TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE

For use of this form, see ER 415-1-10; the proponent agency is CECW-CE.

DATE	TRANSMITTAL NO.
9 Aug 13	31 62 43 - 6.0 PB# SUB-40.0

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (*This section will be initiated by the contractor*)

TO:	FROM:	CONTRACT NO.	CHECK ONE:
Mr. Mark Martin SBFCA C/O Parsons Brinkeroff 2329 Gateway Oaks Drive, Suite 200 Sacramento, CA 95833-4231	Nordic / Magnus Pacific JV 1437 Furneaux Road Olivehurst, CA 95961	01-2013C	[x] THIS IS A NEW TRANSMITTAL [ ] THIS IS A RESUBMITTAL OF TRANSMITTAL _____

SPECIFICATION SEC. NO. (*Cover only one section with each transmittal*)	PROJECT TITLE AND LOCATION	THIS TRANSMITTAL IS FOR: (*Check one*)
31 62 43 - 6.0	FRWLP - Project Area C	[x] FIO [ ] GA [ ] DA [ ] CR [ ] DA/CR [ ] DA/GA

ITEM NO. (*See Note 3*) a.	DESCRIPTION OF SUBMITTAL ITEM (*Type size, model number/etc.*) b.	SUBMITTAL TYPE CODE (*See Note 8*) c.	NO. OF COPIES d.	CONTRACT DOCUMENT REFERENCE SPEC. PARA. NO. e.	CONTRACT DOCUMENT REFERENCE DRAWING SHEET NO. f.	CONTRACTOR REVIEW CODE g.	VARIATION Enter "Y" if requesting a variation (*See Note 6*) h.	USACE ACTION CODE (*Note 9*) i.
22	Impermeable Layer Verification Drilling Logs -	REPORT	1			A	N	

REMARKS
Please find attached the final drilling logs for the verification drilling that was performed withing the Reach 13 area during the month of July.

I certify that the above submitted items had been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

NAME OF CONTRACTOR	SIGNATURE OF CONTRACTOR
Sean L. Rhodes	Sean L. Rhodes Digitally signed by: Sean L. Rhodes DN: CN = Sean L. Rhodes C = US O = Magnus Pacific OU = Operations Manager Date: 2013.08.09 11:11:26 -07'00'

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (*List by item No.*)	NAME AND TITLE OF APPROVING AUTHORITY	SIGNATURE OF APPROVING AUTHORITY	DATE

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.

2. Each Transmittal shall be numbered consecutively. The Transmittal Number typically includes two parts separated by a dash (-). The first part is the specification section number. The second part is a sequential number for the submittals under that spec section. If the Transmittal is a resubmittal, then add a decimal point to the end of the original Transmittal Number and begin numbering the resubmittal packages sequentially after the decimal.

3. The "Item No." for each entry on this form will be the same "Item No." as indicated on ENG FORM 4288-R.

4. Submittals requiring expeditious handling will be submitted on a separate ENG Form 4025-R.

5. Items transmitted on each transmittal form will be from the same specification section. Do not combine submittal information from different specification sections in a single transmittal.

6. If the data submitted are intentionally in variance with the contract requirements, indicate a variation in column h, and enter a statement in the Remarks block describing he detailed reason for the variation.

7. ENG Form 4025-R is self-transmitting - a letter of transmittal is not required.

8. When submittal items are transmitted, indicate the "Submittal Type" (*SD-01 through SD-11*) in column c of Section I.
   Submittal types are the following:
   SD-01 - Preconstruction SD-02 - Shop Drawings SD-03 - Product Data SD-04 - Samples SD-05 - Design Data SD-06 - Test Reports
   SD-07 - Certificates SD-08 - Manufacturer's Instructions SD-09 - Manufacturer's Field Reports SD-10 - O&M Data SD-11 - Closeout

9. For each submittal item, the Contractor will assign Submittal Action Codes in column g of Section I. The U.S. Army Corps of Engineers approving authority will assign Submittal Action Codes in column i of Section I. The Submittal Action Codes are:

   A -- Approved as submitted.
   B -- Approved, except as noted on drawings. Resubmission not required.
   C -- Approved, except as noted on drawings. Refer to attached comments. Resubmission required.
   D -- Will be returned by separate correspondence.
   E -- Disapproved. Refer to attached comments.
   F -- Receipt acknowledged.
   X -- Receipt acknowledged, does not comply with contract requirements, as noted.
   G -- Other action required *(Specify)*
   K -- Government concurs with intermediate design. (*For D-B contracts*)
   R -- Design submittal is acceptable for release for construction. (*For D-B contracts*)

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract.

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
David Castro	7-1-13	7-2-13		13_84525_01B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 845+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	5 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
HQ Core			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Cement Grout			N/A	N/A	105.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														9:30am start drilling
80.00	2														
	3														
78.00	4														
	5														
76.00	6														10:30am casing split
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_84525_01B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	John Wright			1 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														Lost fluid pressure and mud circulation. no cuttings coming to surface.
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84525_01B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														HQ pipe fell to bottom of casing at roughly 10' below ground surface
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														Resistance on drilling due to dense layer
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84525_01B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														Drill rig rattling
6.00	76														
	77														
4.00	78														
	79														
2.00	80		SANDY SILT (ML); stiff; dark gray; dry; about 20% fine SAND; about 80% low plasticity fines.		1			60				PP = 1.5			
	81														
0.00	82														
	83														
-2.00	84														
	85		Very soft; dark gray; wet; about 40% fine SAND; about 60% low plasticity fines.		2			40							
-4.00	86														
	87		Poorly graded SAND with SILT (SP-SM); loose; dark bluish gray; wet; about 90% coarse SAND; about 10% nonplastic fines.												
-6.00	88														
	89		SILTY SAND (SM); loose; bluish gray; wet; about 75% fine SAND; about 25% nonplastic fines.												
-8.00	90				3			40				PP = 1.5			
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84525_01B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92		SILTY SAND (SM) *(continued)*.		3			40				PP = 1.5			
	93		SILT (ML); stiff; dark gray; moist; about 5% fine SAND; about 95% low plasticity fines.												
-12.00	94														
	95				4			80				PP = 4.5			
-14.00	96														
	97		SILT with SAND (ML); hard; dark gray; moist; about 15% fine SAND; about 85% low plasticity fines.												
-16.00	98		Poorly graded SAND with SILT (SP-SM); medium dense; dark gray; moist; about 85% medium to fine SAND; about 15% nonplastic fines.												
	99														
-18.00	100				5			40							
	101														
-20.00	102														
	103														
-22.00	104		Poorly graded GRAVEL (GP); very dense; dark gray; moist; about 100% coarse to fine, subangular to subrounded GRAVEL.												Barrel broke. End of drilling at 3:30pm.
	105		Bottom of borehole at 105.0 ft bgs												
-24.00	106		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	107														
-26.00	108														
	109														
-28.00	110														
	111														
-30.00	112														
	113														
-32.00	114														
	115														
	116														

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84525_01B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **5 of 5**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-3-13	7-3-13		13_84625_02B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 846+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	5 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
HQ Core			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Cement Grout			N/A	N/A	105.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														7:45am start drilling
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_84625_02B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	John Wright			1 of 5

