

INFORMATION HANDOUT

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PERMITS

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD, 401 PERMIT

UNITED STATES ARMY CORPS OF ENGINEERS, NON-REPORTING NATIONWIDE 404
PERMIT

US FISH AND WILDLIFE SERVICE, BIOLOGICAL OPINION

NO. 81420-2011-F-0821-3

US FISH AND WILDLIFE SERVICE, AMENDED BIOLOGICAL OPINION

NO. 81420-2011-F-0821-R001-2

CALIFORNIA DEPARTMENT OF FISH AND GAME NOTIFICATION

NO. 1600-2013-0453-R3

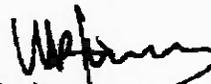
Memorandum

*Flex your power!
Be energy efficient!*

To: STEWART LEE
District Branch Chief
Office of Design SHOPP

Date: August 3, 2011
File: 04-Nap-29-PM 47.0/47.2
04-4A090K (04-0000-11C4)
Bridge Replacement

Attn: Jason Phoa

From: KAI HEUNG, P.E. 
Materials Design Engineer
Engineering Services I - Materials B



Subject: Preliminary Materials Recommendations for Project Report (PR) Preparation

In response to your request dated July 13, 2011, this memo provides our preliminary materials recommendations for PR preparation for the project referenced above. Previously, we provided our recommendations to the Office of Advance Planning in a memo dated May 12, 2009.

We understand that this project proposes to replace the existing Troutdale Creek Bridge from Stations 76 + 65.91 to 77 + 15.91 and to construct new pavement for the bridge approaches from Stations 74 + 20.00 to 76 + 65.91 and 77 + 15.91 to 82 + 44.00.

EXISTING FACILITY

As stated in the May 12, 2009 memo, Route 29 within the project limits is a 2-lane undivided AC paved roadway. Our office records (Memo Dated: November 21, 1994, File: 4-Nap-29-PM 39.5/48.58, EA 4-910230) indicate that this portion of Route 29 was constructed between 1922 and 1923 and resurfaced with AC several times thereafter. However, any information about the existing pavement structural section is neither available in our records nor shown on the available as-built plans.

RECOMMENDATIONS

1. Using a 20-year design life Traffic Index (TI) of 8.5 (provided in a memo dated February 13, 2007 by Advanced Planning/Modeling and Traffic Forecasting - District 4), and an assumed R-Value of 15 for the basement soils, we recommend the following pavement structure section alternatives for Life Cycle Cost Analysis¹

¹For LCCA Procedures Manual, please refer to:
http://www.dot.ca.gov/hq/maint/Pavement/Offices/Pavement_Engineering/PDF/LCCA_Manual_09_01_2010_Final.pdf

Stewart Lee
August 3, 2011
Attn: Jason Phoen
Page 2

- a. 1.05' HMA (A)
- b. 0.20' RHMA (G)/0.85' HMA (A)
- c. 0.40' HMA (A)/0.70' AB (3)/0.75' AS(4)

Use New Construction, Flexible (20-yr design) in Table 1, and Maintenance and Rehabilitation Schedule in Table F-4(a) and F-4(c) of the LCCA Procedures Manual.

2. Based on the results of the LCCA, please use the most appropriate alternative for cost estimate in the PR. The TI and R-Value should also be shown on the Typical Cross Sections are.
3. Please complete the attached Pavement Strategy Checklist and include it in the PR.

If you have any question, please contact Kai Heung at 622.5772.

C: Daily File
Route File

Attachment: Pavement Strategy Checklist

K Heung/B:4A090K-3

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. BRIAN MORI
Chief, Bridge Design Branch 8
Office of Structure Design-West

Date: January 22, 2014

Attention: Mary Beall

File: 04-NAP-29 PM 47.11
04-4A0901
Efis 0400001104
Troutdale Creek Bridge
(Replacement)

From:  MOHAMMAD DEHGHAN/ S. AWAD
Transportation Engineers
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

 HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject : Final Foundation Report (REVISED FOR SCCOUR)

This Report is in response to your request dated 5/03/12, for final foundation recommendations for the proposed Troutdale Creek Bridge Replacement, located on Route 29 (PM 47.11) in Napa County, figure 1 shows its approximate location. This Report supersedes the previous report dated April 26, 2012.

1. SCOPE OF WORK

The following tasks were performed for the preparation of this Report:

- Review of Bridge Inspection Reports and As-Built Foundation Data;
- Field exploration including drilling 2 geotechnical borings;
- Laboratory sample tests (soil corrosion testing);
- Foundation design analysis; and
- Preparation of this Report.

2. PROJECT DESCRIPTION

Troutdale Creek Bridge on State Route (SR) 29 in Napa County is a two-lane reinforced concrete bridge originally built in 1923. It was widened in 1950 to the current configuration, approximately total 31-ft wide and 26-ft long, and consisted of single span slab with wing abutment on spread footings. The existing route is classified as mountainous conventional rural highway. Within the project limits, SR 29 has nonstandard horizontal alignment and sight distance. The 1:2 to 2:1 side slopes are covered with densely populated trees.

MR. BRIAN MORI
Attn: Mary Beall
July 30, 2013
Page 2

The proposed bridge structure is a PC/PS I-girder. The proposed bridge length is 60 feet, the width is 54'-6", and depth is 3'-8"; the proposed bridge railing would be Type 736 and with the pavement superelevated at 8%.

The roadway will be widened on the outside to conform to the new bridge, shifting alignment generally to the east of the existing centerline. The existing junction of the roadway with the bridge is 31 ft that will be widened to 48 ft and then it will be tapered down to 32 ft to conform to the existing roadway.

The existing roadways at both ends of the current bridge approaches will be resurfaced to conform to the new bridge. The proposed radius of 165 feet corresponds to a design speed of 22 mph, and the current warning speed at the bridge is 20 mph.

3. EXCEPTION TO POLICY

There is no known exception to Department policy relating to the investigation or design of the proposed structures.

4. FIELD INVESTIGATION AND TESTING PROGRAM

A total of two geotechnical exploratory borings were drilled to investigate subsurface soil conditions. All two borings were rotary wash borings. Table 1 lists depths of these borings and the dates they were drilled.

All samples were visually identified and recorded in the field log using standard method. For all borings, Standard Penetration Tests (SPT) were performed at 5-foot interval. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. Further, for rock samples, Rock Quality Determination (RQD) and percent of sample recovery for each run were recorded.

Table 1. Summary of Field Borings

Boring ID	Surface Elev. (ft)	Total Depth (ft)	Date of completion	Groundwater Depth (ft)
RC-12-005	1,715.89	90	7-31-12	Not measured
RC-12-006	1727.41	88	9-18/19-12	Not measured

5. SITE GEOLOGY AND SUBSURFACE CONDITIONS

Topography

The project lies in the central part of the Mayacmas Mountain range between northern Napa Valley on the west and Pope Valley to the east. The chain runs roughly northwest-southeast and its highest peak, Cobb Mountain, (4,724 feet), is about 14 miles to the north, and Mount Saint Helena (4,343 ft) is just west of the project area. Troutdale Creek Bridge spans Troutdale Creek at a creek elevation of about 1,697 feet with the traveled way at an elevation of about 1,722 feet. The difference in elevation between the western and eastern abutment is less than 2 feet, with the west being slightly higher. Troutdale Creek originates on the eastern slopes of Mount Saint Helena and flows east/southeast before joining Saint Helena Creek and flowing north to Putah Creek and the Central Valley to the east. Upstream of the location of the bridge, Troutdale Creek has incised a relatively steep channel suggesting seasonal flows could be swift. Beyond the bridge, Troutdale Creek flows through a narrow, relatively flat unnamed valley where it joins several unnamed streams and Van Ness Creek to form St. Helena Creek.

Regional Geology

Located within the Coast Range geomorphic province of California, the geology of the region consists of northwest-trending ridges, gently sloping hills, intermontane valleys, and large elongated depressions. The San Andreas fault system, the most prominent geologic feature in the area, includes the San Andreas fault as well as numerous splays, including the Rodgers Creek and Maacama faults in the north bay, which together take up strain between the northward migrating Pacific plate and the southward (relatively) moving North American plate. The major faults within the system are predominantly right-lateral, strike-slip faults with some compressional component, and these act together to form the prominent ridges and valleys. The San Francisco Bay, a partially filled northwest-trending depression extending from the Santa Clara Valley in the south to the Petaluma Valley in the north, is a direct result of these fault interactions.

Site Geology

Troutdale Creek Bridge lies at the end of a narrow valley incised through the contact of two geologic units: Rhyolite flows and Tuff Breccia of the Tertiary Sonoma Volcanics. These units

MR. BRIAN MORI
Attn: Mary Beall
July 30, 2013
Page 4

form the resistant slopes and ridges in the immediate vicinity of the bridge, while the low-lying areas southeast of the bridge contain Quaternary landslide debris. Based on borings taken from the vicinity of the new bridge, the subsurface consists of varying amounts of sedimentary rocks and minor volcanic, the former of which are likely volcanoclastic material thought to be sediments. Soils, when present over bedrock, are

thin (less than 20') and consist of sandy lean clays with or without gravel. Groundwater was not measured in the borings but can be expected to be at or near the stream elevation within the vicinity of the bridge.

Subsurface Conditions

At boring RC-12-005, the subsurface soil consists of Sedimentary Rock, soft to hard intensely fractured, except for the top 5 feet which contains some vegetation roots.

At boring RC-12-006, the subsurface soil consists of Sedimentary Rock, soft to hard intensely fractured interlayered with very hard Igneous Rock. The top 5 feet of this boring consist of Sandy Lean Clay with Gravel mixed with vegetation roots.

See Exhibit A.

Groundwater

Groundwater was not measured, however, the groundwater level is expected to be near the creek level and fluctuate with the creek flow line elevation.

6. SCOUR EVALUATION

During our visit, we did observe the reported evidence of scour and related distress to the existing bridge. Per Structure's Hydraulics the top of the Abutment 1 footing should be placed at or below elevation 1698 feet and the top of the Abutment 2 footing should be placed at or below elevation 1696.33.

7. CORROSION EVALUATION

MR. BRIAN MORI
Attn: Mary Beall
July 30, 2013
Page 5

Corrosion studies were conducted in accordance with the requirements of California Test Method No. 643. For structural elements, the Department considers a site to be corrosive if one or more of the following conditions exist for the representative soil and/or water samples taken at the site:

Chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater, or the pH is 5.5 or less.

The following table provides the corrosion test summary:

Table 3 - Summary of Corrosion Test for bridge replacement

<i>Boring</i>	<i>Sample Depth</i>	<i>Resistivity (Ohm-Cm)</i>	<i>pH</i>	<i>Chloride Content (ppm)</i>	<i>Sulfate Content (ppm)</i>
RC-12-005	15-25	563	3.2	5.9	4000

Based on the RC-12-005 test result, the site should be considered corrosive and all concrete reinforcing shall have a minimum concrete cover of 3 inches in accordance with Section 5 Concrete Structures of California Amendments (to the AASHTO LRFD Bridge Design Specifications - Fourth Edition) Table 5.12.3-1 Minimum Concrete Cover (inches) for 75-year Design Life.

8. SEISMIC RECOMMENDATIONS

Hossain Salimi of Office of Geotechnical Design-West, will provide the Final Seismic Design Recommendations. He can be contacted at (916) 227-7147 for additional information.

9. FOUNDATION RECOMMENDATIONS

Due to the stiff nature of subsurface soils and relatively small structure loads, we recommend spread footing for both abutments. According to current Caltrans Bridge Design Specifications, the abutments are designed using the Working Stress Design (WSD) method. The foundation design analysis was performed in general using the methods outlined in AASHTO LRFD Bridge Design Specifications (2007); however, reduction factors for geotechnical strength parameters were based on Caltrans/DES/Geotechnical Services criteria. Idealized subsurface soil profile and soil engineering parameters at each abutment location were defined based on the boring logs, relevant literature, and engineering judgment. Liquefaction potential at this site is minimal.

Tables 3 through 5 below are foundation geometry and loads, and scour data (provided by

Structure Design). Table 6 shows the soil parameters used in the calculations. Using a factor of safety of 3.0, the maximum allowable bearing pressure at both Abutments 1 and 2 were calculated to be approximately 26 ksf (Tables 7 and 8). At both Abutments 1 and 2, the foundation materials are mainly weathered rock and settlement is negligible, so the permissible stress was not calculated.

Table 3. Foundation Data

Support No.	Design Method	Finished Grade Elevation (ft)	BOF Elevation (ft)	Footing Size (ft)		Permissible Settlement under Service Load (in)
				B	L	
Abut 1	WSD	1727	1695.	15.83	63.8	2.0
Abut 2	WSD	1725	1693.33	15.83	63.22	2.0

Table 4. Scour Data

Support No.	Long Term (Degradation and Contraction) Scour Elevation (ft)	Short Term (Local) Scour Depth (ft)
Abut 1	1698	N/A
Abut 2	1696.33	N/A

Table 5. Foundation Loads

LRFD Service Limit State I							
Support No.	Total Load				Permanent Load		
	Vertical Load (kip)	Effective Dimensions (ft)		Horizontal Load in Long. Direction (kip)	Vertical Load (kip)	Effective Dimensions (ft)	
		B'	L'			B'	L'
Abut 1	3110	15.83	63.8	1132	2911	15.83	63.8
Abut 2	3110	15.83	63.8	1137	2911	15.83	63.8

Table 6. Soil Parameters Used for Spread Footing Analysis

Support No.	Cohesion (ksf)	Friction angle (degree)	Moisture unit weight (psf)	Footing width (ft)	Embedment Depth (ft)	Ult. bearing capacity (ksf)
Abut 1	0	40	120	16	29.79	78.2
Abut 2	0	40	120	16	26.25	78.2

Table 7. Foundation Design Recommendations for Spread Footings

Support No.	Footing Size (ft)	Bottom of Footing	(LRFD Service-I Limit State Load Combination)
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MR. BRIAN MORI
 Attn: Mary Beall
 July 30, 2013
 Page 7

	B'	L'	Elevation (ft)	Permissible Gross Contact Stress (ksf)	Allowable Gross Bearing Capacity (ksf)
Abut 1	15.83	63.8	1695.5	N/A	26
Abut 2	15.83	63.8	1695.5	N/A	26

Notes: 1) Recommendations are based on the foundation geometry and the load provided by Structure Design in the Foundation Design Data Sheet. The footing contact area is taken as equal to the effective footing area, where applicable.

2) See MTD 4-1 for definitions and applications of the recommended design parameters.

Table 8. Spread Footing Data Table

Support No.	Working Stress Design (WSD)	
	Permissible Gross Contact Stress (ksf)	Allowable Gross Bearing Capacity (ksf)
Abut 1	N/A	26
Abut 2	N/A	26

We have attached the following Bearing Capacity Table 9 for different footing widths.

Table 9
 Bearing Capacity
 Spread Footing at Abutments 1 & 2
 Trutdale Creek – Bridge # 210004
 Nap-29 PM 47.1

No	Footing Size (ft)		Footing Depth (D _f)	L/B	Ultimate Bearing Capacity q _{ut} (ksf)	Factor of Safety (FS)	Allowable Bearing Capacity q _a (ksf)	Permissible Settlement Δ _{pm} (in)	Permissible Contact Pressure q _{pm} (ksf)
	B	L							
1	8	52	32	6.5	39.8	3	13.2	N/A	N/A
2	9	52	32	5.7	44.6	3	14.8	N/A	N/A
3	10	52	32	5.2	49.4	3	16.4	N/A	N/A
4	11	52	32	4.7	54.2	3	18	N/A	N/A
5	12	52	32	4.3	59.0	3	19.6	N/A	N/A
6	13	52	32	4	63.8	3	21.2	N/A	N/A

MR. BRIAN MORI
Attn: Mary Beall
July 30, 2013
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7	14	52	32	3.7	68.6	3	22.8	N/A	N/A
8	15	52	32	3.4	73.4	3	24.4	N/A	N/A
9	16	52	32	3.25	78.2	3	26	N/A	N/A

10. CONSTRUCTION CONSIDERATIONS

Due to the presence of very hard to very hard rock at borings R-12-005 and R-12-006, it is anticipated that the contractor may encounter difficulty during excavation for construction of the bridge abutments. Thus, the contractor should be prepared for such condition.

Due to the presence of groundwater, dewatering is likely to be required during foundation excavation and footing construction.

All support footing excavations are to be inspected and approved by a representative of the Office of Geotechnical Design West. For contact information please refer to the end of the report. The inspections are to be made after the excavation has been completed down to the bottom of the footing elevations as listed in Table 7 and prior to placing any steel rebar or concrete in the excavations. The contractor is to allow seven (7) working days for the inspection of each abutment footing excavation to be completed. The structures representative is to provide the Office of Geotechnical Design West a one-week notification prior to beginning of the seven-day contractor waiting period.

The recommendations contained in this report are based on specific project information regarding design loads and structure location provided by DES Structure Design. If any conceptual changes are made during final project design, or if you have any questions, please contact Mohammad Dehghan at (510) 286-4717 or Hooshmand Nikoui, Branch Chief at (510) 286-4811.

c: TJPokrywka, HNikoui, Daily File, Route File, J Stayton (DES Office Engineer)

MDehghan/mm

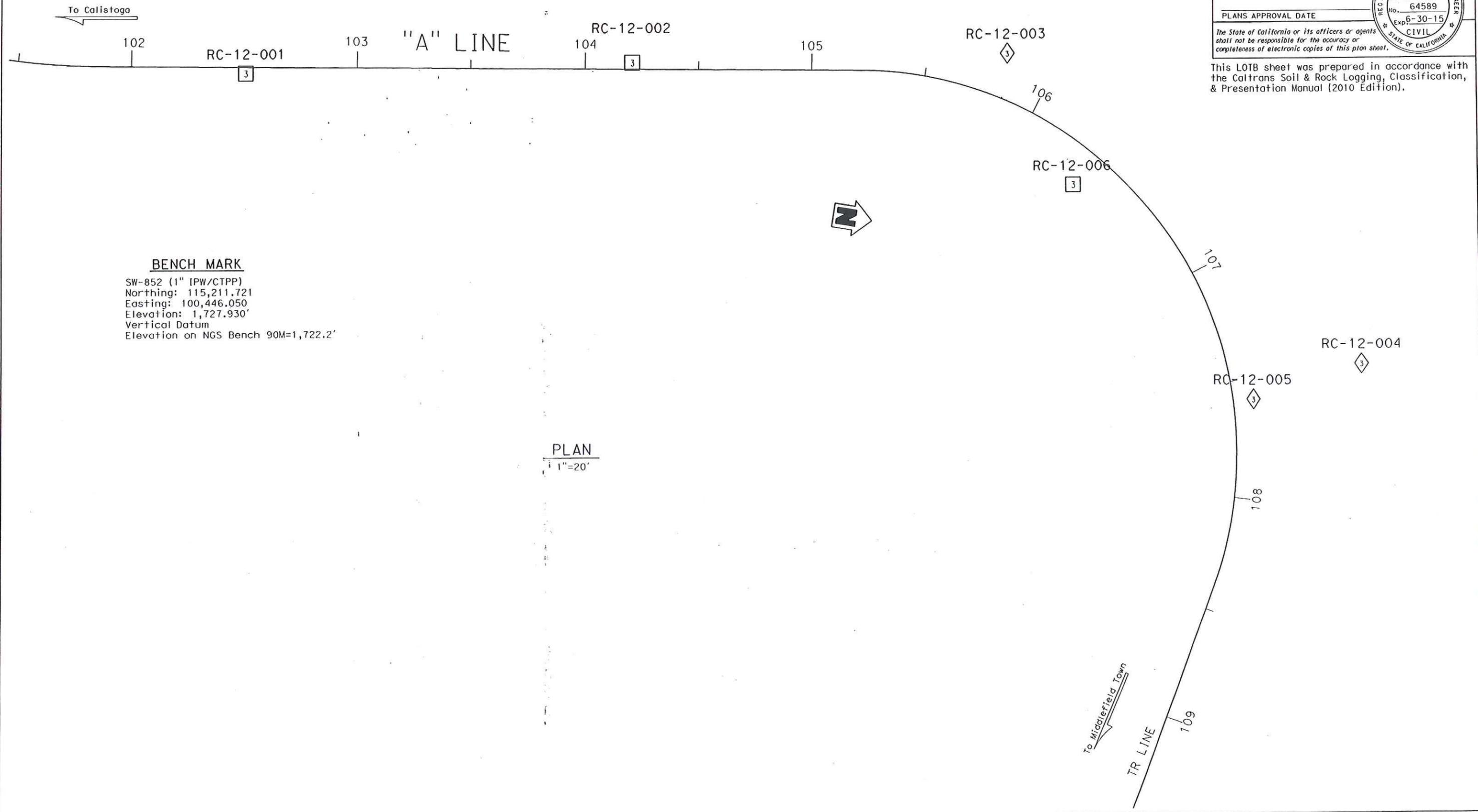
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Nap	29	47.11		

04-08-13
REGISTERED CIVIL ENGINEER
Samuel Awad
No. 64589
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

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This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).



BENCH MARK
SW-852 (1" IPW/CTPP)
Northing: 115,211.721
Easting: 100,446.050
Elevation: 1,727.930'
Vertical Datum
Elevation on NGS Bench 90M=1,722.2'

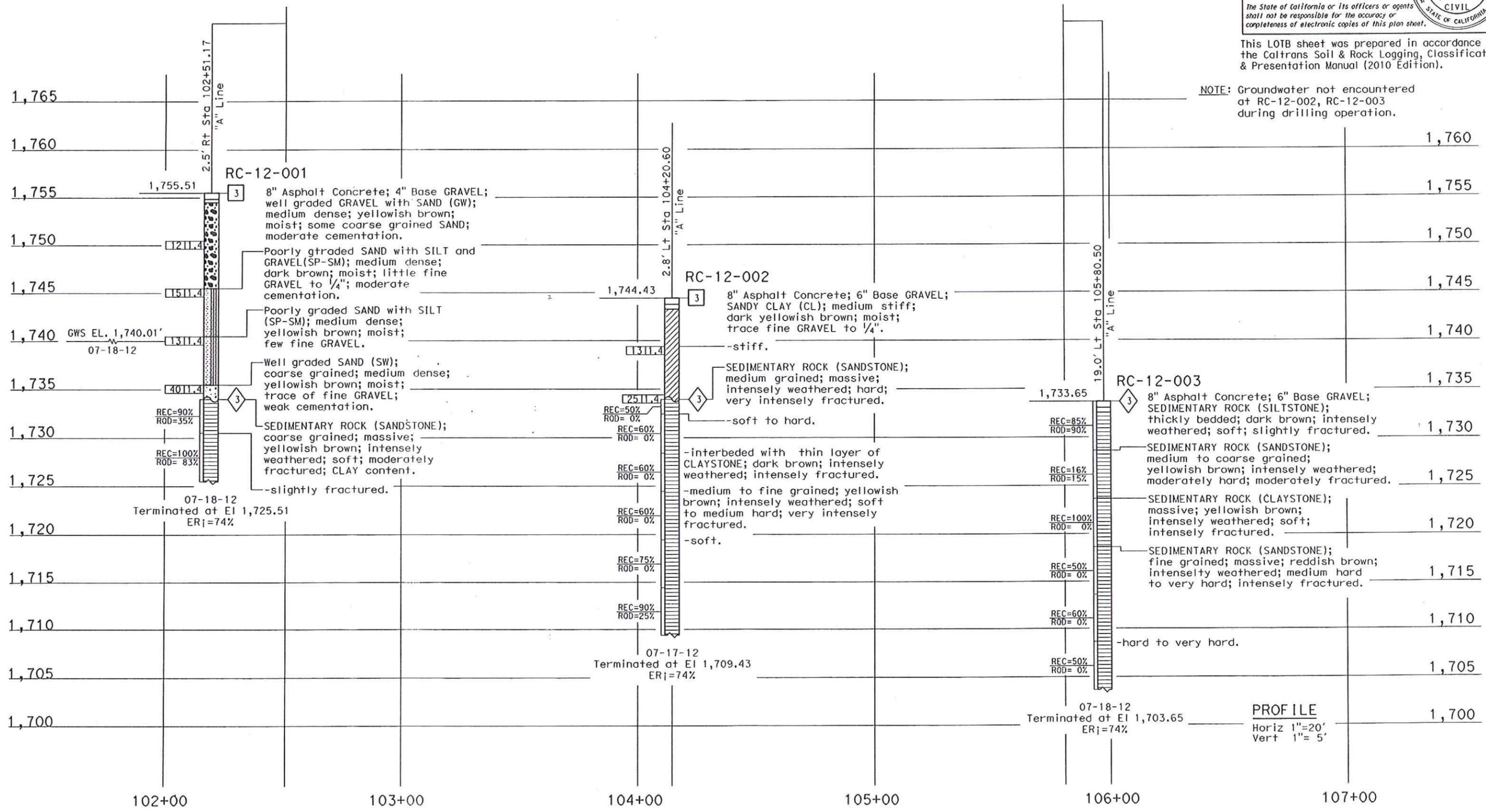
PLAN
1"=20'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.		TROUTDALE CREEK BRIDGE	
FUNCTIONAL SUPERVISOR		FIELD INVESTIGATION BY:		DEPARTMENT OF TRANSPORTATION		OFFICE OF GEOTECHNICAL		21-004		LOG OF TEST BORINGS 1 OF 4	
DRAWN BY: M. Reynolds 03/13		V. Khotan & S. Awad		DESIGN BRANCH		POST MILES		47.11		REVISION DATES	
CHECKED BY: M. Gaffney										SHEET OF	
				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		UNIT: 3660		PROJECT NUMBER & PHASE: 04000011040		CONTRACT NO.: 04-4A0900	
								DISREGARD PRINTS BEARING EARLIER REVISION DATES		01-15-14	

USERNAME => S110R22 DATE PLOTTED => 16-JAN-2014 TIME PLOTTED => 1:15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Nap	29	47.11		
			04-08-13	REGISTERED CIVIL ENGINEER	
PLANS APPROVAL DATE					
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(For Boring Location See Plan, LOTB Sheet 1 of 4)



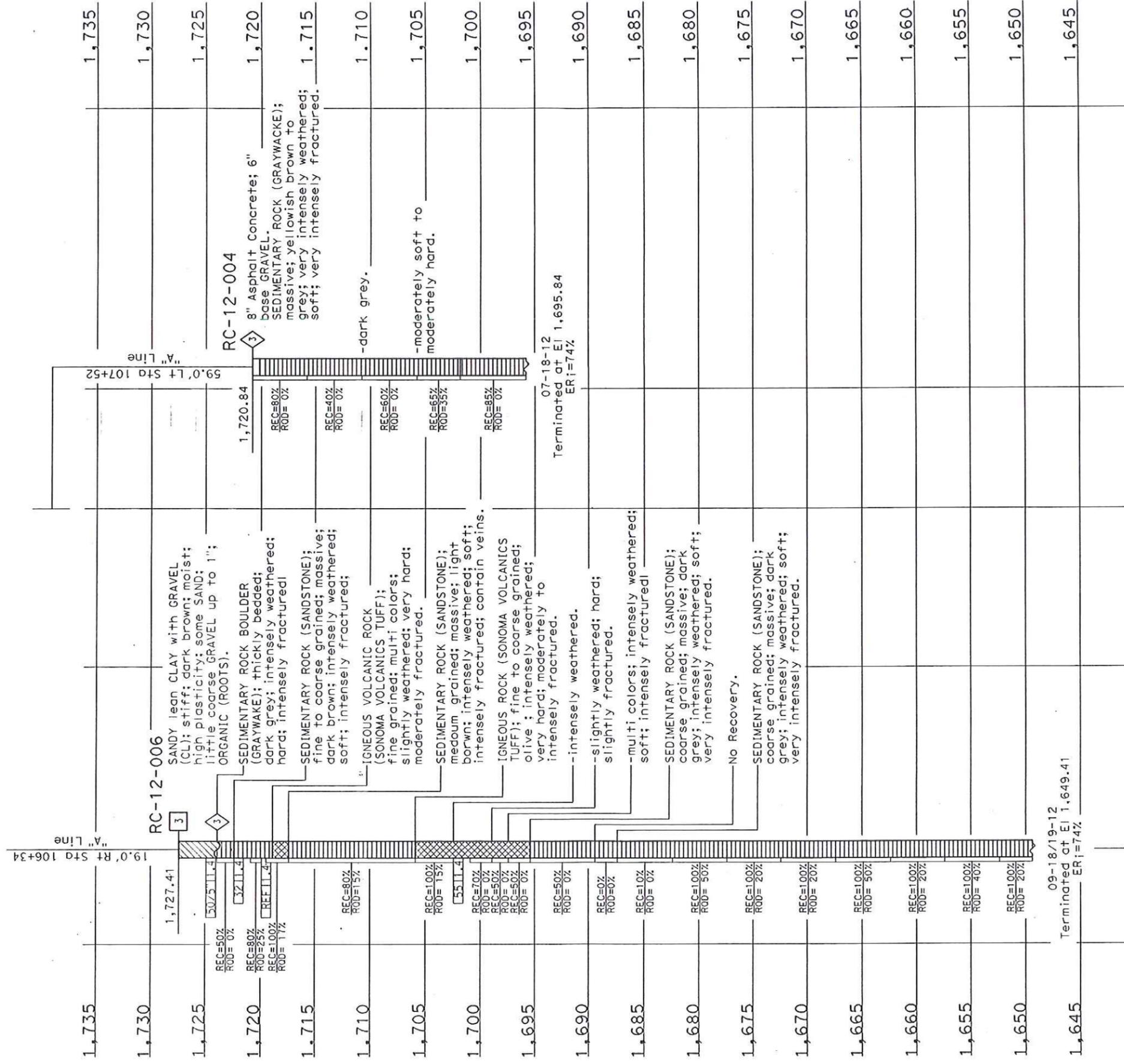
NOTE: Groundwater not encountered at RC-12-002, RC-12-003 during drilling operation.

PROFILE
 Horiz 1"=20'
 Vert 1"= 5'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.		TROUTDALE CREEK BRIDGE	
FUNCTIONAL SUPERVISOR		DRAWN BY: M. Reynolds 03/13		FIELD INVESTIGATION BY: V. Khotan & S. Awad		OFFICE OF GEOTECHNICAL		21-004		LOG OF TEST BORINGS 2 OF 4	
NAME:		CHECKED BY: M. Gaffney				DESIGN BRANCH		POST MILES			
								47.11			
								UNIT: 3660		DISREGARD PRINTS BEARING EARLIER REVISION DATES	
								PROJECT NUMBER & PHASE: 04000011040		CONTRACT NO.: 04-4A090C	
										REVISION DATES	
										SHEET OF	

USERNAME => S110822 DATE PLOTTED => 16-JAN-2014 TIME PLOTTED => 13:16

(For Boring Location See Plan, LOTB Sheet 1 of 4)



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Nap	29	47.11		

04-08-13
 REGISTERED CIVIL ENGINEER
 Samuel Awad
 No. 64589
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

PLANS APPROVAL DATE

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This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).

NOTE: Groundwater not encountered at RC-12-004, RC-12-006 during drilling operation.

PROFILE
 Horiz 1"=20'
 Vert 1"=5'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		TROUTDALE CREEK BRIDGE	
FUNCTIONAL SUPERVISOR	DRAWN BY: M. Reynolds 03/13	FIELD INVESTIGATION BY: V. Khotan & S. Awad		DEPARTMENT OF TRANSPORTATION		OFFICE OF GEOTECHNICAL		LOG OF TEST BORINGS 3 OF 4	
NAME:	CHECKED BY: M. Gaffney					BRIDGE NO. 21-004			
						POST MILES 47.11			
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS						UNIT: 3660		DISREGARD PRINTS BEARING EARLIER REVISION DATES	
						PROJECT NUMBER & PHASE: 04000011040		CONTRACT NO.: 04-4A0900	
						REVISION DATES		SHEET 3 OF 4	

(For Boring Location See Plan, LOTB Sheet 1 of 4)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Nap	29	47.11		

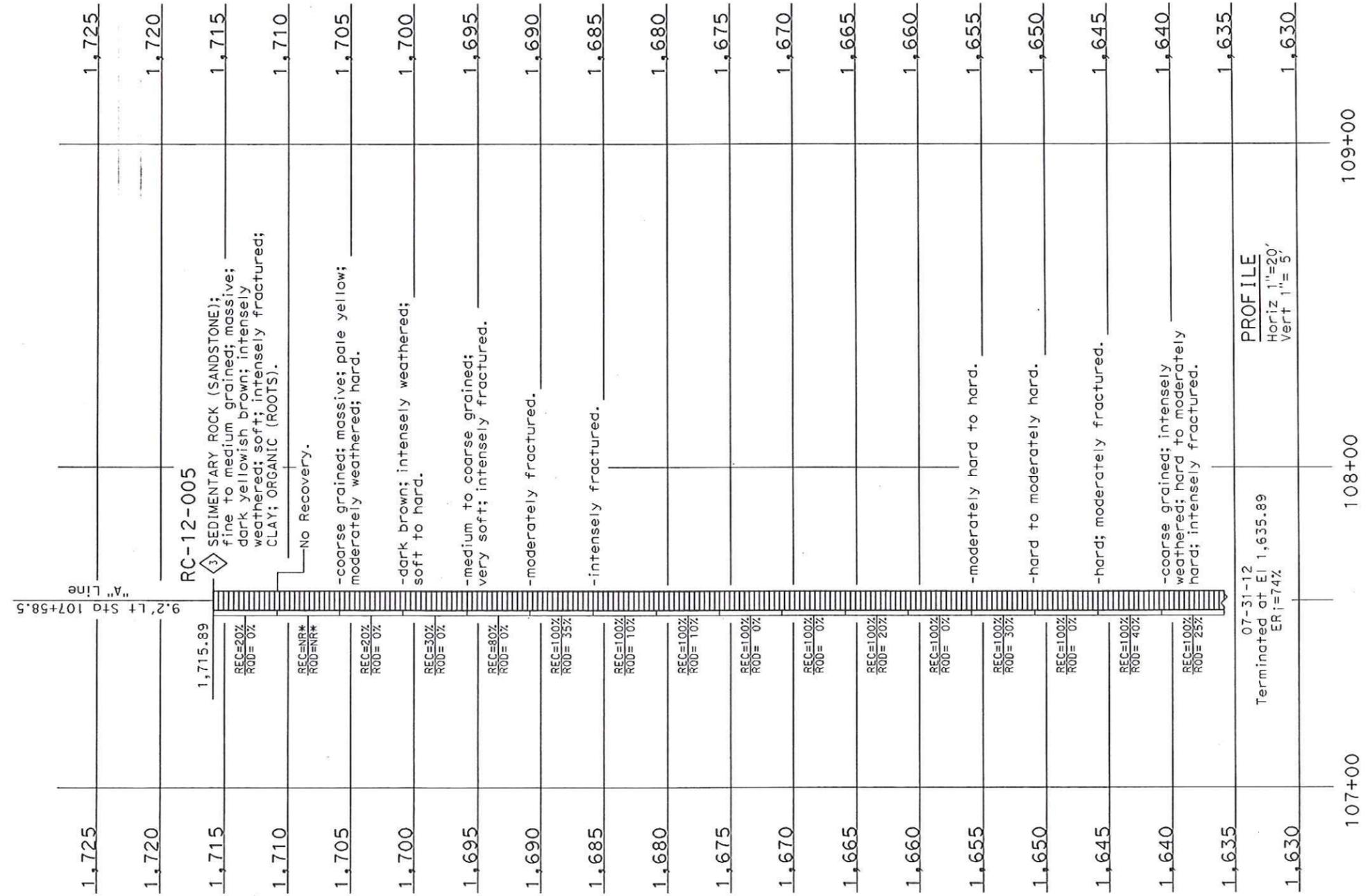
04-08-13
 REGISTERED CIVIL ENGINEER
 Samuel Awad
 No. 64589
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

PLANS APPROVAL DATE

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This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).

NOTE: Groundwater not encountered at RC-12-005 during drilling operation.



ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		TROUTDALE CREEK BRIDGE	
FUNCTIONAL SUPERVISOR	DRAWN BY: M. Reynolds 03/13	FIELD INVESTIGATION BY: V. Khotan & S. Awad		DEPARTMENT OF TRANSPORTATION		OFFICE OF GEOTECHNICAL		LOG OF TEST BORINGS 4 OF 4	
NAME:	CHECKED BY: M. Goffney					DESIGN BRANCH		BRIDGE NO. 21-004	
								POST MILES 47.11	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS				UNIT: 3660		PROJECT NUMBER & PHASE: 04000011040		CONTRACT NO.: 04-4A090C	
				DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES		SHEET OF	

Memorandum

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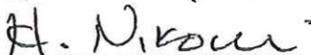
To: MR. BRIAN MORI
Bridge Design Branch 8
Structure Design

Date: July 29, 2013

Attention: M. Beall

File: 04-NAP-29 PM 47.11
04-4A0901
Efis 0400001104
Troutdale Creek Bridge
(Replacement)


From: S. AWAD/M.DEHGHAN
Transportation Engineers
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services


HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

Subject: Foundation Report for Retaining Walls

This memorandum presents our foundation recommendations for the design of the three proposed retaining walls for the above referenced project. The project is located on Route 29 (PM 47.11), north of the city of Calistoga, Napa County. Figure 1 shows its approximate location.

1. SCOPE OF WORK

The following tasks were performed for the preparation of this Geotechnical Design Report:

- Review of as-built plans;
- Field geotechnical exploration, including drilling six borings at the project site;
- Laboratory test results on selected samples;
- Geotechnical design analysis; and
- Preparation of this Foundation Report.

2. PROJECT DESCRIPTION

This project proposes to replace Troutdale Creek Bridge on State Route 29 in Napa County on a new alignment.

The roadway will be widened on the outside to conform to the new bridge, shifting alignment generally to the east of the existing centerline. The existing junction of the roadway with the

MR. BRIAN MORI
Attn: M. Beall
July 24, 2013
Page 2

bridge is 31 ft that will be widened to 48 ft and then it will be tapered down to 32 ft to conform to the existing roadway.

The existing roadways at both ends of the current bridge approaches will be resurfaced to conform to the new bridge. The proposed radius of 165 feet corresponds to a design speed of 22 mph, and the current warning speed at the bridge is 20 mph.

In addition to the constructing a new bridge, three retaining walls will have to be constructed to accommodate roadway alignment modification. Retaining wall no.1 will be constructed on the south side of the new bridge for the proposed widening. Retaining wall No.2 will be constructed on the south east side of the new bridge, adjacent to the bridge wing wall and retaining wall No. 3 will be constructed on the north east side of the new bridge, adjacent to the bridge wing wall.

Recommendations contained in this report are based on the submitted layout and cross section plans, field mapping of the site, subsurface exploration, laboratory test results and retaining wall foundation design analysis. This report addresses our foundation recommendation for the retaining walls. Refer to Table 1 for general information regarding these retaining walls.

Table 1- Retaining Wall Information

Wall No.	Direction	Begin	End	Wall Height, ft	Recommended Type
No. 1	NB	"A" Line 101+92	"A" Line 105+50	15	Soldier Pile
No. 2	NB	"A" Line 106+00	"A" Line 106+56.89	28	Type 1
No. 3	BS	"A" Line 107+80	"A" Line 108+18	26	Type 1

3. EXCEPTION TO POLICY

There is no known exception to Department policy relating to the investigation or design of the proposed structures.

4. SITE GEOLOGY AND SEISMICITY

4.1 Topography

The project lies in the central part of the Mayacmas Mountain range between northern Napa Valley on the west and Pope Valley to the east. The chain runs roughly northwest-southeast and its highest peak, Cobb Mountain, (4,724 feet), is about 14 miles to the north, and Mount Saint

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Helena (4,343 ft).is just west of the project area. Troutdale Creek Bridge spans at a creek elevation of about 1,697 feet with the traveled way at an elevation of about 1,722 feet. The difference in elevation between the western and eastern abutment is less than 2 feet, with the west being slightly higher. Troutdale Creek originates on the eastern slopes of Mount Saint Helena and flows east/southeast before joining Saint Helena Creek and flowing north to Putah Creek and the Central Valley to the east. Upstream of the location of the bridge, Troutdale Creek has incised a relatively steep channel suggesting seasonal flows could be swift. Beyond the bridge, Troutdale Creek flows through a narrow, relatively flat unnamed valley where it joins several unnamed streams and Van Ness Creek to form St. Helena Creek.

4.2 Regional Geology

Located within the Coast Range geomorphic province of California, the geology of the region consists of northwest-trending ridges, gently sloping hills, intermontane valleys, and large elongated depressions. The San Andreas Fault system, the most prominent geologic feature in the area, includes the San Andreas fault as well as numerous splays, including the Rodgers Creek and Maacama Faults in the north bay, which together take up strain between the northward migrating Pacific plate and the southward (relatively) moving North American plate. The major faults within the system are predominantly right-lateral, strike-slip faults with some compressional component, and these act together to form the prominent ridges and valleys. The San Francisco Bay, a partially filled northwest-trending depression extending from the Santa Clara Valley in the south to the Petaluma Valley in the north, is a direct result of these fault interactions.

4.3 Site Geology

Troutdale Creek Bridge lies at the end of a narrow valley incised through the contact of two geologic units: Rhyolite flows and Tuff Breccia of the Tertiary Sonoma Volcanics. These units form the resistant slopes and ridges in the immediate vicinity of the bridge, while the low-lying areas southeast of the bridge contain Quaternary landslide debris. Based on borings taken from the vicinity of the new bridge, the subsurface consists of varying amounts of sedimentary rocks and minor volcanic, the former of which are likely volcanoclastic material thought to be sediments. Soils, when present over bedrock, are thin (less than 20') and consist of sandy lean clays with or without gravel. Groundwater was not measured in the borings but can be expected to be at or near the stream elevation within the vicinity of the bridge.

4.4 Site Seismicity

For Seismicity, see H. Salimi's report (July 17, 2013).

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4.5 Liquefaction

Liquefaction potential, a phenomenon in which soils lose all shear strength and turn essentially to fluids, is considered low in the project area. Potentially liquefiable deposits are generally composed of clean sand with a high ratio of void space. Subsurface sampling in 2007 indicated dense gravelly sand and clay. The subsurface conditions suggest a low potential for liquefaction.

5. FIELD INVESTIGATION AND TESTING PROGRAM

The subsurface exploration was performed by the Office of Geotechnical Design West (OGDW). Six power borings (RC-12-001 through RC-12-006) were drilled utilizing the rotary wash drilling with Standard Penetration Tests (SPT) and Pocket Penetrometer (PP) Tests. Soil samples were taken every 5 feet from the Standard Penetration Test (SPT) and where we encountered rock, Rock Quality Determination (RQD) and percent of sample recovery for each run were recorded. Visual soil descriptions were made in the field in accordance to the Caltrans Soil and Rock logging Manual. Soil classifications were made based on the laboratory test results in accordance to the Unified Soil Classification System. Refer to Attached Exhibit A for The LOTB sheets.

5.1 Subsurface Condition for Soldier Pile Wall (Wall No. 1)

General information of borings located near the wall No.1 site is listed in Table 2.

Table 2- Summary of Field Borings for Soldier Pile Wall (Wall No. 1)

Boring ID	Total Depth (ft)bgs	Date of completion	Hammer Efficiency
RC-12-001	30	7/17/12	74%
RC-12-002	35	7/17/12	74%

At boring RC-12-001, the subsurface soil consists of 21 feet of medium dense gravel with sand or sand with gravel. The SPT blow counts for this boring in this area ranged from 12 to as high as of 40 blows per foot. Intensely weathered moderately fractured sandstone bedrock was encountered at the depth of 22 feet (Elev. 1,734).

At boring RC-12-002, the subsurface soil consists of 10 feet of medium stiff to stiff sandy clay. The remainder of the boring describes the foundation soils as intensely weathered and very intensely fractured sandstone bedrock.

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Groundwater was encountered in boring (RC-12-001) at depth 15.5 feet below the ground surface at the time of drilling. However, groundwater elevations fluctuate seasonally and may be encountered at higher elevations.

5.2 Subsurface Condition for Retaining Wall No. 2 (Wall No. 2)

General information of borings located near the wall No.2 site is listed in Table 3.

Table 3- Summary of Field Borings for Soldier Pile Wall (Wall No. 2)

Boring ID	Total Depth (ft)bgs	Date of completion	Hammer Efficiency
RC-12-006	78	9/18/12	74%

At boring RC-12-006, the subsurface soil condition consists of 5 feet of Sandy Lean Clay with Gravel mixed with vegetation roots over soft to hard intensely fractured Sandstone Sedimentary Rock interlayerd with very hard Igneous Rock.

Groundwater was not encountered in boring (RC-12-006) during the drilling time.

5.3 Subsurface Condition for Retaining Wall No. 3 (Wall No. 3)

General information of borings located near the wall No.3 site is listed in Table 4.

Table 4- Summary of Field Borings for Soldier Pile Wall (Wall No. 3)

Boring ID	Total Depth (ft)bgs	Date of completion	Hammer Efficiency
RC-12-005	80	7/31/12	74%

At boring RC-12-005, the subsurface soil consists of Sedimentary Sandstone Rock, soft to hard intensely fractured, except for the top 5 feet of which contains some vegetation roots.

Groundwater was not encountered in boring (RC-12-005) during the drilling time.

6. GEOTECHNICAL TESTING

6.1 In Situ Testing

Standard Penetration Test (SPT) was performed at 5-foot interval in soil strata. Pocket Penetrometer (PP) tests were conducted on soil samples showing apparent cohesion. Visual soil descriptions were made in the field in accordance to the Caltrans Soil and Rock logging Manual. Soil classifications were made based on the laboratory test results in accordance to the Unified Soil Classification System.

6.2 Laboratory Testing

Please see the attached Exhibit B for corrosion laboratory test results.

7. CORROSION EVALUATION

Corrosion studies were conducted in accordance with the requirements of California Test Method No. 643. The Department considers the site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil samples taken at the site:

Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

The following tables provide the corrosion test summary:

Table 3 - Summary of Corrosion Test for three walls

<i>Boring</i>	<i>Sample Depth</i>	<i>Resistivity (Ohm-Cm)</i>	<i>pH</i>	<i>Chloride Content (ppm)</i>	<i>Sulfate Content (ppm)</i>
RC-12-001	6-20	7211	6.7	N/A	N/A
RC-12-002	6.5-10	2906	5.5	1.1	23.7
RC-12-003	2-15	3392	5.9	N/A	N/A
RC-12-004	1-10	1657	4.0	3.9	820
RC-12-005	15-25	563	3.2	5.9	4000

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Based on the RC-12-004 and RC-12-050 test results, we believe the site should be considered Corrosive and all concrete reinforcing shall have a minimum concrete cover of 3 inches in accordance with Section 5 Concrete Structures of California Amendments (to the AASHTO LRFD Bridge Design Specifications - Fourth Edition) Table 5.12.3-1 Minimum Concrete Cover (inches) for 75-year Design Life.

8. FOUNDATION RECOMMENDATION

8.1 Retaining Wall No. 1 (Soldier Pile Wall)

Based on the submitted plans and cross-sections, the proposed soldier pile wall with wood or concrete lagging will be constructed between Station 101+83.90 and Station 105+19.12 with a maximum height of 15 feet.

Office of Structures Design will determine exact location of the wall. See attached Exhibit C for details.

We recommend that the soldier piles be designed with a maximum spacing of 8 feet on center and in accordance to the following parameters:

Earth Presuures

The wall should be designed for the following:

For *Active pressure* against the wall, use the following from the ground surface to the dredge lines use:

- Internal friction angle $\phi=34^\circ$, $C=250$ psf and soil moist init weight $\gamma= 130$ lb/ft³.
- For earth pressure distribution, use a triangular pressure distribution.
- A rectangular pressure diagram from top of the wall to a depth of 10 ft for traffic surcharge equivalent to 2 ft of fill.
- The wall shall be capable of resisting an additional seismic uniform earth pressure estimated to be equal to 30H psf.

For *passive pressure* against the soldier piles, use the following input:

From the dredge line to the bottom of the soldier piles use:

- Internal friction angle $\phi= 38^\circ$, $C=250$ psf and soil moist weight $\gamma= 130$ lb/ft³.

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- Isolation Factor = 3.0
- The embedment length for the soldier pile wall shall be a minimum of 22 feet.

Vertical CIDH Pile Capacities and Penetration Depth

The ultimate vertical compression and tension capacities of the piles may be calculated using the following design parameters:

- Use ultimate unit pile shaft friction of 4 ksf per unit surface area of the pile length below the dredge line of the wall.
- Use 60 percent of the compression shaft resistance values mentioned above to calculate the ultimate tension (uplift) resistance of the pile.
- For Ultimate pile tips compression, use bearing pressure of 130 ksf per unit tip.

The above recommendations are based on parameters established by our field exploration and engineering judgment.

8.2 Retaining Wall No. 2 (Type 1 Wall)

Based on the submitted plans and cross-sections, the proposed retaining wall No. 2 will be constructed between Station 106+00 and Station 106+56.89 with a maximum height of 27 feet. It is estimated that the allowable bearing capacity of the foundation soils (using factor of safety of 3) is greater than toe pressure required for Standard Plan Type 1 Retaining Wall, based on H= 28 ft with Case I wall design.

Thus, Standard Plan Type 1 retaining wall can be adopted for retaining wall No. 2.

8.3 Retaining Wall No. 3 (Type 1 Wall)

Based on the submitted plans and cross-sections, the proposed retaining wall No. 3 will be constructed between Station 107+80 and Station 108+18.00 with a maximum height of 25 feet. It is estimated that the allowable bearing capacity of the foundation soils (using factor of safety of 3) is greater than toe pressure required for Standard Plan Type 1 Retaining Wall, based on H= 26 ft with Case I wall design.

Thus, Standard Plan Type 1 retaining wall can be adopted for retaining wall No. 3.

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9. CONSTRUCTION CONSIDERATIONS

- Due to the presence of hard to very hard rock at borings RC-12-002, RC-12-003, RC-12-005, and RC-12-006, it is anticipated that the contractor may encounter difficulty during excavation for construction of the retaining walls. Thus, the contractor should be prepared for such condition.
- Because of the existing of groundwater, the contractor should be prepared for dewatering during drilling holes for CIDH piles.
- Minor caving of the drilled holes is anticipated. Use of casing may also be needed due to sandy nature of the soil. .
- Excavation and water control for retaining walls shall conform to the provisions in Section 19-3, "Standard Excavation and Backfill", of the Standard Specifications.
- All retaining walls CIDH holes and footing excavations are to be inspected and approved by a representative of the Office of Geotechnical Design West or Structures Construction. The inspections are to be made after the excavation has been completed down to the bottom of the CIDH holes and footing elevations.



If you have any questions or need additional information, please call Samuel Awad at (510) 622-5443, Mohammad Dehghan at (510) 286-4717, or Hooshmand Nikoui, Branch Chief at (510) 286-4811.

Attachments

c: TPokrywka, HNikoui, SAwad, Daily File

SAwad /mm

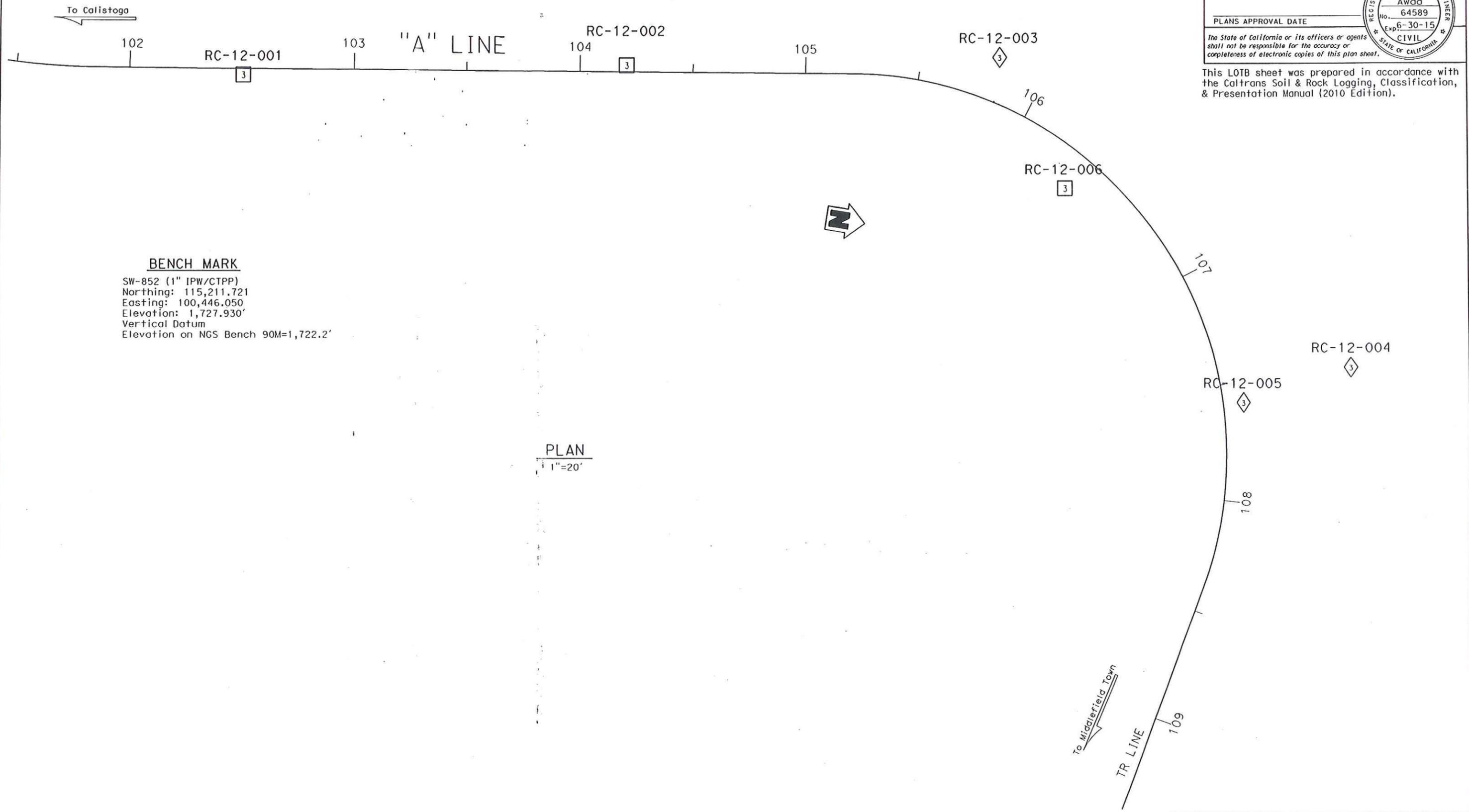
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Nap	29	47.11		

04-08-13
REGISTERED CIVIL ENGINEER
Samuel Awad
No. 64589
Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

PLANS APPROVAL DATE

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

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).



ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		TROUTDALE CREEK BRIDGE	
FUNCTIONAL SUPERVISOR	DRAWN BY: M. Reynolds 03/13	FIELD INVESTIGATION BY:	V. Khotan & S. Awad	DEPARTMENT OF TRANSPORTATION		OFFICE OF GEOTECHNICAL		BRIDGE NO. 21-004	LOG OF TEST BORINGS 1 OF 4
NAME:	CHECKED BY: M. Gaffney					DESIGN BRANCH		POST MILES 47.11	
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS				UNIT: 3660		PROJECT NUMBER & PHASE: 04000011040		CONTRACT NO.: 04-4A0900	
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								01-15-11	

DATE PLOTTED => 16-JAN-2014 TIME PLOTTED => 11:15

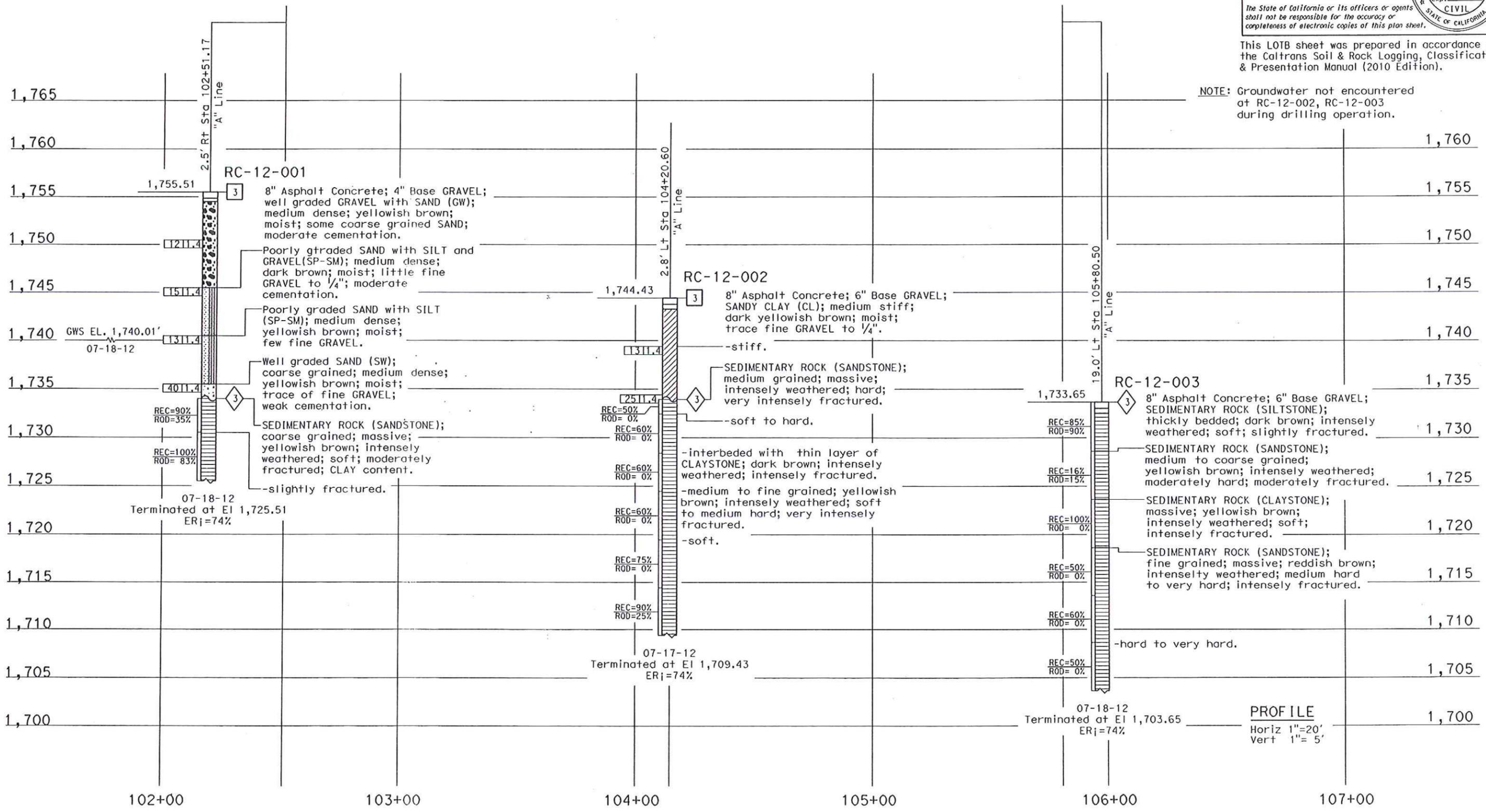
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04	Nap	29	47.11		

04-08-13
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(For Boring Location See Plan, LOTB Sheet 1 of 4)



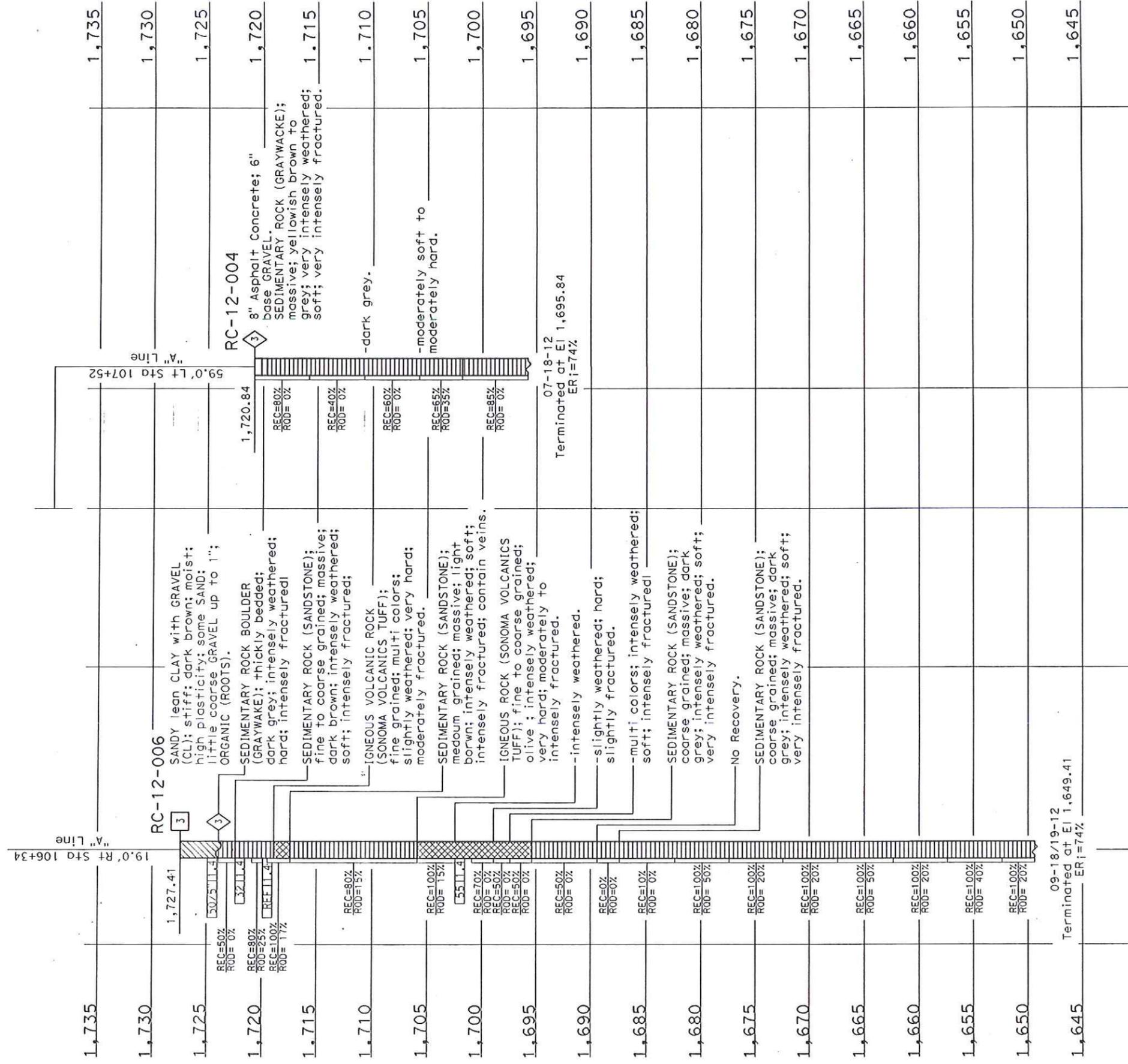
NOTE: Groundwater not encountered at RC-12-002, RC-12-003 during drilling operation.

PROFILE
Horiz 1"=20'
Vert 1"= 5'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.		TROUTDALE CREEK BRIDGE	
FUNCTIONAL SUPERVISOR		DRAWN BY: M. Reynolds 03/13		DEPARTMENT OF TRANSPORTATION		OFFICE OF GEOTECHNICAL		21-004		LOG OF TEST BORINGS 2 OF 4	
NAME:		CHECKED BY: M. Gaffney		FIELD INVESTIGATION BY: V. Khotan & S. Awad		DESIGN BRANCH		POST MILES		REVISION DATES	
								47.11		SHEET OF	
				ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		UNIT: 3660		PROJECT NUMBER & PHASE: 04000011040		DISREGARD PRINTS BEARING EARLIER REVISION DATES	
				0 1 2 3		CONTRACT NO.: 04-4A090C		21-15-14			

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(For Boring Location See Plan, LOTB Sheet 1 of 4)



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Nap	29	47.11		

04-08-13
REGISTERED CIVIL ENGINEER

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Exp. 6-30-15
CIVIL
STATE OF CALIFORNIA

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).

NOTE: Groundwater not encountered at RC-12-004, RC-12-006 during drilling operation.

PROFILE
Horiz 1"=20'
Vert 1"=5'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		TROUTDALE CREEK BRIDGE	
FUNCTIONAL SUPERVISOR	DRAWN BY: M. Reynolds 03/13	FIELD INVESTIGATION BY: V. Khotan & S. Awad	DEPARTMENT OF TRANSPORTATION		OFFICE OF GEOTECHNICAL		BRIDGE NO. 21-004	LOG OF TEST BORINGS 3 OF 4	
NAME:	CHECKED BY: M. Gaffney				DESIGN BRANCH		POST MILES 47.11		
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS				UNIT: 3660		PROJECT NUMBER & PHASE: 04000011040		CONTRACT NO.: 04-4A0900	
				DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES		SHEET 3 OF 4	

DATE PLOTTED => 16-JAN-2014 TIME PLOTTED => 11:18

(For Boring Location See Plan, LOTB Sheet 1 of 4)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Nap	29	47.11		

04-08-13
REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER

Samuel Awad

No. 64589

Exp. 6-30-15

CIVIL

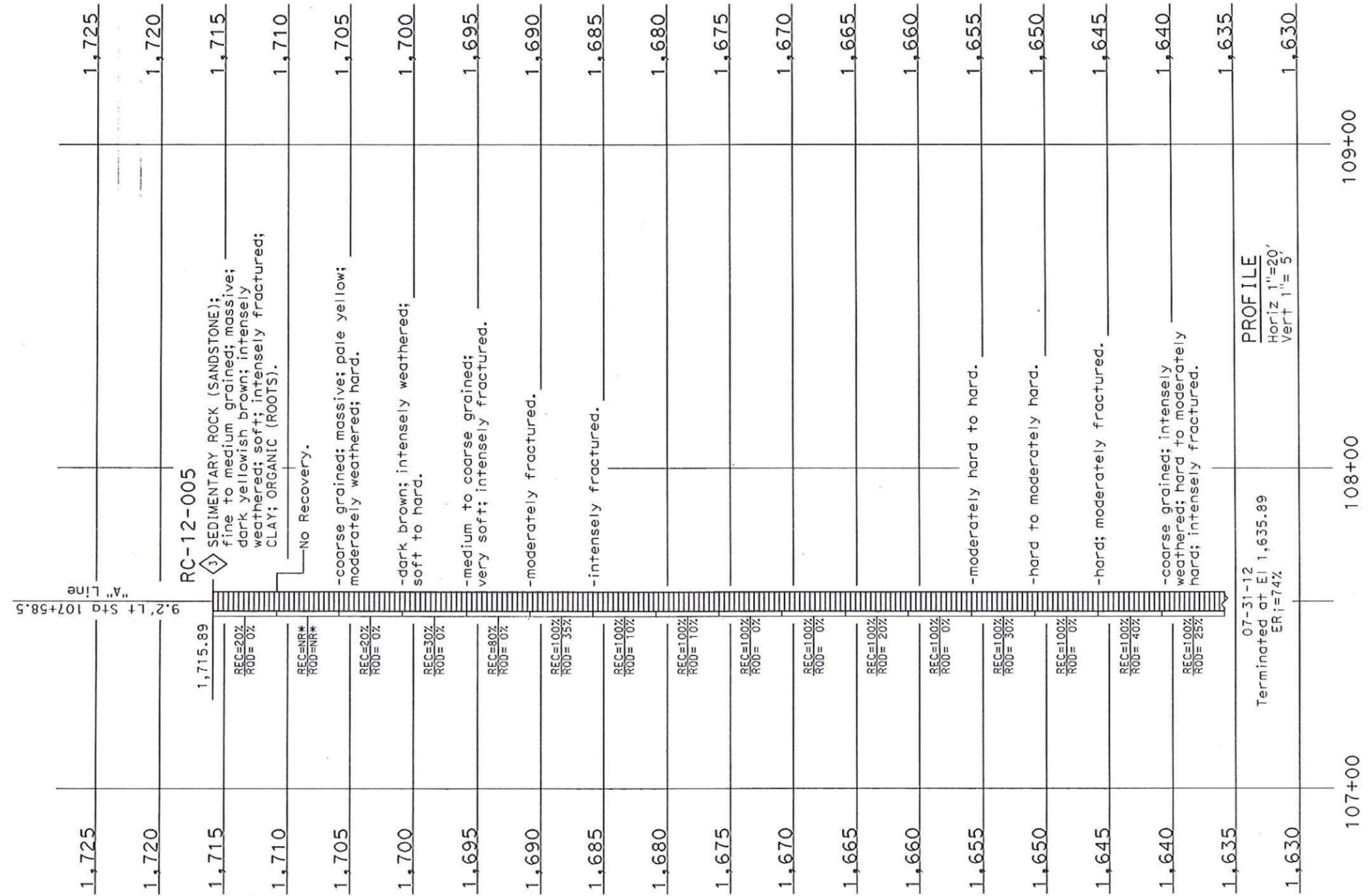
STATE OF CALIFORNIA

PLANS APPROVAL DATE _____

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NOTE: Groundwater not encountered at RC-12-005 during drilling operation.



ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL DESIGN BRANCH		TROUTDALE CREEK BRIDGE	
FUNCTIONAL SUPERVISOR	DRAWN BY: M. Reynolds 03/13	FIELD INVESTIGATION BY: V. Khotan & S. Awad		BRIDGE NO. 21-004		POST MILES 47.11		LOG OF TEST BORINGS 4 OF 4	
NAME:	CHECKED BY: M. Gaffney			UNIT: 3660		PROJECT NUMBER & PHASE: 04000011040		CONTRACT NO.: 04-4A0900	
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				0 1 2 3				REVISION DATES	
								SHEET 4 OF 4	

State of California – Department of Transportation
Division of Engineering Services
Structure Design Services

FINAL HYDRAULIC REPORT

Troutdale Creek
Bridge No. 21-0004
4 - NAP - 29 - PM 47.11
Contract No. 04-4A0901
Project No. 04 0000 1104

Prepared by:



Anthony Nedwick, PE
Structure Hydraulics and Hydrology
July 19, 2013



General:

It is proposed to replace the existing Troutdale Creek Bridge (Br. No. 21-0004) with a new structure on a new alignment. The project is located at Post Mile 47.11 on State Route 29 in Napa County, between the towns of Calistoga and Middletown.

Troutdale Creek Bridge, originally built in 1923, is a single span reinforced concrete (RC) slab with RC wing abutments, founded on spread footings. The bridge was widened in 1950 with a RC deck on steel girders, also founded on spread footings. The structure has an overall length of approximately 26' and a width of about 28'. The bridge is built on a curve and the roadway has a radius of 110 feet.

The existing structure has been determined to be scour critical (NBIS Item 113 Code of "2") due to exposure and undermining of the spread footings. A Scour Plan of Action was completed on 2009.

The current channel was redirected to the southern side of the canyon by a landslide located about 150 feet upstream of the existing structure. This landslide causes the flow to be directed at the southern end of the southern upstream wingwall, then flow along the base of the wingwall where it is then directed at the Abutment 2 wall and footing at about a 45° angle to the abutment wall.

It is proposed to remove the existing bridge, realign and straighten the channel upstream of the proposed replacement structure by removing the existing Abutment 1 in its entirety, and regrading the existing roadway fill behind Abutment 1. The proposed toe of slope along this portion of the stream shall line up with the existing toe of slope located immediately upstream of the existing upstream wingwall and the proposed toe of slope at Abutment 1 of the replacement structure. The minimum bottom width of the main channel is proposed to be approximately 20 feet in width. The new northern embankment will extend up from the north side of the realigned channel with a uniform slope of approximately 2:1. The existing Abutment 2 wall and footing are proposed to remain in place, but the wall shall be cut off as needed.

The embankments along both sides of the channel, both upstream and downstream of the proposed replacement structure, shall be lined with RSP and appropriate filter material. The RSP shall extend up the embankment slopes a minimum of 3 feet vertically above the toe of the slope. Since the natural channel is comprised of cobbles and boulders, it is recommended to line the entire bottom of the channel with the same RSP as will be placed on the embankments.

