120100 Traffic Control System	LS	1	x	260,000.00	=	\$260,000
066090 Maintain Traffic	LS	1	x	50,000.00	=	\$50,000
128650 Portable Changeable Message Signs	LS	1	x	30,000.00	=	\$30,000

SUBTOTAL TRAFFIC ITEMS \$ 4,999,666  
 OVERHEAD \$ 499,967  
 TOTAL TRAFFIC ITEMS \$ 4,499,699

Estimate Reviewed By

\_\_\_\_\_  
 Dale Wilson Date Traffic Design Phone x3248

Estimate Reviewed By

\_\_\_\_\_  
 Camille Abou-Fadel Date Traffic Operations Phone (858)467-4328

**Section 7 DETOURS\***

	Unit	Quantity		Unit Price (\$)	=	Cost
190101 Roadway Excavation	m3		x		=	\$0
198050 Embankment	m3		x		=	\$0
198001 Import Borrow	m3		x		=	\$0
390102 Asphalt Concrete (Type A)	tonne		x		=	\$0
390155 with Asphalt Price Index	tonne		x		=	\$0
260201 Class 2 Aggregate Base	m3		x		=	\$0
250101 Class 4 Aggregate Subbase	m3		x		=	\$0
Temporary Drainage	LS		x		=	\$0
129000 Temporary Railing Type "K"	m		x		=	\$0
12XXXX Temporary Signals	EA		x		=	\$0
120159 Temporary Pavement Delineation	m		x		=	\$0
* Includes constructing, maintaining, and removal						
						SUBTOTAL DETOURS \$ 0
						OVERHEAD \$ 0
						TOTAL DETOURS \$ 0
						SUBTOTAL SECTIONS 1-7 (With Overhead) \$ 32,568,035

**Section 8 MINOR ITEMS (5%-10%)**

Subtotal Section 1-7 =	\$	32,568,035	x	5%	=	\$1,628,402
						SUBTOTAL MINOR ITEMS \$ 1,628,402
						OVERHEAD \$ 162,840
						TOTAL MINOR ITEMS \$ 1,465,562

**Section 9 OVERHEAD**

Overhead Section 1-8 =	\$	3,294,445				
	Unit	Quantity		Unit Price (\$)	=	Cost
070015 Overhead	DAY	400	x	8,236.11	=	\$3,294,445
						TOTAL OVERHEAD \$ 3,294,445

**Section 10 SUPPLEMENTAL WORK (5%-10%)**

Subtotal Section 1-8 =	\$	34,196,437				
	\$	34,196,437	x	5%	=	\$1,709,822
WPCP Implementation**	\$	34,196,437	x	0%	=	\$0
	Unit	Quantity		Unit Price (\$)	=	Cost
066666 Price Index For AC	LS	1	x	10,700.00	=	\$10,700
						TOTAL SUPPLEMENTAL WORK \$ 1,720,522

\*\*Use in all project with less than 2 hectares of disturbed soil. ---- Contact NPDES unit to obtain appropriate percentage to use.

**Section 11 ROADWAY MOBILIZATION\***

Subtotal Section 1-8	\$	34,196,437				
	\$	34,196,437	x	10%	=	\$3,419,644

\* If <50 Working Days (N/A)

TOTAL ROADWAY MOBILIZATION \$ 3,419,644

**Section 12 STATE FURNISHED**

	Unit	Quantity		Unit Price (\$)	=	Cost
066105 RE OFFICE	LS	1	x	160,000.00	=	\$160,000
066610 Partnering	LS	1	x	2,000.00	=	\$2,000
066XXX Controller Assemblies	LS	1	x	20,000.00	=	\$20,000
						TOTAL STATE FURNISHED \$ 182,000

**Section 13 CONTINGENCIES\*\***

Subtotal Section 1-8

Contingencies

	\$	34,196,437	x	25%	=	\$8,549,110
--	----	------------	---	-----	---	-------------

TOTAL CONTINGENCIES \$ 8,549,110

**TOTAL ROADWAY ITEMS \$ 47,942,514**

**Approx # of Working Days = 400**

\*\* As a general rule use appropriate percentage per Project Development Procedures Manual (PDPM).  
(Pre-PSR 30%-50%, PSR 25%, PR 20%, PAR 15%, After PAR 10%)

Contingencies could be increased or decreased depending on the accuracy of the Engineering Estimate and in the possibility of any potential problems that could arise later on. If a contingency other than the recommended on the PDPM is used, then a justification is required.

Justification: (Briefly explain as to why a different percentage was used)

**II. STRUCTURES ITEMS**

Bridge Name	SE CON	WN CON	EL CAM (WIDEN)
Bridge Number	57-SECONN	57-WNCONN	57-1004L
Structure Type	CIP/PC	CIP/PC	CIP/PC
Width (M) [out to out]	12.95	12.95	8.80
Total Bridge Length (M)	710.00	426.00	55.00
Total Area (SQM)	9194.50	5516.70	484.00
Structure Depth (M)	2.80	2.80	2.59
Footing Type (pile/spread)	PILE	PILE	
Cost Per SQM (incl. 10% mobilization, 20% contingency & special aesthetic treatment)	\$ 1,719.00	\$ 1,828.00	\$ 2,769.00
Total Cost for Structure	\$ 15,805,345.50	\$ 10,084,527.60	\$ 1,340,196.00

SUBTOTAL STRUCTURES ITEMS \$ 27,230,069

Railroad Related Costs \$ 0

**TOTAL STRUCTURES ITEMS \$ 27,230,069**

COMMENTS:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Phone

**III. RIGHT OF WAY**

Acquisition, including Excess Land Purchases, Damages to Remainder(s) & Goodwill Loss	\$	4,503,000
Condemnation Settlements 30%	\$	1,350,900
Acquisition of Offsite Mitigation (out to Out)	\$	
Utility Relocation (State Share)	\$	9,900,000
Clearance and Demolition	\$	20,000
RAP and/or Last Resort Housing Costs	\$	
Title and Escrow Fees	\$	8,300
Base Right of Way Cost	\$	
Design Appreciation Factor 30%	\$	1350900

**TOTAL RIGHT OF WAY \$ 17133100**

RIGHT OF WAY SUPPORT      \$      1,090,000

ESCALATED RIGHT OF WAY      \$      24660692

COMMENTS:                      (TOTAL ACREAGE, PARCEL COUNT, ESCALATION RATE THROUGH PROGRAMMED YEAR)

R/W Estimate Prepared By

\_\_\_\_\_

Murray Wilson

\_\_\_\_\_

Date

\_\_\_\_\_

x6120

\_\_\_\_\_

Phone

**IV. ENGINEERING SUPPORT COST**

**DISTRICT 11  
PRELIMINARY PROJECT SUPPORT COST ESTIMATE SUMMARY**

SB-45 CATEGORY	FY 0/1	FY 1/2	FY 2/3	FY 3/4	FY 4/5	FY 5/6	FY 6/7	FY 7/8	P3 Total	Support Ratio
PR/ED (PD,PE,P)	575,000	600,000	575,000						1,750,000	2%
PS&E (PS)				4,150,000	4,150,000				8,300,000	9%
R/W (RW)	30,000	30,000	30,000	500,000	500,000				1,090,000	1%
CONSTR (CM)						3,600,000	3,600,000	3,600,000	10,800,000	12%
<b>tal Support Cost:</b>	<b>605,000</b>	<b>630,000</b>	<b>605,000</b>	<b>4,650,000</b>	<b>4,650,000</b>	<b>3,600,000</b>		<b>3,600,000</b>	<b>21,940,000</b>	
<b>Total Capital Cost</b>										<b>92,306,000</b>
<b>Overall Percent Support</b>										<b>24%</b>

Approved by: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Phone: 688-3381  
Project Control Engineer

**DISTRICT 11  
PROJECT COST ESTIMATE SUMMARY**

Type of Estimate : PSR

11-SD-5/56  
K.P. R53.9/R53.7(I-5)  
0.0/0.8(RTE 56)  
EA 17790K

Program Code : HE11

Project Description IN SANDIEGO COUNTY ON INTERSTATE 5 FROM CARMEL VALLEY ROAD TO 0.80 KM NORTH OF CARMELL VALLEY ROAD AND ON ROUTE 56 FROM CARMEL VALLEY ROAD OVERCROSSING TO 0.30 KM EAST OF EL CAMINO REAL.

