State Route 12 Shoulder Widening from Azevedo to Liberty Island Roads, and Left-Turn Pockets at Currie, McCloskey and Azevedo Roads

04-SOL-92, PM 20.6121.3 and 22.6/23.7
Expenditure Authorization 2A6200

Initial Study with Proposed Mitigated Negative Declaration (CEQA)

Prepared by the State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

Caltrans

February 2008

04-SOL-12
PM 20.6/21.3, and 22.6/23.7
EA 2A6200

On State Route 12, Currie Road to Liberty Island Road
in Solano County

INITIAL STUDY with
PROPOSED MITIGATED NEGATIVE DECLARATION (CEQA)

Submitted Pursuant to: (State) Division 13, Public Resources Code

Prepared by
THE STATE OF CALIFORNIA
Department of Transportation

2/29/08
Date of Approval

Melanie Brent
Melanie Brent
Office Chief
Office of Environmental Analysis
California Department of Transportation

General Information About This Document

What's in this document?

The California Department of Transportation has prepared an Initial Study – Proposed Mitigated Negative Declaration, which examines the potential environmental impacts for the proposed project located on SR 12 Currie Road to Liberty Island Road in Solano County. The document describes why the project is being proposed, the existing environment that could be affected by the project, and any potential impacts.

What should you do?

Please read this Initial Study (CEQA). We welcome your comments. If you have any concerns regarding the proposed project, please send your written comments to Caltrans by the deadline. Submit your comments via regular mail to Caltrans, Attn: Howell Chan, Office of Environmental Analysis, P.O. Box 23660, Mail Station 6-C, Oakland, CA 94623-,0660; submit comments via email to Howell_Chan@ dot.ca.gov
Submit comments by the deadline: June 11,2008
This document is also available at www.dot.ca.gov/dist4/envdocs.htm

What happens after this?

Dates for open forum public meetings will be scheduled during the first week of June if requested by May 26,2008. Please check your local newspaper for the formal announcements. After comments are received fi-om the public and reviewing agencies, Caltrans may (1) give environmental approval to the proposed project, (2) undertake additional environmental studies, or (3) abandon the project. If the project were given environmental approval and funding were appropriated, Caltrans could design and construct all or part of the project.

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Howell Chan, Senior Environmental Planner, P.O. Box 23660, Mail Station 6-C, Oakland, CA 94623-0660; (510) 286-5623 Voice, or use the California Relay Service TTY number, (510) 286-4454.

State of California
Department of Transportation

SCH Number: [ ]
04-SOL-12, PM 20.6/21.3 and 22.6/23.7
EA 2A6200

Negative Declaration (CEQA)

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to provide standard eight-foot shoulders in both directions of State Route 12 from Azevedo Road to Liberty Island Road (PM 22.7/23.7), and to add left-turn pockets at Azevedo Road (PM22.7), McClosky Road (PM 21.3) and Currie Road (PM 20.6).

Determination

Caltrans has prepared an Initial Study and determines from this study that the proposed project would not have a significant effect on the environment for the following reasons:

- The project will not significantly affect fish, plant life or wildlife; nor will it significantly affect any rare or endangered species.
- There will be no significant impacts upon the aesthetic features of the area.
- The project will not significantly affect any important farmland, any floodplain or any wetlands.
- No historic or archaeological sites or structures of architectural or engineering significance will be affected.
- The project will not affect neighborhoods, social, cultural, or educational facilities, or the economy of the area.
- The potential for geologic or seismic hazards will not be increased by the project.
- The project is compatible with local, regional and state land use planning and will not introduce any new patterns of land use or any growth in the area. It will not alter present patterns of traffic circulation or movement.
- There will be no impacts on noise, air, and water quality. The project will not change the rate of use for any natural resources.

_____
James B. Richards
Deputy District Director
California Department of Transportation

_____
Date

Summary

The California Department of Transportation proposes to upgrade State Route (SR) 12 to meet current Caltrans design standards. SR 12 is currently a two-lane highway that serves as the major east-west corridor connecting Napa, Sonoma, and Solano Counties and the San Joaquin Valley. This highway is also strategically located as the only east-west route connecting Solano County to the Sacramento and Stockton areas and, as such, handles a significant amount of interregional traffic. The existing shoulders are standard 8-foot wide in both directions between Currie Road (PM 20.6) and Azevedo Road (PM 22.7). From Azevedo Road (PM 22.7) to Liberty Island Road (PM 23.7), the existing roadway shoulders are less than the 8-foot standard width in both directions. However, there are no left-turn lanes at the three intersections of Currie Road (PM 20.6), McCloskey Road (PM 21.3), and Azevedo Road (PM 22.7).

No significant environmental impacts have been identified in technical studies prepared for the proposed project. Caltrans has used avoidance and minimization measures that reduce any potential project impacts to a level of insignificance. A Categorical Exclusion is being prepared for this project.to satisfy the requirements under NEPA.

The alignment passes though land with potential biological resources. Technical studies addressing potential impacts to listed species and critical habitat including vernal pools for listed species are currently underway. Undetermined vernal pools may be lost due to the project, but would be replaced in an adjacent mitigation area already identified by Caltrans staff and approved by resource agencies. During construction near Well Creek Bridge, measures would be taken to avoid any impacts to nesting birds and aquatic wildlife in the waters below.

This project may affect the following federally listed species:

vernal pool fairy shrimp (Branchinecta lynchiii), vernal pool tadpole shrimp (*Lepidurus* packardi), Conservancy fairy shrimp (Branchinecta conservatio), California tiger salamander (Ambystoma *californience*)

Additionally, the project may affect the following California state listed species:

Swainson's hawk (Buteo swainsonii), burrowing owl (Athene *conicularia*), giant garter snake (*Thanmophis gigus*).

Permits required for this project include:

California Fish and Game Code **1602** Streambed Alteration Agreements

Section **401** Water Quality Certifiction Permit

US Army Corps of Engineers Section **404** Nationwide Permits **14** and 33

US Fish and Wildlife Section 7 Consultation

The project would require approximately 5.53 acres of additional right of way (R/W) in order to accommodate standard shoulders and profile adjustments. This R/W would be in the form of narrow "sliver" acquisitions from ranches engaged in agricultural pursuits along the length of the project. Agricultural land is protected from conversion by State and Federal laws. However, the land and soil are considered non-prime for intensive agriculture, and the amount of acqusition is small in relation to the amount of agricultural acreage in Solano County and the acreage of the adjacent ranches. Therefore, this would not be a significant impact.

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Chapter 1. Proposed Project

1 . Introduction

The California Department of Ttansportation (Caltrans) proposes to upgrade State Route (SR) 12 to meet current design standards. The proposed project will provide standard eight-foot shoulders in both directions of State Route 12 from Azevedo Road to Liberty Island Road (PM 22.7/23.7), and add left-turn pockets at Azevedo Road (PM 22.7), McCloskey Road (PM 21.3) and Currie Road (PM 20.6). Figures 1 and 2 at the end of this chapter show the project location and vicinity maps.

To accommodate the shoulder widening, the existing Well Creek Bridge (PM 22.9) and cross culverts will be extended/replaced and utilities relocated. In order to reduce environmental impacts along Well Creek, a retaining wall is proposed on the North side of the highway between PM 22.9 and 23.0.

This project is programmed under the Collision Reduction Program (Code 201.015) in the amount of $10,447,000 ($8,505,000 for construction and $1,972,000 for right of way) are programmed for the fiscal year (FY) 201012011 in the 2008 State Highway Operation and Protection Program (SHOPP).

1.2 Background

State Route (SR) 12 is a two-lane conventional highway that serves as the only east-west route connecting Solano County to the Sacramento and Stockton areas. The existing shoulders are standard 8-foot wide in both directions between Currie Road (PM20.6) and Azevedo Road (PM 22.7). From Azevedo Road (PM 22.7) to Liberty Island Road (PM 23.7), the existing roadway shoulders are less than standard width in both directions. There are also no left-turn pockets at three intersections of Currie Road (PM 20.6), McCloskey Road (PM 21.3), and Azevedo Road (PM 22.7).

This highway is strategically located as the only east-west route connecting Solano County to the Sacramento and Stockton areas, and as such handles a significant amount of interregional traffic. SR 12 serves as a major road to numerous tourist attractions in the Sacramento Delta, the Sierra Nevada Mountains, and the Lake Tahoe area. Within the project limits, SR 12 carries significant numbers of trucks and conveys traffic between Suisun City to the west and Rio Vista to the east. Both of these residential areas

are experiencing high rates of growth. Accidents along this corridor have been severe, but occur less frequently on the average for roads with similar usage.

A Major Investment Study (MIS) conducted by Solano Transportation Authority (STA) was completed in October 2001, for the portion of Route 12 extending from Route 80 to the Sacramento River. The MIS identified potential existing and future transportation deficiencies and proposed appropriate phased remedies in the Study corridor. The MIS, proposed both short-term and long-term recommendations (Year 2025). This project is consistent with the MIS recommendations to provide Safety Improvements along this section of the highway. The MIS can be viewed at the Solano County Transportation Authority website at Solanolinks.com.

The 2005 Regional Transportation Plan (RTP), produced by the Metropolitan Transportation Commission (MTC), includes projects funded by the SHOPP for improvements in operation and safety between 1-80 and the Sacramento River (Reference Number 21823).

1.3 Project Purpose and Need

The purpose of this project is to reduce accidents and minimize accident severity involving fixed objects, and provide a 'clear recovery zone' off the traveled way on State Route (SR) 12 between Azevedo Road (PM 22.7) and Liberty Island Road (PM 23.7) as a part of the Department's Collision Reduction Program. Under the Clean Up the Roadside Environment program (CURE), this project will remove trees that are in the clear recovery zone and widen the shoulder along both directions of Route 12.

Two roadway rehabilitation projects (EA 0T0900 and EA 0T1010) scheduled for construction in 2010 will provide standard shoulder widths from Currie Road to the west of the project limits. This project will correct the one-mile stretch of non-standard shoulder between Azevedo and Liberty Island Roads (PM 22.7/23.7) by providing standard eight-foot shoulder widths in both directions. Due to numerous accidents along State Route 12 corridor, there was a need to provide left-turn pockets at all the intersections along this route. As a result, this project will also provide left-turn pockets at Currie Road (PM 20.6), McCloskey Road (PM 21.3), and Azevedo Road (PM 22.7).

This project is programmed for $10,447,000 in the State Highway Operation and Protection Program (SHOPP) for the 200912010 fiscal year under program code 201.015 The estimated construction cost is $8,505,000 and right of way is $1,972,000.

1.4 Project Description

The Build Alternative for the proposed project will provide standard eight-foot shoulders in both directions of State Route 12 from Azevedo Road to Liberty Island Road (PM 22.7/23.7), and add left-turn pockets at Azevedo Road (P.M.22.7), McCloskey Road (PM 21.3) and Currie Road (PM 20.6).

To accommodate the shoulder widening, the existing Well Creek Bridge (PM 21.9) and cross culverts will be extended/replaced and utilities within the right of way relocated. In order to reduce environmental impacts along Well Creek, an embankment confinement system designed to combat soil erosion is proposed on the north side of the highway between PM 22.9 and 23.0.

No Build

The No-Build Alterative would retain SR 12 current configuration.

1.5 Permits and Approval Needed

This project will require permits, agreements, and concurrence from resource agencies:

Agency	Permit/Approval
United States Fish and Wildlife Service (USFWS)	Section 7 Consultation for Threatened and Endangered Species, Biological Opinion-IncidentalTake Statement
United States Army Corps of Engineers (USACE)	Section 404 Permit
California Department of Fish and Game (CDFG)	Section 1602 Agreement for Streambed Alteration Section 2080.1 Agreement for Threatened and Endangered Species
State Water Resources Control Board (SWRCB)	Section 402 National Pollution Discharge Elimination System (NPDES)
Regional Water Quality Control Board (RWQCB)	Section 401 Permit

The following figures are attached at the end of this chapter: Azevedo Road to Liberty Island Road including left turn pockets at Azevedo,McClosky, and Curries Roads, Project Location and vicinity maps.