The proposed replacement structure will be a PC/PS I-Girder bridge with a length of 60', as measured along the "A" line alignment, and an overall width of approximately 51'-1". It will be constructed on a new alignment, with the centerline approximately 70 to 75 feet downstream of the roadway centerline at the existing structure. The proposed structure would have a radius of approximately 165 feet, a super elevation

of 8% and a structure depth of 3'-10". Abutments 1 and 2 will be high cantilever seat abutments founded on spread footings. Channel side slopes at the abutments shall be limited to a maximum slope of 2:1 with a minimum of 3 feet of soil cover over the top of the abutment footings.

Datum:

The vertical datum used for this report is based on the 2013 survey data using the NAVD 1988. Datum transformation information between NGVD 1929 and NAVD 1988 was determined using the VERTCON Orthometric Height Conversion provided by the National Geodetic Survey, National Oceanic and Atmospheric Administration (www.ngs.noaa.gov) website. According to the NGS information, the NAVD 1988 datum is 2.94 feet higher than the NGVD 1929 datum at the project site.

This report is based on the As-Built plans and information provided by Structure Design, as well as various other information including previous Caltrans reports, USGS information and survey data from Preliminary Investigations. As-Built elevations were converted to the NAVD 1988 datum using the conversion factor noted above. **All elevations indicated in this report are based on Vertical Datum NAVD 1988, except as noted.**

Basin:

Troutdale Creek Basin covers approximately 1.1 mi² at the site draining portions of northern Napa and southern Lake Counties. Troutdale Creek watershed is generally in a mountainous, heavily forested area with no significant flood control features upstream of the site. Mean Annual Precipitation of the watershed is about 53.4 inches with an Altitude Index of 2.33. Sometime in the history of the structure, there was a landslide approximately 100 feet upstream of the bridge. The first reports of redirected flow were from the 1978 Bridge Inspection Report. This landslide diverted the creek to the southern side of the valley so that flows were now directed at the far end of the upstream wingwall of Abutment 1. The flow then runs along the base of the wingwall and is directed toward Abutment 2, where the flow impinges the abutment wall at an angle of approximately 45 degrees. This redirection of the flow appears to be causing the scour hole and undermining at Abutment 2.

Discharge:

To estimate flow rates, the latest information from the USGS SteamStats website was reviewed. There was no discharge data found for Troutdale Creek.

The USGS StreamStats Data-Collection Station Report determined a drainage area of 1.1 mi² at the bridge site, with approximate flow rates of 400 cfs and 500 cfs, for the 50-year Peak Flow and the 100-year Peak Flow, respectively.

Hydraulic Analysis:

The channel hydraulics were modeled using the Army Corps of Engineers HEC-RAS modeling program, version 4.1.0, utilizing survey data provided by Caltrans Preliminary Investigations. HEC-RAS was used to determine the water surface elevations and velocities throughout the project reach. Topographical data was a composite of LiDAR data and other survey information. The existing bridge is located at about River Station RS 530 in the HEC-RAS model, while the proposed structure is located at about RS 460.

There were two different scenarios analyzed; the existing channel configuration and the proposed channel configuration. The proposed configuration realigned the channel, setting the side slopes at 2:1 and the bottom width of the channel at 20 feet, from approximately the upstream end of the existing upstream wingwall to the proposed bridge. The 2:1 embankment slopes were continued beneath the proposed structure and terminated approximately 60 feet downstream of the proposed structure on the southern bank and 100 feet downstream on the northern bank and channel bottom.

Manning's roughness coefficients for the natural channel vary and were estimated using the USGS Water-Supply Paper 2339, "Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains", V.T.Chow's "Open-Channel Hydraulics" (1959), Federal Highway Administration (FHWA) HDS6 and HEC 23, as well as data and photos gathered during site investigations. Manning's coefficients for the natural channel were estimated at 0.046 in the main channel and 0.066 in the overbank.

$$n = K_u D_x^{1/6}$$

V.T. Chow (1959)

$$K_u = 0.0417 \quad (D_{50} \text{ in meters})$$
$$K_u = 0.0342 \quad (D_{50} \text{ in feet})$$

Anderson et al. (1970)

$$K_u = 0.0482 \quad (D_{50} \text{ in meters})$$
$$K_u = 0.0395 \quad (D_{50} \text{ in feet})$$

Figure 1: Equations for determining Manning's n-value for RSP.

For the RSP, the Manning's roughness coefficients were derived from equation 3.16 found in the FHWA publication HDS6: River Engineering for Highway Encroachments, using the D₅₀ for the RSP. An iterative process was used to arrive at the final RSP size for the channel. The RSP along the channel should be #1

Backing size, placed over an appropriate filter material as per Caltrans Standard Specifications. The methods put forth in the Caltrans Highway Design Manual (May 2012), Section 873.3 Armor Protection, were used to calculate the appropriate material size for the embankment lining, using Figure 873.3A to size the RSP, and Figure 873.3C as a basis for the embedded toe detail. The same method can also be found in the California Bank and Shore Rock Slope Protection Design manual, Section 5-1-C. Section 72, Slope Protection, from the Caltrans 2010 Standard Specifications was also utilized. FHWA HEC 23 was also utilized in the RSP design.

The channel is steep, with an overall average slope of approximately 7.5% in the reach studied, with a slightly steeper slope of 8.5% in the immediate vicinity of the existing structure. For the proposed realignment, the average channel slope shall be approximately 7.7%.

Based on the model for a 100-year event, the average velocities within the realigned channel range from 13.2 fps to 14.8 fps. The depth of flow was less than 2 feet for all the realigned channel. The 100-year Water Surface Elevation (WSEL) at the new bridge was calculated to be 1700.6 feet with a depth of flow of approximately 1.2 feet., while the 50-year WSEL was estimated at 1700.5 feet.

Streambed:

The natural channel bed material consists of boulders, cobbles and gravel. This material is considered to be scourable. The channel is on a steep gradient which causes cascading, turbulent, high velocity flows. After the channel is realigned and graded, the channel bottom should be lined with the same RSP as the banks, #1 Backing with an appropriate filter medium. This will help simulate the natural material of the channel.

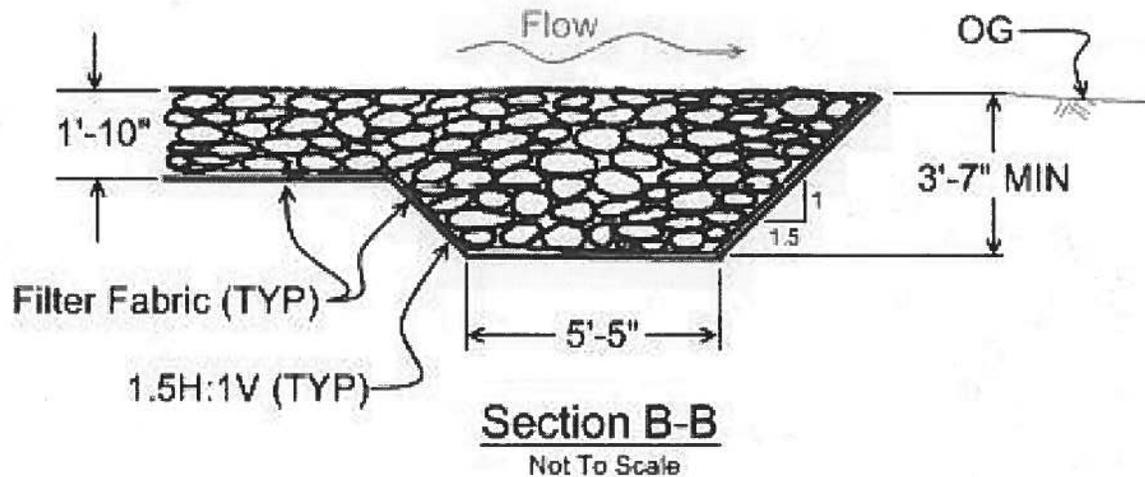


Figure 4: Downstream end detail for RSP.

Scour Analysis:

There is no local pier scour, abutment scour or contraction scour anticipated at the site. Based on a review of historical cross-section data, long term channel degradation is estimated at 3 feet. There is a probability that the channel may migrate causing some erosion of the side slopes. Due to the natural sinuous channel at the site and the steeper slope along the north bank of the channel, the Abutment 2 footing should be placed lower than Abutment 1. For spread footings, the top of the the Abutment 1 footing should be placed at or below elevation 1698 feet and the top of the Abutment 2 footing should be placed at or below elevation 1696.33, using the NAVD 88 Datum, unless founded on competent, scour resistant material as determined by the Office of Geotechnical Design.

Summary & Recommendations:

Below is a summary of key design parameters based on the hydrology and hydraulic analysis performed for this structure.

The channel and embankments should be excavated to allow the top of the RSP lining to remain below the finished invert elevation at all cross-sections. The channel and embankments should be lined with Class 8 filter fabric per Caltrans Standard Specification 72-2.02B or appropriate filter medium, and topped with a 1'-10" thick layer of "#1 Backing" Class RSP, such that the invert and slope of the realigned channel shall be at or slightly below the calculated invert based on the average channel slope between the upstream and downstream limits of the project. Edge Embedment details are based on the Caltrans Highway Design Manual (2010) Figure 873.3C (p. 870-27). End details shall be based on FHWA HEC 23, Figure

The bottom width of the channel shall be a minimum of 20 feet, with 2:1 side slopes on both banks. RSP shall extend a minimum of 3'-6" foot vertically above the channel invert and the toe of slope at both embankments shall be approximately 0'-6" above the invert elevation at any perpendicular cross-section. Cover at the abutments shall be a minimum of 3 feet over the toe of the footings but RSP only needs to be extended to a vertical height of 3'-6" above the invert, or about 6'-0" beyond the toe of the embankment.

All elevations given are referenced to the data provided by Preliminary Investigations-North, using the NAVD 88 vertical datum.

Hydrologic Summary for		
Troutdale Creek Bridge, 21-0004		
Drainage Area: 1.1 mi ²		
Frequency	Design Flood	Base Flood
		50-year
Discharge	400 cfs	500 cfs
Water Surface Elevation at Bridge	1700.50 ft	1700.62 ft
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.		

LongTerm Scour Depths, Troutdale Creek, Br. No. 21-0004		
Support	Degradation Scour Depth	Contraction Scour Depth
All	3.0 foot	N/A

Scour Data (Elevation and Depth), Troutdale Creek, Br. No. 21-0004		
Support	Long Term Scour Elevation	Short Term (Local) Scour Depth
A1	1698 feet	N/A
A2	1696.5 feet	N/A

*Elevations based on the NAVD 1988 datum.

This report has been prepared under my direction as the professional engineer in responsible charge of the work, in accordance with the provisions of the Professional Engineers Act of the State of California.

Table 3: Trees Potentially Impacted within the Project Footprint

DBH* ► SPECIES ▼	4 to 9 inches	10 to 19 inches	20 to 29 inches	30 to 39 inches	40 to 49 inches	50 to 59 inches	> 60 inches	Totals
Big Leaf Maple	17	15	5	2	0	1	0	40
California Bay Laurel	20	9	2	2	1	0	0	34
California Black Oak	1	6	5	4	0	0	0	16
Canyon Live Oak	6	3	1	0	0	0	0	10
Dead	1	0	0	1	0	0	0	2
Dogwood	1	0	0	0	0	0	0	1
Douglas Fir	36	34	16	9	9	3	1	108
Manzanita	0	2	0	0	0	0	0	2
Ponderosa Pine	2	2	4	5	1	0	0	14
Pacific Madrone	11	2	2	0	0	0	0	15
Tan Oak	1	1	0	0	0	0	0	2
Valley Oak	1	0	0	0	0	0	0	1
White Alder	2	3	0	0	0	0	0	5
Pacific yew	1	0	0	0	0	0	0	1
Totals	100	77	35	23	11	4	1	251

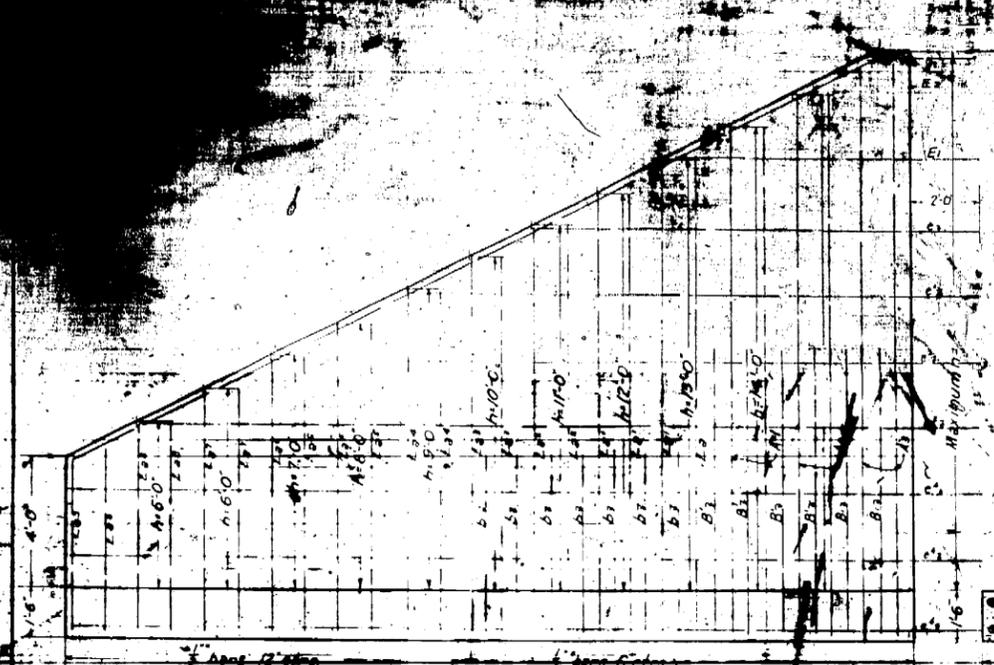
Riparian Tree Count Survey Results

EAST of BRIDGE			
Species	DBH	Tag #	Approximate Location
White alder	21.5	180	northbank near bridge
Big leaf maple	8.5	178	northbank near bridge
Douglas fir	47	328	northbank
Douglas fir	34	335	northbank
Douglas fir	22	194	northbank
Big leaf maple	5, 9	192	northbank walking east, mid-elevation
Douglas fir	14	322	northbank walking east, mid-elevation
Douglas fir	40	956	northbank walking east, mid-elevation
Big leaf maple	16, 15, 22	302	northbank walking east, mid-elevation
Douglas fir	23	957	northbank walking east, mid-elevation
Douglas fir	7	303	northbank walking east, higher-elevation
CA bay laurel	10.5	197	northbank walking east, mid-elevation
Douglas fir	5	379	northbank walking east, mid-elevation
Douglas fir	25	198	northbank walking east, mid-elevation
Douglas fir	15	963	northbank walking east, higher-elevation
CA black oak	29	947	northbank walking east, higher-elevation
Douglas fir	18	323	northbank walking east, mid-elevation
Douglas fir	15	964	northbank walking east, higher-elevation
Pacific madrone	14	324	northbank walking east, mid-elevation
Douglas fir	7	375	northbank walking east, high near road
Douglas fir	8	977	northbank walking east, high near road
Douglas fir	12.5	978	northbank walking east, high near road
Douglas fir	7.5	102	northbank walking east, high near road
Douglas fir	6	940	northbank walking east, high near road
Douglas fir	5	925	northbank walking east, high near road
CA bay laurel	6, 6.5	376	northbank walking east, mid-elevation
Douglas fir	7.5	959	northbank, high near road
Douglas fir	65	361	northbank, high near road
Douglas fir	60	362	northbank walking east, mid-elevation
Pacific madrone	4,3	943	northbank walking east, mid-elevation
Douglas fir	10.5	320	northbank walking east, mid-elevation
Douglas fir	22.5	101	northbank walking east, mid-elevation
Pacific madrone	4	965	northbank walking east, high near road
Douglas fir	24	941	northbank walking east, high near road
Pacific madrone	8,6.5	196	northbank farthest east, down by stream
Canyon live oak	4.5	950	northbank walking east, high near road
CA bay laurel	5	315	northbank farthest east, down by stream
Douglas fir	6.5	929	northbank farthest east, high near road
CA bay laurel	5, 3.5	380	northbank farthest east, down by stream
CA bay laurel	4.75	378	northbank farthest east, down by stream
Douglas fir	29	937	northbank farthest east, high near road
Douglas fir	12.5	330	northbank farthest east, high near road
Douglas fir	16,22	309	northbank farthest east, high near road
CA black oak	42	199	northbank farthest east, high near road

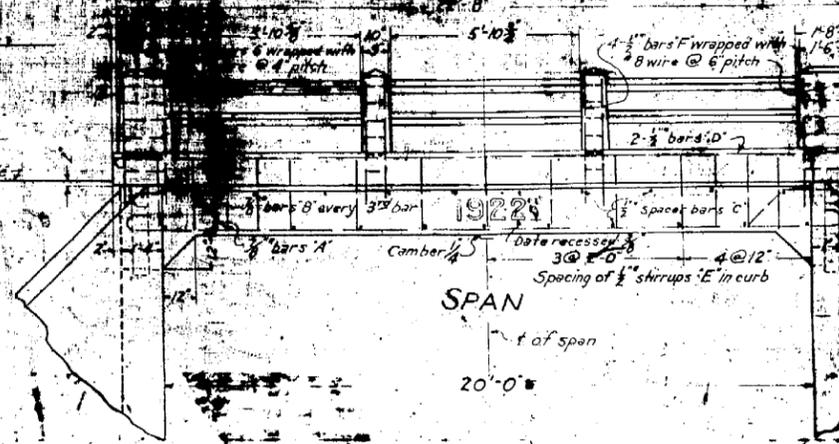
Total on northbank	44		
Douglas fir	51	377	southbank at crossing by tag 378, near stream
CA bay laurel	13	958	southbank at crossing by tag 378, near stream
CA bay laurel	10.5, 6.5	179	southbank walking west, mid-elevation
Douglas fir	47	308	southbank walking west, mid-elevation
Douglas fir	21.5	304	southbank walking west, mid-elevation
Douglas fir	43	975	southbank walking west, up near temporary road
CA bay laurel	5,7,3,6,3	948	southbank walking west, steep area right by stream
Douglas fir	25	325	southbank walking west, mid-elevation
CA bay laurel	7.5	949	southbank walking west, mid-elevation
Douglas fir	4.4	935	southbank walking west, mid-elevation
Douglas fir	4	195	southbank walking west, mid-elevation
Douglas fir	4.5	336	southbank walking west, mid-elevation
Douglas fir	4.5	971	southbank walking west, mid-elevation
Pacific madrone	24.5	191	southbank walking west, up near temporary road by bridge
Douglas fir	5.5	190	southbank walking west, up near temporary road by bridge
Douglas fir	6	305	southbank walking west, up near temporary road by bridge
Douglas fir	10	326	southbank walking west, up near temporary road by bridge
Douglas fir	47.5	314	southbank walking west, up near temporary road by bridge
CA tan oak	5.5	951	southbank right up by bridge
CA black oak	18.5,4	331	southbank right up by bridge
Douglas fir	16	327	southbank right up by bridge
Douglas fir	21	301	southbank right up by bridge
Douglas fir	23	310	southbank right up by bridge
Douglas fir	28	316	southbank right up by bridge
Big leaf maple	32	307	southbank right up by bridge
Douglas fir	11	313	southbank right up by bridge
Big leaf maple	8	306	southbank right up by bridge
Big leaf maple	12	311	southbank in hairpin turn near bridge
Douglas fir	4	976	southbank in hairpin turn near bridge
CA bay laurel	6	924	southbank down by the stream near bridge
CA bay laurel	5,4,4	945	southbank down by the stream near bridge
Big leaf maple	12	930	southbank down by the stream near bridge
CA black oak	5	966	southbank down by the stream next to abutment
Total on southbank	33		
WEST OF BRIDGE			
Species	DBH	Tag #	Approximate Location
White alder	21	104	northbank, near stream by bridge
White alder	14	106	northbank, near stream by bridge
Tan oak	7	960	northbank by wingwall
CA bay laurel	9,6,5,4	105	northbank walking west, high elevation
CA bay laurel	12,5,8,10	109	southbank adjacent to stream
CA bay laurel	4,5,5,8	952	northbank walking west, mid-elevation
Tan oak	4.5	927	northbank walking west, high elevation

CA bay laurel	10.5	177	southbank adjacent to stream
CA bay laurel	10,13,12,	110	southbank near trail
Big leaf maple	33	319	southbank near road
CA bay laurel	5	108	southbank near trail
Big leaf maple	5	974	southbank highest point near road
CA bay laurel	8	114	southbank highest point near road
Pacific madrone	10	113	southbank highest point near road
Douglas fir	56	968	southbank highest point near road
Douglas fir	32	112	southbank highest point near road
Douglas fir	30	111	southbank highest point near road
Total	17		

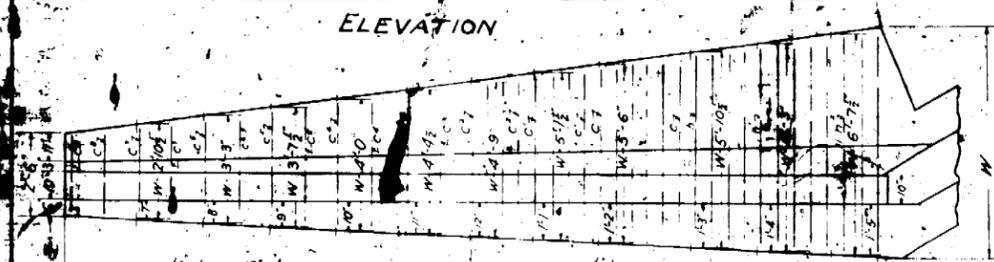
DIV. COUNTY ROUTE SEC.
 W. Nap. - 2 A 21
 Approved July
 State Highway



ELEVATION



ELEVATION

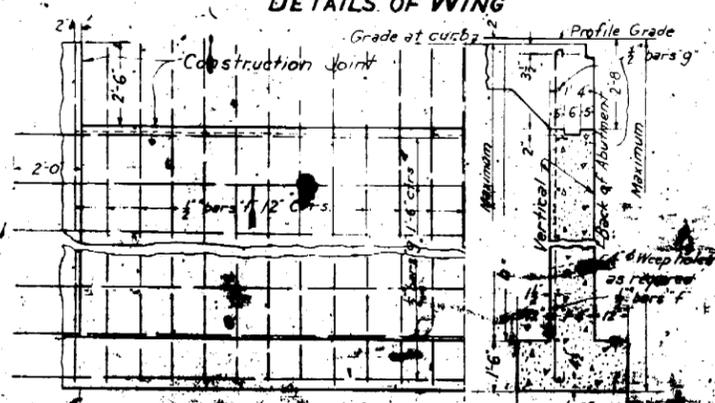


PLAN
DETAILS OF WING

MATERIAL FOR SUPERSTRUCTURE

NUMBER	SIZE	MARK	LENGTH	WEIGHT	REMARKS	BENDS
32	3/8"	A	17'-5"	14.6	1/2" bars A	2
16	1/2"	B	16'-0"	13.2	3" bars B	2
23	1/2"	C	28'-2"	23.2	3" bars C	2
4	D	23'-6"	19.5	16.5	4" bars D	1
30	E	6'-5"	5.1	3.8	1/2" stirrups E	1
32	F	4'-0"	3.3	2.4	1-1/2" bars F	1
48	3/8"	G	6'-6"	5.4	35 lbs #8 wire	1

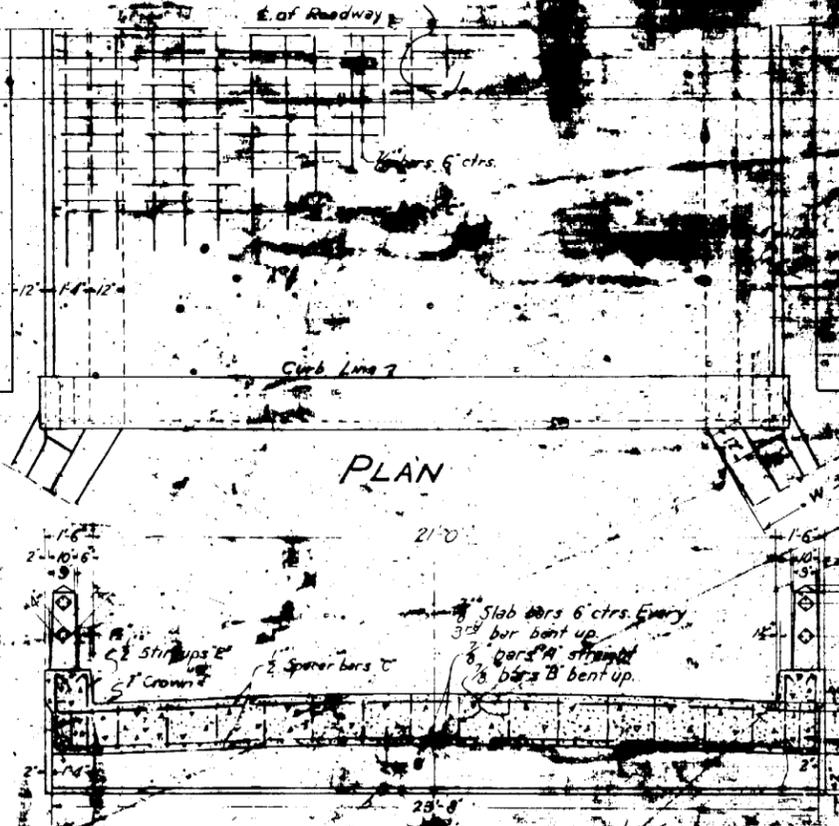
Total steel: 3990 lbs Total concrete: 26,754 yds.



ELEVATION

NUMBER	SIZE	MARK	LENGTH	X	Y	BENDS
3	1 1/2"	A	14'-6"	14.6	14.6	2
3	1 1/2"	B	14'-6"	14.6	14.6	2
3	1 1/2"	C	14'-6"	14.6	14.6	2
3	1 1/2"	D	14'-6"	14.6	14.6	2
3	1 1/2"	E	14'-6"	14.6	14.6	2
3	1 1/2"	F	14'-6"	14.6	14.6	2
3	1 1/2"	G	14'-6"	14.6	14.6	2
3	1 1/2"	H	14'-6"	14.6	14.6	2
3	1 1/2"	I	14'-6"	14.6	14.6	2
3	1 1/2"	J	14'-6"	14.6	14.6	2
3	1 1/2"	K	14'-6"	14.6	14.6	2
3	1 1/2"	L	14'-6"	14.6	14.6	2
3	1 1/2"	M	14'-6"	14.6	14.6	2
3	1 1/2"	N	14'-6"	14.6	14.6	2
3	1 1/2"	O	14'-6"	14.6	14.6	2
3	1 1/2"	P	14'-6"	14.6	14.6	2
3	1 1/2"	Q	14'-6"	14.6	14.6	2
3	1 1/2"	R	14'-6"	14.6	14.6	2
3	1 1/2"	S	14'-6"	14.6	14.6	2
3	1 1/2"	T	14'-6"	14.6	14.6	2
3	1 1/2"	U	14'-6"	14.6	14.6	2
3	1 1/2"	V	14'-6"	14.6	14.6	2
3	1 1/2"	W	14'-6"	14.6	14.6	2
3	1 1/2"	X	14'-6"	14.6	14.6	2
3	1 1/2"	Y	14'-6"	14.6	14.6	2
3	1 1/2"	Z	14'-6"	14.6	14.6	2

PLAN
DETAILS OF ABUTMENT



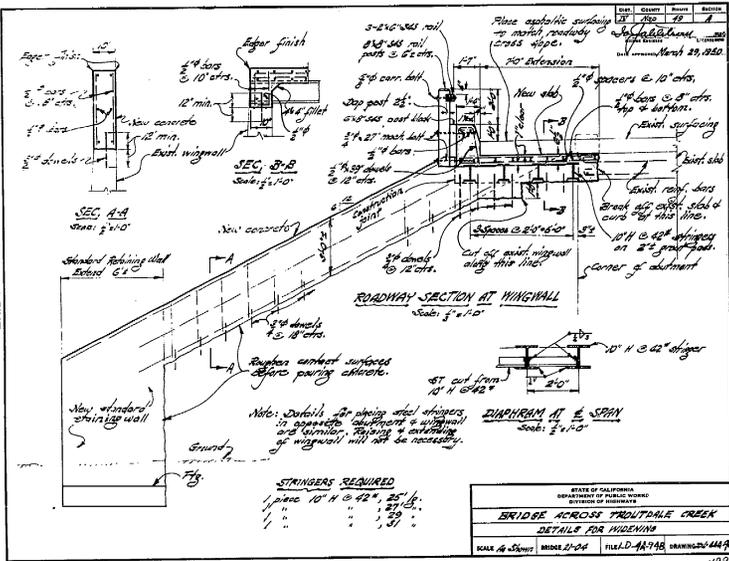
SECTION SLAB

NOTE:-
 All exposed edges to be chamfered one inch, except on railing.
 Reinforcing steel to be square deformed bars.
 Date of year constructed, to be placed on each side of slab.
 Bridge to be drawn as determined by the Engineer and steel to be revised accordingly. Width of bridge and depth of footings to be determined by the Engineer in field.

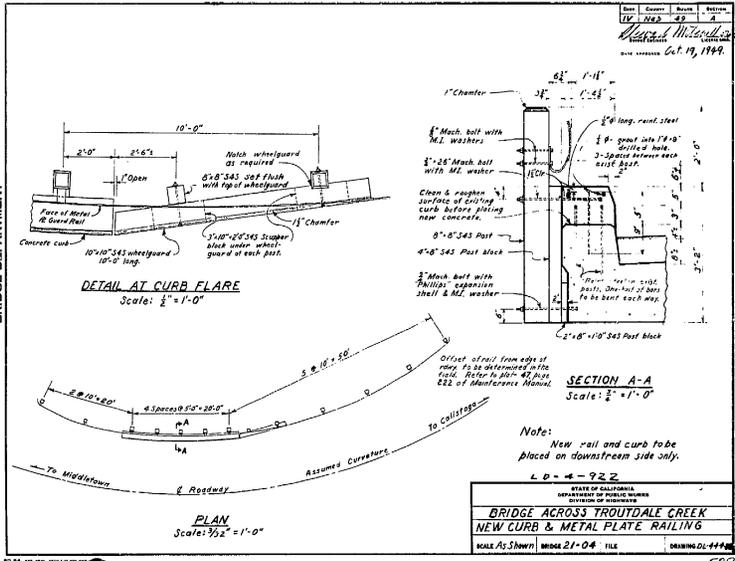
STATE OF CALIFORNIA
 DEPARTMENT OF PUBLIC WORKS
 CALIFORNIA HIGHWAY COMMISSION
BRIDGE ACROSS TROUTDALE CREEK
 STA. 77+00

Traced by F.M.
 Checked by S.E.

I HEREBY CERTIFY THAT THIS IS A TRUE AND ACCURATE COPY OF THE ABOVE DOCUMENT TAKEN UNDER MY DIRECTION AND CONTROL ON THIS DATE IN SACRAMENTO, CALIFORNIA PURSUANT TO AUTHORIZATION BY THE DIRECTOR OF TRANSPORTATION.
 DATE: 6-27-29
 SIGNATURE: Joseph M. Costa
 TITLE: Supervisor of Materials



STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS			
BRIDGE ACROSS TROUTDALE CREEK			
DETAILS FOR WINGWALL			
SCALE AS SHOWN	BRIDGE 21-04	FILE D-44748	DRAWING NO. 44474



STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS			
BRIDGE ACROSS TROUTDALE CREEK			
NEW CURB & METAL PLATE RAILING			
SCALE AS SHOWN	BRIDGE 21-04	FILE	DRAWING NO. 44474

INDEX OF SHEETS

Sheet No.	Description
1	Title Sheet
2	Typical Cross-Sections
3-4	Construction Details, Profile, and Drainage Details
5	Miscellaneous Details and Contract Quantities
6-14	Standard Construction Details
1-7	Cross-Sections

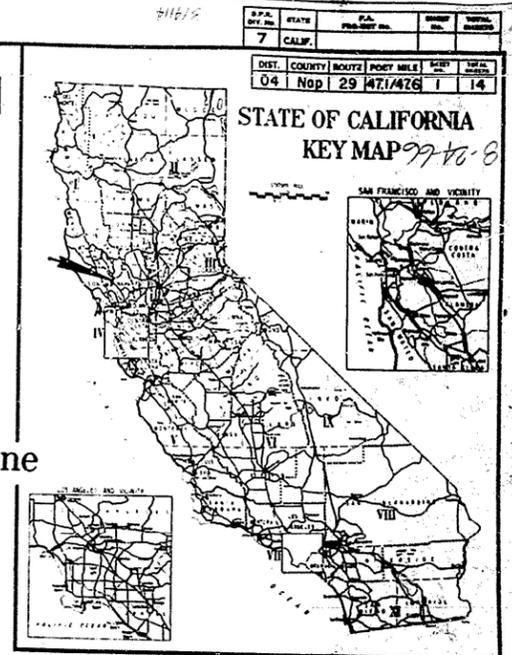
STATE OF CALIFORNIA
 TRANSPORTATION AGENCY
 DEPARTMENT OF PUBLIC WORKS
 DIVISION OF HIGHWAYS

PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
 In Napa County

about 9.7 miles north of Calistoga between 1.5 miles south and 1.0 mile south of Lake County Line

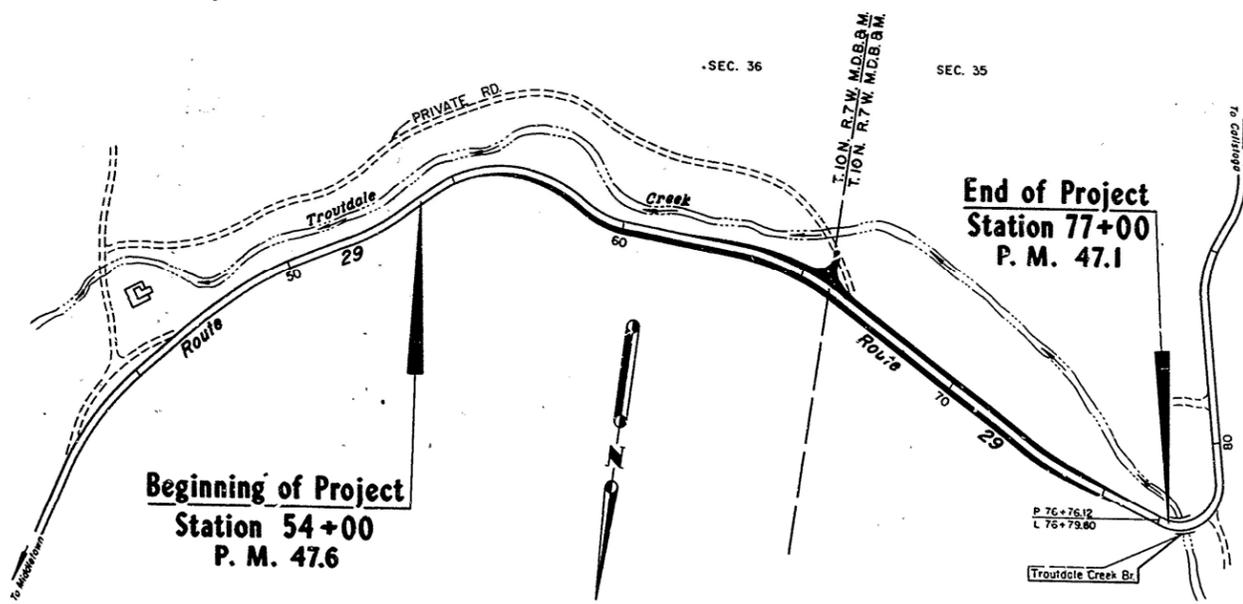
(being the detail plans of a portion of the route for the State highway adopted by the California Highway Commission on July 25, 1922)

MICROFILMED.



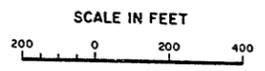
314114

MICROFILMED.



