INFORMATION HANDOUT

For Contract No. 01-0B5104
At MEN-101-93.2

Identified by
Project ID 01 1200 0134 1

PERMITS

PLAC - U.S. Fish and Wildlife Service, Arcata Fish and Wildlife Office

Informal Consultation, Letter of Concurrence
Ref #: AFWO-16B0010-16I0039
Dated November 27, 2015

WATER QUALITY
MATERIALS INFORMATION

Geotechnical Design Report

Dated October 26, 2015

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California 95521
Phone: (707) 822-7201 FAX: (707) 822-8411

In Reply Refer To:
AFWO-16B0010-16I0039

NOV 2 7 2015

Adele Pommerenck, Branch Chief
Environmental Management M2
California Department of Transportation, District 3
703 B Street
Marysville, California 95901

Subject: Informal Consultation for the Jitney Gulch Slip Project, U. S. Route 101, Mendocino County, California

Dear Ms. Pommerenck:

We have reviewed your request, dated November 19, 2015, and received November 19, 2015, for informal consultation with the Fish and Wildlife Service (Service) for the Jitney Gulch Slip Project, U.S. Route 101, Mendocino County, California. This response is prepared in accordance with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and its implementing regulations (50 CFR § 402). As the lead Federal action agency for the project, the California Department of Transportation (Caltrans) is seeking concurrence that the proposed project "may affect, but is not likely to adversely affect," the federally threatened marbled murrelet (*Brachyramphus marmoratus*; murrelet) and northern spotted owl (*Strix occidentalis caurina*; spotted owl). Caltrans is also seeking concurrence that the proposed action will have "no adverse effect" on designated marbled murrelet critical habitat.

This letter transmits the Service's concurrence with Caltrans' "may affect, but not likely to adversely affect" determination for the spotted owl and murrelet, and "no adverse effect" determination for designated murrelet critical habitat.

Project Description and Action Area

Caltrans proposes to install a crib wall on the outer edge of the southbound lane of U.S. Route 101 (US101) at post mile (PM) 93.2 in Mendocino County, California. The project site is located less than a mile north of the town of Leggett, California adjacent to the South Fork of the Eel River. The purpose of this project is to restore the roadway and stabilize the roadway prism damaged by severe storms in March 2011. To reduce the severity of "Run-off-the-Road" collisions at this location, Caltrans also proposes to install approximately 1600 feet of new metal beam guardrail (MBGR) to fill the gap between the existing MBGR from PM 93.06 to PM 93.35 on the west side of US101. All work will occur within the existing Caltrans right-of-way.

The action area for this project includes the project area (actual footprint of ground-disturbing activities), plus a buffer placed around the project area that represents the distance above-ambient construction-generated sound levels are predicted to penetrate nearby forested habitat (potentially causing auditory disturbance to nesting spotted owls or murrelets) before being attenuated back down to ambient sound levels. Caltrans estimated the existing pre-project ambient sound level as "high" (81–90 decibels) and the anticipated construction-generated sound level as "very high" (*i.e.,* 91–100 decibels). Using the Service's 2006 auditory disturbance guidelines for the spotted owl, Caltrans used a 165-foot buffer distance around the footprint of the project as the auditory disturbance distance. The project area plus the 165-foot radius buffer constitutes the 7.5-acre action area for this project.

Potential Effects to Spotted Owls and Marbled Murrelets

Based on a November 13, 2015, field site habitat assessment conducted by a Service biologist, no suitable nesting habitat for either species occurs within the project area or within the action area. A few marginally suitable nest trees (i.e., trees that may be of suitable size, but lack structural characteristics generally required for nesting) occur within the action area, but will not be removed or altered. In addition, most of these trees are widely scattered across the action area, (i.e., overstory canopy closure too low for either species) and the canopy of two marginally suitable nest trees are located directly above the lanes of US101 and thus unlikely used for nesting by either species. Suitable nesting habitat for both species occurs just outside the action area, especially to the west and south (downslope from the southbound lane) along the east bank of the South Fork of the Eel River, which is also designated murrelet critical habitat. However, above-ambient sound generated by construction activities is expected to attenuate back down to ambient levels before reaching that suitable nesting habitat.

No spotted owl or murrelet surveys have been conducted as part of this proposed project within the action area using Service-approved survey protocols. Therefore, Caltrans presumes that the suitable nesting habitat just outside the action area is occupied by spotted owls and murrelets. There are no known spotted owl territory activity centers or murrelet nest sites or detections within the action area. The closest known spotted owl territory activity center occurs over 1 mile from the action area. The closest documented murrelet detection location (from 1989) is located nearly 5 miles southwest of the action area, and the nearest known murrelet "occupied" habitat (suggesting nesting) is approximately 28 miles to the north of the action area in Humboldt Redwoods State Park.