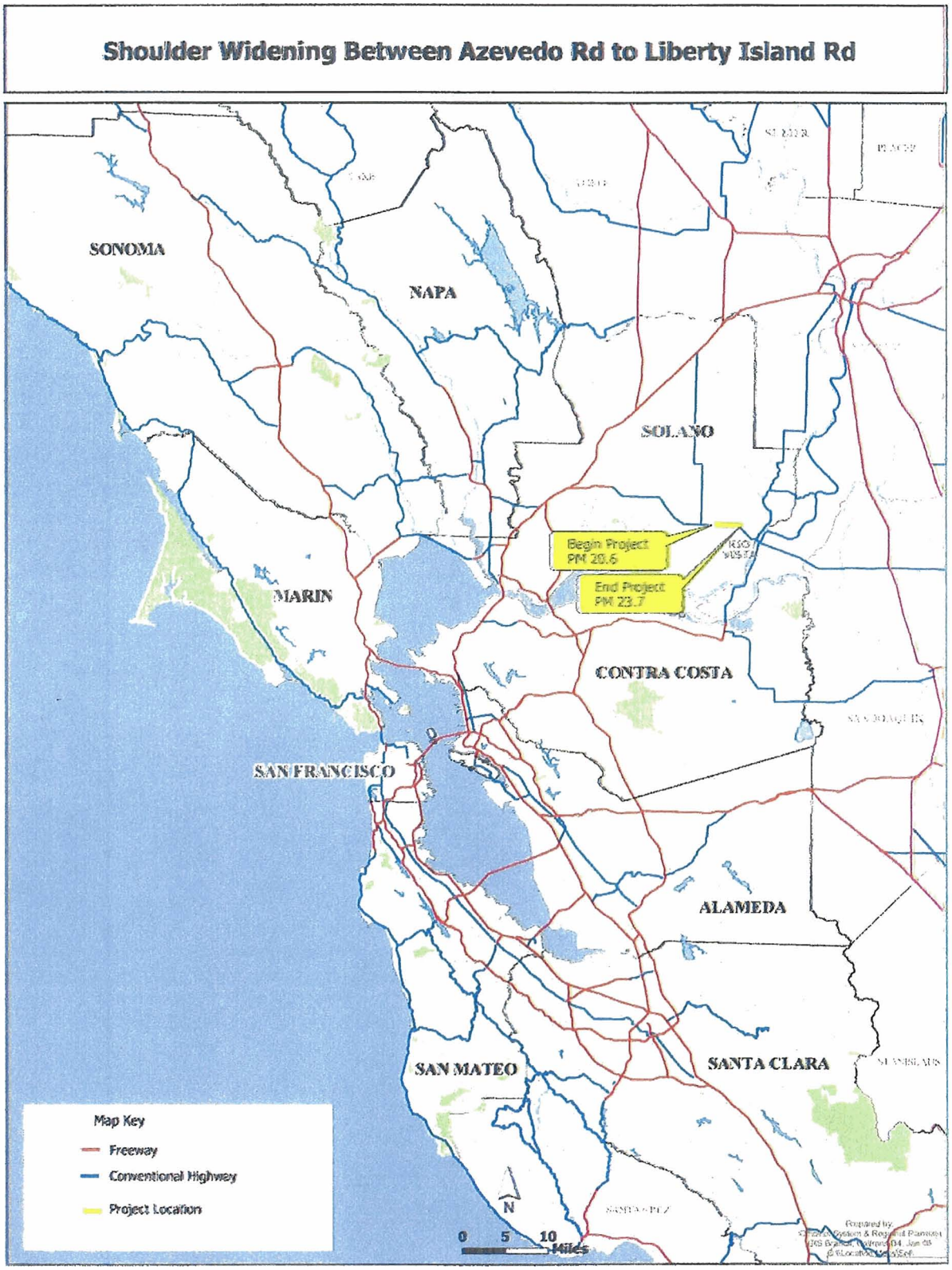

Figure 1. Project Vicinity

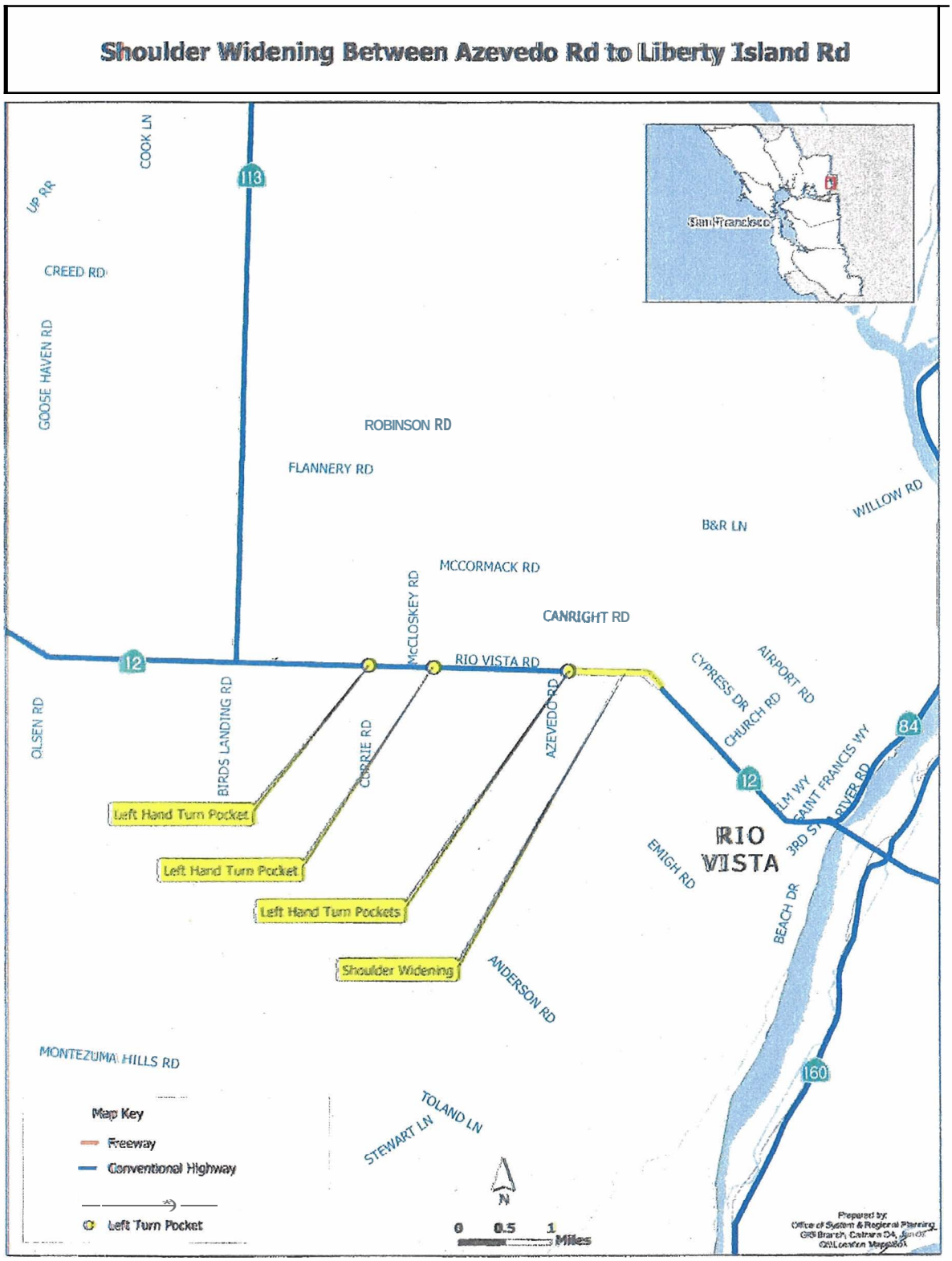

Figure 2. Project Location

Chapter 2. Affected Environment, Environmental Consequences, and Avoidance, Minimization &/or Mitigation Measures

This chapter describes the environmental resources of the project areas and how the resources would be affected by the proposed project. Potential environmental impacts of the proposed project, recommended avoidance and minimization measures are also discussed. Issues of concern pursuant to the California Environmental Quality Act (CEQA) will receive further discussion and provide the basis for responses to the CEQA Checklist form. Please see Appendix A for the CEQA Checklist.

Based on the results of technical studies that examined impacts to environmental resources, Caltrans determined that the appropriate level of CEQA determination for this project is an Initial Study/Mitigated Negative Declaration (IS/MND).

The appropriate level of NEPA determination is a Categorical Exclusion.

The word "significance" has been used in this document as a CEQA term. The proposed project would not significantly affect the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. The mitigation measures identified and described in this document for the proposed project will minimize the impacts to the environment to a level below significance.

This Initial Study will not address the following issues and resources based on reviews from professionally qualified staff (PQS). Noise, Geology and Soils, Air Quality and Cultural Resources.

The Office of Cultural Resources Studies has preformed a formal records search, reviewed Caltrans project files, the in-house Cultural Resource Database, and geomorphological data concerning the project area. An Archeological Survey Report (ASR) of the project area is currently being compiled by Caltrans PQS staff that will satisfy Section 106 of the National Historic preservation Act. The ASR will formally record the finding that the stretch of State Route 12 between the post miles 20.6 and 23.7 is of very low cultural sensitivity, that the project has very little potential to affect historic

properties; and no further study is necessary. Cultural resources will not be addressed further in this Initial Study.

2.1 Human Environment

2.1.1 Land Use

Existing and Future Land Use

Solano County is a fast-growing region within the northern reaches of the San Francisco Bay Area. Regionally, SR 12 is a major east-west route to destinations such as Sacramento, San Francisco and the greater Bay Area, and provides a link to major freeways such as 1-80 and I-5. SR 12 is a two-lane highway facility set in a rural landscape that is flat grassland to the west, and rolling hilly terrain to the east. There are few residential or commercial structures in or around the project area. This stretch of the highway is within unincorporated portions of Solano County. Agricultural land abut the right of way along both sides of the alignment. The agricultural use is primarily grazing of livestock. The land uses along SR 12 are zoned and projected to remain rural, agricultural, and unchanged.

This highway is strategically located as the only east-west route connecting Solano County to the Sacramento and Stockton areas, and as such, handles a significant amount of interregional traffic. SR 12 is a major road to various tourist attractions in the Sacramento Delta, the Sierra Nevada Mountains, and the Lake Tahoe area. Within the project limits, SR 12 carries significant numbers of trucks and conveys traffic between Suisun City to the west and Rio Vista to the east. Both of these urban areas are experiencing high rates of growth. Accident levels are lower for SR 12 than the average for similar roads, but the nature of accidents has been severe.

The long-range (20-year) concept for the highway, which is the Caltrans strategy for future improvements, is for a 4-lane expressway facility divided with limited access such as driveways or minor streets from Suisun City to Rio Vista. However, there are no capacity-increasing planned improvements to the SR 12 corridor within a 25-year planning horizon. The 2005 Regional Transportation Plan (RTP), Transportation 2030 Plan for the San Francisco Bay Area, produced by the Metropolitan Transportation Commission (MTC), includes projects funded by the State Highway Operation Protection Program (SHOPP) for improvements in operation and safety between 1-80 and the Sacramento River (Reference Number 21823).

Consistency with Plans:

Transportation Plans

The proposed project is consistent with the 2005 Regional Transportation Plan (RTP), ***Transportation*** 2030 ***Plan for the San Francisco Bay Area,*** produced by the Metropolitan Transportation Commission (MTC).

State Planning

The 1985 Route Concept Report identified the widening of Route 12 to four lanes from Suisun City to the Solano County/Sacramento County line.

A Major Investment Study (MIS) was completed in October 2001, for the portion of SR 12 extending from Route 80 to the Sacramento River. The MIS identified potential existing and future transportation deficiencies and proposed appropriate phased remedies in the Study corridor. As part of the MIS, both short-term and long-term recommendations (Year 2025) were proposed. This project is consistent with the MIS recommendations to provide Safety Improvements along this section of the highway.

General and Community Plans:

Solano County General Plan

The proposed project would not change any existing land uses. The project is consistent with the Solano County General Plan.

Coastal Zone and Wild and Scenic Rivers

The entire project area is outside of coastal zones. There are no wild and scenic rivers that traverse the project area.

Parks and Recreation

There are no publicly-owned parks, recreation areas, or wildlife or waterfowl refuges that border or are near the project area. No historic sites exist within the project area.

2.1.2 Growth

Regulatory Setting

The California Environmental Quality Act (CEQA) requires the analysis of a project's potential to induce growth. CEQA guidelines, Section 15126.2(d), require that environmental documents "…discuss the ways in which the proposed project could foster

economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

Affected Environment

This portion of the corridor connects recreational and commercial areas, and rural agricultural communities to urban areas for distribution purposes of agriculture products. The SR 12 corridor provides important linkage to SR 113, I-80, and I-5; further to the west, it provides access to US-101.

This project does not increase the traffic capacity of the highway facility and simply enhances its safety and efficiency. Therefore, it would not have any impact on the growth of the area or the community.

Employment Projections and Jobs/Housing Balance

In 2005, there were 148,640 jobs and 194,900 employed residents in Solano County for a jobs deficit of 46,260 jobs.

Job growth is forecast for Solano County with 47% added to the Solano County job base in the period 2005-2030. A projected 38% increase in employed residents ensures no significant improvement to the present situation and a continuing jobshousing imbalance. The jobs deficit is projected to increase to 51,890 in 2030. Growth in jobs is projected to be 47% with a 38% growth in employed residents.

To summarize, the rate of growth in Solano county jobs is expected to be slightly greater than the growth in county residents, but the improvement in the jobshousing balance is negligible compared with the existing jobs deficit. For the foreseeable future, numerous Solano County residents will be required to commute to jobs elsewhere in the Bay Area. As another indicator of this jobshousing imbalance, Solano County today contains the greatest proportion of long-distance commuters (more than 45 minutes each way) among the nine Bay Area counties.

These predicted employment increases may mitigate the housing growth within each county, but all projections emphasize continued demand for travel to local and regional jobs and for regional shopping needs. A significant number of in-county jobs in each of these outlying Bay Area counties are low-wage positions in the retail and service industries that require residents to travel out-of-county for employment.

Table 1

Population, Housing and Employment Growth

in the Greater Project Region: 2005-2030. (from ABAG)

	Population			Households			Employment (Jobs)		
Geographic Area	2005	2030	% change	2005	2030	% change	2005	2030	% change
Solano County	423,800	581,800	37	141,100	193,840	37	148,640	217,910	47
Fairfield	106,600	147,500	38	34,490	47,850	39	49,960	74,120	48
Suisun City	28,500	38,600	35	8,760	11,770	34	4,060	6,890	70
Vacaville	97,500	127,100	30	31,350	41,350	32	30,350	45,920	51

Impact

There will be no adverse impacts as a result of the proposed project.

2.1.3 Farmlands/Agricultural Lands

Regulatory Settiug

The California Environmental Quality Act requires the review of projects that would convert Williamson Act contract land to non-agricultural uses. The main purposes of the Williamson Act are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced property taxes to deter the early conversion of agricultural and open space lands to other uses.

Affected Environment

The project proposes to acquire land from private owners for additional right of way along SR 12. The acquisition of additional right of way is proposed in order to widen the shoulder to standard width, to replace the existing longitudinal side ditchs, and to relocate exsisting utility instillations. Additional right of way acquisitions are in the form of narrow parcel strips –slivers– along SR 12 within the project limits. The proposed project would require fifteen partial aquisitions in which ten of the parcels are pasture, dry irrigation crop lands, one is agricultural with a residence and four are industrial. This may affect several of the following properties with active Williamson Act Contracts. APN# 0048-100-570,0048-100-560,0048-100-440,0048-100-420, and 0048-110-230.

Impact

The Williamson Act of 1965 is the principal implementation of the state of California's policy for the preservation of agricultural land including prime, non-prime and grazing lands.

According to CEQA guidelines, any farmland under this Act shall be evaluated for proposed future land use in coordination with the California Department of Conservation (CDC). There will be no significant impact of the project on agricultural production, each right-of-way acquisition for this project is on the periphery of the agricultural properties. Therefore, no significant acreage of farmland will become non-farmable due to interference with land patterns.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation for farmland is proposed for the project at this time.