Limits : K.P.R52.9/R53.7(I-5), 0.0/0.8(RTE 56)

Proposed Improvement IMPROVEMENTS TO THE RAMPS AT EL CAMINO REAL AND CARMELVALLEY ROAD TO PROVIDE ACCESS TO THE NORTHERN SECTION OF I-5

Alternative : 2

	<b>Current<sup>1</sup></b>	<b>Escalated<sup>2</sup></b>
ROADWAY ITEMS	\$ 6,921,705	\$ 8,024,154
STRUCTURE ITEMS	\$ <u>0</u>	\$ <u>0</u>
SUBTOTAL CONSTRUCTION COST	\$ 6,921,705	\$ 8,024,154
RIGHT OF WAY	\$ <u>11,428,220</u>	\$ <u>11,719,531</u>
 <b>TOTAL CAPITAL COST</b>	 <b>\$ 18,350,000</b>	 <b>\$ 19,744,000</b>
 PR/ED SUPPORT	 \$ 100,000	 \$ 116,000
PS&E SUPPORT	\$ 400,000	\$ 463,800
RIGHT OF WAY SUPPORT	\$ 410,000	\$ 475,400
CONSTRUCTION SUPPORT	\$ <u>480,000</u>	\$ <u>556,500</u>
TOTAL SUPPORT COST	\$ 1,390,000	\$ 1,611,700
 <b>TOTAL PROJECT COST</b>	 <b>\$ 19,740,000</b>	 <b>\$ 21,356,000</b>

\*ESCALATED PROJECT COST FY 00/2005

<sup>1</sup>Year of PSR= 2000  
<sup>2</sup>Year of Construction= 2005  
 5

Reviewed by District O.E.

\_\_\_\_\_ x6735  
 Leon G. Edmonds Date Phone

Approved by Project Manager

\_\_\_\_\_ x3633  
 Joseph R. Hull Date Phone

\* Escalated Cost is calculated at 3.0% for inflation compounded annually to construction year (Only escalate projects that **have not** been programmed)

Revise 9/12/00 MDR





6XXXXX ____ mm Type of Pipe	m	x	=	\$0
6XXXXX ____ mm Type of Pipe	m	x	=	\$0
6XXXXX ____ mm Type of Pipe	m	x	=	\$0
510502 Minor Concrete (minor structure)	m3	x	=	\$0
152604 Modify Inlet	EA	x	=	\$0
72XXXX Rock Slope Protection Type__	m3	x	=	\$0
729010 Rock Slope Protection Fabric	m2	x	=	\$0
721XXX Concrete _____ Lining	m3	x	=	\$0

SUBTOTAL DRAINAGE	\$	275,000
OVERHEAD	\$	27,500
TOTAL DRAINAGE	\$	247,500

**Section 4 SPECIALTY ITEMS**

	Unit	Quantity		Unit Price (\$)	Cost
Retaining Wall	m2	200		350.00	\$70,000
518201 Masonry Block Wall	m2		x	=	\$0
51800X Sound Wall	m2		x	=	\$0
72XXXX Slope Protection (Type __)	HA		x	=	\$0
839704 Concrete Barriers (Type 60 D)	m	130		200.00	\$26,000
833125 Concrete Barriers (Type 25)	m		x	=	\$0
839XXX Cable Railing	m		x	=	\$0
800391 Chain Link Fence 1.80m CL	m	900	x	30.00	\$27,000
839XXX Crash Cushions (Type _____)	EA		x	=	\$0
Hazardous Waste Work	LS		x	=	\$0
192037 Structure Excavation (Ret.Wall)	m3		x	=	\$0
193013 Structure Backfill (Ret. Wall)	m3		x	=	\$0
193031 Pervious Backfill Material (Ret. Wall)	m3		x	=	\$0
520103 Bar Reinf. Steel (Ret. Wall)	KG		x	=	\$0
510133 Class 2 Concrete (Ret. Wall)	m3		x	=	\$0

SUBTOTAL SPECIALTY	\$	123,000
OVERHEAD	\$	12,300
TOTAL SPECIALTY	\$	110,700

**Section 5 ENVIRONMENTAL**

**5A - Environmental & Landscape**

	Unit	Quantity		Unit Price (\$)	=	Cost
208000 Irrigation System	LS	1	x	100,000.00	=	\$100,000
Biological Resources	LS	0	x	0.00	=	\$0
Noise Abatement	LS	0	x	0.00	=	\$0
Cultural Resources Assessment	LS	1	x	2,000.00	=	\$2,000
204037 Planting	HA	1.2	x	86,000.00	=	\$103,200
204099 Plant Establishment	LS	1	x	70,000.00	=	\$70,000
Eucalyptus Replacement	EA	0	x	0.00	=	\$0
Pinus Torreyana Replacement	EA	0	x	0.00	=	\$0
20XXXX Erosion Control (Type ___)	HA		x		=	\$0
Vine Planting	m	130	x	50.00	=	\$6,500
Trees	EA	50	x	100.00	=	\$5,000
Biological Mitigation	LS		x		=	\$0
Texture Wall Treatment	m2	650	x	200.00	=	\$130,000

**5B - NPDES**

074019 Prepare SWPPP	LS		x		=	\$0
074020 Water Pollution Control	LS		x		=	\$0
074023 Temporary Erosion Control	HA	1	x	8,000.00	=	\$8,000
074027 Temp. Erosion Control Blanket	m2		x		=	\$0
203561 Jute Mesh	m2		x		=	\$0
074033A Temp. Construction Entrance	EA	2	x	800.00	=	\$1,600
074032A Temporary Concrete Washout	EA	2	x	1,200.00	=	\$2,400
074031A Temporary Gravel Bags	EA	500	x	10.00	=	\$5,000
074028 Temporary Fiber Rolls	m	600	x	30.00	=	\$18,000
074029 Temporary Silt Fence	m	300	x	10.00	=	\$3,000

SUBTOTAL ENVIRONMENTAL \$ 454,700  
 OVERHEAD \$ 45,470  
 TOTAL ENVIRONMENTAL \$ 409,230

Estimate Reviewed By	S. Glasgow	Date	Environmental Branch Chief	x6715 Phone
Estimate Reviewed By	S. Alvarez	Date	District Landscape Architect	x2542 Phone
Estimate Reviewed By	C. Tesoro	Date	NPDES	x3626 Phone

**Section 6 TRAFFIC ITEMS**

**6A - Traffic Electrical**

	Unit	Quantity		Unit Price (\$)	=	Cost
86055X Lighting & Sign Illumination	LS	1	x	80,000.00	=	\$80,000
Traffic Monitoring System	EA	2	x	50,000.00	=	\$100,000
8602XX Traffic Signals & Lighting	LS		x		=	\$0
560213 Furnish Overhead Sign Structures	LS		x		=	\$0
560219 Install Overhead Sign Structures	LS	1	x	140,000.00	=	\$140,000
CMS System	EA	1	x	150,000.00	=	\$150,000
Modify Traffic Signals	LS	1	x	50,000.00	=	\$50,000
53C Conduit-(F/O)	m	960	x	60.00	=	\$57,600
2-103C Conduit(F/O)	m	2,400	x	200.00	=	\$480,000
Splice Enclosure	EA	8	x	2,000.00	=	\$16,000
Fiber Optic Vault	EA	8	x	3,500.00	=	\$28,000
FOA	m	5,800	x	22.00	=	\$127,600
FOC	m	2,300	x	16.00	=	\$36,800
Enclosure for HUB	EA	1	x	80,000.00	=	\$80,000
FDU	EA	18	x	1,500.00	=	\$27,000
CCTV Pole, Cabinet, Foundation	EA	4	x	9,000.00	=	\$36,000
Traffic Signal Cabinet Foundation	EA	5	x	8,000.00	=	\$40,000
CCTV Assembly	EA	4	x	40,000.00	=	\$160,000
Field Elements	EA	12	x	2,500.00	=	\$30,000
HUB Assembly	EA	1	x	220,000.00	=	\$220,000
Installation Cost(F/O Equip.)	LS	1	x	200,000.00	=	\$200,000
XXXXXX Fiber Optic Conduit System	LS		x		=	\$0
8611XX Ramp Metering System	EA	0	x	0.00	=	\$0
8611XX Ramp Metering System & TMS	EA	1	x	30,000.00	=	\$30,000
XXXXXX Interconnection Facilities	LS		x		=	\$0
860810 Inductive Loop Detectors	LS		x		=	\$0
86093X Traffic Monitoring Stations	LS		x		=	\$0
Signal Interconnection	EA	4	x	50,000.00	=	\$200,000

**6B - Traffic Signing and Striping**

566011 Ground Mounted Signs	EA	0	x	0.00	=	\$0
568016 Overhead Sign Panels	EA	2	x	5,000.00	=	\$10,000
840656 Permanent Pavement Delineation	m	5,000	x	5.50	=	\$27,500
832001 Metal Beam Guard Railing	m		x		=	\$0
120159 Temporary Pavement Delineation	m	10,000	x	6.00	=	\$60,000
120090 Construction Area Signs	LS	1	x	20,000.00	=	\$20,000
129000 Temporary Railing "Type K"	m	2,600	x	60.00	=	\$156,000
129100 Temporary Crash Cushions Modules	EA	60	x	300.00	=	\$18,000
Guardrail	m	60	x	100.00	=	\$6,000
120152 Temporary Pavement Markings	m2		x		=	\$0
840515 Thermoplastic Pavement Marking	m2		x		=	\$0
120199A Traffic Plastic Drums	EA		x		=	\$0
120120 Type III Barricades	EA		x		=	\$0