A small amount (0.2 acre; <3% of the action area) of designated murrelet critical habitat occurs along the southern edge of the action area, but the proposed activities do not include removal or alteration of designated critical habitat, thus no adverse effects are anticipated.

Avoidance and Minimization Measure

Caltrans, as the lead Federal action agency, proposes to implement the following measure to avoid or minimize potential impacts to the federally threatened marbled murrelet and northern spotted owl:

1) No suitable northern spotted owl nesting\roosting habitat or marbled murrelet nesting habitat or suitable nest trees for either species will be removed or altered.

Concurrence

The Service concurs with Caltrans' determination that the proposed construction activities, "may affect, but are not likely to adversely affect," the federally threatened marbled murrelet and northern spotted owl, provided Caltrans implements the avoidance and minimization measure listed above. The Service concurs with these determinations based on information provided in a biological assessment and email and telephone correspondence with Caltrans environmental staff and an assessment of habitat suitability based on available Service geospatial data and a field site visit by a Service staff biologist.

Conclusion

This concludes informal consultation on the Jitney Gulch Slip Project, U. S. Route 101, Mendocino County, California. However, obligations under section 7 of the Act, as amended, should be reconsidered if: (1) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) this action is subsequently modified in a manner that was not considered; (3) a new species is listed or critical habitat designated that may be affected by the action; or (4) you are unable to implement all of the measures described above.

Thank you for your coordination on this project. Please contact fish and wildlife biologist Gregory Schmidt at (707) 825–5103 should you have further questions regarding this consultation.

Sincerely,

Bruce Bingham
Field Supervisor

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: KELLY TIMMONS
Senior Design Engineer
North Region Design Branch E-2

Date: October 26, 2015

File: 01-MEN-101-PM 93.16
EFIS ID 0112000134
Permanent Restoration
EA 01-0B5101

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

Subject: Geotechnical Design Report

Scope of Work

A Geotechnical Design Report (GDR) for a reinforced concrete crib wall is provided for the above referenced project. The project is on State Route 101 near Leggett, in Mendocino County. Retreat of an erosional feature is causing loss of shoulder support and deformation of the southbound lane. A Damage Assessment Form (DAF) No. CEP-CT01-050-0 was completed and a permanent restoration project has been initiated. Design and construction of a Standard Plan Reinforced Concrete Crib Wall to maintain roadway width and improvement of the site drainage are recommended. Review of published geologic data and previous geotechnical reports, field reconnaissance, subsurface investigation, and foundation calculations were performed as part of the geotechnical investigation.

The purpose of this report is to document geotechnical conditions and provide foundation recommendations for proposed crib wall.

Project Description

Highway 101 within the project limits was constructed as a two-lane highway on the slopes above the South Fork of the Eel River on side hill cuts/fills. Cut slopes parallel the northbound lane on the uphill side, and fill and natural slopes support the southbound lane above the river. The roadway consists of two 12 ft lanes and 4 to 6 ft paved shoulders. At some locations on the southbound side, the hinge point of the slope below the road is located within several feet of the edge of the paved shoulder.

Development of an erosional feature due to concentration of water is threatening the southbound lane of Highway 101 near postmile 93.16. The roadway is constructed on a fill located in a well-defined drainage that can be observed above and below the highway. Surface water draining from the highway and overtopping the dike has incised a gully in the soils comprising the fill slope. An existing corrugated metal pipe (CMP) down-drain outlets on the northern flank of the drainage and has also contributed to erosion of the material supporting the roadway. The head of the erosional feature has receded to the existing edge of the paved shoulder, causing depression of the roadway due to loss of shoulder support. Cracking and vertical offset in the paved 4-foot

shoulder has led to the initiation of a permanent restoration project to preserve the southbound lane of the highway and prevent further loss of roadway width. The project proposes to construct a Standard Plan Reinforced Concrete Crib Wall to maintain roadway width, and improve drainage at the site to prevent further erosion.

