COUNTY OF HUMBOLDT
PLANNING AND BUILDING DEPARTMENT
CURRENT PLANNING DIVISION

3015 H Street Eureka CA 95501
Phone: (707)445-7541 Fax: (707) 268-3792

Hearing Date: May 5, 2016

To: Humboldt County Planning Commission

From: Rob Wall, Interim Director of Planning and Building Department

Subject: **DEPARTMENT OF TRANSPORTATION (CALTRANS) Coastal Development Permit and Special Permit**
Application Number 10025
Case Number CDP-15-034 and SP-15-063
Assessor Parcel Number 000-000-000
The project is located in Humboldt County, in the Big Lagoon area, on the west side of State Highway 101, in the southbound lane and shoulder area.

Table of Contents

Please contact Michelle Nielsen, Planner, at 268-3708 or mnielsen@co.humboldt.ca.us if you have any questions about the scheduled public hearing item.

AGENDA ITEM TRANSMITTAL

Hearing Date	Subject	Contact
May 5, 2016	Coastal Development Permit and Special Permit	Michelle Nielsen

Project: The applicant is seeking approval of a Coastal Development Permit and Special Permit for Design Review for improvements Highway 101 in the Big Lagoon area at post mile (PM) 111.4 through to PM 111.7. Improvements will include reconstruction of the southbound lane and shoulder, and associated drainage elements. Three structures are proposed to restore and stabilize the project area: one timber lagging soldier pile ground anchor wall and two anchored pile systems. Temporary access roads will be constructed at each structure location. One-way controlled traffic with a temporary signal system will be used throughout construction. There will be two staging areas in the vicinity of Kane Road: one at PM 111.87 and another at PM 111.72. In addition, at PM 111.4 an existing 18-inch culvert and downdrain will be replaced with a new 24-inch culvert and downdrain. Any excess soils from construction will be disposed of at a commercial disposal site. Construction is expected to last approximately 290 days over two construction seasons. Upon completion of construction the temporary access roads will be removed, regraded, and replanted with native vegetation to match adjacent conditions.

Project Location: The project is located in Humboldt County, in the Big Lagoon area, on the west side of State Highway 101, in the southbound lane and shoulder area. The construction zone begins approximately 0.7 miles north from the intersection of Big Lagoon Park Road and State Highway 101 at post mile 109.0 and continues through post mile 112.8, on the property known to be the in the Caltrans right-of-way, and known to be located in Sections 6, 7, and 18 of Township 9 North Range 1 East, and Section 31 of Township 10 North Range 1 East HBM.

Present Plan Designations: Public Recreation (PR), Coastal Commercial Timberland (TC), North Coast Area Plan (NCAP), Density: PR: N/A; TC: 160 acres per dwelling unit, except that with a joint timber management plan parcels to 40 acres may be created, Slope Stability: High Instability (3).

Present Zoning: (NR/W) Natural Resources (NR), Coastal Wetlands (W); (PR/A,E,W,D,B,F,R), Public Recreation (PR), Archaeological Resource Area Outside Shelter Cove (A), Coastal Elk Habitat (E), Coastal Wetlands (W), Design Review (D), Beach and Dune Areas (B), Flood Hazard Areas (F), Streams and Riparian Corridor Protection (R).

Case Numbers: CDP-15-034 and SP-15-063 **Application Number**: 10025

Assessor Parcel Numbers: 000-000-000

Applicant
Kevin Church
Caltrans
1656 Union Street
Eureka, CA 95501

Owner
State of California
Caltrans Right-of-Way

Agent
Dotrik Wilson
Caltrans
703 B St
Marysville, CA 95901

Environmental Review: Humboldt County is a Responsible Agency pursuant to Section 15381 of the CEQA Guidelines. The Department of Transportation, acting as Lead Agency, prepared and circulated an Initial Study-Mitigated Negative Declaration and one Addendum. The Department of Transportation approved the Mitigated Negative Declaration on January 22, 2015.

State Appeal Status: Project IS appealable to the California Coastal Commission.

Major Issues: None

DEPARTMENT OF TRANSPORTATION (CALTRANS) COASTAL DEVELOPMENT PERMIT AND SPECIAL PERMIT
Case Numbers CDP-15-034 and SP-15-063
Assessor Parcel Number 000-000-000

Recommended Planning Commission Action
1. Describe the application as part of the Consent Agenda.
2. Survey the audience for any person who would like to discuss the application.
3. If no one requests discussion, make the following motion to approve the application as a part of the consent agenda:

Move that Humboldt County, as Responsible Agency, has considered the Initial Study-Mitigated Negative Declaration and Addendum prepared by the Lead Agency, the Department of Transportation, and exercising independent judgement finds the project's impacts are adequately addressed and to make all of the required findings for approval of the Coastal Development Permit and Special Permit based on evidence in the staff report and any public testimony, and adopt the Resolution approving the proposed Department of Transportation's project subject to the recommended conditions.

EXECUTIVE SUMMARY

The Department of Transportation (Caltrans) proposes to permanently repair and restore Highway 101 from Post Mile 111.4 through Post Mile 111.6. In March 2011, severe storm events resulted in three localized slope failures in the southbound lane and shoulder of SR 101. Two of the slope failures were observed at each end of an existing 200-foot long micropile buttress. The third slipout location was further south of the existing micropile buttress, which resulted in the destabilization of the existing roadway. (The existing micropile buttress was constructed in 2009 and consists of steel micropiles, or mini piles (small diameter long steel rods or pipes), drilled and grouted into the ground to provide a deep, stable foundation.) The project will reconstruct the southbound lane, the southbound shoulder and associated drainage elements. Three structures are proposed to restore and stabilize the project area: one timber lagging soldier pile ground anchor wall and two anchored pile systems. Temporary access roads will be constructed at each structure location. One-way traffic control with a temporary signal system will be used during the construction of all three structures.

Structure 1 – Soldier Pile Ground Anchor Wall with Timber Lagging
Approximately two miles north of the intersection of SR 101 and LP Mill Road, a soldier pile ground anchor wall with timber lagging will be installed. The soldier pile is used to ensure stability; lagging between the soldier piles are installed to retain the earth between the soldier piles and the ground anchors are used for horizontal stabilization. When installed, the wall will be 140 feet in length and approximately 25 feet in height. Work includes approximately 20 cast-in-drilled hole (CIDH) H-piles that will be placed at approximately 8.25 foot intervals. The timber lagging will be placed using top down construction. Additionally, a 15-foot wide temporary access road will be constructed along the face of the wall for horizontal drilling and other construction activities. The construction of the temporary access road entails removal of the first two feet of existing topsoil then excavation to an elevation a few feet below the placement of ground anchors. The top two feet of topsoil will be stored for later use in temporary roadway removal and restoration. Potentially, areas of the temporary access road may include placement of temporary, clean, graded, crushed gravel for drainage and sediment control purposes. Two walers will then be constructed using the temporary access road. (A waler is a horizontal timber or beam used to brace or support an upright member ((soldier pile)) along an excavation.) Approximately 25 ground anchors per waler will be placed with a horizontal drilling rig. The existing 24" welded steel pipe (WSP) culvert will extend through the wall. The existing culvert will be cut off five feet from the face of the wall and modified in a rock-lined channel. The proposed wall underdrain will connect with the new rock-lined channel, requiring the removal of a two foot diameter alder tree. The

face of the wall will be backfilled. A see-through matte galvanized metal barrier (ST-10) with an attached bicycle rail will be placed at the top of the wall. The proposed barrier and attached tubular bicycle rail combination was selected to maximize view shed opportunities since the project limits are within the Harry Merlo State Recreation area and the Pacific Coast Bike Route. Upon completion of the wall, the temporary access road will be removed and backfilled, the reserved topsoil will be placed and regraded, and the area replanted with native vegetation.

Structures 2 and 3 – Anchored Pile Systems

Approximately 2.08 miles north of the intersection of SR 101 and LP Mill Road, two proposed anchored pile systems will be installed to the south and to the north of the existing micropile buttress. There is an approximate 50-foot gap between the proposed anchor pile system and the existing micropile buttress at each end. A 15-foot wide temporary access road will be constructed below each of the anchored pile systems for construction access. The proposed anchor pile systems will require minimal excavation. The construction of the temporary access road entails removing the first two feet of existing topsoil, then excavating to the elevation where the anchor pile cap will be constructed. Potentially, areas of the temporary access road may include placement of temporary, clean, graded, crushed gravel for drainage and sediment control purposes. Each anchor pile system will have cast-in-drilled hole (CIDH) W-piles placed at five foot intervals. Ground anchors will be horizontally drilled at an angle 15 to 20 degrees from an horizontal plane into the soil. A reinforced concrete beam that will encase both the ground anchor and the exposed W-piles will be placed along the entire length of the anchor pile system and will be buried under minimal backfill.

The anchor pile system that is proposed south of the existing micropile buttress is approximately 330 feet long, has an angle point located at approximately 100 feet into the horizontal layout resulting in a slight flare along the wall toward the lagoon, and will be offset approximately 28 feet left of the centerline at the south end of the wall, transitioning to 36 feet left of the road centerline at the anchor pile system terminus. Approximately 65 CIDH piles will be installed for this anchor pile system.

The anchor pile system that is proposed to the north of the existing micropile buttress is approximately 205 feet long, will have an inflection point located at approximately 95 feet into the horizontal layout resulting in a slight flare, and will be offset approximately 50 feet left of the centerline at the south end of the wall transitioning to 29 feet left of the road centerline at the anchor pile system terminus. Approximately 40 CIDH piles for the southern anchor pile system will be installed.

Other work includes re-establishing the shoulder at all three structures, replacing the structural section at all three locations, placing crash attenuators at the ends of the soldier pile ground anchor wall, striping, and a final full width pavement overlay between the temporary signal systems due to wear and tear of mobilizing construction equipment in and out of the work zone. Caltrans is required to meet FHWA Safety standards where possible. For this project, the southbound shoulder will vary from four feet at the soldier pile retaining wall to eight feet for the remainder of the project. Increased shoulder widths have increased safety benefits since it provides additional recovery for errant vehicles and wider travel area for cyclists that choose to use the shoulder. The northbound shoulder will not be widened due to concerns regarding environmentally sensitive habitat and species. Construction is expected to last two construction seasons. The Soldier Pile ground anchor wall will be constructed in year one and the anchor pile systems will be constructed in year two or in combination such that there is minimal disruption to the traveling public. Upon completion of the anchor pile systems, the temporary access roads will be removed, regraded, and replanted with native vegetation to match adjacent conditions. These structures are expected to have a design life of 75 years.

Staging, Storage and Disposal
Two staging areas have been identified: one pullout is located approximately 0.8 miles south of Kane Ridge Road at PM 111.87 and another pullout is located approximately 0.67 miles south of Kane Ridge Road at PM 111.72.

Excess soil will be disposed of at a commercial disposal site. Equipment fueling and temporary storage of waste materials (i.e. drill spoils) on site will be necessary and will be performed in accordance with current regulations, Best Management Practices (BMPs) and an approved Storm Water Pollution Prevention Plan (SWPPP) will be required. Specific fueling and waste handling locations and procedures will be clearly identified in the SWPPP.

Traffic Control
Construction signs and traffic control lights will be installed to warn the traveling public. During construction, temporary one-way reversible traffic control will be used. To heighten motorist awareness of cyclists traveling within the construction zone, "Share the Road" signs will be placed along the roadway and temporary traffic signal systems will be set so the cyclist's travel speed is the controlling factor when calibrating the timing.

Construction Schedule
The number of construction seasons is dependent on permitting restrictions. Currently, construction is estimated to take 290 working days over two construction seasons. The anticipated order of work is the soldier pile ground anchor wall with timber lagging is expected to occur in season one and the two anchor pile systems are scheduled in season two. The construction schedule will accommodate special events and/or holiday schedules.

ALTERNATIVES: The Planning Commission could elect not to approve the Coastal Development and Special Permits, or to require the applicant to submit further evidence, or modify the project. These alternatives could be implemented if the Commission is unable to make all of the required findings. Based on the submitted evidence, Planning staff does not recommend further consideration of either alternative.

RESOLUTION OF THE PLANNING COMMISSION
OF THE COUNTY OF HUMBOLDT
Resolution Number 16-

Case Numbers CDP-15-034 and SP-15-063
Assessor Parcel Number 000-000-000

Makes the required findings for certifying compliance with the California Environmental Quality Act and conditionally approves the Department of Transportation's (Caltrans) Coastal Development Permit and Special Permit request.

WHEREAS, the Department of Transportation (Caltrans) submitted an application and evidence in support of approving a Coastal Development Permit and Special Permit for restoring and stabilizing the existing roadway of Highway 101 from Post Mile 111.4 through to Post Mile 111.7 by developing one soldier pile ground anchor wall and two anchored pile systems; and

WHEREAS, the County Planning Division has reviewed the submitted application and evidence and has referred the application and evidence to involved reviewing agencies for site inspections, comments and recommendations; and

WHEREAS, the project is subject to environmental review or exemption pursuant to of the California Environmental Quality Act (CEQA); and

WHEREAS, Caltrans as the Lead Agency prepared and circulated an Initial Study--Mitigated Negative Declaration, State Clearinghouse Number 2014092019, on September 4, 2014;

WHEREAS, Caltrans as Lead Agency approved the project and Initial Study--Mitigated Negative Declaration in accordance with California Environmental Quality Act (CEQA) on January 22, 2015; and filed a Notice of Determination on January 23, 2015; and

WHEREAS, Caltrans as Lead Agency prepared an Addendum, dated March 2016, to the referenced Initial Study--Mitigated Negative Declaration in accordance with CEQA; and

WHEREAS, that none of the conditions described in Section 15052(a)(2) CEQA Guidelines have occurred that would require a shift in Lead Agency designation from Caltrans to Humboldt County; and

WHEREAS, the County of Humboldt, as Responsible Agency pursuant to Section 15381 CEQA Guidelines, has considered the environmental effects of the project as shown and described in the Caltrans Initial Study--Mitigated Negative Declaration and Addendum in Attachment 5; and

WHEREAS, the County of Humboldt has determined that the Caltrans Initial Study--Mitigated Negative Declaration and Addendum in Attachment 5 adequately addresses the project's impacts based on the independent judgment of the County of Humboldt; and

WHEREAS, Attachment 2 in the Planning Division staff report includes evidence in support of making all of the required findings for approving the proposed Coastal Development Permit and Special Permit.

NOW, THEREFORE, be it resolved, determined, and ordered by the Planning Commission that:

1. Pursuant to Section 15096 of the CEQA Guidelines, the Planning Commission has considered the Initial Study-Mitigated Negative Declaration and one Addendum, in Attachment 5, prepared

and approved for the project by Caltrans Lead Agency, and exercising independent judgement finds the project's impacts are adequately addressed; and

2. The Planning Commission makes the findings in Attachment 2 of the Planning Division staff report for Case Numbers CDP15-034 and SP-15-063, based on the submitted evidence; and

3. The Planning Commission conditionally approves the proposed Coastal Development Permit and Special Permit as recommended in the Planning Division staff report for Case Numbers CDP15-034 and SP-15-063.

Adopted after review and consideration of all the evidence on May 5, 2016.

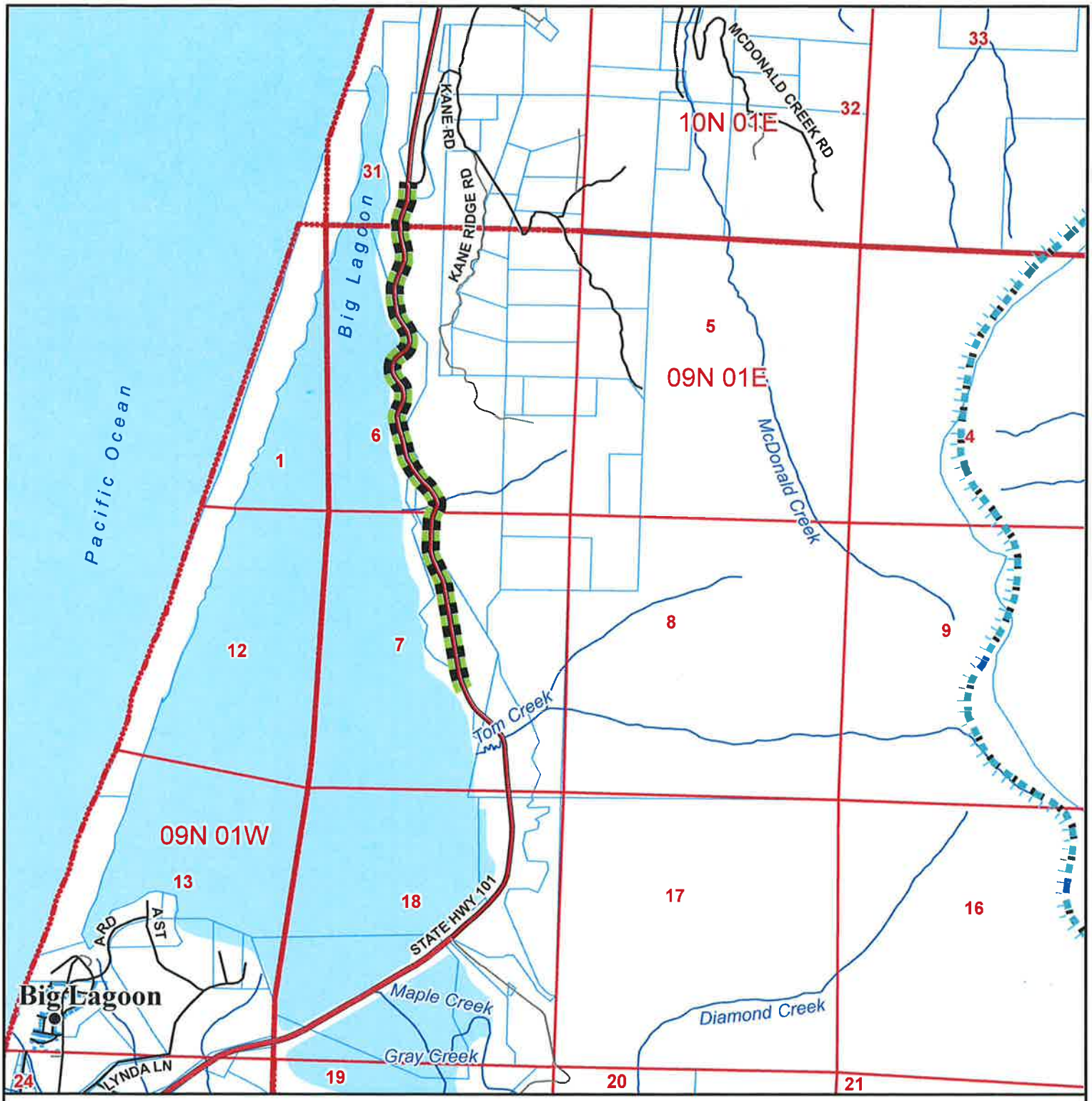
The motion was made by Commissioner _____ and seconded by Commissioner _____.

AYES: Commissioners:
NOES: Commissioners:
ABSTAIN: Commissioners:
ABSENT: Commissioners:
DECISION:

_____
Robert Morris, Chair

I, Suzanne Hegler, Clerk to the Planning Commission of the County of Humboldt, do hereby certify the foregoing to be a true and correct record of the action taken on the above entitled matter by said Commission at a meeting held on the date noted above.

_____
Suzanne Hegler, Clerk



LOCATION MAP

Coastal Zone Boundary

= Project Area

PROPOSED CALTRANS
COASTAL DEVELOPMENT PERMIT
BIG LAGOON AREA
CDP-15-034
APN: N/A
T09N R01E S06,07,18 HB&M (Rodgers Peak)

N

This map is intended for display purposes and should not be used for precise measurement or navigation. Data has not been completely checked for accuracy.

0 0.25 0.5 0.75 Miles

AERIAL MAP

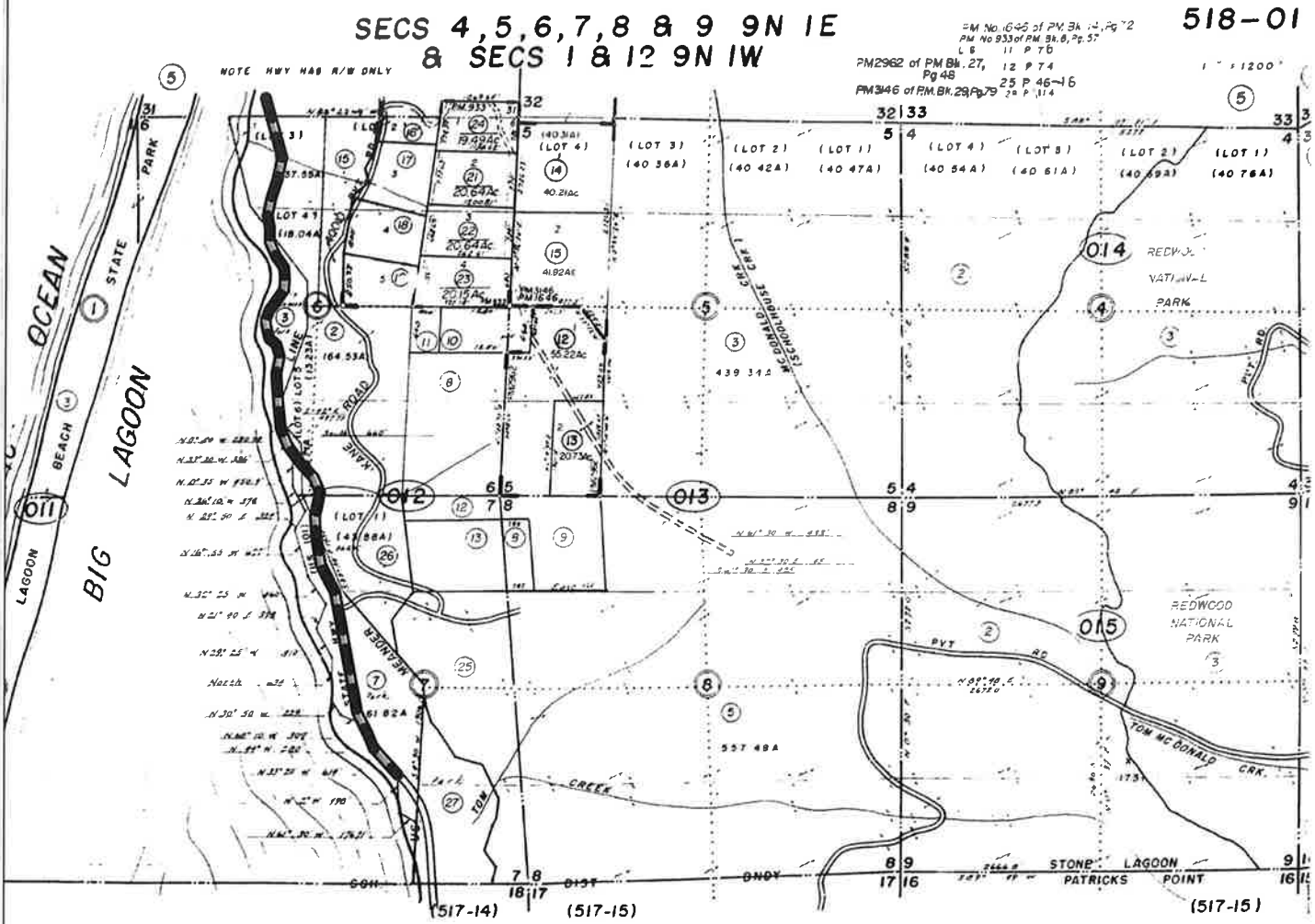
PROPOSED CALTRANS
COASTAL DEVELOPMENT PERMIT
BIG LAGOON AREA
CDP-15-034
APN: N/A
T09N R01E S06,07,18 HB&M (Rodgers Peak)

■ ■ ■ = Project Area

N

This map is intended for display purposes and should not be used for precise measurement or navigation. Data has not been completely checked for accuracy.

0 0.25 Miles



PROJECT AREA = [redacted]

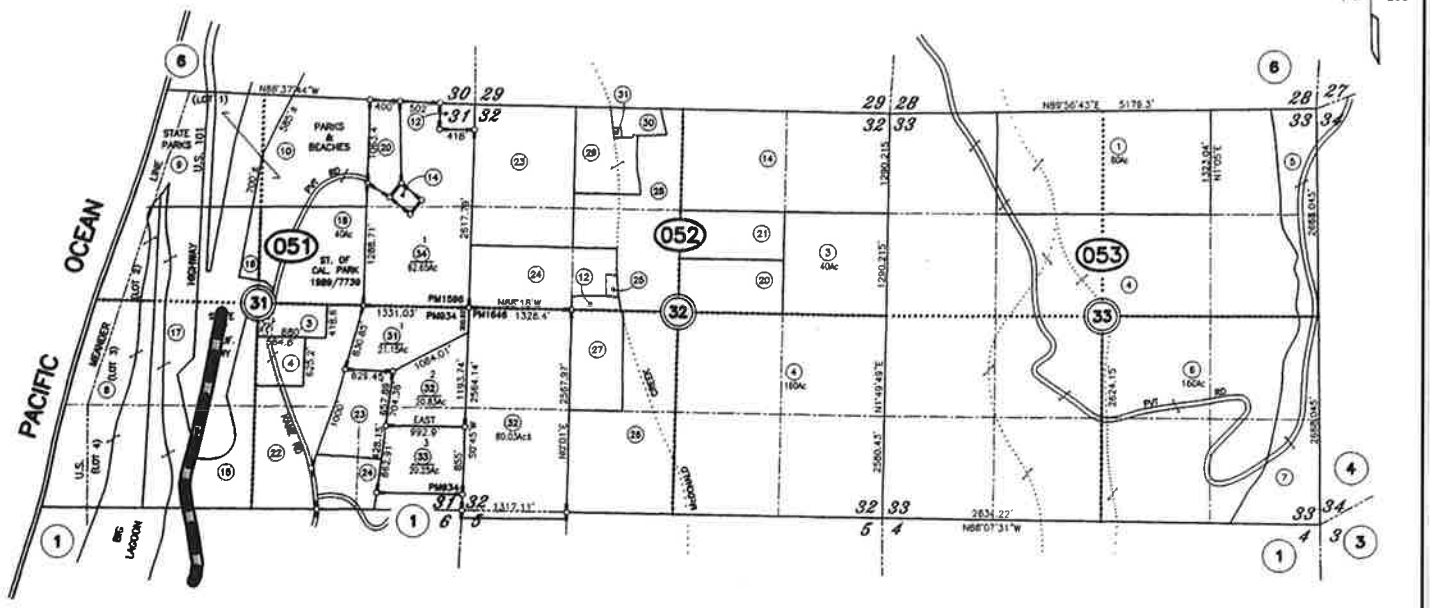
ASSESSOR PARCEL MAP
1 OF 2

PROPOSED CALTRANS
COASTAL DEVELOPMENT PERMIT
BIG LAGOON AREA
CDP-15-034
APN: N/A
T09N R01E S06,07,18 HB&M (Rodgers Peak)

MAP NOT TO SCALE

SECS 31,32 & 33 T10N R1E H.B.& M.

518–05



PM466 of PM Bk 4, Pg 79
PM535 of PM Bk 4, pg 149
PM639 of PM Bk 5, Pg 124
RS, Bk 11 of surveys, Pg 70
RS, Bk 12 of surveys, Pg 74
RS, Bk 25 of surveys, Pgs 46–48
RS, Bk 29 of surveys, Pg 96
PM934 of PM Bk 8, Pg 58
PM1596 of PM Bk 14, Pg 11
PM1646 of PM Bk 14, Pg 72
RS, Bk 68 of surveys, Pg 2

NOTE – Assessor's Block Numbers Shown in Ellipses
Assessor's Parcel Numbers Shown in Circles.

Assessor's Map Bk. 518, Pg.05
County of Humboldt, CA.

300' 600' 1200'

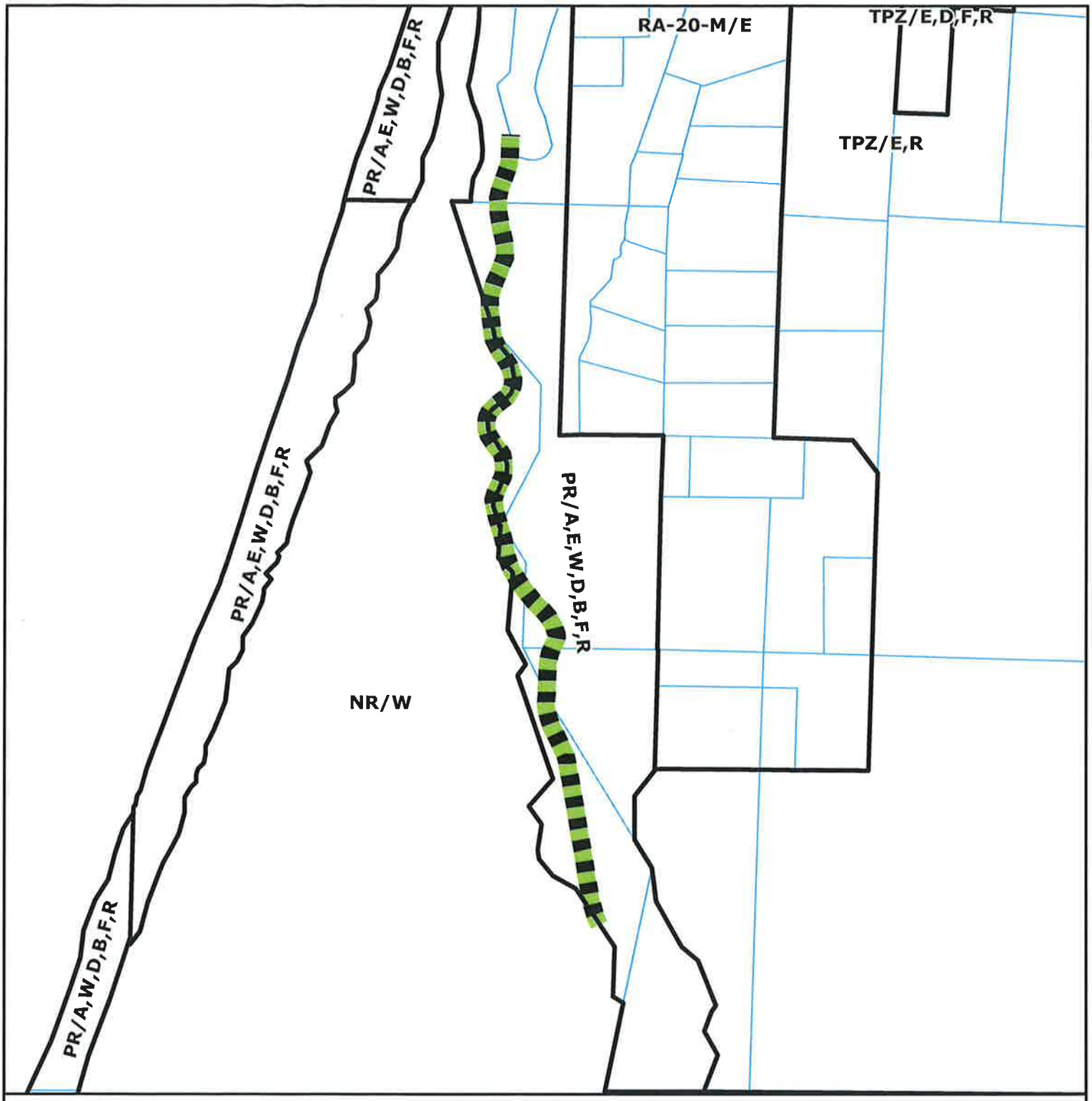
Aug 18, 20

PROJECT AREA = [redacted]

ASSESSOR PARCEL MAP
2 OF 2

PROPOSED CALTRANS
COASTAL DEVELOPMENT PERMIT
BIG LAGOON AREA
CDP-15-034
APN: N/A
T09N R01E S06,07,18 HB&M (Rodgers Peak)

MAP NOT TO SCALE



ZONING MAP

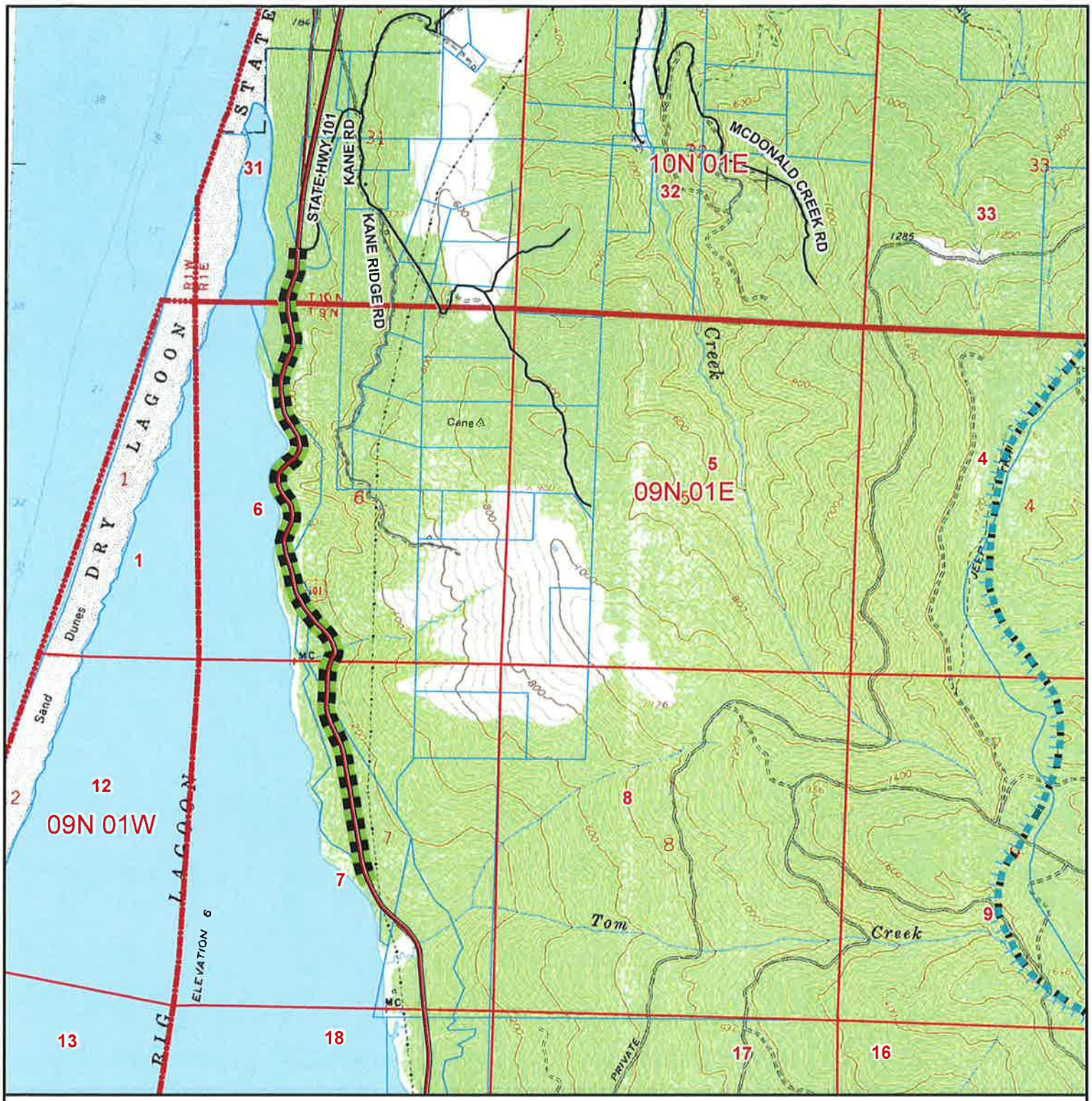
PROPOSED CALTRANS
COASTAL DEVELOPMENT PERMIT
BIG LAGOON AREA
CDP-15-034
APN: N/A
T09N R01E S06,07,18 HB&M (Rodgers Peak)

= Project Area

N

This map is intended for display purposes and should not be used for precise measurement or navigation. Data has not been completely checked for accuracy.

0 0.25 Miles



TOPO MAP

Coastal Zone Boundary

= Project Area

PROPOSED CALTRANS
COASTAL DEVELOPMENT PERMIT
BIG LAGOON AREA
CDP-15-034
APN: N/A
T09N R01E S06,07,18 HB&M (Rodgers Peak)

N

This map is intended for display purposes and should not be used for precise measurement or navigation. Data has not been completely checked for accuracy.

0 0.25 0.5 Miles

INDEX OF PLANS

THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

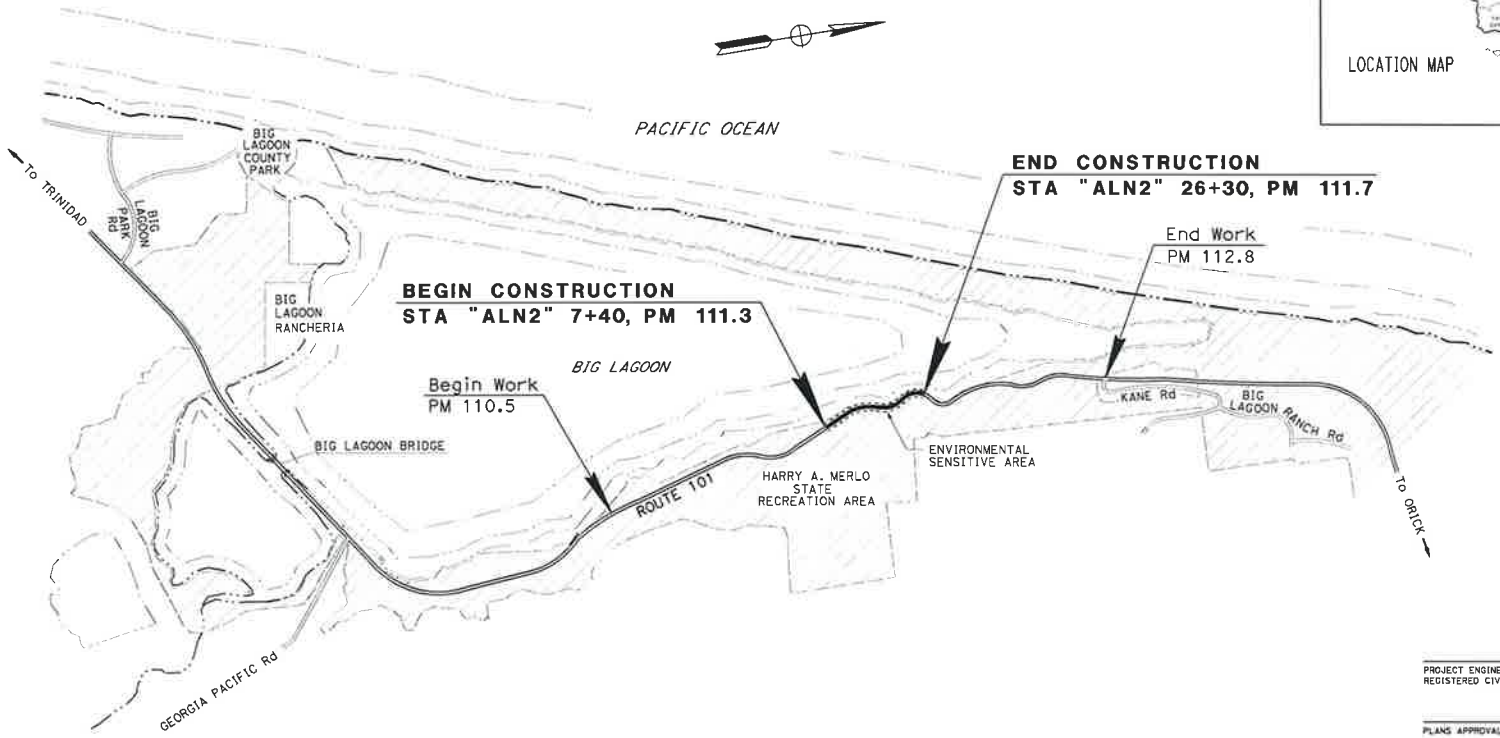
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN HUMBOLDT COUNTY
NEAR TRINIDAD
FROM 2.2 MILES TO 2.4 MILES NORTH OF BIG LAGOON BRIDGE

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2010

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.4 / 111.6		

LOCATION MAP



RECEIVED
MAR 15 2016
Humboldt County
Planning Division

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

Marie A. Brody
No. 59387
Exp. 12-31-15
CIVIL

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NO SCALE

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

CONTRACT No.	01-0B4304
PROJECT ID	0112000127

BORDER LAST REVISED 7/22/2010 | CALTRANS WEB SITE IS: HTTP://WWW.DOT.CA.GOV/ | RELATIVE BORDER SCALE IS IN INCHES | USERNAME => | DGN FILE => | UNIT 0312 | PROJECT NUMBER & PHASE 01120001271

DESIGN BRANCH | KELLY B. TIMMONS | TROY ARSENEAU | DATE PLOTTED => | TIME PLOTTED =>

REVISED
3-15-2016

NOTES:

1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
2. SUPERELEVATIONS ARE SHOWN ON THE SUPERELEVATION DIAGRAMS.

DESIGN DESIGNATION

ADT (2016) = 4,140 D = 60%
ADT (2036) = 4,380 T = 10%
DHV = 550 V = 40 mph
ESAL = 1,575,510 TI_{20} = 9.5

PAVEMENT CLIMATE REGION:

NORTH COAST

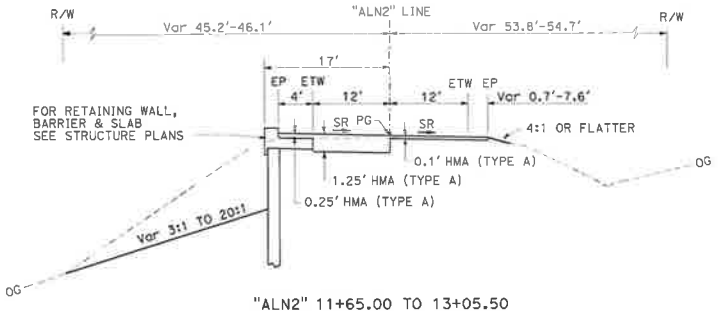
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
01	Hum	101	111.2 / 111.6	

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

PRELIMINARY DESIGN FOR REVIEW ONLY

Marie A. Brody No. 59387 CIVIL



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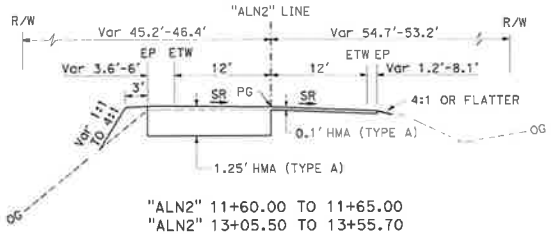

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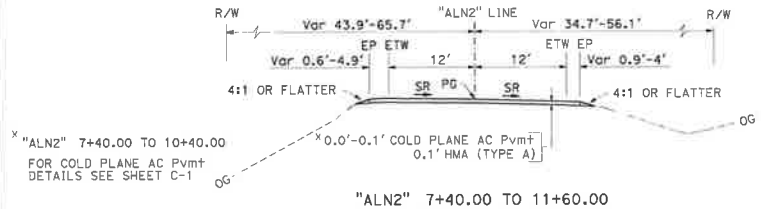
"ALN2" 13+05.50 TO 13+55.70



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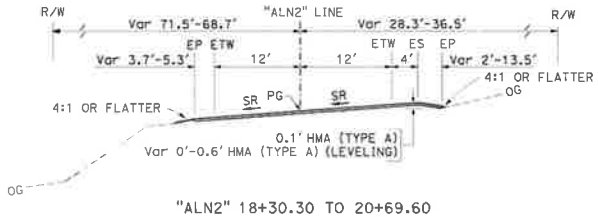
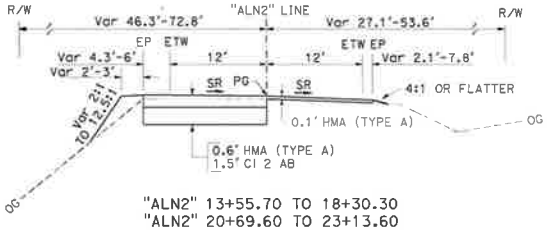
"ALN2" 23+13.60 TO 26+30.00



"ALN2" 18+30.30 TO 20+69.60



"ALN2" 13+55.70 TO 18+30.30
"ALN2" 20+69.60 TO 23+13.60

ROUTE 101

TYPICAL CROSS SECTIONS

NO SCALE

X-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS
CALCULATED-DESIGNED BY: MARIE A. BRADY
CHECKED BY: GINNY SEIBERT
DATE REVISED
REVISED BY

BORDER LAST REVISED 7/2/2010
USERNAME => s170185
DGN FILE => 01120001271dsn001.dgn
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0312
PROJECT NUMBER & PHASE 01120001271
DESIGN DATE PLOTTED => 18 FEB 2016
00-00-00 TIME PLOTTED =>

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

LEGEND

CRASH CUSHION — CRASH CUSHION (TYPE TRACC) (SEE STRUCTURE PLANS)

TFESA — Temp FENCE (TYPE ESA)

ENVIRONMENTAL SENSTIVE AREA

CURVE DATA

No.	R	Δ	T	L
(1)	600'	23°41'40"	125.86'	248.13'
(2)	600'	12°23'43"	65.16'	129.80'

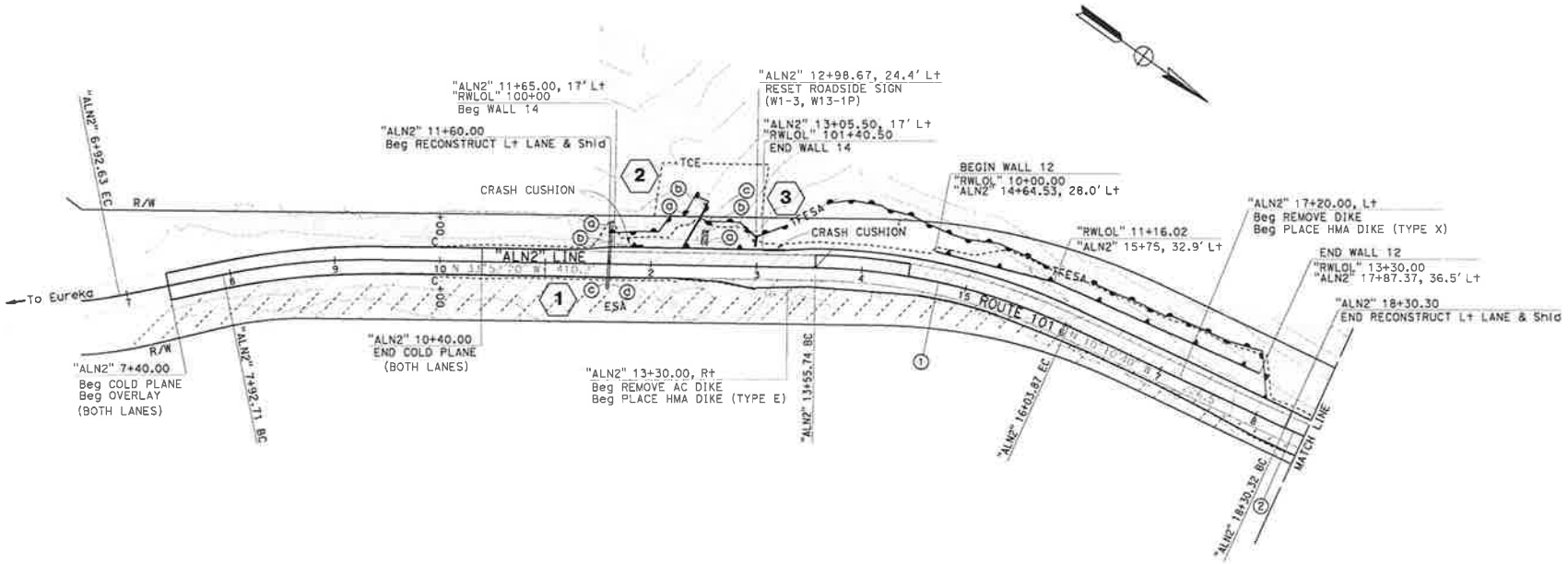
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

PRELIMINARY DESIGN ONLY FOR REVIEW

Marie A. Brady No. 59387 Exp. CIVIL



LAYOUT

SCALE: 1" = 50'

L-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DESIGN

FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS

CALCULATED-DESIGNED BY: MARIE A. BRADY

CHECKED BY: GINNY SEIBERT

REVISED BY | DATE REVISED

DATE PLOTTED => 00-00-00 TIME PLOTTED =>

BORDER LAST REVISED 7/7/2010

USERNAME => DGN FILE =>

RELATIVE BORDER SCALE IS IN INCHES

UNIT 0312

PROJECT NUMBER & PHASE 01120001271

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CURVE DATA

No.	R	Δ	T	L
②	600'	12°23'43"	65.16'	129.80'
③	585'	42°53'46"	229.82'	437.97'

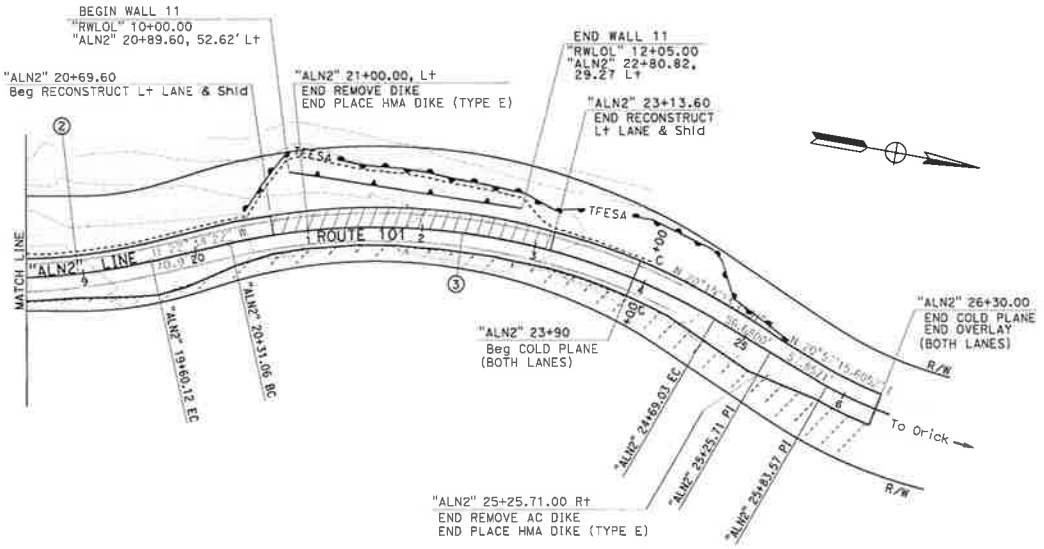
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

PRELIMINARY DESIGN ONLY FOR REVIEW

Marie A. Brady No. 59387 CIVIL



LAYOUT

SCALE: 1" = 50'

L-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans DESIGN

FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS

CALCULATED/DESIGNED BY: MARIE A. BRADY

CHECKED BY: GINNY SEIBERT

REVISED BY | DATE REVISED

BORDER LAST REVISED 7/2/2010

USERNAME => s120115

DGN FILE =>

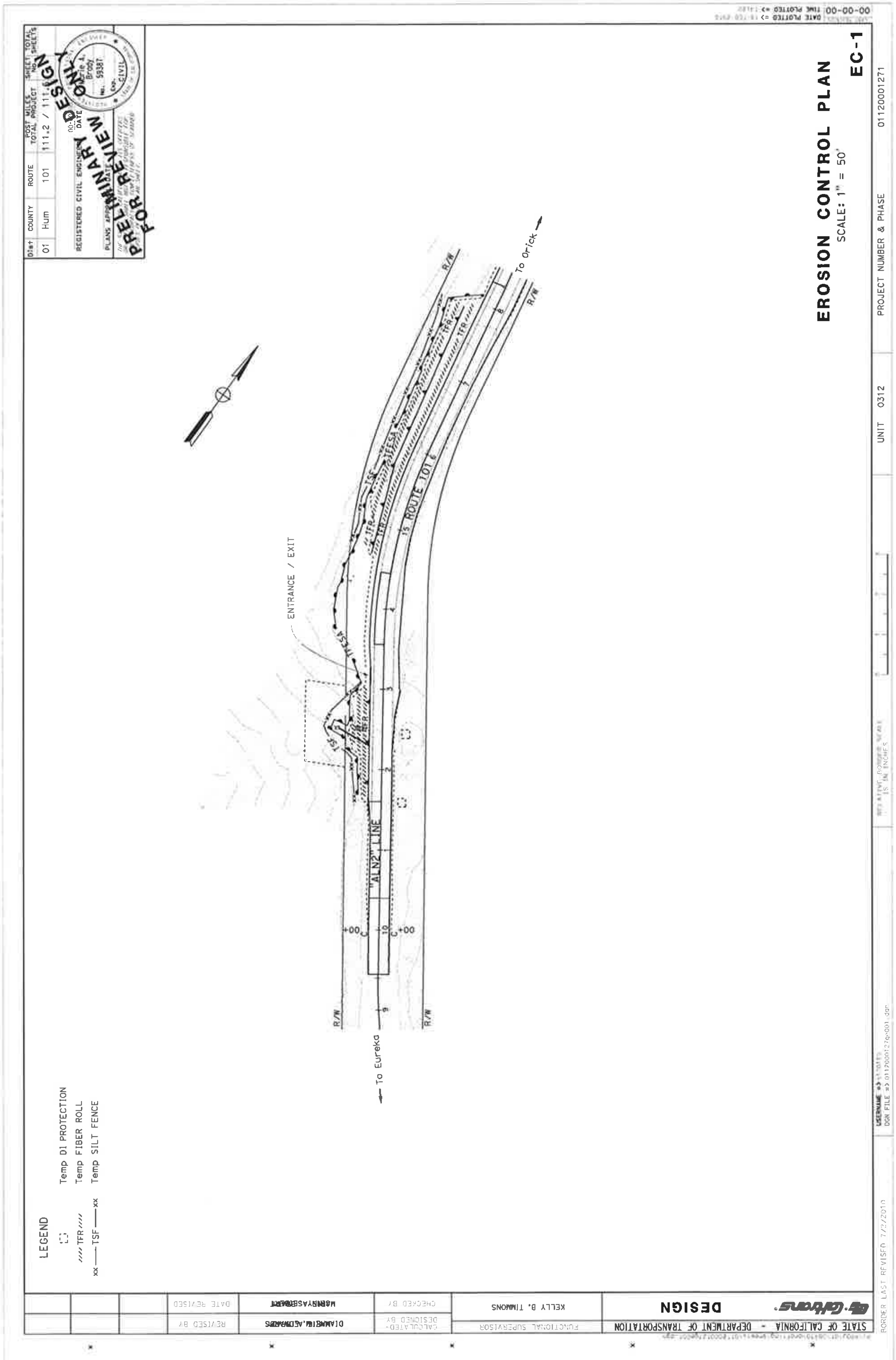
RELATIVE BORDER SCALE IS IN INCHES

UNIT 0312

PROJECT NUMBER & PHASE 01120001271

DATE PLOTTED => 00-00-00

TIME PLOTTED =>


EROSION CONTROL PLAN
SCALE: 1" = 50'
EC-1
LEGEND
Temp DI PROTECTION
TFR Temp FIBER ROLL
xx —— TSF —— xx Temp SILT FENCE
To Eureka
To Orick
ENTRANCE / EXIT
ROUTE 101
"ALN2" LINE
R/W
Dist
COUNTY
ROUTE
01
Hum
101
REGISTERED CIVIL ENGINEER
PLANS APPROVAL DATE
PRELIMINARY DESIGN ONLY
FOR REVIEW
PROJECT NUMBER & PHASE
01120001271
UNIT
0312
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR
KELLY B. TIMMONS

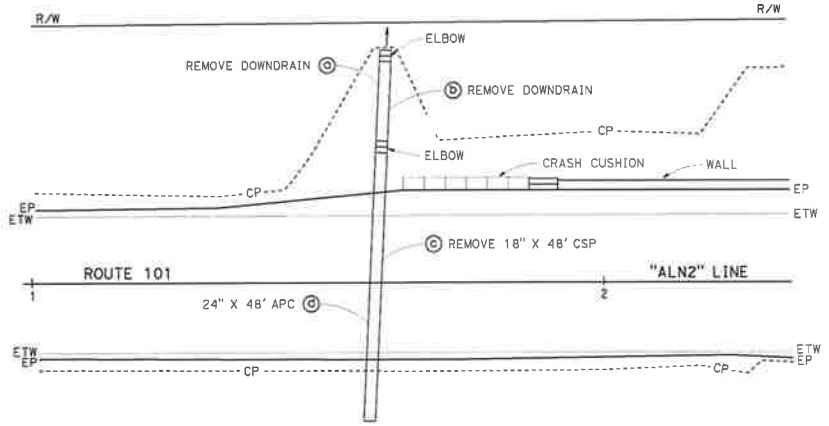
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

