INFORMATION HANDOUT

For Contract No. 11-408004
At 11-SD-79-0.0/29.6

Identified by
Project ID 1100020480

MATERIALS INFORMATION

Geotechnical Design Report

- Geotechnical Design Report, dated April 9, 2014

Water Source Information

- Julian Community Services District, dated July 17, 2014

ELECTRONIC FILES

Read Me File for Design Cross Sections: September 16, 2015

- 11-408004LOC1XS.pdf
- 11-408004LOC4XS.pdf

State of California

Business, Transportation and Housing Agency

Memorandum

Flex Your Power!
Be energy efficient!

To: Laura Espinoza
Traffic Project Development
District 11 MS 230

Date: April 9, 2014

File: 11-SD-79-PM 0.0/29.5
EA: 11-408001
EFIS: 1100020480

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design–South 2, Branch D

Subject: Geotechnical Design Report for Restoration of Eroded Embankment Hinge and Slopes at Various Locations on State Route 79.

1.0 INTRODUCTION

Pursuant to your request, the Office of Geotechnical Design South 2 (OGDS2) is providing this report to be used for design and construction of the subject project. The proposed project involves restoration of eroded embankment hinge and slope at four bridge approaches on State Route 79 (SR-79) at various locations from Post Mile (PM) 0.1 to 29.5 and upgrading the existing Metal Beam Guard Rails (MBGR) as presented in the Figures 1 through 4.

The purpose of this report is to document subsurface geotechnical conditions, provide engineering evaluation of site conditions, and provide recommendations relevant to the design and construction of the project features. The report establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions.

2.0 EXPLORATION

A surface and subsurface investigation was conducted to help characterize the soil conditions present at each bridge approach embankment such as depth and quality of artificial fills, and other conditions that could impact the design or construction of the proposed project features. To accomplish the above purposes, we performed the following:

- Review of the archived and published data pertaining to the project site. This includes review of reports, as-built plans, and published geologic literature.

- Site reconnaissance to visually observe and document the existing site conditions.
- Subsurface exploration consisting of drilling with hand auger.

2.1 Drilling and Sampling

On March 10, 2014 and March 12, 2014 a total of eleven 3-inch diameter hand auger borings (HA-14- 001 through HA-14-011) were drilled at the project sites close to the existing MBGR. The soil borings were advanced into the ground up to five feet (5 ft) below the existing ground surface. Locations of the borings are shown on the Figure 1 through 4. Description of the subsurface soils encountered is presented in Table 1 and also in the later sections of this report.

3.0 GEOTECHNICAL CONDITIONS

The following subsections describe the geotechnical conditions that will affect the project.

3.1 Site Geology

Within the project area SR-79 traverses through the Japatul Valley and Deer Valley in the South (PM 0.0/5.0), and Santa Ysabel Valley and Mataguay Valley in the North (PM 21.0/29.5). Based on our site reconnaissance and review of the geologic maps the sites are underlain by engineered fill over an undetermined thickness of alluvium over decomposed granitic rock.

3.2 Soil

The embankment slopes are primarily comprised of relatively loose silty sand. It is likely that more compact fill lays beneath the outer fill slope.

3.3 Erosion

Existing slopes are partly vegetated, however, the slopes hinges have been eroded over time.

4.0 GEOTECHNICAL CONSIDERATION

4.1 Samagatuma Bridge

The bridge located at PM 0.1 of SR-79. The roadway has been constructed on fill with the side slopes as steep as one horizontal to one vertical (1.0H:1.0V) and the height of approximately between ten feet (10 ft) and twenty feet (20 ft). The subsurface materials at south western corner of the bridge consist of organic soil. The materials at the other corners comprised of fine to coarse sand, silty sand, and sandy silt.

4.2 Sweetwater Bridge

The bridge located at PM 5.0 of SR-79. The roadway has been constructed on fill with the side slopes as steep as two horizontal to one vertical (2.0H:1.0V) and height of approximately between ten feet (10 ft) and twenty feet (20 ft). The slope predominantly comprised of silty sand.

4.3 South Branch Santa Ysabel Creek Bridge

This bridge located at the PM 21.6 of SR-79. The roadway has been constructed on fill over alluvium with the side slopes as steep as one horizontal to one and half vertical (1.0H:1.5V) and the height of approximately between twenty feet (20 ft) and thirty feet (30 ft). The slope predominantly comprised of silty fine sand with gravel.