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														Lost fluid pressure and mud circulation
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84625_02B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														
	49														9:10am
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84625_02B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														Resistance on drilling due to dense layer
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80		SILTY SAND (SM); loose to medium dense; dark gray; wet; about 75 to 80% fine SAND; about 20 to 25% nonplastic to low plasticity fines; Micaceous.		1			80				PP = 0.5			
	81														
0.00	82														
	83		CLAYEY SILT (ML/CL); soft to medium stiff; dark gray; wet; about 10 to 15% fine SAND; about 85 to 90% low to medium plasticity fines; Micaceous.												
-2.00	84		SILTY SAND (SM); loose to medium dense; dark gray; wet; about 5% fine, subangular to subrounded GRAVEL; about 55 to 60% fine SAND; about 40 to 45% low plasticity fines; Micaceous.												
	85		No sample.		2			0							
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90				3			80							
	91		SILTY SAND (SM); loose to medium dense; dark gray; wet; about 60% fine SAND; about 40% low plasticity fines; Micaceous.												
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84625_02B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92		SILTY SAND (SM) *(continued)*.		3			80							
	93		SANDY SILT (ML); medium stiff; dark gray; moist; about 15 to 20% fine SAND; about 80 to 85% low plasticity fines; Micaceous.												
-12.00	94														
	95		SILTY SAND (SM); medium dense; dark gray; wet; about 60 to 70% fine SAND; about 30 to 40% low plasticity fines; Micaceous.		4			100				PP = 4.5			
-14.00	96														
	97		SILTY CLAY with SAND (CL-ML); hard; gray; moist; about 10% fine SAND; about 90% medium plasticity fines.												
-16.00	98														
	99		SILTY SAND (SM); medium dense to dense; dark gray; wet; about 60% fine SAND; about 40% low plasticity fines; Micaceous.												
-18.00	100		About 65 to 70% medium to fine SAND; about 30 to 35% low plasticity fines.												
			No sample.		5			0							gravel/cobbles encountered below 100ft
	101														
-20.00	102														
	103														
-22.00	104														
	105														12:20PM
			Bottom of borehole at 105.0 ft bgs												
-24.00	106		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	107														
-26.00	108														
	109														
-28.00	110														
	111														
-30.00	112														
	113														
-32.00	114														
	115														
	116														

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84625_02B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **5 of 5**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-8-13	7-8-13		13_84725_03B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 847+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	5 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
HQ Core			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Cement Grout			N/A	N/A	124.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														6:30 am start drilling
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_84725_03B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	John Wright			1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84725_03B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														Lost fluid pressure and mud circulation
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84725_03B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80		Poorly graded SAND with SILT (SP-SM); loose to medium dense; dark gray; wet; about 90% medium to fine SAND; about 10% nonplastic fines; Micaceous.		1			100				PP = 0.0			
	81														
0.00	82		SILT (ML); very soft; dark gray; wet; about 25 to 30% fine SAND; about 70 to 75% low plasticity fines; Micaceous.												
	83		Poorly graded SAND with SILT (SP-SM); medium dense to dense; dark gray; wet; about 90% medium to fine SAND; about 10% nonplastic fines; Micaceous.												
-2.00	84														
	85		No sample.		2			0							9:15am, sample stuck, driller had to flush barrel.
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90		No sample.		3			0							
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84725_03B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92		*(continued)*.		3			0							
	93														
-12.00	94														
	95		No sample.		4			0							
-14.00	96														
	97														
-16.00	98														
	99														
-18.00	100		SILTY SAND (SM); loose to medium dense; dark gray; wet; about 60 to 65% medium to fine SAND; about 35 to 40% nonplastic to low plasticity fines; Micaceous.		5			30				PP = 0.5			10:30am
	101		SANDY SILT (ML); soft; dark gray; wet; about 35 to 40% fine SAND; about 60 to 65% low plasticity fines; Micaceous.												Below 101.5 drill rig movement indicates gravel/cobble material
-20.00	102		Well-graded GRAVEL with SILT and SAND (GW-GM); very dense; dark gray; wet; about 60% coarse to fine, subangular to subrounded GRAVEL; about 20% coarse to fine SAND; about 20% low plasticity fines; Micaceous.												
	103														
-22.00	104		No sample.												
	105														
-24.00	106														
	107														
-26.00	108														
	109														
-28.00	110														
	111														
-30.00	112														
	113														
-32.00	114														
	115														
	116														

(continued)

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		*(continued)*.												
	117														
-36.00	118		Poorly graded SAND with SILT (SP-SM); dense to very dense; dark gray; wet; about 10% coarse to fine, subangular to subrounded GRAVEL; about 80% medium to fine SAND; about 10% nonplastic fines; Micaceous.		6			78							
	119														
-38.00	120		Poorly graded GRAVEL with SAND (GP); very dense; gray; wet; about 80% coarse to fine, subangular to subrounded GRAVEL; about 15% medium to fine SAND; about 5% nonplastic fines; Micaceous.		7			67							
	121		No sample.												
-40.00	122														
	123														
-42.00	124														1:00pm
	125		Bottom of borehole at 124.0 ft bgs FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-44.00	126														
	127														
-46.00	128														
	129														
-48.00	130														
	131														
-50.00	132														
	133														
-52.00	134														
	135														
-54.00	136														
	137														
-56.00	138														
	139														
	140														

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84725_03B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **6 of 6**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-16-13	7-17-13		13_84925_05B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 849+25 Reach 13	81.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING
Cement Grout				129.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														12:45pm start drilling
79.00	2														
	3														
77.00	4														
	5														
75.00	6														
	7														
73.00	8														
	9														
71.00	10														
	11														
69.00	12														
	13														
67.00	14														
	15														
65.00	16														
	17														
63.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_84925_05B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET	
	John Wright		1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
59.00	22														
	23														
57.00	24														
	25														
55.00	26														
	27														
53.00	28														
	29														
51.00	30														
	31														
49.00	32														
	33														
47.00	34														
	35														
45.00	36														
	37														
43.00	38														
	39														
41.00	40														
	41														
39.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84925_05B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
35.00	46														
	47														
33.00	48														
	49														
31.00	50														
	51														
29.00	52														
	53														
27.00	54														
	55														
25.00	56														
	57														
23.00	58														
	59														
21.00	60														
	61														
19.00	62														
	63														
17.00	64														
	65														
15.00	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84925_05B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
11.00	70														
	71														
9.00	72														
	73														
7.00	74														
	75														
5.00	76														
	77														
3.00	78														
	79														
1.00	80														
	81														6:30am next day Drill rig rattled, suggesting a gravel layer
-1.00	82														Drill rig stopped rattling, suggesting end of the gravel layer
	83														
-3.00	84														
	85														
-5.00	86														
	87														
-7.00	88														
	89														
-9.00	90														
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84925_05B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-13.00	94														
	95														
-15.00	96														
	97														
-17.00	98														Drill rig rattled, suggesting a gravel layer
	99														
-19.00	100														
	101														
-21.00	102														
	103														
-23.00	104														
	105														
-25.00	106														
	107														
-27.00	108														Drill rig stopped rattling, suggesting end of the gravel layer
	109														
-29.00	110														
	111		Poorly graded SAND (SP); medium dense to dense; dark gray; wet; about 95% medium to fine SAND; about 5% nonplastic fines; Slightly micaceous. A carbonite tooth found in slough of sample.		1	18 28 27	55	78							
-31.00	112														
	113		About 90 to 95% medium to fine SAND; about 5 to 10% nonplastic fines.		2	14 37 37	74	94							
-33.00	114				3	10 16 22	38	96				PP = 4.5			9:25am
	115		SILTY CLAY (CL-ML); hard; dark greenish gray; moist; about 5% medium to fine SAND; about 95% low plasticity fines; Slightly micaceous.												
	116														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84925_05B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116	SILTY CLAY (CL-ML) *(continued)*.												
	117	Soft to medium stiff.		4	13 20 50	70	83							
-37.00	118	SANDY SILT (ML); dark greenish gray; moist; about 45% fine SAND; about 55% low plasticity fines; Slightly micaceous.												
	119	SILTY SAND (SM); medium dense; dark greenish gray; wet; about 70% fine SAND; about 30% nonplastic to low plasticity fines; Slightly micaceous.		5	9 18 22	40	100				PP = 0.5			
-39.00	120			6	8 12 18	30	100							
	121	Poorly graded SAND with SILT (SP-SM); dense; dark gray; wet; about 90% fine SAND; about 10% nonplastic fines; Slightly micaceous. Two inches from tip of sampler is a two inch lense of odorless very dark gray SP-SM material.												
-41.00	122			7	16 25 32	57	89							
	123	Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% fine SAND; about 5% nonplastic fines; Slightly micaceous.												
-43.00	124			8	10 19 20	39	72							
	125	Dense.		9	8 15 18	33	63							
-45.00	126													
	127			10	10 13 13	26	38							
-47.00	128													
	129	SANDY SILT (ML); greenish gray; moist; about 20% fine SAND; about 80% nonplastic to low plasticity fines; Slightly micaceous.												12:30pm
-49.00	130	Bottom of borehole at 129.0 ft bgs												
	131	FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-51.00	132													
	133													
-53.00	134													
	135													
-55.00	136													
	137													
-57.00	138													
	139													
	140													