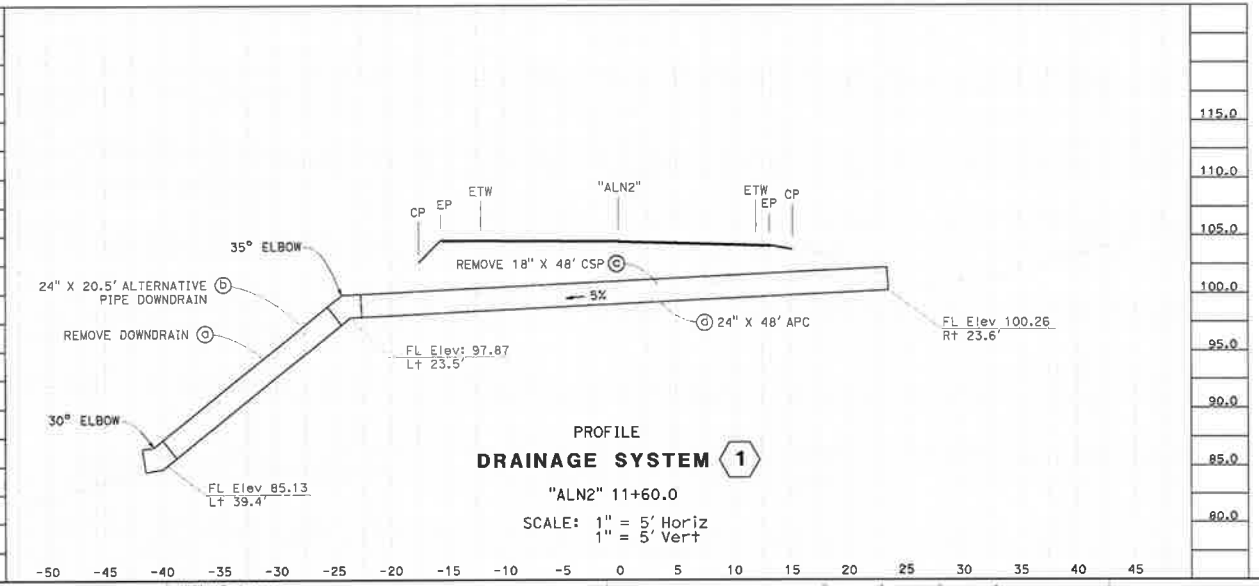
Marie A. Brady No. 59387 Exp. CIVIL

PRELIMINARY DESIGN FOR REVIEW ONLY



PLAN

SCALE: 1" = 10'



PROFILE

DRAINAGE SYSTEM (1)

"ALN2" 11+60.0

SCALE: 1" = 5' Horiz
1" = 5' Vert

DRAINAGE PLAN AND PROFILE

SCALE: AS SHOWN

D-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN
FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS
CALCULATED-DESIGNED BY: MARIE A. BRADY
CHECKED BY: GINNY SEIBERT
REVISED BY
DATE REVISED

BORDER LAST REVISED 7/27/2010
USERNAME => s120111
DGN FILE => 01120001271d001.dgn
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0312
PROJECT NUMBER & PHASE 01120001271
DATE PLOTTED => 00-00-00
TIME PLOTTED =>

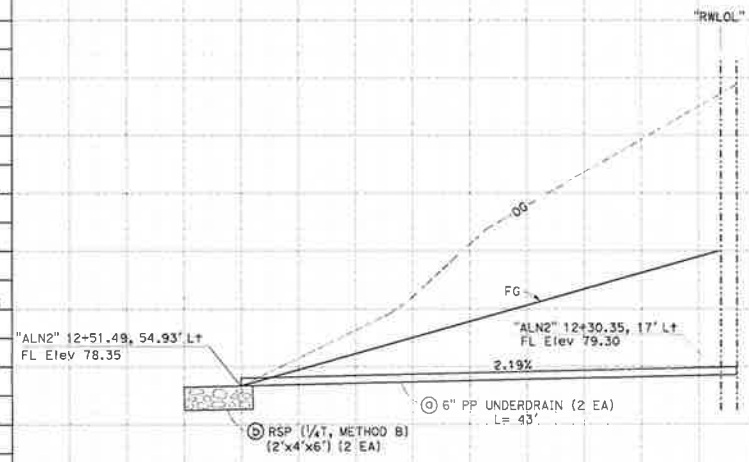
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER DATE

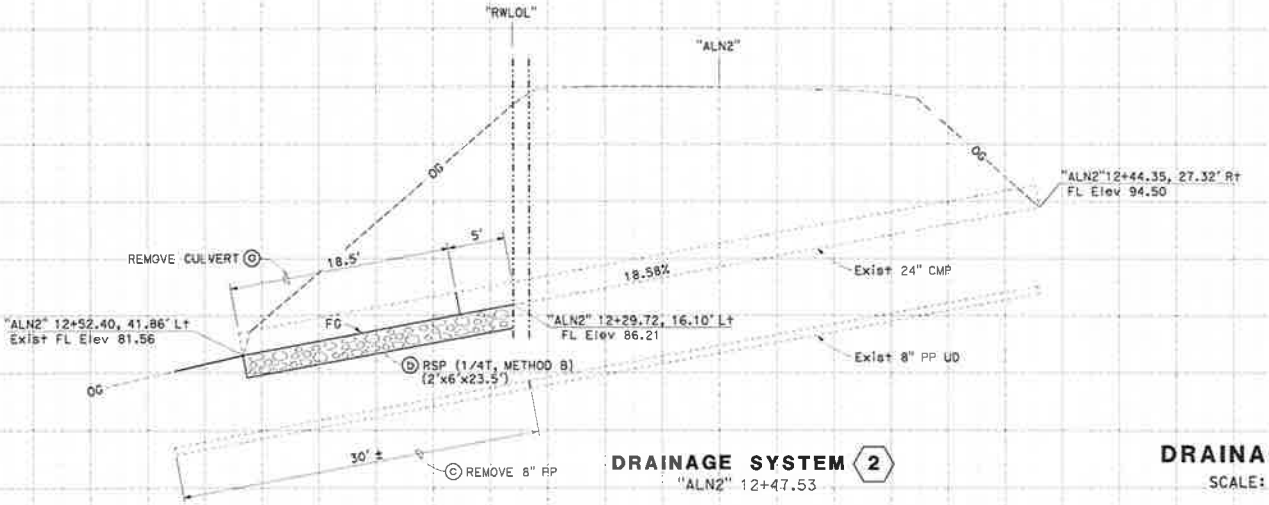
PLANS APPROVAL DATE

Marie A. Brady No. 59387 Exp. CIVIL

PRELIMINARY DESIGN FOR REVIEW ONLY



DRAINAGE SYSTEM (1)
"ALN2" 11+60.89



DRAINAGE SYSTEM (2)
"ALN2" 12+47.53

DRAINAGE PROFILE

SCALE: 1" = 5' Horiz
1" = 5' Vert

DP-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN
FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS
CALCULATED-DESIGNED BY: MARIE A. BRADY
CHECKED BY: GINNY SEIBERT
REVISED BY
DATE REVISED

BORDER LAST REVISED 7/27/2010
USERNAME => s120115
DGN FILE => 01120001271P001.dgn
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0312
PROJECT NUMBER & PHASE 01120001271
DATE PLOTTED => 29-FEB-16
TIME PLOTTED => 14:20

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER — DATE

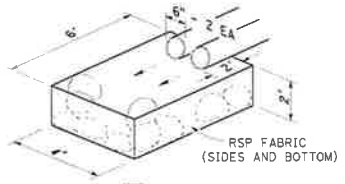
PLANS APPROVAL DATE

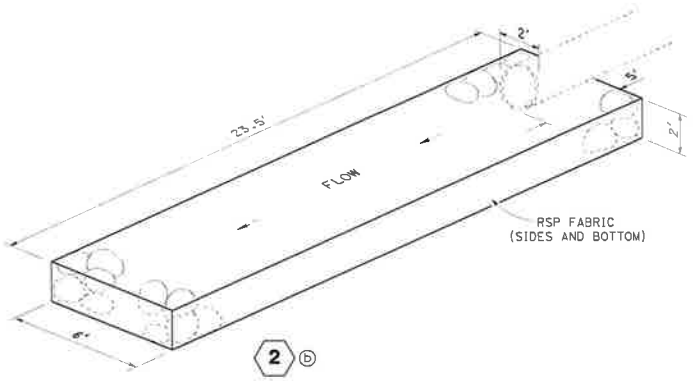
PRELIMINARY DESIGN FOR REVIEW ONLY

Marie A. Brady No. 59387 Exp. CIVIL

APC RECOMMENDATIONS

POSTMILE	GALVANIZED CORRUGATED STEEL PIPE	GALVANIZED POLYMERIC SHEET COATED CORRUGATED STEEL PIPE	CORRUGATED ALUMINUM PIPE	HDPE, TYPE S
111.42	0.109 In (12 GAGE)	0.079 In (14 GAGE)	0.105 In (12 Equiv GAGE)	YES
111.50	NA	0.138 IN (10 GAGE)	NA	YES
111.68	NA	0.138 IN (10 GAGE)	NA	YES





ROCK ENERGY DISSIPATOR

DRAINAGE QUANTITIES

DRAINAGE SYSTEM	DRAINAGE UNIT	REMOVE CULVERT	REMOVE DOWNDRAIN	24" ALTERNATIVE PIPE CULVERT	24" ALTERNATIVE PIPE DOWNDRAIN	24" ELBOW	RSP 1/4TON, METHOD A	RSP FABRIC	6" PP UD	REMOVE PIPE
		EA	EA	LF	LF	EA	CY	SQYD	LF	EA
1			1		20.5	2				
		1		48.0						
2							1.8	7.1	86	
3		1	1							
							10.4	28.8		
										1
TOTAL		1	1			2	12.2	35.9	86	1

DRAINAGE DETAILS AND QUANTITIES

NO SCALE

DD-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN
FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS
CALCULATED - DESIGNED BY: MARIE A. BRADY
CHECKED BY: GINNY SEIBERT
REVISED BY / DATE REVISED

BORDER LAST REVISED 7/2/2010
USERNAME => s170111
DGN FILE => 01120001271sh001.dgn
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0312
PROJECT NUMBER & PHASE 01120001271
DATE PLOTTED => 16-FEB-2016
TIME PLOTTED => 00:00:00

1. EXACT SIGN LOCATION TO BE DETERMINED BY THE ENGINEER.
2. SEE SHEETS TH-2 & TH-3 FOR PLACEMENT OF SIGNS C, D, F, G & I.
3. SIGNS B, C & D FSBT WILL REQUIRE WOOD POLE PROTECTION.
4. SIGNS B, C & D FNBT TO BE PLACED EITHER 15' FROM ETW OR BEHIND EXISTING MBGR.

(X) ROADSIDE SIGN (WITH NUMBERS)

Temp FLASHING BEACON (SEE ELECTRICAL PLANS)

STATIONARY MOUNTED CONSTRUCTION AREA SIGNS

◯	TYPE	SIGN MESSAGE	PANEL SIZE	No. OF POSTS AND SIZE	No. OF SIGNS
A	C40(CA)	TRAFFIC FINES DOUBLED IN CONSTRUCTION ZONE	108" x 42"	2 - 6" x 6"	2
B	W20-1	ROAD WORK AHEAD	36" x 36"	*	2
C	W20-4	ONE LANE ROAD AHEAD	36" x 36"	*	2
D	W3-3	SIGNAL AHEAD SYMBOL	36" x 36"	*	2
E	R4-11	BIKES MAY USE FULL LANE	30" x 30"	1 - 4" x 6"	2
F	R10-6	STOP HERE ON RED	24" x 36"	1 - 4" x 6"	2
G	W1-4	REVERSE CURVE SIGN	36" x 36"	1 - 4" x 6"	1
H	G20-2	END ROAD WORK	36" x 36"	1 - 4" x 6"	2

* PLACE SIGNS ON POLE WITH FLASHING BEACON (SEE ELECTRICAL PLANS).

BARRICADE MOUNTED CONSTRUCTION AREA SIGNS

◯	TYPE	SIGN MESSAGE	PANEL SIZE	BARRICADE TYPE	No. OF SIGNS
I	R26A(S)(CA)	NO STOPPING ANY TIME	24" x 30"	III	3

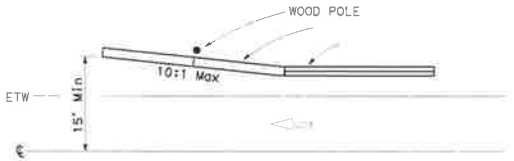
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101	111.2 / 111.[illegible]		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

PRELIMINARY DESIGN ONLY FOR REVIEW

Marie A. Brady No. 59387 Exp. CIVIL



WOOD POLE PROTECTION DETAIL
(SEE NOTE 3)

CONSTRUCTION AREA SIGNS
NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN
FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS
CALCULATED-DESIGNED BY: MARIE A. BRADY
CHECKED BY: GINNY SEIBERT
REVISED BY / DATE REVISED

BORDER LAST REVISED 7/2/2010
USERNAME => [illegible]
DGN FILE => [illegible]
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0312
PROJECT NUMBER & PHASE 01120001271
DATE PLOTTED => [illegible]
00-00-00 TIME PLOTTED => [illegible]

NOTES:

1. CALIFORNIA CODES ARE DESIGNATED BY (CA). OTHERWISE, FEDERAL (MUTCD) CODES ARE SHOWN.
2. ALL SIGNS SHALL HAVE A BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND AND SHALL BE EQUIPPED WITH AT LEAST TWO 16" x 16" ORANGE FLAGS FOR DAYTIME CLOSURE OR FLASHING BEACONS FOR LANE CLOSURE DURING HOURS OF DARKNESS.
3. ALL CONES USED FOR LANE CLOSURES DURING THE HOURS OF DARKNESS SHALL BE FITTED WITH RETROREFLECTIVE BANDS OR SLEEVES.
4. WHEN A PILOT CAR IS USED, PLACE A C37 (CA) SIGN AT ALL INTERSECTIONS WITHIN TRAFFIC CONTROL AREA. WHERE VEHICULAR TRAFFIC CAN NOT EFFECTIVELY SELF-REGULATE, AT LEAST ONE FLAGGER SHALL BE USED AT EACH INTERSECTION WITHIN THE TRAFFIC CONTROL AREA.
5. FLAGGER SHOULD STAND IN A CONSPICUOUS PLACE, FACING TRAFFIC AT ALL TIMES, BE VISIBLE TO APPROACHING TRAFFIC AS WELL AS APPROACHING VEHICLES AFTER THE FIRST VEHICLE HAS STOPPED.
6. ADDITIONAL ADVANCE FLAGGERS ARE REQUIRED.
7. WHEN FLAGGER IS NOT VISIBLE FROM THIS LOCATION PLACE A C29 (CA) SIGN BELOW THE C9A (CA) SIGN.

LEGEND

- TRAFFIC CONE
- TEMPORARY SIGN
- DIRECTION OF TRAVEL
- PORTABLE FLASHING BEACON
- FLAGGER

SIGN PANEL SIZE (MINIMUM)

- [A] 48" x 48" - SPEED OF 45 mph OR MORE; 36" x 36" - SPEED LESS THAN 45 mph
- [B] 30" x 30"
- [C] UNUSED
- [D] UNUSED
- [E] 20" x 7"

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

Sheri M. Rodriguez 12-9-15
REGISTERED CIVIL ENGINEER DATE

Month Day, Year
PLANS APPROVAL DATE

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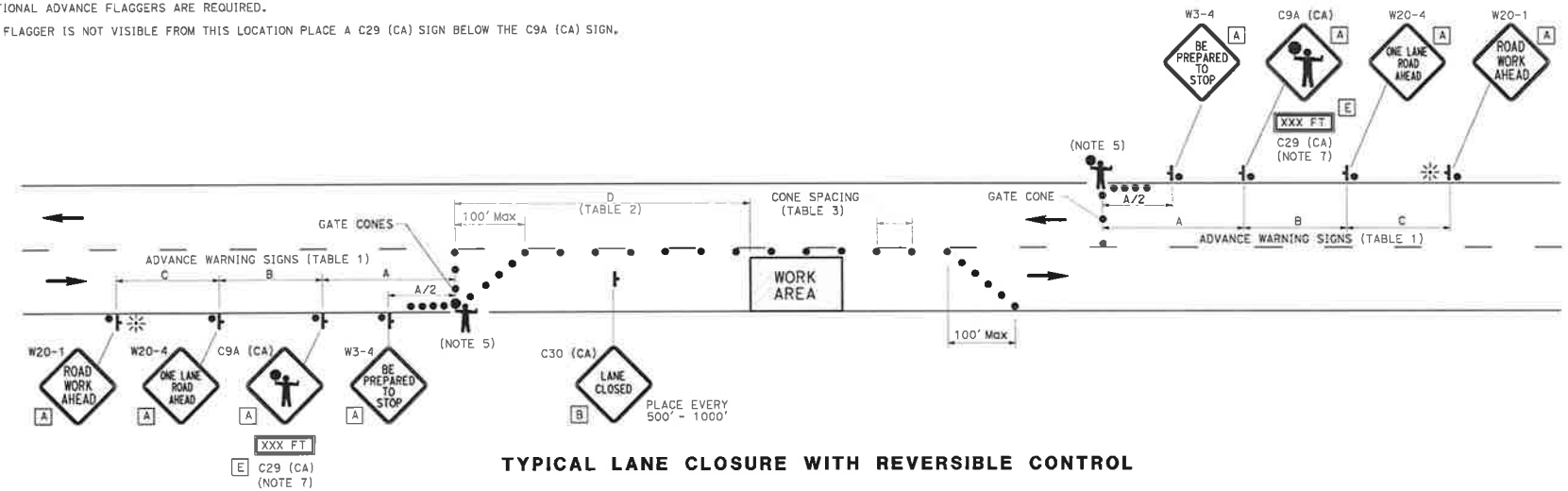


TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL

TABLE 1

ADVANCE WARNING SIGN SPACING

ROAD TYPE	Min A	Min B	Min C
	ft		
URBAN (25 mph OR LESS)	100	100	100
URBAN (30 mph TO 40 mph)	250	250	250
URBAN (MORE THAN 40 mph)	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1500	2640

TABLE 2

BUFFER SPACE

APPROACH SPEED	Min D	DOWNGRADE Min D		
		-3%*	-6%*	-9%*
mph	ft			
25 & BELOW	155	158	165	173
30	200	205	215	227
35	250	257	271	287
40	305	315	333	354
45	360	378	400	427
50	425	446	474	507
55	495	520	553	593
60	570	598	638	686
65	645	682	728	785

* USE ON SUSTAINED DOWNGRADE STEEPER THAN -3 PERCENT AND LONGER THAN 1 MILE.

TABLE 3

Max CONE SPACING

POSTED SPEED	TAPER	TANGENT	CONFLICT*
mph	ft		
20	20	40	10
25	25	50	12
30	30	60	15
35	35	70	17
40	40	80	20
45	45	90	22
50	50	100	25
55	55	110	27
60	60	120	30
65	65	130	32

* USE WHERE THERE IS A CONFLICT BETWEEN EXISTING PAVEMENT MARKINGS AND CHANNELIZERS.

TRAFFIC HANDLING PLAN

NO SCALE

TH-1

APPROVED FOR TRAFFIC HANDLING WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans TRAFFIC OPERATIONS
FUNCTIONAL SUPERVISOR: RICHARD MULLEN
DESIGNED BY: TROY A. ARSENEAU
CHECKED BY: SHERI M. RODRIGUEZ
REVISED BY / DATE REVISED

DATE PLOTTED => 13 FEB 2016
TIME PLOTTED => 14:40
03-05-15

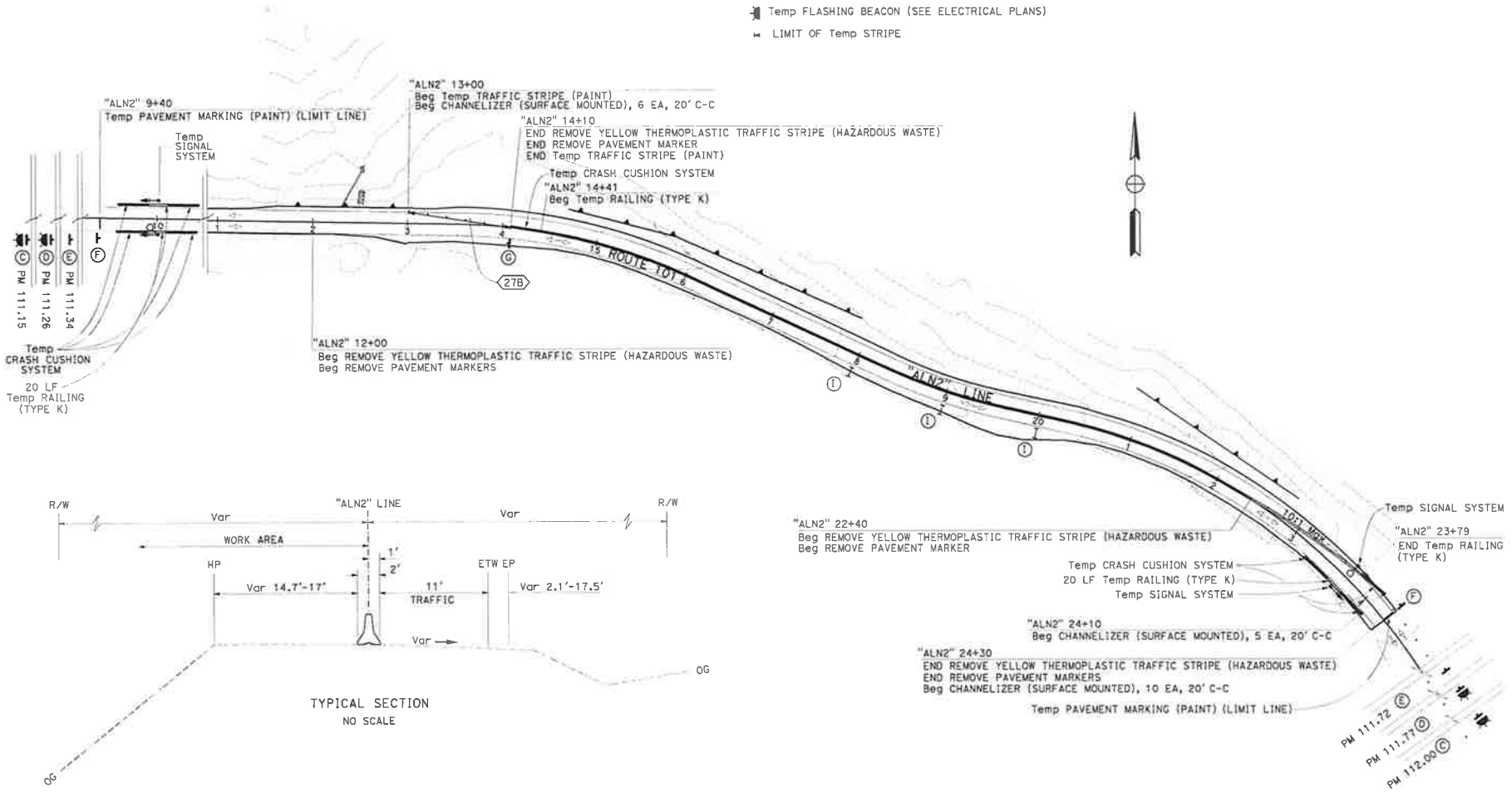
BORDER LAST REVISED 7/2/2010
USERNAME => s120115
DGN FILE => 01120001271tm3001a.dgn
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0042
PROJECT NUMBER & PHASE 01120001271

NOTES:

1. THIS TRAFFIC HANDLING PLAN FOR USE DURING CONSTRUCTION OF WALLS 11 & 12 (SEE STRUCTURE PLANS).
2. SEE ELECTRICAL PLANS FOR Temp SIGNAL SYSTEM AND FLASHING BEACON DETAILS.
3. ALL PAVEMENT DELINEATION MUST BE RESTORED AFTER CONSTRUCTION OF WALLS 11 & 12. (SEE THQ-1 FOR QUANTITIES)

LEGEND

- CHANNELIZER (SURFACE MOUNTED)
- BARRICADE MOUNTED CONSTRUCTION AREA SIGN
- STATIONARY MOUNTED CONSTRUCTION AREA SIGN
- Temp FLASHING BEACON (SEE ELECTRICAL PLANS)
- LIMIT OF Temp STRIPE



TYPICAL SECTION
NO SCALE

TYPICAL LANE CLOSURE FOR WALL 11 & 12 CONSTRUCTION

TRAFFIC HANDLING PLAN

SCALE: 1" = 50'

TH-2

APPROVED FOR STAGE CONSTRUCTION WORK ONLY

NOTES:

1. THIS TRAFFIC HANDLING PLAN FOR USE DURING CONSTRUCTION OF WALL 14 (SEE STRUCTURE PLANS).
2. SEE ELECTRICAL PLANS FOR Temp SIGNAL SYSTEM AND FLASHING BEACON DETAILS.

LEGEND

- · CHANNELIZER (SURFACE MOUNTED)
- I BARRICADE MOUNTED CONSTRUCTION AREA SIGN
- STATIONARY MOUNTED CONSTRUCTION AREA SIGN
- Temp FLASHING BEACON (SEE ELECTRICAL PLANS)
- LIMIT OF Temp STRIPE

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER DATE

Month Day, Year
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS ITEM SHEET.

"ALN2" 9+40
Beg REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)
Beg REMOVE PAVEMENT MARKERS

"ALN2" 10+00
Beg Temp TRAFFIC STRIPE (PAINT)
Beg CHANNELIZER (SURFACE MOUNTED), 5 EA, 20' C-C

"ALN2" 11+00
END REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)
END REMOVE PAVEMENT MARKERS
END Temp TRAFFIC STRIPE (PAINT)
Temp CRASH CUSHION SYSTEM

"ALN2" 11+32
Beg Temp RAILING (TYPE K)

"ALN2" 14+10
Beg REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)
Beg REMOVE PAVEMENT MARKER
Beg Temp TRAFFIC STRIPE (PAINT)

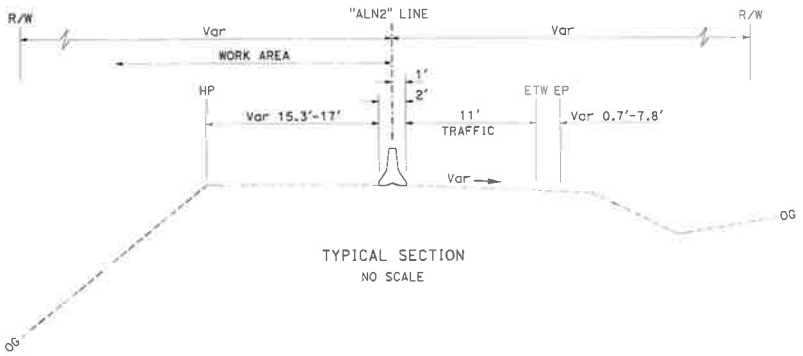
"ALN2" 14+53
END Temp RAILING (TYPE K)
Temp CRASH CUSHION SYSTEM

"ALN2" 14+90
Beg CHANNELIZER (SURFACE MOUNTED), 4 EA, 20' C-C

"ALN2" 15+50
END Temp TRAFFIC STRIPE (PAINT)
Temp CRASH CUSHION SYSTEM

"ALN2" 16+55
END REMOVE THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)
END REMOVE PAVEMENT MARKER
Beg CHANNELIZER (SURFACE MOUNTED), 10 EA, 20' C-C

Temp PAVEMENT MARKING (PAINT) (LIMIT LINE)
Temp SIGNAL SYSTEM
Temp CRASH CUSHION SYSTEM
20 LF Temp RAILING (TYPE K)
PM 111.15
PM 111.26
PM 111.34
27B
TO RELOCATE SIGN
Temp SIGNAL SYSTEM
20 LF Temp RAILING (TYPE K)
Temp PAVEMENT MARKING (PAINT) (LIMIT LINE)
"ALN2" LINE
ROUTE TOT 2
PM 111.72
PM 111.77
PM 112.00



TYPICAL SECTION
NO SCALE

TYPICAL LANE CLOSURE FOR WALL 14 CONSTRUCTION

TRAFFIC HANDLING PLAN

SCALE: 1" = 50'

TH-3

APPROVED FOR STAGE CONSTRUCTION WORK ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans, TRAFFIC OPERATIONS
FUNCTIONAL SUPERVISOR: RICHARD MULLEN
CALCULATED-DESIGNED BY: PAUL W. HAILEY
CHECKED BY: SHERI M. RODRIGUEZ
REVISED BY / DATE REVISED

BORDER LAST REVISED 7/2/2010
USERNAME => [illegible]
DGN FILE => [illegible]
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0042
PROJECT NUMBER & PHASE 01120001271
DATE PLOTTED => 00-00-00
TIME PLOTTED => [illegible]

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER — DATE

Month Day, Year
PLANS APPROVAL DATE

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TRAFFIC CONTROL DEVICES

SHEET	LOCATION		CHANNELIZER (SURFACE MOUNTED) WHITE	Temp RAILING (TYPE K)	Temp CRASH CUSHION SYSTEM
	FROM	TO	EA	LF	EA
CS-1/ TH-2	PM 111.77			40	1
	PM 112.00			40	1
	PM 112.07			40	1
TH-2	"ALN2" 9+57, 12.5' RT	"ALN2" 10+42, 13' RT		20	2
	"ALN2" 9+59, 14' LT	"ALN2" 10+43, 13.5' LT		20	2
	"ALN2" 13+00, 12' LT	"ALN2" 14+10	6		
	"ALN2" 14+10	"ALN2" 24+10, 17' LT		940	2
	"ALN2" 23+24, 12.5' RT	"ALN2" 24+10, 12.5' RT		20	2
	"ALN2" 24+10, 14.5' LT	"ALN2" 24+90, 14.5' LT	5		
	"ALN2" 24+30	"ALN2" 26+10	10		
TH-3	"ALN2" 10+00, 12' LT	"ALN2" 10+80	5		
	"ALN2" 11+00	"ALN2" 14+85, 4' LT		320	2
	"ALN2" 14+90, 3' LT	"ALN2" 15+50, 13' LT	4		
	"ALN2" 15+47, 13' RT	"ALN2" 16+33, 11' RT		20	2
	"ALN2" 15+52, 20' LT	"ALN2" 16+36, 20' LT		20	2
	"ALN2" 16+55	"ALN2" 18+35	10		
		TOTAL	40	1480	17

TEMPORARY PAVEMENT DELINEATION

SHEET	LOCATION		LENGTH	DETAIL	REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)	REMOVE PAVEMENT MARKERS	Temp TRAFFIC STRIPE (PAINT)	Temp PAVEMENT MARKING (PAINT)	REMOVE PAINTED TRAFFIC STRIPE	REMOVE PAINTED PAVEMENT MARKING
	FROM	TO	LF		LF	EA	LF	SQFT	LF	SQFT
TH-2	"ALN2" 12+00	"ALN2" 14+10	210	22	420	18				
	"ALN2" 9+40			LIMIT LINE				12		
	"ALN2" 13+00	"ALN2" 14+10	110	27B			110			
	"ALN2" 22+40	"ALN2" 24+30	190	22	380	18				
	"ALN2" 24+30			LIMIT LINE				12		
TH-2*	"ALN2" 12+00	"ALN2" 14+10	210	22			210			
	"ALN2" 12+45			LIMIT LINE						12
	"ALN2" 13+00	"ALN2" 14+10	110	27B					110	
	"ALN2" 22+40	"ALN2" 24+30	190	22			190			
	"ALN2" 24+30			LIMIT LINE						12
TH-3	"ALN2" 9+40	"ALN2" 11+00	160	22	320	14				
	"ALN2" 9+40			LIMIT LINE				12		
	"ALN2" 10+00	"ALN2" 11+00	100	27B			100			
	"ALN2" 14+10	"ALN2" 16+55	245	22	490	22				
	"ALN2" 14+10	"ALN2" 15+50	140	27B			140			
	"ALN2" 16+55			LIMIT LINE				12		
				TOTAL	1610	72	750	48	110	24

* QUANTITIES TO RESTORE PAVEMENT DELINEATION WHEN TRAFFIC HANDLING ON SHEET TH-2 NO LONGER APPLIES.

TRAFFIC HANDLING QUANTITIES

THQ-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans TRAFFIC OPERATIONS
RICHARD MULLEN
CALCULATED-DESIGNED BY
CHECKED BY
PAUL W. HAILEY
SHERI M. RODRIGUEZ
REVISED BY
DATE REVISED

00-00-00 DATE PLOTTED => 11:20 AM
00-00-00 TIME PLOTTED => 11:20

BORDER LAST REVISED 7/2/2010
USERNAME => M1201%
DGN FILE => 01120001271m1001.dgn
RELATIVE BORDER SCALE IS IN INCHES
UNIT 0042
PROJECT NUMBER & PHASE 01120001271

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

PRELIMINARY DESIGN FOR REVIEW ONLY

Marie A. Brady No. 59387 Exp. CIVIL

REMOVE PAVEMENT DELINEATION

LOCATION (STATION) "ALN2" LINE			DETAIL NUMBER	DETAIL LENGTH	REMOVE YELLOW THERMOPLASTIC TRAFFIC STRIPE (HAZARDOUS WASTE)	REMOVE THERMOPLASTIC TRAFFIC STRIPE	REMOVE PAVEMENT MARKER
FROM	TO	R+/CL/L+		LF	LF	LF	EA
11+00.0	12+45.0	CL	22	145	290		12
16+55.0	22+40.0	CL	22	585	1170		50
9+40.0	11+60.0	L+	27B	220		220.0	
18+30.3	20+69.6	L+	27B	239.3		239.3	
23+13.6	24+30.0	L+	27B	116.4		116.4	
9+40.0	24+30.0	R+	27B	1490		1490.0	
TOTALS FROM Sht THQ-1				1520	1520		68
				TOTAL	2980	2066	128

PAVEMENT DELINEATION

LOCATION "ALN2" LINE		DETAIL NUMBER	DETAIL LENGTH	4" THERMOPLASTIC TRAFFIC STRIPE		PAVEMENT MARKER (RETROREFLECTIVE-RECESSED)	CENTERLINE RUMBLE STRIP (SINUSIDAL)
				SOLID WHITE	SOLID YELLOW	TYPE D	
STATION	R+/CL/L+		LF	LF	LF	EA	STA
9+40.0 TO 24+30.0	CL	22	1490		2980	128	15
9+40.0 TO 24+30.0	R+	27B	1490	1490			
9+40.0 TO 24+30.0	L+	27B	1490	1490			
			SUBTOTAL	2980	2980		
			TOTAL	5960		128	15

PAVEMENT DELINEATION QUANTITIES

PDQ-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans DESIGN

FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS

CALCULATED-DESIGNED BY: MARIE A. BRADY

CHECKED BY: GINNY SEIBERT

REVISED BY

DATE REVISED

BORDER LAST REVISED 7/27/2010

USERNAME => S130115

DGN FILE => 01120001271nb001.dgn

RELATIVE BORDER SCALE IS IN INCHES

UNIT 0312

PROJECT NUMBER & PHASE 01120001271

DATE PLOTTED => 5 FEB 2016

TIME PLOTTED => 14:27

00-00-00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

Marie A. Brody No. 59387 CIVIL

PRELIMINARY DESIGN ONLY FOR REVIEW

ABANDON WELL

LOCATION "ALN2" LINE STATION, OFFSET	EA
12+32.07, 7.37' Lt	1
15+20.78, 31.77' Lt	1
15+67.71, 27.81' Lt	1
17+03.79, 33.33' Lt	1
19+37.69, 63.79' Lt	1
19+81.01, 30.97' Rt	1
21+72.36, 28.67' Lt	1
22+33.93, 28.40' Lt	1
22+35.19, 6.61' Rt	1
TOTAL	10

PLACE HOT MIX ASPHALT DIKE

LOCATION "ALN2" LINE			REMOVE DIKE	HOT MIX ASPHALT DIKE (TYPE E)
STATION	Rt	Lt	LF	LF
13+50 TO 24+30	Rt		1080	1080
17+20 TO 21+00		Lt	380	380
TOTAL			1460	1460

ROADWAY QUANTITIES

LOCATION			COLD PLANE ASPHALT CONCRETE PAVEMENT	SHOULDER BACKING	CLASS 2 AB	HOT MIX ASPHALT (TYPE A)	GEOSYNTHETIC PAVEMENT INTERLAYER (PAVEMENT FABRIC)	TACK COAT	DESCRIPTION
POST MILE	Rt	Lt	SQYD	TON	CY	TON	SQYD	TON	
CONFORMS									
9+40 TO 10+40	X		274			18	3.8	0.11	MAINLINE CONFORM
23+90 TO 24+30		X	147			10	3.8	0.06	MAINLINE CONFORM
STRUCTURAL SECTIONS									
11+60.00 TO 13+55.70		X				93	62.4	0.17	FULL DEPTH AC
13+55.70 TO 18+30.30		X			445	178	211.6	0.45	AC WITH BASE
20+69.60 TO 23+13.60		X			235	94	108.4	0.24	AC WITH BASE
18+30.XX TO 20+69.XX	X					344			LEVELING COURSE
OVERLAY									
9+40 TO 24+30	X	X		443.4		355		1.35	MAINLINE EP TO EP
FROM HMA DIKE						38			
TOTAL			422	443.4	680	1130	390.0	2.38	

RESET POSTMILE MARKER

LOCATION	QUANTITY
STATION	EA
"ALN2" 16+20.00, Rt & Lt	2
TOTAL	2

TEMPORARY FENCE (TYPE ESA)

LOCATION	TEMPORARY FENCE (TYPE ESA)
STATION	LF
"T1" 100+70.00 TO "T1" 101+30.00	72
"T1" 102+70.00 TO "T1" 103+30.00	75
"T2" 201+60.05 TO "T2" 205+34.95	398
TOTAL	545

HIGHWAY PLANTING

LOCATION STATION	SOIL AMENDMENT	ORGANIC FERTILIZER	PLANT ESTABLISHMENT	WOOD MULCH	DUFF	ROLLED EROSION CONTROL PRODUCT (NETTING)	INVASIVE SPECIES REMOVAL
	CF	LB	LS	CY	SQFT	SQFT	LS
"ALN2" 9+40 TO 24+30	21	0.6	1	195	2350	21,400	1

WATER POLLUTION CONTROL

LOCATION	TEMPORARY COVER	TEMPORARY DRAINAGE INLET PROTECTION	FIBER ROLL	SILT FENCE
POST MILE	SQYD	EA	LF	LF
111.4 TO 111.6	2975	2	765	720

SUMMARY OF QUANTITIES

Q-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

DESIGN

FUNCTIONAL SUPERVISOR KELLY B. TIMMONS

CALCULATED-DESIGNED BY MARIE A. BRADY

CHECKED BY GINNY SEIBERT

REVISED BY

DATE REVISED

DATE PLOTTED => TIME PLOTTED => 00-00-00

BORDER LAST REVISED 7/2/2010

USERNAME => DGN FILE =>

RELATIVE BORDER SCALE IS IN INCHES

UNIT 0312

PROJECT NUMBER & PHASE 01120001271

NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

LEGEND

- WOOD MULCH WITH RECP NETTING OVER
- WOOD MULCH
- DUFF WITH RECP NETTING OVER

ABBREVIATIONS:

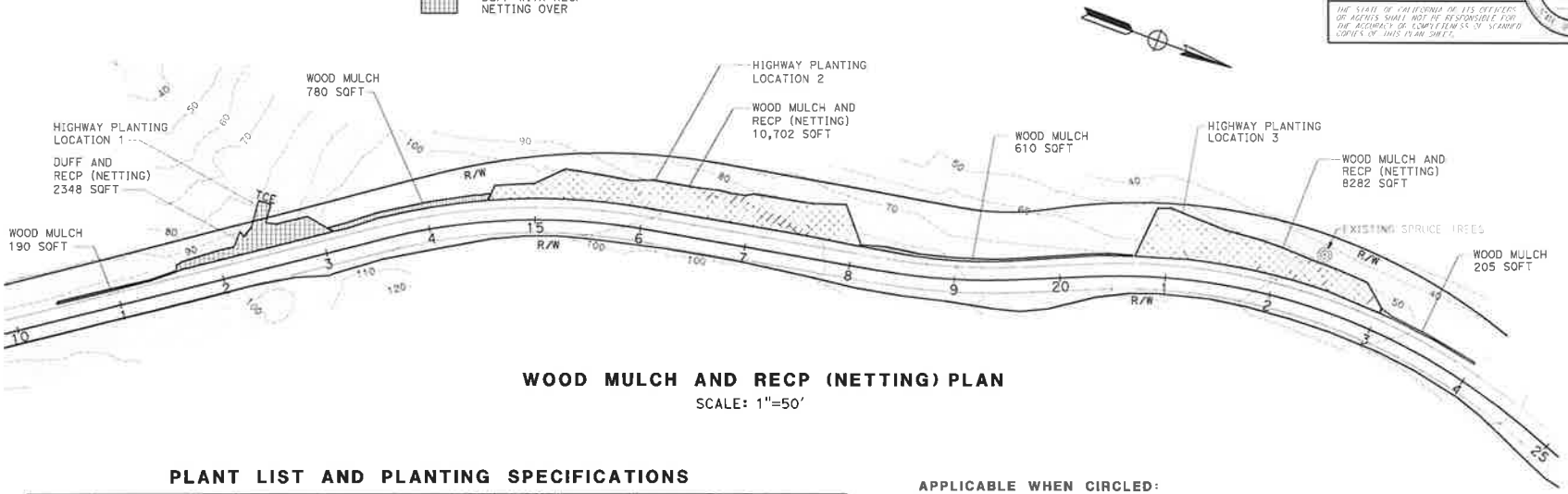
RECP ROLLED EROSION CONTROL PRODUCT (NETTING)

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

LICENSED LANDSCAPE ARCHITECT

PLANS APPROVAL DATE 8-31-13

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



WOOD MULCH AND RECP (NETTING) PLAN

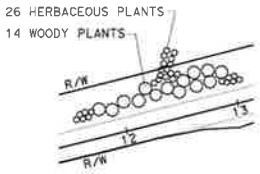
SCALE: 1"=50'

PLANT LIST AND PLANTING SPECIFICATIONS

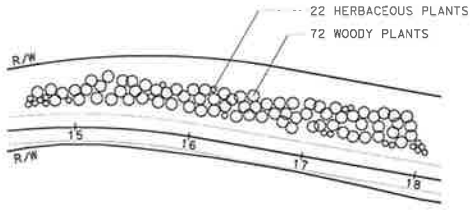
SYMBOL	PLANT TYPE	SIZE ⑤	QUANTITY EA	HOLE SIZE Dia	HOLE SIZE DEPTH	BASIN TYPE	SOIL AMEND ① CUFT	ORG FERT ① LB	SPACING	REMARKS STATE FURNISHED PLANTS FROM STATE PARKS-EXPECTED POT SIZE
○	WOODY PLANTS	⑫	141	8"	16"	II	0.07	0.002	③	4" x 14" TREEPOT OR SMALLER
o	HERBACEOUS PLANTS	⑫	65	8"	8"	II	0.07	0.002	③	1-GALLON OR SMALLER

APPLICABLE WHEN CIRCLED:

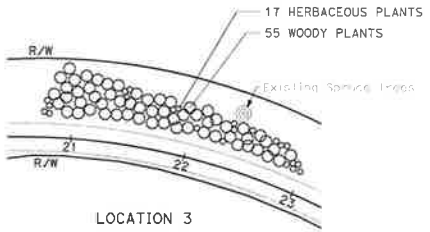
① - QUANTITIES SHOWN ARE "PER PLANT" UNLESS SHOWN AS SQFT OR SQYD APPLICATION RATES
② - BASIN MULCH IS INCLUDED WITH MULCH QUANTITIES SHOWN ON PLANTING PLAN
③ - EXACT LOCATION OF PLANTS TO BE DETERMINED IN THE FIELD
4 - SEE DETAIL
⑤ - SEE SPECIAL PROVISIONS
6 - SEE STANDARD SPECIFICATIONS
7 - AS SHOWN ON PLANS
8 - UNLESS OTHERWISE SHOWN ON PLANS
9 - FOLIAGE PROTECTOR REQUIRED
10 - ROOT PROTECTOR REQUIRED
11 - ROOT BARRIER REQUIRED
⑫ - STATE-FURNISHED



LOCATION 1



LOCATION 2



LOCATION 3

PLANTING PLAN

SCALE: 1"=50'

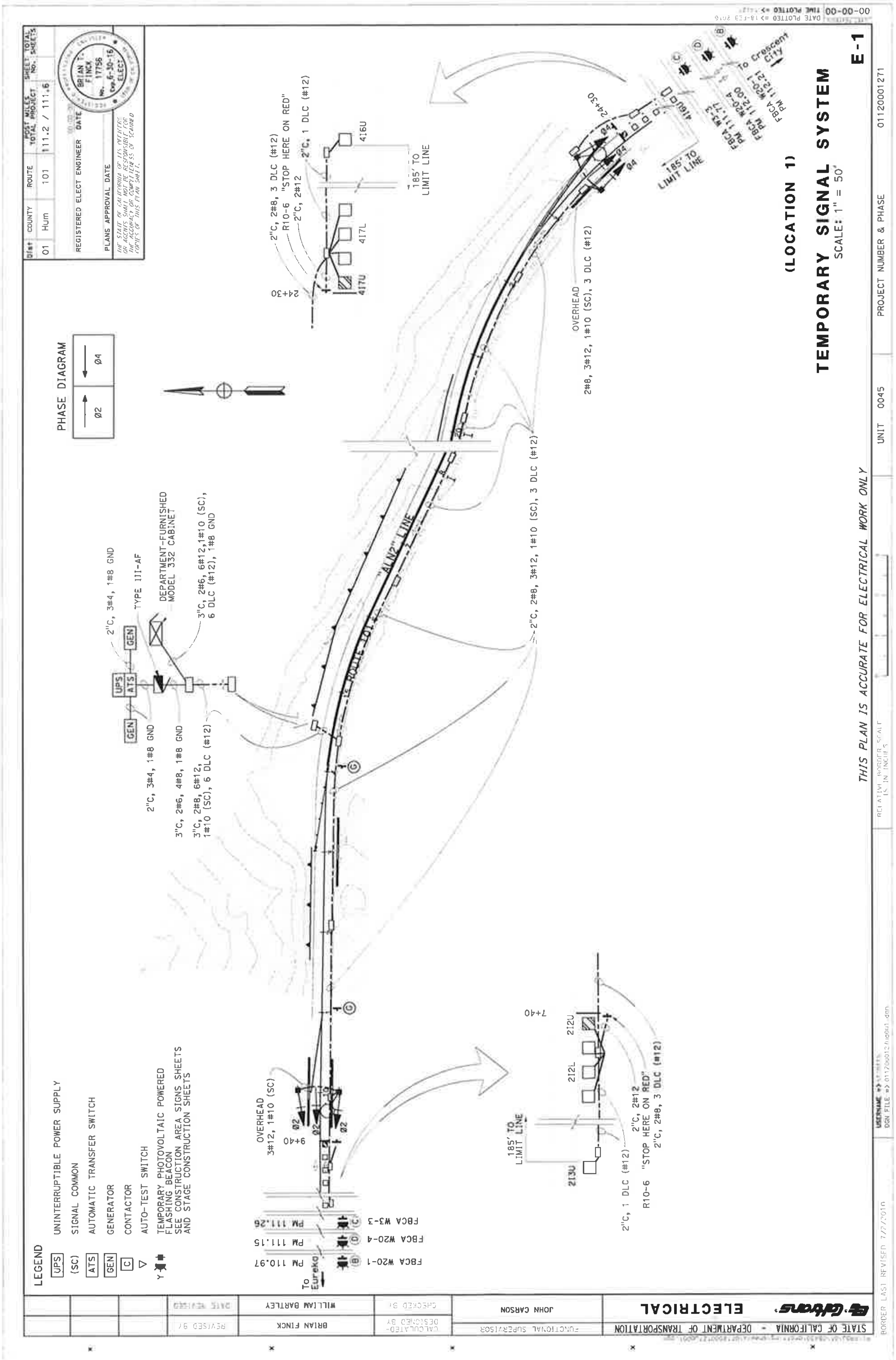
PLANT LIST AND PLANTING PLAN

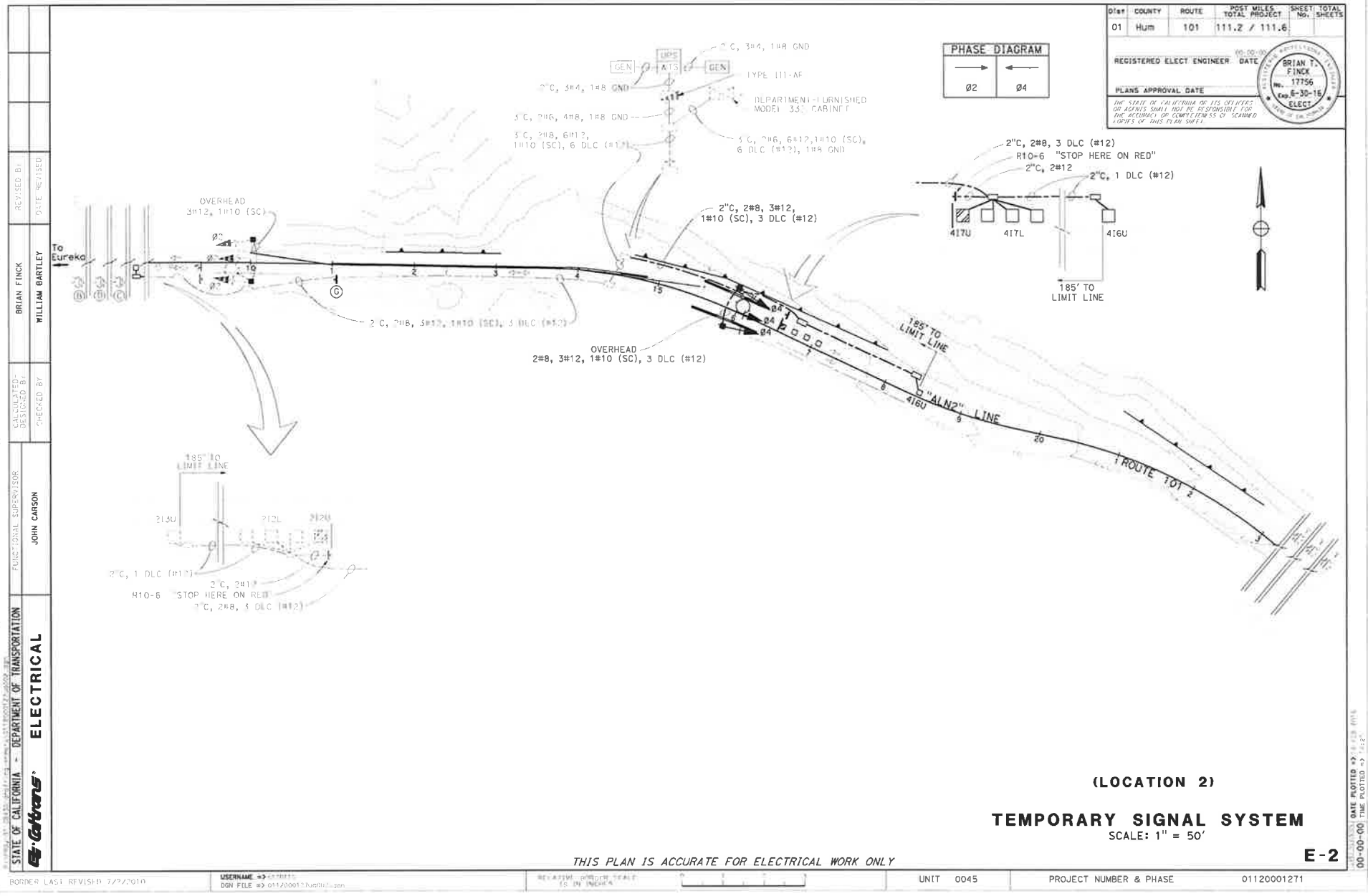
SCALE: AS SHOWN

PL-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans, LANDSCAPE ARCHITECTURE
FUNCTIONAL SUPERVISOR: TIM BOESE
CALCULATED-DESIGNED BY: LAURA LAZZAROTTO
CHECKED BY
REVISED BY / DATE REVISED

BORDER LAST REVISED 7/27/2010 | USERNAME => | DGN FILE => | RELATIVE BORDER SCALE IS IN INCHES | UNIT 0314 | PROJECT NUMBER & PHASE 01120001271 | 00-00-00 TIME PLOTTED => | DATE PLOTTED =>


TEMPORARY SIGNAL SYSTEM
(LOCATION 1)
SCALE: 1" = 50'
E-1
THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY
PHASE DIAGRAM
Ø2
Ø4
LEGEND
UPS UNINTERRUPTIBLE POWER SUPPLY
(SC) SIGNAL COMMON
ATS AUTOMATIC TRANSFER SWITCH
GEN GENERATOR
C CONTACTOR
AUTO-TEST SWITCH
TEMPORARY PHOTOVOLTAIC POWERED FLASHING BEACON SEE CONSTRUCTION AREA SIGNS SHEETS AND STAGE CONSTRUCTION SHEETS
DEPARTMENT-FURNISHED MODEL 332 CABINET
TYPE III-AF
2"C, 3#4, 1#8 GND
3"C, 2#6, 6#12,1#10 (SC), 6 DLC (#12), 1#8 GND
3"C, 2#6, 4#8, 1#8 GND
3"C, 2#8, 6#12, 1#10 (SC), 6 DLC (#12)
2"C, 2#8, 3#12, 1#10 (SC), 3 DLC (#12)
OVERHEAD 2#8, 3#12, 1#10 (SC), 3 DLC (#12)
OVERHEAD 3#12, 1#10 (SC)
"ALN2" LINE
ROUTE 101
2"C, 2#8, 3 DLC (#12)
R10-6 "STOP HERE ON RED"
2"C, 2#12
2"C, 1 DLC (#12)
185' TO LIMIT LINE
416U
417L
417U
212U
212L
213U
24+30
9+40
7+40
FBCA W20-1 PM 110.97
FBCA W20-4 PM 111.15
FBCA W3-3 PM 111.26
FBCA W3-3 PM 111.77
FBCA W20-4 PM 112.00
FBCA W20-1 PM 112.21
To Eureka
To Crescent City
Dist 01 COUNTY Hum ROUTE 101 POST MILES TOTAL PROJECT 111.2 / 111.6
REGISTERED ELECT ENGINEER DATE
PLANS APPROVAL DATE
BRIAN T. FINCK No. 17756 Exp. 6-30-16 ELECT
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
ELECTRICAL
JOHN CARSON
BRIAN FINCK
WILLIAM BARTLEY
PROJECT NUMBER & PHASE 01120001271
UNIT 0045



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED ELECT ENGINEER DATE 00-00-00

BRIAN T. FINCK No. 17756 Exp. 6-30-15 ELECT

PLANS APPROVAL DATE

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REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY	CHECKED BY
BRIAN FINCK	WILLIAM BARTLEY

FUNCTIONAL SUPERVISOR: JOHN CARSON

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

ELECTRICAL

(LOCATION 2)

TEMPORARY SIGNAL SYSTEM

SCALE: 1" = 50'

E-2

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY

BORDER LAST REVISED 7/27/2010

USERNAME => GTHRITE

DGN FILE => 01120001271u0002-dgn

RELATIVE BORDER SCALE IS IN INCHES

UNIT 0045

PROJECT NUMBER & PHASE 01120001271

DATE PLOTTED => 00-00-00

TIME PLOTTED => 14:52

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

Eric Watson No. 64273 Exp. 6/30/15 CIVIL

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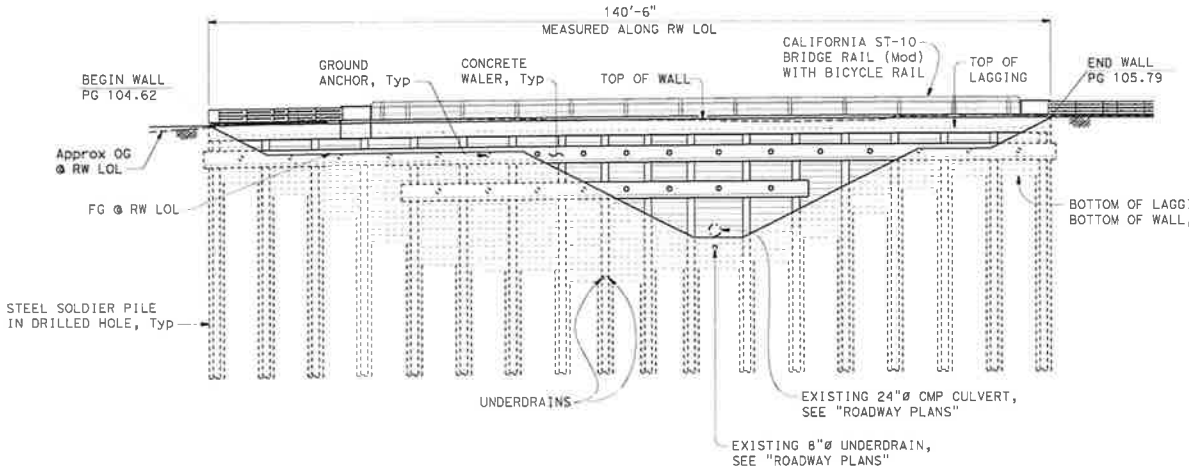
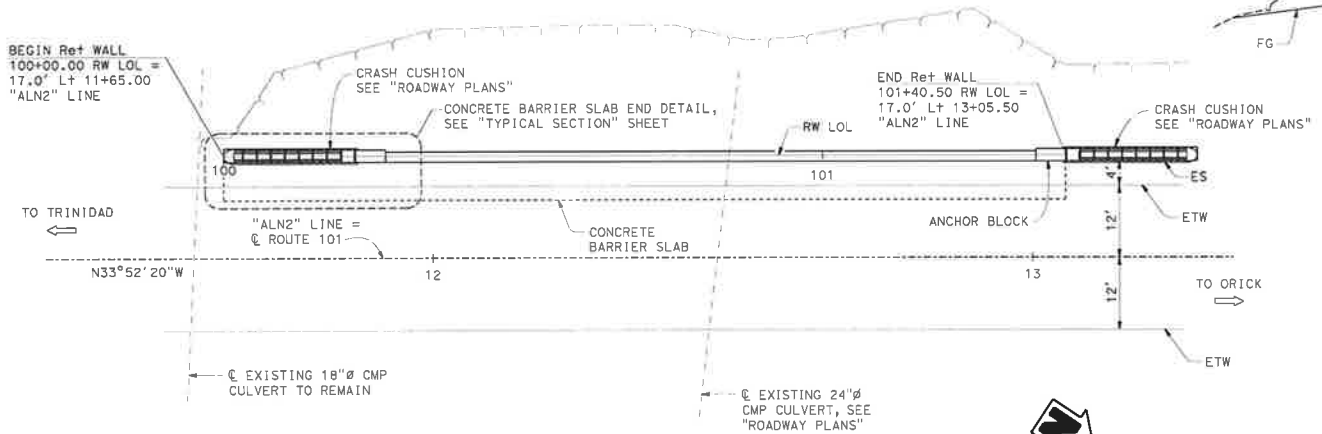
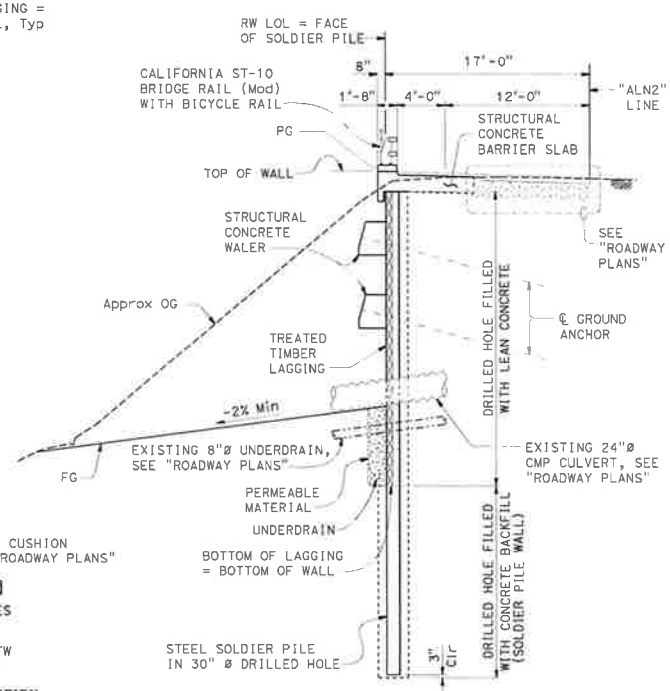


MIRRORED ELEVATION
1" = 10'



PLAN
1" = 10'



TYPICAL SECTION
1" = 5'

For "INDEX TO PLANS, STANDARD PLANS LIST, QUANTITIES and GENERAL NOTES", see "INDEX TO PLANS" sheet.

