ROAD REPAIR AND ACCOUNTABILITY ACT OF 2017
PROJECT BASELINE AGREEMENT
Calpella 2 Bridge Replacements (01-0E090)

Resolution _____
(will be completed by CTC)

1. FUNDING PROGRAM

- ☐ Active Transportation Program
- ☐ Local Partnership Program (Competitive)
- ☐ Solutions for Congested Corridors Program
- ☒ State Highway Operation and Protection Program
- ☐ Trade Corridor Enhancement Program

2. PARTIES AND DATE

2.1 This Project Baseline Agreement (Agreement) for the *Calpella 2 Bridge Replacements (01-0E090)*, effective on, _____(will be completed by CTC), is made by and between the California Transportation Commission (Commission), the California Department of Transportation (Caltrans), the Project Applicant, *Caltrans*, and the Implementing Agency, *Caltrans*, sometimes collectively referred to as the "Parties".

3. RECITAL

3.2 Whereas at its May 13, 2020 meeting the Commission approved the State Highway Operation and Protection Program, and included in this program of projects the *Calpella 2 Bridge Replacements (01-0E090)*, the parties are entering into this Project Baseline Agreement to document the project cost, schedule, scope and benefits, as detailed on the Project Programming Request Form attached hereto as Exhibit A and the Project Report attached hereto as Exhibit B, as the baseline for project monitoring by the Commission.

3.3 The undersigned Project Applicant certifies that the funding sources cited are committed and expected to be available; the estimated costs represent full project funding; and the scope and description of benefits is the best estimate possible.

4. GENERAL PROVISIONS

The Project Applicant, Implementing Agency, and Caltrans agree to abide by the following provisions:

4.1 To meet the requirements of the Road Repair and Accountability Act of 2017 (Senate Bill [SB] 1, Chapter 5, Statutes of 2017) which provides the first significant, stable, and on-going increase in state transportation funding in more than two decades.

4.2 To adhere, as applicable, to the provisions of the Commission:

- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Active Transportation Program", dated
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Local Partnership Program", dated
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Solutions for Congested Corridors Program", dated
- ☒ Resolution G-20-40, "Adoption of Program of Projects for the State Highway Operation and Protection Program", dated May 13, 2020
- ☐ Resolution *Insert Number* , "Adoption of Program of Projects for the Trade Corridor Enhancement Program", dated

4.3 All signatories agree to adhere to the Commission's State Highway Operation and Protection Program, Guidelines. Any conflict between the programs will be resolved at the discretion of the Commission.

4.4 All signatories agree to adhere to the Commission's SB 1 Accountability and Transparency Guidelines and policies, and program and project amendment processes.

4.5 Caltrans agrees to secure funds for any additional costs of the project.

4.6 Caltrans agrees to report on a quarterly basis; after July 2019, reports will be on a semi-annual basis on the progress made toward the implementation of the project, including scope, cost, schedule, outcomes, and anticipated benefits.

4.7 Caltrans agrees to prepare program progress reports on a quarterly basis; after July 2019, reports will be on a semi-annual basis and include information appropriate to assess the current state of the overall program and the current status of each project identified in the program report.

4.8 Caltrans agrees to submit a timely Completion Report and Final Delivery Report as specified in the Commission's SB 1 Accountability and Transparency Guidelines.

4.9 All signatories agree to maintain and make available to the Commission and/or its designated representative, all work related documents, including without limitation engineering, financial and other data, and methodologies and assumptions used in the determination of project benefits during the course of the project, and retain those records for four years from the date of the final closeout of the project. Financial records will be maintained in accordance with Generally Accepted Accounting Principles.

4.10 The Transportation Inspector General of the Independent Office of Audits and Investigations has the right to audit the project records, including technical and financial data, of the Department of Transportation, the Project Applicant, the Implementing Agency, and any consultant or sub-consultants at any time during the course of the project and for four years from the date of the final closeout of the project, therefore all project records shall be maintained and made available at the time of request. Audits will be conducted in accordance with Generally Accepted Government Auditing Standards.

5. SPECIFIC PROVISIONS AND CONDITIONS

5.1 Project Schedule and Cost
See Project Programming Request Form, attached as Exhibit A.

5.2 Project Scope
See Project Report or equivalent, attached as Exhibit B. At a minimum, the attachment shall include the cover page, evidence of approval, executive summary, and a link to or electronic copy of the full document.

5.3 Other Project Specific Provisions and Conditions

Attachments:

Exhibit A: Project Programming Request Form
Exhibit B: Project Report

SIGNATURE PAGE
TO
PROJECT BASELINE AGREEMENT

Calpella 2 Bridge Replacements (EA 01-0E090)

Resolution SHOPP-P-2021-01B

Richard Mullen — 6/19/20

Richard Mullen — Date

Caltrans

Project Applicant

Richard Mullen — 6/19/20

Richard Mullen — Date

Caltrans

Implementing Agency

06/22/2020

Matthew K. Brady — Date

District Director

California Department of Transportation

7-28-20

Toks Omishakin — Date

Director

California Department of Transportation

08/31/20

Mitchell Weiss — Date

Executive Director

California Transportation Commission

Baseline agreement information was extracted from Caltrans' project data systems. Project description, funding and performance measures are from CTIPS. Project delivery milestones are from PRSM. All information is current and accurate.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

BASELINE AGREEMENT | **Date:** 07/07/20 11:32:31 AM

District	EA	Project ID	PPNO	Project Manager
01	0E090	0113000123	4587	MCKEON, CATHY ANN

County	Route	Begin Postmile	End Postmile	Implementing Agency	
MEN	20	33.3	34.4	PA&ED	Caltrans
				PS&E	Caltrans
				Right of Way	Caltrans
				Construction	Caltrans

Project Nickname

Calpella 2 Bridge Replacements

Location/Description

Near Ukiah, from North Calpella Overcrossing to 0.5 mile east of County Road 144 at Russian River Bridge and Overhead No. 10-0182 and Redwood Valley Undercrossing No. 10-0183. Replace two bridges with a single bridge on a new alignment.

Legislative Districts

Assembly:	01	Senate:	02	Congressional:	01

PERFORMANCE MEASURES

	Primary Asset	Good	Fair	Poor	New	Total	Units
Existing Condition	Bridge Health	0	0	19967		19967	Square feet of bridge deck
Programmed Condition	Bridge Health	19967	0	0	22418	42385	Square feet of bridge deck

Project Milestone	Actual	Planned
Project Approval and Environmental Document Milestone	05/28/20	
Right of Way Certification Milestone		06/01/21
Ready to List for Advertisement Milestone		06/15/21
Begin Construction Milestone (Approve Contract)		10/20/21

FUNDING (Allocated amounts are shaded)

Component	Fiscal Year	SHOPP					Total
PA&ED	17/18	2,087					2,087
PS&E	19/20	3,129					3,129
RW Support	19/20	301					301
Const Support	20/21	7,934					7,934
RW Capital	20/21	2,064					2,064
Const Capital	20/21	33,291					33,291
Total		48,806					48,806

Project Report

For Project Approval

On Route Route 20

Between 33.3

And 34.4

I have reviewed the right-of-way information contained in this report and the right-of-way data sheet attached hereto, and find the data to be complete, current and accurate:

Karen E Hawkins

Karen E. Hawkins
ASSISTANT CHIEF NORTH REGION, RIGHT-OF-WAY

APPROVAL RECOMMENDED:

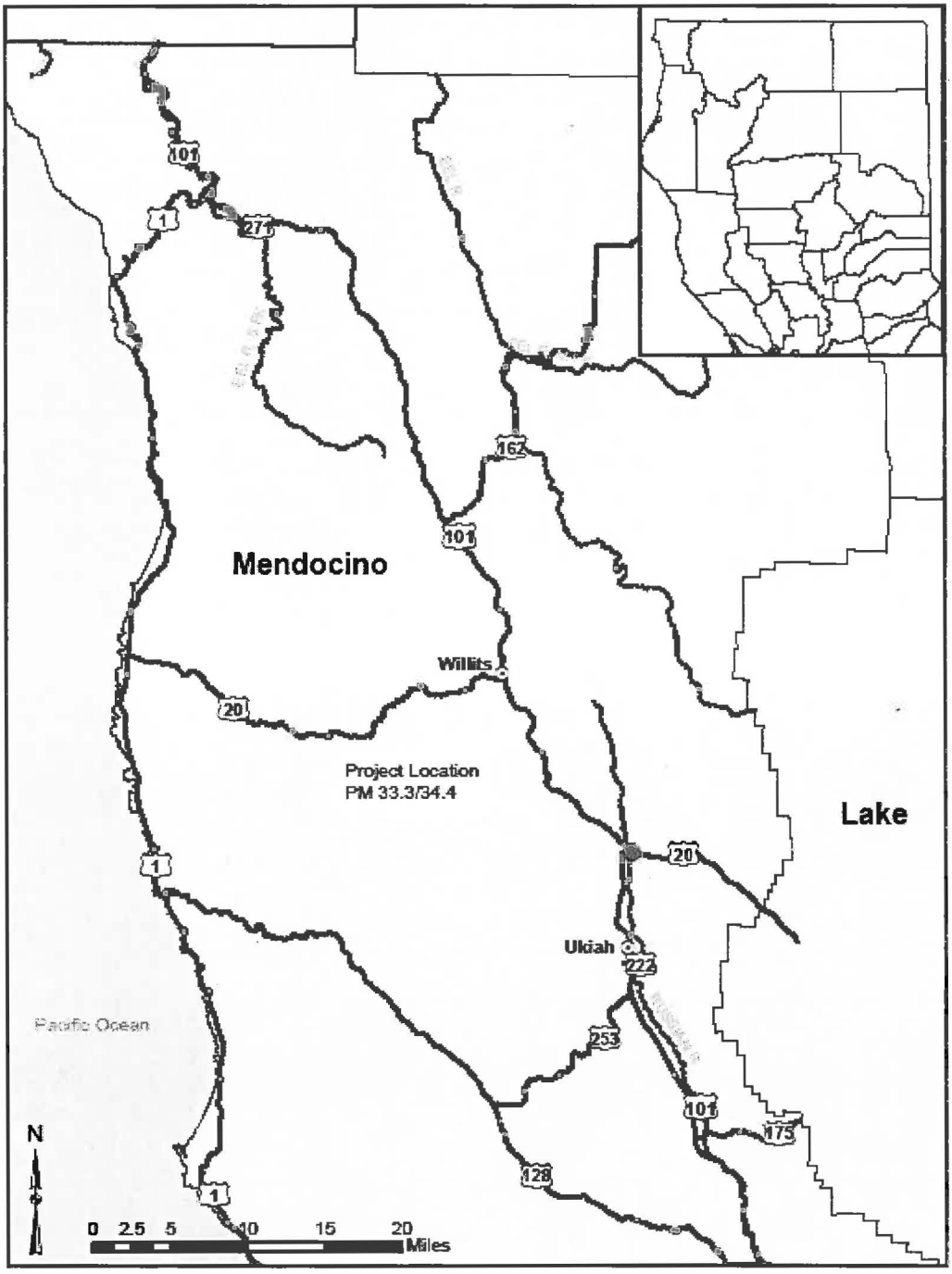
Cathy Mckeon
PROJECT MANAGER

PROJECT APPROVED:

05/28/2020
Date

Matthew K. Brady
DISTRICT 1 DIRECTOR

Vicinity Map
01-MEN-020 PM 33.3/34.4
Russian River (BR #10-182) Bridge Deck Rehabiliatation



Project Report

For Project Approval

On Route Route 20

Between 33.3

And 34.4

I have reviewed the right-of-way information contained in this report and the right-of-way data sheet attached hereto, and find the data to be complete, current and accurate:

Karen E Hawkins

Karen E. Hawkins
ASSISTANT CHIEF NORTH REGION, RIGHT-OF-WAY

APPROVAL RECOMMENDED:

Cathy Mckeon
PROJECT MANAGER

PROJECT APPROVED:

05/28/2020
Date

Matthew K. Brady
DISTRICT 1 DIRECTOR

Vicinity Map

01-MEN-020 PM 33.3/34.4

Russian River (BR #10-182) Bridge Deck Rehabiliatation

This project report has been prepared under the direction of the following registered civil engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

4/10/20

REGISTERED CIVIL ENGINEER *DATE*

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1. INTRODUCTION

Project Description:

This bridge rehabilitation project proposes to perform a complete bridge replacement of the Russian River Bridge (#10-182) and Redwood Valley Undercrossing (#10-183) on a new alignment, located on State Route 20 (SR-20) in Mendocino County. Refer to the Location Map (Attachment A) for more detailed information regarding project location. To ensure that traffic will not be significantly impeded during construction, the existing structures and alignment will remain in place during construction of the selected alternative. This will require the new structure to be on a new alignment to the south of the existing alignment. The alternative involves additional work such as embankment cut/fill, paving bridge approaches, roadway realignment, intersection reconstruction, drainage improvements, and shoulder widening. The alternative proposes the addition of acceleration and deceleration lanes with standard tapers for the intersection of SR-20 and County Road 144.

Project Limits	01-MEN-020 PM 33.3/PM 34.4	
Number of Alternatives	4- including no build	
	Current Cost Estimate:	**Escalated Cost Estimate:**
Capital Outlay Support	$13,303,000	$14,105,000
Capital Outlay Construction	$ 30,288,600	$33,291,000
Capital Outlay Right-of-Way	$ 1,946,667	$ 2,064,000
Funding Source	20.XX.201.110	
Funding Year	2021	
Type of Facility	2-lane Conventional/Expressway	
Number of Structures	2	
SHOPP Project Output	2 Bridges	
Environmental Determination or Document	CEQA – IS/MND	
Legal Description	In Mendocino County near Ukiah from North Calpella Overcrossing to 0.5 mile east of County Road 144	
Project Development Category	4B	

2. RECOMMENDATION

The Project Development Team recommends that the project be approved using the preferred alternative, Alternative 1: One New Structure on a New Southern Alignment and proceeding to the design phase.

3. BACKGROUND

Project History:
The project initially proposed to either replace the bridge deck with widening on the existing alignment or to construct a new bridge(s) to the north or south of the existing alignment. The alternatives that proposed bridge deck replacement required a detour that would re-route SR-20 traffic to local county roads. It was determined that a long-term detour was infeasible due to traffic volumes, truck turning movements through local intersections, detour length, and impacts to surrounding schools. The detour would also involve significant reconstruction of the county roads and was not preferred by both Caltrans and Mendocino County. Consequently, the deck replacement only alternatives have since been eliminated and the only acceptable alternatives that can meet the purpose and need involve new structures on a new alignment. These new structures on a new alignment are examined in this report. In the PSSR no alterations to the intersection of SR-20 and County Road 144 were proposed. However, due to the Route 20 realignment and to address collisions concentrations, the intersection will be reconfigured to include larger radius curves and extended acceleration and deceleration lanes.

Community Interaction:
This project is supported by the local community. Mendocino County is satisfied with the proposal to maintain the current intersection of SR-20 and Road 144 as it provides access to the community of Calpella. This access can be reconfigured in future projects if desired.

Existing Facility:
In District 1, SR-20 begins in Mendocino County in Fort Bragg and continues through Lake County until the Lake/Colusa County line. The District 1 portion of SR-20 is approximately 108 miles in length. The highway is functionally classified as a rural principle arterial with a posted speed of 55 mph. Within the project limits, the travel lanes are 12-feet in width with shoulders ranging from 4 to 6-feet. The existing pavement structure consists of 0.68' to 0.76' of hot mix asphalt (HMA), over 0.50' cement treated base (CTB), over 0.17 Class II base, over 1.00' of select material, over 1.00' of aggregate subbase. This portion of SR-20 is in the State's

Freeway and Express System and STAA trucks are permitted to travel. This section of SR-20 is used as a primary connection between US 101 and I-5 in the central valley.

The Russian River Bridge and Redwood Valley UC were both constructed in 1958 and were seismically retrofitted in 1997 and 1996, respectively. The Russian River Bridge consists of simply-supported 4-span welded steel plate girders. Over time numerous transverse cracks have developed that, indicate the potential for punching shear failures of the bridge deck. The bridge has been identified as needing a deck replacement per Structures Maintenance and Investigation (SM&I) STRAIN recommendation.

4. PURPOSE AND NEED

Purpose:
The purpose of the project is to improve the bridge deck integrity of the Russian River Bridge and OH (#10-182) and Redwood Valley UC (#10-183).

Need:
This project is needed to repair bridge deck deficiencies and reduce possible future punching shear failures.

A. Problem, Deficiencies, Justification

The bridge has been identified as needing a deck replacement per SM&I's STRAIN recommendation. The composite CIP/RC deck has numerous transverse cracks. Deck repairs under contract 01-496704 in 2011 are delaminating and failing in multiple locations. There are numerous transverse soffit cracks with white and brown leachate. The number, pattern, and spacing of the cracks in the deck indicates areas of possible future punching shear failures. In addition, the shoulders are narrower than the 3R, 8-foot width requirement.

B. Regional and System Planning

SR-20 serves as a connection between US 101 and I-5 in the Central Valley. In District 1 the route travels through Lake and Mendocino County, and serves the communities along the route such as Upper Lake, Lucerne, and Clearlake. The roadway is functionally classified as a rural principle arterial in mountainous terrain. The preferred concept level of service (LOS) is C. The preferred alternative is consistent with local and regional plans and the route concept. The alignment is compatible with community transportation access plans. Facility characteristics are summarized in the following table:

State Route 20 Facility Characteristics

Functional Classification	Rural Principal Arterial
Freeway and Expressway System	Yes
Subsystem of Highways for Extra Legal Loads	Yes
Surface Transportation Assistance Act (STAA) Trucks	Yes- STAA terminal Access Route
Strategic Highway Network	No
National Highway System	Yes
Interregional Road System	Yes
Interregional Transportation Strategic Plan	Yes

C. Traffic

Current and Forecasted Traffic

The Office of Travel Forecasting and Modeling provided the following traffic data on July 29, 2019. Construction of this project is expected to begin in the Summer of 2021.

MEN -20- PM 33.4/34.2		
Annual ADT		
Base Year	2017	14,700
Current Year	2019	15,400
	2020	15,700
	2025	17,400
	2030	19,100
	2040	22,500
Peak Year		
Base Year	2017	1,500
Current Year	2019	1,570
	2020	1,600
	2025	1,770
	2030	1,950
	2040	2,300
Directional %		84
DH Truck %		7.0
10-Year TI (2030)		10.0
20-Year TI (2040)		11.0

Collision Data

A collision Analysis was completed on April 24, 2018 which included the most recent 3-year collision data (January 1, 2013 through December 31, 2015) and is on file at the District Office. This highway segment has an actual Total collision rate that is 1.1 times greater than the statewide average for similar highway facilities. The actual Fatal + Injury rate is 1.2 times and greater and the actual Fatal rate is zero (less than the statewide average for similar facilities).

There were twelve total collisions within the project area (0 Fatal, 5 Injury, 7 PDO, 5 multi-vehicle, 2 wet road surface, 4 dark). The Primary Collision Factor (PCF) was "Improper Turn" (4 of 12) followed by "Speeding" (3 of 12). The principal "Type of Collision" was "Hit Object" (7 of 12).

There were five reported collisions on the bridge deck of Bridge #10-0182, three of which were PCF "Improper Turn". In two of the three "Improper Turn" collisions, vehicles hit the concrete bridge rail. The other two of the five PCFs were "Speeding" and "other than Driver" for wood debris on the roadway.

One of the twelve collisions occurred at the intersection with County Road 144 and SR-20. The collision was reported as an improper turn by a motorcycle. Two more collisions occurred near the intersection, but not on the mainline "highway". The PCFs for these collisions was "Speeding".

Improving the curve radius, widening shoulders on the roadway and structure, and extending deceleration/acceleration lane distances will improve roadway geometrics and it is anticipated to reduce the frequency of collisions within the project limits

5. ALTERNATIVES

There is one build alternative and three rejected alternatives including a "No Build" alternative for this project. The build and rejected alternatives are variations of the programmed alternative from the Project Scope Summary Report (PSSR) which is *Alternative 3B: Bridge Replacement, Two Structures on New Alignment, Cast-in-Place posttensioned (CIP/PS) Girders.*

A. Viable Alternatives

Alternative 1: One New Structure on New Southern Alignment

This alternative proposes to construct a single new bridge along a new alignment to the south of the existing bridges. The existing bridges will remain intact during construction to accommodate traffic and avoid a detour through local and county roads. The bridges will be removed after construction of the new structure. The new alignment will allow for standard acceleration and deceleration lanes at the intersection of SR-20 and County Road 144 along with increased sight distance of the intersection. For more information refer to the Layouts, Cross Sections, and Structures Type Selection Report provided in Attachments B, C and D, respectively.

There are no changes proposed for this alternative resulting from circulation of the Draft Project Report and public meeting process. There were comments regarding the intersection of Route 20 and Road 144, which is discussed further in the Public Meeting section below.

Proposed Engineering Features

The new alignment consists of a single 1600-foot radius curve along the bridge with standard superelevation transitions and rates. The profile essentially matches the existing profile but at a slightly higher elevation to achieve bridge clearance and vertical sight distance standards. The alignment provides a standard left turn pocket taper and deceleration length and standard acceleration lane taper and length for the intersection of SR-20 and County Road 144. The intersection will be reconfigured to conform to the new route 20 alignment. The turning movement lanes will also be redesigned to provided longer deceleration and acceleration lengths with improved radii.

The bridge is 860 feet in length and consists of a 7-span CIP/PS box girder structure. The spans vary from 105 feet to 145 feet in length. The western most roadway cross section of the bridge is 40 feet and consists of two 12-foot lanes and two 8-foot shoulders. The eastern most cross section is 64 feet wide and consists of two 12-foot through lanes, 12-foot left-turn lane, 12-foot west bound acceleration lane, and two 8-foot shoulders.

The bridge will likely have driven H-piles assumed in 50-foot lengths for the abutments and 24-inch Cast-in-Drilled-Hole (CIDH) piles were assumed to be in 35-foot lengths for piers. Pending upcoming Foundation Report, there is a high probability that the foundation at the piers will instead be

driven piles. The railroad requires a minimum 25-foot horizontal clearance from the centerline of the track to a pier foundation.

The total estimated number of working days for this alternative is 800 days with 660 days for structures related work. For more information refer to the Layouts, Cross Sections, and Structures Type Selection Report provided in Attachments B, C and D, respectively.

The entire structure can be constructed without significantly impacting mainline traffic. Some stage construction will be required to tie in the new alignment to the existing roadway but traffic in both directions can be maintained during construction through stage construction. The existing structures will be removed once the new alignment is operational.

The typical pavement structural section will consist of 0.20' Rubberized Hot Mix Asphalt-Gap Graded (RHMA-G), 0.35' Hot Mix Asphalt- Type A (HMA-A), and 1.55' of Aggregate Base (AB). Areas where the RHMA-G will not be applied are: County Road 144 intersection, gore area, and County Road 144 approach. In these areas an additional 0.20' of HMA-A will be used in place of the RHMA-G.

Additional work includes:

- Removing trees and vegetation
- Placing approximately 30,000 cubic yards embankment fill at the eastern end of the bridge
- Constructing new roadway structural section
- Pavement grinding and overlay
- Reconstructing the Road 144 intersection with improved geometry for deceleration and acceleration lanes
- Installing WB transition railing, end treatments, and Midwest Guardrail System (MGS)
- Installing drainage inlets, culverts, overside drains, RSP, and drainage ditches. This includes reconfiguring drainage patterns based on new alignment
- Installing new signs and striping including gore striping
- Contour grading and replanting of the fill prism of the existing roadway
- Repaving and minor shoulder widening on Eastside Calpella Road within the vicinity of the new bridge
- Removing the existing bridges
- Removing the structural section of the existing road
- Relocating overhead and underground utilities along Eastside Calpella Road

- Removing culverts, inlets, and overside drains along the existing alignment
- Installing permanent BMPs such as infiltration areas

Utility and Other Owner Involvement

Overhead electrical/telecommunication utilities and underground telecommunication/water utilities along Eastside Calpella Road will be relocated since the poles are located at the new bridge locations. An underground 8-inch gas transmission line is located at the west end of the structure and has been positively identified by potholing. The utility is in close proximity to the proposed bent locations but does not need to be relocated for construction.

Railroad Involvement

The North Coast Rail Authority (NCRA) will be involved in this project. Although the railroad is not in use, the Northern Pacific Railroad runs directly under the bridge. As such, any vertical and horizontal clearance issues because of pier placement or deck height will be considered when designing the bridge.

Highway Planting

The three vegetation communities impacted by construction activities are oak woodlands, riparian, and wetlands. The oak woodland will be replanted onsite after the construction, including planting on the existing alignment roadway road prism.

Permit driven revegetation will be implemented in all riparian areas where woody and herbaceous plants are impacted by construction. Approximately 0.11 acre of riparian vegetation will be replanted on-site. Additional riparian impacts not mitigated by onsite revegetation, as well as impacts to wetlands and Waters of the U.S./State would be mitigated off-site at a location in the Russian River watershed. All wetland mitigation will be implemented off-site. Right-of-Way dollars have been included for off-site mitigation planting.

Nonmotorized and Pedestrian Features

There are currently no pedestrian features along this segment of SR-20. This project does not propose to install any pedestrian specific features, however the new bridge will have 8 foot shoulders which can accommodate pedestrians when necessary.

Cost Estimate

The estimated cost of this alternative in year 2019 dollars is as follows:

Roadway	$ 14,518,600
Structures	$ 15,770,000
Right-of-Way	$ 1,946,667
Total Estimated Cost	$ 32,235,267

Call $ 32,236,000

Refer to the Cost Estimate (Attachment E) for further detailed cost information.

Right-of-Way Data

An updated Data Sheet was prepared for Alternative 1 on March 16, 2020 (Attachment F) to include updated acquisition and mitigation costs. The cost information for Alternative 1 has been included in the cost estimate. Permanent Right-of-Way acquisition is required from four parcels for the southern alignment proposed in Alternative 1.

Nonstandard Design Features

Geometric Design Reviews were conducted on May 2018 and April 2019 and included the Project Engineer, the District Design Liaison for Eureka, and the Chief of Design- North Region. The following Design Standards were identified to be included in the Design Standard Decision Document (DSDD). There are two non-standard features are related to mainline, Highway Design Manual (HDM) index 203.1, Horizontal Stopping Sight Distance and HDM index 304.1 Side Slopes. All other non-standard design features are related to the turning movement lanes associated with the SR-20 and Road 144 intersection.

Design Standards Risk Assessment			
Alt.	Design Standard from Highway Design Manual Tables 82.1A & 82.1B	Probability of Design Exception Approval	Justification for Probability Rating
1	**HDM 202.2(1)- Roadways described below, (a) through (e), shall be designed with the e_{max} indicated. Based on the above e_{max}, superelevation rates from Tables 202.2A through 202.2E shall be used with the minimum curve radii and design speed (V_d).** **HDM 203.2- Standards for Curvature. Tables 202.2A through 202.2E shall be the minimum radius of curve for the superelevation rates and design speeds on highways.**	High	Turning lanes only- The curve radius and deceleration distance are improved at the right turn lane ramps.
1	**HDM 202.5(1)-** A superelevation transition should be designed in accordance with the diagram and tabular data shown in Figure 202.5A to satisfy the requirements of safety, comfort, and pleasing appearance.	High	Turning lanes only- The curve radius and deceleration distance are improved at the right turn lane ramps. Curve design meets comfortable speed criteria.
1	**HDM 202.5(2)-** Two-thirds of the superelevation runoff should be on the tangent and one-third within the curve	High	Turning lanes only- The curve radius and deceleration distance are improved at the right turn lane ramps.
1	**HDM 203.1 General Controls: Horizontal alignment shall provide at least the minimum stopping sight distance for the chosen design speed at all points on the highway, as given in Table 201.1 and explained in Index 201.3.** (Table 201.1 indicates the minimum stopping sight distance is 660 feet for 65 mph).	High	The proposed bridge railing will provide improved curve radius, shoulder width, and increases the existing SSD along the bridge.
1	**HDM 304.1-**Side Slope Standards. For new construction, widening, or where slopes are otherwise being modified, embankment (fill) slopes should be 4:1 or flatter.	High	The non-recoverable 2:1 embankment slopes at bridge approaches will be protected by guardrail

B. Rejected Alternatives

Both alternative 2A and 2B were rejected and therefore eliminated from further study due to the following reasons:

In July 2019, the PDT recommended to formally eliminate the northern alignment alternatives. The non-standard geometric features were analyzed and discussed by the PDT functional units and it was decided that the non-standard design features associated with the northern alignment are not desirable. The northern alignment creates a smaller radius curve on the structure than currently exists and short, reversing curve near the US 101 on ramp is necessary to connect the new curve to the exiting road. Building a structure with a 75-100 yr. design life, to non-standard roadway geometry is not preferred.

In addition, the northern alignments require Right-of-Way acquisition from an improved parcel that contains a house. The improved parcel would be significantly impacted due to its irregular shape and the location of improvements. This would significantly increase acquisition costs and would negatively impact the project schedule. The parcels to the south are vacant land and will not be as severely impacted.

Environmentally, the impacts and mitigation requirements to riparian and wetland areas are similar for both southern and northern alignments. However, the northern alignment's impacts less oak woodland area.

Alternative 2A: Two New Structures on New Northern Alignment

This alternative proposed to replace both bridges with two new bridges to the north of the existing alignment. The existing bridges will be removed after construction of the new structure. The new alignment would allow for standard acceleration and deceleration lanes at the intersection of SR-20 and County Road 144.

The new alignment consists of a 1250-foot radius curve along the bridge with a non-standard max. superelevation rate for the maximum design speed. The alignment provides a standard left turn pocket taper and deceleration length, and standard acceleration lane taper and length for the intersection of SR-20 and County Road 144. The intersection would be repaved and will match the existing configuration. To provide the same WB SR -20 to Road 144 deceleration/turn pocket configuration provided in Alternative 1, the area near the Road 144 off ramp curve will require embankment fill and a new structural section.

The proposed Russian River bridge is 455 feet in length and consists of 5-span CIP/PS box girder with a curve radius of 1250 feet. The spans vary from 68 feet to 125 feet in length. The proposed Redwood Valley Road UC is 96 feet in length and consists of a single span CIP/PS box girder structure.

An embankment fill prism would be constructed between the two bridges in a similar configuration as the existing fill prism. This fill would be approximately 340 feet in length, with a final grade that is 30 feet above the existing ground and extends 130 feet to the north of the existing roadway hinge point. Right-of-Way acquisition to the north would be required to accommodate the new fill prism.

Alternative 2B: One New Structure on New Northern Alignment

This alternative proposed to replace both bridges with a single new bridge to the north of the existing alignment. The existing bridges would be removed after construction of the new structure. The new alignment would allow for standard acceleration and deceleration lanes at the intersection of SR-20 and County Road 144.

The new alignment consists of a 1250-foot radius curve along the bridge with a non-standard max. superelevation rate for the max. design speed. The alignment provides a standard left turn pocket taper and deceleration length, and standard acceleration lane taper and length for the intersection of SR-20 and County Road 144. The intersection would be repaved and will match the existing configuration. To provide the same WB SR-20 to Road 144 deceleration/turn pocket configuration provided in Alternative 1, the area near the Road 144 off ramp curve will require embankment fill and a new structural section.

The proposed bridge is 900 feet in length and consists of a 9-span CIP/PS box girder structure with a curve radius of 1250 feet.

Alternative 3: No Build

The third alternative is a no build alternative that would keep the existing structures in place and unchanged. The alternative has been rejected as it does not meet the purpose and need of the project.

6. CONSIDERATIONS REQUIRING DISCUSSION

A. HAZARDOUS WASTE

An Initial Site Assessment (ISA) was conducted on January 2015 (Attachment G) which determined the project has the following hazardous waste issues:

- Nominal hazardous waste issues related Aerially Deposited Lead (ADL) in soils adjacent to the shoulders. It was determined that this issue would be addressed with 7-1.02K(6)(j)(iii) EARTH MATERIAL CONTAINING LEAD (SSP) and a Lead Compliance Plan contract item.

- Although not present, Naturally Occurring Asbestos (NOA) is shown on Mendocino County AQMD maps as "may contain"; therefore, an exemption for a dust control plan will need to be acquired.

Previous surveys of the bridges in the project area have been conducted but did not include base concrete evaluation. A survey of the existing structures to be removed will be conducted to determine if any hazardous material is present. A National Emissions Standards for Hazardous Air Pollutants (NESHAP) notification will need to be sent to the Mendocino County Air Quality Management District (AQMD).

B. VALUE ANALYSIS

A Value Analysis (VA) was conducted in May 2019. A majority of the recommendations developed from the analysis were considered by the PDT but were not incorporated into the project. Upon further analysis, the anticipated cost savings from the recommendations were not justified by the impacts to roadway geometry or the constructability of the project. One alternative developed by the VA team, *Alternative 5: Single Column Bents at locations 2 and 3*, will be analyzed further during the design phase. Refer to Value Analysis Report, located in the project files, for detailed information regarding the analysis and responses from the PDT.

C. RESOURCE CONSERVATION

To the west of the project limits there is additional area where material is available to be used as fill. This may be an option to help balance the amount of cut/fill material used during construction. All recyclable materials and non-renewable resources will become property of the contractor. Wood from vegetation removal will not become property of the contractor. Small woody material will be chipped and saved onsite for

revegetation efforts and large wood will either be stored to place onsite for habitat or be turned over to relevant Tribes if they have interest.

D. RIGHT-OF-WAY ISSUES

A Right-of-Way Data Sheet was prepared for the project alternatives on April 4, 2019 and an updated Data Sheet was prepared for Alternative 1 on March 16, 2020 (Attachment F). Right-of-way lead time requires a minimum of months after appraisal maps, utility conflict maps, and necessary environmental clearance/ agreements are received. Additionally, a minimum of 20 months will be required after receiving the last appraisal map to Right-of-Way for certification.

Temporary Construction Easements (TCE) will be obtained for three parcels identified for potential access to bridge piers and construction access roads. A TCE for access as well as a permanent Easement will be required from the North Coast Rail Authority (NCRA) for demolition of the existing Russian River Bridge.

E. ENVIRONMENTAL COMPLIANCE

The Negative Declaration has been prepared in accordance with Caltrans' environmental procedures, as well as State and federal environmental regulations. The attached Negative Declaration (Attachment H) is the appropriate document for the proposal.

The prepared Initial Study with Proposed Mitigated Negative Declaration expects to determine that the proposed project would not have a significant impact on the environment for the following reasons:

- The project would have no effect with regard to agriculture and forest resources, energy, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, tribal cultural resources, utilities and service systems, and wildfire.

- The project would have less than significant impacts with regard to aesthetics, air quality, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous waste materials, and hydrology and water quality.

- With mitigation measures incorporated, the project would have less-than-significant impacts with regard to biological resources.

Hydroacoustic monitoring will also be incorporated into construction activities, specifically pile driving for trestle, falsework, pier columns, and any work within the stream channel.

Bat exclusion measures will be implemented on the railroad structure to prevent disturbance during construction activities.

F. Air Quality Conformity

The project falls within an area designated as not in non-attainment for air quality; therefore, air quality conformity is not required.

G. Title VI Considerations

It is anticipated that no business or residence will have to be relocated because of current project scope. All considerations of Title VI of the Civil Rights Act of 1964 shall be evaluated in the development of this project.

H. Noise Impact Study Report

The project is considered a Type III project meaning it is exempt from traffic noise impact analysis under Title 23, Part 772 of the Code of Federal Regulations (23CFR772). Traffic noise impact is not anticipated to occur.

I. Life-Cycle Cost Analysis

A formal Life Cycle Cost Analysis was not conducted for this project. However, cost analysis was included as part of the Value Analysis process. Additionally, life cycle cost analysis was inherently considered during the evolution of the project alternative. The decision to construct an entirely new structure on a new alignment was in part based on the life cycle cost of a new structures vs. retrofitting and widening and existing structure with limited service life remaining.

J. Reversible Lanes

This project does not qualify as a capacity increasing or a major street or highway realignment project and reversible lanes have not been considered.

7. OTHER CONSIDERATIONS AS APPROPRIATE

A. Public Open House

A Public Open House was held March 11, 2020 at 5:30pm. No comments were received on the environmental document.

Multiple comments received were regarding the SR-20 and Road 144 intersection. Community members desired the at-grade intersection be altered, perhaps with the addition of an eastbound on-ramp that would eliminate the Road 144 to eastbound Route 20 left turn movement. It was explained to the concerned parties that an on-ramp configuration was considered but could not be included in this Bridge Replacement project. The proposed design does not prevent the addition of an on-ramp with another project in the future. Traffic Safety is aware of the concern and a currently proposed project will install a warning sign system with vehicle detectors to activate flashing beacons at the Road 144 intersection. These features will be perpetuated in the realignment associated with this project.

This project will improve the sight distance at the intersection. Additional features such as striping, delineators, contrasting pavement can also be included to better distinguish the intersection and turning movements.

During the public review period, the environmental document received two comments. The comments received on the environmental document have been addressed in the attached Mitigation Negative Declaration.

B. PERMITS

Permits and approvals required for this project include:

- Section 1602 Lake or Streambed Alteration Agreement from the California Department of Fish and Wildlife
- Section 404 Clean Water Act from the U.S. Army Corps of Engineers
- Section 401 Water Quality Certification from the North Coast Regional Water Quality Control Board
- Biological opinion from the National Marine Fisheries Service
- Letter of Concurrence from US Fish and Wildlife Service

C. HYDRAULICS AND DRAINAGE

A Floodplain Evaluation and Summary Report (FERS) and a Preliminary Drainage Recommendation (Attachment I) was prepared on August 21, 2019. The proposed construction activities are not expected to have any significant adverse floodplain impacts.

New drainage facilities including culverts, over side drains, and inlets will be installed along the new alignment. Existing over side drains and culverts will be modified, abandoned, or removed as needed. A new ditch and possible Design Pollution Prevention (DPP) items will be constructed at the embankment toe on the south eastern side of the bridge to perpetuate flow patterns to Eastside Calpella Road. Additional

drainage work such as culvert/ inlet replacement and ditch reconstruction will occur on Eastside Calpella Road to accommodate flow patterns around the new bridge pier.

The low point of the vertical curve occurs on the new bridge. Water from the structure's surface will be collected in scuppers connected by a drainage system that will convey water down piers and onto rock slope protection on the ground.

D. LOCAL INVOLVEMENT/COOPERATIVE AGREEMENTS

The project does involve local involvement and an encroachment permit will be required from the county. The project will be reconstructing Eastside Calpella Road under the new structure. No cooperative agreements are anticipated for this project. The project will impact two local roads that service the community of Calpella and there should be close coordination with the County during traffic closures.

E. STORM WATER DATA REPORT

A Storm Water Data Report (SWDR) (Attachment J) was prepared on August 27, 2019. Temporary Construction Site Management best management practices (BMPs) will be deployed as necessary under a contractor prepared Storm Water Pollution Prevention Plan (SWPPP). Permanent BMPs such as infiltration areas will also be constructed within the project limits to mitigate the increased impervious surface area.

Potential Design Pollution Prevention (DPP) areas have been identified and the exact location and size of these areas will be determined in the design phase. The project report includes funding for storm water compliance measures. The temporary construction site BMP costs have been estimated using 2.5% of the total construction cost.

F. TRANSPORTATION MANAGEMENT PLAN

A Transportation Management Plan (TMP) (Attachment K) was prepared on June 1, 2018. Significant traffic impacts are not anticipated during construction, provided that the TMP recommendations and requirements are incorporated into the project.

During construction reversing traffic control is expected along with intermittent closures, shoulder closures, and ramp closures. Closure during night hours will be required for reversing traffic control. The anticipated maximum delays are 10 minutes during reversing control and 20 minutes during intermittent closures. Maximum delay times are crucial to adhere to due to the project proximity to US 101 on/off ramps. Extensive traffic

queues could adversely impact US 101 ramp operation.

Full closure of the county owned Eastside Calpella Road may be required for specific construction operations such as pier and abutment construction. Caltrans will notify and coordinate with the county in advance of any road closures. At no point during construction will traffic be diverted onto county roads as a detour.

Traffic Staging

A majority of project construction can occur without impacting mainline traffic. However, stage construction will be necessary to tie the new alignment into the existing highway. Potential traffic staging scenarios have been discussed and considered in the cost estimate. Traffic staging plans will be developed during the design phase and may involve widening of the existing roadway prism for temporary lanes. None of the staging scenarios will involve detouring traffic onto county roads.

G. MATERIALS RECOMMENDATION

A Materials Recommendation (Attachment L) was prepared on August 8, 2018. Recommendation Alternative 2 was used for the structural section. No rubberized HMA will be used within the Road 144 intersection area, gore areas, or entrance and exit ramps where turning movements typically occur.

H. ASSET MANAGEMENT

The primary assets associated with this project include a Bridge Replacement/New Structure, New Pavement, New Culvert/Drainage System, Signing, and safety assets such as new MGS and end treatments. This project's performance objectives are consistent with the Transportation Asset Management Plan, Ten-Year State Highway Operation and Protection Program (SHOPP) Plan, and Five-Year Maintenance Plan. Refer to the Performance Measures (Attachment M) for detailed performance information.

I. COMPLETE STREETS

Caltrans' Complete Streets Directive promotes a multimodal transportation system that accommodates pedestrians, bicyclists, transit, and vehicular users. This segment of Route 20 does not currently have accommodations outside of the shoulder for pedestrians or bicyclists. Pedestrian and bicyclists are not prohibited on the facility. The project will improve the available shoulder width for pedestrians and bicyclists on the bridge by increasing shoulders to 8 feet. The increased shoulder width will also provide greater separation from vehicular traffic for both bicyclists

and pedestrians; increasing safety for all users.

J. CLIMATE CHANGE CONSIDERATIONS

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) is intended to establish a Department policy that will ensure efforts to incorporate climate change into Departmental decisions and activities. This facility constructed by project is not anticipated to increase greenhouse gas (GHG) emissions and the widened structure with a reconstructed intersection will increase operational performance, potentially reducing GHG emissions from traveling vehicles.

During construction the contractor will comply with Caltrans Standard Specifications regarding emissions reduction and air quality. Idling vehicles during construction will be restricted to no more than 5 minutes per Title 13 of the California Code of regulations. Refer to the Environmental Document (Attachment H) for additional climate change information.

K. WIRED BROADBAND FACILITIES

There are no broadband facilities along SR-20 within the project limits. The project does not install infrastructure or restrict future installation of broadband facilities. The new Russian River Bridge will be designed to accommodate future broadband utility installations.

L. CORRIDOR AND SYSTEM COORDINATION

Future coordination is recommended with the following projects that are within or near the vicinity of this project:

- EA 01-0H940 (PM 33.5/34.0)- Rehabilitate Bridge Deck (Construction 2018). The purpose of this project was to extend the life of the bridge deck until replacement can occur. Completed in 2018.

- EA 01-0J830 (PM 33.7/34.1)- Safety Project (Construction 2020). Project proposes to construct a warning sign system with vehicle detectors to activate flashing beacons at the Road 144 intersection.

The vehicle detection system and signs installed by project EA 01-0J830 will be replaced by this project once the new intersection is complete.

M. LANDSCAPE ARCHITECTURE ASSESSMENT

A Landscape Assessment was not prepared but an estimate of landscape, replanting, and erosion control items was provided (Attachment N) on April 3, 2020.

A cost of $831,000 was estimated for soil stabilization, erosion control, and onsite revegetation. Future coordination with local tribes and the local community may initiate the need for aesthetic treatment on the bridge railing.

N. CONSTRUCTION STAGING AREAS

There are a number of anticipated staging areas within State Right-of-Way, which are displayed on the layouts. Potential areas include: a large turnout on the southeast side of the highway, a large turnout on the northeast side of the highway, the turnout between US 101 northbound ramp and SR-20, the access road area under the bridges on the north side, and a portion of the lumber mill property on the south side.

O. MATERIAL BORROW SITE

The project requires approximately 45,000 cubic yards of imported material to construct the embankments at the bridge approaches. This volume of material may be accommodated by providing a state furnished optional borrow site or by finding a dedicated commercial source prior to contract bidding. A nearby by commercial site has been identified as having this volume of material available.

8. FUNDING, PROGRAMMING AND ESTIMATE

Funding

This project is currently State funded only and is being funded from the 20.XX.201.110 Bridge Rehabilitation Program. The project is programmed in the 2018 SHOPP in the fiscal year 20/21. Refer to the Programming Sheet (Attachment O) for the estimate of support resources.

Programming

This project is programmed in the SHOPP at a cost of $47,825,000. This includes $29,036,000 for Capital Construction cost, $4,001,000 for Capital Right-of-Way costs, and $14,788,000 for Project Support costs.

The table below shows the estimated escalated costs.

Fund Source	Fiscal Year Programmed				Estimated Cost	Difference
20.XX.201.110	Prior	19/20	20/21	Total	Total	%
Component	*In thousands of dollars ($1000)*					
PA&ED Support	3,424	0	0	3,424	3,418	-0.2
PS&E Support	0	3,129	0	3,129	2,771	-12.1
Right-of-Way Support	0	0	301	301	336	11.0
Construction Support	0	0	7,934	7,934	7,508	-5.5
Right-of-Way	0	0	4,001	4,001	2,064	-63.9
Construction	0	0	29,036	29,036	33,291	13.7
Total	3,424	3,129	41,272	47,825	49,460	

The support to capital ratio is 39.90%.

Estimate

The total escalated estimate is $49,460,000 which includes $33,291,000 for Construction Capital, $2,064,000 for Right-of-Way Capital, and $14,105,000 for support.

Cost Comparison

- The escalated project cost exceeds the currently the programmed amount by approximately $1,635,000.

- The capital cost increased from the originally programmed amount primarily due to onsite revegetation/landscaping items and riparian/wetland mitigation costs being greater than anticipated based on increases to anticipated environmental impacts. In addition, the roadway cost was refined, and additional costs added for stage construction related items. These costs were accounted for in the Project Change Request (PCR) submitted on April 6, 2020 and are represented in the table above.

Construction Estimate

The most significant aspects of the construction estimate include: the new structure, demolition of the existing structure, pavement structural section, earthwork, revegetation, and mitigation costs.

9. DELIVERY SCHEDULE

Project Milestones		Milestone Date (Month/Day/ Year)	Milestone Designation (Target/Actual)
APPROVE PID	M010	05/22/2015	A
PROGRAM PROJECT	M015	03/16/2016	A
BEGIN ENVIRONMENTAL	M020	11/01/2016	A
BEGIN PROJECT	M040	06/27/2016	A
CIRCULATE DPR & DED EXTERNALLY	M120	01/24/2020	T
PA & ED	M200	05/15/2020	T
BRIDGE SITE DATA RECIEVED	M221	08/01/2019	A
RIGHT-OF-WAY REQUESTS	M224	10/04/2019	A
REGULAR RIGHT-OF-WAY	M225	01/02/2020	T
GENERAL PLANS	M275	09/18/2020	T
PS&E TO DOE	M377	04/05/2021	T
DRAFT STRUCTURES PS&E	M378	12/11/2020	T
PROJECT PS&E	M380	05/12/2021	T
RIGHT-OF-WAY CERTIFICATION	M410	05/14/2021	T
READY TO LIST	M460	05/31/2021	T
HEADQUARTERS ADVERTISE	M480	06/28/2021	T
AWARD	M495	09/22/2021	T
APPROVE CONTRACT	M500	10/20/2021	T
CONTRACT ACCEPTANCE	M600	10/03/2024	T
END PROJECT EXPENDITURES	M800	12/28/2029	T
FINAL PROJECT CLOSEOUT	M900	09/29/2031	T

10. RISKS

The Risk Register prepared for the project is included as Attachment P. The greatest risks identified by the PDT include:

- In order to maintain delivery schedule, geotechnical drilling and Structure/District design must continue with design during DPR circulation. This work may have to be reconsidered if there is public opposition or if significant comments arise that challenge the technically preferred alternative, which would delay schedule.

- As a result of the need for railroad consultation and review 60% plans, a delay in project delivery may occur.

- As a result of potential delay in Right-of-Way acquisition, a delay in R/W Certification may occur which would lead to a delay in RTL.

11. EXTERNAL AGENCY COORDINATION

Federal Highway Administration (FHWA)

This project is considered to be an Assigned Project in accordance with the current Federal Highway Administration (FWHA) and Department of Transportation (Caltrans) Joint Stewardship and Oversight Agreement.

The project requires the following coordination:

The proposed project alternatives will involve work beneath the existing bridge deck. The project, therefore, will require a Clean Water Act Section 404 U.S. Army Corp of Engineers permit, a Section 401 Water Quality Certification from the North Coast Regional Water Quality Control Board, and a 1602 Lake and Streambed Alteration Agreement from the California Department of Fish and Wildlife. Consultation and Coordination with the United States Fish and Wildlife Service, National Marine Fisheries Service, and California Department Fish and Wildlife will be required.

Railroads
On August 31, 2018 the California State Senate passed SB 1029 that will dissolve the NCRA. The bill will create the Great Redwood Trail Agency, which will be given oversight of the railroad north of Willits and transfer the southern portion to the existing Sonoma Marin Area Rail Transit (SMART), a commuter train operator. The bill proposes to potentially return rail services up to Willits.

12. PROJECT REVIEWS

Scoping team field review	PDT	Date 4/11/19
District Program Advisor	Stan Brandenburg	Date 1/16/20
Headquarters SHOPP Program Advisor	Takako Fujioka	Date 9/17/20
District Maintenance	Chris Ghidinelli	Date 4/15/20
Headquarters Project Delivery Coordinator	Michael Webb	Date
Project Manager	Cathy McKeon	Date 5/1/20

District Safety Review Ken Hallis Date 9/17/20
Constructability Review Jim McGee Date TBD

13. PROJECT PERSONNEL

Name	Title	Phone Number
Matt Smith	Project Engineer	(707) 445-6526
Matt Small	Designer	(707) 445-6327
Caren Coonrod	Design Senior	(707) 445-6229
Erwin Rufino	Structures Design	(916) 227-9308
Bryan Bet	Structures Construction	(707) 498-3018
Cathy Mckeon	Project Manager	(707) 498-7635
Mark Sobota	District 1 Project Coordination	(707) 445-6672
David Morgan	District 1 Traffic Safety	(707) 445-6376
Kenneth Russo	Environmental Planning Branch Chief	(530) 741-4291
Fermina Chavez	Environmental Coordinator	(530) 741-4084
Robert Close	Senior Right-of-Way Agent	(707) 445-6582
Tauni Melvin	Senior Utility Coordinator	(707) 441-5846
Geoffrey Wright	Area Construction Engineer	(707) 485-1010
Dan Kornegay	Field Maintenance Supervisor	(707) 463-4751
Mark Gorona	Maintenance Liaison Engineer	(707) 441-5651
Laura Lazzarotto	Landscape Architect	(707) 445-7878
Loriel Caverly	Revegetation Specialist	(707) 441-5808
Tim Nelson	Mitigation Specialist	(707) 445-5658
Robert Wall	Stewardship Branch Chief	(707) 445-5320

14. ATTACHMENTS (Number of Pages)

A. Location Map (1)
B. Layouts (2)
C. Typical Cross Sections (8)
D. Structures Type Selection Report (49)
E. Cost Estimate (10)
F. Right-of-Way Data Sheet (18)
G. Updated Initial Site Assessment (3)
H. Environmental Document (249)
I. Floodplain Evaluation and Summary Report (FERS)/ Preliminary Drainage Recommendation (9)
J. Stormwater Data Report (12)
K. Transportation Management Plan (7)
L. Materials Recommendation (4)
M. SHOPP Performance Output (1)
N. Estimate of Landscape, Replanting, and Erosion Control Items (1)
O. Programming Sheet (2)
P. Risk Register (3)

ATTACHMENT A

PROJECT LOCATION

MAP

01-MEN-020 PM 33.3/34.4
Russian River (BR #10-182) Bridge Rehabiliatation

ATTACHMENT B

LAYOUTS

CALPELLA BRIDGES
DECK REHABILITATION
01-0E090 (01 1300 0123)
MEN-020-PM 33.3/34.2

LEGEND
- R/W AQUISITION
- EXISTING RIGHT OF WAY
- CUT AREA
- FILL AREA

SCALE: 1" = 100'

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Men	020	33.3/34.2		

REGISTERED CIVIL ENGINEER DATE

Month Day, Year

PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

PRELIMINARY DESIGN FOR REVIEW ONLY

END CONTOUR GRADING BEG REMOVE BRIDGE
END REMOVE BRIDGE BEG CONTOUR GRADING
END REMOVE BRIDGE BEG REMOVE BASE & SURFACING
"CL1" 20+50 BEG BRIDGE (WIDTH = 44')
RUSSIAN RIVER
BEG SHOULDER WIDENING EASTSIDE CALPELLA RD
"CL1" 23+10 END BRIDGE (WIDTH = 65')
END SHOULDER WIDENING EASTSIDE CALPELLA RD
ROAD 144
END REMOVE BASE & SURFACING BEG REMOVE BRIDGE
RECONSTRUCT DRAINAGE DITCH
ABANDON CULVERT (24" diam CMP)
INFILTRATION AREA OR DITCH (L=430')
OVERSIDE DRAIN
"CL1" 16+50.98 BC BEG REALIGNMENT BEG STRUCTURAL SECTION
MODIFY DRAINAGE INLET
SR 20
DRAINAGE DITCH (L=50')
RSP
R/W EXISTING DITCH
DOWNDRAIN FROM STRUCTURE
END SHOULDER WIDENING EASTSIDE CALPELLA RD
DRAINAGE DITCH (L=715')
CONFORM ROAD 144
"CL1" 12+80.00 CONFORM
REMOVE OVERSIDE DRAIN
INSTALL CULVERT (24"ACP, L=50')
BEG SHOULDER WIDENING EASTSIDE CALPELLA RD
ABANDON CULVERT
INSTALL CULVERT (24" APC, L=230')
END COLD PLANE BEG REMOVE BASE & SURFACING
NORTHWESTERN PACIFIC RAILROAD
EASTSIDE CALPELLA RD
OVERSIDE DRAIN
OVERSIDE DRAIN
REMOVE OVERSIDE DRAIN
END REMOVE BASE & SURFACING BEG COLD PLANE
"CL1" 40+80.53 EC END REALIGNMENT END STRUCTURAL SECTION
TO US 101
BEG COLD PLANE
"CL1" 10+00.00 BEG
TO UPPER LAKE
"CL1" 44+90 CONFORM END COLD PLANE "CL1" 45+12.53 END

ALTERNATIVE 1:
ONE NEW STRUCTURE ON NEW SOUTHERN ALIGNMENT "CL1"

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY
MATT SMITH
FUNCTIONAL SUPERVISOR
CAREN COONROD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

LAST REVISION
DATE PLOTTED => 15-JAN-2020
TIME PLOTTED => 14:01

P:\PROJ\01\0E090\design\510 Plans\Alternative Layouts\Alt_1_Frames\0-phase\Alternative1_FullView.dgn

BORDER LAST REVISED 7/2/2010

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DGN FILE => Alternative1_FullView.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0312

PROJECT NUMBER & PHASE 0113000123

CALPELLA BRIDGES
DECK REHABILITATION
01-0E090 (01 1300 0123)
MEN-020-PM 33.3/34.2

LEGEND
- EXISTING RIGHT OF WAY
- ESL
- CUT AREA
- FILL AREA
- STAGING
- ACCESS AREAS
- ESA

SCALE: 1" = 100'

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Men	020	33.3/34.2		

REGISTERED CIVIL ENGINEER DATE

Month Day, Year

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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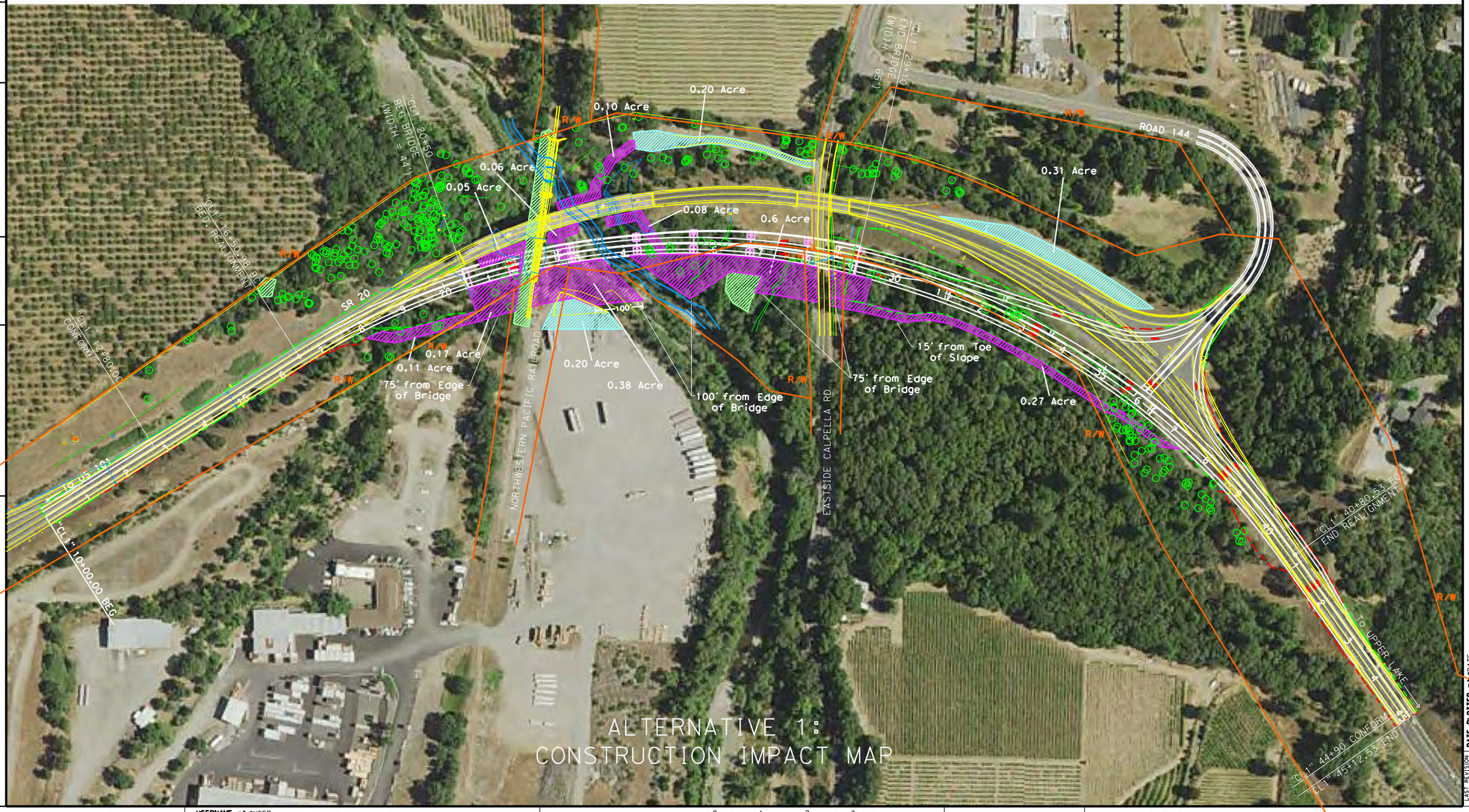
PRELIMINARY DESIGN REVIEW ONLY



ALTERNATIVE 1:
CONSTRUCTION IMPACT MAP

REVISED BY | DATE REVISED

CALCULATED- | DESIGNED BY | CHECKED BY

MATT SMITH

FUNCTIONAL SUPERVISOR

CAREN COONROD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DESIGN

$REQUEST

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TIME PLOTTED => $TIME
09/03/19

BORDER LAST REVISED 7/2/2010

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DGN FILE => $REQUEST

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0312

PROJECT NUMBER & PHASE 0113000123

ATTACHMENT C

TYPICAL SECTION

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET	TOTAL SHEETS
01	Men	020	33.3/34.4		

REGISTERED CIVIL ENGINEER — DATE

Month, Day, Year

PLANS APPROVAL DATE

PRELIMINARY DESIGN FOR REVIEW ONLY

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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NOTES:

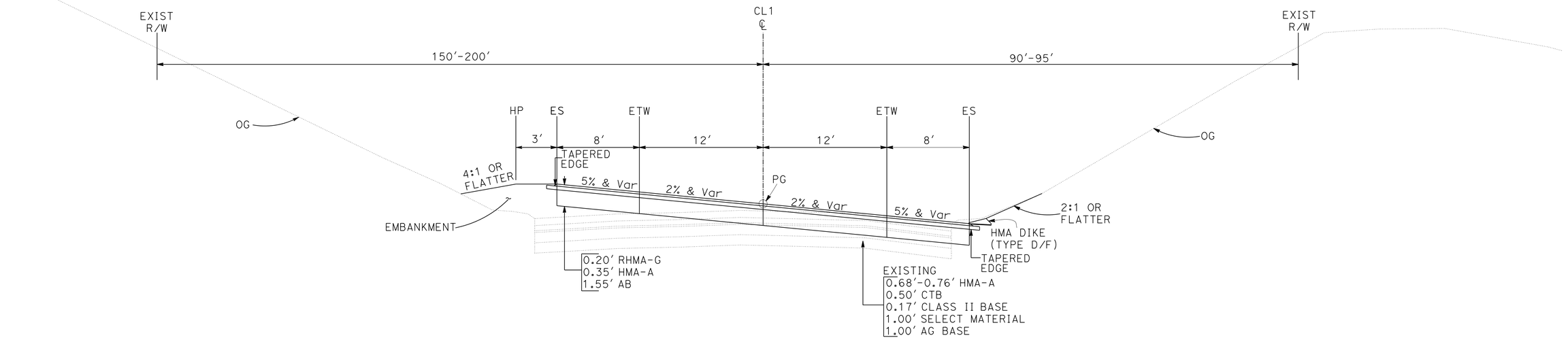
1. DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

2. SUPERELEVATIONS ARE SHOWN ON THE SUPERELEVATION DIAGRAMS.

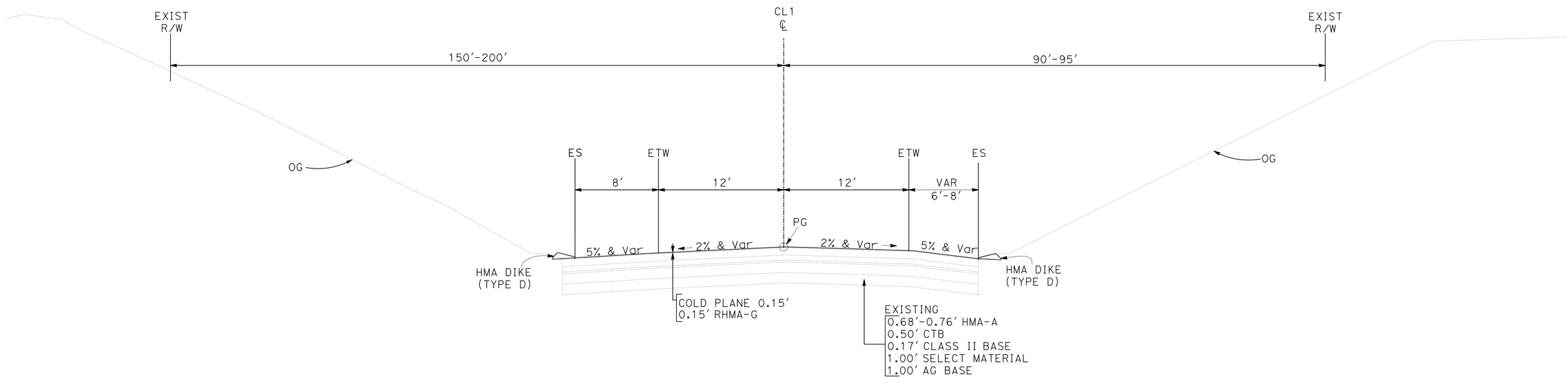
DESIGN DESIGNATION

ADT (2012)	11,400	D	60%
ADT (2030)	16,100	T	3.0%
DHV	2,415	V	65 mph
ESAL	X,XXX,XXX	TI_{20}	11.0

PAVEMENT CLIMATE REGION: LOW MOUNTAIN



STATION "CL1" 16+50.9 TO 20+50.0



STATION "CL1" 12+50.0 TO "CL1" 16+50.9

TYPICAL CROSS SECTIONS

NO SCALE

XS-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans®
DESIGN

FUNCTIONAL SUPERVISOR: CAREN COONROD

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY: MATT SMITH

DATE REVISED

LAST REVISION 03/26/19

DATE PLOTTED => 30-AUG-2019
TIME PLOTTED => 14:17

BORDER LAST REVISED 7/2/2010

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DGN FILE => CL1_Typical Sections-edits Moshin.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0312

PROJECT NUMBER & PHASE 0113000123

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET	TOTAL SHEETS
01	Men	020	33.3/34.4		

REGISTERED CIVIL ENGINEER DATE

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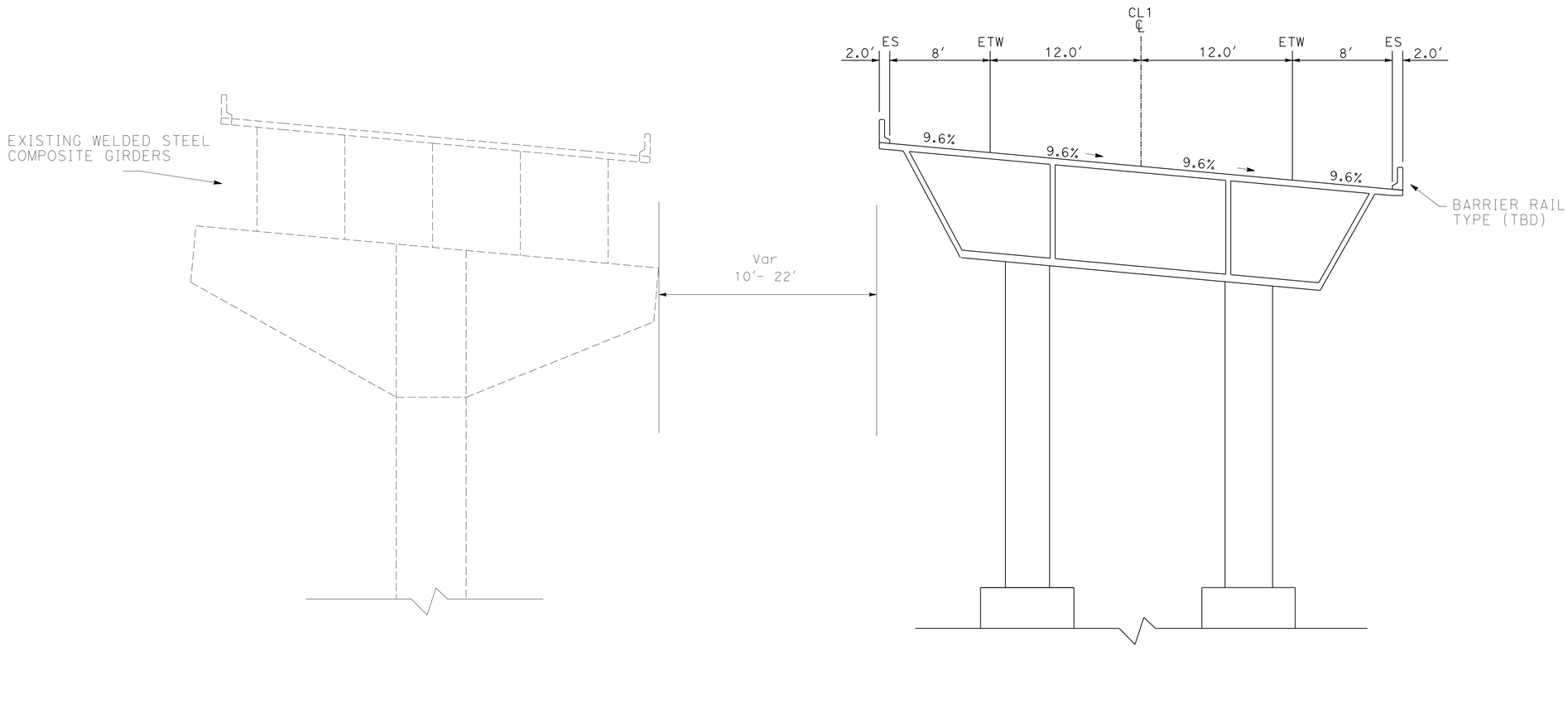

STATION "CL1" 25+50.0 TO "CL1" 22+62.5

TYPICAL CROSS SECTIONS

NO SCALE

XS-2

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UNIT 0312

PROJECT NUMBER & PHASE 0113000123

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET	TOTAL SHEETS
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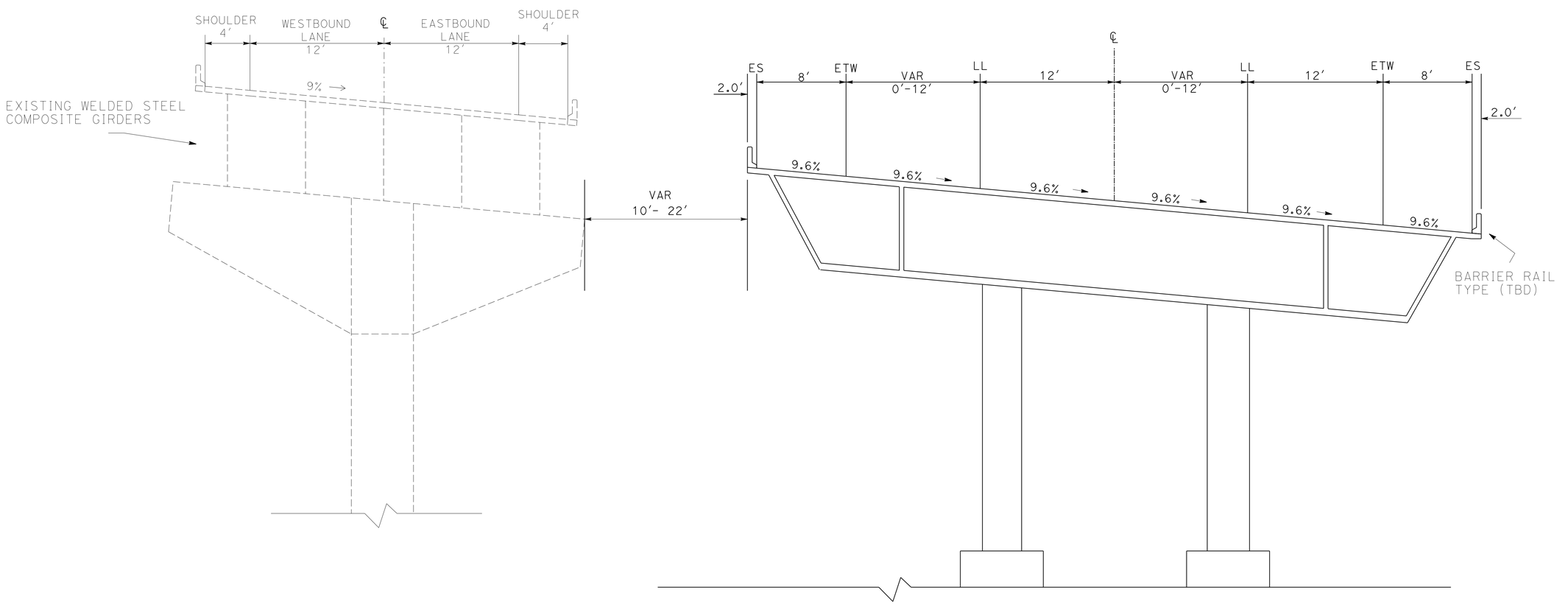

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TYPICAL CROSS SECTIONS

NO SCALE

XS-3

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UNIT 0312

PROJECT NUMBER & PHASE 0113000123

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET	TOTAL SHEETS
01	Men	020	33.3/34.4		

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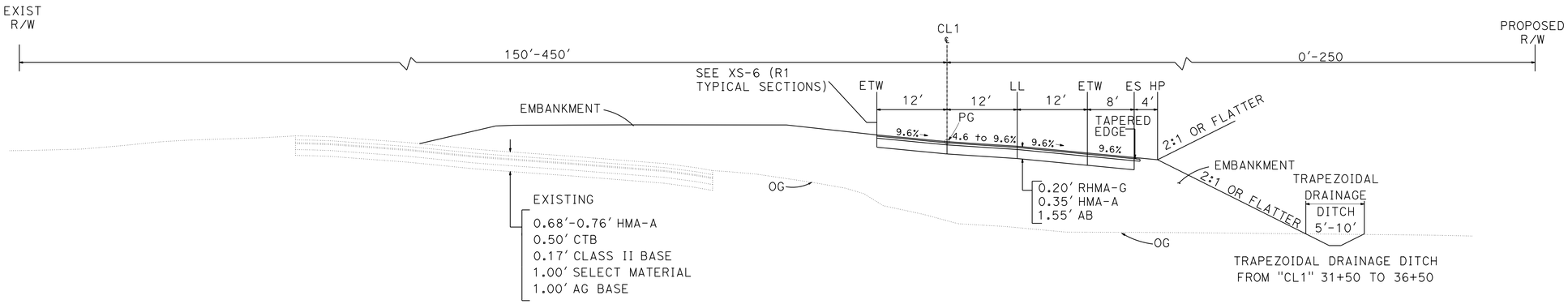

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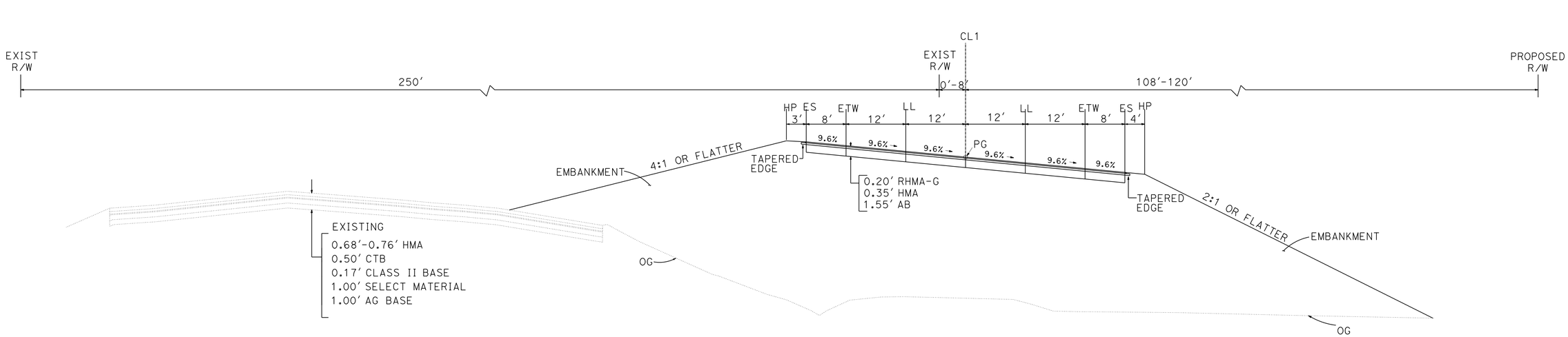

STATION "CL1" 29+10 TO "CL1" 31+65

TYPICAL CROSS SECTIONS XS-4

NO SCALE

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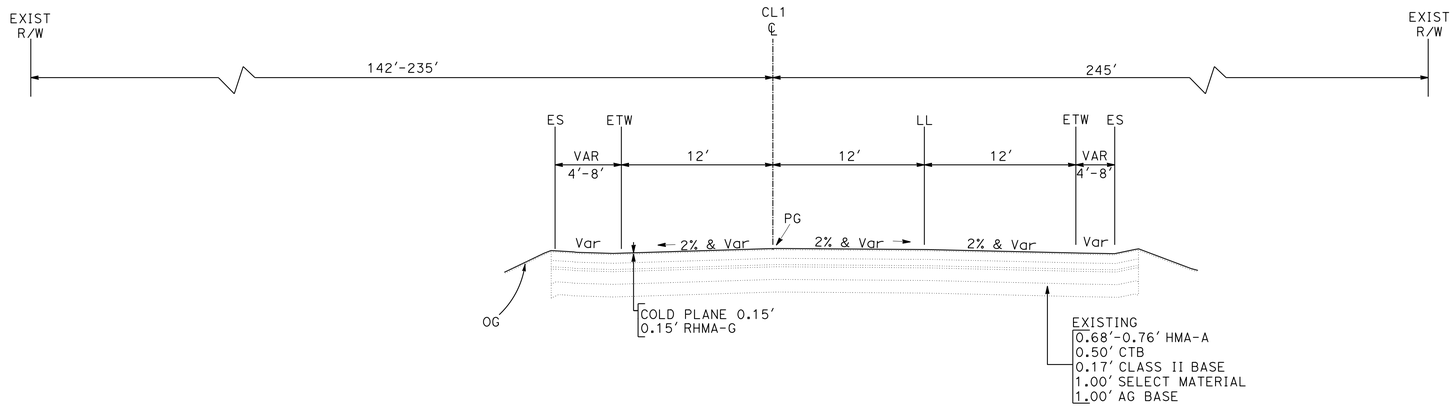

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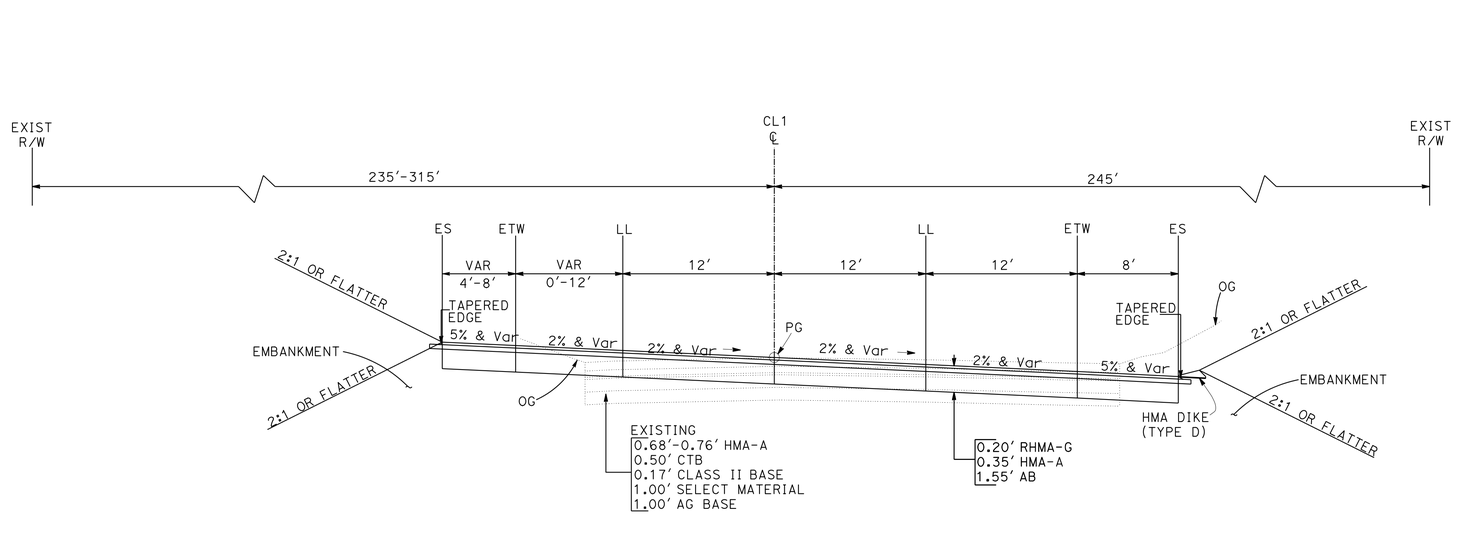

STATION "CL1" 39+86 TO "CL1" 42+27

TYPICAL CROSS SECTIONS

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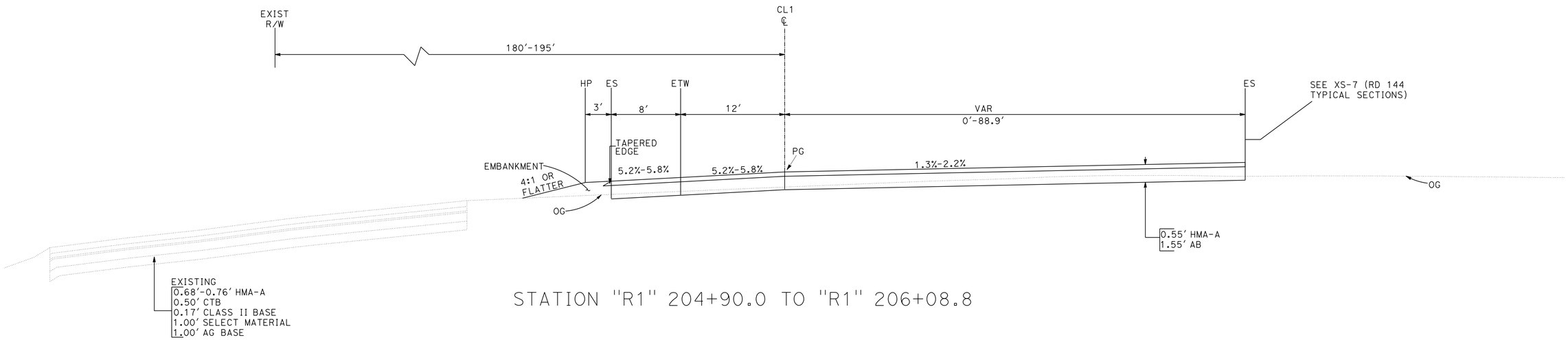
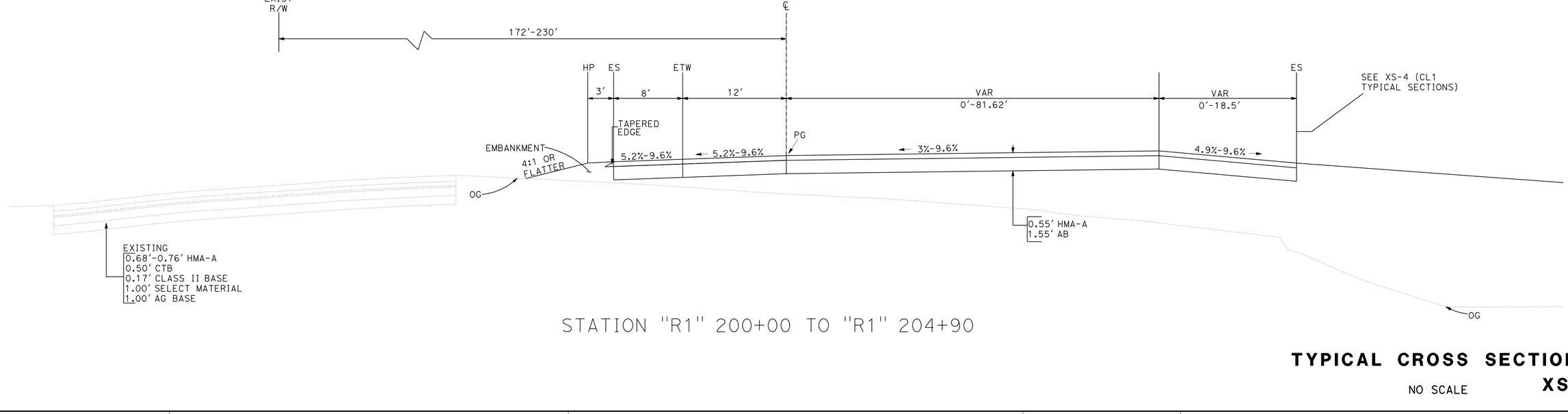


STATION "R1" 204+90.0 TO "R1" 206+08.8



STATION "R1" 200+00 TO "R1" 204+90

TYPICAL CROSS SECTIONS

NO SCALE

XS-6

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UNIT 0312

PROJECT NUMBER & PHASE 0113000123

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET	TOTAL SHEETS
01	Men	020	33.3/34.4		

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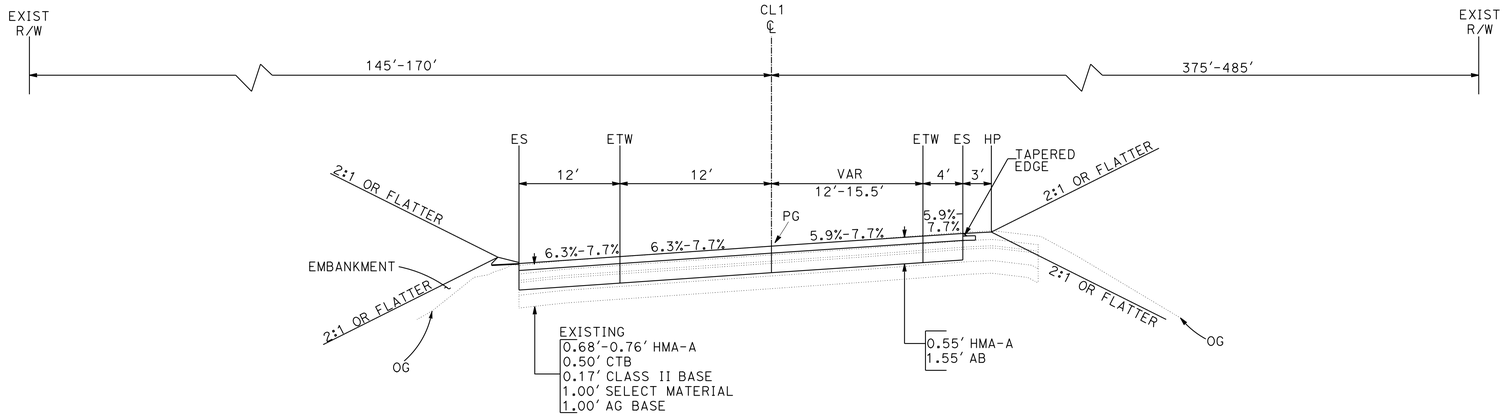
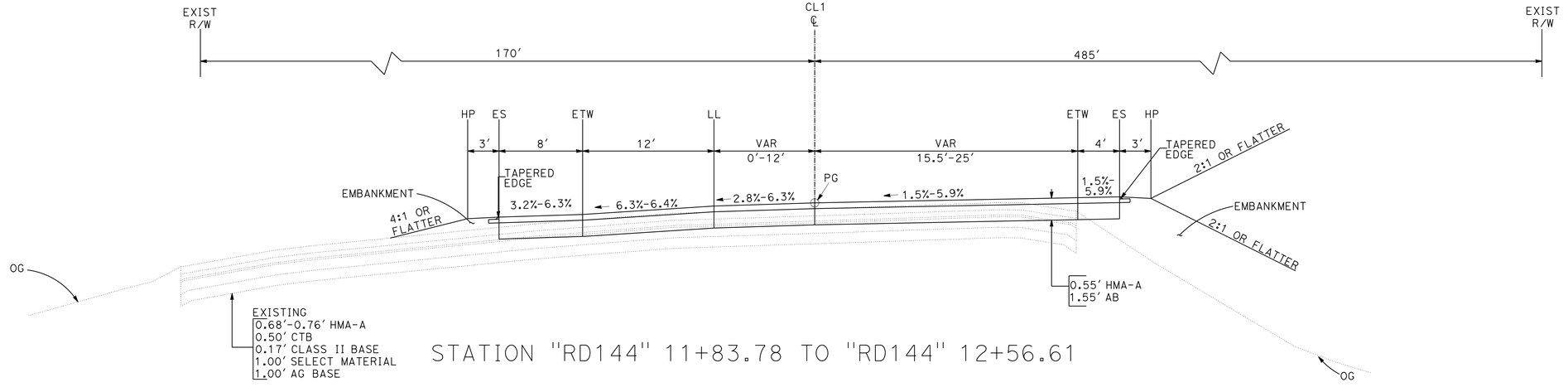
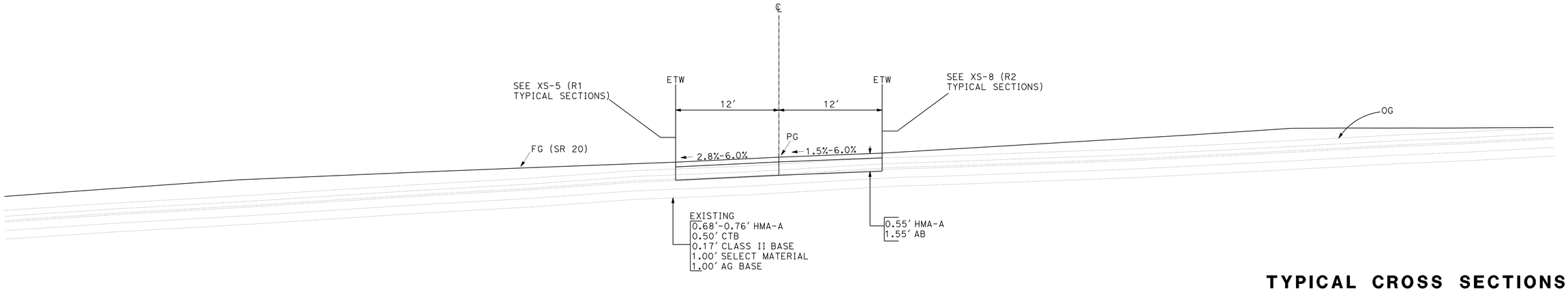


STATION "RD144" 12+56.61 TO "RD144" 12+96.89



STATION "RD144" 11+83.78 TO "RD144" 12+56.61



STATION "RD144" 10+12.05 TO "RD144" 11+83.78

TYPICAL CROSS SECTIONS

NO SCALE

XS-7

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UNIT 0312

PROJECT NUMBER & PHASE 0113000123

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET	TOTAL SHEETS
01	Men	020	33.3/34.4		

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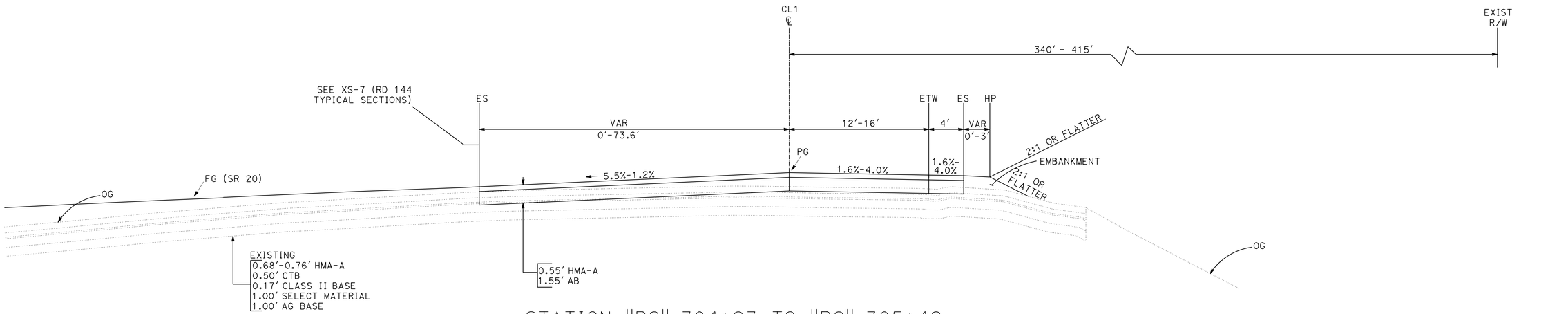
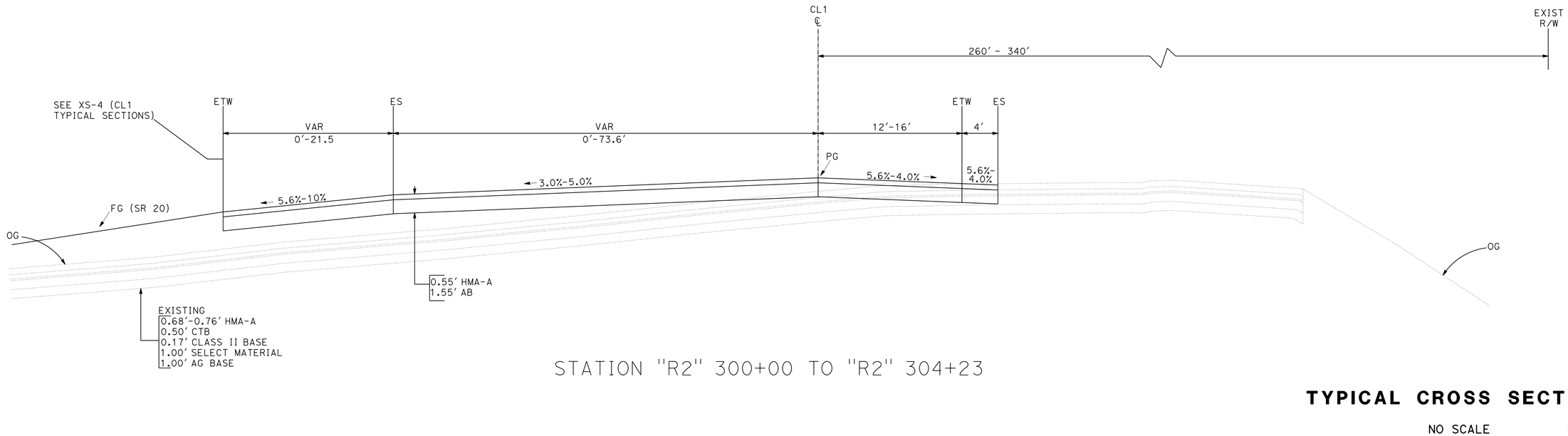


STATION "R2" 304+23 TO "R2" 305+42



STATION "R2" 300+00 TO "R2" 304+23

TYPICAL CROSS SECTIONS

NO SCALE

XS-8

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UNIT 0312

PROJECT NUMBER & PHASE 0113000123

ATTACHMENT D

STRUCTURES TYPE SELECTION REPORT

STRUCTURE TYPE SELECTION REPORT

Russian River Bridge and Overhead
01-MEN-20-PM 33.3/34.3
EA 01-0E090

Design Branch 6

10:00 AM – 12:00 PM
January 23, 2020
FM1, Room 220
1801 30th Street, Sacramento CA

Branch Chief: Gary Blakesley
Structure Project Engineer: Hilario Tuazon, Jr.