Beginning of Project
 Station 54+00
 P. M. 47.6

End of Project
 Station 77+00
 P. M. 47.1



Length of Project = 0.43 mile

AS BUILT PLANS
 Contract No. 04-314114
 Date Completed 5-27-66
 Document No. 40000014

MICROFILMED.

NO CONSTRUCTION CHANGES

CONTRACT No. 04-314114
 DATE ACCEPTED 5-27-66
AS BUILT
 RESIDENT ENGINEER R.E. Shour
 REVISIONS BY... DATE
 DELINEATED BY... DATE
 CHECKED BY... DATE

Alan Hunt
 District Engineer
H.H. Beardsley
 Assistant Engineer of Charge
 December 20, 1965
John E. ...
 State Highway Engineer
 Registered Civil Engineer No. 0945
 Director of Public Works

CONTRACT NO. 04-314114

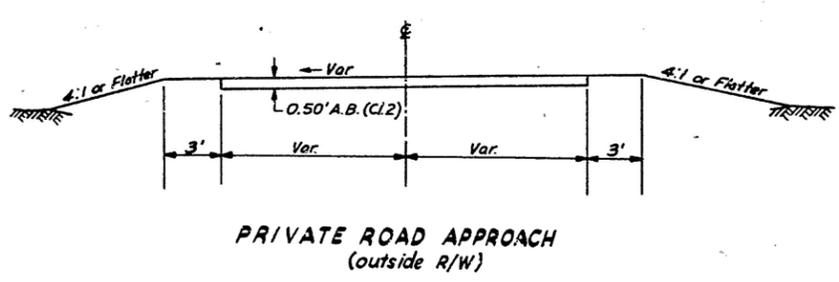
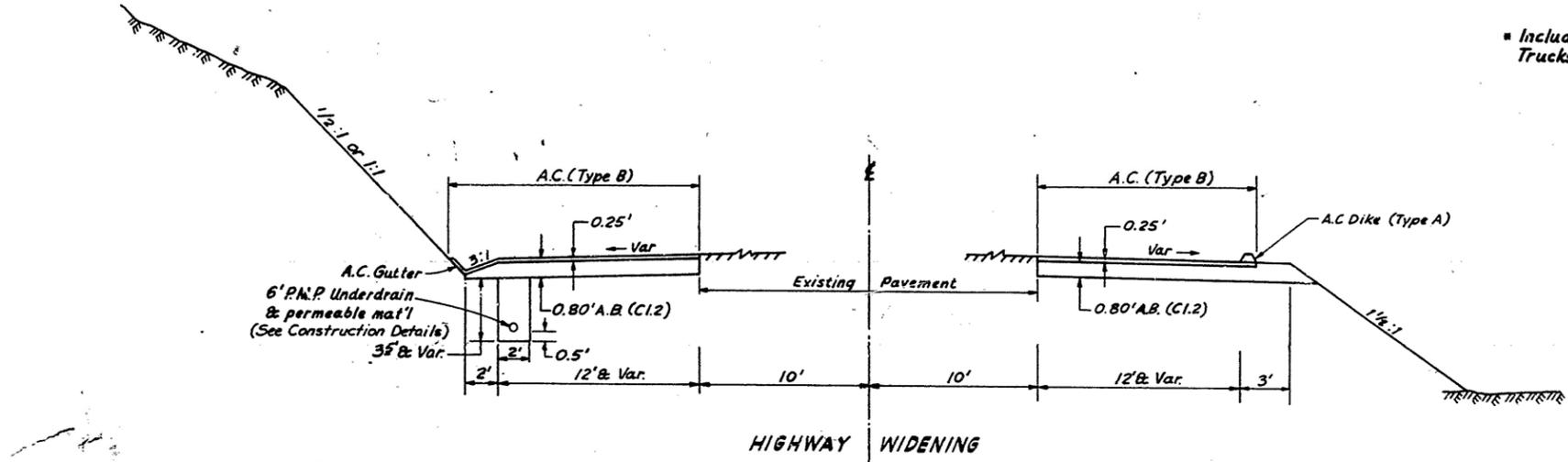
MICROFILMED.

DATE	BY	SCALE	NO.
12/22/65	J.A.H.	1/4" = 1'-0"	2

December 22, 1965
J.A.H.

ABBREVIATIONS
 A.C. (Type B) Asphalt Concrete (Type B)
 A.B. (Cl. 2) Aggregate Base (Class 2)

DESIGN DESIGNATION
 ANNUAL A.D.T. (64) 1,800
 PEAK MONTH A.D.T. (75) 8,000
 D.H.V. 1,000
 D 70%
 T 9%
 V -
 * Includes autos with trailers.
 Trucks only = 3%



AS BUILT PLANS
 Contract No. 04-314114
 Date Completed 5-27-66
 Document No. 40000014

Notes:
 1. Dimensions shown are subject to tolerances specified in the Standard Specifications
 2. Superelevation as directed by the Engineer or as shown on the plans.

MICROFILMED.
 NO CONSTRUCTION CHANGES

CONTRACT No. 04-314114
 DATE ACCEPTED 5-27-66
AS BUILT
 REGIONAL ENGINEER R.E. SHOUR
 REVISIONS BY... DATE...
 DESIGNED BY... DATE...
 CHECKED BY... DATE...

*R.A. H...
 H. H. Jones
 REGISTERED CIVIL ENGINEER No. 4472*

4-NAP-29
 Between 1.5 Mi. and 1.0 Mi. South of
 Lake County Line near Calistoga
TYPICAL CROSS-SECTIONS
 Scale: 1" = 4'

DESIGNED BY	DATE	APPROVAL	RECOMMENDED BY	DATE
E.A. Jones			J.B. Watson	

314111

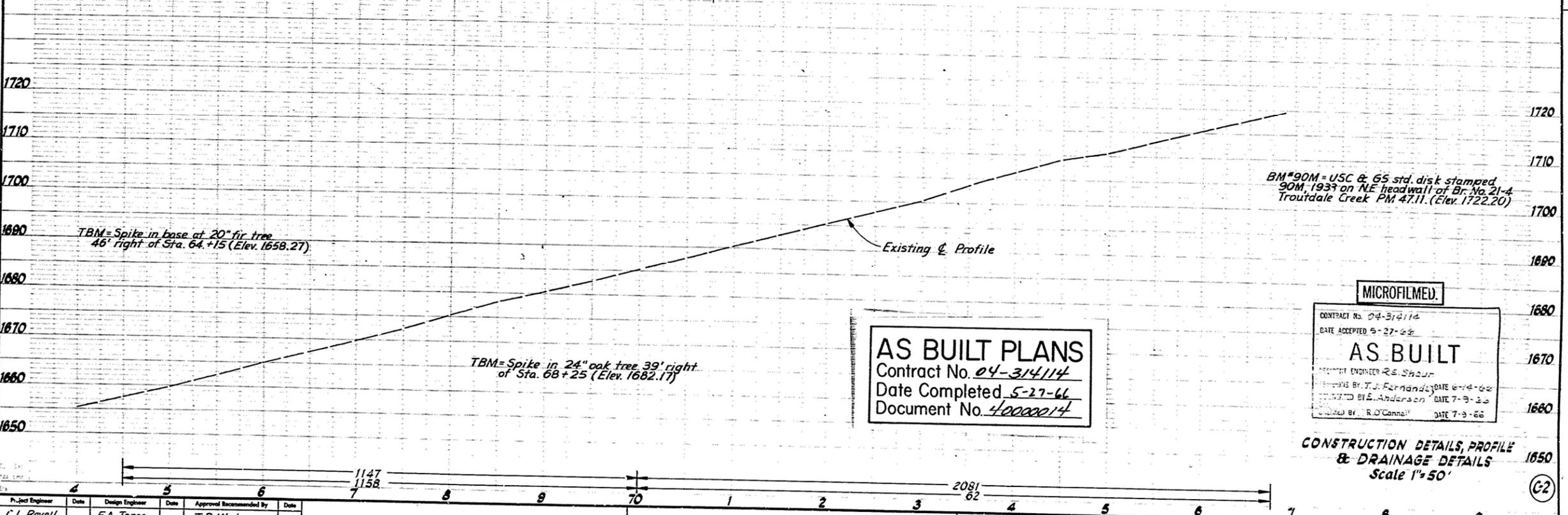
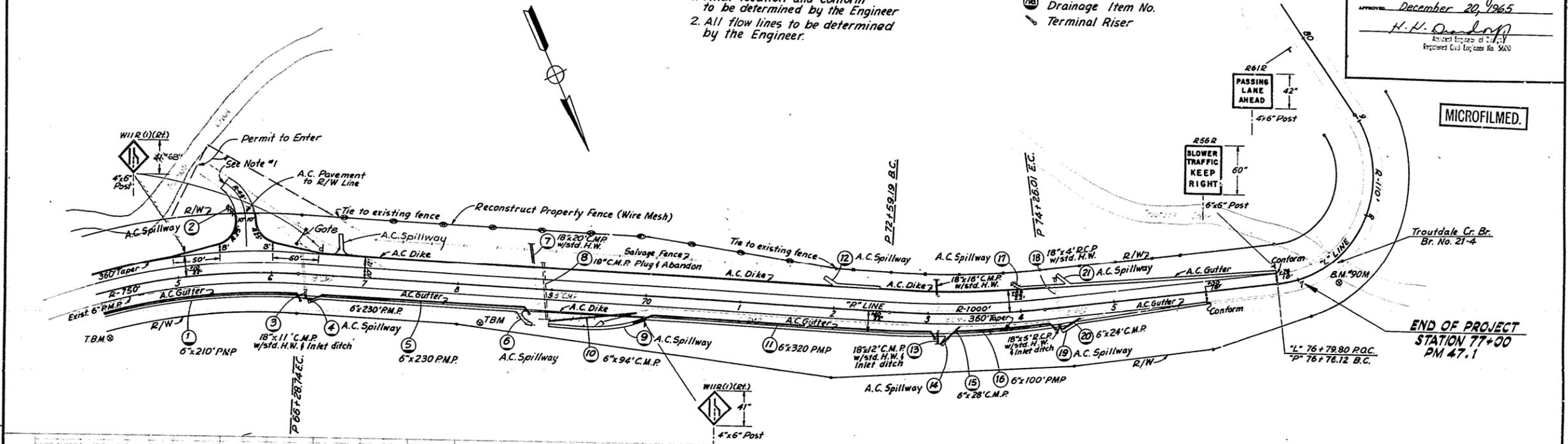
DATE	PROJECT	DATE	PROJECT	DATE	PROJECT
04	Map	29	471-476	4	14

R.A. Healy
 CIVIL ENGINEER
 APPROVED December 20, 1965
 H.H. Anderson
 Registered Civil Engineer No. 5600

NOTE:
 1. Final location and conform to be determined by the Engineer
 2. All flow lines to be determined by the Engineer.

LEGEND
 (16) Drainage Item No.
 Terminal Riser

MICROFILMED.



AS BUILT PLANS
 Contract No. 04-314114
 Date Completed 5-27-66
 Document No. 40000014

MICROFILMED.
 CONTRACT No. 04-314114
 DATE ACCEPTED 5-27-66
AS BUILT
 PROJECT ENGINEER R.S. Shoun
 DRAWN BY J.J. Fernandez DATE 6-16-66
 CHECKED BY E. Anderson DATE 7-9-66
 DESIGNED BY R.O. Conna DATE 7-9-66

CONSTRUCTION DETAILS, PROFILE & DRAINAGE DETAILS
 Scale 1"=50'

Project Engineer	Date	Design Engineer	Date	Approval Recommended By	Date
C.L. Revell		E.A. Jones		J.B. Watson	

314114

MICROFILMED.

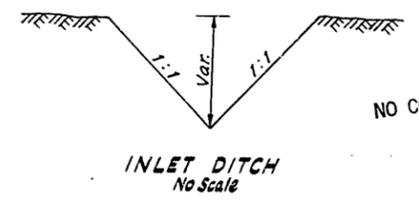
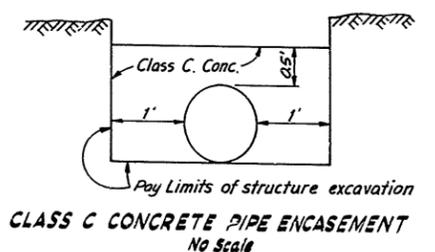
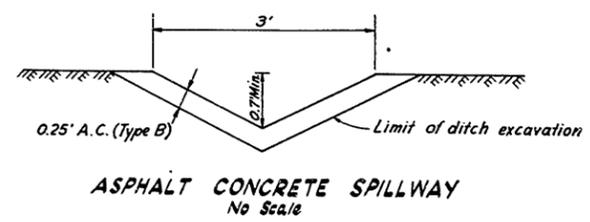
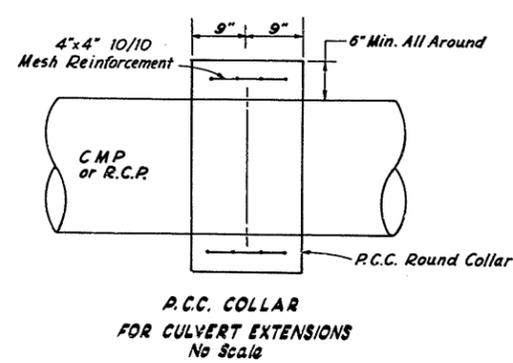
(C2)

314111

314114 MICROFILMED

STRUCTURE LIST (DRAINAGE)

Sheet Number	Item Number	REMARKS	Renovating Concrete	Structure Excavation	Structure Backfill	Ditch Excavation	C.M.P.			R.P.P.	R.C.P.	Class C Conc. Encasement	Class A (Minor Str.)	Permeable Material	Asphalt Concrete	Placing A.C. Spillway	Culvert Markers	Underdrain Markers	Sheet Number	Item Number	
							6"	15"	18"												6"
C-1	1	18" C.M.P. Remove H.W., Const. Std. H.W., Collar & Inlet Ditch	0.7	0.3	1			5			0.67	1.08							C-1	1	
	2	6" C.M.P.	3.7	3.6		20														2	
	3	A.C. Spillway			1									0.8	4.4					3	
	4	6" P.M.P. & Terminal Riser	44.6			8			180					45.4						4	
	5	6" P.M.P. & Terminal Riser	23.3			8			90					22.7						5	
	6	18" C.M.P. Remove H.W., Const. Std. H.W., Collar & Inlet Ditch	0.7	1.8	1.3	2		11				1.08								6	
	7	6" C.M.P.	4.4	4.4		24														7	
	8	A.C. Spillway			1									0.8	4.4					8	
	9	6" P.M.P. & Terminal Riser	80.3			8			310					78.1						9	
	10	15" C.M.P. Remove H.W., Const. Std. H.W., Collar & Inlet Ditch	1.2	3.2	1.0	8	23				1.96	1.80								10	
	11	A.C. Spillway			1									0.8	4.4					11	
	12	6" P.M.P.	32.4			8			125					31.5						12	
	13	18" C.M.P. Remove H.W., Const. Std. H.W., Collar & Inlet Ditch	1.3	4.9	2.3	2		27			1.81	2.16								13	
	14	A.C. Spillway			1									0.8	4.4					14	
	15	6" C.M.P.	5.6	5.4		30														15	
G-2	1	6" P.M.P. & Terminal Riser	54.4			8			210					52.8						C-2	1
	2	A.C. Spillway			2									1.1	6.7					2	
	3	18" C.M.P. Remove H.W., Const. Std. H.W., Collar & Inlet Ditch	0.7	1.8	1.3	1		11			1.08									3	
	4	A.C. Spillway			1									0.8	4.4					4	
	5	6" P.M.P. & Terminal Riser	59.6			8			230					58.0						5	
	6	A.C. Spillway			2									1.9	11.1					6	
	7	18" C.M.P., Const. Std. H.W., Collar	4.2	3.0				20			1.08									7	
	8	Plug & Abandon Exist. 18" C.M.P.									0.06									8	
	9	A.C. Spillway			9									8.3	48.9					9	
	10	6" C.M.P.	17.4	16.7		94														10	
	11	6" P.M.P. & Terminal Riser	82.9			8			320					80.6						11	
	12	A.C. Spillway			1									0.9	5.3					12	
	13	18" C.M.P. Remove H.W., Const. Std. H.W., Collar & Inlet Ditch	1.3	5.2	3.8	1		28			2.16									13	
	14	A.C. Spillway			1									0.8	4.4					14	
	15	6" C.M.P.	5.2	5.0		28														15	
	16	6" P.M.P. & Terminal Riser	25.9			8			100					25.2						16	
	17	A.C. Spillway			1									0.8	4.4					17	
	18	18" R.C.P. Remove H.W., Const. Std. H.W., Collar & Inlet Ditch	0.7	0.3	0.2	2			9		2.24									18	
	19	A.C. Spillway			1									0.6	3.6					19	
	20	6" C.M.P.	4.4	4.3		24														20	
	21	A.C. Spillway			1									1.1	6.7					21	
TOTAL			6.6	46.8	52.3	40	284	23	102	1565	9	4.44	12.74	312.8	19.5	113.1	14	17			



WOOD SIGN POST QUANTITIES

Post Size	FBM
4" x 6"	112
6" x 6"	99

AS BUILT PLANS
Contract No. 04-314114
Date Completed 5-27-66
Document No. 40000014

RESETTING MARKERS

Location	Markers	
	Culvert Markers	Underdrain Markers
From structure list	14	
L 55+83		1
L 59+29		1
P 63+98		1
P 69+95		1
P 73+10		1
P 74+39		1
TOTAL	14	6

RECONSTRUCT PROPERTY FENCE (Type WM)

Station	Location	Lin. Ft.
P 66+60 to P 72+00	Lt.	540
TOTAL		540

REMOVING TRAFFIC STRIPES

Station	Location	Lin. Ft.
L 55+00 to P 76+76	€	820
TOTAL		820

A.C. DIKES

Station	Location	Lin. Ft.
L 61+50± to L 65+00±	Lt.	430
L 65+80± to L 72+00±	Lt.	640
L 68+70± to L 70+00±	Rt.	130
L 72+50 to L 74+00±	Rt.	150
TOTAL		1350

EARTHWORK SUMMARY

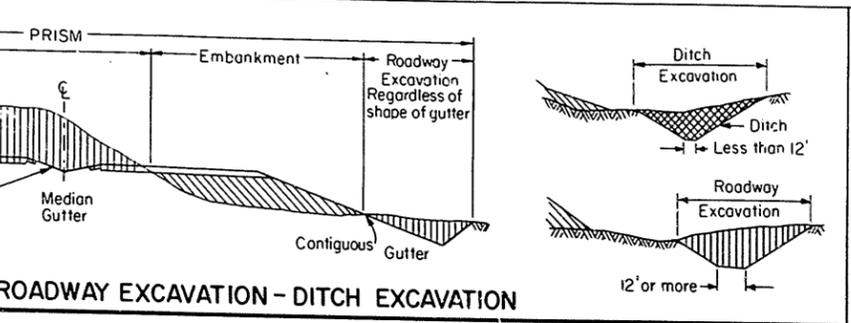
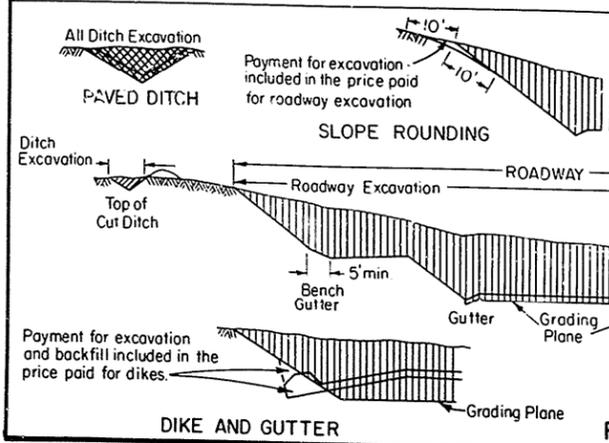
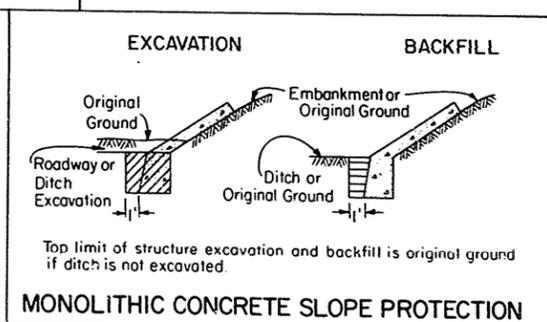
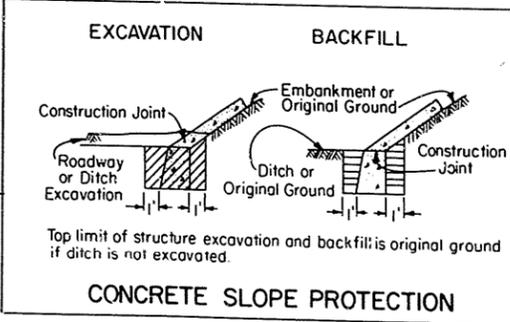
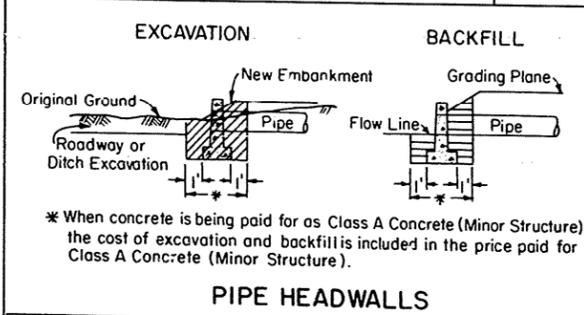
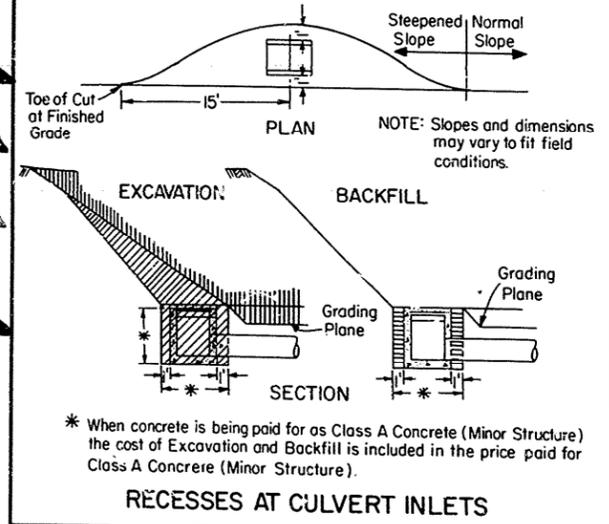
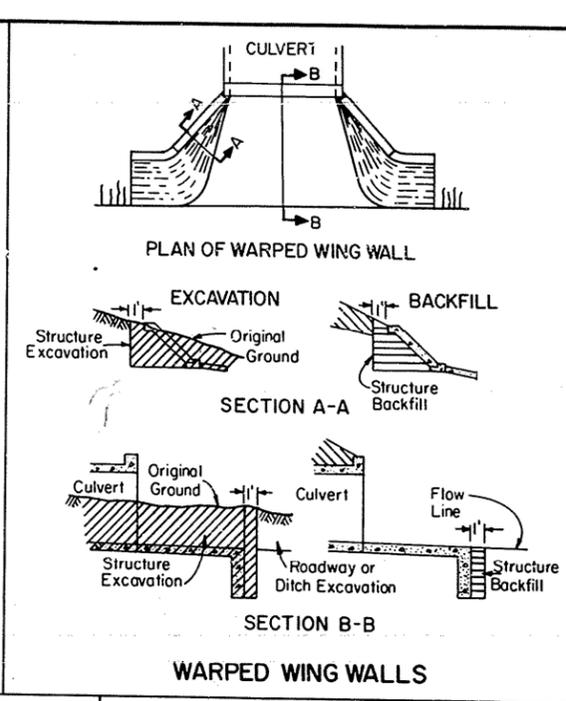
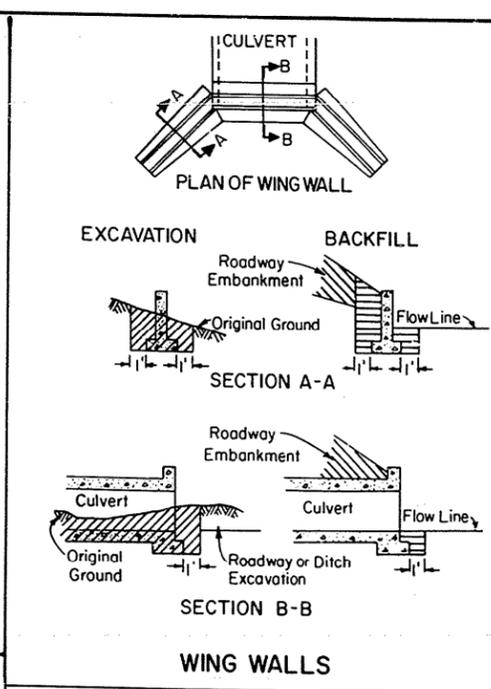
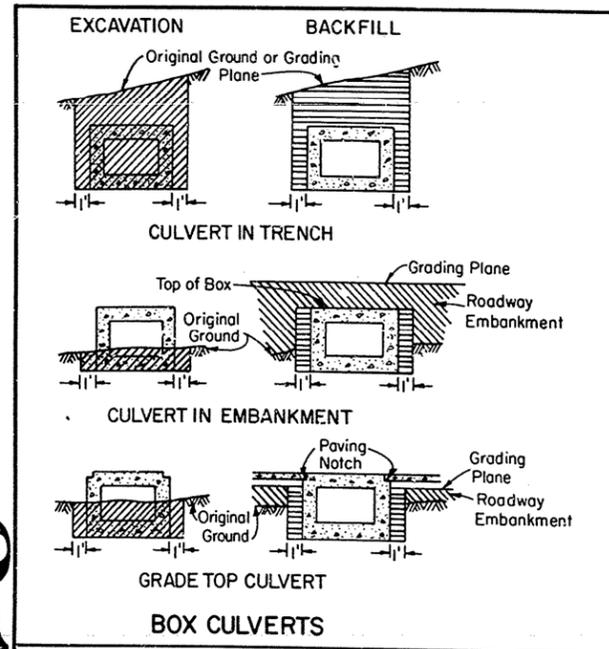
Item	Exc.	Emb.
Sta 61+50 to 77+76 Left	683	1549
Sta 55+00 to 77+76 Right	6337	15
Structure Ex.	467	
Ditch Ex.	40	
TOTAL CU. YDS.	7527	1564

CONTRACT No. 04-314114
DATE ACCEPTED 5-27-66
AS BUILT
RESIDENT ENGINEER R. E. Snour
REVISIONS BY... DATE...
DELINEATED BY... DATE...
CHECKED BY... DATE...

MISCELLANEOUS DETAILS AND CONTRACT QUANTITIES

Project Engineer	Date	Checked by	Date	Asst. Recommended by	Date
CL. Revel		EA. Jones		TR. Watson	

31414



NO CONSTRUCTION CHANGES

CONTRACT NO. 04-31414
DATE ACCEPTED 5-27-66

AS BUILT

RESIDENT ENGINEER R.E. SHOUR
REVISIONS BY... DATE...
DELINEATED BY... DATE...
CHECKED BY... DATE...

MICROFILMED.

To accompany plans dated December 20, 1965.

DISTRICT	COUNTY	ROUTE	POST MILES - TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	Alameda	29	47.1 / 87.6	6	14

APPROVAL RECOMMENDED

[Signature]
Assistant State Highway Engineer - Bridges

[Signature]
Engineer of Design
Registered Civil Engineer No. 9837

Approved September 30, 1965

[Signature]
State Highway Engineer
Registered Civil Engineer No. 5945

By: *[Signature]*
Deputy State Highway Engineer
Registered Civil Engineer No. 5645

AS BUILT PLANS
Contract No. 04-31414
Date Completed 5-27-66
Document No. 40000014

MICROFILMED.

LEGEND

Structure Excavation	Roadway Excavation
Structure Backfill	Roadway Embankment
Ditch Excavation	Original Ground

STATE OF CALIFORNIA
TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

LIMITS OF PAYMENT FOR
EXCAVATION AND BACKFILL
MISCELLANEOUS

A62-A

STORM WATER INFORMATION HANDOUT
CONTRACT NO: 04-4A00901
04-NAPA-29-PM 47.0/47.2

Troutdale Creek Bridge Replacement
(For Contractor)

California Department of Transportation
District 04
Office of Water Quality
111 Grand Avenue, Oakland, CA 94612

July, 2014

Disclaimer

A "Disclaimer" is required specifying that the information provided in the Non Storm Water Information Handout is just a guideline and is to be used for information purposes only and should not be considered a sole source document to adhere to the requirements of the new National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), Number CAS000002, adopted on September 2, 2009. The contractor is required to provide water quality monitoring, sampling and implement best management practices (BMPs) based on standard industry operations, field conditions and conditions encountered based on the contractor's means and methods. The information in this handout is not to be construed in any way as a waiver of the provisions in the CGP. Bidders and contractors are cautioned to make independent investigations and examinations as they deem necessary to satisfy the conditions encountered in performance of work, with respect to the following: sampling and monitoring locations, distribution of watershed areas for sizing of BMPs, and selection of BMPs in order to conform to the requirement of the contract documents and the CGP.

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CONTRACT NO: 04-4A0904

1 PROJECT INFORMATION

- 1A Project Description
- 1B Receiving Water Bodies
- 1C Climate and Rainfall Data

2 CONSTRUCTION GENERAL PERMIT

- 2A Risk Level

3 TEMPORARY CONSTRUCTION SITE BMPs

- 3A Run-on Discharges
- 3B Temporary ESA Fencing

4 PERMITS/CERTIFICATIONS

- 4A General

5 ATTACHMENTS

- A LOCATION MAP
- B RISK LEVEL DETERMINATION
- C RAINFALL DATA
- D PROJECT DISCHARGE LOCATION PLAN
- E 401 CERTIFICATION
- F 1602 PERMIT
- G BIOLOGICAL OPINION & ADDENDUM

1 Project Information

1A Project Description

This is a bridge replacement project along State Route 29 (SR-29) at post mile 47.11. This project will replace the existing 9.4-m wide, 7.9-m long, 2-lane Troutdale Creek Bridge (Bridge No. 21-0004) into a new single-span bridge as preferred alternative for a long-term scour mitigation measure. Troutdale Creek Bridge is a RC slab span with RC wing abutment on spread footings. The span configuration of this bridge is 1 @ 7.0m. Troutdale creek below the bridge consists of natural boulder, cobble and gravel roadbed on steep gradient and is characterized by cascading turbulent flow with high velocity.

To install a widened and realigned bridge reconstruction of SR-29 will include embankment work for widening the roadway. Existing silt deposits will be excavated as part of bridge abutments and footings construction. The sliver widening along inside curve of the bridge consist of RC deck on top of steel stringer.

Total disturbed soil area (DSA) would be about 2.2 acres. DSA includes new paved and reworked areas, cut/fill slopes, and expansion of right of way for the temporary construction easement (TCE) on road realignment. In both instances work above the creek would be involved.

The project is located in Napa County, a co-holder of an MS4 municipal stormwater NPDES phase-2 permit along with the cities of Napa, Calistoga, St. Helena, and town of Yountville.

1B Receiving Water Bodies

The project is within the Putah Creek Upper Putah Creek hydrologic area (HA) 512.30 with an annual rainfall of 41.8 inches covering 156,644 acres. There are no impaired waterbodies within this hydrologic area. Troutdale Creek is not a 303d listed waterbody for any pollutant of concern. It connects to Helena Creek that connects to Upper Putah Creek about 9.5 miles north of the project site; neither creeks are identified as impaired.

1C Climate and Rainfall Data

A National Oceanic and Atmospheric Administration (NOAA) weather station located in NAPA STATE HOSPITAL, CA was used to obtain an estimated number of rainy days per year and qualifying rain events. The Compliance Storm Event was also downloaded from the NOAA website.

Rainy days per year (precipitation 0.10 inches or greater)	<u>44.7</u> days
Qualifying rain events per year	<u>44.7</u> days
Compliance Storm Event (rainfall total for the 5 year, 24 hr storm)	<u>3.77</u> inches

2 Construction General Permit

A Storm Water Pollution Prevention Plan is required since the disturbed soil area is 2.2 acres and R value is 182.08.

2A Risk Level

R factor	<u>182.08</u>
K factor	<u>0.17</u>
LS factor	12.15
Sediment Risk	<u>376.08</u>
Receiving Water Body Risk	<u>No/Low</u>
Risk Level	<u>2</u>

3 Temporary Construction Site BMPs

The estimated quantities of temporary construction site BMPs are in the PSE package. Various soil stabilization and sediment barriers are proposed due to the project's direct discharge into the Troutdale Creek to Helena Creek to Upper Putah Creek.

3A Run-on Discharges

Run-on discharges are off-site storm water that can potentially run to the site. Run-on discharges should be calculated based on a rainfall intensity for a 2-year 24-hour event per the PPDG. The Rational Method is typically used to calculate run-on discharges.

Equation: $Q=CiA$

where Q = Run-on discharge (cubic feet per second)

C = Runoff coefficient

i = 2-year, 24-hour rainfall intensity (inches/hour)

Locations of Run-on Discharges are as follows:

<u>Location</u>	<u>Area (ac)</u>	<u>Discharges (cfs)</u>
No known		

The project cross-sections in the PSE package do not show areas of run-on adjacent to the roadway that would flow into the project work area; however, the Contractor needs to verify all run-on for the proposed project.

3B Temporary ESA Fencing

Temporary ESA fencing is depicted on the layouts and on the USACE and CDFG impact maps. Adhere to the ESA fencing on the layout plans. The ESA fencing will depict areas where no construction activity can occur, except water quality monitoring and sampling. In many locations where temporary silt fence was also required, ESA fencing may be combined with temporary silt fence as temporary reinforced silt fence type 1. These locations will be depicted on the layout maps.

4 Permits/Certifications

4A General

The permits required for the project note conditions that may call for special consideration from the Contractor. Conditions include work windows for in water work and various job site management, including equipment and stockpiles.

A project-specific Spill Containment, Cleanup Plan, which should be prepared and included as part of Section 500 (500.1.1) in the Storm Water Pollution Prevention Plan (SWPPP). Please see Materials Management Plan under Section 500 (500.1.1) of the SWPPP template. This Plan also needs to address Drilling Slurries and Fluids per Standard Specifications section 13-4.03D(5) Liquid Waste.