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_84925_05B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **6 of 6**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-18-13	7-19-13		13_85025_06B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 850+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Std Cal (2.5"), Mod Cal (2"), Shelby (2.87"), SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Cement Grout			N/A	N/A	130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														6:20am start drilling
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_85025_06B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET	
	John Wright		1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20		*(continued)*.												
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32		SILTY SAND (SM); light brown with mottled orange; dry to moist; about 70 to 75% fine SAND; about 25 to 30% nonplastic fines; Slightly micaceous. 1: 200 psi down pressure for entire 24".		1			92							8:45am
	33														
48.00	34		About 75 to 80% fine SAND; about 20 to 25% nonplastic fines; 2: 200 psi down pressure for first 18". Gradual increase from 200 psi to 700 psi for last 6".		2			79							
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85025_06B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														drill rig rattling indicating gravel layer from 58' to 59'
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85025_06B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-12.00	94														
	95														
-14.00	96														
	97														
-16.00	98														drill rig rattling indicating gravel layer
	99														
-18.00	100		Poorly graded GRAVEL (GP); very dense; dark gray; wet; about 75% coarse to fine, angular to subangular GRAVEL; about 15 to 20% coarse to fine SAND; about 5 to 10% nonplastic fines.		3	50/4	REF	100							11:00pm
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														drill rig stopped rattling indicating end of gravel layer
	109														
-28.00	110		Elastic SILT (MH); hard; greenish gray; dry to moist; about 5% fine SAND; about 95% low to medium plasticity fines; Slightly micaceous.		4	12 15 19	34	100				PP = 4.0			11:15am
	111														
-30.00	112				5	13 13 15	28	100				PP = 4.25			
	113		Very stiff.		6	6 10 17	27	100				PP = 2.25			
-32.00	114														
	115				7		71	100				PP = 4.5			
	116														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85025_06B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**	DATE	SHEET **5 of 6**	

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116	Elastic SILT (MH) *(continued)*.		7	22	71	100							
	117	Medium plasticity fines.		8	33 38	45	100				PP = 4.25			
		SANDY SILT (ML); hard; greenish gray; moist; about 40 to 45% fine SAND; about 50 to 55% low plasticity fines.			15									
-36.00	118	Elastic SILT (MH); very stiff; greenish gray; dry to moist; about 5% fine SAND; about 95% medium plasticity fines.		9	18 27	26	100				PP = 3.25			
	119	Very stiff; PP = 2.75.			8 10						PP = 2.75			
-38.00	120	SANDY SILT (ML); hard; greenish gray; moist; about 40 to 45% fine SAND; about 50 to 55% low plasticity fines.		10	16 8	31	83				PP = >4.5			2:45pm
	121	PP = <4.5.			10									
		SILTY SAND (SM); dark gray; wet; about 70% fine SAND; about 30% nonplastic to low plasticity fines; Slightly micaceous.		11	21 10	61	100							
-40.00	122	SANDY SILT (ML); gray; moist; about 30% fine SAND; about 70% low plasticity fines.			21									
	123	Poorly graded SAND with SILT (SP-SM); medium dense to dense; dark gray; wet; about 85% fine SAND; about 15% nonplastic fines; Micaceous.		12	40 19	83	100							From 123' to 123.5, grades from Elastic SILT to Sandy SILT
-42.00	124	Elastic SILT (MH); hard; greenish gray; moist; about 10% fine SAND; about 90% medium plasticity fines.			33 50									
	125	SILTY SAND (SM); very dense; dark gray; wet; about 80% fine SAND; about 20% nonplastic fines; Micaceous.		13	20 38	93	100				PP = 3.75			3:50pm From 125.5' to 126' grades from Silty SAND to Elastic SILT
-44.00	126	Elastic SILT (MH); greenish gray; moist; about 10% fine SAND; about 90% medium plasticity fines.			55									
	127			14	29 45 50/4	95/10	100				PP = 3.5			
-46.00	128			15	17 21 31	52	100							
	129	SILTY SAND (SM); dark gray; moist; about 75 to 80% fine SAND; about 20 to 25% low plasticity fines; Micaceous.												4:30pm
-48.00	130	Bottom of borehole at 130.0 ft bgs												
	131	FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-50.00	132													
	133													
-52.00	134													
	135													
-54.00	136													
	137													
-56.00	138													
	139													
	140													

Material Graphics

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE **BORING RECORD**				HOLE ID **13_85025_06B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **6 of 6**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-19-13	7-20-13		13_85225_08B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 852+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING	AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
Cement Grout			N/A	N/A	130.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_85225_08B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET	
	David Castro		1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85225_08B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														Driller encountered possible gravel layer
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														
	92														

(continued)

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-12.00	94														out of gravel layer
	95														
-14.00	96														
	97														Driller encountered possible gravel layer
-16.00	98														
	99														
-18.00	100														
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														
	109														
-28.00	110														
	111														end gravel layer
			Fat CLAY (CH); stiff; greenish blue gray; moist; about 5 to 10% fine SAND.		1	7 8 11	19	100				PP = 1.5			
-30.00	112														
	113				2	6 16 23	39	100				PP = 4.25			
-32.00	114				3	17 17 18	35	100							
	115														
	116														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85225_08B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116	Fat CLAY (CH) *(continued)*.		4	17 22 23	45	100				PP = 4.5			
	117	CLAYEY SAND (SC); medium dense; gray; moist; fine SAND; about 20% low plasticity fines.		5	7 11 16	27	100				PP = 1.5			
-36.00	118													
	119			6	7 13 26	39	100				PP = .75			
-38.00	120	Lean CLAY (CL); soft to medium stiff; gray; moist; about 10% fine SAND; low to medium plasticity fines.		7	8 26 50	76	100							
	121													
-40.00	122	Fat CLAY (CH); very stiff to hard; greenish blue gray; moist; about 5 to 10% fine SAND.		8	21 50 50/2	100/8	78				PP = 4.5			
	123													
-42.00	124	SILTY SAND (SM); very dense; gray; wet; fine SAND; about 15 to 20% fines; mica.		9	20 32 44	76	100				PP = 4.5			
	125													
-44.00	126	Fat CLAY (CH); very stiff to hard; greenish blue gray; moist; about 5 to 10% fine SAND.		10	14 34 50	84	100							
	127	Lean CLAY (CL); hard; gray; moist.												
-46.00	128	Fat CLAY (CH); very stiff to hard; greenish blue gray; wet; about 5 to 10% fine SAND.		11	19 26 56	82	100							
	129			12	15 16 21	37	89							
-48.00	130	Poorly graded SAND with SILT (SP-SM); dense; dark gray; moist; fine SAND; about 10 to 15% fines; mica.												4:15pm
	131	Bottom of borehole at 130.5 ft bgs												
-50.00	132	FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	133													
-52.00	134													
	135													
-54.00	136													
	137													
-56.00	138													
	139													
	140													