4.4 Mataguay Creek Bridge

This bridge located at the PM 29.5 of SR-79. The roadway has been constructed on fill over alluvium with the side slopes as steep as one horizontal to one and one half vertical (1.0H:1.5V) and the height of approximately between six feet (6 ft) and eight feet (8 ft). The slopes predominantly comprised of silty fine sand.

4.5 Grading Factor

The material used to restore the existing roadway embankment at four bridge approaches, will be partly from existing embankments. Loose materials will be removed and re-compacted to 90%. In order to determine a grading factor of existing loose soil, for the purpose of calculating material quantities, the OGDS2 staff and the District 11 Materials Testing Laboratory staff from Carmel Valley Construction Office conducted field density tests on existing embankments. On March 10, 2014, and March 12, 2014, several density tests were performed on the upper one foot of the loose existing embankments material. The relative compaction of the existing embankments material was prepared by the Lab. The relative compaction of existing embankment soils for each location was compared with 90% compaction, and consequently, a Grading Factor was determined for each location. The Grading Factors are presented in the Table 1.

4.6 MATERIAL SOURCES

Import borrow will be required for embankment construction. Any imported borrow shall conform to Section 19-7 "Borrow Materials" of the Caltrans Standard Specifications. District 11 Design plans to use Class 2 aggregate for this purpose.

5.0 RECOMMENDATIONS

- Existing embankment materials may be re-used solely or mixed with borrow materials to build the new embankment fill, except at south west corner of the Samagatuma bridge

where the materials are predominantly comprised of organic soil. It is recommended that these unsuitable materials be removed and replaced with suitable embankment.

- The on-site soils may generally be excavated with conventional equipment.
- Appropriate erosion control measures should be implemented to protect the newly graded slope faces.
- Concentrated runoff should not be directed to drain over the slopes.
- It is recommended that the newly graded slopes have an inclination of two horizontal to one vertical (2.0H:1.0V).

8.0 DIFFERING SITE CONDITIONS

The characterizations of geotechnical conditions affecting project features and presented in this report are based on the review of the design information provided, planned project features, as-built plans, geologic maps, geologic literature, archival reports, exploration by OGDS2, and laboratory testing. The evaluations and recommendations contained in this report are based on the information discovered and data gathered. If conditions are encountered during the project that appear to differ from the conditions conveyed in this report, or if construction difficulties related to soil conditions are encountered, a representative of OGDS2 Branch D should be consulted to assist with the assessment of the prevailing geotechnical conditions and to assist in formulating appropriate strategies to facilitate project completion.

Should project design features vary significantly from those described in this report an updated GDR should be prepared by OGDS2 Branch D to address the geotechnical considerations related to those features.

Our Office will be available for further assistance as needed. Should you have any questions, please call Ali Lari at (760) 929-5945.

Ali Lari, P E
Transportation Engineer (Civil)
Office of Geotechnical Design-South 2

REGISTERED PROFESSIONAL ENGINEER
ALI LARI
No. C65846
Exp. 12-31-15
CIVIL
STATE OF CALIFORNIA

Attachments
Figures 1 through 4: Layout plans.
Table 1: Subsurface Soil and Grading Factor.

CC:

Art Padilla	District Materials Engineer
Abbas Abghari	Office Chief, OGDS2
Shawn Wei	Branch Chief, Branch D, OGDS2
Ricardo Padilla	Project Design Engineer
District Construction RE Pending File	It is the responsibility of the Project Design Manager to include this document in the District Construction RE Pending File.