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I. Introduction

The proposed project is located on State Highway 20 in Mendocino County at post mile 33.6. The project is approximately 8 miles north of Ukiah, CA or 20 miles west of Upper Lake, CA. See Figure A for project location map.

This project is a bridge deck rehabilitation project that ultimately developed into a complete bridge replacement of the Russian River Bridge and Redwood Valley Road Undercrossing. The bridge replacement will be on a new alignment along State Route 20 in Mendocino County. Due to the realignment of State Route 20, the project will also improve roadway safety by addressing collision issues by reconfiguring intersection geometrics with larger radius curves and extended acceleration and deceleration lanes. The scope of structure work for this project includes:

- Construction of a new 860-foot bridge;
- Realignment of State Route 20

The

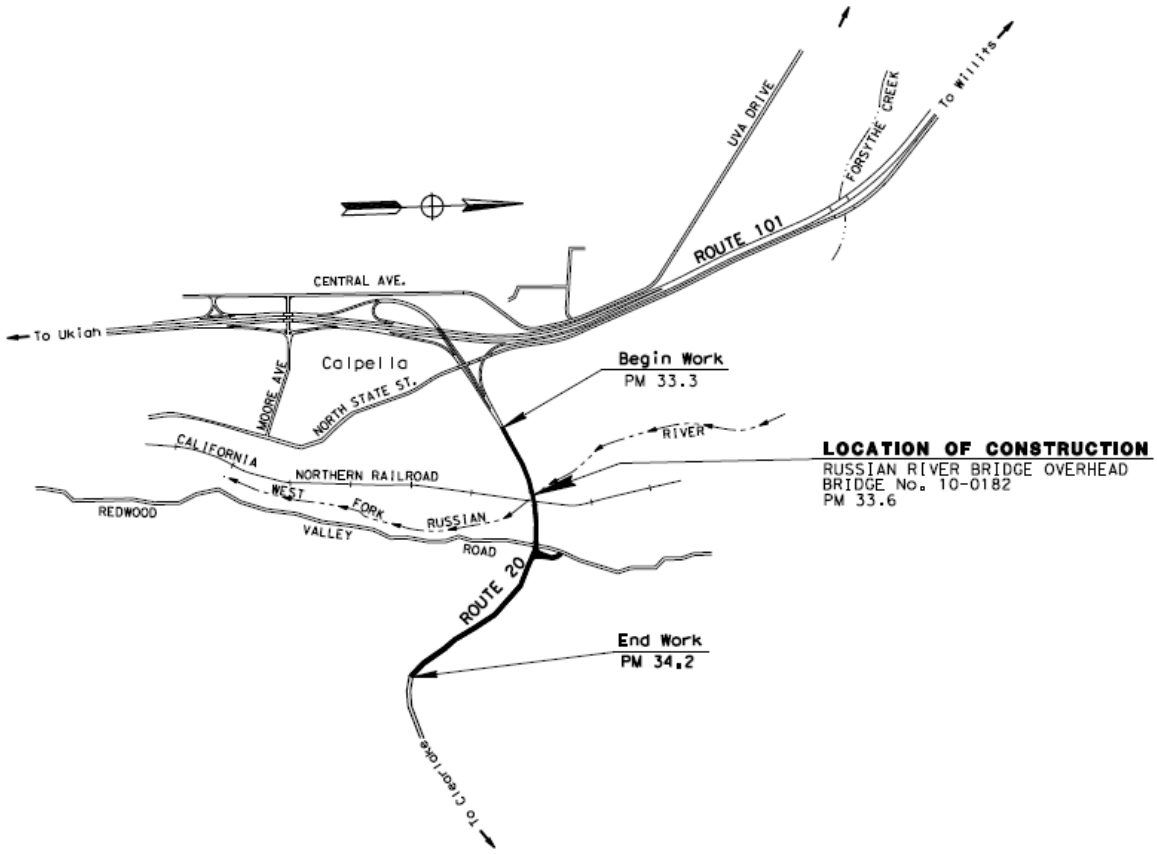

Figure A – Project Location Map


Mendocino
Lake
Willits
Ukiah
Project Location
PM 33.3/34.4
Pacific Ocean
EEL R. S FK
EEL R. M FK
RUSSIAN R
101
1
271
162
20
222
253
175
128
N
0 2.5 5 10 15 20
Miles

II. Background

This project initially was a deck rehabilitation project that proposed to either replace the bridge deck with widening on the existing alignment or to construct a new bridge(s) to the north or south of the existing alignment. This project has gone through multiple alternatives, with varying degrees of scope of work and cost. Due to traffic volumes, truck turning movements through local intersections, detour length, impacts to surrounding schools, and significant reconstruction of county roads; both Caltrans and Mendocino County determined that a long-term detour was infeasible. The preferred alternative that can meet the purpose and needs of the project proposes to perform a complete bridge replacement of two existing structures, the Russian River Bridge (#10-182) and Redwood Valley Road Undercrossing (#10-183), on a new alignment along State Route 20 in Mendocino County. A Value Analysis Study was conducted in May of 2019. From this study, the VA team has decided on the New Structure on Southern Alignment alternative, which is the current proposal to replace two existing structures with a new single structure to the south of the existing alignment. This will reconfigure the intersection of State Route 20 and County Road 144 to conform to the new mainline alignment. Included with this proposal is the addition of acceleration and deceleration lanes with standard tapers for the intersection of State Route 20 and Road 144. The existing bridge deck is currently in such poor condition that the bridge is susceptible to punching shear failure.

III. Structure Types Considered

A Value Analysis study was conducted in May 2019 by the project development team along with consultants. The Value Analysis team explored various alternatives regarding the realignment layout for State Route 20. The objectives of the VA study, among other things, were to provide possible cost and schedule savings, provide performance improvement, consider new alignments and improve traffic operations and safety. During the study, the structure type that was utilized was the Cast-In-Place Prestressed Box Girder, using information obtained from an old APS done in September 2018, with updated cost estimates. According to the Draft Project Report, dated September 2019, “the recommendations developed from the analysis (Value Analysis) were considered by the PDT but were not incorporated into the project. Upon further analysis, the anticipated cost savings from the recommendations were not justified by the impacts to roadway geometry or the constructability of the project.” The existing structures will remain operational while the new structure is in construction. The findings that resulted from the Value Analysis concluded that the proposed New Southern Alignment is the best option and is the preferred alternative. The main advantages of the preferred Southern Alignment alternative over others include preferred alignment with Highway 101 to the west and realignment of the existing intersection of State Route 20 and County Road 144 to the east. Information regarding each alternative are as follows:

One Structure on New Southern Alignment - Alternative 1 (Preferred)
The southern realignment of State Route 20 to construct a single new bridge to the south of the existing bridges with a seven-span CIP/PS box girder was considered and is the preferred structure alignment alternative. The new alignment will consist of a single 1600-foot radius curve with standard superelevation transitions. The profile of the new structure will match the existing profile but at a slightly higher elevation, in which the CIP/PS box girder type gives the best railroad clearance while following the depth-to-span ratio guidelines. This type also allows for longer span lengths which helps with spanning over the railroad and Russian River. It was initially assumed that 24" CIDH piles were to be used at the piers, but it will eventually depend on the geotechnical exploration and recommendations in the forthcoming Foundation Report. With this current assumption, horizontal clearance from centerline of track to a foundation is 35 feet, which meets the railroad minimum of 25 feet horizontal clearance. Abutment foundations are assumed to be HP 10x57 driven piles, based on the Structures Preliminary Geotechnical Report dated January 2015.

Two Structures on New Northern Alignment - Alternative 2A
The northern realignment of State Route 20 will replace both existing bridges with two new bridges to the north of the existing bridges. The new Russian River bridge will be a five-span 455 feet long CIP/PS box girder with a curve radius of 1250 feet. The new Redwood Valley Road UC will be a 96 feet long single span structure with the same curve radius. This alternative was formally rejected by the Project Development Team in July 2019 due to non-standard geometric features such as smaller curve radius, reversing curves, and an undesirable intersection configuration associated with the northern alignment. Building a structure with a 75 to100-year design life with non-standard roadway geometry is not preferred.

One Structure on New Northern Alignment - Alternative 2B
The northern realignment of State Route 20 will replace both existing bridges with a single new bridge to the north of the existing bridges. The new bridge will be a nine-span 900 feet long CIP/PS box girder with a curve radius of 1250 feet. This alternative was formally rejected by the Project Development Team in July 2019 for the same reasons mentioned above for Alternative 2A.

The structure types that were considered for this project are the CIP P/S Box Girder, CIP Reinforced Concrete Box Girder and the Precast P/S Wide-Flange Girder. The structure is required to span over a railroad, a river as well as an existing roadway. The structure is also required to have a varying width to include the addition of acceleration and deceleration lanes with standard tapers for the intersection of State Route 20 and County Road 144. Due to these constraints present at the site, it was found that the best option was to use the CIP P/S Box Girder type. This structure type is the most flexible and can meet all the necessary requirements. (See Table 1 below)

Table 1 – Structure Types Considered

Structure Name	Structure Type	Structure Depth (ft)[1]	Minimum Vertical Clearance (ft)[2]	Common Span Range (ft)[3]	Comments
Russian River Bridge and OH	CIP P/S Box Girder	6	27	100-250	• Preferred Type. • Minimum vertical clearance met. • Able to handle longer span lengths. • Able to handle varying structure widths. • Meets two-frame structure requirement by placing hinge in Span 4.
	CIP Reinforced Concrete Box Girder	8	19	50-120	• Not preferred. • Minimum vertical clearance not met. • Maximum span length less than 145'.
	Precast P/S Wide Flange Girder	6	27	90-180	• Not preferred. • Hinge/joint will need to be placed at pier 5 cap. • Drop-cap bents will be needed. • Long, straight girders could pose a problem with a tight radius curve. • Limited site accessibility.

[1] Using AASHTO LRFD 6th Edition, Table 2.5.2.6.3-1.
[2] Minimum vertical clearances required for railroad is 25'.
[3] Data taken from "Comparative Bridge Costs (2018)" sheet.

Accelerated Bridge Construction
An ABC Design Impact Questionnaire was completed with an ABC Rating of 26. According to the ABC Decision Flow Chart, conventional construction methods are to be implemented.

Table 2 shows a summary of the details for a CIP Prestressed Box Girder

Table 2 – Structure Type Data for Russian River Bridge OH, Br. No. TBD

Structure Type	**CIP/PS Box Girder.**
Bridge Length	860'-0"
Structure Depth	6'-0" Depth/Span Ratio = 0.041.
Bridge Width	44'-0" to 65'-3 1/3" (2-2-ft Barriers + 2-8-ft shoulders + 2-12-ft through lanes + varying left-turn lane + varying west bound acceleration lane).
Abutments	Seat-type abutments.
Bent/Column	Two-column bents with 5'-6" diameter columns.
Foundation Type	Abutments: HP 10x57 piles; Bents: 24" CIDH (both assumed).
No. of spans	7 spans: 105'-0" to 145'-0" spans.
Bearing Devices	Elastomeric Bearing Pads.
Joint Seals	Type B joint seals at abutments and hinge.
Temperature Range	34° – 94° F (Bridge Site Submittal).
Bridge Barrier	Concrete Barrier Type 842.
Structure Approach	Not needed.
Utilities	None requested (Bridge Site Submittal).
Future Utility Opening	None.
Future Widening	Not anticipated.

IV. Structure Cost Estimate and Number of Working Days

The Cost Estimates presented in this section are for the three alternatives that were utilized in the Value Analysis Study conducted in May 2019. As was mentioned before, the only structure type used for the VA study was the Cast-In-Place Prestressed Box Girder; other structure types that were considered were eliminated early on due to constraints at the site and feasibility to meet "purpose and needs" of the project. The estimated construction costs, including 10% time-related overhead, 10% mobilization and 20% contingencies, are as follows:

Table 3 – Structure Cost Estimates

Structure Name	Structure Type	Alternative No.	Deck Area	GP/APS Cost Estimate	Working Days
Russian River Bridge	CIP/PS Box Girder[1,2,3] One New Structure along New Southern Alignment	1	43,284 ft^2	$16.6M	660
	CIP/PS Box Girder[1,2,4,6] Two New Structures along New Northern Alignment	2A	26,559 ft^2	$9.6M	508
	CIP/PS Box Girder[1,2,5] One New Structure along New Northern Alignment	2B	46,350 ft^2	$15.4M	367

[1] 24" CIDH assumed at the piers.
[2] Class 140 driven piles assumed at the abutments.
[3] GP Estimate dated 12/13/19.
[4] APS Estimate dated 09/13/18.
[5] APS Estimate dated 09/13/18.
[6] Includes estimate for Eastside Calpella UC.

V. Preliminary Foundation Recommendations and Geology Information

Site Geology

The Office of Geotechnical Design North provided a Structure Preliminary Geotechnical Report (SPGR) on January 22, 2015. According to the SPGR, the report includes a review and evaluation of the As-Built bridge files for the existing structure, and a review of geologic maps and literature. The report mentions that a subsurface investigation was conducted in March and April of 1956 for the original bridge. The borings from the investigation showed that materials at the site are composed of interbedded loose to very dense silty sand and gravel.

Preliminary Foundation Recommendations

According to the SPGR, there are two feasible foundation types. They are as follows:

1. H-Piles

Based on the available information, matching the existing foundation type of driven steel H-Piles may be a possibility at the site depending on the final pile design (pile length, scour, etc.). If undesired material is encountered during the subsurface investigation, the scour elevation is determined to be below the bottom of footing, or embedment required by high lateral demands is not achievable, a different foundation type must be considered.

2. Cast-In-Drilled-Hole (CIDH) Piles/ Drilled Shafts

CIDH piles are an alternative foundation type applicable at the site. CIDH piles can be designed for high axial and lateral forces, and can be embedded below the scour elevation. The very dense sand layers can be drilled through, but the presence of high groundwater may cause some difficult conditions (i.e. caving potential). The use of temporary casing or drilling fluids may be needed to prevent caving. Minimal settlement should be expected. Due to the presence of groundwater the CIDH piles will be constructed using the wet method, they must be at least 24-inches in diameter to allow for PVC Gamma Gamma Logging inspection tubes. Caution should be taken when constructing this pile type in these conditions to avoid caving and anomalies in the pile.

VI. Preliminary Seismic Recommendations

The project is located within a moderately high seismic region. There is one fault zone near the project site. Table 4 lists the active and potentially active zone in the project vicinity.

Table 4 - Active and Potentially Active Faults

Fault	Moment Magnitude of Maximum Credible EQ	Fault ID	Type of Fault[1]	Distance to Fault from Project Area (mi)
Maacama Fault Zone (North Section)	7.4	66	SS	1.25

[1] SS = Strike-Slip Fault

There are no known faults that are Holocene or younger in age that fall within 1,000 feet of the structure, therefore the potential for surface fault rupture at the site is non-existent. Also, the structure does not fall within an Alquist-Priolo Earthquake Fault Zone.

A design response spectrum for the project area was estimated using Caltrans ARS Online (V2.3.06). The design response spectrum is based on the envelope of a combination of methods of the Deterministic Seismic Hazard and the USGS 5% Probability of Exceedance spectrums (Figure F). A near fault adjustment factor is used since the Maacama fault zone (North Section) is less than 25 km (15.5 miles) from the site. The peak ground acceleration is estimated to be 0.63g.

Geotechnical Design North will re-evaluate the seismic recommendations when additional soil and rock data become available.

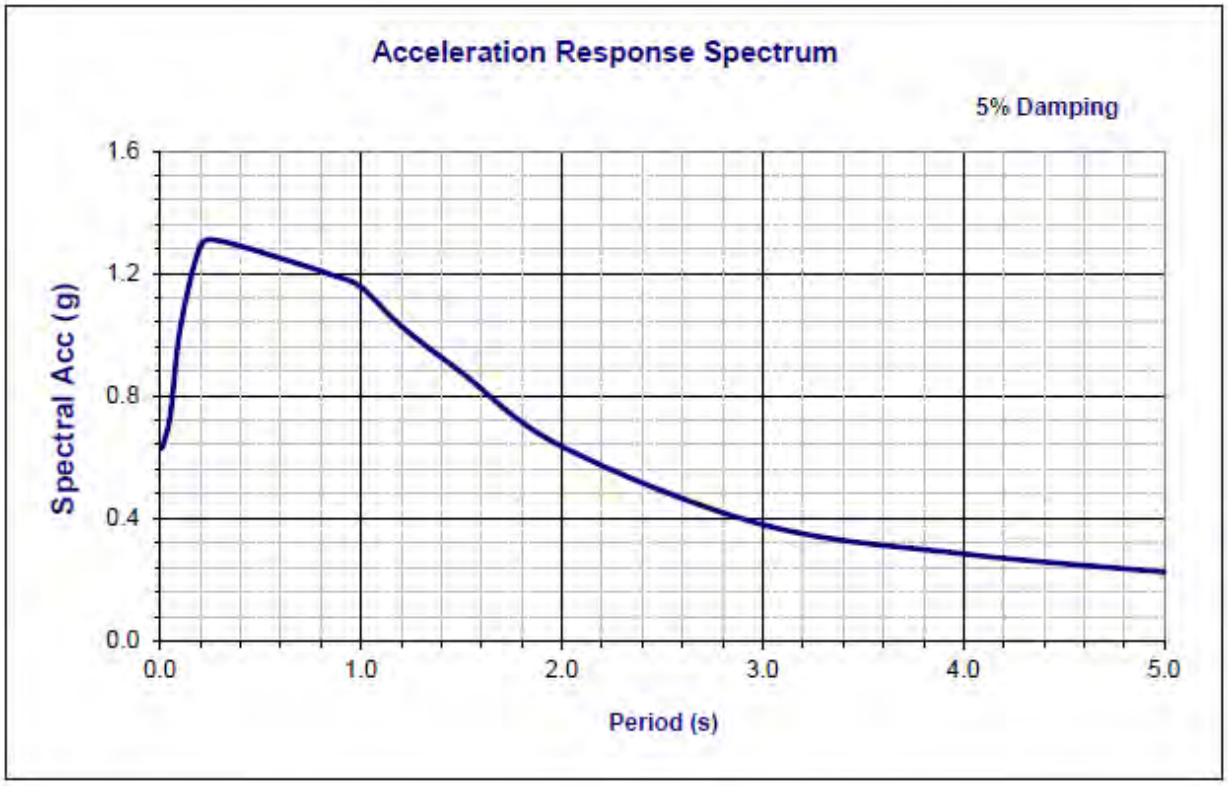

Figure B – Acceleration Response Spectrum

VII. Aesthetics

Currently, we are using Concrete Barrier Type 842 as bridge railings for the structure. According to the Draft Project Report, a Landscape Assessment was prepared for this project and approved on September 3, 2019. Future coordination with local tribes may initiate the need for aesthetic treatment on the bridge railing. Figure G shows a typical cross section of the proposed bridge rail.

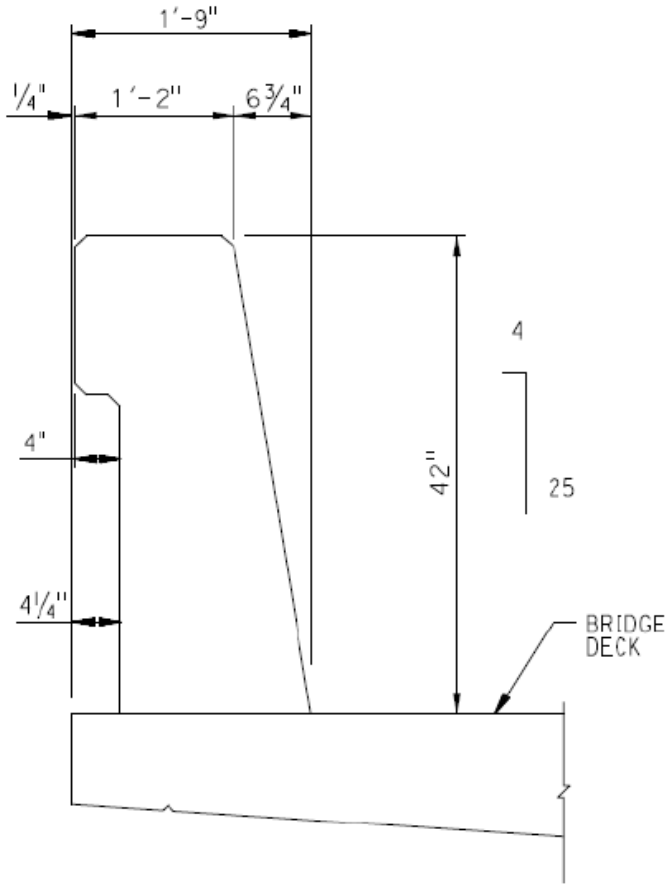

Figure C – Concrete Barrier Type 842

VIII. Construction Issues

Several construction issues including access limitations, structure clearances, traffic control and staging, staging areas and fill material have been identified.

Access Limitations
Construction access limitations have been identified due to in water work limitations. In-water work has been constrained within the period of June 15 to October 15.

Structure Clearances
Structure clearances have been identified due to the presence of a railroad line running North-South underneath the new structure. Minimum vertical and horizontal clearance requirements from the centerline of track to the falsework must be followed during construction.

Traffic Control and Traffic Staging
Because the proposed bridge would be placed on a new alignment, a traffic detour would not be required during bridge construction. Once the new bridge is constructed and traffic is routed to the new alignment, the abandoned roadway would be removed. At no point during construction should traffic be diverted onto County roads as a detour.
According to the Draft Project Report, stage construction will be necessary to tie the new alignment into the existing highway. Potential traffic staging plans will be developed.

Staging Areas
Construction equipment and materials would be staged onsite within the project limits. There are a number of anticipated staging areas within the State Right of Way. Construction of the new bridge would require removing trees and vegetation.

Fill Material
According to the Draft Project Report, about 45,000 cubic yards of imported material will be required to construct the embankments at the bridge approaches. This can be accommodated by providing a state furnished optional borrow site or by finding a dedicated commercial source.

IX. Utilities

According to the Draft Project Report, overhead utilities and an underground telecommunication utility along Eastside Calpella Road will be relocated since the poles are located at the new bridge location. An underground 8-inch gas transmission line is located at the west end of the structure and is in close proximity to the proposed bent location. However, this utility line does not need to be relocated for construction.

There is currently no need for future utility openings.

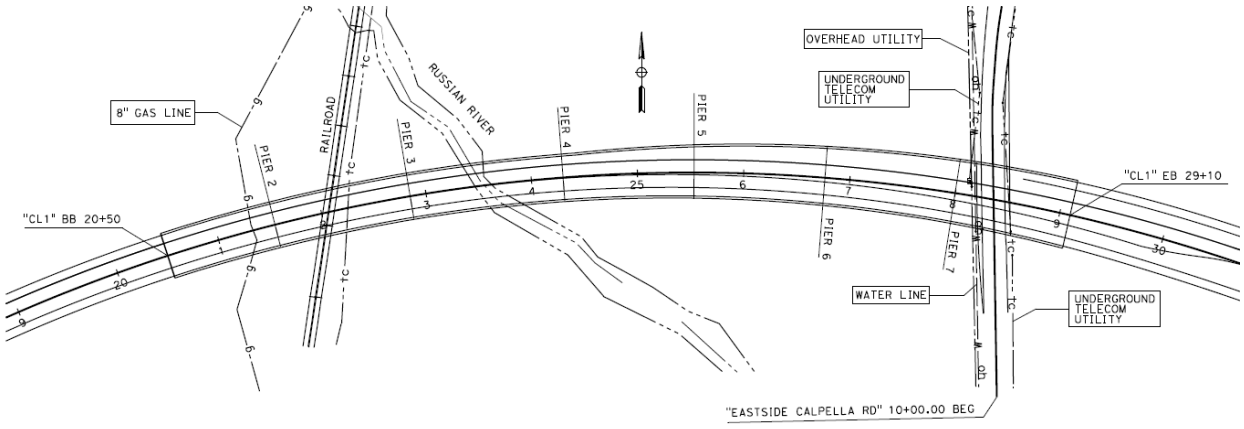

Figure D – Existing Utilities Locations

X. Environmental Constraints

According to the Draft Project Report, an Initial Study with proposed Mitigated Negative Declaration has been prepared in accordance with Caltrans' environmental procedures, as well as State and Federal environmental regulations. The Draft Environmental Document is currently being finalized. A completed Environmental Compliance Document will be forthcoming.

XI. Corrosion and Hazardous Materials

From an Initial Site Assessment (ISA) that was conducted on January 2015, it was determined that the project has nominal hazardous waste issues related to Aerially Deposited Lead (ADL) in the soils adjacent to the shoulders. And although not present, Naturally Occurring Asbestos (NOA) is shown on Mendocino County Air Quality Management District (AQMD) maps as "may contain"; therefore, an exemption for a dust control plan will need to be acquired. And a survey of the existing structures to be removed will need to be conducted to determine if any hazardous material is present.

XII. Permits and Agreements

District 1 will handle all Environmental permits necessary for the construction of the new structure. The following permits will be required:

Permit or Regulation	Agency	Status
Section 404 Clean Water Act	U.S. Army Corp of Engineers	In progress
Section 401 Water Quality Certification	North Coast Regional Water Quality Control Board	In progress
Section 1602 Lake or Streambed Alteration	California Dept. of Fish and Wildlife	In progress

XIII. Project Milestones and Schedule[1]

ID	Milestone	Date
---	Preliminary Foundation Report Request	03/12/2019
M221	Bridge Site Submittal	07/31/2019
---	Foundation Plan	09/24/2019
---	Type Selection Meeting	01/23/2020
---	Request Foundation Report	02/10/2020
M275	General Plan Distribution	01/30/2020
---	Foundation Report	05/01/2020
M376	Structure P&Q	10/09/2020
M378	Draft Structure PS&E	12/11/2020
M377	Final Structure PS&E	03/26/2021
M380	Project PS&E	04/05/2021
M460	Ready-To-List	05/31/2021
M480	Advertise	07/01/2021
M495	Award	08/01/2021

[1] Dates based on Draft Project Report and eSSOP.

XIV. Attachments

- Draft General Plan for Russian River Bridge and Overhead
- Structure Preliminary Geotechnical Report (01/22/2015)
- Structure GP Estimate (12/13/19) – Alternative 1
- Structure APS Estimates (09/13/18) – Alternatives 2A and 2B
- Risk Register (09/19/2019)
- Preliminary Hydraulic Report (06/12/2015)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Men	20	PPPP	????	#####

REGISTERED CIVIL ENGINEER — X — DATE

MM/DD/YYYY
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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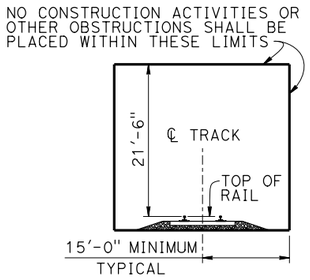
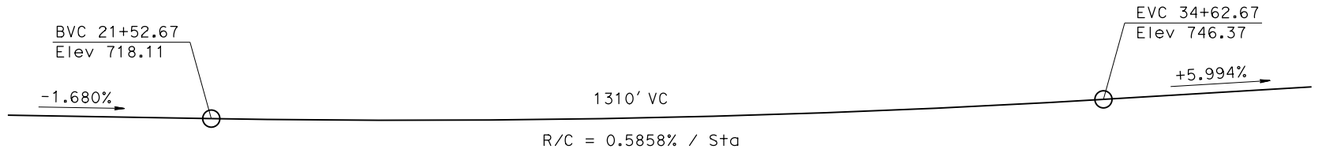


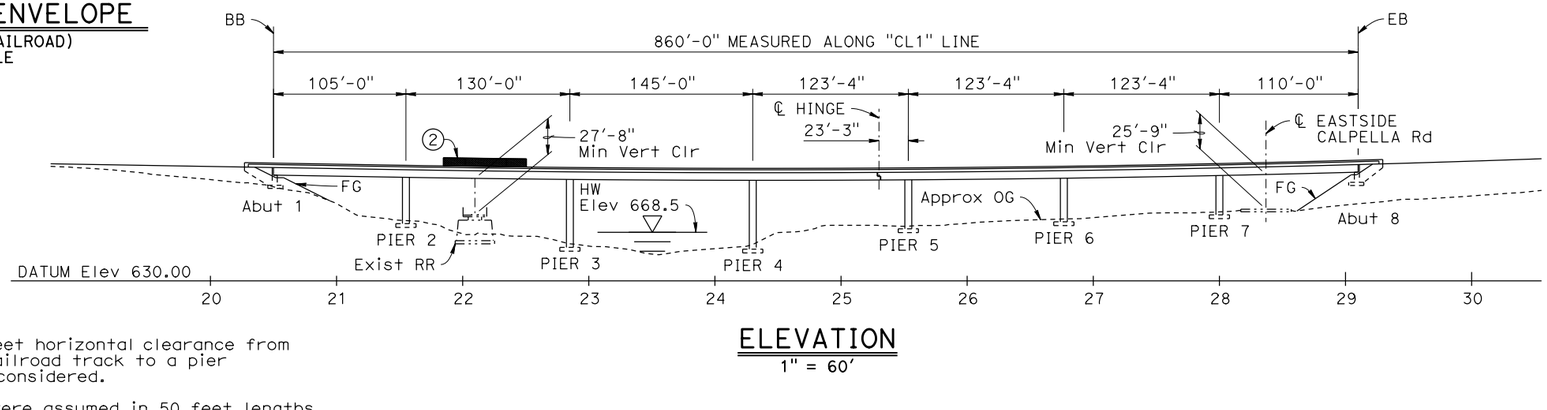
MINIMUM CONSTRUCTION CLEARANCE ENVELOPE

(NORMAL TO RAILROAD)
NO SCALE



PROFILE GRADE

NO SCALE



ELEVATION

1" = 60'

TRAFFIC NOTES

VEHICULAR TRAFFIC:

1. ___ New alignment. No traffic at the site.
2. ___ Traffic will be detoured away from the site.
3. ___ Traffic will be carried on the structure.
   Stage construction _-_ will _-_ will not be required.
4. X Traffic will pass under the structure on
   Eastside Calpella Rd (Name of St or Hwy)
   A. ___ No falsework allowed over traffic.
   B. ___ Falsework opening(s) required:

	Temp Vertical Clearance	Width of Traffic Opening
____ Bound		
____ Bound		
X Two-Way	15'-0"	24'-0"

   C. ___ Temporary traffic lane reduction needed for footing excavation.

PEDESTRIAN TRAFFIC:

Falsework opening required on: _____ (Name of St)

Location	Height	Width

RAILROAD TRAFFIC:

Falsework opening required over: UPRR (Name of RR)

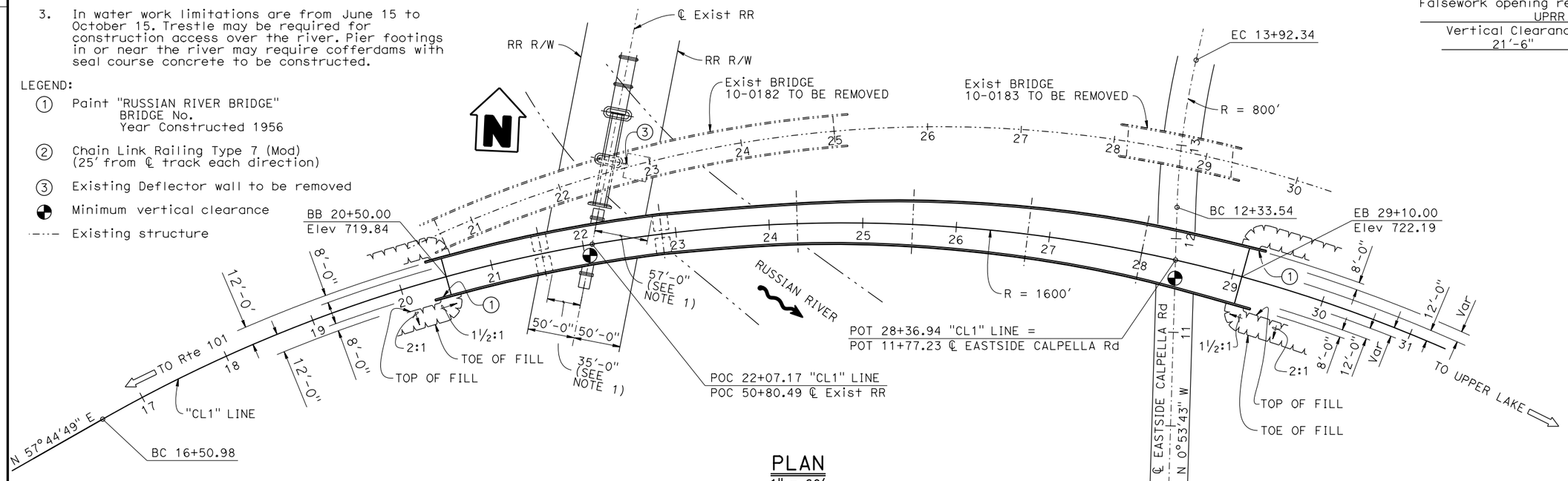
Vertical Clearance	Horiz Clear Width
21'-6"	15'-0"

NOTES:

1. A minimum 25 feet horizontal clearance from centerline of railroad track to a pier foundation was considered.
2. Driven H-piles were assumed in 50 feet lengths for the abutment. 24" CIDH pile were assumed in 35 feet lengths for the piers.
3. In water work limitations are from June 15 to October 15. Trestle may be required for construction access over the river. Pier footings in or near the river may require cofferdams with seal course concrete to be constructed.

LEGEND:

① Paint "RUSSIAN RIVER BRIDGE" BRIDGE No. Year Constructed 1956
② Chain Link Railing Type 7 (Mod) (25' from ℄ track each direction)
③ Existing Deflector wall to be removed
Minimum vertical clearance
Existing structure



PLAN

1" = 60'

CURVE DATA
R = 1600.00'
Δ = 87°00'07"
T = 1518.39'
L = 2429.55'

DESIGN	BY H. TUAZON	CHECKED X	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE			
DETAILS	BY J. YANG / S. SHAMBRA	CHECKED X	LAYOUT	BY X	CHECKED X		
QUANTITIES	BY X	CHECKED X	SPECIFICATIONS	BY X	PLANS AND SPECS COMPARED X		

GARY BLAKESLEY
BRANCH CHIEF

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
STRUCTURE DESIGN
DESIGN BRANCH 6

BRIDGE No. XX-XXXX
POST MILE X.X

RUSSIAN RIVER BRIDGE OH
GENERAL PLAN No. 1

STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REVISION 1/11/2019)

DATE PLOTTED => 08-JAN-2020 TIME PLOTTED => 10:46
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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3591
PROJECT NUMBER & PHASE: 01130001230 CONTRACT No.: 01-0E0904

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	OF
11-01-19	01-06-20			1	X

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	Men	20	PPPP	????	#####

REGISTERED CIVIL ENGINEER — X — DATE

MM/DD/YYYY
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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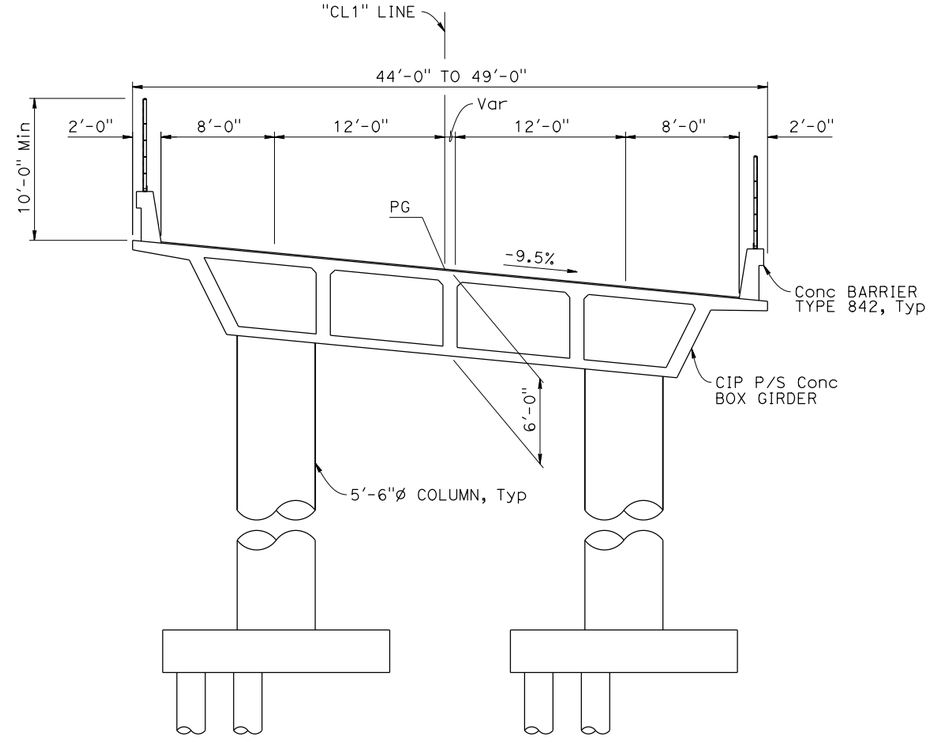
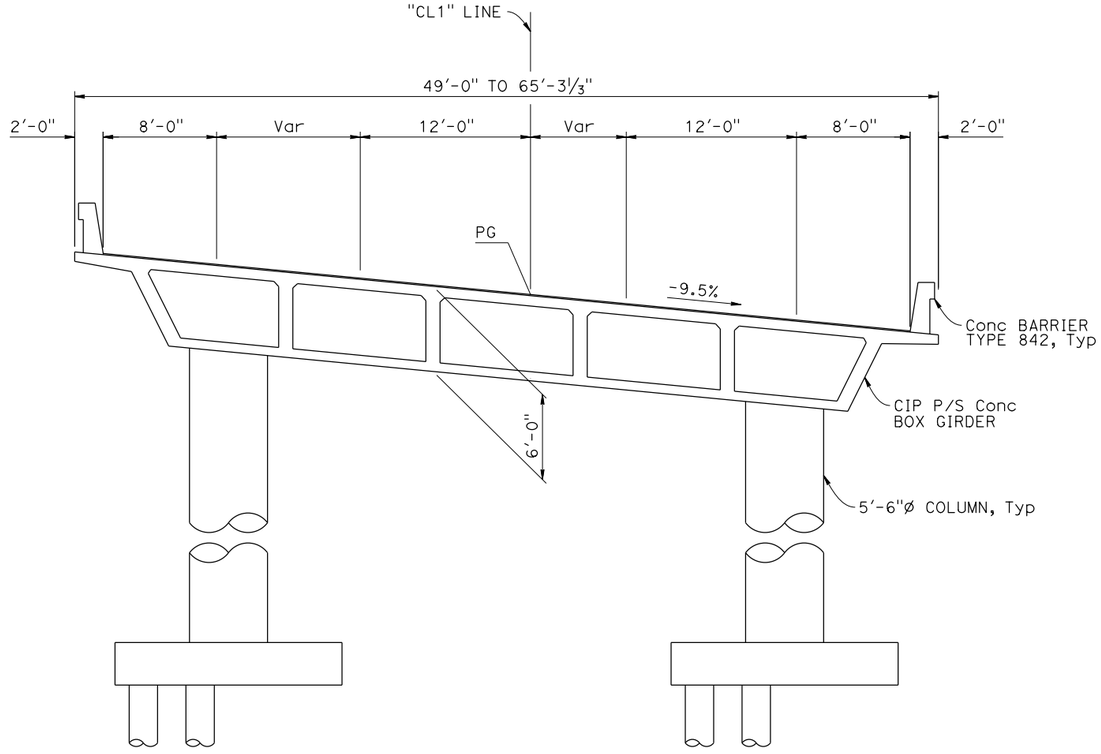


FROM 20+50.00 TO 25+30.08



FROM 25+30.08 TO 29+10.00

TYPICAL SECTION
1" = 1'-0"

NOTE: Not all piles shown

GARY BLAKESLEY BRANCH CHIEF	DESIGN	BY H. TUAZON	CHECKED X	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE			STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 6	BRIDGE No. XX-XXXX POST MILE X.X	RUSSIAN RIVER BRIDGE OH GENERAL PLAN No. 2
	DETAILS	BY J. YANG / S. SHAMBRA	CHECKED X	LAYOUT	BY X	CHECKED X					
	QUANTITIES	BY X	CHECKED X	SPECIFICATIONS	BY X	PLANS AND SPECS COMPARED X					

STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REVISION 1/11/2019)

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ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3591
PROJECT NUMBER & PHASE: 01130001230 CONTRACT No.: 01-0E0904

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
11-01-19	01-06-20			2	X

M e m o r a n d u m

Serious drought.
Help Save Water!

To: GARY BLAKESLEY
Office of Bridge Design North/Central-Branch 6
Division of Engineering Services
Structure Design

Date: January 22, 2015

File: 01-MEN-20-PM 33.63
Russian River Bridge
and Overhead (BOH)
Bridge No. 10-0182
EA 01-0E090K
Project ID 0113000123

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES – MS 5

Subject: Structure Preliminary Geotechnical Report for the Russian River Bridge and Overhead

Scope of Work

Per your request, the Office of Geotechnical Design North (OGD-N) has prepared this Structure Preliminary Geotechnical Report (SPGR) for the proposed bridge deck widening and replacement of the Russian River BOH (Bridge No. 10-0182). This report includes a review and evaluation of the As-Built bridge files for the existing structure, and a review of geologic maps and literature.

Project Description

The existing structure on Highway 20 is an approximately 440 feet long, four span bridge that spans over the Russian River and the railroad tracks of the California Northern Railroad near the town of Ukiah in Mendocino County. The Russian River BOH was built in 1958, widened in 1991, and retrofitted in 1997. The original structure and the retrofit are supported on driven steel H-Piles Elevations in this report are based on the As-Built datum.

Site Geology and Subsurface Conditions

Based on the Geologic map of California, Ukiah Sheet (Jennings and Strand, 1960), the site consists of Recent Alluvium (Qal), Quaternary Nonmarine Terrace Deposits (Qt), and Pliocene-Pleistocene Nonmarine Sedimentary Deposits of the Cache formation (Qp).

A subsurface investigation was conducted in March and April of 1956 for the original bridge. The investigation included seven rotary borings, seven 1 inch soil tube borings, and one 2 ¼ inch cone penetrometer. The borings ranged from 11 to 47 feet deep.

The materials encountered at the site are composed of interbedded loose to very dense silty sand and gravel.

Groundwater

According to the 1956 As-Built Log of Test Borings (LOTB), groundwater data is assumed to be at the river elevation, +/- 662.4 feet.

Scour Evaluation

Scour was documented in the Bridge Inspection Report dated October 24, 2012 by Maxine Jacoby. It was reported that "The seismic retrofit sheet piles and pile caps are exposed at Bents 3 and 4, the exposure ranges from 50 cm to 60 cm (20-24 inches). There have been no significant changes in the last 10-12 years. Structures Hydraulics Bridge has determined the foundations to be stable for calculated scour. Anticipated scour should be within the limits of the footings or piles. No action is required at this time."

A memorandum dated September 1, 1999 by Mark Palmer of the Office of Geotechnical Support was sent to Bill Lindsey of the Office of Hydrology and Hydraulics. It concluded, "Although the pile caps for Piers 3 & 4 are currently exposed, the foundations are not yet scour critical. Several design storm events will be necessary to significantly damage the Pier 3 & 4 foundations and require their repair. Because the foundations are not scour critical and the rate of scour and subsequent foundation damage can be measured between storm events, it is recommended that a passive scour countermeasure, such as scour monitoring be implemented as soon as possible. If monitoring indicates the need of further scour countermeasures, the most likely fix would be to install a properly designed rock rip rap system to prevent the further erosion of the bedrock."

Corrosion Evaluation

No information on corrosivity at the site is available. Soil samples will be collected and analyzed for corrosivity during the future field investigation.

Preliminary Seismic Recommendations

The deterministic spectrum from the Caltrans ARS Online Tool (version 2.3.06) is based on the nearest active fault that controls ground motion. For the Russian River BOH, this fault is the Maacama fault zone (North section) (Fault ID No. 66), referred to as a strike-slip fault with a MMax of 7.4. The closest distance to this fault rupture plane from the site estimated to be 1.25 miles (2.0 km).

Based on the As-Built LOTBs, the V_{S30} (the weighted average shear wave velocity for the top 100 feet of foundation materials) is estimated to be about 990 feet per second, and is considered to be applicable to the foundation materials of this bridge site.

Based on the "Methodology for Developing Design Response Spectrum for Use in Seismic Design Recommendations, November 2012," the design ground motion is the highest spectral acceleration as obtained by any or a combination of the following three methods for the Russian River Bridge and Overhead:

1) State wide minimum deterministic spectrum requirements with MMax of 6.5, vertical strike-slip event with a rupture distance of 7.5 miles.
2) Deterministic Seismic Hazard spectrum from the Caltrans ARS Online Tool (version 2.3.06).
3) The USGS 5% Probability of Exceedance in 50 years (975 years return period).

The design Acceleration Response Spectrum (ARS) curve for the Russian River Bridge and Overhead is an envelope of combination of methods 2 and 3 as stated above. A near fault adjustment factor is used since the Maacama fault zone (North Section) is less than 25 km from the site. The peak ground acceleration is estimated to be 0.63g.

The USGS 5% Probability of Exceedance in 50 years (975 years return period) data was obtained at the USGS 2008 Interactive Deaggregation website (http://geohazards.usgs.gov/deaggint/2008/) with a near fault factor applied.

Overall soil liquefaction potential across the site is considered low based on the As-Built LOTB and assumed groundwater elevation. However, localized, loose, saturated sands/silty sands are documented in the As-Built LOTB. These materials are likely to liquefy during a strong earthquake. A detailed liquefaction analysis will be performed after the future field investigation.

The potential for surface fault rupture at the site is absent because there are no known faults that are Holocene or younger in age that fall within 1,000 feet of the structure. The structure does not fall within an Alquist-Priolo Earthquake Fault Zone.

Please note that we will re-evaluate the seismic recommendations when additional soil and rock data become available.

As-Built Foundation Data

The Russian River BOH was constructed in 1958. According to the As-Built plans the original foundations are driven 10BP42 H-piles. According to the Foundation Plan dated December 17, 1956 the bottom of footing elevation is as presented in Table 1.

Table 1. 1958 As-Built Foundation Data Table for Bridge Number 10-0182.

Location	Pile Type (H-pile)	Design Load (kips)	Bottom of Pile Cap (ft)	Estimated Tip Elevation (ft)	Lowest Tip Elevation (ft)	Highest Tip Elevation (ft)	Average Tip Elevation (ft)
Abutment 1	10BP42	45	703.25	655.0	653.5	667.0	661.5
Pier 2	10BP42	45	651.0	635.0	631.0	634.0	632.8
Pier 3	10BP42	45	649.0	635.0	629.2	634.8	630.7
Pier 4	10BP42	45	660.0	645.0	635.5	643.0	640.7
Abutment 5	10BP42	45	694.5	645.0	650.1	654.0	651.7

The Russian River BOH was retrofitted at the piers in 1997. Four 14 x 89 H-Piles with a design load of 100 tons were added at Piers 2, 3 and 4. The As-Built retrofit foundation information is presented in Table 2.

Table 2. 1997 As-Built Foundation Data Table for Bridge Number 10-0182.

Location	Pile Type (H-pile)	Design Load (kips)	Bottom of Pile Cap (ft)	Specified Tip Elevation (ft)
Pier 2	HP14x89	100	653.5	635.0
Pier 3	HP14x89	100	651.5	635.0
Pier 4	HP14x89	100	662.5	645.0

Preliminary Foundation Recommendations

The following preliminary foundation recommendations are based on a preliminary evaluation of the site conditions using available data and do not constitute final recommendations. A site investigation including drilling is required to generate adequate subsurface data before final recommendations are made.

For the proposed widening or replacement of the bridge deck, the following foundation types can be considered at all support locations. Whichever alternative is to be used for the bridge foundation, the design engineer must determine the anticipated performance and requirements expected of the foundation types below.

1. H-Piles

   Based on the available information, matching the existing foundation type of driven steel H-Piles may be a possibility at the site depending on the final pile design (pile length, scour, etc.). If undesired material is encountered during the subsurface investigation, the scour elevation is determined to be below the bottom of footing, or embedment required by high lateral demands is not achievable, a different foundation type must be considered.

2. CIDH Piles/ Drilled Shafts

   CIDH piles is an alternative foundation type applicable at the site. CIDH piles can be designed for high axial and lateral forces, and can be embedded below the scour elevation. The very dense sand layers can be drilled through, but the presence of high groundwater may cause some difficult conditions (i.e., caving potential). The use of temporary casing or drilling fluids may be needed to prevent caving. Minimal settlement should be expected. Due to the presence of groundwater the CIDH piles will be constructed using the wet method, they must be at least 24-inches in diameter to allow for PVC Gamma Gamma Logging inspection tubes. Caution should be taken when constructing this pile type in these conditions to avoid caving and anomalies in the pile.

Additional Field Work and Laboratory Testing

For the Foundation Report, a field investigation is required to characterize the site and obtain information concerning the subsurface conditions, the current groundwater conditions, corrosion potential, site-specific seismic data and other pertinent geologic information. Five mud rotary borings are recommended to investigate the subsurface for the proposed foundation supports for the bridge deck widening or replacement. Estimated depths of the borings are 150 feet. Borings should be drilled at or very near the proposed support locations to obtain location-specific geologic information.

A request for a Foundation Report should include a General Plan (GP), Foundation Plan (FP), and any additional plans available for the new proposed work. To perform the subsurface investigation at this site drilling through the bridge deck or below the bridge in the channel will be necessary. The District should be aware that drilling through a watercourse (Russian River) would require that special permits be obtained. The District Project Manager should be aware that multiple permits may be required to commence the drilling and should plan to schedule sufficient time (a minimum of six months) for obtaining the permits. Encroachment, right of entry and sensitive environmental permits may be required for the drilling. In addition to the permits, sufficient time should be scheduled for utility clearances, road or lane closures, site access and site hazardous assessment reports.

If a site hazardous assessment report for soil and groundwater contamination is available, it should be communicated to our Office prior to starting the subsurface investigation.

Estimated OGD-N Time and Duration Required

The following resource estimate is issued pursuant the "Memo to Designers" 1-35 (Revised 6/08). The estimated time is based upon the following assumptions:

1) Structure Design will provide all information required by Geotechnical Services.
2) The Department will provide the appropriate resources (funding, staff, and equipment) for the project.
3) The District will provide the necessary support services as stated above.

Table 2 below presents the Geotechnical Services (GS) resource estimate to complete the project. It includes cost centers 3643 (Drafting), 3650 (Geotechnical Support), 3656 (Drilling Services), and 3657 (Geotechnical Design North). This is based on our understanding of the current scope of the project. Please note that if scope changes occur, revision to the estimated hours may be necessary.

Table 3. Resource Estimate For The Russian Rive Bridge and Overhead

	Unit	100	150	160	185	230	240	250	255	270	275	285	290	Totals
Drafting	**3643**	0	0	0	0	0	120	0	0	0	0	0	0	**120**
GS	**3650**	0	0	0	0	0	200	0	0	0	1200	20	20	**1440**
Drilling	**3656**	20	0	0	40	0	1400	0	0	0	0	0	0	**1460**
GDN	**3657**	150	120	120	200	0	1000	70	90	0	300	50	50	**2150**
Totals (hours)		**170**	**120**	**120**	**240**	**0**	**2750**	**70**	**90**	**0**	**1500**	**70**	**70**	**6170**

Notes:
1. *Includes five (5) mud rotary borings for this bridge.*
2. *The requests for the FR should be forwarded to Geotechnical Services a minimum of twenty-four (24) weeks before the requested due dates.*
3. *This estimate is preliminary and is subject to revision.*

If you have any questions regarding this report, please contact Joe Kaump at 227-1044, Thomas Song at 227-1057 or Reid Buell at 227-1012.

JOSEPH KAUMP, PG 7837
Engineering Geologist
Office of Geotechnical Design-North

THOMAS SONG, PE 69325
TransportationEngineer-Civil
Office of Geotechnical Design-North

Attachment: Preliminary ARS curve

c: Reid Buell (E-copy)
Steven Blair-District Project Manager (E-copy)
Eskinder Taddese -PLE (E-copy)
Tom Fitzgerald - District Materials Engineer
Steve Ng-Structures Hydraulics (E-copy)

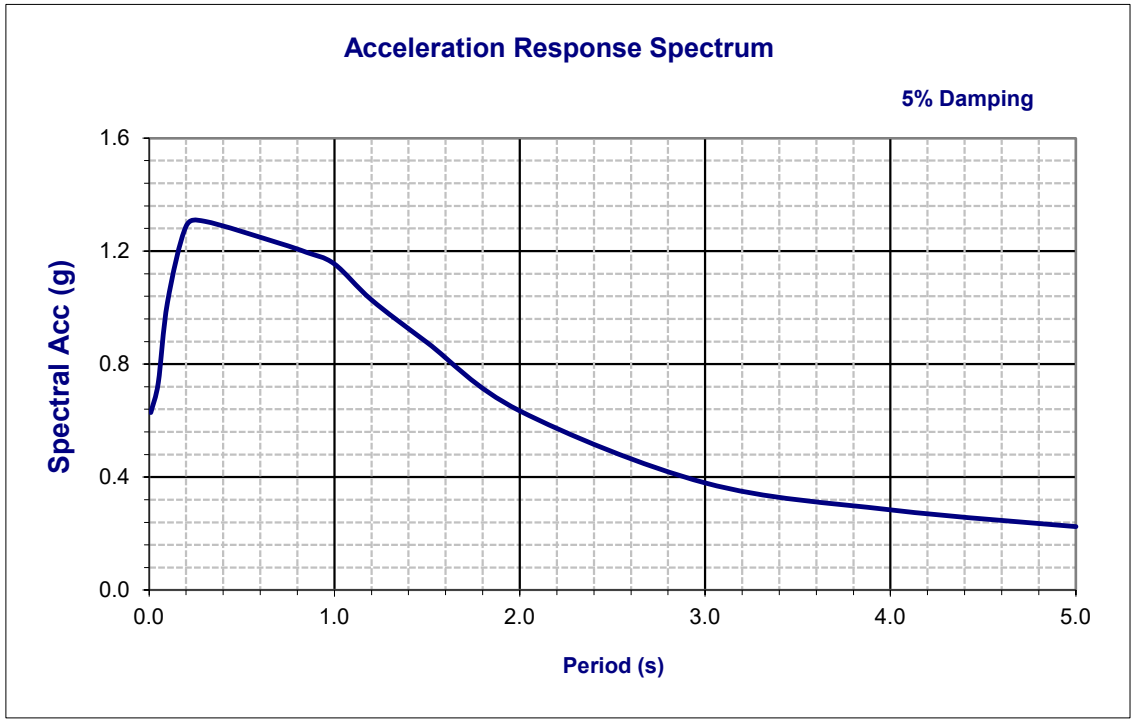
Russian River BOH

Bridge No. 10-0182
PID 0113000123

Latitude 39.2433
Longitude -123.2004

Control **Envelope**

Period (s)	Sa(g)
0.01	0.629
0.05	0.733
0.1	1.019
0.2	1.288
0.3	1.306
0.7	1.229
0.85	1.196
1	1.155
1.2	1.028
1.5	0.877
2	0.635
3	0.380
4	0.285
5	0.225



Nearest Active Deterministic Fault Data

Fault	Maacama fault zone (North Section)		R_{rup}	2	km
Fault ID	66		R_{jb}	0	km
Style	SS		R_x	2	km
Mmax	7.4		V_{S30}	300	m/s
Dip	63	deg	$Z_{1.0}$	N/A	m
Z_{TOR}	0	km	$Z_{2.5}$	N/A	km

Note

Please note the Design ARS curve is an envelope of the USGS 5% Probability of Exceedance in 50 years (975 years return period) from the USGS 2008 Interactive Deaggregation website and Deterministic Fault Data.

Preliminary

Design Response Spectrum

PROBABILISTIC STRUCTURE COST ESTIMATE

INPUT

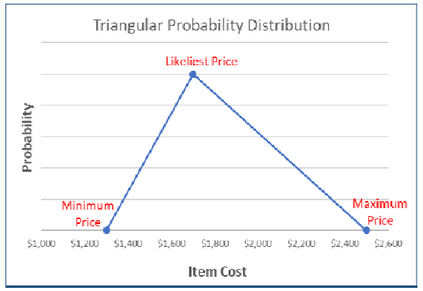
X	GENERAL PLAN ESTIMATE		ADVANCE PLANNING ESTIMATE

Revised -November 12, 2019

IN EST:	11/18/2019
OUT EST:	12/13/2019

BRIDGE NAME:	RUSSIAN RIVER BRIDGE OVERHEAD
BRIDGE NUMBER:	10-0182
TYPE:	CIP/PS BOX GIRDER
EA:	01-0E090
PROJECT ID:	01.1300.0123
ACCELERATED BRIDGE PROJECT	
DESIGN SECTION:	06
# OF STRUCTURES IN PROJECT :	1
PRICES BY :	Paul Mak
PRICES CHECKED BY :	
QUANTITIES BY:	H. TUAZON

DISTRICT:	01
CO:	MEN
RTE:	20
PM:	33.3
DEPTH	6'-0"
LENGTH	860'-0"
WIDTH	VARIES
AREA	43285
EST. NO.	
COST INDEX:	749
DATE:	
DATE:	11/18/2019



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

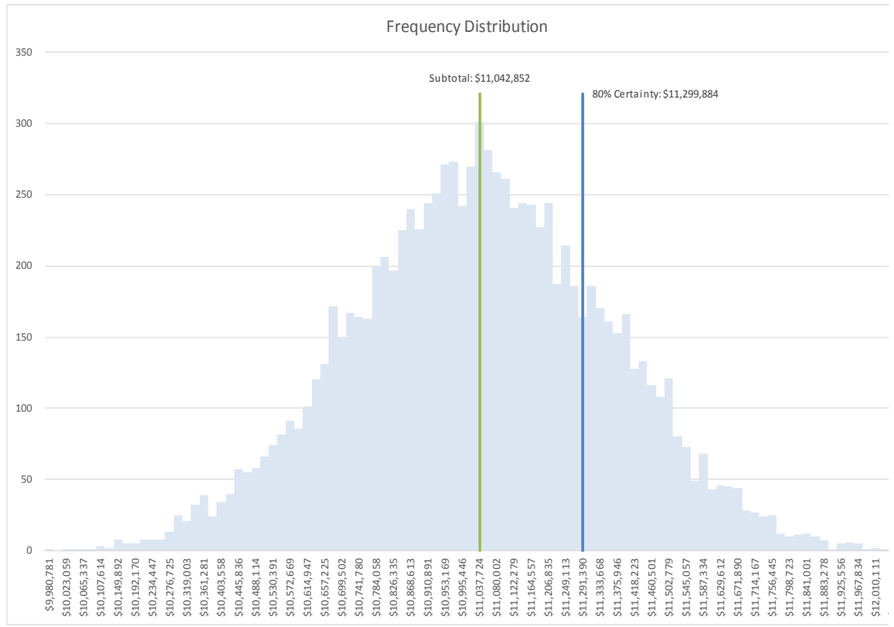
	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	ITEM PRICE RANGE MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
1	BRIDGE REMOVAL BR. # 10-0182	STEEL GIRDER	SQFT	15412	$10.00	$16.00	$20.00	$246,592
2	BRIDGE REMOVAL BR. # 10-0183	CONC. T-BEAM	SQFT	4022	$15.00	$20.00	$25.00	$80,440
3	STRUCTURE EXCAVATION (BRIDGE)		CY	1252	$85.00	$105.00	$125.00	$131,460
4	STRUCTURE EXCAVATION (TYPE A)		CY	302	$220.00	$280.00	$340.00	$84,560
5	STRUCTURE BACKFILL (BRIDGE)		CY	684	$130.00	$160.00	$190.00	$109,440
6	24" CAST-IN-DRILLED HOLE CONCRETE PILING		LF	11200	$180.00	$220.00	$260.00	$2,464,000
7	FURNISH STEEL PILING (HP 10 X 57)		LF	1400	$30.00	$35.00	$40.00	$49,000
8	DRIVE STEEL PILE (HP 10 X 57)		EA	28	$2,800.00	$3,400.00	$4,000.00	$95,200
9	PRESTRESSING CAST-IN-PLACE CONCRETE		LB	106638	$1.30	$1.60	$1.90	$170,621
10	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	594	$350.00	$450.00	$550.00	$267,300
11	STRUCTURAL CONCRETE, BRIGE		CY	2578	$1,000.00	$1,200.00	$1,400.00	$3,093,600
12	STRUCTURAL CONCRETE, BRIDGE (POLYMER FIBER		CY	1266	$900.00	$1,100.00	$1,300.00	$1,392,600
13	JOINT SEAL (MR = 1")	TYPE B	LF	109	$75.00	$95.00	$115.00	$10,355
14	JOINT SEAL (MR = 1.5")	TYPE B	LF	49	$80.00	$100.00	$120.00	$4,900
15	BAR REINFORCING STEEL (BRIDGE)		LB	916713	$0.90	$1.10	$1.30	$1,008,384
16	BAR REINFORCING STEEL (BRIDGE-OTHER)	24" CIDH	LB	257109	$0.90	$1.10	$1.30	$282,820
17	CONCRETE BARRIER (TYPE 842)		LF	1801	$110.00	$130.00	$150.00	$234,130
18	CHAIN LINK RAILING TYPE 7 (MOD)		LF	102	$140.00	$175.00	$210.00	$17,850
19	RAILROAD PROTECTION		SQFT	4500	$15.00	$20.00	$25.00	$90,000
20	TEMPORARY TRESTLE		SQFT	24000	$40.00	$45.00	$50.00	$1,080,000
21	COFFERDAM		SQFT	2160	$55.00	$60.00	$65.00	$129,600
22								
23								
24								
25								
26								
27								
28								
29								
30								
							SUBTOTAL	$11,042,852

	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM	
BRIDGE REMOVAL		SQFT					

Comments

OUTPUT

This probabilistic estimate forecasts a range of likely final costs and their associated probabilities of occurring, or confidence levels. Item cost uncertainty is captured by estimating a range of prices: minimum, likely and maximum. The estimate model assumes a triangular distribution for each item, independent from the other items. A Monte Carlo simulation with 10,000 trials is used to develop a reasonable range of possible cost combinations.

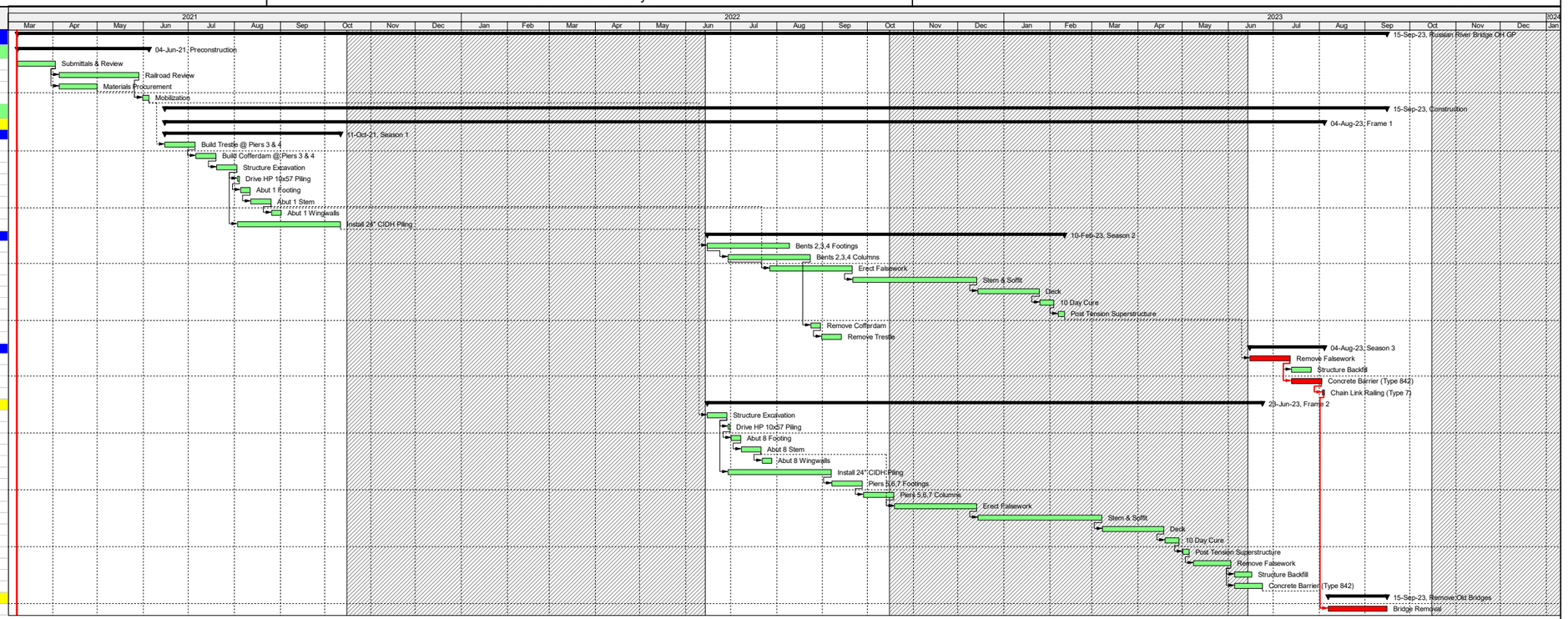


Time Related Overhead, Mobilization and Contingency NOT INCLUDED

Percentiles:	Forecast values	
0%	$9,980,781	BASED ON THE ASSUMPTIONS USED
10%	$10,624,139	TO CREATE THE MODEL, DES
20%	$10,761,061	STRUCTURE OFFICE ENGINEER
30%	$10,860,455	RECOMMENDS THAT THE
40%	$10,946,930	PROGRAMMING LEVEL BUDGET FOR
50%	$11,025,909	THIS PROJECT BE DESIGNATED AT
60%	$11,103,140	THE 80% FORECAST VALUE.
70%	$11,192,578	
80%	**$11,299,884**	
90%	$11,436,330	
100%	$12,094,667	

BRIDGE COST PER SQUARE FOOT	$261	DOES NOT INCLUDE time related overhead (TRO), mobilization and contingency
BRIDGE REMOVAL		
ESTIMATED COST Subtotal + Bridge	$11,300,000	
TOTAL	$16,573,000	INCLUDES mobilization: 10%, structure TRO: 10% and contingency 20%

Activity ID	Activity Name	Original Duration	Start	Finish
Russian River Bridge OH GP		660	08-Mar-21	15-Sep-23
Preconstruction		65	08-Mar-21	04-Jun-21
A1000	Submittals & Review	20	08-Mar-21	02-Apr-21
A1010	Railroad Review	40	05-Apr-21	28-May-21
A1020	Materials Procurement	20	05-Apr-21	30-Apr-21
A1030	Mobilization	5	31-May-21	04-Jun-21
Construction		589	15-Jun-21	15-Sep-23
Frame 1		559	15-Jun-21	04-Aug-23
Season 1		85	15-Jun-21	11-Oct-21
C1000	Build Trestle @ Piers 3 & 4	15	15-Jun-21*	05-Jul-21
C1010	Build Cofferdam @ Piers 3 & 4	10	06-Jul-21	19-Jul-21
C1020	Structure Excavation	10	20-Jul-21	02-Aug-21
C1030	Drive HP 10x57 Piling	2	03-Aug-21	04-Aug-21
C1040	Abut 1 Footing	5	05-Aug-21	11-Aug-21
C1050	Abut 1 Stem	10	12-Aug-21	25-Aug-21
C1060	Abut 1 Wingwalls	5	26-Aug-21	01-Sep-21
C1070	Install 24" CIDH Piling	50	03-Aug-21	11-Oct-21
Season 2		173	15-Jun-22	10-Feb-23
C2000	Bents 2,3,4 Footings	40	15-Jun-22*	09-Aug-22
C2010	Bents 2,3,4 Columns	40	29-Jun-22	23-Aug-22
C2020	Erect Falsework	40	27-Jul-22	20-Sep-22
C2030	Stem & Soffit	60	21-Sep-22	13-Dec-22
C2040	Deck	30	14-Dec-22	24-Jan-23
C2050	10 Day Cure	8	25-Jan-23	03-Feb-23
C2060	Post Tension Superstructure	5	06-Feb-23	10-Feb-23
C2070	Remove Cofferdam	5	24-Aug-22	30-Aug-22
C2080	Remove Trestle	10	31-Aug-22	13-Sep-22
Season 3		37	15-Jun-23	04-Aug-23
C3000	Remove Falsework	20	15-Jun-23*	12-Jul-23
C3010	Structure Backfill	10	13-Jul-23	26-Jul-23
C3020	Concrete Barrier (Type 842)	15	13-Jul-23	02-Aug-23
C3030	Chain Link Railing (Type 7)	2	03-Aug-23	04-Aug-23
Frame 2		268	15-Jun-22	23-Jun-23
C4000	Structure Excavation	10	15-Jun-22*	28-Jun-22
C4010	Drive HP 10x57 Piling	2	29-Jun-22	30-Jun-22
C4020	Abut 8 Footing	5	01-Jul-22	07-Jul-22
C4030	Abut 8 Stem	10	08-Jul-22	21-Jul-22
C4040	Abut 8 Wingwalls	5	22-Jul-22	28-Jul-22
C4050	Install 24" CIDH Piling	50	29-Jun-22	06-Sep-22
C4060	Piers 5,6,7 Footings	15	07-Sep-22	27-Sep-22
C4070	Piers 5,6,7 Columns	15	28-Sep-22	18-Oct-22
C4080	Erect Falsework	40	19-Oct-22	13-Dec-22
C4090	Stem & Soffit	60	14-Dec-22	07-Mar-23
C4100	Deck	30	08-Mar-23	18-Apr-23
C4110	10 Day Cure	8	19-Apr-23	28-Apr-23
C4120	Post Tension Superstructure	5	01-May-23	05-May-23
C4130	Remove Falsework	20	08-May-23	02-Jun-23
C4140	Structure Backfill	10	05-Jun-23	16-Jun-23
C4150	Concrete Barrier (Type 842)	15	05-Jun-23	23-Jun-23
Remove Old Bridges		30	07-Aug-23	15-Sep-23
C5000	Bridge Removal	30	07-Aug-23	15-Sep-23



No work in water
10/16 to 6/14

No work in water
10/16 to 6/14

No work in water
10/16 to 6/14

Assumptions:

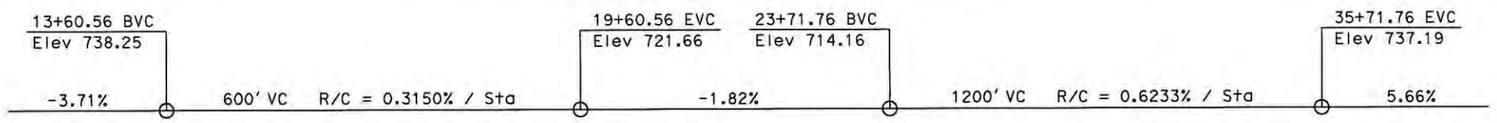
- Cofferdams are allowed to stay in the water over winter.
- Falsework is allowed to stay in the water over winter.
- Frame 2 is out of water so can be constructed any time.

Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

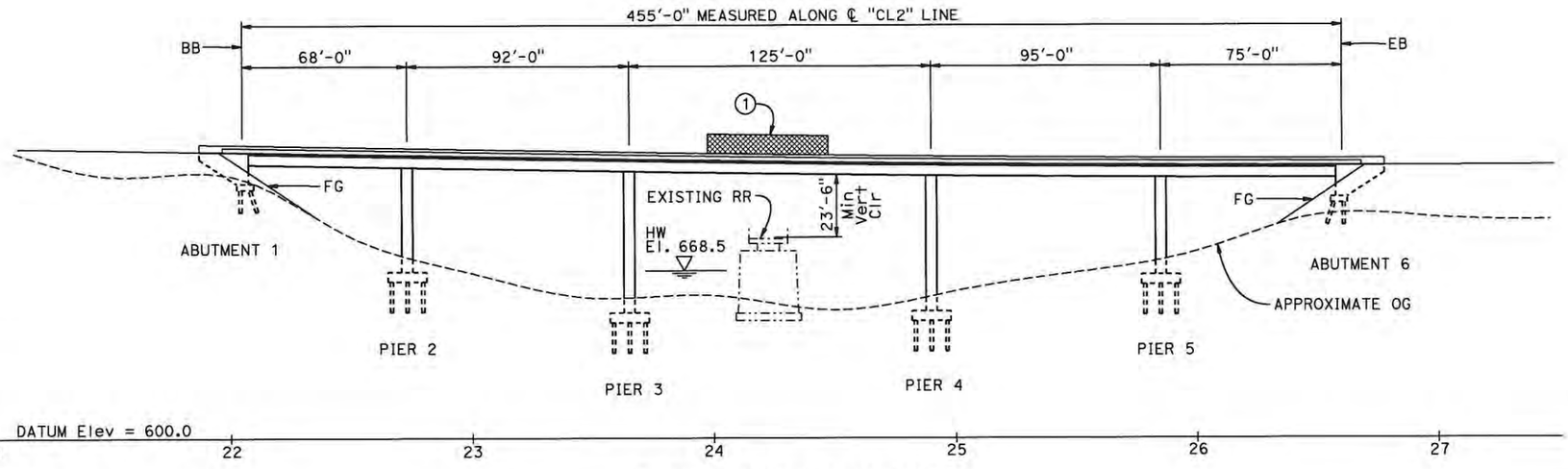
TASK filter: All Activities

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF ENGINEERING SERVICES

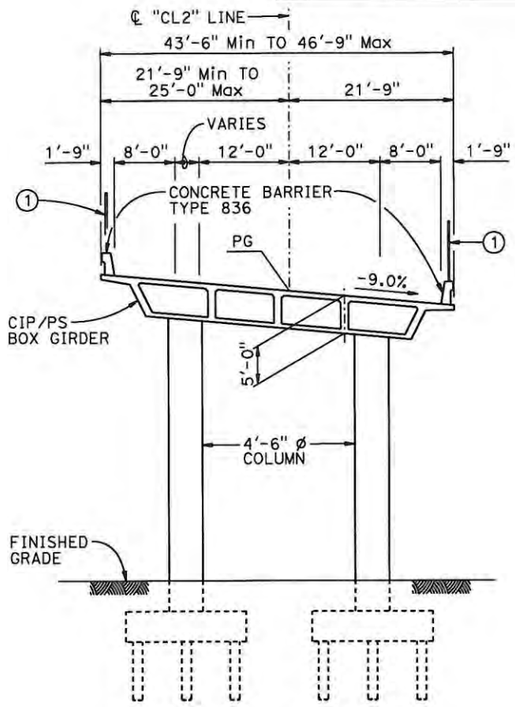
Dist	COUNTY	ROUTE	POST MILE
01	Men	20	33.3



PROFILE GRADE
NO SCALE



DEVELOPED ELEVATION
1" = 30'-0"



TYPICAL SECTION
1" = 10'-0"

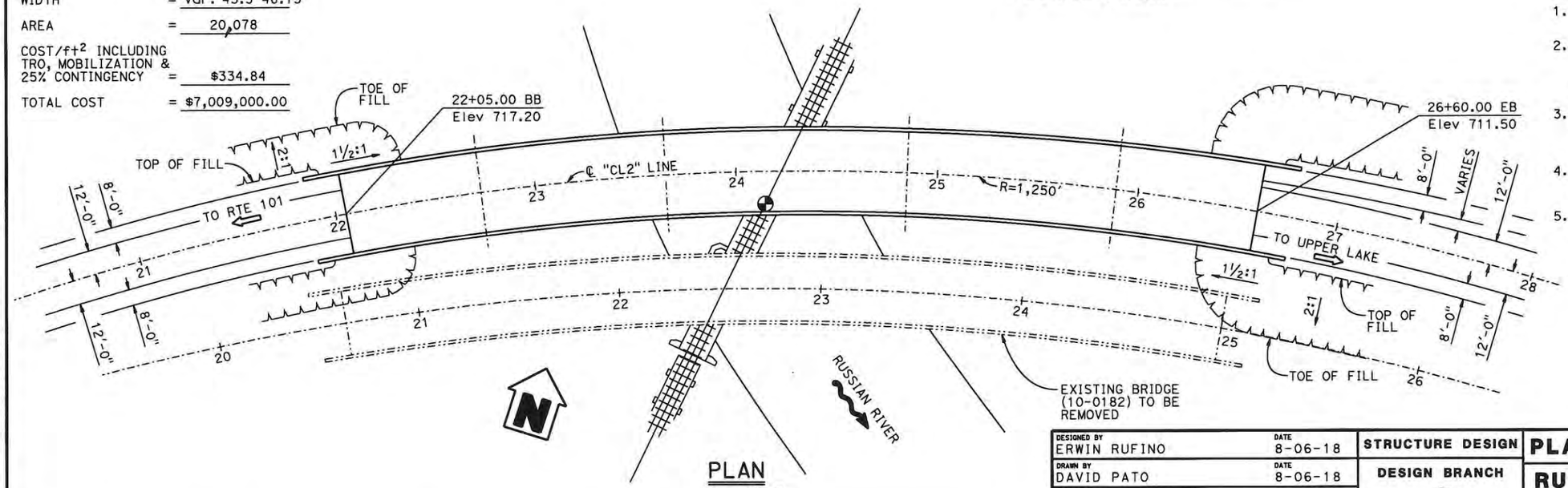
DATE OF ESTIMATE		9-13-2018
BRIDGE REMOVAL	=	$326,600.00
STRUCTURE DEPTH	=	5.00
LENGTH	=	455
WIDTH	=	Var. 43.5-46.75
AREA	=	20,078
COST/ft² INCLUDING TRO, MOBILIZATION & 25% CONTINGENCY	=	$334.84
TOTAL COST	=	$7,009,000.00

LEGEND:

- Minimum Vertical Clearance.
- (1) Chain Link Railing Type 7 (Mod), (25' from ℄ Track.

