

# **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

## 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.

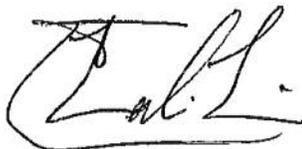
- The on-site soils may generally be excavated with conventional equipment.
- Appropriate erosion control measures should be implemented to protect the newly graded slope faces.
- Concentrated runoff should not be directed to drain over the slopes.
- It is recommended that the newly graded slopes have 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



### Attachments

Figures 1 through 4: Layout plans.

Table 1: Subsurface Soil and Grading Factor.

CC:

Art Padilla  
Abbas Abghari  
Shawn Wei  
Ricardo Padilla  
District Construction RE Pending File



District Materials Engineer  
Office Chief, OGDS2  
Branch Chief, Branch D, OGDS2  
Project Design Engineer  
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%
<b>Samagatuma Creek</b>	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%	<b>0.89</b>
	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%	<b>0.90</b>

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

DRAWN	CHECKED	DATE	BY	DATE	BY
11	SD	79		0.0/29.8	

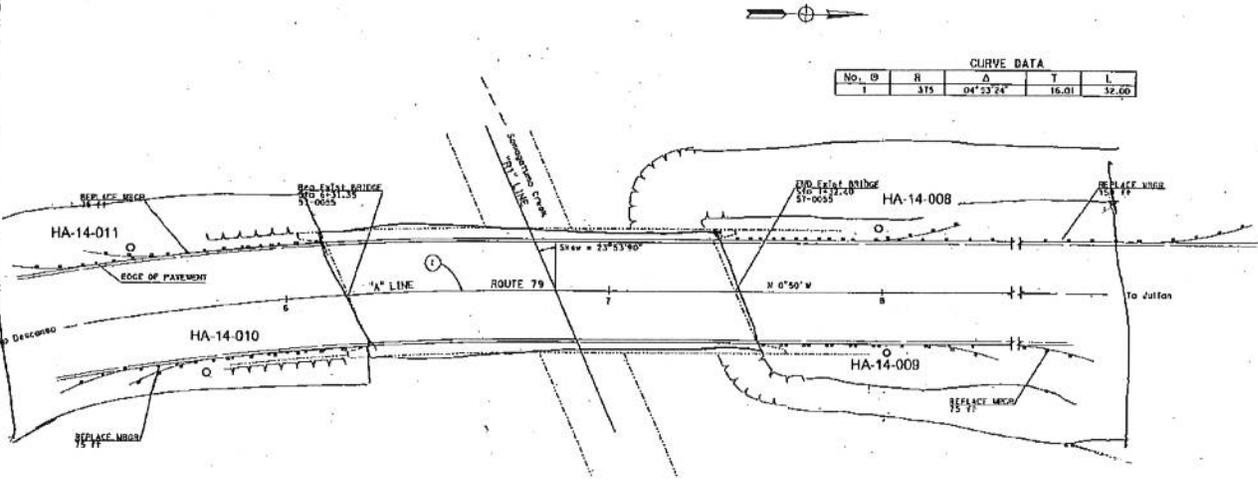
REGISTERED CIVIL ENGINEER STATE OF CALIFORNIA  
 RICHARD ZORRELL  
 No. C-28123  
 Exp. 12/31/81

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICE OF PUBLIC UTILITIES AND ENERGY, OR THE PUBLIC UTILITIES COMMISSION OF SAUNDERS COUNTY OF THIS STATE.

CURVE DATA

No.	θ	R	Δ	T	L
1		375	04°52'24"	16.01	32.00



SAMAGATUMA BRIDGE

AND R/W  
CIVIL 3D.

Figure 1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
 DESIGN

DESIGNED BY: RICHARD ZORRELL  
 CHECKED BY: RICHARD ZORRELL  
 DATE REVISED: \_\_\_\_\_

FUNCTIONAL SUPERVISOR: CHRIS W. THOMAS

TITLE NAME: 11-132337  
 DGN FILE: 111022010001.dgn

RELATIVE BORDER SCALE: 1" = 100'

UNIT: 2163

PROJECT NUMBER & PHASE

SCALE: 1/20" = 1' L-1

UNDESIGNED AND UNCHECKED DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION.