Required permits:

1. 401 Certification from the Regional Water Quality Board
2. Biological Opinion & addendum from the U.S. Fish and Wildlife
3. 1600 Permit from the CA Department of Fish and Game

5 ATTACHMENTS

ATTACHMENT A

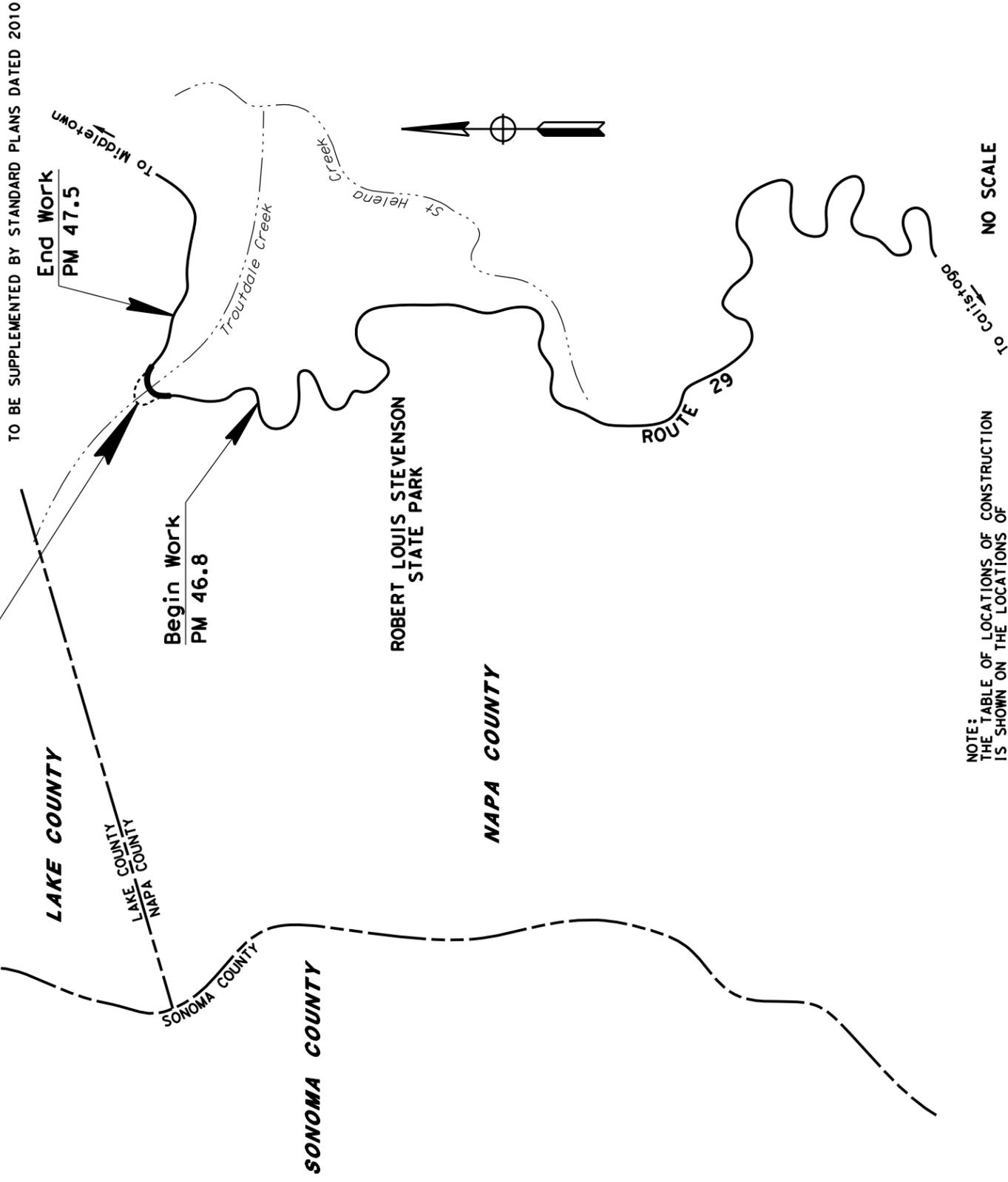
LOCATION MAP

INDEX OF PLANS

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**PROJECT PLANS FOR CONSTRUCTION ON
 STATE HIGHWAY**

**IN NAPA COUNTY
 ABOUT 6.0 MILES NORTH OF CALISTOGA
 AT TROUTDALE CREEK BRIDGE**

**LOCATION OF CONSTRUCTION
 STA ??? 106+90 PM 47.1**

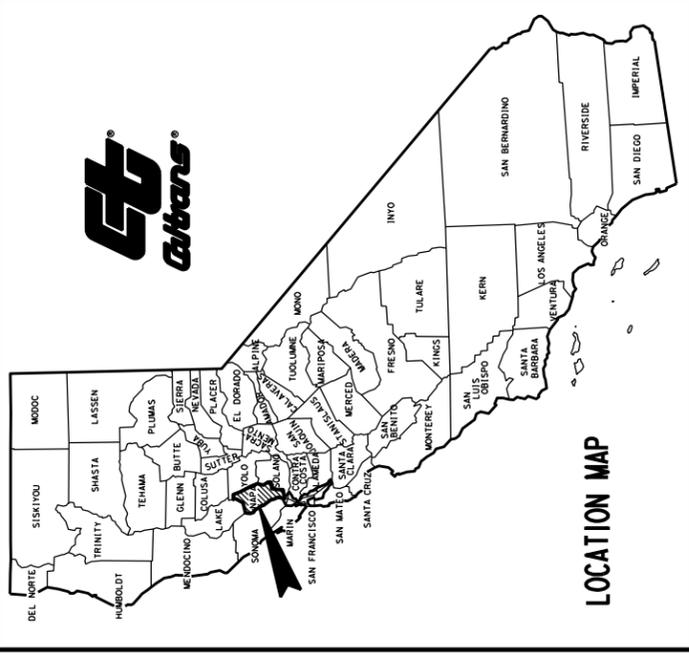


TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

NOTE:
 THE TABLE OF LOCATIONS OF CONSTRUCTION
 IS SHOWN ON THE LOCATIONS OF
 CONSTRUCTION SHEET.

NO SCALE

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



Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
04	Nap	29	47.0/47.2	

DESIGN MANAGER STEWART LEE	PROJECT MANAGER KELLY HIRSCHBERG
-------------------------------	-------------------------------------

PROJECT ENGINEER REGISTERED CIVIL ENGINEER DATE _____

PLANS APPROVAL DATE _____

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

REGISTERED PROFESSIONAL ENGINEER
 CIVIL
 No. _____
 Exp. _____
 STATE OF CALIFORNIA

CONTRACT No.	04-4A 0904
PROJECT ID	0400001104

ATTACHMENT B

RISK LEVEL DETERMINATION

	A	B	C
1	Sediment Risk Factor Worksheet		Entry
2	A) R Factor		
3	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.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	R Factor Value		182.08
6	B) K Factor (weighted average, by area, for all site soils)		
7	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.		
8	Site-specific K factor guidance		
9	K Factor Value		0.17
10	C) LS Factor (weighted average, by area, for all slopes)		
11	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.		
12	LS Table		
13	LS Factor Value		12.15
14			
15	Watershed Erosion Estimate (=RxKxLS) in tons/acre		376.08624
16	Site Sediment Risk Factor		High
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

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 check the attached worksheet or visit the link below) or has a USEPA approved TMDL implementation plan for sediment ?: 2006 Approved Sediment-impaired WBs Worksheet http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml	No	Low
OR A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp		

Combined Risk Level Matrix

		<u>Sediment Risk</u>		
		Low	Medium	High
Low	Level 1	Level 2		
High	Level 2		Level 3	

Project Sediment Risk: **High**

Project RW Risk: **Low**

Project Combined Risk: **Level 2**

ATTACHMENT C

RAINFALL DATA

Rainfall Intensity can be obtained by the following link:

<http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif>

Refer to chapters 800, Highway Drainage Design of Highway Design Manual for information on runoff coefficient and shed map. The weighted runoff coefficient of 0.55 is recommended for the project area.

ATTACHMENT D

PROJECT DISCHARGE LOCATION PLAN

ATTACHMENT E

401 CERTIFICATION

Central Valley Regional Water Quality Control Board

30 April 2014

Kelly Hirschberg
California Department of Transportation
111 Grand Avenue
Oakland, CA 94623-0660

CERTIFIED MAIL
7013 2250 0000 3465 9533

***CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY
CERTIFICATION; CALIFORNIA DEPARTMENT OF TRANSPORTATION, IN NAPA COUNTY
ON ROUTE 29 AT THE TROUTDALE CREEK BRIDGE PROJECT (WDID#5A28CR00019),
NAPA COUNTY***

This Order responds to the 10 December 2013 application submitted by California Department of Transportation (Applicant) for the Water Quality Certification of a bridge replacement project permanently impacting 0.045 acre/258 linear feet and temporarily impacting 0.154 acre/329 linear feet of waters of the United States.

This Order serves as certification of the United States Army Corps of Engineers' Nationwide Permit# 14 (SPK# 2013-00366) under § 401 of the Clean Water Act, and a Waste Discharge Requirement under the Porter-Cologne Water Quality Control Act and State Water Board Order 2003-0017-DWQ.

WATER QUALITY CERTIFICATION STANDARD CONDITIONS:

1. This Order serves as a Water Quality Certification (Certification) action that is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to § 13330 of the California Water Code and § 3867 of the California Code of Regulations.
2. This Certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Certification application was filed pursuant to § 3855(b) of the California Code of Regulations, and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. The validity of any non-denial Certification action shall be conditioned upon total payment of the full fee required under § 3860(c) of the California Code of Regulations.
4. This Certification is no longer valid if the project (as described) is modified, or coverage under § 404 of the Clean Water Act has expired.
5. All reports, notices, or other documents required by this Certification or requested by the Central Valley Regional Water Quality Control Board (Central Valley Water Board) shall be signed by a person described below or by a duly authorized representative of that person.
 - (a) For a corporation: by a responsible corporate officer such as (1) a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function; (2) any other person who performs similar policy or decision-making functions for the corporation; or (3) the manager of one or more manufacturing, production, or operating facilities if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - (b) For a partnership or sole proprietorship: by a general partner or the proprietor.
 - (c) For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.
6. Any person signing a document under Standard Condition number 5 shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

TECHNICAL CERTIFICATION CONDITIONS:

In addition to the above standard conditions, the Applicant shall satisfy the following:

1. The Applicant shall notify the Central Valley Water Board in writing seven (7) days in advance of the start of any work within waters of the United States. The notification shall include the name of the project and the WDID number, and shall be sent to the Central Valley Water Board Contact indicated in this Certification.
2. Except for activities permitted by the United States Army Corps of Engineers under § 404 of the Clean Water Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.
3. The Applicant shall maintain a copy of this Certification and supporting documentation (Project Information Sheet) at the Project site during construction for review by site personnel and agencies. All personnel (employees, contractors, and subcontractors) performing work on the proposed project shall be adequately informed and trained regarding the conditions of this Certification.
4. The Applicant shall perform surface water sampling:
 - a) when performing any in-water work;
 - b) in the event that project activities result in any materials reaching surface waters; or
 - c) when any activities result in the creation of a visible plume in surface waters.

The monitoring requirements in Table 1 shall be conducted upstream out of the influence of the project, and 300 feet downstream of the work area. The sampling frequency may be modified for certain projects with written approval from Central Valley Water Board staff.

Table 1:

Parameter	Unit	Type of Sample	Minimum Sampling Frequency	Required Analytical Test Method
Turbidity	NTU	Grab ⁽¹⁾	Every 4 hours during in-water work	(2, 4)
Settleable Material	mL/L	Grab ⁽¹⁾	Every 4 hours during in-water work	(2)
pH	Standard Units	Grab ⁽¹⁾	Every 4 hours during in-water work	(2, 4)
Dissolved Oxygen (DO)	mg/L & % saturation	Grab ⁽¹⁾	Every 4 hours during in-water work	(2, 4)

⁽¹⁾ Grab samples shall not be collected at the same time each day to get a complete representation of variations in the receiving water.

⁽²⁾ Pollutants shall be analyzed using the analytical methods described in 40 Code of Federal Regulations Part 136; where no methods are specified for a given pollutant, the method shall be approved by Central Valley Water Board staff.

- (3) Visible construction-related pollutants include oil, grease, foam, fuel, petroleum products, and construction-related, excavated, organic or earthen materials.
- (4) A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring shall be maintained onsite.

Surface water monitoring shall occur at mid-depth. A surface water monitoring report shall be submitted to the Central Valley Water Board Contact indicated in this Certification within two weeks of initiation of sampling and every two weeks thereafter. In reporting the monitoring data, the Applicant shall arrange the data in tabular form so that the sampling locations, date, constituents, and concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the project complies with Certification requirements. The report shall include surface water sampling results, visual observations, and identification of the turbidity increase in the receiving water applicable to the natural turbidity conditions specified in the turbidity criteria below.

If no monitoring is conducted, the Applicant shall submit a written statement to the Central Valley Water Board Contact indicated in the Certification stating, "No monitoring was required." with the Notice of Completion.

- 5. The Central Valley Water Board adopted a *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Turbidity, settleable matter, pH limits are based on water quality objectives contained in the Basin Plan and are part of this Certification as follows:

- a) Activities shall not cause turbidity increases in surface water to exceed:
 - i. where natural turbidity is less than 1 Nephelometric Turbidity Units (NTUs), controllable factors shall not cause downstream turbidity to exceed 2 NTUs;
 - ii. where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU;
 - iii. where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
 - iv. where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs; and
 - v. where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

Except that these limits will be eased during in-water working periods to allow a turbidity increase of 15 NTUs over background turbidity. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. Averaging periods may only be used with prior approval of the Central Valley Water Board staff.

- b) Activities shall not cause settleable matter to exceed 0.1 mL/L in surface waters.

- c) Activities shall not cause pH to be depressed below 6.5 nor raised above 8.5 in surface water.
6. The Applicant shall notify the Central Valley Water Board immediately if the above criteria for turbidity, settleable matter, pH or other water quality objectives are exceeded.
7. In-water work shall occur during periods of low flow and no precipitation.
8. Refueling of equipment within the floodplain or within 300 feet of the waterway is prohibited. If critical equipment must be refueled within 300 feet of the waterway, spill prevention and countermeasures must be implemented to avoid spills. Refueling areas shall be provided with secondary containment including drip pans and/or placement of absorbent material. No hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, or other construction-related potentially hazardous substances should be stored within a floodplain or within 300 feet of a waterway. The Applicant must perform frequent inspections of construction equipment prior to utilizing it near surface waters to ensure leaks from the equipment are not occurring and are not a threat to water quality.
9. The Applicant shall develop and maintain onsite a project-specific Spill Prevention, Containment and Cleanup Plan outlining the practices to prevent, minimize, and/or clean up potential spills during construction of the project. The Plan must detail the project elements, construction equipment types and location, access and staging and construction sequence. The Plan must also address spill response and prevention measures for potential spills that may occur within the project site.
10. Raw cement, concrete (or washing thereof), asphalt, drilling fluids, lubricants, paints, coating material, oil, petroleum products, or any other substances which could be hazardous to fish and wildlife resulting from or disturbed by project-related activities, shall be prevented from contaminating the soil and/or entering waters of the United States.
11. Concrete must completely be cured before coming into contact with waters of the United States. Surface water that contacts wet concrete must be pumped out and disposed of at an appropriate off-site commercial facility, which is authorized to accept concrete wastes.
12. A method of containment must be used below the bridge(s), boardwalk(s), temporary crossing(s) to prevent debris from falling into the water body through the entire duration of the project.
13. Silt fencing, straw wattles, or other effective management practices must be used along the construction zone to minimize soil or sediment along the embankments from migrating into the waters of the United States through the entire duration of the project.
14. The use of netting material (e.g., monofilament-based erosion blankets) that could trap aquatic dependent wildlife is prohibited within the project area, as indicated in the attached map (Figure 1).

15. All areas disturbed by project activities shall be protected from washout and erosion.
16. All temporarily affected areas shall be restored to pre-construction contours and conditions upon completion of construction activities.
17. All materials resulting from the project shall be removed from the site and disposed of properly.
18. This Certification does not allow permanent water diversion of flow from the receiving water. This Certification is invalid if any water is permanently diverted as a part of the project.
19. If temporary surface water diversions and/or dewatering are anticipated, the Applicant shall develop and maintain on-site a Surface Water Diversion and/or Dewatering Plan(s). The Plan(s) shall include the proposed method and duration of diversion activities. The Surface Water Diversion and/or Dewatering Plan(s) must be consistent with this Certification.
20. When work in a flowing stream is unavoidable and any dam or other artificial obstruction is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream, to maintain beneficial uses of waters of the State below the dam. Construction, dewatering, and removal of temporary cofferdams shall not violate Technical Certification Condition 5 of this Certification.
21. Any temporary dam or other artificial obstruction constructed shall only be built from clean materials such as sandbags, gravel bags, water dams, or clean/washed gravel which will cause little or no siltation. Stream flow shall be temporarily diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses.
22. The discharge of petroleum products, any construction materials, hazardous materials, pesticides, fuels, lubricants, oils, hydraulic fluids, raw cement, concrete, asphalt, paint, coating material, drilling fluids, or other construction-related potentially hazardous substances to surface water and/or soil is prohibited. In the event of a prohibited discharge, the Applicant shall notify the Central Valley Water Board Contact within 24-hours of the discharge. Activities shall not cause visible oil, grease, or foam in the receiving water.
23. The Applicant shall submit a copy of the final, signed and dated Lake or Streambed Alteration Agreement issued by the California Department of Fish and Wildlife within 14 days of issuance to the Central Valley Water Board Contact indicated in this Certification.
24. The Applicant shall comply with all California Department of Fish and Wildlife requirements, including, but not limited to, those requirements described in the Lake or Streambed Alteration Agreement.

25. The Applicant shall comply with all United States Fish and Wildlife Service requirements, including but not limited to those requirements described in the Biological Opinion (81420-2011-F-0821-R001-2), provided to the California Department of Transportation dated 27 March 2014.
26. The Applicant shall obtain coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities Order No. 2009-0009-DWQ for discharges to surface waters comprised of storm water associated with construction activity, including, but not limited to, demolition, clearing, grading, excavation, and other land disturbance activities of one or more acres, or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres.
27. The Conditions in this Certification are based on the information in the attached "Project Information Sheet." If the actual project, as described in the attached Project Information Sheet, is modified or changed, this Certification is no longer valid until amended by the Central Valley Water Board.
28. The Applicant shall implement each of the mitigation measures specified in the approved Mitigated Negative Declaration for the project, as they pertain to biology, hydrology and water quality impacts as required by § 21081.6 of the Public Resource Code and § 15097 of the California Code of Regulations.
29. In the event of any violation or threatened violation of the conditions of this Certification, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under state and federal law. The applicability of any state law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to ensure compliance with this Certification.
 - (a) If the Applicant or a duly authorized representative of the project fails or refuses to furnish technical or monitoring reports, as required under this Certification, or falsifies any information provided in the monitoring reports, the applicant is subject to civil liability, for each day of violation, and/or criminal liability.
 - (b) In response to a suspected violation of any condition of this Certification, the Central Valley Water Board may require the Applicant to furnish, under penalty of perjury, any technical or monitoring reports the Central Valley Water Board deems appropriate, provided that the burden, including cost of the reports, shall be in reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
 - (c) The Applicant shall allow the staff of the Central Valley Water Board, or an authorized representative(s), upon the presentation of credentials and other documents, as may be required by law, to enter the project premises for inspection, including taking photographs and securing copies of project-related records, for the

purpose of assuring compliance with this Certification and determining the ecological success of the project.

30. The Applicant shall provide a Notice of Completion (NOC) no later than 30 days after the project completion. The NOC shall demonstrate that the project has been carried out in accordance with the project description in the Certification and in any approved amendments. The NOC shall include a map of the project location(s), including final boundaries of any on-site restoration area(s), if appropriate, and representative pre and post construction photographs. Each photograph shall include a descriptive title, date taken, photographic site, and photographic orientation.

CENTRAL VALLEY WATER BOARD CONTACT:

Trevor Cleak, Environmental Scientist
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670-8114
tcleak@waterboards.ca.gov
(916) 464-4684

CALIFORNIA ENVIRONMENTAL QUALITY ACT:

The California Department of Transportation is the Lead Agency responsible for compliance with the California Environmental Quality Act for the In Napa County on Route 29 at the Troutdale Creek Bridge Project pursuant to § 21000 et seq. of the Public Resources Code. The California Department of Transportation approved the Mitigated Negative Declaration on 28 June 2013. The California Department of Transportation filed a Notice of Determination with the State Clearinghouse on 5 July 2013 (State Clearinghouse Number 2012092011).

The Central Valley Water Board is a responsible agency for the project. The Central Valley Water Board has determined that the Mitigated Negative Declaration is in accordance with the requirements of the California Environmental Quality Act.

The Central Valley Water Board has reviewed and evaluated the impacts to water quality identified in the Mitigated Negative Declaration. The mitigation measures discussed in the Mitigated Negative Declaration to minimize project impacts to State waters are required by this Certification.

With regard to the remaining impacts identified in the Mitigated Negative Declaration the corresponding mitigation measures proposed are within the responsibility and jurisdiction of other public agencies.

WATER QUALITY CERTIFICATION:

I hereby issue an Order certifying that any discharge from the California Department of Transportation, In Napa County on Route 29 at the Troutdale Creek Bridge Project (WDID#5A28CR00019) will comply with the applicable provisions of § 301 ("Effluent Limitations"), § 302 ("Water Quality Related Effluent Limitations"), § 303 ("Water Quality Standards and Implementation Plans"), § 306 ("National Standards of Performance"), and § 307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act. This discharge is also regulated under State Water Resources Control Board Water Quality Order No. 2003-0017 DWQ "Statewide General Waste Discharge Requirements For Dredged Or Fill Discharges That Have Received State Water Quality Certification (General WDRs)".

Except insofar as may be modified by any preceding conditions, all Certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in compliance with the conditions of this Certification, the California Department of Transportation's application package, and the attached Project Information Sheet, and (b) compliance with all applicable requirements of the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011.


for Pamela C. Creedon
Executive Officer

Enclosure: Project Information Sheet

Attachment: Figure 1 – Project Location Map

cc: Distribution List, page 14

PROJECT INFORMATION SHEET

Application Date: 10 December 2013

Applicant: Kelly Hirschberg
California Department of Transportation
111 Grand Avenue
Oakland, CA 94623

Applicant Representative: Cyrus Vafai
California Department of Transportation
111 Grand Avenue
Oakland, CA 94623

Project Name: In Napa County on Route 29 at the Troutdale Creek Bridge Project

Application Number: WDID#5B28CR00019

Date Application Deemed Complete: 17 January 2014

Type of Project: Bridge replacement project

Timeframe of Project Implementation: 1 June through 31 October

Project Location: Section 35, Township 10 North, Range 7 West, MDB&M.
Latitude: 38°39'50.7594"N and Longitude: 122°35'53.52" W

County: Napa County

Receiving Water(s) (hydrologic unit): Troutdale Creek and unnamed tributaries of Troutdale Creek, Sacramento Hydrologic Basin, Putah Creek Hydrologic Unit #512.22, Capell Creek HSA

Water Body Type: Streambed

Designated Beneficial Uses: The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011 (Basin Plan) has designated beneficial uses for surface and ground waters within the region. Beneficial uses that could be impacted by the project include, but are not limited to: Municipal and Domestic Water Supply (MUN); Agricultural Supply (AGR); Industrial Supply (IND); Hydropower Generation (POW); Groundwater Recharge (GWR); Water Contact Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Preservation of Biological Habitats of Special Significance (BIOL); Rare, Threatened, or Endangered Species (RARE); Migration of Aquatic Organisms (MIGR); Spawning, Reproduction, and/or Early Development (SPWN); and Wildlife Habitat (WILD). A

comprehensive and specific list of the beneficial uses applicable for the project area can be found at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.shtml.

303(d) List of Water Quality Limited Segments: Troutdale Creek and unnamed tributaries to Troutdale Creek are the receiving waters for the In Napa County on Route 29 at the Troutdale Creek Bridge Project. Troutdale Creek and the unnamed tributaries are not listed on the 303(d) list; therefore, this project will not impact an impaired water body. The most recent list of approved water quality limited segments is found at:
http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

Project Description: The In Napa County on Route 29 at the Troutdale Creek Bridge Project (Project) consists of replacing an existing 28-foot wide by 110 feet long bridge with a new 28-foot wide by 165-foot long bridge. The Project is located on State Route 29, approximately 0.7 miles east of the intersection of State Route 29 and Livermore Road in Napa County.

The creek will be dewatered using 220 cubic yards of gravel sandbags to construct a cofferdam and divert the flows around the project area. The existing bridge will be removed by removing one abutment. The final abutment will be abandoned in place. The rest of the bridge will be demolished using a backhoe or an excavator. The creek will be widened and regraded by excavating approximately 216.7 cubic yards of soil from the creek. The new bridge will be located approximately 100-feet south of the existing bridge. Cast-in-place concrete will be placed to construct the abutments for the new bridge. The abutments will be located outside, but adjacent to, the ordinary high water mark. Approximately 216.7 cubic yards of rip rap will be placed into the creek to control for erosion.

Two drainage ditches (Drainage 3 and 6 on Figure 1), will be replaced. Drainage 3 will be moved to a new location and will require approximately 4.7 cubic yards of soil to be placed into the existing drainage. To create the new drainage, approximately 8.9 cubic yards of soil will be excavated and 8.9 cubic yards of rip rap will be placed. Drainage 6 will be replaced in the same location and require approximately 2.3 cubic yards of soil to be excavated and 2.3 cubic yards of rip rap to be placed.

Other project activities such as constructing two temporary access roads to the creek and constructing the new bridge will not impact waters of the United States.

The project will permanently impact 0.045 acre/258 linear feet and temporarily impact 0.154 acre/329 linear feet of waters of the United States.

Preliminary Water Quality Concerns: Construction activities may impact surface waters with increased turbidity, settleable matter, and pH.

Proposed Mitigation to Address Concerns: The Applicant will implement Best Management Practices to control sedimentation and erosion. The Applicant will conduct turbidity, settleable matter, and pH testing during in-water work, stopping work if Basin Plan criteria are exceeded or observations indicate an exceedance of a water quality objective. All temporary affected areas

will be restored to pre-construction contours and conditions upon completion of construction activities to provide 1:1 mitigation for temporary impacts.

Excavation/Fill Area: Approximately 227.9 cubic yards of native soil will be excavated from 0.045 acre of waters of the United States.

Approximately 232.6 cubic yards of rip rap will be placed into 0.045 acre of waters of the United States and 220 cubic yards of gravel bags will be temporarily placed into 0.154 acre of waters of the United States.

Dredge Volume: None

California Integrated Water Quality System Impact Data: The Project will permanently impact 0.045 acre/ 258 linear feet and temporarily impact 0.154 acre/ 329 linear feet of stream bed from excavation and fill activities. Temporary impacts to the unnamed drainages are from construction equipment accessing the drainage.

Table 2: Impacts from Excavation and Fill Activities

Water Feature Type	Permanent			Temporary		
	Acre(s)	Linear Feet	Cubic Yards	Acre(s)	Linear Feet	Cubic Yards
Stream Channel						
Troutdale Creek	0.034	258	433.4	0.152	329	220
Unnamed Drainages	0.011	-	27.1	0.002	-	-
Stream Total	0.045	258	460.5	0.154	329	220
Total Impacts	0.045	258	460.5	0.154	329	220

United States Army Corps of Engineers File Number: SPK #2013-00366

United States Army Corps of Engineers Permit Type: Nationwide Permit #14

California Department of Fish and Wildlife Lake or Streambed Alteration Agreement: The Applicant applied for a Lake or Streambed Alteration Agreement on 30 October 2013.

Possible Listed Species: Northern spotted owl

Status of CEQA Compliance: The California Department of Transportation approved the Mitigated Negative Declaration on 28 June 2013. The California Department of Transportation filed a Notice of Determination with the State Clearinghouse on 5 July 2013 (State Clearinghouse Number 2012092011).

The Central Valley Water Board will file a Notice of Determination with the State Clearinghouse as a responsible agency within five (5) days of the date of this Certification.

Compensatory Mitigation: The Central Valley Water Board is not requesting compensatory mitigation for the In Napa County on Route 29 at the Troutdale Creek Bridge Project.

Application Fee Provided: Total fees of \$1,434.00 have been submitted to the Central Valley Water Board as required by § 3833(b)(3)(A) and § 2200(a)(3) of the California Code of Regulations.

DISTRIBUTION LIST

Paula Gill
United States Army Corps of Engineers
San Francisco District Office
Regulatory Division
1455 Market St #16
San Francisco, CA 94103

John Cleckler
United States Fish & Wildlife Service
Sacramento Fish & Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Bill Jennings
CA Sportfishing Protection Alliance
3536 Rainier Avenue
Stockton, CA 95204

Bill Orme (Electronic copy only)
401 Certification and Wetlands Unit Chief
State Water Resources Control Board

Jason A. Brush (Electronic copy only)
Wetlands Office Supervisor (WTR-8)
United States Environmental Protection Agency

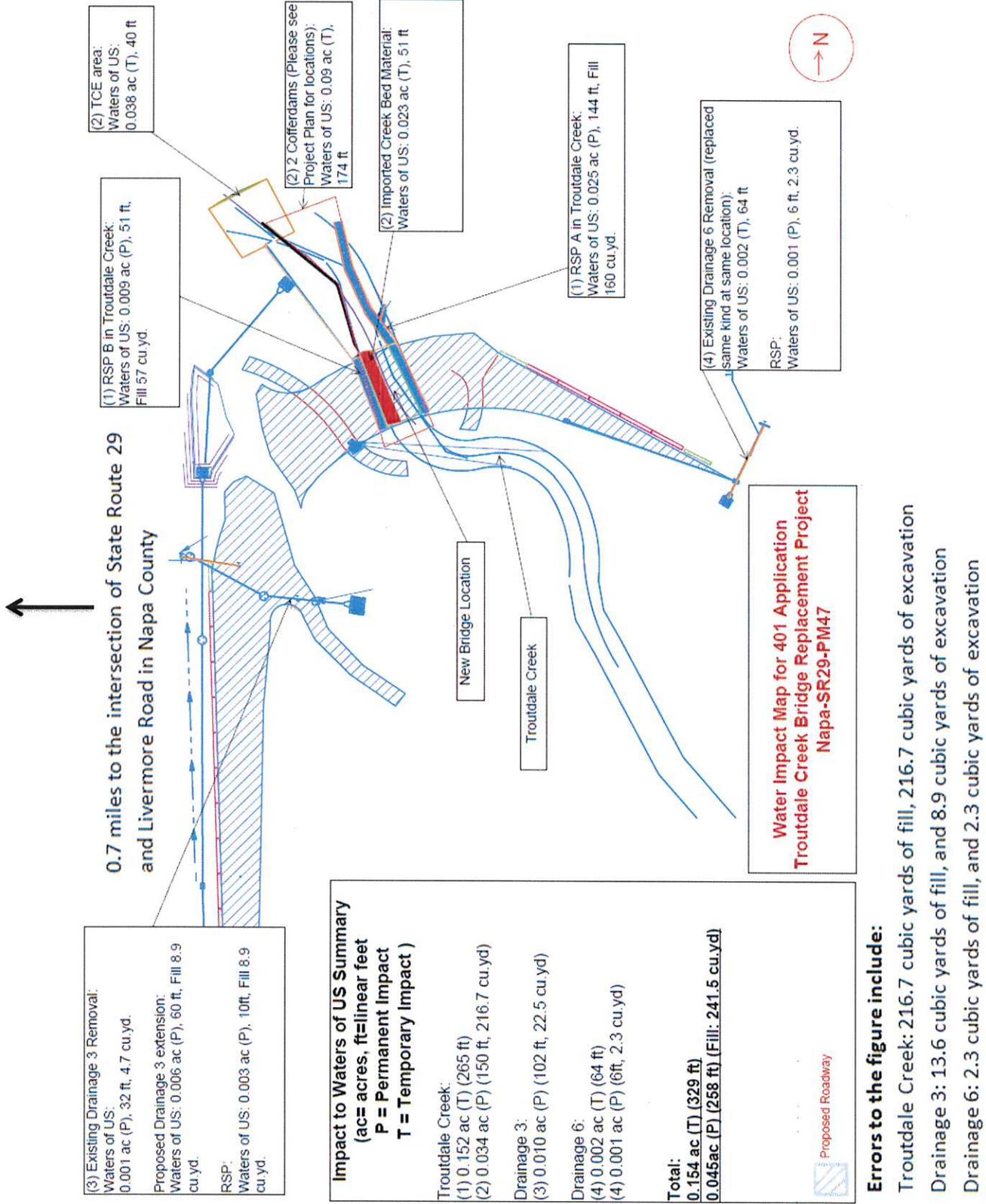


Figure 1 – Project Location Map

ATTACHMENT F

1602 PERMIT



State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



April 7, 2014

Mr. Hardeep Takhar
California Department of Transportation
111 Grand Avenue
Oakland, CA 94623

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2013-0453-R3
Troutdale Creek Bridge Replacement Project

Dear Mr. Takhar:

Enclosed is the final Streambed Alteration Agreement (“Agreement”) for the Troutdale Creek Bridge Replacement Project (“Project”). Before the Department may issue an Agreement, it must comply with the California Environmental Quality Act (“CEQA”). In this case, the Department, acting as a responsible agency, filed a notice of determination (“NOD”) on April 7, 2014 based on information contained in the Negative Declaration the lead agency prepared for the Project.

Under CEQA, filing a NOD starts a 30-day period within which a party may challenge the filing agency’s approval of the project. You may begin your project before the 30-day period expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this matter, please contact Melissa Escaron, Senior Environmental Scientist (Specialist), at (925)786-3045 or melissa.escaron@wildlife.ca.gov.

Sincerely,

Craig J. Weightman
Environmental Program Manager
Bay Delta Region

cc: Sandee K. Hufana
Lieutenant Jones
Warden Monroe

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
BAY DELTA REGION
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558
(707) 944-5500
WWW.WILDLIFE.CA.GOV



STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2013-0453-R3
Troutdale Bridge Replacement Project

CALIFORNIA DEPARTMENT OF TRANSPORTATION

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and the California Department of Transportation (Permittee), as represented by Mr. Hardeep Takhar.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on December 9, 2013 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement

PROJECT LOCATION

This Project is located Napa County on State Route 29, Post Mile 47.1, at the Troutdale Creek Bridge.

PROJECT DESCRIPTION

This project proposes to replace the Troutdale Creek Bridge on State Route 29 in Napa County, on a new alignment, southeast of the existing bridge. The new bridge will consist of two 16-foot lanes with standard 8-foot shoulders. This adjustment will require realignment as well as widening of the existing roadway. Three retaining walls will be built to reduce right-of-way and environmental impacts. New wingwalls will be built to direct the channel flow at the upstream side.

The existing bridge will be demolished and the area will be widened to allow for a more natural watercourse. Two on-site unpaved temporary construction access roads, approximately 30 feet in width for both, 60 feet in length on the north side and 130 feet on the south side of the bridge, will be established inside the project footprint.

Permanent and temporary impacts to the bed, channel, and bank will result from vegetation removal, the installation of a temporary creek diversion system, road widening, construction of temporary access roads, grading and widening the channel, construction of the new bridge, and bridge demolition. This Agreement allows for all necessary utility relocations.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.
- 1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.
- 1.4 Project Site Entry. Permittee agrees that CDFW personnel may enter the project site, at any time to verify compliance with the Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

- 2.1 All work within riparian zones shall occur between June 15 and October 15.
- 2.2 At least 30-days prior to commencing Project activities covered by this Agreement, the Permittee shall submit to CDFW, for review and approval, the qualifications for a number of biologists (Qualified Biologist) that shall oversee the implementation of the conditions in this Agreement. At a minimum, the Qualified Biologists shall have a combination of academic training and professional experience in biological sciences and related resource management activities. The Qualified Biologists shall communicate to the Resident Engineer when any activity is not in compliance with this Agreement and the Resident Engineer shall immediately stop the activity that is not in compliance with this Agreement.
- 2.3 Before the onset of construction activities, a Qualified Biologist shall conduct an education program for all construction personnel. At a minimum the training will include a description of California red legged frog, and migratory birds, and their habitats; the occurrence of these species within the Project site; an explanation of their state and federal statuses; avoidance and minimization measures; habitats as they relate to the Project site; and boundaries within which construction may occur. A fact sheet conveying this information will be prepared and distributed to all construction crews and Project personnel entering the Project site. Upon completion of the program, personnel will sign a form stating that they attended the program and understand all the avoidance and minimization measures.
- 2.4 A Qualified Biologist shall conduct clearance surveys and be on-site during all activities that may result in the take of California red-legged frog (CRLF). The Qualified Biologist shall stop work through the Resident Engineer if activities are identified that may result in the take of CRLF.
- 2.5 Preconstruction surveys for the western pond turtle in potential habitat shall be conducted 48 hours prior to construction by a Qualified Biologist. If western pond turtles are found in the project area during preconstruction surveys, CDFW shall be notified. If preconstruction surveys identify active western pond turtle nests, a Qualified Biologist shall establish a no-disturbance buffer zone around the nest using temporary orange construction fencing. The radius of the buffer zone and the duration of the exclusion shall be determined in consultation with CDFW. The buffer zone and fencing shall remain in place until the young have left the nest, as determined by a Qualified Biologist. The Qualified Biologist shall also remain present during construction in the area to

inspect the work area, including construction equipment left on-site, for western pond turtles to ensure that individuals have not moved into the work area.