RISKS & ASSUMPTIONS

1. The BB station was set to minimize roadway earthwork.
2. The EB station was set to be roughly aligned with existing EB, considering that the existing roadway embankment would be extended northward to accommodate new alignment.
3. Driven H-Piles were assumed in 50-ft lengths for the abutments. 24" CIDH piles were assumed in 35-ft lengths for the piers.
4. A minimum 25-ft horizontal clearance from the centerline of railroad track to a pier foundation was considered.
5. No seasonal restriction of work is assumed at this time. Trestles may be required for construction access over the river. Pier footings in or near the river may require cofferdams with seal course concrete to be constructed.



PLAN
1" = 30'-0"

DESIGNED BY ERWIN RUFINO	DATE 8-06-18	STRUCTURE DESIGN	PLANNING STUDY - ALT 2A
DRAWN BY DAVID PATO	DATE 8-06-18	DESIGN BRANCH 6	RUSSIAN RIVER BRIDGE OH
CHECKED BY ALI YOUSIF	DATE 8-06-18		UNIT: 3591 / BRIDGE No.: 10-0182
APPROVED GARY BLAKESLEY	DATE 8-08-18		CONTRACT No.: 01-0E0904 / PROJECT No. & PHASE: 01130001230

STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (ENGLISH) (REVISION 4/19/2018)
DATE PLOTTED => 14-SEP-2018 TIME PLOTTED => 11:01
FILE => 01-0e090-a-ps2a.dgn USERNAME => s113491

PROBABILISTIC STRUCTURE COST ESTIMATE

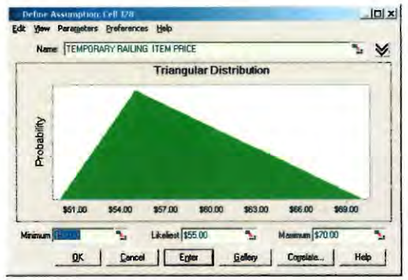
[ ] GENERAL PLAN ESTIMATE [X] ADVANCE PLANNING ESTIMATE

Revised - October 2, 2017

BRIDGE NAME:	Russian River BOH (Alt 2A)
BRIDGE NUMBER:	10-0182
TYPE:	CIP/PS
EA:	01-0E090
PROJECT ID:	01 1300 0123
ACCELERATED BRIDGE PROJECT	NO
DESIGN SECTION:	06
# OF STRUCTURES IN PROJECT :	2
PRICES BY :	Paul Mak
PRICES CHECKED BY :	
QUANTITIES BY:	ALI YOUSIF

IN EST:	8/24/2018
OUT EST:	9/13/2018
DISTRICT:	01
CO:	MEN
RTE:	20
PM:	33.3
DEPTH	5.0
LENGTH	455
WIDTH	Var. 43.5-46.75
AREA	20078
EST. NO.	
COST INDEX:	564
DATE:	
DATE:	8/17/2018

INPUT



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	ITEM PRICE RANGE MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
1	STRUCTURE EXCAVATION (BRIDGE)		CY	417	$55.00	$80.00	$95.00	$33,360
2	STRUCUTRE EXCAVATION (TYPE A)		CY	493	$140.00	$220.00	$380.00	$108,416
3	STRUCTURE BACKFILL (BRIDGE)		CY	389	$90.00	$100.00	$110.00	$38,928
4	FURNISH STEEL PILING (HP 10 X 57)		LF	1,100	$32.00	$37.00	$42.00	$40,700
5	DRIVE STEEL PILE (HP 10 X 57)		EA	22	$2,300.00	$3,000.00	$3,700.00	$66,000
6	24" CAST-IN-DRILLED-HOLE CONCRETE PILING		LF	2,800	$125.00	$240.00	$450.00	$672,000
7	PRESTRESSING CAST-IN-PLACE CONCRETE	270 Ksi Strand	LB	55,000	$1.50	$1.65	$1.80	$90,750
8	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	297	$470.00	$515.00	$585.00	$152,812
9	STRUCTURAL CONCRETE, BRIDGE		CY	1,778	$730.00	$1,120.00	$1,480.00	$1,991,508
10	JOINT SEAL (MR 1")	Type B	LF	92	$55.00	$85.00	$120.00	$7,820
11	BAR REINFORCING STEEL (BRIDGE)		LB	580,821	$0.90	$1.00	$1.10	$580,821
12	CONCRETE BARRIER (Type 836)		LF	950	$110.00	$130.00	$150.00	$123,500
13	CHAIN LINK RAILING TYPE 7 (MOD)		LF	120	$210.00	$270.00	$300.00	$32,400
14	RAILROAD PROTECTION		SQFT	4,500	$15.00	$20.00	$25.00	$90,000
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

		SUBTOTAL	$4,029,016
TIME RELATED OVERHEAD		10%	$402,902
MOBILIZATION		10%	$492,435
SUBTOTAL BRIDGE ITEMS			$4,924,352
CONTINGENCIES		25%	$1,231,088
		SUBTOTAL	$6,155,440

Comments
type 836 = 736 x 1.2
railroad protection assumed 150' x 30' = 4500 sf

	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM
BRIDGE REMOVAL	4-SP Steel Girder	SQFT	15437	$7.00	$12.00	$17.00

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY $283,010

Notes

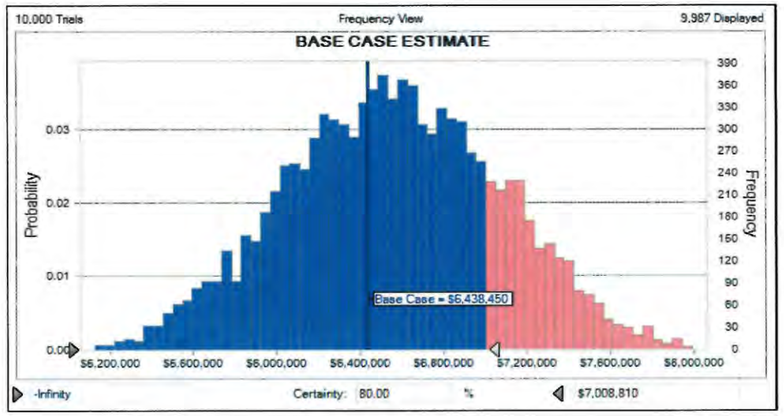
Highlighted cells represent the quantities and prices that are included in the model.
Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

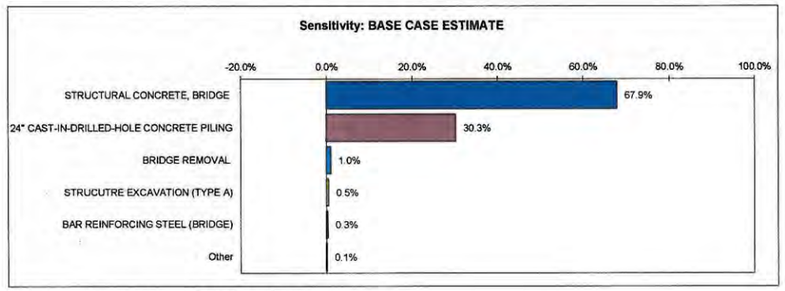
BASE CASE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION

BASE CASE ESTIMATE $6,438,450

OUTPUT

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.





Percentiles:	Forecast values	
0%	$5,067,079	
10%	$5,893,631	
20%	$6,112,617	
30%	$6,274,156	
40%	$6,426,565	
50%	$6,557,782	
60%	$6,691,275	
70%	$6,842,121	Recommended Range
80%	$7,008,810	
90%	$7,224,693	
100%	$8,087,229	

BASED ON THE ASSUMPTIONS USED TO CREATE THE MODEL, THE DES-STRUCTURE OFFICE ENGINEER RECOMMENDS THAT THE PROGRAMMING LEVEL BUDGET FOR THIS PROJECT BE DESIGNATED AT THE 80% FORECAST VALUE.

80% FORECAST VALUE = $7,009,000.00

***80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction**

Years Beyond Midpoint	Escalation Rate	Escalated Budget Est.
1	4.20%	$7,303,000
2	4.20%	$7,610,000
3	4.20%	$7,930,000
4	4.20%	$8,263,000
5	4.20%	$8,610,000

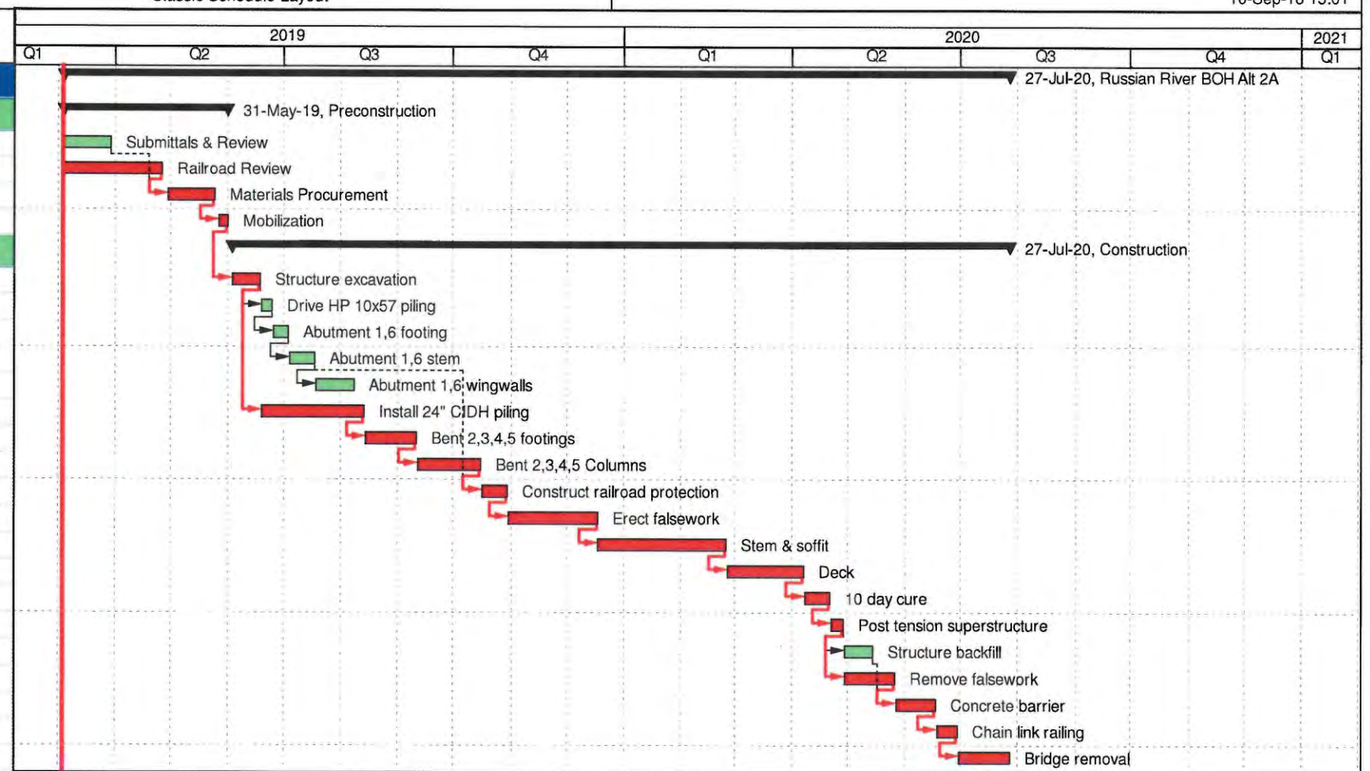
* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at http://www.dot.ca.gov/hq/oppd/costest/data.htm. Web page updated May 2014.

80 % Forecast

BRIDGE COST PER SQUARE FOOT	=	$335
BRIDGE REMOVAL	=	$326,600

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

Activity ID	Activity Name	Original Duration	Start	Finish
Russian River BOH Alt 2A		366	04-Mar-19	27-Jul-20
Preconstruction		65	04-Mar-19	31-May-19
A1000	Submittals & Review	20	04-Mar-19	29-Mar-19
A1010	Railroad Review	40	04-Mar-19	26-Apr-19
A1020	Materials Procurement	20	29-Apr-19	24-May-19
A1030	Mobilization	5	27-May-19	31-May-19
Construction		301	03-Jun-19	27-Jul-20
C1000	Structure excavation	12	03-Jun-19	18-Jun-19
C1010	Drive HP 10x57 piling	4	19-Jun-19	24-Jun-19
C1020	Abutment 1,6 footing	7	25-Jun-19	03-Jul-19
C1030	Abutment 1,6 stem	10	04-Jul-19	17-Jul-19
C1040	Abutment 1,6 wingwalls	15	18-Jul-19	07-Aug-19
C1042	Install 24" CIDH piling	40	19-Jun-19	13-Aug-19
C1050	Bent 2,3,4,5 footings	20	14-Aug-19	10-Sep-19
C1060	Bent 2,3,4,5 Columns	25	11-Sep-19	15-Oct-19
C1062	Construct railroad protection	10	16-Oct-19	29-Oct-19
C1070	Erect falsework	35	30-Oct-19	17-Dec-19
C1080	Stem & soffit	50	18-Dec-19	25-Feb-20
C1090	Deck	30	26-Feb-20	07-Apr-20
C1100	10 day cure	10	08-Apr-20	21-Apr-20
C1110	Post tension superstructure	5	22-Apr-20	28-Apr-20
C1120	Structure backfill	12	29-Apr-20	14-May-20
C1130	Remove falsework	20	29-Apr-20	26-May-20
C1140	Concrete barrier	16	27-May-20	17-Jun-20
C1150	Chain link railing	8	18-Jun-20	29-Jun-20
C1160	Bridge removal	20	30-Jun-20	27-Jul-20

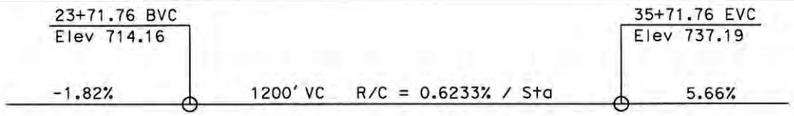


Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary

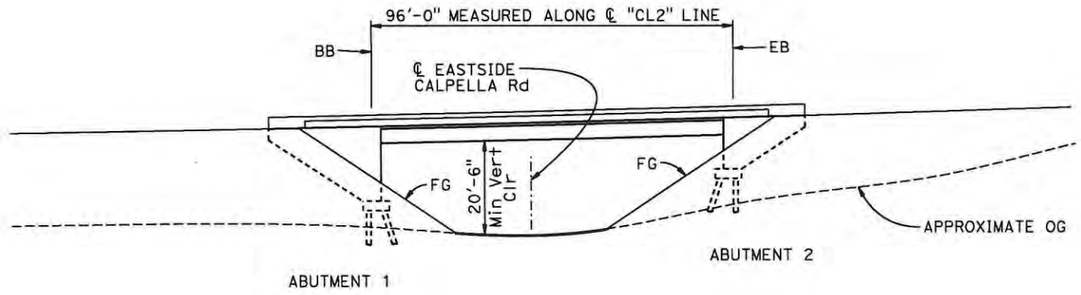
TASK filter: All Activities

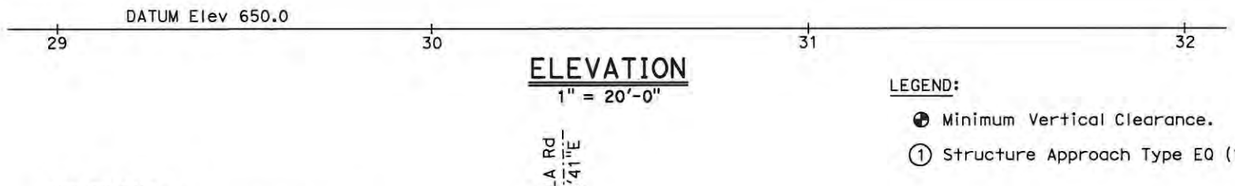
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF ENGINEERING SERVICES

Dist	COUNTY	ROUTE	POST MILE
01	Men	20	33.6

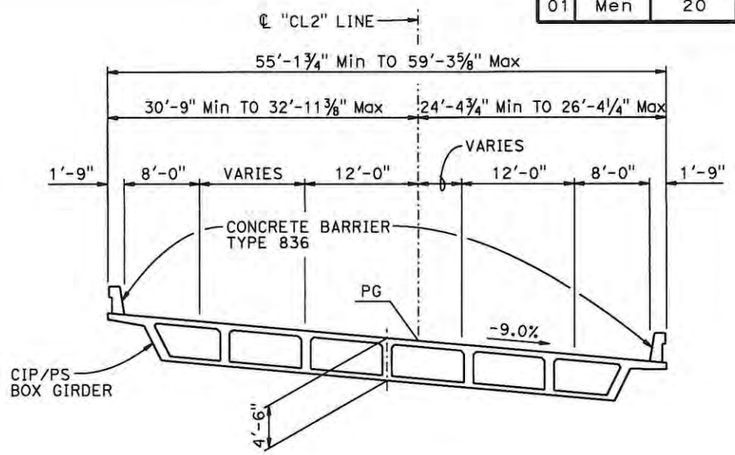


PROFILE GRADE
NO SCALE





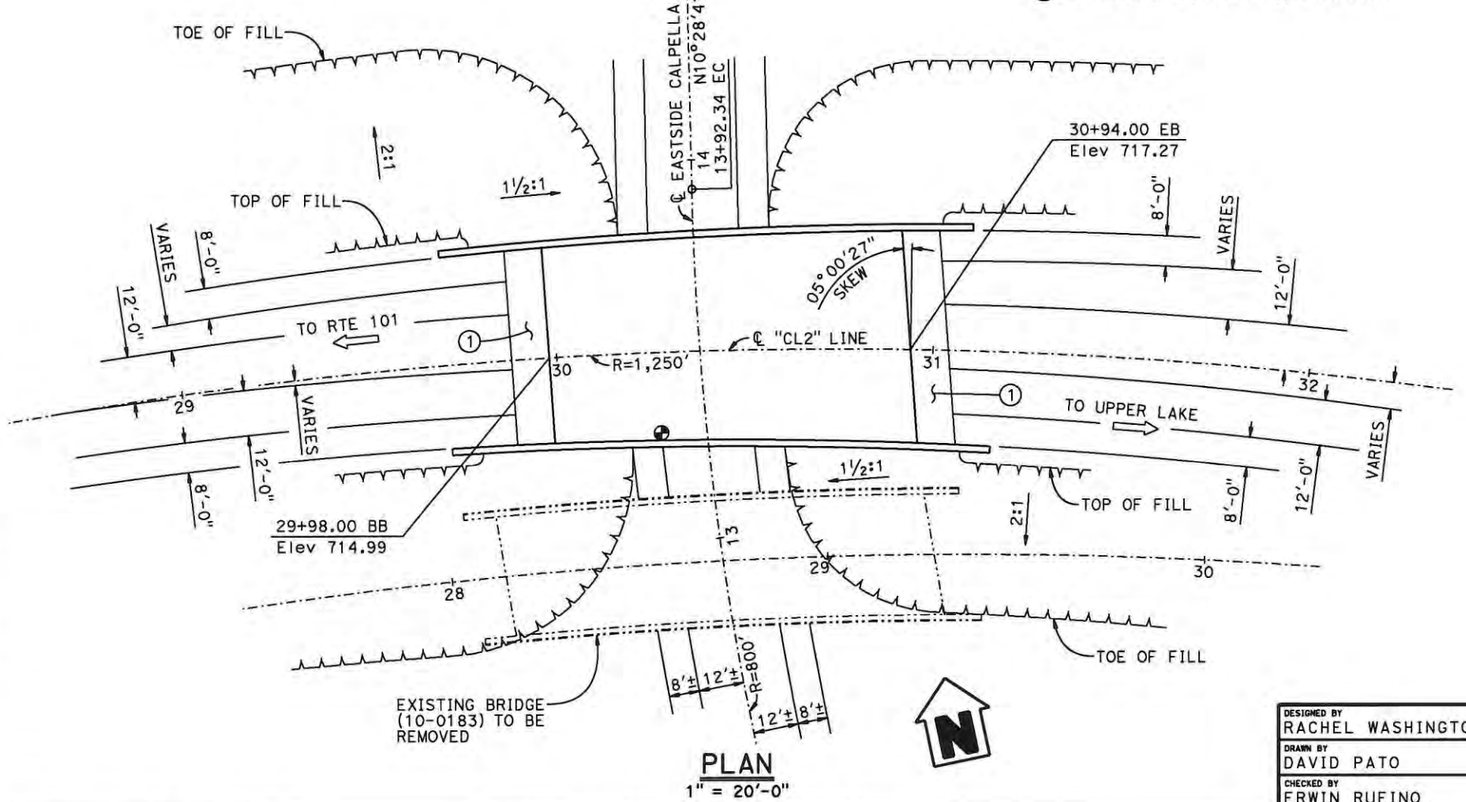
ELEVATION
1" = 20'-0"



TYPICAL SECTION
⅛" = 1'-0"

LEGEND:

- ⊕ Minimum Vertical Clearance.
- ① Structure Approach Type EQ (10).



PLAN
1" = 20'-0"

DATE OF ESTIMATE	9-13-2018
BRIDGE REMOVAL	= $164,200.00
STRUCTURE DEPTH	= 4.50
LENGTH	= 96
WIDTH	= Var. 55.2-59.3
AREA	= 5,496
COST/ft² INCLUDING TRO, MOBILIZATION & 25% CONTINGENCY	= $438.09
TOTAL COST	= $2,561,000.00

RISKS & ASSUMPTIONS

1. BB and EB stations were set based upon 1.5:1 side slopes that are controlled from the toe (edge of shoulders of Eastside Calpella Rd).
2. Driven H-Piles were assumed in 50-ft lengths for the abutments.
3. No seasonal restriction of work is assumed at this time.

DESIGNED BY RACHEL WASHINGTON	DATE 8-09-18	STRUCTURE DESIGN	PLANNING STUDY - ALT 2A
DRAWN BY DAVID PATO	DATE 8-09-18	DESIGN BRANCH 6	EASTSIDE CALPELLA UC
CHECKED BY ERWIN RUFINO	DATE 8-21-18		UNIT: 3591 / BRIDGE No.: 10-0183
APPROVED GARY BLAKESLEY	DATE 8-22-18		CONTRACT No.: 01-0E0904 / PROJECT No. & PHASE: 01130001230

STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (ENGLISH) (REVISION 4/19/2018)

DATE PLOTTED => 14-SEP-2018 TIME PLOTTED => 11:01
FILE => 01-0e090-c-ps-calp2a2.dgn USERNAME => s113491

PROBABILISTIC STRUCTURE COST ESTIMATE

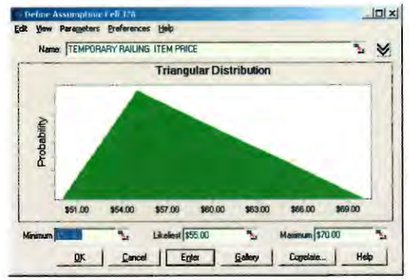
[ ] GENERAL PLAN ESTIMATE [X] ADVANCE PLANNING ESTIMATE

Revised - October 2, 2017

BRIDGE NAME:	Eastside Calpella Rd UC (ALT 2A)
BRIDGE NUMBER:	10-0183
TYPE:	CIP/PS Box Girder
EA:	01-0E090
PROJECT ID:	01 1300 0123
ACCELERATED BRIDGE PROJECT	NO
DESIGN SECTION:	06
# OF STRUCTURES IN PROJECT :	2
PRICES BY :	Paul Mak
PRICES CHECKED BY :	
QUANTITIES BY:	ALI YOUSIF

IN EST:	8/24/2018
OUT EST:	9/13/2018
DISTRICT:	01
CO:	MEN
RTE:	20
PM:	33.6
DEPTH	4.5
LENGTH	96
WIDTH	Var. 55.2-59.3
AREA	5496
EST. NO.	
COST INDEX:	564
DATE:	
DATE:	9/10/2018

INPUT



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
					ITEM PRICE RANGE			
1	STRUCTURE EXCAVATION (BRIDGE)		CY	554	$55.00	$80.00	$95.00	$44,283
2	STRUCTURE BACKFILL (BRIDGE)		CY	459	$90.00	$100.00	$110.00	$45,879
3	FURNISH STEEL PILING (HP 10 X 57)		LF	1,550	$30.00	$40.00	$50.00	$62,000
4	DRIVE STEEL PILE (HP 10 X 57)		EA	31	$2,300.00	$3,000.00	$3,700.00	$93,000
5	PRESTRESSING CAST-IN-PLACE CONCRETE	270 Ksi Strand	LB	20,850	$1.70	$2.90	$3.85	$60,465
6	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	113	$460.00	$615.00	$840.00	$69,730
7	STRUCTURAL CONCRETE, BRIDGE		CY	617	$1,035.00	$1,400.00	$1,735.00	$863,800
8	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE EQ)		CY	43	$750.00	$1,050.00	$1,350.00	$45,150
9	JOINT SEAL (MR 1")	Type B	LF	117	$55.00	$85.00	$120.00	$9,945
10	BAR REINFORCING STEEL (BRIDGE)		LB	138,164	$1.05	$1.15	$1.25	$158,889
11	CONCRETE BARRIER (Type 836)		LF	232	$135.00	$210.00	$295.00	$48,720
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
							SUBTOTAL	$1,501,861

Comments

TIME RELATED OVERHEAD		10%	$150,186
MOBILIZATION		10%	$183,561
SUBTOTAL BRIDGE ITEMS			$1,835,607
CONTINGENCIES		25%	$458,902
		SUBTOTAL	$2,294,509

	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM
BRIDGE REMOVAL	3-sp Conc T-bm	SQFT	4003	$20.00	$25.00	$30.00

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY $152,892

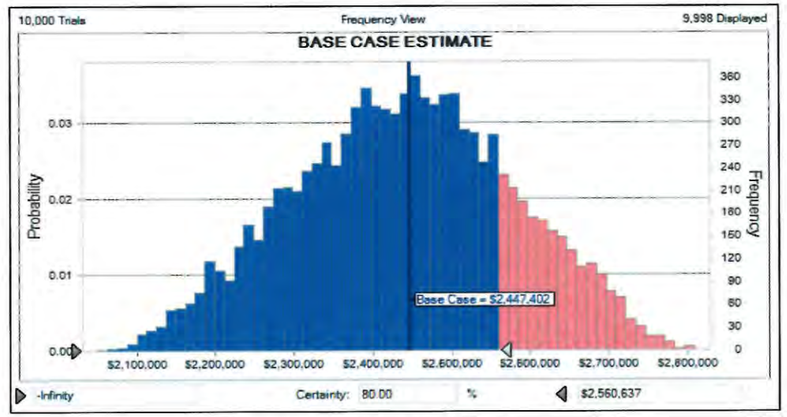
Notes

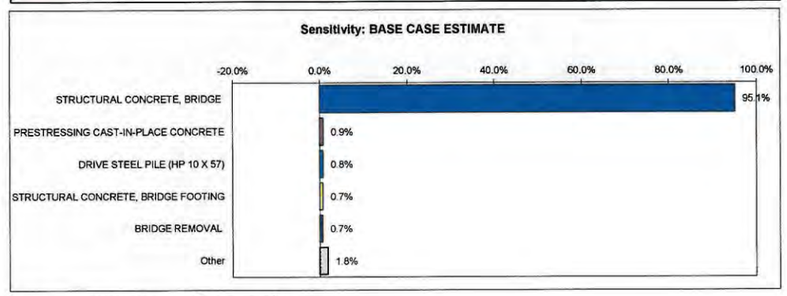
Highlighted cells represent the quantities and prices that are included in the model.
Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

BASE CASE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION	
BASE CASE ESTIMATE	$2,447,402

OUTPUT

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.





Percentiles:	Forecast values	
0%	$2,033,759	
10%	$2,252,689	
20%	$2,315,918	
30%	$2,364,272	
40%	$2,402,276	
50%	$2,440,844	
60%	$2,477,166	
70%	$2,515,528	Recommended Range
80%	$2,560,637	
90%	$2,624,078	
100%	$2,808,430	

BASED ON THE ASSUMPTIONS USED TO CREATE THE MODEL, THE DES-STRUCTURE OFFICE ENGINEER RECOMMENDS THAT THE PROGRAMMING LEVEL BUDGET FOR THIS PROJECT BE DESIGNATED AT THE 80% FORECAST VALUE.

80% FORECAST VALUE = $2,561,000.00

***80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction**

Years Beyond Midpoint	Escalation Rate	Escalated Budget Est.
1	4.20%	$2,668,000
2	4.20%	$2,780,000
3	4.20%	$2,897,000
4	4.20%	$3,019,000
5	4.20%	$3,146,000

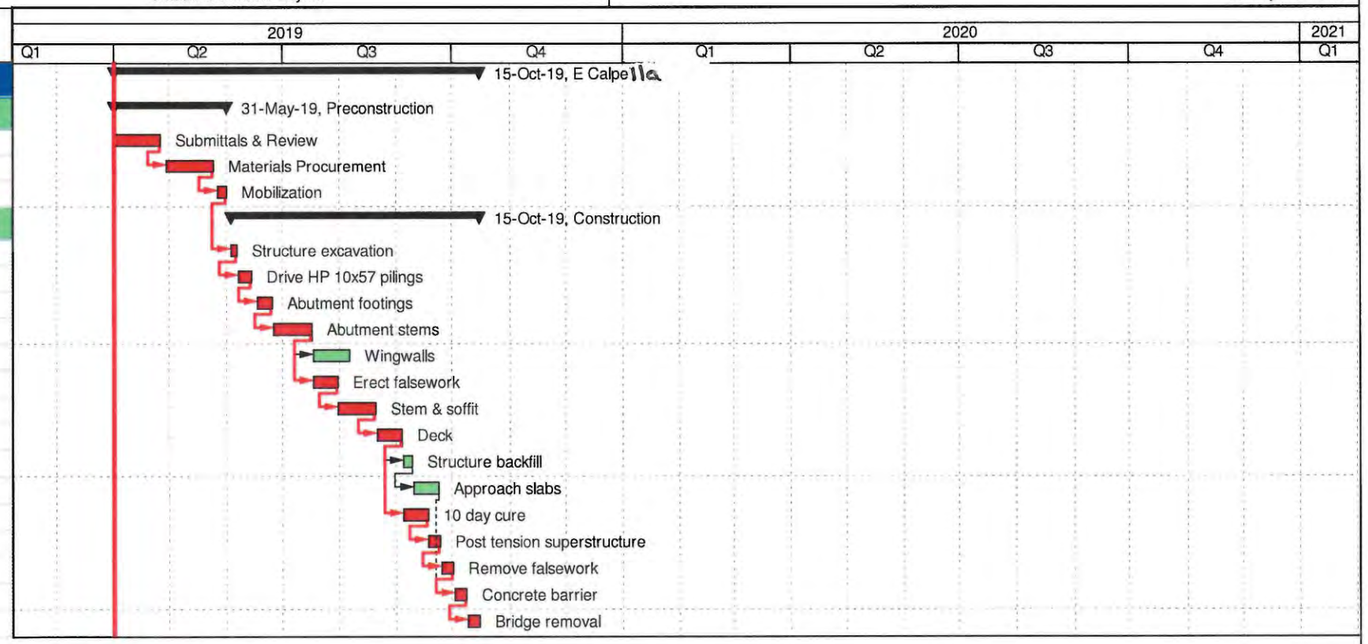
* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at http://www.dot.ca.gov/hq/oppd/costest/data.htm. Web page updated May 2014.

80 % Forecast

BRIDGE COST PER SQUARE FOOT	=	$438
BRIDGE REMOVAL	=	$164,200

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

Activity ID	Activity Name	Original Duration	Start	Finish
E Calpella		142	01-Apr-19	15-Oct-19
Preconstruction		45	01-Apr-19	31-May-19
A1000	Submittals & Review	20	01-Apr-19	26-Apr-19
A1010	Materials Procurement	20	29-Apr-19	24-May-19
A1020	Mobilization	5	27-May-19	31-May-19
Construction		97	03-Jun-19	15-Oct-19
A1030	Structure excavation	4	03-Jun-19	06-Jun-19
A1040	Drive HP 10x57 pilings	6	07-Jun-19	14-Jun-19
A1050	Abutment footings	7	17-Jun-19	25-Jun-19
A1060	Abutment stems	15	26-Jun-19	16-Jul-19
A1070	Wingwalls	15	17-Jul-19	06-Aug-19
A1080	Erect falsework	10	17-Jul-19	30-Jul-19
A1090	Stem & soffit	15	31-Jul-19	20-Aug-19
A1100	Deck	10	21-Aug-19	03-Sep-19
A1101	Structure backfill	4	04-Sep-19	09-Sep-19
A1104	Approach slabs	10	10-Sep-19	23-Sep-19
A1108	10 day cure	10	04-Sep-19	17-Sep-19
A1110	Post tension superstructure	5	18-Sep-19	24-Sep-19
A1120	Remove falsework	5	25-Sep-19	01-Oct-19
A1130	Concrete barrier	5	02-Oct-19	08-Oct-19
A1140	Bridge removal	5	09-Oct-19	15-Oct-19

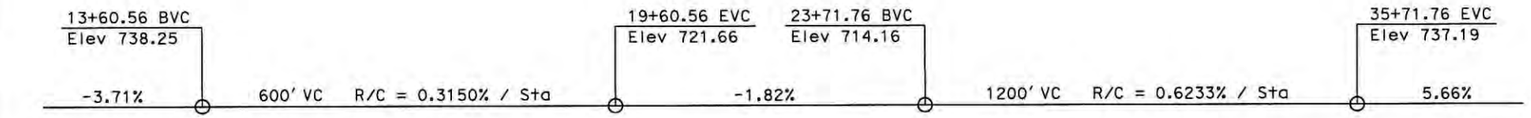


Actual Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone
summary

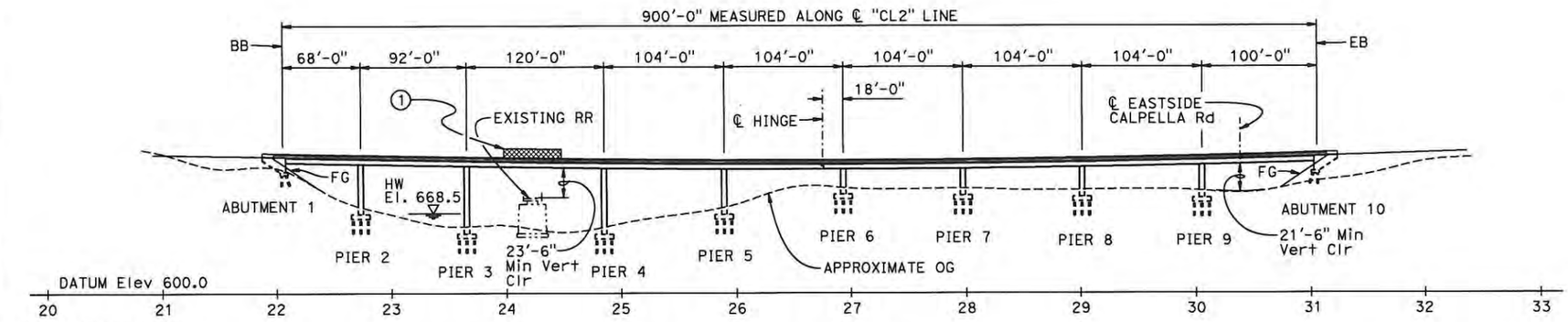
TASK filter: All Activities

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - DIVISION OF ENGINEERING SERVICES

Dist	COUNTY	ROUTE	POST MILE
01	Men	20	33.3



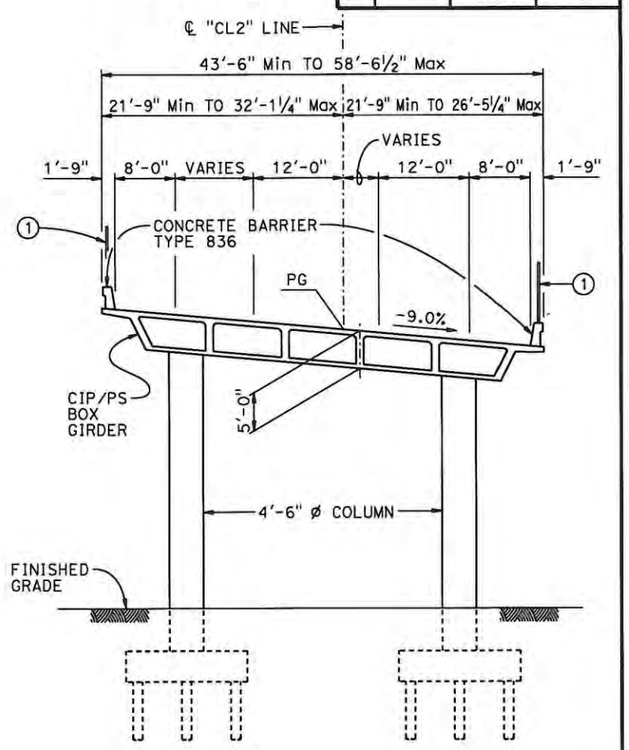
PROFILE GRADE
NO SCALE



DEVELOPED ELEVATION
1" = 60'-0"

RISKS & ASSUMPTIONS

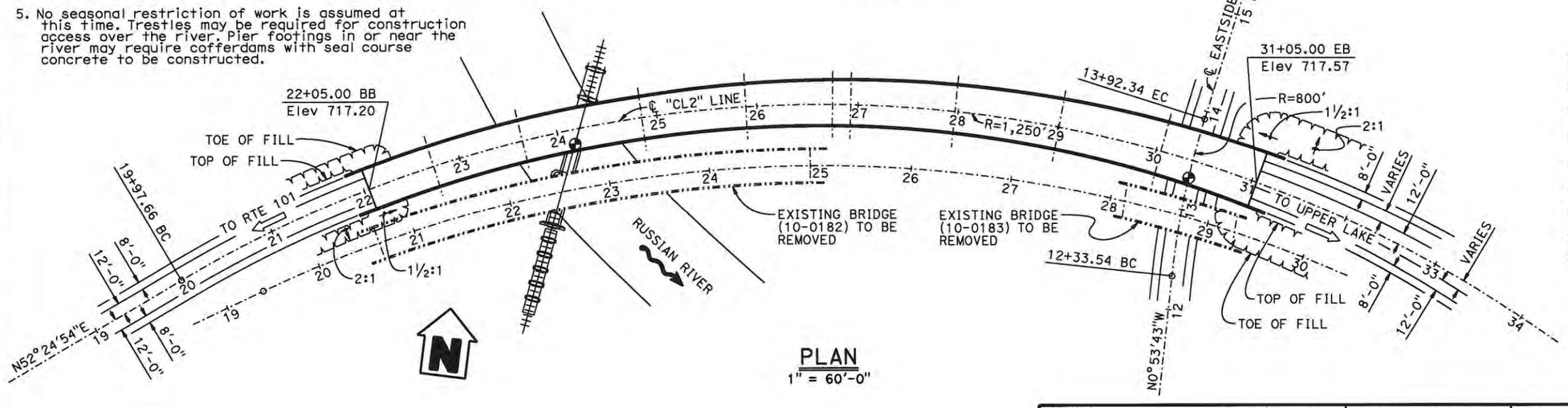
1. The BB station was set to minimize roadway earthwork.
2. The EB station was set to be roughly aligned with existing EB, considering that the existing roadway embankment would be extended northward to accommodate new alignment.
3. Driven H-Piles were assumed in 50-ft lengths for the abutments. 24" CIDH piles were assumed in 35-ft lengths for the piers.
4. A minimum 25-ft horizontal clearance from the centerline of railroad track to a pier foundation was considered.
5. No seasonal restriction of work is assumed at this time. Trestles may be required for construction access over the river. Pier footings in or near the river may require cofferdams with seal course concrete to be constructed.



TYPICAL SECTION
1" = 10'-0"

LEGEND:

- Minimum Vertical Clearance.
- (1) Chain Link Railing Type 7 (Mod), (25' from ℄ Track.



PLAN
1" = 60'-0"

DATE OF ESTIMATE	9-11-2018
BRIDGE REMOVAL	= $499,000.00
STRUCTURE DEPTH	= 5.00
LENGTH	= 900
WIDTH	= Varies 44-59
AREA	= 46,373
COST/ft² INCLUDING TRO, MOBILIZATION & 25% CONTINGENCY	= $322.21
TOTAL COST	= $15,384,000.00

DESIGNED BY ERWIN RUFINO	DATE 7-26-18	STRUCTURE DESIGN	PLANNING STUDY - ALT 2B
DRAWN BY DAVID PATO	DATE 7-26-18	DESIGN BRANCH 6	RUSSIAN RIVER BRIDGE OH
CHECKED BY JACOB BEHNKE	DATE 7-31-18	UNIT: 3591	BRIDGE No.: 10-0182
APPROVED GARY BLAKESLEY	DATE 7-31-18	CONTRACT No.: 01-0E0904	PROJECT No. & PHASE: 01130001230

STRUCTURES DESIGN ADVANCE PLANNING STUDY SHEET (ENGLISH) (REVISION 4/19/2018)
DATE PLOTTED => 14-SEP-2018 TIME PLOTTED => 11:01
FILE => 01-0e090-a-ps2b.dgn USERNAME => s113491

PROBABILISTIC STRUCTURE COST ESTIMATE

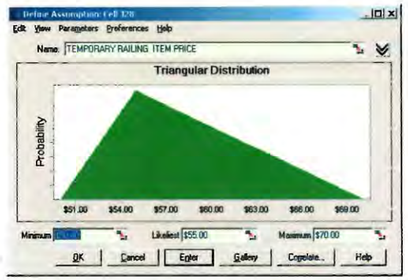
[ ] GENERAL PLAN ESTIMATE [x] ADVANCE PLANNING ESTIMATE

Revised - February 14, 2017

BRIDGE NAME:	RUSSIAN RIVER BOH (ALT 2-B)
BRIDGE NUMBER:	10-0182
TYPE:	9-SPAN CIP/PS BOX GIRDER
EA:	01-0E090
PROJECT ID:	0113000123
ACCELERATED BRIDGE PROJECT	NO
DESIGN SECTION:	06
# OF STRUCTURES IN PROJECT :	1
PRICES BY :	Paul Mak
PRICES CHECKED BY :	
QUANTITIES BY:	Jacob Behnke

IN EST:	8/13/2018
OUT EST:	9/11/2018
DISTRICT:	01
CO:	Men
RTE:	20
PM:	33.3
DEPTH	5.0
LENGTH	900.0
WIDTH	44-59
AREA	46373
EST. NO.	
COST INDEX:	564
DATE:	
DATE:	7/31/2018

INPUT



The Assumption Curves, unless noted otherwise, are modeled with a triangular distribution with the "Minimum, Likeliest and Maximum values."

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	ITEM PRICE RANGE MINIMUM	LIKELIEST	MAXIMUM	AMOUNT
1	BRIDGE REMOVAL Br. # 10-0182	4-sp Steel Gird	SQFT	15,437				$0
2	BRIDGE REMOVAL Br. # 10-0183	3-sp Conc T-Bean	SQFT	4,003				$0
3	STRUCTURE EXCAVATION (BRIDGE)		CY	1,368	$115.00	$150.00	$165.00	$205,216
4	STRUCTURE EXCAVATION (TYPE A)		CY	215	$140.00	$220.00	$380.00	$47,300
5	STRUCTURE BACKFILL (BRIDGE)		CY	935	$65.00	$100.00	$120.00	$93,501
6	24" CAST-IN-DRILLED-HOLE CONCRETE PILING		LF	6,720	$125.00	$240.00	$450.00	$1,612,800
7	FURNISH STEEL PILING (HP 10 X 57)		LF	1,400	$30.00	$40.00	$50.00	$56,000
8	DRIVE STEEL PILE (HP 10 X 57)		EA	28	$2,300.00	$3,000.00	$3,700.00	$84,000
9	PRESTRESSING CAST-IN-PLACE CONCRETE	Cable Strands	LB	90,297	$1.55	$1.75	$1.95	$158,019
10	STRUCTURAL CONCRETE, BRIDGE FOOTING		CY	533	$450.00	$500.00	$550.00	$266,500
11	STRUCTURAL CONCRETE, BRIDGE		CY	3,418	$1,100.00	$1,350.00	$1,800.00	$4,614,300
12	JOINT SEAL (MR 1")	Type B	LF	103	$75.00	$95.00	$120.00	$9,785
13	JOINT SEAL (MR 2")	Type B	LF	47	$110.00	$125.00	$145.00	$5,875
14	BAR REINFORCING STEEL (BRIDGE)		LB	1,240,970	$0.90	$1.00	$1.10	$1,240,970
15	CONCRETE BARRIER (TYPE 836)		LF	1,840	$110.00	$140.00	$170.00	$257,600
16	CHAIN LINK RAILING TYPE 7 (MOD)		LF	120	$210.00	$270.00	$300.00	$32,400
17	RAILROAD PROTECTION		SQFT	4500	$15.00	$20.00	$25.00	$90,000
18								$0
19								$0
20								$0
21								$0
22								$0
23								$0
24								$0
25								$0
26								$0
27								$0
28								$0
29								$0
30								$0
							SUBTOTAL	$8,774,266

Comments
railroad protection assumed 150' x 30' = 4500 sf

TIME RELATED OVERHEAD			$877,427
MOBILIZATION		10%	$1,072,410
SUBTOTAL BRIDGE ITEMS		10%	$10,724,103
CONTINGENCIES		25%	$2,681,026
		SUBTOTAL	$13,405,129

	TYPE	UNIT	QUANTITY	MINIMUM	LIKELIEST	MAXIMUM
BRIDGE REMOVAL	0.00	SQFT	19440	$10.00	$15.00	$20.00

BRIDGE REMOVAL LUMP SUM PRICE INCLUDES TRO, MOBILIZATION AND CONTINGENCY $445,500

Notes

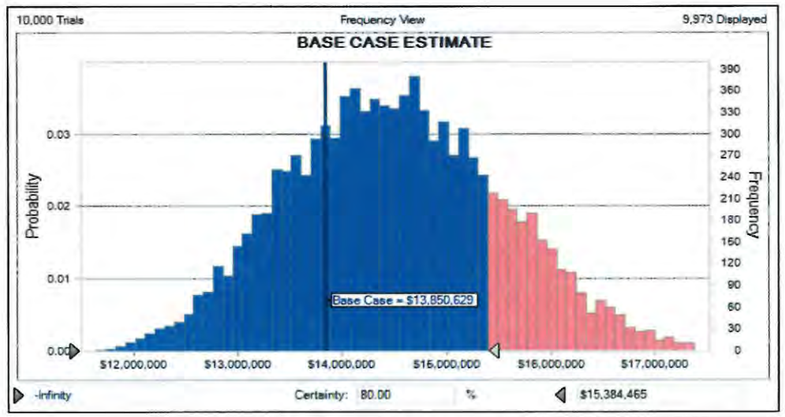
Highlighted cells represent the quantities and prices that are included in the model.
Base Case Estimate is the sum of the Quantity multiplied by "Likeliest" Item Price

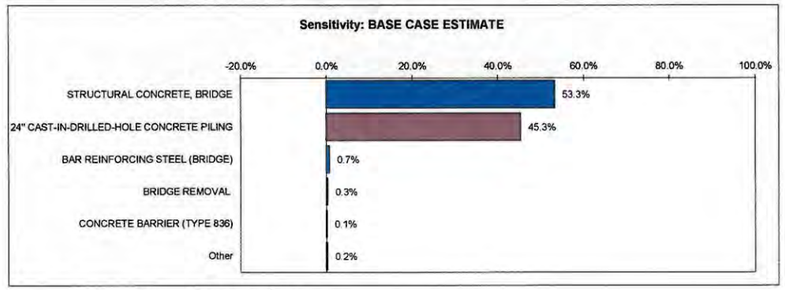
BASE CASE ESTIMATE TO ASSUMED MIDPOINT OF CONSTRUCTION

BASE CASE ESTIMATE $13,850,629

OUTPUT

The estimate ranges generated below were prepared using Crystal Ball software. Crystal Ball software automatically calculates and records the results of thousands of different "what if" cases. Analysis of these scenarios reveals to you the range of possible outcomes, their probability of occurring, the inputs that most impact your model, and where you should focus your efforts.





Percentiles:	Forecast values	
0%	$11,609,655	
10%	$13,192,224	
20%	$13,596,518	
30%	$13,921,295	
40%	$14,199,884	
50%	$14,477,290	
60%	$14,739,095	
70%	$15,043,882	Recommended Range
80%	$15,384,465	
90%	$15,860,362	
100%	$17,937,209	

BASED ON THE ASSUMPTIONS USED TO CREATE THE MODEL, THE DES-STRUCTURE OFFICE ENGINEER RECOMMENDS THAT THE PROGRAMMING LEVEL BUDGET FOR THIS PROJECT BE DESIGNATED AT THE 80% FORECAST VALUE.

80% FORECAST VALUE = $15,384,000.00

***80% Forecast Value Escalated Budget Estimate to Assumed Midpoint of Construction**

Years Beyond Midpoint	Escalation Rate	Escalated Budget Est.
1	4.20%	$16,031,000
2	4.20%	$16,704,000
3	4.20%	$17,406,000
4	4.20%	$18,137,000
5	4.20%	$18,899,000

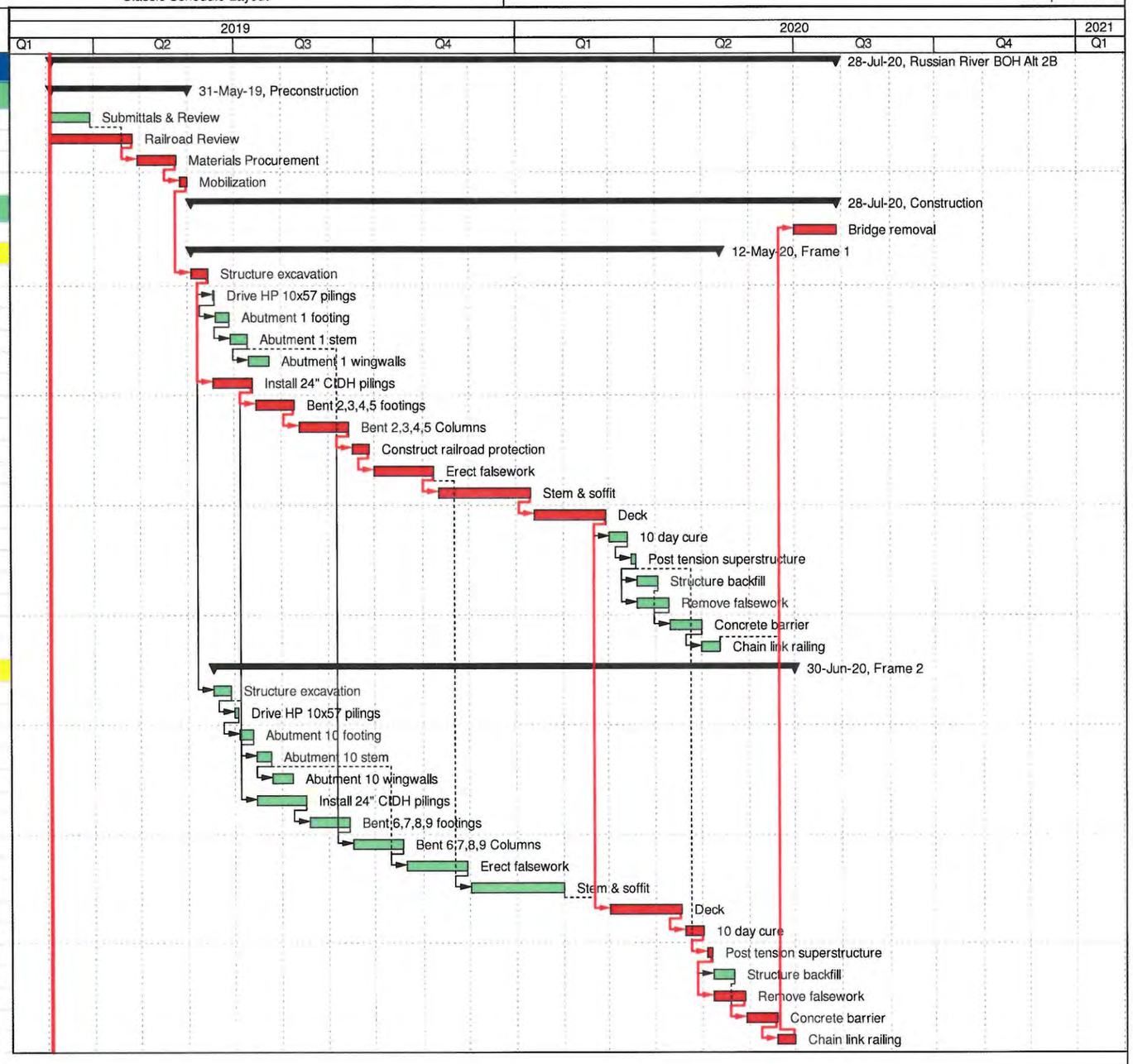
* Escalated structure cost is provided for information only, actual construction costs may vary. Escalated structure costs provided do not replace Departmental policy to update cost estimates annually. Escalation rates used are based on Global Insight data posted at http://www.dot.ca.gov/hq/oppd/costest/data.htm. Web page updated May 2014.

80 % Forecast		
BRIDGE COST PER SQUARE FOOT	=	$322
BRIDGE REMOVAL	=	$499,000

Bridge Cost per Square Foot and/or Bridge Removal costs modeled independently. Their 80% Forecast Values Provided for informational purposes only.

Russian River BOH Alt 2B | Classic Schedule Layout | 12-Sep-18 13:01

Activity ID	Activity Name	Original Duration	Start	Finish
Russian River BOH Alt 2B		367	04-Mar-19	28-Jul-20
Preconstruction		65	04-Mar-19	31-May-19
A1000	Submittals & Review	20	04-Mar-19	29-Mar-19
A1001	Railroad Review	40	04-Mar-19	26-Apr-19
A1010	Materials Procurement	20	29-Apr-19	24-May-19
A1020	Mobilization	5	27-May-19	31-May-19
Construction		302	03-Jun-19	28-Jul-20
C3000	Bridge removal	20	01-Jul-20	28-Jul-20
Frame 1		247	03-Jun-19	12-May-20
C1000	Structure excavation	10	03-Jun-19	14-Jun-19
C1010	Drive HP 10x57 pilings	2	17-Jun-19	18-Jun-19
C1020	Abutment 1 footing	7	19-Jun-19	27-Jun-19
C1030	Abutment 1 stem	8	28-Jun-19	09-Jul-19
C1040	Abutment 1 wingwalls	10	10-Jul-19	23-Jul-19
C1042	Install 24" CIDH pilings	20	17-Jun-19	12-Jul-19
C1050	Bent 2,3,4,5 footings	20	15-Jul-19	09-Aug-19
C1060	Bent 2,3,4,5 Columns	25	12-Aug-19	13-Sep-19
C1062	Construct railroad protection	10	16-Sep-19	27-Sep-19
C1070	Erect falsework	30	30-Sep-19	08-Nov-19
C1080	Stem & soffit	45	11-Nov-19	10-Jan-20
C1090	Deck	35	13-Jan-20	28-Feb-20
C1100	10 day cure	10	02-Mar-20	13-Mar-20
C1110	Post tension superstructure	4	16-Mar-20	19-Mar-20
C1120	Structure backfill	10	20-Mar-20	02-Apr-20
C1130	Remove falsework	15	20-Mar-20	09-Apr-20
C1140	Concrete barrier	15	10-Apr-20	30-Apr-20
C1150	Chain link railing	8	01-May-20	12-May-20
Frame 2		272	17-Jun-19	30-Jun-20
C2000	Structure excavation	10	17-Jun-19	28-Jun-19
C2010	Drive HP 10x57 pilings	3	01-Jul-19	03-Jul-19
C2020	Abutment 10 footing	7	04-Jul-19	12-Jul-19
C2030	Abutment 10 stem	8	15-Jul-19	24-Jul-19
C2040	Abutment 10 wingwalls	10	25-Jul-19	07-Aug-19
C2042	Install 24" CIDH pilings	25	15-Jul-19	16-Aug-19
C2050	Bent 6,7,8,9 footings	20	19-Aug-19	13-Sep-19
C2060	Bent 6,7,8,9 Columns	25	16-Sep-19	18-Oct-19
C2070	Erect falsework	30	21-Oct-19	29-Nov-19
C2080	Stem & soffit	45	02-Dec-19	31-Jan-20
C2090	Deck	35	02-Mar-20	17-Apr-20
C2100	10 day cure	10	20-Apr-20	01-May-20
C2110	Post tension superstructure	4	04-May-20	07-May-20
C2120	Structure backfill	10	08-May-20	21-May-20
C2130	Remove falsework	15	08-May-20	28-May-20
C2140	Concrete barrier	15	29-May-20	18-Jun-20
C2150	Chain link railing	8	19-Jun-20	30-Jun-20



Actual Level of Effort | Actual Work | Remaining Work | Critical Remaining Work | Milestone | summary

TASK filter: All Activities

Risk Register for 0E090, Calpella 2 Bridge Replacements

Form v3.3 last modified 10/30/2018 CB

Risk Checkpoint:	PA&ED
Date:	9/19/2019
Project Nickname:	Calpella 2 Bridge Replacements
EA:	0E090
Co-Rt, Post Miles:	MEN 20 33.3/34.4
Project Manager:	Cathy McKeon
FY & Program (SHOPP or STIP):	2018 (SHOPP)
Capital Costs:	$28,759k
Support Costs:	$13,300k
Total Costs:	$42,059k
RTL Target:	5/1/2021

Phase	Cost Contingency Range $k			Schedule Contingency Range (Wkg Days)		
	Optimistic	PERT	Pessimistic	Optimistic	PERT	Pessimistic
0-PA&ED	$21	$45	$78	3	6	10
1-PS&E	$0	$0	$0	3	6	10
2-RW Sup	$0	$0	$0	0	0	0
3-Con Sup	$0	$0	$0	0	0	0
Support Contingency	$21	$45	$78	5	12	20
9-RW Cap	$0	$0	$0	0	0	0
4-Con Cap	$15	$73	$180	18	27	36
Capital Contingency	$15	$73	$180	18	27	36
Total Contingency	$36	$118	$258	23	39	56

Risk Identification								Risk Assessment			Risk Response				Quantifying "Red" (High P & I) Level Risks			
Status	ID #	Type	Category	Title	Risk Statement	Current status / assumptions	Risk Trigger	Probability (P)	Cost Impact Schedule Impact (I)	Cost Score Schedule Score (PxI)	Strategy	Response Actions	Risk Owner	Updated	Impacted Phase	Calculated Contingency	Support (hours) Capital Cost $k	Schedule (Days)
Active	1	Threat	Environmental	Construction Staging Areas	As a result of future project development to designate staging areas, locations may be identified that could require added clearances	Design has designated staging areas. Any staging areas that are designated further along in the project process should also be confined to previously disturbed or paved areas to avoid additional studies.	Staging Areas with nonstandard clearances required.	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	Design will communicate any additional staging areas as soon as possible. Any impacts to jurisdictional resources will need to be included in the appropriate permit.	Design, Environ. & PM	4/8/2018	0-PA&ED Sup	O ML P	O ML P	O ML P
								20%	2 - Low (<1 month)	4							
Active	2	Threat	Right of Way	Data Sheet Requirements	As a result of the R/W Data Sheet not being completed, then schedule and resource estimates would not be accurate.	Design will send a request for a R/W Data Sheet in a timely manner.	Late R/W Data Sheet Request.	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	Monitor during next phase of project development	PM & R/W	4/8/2018	2-RW Sup	O ML P	O ML P	O ML P
								20%	2 - Low (<1 month)	4							
Active	3	Threat	Organizational	Community Opposition	As a result of the possibility of potential lawsuits that may challenge the project, delays to project delivery and/or start of construction may occur.	Public support for the project is currently expected.	Legal challenges	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	PM will coordinate with the local community to inform them of the purpose and need for the project to garner support.	PM/RW	4/2/2019	0-PA&ED Sup			O ML P
								20%	2 - Low (<1 month)	4							
Active	4	Opportunity	Project Management	Project Construction (probable) Detour Timing	As a result of the future expected complete traffic detour, impacts to the local commuters will be greatly reduced if the main closure is timed to coincide with local schools summer closures.	Assume that preferred project alternative will not be on the current alignment.	Main Closure does not coincide with local schools Summer Break.	3-Moderate (31-50%)	4 - Moderate ($5,521k - $11,039k	12	Avoid	Per direction of District Director offline alignment will be used for the preferred alternative to avoid use of local roads and impacts to local traffic.	Design, Environ. & PM	5/5/2018	3-Con Sup	O ML P	O ML P	O ML P
								40%	4 - Moderate (1-3 months)	12					4-Con Cap	O ML P	O ML P	O ML P
Active	5	Threat	Project Management	Permitting Requirements	As a result of the project location spanning both a river and Railroad tracks, Environmental and R/W permits will be required, and could require unanticipated mitigation or restrictions which could increase project capital and resource costs.	Riparian vegetation removal has been identified and will be need to be addressed. Current assumed ratios based on previous experience in the area.	Permit conditions are not as anticipated.	3-Moderate (31-50%)	4 - Moderate ($5,521k - $11,039k	12	Mitigate	Early coordination with the agencies is ongoing. Working with environmental to identify potential mitigation sites.	Environ., R/W & PM	4/2/2019	0-PA&ED Sup	O ML P	O ML P	O ML P
								40%	4 - Moderate (1-3 months)	12					9-RW Cap	O ML P	O ML P	O ML P
Active	6	Threat	Right of Way	Delay of Right of Way	As a result of a delay in the acquisition of RW, a delay of RW Cert may occur which would lead to a delay of RTL	Appraisal maps, COS and HMDD will be completed by M225 and requested lead time will be available to complete acquisition.	Delay in parcel acquisition	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	Coordinate with RWE for timely delivery of mapping, COS and HMDD.	ROW	5/1/2018				
								20%	2 - Low (<1 month)	4								
Active	7	Threat	Right of Way	Additional RW Required	As a result of additional right of way requirements not clearly identified in the K phase, a delay of RW Cert may occur which would lead to a delay of RTL and additional RW capital costs.	Right of way requirements have been determined prior to PAED and capital and resource costs "right sized" prior to RTL	Additional RW requirements after PAED.	3-Moderate (31-50%)	2 - Low (<$5,520k)	6	Accept	Re-sequence work to enable R/W Certification. PM will right size the project to add RW capital to address the RW needs.	ROW/PM	4/2/2019	2-RW Sup	O ML P	O ML P	O ML P
								40%	2 - Low (<1 month)	6								
Active	8	Threat	Right of Way	Utility Involvement	As a result of utility conflicts not being resolved prior to RW Cert, RW Cert may be delayed which would lead to a delay in delivering RTL	RW utility has met with utilities and is working on a conflict resolution.	If utility conflict maps are not received within 6 months of RTL or the utilities have not cleared by RW cert.	2-Low (11-30%)	2 - Low (<$5,520k)	4	Escalate	Mitigate delays with timely meetings, submittals and review. If conflict maps or delay in relocation is anticipated the PM will elevate.	ROW	5/1/2018				
								20%	4 - Moderate (1-3 months)	8								
									4 - Moderate	12					0-PA&ED Sup	O ML	O ML	

Risk Identification								Risk Assessment			Risk Response				Quantifying "Red" (High P & I) Level Risks			
Status	ID #	Type	Category	Title	Risk Statement	Current status / assumptions	Risk Trigger	Probability (P)	Cost Impact Schedule Impact (I)	Cost Score Schedule Score (Pxl)	Strategy	Response Actions	Risk Owner	Updated	Impacted Phase	Calculated Contingency	Support (hours) Capital Cost $k	Schedule (Days)
Active	9	Threat	Right of Way	Early RR Consultation	As a result of accelerating the bridge design to allow for early RR consultation before DED to keep the project on schedule, the PA&ED costs could increase and the schedule be delayed if the bridge alignment is modified.	No preferred alternative has yet been determined, but southerly alignment seems likely preferred due to traffic safety concerns.	Bridge Alignment is modified after Bridge Site Submittal is delivered.	3-Moderate (31 50%) 40%	($5,521k - $11,039k 4 - Moderate (1-3 months)	12 12	Accept	Conduct early consultation with Design Liaison and with resource agencies to better scope concerns prior to BSS. Increase design efforts in PAED to allow 60% design to proceed for RR review. If needed PM will request supplemental funds.	Structures, Utilities	12/7/2017	0-PA&ED Sup		P	P
Active	10	Threat	Right of Way	Parcel Access	As a result of property owners not allowing access on parcels for drilling and environmental review, the soil & environmental conditions may not be known, resulting in increased costs and delays during PaED and potentially during construction.	The property owner allowed access for env. Review and drilling but the approval for access expires on 11/1/2019. Drilling will not be completed by then and additional access in also needed for bio review. An extension has been requested.	IF the extension is denied, a court order would be required.	3-Moderate (31 50%) 40%	2 - Low (<$5,520k) 4 - Moderate (1-3 months)	6 12	Accept	If the extension is denied, PM will work with RW to acquire a court order to allow the drilling in PAED. If court order not issued, will proceed with soil assumptions, based on nearby drilling and provide post drilling for confirmation once parcels are acquired.	Geotech/RW /Environmental	4/2/2019	3-Con Sup		O ML P	O ML P
Active	11	Threat	Project Management	Condemnation	As a result of property owners not willing to sell, the project may require condemnation resulting in increased costs and delays during design.	Assume property owner is willing to sell portion of parcels and that negotiations can proceed without condemnation.	RW is notified that property owners are not willing to negotiate for purchase.	2-Low (11-30%) 20%	2 - Low (<$5,520k) 2 - Low (<1 month)	4 4	Mitigate	Early discussions with the property owner to resolve conflicts. Proceed with RW negotiations preparing in advance for condemnation.	PM	4/2/2019	3-Con Sup		O ML P	O ML P
Active	12	Threat	Project Management	Deck Failure	As a result of the deck being in very poor condition, a delay due to any of the risks noted for schedule could cause the deck to fail unless interim maintenance on deck is performed.	Deck maintenance project was constructed in fall 2018 and will last for 5 years. Assume that completion of project will occur before another deck maintenance project is required.	The Deck fails.	2-Low (11-30%) 20%	4 - Moderate ($5,521k - $11,039k 4 - Moderate (1-3 months)	8 8	Mitigate	This risk remains as a low risk in the event there are further delays to the project. The PDT is being aggressive in tracking and coordinating project so that it remains on current schedule.	PM	4/2/2019	3-Con Sup 4-Con Cap		O ML P O ML P	O ML P O ML P
Retired	13	Threat	Design	Alignment Revision	As a result of not clearly identifying the location of the off-alignment alternative prior to PAED, and potentially as a result of the Value Analysis, an additional alignment alternative may be needed to address geometric ~~or environmental~~ concerns which could lead to increased support and capital costs and delay the project.	Southerly Alignment was added and is technically preferred alignment and will be the ultimate alignment for the project.	If the technically preferred alignment is not selected or is altered significantly.	4-High (51-70%) 60%	8 - High ($11,040k - $22,078k) 8 - High (3-6 months)	32 32	Escalate	Added southerly alignment to address safety concerns. The southerly alignment was selected as technically preferred. VA recommendations were determined to be non-valid and Exec Staff agreed. The project is moving forward with the designed southerly alignment. This risk is retired.	PM	9/19/2019	0-PA&ED Sup 4-Con Cap	$40k $73k 27	O 250 hours ML 500 hours P 1,000 hours PERT 542 hours O $25k ML $100k P $300k PERT $121k	O ML P O 30 ML 45 P 60 PERT 45
Active	14	Threat	Environmental	Wetland Impacts	As a result of wetlands being impacted, mitigation may be necessary that would increase the resource and capital costs and delay the project.	Assume wetlands will be avoided or can be adequately mitigated if avoidance is not feasible.	Wetlands are confirmed along the selected alignment.	3-Moderate (31 50%) 40%	4 - Moderate ($5,521k - $11,039k 4 - Moderate (1-3 months)	12 12	Avoid	The project will be unable to avoid wetlands within the ESL, and environmental will pursue off-site mitigation.	PM	5/30/2018	0-PA&ED Sup 4-Con Cap		O ML P O ML P	O ML P O ML P
Active	15	Threat	Environmental	Geotechnical Drilling Impact	As a result of the lack of known geotechnical drilling locations and proceeding with PAED, future unknown impacts may occur in the design phase for geotechnical drilling, which may require additional environmental clearances, permits or mitigation which would lead to potential additional resource and capital cost and project delays.	Drilling impacts are being incorporated into the permits, however, the area of the drilling in the side channel needs to be addressed before retiring this risk.	If additional impacts are encountered during drilling.	3-Moderate (31 50%) 40%	4 - Moderate ($5,521k - $11,039k 4 - Moderate (1-3 months)	12 12	Avoid	An amendment to the permit will be requested for the one location in the side channel. If this is unresolved by the time drilling is scheduled, all other locations will be drilled and env. will continue to work with CDFW on this one site. Confirming drilling could be done in Phase 1. Drilling locations in field with environmental/geotechnical staff in advance of and just prior to drilling to avoid sensitive areas where possible.	Environmental/ Geotech	9/19/2019	0-PA&ED Sup 4-Con Cap		O ML P O ML P	O ML P O ML P
Active	16	Threat	Right of Way	Railroad Transfer	As a result of the railroad ownership & management being in a state of flux the process and documentation for approval is unknown and may result in significant delays in the project which could result in schedule delays, resource cost increases and funding failure if the project is moved into a funding year that is not supported by the D1 10 year plan.	It is assumed that the RR will be taken over by SMARTS train (most restrictive).	If the submittal of the RR is rejected, delayed or requires significant alterations.	5-Very High (>70%) 85%	1 - Very Low (Insignificant) 8 - High (3-6 months)	5 40	Escalate	PM will elevate the issue to management and coordinate with the RR planning liaison to keep apprised of development. Preparing and submitting the RR packet in advance of PAED based on technical alignment.	RR Coordinator	4/2/2019	0-PA&ED Sup 1-PS&E Sup	$5k 6 6	O 30 hours ML 45 hours P 60 hours PERT 45 hours O ML P	O 3 ML 6 P 12 PERT 7 O 3 ML 6 P 12 PERT 7
Active	10A	Threat	Environmental	Access for Studies	As a result of restricted access for several parcels within the ESL that has kept the project biologist from surveying portions of the project, unexpected sensitive areas could be encountered later in project development when access to these areas is obtained, which would lead to unexpected increased costs or project delays.	Assumptions have been made concerning the habitat type within the un-surveyed areas, and environmental staff are moving forward with studies and deliverables.	Encountering unknown sensitive areas after PTE access is granted.	3-Moderate (31 50%) 40%	2 - Low (<$2,103k) 4 - Moderate (1-3 months)	6 12	Accept	Environmental is assuming that a portion of the restricted area is wetland habitat.	Environmental/R OW	4/8/2019	0-PA&ED Sup 1-PS&E Sup		O ML P O ML P	O ML P O ML P
Active	17	Threat	Environmental	Tribal Consultation	As a result of Federal and State Law requiring Tribal outreach and, if solicited, Tribal Consultation, Native American Tribes could designate part of the project area as a sacred or historical gathering site, the cultural study could be delayed which would delay DED and/or PA&ED and/or require mitigation.	No Tribe has responded to outreach efforts.	The tribe initiates formal consultation	1-Very Low (1-10%) 40%	2 - Low (<$2,103k) 8 - High (3-6 months)	2 8	Accept	Careful monitoring of Tribal relations by cultural staff and communication with environmental staff and PDT if a Native American Tribe initiates consultation	Environmental	4/8/2019	0-PA&ED Sup 1-PS&E Sup		O ML P O ML P	O ML P O ML P
					As a result of coordination between a property owner and Caltrans mitigation biologists, the	The property owner of the parcel has expressed a desire to sell the property to Caltrans. Caltrans would	The PDT pursues the	3-Moderate (31 50%)	4 - Moderate ($2,104k - $4,206k	12		Currently no action is to be taken. The PDT would need to acknowledge and agree on this path forward in order			0-PA&ED Sup		O ML P	O ML P

Risk Identification								Risk Assessment			Risk Response				Quantifying "Red" (High P & I) Level Risks			
Status	ID #	Type	Category	Title	Risk Statement	Current status / assumptions	Risk Trigger	Probability (P)	Cost Impact Schedule Impact (I)	Cost Score Schedule Score (PxI)	Strategy	Response Actions	Risk Owner	Updated	Impacted Phase	Calculated Contingency	Support (hours) Capital Cost $k	Schedule (Days)
Active	18	Opportunity	Environmental	Jacobs Property	purchase of the Jacobs property for the purpose of mitigation for this project may occur, which would lead to decreased mitigation costs.	need buy-off from resource agencies. Resource agencies currently do not agree that the parcel could be used for Calpella	purchase of the Jacobs property	40%	1 - Very Low (Insignificant)	3	Accept	to capitalize on this opportunity. Caltrans would need to convince resource agencies of the property's value for the Calpella project.	Environmental	4/9/2019	1-PS&E Sup		O ML P	O ML P
Active	19	Threat	Environmental	New Agency Liaisons	As a result of new agency liaisons at CDFW, NMFS, and USACE, unknown issues related to the development of working relationships may occur, which would lead to increased expenses (e.g., mitigation ratios) and permit/consultation delays that could affect project milestones.	Consultation with agencies is ongoing, and no issues have developed so far.	Coordination with the new liaisons does not proceed as planned.	2-Low (11-30%) 40%	2 - Low (<$2,103k) 4 - Moderate (1-3 months)	4 8	Mitigate	Early and frequent consultation will be conducted with the agencies to identify and address any issues as early as possible.	Environmental	4/9/2019	0-PA&ED Sup 1-PS&E Sup		O ML P	O ML P
Active	20	Threat	Environmental	NMFS Consultation	As a result of the current Biological Opinion and Biological Assessment procedures for Caltrans and NMFS, unexpected delays of the Biological Assessment from NMFS may occur, which would lead to delays in permits and project milestones.	Coordination with NMFS is ongoing and the BA/BO is in progress. Consultation will begin when Caltrans submits the BA to NMFS this summer.	BO/BA process with NMFS does not proceed as planned	3-Moderate (31 50%) 40%	2 - Low (<$2,103k) 4 - Moderate (1-3 months)	6 12	Mitigate	Coordination is ongoing. Early and frequent coordination will be conducted with NMFS to identify and address any issues as early as possible.	Environmental	4/9/2019	0-PA&ED Sup 1-PS&E Sup		O ML P	O ML P
Active	20	Threat	Environmental	NMFS Take Permit	As a result of the necessity of a Take Permit for protected fish species and that Caltrans biologists must apply for this permit with an estimated amount of "take" of the species, an underestimate of the amount of "take" the project will have may occur, which would lead to a re-initiation of formal consultation with NMFS and delay project milestones.	Consultation with NMFS is ongoing and estimations for "take" amounts are in progress	Caltrans exceeds the estimated "take" of the Take Permit	2-Low (11-30%) 40%	2 - Low (<$2,103k) 4 - Moderate (1-3 months)	4 8	Mitigate	Caltrans biologists will estimate "take" with worst case scenarios from construction and design in mind. This will limit the possibility that Caltrans exceeds the estimated "take".	Environmental	4/9/2019	0-PA&ED Sup 1-PS&E Sup		O ML P	O ML P
Active	21	Threat	Environmental	Limited Onsite Planting Space	As a result of limited onsite planting availability, more off-site plantings than anticipated may be necessary, which would increase project costs.	Current revegetation estimates have contingency costs. And consultation with resource agencies is ongoing.	After construction, the onsite area to revegetate is smaller than estimated.	2-Low (11-30%) 40%	2 - Low (<$2,103k) 4 - Moderate (1-3 months)	4 8	Mitigate	Caltrans biologists and revegetation/mitigation specialists will work with resource agencies to identify creative and applicable solutions for planting onsite, such as existing habitat enhancement, that increase our onsite planting credit.	Environmental	4/9/2019	0-PA&ED Sup 1-PS&E Sup		O ML P	O ML P
Active	22	Threat	Environmental	Oak Mitigation	As a result of oak removal, it may be determined that Oaks Impacts are significant , which would require mitigation and increase the capital and support costs for oak mitigation.	Environmental has determined that the impacts to oaks are not significant, and therefore mitigation is not required.	If, after agency consultation, environmental determines that oak impacts are significant.	2-Low (11-30%) 20%	2 - Low (<$2,103k) 2 - Low (<1 month)	4 4	Escalate	If the agencies feel that the oak impacts are significant, this issue will be elevated in Environmental for further discussion with agencies.	Environmental	9/19/2019				
Active	23	Threat	Geotechnical	Drilling Contract Delay	As a result of the lack of a geotechnical consultant contract, a delay in drilling may occur, which could result in delays and unknown soil conditions that have could increase capital costs.	Geotech was scheduled to Drill in Summer of 2019 during PAED, but is currently on hold pending a new Geotech contract. Current in-house staffing is unavailable.	If drilling is not complete and information is not provided to design prior to PaED or within the current FY of delivery 19/20.	3-Moderate (31 50%) 40%	2 - Low (<$2,103k) 8 - High (3-6 months)	6 24	Escalate	Geotech will track the progress of the geotechnical contract and provide an update to PM on a monthly basis. If the drilling is not schedule with a task order in place by 2/2019 the PM will escalate.	Geotechnical	9/19/2019	1-PS&E Sup	$2k	O 15 hours ML 30 hours P 45 hours PERT 30 hours	O ML P

M e m o r a n d u m

Serious drought.
Help save water!

To: **GARY BLAKESLEY**
Chief, Bridge Design Branch 6
Division of Engineering Services
Office of Bridge Design North and Central

Attn: Hilario Tuazon, Jr.

Date: June 12, 2015

File: 01-MEN-20-PM 33.6
Russian River BOH
Br. No. 10-0182
EA: 01-0E090K
EFIS: 01-1300-0123

From: **JOSE VARGAS**
Transportation Engineer (Civil)
Division of Engineering Services
Structure Hydraulics & Hydrology Branch

Subject: **Preliminary Hydraulic Report (PHR) for Russian River BOH (Br. No. 10-0182)**

The PHR request memo dated 1/27/15 indicated a requested completion date of 2/24/15. Due to the general hydraulic/scour complexity of the bridge site and the multiple alternatives being evaluated, additional review time was required. Other urgent project delivery commitments also caused delays in the completion of this study. The hydraulic/scour evaluation for the above-mentioned structure is provided below. The proposed project includes several alternatives:

Alternative 1 - Deck Replacement (existing foundations)
Alternative 2 - Deck Replacement & Widening (add new piers on both sides of existing piers)
Alternative 3A - Bridge Replacement, steel composite girders (3-span, 2 new piers)
Alternative 3B - Bridge Replacement, CIP, P/S concrete box girder (3-span, 2 new piers)
Alternative 4 - Deck Replacement & Widening-Right (downstream side), (new piers added)

The preliminary hydraulic/scour evaluation is based on an office review of available bridge hydraulic files, bridge inspection/maintenance reports, channel cross-sections, previous studies, and other required assumptions. Preliminary hydraulic/scour results were based on a simplified hydraulic model using a single 2006 (upstream) channel cross-section and assumed discharges, longitudinal channel slope, and composite Manning's "*n*" roughness coefficient for the channel.

It should be emphasized that the information provided at this time is subject to change as more detailed information becomes available. Due to significant limitations of using a single channel cross-section hydraulic model for the preliminary hydraulic/scour analysis and considering the complex bridge foundations for some alternatives, final hydraulic conditions and calculated scour depths may potentially change significantly when a more detailed hydraulic analysis is completed for the Final Hydraulic Report (FHR) during the final design phase of the project.

Bridge Site Description

The Russian River Bridge and Overhead (BOH), Br. No. 10-0182, site is located on State Route 20 in Mendocino County. The existing bridge was built in 1958, widened in 1991, and seismically retrofitted in 1997. According to Bridge Inspection Reports (BIR's), the bridge structure is described as, "*simply-supported 4-span welded steel plate girders (5), with a*

composite CIP/RC deck, on RC hammerhead bent caps on RC round single-column piers, with full height seismic retrofit steel shell, and RC open end seat abutments, all founded on driven steel H piles. The west end of the girders in each span rests on an expansion (rocker) bearing; the east end rests on a fixed/pinned bearing". The total bridge length and total width are roughly 440.3 feet and 35.0 feet, respectively.

A vertical datum is not specified in the 1958 As-Built plans. For general comparison purposes, the elevations shown on available As-Built plans are assumed to be referenced to NGVD29 for this study only. However, the actual vertical datum for the bridge plans should be first determined and/or confirmed in order to directly compare estimated elevations determined in this study to elevations with known vertical datums.

Discharges

The 50-year and 100-year frequency discharges for the bridge site were estimated using the United States Geological Survey (USGS) StreamStats online/web-based software program and the regional regression methods presented in the USGS Scientific Investigations Report (SIR 2012-5113). Based on the watershed delineation and basin characteristics provided by StreamStats for the bridge site, the calculated watershed (drainage) area is roughly 84.0 square miles (sq. mi.) and the mean annual precipitation is 47.3 inches.

Using the results from StreamStats and applicable regional regression equations, the 50-year and 100-year frequency discharges for the bridge site are roughly 16,620 cubic feet per second (cfs) and 19,200 cfs, respectively (values rounded off to the nearest 10 cfs). It may be noted that the 50-year and 100-year frequency discharge events may also be referred to as the 2% and 1% Annual Exceedance Probability (AEP) flood, respectively.

For comparison purposes, the current Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) for Mendocino County (effective date of 6/2/11) indicates 50-year and 100-year frequency discharges of 17,300 cfs and 19,200 cfs, respectively, near the bridge site (upstream of the Russian River confluence with York Creek; drainage area of 87.0 sq. mi.).

For preliminary recommendations, the 50-year and 100-year discharges based on the USGS StreamStats results were considered and reported for this study. It may be noted that the 100-year frequency discharge using USGS StreamStats and the FEMA FIS discharge are the same.

