

















CLIENT Hartwig and Associates

PROJECT NAME US6 Bridges




PROJECT NUMBER 280.01

PROJECT LOCATION Denver, Colorado

## LITHOLOGY

- |   |                              |   |                        |
|---|------------------------------|---|------------------------|
|  | Asphalt Pavement             |  | Native - CLAY          |
|  | Concrete                     |  | Native - CLAY, silty   |
|  | Fill - Aggregate Base Course |  | Native - SAND and CLAY |
|  | Fill - SAND                  |  | Native - SAND          |
|  | Fill - CLAY                  |  | Native - TOPSOIL       |
|  | Native - SILT                |  | Bedrock - SANDSTONE    |
|  | Native - SAND, silty         |  | Bedrock - SILTSTONE    |
|  | Native - SAND, gravelly      |  | Bedrock - CLAYSTONE    |

## SAMPLE TYPE

- |   |   |   |  |
|---|---|---|--|
|  | GRAB SAMPLE FROM CUTTINGS                                   |  | MODIFIED CALIFORNIA SAMPLER<br>2.5" O.D. AND 2" I.D.<br>WITH BRASS LINERS INCLUDED |
|  | SPLIT SPOON SAMPLER<br>2" O.D. AND 1 3/8" I.D.<br>NO LINERS |   |  |

15/12 Indicates 15 blows of a 140 pound hammer falling 30 inches was required to drive the sampler 12 inches.

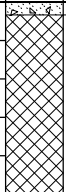

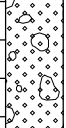

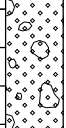

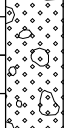
50/11 Indicates 50 blows of a 140 pound hammer falling 30 inches was required to drive the sampler 11 inches.

5,5,5 Indicates 5 blows, 5 blows, 5 blows of a 140 pound hammer falling 30 inches was required to drive the sampler 18 inches.

▼ GROUND WATER LEVEL NOTED AT THE TIME OF DRILLING

**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/21/11      **COMPLETED** 12/21/11      **GROUND ELEVATION** 5206.5 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 687280.3      **EAST** 954457.3  
**DRILLING METHOD** Hollow Stem      **HOLE SIZE** 8"      **BORING LOCATION:** In sidewalk SW corner of Bryant St. at US6  
**LOGGED BY** H. Ochoa      **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer      **WATER DEPTH** 10.0 ft on 12/21/11

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5207	0		CONCRETE sidewalk approximately 4" thick (Fill) CLAY, with sand, trace gravel, moist, dark brown to brown, medium stiff										
5202	5			MC	7/12	-0.4		88.2	35.5	28	17	11	92.1
5197	10		(Native) SAND, with gravel, moist or wet, reddish brown, medium dense to dense	MC	25/12				2.0				
5192	15			SS	8/13/17				10.8	NP	NP	NP	4.7
5187	20			SS	15/20/22				12.4				
5182	25			SS	8/14/14				12.4				
5177	30												
5172	35		(Bedrock) SILTSTONE, very sandy in parts, moist, reddish brown, very hard	MC	50/6			109.0	18.3	34	28	6	48.5

CLIENT Hartwig and Associates PROJECT NAME US6 Bridges  
PROJECT NUMBER 280.01 PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5172	35	XXXXXX XXXXXX XXXXXX	(Bedrock) SILTSTONE, very sandy in parts, moist, reddish brown, very hard <i>(continued)</i>										
			(Bedrock) CLAYSTONE, slightly moist, grey, very hard					104.8	19.6	44	18	26	84.5
5167	40		(Bedrock) SANDSTONE, with clay, slightly moist, grey-brown, very hard	MC	50/3								
		.....	Bottom of hole at 43.3 feet.	SS	50/3				20.8				


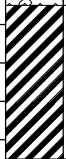
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**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/28/11      **COMPLETED** 12/28/11      **GROUND ELEVATION** 5227.7 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 687391.6      **EAST** 954380.9  
**DRILLING METHOD** Hollow Stem      **HOLE SIZE** 8"      **BORING LOCATION:** Lane 1 WB US6, West of Bryant St  
**LOGGED BY** H. Ochoa      **GROUND WATER LEVELS:**  
**NOTES**      ▼ **WATER DEPTH** 32.0 ft on 12/28/11