2.1.4 Community Impacts

Regulatory Setting

Under the California Environmental Quality Act, an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

Affected Environment

This stretch of SR 12 links northbound SR 113 and is an important east-west link for motorists traveling between the Fairfield/Suisun City area and Rio Vista. These towns are destinations as well as transportation hubs for commuters using mass transit. SR 12 serves as an interregional, recreational, commercial, agricultural, and commuter route. It provides an important link to interstate truck routes including US-101,I-80 and I-5. The highway serves as a route for long-distance recreational bicycle travel.

Impact

The proposed project would not divide the community or require any relocations. The proposed project would not adversely result in adverse impacts on population growth/sprawl, local economy, municipal or community services, utility services, community character, or existing and proposed land uses.

2.1.5 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, ***Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,*** signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For year 2007, this was $20,650 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. The Department's commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix C of this document.

Impacts

The proposed project would not require any residential or business relocations. The widened road would be within an existing, highway corridor. Although the new median barrier would create a minor impact to traffic circulation, the project would not constitute any new physical or psychological barriers that would divide, disrupt or isolate

neighborhoods in the corridor. The proposed improvements would require both temporary and permanent sliver acquisitions affecting private property. Existing parking would not be affected. Private driveways that are affected due to the roadway widening will be realigned where needed.

Based on the above discussion and analysis, the build alternatives will not cause disproportionately high and adverse effects on any minority or low-income populations as per E.O. 12898 regarding environmental justice.

2.1.6 Utility/Emergency Services

Affected Environment

A right of way data sheet was prepared October 0112007 outlining utility installations existing within the current right-of-way. Relocation of utility installations is proposed in the scope of the project in order to provide a standard shoulder width. There are subsurface natural gas and telecommunication utilities in the roadside area and under SR-12. Utility owners located within the project limits are AT&T, PG&E, and a water service provider based on the Utility information sheet dated September 14,2007. PG&E and Frontier Communications sent their respective maps to Caltrans for verification. A request for Utility verification was sent to the Utility owners on September 24,2007 to communicate the additional project limits between Currie Road and McCloskey Road.

For the shoulder widening portions of the project from Azevedo Road to Liberty Island Road, utility relocation will be required. Additional utility information must be studied to determine the extent of relocations required once complete mapping from Utility owners is provided to Caltrans.

Impacts

During construction, Caltrans standard signage would be employed to clearly identify temporary detours in the project area to direct traffic including law enforcement, fire, and other emergency services. Power pole relocation would not affect the capacity or coverage of electrical or telephone service. There would most likely be minor inconveniences during the relocation of utility poles or other related structures. However, these would be both temporary and of short duration.

2.1.7 Traffic/Transportation/Pedestrian/Bicycle Facilities

Regulatory Setting

The Department is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

Affected Environment

SR 12 is the major east-west regional corridor linking the residential housing of Solano County with local and regional employment areas, and tourism in Napa County. The area is rural in character and the highway carries little pedestrian or bicycle traffic.

The 2004 Traffic Volumes on California State Highways publication indicates an Annual Average Daily Traffic (AADT) of 16,700 vehicles and is projected to increase demand to 32,000 vehicles by the year 2020 for this segment of SR 12. The table below shows the traffic data projections for the proposed project on SR 12 between Azevedo Road and Liberty Island Road. Average Daily traffic (ADT), Traffic Index (TI),a measure of the amount of punishment by weight that a roadway will be subject to over the design life period, and the percentage of truck traffic are represented below.

Table 2

Year	ADT	TI (mainline)	TI (shoulder)	Truck %
2007	22500			
2022	35200	11.5	7	8.9
2032	43700	12.5	8	8.9

Reducing accidents and minimizing accident severity involving fixed objects along SR 12 is the purpose of this project. Traffic and accident analysis shows that there is a need to reduce the number and severity of the accidents in the project location.

The following is a summary of the Traffic Accident Surveillance Analysis System (TASAS) accident data on SR 12, between Currie Road and Liberty Island Road for the

three-year period from July 1,2004 to June 30,2007. There were a total of twenty four accidents, including one-fatal, nine-injury and fourteen-property damage only accidents.

The number of accidents per million vehicle miles and the accident types are shown as follows:

Table 3

	FATAL	**FATAL+ INJURY**	**TOTAL**
Actual	**0.016**	**0.16**	**0.38**
Statewide Average	**0.030**	**0.41**	**0.82**

The twenty-four total accidents fall into the following collision type categories:

No. of Accidents	Type of Collision
4 (16.7%)	Head-On
5 (20.8%)	Sideswipe
6 (25.0%)	Rear End
1 (4.2%)	Broadside
6 (25.0%)	Hit Object
2 (8.4%)	Other

Impacts

A Transportation Management Plan (TMP) will be required for this project. The Transportation Management Plan is a special program that will be implemented during construction to minimize and prevent delay and inconvenience to the traveling public. The TMP will include press releases to notify and inform motorists, business, community groups, local entities, and emergency services of upcoming closures. Various TMP

elements such as portable changeable message signs and CHP Construction Zone Enhanced Enforcements Program (COZEEP) will be utilized to alleviate and minimize delay to the traveling public.

There may be temporary effects to the use of the facility by bicyclists during construction; due to project staging, those effects are believed to be of minor significance and of short duration. During construction, bicyclists may be routed to the opposite side of the highway as needed. Widening shoulders within the project limits would allow bicyclists to maintain safer distances from motorized vehicular traffic.

2.1.8 Visual/Aesthetics

Regulatory Setting

The California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with...enjoyment of aesthetic, natural, scenic and historic environmental qualities." [CA Public Resources Code Section 21001(b)]

Affected Environment

Landscape in the area is rural environment consisting of open farmlands and ranchettes located along rolling grassy hills. The Caltrans Scenic Highway Program states that SR 12 within project limits is not eligible for scenic highway status.

Impact

The project is in compliance with the Solano County General Plan. Project activities would not remove or separate any key feature or characteristic important to nearby or distant vistas. There are no scenic resources such as unique or outstanding trees, rock outcroppings, historic buildings or other structures, that would be adversely affected by the proposed project. Removal of roadside vegetation would not significantly affect the visual quality of the environment.

Proper erosion control measures pursuant to best management practices (BMPs) would be implemented by Caltrans. Embankments and excavated slopes would be revegetated with erosion-control grasses compatible with the adjacent seasonal grasses. Proposed embankments and excavated slopes would not be out of character in the appearance of the sourounding area.

There are approximately 44 trees that will be removed within the current right of way alignments including: (35 Juglans, 7 Eucalyptus and 2 Platanus). The removal of these trees requires no mitigation. However, replacement tree planting on adjacent properties will be encouraged.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refiain fiom conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration requirements for compliance are outlined in 23 CFR 650 Subpart A.

In order to comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments

  Risks of the action

- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

Affected Environment

Drainage facilities will be installed and upgraded and existing longitudinal ditches will be re-established along the limits of the project. The major drainage works include the replacement of five culverts and the extension of four other culverts.

On the north side of the project along Well Creek from PM 21.9 to PM 22.0, an embankment confinement system or a soldier pile retaining wall has been proposed to avoid filling into the creek bed.

Impacts

The drainage pattern of the existing facility would not change because it meets standard Caltrans criteria and guidelines for the design of drainage facilities. A portion of the project area is within the 100 Year Floodplain; the area subject to 100-year floods roughly corresponding to Well Creek. The proposed project does not result in new footings or structures in the 100 Year Floodplain and will not decrease floodplain values.

2.2.2 Water Quality and Storm Water Runoff

Regulatory Setting

The primary federal law regulating Water Quality is the Clean Water Act; (CWA) issued by the U.S. Environmental Protection Agency (EPA). The EPA delegated its authority in California to the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCB). The RWQCB prepares and adopts the Water Quality Control Plan, (Basin Plan), a master policy document for managing surface and groundwater quality in the region. The State Water Resources Control Board and the Regional Water Quality Control Board issue permits that implement the standards included in the Basin Plan as well as other requirements of the State Water Code and the federal Clean Water Act.

Section 401 of the CWA requires a water quality certification from the State Board or Regional Board when a project: 1) requires a federal license or permit (a Section 404 permit is the most common federal permit for Caltrans projects), and 2) will result in a discharge to waters of the United States.

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit system to regulate municipal and industrial storm water discharges, including discharges from highways. To ensure CWA compliance and facilitate processing of routine projects, the SWRCB has issued Caltrans a blanket NPDES Statewide Storm Water Permit to regulate storm water discharges from Caltrans facilities (Order No. 99-06-DWQ, CAS000003).

In addition, the SWRCB has issued a statewide Construction General Permit for construction activities (Order No. 98-08-DWQ, CAS000002), that applies to all storm water discharges from land where clearing, grading, and excavation result in disturbances of at least 0.4 hectares (1 acre) or more. Construction activity that results in soil disturbances of less than 0.4 hectares (1 acre) is subject to the General Permit if the

construction activity is part of a larger Common Plan of Development totaling 0.4 hectares (1 acre) or more of soil disturbing activities, or if there is potential for significant water quality impairment resulting fiom the activity as determined by the RWQCB. All projects that are subject to the construction general permit require a Storm Water Pollution Prevention Plan (SWPPP). Caltrans[7] construction projects that are less than 0.4 hectares (1 acre) need to incorporate Water Pollution Prevention Plans (WPCP).

Affected Environment

The project is located in the Valley-Putah Cache Elmira hydrologic area (HA 511.10), which receives 18.4 inches of annual rainfall in 195,399 acres of watershed. The climate in the area is of Mediterranean in character with dry warm summers and wet cool winters. Rainy season is fiom the period October 15 up to April 15. SR 12 project elevation limits are 79 feet on the west end (Azevedo Road) and slopes down to 48 feet one mile at the eastern limit (Liberty Island Road) of the project.

Runoff fiom the western portion of the project flows northeasterly to the Big Ditch and Lindsey Slough part of the Sacramento River. The eastern portion flows to the Sacramento River, about 3 miles southeast of the project. Sacramento River is part of the Delta Waterways and its tributary Lindsay Slough is about 4 miles north of the project. Well Creek, a seasonal stream crosses under SR 12 at PM 22.91.

The project will disturb about 5.2 acres of soil and increase the net added impervious area by 1.9 acres. Temporary impacts will be minimized through the use of Construction Site BMP measures and erosion control. Permanent impacts will be minimize by permanent treatment BMPs and design pollution control BMPs discussed below. Treatment BMPs will be incorporated into the project to the maximum extend practicable.

There are no identified high-risk areas in the vicinity. High-risk areas are locations where spills fiom department owned right-of-ways, activities, or facilities can discharge directly to municipal or domestic water supply reservoirs or ground water percolation facilities.

Ground Water

The project lies in the Solano Subbasin of the Sacramento Valley Solano Groundwater Basin 5-21.66. In 1941, groundwater levels declined due to increasing agricultural and urban development, reaching their lowest historical levels in the late 1950s.

A large pumping depression between Davis and Dixon was one of the more notable groundwater level depressions in the subbasin. Surface water deliveries beginning in 1959 caused groundwater levels to rise slightly or slow their descent. Since this time,

groundwater level trends within the Solano subbasin have been affected by drought periods in the mid-1970s and late-1980s but have recovered quickly in the following "wet" years.

General hydrologic classification of soils is predominantly Diablo Ayar clays followed by a small percentage of Antioch-San Ysidro complex and Rincon clay loam mainly belonging to hydrologic group D of very slow infiltration and high runoff potential. Rainfall intensity measured in terms of runoff rate in the Central Valley Region is 0.16 inches per hour. Potential groundwater contamination is low for work limited to widening the shoulder. In sites where excavation will be required such as culverts, ditches and drainages, groundwater depth will have to be investigated especially close to surrounding wetlands.

Avoidance, Minimization or Mitigation.

Caltrans NPDES Permit Order No. 99-06 specifies construction activities with soil disturbance of one acre or more to document water pollution control practices through an effective Storm Water Pollution Prevention Plan (SWPPP). For Caltrans projects with less than an acre of disturbed soil area (DSA), a Water Pollution Control Program (WPCP) is prepared. Peak flow rates, runoff velocities, and erosive characteristics of the soils in the area are assessed with regard to downstream watercourses to determine potential impacts. Development of a SWPPP may be required for projects with less than one acre DSA if it is determined that a project possesses significant water quality risk such as work within or above a waterbody. This project has over an acre of soil disturbance and has work above a waterbody; hence, it will require a SWPPP.

Best Management Practices (BMPs) are implemented to protect water quality and reduce potential for pollution associated with storm water runoff. A BMP is any program, technology, process, siting criteria, operating method, or device that controls, prevents, removes, or reduces pollution.

Design Pollution Prevention BMPs

Permanent water quality controls are used to reduce pollutant discharges by preventing erosion. These BMPs are standard technology-based, non-treatment controls selected to reduce pollutant discharges to the maximum extent practicable (MEP) requirements. They apply to all projects. This category of BMPs includes preservation of existing vegetation; concentrated flow conveyance systems, such as ditches, berms, dikes, swales, overside drains, outlet protection/velocity dissipation devices; and slope/surface protection systems such as vegetated surfaces and hard surfaces.

Construction site BMPs

Temporary controls used to reduce pollutant discharges during construction. These controls are best conventional technology/best available technology (BCT/BAT) based BMPs that may include soil stabilization, sediment control, wind erosion control, tracking control, non-storm water management and waste management.

Treatment BMPs

Treatment BMPs are permanent water quality controls used to remove pollutants from storm water runoff prior to being discharged &om Caltrans right-of-way. These controls will be used on the project to meet MEP requirements. This category of BMPs includes traction sand traps, infiltration basins, detention devices, biofiltration strips/swales, dry weather flow diversion, and Gross Solid Removal Devices (GSRDs).

Use of appropriate BMPs, their specific sites, quantities and specifications will be separately documented as the project advances and more data becomes available at each phase.