Jeff Sims, DESIGN ENGINEER	DESIGN	BY Rizla da Cruz Ferreira	CHECKED Glen Lawson	LOAD & RESISTANCE FACTOR DESIGN			
	DETAILS	BY Bob Huddleston	CHECKED Glen Lawson	LAYOUT	BY Rizla da Cruz Ferreira	CHECKED Glen Lawson	
	QUANTITIES	BY Eric Watson	CHECKED Jin Zhou	SPECIFICATIONS	BY X	PLANS AND SPECS COMPARED X	

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO. 04E0037
POST MILE 111.42

SOLDIER PILE WALL NO. 14
GENERAL PLAN

UNIT: 3576
PROJECT NUMBER & PHASE: 0112000127I
CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

1 10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101			

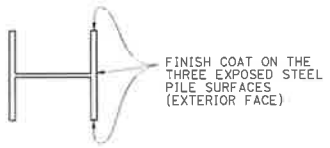
REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.

Eric Watson No. 64273 Exp. 6/30/15 CIVIL

INDEX TO PLANS



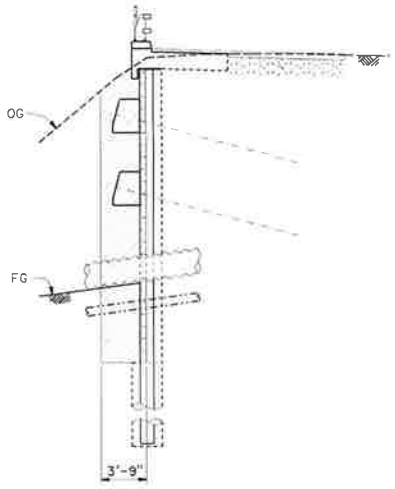
LIMITS OF FINISH COAT
STEEL SOLDIER PILE
NO SCALE

STANDARD PLANS 2010

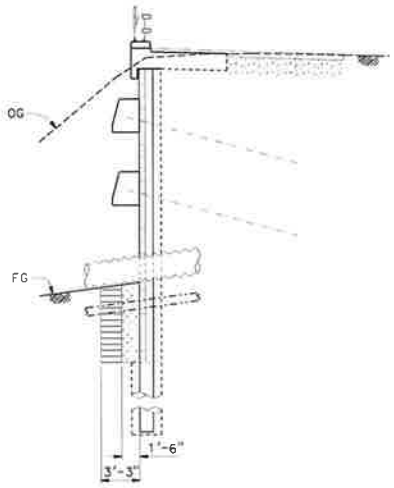
	A10A	ABBREVIATIONS (SHEET 1 OF 2)
RSP	A10B	ABBREVIATIONS (SHEET 2 OF 2)
	A10C	LINES AND SYMBOLS (SHEET 1 OF 3)
	A10D	LINES AND SYMBOLS (SHEET 2 OF 3)
	A10E	LINES AND SYMBOLS (SHEET 3 OF 3)
	A10F	LEGEND - SOIL (SHEET 1 OF 2)
	A10G	LEGEND - SOIL (SHEET 2 OF 2)
	A10H	LEGEND - ROCK
RSP	B11-47	CABLE RAILING
RSP	B11-68	CALIFORNIA ST-10 BRIDGE RAIL (1 OF 3)
	B11-69	CALIFORNIA ST-10 BRIDGE RAIL (2 OF 3)
RSP	B11-70	CALIFORNIA ST-10 BRIDGE RAIL (3 OF 3)

LEGEND:

- Structure Excavation (Soldier Pile Wall)
- Structure Backfill (Soldier Pile Wall)
- Permeable Material



EXCAVATION



BACKFILL

LIMITS OF EXCAVATION AND BACKFILL
1" = 5'

QUANTITIES

STRUCTURE EXCAVATION (SOLDIER PILE WALL)	280	CY
STRUCTURE BACKFILL (SOLDIER PILE WALL)	111	CY
CONCRETE BACKFILL (SOLDIER PILE WALL)	77	CY
LEAN CONCRETE BACKFILL	54	CY
GROUND ANCHOR (SUBHORIZONTAL)	25	EA
STEEL SOLDIER PILE (HP 14 X 73)	720	LF
30" DRILLED HOLE	725	LF
STRUCTURAL CONCRETE, BARRIER SLAB	65	CY
STRUCTURAL CONCRETE, WALER	43	CY
BAR REINFORCING STEEL (EPOXY COATED)(WALER)	12,170	LB
TIMBER LAGGING	13	MFBM
CLEAN AND PAINT STEEL SOLDIER PILING	LUMP	SUM
6" PERFORATED PLASTIC PIPE UNDERDRAIN	146	LF
6" NON-PERFORATED PLASTIC PIPE UNDERDRAIN	27	LF
CALIFORNIA ST-10 BRIDGE RAIL (MODIFIED) WITH BICYCLE RAILING	119	LF

GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:

AASHTO LRFD Bridge Design Specifications, 2012 Edition with Caltrans Amendments, preface dated January 2014.

LIVE LOAD:

2'-0" Level Earth Surcharge

SOIL PARAMETERS (For determination of Design Lateral Earth Pressures):

0'-27' from surface: $\Phi = 26°$, $\gamma = 125$ pcf

27'+ from surface: $\Phi = 38°$, $\gamma = 140$ pcf , c = 500 psf, Cohesion used for seismic only

SEISMIC LOADING:

PGA = 0.63g
Horizontal seismic coefficient (k_h) = 0.32
Vertical seismic coefficient (k_v) = 0.0

STRUCTURAL STEEL:

f_y = 50 ksi

REINFORCED CONCRETE:

f_y = 60 ksi
f'_c = 3.6 ksi
n = 8

PRESTRESSING STEEL (GROUND ANCHORS):

Strands - ASTM designation:A416 (270 ksi Low Relaxation Steel)
Bars - ASTM designation: A722 Type II (150 ksi)
FTL = Factored Test Load Per Anchor (kips)
FDL = Factored Design Load Per Anchor
FTL = 1.0 FDL
LL = Lock-Off Load = 0.55 FDL
f_{pu} = Minimum ultimate tensile stress of steel in ground anchor (kips/in^2)
A_s (Min) = Minimum cross sectional area of prestressing steel in ground anchor (in^2)

$$A_s\,(\text{Min}) = \frac{1.0\ \text{FTL}}{0.75\ f_{pu}}$$

STRUCTURAL TIMBER:

Treated Douglas Fir No.1 or better
Timber to be full sawn

DESIGN	BY Rizia da Cruz Ferreira	CHECKED Glen Lawson	
DETAILS	BY Bob Huddleston	CHECKED Glen Lawson	
QUANTITIES	BY Eric Watson	CHECKED Jin Zhou	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO. 04E0037
POST MILE 111.42

SOLDIER PILE WALL NO. 14
INDEX TO PLANS

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576
PROJECT NUMBER & PHASE: 01120001271
CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	NO.
10 of 14	01 of 15	10/01/11		2	10

NOTES:

1. All steel soldier piles are HP 14 x 73, 40'-0" long.
   See "GENERAL NOTES" on "INDEX TO PLANS" sheet for specifications.
2. California ST-10 Bridge Rail (Mod) not shown.
3. For underdrain details, see "DRAINAGE DETAILS" sheet.
4. For "CULVERT PENETRATION DETAIL", see "DRAINAGE DETAILS" sheet.
5. Existing culvert and retaining wall intersection to be verified by the Contractor.
6. Ground Anchor locations and horizontal angle to be adjusted by the Contractor and approved by the Engineer in order to avoid existing culvert

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

Eric Watson No. 64273 Exp. 6/30/15 CIVIL

PLANS APPROVAL DATE

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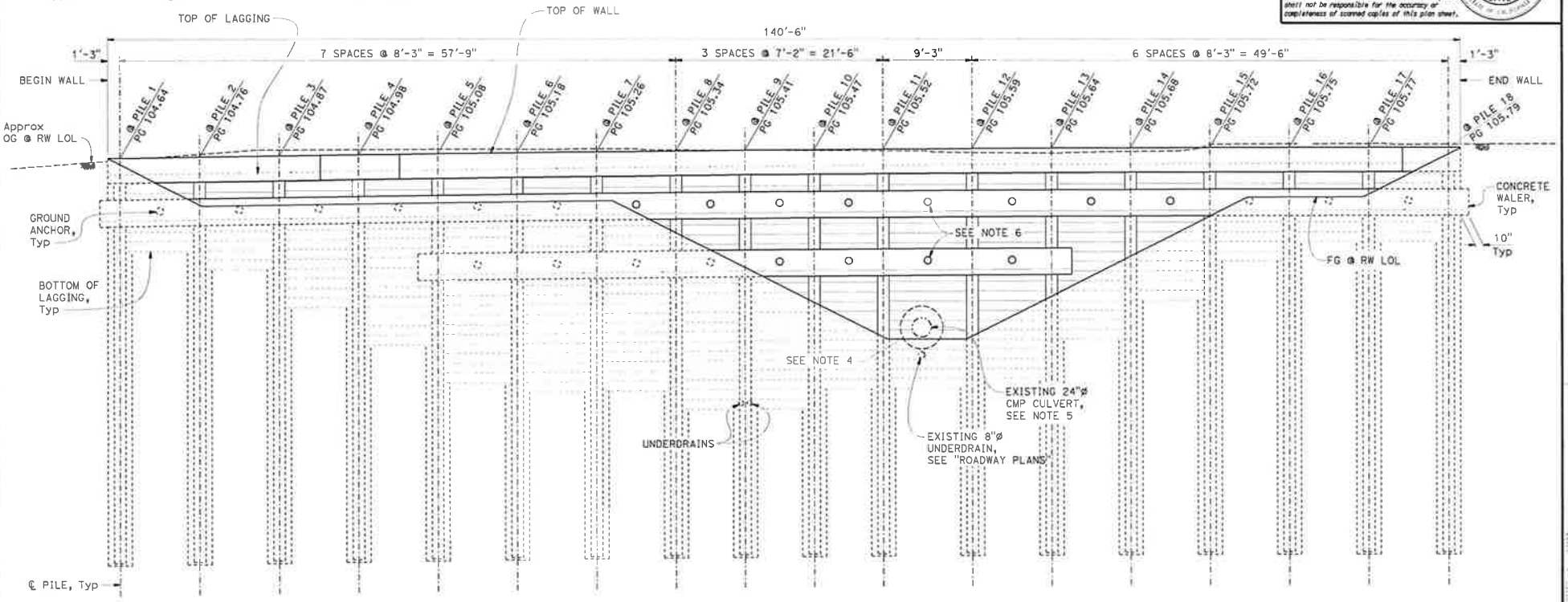

No. OF TIMBER LAGGINGS BETWEEN PILES	8	10	14	18	22	23	23	25	25	23	23	22	18	14	10	8	8
UPPER ANCHOR FDL (Kips)	80	80	132	186	155	155	155	155	155	155	155	155	186	132	80	80	80
LOWER ANCHOR FDL (Kips)					132	132	132	132	132	132	132	132					

MIRRORED ELEVATION

1" = 5'

DESIGN	BY Rizia da Cruz Ferreira	CHECKED Glen Lawson	
DETAILS	BY Bob Huddleston	CHECKED Glen Lawson	
QUANTITIES	BY Eric Watson	CHECKED Jin Zhou	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO. 04E0037
POST MILE 111.42

SOLDIER PILE WALL NO. 14
STRUCTURE PLAN

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576
PROJECT NUMBER & PHASE: 0112000127I
CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES: 10-14-15 | 05-01-15 07-16-15

SHEET 3 OF 10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

Eric Watson No. 64273 Exp. 6/30/15 CIVIL

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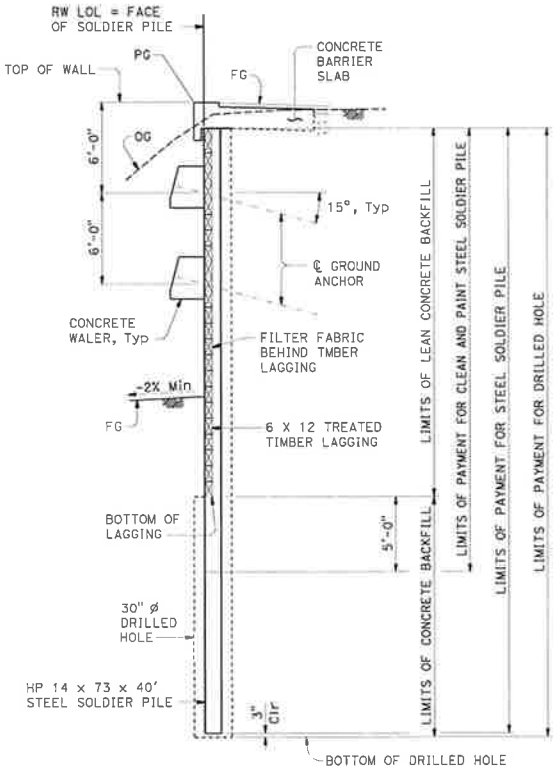
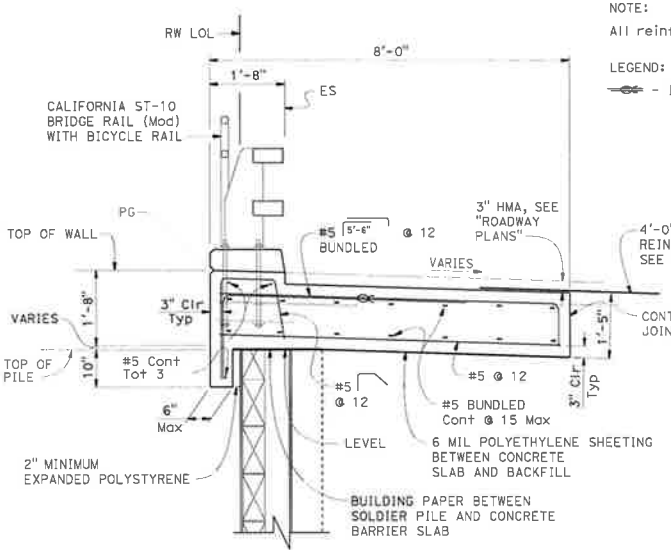


TYPICAL SECTION
1/4" = 1'-0"

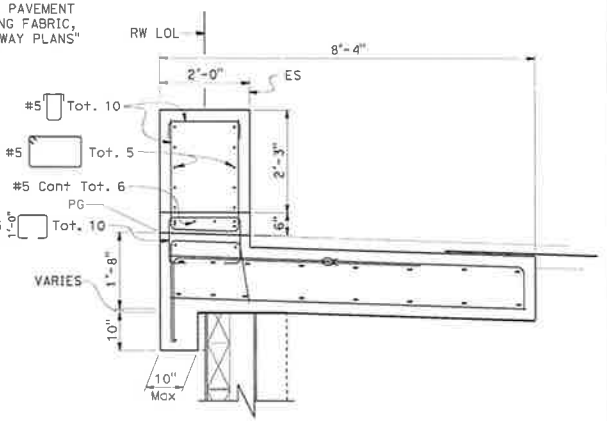
NOTE:
All reinforcement to be epoxy coated

LEGEND:
⟿ - Indicates bundled bars



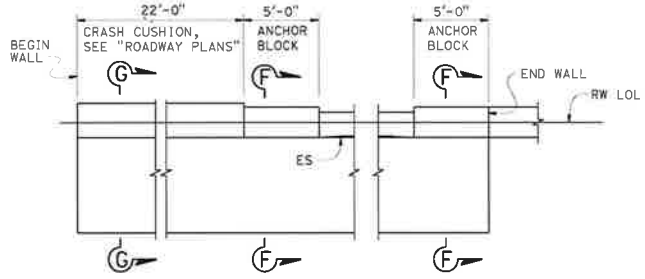
CONCRETE BARRIER SLAB DETAIL
3/4" = 1'-0"

NOTE:
For details not shown, see "CALIFORNIA ST-10 BRIDGE RAIL (MOD) DETAILS" sheet and RSP B11-66



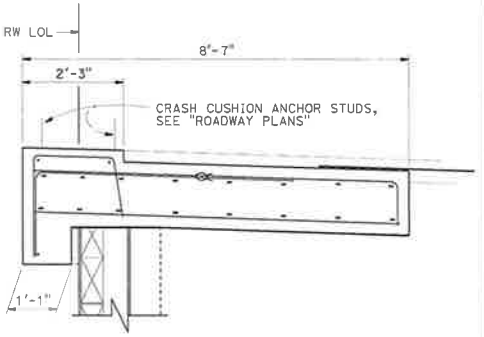
SECTION F-F
3/4" = 1'-0"

NOTE:
For details not shown, see "CONCRETE BARRIER SLAB DETAIL"



PLAN

CONCRETE BARRIER SLAB END DETAIL
1/4" = 1'-0"



SECTION G-G
3/4" = 1'-0"

NOTE:
For details not shown, see "CONCRETE BARRIER SLAB DETAIL"

DESIGN	BY Rizia da Cruz Ferreira	CHECKED Glen Lawson	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 1	BRIDGE NO. 04E0037
DETAILS	BY B. Huddleston/G. Dickerson	CHECKED Glen Lawson			POST MILE 111.42
QUANTITIES	BY Eric Watson	CHECKED Jin Zhou			

SOLDIER PILE WALL NO. 14
TYPICAL SECTION

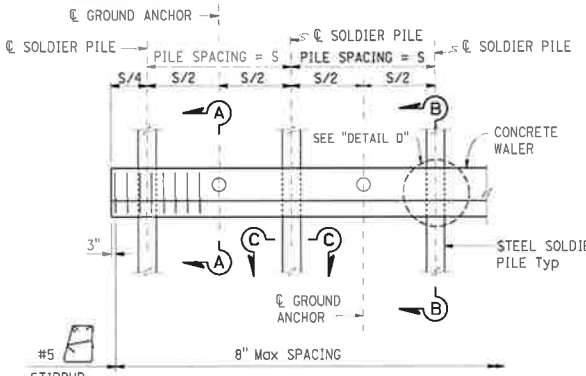
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

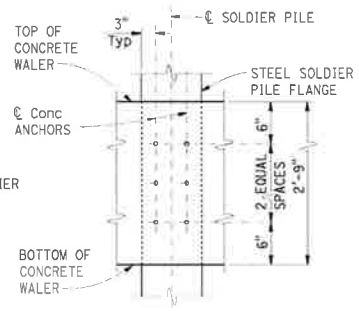
UNIT: 3576 PROJECT NUMBER & PHASE: 01120001271 CONTRACT NO.: 01-0B4304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

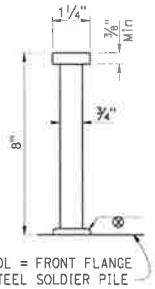
5 10



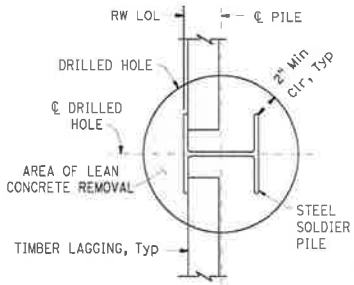
WALER PART ELEVATION
NO SCALE



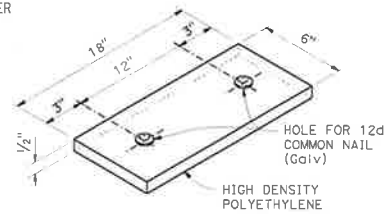
DETAIL D
NO SCALE



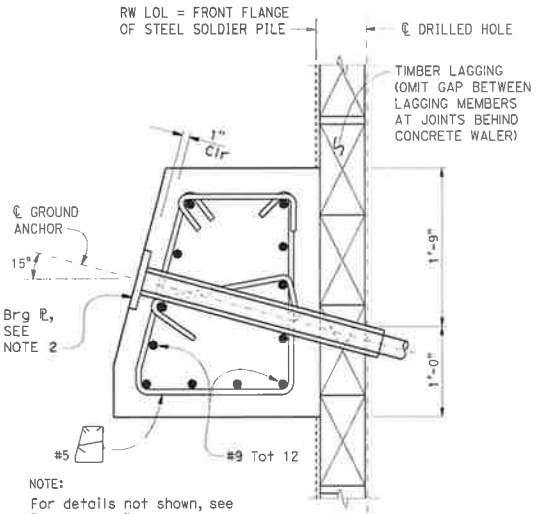
CONCRETE ANCHOR DETAIL
NO SCALE



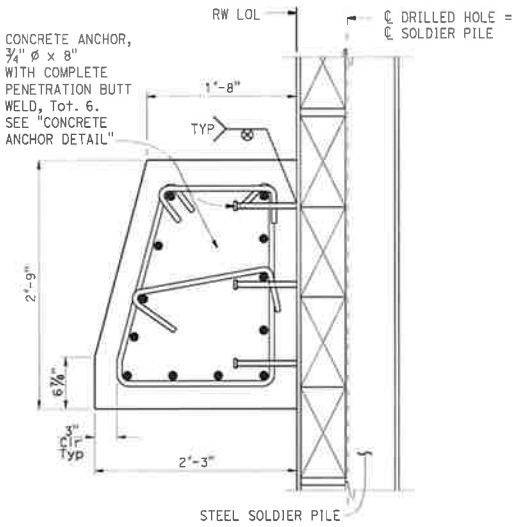
SECTION C-C
NO SCALE



SHIM DETAIL
NO SCALE

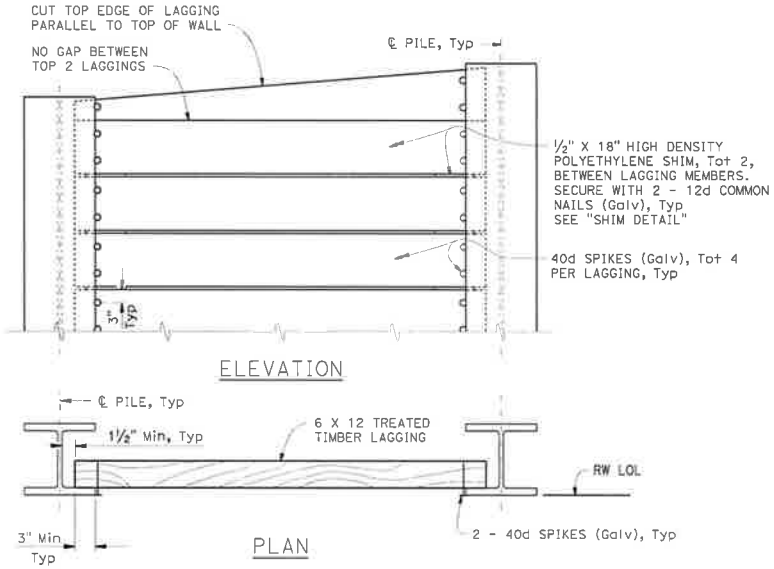


SECTION A-A
1½" = 1'-0"



SECTION B-B
1½" = 1'-0"

NOTES:
1. Concrete walers may be poured to face of lagging.
2. Bearing plates may be recessed or on face of concrete waler.
3. All reinforcement to be epoxy coated.



LAGGING DETAILS
NO SCALE

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER — DATE
PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of scanned copies of this plan sheet.
Eric Watson No. 64273 Exp. 6/30/15 CIVIL

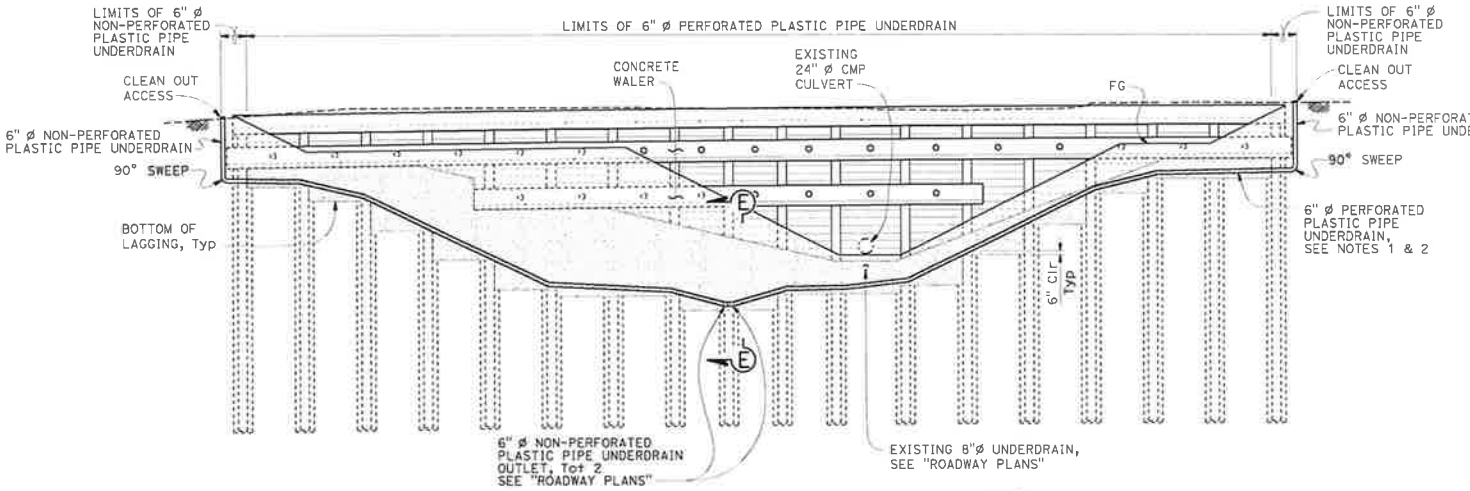
	BY	CHECKED
DESIGN	Rizia da Cruz Ferreira	Glen Lawson
DETAILS	Bob Huddleston	Glen Lawson
QUANTITIES	Eric Watson	Jin Zhou

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN
DESIGN BRANCH 1

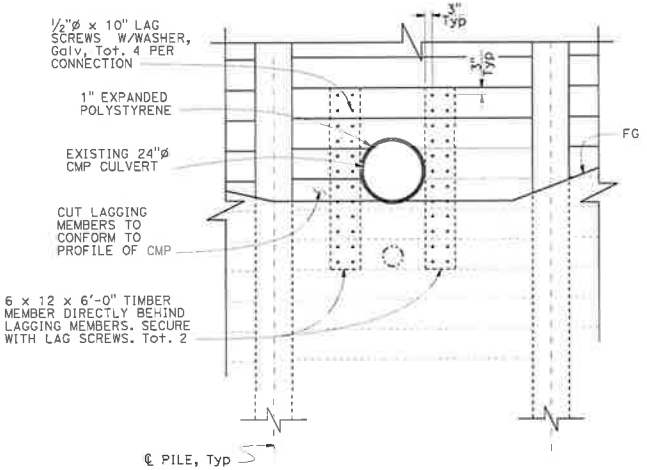
BRIDGE NO. 04E0037
POST MILE 111.42

SOLDIER PILE WALL NO. 14
WALL DETAILS

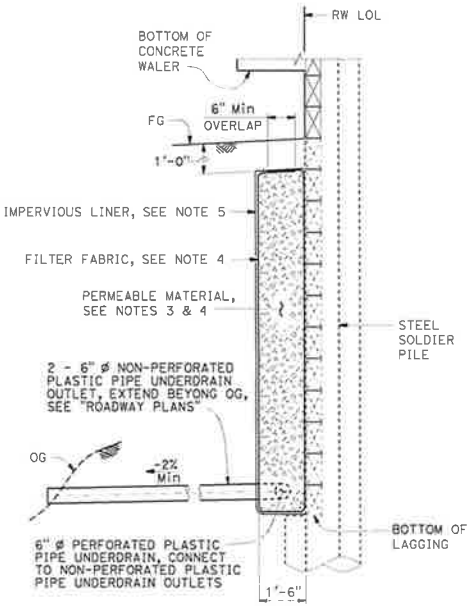
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
UNIT: 3576
PROJECT NUMBER & PHASE: 01120001271
CONTRACT NO.: 01-084304
DISREGARD PRINTS BEARING EARLIER REVISION DATES
SHEET 6 OF 10



UNDERDRAIN LAYOUT
1/8" = 1'-0"



CULVERT PENETRATION DETAIL
1/2" = 1'-0"



SECTION E-E
1/2" = 1'-0"

NOTES:

1. All underdrains must be placed with a minimum of -2% slope to facilitate drainage.
2. Perforated plastic pipes must have at least 6" clearance above the bottom of lagging at all locations.
3. Permeable material shall extend from bottom of lagging to bottom of concrete waler or 1' below FG, whichever is lower.
4. Permeable material to be placed against lagging and be completely surrounded by filter fabric.
5. Impervious liner to be placed between soil and permeable material only.
6. Clean out accesses are required at both ends of wall.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER — DATE
PLANS APPROVAL DATE
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Eric Watson No. 64273 Exp. 6/30/15 CIVIL

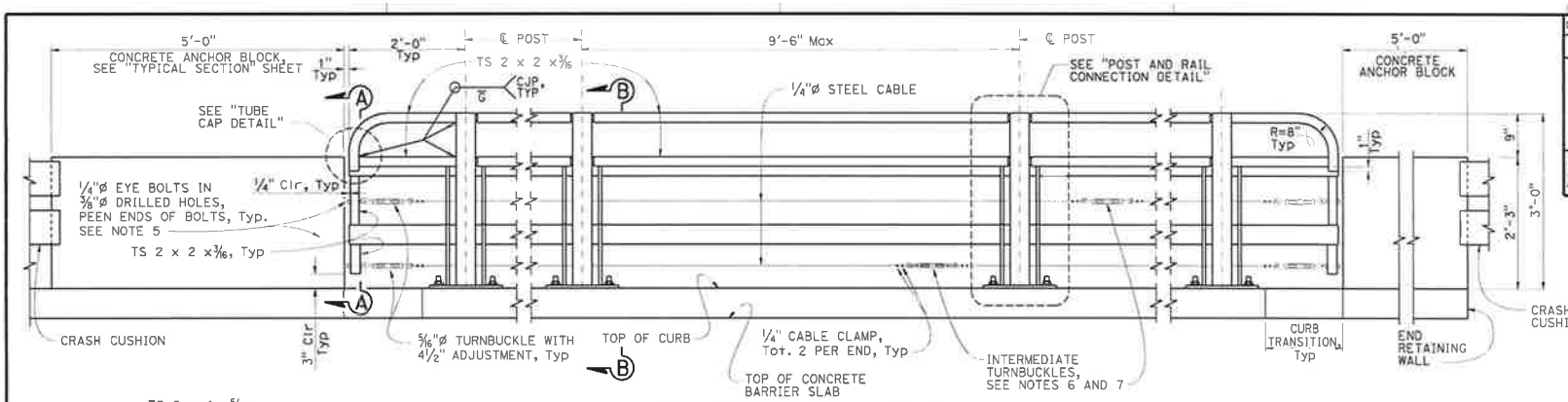
	BY	CHECKED
DESIGN	Rizia da Cruz Ferreira	Glen Lawson
DETAILS	B Huddleston/G Dickerson	Glen Lawson
QUANTITIES	Eric Watson	Jin Zhou

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN
DESIGN BRANCH 1

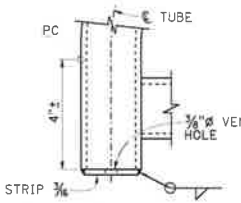
BRIDGE NO. 04E0037
POST MILE 111.42

SOLDIER PILE WALL NO. 14
DRAINAGE DETAILS

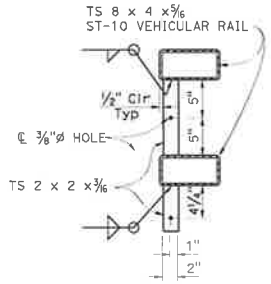
STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3
UNIT: 3576
PROJECT NUMBER & PHASE: 01120001271
CONTRACT NO.: 01-084304
DISREGARD PRINTS BEARING EARLIER REVISION DATES
SHEET 8 OF 10



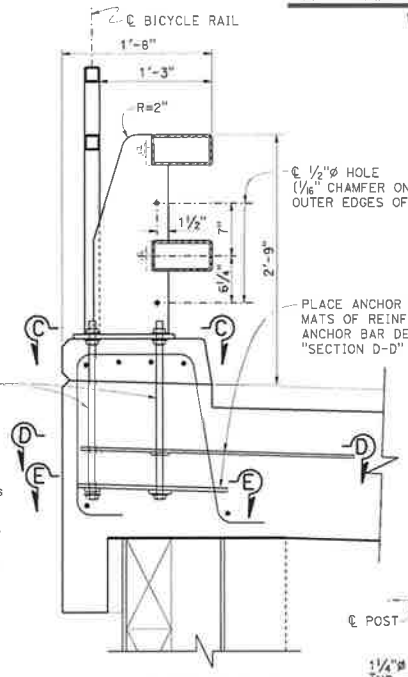
PART MIRRORED ELEVATION
1" = 1'-0"



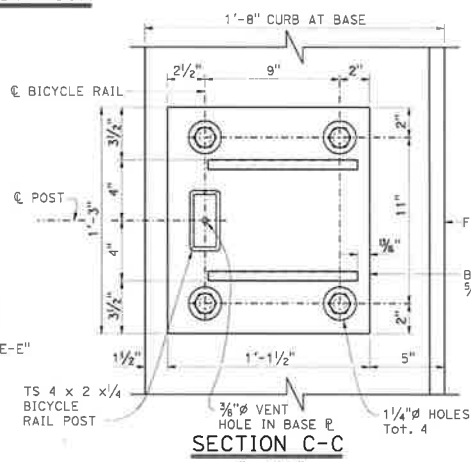
TUBE CAP DETAIL
6" = 1'-0"



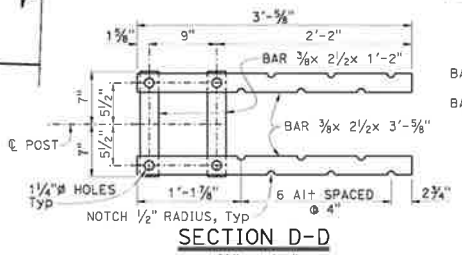
SECTION A-A
1 1/2" = 1'-0"



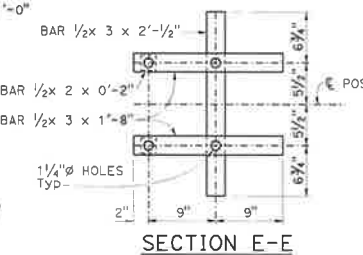
SECTION B-B
1 1/2" = 1'-0"



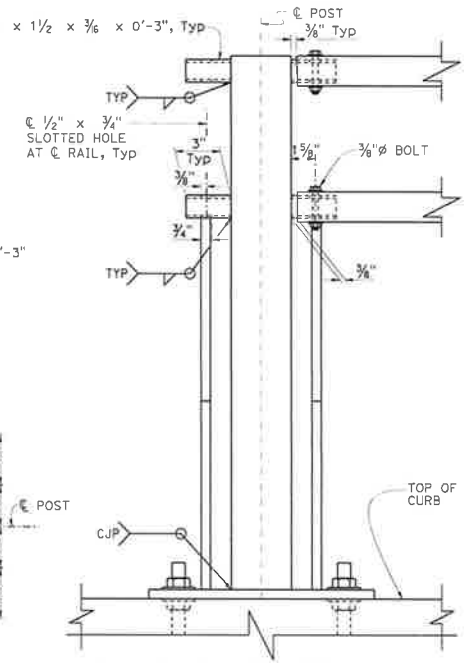
SECTION C-C
3" = 1'-0"



SECTION D-D
1 1/2" = 1'-0"



SECTION E-E
1 1/2" = 1'-0"



POST & RAIL CONNECTION DETAIL
3" = 1'-0"

NOTES:
1. Galvanize rail assembly and all components after fabrication.
2. Posts shall be normal to railing.
3. All bolts and bicycle railing shall be A307 with Thread Locking System.
4. For details not shown, see Standard Plans RSP B11-68, B11-69 and RSP B11-70.
5. See Standard Plans RSP B11-47 for Alternative Cable Connection and Alternative Dead End Anchorage.
6. Maximum distance between turnbuckles shall be 100'.
7. Intermediate Turnbuckles shall be placed in adjacent spans.
8. Cable shall not be spliced between Intermediate Turnbuckles and End Anchorage.
9. Provide Thimbles at all cable loops.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

Eric Watson No. 54273 Exp. 6/30/15 CIVIL

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	BY	CHECKED
DESIGN	Rizia da Cruz Ferreira	Glen Lawson
DETAILS	Gerald Dickerson	Glen Lawson
QUANTITIES	Eric Watson	Jin Zhou

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO. 04E0037
POST MILE 111.42

SOLDIER PILE WALL NO. 14
CALIFORNIA ST-10 BRIDGE RAIL (MOD) DETAILS

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576
PROJECT NUMBER & PHASE: 01120001271
CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

SHEET	OF
9	10

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

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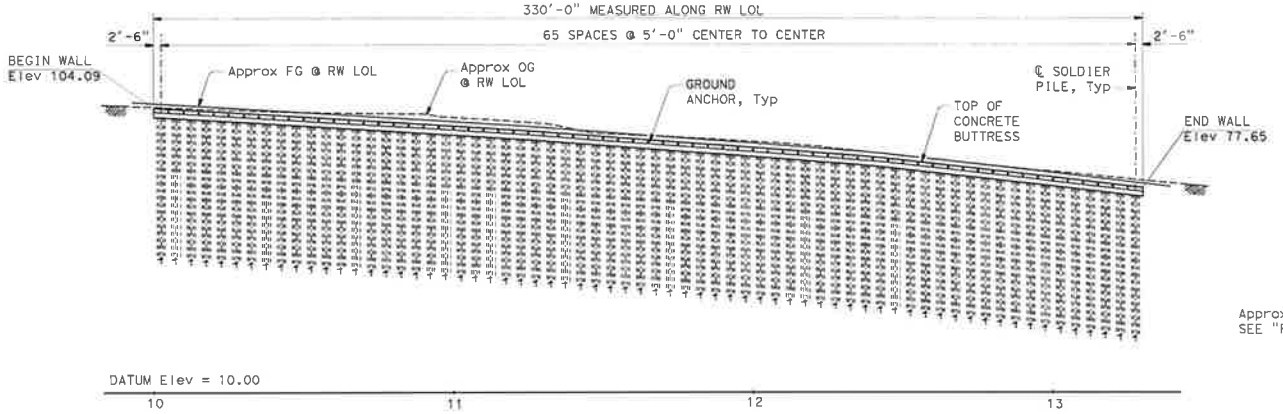
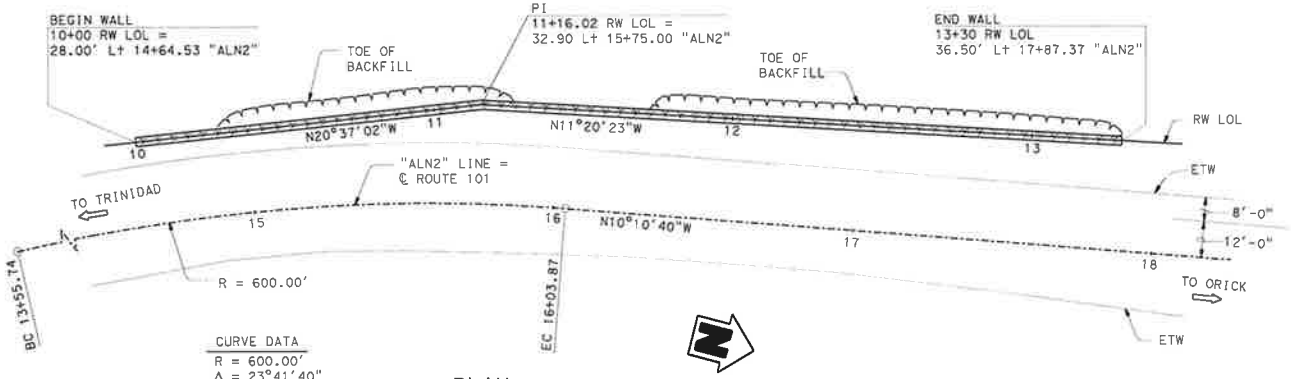
Eric Watson No. 64273 Exp. 6/30/15 CIVIL



DEVELOPED MIRRORED ELEVATION

1" = 20'

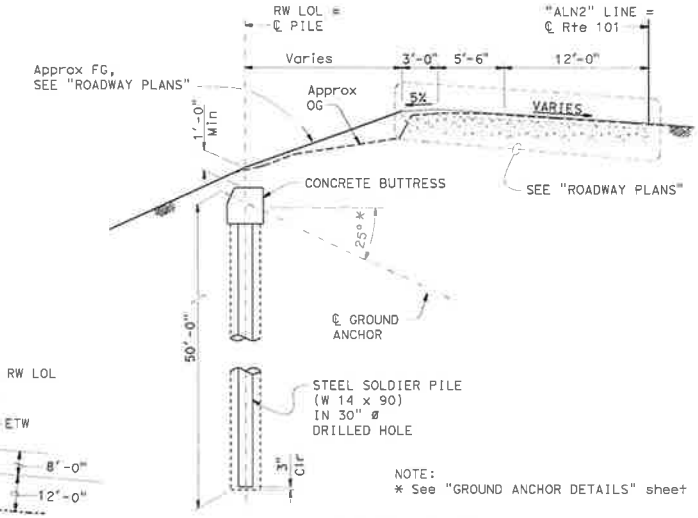


CURVE DATA

R = 600.00'
Δ = 23°41'40"
T = 125.86'
L = 248.13'

PLAN

1" = 20'



TYPICAL SECTION

1" = 5'

INDEX TO PLANS

STANDARD PLANS DATED 2010

	A10A	ABBREVIATIONS (SHEET 1 OF 2)
RSP	A10B	ABBREVIATIONS (SHEET 2 OF 2)
	A10C	LINES AND SYMBOLS (SHEET 1 OF 3)
	A10D	LINES AND SYMBOLS (SHEET 2 OF 3)
	A10E	LINES AND SYMBOLS (SHEET 3 OF 3)
	A10F	LEGEND - SOIL (SHEET 1 OF 2)
	A10G	LEGEND - SOIL (SHEET 2 OF 2)
	A10H	LEGEND - ROCK

STANDARD PLAN SHEET No.

DETAIL No.

QUANTITIES

STRUCTURE EXCAVATION (SOLDIER PILE WALL)	263	CY
STRUCTURE BACKFILL (SOLDIER PILE WALL)	135	CY
CONCRETE BACKFILL (SOLDIER PILE WALL)	546	CY
GROUND ANCHOR (SUBHORIZONTAL)	65	EA
STEEL SOLDIER PILE (W 14 X 90)	3,185	LF
30" DRILLED HOLE	3,102	LF
STRUCTURAL CONCRETE, BUTTRESS	104	CY
BAR REINFORCING STEEL (BUTTRESS)	12,820	LB

Jeff Sims
DESIGN ENGINEER

DESIGN	Eric Watson	Daniel Sessions	LOAD & RESISTANCE FACTOR DESIGN		
DETAILS	Bob Huddleston	Daniel Sessions	LAYOUT	Eric Watson	Daniel Sessions
QUANTITIES	Greg Thornton	Jie Tang	SPECIFICATIONS	X	Daniel Sessions

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO. 04E0036
POST MILE 111.46

ANCHORED BUTTRESS WALL NO. 12
GENERAL PLAN

UNIT: 3576
PROJECT NUMBER & PHASE: 01120001271
CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES			SHEET	OF
08/15/15	10/26/15	02/19/15	1	8

STRUCTURES DETAIL GENERAL PLAN SHEET (REV 09-01-10)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER — X — DATE

PLANS APPROVAL DATE

Eric Watson No. 84273 Exp. 6/30/15 CIVIL

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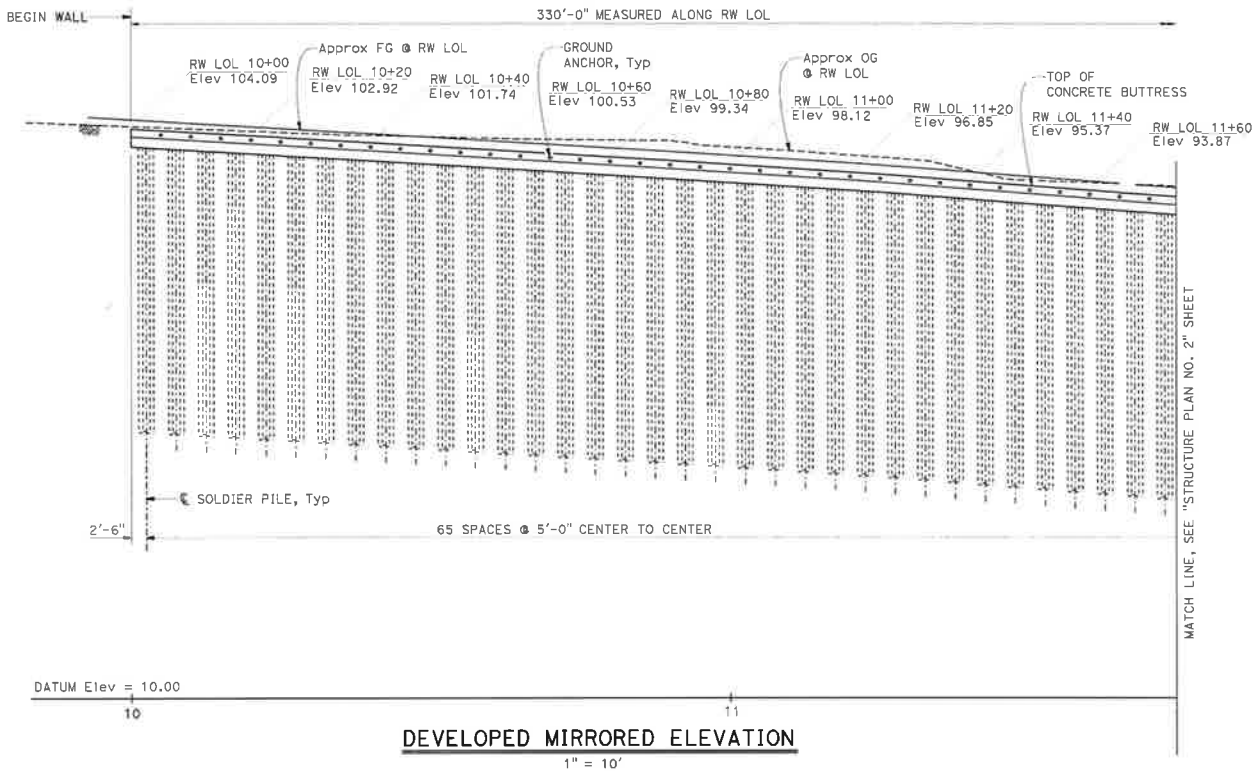
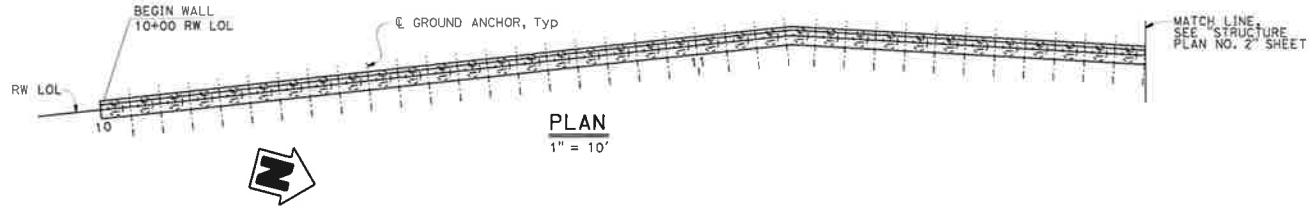


DEVELOPED MIRRORED ELEVATION

1" = 10'



PLAN

1" = 10'

DESIGN	BY Eric Watson	CHECKED Daniel Sessions	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 1	BRIDGE NO. 04E0036
DETAILS	BY Jin Zhou	CHECKED Daniel Sessions			POST MILE 111.46
QUANTITIES	BY Greg Thornton	CHECKED Jie Tang			

ANCHORED BUTTRESS WALL NO. 12

STRUCTURE PLAN NO. 1

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576 PROJECT NUMBER & PHASE: 01120001271 CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES			SHEET	OF
08.15.14	02.23.15	05.01.15	2	7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

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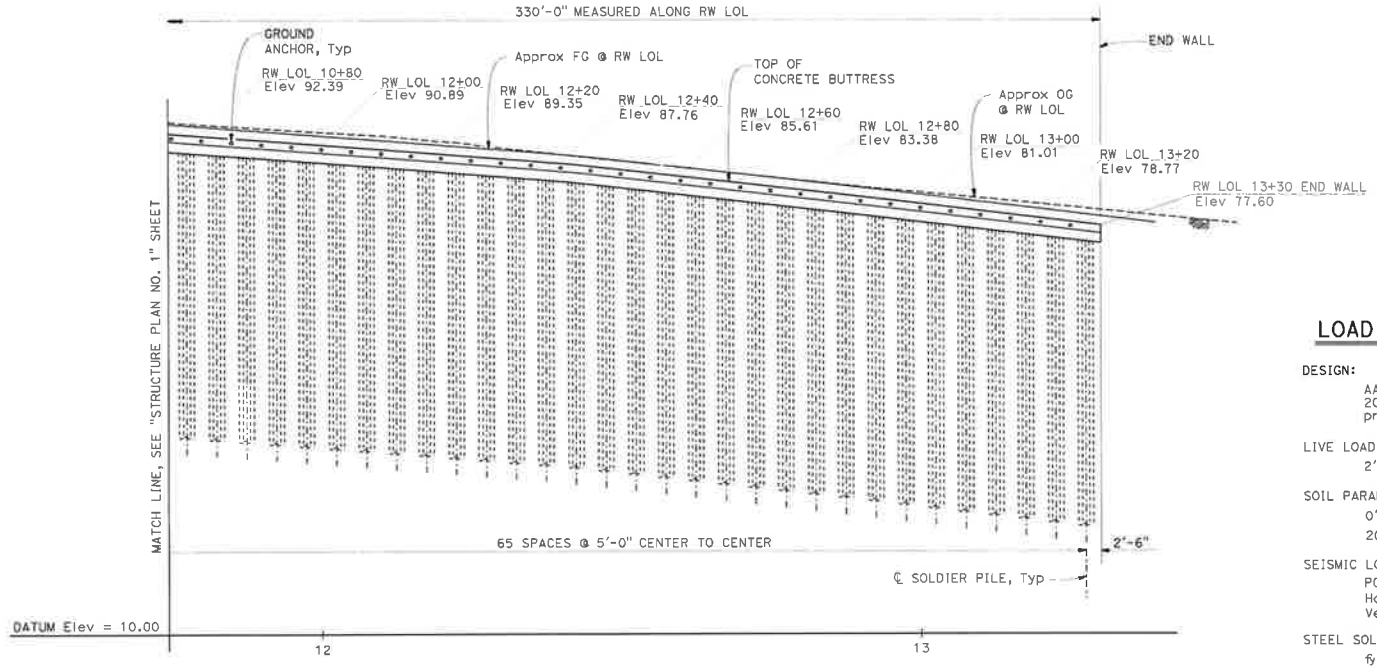
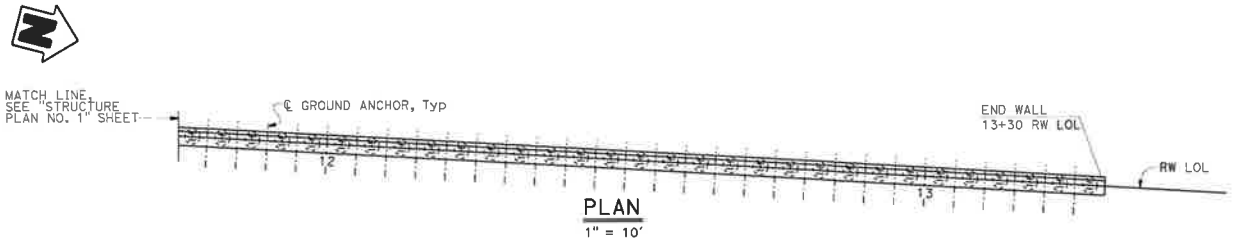
Eric Watson No. 64273 Exp.6/30/15 CIVIL



DEVELOPED MIRRORED ELEVATION

1" = 10'



PLAN

1" = 10'

GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:

AASHTO LRFD Bridge Design Specifications, 2012 Edition with Caltrans Amendments, preface dated January 2014.