Table 1

Subsurface Soil and Grading Factor

Location	Boring Number	Soil Description	Relative Compaction Of Loose Embankment Soil	Grading Factor RC=90%
Mataguay Creek	HA-14-001	SILTY SAND (SM), light brown, fine SAND. At 2.5 feet: GRAVELY SAND. (Asphalt Aggregate), black. (FILL). At 4.0 feet: End of boring.	83%	**0.92**
	HA-14-002	Poorly graded SAND with SILT, light brown, fine to coarse SAND (FILL). At 4.0 feet: End of boring.		
Santa Ysabel Creek	HA-14-003	SILTY SAND (SM), brown, with MICA, (FILL). At 4.0 feet: End of boring	79.5%	**0.88**
	HA-14-004	SILTY SAND with GRAVEL (SM), brown, fine to coarse SAND and GRAVEL (FILL). At 5 feet: End of boring		
Sweetwater Creek	HA-14-005	SILTY SAND (SM), black, fine to coarse SAND. At 2 feet encountered a big rock moved the hole 10 feet toward north and re-drilled, same result. (FILL). At 2 feet: End of boring	79.8%	**0.89**
	HA-14-006	SILTY SAND (SM), brown, fine to coarse.SAND. At 1 foot: elastic SILT with SAND (MH), black, fine SAND. (FILL). At 3.5 feet: End of boring		
	HA-14-007	SILTY SAND (SM), light brown, fine to coarse SAND. At 1 foot: Elastic SILT with SAND (MH), black, fine SAND. (FILL). At 4 feet: End of boring		

Location	Boring Number	Soil Description	Relative Compaction Of Loose Embankment Soil	Grading Factor RC=90%
Samagatuma Creek	HA-14-008	SILTY SAND (SM), black, fine to coarse SAND. At 2 feet encountered a big rock, moved the hole 5 feet toward south and re-drilled, same result,(FILL). At 2 feet: End of boring	80%	**0.89**
	HA-14-009	Poorly graded SAND (SP), black, fine to coarse SAND, (FILL). At 3.5 feet encountered a big rock, End of boring.		
	HA-14-010	Poorly graded SAND with GRAVEL (SP), fine to coarse SAND and GRAVEL. (FILL). At 1 foot encountered big rock End of boring.		
	HA-14-011	ORGANIC SOIL with SAND (OL), black, little fine to coarse SAND, (FILL). At 3 feet: End of boring	81%	**0.90**

NOTE:

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

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	79	0.0/29.8		

REGISTERED CIVIL ENGINEER DATE

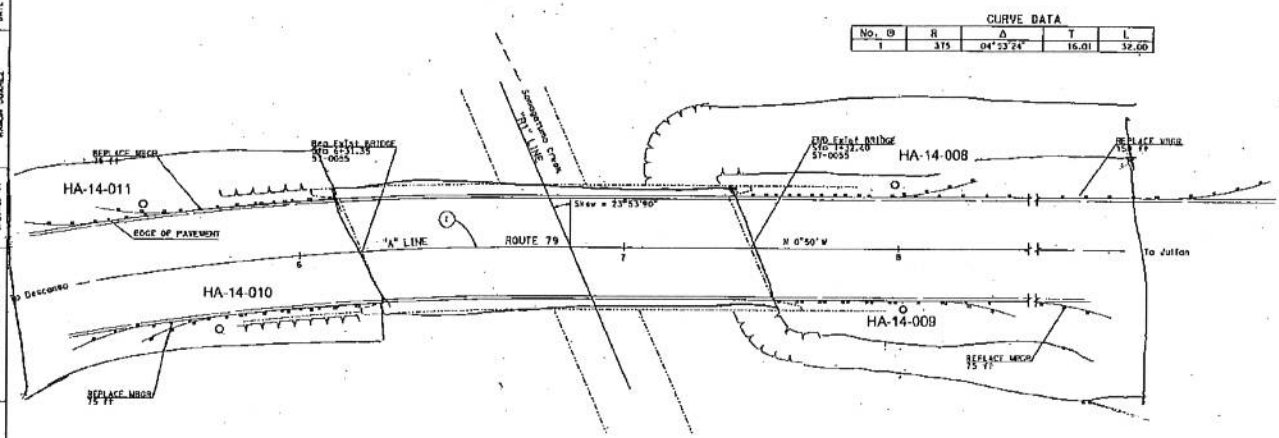
PLANS APPROVAL DATE

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

RICARDO PADILLA No. C58151 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

CURVE DATA

No. ⊕	R	Δ	T	L
1	375	04°53'24"	16.01	32.00



SAMAGATUMA BRIDGE

AND R/W

CIVIL 3D.