**6C - Traffic Management Plan**

066063 Public Information	LS	1	x	25,000.00	=	\$25,000
066061 COZEEP	LS	1	x	27,000.00	=	\$27,000
120100 Traffic Control System	LS	1	x	100,000.00	=	\$100,000
066090 Maintain Traffic	LS	1	x	60,000.00	=	\$60,000
128650 Portable Changeable Message Signs	EA	1	x	10,000.00	=	\$10,000

SUBTOTAL TRAFFIC ITEMS \$ 2,808,500

OVERHEAD \$ 280,850

TOTAL TRAFFIC ITEMS \$ 2,527,650

Estimate Reviewed By

\_\_\_\_\_  
Dale Wilson Date Traffic Design x3248 Phone

Estimate Reviewed By

\_\_\_\_\_  
Camille Abou-Fadel Date Traffic Operations (858)467-4328 Phone

**Section 7 DETOURS\***

	Unit	Quantity		Unit Price (\$)	Cost
190101 Roadway Excavation	m3		x	=	\$0
198050 Embankment	m3		x	=	\$0
198001 Import Borrow	m3		x	=	\$0
390102 Asphalt Concrete (Type A)	tonne		x	=	\$0
390155 with Asphalt Price Index	tonne		x	=	\$0
260201 Class 2 Aggregate Base	m3		x	=	\$0
250101 Class 4 Aggregate Subbase	m3		x	=	\$0
Temporary Drainage	LS		x	=	\$0
129000 Temporary Railing Type "K"	m		x	=	\$0
12XXXX Temporary Signals	EA		x	=	\$0
120159 Temporary Pavement Delineation	m		x	=	\$0

\* Includes constructing, maintaining, and removal

SUBTOTAL DETOURS \$ 0  
OVERHEAD \$ 0  
TOTAL DETOURS \$ 0

SUBTOTAL SECTIONS 1-7 (With Overhead) \$ 4,606,115

**Section 8 MINOR ITEMS (5%-10%)**

Subtotal Section 1-7 = \$ 4,606,115 x 5% = \$230,306

SUBTOTAL MINOR ITEMS \$ 230,306  
OVERHEAD \$ 23,031  
TOTAL MINOR ITEMS \$ 207,275

**Section 9 OVERHEAD**

Overhead Section 1-8 = \$ 438,173

	Unit	Quantity		Unit Price (\$)	Cost
070015 Overhead	DAY	150	x	2,434.29	= \$365,144

TOTAL OVERHEAD \$ 438,173

**Section 10 SUPPLEMENTAL WORK (5%-10%)**

Subtotal Section 1-8 = \$ 4,836,421  
\$ 4,836,421 x 5% = \$241,822

WPCP Implementation\*\* \$ 4,836,421 x 0.50% = \$24,183

	Unit	Quantity		Unit Price (\$)	Cost
066666 Price Index For AC	LS	1	x	0.00	= \$0

TOTAL SUPPLEMENTAL WORK \$ 266,005

\*\*Use in all project with less than 2 hectares of disturbed soil. ---- Contact NPDES unit to obtain appropriate percentage to use.

**Section 11 ROADWAY MOBILIZATION\***

Subtotal Section 1-8	\$	4,836,421				
	\$	4,836,421	x	10%	=	\$483,643

\* If <50 Working Days (N/A)

TOTAL ROADWAY MOBILIZATION \$ 483,643

**Section 12 STATE FURNISHED**

	Unit	Quantity		Unit Price (\$)	=	Cost
066105 RE OFFICE	LS	1	x	160,000.00	=	\$160,000
066610 Partnering	LS	1	x	2,000.00	=	\$2,000
066XXX Controller Assemblies	LS	1	x	10,000.00	=	\$10,000
TOTAL STATE FURNISHED						\$ 172,000

**Section 13 CONTINGENCIES\*\***

Subtotal Section 1-8

Contingencies

\$	4,836,421	x	25%	=	\$1,209,106
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TOTAL CONTINGENCIES \$ 1,209,106

**TOTAL ROADWAY ITEMS \$ 6,921,705**

**Approx # of Working Days = 180**

\*\* As a general rule use appropriate percentage per Project Development Procedures Manual (PDPM).  
(Pre-PSR 30%-50%, PSR 25%, PR 20%, PAR 15%, After PAR 10%)

Contingencies could be increased or decreased depending on the accuracy of the Engineering Estimate and in the possibility of any potential problems that could arise later on. If a contingency other than the recommended on the PDPM is used, then a justification is required.

Justification: (Briefly explain as to why a different percentage was used)

**II. STRUCTURES ITEMS**

Bridge Name	SE CON	WN CON	EL CAM (WIDEN)
Bridge Number			
Structure Type			
Width (M) [out to out]	0.00	0.00	0.00
Total Bridge Length (M)	0.00	0.00	0.00
Total Area (SQM)	0.00	0.00	0.00
Structure Depth (M)			
Footing Type (pile/spread)			
Cost Per SQM (incl. 10% mobilization, 20% contingency & special aesthetic treatment)	\$ -	\$ -	\$ -
Total Cost for Structure	\$ -	\$ -	\$ -

SUBTOTAL STRUCTURES ITEMS \$ 0

Railroad Related Costs \$ 0

**TOTAL STRUCTURES ITEMS \$ 0**

COMMENTS:

\_\_\_\_\_ Date

\_\_\_\_\_ Phone

**III. RIGHT OF WAY**

Acquisition, including Excess Land Purchases, Damages to Remainder(s) & Goodwill Loss	\$	946,200
Condemnation Settlements 30%	\$	283,860
Acquisition of Offsite Mitigation (out to Out)	\$	
Utility Relocation (State Share)	\$	9,900,000
Clearance and Demolition	\$	10,000
RAP and/or Last Resort Housing Costs	\$	
Title and Escrow Fees	\$	4,300
Base Right of Way Cost	\$	
Design Appreciation Factor 30%	\$	283860

**TOTAL RIGHT OF WAY \$ 11428220**

RIGHT OF WAY SUPPORT \$ 410,000

ESCALATED RIGHT OF WAY \$ 11719531

COMMENTS: (TOTAL ACREAGE, PARCEL COUNT, ESCALATION RATE THROUGH PROGRAMMED YEAR)

R/W Estimate Prepared By

\_\_\_\_\_  
Murray Wilson

\_\_\_\_\_  
Date

\_\_\_\_\_  
x6120

\_\_\_\_\_  
Phone

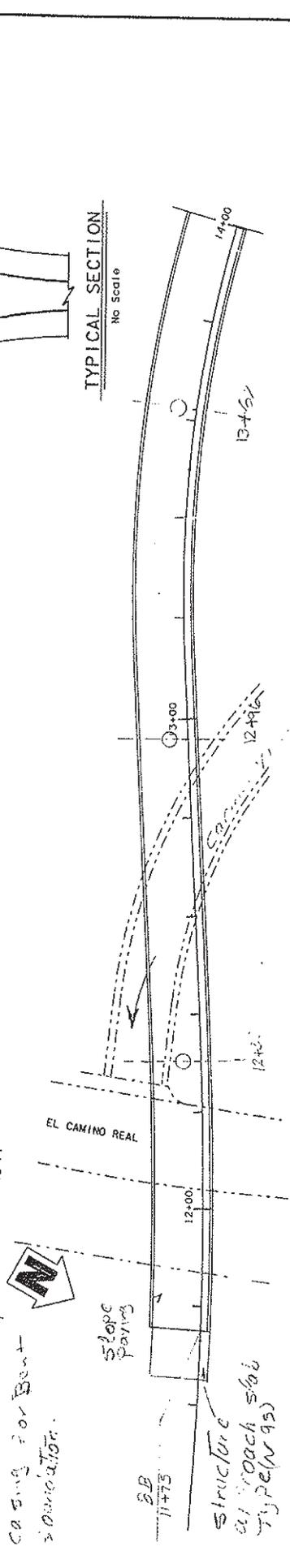
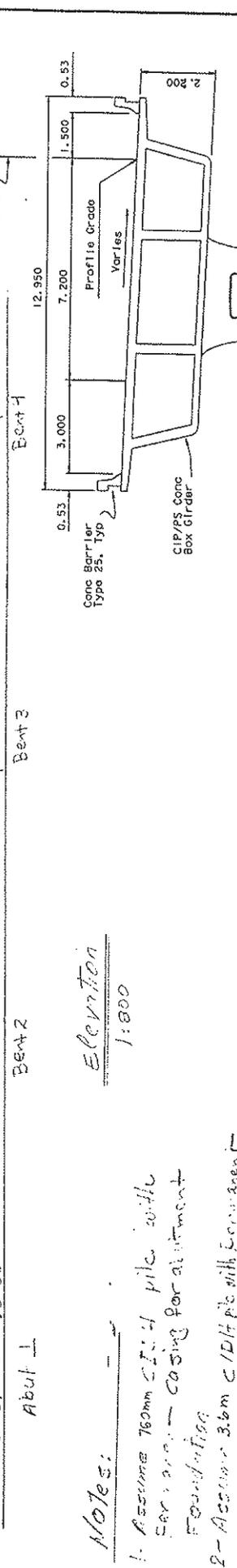
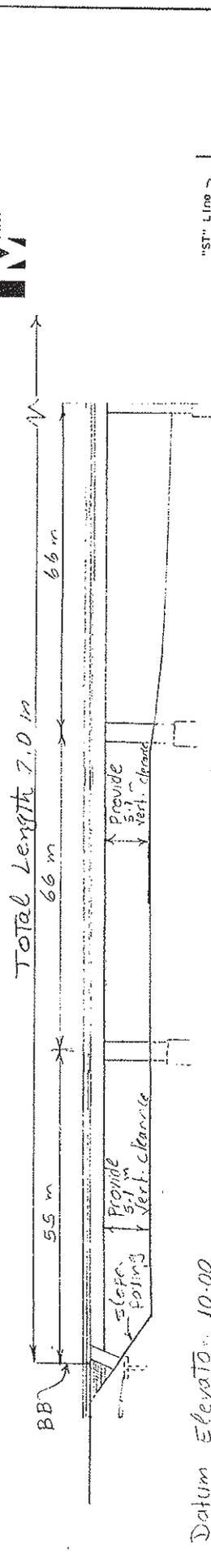
**IV. ENGINEERING SUPPORT COST**