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85225_08B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**	DATE	SHEET **6 of 6**	

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-20-13	7-22-13		13_85325_09B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 853+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING
Cement Grout				130.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														6:30 am start drilling on 7/20/13
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_85325_09B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	John Wright			1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														7:00am resume drilling on 7/22/13
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85325_09B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														7:45am Drill rig rattled, suggesting GP or other gravel material
	49														
32.00	50														end of gravel layer
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85325_09B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														Drill rig rattled, suggesting GP or other gravel material
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85325_09B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														8:30am mud appears to be thining out, possible from groundwater
-12.00	94														
	95														
-14.00	96														
	97														
-16.00	98														
	99														
-18.00	100														Drill rig rattled, suggesting GP or other gravel material
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														
	109														
-28.00	110														
	111		SILTY SAND (SM); very dense; gray; moist to wet; about 70% fine SAND; about 30% low plasticity fines; Micaceous.		1	16 21 33	54	100							10:45am
-30.00	112		Poorly graded SAND (SP); medium dense; dark gray; wet; about 95% fine SAND; about 5% nonplastic fines; Micaceous.		2	8 14 16	30	100							
	113		SILTY SAND (SM); medium dense; dark gray; wet; about 70% fine SAND; about 30% low plasticity fines; Micaceous.												
-32.00	114		SANDY SILT (ML); gray; moist; about 25% fine SAND; about 75% low plasticity fines; Slightly micaceous.		3	4 5 11	16	100				PP = 3.0			
	115		SILTY CLAY (CL-ML); stiff; gray; moist; about 5% fine SAND; about 95% low to medium plasticity fines; Micaceous.												
	116														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85325_09B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116	Elastic SILT with SAND (MH); very stiff; gray; moist; about 20% fine SAND; about 80% low to medium plasticity fines; Micaceous.		4	7 7 12	19	100				PP = 2.25			
	117	Elastic SILT with SAND (MH) *(continued)*.												
-36.00	118	SILTY SAND (SM); medium dense; gray; moist to wet; about 15 to 25% fine SAND; about 75 to 85% nonplastic to low plasticity fines; Slightly micaceous.		5	8 15 16	31	100							
	119	About 25% fine SAND; about 75% nonplastic to low plasticity fines.		6	8 17 21	38	100							Gradually grades from 15% to 25% fines at 119'. 1" lense of Elastic SILT
-38.00	120	SANDY SILT (ML); dense to very dense; gray; moist to wet; about 45% fine SAND; about 55% low plasticity fines.												
	121	Elastic SILT (MH); very stiff; gray; moist; about 20% fine SAND; about 80% low to medium plasticity fines; Micaceous.		7	15 22 50	72	100							
-40.00	122	SILTY SAND (SM); dense; gray; wet; about 80% medium to fine SAND; about 20% nonplastic to low plasticity fines; Slightly micaceous.		8	11 28 22	50	33							
	123	SILTY CLAY (CL-ML); hard; gray; moist; about 5% fine SAND; about 95% low to medium plasticity fines; Micaceous, very indurated & blocky texture..												
-42.00	124			9	12 21 50/5	71/11	100				PP = >4.5			Rock was stuck inside sample 8. Not clear whether the 6" recovered material is representative of the top or bottom of the sample interval
	125	SILTY SAND (SM); dense to very dense; gray; wet; about 55% fine SAND; about 45% low plasticity fines.												
-44.00	126	SILTY CLAY (CL-ML); hard; gray; moist; about 5 to 10% fine SAND; about 90 to 95% medium plasticity fines; Very indurated.		10	20 45 67	112	100				PP = >4.5			
	127													
-46.00	128	SILTY SAND (SM); very dense; gray; moist; about 55 to 60% fine SAND; about 40 to 45% low plasticity fines; Slightly micaceous.		11	15 20 28	48	89				PP = >4.5			
	129			12	12 22 37	59	94				PP = >4.5			
-48.00	130	SILTY CLAY (CL-ML); hard; gray; moist; about 5 to 10% fine SAND; about 90 to 95% medium plasticity fines; Very indurated.												2:30pm
	131	Bottom of borehole at 130.5 ft bgs												
-50.00	132	FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	133													
-52.00	134													
	135													
-54.00	136													
	137													
-56.00	138													
	139													
	140													

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85325_09B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **6 of 6**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-23-13	7-24-13		13_85425_10B
DRILLING CONTRACTOR: Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line): 0.00' Rt Sta 854+25 Reach 13	SURFACE ELEVATION: 82.0 ft
DRILLING METHOD: Rotary Wash			DRILL RIG: CME 75	BOREHOLE DIAMETER: 4 in
SAMPLER TYPE(S) AND SIZE(S) (ID): Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			SPT HAMMER TYPE: Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION: Cement Grout			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING: 130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														Began Drilling at 7am on 7/23/13
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														Attempted to sample clay material from auger cuttings for Raitos mix design 15' to 28'
	15		SILTY SAND (SM); brown; dry to moist; fine SAND; about 25 to 35% fines.												
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_85425_10B
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME: SBFCA				
BRIDGE NUMBER	PREPARED BY: David Castro		DATE	SHEET 1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20		SILTY SAND (SM) *(continued)*.												
	21		SANDY lean CLAY (CL); brown; fine SAND; about 25 to 35% low plasticity fines.												
60.00	22														
	23		SILTY SAND (SM); brown; dry to moist; fine SAND; about 25 to 35% fines.												
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85425_10B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														Fine gravel. 9:40am
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85425_10B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														Course gravel.
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														stopped drilling. driller mix more mud. starting to lose circulation.
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														drill rig chattering. possible large cobbles. 10:20am.
	91														
	92														

(continued)

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														drilled through cobble layer. still in gravel. lost fluid. driller mixed more mud. used 220 gallons of water so far.
-12.00	94														through gravel layer. 10:45am.
	95														
-14.00	96														
	97														
-16.00	98														
	99														
-18.00	100		Poorly graded GRAVEL with CLAY and SAND (GP-GC); very dense; dark gray; wet; about 55 to 60% coarse to fine GRAVEL; about 25 to 30% medium to fine SAND; about 15% low plasticity fines.		1	43 50/3	50/3	56							tried to use drag bit but couldn't get through gravel. switched back to roller bit.
	101				2	40 50/3	50/3	33							
-20.00	102				3	23 50		75							
	103				4	17 39 42	81	56							
-22.00	104														
	105														
-24.00	106		No sample.		5	40 50/3	50/3	33							mixed more mud. out of water. 300 gallons of water used so far. recovered 3 x 1.5 inch cobble fragment with some poorly graded gravels
	107														
-26.00	108														
	109														
-28.00	110														
	111														approximately end of gravel layer
-30.00	112		SILTY CLAY (CL-ML); hard; greenish gray; moist; fine SAND; about 5% medium plasticity fines.		6	16 21 21	42	100				PP = >4.5			
	113														
-32.00	114		SANDY SILTY CLAY to CLAYEY SILT (CL/ML); stiff; gray; moist; about 40% fine SAND; low plasticity fines; mica.		7	9 12 22	34	100				PP = 1.75			
	115		Grades into fine grained sand.												
	116		SILTY CLAY (CL-ML); stiff to very stiff; greenish gray; moist; about 5 to 10% fine SAND; low to medium		8		26	92				PP = 2.0			