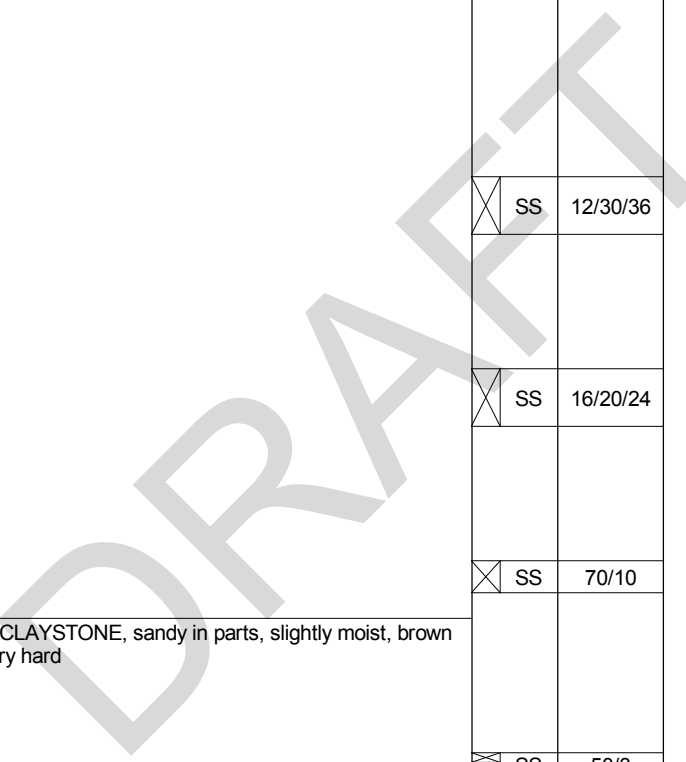
LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5228	0		(Asphalt) PAVEMENT, approximately 10"				0.00		6.4	27	15	12	28.1
			(Fill) SAND, with gravel traces of silt and clay, moist, brown, firm	⊗ SS	15/20/21								
5223	5		(Fill) CLAY, sandy, moist, brown, stiff (US6 Embankment Fill)	⊠ MC	8/12	0.0		100.2	21.0				
5218	10			⊠ MC	12/12	0.0	0.00	98.8	21.0				
5213	15			⊠ MC	9/12	-0.2		103.0	19.9				
5208	20			⊠ MC	18/12			103.3	20.9				
5203	25		(Native) CLAY, with sand, moist, brown, stiff	⊠ MC	14/12			95.0	26.7				
5198	30		(Native) SAND, with gravel silty to clayey in parts, wet, reddish brown, dense										
5193	35			⊗ SS	15/21/28				10.9	NP	NP	NP	6.1


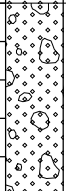

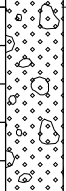


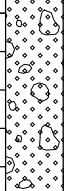
CLIENT Hartwig and Associates PROJECT NAME US6 Bridges  
PROJECT NUMBER 280.01 PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5193	35		(Native) SAND, with gravel silty to clayey in parts, wet, reddish brown, dense ( <i>continued</i> )	⊗									
5188	40												
5183	45				⊗ SS	12/30/36			13.5	NP	NP	NP	5.9
5178	50				⊗ SS	16/20/24			10.7				
5173	55				⊗ SS	70/10			13.9	30	18	12	22.2
			(Bedrock) CLAYSTONE, sandy in parts, slightly moist, brown to grey, very hard										
			Bottom of hole at 59.5 feet.	⊗ SS	50/3		0.00		20.9				