2.2.3 Hazardous Waste/ Materials

Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

The primary federal laws regulating hazardous wasteslmaterials are the Resource Conservation and Recovery Act of **1976** (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of **1980** (CERCLA). The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA provides for "cradle to grave" regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of **1992**
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act

- Occupational Safety & Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved. Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

Affected Environment

An Environmental Assessment was completed in April 2007. There are no visual indications of any sources of hazardous materials/wastes such as chemical containers, or use of the project area for waste disposal. There are no industrial facilities, gas stations, or other potential generators of hazardous waste and materials in the surrounding area, which is undeveloped and rural. A site investigation report completed in December 1998 in Solano County at the SR 121113 interchange (PM 10.8) indicates that there are lead concentrations within the corridor below the regulatory thresholds.

Impacts

If test results for aerially deposited lead reveal that the lead present in the soil is typically low and is and not at a hazardous level, the soil can be reused at the project location and surrounding area without restriction. The Caltrans special provision for health and safety would be implemented before any reuse of the soil. Soil testing shall be conducted during the PS&E phase of the project to confirm levels of lead concentration. However, there are no hazardous waste issues currently based on the latest Environmental Assessment.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation is currently proposed.

2.3 Biological Environment

2.3.1 Natural Communities

Regulatory Setting

This section discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species section 2.3.5. Wetlands and other waters are also discussed below in the following section 2.3.2.

Affected Environment

Topographically the project is composed of rolling, hilly terrain that is part of the Montezuma Hills. This grassland region is transversed by seasonal creeks and swales. Wildlife species that occupy the project area include invertebrates, fish, amphibians, reptiles, birds, and small mammals.

This section of the environmental document addresses the concerns surrounding plant and animal species, special-status species, regulated habitats and wetlands and Waters of the United States. as they relate to the proposed project. This project may affect three federally listed vernal pool large branchiopod species including the endangered Conservancy fairy shrimp (Branchinecta *conservatio*), threatened vernal pool fairy shrimp (Branchinecta lynchi) and endangered vernal pool tadpole shrimp,as well as the California tiger salamander (Ambystoma *californience*). Additionally, the project may affect the California-listed threatened Swainson's hawk (Buteo *swainsonii*),the burrowing owl (Athene conicularia) and giant garter snake (Thanmophis *gigus*). The proposed project would affect wetlands, and other waters occurring within the area.

All permanently and temporarily affected areas provided in this analysis are based upon preliminary design data. Permanent impacts include the potential loss of unverified or potential wetlands, and other waters. Permanent impacts also include the estimated loss of approximately 44 trees.

Caltrans will preferentially implement onsite mitigation for temporary impacts to natural communities, as these impacts are identified in later stages of project design.

Caltrans is in the process of identifying mitigation sites for the implementation of onsite mitigation for permanent impacts to wetland habitats. Where onsite mitigation is unavailable or infeasible, Caltrans will seek nearby offsite mitigation for permanent loss of habitats through the purchase of appropriate habitat or mitigation bank credits. Caltrans will participate in the preservation and restoration of vernal pool habitat necessary to compensate for impacts to federally-listed large branchiopods pending approval of participating agencies.

Permits expected for this project include a CDFG Section 1602 Lake and Streambed Alteration Agreement; a Clean Water Act (CWA) Section 404 Individual Permit from the U.S. Army Corps of Engineers (USACE); a CWA Section 401 Water Quality Certification permit from the Central Valley Regional Water Quality Control Board (RWQCB); and a Biological Opinion with a Section 7 incidental take permit from the U.S. Fish and Wildlife Service (USFWS).

2.3.2 Wetlands and Other Waters

Regulatory Setting

Wetlands and other waters are protected under several laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. U. S. Army Corps of Engineers (USACE) manages the Section 404 permit program with oversight by the U. S. Environmental Protection Agency (EPA).

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm. At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Game (CDFG) and the Cental Valley Regional Water Quality Control Board (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details.

Affected Environments

Wetlands

In very general terms, waters of the United States are features within which water flows or ponds, such as creeks, rivers, and streams and their tributaries, or oceans, bays, or ponds, and that lack vegetation.

Wetlands and other waters of the U.S. are distributed occasionally throughout the project as depressional swales or ditches or in hillside seeps in areas underlain by a restrictive soil layerthat results in a seasonally-perched water table.

Wetland community types present vary considerably along the project study area, and include: riparian, seasonal (ephemeral pool), perennial (marsh), ponds, and ditches and intermittent drainages, many of which function to convey roadside runoff. Some of these features support hydrophytic (wetland) vegetation and are referred to as wetlands.

Vegetation associated with seasonal wetlands is variable depending on the duration of inundation. Species generally associated with short duration ponding include: Mediterranean barley (Hordeum marinum ssp. *gussoneanum*), curly dock (*Rumex* crispus), Harding grass (Phalaris *aquatica*), bristly ox-tongue (Picris echioides), and Italian ryegrass. In areas subject to prolonged inundation, associated species include: semaphore grass (Pleuropogon *californicus*), tall cyperus (*Cyperus eragrostis*), broad-leaved cattail (Typha *latifolia*), and hardstem bulrush (*Scirpus* actutus).

Waters of the U. S.

Hydrology in the BSA is dominated by one perennial creek that is mapped on USGS maps: (Well Creek, Solano County). Runoff from the western portion of the project flows northeasterly to the Big Ditch and Lindsey Slough, which are part of the Sacramento River. The eastern portion flows to the Sacramento River, about 3 miles southeast of the project. Sacramento River is part of the Delta Waterways and its tributary Lindsay Slough is about 4 miles north of the project.

Impacts

The exact amount of wetlands will not be definitively known until the USACE (San Francisco District) verifies the wetland delineation and makes a determination on the limit of their jurisdiction. It is likely that any USACE non-jurisdictional wetlands and other waters features would be regulated by the RWQCB under the Porter-Cologne Act.

Due to access constraints, the total amount of seasonal wetland and other waters within the BSA is likely to change as more access to the study area is available. Most likely, the amount of wetland and other waters present within the BSA would be expected to decrease as the wetland delineation is refined.

A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for this project for Section 404 permit actions; this certification or waiver is issued by the RWQCB. Current assessment project impacts to potential wetlands will require the issuance of a Nation Wide Permit from the USACE.

Avoidance, Minimization and/or Mitigation Measures

All feasible and practical measures will be undertaken to avoid or minimize impacts to seasonal wetlands and other waters during construction. These measures are described below.

- Wetland assessments will be conducted in parcels for which access can be obtained. In order to investigate additional areas, aerial photography, parcel maps, and assisted

visual observation methods will be used to refine delineations where direct property access was not obtained to reduce the potential amount of impact. Wetland delineations conducted by Caltrans will be verified by USACE prior to project construction as part of the USACE jurisdictional determination.

- To the maximum extent practicable, all construction activities in the temporary work area will avoid wetlands and other waters of the U. S. All wetlands and waters within the temporary work area will be designated as an Environmentally Sensitive Area (ESA) and protected with appropriate fencing and signage. All ESAs will be shown on the final construction drawings.
- All work will be performed in accordance with a SWPPP. Also, BMPs to prevent erosion into onsite or offsite waters of the U. S., (including wetlands) will be implemented and may include the use of silt fences, sandbags, detention basins, and other means as appropriate.
- The topography and grade will be restored to preconstruction conditions in wetland and other waters areas that are temporarily affected. Following all grading and earthwork, these areas will be either be replanted or reseeded with the appropriate plant species, if determined necessary, or monitored following construction, to determine that vegetation comparable to the pre-existing condition has naturally regenerated.
- Unavoidable wetland and other waters losses estimated to occur once additional wetland investigations are performed or that occur during construction will be tallied and incorporated into project permits and compensatory mitigation documents and requirements as appropriate. Compensatory mitigation is described below.

In cases where impacts to wetlands and other waters are unavoidable, Caltrans will mitigate impacts to a less than significant level through wetland preservation and/or creation at an approved ratio as determined during the permitting process by the USACE and the RWQCB.

Compensatory mitigation will consist of the following elements:

To minimize the potential for onsite or offsite erosion into other wetland features, on-site roadside ditch wetland or other waters creation will occur prior to project completion and will be completed prior to the beginning of the wet season (typically October 31st).

Standard erosion control measures (BMP) and the preparation of a SWPPP will be required of the contractor and implemented during construction to ensure that sedimentation into adjacent wetlands and other waters does not occur and indirectly

impact adjacent resources. Monitoring of erosion control measures will be conducted during construction and remedied if found insufficient.

Creation of wetland habitat as compensation for permanent impacts will be required. This may be accomplished through habitat creation, off-site location, or through restoration, preservation, or a combination of these two approaches.

Creation of wetland and other waters habitat will be accomplished through steps outlined in a Conceptual Wetland Restoration Plan that will be prepared and submitted in support of obtaining the project permits, agreements, waivers, or approvals from the USACE, CDFG, and RWQCB.

The mitigation ratio for the creation of wetland resources will range from between 1:1 to 3:1 (mitigation to impact) on an acreage basis, off-site. The exact mitigation ratio (acreage basis) will be dependent on the type and habitat quality of the wetlands and other waters adversely affected, the quantity and location of adverely affected wetlands resources, the location of the proposed creation, and the outcome of agency discussions.

The Conceptual Wetland and Other Waters Creation Plan will follow guidelines established by the USACE. A discussion of the annual reporting requirement, a monitoring plan, and remedial measures will be included in the plan, should monitoring determine that success criteria are not being achieved. The Caltrans District 4 Office of Biological Sciences and Permits will plan and implement any mitigation, in conjunction with the Caltrans District 4 Office of Landscape Architecture.

Compensatory mitigation could also be accomplished by purchasing mitigation credits at a wetland mitigation bank that services Solano and Napa Counties. Currently, there are several USFWS approved active mitigation banks that service Solano and Napa Counties. With the implementation of the above measures, impacts to wetlands and other waters will be reduced to a less than significant level.

Cumulative Impacts

Impacts to wetlands and other waters occurring as a result of the proposed project will also be less than significant after mitigation is implemented. No significant cumulative impacts are anticipated to occur to wetland resources from the SR 12 shoulder widening. Therefore, the project is not expected to have a significant contribution to any potential cumulative impacts to wetland resources and the incremental effect is not expected to be cumulatively considerable.

2.3.3 Plant Species

Regulatory Setting

The United States Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) share regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species Section 2.3.4 in this document for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and non-listed California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at Title 16 United States Code (USC), Section 1531, et. seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et. seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

Vegetation Community

Although federally listed plant species inhabit the project area as well as unique or special plant communities, the existing right-of-way has largely ruderal vegetation with little habitat value. Four vegetation associations typify the biological study area:

Roadside Ruderal Vegetation: Exotic annual grasses and weeds dominate the roadside ruderal vegetation in the existing right-of-way. There is no habitat value to this vegetation, which is subject to normal roadway maintenance.

Roadside Wetlands: The roadside wetlands include: waters associated with highway runoff, natural drainages, seeps, swales, and pools that are intercepted by the highway banks and culverts. The majority of the plants are obligate or facultative native plants. The most common native plants are nutsedge (*Cyperus* eragrostis), common spike rush (Eleocharis macrostachya), alkali heath (Frankenia salina), button celery (*Eryngium*

aristulatum), Baltic rush (*Juncus* balticus), toad rush (*J.* bufonius), and meadow barley (Hordeum brachyantherum). A unique wetland vegetation association is found in cultivated swales along the fence lines. These areas are maintained for fire protection and have common native vernal pool plants.

Valley Needlegrass Grassland: Valley Needlegrass Grassland is typified by the presence of the native perennial bunchgrass, purple needlegrass (*Nassella* pulchra). A small amount of Valley Needlegrass grassland may occur adjacent to the highway.

Vernal Pools: Vernal pool plants found in this area may include: annual hairgrass, semaphore grass, brass buttons, tidy-tips (Layia *fremontii*), goldfields (*Lasthenia californica*), Douglas's meadowfoam (Limnanthes douglasii rosea), fringed downingia, Vasey's coyote-thistle (*Eryngium* vaseyi), button celery, Baker's navarretia (Navarretia leucocephala bakeri), Sacramento pogogyne (*Pogogyne* zizyphoroides), Delta woolly marbles (Psilocarphus brevissimus brevissimus), Oregon woolly-marbles (P. oregonus), Greene's popcorn flower (P. greenei), microseris (Microseris sp.), and white tip clover (*Trifolium variegatum*).

Impacts

Caltrans biologists are conducting plant surveys for the project study area. Conclusions regarding special status and listed species will be included opon completion of spring 2008 survey work. There are potential impacts to plants found in the California Natural Diversity Database (CNDDB) and U.S. Fish and Wildlife (USFWS) list of special status plants for the proposed project.

2.3.4 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NOAA Fisheries) and the California Department of Fish and Game (CDFG) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with special status wildlife that are listed or proposed for listing under the state or federal Endangered Species Act. All special status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act

  Migratory Bird Treaty Act

  Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1601 – 1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

Affected Environment

This project may affect the following federally listed species:

vernal pool fairy shrimp (Branchinecta *lynchiii*), vernal pool tadpole shrimp (Lepidurus packardi), Conservancy fairy shrimp (Branchinecta conservatio), California tiger salamander (Ambystoma *californience*)

Additionally, the project may affect the following California state listed species:

Swainson's hawk (Buteo swainsonii), burrowing owl (Athene conicularia), giant garter snake (Thanmophis *gigus*).

Special-Status and Protected Birds

Species of birds with special status may be within the project area. Of these are one is State-listed as threatened (Swainson's hawk). Swainson's hawk was not observed during surveys within the project area; however, a Section 2081 incidental take permit will be required if this species will be affected by project-related activities.

Two special-status or fully protected bird species potentially could be present within the project biological study area (BSA):

White-tailed kite is a fully protected bird. CDFG does not issue take permits for fully protected species, and there are no provisions in the California Fish and Game Code for mitigating effects to fully protected species.

Loggerhead shrike is a SSC. CDFG does not issue take permits for **fully** protected species, and there are no provisions in the California Fish and Game Code for mitigating effects to fully protected species.

In addition to the state or federal listing status, most birds that occur within the project area are protected under the Migratory Bird Treaty Act (MBTA) and CDFG codes.

Impacts

There will be less than significant impacts to animals protected or not under Federal and State laws in the project area.