**DISTRICT 11  
PRELIMINARY PROJECT SUPPORT COST ESTIMATE SUMMARY**

SB-45 CATEGORY	FY 0/1	FY 1/2	FY 2/3	FY 3/4	FY 4/5	FY 5/6	FY 6/7	FY 7/8	P3 Total	Support Ratio
PR/ED (PD,PE,PI)	50,000	50,000							100,000	1%
PS&E (PS)			200,000	200,000					400,000	2%
R/W (RW)	5,000	5,000	200,000	200,000					410,000	2%
CONSTR (CM)					240,000	240,000			480,000	3%
<b>tal Support Cost:</b>	<b>55,000</b>	<b>55,000</b>	<b>400,000</b>	<b>400,000</b>	<b>240,000</b>	<b>240,000</b>		<b>0</b>	<b>1,390,000</b>	
									<b>Total Capital Cost</b>	<b>18,350,000</b>
									<b>Overall Percent Support</b>	<b>8%</b>

Approved by: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Phone: 688-3381  
Project Control Engineer

DISTRICT COUNTY NOTE TOTAL PROJECT  
 5 5 5 5



Date of estimate: 5-15-99

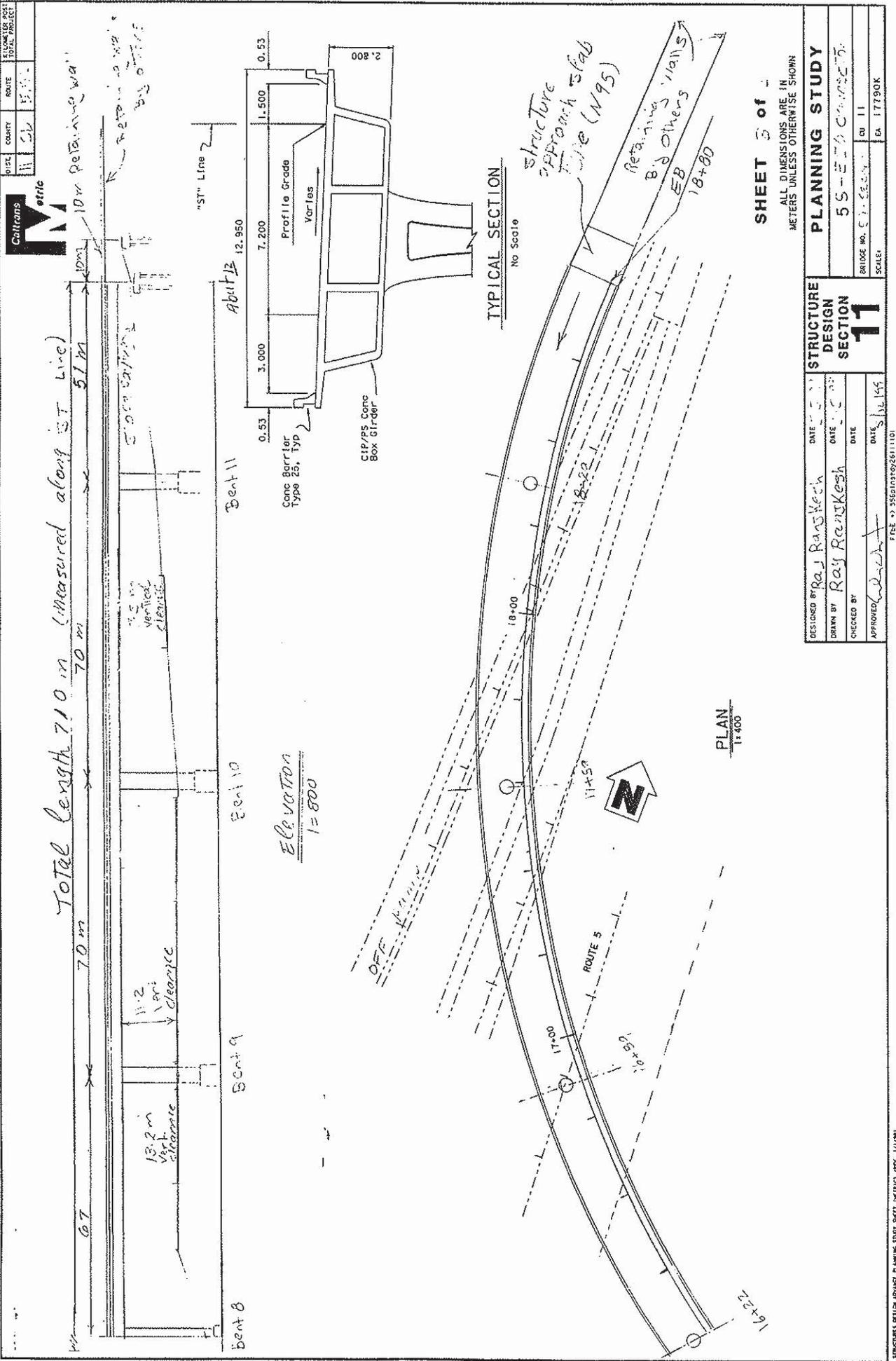
Structure depth:	2.80
Length:	7.10
Width:	12.82
Area:	9194.5
Cost including 10% Mobilization & 25% Contingency:	\$ 1719.2
Total Cost:	\$ 1588.000

Notes:  
 1- Assume 760mm CIP/PS pile with 5.1 m casing for alignment Foundation  
 2- Assume 3.6m CIP/PS pile with 5.1 m casing for Bent Foundation.

SHEET 1 of 2

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY	Raj Ranjith	DATE	5-5-99	STRUCTURE DESIGN SECTION	11
DRAWN BY	Raj Ranjith	DATE	5-5-99	BRIDGE NO.	55-55-50
CHECKED BY		DATE		CU	11
APPROVED BY		DATE	12/4/99	SCALE	EA 1:7500K



Caltrans	etrlc	ROUTE	5	PROJECT	
		COUNTY	San Diego		
		DISTRICT	11		

SHEET 5 of 5

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

PLANNING STUDY

5 S - E - 0 - 0 - 0 - 0

BRIDGE NO. 5 S - E - 0 - 0 - 0 - 0

SCALE: EA 1:17790K

STRUCTURE DESIGN SECTION

11

DATE: 11/15/95

DATE: 11/15/95

DESIGNED BY: Ray RanaMech

DRAWN BY: Ray RanaMech

CHECKED BY:

APPROVED BY: [Signature]

FILE # 55510102611101

PLAN 1:400



TYPICAL SECTION

No Scale

ELEVATION 1:800

Total length 710 m (measured along ST Line)

10% Retaining wall

5.0m Vertical clearance

13.2m Vert. clearance

11.2m Vert. clearance

Retaining wall by others

Structure approach slab  
by others (W95)