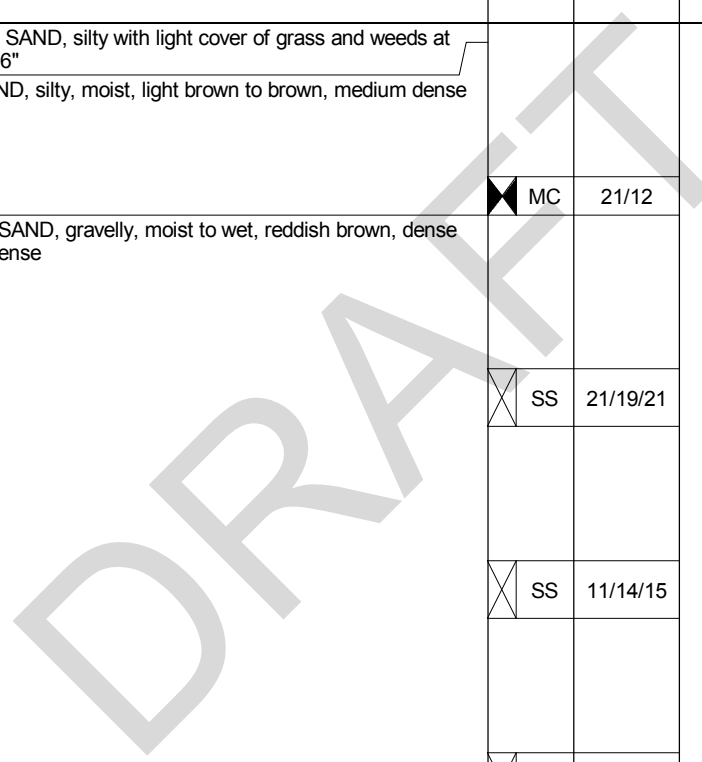
LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12



**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/27/11 **COMPLETED** 12/27/11 **GROUND ELEVATION** 5207.5 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687508.5 **EAST** 954401.9  
**DRILLING METHOD** Hollow Stem **HOLE SIZE** 8" **BORING LOCATION:** In vegetation NW corner of Bryant St at US6  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 15.0 ft on 12/27/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5208	0		(Topsoil) SAND, silty with light cover of grass and weeds at surface, 6" (Fill) SAND, silty, moist, light brown to brown, medium dense										
5203	5		(Native) SAND, gravelly, moist to wet, reddish brown, dense to very dense	MC	21/12		0.00	102.9	15.2				
5198	10			SS	21/19/21				3.8	NP	NP	NP	7.2
5193	15			SS	11/14/15				9.0				
5188	20			SS	9/12/19				12.4				
5183	25			SS	12/25/25				12.2	NP	NP	NP	7.2
5178	30												
5173	35			SS	50/4				12.3				

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12




CLIENT Hartwig and Associates

PROJECT NAME US6 Bridges

PROJECT NUMBER 280.01

PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5173	35		(Bedrock) CLAYSTONE, moist, grey, very hard										
5168	40		MC	50/5	0.00	109.9	15.6						
5163	45		MC	50/4		120.7	14.7	41	23	18	92.1		
			Bottom of hole at 49.5 feet.										

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PROJECT NAME US6 Bridges

PROJECT NUMBER 280.01

PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5171	35		(Bedrock) CLAYSTONE, sandy with interbedded silty sandstone lenses, moist, reddish brown to grey, very hard (continued)	MC	50/6		0.02	108.8	19.1				
5166	40		SS	50/5					17.6	24	23	1	22.9
5161	45		MC	50/3				117.5	15.6				
5156	50		SS	50/6					22.8				
				Bottom of hole at 50.5 feet.									


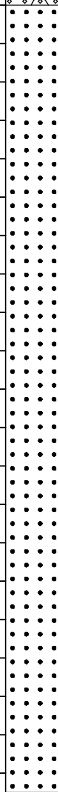


CLIENT Hartwig and Associates

PROJECT NAME US6 Bridges

PROJECT NUMBER 280.01

PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5189	35		(Native) SAND, gravelly, moist to wet, light brown to light reddish brown, medium dense to dense ( <i>continued</i> )	SS	15/10/12				11.8				
5184	40			SS	16/25/30				12.5	NP	NP	NP	4.4
5179	45			SS	50/6				22.4				
5174	50				(Bedrock) SANDSTONE, clayey, silty in parts, slightly moist, dark grey, very hard  (lightly cemented)								
5169	55	SS	50/0.5						18.0				
5164	60	MC	50/1					112.0	18.4				
5159	65	MC	50/0										
5154	70			SS	50/3				21.5				
			Bottom of hole at 70.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