LIVE LOAD:

2'-0" Level Earth Surcharge

SOIL PARAMETERS (For determination of Design Lateral Earth Pressures):

0'-20' from surface: $\Phi = 34°$, $\gamma = 125$ pcf

20'-50' from surface: $\Phi = 21°$, $\gamma = 125$ pcf

SEISMIC LOADING:

PGA = 0.63g

Horizontal seismic coefficient (k_h) = 0.21

Vertical seismic coefficient (k_v) = 0.0

STEEL SOLDIER PILES:

f_y = 50 ksi

REINFORCED CONCRETE:

f'_c = 3.6 ksi

f_y = 60 ksi

n = 8

PRESTRESSING STEEL (GROUND ANCHORS):

Strands - ASTM designation:A416

Bars - ASTM designation: A722 Type I

FDL = Factored Design Load 90 kips

FTL = Factored Test Load 90 kips

LL = Lock-Off Load 50 kips

f_{pu} = Minimum ultimate tensile stress of ground anchor steel (ksi)

A_s (Min) = Minimum cross sectional area of steel in Ground Anchor (in^2)

$$A_s(\text{Min}) = \frac{1.0\ FTL}{0.75\ f_{pu}}$$

DESIGN	BY Eric Watson	CHECKED Daniel Sessions	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 1	BRIDGE NO. 04E0036
DETAILS	BY Jin Zhou	CHECKED Daniel Sessions			POST MILE 111.46
QUANTITIES	BY Greg Thornton	CHECKED Jie Tang			

ANCHORED BUTTRESS WALL NO. 12

STRUCTURE PLAN NO. 2

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 08-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576 PROJECT NUMBER & PHASE: 01120001271 CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

SHEET 3 OF 7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

Eric Watson No. 64273 Exp. 6/30/15 CIVIL

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

CURVE DATA

No.	R	Δ	T	L
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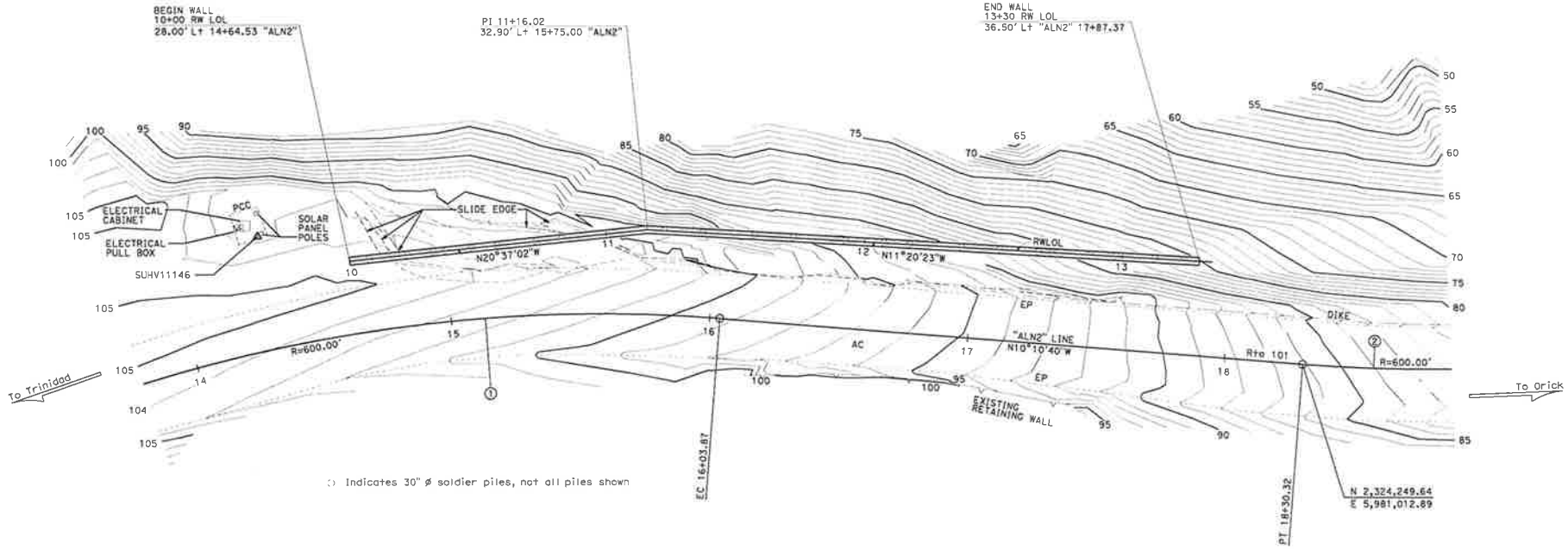
2	600.00	12°23'43"	65.16	129.80



○ Indicates 30" ø soldier piles, not all piles shown

PRELIMINARY INVESTIGATION SECTION											
SCALE 1"=20'	VERT.DATUM NAVD88	PHOTOGRAMMETRY AS OF: X									
	HOR.DATUM NAD83 (1991.35)	SURVEYED	BY DISTRICT		CHECKED	BY D. IVY	7/2014				
	ALIGNMENT TIES Dist. Traverse Sheet	DRAFTED	BY L. YOUNG	7/2014	CHECKED	BY S. SOU	7/2014				
STRUCTURES FOUNDATION PLAN SHEET (ENGLISH) (REV. 09-01-10)					ORIGINAL SCALE IN INCHES FOR REDUCED PLANS						

DESIGN	BY Eric Watson	CHECKED Daniel Sessions
DETAILS	BY Jin Zhou	CHECKED Daniel Sessions
QUANTITIES	BY Greg Thornton	CHECKED Jie Tang

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO.	04E0036
POST MILE	111.46

ANCHORED BUTTRESS WALL NO. 12
FOUNDATION PLAN

UNIT: 3576
PROJECT NUMBER & PHASE: 01120001271
CONTRACT NO.: 01-0B4304

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
07/24/14	07/21/15	00/00/15		4	7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

Eric Watson No. 64273 Exp.6/30/15 CIVIL

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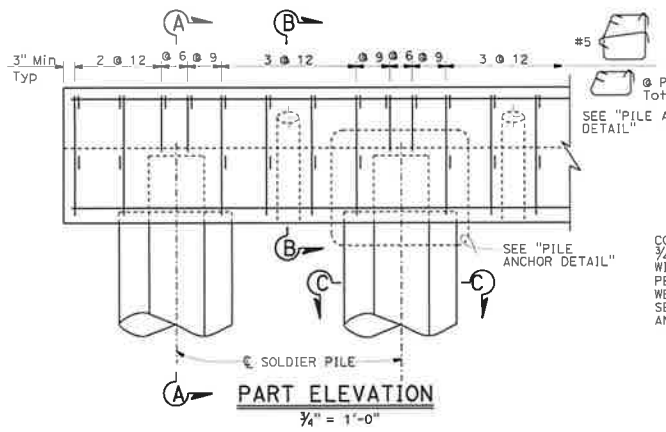
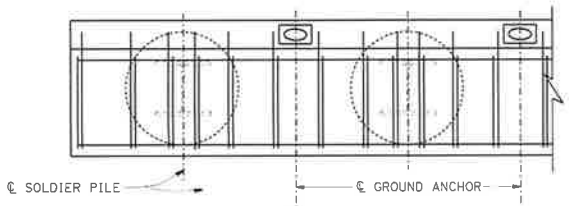
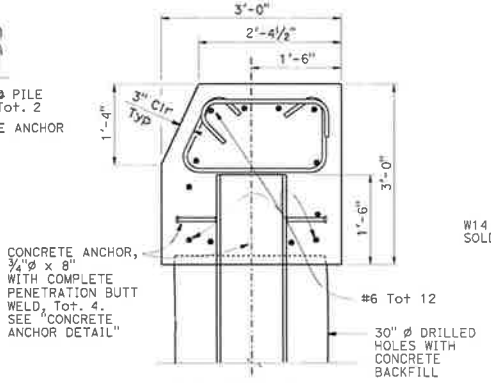


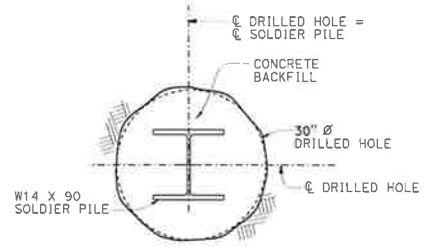
PART ELEVATION
3/4" = 1'-0"



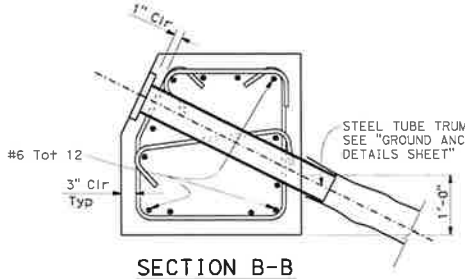
PLAN
3/4" = 1'-0"



SECTION A-A
1" = 1'-0"



SECTION C-C
3" = 1'-0"



SECTION B-B
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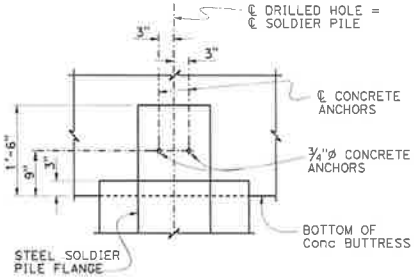
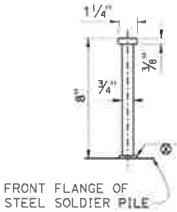
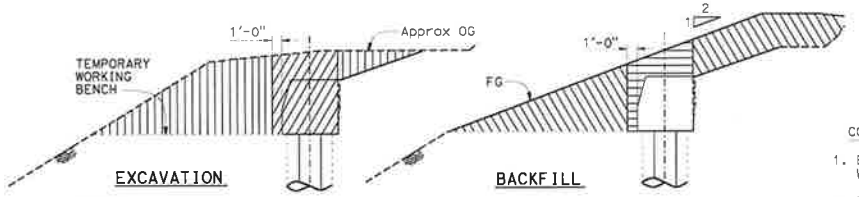


CONCRETE ANCHOR DETAIL
1" = 1'-0"



CONCRETE ANCHOR
3" = 1'-0"



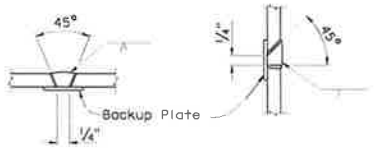
LEGEND:

- Indicates Structure Excavation (Soldier Pile Wall)
- Indicates Structure Backfill (Soldier Pile Wall)
- Indicates Roadway Excavation
- Indicates Roadway Embankment

LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL
NO SCALE

CONSTRUCTION SEQUENCE:

1. Excavate to bottom of Concrete Buttress and build temporary Working Bench where required.
2. Excavate back side of Concrete Buttress at 1:1 slope, or flatter, from top corner of Buttress to Original Grade. Concrete Buttress must be placed against undisturbed material.
3. Install Ground Anchors, see "Ground Anchor Details" sheet.
4. Construct Concrete Buttress.
5. Test Ground Anchors and lock off.
6. Backfill to Finish Grade.



SINGLE VEE-GROOVE SINGLE BEVEL-GROOVE

PILE WELDING DETAIL-BUTT JOINTS
NO SCALE

NOTES:

a. Single Vee-Groove permitted for all position
b. Single Bevel-Groove permitted for horizontal joints only

DESIGN	BY Eric Watson	CHECKED Daniel Sessions	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 1	BRIDGE NO. 04E0036
DETAILS	BY Jin Zhou	CHECKED Daniel Sessions			POST MILE 111.46
QUANTITIES	BY Greg Thornton	CHECKED Jie Tang			

ANCHORED BUTTRESS WALL NO. 12

BUTTRESS DETAILS

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576 PROJECT NUMBER & PHASE: 01120001271 CONTRACT NO.: 01-0B4304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES			SHEET	OF
			5	7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

Eric Watson No. 64273 Exp. 6/30/15 CIVIL

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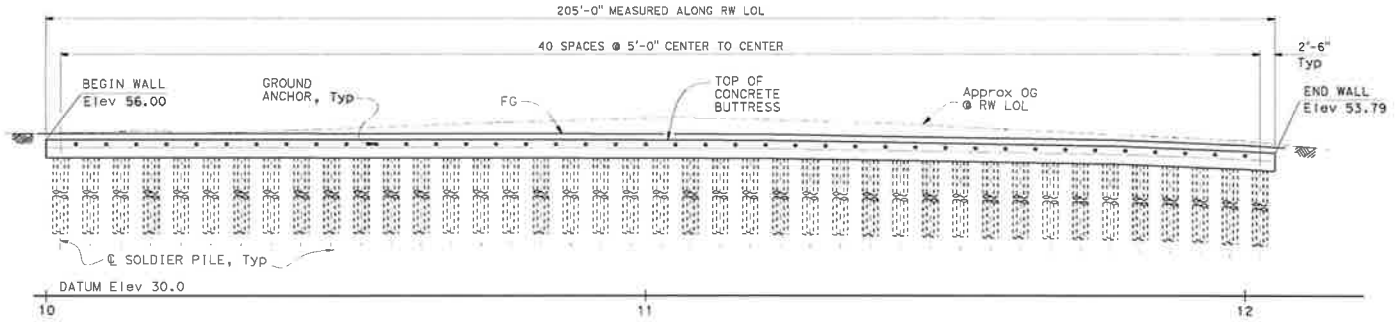
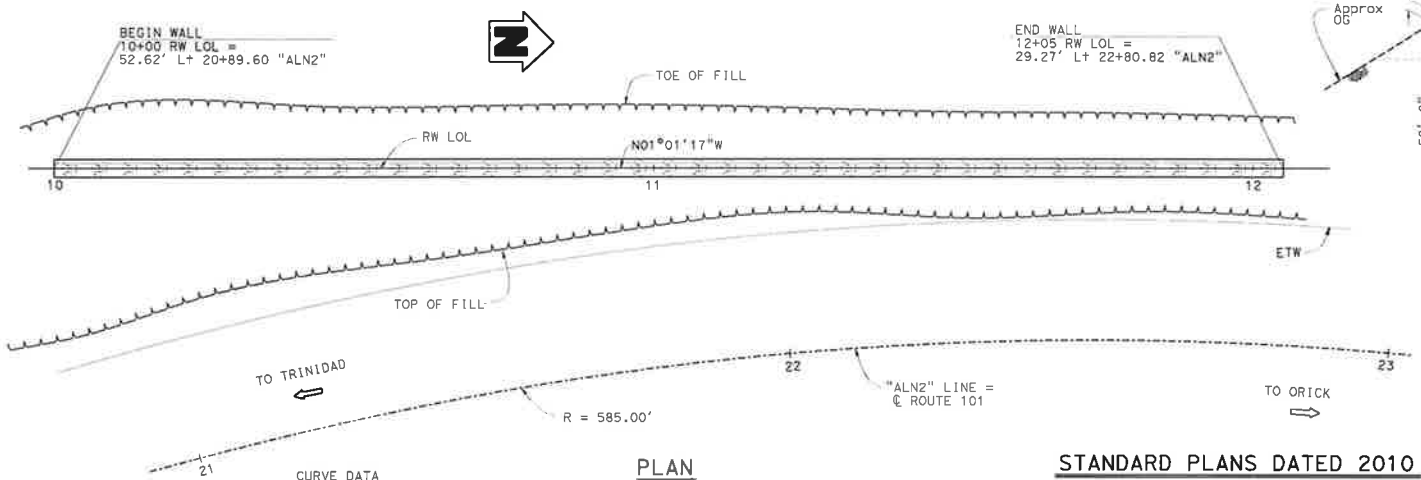
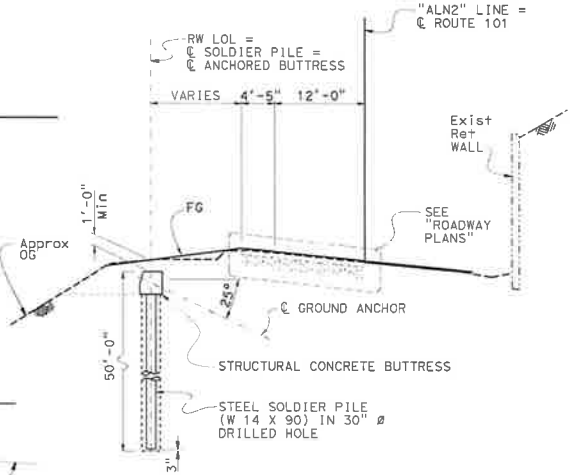


MIRRORED ELEVATION
1" = 10'



CURVE DATA
R = 585.00'
D = 9°47'38.94"
Δ = 42°53'45.46"
L = 437.98'

PLAN
1" = 10'



TYPICAL SECTION
1/8" = 1'-0"

INDEX TO PLANS

STANDARD PLANS DATED 2010

	A10A	ABBREVIATIONS (SHEET 1 OF 2)
RSP	A10B	ABBREVIATIONS (SHEET 2 OF 2)
	A10C	LINES AND SYMBOLS (SHEET 1 OF 3)
	A10D	LINES AND SYMBOLS (SHEET 2 OF 3)
	A10E	LINES AND SYMBOLS (SHEET 3 OF 3)
	A10F	LEGEND - SOIL (SHEET 1 OF 2)
	A10G	LEGEND - SOIL (SHEET 2 OF 2)
	A10H	LEGEND - ROCK

STANDARD PLAN SHEET No.
DETAIL No.

QUANTITIES

STRUCTURE EXCAVATION (SOLDIER PILE WALL)	147	CY
STRUCTURE BACKFILL (SOLDIER PILE WALL)	64	CY
CONCRETE BACKFILL (SOLDIER PILE WALL)	352	CY
GROUND ANCHOR (SUBHORIZONTAL)	40	EA
STEEL SOLDIER PILE (W 14 X 90)	1,978	LF
30" DRILLED HOLE	1,927	LF
STRUCTURAL CONCRETE, BUTTRESS	65	CY
BAR REINFORCING STEEL (BUTTRESS)	7,760	LB

DESIGN	Eric Watson	Glen Lawson	LOAD & RESISTANCE FACTOR DESIGN			
DETAILS	B. Jenks/ J. Zhou	Glen Lawson	LAYOUT	Eric Watson	Glen Lawson	PLANS AND SPECS COMPARED X
QUANTITIES	Greg Thornton	Bob Huddleston	SPECIFICATIONS	X		

Jeff Sims
DESIGN ENGINEER

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO. 04E0035
POST MILE 111.6

ANCHORED BUTTRESS WALL NO. 11
GENERAL PLAN

UNIT: 3576
PROJECT NUMBER & PHASE: 01120001271
CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				DATE	DATE
				1	7

STRUCTURES DESIGN GENERAL PLAN SHEET (REVISED DEC 09-01-10)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

Eric Watson No. 64273 Exp.6/30/15 CIVIL

PLANS APPROVAL DATE

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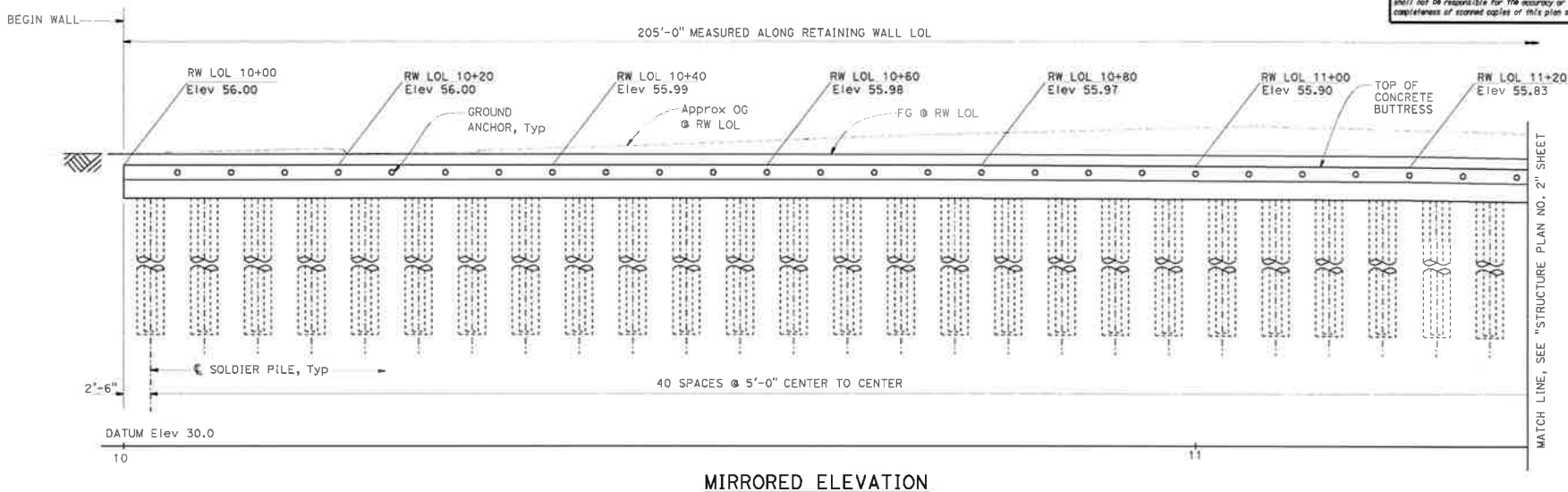
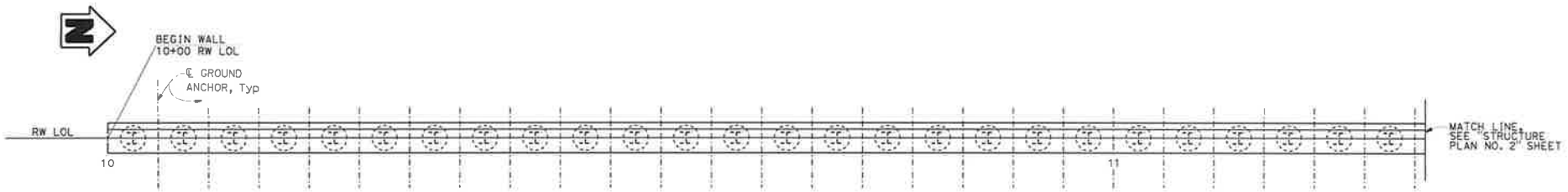


MIRRORED ELEVATION

1" = 5'



PLAN

1" = 5'

DESIGN	BY Eric Watson	CHECKED Glen Lowson	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 1	BRIDGE NO. 04E0035	ANCHORED BUTTRESS WALL NO. 11	
DETAILS	BY Jin Zhou	CHECKED Glen Lowson			POST MILE 111.6	STRUCTURE PLAN NO. 1	
QUANTITIES	BY Greg Thornton	CHECKED Bob Huddleston					

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576 PROJECT NUMBER & PHASE: 01120001271 CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATE	DATE	SHEET	OF
		2	7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

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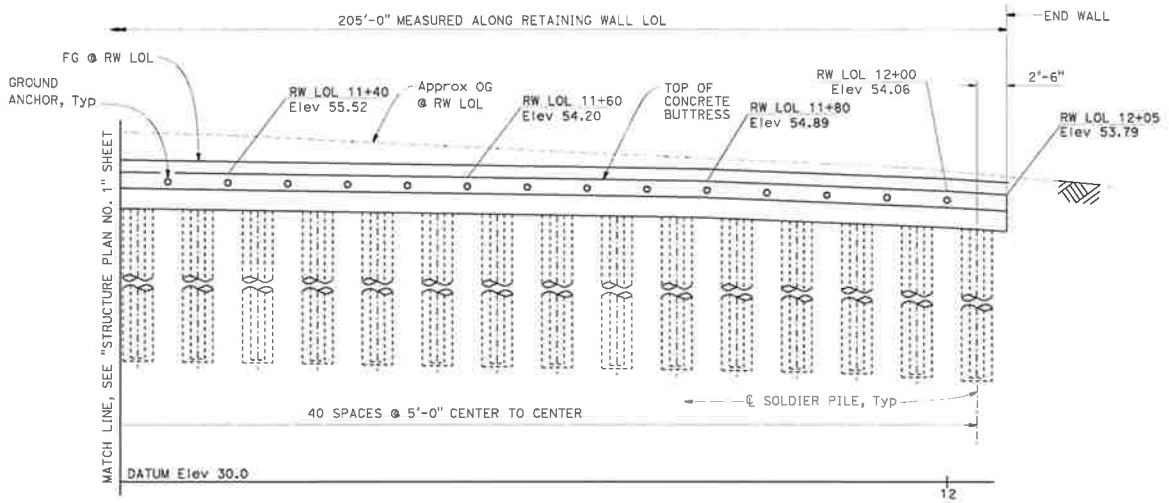
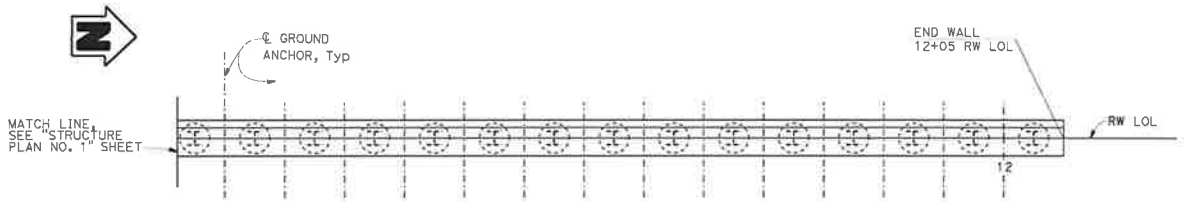
Eric Watson No. 64272 Exp. 6/30/15 CIVIL



MIRRORED ELEVATION

1" = 5'



PLAN

1" = 5'

GENERAL NOTES
LOAD AND RESISTANCE FACTOR DESIGN

DESIGN:

AASHTO LRFD Bridge Design Specifications, 2012 Edition with Caltrans Amendments, preface dated January 2014.

LIVE LOAD:

2'-0" Level Earth Surcharge

SOIL PARAMETERS (For determination of Design Lateral Earth Pressures):

0'-20' from surface: $\Phi = 34°$, $\gamma = 125$ pcf

20'-50' from surface: $\Phi = 21°$, $\gamma = 125$ pcf

SEISMIC LOADING:

PGA = 0.63g
Horizontal seismic coefficient (k_h) = 0.21
Vertical seismic coefficient (k_v) = 0.0

STEEL SOLDIER PILES:

f_y = 50 ksi

REINFORCED CONCRETE:

f'_c = 3.6 ksi
f_y = 60 ksi
n = 8

PRESTRESSING STEEL (GROUND ANCHORS):

Strands - ASTM designation:A416

Bars - ASTM designation: A722 Type I

FDL = Factored Design Load 90 kips

FTL = Factored Test Load 90 kips

LL = Lock-Off Load 50 kips

f_{pu} = Minimum ultimate tensile stress of ground anchor steel (ksi)

A_s (Min) = Minimum cross sectional area of steel in Ground Anchor (in^2)

$$A_s(\text{Min}) = \frac{1.0\ FTL}{0.75\ f_{pu}}$$

	BY	CHECKED
DESIGN	Eric Watson	Glen Lawson
DETAILS	Jin Zhou	Glen Lawson
QUANTITIES	Greg Thornton	Bob Huddleston

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 1

BRIDGE NO. 04E0035
POST MILE 111.6

ANCHORED BUTTRESS WALL NO. 11
STRUCTURE PLAN NO. 2

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576
PROJECT NUMBER & PHASE: 01120001271
CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES | SHEET | OF
3 | 7

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

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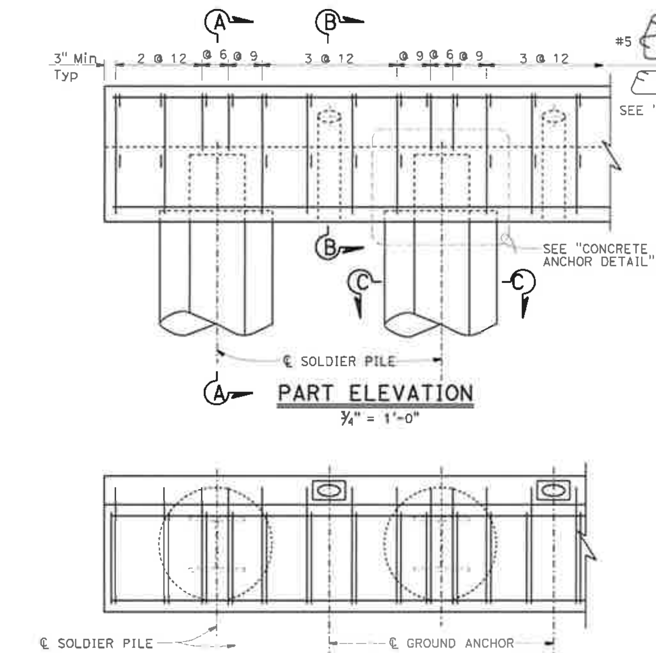
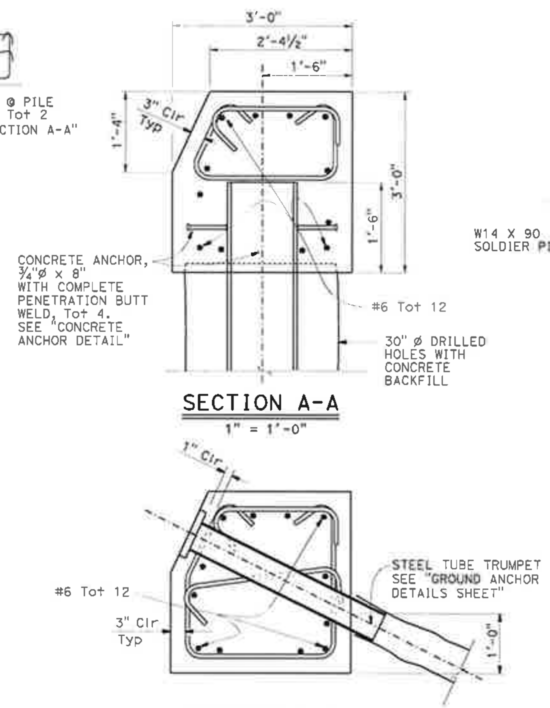
Eric Watson No. 64273 Exp. 6/30/15 CIVIL STATE OF CALIFORNIA



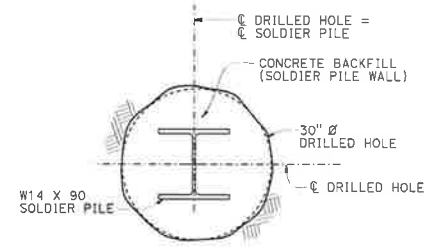
PART ELEVATION
¾" = 1'-0"

PLAN
¾" = 1'-0"

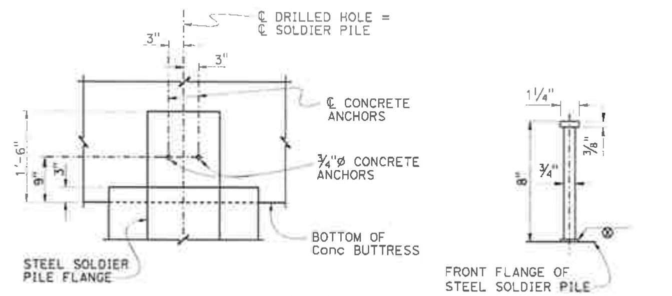


SECTION A-A
1" = 1'-0"

SECTION B-B
1" = 1'-0"

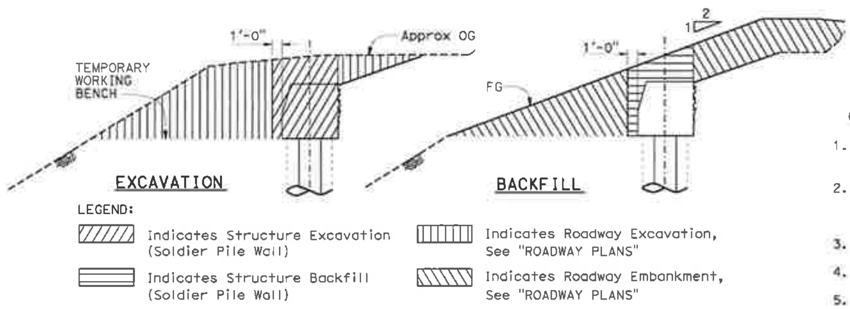


SECTION C-C
3" = 1'-0"



CONCRETE ANCHOR DETAIL
1" = 1'-0"

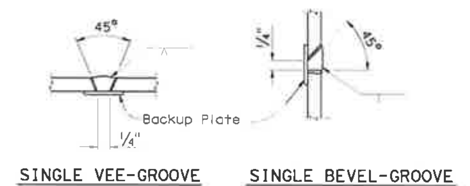
CONCRETE ANCHOR
3" = 1'-0"



LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL
NO SCALE

CONSTRUCTION SEQUENCE:

1. Excavate to bottom of Concrete Buttress and build temporary Working Bench where required.
2. Excavate back side of Concrete Buttress at 1:1 slope, or flatter, from top corner of Buttress to Original Grade. Concrete Buttress must be placed against undisturbed material.
3. Install Ground Anchors, see "Ground Anchor Details" sheet.
4. Construct Concrete Buttress.
5. Test Ground Anchors and lock off.
6. Backfill to Finish Grade.



PILE WELDING DETAIL-BUTT JOINTS
NO SCALE

NOTES:

a. Single Vee-Groove permitted for all position
b. Single Bevel-Groove permitted for horizontal joints only

DESIGN	BY Eric Watson	CHECKED Glen Lewson
DETAILS	BY Jin Zhou	CHECKED Glen Lewson
QUANTITIES	BY Greg Thornton	CHECKED Bob Huddleston

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN — DESIGN BRANCH 1

BRIDGE NO. 04E0035 — POST MILE 111.6

ANCHORED BUTTRESS WALL NO. 11

BUTTRESS DETAILS

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576 PROJECT NUMBER & PHASE: 01120001271

CONTRACT NO.: 01-0B4304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

SHEET 5 OF 7

NOTES:

(A) Level of initial grouting for drilled hole 6" in diameter or smaller

(B) Level of secondary grouting

(C) Level of initial grouting inside corrugated sheathing

(D) Face of wall excavation

NOTES:

1. Anchorage enclosure shall only be used when anchor head assembly is not enclosed in concrete.
2. Anchorage enclosure shall have provisions to allow injecting grout at low end and venting at high end. Galvanize after fabrication.
3. Silicone sealant to cover full width of flange.
4. Steel tube (Min thickness = ¼") welded to bearing plate. Galvanize assembly after fabrication
5. Steel tube welded to bearing plate. Inside diameter of steel tube (Min thickness = ¼") to be 1" greater than outside diameter of smooth sheathing. Galvanize assembly after fabrication.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101			

REGISTERED CIVIL ENGINEER X DATE

PLANS APPROVAL DATE

Eric Watson No. 64213 Exp.6/30/15 CIVIL

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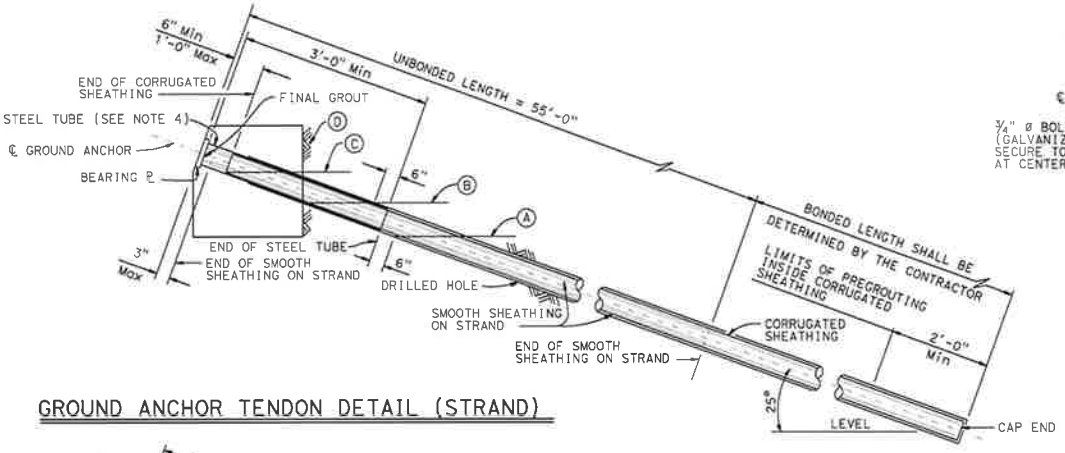
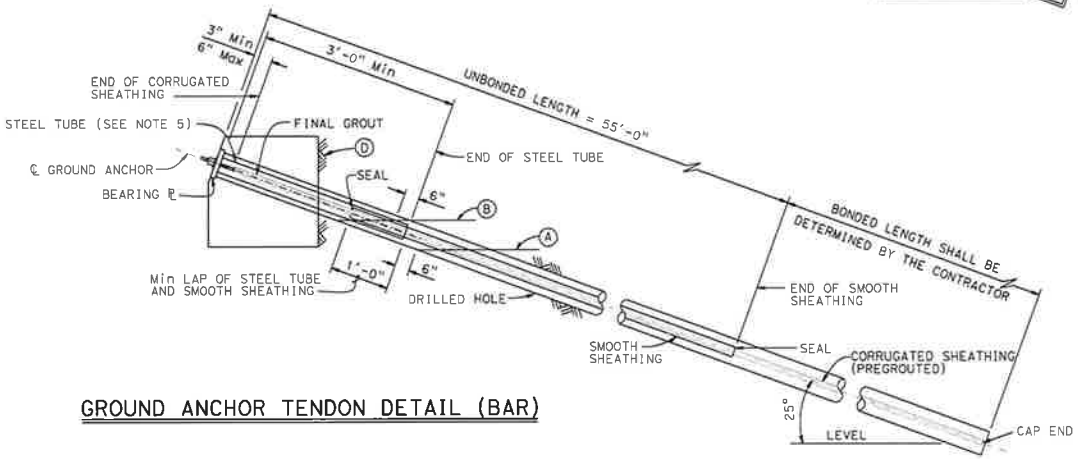
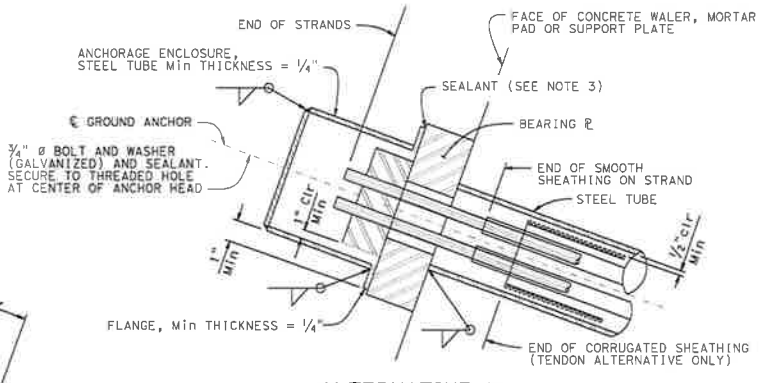


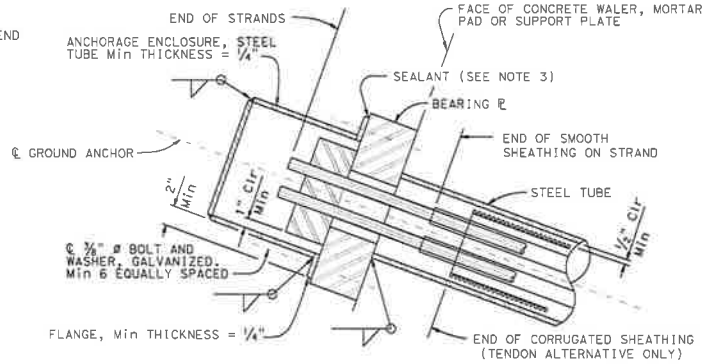
GROUND ANCHOR TENDON DETAIL (STRAND)



GROUND ANCHOR TENDON DETAIL (BAR)



ALTERNATIVE X



ALTERNATIVE Y

ANCHORAGE ENCLOSURE DETAILS

NO SCALE

DESIGN	BY Eric Watson	CHECKED Glen Lawson	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 1	BRIDGE NO. 04E0035 POST MILE 111.6
DETAILS	BY Jin Zhou	CHECKED Glen Lawson			ANCHORED BUTTRESS WALL NO. 11 GROUND ANCHOR DETAILS
QUANTITIES	BY X	CHECKED X			

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REV. 09-01-10)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3576 PROJECT NUMBER & PHASE: 01120001271 CONTRACT NO.: 01-084304

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	OF
04/27/15	07/14/15			6	7

ATTACHMENT 1

RECOMMENDED CONDITIONS OF APPROVAL

APPROVAL OF THE COASTAL DEVELOPMENT PERMIT AND SPECIAL PERMIT IS CONDITIONED UPON THE FOLLOWING TERMS AND REQUIREMENTS WHICH MUST BE FULFILLED BEFORE THE USE MAY BE INITIATED:

1. The work shall be conducted in accordance with the Project Description, the Department of Transportation's approved Initial Study-Mitigated Negative Declaration, Addendum, Revegetation Plan, etc. (Attachments 3 and 4) for the duration of the permit.
2. The road construction shall employ suitable techniques and measures necessary to prevent erosion and minimize surface runoff. In accordance with Section 3.41(F) of the North Coast Area Plan this shall include, but is not limited to:
   a. Limiting soil exposure and disturbed area.
   b. Minimizing uninterrupted slope length through surface roughening and serrated slopes.
   c. Temporary slope stabilization if grading operations do not occur during dry weather months (May through October) including mulches, nettings, chemical and natural binders, rip-rap, etc.
   d. Immediate vegetative plantings of disturbed slopes at finished grades.
   e. Control of runoff through controlled water and drainage systems with dissipated discharges and receiving stream bank protection.
   f. Diversion of runoff away from graded areas and areas traveled during project development.
   g. Temporary and permanent sediment control through use of dikes, filler berms, and sediment basins.

3. If any work will occur within a County right of way (e.g., Kane Road), the applicant shall apply for and obtain an encroachment permit for any traffic control, signs, lane closures and staging areas. Contact the Land Use Division of the Department of Public Works for more information.

4. If any work will occur within a County right of way (e.g., Kane Road), the applicant shall submit location map that references applicable Caltrans traffic control standards and plans and erosion control standard plans that are to be used for this project. Conditions requiring a traffic control plan other than T13 will require that the applicant submit a traffic control plan as part of the encroachment permit. Contact the Land Use Division of the Department of Public Works for more information.

5. Changes in the project other than Minor Deviations from the Plot Plan as provided in HCC Section 312-11.1 shall require a modification of this permit.

6. All mitigation measures identified within the Initial Study-Mitigated Negative Declaration shall be incorporated and implemented during project construction.

7. The applicant shall submit an annual Biological Monitoring Report for the Coastal wetland restoration area to the Planning Director for three (3) years following the completion of the work. Additional reports shall be provided to the Army Corps of Engineers and the California Department of Fish and Wildlife, consistent with the applicant's approved Initial Study-Mitigated Negative Declaration dated August 2014, Addendum dated March 2016, and Revegetation Plan dated November 2015. The report shall be prepared by a qualified biologist and shall document the success of the restoration measures and identify follow-on measures, if necessary, to achieve the identified level of revegetation.

8. The applicant is required to pay for permit processing on a time and material basis as set forth in the schedule of fees and charges as adopted by ordinance of the Humboldt County Board of

Supervisors. The Department will provide a bill to the applicant after the decision. Any and all outstanding Planning fees to cover the processing of the application to decision by the Hearing Officer shall be paid to the Humboldt County Planning Division, 3015 "H" Street, Eureka.

9. **Prior to hearing:** The applicant shall provide the County a check in the amount of $50.00 payable to the Humboldt County Clerk/Recorder for the Department's filing of the Notice of Determination as Responsible Agency under CEQA.

Ongoing Requirements/Development Restrictions which Must be Satisfied for the Life of the Project:

1. The project shall be conducted in accordance with the project description and approved project site plan.

2. Per the Plan of Operations excess soil will be disposed of at a commercial disposal site. However, if this practice were to change all excavated excess material must then be placed on an approved location with all required permits. Testing of the soil for potential contamination may be required by the Building Division. Before placement of excavate excess material documentation must be submitted to the Planning Division which verifies that the property owner(s) receiving the fill material have consented to its placement and that all required permit(s) have been obtained prior to commencement of the excavation and grading work. **Note: A Coastal Development Permit is required for fill placed in the Coastal Zone.**

Informational Notes:

1. If buried archaeological or historical resources are encountered during construction activities, the contractor on-site shall call all work in the immediate area to halt temporarily, and a qualified archaeologist is to be contacted to evaluate the materials. Prehistoric materials may include obsidian or chert flakes, tools, locally darkened midden soils, groundstone artifacts, dietary bone, and human burials. If human burial is found during construction, state law requires that the County Coroner be contacted immediately. If the remains are found to be those of a Native American, the California Native American Heritage Commission will then be contacted by the Coroner to determine appropriate treatment of the remains.

   The applicant is ultimately responsible for ensuring compliance with this condition.

2. The applicant is responsible for receiving all necessary permits and/or approvals from other federal, state and local agencies.

3. The Coastal Development Permit and Special Permit shall expire and become null and void at the expiration of one (1) year after all appeal periods have lapsed (see "Effective Date"); except where use in reliance on the permit has commenced prior to such anniversary date. The period within which use must be commenced may be extended as provided by Section 312-11.3 of the Humboldt County Code. Provided the conditions of approval have been satisfied and activity has commenced prior to the expiration date, the Coastal Development Permit shall be valid for a period of five (5) years, and, upon a review by the Planning Director and a finding that no changes to the conditions of approval are necessary, the permit shall be extended for an additional five (5) year period, for a total of ten (10) years.

4. NEW DEVELOPMENT TO REQUIRE PERMIT. Any new development as defined by Section 313-139.6 of the Humboldt County Code (H.C.C.), shall require a Coastal Development Permit modification, except for Minor Deviations from the Plot Plan as provided under Section 312-11.1 of the Zoning Regulations.

ATTACHMENT 2
STAFF ANALYSIS OF THE EVIDENCE SUPPORTING THE REQUIRED FINDINGS

Required Findings: To approve this project, the Hearing Officer must determine that the applicant has submitted evidence in support of making **all** of the following required findings.

The Coastal Zoning Ordinance, Section 312-17.1 of the Humboldt County Code (Required Findings for All Discretionary Permits) specifies the findings that are required to grant a Conditional Use Permit:

1. The proposed development is in conformance with the County General Plan;

2. The proposed development is consistent with the purposes of the existing zone in which the site is located;

3. The proposed development conforms with all applicable standards and requirements of these regulations; and

4. The proposed development and conditions under which it may be operated or maintained will not be detrimental to the public health, safety, or welfare; or materially injurious to property or improvements in the vicinity.

5. The Appendix to Title III, Division 1 of the H.C.C. specifies that in addition to the required findings specified in Title III, Division 1 of the H.C.C., the Hearing Officer may approve or conditionally approve an application for a Coastal Development Permit only if the following Supplemental Findings are made:

312-39.3 Coastal Scenic Areas:
39.3.1 The project is sited and designed to be subordinate to the character of the setting.

312-39.4 Coastal Streams and Riparian Areas:
39.4.1 There are no significant adverse affects on habitat areas;
39.4.2 There is no less environmentally damaging feasible alternative; and
39.4.3 The best mitigation measures feasible have been provided to minimize adverse environmental effects.

312-39.5 Coastal View Areas:
39.5.1 To the maximum extent feasible, the project is sited so as not to interfere with public views to and along the ocean from public roads and recreation areas.

312-39.7 Coastal Elk Habitat Areas:
39.7.1 The development will be compatible with the continuance of elk habitat areas.

312-39.8 Coastal Natural Drainage Courses.
39.8.1 Natural drainage courses, including ephemeral streams, will be retained and protected from development which would impede the natural drainage pattern or have a significant adverse affect on water quality or wildlife habitat.

312-39.9 Coastal Natural Landforms
39.9.1 Alterations to natural land forms will be minimized.

312-39.11 Coastal Road Construction:
39.11.1 Alteration of natural streams and drainage will be minimized;
39.11.2 The project is sited and designed to prevent impacts which would significantly

degrade water resources.

312-39.14 Coastal Wetlands, All wetlands, with the exception of Pocket Marshes:
39.14.1.1 There is no less environmentally damaging feasible alternative;
39.14.1.2 The best mitigation measures feasible have been provided to minimize adverse environmental effects; and
39.14.1.3 The required mitigation will maintain or enhance the functional capacity of the wetland or estuary.

6. In addition, the California Environmental Quality Act (CEQA) states that a Responsible Agency shall consider the Initial Study-Mitigated Negative Declaration prepared by the Lead Agency. Before approving the project the Responsible Agency shall exercise its independent judgement and determine if the Lead Agency's Initial Study-Mitigate Negative Declaration adequately addresses the project's impacts. If the Responsible Agency determines that the Lead Agency's Initial Study-Mitigated Negative Declaration is inadequate, it shall prepare a subsequent EIR or MND pursuant to CEQA Section 15162, or deny the project.

To approve this project, the Hearing Officer must determine that the applicant has submitted evidence in support of making **all** of the following required findings.

1. The proposed development must be consistent with the General Plan. The following table identifies the evidence which supports finding that the proposed development is in conformance with all applicable policies and standards of the North Coast Area Plan (NCAP) and the Framework General Plan.

Plan Section(s) and Summary of Applicable Goal	**Evidence which supports Making the General Plan Conformance Finding**
NCAP Rural Plan Designations §5.30: Public Recreation (PR) and Coastal Commercial Timber (TC) PR Principal use: Protect publicly owned lands suitable for recreational development or resource protection. TC Principal use: Protect productive timberlands for long-term production of merchantable timber.	The project is in the rural area near Big Lagoon and the south of Orick. The surrounding and adjacent lands are State Park lands. The project involves the repair and restoration of the southbound lane of Highway 101. After severe storms in March 2011, three localized slope failures occurred and destabilized the roadway. The project will reconstruct the southbound lane, the southbound shoulder and associated drainage elements. Three structures are proposed to restore and stabilize the project area: one timber lagging soldier pile ground anchor wall and two anchored pile systems. Temporary access roads will be constructed at each structure location. One-way traffic control with a temporary signal system will be used throughout construction of all three structures. Upon completion of the anchor pile systems, the temporary access roads will be removed, regraded, and replanted with native vegetation to match adjacent conditions. These structures are expected to have a design life of 75 years. The project contemplated is an allowed use as essential service in all areas of the County subject to conformance with resource protection policies of the North Coast Area Plan. As the project is repair and restore of an existing roadway that provides access to the northern coastal portion of the County, and does not propose to increase service capacity, the project is not anticipated to impact recreation opportunities nor timberlands, over the short- or long-term.
Urban Limits §3.21 NCAP New development shall be located within existing developed areas or in areas with adequate public services.	Although the project area is located outside the mapped Urban Limit Line of the NCAP, the project is for the repair of the existing State Highway 101 roadway. Severe storm events in March 2011 caused three localized slope failures in the southbound land of Highway 101. The project will restore and stabilize the roadway in the project area. The project will not increase the service capacity of the existing roadway. As such, the project will not enable potential increases in density or conversion of lands from rural uses to urban uses.

Hazards §3.26 NCAP New development shall minimize risks to life and property and assure stability and structural integrity of the natural landforms found on-site.	The project site is located in an area of high instability. The project is in response to slope failures that are impacting the southbound lane of Highway 101. Three slope failures occurred in March 2011 following severe storm events. The applicant proposes to develop three retaining wall structures that will restore and stabilize the southbound lane. All of the structures will be designed and engineered to address the local stability issues. Additionally, the project design has evaluated potential drainage issues elements. The project employs Best Management Practices and application of erosion controls measures to minimize erosion and sedimentation, along with revegetation of disturbed areas. The project site is located in area of moderate fire hazard severity. The project, however, is not expected to result in an increase exposure of people or property to fire hazards as it is for the restoration and stabilization of the existing roadway of Highway 101 between PM 111.4 and PM 111.6. Potential tsunami inundation is another mapped hazard in the area given the close proximity to the Big Lagoon. The lagoon, however, is at a much lower elevation than the Highway 101 roadbed. The project is not expected increase the exposure of people or property to tsunami hazards because the project 1) is to repair and stabilize and existing public road; 2) will not increase the service capacity of the existing road; and 3) does not entail residential development that would increase density. The project site is outside areas subject to flooding according to FEMA mapping. The project as proposed minimizes risks to life and property as well as maintains access to the rural, northern part of the county.
Archaeological and Paleontological Resources §3.27 NCAP Protect cultural, archeological and paleontological resources.	The project site is in the within the territory of the Coast Yurok. The applicant's Archaeological Survey Report, dated March 2014, identified no cultural resources after conducting a field survey using linear transects, and a ground surface examination. Additionally, the applicant consulted with the Yurok THPO, Robert McConnell. "Mr. McConnell responded that there was not an adverse indirect effect" (Page 6). The project's conditions of approval include the requirement that should buried materials be inadvertently uncovered that the protocol be observed. Additionally, the applicant has stated should the project design change to include areas not surveyed, additional investigation will be required (Page 6, Archaeological Survey Report). Based on the above, staff finds the project consistent with the provisions of the A combining zone.
Public Services, §3.32 NCAP Public roadway improvement projects shall not, either individually or cumulatively, degrade environmentally sensitive habitat areas or coastal scenic areas.	The policy language of Section 3.32 NCAP restricts roadway improvements beyond repair and maintenance, and stipulates that improvements be consistent with Sections 3.41 and 3.42 NCAP. Section 3.32(a) NCAP specifies "reconstruction and restoration of existing roadways...construction of protective works such as rock slope protection and slope corrections, reconstruction of roadways following damage by storms of other disasters..." as allowable roadway improvements.

Resource Protection, Environmentally Sensitive Habitat Areas, Road Construction Within Watersheds Containing Wetlands §§3.40, 3.41, 3.41(F) NCAP

Protect designated sensitive and critical resource habitats.

Incidental public services allowed when there is no feasible less environmentally damaging alternative and where feasible mitigation measures have been provided to minimize adverse environmental effects. Road construction within watersheds containing wetlands shall employ suitable techniques and measures necessary to prevent erosion and minimize surface runoff. This shall include, but is not limited to:

a. Limiting soil exposure and disturbed area.
b. Minimizing uninterrupted slope length through surface roughening and serrated slopes.
c. Temporary slope stabilization if grading operations do not occur during dry weather months (May through October) including mulches, nettings, chemical and natural binders, rip-rap, etc.
d. Immediate vegetative plantings of disturbed slopes at finished grades.
e. Control of runoff through controlled water and drainage systems with dissipated discharges and receiving stream bank protection.
f. Diversion of runoff away from graded areas and areas traveled during project development.
g. Temporary and permanent sediment control through use of dikes, filler berms, and sediment basins.

According to the applicant's August 2014 Initial Study and Mitigated Negative Declaration and March 2016 Addendum, there are four drainages, referenced as Other Waters of the United States (OWUS), in the cited documents. Also in the project area there are two wetlands, one is Army Corps of Engineers jurisdictional wetland, and the one is a one parameter Coastal wetland. The ACOE wetland and the entirety of one of the OWUS are located on the east side of Highway 101, and outside the work limits. Therefore these features will not impacted by the project. Nonetheless, the project's construction plans will show much of the eastern side of the roadway as Environmental Sensitive Areas and are to be avoided during construction.

As for the other two OWUS, they inlet on the east side of Highway 101, are culverted under the roadway, and then outlet on the west side. The project will result in temporary impacts to two of these OWUS located on the west side of Highway 101. However, the project employs the avoidance and minimization measures to prevent potential erosion and pollution to receiving waters stemming from construction activities and/or operations. These measures include installing temporary fencing, implementing BMPs for erosions and sediment control, and revegetating the site post-construction. According to the applicant's IS-MND, the temporary impacts will be fully mitigated. The specifics of these mitigation measures are contained in the applicant's submittals found in Attachments 3 and 5, and discussed herein. There will be a permanent impact only to approximately 50 square feet/25 feet length of the culverted OWUS; however, these impacts are expected to be beneficial because the length of open channel drainage will increase by 25 feet.

The Coastal wetland is located in the compacted gravel pullout on the west side of Highway 101. According to the applicant's IS-MND (Page 29) this Coastal wetland is a one parameter wetland, and is dominated with facultative wetland species. Only one obligate wetland species, hedge nettle (Stachys ajugoides) exists in a small quantity (5% cover in the herb stratum). While this area qualifies as a Coastal wetland, it is not providing the functions and values a typical wetland would provide and it is not of high quality per the applicant. Because this wetland is located at the northern end of the area where the soldier pile wall will be installed, construction activities will occur either adjacent or encroach into this wetland. According to the applicant's IS-MND approximately 373 square feet of the 926 square foot wetland will potentially be impacted by the project. However, according to the applicant's IS-MND and Addendum impacts associated with encroachment will be temporary as the applicant will restore this wetland to at its least existing value. Restoration activities include revegetating with native species include those locally sourced. The project's conditions of approval require that the applicant submit annual monitoring reports for a period of three years document the success of the restoration efforts, and if any further efforts are necessary to restore the wetland to its existing condition.

The applicant's IS-MND documents the presence of many animal species in the project area and vicinity. The IS-MND discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed below. All other special-status animal species are discussed therein, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species. The IS-MND finds that the project will not directly impact threatened or endangered species present in the project area or the vicinity but may have indirect auditory disturbance impacts associated with construction noise levels. These impacts are mitigated by restricting and adjusting the season and/or hours of construction activities to avoid conflicts with for resident and migratory species. Potential impacts are mitigated by retaining trees, including snags and logs, which may provide habitat for resident and migratory species. Also wildlife trash containers will be used and removed daily to avoid the attraction of, such as Steller jays and ravens. The project's conditions of approval include the requirement that the applicant incorporate and implement items 3.41(F)a) through g) as specified in the North Coast Area Plan. Based on the above and the applicant's submittals, staff finds that the project is consistent with the NCAP's policies for development in ESHA, will protect designated sensitive and critical resource habitats, and the applicant's already included BMPs, etc. will accomplish items 3.41(F)a) through g) of the NCAP.