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85425_10B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**	DATE	SHEET **5 of 6**	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		plasticity fines; slighty mica. SILTY CLAY (CL-ML) *(continued)*.		8	10 12	26	92				PP = 2.0			
	117		Poorly graded SAND (SP); medium dense; dark gray; wet; about 5% medium to fine SAND; nonplastic fines; slighty mica.		9	14 10 16	51	100				PP = 2.25			
-36.00	118		SANDY SILTY CLAY to CLAYEY SILT (CL/ML); hard; gray; moist; low plasticity fines; interbedded lenses of SP.		10	35 15 36	76	100				PP = >4.5			
-38.00	120		CLAYEY SAND (SC); very dense; dark gray; wet; medium to fine SAND; about 15% low plasticity fines; slighty mica, interbedded layers of sandy silt.		11	40 22 31 45	76	83							
-40.00	122		Poorly graded SAND with SILT (SP-SM); dense to very dense; dark gray; about 10% medium to fine SAND.		12	18 22 31	53	78							
-42.00	124				13	8 17 27	44	94							
-44.00	126		SANDY SILT (ML); very stiff; greenish gray; moist to wet; about 45 to 50% fine SAND; low plasticity fines; slighty mica.		14	19 22 40	62	50							
-46.00	128				15	20 22 40	62	100				PP = 3.5			
-48.00	129		Lean CLAY (CL); stiff to very stiff; greenish gray; moist; about 10% fine SAND; low plasticity fines; slighty mica.		16	9 12 21	33	100							10:30am
	130		Bottom of borehole at 130.0 ft bgs												
-50.00	132		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-52.00	134														
-54.00	136														
-56.00	138														
	140														

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_85425_10B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**	DATE	SHEET **6 of 6**	

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-9-13	7-10-13		13_86125_17B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 861+25 Reach 13	81.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	5 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Mod Cal (2"), HQ Core, SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING
Cement Grout				132.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														7:00am start drilling
79.00	2														
	3														
77.00	4														
	5														
75.00	6														
	7														
73.00	8														
	9														
71.00	10														
	11														
69.00	12														
	13														
67.00	14														
	15														
65.00	16														
	17														
63.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_86125_17B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET	
	John Wright		1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
59.00	22														
	23														
57.00	24														
	25														
55.00	26														
	27														
53.00	28														
	29														
51.00	30														
	31														
49.00	32														
	33														
47.00	34														
	35														
45.00	36														
	37														
43.00	38														
	39														
41.00	40														
	41														
39.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86125_17B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
35.00	46														
	47														
33.00	48														
	49														
31.00	50														
	51														
29.00	52														
	53														
27.00	54														
	55														
25.00	56														
	57														
23.00	58														
	59														
21.00	60														
	61														
19.00	62														
	63														
17.00	64														
	65														
15.00	66														
	67														Drill rig rattled, suggesting a gravel layer
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86125_17B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
11.00	70														
	71														
9.00	72														
	73														
7.00	74														
	75														9:25am. Temporarily lost mud circulation
5.00	76														
	77														
3.00	78														Pipe temporarily plugged
	79														
1.00	80														
	81														
-1.00	82														
	83														
-3.00	84														
	85														
-5.00	86														
	87														
-7.00	88														
	89														
-9.00	90														
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86125_17B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-13.00	94														
	95														
-15.00	96														
	97														
-17.00	98														
	99														
-19.00	100														
	101														
-21.00	102		No sample.		1			0							10:45am Drill rig rattled at ~102', suggesting a gravel layer. Tried to punch and drive a sample, both of which had no recovery (1 & 2). Continued to drill until drill rig stopped rattling at 107'
	103														
-23.00	104				2			0							
	105														
-25.00	106														
	107		No sample.		3			0							12:45pm
-27.00	108														
	109		Fat CLAY (CH); very soft to soft; dark greenish gray; moist; about 5% fine SAND; about 95% medium to high plasticity fines.		4			100				PP = 0.25			Tried to get a punch sample from 109' to 111', but sample remained attached to insitu soil at 111' depth. Continued to drive a cal sampler, from 109' to 110.5', to retrieve sample
-29.00	110														
	111														
-31.00	112				5			0							Driller left sampler in hole overnight, resting at ~112' (7/9/13). Retrieved sampler next morning (7/10/13) at ~115', suggesting sampler sunk into soil overnight. Soil sample most likely disturbed, and exact location of depth is questionable.
	113														
-33.00	114				6			0				PP = 0.50			
	115														
	116														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86125_17B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		Fat CLAY (CH); very soft to soft; dark greenish gray; moist; about 5% fine SAND; about 95% medium to high plasticity fines.		7			6							
	117														
-37.00	118														
	119														After sample 7, driller flushed out inside drill rod to clear soil. After flushed out, depth of drill bit was 124'. Driller suggested that with previous punch samples did not latch on properly to the drill rod, thus pushing soil inside the drill rod and not the sampler
-39.00	120														
	121														
-41.00	122														
	123														
-43.00	124		No sample.		8	28 44 41	85	0							
	125														Trace shell-like fragments
-45.00	126		SILTY SAND (SM); medium dense; dark gray; wet; about 80 to 85% fine SAND; about 15 to 20% fines. Poorly graded GRAVEL (GP).		9	31 28 30	58	17							3:10pm
	127														Drill rig rattled for about 8" between 127' and 128', suggesting a gravel lense
-47.00	128		Poorly graded SAND with SILT (SP-SM); dense to very dense; dark gray; wet; about 5% fine GRAVEL; about 85% coarse to fine SAND; about 10% fines.		10	6 14 13	27	94							6:30am 7/10/13
	129														
-49.00	130														
	131		About 15% fines.		11	7 7 10	17	89							10:30am
-51.00	132		Bottom of borehole at 132.0 ft bgs												
	133		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-53.00	134														
	135														
-55.00	136														
	137														
-57.00	138														
	139														
	140														

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86125_17B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**	DATE	SHEET **6 of 6**	