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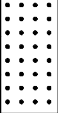



CLIENT Hartwig and Associates

PROJECT NAME US6 Bridges

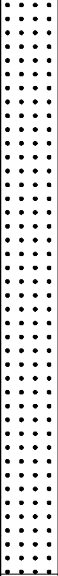
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PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5172	35		(Bedrock) SANDSTONE, clayey, moist, grey, very hard <i>(continued)</i>	SS	75/10				16.6	36	21	15	42.7
5167	40		(Bedrock) SANDSTONE, silty, moist, grey, very hard	SS	50/3				14.5	24	22	2	38.0
5162	45			MC	50/4		0.00	120.6	12.5				
5157	50			MC	50/3			105.2	19.5				
5152	55			MC	50/4			108.2	19.6				
			Bottom of hole at 55.5 feet.										



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PROJECT NUMBER 280.01 PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5173	35		(Bedrock) SANDSTONE, silty, wet, light brown, very hard <i>(continued)</i>	MC	50/3								
5168	40												
5163	45												
5158	50												
			Bottom of hole at 50.0 feet.	SS	50/0								

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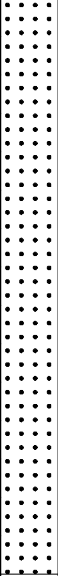
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ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5173	35		(Bedrock) SANDSTONE, silty, slightly moist to moist, dark grey, very hard (continued)										
5168	40			SS	50/0								
			Bottom of hole at 44.1 feet.	SS	50/1				21.1				

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ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5170	35		(Bedrock) SANDSTONE, silty, moist, grey to dark grey with white flecks, very hard <i>(continued)</i>	MC	50/2			111.9	14.8				
5165	40			MC	50/0 Sampler Bounce			117.5	13.3	NP	NP	NP	35.9
5160	45			MC	50/3			123.2	15.0				
5155	50				Bottom of hole at 50.0 feet.	MC	50/0 Sampler Bounce						



**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/14/11      **COMPLETED** 12/14/11      **GROUND ELEVATION** 5195.1 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 687567.3      **EAST** 955366.8  
**DRILLING METHOD** Hollow Stem      **HOLE SIZE** 8"      **BORING LOCATION:** On river bank, South Platte Bridge, North side, Mid span  
**LOGGED BY** J, Biller      **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer      **WATER DEPTH** 4.0 ft on 12/14/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5195	0		(Native) SAND, silty, very moist, dark brown, loose										
			(Native) SAND, silty, wet, light brown, medium dense										
5190	5			MC	20/12			117.4	16.1	NP	NP	NP	3.1
5185	10		(Bedrock) SANDSTONE, silty, very moist, light brown to grey, very hard	SS	80/12		0.00		20.6	40	34	6	33.6
5180	15			MC	50/3		0.00	114.5	16.8				
			Bottom of hole at 17.3 feet.	MC	50/3					40	28	12	42.1

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/12/12 **COMPLETED** 1/12/12 **GROUND ELEVATION** 5209.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687406.0 **EAST** 955412.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Outside Shoulder EB US6, East of South Platte  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 18.0 ft on 1/12/12

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5209	0		(Asphalt) PAVEMENT, approximately 13"				0.00			NP	NP	NP	9.4
			(Fill) SAND, with gravel, slightly moist, light brown to brown, medium dense	SS	19/12/9				6.8	NP	NP	NP	11.2
			Chloride @ 13"-15' = 0.0320%										
5204	5			MC	17/12			113.2	5.1				
5199	10			MC	13/12			127.9	3.4	NP	NP	NP	8.8
5194	15		(Native) SAND, with gravel, slightly moist to wet, reddish brown, medium dense to dense	SS	11/7/7				3.6				
5189	20			SS	12/12/16				11.7	NP	NP	NP	4.0
5184	25			SS	20/30/20				11.6				
5179	30		(Bedrock) SANDSTONE, silty, wet, brown to grey, very hard	MC	50/1				11.6				
			Bottom of hole at 34.1 feet.	SS	50/1				19.8				