Pertinent Reports and Investigations

The following publications were used to assist in the assessment of site conditions:

1. Manson M.W., Davenport C.W., Domrose C.J., and Wills C.J. (2003). "Landslides in the Highway 101 Corridor between Leggett and Piercy, Mendocino County, California," *Special Report 187, California Geological Survey, Sacramento, California.*

2. Fippin, Jeff (2000). "Preliminary Geotechnical Report 01-Men-101-93.2".

3. Fippin, Jeff (2001) Geotechnical Design Report 01-Men-101-93.2 Soldier Pile Wall near Leggett".

Field Investigation and Laboratory Testing Program

Two mud rotary borings were drilled in 2012 to determine the subsurface conditions for the crib wall foundation design. Four mud rotary borings were also drilled in 2001. Log of Test Borings sheets for the 2001 borings are included as an attachment to this report, and locations relative to the new project stationing are referenced in Table 1. In-situ soil strength parameters were determined using the Standard Penetration Test (SPT) for cohesionless soils overlying rock. Laboratory tests were used to determine the particle size distribution, corrosion potential, and uniaxial compressive strength (UCS) of representative samples obtained at depth. Refer to Table 1 for a summary of subsurface investigation information.

Table 1. Subsurface Exploration Summary

Boring	*Completion Date*	*Equipment*	*Hammer Type*	*Hammer Efficiency (%)*	*Approximate Ground Elevation (ft)*	*Depth (ft)*	*Station/ Offset*
RC-12-001	12-11-2012	Acker MP8	Auto	83	941.0	20.0	13.5' Lt CL2 Sta 405+34.32
RC-12-002	12-11-2012	Acker MP8	Auto	83	940.2	24.0	5.6' Lt CL2 Sta 404+90.22
B-1	10-4-2001	Mobile	-	-	939.6	15.0	20.0' Lt. CL2 Sta 405+36.11
B-2	10-3-2001	Mobile	-	-	939.6	40.0	13.5' Lt CL2 Sta 405+03.72
B-3	10-3-2001	Mobile	-	-	939.5	20.0	21.8' Lt CL2 Sta 404+63.90
B-4	10-4-2001	Mobile	-	-	939.6	15.0	12.3' Rt CL2 Sta 405+03.26

Geology and Subsurface Conditions

Geology

Manson et al. (2003) identify the primary bedrock unit in the project area as the Franciscan Complex. Relatively hard blocks of intact sandstone in a matrix of weak, sheared, fine-grained sedimentary rocks characterize the Coastal Terrane within the Coastal Belt of the Franciscan Complex. Site geology consists of sandstone and shale overlain by unconsolidated river terrace deposits and colluvium. Uplift of the mountains, high rainfall totals, and the erodible nature of the surficial deposits and bedrock have led to development of many erosional features and landslides that impact the highway corridor. Manson et al. identified over 300 landslides of various types along the approximately 9.2 miles of Highway 101 between Leggett and Piercy. Borings drilled at the proposed project site encountered fill comprised of clay, sand, and gravel overlying Franciscan bedrock of shale and greywacke sandstone. The depth to the contact of the fill and bedrock increases toward the outboard side of the southbound lane. Point load test results and correlated Uniaxial Compressive Strength of the encountered rock from the 2001 investigation are summarized in Table 2.

Table 2. Point Load Testing Summary

Sample	Failure Load, P (lbs)	Correlated Uniaxial Compressive Strength (psi)
B-1-1-4	3,168	9065
B-2-2-11	2,112	5729
B-2-2-13	88	232
B-3-3-5	440	1117
B-4-4-3	35	87
B-4-4-5	58	87

Groundwater

An open observation well was installed in boring RC-12-001 to observe fluctuations in groundwater levels and determine if groundwater will influence construction and foundation design. Results of the groundwater-monitoring program are summarized in Table 3.

Table 3. Groundwater Elevations

Boring	Date	Depth to Groundwater (ft)	Groundwater Elevation(ft)
RC-12-001	4/18/2013	DRY	N/A

Corrosion Evaluation

The Department considers a site to be potentially corrosive to the foundation elements if the following conditions exist for the representative soil and/or water samples taken at the site: minimum resistivity of 1000 ohm-cm or less and/or PH of 5.5 or less.

Soil samples were obtained during the subsurface investigation and tested for corrosion potential at the District 5 Materials Laboratory. The results of the corrosion testing are presented in Table 4. Based on the results, soils are not considered corrosive to foundation elements.

Table 4. Corrosion Testing Summary

Boring	*Depth (ft)*	*pH*	*Resistivity ohm-cm*	*Chloride ppm*	*Sulphate ppm*	*Corrosive*
RC-12-001	0.0-5.0	7.9	4900	-	-	NO
RC-12-002	0.0-5.0	8.4	2600	-	-	NO