- 2.6 Prior to the start of construction Environmentally Sensitive Areas (ESAs) shall be clearly delineated using high-visibility orange fencing to protect sensitive habitats. The ESA fencing will remain in place throughout the duration of the Project. The final Project plans will depict all locations where ESA fencing will be installed and how it will be installed. The bid solicitation package special provisions will clearly describe acceptable fencing material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within ESAs. ESA fencing shall be erected as directed by a Qualified Biologist.
- 2.7 If Project activities will occur between February 15 and September 1, a Qualified Biologist shall conduct pre-construction surveys for nesting birds no more than one week prior to construction. Surveys shall consist of multiple days of observations. If nests are found the Qualified Biologist shall establish an appropriate buffer to be in compliance with Migratory Bird Treaty Act (MBTA) and Fish and Game Code 3503. The Qualified Biologist shall perform at least two hours of pre-construction monitoring of the nest to characterize "typical" bird behavior. The Qualified Biologist shall monitor the nesting birds and shall increase the buffer if the Qualified Biologist determines the birds are showing signs of unusual or distressed behavior by Project activities. Atypical nesting behaviors which may cause reproductive harm include, but are not limited to, defensive flights/vocalizations directed towards Project personnel, standing up from a brooding position, and flying away from the nest. The Qualified Biologist shall have authority, through the Resident Engineer, to order the cessation of all Project activities if the nesting birds exhibit atypical behavior which may cause reproductive failure (nest abandonment and loss of eggs and/or young) until an appropriate buffer is established. To prevent encroachment, the established buffer(s) shall be clearly marked by high visibility material. The established buffer(s) shall remain in effect until the young have fledged or the nest has been abandoned as confirmed by the Qualified Biologist. Any sign of nest abandonment shall be reported to CDFW within 48 hours.
- 2.8 To prevent inadvertent entrapment of animals during construction, all excavated, steep-walled holes or trenches more than 2-feet deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks at an angle no greater than 30 degrees. Before such holes or trenches are filled they must be thoroughly inspected for trapped animals. All replacement pipes, culverts, or similar structures stored in the riparian zone overnight will be inspected before they are subsequently moved, capped and/or buried.

- 2.9 Permittee shall conduct work defined in the above Project Description, and within the Project area, during periods of dry weather. The Project area is defined as the bed, bank, channel, and associated wetland habitat. The Permittee shall monitor forecasted precipitation. When ¼ inch or more of precipitation is forecasted to occur, the Permittee shall stop work before precipitation commences. No Project activities may be started if its associated erosion control measures cannot be completed prior to the onset of precipitation. After any storm event, the Permittee shall inspect all sites currently under construction and all sites scheduled to begin construction within the next 72 hours for erosion and sediment problems and take corrective action as needed. Seventy-two hour weather forecasts from National Weather Service shall be consulted and work shall not start back up until runoff ceases and there is less than a 30% forecast for precipitation for the following 24-hour period.
- 2.10 Permittee shall utilize erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter waterways. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. Erosion control installations shall be monitored for effectiveness and shall be repaired or replaced as recommended by a Qualified Biologist or Water Quality Monitor to the Resident Engineer. As needed to prevent sediment transport, Permittee shall deploy soil stabilizer such as hydroseeding, netting, erosion control mats, mulch, fiber rolls, silt fences, check dams, and flow velocity dissipation devices. Permittee shall stabilize and equip construction site entrances and exits with tire washing capability. Materials containing monofilament or plastic shall not be used. Erosion and sediment control measures shall be installed prior to unseasonable rain storms.
- 2.11 All disturbed areas shall be re-graded and hydroseeded. Hydroseed shall not contain invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: <http://www.calipc.org/ip/inventory/weedlist.php>.
- 2.12 Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the creek channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream must be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.
- 2.13 Refueling of mobile construction equipment and vehicles shall not occur within 50 feet of any water body, or anywhere that spilled fuel could drain to a water body. Refueling of stationary equipment requiring breakdown and setup to move will remain in place. All equipment shall be refueled with appropriate drip pans, absorbent pads, and water quality Best Management Practices.

Equipment and vehicles operating in the Project site shall be checked and maintained daily to prevent leaks of fuels, lubricants, or other liquids.

2.14 Permittee shall comply with all applicable state and federal laws, including the California and Federal Endangered Species Act. This Agreement does not authorize the take of any state or federally endangered listed species. Liability for any take or incidental take of such species remains the responsibility of the Permittee for the duration of the Project. Any unauthorized take of listed species may result in prosecution and nullification of the Agreement. This Agreement does not authorize the capture or relocation of Fully Protected Species.

3. Reporting Measures

Permittee shall meet each reporting requirement described below.

3.1 Permittee shall submit an Onsite Restoration Plan for temporary impacts at least 2 months prior to the start of construction. The Onsite Restoration plan shall include a plant palette of native species to be used, success criteria, a monitoring and reporting schedule, and corrective actions to be taken if mitigation measures do not meet the approved success criteria. All plantings shall be derived from locally available genotypes, if available at the time of plant installation. The Permittee shall monitor the survival and vigor of onsite plantings for a period of 3 years to ensure attainment of 70% survivorship. Permittee shall control invasive species to ensure 70% survivorship of restoration plantings after 3 years.

CONTACT INFORMATION

Any communication that Permittee or CDFW submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or CDFW specifies by written notice to the other.

To Permittee:

California Department of Transportation
Mr. Hardeep Takhar
111 Grand Ave
Oakland, Ca
Hardeep.takhar@dot.ca.gov

To CDFW:

California Department of Fish and Wildlife

Bay Delta Region
7329 Silverado Trail
Napa, California 94558
Attn: Lake and Streambed Alteration Program – Melissa Escaron
Notification #1600-2013-0453-R3
Fax (707) 944-5553
Melissa.escaron@wildlife.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute CDFW's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

CDFW may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before CDFW suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes CDFW from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects CDFW's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and

subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

CDFW may amend the Agreement at any time during its term if CDFW determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to CDFW a completed CDFW "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's

term. To request an extension, Permittee shall submit to CDFW a completed CDFW "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in CDFW's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). CDFW shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of CDFW's signature, which shall be: 1) after Permittee's signature; 2) after CDFW complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.wildlife.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire on December 31, 2018 unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

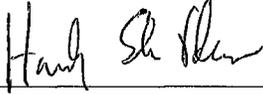
AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

**FOR CALIFORNIA DEPARTMENT OF
TRANSPORTATION**

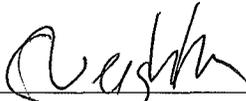


Hardeep Takhar
Office Chief

3-27-14

Date

FOR DEPARTMENT OF FISH AND WILDLIFE



Craig J. Weightman
Environmental Program Manager

4/7/14

Date

Prepared by: Melissa Escaron
Staff Environmental Scientist

Date Revised: March 13, 2014

Date Sent: March 26, 2014

FOR DEPARTMENT USE ONLY				
Date Received	Amount Received	Amount Due	Date Complete	Notification No.
12/9/13	\$482.75	\$		1600-2013-0453-3



State of CA
 Dept. of Transportation
 #082-285144
 STATE OF CALIFORNIA
 DEPARTMENT OF FISH AND GAME

Escaron
 Mt Jones
 Wdr Monroe



NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Name	Hardeep Takhar, Acting Chief, Office of Biological Sciences & Permits			Fish & Game
Business/Agency	California Department of Transportation, District 4			
Street Address	111 Grand Avenue			DEC 09 2013
City, State, Zip	Oakland, CA 94612			
Telephone	(510) 286-7182	Fax	(510) 286-6374	
Email	Hardeep.Takhar@dot.ca.gov			

2. CONTACT PERSON (Complete only if different from applicant)

Name	Sandee K. Hufana			
Street Address	111 Grand Avenue			
City, State, Zip	Oakland, CA 94612			
Telephone	(510) 286-5637	Fax	(510) 286-5600	
Email	Sandee.Hufana@dot.ca.gov			

3. PROPERTY OWNER (Complete only if different from applicant)

Name				
Street Address				
City, State, Zip				
Telephone		Fax		
Email				

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name		Troutdale Bridge Replacement Project		
B. Agreement Term Requested		<input checked="" type="checkbox"/> Regular (5 years or less) <input type="checkbox"/> Long-term (greater than 5 years)		
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning (year)	Ending (year)	Start Date (month/day)	End Date (month/day)	
2015	2017	06/01	10/15	
				300.00

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	<input checked="" type="checkbox"/> Standard (Most construction projects, excluding the categories listed below)
B.	<input type="checkbox"/> Gravel/Sand/Rock Extraction (Attachment A) Mine I.D. Number: _____
C.	<input type="checkbox"/> Timber Harvesting (Attachment B) THP Number: _____
D.	<input type="checkbox"/> Water Diversion/Extraction/Impoundment (Attachment C) SWRCB Number: _____
E.	<input type="checkbox"/> Routine Maintenance (Attachment D)
F.	<input type="checkbox"/> DFG Fisheries Restoration Grant Program (FRGP) FRGP Contract Number: _____
G.	<input type="checkbox"/> Master
H.	<input type="checkbox"/> Master Timber Harvesting

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. **Note: The Department may not process this notification until the correct fee has been received.**

	A. Project	B. Project Cost	C. Project Fee
1	Troutdale Bridge Replacement Project	\$2,700,000.00	\$4,482.75
2			
3			
4			
5			
		D. Base Fee (if applicable)	
		E. TOTAL FEE ENCLOSED	\$4,482.75

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

Yes (Provide the information below) No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

No Yes (Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.)

Continued on additional page(s)

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

8. PROJECT LOCATION

<p>A. Address or description of project location. <i>(Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway)</i></p> <p>The proposed Troutdale Creek Replacement Project (project) is located on State Route (SR) 29, Post Mile (PM) 47.11 in Napa County at the Troutdale Bridge (No. 21-0004) PM 47.11. The location and vicinity map for the project is provided in the Attachment 2-Project Maps (Figure 1).</p> <p>Directions from Eastbay:</p> <ol style="list-style-type: none"> 1. Take I-580 West toward San Francisco 2. Keep left onto I-80 E 3. At exit 33, take ramp right for CA-37 toward Napa 4. At exit 19, take ramp right for CA-29 toward Napa 5. Turn right onto CA-29 N / Sonoma Blvd 6. Turn right onto CA-29 / Lincoln Ave (Calistoga, CA) 7. Arrive at Troutdale Creek, CA on the right <p align="right"><input type="checkbox"/> Continued on additional page(s) ⁺</p>				
B. River, stream, or lake affected by the project.		Troutdale Creek		
C. What water body is the river, stream, or lake tributary to?		Saint Helena Creek		
D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
E. County	Napa County			
F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Detert Reservoir quadrangle	10N	7W	35	SW
<input type="checkbox"/> Continued on additional page(s)				
K. Meridian (check one)	<input type="checkbox"/> Humboldt	<input checked="" type="checkbox"/> Mt. Diablo	<input type="checkbox"/> San Bernardino	
L. Assessor's Parcel Number(s)				
0160-1001-9000 and Caltrans right-of-way				
<input type="checkbox"/> Continued on additional page(s)				
M. Coordinates (If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)				
Latitude/Longitude	Latitude:	38° 40' 2" N	Longitude:	122° 35' 55" W
	<input checked="" type="checkbox"/> Degrees/Minutes/Seconds	<input type="checkbox"/> Decimal Degrees	<input type="checkbox"/> Decimal Minutes	
UTM	Easting:	Northing:	<input type="checkbox"/> Zone 10	<input type="checkbox"/> Zone 11
Datum used for Latitude/Longitude or UTM		<input type="checkbox"/> NAD 27	<input checked="" type="checkbox"/> NAD 83 or WGS 84	

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bank stabilization – rip-rap/retaining wall/gabion	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat dock/pier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat ramp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bridge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Channel clearing/vegetation management	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Culvert	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Debris basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diversion structure – weir or pump intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filling of wetland, river, stream, or lake	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geotechnical survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat enhancement – revegetation/mitigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low water crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Road/trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment removal – pond, stream, or marina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Storm drain outfall structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary stream crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility crossing : Horizontal Directional Drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jack/bore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open trench	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other <i>(specify):</i> Temporary cofferdam	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

See Attachment 1- Supplement to 1602 Application

Continued on additional page(s)

B. Specify the equipment and machinery that will be used to complete the project.

Equipment expected to be used during construction includes: backhoes, dozers, trenchers, and excavators; chainsaws, chippers, and loaders; augers and pile drivers; cranes and manlifts; concrete mixer truck, pump truck, and logging truck; paver compressor and other compaction equipment; and hoe ram and jack hammers. See Attachment 1- Supplement to 1602 Application, Section 10, for equipment used during specific construction activities.

Continued on additional page(s)

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).

Yes No (Skip to box 11)

D. Will the proposed project require work in the wetted portion of the channel?

Yes (Enclose a plan to divert water around work site)
 No

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

See Attachment 1- Supplement to 1602 Application

Continued on additional page(s)

B. Will the project affect any vegetation? Yes (Complete the tables below) No

Vegetation Type	Temporary Impact	Permanent Impact
Douglas Fir-Pine Alliance See Attachment 1 Supplement Section 11B	Linear feet: <u>216</u> Total area: <u>0.24 ac</u>	Linear feet: <u>60</u> Total area: <u>0.05 ac</u>
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
See Attachment 1 Supplement, Table 2	94	4" to 60+"

Continued on additional page(s)

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

Yes (List each species and/or describe the habitat below) No Unknown

See Attachment 1 Supplement to 1602 Application, Section 11C

Continued on additional page(s)

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

See Attachment 1 Supplement to 1602 Application, Section 11D

Continued on additional page(s)

E. Has a biological study been completed for the project site?

Yes (Enclose the biological study) No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

Yes (Enclose the hydrological study) No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

12. MEASURES TO PROTECT FISH, WILDLIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.
See Attachment 1 Supplement, Section 12A
<input checked="" type="checkbox"/> Continued on additional page(s)
B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.
See Attachment 1 Supplement, Section 12B
<input checked="" type="checkbox"/> Continued on additional page(s)
C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.
See Attachment 1 Supplement, Section 12C
<input checked="" type="checkbox"/> Continued on additional page(s)

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.		
A. <u>USACOE Clean Water Act 404 Nationwide Permit- Application pending</u>	<input checked="" type="checkbox"/> Applied	<input type="checkbox"/> Issued
B. <u>RWQCB 401 Water Quality Certification- Application pending</u>	<input checked="" type="checkbox"/> Applied	<input type="checkbox"/> Issued
C. <u>USFWS Biological Opinion- See Attachment 4</u>	<input type="checkbox"/> Applied	<input checked="" type="checkbox"/> Issued
D. Unknown whether <input type="checkbox"/> local, <input type="checkbox"/> state, or <input type="checkbox"/> federal permit is needed for the project. (Check each box that applies)		
<input type="checkbox"/> Continued on additional page(s)		

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

14. ENVIRONMENTAL REVIEW

<p>A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?</p> <p><input checked="" type="checkbox"/> Yes (Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each) <input type="checkbox"/> No (Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared)</p>			
<input type="checkbox"/> Notice of Exemption	<input type="checkbox"/> Mitigated Negative Declaration	<input checked="" type="checkbox"/> NEPA document (type): <u>IS</u>	
<input checked="" type="checkbox"/> Initial Study	<input type="checkbox"/> Environmental Impact Report	<input checked="" type="checkbox"/> CESA document (type): <u>Neg Dec</u>	
<input checked="" type="checkbox"/> Negative Declaration	<input checked="" type="checkbox"/> Notice of Determination (Enclose)	<input checked="" type="checkbox"/> ESA document (type): <u>BA/BO</u>	
<input type="checkbox"/> THP/ NTMP	<input type="checkbox"/> Mitigation, Monitoring, Reporting Plan		
B. State Clearinghouse Number (if applicable)		2012092011	
C. Has a CEQA lead agency been determined?		<input checked="" type="checkbox"/> Yes (Complete boxes D, E, and F) <input type="checkbox"/> No (Skip to box 14.G)	
D. CEQA Lead Agency	Caltrans		
E. Contact Person	Yolanda Rivas	F. Telephone Number	(510) 286-6216
G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.			
Not Applicable			
<input type="checkbox"/> Continued on additional page(s)			
H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?			
<input type="checkbox"/> Yes (Enclose proof of payment) <input checked="" type="checkbox"/> No (Briefly explain below the reason a filing fee has not been paid)			
Will be paid at the time of submittal of this application.			
<p>Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.</p>			

15. SITE INSPECTION

<p>Check one box only.</p> <p><input type="checkbox"/> In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.</p> <p><input checked="" type="checkbox"/> I request the Department to first contact (insert name) <u>Sandee K. Hufana</u> at (insert telephone number) <u>(510) 286-5637</u> to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.</p>

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?
<input checked="" type="checkbox"/> Yes (Please enclose the information via digital media with the completed notification form)
<input type="checkbox"/> No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

 _____ Signature of Applicant or Applicant's Authorized Representative	<u>12.5, 2013</u> _____ Date
<u>Hardeep Takhar</u> _____ Print Name	

NOTICE OF DETERMINATION

TO: Office of Planning and Research
Post Office Box 3044
Sacramento, California 95812-3044

FROM: California Department of Fish and Wildlife
Bay Delta Region
7329 Silverado Trail
Napa, California 94558

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code

PROJECT TITLE: Troutdale Creek Bridge Replacement Project

STATE CLEARINGHOUSE NUMBER: 2012092011

LEAD AGENCY: California Department of Transportation
CONTACT: Carie Montero, (510)286-5636.

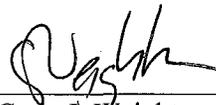
RESPONSIBLE AGENCY: California Department of Fish and Wildlife
CONTACT: Melissa Escaron, (925)786-3045

PROJECT DESCRIPTION / LOCATION: The Project will demolish the existing Route 29 bridge over Troutdale Creek, and construct a new bridge along an improved alignment. The Project is located on Route 29 at the Troutdale Creek crossing in Napa County. The California Department of Fish and Wildlife is executing a Lake and Streambed Alteration Agreement Number 1600-2013-0453-3 pursuant to Section 1602 of the Fish and Game Code to the project Applicant, California Department of Transportation.

This is to advise that the California Department of Fish and Wildlife as a Responsible Agency approved the project described above on April 7, 2014 and has made the following determinations regarding the above described project pursuant to section 15096 (i).

1. The project *will not* have a significant effect on the environment.
2. CDFW considered the Negative Declaration as previously prepared for this project by the Lead Agency.

This is to certify that a copy of the Negative Declaration prepared for this project is available to the general public and may be reviewed at: <http://www.dot.ca.gov/dist4/envdocs.htm>. Please contact the lead agency person specified above.



Craig J. Weightman
Environmental Program Manager
Bay Delta Region

Date Received for Filing: _____

ATTACHMENT G

BIOLOGICAL OPINION & ADDENDUM



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In Reply Refer To:
81420-2011-F-0821-3

JUN 21 2013

Ms. Melanie Brent
California Department of Transportation
Environmental Division, MS-8E
111 Grand Avenue
Oakland, California 94612

Subject: Biological Opinion for the Proposed State Route 29 Troutdale Creek Bridge Replacement Project, Napa County, California (Caltrans EA 4A090)

Dear Ms. Brent:

This is in response to your March 29, 2013, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed State Route (SR) 29 Troutdale Creek Bridge Replacement Project in Napa County, California. The associated letter included the request for formal consultation on the threatened California red-legged frog (*Rana draytonii*). Your consultation package was considered complete on March 29, 2013. This document represents the Service's biological opinion on the effects of the proposed action on the California red-legged frog. This document has been prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*)(Act).

The Service agrees with Caltrans determination that the project may affect, but is unlikely to adversely affect the threatened northern spotted owl. The Service was able to confirm through the California Department of Fish and Wildlife (CDFW) Spotted Owl Database Manager, Michael Hardy, that the California Natural Diversity Database (CNDDB) northern spotted owl (*Strix occidentalis caurina*) record, NAP0017, located within the proposed project action area is not associated with a spotted owl activity center. It is the Services' opinion that the proposed project is not likely to adversely affect the northern spotted owl given Caltrans commitment to conduct all tree removal between September 15 and March 31. This work window would likely avoid noise and habitat disturbance during the owl's typically breeding season. According to a Caltrans' acoustic survey provided in the January 2013, Biological Assessment (BA), the noise associated with the proposed bridge construction is unlikely to exceed ambient road noise. Noise and activity associated with the proposed construction is unlikely to disturb spotted owls occupying adjacent watersheds.

Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law on July 6, 2012. Effective, October 1, 2012, MAP-21 includes provisions to promote streamlined

and accelerated project delivery. Caltrans was approved to participate in the MAP-21 Surface Transportation Project Delivery Program through the National Environmental Policy Act (NEPA) Assignment Memorandum of Understanding (MOU). The MOU allows Caltrans to assume the Federal Highway Administration's (FHWA) responsibilities under NEPA as well as FHWA's consultation and coordination responsibilities under Federal environmental laws for most highway projects in California. Caltrans is exercising this authority as the Federal nexus for section 7 consultation on this project.

This biological opinion (BO) is based on: (1) an October 27, 2011 field visit; (2) the January 2013, BA; (3) Caltrans' March 29, 2013, response to the Service's March 11, 2013, 30-day letter; (4) Caltrans' June 18, 2013, response to the June 12, 2013 draft BO (Service File #81420-2011-F-0821-2); and (5) other information available to the Service.

Consultation History

- September 8, 2011 The Service received a telephone call from Caltrans requesting technical assistance for the project. The Service was informed that a 2007 record of northern spotted owl nest site was located within 0.1 mile of the project footprint and the project would include the removal of more than 100 trees. The Service provided standard northern spotted owl work windows and noise disturbance guidelines intended for avoidance and minimization of adverse effects on active northern spotted owl nest sites. The Service offered to provide more detailed guidance after Caltrans provided a map of the project footprint and a project description.
- October 27, 2011 The Service visited the proposed project site with Caltrans. The Service recommended that Caltrans initiate formal consultation for the California red-legged frog based on the riparian and creek habitat that would be affected by the proposed project.
- November 18, 2011 The Service provided Caltrans with technical assistance regarding the California red-legged frog, via an electronic (e-mail) mail message. The message provided an outline of the Service's rationale for why the California red-legged frog has the potential to occur within the proposed action area and is likely to be adversely affected by the proposed project.
- January 16, 2013 The Service received Caltrans' request to initiate formal consultation for the northern spotted owl and informal consultation for the California red-legged frog. The request submittal included a January 2013 BA.
- March 11, 2013 The Service issued a 30-day letter (Service File No: 81420-2011-TA-0821-1) to Caltrans requesting additional project description information necessary to complete formal consultation. In the letter, the Service recommended that Caltrans initiate formal consultation for the California red-legged frog. The Service also included additional information regarding northern spotted owl occupancy of the project area, leading the

Service to recommend that Caltrans seek informal consultation for the listed owl.

March 29, 2013 The Service received additional project description information from Caltrans in response to the March 11, 2013, 30-day letter. With the response, Caltrans requested formal consultation on the California red-legged frog and informal consultation on the northern spotted owl. Caltrans' response provided the additional information needed to complete consultation.

June 12, 2013 The Service issued a draft BO (Service File #81420-2011-F-0821-2) for Caltrans' review and comment.

June 18, 2013 The Service received Caltrans' comments regarding the June 12, 2013, draft BO.

BIOLOGICAL OPINION

Description of the Proposed Action

The following project description was provided by Caltrans with minor modifications for reasons of clarity and accuracy incorporated by the Service.

The proposed project is located at Post Mile 47.11 along SR 29 in rural Napa County. The proposed project area is in a mountainous area approximately 5 miles north of the City of Calistoga and 5.5 miles south of the City of Middletown. SR 29 exits Robert Louis Stevenson State Park approximately 0.5 mile south of the project. The project is centered on a sharp curve in the 2-lane roadway with a bridge crossing of Troutdale Creek. The curve and the approaches are situated across steep topography and adjacent to dense forest. A residence and its access are located within the curve. The bridge was originally constructed in 1925 and was reconstructed in 1950.

The purpose of the project is to: (1) replace the bridge and subsurface structure to prevent further scouring, (2) meet current hydraulic and structural design standards, and (3) realign the roadway to reduce the curve for safer travel.

Construction Schedule

The proposed project is estimated to take 3 years to complete. Vegetation removal and utility relocation will occur in the first year between September 15 and March 31. Construction of the new bridge and road realignment will be completed during the second year. Demolition of the old bridge and removal of the abandoned roadway will be completed in the third year. Restoration of temporary work areas will occur following each year of project activities. Bridge construction is projected to begin in 2015. Ground disturbance work within the bed and bank of Troutdale Creek and drainage improvement work will be restricted to the dry season work window of June 1 to October 15.

Equipment

Equipment expected to be used during construction includes:

- Back hoes, dozers, trenchers, and excavators;
- Chainsaws, chippers, and loaders;
- Augers and pile drivers;
- Cranes and manlifts;
- Concrete mixer truck, pump trucks, and logging truck;
- Paver compressor and other compaction equipment; and
- Hoe ram and jack hammers.

Project Components and Methods

Site Preparation

Site preparation will include installation of fencing, establishment of staging areas, establishment of access roads, and vegetation clearing.

Prior to construction, high-visibility orange construction or sensitive habitat fencing and California red-legged frog exclusion fencing will be installed along the perimeter of the work areas to clearly delineate the extent of the construction area and to prevent red-legged frogs from entering the construction area. The location of the fences will be established in the field by the biological monitor.

Temporary staging areas will be used for equipment storage, equipment maintenance, and construction material storage. Staging will take place within the described project footprint, which includes the existing and the proposed right of way. The staging areas will be moved accordingly within the project footprint to facilitate project construction.

Two temporary 12-foot wide roads will be established to provide access from both sides of Troutdale Creek. The access from the north creek bank will be 60 feet long. The south bank access will be 120 feet long. These temporary access roads will be restored to their original grade and will be revegetated following construction. Caltrans will re-establish contours to areas that are being reclaimed to reflect the natural stream morphology of Troutdale Creek observed up and down stream of the existing bridge structure.

Vegetation removal will occur prior to the first year of construction season between September 15 and March 31. Vegetation will be completely removed from areas that will be occupied by permanent structures. Vegetation will be cut above ground level in areas that will be subject to temporary ground disturbance. Caltrans estimates that approximately 250 trees will be removed. Tree removal and clearing and grubbing will include the use of hand tools, chain saws, chippers, loaders, logging trucks, backhoes, dozers, and excavators.

Utility Relocation

Water, electrical, and telephone utilities are located within the project footprint. The existing water line is contained within a polyvinyl chloride pipe that traverses the western bank of

Troutdale Creek. The electrical and telephone lines are suspended overhead and supported by poles.

The removal and replacement of the water line will occur during the bridge construction phase. Access will be established south of the new bridge alignment. No staging area will be required and the work will be completed with hand tools and a backhoe.

If avoidance is not possible, the electrical and phone lines will be relocated within the immediate vicinity of the existing pole locations. This work would be contained within the described construction footprint and may involve the removal of existing support poles and the installation of new poles.

Troutdale Creek Bridge Replacement

The existing Troutdale Creek Bridge will be replaced with a single-span structure. The proposed bridge will be built on a new curve alignment with a 165-foot radius. The new alignment will reduce the severity of the existing road bend which has a 110-foot radius.

The bridge abutments will be built first followed by adjoining wing walls designed to direct the channel flow under the bridge. For the superstructure construction, cranes may be used to set 11 precast/prestress I-girders onto the seats at both abutments. Then, timber falsework will be placed between the girders. Concrete will be poured onto this falsework as cast-in-place to form a 7-inch-thick bridge deck with steel reinforcement.

The bridge replacement would occur in two phases. The new bridge would be built in the first year, allowing traffic to continue to use the existing structure. Following completion of the new bridge, traffic would be rerouted to the new structure and the old bridge will be demolished the following year as phase 2.

Creek access will be needed for bridge demolition. A falsework platform will be suspended beneath the existing bridge to capture construction debris. The bridge deck and the tops of abutments will be demolished from the middle, out. The remaining portions of the old bridge abutments and pile caps will be cut down to 3 feet below the existing grade.

Temporary Water Diversion

A temporary water diversion system will be used during construction to reroute creek flow during in-stream work. The temporary creek diversion system is likely to consist of a diversion pipe with temporary cofferdams located at the up and downstream ends of the work area. The cofferdams will be constructed across the existing creek channel with gravel bags wrapped in impermeable plastic sheeting. A cutoff wall will be provided at the bottom of the cofferdams to reduce water seepage into the working area. The cofferdams will be assembled and removed during each year of the 2-year construction schedule. The temporary creek diversion system will be removed by October 15 of each construction year.

Caltrans will submit the water diversion plan to the Regional Water Quality Control Board (RWQCB) and CDFW for review and approval prior to construction.

Road Realignment

The road approaches on either end of the bridge will be realigned and widened to conform to the new bridge structure. In doing so, the existing 31-foot wide bridge and roadway will be widened to 48 feet. The approaches will taper to conform to the existing 31-foot wide roadway, north and south of the bridge. Existing metal beam guard rails will be replaced with solid concrete barriers. The existing roadside drainage will be modified to conform to the new road alignment. Suitable excavated material will be used to raise the profile of the approaches to meet the new bridge structure. Excess excavated material will be disposed at a certified landfill. Retaining walls will be built along the northbound lane of bridge approaches and for the bridge abutments to minimize and support the road embankment. The walls will have cast-in-drilled-hole or pile-driven footing foundation of reinforced soldier pile. The walls range in height from 6 to 12 feet tall and will be 32 to 358 feet long. Abandoned roadway will be removed and the former roadbed will be recontoured, stabilized, and revegetated with plants native to the area.

Site Clean-Up and Restoration

All construction-related materials including the wildlife exclusion fencing and environmentally sensitive area fencing will be removed after construction activities have been completed. Temporarily disturbed areas will be revegetated with appropriate native plant species. Permanent erosion control, including soil stabilization measures such as hydroseeding, coir netting and non-filament mesh will be applied to affected construction areas to minimize erosion following construction.

A revegetation plan will be prepared and will likely include, but will not be limited to: amendment of plant holes; initial plant installation of native or appropriate trees, shrubs, ground covers, grasses or forbs by way of nursery container stock or hydroseeding; caring for the plantings to ensure a healthy, growing condition for a 3-year plant establishment period; in-kind replacement of suitable plants; weeding, non-chemical rodent and other pest control; mowing; trash and debris removal; plant pruning and fertilizer application; plant basin mulching; and installation of foliage protectors as needed or as determined necessary. Irrigation may include hand or truck watering and a temporary above or below grade irrigation system. Maintenance of the restoration site is expected to be minimal, as the native plants should be well established by the completion of the 3-year plant establishment period.

Proposed Conservation Measures

Caltrans proposes to avoid and minimize effects to the northern spotted owl and California red-legged frog by implementing the following measures:

- a. Before the onset of construction activities, a Service-approved biologist will conduct an education program for all construction personnel. At a minimum, the training will include a description of the California red-legged frog, northern spotted owl, migratory birds, and their habitats; the occurrence of these species within the project footprint and action area; an explanation of the status of these species and protection under the Act and MBTA; the measures to be implemented to conserve listed species and their habitats as they relate to the work site; and boundaries within which construction may occur. A fact sheet conveying this information will be prepared and distributed to all construction and project personnel. Upon completion of the training

program, personnel will sign a form stating that they attended the program and understand all the avoidance and minimization measures and implications of Act. Sign-in sheets will be kept on file and will be available to the Service upon request.

- b. A Service-approved biologist(s) will be on-site during all activities that may result in the take of the California red-legged frog.
- c. No more than twenty (20) working days prior to any ground disturbance, pre-construction California red-legged frog surveys will be conducted by a Service-approved biologist. The Service-approved biologist(s) will investigate all potential California red-legged frog cover sites within the action area. This includes full investigation of mammal burrows within the construction footprint with scoping or excavation. The entrances of burrows will be collapsed following investigation in areas that will be subject to ground disturbance.
- d. Safety permitting, a Service-approved biological monitor will also investigate areas of disturbed soil for signs of California red-legged frogs within 30 minutes following the initial disturbance of that given area.
- e. The Service-approved biologist(s) will permanently remove, from the project site, any exotic wildlife species, such as bullfrogs and crayfish, to the extent possible.
- f. The Resident Engineer or their designee will be responsible for implementing the conservation measures and *Terms and Conditions* of the BO and will be the point of contact for the project. The Resident Engineer or their designee will maintain a copy of the BO onsite whenever construction is taking place. Their name and telephone number will be provided to the Service at least thirty (30) calendar days prior to groundbreaking. Prior to groundbreaking, the Resident Engineer will submit a letter to the Service verifying that they possess a copy of the BO and understands the *Terms and Conditions*.
- g. The Resident Engineer will stop work at the request of the Service-approved biologist(s) if activities are identified that may result in the take of the California red-legged frog. Should the biologist(s) or the Resident Engineer exercise this authority, the Service will be notified by telephone and e-mail within one (1) working day. The Service contact will be the Coast-Bay/Forest Foothills Division Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600.
- h. If, at any time, a California red-legged frog is discovered, the Resident Engineer and the biological monitor will be informed immediately. The biological monitor will determine if relocating the animal is necessary and will work with Service prior to handling or relocating unless otherwise authorized.
- i. Vegetation that is within the cut-and-fill line or is growing in locations where permanent structures will be placed (for example, road alignment, shoulder widening, and bridge abutments) will be cleared. In areas that will be subject to revegetation,

plants will only be cleared where necessary and will be cut above soil level. This will increase the potential of those plants to resprout after construction. All clearing and grubbing of woody vegetation will occur by hand or by using construction equipment such as backhoes and excavators, with the exception of trees (which will be removed by chainsaw, as needed). All cleared vegetation will be removed from the project footprint to prevent attracting animals to the project site.

- j. A Service-approved biologist will be present during all vegetation clearing and grubbing activities. If a California red-legged frog is discovered during these activities, the Service-approved biologist, through the Resident Engineer or their designee, will halt all work within 50 feet of the animal and will contact the Service to determine how to proceed.
- k. Except for limited vegetation clearing, work within California red-legged frog habitat will be restricted to between June 1 and October 15. Pre-construction vegetation clearing will occur outside of the typical migratory bird nesting season and northern spotted owl breeding season (February 1 to September 15), restricting all tree and vegetation removal to between September 15 and March 31.
- l. Caltrans will restore temporarily disturbed areas to the preconstruction function and values to the maximum extent practicable. Exposed slopes and bare ground will be reseeded with native grasses and shrubs to stabilize and prevent erosion. Where disturbance includes the removal of trees and woody shrubs, native species will be replanted based on local species composition. Any revegetation plans will be reviewed and approved by the Service. In addition, annual monitoring reports on the success of the plantings will be provided to the Service for review.
- m. Night-time construction will be minimized.
- n. Firearms will be prohibited at the project site, except for those carried by authorized security personnel, or local, State or Federal law enforcement officials.
- o. If requested, before, during, or upon completion of groundbreaking and construction activities, Caltrans will allow access by Service personnel to the action area to inspect project effects. Caltrans requests that all agency representatives contact the Resident Engineer prior to accessing the work site and review and sign the Safe Work Code of Practices, prior to accessing the work site for the first time.
- p. Prior to the start of construction, areas containing sensitive habitats adjacent to or within construction work areas for which physical disturbance is not allowed will be clearly delineated using high-visibility orange fencing. The fencing will remain in place throughout the duration of the project and will prevent construction equipment or personnel from entering sensitive habitat areas. The final project plans will depict all locations where fencing will be installed and how it will be installed. The special provisions in the bid solicitation package will clearly describe acceptable fencing

material and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within the sensitive areas.