Visual Resource Protection §3.42 et seq. NCAP
Physical Scale and Visual Compatibility: No development shall be approved that is not compatible with the physical scale of development as designated in the zoning for the subject parcel. For proposed development not within an urban limit as shown in the Area Plan maps that such development meet all standards, including specific limitations on height and bulk, for the principal permitted use as designated in the zoning, where such principal use is for detached residential, agricultural uses, or forestry activities regulated by CDF only. The project site is located outside the mapped urban limit line. The work proposed by the applicant is for the permanent restoration of Highway 101. Three localized slope failures occurred along this segment of roadway in March 2011 following severe storm events. The repair and restoration work is an allowed use as essential service in all areas of the County subject to conformance with resource protection policies of the North Coast Area Plan. The proposed structures will all be below grade, and have expected life of approximately 75 years. Therefore, the project does not raise compatibility issues with height and bulk, or other development standards.
Protection of Natural Landforms: Natural contours, including slope, visible contours of hilltops and treelines, bluffs and rock outcroppings, shall suffer the minimum feasible disturbance compatible with development of any permitted use. The project will achieve roadway stabilization by the construction of engineered earth retaining wall systems, not by cutting, grading, filling, or clearing. The proposed structures are located adjacent to the existing roadway. For the anchored pile systems, minimal excavation will be required according to the applicant's submittal. A temporary road for construction access will be constructed below the anchor pile systems. Similarly for the soldier pile wall, a temporary construction access road will be constructed along the face the wall. In both cases, upon completion of the respective walls, the temporary roads will be backfilled, the reserved topsoil will be placed and regraded, and the area replanted with native vegetation, including local sources. For the soldier pile wall, one mature alder will removed to allow for the installation of a new culvert that will be connected to this wall's underdrain. According to the applicant's MND, "trees will be replanted at a minimum ratio of 3:1" (Page 78). Additionally, the project's IS-MND includes the implementation of Best Management Practices for erosion control during and post-construction. Staff finds that the project as proposed will minimize alterations to natural land forms; thereby, the project design will protect natural land forms.

Coastal Scenic Areas: the intent of these regulations that all development be subordinate to the character of the designated area, and to the scenic use and enjoyment of public recreational lands within these areas. New industrial and public facility development shall be limited to temporary storage of materials and equipment for the purpose of road and utility repair or improvement provided that this is necessary to the repair or improvement, and no feasible site for storage of equipment or material is available outside such area. The project is not for the development of a new public facility; rather the proposed work is to repair and restore the existing roadway. The project will not increase the roadway's existing service capacity. The project does involve temporary storage of native soil (reserved for backfill), safety signage, construction access roads, and staging areas. This temporary development is necessary for the applicant to complete the work. With respect to construction access roads the project will implement BMPs, along with avoidance measures, to ensure all impacts associated with this temporary road are minimized. Equipment fueling and temporary storage of waste materials (i.e. drill spoils) on site will be necessary, and will be performed in accordance with current regulations, Best Management Practices (BMPs), and an approved Storm Water Pollution Prevention Plan (SWPPP) will be required. Specific fueling and waste handling locations and procedures will be clearly identified in the SWPPP. Once the work is completed, slopes will be re-graded and re-contoured, revegetation of the site as described in the Revegetation Plan, dated November 2015 will be implemented. Existing pullouts will be used for staging areas. All debris associated with the project will be removed from the site and disposed of appropriately at an approved location. The prescriptive standards in Section 3.42C(c) do not apply to the proposed earth retaining structures as they will not have an above grade vertical project when completed. Additionally, the setbacks do not apply as all of the proposed improvements are to occur within the existing right of way of State Highway 101.	
Coastal View Areas: the intent of these regulations that no development shall block coastal views to the detriment of the public; and the following uniform standards and conditions shall apply to all development other than agricultural development and timberland management subject to CDF requirements for special treatment areas in said areas. The project does not involve timber management, although one mature alder will be removed in order install a culvert, a drainage element for the soldier pile wall. The two anchor pile walls will be buried below finish grade. These walls do not require a barrier rail. The soldier pile wall, however, requires the installation a three foot barrier/bridge rail including a bike rail will be installed for the safety of travelers on Highway 101. The bridge rail will be made of matte galvanized metal that will be see-through, and painted forest green. The rail design was selected to maximize view opportunities to travelers in the Harry Merlo State Recreation Area and Pacific Coast Bike Trail. The representative of the State Parks has indicated that the forest green color would be suitable at this location (see email dated November 20, 2015).	
Public Access §3.50 NCAP New development shall maintain and where feasible provide new opportunities for public access to the coast consistent with public safety needs, property rights protection, and protection of fragile coastal resources.	There is a coastal access point at the Harry A. Merlo State Recreation Area that is in the vicinity, at PM 110.47 per the agent, where construction warning signs will be temporarily installed. Although this access point is nearby, the project does not propose to use this area for staging or other associated project activities. There are no designated coastal access points north of this coastal access point that falls within the project's limits. Based on the above, the project will not impact coastal access.

2. The proposed development is consistent with the purposes of the existing zone in which the site is located; 3. The proposed development conforms with all applicable standards and requirements of these regulations; and 5. Supplemental Coastal Resource Protection Findings. The following table identifies the evidence which supports finding that the proposed development is in conformance with all applicable policies and standards in the Humboldt County Coastal Zoning Regulations.

Zoning Section	Summary of Applicable Requirement	Evidence
Section 313-5.1 Public Recreation (PR) Section 313-5.4 Natural Resources (NR)	Primary and compatible uses include fish and wildlife habitat management. The maintenance activities require a CDP.	Roads are an Essential Services Civic Use Type. Roads provide connectivity to rural areas and are developed for the safety and convenience of the public. The project consists of repair and maintenance to State Highway 101 to provide permanent restoration of the southbound lane of Highway 101 between PM 111.4 and PM 111.7. Three localized slope failure areas occurred March 2011 due to severe storm events. Also the work is to prevent future roadway closures from occurring after storm events.
Development Standards for RS Zones: all of the proposed improvements are to be constructed within the existing right-of-way for State Highway 101.		
Minimum Lot Size and Lot Width; Maximum Lot Depth	These standards do not apply as all of the proposed improvements are to occur within the existing right of way of State Highway 101. A right of way does not constitute a lot.	
Yard Setbacks	These standards do not apply as all of the proposed improvements are to occur within the existing right of way of State Highway 101.	
Structure Height:	PR and NR: maximum 35 feet	The soldier pile ground anchor wall will be approximately 25 feet in height. A soldier pile wall is a type of retaining wall, and will be below road bed grade. Above grade a bridge (guard) rail will be installed with a height of approximately 3 feet.
Max. Coverage:	None specified	n/a

Zoning Section and Summary of Applicable Requirement	Evidence That Supports the Zoning Finding
Section 313-15 et seq. Combining Zones and Section 312-39 et seq. Supplemental Findings	
313-16.1 Archaeological Resource Area Outside Shelter Cove (A): The purpose of these regulations is to provide for reasonable mitigation measures where development would have an adverse impact upon archaeological and paleontological resources.	The project site is in the within the territory of the Coast Yurok. The applicant's Archaeological Survey Report, dated March 2014, identified no cultural resources after conducting a field survey using linear transects, and a ground surface examination. Additionally, the applicant consulted with the Yurok THPO, Robert McConnell. "Mr. McConnell responded that there was not an adverse indirect effect" (Page 6). The project's conditions of approval include the requirement that should buried materials be inadvertently uncovered that the protocol be observed. Additionally, the applicant has stated should the project design change to include areas not surveyed, additional investigation will be required (Page 6, Archaeological Survey Report). Based on the above, staff finds the project consistent with the provisions of the A combining.
313-17.1: Beach and Dune Areas (B): The purpose of these regulations is to ensure that any development permitted in coastal beach and dune areas, as designated in the Coastal Land Use Plan Resource Protection Maps, will not detract from the area's natural resource value or their potential for providing recreational opportunity.	Sections 313-137 and 313-139 HCC, respectively, define beach and dune. The project site does not contain dune areas as defined in the referenced section. While there are beach areas, as defined, to the west of the project site, the proposed work, including drainage improvements, will occur above and outside the shoreline area. Therefore, the provisions of the Beach and Dune Areas combining zone do not apply to the proposed project because there are no beach or dune areas present at the location of the work to be performed.
313-19.1 Design Review (D), 312-39.3 Coastal Scenic Areas, and 312-39.5 Coastal View Areas	
313-19.1.5.1: The Design Review Committee must determine that the project is consistent and compatible with the applicable elements of the General Plan.	The project was referred to the Big Lagoon Design Review Committee in accordance with procedure, but the Committee has not provided comments on the proposal. The project area is located adjacent to Big Lagoon, and in the Harry A. Merlo State Recreation Area, and is highly scenic. The Harry A. Merlo SRA extends to the eastern shoreline of Big Lagoon. The redwood forest and Sitka spruce forest lined much of the roadway. As discussed above, the project has been found to be consistent with the NCAP.
Coastal Scenic Areas: 313-19.1.5.1.1: Within designated Coastal Scenic Areas: as mapped measures are included in the project design so that it will be subordinate to the character of the surrounding setting. 312-39.3.1: The project is sited and designed to be subordinate to the character of the setting. Coastal View Areas: 313-19.1.5.1.2: Where mapped and where views from the public	The project area is mapped as Coastal Scenic and Coastal View in NCAP. The two anchor pile walls will be buried below finish grade, and once completed will not be noticeable to travelers on Highway 101. These walls do not require a barrier rail. The soldier pile wall will be approximately 140 feet in length and 25 feet in height. The wall is a component to restore the roadway to the original condition. According to the applicant's Visual Impacts memorandum, the potential for the soldier pile wall to be seen by users on Big Lagoon is very slight. Boaters are not likely to be in a position to see the wall because the Lagoon's much lower elevation: the Lagoon's elevation is approximately 9 feet, versus the elevation average of 90 feet for the project site (elevation ranges from 50 to 130 feet, according to the applicant). Also, many trees grown between the wall and the Lagoon obstructing

roads to the coast or coastal waterways are of concern, the height, width, and siting of structures, including setbacks from roads and parcel lines will be considered to retain as much of the existing view as possible. Views from public trails, beaches, or public recreation areas into the development site will also be considered. 312-39.5.1: To the maximum extent feasible, the project is sited so as not to interfere with public views to and along the ocean from public roads and recreation areas.	the visibility of the wall. Further, the wall will be painted brown to blend in with its surroundings. At the top of the soldier pile wall, a three foot barrier/bridge rail including a bike rail will be installed. The bridge rail will be made of matte galvanized metal that will be see-through, and painted forest green. The rail design was selected to maximize view opportunities to travelers in the Harry Merlo State Recreation Area and Pacific Coast Bike Trail. The representative of the State Parks has indicated that the forest green color would be suitable at this location (see email dated November 20, 2015). Based on the above and the documentation submitted by the applicant, staff finds that the proposed structures will be subordinate to the character of the setting, and that adequate design and siting measures have been taken to ensure that the project will not to interfere with public views to and along the adjacent Big Lagoon and the Harry A. Merlo SRA.
313-19.1.5.2 Protection of natural landforms through minimizing alterations caused by cutting, grading filling and clearing, except to comply with fire hazard regulations. 312-39.9.1: Alterations to natural land forms will be minimized.	The project will achieve roadway stabilization by the construction of engineered earth retaining wall systems, not by cutting, grading, filling, or clearing. The proposed structures are located adjacent to the existing roadway. For the anchored pile systems, minimal excavation will be required according to the applicant's submittal. A temporary road for construction access will be constructed below the anchor pile systems. Similarly for the soldier pile wall, a temporary construction access road will be constructed along the face the wall. In both cases, upon completion of the respective walls, the temporary roads will be backfilled, the reserved topsoil will be placed and regraded, and the area replanted with native vegetation. For the soldier pile wall, one mature alder will removed to allow for the installation of a new culvert that will be connected to this wall's underdrain. According to the applicant's MND, "trees will be replanted at a minimum ratio of 3:1" (Page 78). Additionally, the project's IS-MND includes the implementation of Best Management Practices for erosion control. Staff finds that the project as proposed will minimize alterations to natural land forms; thereby, the project design will protect natural land forms.
Exterior Lighting: all new outdoor lighting shall be compatible with the existing setting and directed within the property boundaries.	The project does not include the permanent installation of new outdoor lighting. Safety warning signage with warning lights will be installed to alert travelers on Highway 101 of the construction activity. This temporary public safety lighting is not expected to result in a capability issue with the surrounding rural land use.
Landscaping: Screening or softening the visual impact of new structures through landscaping; preferably with native vegetation.	As discussed above, upon completion the anchored pile systems will not visible to travelers on Highway 101 or from users on Big Lagoon as it will be backfilled. As for the soldier pile, it is not expected to significantly visible for users on Big Lagoon due to the elevation differential between the Lagoon and the project site, and intervening trees. Nonetheless, the wall will be painted brown to help it blend in with the surrounding landscape. According to the applicant's November 2015 Revegetation Plan (Page 4), revegetation is proposed to offset both temporary and permanent impacts associated with this construction project. Further, revegetation will use a combination of plant material that may

	include locally collected and outgrown bare root stock, container stock, and salvaged material collected onsite when feasible.
Underground Utilities: where feasible, new utilities shall be underground or sited unobtrusively if aboveground.	The need for new utilities is not anticipated.
Setbacks from roads and property lines are appropriate to protect the scenic and visual qualities of the site and area.	The proposed project meets all setback requirements for small parcels. There are not likely to be impacts to scenic or visual qualities of the area.
Off-Premise signs shall be designed attractively and in a style compatible with the neighborhood setting.	The project does not propose the installation of off-premise signs.
313-20 Coastal Elk Habitat Areas (E): Ensure that development within elk habitat is compatible with such habitat areas and is sited and designed to mitigate impacts which would significantly degrade such habitat. 312-39.7.1: The development will be compatible with the continuance of elk habitat areas.	The project may result in temporary impacts to the habitat area of elk due to increased noise levels during construction activities. The potential impact would be limited to the duration of construction period. As this work is being conducted in and adjacent to the existing roadway, an existing source of noise and disturbance, existing elk have adapted to this existing disturbance. Existing wildlife corridors exist outside the project area. The project will not introduce new development in an existing wildlife corridor. With respect to vegetation, the project will impact approximately 0.28 non-sensitive ruderal areas. According to the applicant's Revegetation Plan, vegetation adjacent to the construction area will be fenced, sediment control measures (e.g., silt fencing, fiber rolls, jute netting, duff/mulch, and other BMPs), will be implemented. The 0.28 acre of disturbed area will be revegetated with "...self-sustaining native plants appropriate for the region and vegetation type disturbed by project activities and striving to meet State Parks genetic integrity guidelines" (Page 4). As required by Section 313-20.1.3, the project application was referred to the Department of Fish and Wildlife for comment. That agency did not have any comments. Based on the above and comments from reviewing agencies, the project is compatible with elk habitat areas, and will not significantly degrade habitat.
313-21.1 Flood Hazard Areas (F) The purpose of these regulations is to minimize public and private losses due to flood and tsunami conditions in specific areas of the County.	The delineated areas of work and construction are outside a mapped flood hazard zone. These areas are however in a mapped tsunami inundation area. The project is not expected increase the exposure of people or property to tsunami hazards because the project 1) t is to repair and stabilize and existing public road; 2) t will not increase the service capacity of the existing road; and 3) does not entail residential development that would increase density. Based on the above the project will not increase the risk of any tsunami hazard.
313-33.1 Streams and Riparian Corridors Protection (R), 312-39.4 Coastal Streams and Riparian Areas, 312-39.8 Coastal Natural Drainage Courses, 313-38.1 Coastal Wetland Areas (W), and 312-39.14 Coastal Wetlands	

313-33.1 Streams and Riparian Corridors Protection The purpose of these regulations is to provide for the maintenance, enhancement, and, where feasible, restoration of water resources by restricting development, and by minimizing adverse effects of runoff, interference with surface water flow, and alteration of natural streams, and by protecting riparian habitats. 312-39.4 Coastal Streams and Riparian Areas 39.4.1 There are no significant adverse effects on habitat areas; 39.4.2 There is no less environmentally damaging feasible alternative; and 39.4.3 The best mitigation measures feasible have been provided to minimize adverse environmental effects. 313-38.1 Coastal Wetland Areas (W) The purpose of these regulations is to provide that any development in coastal wetlands will not degrade the wetland, but will maintain optimum populations of marine or freshwater organisms and, where feasible, will enhance wetland resources. 312-39.14 Coastal Wetlands 39.14.1.1 There is no less environmentally damaging feasible alternative; 39.14.1.2 The best mitigation measures feasible have been provided to minimize adverse environmental effects; and 39.14.1.3 The required mitigation will maintain or enhance the functional capacity of the wetland or estuary.	According to the applicant's August 2014 Initial Study and Mitigated Negative Declaration and March 2016 Addendum, there are four drainages, referenced as Other Waters of the United States (OWUS), in the cited documents. Also in the project area there are two wetlands, one is Army Corps of Engineers jurisdictional wetland, and the one is a one parameter Coastal wetland. The ACOE wetland and the entirety of one of the OWUS are located on the east side of Highway 101, and outside the work limits. Therefore these features will not impacted by the project. Nonetheless, the project's construction plans will show much of the eastern side of the roadway as Environmental Sensitive Areas and are to be avoided during construction. As for the other two OWUS, they inlet on the east side of Highway 101, are culverted under the roadway, and then outlet on the west side. The project will result in temporary impacts to two of these OWUS located on the west side of Highway 101. However, the project employs the avoidance and minimization measures to prevent potential erosion and pollution to receiving waters stemming from construction activities and/or operations. These measures include installing temporary fencing, implementing BMPs for erosions and sediment control, and revegetating the site post-construction. According to the applicant's IS-MND, the temporary impacts will be fully mitigated. The specifics of these mitigation measures are contained in the applicant's submittals found in Attachment 3, and discussed herein. There will be a permanent impact only to approximately 50 square feet/25 feet length of the culverted OWUS; however, these impacts are expected to be beneficial because the length of open channel drainage will increase by 25 feet. The Coastal wetland is located in the compacted gravel pullout on the west side of Highway 101. According to the applicant's IS-MND (Page 29) this Coastal wetland is a one parameter wetland, and is dominated with facultative wetland species. Only one obligate wetland species, hedge nettle (Stachys ajugoides) exists in a small quantity (5% cover in the herb stratum). While this area qualifies as a Coastal wetland, it is not providing the functions and values a typical wetland would provide and it is not of high quality per the applicant. Because this wetland is located at the northern end of the area where the soldier pile wall will be installed, construction activities will occur either adjacent or encroach into this wetland. According to the applicant's IS-MND approximately 373 square feet of the 926 square foot wetland will potentially be impacted by the project. However, according to the applicant's IS-MND and Addendum impacts associated with encroachment will be temporary as the applicant will restore this wetland to at its least existing value. Restoration activities include revegetating with native species include those locally sourced. The project's conditions of approval require that the applicant submit annual monitoring reports for a period of three years document the success of the restoration efforts, and if any further efforts are necessary to restore the wetland to its existing condition. There are

	no alternatives for restoring the road at this location. Staff believes that the applicant's restoration mitigation will maintain the wetland at its current value, and the best mitigation measures have been provided to minimize adverse effects.
312-39.11Coastal Road Construction 39.11.1 Alteration of natural streams and drainage will be minimized. 39.11.2 The project is sited and designed to prevent impacts which would significantly degrade water resources.	See above discussion and the applicant's IS-MND in Attachment 5 that document the BMPs, etc. and other measures that will be employed to prevent impacts to water resources. The project does not contemplate altering natural streams or drainage in the project site.

4. Public Health, Safety and Welfare, and Environmental Impact: The following table identifies the evidence which supports finding that the proposed development will not be detrimental to the public health, safety and welfare or materially injurious to properties or improvements in the vicinity, and will not adversely impact the environment.

Code Section	Summary of Applicable Requirement	Evidence that Supports the Required Finding
§312-17.1.4	Proposed development will not be detrimental to the public health, safety and welfare or materially injurious to properties or improvements in the vicinity.	All reviewing referral agencies have recommended approved or conditional approval the proposed development. Calfire expressed concerns about possible response delays north of the construction site. The applicant provided details regarding traffic management plans to Calfire, and no further comments were received in response to this supplemental information. Based on the applicant's submittal, no detrimental effects to public health, safety and welfare have been identified. The proposed development is not expected be detrimental to property values in the vicinity nor pose any kind of public health hazard.

6. Environmental Impact: As Lead Agency under CEQA, the Department of Transportation (Caltrans) prepared and circulated an Initial Study--Mitigated Negative Declaration (MND) for the project. According to the Notice of Determination, Caltrans approved the IS-MND January 22, 2015. A copy the documents and associated reports are included as Attachment 5.

Before approving the project as a Responsible Agency under CEQA, the Planning Commission must review and consider the IS-MND adopted by the Lead Agency (Caltrans) and exercising independent judgement determine if the project's impacts are adequately addressed. If the Responsible Agency determines that the Lead Agency's Initial Study-Mitigated Negative Declaration is inadequate, it shall prepare a subsequent EIR or MND pursuant to CEQA Section 15162, or deny the project.

Staff has reviewed the applicant's approved Initial Study-Mitigate Negative Declaration and one Addendum in Attachment 5. Staff believes that referenced documents adequately address all of the project's potential impacts.

A Notice of Determination will be filed for the project consistent with Section 15096 of the State CEQA Guidelines.

ATTACHMENT 3
APPLICANT'S EVIDENCE IN SUPPORT OF THE REQUIRED FINDINGS

Attachment 3 includes a listing of all written evidence which has been submitted by the applicant in support of making the required findings. The following materials are on file with the Planning Division unless noted otherwise:

- Updated Project Description, received by Planning Division January 21, 2016
- Historic Property Survey Report, dated March 2014
- Archaeological Survey Report, dated March 2014 (confidential and exempt from disclosure pursuant to the Public Records Act)
- Revegetation Plan, dated November 2015: attached
- Transportation Management Plan, dated October 16, 2014
- Revised Natural Environment Study, dated November 2014
- Big Lagoon Wall--Visual Impacts memorandum, dated July 31, 2014: attached
- Caltrans NEPA Determination, dated November 26, 2014
- Water Quality Assessment Report, dated July 2014

Revegetation Plan

Big Lagoon Walls Project

State Route 101 in Humboldt County
Post Mile 111.4/111.6
EA 01-0B430/EFIS 0112000127

California Department of Transportation
Prepared by North Region Environmental
Date: November 2015

Prepared by: Katie Thoreson
Associate Environmental Planner/NS

Prepared by: Desiree Davenport
Revegetation Specialist

Approved by: Carolyn Brown
Stewardship Branch Chief

Rec'd 12/2/2015

Big Lagoon Walls Revegetation Plan
01-0B430

Introduction

The following revegetation plan is for the Big Lagoon Walls Storm Damage Repair Project in Humboldt County, on US 101 from post mile (PM) 111.4 through PM 111.6 (Figures 1 & 2, Appendix).

In March 2011, severe storm events resulted in three localized slope failures in the southbound lane and shoulder of US 101. This area has been the location of previous slope failures. Two of the localized slope failures are at each end of an existing 200 foot long micropile buttress constructed in 2009 as a Director's Order repair. The third slipout location is further south of the existing micropile buttress resulting in the destabilization of the existing roadway prism. The proposed project will reconstruct the southbound lane, southbound shoulder and associated drainage elements, as well as limited widening at discrete sections of the northbound shoulder. Three structures are proposed to restore and stabilize the project area: one timber lagging soldier pile tieback wall (Location 1) and two anchor pile systems (Locations 2 and 3; see Figure 3, Appendix).

This revegetation plan addresses onsite revegetation of the areas that will be disturbed during construction of the three structures. Revegetation will occur in the vicinity of each structure, noted as Locations 1 through 3 on Figure 3, where bare soil is left after construction. Vegetation types at these three locations include disturbed/ruderal areas, Sitka spruce forest (*Picea sitchensis* Forest Alliance), redwood forest (*Sequoia sempervirens* Forest Alliance) and a riparian area associated with a small ephemeral drainage within the redwood forest (Sawyer et al. 2009).

Impacts to redwood forest and the riparian area associated with a seasonal drainage are expected to occur as a result of construction of the timber-lagged soldier pile tie-back wall. Impacts to this area will occur due to excavation and construction of an access road at the face of the proposed wall, grading and access for installation of the wall drainage, removal of approximately 20 feet of culvert length that currently extends beyond the proposed wall and access for grading and placement of rock to establish an open channel that will conform to the existing drainage channel where the length of culvert was previously.

Impacts to Sitka spruce forest as well as ruderal areas are expected as a result of the construction of two anchor pile systems and necessary construction access.

The area between the two proposed anchor pile systems was disturbed by the 2009 emergency opening project and has been revegetated with red alder (*Alnus rubra*), Sitka spruce (*Picea sitchensis*), Douglas fir (*Pseudotsuga menziesii*), coast redwood (*Sequoia sempervirens*), evergreen huckleberry (*Vaccinium ovatum*), and salal (*Gaultheria shallon*) plantings. Many red alder trees have volunteered in this area as well. This area will be designated as an Environmentally Sensitive Area (ESA) to ensure none of the plantings or volunteers will be disturbed by equipment access and/or storage of materials. Only limited access for weed removal will be permitted in this area.

Environmental Setting

The project is located in the North Coast subregion of the Northwest Region of the California Floristic Province (Baldwin 2012) in coastal Humboldt County Located within the U.S. Geological Survey (USGS) 7.5-minute Rodgers Peak quadrangle. The project is located adjacent to Big Lagoon and the Harry A. Merlo State Recreation Area (SRA).

The project area exists at an elevation of approximately 113 feet on the south end and approximately 36 feet at the north end, with a roughly 30-40% slope extending uphill of US-101 to the east and a 40-80% downhill slope to the west extending to the beach along the northeastern portion of Big Lagoon. Big Lagoon consists of an alluvial plain surrounded by steep to sloping uplands and is the largest and southernmost of several coastal lagoons between Trinidad and Redwood Creek (near Orick). The eastern shoreline of Big Lagoon, including areas within the project area, is part of Harry A. Merlo SRA.

The project area is located near the Pacific Ocean and experiences wet, cool winters and dry, mild foggy summers. Average rainfall totals 67 inches, mostly falling between November and March. The wettest months are December and January, receiving an average rainfall of 22.78 inches during these 2 months. The summer months (July and August) receives an average precipitation of 0.34 and 0.51 inches, partially comprised of fog. The average annual air temperature is 51.8°F, with an average low of 36.7°F in January and an average high of 70.7° F in September.

The redwood forest is dominated by redwoods with other trees present in the canopy including grand fir (*Abies grandis*), Sitka spruce and cascara (*Frangula purshiana*). A thick understory includes a shrub layer of red elderberry (*Sambucus racemosa*), thimbleberry (*Rubus parviflorus),* salal, and salmonberry *(Rubus spectabilis)* and an herbaceous layer including sword fern (*Polystichum munitum*), lady fern (*Athyrium filix-femina*), wild ginger *(Asarum caudatum),* cow parsnip *(Heracleum maximum),* and candy flower *(Claytonia sibirica).*

The Sitka spruce forest is dominated by Sitka spruce and grand fir (co-dominant) with other trees including red alder and coast redwood. The understory is dominated by shrubs, ferns and herbaceous vegetation including evergreen huckleberry (*Vaccinium ovatum*), twinberry (*Lonicera involucrata* ssp. *ledebourii),* coast silk tassel *(Garrya elliptica),* California blackberry *(Rubus ursinus),* thimbleberry, oceanspray (*Holodiscus discolor*) wild cucumber (*Marah fabaceus*), sword fern, bracken fern *(Pteridium aquilinum),* and false lily-of the-valley *(Maianthemum dilatatum).*

The disturbed/ruderal areas consist primarily of weedy herbaceous vegetation including sweet vernal grass (*Anthoxanthum odoratum),* orchard grass *(Dactylis glomerata),* tall fescue *(Festuca arundinacea),* mouse-ear chickweed *(Cerastium arvense),* Queen Anne's lace *(Daucus carota),* rye grass *(Festuca perennis),* ox-eyed daisy *(Leucanthemum vulgare),* white sweet clover *(Melilotus albus),* cranesbill *(Geranium dissectum),* vetch *(Vicia sativa, V. hirsuta)* and English plantain *(Plantago lanceolata).* This area also includes some invasive shrubs including scotch broom (*Cytisus scoparius*), fennel (*Foeniculum vulgare*), and Himalayan blackberry (*Rubus armeniacus*).

Project Impacts

Sitka Spruce Forest

Approximately 0.16 acres of Sitka spruce forest on the downslope (western) side of US-101 will be affected during construction of the anchor pile systems. These impacts are expected to be temporary, as the anchor pile systems will be buried.

Redwood Forest

Approximately 0.04 acre of redwood forest on the downslope (western) side of US-101 will be affected for construction of the timber-lagged soldier pile wall and associated drainage.

Riparian area

Approximately 0.01 acre of the riparian area associated with the seasonal drainage that runs through the proposed soldier-pile wall will be affected. The riparian area exists within the redwood forest. This area will be affected due to the need for access to construct the timber lagged soldier pile tieback wall and drainage for the wall. Impacts to the existing riparian area will be temporary; however an additional approximately 20-foot length of new open channel will result from cutting off the culvert at the face of the wall.

Ruderal Vegetation

The project will also result in approximately 0.28 acre impact to non-sensitive, ruderal areas consisting largely of weedy species. The impacts to this area will be the result of construction of the anchor-pile systems, minor widening to restore shoulders and construction access.

Table 1: Impacts to Vegetation Communities in the Project Area.

	Area	
	SF	**Acreage**
Redwood Forest Alliance	1902	**0.04**
***Riparian**	446	**0.01**
Sitka Spruce Forest Alliance	6,875	**0.16**
Ruderal/Disturbed Area	12109	**0.28**

*The area described as *Riparian* is within the *Redwood Forest Alliance* and contains species consistent with the redwood forest vegetation alliance. It is specified as riparian because of its proximity to the seasonal drainage.

Vegetation adjacent to the construction areas will be protected by Environmentally Sensitive Area (ESA) fencing. Sediment control measures such as silt fencing, fiber rolls, jute netting, duff/mulch and other Best Management Practices BMPs will be used for erosion control.

Revegetation Goal

The revegetation goal is to restore a total of 0.28 acre of Disturbed Soil Area (DSA) with self-sustaining native plants appropriate to the region and vegetation type disturbed by project activities and striving to meet State Parks genetic integrity guidelines. The planting areas will be associated with the newly contoured slopes below the timber lagged soldier pile retaining wall and the two micropile buttresses. Revegetation is proposed to offset both temporary and permanent impacts associated with this construction project.

Site Preparation

At all three locations, the slopes will be re-graded and re-contoured after construction activities have been completed. Planting basins will be dug to accommodate container plantings. Duff will be spread over the ground at location 1, and wood mulch will be spread at locations 2 and 3, to slow surface water run-off and invasive plant growth. Biodegradable coir (coconut fiber) netting will be placed along sloping ground to hold duff in place.

Clear Recovery Zone Setback

The planting area includes a "clear recovery" zone of 20 feet, which is a required tree-planting setback from the traveled road surface for safety and maintenance. Planting within the clear recovery zone will consist of low growing herbaceous species and shrubs; tree planting will occur outside this roadside zone.

Revegetation Methods

Revegetation will utilize a combination of plant material that may include locally collected and outgrown bare root stock, container stock, and salvaged material collected onsite when feasible. The species and quantities of plant material to be utilized are presented in Table 2 (below) and shown on the attached planting plan (see Figure 3, Appendix). In addition, natural vegetation recruitment is likely, and will be incorporated into planting considerations and revegetation goals.

Bare root and/or container plants will be planted in holes twice as wide as and slightly deeper than root or container size, with organic compost incorporated into the hole and soil. Plants will be deep watered immediately after planting (soils will be saturated beyond the first several inches), and mulched.

Revegetation planting and maintenance will be the responsibility of the contractor for a 250 day Plant Establishment Period under the construction contract. After this period, maintenance including watering and weeding will be contracted out to and performed by the California Conservation Corps (CCC) and overseen by a Caltrans Revegetation Specialist for the duration of the 5-year maintenance and monitoring period.

Implementation Schedule

Revegetation. Container plants will be installed by the contractor before construction is completed. The contractor is responsible for replanting if any initial plants fail to establish within the 250 day plant establishment period.

Watering. The contractor will conduct watering during the first year, as needed. Watering for the second and third years will be conducted by the CCC.

Weeding. There is a potential for invasive plants to establish in the revegetation areas, following vegetation removal and ground disturbance. Revegetated areas will be weeded by hand during planting and during the 5-year maintenance and monitoring period.

Monitoring and Success Criteria

Monitoring will be performed to ensure that the revegetation goal is met, and provide a mechanism for corrective action if necessary. Monitoring will characterize extant conditions in the field, and data collection will be reproducible and collected in a consistent manner. Monitoring will be conducted during the 5-year maintenance and monitoring period by a Caltrans Revegetation Specialist and/or project Biologist with appropriate field survey experience.

Monitoring will consist of the following:

- Evaluating survival of native plants by census. Census monitoring will be conducted annually for five years after the planting is implemented. Installed and volunteer native plants that are alive during monitoring will be counted. Establishment of volunteer native species may be included in the total plant count, since volunteers indicate that revegetation is successfully occurring and that a site is self-sustaining.

- Establishing reproducible photo points prior to plant installation and revisited each year to document vegetation establishment. Photos will be provided with the annual and final monitoring reports. Additional or alternate photo points may need to be installed if the original photo points fail to capture enough visual data.

- Monitoring schedule: During the first, third and fifth years, monitoring will be conducted to assess progress toward the success criteria and identify and/or implement remedial or adaptive management measures. First year monitoring will occur at least one full year after the initial planting. The final monitoring in year five will assess whether the success criteria have been met.

Performance and Success Criteria

- Performance Criteria
  - Year 1: At least 90% of installed and/or volunteer native plants will be alive in monitoring year 1.
  - Year 3: At least 80% of installed and/or volunteer native plants will be alive in monitoring year 3.

- Success Criterion
  - Year 5: At least 70% of installed and/or volunteer native plants will be alive in monitoring year 5.

Remedial Actions and Adaptive Management

If performance/success criteria are not met, the Revegetation Specialist, Biologist, and/or Landscape Architect will assess potential reasons for criteria not being met and develop adaptive management strategies to correct issues. If success criterion is not met in year 5, Caltrans will coordinate with the permitting agencies to discuss the success criterion issues and develop a plan to resolve the issues. All remedial or adaptive management measures will be documented in the annual monitoring reports.

Reporting

Revegetation monitoring reports for years 1, 3 and 5 will be submitted to the California North Coast Regional Water Quality Control Board, CDFW, the Coastal Commission, and State Parks by the end of January following first-year monitoring. The monitoring results will be summarized in a report that will include site photos and will be sent to the appropriate reviewing agencies. The fifth and final report will document whether the success criterion was met and if remedial actions are needed or if revegetation is considered complete.

References

Hickman, J.C. 1993. *The Jepson Manual: Higher Plants of California.* University of California Press. Berkeley, CA.

Sawyer, J.O., T. Keeler-Wolf, J.M. Evens. 2009. Manual of California Vegetation. Second Edition. California Plant Native Society Press, Sacramento, CA.

Table 2: Planting Palette for Big Lagoon Walls, EA 01-0B430.

Stratum	Scientific Name / Common Name	Quantity	Planting Density (Ft On-Center)	Comments
South Wall (Location 1; 0.05 acres)				
Woody	*Alnus rubra* red alder	**14**	**12**	Salvage Plant Material or Container Stock; Tree Pot or 1 Gallon
	Frangula purshiana cascara			
	Lonicera involucrata ssp. *ledebourii* twin berry			
	Rubus parviflorus thimbleberry			
	Sequoia sempervirens coast redwood			
Herb	*Heracleum lanatum* cow parsnip	**4**	**5**	Salvage Plant Material or Container Stock; 1 Gallon
	Polystichum munitum sword fern			
	Rubus ursinus California blackberry			
Middle and North Walls (Locations 2 & 3; 0.44 acres)				
Woody	*Abies grandis* grand fir	**127**	**12**	Salvage Plant Material or Container Stock; Tree Pot or 1 Gallon
	Alnus rubra red alder			
	Frangula purshiana cascara			
	Lonicera involucrata ssp. *ledebourii* twin berry			
	Morella californica wax myrtle			
	Picea sitchensis Sitka spruce			
	Ribes sanguineum var. *glutinosum* pink flowering currant			
	Rubus parviflorus thimbleberry			
	Sambucus racemosa var. *racemosa* red elderberry			
Herb	*Heracleum lanatum* cow parsnip		**5**	Salvage Plant Material or Container Stock; 1 Gallon
	Polystichum munitum sword fern			
	Rubus ursinus California blackberry			

Appendix

Figure 1. Project Location

Hum-101 Post Mile 111.4/111.6
Big Lagoon Retaining Walls
EA 0B4300

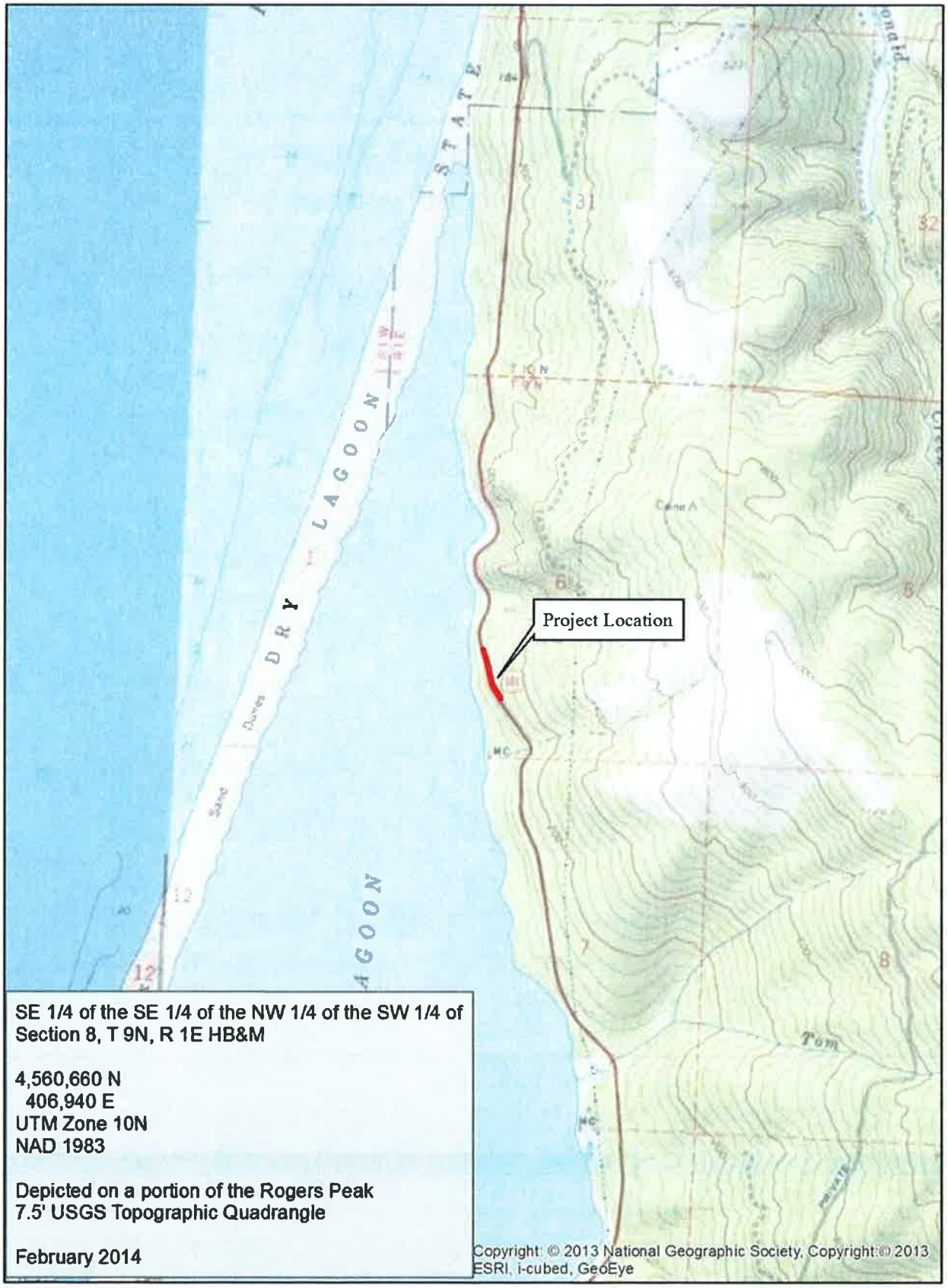


Figure 1

INDEX OF PLANS

Figure 2. Project Limits and Post Miles

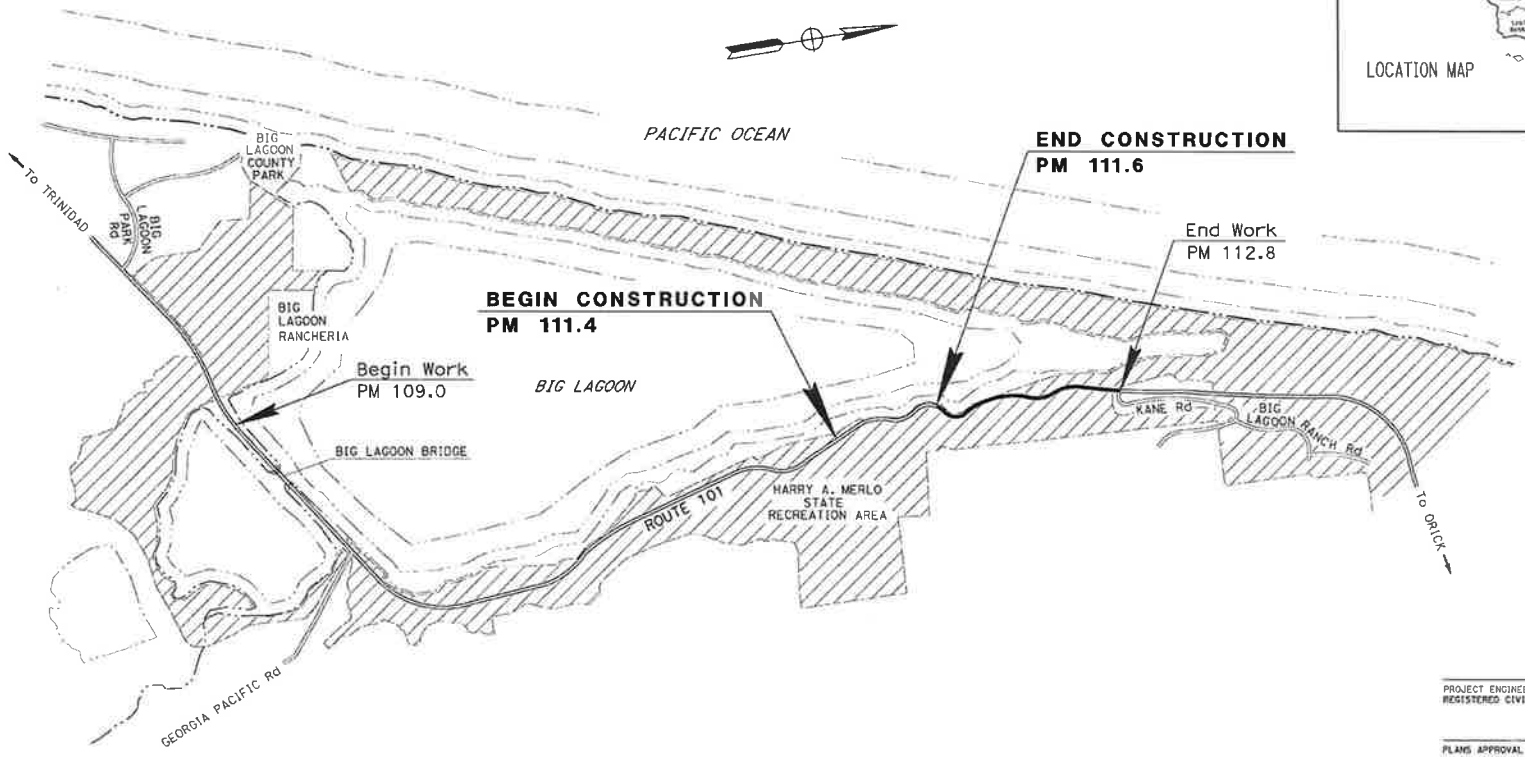
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.4 / 111.6		

THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

PROJECT PLANS FOR CONSTRUCTION ON STATE HIGHWAY IN HUMBOLDT COUNTY NEAR TRINIDAD FROM 2.2 MILES TO 2.4 MILES NORTH OF BIG LAGOON BRIDGE

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2010



NO SCALE

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER
D.M.EDWARDS No. C-51898 Exp. 6-30-14 CIVIL STATE OF CALIFORNIA

PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

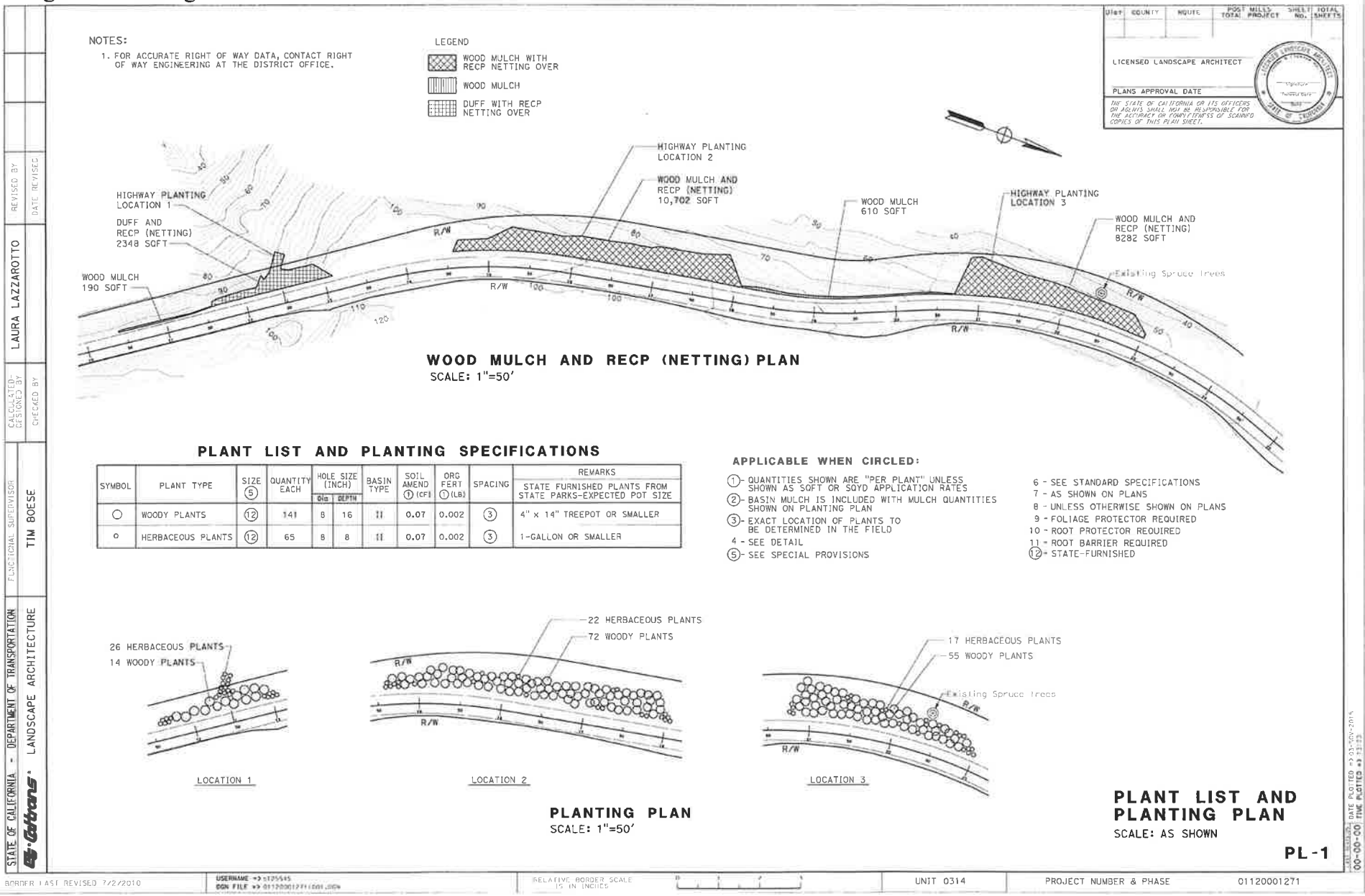
THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

CONTRACT No.	01-0B4304
PROJECT ID	0112000127

PROJECT ENGINEER: KELLY B. TIMMONS
PROJECT MANAGER: TALITHA JANE HODGSON
DATE PLOTTED => 04-SEP-2015
TIME PLOTTED => 14:42

BORDER LAST REVISED 7/27/2010 | CALTRANS WEB SITE IS: HTTP://WWW.DOT.CA.GOV/ | RELATIVE BORDER SCALE IS IN INCHES | USERNAME => s112382 DGN FILE => 0112000127ab001.dgn | UNIT 0312 | PROJECT NUMBER & PHASE 01120001271

Figure 3. Planting Plan



Updated Description of Project

The California Department of Transportation (Caltrans) proposes permanent restoration to SR 101 from PM 111.4 through PM 111.6 in Humboldt County. In March 2011, severe storm events resulted in three localized slope failures in the southbound lane and shoulder of SR 101. Two of the slope failures were observed at each end of an existing 200-foot long micropile buttress (steel micropiles, or mini piles (small diameter long steel rods or pipes), drilled and grouted into the ground to provide a deep, stable foundation) constructed in 2009; the third slipout location was further south of the existing micropile buttress, which resulted in the destabilization of the existing roadway. The project will reconstruct the southbound lane, the southbound shoulder and associated drainage elements. Three structures are proposed to restore and stabilize the project area: one timber lagging soldier pile ground anchor wall and two anchored pile systems. Temporary access roads will be constructed at each structure location. One-way traffic control with a temporary signal system will be used throughout construction of all three structures.

Structure 1 – Soldier Pile Ground Anchor Wall with Timber Lagging

Approximately two miles north of the intersection of SR 101 and LP Mill Road, a soldier pile ground anchor wall with timber laggings. The soldier pile is used to ensure stability; lagging between the soldier piles are installed to retain the earth between the soldier piles; and the ground anchors are used for horizontal stabilization. When installed, the wall will be 140 feet in length and approximately 25 feet in height. Work includes approximately 20 cast-in-drilled hole (CIDH) H-piles that will be placed at approximately 8.25 foot intervals. The timber lagging will be placed using top down construction. Additionally, a 15-foot wide temporary access road will be constructed along the face of the wall for horizontal drilling and other construction activities. The construction of the temporary access road entails removal of the first two feet of existing topsoil then excavation to an elevation a few feet below the placement of ground anchors. The top two feet of topsoil will be stored for later use in temporary roadway removal and restoration. Potentially, areas of the temporary access road may include placement of temporary, clean, graded, crushed gravel for drainage and sediment control purposes. Two walers (a horizontal timber or beam used to brace or support an upright member (soldier pile) along an excavation) will then be constructed utilizing the temporary access road. Approximately 25 ground anchors per waler will be placed with a horizontal drilling rig. The existing 24" welded steel pipe (WSP) culvert that will extend through the wall. The existing culvert will be cut off five-feet from the face of the wall and modified in a rock-lined channel. The proposed wall underdrain will connect with the new rock-lined channel, requiring that a two foot diameter alder tree be removed. The face of the wall will be backfilled. A see-through matte galvanized metal barrier (ST-10) with an attached bicycle rail will be placed at the top of the wall. The proposed barrier and attached tubular bicycle rail combination was selected to maximize view shed opportunities since the project limits are within the Harry Merlo State Recreation area and the Pacific Coast Bike Route. Upon completion of the wall, the temporary

use the shoulder. The northbound shoulder will not be widened due to concerns regarding environmentally sensitive habitat and species. The length of construction is expected to be two construction seasons. The Soldier Pile ground anchor wall will be constructed in year one; and the anchor pile systems will be constructed in year two or in combination such that there is minimal disruption to the traveling public. Upon completion of the anchor pile systems, the temporary access roads will be removed, regraded, and replanted with native vegetation to match adjacent conditions. These structures are expected to have a design life of 75 years.

Staging, Storage and Disposal

Two staging areas have been identified: one pullout is located approximately 0.8 miles south of Kane Ridge Road at PM 111.87 and another pullout approximately 0.67 miles south of Kane Ridge Road at PM 111.72.

Excess soil will be disposed of at a commercial disposal site.

Equipment fueling and temporary storage of waste materials (i.e. drill spoils) on site will be necessary, and will be performed in accordance with current regulations, Best Management Practices (BMPs), and an approved Storm Water Pollution Prevention Plan (SWPPP) will be required. Specific fueling and waste handling locations and procedures will be clearly identified in the SWPPP.

Traffic Control

Construction signs will be installed to warn the traveling public, as well as traffic control lights. During construction, temporary one-way reversible traffic control will be used. To heighten motorist awareness of cyclists traveling within the construction zone, "Share the Road" signs will be placed along the roadway and temporary traffic signal systems will be set so the cyclist's travel speed is the controlling factor when calibrating the timing.

Construction Schedule

The number of construction seasons is dependent on permitting restrictions. Currently, construction is estimated to take 290 working days, over two construction seasons. The anticipated order of work is the soldier pile ground anchor wall with timber lagging is expected to occur in season one and the two anchor pile systems are scheduled in season two. The construction schedule will accommodate special events and/or holiday schedules.

State of California Business, Transportation and Housing Agency

MEMORANDUM

To: Cassandra Pitts
Office of Environmental Management
Department of Transportation – North Region

Date: 31 July 2014

File: HUM 101
PM 111.4/111.6
Big Lagoon Wall

From: **DEPARTMENT OF TRANSPORTATION - North Region**
Division of Design and Engineering Services
Office of Engineering Services

Subject: Big Lagoon Wall – **Visual Impacts**

The following report has been prepared for the retaining wall project on Route 101 in Humboldt County.

Summary

The proposed project will have a low visual impact at the soldier pile wall and no visual impacts at the anchor pile walls.

Project Description

The project proposes to construct three separate retaining walls in order to stabilize the southbound lane, the southbound shoulder and associated drainage elements as well as limited widening at discrete sections of the northbound shoulder. Temporary access roads will be constructed at each structure location. One-way controlled traffic with a temporary signal system will be used throughout the construction of all three structures.

Soldier pile ground anchor wall with timber lagging

Down-slope to the west, a 140 foot long timber lagging soldier pile tieback wall approximately 25 feet in height would be constructed from PM 111.42 to PM 111.45, 16 feet left of the road centerline. A see-through barrier with an attached bicycle rail will be placed at the top of the wall. Additionally, a 15 foot wide temporary access road will be constructed along the face of the wall for horizontal drilling and other construction activities. One or two walers will be constructed. The existing 18" diameter Corrugated Steel Pipe (CSP) culvert at PM 111.42 will be reconstructed. The existing 24" Welded Steel Pipe (WSP) culvert will intersect the proposed wall and will be protected in place. The face of the wall may be backfilled to a minimum of 2 feet. An existing culvert that separated during the storm event will be replaced and will extend through the wall. The proposed wall underdrain will connect with the new culvert, requiring that a 2' diameter alder tree be removed.

Anchor pile systems

The second and third proposed structures are two anchored pile systems that will be installed both to the south and to the north of the existing micropile buttress. There is an

approximate 50 foot gap between the proposed anchor pile system and the existing micropile buttress at each end. The anchor pile system that is proposed south of the existing micropile buttress is approximately 320' long. The anchor pile system that is proposed to the north of the existing micropile buttress is approximately 205' long. An access road 15 feet wide will be constructed below each of the anchored pile systems for construction access. The proposed anchor pile systems require minimal excavation. The anchor pile system is buried below finished grade.

Other work includes re-establishing the shoulder at all three structures, replacing the structural section at all three locations, placing crash attenuators at the ends of the soldier pile ground anchor wall, striping and a final full width pavement overlay between the temporary signal systems due to wear and tear of mobilizing construction equipment in and out of the work zone. The length of construction is expected to be two construction seasons. Anticipated order of work is that the soldier pile ground anchor wall will be constructed in year one and the anchor pile systems will be constructed in year two.