Foundation Recommendations

Standard Plan Crib Wall

A 2010 Standard Plan Type A reinforced concrete crib wall at a 1:6 batter is the recommended structure type. A maximum design height of 30 feet was determined using cross sections provided by Design and the depth of embedment required to found the crib wall on competent material. The specified base elevations of the crib wall are intended to bear on the greywacke sandstone encountered below the fill and shale. Presumptive bearing capacity based on rock type and degree of fracturing of the greywacke sandstone was estimated using the *FHWA Geotechnical Engineering Circular 6 Shallow Foundations,* and compared to the gross factored bearing stress provided in the Standard Plans. An allowable presumptive bearing pressure of 20 ksf for the greywacke exceeds the gross factored bearing stress of 7.6 ksf for a 30-foot high Type A Standard Plan Crib Wall at 1:6 batter. Sliding and overturning stability of standard plan crib wall dimensions provided in the Standard Plans have been checked for a minimum soil friction angle of 34 degrees, an interface friction angle of 25.5 degrees, a soil unit weight of 120 pcf, and a seismic earth pressure coefficient of 0.2g. Soil and site parameters determined in the subsurface investigation and evaluation of site seismicity indicate that the minimum design criteria are met.

Construction Considerations

Loose soils and groundwater in the form of springs may be encountered during foundation excavations. Although a static groundwater table was not intercepted in the observation well, localized springs were observed in the cut slope above the highway and may be encountered during excavation. Temporary slopes and/or shoring will be required to support the excavation to the crib wall foundation. Full closure of the southbound lane will be required to construct the crib wall.

The depth to competent rock at the layout line was estimated using the observed contact elevation in the boring located inside of the layout line, and the observed angle of contact between soil and rock exposed on the flanks of the drainage. If competent material is not encountered at the elevation at the base of the excavation for the crib wall foundation, increasing the height of the wall to found the base on competent material is recommended. If competent

rock is encountered above the design base elevation of the crib wall, decreasing the height of the wall is recommended. Contact Geotechnical Design North personnel for assistance in characterizing the material at the proposed base elevation of the crib wall during construction.

Additional Information

Standard Specification 2-1.6.B, "Supplemental Project Information", discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the Addressee of this report via electronic mail.

Data and information attached with the project plans are:

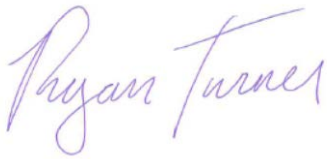
A. Log of Test Borings.

Data and information included in the Information Handout provided to the Bidders and Contractors are:

A. Geotechnical Design Report for the Retaining Wall dated October 26, 2015.

If you have any questions or comments, please contact Ryan Turner at (805) 549-3750 or Charlie Narwold at (707) 445-6036.