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PROJECT NUMBER 280.01 PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5174	35		(Bedrock) SANDSTONE, silty, slightly moist, grey, very hard <i>(continued)</i>										
5169	40			SS	50/0								
5164	45			SS	50/0								
			Bottom of hole at 49.0 feet.	SS	50/0								

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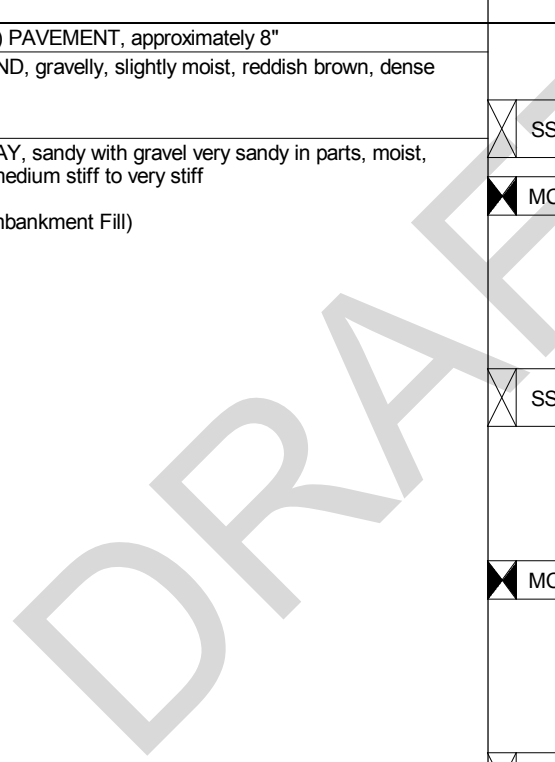




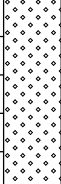

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/12/12 **COMPLETED** 1/12/12 **GROUND ELEVATION** 5225.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687442.0 **EAST** 955898.0  
**DRILLING METHOD** Hollow Stem **HOLE SIZE** 8" **BORING LOCATION:** Outside Shoulder EB US6, West of I-25  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 32.0 ft on 1/12/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5225	0		(Asphalt) PAVEMENT, approximately 8"				0.00			NP	NP	NP	17.1
			(Fill) SAND, gravelly, slightly moist, reddish brown, dense						8.1	NP	NP	NP	7.3
			(Fill) CLAY, sandy with gravel very sandy in parts, moist, brown, medium stiff to very stiff	SS	31/32/15								
5220	5		(US6 Embankment Fill)	MC	19/12	0.2		116.0	10.7				
									16.9				
5215	10			SS	2/4/5								
5210	15			MC	26/12			114.6	16.4	30	14	16	49.0
5205	20			SS	6/4/12				13.8				
5200	25		(Native) SAND, with silt, trace gravel, moist to wet, light brown, medium dense to dense	MC	24/12			88.7	1.5	NP	NP	NP	1.9
5195	30			SS	10/11/-				8.1				
5190	35			SS	65/12				10.9	NP	NP	NP	4.8

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12



CLIENT Hartwig and Associates PROJECT NAME US6 Bridges  
PROJECT NUMBER 280.01 PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5190	35		(Native) SAND, with silt, trace gravel, moist to wet, light brown, medium dense to dense <i>(continued)</i>										
5185	40		(Bedrock) CLAYSTONE, with sand, moist, very hard	SS	12/29/39				12.2				
5180	45			MC	50/2			109.6	19.6				
5175	50			SS	50/3				19.0				
			Bottom of hole at 54.0 feet.	SS	50/1				21.7				

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

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CLIENT Hartwig and Associates