Figure 1

SCALE: 1:20'

L-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DESIGN

FUNCTIONAL SUPERVISOR: CHRIS M THOMAS

CALCULATED-DESIGNED BY: RICARDO PADILLA

CHECKED BY: RAMON JUAREZ

REVISED BY

DATE REVISED

BORDER LAST REVISED 7/2/2010

RELATIVE BORDER SCALE IN INCHES

UNIT 2763

PROJECT NUMBER & PHASE 1100020481

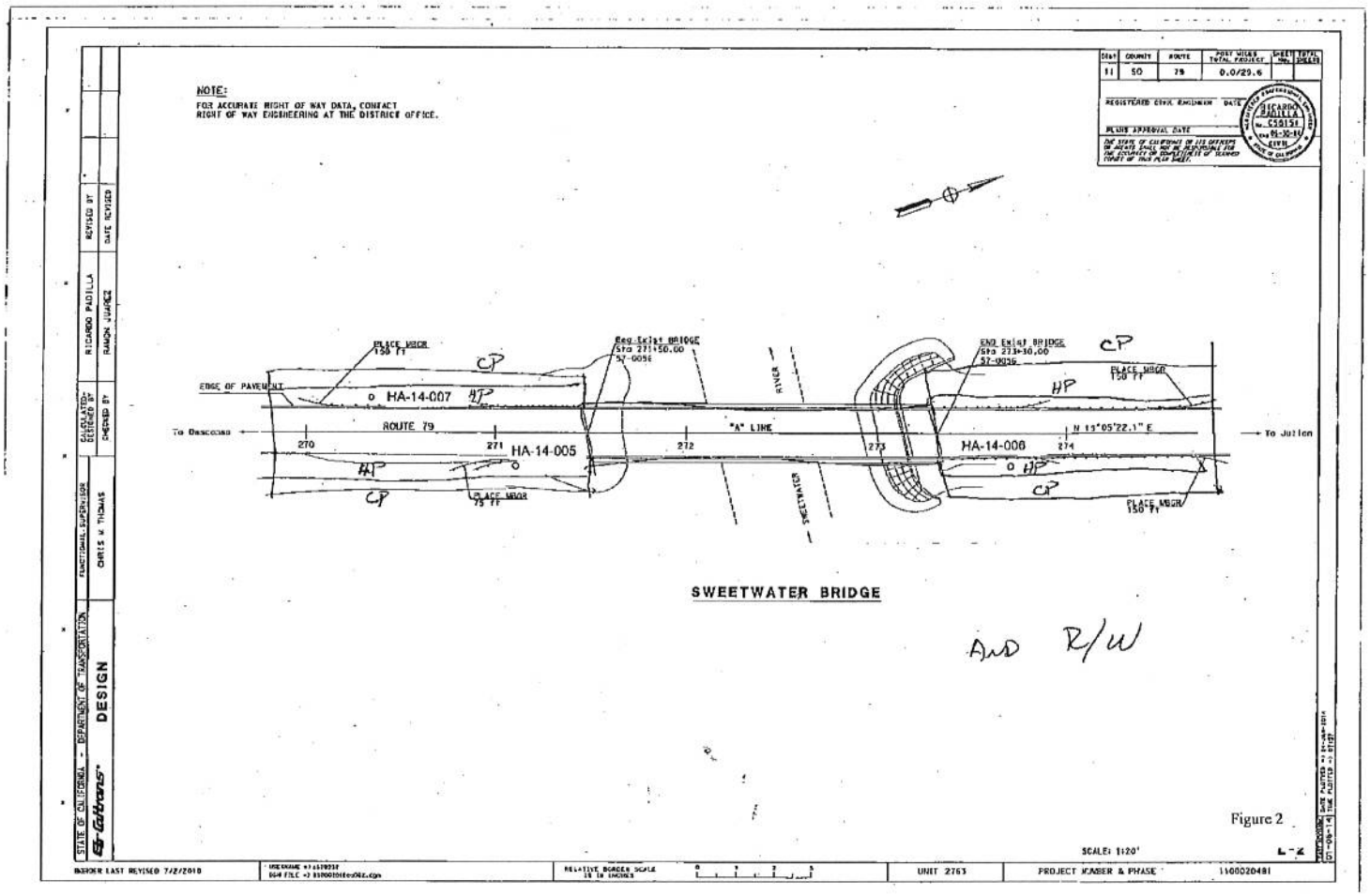

NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
DIST 11
COUNTY SD
ROUTE 79
POST MILES TOTAL PROJECT 0.0/29.6
REGISTERED CIVIL ENGINEER
DATE
PLANS APPROVAL DATE
RICARDO PADILLA
C59154
PLACE MBGR 150 FT
Beg Exist BRIDGE Sta 271+50.00 57-0056
END Exist BRIDGE Sta 273+30.00 57-0056
EDGE OF PAVEMENT
HA-14-007
HA-14-005
HA-14-006
ROUTE 79
"A" LINE
N 15°05'22.1" E
To Descanso
To Julian
270
271
272
273
274
CP
HP
PLACE MBGR 75 FT
PLACE MBGR 150 FT
RIVER
SWEETWATER
SWEETWATER BRIDGE
AND R/W
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN
FUNCTIONAL SUPERVISOR
CHRIS M THOMAS
CALCULATED-DESIGNED BY
RICARDO PADILLA
CHECKED BY
RAMON JUAREZ
REVISED BY
DATE REVISED
SCALE: 1:20'
L-2
BORDER LAST REVISED 7/2/2010
RELATIVE BORDER SCALE IS IN INCHES