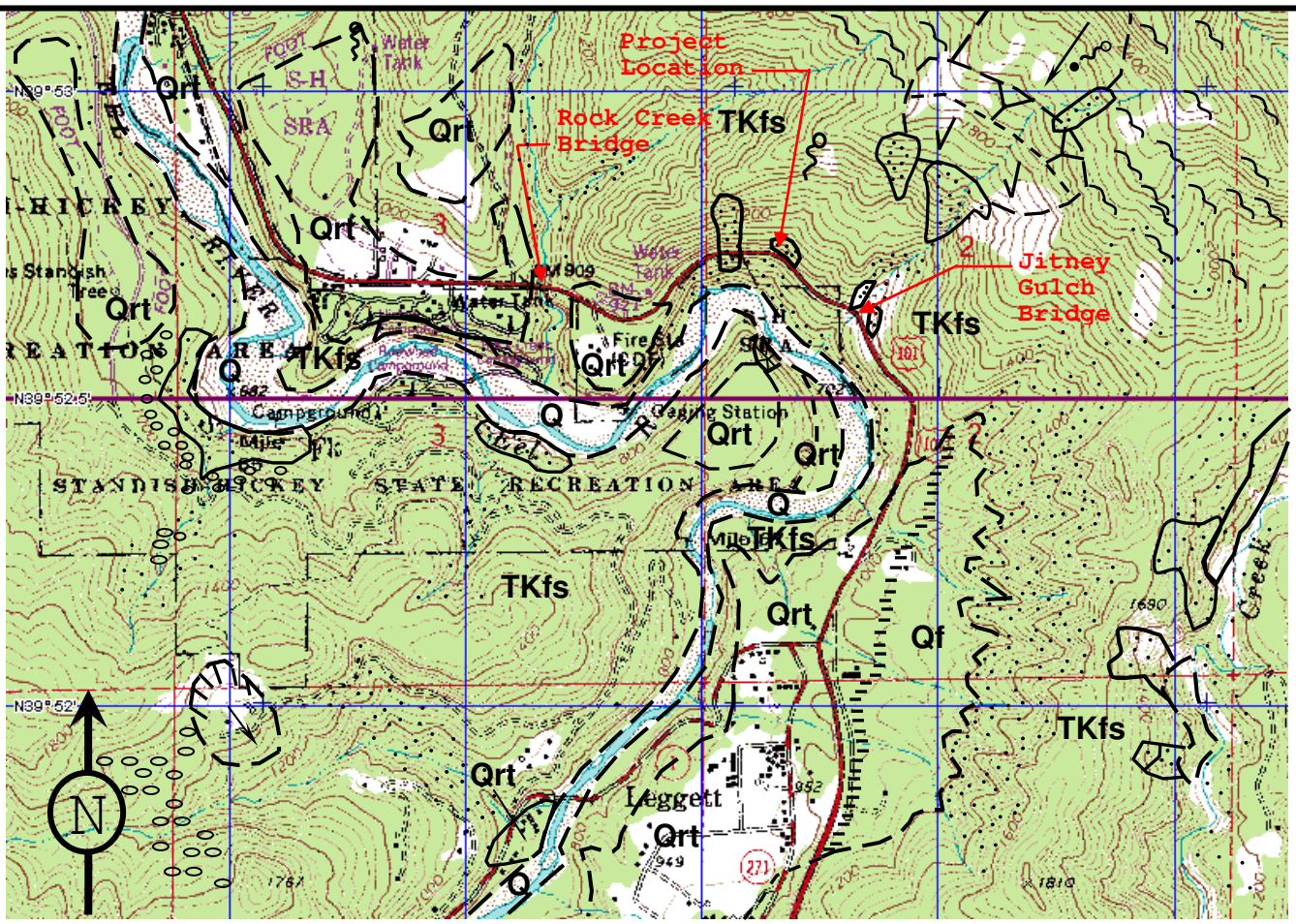
Signed: 10-26-2015



RYAN TURNER, P.E., G.E.
Transportation Engineer Civil
Geotechnical Design – North
Branch D

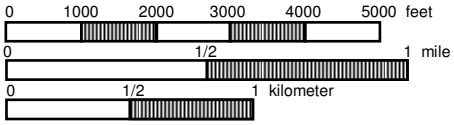
LIST OF ATTACHMENTS

Geologic Map	Attachment 1
Crib Wall Details	Attachment 2
As-Built 2001 LOTB	Attachment 3



CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL
SEE FIGURE NO. 1b FOR EXPLANATION OF SYMBOLS

SCALE:



EXPLANATION OF ABREVIATIONS

Q – Alluvium (Holocene): sand and gravel within and immediately above active stream channel; area of active stream erosion

Qf – Alluvial Fan Deposits (Quaternary): unconsolidated lobate deposits of subangular sandstone and shale fragments or peridotite boulders contained within a silty-shale matrix; east of Leggett individual fans have coelesced into a small piedmont alluvial plain.

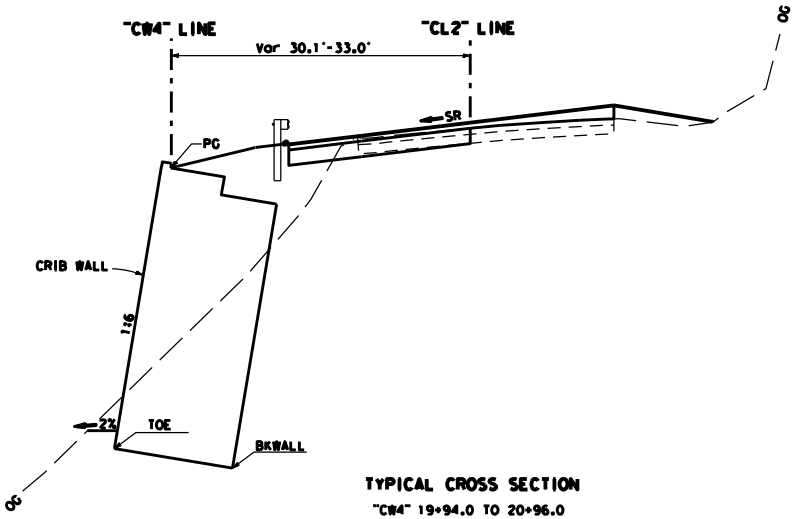
Qrt – River Terrace Deposits (Holocene-Tertiary?): sand and gravel remnant deposits located above and along present-day streams; gravels forming large benches along South Fork Eel River may be of Tertiary age.

TKfs – Franciscan Coastal Belt Sedimentary Rocks (Tertiary-Cretaceous): well consolidated sandstone interbedded with siltstone, mudstone, shale and minor amounts of conglomerate; some olistostromes and limestone concretions present.