Water Surface Elevations (WSEL's)

Based on the assumed discharges, WSEL's at the bridge site were calculated using a single channel cross-section (dated 10/12/06) taken on the upstream side of the existing bridge. A longitudinal channel slope of 0.00307 for the bridge site was estimated using the streambed profile shown on the FEMA FIS Flood Profile. A single composite Manning's "*n*" roughness coefficient of 0.048 for the channel cross-section was assumed based on photos of the bridge site and previous hydraulic studies. Based on the simplified hydraulic model (which does not include any potential backwater effects), the calculated WSEL's at the upstream face of bridge for the 50-year and 100-year frequency discharges are roughly 664.7 feet and 665.6 feet, respectively (assumed as NGVD29).

For comparison purposes, the current FEMA FIS and Flood Insurance Rate Map (FIRM) for this area provide estimated WSEL's at the bridge site. Based on the FEMA FIS frequency discharges and FIS flood profiles, the 50-year and 100-year WSEL's at the bridge site are roughly 678.1 feet and 679.2 feet, respectively (Vertical Datum: NAVD88). For comparison purposes, applying the vertical datum conversion factor indicated in the FEMA FIS of "*+2.85 feet*" from NGVD29 to NAVD88 (*NGVD29 + 2.85 feet = NAVD88*) for this location, the estimated FEMA 50-year and 100-year WSEL's in NGVD29 are roughly 675.3 feet and 676.4 feet, respectively.

It may be noted that the WSEL's in the FEMA FIS for the bridge site are roughly 11 feet higher than WSEL values calculated for this study. The significant difference in WSEL's may be due to differences in channel cross-section(s), slope, and roughness coefficients used in each study and other long-term channel changes (i.e. degradation, channel geometry, etc.). The WSEL's calculated based on the single 2006 channel cross-section and other assumptions are reported for this study.

Velocity

Based on the 100-year frequency discharge and simplified hydraulic model results, the calculated peak local water velocity at the bridge site is roughly 9.0 feet per second (ft/sec) within the main channel (thalweg) area. The calculated average local water velocity at the bridge site is roughly 8.0 ft/sec. More detailed hydraulic models based on current field survey data may potentially indicate local peak velocities significantly different than reported in this study.

Historical Highwater

The current FEMA FIS provides an estimated historical highwater mark elevation of 675.51 feet (NAVD88) for the Russian River at the State Highway 20 bridge. Converted to NGVD29, the FEMA FIS highwater elevation is roughly 672.7 feet. The highwater record was based on USACE's highwater elevation for the 1964 flood. For information purposes, the current General Plan sheet for the existing bridge shows a highwater elevation of 672.5 feet, which is assumed to be the estimated FEMA FIS highwater elevation (difference due to conversion / rounding off).

Bridge Soffit Elevation and Freeboard

Due to being a Bridge and Overhead (BOH) structure spanning over a railroad facility, minimum vertical clearance requirements above the railroad track must be maintained. The railroad clearance requirements for the bridge soffit would be expected to supersede minimum soffit elevation requirements based only on hydraulic requirements. Matching the existing minimum soffit elevation or placing the new soffit higher would be expected to meet both railroad clearance and hydraulic site requirements.

Drift/Debris

Available bridge records for the existing bridge indicate some past drift/debris accumulation at or near the existing Pier 3 and Pier 4 locations. In the records, the drift/debris is generally described as "*timber drift*" and "*logs & drift*". In terms of a description of drift dimensions/size, a Bridge Inspection Report (BIR) dated 6/10/02 indicates, "*Pier 3 has drift debris piled up against the upstream side. One of the logs jammed against the pier measures 300mm in diameter by 20-30m in length.*" Roughly converted to English units, the noted log dimensions are roughly 1.0 foot in diameter and 66-98 feet in length.

Based on available records and images of the bridge site, there appears to be some potential drift sources (including some Redwood logs and drift material) located upstream and within/adjacent to the main channel area, some of which may potentially be transported downstream and reach the bridge site during more significant flood events. Due to the location and orientation of the railroad bridge crossing underneath the existing State bridge structure, the upstream railroad bridge piers may tend to catch some of the floating drift which may otherwise pass through this bridge waterway during larger flood events; therefore, reducing some of the total potential drift reaching and accumulating at the State bridge piers.

It is generally assumed and recommended that any significant drift accumulation at the piers or bridge site is periodically removed by Caltrans Maintenance or others, as needed. In addition, removing drift accumulations at the upstream railroad piers (within State Right-of-Way, ROW) would help reduce the total amount of drift passing through the State bridge waterway.

Long-Term Channel Stability

Bridge records with ground elevation information and/or recorded channel cross-sections at the bridge were located for the following years: 1958 (original ground as shown on the As-Built Foundation Plan and Log of Test Borings, LOTB), 1972, 1995, 1997, 2002, and 2006. All recorded channel cross-sections were taken along the upstream side (face) of the bridge except for the channel cross-section dated 11/18/97, which was taken on the downstream side. Therefore, the 1997 cross-section is not directly comparable to the other recorded cross-sections. A plot of available historical (upstream bridge face) channel cross-sections is shown on **Figure 1** on **Page 6**.

Vertical Stability - Degradation

Available historical cross-sections at the bridge site indicate the main channel area has generally remained between Piers 2 and 4. If strictly comparing thalweg elevations (at different reference locations), the main (active) channelbed area appears to have degraded approximately 6.0 feet between 1972 and 2006 (34 years). If comparing ground elevations at the centerline of Bent 3 (at the same reference point), the difference is roughly 4.4 feet. Calculated average degradation rates based on these two estimates are 0.18 ft/yr (2.2 in/yr) and 0.13 ft/yr (1.6 in/yr). Conservatively assuming the current degradation rates continue in the future, total degradation (depth) estimates for a 75-year design period are roughly 13.5 feet and 9.8 feet, respectively. For preliminary purposes, potential total degradation of 10.0 feet is assumed based on the lower calculated degradation rate.

It should be noted that the 1999 scour evaluation estimated continued degradation (depth) of roughly 2.6 feet for the site. Although the calculated degradation rate was similar to the rate estimated in this study, the 1999 estimated degradation depth only considered "*a 20-year residual life of the structure*" (design period). If the selected alternative relies on the existing foundations for support (i.e. Alternatives 1, 2, or 4), discussions with the Structure Maintenance & Investigations (SM&I) Hydraulic Branch may help determine whether an updated bridge scour evaluation (Item 113 code) is necessary which considers a longer design period (i.e. 75 years, 100 years, etc.) for the "new" bridge. Long-term scour countermeasures may be necessary for Alternatives 1, 2, or 4 to provide localized scour protection.

Available aerial images (Google Maps) appear to show an aggregate/gravel mining site located adjacent to the Russian River roughly 2.3 miles downstream of the bridge site. In general, removal of naturally-deposited channelbed material from a channel system may potentially impact the natural sediment transport process along the river reach, which may affect channel conditions/characteristics and general vertical/horizontal channelbed stability (degradation, migration, etc.).

Lateral Stability - Migration

From available channel cross-sections, the thalweg (the lowest point in the channel) has generally remained between Piers 2 and 4 (Spans 2 and 3). Based on the most current cross-section available (2006), the main active channel area (waterway) on the upstream side of the bridge is located between Piers 2 and 4. For information purposes, the estimated thalweg elevation on the upstream side of the bridge based on the 2006 channel cross-section is roughly 650.1 feet and is located between Piers 2 and 3 (near mid-span).

Some lateral migration of the channel has been noted in bridge records. A BIR dated 12/27/64 regarding storm damage occurring between December 21-27, 1964, states:

> "*During a period of heavy run-off the channel shifted about 50' to the east destroying a portion of the railroad bridge upstream and dislodging the rock bank protection in the area. In addition at pier 4, formerly out of the channel, the embankment was scoured out down below the bottom of footing. The configuration of the easterly bank is such that further moderately heavy run-offs will cut into the bank until the easterly approach fill is endangered. As an emergency measure the District intends to "end dump" rock at selected locations to keep damage to a minimum until such time as permanent repairs can be made.*"

Several reports note periodic observed scour and placement of large/heavy RSP at the existing piers and abutment embankments (roadway approaches). For example, a Revised Original Report dated 12/11/74 indicates, "*Pier 4 footing is scoured all way around. Undermining has begun on westerly side.*" and recommended to "*Place additional rock protection along westerly side of pier 4 footing as soon as possible to prevent further undermining*". More recent reports indicate footing/pile cap exposure at Piers 3 and 4 of roughly 50cm to 60cm (20 - 24 inches) and that no significant changes have occurred recently.

There is insufficient information to accurately determine or reliably predict future long-term lateral stability at this bridge site. Relatively dry (drought) conditions in California in the recent past with few or no significant flood events may have contributed to the "no significant changes" noted in more recent bridge inspection reports. Based on historical information and proximity of the main (active) channel area to the piers, potential lateral migration to any pier location within the main/active channel area is conservatively assumed. Potential concerns of water-related damage at the Abutment 5 roadway approach has also been mentioned in the past. It is assumed that any significant future bank erosion issues and/or thalweg migration issues at this site may potentially be a relatively gradual process that would likely allow some time to detect (during scheduled bridge inspections and/or other site visits) and address concerns as required.

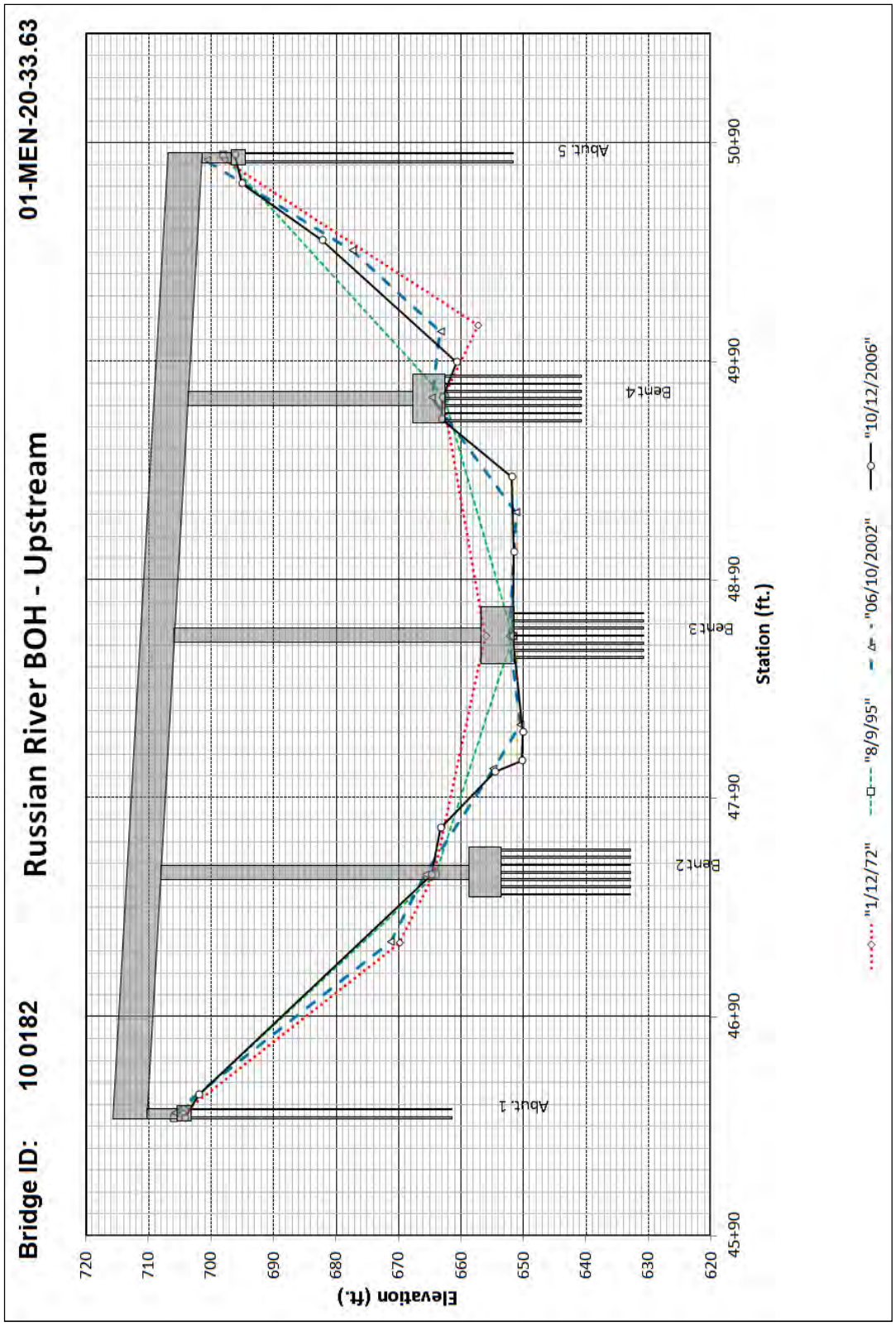


Figure 1 - Historical Channel Cross-Sections (Upstream Side of Bridge)

Scour

Current Item 113 Scour Code Rating

The existing bridge was first evaluated for scour potential in 1999 by the Structure Maintenance & Investigations (SM&I) Hydraulics Office, SM&I Ratings Office, Structure Hydraulics, and Division of Engineering Services (DES) Geotechnical Services. Based on a BIR dated 8/17/99, the Item 113 Scour Code was changed from 6 to 5. The report states, "*Although the pile caps for Piers 3&4 are currently exposed, the foundations are not yet scour critical. Several design storm events will be necessary to significantly damage Pier 3 and 4 foundations and require their repair. Geology DSM&I Ratings and Structure Hydraulics believes that the rate of scour and foundation damage can be monitored by the Structure Maintenance between storm events. During the process of monitoring, it will be evaluated by Structure Hydraulics if further pier scour countermeasures are needed. It is also recommended that ABME personnel should obtain a stream cross section at 5-year intervals and after every significant storm event (Floods with return periods of 10 years or more).*"

Although the 1999 scour evaluation determined the existing bridge was not currently scour critical, the report noted that several design storms could significantly damage the foundations at Piers 3 and 4. Continued periodic monitoring and stream cross-sections were recommended. A subsequent BIR dated 10/12/06 generally repeated the 1999 evaluation results/recommendations.

Pier Scour Assumptions

Several site-specific factors and bridge details increase the overall hydraulic and scour complexity of this bridge site, including complex pier foundations (columns, footings/pile caps, piles), the "*deflector wall*" located between the State bridge Pier 3 and the adjacent railroad pier, and the interaction between the State bridge and railroad bridge (piers and abutments). Due to the complex hydraulic/scour conditions at the bridge site, potential scour depth estimates provided in this study are based on simplified assumptions. Potential scour depths provided in this study may change significantly when a more detailed hydraulic/scour analysis is completed for the Final Hydraulic Report (FHR) during the final design phase of the project.

Conservatively assuming full lateral channel migration may potentially occur mainly within the historical main channel area (between Piers 2 and 4), preliminary scour depths are provided for pier locations only. Potential abutment scour was not calculated at this time, but will be re-evaluated for the FHR. Due to the general location of the abutments relative to the main channel waterway area, it is generally assumed that any future potential scour-related or lateral channel migration issues at either abutment (bank slope) locations may tend to occur more gradually, which would likely allow adequate time to detect and address concerns as required.

The scour analysis considered a 100-year flood event and was based on calculated hydraulic results using a single, upstream-side channel cross-section taken in 2006. For scour analysis purposes, 2.0 feet of additional floating drift/debris width on each side of each pier stem (column) was assumed; no drift/debris was assumed for the pile caps/footings or the piles. Potential thalweg migration to any pier location (Piers 2 - 4) was conservatively assumed. No hydraulic skew was assumed at the piers for the study. Potential contraction scour was not calculated at this time due to lack of channel (cross-section) information upstream of the bridge site.

Alternatives 1, 2, and 4 propose utilizing the existing foundations for full or partial support. Alternatives 2 and 4 include placing additional new (smaller) foundations next to the existing larger foundations. Although the new smaller footings proposed for Alternatives 2 and 4 may potentially produce lower local scour depths if analyzed independently (as compared to the larger existing foundations), the additional "new" foundations would be placed adjacent to the existing foundations; therefore, the potential scour depth/elevations for the existing, larger foundations were conservatively assumed for Alternatives 2 and 4 as the controlling local scour condition. For comparison purposes, the preliminary potential local scour estimated for Alternatives 3A and 3B were based on the new BOF elevations matching the BOF elevations of the existing foundations and also assumed the "no tremie seal" condition as considered for the existing foundations.

The current HEC-18 Manual, "*Evaluating Scour at Bridges*", (5th Edition, April 2012) includes equations for pier scour in coarse bed materials ("coarse-bed armoring") which may reduce the calculated scour depth for the pier stem component only (i.e. not applicable for footing/pile cap or piles for complex pier scour) under certain applicable conditions. Based on the current hydraulic results and estimated surface channelbed gradation (based on a field visual estimate in 2006), the channelbed armoring reduction does not appear applicable for this site. However, the potential applicability of the coarse-bed armoring equation for the pier stem component of complex pier scour may be re-evaluated for the FHR study when a more accurate hydraulic model is completed. If applicable, channelbed armoring may decrease the calculated scour for the pier stem component, thus decreasing the total scour depth for bridge design purposes.

Table 1 - Calculated Potential Scour Depths/Elevations (Lateral Migration Case)

Description of Item	**Alternatives 1, 2, & 4**			**Alternatives 3A & 3B**	
	Pier 2	***Pier 3***	***Pier 4***	***Piers 2 and 3***	
Thalweg **Elevation**, feet *(2006 channel cross-section, upstream side)*	650.1	650.1	650.1	650.1	650.1
Degradation Depth, feet *(assumed typical 75-year bridge design period)*	10.0	10.0	10.0	10.0	10.0
Long-Term Degradation **Elevation**, feet	640.1	640.1	640.1	640.1	640.1
Local Pier Scour Depth, feet	15.0	20.0	10.0	17.0	17.5
TOTAL Scour **Elevation**, feet	625.1	620.1	630.1	623.1	622.6

NOTES:

(1) Scour depths conservatively assume fully-scourable channelbed material and are rounded off to the nearest 0.5 feet.

(2) Potential contraction scour was not calculated at this time due to lack of channel cross-section data.

(3) For Alternatives 2 and 4, the more conservative scour depths/elevations based on the existing foundations are assumed to supersede the potential scour depths/elevations for the new adjacent foundations.

(4) For Alternatives 3A and 3B (new bridge piers/foundations), the BOF elevations for the new pile caps/footings were assumed to match the existing foundation details for preliminary scour calculation purposes only - final scour depths for the new foundations will be determined based on the final foundation details. Estimated scour values for the new foundations considered the "no tremie seal" condition as considered for existing foundations (the additional 2.5 feet thickness due to the proposed tremie seal would be expected to slightly increase calculated scour).

Based on a Memo dated 5/5/99 to SM&I Hydraulics from SM&I Stability Rating Branch, structure stability analysis for the existing bridge foundations indicated a minimum of 7 feet of pile embedment in competent soil must be maintained for the piles to maintain fixity and stability. The stability analysis did not consider pile soil bearing capacity and recommended contacting the Office of Structural Foundations to evaluate the pile bearing capacity.

For reference purposes, the bottom-of-footing (BOF) elevations and average pile tip elevations for the existing foundations are included on **Table 2**. Based on average pile tips at Piers 2 - 4, the estimated "foundation stability (cut-off) elevations" based on maintaining a minimum of 7 feet of pile embedment are shown below. Assuming potential (full) thalweg migration to any pier location, the local ground elevation at the centerline of the pier would be roughly 650.1 feet. Considering this thalweg elevation, the estimated total local depth of combined "degradation and local pier scour" allowed at each pier location before reaching the estimated "foundation stability elevation" is shown in **Table 2**.

Table 2 - Bottom-of-Footing & Average Pile Tip Elevations for Existing Foundations

	Pier 2	**Pier 3**	**Pier 4**
BOF (footing/pile cap) **Elevation**, feet *(BOF elevations as shown on the 1997 Seismic Retrofit Plans)*	653.5	651.5	662.5
Average Pile Tip **Elevation**, feet	632.8	630.7	640.7
Thalweg **Elevation** at Pier Centerline, feet *(2006 channel cross-section, upstream side)*	650.1	650.1	650.1
Estimated "Foundation Stability **Elevation**", feet *(assumed as 7 feet above average pile tip elevation)*	639.8	637.7	647.7
Total Depth of "Degradation and Local Pier Scour" to Reach the Foundation Stability Elevation, feet	10.3	12.4	2.4

NOTE:
"Foundation Stability Elevation" based on 5/5/99 memo from SM&I Stability Rating Branch which indicated a minimum of 7 feet of pile embedment in competent soil for piles to maintain fixity and stability. For this evaluation, "foundation stability elevations" assumed as 7 feet above average pile tip elevation.

Based on the current degradation/scour assumptions considered for this study, the estimated total degradation/scour depths and/or elevations would extend below the estimated maximum scour "cut-off" elevation of the piles as indicated by SM&I Ratings Branch in 1999, which may potentially cause foundation instability.

In summary, calculated potential scour depths/elevations for Alternatives 1, 2, and 4 (i.e. the "new" bridge is fully or partially supported on the existing foundations) indicate local pier scour countermeasures would likely be required for long-term foundation stability for the "new" bridge structure. Alternatives 3A and 3B would include new foundations which would be designed to account and meet the appropriate scour, seismic, BOH (railroad), design requirements for the site.

Other Considerations

Bottom-of-Footing (BOF) Elevations for the Existing Foundations

Comparing the BOF (pile cap) elevations shown for Piers 2 - 4 on the 1958 As-Built plans and the 1997 Seismic Retrofit plan details, there appears to be a discrepancy of 2.5 feet. The BOF elevations (in feet) for Piers 2 - 4 shown on the 1958 As-Built plans are 651.0, 649.0, and 660.0, respectively. The BOF elevations (in feet) for existing Piers 2 - 4 shown on the 1997 Seismic Retrofit plans are 653.5, 651.5, and 662.5, respectively.

A note shown on the 1958 As-Built plans indicates the tremie seal was eliminated for the footings/pile caps (the thickness of the tremie seal was shown as 2.5 feet). The "crossed out" note on the plans also indicates, "*When seal is not used, the bottom of the reinforced footing shall be placed at the elevation shown for bottom of seal*." However, it is unknown whether the BOF was placed at the indicated "bottom of (tremie) seal" elevation or whether the tremie seal was simply eliminated and the originally-designed BOF was maintained. Assuming that the tremie seal was simply eliminated, the noted BOF elevations for Piers 2 - 4 based on the 1997 Seismic Retrofit plans (the "no tremie seal" condition) were considered for this study.

Caltrans Geotechnical Branch Recommendations

Caltrans Geotechnical Services Branch should be consulted regarding preliminary scour evaluation results. Geotechnical Services may also provide some updated information or recommendations regarding local site conditions and other geotechnical features or factors which may potentially affect or limit the predicted total scour depths and/or the potential long-term horizontal/vertical stability of the channel (migration, degradation, etc.).

Preliminary Hydraulic Results & Recommendations

- The National Bridge Inspection Standards (NBIS) Item 113 Code for Scour is currently "5".

- Estimated maximum local (water) velocity in the main channel (thalweg) area is 9.0 ft/sec.

- The scour evaluation completed by the SM&I Hydraulics Office in 1999 concluded that the existing bridge was not "*yet scour critical*", but recommended continued monitoring (periodic channel cross-sections). The 2006 review (BIR) only considered estimated future degradation for a 20-year design period - which was the assumed "*residual life*" of the structure at that time.

The "new" bridge superstructure for Alternatives 1, 2, and 4 would either be fully or partially supported on the existing foundations. Alternatives 3A and 3B would be full bridge replacements with new foundations which would be designed to account for requirements and conditions for scour, seismic, bridge and overhead, etc. If a full bridge replacement option is not selected, the existing foundations for the "new" bridge would need to consider potential local scour and long-term degradation effects which may occur within an assumed 75 to 100-year bridge design/service period, which is typically assumed for new bridges.

The selection of a bridge alternative which relies on the support of the existing foundations may potentially require long-term scour countermeasures to provide localized scour protection. A discussion between Bridge Design, SM&I Hydraulics, Geotechnical Services, and Structure

Hydraulics would better determine whether an updated scour evaluation and/or Item 113 Code change is necessary and may also help resolve other potential issues or concerns.

If Alternatives 3A and 3B (new bridges and foundations) are selected, the proposed foundations should be designed accordingly for the anticipated hydraulic/scour conditions and long-term degradation, which may include placing the pile cap/footing and piles deeper (as compared to the existing foundations). As an alternative, modifying the pile cap configuration/orientation to minimize the cross-sectional obstruction area perpendicular to the main flow direction (i.e. "streamlining" the foundations to minimize flow obstructions) and/or considering foundation types with smaller "hydraulic/scour footprints" (i.e. circular piers, CIDH, CISS, etc.) than large-sized, complex foundations (pier column/pile cap/piles) would be expected to result in lower total scour depths and may reduce the required foundation design depths.

• The preliminary hydraulic/scour analysis results reported for this study were based on a simplified hydraulic model using a single, upstream-side channel cross-section taken in 2006 and relies heavily on current assumptions based on limited information available. There is a wide range of possible hydraulic/scour analysis results due to many site-specific factors and assumptions (or combinations of assumptions) considered for this study. When a more detailed and refined hydraulic model is completed during the final design phase of the project, hydraulic/scour results and recommendations provided at this time may change significantly.

Hydrologic / Hydraulic Summary			
Total Drainage Basin Area: 84.0 square miles			
	Design Flood	**Base Flood**	**Overtopping Flood**
Frequency, years	50	100	N/A
Discharge, cfs	16,620	19,200	N/A
Water Surface Elevation at Bridge, feet	664.7	665.6	N/A
Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.			

NOTE: The reported discharges are based on USGS StreamStats results. The reported WSEL's were calculated using the 2006 upstream-side channel cross-section and current assumptions used for this study. For comparison purposes, the WSEL's shown on the 2011 FEMA FIRM/FIS based on the FEMA's 50-year and 100-year frequency discharges at the bridge site are roughly 675.3 feet and 676.4 feet, respectively (values converted from NAVD88 to NGVD29 using the indicated local vertical datum adjustment of 2.85 noted in the FEMA FIS).

If you have any questions or concerns, please contact me at (916) 227-9856 or the Acting Structure Hydraulics & Hydrology Branch Chief, Tony Nedwick at (916) 227-8852.

ATTACHMENT E

COST ESTIMATE

PROJECT
PROJECT REPORT COST ESTIMATE

EA: 0I-0E090

PID: DS1234567

EA: 0I-0E090 PID: D51234567

District-County-Route: 01-MEN-20

PM: 33.3-34.4

Type of Estimate : Draft Project Report

Program Code : 20.XX.201.110 Project

Limits: 0I-MEN-20-33.3/34.4

Project Description: Bridge Deck Rehabilitation

Scope : Bridge Deck Rehabilitation

Alternative : 1: New Structure on Southern Alignment

SUMMARY OF PROJECT COST ESTIMATE

	Current Year Cost	Escalated Cost
TOTAL ROADWAY COST	$ 14,518,600	$ 15,957,462
TOTAL STRUCTURES COST	$ 15,770,000	$ 17,332,882
SUBTOTAL CONSTRUCTION COST	$ 30,288,600	$ 33,290,345
TOTAL RIGHT OF WAY COST	$ 1,946,667	$ 2,064,000
TOTAL CAPITAL OUTLAY COSTS	**$ 32,236,000**	**$ 35,355,000**
PR/ED SUPPORT	$ 2,787,000	$ 3,365,000
PS&E SUPPORT	$ 2,632,000	$ 2,771,000
RIGHT OF WAY SUPPORT	$ 255,000	$ 336,000
CONSTRUCTION SUPPORT	$ 7,824,000	$ 7,580,000
TOTAL SUPPORT COST	**$ 13,498,000**	**$ 14,052,000**
TOTAL PROJECT COST	**$ 45,750,000**	**$ 49,407,000**

If Project has been programmed enter Programmed Amount

	Month	/	Year
Date of Estimate (Month/Year)	4	/	2020
Estimated Construction Start (Month/Year)	11	/	2021
Number of Working Days =	760		
Estimated Mid-Point of Construction (Month/Year)	10	/	2023
Estimated Construction End (Month/Year)	6	/	2025

Number of Plant Establishment Days

Estimated Project Schedule

PID Approval	06/22/15
PA/ED Approval	04/15/20
PS&E	05/12/21
RTL	05/31/21
Begin Construction	11/01/21

Reviewed by District O.E. or Cost Estimate Certifier

Office Engineer / Cost Estimate Certifier	Date	Phone
	4/6/20	530-741-7152

Approved by Project Manager

Project Manager	Date	Phone

I. ROADWAY ITEMS SUMMARY

	Section		Cost
1	Earthwork	$	1,224,500
2	Pavement Structural Section	$	1,813,200
3	Drainage	$	184,700
4	Specialty Items	$	94,600
5	Environmental	$	4,963,000
6	Traffic Items	$	875,100
7	Detours	$	-
8	Minor Items	$	457,800
9	Roadway Mobilization	$	961,300
10	Supplemental Work	$	466,400
11	State Furnished	$	1,127,100
12	Time-Related Overhead	$	913,300
13	Roadway Contingency	$	1,437,600
	TOTAL ROADWAY ITEMS	**$**	**14,518,600**

Estimate Prepared By : Matt Smith, Project Engineer — 4/8/20 (Date) — (707) 445- 6526 (Phone)

Estimate Reviewed By : Caren Coonrod, Design Senior E2 — 4/13/20 (Date) — (707) 445-6229 (Phone)

By signing this estimate you are attesting that you have discussed your project with all functional units and have incorporated all their comments or have discussed with them why they will not be incorporated.

SECTION 1: EARTHWORK

Item code		Unit	Quantity		Unit Price ($)			Cost
190101	Roadway Excavation	CY	8,800	x	45	=	$	396,000
198010	Imported Borrow	CY	44,900	x	15	=	$	673,500
160103	Clearing & Grubbing	ACRE	3	x	35,000	=	$	105,000
	Tree Removal	LS	1	x	50,000	=	$	50,000

TOTAL EARTHWORK SECTION ITEMS $ 1,224,500

SECTION 2: PAVEMENT STRUCTURAL SECTION

Item code		Unit	Quantity		Unit Price ($)			Cost
390132	Hot Mix Asphalt (Type A)	TON	4,000	x	175	=	$	700,000
390137	Rubberized Hot Mix Asphalt (Gap Graded)	TON	1,300	x	200	=	$	260,000
39300X	Geosynthetic Pavement Interlayer (Type X)	SQYD	900	x	8	=	$	7,200
260203	Class 2 Aggregate Base	CY	7,450	x	65	=	$	484,250
397005	Tack Coat	TON	3	x	2,000	=	$	6,000
394073	Place Hot Mix Asphalt Dike (Type D)	LF	2,325	x	10	=	$	23,250
150771	Remove Asphalt Concrete Dike	LF	1,100	x	5	=	$	5,500
150860	Remove Base and Surfacing	CY	8,040	x	25	=	$	201,000
394090	Place Hot Mix Asphalt (Miscellaneous Area)	SQYD	500	x	30	=	$	15,000
153103	Cold Plane Asphalt Concrete Pavement	SQYD	3,900	x	15	=	$	58,500
394053	Shoulder Rumble Strip (HMA, Ground-In Indentations)	STA	50	x	150	=	$	7,500
394090	Pace HMA (Miscellaneous Areas)	SQYD	2,500	x	18	=	$	45,000

TOTAL PAVEMENT STRUCTURAL SECTION ITEMS $ 1,813,200

SECTION 3: DRAINAGE

Item code		Unit	Quantity		Unit Price ($)			Cost
150809	Remove Culvert	LF	30	x	110	=	$	3,300
152604	Modify Inlet	EA	5	x	2,600	=	$	13,000
15020X	Abandon Culvert	EA	1	x	2,000	=	$	2,000
510502	Minor Concrete (Minor Structure)	CY	5	x	2,000	=	$	10,000
610112	24" Alternative Pipe Culvert	LF	50		350		$	17,500
610117	30" Alternative Pipe Culvert	LF	230		280		$	64,400
692003	8" Entrance Taper	EA	7	x	1,120	=	$	7,840
692303	8" Anchor Assembly	EA	7	x	630	=	$	4,410
692020	8" Alternative Pipe Downdrain	LF	108	x	75	=	$	8,100
72XXXX	Rock Slope Protection (Type and Method)	CY	24	x	250	=	$	6,000
72901X	Rock Slope Protection Fabric (Class X)	SQYD	16	x	25	=	$	400
721420	Concrete (Ditch Lining)	CY		x		=	$	-
721430	Concrete (Channel Lining)	LS	1	x	21,500	=	$	21,500
750001	Miscellaneous Iron and Steel	LB	225	x	5.50	=	$	1,238
XXXXXX	Additional Drainage (Anticipated additional items)	LS	1	x	25,000	=	$	25,000

TOTAL DRAINAGE ITEMS $ 184,700

SECTION 4: SPECIALTY ITEMS

Item code		Unit	Quantity		Unit Price ($)			Cost
080050	Progress Schedule (Critical Path Method)	LS	1	x	5,000	=	$	5,000
070030	Lead Compliance Plan	LS	2	x	5,000	=	$	10,000
150661	Remove Guardrail	LF	1,060	x	10	=	$	10,600
832016	Midwest Guardrail System (7' Post)	LF	600	x	35	=	$	21,000
839584	Alternative In-line Terminal System	EA	4	x	5,000	=	$	20,000
839543	Transition Railing (Type WB-31)	EA	4	x	5,000	=	$	20,000
710167	Remove Terminal Systems	EA	8	x	1,000	=	$	8,000

TOTAL SPECIALTY ITEMS $ 94,600

SECTION 5: ENVIRONMENTAL

5A - ENVIRONMENTAL MITIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost	
	Off-site Mitigation	LS	1	x	3,100,000	=	$	3,100,000	
	Fish/Aquatic species biologist	LS	1	x	90,000	=	$	90,000	
	Bat Specialist	LS	1	x	50,000	=	$	50,000	
	Bird survey biologist	LS	1	x	7,000	=	$	7,000	
	Bat Exclusion	LS	1	x	100,000	=	$	100,000	
	Hydro-acoustic Monitoring	LS	1	x	150,000	=	$	150,000	
								Subtotal Environmental Mitigation	*$ 3,497,000*

5B - LANDSCAPE AND IRRIGATION

Item code		Unit	Quantity		Unit Price ($)			Cost	
200002	Roadside Clearing	LS	1	x	7,500	=	$	7,500	
202006	Soil Amendment	CY	20	x	185	=	$	3,700	
202038	Packet Fertilizer	EA	2,210	x	2.10	=	$	4,641	
204035	Plant (Group A)	EA	3,325	x	55	=	$	182,875	
204099	Plant Establishment Work	LS	1	x	200,000	=	$	200,000	
205035	Wood Mulch	CY	110	x	200	=	$	22,000	
205051	Foliage Protectors	EA	500	x	30	=	$	15,000	
205061	Root Protectors	EA	200	x	20	=	$	4,000	
208004A	Temp. Irrigation	LS	1	x	100,000	=	$	100,000	
								Subtotal Landscape and Irrigation	*$ 539,716*

5C - EROSION CONTROL

Item code		Unit	Quantity		Unit Price ($)			Cost	
210010	Move In/Move Out (Erosion Control)	EA	6	x	1,000	=	$	6,000	
210120	Duff	ACRE	0.50	x	7,000	=	$	3,500	
210360	Compost Sock	LF	12,000	x	10.50	=	$	126,000	
210270	RECP (Netting)	SQFT	6,000	x	1	=	$	6,000	
210300	Hydromulch	SQFT	210,000	x	0.17	=	$	35,700	
210430	Hydroseed	SQFT	210,000	x	0.30	=	$	63,000	
210445A	Imported Biofiltration Soil	CY	135	x	130.00	=	$	17,550	
210510A	Rip Soil	ACRE	1.60	x	3,000	=	$	4,800	
210610	Compost	CY	200	x	100	=	$	20,000	
210630	Incorporate Materials	SQFT	21,700	x	0.40	=	$	8,680	
								Subtotal Erosion Control	*$ 291,230*

5D - NPDES

Item code		Unit	Quantity		Unit Price ($)			Cost	
130300	Prepare SWPPP	LS	1	x		=	$	-	
130100	Job Site Management	LS	1	x		=	$	-	
	Temporary BMP (2.5% Capital Cost)	LS	1	x	600,000	=	$	600,000	
	Permanent BMP- DPPA, etc.	LS	1	x	35,000	=	$	35,000	
								Subtotal NPDES	*$ 635,000*

TOTAL ENVIRONMENTAL	**$**	**4,963,000**

Supplemental Work for NPDES

066595	Water Pollution Control Maintenance Sharing*	LS	1	x	0	=	$	-	
066596	Additional Water Pollution Control**	LS	1	x	0	=	$	-	
066597	Storm Water Sampling and Analysis***	LS		x		=	$	-	
								Subtotal Supplemental Work for NDPS	*$ -*

*Applies to all SWPPPs and those WPCPs with sediment control or soil stabilization BMPs.

**Applies to both SWPPPs and WPCP projects.

*** Applies only to project with SWPPPs.

SECTION 6: TRAFFIC ITEMS

6A - Traffic Electrical

Item code		Unit	Quantity		Unit Price ($)			Cost
86070X	Interconnection Conduit and Cable	LF/LS		x		=	$	-
5602XX	Furnish Sign Structure (Type X)	LB		x		=	$	-
5602XX	Install Sign Structure (Type X)	LB		x		=	$	-
498040	XX" CIDHC Pile (Sign Foundation)	LF		x		=	$	-
86080X	Inductive Loop Detectors	EA/LS		x		=	$	-
	CMS	LS	1	x	125,000	=	$	125,000
860090	Maintain Existing Traffic Management System Elements During Construction	LS	1	x	35,000	=	$	35,000

Subtotal Traffic Electrical *$ 160,000*

6B - Traffic Signing and Striping

Item code		Unit	Quantity		Unit Price ($)			Cost
566011	Roadside Sign - One Post	EA	19	x	350	=	$	6,650
566012	Roadside Sign - Two Post	EA	6	x	500	=	$	3,000
5602XX	Furnish Sign	SQFT	400	x	15	=	$	6,000
568016	Install Sign Panel on Existing Frame	SQFT		x		=	$	-
150711	Remove Painted Traffic Stripe	LF		x		=	$	-
141103	Remove Yellow Painted Traffic Stripe (Hazardous Waste)	LF	3,280	x	5	=	$	16,400
150712	Remove Painted Pavement Marking	SQFT		x		=	$	-
150742	Remove Roadside Sign	EA	19	x	100	=	$	1,900
152320	Reset Roadside Sign	EA		x		=	$	-
152390	Relocate Roadside Sign	EA		x		=	$	-
82010X	Delineator (Class X)	EA		x		=	$	-
840505	6" Thermoplastic Traffic Stripe	LF	17,200	x	2	=	$	34,400
120090	Construction Area Signs	LS	1	x	40,000	=	$	40,000

Subtotal Traffic Signing and Striping *$ 108,350*

6C - Traffic Management Plan

Item code		Unit	Quantity		Unit Price ($)			Cost
12865X	Portable Changeable Message Signs	EA/LS	1	x	$ 30,000	=	$	30,000

Subtotal Traffic Management Plan *$ 30,000*

6C - Stage Construction and Traffic Handling

Item code		Unit	Quantity		Unit Price ($)			Cost
120199	Traffic Plastic Drum	EA		x		=	$	-
12016X	Channelizer (Type X)	EA	1,000	x	40	=	$	40,000
120120	Type III Barricade	EA	24	x	120	=	$	2,880
129100	Temporary Crash Cushion Module	EA	4	x	500	=	$	2,000
120100	Traffic Control System	LS	1	x	160,000	=	$	160,000
129110	Temporary Crash Cushion	EA	8	x	5,500	=	$	44,000
129000	Temporary Railing (Type K)	LF	2,000	x	35	=	$	70,000
120149	Temporary Pavement Marking (Paint)	SQFT	1,300	x	6	=	$	7,800
	Additional Stage Construction Items (LS)	LS	1	x	250,000	=	$	250,000

Subtotal Stage Construction and Traffic Handling *$ 576,680*

TOTAL TRAFFIC ITEMS **$ 875,100**

SECTION 7: DETOURS

Includes constructing, maintaining, and removal

Item code		Unit	Quantity	Unit Price ($)	Cost
				TOTAL DETOURS	**$ -**
				SUBTOTAL SECTIONS 1 through 7	$ 9,155,100

SECTION 8: MINOR ITEMS

8A - Americans with Disabilities Act Items							
	ADA Items			0.0%	$	-	
8B - Bike Path Items							
	Bike Path Items			0.0%	$	-	
8C - Other Minor Items							
	Other Minor Items			1.0%	$	91,551	
	Total of Section 1-7	$	9,155,100	x 4.0%	= $	366,204	
				TOTAL MINOR ITEMS			**$ 457,800**

SECTIONS 9: MOBILIZATION

Item code							
999990	Total Section 1-8	$	9,612,900	x 10.0%	= $	961,290	
				TOTAL MOBILIZATION			**$ 961,300**

SECTION 10: SUPPLEMENTAL WORK

Item code		Unit	Quantity		Unit Price ($)		Cost
066670	Payment Adjustments For Price Index Fluctuations	LS	1	x	25,500	= $	25,500
066094	Value Analysis	LS	1	x	10,000	= $	10,000
066919	Dispute Resolution Board	LS	1	x	20,000	= $	20,000
066921	Dispute Resolution Advisor	LS	1	x	5,000	= $	5,000
066015	Federal Trainee Program	LS	1	x	13,600	= $	13,600
066610	Partnering	LS	1	x	50,000	= $	50,000
	Railroad Flagging	LS	1	x	150,000	= $	150,000
066204	Remove Rock and Debris	LS		x		= $	-
066222	Locate Existing Crossover	LS		x		= $	-
	*Cost of **NPDES** Supplemental Work specified in Section 5D*					= $	-
	Total Section 1-8	$	9,612,900		2%	= $	192,258
					TOTAL SUPPLEMENTAL WORK		**$ 466,400**

SECTION 11: STATE FURNISHED MATERIALS AND EXPENSES

Item code		Unit	Quantity		Unit Price ($)		Cost
066105	Resident Engineers Office	LS	1	x	$250,756	=	$250,756
066063	Traffic Management Plan - Public Information	LS	1	x	$5,000	=	$5,000
8609XX	Traffic Monitoring Station (X)	LS		x		=	$0
066841	Traffic Controller Assembly	LS		x		=	$0
066062	COZEEP Contract	LS	1	x	$80,000	=	$80,000
066838	Reflective Numbers and Edge Sealer	LS		x		=	$0
066916	Annual 401 Certification Fees	LS	1	x	$12,000	=	$12,000
	Onsite Riparian Revegetation	LS	1	x	$400,000	=	$400,000
	Offsite Mitigation	LS	1	x	$187,000	=	$187,000
	Total Section 1-8	$	9,612,900		2.00%	= $	192,258

TOTAL STATE FURNISHED **$1,127,100**

SECTION 12: TIME-RELATED OVERHEAD

Total of Roadway ~~and Structures~~ Contract Items excluding Mobilization $9,612,900 (used to calculate TRO)

Total Construction Cost (excluding TRO and Contingency) $12,167,700 (used to check if project is greater than $5 million excluding contingency)

Estimated Time-Related Overhead (TRO) Percentage (0% to 10%) = **9.5%**

Item code		Unit	Quantity		Unit Price ($)		Cost
070018	Time-Related Overhead	WD	150	X	$10	=	$913,300
	This portion District only TRO costs						
	Structures TRO included in Structures estimate						

TOTAL TIME-RELATED OVERHEAD **$913,300**

Note: If the building portion of the project is greater than 50% of the total project cost, then TRO is not included.

SECTION 13: ROADWAY CONTINGENCY

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Total Section 1-12	$	13,081,000	x	**15%**	=	$1,437,600	
				Environmental Mitiagtion portion removed from total for contingency c			
						TOTAL CONTINGENCY	**$1,437,600**

II. STRUCTURE ITEMS

Bridge 1

DATE OF ESTIMATE	00/00/00		00/00/00		00/00/00
Bridge Name	Russian River Bridge		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Bridge Number	10-182		57-XXX		57-XXX
Structure Type	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	60 LF		0 LF		0 LF
Total Bridge Length (Feet)	860 LF		0 LF		0 LF
Total Area (Square Feet)	45500 SQFT		0 SQFT		0 SQFT
Structure Depth (Feet)	7 LF		0 LF		0 LF
Footing Type (pile or spread)	Pile		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$339		$0		$0
COST OF EACH STRUCTURE	**$15,770,000**		**$0**		**$0**

DATE OF ESTIMATE	00/00/00		00/00/00		00/00/00
Name	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Bridge Number	57-XXX		57-XXX		57-XXX
Structure Type	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Width (Feet) [out to out]	0 LF		0 LF		0 LF
Total Length (Feet)	0 LF		0 LF		0 LF
Total Area (Square Feet)	0 SQFT		0 SQFT		0 SQFT
Structure Depth (Feet)	0 LF		0 LF		0 LF
Footing Type (pile or spread)	xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx		xxxxxxxxxxxxxxxxxx
Cost Per Square Foot	$0		$0		$0
COST OF EACH STRUCTURE	**$0**		**$0**		**$0**

TOTAL COST OF BRIDGES	**$15,770,000**
TOTAL COST OF BUILDINGS	**$0**

Structures Mobilization Percentage 0% **$0**

Included in APS estimate

Recommended Contingency: (Pre-PSR 30%-50%, PSR 25%, Draft PR 20%, PR 15%, after PR approval 10%, Final PS&E 5%)

Included in APS estimate-15% used in this estimate

Structures Contingency Percentage 0% **$0**

TOTAL COST OF STRUCTURES $15,770,000

Estimate Prepared By:

XXXXXXXXXXXXXXXX ------ Division of Structures

Date

EA: 01-0E090 PID: 0113000123

III. RIGHT OF WAY

Fill in all of the available information from the Right of Way data sheet.

A)	A1)	Acquisition, including Excess Land Purchases, Damages & Goodwill, Fees	$	245,488
	A2)	Appraisal Fees	$	15,000
B)		Acquisition of Offsite Mitigation	$	1,366,155
		Permit Fees	$	24,024
C)	C1)	Utility Relocation (State Share)	$	290,000
	C2)	Potholing (Design Phase)	$	0
D)		Railroad Acquisition	$	0
E)		Clearance / Demolition	$	0
F)		Relocation Assistance (RAP and/or Last Resort Housing Costs)	$	0
G)		Title and Escrow	$	6,000
H)		Environmental Review	$	0
I)		Condemnation Settlements 0%	$	0
J)		Design Appreciation Factor 0%	$	0
K)		Utility Relocation (Construction Cost)	$	0

L)	**TOTAL RIGHT OF WAY ESTIMATE**	**$1,946,667**
M)	**TOTAL R/W ESTIMATE: Escalated**	**$2,064,000**
N)	**RIGHT OF WAY SUPPORT**	**$0**

Support Cost Estimate Prepared By: Kevin Waxman — Phone

Utility Estimate Prepared By: Utility Coordinator[2] — Phone

R/W Acquisition Estimate Prepared By: Right of Way Estimator[3] — Phone

Note: Items G & H applied to items A + B

[1] When estimate has Support Costs only [2] When estimate has Utility Relocation [3] When R/W Acquisition is required

ATTACHMENT F

RIGHT OF WAY

DATASHEET

State of California
Department of Transportation

CALIFORNIA STATE TRANSPORTATION AGENCY

MEMORANDUM

Making Conservation
A California Way of Life.

To: CAREN COONROD
Design Engineer
Department of Transportation

Attention: MATT SMITH
Project Engineer

Date: March 16, 2020

File: 01-MEN-20-PM 33.3/34.4
EFIS No.: 01 1300 0123
EA: 0E0900
Alternate: 1A

From: KAREN E. HAWKINS
North Region Right of Way Assistant Manager,
Project Delivery
Eureka/Redding

Subject: CURRENT ESTIMATED RIGHT OF WAY COSTS

Project Description: In Mendocino County Near Ukiah from North Calpella OC to 0.5 Mile East of County Road 144

Alternate Description: Calpella 2 Bridge Replacements - Replaces the Russian River Bridge OC and Redwood Valley UC with a single structure on a new alignment south of the existing alignment.

We have completed an estimate of the right of way costs for the above referenced project based on information received from you on July 24, 2019 .

Right of Way Lead Time will require a minimum of 20 months after receipt of appraisal maps, utility conflict maps, environmental clearances (HMDD) and Certificate of Sufficiency (COS). A minimum of 20 months prior to certification will be required from receipt of the last map revision. Shorter lead times may require additional support resources and may adversely affect delivery of Right of Way Certification.

for

KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
EUREKA/REDDING

Attachments:
Right of Way Data Sheet

cc. Cathy Mckeon

State of California - Department of Transportation

RIGHT OF WAY DATASHEET

EA: 0E0900
PROJECT NO.: 01 1300 0123
LOCATION: 01-MEN-20-PM 33.3/34.4
Description: Replace Two Bridges In Mendocino County Near Ukiah from North Calpella OC to 0.5 Mile East of County Road 144

ALTERNATE: 1A
DATE: 3/16/2020
Datasheet Type: Design Change

---

1. Right of Way Cost Estimate:

	Current Value Future Use	Escalation Rate	Escalated Value
A. Total Acquisition Cost	$245,488	5%	$260,429
B. Appraisal Fees Estimate	$15,000	N/A	$15,000
C. Mitigation Acquisition & Credits	$1,366,155	5%	$1,449,304
D. Project Development Permit Fees	$24,024	5%	$25,486
Subtotal	$1,650,667		$1,750,218
E. Utility Relocation (State's Share)	$290,000	5%	$307,650
(Owner's Share: $270,000)			
F. Relocation Assistance (RAP)	$0		$0
G. Clearance/Demolition	$0		$0
H. Title & Escrow	$6,000	5%	$6,365
I. Total Estimated Right of Way Cost	$1,946,667	**Rounded**	**$2,064,000** *
J. Construction Contract Work	$0		

2. Current Date of Right of Way Certification June 1, 2021

3. Parcel Data:

Type		Dual/Appr	Utilities		Railroad	
X	0		U4 - 1	2	C&M Agreement	1
A	0		- 2	0	Service Contract	2
B	3		- 3	2	Easements	0
C	0	0	- 4	0	Rights of Entry	2
D	0	0	U5 - 7	3	Clauses	1
RR	0		- 8	0		
Total	**3**		- 9	4		

Excess 0

Areas:		Mitigation		Misc. R/W Work	
R/W	2.8 AC	Impacts	2	RAP Displacees	N/A
TCE	2.256 AC	Parcels	6	Clear/Demo	N/A
Excess	N/A	Credits	1	Permit to Enters	N/A
Mitigation	9.69 Ac.			Condemnation	1
				USA Involvement	No

4. **Provide a general description of the right of way and excess lands required (zoning, use, major improvements, critical or sensitive parcels, etc.).**

3 Parcels will be required in Fee and TCE. Zoning for 2 of the Parcels is a combination of AG40 and Industrial. Acquisition in TCE from NCRA may require additional "corridor factor" acquisition funds which are determind by NCRA.

5. **Are any properties acquired for this project expected to be rented, leased, or sold?**

Yes _____ No __X__

6. **Are RAP displacements required?**

Yes _____ No __X__

No. of single family __N/A__ No. of business/nonprofit __N/A__

No. of multi-family __N/A__ No. of farms __N/A__

Based on Draft/Final Relocation Impact Statement/Study dated N/A

__N/A__ Sufficient replacement housing will be available without last resort housing.

__N/A__ Sufficient replacement housing will not be available without last resort housing.

7. **Is there an effect on assessed valuation?**

Yes _____ No _____ Not Significant __X__

8. **Are there any items of Construction Contract Work?**

Yes _____ No __X__

There is no Construction Contract Work associated with the project.

9. **Are utility facilities or rights of way affected?**

Yes __X__ No _____

Names of Utility Companies requiring verification only.

Redwood Valley Water Company - water (underground), PG&E - gas (underground) and Level 3 Communications - communication (underground & aerial)

Names of Utility Companies requiring involvements.

PG&E - electric (aerial), Comcast - communications (underground & aerial), AT&T - communications (underground & aerial), and Calpella County Water District - water (underground)

Additional information concerning Utility Involvement on this project.

One joint PG&E/Comcast pole is in conflict along Eastside Calpella Road, may require four poles to be relocated to achieve required height. Comcast and Calpella County Water District UG facilities on the west side of Eastside Calpella Road are in conflict. PG&E relocation appears to be a 50/50 liability. Potholing was completed 7/25/2019. As additional information becomes available, this estimate may need to be revised.

10. Are railroad facilities or rights of way affected?

Yes X No _____ Phase 4 Capital **$165,000**

This project proposes reconstructing and demolishing (the existing) Russian River Bridge/Overhead which is a separated grade crossing over North Coast Railroad Authority (NCRA) Right of Way. In addition access to the work area will require crossing the currently non-operating RR tracks at two locations.

11. Are USA Lands or Rights Affected?

Yes _____ No X Phase 4 Capital **$0**

Agencies Involved:

US Forest Service _____	BLM _____	Army Corps of Engineers _____
National Parks _____	BIA _____	Vetrans Administration _____
US Fish & Wildlife _____	GSA _____	_____

Rights or Permissions to acquire:

Easement _____	Special Use Permit _____	Courtesy Letter _____
Right of Way Grant _____	Cooperative Work Agreement _____	Cost Recovery _____
Mineral Agreement _____	Letter of Concurrence _____	Timber Sale _____
		_____

12. Is an RE Office required for the project?

Yes X No _____

Type of RE Office

Modular _____ Move In X

13. Were any previously unidentified sites with hazardous waste and/or material found?

Yes _____ None Evident X

14. Are there material borrow and/or disposal sites required?

No _____ Optional X Mandatory _____

Per Project Engineer, project will require approximately 40,000 cy of fill material.

15. Are there potential relinquishments and/or abandonments?

Yes _____ No X

16. Are there any existing and/or potential airspace sites?

Yes _____ No X

17. What type of mitigation is required for the project?

Offsite mitigation will be required for impacts to wetland and riparian habitat. This will require the acquisition of 6 parcels and the payment of an endowment. Estimated parcel costs includes independent appraisal fee, title fees and incentive payment. Oak woodlands mitigation will be completed on-site utilizing Phase 4 funds.

18. Is it anticipated that Caltrans will perform all Right of Way work?

Yes X No _____

19. Indicate the anticipated Right of Way schedule and lead time requirements.

Right of Way Lead Time will require a minimum of **20** months after we receive first appraisal maps, utility conflict maps, necessary environmental clearances and freeway agreements have been approved and obtained. Additionally a minimum of **20** months will be required after receiving the last appraisal map to Right of Way for certification.

20. Assumptions and limiting Conditions: (Check boxes that apply.)

- ☑ Acquisition from NCRA may require additional RW funds & leadtime to accommodate their "Corridor Factor" acquisition requirements.
- ☑ 18 months lead time is requested due to expectations that condemnations will be required.
- ☑ Estimate includes the acquisition of 6 parcels for mitigation.

Evaluation Prepared By:

Right of Way Kevin Waxman KEVIN WAXMAN Date 3/16/2020

Reviewed By

RW Project Coordinator for SAM GENTLE Date 3/18/20

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable Highest and Best Use, estimated values, escalation rates and assumptions are reasonable and proper, subject to the limiting conditions set forth, and I find this Data Sheet to be complete and current.

Robert Close
ROBERT CLOSE
Senior Right of Way Agent
Project Delivery Branch
Eureka

3/19/2020
Date

for
KAREN E. HAWKINS
Assistant Chief
North Region Right of Way
Eureka/Redding

3/19/2020
Date

ATTACHMENT G

INITIAL SITE ASSESSMENT

State of California
Department of Transportation

California State Transportation Agency

Memorandum

Flex your power!
Be energy efficient!

To: Matt Smith, Project Engineer
North Region Design, E2

Date: January 18, 2015

File No.: 1-MEN-20-33.5/33.8
01-0E090K
01 1300 0123

Russian River Bridge Deck Rehabilitation

From: Steve Werner
North Region Office of Environmental Engineering—North

Subject: Initial Site Assessment

We conducted an Initial Site Assessment (ISA) for the Russian River Bridge Deck Rehabilitation project as you requested in October 2014. The ISA found that the project has nominal hazardous waste issues as described below:

1. Aerially Deposited Lead (ADL) in shoulder soils is present. Since widening will be accomplished by embankment construction with imported material, this issue may be addressed with standard SSPs and a Lead Compliance Plan contract item.

2. Naturally Occurring Asbestos (NOA) is not present, however, the worksite is shown on Mendocino County AQMD maps as "may contain," and therefore an exemption for dust control plan will need to be acquired.

3. A survey of the bridge structure(s) is required for the bridge deck rehabilitation or demolition. This Survey can be accomplished in the zero phase. Previous surveys were conducted for the bridge(s) but did not include base concrete evaluation. A NESHAP notification to the Mendocino County AQMD is also required.

4. Pavement and guard rail work will require the inclusion of SSPs for the waste that will be generated.

Please contact this office when the project is in the zero phase so that we can have the bridge(s) surveyed as noted above.

For the purposes of determining the appropriate environmental documents required for the project, the work site should not be considered to be on the *Hazardous Waste and Substances Site List (Cortese List)*.

If there are any changes to the scope of the project, please send an e-mail or letter describing the changes so that an evaluation can be made for possible hazardous waste issues that could affect your project.

cc: 1-SWerner 2-File

SSW

Smith, Matt A@DOT

From: Melani, Mark@DOT
Sent: Monday, July 23, 2018 8:03 AM
To: Smith, Matt A@DOT
Cc: Mckeon, Cathy@DOT
Subject: FW: 01-0E090 Calpella Bridges ISA and Site Review Request - Survey reqd 07-18
Attachments: 0E090_ISA_request_memo.pdf; 0E090_ISA_attachments.pdf

Good Morning Matt,

Steve Werner's January 2018 ISA still fully applies. A preliminary site investigation/structural survey will be required prior to final PS&E. As the final project scope is determined, send me an e-mail requesting we conduct sampling. I estimate the sampling and reports will costs around $17,000 and take 4 to 6 months to complete once requested. Additionally please include 120 hours for unit 0386 in 0 phase 165 or 1 phase 235 and 24 hours in 1 phase 255 to cover this requirement.

Thank You,

Mark Melani

California Department of Transportation
Office of Environmental Engineering – South
703 B Street
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From: Smith, Matt A@DOT
Sent: Wednesday, June 13, 2018 3:03 PM
To: Coleman, Douglas B@DOT <douglas.coleman@dot.ca.gov>
Cc: Church, Kevin B@DOT <kevin.church@dot.ca.gov>; Melani, Mark@DOT <mark.melani@dot.ca.gov>
Subject: 01-0E090 Calpella Bridges ISA and Site Review Request

Hello Doug-

Please see the attached ISA request for the Calpella Bridges project located in Mendocino, route 20 PM 33.3/34.4. Let me know if you have any questions. Thanks.

~~~~~~

Matt Smith
Project Engineer
NR Design E2
707-445-6526
~~~~~~

ATTACHMENT H

ENVIRONMENTAL

COMPLIANCE DOCUMENT

CALPELLA 2 BRIDGE REPLACEMENTS PROJECT

MENDOCINO COUNTY, CALIFORNIA
DISTRICT 1 – MEN – 20 (Post Miles 33.3 to 34.4)
01-0E090 / 013000123

Initial Study with Mitigated Negative Declaration

Prepared by the
State of California Department of Transportation

April 2020

General Information about this Document

What's in this document?

The California Department of Transportation (Caltrans) has prepared this Initial Study, which examines the potential environmental impacts of the proposed project located in Mendocino County, California. Caltrans is the lead agency under the California Environmental Quality Act (CEQA). This document tells you why the project is being proposed, how the existing environment could be affected by the project, the potential impacts of the project, and proposed avoidance and minimization measures. The Initial Study circulated to the public between February 21, 2020 and March 23, 2020. Comments received during this period are included in Chapter 6. Elsewhere throughout this document, a vertical line in the margin indicates a change made since the draft document circulation. Minor editorial changes and clarifications have not been so indicated.

Alternative Formats:

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please write to or call Caltrans, Attention: Bonnie Kuhn, Public Information Officer, PO Box 3700, Eureka, CA 95502-3700; (707) 441-4678 Voice, or use the California Relay Service TTY number, 711 or 1-800-735-2929.

SCH Number: Pending
01-MEN-20-PM 33.3/34.4
01-0E090 / 0113000123

CALPELLA 2 BRIDGE REPLACEMENTS PROJECT

Replace two bridges with a single bridge on State Route 20 in Mendocino County, from post miles 33.3 to 34.4 north of Ukiah.

INITIAL STUDY WITH PROPOSED MITIGATED NEGATIVE DECLARATION

Submitted Pursuant to: Division 13, California Public Resources Code

THE STATE OF CALIFORNIA

Department of Transportation

2/13/20

Date of Approval

Wesley Stroud, Office Chief - Redding
North Region Environmental Management
California Department of Transportation
CEQA Lead Agency

The following person(s) may be contacted for more information about this document:

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SCH Number: 2020029075
01-MEN-20-PM 33.3/34.4
01-0E090 / 0113000123

Mitigated Negative Declaration

Pursuant to: Division 13, California Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to perform a complete bridge replacement of the Russian River Bridge (#10-182) and Redwood Valley Undercrossing (#10-183) on a new alignment, located along State Route (SR) 20 in Mendocino County near Ukiah between post miles (PM) 33.3 to 34.4. To ensure traffic would not be significantly impeded during construction, the existing structures and alignment would remain in place during construction. This would require that the new structure be on a new alignment south of the existing alignment. Additional work such as embankment cut/fill, paving bridge approaches, roadway realignment, and shoulder widening would be involved. This includes the addition of acceleration and deceleration lanes with standard tapers for the intersection of SR-20 and County Road (CR) 144. Currently, the bridge deck has numerous transverse cracks leaving the bridge susceptible to punching shear failure.

Determination

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

The project would have no effect with regards to agriculture and forest resources, energy, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, tribal cultural resources, utilities and service systems, and wildfire.

The project would have less-than-significant impacts with regard to aesthetics, air quality, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, and hydrology and water quality.

With mitigation measures incorporated, the project would have less-than-significant impacts with regard to biological resources.

Wesley Stroud, Office Chief - Redding
North Region Environmental Management
California Department of Transportation

Date

Wesley Stroud

5/14/20

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List of Abbreviated Terms

Abbreviation	Description
AB	Assembly Bill
ARB	Air Resources Board
BMPs	Best Management Practices
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CH4	methane
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CRHR	California Register of Historical Resources
CTP	California Transportation Plan
CWA	Clean Water Act
EIR	Environmental Impact Report
EO	Executive Order
EPA	Environmental Protection Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
GHG	greenhouse gas
H_2S	hydrogen sulfide
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
LCFS	low carbon fuel standard
LSAA	Lake or Streambed Alteration Agreement
MBTA	Migratory Bird Treaty Act
MLD	Most Likely Descendent
MMTC02e	million metric tons of carbon dioxide equivalent
MND	Mitigated Negative Declaration
MPO	Metropolitan Planning Organization
MS4s	Municipal Separate Storm Sewer Systems

Abbreviation	Description
N2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
ND	Negative Declaration
NEPA	National Environmental Policy Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
OHWM	Ordinary High-Water Mark
OPR	Office of Planning and Research
Pb	lead
PDT	Project Development Team
PM	particulate matter
PM2.5	particles of 2.5 micrometers and smaller
PM10	particles of 10 micrometers or smaller
PM	post mile
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PRC	Public Resources Code
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SCS	Sustainable Communities Strategy
SDC	Seismic Design Criteria
SF6	sulfur hexafluoride
SHPO	State Historic Preservation Officer
SLR	Sea Level Rise
SO_2	sulfur dioxide
SWMP	Storm Water Management Plan
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDLs	Total Maximum Daily Loads
TMP	Traffic Management Plan
U.S. or US	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDOT	U.S. Department of Transportation
U.S. EPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VMT	Vehicle Miles Traveled

Abbreviation	Description
WDRs	Waste Discharge Requirements
WQOs	Water Quality Objectives

Chapter 1. Proposed Project

1.1 Project History

The Department of Transportation (Caltrans) is the lead agency under the California Environmental Quality Act (CEQA). Caltrans proposes a bridge replacement project to remove the Russian River Bridge and Redwood Valley Undercrossing and construct a new crossing for State Route (SR) 20 along a new alignment. Figures 1 and 2 indicate the project location and vicinity maps.

The project initially proposed to either replace the bridge deck with widening on the existing alignment or to construct a new bridge(s) to the north or south of the existing alignment. The alternatives that proposed bridge deck replacement required a detour that would re-route SR-20 traffic to local county roads. It was determined that a long-term detour was infeasible due to traffic volumes, truck turning movements through local intersections, detour length, and impacts to surrounding schools. The detour would also involve significant reconstruction of the county roads and was not preferred by both Caltrans or Mendocino County. Consequently, the deck replacement only alternatives have since been eliminated. The only alternatives that meet the purpose and need involve new structures on a new alignment. These new structures on a new alignment are examined in this report. In the Project Scope Summary Report (PSSR) no alterations to the intersection of SR-20 and County Road 144 were proposed. However, due to the SR-20 realignment and to address collision concentrations, the intersection would be reconfigured to include larger radius curves and extended acceleration and deceleration lanes.

1.2 Project Description

Caltrans proposes to perform a complete bridge replacement of the Russian River Bridge (Bridge #10-182) and Redwood Valley Road Undercrossing (UC) (Bridge #10-183) on a new alignment, located along SR-20 in Mendocino County near Ukiah between post miles (PM) 33.3 to 34.4. To insure traffic would not be significantly impeded during construction, the existing structures and alignment would remain in place during construction. This would require that the new structure be on a new alignment south of the existing alignment. The alternatives involve additional work such as embankment cut/fill, paving bridge approaches, roadway realignment, and shoulder widening. Each alternative proposes the addition of acceleration and deceleration lanes with standard tapers for the intersection of SR-20 and County Road (CR) 144. Currently, the bridge deck has numerous transverse cracks leaving the bridge susceptible to punching shear failure.

Project Objectives (Purpose and Need)

The purpose of this project is to improve the bridge deck integrity of the Russian River Bridge and Redwood Valley UC.

The Russian River Bridge has been identified as needing a deck replacement per Structure Maintenance and Investigations Structure Replacement and Improvement Needs recommendation. The composite cast-in-place/reinforced concrete (CIP/RC) deck has numerous transverse cracks, deck repairs are delaminating and failing in multiple locations, and there are numerous transverse soffit cracks with white and brown leachate. The number, pattern, and spacing of the cracks indicates areas of possible future punching shear failures. This project is needed to repair bridge deck deficiencies and reduce possible future punching shear failures. In addition, the shoulders are narrower than the 8-foot requirement.

Proposed Project

Caltrans proposes a bridge replacement project to remove the Russian River Bridge and Redwood Valley UC and construct a new crossing for SR-20 along a new alignment. The project description includes a discussion of the existing facility, preferred alternative, construction methodology, and other alternatives that were considered but have been eliminated from further discussion.

Existing Facility

The existing facility is a conventional 2-lane highway, with 12-foot lanes and 4 to 6-foot shoulders, along a 1300-foot-radius curve and is comprised of two structures separated by a fill prism. The structures are the Russian River Bridge and the Redwood Valley UC. In addition to the structures, the project area encompasses the CR-144 intersection immediately east of the Redwood Valley UC.

The Russian River Bridge was constructed in 1958 and was seismically retrofitted in 1997. The bridge is 440 feet long and spans the Russian River and a segment of the North Coast Rail Authority’s (NCRA’s) Northwestern Pacific Railroad. The bridge consists of simply-supported 4-span welded steel plate girders, and the deck is a CIP/RC structure. This type of bridge deck is constructed in its operating location, after construction of the piles, by pouring concrete over reinforcing steel rebar. The deck and underside of this bridge have numerous cracks that indicate areas of possible future punching shear failures. If a failure of this type occurs, the deck would be pushed down around the piles by its load (in this case, traveling vehicles). This would give the appearance that the piles punched through the deck.

The Redwood Valley UC was constructed in 1958 and was seismically retrofitted in 1996. It is a single span 4-tee beam bridge. The bridge is 115 feet long and spans Eastside Calpella Road. The bridge deck is a CIP/RC structure that has been recommended for replacement after routine structure health surveys.

Introduction to Project Alternatives

There is one build alternative, one “No Build” alternative, and three rejected alternatives for this project. The build and rejected alternatives are variations of the programmed alternative from the PSSR.

Alternative 1: One New Structure on New Southern Alignment

This alternative proposes to construct a single new bridge along a new alignment to the south of the existing bridges. The existing bridges would remain intact during construction to accommodate traffic and avoid a detour through local and county roads. The bridges would be removed after construction of the new structure. The new alignment would allow for standard acceleration and deceleration lanes at the intersection of SR-20 and CR-144 along with increased sight distance of the intersection.

The new alignment consists of a single 1600-foot radius curve along the bridge with standard superelevation transitions and rates. The profile essentially matches the existing profile but at a slightly higher elevation to achieve bridge clearance and vertical sight distance standards. The alignment provides a standard left-turn pocket taper and deceleration length, and standard acceleration lane taper and length for the intersection of SR-20 and CR-144. The intersection would be reconfigured to conform to the new SR-20 alignment. The turning movement lanes would also be redesigned to provide longer decelerations and acceleration lengths.

The new bridge is 860 feet in length and consists of a 7-span cast-in-place/prestressed concrete structure box girder structure. The spans vary from 105 feet to 145 feet in length. The western most roadway cross section of the bridge is 40 feet wide and consists of two 12-foot lanes and two 8-foot shoulders. The eastern most cross section is 64 feet wide and consists of a 12-foot east bound through lane, a 12-foot east bound left turn lane, a 12-foot west bound through lane, a 12-foot westbound acceleration lane, and two 8-foot shoulders.

The bridge would likely have driven H-piles assumed in 50-foot increments for the abutments and 24-inch cast-in-drilled-hole (CIDH) piles assumed to be in 35-foot increments for piers. Pending the upcoming Foundation Report, there is a high probability that the foundation at the piers would instead be driven piles. The railroad

requires a minimum 25-foot horizontal clearance from the centerline of the track to a pier foundation. The estimated number of structures-related working days for this alternative is 570 days with 442 for structures-related work.

The entire structure would be constructed without significantly impacting mainline traffic. Some stage construction would be required to tie in the new alignment to the existing roadway but traffic in both directions would be maintained during construction. The existing structures would be removed once the new alignment is operational.

The typical pavement structural section would consist of 0.2 feet Rubberized Hot Mix Asphalt-Gap Graded (RHMA-G), 0.35 feet Hot Mix Asphalt-Type A (HMA-A), and 1.55 feet of Aggregate Base (AB). Areas where the RHMA-G would not be applied are: CR-144 intersection, gore area, and CR-144 approach. In these areas an additional 0.2 feet of HMA-A would be used in place of the RHMA-G.

Additional work includes:

- Removing trees and vegetation
- Placing approximately 30,000 cubic yards of embankment fill at the eastern end of the bridge
- Constructing new roadway structural section
- Pavement grinding and overlay
- Reconstructing the CR-144 intersection with improved geometry for deceleration/acceleration lanes
- Installing westbound transition railing, end treatments, and Midwest Guardrail System
- Installing drainage inlets, culverts, over side drains, rock slope protection (RSP), and drainage ditches. This includes reconfiguring drainage patterns based on new alignment.
- Installing new signs and striping including gore striping
- Contour grading and replanting of existing fill prism of the existing roadway
- Repaving and shoulder widening on Eastside Calpella Road within the vicinity of the new bridge
- Removing existing bridges

- Removing base and asphalt concrete (AC) surfacing on the existing road
- Relocating overhead and underground utilities along Eastside Calpella Road
- Repaving and minor shoulder widening on Eastside Calpella Road within the vicinity of the new bridge.
- Removing existing bridges
- Removing the structural section of the existing road
- Relocating overhead and underground utilities along Eastside Calpella Road
- Removing culverts, inlets, and overside drains along the existing alignment
- Installing permanent Best Management Practices (BMPs) such as infiltration areas

Construction Methodology

This section discusses how construction of the project would occur.

Construction Staging and Access Roads

This project would be constructed in two stages. The first stage would construct the new structures, fill prisms, and the CR-144/SR-20 intersection while traffic continues to use the existing structures. The second stage would shift traffic to the new alignment and then demolish the existing Russian River Bridge and the Redwood Valley UC.

Staging areas would be necessary for the proposed bridge construction and demolition. The staging areas would include the large turnouts east of the project site on the south and north side of SR-20, the turnout between the US-101 northbound onramp and SR-20, the existing maintenance area north of the existing fill prism between the existing structures, and a portion of a commercial parcel to the south of the existing alignment of SR-20. The commercial parcel is currently a lumber yard, and access would be acquired through a temporary construction easement.

Currently, the NCRA's Northwestern Pacific Railway is not transporting freight trains. However, the NCRA considers the railway an active line, and during construction, any railway traffic would be able to move through the project site. During construction, a containment platform supported by falsework would be used to protect the railroad. The platform would span the railroad through the project area and allow rail traffic to continue to operate through a falsework opening. The platform would protect the railroad from any construction debris. Throughout the construction of the project, it

would be necessary for heavy equipment and construction vehicles to cross the railroad tracks. To protect the rails from damage from construction equipment, protective material would be placed adjacent to the rails to elevate the tires or treads of the equipment over the tracks, which would prevent the weight of the equipment from being applied directly on the rails.

A 50-foot-wide access road composed of placed rock would be required to construct the pier foundations and falsework. An additional clear distance of 50 feet adjacent to the access road would be required to construct falsework and safely conduct the bridge construction.

An access road would also be required to reach and demolish the piers below the existing Russian River Bridge. The demolition of the existing Redwood Valley UC would be performed from Eastside Calpella Road and the existing fill prisms and would not require new access roads.

Falsework and Trestles

Temporary trestles during construction may be required to provide additional mobility of equipment in the construction area. The exact dimensions, locations, and need for the trestles would be determined by the contractor during the construction phase. The supports for the trestles are assumed to be driven or drilled piles. Driven piles would be installed using an impact hammer attached to a pile driving rig. If the piles are drilled, a cofferdam would be required. The construction of cofferdams would require that sheet piles be vibrated into the river bottom to form a rectangular shape. The cofferdam would then be dewatered. If needed, a seal course of concrete would be placed at the bottom of the cofferdam to prevent intrusion of water into the cofferdam.

As part of the bridge construction process, falsework would be required to support the new bridge during construction. The falsework design would be determined by the construction contractor and would be dependent on the availability of materials and equipment. The falsework may span the Russian River and would require structure supports near or in the river. It is possible that the installation of falsework support locations may require cofferdams. In this case, the same cofferdam process outlined above would be used.

Demolition of Existing Structures

After the construction of the new structure is complete, traffic would be shifted to the new alignment and the existing bridges would be demolished. The removal of the existing bridge decks and girders would be accomplished from the existing bridge decks and an access road from the northern maintenance area. This work would be done

using small hand tools, an excavator mounted hoe ram, and a large crane to handle the steel girders.

The concrete piers and abutments would also be demolished. This work would be performed from the access road. Concrete pier towers are typically knocked to the ground using excavators with concrete rams. Once down, the pier towers would be broken apart and trucked away.

The foundations would be removed using concrete rams on excavators. All foundations would be removed, which would leave only the existing piles at a depth of 3 feet below the ground.

Excavation

Excavation and earth moving activities would be needed for construction of the project. The project would require both the cut of existing material and the fill of new material to construct the CR-144/SR-20 intersection. The intersection would be shifted southwest at approximately the same grade of the existing roadway.

Two new fill prisms that would be constructed for the project are discussed below:

A fill prism would be constructed on the west end of the new Russian River Bridge. This fill prism would be approximately 200 feet long and a maximum of 15 feet taller than the original ground. The south slope of the prism would extend 55 feet horizontally and 25 feet vertically from the new southern edge of pavement before reaching original ground. The north slope would extend approximately 10 feet horizontally and 10 feet vertically from the new northern edge of pavement before reaching original ground.

A fill prism would be constructed on the east end of the new Russian River Bridge. This fill prism would be approximately 250 feet long and a maximum of 35 feet above original ground. At the widest portion of its base, the east end of the new Russian River Bridge, the prism would be 190 feet wide. The prism would taper from its widest portion as it approaches the intersection, reaching a minimum width of approximately 100 feet, before widening again to accommodate the pavement area of the CR-144/SR-20 intersection. The north slope of the prism would extend 60 feet horizontally and 15 feet vertically from the new northern edge of pavement before reaching the existing fill prism east of the existing Redwood Valley UC, and the south slope of the prism would extend 60 feet horizontally and 30 feet vertically from the new southern edge of pavement before reaching original ground.

Some excavation would also be needed for the demolition of the existing structure and the old roadway.

Drainage

Construction of the project would require new drainage facilities as several culverts would be affected. Existing culverts would be relocated, extended, or removed based on the recommendations of Caltrans' hydraulics engineers and the Caltrans' Highway Design Manual. The design of the new stormwater facilities would be finalized during the design phase of the project.

Drainage patterns would remain the same with a slight alteration to a drainage channel to the west of Eastside Calpella Road where a bridge pier would be placed at an existing culvert outlet and channel location. A new culvert, outlet, and approximately 50 feet of new ditch/channel would be constructed to the south of the existing drainage system. The new channel would conform to the existing flow line, maintaining the existing flow patterns and outlet points.

Traffic Management

The project would be constructed off the existing alignment, making it possible for two-way traffic to remain active throughout most of construction. The movement of heavy equipment, work on the CR-144/SR-20 intersection, and the demolition of the two existing bridges could require reversing traffic control, intermittent closure, shoulder closure, and ramp closure on SR-20, CR-144, and Redwood Valley Road. The maximum delay anticipated from reversing traffic control would be 10 minutes, and the maximum delay from intermittent closures would be 20 minutes.

The project would take steps to minimize traffic impacts to the local area. Any emergency service agency whose ability to respond to incidents affected by traffic control would be notified prior to any closure. The local busing system would be notified to minimize impacts to their schedule. The Resident Engineer would provide information to residents and businesses before and during project work that could have a negative impact on commerce and travel. Bicyclists would be accommodated through the work zone, and during reversing traffic control, bicyclists would be instructed to join the vehicle queue.

Utilities

At the proposed project site, utility lines are present in several locations. An underground gas line runs parallel to the Northwest Pacific Railroad south of the project, before crossing under the existing Russian River Bridge at the west abutment. North of the bridges, the gas line turns 90 degrees and heads east, parallel to SR-20. Overhead telecom and electric lines are present in the project area along Eastside Calpella Road, across the existing Redwood Valley UC structure. Another telecom line is attached to

the Northwest Pacific Railroad trestle bridge. Underground water and telecom lines cross the project area near the Redwood Valley UC.

If the utility poles or lines conflict with the proposed work, they would be relocated or protected in place during construction. Caltrans would verify the location of any underground gas, electric, water, or sewer lines within the project area. Caltrans would coordinate with utility owners to relocate or protect utilities prior to construction.

Construction Equipment

Equipment anticipated to be used throughout construction includes the following:

- Excavation of existing material would be accomplished using an excavator. Excavated material would be temporarily removed from the jobsite via dump trucks. It would likely be returned to be repurposed as part of the structure backfill.
- Piles would be driven using a pile driving rig that would be positioned on the roadway prism. The pile rig would consist of a track mounted crane, pile leads, and a diesel hammer.
- CIDH piles would be drilled using a drill rig, baker tanks to supply and circulate polymer drilling slurry, a crane to place the rebar cage, and a concrete pump truck to place the concrete delivered by concrete trucks.
- Pouring the concrete footings, abutments, wingwalls, and columns would require the use of concrete trucks and a concrete pump truck.
- The backfill and grading operation would require the use of dump trucks to bring material in, a loader or excavator to help position the material, and a rolling compactor to compact the material.
- A crane would be needed throughout the process to lift rebar and framework material into place.
- A bidwell machine would be used for the deck pour to help work and finish the concrete. The bidwell machine is a bridge deck finishing machine that runs along tracks at the edge of deck.
- A paving machine would be brought in along with dump trucks carrying asphalt to place the approach asphalt and pave the new CR-144/SR-20 intersection.

Right-of-Way Impacts

The project would require permanent right-of-way (ROW) acquisition from four parcels totaling 2.76 acres (120,225.6 square feet). No displacements would occur. Three temporary construction easements would be required for construction access and equipment staging.

Access to properties adjacent to the project area would be maintained throughout construction.

Complete Streets

Caltrans' Complete Streets Directive promotes a transportation system that safely accommodates bicyclists, pedestrians and transit users. In the project vicinity, SR-20 serves a variety of traffic including local traffic, commuters, interregional freight, and seasonal tourism. All modes of transportation have been included in the proposed design to the extent feasible. The existing facility has 4-to-6-foot-wide shoulders that would be upgraded to standard 8-foot-wide shoulders, improving the functionality and safety of the roadway for motorists, bicyclists, and pedestrians. The increased shoulder width would also provide greater separation from vehicular traffic for both bicyclists and pedestrians; increasing safety for all users.

The proposed improvements account for the needs of everyone using the road, and the project funding, planning, design, maintenance, and operations are aligned with the goals of the Caltrans Complete Streets policy.

General Plan Description, Zoning, and Surrounding Land Uses

The project is located in Calpella, a census designated place in the Ukiah Valley. Land use and development in Calpella is governed by the Ukiah Valley Area Plan (UVAP), a comprehensive and long-range planning document that represents the vision and foresight of the people who live and work in the Ukiah Valley. Land use near the proposed project is designated in the UVAP as Agricultural, Industrial, Commercial, and Rural Residential. According to Mendocino County zoning maps, land near the proposed project is zoned as Public Facilities, Agriculture, Commercial, Industrial, and Rural Residential.

Throughout the project area SR-20 is classified as a two-lane conventional highway and is functionally classified as a Rural Principal Arterial. Rural Principal Arterials serve substantial statewide or interstate travel, and they provide service to all or virtually all urban areas with a population of 50,000 and over and a large majority of those with a population of 25,000 and over. Principal arterials provide an integrated transportation network without interrupted connections.

The project elevation is approximately 717 feet above mean sea level. The climate type is Mediterranean which is typified by wet, mild winters and hot, dry summers.

Habitat surrounding the proposed project is characterized by agricultural lands with developed roadways, non-vegetated staging areas, streams, and riparian habitat.

Alternatives Considered but Eliminated from Further Consideration

Both alternatives 2A and 2B were rejected and therefore eliminated from further study due to the following reasons:

In July 2019, the project development team (PDT) recommended to formally eliminate two northern alignment alternatives. The non-standard geometric features were analyzed and discussed by the PDT functional units and it was decided that the design features such as the smaller curve radius, reversing curves, and intersection configuration associated with the northern alignments were not desirable. The northern alignment creates a smaller radius curve on the structure than currently exists and a short, reversing curve near the US-101 onramp is necessary to connect the new curve to the existing road. Building a structure with a 75 to 100-year design life to non-standard roadway geometry is not preferred. In addition, the northern alignment alternatives require ROW acquisition from a property which would significantly delay project construction.

Alternative 2A: Two New Structures on New Northern Alignment

This alternative proposed to replace both bridges with two new bridges separated by a fill prism along a new alignment to the north of the existing alignment. The existing bridges would remain intact during construction to accommodate traffic and avoid a detour through local and county roads. The existing bridges would be removed after construction of the new structure.

Alternative 2B: One New Structure on New Northern Alignment

This alternative proposed to replace both bridges with a single bridge along a new alignment to the north of the existing alignment. The existing bridges would remain intact during construction to accommodate traffic and avoid a detour through local and county roads. The existing bridges would be removed after construction of the new structure.

Alternative 3: No Build

The third alternative is a no build alternative that would keep the existing structures in place and unchanged. The alternative has been rejected as it does not meet the purpose and need of the project.

Value Analysis Summary

A Value Analysis (VA) study was conducted for the project. The VA study was conducted in May 2019. The purpose of this analysis was to assess the elements of cost, performance, time, and risk as they relate to project value. The VA team identified and developed six VA alternatives and eleven VA design recommendations.

The objectives of the VA study were to:

- Analyze the current project design, estimate, and schedule.
- Provide possible cost and/or schedule-saving recommendations.
- Provide performance improvement recommendations.
- Consider proposed new alignments of bridges and roadways and.
- Consider improvements to traffic operations and roadway safety.