PROJECT NAME US6 Bridges

PROJECT NUMBER 280.01

PROJECT LOCATION Denver, Colorado

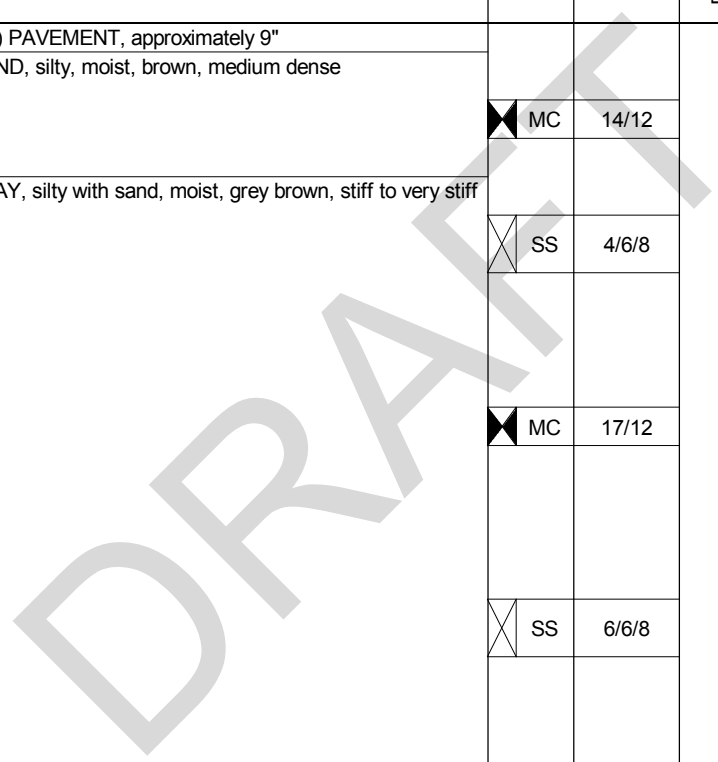
ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5190	35		(Native) SAND, with gravel, moist to wet, light brown, loose to medium dense (continued)	SS	14/12/11				15.0				
5185	40		(Bedrock) CLAYSTONE, moist, grey, very hard	SS	10/17/41				22.0				
5180	45			MC	50/5		114.0	15.0					
5175	50			SS	50/5			19.4	41	20	21	79.0	
5170	55			SS	50/5			21.4					
			Bottom of hole at 57.0 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/10/12 **COMPLETED** 1/10/12 **GROUND ELEVATION** 5223.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687561.0 **EAST** 955836.0  
**DRILLING METHOD** Hollow Stem **HOLE SIZE** 8" **BORING LOCATION:** Outside Shoulder WB US6, West of I-25  
**LOGGED BY** J. Biller **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 30.5 ft on 1/10/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5223	0		(Asphalt) PAVEMENT, approximately 9"				0.00			NP	NP	NP	8.8
			(Fill) SAND, silty, moist, brown, medium dense	MC	14/12				16.1				
5218	5		(Fill) CLAY, silty with sand, moist, grey brown, stiff to very stiff	SS	4/6/8				15.4	37	15	22	53.1
5213	10			MC	17/12			113.0	16.9				
5208	15			SS	6/6/8				13.3	27	15	12	42.9
5203	20			MC	20/12			102.9	20.8				
5198	25		(Native) SAND, gravelly, moist to wet, light brown with black streaks, medium dense to dense	SS	5/8/14				1.3				
5193	30			SS	14/17/17				8.1	NP	NP	NP	3.3
5188	35												

LOG - STANDARD 280.01 6TH AND PLATTE RIVER GP.J ROCKSOL TEMPLATE.GDT 6/11/12






CLIENT Hartwig and Associates

PROJECT NAME US6 Bridges

PROJECT NUMBER 280.01

PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5188	35		(Native) SAND, gravelly, moist to wet, light brown with black streaks, medium dense to dense ( <i>continued</i> )	SS	18/18/22				20.7				
5183	40			SS	50/10				17.7				
5178	45		(Bedrock) CLAYSTONE, moist, grey, very hard	MC	50/3		0.00	118.4	14.1				
5173	50			SS	50/6				18.4	39	21	18	91.9
5168	55			SS	50/5								
			Bottom of hole at 55.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