Nest removal activities will affect bird nesting habitat and would constitute a potential impact to the nesting habitat; however, because nesting habitat in the BSA is only a small percentage of what exists in the local area, this impact is expected to be a less than significant impact. Therefore, significant impacts to nesting birds is not anticipated

2.3.5 Threatened and Endangered Species

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): Title 16 United States Code (USC), Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take statement. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The California Department of Fish and Game

(CDFG) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

Affected Environment

The SR 12 project traverses land with significant biological resources. There are four federally listed or proposed animal species that could potentially be affected by the proposed project. These include: California tiger salamander (Ambystoma *californiense)*, vernal pool fairy shrimp *(Brachinecta lynchi)*, vernal pool tadpole shrimp *(Lepidurus packardi),* and Conservancy fairy shrimp (Branchinecta *conservatio).* Additionally, the project may affect the following California state listed species: Swainson's hawk (Buteo swainsonii), burrowing owl (Athene conicularia), and giant garter snake (Thanmophis *gigus*).

The entire project area is inside potential habitat for vernal pool crustaceans. The invertebrate larvae and adults contribute to the diversity and complexity of the vernal pools and playa lake systems found within the undisturbed grazed grasslands. The invertebrates have developed unique mechanisms to survive the yearly cycle of flooding and drought. Fairy shrimp and vernal pool tadpole shrimp are listed invertebrates that have adapted to this environment.

Impacts and Minimization Measures

The vernal pool species and California tiger salamander would be the only species adversely affected by the SR 12 project. The proposed project would affect a yet unspecified number of vernal pool complexes with special-status crustaceans. Avoidance and minimization procedures for these pools will be determined in formal Section 7 consultation with USFWS. Restoration activity would take place at an USFWS approved site, and conform to the USACE and USFWS model for vernal pool habitat mitigation. As a result, the proposed project would have no significant impact on the vernal pool fairy shrimp or vernal pool tadpole shrimp.

Standard minimization efforts to be implemented would include elements of the following to avoid and minimize project-related impacts:

- Design modifications that may allow Caltrans to avoid the species and reduce the impact below the level of significance.

  To the maximum extent practicable, avoidance of all construction activities in the temporary work area with federally-listed branchiopod habitat. Any identified federally listed branchiopod habitat within the temporary work area could be designated as an ESA and protected with appropriate fencing and signage. All ESAs will be shown on the final construction drawings.

  Performance of all work in accordance with a Storm Water Pollution Prevention Plan (SWPPP). Best Management Practices (BMPs) will be implemented and may include the use of silt fences, sandbags, detention basins, and other means as appropriate to prevent erosion into any identified federally listed branchiopod habitat.

  Restoration of the topography and grade to preconstruction conditions in vernal pool areas that are temporarily affected. Following all grading and earthwork, these areas will be either replanted or reseeded with the appropriate plant species, if determined necessary, or monitored following construction, to ensure that vegetation comparable to the pre-existing condition has naturally regenerated.

  Tallying of unavoidable vernal pool losses during construction and incorporating into project permits and compensatory mitigation documents and requirements as appropriate. Compensatory mitigation is described below.

Since project-related impacts are currently undetermined, no compensatory mitigation for impacts to federally-listed large branchiopod has been identified. If federally-listed branchiopods are determined to be adversely affected by the project, then appropriate compensatory mitigation will be developed and implemented in coordination with the appropriate resource agencies.

To mitigate the potential permanent impacts of the proposed project on listed branchiopods, Caltrans would purchase vernal pool construction and/or vernal pool preservation credits. This vernal pool preservation and creation would constitute adequate compensation for adverse effects to branchiopod species. This compensation would include:

Purchase of mitigation credits at an existing bank or banks, or

- Purchase and preservation of a parcel with suitable habitat submitted to the USFWS for approval, or
- A combination of these two approaches.

2.3.6 Invasive species

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999 directs the use of the state's noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

Impacts

Construction activities associated with the proposed project have the potential to introduce noxious weeds fiom the project area into uninfested areas. Potentially at risk areas include neighboring grasslands, wetlands or other waters, and vernal pools. Through the successful implementation of aviodance and minimization efforts, the project will have no adverse impact fiom noxious weeds on sensitive communities.

Avoidance, Minimization and/or Mitigation Measures

Caltrans will implement the following protection measures:

Prior to project construction, Caltrans will conduct surveys within the project area for invasive species of highest concern and the preconstruction weed surveys will be mapped.

Caltrans will not allow disposal of soil and plant materials fiom any areas that support CDFA List A or Cal-IPC List 1 invasive species into natural habitats such as coast live oak woodland, coast live oak-willow riparian forest, or within or directly adjacent to wetlands or other waters.

Erosion control species will be certified "weed free" to reduce the chances of introducing a new invasive species to the project BSA, or spreading an existing invasive species into

unoccupied areas. Additionally, only non-invasive native and/or non-native species will be used for erosion control or landscaping.

If CDFA List A plants are identified during future surveys, or another invasive habitat threat is identified (e.g., such as the sudden oak death fungal pathogen), all construction equipment shall be pressure washed or steam cleaned prior to initial entry to the project limits. Additionally, other measures as required by CDFA or other agencies may be required to prevent the spread of pathogens or invasive plants.

Cumulative Impacts

Should an invasive plant be observed during future surveys within the BSA, mitigation measures as described above will be implemented. With implementation of mitigation measures, impacts to natural habitats due to invasive weeds, should any be identified, will be less than significant after mitigation is implemented. No significant cumulative impacts are anticipated due to invasive weed species from the SR 12 shoulder widing project. Therefore, the project is not expected to have a significant contribution to any potential cumulative impacts to invasive species.

2.3.7 Construction Impacts

Affected Environment

The SR 12 shoulder widening construction is to be staged using one-way traffic control, leaving one lane westbound or eastbound, open throughout construction.

Impacts

The proposed the project will be constructed in two stages:

Stage one: Construct the shoulder widening on the westbound direction. This work needs to be performed at night under one-way lane closure.

Stage two: Construct the shoulder widening on the eastbound direction. Place temporary railing (Type K) along the eastbound edge of travel-way and maintain two lanes traffic utilizing the newly constructed westbound shoulder.

The existing centerline rumble strips will be removed and reconstructed during construction. The proposed drainage system work will be constructed along the new shoulder behind the temporary railing (Type K).

Utility relocations have been identified within the project footprint and will be relocated as necessary. All utility relocations will be within the environmental footprint of the proposed project. The potential impacts due to relocation of utilities have already been taken into account in the environmental studies.

Avoidance, Minimization, **and/or** Mitigation Measures

A Transportation Management Plan (TMP) will be required for this project. The Transportation Management Plan is a special program that will be implemented during construction to minimize and prevent delay and inconvenience to the traveling public. The TMP will include press releases to notify and inform motorists, business, community groups, local entities, and emergency services of upcoming closures. Various TMP elements such as portable changeable message signs and CHP Construction Zone Enhanced Enforcements Program (COZEEP) will be utilized to alleviate and minimize delay to the traveling public.

2.3.8 Climate Change (CEQA)

Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas[1] (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1,2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80% below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the-passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions

[1] **Greenhouse gases related to human activity include: Carbon dioxide, Methane, Nitrous oxide, Tetrafluoromethane, Hexafluoroethane, Sulfur hexafluoride, HFC-23, HFC-134a*, and HFC-152a*.**

reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

Climate change and GHG reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change.

Affected Environment

"According to a recent white paper by the Association of Environmental Professionals[2], "an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases.

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans (December 2006).

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour) and speeds over 55 mph. Relieving congestion by enhancing operations and improving travel times in high congestion travel corridors will lead to an overall reduction in GHG emissions. "

The redistribution of traffic caused by the Build alternative would affect the surrounding roadways in the area differently. Evaluating the net effect on the generation of GHG would have to be done by analyzing the transportation network as a whole. While the Metropolitan Transportation Commission (MTC) currently does not include GHG in the air quality analysis of the Bay Area's Regional Transportation Plan, the latest analysis

[2] *Hendrix, Micheal and Wilson, Cori. Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents (March 5, 2007), p. 2.*

did find the Plan as a whole meets the goals established in the ozone attainment plan (VOC and NOx) and the CO maintenance plan for the Bay Area Air Basin.

Hoping to reduce some of the worst climate change effects expected to occur in the Bay Area, a Joint Policy Committee (JPC) was formed between four planning agencies in the Bay Area: the Association of Bay Area Governments (ABAG); the Bay Area Air Quality Management District (BAAQMD); MTC; and the Bay Conservation and Development Commission (BCDC). The recommendations from the JPC will address climate change through a multi-pronged strategy and may result in changes to transportation planning on the regional level.

The proposed project's purpose is to reduce accidents and minimize accident severity involving fixed objects, and provide a "clear recovery zone" off the traveled way on SR 12. This project is a safety project and is not capacity increasing.

The Department recognizes the concern that carbon dioxide emissions rise cuasing climate change. However, modeling and gauging the impacts associated with an increase in GHG emissions levels, including carbon dioxide, at the project level is not currently possible. No federal, state or regional regulatory agency has provided methodology or criteria for GHG emission and climate change impact analysis. Therefore, the Department is unable to provide a scientific or regulatory based conclusion regarding whether the project's contribution to climate change is cumulatively considerable.

The Department continues to be actively involved on the Governor's Climate Action Team as ARB works to implement AB 1493 and AB 32. As part of the Climate Action Program at Caltrans (December 2006), the Department is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks. However it is important to note that the control of the fuel economy standards is held by the United States Environmental Protection Agency and ARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California Davis.

Chapter 3. Comments and Coordination

During the preparation of this document, the following agencies were consulted:

U. S. Army Corps of Engineers (USACE)

U. S. Fish and Wildlife Service (USFWS)

California Department of Fish and Game (CDFG)

Solano Transportation Authority (STA)

Metropolitan Transportation Commission (MTC)

California Department of Conservation (CDC)

This project has the support of the MTC, U.S. Department of Agriculture-Natural Resources Conservation Service, and STA.

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including: project development team meetings, and interagency coordination. This chapter summarizes the results of the Department's efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

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Appendix A CEQA Environmental Significance Checklist

This checklist identifies physical, biological, social and economic factors that under CEQA might be affected by the proposed project. Where the checklist determination is something other than "no impact", the associated environmental topic is further discussed in the environmental document.

Supporting documentation of all CEQA checklist determinations is provided in Chapters 2, 3, and 4 of this Initial Study/Environmental Assessment. Documentation of "No Impact" determinations is provided at the beginning of Chapter 2. Discussion of all impacts, avoidance, minimization, and/or compensation measures under the appropriate topic headings in Chapters 2, 3, and 4.

Environmental Significance Checklist

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	X	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	X	
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	X
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☐	X
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts				

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐		X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	X	☐
c) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	X	
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district might be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	X
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	X
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	X
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	X
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	X	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife	☐	☐		X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Service?				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	X	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	X	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐		X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?	☐	☐		X
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐		X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐		X
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	X
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	X
VI. GEOLOGY & SOILS: Would the project:				
Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	X
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	X
ii) Strong seismic ground shaking?	☐	☐	☐	X
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	X
iv) Landslides?	☐	☐	☐	X
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	X
VII. HAZARDS AND HAZARDOUS MATERIALS B Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	X
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving release of hazardous materials into the environment?	☐	☐	X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within onequarter mile of an existing or proposed school?	☐	☐	☐	X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the area?	☐	☐	☐	X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	X
VIII. HYDROLOGY AND WATER QUALITY: Would the project:				

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
Violate any water quality standards or waste discharge requirements?	☐	☐	☐	X
Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☐	X
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?	☐	☐		X
f) Otherwise substantially degrade water quality?	☐	☐	☐	X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	X
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☐	X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	X
j) Inundation by tsunami, or mudflow?	☐	☐	☐	X
IX. LAND USE AND PLANNING: Would the project:				
Physically divide an established community?	☐	☐	☐	X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	X
c) Conflict with any applicable habitat conservation plan or	☐	☐	☐	X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
natural community conservation plan?				
X. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	X
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	X
XI. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	X
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	X
XII. POPULATION AND HOUSING. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	X
Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. PUBLIC SERVICES				
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	X
Police protection?	☐	☐	☐	X
Schools?	☐	☐	☐	X
Parks?	☐	☐	☐	X
Other public facilities?	☐	☐	☐	X
XIV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	X
XV. TRANSPORTATION/TRAFFIC: Would the project:				
a) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	X
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?	☐	☐	☐	X
e) Result in inadequate emergency access?	☐	☐	☐	X
f) Result in inadequate parking capacity?	☐	☐	☐	X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Conflict with adopted policies, plans, or programs supporting alternative transportation?	☐	☐	☐	X
XVI. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	X
b) Result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	X
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	X
d) Have sufficient water supplies available to serve the project from existing or new entitlements and resources?	☐	☐	☐	X
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	X
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	X
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	X
XVII. MANDATORY FMDMGS OF SIGNIFICANCE:				
Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	X
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	X

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c) **Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?**	☐	☐	☐	X

Appendix B Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY (916) 653-4086

Flex your power!
Be energy efficient!

January 14, 2005

TITLE VI
POLICY STATEMENT

The California Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, *ensures* that no person in the *State* of California shall, on the grounds of race, color, national origin, *sex*, disability, and age, be excluded from participation in, be denied the benefits of. or be otherwise subjected to discrimination under any program or activity it administers.