At the completion of the study, the PDT, through executive staff concurrence, selected an alternative for further study and confirmed the rejection of the other five VA alternatives.

The baseline concept for the selected alternative includes six bridge bents. Bents are a type of support for the bridge piles. The alternative concept proposes to consider single column bents in lieu of two column bents where possible. The PDT members determined that additional analysis would be required to determine if the concept is feasible. This work would be done in the design phase.

Project Maps

Figures 1 and 2 provide the project location and vicinity maps. Project layouts can be found in Appendix B.

Figure 1. Project Location Map

Figure 2. Project Vicinity Map

1.3 Permits and Approvals Needed

The project would require the following permits, licenses, agreements, and certifications listed in Table 1.

Table 1. Agency Approvals

Agency	Permit/Approval	Status
California Department of Fish and Wildlife (CDFW)	1602 Lake and Streambed Alteration Agreement (LSAA)	Would be completed in the next project phase
North Coast Regional Water Quality Control Board (RWQCB)	Section 401 Water Quality Certification	Would be completed in the next project phase
U.S. Army Corps of Engineers (USACE)	Section 404 Nationwide 14	Would be completed in the next project phase
U.S. Fish and Wildlife Service (USFWS)	Letter of Concurrence (LOC)	In progress
National Marine Fisheries Service (NMFS)	Programmatic Biological Opinion (BO)	In progress

1.4 Standard Measures and Best Management Practices

1.4.1 Utilities and Emergency Services

UE-1: All emergency response agencies in the project area would be notified of the project construction schedule and would have access to SR-20 throughout the construction period.

UE-2: Caltrans would coordinate with the utility providers before relocation of any utilities to ensure potentially affected utility customers would be notified of potential service disruptions before relocations.

1.4.2 Traffic and Transportation

TT-1: Pedestrian and bicycle access would be maintained during construction.

TT-2: The Contractor would be required to reduce any access delays to driveways or public roadways within or near the work zones.

TT-3: A Traffic Management Plan (TMP) would be applied to project.

1.4.3 Visual Aesthetics

VA-1: Riparian and wetland areas impacted by construction would be replanted with regionally appropriate native plants.

VA-2: Any temporary access roads would be restored to a natural contour and revegetated with appropriate native plants. Plant species and locations would be developed by the project landscape architect and biologist.

VA-3: Alterations to the existing contours of any temporary construction staging areas created by the contractor would be graded to previous conditions and revegetated with appropriate native plants.

VA-4: Tree removal would be limited to the maximum extent feasible.

1.4.4 Cultural Resources

CR-1: If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find in consultation with the State Historic Preservation Officer.

CR-2: If human remains are discovered, State Health and Safety Code § 7050.5 states that further disturbances and activities would cease in any area or nearby area suspected to overlie remains, and the County Coroner be contacted. Pursuant to CA Public Resources Code (PRC) § 5097.98, if the remains were thought to be Native American, the coroner would notify the Native American Heritage Commission (NAHC) who would then notify the Most Likely Descendent (MLD).

At this time, the person who discovered the remains would contact the Environmental Senior and Professionally Qualified Staff so they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC § 5097.98 would be followed as applicable.

1.4.5 Hydrology and Floodplain

HF-1: Bridge soffit elevation would not be lower than the existing bridge in order to maintain the existing freeboard provided and not alter existing hydrology.

HF-2: Existing bridge pilings would be removed, which would provide less resistance and blockage of water moving downstream in a flood event.

1.4.6 Water Quality and Stormwater Runoff

WQ-1: The project would comply with the provisions of the Caltrans' Statewide National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (Order 2012-0011-DWQ), which became effective July 1, 2013, and the NPDES Construction General Permit (Order 2009-0009-DWQ) which became effective July 1, 2010.

Before any ground-disturbing activities, the contractor would prepare a Stormwater Pollution Prevention Plan (SWPPP) (per the Construction General Permit Order 2009-0009-DWQ) that includes erosion control measures and construction waste containment measures so that waters of the State are protected during and after project construction.

The SWPPP would identify all potential sources of pollutants that may affect the quality of stormwater; including construction site BMPs to control sedimentation, erosion, and potential chemical pollutants; providing for construction materials management; including non-stormwater BMPs; and including routine inspections and a monitoring and reporting plan. All construction site BMPs would follow the latest edition of the Caltrans' *Stormwater Quality Handbooks: Construction Site BMPs Manual* to control and reduce the impacts of construction-related activities, materials, and pollutants on the watershed.

The project SWPPP would be continuously updated to adapt to changing site conditions during the construction phase.

Construction would likely require the following temporary construction site BMPs:

- Any spills or leaks from construction equipment (i.e., fuel, oil, hydraulic fluid, and grease) shall be cleaned up in accordance with applicable local, state, and/or federal regulations.
- Water would be removed by means of dewatering the individual pipe piles or cofferdams.
- Water generated from the dewatering operations would be trucked off-site to an appropriate facility, treated and used on-site for dust control and/or discharged to an infiltration basin, or used to irrigate agricultural lands.
- Fiber rolls or silt fences would be installed.
- Existing vegetated areas would be maintained to the maximum extent practicable.

- Clearing, grubbing, and excavation would be limited to specific locations, as delineated on the plans, to maximize the preservation of existing vegetation.
- Vegetation reestablishment or other stabilization measures would be implemented on disturbed soil areas, per the Erosion Control Plans.
- Soil disturbing work would be limited during the rainy season.

Additionally, permanent BMPs would be implemented as part of the project and would include erosion control fabric or netting and hydroseeding to stabilize newly graded slopes and climate appropriate landscaping to reduce runoff and promote surface infiltration of runoff.

WQ-2: The project would incorporate pollution prevention and design measures consistent with the 2016 Caltrans' Statewide Stormwater Management Plan to meet Water Quality Objectives (WQOs). This plan complies with the requirements of the Caltrans' Statewide NPDES MS4 Permit (Order 2012-0011-DWQ).

The project design would likely include the following permanent stormwater treatment BMPs:

- Vegetated surfaces would feature native plants and revegetation would use a seed mixture, mulch, tackifier, and fertilizer combination recommended in the Erosion Control Plans prepared for the project.
- Existing roadway and bridge drainage systems currently discharge stormwater to receiving waters through bridge deck drains and/or discharge to vegetated slopes adjacent to the highway facility. The current design for stormwater management, post construction, is to perpetuate existing drainage patterns. Stormwater will continue to sheet flow to vegetated slopes providing stormwater treatment in accordance with Caltrans NPDES MS4 Permit.

WQ-3: A temporary water diversion would be necessary in the Russian River to construct the bridge foundation and cofferdams, which may need to be dewatered during pier retrofit and catcher bent construction. The contractor would be required to prepare and submit a Construction Site Dewatering/Diversion Plan to Caltrans for approval prior to any dewatering. Depending on site conditions, the plan may also require specifications for the relocation of sensitive aquatic species. Water generated from the dewatering operations would be pumped and discharged according to the approved plan and federal, state, or local regulations.

1.4.7 Hazardous Waste and Material

HW-1: Per Caltrans requirements, the contractor would prepare a project-specific Lead Compliance Plan (CCR Title 8, § 1532.1, the "Lead in Construction" standard) to reduce worker exposure to lead-impacted soil. The plan would include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of lead-impacted soil.

HW-2: Low levels of aerially deposited lead from the historic use of leaded gasoline exist along roadways throughout California. The project would adhere to Caltrans' Standard Special Provision Section 7-1.02K(6)(j)(iii) "Earth Material Containing Lead."

HW-3: Thermoplastic paint may contain lead of varying concentrations depending upon color, type, and year of manufacture. Traffic stripes would be removed and disposed of in accordance with Caltrans' Standard Special Provision Section 36-4 "Residue Containing Lead from Paint and Thermoplastic".

HW-4: Treated wood waste comes from old wood that has been treated with chemical preservatives to prevent fungal decay and insect attacks. Potential sources of treated wood waste within the project area are sign posts and guardrail. If treated wood waste is generated during this project, it would be disposed of in accordance with Standard Special Provision 14-11.14 "Treated Wood Waste".

HW-5: The existing structures were originally built in 1958, and it is possible that they were constructed using asbestos containing material and lead containing paint. Later in the project development process, a structural survey would be conducted that would determine whether special materials handling, worker health and safety training, and/or abatement would be required during construction.

1.4.8 Geology and Seismic/Topography

GS-1: The project would be designed to minimize slope failure, settlement, and erosion using recommended construction techniques and BMPs. New slopes would be revegetated to reduce erosion potential.

GS-2: Temporary construction site BMPs including fiber rolls, silt fences, temporary gravel bag berms, stabilized entrances/exits to construction areas, temporary cover for stockpiles, streambed stabilization, and street sweeping would be implemented as necessary to reduce the amount of erosion and topsoil loss. In addition to temporary BMPs, permanent BMPs would be implemented to final slopes and disturbed areas. Erosion control fabric or netting and hydroseed would be used to

stabilize newly graded slopes. Climate appropriate landscaping that reduces runoff and promotes surface infiltration would be planted prior to completion construction.

GS-3: In the unlikely event that fossils were encountered during project excavations, Caltrans' Standard Specification 14-7 would be followed. This standard specification states that if unanticipated paleontological resources were discovered, all work within 60 feet would stop, the area around the fossil would be protected, and the Resident Engineer would be notified.

1.4.9 Wetlands and Other Waters

WW-1: The contractor would be required to place temporary barrier fencing along the boundaries of all riparian, wetland or other environmentally sensitive areas adjacent to the project footprint.

WW-2: Impacts to waters and riparian vegetation would be reduced by incorporating the measures identified in the Biological Resources Section.

WW-3: Caltrans would be required to restore wetland and riparian areas temporarily impacted by construction to pre-existing conditions prior to completion of construction.

1.4.10 Threatened and Endangered Species

TS-1: To protect the most vulnerable life stages of sensitive fish species that occur within the project area, in-stream work would be restricted to the period between June 15 and October 15. Construction activities restricted to this period include any work within the bed, bank or channel.

TS-2: Prior to any construction activities or grading below the Ordinary High-Water Mark (OHWM) of the Russian River or within the associated drainages, a qualified Contractor Supplied Biologist (CSB) would survey the anticipated work area for the presence of foothill yellow-legged frog (FYLF), western pond turtle (WPT), and any other potentially present aquatic species. Any frogs or turtles located would have a temporary disturbance buffer of 25 feet until the animal vacates the area. If the animal is in imminent danger or expected to delay construction, then the animal may be safely relocated to suitable habitat outside the project area.

A qualified biologist would monitor all construction activities in jurisdictional waters, and be present during dewatering activities, drilling, concrete pours, and road grading to ensure adherence to all environmental permit conditions and avoidance and minimization measures during construction.

TS-3: The pre-construction meeting with the contractor would consist of a briefing on environmental permit conditions and requirements relative to each stage of the proposed project, including, but not limited to, work windows, construction site management, and how to identify and report regulated species within the project areas.

TS-4: Artificial night lighting may be required. The use of artificial lighting would be temporary and of short duration, deflectors would be used, and lighting would be directed away from the channel and focused specifically on the portion of the bridge actively under construction to reduce potential disturbance to sensitive species. To reduce the effects of artificial light on sensitive biological resources, use near watercourses would be limited to critical need (i.e., due to accelerated work schedule to meet permit deadlines or reaching a critical juncture in work at a time when it would be infeasible to stop construction).

TS-5: Hydroacoustic monitoring would be conducted during all construction activities that have the potential to produce impulsive sound waves within the Russian River. This may include work associated with the temporary access route that may require pile driving (land based). Hydroacoustic monitoring would ensure compliance with the terms and conditions resulting from Section 7 consultation with NMFS and provide an opportunity to adopt alternative construction methods to avoid or minimize project impacts where feasible.

A hydroacoustic monitoring plan would be prepared prior to construction that addresses the frequency of monitoring, positions that hydrophones would be deployed, and techniques for gathering and analyzing acoustic data, quality control measures, and reporting activities.

TS-6: Fish relocation would be performed as described under AS-4.

1.4.11 Plant Species

PS-1: After all construction materials are removed, the project area would be revegetated. Replanting would be subject to a plant establishment period as defined by project permits, which would require Caltrans to adequately water plants, replace unsuitable plants, and control pests. Caltrans would implement a program of invasive weed control in all areas of soil disturbance caused by construction to improve habitat for native species in and adjacent to disturbed soil areas within the project limits.

PS-2: The contractor would be required to place temporary barrier fencing along the boundaries of all riparian, wetland or other environmentally sensitive areas to avoid impacts to sensitive habitats that occur adjacent to the project footprint.

1.4.12 Animal Species

AS-1: Vegetation removal would be restricted to the period outside the bird breeding season (October 1 through January 31) or, if vegetation removal is required during the breeding season, a nesting bird survey would be conducted within one week of disturbance by a qualified biologist. If an active nest is located, the biologist would coordinate with CDFW to establish appropriate species-specific buffer(s) and any monitoring requirements. The buffer(s) would be delineated around each active nest and construction activities would be excluded from these areas until the nest is no longer occupied.

AS-2: Partially constructed and unoccupied nests within the construction area would be removed and disposed of on a regular basis throughout the breeding season (February 1 to September 30) to prevent their occupation. Nest removal would be repeated weekly under guidance of a qualified biologist to ensure nests are inactive prior to removal. Removed nest material would be prevented from falling into waterways. Exclusionary devices would not be used to prevent birds nesting on the existing bridge structures as these devices have the potential to entrap or harm night roosting bats. A bat exclusion plan would be developed for this project. Exclusion devices would be installed after the maternity season but before hibernation. Exclusion devices would be installed and monitored by a CSB.

AS-3: Pre-construction surveys for active raptor nests within one-fourth mile of the project area would be conducted by a qualified biologist within 15 days prior to the initiation of construction activities. Areas to be surveyed would be limited to those areas subject to increased disturbance because of construction activities (i.e., areas where existing traffic or human activity is greater than or equal to construction-related disturbance need not be surveyed). If any active raptor nests were identified, appropriate conservation measures (as determined by a qualified biologist) would be implemented. These measures may include, but are not limited to, establishing a construction-free buffer zone around the active nest site, biological monitoring of the active nest site, and delaying construction activities near the active nest site until the nest is no longer occupied.

AS-4: Construction of the temporary water diversion would likely require exclusion, capture, and relocation of aquatic species occurring within the dewatered area. The contractor would be required to include an Aquatic Species Relocation Plan as part

of the Construction Site Dewatering and Diversion Plan to Caltrans for approval prior to any dewatering and diversion. The plan would clearly outline the methods for dewatering and aquatic species relocation. Fish exclusion and relocation would likely be conducted using seining gear, electrofishing gear, or dip nets. If electrofishing is required, it would be performed by a qualified fisheries biologist with appropriate training and experience in electrofishing techniques. Electrofishing for salmonids would comply with *Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act,* and any seining or other capture and removal techniques would adhere to the *California Salmonid Stream Habitat Restoration Manual*.

All salmonids removed from the work area would be relocated to nearby suitable habitat downstream of the diversion. If unexpected life stages are observed (e.g., adults or smolts), or unforeseen injury or mortality of salmonids occurs, project activities would cease and NMFS and CDFW would be contacted immediately. Once aquatic species have been relocated from the work area, the diversion would be constructed. The proposed diversion may consist of one or a series of pipes laid side by side along the west bank of the creek and buried with clean gravel. A combination of plastic liner, gravel bags, a water bladder, and/or other impermeable materials would be used to direct water through the culvert. Because sufficient head flow is anticipated through the diversion, gravity, rather than pumping, would carry water through the pipe(s). To fully assess any fish not captured during initial efforts and to avoid stranding, dewatering drawdown would occur incrementally. The diversion area may be electrofished a second time after the dam is placed and water levels drop to capture any fish that remain. Additional clean gravel may be added to the stream bed over RSP fabric to establish a flat working surface where needed under the bridge.

The plan would also include provisions for a pre-construction survey by a qualified biologist for WPT, and FYLF. Any turtle nests located would be marked for avoidance. Any frogs, tadpoles, and egg masses found during the initial survey would be safely netted and relocated to suitable habitat downstream of the project area by the biologist prior to conducting electrofishing for salmonids or lamprey. Gravel or any other material for construction purposes would be introduced slowly starting upstream, giving frogs an opportunity to escape downstream. The biologist would be present during all phases of in-stream construction to assist with relocation efforts as they arise.

1.4.13 Invasive Species

The standard measures described in PS-1 for restoring the project site post construction are also appropriate for the control of invasive species.

IS-1: After all construction materials are removed, the project area would be restored to a natural setting by grading, placing erosion control, and replanting. Replanting would be subject to a plant establishment period as defined by project permits, which would require Caltrans to adequately water plants, replace unsuitable plants, and control pests. Caltrans would implement a program of invasive weed control in all areas of soil disturbance caused by construction to improve habitat for native species in and adjacent to disturbed soil areas within the project limits.

IS-2: Plant species used for erosion control would consist of native species or non-persistent hybrids that would prevent invasive species from colonizing disturbed area.

IS-3: Gravel and/or fill material to be placed in relatively weed-free areas would come from weed-free sources.

1.5 Discussion of the NEPA Categorical Exclusion

This document contains information regarding compliance with CEQA and other state laws and regulations. Separate environmental documentation, supporting a Categorical Exclusion (CE) determination, would be prepared in accordance with the National Environmental Policy Act (NEPA). When needed for clarity, or as required by CEQA, this document may contain references to federal laws and/or regulations (CEQA, for example, requires consideration of adverse effects on species identified as a candidate, sensitive, or special-status species by the NMFS and the USFWS—in other words, species protected by the Federal Endangered Species Act).

Chapter 2 CEQA Environmental Checklist

Environmental Factors Potentially Affected

The environmental factors noted below would be potentially affected by this project. Please see the CEQA checklist on the following pages for additional information.

Potential Impact Area	Impacted: Yes / No
Aesthetics	Yes
Agriculture and Forestry	No
Air Quality	Yes
Biological Resources	Yes
Cultural Resources	Yes
Energy	No
Geology/Soils	Yes
Greenhouse Gas Emissions	Yes
Hazards and Hazardous Materials	Yes
Hydrology/Water Quality	Yes
Land Use/Planning	No
Mineral Resources	No
Noise	No
Population/Housing	No
Public Services	No
Recreation	No
Transportation/Traffic	No
Tribal Cultural Resources	No
Utilities/Service Systems	No
Wildfire	No
Mandatory Findings of Significance	Yes

The CEQA Environmental Checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the project would indicate there are no impacts to a particular resource. A NO IMPACT answer in the last column of the checklist reflects this determination. The words “significant” and “significance” used throughout the checklist and this document are only related to potential impacts pursuant to CEQA.

The questions in the CEQA Checklist are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, as well as standard measures that are applied to all or most Caltrans' projects (such as BMPs and measures included in the Standard Plans and Specifications or as Standard Special Provisions) are considered to be an integral part of the project and have been considered prior to any significance determinations documented in the checklist or document.

Project Impact Analysis Under CEQA for Initial Study

CEQA broadly defines "project" to include "*the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment"* (14 CCR § 15378). Under CEQA, normally the baseline for environmental impact analysis consists of the existing conditions at the time the environmental studies began. However, it is important to choose the baseline that most meaningfully informs decision-makers and the public of the project's possible impacts. Where existing conditions change or fluctuate over time, and where necessary to provide the most accurate picture practically possible of the project's impacts, a lead agency may define existing conditions by referencing historic conditions, or conditions expected when the project becomes operational, or both, that are supported with substantial evidence. In addition, a lead agency may also use baselines consisting of both existing conditions and projected future conditions that are supported by reliable projections based on substantial evidence in the record. The CEQA Guidelines require a "statement of objectives sought by the proposed project" (14 CCR § 15124(b)).

CEQA requires the identification of each potentially "significant effect on the environment" resulting from the action, and ways to mitigate each significant effect. Significance is defined as *"Substantial or potentially substantial adverse change to any of the physical conditions within the area affected by the project"* (14 CCR § 15382). CEQA determinations are made prior to and separate from the development of mitigation measures for the project.

The legal standard for determining the significance of impacts is whether a "fair argument" can be made that a "substantial adverse change in physical conditions" would occur. The fair argument must be backed by substantial evidence including facts, reasonable assumption predicated upon fact, or expert opinion supported by facts. Generally, an environmental professional with specific training in a particular area of environmental review can make this determination.

Though not required, CEQA suggests Lead Agencies adopt ***thresholds of significance,*** which define the level of effect above which the Lead Agency would consider impacts to be significant, and below which it would consider impacts to be less than significant. Given the size of California and it's varied, diverse, and complex ecosystems, as a Lead Agency that encompasses the entire State, developing ***thresholds of significance*** on a state-wide basis has not been pursued by Caltrans. Rather, to ensure each resource is evaluated objectively, Caltrans analyzes potential resource impacts based on their location and the effect of the potential impact on the resource as a whole in the project area. For example, if a project has the potential to impact 0.10 acre of wetland in a watershed that has minimal development and contains thousands of acres of wetland, then a "less than significant" determination would be considered appropriate. In comparison, if 0.10 acre of wetland would be impacted that is located within a park in a city that only has 1.00 acre of total wetland, then the 0.10 acre of wetland impact could be considered "significant."

If the action may have a potentially significant effect on any environmental resource (even with mitigation measures implemented), then an Environmental Impact Report (EIR) must be prepared. Under CEQA, the lead agency may adopt a negative declaration (ND) if there is no substantial evidence that the project may have a potentially significant effect on the environment (14 CCR § 15070(a)). A proposed negative declaration must be circulated for public review, along with a document known as an Initial Study (IS). CEQA allows for a "mitigated negative declaration" in which mitigation measures are proposed to reduce potentially significant effects to less than significant (14 CCR § 15369.5).

Although the formulation of mitigation measures shall not be deferred until some future time, the specific details of a mitigation measure may be developed after project approval when it is impractical or infeasible to include those details during the project's environmental review. The lead agency must (1) commit itself to the mitigation, (2) adopt specific performance standards the mitigation would achieve, and (3) identify the type(s) of potential action(s) that can feasibly achieve that performance standard and that would be considered, analyzed, and potentially incorporated in the mitigation measure. Compliance with a regulatory permit or other similar process may be identified as mitigation if compliance would result in implementation of measures that would be reasonably expected, based on substantial evidence in the record, to reduce the significant impact to the specified performance standards (§15126.4(a)(1)(B)). Per CEQA, measures may also be adopted, but are not required, for environmental impacts that are not found to be significant (14 CCR § 15126.4(a)(3)). Under CEQA, mitigation is defined as avoiding, minimizing, rectifying, reducing, and compensating for any potential impacts (CEQA 15370).

Regulatory agencies may require additional measures beyond those required for compliance with CEQA. Though not considered “mitigation” under CEQA, these measures are often referred to in an Initial Study as “mitigation”, Good Stewardship or BMPs. These measures can also be identified after the IS/MND is approved.

CEQA documents must consider direct and indirect impacts of a project (CAL. PUB. RES. CODE § 21065.3). They are to focus on significant impacts (14 CCR § 15126.2(a)). Impacts that are less than significant need only be briefly described (14 CCR § 15128). All potentially significant effects must be addressed.

2.1 Aesthetics

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Have a substantial adverse effect on a scenic vista?	No	No	No	Yes
Would the project: b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No	No	Yes	No
Would the project: c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	No	No	Yes	No
Would the project: d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	No	No	No	Yes

"No Impact" and "Less Than Significant Impact" determinations in this section are based on the scope, description, and location of the proposed project, as well as the Visual Impact Assessment dated November 5, 2019.

Regulatory Setting

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

Environmental Setting

SR-20 is eligible for designation as a State Scenic Highway from the coast in Fort Bragg to Colusa County. The bridge is located less than half a mile east of the US-101/SR-20 junction and approximately six miles north of Ukiah. The route is generally curvilinear and characterized by mountainous terrain. The land use type is considered

undeveloped land, with some scattered rural residential development, agricultural, and recreational use. The project is in the Northern California Coast Ranges as part of the Section of California Eco-regions. Oak woodlands, chaparral, and grassland border the highway corridor east and west of the bridge. Riparian vegetation and agricultural land along and adjacent to the Russian River are seen north and south of the bridge. A mill yard is located in the southern viewshed from the bridge, and agricultural land is within the northern viewshed. Lake Mendocino, a recreational reservoir, is located two miles southeast of the bridge. The region is characterized by a Mediterranean climate of hot dry summers and cool moist winters.

Discussion of Environmental Evaluation Questions 2.1—Aesthetics

a) SR-20 provides some areas that could potentially be considered a vista point along the main roadway. However, Caltrans has not officially designated a scenic vista in the general vicinity of the project area, nor has an informal scenic vista been established and utilized by the public. No scenic vistas would be impacted by the proposed project.

b) Within the project area, SR-20 is listed as an Eligible State Scenic Highway. Within the project limits, the most notable scenic resources are the natural roadside vegetation, the Russian River, and views of surrounding hills, vineyards and riparian vegetation along the river. Although the project includes tree and vegetation removal, on- and off-site restoration/mitigation of riparian and oak woodland habitat would occur, reducing the project's visual impact to less than significant. No significant quantities of landscape features would be removed that would potentially affect SR-20's eligibility as a State Scenic Highway.

c) The project corridor travels through oak woodlands, agricultural land, and crosses the Russian River. Within the existing corridor, dense vegetation blocks outward views and therefore the dominant view is of the highway. Though the site would remain an active roadway, the project would remove many of the pattern attributes and characteristics that contribute to the visual experience of the highway. However, the on-site habitat restoration, inclusion of a pattern on the bridge railing, and coloring of the galvanized chain link fencing is expected to reduce permanent visual quality effects. Therefore, the project is expected to generate a less than significant impact on the visual quality of the site.

d) The proposed project is expected to be completed during normal working daylight hours as to not necessitate nighttime illumination sources. Any potential for light and glare would be temporary and all temporary construction activities that require nighttime illumination sources for staging, access, or other construction activities shall comply with Caltrans' Standard Specification 7-1.04, "Public Safety". Fencing is required on the bridge above the railroad tracks, consisting of chain link fence, colored either green,

brown, or black to reduce reflectivity and recede into the landscape. Therefore, no substantial new source of lighting or glare is proposed as part of the project.

Mitigation Measures

Based on the determinations made in the CEQA Checklist, mitigation measures have not been proposed for the project.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "*No Impact*" would occur.

2.2 Agriculture and Forest Resources

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	No	No	No	Yes
Would the project: b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	No	No	No	Yes
Would the project: c) Conflict with existing zoning, 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))?	No	No	No	Yes
Would the project: d) Result in the loss of forest land or conversion of forest land to non-forest use?	No	No	No	Yes

Would the project: 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?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project, as well as the California Department of Conservation Farmland Maps and Natural Resources Conservation Service Soil Survey. Potential impacts to Agriculture and Forest Resources are not anticipated due to the following:

a) Although permanent acquisition of land is anticipated as part of this project, no Prime Farmland would be acquired. Land classified as Prime Farmland is located to the north of the existing SR-20 alignment. The proposed alignment would shift SR-20 to the south, away from Prime Farmland. The project would not convert any land currently used for agriculture to non-agricultural use.

b) There are no parcels under a Williamson Act contract within the project limits.

c) No forest land, timberland, or timberland zoned Timberland Production was identified within the project limits.

d) No forest land was identified within the project limits, and no conversion of forest land to non-forest use is associated with this project.

e) There would be no other changes to farmland or forest land.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "No Impact" would occur.

2.3 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.

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Conflict with or obstruct implementation of the applicable air quality plan?	No	No	No	Yes
Would the project: b) 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?	No	No	No	Yes
Would the project: c) Expose sensitive receptors to substantial pollutant concentrations?	No	No	No	Yes
Would the project: d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	No	No	Yes	No

"No Impact" and "Less Than Significant" determinations in this section are based on the scope, description, and location of the proposed project, as well as the Noise, Air Quality, Greenhouse Gas, and Energy Analysis dated July 23, 2019. There would be temporary construction emissions associated with the project. Please see Section 2.8 – Greenhouse Gas Emissions for more information.

Regulatory Setting

The Federal Clean Air Act (CAA), as amended, is the primary federal law that governs air quality, while the California Clean Air Act is its corresponding state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards (CAAQS) have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), which is broken down for regulatory

purposes into particles of 10 micrometers or smaller (PM10) and particles of 2.5 micrometers and smaller (PM2.5), and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb) and state standards exist for visibility-reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and CAAQS are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel "conformity" requirement under the CAA also applies.

The project area is in attainment for federal and state criteria pollutants O, PM10, and PM2.5, and is in unclassified status for all other criteria pollutants (Mendocino County Air Pollution Control District).

Environmental Setting

The proposed project is located in Mendocino County. Mendocino County is designated as attainment or is unclassified for all current National Ambient Air Quality Standards.

Discussion of Environmental Evaluation Questions 2.3—Air Quality

a - c) Mendocino County is designated as in attainment or unclassified for all current NAAQS. The proposed project would not result in changes to the traffic volume, fleet mix, vehicle speed, location of the existing facility, or any other factor that would cause an increase in operational emissions and therefore, would have no impact to air quality.

d) The proposed project may result in the generation of short-term, construction-related air emissions, including fugitive dust and exhaust emissions from construction equipment. Fugitive dust, sometimes referred to as windblown dust or PM10, would be the primary short-term construction impact, which may be generated during excavation, grading and hauling activities. However, both fugitive dust and construction equipment exhaust emissions would be temporary and transitory in nature. Dust and emissions are reduced and controlled according to Caltrans' 2015 Standard Specifications, under the Section 10-5 "Dust Control", Section 14-9 "Air Quality" and Section 18 "Dust Palliatives." Due to the above information, there would be a "Less Than Significant" impact to air quality.

Mitigation Measures

Based on the determinations made in the CEQA Checklist, mitigation measures have not been proposed for the project.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.4 Biological Resources

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?	No	Yes	No	No
Would the project: 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 Wildlife or U.S. Fish and Wildlife Service?	No	Yes	No	No
Would the project: c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	No	Yes	No	No
Would the project: 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?	No	No	Yes	No
Would the project: e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	No	No	Yes	No
Would the project: 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?	No	No	No	Yes

"No Impact," "Less Than Significant Impact," and "Less Than Significant with Mitigation" determinations in this section are based on the scope, description, and location of the proposed project, as well as the Natural Environment Study.

Regulatory Setting

Natural Communities

CDFW has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (Fish & Game Code, § 1802). CDFW, as a trustee agency under CEQA Guidelines Section 15386, provides expertise in reviewing and commenting on environmental documents and provides protocols regarding potential negative impacts to those resources held in trust for the people of California.

CDFW maintains records of sensitive natural communities in the California Natural Diversity Database (CNDDB). Natural Communities of Special Concern (NCSC) are those natural communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special-status taxa and their habitat. High priority NCSC are globally (G) and state (S) ranked 1 to 3, where 1 is critically imperiled, 2 is imperiled, and 3 is vulnerable. Global and state ranks of 4 and 5 are considered apparently secure and demonstrably secure, respectively. Natural communities with ranks of S1-S3 are to be addressed in the environmental review processes of CEQA and its equivalents.

Wetlands and waters of the U.S. are also considered sensitive by both federal and state agencies, which are discussed in more detail below.

Wetlands, Other Waters, and Adjacent Riparian Vegetation

FEDERAL

Waters of the United States (including wetlands) 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. The lateral limits of jurisdiction over non-tidal water bodies extend to the OHWM, in the absence of adjacent wetlands. When

adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. 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 USACE with oversight by the U.S. EPA.

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. 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 Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] 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 (EO) for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as the Federal Highway Administration (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 proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

STATE

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the RWQCBs, and CDFW. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) may also be involved.

Sections 1600–1607 of the California Fish and Game Code (CFGC) require any agency that proposes a project that would 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 the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement (LSAA) would 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 Hydrology and Water Quality section for additional details.

Plant Species

USFWS and CDFW have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special-status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species Section in this document for detailed information regarding these species.

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

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Sections 1900–1913, and CEQA, found at California Public Resources Code, Sections 21000–21177.

Animal Species

Many state and federal laws regulate impacts to wildlife. The USFWS, National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service [NMFS]), and 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 Acts. Species listed or proposed for listing as threatened or endangered are discussed in the following section. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NMFS candidate species.

Federal laws and regulations pertaining to wildlife include the following:

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

State laws and regulations pertaining to wildlife include the following:

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

Threatened and Endangered Species

The primary federal law protecting threatened and endangered species is FESA: 16 USC Section 1531, et seq. See also 50 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 FHWA (and Caltrans, as assigned), are required to consult with the USFWS and NMFS to ensure 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 BO 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, 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. CDFW is the agency responsible for implementing CESA. Section 2080 of the California 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 California 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 CDFW. For species listed under both FESA and CESA requiring a BO under Section 7 of 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.

Invasive Species

On February 3, 1999, President William J. Clinton signed EO 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." 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 NEPA analysis for a proposed project.

Environmental Setting

US-101 runs in a north/south direction, entering the Russian River basin from the northwest in the area of Forsythe Creek and continuing along the middle reach, crossing over the river as it turns westward, north of Santa Rosa. SR-20 runs along the East Fork and crosses the mainstem south of Redwood Valley. The Calpella Bridge project is located immediately east of the intersection of SR-20 and US-101, approximately 9.5 linear miles south of the northern boundary of the Russian River watershed.

Vegetation composition within the watershed is comprised of coniferous (12%), Montane Hardwood (40%), Grassland (18%), and agricultural (13%). Dominant land uses include urban areas, agriculture, ranching, and gravel mining. Impairments to the watershed include sediment, temperature, nutrients, pathogens, and metals.

At the project location, the active channel of the Russian River is a perennial river that flows beneath the Russian River Bridge (Bridge # 10-182) and consists of low to medium riffles with substrate consisting of primarily cobbles, silt and woody debris. There are a series of lateral ephemeral channels that appear to exhibit flow through much of the winter rainy season and either dry up or pond by early to late spring. This river provides habitat for various species, such as anadromous fish and amphibians.

The project is located in the mountainous terrain of Mendocino County, which is characterized by high rainfall and mixed evergreen, mixed hardwood and redwood forests. The surrounding habitats include hardwoods such as California black oak (*Quercus kelloggii*), Coastal live oak (*Quercus agrifolia*), Oregon oak (*Quercus garryana*), Pacific madrone (*Arbutus menziesii*), big-leaf maple (*Acer marophyllum*), and Oregon ash (*Fraxinus latifolia*); coastal chaparral and scrub such as manzanita (*Arctostaphylos manzanita*), buck brush (*Ceanothus cuneatus var. cuneatus*), toyon (*Heteromeles arbutifolia*), and coyote brush (*Baccharis pilularis*); and open grassland areas including various herbaceous plants.

Habitat types within the Environmental Study Limit (ESL) vary greatly, with California black oak and big-leaf maple habitat northwest of the existing bridge;

to riparian habitat extending along the southwest and southeast of the Russian River. Oak woodlands, including manzanita species can be found east of Eastside Calpella Road.

Natural Communities

Oak Woodlands

Two oak woodland alliances were observed within the project vicinity, Coast Live Oak (*Quercus agrifolia*) Woodland Alliance and Valley Oak (*Quercus lobata*) Woodland Alliance. One other community identified within the ESL, the California Bay (*Umbellularia californica*) Forest Alliance also contains Coast live oak and California black oak (*Quercus kelloggii*), however, other dominant overstory species present within the community including California bay laurel (*U. californica*) and big-leaf maple (*Acer macrophyllum*) led to the community more closely representing the California Bay Laurel Alliance.

Within the ESL, approximately 10.43 acres of Coast live oak woodlands and 1.97 acres of valley oak woodland were observed. Valley oak dominant communities within the ESL exist largely between the Russian River and Easteside Calpella Road. and most closely identify with a sub-description of valley oak woodlands within the Northern California Interior Coast Ranges, which can occupy riparian benches and terraces. As a result, impacts to areas within the Valley Oak Woodland Alliance are discussed in the Riparian section and are not discussed in the Oak Woodland Project Impacts.

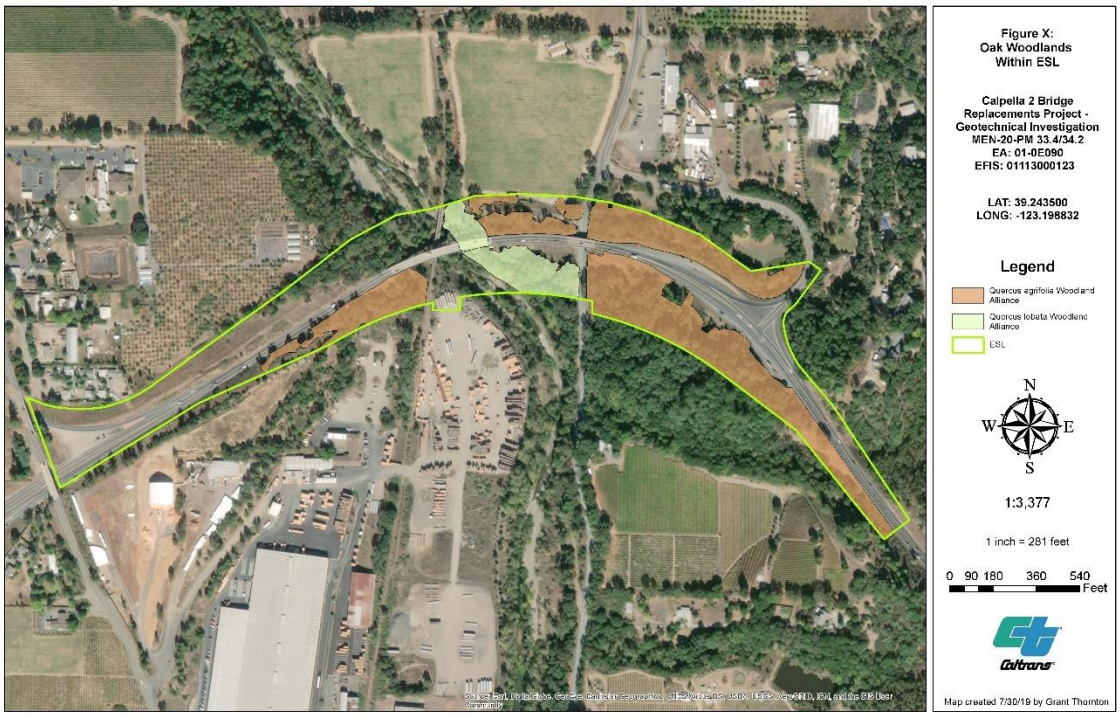

Figure 3: Oak Woodlands within ESL

Wetlands, Other Waters, and Adjacent Riparian Vegetation

WETLANDS

The methodology described in the USACE's *1987 Corps of Engineers Wetlands Manual* and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), May 2010, were used to delineate wetlands within the project ESL (portions of the action area outside the ESL were not surveyed for wetlands). The most current estimates of impacts to potentially jurisdictional wetlands, based on non-USACE-verified jurisdictional boundaries and the most current project design, are summarized in the discussion of the CEQA checklist below. A total of 0.69 acre of potentially jurisdictional wetlands were delineated within the project ESL. Access was denied to some portions of the ESL, as a result, additional wetlands may be present within areas of the ESL that have not been surveyed to date. It is anticipated that access would be granted in 2020 and that surveys within these areas would be completed in spring 2020.

Photos 1 and 2: Images taken July 10, 2019 and June 14, 2018, show potentially jurisdictional wetlands identified in the Biological Study Area (BSA) in the northwest and southeast areas, respectively.

Wetlands in the northwest section of the ESL appear to be influenced by irrigation of an orchard, located approximately 150 feet north of potentially jurisdictional wetlands. Potentially jurisdictional wetlands located in the southeast portion of the ESL appear to be influenced by a culvert outlet at PM 33.95 and a downed tree south of the culvert outlet (Photo 3 and 4). It appears a drainage channel existed from the culvert at PM 33.95 to the drainage at Eastside Calpella Road, however, due to excessive siltation and the downed tree, water flowing out of the culvert discharges into the property immediately south of the ROW.

Photos 3 and 4: Images taken February 2019 show the culvert outlet at PM 33.95 and the downed tree west of the culvert outlet.

OTHER WATERS

The Russian River is a perennial river that is approximately 110 miles long with headwaters north of Ukiah that flow southward to Forestville, emptying into the Pacific Ocean in Jenner, CA. At the project location, the active channel of the Russian River is approximately 50 feet wide with average depths ranging from 0.2 to 1.2 m (0.66 to 3.93 feet), although episodic periods of intense flooding do occur. The floodplain immediately west of the active channel of the Russian River extends approximately 94 feet from the west bank of the active channel and contains a series of lateral channels that convey water during high flow and exhibit an OHWM. Substrate within the river consists mainly of cobble, silt, and woody debris.

Photo 5: Image taken May 16, 2019 shows debris approximately three meters higher than the lateral channel west of the Russian River's active channel.

ADJACENT RIPARIAN VEGETATION

Within the ESL, a total of three riparian habitat communities, comprising approximately 2.82 acres were observed. A fourth habitat community, the Fremont Cottonwood Forest, is typically associated with riparian habitats, but was observed outside the riparian area. The community is described below, but is not included in overall riparian impacts. This Forest comprised approximately 0.161 acre within the ESL. Brief discussions of each community are provided below.

Valley Oak Riparian Forest

A Valley Oak riparian community exists east of the left bank of the Russian River to Eastside Calpella Road. This community is found on the north and south sides of the existing alignment, though it extends further south than north of the existing alignment within the ESL (Figure 4). The area south of the existing SR 20, sits at an elevation approximately 3 meters (10ft) higher than the OHWM of the Russian River (Photo 6). This area may experience some flooding during high water years and provides shade to an ephemeral drainage from Eastside Calpella Road that ultimately discharges into the Russian River. Within this community there are small isolated patches of non-native tree species including Osage orange (*Maclura pomifera*) and American elm (*Ulmus americana*).

Photo 6: Image of drop off point from Valley Oak Woodland to active channel of Russian River.

White Alder (Alnus rhombifolia) Forest Alliance

White alder is well adapted to many flood regimes. Stands exist usually on seasonally flooded stream banks and channel bars just at or below the bank full level, but they occur sometimes in intermittently flooded floodplains and rarely in permanently saturated seeps.

The white alder forest alliance comprises a majority of the community found within the Russian River floodplain and makes up approximately 0.815 acre of habitat within the ESL. Other dominant overstory and mid-story species observed within this community include Fremont cottonwood (*Populus fremontii*), sandbar willow (*Salix exigua*), black willow (*Salix gooddingii*), and California grape (*Vitis californica*).

Sandbar Willow Thickets

The sandbar willow thicket alliance is widespread and common throughout California, especially along seasonally or temporarily flowing streams and at seeps. It often forms dense clonal stands, though great variation exists regionally in shrub and understory composition, ranging from Sierran mountain meadows to those in Colorado Desert oases.

Although sandbar willow is a component of the other communities described above, this habitat alliance is found specifically on a small island between the active channel of the Russian River and a secondary channel immediately west of the active channel, south of the existing alignment. Within the ESL, this community comprises approximately 0.035 acre.

Fremont Cottonwood (Populus fremontii) Forest Alliance

Fremont cottonwood (*P. fremontii*) is a fast-growing, short-lived tree that is shade intolerant. Trees produce copious, wind-dispersed seeds in the spring that are viable for up to 5 days. Seeds germinate on moist alluvium and other recently disturbed sites and successfully establish in areas where subsurface water is available during the growing season. Although cottonwoods are components of other communities within the ESL, this particular community was observed in a non-riparian area, adjacent to a coast live oak community, located approximately 0.07 mile east of the intersection of SR-20 and Eastside Calpella Road. Within the ESL, this community is comprised largely of cottonwoods and arroyo willow (*Salix lasiolepis*) and encompasses approximately 0.16 acre.

This particular community does not appear to be associated with any state or federally jurisdictional areas and was not considered in impact assessment for riparian communities.

Figure 4: Riparian Communities within ESL

Plant Species

The plants listed in Table 2 are considered to be of special concern based on (1) federal, state, or local laws regulating their development; (2) limited distributions; and/or (3) the presence of habitat required by the special-status plants occurring on site. No species listed in Table 2 were identified within the ESL, however, access was denied to some portions of the BSA until late spring/summer 2019, after all sensitive plant species had senesced. As a result, full floristic surveys for special status plant species could not be completed within the BSA during the appropriate times. It is anticipated that access would be granted in 2020 and that surveys within these previously restricted areas would be completed in spring 2020.

Northern California black walnut (*Juglans hindsii*) was identified within the ESL and is discussed in greater detail below. A list with effects determinations for all plant species with the potential to occur within the area are listed in Table 2.

Northern California Black Walnut

Two Northern California black walnuts were observed within the ESL. The furthest northern extent of Northern California black is within Napa county, which is south of the project location. It is likely that this tree is outside of its natural distribution and may have originated from the rootstock of one of the local orchards near the project location. Several walnut orchards have been observed near the project site, including one immediately northwest of the project site, and several more along North State Street and County Road A.

Table 2 – Special Status Plants Potentially Occurring or Known to Occur in the Project Area

Scientific Name	Common Name	Federal/ State/ CNPS	Habitat	Present/ Absent	Rationale
Plants					
Cypripedium californicum	California lady's-slipper	-/-/List 4.2	Bogs and fens, lower montane coniferous forest/seeps and streambanks, usually serpentinite.	Absent	No Impact. Suitable habitat not present within ESL
Cypripedium montanum	Mountain lady's-slipper	-/-/List 4.2	Broad-leafed upland forest, Cismontane woodland, lower montane coniferous forest, North Coast coniferous forest.	Absent	No Impact. Species not observed during surveys.
Lasthenia burkei	Burke's goldfields	E/E/List 1B.1	Meadows and seeps (mesic), vernal pools.	Absent	No Effect. Suitable habitat not present within ESL.
Lasthenia conjugens	Contra Costa goldfields	E/-/List 1B.1	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools/mesic.	Absent	No Effect. Suitable habitat not present within ESL.
Limnanthes bakeri	Baker's meadowfoam	-/R/List 1B.1	Meadows and seeps, marshes and swamps (freshwater), valley and foothill grassland (vernally mesic), vernal pools.	Present	No Impact. species not observed during surveys.

Navarretia leucocephala ssp. bakeri	Baker's navarretia	-/-/List 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools/mesic.	Present	No Impact. Species not observed during surveys.
Ranunculus lobbii	Lobb's aquatic buttercup	-/-/List 4.2	Cismontane woodland, North Coast coniferous forest, valley and foothill grassland, vernal pools/mesic.	Present	No Impact. Species not observed during surveys.
Sanguisorba officinalis	Great burnet	-/-/List 2B.2	Bogs and fens, broadleafed upland forest, meadows and seeps, marshes and swamps, North Coast coniferous forest, riparian forest/often serpentinite.	Absent	No Impact. Species not observed during surveys.
Trifolium amoenum	Showy Indian clover	E/-/List 1B.1	Coastal bluff scrub, valley and foothill grassland (sometimes serpentinite).	Present	No Impact. Suitable habitat not present within ESL.

[1]Status Explanations:

Federal Status (pursuant to the Federal Endangered Species Act of 1973, as amended)

E = endangered. Listed as being in danger of extinction.

T = threatened. Listed as likely to become endangered within the foreseeable future.

P = proposed. Proposed for listing as threatened or endangered, or for delisting.

C = candidate. Candidate that may become a proposed species.

D = delisted.

- = no listing under the Federal Endangered Species Act.

State Status (pursuant to §1904 (Native Plant Protection Act of 1977) and §2074.2 and §2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code)

E = listed as endangered under the California Endangered Species Act.

T = listed as threatened under the California Endangered Species Act.

C = candidate. Candidate that may become threatened, endangered, or delisted.

D = delisted.

- = no listing.

State Status (other listings)

SC = species of special concern. Animals not listed under the Federal Endangered Species Act or the California Endangered Species Act, but which are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist.

FP = Fully Protected. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

WL = Watch List. Species that do not meet the criteria of SC, but for which there is concern and a need for additional information to clarify status.

California Native Plant Society (CNPS)

List 1A = Presumed extinct in California.

List 1B species = Plants rare, threatened, or endangered in California and elsewhere.

List 2 species = Rare, threatened, or endangered in California, but more common elsewhere.

List 3 species = More information is needed about the plant species.

List 4 species = Limited distribution (Watch List).

.1 = seriously endangered in California.

.2 = fairly endangered in California.

.3 = Not very endangered in California

Animal and Threatened/Endangered Species

Animals are considered to be of special concern based on (1) federal, state, or local laws regulating their development; (2) limited distributions; and/or (3) the habitat requirements of special-status animals occurring on site. Bat species, California Coastal chinook salmon (*Oncorhynchus tshawytscha*), Central California Coast coho salmon (*Oncorhynchus kisutch*), Central California Coast steelhead (*Oncorhynchus mykiss*), foothill yellow-legged frog (*Rana boylii*), osprey (*Pandion haliaetus*) western pond turtle (*Emys marmorata*), northern spotted owl (*Strix occidentalis caurina*) and yellow billed cuckoo (*Coccyzus americanus)* have the potential to exist within the ESL and are discussed in greater detail below. A list with effects determinations for all listed and sensitive animal species with the potential to occur within the area are listed in Table 3.

Table 3 – Special-status Animals and Critical Habitat Potentially Occurring or Known to Occur in the Project Area

Scientific Name	Common Name	Federal/ State	Habitat	Present/ Absent	Rationale
Amphibians					
Rana boylii	Foothill yellow-legged frog	-/SC	Creeks or rivers in woodlands or forests with rock and gravel substrate and low overhanging vegetation along the edge.	Present	Minimal Impact. Species observed within project limits. Avoidance and minimization measures would be implemented to avoid impacts and 'take' of the species.
Rana draytonii	California red-legged frog	T/SC	Permanent and semi-permanent aquatic habitats such as creeks and cold-water ponds, with emergent and submergent vegetation.	Present	No Effect. Suitable habitat present within project limits, however, project is outside species distribution. Discussed potential species occurrence with USFWS on 3/14/19.
Taricha rivularis	Red-bellied newt	-/SC	Coastal drainages from Humboldt county south to Sonoma county, inland to Lake county. Lives in terrestrial habitats, juveniles generally underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean rocky substrate.	Absent	No Impact. Suitable habitat present within ESL, however, project is outside species distribution and species not observed during surveys. The project would not result in take of the species.
Birds					
Charadrius alexandrinus nivosus	Western snowy plover	T/SC	Coastal beaches above the normal high tide limit with wood or other debris for cover. Inland shores of salt ponds	Absent	No Effect. Suitable habitat not present within ESL.

			and alkali or brackish inland lakes.		
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	T/E	Wide, dense riparian forests with a thick understory of willows for nesting; sites with a dominant cottonwood overstory are preferred for foraging; may avoid valley oak-riparian habitats where scrub jays are abundant.	Present	May effect, not likely to adversely effect. Suitable foraging and nesting habitat is present within ESL, however, species not observed within project area during general biological surveys.
Pandion haliaetus	Osprey	-/WL	Nests in snags, trees, or utility poles near the ocean, large lakes, or rivers with abundant fish populations.	Present	No Impact. Species observed within project limits, however, no nests observed within project limits. Foraging habitat marginal. Project would not result in take of species.
Strix occidentalis caurina	Northern spotted owl	T/T	Dense old-growth or mature forests dominated by conifers with topped trees or oaks available for nesting crevices.	Absent	No Effect. Suitable habitat not present within ESL.
Fish					
Oncorhynchus kisutch	Central California coast (CCC) coho salmon	E/E	Cool freshwater streams and rivers require sand and gravel for spawning.	Present	May affect, not likely to adversely affect. Project would not result in take of species.
Oncorhynchus mykiss	Central California coast (CCC) steelhead	T/-	Spawns in gravel-bottomed, high velocity rivers and streams; migrates to ocean.	Present	May affect, likely to adversely affect. Project would not result in take of species.

Oncorhynchus tshawytscha	California coastal (CC) Chinook salmon	T/-	Ocean and coastal streams.	Present	May affect, likely to adversely affect. Project would not result in take of species.
Mammals					
Erethizon dorsatum	North American porcupine	None	Occupy a variety of habitats including deciduous forests, open tundra, and desert chaparral. Occur in most major regions and habitat types across northern California	Absent	No Impact. Species not observed during surveys.
Pekania pennanti	Fisher	-/Pt	Mature, dense, northern coniferous and mixed forests with greater than 50% canopy closure and denning sites.	Absent	No Effect. Suitable habitat not present within ESL.
Reptiles					
Emys marmorata	Western pond turtle	-/SC	Permanent or mostly permanent waters in a variety of habitats.	Present	No Impact. Species not observed at surveys.
Habitats					
Habitat Name		**Habitat Description**		**Present/ Absent**	**Rationale**
CCC Coho Critical Habitat		Waterways, substrate, and adjacent riparian zones below longstanding, naturally impassable barriers.		Present	May affect, likely to adversely affect. Minimal vegetation removal would occur within the riparian corridor but outside the active channel. Minimal ground disturbance and vegetation disturbance would occur. AMMs in place to avoid/minimize potential impacts.

CC Chinook Salmon Critical Habitat	Stream channels within the designated stream reaches, and includes a lateral extent as defined by the ordinary high-water line.	Present	May affect, likely to adversely affect. Minimal vegetation removal would occur within the riparian corridor but outside the active channel. Minimal ground disturbance and vegetation disturbance would occur. AMMs in place to avoid/minimize potential impacts.
CCC Steelhead Critical Habitat	Stream channels within the designated stream reaches, and includes a lateral extent as defined by the ordinary high-water line.	Present	May affect, likely to adversely affect. Minimal vegetation removal would occur within the riparian corridor but outside the active channel. Minimal ground disturbance and vegetation disturbance would occur. AMMs in place to avoid/minimize potential impacts.
Coho EFH	Below OHWM.	Present	May adversely effect. No in-water work proposed.
Chinook Salmon EFH	Below OHWM.	Present	May adversely effect. No in-water work proposed.

[1]Status Explanations:

Federal Status (pursuant to the Federal Endangered Species Act of 1973, as amended)

E = endangered. Listed as being in danger of extinction.

T = threatened. Listed as likely to become endangered within the foreseeable future.

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FP = Fully Protected. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

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BAT SPECIES

Night time visual and acoustic exit surveys were conducted by Caltrans on June 20, 2018 and July 8, 2019. Results of species observed during the acoustic surveys were analyzed using SonoBat Version 4.2 (Table 4). A total of ten bat species were observed. A separate daytime and nighttime exit survey was conducted by environmental consultants Galloway Enterprises (Consultant) on October 15, 2018 for a bridge deck overlay project on the Russian River bridge. According to the Consultant report, a total of 7 bats of an unknown species were observed exiting a hinge joint within the Russian River bridge. The conclusion of the report was that the Russian River bridge was being utilized as a day roost.

Table 4: Results from the June 20, 2018 and July 8, 2019 SonoBat Surveys and species preferred habitat

Species Identified at Russian River Bridge			Preferred Habitat Type[1*]						
Species Code	Scientific Name	Common Name	Bridge	Cave/ Mine	Building	Cliff/ Rock Crevice	Tree Bark/ Hollow	Tree Foliage	Riprap/ Dry Rock Wall
COTO	*Corynorhinus townsendii townsendii*	Townsend's big-eared bat	2	1	2		3		
EPFU	*Eptesicus fuscus*	Big brown bat	2	1	2		3		
LABL	*Lasiurus blossevilii*	Western red bat						1	
LANO	*Lasionycteris noctivagans*	Silver-haired bat	3				1		
MYCA	*Myotis californicus*	California myotis	2	2	1	1	2		3
MYLU	*Myotis lucifugus*	Little brown myotis	2	2	1	2	2		
MYVO	*Myotis volans*	Long-legged myotis	2	2	2		1		

MYYU	*Myotis yumanensis*	Yuma myotis	1	2	1	3	2		3
MYCI	*Myotis ciliolabrum*	Western small-footed myotis	2	2		1			
TABR	*Tadarida brasiliensis*	Mexican free-tailed bat	1	2	1	1	3		

1. Preferred Habitat Type based on values provided in Caltrans Bat Guidance (2019)

* 1 = use frequently; 2 = use sometimes; 3 = use rarely; Blank = not known to use

While the Russian River bridge does provide some suitable habitat for roosting bats, a majority of the bats observed during the 2018 and 2019 Caltrans' surveys appeared to be exiting from a railroad bridge approximately 30 feet below the existing Russian River bridge. In the June 2018 survey, approximately five bats were observed exiting joint seals from the Russian River bridge. Biologists also observed what appeared to be a potential maternal colony of myotis bats exiting the railroad bridge. The assumption was made based on the large size of the myotis bats, short flight duration and slow speed. In the July 2019 survey, no bats were observed exiting the Russian River bridge, nor was there any observation of pregnant myotis bats or pups exiting the railroad bridge. The exact reason for no bats observed exiting the Russian River bridge in 2019 are unknown, however, a possible bat exclusion in one of the joint seals of the Russian River bridge was observed in September 2019 (Photo 7) and could explain why no bats were observed.

The Redwood Valley Road UC was not surveyed using acoustical surveys, but does appear to contain suitable habitat for day roosting and night roosting bats. No evidence of guano or urine staining was observed, however, swallow nests have been observed on the undercrossing and there has been previous evidence that day roosting bats could be found in abandoned swallow nests.

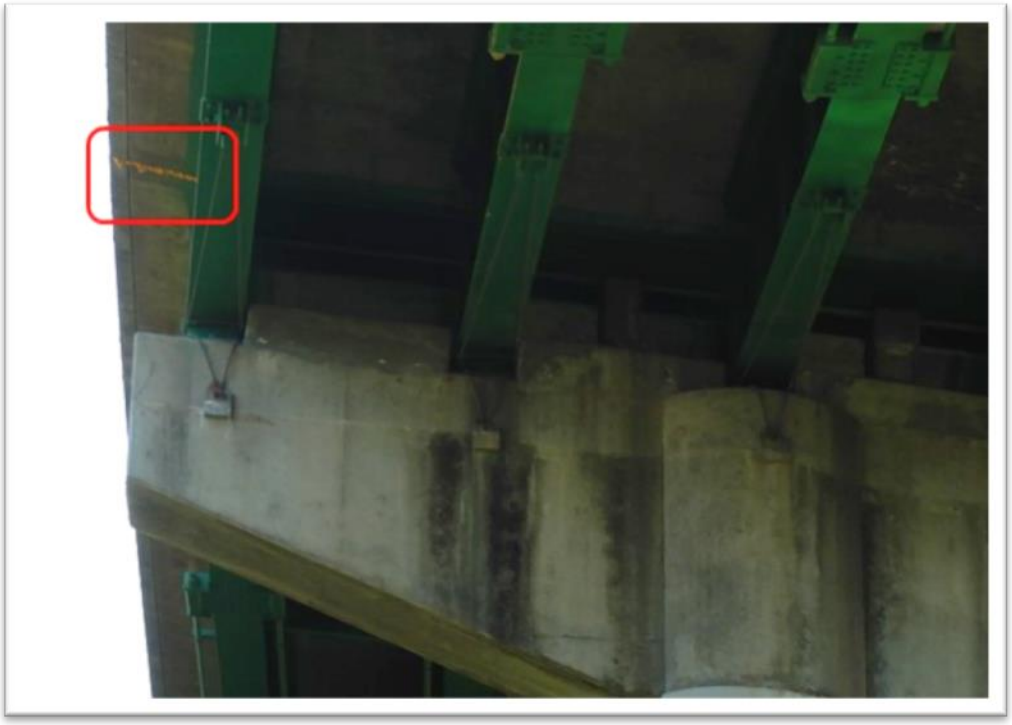


Photo 7: Image of possible bat exclusion on Russian River bridge. Image taken September 2019 by Grant Thornton

Tree roosting bats can roost in foliage, dead and dying trees (e.g., snags), especially beneath loose bark, in tree cavities and hollows or in crevices. The abovementioned structural flaws can commonly be found in conifer snags, and in live, mature cottonwoods (*Populus* spp.), sycamores (*Platanus racemosa*), and oaks (*Quercus* spp.). These tree roosts can occur within the State's ROW, particularly along stream and river corridors.

No bats were observed entering or exiting trees, however, results from the SonoBat surveys found three species with trees identified as their preferred habitat (Rank 1), though an additional three species identified may use trees on occasion (Rank 2). Suitable tree roosting habitat exists within the project BSA and would be impacted by project activities.


Photos 8 and 9: Images of dead trees with multiple snags and tree hollows by Grant Thornton.

California Coastal chinook salmon

Focused surveys were not conducted at the project location, however, critical habitat is present within the BSA; therefore, presence is assumed. At the project location, the active channel of the Russian River is approximately 50 feet wide with average depths ranging from 0.2 to 1.2 meters (0.66 to 3.93 feet). The floodplain immediately west of the active channel of the Russian River extends approximately 94 feet from the west bank of the active channel and contains a series of lateral channels that convey water during high flow events. Substrate within the river consists mainly of cobble, silt, and woody debris.

Two relatively close sources of fish survey data were used to estimate the potential populations of listed salmonid species in the BSA. The closest source of survey data to the BSA is the School Way Bridge Project, a Caltrans Local Assistance project constructed in 2015. This project was located approximately 1.8 miles upstream from the project site on the West Fork of the Russian River. The next closest source of sampling data is the Coyote Valley Fish Facility (CVFF), located on the East Fork of the Russian River approximately 3.3 linear miles south of the BSA. CVFF has made yearly fish count data available to the public.

The closest observations of CC Chinook salmon occur at the CVFF, located approximately 3.3 linear miles south of the project location along the East Fork of the Russian River. In a review of the weekly anadromous fish counts from CVFF, the most recent available data (2012 - 2017) shows that one adult chinook

salmon was observed at CVFF in December 2013. No observations of juveniles were recorded.

The proposed project would occur near the Russian River, which has been designated as critical habitat for CC Chinook salmon. As a result, presence of CC Chinook salmon is assumed.

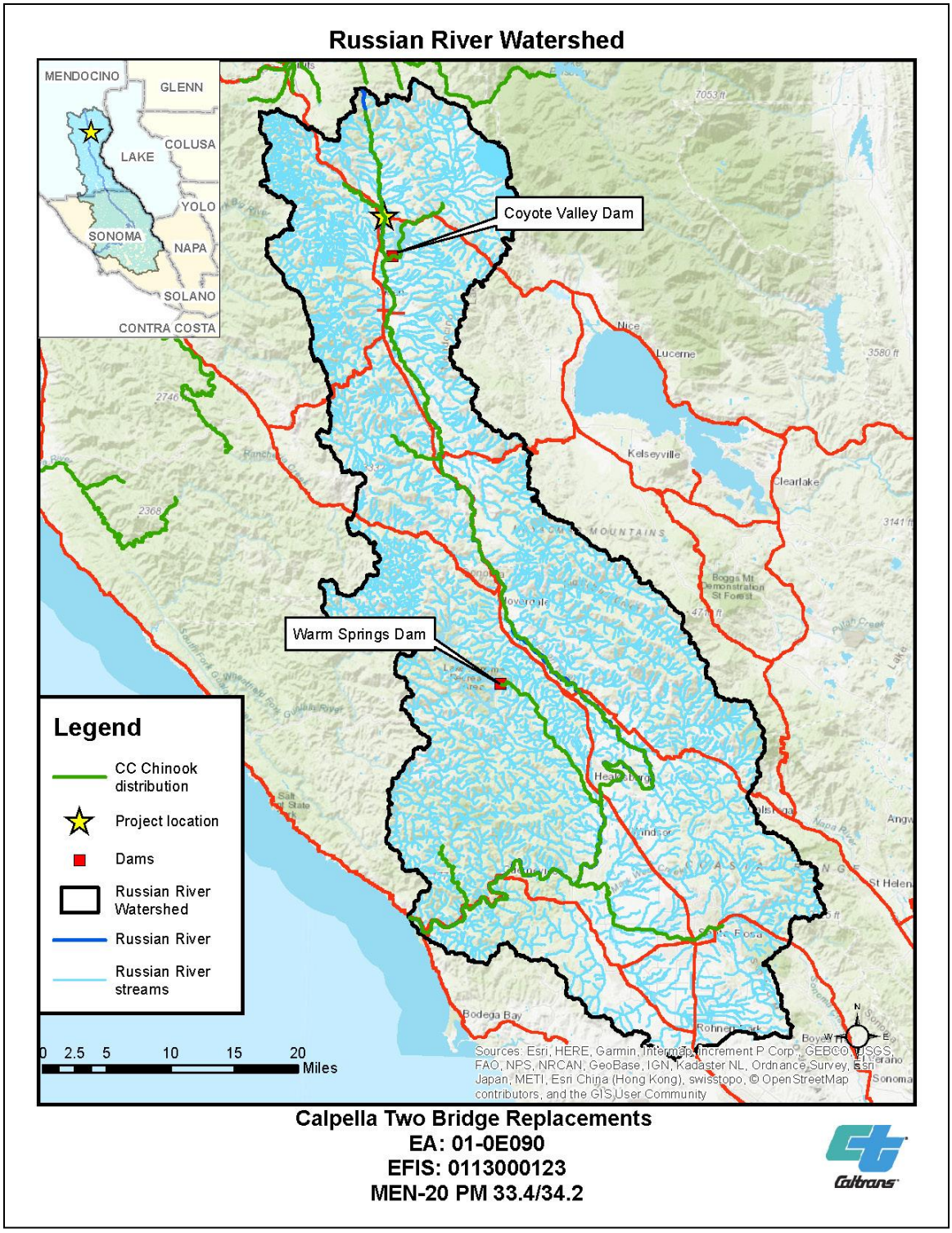


Figure 5: CC Chinook salmon distribution in the Russian River watershed.

CENTRAL CALIFORNIA COAST COHO SALMON

At the project location, the active channel of the Russian River is approximately 50 feet wide with average depths ranging from 0.2 to 1.2 meters (0.66 to 3.93 feet). The floodplain immediately west of the active channel extends approximately 94 feet from the west bank of the active channel and contains a series of lateral channels that convey water during high flow events. Substrate within the river consists mainly of cobble, silt, and woody debris.

The closest observations of CCC coho occur at the CVFF, located approximately 3.3 linear miles south of the project location along the East Fork of the Russian River. In a review of the weekly anadromous fish counts from CVFF the most recent available data (2012-2017), two adult coho were observed at CVFF, one in 2016 and one in 2013. No observations of juveniles were recorded.

The proposed project would occur within and near the Russian River watershed, which has been identified as critical habitat for CCC coho. Coho salmon distribution is currently assumed to be restricted to the lower third of the Russian River watershed, approximately 40 linear miles south of the proposed project location. Due to this restricted distribution, it is assumed that CCC coho salmon would not be present in the action area.

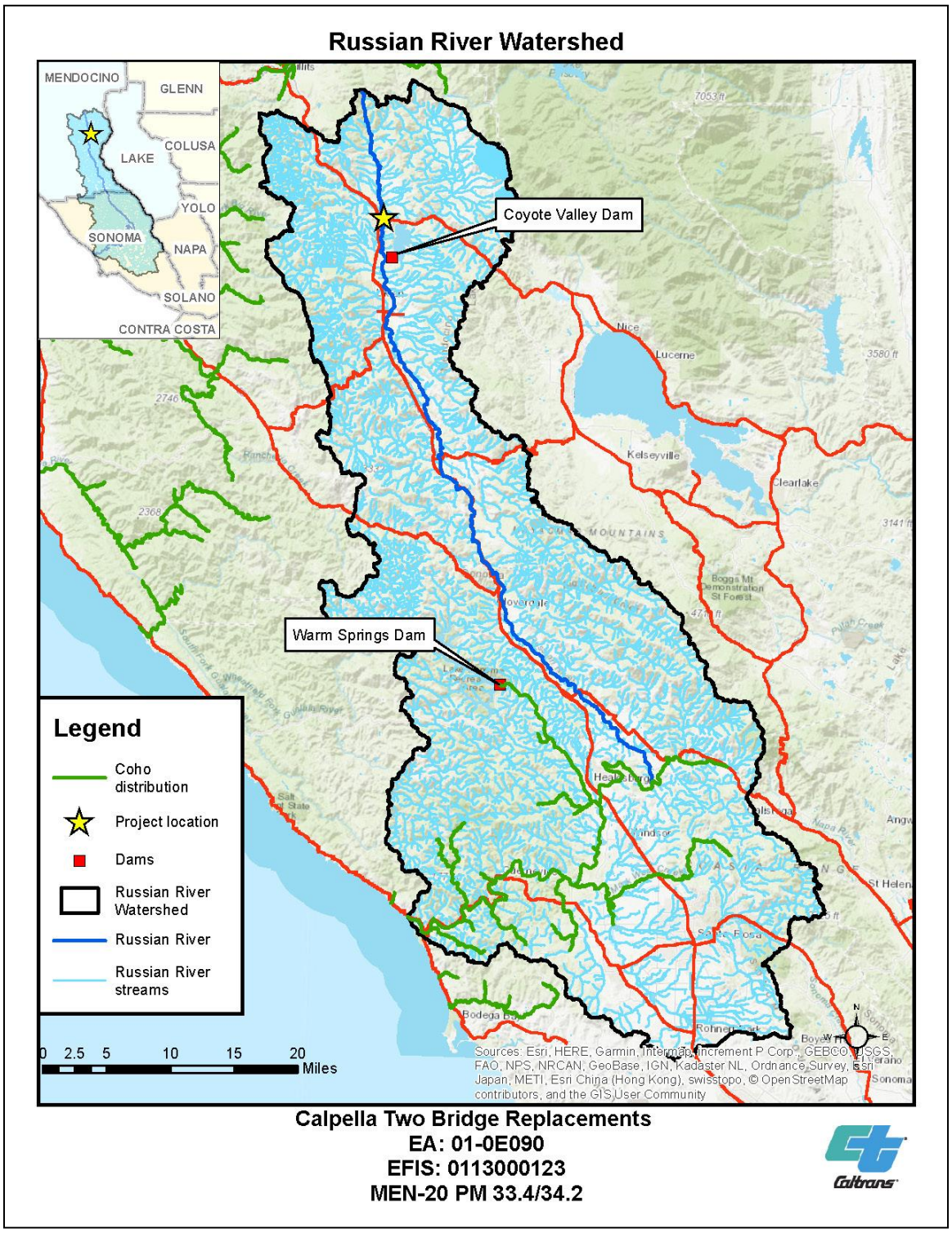


Figure 6: CCC Coho salmon distribution in the Russian River watershed.

CENTRAL CALIFORNIA COAST STEELHEAD

At the project location, the active channel of the Russian River is approximately 50 feet wide with average depths ranging from 0.2 to 1.2 meters (0.66 to 3.93 feet). The floodplain immediately west of the active channel of the Russian River extends approximately 94 feet from the west bank of the active channel and contains a series of lateral channels that convey water during high flow events. Substrate within the river consists mainly of cobble, silt, and woody debris.

Juvenile salmonids (with parr marks) were observed within the action area during a fish passage assessment study on May 15, 2019. Caltrans assumes these juvenile salmonids were steelhead due to the higher abundance of steelhead from other sources nearby, but identification has not been confirmed. One deceased juvenile steelhead was observed approximately 160 feet downstream of the action area by Caltrans Biologists on June 11, 2019.

The next closest observations of CCC steelhead occur at the CVFF, located approximately 3.3 linear miles south of the project location along the East Fork of the Russian River. In a review of the weekly anadromous fish counts from CVFF the most recent available data (2012-2017), an average of 2,000 adult steelhead were observed each survey season at CVFF. One juvenile observation was recorded in 2016.

The proposed project would occur near the Russian River, which has been designated as critical habitat for CCC steelhead. As a result of the Russian River's critical habitat designation, presence is assumed.

FOOTHILL YELLOW-LEGGED FROG

A field survey was conducted on May 14, 2018 utilizing the visual encounter survey method. Suitable spawning habitat consisting of appropriate cobble substrate and sunny banks with areas of good dispersal habitat is present within the project location. FYLF were observed in an isolated pond approximately 60 feet west of the proposed location for pier 3 (Photo 10). Two bullfrogs (*Lithobates catesbeianus*) were also observed during the FYLF protocol survey and during subsequent general flora/fauna surveys. No further FYLF were noted for the remainder of the 2018 field season. Three additional FYLF visual encounter surveys were completed on May 16, 2019, June 11, 2019, and July 8, 2019. One juvenile FYLF was observed on July 8 in the same location where FYLF were observed the previous year.


Photos 10 and 11: Photo 10 shows FYLF (*R. boylii*) in ponded area within the Russian River floodplain near the proposed location for pier 3. Photo 11 shows a bullfrog (*L. catesbeianus*) located approximately 200 feet northeast of FYLF observation.

Osprey

Sightings of osprey in flight were noted at the project location, however no nesting sites were observed within the ESL. According to CNDDB, in 2004 a pair of adult ospreys were observed nesting on a utility pole near the intersection of SR-20 and Road A, north of Lake Mendocino, approximately 1.13 miles from the project location.

Western Pond Turtle

No species-specific surveys were conducted for WPT, however, a possible sighting of WPT was observed on July 8, 2019, north of the existing bridge. Suitable basking and dispersal habitat is present with the ESL, so presence of WPT is assumed.

Northern spotted owl

No species-specific surveys were conducted for Northern spotted owl (NSO). Two observations have been reported to CDFW's CNDDB approximately 1.4 miles away from the project location. Shapefiles containing suitable nesting and roosting habitats were provided by USFWS to Caltrans on June 10, 2019 (Figure 7). The data identifying suitable nesting and roosting habitat is based on data from the Classification and Assessment with LANDSAT of Visible Ecological Grouping's (CALVEG) Existing Vegetation (Eveg) data. This Eveg polygon feature class is a CALVEG map product used for vegetation classification. According to the feature class, areas highlighted in Figure 7 have a Society of American Foresters (SAF) cover type of Pacific-Douglas Fir.

Floristic surveys conducted between April 2017 and October 2019 found habitat types within the ESL inconsistent with the Eveg cover type classification. A

combined assessment using alliances developed in “A Manual of California Vegetation” was conducted in September 2019 to identify the vegetation type. It was determined that the vegetation within the area in Figure 7 more appropriately matched the Coast live oak (*Quercus agrifolia*) Woodland Alliance and is consistent with Eveg classifications in other woodland areas within the ESL and surrounding areas. While some conifers were observed within the ESL, observations were sporadic. No Pacific Douglas Fir cover type habitat was observed within the ESL.

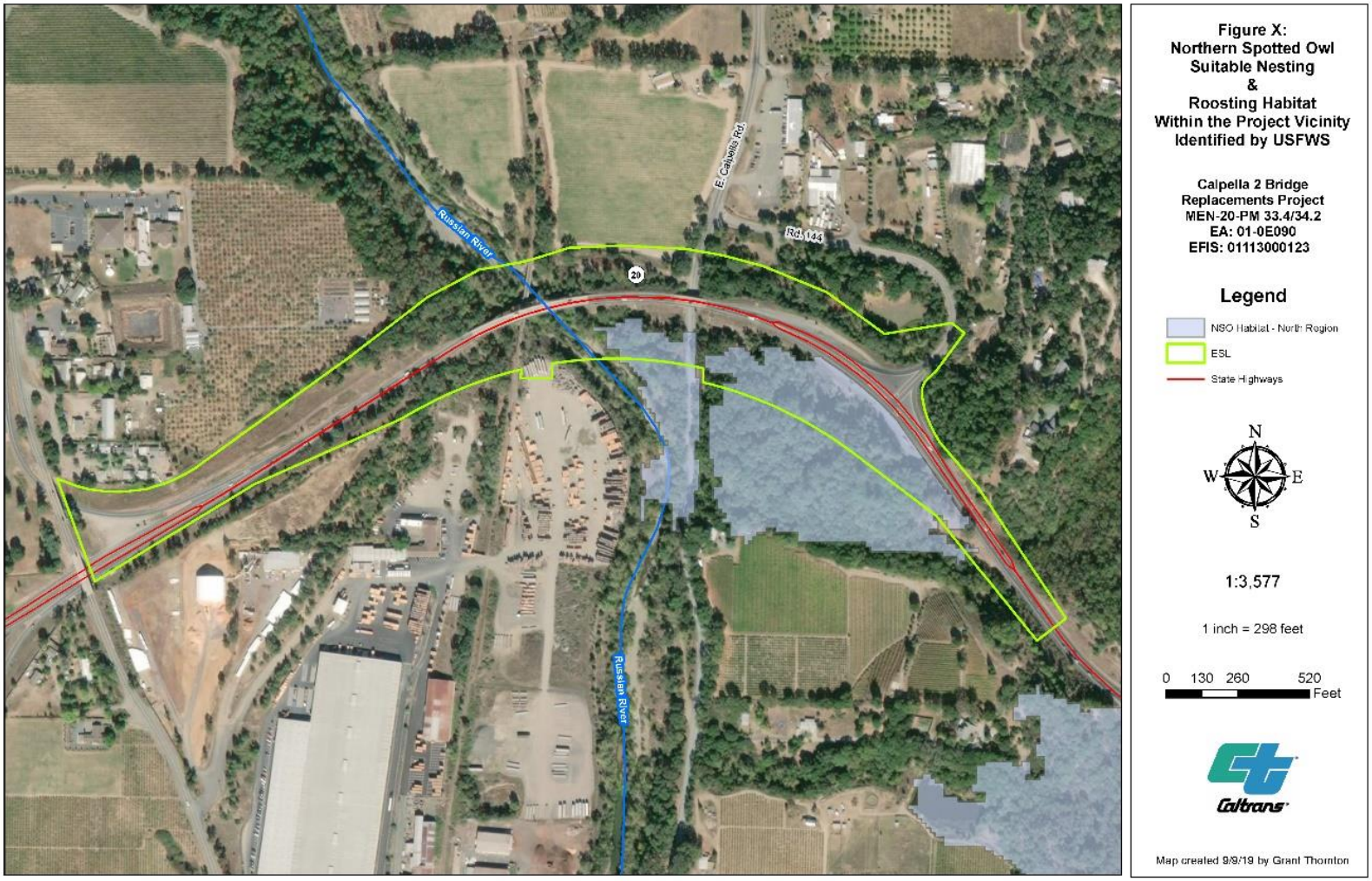


Figure 7: Suitable Nesting and Roosting Habitat Identified by USFWS Within and Near Project ESL.

YELLOW-BILLED CUCKOO

Protocol level surveys to determine presence were not conducted; however, Mendocino County has been identified by USFWS as a location where the yellow-billed cuckoo (YBCU) is known to occur or is believed to occur and is listed as a historical and current county of occurrence. YBCU surveys were conducted near Willits and Clear Lake in June 1977 and no cuckoos were detected. Focused YBCU surveys were not conducted for this project; although, YBCU were not observed during general biological surveys. The closest sighting of YBCU occurred in 1997 within the Navarro River Redwoods approximately 29 miles west of the project location. Presence is unlikely but assumed.

A field visit was conducted on March 14, 2019 with Greg Schmidt, Fish and & Wildlife Biologist for the Endangered Species Program and Caltrans Liaison for USFWS. Although no detections of YBCU have occurred within the project limits, it was determined that the project site contains both suitable nesting and foraging habitat for YBCU, however, the project site does not contain a large block of riparian area which cuckoos prefer. For example, along the Sacramento River, nesting YBCUs occupied home ranges which included 25 acres or more of riparian habitat.

CRITICAL HABITAT FOR CALIFORNIA COASTAL CHINOOK AND CENTRAL CALIFORNIA COAST STEELHEAD CRITICAL HABITAT

The Russian River throughout the BSA has been identified by NMFS as critical habitat for CC Chinook and CCC steelhead. The following Primary Constituent Elements (PCE's) are present within the BSA:

Freshwater spawning sites

Freshwater spawning habitat is present within the BSA.

Freshwater rearing sites

Freshwater rearing sites are present within the Russian River in the action area. There are several downed or overhanging trees, as well as undercut river banks, large boulders, aquatic vegetation and slower/deeper pool environments that could serve as protective cover for juvenile salmonids. Large contributors of shade over the Russian River within the action area are the existing Russian River bridge and the railroad bridge, while the river margins are shaded by overhanging vegetation. Within the action area, there is connection to surrounding riparian habitat, which serves as an important source of woody debris and detritus for the river ecosystem, as well as a supply of riparian invertebrates for juveniles to feed on. During the summer, in-water temperatures can reach near lethal (24°C) temperatures for salmonids with flows

reduced to one or less cubic feet per second (cfs). As a result, areas within the BSA may not be suitable habitat during summer months for rearing.

Freshwater migration corridors

The Russian River is considered a freshwater migration corridor for Chinook and steelhead. A fish barrier assessment was completed by Caltrans biologists in May 2019, and there are no known barriers to fish passage throughout the action area.

Critical Habitat for Central California Coast coho

The Russian River throughout the BSA has been identified by NMFS as critical habitat for CCC coho. The PCE's described above are present within the BSA and discussed further below. Impacts to PCE's for CCC coho are similar to PCE impacts for CC Chinook and CC steelhead.

Essential Fish Habitat

Essential fish habitat (EFH) is found within the BSA within the Russian River. More information regarding salmon habitat conditions within the BSA are described under sections for critical habitat for CC Chinook salmon, CCC steelhead, and CCC coho.

Invasive Species

Areas of invasive vegetation occur adjacent to SR-20, largely within the fill prism between the Russian River bridge and Eastside Calpella Road UC and areas west of the Russian River bridge. These areas within the BSA are dominated by annual grasses and forbs including soft chess (*Bromus hordeaceous*), ripgut brome (*Bromus diandrus*), Italian ryegrass (*Festuca perennis*), wild oat (*Avena fatua*), yellow starthistle (*Centaurea solstitialis*) and others.

Discussion of Environmental Evaluation Questions 2.4—Biological Resources

The following discusses questions A through F of the CEQA Checklist - Biological Resources section. Each question is discussed individually; however, it should be noted that some resources (e.g., salmonids) fall under more than one question. As such, where necessary, those resources are discussed multiple times throughout this section.

Discussion of CEQA Checklist Question A

The following CEQA Checklist item was used to evaluate the impacts of the proposed project on species in the project area:

- Would 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 Wildlife, U.S. Fish and Wildlife Service, or NOAA Fisheries?

Plant Species

Northern California Black Walnut

Based on the current design, existing trees may be impacted by access roads needed for bridge demolition and new bridge construciton. Given that removal of these trees cannot be avoided and mitigation would be addressed in the 1600 permit, a determination was made that the project would have a “Less Than Significant Impact with Mitigation Incorporated” on the Northern California Black Walnut.

Animal Species

Bat Species

Impacts to Bridge Roosting Bats

Of the ten bat species identified during surveys (Table 4), two species have bridges identified as their preferred habitat (Rank 1) with an additional six species that may use bridges on occasion (Rank 2). In the 2018 surveys, approximately five bats were visually observed exiting joint seals in the Russian River bridge, while a majority of the bats were seen exiting the railroad bridge, located underneath the Russian River bridge. In the 2019 survey, no bats were seen exiting the Russian River bridge, which could be due to exclusion devices left in place after a bridge deck rehabilitation project was completed in fall 2018. Like 2018, in 2019, a majority of bats were seen exiting the railroad bridge. The Russian River bridge would remain in place until the new bridge is completed and demolished shortly thereafter. The railroad bridge would not be impacted as a result of project activities, and a containment structure would be placed above or around the railroad bridge during construction and demolition to avoid damage to the structure. The containment structure would not be sealed, so it is not anticipated the containment structure would negatively impact bats roosting in the railroad bridge.

Highway construction noise (e.g., heavy equipment, blasting, and pile-driving) can potentially affect bats, particularly those species that roost in bridges, culverts, or other highway infrastructure or in nearby buildings, trees, or rock outcroppings. Sudden, loud noises can potentially disturb bats and cause abandonment of roosts. Although it has yet to be studied, if loud and sudden enough, such noise can potentially cause temporary or permanent hearing loss in bats. Chronic disturbance may also alter

important colony activity patterns, particularly during the breeding season, and disrupt critical torpor cycles of hibernating/overwintering bats, forcing them to overuse critical energy resources.

While a majority of the general construction activities are not anticipated to create sound levels that could cause negative impacts to bat colonies, pile driving would be needed for the installation of falsework, trestling, and pier columns. It is anticipated that these activities could generate estimated sound levels of 96 to 106 decibels (dB) at 50 feet. Based on the current project design, piers two and three of the proposed bridge are located approximately 43 feet west and 64 feet east, respectively of the existing railroad bridge. Each pier contains two 6-feet wide columns with 20-feet (approximate) wide footings. Each footing would require 16, HP 10X57 H-piles (approximately 10-inches in diameter), resulting in 64 piles within approximately 80 feet of the railroad bridge.