- q. California red-legged frog exclusionary fencing will be placed at the edge of active construction areas to restrict frog access into the work area. The fencing will consist of taut silt fabric; 24 inches in height, stacked at 10-foot intervals, with the bottom buried 6 inches below grade. Exclusion fencing will be inspected and maintained on a daily basis.
- r. To prevent inadvertent entrapment of the California red-legged frog during construction, all excavated, steep-walled holes or trenches more than 1 foot deep will be covered at the close of each working day by plywood or similar materials or will be constructed with one or more escape ramps composed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All replacement pipes, culverts, or similar structures stored in the project footprint overnight will be inspected before they are subsequently moved, capped, and/or buried.
- s. If pumping is used for dewatering, intakes will be completely screened with wire mesh no larger than 0.2 inch to prevent frogs from entering the pump.
- t. Caltrans will comply with Presidential Executive Order 13112 (available at <http://www.gpo.gov/fdsys/pkg/FR-1999-02-08/pdf/99-3184.pdf>) to reduce the spread of invasive, non-native plant species and minimize the potential decrease of palatable vegetation for wildlife. This order prevents the introduction of invasive species and provides for their control in order to minimize the economic, ecological, and human health effects. In the event that noxious weeds are disturbed or removed during construction-related activities, the contractor will be required to contain the plant material associated with these noxious weeds and dispose of them in a manner that will not promote their spread. The contractor will be responsible for obtaining all permits, licenses and environmental clearances for properly disposing of materials. Areas subject to noxious weed removal or disturbance will be replanted with fast-growing native grasses or a native erosion control seed mixture. If seeding is not possible, the areas will be covered to the extent practicable with heavy black plastic solarization material until the end of the project.
- u. A Stormwater Pollution Prevention Plan (SWPPP) and erosion control best management practices (BMPs) will be developed and implemented to minimize wind- or water-related erosion. These BMPs will be in compliance with RWQCB requirements. Protective measures will include, at a minimum:
 - 1. Forbidding any discharge of pollutants from vehicle and equipment cleaning into any storm drains or watercourses;

2. Keeping vehicle and equipment fueling and maintenance operations at least 50 feet away from watercourses, except at established commercial gas stations or established vehicle maintenance facilities;
 3. Collecting and disposing of concrete wastes in washouts and water from curing operations;
 4. Maintaining spill containment kits onsite at all times during construction operations and/or staging or fueling of equipment;
 5. Using water trucks and dust palliatives to control dust in excavation and fill areas, covering temporary access road entrances and exits with rock (rocking), and covering of temporary stockpiles when weather conditions require;
 6. Installing coir rolls or straw wattles along or at the base of slopes during construction to capture sediment;
 7. Protecting graded areas from erosion using a combination of silt fences, fiber rolls along toes of slopes or along edges of designated staging areas, and erosion control netting (such as jute or coir) as appropriate on sloped areas; and
 8. Establishing permanent erosion control measures, such as biofiltration strips and swales, to receive stormwater discharges from the highway or other impervious surfaces.
- v. Plastic mono-filament netting (erosion control matting) or similar material will not be used at the project site because California red-legged frog may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.
- w. The following site restrictions will be implemented to avoid or minimize potential effects on listed species and their habitats:
1. Enforcing a speed limit of 15 miles per hour in the project footprint in unpaved and paved areas, except on the current highway, to reduce dust and excessive soil disturbance;
 2. Locating construction access, staging, storage, and parking areas within the project right-of-way outside of Caltrans' identified sensitive habitat areas or outside of the right-of-way in areas environmentally cleared and permitted by the contractor. Access routes, staging and storage areas, and contractor parking will be limited to the minimum necessary to construct the proposed project. Routes and boundaries of roadwork will be clearly marked prior to initiating construction or grading;
 3. Certifying, to the maximum extent practicable, any borrow material to be nontoxic and weed free; and

4. Enclosing all food and food-related trash items in sealed trash containers and removing them from the site at the end of each day;
5. Prohibiting all pets within the project footprint during construction;
6. Maintaining all equipment to prevent the leakage of vehicle fluids (such as gasoline, oils, or solvents) and developing a Spill Response Plan. Hazardous materials (such as fuels, oils, and solvents) will be stored in sealable containers in a designated location that is at least 50 feet from aquatic habitats;
7. Servicing vehicles and construction equipment including fueling, cleaning, and maintenance at least 50 feet from any aquatic habitat unless separated by a topographic or drainage barrier.

Analytical Framework for the Jeopardy Determination

In accordance with policy and regulation, the jeopardy analysis in this BO relies on four components: (1) the *Status of the Species*, which evaluates the California red-legged frog range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the listed species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the California red-legged frog; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the California red-legged frog current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The jeopardy analysis in this BO places an emphasis on consideration of the range-wide survival and recovery needs of the California red-legged frog and the role of the action area in the survival and recovery of the California red-legged frog as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Action Area

The action area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For the proposed action, the action area encompasses the 2.71-acre construction footprint and other habitat within at least 0.5 mile downstream of the construction footprint affected by potential water quality issues.

Status of the California Red-Legged Frog

Listing Status

The California red-legged frog was listed as a threatened species on May 23, 1996 (Service 1996). Critical habitat was re-designated for this species on March 17, 2010 (Service 2010). A recovery plan was published for the California red-legged frog on September 12, 2002 (Service 2002).

Description

The California red-legged frog is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 2003). The abdomen and hind legs of adults are largely red, while the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background. Dorsal spots usually have light centers (Stebbins 2003), and dorsolateral folds are prominent on the back. California red-legged frogs have paired vocal sacs and vocalize in air (Hayes and Krempels 1986). Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

Distribution

The historic range of the red-legged frog extended coastally from the vicinity of Elk Creek in Mendocino County, California, and inland from the vicinity of Redding, Shasta County, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985; Hayes and Krempels 1986; Fellers 2005). The red-legged frog was historically documented in 46 California counties but the taxon now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (Service 2002). California red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the Central Coast. Within the remaining distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern Coast Range, northern Transverse Ranges, southern Transverse Ranges, and Peninsular Ranges.

Status and Natural History

California red-legged frogs predominately inhabit permanent water sources such as streams, lakes, marshes, natural and man-made ponds, and ephemeral drainages in valley bottoms and foothills up to 4,921 feet in elevation (Jennings and Hayes 1994, Bulger *et al.* 2003, Stebbins 2003). However, California red-legged frogs also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. California red-legged frogs also can be found in disturbed areas such as channelized creeks and drainage ditches in urban and agricultural areas. For example, an adult California red-legged frog was observed in a shallow isolated pool on North Slough Creek in the American Canyon area of Napa County (C. Gaber, PG&E, pers. comm., 2008). This frog location was surrounded by vineyard development. Another adult California red-legged frog was observed under debris in an unpaved parking lot in a heavily industrial area of Burlingame (P. Kobernus, Coast Ridge Ecology, pers. comm., 2008). This frog was likely utilizing a nearby drainage ditch. Caltrans also has discovered California red-legged frog adults, tadpoles, and egg masses within a storm drainage system within a major cloverleaf intersection of Millbrae Avenue and SR 101 in a heavily developed area of San Mateo

County (Caltrans 2007). California red-legged frog has the potential to persist in disturbed areas as long as those locations provide at least one or more of their life history requirements.

California red-legged frogs typically breed between November and April in still or slow-moving water at least 2.5 feet in depth with emergent vegetation, such as cattails, tules or overhanging willows (Hayes and Jennings 1988). There are earlier breeding records from the southern portion of their range (Storer 1925). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on or near the surface of the water (Hayes and Miyamoto 1984). Individuals occurring in coastal areas are active year-round (Jennings *et al.* 1992), whereas those found in interior sites are normally less active during the cold and dry seasons.

During other parts of the year, habitat includes nearly any area within 1-2 miles of a breeding site that stays moist and cool through the summer (Fellers 2005). According to Fellers (2005), this can include vegetated areas with coyote brush, California blackberry thickets, and root masses associated with willow and California bay trees. Sometimes the non-breeding habitat used by California red-legged frogs is extremely limited in size. For example, non-breeding California red-legged frogs have been found in a 6-foot wide coyote brush thicket growing along a small intermittent creek surrounded by heavily grazed grassland (Fellers 2005). Sheltering habitat for California red-legged frogs is potentially all aquatic, riparian, and upland areas within the range of the species and includes any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned structures, or hay stacks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

California red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adult frogs are often associated with permanent bodies of water. Some frogs remain at breeding sites all year while others disperse. Dispersal distances are typically less than 0.5 mile, with other individuals moving up to 1-2 miles (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005).

In a study of California red-legged frog terrestrial activity in a mesic area of the Santa Cruz Mountains, Bulger *et al.* (2003) categorized terrestrial use as migratory and non-migratory. The latter occurred over one to several days and was associated with precipitation events. Migratory movements were characterized as the movement between aquatic sites and were most often associated with breeding activities. Bulger *et al.* (2003) reported that non-migrating frogs typically stayed within 200 feet of aquatic habitat 90 percent of the time and were most often associated with dense vegetative cover, *i.e.* California blackberry, poison oak and coyote brush. Dispersing frogs in northern Santa Cruz County traveled distances from 0.25-mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger *et al.* 2003).

In a study of California red-legged frog terrestrial activity in a xeric environment, Tatarian (2008) noted that 57 percent of frogs fitted with radio transmitters in the Round Valley study area in eastern Contra Costa County stayed at their breeding pools, whereas 43 percent moved into adjacent upland habitat or to other aquatic sites. This study reported a peak of seasonal terrestrial movement occurring in the fall months, with movement commencing with the first 0.2 inch of precipitation. Movements away from the source pools tapered off into spring. Upland movement activities ranged from 3 to 233 feet, averaging 80 feet, and were associated with a variety of refugia including grass thatch, crevices, cow hoof prints, ground squirrel burrows at the bases of trees or rocks, logs, and a downed barn door; others were associated with upland sites lacking refugia (Tatarian 2008). The majority of terrestrial movements lasted from 1-4 days; however, an adult female was reported to remain in upland habitat for 50 days (Tatarian 2008). Uplands closer to aquatic sites were used more often and frog refugia were more commonly associated with areas exhibiting higher object cover (*e.g.*, woody debris, rocks, and vegetative cover). Subterranean cover was not significantly different between occupied upland habitat and non-occupied upland habitat.

California red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Egg masses containing 2,000-5,000 eggs are attached to vegetation below the surface and hatch after 6-14 days (Storer 1925, Jennings and Hayes 1994). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992). Eggs exposed to salinity levels greater than 4.5 parts per thousand results in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3.5-7 months following hatching and reach sexual maturity at 2-3 years of age (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1985, 1990, 1994). Of the various life stages, larvae probably experience the highest mortality rates, with less than 1 percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). Sexual maturity normally is reached at 3-4 years of age (Storer 1925; Jennings and Hayes 1985). California red-legged frogs may live 8-10 years (Jennings *et al.* 1992). Populations of California red-legged frogs fluctuate from year to year. When conditions are favorable California red-legged frogs can experience extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, California red-legged frogs may temporarily disappear from an area when conditions are stressful (*e.g.*, drought).

California red-legged frogs have a diverse diet which changes as they mature. The diet of larval California red-legged frogs is not well studied, but is likely similar to that of other ranid frogs, which feed on algae, diatoms, and detritus by grazing on the surfaces of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b, 1997). Hayes and Tennant (1985) analyzed the diets of California red-legged frogs from Cañada de la Gaviota in Santa Barbara County during the winter of 1981 and found invertebrates (comprising 42 taxa) to be the most common prey item consumed; however, they speculated that this was opportunistic and varied based on prey availability. They ascertained that larger frogs consumed larger prey and were recorded to have preyed on Pacific tree frogs, three-spined stickleback and to a limited extent, California mice, which were abundant at the study site (Hayes and Tennant 1985, Fellers 2005). Although larger vertebrate prey was consumed less frequently, it represented over half of the prey mass eaten by

larger frogs suggesting that such prey may play an energetically important role in their diets (Hayes and Tennant 1985). Juvenile and subadult/adult frogs varied in their feeding activity periods; juveniles fed for longer periods throughout the day and night, while subadult/adults fed nocturnally (Hayes and Tennant 1985). Juveniles were significantly less successful at capturing prey and all life history stages exhibited poor prey discrimination; feeding on several inanimate objects that moved through their field of view (Hayes and Tennant 1985).

Metapopulation and Patch Dynamics

The direction and type of habitat used by dispersing animals is especially important in fragmented environments (Forys and Humphrey 1996). Models of habitat patch geometry predict that individual animals will exit patches at more “permeable” areas (Buechner 1987; Stamps *et al.* 1987). A landscape corridor may increase the patch-edge permeability by extending patch habitat (La Polla and Barrett 1993), and allow individuals to move from one patch to another. The geometric and habitat features that constitute a “corridor” must be determined from the perspective of the animal (Forys and Humphrey 1996).

Because their habitats have been fragmented, many endangered and threatened species exist as metapopulations (Verboom and Apeldoorn 1990; Verboom *et al.* 1991). A metapopulation is a collection of spatially discrete subpopulations that are connected by the dispersal movements of the individuals (Levins 1970; Hanski 1991). For metapopulations of listed species, a prerequisite to recovery is determining if unoccupied habitat patches are vacant due to the attributes of the habitat patch (food, cover, and patch area) or due to patch context (distance of the patch to other patches and distance of the patch to other features). Subpopulations of patches with higher quality food and cover are more likely to persist because they can support more individuals. Large populations have less of a chance of extinction due to stochastic events (Gilpin and Soule 1986). Similarly, small patches will support fewer individuals, increasing the rate of extinction. Patches that are near occupied patches are more likely to be recolonized when local extinction occurs and may benefit from emigration of individuals via the “rescue” effect (Hanski 1982; Fahrig and Merriam 1985; Gotelli 1991; Holt 1993). For the metapopulation to persist, the rate of patches being colonized must exceed the rate of patches going extinct (Levins 1970). If some subpopulations go extinct regardless of patch context, recovery actions should be placed on patch attributes. Patches could be managed to increase the availability of food and/or cover.

Movements and dispersal corridors likely are critical to California red-legged frog population dynamics, particularly because the animals likely currently persist as metapopulations with disjunct population centers. Movement and dispersal corridors are important for alleviating over-crowding and intraspecific competition, and also they are important for facilitating the recolonization of areas where the animal has been extirpated. Movement between population centers maintains gene flow and reduced genetic isolation. Genetically isolated populations are at greater risk of deleterious genetic effects such as inbreeding, genetic drift, and founder effects. The survival of wildlife species in fragmented habitats may ultimately depend on their ability to move among patches to access necessary resources, retain genetic diversity, and maintain reproductive capacity within populations (Petit *et al.* 1995; Buza *et al.* 2000; Hilty and Merenlender 2004).

Most metapopulation or metapopulation-like models of patchy populations do not directly include the effects of dispersal mortality on population dynamics (Hanski 1994; With and Crist 1995; Lindenmayer and Possingham 1996). Based on these models, it has become a widely held notion that more vagile species have a higher tolerance to habitat loss and fragmentation than less vagile species. But models that include dispersal mortality predict the opposite: more vagile species should be more vulnerable to habitat loss and fragmentation because they are more susceptible to dispersal mortality (Fahrig 1998; Casagrandi and Gatto 1999). This prediction is supported by Gibbs (1998), who examined the presence-absence of five amphibian species across a gradient of habitat loss. He found that species with low dispersal rates are better able than more vagile species to persist in landscapes with low habitat cover. Gibbs (1998) postulated that the land between habitats serves as a demographic “drain” for many amphibians. Furthermore, Bonnet *et al.* (1999) found that snake species that use frequent long-distance movements have higher mortality rates than do sedentary species.

Threats

Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the red-legged frog throughout its range. Several researchers in central California have noted the decline and eventual local disappearance of California and northern California red-legged frogs (*Rana aurora*) in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish, signal crayfish, and several species of warm water fish including sunfish, goldfish, common carp, and mosquitofish (Moyle 1976, Barry 1992, Hunt 1993, Fisher and Schaffer 1996). This has been attributed to predation, competition, and reproduction interference. Twedt (1993) documented bullfrog predation of juvenile northern California red-legged frogs, and suggested that bullfrogs could prey on subadult northern California red-legged frogs as well. Bullfrogs may also have a competitive advantage over California red-legged frogs. For instance, bullfrogs are larger and possess more generalized food habits (Bury and Whelan 1984). In addition, bullfrogs have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977). Furthermore, bullfrog larvae are unpalatable to predatory fish (Kruse and Francis 1977). Bullfrogs also interfere with red-legged frog reproduction. Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat. Both California and northern California red-legged frogs have also been observed in amplexus (mounted on) with both male and female bullfrogs (Jennings and Hayes 1990; Jennings 1993; Twedt 1993).

The urbanization of land within and adjacent to red-legged frog habitat has also adversely affected California red-legged frogs. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks red-legged frog dispersal, and the introduction of predatory fishes and bullfrogs.

Diseases may also pose a significant threat though the specific effects of diseases on the California red-legged frog are not known. Pathogens are suspected of causing global amphibian declines (Davidson *et al.* 2003). Chytridiomycosis and ranaviruses are a potential threat to the red-legged frog because these diseases have been found to adversely affect other amphibians, including the listed species (Davidson *et al.* 2003; Lips *et al.* 2003). Non-native species, such as bullfrogs and non-native tiger salamanders that live within the range of the California red-legged frog have been identified as potential carriers of these diseases (Garner *et al.* 2005). Human

activities can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves (*i.e.*, contaminated boots or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in the listed species being more susceptible to the effects of disease. Disease will likely become a growing threat because of the relatively small and fragmented remaining California red-legged frog breeding sites, the many stresses on these sites due to habitat losses and alterations, and the many other potential disease-enhancing anthropogenic changes that have occurred both inside and outside the species' range.

Negative effects to wildlife populations from roads and pavement may extend some distance from the actual road. The phenomenon can result from any of the effects already described in this BO, such as vehicle-related mortality, habitat degradation, and invasive exotic species. Forman and Deblinger (1998, 2000) described the area affected as the "road effect" zone. Along a 4-lane road in Massachusetts, they determined that this zone extend for an average of approximately 980 feet to either side of the road for an average total zone width of approximately 1,970 feet. They describe the boundaries of this zone as asymmetric and in some areas diminished wildlife use attributed to road effects was detected greater than 0.6 mile from Massachusetts Route 2. The "road-zone" effect can also be subtle. Van der Zandt *et al.* (1980) reported that lapwings and black-tailed godwits feeding at 1,575-6,560 feet from roads were disturbed by passing vehicles. The heart rate, metabolic rate and energy expenditure of female bighorn sheep increase near roads (MacArthur *et al.* 1979). Trombulak and Frossell (2000) described another type of "road-zone" effect due to contaminants. Heavy metal concentrations from vehicle exhaust were greatest within 66 feet of roads, but elevated levels of metals in both soil and plants were detected at 660 feet of roads. The "road-zone" apparently varies with habitat type and traffic volume. Based on responses by birds, Forman (2000) estimated the effect zone along primary roads of 1,000 feet in woodlands, 1,197 feet in grasslands, and 2,657 feet in natural lands near urban areas. Along secondary roads with lower traffic volumes, the effect zone was 656 feet. The "road-zone" effect with regard to California red-legged frogs has not been adequately investigated.

The necessity of moving between multiple habitats and breeding ponds means that many amphibian species, such as the California red-legged frog, are especially vulnerable to roads and well-used large paved areas in the landscape. Van Gelder (1973) and Cooke (1995) have examined the effect of roads on amphibians and found that because of their activity patterns, population structure, and preferred habitats, aquatic breeding amphibians are more vulnerable to traffic mortality than some other species. Large, high-volume highways pose a nearly impenetrable barrier to amphibians and result in mortality to individual animals as well as significantly fragmenting habitat. Hels and Buchwald (2001) found that mortality rates for anurans on high traffic roads are higher than on low traffic roads. Vos and Chardon (1998) found a significant negative effect of road density on the occupation probability of ponds by the moor frog (*Rana arvalis*) in the Netherlands. In addition, incidents of very large numbers of road-killed frogs are well documented (*e.g.*, Ashley and Robinson 1996), and studies have shown strong population level effects of traffic density (Carr and Fahrig 2001) and high traffic roads on these amphibians (Van Gelder 1973; Vos and Chardon 1998). Most studies regularly count road kills from slow moving vehicles (Hansen 1982; Rosen and Lowe 1994; Drews 1995; Mallick *et al.* 1998) or by foot (Munguira and Thomas 1992). These studies assume that every victim is

observed, which may be true for large conspicuous mammals, but it certainly is not true for small animals, such as the California red-legged frog. Amphibians appear especially vulnerable to traffic mortality because they readily attempt to cross roads, are slow-moving and small, and thus cannot easily be avoided by drivers (Carr and Fahrig 2001).

Environmental Baseline in the Action Area

The proposed SR 29 Troutdale Creek Bridge Replacement Project is located in a rural, mountainous area of Napa County, approximately 0.5 mile north of Robert Louis Stevenson State Park. The vicinity is primarily characterized by coniferous and hardwood forest with patches of scrub vegetation and cleared areas occupied by non-native grasses.

Troutdale Creek originates on the upper western slope of Mount St. Helena Robert Louis Stevenson State Park and flows westward, approximately 1.7 miles to the SR 29 Bridge. From the bridge, the creek travels another approximately 0.9 mile to a confluence with Saint Helena Creek.

Troutdale Creek provides habitat for the California red-legged frog. It is a perennial waterway surrounded by dense riparian vegetation. On October 27, 2011, visit to the proposed action area the creek was observed to have a variety of hydrological features including a large pool under the existing bridge as well as slack water, riffles, and cascading pools. The creek bed is full of large boulders, cobbles, root wads, and woody debris, providing complex frog cover in conjunction with the surrounding dense understory riparian vegetation.

Red-legged frogs can breed in a variety of freshwater situations, including freshwater marshes, backwater pools, ditches, agricultural basins, and stock ponds. Based on our review of aerial photography, there are potential breeding ponds between approximately 0.5 and 1.14 miles from the proposed project. Troutdale Creek is a dynamic hydrologic system which contains backwaters, pools, and slackwater areas whose location and suitability for successful breeding varies annually. Adult California red-legged frogs are highly mobile and have been documented to move more than 2 miles over upland habitat. The frog habitat within the action area has direct connectivity with suitable habitat north, south, east, and west of the project site and is well within the feasible movement distance to potential breeding locations.

The red-legged frog likely utilizes the surrounding upland habitat within and beyond the Troutdale Creek riparian corridor for refuge, forage, and dispersal. Red-legged frogs could travel to and between resource areas by using the riparian corridor or moving directly over the surrounding hills. The action area provides year-round refuge, forage, and dispersal habit for California red-legged frogs and potential breeding habitat during ideal hydrological periods.

There are local observational records of the California red-legged frog, north, south, east, and west of the project action area. However, there are no identifiable records within 2 miles of the project footprint. The lack of species occurrence records in the California Natural Diversity Database (CNDDDB) likely is the result of a lack of survey efforts in northern Napa County (CDFW 2013a; 2013b). This in turn is likely due to few recent local development projects and the majority of the land adjacent to the action area being in private ownership.

Caltrans did not conduct standardized or protocol frog or other wildlife surveys in the proposed action area to support their baseline analysis for the project. The Service used aerial photography and field observations from available access locations to independently identify available upland habitat for refugia and dispersal as well as potential riparian and aquatic habitat throughout the action area vicinity.

The recovery plan for California red-legged frogs identifies eight Recovery Units (Service 2002). The establishment of these Recovery Units is based on the Recovery Team's determination that various regional areas of the species' range are essential to its survival and recovery. The status of the California red-legged frog will be considered within the smaller scale of Recovery Units as opposed to the overall range. These Recovery Units are delineated by major watershed boundaries as defined by U. S. Geological Survey (USGS) hydrologic units and the limits of the range of the California red-legged frog. The goal of the recovery plan is to protect the long-term viability of all extant populations within each Recovery Unit. The proposed project is within Putah Creek-Cache Creek Core Recovery Area of Recovery Unit 3 (North Coast and North San Francisco Bay Unit) (Service 2002).

The Service believes that the California red-legged frog is reasonably certain to occur within the action area due to: (1) the project being located within the species' range and current distribution; (2) suitable aquatic, dense riparian, and upland habitat within the action area; (3) the project footprint is within 0.5 miles of a potential breeding pond; (4) all the elements needed to support the species' life history are potentially located within 0.5-mile of the action area; (5) the lack of significant disturbance or history of significant threats to the species in the general vicinity; (6) the ability of the California red-legged frog to move a considerable distance; and (7) the biology and ecology of the animal.

Effects of the Proposed Action

Caltrans proposes to minimize construction related effects by implementing the *Proposed Conservation Measures* included in the *Description of the Proposed Action* section of this BO. Effective implementation of the *Conservation Measures* will likely minimize effects to the California red-legged frog during construction but incidental take is still likely to occur. Therefore, the proposed SR 29 Troutdale Creek Bridge Replacement Project has the potential to result in a variety of adverse effects that would result in take of the California red-legged frog.

Construction activities could result in the killing, harming and/or harassment of juvenile and adult frogs inhabiting areas of suitable aquatic and upland habitat. The project, as proposed in Caltrans' January 2013, BA and further described in Caltrans' March 29, 2013 letter, is defined by a 2.71-acre construction footprint, much of which is located within the bed and bank of Troutdale Creek. The project will include: (1) the installation of 0.54 acre of permanent roadway structures; (2) 1.63 acres of temporary work areas; and (3) the reclamation of 0.16 of abandoned roadway. Work in the riparian zone will include 0.05 acre of permanent effects, 0.27 acre of temporary effects, and 0.03 acre of habitat restoration of the area occupied by the old bridge.

Adverse effects to the California red-legged frog are most likely to be limited to the construction phase of the project. Permanent and prolonged temporal loss of habitat will result from: the construction of a new bridge structure and road alignment; the removal and/or disturbance of vegetation; the establishment and use of temporary access roads down to the streambed; temporary dewatering of the Troutdale Creek bed and temporary rerouting of Troutdale Creek; exclusion from habitat within the work area; and disruption of connectivity between up and downstream habitat. Construction noise, vibration, and increased human activity during construction may interfere with normal behaviors such as feeding, sheltering, movement between refugia and foraging grounds, and other frog essential behaviors. This can result in avoidance of areas that have suitable habitat but intolerable levels of disturbance.

Unless identified by the biological monitor or site personnel, and rescued by the biological monitor, individual California red-legged frogs exposed during earthwork and vegetation trimming/clearing or moving within active work areas likely will be crushed and killed or injured by construction-related activities. Even with biological monitoring, overall awareness, and proper escape ramps, California red-legged frogs could fall into the trenches, pits, or other excavations, and then risk being directly killed or be unable to escape and be killed due to desiccation, entombment, or starvation. Proper trash disposal is often difficult to enforce and is a common non-compliance issue. Improperly disposed edible trash could attract predators, such as raccoons, crows, and ravens, to the site, which could subsequently prey on the listed amphibian. Caltrans' commitment to use erosion control devices other than mono-filament should be effective in avoiding the associated risk of entrapment that can result in death by predation, starvation, or desiccation (Stuart *et al.* 2001). Restricting work within Troutdale Creek to between June 1 and October 15, primarily avoids the wettest time of year and the onset of the breeding season when frogs are more likely to be involved in dispersal. Caltrans will further minimize adverse effects by: locating much of the construction staging, storage, and parking areas outside of sensitive habitat; clearly marking construction work boundaries with high-visibility fencing; conducting preconstruction surveys and environmental monitoring; and stabilizing and revegetating temporarily disturbed areas. Adverse effects from construction activities will be partially minimized by: installing wildlife exclusion fencing to deter frogs from wandering into construction areas; educating workers; and requiring a Service-approved biologist to be present to monitor construction activities.

If unrestricted, the proposed construction activities could result in the introduction of chemical contaminants to frog habitat. Exposure pathways could include inhalation, dermal contact, direct ingestion, or secondary ingestion of contaminated soil, plants or prey species. Exposure to contaminants could cause short- or long-term morbidity, possibly resulting in reduced productivity or mortality. However, Caltrans proposes to minimize these risks by implementing a SWPPP and erosion control BMPs which will consist of refueling, oiling, or cleaning of vehicles and equipment a minimum of 50 feet from riparian and aquatic areas; installing coir rolls, straw wattles and/or silt fencing to capture sediment and prevent runoff or other harmful chemicals from entering the aquatic habitat; and locating staging, storage and parking areas away from aquatic habitat.

Preconstruction surveys and the relocation of individual California red-legged frogs may avoid injury or mortality; however, capturing and handling frogs may result in stress and/or inadvertent injury during handling, containment, and transport. Caltrans proposes to minimize these effects by using Service-approved biologists, limiting the duration of handling, and relocating amphibians to suitable nearby habitat within the Troutdale Creek riparian corridor in accordance with Service guidance.

If unrestricted, biologists and construction workers traveling to the action area from other project sites may transmit diseases by introducing contaminated equipment. The chance of a disease being introduced into a new area is greater today than in the past due to the increasing occurrences of disease throughout amphibian populations in California and the United States. It is possible that chytridiomycosis, caused by chytrid fungus, may exacerbate the effects of other diseases on amphibians or increase the sensitivity of the amphibian to environmental changes (*e.g.*, water pH) that reduce normal immune response capabilities (Bosch *et al.* 2001, Weldon *et al.* 2004).

Gaining access to and working in the Troutdale Creek bed represents the primary risk to the California red-legged frog. Bridge construction and demolition work activities will be located in the creek bed to such an extent that the water flow will be rerouted around the work area. Therefore the proposed activities have the potential to adversely affect all the frogs that occupy the general vicinity; the local aquatic and upland habitat; frogs that would be moving up or downstream through the project footprint; and habitat connectivity. Construction of the new bridge and the associated road realignment on both bridge approaches will require the removal of dense riparian vegetation and forest that provides cover and refuge for the listed frog. California red-legged frogs are likely active year-round within the Troutdale Creek riparian corridor and may be encountered on a daily basis. Work activities are likely to adversely affect the movement, and localized foraging and other behaviors of the red-legged frogs in the riparian corridor and surrounding forest. Frogs will most likely be actively moving around, through, or within the work area during the evening when work is not taking place. This places greater emphasis on thorough biological clearance of work areas and under staged equipment and materials prior to the start of each day's activities.

The new bridge structure should be less intrusive to the Troutdale Creek bed, having less influence on the creek hydrology. The new bridge will be a spanned structure with abutments set back further from the creek bank than the existing bridge. The longer bridge design will result in a less constricted creek bank with more natural flows and a more contiguous riparian corridor. A greater width will promote enhance passage for California red-legged frogs and other wildlife. This is especially true during periods of high flow when inundation of the stream bank forces available terrestrial wildlife passage further up the margins of the creek bank.

Demolition of the existing bridge structure and associated approaches will partially offset the adverse effects associated with the new bridge construction. The current bridge structure restricts the width of the creek, therefore altering hydrology. The existing abutments are located within the creek bank, interrupting the continuity of the riparian corridor and wildlife passage.

Successful reclamation of the 0.16-acre of riparian vegetation within the demolished bridge alignment and the restoration of the 1.63-acre temporary work area needed for construction of the new structure should result in a more extensive and contiguous riparian corridor.

Use of the new bridge and associated road realignment is not expected to increase the local wildlife-vehicle collision risk. The project is unlikely to result in increased traffic volume or speed. The realignment should result in increased visibility of the roadway ahead and retaining walls supporting the bridge approaches are a likely barrier to California red-legged frog movement onto the road and may be effective in directing frog and other wildlife movement under the Troutdale Creek Bridge.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this BO. Future Federal actions that are unrelated to the proposed SR 29 Troutdale Creek Bridge Replacement Project are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service is not aware of specific projects that might affect the California red-legged frog in the action area that are currently under review by State, county, or local authorities.

The Service is not aware of any cumulative effects to the California red-legged frog that are reasonably certain to occur within the action area.

Conclusion

After reviewing the current status of California red-legged frog, the environmental baseline for the action area, and the effects of the proposed action, and the cumulative effects on the species, it is the Service's biological opinion that the proposed SR 29 Troutdale Creek Bridge Replacement Project, as described herein, is not likely to jeopardize the continued existence of this/these species. We base this conclusion on the following: (1) Caltrans will implement a comprehensive list of conservation measures to minimize and avoid adverse effects to the California red-legged frog; (2) areas of temporary ground disturbance will be restored to meet baseline or enhanced California red-legged frog habitat values; and (3) the new bridge and approach design will provide enhanced habitat connectivity up and downstream of the bridge crossing.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly

impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by Caltrans so that they become binding conditions of any grant or permit issued to Caltrans as appropriate, in order for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this incidental take statement. If Caltrans (1) fails to assume and implement the terms and conditions or (2) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to their wariness, cryptic nature, and the abundance of potential cover sites within the action area. Finding an injured or dead California red-legged frog is unlikely due to their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger. Depending on the condition of the carcass, it may be difficult to differentiate between the remains of the California red-legged frog and the foothill yellow-legged frog (*Rana boylei*), which is also likely to occur in Troutdale Creek. Losses of the California red-legged frog may also be difficult to quantify due to a lack of baseline survey data and seasonal/annual fluctuations in their numbers due to environmental or human-caused disturbances. There is a risk of harm, harassment, injury and mortality as a result of the proposed construction activities, the permanent and temporary loss/degradation of suitable habitat, and capture and relocation efforts; therefore, the Service is authorizing take incidental to the proposed action as (1) the injury and mortality of no more than one adult, juvenile, or larval California red-legged frog and (2) the capture, harm and harassment of all California red-legged frogs within the 2.71-acre project footprint. Upon implementation of the following *Reasonable and Prudent Measures*, California red-legged frogs within the action area in proportion to the amount and type of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

The Service has determined that this level of anticipated take for the California red-legged frog is not likely to jeopardize the continued existence of this species.

Reasonable and Prudent Measure

The Service has determined that the following reasonable and prudent measure is necessary and appropriate to minimize the effect of the proposed action on the California red-legged frog.

Caltrans will be responsible for the implementation and compliance with this measure:

1. Minimize the adverse effects to the California red-legged frog and its habitat in the action area.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans must comply with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. The following Terms and Conditions implement Reasonable and Prudent Measure one (1):
 - a. Caltrans shall minimize the potential for harm, harassment, or killing of the California red-legged frog resulting from project related activities by implementing the conservation measures as stated in the *Description of the Proposed Action* of this BO.
 - b. Caltrans shall require all contractors to comply with the Act in the performance of the action and shall perform the action as outlined in the *Description of the Proposed Action* of this BO as provided by Caltrans in the January 2013, BA and all other supporting documentation submitted to the Service.
 - c. Caltrans shall include language in their contracts that expressly requires contractors and subcontractors to work within the boundaries of the project footprint identified in this BO, including vehicle parking, staging, laydown areas, and access.
 - d. At least 15 days prior to the onset of any construction-related activities, Caltrans shall submit to the Service, for approval, the name(s) and credentials of biologists it wishes to conduct activities specified for this project. Information included in a request for authorization should include, at a minimum: (1) relevant education; (2) relevant training on species identification, survey techniques, handling individuals of different age classes, and handling of different life stages by a permitted biologist or recognized species expert authorized for such activities by the Service; (3) a summary of field experience conducting requested activities (to include project/research information); (4) a summary of BOs under which they were authorized to work with the listed species and at what level (such as construction monitoring versus handling), this should also include the names and qualifications of persons under which the work was supervised as well as the amount of work experience on the actual project; (5) A list of Federal Recovery Permits [10(a)1(A)] held or under which are authorized to work with the species (to include permit number, authorized activities, and name of permit holder); (6) any relevant professional references with contact information. No project construction shall begin until Caltrans has received written Service approval for biologists to conduct specified activities.
 - e. Caltrans shall provide a restoration and revegetation plan for the 1.63 acres of temporary effected areas and the 0.16 acre reclaimed area to be reviewed and

approved by the Service no later than sixty (60) calendar days prior to date of initial groundbreaking at the project site. The plan will include, but will not be limited to: schedule, methodology, a list of the seed mixes and container plants, plant material source, irrigation, maintenance schedule, monitoring program, success criteria, control of invasive, noxious weeds, and remediation and adaptive management. In addition, annual monitoring reports on the success of the plantings shall be provided to the Service following the date of project completion. The reports will be submitted on or before December 31 of each year monitoring is conducted.