Retaining walls  
by others  
EB  
18+80

"ST" Line

Bent 11

Bent 10

Bent 9

Bent 8

12.950

0.53

7.200

1.500

0.53

3.000

0.53

2.800

18+00

17+50

17+00

16+50

16+22



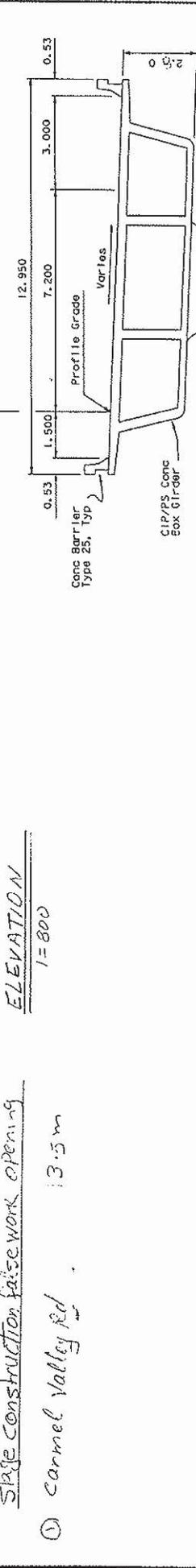
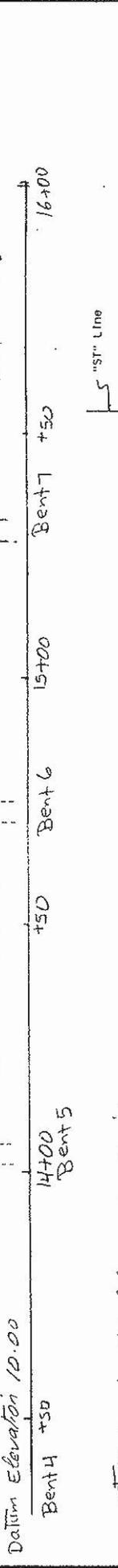
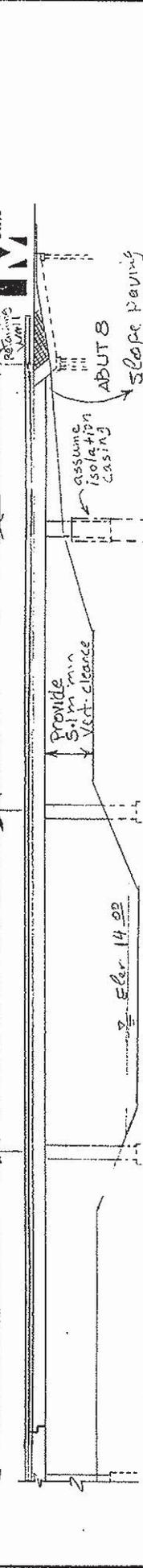
ROUTE	5.56
COUNTY	SD
DIST.	11



DATE	4/20/97
DESIGNED BY	Ray Ranjresh
CHECKED BY	BJE/RS
APPROVED	[Signature]

BRIDGE NO.	W56-115
COUNTY	SD
DIST.	11
SCALE	1:1730K

STRUCTURE DESIGN - ADVANCE PLANNING STUDY SHEET (STRUCT. DIV. 1730K)



STAGE construction falsework opening  
 Carmel Valley Rd 13.5m  
 ELEVATION 1=800

PLAN 1:800

SHEET 2 of 2  
 ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

STRUCTURE DESIGN SECTION 11  
 PLANNING STUDY

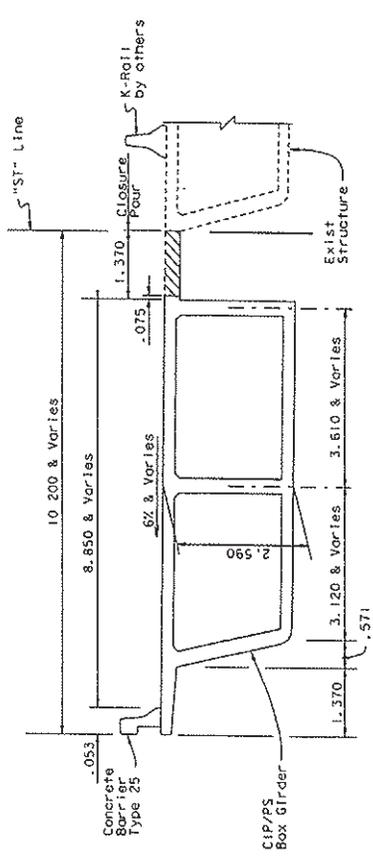
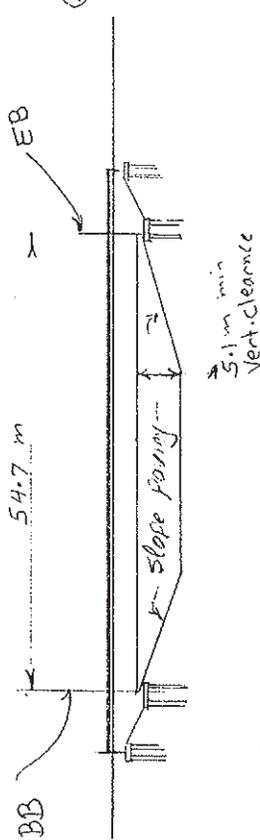
DATE	4/20/97
DESIGNED BY	Ray Ranjresh
CHECKED BY	BJE/RS
APPROVED	[Signature]
BRIDGE NO.	W56-115
COUNTY	SD
DIST.	11
SCALE	1:1730K

DATE	PROJECT	SCALE	ROUTE	PROJECT
11	SD	5:56		



**Notes**

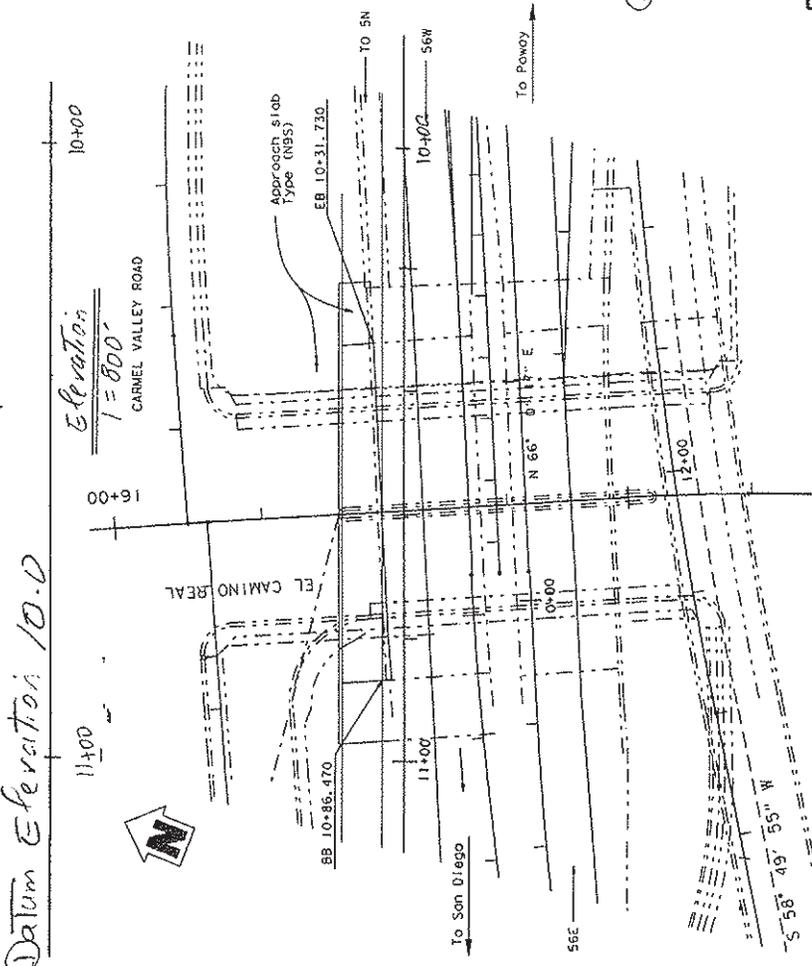
- ① Assume Class 65 C155 for abutment Foundation
- ② 5.1m minimum vertical clearance



TYPICAL SECTION AT EB  
1:100

Date of estimate:	5-13-99
Structure depth:	2.590
Length:	54.7
Width:	8.80 & varies
Area:	450.00
Cost \$K including 10% Mobilization & 25% Contingency:	A 2768.1
Total Cost:	\$ 1,246,000

③ District to provide AC overlay for modification of super-elevation difference between existing and widening bridges subject to the approval of OSD.