In addition, pile driving may be needed for the installation of trestling and falsework near the railroad bridge. It is estimated that one-to-three bents may be located near the railroad bridge. Each trestle bent would require approximately 7-12 piles per bent. Each falsework bent would require approximately 16 piles. As a result, sound levels from pile driving for the installation of trestling, falsework, and pier column footings are loud enough to exceed most background noise and could be a source of potential disturbance for bats in an active roost.

There are few data sources that suggests that substrate vibrations affect bats and little is known about this type of impact. At a bridge project in Sonoma County, pile driving within 300 feet of an active maternity colony did not disturb roosting Yuma myotis and Mexican free-tailed bats enough to result in their departure. At another bridge site in Tulare County, the initiation of pile driving resulted in the disturbance of a maternity colony, which moved to the opposite end of a bridge; however, it is noteworthy that the bats did not leave the bridge structure.

With the removal of the existing Russian River bridge, the project would result in the permanent removal of potential bat habitat. These impacts have the potential to prevent the return of any potential roosting colonies that may inhabit either the Russian River bridge or Redwood Valley Road UC. However, suitable habitat would continue to be available throughout the duration of construction within the railroad bridge and nearby vacant buildings.

Impacts to Tree Roosting Bats

Tree removal would be necessary for staging, access, and construction of the new bridge as well as access roads for the demolition of the existing bridge. No bats were observed entering or exiting trees, however, focused surveys specifically for tree

roosting bats were not conducted. Results from the SonoBat surveys found three bat species with trees identified as their preferred habitat (Rank 1), though an additional three species identified may use trees on occasion (Rank 2). Suitable tree roosting habitat exists within the project ESL and BSA and would be impacted by project activities.

Within the non-riparian oak communities, approximately 3.024 acres of oak woodlands would be impacted. This represents approximately 28% of the non-riparian oak woodlands within the ESL. Within the designated riparian areas, approximately 1.17 acre and 0.27 acre of valley oak riparian and floodplain communities (sandbar willow and white alder alliances) would be impacted, respectively. This would represent approximately 60% of the valley oak riparian community and 31% of the floodplain community identified within the ESL. It is important to note, however, that this is not the community in its entirety, only within the ESL. Each of these communities extend well beyond the project limits. It is possible that tree removal could impact potential bat roosting habitat, though suitable habitat would remain within the ESL and surrounding areas pre- and post-construction. With the incorporation of avoidance and minimization measures discussed below, direct impacts to individual bats and colonies would not be anticipated.

Bat Avoidance/Minimization Efforts

If bats are present in the ESL during the construction period, impacts would be avoided or minimized with the incorporation of both standard measures and the following measures listed below:

Construction Activities around Railroad Bridge

The following avoidance and minimization measures were adapted from the Caltrans Bat Mitigation Guidance and would apply for work conducted around the railroad bridge:

1. Airspace access to and from the bridge should not be severely restricted.
2. The area around the bridge roost should be designated as an Environmentally Sensitive Area (ESA).
3. Vehicles and equipment (including generators and pumps) with internal combustion engines are not to be parked or operated under the railroad bridge.
4. Construction personnel should not be present under the colony, especially during the evening exodus.
5. Clearing and grubbing of vegetation under and around roosts should be minimized wherever possible.

Bridge Demolition

Work Window: To avoid impacts on the maternity colonies and hibernating bats, the bridge would be demolished after the maternity season and prior to hibernation, generally between September 15 and October 31, unless exclusionary devices are first installed. If pallid bats or any other special-status bats are roosting on the bridge during the pre-installation surveys, exclusion devices would be installed to preclude these bats. If bats can be successfully excluded between September 15 and October 31, the bridge may be demolished after the devices are installed and as long as exclusion devices are monitored and maintained. Presence of the maternity colonies, or any bats would preclude demolition until the end of summer (September 15).

Installation of Exclusion Devices: Installation of exclusion devices, if feasible, would occur after the maternity season and prior to hibernation (between September 15 and October 31) to preclude bats from occupying a roost site during demolition. When it is not feasible to establish recommended buffer zones, bats should be excluded from work areas prior to April 15 of the construction year. Exclusion should be done selectively, and only to the extent necessary. Exclusionary devices would only be installed by or under the supervision of a bat biologist with experience installing exclusion devices on bridges. The bat biologist would be contacted several months ahead of demolition to evaluate the bridge and determine the feasibility of installing exclusion devices.

Pre-installation Surveys: If exclusion devices would be installed, a minimum of two daytime surveys and two evening emergence surveys would be conducted prior to installation of exclusion devices to confirm known roosting sites and identify additional roosting sites. These surveys should be no more than one week prior to exclusion installation.

Monitoring of Exclusion Devices: If exclusion devices are installed, they would be checked every two weeks and maintained such that they do not allow bats to re-enter known roosting sites before demolition.

Other Deterrence Measures: Other measures to deter bat roosting, such as using lights or acoustic disturbance, may be used if developed in coordination with and approved by CDFW.

Tree Removal

Potential Habitat Trees: Potential bat habitat trees, identified by a qualified bat biologist, shall only be removed between September 1 through October 15, or prior to evening temperatures dropping below 45°F and onset of rainfall greater than 0.5 inches in 24 hours.

Tree Removal: Bat habitat trees should only be removed during seasonal periods of bat activity as described above, and only after;

1. Two-step tree removal over two consecutive days (e.g. Tuesday and Wednesday, or Thursday and Friday). With this method, small branches and small limbs containing no cavity, crevice or exfoliating bark habitat on habitat trees, as identified by a qualified bat biologist are removed first on Day 1, using chainsaws only (no dozers, backhoes, etc.). The following day (Day 2), the remainder of the tree is to be removed. The disturbance caused by chainsaw noise and vibration, coupled with the physical alteration of the tree, has the effect of causing colonial bat species to abandon the roost tree after nightly emergence for foraging. Removing the tree the next day prevents re-habituation and reoccupation of the altered tree.
2. Trees containing suitable potential habitat must be trimmed with chainsaws on Day 1 under initial field supervision by a qualified bat biologist to ensure that the tree cutters fully understand the process, and avoid incorrectly cutting potential habitat features or trees. After tree cutters have received sufficient instruction, the qualified bat expert does not need to remain on the site.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on bats with the implementation of the above avoidance and minimization efforts.

California Coastal Chinook Salmon and Central California Coast Steelhead

Hydroacoustic Impacts: Due to the need for impact pile driving for trestle, falsework, and pier columns during construction, there would be elevated levels of underwater noise generated by pile strikes. If present, juvenile salmonids would be exposed to this direct stressor due to the timing of the action (anticipated between June 15 - October 15). Russian River channel habitat within the action area would be exposed to hydroacoustic stressors.

The maximum impact zone for the 187 dB and 183 dB cumulative sound exposure level (SEL) criteria during construction of the temporary work trestle and falsework is estimated to extend from the pile to bends in the river, located approximately 73 meters (240 feet) upstream and 134 meters (440 feet) downstream of the project location. The typical peak levels for unattenuated impact driving the trestle piles is expected to remain below the 206 dB peak injury criteria. The distance to the 206 dB peak criteria is estimated to be <10meters (32.8feet) from the pile.

Sound generated by impact pile driving has the potential to impact fish in a range of ways, including altering behavior, physical injury, or mortality. Damage to fish depend on a variety of factors, including repetition rate of the sound, pressure level, frequency and duration of the sound, as well as the size of the fish. Peak sound pressure levels of 206 dB can cause injuries in all sizes of fish. Cumulative SEL of 187 dB can cause injuries in fish 2 grams or larger and cumulative SEL of 183 dB can cause injuries in fish 2 grams or smaller. The response of fish to hydroacoustic stressors within the action area depend on the frequency, intensity, and severity of the noise.

Hydroacoustic impacts may impact the habitat suitability of the action area during impact driving activities due to possible change in salmonid behavior, and threat of physical injury or mortality. However, this is expected to be a temporary impact (occurring only during the time for active pile driving between June 15 and October 15).

Sedimentation/Turbidity: Due to the soil disturbance associated with project activities such as constructing access roads, clearing and grubbing, there is a chance of sediment loading in the river channel, which would cause an increase in turbidity in the water flowing through the action area and in deposited fine sediment within the gravel. Salmonid eggs and juveniles would primarily be exposed to this indirect stressor. Sediment would potentially be traveling from disturbed upland and riparian areas and depositing into the Russian River channel within the action area.

Fine sediment can coat gills of aquatic species, decreasing respiratory abilities. Sediment loading can also reduce stream depth heterogeneity, which can negatively impact pool-dwelling species. An increase in fine sediment in the river is considered an indirect effect, and may cause a loss of spawning habitat, decreased survival of salmonid eggs, as well as a loss of cover and food source for juvenile salmonids. Increased levels of sediment may cause filling in of interstitial spaces within spawning gravel. Fine sediment filling interstitial spaces within the river's gravel would potentially impact salmonid egg-to-fry survival, since this would reduce the circulation of cold, clean, oxygenated water to the eggs.

Increased sedimentation in rivers can lead to increased turbidity, scouring, and abrasion of stream substrates. Sedimentation can also reduce primary production and reduce substrate suitability for periphyton and biofilm production. Sediment can fill interstitial habitats, which can be detrimental to crevice-occupying stream invertebrates and gravel-spawning fish. Depending on the source of sediment loading, the stressor can be present temporarily or chronically if not properly addressed. Work in the Russian River channel would be limited to the June 15 and October 15 work windows, which is a season in which only juvenile salmonids would be expected to be within the action area. Measures to control sediment erosion and dust from entering in water would be

implemented in order to avoid increasing sediment levels in the river, both during the active construction and post construction.

Loss of Riparian Vegetation: Due to the need for staging and access for construction of the new bridges as well as access for demolition of the existing bridge, removal of riparian vegetation would occur. The closer a tree is to the area for new bridge construction, trestles and falsework, and access roads, the more likely the tree will be completely removed (including roots). It is largely up to the discretion of the contractor to choose to leave roots and stumps in place in the rest of the riparian and oak woodland impact areas. Approximately 54 riparian trees over 4-inch diameter at breast height (DBH) providing shade to the Russian River will be removed. Overstory species include Arroyo willow (*Salix lasiolepis*), Goodding's willow (*Salix gooddingii*), Fremont cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), Pacific madrone (*Arbutus menziesii*), and white alder (*Alnus rhombifolia*). Removing riparian trees will reduce the amount of vegetative cover within the stream. This in turn can increase temperatures along the river margins where the cover is removed, a change in food availability, and change organic/inorganic inputs within the action area. However, the larger size of the new bridge will increase the shade of the river by 0.035 acres. All life stages of salmonids will be exposed to this indirect stressor.

Removing riparian vegetation would reduce the available shaded cover for salmonids. Salmonids depend on riparian vegetation for shaded cover for protection from predation. The reduction of shaded cover may temporarily degrade habitat suitability for juvenile salmonids, leaving them more vulnerable to predation. This may lead to a changed behavioral response from juvenile salmonids in the action area, possibly by avoiding areas without vegetative cover within the action area.

Removing riparian vegetation from river habitats reduces shading, which causes increases in stream temperatures, light penetration, and primary production in rivers. Without the root structure in place, removing riparian vegetation decreases bank stability, leaving the river more susceptible for bank and channel erosion, which leads to all of the impacts of increased sedimentation discussed previously. Loss of riparian also decreases allochthonous organic matter such as leaf litter and large woody debris, which can impact nutrient cycling in rivers and alter food chains. Riparian areas act as natural filters for river systems, and without them, it decreases removal of nutrient and contaminant runoff and sediment trapping from upland runoff.

Riparian trees providing shade to the active channel of the Russian River were mapped within impact areas. In total, there will be a removal of approximately 54 trees along the banks of the Russian River that would provide shade to the active channel, as well as a small island comprised of willow below OHWM. The closer any trees are to the new bridge construction and access roads (total width of 75 to 100 feet), the more likely it is

that the contractor will need to remove the entire tree (including roots and stumps) for grading and structure construction. Trees farther away from these areas within the impact footprint are more likely to be left with stumps and roots intact. The majority of the riparian trees contributing shade to the Russian River within the impact areas are within or very close to the bridge construction areas and access roads. For the purposes of this analysis, it is likely that the contractor would need to completely remove (including roots and stumps) all 54 shade trees within the riparian impact areas.

Loss of Channel Habitat: Due to construction of new bridge piers, temporary trestles, and falsework bents, there would be an alteration of channel morphology (new fill would be introduced to the channel and old fill would be removed from the channel). All life stages of salmonids would be exposed to this indirect stressor, since the trestles and falsework may remain in the Russian River over the winter season.

Losing potential spawning gravel habitat within the Russian River channel may lead to behavioral changes for adults in choosing different available spawning sites. This would also potentially lead to changes in spatial occupancy of juvenile salmonids due to the changes and positioning of artificial fill in the Russian River channel.

During construction, there would be both permanent and temporary loss of channel habitat. Trestles and falsework would be considered temporary fill, while the new bridge piers would be considered permanent fill. The old bridge pier removal would be considered permanent removal.

Alteration of Channel Hydrology: Due to construction of new bridge piers, temporary trestle and falsework bents, there would be a temporary alteration of channel hydrology stemming from the need to dewater areas of the channel. Dewatering will likely occur with use of cofferdams around the work areas, and the cofferdams would likely cover a footprint of approximately 10 feet around the new pier footprints. In total, there is anticipated to be an approximate dewatered footprint of 250 linear-feet of Russian River channel.

This would cause a temporary change in areas of suitable habitat within the channel, a temporary change in available food (stream invertebrates), and possibly a temporary change in water temperature on a small spatial scale within the action area. Juvenile salmonids would primarily be exposed to this indirect stressor due to the timing of the action.

During water diversion and dewatering activities, fish would be relocated and excluded from the action area. This will cause a temporary disruption in habitat connectivity in the action area within the Russian River channel.

In general, changes in hydrology can lead to changes in channel dynamics such as changes in erosion, flooding, and transport of nutrients, sediment, and contaminants can degrade channel habitats. However, the change in hydrology associated with this project would be minimal and isolated to temporary water diversions and dewatering activities associated with bridge construction within the action area. Activities in the Russian River channel would be limited to seasonal low flow conditions (June 15 to October 15) so that it would have fewer impacts on salmonids and the channel habitat. The dewatering activities would temporarily degrade habitat within a portion of the action area.

California Coastal Chinook and Central California Coast Steelhead Avoidance/Minimization Efforts

To avoid and minimize effects to salmonids and their habitats, Caltrans will implement the following general measures:

1. Work window: All work within suitable aquatic habitat for salmonids would occur between June 15 and October 15 during the summer low-flow period to minimize potential exposure of juveniles to pile driving noise/vibration.
2. Night work: All nighttime construction would be minimized to the greatest extent practicable.
3. Night lighting: Artificial lighting of the action area during nighttime hours would be minimized to the maximum extent practicable.
4. Water diversion structures: Cofferdam and/or water diversions would be constructed to exclude construction activities from adversely impacting the water quality of Russian River while maintaining flow through the project area. The contractor would submit a water diversion plan to appropriate regulatory agencies for approval 60 days prior to construction.
5. Work area isolation for in-water construction:

   a. The work area would be isolated within the wetted channel from the active stream, or other waterbody, whenever FESA-listed fish are reasonably certain to be present.

   b. Engineering design plans for work area isolation would include all isolation elements and fish release areas.

   c. The project would use a coffer dam and a bypass culvert or pipe, or a lined, non-erodible diversion ditch to divert flow around the dewatered area. Flow

energy would be dissipated to prevent damage to riparian vegetation or stream channel and provide for safe downstream reentry of fish, preferably into pool habitat with cover. Push-up dams composed of stream substrate would not be an acceptable isolation method.

d. Where gravity feed is not possible, water would be pumped from the work site, including any seepage water, to avoid re-watering the isolated area and to sustain stream flow.

e. Seepage water would be pumped to a temporary storage and treatment site, or into upland areas, to allow water to percolate through soil or to filter through vegetation before reentering the stream channel with a treatment system comprised of either a hay bale basin or other sediment control device.

f. Monitoring would be conducted downstream of the construction site to prevent stranding of aquatic organisms.

g. When construction is complete, the construction site would be re-watered slowly to prevent loss of surface flow downstream, and to prevent a sudden increase in stream turbidity.

h. Whenever a pump is used to dewater the isolation area and FESA-listed fish may be present, a fish screen would be used that meets the most current version of NMFS' fish screen criteria (NMFS 2011b or most recent).

6. Environmentally Sensitive Areas: ESAs within the action area will be delineated with staking, flagging, or high-visibility fencing to avoid impacts during construction.

7. Permits: Caltrans will include a copy of the all relevant permits within the construction bid package of the proposed Project. The Resident Engineer or their designee will be responsible for implementing the Conservation Measures and Terms and Conditions of the USFWS LOC, NMFS BO, and all other permits.

8. Biological monitor: NMFS-approved biologists would be on-site during dewatering and initial ground-disturbing activities, and thereafter as needed to fulfill the role of the approved biologist as specified in project permits. The biologists would keep copies of applicable permits in their possession when on-site. Through the Resident Engineer or their designee, the agency-approved biologists shall be given the authority to communicate either verbally, by telephone, email or hardcopy with all project personnel to ensure that take of listed species is minimized and permit requirements are fully implemented.

9. Biological monitor approval: Caltrans would submit the names and qualifications of the biological monitor(s) for NMFS approval prior to initiating construction activities for the proposed project. Biological monitors must have expertise in anadromous salmonid biology, including handling, collecting, and relocating salmonids.

10. Worker environmental awareness training: All construction personnel would attend a mandatory environmental education program delivered by an agency-approved biologist prior to working on the project.

11. Vehicle use: Project employees would be required to comply with guidance governing vehicle use, speed limits on unpaved roads, fire prevention, and other hazards.

12. Trash control: All food-related trash items such as wrappers, cans, bottles, and food scraps would be disposed of in closed containers and removed at least once a day from the work area.

13. Firearms: No firearms would be allowed in the action area except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.

14. Pets: To prevent harassment, injury or mortality of sensitive species, no pets would be permitted on the Project site.

15. Pre-construction surveys: Prior to any ground disturbance, pre-construction surveys would be conducted by an agency-approved biologist for listed species.

16. Listed species on-site: The Resident Engineer would immediately contact the agency-approved project biologist(s) in the event that a coho, Chinook, or steelhead is observed within the construction zone. The Resident Engineer would suspend construction activities within a 50-foot radius of the animal until the animal leaves the site voluntarily or an agency-approved protocol for removal has been established.

17. Fish relocation plan: A fish relocation plan would be developed by NMFS-approved contractor supplied biologists. Caltrans would submit this monitoring/relocation plan to NMFS for review and approval 60 days prior to installation of the dewatering system. The plan would include the methodology of capturing and relocating fish.

18. Fish capture and release:

a. If practicable, fish would be removed before dewatering; otherwise fish would be removed from an exclusion area as it is slowly dewatered with methods such as hand or dip-nets, seining, or trapping with minnow traps (or gee-minnow traps).

b. Isolation areas would be managed in a manner to avoid multiple salvage events (e.g., do not let water or fish into the isolation during non-work times).

c. Fish capture would be supervised by a qualified fisheries biologist, with experience in work area isolation and competent to ensure the safe handling of all fish.

d. Fish capture activities would occur during periods of the day with the coolest air and water temperatures possible, normally early in the morning to minimize stress and injury of species present.

e. Block nets would be monitored frequently enough to ensure they stay secured to the banks and free of organic accumulation.

f. Electrofishing would be used during the coolest time of day, only after other means of fish capture are determined to be not feasible or ineffective.

g. Biologists would not electrofish when the water appears turbid, e.g., when objects are not visible at depth of 12 inches.

h. Biologists would not intentionally contact fish with the anode.

i. Biologists would follow NMFS (2000 or most recent) electrofishing guidelines.

j. Biologists would begin electrofishing with a minimum pulse width and recommended voltage, then gradually increase to the point where fish are immobilized.

k. Biologists would immediately discontinue electrofishing if fish are killed or injured, i.e., dark bands visible on the body, spinal deformations, significant de-scaling, torpid or inability to maintain upright attitude after sufficient recovery time. Biologists would recheck machine settings, water temperature and conductivity, and adjust or postpone procedures as necessary to reduce injuries.

l. If buckets are used to transport fish:

i. The amount of time that fish would be in a transport bucket would be minimized.

ii. Buckets would be kept in shaded areas or, if no shade is available, covered by a canopy.

iii. The number of fish within a bucket would be limited; fish would be of relatively comparable size to minimize predation.

iv. Aerators would be used or water would be replaced in the buckets at least every 15 minutes with cold clear water.

v. Fish would be released in an area upstream with adequate cover and flow refuge; downstream would be acceptable provided the release site is below the influence of construction.

m. Fish presence, handing, and injury would be monitored and recorded during all phases of fish capture. Even if no fish are caught, a fish salvage report would be submitted to the NMFS Santa Rosa Office within 60 days of capture (or isolation) that documents date, time of day, fish handling procedures, air and water temperatures, and total numbers of each FESA-listed fish injured or killed.

19. Fish screening: All water pumping or withdrawal from the river must comply with NMFS *Fish Screening Criteria for Anadromous Salmonids* to avoid the entrainment of fish.

20. Vibratory driving: Any piles driven into the river channel would be installed using vibratory driving if feasible.

21. Hydroacoustic monitoring: Prior to construction, an acoustical monitoring plan to evaluate the sound levels during pile driving activities would be prepared by a qualified biologist. The acoustical monitoring plan must receive approval from NMFS prior to in-channel work and would be implemented during all vibratory and impact pile driving activities.

22. Storm water pollution prevention plan: The SWPPP is a document that addresses water pollution control for a construction project. The contractor would be required to prepare and implement a SWPPP that includes erosion control BMPs and construction waste containment measures to ensure that waters of the U.S. and State are protected during and after project construction. The SWPPP would include sedimentation, siltation, turbidity, and non-visual pollutant monitoring, and outline a sampling and analysis strategy, monitoring and reporting schedule, and inspection schedule.

23. Spill prevention control and countermeasure plan (SPCCP): To minimize the potential for accidental spills of materials hazardous to the aquatic environment, a SPCCP would be prepared.

24. Caltrans standard BMPs: Protective measures would be included in the contract, including, at a minimum:

    a. No discharge of pollutants from vehicle and equipment cleaning are allowed into the storm drain or water courses.

    b. Vehicle and equipment fueling and maintenance operations must be at least 50 feet away from water courses.

    c. Concrete wastes that are collected in washouts and water from curing operations would be collected and disposed of and not allowed into water courses.

    d. Dust control would be implemented, including use of water trucks and tackifiers to control dust in excavation and fill areas, rocking temporary access road entrances and exits, and covering temporary stockpiles when weather conditions require.

    e. Appropriate erosion control would be installed along or at the base of slopes during construction to capture sediment and temporary organic hydro mulching would be applied to all unfinished disturbed and graded areas.

    f. Work areas where temporary disturbance has removed the vegetation would be restored and re-seeded with a native seed mix.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on CC Chinook salmon and CCC steelhead.

Per FESA, Caltrans anticipates the proposed project “may affect, and is likely to adversely affect” CC Chinook salmon and CCC steelhead. The project would not result in “take” of either species.

Central California Coast Coho Salmon

Due to the limited distribution of CCC coho salmon to the lower third of the Russian River watershed, Caltrans anticipates that there is low potential for juvenile coho to be present within the action area. There is low potential for handling juvenile coho by the contractor-supplied biologists for the fish relocation program since the action area is outside of current species distribution within the Russian River watershed. There is also

a low potential for coho exposure to elevated levels of turbidity in the water and sediment in gravel since the action area is outside of current species distribution within the Russian River watershed.

Please refer to the section above under CC Chinook and CCC steelhead impacts for more information regarding hydroacoustic impacts, sedimentation/turbidity, loss of riparian vegetation, loss of channel habitat, and alteration of channel hydrology for CCC coho.

Central California Coast Coho Avoidance/Minimization Efforts

To avoid and minimize effects to salmonids and their habitats, Caltrans would implement the general measures described in the above section for CC Chinook salmon and CCC steelhead.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on CCC coho salmon.

Per FESA, Caltrans anticipates the proposed project “may affect, but is not likely to adversely affect” CCC coho salmon. The project would not result in “take” of the species.

Foothill Yellow-Legged Frog

Suitable habitat and observations of FYLF occur within and beyond the project limits. Surveys in 2018 and 2019 found a total of three FYLFs within the project limits. It is possible that relocation of species during construction may be necessary, although with incorporation of the avoidance and minimization measures outlined below, it is not anticipated the project would result in 'take' of the species.

Potential breeding habitat may be temporarily impacted by project activities for the installation of trestles and falsework. It is not anticipated that the installation of pier columns would result in permanent impacts to breeding habitat.

Foothill Yellow-Legged Frog Avoidance/Minimization Efforts

If FYLF are present in the ESL during the instream construction period, impacts would be avoided or minimized with incorporation of standard measures and the following measures listed below:

1. Conduct a Pre-Construction Survey: Within 3 to 5 days prior to entering or working at the project site, a qualified biologist shall examine the project site to

determine the presence/absence of standing or flowing water, and the presence and/or the potential for presence of FYLF adults, juveniles, tadpoles, or egg masses within the project area. Prior to commencing work, Caltrans shall provide to CDFW for review preconstruction survey notes and observations.

2. If FYLF are found during the pre-construction survey, Caltrans shall:

    a. Consult CDFW immediately by either telephone or email and provide a short description of observations, including a count of individuals and the life stage(s), conditions at the site, and other aquatic species observed; and;

    b. Either propose site-specific measures that would be utilized to avoid take, or obtain an incidental take permit (ITP) if take of FYLF cannot be avoided. In stream work shall not commence until CDFW has provided written approval of the proposed avoidance measures or an ITP has been issued.

3. If no FYLFs are found during the pre-construction survey and no surface water is present in the project area, work may commence without further surveys.

4. If no FYLFs are found but surface water is present during the pre-construction survey, or if surface water becomes present at any time during the work period, a qualified biologist shall survey the work site each day before commencement of work activities where equipment and/or materials may come in contact with FYLFs, streams, or riparian habitat.

5. If FYLFs are observed at any time during the construction season, work in the immediate area shall be halted, CDFW immediately consulted, and conservation measures developed and agreed to by CDFW prior to recommencing work.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on FYLF.

Osprey

Suitable nesting habitat was not observed within the project limits, however, osprey may forage within the Russian River. Still, it is not anticipated that the project would result in impacts to osprey.

Osprey Avoidance/Minimization Efforts

The following measures would be implemented to avoid potential impacts to osprey:

- Preconstruction surveys would be conducted no less than 14 days and no more than 30 days before the project starts.

- If an active nest is found, a qualified biologist would monitor the active nest during construction activities to ensure that no interference with the osprey's breeding activities occurs.

- Removal of any trees within the ESL should be done outside of the nesting season, however, if a tree in the ESL needs to be removed during nesting season a qualified biologist would inspect the tree prior to removal to ensure that no nests are present.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on osprey.

Western Pond Turtle

Due to the temporary nature of construction and the abundance of suitable habitat in the project vicinity for which turtles could relocate if necessary, no impacts to western pond turtle from this project are anticipated. Additionally, the staging and access road locations would be surveyed for signs of nesting before they are graded and, if present, would be marked for avoidance. Given this, the project would be expected to have minimal, if any, impact on WPT.

Western Pond Turtle Avoidance/Minimization Efforts

If WPT are present in the ESL during the in-stream construction period, impacts would be avoided or minimized with incorporation of standard measures and the following measure listed below:

- Focused surveys would be conducted for WPT 48 hours prior to the initiation of project construction. If WPT are discovered at any time, they would be relocated downstream in the appropriate habitat.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on WPT.

Northern Spotted Owl

Suitable habitat for NSO is not present within the ESL.

Northern Spotted Owl Avoidance/Minimization Efforts

No avoidance and minimization measures are proposed. Caltrans has determined that the project would have no effect to NSO.

Yellow-Billed Cuckoo

Up to 1.43 acres of temporary and permanent impacts to riparian vegetation are anticipated. This would include vegetation that YBCU may use for foraging and nesting.

Yellow-Billed Cuckoo Avoidance/Minimization Efforts

The following list of project features have been considered and would be implemented in the proposed project:

1. Work outside of the June 1 to August 31 nesting season, or,
2. Start work on the project prior to June 1.
    a. If work is proposed during the nesting season, vegetation removal should be conducted prior to June, before nesting of YBCU would occur.
    b. For construction conducted between April 1 and August 31, a USFWS-approved biologist would conduct passive surveys within a minimum of 500 feet of proposed activities to determine the presence of cuckoos. Nesting surveys would be conducted in accordance with the recommended timing, methodology, and/or protocol for Western YBCU. A Natural History Summary and Survey Protocol for the Western YBCU Population.
    c. Surveys would be conducted within 14 days prior to the start of construction. If there is a break in construction of one week or more, surveys would be conducted prior to the re-initiation of construction. If birds or nests are located within this buffer, USFWS would be contacted for further guidance to ensure birds or nests are not disturbed.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on YBCU.

Per FESA and as a result of the field visit with USFWS on March 14, 2019, Caltrans anticipates the proposed project “may affect, not likely to adversely affect” YBCU. The project would not result in “take” of the species. Informal consultation with USFWS for potential project effects to YBCU would be conducted in spring 2020.

Critical Habitat for California Coastal Chinook, Central California Coast Steelhead, and Central California Coast Coho

Sedimentation/Turbidity: Due to soil disturbance associated with project activities such as constructing access roads and clearing and grubbing, there is a chance of sediment loading in the river channel, which would cause an increase in turbidity in the water flowing through the BSA and in deposited fine sediment within the gravel. Salmonid eggs and juveniles would primarily be exposed to this indirect stressor.

Fine sediment can coat gills of aquatic species, decreasing respiratory abilities. Sediment loading can also reduce stream depth heterogeneity, which can negatively impact pool-dwelling species. An increase in fine sediment in the river is considered an indirect effect, and may cause a loss of spawning habitat, decreased survival of salmonid eggs, as well as a loss of cover and food source for juvenile salmonids. Increased levels of sediment may cause filling in of interstitial spaces within spawning gravel. Fine sediment filling interstitial spaces within the river’s gravel would potentially impact salmonid egg-to-fry survival, since this would reduce the circulation of cold, clean, oxygenated water to the eggs.

Increased sedimentation in rivers can lead to increased turbidity, scouring, and abrasion of stream substrates. Sedimentation can also reduce primary production and reduce substrate suitability for periphyton and biofilm production. Sediment can fill interstitial habitats, which can be detrimental to crevice-occupying stream invertebrates and gravel-spawning fish. Depending on the source of sediment loading, the stressor can be present temporarily or chronically if not properly addressed.

Work in the Russian River channel would be limited to the June 15 to October 15 work windows, which is a season in which only juvenile salmonids would be expected to be within the action area. Measures to control sediment erosion and dust from entering in water would be implemented in order to avoid increasing sediment levels in the river, both during the active construction and post construction.

Loss of Riparian Vegetation: Due to the need for staging and access for construction of the new bridge, as well as access for demolition of the existing bridge, removal of riparian vegetation would occur. The closer a tree is to the area for new bridge construction, trestles and falsework, and access roads, the more likely the tree will be completely removed (including roots). It is largely up to the discretion of the contractor to choose to leave roots and stumps in place in the rest of the riparian impact areas. Removing riparian trees would reduce the amount of vegetative cover within the stream. This in turn can increase temperature along the river margins where the cover is removed, a change in food availability, shaded cover for protection from predation, and change allochthonous inputs within the BSA. However, the larger size of the new bridge would increase the shade of the river by 0.035 acres (1,524 square feet) over the active channel. All life stages of salmonids would be exposed to this indirect stressor.

In addition, the removal of mature riparian vegetation may result in a reduction of bank stability, leaving the river more susceptible for bank and channel erosion. This could lead to increased sedimentation, and the impacts associated with it. Loss of riparian habitat also decreases allochthonous organic matter such as leaf litter and large woody debris, which can impact nutrient cycling in rivers and alter food chains. Riparian areas act as natural filters for river systems, and without them, it decreases removal of nutrient and contaminant runoff and sediment trapping from upland runoff.

Riparian trees providing shade to the active channel of the Russian River were mapped within impacts areas. In total, there would be a removal of approximately 54 trees along the banks of the Russian River that would provide shade to the active channel, as well as a small island comprised of willow below OHWM. The closer any trees are to the new bridge construction and access roads (total width of 75 to 100 feet), the more likely it is that the contractor would need to remove the entire tree (including roots and stumps) for grading and structure construction. Trees farther away from these areas within the impact footprint are more likely to be left with stumps and roots intact. The majority of the riparian trees contributing shade to the Russian River within the impact areas are within or very close to the bridge construction areas and access roads. For the purposes of this analysis, it is likely that the contractor would need to completely remove (including roots and stumps) all 54 shade trees within the riparian impact areas.

Loss of Channel Habitat: Due to construction of new bridge piers and temporary trestles and falsework bents, there would be an alteration of channel morphology (new fill would be introduced to the channel and old fill would be removed from the channel). All life stages of salmonids would be exposed to this indirect stressor, since the trestles and falsework may remain in the Russian River over the winter season, and from additional bridge pier columns placed within and near the Russian River.

Losing potential spawning gravel habitat within the Russian River channel may lead to behavioral changes for adults in choosing different available spawning sites. This would also potentially lead to changes in spatial occupancy of juvenile salmonids due to the changes and positioning of artificial fill in the Russian River channel.

During construction, there would be both permanent and temporary loss of channel habitat. Trestles and falsework would be considered temporary fill, while the new bridge piers would be considered permanent fill. The existing bridge has one column (Photo 12 and 13) located within OHWM. The new bridge design requires two columns per pier. The proposed dimensions of the new pier footing for each column is approximately the same width as the old pier footings. As a result, although one pier would be removed when the existing bridge is demolished, two piers would be located within OHWM of a channel that runs lateral to the Russian River, and a third column footing would partially be below OHWM of the active channel on the left bank. Overall, it is anticipated there would be a net loss of approximately 0.008 acre of Russian River channel habitat within the action area, due to the creation of new bridge pier columns.

Photos 12 and 13: Pier 3 of existing bridge. Photo 12 taken 2/28/19. Photo 13 taken 4/30/19.

Alteration of Channel Hydrology: Due to construction of new bridge piers, temporary trestle and falsework bents, there would be a temporary alteration of channel hydrology stemming from the need to dewater areas of the channel. Dewatering would likely occur with use of cofferdams around the work areas, and the cofferdams would likely cover a footprint of approximately 10 feet around the new pier footprints. In total, there is anticipated to be an approximate dewatered footprint of approximately 250 linear feet of Russian River channel for the construction of the new bridge.

This would cause a temporary change in areas of critical habitat within the channel, a temporary change in available food (stream invertebrates), and possibly a temporary change in water temperature on a small spatial scale within the action area. Juvenile

salmonids would primarily be exposed to this indirect stressor due to the timing of proposed construction.

During water diversion and dewatering activities, fish would be relocated and excluded from the action area. This may cause a temporary disruption in habitat connectivity in the action area within the Russian River channel.

In general, changes in hydrology can lead to changes in channel dynamics such as changes in erosion, flooding, and transport of nutrients, sediment, and contaminants can degrade channel habitats. However, the change in hydrology associated with this project would be minimal and isolated to temporary water diversions and dewatering activities associated with bridge construction within the action area. Activities in the Russian River channel would be limited to seasonal low flow conditions (June 15 to October 15) so that it would have fewer impacts on salmonids and the channel habitat. The dewatering activities would temporarily degrade habitat within a portion of the action area.

Avoidance/Minimization Efforts for Critical Habitat for Chinook, Steelhead, and Coho

To avoid and minimize effects to critical habitat for CC Chinook, CCC steelhead, and CCC coho, Caltrans would implement the general measures described in the above section for CC Chinook and CCC steelhead.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on critical habitat for CC Chinook, CCC steelhead, and CCC coho.

Per FESA, Caltrans anticipates the proposed project “may affect, likely to adversely affect” critical habitat for CC Chinook, CCC steelhead, and CCC coho.

Essential Fish Habitat

A determination that the proposed action may adversely affect EFH for Chinook salmon and coho salmon. Adverse effect means any effect that reduces quality and/or quantity of EFH, and may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), or site-specific or habitat-wide effects, including individual, cumulative, or synergistic consequences of actions. Adverse effects to EFH would be avoided and minimized to the greatest extent practicable. However, this does not eliminate temporary and permanent impacts to the river channel and associated riparian habitat.

- The Russian River and surrounding area is designated as essential fish habitat for Chinook salmon and coho salmon.
- The project would include two seasons of in-water work.
- There would be a temporary loss of approximately 0.25 acres or 250 linear feet of in-channel habitat below OHWM in the Russian River from dewatering activities and work area isolation. Within this dewatered footprint there would be approximately 0.168 acres of temporary impacts from bridge construction activities that would be captured in other applicable permits (1602, 401, 404).
- There would be a permanent loss of 0.004 acres of in-channel habitat below OHWM in the Russian River.
- The project activities may cause temporary turbidity levels to rise above baseline conditions, which may temporarily degrade EFH during juvenile occupation of the action area.
- There would be a temporary loss of 1.376 acres of riparian, which includes 1.125 acres of valley oak riparian and 0.251 acres of floodplain riparian.
- There would be a permanent loss of 0.057 acres of riparian, which includes 0.042 acres of valley oak riparian and 0.015 acres of floodplain riparian.
- Potentially harmful noise levels from pile driving could lead to temporary conditions of unsuitable habitat within the action area, due to risk of harassment, injury, or death of salmonids.

Avoidance and Minimization Efforts for Essential Fish Habitat

To avoid and minimize effects to essential fish habitat, Caltrans would implement the general measures described in the above section for CC Chinook and CCC steelhead.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact” on essential fish habitat.

Per FESA, Caltrans anticipates the proposed project “may adversely affect” essential fish habitat.

DISCUSSION OF CEQA CHECKLIST QUESTION B

The following CEQA Checklist item was used to evaluate the impacts of the proposed project on natural communities:

- Would the project 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 Wildlife or U.S. Fish and Wildlife Service?

Adjacent Riparian Vegetation

Based on the current project design, it is anticipated the project would result in approximately 1.376 acres of temporary impacts and 0.057 acre of permanent impacts. For the purpose of this assessment, temporary impacts were considered for areas impacted by staging and access, and areas underneath the proposed structure that would not receive permanent fill. Permanent impacts are considered to be areas where impacts would result in permanent loss of a potentially jurisdictional area. This includes

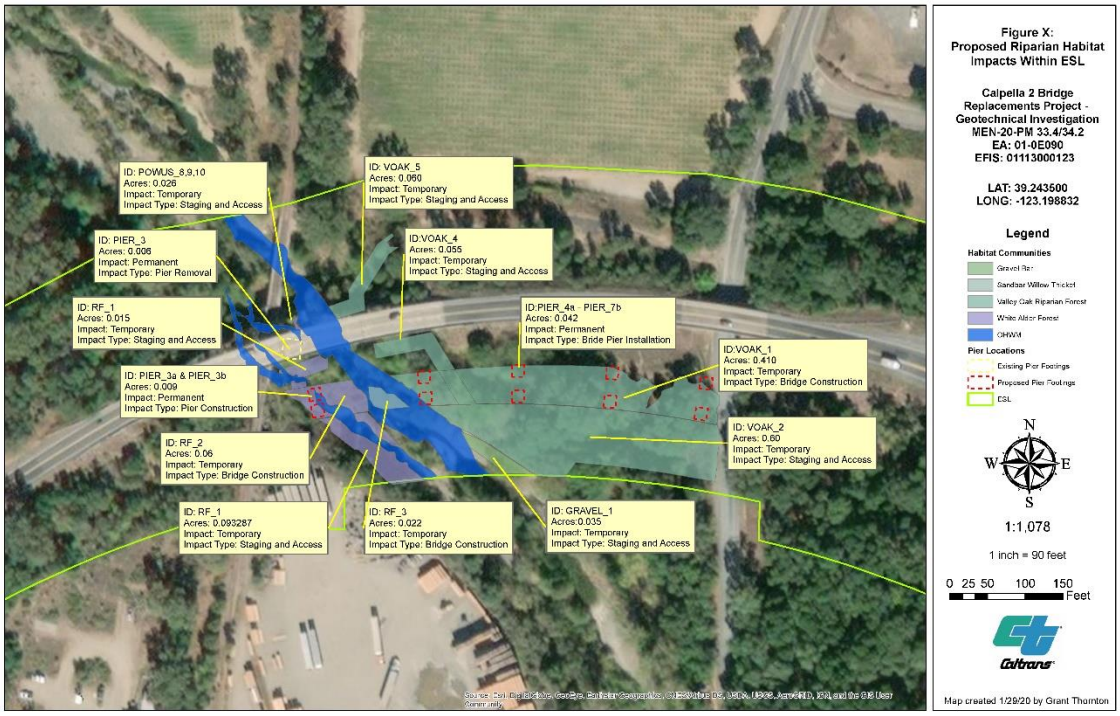


Figure 8: Proposed Riparian Habitat Within the ESL

the placement of new piers, and any cut and/or fill needed for the construction of the abutments and new highway alignment.

Within the BSA, the Russian River becomes a braided channel, and is comprised of an active channel and two lateral channels that convey waters during periods of moderate and high flow. Between these channels, riparian habitat overlaps the OHWM of the secondary channels. Based on vegetation mapping and OHWM delineations, the floodplain of the Russian River extends approximately 90 to 150 feet west of the left

bank of the Russian River active channel. Impacts to the floodplain are discussed in the paragraph below.

Within the Russian River floodplain, it is anticipated that the project would result in approximately 0.251 acre of temporary impacts and 0.015 acre of permanent impacts (Table 5). Temporary impacts would occur as a result of staging and access, while permanent impacts would occur from the placement of two columns that would comprise pier 3. Additional permanent impacts would occur from the removal of the existing pier 3, which would be excavated three feet below original grade and backfilled with native material. Although this impact is permanent, it would provide a benefit to the overall community by removing a barrier within the floodplain, providing additional spawning habitat.

Immediately east of the left bank of the Russian River, the vegetation community transitions from predominately white alder and willow communities within the floodplain to a valley oak woodland. South of the existing alignment, the valley oak woodland community extends from the left bank of the Russian River to Eastside Calpella Road and provides shading to the Russian River as well as an ephemeral drainage that extends from a hillside northeast of the BSA and discharges directly to the Russian River.

Within the valley oak woodland, it is anticipated that the project would result in approximately 1.125 acres of temporary impacts and 0.042 acre of permanent impacts (Table 5). Temporary impacts would occur as a result of staging and access, while permanent impacts would occur from the placement columns for piers 4 - 7.

Table 5: Impacts to Riparian Communities

LOC_ID	Location	Area (Acres)	Type	Impact
RF_2	Floodplain west of Russian River	0.060	Floodplain	Temporary
RF_3	Willow island	0.022	Floodplain	Temporary
PIER_3a	Pier 3, Column 1	0.004	Floodplain	Permanent

PIER_3b	Pier 3, Column 2	0.004	Floodplain	Permanent
RF_1	Staging and Access - South of Pier 3, Column 2	0.093	Floodplain	Temporary
RF_1	Staging and Access - Between New and Old Bridge	0.015	Floodplain	Temporary
POWUS_8,9,10	Staging and access north of existing bridge	0.026	Floodplain	Temporary
PIER_3	Demolition of old pier 3	0.006	Floodplain	Permanent
GRAVEL_1	Staging and Access- South of Pier 4, Column 2	0.035	Floodplain	Temporary
RW_5	Staging and Access	0.060	Riparian	Temporary
RW_4	Staging and Access	0.055	Riparian	Temporary

PIER_4a-PIER7b	Piers 4-7	0.042	Riparian	Permanent
RW_1	Bridge Alignment	0.410	Riparian	Temporary
RW_2	Staging and Access South of Proposed Bridge Alignment	0.600	Riparian	Temporary
Total Temporary Floodplain		0.251		
Total Permanent Floodplain		0.015		
Total Temporary Riparian		1.125		
Total Permanent Riparian		0.042		
Total Temporary (Floodplain + Riparian)		1.376		
Total Permanent (Floodplain+ Riparian)		0.057		
Grand Total		1.433		

Permanent impacts to riparian vegetation would be reduced to the greatest extent practicable with incorporation of the measures outlined below. These standard measures would ensure that applicable BMPs are used to stabilize all bare soil areas over both the short and long term and to minimize adverse effects to water quality, aquatic habitat, and aquatic species. BMPs include treatment controls, soil stabilization practices, and weather-appropriate scheduling. High-visibility temporary fencing would be used to limit ground disturbance to the project footprint, and debris containment plans would be implemented if needed to ensure construction debris does not enter adjacent waters.

The following measures would be implemented during construction:

- Upon completion of project, areas of disturbance on streambanks shall be stabilized with wattles and straw.

- Hay and/or straw used in erosion control application shall be certified weed-free or weed-seed free.

- Modified or disturbed portions of streams, banks, and riparian areas would be restored as nearly as possible to natural and stable contours (elevations, profile, and gradient).

- The areas outside of permitted construction areas would be designated as ESAs. Where feasible, highly visible ESA fencing would be installed to delineate the permitted area. No project activities would occur within jurisdictional areas outside the delineated construction area.

- Existing slash shall be piled onsite before construction activities. Upon completion of project, slash piles shall be spread out or chipped onsite.

- Disturbance or removal of vegetation shall not exceed the minimum necessary to complete construction activities. Where possible, trees would be trimmed instead of removed to gain access to the work sites and flagging would be used to delineate the work area. Any debris and sediment would be contained within the project site and disposed of appropriately off-site.

- Caltrans would also implement a program of invasive weed control in all areas of soil disturbance caused by construction to improve habitat for native species in and adjacent to disturbed soil areas within the project limits. Caltrans would also prepare a project-specific revegetation plan.

Based on the above, a determination was made that the project would have a “Less Than Significant Impact with Mitigation” on riparian habitat.

Oak Woodlands

Based on the current project description, it is anticipated the proposed project would result in approximately 0.359 acre of temporary impacts and 2.653 acres of permanent impacts to coast live oak woodlands (Table 6).

Table 6: Impacts to Non-Riparian Oak Woodlands within ESL.

ID	Location	Acreage	Impact Type
OAK_11	Cut/Fill North of new alignment	0.225	Permanent
OAK_8	New alignment E. of E. Calpella Rd._1	0.615	Permanent
OAK_7	New alignment E. of E. Calpella Rd._2	0.140	Permanent
OAK_6	New alignment E. of E. Calpella Rd._3	0.030	Permanent
OAK_14	Cut/Fill South of new alignment_1	0.442	Permanent
OAK_13	Cut/Fill South of new alignment_2	0.156	Permanent
OAK_12	Cut/Fill South of new alignment_3	0.163	Permanent
OAK_1	Staging and Access South of new alignment	0.328	Temporary
OAK_9	Cut/Fill and Staging North of proposed alignment	0.330	Permanent
OAK_5	Proposed Alignment	0.310	Permanent
OAK_4	Staging south of proposed alignment and Cut/Fill	0.018	Permanent
OAK_10	Fill prism between proposed alignment and southern staging area	0.224	Permanent
OAK_2	Access for demo of old bridge	0.003	Temporary
OAK_3	Access for demo of old bridge	0.028	Temporary

	Total Temporary Impacts	**0.359**	
	Total Permanent Impacts	**2.653**	
	Grand Total	**3.012**	

Temporary impacts would largely occur as the result of developing staging and access for the proposed alignment and access for demolition of the existing bridge. Permanent impacts would occur in areas of the proposed bridge alignment and the development of fill prisms necessary to contour the new alignment (Figure 9).

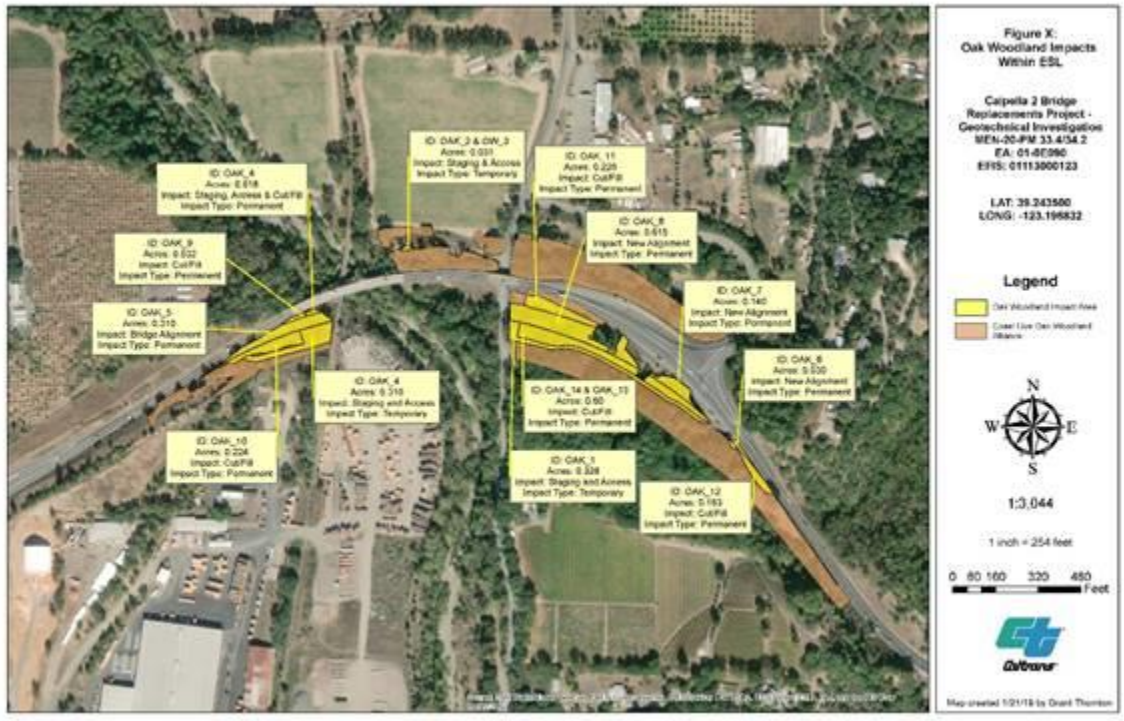


Figure 9: Non-Riparian Oak Woodland Impacts Within ESL

To avoid and minimize effects to oak woodlands, Caltrans would implement the following general measures:

- <u>Restrict Timing of Vegetation Removal</u>
    - Vegetation removal would occur outside the migratory bird breeding season (from October 1 to January 31). If vegetation cannot be cleared outside of the bird breeding season, migratory bird surveys would be conducted by a qualified biologist no earlier than two weeks before construction. If nesting birds are found during preconstruction surveys, a

qualified biologist would coordinate with CDFW, and USFWS if needed, to establish a species-specific buffer around each nest site and monitor the nest during construction.

- Minimize Disturbance
    - Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. Where possible, trees would be trimmed instead of removed to gain access to the work sites.

Based on the above, a determination was made that the project would have a "Less Than Significant Impact" on oak woodlands.

Discussion of CEQA Checklist Question C

The following CEQA Checklist item was used to evaluate the impacts of the proposed project on wetlands and waters:

- Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Wetlands

The most current project design was analyzed against biological resources that were surveyed and mapped during the 2018-2019 survey seasons (final plans, specifications, and estimates have not been developed for this project). A list of jurisdictional wetlands within the BSA is provided in Table 7. Based on surveys completed to date, the proposed project would result in approximately 0.030 acre of permanent impacts to wetlands as a result of the fill prism for the new SR-20 alignment east of Eastside Calpella Road. No temporary impacts to wetland were identified.

Table 7: Wetlands Identified within ESL

Location	Acreage	Impacted?	Impact	Impact Type
Wetland 1, East of E. Calpella Rd on Held Property	0.021	Yes	Permanent	New bridge alignment

Wetland 1, East of E. Calpella Rd on Held Property	0.004	Yes	Permanent	Fill for new bridge alignment
Wetland 2 E. of E. Calpella Rd on Held Property	0.005	Yes	Permanent	New bridge alignment
Northwest of Russian River, north of SR 20	0.005	No	N/A	N/A
Northwest of Russian River, north of SR 20	0.034	No	N/A	N/A
Total Wetlands in BSA	**0.069**			
Total Temporary Impacts	**0.00**			
Total Permanent Impacts	**0.030**			

Consistent with the regulations under Section 404 of the Clean Water Act, the determination of permanent and temporary adverse impacts to jurisdictional waters of the United States were based upon any “discharges of dredged or fill material”, and were calculated as discussed below:

Permanent Impacts

Any jurisdictional waters receiving a new permanent fill including, but not limited to any new permanent fills placed for roadways and associated embankments (cut and fill areas). As well as any new permanent fills associated with new drainage features/structures including the extension of existing culverts, as well as any permanent instream structures including culvert end treatments such as rock slope protection, flared end sections, headwalls, and endwalls, were considered permanent impacts.

Based on the current project description, a total of 0.030 acre of wetlands would be permanently impacted as a result of construction activities. These areas would be permanently impacted by the eastern bridge abutment and fill prism needed to create the new SR-20 alignment.

Temporary Impacts

Temporary Fills: Any jurisdictional waters receiving any fill that would be removed from the jurisdictional waters before or upon project completion, including, but not limited to any backfills for geotechnical borings and coffer-dams or temporary diversion structures that may be required for de-watering activities when working in a flowing stream were considered as temporary impacts.

Additionally, any jurisdictional waters that would be temporarily disturbed by construction activities or by equipment access and operation that would be re-contoured to as close to pre-project condition, stabilized and re-vegetated with appropriate native species as soon as feasible at the conclusion of construction activities, would be considered as temporary impacts. No temporary impacts to wetlands were identified.

To avoid and minimize effects to wetlands, Caltrans would implement the following general measures:

1. Establish Environmentally Sensitive Areas: Additional direct and indirect impacts to sensitive biological resources throughout the project area would be avoided or minimized by designating these features outside of the construction impact area as ESAs on project plans and in project specifications. ESA information would be shown on contract plans and discussed in the Special Provisions. ESA provisions may include, but are not necessarily limited to, the use of temporary orange (high-visibility) fencing to identify the proposed limit of work in areas adjacent to sensitive resources or to locate and exclude sensitive resources from potential construction impacts. Contractor encroachment into ESAs would be prohibited (including the staging/operation of heavy equipment or casting of excavated materials). ESA provisions would be implemented as a first order of work and remain in place until all construction activities are complete.

2. Containment Measures / Construction Site Best Management Practices: The Contractor shall implement mitigation measures so as to contain construction related material, in manageable locations, and prevent debris from entering surface waters during in-water work and for construction operations outside of receiving waters.

   BMPs utilized for erosion control would be implemented and in place prior to, during, and after construction to ensure that no silt or sediment enters receiving waters. Areas where a disturbance of soil has occurred would be stabilized appropriately and approved by the North Coast RWQCB (NCRWQCB) prior to filing the NPDES Construction General Permit Notice of Termination. BMPs options and the selected mitigation measures deployed, which relate to in-water work, would be considered, evaluated, and dependent on factors such as field

conditions, changes to construction strategies, and regulatory requirements in order to protect the beneficial uses of receiving waters. The project design team may specify BMPs to be utilized during construction in addition to, or in place of, other temporary measures selected by the Contractor.

Compliance with all construction site BMPs, specified in the approved SWPPP and any other permit conditions, is mandatory to minimize the introduction of construction related contaminants and sediment to receiving waters. In order to achieve this and reduce the potential for discharge, the Contractor would follow all applicable guidelines and requirements in the 2018 Caltrans Standard Specifications (2018 CSS), Section 13, regarding water pollution control and general specifications for preventing, controlling, and abating water pollution in streams, waterways, and other bodies of water. Project specific BMPs shall address (among other things) soil stabilization, sediment control, wind erosion control, vehicle tracking control, non-storm water management, and waste management practices and would be based on the best conventional and best available technology. Caltrans staff and the Contractor shall perform routine inspections of the construction area to verify that field BMPs are properly implemented, maintained, and are operating effectively and as designed. BMPs and mitigation measures selected must meet the standards and objectives to minimize water pollution impacts set forth in the 2018 CSS and shall include (but not be limited to) the following:

- Use only equipment in good working order and free of dripping or leaking engine fluids.
- Conduct any necessary equipment washing where water is prevented from flowing into municipal drainage conveyance systems and receiving waters.
- In case of an accidental spill, an “emergency response plan” would be prepared and submitted to the NCRWQCB and USACE for review and approval at least 14 days prior to conducting any construction work. A spill prevention control and countermeasures plan would be onsite and in place to handle any topside spills. The plan would include strict on-site handling rules to keep construction and maintenance materials from entering the river, including procedures related to refueling, operating, storing, and staging construction equipment, as well as preventing and responding to spills. The plan also would identify the parties responsible for monitoring the spill response. During construction, any spills would be cleaned up immediately according to the spill prevention and countermeasure plan.

- BMPs for spill containment measures (plastic sheeting, absorbent pads and/or other containment devices) would be utilized during all-over water/trestle-mounted construction activities. BMPs would be deployed around and beneath all over-water/ trestle-mounted construction equipment. Supplemental equipment would be on-site to collect and remove any spills.

- Prevent discharge of turbid water to the Russian River during any construction activities including, but not limited to de-watering activities, by filtering the discharge first using a filter bag, diverting the water to a settling tank or infiltration areas, and/or treating the water in a manner to ensure that discharges conform to the water quality requirements of the waste discharge permit issued by the NCRWQCB prior to entering receiving waters.

3. Environmental Awareness Training for Construction Personnel: Before any work occurs in the project area, including grading and tree removal, Caltrans' contractors would retain a qualified biologist to conduct a mandatory contractor/worker environmental awareness training for construction personnel. The awareness training would be provided to all construction personnel (contractors and subcontractors) to brief them on the need to avoid effects to sensitive biological resources (e.g., riparian vegetation, wetlands, special-status species, nesting birds, and protected trees) adjacent to construction areas and the penalties for not complying with applicable state and federal laws and permit requirements. The biologist would inform all construction personnel about the life history and habitat requirements of special-status species with potential for occurrence onsite, the importance of maintaining habitat, and the terms and conditions of the BO or other authorizing document (e.g., letter of concurrence). Proof of this instruction would be submitted to the project proponent, and other overseeing agencies (i.e., CDFW, USACE, and/or NCRWQCB), as appropriate. The environmental training also would cover general restrictions and guidelines that must be followed by all construction personnel to reduce or avoid effects on sensitive biological resources during project construction. General restrictions and guidelines that would be followed by construction personnel are listed below:

    - Project-related vehicles would observe the posted speed limit on hard-surfaced roads and a 10 mile-per-hour speed limit on unpaved roads or access areas during travel within the project limits.

    - Project-related vehicles and construction equipment would restrict off-road travel to the designated construction area.

- Vegetation clearing and construction operations would be limited to the minimum necessary.
- All food-related trash would be disposed of in closed containers and removed from the project site at least once a week during the construction period. Construction personnel would not feed or otherwise attract wildlife to the project site.
- No pets or firearms would be allowed on the project site.
- To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel would not service vehicles or construction equipment outside designated staging areas.
- The training also would include identifying the BMPs written into construction specifications for avoiding and minimizing the introduction and spread of invasive plants.

4. Limit Vegetation Removal: Vegetation removal shall be limited to the absolute minimum amount required for construction.
5. Restore/Revegetate Temporarily Affected Areas Onsite

EO 11990, Protection of Wetlands (1977), calls for no net loss of wetlands, and established a national policy to avoid adverse effects to wetlands whenever there is a practicable alternative. Given the project would replace the bridges on a southern alignment, the identified alternative was determined to be the most practicable alternative that would meet the project's objective (purpose and need) while also limiting the acreage of wetlands that could potentially be affected.

Based on the scope of the project, the project's anticipated effect on the resource, and the permanent nature of the disturbance, a determination was made that the project would result in a "Less Than Significant with Mitigation" impact to wetlands.

Other Waters

Permanent Impacts

Any jurisdictional waters receiving a new permanent fill including, but not limited to any new permanent fills placed for roadways and associated embankments (cut and fill areas), as well as any new permanent fills associated with any other new drainage features/structures including the extension of existing culverts, as well as any

permanent instream structures including culvert end treatments such as rock slope protection, flared end sections, headwalls and endwalls, were considered permanent impacts.

Based on the current project description, a total of 0.004 acre of Waters of the United States/Waters of the State (WOUS/WOS) would be permanently impacted as a result of project activities. This would occur in areas of new pier column placement below the OHWM (Table 8).

Temporary Impacts

Temporary Fills: Any jurisdictional waters receiving any fill that would be removed from the jurisdictional waters before or upon project completion, including, but not limited to any backfills for geotechnical borings and coffer-dams or temporary diversion structures that may be required for de-watering activities when working in a flowing stream were considered as temporary impacts.

Additionally, any jurisdictional waters that would be temporarily disturbed by construction activities or by equipment access and operation that would be re-contoured to as close to pre-project condition, stabilized and re-vegetated with appropriate native species as soon as feasible at the conclusion of construction activities, would be considered temporary impacts.

Based on the current project description, a total of 0.245 acre of WOUS/WOS would be temporarily impacted as a result of project activities (Table 8). Impacts would occur largely for the purposes of staging and access below OHWM. In addition, impacts were assumed at all potentially jurisdictional drainage channels that would be impacted (re-established) as a result of roadway widening at Eastside Calpella Road, realignment of SR-20, or reconnecting the culvert at PM 33.95 to the drainage channel at Eastside Calpella Road.

Table 8: Temporary and Permanent Impacts to WOUS/WOS as a Result of Project Activities

Location	Acreage	Impact Type
Culvert inlet at PM 33.95	0.002	Temporary
Culvert outlet at PM 33.95	0.002	Temporary
Channel from area South of SR 20 to E. Calpella Rd. Drainage	0.018	Temporary

Culvert inlet at E. Calpella Rd.	0.002	Temporary
Culvert outlet at E. Calpella Rd.	0.002	Temporary
Drainage channel parallel to E. Calpella Rd.	0.016	Temporary
Channel from E. Calpella Rd. to Russian River 1 Realignment under bridge	0.011	Temporary
Channel from E. Calpella Rd. to Russian River 2 Staging and access	0.023	Temporary
OHWM of Russian River	0.064	Temporary
Lateral channel west of Russian River	0.012	Temporary
Staging and Access- South of Pier 4, Column 2	0.022	Temporary
Staging and Access - South of Pier 3, Column 2	0.040	Temporary
Staging and Access Between New and Old Bridge	0.010	Temporary
Staging and access north of existing bridge	0.020	Temporary
Pier 3, Column 1	0.002	Permanent
Pier 3, Column 2	0.001	Permanent
Pier 4, Column 2	0.001	Permanent
Total Temporary	**0.245**	
Total Permanent	**0.004**	
Grand Total	**0.248**	

To avoid and minimize effects to other waters, Caltrans would implement the measures described for wetlands in the section above.

Based on the scope of the project, the project's anticipated effect on the resource, and the temporary and permanent nature of the disturbance, a determination was made that the project would result in a "Less Than Significant with Mitigation" impact to other waters.

Discussion of CEQA Checklist Question D

The following CEQA Checklist item was used to evaluate the impacts of the proposed project on any plant and animal species:

- Would the project 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?

Bat Species

Please reference Section 2.4 "Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A." Based on the discussion of bat species in Question A, a determination was made that the project would have a "Less Than Significant Impact" impact on bat species and their habitats.

California Coastal Chinook Salmon

Please reference Section 2.4 "Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A." Based on the discussion of CC Chinook salmon in Question A, a determination was made that the project would have "Less Than Significant Impact" on CC Chinook salmon.

Per FESA, Caltrans anticipates the proposed project "may affect, likely to adversely affect" CC Chinook salmon. The project would not result in "take" of the species.

Central California Coast Coho Salmon

Please reference Section 2.4 "Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A." Based on the discussion of central CCC coho salmon in Question A, a determination was made that the project would have a "Less Than Significant Impact" on CCC coho salmon.

Per FESA, Caltrans anticipates the proposed project "may affect, not likely to adversely affect" CCC coho salmon. The project would not result in "take" of the species.

Central California Coast Steelhead

Please reference Section 2.4 “Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A.” Based on the discussion of central CCC steelhead in Question A, a determination was made that the project would have a “Less Than Significant Impact” on CCC Steelhead.

Per FESA, Caltrans anticipates the proposed project “may affect, likely to adversely affect” CCC steelhead. The project would not result in “take” of the species.

Foothill Yellow-Legged Frog

Please reference Section 2.4 “Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A.” Based on the discussion of FYLF in Question A, a determination was made that the project would have a “Less Than Significant Impact” on FYLF.

Osprey

Please reference Section 2.4 “Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A.” Based on the discussion of osprey in Question A, a determination was made that the project would have a “Less Than Significant Impact” on osprey.

Western Pond Turtle

Please reference Section 2.4 “Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A.” Based on the discussion of WPT in Question A, a determination was made that the project would have a “Less Than Significant Impact” on WPT.

Northern Spotted Owl

Please reference Section 2.4 “Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A.” Based on the discussion of NSO in Question A, a determination was made that the project would have “No Effect” on NSO.

Yellow-Billed Cuckoo

Please reference Section 2.4 “Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Question A.” Based on the discussion of YBCU in Question A, a determination was made that the project would have a “Less Than Significant Impact” on YBCU.

Per FESA and as a result of the field visit with USFWS on March 14, 2019, Caltrans anticipates the proposed project "may affect, not likely to adversely affect" YBCU. The project would not result in "take" of the species.

Critical Habitat for California Coastal Chinook and Central California Coast Steelhead

Please reference Section 2.4 "Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Questions A." Based on the discussion of critical habitat for CC Chinook salmon and CCC steelhead in Questions A, a determination was made that the project would have a "Less Than Significant Impact" on critical habitat for CC Chinook and CCC steelhead.

Per FESA, Caltrans anticipates the proposed project "may affect, likely to adversely affect" critical habitat for CC Chinook and CCC steelhead.

Critical Habitat for Central California Coast Coho

Please reference Section 2.4 "Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Questions A." Based on the discussion of critical habitat for CCC coho in Questions A, a determination was made that the project would have a "Less Than Significant Impact" on critical habitat for CCC coho.

Per FESA, Caltrans anticipates the proposed project "may affect, likely to adversely affect" critical habitat for CCC coho.

Essential Fish Habitat

Please reference Section 2.4 "Discussion of Environmental Evaluation Questions 2.4 – Biological Resources – Questions A." Based on the discussion of EFH in Questions A, a determination was made that the project would have a "Less Than Significant Impact" on EFH.

Per FESA, Caltrans anticipates the proposed project "may adversely affect" EFH.

Discussion of CEQA Checklist Question E

The following CEQA Checklist item was used to evaluate conflicts with any local policies or ordinances:

- Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Oak Woodlands

The *Mendocino County General Plan,* adopted in 2009, has several policies which outline oak woodland protection. The policies include; Policy RM-24, Policy RM-25, and Policy RM-28.1. The proposed project would impact 4 acres of oak woodland. Mendocino County has an estimated 580,416 acres of oak woodland present within county lines. The approximately 4 acres of impacted oak woodland accounts for 0.0009% of Mendocino County's 580,416 acres; therefore, there would only be a less than significant impact given the abundant oak woodland present.

Discussion of CEQA Checklist Question F

The following CEQA Checklist item was used to evaluate conflicts with the provisions of an adopted Conservation Plan:

- Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

A "No Impact" determination in this section is based on the location of the proposed project. The project is not located within any habitat or community conservation locations; therefore, it would not conflict with provisions of any Habitat or Natural Community Conservation Plans.

Mitigation Measures

Wetlands

For impacts that cannot be restored on-site and areas where permanent loss has occurred (ie., placement of piers and abutments) mitigation for permanent impacts to wetland habitat would be offset by mitigation determined during the permitting phase of this project. If off-site restoration were implemented, the appropriate measures would be identified and coordinated through the USACE, NCRWQCB, CDFW, and any other administering agencies.

Other Waters

Temporary Impacts

After completion, all materials used for the temporary access roads, cofferdams and/or trestle piles would be completely removed from the site. The site would then be restored

to a natural setting by regrading and revegetating with native plants, as required by the final approved revegetation plan and erosion control plans.

Permanent Impacts

For impacts that cannot be restored on-site and areas where permanent loss has occurred (i.e., placement of piers and abutments) mitigation for permanent impacts to riparian habitat would be offset by mitigation determined during the permitting phase of this project. If off-site restoration were implemented, the appropriate measures would be identified and coordinated through the USACE, NCRWQCB, CDFW, and any other administering agencies.

Adjacent Riparian Vegetation

Temporary Impacts

After completion, all materials used for the temporary access roads, cofferdams and/or trestle piles would be completely removed from the site. The site would then be restored to a natural setting by regrading and revegetating with native plants, as required by the final approved revegetation plan and erosion control plans.

Permanent Impacts

For impacts that cannot be restored on-site and areas where permanent loss has occurred (i.e., placement of piers and abutments) mitigation for permanent impacts to riparian habitat would be offset by mitigation determined during the permitting phase of this project. If off-site restoration were implemented, the appropriate measures would be identified and coordinated through the USACE, NCRWQCB, CDFW, and any other administering agencies.

Oak Woodlands

No compensatory mitigation is proposed for non-riparian oak woodlands. To address the loss of non-riparian oak woodland communities impacted by project activities, Caltrans proposes to plant areas within the existing Caltrans ROW near the project location, and re-plant areas of the old SR-20 alignment and existing fill prism with oaks that are of the same species impacted by project activities.

Critical Habitat for California Coastal Chinook and Central California Coast Steelhead

Any impacts to critical habitat for CC Chinook and CCC steelhead would be addressed under proposed mitigation for loss of OWUS/WOS and associated riparian habitat.

Critical Habitat for Central California Coast Coho

Any impacts to critical habitat for CCC coho would be addressed under proposed mitigation for loss of OWUS/WOS and associated riparian habitat.

Essential Fish Habitat

Any impacts to EFH would be addressed under proposed mitigation for loss of OWUS/WOS and associated riparian habitat.

Northern California Black Walnut

The Northern California black walnuts are within an area considered to be jurisdictional riparian habitat. As a result, any impacts to the trees would be addressed in the 1600 permit and compensatory mitigation for impacts to riparian habitat may be required.

Bat Species

No compensatory mitigation is proposed for bats.

California Coastal Chinook Salmon

Any impacts to CC Chinook salmon would be addressed under proposed mitigation for loss of OWUS/WOS and associated riparian habitat.

Central California Coast Coho Salmon

Any impacts to CCC coho salmon would be addressed under proposed mitigation for loss of OWUS/WOS and associated riparian habitat.

Central California Coast Steelhead

Any impacts to CCC steelhead would be addressed under proposed mitigation for loss of OWUS/WOS and associated riparian habitat.

Foothill Yellow-Legged Frog

No compensatory mitigation is proposed for FYLF.

Osprey

No compensatory mitigation is proposed for osprey.

Western Pond Turtle

No compensatory mitigation would be required given impacts to WPT would be avoided or minimized through implementation of the standard measures designed to protect aquatic organisms.

Northern Spotted Owl

No compensatory mitigation is proposed for NSO.

Yellow-Billed Cuckoo

No compensatory mitigation is proposed for YBCU.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.5 Cultural Resources

Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	No	No	Yes	No
Would the project: b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	No	No	Yes	No
Would the project: c) Disturb any human remains, including those interred outside of dedicated cemeteries?	No	No	No	Yes

"No Impact" and "Less Than Significant" determinations in this section are based on the scope, description, and location of the proposed project, as well as information provided by the project Archaeologist on December 19, 2019 from the draft Historic Property Survey Report (HPSR). The HPSR is currently in progress and would be completed prior to finalizing this document.

Regulatory Setting

The term "cultural resources," as used in this document, refers to the "built environment" (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including "historic properties," "historic sites," "historical resources," and "tribal cultural resources." Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 CFR 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the FHWA, the ACHP, the California State Historic Preservation Officer (SHPO), and the

Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the ACHP's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

CEQA requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as "unique" archaeological resources. California PRC Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill 52 (AB 52) added the term "tribal cultural resources" to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires state agencies to identify and protect state-owned historical resources that meet the NRHP listing criteria. It further requires the Department to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the SHPO before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU)[1] between the Department and SHPO, effective January 1, 2015. For most Federal-aid projects on the State Highway System, compliance with the Section 106 PA would satisfy the requirements of PRC Section 5024.

Environmental Setting

Record searches and literature reviews identified one cultural resource within the project limits: the mainline of the Northwestern Pacific Railroad. Other cultural resources have been previously documented in the project vicinity, but not within the project limits.

[1] The MOU is located on the SER at http://www.dot.ca.gov/ser/vol2/5024mou_15.pdf

The Native American Heritage Commission search determined that no tribal cultural resources have been identified in the project area. Native American consultation was initiated on February 21, 2018. Initial letters were sent out at this time, and on March 21, 2018 follow-up emails and telephone calls were conducted. No resources were mentioned, and no concerns were raised by those who responded. Pedestrian surveys were conducted by archaeologists from Pacific Legacy, Incorporated on March 13-14, 2018. Studies identified three historic-era archaeological sites (CA-MEN-3784H, P-23-006195, and Calpella 1), and three built environment resources (CA-MEN-3111H/P-23-003663, Bridge No. 10-0182, and Bridge No. 10-0183) within the project Area of Potential Effects (APE).

Discussion of Environmental Evaluation Questions 2.5—Cultural Resources

a - b) Studies identified three historic-era archaeological sites (CA-MEN-3784H, P-23-006195, and Calpella 1), and three built environment resources (CA-MEN-3111H/P-23-003663, Bridge No. 10-0182, and Bridge No. 10-0183) within the project APE.

Investigations at site Calpella 1 identified the ruins of a late 19th to mid-20th century farmstead. Due to property access issues, this site has not been evaluated for the NRHP or the CRHR. The evaluation of, effects analysis for, and potential mitigation for this resource would follow the stipulations of the project-specific Programmatic Agreement (Project PA) and associated Cultural Resources Management Plan (CRMP) that has been developed for this project. The California SHPO would concur with the final Project PA.

CA-MEN-3784H – This site is assumed eligible for the NRHP for the purposes of this project only due to a limited potential to effect in accordance with PA Stipulation VIII.C.3. CSO is reviewing this recommendation for approval. It was determined that the project would not adversely affect this site. The California SHPO is reviewing this determination. No further work at this site should be necessary.

P-23-006195 – This site is assumed eligible for the NRHP for the purposes of this project only due to a limited potential to effect in accordance with PA Stipulation VIII.C.3. The Cultural Studies Office (CSO) is reviewing this recommendation for approval. It was determined that the project would not adversely affect this site. The California SHPO is reviewing this determination. No further work at this site should be necessary.

CA-MEN-3111H/P-23-003663 – Northwestern Pacific Railroad consists of the mainline of the railroad and its bridge over the Russian River. The railroad was constructed in 1901 as part of the California Northwestern Railway, which later merged with several other railroads to form the Northwestern Pacific Railroad. This resource was

recommended as eligible for listing in the NRHP and the CRHR as a historic district in 2004. No formal eligibility determination has been made. No further work at this site should be necessary, as it would be protected in its entirety during construction.

Bridge No. 10-0182, the Russian River Bridge/Overpass, was previously evaluated as a part of Caltrans' California Historic Bridge Inventory and determined ineligible for listing in the NRHP. No further work at this site is necessary.

Bridge No. 10-0183, the Redwood Valley Road UC, was previously evaluated as a part of Caltrans' California Historic Bridge Inventory and determined ineligible for listing in the NRHP. No further work at this site is necessary.

c) No indicators of human remains were observed within the project limits. If human remains are identified during the construction activity, they would be treated in accordance with the requirements of California Health and Safety Code section 7050.5 and Public Resources Code section 5097.98. If, pursuant to §7050.5(c) of the California Health and Safety Code, the county coroner/medical examiner determines that the human remains are or may be of Native American origin, then the discovery shall be treated in accordance with the provisions of §5097.98 (a)-(d) of the California Public Resources Code.

Mitigation Measures

Based on the determinations made in the CEQA Checklist, mitigation measures have not been proposed for the project.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "No Impact" would occur.

2.6 Energy

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	No	No	No	Yes
Would the project: b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project, as well as the Noise, Air Quality, Greenhouse Gas, and Energy Analysis dated July 23, 2019. Potential impacts to energy are not anticipated due to the following:

a - b) The proposed project would not increase capacity or provide congestion relief when compared to the no-build alternative. It may contribute to roadway improvement that would improve vehicles' fuel economies and thus affecting project energy consumption.

The basic procedure for analyzing direct energy consumption from construction activities is to obtain fuel consumption projections in gallons from the CAL-CET2018, version 1.2. CAL-CET outputs fuel consumption based on project-specific construction information.

The proposed project does not include maintenance activities which would result in long-term indirect energy consumption by equipment required to operate and maintain in the roadway. Thus, it is unlikely to increase indirect energy consumption though increased fuel usage.

Proposed project construction would primarily consume diesel and gasoline through operation of heavy-duty construction equipment, material deliveries, and debris hauling. As indicated above, energy use associated with proposed project construction is estimated to result in the total short-term consumption of 55,888 gallons from diesel-powered equipment and 35,741 gallons from gasoline-powered equipment. This represents a small demand on local and regional fuel supplies that would be easily accommodated, and this demand would cease once construction is complete.

Moreover, construction-related energy consumption would be temporary and not a permanent new source of energy demand, and demand for fuel would have no noticeable effect on peak or baseline demands for energy. Therefore, the project would not result in an inefficient, wasteful, and unnecessary consumption of energy.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.7 Geology and Soils

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Directly or indirectly cause 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.	No	No	No	Yes
Would the project: a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: ii) Strong seismic ground shaking?	No	No	Yes	No
Would the project: a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: iii) Seismic-related ground failure, including liquefaction?	No	No	Yes	No
Would the project: a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: iv) Landslides?	No	No	No	Yes
Would the project: b) Result in substantial soil erosion or the loss of topsoil?	No	No	Yes	No
Would the project: 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?	No	No	Yes	No

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: 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?	No	No	Yes	No
Would the project: 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?	No	No	No	Yes
Would the project: f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	No	No	No	Yes

"No Impact" and "Less Than Significant" determinations in this section are based on the scope, description, and location of the proposed project, as well as the California Geological Survey Regulatory Maps, the United States Department of Agriculture (USDA) Soil Conservation Service Soil Survey of Lake County, the Probabilistic Seismic Hazard Map for the North Coast from the California Seismic Safety Commission, and USDA Natural Resources Conservation Service Web Soil Survey.

Regulatory Setting—Geology and Soils

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Caltrans' Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. Structures are designed using Caltrans' Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification would determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more

information, please see Caltrans' Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

Environmental Setting—Geology and Soils

The project area is located approximately one mile east of the Maacama Fault and 18.7 miles from the Bartlett Springs Fault. The Maacama Fault is considered the northernmost segment of the Hayward Fault subsystem of the San Andreas Fault zone. The Bartlett Springs Fault is located in the vicinity of Lake Pillsbury running northwest and southeast from the lake approximately 12 miles in each direction. Liquefiable soils are present within the project site. Preliminary review of existing published geologic maps of the area show that sandy gravelly loam soils could be encountered at the project site. No active faults cross the project site and the project is not located in an area at high risk of landslides.

Discussion of Environmental Evaluation Questions 2.7 (a-e)—Geology and Soils

a) i: The project area is not within a delineated Alquist-Priolo Earthquake Fault Zone. No active faults cross the project site. Therefore, the project would not rupture a known earthquake fault, and there would be no impact.

a) ii-iii: Although the project site is not located in an Alquist-Priolo Earthquake Fault Zone, the project area is approximately 1 mile east of the Maacama Fault and 18.7 miles from the Bartlett Springs Fault. The Maacama Fault is considered the northernmost segment of the Hayward Fault subsystem of the San Andreas Fault zone, and the fault is considered capable of producing large earthquakes and could produce strong or very strong ground shaking in the project area. The Bartlett Springs Fault is located in the vicinity of Lake Pillsbury running northwest and southeast from the lake approximately 12 miles in each direction. The Bartlett Springs Fault is less likely to affect the project area due to the distance between the fault and the project area.

   Due to the presence of liquefiable soils within the project site, there is a potential for seismic-related ground settlement and lateral spreading. Bridge structures are designed using Caltrans' Seismic Design Criteria, which provide the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification would determine its seismic performance level and which methods would be used to estimate the seismic demands and structural capabilities. The proposed project would not expose people to injury or harm. The proposed project would replace poor-condition, aging structures with a new structure that is designed to the appropriate design criteria, and therefore would potentially reduce the existing risk from seismic events. A final foundation report

would outline the required design measures to reduce the risks from liquefaction, settlement, and lateral spreading. The project would have a less than significant impact to seismic-related risks.

a) iv: The proposed project is not located in an area that is at a high risk of landslides, so there would be no impact from landslide hazards.

b) Considerable earth-moving activities would be necessary to construct the project. Construction would include the construction of access roads and staging areas, placing of fill prisms, excavation of cut material, excavation of existing pavement, excavation for structures work, and excavation for drainage work. Earth-moving activities have the potential to cause soil erosion and loss of topsoil.

Temporary construction site BMPs including fiber rolls, silt fences, temporary gravel bag berms, stabilized entrances to access roads, temporary cover for stockpiles, streambed stabilization, and street sweeping would be implemented as necessary to reduce the amount of erosion and topsoil loss.

In addition to temporary BMPs, permanent BMPs would be implemented after construction. Erosion control fabric or netting and hydroseeding would be used to stabilize newly graded slopes, and climate appropriate landscaping that reduces runoff and promotes surface infiltration would be planted after construction. The project would have a less than significant impact from soil erosion and the loss of topsoil.

c - d) Based on preliminary review of existing published geologic maps of the area, sandy gravelly loam soils could be encountered. Sandy gravelly loam soils are susceptible to liquefaction and expansion under certain conditions. If future geotechnical investigations determine this soil type to be present, it would be addressed appropriately through design features. The project would be constructed to meet Caltrans safety and seismic standards, which would reduce the risk from unstable soils to people and structures.

e) The proposed project does not include the use of septic tanks or alternative waste water disposal systems. Therefore, there would be no impact.

Mitigation Measures—Geology and Soils

Based on the determinations made in the CEQA Checklist, mitigation measures have not been proposed for the project.

No Build Alternative—Geology and Soils

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

Regulatory Setting—Paleontological Resources

Several sections of the California Public Resources Code protect paleontological resources. Section 5097.5 prohibits “knowing and willful” excavation, removal, destruction, injury, and defacement of any paleontological feature on public lands (lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

Environmental Setting—Paleontological Resources

The project is not located in an area that would contain unique geologic features, therefore the project would have no impact on those features. Geology in the project area is associated with the Pleistocene and Pliocene geologic eras.

Discussion of Environmental Evaluation Question 2.7 (f)—Paleontological Resources

f) The project is not located in an area that would contain unique geologic features, therefore the project would have no impact on those features. Geology in the project area is associated with the Pleistocene and Pliocene geologic eras. Geology from these eras could contain paleontological resources, however only pile driving would reach a soil disturbance depth that would disturb any paleontological resources. It would be difficult if not impossible to recover any resources that were disturbed, because the disturbance would occur at a considerable depth below the surface and the driving activities would likely render any resource unidentifiable. Although improbable, any unanticipated find of a paleontological resource would follow Caltrans’ standard specifications for paleontological resources. No impact is anticipated to paleontological resources because of project activities.

Mitigation Measures—Paleontological Resources

Based on the determinations made in the CEQA Checklist, mitigation measures have not been proposed for the project.

No Build Alternative—Paleontological Resources

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.8 Greenhouse Gas Emissions

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	No	No	Yes	No
Would the project: b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	No	No	Yes	No

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 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), and various hydrofluorocarbons (HFCs). CO_2 is the most abundant GHG; while it is a naturally occurring component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2.

Two terms are typically used when discussing how we address the impacts of climate change: "greenhouse gas mitigation" and "adaptation." GHG mitigation covers the activities and policies aimed at reducing GHG emissions to limit or "mitigate" the impacts of climate change. Adaptation, on the other hand, is concerned with planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels). This analysis would include a discussion of both.

REGULATORY SETTING

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

Federal

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

The NEPA (42 USC Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The FHWA recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (FHWA 2019). This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values—"the triple bottom line of sustainability" (FHWA n.d.). Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects. The most important of these was the Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate Average Fuel Economy (CAFE) Standards. This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the CAFE program on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Energy Policy Act of 2005, 109th Congress H.R.6 (2005–2006): This act sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) the establishment of the Office of Indian Energy Policy and Programs within the Department of Energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

The U.S. EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA) is responsible for setting GHG emission standards for new cars and light-duty vehicles to significantly increase the fuel economy of all new passenger cars and light trucks sold in the United States. Fuel efficiency standards directly influence GHG emissions.