<b>CLIENT</b> Hartwig and Associates	<b>PROJECT NAME</b> US6 Bridges
<b>PROJECT NUMBER</b> 280.01	<b>PROJECT LOCATION</b> Denver, Colorado
<b>DATE STARTED</b> 12/15/11 <b>COMPLETED</b> 12/15/11	<b>GROUND ELEVATION</b> 5207.2 ft
<b>DRILLING CONTRACTOR</b> Dakota Drilling	<b>NORTH</b> 687423.4 <b>EAST</b> 956039.4
<b>DRILLING METHOD</b> Solid Stem <b>HOLE SIZE</b> 4"	<b>BORING LOCATION:</b> Lane 1 SB I-25, South of US6
<b>LOGGED BY</b> J. Biller	<b>GROUND WATER LEVELS:</b>
<b>NOTES</b> Manual Hammer	▼ <b>WATER DEPTH</b> 16.0 ft on 12/15/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5207	0		(Asphalt) PAVEMENT, approximately 16"				0.00			NP	NP	NP	8.4
			(Fill) SAND, silty with traces of clay, slightly moist, light brown to grey brown, medium dense to dense	MC	44/12			123.3	12.3				
5202	5		(Native) SAND, silty in parts, moist to wet, light brown, medium dense	MC	30/12				1.6				
5197	10			SS	7/5/5				1.0	NP	NP	NP	0.5
5192	15			MC	20/12			117.6	12.1				
5187	20			SS	7/10/20				12.1				
5182	25		(Bedrock) SANDSTONE, clayey, moist, dark grey, very hard	MC	50/3			94.3	18.4				
5177	30			SS	50/5				15.4				
5172	35			SS	50/4		0.00		21.6	34	20	14	69.9

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

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CLIENT Hartwig and Associates PROJECT NAME US6 Bridges  
 PROJECT NUMBER 280.01 PROJECT LOCATION Denver, Colorado

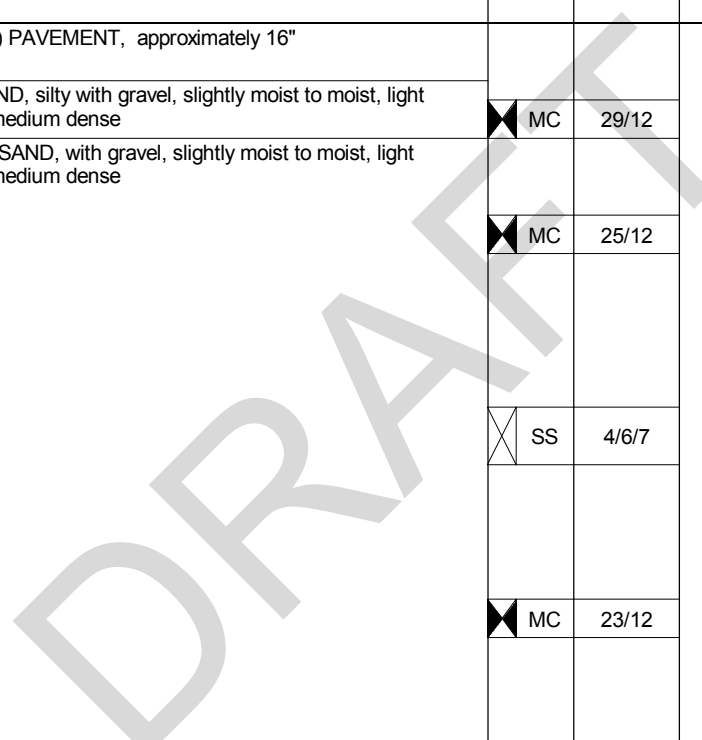
ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5172	35		(Bedrock) SANDSTONE, clayey, moist, dark grey, very hard <i>(continued)</i>										
5167	40			SS	50/3				20.2				
			Bottom of hole at 44.3 feet.	SS	50/4				20.7				

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**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/15/11 **COMPLETED** 12/16/11 **GROUND ELEVATION** 5203.9 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687597.4 **EAST** 955947.9  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4" **BORING LOCATION:** Lane 1 SB I-25, North of US6  
**LOGGED BY** J. Biller **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 9.5 ft on 12/15/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5204	0		(Asphalt) PAVEMENT, approximately 16"				0.00			17	18	NP	8.6
			(Fill) SAND, silty with gravel, slightly moist to moist, light brown, medium dense	MC	29/12			117.6	15.1				
5199	5		(Native) SAND, with gravel, slightly moist to moist, light brown, medium dense	MC	25/12			98.1	1.5	NP	NP	NP	1.9
5194	10			SS	4/6/7				6.1				
5189	15			MC	23/12			114.2	15.3	NP	NP	NP	2.3
5184	20		(Bedrock) CLAYSTONE, sandy, moist, reddish brown, grey, very hard	SS	50/5				23.1				
5179	25			MC	50/0								
5174	30			SS	50/4				17.5	41	19	22	62.7
5169	35			SS	50/3				19.5				