WILL KEMPTON
Director

"Caltrans improves mobility across California"

Appendix *C* Layouts, Cross Sections, and Abbreviations

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SOL	12	22.6/23.7		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — NO. — EXP. — CIVIL — STATE OF CALIFORNIA

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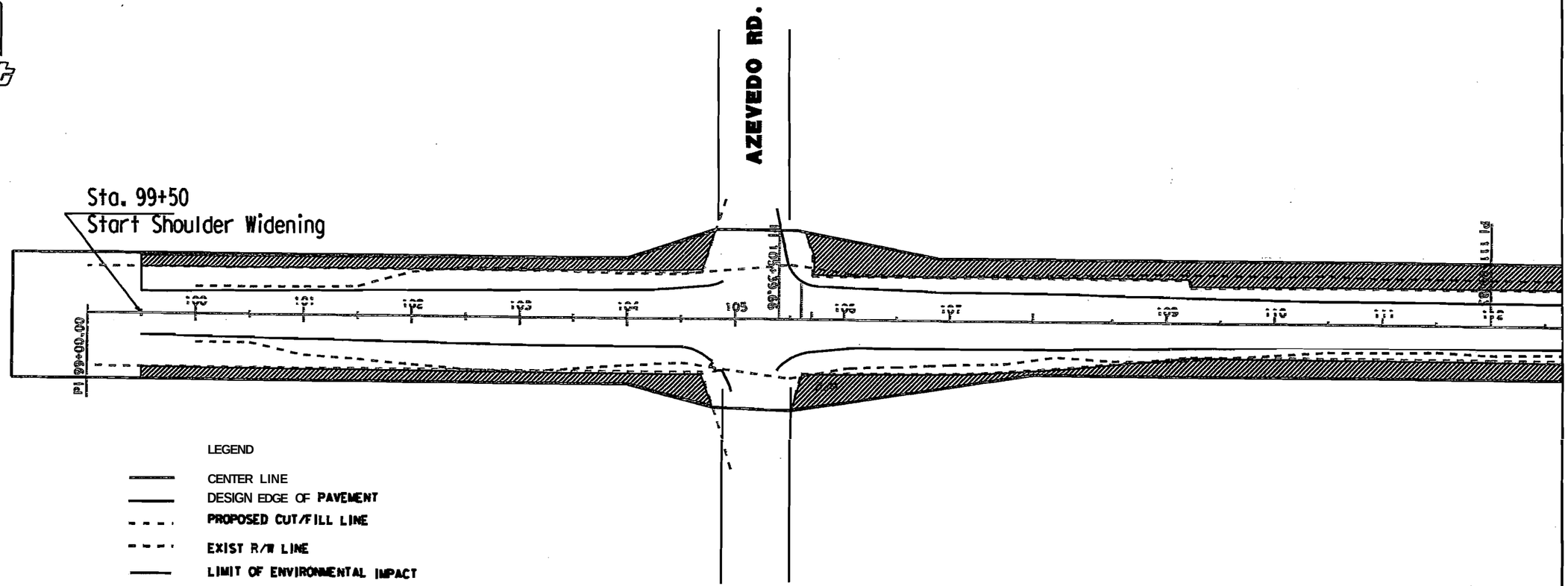
SOL 12 SHOULDER WIDENING & LEFT TURN LANE PROJECT
(ALIGNMENT B)



LEGEND

- CENTER LINE
- DESIGN EDGE OF PAVEMENT
- PROPOSED CUT/FILL LINE
- EXIST R/W LINE
- LIMIT OF ENVIRONMENTAL IMPACT
- ADDITIONAL ROW

LAYOUT L-1

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SOL	12	22.6/23.7		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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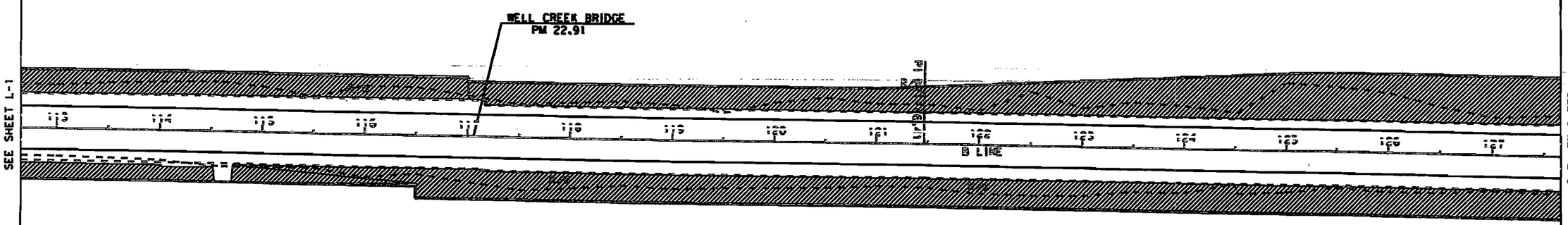
(ALIGNMENT B)



LEGEND

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- PROPOSED CUT/FILL LINE
- EXIST R R LINE
- LIMIT OF ENVIRONMENTAL IMPACT
- ADDITIONAL ROW

LAYOUT L-2

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SOL	12	22.6/23.7		

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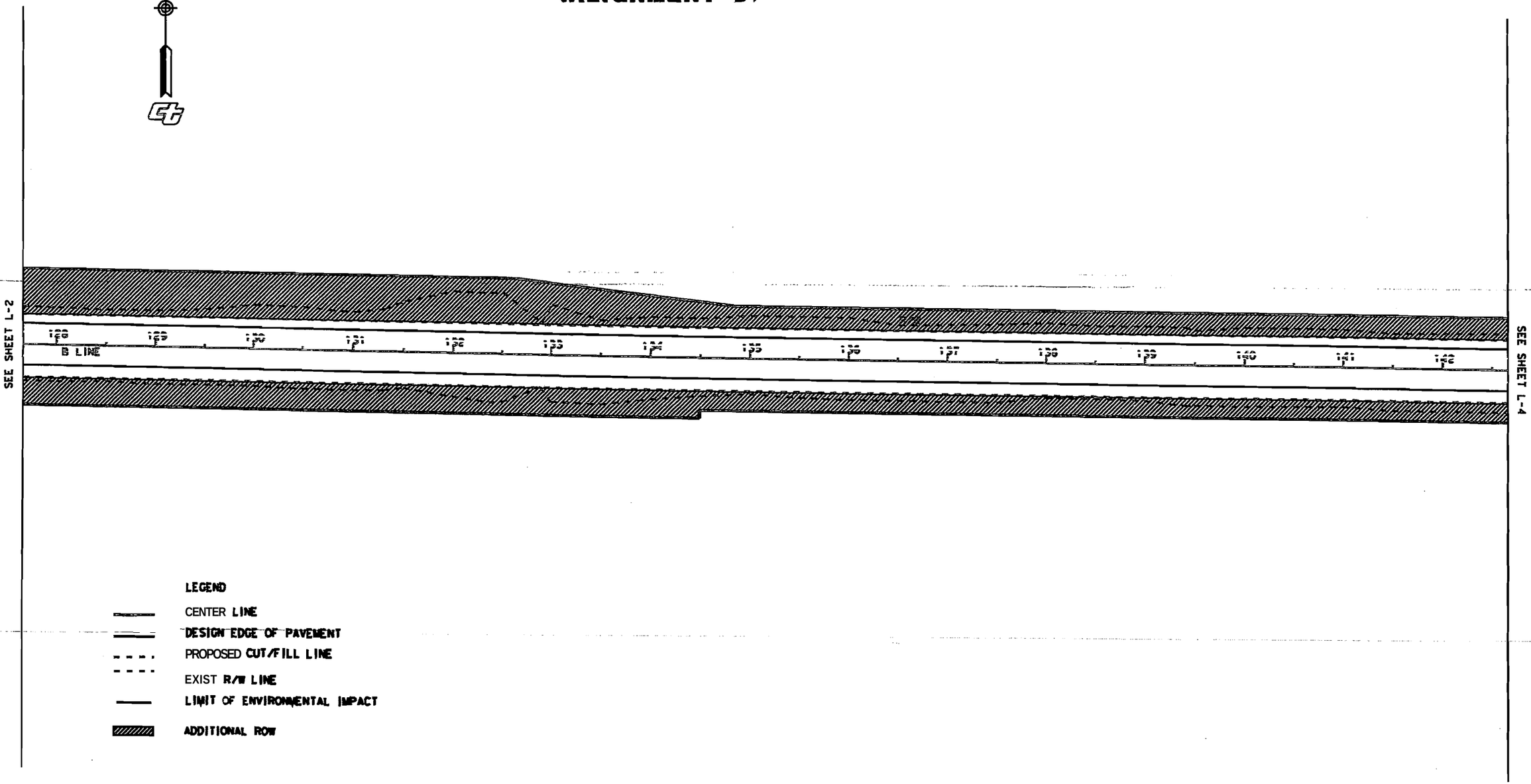

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LAYOUT L-3

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04	SOL	12	22.6/23.7		

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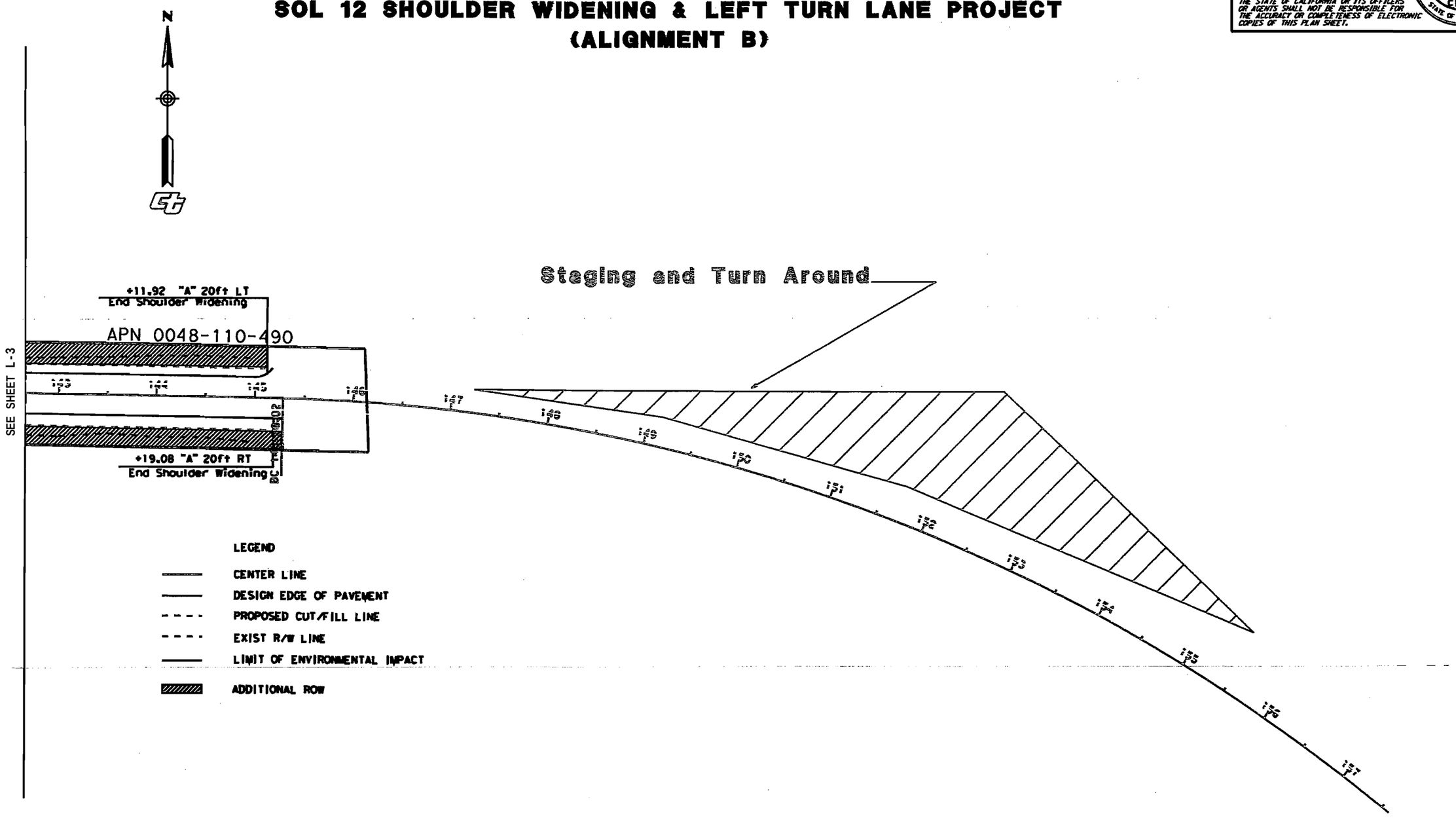
(ALIGNMENT B)



LAYOUT L-4

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SOL	12	20.5/21.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
NO.
Exp.
CIVIL
STATE OF CALIFORNIA

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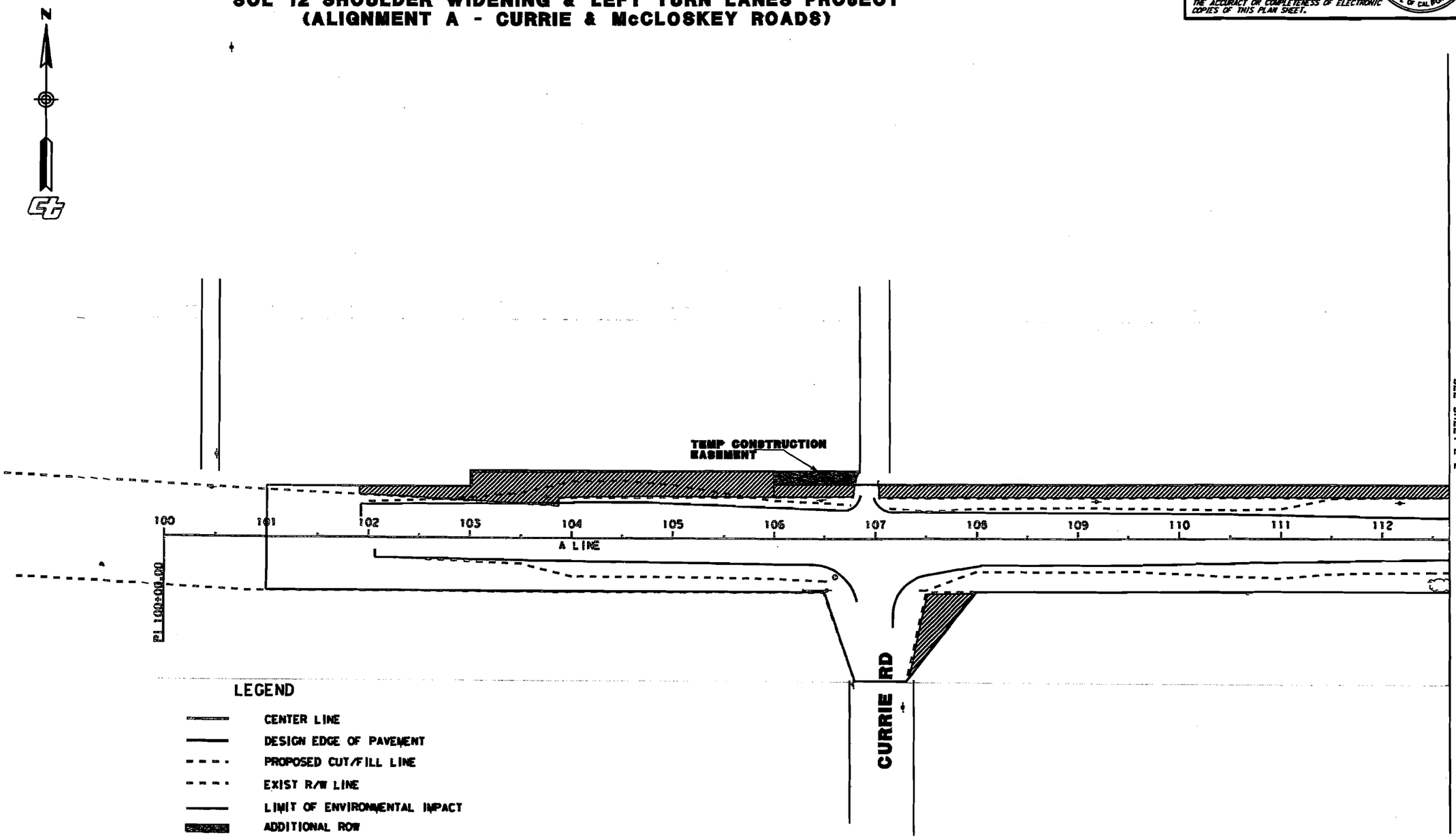
SOL 12 SHOULDER WIDENING & LEFT TURN LANES PROJECT
(ALIGNMENT A - CURRIE & McCLOSKEY ROADS)