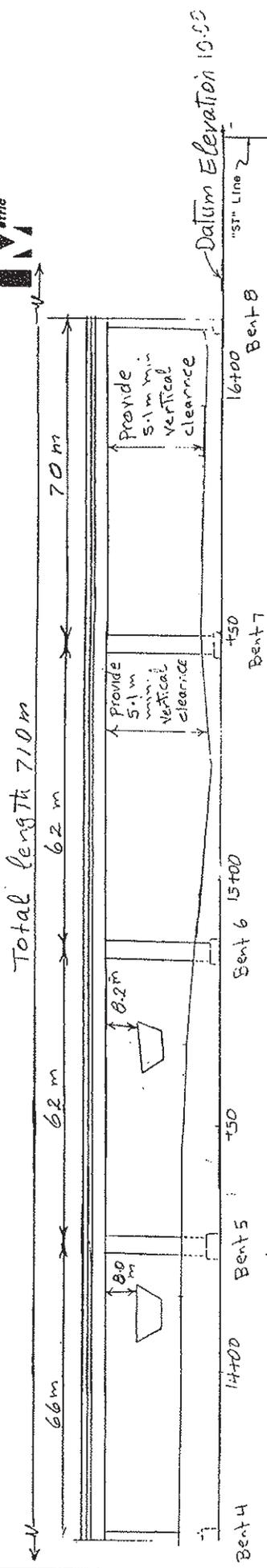
PLAN  
1:800

SHEET 1 of 1  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY	Ray Ranjresh	DATE	5-13-99
CHECKED BY	Ray Ranjresh	DATE	
APPROVED BY	[Signature]	DATE	5/13/99
STRUCTURE DESIGN SECTION	11		
PLANNING STUDY	ELCAMINO REAL UC WIDEN		
BRIDGE NO.	57-1004E	CU	11
SCALE	EA 1:7790K		

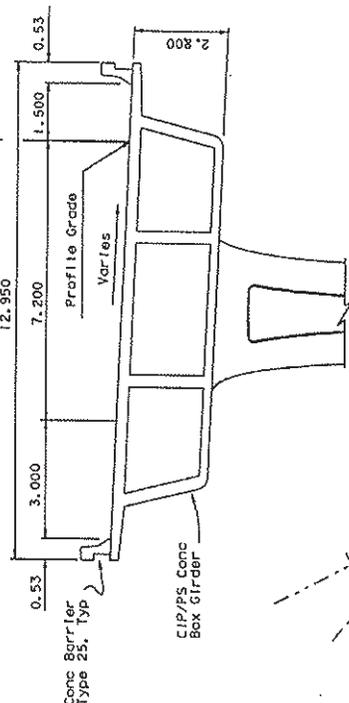


SHEET NO.	DATE	BY
11	5/99	RS
PROJECT NO.		ROUTE
11 SD		5,56
TOTAL SHEETS		
2		

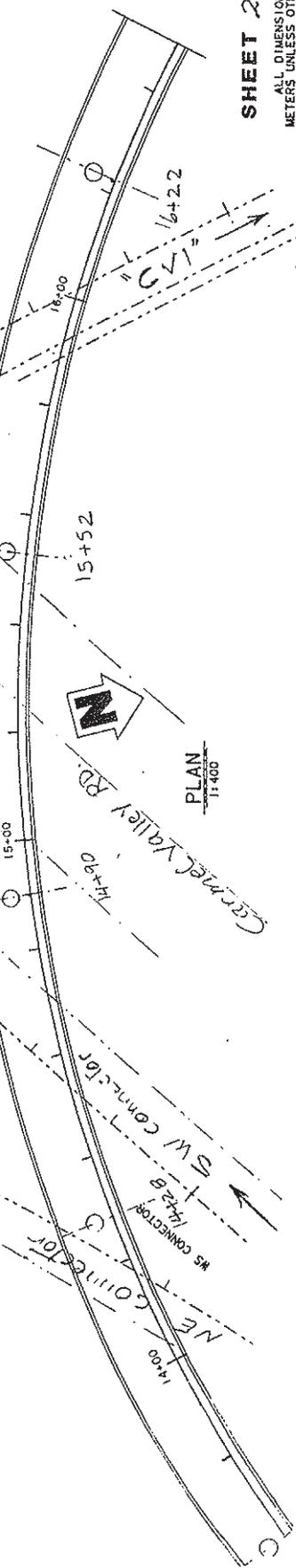


Stage construction falsework Horizontal opening

	Horizontal opening	Elevation
① El Camino Road	27.1 m	
② Carmel Valley Rd (east end)	11.9 m	
③ Carmel Valley Rd (west end)	15 m @ 11.7 m W/B	1 = 800
④ Carmel Valley Rd	7.8 m	
⑤ I-5 (N188 S/B)	21.3 m	
⑥ Truck Suppass (S/B)	11.4 m	
⑦ Carmel Valley Rd (off ramp)	7.5 m	

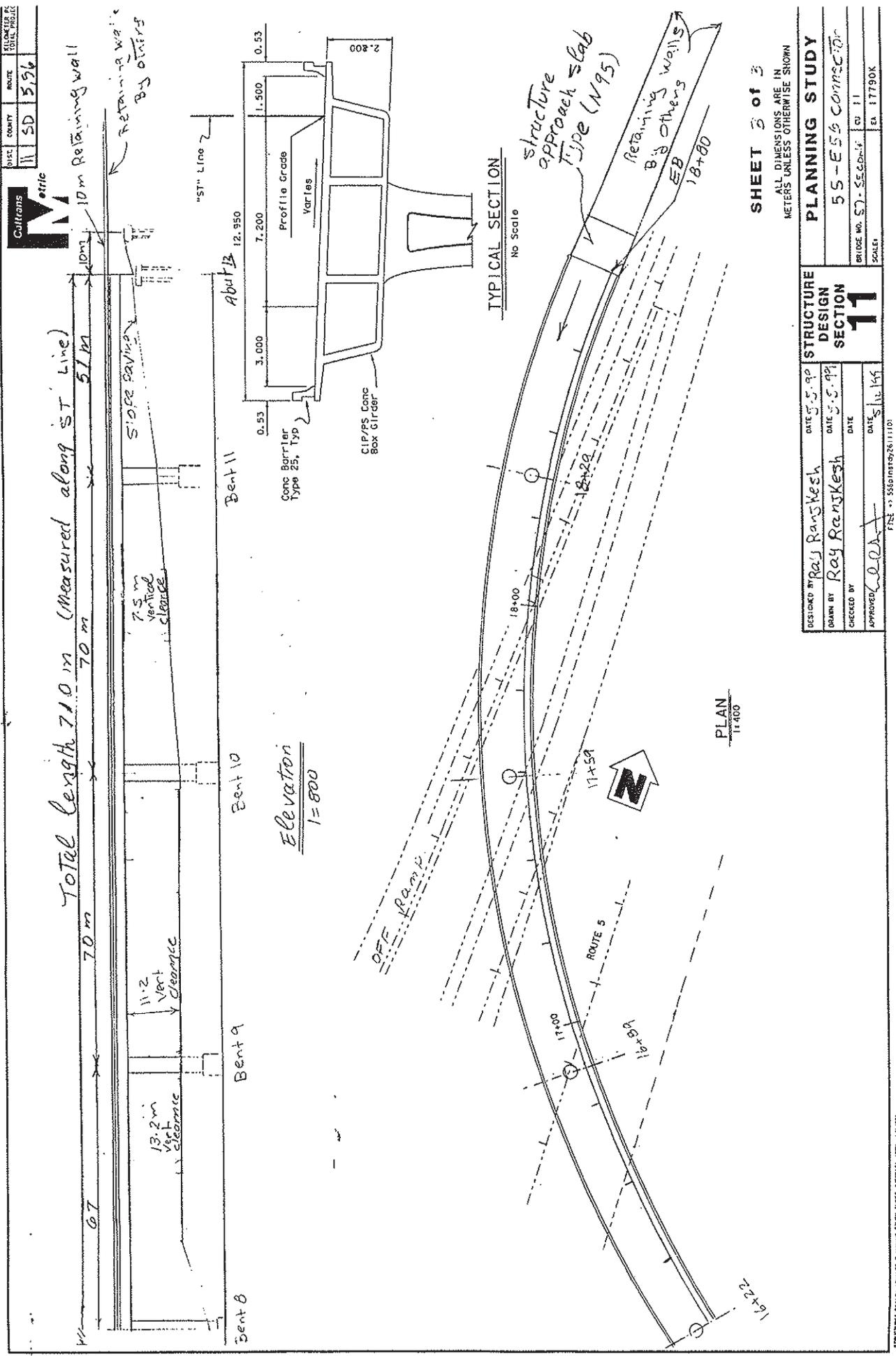


TYPICAL SECTION  
No Scale



SHEET 2 of 3  
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY	DATE	STRUCTURE DESIGN SECTION
RAY RANJKESH	5-99	11
DRAWN BY	DATE	BRIDGE NO. 57-5620-11
RAY RANJKESH	5-99	55-556 connector
CHECKED BY	DATE	SCALE
RS	5/11/99	AS 1:7790K
APPROVED BY	DATE	FILE # 55501072610105
RS	5/11/99	