State

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and EOs including, but not limited to, the following:

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 year 1990 levels by 2050. This goal was further reinforced with the passage of Assembly Bill (AB) 32 in 2006 and Senate Bill (SB) 32 in 2016.

AB 32, Chapter 488, 2006, Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals outlined in EO S-3-05, while further mandating that the California ARB create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code [H&SC] Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

EO S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard (LCFS) for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by the year 2020. ARB re-adopted the LCFS regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

SB 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for 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 how it would achieve the emissions target for its region.

SB 391, Chapter 585, 2009, California Transportation Plan: This bill requires the State's long-range transportation plan to identify strategies to address California's climate change goals under AB 32.

EO B-16-12 (March 2012) orders State entities under the direction of the Governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

EO B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$).[2] Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, *Safeguarding California*, every 3 years, and to ensure that its provisions are fully implemented.

SB 32, Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

SB 1386, Chapter 545, 2016, declared "it to be the policy of the state that the protection and management of natural and working lands … is an important strategy in meeting the state's greenhouse gas reduction goals, and would require all state agencies, departments, boards, and commissions to consider this policy when revising, adopting, or establishing policies, regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands."

AB 134, Chapter 254, 2017, allocates Greenhouse Gas Reduction Funds and other sources to various clean vehicle programs, demonstration/pilot projects, clean vehicle rebates and projects, and other emissions-reduction programs statewide.

Senate Bill 743**,** Chapter 386 (September 2013): This bill changes the metric of consideration for transportation impacts pursuant to CEQA from a focus on automobile delay to alternative methods focused on vehicle miles travelled, to promote the state's goals of reducing greenhouse gas emissions and traffic related air pollution and promoting multimodal transportation while balancing the needs of congestion management and safety.

[2] GHGs differ in how much heat each trap in the atmosphere (global warming potential, or GWP). CO_2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called "carbon dioxide equivalent" (CO_2e). The global warming potential of CO_2 is assigned a value of 1, and the GWP of other gases is assessed as multiples of CO_2.

Senate Bill 150**,** Chapter 150, 2017, Regional Transportation Plans: This bill requires ARB to prepare a report that assesses progress made by each metropolitan planning organization in meeting their established regional greenhouse gas emission reduction targets.

EO B-55-18, (September 2018) sets a new statewide goal to achieve and maintain carbon neutrality no later than 2045. This goal is in addition to existing statewide targets of reducing GHG emissions.

EO N-19-19 (September 2019) advances California's climate goals in part by directing the California State Transportation Agency to leverage annual transportation spending to reverse the trend of increased fuel consumption and reduce GHG emissions from the transportation sector. It orders a focus on transportation investments near housing, managing congestion, and encouraging alternatives to driving. This EO also directs ARB to encourage automakers to produce more clean vehicles, formulate ways to help Californians purchase them, and propose strategies to increase demand for zero-emission vehicles.

ENVIRONMENTAL SETTING

The proposed project is located in Calpella, a census designated place in the Ukiah Valley. Land use and development in Calpella is governed by the Ukiah Valley Area Plan (UVAP), a comprehensive and long-range planning document that represents the vision and foresight of the people who live and work in the Ukiah Valley. Land use near the proposed project is designated in the UVAP as Agricultural, Industrial, Commercial, and Rural Residential. According to Mendocino County zoning maps, land near the proposed project is zoned as Public Facilities, Agriculture, Commercial, Industrial, and Rural Residential.

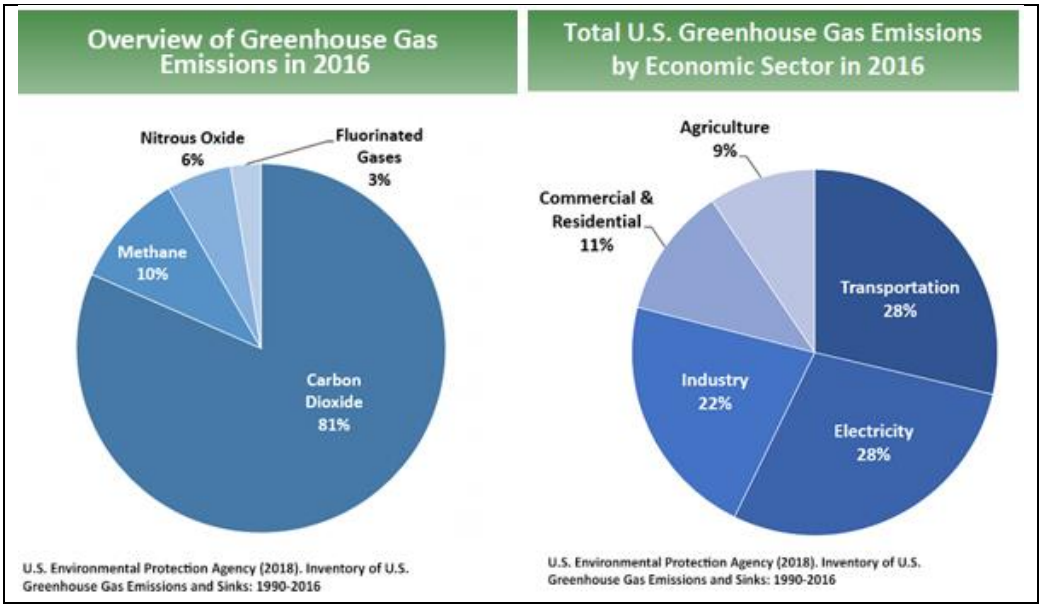
Throughout the project area, SR-20 is classified as a two-lane conventional highway and is functionally classified as a Rural Principal Arterial. It is listed as an eligible State Scenic Highway. The Mendocino Council of Governments (MCOG) guides transportation development in the project area with the 2017 Mendocino County Regional Transportation Plan (RTP), adopted in February 2018.

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time, such as a calendar year. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. U.S. EPA is responsible for documenting GHG emissions nationwide, and the ARB does so for the state, as required by H&SC Section 39607.4.

National GHG Inventory

The U.S. EPA prepares a national GHG inventory every year and submits it to the United Nations in accordance with the Framework Convention on Climate Change. The inventory provides a comprehensive accounting of all human-produced sources of GHGs in the United States, reporting emissions of CO_2, CH_4, N_2O, HFCs, perfluorocarbons, SF_6, and nitrogen trifluoride. It also accounts for emissions of CO_2 that are removed from the atmosphere by "sinks" such as forests, vegetation, and soils that uptake and store CO_2 (carbon sequestration). The 1990–2016 inventory found that of 6,511 $MMTCO_2e$ GHG emissions in 2016, 81% consist of CO_2, 10% are CH_4, and 6% are N_2O; the balance consists of fluorinated gases (U.S. EPA 2018). In 2016, GHG emissions from the transportation sector accounted for nearly 28.5% of U.S. GHG emissions.

Figure 10: U.S. 2016 Greenhouse Gas Emissions



State GHG Inventory

ARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. The 2019 edition of the GHG emissions inventory found total California emissions of 424.1 $MMTCO_2e$ for 2017, with the transportation sector responsible for 41% of total GHGs. It also found that overall statewide GHG emissions declined from 2000 to 2017 despite growth in population and state economic output (ARB 2019a).

Figure 11: California 2017 Greenhouse Gas Emissions

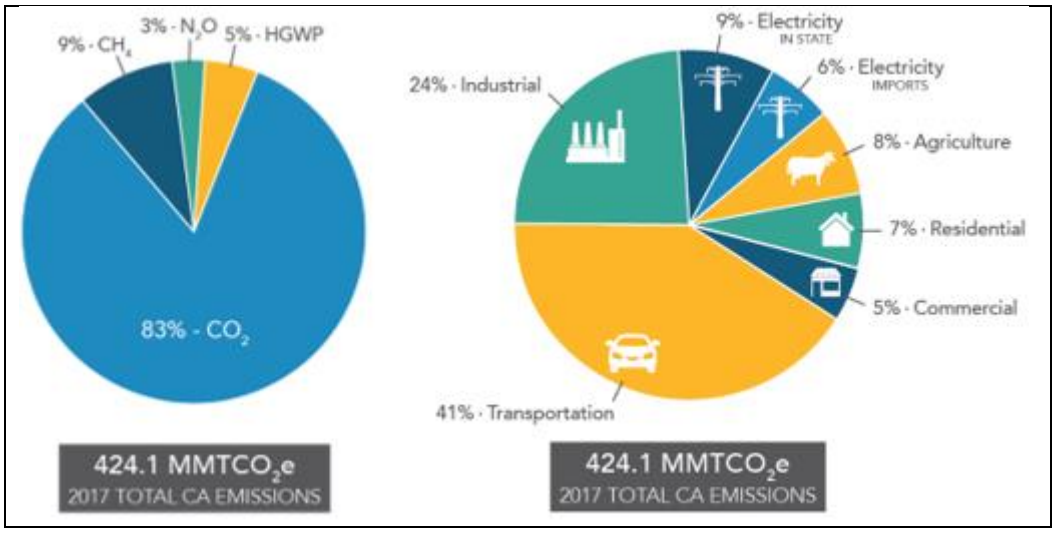
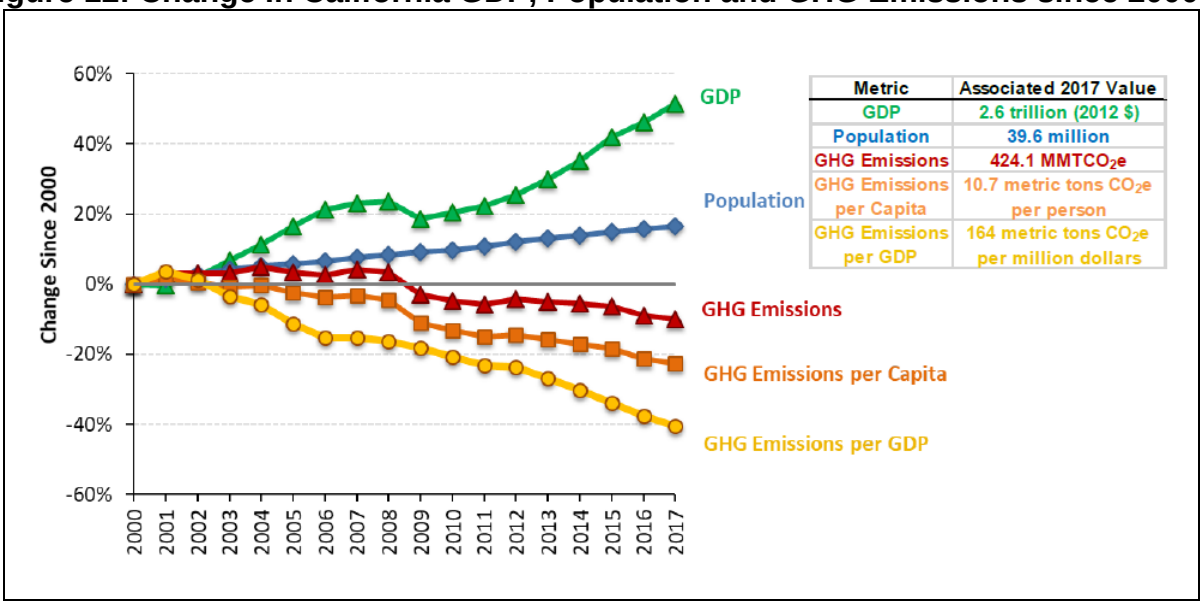


Figure 12: Change In California GDP, Population and GHG Emissions since 2000



Source: ARB 2019b

AB 32 required ARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020, and to update it every 5 years. ARB adopted the first scoping plan in 2008. The second updated plan, *California's 2017 Climate Change Scoping Plan*, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32. The AB 32

Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions.

Regional Plans

The proposed project is within the jurisdiction of the Mendocino Council of Governments, the regional transportation planning agency. The *2017 Mendocino County Regional Transportation Plan* (Davey-Bates Consulting 2018) includes policies on climate change and the environment. The RTP offers a comprehensive transportation strategy that, among other things, is intended to reduce GHGs by reducing vehicle miles traveled. Goals include building a more resilient transportation network. While the proposed project is not specifically listed in the RTP, similar Caltrans projects identified for the 2016 SHOPP are included in the RTP Action Plan list of proposed short-range projects. The City of Ukiah's climate action plan includes a goal to improve bicycle and pedestrian infrastructure (ESA 2014).

PROJECT ANALYSIS

GHG emissions from transportation projects can be divided into those produced during operation of the SHS and those produced during construction. The primary GHGs produced by the transportation sector are CO_2, CH_4, N_2O, and HFCs. CO_2 emissions are a product of the combustion of petroleum-based products, like gasoline, in internal combustion engines. Relatively small amounts of CH_4 and N_2O are emitted during fuel combustion. In addition, a small amount of HFC emissions are included in the transportation sector.

The CEQA Guidelines generally address GHG emissions as a cumulative impact due to the global nature of climate change (Pub. Resources Code, § 21083(b)(2)). As the California Supreme Court explained, "because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself." (Cleveland National Forest Foundation *v.* San Diego Assn. of Governments (2017) 3 Cal.5th 497, 512.) 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. Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment.

Operational Emissions

The proposed project is a bridge replacement project. The new bridge would not increase capacity and would not change travel demands or traffic patterns when compared to existing conditions and the no-build alternative. Therefore, an increase in operational GHG emissions is not anticipated.

Construction Emissions

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions would 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 offset to some degree by longer intervals between maintenance and rehabilitation activities.

The Caltrans Construction Emissions Tool (CAL-CET2018 version 1.2) was used to estimate carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and hydrofluorocarbons (HFCs) emissions from construction activities. Construction is expected to begin in 2021 and last approximately 570 working days. Table 9 summarizes estimated GHG emissions generated by on-site equipment for the project.

Table 9: Total GHG Emissions during Construction (US tons)

Construction Year	CO_2	CH_4	N_2O	HFC
2021	336	<1	<1	<1

Implementation of the following measures, some of which may also be required for other purposes such as air pollution control, would reduce GHG emissions resulting from construction activities. Please note that although these measures are anticipated to reduce construction-related emissions, these reductions cannot be quantified at this time.

- The construction contractor must comply with the Caltrans' Standard Specifications Section 14-9. Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

- Compliance with Title 13 of the California Code of Regulations, which includes restricting idling of construction vehicles and equipment to no more than 5 minutes.

- Caltrans' Standard Specification 7-1.02C "Emissions Reduction" ensures that construction activities adhere to the most recent emissions reduction regulations mandated by the California Air Resource Board.

- Utilize a traffic management plan to minimize vehicle delays and idling emissions.

- To the extent feasible, construction traffic would be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

CEQA CONCLUSION

While the proposed project would result in GHG emissions during construction, it is anticipated that the project would not result in any increase in operational GHG emissions. The proposed project does not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. With implementation of construction GHG-reduction measures, the impact would be less than significant.

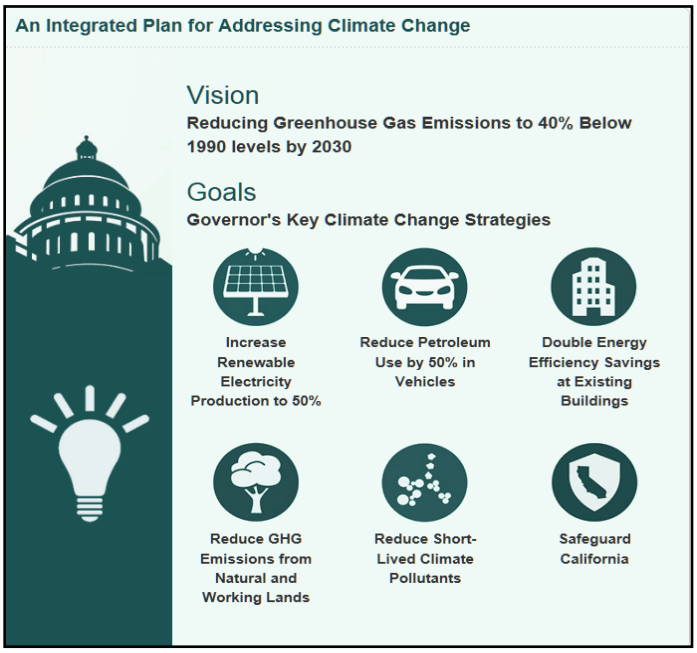
Caltrans is firmly committed to implementing measures to help reduce GHG emissions. These measures are outlined in the following section.

GREENHOUSE GAS REDUCTION STRATEGIES

Statewide Efforts

Major sectors of the California economy, including transportation, will need to reduce emissions to meet the 2030 and 2050 GHG emissions targets. Former Governor Edmund G. Brown promoted GHG reduction goals that involved (1) reducing today's petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farms and rangelands, forests, and wetlands so they can store carbon; and (6) periodically updating the state's climate adaptation strategy, *Safeguarding California*.

Figure 13: California Climate Strategy



The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled (VMT). A key state goal for reducing GHG emissions is to reduce today's petroleum use in cars and trucks by up to 50 percent by 2030 (State of California 2019).

In addition, SB 1386 (Wolk 2016) established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove carbon dioxide from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

Caltrans Activities

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set an interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

California Transportation Plan (CTP 2040)

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. In 2016, Caltrans completed the *California Transportation Plan 2040*, which establishes a new model for developing ground transportation systems, consistent with CO_2 reduction goals. It serves as an umbrella document for all the other statewide transportation planning documents. Over the next 25 years, California will be working to improve transit and reduce long-run repair and maintenance costs of roadways and developing a comprehensive assessment of climate-related transportation demand management and new technologies rather than continuing to expand capacity on existing roadways.

SB 391 (Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. While MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

Caltrans Strategic Management Plan

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing VMT
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

Funding and Technical Assistance Programs

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several sustainable transportation planning grants. These grants encourage local and regional multimodal transportation, housing, and land use planning that furthers the region's RTP/SCS; contribute to the State's GHG reduction targets and advance transportation-related GHG emission reduction project types/strategies; and support other climate adaptation goals (e.g., *Safeguarding California*).

CALTRANS POLICY DIRECTIVES AND OTHER INITIATIVES

Caltrans Director's Policy 30 (DP-30) 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) provides a comprehensive overview of Caltrans' statewide activities to reduce GHG emissions resulting from agency operations.

Project-Level GHG Reduction Strategies

The following measures will also be implemented in the project to reduce GHG emissions and potential climate change impacts from the project.

- The construction contractor must comply with the Caltrans' Standard Specifications Section 14-9. Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

- Compliance with Title 13 of the California Code of Regulations, which includes restricting idling of construction vehicles and equipment to no more than 5 minutes.

- Anticipated traffic control has an estimated maximum delay of 10 minutes during reversing control and 20 minutes during intermittent closure. During k-rail placement and tie-in construction operations, public traffic may be stopped in both directions for periods not to exceed 5 minutes. After each closure, all accumulated traffic must be allowed to pass through the work zone before another closure is made.

- Caltrans' Standard Specification 7-1.02C "Emissions Reduction" ensures that construction activities adhere to the most recent emissions reduction regulations mandated by the California ARB.

- Utilize a traffic management plan to minimize vehicle delays and idling emissions.

- Construction traffic would be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

- The existing bridge would remain open during construction, avoiding lengthy detours.

- The new bridge's upgraded 8-foot-wide shoulders would improve functionality of the roadway for bicyclists and pedestrians. The increased shoulder width would also provide greater separation from vehicular traffic for both bicyclists and pedestrians, increasing safety for all users to support active transportation.

ADAPTATION

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must 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 their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects would vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

Federal Efforts

Under NEPA assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance.

The U.S. Global Change Research Program (USGRCP) delivers a report to Congress and the President every 4 years, in accordance with the Global Change Research Act of 1990 (15 U.S.C. ch. 56A § 2921 et seq). The *Fourth National Climate Assessment*, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways." Chapter 12, "Transportation," presents a key discussion of vulnerability assessments. It notes that "asset owners and operators have increasingly conducted more focused studies of particular assets that consider multiple climate hazards and scenarios in the context of asset-specific information, such as design lifetime" (USGCRP 2018).

U.S. Department of Transportation (DOT) Policy Statement on Climate Adaptation in June 2011 committed the federal DOT to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely, and that transportation

infrastructure, services and operations remain effective in current and future climate conditions" (U.S. DOT 2011).

FHWA order 5520 (*Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events,* December 15, 2014) established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that foster resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2019).

State Efforts

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. *California's Fourth Climate Change Assessment* (2018) is the state's latest effort to "translate the state of climate science into useful information for action" in a variety of sectors at both statewide and local scales. It adopts the following key terms used widely in climate change analysis and policy documents:

Adaptation to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

- *Adaptive capacity* is the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."

- *Exposure* is the presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.

- Resilience is the "capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience". Adaptation actions contribute to increasing resilience, which is a desired outcome or state of being.

- *Sensitivity* is the level to which a species, natural system, or community, government, etc., would be affected by changing climate conditions.

- *Vulnerability* is the "susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt." Vulnerability can increase because of physical (built and environmental),

> social, political, and/or economic factor(s). These factors include, but are not limited to: ethnicity, class, sexual orientation and identification, national origin, and income inequality. Vulnerability is often defined as the combination of sensitivity and adaptive capacity as affected by the level of exposure to changing climate.

Several key state policies have guided climate change adaptation efforts to date. Recent state publications produced in response to these policies draw on these definitions.

EO S-13-08, issued by then-governor Arnold Schwarzenegger in November 2008, focused on sea-level rise and resulted in the *California Climate Adaptation Strategy* (2009), updated in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan). The Safeguarding California Plan offers policy principles and recommendations and continues to be revised and augmented with sector-specific adaptation strategies, ongoing actions, and next steps for agencies.

EO S-13-08 also led to the publication of a series of sea-level rise assessment reports and associated guidance and policies. These reports formed the foundation of an interim *State of California Sea-Level Rise Interim Guidance Document* (SLR Guidance) in 2010, with instructions for how state agencies could incorporate "sea-level rise (SLR) projections into planning and decision making for projects in California" in a consistent way across agencies. The guidance was revised and augmented in 2013. *Rising Seas in California – An Update on Sea-Level Rise Science* was published in 2017 and its updated projections of sea-level rise and new understanding of processes and potential impacts in California were incorporated into the *State of California Sea-Level Rise Guidance Update* in 2018.

EO B-30-15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This EO recognizes that effects of climate change other than sea-level rise also threaten California's infrastructure. At the direction of EO B-30-15, the Office of Planning and Research published *Planning and Investing for a Resilient California: A Guidebook for State Agencies* in 2017, to encourage a uniform and systematic approach. Representatives of Caltrans participated in the multi-agency, multidisciplinary technical advisory group that developed this guidance on how to integrate climate change into planning and investment.

AB 2800 (Quirk 2016) created the multidisciplinary Climate-Safe Infrastructure Working Group, which in 2018 released its report, *Paying it Forward: The Path Toward Climate-Safe Infrastructure in California*. The report provides guidance to agencies on how to address the challenges of assessing risk in the face of inherent uncertainties still posed

by the best available science on climate change. It also examines how state agencies can use infrastructure planning, design, and implementation processes to address the observed and anticipated climate change impacts.

Caltrans Adaptation Efforts

Caltrans Vulnerability Assessments

Caltrans is conducting climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects including precipitation, temperature, wildfire, storm surge, and sea-level rise. The approach to the vulnerability assessments was tailored to the practices of a transportation agency, and involves the following concepts and actions:

- *Exposure* – Identify Caltrans assets exposed to damage or reduced service life from expected future conditions.
- *Consequence* – Determine what might occur to system assets in terms of loss of use or costs of repair.
- *Prioritization* – Develop a method for making capital programming decisions to address identified risks, including considerations of system use and/or timing of expected exposure.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments will guide analysis of at-risk assets and development of adaptation plans to reduce the likelihood of damage to the State Highway System, allowing Caltrans to both reduce the costs of storm damage and to provide and maintain transportation that meets the needs of all Californians.

Project Adaptation Analysis

Sea-Level Rise

The proposed project is outside the coastal zone and not in an area subject to sea-level rise. Accordingly, direct impacts to transportation facilities due to projected sea-level rise are not expected.

Floodplains

The Russian River Bridge (No. 10-0182) carries SR 20 across the river at PM 33.63. The project area receives an average of about 46 inches of precipitation annually, mostly from November to March. The roadway at the project location is approximately

725 feet above mean sea level in a Federal Emergency Management Agency (FEMA) Zone AE floodplain. The FEMA Zone AE floodplain is defined as a Special Flood Hazard Area in a 100-year floodplain. Base flood elevations range from 678 feet at the downstream limit to 681 feet at the upstream limit. Portions of the project span the regulatory floodway; another small portion, at the western limit, falls within the FEMA Zone X (Shaded) floodplain with 0.2% or less annual chance flood hazard and the rest of the project area falls within Zone X, defined as an area of minimal flood hazard.

Climate change is expected to bring fewer but potentially heavier individual precipitation events in the project region. The Caltrans August 2019 Hydraulic Recommendation memo cites NOAA Atlas 14 data on historic 100-year rainfall intensity as 4.39 inches per hour, and 2-year 24-hour rainfall depth as 3.55 inches. The Caltrans District 1 Climate Change Pilot Study (2014) estimated the potential increase in average daily precipitation in the project region could be more than 10% by 2099 under a wet global climate model, compared to the 1970–1999 historic period (Caltrans and Humboldt County Association of Governments 2014). However, different models produce different results, ranging from increasing to decreasing rainfall. The report explains that “Rainfall and runoff changes varied depending upon models. Models predicting increased rainfall were used as a conservative measure to assess asset exposure.” Adding to the uncertainty, many other factors (such as riverbed geology, geography, and slopes) influence the potential effects of higher rainfall on a river and how it interacts with roadway infrastructure.

The replacement bridge would be designed to well exceed the minimum freeboard of 2 feet required in the Highway Design Manual. The bridge substructure elements are designed to be stable for scour caused by 100-year flows. The project would also include upgrading the existing stormwater system to accommodate the new hydrologic footprint of the project area. Hydraulic recommendations include enlarging a cross-culvert at PM 33.95 from its current effective diameter of 20 inches to 30 inches. Temporary and permanent BMPs such as streambank stabilization and climate-appropriate landscaping would reduce runoff and promote surface infiltration of runoff.

The structure would have a design life of 75 years. Considering that information along with its construction completion year of 2024, it’s elevation above the river, and protective features included in the project, the new bridge is likely to withstand hydrologic changes that may occur under climate change through design year 2099.

WILDFIRE

The proposed project is located in state and local responsibility areas of moderate fire hazard severity. Design features that would help prevent spread of wildfire and protect the asset from harm include steel guardrail posts (instead of wood), concrete weed

mats for guardrail, and non-plastic culverts. Widening the intersection of SR-20 and CR-144 would improve the intersection's use as a firebreak if necessary.

2.9 Hazards and Hazardous Materials

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	No	No	Yes	No
Would the project: 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?	No	No	Yes	No
Would the project: c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	No	No	No	Yes
Would the project: 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?	No	No	No	Yes
Would 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 result in a safety hazard or excessive noise for people residing or working in the project area?	No	No	No	Yes
Would the project: f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	No	No	No	Yes
Would the project: g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	No	No	No	Yes

"No Impact" and "Less Than Significant" determinations in this section are based on the scope, description, and location of the proposed project, as well as the Initial Site Assessment dated July 23, 2018.

Regulatory Setting

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is also authorized by the federal government to implement the Resource Conservation and Recovery Act (RCRA) in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires clean-up of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and clean up contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

Environmental Setting

The proposed project, which is not located within or impacting any sites on the Cortese List, is located in an area where geologic evaluations indicate that altered ultramafic bedrock, alluvium derived from ultramafic rock, or other rock commonly associated with naturally occurring asbestos may be present. This project includes work on existing structures which may contain asbestos containing material or lead containing paint.

Discussion of Environmental Evaluation Questions 2.9—Hazards and Hazardous Materials

a - b) This project would not create a significant hazard to the public. Five minor hazardous waste issues that may be or are confirmed at the project location are naturally occurring asbestos, aerially deposited lead, thermoplastic paint, treated wood waste, and asbestos and/or lead in the existing bridge structures.

After a review of geologic maps and reports from the California Geological Survey and the United States Geological Survey, it was identified that naturally occurring asbestos may be present, because altered ultramafic bedrock, alluvium from ultramafic rock, or other rocks associated with naturally occurring asbestos

may be present. Standard Special Provisions or a Non-Standard Special Provision would be implemented to avoid or minimize exposure to this minor hazard.

Low levels of aerially deposited lead from the historic use of leaded gasoline exist along roadways throughout California. The project would adhere to Caltrans' Standard Special Provision Section 7-1.02K(6)(j)(iii) "Earth Material Containing Lead."

Thermoplastic paint may contain lead of varying concentrations depending upon color, type, and year of manufacture. Traffic stripes would be removed and disposed of in accordance with Caltrans' Standard Special Provision Section 36-4 "Residue Containing Lead from Paint and Thermoplastic."

Treated wood waste comes from old wood that has been treated with chemical preservatives to prevent fungal decay and insect attacks. Potential sources of treated wood waste within the project area are sign posts and guardrail. If treated wood waste is generated during this project, it would be disposed of in accordance with Caltrans' Standard Special Provision 14-11.14 "Treated Wood Waste."

The existing structures were originally built in 1958, and it is possible that they were constructed using asbestos containing material and lead containing paint. Later in the project development process, a structural survey would be conducted that would determine whether special materials handling, worker health and safety training, and/or abatement would be required during construction.

The proposed project would have a less than significant impact on public exposure to hazards. The project features mentioned above would be implemented if appropriate, and impacts would be further reduced.

c) No existing or proposed schools are present within one-quarter mile of the project area; therefore, there would be no impact to schools from hazardous emissions or hazardous or acutely hazardous materials.

d) This project is not located on a site which is included on a list of hazardous material sites pursuant to Government Code Section 65962.5, so there would be no impact from such sites.

e - f) This project is not located within an airport land use plan, within 2 miles of a public airport, or within the vicinity of a private airstrip. The project would not

result in a safety hazard for people residing or working in the project area due to airport hazards, so there would be no impact.

g) This project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, so there would be no impact.

Mitigation Measures

Based on the determinations made in the CEQA Checklist, mitigation measures have not been proposed for the project.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.10 Hydrology and Water Quality

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	No	No	No	Yes
Would the project: b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	No	No	Yes	No
Would the project: c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation on- or off-site;	No	No	Yes	No
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	No	No	Yes	No
(iii) 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; or	No	No	Yes	No
(iv) impede or redirect flood flows?	No	No	Yes	No
Would the project: d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	No	No	No	Yes
Would the project: e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	No	No	No	Yes

"No Impact" and "Less Than Significant" determinations in this section are based on the scope, description, and location of the proposed project, as well as the Water Quality Assessment Report dated March 2019 and the Floodplain Evaluation Report Summary prepared October 4, 2019.

Regulatory Setting

Federal

Clean Water Act

In 1972, Congress amended the federal Water Pollution Control Act, making the addition of pollutants to waters of the United States from any point source[3] unlawful unless the discharge is in compliance with a NPDES permit. This act and its amendments are known today as the CWA. Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of stormwater from municipal and industrial/construction point sources to comply with the NPDES permit program. 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 United States to obtain certification from the state that the discharge would 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 United States. RWQCBs administer this permitting program in California. Section 402(p) requires permits for discharges of stormwater 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 USACE.

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

[3] A *point source* is any discrete conveyance such as a pipe or a human-made ditch.

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 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 EPA's Section 404 (b)(1) Guidelines (40 CFR § 230), and whether the permit approval is in the public interest. The Guidelines were developed by EPA in conjunction with USACE and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if no practicable alternative exists that would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have lesser effects to waters of the United States and not cause 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[4] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the United States. In addition, every permit from the USACE, even if not subject to the Guidelines, must meet general requirements. See 33 CFR Part 320.4.

State

Porter-Cologne Water Quality Control Act

California's Porter-Cologne Water Quality Control Act (Porter-Cologne Act), enacted in 1969, provides the legal basis for water quality regulation in 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. The act predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the United States, such as groundwater and surface waters not considered waters of the United States. Additionally, the Porter-Cologne Act prohibits discharges of "waste" as defined and this definition is broader than the CWA definition of "pollutant." Discharges under

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

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 SWRCB and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA, and for 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, the RWQCBs designate beneficial uses for all water body segments and then set the 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 that the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, 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. RWQCBs 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 Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the CWA requires issuance of NPDES permits for five categories of stormwater discharges, including 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 stormwater, that is designed or used for collecting or conveying stormwater.” The SWRCB has identified Caltrans as an owner/operator of an MS4 under federal regulations. Caltrans’ MS4 Permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES MS4 permits for five years, and permit requirements remain active until a new permit has been adopted.

Caltrans' 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. Caltrans must comply with the requirements of the Construction General Permit (see below);

2. Caltrans must implement a year-round program in all parts of the state to effectively control stormwater and non-stormwater discharges; and

3. Caltrans' stormwater discharges must meet water quality standards through implementation of permanent and temporary (construction) BMPs, to the maximum extent practicable, and other measures the SWRCB determines necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the statewide Storm Water Management Plan (SWMP) to address stormwater pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing stormwater 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 Caltrans uses to reduce pollutants in stormwater and non-stormwater discharges. It outlines procedures and responsibilities for protecting water quality, including selection and implementation of BMPs. Further, in recent years, hydromodification control requirements and measures to encourage low impact development have been included as a component of new development permit requirements. The proposed project would be programmed to follow the guidelines and procedures outlined in the latest SWMP to address stormwater runoff.

CONSTRUCTION GENERAL PERMIT

Construction General Permit (CGP) (Order No. 2009-009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The CGP was amended by 2010-0014-DWQ and 2012-0006-DWQ on February 14, 2011, and July 17, 2012, respectively. The permit regulates stormwater discharges from construction sites that result in a disturbed soil area (DSA) of 1 acre or greater and/or are smaller sites that are part of a larger common plan of development. By law, all stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1 acre must comply with the provisions of the CGP. Operators of regulated construction sites are required to develop SWPPPs; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the CGP.

The 2009 CGP 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 and whether the receiving water has been designated by the SWRCB as sediment-sensitive. SWPPP requirements vary according to the risk level. For example, a Risk Level 3 (highest risk) project would require compulsory stormwater runoff pH and turbidity monitoring and certain BMPs, and, in some cases, 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 SWPPP. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Program rather than a SWPPP is necessary for projects with a DSA of less than 1 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 would be in compliance with state water quality standards. The most common federal permits triggering a 401 Certification are CWA Section 404 permits issued by USACE. The 401 Certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a Section 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 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.

Environmental Setting

The Project is located on SR-20 from post mile (PM) 33.3 to PM 34.2 in the unincorporated area of Calpella in Mendocino County. The Project is within the Russian River Hydrologic Unit (HU), Upper Russian River Hydrologic Area (HA), Forsythe Creek Hydrologic Subarea (HSA, #114.33) from approximately PM 33.3 to PM 34.1, and Ukiah Hydrologic Subarea (HSA, #114.31) from approximately PM 34.1 to PM 34.2.

The Russian River crosses SR-20 at PM 33.63, Bridge Number 10-0182. The major tributaries of the Russian River near the Project area are Forsythe Creek and the East Fork of the Russian River. Forsythe Creek merges with the Russian River north of Calpella, and the East Fork of the Russian River joins with the Russian River north of

Ukiah. The East Fork of the Russian River created Lake Mendocino (a reservoir located between Redwood Valley and Ukiah Valley).

The Department of Water Resources (DWR) Bulletin 118, describes the Project as being within the Ukiah Valley Groundwater Basin (Basin #: 1-025), located in the southeast area of Mendocino County. The Ukiah Valley groundwater basin is 22 miles long and 5 miles wide at its widest point. The surface area of the basin is approximately 37,500 acres (59 square miles).

The elevation at the project site is approximately 725 feet. The average annual precipitation for this area is 32 to 47 inches. The majority of precipitation occurs from November to March. The average annual maximum temperature is 73.5°F and the average annual minimum temperature is 43.6°F.

Discussion of Environmental Evaluation Questions 2.10—Hydrology and Water Quality

a) The proposed project is within the Russian River Hydrologic Unit, Upper Russian River Hydrologic Area, Forsythe Creek Hydrologic Subarea from approximately PM 33.3 to PM 34.1, and Ukiah Hydrologic Subarea from approximately PM 34.1 to PM 34.2. Within the project area, drainage systems channel roadside runoff to the Russian River.

   Forsythe Creek is impaired for sedimentation/siltation and temperature, while the Russian River is impaired for aluminum, sedimentation/siltation, and temperature. Potential temporary impacts to water quality could result from active construction areas, which could lead to the release of fluids, concrete material, construction debris, sediment, and litter beyond the perimeter of the site.

   This project would not violate any water quality standards or waste discharge requirements. The proposed project would comply with the conditions of the California SWRCB CGP. The CGP requires that the construction contractor prepare a project specific SWPPP, which identifies temporary construction site BMPs to reduce construction impacts on receiving water quality based on potential pollutants and pollutant sources. There would be no impact.

b) Construction activities within the Russian River would require dewatering, which could result in a drawdown in groundwater. De-watering would be performed by constructing cofferdams around pier locations. The construction of cofferdams would require that sheet piles be vibrated into the river bottom to form a rectangular shape. The cofferdam would then be dewatered. If needed, a seal

course of concrete would be placed at the bottom of the cofferdam to prevent intrusion of water into the cofferdam.

Temporary impacts to groundwater levels may occur but would be minimal and limited to the construction period; therefore, impacts are expected to be less than significant. No permanent impacts are anticipated.

c) The proposed project would alter the drainage pattern of the project area through the placement of new cut fill, addition of new impervious surfaces, and temporary alteration of the Russian River's course.

At both ends of the structure, new fill prisms would be constructed. Additional cut and fill would be needed to shift the alignment of the CR-144/SR-20 intersection to accommodate the new alignment of SR-20. New impervious surfaces would be placed at the redesigned CR-144/SR-20 intersection and the new, wider bridge structure. The construction of cofferdams to perform bridge pier work would result in the temporary rerouting of the Russian River during construction.

The project would upgrade the existing stormwater system to accommodate the new hydrologic footprint of the project area. The stormwater system would be designed based on recommendations from Caltrans' hydraulics engineers and the Caltrans' Highway Design manual. The design for the stormwater system would be finalized in the design phase of the project.

The project would require the contractor to prepare a SWPPP to minimize pollution and stormwater runoff during construction. The SWPPP would include appropriate temporary BMPs such as the use of silt fences, gravel bags, fiber rolls, streambank stabilization methods, street sweeping, dust-control, construction mobilization locations, and temporary construction entrances and exits.

Additionally, permanent BMPs would be implemented as part of the project and would include erosion control fabric or netting and hydroseeding to stabilize newly graded slopes and climate appropriate landscaping to reduce runoff and promote surface infiltration of runoff.

The project would be required to implement post-construction stormwater controls under the Caltrans' MS4 permit and the Section 401 Water Quality Certification from the NCRWQCB. The treatment controls would address potential post-construction stormwater impacts by reducing pollutant loads in runoff prior to reach receiving waters downstream. The treatment controls would

be evaluated during the design phase and would be located and sized in accordance with Caltrans' design guidance and the MS4 permit.

i. Erosion and siltation on- or off-site would be controlled by the temporary and permanent BMPs described above. A less than significant impact is expected.

ii. The increase in runoff, caused by a change in drainage patterns and the increase in impervious surfaces would not be substantial and would not cause substantial flooding with the construction of the new stormwater system of the project area and the application of temporary and permanent BMPs described above. The impact from an increase in surface runoff is expected to be less than significant.

iii. The new stormwater systems would accommodate the new hydrologic footprint of the project area. The stormwater system would be designed based on recommendations from Caltrans' hydraulics engineers and the Caltrans' Highway Design manual. The design for the stormwater system would be finalized in the design phase of the project. Additional polluted runoff resulting from the project's construction would be managed by the temporary and permanent BMPs described above. The impact from additional stormwater and additional sources of polluted runoff is expected to be less than significant.

iv. As part of the construction of the new bridge structure, piers would be placed within the floodplain of the Russian River. These impacts to the floodplain are expected to be reduced to a less than significant level with the removal of the existing bridge's columns.

d) The proposed project is not in an area that is at risk of seiches or tsunamis. In the event of a catastrophic flood, the project area could be at risk of inundation. However, the project would not store pollutants and would not be constructed with hazardous materials that would pose a threat to the public if disturbed by a flood event. Therefore, no impact is expected.

e) The project would not conflict with or obstruct the implementation of any water pollution control plan or sustainable groundwater management plan. Therefore, no impact is expected.

Mitigation Measures

Based on the determinations made in the CEQA Checklist, mitigation measures have not been proposed for the project.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.11 Land Use and Planning

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Physically divide an established community?	No	No	No	Yes
Would the project: b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project. Potential impacts to land use and planning are not anticipated due to the following:

a) The existing structures connect the rural area to the east with the communities of Calpella and Ukiah as well as the other communities along US 101 to the north and south. During the construction of the proposed bridge, the existing bridges would remain open to two-way traffic, and no community division is anticipated. The construction of the proposed bridge would limit the risk that the community could become divided should either existing structure fail. There would be no impact from physically dividing an established community.

b) The project complies with the stated goals of the Ukiah Valley Area Plan, which includes goals for transportation, pedestrian access and safety, and freight rail.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "No Impact" would occur.

2.12 Mineral Resources

Question:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	No	No	No	Yes
Would the project: 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?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project, as well as the mineral resource maps from the California Department of Conservation. Potential impacts to mineral resources are not anticipated due to the following:

a - b) No mineral resources were identified within the project limits or would be affected by the proposed project. There would be no impact to mineral resources.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "No Impact" would occur.

2.13 Noise

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project result in: a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	No	No	No	Yes
Would the project result in: b) Generation of excessive groundborne vibration or groundborne noise levels?	No	No	No	Yes
Would the project result in: c) For a project located within the vicinity of a private airstrip or 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?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project, as well as Noise, Air Quality, Greenhouse Gas, and Energy Analysis dated July 23, 2019. Potential impacts to mineral resources are not anticipated due to the following:

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 is not anticipated.

Based on the scope of work, this project is considered a Type III project. Traffic noise impact is not predicted to occur from the proposed project; therefore, noise abatement is not considered.

During construction, noise may be generated from the contractors' equipment and vehicles. Caltrans requires the Contractor to conform to the provisions of Caltrans' Standard Specification, Section 14-8.02 "Noise Control" which states "Control and monitor noise from work activities." And "Do not exceed 86 dBA LMax at 50 feet from the job site activities from 9 p.m. to 6 a.m."

b) The project is not expected to generate excessive groundborne vibration or groundborne noise. Vibration levels could be perceptible and cause disturbances at residences near the project area during operation of heavy equipment. However, these effects would be short-term and intermittent and would cease once construction is completed.

c) The project is not located within the vicinity of a private, public, or public use airport. There would be no impact from airport noise.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.14 Population and Housing

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Induce substantial unplanned 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)?	No	No	No	Yes
Would the project: b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project. Potential impacts to the population and housing are not anticipated due to the following:

a) The proposed project would not increase capacity or access; therefore, the proposed project would not directly or indirectly induce population growth in the area. The project would not add new homes or businesses and would not extend any roads or other infrastructure. There would be no impact.

b) Although some of the areas surrounding the project are rural residential communities, there are no residences within the project area, and no replacement housing would be necessary. There would be no impact.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "No Impact" would occur.

2.15 Public Services

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	No	No	No	Yes
Police protection?	No	No	No	Yes
Schools?	No	No	No	Yes
Parks?	No	No	No	Yes
Other public facilities?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project. Potential impacts to public resources are not anticipated due to the following:

a) During construction any emergency service agency whose ability to respond to incidents may be affected by traffic control would be notified prior to any closure. All emergency vehicles would be accommodated through the work area. There would be no impact to emergency services resulting from the project.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "No Impact" would occur.

2.16 Recreation

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	No	No	No	Yes
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?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project. Potential impacts to recreation are not anticipated due to the following:

a) The project would not increase the use of existing neighborhood parks, regional parks, or other recreational facilities. No neighborhood parks, regional parks, or other recreational facilities are present within the project limits. There would be no impact to neighborhood or regional parks.

b) The project does not include recreational facilities or require the construction or expansion of recreational facilities. No neighborhood parks, regional parks, or other recreational facilities are present within the project limits. There would be no impact from the construction of recreational facilities.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "No Impact" would occur.

2.17 Transportation/Traffic

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	No	No	No	Yes
Would the project: b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? NOTE: While public agencies may immediately apply Section 15064.3 of the updated Guidelines, statewide application is not required until July 1, 2020. In addition, uniform statewide guidance for Caltrans projects is still under development. The PDT may determine the appropriate metric to use to analyze traffic impacts pursuant to section 15064.3(b). Projects for which an NOP will be issued any time after December 28, 2018, should consider including an analysis of VMT/induced demand if the project has the potential to increase VMT (see page 20 of OPR's updated SB 743 Technical Advisory), particularly if the project will be approved after July 2020.	No	No	No	Yes
Would the project: c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	No	No	No	Yes
Would the project: d) Result in inadequate emergency access?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project, as well as the Transportation Management Plan dated November 28, 2018. Potential impacts to transportation/traffic are not anticipated due to the following:

a) The project is not anticipated to conflict with a program, plan, ordinance, or policy addressing the circulation system; therefore, there would be no impact.

b) The proposed project would not conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b). There would be no impact.

c) The preferred alternative would increase the curve radius of the roadway from the existing 1300 feet to 1600 feet, thus creating a more gradual curve that would be geometric design feature that would reduce hazards. The project would also increase sight distance and acceleration lane lengths at the CR-144 intersection which would reduce road hazards. Therefore, the project would have no impact.

d) Two-way traffic would be maintained during most construction activities. However, for some activities reversing traffic control, intermittent closure, shoulder closure, and ramp closure could be necessary for SR-20, CR-144, and Eastside Calpella Road. Emergency vehicles would be notified in advance of any closures. Access for emergency vehicles would be maintained throughout the duration of construction; therefore, the project would have no impact on emergency access.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.18 Tribal Cultural Resources

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	No	No	No	Yes
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project, as well as information provided by the project Archaeologist on December 19, 2019 from the draft Historic Property Survey Report (HPSR). The HPSR is currently in progress and would be completed prior to finalizing this document. Potential impacts to tribal resources are not anticipated due to the following:

a - b) The California Native American Heritage Commission (NAHC) was contacted to request a search of the sacred lands file and an updated list of Native American contacts for the project area. Consultation letters were mailed to representatives of the Cahto Tribe, the Coyote Band of Pomo Indians, the Guidiville Rancheria of California, the Hopland Band of Pomo Indians, the Pinoleville Pomo Nation, the

Potter Valley Tribe, the Redwood Valley Band of Pomo, the Round Valley Indian Tribes of the Round Valley Reservation, and the Sherwood Valley Band of Pomo. The tribes that responded to these letters did not express any concerns with the project.

The NAHC search determined that no tribal cultural resources were identified within the project study limits. Therefore, there would be no impacts to tribal cultural resources.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.19 Utilities and Service Systems

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project: a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities—the construction or relocation of which could cause significant environmental effects?	No	No	No	Yes
Would the project: b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	No	No	No	Yes
Would the project: c) 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?	No	No	No	Yes
Would the project: d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	No	No	No	Yes
Would the project: e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, and location of the proposed project. Potential impacts to tribal resources are not anticipated due to the following:

a) The utilities expected to be encountered are described in Section 1.2 of this document. If the utility poles or lines conflict with the proposed work, then they would be relocated or protected in place during construction. Caltrans would verify the location of any underground gas, electric, water, or sewer lines within the project area. Caltrans would coordinate with utility owners to relocate or

protect utilities prior to construction. Utility relocation plans would be finalized in the design phase of the project. A less than significant impact to the environment is anticipated from utility relocations.

b) The project would have sufficient water supplies during construction and would not have an effect on water supplies for future developments. There would be no impact.

c) The project would not have a demand for wastewater treatment, so there would be no impact.

d - e) The project would comply with all statutes and regulations related to the disposal of solid waste generated during construction, so there would be no impact.

No Build Alternative

The existing condition would remain; therefore, per CEQA, “No Impact” would occur.

2.20 Wildfire

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	No	No	No	Yes
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	No	No	No	Yes
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	No	No	No	Yes
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project: d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	No	No	No	Yes

"No Impact" determinations in this section are based on the scope, description, location, and CalFire Fire Hazard Severity Zone Maps of the proposed project. Potential impacts to wildfire are not anticipated due to the following:

a) The proposed project is in both a state responsibility area of moderate fire hazard severity and a local responsibility area of moderate fire hazard severity. The Mendocino County Operational Area Emergency Operations Plan was approved by the Mendocino County Board of Supervisors in September 2016. The project

would not substantially impair this plan since the existing structures and roadway would remain open to two-way traffic during construction. Therefore, there would be no impact.

b) The proposed project would incorporate design features to prevent the uncontrolled spread of a wildfire within the project area. These design features would include steel posts as opposed to wood for guardrail, concrete weed mats for guardrail, and non-plastic culverts. In addition, the project would widen the existing intersection of SR-20 and CR-144, which would improve the intersection's use as a firebreak if needed. There would be no impact.

c) The proposed project is an infrastructure project, and the project would not require the installation or maintenance of additional infrastructure that would result in temporary or ongoing impacts to the environment.

d) The project is not located in an area that has a high landslide risk, so no impact is anticipated from fire related landslides. Although the project would place fill in a 100-year floodplain, the project would comply with all pertinent regulations, and the project would not expose people or structures to fire related flooding.

No Build Alternative

The existing condition would remain; therefore, per CEQA, "No Impact" would occur.

2.21 Mandatory Findings of Significance

Question	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially 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?	No	Yes	No	No
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)?	No	Yes	No	No
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	No	No	Yes	No

Discussion of Environmental Evaluation Questions 2.21—Mandatory Findings of Significance

The CEQA of 1970 requires preparation of an Environmental Impact Report (EIR) when certain specified impacts may result from construction or implementation of a project. The analysis indicated the potential impacts associated with this project would not require an EIR. Mandatory Findings of Significance are not required for projects where an EIR has not been prepared.

2.22 Cumulative Impacts

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the NEPA can be found in 40 CFR, Section 1508.7 of the Council on Environmental Quality (CEQ) Regulations.

2.22.1 Aesthetics

Given that the project would result in low visual impacts and those impacts would be addressed by the implementation of standard measures, the project would not be expected to have a cumulative impact on aesthetics.

2.22.2 Agriculture and Forest Resources

Given that the project would result in no impacts on agriculture and forest resources, the project would not be expected to have a cumulative impact on agricultural or forest resources.

2.22.3 Air Quality

Given that the project would result in low air quality impacts and those impacts would be addressed by the implementation of standard measures, the project would not be expected to have a cumulative impact on air quality.

2.22.4 Biological Resources

Records were searched on the California State Clearinghouse website for activities near the proposed project. There were no projects listed within the project vicinity for future construction. Records were also searched on the Caltrans' North Region Data Library for past and future projects that could occur within the BSA. The Library identified two projects within the BSA that have been identified as future construction within the project limits. These include one asphalt maintenance project and a lighting upgrade project. Caltrans does not anticipate cumulative effects on any of the species or habitats as a result of the proposed actions.

2.22.5 Cultural Resources

Given that the project would result in low impacts to cultural resources and those impacts would be addressed by the implementation of standard measures, the project would not be expected to have a cumulative impact on cultural resources.

2.22.6 Energy

Given that the project would result in no impacts to energy, the project would not be expected to have a cumulative impact on energy.

2.22.7 Geology and Soils

Given that the project would result in low impacts to geology and soils and those impacts would be addressed by the implementation of standard measures, the project would not be expected to have a cumulative impact on geology and soils.

2.22.8 Greenhouse Gas Emissions

Please see Greenhouse Gas Emissions, Section 2.8.

2.22.9 Hazards and Hazardous Materials

Given that the project would result in low impacts to hazards and hazardous materials and those impacts would be addressed by the implementation of standard measures, the project would not be expected to have a cumulative impact on hazards and hazardous materials.

2.22.10 Hydrology and Water Quality

Given the small scale of potential effects and the design features and standard measures to offset these effects, the proposed project would not be expected to result in a cumulative impact on hydrology or water quality.

2.22.11 Land Use and Planning

Given that the project would result in no impacts on land use and planning, the project would not be expected to have a cumulative impact on land use and planning.

2.22.12 Mineral Resources

Given that the project would result in no impacts on mineral resources, the project would not be expected to have a cumulative impact on mineral resources.

2.22.13 Noise

Given that the project would result in no impacts on noise, the project would not be expected to have a cumulative impact on noise.

2.22.14 Population and Housing

Given that the project would result in no impacts on population and housing, the project would not be expected to have a cumulative impact on population and housing.

2.22.15 Public Services

Given that the project would result in no impacts on public services, the project would not be expected to have a cumulative impact on public services.

2.22.16 Recreation

Given that the project would result in no impacts on recreation, the project would not be expected to have a cumulative impact on recreation.

2.22.17 Transportation/Traffic

Given that the project would result in no impacts on transportation/traffic, the project would not be expected to have a cumulative impact on transportation/traffic.

2.22.18 Tribal Cultural Resources

Given that the project would result in no impacts on tribal resources, the project would not be expected to have a cumulative impact on tribal resources.

2.22.19 Utilities and Service Systems

Given that the project would result in no impacts to utilities and service systems, the project would not be expected to have a cumulative impact on utilities and service systems.

2.22.20 Wildfire

Given that the project would result in no impacts on wildfire, the project would not be expected to have a cumulative impact on wildfire.

Chapter 3. Coordination and Comments

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 PDT meetings and interagency coordination meetings. This chapter summarizes the results of Caltrans' efforts to identify, address, and resolve project-related issues through early and continuing coordination.

The following agencies, organizations, and individuals were consulted in the preparation of this environmental document.

Coordination with Resource Agencies

Cultural:

- Consultation letters were mailed to representatives of the Cahto Tribe, the Coyote Band of Pomo Indians, the Guidiville Rancheria of California, the Hopland Band of Pomo Indians, the Pinoleville Pomo Nation, the Potter Valley Tribe, the Redwood Valley Band of Pomo, the Round Valley Indian Tribes of the Round Valley Reservation, and the Sherwood Valley Band of Pomo.

Biology:

Coordination

- NMFS Fish Biologist Mike Kelly was contacted for Technical Assistance on December 26, 2017.

- A site visit was conducted with CDFW Senior Environmental Scientist JoAnn Loehr on March 20, 2018.

- A site visit was conducted with NCRWQCB Senior Environmental Scientist Brandon Stevens and CDFW Senior Environmental Scientist JoAnn Loehr from CDFW on May 15, 2018.

- Greg Schmidt, Fish and & Wildlife Biologist for the Endangered Species Program and Caltrans Liaison for USFWS was contacted for Technical Assistance on February 5, 2019.

- A site visit was conducted with Caltrans Agency Liaison Rob Meade and USFWS Biologist Greg Schmidt to determine project effects from Geotech drilling to federally listed species on March 14, 2019.

- A site visit was conducted with CDFW Senior Environmental Scientist Jamie Jackson, NMFS Fishery Biologist Elena Meza, and NCRWQCB Senior Environmental Scientist Brandon Stevens to determine project effects from Geotech to state and federally listed species as well as impacts to jurisdictional areas on April 10, 2019.

- A phone conference with CDFW Senior Environmental Scientist Jamie Jackson and Caltrans Senior Environmental Planner Stephanie Frederickson was conducted on May 23, 2019 regarding the need for a 1600 permit for Geotech. It was determined in the meeting that a 1600 permit for Geotech drilling was not needed.

- A site visit was conducted with CDFW Senior Environmental Scientist Jamie Jackson and USACE Senior Regulatory Project Manager Daniel Breen on July 8, 2019 to discuss project impacts to jurisdictional areas.

- A site visit was conducted with NCRWQCB Senior Environmental Scientists Brandon Stevens and Susan Stewart on July 24, 2019 to discuss project impacts to jurisdictional areas.

- A phone conference with Caltrans NMFS Liaison and Fishery Biologist Elena Meza was conducted on August 8, 2019 to discuss avoidance and minimization measures and general questions pertaining to the submittal of the Biological Assessment.

- Agency phone conference with representatives from CDFW, NMFS, and USFWS concerning project impacts conducted on August 29, 2019.

- Agency phone conference with representatives from CDFW, NCRWQCB, NMFS, USACE, and USFWS concerning potential offsite mitigation locations conducted on October 7, 2019.

- Agency site visit with representatives from CDFW, NCRWQCB, NMFS, USACE, and USFWS to the Jacobs Property, a potential offsite mitigation location was conducted on October 16, 2019.

Consultation

- Formal consultation with the NMFS pursuant to Section 7 of the Endangered Species Act of 1973 for the federally listed CC Chinook salmon, CCC coho salmon, and CCC steelhead

- Informal consultation with the USFWS pursuant to Section 7 of the Endangered Species Act of 1973 for the federally listed YBCU

Chapter 4. List of Preparers

The following individuals performed the work on the project:

California Department of Transportation, District 1

Alex Arevalo	Transportation Engineer/NPDES Coordinator
	Contribution: Water Quality Assessment Report
Joan Fine	Associate Environmental Planner (Architectural History)
	Contribution: Built Environment Evaluation
Michelle Holtz	Associate Environmental Planner (Project Coordinator)
	Contribution: Project Coordinator and Document Preparer
Laura Lazzarotto	Landscape Architect
	Contribution: Visual Impact Assessment
Cathy McKeon	Project Manager
	Contribution: Project Management
Mark Melani	Associate Environmental Planner (Hazardous Waste)
	Contribution: Initial Site Assessment
Adele Pommerenck	Environmental Branch Chief
	Contribution: Senior Environmental Planner
Celeste Redner	Transportation Engineer
	Contribution: Floodplain Evaluation Summary Report
Jamie Lusk	TMP Coordinator
	Contribution: Transportation Management Plan
Matt Smith	Transportation Engineer
	Contribution: Project Design
Ian Springer	Associate Environmental Planner (Archaeology)
	Contribution: Cultural Studies
Wesley Stroud	Environmental Office Chief
	Contribution: Supervising Environmental Planner

Grant Thornton	Associate Environmental Planner (Natural Sciences) Contribution: Natural Environment Study
Saeid Zandian	Transportation Engineer Contribution: Traffic Noise and Air Quality Impact Assessment and Greenhouse Gas Construction Emissions Analysis

Chapter 5. References

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Chapter 6. Public Comments and Responses

The Initial Study with Proposed Negative Declaration was made available for public review and comment from February 21, 2020 to March 23, 2020. Copies of the document were available for review at the Caltrans District 3 Office at 703 B Street in Marysville, CA 95901, Caltrans District 1 Office at 1656 Union St, Eureka, CA, 95501, Mendocino County Library at 105 N Main St, Ukiah, CA 95482, Willits Library at 390 E Commercial St, Willits, CA 95490. A public meeting for the project was held on March 11, 2020 from 5:30 to 8:30 p.m. at Eagle Peak Middle School at 8601 West Road in Redwood Valley, CA 95470. No comments on the draft environmental document were received at the meeting.

Two comments were received on the Initial Study with Proposed Negative Declaration (Table 10).

Table 10: Comments Received on the Initial Study with Proposed Negative Declaration

Number	Commenter Name	Format of Comment	Date Received
1	Native American Heritage Commission	Email	March 2, 2020
2	California Department of Fish and Wildlife	Email	April 3, 2020

The following pages include a copy of the comments along with Caltrans responses.

Comment #1: Native American Heritage Commission

STATE OF CALIFORNIA — Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

March 2, 2020

Adele Pommerenck, Senior Environmental Planner
CalTrans

Via Email to: adele.pommerenck@dot.ca.gov

Re: SCH# 2020029075, Calpella 2 Bridge Replacements (EA: 01-0E090) Project, Mendocino County

Dear Ms. Pommerenck:

The Native American Heritage Commission (NAHC) has reviewed the Draft Environmental Impact Report (DEIR)/Mitigated Negative Declaration (MND) or Negative Declaration prepared for the project referenced above. The review may have included the Cultural Resources Section, Archaeological Report, Appendices for Cultural Resources Compliance, as well as other informational materials. We have the following concerns:

- There does not appear to be evidence that possible mitigation measures were developed in consultation with the traditionally, culturally affiliated California Native American Tribes, for example when resources are found, avoidance or conservation easements.

The California Environmental Quality Act (CEQA)[1], specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.[2] If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared.[3] In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended in 2014 by Assembly Bill 52 (AB 52).[4] **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** AB 52 created a separate category for "tribal cultural resources"[5], that now includes "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.[6] Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.[7] Your project may also be subject to **Senate Bill 18 (SB 18)** (Burton, Chapter 905, Statutes of 2004), Government Code 65352.3, if it also involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space. **Both SB 18 and AB 52 have tribal consultation requirements.** Additionally, if your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966[8] may also apply.

[1] Pub. Resources Code § 21000 et seq.
[2] Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b); CEQA Guidelines Section 15064.5 (b)
[3] Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1); CEQA Guidelines § 15064 (a)(1)

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

Agencies should be aware that AB 52 does not preclude agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52. For that reason, we urge you to continue to request Native American Tribal Contact Lists and Sacred Lands File searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/. Additional information regarding AB 52 can be found online at http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf, entitled "Tribal Consultation Under AB 52: Requirements and Best Practices".

The NAHC recommends lead agencies consult with all California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources.

A brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments is also attached.

If you have any questions or need additional information, please contact me at my email address: Sarah.Fonseca@nahc.ca.gov.

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

cc: State Clearinghouse

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Pertinent Statutory Information:

Under AB 52:
AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:
Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice.
A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.[4] and **prior to the release of a negative declaration, mitigated negative declaration or environmental impact report.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18).[5]
The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.
b. Recommended mitigation measures.
c. Significant effects.[6]

1. The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.

If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. [7]
With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process **shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10.** Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.[8]
If a project may have a significant impact on a tribal cultural resource, **the lead agency's environmental document shall discuss** both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource.[9]

Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.[10]

Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 **shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program**, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable.[11]
If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, **the lead agency shall consider feasible mitigation** pursuant to Public Resources Code section 21084.3 (b).[12]
An environmental impact report **may not be certified**, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

[4] Pub. Resources Code § 21080.3.1, subds. (d) and (e)
[5] Pub. Resources Code § 21080.3.1 (b)
[6] Pub. Resources Code § 21080.3.2 (a)
[7] Pub. Resources Code § 21080.3.2 (a)
[8] Pub. Resources Code § 21082.3 (c)(1)
[9] Pub. Resources Code § 21082.3 (b)
[10] Pub. Resources Code § 21080.3.2 (b)
[11] Pub. Resources Code § 21082.3 (a)
[12] Pub. Resources Code § 21082.3 (e)

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days.[13]

This process should be documented in the Tribal Cultural Resources section of your environmental document.

Under SB 18:

Government Code § 65352.3 (a) (1) requires consultation with Native Americans on general plan proposals for the purposes of "preserving or mitigating impacts to places, features, and objects described § 5097.9 and § 5091.993 of the Public Resources Code that are located within the city or county's jurisdiction. Government Code § 65560 (a), (b), and (c) provides for consultation with Native American tribes on the open-space element of a county or city general plan for the purposes of protecting places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code.

- SB 18 applies to **local governments** and requires them to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf
- Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.**[14]
- There is no Statutory Time Limit on Tribal Consultation under the law.
- Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research,[15] the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction.[16]
- Conclusion Tribal Consultation: Consultation should be concluded at the point in which:
  - The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
  - Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation.[17]

NAHC Recommendations for Cultural Resources Assessments:

- Contact the NAHC for:
  - A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
  - A Native American Tribal Contact List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
    - The request form can be found at http://nahc.ca.gov/resources/forms/.
- Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
  - If part or the entire APE has been previously surveyed for cultural resources.
  - If any known cultural resources have been already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.

[13] Pub. Resources Code § 21082.3 (d)
[14] (Gov. Code § 65352.3 (a)(2)).
[15] pursuant to Gov. Code section 65040.2,
[16] (Gov. Code § 65352.3 (b)).
[17] (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

- If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    - The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

Examples of Mitigation Measures That May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

- Avoidance and preservation of the resources in place, including, but not limited to:
    - Planning and construction to avoid the resources and protect the cultural and natural context.
    - Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
    - Protecting the cultural character and integrity of the resource.
    - Protecting the traditional use of the resource.
    - Protecting the confidentiality of the resource.
- Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed.[18]
- Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.[19]

The lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

- Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources.[20] In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

[18] (Civ. Code § 815.3 (c)).
[19] (Pub. Resources Code § 5097.991).
[20] per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)).

Response to Comment #1: Native American Heritage Commission

Thank you for your comments. Additional language has been added to page 122 of this document. Caltrans would continue consultation for the life of the project.

Comment #2: California Department of Fish and Wildlife

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State of California
Department of Fish and Wildlife

Memorandum

Date: April 3, 2020

To: Fermina Chavez, Environmental Coordinator
California Department of Transportation

From: Curt Babcock DocuSigned by: Curt Babcock
Habitat Conservation Program Manager
Northern Region

Subject: **Calpella 2 Bridge Replacements, State Clearinghouse Number 2020029075**

Dear Fermina Chavez:

On February 24, 2020, California Department of Fish and Wildlife (CDFW) received a Notice of Completion for a draft Initial Study/Mitigated Negative Declaration (ISMND) from the California Department of Transportation (Lead Agency) for the Calpella 2 Bridge Replacements (Project), Mendocino County, California. CDFW understands that the Lead Agency will accept comments on the project through April 6, 2020. As a Trustee for the State's fish and wildlife resources, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants and the habitat necessary to sustain their populations. As a Responsible Agency, CDFW administers the California Endangered Species Act (CESA) and other provisions of the Fish and Game Code that conserve the State's fish and wildlife public trust resources. CDFW offers the following comments and recommendations in our role as a Trustee and Responsible Agency under the California Environmental Quality Act (CEQA), California Public Resource Code section 21000 et seq.

CDFW has four primary concerns with the ISMND:

1. The ISMND does not include adequate information about on-site wetlands and rare plants, because surveys have not yet been completed.
2. The ISMND defers mitigations for wetland and riparian habitat and does not include performance standards for these mitigations.
3. The ISMND does not propose to mitigate for permanent impacts to 2.7 acres of oak woodlands.
4. The ISMND does not include sufficient detail to determine extent and potential significance of impacts to day-roosting bats on the Russian River bridge, the Redwood Valley Road Undercrossing, and the adjacent railroad bridge.

Project Description

The Lead Agency proposes to perform a complete bridge replacement of the Russian River Bridge (Bridge #10-182) and Redwood Valley Road Undercrossing (Bridge #10-183) on a new alignment, located along SR-20 in Mendocino County near Ukiah between post miles 33.3 to 34.4. To ensure traffic would not be significantly impeded during construction, the existing structures and alignment would remain in place during

construction. This would require that the new structure be on a new alignment south of the existing alignment. The alternatives involve additional work such as embankment cut/fill, paving bridge approaches, roadway realignment, and shoulder widening.

Survey Data

The ISMND states that access for surveys was denied to some portions of the Project area, and that as a result, additional wetlands may be present within Project areas that have not been surveyed to date. The ISMND anticipates that that surveys within these areas would be completed in spring 2020. Similarly, the ISMND states:

> *"…access was denied to some portions of the BSA (Biological Study Area) until late spring/summer 2019, after all sensitive plant species had senesced. As a result, full floristic surveys for special status plant species could not be completed within the BSA during the appropriate times. It is anticipated that access would be granted in 2020 and that surveys within these previously restricted areas would be completed in spring 2020."*

Because this baseline of environmental setting is uncertain, CDFW, other agencies, and the public do not have a basis from which to assess the potential impacts to biological resources, the significance of these potential impacts, or the adequacy of proposed mitigations to reduce the impacts to less than significant.

CDFW recommends that the Lead Agency provide adequate survey results for all locations that may be impacted by the Project. Survey results should be included in the Initial Study and should inform both the Initial Study and Findings of Significance. This should occur prior to notification of intent to adopt this Mitigated Negative Declaration. As needed, specific mitigation and a Mitigation Monitoring Reporting Plan (MMRP) should be provided.

Wetland and Riparian Mitigation

For impacts to wetlands, the ISMND states:

> *"For impacts that cannot be restored on-site and areas where permanent loss has occurred (i.e., placement of piers and abutments) mitigation for permanent impacts to wetland habitat would be offset by mitigation determined during the permitting phase of this project. If off-site restoration were implemented, the appropriate measures would be identified and coordinated through the USACE, NCRWQCB, CDFW, and any other administering agencies."*

Similarly, the document defers identification of compensatory mitigation for permanent impacts to riparian vegetation to the permitting phase of the Project.

Because the Lead Agency is able to predict impacts to these resources, and the Lead Agency is able to consult with Responsible Agencies to determine the details of

adequate and appropriate compensatory mitigation, these impacts and their mitigations should be considered a part of the whole of the action. Because the whole of the action should be available for agency and public review, CDFW recommends the Lead Agency include details of proposed mitigations, including performance standards, such as mitigation ratios of greater than 1:1 in order to achieve a no-net-loss standard, and a draft MMRP in the ISMND prior to notification for adoption.

Impacts to Oak Woodlands

Oak woodland communities in the Project area include coast live oak (*Quercus agrifolia*) woodland alliance and valley oak (*Quercus lobata*) woodland alliance. Many oak woodland habitats are also Sensitive Natural Communities. Natural Communities with State ranks of S1-S3 are considered Sensitive Natural Communities to be addressed in the environmental review processes of CEQA and its equivalents. Valley oak woodland is a Sensitive Natural Community with a State Rank of 3. Coast live oak woodlands have a number of associations with State ranks of 3, but the ISMND does not describe Natural Communities in sufficient detail to determine, which, if any of the coast live oak natural community associations impact by the Project may be sensitive.

Regardless of their natural community status, oak woodlands in California have the greatest wildlife species richness of any other habitat in the state, with over 330 species of birds, mammals, and herpetofauna relying upon these habitats at some point during their lives (CalPIF 2002). Oak woodlands have experienced ongoing declines due to conversion to urban and agricultural land uses, and oak woodlands are also impacted by low recruitment, novel pathogens, competition from invasive species, and fire suppression (Whipple et al. 2011). California has lost approximately 1/3 of its of historic oak woodland habitat statewide (CalPIF 2002). Because oaks are slow-growing trees, the substantial habitat and ecosystem value that mature trees provide is difficult to replace.

The ISMND proposes no compensatory mitigation for permanent impacts to 2.7 acres of non-riparian (coast live oak) oak woodlands, but states:

> *"To address the loss of non-riparian oak woodland communities impacted by project activities, Caltrans proposes to plant areas within the existing Caltrans ROW near the project location, and re-plant areas of the old SR-20 alignment and existing fill prism with oaks that are of the same species impacted by project activities."*

The ISMND determines that impacts to oak woodlands are less than significant based on an evaluation of the estimated entire area of all types of oak woodlands in all of Mendocino County. However, the ISMND states that the environmental study limit contains just over 10 acres of oak woodlands. The Project as proposed will permanently impact over 25 percent of oak woodland habitat in the Project area, which is potentially significant, particularly given the high habitat value and ongoing declines to these habitats throughout northwestern California.

CDFW recommends that the ISMND propose mitigation as specified in recommendation 2 below. Mitigation for impacts to oaks should be on-site, if the on-site planting opportunities will result in similar habitat quality and quantity to that which will be lost. If off-site mitigation is necessary, it should emphasize the creation of oak woodland communities rather than the planting of scattered individual trees.

Impacts to Bats

According to the ISMND, surveys conducted on June 20, 2018, October 15, 2018, and July 8, 2019, indicate the presence of day-roosting bats on the Russian River bridge as well as the adjacent railroad bridge. It does not appear that the Redwood Valley Road Undercrossing was surveyed either acoustically or visually, however, the ISMND states that it "*…does appear to contain suitable habitat for day roosting and night roosting bats*."

The ISMND states that Lead Agency biologists:

> "*…observed what appeared to be a potential maternal colony of myotis bats exiting the railroad bridge. The assumption was made based on the large size of the myotis bats, short flight duration and slow speed.*"

The Russian River Bridge and the Redwood Valley Road Undercrossing would both be removed and replaced as part of the Project, and the ISMND does not propose to replace existing roosting habitat on either structure. The railroad bridge and associated maternity colony is likely to be impacted by noise and other construction related disturbance due to its proximity to the Project site but may remain available as roosting habitat after construction is complete.

The ISMND states:

> *"With the removal of the existing Russian River bridge, the project would result in the permanent removal of potential bat habitat. These impacts have the potential to prevent the return of any potential roosting colonies that may inhabit either the Russian River bridge or Redwood Valley Road UC. However, suitable habitat would continue to be available throughout the duration of construction within the railroad bridge and nearby vacant buildings."*

The ISMND does not describe the location, extent, or status of the "*suitable habitat*" available in nearby vacant buildings. Consequently, CDFW finds that identifying nearby vacant buildings as potential suitable bat roosting habitat, without any specific information on their use and management, renders them of little value in supporting a determination that Project impacts to bat roosting habitat will be less than significant. Specifically, the document lacks information regarding 1) if the vacant buildings are currently used by bats, 2) if the vacant buildings are likely to persist, and 3) if bats are currently or will in the future be excluded from these buildings.

The permanent loss of roosting habitat is considered one of the primary conservation issues for bat populations (Johnston et al. 2019). Yuma myotis (*Myotis yumanensis*), one of the myotis species likely to be using the on-site habitat, are considered "*…at high risk because a large percentage of their population occurs in bridges and culverts, which, makes them susceptible to habitat loss when bridges are retrofitted or replaced*" (Johnston et al. 2019). Without additional information about the extent and type of roosting habitat and current bat use onsite, and without any information about the nearby vacant buildings referenced in the ISMND that may provide habitat, CDFW cannot concur that loss of roosting habitat on the bridge itself is less than significant. Further, given that the Lead Agency will not be able to exclude bats from the railroad bridge, and the proximity of this site to construction, it will be difficult to avoid or minimize impacts to this colony during Project construction.

CDFW therefore recommends incorporating roosting habitat, such as Oregon wedge roosting boxes or other panels as described in Johnson et al. (2019), or other similar structures, in the design for the replacement bridge. Incorporation of roosting habitat would mitigate for potentially significant temporary impacts to bats occurring from both disturbance and exclusion due to construction, and from permanent removal of roosting habitat on the existing bridge. CDFW recommends ensuring that roosts on the existing bridge and adjacent railroad bridge are protected to the greatest extent feasible during construction, or bats are humanely excluded, as recommended by a qualified bat expert and in consultation with CDFW.

Summary of Recommendations

CDFW has several recommendations for the Lead Agency to ensure that potentially significant impacts of the Project are reduced to less than significant:

1. The ISMND should include details of proposed mitigations for wetland and riparian habitat. These details should include performance standards, such as mitigation ratios of greater than 1:1 in order to achieve a no-net-loss standard, and a draft MMRP prior to notification for adoption.
2. The ISMND should report the number, species, and size of oak trees that cannot be avoided and must be taken. Mitigation for impacts to oaks should be on-site to the extent feasible, if the on-site planting opportunities will result in similar habitat quality and quantity to that which will be lost. If off-site mitigation is necessary, it should emphasize the creation of oak woodland communities rather than the planting of scattered individual trees. In order to reduce the significance of impact to oak woodlands, CDFW recommends the following mitigation ratios:
    a. <1" dbh replaced at a minimum 1:1 mitigation ratio
    b. 1-11" dbh replaced at a minimum 6:1 mitigation ratio
    c. 12-18" dbh replaced at a minimum 8:1 mitigation ratio
    d. 18" dbh replaced at a minimum 10:1 mitigation ratio

These ratios are consistent with prior CDFW recommendations for projects with oak woodland impacts and may be modified upon further consultation with CDFW.

3. The ISMND should include a Mitigation Monitoring Plan for oaks. Oak monitoring should include a minimum 80 percent success criteria for plantings over 5 years, and protection of the trees in perpetuity.
4. Bat protection measures should be developed in consultation with CDFW and a qualified bat expert with experience in minimizing construction disturbance to active maternity colonies.
5. Because the extent and type of the bat roosting habitat on the existing Russian River bridge and Redwood Valley Road Undercrossing is not well described, CDFW cannot determine whether the loss of these roost habitats may constitute a significant impact. CDFW therefore recommends incorporating day roosting habitat on the new bridge to replace the habitat in-kind.

These changes are necessary for CDFW to determine that the Project will have a less than significant impact on biological resources.

Thank you for the opportunity to comment on this draft ISMND. CDFW staff are available to meet with you to consult with or address the contents of this letter in greater depth. If you have questions on this matter or would like to discuss these recommendations, please contact Senior Environmental Scientist Specialist Jennifer Olson at (707) 445-5387 or by e-mail at Jennifer.Olson@wildlife.ca.gov.

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References

CalPIF (California Partners in Flight). 2002.The oak woodland bird conservation plan: a strategy for protecting and managing oak woodland habitats and associated birds in California. Version 2.0. (S. Zack, lead author). Point Reyes Bird Observatory, Stinson Beach, CA. http://www.prbo.org/calpif/plans.html.

Johnston, D.S., Briones, K., and Pincetich, C. 2019. California Bat Mitigation: A Guide to Developing Feasible and Effective Solutions. H. T. Harvey & Associates, Los Gatos, CA. Prepared for the California Department of Transportation, Office of Biological Studies, Sacramento, CA. Task Order 7, Agreement No.43A0355.

Whipple A.A., Grossinger R.M., and Davis F.W. 2011. Shifting baselines in a California oak savanna: nineteenth century data to inform restoration scenarios. Restoration Ecology 19 (101):88-101.

Response to Comment #2: California Department of Fish and Wildlife

Thank you for your comments. Please see below for the responses.

1. The ISMND does not include adequate information about on-site wetlands and rare plants, because surveys have not yet been completed.

Caltrans proposes to conduct all wetland delineations and floristic surveys in areas not surveyed prior to the completion of the NES during appropriate seasonal windows and prior to the submittal of permit applications. Wetland delineations will be completed using methods identified in Section 2.2.2.1 of the Natural Environment Study. Changes in findings will be amended in the Final Environmental Document as appropriate.

2. The ISMND defers mitigations for wetland and riparian habitat and does not include performance standards for these mitigations.

Full mitigation, including ratios, amounts and standards will be finalized during the permitting phase of this project with our regulatory partners including CDFW, USACE, NCRWQCB and any other administering agencies.

3. The ISMND does not propose to mitigate for permanent impacts to 2.7 acres of oak woodlands.

Caltrans will address all impacts to Valley Oak riparian habitat through permit-driven mitigation and will replant at an agreed upon ratio with all regulatory partners. Caltrans does not propose to mitigate for impacts to areas within the Coast Live Oak woodland alliance, but oaks will be replanted onsite to the greatest extent feasible.

4. The ISMND does not include sufficient detail to determine extent and potential significance of impacts to day-roosting bats on the Russian River bridge, the Redwood Valley Road Undercrossing, and the adjacent railroad bridge.

Caltrans is currently in the process of coming to a determination regarding potential impacts to bat habitat including proposed avoidance and minimization measures. All findings will be amended to the ED once finalized.

Appendix A. Title VI Policy Statement

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
P.O. BOX 942873, MS-49
SACRAMENTO, CA 94273-0001
PHONE (916) 654-6130
FAX (916) 653-5776
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www.dot.ca.gov

Making Conservation a California Way of Life.

May 2019

NON-DISCRIMINATION POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964, ensures *"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."*

Related federal statutes, remedies, and state law further those protections to include sex, disability, religion, sexual orientation, and age.

For information or guidance on how to file a complaint, please visit the following web page: http://www.dot.ca.gov/obeo/TitleVI.html.

To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Business and Economic Opportunity, at 1823 14th Street, MS-79, Sacramento, CA 95811; (916) 324-8379 (TTY 711); or at Title.VI@dot.ca.gov.

Original signed by

LAURIE BERMAN
Director

Appendix B. Layouts of Proposed Work

CALPELLA BRIDGES
DECK REHABILITATION
01-0E090 (01 1300 0123)
MEN-020-PM 33.3/34.2

SCALE: 1" = 100'

LEGEND
- R/W AQUISITION
- EXISTING RIGHT OF WAY
- CUT AREA
- FILL AREA
- ESL

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
01	Men	020	33.3/34.2		

REGISTERED CIVIL ENGINEER DATE

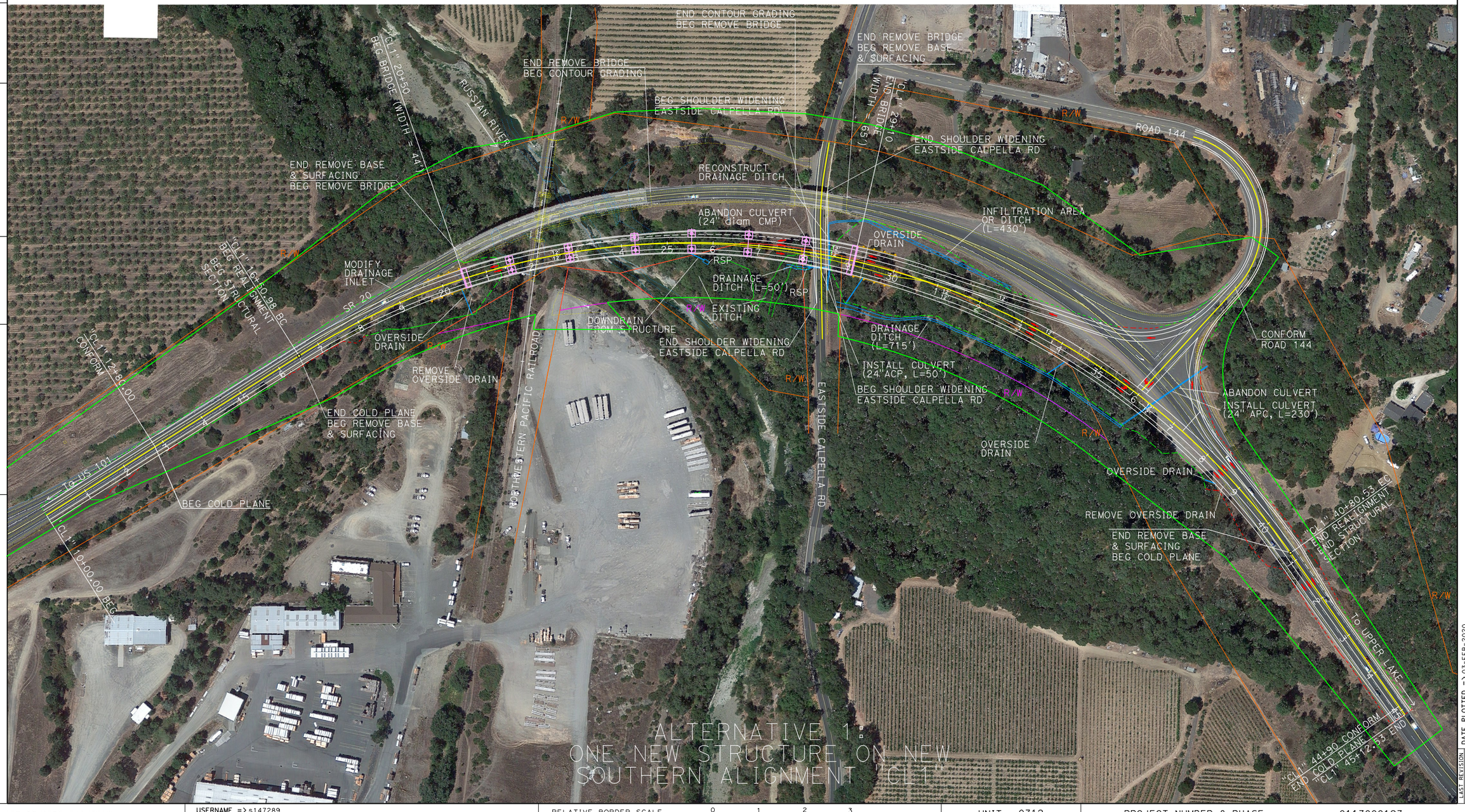
Month Day, Year

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 PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

PRELIMINARY DESIGN FOR REVIEW ONLY



ALTERNATIVE 1:
ONE NEW STRUCTURE ON NEW SOUTHERN ALIGNMENT "CL1"

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY: MATT SMITH
CHECKED BY:
DRAWN BY:

FUNCTIONAL SUPERVISOR: CAREN COONROD

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN

P:\PROJ\01\0E090\design\510 Plans\Alternative Layouts\Alt_1_Frames\0-phase\Alternative1_FullView.dgn

LAST REVISION
DATE PLOTTED => 03-FEB-2020
TIME PLOTTED => 15:48

BORDER LAST REVISED 7/2/2010

USERNAME => s147289
DGN FILE => Alternative1_FullView.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

UNIT 0312

PROJECT NUMBER & PHASE 0113000123

Appendix C. USFWS, NMFS, CNDDB, CNPS Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
Phone: (707) 822-7201 Fax: (707) 822-8411

In Reply Refer To: October 09, 2019
Consultation Code: 08EACT00-2018-SLI-0062
Event Code: 08EACT00-2020-E-00030
Project Name: 01-0E090 Calpella Bridge Replacement

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arcata Fish And Wildlife Office
1655 Heindon Road
Arcata, CA 95521-4573
(707) 822-7201

Project Summary

Consultation Code: 08EACT00-2018-SLI-0062

Event Code: 08EACT00-2020-E-00030

Project Name: 01-0E090 Calpella Bridge Replacement

Project Type: TRANSPORTATION

Project Description: Replacement of 2 bridges along SR 20 near Calpella and SR 101

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/39.2420771525188N123.20312501012774W

Counties: Mendocino, CA

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Fisher *Pekania pennanti* Population: West coast DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3651	Proposed Threatened

Birds

NAME	STATUS
Northern Spotted Owl *Strix occidentalis caurina* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1123	Threatened
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Flowering Plants

NAME	STATUS
Burke's Goldfields *Lasthenia burkei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4338	Endangered
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Showy Indian Clover *Trifolium amoenum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6459	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

From: NMFSWCRCA Specieslist - NOAA Service Account
To: Thornton, Grant@DOT
Subject: Re: Caltrans EA: 01-0E090 Calpella 2-Bridge Replacement
Date: Wednesday, October 9, 2019 3:41:52 PM

Receipt of this message confirms that NMFS has received your email to nmfswcrca.specieslist@noaa.gov. If you are a federal agency (or representative) and have followed the steps outlined on the California Species List Tools web page (http://www.westcoast.fisheries.noaa.gov/maps_data/california_species_list_tools.html), you have generated an official Endangered Species Act species list.