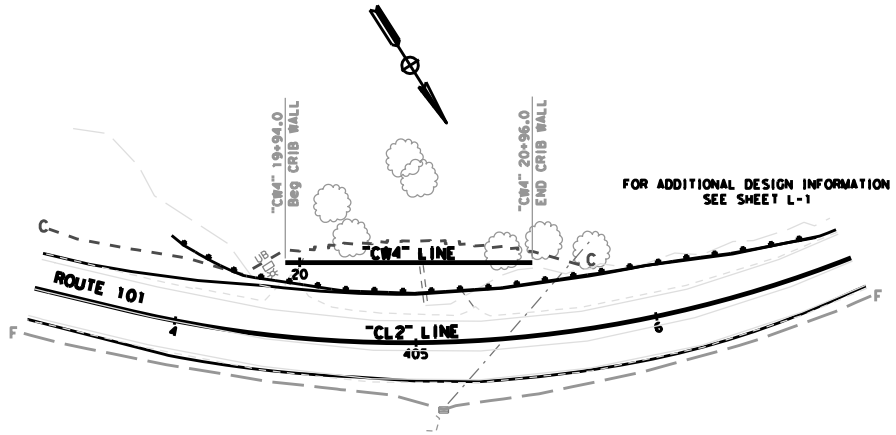
DEPARTMENT OF TRANSPORTATION DIVISION OF ENGINEERING SERVICES Geotechnical Services Office of Geotechnical Design - North	EA: 01-0B5101	**GEOLOGY MAP**
	01-MEN-101; PM 93.16 **FOUNDATION REPORT**	**Attachment 1**

NOTES:

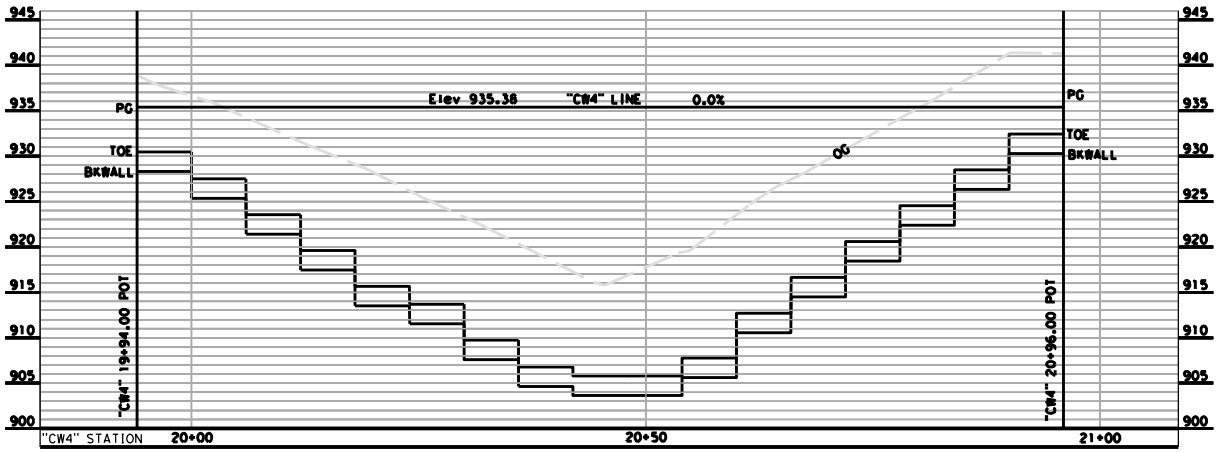
1. SEE SHEET L-1 FOR GUARDRAIL INFORMATION.
2. STRUCTURE BACKFILL (CRIBWALL) SHALL BE TYPE E.



TYPICAL CROSS SECTION
"CW4" 19+94.0 TO 20+96.0



PLAN VIEW



PROFILE

REINFORCED CONCRETE CRIB WALL (TYPE A)

Attachment 2

CONSTRUCTION DETAILS
NO SCALE

C-1

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Men	101			

REGISTERED CIVIL ENGINEER 1-17-02

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Jeff A. Fippin No. C058935 Exp. 06-30-03 CIVIL STATE OF CALIFORNIA