UNIT 2763
PROJECT NUMBER & PHASE
1100020481

Figure 2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
11	SD	79	0.0/29.6		

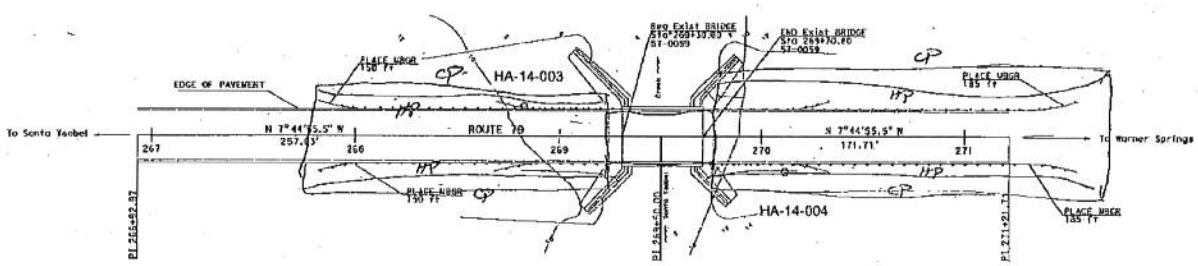
REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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

RICARDO PADILLA C58151 24-05-14 CIVIL STATE OF CALIFORNIA

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



SANTA YSABEL BRIDGE

AND R/W

Figure 3

SCALE: 1:20'

L-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN

FUNCTIONAL SUPERVISOR: CHRIS H THOMAS
CALCULATED-DESIGNED BY: RICARDO PADILLA
CHECKED BY: RAMON JUAREZ
REVISED BY
DATE REVISED

BORDER LAST REVISED 7/2/2010

RELATIVE BORDER SCALE IS IN INCHES

UNIT 2763

PROJECT NUMBER & PHASE 1100020481

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
11	SD	79	0.1/29.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

RICARDO PADILLA No. C58131 Exp. 06-30-10 CIVIL STATE OF CALIFORNIA

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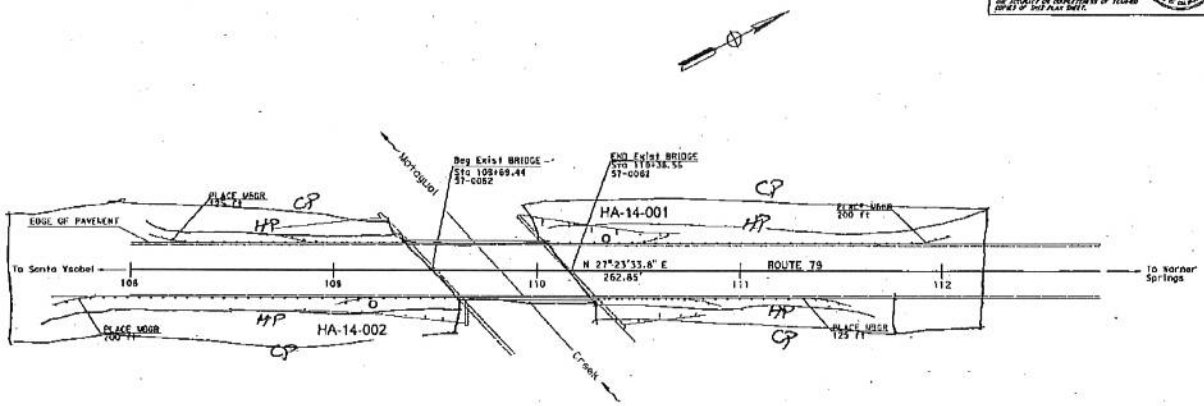
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