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Caltrans

LAYOUT L5

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SOLANO	12	20.5/21.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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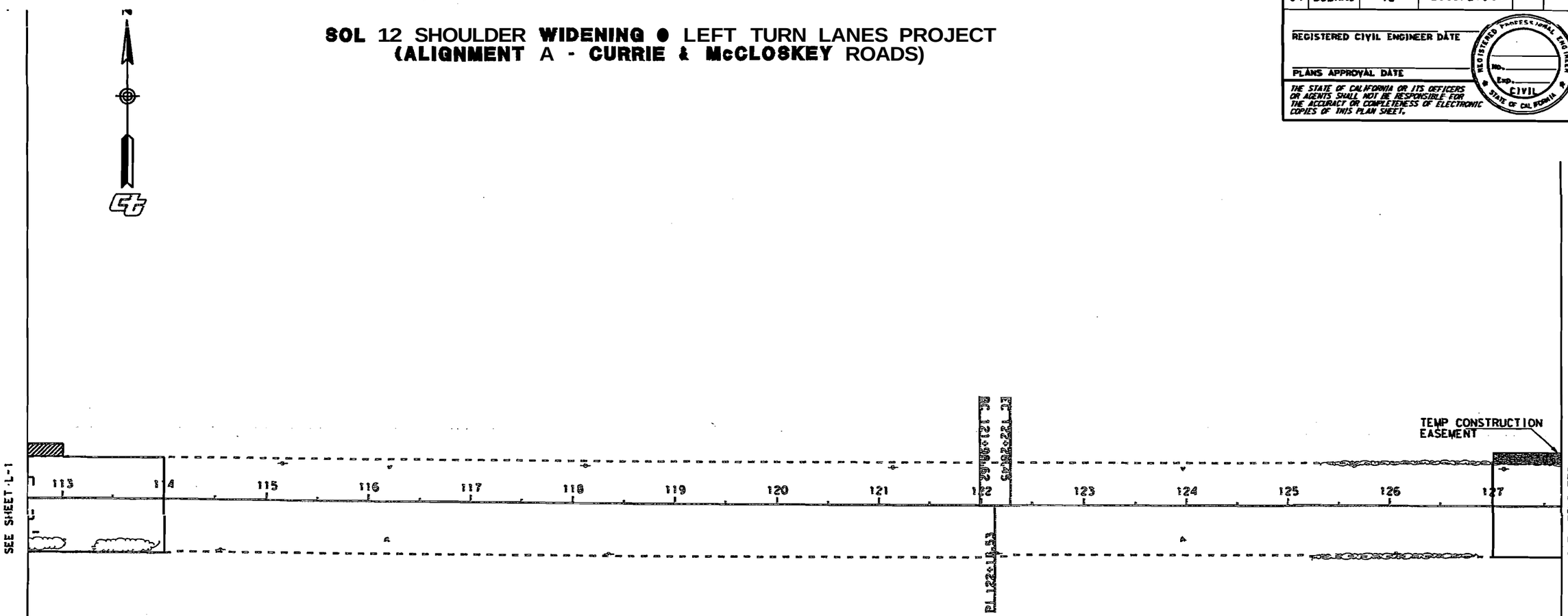
(ALIGNMENT A - CURRIE & McCLOSKEY ROADS)



LEGEND

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- EXIST R R LINE
- LIMIT OF ENVIRONMENTAL IMPACT
- ADDITIONAL ROW

LAYOUT L-6

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04	SOLANO	12	20.5/21.4		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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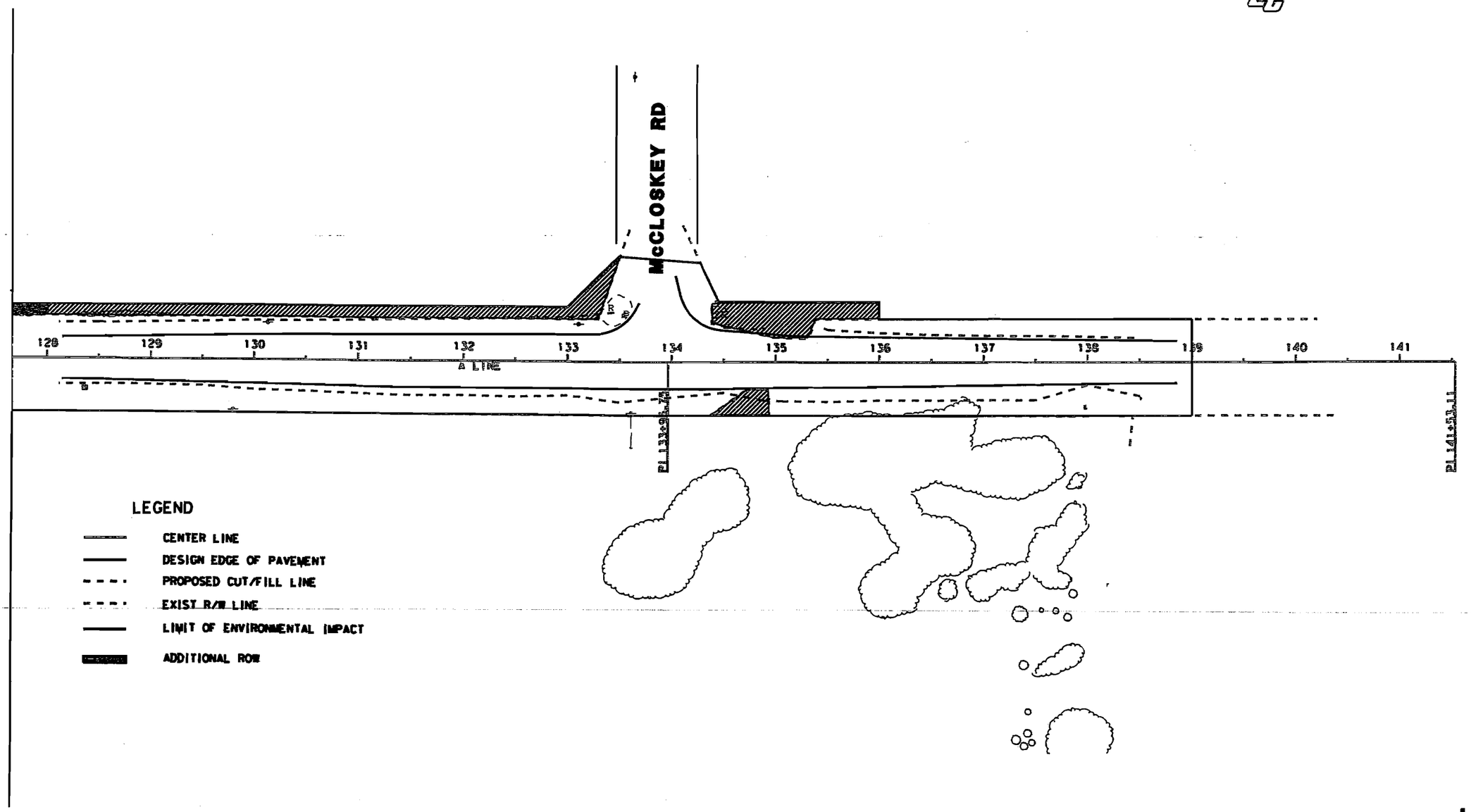
(ALIGNMENT A - CURRIE & McCLOSKEY ROADS)



LAYOUT L-7

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Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SOL	12	20.6/23.7		

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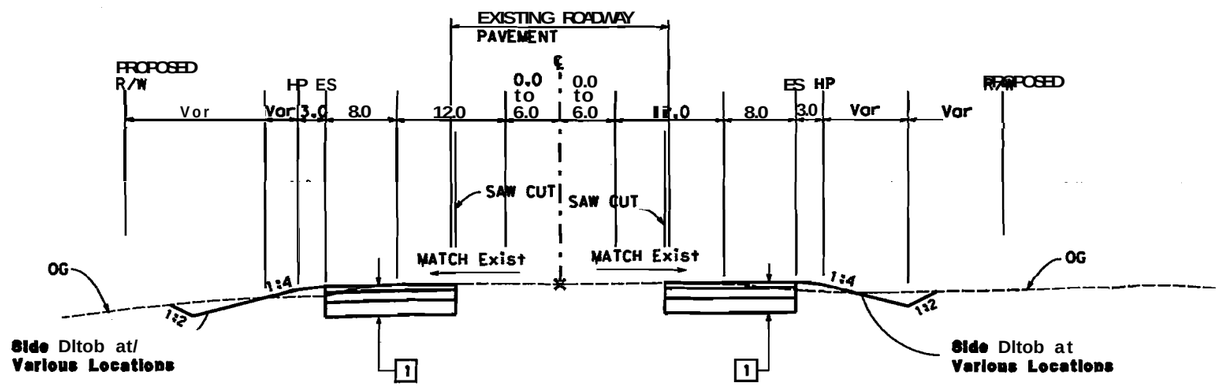

1 — 0.84 ft AC (A)
1.03 ft AB (3)
1.62 ft A6 (4)

SHOULDER WIDENING & LEFT-TURN LANE

A 101+93 TO 106+65
A 107+20 TO 112+72
A 128+15 TO 133+50
A 134+40 TO 138+85
B 99+50 TO 104+80
B 105+70 to 110+50

TYPICAL CROSS SECTION

NO SCALE

X-1

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PROJECT ENGINEER H. SEALEY

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SOL	12	20.6/23.7		

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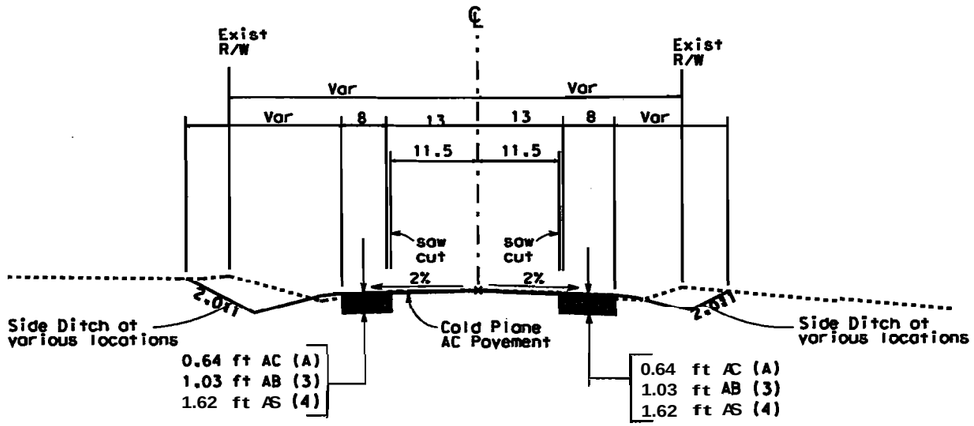
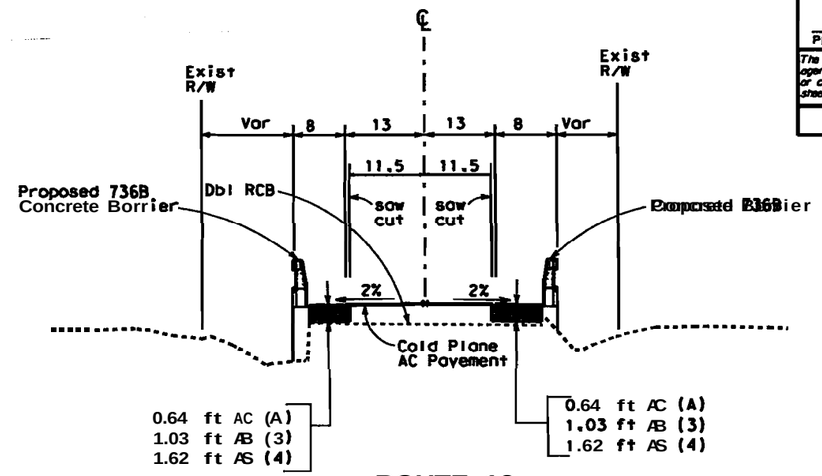