Project Setting

The project area is located in the Coast Range along the Northwestern Humboldt County coast. Redwood National Park surrounds the site to the north and east and the town of Trinidad is approximately 10 miles to the south. The Pacific Ocean is the dominant feature to the west. The main landowners surrounding the project area include the National Park Service, California State Parks and Recreation and private landholders. Travelers along this section of Route 101 enjoy spectacular scenery as they wind their way through redwood forests, riparian woodlands, and coastal bluffs. There are occasional views of Big Lagoon and the Pacific Ocean where the canopy opens and the views of the surrounding area open near the northern end of the project area as the road skirts the edge of the coastal bluffs.

Dominant vegetation species in redwood forests include redwood, Douglas fir, Sitka spruce, madrone, tan oak, red alder, big leaf maple, California laurel, California huckleberry, Pacific red elderberry, creek dogwood, salal and sword fern. Common species in the riparian woodlands include red alder, vine maple, grand fir, Sitka spruce black cottonwood, Douglas fir, Hooker willow, Arroyo willow, redwood and chain fern.

The local climate is greatly influenced by the nearby Pacific Ocean. Temperature variations between the seasons have a 20-degree range. Winters are often rainy with highs in the 50's F during the day and the upper 30's F at night. Summers are mostly overcast or foggy with temperatures in the 60's and low 70's during the day the upper 40's at night. The area receives an average of 67.6 inches of rainfall a year which mostly occurs between the months of October and May.

The Visual Environment

The visual environment of Route 101 between McKinleyville and Crescent City is of high scenic quality. The route passes through portions of Redwood National Park and Redwood State Park providing spectacular views of old growth redwood, riparian

woodlands and the Pacific Ocean. The towns of Orick and Klamath are located along Route 101 and provide travel and tourist services for passing motorists. The highway alternates between four lane freeway and two-lane highway depending on the local topography and proximity to stands of old growth redwoods.

Within the project area, the vegetation coverage is mostly redwood forest on steep slopes. Northbound, Big Lagoon and the Pacific Ocean are partially visible west of the existing alignment. At the north end of the project limits, the travelling public is treated to wide views of Big Lagoon, the coastline, and the Pacific Ocean. Southbound entering the project area, the highway curves east to go around Big Lagoon. The landscape changes from views of the Pacific Ocean to redwood forest with views of Big Lagoon through the trees.

Scenic Resources

Although Route 101 in Humboldt County has not been officially designated as a state scenic highway it is 'Eligible' for scenic highway status. The project area is located in Humboldt Lagoons State Park, which encompasses Big Lagoon, Dry Lagoon and Stone Lagoon. Other nearby parks include Patrick Point State Park, Redwood National Park and Prairie Creek Redwoods State Park as well as several other state parks in Del Norte County all of which protect not only the redwoods but the surrounding natural scenic resources for the enjoyment of the visiting public.

Temporary Impacts

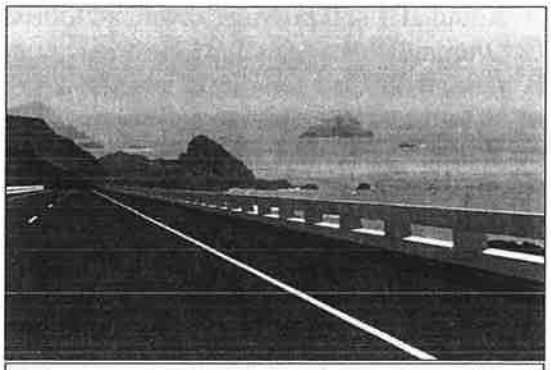
Temporary impacts created during project construction will include areas used for staging of equipment and materials. Passing vehicles will observe the storage of heavy equipment and other materials required in the construction. These temporary visual impacts are part of the general construction landscape and do not require mitigation. Lane closure devices including cones and changeable message signage will be used to direct motorists through the construction site. Although the closure devices will not blend into the surrounding landscape, they are required for traffic safety and will not create adverse visual impacts.

Potential Impacts

This project has one build alternative which proposes to construct three retaining walls down-slope of the highway. Northbound, the first wall is a soldier pile tie back wall. This wall is on a short straight section of road and will require a barrier rail with a bicycle railing on top. Views to the east include lush conifer forest with herbaceous plants in the foreground. To the west, riparian and coniferous forest are visible in the foreground, Big Lagoon and the Pacific Ocean are visible in the middle and background. Quality of the views towards the west will depend on the level of transparency of the bridge railing selected.

The two options for barrier rail design are the ST-10 and Type-80. These barrier types provide for optimal visibility of the surrounding landscape compared to the style of bridge railings used on highway projects in the past 10 or 20 years. The following analysis compares these two barrier rails that provide 'see through' opportunities approved for use on the California Highway System.

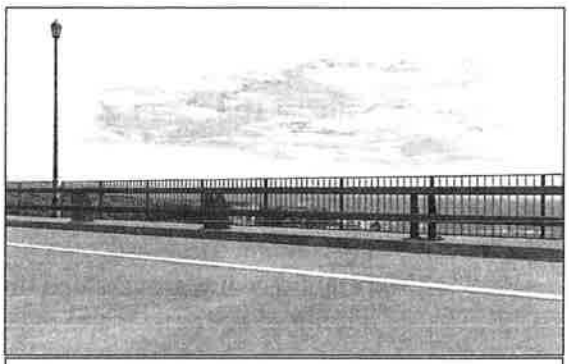
The Type-80 is 31.8 inches high with an 11.8 inch horizontal concrete rail and a 9 inch high concrete curb. The 15 inch thick posts are concrete and spaced at 10 feet on center and there is an 11 inch window between the railing and the curb-like foundation. When viewed from the highway, Type-80 has 35% window area and 65% solid surface. The Type-80 barrier rail is made of concrete and has the potential to weather with age which would be attractive in this forested area which is mottled with sunlight. A bicycle railing will be attached to the top horizontal rail which is a requirement on designated bicycle routes.



TYPE 80 BRIDGE RAILING

The ST-10 is 32.6 inches high with two 4 inch high horizontal steel rails and a six inch high concrete foundation. The steel posts are spaced at 10 feet on center and there is a 18.7 inch window between the posts, rail and foundation. When viewed from the highway, the ST-10 has 57% window area and 43% solid surface.

The ST-10 can either be galvanized steel in color or painted. In this natural setting, the barrier rail will be a man-made element in the landscape. The see-through design, coupled with it's short length and straight profile all contribute to the barrier rail having a low visual impact.



ST-10 BRIDGE RAILING with fence

The soldier pile wall will be 25' feet tall. The face of the wall will not be visible from the roadway. The potential for the wall to be seen from Big Lagoon is very slight. Boaters are not likely to be in a position to see the wall. The Lagoon is at a much lower elevation and many conifer trees grow between the Lagoon and the highway. Both the distance of the Lagoon, vertically and horizontally, and trees being the dominant view eastwards contribute to the proposed wall not being visible from the Lagoon.

In order to further stabilize the roadway, walls need to be constructed to the north and south of the existing micropile buttress. The southern retaining system begins approximately 160 feet north of the soldier pile wall. The proposed wall is 320 feet long and the northern wall is 205 feet long. The existing micropile buttress does not have a barrier rail and the two new anchor pile walls will not require a barrier rail either. The two anchor pile walls will be buried below finished grade and will not be visible. The temporary access roads will be regraded to existing conditions and the area will be hydroseeded and native plants will be planted. There will not be any visual impacts at this location.

Recommendations

Current design recommendations include:

- California State Parks and Recreation should approve all revegetation and plant lists. Plant sources should be from local sources.
- If the ST-10 barrier rail is selected, Landscape Architecture recommends painting the barrier and bicycle railings forest green.

Laura Lazzarotto
Landscape Architect RLA #4045
Caltrans District 1

ATTACHMENT 4
REFERRAL AGENCY COMMENTS AND RECOMMENDATIONS

The project was referred to the following referral agencies for review and comment. Those agencies that provided written comments are checked off.

Referral Agency	Response	Recommendation	Attached	On File
County Building Inspection Division	✓	Approval		✓
County Department of Public Works	✓	Conditional Approval		✓
California Coastal Commission				✓
California Department of Fish and Wildlife				
Big Lagoon Design Review Committee				
State Parks				
County Division of Environmental Health	✓	Approval		✓
Calfire	✓	Comments		✓
Yurok Tribe	✓	Approval		✓

ATTACHMENT 5

APPLICANT'S APPROVED INITIAL STUDY-MITIGATED NEGATIVE DECLARATION AND ADDENDUM

Big Lagoon Slipout Repair

"Big Lagoon Walls"

STATE ROUTE 101 IN HUMBOLDT COUNTY
01-HUM-101 - PM 111.4/111.6
EA 0B430 / EFIS 0112000127

Initial Study
with Mitigated Negative Declaration

Prepared by the
State of California Department of Transportation

August 2014

Caltrans

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: Adele Pommerenck, Branch Chief, 703 B Street, Marysville, CA 95901; (530) 741-4215 Voice, or use the California Relay Service TTY number, 1-800-735-2929.

SCH#
01-HUM-101-PM 111.4/111.6
EA: 0B430 / EFIS: 01 1200 0127

Big Lagoon Slipout Repair
"Big Lagoon Wall"

Initial Study with Proposed Mitigated Negative Declaration

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

THE STATE OF CALIFORNIA
Department of Transportation

Sandra Rosas, Office Chief
North Region Environmental Services, North (Eureka)
California Department of Transportation

8/29/2014
Date of Approval

SCH No. 2014092019
01-HUM-101-PM111.4-111.6
EA 01-0B430/EFIS 0112000127

MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans), proposes permanent restoration of State Route 101 in Humboldt County in the Big Lagoon area from postmile (PM) 111.4 through PM 111.6. The project will reconstruct the southbound lane, the southbound shoulder and associated drainage elements. Three structures will restore and stabilize the project area: one timber lagging soldier pile ground anchor wall and two anchored pile systems. Temporary access roads will be constructed at each structure location. One-way controlled traffic with a temporary signal system will be used throughout the construction of all three structures.

Determination

An Initial Study has been prepared by Caltrans. On the basis of this study it is determined that the proposed action, with the incorporation of the identified avoidance and minimization measures, would not have a significant effect on the environment for the following reasons:

- The project would have no effect on aesthetics, agriculture/forest resources, air quality, cultural resources, geology/soils, hazards/hazardous materials, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation/traffic, and utilities/service systems.

- The project would have a less than significant effects with mitigation to biological resources and hydrology/water quality. Impacts would be offset through implementation of avoidance, minimization and mitigation measures and best management practices as well as compliance with permit requirements.

Sandra Rosas, Office Chief
North Region Environmental Services, North
California Department of Transportation

11/26/2014
Date

Section 1 – Project

Project Title

Big Lagoon Slipout Repair "Big Lagoon Walls" Project

Lead Agency & Project Sponsor's Name, Address and Contact Person

California Department of Transportation
Attn: Adele Pommerenck
703 B Street
Marysville, CA 95901

Project Location

The project is located on State Route (SR) 101, in Humboldt County in the Big Lagoon area, approximately 0.25 miles south from the intersection of SR 101 and Kane Ridge Road and continuing south for approximately 1,031 feet.

Purpose and Need

The purpose of this project is to provide permanent restoration to three localized slope failure areas on SR 101 in Humboldt County. The project is needed to restore and stabilize the area to prevent future roadway failures from occurring after storm events.

Description of Project

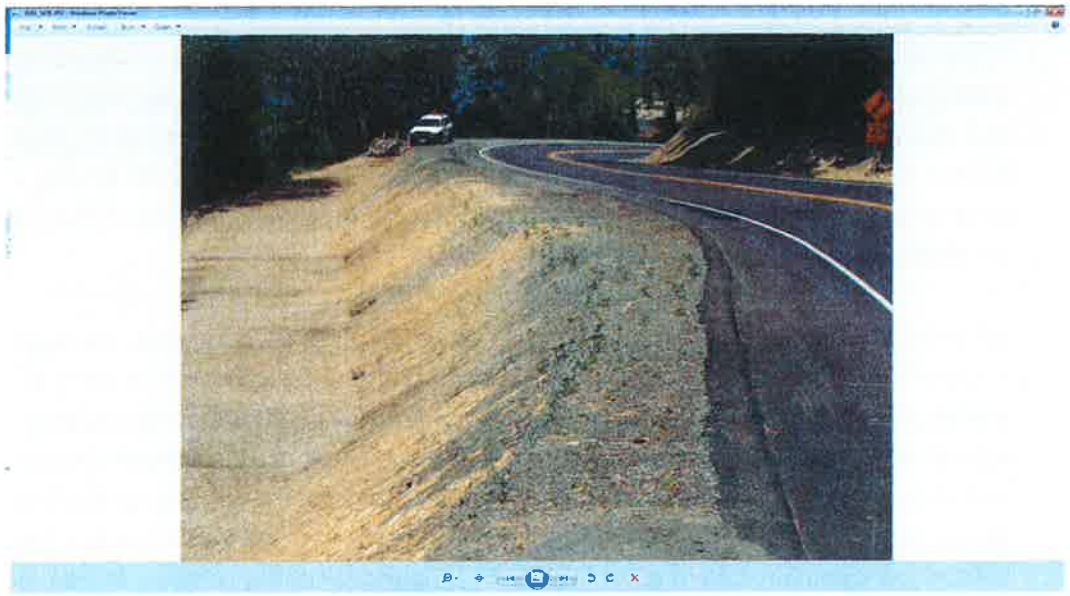
The California Department of Transportation (Caltrans) proposes permanent restoration to SR 101 from PM 111.4 through PM 111.6 in Humboldt County. In March 2011, severe storm events resulted in three localized slope failures in the southbound lane and shoulder of SR 101. Two of the slope failures were observed at each end of an existing 200-foot long micropile buttress (steel micropiles, or mini piles (small diameter long steel rods or pipes), drilled and grouted into the ground to provide a deep, stable foundation) constructed in 2009; the third slipout location was further south of the existing micropile buttress, which resulted in the destabilization of the existing roadway. The project will reconstruct the southbound lane, the southbound shoulder and associated drainage elements. Three structures are proposed to restore and stabilize the project area: one timber lagging soldier pile ground anchor wall and two anchored pile systems. Temporary access roads will be constructed at each structure location. One-way traffic control with a temporary signal system will be used throughout construction of all three structures.

Similar soldier pile retaining wall post construction.

Structure 1 – Soldier Pile Ground Anchor Wall with Timber Lagging

Approximately two miles north of the intersection of SR 101 and LP Mill Road, a soldier pile ground anchor wall with timber laggings. The soldier pile is used to ensure stability; lagging between the soldier piles are installed to retain the earth between the soldier piles; and the ground anchors are used for horizontal stabilization. When installed, the wall will be 140 feet in length and approximately 25 feet in height. Work includes approximately 20 cast-in-drilled hole (CIDH) H-piles that will be placed at approximately 8.25 foot intervals. The timber lagging will be placed using top down construction. Additionally, a 15-foot wide temporary access road will be constructed along the face of the wall for horizontal drilling and other construction activities. The construction of the temporary access road entails removal of the first two feet of existing topsoil then excavation to an elevation a few feet below the placement of ground anchors. The top two feet of topsoil will be stored for later use in temporary roadway removal and restoration. Potentially, areas of the temporary access road may include placement of temporary, clean, graded, crushed gravel for drainage and sediment control purposes. One or two walers (a horizontal timber or beam used to brace or support an upright member (soldier pile) along an excavation) will then be constructed utilizing the temporary access road. Approximately 20 ground anchors per waler will be placed with a horizontal drilling rig. The existing drainage system at PM 111.42 includes an 18"-diameter corrugated steel pipe (CSP) culvert that will be reconstructed. The existing 24" welded steel pipe (WSP) culvert that will intersect the proposed wall and will be protected in place and will extend through the wall. The proposed wall underdrain will connect with the new culvert, requiring that a two foot diameter alder tree be removed. The face of the wall will be backfilled. A see-through matte galvanized metal barrier

(ST-10) with an attached bicycle rail will be placed at the top of the wall. The proposed barrier and attached tubular bicycle rail combination was selected to maximize view shed opportunities since the project limits are within the Harry Merlo State Recreation area and the Pacific Coast Bike Route. Upon completion of the wall, the temporary access road will be removed and backfilled; the reserved topsoil will be placed and regraded; and the area replanted with native vegetation.



Picture of an existing micropile buttress, the anchor pile systems will look similar after construction.

Structures 2 and 3 – Anchored Pile Systems

Approximately 2.08 miles north of the intersection of SR 101 and LP Mill Road, two proposed anchored pile systems will be installed to the south and to the north of the existing micropile buttress. There is an approximate 50-foot gap between the proposed anchor pile system and the existing micropile buttress at each end. A 15-foot wide temporary access road will be constructed below each of the anchored pile systems for construction access. The proposed anchor pile systems will require minimal excavation. The construction of the temporary access road entails removing the first two feet of existing topsoil, then excavating to the elevation where the anchor pile cap will be constructed. Potentially, areas of the temporary access road may include placement of temporary, clean, graded, crushed gravel for drainage and sediment control purposes. Each anchor pile system will have cast-in-drilled hole (CIDH) W-piles placed at five foot intervals. Ground anchors will be horizontally drilled at an angle 15 to 20 degrees from a horizontal plane into the soil. A reinforced concrete beam that will encase both the ground anchor and the exposed W-piles will be placed along the entire length of the anchor pile system and will be buried under minimal backfill.

The anchor pile system that is proposed south of the existing micropile buttress is approximately 320 feet long; has an angle point located at approximately 100 feet into the horizontal layout resulting in a slight flare along the wall toward the lagoon; and will be offset approximately 28 feet left of the centerline at the south end of the wall, transitioning to 36 feet left of the road centerline at the anchor pile system terminus. Approximately 65 CIDH piles will be installed for this anchor pile system.

The anchor pile system that is proposed to the north of the existing micropile buttress is approximately 205 feet long; will have an inflection point located at approximately 95 feet into the horizontal layout resulting in a slight flare; and will be offset approximately 33 feet left of the centerline at the south end of the wall transitioning to 29 feet left of the road centerline at the anchor pile system terminus. Approximately 40 CIDH piles for the southern anchor pile system will be installed.

Other work includes re-establishing the shoulder at all three structures, replacing the structural section at all three locations, placing crash attenuators at the ends of the soldier pile ground anchor wall, striping, and a final full width pavement overlay between the temporary signal systems due to wear and tear of mobilizing construction equipment in and out of the work zone. Caltrans is required to meet FHWA Safety standards where possible. For this project, the southbound shoulder will vary from four feet at the soldier pile retaining wall to eight feet for the remainder of the project. Increased shoulder widths have increased safety benefits since it provides additional recovery for errant vehicles and wider travel area for cyclists that choose to use the shoulder. The northbound shoulder will not be widened due to concerns regarding environmentally sensitive habitat and species. The length of construction is expected to be two construction seasons. The Soldier Pile ground anchor wall will be constructed in year one; and the anchor pile systems will be constructed in year two or in combination such that there is minimal disruption to the traveling public. Upon completion of the anchor pile systems, the temporary access roads will be removed, regraded, and replanted with native vegetation to match adjacent conditions. These structures are expected to have a design life of 75 years.

Staging, Storage and Disposal

Two staging areas have been identified: one pullout is located approximately 0.8 miles south of Kane Ridge Road at PM 111.87 and another pullout approximately 0.67 miles south of Kane Ridge Road at PM 111.72.

Excess soil will be disposed of at a commercial disposal site.

Equipment fueling and temporary storage of waste materials (i.e. drill spoils) on site will be necessary, and will be performed in accordance with current regulations, Best Management Practices (BMPs), and an approved Storm Water Pollution Prevention

Plan (SWPPP) will be required. Specific fueling and waste handling locations and procedures will be clearly identified in the SWPPP.

Traffic Control

Construction signs will be installed to warn the traveling public; as well as, stop signs and traffic control lights. During construction, temporary one-way reversible traffic control will be used during work hours. To heighten motorist awareness of cyclists traveling within the construction zone, "Share the Road" signs will be placed along the roadway and temporary traffic signal systems will be set so the cyclist's travel speed is the controlling factor when calibrating the timing.

Construction Schedule

The number of construction seasons is dependent on permitting restrictions. Currently, construction is estimated to take 225 working days, over two construction seasons. The anticipated order of work is the soldier pile ground anchor wall with timber lagging is expected to occur in season one and the two anchor pile systems are scheduled in season two. The construction schedule will accommodate special events and/or holiday schedules.

Surrounding Land Uses and Settings

Existing land use within the project vicinity is Coastal Commercial Timberland. The surrounding areas are both state and state park land. There are a few rural residential parcels adjacent to the state park land approximately 0.25 miles from the project limits on SR 101. No alteration to present or planned land use would occur as a result of the proposed project.

According to the North Coast Area Plan of the Humboldt County Local Coastal Program the land use is designated to protect productive timberlands for long-term production of merchantable timber.

Permits and Approvals Needed

The following environmental permits and approvals are required for this project:

- Federal Endangered Species Act Section 7 Consultation, U.S. Fish and Wildlife Service
- 401 Water Quality Certification, North Coast Regional Water Quality Control Board
- Non-Reporting 404 Permit, United States Army Corps of Engineers
- 1602 Streambed Alteration Agreement, California Department of Fish and Wildlife
- Humboldt County Local Coastal Development Permit

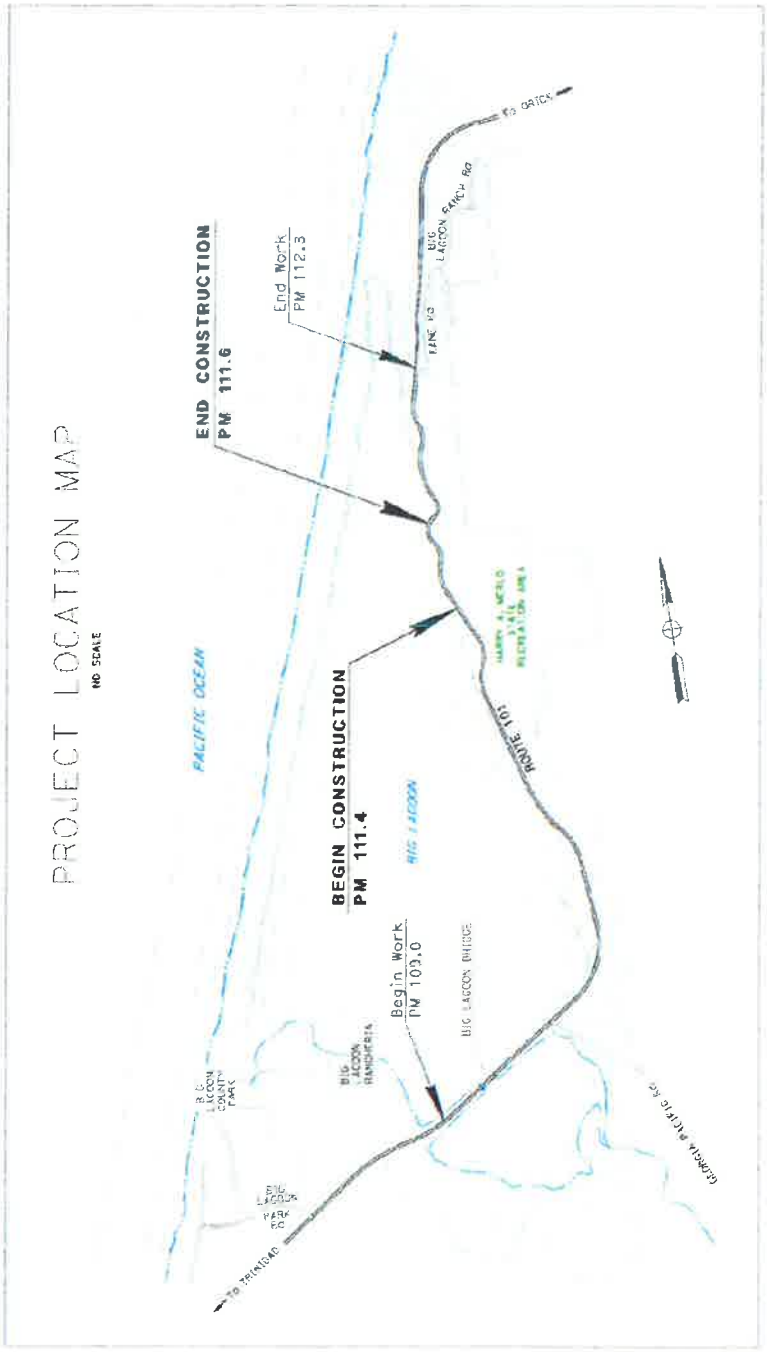
Zoning

The project area is zoned as "Public Recreation" under the Humboldt County General Plan and the North Coast Area Plan of the Humboldt County Local Coastal Program.

VICINITY MAP

PROJECT LOCATION
HUM-101-PM 111.4/111.6

No Scale


PROJECT LOCATION MAP
NO SCALE
END CONSTRUCTION
PM 111.6
End Work
PM 112.3
BEGIN CONSTRUCTION
PM 111.4
Begin Work
PM 109.0
PACIFIC OCEAN
BIG LAGOON
ROUTE 101
BIG LAGOON BRIDGE
BIG LAGOON RANCH RD
TO ORICK
TO TRINIDAD
CLIMATIC BLUFFS SP

Section 2 – Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project. Please see the CEQA checklist for additional information. Any boxes not checked represent issues that were considered as part of the scoping and environmental analysis for the project, but for which no significant impacts were identified. Therefore, no further discussion of these issues is in this document.

☐	Aesthetics	☐	Agriculture and Forestry	☐	Air Quality
☒	Biological Resources	☐	Cultural Resources	☐	Geology/Soils
☐	Greenhouse Gas Emissions	☐	Hazards and Hazardous Materials	☒	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☐	Noise
☐	Paleontology	☐	Population/Housing	☐	Public Services
☐	Recreation	☐	Transportation/Traffic	☐	Utilities/Service Systems
☐	Mandatory Findings of Significance				

Section 3 – CEQA Checklist

01-HUM-101	111.4/111.6	01-0B430
Dist.-Co.-Rte.	P.M/P.M.	E.A.

This checklist identifies physical, biological, social and economic factors that might be affected by the project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself. The words "significant" and "significance" used throughout the following checklist are related to CEQA impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the information provided in the Visual Impact Assessment dated July 31, 2014.

II. AGRICULTURE AND FOREST RESOURCES 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?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Explanation: The project is located within California State Parks' boundaries; however, based on the scope, description, and location of the project a "no Impact" determination is made in this section.

III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	☐	☐	☐	☒
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
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 which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the Air Quality Assessment Report dated January 22, 2014.

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 U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife 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?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Explanation: "No Impact" determinations and "Less Than Significant with Mitigation" determinations in this section are based on information provided in the Natural Environment Study (NES) dated August, 2014, and further discussion begins on page 19.

V. CULTURAL RESOURCES: Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the Cultural Resources Report dated March 24, 2014.

VI. GEOLOGY AND SOILS: Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
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?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the scope, description, and location of the project.

VII. GREENHOUSE GAS EMISSIONS: Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is Caltrans determination that in the absence of further regulatory or scientific information related to GHG emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to implementing measures to help reduce the potential effects of the project. Further discussion begins on page 61.

VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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 project area?	☐	☐	☐	☒
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?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the Information contained in the Initial Site Assessment prepared In February 28, 2013.

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) 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 which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
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?	☐	☐	☐	☒
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 which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
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?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒

Explanation: "No Impact" determinations and "Less Than Significant Impact" determinations in this section are based on information provided in the Water Quality Assessment Report dated July 2014 and the Flood Plain Evaluation Report Summary dated July 10, 2013.

X. LAND USE AND PLANNING: Would the project:

a) Physically divide an established community?	☐	☐	☐	☒
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?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the scope, description, and location of the project.

XI. 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the scope, description and, location of the project.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XII. 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?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
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?	☐	☐	☐	☒
) 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?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the information provided in the Noise Assessment Report dated January 22, 2014.

XIII. 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)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the scope, description, and location of the project.

XIV. PUBLIC SERVICES:				
a) 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?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the scope, description, and location of the project.

XV. 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?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the scope, description, and location of the project.

XVI. TRANSPORTATION/TRAFFIC: Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
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?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the scope, description, and location of the project.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or 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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which 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?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Explanation: "No Impact" determinations in this section are based on the scope, description, and location of the project.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

a) 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, substantially 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?	☐	☒	☐	☐
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)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Section 4 – Affected Environment, Environmental Consequences, and Mitigation Measures

Biological Resources

NATURAL COMMUNITIES

This section of the document 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 and [Wetlands and Other Waters] are also discussed below.

Coastal "Environmentally Sensitive Habitat Areas" (ESHAs)
The Humboldt Bay Local Coastal Development Program (LCP) defines an ESHA as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which could be easily disturbed or degraded by human activities and developments" (Coastal Act Section 30107.5).

These include:

- Rare and Endangered Species habitat
- Coastal wetlands and lagoons

Several of these areas exist within the project's Biological Study Area (BSA) including; listed species habitat, coastal wetlands, riparian habitat, Natural Communities of Special Concern (NCSC), and Big Lagoon. Potential impacts to these resources are discussed below.

Redwood Forest
Affected Environment

The Sequoia sempervirens Forest Alliance (Redwood Forest) present within the study area is dominated by redwoods (*Sequoia sempervirens*) with other trees present in the canopy including grand fir (*Abies grandis*), Sitka spruce (*Picea sitchensis*) and Cascara (*Frangula purshiana*). A thick stratum of shrubs including evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), red elderberry (*Sambucus racemosa*),

thimbleberry (Rubus parviflorus),and Salmonberry(*Rubus spectabilis*) is present in the understory with ferns and herbaceous flowering plants including lady fern (*Athyrium filix-femina*), sword fern (*Polystichum munitum*), wild ginger (*Asarum caudata*) candy flower (*Claytonia sibrica*) and California vanilla grass (*Anthozanthum occidentale*). Redwood forest is ranked as G3 S3 and is considered a Natural Community of Special Concern (CDFG2010). CDFW's natural community rarity rankings follow NatureServe's 2009 NatureServe Conservation Status Assessment: Methodology for Assigning Ranks, in which all alliances are listed with a global (G) and state(S) rank. Natural Communities of Special Concern are those natural communities that are ranked S1 to S3 (CDFG 2010), where 1 is critically imperiled, 2 imperiled, and 3 vulnerable.

Environmental Consequences

Impact criteria define the level of direct and indirect impacts on Natural Communities. The purpose of the establishing criteria is to help determine when an impact is significant under CEQA.

Does the project result in:

- Substantial loss of common natural communities that provide habitat for wildlife?
- Substantial reduction in habitat for fish, wildlife, or plants?
- Disruption of natural wildlife movement corridors?
- Fragmentation or isolation of wildlife habitats, especially riparian, oak woodland, and wetland habitats?
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Impacts to Redwood forest are expected to be minimal. No redwood trees will be adversely impacted, Potential impacts could occur due to colonization of newly disturbed areas by non-native species, however this will be minimized through revegetation efforts and proposed Avoidance and Minimization Measures to control/reduce the spread of non-native, invasive species.

Trees that will be removed in this area will include one 2 foot alder.

Root Impact Analysis

An evaluation was conducted to determine whether work (i.e. placement of fill or excavation) within a buffer of 5x the diameter at breast height (dbh) of mature trees would be required. Trees greater than 6 inches dbh were surveyed, and any mature trees with buffer zones that exist in proximity of the proposed repair work were mapped

(with their corresponding 5 x dbh buffers) to determine if further analysis of potential impacts would be required. It was determined that work would occur within these buffer areas for 2 trees greater than 24" in diameter; one mature alder which will require removal (discussed above) and an 8-foot dbh redwood near the south end of the proposed timber-lagged soldier pile wall, within the Redwood forest Natural Community. Work will occur in both the Root Health Zone (5xdbh) and the Structural Root Zone (3xdbh) of the redwood. Impacts to roots resulting from the project consist of excavation of approximately 6% of the tree's Root Health Zone (RHZ) to construct the wall and for installation of the end treatment/crash cushion at the end of the wall. Installation of the crash cushion will also occur within approximately 5% of the Structural Root Zone (SRZ). Excavation for the crash cushion will only require excavation to a depth of approximately 8 inches. After an assessment of the trees existing heath and the potential impacts to tree roots it was determined that the work would not result in a considerable impact to the health of the tree.

Avoidance, Minimization, and/or Mitigation Measures

- The roadway will not be upgraded to standard shoulders in any areas where trees or their roots (within the RHZ) would be impacted.
- The access road for the timber-lagged soldier pile wall will be one way only, to avoid impacts to tree roots of an old growth redwood.
- A biological monitor will be onsite during excavation within the Structural Root Zone; if any roots greater than 2 inches in diameter are encountered an air spade must be used.
- Measures to avoid the introduction and spread of invasive species will be employed.
- Invasive species within the project area including, but not limited to; scotch broom (*Cytisus scoparius*), jubata grass (*Cortaderia jubata*), fennel (*Foeniculum vulgare*), Himalayan blackberry (*Rubus armeniacus*) and Spanish heather within the project limits will be removed, contained and disposed of properly.
- All temporarily disturbed areas will be restored and revegetated with appropriate native species upon project completion.

With the incorporation of these minimization measures there will be a less than significant impact to the Redwood Forest.

Sitka Spruce Forest

Affected Environment

The *Picea sitchensis* Forest Alliance (Sitka spruce Forest), present within the study area is dominated by Sitka spruce and grand fir with other trees including red alder (*Alnus rubra)* and coast redwood. The understory is dominated by shrubs, ferns and herbaceous vegetation including evergreen huckleberry, twinberry honeysuckle (*Lonicera involucrata),* coast silk tassel *(Garrya eliptica),* California blackberry *(Rubus*

ursinus), Thimbleberry, oceanspray (*Holodiscus discolor*) wild cucumber (*Marah fabaceus*), sword fern, bracken fern *(Pteridium aquilinum),* and false lily-of the-valley *(Myanthemum dilatatum).* Sitka Spruce Forest is ranked *G5S2* and is considered a NCSC (CDFG2010).

Environmental Consequences

Impacts to Grand fir-Sitka spruce forest are expected to be minimal. No mature Sitka spruce or grand fir trees will be impacted; three 12-18-inch dbh red alders will require removal in this area. The majority of the ground disturbance will occur in previously disturbed areas and/or areas close to the highway.

Avoidance, Minimization, and/or Mitigation Measures

- The roadway will not be upgraded to standard shoulders in any areas where trees associated with a NCSC would be impacted.
- Invasive species within the project area including, but not limited to; scotch broom *(Cytisus scoparius)*, jubata grass *(Cortaderia jubata)*, fennel (*Foeniculum vulgare*), Himalayan blackberry (*Rubus armeniacus*) and Spanish heather within the project limits will be removed, contained, and disposed of properly.
- All temporarily disturbed areas will be restored and revegetated with appropriate native species upon project completion. Three 8-12 inch dbh red alder trees will be removed by the project and will be replaced onsite (see Table 1 "Impacts to Vegetation Communities and Trees in the Project Area").
- No work will occur within a buffer of 5x the diameter at breast height (dbh) of mature Sitka spruce, grand fir or redwood trees within this vegetation community area.

With the incorporation of these minimization measures there will be a less than significant impact.

Riparian

Affected Environment

A riparian area exists within the area required for access to construct the timber lagged soldier pile tieback wall. This riparian area is associated with the unnamed ephemeral drainage that flows through the culvert on the southbound side of the highway. This area is within the Redwood forest Alliance vegetation community and contains species consistent with that vegetation community.

Environmental Consequences

Impacts within the riparian area occur as the result of access necessary to construct the soldier pile tie back wall. These impacts include approximately 1747 square feet of ground disturbance, including the removal of the shrubs, saplings and herbs. One two-foot red alder (previously discussed) will require removal due to grading associated with

drainage installation. Impacts to the riparian area will be temporary, as the entire area will be restored and revegetated upon completion.

Avoidance, Minimization, and/or Mitigation Measures

- Measures to avoid the introduction and spread of invasive species will be employed.
- Invasive species within the project area including, but not limited to; scotch broom (Cytisus scoparius), jubata grass (Cortaderia jubata), fennel (Foeniculum vulgare), Himalayan blackberry (Rubus armeniacus) and Spanish heather within the project limits will be removed,, contained and disposed of properly.
- All temporarily disturbed areas will be restored and revegetated with appropriate native species upon project completion. One two-foot red alder tree will be removed by the project and will be replaced onsite (see Table 1 "Impacts to Vegetation Communities and Trees in the Project Area").
- Approximately 25 feet of new open channel will result from shortening the existing culvert to the wall face, this area will be restored and revegtated, increasing the riparian area of this ephemeral drainage.

With the incorporation of these minimization measures there will be a less than significant impact.

Ruderal/Revegetation Area

Affected Environment

These areas consist primarily of weedy herbaceous vegetation including: sweet vernal grass (*Anthozanthum odoratum)*, orchard grass *(Dactylis glomerata),* tall fescue *(Festuca arundinaceae)*, mouse-ear chickweed *(Cerastium arvense),* Queen Anne's lace *(Daucus carota),* rye grass*(Festuca perennis),* Ox-eyed daisy *(Leucanthemum vulgare),* white sweet clover *(Melilotus albus),* cranesbill *(Geranium dissectum),* Vetch *(Vicia sativa, V. hirsuta)* and English plantain *(Plantago lanceolata)*, This area also includes some invasive shrubs including scotch broom (*Cytisus scoparius*) Fennel (*Foeniculum vulgare)* and Himalayan blackberry(*Rubus armeniacus*).

Also included in this vegetation type, is an area that was disturbed by the 2009 emergency project. This area was planted with native species as part of restoration activities. This revetation area contains approximately 58 red alder saplings, 28 Sitka spruce saplings, 9 Douglas fir (*Psuedotsuga menziesii*) saplings and 27 salal.

Environmental Consequences

The project will result in approximately 0.49 acre impact to non-sensitive, ruderal areas consisting largely of weedy species and a previous Caltrans revegetaton site that consists of immature native trees and shrubs and weedy herbaceous species. The impacts to this area will be the result of construction of the anchor-pile systems, minor widening to restore shoulders and construction access. Impacts to these areas

(including the existing revegetation area) are expected to be temporal as they will be revegetated upon project completion, using locally sourced native species, if at all feasible.

Avoidance, Minimization, and/or Mitigation Measures

- Measures to avoid the introduction and spread of invasive species will be employed.
- Invasive species within the project area including, but not limited to; scotch broom *(Cytisus scoparius)*, jubata grass *(Cortaderia jubata)*, fennel (*Foeniculum vulgare*), Himalayan blackberry (*Rubus armeniacus*) and Spanish heather within the project limits will be removed,, contained and disposed of properly.
- All temporarily disturbed areas will be restored and revegetated with appropriate native species upon project completion.

With the incorporation of these minimization measures there will be a less than significant impact.

Table 1: Impacts to Vegetation Communities and Trees in the Project Area.

	Area		Trees		
	SF	**Acreage**	**#**	**species**	**Dbh**
Redwood Forest Alliance	6080	**0.13**	**1**	Alder	6-8 in
***Riparian**	1362	**0.03**	**1**	Alder	24 in
Sitka Spruce Forest Alliance	6,875	**0.16**	**3**	Alder	8-12 in
Ruderal/Revegetation Area	21,488	**0.49**			

*The area described as *Riparian* is within the *Redwood Forest Alliance* and contains species consistent with the Redwood forest vegetation alliance is specified as riparian because of its proximity to the seasonal drainage.

Harry A. Merlo State Recreational Area (SRA) Natural Preserves
Affected Environment

Harry A. Merlo SRA contains significant natural features, including approximately 193 acres of old-growth forest which was proposed for designation as Natural Preserves in the Humboldt Lagoon State Park and Harry A. Merlo SRA General Plan (California State Parks, 1986). Natural preserve designations receive the highest protection of California State Parks Lands and consist of "distinct areas of outstanding natural or scientific significance" These areas are established with the purpose "to preserve such features as rare or endangered plant and animal species and their supporting ecosystems, representative examples of plant or animal communities existing in California prior to the impact of civilization".

Three Natural Preserves have been proposed within Harry A. Merlo SRA these areas were proposed as natural preserves because they contain "the best known example of an unusual old-growth forest association of coast redwood, grand fir, and Sitka spruce."

The southern half of the project area is adjacent to and within Harry A Merlo SRA Natural Preserves.

Environmental Consequences

Potential impacts to Natural Preserves are expected to be similar to those of Natural Communities of Special Concern (discussed in Table 1 above). Impacts to Natural Preserves consist of disturbance to approximately 1215 square-foot area (0.0X acre) as a result of grading for wall drainage and the removal of a 24inch dbh red alder (as previously discussed). Impacts to these Natural Preserves are expected to be minor for the following reasons:

1. The project will not result in the removal of any of the old growth trees or species for which these preserves were designated; however, one mature alder will be removed); and

2. No significant widening, alignment shift or removal of forested areas within Caltrans ROW (which is adjacent to these Natural Preserves) that could further contribute to edge effects will occur as part of this project.

Potential impacts that could occur due to the possibility of colonization of newly disturbed areas by non-native species will be minimized through revegetation efforts and avoidance and minimization measures to control/reduce the spread of non-native, invasive species.

Avoidance, Minimization, and/or Mitigation Measures

- The roadway will not be upgraded to standard shoulders in any areas where trees or their roots (within the RHZ) would be impacted.
- The access road for the timber-lagged soldier pile wall will be one way only, to avoid impacts to tree roots of an old growth redwood adjacent to the Natural Preserve.
- A biological monitor will be onsite during excavation within the Structural Root Zone; if any roots greater than 2 inches in diameter are encountered an air spade must be used.
- Measures to avoid the introduction and spread of invasive species will be employed and any known invasive species within the project area (i.e. scotch broom [*Cytisus scoparius*], pampas/ jubata grass [*Cortaderia jubata* and Spanish heather [*Erica lutistanica*]) will be removed, contained and disposed of properly.
- All temporarily disturbed areas will be restored and revegetated with appropriate native species upon project completion. Three 6-8 inch dbh Alder trees will be

removed by the project and will be replaced in kind onsite (see Table 1 "Impacts to Vegetation Communities and Trees in the Project Area").

- The 24 inch dbh red alder that will require removal will be left in place or returned to its original general location: Cutting the trunk of this tree (in to smaller pieces) will be avoided.

With the incorporation of these minimization measures there will be a less than significant impact to the Natural Preserves.

WETLANDS AND OTHER WATERS OF THE UNITED STATES

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 United States Code [USC] 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. 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 CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot 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. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the United States Environmental Protection Agency (U.S. EPA).

The USACE issues two types of 404 permits: General and Standard permits. There are two types of General permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard permits. There are two types of Standard permits: Individual permits and Letters of Permission. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1)

Guidelines (U.S. EPA 40 Code of Federal Regulations [CFR] Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as the FHWA and/or Caltrans, as assigned, 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 project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the Regional Water Quality Control Boards (RWQCB) and the California Department of Fish and Wildlife (CDFW). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of the California 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 CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW 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 CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to waters of the U.S. This is most frequently required in tandem with a Section 404 permit request. Please see the Water Quality section for additional details.

Affected Environment

The wetland study area contained three jurisdictional Other Waters of the U.S.; a vegetated roadside ditch, a wetland area associated with the ditch and a seasonal

drainage that crosses SR 101 at the southern end of the project footprint. One single parameter wetland (Coastal) also exists within the project area. Three wetland or jurisdictional Other Waters of the U.S. features were observed during the wetland delineation survey and determined to be jurisdictional under sections 401 and 404 of the CWA. These features consisted of the following categories of jurisdictional features:

- Relatively Permanent Waters (RPWs)- waters that flow continuously at least seasonally (typically at least 3 months of the year) and are not navigable, but are tributaries to a Traditional Navigable Water [1].

- Non-RPWs- waters that do not have continuous flow at least seasonally but have a significant nexus to a Traditional Navigable Water.

- Wetlands- areas that are inundated or saturated with surface or ground water at a frequency and duration sufficient to support and typically do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands are considered jurisdictional under the CWA if they have three parameters (hydrophitic vegetation, hydric soils and hydrology) characteristic of these features and have a significant nexus to a Traditional Navigable Water.

Seasonal Drainage (RPW)
A seasonal drainage exists within the project footprint study *area* and is considered an RPW. This drainage begins on the east side of SR 101, flowing underneath the highway through a culvert at PM 111.43. The culvert outlets approximately 15 feet downslope of the highway then flows into Big Lagoon (approximately 300 feet away). This drainage typically has no flow for the majority of the dry season.

Drainage Ditch (Non-RPW)
A drainage ditch exists along the northbound shoulder of the highway within the project study area. The ditch begins to the south of the project limit and continues north to the culvert inlet/seasonal drainage at PM 111.43. The northern most portion of the ditch flows into the culvert at PM 111.43 and the southernmost portion of the ditch flows south into a culvert/unnamed drainage outside the project limits near PM 111.05. This ditch collects primarily roadside drainage; however, it has a significant nexus to Big Lagoon (a traditional navigable water), and is therefore jurisdictional.

USACE Wetland (Drainage Ditch)
A USACE jurisdictional wetland exists within the project study *area*, associated with the drainage ditch. The wetland vegetation is dominated by marsh baccharis (*Baccharis glutinosa*), Coltsfoot (*Petasites frigidus*) and creeping buttercup (*Ranuculus repens*).

Traditional Navigable Water include all waters subject to the ebb and flow of the tide, or waters that are presently used, have been used in the past, or may be used in the future to transport interstate or foreign commerce, and all waters that are navigable in fact under federal law for any purpose.[1]

The wetland is directly adjacent to the drainage ditch (Non-RPW) with a significant nexus to Big Lagoon (a traditional navigable water).

Coastal Wetland (1 Parameter)

A one parameter wetland exists within a compacted graveled pullout within the project footprint study area. This area is dominated with facultative wetland species such as coltsfoot, creeping buttercup, and velvet grass, which are very common in coastal environments. Only one obligate wetland species, hedge nettle (*Stachys ajugoides*) existed in a very small quantity (5% cover in the herb stratum). This area qualifies as a coastal wetland; however, it is not providing the functions and values a typical wetland would provide and it is not of high quality.

Table 2: Wetlands and Waters in the Project Area

	Present within Study Area	
	Length (ft)	Area (Sq.ft/Ac.)
OWUS		
RPW	112 ft	448 SF/0.010 ac
culverted RPW	70 ft	140 SF/0.003 ac
Non RPW	332 ft	664 SF/0.015 ac
Wetlands		
USACE	*n/a*	345 SF/ 0.008 ac
Coastal	*n/a*	926 SF/0.021 ac.

Environmental Consequences

Impact criterias define the level of direct and indirect impacts on Wetlands and other waters of the U.S.. The purpose of the establishing criteria is to help determine when an impact is significant under CEQA.

Does the result in:

- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

The project is expected to temporarily impact approximately 0.004 acres of OWUS resulting from construction access and other activities required for constructing the timber-lagged soldier pile wall. The project is also expected to result in approximately 50 SF (0.001) permanent impacts to culverted OWUS however these impacts are will be beneficial as they will be the result of shortening the length of the culvert and increasing the length of open channel drainage by approximately 25 feet. Therefore, permanent impacts to RPWs are expected to be self mitigating.

Impacts to coastal wetland are minimal (0.009) and will result in only a temporal loss of low quality, marginal coastal wetland. Impacts to all wetland and other waters are summarized below in Table 3 below.

Table 3: Impacts to Wetlands and Waters in the Project Area

	Temporary		Permanent		Total	
	Length (ft)	Area (SF/Ac.)	Length (ft)	Area (SF/Ac.)	**Length (ft)**	**Area (SF/Ac.)**
OWUS						
RPW	51 ft	204 SF/ 0.004 ac	0	0	**51 ft**	**204 SF/ 0.004 ac**
Culverted RPW			25 ft	50 SF/0.001 ac	**25 ft**	**50 SF/ 0.001 ac**
Non RPW	0	0	0	0	**0**	**0**
Wetlands						
USACE	0	0	0	0	**0**	**0**
Coastal	n/a	373 SF/ 0.009 ac	0	0	**n/a**	**373 SF/ 0.009 ac**

- The need for compensatory mitigation for wetlands and waters of the U.S. is not anticipated, due to the avoidance and minimization measures that will be employed and the onsite restoration of approximately 25 feet of new open channel. Offsite mitigation may be required for this project; however, the location of any proposed offsite mitigation has yet to be determined. Currently there are no mitigation banks that serve the project area.

ANIMAL SPECIES

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed below. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

Impact criteria define the level of direct and indirect impacts on animal species. The purpose of the establishing criteria is to help determine when an impact is significant under CEQA.

Does the project 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 U.S. Fish and Wildlife Service?

- 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?

Migratory Birds

Affected Environment

The Federal Migratory Bird Treaty Act (MBTA) protects migratory birds, their nests, and eggs from disturbance or destruction.

Environmental Consequences

The project should not result in any direct impacts to migratory birds or their nests. Implementation of the Avoidance and Minimization measure listed below, impacts to nesting birds are expected to be minimal.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures will be implemented to prevent impacts to Migratory birds:

- Vegetation will be removed outside of the nesting season (February 1 and September 15) and will be kept trimmed and/or cleared prior to, as well as, during construction to discourage nesting.

- For contingency purposes a plan will be developed, prior to construction of the project, to determine the protocol to be followed if any nesting birds are discovered in the project area or if it is determined that additional vegetation will need to be removed during construction. This plan will be developed in coordination with the appropriate regulatory agencies. The plan will be based on following guidelines:
    - Surveys will be conducted (no earlier than two days prior to vegetation removal) by a qualified biologist to identify and locate nesting birds
    - If bird nests are found:
        - Buffer areas will be established around active nests, construction activities that disturb birds will not occur within the buffer area.
        - The areas will be marked as environmentally sensitive and nests will be monitored by a qualified biologist for disturbance behaviors.

With the incorporation of these avoidance and minimization measures there will be less than significant impacts on migratory birds.

Del Norte Salamander (DNS)

The Del Norte salamander (*Plethodon elongatus*) is a California species of special concern. DNS' occur in cool, moist mixed conifer/hardwood forests dominated by large trees, with a stable micro-climate, deep litter layer and closed multi-storied canopy. These species are often associated with mesic talus slopes and road fills or under woody debris (Stebbins, 2003).

Affected Environment

The mesic coastal forest within the project BSA is likely to provide habitat for this species. Although this species is likely to occur in areas within the BSA and project footprint, DNS is less likely to occur in the northern part of the project where the majority of impacts from the anchor pile buttress will occur since these areas are more open, arid and disturbed and more highly influenced by edge effects associated with the highway.

Environmental Consequences

The project has potential to directly impact DNS; however with proper implementation of the avoidance and minimization measures listed below, the likelihood of direct impacts to this species will be reduced.

Avoidance, Minimization, and/or Mitigation Measures

- A qualified biologist will be onsite prior to, and during any initial disturbance (i.e. clearing /grubbing and/or grading) of areas where DNS are likely to occur.
- Any DNS located during construction of the project will be relocated to a safe and appropriate off-site location determined by a qualified biologist.

- All holes and/or steep-walled trenches will be completely covered or fitted with escape ramps at the end of each work day to ensure no wildlife becomes trapped or harmed.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the Del Norte salamander.

Northern red-legged frog (NRLF)

The Northern red legged frog (*Rana aurora*) is a California species of special concern. NRLF occur in humid forests, woodlands and stream sides, usually near permanent water in dense riparian cover. During the non-breeding season, NRLF are found in damp forests/woods and meadows during the non-breeding season.

Affected Environment

Habitat for the species is likely to exist in the mesic coastal forest within the project BSA. Although this species is likely to occur in areas within the BSA and project footprint, NRLF is less likely to occur in the northern part of the project where the majority of impacts from the anchor pile buttress will occur; since these areas are more open, arid, disturbed and more highly influenced by edge effects associated with the highway. The southern portion of the project where the seasonal drainage exists (at proposed soldier pile ground anchor wall with timber lagging location) provides better cover for this species.

Environmental Consequences

The project has potential to directly impact NRLF; however, with proper implementation of the avoidance and minimization measures listed below, the likelihood of direct impacts to this species will be reduced.

Avoidance, Minimization, and/or Mitigation Measures

- A qualified biologist will be onsite prior to, and during any initial disturbance (i.e. clearing /grubbing and/or grading) of areas where NRLF could occur, to clear the area of any NRLF.
- Any NRLF located during construction of the project will be relocated to a safe appropriate off-site location determined by a qualified biologist.
- All holes and/or steep-walled trenches will be completely covered or fitted with escape ramps at the end of each work day to ensure no wildlife becomes trapped or harmed.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the Northern red-legged frog.

White-footed vole (WFV)

The white-footed vole (*Arborimus albipies*) is a California species of special concern. This species prefers mature coastal forest near small, clear streams with dense alder and shrubs. WFV occupy the habitat from the ground surface to the canopy and feed in all layers and nests on the ground under logs or rocks.

Affected Environment

The preferred habitat for the species is likely to exist in the mesic coastal forest with dense shrub layer and ground cover within the project BSA. WFV is likely to occur within the project area.

Environmental Consequences

The project has potential to directly impact WFV; however, with proper implementation of the avoidance and minimization measures listed below, the likelihood of direct impacts to this species will be reduced.

Avoidance, Minimization, and/or Mitigation Measures

- A qualified biologist will be onsite prior to and during initial disturbance (i.e. clearing /grubbing and/or grading) to clear any areas where WFV could occur.
- Any WFV located during construction of the project will be allowed to escape or will be relocated to a safe appropriate off-site location.
- All holes and/or steep-walled trenches will be completely covered or fitted with escape ramps at the end of each work day to ensure no wildlife becomes trapped or harmed.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the White-footed vole.

Humboldt marten

The Humboldt marten (*Martes americana humboldtensis*) is a California species of special concern that may meet criteria for listing. This species is associated with late successional coniferous forest in the coastal redwood zone. They prefer forests with low overhead cover, typical of old growth forests.

Affected Environment

Although the mesic coastal forest within the project BSA and project footprint provides many of the preferred habitat components associated for this species (large trees with structure, course woody debris and dense shrub layer), it is highly unlikely to occur since the BSA is open and fragmented and the project is well outside the current known range of the species.

Environmental Consequences

The project will not impact the Humboldt marten and will have no effect on the habitat. Any potential impacts to this species would result from indirect noise disturbance; however, even noise impacts to this species are highly unlikely. Proper implementation of the avoidance and minimization measures will further reduce the likelihood of direct impacts to this species.

Palid bat
Silver-haired bat
Yuma myotis
Affected Environment

No protocol surveys were conducted for Bat Species of Special Concern. Palid bat (*Antrozous palidus*), Silver-haired bat (*Lasionycteris noctivicans*), and Yuma myotis (*Myotis yumansis*). Large trees within the BSA likely provide cavities and/or crevices that could be used by bat species for day roosts, night roosts and, in the summer months, maternity roosts.

Environmental Consequences

The project will not result in any direct impacts to bats or bat habitat. Any impacts to these species would occur as the result of indirect auditory disturbance associated with construction noise levels. Due to the high levels of noise disturbance that currently exists on site and because increases in sound levels would likely be significantly attenuated by the structure of the roosting habitat itself, noise impacts to bats are expected to be minimal. However, implementation of the following avoidance and minimization measures will further reduce impacts to the species.

Avoidance, Minimization, and/or Mitigation Measures

- No trees that could provide night roosting or maternity roost habitat will be removed or altered by project activities.
- No proposed activity generating noise levels 20 or more decibels above ambient noise levels or with maximum noise levels (ambient noise plus activity-generated noise) above 90 decibels (with the exception of back-up alarms) will occur within 165 feet of a known maternity roost.
- A tree assessment will be conducted to assess trees within a 165 foot buffer of project activities and determine if they provide the structural components required for roosting bats. Any trees suitable for maternity roosts will be examined for any signs or presence of bats, and follow-up surveys will be conducted if necessary.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the Palid bad, Silver-haired bat and the Yuma myotis, or any other bat species of special concern.

THREATENED AND ENDANGERED SPECIES

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and later 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 (FHWA), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) 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 may include a Biological Opinion with an Incidental Take statement, a Letter of Concurrence and/or documentation of a No Effect finding. 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 Wildlife (CDFW) 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 the CDFW. For species listed under both the FESA and CESA requiring a Biological Opinion under Section 7 of the FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring,

exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

***Marbled Murrelet* (MAMU)**

Affected Environment

Marbled Murrelet (*Brachyramphus marmoratus*) is federally listed as threatened and listed as endangered by the State. No protocol surveys were conducted for marbled murrelet (MAMU). Habitat suitability for MAMU was examined within a 0.25 mile buffer of the project footprint (BIOS 2014). Potential suitable nesting/roosting habitat occurs within the 0.25 mile buffer of the project area.

Only marginal habitat for MAMU occurs within the BSA and Action Area (165 foot buffer of project activities). Although mature redwoods, sitka spruce and grand fir with large lateral limbs are present within the Action Area and could provide the structure needed to support nesting MAMU, the majority of the habitat within the Action Area is open and fragmented and the canopy closure is insufficient to provide protection from predators and the weather.