MATAGUAL BRIDGE

Add R/W

Figure 4

SCALE: 1:20'

L-4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
FUNCTIONAL SUPERVISOR: CHRIS M THOMAS
CALCULATED-DESIGNED BY: RICARDO PADILLA
CHECKED BY: RAMON JUAREZ
REVISED BY
DATE REVISED

BORDER LAST REVISED 7/2/2010 | UNIT 2763 | PROJECT NUMBER & PHASE 1100020481

From: Des Jardins, Bethnay L@DOT
To: Des Jardins, Bethnay L@DOT
Subject: AADD-11-408001-Water-Letter1
Date: Friday, March 20, 2015 8:42:26 AM

FW: 11-40800 Bridge Rail Upgrades Non-potable water availability concurrence.

Padilla, Ricardo@DOT

You replied on 3/19/2015 11:35 AM.

Sent: Thu 3/19/2015 11:32 AM
To: Des Jardins, Bethnay L@DOT
Cc: Yazdan, Fred F@DOT

Confirmation of non-potable water.

From: Julian Community Services District [mailto:julilancsd@earthlink.net]
Sent: Thursday, March 19, 2015 11:31 AM
To: Padilla, Ricardo@DOT
Subject: RE: 11-40800 Bridge Rail Upgrades Non-potable water availability concurrence.

Hello Ricardo,

The JCSD can and will supply non-treated, non-potable water for your project.
We will set a Jones head hydrant for your use.

Please call if you have any further questions.

Harry Seifert
Julian Community Services District

From: Padilla, Ricardo@DOT [mailto:ricardo.padilla@dot.ca.gov]
Sent: Thursday, March 19, 2015 10:13 AM
To: juliancsd@earthlink.net
Subject: 11-40800 Bridge Rail Upgrades Non-potable water availability concurrence.

Hello Harry,

Can you please verify that Construction water will be non-potable?

Thank you.

From: Padilla, Ricardo@DOT
Sent: Wednesday, March 18, 2015 3:08 PM
To: 'juliancsd@earthlink.net'
Cc: Des Jardins, Bethnay L@DOT
Subject: 11-408001 Bridge Rail Upgrades N0n-Potable water availability concurrence response.

Hello Han-y,

I know I asked for this verification before; however, I cannot find the previous email confirmation or print out.

Could you verify that Construction water will be non-potable?

Thank you,

Ricardo (619) 688-0136

Padilla, Ricardo@DOT

This folder i

Bethnay DesJardins
District 11
Contract Engineer
619-688-6896

Padilla, Ricardo@DOT

From: Harry Seifert [bseifert71@mindspring.com]
Sent: Thursday, July 17, 2014 2:56 PM
To: Padilla, Ricardo@DOT
Cc: JCSD
Subject: Re: 11-408001 Bridge Rail Upgrades ++water availability concurrence request++Attn. Harry Seifert

Hello Ricardo,

The Julian Community Services District has sufficient water to provide for your construction project, however the service may be interrupted or discontinued during
a major emergency event such as a structure fire within the JCSD or a large vegetation within 5 miles of the District boundaries.
There is a metered fire hydrant located at 2656 Farmer Road. Any and all water used must be taken from this hydrant.
Your water truck operators must be checked out on the operation of a dry barrel fire hydrant system before they will be allowed to draw water.
There is no meter deposit.
The bulk water rate for the JCSD is $0.20 per cubic foot.

Thank you.

Harry C. Seifert
Julian Community Services District

On Jul 16, 2014, at 2:52 PM, JCSD <juliancsd@earthlink.net> wrote:

----- Original Message -----
From: Padilla, Ricardo@DOT
To: juliancsd@earthlink.net
Sent: Wednesday, July 16, 2014 9:20 AM
Subject: FW: 11-408001 Bridge Rail Upgrades ++water availability concurrence request++Attn. Harry Seifert

Good Morning Harry,

We need some water for construction purposes.

Could you please provide concurrence on how much water could be provided for embankment (earthwork) purposes.