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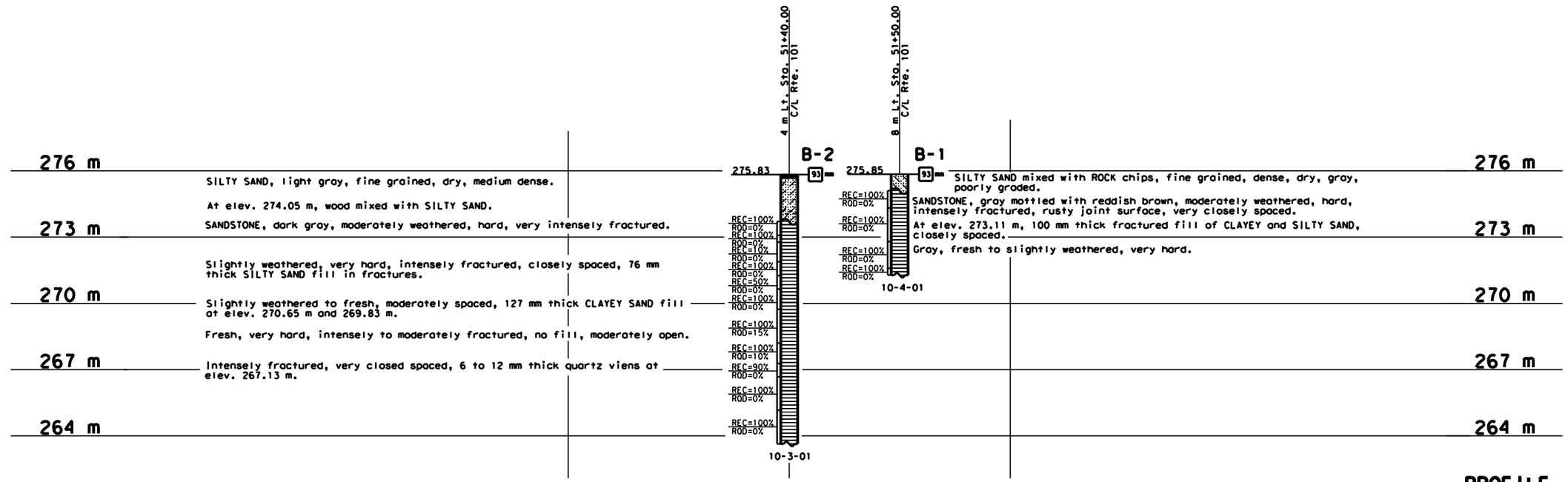
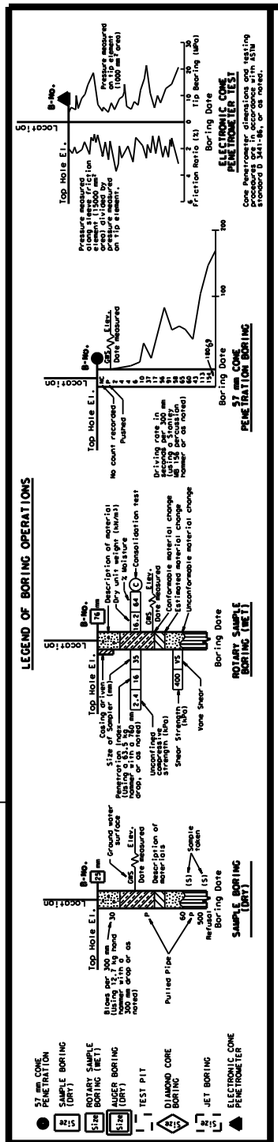
FOR PLAN VIEW, SEE
"LOG OF TEST BORINGS" 1 OF 2

Note: No ground water encountered during field investigation.



PROFILE
HOR. 1:200
VER. 1:100

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN



LEGEND OF EARTH MATERIALS

GRAVEL, SAND, SILT, CLAY, SANDY CLAY or CLAYEY SAND, SANDY SILT or SILTY SAND, SILTY CLAY, CLAYEY SILT, PEAT and/or ORGANIC MATTER, COBBLES and/or BOULDERS, IGNEOUS ROCK, SEDIMENTARY ROCK, METAMORPHIC

CONSISTENCY CLASSIFICATION FOR SOILS

According to the Standard Penetration Test

SPT N-Value (Blows/0.3m)	Granular	SPT N-Value (Blows/0.3m)	Cohesive
0-4	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-30	Medium Dense	5-8	Firm
31-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very stiff
		>30	Hard

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

ENGINEERING SERVICES	GEOTECHNICAL SERVICES
DRAWN BY	W. Tang 1/02
CHECKED BY	M. Naing 01/02

FIELD INVESTIGATION BY: M. Naing

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES STRUCTURE DESIGN

BRIDGE NO.