The closest documented MAMU observation is less than 0.5 miles to the north on SR 101. Numerous observations have been made offshore to the west of the project, as well as, inland within Redwood National Park (approximately 3.5 miles east of the project on Forty-four Creek). Although the habitat within the project Action Area is unlikely to be used by MAMU for nesting, it cannot be ruled out. Also, MAMU are very likely to fly through the area during their daily migrations between nesting areas inland and foraging areas off the coast. MAMU presence within the BSA and Action Area is assumed.

The project is located within designated critical habitat for MAMU. No suitable trees or any other primary constituent elements will be altered; therefore no impacts to critical habitat will result from the project activities.

Impact criteria define the level of direct and indirect impacts on animal species. The purpose of the establishing criteria is to help determine when an impact is significant under CEQA.

Does the project result in:

- 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 U.S. Fish and Wildlife Service?

- 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?

Environmental Consequences

The project will not result in any direct impacts to MAMU or MAMU habitat. All impacts to this species are the result of indirect auditory disturbance associated with construction noise levels.

Using the FWS 2006 Guidance *Estimating the Effects of Auditory and Visual Disturbance to Marbled Murrelets in Northwestern California*, a comparison was made between the ambient noise level and the noise level a nesting MAMU would likely be subjected to as a result of implementing the project. Ambient noise level of the project area is estimated to be *moderate* (~71-80dB) to *high* (~81-90 dB). Noise levels from construction activities are estimated to also fall within the moderate to high ranges as well as the very high range (~91-100 dB) when considering backup alarms[2]. Thus, the harassment distance for MAMU is estimated to take place within 50 meters (165 feet) of the project for all work including back-up alarms, this area is considered the project *Action Area* (i.e., the maximum area affected directly or indirectly by the project).

The project has potential to result in harassment of MAMU within the 165 foot noise disturbance buffer. However, because it is unlikely that MAMU's nest within the action area, and because no construction related noise is over 90 dB (with the exception of back-up alarms), or noise greater that 20 dB over ambient will occur during the MAMU nesting season, effects to MAMU are expected to be insignificant. Activities that generate very high levels of noise, such as guardrail installation, will occur after August 20 and within daylight hour restrictions.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures will be implemented to prevent impacts to MAMU:

- No trees that could provide suitable nesting or roosting habitat for this species will be removed or altered.

- No proposed activity generating noise levels 20 or more decibels above ambient noise levels or with maximum noise levels (ambient noise plus activity-generated noise) above 90 decibels (except back-up alarms) may

[2] *USFWS Caltrans Routine Maintenance Programmatic Letter of Concurrence* (USFWS 2014) excludes equipment back up alarms from the noise disturbance criteria.

occur during the nesting season (March 24 to September 15). In addition, no human activities shall occur within visual line-of-sight of 131 feet or less from a nest.

- Between August 20 (date when most marbled murrelets have fledged in coastal Northern California) and September 15 (end of marbled murrelet nesting season) of any year, project activities that will generate noise 10dbs or more above ambient levels will observe a daily work window beginning two hours post-sunrise and ending two hours pre-sunset. However, prep work that does not generate noise above ambient levels can occur during all hours.

- All trash will be properly contained in wildlife proof containers and removed from the project site daily to avoid attracting predators such as Steller jays and ravens.

- Guardrail installation will occur after August 20 and within daylight hour restrictions.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the Marbled Murrelet.

Northern Spotted Owl (NSO)

Affected Environment

The Northern Spotted Owl (*Strix occidentalis caurina*) is listed as a threatened species by the United States Fish and Wildlife Service and as a candidate species by the California Department of Fish and Wildlife.

No protocol surveys were conducted for the NSO. Habitat suitability for NSO was examined within a 0.25 mile buffer of the project footprint. Potential suitable nesting/roosting habitat occurs within the 0.25 mile buffer of the project area. The majority of the habitat directly adjacent to the project is too open and fragmented to provide high quality nesting/roosting habitat for this species. However, marginal potential nesting/roosting habitat for the NSO does occur within the BSA and Action Area.

The closest documented NSO observation is approximately 0.6 miles to the northeast of the project. NSO presence within the BSA and Action Area is assumed.

Environmental Consequences

The project will not result in any direct impacts to NSO or NSO nesting/roosting habitat. All project impacts to this species are the result of indirect auditory disturbance associated with construction noise levels.

Using the FWS 2006 Guidance *Estimating the Effects of Auditory and Visual Disturbance to Northern Spotted Owl in Northwestern California*, a comparison was made between the ambient noise level and the noise level a nesting NSO would likely be subjected to as a result of implementing the project. Ambient noise level of the project area is estimated to be *moderate* (~71-80dB) to *high* (~81-90 dB). Noise levels from construction activities are estimated to also fall within the moderate to high ranges as well as the very high range (~91-100 dB) when considering back-up alarms[3]. Thus, the harassment distance for NSO is estimated to take place within 165 feet of the project for all work, including back-up alarms. This area is considered the project Action Area (i.e., the maximum area affected directly or indirectly by the project).

The project is expected to result in harassment of NSO within the 165 foot noise disturbance buffer. However, because it is unlikely that NSO nest within the action area, and because no construction-related noise over 90 dB (with the exception of back up alarms) or noise greater that 20 dB over ambient will occur during the NSO nesting season, effects to NSO are expected to be insignificant.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures will be implemented to prevent impacts to NSO:

- No trees that could provide suitable nesting or roosting habitat for this species will be removed or altered.

- No proposed activity generating noise levels 20 or more decibels above ambient noise levels or with maximum noise levels above 90 decibels (except back-up alarms) may occur during the NSO nesting season (February 1 to July 31)(Service 2006). In addition, no human activities shall occur within a visual line-of-sight of 131 feet or less from a known nest location (Service 2006).

- Guard rail installation will occur after July 15 and before February 1.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the Northern Spotted Owl.

Bald Eagle (BAEA)

Affected Environment

The Bald Eagle (Haliaetus leucocephalus) is currently listed as Endangered and fully protected by the State and has been delisted under the Federal Endangered Species

[3] *USFWS Caltrans Routine Maintenance Programmatic Letter of Concurrence* (USFWS 2014) excludes equipment back up alarms from the noise disturbance criteria.

Act. No protocol surveys were conducted for BAEA. A nest exists south of the project area. No nests exist within the BSA; however, an individual was observed flying over the project area on May 8, 2014, during a botanical survey. Trees within the project BSA could provide the structure required for nesting and Big Lagoon provides foraging habitat. It is unlikely that BAEA would nest in the project BSA since the species have large home ranges and a high tendency to return to the same nest year after year.

Environmental Consequences

The project will not result in any direct impacts to BAEA or BAEA habitat. Any project impacts to this species are the result of indirect auditory disturbance associated with construction noise levels, which is not anticipated to effect nesting pairs since the known nest is over one mile away. These impacts are not expected to result in State take of this species.

Impacts to Bald Eagles will be less than significant.

Little Willow Flycatcher (WIFL)

Affected Environment

The Little Willow Flycatcher *(Empidonax traillii brewsteri)* is listed as Endangered by the State. No protocol surveys were conducted for WIFL. The potential habitat that exists within the BSA is marginal and unlikely to support this species; however, minimal habitat requirements are present. WIFL require greater than 20% cover of riparian scrub, or at least 0.25 acre of contiguous shrub cover adjacent to a permanent water source or wet meadow. Areas adjacent to the BSA located along the margin of the Lagoon and in the willow scrub riparian area to the north of the project may meet needed habitat components. The closest documented WIFL observation is over 80 miles south of the project in a dense willow thicket along the South Fork Eel River within Humboldt Redwoods State Park.

Environmental Consequences

The project will not result in any direct impacts to WIFL or WIFL habitat. Any project impacts to this species are the result of indirect auditory disturbance associated with construction noise levels. These impacts are not expected to result in State take of this species.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures will be implemented to prevent impacts to WIFL:

- No willow riparian habitat suitable for WIFL will be removed or altered by project activities.
- No proposed activity generating noise levels 20 or more decibels above ambient noise levels or with maximum noise levels (ambient noise plus

activity-generated noise) above 90 decibels (except back-up alarms) will occur from February 1 to July 31, which includes the WIFL nesting season.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the Little Willow Flycatcher.

Pacific Fisher (Fisher)

Affected Environment

The Pacific fisher *(Martes pennanti pacifica)* is currently a Candidate for listing under both the State and Federal Endangered Species Act. No surveys were conducted for Pacific fisher. Although the forest areas within the BSA likely provide the down logs, snags and cavities required for resting/denning for this species, the forested habitat is too open and fragmented, and therefore, is unlikely to be used by this species for denning. Although use of this marginal habitat within the project's BSA is unlikely, it cannot be ruled out. Fisher may use areas within the BSA for long range movements to access portions of their large territories. The closest documented Fisher observation is approximately eight miles east of the project, within the Redwood National Park.

Environmental Consequences

The project will not result in any direct impacts to Pacific fisher or Pacific fisher habitat. Any project impacts to this species are the result of indirect auditory disturbance associated with construction noise levels. These impacts are not expected to result in harm to this species.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures will be implemented to prevent impacts to the Pacific fisher:

- No trees, snags, or logs that could provide fisher denning or resting habitat will be removed or altered by project activities.
- No proposed activity generating noise levels 20 or more decibels above ambient noise levels or with maximum noise levels (ambient noise plus activity-generated noise) above 90 decibels will occur within 165 feet of a known den.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the Pacific fisher.

Townsends Big-Eared Bat (TBEB)

Affected Environment

The Townsends big-eared bat *(Corynorhinus townsendii)* is currently a candidate for listing under CESA. No protocol surveys were conducted for TBEB. Large trees within the BSA likely provide cavities and/or crevices that could be used by TBEB and other bat species for day roosts and, in the summer months, maternity roosts. The closest

documented observation was the result of a road kill approximately 65 miles south of the project off SR 101, just south of Scotia.

Studies have shown parturition (giving birth) begins in late May in California, mid-July in Washington state, and June in Texas (Kunz and Martin 1982). Parturition occurs mid-summer, coinciding with periods of high prey availability, and can vary year-to-year depending on the weather. Single pups are born in May and June with births peaking in late May. The young are weaned at six weeks, and begin to fly in 2.5-3 weeks after birth (Zeiner et al. 1988). In south central Oregon, the maternity period is May through August (Kerwin 2007). Parturition in Grizzly Creek State Park was estimated to occur on June 17, 2000; due to an observation of a 4-day old pup on June 21.

Environmental Consequences

The project will not result in any direct impacts to TBEB or TBEB habitat. Any project impacts to this species are the result of indirect auditory disturbance associated with construction noise levels. These impacts are not expected to rise to the level of State take for this species due to the relatively high level of noise disturbance existing on site and the increases in noise level would likely be greatly attenuated by the structure of the roosting habitat itself.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures will be implemented to prevent impacts to TBEB:

- No trees that could provide day roosting or maternity roost habitat will be removed or altered by project activities.
- A tree assessment will be conducted to assess trees within a 165 foot buffer of project activities to determine if they provide the structural components required for roosting Townsends Bats. Any trees suitable for maternity roosts will be examined for the presence of bat sign; if a tree or trees is suspected to contain a maternity roost, then follow-up surveys will be conducted.
- No proposed activity generating noise levels 20 or more decibels above ambient noise levels or with maximum noise levels (ambient noise plus activity-generated noise) above 90 decibels (except back-up alarms) will occur before July 31. If a maternity roost is discovered within 165 feet of the project, then this noise restriction will be extended until the end of August.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact to the Townsends big-eared bat.

Listed Fish Species

Affected Environment

Several listed and sensitive fish species are either known to be present, or have high potential to occur in Big Lagoon within the BSA including Tidewater goby

(Eucyclogobius newberryi), coast cutthroat trout (*Oncorhynchus clarki clarki*), Northern California steelhead (*Oncorhynchus mykiss), and* Coho salmon (*Oncorhynchus kisutch).* However, no work will be conducted in Big Lagoon.

Environmental Consequences
Since fish are not present within the Project Footprint, and appropriate erosion control measures and storm water BMP's will be employed, there are no impacts to listed fish species.

Avoidance, Minimization, and/or Mitigation Measures
The following avoidance and minimization measures will be implemented to prevent impacts to listed fish species:

- A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for the project and appropriate BMPs will be employed to protect water quality.
- All disturbed areas will be treated with appropriate erosion control methods. All areas available for revegetation will be planted to reduce the potential for future erosion.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact.

INVASIVE SPECIES

Regulatory Setting

On February 3, 1999, President William J. Clinton signed Executive Order (FO) 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 (FHWA) guidance issued August 10, 1999 directs the use of the State's invasive species list maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the National Environmental Policy Act (NEPA) analysis for a project.

Affected Environment
Several invasive plant species have been documented within the project area, including jubata grass (*Cortaderia jubata*), Scotch broom, fennel (*Foeniculum vulgare*), and Himalayan blackberry. These species are included on the California Invasive Plant

Council (Cal-IPC) Inventory in the *high* category. Species are rated as *High* because they are expected to have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most of these species are widely distributed ecologically.
Species in the project area including: black mustard (*Brassica nigra*), bull thistle (*Cirsium vulgare*) and poison hemlock (*Conium maculatum*) are rated as *Moderate* and are considered to have substantial and apparent, but generally not severe ecological impacts. Wild raddish (*Raphanus sativus*), Spanish heather (*Erica lusitanica*) are found in the project area and are rated as *Limited*. Species with this rating are either invasive however their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. A full list of species included in the Cal-IPC database that were found in the project area are included in the table below. Other non-native weedy species not included in the Cal-IPC list including: white sweet-clover, Queen Anne's lace, Chicory (*Cichorium intybus*), sweet pea (*Lathyrus latifolius*), Australian burnweed (*Senecio minimus*), bird's-foot trefoil *(Lotus corniculatus*),and sow-thistle (*Sonchus sp.*) also occur onsite.

Invasive animal species also occur in the project vicinity. New Zealand mud snail has been documented in Big Lagoon.

Invasive Plant list		**Cal-IPC Rating**
Agrostis stolonifera	creeping bentgrass	Limited
Anthoxanthum odoratum	sweet vernal grass	Moderate
Brassica nigra	black mustard	Moderate
Brassica rappa	field mustard	Limited
Briza maxima	rattlesnake grass	Limited
Cirsium vulgare	bull thistle	Moderate
Conium maculatum	poison hemlock	Moderate
Cortaderia jubata	jubata grass	High
Cynosurus echinatus	hedgehog dog-tail grass	Moderate
Cytisis scoparius	Scotch broom	High
Erica lusitanica	Spanish heather	Limited
Festuca myuros	rat-tail fescue	Moderate
Foeniculum vulgare	fennel	High
Geranium dissectum	discected cranesbill	Limited
Holcus lanatus	velvet grass	Moderate
Hypericum perforatum	St. Johns wort	Moderate
Hypochaeris radiacata	rough cat's ear	Moderate
Leucanthemum vulgare	ox-eye daisy	Moderate
Medicago polymorpha	toothed burr-clover	Limited

Mentha pulegium	pennyroyal	Moderate
Picris echioides	bristly ox-tongue	Limited
Plantago lanceolata	English plantain	Limited
Ranunculus repens	creeping buttercup	Limited
Raphanus sativus	wild radish	Limited
Rubus armeniacus	Himalayan blackberry	High
Rumex acetosella	sheep sorrel	Moderate
Rumex crispus	curly dock	Limited

Environmental Consequences

Because of the proximity of the project to a heavily traveled highway, the presence of invasive species currently on site and the openness/lack of canopy closure on the upper portion of the project; there is a high likelihood of establishment by non-native species within the areas disturbed by construction, in particular, the areas disturbed for construction of the two anchor pile systems. Colonization of the newly disturbed areas associated with construction the timber-lagged soldier pile wall is less likely because of the shade provided by the mature redwood forest, and the relatively weed free conditions of the existing topsoil.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures will be implemented to reduce the spread of invasive non-native plant species and minimize the potential for disturbance activities to decrease palatable vegetation for wildlife species. Caltrans will implement the following protection measures in compliance with Executive Order (EO) 13112:

- Invasive species including, but not limited to; scotch broom, jubata grass, fennel, Himalayan blackberry and Spanish heather within the project limits will be removed as part of project activities.
- Plant species used for erosion control will consist of native species or non-persistent hybrids that will prevent invasive species from colonizing disturbed areas. Native vegetation and any duff layer removed by project activities should be saved and replaced as mulch where feasible
- Native vegetation will not be removed unless absolutely necessary. Vegetation, especially within riparian or other sensitive communities, should be left in place when possible and driven over or trimmed, rather than removed.
- All temporally disturbed areas will be revegetated with locally native species and/or non-persistent hybrids that will serve to stabilize site conditions. Monitoring and maintenance of revegetated areas will be implemented by

Caltrans staff (or their contractors) to ensure that natives become re-established and that colonization by invasive species does not occur.

- Prior to construction a revegetation plan will be developed. This plan will include a five-year monitoring/plant establishment period with specific success criteria outlined. A draft of this plan will be submitted to State Parks and other agencies for review.

- Plants will be collected locally and outgrown prior to construction of the project to ensure there will be acceptable planting materials available at the time of revegetation planting.

- Caltrans will not allow transport of soil and/or plant materials from any areas that support invasive species to areas that support native dominated plant communities. Gravel and/or fill material to be placed in relatively weed-free areas will come from weed-free sources, if at all practicable.

- Resident Engineers and construction personnel will be provided information on weed identification and the importance of controlling and preventing the spread of identified invasive non-native species.

With proper implementation of the above avoidance and minimization measures, adverse effects due to colonization of the area by invasive species will be greatly reduced to less than significant. There is a high likelihood of establishment by non-native species within the areas disturbed by construction (in particular, the areas disturbed for construction of the two anchor pile systems); however, over time, and continued maintenance (including weed control and supplemental watering), the native plantings are anticipated to increase in cover and shade out weedy species. At a minimum, continued control of weeds will be necessary in this area for the duration of the plant establishment period.

HYDROLOGY AND WATER QUALITY

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source[4] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987

[4] A point source is any discrete conveyance such as a pipe or a man-made ditch.

amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.

- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).

- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).

- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The USACE issues two types of 404 permits: General and Standard permits. There are two types of General permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of the USACE's Standard permits. There are two types of Standard permits: Individual permits and Letters of Permission. For Standard permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's Section 404 (b)(1) Guidelines (U.S. EPA Code of Federal Regulations [CFR] 40 Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative

(LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[5] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

[5] The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System (NPDES) Program

Municipal Separate Storm Sewer Systems (MS4)

Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified the Department as an owner/operator of an MS4 under federal regulations. The Department's MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

The Department's MS4 Permit (Order No. 2012-0011-DWQ) was adopted on September 19, 2012 and became effective on July 1, 2013. The permit has three basic requirements:

1. The Department must comply with the requirements of the Construction General Permit (see below);

2. The Department must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and

3. The Department storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs), to the Maximum Extent Practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, the Department developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within the Department for implementing storm water management procedures and practices as well as training, public education and

participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices the Department uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of Best Management Practices (BMPs). The project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with the Department's Standard Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the United States must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as Waste Discharge Requirements (WDRs) under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

Affected Environment

A Water Quality Assessment Report was prepared in July 2014. The project is located adjacent to Big Lagoon in Humboldt County. It is situated in the Big Lagoon Hydrologic Area in Trinidad Hydrologic Unit. The project is located in the McDonald Creek watershed. The hydrologic information of the project is summarized below in Table 4. Runoff from the project discharges to Big Lagoon.

Table 4. Hydrologic Information

Route	Post Mile	Hydrologic Unit	Hydrologic Area	Hydrologic Area Name	Watershed	Average Annual Precipitation (Inches)
101	111.4-111.6	Trinidad	108.10	Big Lagoon	McDonald Creek	50

Impact criteria define the level of direct and indirect impacts on water quality, hydrology, and storm water runoff. The purpose of establishing criteria is to help determine when an impact is significant under CEQA. The following general criteria were used to evaluate the impacts of the project on water quality, hydrology, and storm water runoff:

- Violate any water quality standards or waste discharge requirements?
- 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 which would result in flooding on- or off-site?
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- 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 which would not support existing land uses or planned uses for which permits have been granted)?

- 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?

Environmental Consequences

There is the potential for temporary water quality impacts to occur during the improvement activities due to work adjacent to Big Lagoon. Tree and vegetation removal, including redwoods within Big Lagoon State Park, would be necessary to allow for the improvement activities. Without implementation of best management practices (BMPs), construction activities associated with the project have the potential to impact water quality through the release of pollutants such as sediment, soil stabilization residues, oil and grease, and trash and debris. Any type of soil disturbance would expose soil to erosion from wind and water that could result in sedimentation to receiving waters.

Permanent water quality and hydromodification impacts can also occur as a result of the increase in impervious surface and an associated increase in storm water runoff volume. However, the increase in impervious surface is not known at this time. Permanent water quality impacts may also result from pollutants typically generated from transportation-related projects including sediment/turbidity, nutrients, organic compounds, trash and debris, oxygen-demanding substances, oil and grease, and metals.

Avoidance, Minimization, and/or Mitigation Measures

To prevent potential pollution to receiving waters as a result of construction activities and/or operations related to this project, pollution prevention BMPs would be incorporated. Compliance with the standard requirements of the Caltrans NPDES Permit and Construction General Permit would be required to minimize potential short-term construction-related and permanent impacts.

The minimum anticipated temporary and permanent BMP measures for this project are described below.

- Sediment and erosion-control BMPs will be implemented in compliance with the Caltrans NPDES and Construction General permits. Anticipated temporary sediment and erosion control measures for this project include the following:

    - Silt fence
    - Fiber rolls
    - Sandbag barrier
    - Gravel bag berm

- Rolled erosion-control product (e.g., netting)

- Specific pollution prevention measures will be implemented for the project to help minimize pollution in storm water runoff, including preservation of existing vegetation as much as possible, planting on disturbed areas and newly constructed slopes to re-establish vegetation, slope/surface protection systems (permanent soil stabilization), and designated material storage areas.

- The project will be regulated by North Coast RWQCB through Caltrans Statewide NPDES Permit (Order No. 2012-0011-DWQ). Caltrans would implement the programs specified in its approved Storm Water Management Plan to minimize potential temporary and permanent impacts.
- A Storm Water Pollution Prevention Plan (SWPPP) will be prepared and implemented in accordance with the Construction General Permit to address all construction-related activities, equipment, and materials that have the potential to impact water quality. The SWPPP identifies the sources of pollutants that may affect the quality of storm water; includes construction site BMPs to control sedimentation, erosion, and potential chemical pollutants; provides for construction materials management, non-storm-water BMPs, and includes routine inspections and a monitoring and reporting plan. Post-construction standards to address hydromodification impacts may also be required under this permit.
- All construction site BMPs will follow the latest edition of the Storm Water Quality Handbook: Construction Site Best Management Practices Manual (Caltrans 2003) to control and minimize the impacts of construction-related activities, materials, and pollutants on the watershed.
- The project will comply with Caltrans Standard Specifications for Water Pollution Control and Job Site Management (Caltrans 2010). The project would implement storm water and water pollution control training, routine BMP inspections, spill prevention and control, materials and waste management, and non-storm water management. Caltrans' Standard Specifications require the Contractor to submit a Water Pollution Control Plan if the disturbed soil area is less than one acre. This plan would meet the standards and objectives to minimize water pollution impacts set forth in Caltrans' Standard Specifications.

By implementing the BMPs as described above and in compliance with applicable permits and regulations, the Big Lagoon Walls Project would meet federal, state, and local storm water management and water quality protection regulations by minimizing the potential for pollutant transport.

With the incorporation of these avoidance and minimization measures there will be a less than significant impact on hydrology and water quality.

COASTAL ZONE

Regulatory Setting

This project has the potential to affect resources protected by the Coastal Zone Management Act of 1972 (CZMA). The CZMA is the primary federal law enacted to preserve and protect coastal resources. The CZMA sets up a program under which coastal states are encouraged to develop coastal management programs. States with an approved coastal management plan are able to review federal permits and activities to determine if they are consistent with the state's management plan.

California has developed a coastal zone management plan and has enacted its own law, the California Coastal Act of 1976, to protect the coastline. The policies established by the California Coastal Act are similar to those for the CZMA: they include the protection and expansion of public access and recreation; the protection, enhancement, and restoration of environmentally sensitive areas; the protection of agricultural lands; the protection of scenic beauty; and the protection of property and life from coastal hazards. The California Coastal Commission is responsible for implementation and oversight under the California Coastal Act.

Just as the federal CZMA delegates power to coastal states to develop their own coastal management plans, the California Coastal Act delegates power to local governments to enact their own local coastal programs (LCPs). LCPs determine the short- and long-term use of coastal resources in their jurisdiction consistent with the California Coastal Act goals. A federal consistency determination may be needed as well.

Affected Environment

The project is located in the Big Lagoon area (approximately 0.25 miles south from the intersection of SR 101 and Kane Ridge Road, and continues south for approximately 1,031 feet). The "Coastal Resources" map below identifies the coastal zone boundary (according to the North Coast Area Plan of the Humboldt County Local Coastal Program) and the project location. Since the project location is within the Humboldt County Local Coastal Boundary, a local coastal development permit will be required.

A one parameter wetland exists within a compacted graveled pullout within the project footprint. This area is dominated with facultative wetland species such as coltsfoot, creeping buttercup and velvet grass which are very common in coastal environments. Only one obligate wetland species, hedge nettle (*Stachys ajugoides*) existed in a very small quantity (5% cover in the herb stratum). This area qualifies as a coastal wetland; however, it is not providing the functions and values a typical wetland would provide, and it is not of high quality.

Table 5 Wetlands and Waters in the Project Area.

	Present within Study Area	
	Length (ft)	Area (Sq.ft/Ac.)
OWUS		
RPW	112 ft	448 SF/0.010 ac
culverted RPW	70 ft	140 SF/0.003 ac
Non RPW	332 ft	664 SF/0.015 ac
Wetlands		
USACE	*n/a*	345 SF/ 0.008 ac
Coastal	*n/a*	926 SF/0.021 ac.

Environmental Consequences

The project is expected to temporarily impact approximately 0.004 acres of OWUS resulting from construction access and other activities required for constructing the timber-lagged soldier pile wall. The project is also expected to result in approximately 50 SF (0.001) permanent impacts to culverted OWUS however these impacts are will be beneficial as they will be the result of shortening the length of the culvert and increasing the length of open channel drainage by approximately 25 feet. Therefore, permanent impacts to RPWs are expected to be self mitigating.

Impacts to coastal wetland are minimal (0.009) and will result in only a temporal loss of low quality, marginal coastal wetland. Impacts to all wetland and other waters are summarized below in Table 6.

Table 6. Impacts to Wetlands and Waters in the Project Area.

	Temporary		Permanent		Total	
	Length (ft)	Area (SF/Ac.)	Length (ft)	Area (SF/Ac.)	**Length (ft)**	**Area (SF/Ac.)**
OWUS						
RPW	51 ft	204 SF/ 0.004 ac	0	0	**51 ft**	**204 SF/ 0.004 ac**
Culverted RPW			25 ft	50 SF/0.001 ac	**25 ft**	**50 SF/ 0.001 ac**
Non RPW	0	0	0	0	**0**	**0**
Wetlands						
USACE	0	0	0	0	**0**	**0**
Coastal	n/a	373 SF/ 0.009 ac	0	0	**n/a**	**373 SF/ 0.009 ac**

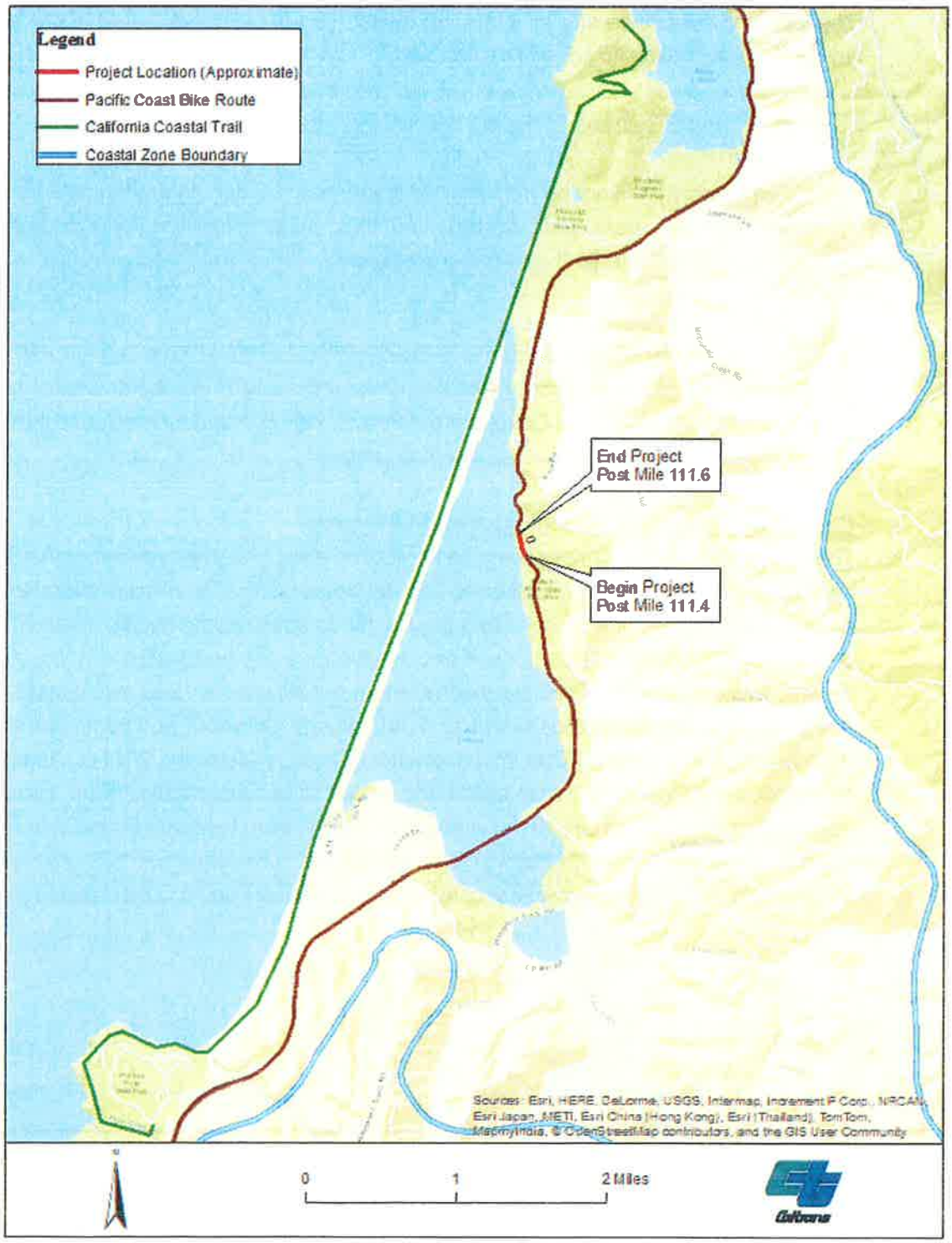
Avoidance, Minimization, and/or Mitigation Measures
The following avoidance and minimization measures will be implemented to prevent and/or reduce impacts to coastal resources:

- Appropriate Caltrans BMPs will be implemented to protect water quality.

- The roadway will not be upgraded to standard shoulders in any areas where wetlands or waters would be impacted, thus avoiding the non-RPW drainage ditch and associated 3-parameter wetland.

- The project would include appropriate barrier and bicycle rail features to blend into the surrounding environment, preserving the coastal view and natural surroundings. In addition, Caltrans will coordinate with Humboldt County to obtain a Local Coastal Development Permit, which would include conditions to avoid impacts to the coastal zone resources.

California Coastal Trail/Pacific Coast Bike Route:
The California Coastal Conservancy has prepared a plan, at the direction of the State Legislature, to complete the "California Coastal Trail (CCT)." The trail is intended to be a continuous public right-of-way along the California coastline for hiking. "Nearly half complete, CCT is currently comprised of discontinuous segments along the coastline. When completed, the CCT will extend the length of California's 1200 mile coastline along beaches, bluffs, seaside roads, and through coastal towns and communities." (Humboldt County Coastal Trail Implementation Strategy (January, 2011)). As shown on the "Coastal Resources" map below, the project area runs parallel to the "completed segment" of the CCT on SR 101 in Humboldt County, from Patrick's Point State Park, north to Stone Lagoon. The Pacific Coast Bike Route runs along SR 101. The wider shoulders would improve bicycle accommodations on the Pacific Coast bicycle route.


Legend
Project Location (Approximate)
Pacific Coast Bike Route
California Coastal Trail
Coastal Zone Boundary
End Project
Post Mile 111.6
Begin Project
Post Mile 111.4
Sources: Esri, HERE, DeLorme, USGS, Intermap, Increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
0
1
2 Miles
Caltrans

CLIMATE CHANGE

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (s, s, s, 2-tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles make up the largest source of GHG-emitting sources. The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

There are typically two terms used when discussing the impacts of climate change: "Greenhouse Gas Mitigation" and "Adaptation." "Greenhouse Gas Mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. "Adaptation" refers to the effort of planning for and adapting to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)[6].

There are four primary strategies for reducing GHG emissions from transportation sources: 1) improving the transportation system and operational efficiencies, 2) reducing travel activity, 3) transitioning to lower GHG-emitting fuels, and 4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued cooperatively.[7]

Regulatory Setting

State

With the passage of several pieces of legislation including State Senate and Assembly bills and Executive Orders, California launched an innovative and proactive approach to dealing with GHG emissions and climate change.

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[6] http://climatechange.transportation.org/ghg_mitigation/

[7] http://www.fhwa.dot.gov/environment/climate_change/mitigation/

Assembly Bill 1493 (AB 1493), Pavley, Vehicular Emissions: Greenhouse Gases, 2002: This bill requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

Executive Order (EO) S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to 1) year 2000 levels by 2010, 2) year 1990 levels by 2020, and 3) 80 percent below the year 1990 levels by 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

Assembly Bill 32 (AB 32), Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 sets the same overall GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order set forth the low carbon fuel standard for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill 97 (SB 97) Chapter 185, 2007, Greenhouse Gas Emissions: This bill required the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the California Environmental Quality Act (CEQA) Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires the California Air Resources Board (CARB) to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan for the achievement of the emissions target for their region.

Senate Bill 391 (SB 391) Chapter 585, 2009 California Transportation Plan: This bill requires the State's long-range transportation plan to meet California's climate change goals under AB 32.

Federal

Although climate change and GHG reduction are a concern at the federal level, currently no regulations or legislation have been enacted specifically addressing GHG emissions reductions and climate change at the project level. Neither the United States Environmental Protection Agency (U.S. EPA) nor the Federal Highway Administration (FHWA) has issued explicit guidance or methods to conduct project-level GHG analysis.[8] FHWA supports the approach that climate change considerations should be integrated throughout the transportation decision-making process–from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will assist in decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies outlined by FHWA to lessen climate change impacts correlate with efforts that the state is undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.
Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean Car Program" and EO 13514 - *Federal Leadership in Environmental, Energy and Economic Performance.*

Executive Order 13514 (October 5, 2009): This order is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

U.S. EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts v. EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, U.S. EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six greenhouse gases constitute a threat to public health and welfare. Thus, it is the Supreme Court's

[8] To date, no national standards have been established regarding mobile source GHGs, nor has U.S. EPA established any ambient standards, criteria or thresholds for GHGs resulting from mobile sources.

interpretation of the existing Act and EPA's assessment of the scientific evidence that form the basis for EPA's regulatory actions. U.S. EPA in conjunction with NHTSA issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010.[9]

The U.S. EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced GHG emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever GHG regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle GHG regulations.

The final combined standards that made up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards implemented by this program are expected to reduce GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On August 28, 2012, U.S. EPA and NHTSA issued a joint Final Rulemaking to extend the National Program for fuel economy standards to model year 2017 through 2025 passenger vehicles. Over the lifetime of the model year 2017-2025 standards this program is projected to save approximately four billion barrels of oil and two billion metric tons of GHG emissions.

The complementary U.S. EPA and NHTSA standards that make up the Heavy-Duty National Program apply to combination tractors (semi trucks), heavy-duty pickup trucks and vans, and vocational vehicles (including buses and refuse or utility trucks). Together, these standards will cut greenhouse gas emissions and domestic oil use significantly. This program responds to President Barack Obama's 2010 request to jointly establish greenhouse gas emissions and fuel efficiency standards for the medium- and heavy-duty highway vehicle sector. The agencies estimate that the combined standards will reduce CO2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of model year 2014 to 2018 heavy duty vehicles.

Project Analysis

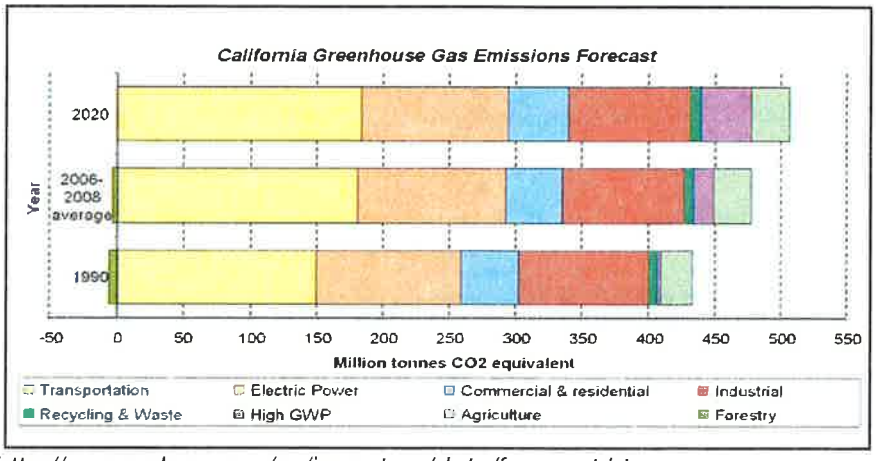
An individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its *incremental*

[9] http://www.c2es.org/federal/executive/epa/greenhouse-gas-regulation-faq

change in emissions when combined with the contributions of all other sources of GHG.[10] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(1) and 15130). To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

The AB 32 Scoping Plan mandated by AB 32 includes the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, the ARB released the GHG inventory for California (forecast last updated: October 28, 2010). The forecast is an estimate of the emissions expected to occur in 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the GHG inventory for 2006, 2007, and 2008.

FIGURE 1 California Greenhouse Gas Forecast



Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Caltrans and its parent agency, the Transportation 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

[10] This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the U.S. Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

is implementing the Climate Action Program at Caltrans that was published in December 2006.[11]

This project is a road safety and reconstruction project that was a result of slope failures occurred after severe storm events in 2011. No additional lanes are planned to be constructed. The capacity of the roadway will not increase and, thus, the operation of the project will have a low- to no-potential for an increase in GHG emissions.

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events

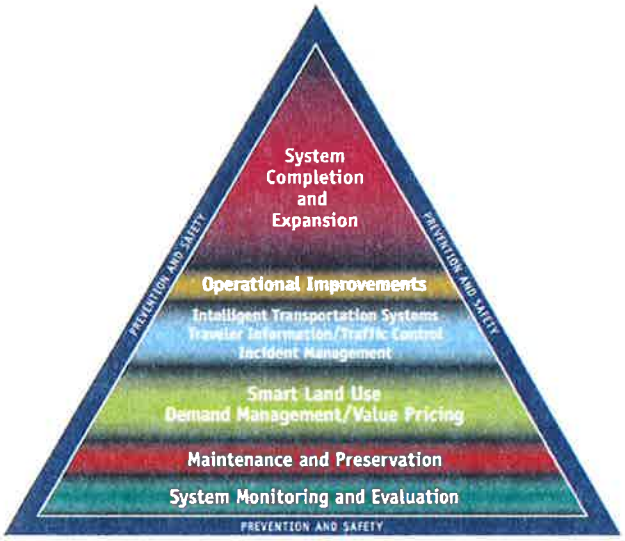
CEQA Conclusion

While the project will result in a slight increase in GHG emissions during construction, it is anticipated that the project will not result in any increase in operational GHG emissions. However, it is Caltrans determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and CEQA significance, it is too speculative to make a determination regarding significance of the project's direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

[11] Caltrans Climate Action Program is located at the following web address: http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

Greenhouse Gas Reduction Strategies

The Department continues to be involved on the Governor's Climate Action Team as the ARB works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set
forth in AB 32. Many of the strategies the Department is using to help meet the targets in AB 32 come from then-Governor Arnold Schwarzenegger's Strategic Growth Plan for California. The Strategic Growth Plan targeted a significant decrease in traffic congestion below 2008 levels and a corresponding reduction in GHG emissions, while accommodating growth in population and the economy. The Strategic Growth Plan relies on a complete systems approach to attain CO_2 reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as depicted in The Mobility Pyramid (*shown above*).



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 works closely with local jurisdictions on planning activities, but does not have local land use planning authority. The Department assists efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; the Department is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by participating on the Climate Action Team. It is important to note, however, that control of fuel economy standards is held by the U.S. EPA and ARB. The Department is also working towards enhancing the State's transportation planning process to respond to future challenges. Similar to requirements for regional transportation plans under Senate Bill (SB) 375 (Steinberg 2008), SB 391(Liu 2009) requires the State's long-range transportation plan to meet California's climate change goals under Assembly Bill (AB) 32.

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce greenhouse gas (GHG) emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future, statewide, integrated, multimodal transportation system.

The purpose of the CTP is to provide a common policy framework that will guide transportation investments and decisions by all levels of government, the private sector, and other transportation stakeholders. Through this policy framework, the CTP 2040 will identify the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the State's transportation needs.
Table below summarizes the Departmental and statewide efforts that the Department is implementing to reduce GHG emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Climate Change/CO_2 Reduction Strategies						
Strategy	**Program**	**Partnership**		**Method/Process**	Estimated CO_2 Savings Million Metric Tons (MMT)	
		Lead	**Agency**		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements & Intelligent Transportation System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	0.07	2.17
Mainstream Energy & GHG into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, CalEPA, ARB, CEC		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.045 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone ceme mix 25% fly ash cement m > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	Cal EPA, ARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.18

Climate Change (June 22, 2012): is intended to establish a Department policy that will ensure coordinated efforts to incorporate climate change into Departmental decisions and activities.

Caltrans Activities to Address Climate Change (April 2013)[12] provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce greenhouse gas emissions resulting from agency operations.

The following measures will also be included in the project to reduce the GHG emissions and potential climate change impacts from the project:

1. According to Caltrans Standard Specifications, the contractor must comply with all local Air Pollution Control District's (APCD) rules, ordinances, and regulations for air quality restrictions.
2. Caltrans Standard Specifications, a required part of all construction contracts, should effectively reduce and control emission impacts during construction under the provisions of Section 7-1.02C "Emission Reduction" and Section 14-9.03 "Dust Control". Provision 14-9.02 "Air Pollution Control" requires the contractor to comply with all pertinent rules, regulations, ordinances, and statutes of the local air district.
3. All temporarily disturbed areas will be restored and revegetated with appropriate native species upon project completion. Trees removed by the project will be replaced in kind onsite.

Adaptation Strategies

"Adaptation strategies" refer to how the Department and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality (CEQ), the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency task force progress report on October 28, 2011[13],

[12] http://www.dot.ca.gov/hq/tpp/offices/orip/climate_change/projects_and_studies.shtml

[13] http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation

outlining the federal government's progress in expanding and strengthening the Nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provides an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as freshwater, and providing accessible climate information and tools to help decision-makers manage climate risks .

Climate change adaptation must also involve the natural environment as well. Efforts are underway on a statewide-level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08, which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea level rise.

In addition to addressing projected sea level rise, the California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, state and federal public and private entities to develop The California Climate Adaptation Strategy (Dec 2009)[14], which summarizes the best-known science on climate change impacts to California, assesses California's vulnerability to the identified impacts, and then outlines solutions that can be implemented within and across state agencies to promote resiliency.

The strategy outline is in direct response to EO S-13-08 that specifically asked the Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other state agencies were involved in the creation of the Adaptation Strategy document, including the California Environmental Protection Agency; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: Public Health; Biodiversity and Habitat; Ocean and Coastal Resources; Water Management; Agriculture; Forestry; and Transportation and Energy Infrastructure. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings.

[14] http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF

The National Academy of Science was directed to prepare a Sea Level Rise Assessment Report[15] to recommend how California should plan for future sea level rise. The report was released in June 2012 and included:

- Relative sea level rise projections for California, Oregon and Washington taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates.
- The range of uncertainty in selected sea level rise projections.
- A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.
- A discussion of future research needs regarding sea level rise.

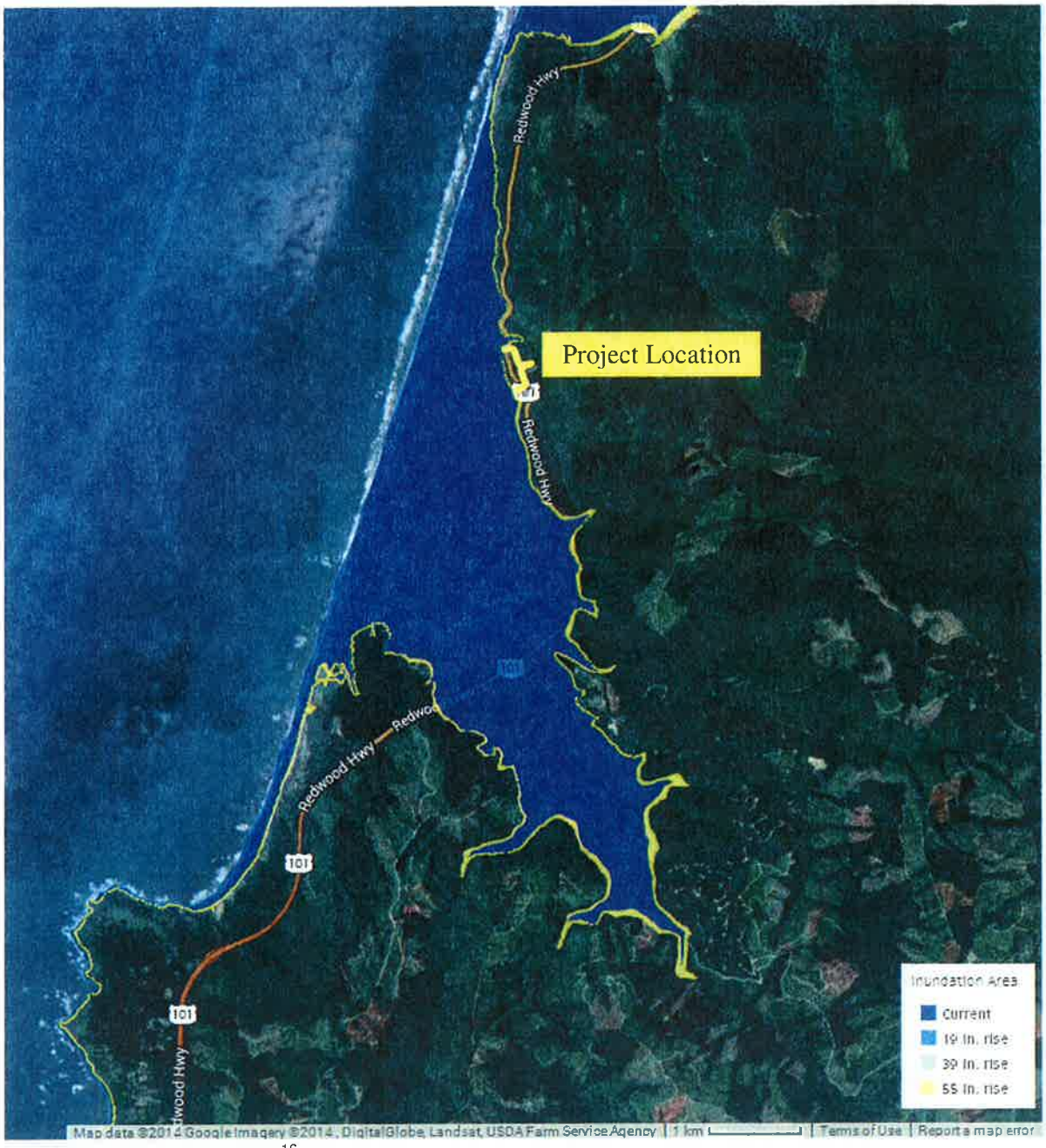
In 2010, interim guidance was released by The Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans as a method to initiate action and discussion of potential risks to the states infrastructure due to projected sea level rise. Subsequently, CO-CAT updated the Sea Level Rise guidance to include information presented in the National Academies Study.

All state agencies that are planning to construct projects in areas vulnerable to future sea level rise are directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data.

All projects that have filed a Notice of Preparation as of the date of EO S-13-08, and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects may, but are not required to, consider these planning guidelines. The project is located in the coastal region along the inland side of Big Lagoon. While, sea level rise forecasts show that Big Lagoon adjacent waterways will be inundated with sea water, the project area is not expected to be in the area of inundation, as shown in Figure 2.

[15] *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012) is available at http://www.nap.edu/catalog.php?record_id=13389.

FIGURE 2



Source: Cal-Adapt 2014[16]

Coastal areas are vulnerable to a range of natural hazards, including storms, extreme high tides, cliff erosion, and projected rising sea levels. According to several sea level rise projection maps, sea level rise (SLR) in the next century may inundate certain areas along the California coastline, affecting land uses and roadway infrastructure. The potential for projected SLR within the project vicinity through the years 2050 and 2100 may exacerbate existing natural hazards within the project area that will need to

[16] http://cal-adapt.org/sealevel/

be addressed on a regional level through collaboration between Caltrans and local agencies with land use authority. The existing roadway is outside of the shaded blue and yellow areas shown on the attached sea level rise map taken from the California Energy Commission's Cal-Adapt web interface. This map shows the areas of direct impacts due to existing flooding potential or projected sea level rise inundation. This project proposes to realign and reinforce an existing structure with an approximated design life of approximately 75 years. A comprehensive planning and adaptation plan approach will be required through collaboration efforts between Caltrans and the local land use planning agencies to ensure future plans for infrastructure and the surrounding land uses consider sea level rise.

Executive Order S-13-08 also directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance and operational improvements of the system, and economy of the state. The Department continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, the Department is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change effects, the Department has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, the Department will be able review its current design standards to determine what changes, if any, may be needed to protect the transportation system from sea level rise.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. The Department is an active participant in the efforts being conducted in response to EO S-13-08 and is mobilizing to be able to respond to the National Academy of Science Sea Level Rise Assessment Report.

Section 5 – Comments and Coordination

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required, and to identify potential impacts and avoidance, minimization and/or 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 (PDT) meetings and interagency coordination meetings. This chapter summarizes the results of the Department's efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

The Initial Study with Proposed Negative Declaration will be made available for public and agency review and comment for 30 days. Caltrans has ensured that the document will be made available to all appropriate parties and agencies, including the following: 1) Responsible agencies, 2) Trustee agencies that have resources affected by the project, 3) other state, federal and local agencies which have regulatory jurisdiction, or that exercise authority over resources which may be affected by the project, 4) the general public. Copies of the document will be made available at the Caltrans District 3 Office of Environmental Management (M-2) located at 703 B St., Marysville, at the District 1 Office at 1656 Union Street, Eureka, at the Eureka Public Library at 1313 3rd Street, Eureka, and at the Trinidad Public Library at 380 Janis Court, Trinidad. This document may be downloaded at the following website address:

http://www.dot.ca.gov/dist3/departments/envinternet/envdoc.htm.

Federal Endangered Species Act Consultation Summary

Section 7 Consultation for effects to NSO and MAMU and Designated Critical Habitat for MAMU is in progress. The project is not expected to affect any other federally listed species. Caltrans has determined that the project is "not likely to adversely affect" both NSO and MAMU and that the project will not result in an adverse modification of designated critical habitat for MAMU.

USFWS's Programmatic Letter of Concurrence

This project's activities will be covered under the USFWS-Caltrans Routine Maintenance Programmatic Letter of Concurrence (PLOC) (USFWS 2014). The PLOC covers specific maintenance activities (including construction of retaining walls, and permanent restoration of storm damage) that "may affect but are not likely to adversely affect" specific federally listed species including both NSO and MAMU (as well as other federally listed species that do not occur within the project's Action Area .

The PLOC covers the project's activities and their potential effects to NSO and MAMU, with the condition that the specific Avoidance and Minimization Measures that are outlined in the PLOC for each applicable species (NSO and MAMU) can be complied with.

California Endangered Species Act Consultation Summary

Coordination with California Department of Fish and Wildlife for effects to State Listed Species and candidate species is currently in progress. Impacts to State Listed and Candidate species are not anticipated to rise to the level of take under California Endangered Species Act.

Wetlands and Other Waters Coordination Summary

A Jurisdictional Determination Report will be sent to US Army Corps of Engineers and Regional Water Quality Control Board (RWQCB) for review and verification. A Coastal Wetland Delineation report will be submitted to the California Coastal Commission for their review.

California Coastal Act Coordination

Project Activities must be consistent with California Coastal Act and the Humboldt Bay Area local Coastal Program. Development occurring within areas containing "Environmentally Sensitive Habitats"(ESHA) shall be subject to conditions and requirements of Humboldt Bay LCP.

The Humboldt Bay Local Coastal Plan defines ESHA's as "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments" (Coastal Act Section 30107.5). These include:

- *Areas of special biological significance* (RWQCB)
- Rare and Endangered Species habitat
- Coastal wetlands and lagoons

A Coastal Wetland Delineation report, as well as an analysis of ESHA's Existing in the project area report will be submitted to the California Coastal Commission for their review.

The Humboldt Bay Area Local Coastal Plan also requires that all road projects employ "suitable techniques and measures necessary to prevent erosion and minimize surface runoff". Caltrans will incorporate specific measures (BMP's) to prevent erosion.

Section 6 – List of Preparers

The following Caltrans staff contributed to the preparation of this Initial Study:

Brady, Marie, Project Engineer. Contribution: Project Design.

Cardiff, Darrell, Associate Environmental Planner (Archaeology). Contribution: Cultural Resource Report.

Hodgson, Talitha, Project Manager. Contribution: Project Coordination.

Lazzaratto, Laura, Landscape Architect. Contribution: Visual Impact Assessment.

Melendrez, David, Senior Transportation Engineer. Contribution: Water Quality Assessment Report.

Pepper, Kristine, Hydraulics Engineer. Contribution: Floodplain Evaluation Report.

Pitts, Cassandra, Associate Environmental Planner (Coordinator). Contribution: Initial Study.

Pommerenck, Adele, Senior Environmental Planner. Contribution: Environmental Branch Chief.

Thoreson, Katie, Associate Environmental Planner (Natural Science). Contribution: Project Biologist, Natural Environment Study,

Werner, Steve, Hazardous Waste Specialist. Contribution: Initial Site Assessment.

Zandian, Saeid, Air and Noise Specialist. Contribution: Air and Noise Assessment.

Appendix A Public Comments

State of California • Natural Resources Agency
Edmund G. Brown Jr., *Governor*
DEPARTMENT OF PARKS AND RECREATION
Lisa Ann L. Mangat, *Acting Director*
NORTH COAST REDWOODS DISTRICT
P.O. Box 2006
Eureka, CA 95502-2006
(707) 445-6547 Ex25; Fax (707) 441-5737
Email: roger.goddard@parks.ca.gov

October 06, 2014

Big Lagoon Slipout Repair – Big Lagoon Wall
Eureka, CA 95502

Regarding: Big Lagoon Slipout Repair – Big Lagoon Wall
Initial Study with Proposed Mitigated Negative Declaration (SCH # not provided)

To Whom It May Concern:

Thank you for the opportunity to review and comment on the Big Lagoon Slipout Repair – Big Lagoon Wall Initial Study with Proposed Mitigated Negative Declaration (SCH# not provided).

California State Park's North Coast Redwoods District (NCRD) consists of twenty-four park units totaling approximately 134,000 acres and is responsible for the management of the lagoons within Humboldt Lagoons State Park, which are part of the largest lagoon system in the United States. The lagoons are enjoyed by local county residents to more distant statewide visitors, who kayak, sail, bird watch, swim, and fish. Big Lagoon provides habitat for thousands of resident and migratory birds and the federally endangered tidewater goby. Additionally, NCRD manages Harry Merlo State Recreation Area (HMSRA) and Big Lagoon Natural Preserve, which surround the proposed Caltrans project.

When reviewing projects that may affect state park resources we base our review on the Department's Mission Statement which states:

"The mission of the California Department of Parks and Recreation is to provide for the health, inspiration, and education of the people of California by helping to preserve the states extraordinary biological diversity, protecting it's most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation."

After careful review of Big Lagoon Slipout Repair – Big Lagoon Wall Initial Study with Proposed Mitigated Negative Declaration, here after referred to as the IS/MND, California State Park's North Coast Redwoods District (NCRD) has concerns regarding the assessment, impact analysis, and mitigation for impacts to Park resources.