Messages sent to this email address are not responded to directly. For project specific questions, please contact your local NMFS office.

Northern California/Klamath (Arcata) 707-822-7201

North-Central Coast (Santa Rosa) 707-387-0737

Southern California (Long Beach) 562-980-4000

California Central Valley (Sacramento) 916-930-3600

From: Thornton, Grant@DOT
To: nmfswcrca.specieslist@noaa.gov
Subject: Caltrans EA: 01-0E090 Calpella 2-Bridge Replacement
Date: Wednesday, October 9, 2019 3:41:00 PM

To whom it may concern:

The project is located within the Ukiah 7.5-minute USGS quadrangle. The search results from the California Species Lists Tools website is provided below.

Non-federal agency name and address:
California Department of Transportation
703 B Street
Marysville, CA 95901

Point of Contact:
Grant Thornton
Grant.thornton@dot.ca.gov
(530) 741-4133

Quad Name **Ukiah**

Quad Number **39123-B2**

ESA Anadromous Fish

SONCC Coho ESU (T) -
CCC Coho ESU (E) - **X**
CC Chinook Salmon ESU (T) - **X**
CVSR Chinook Salmon ESU (T) -
SRWR Chinook Salmon ESU (E) -
NC Steelhead DPS (T) -
CCC Steelhead DPS (T) - **X**
SCCC Steelhead DPS (T) -
SC Steelhead DPS (E) -
CCV Steelhead DPS (T) -
Eulachon (T) -
sDPS Green Sturgeon (T) -

ESA Anadromous Fish Critical Habitat

SONCC Coho Critical Habitat -
CCC Coho Critical Habitat - **X**
CC Chinook Salmon Critical Habitat - **X**
CVSR Chinook Salmon Critical Habitat -
SRWR Chinook Salmon Critical Habitat -
NC Steelhead Critical Habitat -
CCC Steelhead Critical Habitat - **X**

SCCC Steelhead Critical Habitat -
SC Steelhead Critical Habitat -
CCV Steelhead Critical Habitat -
Eulachon Critical Habitat -
sDPS Green Sturgeon Critical Habitat -

ESA Marine Invertebrates

Range Black Abalone (E) -
Range White Abalone (E) -

ESA Marine Invertebrates Critical Habitat

Black Abalone Critical Habitat -

ESA Sea Turtles

East Pacific Green Sea Turtle (T) -
Olive Ridley Sea Turtle (T/E) -
Leatherback Sea Turtle (E) -
North Pacific Loggerhead Sea Turtle (E) -

ESA Whales

Blue Whale (E) -
Fin Whale (E) -
Humpback Whale (E) -
Southern Resident Killer Whale (E) -
North Pacific Right Whale (E) -
Sei Whale (E) -
Sperm Whale (E) -

ESA Pinnipeds

Guadalupe Fur Seal (T) -
Steller Sea Lion Critical Habitat -

Essential Fish Habitat

Coho EFH - X
Chinook Salmon EFH - X
Groundfish EFH -
Coastal Pelagics EFH -
Highly Migratory Species EFH -

MMPA Species (See list at left)

ESA and MMPA Cetaceans/Pinnipeds

See list at left and consult the NMFS Long Beach office 562-980-4000

MMPA Cetaceans -
MMPA Pinnipeds -

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Ukiah (3912322))
 AND County IS (Mendocino)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Arctostaphylos stanfordiana ssp. raichei Raiche's manzanita	PDERI041G2	None	None	G3T2	S2	1B.1
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Erethizon dorsatum North American porcupine	AMAFJ01010	None	None	G5	S3	
Lasthenia burkei Burke's goldfields	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
Limnanthes bakeri Baker's meadowfoam	PDLIM02020	None	Rare	G1	S1	1B.1
Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Rana boylii foothill yellow-legged frog	AAABH01050	None	Candidate Threatened	G3	S3	SSC
Taricha rivularis red-bellied newt	AAAAF02020	None	None	G4	S2	SSC

Record Count: 9

CNPS California Native Plant Society

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

7 matches found. *Click on scientific name for details*

Search Criteria

Found in Mendocino County, Found in Quad 3912322

Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Listing Status	Federal Listing Status
Cypripedium californicum	California lady's-slipper	Orchidaceae	perennial rhizomatous herb	Apr-Aug(Sep)	4.2		
Cypripedium montanum	mountain lady's-slipper	Orchidaceae	perennial rhizomatous herb	Mar-Aug	4.2		
Lasthenia burkei	Burke's goldfields	Asteraceae	annual herb	Apr-Jun	1B.1	CE	FE
Limnanthes bakeri	Baker's meadowfoam	Limnanthaceae	annual herb	Apr-May	1B.1	CR	
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1		
Ranunculus lobbii	Lobb's aquatic buttercup	Ranunculaceae	annual herb (aquatic)	Feb-May	4.2		
Sanguisorba officinalis	great burnet	Rosaceae	perennial rhizomatous herb	Jul-Oct	2B.2		

Suggested Citation

California Native Plant Society, Rare Plant Program. 2019. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 09 October 2019].

Search the Inventory
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Information
About the Inventory
About the Rare Plant Program
CNPS Home Page
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Contributors
The Calflora Database
The California Lichen Society
California Natural Diversity Database
The Jepson Flora Project
The Consortium of California Herbaria
CalPhotos

Questions and Comments

Appendix D. Biological Surveys – Species, Personnel, and Dates

Date	Participants	Purpose
April 27, 2017	Caltrans Biologists Lori Price, Alex Laughtin, and Grant Thornton.	Botanical surveys
June 26, 2017	Caltrans Biologists Lori Price, Grant Thornton, and Mindy Trask.	Botanical surveys
February 6, 2018	Caltrans Biologists Grant Thornton, Alex Laughtin, Michelle Holtz, Hannah Clark, Jennifer Greslik and Reed Crane. Caltrans Archaeologist Ian Springer.	OHWM mapping and botanical surveys
March 20, 2018	Caltrans Biologists Grant Thornton, Michelle Holtz, and Jennifer Greslik. Caltrans Archaeologist Ian Springer. Caltrans Project Manager Cathy McKeon. CDFW Senior Environmental Scientist JoAnn Loehr.	Geotechnical field review
May 14, 2018	Caltrans Biologists Grant Thornton, Jennifer Greslik, Hannah Clark and Allison Kunz.	Botanical and FYLF surveys
May 15, 2018	Caltrans Biologist Grant Thornton. Caltrans Coordinator Max Lammert. Caltrans Project Manager Cathy McKeon. Caltrans Senior Engineering Geologist Christopher Risden. CDFW Senior Environmental Scientist JoAnn Loehr. NCRWQCB Senior Environmental Scientist Brandon Stevens.	Geotechnical field review
June 20, 2018	Caltrans Biologists Grant Thornton, Reed Crane, and Jennifer Greslik.	Vegetation mapping and nighttime bat exit survey
March 14, 2019	Caltrans Biologists Grant Thornton and Jennifer Greslik. Caltrans Revegetation Specialists Loriel Caverly and Desiree Davenport. Caltrans	Field visit with USFWS. Identify revegetation and

	Agency Liaison Rob Meade. USFWS Biologist Greg Schmidt.	mitigation needs.
April 10, 2019	Caltrans Biologists Grant Thornton and Jennifer Greslik. Caltrans Coordinator Max Lammert. Caltrans Archaeologist Ian Springer. Caltrans Engineering Geologists Matt Gaffney and Christopher Risden. Caltrans Bridge Construction Engineer Bryan Bet. CDFW Senior Environmental Scientist Jamie Jackson. NMFS Fishery Biologist Elena Meza. NCRWQCB Senior Environmental Scientist Brandon Stevens.	Field visit with state and federal agencies to identify impacts from Geotech drilling.
May 14, 2019	Caltrans Biologists Grant Thornton and Hannah Clark	FYLF Survey, wetland delineation, and habitat mapping
July 8, 2019	Caltrans Biologists Grant Thornton, Emerald Remund, Michelle Holtz, and Jennifer Greslik. Caltrans Revegetation Specialist Loriel Caverly. Caltrans Mitigation Specialist Desireé Davenport. Caltrans Senior Environmental Planner Rob Meade. Caltrans Project Manager Cathy McKeon. Caltrans Resident Engineer Matt Smith. Caltrans Bridge Construction Engineer Bryan Bet. CDFW Senior Environmental Scientist Jamie Jackson. USACE Senior Regulatory Project Manager Daniel Breen.	Field visit with CDFW, USACE, and members of PDT. Wetland delineations, FYLF survey, botanical surveys, and Night time bat exit survey
July 24, 2019	Caltrans Biologists Grant Thornton and Hannah Clark. NCRWQCB Senior Environmental Scientists Brandon Stevens and Susan Stewart	Field visit to discuss project impacts to jurisdictional waters.

ATTACHMENT I

FLOODPLAIN EVALUATION SUMMARY REPORT AND PRELIMINARY DRAINAGE RECOMMENDATIONS

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Making Conservation.
a California Way of Life!

To: MATT SMITH, Project Engineer
District 1 Design – E2

Date: August 21, 2019
File: 01-MEN-020-PM 33.3/34.3
01-0E090
01 1300 0123
Calpella 2 Bridge Replacements

From: CELESTE REDNER
North Region Capital Hydraulics
District 1- Eureka

Subject: HYDRAULIC RECOMMENDATION – 0 PHASE

At the request of Matt Smith, Design E2, on February 26, 2019; North Region Hydraulics staff has completed a hydraulic review for the 0-Phase of the project. This project proposes to address bridge deck deficiencies on the Russian River Bridge OC (#10-182) located on State Route 20, postmile 33.63. The project will replace the current structures with either a single new structure or two new structures on a new alignment to the north or south of the existing alignment. In addition, the new alignment requires the nearby Redwood Valley UC (#10-183) also be replaced on a new alignment.

The programmed alternative proposes to replace the two structures on a new alignment consisting of two 12-ft through lanes, two 8-ft shoulders, an acceleration lane and left turn lane tapers with varying widths, and standard bridge railing. The intersection of SR 20 and Road 144 will also be reconstructed to fit new mainline geometry and eliminate left turn movements onto EB SR 20. Traffic will remain on the existing alignment until the new structure(s) and roadway are complete.

Watershed Characteristics

The proposed project is located on the United States Geological Survey (USGS) Ukiah Quadrangle 39123-B2-TF-024, see Figure 1.

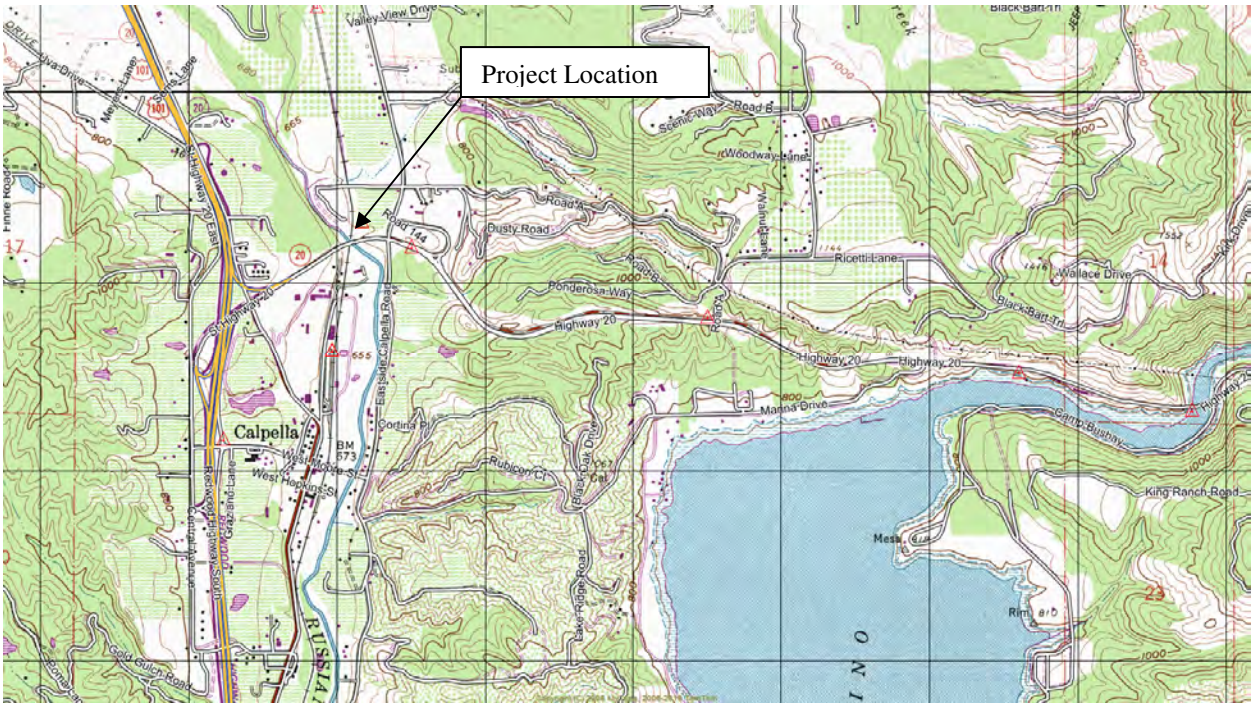


Figure 1. USGS Ukiah Quadrangle

Climate

Weather data from the Potter Valley PH (047109) monitoring station shows that the project location has a Mean Annual Precipitation of 45.76 inches with an Average Monthly Minimum January Temperature of 33.9 degrees Fahrenheit and an Average Monthly Maximum July temperature of 93.6 degrees Fahrenheit. Rainfall occurs mainly in the winter months and the Average Total Snowfall is 0.6 inches.

Hydrology

National Oceanic and Atmospheric Administration (NOAA) Atlas 14 intensity, duration, frequency estimates, and the 2 year 24 hour rainfall depth are provided in the Table below (http://hdsc.nws.noaa.gov/hdsc/pfds/pfds).

Hydrology	
Time of Concentration (Roadway)	5 minutes
Intensity (Inches/Hour)	5 year – 2.39
	10 year – 2.84
	25 year – 3.46
	100 year – 4.39
2 year 24 hour rainfall depth (inches)	3.55

Drainage Summary

The stationing convention used for the drainage summary was taken from the Alternative 1A Layout sheets that had a "Last Revision" date of 03/29/19.

Culverts and Drainage Inlets

There is an existing stormdrain system located at the western limits of the project. The system consists of a series of 5 drainage inlets and about 794 linear feet of 18-inch corrugated metal pipe. This system flows to the north east and outlets through a flared end section and flows into an open channel, which flows through a series of open channel and culverts towards the Russian River. The work proposed for the stormdrain system is to raise the drainage inlets to grade. For cost estimating purposes assume that 5 drainage inlets will need to be adjusted to grade.

PM 33.95

There is an existing cross culvert located at PM 33.95. The culvert modification form is attached to these recommendations for reference. The culvert is approximately 213 feet long. The original culvert was a 24-inch corrugated steel pipe, but was lined in 2006 and now has a diameter of 20-inches. This culvert will need to be lengthened due to the new roadway alignment. It is recommended to replace the culvert with a 30-inch diameter culvert. This will allow for future lining of the culvert, if needed.

Overside Drains

There are four existing overside drains within the project limits. They are located at approximate stations 18+10 Rt, 26+25 Lt (offset on old alignment), and 38+75 Rt. The overside drain located on the old alignment should be removed. The remaining three overside drains located at approximate stations 18+10 Rt, 37+00 Lt (asphalt lined), and 38+75 Rt, should be replaced on the new alignment at approximately the same locations. For cost estimating purposes assume that 4 overside drains will be removed and 3 overside drains will be constructed.

Gutter Spread

Gutter spread calculations were completed for segments of the project. The locations and results of the gutter spread calculations are summarized in the table below.

Gutter Location Description	Gutter Cross Slope (ft/ft)	Longitudinal Slope (ft/ft)	Flow (cfs)	Water Spread (ft)	Shoulder Width (ft)
11+50 to 14+75 Lt	0.05	0.035	0.46	2.42	8
11+50 to 14+75 Rt	0.05	0.035	0.46	2.42	8
14+75 to 18+00 Rt	0.05	0.021	0.93	3.36	8
38+70 to 44+00 Rt	0.05	0.06	1.74	3.5	8

Ditches

Two new ditch segments will be created with this project.

One segment will be created between the old roadway alignment and the new roadway alignment, approximate length is 490-ft between sta 29+10 to sta 34+00 Lt. The drainage area contributing to this ditch is relatively small and consists of flow coming off the new alignment embankment and from a portion of the old roadway alignment and existing roadway embankment.

The second ditch segment will be located at the toe of the new roadway prism from sta 31+50 to sta 36+25 Rt. The longitudinal slope of this ditch is approximately 5%. The flow that would contribute to this ditch would be from the outlet of the existing culvert at PM 33.95 and also runoff from the new roadway prism.

Conclusion

These recommendations should be further refined at a later project phase as additional drainage needs may be identified as the project progresses.

If you have questions or concerns, please contact our office at (707) 441-2037.

cc: 1 Matt Small, Design Engineer
2. Cathy McKeon, Project Manager
3. Project files

Mailed To Mike Vina –Eureka on 4/9/08

CULVERT MODIFICATION FORM

CO: MEN | ROUTE: 20 | PM: 33.95 | DATE: 10-16-06

E.A.: 01-297704

R.E.: SUSAN TAPPAN

INSP.: D. HILL

New Culvert Installation	YES / NO
Abandon Existing Culvert	YES / NO
Remove Existing Culvert	YES / NO
Other (note below)	YES / NO

INLET:

Inlet Structure Type: FLARED END SECTION

Headwater Available: ____ FT. | Inlet to R/W (est): ____ FT.

CULVERT:

Cut C.L. to F.L: 213.2 FT | Year Inst.: 2006 C (C)onfirmed (A)pprox.

Size: 20 in | Type: HDPE (CSP, CSPH, CSPA, SSPP, RCP, PVC, HDPE)

Asphalt Coated: YES / NO

Paved Invert: YES / NO

Concrete Lined: YES / NO

Plastic Liner: (YES) / NO

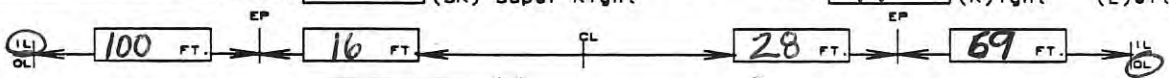
Slope: 2.28 %

"A" 18+60 ±

33.95?

DIMENSIONS:

Roadway: C (C)rown (SL) Super Left (SR) Super Right | SKEW: N 0 (N)egible (R)ight (L)eft



Length: 213 FT. A (M)easured (A)pproximate

OUTLET:

Outlet Structure Type: NONE

Outlet to R/W (est): ____ FT.

Remarks

REPLACED EXISTING FES WITH NEW BITUMINOUS COATED FES AND LINED CULVERT WITH 20" HDPE PIPE.

DS2

structure

PROVIDE DRAWING ON BACK IF NECESSSARY.

FLOODPLAIN EVALUATION REPORT SUMMARY

District: 01 **County:** MEN **Route:** 20 **P.M.:** 33.3-34.4
Project EA: 01-0E090 **EFIS Project ID:** 01-1300-0123 **Bridge Number:** #10-0182 / #10-0183

Limits: The project is located along Route 20 in Mendocino County from postmile (PM) 33.3 to 34.4. The project proposes to implement the Bridge Deck Rehabilitation Program to replace the existing structure with deck deficiencies at PM 33.63, with either a single new structure or two new structures on a new alignment to the north or south of the existing alignment. The deficiencies are reported as multiple transverse soffit cracks and failure and delamination of previous repairs on the bridge.

Floodplain Description: The proposed project limits are PM 33.3 to PM 34.4. The roadway is a curvy conventional two-lane highway in the project limits. The project spans Flood Insurance Rate Map (FIRM) # 06045C1502F Map Index effective June 02, 2011. The highway crosses Zone AE at the vicinity of the Russian River, which is defined as "Special Flood Hazard Areas" corresponding to 100-year floodplain with provided "Base Flood Elevation", with BFE = 681 ft. at upstream limit and BFE = 678 ft. at downstream limit. The lowest bridge elevation should be reported for this area. On the conditions of same or raised new road and bridge structure elevation, proposed activities are not expected to have adverse impacts on floodplain.
A small portion of the project, at the western limits of bridge # 10-0182, fall within Zone X (Shaded) designated as the 0.2% annual chance flood hazard; areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. The rest of the project falls within Zone X (No Screen), which is classified as an area of minimal flood hazard. This evaluation should be updated when an alternative is decided upon. The proposed construction activities are not expected to have any significant adverse floodplain impacts.

		No	Yes
1.	Is the proposed action a longitudinal encroachment of the base floodplain?	x	
2.	Are the risks associated with the implementation of the proposed action significant?	x	
3.	Will the proposed action support probable incompatible floodplain development?	x	
4.	Are there any significant impacts on natural and beneficial floodplain values?	x	
5.	Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain values? If yes, explain.	x	
6.	Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105(q)?	x	
7.	Are Floodplain Hydraulic Studies that document the above answers on file? If not explain.		x

PREPARED BY:

Celeste Redner

Signature - Dist. Hydraulic Engineer — 9-14-18 Date

Signature - Dist. Environmental Branch Chief — Date

Signature - Dist. Project Engineer — Date

FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2016.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 5/8/2018 2:46:35 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at https://www.fema.gov/media-library/assets/documents/118418.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

ATTENTION: The levee, dike, or other structure that impacts flood hazards inside this boundary has not been shown to comply with Section 65.10 of the NFIP Regulations. As a result, this FIRM panel will be revised at a later date to update the flood hazard information associated with this structure. The flood hazard data inside this boundary on the FIRM panel has been recalculated from the previous effective (historic) FIRM for this area, after being converted from NGVD 29 to NAVD 88.

SCALE

N

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD88
For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map please see the Flood Insurance Study(FIS) Report for your community at https://msc.fema.gov

1 inch = 500 feet 1:6,000

0 250 500 1,000 1,500 2,000 Feet

0 50 100 200 300 400 Meters

FEMA National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

MENDOCINO COUNTY, CALIFORNIA AND INCORPORATED AREAS
PANEL 1502 OF 2050

Panel Contains:

COMMUNITY	NUMBER	PANEL
MENDOCINO COUNTY, CALIFORNIA	060183	1502

ATTACHMENT J

STORM WATER

DATA REPORT

Dist-County-Route: 01-MEN-20
Post Mile Limits: 33.3-34.2
Type of Work: Construct Bridge
Project ID (EA): 01-0E090
Program Identification: 201.110 Bridge Program
Phase: ☐ PID ☒ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): North Coast
Total Disturbed Soil Area: 6.56 acres PCTA: 1.8 acres
Alternative Compliance (acres): TBD ATA 2 (50% Rule)? Yes ☐ No ☒
Estimated Const. Start Date: 10/21/2021 Estimated Const. Completion Date: 10/03/2024
Risk Level: RL 1 ☐ RL 2 ☐ RL 3 ☒ WPCP ☐ Other: _____
Is MWELO applicable? Yes ☐ No ☒
Is the Project within a TMDL watershed? Yes ☐ No ☒
TMDL Compliance Units (acres): N/A
Notification of ADL reuse (if yes, provide date): Yes ☐ Date: _____ No ☒

This Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the date upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E only.

Matt Smith, Registered Project Engineer/Landscape Architect — 7/24/19 Date

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

Cathy Mckeon, Project Manager — 8/21/19 *Date*

Scott Lezchuk, Designated Maintenance Representative — 8/27/19 *Date*

Laura Lazzarotto, Designated Landscape Architect Representative — 7/26/19 *Date*

[Stamp Required at PS&E only]

Celeste Redner, District/Regional Design SW Coordinator or Designee — 8-27-19 *Date*

STORMWATER DATA INFORMATION

1. Project Description

Design is currently preparing a Draft Project Report (DPR) for a bridge replacement project in Mendocino County on State Route 20 near the town of Calpella. The project proposes to perform a complete replacement of the Russian River Bridge (#10-182) and Eastside Calpella Road Undercrossing (#10-183). To accommodate traffic and avoid the use of a detour through local and county roads, the existing bridges will remain intact during construction.

The new alignment consists of a 1600-foot radius curve along the bridge with standard superelevation transitions and rates. The existing profile will generally be perpetuated to match the existing grade at the project limits. The alignment provides a standard left turn pocket taper and deceleration length and standard accelerations lane tapers and lengths for the intersection of SR-20 and County Road 144.

The new bridge is 1100 feet in lengths and consists of an 8-span CIP/PS box girder structure. The spans vary from 105 to 155 feet in length. The western most cross section of the bridge is 44 feet wide and consists of two 12-foot travel lanes and two 8-foot shoulders. The eastern most cross section of the bridge is 68 feet wide and consists of a 12-foot east bound through lane, a 12-foot east bound left turn lane, a 12-foot west bound through lane, a 12-foot west bound acceleration lane, and two 8-foot shoulders.

DSA (Acres)	Existing Impervious Area (Acres)	Post Impervious Area (Acres)	Net New Impervious (NNI) (Acres)	Replaced Impervious Surface (RIS) (Acres)	Sidewalks Separate Bikeways (EIA) (Acres)	New Impervious Surface (NIS) (Acres)	ATA #1, (Acres)	ATA #2, (Acres)	PCTA (Acres)
6.56	4.30	5.02	0.72	1.08	0	1.8	0	0	1.8

PCTA = NNI + RIS + ATA #1 + ATA #2
NIS = NNI + RIS – EIA
NNI = Post Impervious – Pre-Impervious
ATA = Additional Treated Area
*EIA = Excluded Impervious Area

- Total disturbed soil area (DSA): The DSA includes construction areas (bridge demolition and construction, new roadway construction, cut slope areas, roadway removed to subgrade and replaced) and staging areas.
- New impervious surface (NIS): The NIS is the sum of the Net New Impervious (NNI) and Replaced Impervious Surface (RIS).
    - Net New Impervious (NNI): NNI estimation includes the total post-project impervious area minus the pre-project impervious area. The pre-project impervious area was determined by using the distance between the right and left edge of pavement over the length of the existing roadway within the project limits and at the SR-20 and CR-144 intersection. The estimation includes the bridges as impervious area. The post-project impervious area was determined by using the distance between the new right and left edge of pavement over the length of the new roadway. The post-project area includes the additional area constructed at the SR-20 and CR-144 intersection, the new bridge, and the removal of any impervious surface no longer required.

- Replaced impervious surface (RIS): RIS estimation includes any surface area where the existing structural section will be removed and replaced with the new structural section.
- PCTA
  - NNI is not greater than 50% of the post project impervious area.
  - There are no existing BMPs within the project limits.

2. Site Data and Stormwater Quality Design Issues

- This project is in the Russian River HU, Upper Russian River HA, Forsythe Creek HSA. The nearest receiving water is the Russian River. The Russian River is on the 303(d) list for sedimentation/siltation and temperature.
- A 401 Certification is required for this project.
- The project elevation varies between 820 feet and 700 feet. The table below summarizes the soil composition within the project area:

Table 1 – Soil Composition within the project area.

Map Unit Name	Acres in AOI	Percent of AOI
Feliz loam, 2 to 5 percent slopes	0.1	0.20%
Pinnobie loam, 0 to 2 percent slopes	8.3	22.80%
Pinole gravelly loam, 2 to 8 percent slopes	13.1	36.10%
Urban land	4.7	13.00%
Xerochrepts-Haploxeralfs-Argixerolls complex, 30 to 50 percent slopes, high ffd	8.9	24.40%
Water	1.3	3.50%
Totals for Area of Interest	**36.4**	**100.00%**

- The average annual precipitation in nearby Ukiah is 40 inches. Most of precipitation occurs between the months of November through March. The annual high temperature is 72.4°F and the annual low temperature is 45.6°F
- The terrain of the project site is described as mountainous.
- The land use is described as scattered rural residential, recreational, agricultural, and undeveloped land (open space).

3. Construction Site BMPs to be used on Project

- This project will be constructed over three seasons and will be administered under a Contractor-prepared SWPPP since the DSA is an acre or over.
- The preliminary Risk Level Determination has been identified as a 3 using the GIS Mapping Method 1, Appendix 1 of the 2009 CGP. The Risk Level Determination applies to a SWPPP project.
- Temporary Construction BMPs to be listed as separate bid items include: Prepare SWPPP or Prepare WPCP, REAP, SAP, Stormwater Annual Report, Job Site Management, Temporary Drainage Inlet Protection, Temporary Construction Entrance/Exit, Temporary Check Dam, Temporary Concrete Washout, Temporary Fiber Rolls, Temporary Gravel Bag Barrier, Temporary Silt Fence, Temporary Lined Ditches, Temporary, and Soil Stabilization Temporary BMPs to be identified and quantified during the PS&E phase.
- Non-stormwater BMPs include Dewater Operations, Temporary Stream Crossing, Structure Demolition/Removal over or adjacent to Water, Pile Driving Operations, and Material and Equipment Use on or near Water.
- A temporary access staging area will be constructed on the southwest of the existing bridge.
- This project will require an in-stream Water Quality Monitor and Monthly and Annual Water Quality Reporting.
- The estimate for Temporary Construction BMPs is 2.5% of the construction cost as given by Table F-2 on page F-3 of the 2016 PPDG.
- The attached Construction Site Consideration Form documents construction concurrence in accordance with North Region Directives.
- Document the coordination effort to get concurrence from Construction regarding the Construction Site BMP strategy and estimate (provide names of staff and date of concurrence; required at PS&E only; recommended at all phases).

4. Maintenance BMPs

- Inlet stenciling will not be required.
- Maintenance features to assist with maintain Treatment BMPs, if deployed, such as vehicle pullouts, access gates and roads, will be identified during the PS&E phase of the project.

5. Other Water Quality Requirements and Agreements

- The water quality requirements and agreements with the North Coast RWQCB are outlined in the project specific 401 Certification.

6. Permanent BMPs

Rapid Stability Assessment

- Not required due to NNI being less than one acre.

Design Pollution Prevention (DPP) BMP Strategy

- Permanent DPP DMPs will be required for this project. These DPP BMPs may be used to infiltrate the Water Quality Volume (WQV) (e.g. soil modification, vegetated surface, channel

lining, RSP). Any stabilized pervious area within the project limits that receives runoff from the impervious area and promotes infiltration of the run-off may be designated as a DPP Infiltration Area. DPP Infiltration areas can be vegetated or non-vegetated.

- The proposed alignment will perpetuate the existing sag vertical curve. The low point of the proposed sag vertical curve is located on the bridge. Scuppers will be required to remove any flow gathered on the bridge. The water will be conveyed to an existing ditch that flows into the Russian River.
- Potential DPP Infiltration Areas exist within the project limits on the left side of the highway from STA "CL1" 10+00 through "CL1" 12+75 and "CL1" 29+00 through "CL1" 35+00 and on the right side from STA "CL1" 18+00 to "CL1" 20+50
- DPP BMPs on fill areas receiving highway runoff are eligible for TMDL CUs (stabilized areas only). Other DPP BMPs that are infiltrating stormwater and being used for post construction treatment, Alternative compliance and CUs will be documented under the Treatment BMP Strategy section below during the PS&E phase of the project.

Treatment BMP Strategy

- In accordance with the "*Evaluation Documentation Form"*, this project is required to consider treatment BMPs.
- This project is required to treat the PCTA.
- A potential bioswale location exists to the left of the proposed alignment where the existing alignment will be removed (stations "CL1" 29+00 through 35+00).
- 100% treatment of the PCTA is required under the Caltrans Statewide MS4 Permit.
- The estimate to incorporate DPP and Treatment BMPs is $100,000 per lanemile. This estimate does not include Right-of-Way acquisition costs for constructing Treatment BMPs or establishing drainage easements.
- This project will use DPPIA as a treatment BMPs to fulfill the PCTA requirement. The locations of the DPPIA will be located in the 1-Phase.

Required Attachments

- Vicinity Map
- Evaluation Documentation Form (EDF)
- Construction Site BMP Consideration Form
- Risk Level Determination Documentation
- Erosivity Index Calculator Results

Vicinity Map

MEN-020-PM 33.3/34.4
Russian River Bridge Deck Rehabilitation

DATE: 04/17/2019

Project ID (EA): 01-0E090

No.	Criteria	Yes ✓	No ✓	Supplemental Information for Evaluation
1.	Begin Project evaluation regarding requirement for implementation of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Treatment BMPs. Continue to 2.
2.	Is the scope of the Project to install Treatment BMPs (e.g., Alternative Compliance or TMDL Compliance Units)?		✓	If **Yes**, go to 8. If **No**, continue to 3.
3.	Is there a direct or indirect discharge to surface waters?	✓		If **Yes**, continue to 4. If **No**, go to 9.
4.	As defined in the WQAR or ED, does the project: a. discharge to areas of Special Biological Significance (ASBS), or b. discharge to a TMDL watershed where Caltrans is named stakeholder, or c. have other pollution control requirements for surface waters within the project limits?		✓	If **Yes to any**, contact the District/Regional Design Stormwater Coordinator or District/Regional NPDES Coordinator to discuss the Department's obligations, go to 8 or 5. _____*(Dist./Reg. Coordinator initials)* If **No** to all, continue to 5.
			✓	
		✓		
5.	Are any existing Treatment BMPs partially or completely removed? (ATA condition #1, Section 4.4.1)		✓	If **Yes**, go to 8 **AND** continue to 6. If **No**, continue to 6.
6.	Is this a Routine Maintenance Project?		✓	If **Yes**, go to 9. If **No**, continue to 7.
7.	Does the project result in an increase of one acre or more of new impervious surface (NIS)?	✓		If **Yes**, go to 8. If **No**, go to 9.
8.	Project is required to implement Treatment BMPs.	Complete Checklist T-1, Part 1.		
9.	Project is not required to implement Treatment BMPs. _____ *(Dist./Reg. Design SW Coord. Initials)* _____*(Project Engineer Initials)* _____ *(Date)*	Document for Project Files by completing this form and attaching it to the SWDR.		

Version 7/29/13

Risk Determination Worksheet

Step 1 Determine Sediment Risk via one of the options listed:

1. GIS Map Method - EPA Rainfall Erosivity Calculator & GIS map
2. Individual Method - EPA Rainfall Erosivity Calculator & Individual Data

Step 2 Determine Receiving Water Risk via one of the options listed:

1. GIS map of Sediment Sensitive Watersheds provided
2. Site Specific Analysis (support documentation required)

Step 3 Determine Combined Risk Level

CDOT Project Information

EA:	**01-0E090**
	01-MEN-20 33.3/34.2
EFIS:	**01 1300 0123**
	Calpella Bridge Replacement
Lat	**39.2426**
Long	**123.1958**
Start PM	**33.3**
End PM	**34.2**
Const Start	**10/1/2021**
CCA Date	**3/1/2024**

Required at PSE only

DSA (ac)	4.24
Total Project Area (ac)	33.44
Total Pre Impervious (ac)	4.31
Total Post Impervious. (ac)	4.94

Project Combined Risk **Level 3**

01-0E090/01-MEN-20 33.3/34.2/Calpella Bridge Replacement

Sediment Risk Factor Worksheet	Entry
A) R Factor	
Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.	
http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm	
R Factor Value	333.00
B) K Factor (weighted average, by area, for all site soils)	
The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.	
Site-specific K factor guidance	
K Factor Value	0.28
C) LS Factor (weighted average, by area, for all slopes)	
The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.	
LS Table	
LS Factor Value	4.98
Watershed Erosion Estimate (=RxKxLS) in tons/acre	464.34
Site Sediment Risk Factor Low Sediment Risk: < 15 tons/acre Medium Sediment Risk: >=15 and <75 tons/acre High Sediment Risk: >= 75 tons/acre	**High**

See Screenshots in BACKUP worksheet for value documentation

01-0E090/01-MEN-20 33.3/34.2/Calpella Bridge Replacement

Receiving Water (RW) Risk Factor Worksheet	Entry	Score
A. Watershed Characteristics	**yes/no**	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml	**Yes**	**High**
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml		
Region 1 Basin Plan Region 2 Basin Plan Region 3 Basin Plan Region 4 Basin Plan Region 5 Basin Plan Region 6 Basin Plan Region 7 Basin Plan Region 8 Basin Plan Region 9 Basin Plan		

01-0E090/01-MEN-20 33.3/34.2/Calpella Bridge Replacement

Combined Risk Level Matrix

Receiving Water Risk	Sediment Risk: Low	Sediment Risk: Medium	Sediment Risk: High
Low	Level 1	Level 2	
High	Level 2		Level 3

Project Sediment Risk: High

Project RW Risk: High

Project Combined Risk: Level 3

Facility Information

- Start Date: 10/21/2021
- End Date: 10/03/2024
- Latitude: 39.2426
- Longitude: -123.1958

Erosivity Index Calculator Results

An erosivity index value Of **333** has been determined for the construction period of **10/21/2021 - 10/03/2024**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do NOT qualify for a waiver from NPDES permitting requirements**.

ATTACHMENT K

TRANSPORTATION MANAGEMENT PLAN

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

TRANSPORTATION MANAGEMENT PLAN UPDATE

To: MATT SMITH
Project Engineer
North Region Design E2

As Signed By SMR

From: SHERI RODRIGUEZ, Chief
District 1 Office of Traffic Operations

Date: June 1, 2018
File: MEN-20 PM 33.4/34.2
EA: 01-0E0900
EFIS: 01 1300 0123 0
Calpella 2 Bridge Replacements

Project Information

Location:	In Mendocino County, near Ukiah, at Russian River OH and at Redwood Valley UC.	
Type of Work:	Replace two bridges on new alignment.	
Anticipated Traffic Control:	Reversing traffic control Intermittent closure Shoulder closure Ramp closure	
Estimated Maximum Delay:	10 minutes during reversing control 20 minutes during intermittent closure	
Peak Hour Traffic Volumes:	1300 vph	
Lane Requirement Charts Included:	Yes	
Closure During Night Hours:	Required	
Number of Working Days:	TBD	
PA&ED Date:	September 1, 2019	
RTL Date:	May 1, 2021	
District Traffic Manager/ TMP Manager:	Sheri Rodriguez	(707) 445-6377
TMP Coordinator:	Jamie Lusk	(707) 445-6419

Anticipated Traffic Impacts

Significant traffic impacts are not anticipated provided the following recommendations and requirements are incorporated into the project. In conformance with Deputy Directive-60, District Lane Closure Review Committee approval is not required for projects with anticipated traffic delay less than 30 min.

Hours of Work

- See Chart nos. 1-2 "Conventional Highway Lane Requirements" for work hour restrictions.

- See Chart no. 3 "Lane Closure Restrictions for Designated Holidays" for work day restrictions.

Public Notice

- Upon receipt of notice that the total roadway width, including paved shoulder, will be narrowed to less than 16 ft or there is a change in vertical clearance, the Resident Engineer must promptly notify the HQ District 1 Construction Liaison at (916) 322-4822 so annual permit holders can be notified of restrictions.

- The District Public Information Office, (707) 445-6444, must be contacted two weeks in advance of the start of construction.

- Each closure must be entered in the Lane Closure System (LCS; http://lcs.dot.ca.gov/lcsprod/).

  - To access the LCS you will need an account. Contact Jeannette Candalot at (707) 445-7807 to get set up with an account.

  - Every Monday by noon, submit a schedule of planned closures for the next week period. The next week period is defined as Friday midnight through the following Friday midnight.

  - Closures must be statused daily. Status closures before the first advance warning sign is placed (1097) and after the last advance warning sign is picked up (1098) or if cancelled (1022). Statusing can be accomplished through:

Status With	Day	Time	Contact Number
LCS	Any	Any	-
District 1 Dispatch	Monday-Friday	6am-6pm	(707) 441-5747
District 3 Dispatch	Monday-Friday	6pm-6am	(916) 859-7900
District 3 Dispatch	Saturday and Sunday	Any	(916) 859-7900

- Any emergency service agency whose ability to respond to incidents will be affected by any lane closure must be notified prior to that closure.

- Work must be coordinated with the local busing system to minimize impact on their bus schedules.

- The Resident Engineer must provide information to residents and businesses before and during project work that may represent a negative impact on commerce and travel surrounding the zone of construction. Funding must be included in supplemental funds for public information (Item 066063 Traffic Management Plan – Public Information; consider $5,000).

- Consider incorporating supplemental funds into the cost estimate for this project for an open house public meeting prior to the construction phase.

- Traffic Census Station 17210 is located near post mile 33.3. Provide Traffic Census representatives 14 days' notice before the pre-construction and post-construction operational status checks. Contact Traffic Census at (707) 496-0553.

Bicyclist Accommodation

- Bicyclists must be accommodated through the work zone. Signage must be used to alert vehicles of the possible presence of bicyclists.

    - During reversing traffic control using flaggers, bicyclists must be instructed to join the vehicle queue.

Traffic Control

- One reversing traffic control lane closure is allowed within the project limits.

- The W11-1 vehicular traffic sign (bicycle symbol) and the W16-1 supplemental plaque (SHARE THE ROAD) must be placed prior to the construction zone.

- Reversing traffic control must be in conformance with the attached traffic handling plan dated May 1, 2018 "Typical Lane Closure with Reversible Control."

    - A minimum of 14 ft of paved roadway must be open for use by public traffic.

    - The maximum length of a reversing traffic control lane closure is 2,000 ft.

    - Advance flaggers are required during daylight hours. Full matrix PCMS boards with the capability of displaying a flagger symbol must be used during hours of darkness when advance flaggers are not present.

- During k-rail placement and tie-in construction operations, public traffic may be stopped in both directions for periods not to exceed 5 min. After each closure, all accumulated traffic must be allowed to pass through the work zone before another closure is made.

- Work that occurs outside of a traffic lane but within 6 ft of the edge of traveled way on a 2-lane facility must require a shoulder closure. Close the shoulder area with cones or portable delineators. Place the cones or delineators on a taper in advance of work, parked vehicles or equipment and along the edge of the traveled way at 25 ft intervals to a point not less than 25 ft past the last vehicle or piece of equipment. Use at least 9 cones or delineators for the taper. Use a W20-1, "Road Work Ahead," W21-5b, "Right/Left Shoulder Closed Ahead," or C24(CA), "Shoulder Work Ahead," sign mounted on a crashworthy, portable sign support with flags. The sign must be at least 48 by 48 inches in size.

- Work that requires a U.S. 101 NB to S.R. 20 EB ramp closure must be in conformance with the Caltrans Revised Standard Plan RSP T14, "TRAFFIC CONTROL SYSTEM FOR RAMP CLOSURE."

  - Advance warning signs advising the hours of closure must be required 7 days prior to the ramp closure.

  - No two off or on-ramps in the same interchange can be closed at the same time.

  - In the event the ramp is closed, the designer must provide a traffic handling plan to detour traffic to the West Rd interchange where they will be directed to re-enter U.S. 101 southbound.

- A minimum of one PCMS in advance of each end of the construction site must be required to notify the public of the closures related to this project.

  - Start displaying the message on the PCMS 15 minutes before closing the lane.

  - The minimum height of the PCMS must be 7 ft.

- Access to businesses, side roads and residences must be maintained at all times. When work or traffic queues extend through an intersection, additional traffic control will be required at the intersection.

- COZEEP is recommended for this project based on risk factors associated with this project and the COZEEP Guidelines (CA DOT Construction Manual Section 2-215C). The associated risk factors include: workers exposed to traffic,

night construction activities, end of queue management, speed management, and significant truck volumes.

Contingency Plan

The contractor must prepare a contingency plan for reopening closures to public traffic. The Contractor must submit the contingency plan for a given operation to the Engineer within one working day of the Engineer's request. Contingencies for unanticipated delays, emergencies, etc. must be coordinated between the RE and the Contractor.

SMR/pwh

CC: 1)SMRodriguez, 2)JCandalot
CNaegele - Unico
CGhidinelli
CMcKeon
JMcGee
Traffic Safety
PIO

Chart no. 1
Complete Ramp Closure Hours

County: Mendocino	Route/Direction: 101 NB	PM: 33.66

Closure limits: US 101 NB Off to SR 20 EB

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	C	C	C	C	C	C	C													C	C	C	C	C	
Fridays	C	C	C	C	C	C	C																		
Saturdays																									
Sundays																				C	C	C	C	C	

Legend:
C Ramp may be closed completely

No ramp closures allowed.

REMARKS:
1. Keep the full width of the ramp traveled way open for use by traffic on designated holidays and special days.
2. A ramp detour plan must be approved prior to the closure of any ramps.

Chart no. 2
Conventional Highway Lane Requirements

County: Mendocino	Route/Direction: 20 EB/WB	PM: 33.4/34.2

Closure limits:

From hour to hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	R	R	R	R	R	R	R													R	R	R	R	R	
Fridays	R	R	R	R	R	R	R																		
Saturdays																									
Sundays																				R	R	R	R	R	

Legend:

R	Provide at least one 14 ft through traffic lane for use by both directions of travel (Reversing Control). The maximum closure length is 2,000 ft.
	No lane and/or shoulder closures allowed.

REMARKS: Keep the full width of the traveled way open to traffic when no active construction activities are occurring in the traveled way or within 6 ft of the traveled way.

Chart no. 3: Lane Closure Restrictions for Designated Holidays

Thu	Fri	Sat	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Sun
xx	**H** xx									
	xx	**H** xx								
	xx		**H** xx	xx						
	xx			**H** xx						
				xx	**H** xx					
					xx	**H** xx				
						xx	**H** xx	xx		

Legend:

	Refer to lane requirement charts
xx	The full width of the traveled way must be open for use by traffic.
H	Designated Holiday

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
01	x	x	x		

Sheri M Rodriguez 05-01-18
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 PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
SHERI M. RODRIGUEZ
No. C66861
Exp. 9-30-18
CIVIL
STATE OF CALIFORNIA

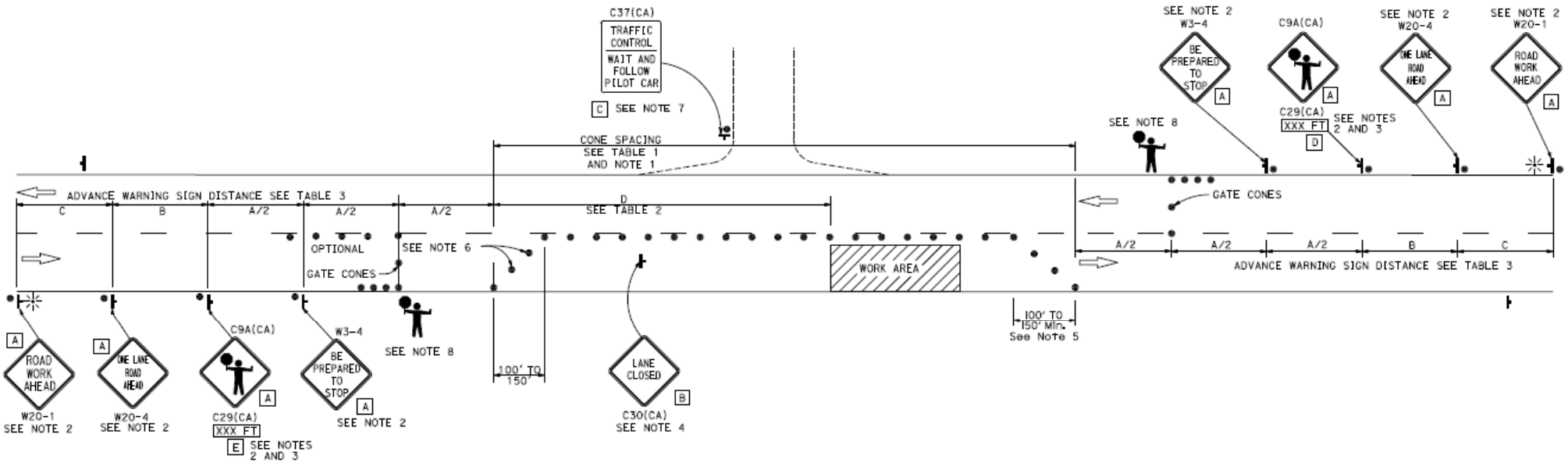
GENERAL NOTES:

SEE REVISED STANDARD PLAN RSP T9 FOR TABLES.

USE CONE SPACING X FOR TAPER SEGMENT, Y FOR TANGENT SEGMENT OR Z FOR CONFLICT SITUATIONS, AS APPROPRIATE, PER TABLE 1, UNLESS X, Y, OR Z CONE SPACING IS SHOWN ON THIS SHEET.

PROVIDE AT LEAST ONE PERSON TO CONTINUOUSLY MAINTAIN TRAFFIC CONTROL DEVICES FOR LANE CLOSURES.

TYPICAL LANE CLOSURE WITH REVERSIBLE CONTROL



NOTES:

1. PORTABLE DELINEATORS, PLACED AT ONE-HALF THE SPACING INDICATED FOR TRAFFIC CONES, MAY BE USED INSTEAD OF CONES FOR DAYTIME CLOSURES ONLY.
2. EACH ADVANCE WARNING SIGN IN EACH DIRECTION OF TRAVEL SHALL BE EQUIPPED WITH AT LEAST TWO FLAGS FOR DAYTIME CLOSURE. EACH FLAG SHALL BE AT LEAST 16" X 16" IN SIZE AND SHALL BE ORANGE OR FLUORESCENT RED-ORANGE IN COLOR. FLASHING BEACONS SHALL BE PLACED AT THE LOCATIONS INDICATED FOR LANE CLOSURE DURING HOURS OF DARKNESS.
3. AN OPTIONAL C29(CA) SIGN MAY BE PLACED BELOW THE C9A(CA) SIGN.
4. PLACE C30(CA) "LANE CLOSED" SIGN AT 500' TO 1000' INTERVALS THROUGHOUT EXTENDED WORK AREAS. THEY ARE OPTIONAL IF THE WORK AREA IS VISIBLE FROM THE FLAGGER STATION.
5. LENGHT MAY BE REDUCED BY THE ENGINEER TO ADDRESS SITE CONDITIONS.
6. EITHER TRAFFIC CONES OR BARRICADES SHALL BE PLACED ON THE TAPER. BARRICADES SHALL BE TYPE I, II, OR III.
7. WHEN A PILOT CAR IS USED, PLACE A C37(CA) "TRAFFIC CONTROL-WAIT AND FOLLOW PILOT CAR" SIGN WITH BLACK LEGEND ON WHITE BACKGROUND AT ALL INTERSECTIONS, DRIVEWAYS AND ALLEYS WITHOUT A FLAGGER WITHIN TRAFFIC CONTROL AREA.
8. ADDITIONAL ADVANCE FLAGGERS MAY BE REQUIRED. DURING HOURS OF DARKNESS A FULL MATRIX PCMS BOARD CAPABLE OF DISPLAYING A FLAGGER SYMBOL SHALL BE USED IF ADVANCE FLAGGERS ARE NOT PRESENT.

SIGN PANEL SIZE (Min)

A	48" x 48"
B	30" x 30"
C	36" x 42"
D	20" x 7"

LEGEND

- TRAFFIC CONE
- TEMPORARY TRAFFIC CONTROL SIGN
- PORTABLE FLASHING BEACON
- FLAGGER

TRAFFIC HANDLING PLAN

NO SCALE

TH-1

APPROVED FOR TRAFFIC HANDLING WORK ONLY

ATTACHMENT L
MATERIALS
RECOMMENDATION

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Making Conservation a California Way of Life.

To: Matt Smith, Project Engineer
Design E2

Date: August 8, 2018

File: 01-MEN-20-PM33.3/34.4
01-0E0900
EFIS: 01-1300-0123
Calpella 2 Bridge Replacements

From: Abnish Rajbanshi, PE
Materials Engineering
North Region, Eureka Materials Lab

Subject: **Materials Recommendation**

In response to your request dated June 11, 2018, following materials recommendation is provided. The Department's Document Retrieval System (DRS) and the Materials Laboratory's project history files were reviewed for previous work within and adjacent to this project's limit. A field review was not conducted due to response time requested and phase of this project. The structural section recommended herein are calculated based on the historic R-values within the vicinity of this project's Limit.

Existing Structural Section Thickness

A review of the Materials Laboratory Structural Section History Files and the Department's Document Retrieval System (DRS) within the project limits indicate an existing structural section consisting; 0.68' to 0.76' of hot mix asphalt (HMA), over 0.50' cement treated base (CTB), over 0.17' of Class II base, over 1.00' of select material, over 1.00' of aggregate subbase. The existing pavement surface consists of 0.10' of hot mix asphalt -Type A (HMA-A) placed under contract 01-0G0904 in 2016.

New Structural Sections

Traveled Way Route 20 - 20 Year Design Life - (For Alternative 1, Alternative 2a, and Alternative 2b)

The crumb rubber usage in hot mix asphalt pavements memorandum signed by Karla Sutliff and Steve Takigawa dated February 10, 2015 lists rubberized hot mix asphalt (RHMA) as the default pavement when hot mix asphalt quantities are greater than 1000 tons. The calculated quantities of rubberized hot mix asphalt to be used in this project is more than 1000 tons. For this reason, maximum allowable thickness of 0.20 feet of rubberized hot mix asphalt- gap graded (RHMA-G) is recommended in combination with hot mix asphalt -type A (HMA-A) for all HMA placed on this project, excluding Rd. 144 intersection area; entrance and exit ramps, gore area and Rd.144 approach. If in case for any reason such as staged construction etc, the calculated quantity of RHMA to be placed comes out to be less than 1000 tons, then equal thickness of HMA-A can be used instead of RHMA for the structural section recommended in this report.

The following equivalent structural sections are recommended for any areas where new structural sections are needed for mainline traffic. Calculations are based on an R-value of 25 and a 20 year traffic index of 11.

Alternative	RHMA-G	HMA-A	AB (Cl 2)	AS (Cl 2)
1	0.20'	0.35'	0.90'	0.70'
2 (preferred)	0.20'	0.35'	1.55'	-----
3	0.20'	1.00'	-----	-----

Shoulder Route 20– 20 Year Design Life- (For Alternative 1, Alternative 2a, and Alternative 2b)

The following equivalent structural sections are recommended for any areas where new structural sections are needed for shoulders. Calculations are based on an R-value of 25 and 2% of the projected 20 year mainline traffic index for shoulders of 7.

Alternative	RHMA-G	HMA-A	AB (Cl 2)
1 (Preferred)	0.20'	0.15'	0.85'
2	0.20'	0.55'	-----

Traveled Way and Shoulders- 20 year design Life – Route 144/Entrance and Exit Ramps/ Gore Area

The following equivalent structural sections are recommended for any areas where new structural sections are needed for mainline traffic. Calculations are based on an R-value of 25 and a 20 year traffic index of 8 considered for light traffic ramps from Table 613.5A of Highway Design Manual.

Alternative	HMA-A	AB (Cl 2)
1 (Preferred)	0.40'	1.00'
2	0.85'	-----

Notes:

- The alternative to use full depth HMA should be considered for special situations only. This would include, but not limited to, narrow widening, temporary structural sections, or fill over shallow utilities.
- Per Section 613.5(2)(b) "Shoulders" of the Highway Design Manual, new or reconstructed shoulders shall be designed using the same traffic index as the adjacent lane when the shoulder is to be 5' or less in width. For shoulders greater than 5', it may be reduced in thickness, but shall match the traffic index of the adjacent lane for the first 2' on outside shoulders and 1' on inside shoulders measured from the edge of traveled way. At the designer's option and for ease of construction and constructability, you may elect to match the adjacent traveled way structural section thickness for the full width of the shoulder.
- Imported borrow used to construct embankment, must meet a minimum R-value of 25 when placed within 4 feet of finished grade.
- Per section 504.2 (2) of Highway Design Manual, contrasting surface treatment beyond the gore pavement should be provided on both entrance and exit ramps. Please refer to Figure 504.2A, and 504.2B of Highway Design Manual for details.

Material Specifications

- Hot Mix Asphalt (HMA): Shall be HMA-A conforming to Section 39 of the Standard Specifications. The estimated unit weight of HMA-A is 155 lbs/ft^3.
- Rubberized Hot Mix Asphalt- Gap Graded (RHMA-G): Shall confirm to section 39-2.03 of 2015 Standard Specifications. The estimated unit weight of RHMA-G is 155 lbs/ft^3
- Asphalt Binder: Shall be PG 64-28m for HMA-A, and PG 64-16 for RHMA-G. The estimated percentage of asphalt binder is 5.6% for HMA-A and 7.7% for RHMA-G.
- Paint Binder (Tack Coat): Shall conform to Section 39 of the Standard Specifications.
- Aggregate Base (AB): Shall be Class 2, conforming to Section 26 of the Standard Specifications and the NSSP for aggregate base within District 1.
- Aggregate Subbase (AS): Shall be Class 2, conforming to Section 25 of the Standard Specifications.

- Shoulder Backing: Shall conform to the requirements within the Standard Special Provisions for shoulder backing with District1. The minimum loose unit weight per CTM-212 (Rodding Method) shall be 105 lb./ft^3.

If you have any questions regarding this report, please call me at (707)-445-6386

Attachments:

AR: ar
cc: Matt Smith
Lab Files

ATTACHMENT M
ASSET MANAGEMENT

SHOPP Project - Accomplishment - Performance Measures - Benefits

District: 01 **Tool ID:** 13544 **Project ID:** 0113000123 **EA:** 0E090 **Co-Rte-PM:** MEN-020-33.63/33.63 (Primary Location)

Res In PID WP: 03/27/18 **Project Manager:** Cathy McKeon

Save to Excel

☑ Bridge ☑ Pavement ☑ Drainage ☐ Facilities ☑ Safety ☐ Mobility ☐ Roadside ☑ Complete Streets ☐ Sustainability /Climate Change ☐ Advance Mitigation/Mitigation ☐ Major Damage ☐ Green-house Gases ☐ Relinquishment

Performance & Accomplishments (PPC)

	Activity Detail	Performance Objective	Unit of Measurement	Quantity	Assets in Good Cond	Assets in Fair Cond	Assets in Poor Cond	New Asset Added	Comment
1	Bridge Replacement/New Construction (201.110, .111, .113, .322)	Bridge Health	SF	49623.0			19967.0	29656.0	
2		Bridge Scour Mitigation				15844.0			
3		Bridge Seismic Restoration			4123.0		15844.0		
4		Bridge Goods Movement Upgrades			19967.0				
5	Fish Passage	No Performance Objective in the SHSMP	Yes/No	No					No
6	Number of Bridges	No Performance Objective in the SHSMP	EA	2.0					
7	Other Pavement Activity	No Performance Objective in the SHSMP	-	1.2			0.9	0.3	0.3 miles of new pavement, 0.9 miles of existing mainline removal
8	Headwall/Endwall (201.151)	No Performance Objective in the SHSMP	EA	1.0				1.0	
9	Energy Disipation & other Element {RSP,DI, FES etc.} (201.151)	No Performance Objective in the SHSMP	EA	17.0			5.0	12.0	5 DI modifications, 8 OSDs, 2 REDs, 24CY RSP, concrete channel lining
10	New Culvert	No Performance Objective in the SHSMP	EA	1.0				1.0	Approx. PM33.96
11	New Culvert	Drainage System Restoration	LF	230.0				230.0	
12	Other Drainage Activity	No Performance Objective in the SHSMP	-	6.0				6.0	
13	Drainage Improvements (201.010, .015)	No Performance Objective in the SHSMP	EA	1.0				1.0	2325LF dike
14	Guard Rail (201.010, .015)	No Performance Objective in the SHSMP	LF	600.0				600.0	MGS 7' posts with new bridge (8 WB-31s and 8 in-line terminal systems)
15	Rumble Strips (201.010, .015)	No Performance Objective in the SHSMP	LF	5000.0				5000.0	
16	Signing (201.010, .015)	No Performance Objective in the SHSMP	EA	27.0			27.0		19 one post signs, 6 two post signs, Also 400 SQFT of sign panels
17	Bridge Access for pedestrians and bicyclists (201.999)	No Performance Objective in the SHSMP	EA	2.0			2.0		
18	Is any location within the project limits Ped/Bike accessible?	No Performance Objective in the SHSMP	Yes/No	Yes					Yes

ATTACHMENT N

LANDSCAPE ARCHITECTURE ASSESSMENT

State of California **Business, Transportation and Housing Agency**

Memorandum

To: Matt Smith, Project Engineer

Date: April 2, 2020

File: 01-MEN-20
PM 33.3/34.2
EA: 01-0E090
EFIS: 013000123
Calpella Bridges

From: Department of Transportation
North Region Office of Landscape Architecture, Eureka

Subject: Updated Cost Estimate for planting, temporary irrigation, 3 years of plant establishment, prepare planting areas, and erosion control.

Please include the items below in your Estimate.

Engineers Estimate

Item Code	Description	Unit	Qty	Price	Amount
	Highway Planting Items				
200002	Roadside Clearing	LS	1	7500.00	$ 7,500.00
202006	Soil Amendment	CY	20	185.00	$ 3,700.00
202038	Packet Fertilizer	EA	2210	2.10	$ 4,641.00
204035	Plant (Group A)	EA	3325	55.00	$ 182,875.00
204099	Plant Establishment	LS	1	200,000.00	$ 200,000.00
205035	Wood Mulch	CY	110	200.00	$ 22,000.00
205051	Foliage Protectors	EA	500	30.00	$ 15,000.00
208004A	Temporary Irrigation	LS	1	100,000.00	$ 100,000.00
	Erosion Control Items				
210010	Move-In/Move-Out (Erosion Control)	EA	6	1000.00	$ 6000.00
210120	Duff	ACRE	0.5	7000.00	$ 3,500.00
210270	RECP (Netting)	SQFT	6000	1.00	$ 6,000.00
210300	Hydromulch	SQFT	210,000	0.17	$ 35,700.00
210360	Compost Sock	LF	12,000	10.50	$ 126,000.00
210430	Hydroseed	SQFT	210,000	0.30	$ 63,000.00
210445A	Imported Biofiltration Soil	CY	135	130.00	$ 17,550.00
210510A	Rip Soil	ACRE	1.6	3000.00	$ 4,800.00
210610	Compost (CY)	CY	200	100.00	$ 20,000.00
210630	Incorporate Materials	SQFT	21,700	0.40	$ 8,680.00

Plant Establishment covers a 3 year period.

ATTACHMENT O

PROGRAMMING SHEET

Programming Sheet with Risk and OE

AMS ID: 0113000123 EA: 01-0E090 COUNTY: ROUTE: 020 POSTMILE: 33.3/34.4

Project Manager:	MCKEON, CATHY ANN	PM Assistant:	LAW, REBECCA L	Project Nickname:	Calpella 2 Bridge Replacements		
Project Description - Long:	IN MENDOCINO COUNTY NEAR UKIAH FROM NORTH CALPELLA OVERCROSSING TO 0.5 MILE EAST OF COUNTY ROAD 144						
Work Description - Long:	REPLACE TWO BRIDGES						
PPNO:	4587	Program:	shopp	RPT:	No	Funding	No
PROGRAM YR:	2021	Working Days:					
Open for Time:	Yes	Subprogram:	Bridge Rail Replacement and	CT Status:	APL	RMP:	
RMP Date:							
10 Yr SHOPP:	No	AADD:	Yes	Dist	SHOPP MAJOR	FED Aid Eligible:	YES

MS	MS Description	MS Date	
M000	ID NEED	05/28/2013	(A)
M010	APPROVE PID	05/22/2015	(A)
M015	PROG PROJ	03/16/2016	(A)
M020	BEGIN ENVIRO	11/01/2016	(A)
M040	BEGIN PROJ	06/27/2016	(A)
M120	CIRC DPR & DED EXT	02/14/2020	(A)
M200	PA&ED	02/01/2020	(T)
M221	RECEIVE COMPLETE	08/01/2019	(A)
M224	R/W REQTS	10/04/2019	(A)
M225	REGULAR R/W	01/29/2020	(A)
M275	GENERAL PLANS	09/18/2020	(T)
M300	CIRC PLANS IN DIST	01/11/2021	(T)
M377	PS&E TO DOE	04/05/2021	(T)
M378	DRAFT STRUC PS&E	12/11/2020	(T)
M380	PROJ PS&E	05/12/2021	(T)
M410	R/W CERT	06/01/2021	(T)
M430	DCR	05/17/2021	(T)
M460	RTL	06/15/2021	(T)
M480	HQ ADVERT	06/28/2021	(T)
M495	AWARD	09/22/2021	(T)
M500	APPROVE CONTRACT	10/20/2021	(T)
M600	CONTRACT ACCEPT	10/03/2024	(T)
M700	FINAL REPORT	10/03/2025	(T)
M800	END PROJ EXP	12/28/2029	(T)
M900	FINAL PROJ	09/29/2031	(T)

Env EA, IS

Capital Cost Estimates ($k)

	Amount $k	EST Date
Roadway	14519	04/03/20
Structures	15770	04/07/20
Const Total	30,289	
ROW	1947	09/24/19
Total	32,236	

Risk & Operating Expense Budget

	Risk Bud. ($k)	OE ($k)
Phase 0 - PAED	$0	$0
Phase 1 - PS&E	$0	$0
Phase 2 - RW	$0	$0
Phase 3 - Con	$0	$0
Phase 4 - Con Cap	$0	$0
Phase 9 - RW Cap	$0	$0
Total	$0	$0

Note: For Phase 0, 1, 2 and 3, only enter Risk Budget amount if not already entered in PRSM

Funding Info ($k)

Fund Source	PA&ED	PS&E	ROW	CON	ROW CAP	CON CAP
2010201.110	3423.7	3129	301	7934	0	0
4050201.110	0	0	0	0	0	0
2020201.110	0	0	0	0	4001	29036
Total:	**3,423.7**	**3,129**	**301**	**7,934**	**4,001**	**29,036**

	Capital Cost Est.($k)
FY Mid M500-M600	2023
CC Escalation %:	3.20%
CC Escalated $:	33,291
ROW CAPITAL:	2,064
TOTAL:	35,355

PROJECT SUPPORT COSTS ($k)

Phase Esc. Rate	PRIOR ACT $	FY19/20 ETC	FY19/20 (0.00%)	FY20/21 (3.20%)	FY21/22 (3.20%)	FY22/23 (2.00%)	FY23/24 (2.00%)	Future (2.00%)	Total	Sup/Cap %
0	**2,736**		**629**	**0**	**0**	**0**	**0**	**0**	**3,365**	**9.52%**
1	**0**		**250**	**2,346**	**175**	**0**	**0**	**0**	**2,771**	**7.84%**
2	**0**		**11**	**139**	**48**	**18**	**18**	**102**	**336**	**0.95%**
3	**0**		**0**	**0**	**1,322**	**1,945**	**1,989**	**2,324**	**7,580**	**21.44%**
							TOTAL SUPPORT COSTS:		14,052	39.75%
							TOTAL PROJECT COSTS:		49,407	

PROJECT SUPPORT PYs

	Division	PRIOR ACT PYS	2020 ETC PYs	2021 ETC PYs	2022 ETC PYs	2023 ETC PYs	2024 ETC PYs	Future ETC PYs	Total ETC PYs
01	ADMN	0.13	0.14	0.02	0.01	0.00	0.00	0.01	0.31
01	MTCE	0.01	0.03	0.01	0.00	0.00	0.00	0.00	0.05
01	PPM	0.40	0.25	0.30	0.19	0.14	0.14	0.79	2.22
01	TPLN	0.02	0.01	0.03	0.00	0.00	0.00	0.00	0.06
01	TROP	0.17	0.13	0.41	0.05	0.05	0.05	0.05	0.90
01	TOTALS :	0.73	0.56	0.77	0.25	0.19	0.19	0.85	3.54
	Division	PRIOR ACT PYS	2020 ETC PYs	2021 ETC PYs	2022 ETC PYs	2023 ETC PYs	2024 ETC PYs	Future ETC PYs	Total ETC PYs
03	ENV	0.19	0.02	0.20	0.03	0.05	0.05	0.01	0.55
03	CONS	0.05	0.12	0.55	3.26	4.53	4.54	3.07	16.11
03	ENVM	4.38	0.68	1.57	0.64	0.89	0.90	3.89	12.94
03	ESRV	0.25	0.15	0.84	0.09	0.02	0.02	0.05	1.41
03	PRJD	1.69	0.63	1.61	0.23	0.13	0.13	0.62	5.04
03	RWLS	0.82	0.18	1.84	0.16	0.06	0.06	0.18	3.29
03	SURV	1.60	0.07	0.60	0.26	0.28	0.28	0.34	3.41
03	TPLN	0.03	0.00	0.01	0.00	0.00	0.00	0.01	0.05
03	TOTALS :	9.01	1.85	7.22	4.67	5.96	5.98	8.17	42.80
	Division	PRIOR ACT PYS	2020 ETC PYs	2021 ETC PYs	2022 ETC PYs	2023 ETC PYs	2024 ETC PYs	Future ETC PYs	Total ETC PYs

Programming Sheet with Risk and OE

AMS ID: 0113000123 EA: 01-0E090 COUNTY: ROUTE: 020 POSTMILE: 33.3/34.4

	Division	PRIOR ACT PYS	2020 ETC PYs	2021 ETC PYs	2022 ETC PYs	2023 ETC PYs	2024 ETC PYs	Future ETC PYs	Total ETC PYs
53	O108	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.03
53	TOTALS :	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.03
	Division	PRIOR ACT PYS	2020 ETC PYs	2021 ETC PYs	2022 ETC PYs	2023 ETC PYs	2024 ETC PYs	Future ETC PYs	Total ETC PYs
59	GS	0.73	0.68	0.68	0.10	0.12	0.12	0.04	2.46
59	METS	0.03	0.04	0.01	0.13	0.18	0.18	0.06	0.62
59	PPM	0.16	0.01	0.11	0.15	0.00	0.00	0.02	0.45
59	SCON	0.03	0.05	0.15	1.58	2.27	2.28	2.14	8.51
59	SDSN	2.62	1.09	3.05	0.31	0.25	0.25	0.11	7.68
59	SP&I	0.25	0.20	0.37	0.03	0.03	0.03	0.01	0.93
59	TOTALS :	3.82	2.07	4.37	2.30	2.85	2.86	2.38	20.65
	Division	PRIOR ACT PYS	2020 ETC PYs	2021 ETC PYs	2022 ETC PYs	2023 ETC PYs	2024 ETC PYs	Future ETC PYs	Total ETC PYs
		2.05	0.00	0.00	0.00	0.00	0.00	0.00	2.05
	TOTALS :	2.05	0.00	0.00	0.00	0.00	0.00	0.00	2.05
PROJECT TOTALS:		15.64	4.48	12.36	7.22	9.00	9.03	11.40	69.07

Comments: Capital escalation calculated by PE

ATTACHMENT P

RISK REGISTER

Risk Register for 0E090, Calpella 2 Bridge Replacements

Form v3.3 last modified 10/30/2018 CB

Risk Checkpoint:	PA&ED
Date:	4/2/2019
Project Nickname:	Calpella 2 Bridge Replacements
EA:	0E090
Co-Rt, Post Miles:	MEN 20 33.3/34.4
Project Manager:	Cathy McKeon
FY & Program (SHOPP or STIP):	2018 (SHOPP)
Capital Costs:	$28,759k
Support Costs:	$13,300k
Total Costs:	$42,059k
RTL Target:	5/1/2021

Phase	Cost Contingency Range $k			Schedule Contingency Range (Wkg Days)		
	Optimistic	PERT	Pessimistic	Optimistic	PERT	Pessimistic
0-PA&ED	$21	**$45**	$78	3	6	10
1-PS&E	$0	**$0**	$0	3	6	10
2-RW Sup	$0	**$0**	$0	0	0	0
3-Con Sup	$0	**$0**	$0	0	0	0
Support Contingency	$21	**$45**	$78	5	12	20
9-RW Cap	$0	**$0**	$0	0	0	0
4-Con Cap	$15	**$73**	$180	18	27	36
Capital Contingency	$15	**$73**	$180	18	27	36
Total Contingency	$36	**$118**	$258	23	39	56

Risk Identification								Risk Assessment			Risk Response				Quantifying "Red" (High P & I) Level Risks			
Status	ID #	Type	Category	Title	Risk Statement	Current status / assumptions	Risk Trigger	Probability (P)	Cost Impact Schedule Impact (I)	Cost Score Schedule Score (PxI)	Strategy	Response Actions	Risk Owner	Updated	Impacted Phase	Calculated Contingency	Support (hours) Capital Cost $k	Schedule (Days)
Active	1	Threat	Environmental	Construction Staging Areas	As a result of future project development to designate staging areas, locations may be identified that could require added clearances	Designated staging areas should be confined to previously disturbed or paved areas if possible.	Staging Areas with nonstandard clearances required.	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	Monitor during future project development	Design, Environ. & PM	4/8/2018	0-PA&ED Sup		O ML P	O ML P
								20%	2 - Low (<1 month)	4								
Active	2	Threat	Right of Way	Data Sheet Requirements	As a result of the R/W Data Sheet not being completed, then schedule and resource estimates would not be accurate.	Design will send a request for a R/W Data Sheet in a timely manner.	Late R/W Data Sheet Request.	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	Monitor during next phase of project development	PM & R/W	4/8/2018	2-RW Sup		O ML P	O ML P
								20%	2 - Low (<1 month)	4								
Active	3	Threat	Organizational	Community Opposition	As a result of the possibility of potential lawsuits that may challenge the project, delays to project delivery and/or start of construction may occur.	Public support for the project is currently expected.	Legal challenges	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	PM will coordinate with the local community to inform them of the purpose and need for the project to garner support.	PM/RW	4/2/2019	0-PA&ED Sup			O ML P
								20%	2 - Low (<1 month)	4								
Active	4	Opportunity	Project Management	Project Construction (probable) Detour Timing	~~As a result of the future expected complete traffic detour, impacts to the local commuters will be greatly reduced if the main closure is timed to coincide with local schools summer closures.~~	Assume that preferred project alternative will not be on the current alignment.	Main Closure does not coincide with local schools Summer Break.	3-Moderate (31-50%)	4 - Moderate ($5,521k - $11,039k	12	Avoid	Per direction of District Director offline alignment will be used for the preferred alternative to avoid use of local roads and impacts to local traffic.	Design, Environ. & PM	5/5/2018	3-Con Sup		O ML P	O ML P
								40%	4 - Moderate (1-3 months)	12					4-Con Cap		O ML P	O ML P
Active	5	Threat	Project Management	Permitting Requirements	As a result of the project location spanning both a river and Railroad tracks, Environmental and R/W permits will be required, and could require unanticipated mitigation or restrictions which could increase project capital and resource costs.	Riparian vegetation removal has been identified and will be need to be addressed. Current assumed ratios based on previous experience in the area.	Permit conditions are not as anticipated.	3-Moderate (31-50%)	4 - Moderate ($5,521k - $11,039k	12	Mitigate	Early consultation with the agencies has been conducted to find least impactful solution. Working with environmental to identify potential mitigation sites.	Environ., R/W & PM	4/2/2019	0-PA&ED Sup		O ML P	O ML P
								40%	4 - Moderate (1-3 months)	12					9-RW Cap		O ML P	O ML P
Active	6	Threat	Right of Way	Delay of Right of Way	As a result of a delay in the acquisition of RW, a delay of RW Cert may occur which would lead to a delay of RTL	Appraisal maps, COS and HMDD will be completed by M225 and requested lead time will be available to complete acquisition.	Delay in parcel acquisition	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	Coordinate with RWE for timely delivery of mapping, COS and HMDD.	ROW	5/1/2018				
								20%	2 - Low (<1 month)	4								
Active	7	Threat	Right of Way	Additional RW Required	As a result of additional right of way requirements not clearly identified in the K phase, a delay of RW Cert may occur which would lead to a delay of RTL and additional RW capital costs.	Right of way requirements will be determined prior to PAED and capital and resource costs "right sized" prior to RTL	Additional RW requirements	4-High (51-70%)	2 - Low (<$5,520k)	8	Accept	Re-sequence work to enable R/W Certification. PM will right size the project to add RW capital to address the RW needs.	ROW/PM	4/2/2019	2-RW Sup		O ML P	O ML P
								60%	2 - Low (<1 month)	8								
Active	8	Threat	Right of Way	Utility Involvement	As a result of utility conflicts not being resolved prior to RW Cert, RW Cert may be delayed which would lead to a delay in delivering RTL	Conflict maps will be provided to RW by PAED	Unresolved Utility Conflicts	2-Low (11-30%)	2 - Low (<$5,520k)	4	Accept	Mitigate delays with timely submittals and review.	ROW	5/1/2018				
								20%	2 - Low (<1 month)	4								
Active	9	Threat	Right of Way	Early RR Consultation	As a result of accelerating the bridge design to allow for early RR consultation before DED to keep the project on schedule, the PA&ED costs could	No preferred alternative has yet been determined, but southerly alignment seems	Bridge Alignment is modified after Bridge Site Submittal is	3-Moderate (31-50%)	4 - Moderate ($5,521k - $11,039k	12	Accept	Conduct early consultation with Design Liaison and with resource agencies to better scope concerns prior to BSS. Increase design efforts in PAED to allow 60%	Structures, Utilities	12/7/2017	0-PA&ED Sup		O ML P	O ML P

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					increase and the schedule be delayed if the bridge alignment is modified.	likely preferred due to traffic safety concerns.	delivered.	40%	4 - Moderate (1-3 months)	12		design to proceed for RR review.						
Active	10	Threat	Right of Way	Parcel Access	As a result of property owners not allowing access on parcels for drilling and environmental review, the soil & environmental conditions may not be known, resulting in increased costs and delays during PaED and potentially during construction.	Court order will be issued to allow drilling/environmental access on the southerly parcels prior to PSE.	If Court Order is not issued and design proceeds with assumed soil/ environmental conditions which are incorrect and need to be addressed during construction.	4-High (51-70%)	2 - Low (<$5,520k)	8	Accept	The PM is working with RW to acquire a court order to allow the drilling in PAED. If court order not issued, will proceed with soil assumptions, based on nearby drilling and provide post drilling for confirmation once parcels are acquired.	Geotech/RW /Environmental	4/2/2019	3-Con Sup		O ML P	O ML P
								60%	4 - Moderate (1-3 months)	16								
Active	11	Threat	Project Management	Condemnation	As a result of property owners not willing to sell, the project may require condemnation resulting in increased costs and delays during design.	Assume property owner is willing to sell portion of parcels and that negotiations can proceed without condemnation.	RW is notified that property owners are not willing to negotiate for purchase.	2-Low (11-30%)	2 - Low (<$5,520k)	4	Mitigate	Early discussions with the property owner to resolve conflicts. Proceed with RW negotiations preparing in advance for condemnation.	PM	4/2/2019	3-Con Sup		O ML P	O ML P
								20%	2 - Low (<1 month)	4								
Active	12	Threat	Project Management	Deck Failure	As a result of the deck being in very poor condition, a delay due to any of the risks noted for schedule could cause the deck to fail unless interim maintenance on deck is performed.	Deck maintenance project was constructed in fall 2018 and will last for 5 years. Assume that completion of project will occur before another deck maintenance project is required.	The Deck fails.	2-Low (11-30%)	4 - Moderate ($5,521k - $11,039k	8	Mitigate	This risk remains as a low risk in the event there are further delays to the project. The PDT is being aggressive in tracking and coordinating project so that it remains on current schedule.	PM	4/2/2019	3-Con Sup		O ML P	O ML P
								20%	4 - Moderate (1-3 months)	8					4-Con Cap		O ML P	O ML P
Active	13	Threat	Design	Alignment Revision	As a result of not clearly identifying the location of the off-alignment alternative prior to PAED, and potentially as a result of the Value Analysis, an additional alignment alternative may be needed to address geometric or environmental concerns which could lead to increased support and capital costs and delay the project.	Southerly Alignment was added and is technically preferred alignment and will be the ultimate alignment for the project.	If the technically preferred alignment is not selected or is altered significantly.	4-High (51-70%)	8 - High ($11,040k - $22,078k)	32	Accept	Added southerly alignment to address safety concerns. The southerly alignment was selected as technically preferred. Proceeding with drilling along this alignment at risk. Will coordinate early with program management and traffic safety. Combine resources if possible for safety project. Minimize delays by coordinating closely with functional units.	PM	5/30/2018	0-PA&ED Sup	$40k	O 250 hours ML 500 hours P 1,000 hours PERT 542 hours	O ML P
								60%	8 - High (3-6 months)	32					4-Con Cap	$73k 27	O $25k ML $100k P $300k PERT $121k	O 30 ML 45 P 60 PERT 45
Active	14	Threat	Environmental	Wetland Impacts	As a result of wetlands being impacted, mitigation may be necessary that would increase the resource and capital costs and delay the project.	Assume wetlands will be avoided or can be adequately mitigated if avoidance is not feasible.	Wetlands are confirmed along the selected alignment.	3-Moderate (31-50%)	4 - Moderate ($5,521k - $11,039k	12	Avoid	Delineate wetlands as soon as possible and evaluate impacts. Eliminate unnecessary cuts in area of wetlands and/or select alternative alignments. If unable to avoid, environmental will pursue advanced mitigation if available to minimize	PM	5/30/2018	0-PA&ED Sup		O ML P	O ML P
								40%	4 - Moderate (1-3 months)	12					4-Con Cap		O ML P	O ML P
Active	15	Threat	Environmental	Geotechnical Drilling Impact	As a result of the lack of known geotechnical drilling locations and proceeding with PAED, future unknown impacts may occur in the design phase for geotechnical drilling, which may require additional environmental clearances, permits or mitigation which would lead to potential additional resource and capital cost and project delays.	Drilling impacts are being incorporated into the permits.	If additional impacts are encountered during drilling.	3-Moderate (31-50%)	4 - Moderate ($5,521k - $11,039k	12	Avoid	Review drilling locations in field with environmental/geotechnical staff in advance of and just prior to drilling to avoid sensitive areas where possible.	Environmental/ Geotech	4/2/2019	0-PA&ED Sup		O ML P	O ML P
								40%	4 - Moderate (1-3 months)	12					4-Con Cap		O ML P	O ML P
Active	16	Threat	Rail Road	Railroad Transfer	As a result of the railroad ownership & management being in a state of flux the process and documentation for approval is unknown and may result in significant delays in the project which could result in schedule delays, resource cost increases and funding failure if the project is moved into a funding year that is not supported by the D1 10 year plan.	It is assumed that the RR will be taken over by SMARTS train (most restrictive).	If the submittal of the RR is rejected, delayed or requires significant alterations.	5-Very High (>70%)	1 - Very Low (Insignificant)	5	Escalate	PM will elevate the issue to management and coordinate with the RR planning liaison to keep apprised of development. Preparing and submitting the RR packet in advance of PAED based on technical alignment.	RR Coordinator	4/2/2019	0-PA&ED Sup	$5k 6	O 30 hours ML 45 hours P 60 hours PERT 45 hours	O 3 ML 6 P 12 PERT 7
								85%	8 - High (3-6 months)	40					1-PS&E Sup	6	O ML P	O 3 ML 6 P 12 PERT 7