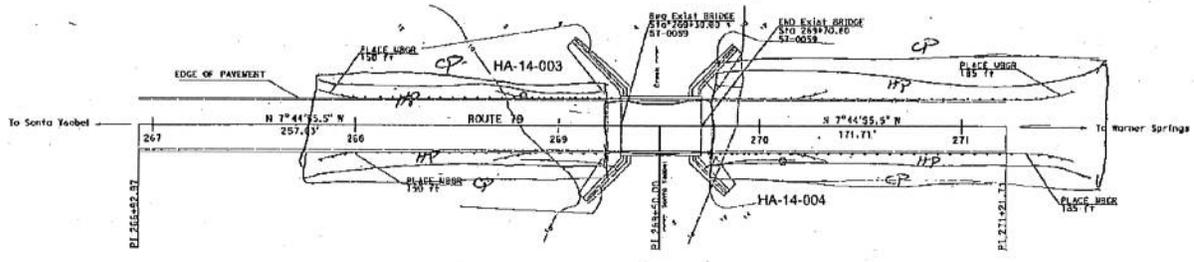


**NOTE:**  
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT  
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

DIST	COUNTY	ROUTE	POST MILE	PROJECT	DATE
11	SD	79	0.0/21.6		

REGISTERED CIVIL ENGINEER DATE: **RICHARDO PADILLA** 12/2014  
 LICENSE NO. **48322**  
 PLEASE APPROVAL BLUE  
 THE STATE OF CALIFORNIA OR ITS OFFICERS  
 OR AGENCIES SHALL NOT BE RESPONSIBLE FOR  
 THE ACCURACY OR COMPLETENESS OF THE  
 DATA OF THIS PLAN SHEET.

DESIGNED BY	CHECKED BY	REVISIONS	REVISOR	DATE
CHRIS M THOMAS	CHRIS M THOMAS			



**SANTA YSABEL BRIDGE**

*AND R/W*

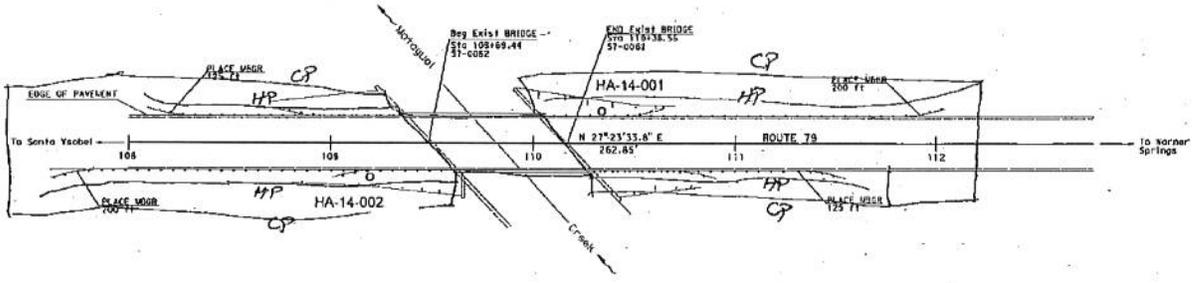
Figure 3

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

DIST.	COUNTY	ROUTE	POST MILE TOTAL DISTANCE	DATE REVISED
11	SD	79	0.1/20.8	

REGISTERED CIVIL ENGINEER	DATE
<b>RICHARDO PADILLA</b>	
PELLE APPROVAL BY:	
<b>M. SCHRIER</b>	



*And R/W*

Figure 4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 DESIGN

FUNCTIONAL ENGINEER: CHRIS H THOMAS  
 CHECKED BY: RICHARDO PADILLA  
 REVISIONS BY: RANDY JUAREZ

**From:** [Des Jardins, Bethnay L@DOT](mailto:Des.Jardins.Bethnay.L@DOT)  
**To:** [Des Jardins, Bethnay L@DOT](mailto: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:juliancsd@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](mailto: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 Non-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**

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**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](mailto:juliancsd@earthlink.net)> wrote:

----- Original Message -----

**From:** Padilla, Ricardo@DOT  
**To:** [juliancsd@earthlink.net](mailto: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

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**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

*Be energy efficient!*  
*Flex your power!*

**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>

Estimated Water Usage for Water Availability Request

<b>WATER USE ESTIMATE</b>			
<b>Project Information</b>			
Contract Number	11-40800		
Project Identifier Number	1100020480		
County/Route/PM	SD/79/0.0-29.6		
<b>Estimate Prepared By</b>			
RP		<b>Estimate Date and Time:</b>	<b>10/16/2014 13:49</b>
<b>Base Rates Used For Calculating Estimated Required Water</b>			
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	
<b>Estimated Water Required for Bid Item / Work Activity</b>			
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.			
<b>Project Estimated Total Water Required</b>			
	136,252	Gallons	
	18,214	CF	
	516	M <sup>3</sup>	
	0.42	Acre-foot	