SHEET 3 of 3

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

PLANNING STUDY

55-E56 Connector

BRIDGE NO. 55-E56-11

SCALE EA 1:7700X

STRUCTURE DESIGN SECTION

11

DATE 5.5.99

DATE 5.5.99

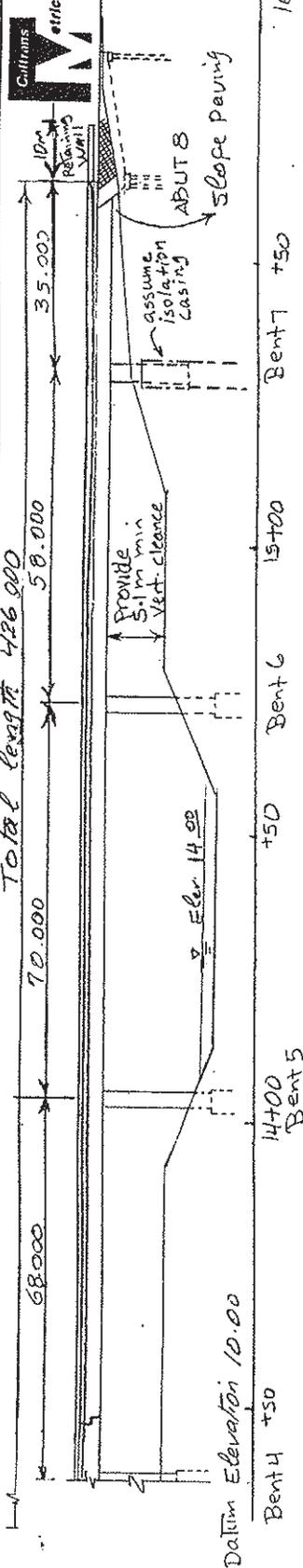
DATE 5.11.99

DATE 5.11.99

FILE: 55E56INSTRY261110

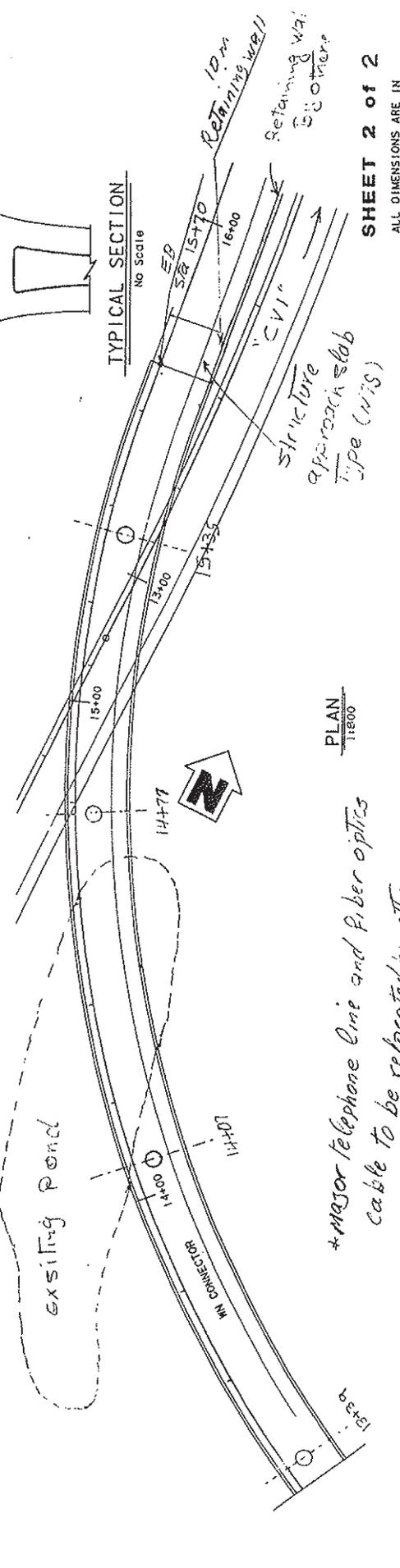
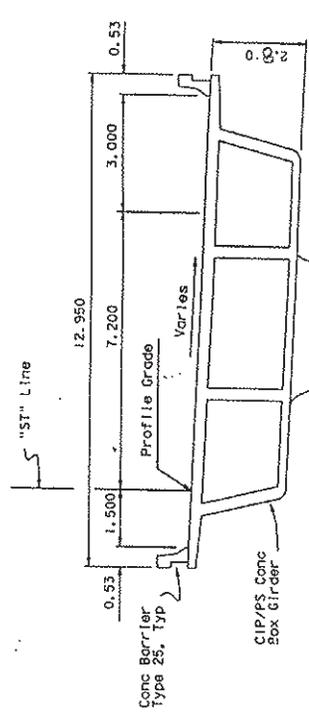
STRUCTURE DESIGN ADVANCE PLANNING STUDY SHEET NO. 11/200

ASST.	CONVY.	ROUTE	KILOMETERS TOTAL PROJ.
11	SD	5.56	



ELEVATION  
1=800

Stage construction falsework opening  
Carmel Valley Rd. 13.5m



\*Major telephone line and fiber optics cable to be relocated by others.

SHEET 2 of 2

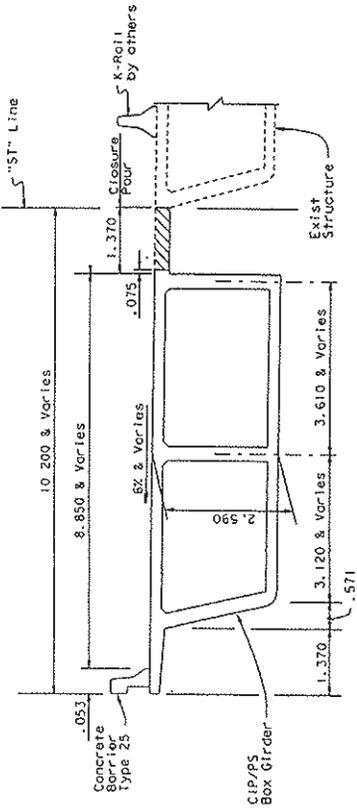
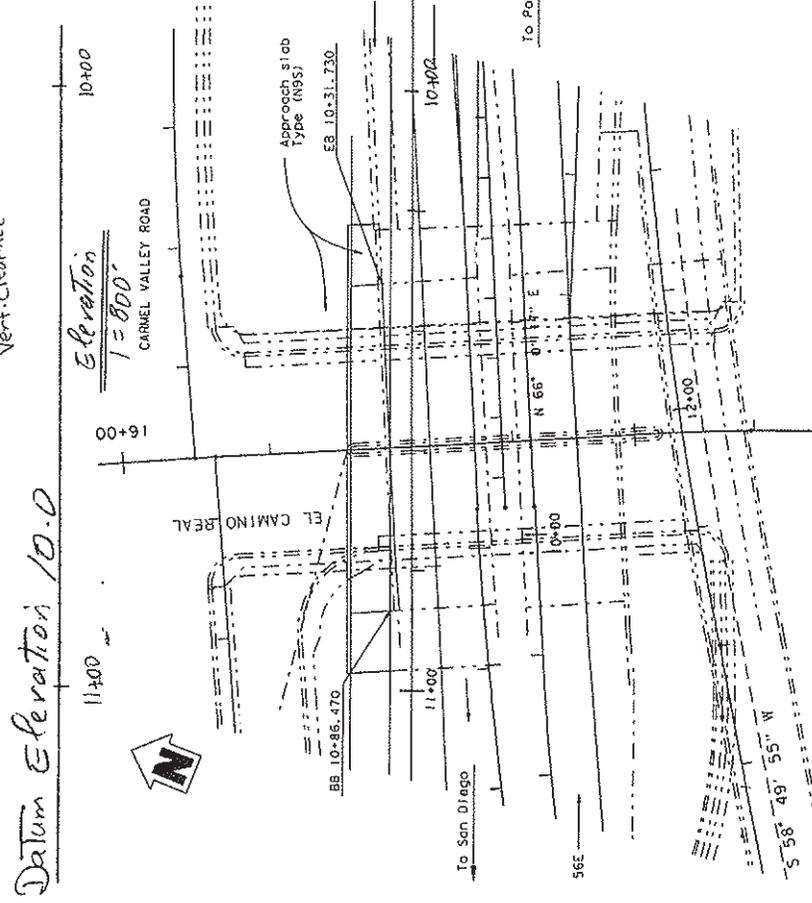
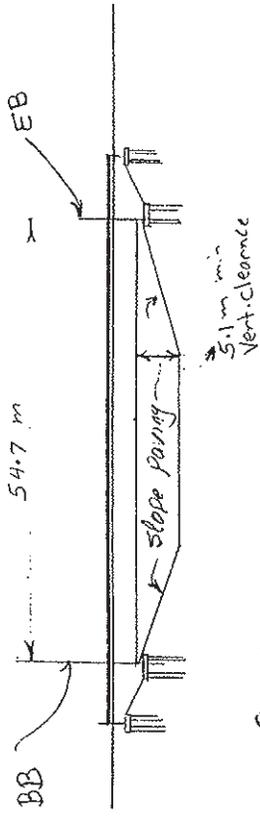
ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY	DATE	STRUCTURE DESIGN SECTION
RAY RANJESH	4/20/99	11
DRAWN BY	DATE	PLANNING STUDY
BJE/RS	4/20/99	WSS-W/S connector
CHECKED BY	DATE	BRIDGE NO. 57-141N CONN
APPROVED	DATE	CU 11
	11.11.99	SCALE: 1:1790K