Please see the attachment, they include a full set of plans, memo, and water needs spreadsheet.

Thank you,

Ricardo Padilla, PE

From: Aneld Anub [mailto:Aneld.Anub@HELIXWATER.org]
Sent: Wednesday, July 16, 2014 8:39 AM

To: Padilla, Ricardo@DOT
Cc: Carlos Perdomo; Tim Ross
Subject: FW: 11-408001 Bridge Rail Upgrades ++water availability concurrence request++

Hi Ricardo,

The referenced area (RTE 79) is way outside of the Helix Water District boundaries and we won't be able to supply water for this project.

Aneld Anub
Helix Water District
619-667-6273

From: Padilla, Ricardo@DOT [mailto:ricardo.padilla@dot.ca.gov]
Sent: Tuesday, July 15, 2014 2:21 PM
To: Aneld Anub
Subject: 11-408001 Bridge Rail Upgrades ++water availability concurrence request++

Hello Aneld,

Please provide us with concurrence that water will be available for the attached project between 7-30-15 to 2-30-16.

Memorandum

Flex your power!
Be energy efficient!

To: **HELIX WATER DISTRICT**
Aneld Anub
Planning Manager

Date: July 15, 2014

File: 11-408001
11-SD-79
PM 0.0/29.5
PID: 11 00020481

From: **DEPARTMENT OF TRANSPORTATION, DISTRICT 117-30-15 to 2-30-**
Ricardo Padilla
Project Engineer

Subject: Water availability for 120 Working Day Bridge Rail Upgrades Project.

Project Description

This project proposes four Bridge Rail Upgrades on Route 79. Improvements include: Bridge Rail Removal and Replecement with ST-10 Rail, Approach and Departure Midwest Guard Rail System, Miscellaneous HMA Paving, Slope Embankment Repair, and Seed/Emulsion slope treatment (see attached Plans).

Needs

The estimated amount of water for this project is 138,246 Gallons for roadway excavation and embankment, subgrade compaction and hot mix asphalt miscellaneous paving (see attachment).

Requested

Please provide concurrence that water will be available from 7-30-15 to 2-30-16.

Thank you,

Ricardo Padilla, P.E.
Project Engineer

<11-40800 Full Set.pdf><Helix Water District.doc><Water_Availability_Estimate_Water_Usage.xls>

WATER USE ESTIMATE

Project Information

Contract Number	11-40800
Project Identifier Number	1100020480
County/Route/PM	SD/79/0.0-29.6

Estimate Prepared By

RP

Estimate Date and Time: **10/16/2014 13:49**

Base Rates Used For Calculating Estimated Required Water

Bid Item / Work Activity	Base Rates	Unit of Measure
Roadway Excavation (Embankment)	30	Gal/CY
Aggregate Base & Subbase	15	Gal/CY
Dust Control	2	Gal/SQYD/Day
Subgrade Compaction	10	Gal/SQYD
Hot Mix Asphalt Compaction	7	Gal/Ton
Concrete	25	Gal/CY
Cold Planning Pavement	0.5	Gal/SQYD
Grind Concrete Pavement	6.5	Gal/SQYD
Groove Concrete Pavement	1.5	Gal/SQYD

Estimated Water Required for Bid Item / Work Activity

Bid Item / Work Activity	Estimated Quantity	Quantity Unit of Measure	Estimated Water Required (Gallons)
Roadway Excavation (Embankment)	4284	CY	128,520
Aggregate Base & Subbase	0	CY	0
Dust Control Area	90	SQYD	
Dust Control Days	40	days	7,200
Subgrade Compaction	0	SQYD	0
Hot Mix Asphalt Compaction	76	Ton	532
Concrete	0	CY	0
Cold Planning Pavement	0	SQYD	0
Grind Concrete Pavement	0	SQYD	0
Groove Concrete Pavement	0	SQYD	0

Note: Include only concrete that could be produced at a portable plant on the projects site.

Project Estimated Total Water Required	Unit of Measure
136,252	Gallons
18,214	CF
516	M^3
0.42	Acre-foot

READ ME FILE FOR DESIGN CROSS SECTIONS
September 16, 2015

408004LOC1XS.pdf:	Design cross sections for Location 1 Samagatuma Creek Bridge
408004LOC4XS.pdf	Design cross sections for Location 4 Matagual Creek Bridge