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-10-13	7-12-13		13_86225_18B
DRILLING CONTRACTOR: Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line): 0.00' Rt Sta 862+25 Reach 13	SURFACE ELEVATION: 81.0 ft
DRILLING METHOD: Rotary Wash			DRILL RIG: CME 75	BOREHOLE DIAMETER: 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID): HQ Core, SPT (1.4")			SPT HAMMER TYPE: Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION: Cement Grout			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING: 124.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		SILTY SAND (SM); yellowish brown; dry; about 5% fine, angular to subangular GRAVEL; about 70% fine SAND; about 25% nonplastic to low plasticity fines.												
	1														12:45pm start drilling
79.00	2														
	3														
77.00	4														
	5														
75.00	6														
	7														
73.00	8		About 20% nonplastic to low plasticity fines.												
	9														
71.00	10														
	11														
69.00	12														
	13														
67.00	14														
	15														
65.00	16														
	17														
63.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_86225_18B
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME: SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20		*(continued).*												
	21														
59.00	22														
	23														
57.00	24														
	25														
55.00	26														
	27														
53.00	28														
	29														
51.00	30														
	31														
49.00	32														
	33														
47.00	34														
	35														
45.00	36														
	37														
43.00	38														
	39														
41.00	40														
	41														
39.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86225_18B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
35.00	46														
	47														
33.00	48														
	49														
31.00	50														
	51														
29.00	52														
	53														
27.00	54														
	55														
25.00	56														
	57														
23.00	58														
	59														
21.00	60														
	61														
19.00	62														
	63														
17.00	64														
	65														Drill rig rattled, suggesting a gravel layer
15.00	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86225_18B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
11.00	70														
	71														
9.00	72														
	73														
7.00	74														
	75														
5.00	76														
	77														
3.00	78														
	79														
1.00	80														Drill rig stopped rattling, suggesting end of the gravel layer.
	81														
-1.00	82														
	83														
-3.00	84														3:00pm Drill rig rattled, suggesting a gravel layer Lost mud circulation. Truck went to get more water
	85														
-5.00	86														
	87														
-7.00	88														
	89														
-9.00	90														
	91														3:30pm Drill rig stopped rattling, suggesting end of the gravel layer
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86225_18B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-13.00	94														Stopped drilling for the day at 94' on 7/10/13. Resumed drilling at 6:30am on 7/11/13. Still having mud loss. Driller stated they used ~150 gal of water
	95														
-15.00	96														
	97														
-17.00	98														
	99														
-19.00	100														
	101														
-21.00	102		SILTY GRAVEL with SAND (GM); very dense; dark gray; wet; about 65% coarse to fine, subangular GRAVEL; about 20% coarse to fine SAND; about 15% fines.		1	21 58 50	108	58							6:50am 7/11/12
	103														
-23.00	104														
	105		About 55 to 60% coarse to fine, subangular GRAVEL; about 25 to 30% coarse to fine SAND; about 15% fines.		2	18 51 72	123	50							
-25.00	106														
	107		Lean CLAY (CL); stiff; dark greenish gray; moist; about 20% fine SAND; about 80% medium plasticity fines.		3			100				PP = 1.5			At 107' (8AM on 7/11/13) a piece from the gimble on the driller's rig fell. Driller temporarily stopped drilling to assess situation and fix the equipment. Resumed drilling at 11:20AM Sample has trace subangular fine gravel, but most likely gravel that fell from a shallower section.
-27.00	108														
	109		About 5% fine SAND; medium to high plasticity fines.									PP = 3			
-29.00	110		Very stiff.									PP = 1.5			
	111														
			Stiff.									PP = 4.5			
-31.00	112		Hard.												Driller stated he has used 1200 gallons of water so far on this hole.
	113														
-33.00	114		Lean CLAY (CL); stiff; dark greenish gray; moist; about 20% fine SAND; about 80% medium plasticity fines.		4			100							Upper 22" of sample had some fine subangular gravel, but most likely gravel that fell from a shallower section.
	115		Stiff.									PP = 1.5			
	116														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86225_18B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		Lean CLAY (CL) *(continued)*.		4			100							
	117		Stiff; about 5 to 10% medium to fine SAND.									PP = 1.5			
-37.00	118		Medium stiff to stiff.									PP = 1.0			
			Soft to medium stiff.									PP = 0.5			
	119		No sample.		5			0							3:45pm stopped drilling for day. Driller felt change in soil matrix ~119' to 120' and sample 5 resulted in no recovery. 7:10am Resumed drilling
-39.00	120														
	121														
-41.00	122														
	123		SANDY SILT (ML); medium stiff to stiff; dark gray; moist to wet; about 35% medium to fine SAND; about 65% nonplastic to low plasticity fines.		6	6 12 18	30	100				PP = 1.0			
-43.00	124		Poorly graded SAND with SILT (SP-SM); loose to medium dense; dark gray; wet; about 85 to 90% coarse to fine SAND; about 10 to 15% fines.												9:45am
	125		Bottom of borehole at 124.5 ft bgs												
-45.00	126		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
	127														
-47.00	128														
	129														
-49.00	130														
	131														
-51.00	132														
	133														
-53.00	134														
	135														
-55.00	136														
	137														
-57.00	138														
	139														
	140														

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86225_18B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **6 of 6**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-15-13	7-16-13		13_86325_19B
DRILLING CONTRACTOR: Geo-Ex, Driller Name: Tom Scott			BOREHOLE LOCATION (Offset, Station, Line): 0.00' Rt Sta 863+25 Reach 13	SURFACE ELEVATION: 82.0 ft
DRILLING METHOD: Rotary Wash			DRILL RIG: CME 75	BOREHOLE DIAMETER: 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID): Std Cal (2.5"), SPT (1.4")			SPT HAMMER TYPE: Automatic Trip, 140 lb, 30 inch	HAMMER EFFICIENCY, ERi
BOREHOLE BACKFILL AND COMPLETION: Cement Grout			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING: 104.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														Start drilling at 7:00am
80.00	2														
	3		SILTY SAND (SM); yellowish brown; dry; about 5% fine, subangular GRAVEL; about 65% medium to fine SAND; about 30% nonplastic fines.												
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_86325_19B
DIST. 03	COUNTY YUB	ROUTE	POSTMILE D	EA 03-13-120.1
PROJECT OR BRIDGE NAME: SBFCA				
BRIDGE NUMBER	PREPARED BY John Wright	DATE	SHEET 1 of 5	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														Drill rig hit a thin (<1') rough layer of material
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86325_19B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86325_19B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														Drill rig rattled, suggesting a gravel layer
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														Drill rig stopped rattling, suggesting end of the gravel layer
-6.00	88														
	89														
-8.00	90														
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86325_19B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 5**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-12.00	94														
	95														
-14.00	96														
	97														
-16.00	98														
	99														
-18.00	100														
	101														Drill rig rattled, suggesting a gravel layer
-20.00	102														
	103		SILTY SAND (SM); very dense; dark gray; wet; about 5% fine, subangular GRAVEL; about 80% coarse to fine SAND; about 15% fines.		1			0							11:15am
					2			50							
-22.00	104		SILTY SAND with GRAVEL (SM); very dense; dark gray; wet; about 35% fine, subangular GRAVEL; about 55% coarse to fine SAND; about 10% fines.		3			50							12:45pm driller couldn't advance boring
	105		Bottom of borehole at 104.0 ft bgs												
-24.00	106														
	107														
-26.00	108														
	109														
-28.00	110														
	111														
-30.00	112														
	113														
-32.00	114														
	115														
	116														

FINAL LOG:
The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_86325_19B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **5 of 5**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-30-13	7-31-13		13_89025_46B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Tom Scott			0.00' Rt Sta 890+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Std Cal (2.5"), Mod Cal (2"), SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING
Cement Grout				130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														12:10 pm start drilling
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_89025_46B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	John Wright			1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20		*(continued).*												
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														driller encounterd gravel layer
	35														
46.00	36														
	37														end gravel layer
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89025_46B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														added more mud (+100 gallons of water)
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														encountered gravel layer
24.00	58														
	59														end of gravel layer
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89025_46B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														encountered gravel layer
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														end of gravel layer
-6.00	88														
	89														
-8.00	90														
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89025_46B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-12.00	94														
	95														
-14.00	96														
	97														
-16.00	98														
	99														encountered gravel layer
-18.00	100														
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														
	109														end of gravel layer
-28.00	110														
	111		CLAYEY SILT with SAND (ML/CL); hard; greenish blue gray; moist; about 15 to 20% fine SAND; about 80 to 85% low plasticity fines; Slightly micaceous.		1	15 22 29	51	96				PP = 4.5			
-30.00	112														
	113		Lean CLAY (CL); very stiff to hard; greenish blue gray; moist; about 5% fine SAND; about 95% medium plasticity fines; Slightly micaceous.		2	13 16 22	38	79				PP = 4.0			
-32.00	114														
	115		SILTY CLAY with SAND (CL-ML); hard; greenish blue gray; moist; about 15 to 20% fine SAND; about 80 to 85% low to medium plasticity fines; Slightly micaceous.		3		46	100				PP = >4.5			
	116														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89025_46B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116	SILTY CLAY with SAND (CL-ML) *(continued)*.		3	18 21 25	46	100				PP = >4.5			
	117													
-36.00	118	SILTY SAND (SM); dense; dark gray; wet; about 75% fine SAND; about 25% nonplastic fines; Micaceous. Approximately 2" from tip is a 3" lense of Poorly Graded SAND (SP), dark gray (10YR 4/1), wet, 95% fine to coarse grained sand.		4	12 22 24	46	79							
	119													
-38.00	120	Lean CLAY with SAND (CL); very stiff; greenish blue gray; moist; about 15% medium to fine SAND; about 85% medium plasticity fines; Slightly micaceous.		5	9 11 13	24	100				PP = 3.0			
	121													
-40.00	122													
	123	Blocky/indurated. SILTY SAND (SM); very dense; gray; moist to wet; about 80% fine SAND; about 20% nonplastic to low plasticity fines.		6	18 40 50/5"	90/11	94				PP = >4.5			
-42.00	124	Lean CLAY with SAND (CL); very stiff; greenish blue gray; moist; about 15% medium to fine SAND; about 85% medium plasticity fines.		7	12 18 29	47	100				PP = >4.5			
	125	Lean CLAY (CL); hard; greenish blue gray; moist; about 5% fine SAND; about 95% medium plasticity fines; Micaceous, blocky/indurated.		8	16 33 50/4"	83/10	58							
-44.00	126													
	127													
-46.00	128	SANDY SILT (ML); dark gray; moist; about 30% fine SAND; about 70% low plasticity fines; Micaceous.		9	23 29 31	60	100							
	129	SILTY SAND (SM); dark gray; moist to wet; about 80% fine SAND; about 20% nonplastic to low plasticity fines; Micaceous.												
-48.00	130	Bottom of borehole at 130.0 ft bgs												
	131	FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-50.00	132													
	133													
-52.00	134													
	135													
-54.00	136													
	137													
-56.00	138													
	139													
	140													