PROJECT NO.	11	COUNTY	SD	ROUTE	5.56	APPROVED BY	LOCAL PROJECT
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- Notes*
- Assume Class 65 CISS for abutment Foundation
  - 5.1m minimum vertical clearance



TYPICAL SECTION AT EB  
1:100

Date of estimate:	5-18-99
Structure depth:	2.590
Length:	54.7
Width:	8.80 & varies
Area:	450.00
Cost/M including 10% Mobilization & 2% Contingency:	\$ 27168.7
Total Cost:	\$ 1,246,000

③ District to provide AC overlay for modification of super-elevation difference between existing and widening bridges. Subject to the approval of OSD.

SHEET 1 of 1

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGNED BY	Ray Ranjresh	DATE	5-13-99
CHECKED BY	Ray Ranjresh	DATE	5-13-99
APPROVED BY	[Signature]	DATE	5-13-99
STRUCTURE DESIGN SECTION	11	BRIDGE NO.	57-1004L
PLANNING STUDY	ELCAMINO REAL UC WIDEN	CU (I)	EA 17790K
SCALE:			

PLAN  
1:800

**1 TRAFFIC DATA**

<b>Average Daily Traffic</b>	
Base Year (Year 0)	17,300 <small>w/ Project</small>
Forecast (Year 20)	24,000 <small>w/ Project</small>
<b>Percent Truck Traffic</b>	8% <small>8%</small>
<b>Segment Length (miles)</b>	
<small>Existing</small>	1.5
<small>New</small>	1.3
<b>Average Vehicle Operating Speed (mph)</b>	
<small>Existing Facility:</small>	
Base Year (Year 0)	30 <small>w/ Project</small>
Forecast (year 20)	20 <small>w/ Project</small>
<small>New Facility:</small>	
Initial year (Year 1)	55 <small>w/ Project</small>
Forecast (year 20)	45 <small>w/ Project</small>

**3 ECONOMIC ASSUMPTIONS**

<b>General</b>	
Inflation Rate	3.50%
Discount Rate	8.00%
Real Discount Rate	4.50%
<b>User Costs</b>	
Value of Travel Time (\$/minute) - Autos	\$0.19
Value of Travel Time (\$/minute) - Trucks	\$0.49
<small>Use Lookup Table on Page 1: Existing New</small>	
Unit Operating Cost (Autos)	\$0.19 <small>\$0.18</small>
Unit Operating Cost (Trucks)	\$0.33 <small>\$0.40</small>

**2 ACCIDENT DATA & COSTS**

<b>3-Year Accident Data for Facility</b>		
Fatal Accidents	0	Avg. Cost per Accident
Injury Accidents	13	\$2,920,000
Property Damage Accidents	15	\$110,000
Avg. Cost / Accident for Facility:		\$8,400
<b>Accident Rates (per million vehicle-miles)</b>		
<small>Without Project</small>		
Statewide Avg. for Same Rd. Class	2.46	
Actual Rate on Existing Segment	3.00	
Adjustment Factor (AF= Actual / Avg.)	1.22	
<small>With Project</small>		
New Facility:		
Statewide Average for Same Rd. Class	1.09	
Adjusted Avg. Rate (Avg. (x) AF)	1.33	

**4 INVESTMENT ANALYSIS**

<b>SUMMARY RESULTS</b>	
Life-Cycle Costs (mil. \$)	\$40.0
Life-Cycle Benefits (mil. \$)	\$23.6
Net Present Value (mil. \$)	-\$13.7
Benefit / Cost Ratio:	0.7
Rate of Return on Investment:	-1.7%

Notes: Accident rate for Local Road-Existing  
Accident rate for I-5-Proposed

**PROJECT: 5/56 NB Connectors-Carmel Valley Road-Alt 2**

**1 TRAFFIC DATA**

<b>Average Daily Traffic</b>	
Base Year (Year 0)	17,300
Forecast (Year 20)	24,000
<b>Percent Truck Traffic</b>	<b>8%</b>

<b>Segment Length (miles)</b>	<b>Existing</b>	<b>New</b>
	1.5	1.5

<b>Average Vehicle Operating Speed (mph)</b>	
Existing Facility:	
Base Year (Year 0)	30
Forecast (year 20)	20
New Facility:	
Initial year (Year 1)	40
Forecast (year 20)	30

**2 ACCIDENT DATA & COSTS**

<b>3-Year Accident Data for Facility</b>		
	Count (No.)	Avg. Cost per Accident
Fatal Accidents	0	\$2,920,000
Injury Accidents	13	\$110,000
Property Damage Accidents	15	\$6,400
<b>Avg. Cost / Accident for Facility:</b>		<b>\$54,500</b>

<b>Accident Rates (per million vehicle-miles)</b>		
	Without Project	With Project
Statewide Avg. for Same Rd. Class	2.46	2.46
Actual Rate on Existing Segment	3.00	3.00
Adjustment Factor (AF= Actual / Avg.)	1.22	
New Facility:		
Statewide Average for Same Rd. Class		2.46
Adjusted Avg. Rate (Avg. (X) AF)		3.00

**3 ECONOMIC ASSUMPTIONS**

<b>General</b>	
Inflation Rate	3.50%
Discount Rate	8.00%
Real Discount Rate	4.50%
<b>User Costs</b>	
Value of Travel Time (\$/minute) - Autos:	\$0.19
Value of Travel Time (\$/minute) - Trucks:	\$0.49
<b>Use Lookup Table on Page 1:</b>	
Unit Operating Cost (Autos)	Existing \$0.19 New \$0.18
Unit Operating Cost (Trucks)	Existing \$0.33 New \$0.36

**4 INVESTMENT ANALYSIS**

SUMMARY RESULTS

Life-Cycle Costs (mil. \$)	\$14.4
Life-Cycle Benefits (mil. \$)	\$11.6
Net Present Value (mil. \$)	-\$2.9
Benefit / Cost Ratio:	0.8
Rate of Return on Investment:	1.6%

Notes: Accident rate for Local Road-Existing & Proposed

## Mitigation and Compliance Cost Estimate

Dist.-Co.-Rte.-KP: 11-SD- I-5/SR-56 EA: 17790K  
 Project Description:  
 Project Study Report for I-5/SR-56  
 Alternative 1

Person completing form/Dist. Branch.: Mohammad Ravanipour, Dist. 11, Design  
 Project Manager: Joe Hull Phone number: (619) 688- 3633  
 Date:

	Mitigation			Compliance Permit & Agreement <sup>4</sup>
	Project Feature <sup>1</sup>	Enviro. Obligation <sup>2</sup>	Statutory Require. <sup>3</sup>	
Fish & Game 1601 Agreement				
Coastal Development Permit				
State Lands Agreement				
NPDES Permit				
COE 404 Permit - Nationwide				
COE 404 Permit - Individual				
COE Section 10 Permit				
COE Section 9 Permit				
Other:				
Noise attenuation		\$200,000		
Special landscaping				
Archaeological				
Biological		\$10,000		
Historical				
Scenic resources				
Wetland/riparian				
Other:		\$2,000		
<b>TOTAL (Enter zeros if no cost)</b>	<b>\$0</b>	<b>\$212,000</b>	<b>\$0</b>	<b>\$0</b>

\*Costs are to be reported in \$1000's

\*Costs are to include all costs to complete the commitment including: capital outlay and staff support; cost of right-of-way or easements; long-term monitoring and reporting, and; any follow-up maintenance.

\*After approval by the Project Manager a copy of the completed form is to be included in the PR/PSSR and a copy sent to Headquarters Environmental Program, attention: John Hebner

<sup>1</sup>Mitigation Caltrans would normally do if not required by a permit or environmental agreement.

<sup>2</sup>Mitigation Caltrans would not normally do but is required by conditions of a permit or environmental agreement.

<sup>3</sup>Mitigation Caltrans would not normally do and is not required by a permit or environmental agreement but is required by law.

<sup>4</sup>Non-mitigation Caltrans would not normally do but is required by conditions of a permit or agreement.