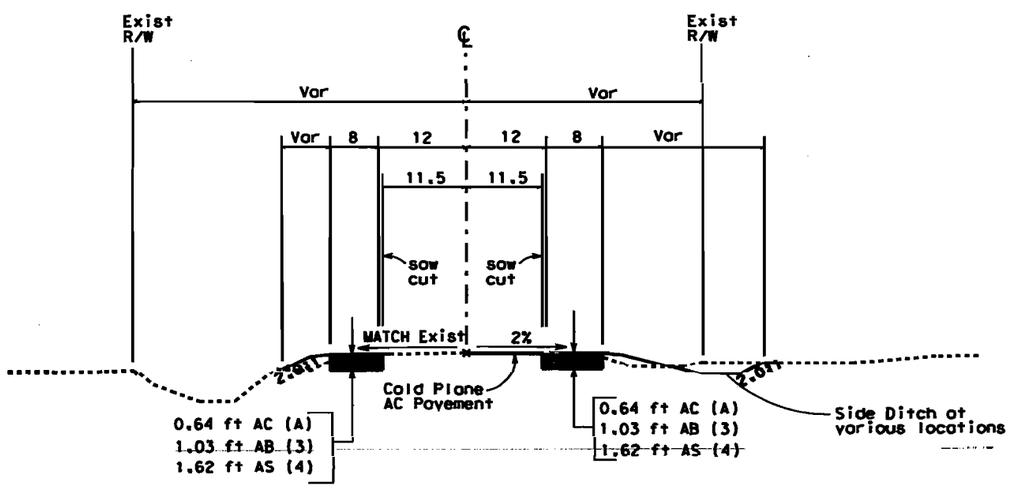
ROUTE 12

B STA 110+50 TO 116+70



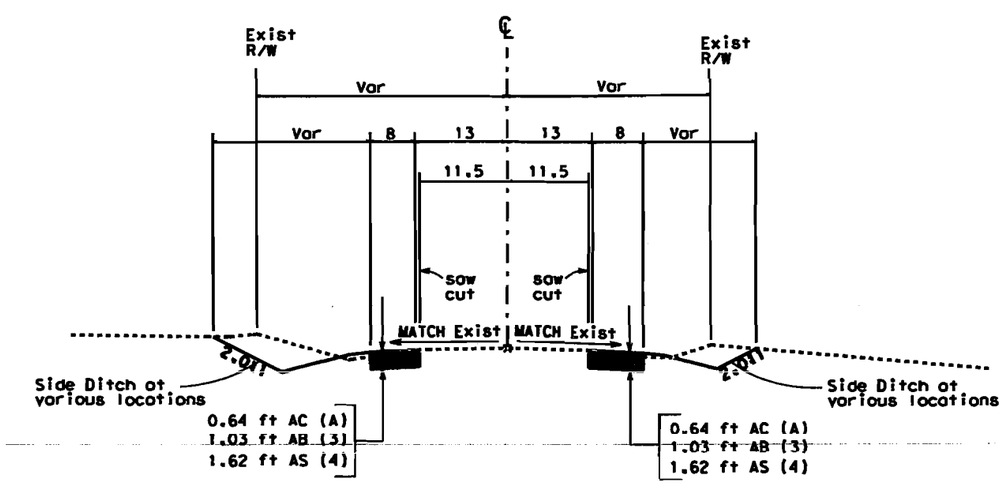
ROUTE 12

B STA 116+70 TO 117+20



ROUTE 12

B STA 117+20 TO 124+00



ROUTE 12

B STA 124+00 TO 145+00

TYPICAL CROSS SECTION

NO SCALE

X-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

PROJECT DEVELOPMENT

PROJECT ENGINEER H. SEALEY

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CU 04223

EA 2A6200

A

AB	aggregate base
ABBC	asbestos bonded bituminous coated
ABM	air-blown mortar
Abn	abandon
Abut	abutment
AC	asphalt concrete
ACB	asphalt concrete base
ACP	asbestos cement pipe
ADL	added dead load
Adj	adjust
AFES	alternative flared end section
Ahd	ahead
Alt	alternate
AM	time from midnight to noon
AP	alternative pipe
APC	alternative pipe culvert
Approx	approximate
APU	alternative pipe underdrain
ARS	acceleration response spectrum
AS	aggregate subbase
ASRP	aluminum spiral rib pipe
Assy	assembly
ATPB	asphalt treated permeable base
ATPM	asphalt treated permeable material
Ave	avenue
Avg	average
@	at

B

BAGR	bridge approach guard railing
BB	beginning of bridge
B-B	back-to-back
BC	begin horizontal curve
BCR	begin curb return
Beg	begin
Bit Ctd	bituminous coated
Bk	back
Bkf	backfill
Bldg	building
BLM	bridge-log mile
Blvd	boulevard
BM	bench mark
Bot	bottom
Br	bridge
Brg	bearing
BTU	british thermal unit
BVC	begin vertical curve
BW	barbed wire

C

CAA	cable anchor assembly
CAP	corrugated aluminum pipe
CAPA	corrugated aluminum pipe arch
CAS	construction area sign
CB	concrete barrier
CBW	concrete block wall
C-C	center to center

C continued

CG	center of gravity
Chnl	channel
CI	cast iron
CIDH	cast-in-drilled-hole
CIP	cast-in-place, cast iron pipe
CIPCP	cast in place concrete pipe
CISS	cast-in-steel-shell
CJP	complete joint penetration
CL	chain link
CL-6	chain link fence (6 ft)
Cl	class
Clr	clear, clearance
CM	corrugated metal
CMP	corrugated metal pipe
Co	county
Col	column
Conc	concrete
Cond	conduit
Conn	connector
Const	construct, construction
Cont	continuous
Coord	coordinate
CP	candlepower
Cr	creek
CRCP	continuous reinforced concrete pavement
CRSP	concreted rock slope protection
CSP	corrugated steel pipe
CSPA	corrugated steel pipe arch
CTB	cement treated base
CTPB	cement treated permeable base
CTPM	cement treated permeable material
Ctrs	centers
Culv	culvert
℄	centerline

D

D	depth
DD	downdrain
Dbl	double
Deg	degree
Del	delineator
Det	detail, detour
DF	douglas fir
DI	drainage inlet, drop inlet
Dia	diameter
Diaph	diaphragm
Dist	distance, district
DMBB	double metal beam barrier
Dr	drive
DTBB	double thrie beam barrier
Dwy	driveway

E

E	east
Ease	easement
EB	end of bridge, eastbound
EC	end horizontal curve
ECR	end curb return
ED	edge drain
EDC	edge drain cleanout
EDO	edge drain outlet
EDV	edge drain vent
Elec	electrolier
Elect	electric
Elev	elevation
Emb	embankment
Engr	Engineer
EOD	edge of deck
EP	edge of pavement
Eq	equation
ES	edge of shoulder
ETW	edge of traveled way
EVC	end vertical curve
EW	endwall
Exc	excavation
Exist, (E)	existing
Exp	expansion, expressway
Exp Jt	expansion joint
Ext	exterior

F

F & C	frame and cover
F & G	frame and grate
FB	floor beam
Fdn	foundation
FEBT	facing eastbound traffic
FES	flared end section
FF	filter fabric
FG	finished grade
FH	fire hydrant
Fig	figure
FL	flow line
FNBT	facing northbound traffic
FOB	free on board
FOC	face of concrete
Fr Rd	frontage road
FS	for side, finished surface
FSBT	facing southbound traffic
Ftg	footing
FWBT	facing westbound traffic
Fwy	freeway

G

g	acceleration due to gravity
Ga	gage
Galv	galvanized
GP	grading plane
GR	guard railing
GSP	galvanized steel pipe

G continued

Gtr	gutter

H

H	height
h, hr	hour
HD	horizontal drain
hdwl	headwall
Hex Hd	hexagonal head
HMA	hot mixed asphalt
Horiz	horizontal
HP	hinge point, horsepower
HPS	high performance steel
HS	high strength
HW	headwall, high water
HWM	high water mark
Hwy	highway

I

IB	imported borrow
ID	inside diameter
IF	inside face
Int	interior
Inv	invert
Irr	irrigation

J

Jct	junction
JP	joint pole
JPCP	jointed plain concrete pavement
JS	junction structure
Jt	joint

K

L

L	length
Lat	latitude
LCB	lean concrete base
Ln	lane
Loc	location
LOL	layout line
Long	longitude
Longit	longitudinal
LS	lump sum
Lt	left

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 1, 2006

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — Santa Mona — No. 14494 — Exp. 12-31-06 — CIVIL — STATE OF CALIFORNIA

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General Rules:

1. Abbreviations should be upper and lower case letters.
   i.e., Misc = miscellaneous
   and Bit Ctd = bituminous coated
2. Acronyms should be all upper case letters.
   i.e., BCR = begin curb return

Units of Measurement

(See Tables A, B and C on Standard Plan A10B)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)

NO SCALE

A10A

2006 STANDARD PLAN A10A

12-17-04

M

Maint	maintenance
Max	maximum
MB	metal beam
MBB	metal beam barrier
MBGR	metal beam guard railing
Med	median
MH	manhole
Min	minimum
Misc	miscellaneous
Misc I & S	miscellaneous iron and steel
Mkr	marker
Mod	modified, modify
Mon	monument
MP	metal plate
MPGR	metal plate guard railing
MR	movement rating
MSE	mechanically stabilized embankment
Mtl	material

N

N	north
NB	northbound
No.	number (must have period)
Nos.	numbers (must have period)
NPS	nominal pipe size
NS	near side
NTS	not to scale

O

Obir	obliterate
OC	overcrossing
OD	outside diameter
OF	outside face
OG	original ground
OGAC	open graded asphalt concrete
OH	overhead
O-O	out to out
Opp	opposite

P

P	page
PAP	perforated aluminum pipe
PB	pull box
PC	point of curvature, precast
PCC	point of compound curve, portland cement concrete
PCP	perforated concrete pipe, prestressed concrete pipe
PCVC	point of compound vertical curve
Ped	pedestrian
Ped OC	pedestrian overcrossing
Ped UC	pedestrian undercrossing
Perm Mtl	permeable material
PG	profile grade

P continued

PI	point of intersection
PJP	partial joint penetration
℄,PL	plate
P/L	property line
PM	post mile, time from noon to midnight
PN	paving notch
POC	point of horizontal curve
POT	point of tangent
POVC	point of vertical curve
PP	pipe pile, plastic pipe, power pole
PPL	preformed permeable liner
PPP	perforated plastic pipe
PRC	point of reverse curve
PRF	pavement reinforcing fabric
PRVC	point of reverse vertical curve
PS&E	plans, specifications and estimates
PS, P/S	prestressed
PSP	perforated steel pipe
PT	point of tangency
PVC	polyvinyl chloride
Pvmt	pavement

Q

Qty	quantity

R

R	radius
R & D	remove and dispose
R & S	remove and salvage
R/C	rate of change
RCA	reinforced concrete arch
RCB	reinforced concrete box
RCP	reinforced concrete pipe
RCPA	reinforced concrete pipe arch
Rd	road
Reinf	reinforced, reinforcement, reinforcing
Rel	relocate
Repl	replacement
Ret	retaining
Rev	revised
Rdwy	roadway
RM	road-mixed
RP	radius point, reference point
RR	railroad
RSP	rock slope protection
Rt	right
Rte	route
RW	redwood, retaining wall
R/W	right of way
Rwy	railway

S

S	south, supplement
SAE	structure approach embankment
Salv	salvage
SAPP	structural aluminum plate pipe
SB	southbound
SC	sand cushion
SCSP	slotted corrugated steel pipe
SD	storm drain
Sec	second, section
Sep	separation
SG	subgrade
Shld	shoulder
Sht	sheet
Sim	similar
℄	station line
SM	selected material
Spec	special, specifications
SPP	slotted plastic pipe
SS	slope stake
SSBM	strap and saddle bracket method
SSD	structural section drain
SSPA	structural steel plate arch
SSPP	structural steel plate pipe
SSPPA	structural steel plate pipe arch
SSRP	steel spiral rib pipe
St	street
Sta	station
STBB	single thrie beam barrier
Std	standard
Str	structure
Surf	surfacing
SW	sidewalk, sound wall
Swr	sewer
Sym	symmetrical
S4S	surface 4 sides

T

T	semi-tangent
TAB	tablet
Tan	tangent
TBB	thrie beam barrier
Tbr	timber
TC	top of curb
TCB	traffic control box
Tel	telephone
Temp	temporary
TG	top of grade
Tot	total
TP	telephone pole
TPB	treated permeable base
TPM	treated permeable material
Trans	transition

T continued

TS	transverse traffic signal, tubular steel
Typ	typical

U

UC	undercrossing
UD	underdrain
UON	unless otherwise noted
UP	underpass

V

V	valve, design speed
Var	variable
VC	vertical curve
VCP	vitrified clay pipe
Vert	vertical
Via	viaduct
Vol	volume

W

W	west, width
WB	westbound
WH	weep hole
WM	wire mesh
WS	water surface
WSP	welded steel pipe
Wt	weight
WV	water valve
WW	wingwall
WWLOL	wingwall layout line

X

X Sec	cross section
Xing	crossing

Y

Yr	year
Yrs	years

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Santip Wong No. 56699 Exp. 12-31-06 CIVIL STATE OF CALIFORNIA

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UNITS OF MEASUREMENT

Some of the symbols for United States Customary units of measurement used in the Project Plans Quantity Summaries and in the Engineer's Estimate are as follows:

TABLE A

Symbol Used	Definitions
EA	each
LB	pound(s)
ACRE	acre
GAL	gallon
LF	linear foot
SQFT	square foot
CF	cubic foot
SQYD	square yard
CY	cubic yard
STA	100 feet
TAB	tablet
TON	2,000 pounds

Some of the symbols for United States Customary units of measurement used for physical properties of materials are as follows:

TABLE B

Symbol Used	Definitions
ksi	kips per square inch
ksf	kips per square foot
psi	pounds per square inch
psf	pounds per square foot
lb/ft^3	pounds per cubic foot

Other commonly used symbols for United States Customary units of measurement:

TABLE C

Symbol Used	Definitions
ø	nominal diameter
lb	pound
kip	1,000 pounds
cal	calorie
Ft, ft	foot or feet

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)

NO SCALE

A10B

2006 STANDARD PLAN A10B

2

3-6-06