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89025_46B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **John Wright**		DATE	SHEET **6 of 6**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-29-13	7-30-13		13_89125_47B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Ryan			0.00' Rt Sta 891+25 Reach 13	85.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Mod Cal (2"), SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING
Cement Grout				130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														Ben on-site at 10:30am CME 55 track rig on-site. not drilling yet. setup at 13_889+25_45B
82.98	2														
	3														
80.98	4														
	5														
78.98	6														
	7														
76.98	8														
	9														
74.98	10														700 gallons
	11														
72.98	12														
	13														
70.98	14														
	15														
68.98	16														
	17														
66.98	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_89125_47B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	David Castro			1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
62.98	22														
	23														
60.98	24														
	25														
58.98	26														
	27														
56.98	28														
	29														
54.98	30														
	31														
52.98	32														
	33														
50.98	34														
	35														12:42pm installed tricone bit to begin drilling to sample depth
48.98	36														
	37														
46.98	38														
	39														
44.98	40														
	41														
42.98	42														
	43														Lost circulation, driller thinks the casing is leaking. observed liquid coming up around casing. adding 5 ft
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89125_47B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														of casing.
	45														Lost circulation again due to soil layer @ 45'. lost 300 to 250 gallons.
38.98	46														
	47														
36.98	48														
	49														
34.98	50														
	51														
32.98	52														
	53														
30.98	54														
	55														
28.98	56														
	57														
26.98	58														
	59														
24.98	60														circulation corrected @ 60'. likely in the silt layer shown on sonic boring
	61														driller indicated gravel layer at 63'. matches well with nearby sonic boring. started to lose fluid.
22.98	62														
	63														
20.98	64														
	65														
18.98	66														
	67														
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89125_47B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
14.98	70														
	71														
12.98	72														
	73														
10.98	74														
	75														
8.98	76														
	77														
6.98	78														still losing fluid. about 400 gallons so far.
	79														1:12pm
4.98	80														
	81														
2.98	82														
	83														500 gallons used
0.98	84														
	85														1:52pm
-1.02	86														
	87														end gravel layer. matches with nearby sonic boring
-3.02	88														
	89														
-5.02	90														
	91														2:00pm JW on-site
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89125_47B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-9.02	94														
	95														
-11.02	96														
	97														
-13.02	98														
	99														
-15.02	100														600 gallons. gravels at 101'
	101														
-17.02	102														
	103														
-19.02	104														
	105														still losing fluid
-21.02	106														
	107														
-23.02	108														
	109														
-25.02	110														2:39pm. end gravel layer
	111														
-27.02	112		SILTY CLAY (CL-ML); medium stiff to stiff; gray; moist; about 3 to 5% fine SAND; low to medium plasticity fines; course gravel in sample tip (2" x 1", flat, subangular).		1	7 17 18	35	29				PP = 1.0			
	113														
-29.02	114		Lean to fat CLAY (CL/CH); stiff to very stiff; gray; moist; about 5% fine SAND; medium to high plasticity fines; slightly mica.		2	17 16 16	32	100				PP = 2.75			
	115		Lean CLAY (CL); stiff to very stiff; gray; moist; about 15% fine SAND; medium plasticity fines; slightly mica.												5:00 pm. 7/29/13. JW off-site 6:05am. 7/30/13. JW on-site mixed more mud. 850 gallons used
	116		SILTY SAND (SM); medium dense; gray; wet; about		3		31	100							

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89125_47B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116	15% nonplastic to low plasticity fines; slightly mica.		3	11 15 16	31	100				PP = 2.75			so far.
	117	Lean CLAY (CL); stiff to very stiff; gray; moist; about 15% fine SAND; medium plasticity fines; slightly mica.												
-33.02	118			4	26 28 45	73	100				PP = 1.25			
	119	SILTY CLAY (CL-ML); stiff; gray; moist; about 10% fine SAND; medium plasticity fines; slightly mica, blocky/indurated.												
-35.02	120			5	13 14 21	35	100							
	121													
-37.02	122													
	123	SANDY SILT (ML); stiff; gray; moist; about 45% medium to fine SAND; nonplastic to low plasticity fines; slightly mica.		6	14 23 36	59	100							
-39.02	124	Poorly graded SAND with SILT (SP-SM); dense.												
	125	SILT with SAND (ML); medium stiff to stiff; dark gray; moist; about 15% fine SAND; low plasticity fines; mica, blocky/indurated.		7	11 18 32	50	100							
-41.02	126	SILTY SAND (SM); dense; dark gray; moist to wet; about 60% fine SAND; nonplastic fines; mica.												
	127	SANDY SILTY CLAY (CL-ML); stiff; dark gray; moist; about 35% fine SAND; low to medium plasticity fines; mica.												
-43.02	128	SILTY SAND (SM); dense to very dense; dark gray; wet; fine SAND; about 15% nonplastic fines; mica.		8	12 24 33	57	100							
	129	SANDY lean CLAY (CL); medium stiff to stiff; gray; moist; about 45% fine SAND; low plasticity fines; slightly mica.		9	6 15 19	34	100				PP = 1.0			
-45.02	130	SANDY SILT (ML); medium stiff to stiff; dark gray; moist; about 45% fine SAND; about 55% nonplastic to low plasticity fines; mica.												
	131	SANDY lean CLAY (CL); medium stiff to stiff; gray; moist; about 45% fine SAND; medium plasticity fines; blocky/indurated.												
-47.02	132	Bottom of borehole at 130.0 ft bgs												
-49.02	134													
-51.02	136													
-53.02	138													
	140													

FINAL LOG:
The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89125_47B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **6 of 6**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
David Castro	7-27-13	7-27-13		13_89225_48B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Ryan			0.00' Rt Sta 892+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Mod Cal (2"), SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING
Cement Grout				130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														drilling began at 7:00am
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_89225_48B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY	DATE	SHEET	
	David Castro		1 of 6	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89225_48B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														driller encountered gravel layer
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														
	68														

(continued)