Geology

Please confirm that the project addresses stabilization of the full length of all cracks along the headscarp of the subject slide or if it does not, please address how remnant sections of unconstrained, potentially unstable soil at the road shoulder will be addressed.

Natural Resources

In reading the referenced environmental document, it was noted on page 47, paragraph 1, lines 2-4. " Tree and vegetation removal, including redwoods within Big Lagoon State Park, would be necessary to allow for the improvement activities." Please clarify this.

The IS/MND is vague in regard to how it assessed impacts to trees as well as to the proximity of trees to the project area. It states that old growth trees will not be impacted but does not state how that was determined. For impact assessment of mature trees, Caltrans needs to assess the portions of the Structural Root Zone (3 x dbh) and the Root Health Zone (5 x dbh) that will be impacted by the proposed action. Any root 2" or greater in either of these zones that are impacted or that are covered by hardened surfaces could be considered a significant adverse effect. These new impacts also need to be evaluated for the area already impacted by the existing highway and then it must be determined if any of these previously impacted trees will suffer greater impacts in either of these zones. State Parks recommends that Caltrans provides documentation that there are no old growth or mature trees within 5 x dbh of the proposed action. If there are, then an evaluation as described above needs to be conducted.

It is not stated in the IS/MND that a protocol floristic survey and wetland delineation were conducted. Please clarify.

On page 28, under Migratory Birds – Avoidance, Minimization and/or Mitigation Measures, it is stated that if vegetation has not been cleared outside of the breeding season, then bird surveys will be conducted for nesting birds. NCRD requests that vegetation must be removed outside of the breeding season, as attempting nesting surveys and setting up buffer zones for established nests are not adequate ways to protect migratory birds. Additionally, nesting vegetation must be kept cleared until the project begins construction.

Natural Preserves

The majority of HMSRA is designated as a State Recreation Area; however, contained within the Park are three subunits classified as Natural Preserves. Under the California State Park classification system, Natural Preserves retain the highest level of protection. Natural Preserves "***consist of distinct nonmarine areas of outstanding natural or scientific significance established within the boundaries of other state park system units. The purpose of natural preserves shall be to preserve such features as rare or endangered plant and animal species and their supporting ecosystems, representative examples of plant or animal communities existing in California prior to the impact of civilization, geological features illustrative of geological processes, significant fossil occurrences or geological features of cultural or economic interest, or topographic features illustrative of representative or unique biogeographical patterns.***" (PRC §5019.71). The Natural Preserves in HMSRA were established because they contain "the best known example of an unusual old-growth forest association of coast redwood, grand fir, and Sitka spruce DPR 1986).

It appears that the proposed action will occur adjacent to the Natural Preserves located in HMSRA. The IS/MND did not address the presence of the Preserves nor did it include it in the impact analysis. Due to the sensitivity of this classification and the habitat within, the highest care should be given in the evaluation of impacts, including impacts to trees adjacent to project activites.

Revegetation Plan

The IS/DEIR states that it will revegetate areas disturbed by the proposed action; however, it does not provide a revegetation plan that demonstrates this. The mitigation proposed is less than a 1:1 ratio, and this is inadequate to account for temporal losses. Furthermore all mitigation measures must be enforceable. State Parks recommends that Caltrans develop a revegetation plan and submit it for review and approval to State Parks. The Revegetation Plan must follow NCRD's genetic integrity guidelines. NCRD recommends that the plan extend for a 5 year period, with benchmarks on the success of the revegetation at years 2, 3, 4 & 5. If failure by the 5th year, Caltrans need to consult with NCRD.

As addressed above, the NCRD's review of the IS/DEIR has found several major deficiencies in the analysis of impacts to sensitive resources including old growth trees and forests and the complete failure to address impacts to the State Preserves. It is also the NCRD determination that the project description in the IS/DEIR is inadequate to properly assess impacts associated with the proposed action. Therefore, NCRD recommends that Caltrans be required to address the inadequacies of the IS/DEIR and provide this information for review. This would require either an extension of the public comment period or a refilling of the IS/DEIR. Without such additional information, NCRD can only conclude that the proposed action will have significant adverse effects on park resources.

If you have any questions regarding our comments please feel free to contact us.

Sincerely,

(Signed by Carol Wilson *for)*
Roger R. Goddard
Acting District Manager
North Coast Redwoods District

Cc: State Clearing House

Response to Comments from California State Park's North Coast Redwoods District (NCRD)

Response to Comment #1: The proposed anchored pile systems encompass all but approximately the northernmost 50 feet of the cracks observed on site. The magnitude of the cracks at the very northern end of the project did not warrant extending the wall based on geotechnical considerations. Furthermore extending the wall to encompass the cracks in this area would require constructing the wall farther toward the Lagoon resulting in significant impacts.

Response to Comment #2: The reference to remove redwoods within Big Lagoon State Park was included in error and has been removed from the Final Environmental document.

Response to Comment #3: Caltrans has determined that no old growth trees will be impacted by the project. An evaluation was conducted to determine whether work (i.e. placement of fill, excavation, etc.) within a buffer of 5x the diameter at breast height (dbh) of mature trees would be required. Trees greater than 6 inches dbh were surveyed, and any mature trees with buffer zones that exist in proximity of the proposed repair work were mapped (with their corresponding 5 x dbh buffers) to determine if further analysis of potential impacts would be required. It was determined that work would occur within the buffer area for one 8-foot dbh redwood near the south end of the proposed timber-lagged soldier pile wall. Construction of the wall and installation of the end treatment (crash cushion) will result in impacts to approximately 6% of the trees Root Health Zone, and approximately 5% of the trees Structural Root Zone. After an assessment of the trees existing heath and the potential impacts to tree roots from the proposed work by certified arborist, Darin Sullivan (Caltrans), it was determined that the work would not result in a considerable impact to the health of the tree.

The following avoidance and minimization measure will be implemented to further reduce potential impacts to tree roots:

- A biological monitor will be onsite during excavation within the Structural Root Zone, if any roots greater than 2 inches in diameter are encountered, an air spade must be used.

- As disclosed in the document, one mature alder (24 inch dbh) will require removal due to the installation of an under drain associated with the proposed wall.

Response to Comment #4: Wetland delineation and California Department of Fish and Wildlife protocol floristic surveys were conducted for the project. Additional information regarding these surveys is included in the Natural Environment Study (NES) for the project, which is available upon request.

Response to Comment #5: To discourage nesting, vegetation removed within the project footprint will be removed outside the breeding season and will be kept trimmed and/or cleared prior to and during construction. For contingency purposes, a plan will be developed, prior to construction of the project, to determine the protocol to be followed if any nesting birds are discovered in the project area or if it is determined that additional vegetation will need to be removed during construction. This plan will be developed in coordination with the appropriate regulatory agencies.

Response to Comment #6: The southern portion of the project is adjacent to two units within Harry A. Merlo State Recreational Area designated by California State Parks as Natural Preserves (# 2 and 3). Although the document did not specifically address these areas designated as Natural Preserves, it addressed potential impacts to the Natural Communities which make up these Preserves. Potential impacts to Natural Preserves are discussed in the Final Environmental Document under subsection Natural Communities.

Response to Comment #7: Caltrans routinely prepares revegetation plans during and after the permitting phase of projects to ensure that the commitments agreed upon can be incorporated. The revegetation plan for this project will include a five-year monitoring/plant establishment period with specific success criteria (i.e. benchmarks) outlined. The plan will include annual monitoring reports (beginning at year 2) to determine whether contingency measures will be required. A draft of this plan will be submitted to State Parks and other agencies for review.

The proposed revegetation will be consistent with NCRD's genetic integrity guidelines. Caltrans staff have been working with State Parks' staff on a plant outgrow contract to ensure there will be acceptable planting materials (collected locally) available at the time of planting.

Caltrans typically mitigates for impacts to wetlands at a 3:1 ratio for permanent Impacts and a 1.1:1 ratio for temporary impacts; however, these ratios vary depending on the quality of the wetland/or habitat in question. Trees will be replanted at a minimum of a 3:1 ratio.

Addendum to the Revised Natural Environmental Study

01-HUM-101-PM 111.4

EA 01-0B430

March 2016

(Revised Natural Environmental Study –November 2014)

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Rec'd 3/2/2016

Summary

Caltrans proposes adding a culvert and downdrain replacement to the Big Lagoon Walls Storm Damage Repair Project on US Highway (US) 101 at post mile (PM) 111.4 in Humboldt County. The location of the new culvert and downdrain replacement is within the original project boundary. All study methods, regulatory requirements, environmental settings, and results indicated in the *Big Lagoon Walls: Revised Natural Environmental Study – November 2014* (NES) are valid and applicable to the proposed additional work with the exceptions noted below. Additional proposed work will be completed within the original project time schedule. All avoidance and minimization measures within the NES will be implemented.

The replacement of the culvert and downdrain will result in a temporary impact to a non-relatively permanent water (Non-RPW) and potential minimal impacts to mature redwood tree roots and health. The additional proposed work will require updates to the 401 Water Quality Certification with the North Coast Regional Water Quality Control Board, the non-reporting Section 404 Nationwide Permit 14 with US Army Corps of Engineers, and the 1602 Lake or Streambed Alteration Agreement (LSAA) with California Department of Fish and Wildlife.

Additional Project Description – Drainage Work

A field investigation in December 2015 revealed deterioration of an existing 18-inch diameter culvert on US 101 at PM 111.42 in Humboldt County; therefore, the culvert has been recommended for replacement. All work will occur within the existing Caltrans right-of-way in the limits of the Big Lagoon Walls Project.

The existing 18-inch diameter culvert and downdrain will be replaced with a 24-inch diameter culvert and downdrain. The maximum depth of excavation in the within the road itself will be approximately 8 feet. Trenching to remove the culvert will be approximately 3 feet wide and may extend up to 5 feet past the existing culvert inlet. No additional modifications to the configuration of the existing culvert or downdrain are proposed.

Most of the work will occur from the top of the existing roadway. No temporary access roads will be required. To remove and replace the culvert, trenching and excavation will occur within the roadway. The existing downdrain at the culvert outlet will be removed and replaced. No tree removal will be required; however, minimal removal of ruderal vegetation will occur.

Scope of Work

- Remove existing 18-inch diameter by 20.5 feet long downdrain.
- Excavate, trench, and remove existing 18-inch diameter by 48-feet long culvert.
- Replace culvert with 24-inch diameter by 48-feet long culvert.
- Backfill excavation and trenching.
- Replace existing downdrain with 24-inch diameter by 20.5 feet long downdrain.
- Apply erosion control.

Construction Schedule

Construction will be about 5 working days, and will occur within the original timeframe indicated in the NES for the Big Lagoon Walls Project. All construction activities will be conducted concurrently with the Big Lagoon Walls Project. See Attachment A for the updated project plans.

Study Methods

On January 5, 2016, a site visit was conducted by Caltrans biologists Jennifer Barbour and Denise Walker-Brown to assess potential impacts related to the new culvert and downdrain replacement. It was determined that the culvert and downdrain replacement would result in additional temporary impacts to the drainage ditch identified as a Non-RPW on the northbound side of US 101 (Map 1. Wetlands and Waters), and potential impacts to mature redwood tree roots (Attachment A. Plans 5-8, and Map 2). To further assess tree health and root impacts, a subsequent field visit was conducted on January 21, 2016 with Caltrans arborist, Darin Sullivan, Caltrans biologist, Jennifer Barbour, design engineer, Marie Brady, and resident engineer, Mark Gorona.

Waters of the US Updated

Three Wetland or Other Waters of the United States (OWUS) were determined to be jurisdictional under Sections 401 and 404 of the Clean Water Act (CWA) in the NES. With the addition of the culvert replacement at PM 111.42 another jurisdictional feature is identified. This additional feature is a Non-RPWs- OWUS that do not have continuous flow at least seasonally, but have a significant nexus to a TNW.

The culvert and downdrain to be replaced at PM 111.42 conveys a segment of Non-RPW across US 101. At the inlet there is a distinct bed and bank; however, at the outlet there is no defined bed and bank. Water flows down the slope towards Big Lagoon into downed logs and vegetation. The table below summarizes the updates to existing wetlands and waters in the project area (Table 1). The segment of Non-RPW that is conveyed by the culvert at PM 111.42 has been

added to Table 1 and is highlighted. This culvert and jurisdictional feature was not identified in the project wetlands and waters analysis in the NES. An updated map has also been provided below (Map 1).

Table 1. Updated Wetlands and Waters in the Project Area

	Present within Study Area	
	Length (ft.)	Areas (Sq. ft. / Ac.)
Other Waters of the United States (OWUS)		
RPW	112 ft	448 SF/ 0.010 ac
Culverted RPW (PM 111.43)	70 ft	140 SF/ 0.003 ac
Non RPW	332 ft	664 SF/ 0.015 ac
Culverted Non RPW (PM 111.42)	68.5 ft	103 SF/ 0.002 ac
Wetlands		
USACE	n/a	345 SF/ 0.008 ac
Coastal	n/a	926 SF/ 0.021 ac

Additional Project Impacts to Other Waters of the US (OWUS)

The new culvert and downdrain replacement at PM 111.42 is expected to add a temporary impact of approximately 0.0003 acre to Non-RPW (Table 2). Additional temporary impacts to the Non-RPW at the culvert inlet include excavation of an area approximately 5 feet from the inlet (3 feet wide and 1-foot deep). See Attachment A, Plans 1-8 for updated project plans. The culvert and downdrain replacement, and the dredging within Non-RPW, will occur when water is not present. The dredged material will be replaced and revegetated with erosion control seed mix. No additional impacts are anticipated. Standard erosion protection measures and the avoidance and minimization measures listed in the NES will be implemented.

Updated impacts to all wetlands and other waters are summarized below. The new impacts are highlighted.

Table 2. Updated Impacts to Wetlands and Waters in the Project Area

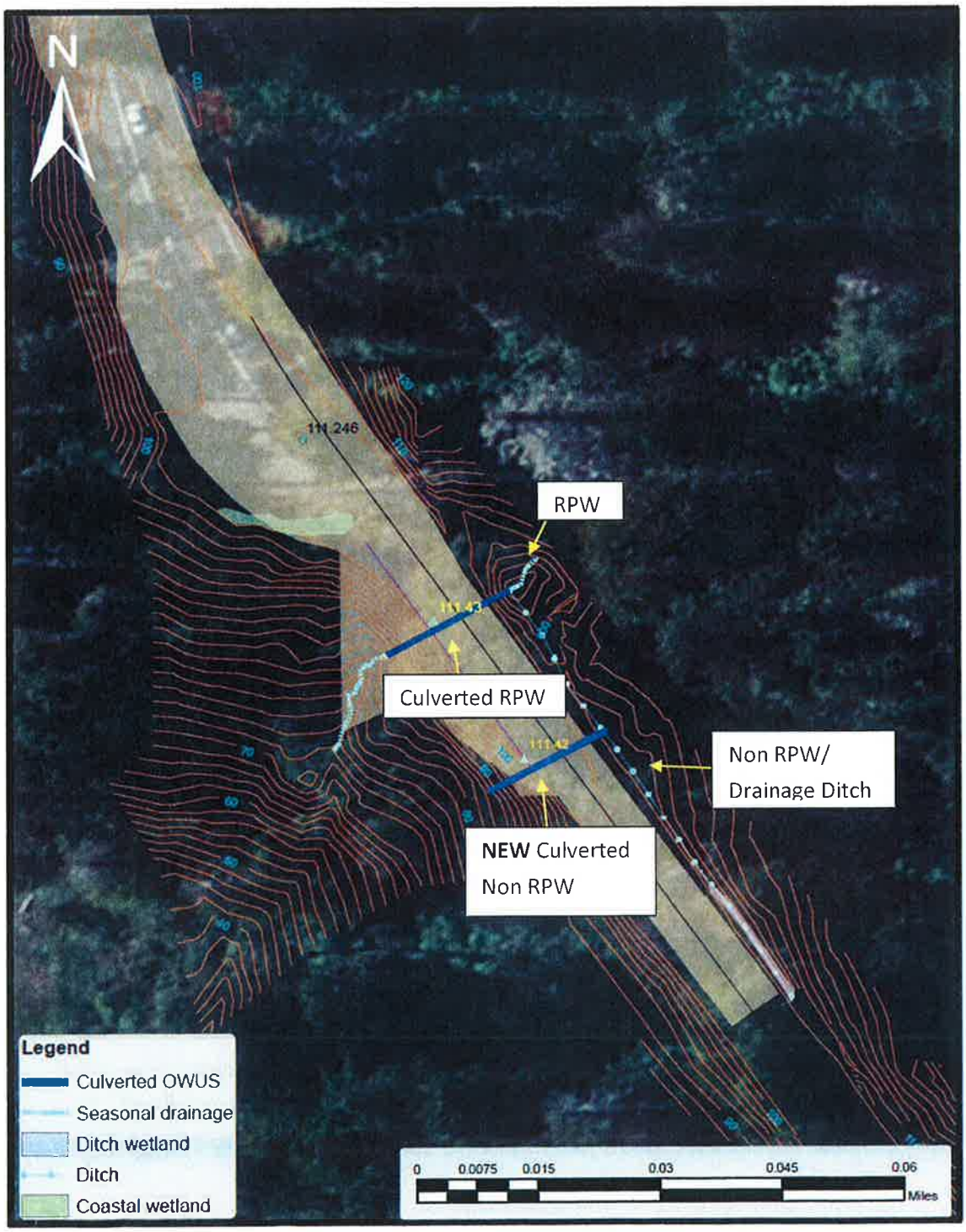
	Temporary		Permanent		Total	
	Length (ft)	Area (SF/Ac.)	Length (ft)	Area (SF/Ac.)	**Length (ft)**	**Area (SF/Ac.)**
OWUS						
RPW	15 ft	64 SF/ 0.001 ac	6	24	**22 ft**	**88 SF/ 0.002 ac**
Culverted RPW			25 ft	50 SF/ 0.001 ac	**25ft**	**50 SF/ 0.001 ac**
Non RPW	5 ft	15 SF/ 0.0003 ac	0	0	**5 ft**	**15 SF/ 0.0003 ac**
Wetlands						
USACE	0	0	0	0	**0**	**0**
Coastal	N/A	373 SF/ 0.009 ac	0	0	**N/A**	**373 SF/ 0.009 ac**

RPW = relatively permanent water

Map 1. Wetlands and Waters

Big Lagoon Walls (0B430)

HUM-101-PM111.4/111.6



Compensatory Mitigation

No additional compensatory mitigation is anticipated due to the avoidance and minimization measures described in the Revised NES.

Tree Impacts

An evaluation was conducted to determine if ground disturbance related to the culvert and downdrain replacement at PM 111.42 would occur within the root health zone (RHZ) or the structural root zone (SRZ) of any mature trees over 30 inches diameter at breast height, the diameter measured 4.5 feet above ground level (DBH). The RHZ is a circular area with the tree trunk at the center and an area equal to five times the DBH. The SRZ is a circular area with the tree trunk at the center and a radius equal to three times the DBH. Work will occur within at least one of these zones for two additional trees, and for one tree that was previously considered in the NES. See Attachment A for project plans with tree details, and Attachment B for site photos.

Tree 32 Redwood (6-foot DBH)

The culvert replacement will require work within the RHZ and SRZ of Tree 32, which is a 6 foot DBH Redwood tree (*Sequoia sempervirens*) located on northbound US 101. Currently, this tree appears to be in good health. Tree 32 is located upslope of the culvert work. The existing culvert at PM 111.42, installed in 1984, is above an old culvert that was sealed and abandoned.

The majority of the work will be within the prism of the roadway on fill material. The excavation and ground disturbance at the inlet of the culvert at PM 111.42 (an area 3' x 5', up to 1 foot in depth) will occur within the RHZ of this tree (approximately 14 cubic feet), with a small portion within the SRZ (approximately 1 cubic foot).

Replacement of the culvert will not impact any structural roots that will destabilize the tree and is not anticipated to divert a larger volume of water from the tree than the existing culvert. While the current proposed ground disturbance may have minor impacts to roots within these zones of Tree 32, it has been determined there should be no substantial negative impacts due to the historical ground disturbance within the last 30 years, and the appearance of good tree health.

Tree 1 Redwood (8-foot DBH)

The NES evaluated the impacts to roots of Tree 1, an 8-foot DBH Redwood tree, associated with construction of the wall and installation of the end treatment/crash cushion. Installation of the crash cushion will occur within a small portion of the SRZ. In addition, the new culvert replacement will also require excavation within both the RHZ and SRZ of Tree 1.

Tree 1 is located on the southbound side of US 101, on the slope below the prism of the roadway. Tree 1 exhibits multiple branches at the crown, but overall appears to be in good health.

The current culvert outlet at PM 111.42 is located on the southbound side of US 101 downslope, approximately 8 feet below the surface of the roadway within the road fill. Due to the culvert outlet location in roadway fill upslope from the tree and the roots system potential impacts to Tree 1 are minimal to none. The replacement of the downdrain does not include excavation and will not have an impact on Tree 1's root system.

Tree 2 Redwood (5.15-foot DBH)

Replacement of the culvert downdrain at PM 111.42 will occur within Tree 2's (5.15 DBH Redwood Tree) RHZ. The downdrain replacement does not include excavation and will not have an impact on tree roots.

The following avoidance and minimization measures is proposed in the Revised NES, and will be implemented for the additional work:

- A biological monitor will be onsite during excavation within the Structural Root Zone; if any root greater than 2 inches in diameter are encountered an air spade must be used.

Conclusion

The proposed culvert replacement will result in minimal impacts. Additional impacts to other waters of the US will not result in a substantial increase in the overall impacts of this project. The impacts to tree roots will be minor. Overall, the additional work will be low impact, and will not negatively impact any tree's health or their associated communities. All avoidance and minimization measures included in the NES will be implemented during the work outlined in this addendum.

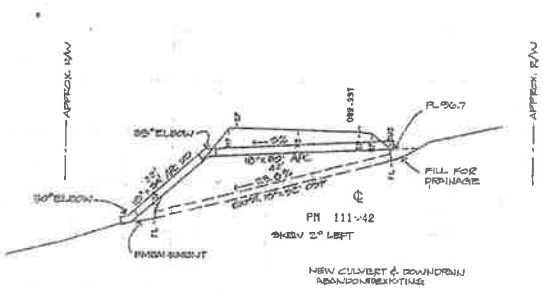
The scope of this work was assessed and is covered under the USFWS Guidance (2014) *Programmatic informal consultation for the California Department of Transportation's Routine Maintenance and Repair Activities, and Small Projects Program for Districts 1 and 2*. Caltrans has concluded that the addition of the culvert and downdrain replacement will not result in a change from the original determination that the project is "not likely to adversely affect" both Northern Spotted Owl (*Strix occidentalis caurina*) and Marbled Murrelet (*Brachyramphus marmoratus*).

The following permit applications will be revised to include the additional work: Section 401 Water Quality Certification with the North Coast Regional Water Quality Control Board, the Non-Reporting Section 404 Pre Construction Notification with the US Army Corps of Engineers,

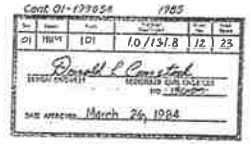
and the 1602 Lake or Streambed Alteration Agreement with the California Department of Fish and Wildlife.

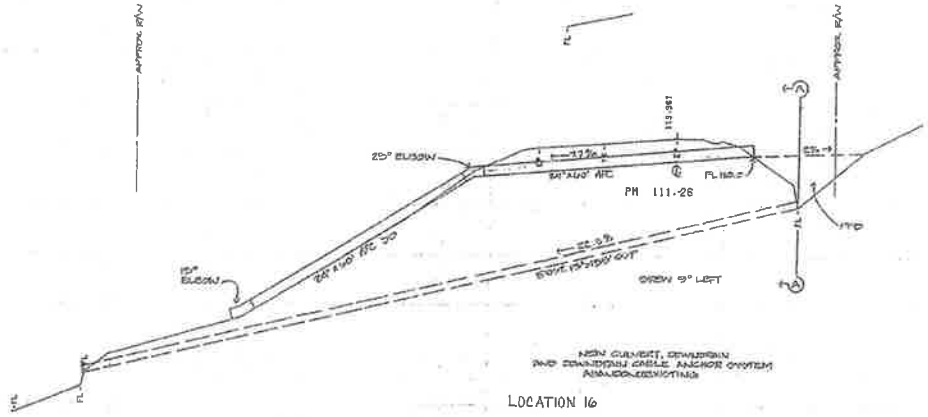
Attachment A. Project Plans

- Plan 1. As Built
- Plan 2. Layout
- Plan 3. Drainage Profile
- Plan 4. Drainage Details and Quantities
- Plan 5. Tree Impacts
- Plan 6. Tree 1, 2, and 32 Details
- Plan 7. Tree 32 Detail
- Plan 8. Trees 1 and 2 Detail
- Map 2. Tree Impacts – Original Scope of Work

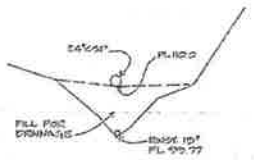


LOCATION 17





LOCATION 16



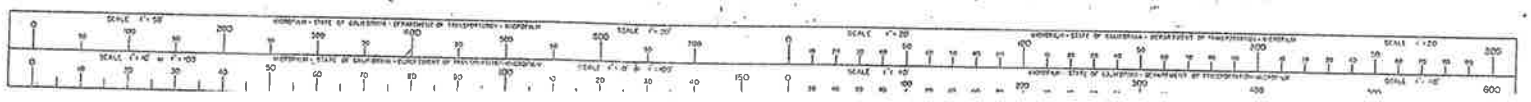
SECTION A-A

DRAINAGE PROFILES

12

9

SCALE: H10' V10' P.M. 111.26 & 111.42



NOTE:

FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

LEGEND

CRASH CUSHION	CRASH CUSHION (TYPE TRACC) (SEE STRUCTURE PLANS)
TFESA	Temp FENCE (TYPE ESA)

CURVE DATA

No.	R	Δ	T	L
(1)	600'	23°41'40"	125.86'	248.13'
(2)	600'	12°23'43"	65.16'	129.80'

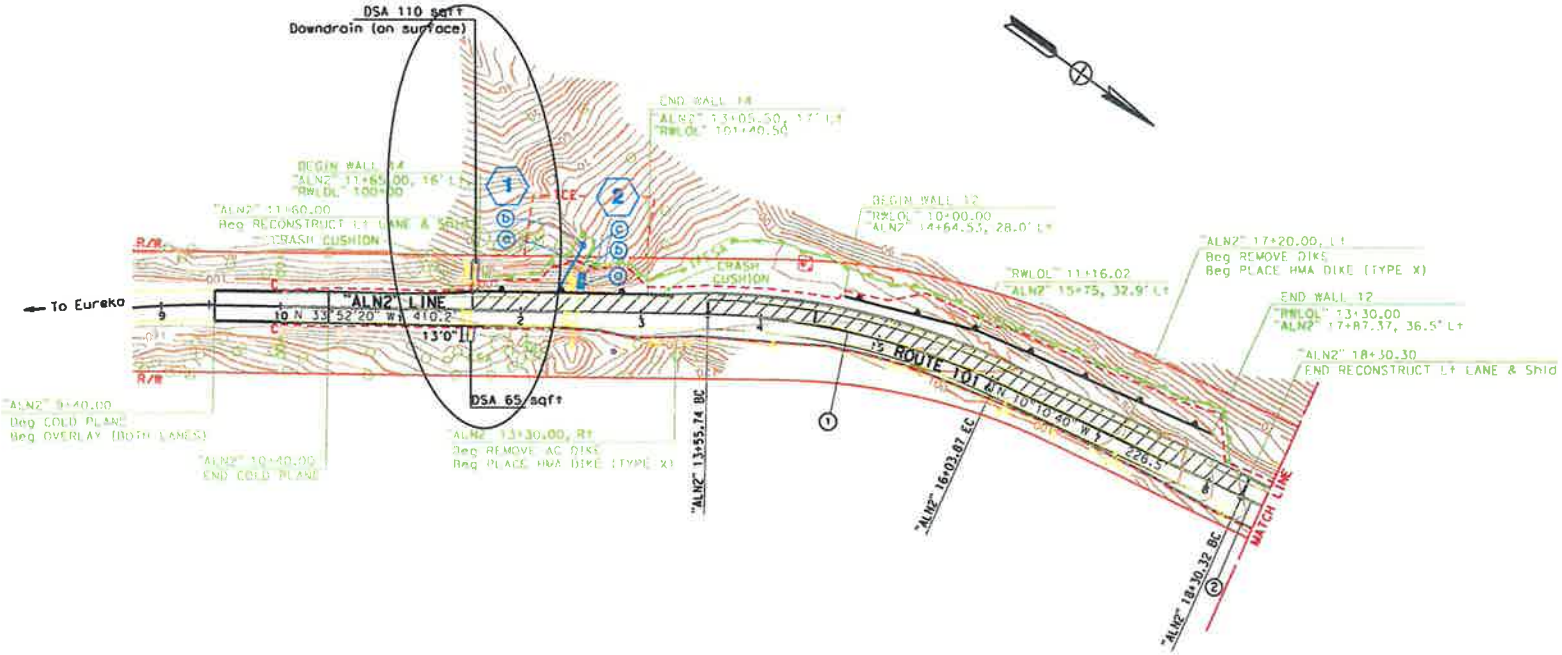
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER NO. EXP. CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



LAYOUT

SCALE: 1" = 50'

L-1

REVISED BY	DATE REVISED	CALCULATED-DESIGNED BY	CHECKED BY	FUNCTIONAL SUPERVISOR
DIANNE M. EDWARDS		MARIE A. BRADY		

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

DATE PLOTTED => SCALE
TIME PLOTTED => TIME

BORDER LAST REVISED 7/2/2010

USERNAME => USER
DGN FILE => *REQUIRED*

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0000

PROJECT NUMBER & PHASE 0000000001

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

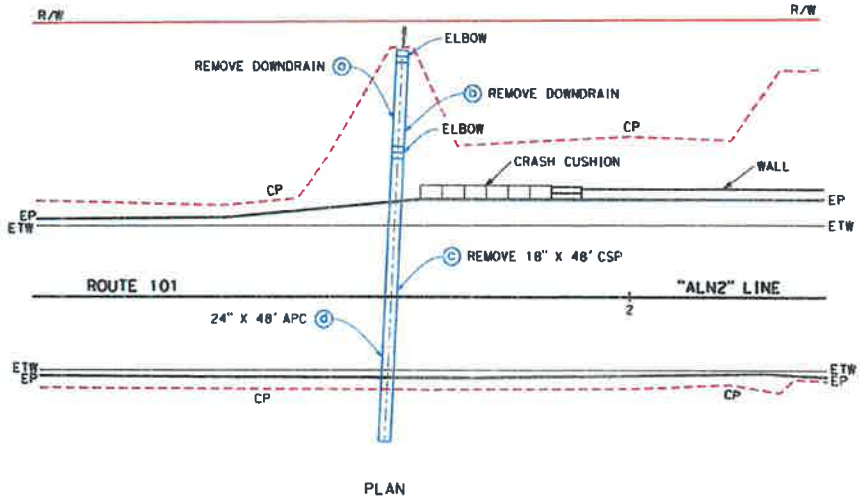
REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

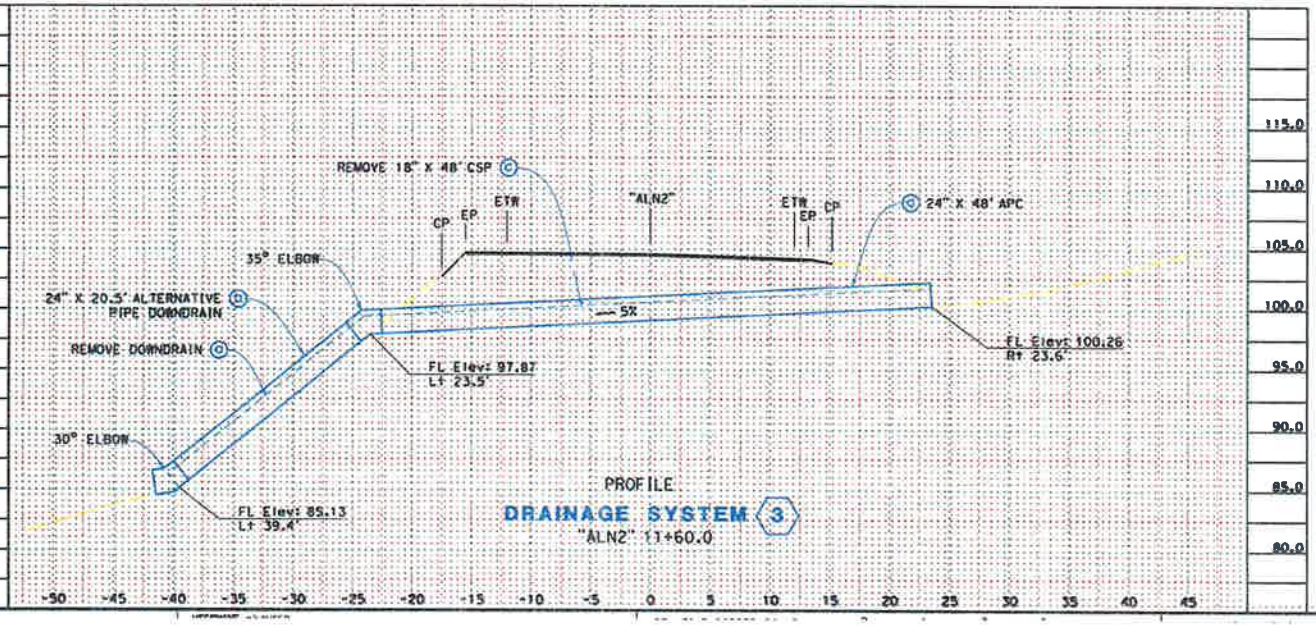
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED VERSIONS OF THIS MAIN SHEET.

Marie A. Brady 59387 CIVIL STATE OF CALIFORNIA

PRELIMINARY DESIGN FOR REVIEW ONLY



PLAN



DRAINAGE PROFILE

SCALE: 1" = 5' Horiz
1" = 5' Vert

DP-2

REVISED BY | DATE REVISED

MARIE A. BRADY | GINNY SEIBERT

CALCULATED-DESIGNED BY | CHECKED BY

FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION — DESIGN

Caltrans

REQUEST | DATE PLOTTED

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER — DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA AND ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED IMAGES OF THIS PLAN SHEET.

Marie A. Brady No. 59387 Exp. CIVIL STATE OF CALIFORNIA

PRELIMINARY DESIGN FOR REVIEW ONLY

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DESIGN

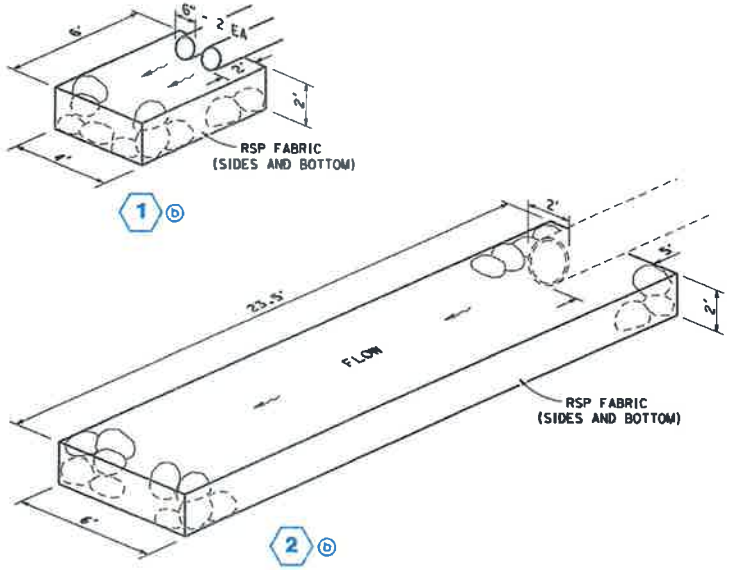
FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS

CALCULATED-DESIGNED BY: MARIE A. BRADY

CHECKED BY: GINNY SEIBERT

REVISED BY

DATE REVISED



ROCK ENERGY DISSIPATOR

DRAINAGE QUANTITIES

DRAINAGE SYSTEM	DRAINAGE UNIT	REMOVE CULVERT	REMOVE DOWNDRAIN	24" ALT PIPE CULVERT	24" ALT PIPE DOWNDRAIN	24" ELBOW	RSP 1/4 TON, METHOD A	RSP FABRIC	6" PP UD	REMOVE PIPE
		EA	EA	LF	LF	EA	CY	SQYD	LF	EA
1	b						1.8	7.1	86	
2	b	1	1				10.4	28.8		
	c									1
3	c		1		20.5	2				
	d	1								
	a			48.0						
TOTAL		1	1			2	12.2	35.9	86	1

APC RECOMMENDATIONS

POSTMILE	GALVANIZED CORRUGATED STEEL PIPE	GALVANIZED POLYMERIC SHEET COATED CORRUGATED STEEL PIPE	CORRUGATED ALUMINUM PIPE	HDPE, TYPE S
111.42	0.109 in (12 Gage)	0.079 in (14 Gage)	0.105 in (12 equiv. Gage)	YES
111.50	NA	0.138 in (10 Gage)	NA	YES
111.68	NA	0.138 in (10 Gage)	NA	YES

DRAINAGE DETAILS AND QUANTITIES

NO SCALE

DD-1

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Hum	101	111.2 / 111.6		

REGISTERED CIVIL ENGINEER — DATE 9/2/15

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA AND ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED DATA ON THIS PLAN SHEET.

Marie A. Brady, No. 59387, CIVIL, State of California

PRELIMINARY DESIGN FOR REVIEW ONLY

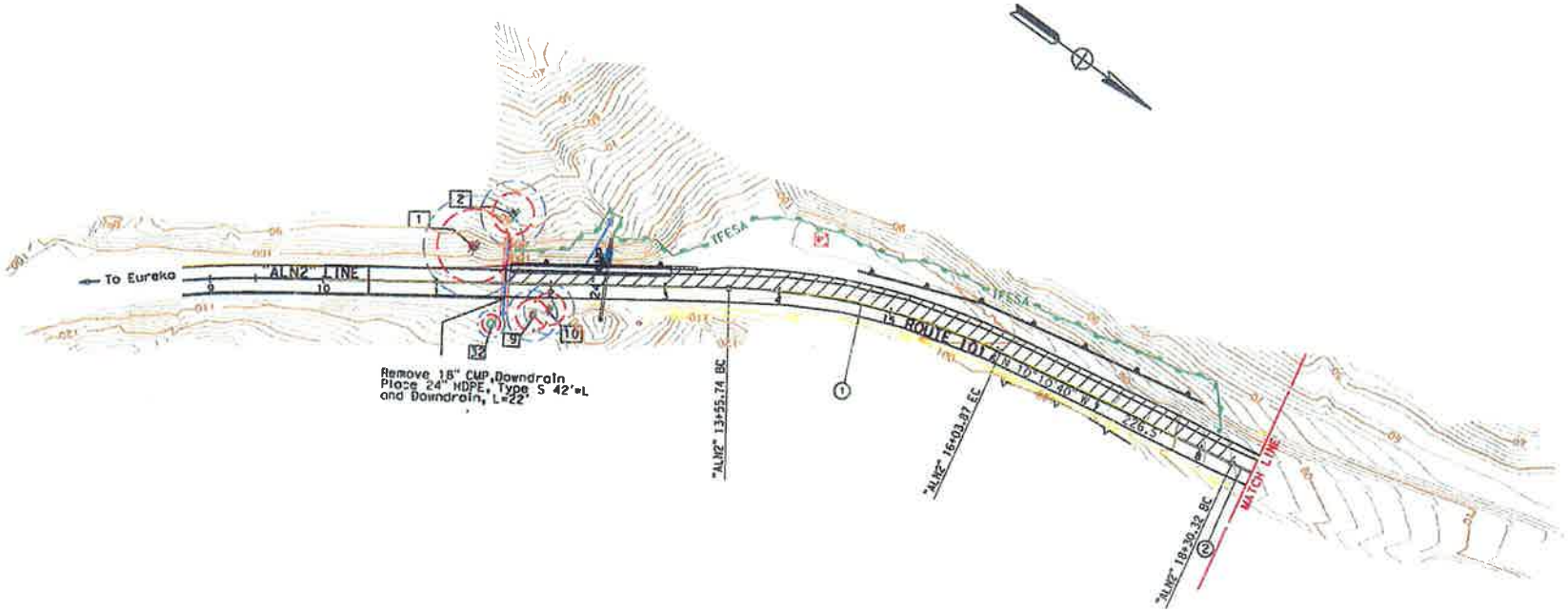
REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY	CHECKED BY
DIANNE M. EDWARDS	MARIE A. BRADY

FUNCTIONAL SUPERVISOR: KELLY B. TIMMONS

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans DESIGN

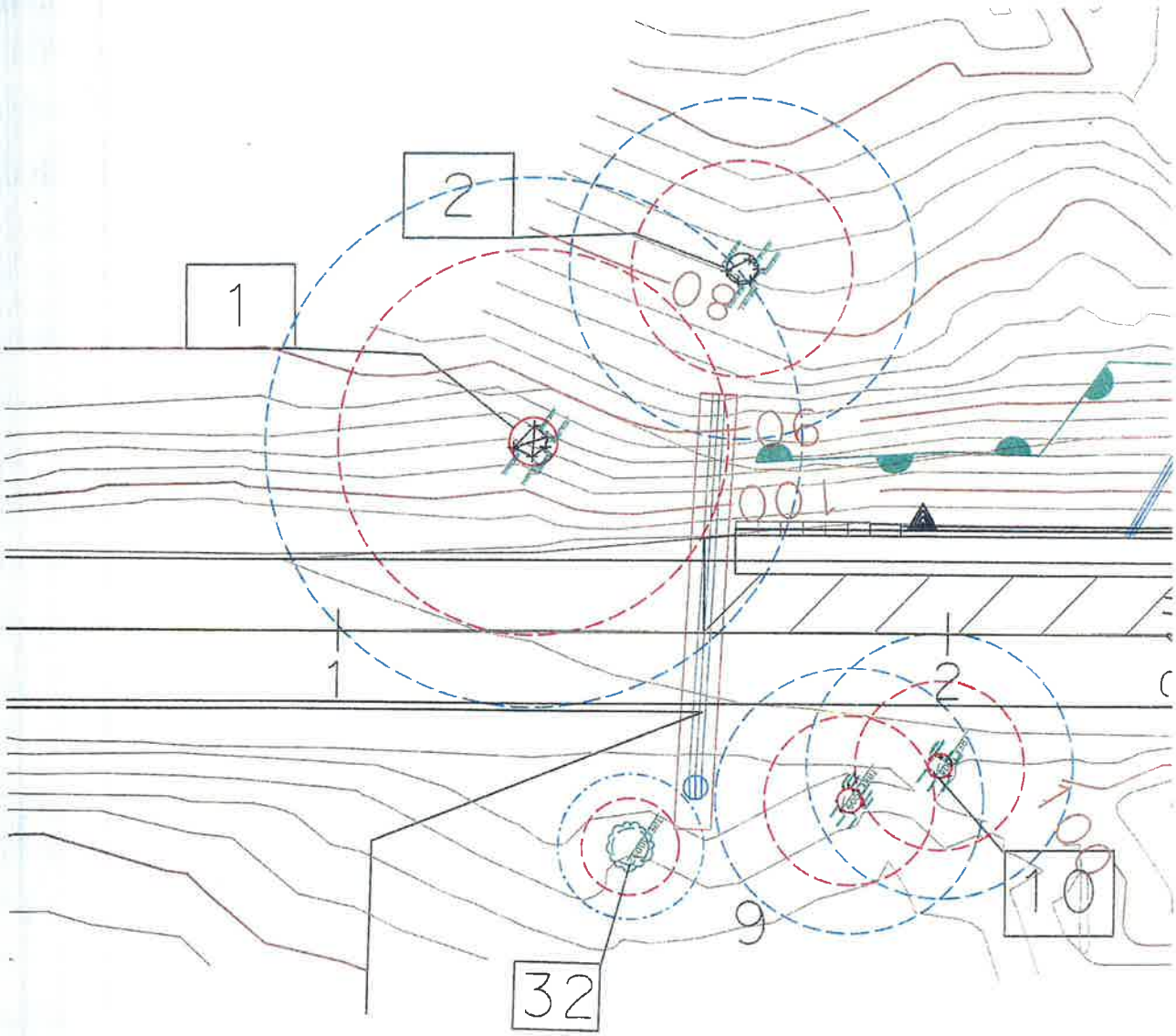


LEGEND	
Structural Root Zone (can damage tree stability)	= 3 M (BHD) Breast Height Diameter
Root Health Zone (can affect tree health)	= 5 M (BHD) Breast Height Diameter
1 TREE 40093, Redwood 8' BHD	9 TREE 30091, redwood, 4 ' BHD
2 TREE 40099 , redwood, 5.15' BHD	10 TREE 30087,, redwood, 4' BHD
32 TREE 30092 , redwood, 6.00' BHD	

CULVERT PM 111.42 TREE IMPACTS

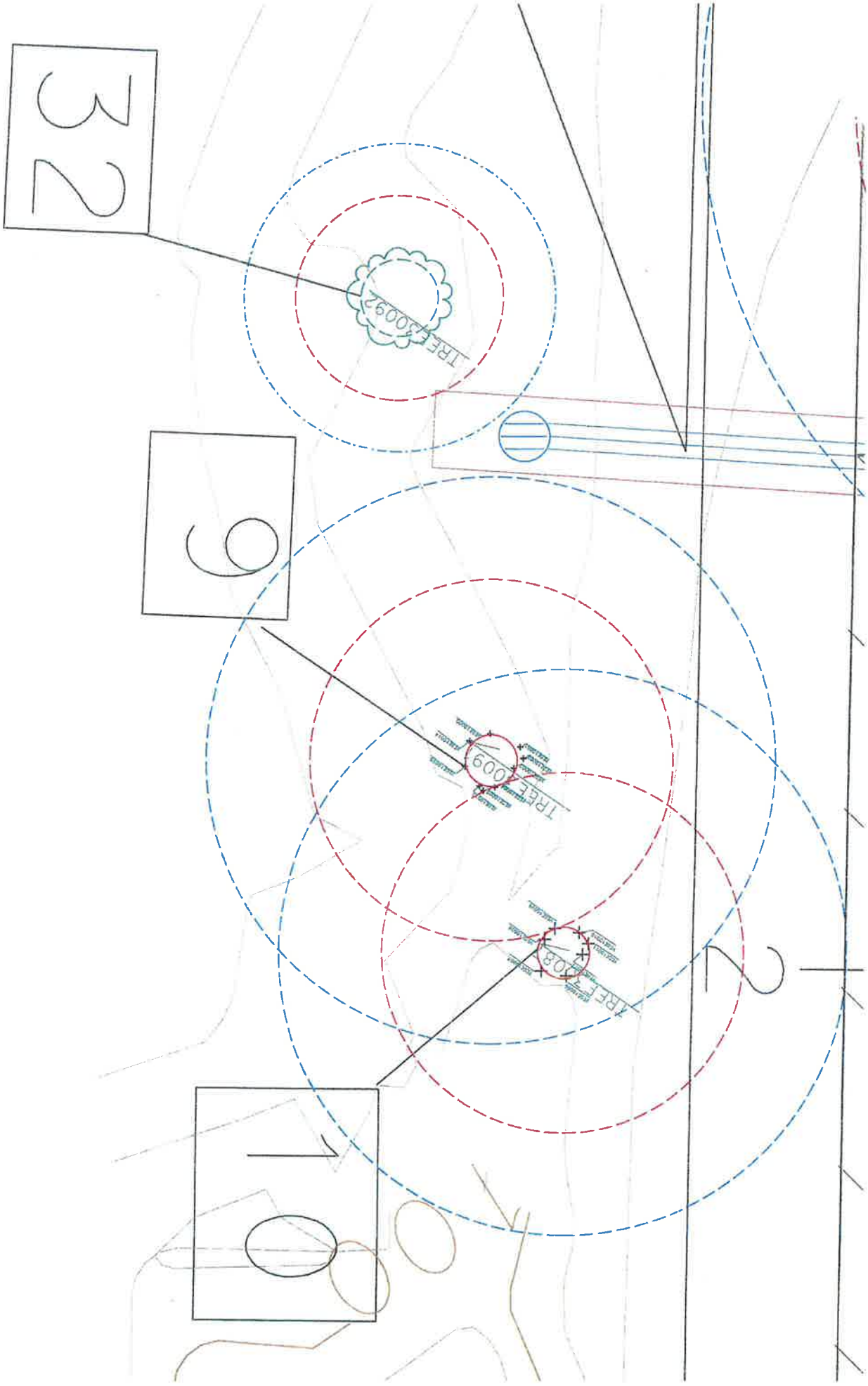
SCALE: 1" = 50'

X-X1

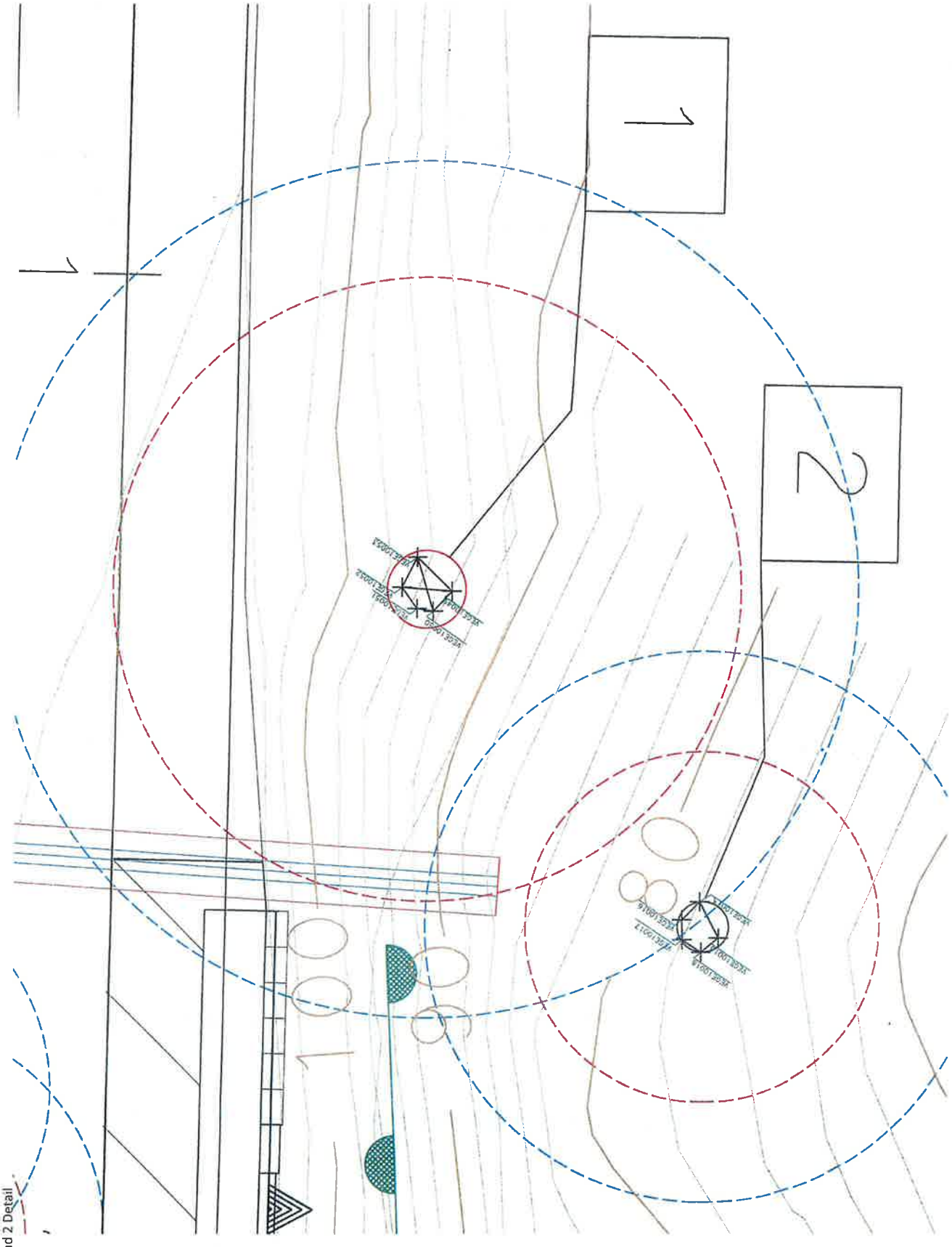


Remove 18" CMP, Downdrain
Place 24" HDPE, Type S 42'=L
and Downdrain, L=22'

Plan 6. Tree 1, 2, and 32 Detail



Plan 7. Tree 32 Detail

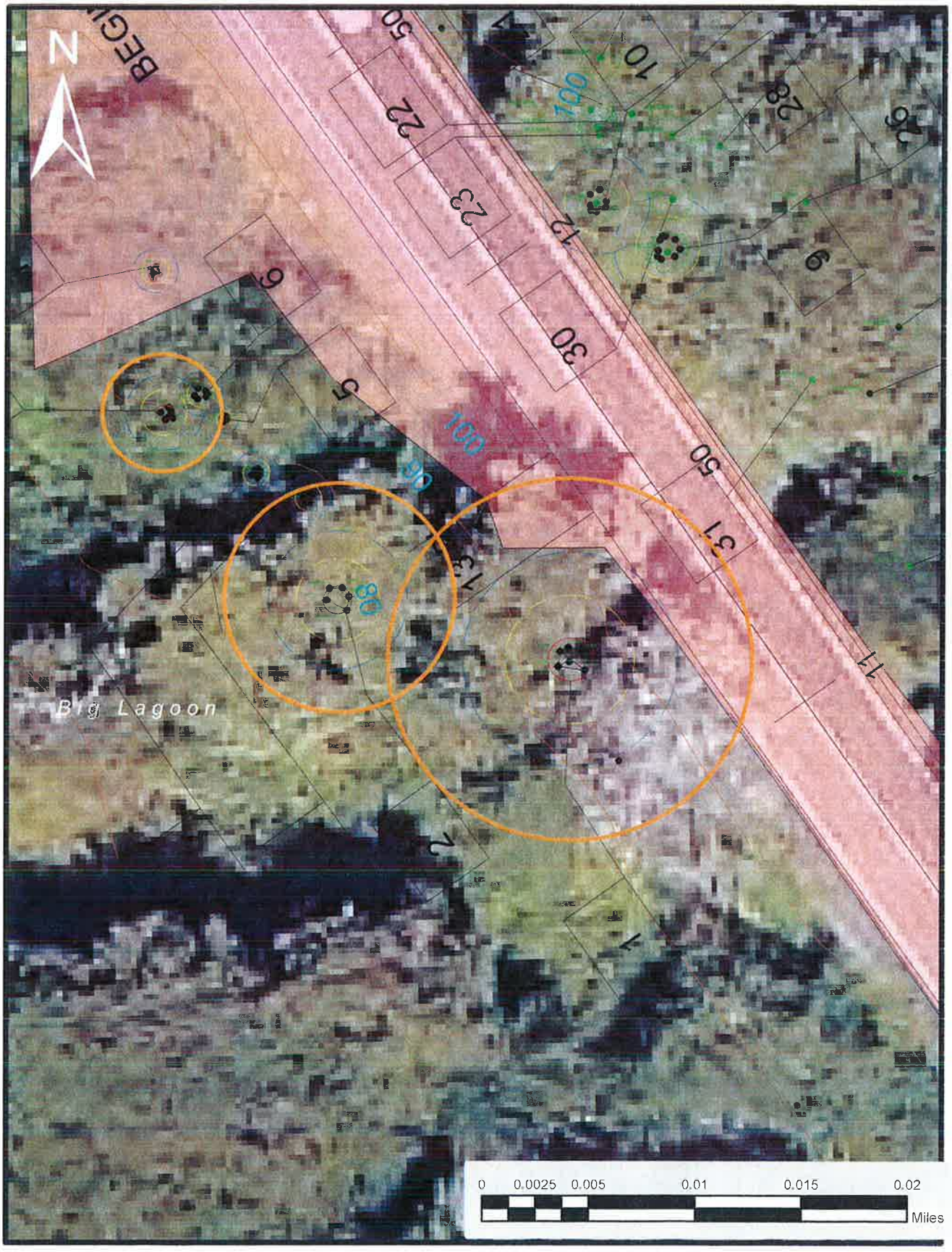


Plan 8. Trees 1 and 2 Detail

Map 2. Tree Impacts - Original Scope of Work

Big Lagoon Walls (0B430)

HUM-101-PM111.4/111.6



Attachment B. Site Photos

01-0B430 Site Photos

Photo 1. Looking South on from the northbound side of SR 101, view of culvert marker at PM 111.42 and Tree 32.

Photo 2. Looking south on SR 101, view of Tree 32.

Photo 3. Looking south on southbound side of SR 101, below the roadway. View of Tree 1 and Tree 2. Caltrans biologist standing at outlet of the downdrain of culvert at PM 111.42.