KILOMETER POST 149.9

SOLDIER PILE WALL ON RTE 101 NEAR LEGGETT

LOG OF TEST BORINGS 2 OF 2

CU 01
EA 410101

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY) 1-17-02

SHEET OF

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

OGS CIVIL LOG OF TEST BORINGS SHEET (METRIC) (REV. 3/01)

FILE => $REQUEST

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
01	Men	101			

Caltrans Metric

REGISTERED CIVIL ENGINEER 1-17-02

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Jeff A. Fippin No. C058935 Exp. 06-30-03 CIVIL STATE OF CALIFORNIA

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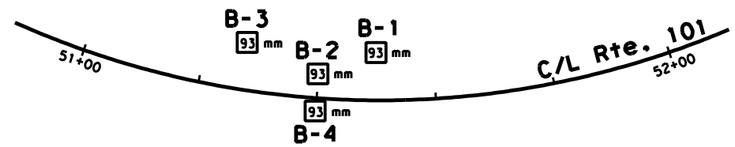

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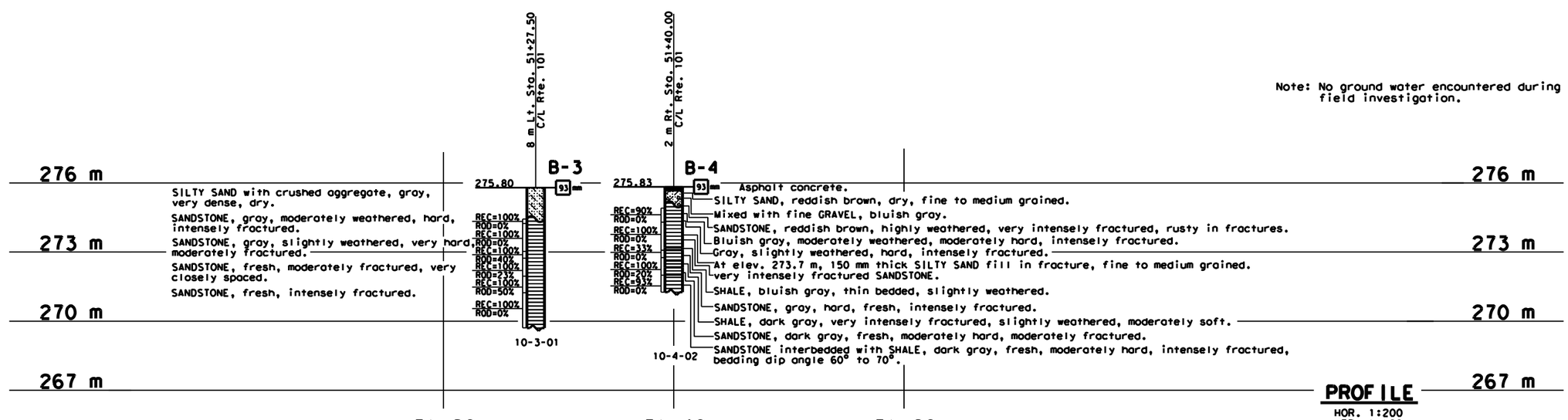
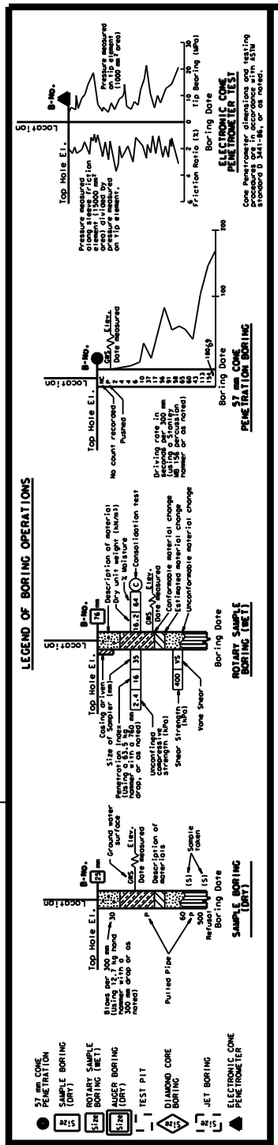


Note: No ground water encountered during field investigation.

PROFILE
HOR. 1:200
VER. 1:100

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN



ENGINEERING SERVICES	GEOTECHNICAL SERVICES
DRAWN BY	W. Tang 1/02
CHECKED BY	M. Naing 01/02

FIELD INVESTIGATION BY: M. Naing

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES STRUCTURE DESIGN

BRIDGE NO.

KILOMETER POST 149.9

SOLDIER PILE WALL ON RTE 101 NEAR LEGGETT
LOG OF TEST BORINGS 1 OF 2

CU 01
EA 410101

DISREGARD PRINTS BEARING EARLIER REVISION DATES 1-17-02

REVISION DATES (PRELIMINARY STAGE ONLY) | SHEET | OF

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

OGS CIVIL LOG OF TEST BORINGS SHEET (METRIC) (REV. 3/01)

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