The revegetation plan will include a photo monitoring plan. The plan will include, but is not limited, to the following:

1. An adequate number of photo monitoring stations will be established to provide representative views of project restoration and construction activities. Stations will be located in areas that allow for unobstructed views, to the extent allowed by surrounding vegetative cover and topography. Each station will provide a representative panoramic view of the restoration footprint. Caltrans will ensure that photo monitoring stations numbers and locations are sufficient to document temporary effects restoration success.
 2. Establishment and operation of photo monitoring at all stations will occur prior to the date of initial ground breaking activities. Baseline photographs will be taken during the spring growing season prior to construction. Following the completion of ground disturbance, photo documentation will be conducted quarterly to document restoration relative to four seasons. Photo documentation will conclude when the Service has agreed that success criteria have been met.
 3. Photo monitoring station locations will be provided to the Service in an acceptable geographic format with the coordinate system identified.
 4. If the Service or the biological monitor(s) determines that additional monitoring stations are necessary, the locations will be added to the inventory of photo monitoring stations prior to the date of the next photo documentation.
 5. During each photo monitoring cycle all stations will be visited within a two day period.
 6. At the conclusion of restoration, the acreage of restored areas will be tabulated and provided to the Service. The extent of restoration will be delineated with a handheld GPS device and a trackfile provided to the Service Representative.
- f. Each California red-legged frog encounter shall be treated on a case-by-case basis in coordination with the Service but general guidance is as follows: (1) leave the non-injured frog if it is not in danger or (2) move the frog to a nearby location if it is in danger.

These two options are further as follows.

- 1) When a California red-legged frog is encountered in the action area the first priority is to stop all activities in the surrounding area that have the potential to result in the harm, harassment, injury, or death of the individual. Then the monitor needs to assess the situation in order to select a course of action that will minimize adverse effects to the individual. Contact the Service once the site is secure. The contacts for this situation are Ryan Olah (ryan_olah@fws.gov) or John Cleckler (john_cleckler@fws.gov). They can also be reached at (916) 414-6600. If you get voicemail messages for these contacts then contact John Cleckler on his cell phone at (916) 712-6784. The issue of contacting people on the weekend or after office hours is addressed later. Contact the Service prior to the start of construction to confirm the status of this contact information.

The first priority is to avoid contact with the frog and allow it to move out of the action area and hazardous situation on its own to a safe location. The animal should not be picked up and moved because it is not moving fast enough or it is inconvenient for the construction schedule. This guidance only applies to situations where a California red-legged frog is encountered on the move during conditions that make their upland travel feasible. This does not apply to California red-legged frog that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to support the life history of the California red-legged frog should they move outside the construction footprint.

Avoidance is the preferred option if the California red-legged frog is not moving and is using aquatic habitat or is within some sort of burrow or other refugia. The area should be well marked for avoidance by construction and a Service-approved biological monitor should be assigned to the area when work is taking place nearby.

- 2) The animal should be captured and moved when it is the only option to prevent its death or injury.

If appropriate habitat is located immediately adjacent to the capture location then the preferred option is short distance relocation to that habitat. This must be coordinated with the Service but the general guidance is the frog should not be moved outside of the area it would have traveled on its own. Under no circumstances should a frog be relocated to another property without the owner's written permission. It is Caltrans' responsibility to arrange for that permission.

The release must be coordinated with the Service and will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow or

other suitable refugia and in certain circumstances pools without non-native predators may be suitable.

Only Service-approved biologists for the project can capture California red-legged frogs. Nets or bare hands may be used to capture California red-legged frogs. Soaps, oils, creams, lotions, repellents, or solvents of any sort cannot be used on hands within 2 hours before and during periods when they are capturing and relocating California red-legged frogs. To avoid transferring disease or pathogens between sites during the course of surveys or handling of the frogs, Service-approved biologists must use the following guidance for disinfecting equipment and clothing. These recommendations are adapted from the *Declining Amphibian Population Task Force's Code* (<http://www.open.ac.uk/daptf/>).

- i. All dirt and debris, including mud, snails, plant material (including fruits and seeds), and algae, must be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water and/or an amphibian. Cleaned items should be rinsed with fresh water before leaving each site.
- ii. Boots, nets, traps, etc., must then be scrubbed with either a 70 percent ethanol solution, a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water), QUAT 128 (quaternary ammonium, use 1:60 dilution), or a 6 percent sodium hypochlorite 3 solution and rinsed clean with water between sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland. All traces of the disinfectant must be removed before entering the next aquatic habitat.
- iii. Used cleaning materials (liquids, etc.) must be disposed of safely, and if necessary, taken back to the lab for proper disposal.
- iv. Service-approved biologists must limit the duration of handling and captivity. While in captivity, individual California red-legged frogs shall be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge. Containers used for holding or transporting should not contain any standing water.

The Service believes that no more than one California red-legged frog will be incidentally taken due to harm as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Reporting Requirements

In order to monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, Caltrans shall adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, Caltrans must reinitiate formal consultation as per 50 CFR 402.16.

1. The Service must be notified within one (1) working day of the finding of any injured or dead listed species or any unanticipated damage to its habitat associated with the proposed project. Notification will be made to the Coast-Bay/Forest Foothills Division Chief of the Endangered Species Program at the Sacramento Fish and Wildlife Office at (916) 414-6600, and must include the date, time, and precise location of the individual/incident clearly indicated on a U.S. Geological Survey 7.5-minute quadrangle or other maps at a finer scale, as requested by the Service, and any other pertinent information. When an injured or dead individual of the listed species is found, Caltrans shall follow the steps outlined in the following *Disposition of Individuals Taken* section.
2. Sightings of any listed or sensitive animal species should be reported to the CNDDDB of the CDFW (<http://www.dfg.ca.gov/biogeodata/cnddb/>).
3. Caltrans shall submit a post-construction compliance report prepared by the on-site biologist to the Service within forty (40) working days following project completion or within sixty (60) calendar days of any break in construction activity lasting more than forty (40) working days. This report will detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on listed species, if any; (v) occurrences of incidental take of any listed species; and (vi) other pertinent information. The report(s) will be addressed to the Coast-Bay/Forest Foothills Division Chief of the Endangered Species Program at the Sacramento Fish and Wildlife Office.

Disposition of Individuals Taken

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact persons are the Coast-Bay/Forest Foothills Division Chief of the Endangered Species Program at the Sacramento Fish and Wildlife Office at (916) 414-6600; and the Resident Agent-in-Charge of the Service's Office of Law Enforcement, 5622 Price Way, McClellan, California 95562, at (916) 569-8444.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

1. In the January 2013 BA, Caltrans proposed the transfer of funds to the California Department of Parks and Recreation (State Parks) for management or study-related uses associated with the northern spotted owl. The Service encourages such a contribution and would work with Caltrans, State Parks, and other local entities to “brain storm” ideas. The 2011 Robert Louis Stevenson State Park & Wildlake-Duff Ranches Interim Management Plan includes a relevant discussion of management needs and opportunities (LTNC 2011).
2. Caltrans District 4 should work with the Service to develop a conservation strategy that would identify the current safe passage potential along Bay Area highways and the areas where safe passage for wildlife could be enhanced or established.
3. Caltrans should assist the Service in implementing recovery actions identified in the Recovery Plan for the California Red-legged Frog (Service 2002).
4. Caltrans should consider participating in the planning for a regional habitat conservation plan for the California red-legged frog, other listed species, and sensitive species.
5. Caltrans should consider establishing functioning preservation and creation conservation banking systems to further the conservation of the California red-legged frog, and other appropriate species. Such banking systems also could possibly be utilized for other required mitigation (i.e., seasonal wetlands, riparian habitats, etc.) where appropriate. Efforts should be made to preserve habitat along roadways in association with wildlife crossings.
6. Roadways can constitute a major barrier to critical wildlife movement. Therefore, Caltrans should incorporate culverts, tunnels, or bridges on highways and other roadways that allow safe passage by California red-legged frog, other listed animals, and wildlife. Photographs, plans, and other information into the BAs if “wildlife friendly” crossings are incorporated into projects. Efforts should be made to establish upland culverts designed specifically for wildlife movement rather than accommodations for hydrology. Transportation agencies should also acknowledge the value of enhancing human safety by providing safe passage for wildlife in their early project design.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION--CLOSING STATEMENT

This concludes formal consultation on the proposed SR 29 Troutdale Creek Bridge Replacement Project. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, including work outside of the project footprint analyzed in this opinion and including vehicle parking, staging, lay down areas, and access roads; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this BO including use of rodenticides or herbicides; relocation of utilities; and use of vehicle parking, staging, lay down areas, and access roads; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any additional take will not be exempt from the prohibitions of section 9 until consultation has been completed on a reinitiation.

If you have questions concerning this BO on the proposed SR 29 Troutdale Creek Bridge Replacement Project, please contact John Cleckler, Caltrans Liaison (john_cleckler@fws.gov) or Ryan Olah, Coast-Bay/Forest Foothills Division Chief (ryan_olah@fws.gov), at the letterhead address, (916) 414-6600, or by electronic mail.

Sincerely,


for Jan Knight
Acting Field Supervisor

cc:

Melissa Escaron, California Department of Fish and Wildlife, Napa, California
Elizabeth Lee, California Regional Water Quality Control Board, Sacramento, California
Paula Gill, U.S. Army Corps of Engineers, San Francisco, California
Chris States, James Coniglio, Carie Montero, California Department of Transportation, Oakland,
California

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Personal Communication

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Kobernus, Patrick. 2008. Wildlife Biologist, Coast Ridge Ecology, San Francisco, California. Personal communication with Michelle Havens, U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, on October 16, 2008.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



In Reply Refer To:
81420-2011-F-0821-R001-2

MAR 27 2014

Mr. Hardeep Takhar
California Department of Transportation
Environmental Division, MS-8E
111 Grand Avenue
Oakland, California 94612

Subject: Reinitiation of Formal Section 7 Consultation for the Proposed State Route 29
Troutdale Creek Bridge Replacement Project, Napa County, California (Caltrans
EA 4A090)

Dear Mr. Takhar:

This is in response to the California Department of Transportation's (Caltrans) December 5, 2013, request to reinitiate formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed State Route (SR) 29 Troutdale Creek Bridge Replacement Project in Napa County, California. Your request was received in our office via an electronic mail (e-mail) message on December 5, 2013. This letter amends the Service's biological opinion on the effects of the project on the threatened California red-legged frog (*Rana draytonii*). Caltrans' revised project description does not necessitate a revision to our effects analysis on the threatened northern spotted owl (*Strix occidentalis caurina*). Caltrans requested a draft amendment for review on March 11, 2014 and a final amendment on March 21, 2014 following their review of the draft.

As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in the Biological Opinion (BO), including work outside of the project footprint analyzed in the BO; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the BO; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any additional take will not be exempt from the prohibitions of section 9 until consultation has been completed on a reinitiation.

The original BO for the SR 29 Troutdale Creek Bridge Replacement Project was issued on June 21, 2013 (Service File No. 81420-2011-F-0821-3). Caltrans' reinitiation of formal consultation is prompted by changes to the project design and associated effects to the California red-legged frog. According to Caltrans, the design revisions include 0.4 acre of additional right-of-way needed for construction and drainage easements; Troutdale Creek channel widening; placement of rock slope protection (RSP); changes to the utility relocation and drainage improvements; and the plant establishment plan. The changes will result in the addition of 0.4 acre of temporary work space, increasing the construction footprint from 2.71 acres to 3.11 acres. The revised project footprint consists of 1.08 acres of permanent and 2.03 acres of temporary California red-legged frog habitat loss.

This amendment has been prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 et seq.) and is based on: (1) the June 21, 2013, BO; (2) Caltrans' December 5, 2013, request for reinitiation; (3) February 12, 2014 and March 7, 2014 e-mail messages from Caltrans; and (4) other information available to the Service.

The following changes are made to the June 21, 2013 BO:

1. Add the following to the *Consultation History*:

June 21, 2013	The Service issued the original BO for the project.
August 6, 2013	The Service received an e-mail message from Caltrans regarding the addition of a bioswale to the project design.
August 9, 2013	In a telephone conference with Caltrans, the Service confirmed that the added bioswale was contained within the project footprint analyzed for the BO. The BO included an analysis of other ground disturbing activities at the proposed swale location that were likely to adversely affect the California red-legged frog. The addition of the swale was unlikely to change the original analysis other than the bioswale is likely to create periodic shallow aquatic habitat for the California red-legged frog following rain events. The swale's capture of road run off is preferable to allowing it to flow directly into Troutdale Creek.
December 5, 2013	The Service received Caltrans' December 5, 2013, request to reinitiation consultation via an e-mail message.
January 17, 2014	The Service sent Caltrans a request for additional project information and clarification via an e-mail message. This request was the equivalent of a 30-day letter.

- February 12, 2014 The Service received an e-mail message from Caltrans in response to the Service's January 17, 2014, request for additional information. The response resolved a portion of the Service's information request.
- March 7, 2014 The Service received additional project description information from Caltrans via an e-mail message.
- March 11, 2014 Caltrans requested a draft amendment for review in advance of the final.
- March 19, 2014 The Service issued a draft amendment (Service File No. 81420-2011-F-0821-R001-1) for Caltrans' review.
- March 21, 2014 The Service received confirmation from Caltrans to issue the draft amendment text as a final document.

2. Add the following to *Project Components and Methods* section of the *Description of the Proposed Action*:

Grading and Channel Widening

The existing Troutdale Creek Bridge includes infrastructure embedded in the creek bank. Removing the structure will include widening, recontouring, and stabilizing the bank to provide a more direct approach for the creek's flow. The design purpose is to direct flow away from the existing Abutment 2, reducing or eliminating the stability issues associated with the abutment wall and the steep embankment. The channel bottom will be widened to a minimum of 20 feet with 2:1 embankment slopes. Cover at the abutments would be a minimum of 3 feet over the toe of the footings.

Before the channel upstream can be widened, the existing Abutment 1 will be completely removed and the existing roadway fill behind it will be excavated 3 feet below the Troutdale Creek flowline. RSP will be installed to stabilize both sides of the creek embankment where the existing bridge will be removed. The widened embankment will be contoured to match the slope up and downstream of the former bridge location. Approximately 0.115 acre of RSP will be placed within the Troutdale Creek bed and bank. The RSP will extend up the embankment slopes 3 feet vertically above the toe of the slope and 5 feet below the toe of slope. A 0.023 acre area of creekbed will be excavated and replaced with imported creek bed material as part of the bridge demolition and channel realignment. The existing Abutment 2 and its footing will remain in place to function as a retaining wall. A gutter will be constructed behind the wall to collect runoff and direct the outfall to a RSP pad.

3. Replace the *Utility Relocation* section starting on page 4 with the following:

Utility Relocation and Drainage Improvement

Existing water, electrical, and telephone utilities are located within the project footprint. The existing water line is contained within a polyvinyl chloride pipe that traverses the western bank of Troutdale Creek. The electrical and telephone lines are suspended overhead and supported by poles.

The removal and replacement of the water line will occur during the bridge construction phase. Access will be established south of the new bridge alignment. No staging area will be required and the work will be completed with hand tools and a backhoe.

If avoidance is not possible, the electrical and phone lines will be relocated within the immediate vicinity of the existing pole locations. This work would be contained within the described construction footprint and may involve the removal of existing support poles and the installation of new poles.

The design includes 6 drainage systems. Of these, 2 are located within Waters of the US. The replacement of these 2 systems will include installation of headwalls, 24 and 18-inch culverts, concrete inlets, and RSP outfalls. The other drainage systems will be located within the roadway.

Light equipment such as backhoes, hand operated augers and trenchers will be used for utility relocation and drainage adjustment.

4. Change the second paragraph in the *Site Clean-Up and Restoration* section on page 6, from:

A revegetation plan will be prepared and will likely include, but will not be limited to: amendment of plant holes; initial plant installation of native or appropriate trees, shrubs, ground covers, grasses or forbs by way of nursery container stock or hydroseeding; caring for the plantings to ensure a healthy, growing condition for a 3-year plant establishment period; in-kind replacement of suitable plants; weeding, non-chemical rodent and other pest control; mowing; trash and debris removal; plant pruning and fertilizer application; plant basin mulching; and installation of foliage protectors as needed or as determined necessary. Irrigation may include hand or truck watering and a temporary above or below grade irrigation system.

To:

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establishment period; in-kind replacement of suitable plants; weeding, non-chemical rodent and other pest control; mowing; trash and debris removal; plant pruning and fertilizer application; plant basin mulching; and installation of foliage protectors as needed or as determined necessary. Irrigation may include hand or truck watering and a temporary above or below grade irrigation system.

5. Change the *Action Area* section on page 11, from:

The action area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For the proposed action, the action area encompasses the 2.71-acre construction footprint and other habitat within at least 0.5 mile downstream of the construction footprint affected by potential water quality issues.

To:

The action area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” For the proposed action, the action area encompasses the 3.11-acre construction footprint and other habitat within at least 0.5 mile downstream of the construction footprint affected by potential water quality issues.

6. Change the second and third paragraphs in the *Effects of the Proposed Action* starting on page 19, from:

Construction activities could result in the killing, harming and/or harassment of juvenile and adult frogs inhabiting areas of suitable aquatic and upland habitat. The project, as proposed in Caltrans’ January 2013, BA and further described in Caltrans’ March 29, 2013 letter, is defined by a 2.71-acre construction footprint, much of which is located within the bed and bank of Troutdale Creek. The project will include: (1) the installation of 0.54 acre of permanent roadway structures; (2) 1.63 acres of temporary work areas; and (3) the reclamation of 0.16 of abandoned roadway. Work in the riparian zone will include 0.05 acre of permanent effects, 0.27 acre of temporary effects, and 0.03 acre of habitat restoration of the area occupied by the old bridge.

Adverse effects to the California red-legged frog are most likely to be limited to the construction phase of the project. Permanent and prolonged temporal loss of habitat will result from: the construction of a new bridge structure and road alignment; the removal and/or disturbance of vegetation; the establishment and use of temporary access roads down to the streambed; temporary dewatering of the Troutdale Creek bed and temporary rerouting of Troutdale Creek; exclusion from habitat within the work area; and disruption of connectivity between up and downstream habitat. Construction noise, vibration, and increased human activity during construction may interfere with normal behaviors such as feeding, sheltering, movement between refugia and foraging grounds, and other frog

essential behaviors. This can result in avoidance of areas that have suitable habitat but intolerable levels of disturbance.

To:

Construction activities could result in the killing, harming and/or harassment of juvenile and adult frogs inhabiting areas of suitable aquatic and upland habitat. The project, as proposed in Caltrans' January 2013 BA, March 29, 2013 letter, and December 5, 2013 reinitiation request is defined by a 3.11-acre construction footprint, much of which is located within the bed and bank of Troutdale Creek. The project will include: (1) the installation of 0.54 acre of permanent roadway structures; (2) 2.03 acres of temporary work areas; and (3) the reclamation of 0.16 of abandoned roadway. Work in the riparian zone will include 0.05 acre of permanent effects, 0.27 acre of temporary effects, and 0.03 acre of habitat restoration of the area occupied by the old bridge.

Adverse effects to the California red-legged frog are most likely to be limited to the construction phase of the project. Permanent and prolonged temporal loss of habitat will result from: the construction of a new bridge structure and road alignment; the removal and/or disturbance of vegetation; the establishment and use of temporary access roads down to the streambed; temporary dewatering of the Troutdale Creek bed and temporary rerouting of Troutdale Creek; excavation and recontouring of the creek bed and bank; placement of RSP; exclusion from habitat within the work area; and disruption of connectivity between up and downstream habitat. Construction noise, vibration, and increased human activity during construction may interfere with normal behaviors such as feeding, sheltering, movement between refugia and foraging grounds, and other frog essential behaviors. This can result in avoidance of areas that have suitable habitat but intolerable levels of disturbance.

7. Change the third paragraph of the *Effects of the Proposed Action* section on page 21, from:

Gaining access to and working in the Troutdale Creek bed represents the primary risk to the California red-legged frog. Bridge construction and demolition work activities will be located in the creek bed to such an extent that the water flow will be rerouted around the work area. Therefore the proposed activities have the potential to adversely affect all the frogs that occupy the general vicinity; the local aquatic and upland habitat; frogs that would be moving up or downstream through the project footprint; and habitat connectivity. Construction of the new bridge and the associated road realignment on both bridge approaches will require the removal of dense riparian vegetation and forest that provides cover and refuge for the listed frog. California red-legged frogs are likely active year-round within the Troutdale Creek riparian corridor and may be encountered on a daily basis. Work activities are likely to adversely affect the movement, and localized foraging and other behaviors of the red-legged frogs in the riparian corridor and surrounding forest. Frogs will most likely be actively moving around, through, or within

the work area during the evening when work is not taking place. This places greater emphasis on thorough biological clearance of work areas and under staged equipment and materials prior to the start of each day's activities.

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Gaining access to and working in the Troutdale Creek bed represents the primary risk to the California red-legged frog. Bridge construction and demolition work activities will be located in the creek bed to such an extent that the water flow will be rerouted around the work area. Therefore the proposed activities have the potential to adversely affect all the frogs that occupy the general vicinity; the local aquatic and upland habitat; frogs that would be moving up or downstream through the project footprint; and habitat connectivity. Construction of the new bridge and the associated road realignment on both bridge approaches will require the removal of dense riparian vegetation and forest that provides cover and refuge for the listed frog. Demolition of the existing bridge and stabilization of the resulting embankment will require excavation of the Troutdale Creek bed and bank; realignment of the bed and bank; and RSP placement within the bed and bank. California red-legged frogs are likely active year-round within the Troutdale Creek riparian corridor and may be encountered on a daily basis. Work activities are likely to adversely affect the movement, and localized foraging and other behaviors of the red-legged frogs in the riparian corridor and surrounding forest. Frogs will most likely be actively moving around, through, or within the work area during the evening when work is not taking place. This places greater emphasis on thorough biological clearance of work areas and under staged equipment and materials prior to the start of each day's activities.

8. Add the following to the *Effects of the Proposed Action* discussion at the beginning of page 22:

Installation of RSP within the bed and bank of Troutdale Creek may inhibit California red-legged frog movement. Caltrans will select RSP material and install it such that it mimics the existing topography and substrate up and downstream. This is likely to reduce the adverse effects on frog movement. The RSP will aid stabilization of the creek embankment and reduce sedimentation into the creek.

9. Change the first paragraph of the *Effects of the Proposed Action* section on page 22, from:

Successful reclamation of the 0.16-acre of riparian vegetation within the demolished bridge alignment and the restoration of the 1.63-acre temporary work area needed for construction of the new structure should result in a more extensive and contiguous riparian corridor.

To:

Successful reclamation of the 0.16-acre of riparian vegetation within the demolished bridge alignment and the restoration of the 2.03-acre temporary work area needed for construction of the new structure should result in a more extensive and contiguous riparian corridor.

10. Change the *Amount of Take* section on page 23, from:

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to their wariness, cryptic nature, and the abundance of potential cover sites within the action area. Finding an injured or dead California red-legged frog is unlikely due to their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger. Depending on the condition of the carcass, it may be difficult to differentiate between the remains of the California red-legged frog and the foothill yellow-legged frog (*Rana boylei*), which is also likely to occur in Troutdale Creek. Losses of the California red-legged frog may also be difficult to quantify due to a lack of baseline survey data and seasonal/annual fluctuations in their numbers due to environmental or human-caused disturbances. There is a risk of harm, harassment, injury and mortality as a result of the proposed construction activities, the permanent and temporary loss/degradation of suitable habitat, and capture and relocation efforts; therefore, the Service is authorizing take incidental to the proposed action as (1) the injury and mortality of no more than one adult, juvenile, or larval California red-legged frog and (2) the capture, harm and harassment of all California red-legged frogs within the 2.71-acre project footprint. Upon implementation of the following *Reasonable and Prudent Measures*, California red-legged frogs within the action area in proportion to the amount and type of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this opinion.

To:

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to their wariness, cryptic nature, and the abundance of potential cover sites within the action area. Finding an injured or dead California red-legged frog is unlikely due to their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger. Depending on the condition of the carcass, it may be difficult to differentiate between the remains of the California red-legged frog and the foothill yellow-legged frog (*Rana boylei*), which is also likely to occur in Troutdale Creek. Losses of the California red-legged frog may also be difficult to quantify due to a lack of baseline survey data and seasonal/annual fluctuations in their numbers due to environmental or human-caused disturbances. There is a risk of harm, harassment, injury and mortality as a result of the proposed construction activities, the permanent and temporary loss/degradation of suitable habitat, and capture and relocation

efforts; therefore, the Service is authorizing take incidental to the proposed action as (1) the injury and mortality of no more than one adult or juvenile California red-legged frog and (2) the capture, harm and harassment of all California red-legged frogs within the 3.11-acre project footprint. Upon implementation of the following *Reasonable and Prudent Measures*, California red-legged frogs within the action area in proportion to the amount and type of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted under this opinion.

11. Change *Term and Condition 1e* beginning on the bottom of page 24, from:

Caltrans shall provide a restoration and revegetation plan for the 1.63 acres of temporary effected areas and the 0.16 acre reclaimed area to be reviewed and approved by the Service no later than sixty (60) calendar days prior to date of initial groundbreaking at the project site. The plan will include, but will not be limited to: schedule, methodology, a list of the seed mixes and container plants, plant material source, irrigation, maintenance schedule, monitoring program, success criteria, control of invasive, noxious weeds, and remediation and adaptive management. In addition, annual monitoring reports on the success of the plantings shall be provided to the Service following the date of project completion. The reports will be submitted on or before December 31 of each year monitoring is conducted.

To:

Caltrans shall provide a restoration and revegetation plan for the 2.03 acres of temporary effected areas and the 0.16 acre reclaimed area to be reviewed and approved by the Service no later than sixty (60) calendar days prior to date of initial groundbreaking at the project site. The plan will include, but will not be limited to: schedule, methodology, a list of the seed mixes and container plants, plant material source, irrigation, maintenance schedule, monitoring program, success criteria, control of invasive, noxious weeds, and remediation and adaptive management. In addition, annual monitoring reports on the success of the plantings shall be provided to the Service for the 3 consecutive years following the date of project completion. The reports will be submitted on or before December 31 of each year monitoring is conducted.

12. Change #3 under the *Reporting Requirements* section on page 28, from:

Caltrans shall submit a post-construction compliance report prepared by the on-site biologist to the Service within forty (40) working days following project completion or within sixty (60) calendar days of any break in construction activity lasting more than forty (40) working days. This report will detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on listed species, if any; (v) occurrences of incidental take of

any listed species; and (vi) other pertinent information. The report(s) will be addressed to the Coast-Bay/Forest Foothills Division Chief of the Endangered Species Program at the Sacramento Fish and Wildlife Office.

To:

Caltrans shall submit an annual post-construction compliance report prepared by the on-site biologist to the Service within forty (40) working days following the end of the year or the date of project completion or within sixty (60) calendar days of any break in construction activity lasting more than forty (40) working days. This report will detail (i) dates that construction occurred; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on listed species, if any; (v) occurrences of incidental take of any listed species; and (vi) other pertinent information. The report(s) will be addressed to the Coast-Bay/Forest Foothills Division Chief of the Endangered Species Program at the Sacramento Fish and Wildlife Office.

This concludes the reinitiation of formal consultation on the SR 29 Troutdale Creek Bridge Replacement Project. Please contact John Cleckler, Caltrans Liaison (John_Cleckler@fws.gov) or Ryan Olah, Coast-Bay/Forest Foothills Division Chief (Ryan_Olah@fws.gov), at the letterhead address, (916) 414-6600, or by electronic mail if you have any questions regarding this amendment.

Sincerely,



For Cay C. Goude
Assistant Field Supervisor

cc:

Christopher States and Christopher Herbst, Caltrans, Oakland, California
Melissa Escaron, California Department of Fish and Wildlife, Napa, California
Elizabeth Lee, California Regional Water Quality Control Board, Sacramento, California
Paula Gill, U.S. Army Corps of Engineers, San Francisco, California



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

APR 10 2014

REPLY TO
ATTENTION OF

Regulatory Division

Subject: File Number 2013-00366N

California Department of Transportation (Caltrans), District 4
Mr. Hardeep Takhar
111 Grand Avenue
Mail Station 8A
Oakland, California 94612

Dear Mr. Takhar:

This correspondence is in reference to your submittal of December 10, 2013, concerning Department of the Army (DA) authorization to replace the bridge over Troutdale Creek located at Post Mile 47.11 along State Route (SR) 29, approximately 5 miles north of Calistoga, in rural Napa County, California (38.6676, -122.5989).

The purpose of the project is to: (1) replace the bridge and subsurface structure to prevent further scouring, (2) meet current hydraulic and structural design standards, and (3) realign the roadway to reduce the curve for safer travel. Work will include replacement of the Troutdale Creek Bridge on a new alignment, with a radius of 165 feet across the creek, southeast of the existing bridge. The roadway will consist of two 16-foot lanes with standard 8-foot shoulder and will conform to the existing roadway. Retaining walls will be built on soldier piles and new wing walls will be built to direct the channel flow at the upstream side of the creek. Utility relocation will be required as a part of the project. A temporary creek diversion system will be employed to divert creek flow around the work area during the construction window (June 1 to October 15). The temporary creek diversion system will include two 24" plastic pipes with temporary cofferdams located at the upstream and downstream ends. Work in Corps jurisdiction will require placement of fill to stabilize the abutment 2, construct two temporary access roads, and for drainage improvements. Work will require permanent placement of fill within 0.045 acre (198 linear feet) and temporary placement of fill in 0.154 acre (329 linear feet) of Troutdale Creek. All work shall be completed in accordance with the plans and drawings titled "*USACE File #2013-00366N, Troutdale Bridge SR29 PM 47.11, April 3, 2014, Figure 1 to 6*" (enclosure 1).

Section 404 of the Clean Water Act (CWA) generally regulates the discharge of dredged or fill material below the plane of ordinary high water in non-tidal waters of the United States, below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters. Section 10 of the Rivers and Harbors Act generally regulates construction of structures and work, including excavation, dredging, and discharges of dredged

or fill material, occurring below the plane of mean high water in tidal waters of the United States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States. Navigable waters of the United States generally include all waters subject to the ebb and flow of the tide; and/or all waters presently used, or have been used in the past, or may be susceptible for future use to transport interstate or foreign commerce.

The enclosed delineation map titled, “*Troutdale Bridge SR29 PM 47.11 Calistoga, Napa County, California*”, in one sheet date certified April 9, 2014, accurately depicts the extent and location of other waters of the United States within the boundary area of the site that are subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act (enclosure 2). This approved jurisdictional determination is based on the current conditions of the site, as verified based on a review of available digital photographic imagery, and a review of other data included in your submittal. This approved jurisdictional determination will expire in five years from the date of this letter, unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date.

You are advised that the approved jurisdictional determination may be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and *Notification of Administrative Appeal Options, Process, and Request for Appeal* (NAO-RFA) Form. If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to this office for reconsideration of this decision. If you do not provide new information to this office, you may elect to submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process; the completed NAO-RFA Form must be submitted directly to the Appeal Review Officer at the address specified on the NAO-RFA Form. You will relinquish all rights to a review or an appeal, unless this office or the Division Engineer receives new information or a completed NAO-RFA Form within 60 days of the date on the NAO-RFA Form. If you intend to accept the approved jurisdictional determination, you do not need to take any further action associated with the Administrative Appeal Process.

Based on a review of the information in your submittal, the project qualifies for authorization under Department of the Army Nationwide Permit (NWP) 14 for Linear Transportation, 77 Fed. Reg. 10,184, February 21, 2012, pursuant to Section 404 of the CWA of 1972, as amended (33 U.S.C. § 1344 *et seq.*). The project must be in compliance with the terms of the NWP, the general conditions of the Nationwide Permit Program, and the San Francisco District regional conditions cited in enclosure 3. You must also be in compliance with any special conditions specified in this letter for the NWP authorization to remain valid. Non-compliance with any term or condition could result in the revocation of the NWP authorization

for your project, thereby requiring you to obtain an Individual Permit from the Corps. This NWP authorization does not obviate the need to obtain other State or local approvals required by law.

This verification will remain valid until March 18, 2017, unless the NWP authorization is modified, suspended, or revoked. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon a NWP will remain authorized provided the activity is completed within 12 months of the date of a NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 C.F.R. § 330.4(e) and 33 C.F.R. §§ 330.5 (c) or (d). This verification will remain valid if, during the time period between now and March 18, 2017, the activity complies with any subsequent modification of the NWP authorization. The Chief of Engineers will periodically review NWPs and their conditions and will decide to either modify, reissue, or revoke the permits. If a NWP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. It is incumbent upon you to remain informed of any changes to the NWPs. Changes to the NWPs would be announced by Public Notice posted on our website (<http://www.spn.usace.army.mil/Missions/Regulatory.aspx>). Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance, enclosure 4, verifying that you have complied with the terms and conditions of the permit.

This authorization will not be effective until you have obtained a Section 401 water quality certification from the San Francisco Bay Regional Water Quality Control Board (RWQCB). If the RWQCB fails to act on a valid request for certification within two months after receipt of a complete application, the Corps will presume a waiver of water quality certification has been obtained. You shall submit a copy of the certification to the Corps prior to the commencement of work.

General Condition 18 stipulates that project authorization under a NWP does not allow for the incidental take of any federally-listed species in the absence of a biological opinion (BO) with incidental take provisions. As the principal federal lead agency for this project, Caltrans initiated consultation with the United States Fish and Wildlife Service (USFWS) to address project related impacts to listed species, pursuant to Section 7(a) of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*). By letters of June 21, 2013 and March 27, 2014, the USFWS issued BOs cited in enclosure 5; with an incidental take statement for California red-legged frog. Additionally, the USFWS concurred with the determination that the project was not likely to adversely affect northern spotted owl.

In order to ensure compliance with this NWP authorization, the following special conditions shall be implemented:

1. All standard Best Management Practices shall be implemented to prevent the movement of sediment downstream. No debris, soil, silt, sand, bark, slash, sawdust, cement, concrete, washings, petroleum products, or other organic or earthen material shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the waterways.
2. A post construction report shall be submitted 45 days after the conclusion of construction activities. The report shall document construction activities and contain as-built drawings (if different from drawings submitted with application) and include before and after photos.
3. To remain exempt from the prohibitions of Section 9 of the Endangered Species Act, the non-discretionary Terms and Conditions for incidental take of federally-listed California red-legged frog shall be fully implemented as stipulated in the Biological Opinions entitled, "*Biological Opinion for the Proposed State Route 29 Troutdale Creek Bridge Replacement Project, Napa County, California*" (pages 1-37) dated June 21, 2013 and "*Reinitiation of Formal Section 7 Consultation for the Proposed State Route 29 Troutdale Creek Bridge Replacement Project, Napa County, California (Caltrans EA 4A090)*" (pages 1-10) dated March 27, 2014. Project authorization under the NWP is conditional upon compliance with the mandatory terms and conditions associated with incidental take. Failure to comply with the terms and conditions for incidental take, where a 'take' of a federally-listed species occurs, would constitute an unauthorized take and non-compliance with the NWP authorization for your project. The USFWS is, however, the authoritative federal agency for determining compliance with the incidental take statement and for initiating appropriate enforcement actions or penalties under the Endangered Species Act.
4. The USFWS concurred with the determination that the project was not likely to adversely affect northern spotted owl. This concurrence was premised, in part, on project work restrictions outlined in enclosure 5. These work restrictions are incorporated as special conditions to the NWP authorization for your project to ensure unauthorized incidental take of species and loss of critical habitat does not occur.
5. The temporary creek diversion system will be removed at the end of each construction season by October 15. One cofferdam will be assembled and removed in each of the two construction seasons at different locations, one for the construction of the new bridge and the other for the demolition of the old bridge.

6. The permittee shall notify the Corps in writing of the anticipated start and stop dates of construction, at least 5 days prior to the initiation of construction.
7. California native plants and/or seeds shall be used to revegetate all exposed areas throughout the project site at project completion.
8. The area upstream and downstream of the project reach shall be monitored annually for a three year period post construction to qualitatively assess channel conditions. Evidence of channel instability (e.g. migrating headcuts, crib wall failure, or bank erosion) shall be documented and remediation measures shall be proposed. After receiving approval from the USACE proposed measures shall be implemented. Photographs and a brief summary discussion of work performed shall be provided with the annual monitoring report. The report shall be submitted to the Corps no later than December 31 of each year.
9. A post construction report shall be submitted 45 days after the conclusion of construction activities. The report shall document construction activities and contain as-built drawings (if different from drawings submitted with application) and include before and after photographs.

You may refer any questions on this matter to Paula Gill of my Regulatory staff by telephone at 415-503-6776 or by e-mail at Paula.C.Gill@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,



 Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copies Furnished (w/o enclosures):

CA RWQCB, San Francisco, CA

U.S. EPA, San Francisco, CA

CA SWRCB, Sacramento, CA

CDFW, Yountville, Ca

USFWS, Sacramento, Ca