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														end gravel layer
	91														
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89225_48B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														
-12.00	94														
	95														
-14.00	96														encountered gravel layer
	97														
-16.00	98														
	99														
-18.00	100														
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107														
-26.00	108														10:50am rig burning oil, stop rig to refill with oil. start again at 11:15am.
	109														
-28.00	110														end gravel layer
	111		CLAYEY SILT with SAND (ML/CL); stiff; greenish blue gray; moist; about 15% medium to fine SAND; low plasticity fines.		1	16 15 14	29	54							
-30.00	112														
	113		SANDY SILT (ML); stiff; greenish blue gray; moist; about 20 to 50% medium to fine SAND; blocky texture in upper 9".		2	10 12 17	29	100							
-32.00	114														
	115		SILTY SAND (SM); dense to very dense; greenish gray; moist; about 35% medium to fine SAND.		3		50	96							
	116														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89225_48B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		SILTY SAND (SM) *(continued)*.		3	16 20 30	50	96							
	117														
			Poorly graded SAND (SP); dense; dark greenish gray; moist; medium SAND; about 8% fines.												
-36.00	118		SILTY SAND (SM); dense; greenish gray; moist; about 30% fines.		4	20 24 25	49	83							
	119		Poorly graded SAND (SP); dense; greenish gray; moist; coarse to medium SAND; about 7% fines.												
-38.00	120		SANDY SILT (ML); stiff to very stiff; greenish gray; moist; about 40% fine SAND.												
	121				5	11 13 22	35	100							
-40.00	122		SILTY SAND (SM); medium dense to dense; greenish gray; moist; about 35% fine SAND.												
	123				6	24 60 75/5	135/11	96							
-42.00	124		SANDY SILTY CLAY (CL-ML/CL/ML); hard; greenish gray; moist; about 15% fine SAND; about 15% low plasticity fines.												
	125		SILTY SAND (SM); very dense; greenish gray; moist; about 20% fine SAND.												
-44.00	126		Lean CLAY with SAND (CL); hard; dark greenish gray; moist; about 20% fine SAND; medium plasticity fines; blocky and indurated.		7	33 60 150	210	100							
	127														
-46.00	128				8	19 27 50	77	100							driller noted density change, became easier to drill
	129		SILTY SAND (SM); very dense; greenish gray; moist; about 25 to 35% fines.												
-48.00	130		Bottom of borehole at 130.0 ft bgs												
	131		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-50.00	132														
	133														
-52.00	134														
	135														
-54.00	136														
	137														
-56.00	138														
	139														
	140														

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89225_48B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **6 of 6**

LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
John Wright	7-26-13	7-26-13		13_89525_51B
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Geo-Ex, Driller Name: Ryan			0.00' Rt Sta 895+25 Reach 13	82.0 ft
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Rotary Wash			CME 75	4 in
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
Mod Cal (2"), SPT (1.4")			Automatic Trip, 140 lb, 30 inch	
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS: DURING DRILLING N/A; AFTER DRILLING (DATE) N/A	TOTAL DEPTH OF BORING
Cement Grout				130.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0														
	1														
80.00	2														
	3														
78.00	4														
	5														
76.00	6														
	7														
74.00	8														
	9														
72.00	10														
	11														
70.00	12														
	13														
68.00	14														
	15														
66.00	16														
	17														
64.00	18														
	19														
	20														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				13_89525_51B
DIST.	COUNTY	ROUTE	POSTMILE	EA
03	YUB		D	03-13-120.1
PROJECT OR BRIDGE NAME				
SBFCA				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
	David Castro			1 of 6

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	20														
	21														
60.00	22														
	23														
58.00	24														
	25														
56.00	26														
	27														
54.00	28														
	29														
52.00	30														upper 30' hard material to drill
	31														
50.00	32														
	33														
48.00	34														
	35														
46.00	36														
	37														
44.00	38														
	39														
42.00	40														
	41														
40.00	42														
	43														
	44														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89525_51B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **2 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	44														
	45														
36.00	46														
	47														
34.00	48														
	49														
32.00	50														
	51														
30.00	52														
	53														
28.00	54														
	55														
26.00	56														
	57														
24.00	58														
	59														
22.00	60														
	61														
20.00	62														
	63														
18.00	64														
	65														
16.00	66														
	67														possible gravel layer
	68														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89525_51B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **3 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	68														
	69														
12.00	70														
	71														
10.00	72														
	73														
8.00	74														
	75														
6.00	76														
	77														
4.00	78														
	79														
2.00	80														
	81														
0.00	82														
	83														
-2.00	84														9:45am lost fluid. mixed more mud. used about 200 gallons of water so far.
	85														
-4.00	86														
	87														
-6.00	88														
	89														
-8.00	90														
	91														end gravel layer
	92														

(continued)

Crawford & Associates, Inc.
Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89525_51B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **4 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	92														
	93														encountered gravel layer
-12.00	94														
	95														
-14.00	96														
	97														
-16.00	98														
	99														
-18.00	100														drill rig rattling heavily. possible cobbles
	101														
-20.00	102														
	103														
-22.00	104														
	105														
-24.00	106														
	107		SILTY CLAY (CL-ML); stiff to very stiff; greenish gray; moist; about 5% fine SAND; medium plasticity fines; indurated/blocky texture, slightly mica.		1	16 19 19	38	88							
-26.00	108														
	109														
-28.00	110				2	12 13 15	28	100				PP = 3.0 PP = 2.5			
	111														
-30.00	112				3	21 22 31	53	100				PP = 1.5			
	113														
-32.00	114				4	8 14 14	28	0							
	115		SANDY lean CLAY (CL/CL/ML); medium stiff to stiff; greenish gray; moist; about 35 to 40% fine SAND; low to medium plasticity fines; slightly mica.												
	116														

(continued)

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Geotechnical Engineering, Design and Construction Services

REPORT TITLE				HOLE ID
BORING RECORD				**13_89525_51B**
DIST. **03**	COUNTY **YUB**	ROUTE	POSTMILE **D**	EA **03-13-120.1**
PROJECT OR BRIDGE NAME **SBFCA**				
BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **5 of 6**

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	116		SANDY lean CLAY (CL/CL/ML) *(continued)*.												
	117				5	13 20 29	49	100							
-36.00	118		Elastic SILT (MH); medium stiff; greenish gray; moist; fine SAND; about 25% nonplastic to low plasticity fines; mica.												
	119				6	14 20 23	43	100							
-38.00	120		SILTY SAND (SM); dense; gray; moist; fine SAND; about 10% fines; mica.												
	121		Poorly graded SAND with SILT (SP-SM); dense; gray; wet; medium to fine SAND; about 15% nonplastic fines.												
			SILTY SAND (SM); dense; dark gray; wet.												
-40.00	122		Elastic SILT (MH); medium stiff to stiff; gray; moist; about 15% fine SAND; low plasticity fines; mica.		7	28 30 30	60	100							
	123														
-42.00	124				8	21 30 38	68	100							
	125														
-44.00	126														
	127				9	10 17 26	43	100							
-46.00	128		SANDY SILT (ML); stiff to very stiff; gray; moist; about 40% fine SAND; nonplastic to low plasticity fines; mica.		10	24 28 46	74	100							
			SILTY SAND (SM); very dense; gray; moist; about 50% fine SAND; low plasticity fines; mica.												
	129		SILT with SAND (ML); very dense; gray; moist; about 15 to 20% fine SAND; low plasticity fines; mica, indurated.												
-48.00	130		Bottom of borehole at 130.0 ft bgs												
	131		FINAL LOG: The lines designating the interface between soil types are approximate. The transition between soil types may be abrupt or gradual. Our final logs represent our interpretation of the field logs and general knowledge of the site and geological conditions.												
-50.00	132														
	133														
-52.00	134														
	135														
-54.00	136														
	137														
-56.00	138														
	139														
	140														

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BRIDGE NUMBER	PREPARED BY **David Castro**		DATE	SHEET **6 of 6**