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12




CLIENT Hartwig and Associates

PROJECT NAME US6 Bridges

PROJECT NUMBER 280.01


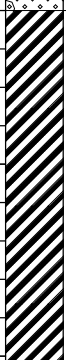
PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5169	35		(Bedrock) CLAYSTONE, sandy, moist, reddish brown, grey, very hard (continued)										
			Bottom of hole at 39.3 feet.	SS	50/3				20.6				

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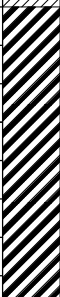


CLIENT Hartwig and Associates PROJECT NAME US6 Bridges  
PROJECT NUMBER 280.01 PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5198	35		(Native) SAND, gravelly, slightly moist to wet, light brown, medium dense to dense <i>(continued)</i>	SS	25/17/12				3.1	NP	NP	NP	5.1
5193	40		SS	26/30/30				11.7					
5188	45		MC	50/11									
5183	50			(Bedrock) CLAYSTONE, moist, grey, very hard	SS	50/6		0.00		21.6	50	22	28
5178	55	MC		50/3									
			Bottom of hole at 55.3 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12



CLIENT Hartwig and Associates PROJECT NAME US6 Bridges  
PROJECT NUMBER 280.01 PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5198	35		(Native) SAND, gravelly, moist to wet, grey brown to reddish brown, medium dense to dense <i>(continued)</i>	MC	40/12			129.4	4.2	NP	NP	NP	4.6
5193	40			SS	12/18/20				13.4				
5188	45		(Native) CLAY, trace sand, moist, brown, hard	SS	15/20/15				19.9				
5183	50		(Bedrock) CLAYSTONE, sandy, moist, grey, very hard	MC	50/5			120.7	15.0				
5178	55			SS	50/5			111.2	17.2	38	25	13	66.4
5173	60			SS	50/5				17.6				
			Bottom of hole at 60.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

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**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/15/12 **COMPLETED** 1/15/12 **GROUND ELEVATION** 5232.2 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687601.4 **EAST** 956168.0  
**DRILLING METHOD** Hollow Stem **HOLE SIZE** 8" **BORING LOCATION:** Outside Shoulder WB US6, East of I-25  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 12.0 ft on 1/15/12

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5232	0		(Asphalt) PAVEMENT, approximately 8.5"				0.00			NP	NP	NP	41.6
			Aggregate Base Course, sand, gravel, approximately 16.5"						7.1				
5227	5		(Fill) CLAY, sandy, moist to very moist, medium stiff to very stiff (US 6 Embankment)	SS	22/19/9								
				MC	21/12	0.2		112.9	16.1				
5222	10			SS	7/10/11								
5217	15			SS	6/3/3	0.12			22.2	31	16	15	54.5
5212	20			SS	7/14/12				17.3				
5207	25		(Native) CLAY, sandy in parts, very moist to moist, light brown to brown, very soft to soft	SS	8/10/10				19.5				
5202	30			SS	6/10/12				19.3				
			(Native) SAND, with gravel to gravelly, slightly moist, light reddish brown, medium dense	SS	10/19/30				15.5				
5197	35			SS	8/7/6				3.1	NP	NP	NP	3.7






CLIENT Hartwig and Associates

PROJECT NAME US6 Bridges

PROJECT NUMBER 280.01








PROJECT LOCATION Denver, Colorado

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5197	35		(Native) SAND, with gravel to gravelly, slightly moist, light reddish brown, medium dense ( <i>continued</i> )	⊗									
			(Native) SAND, gravelly, wet, light reddish brown, medium dense to dense										
5192	40			⊗ SS	10/19/25				8.2	NP	NP	NP	4.8
5187	45				⊗ SS	9/12/38							
5182	50		(Bedrock) CLAYSTONE, sandy, moist, grey, very hard	⬠ MC	50/4		0.04	128.4	15.0				
5177	55				⊗ SS	50/4			19.6	40	22	18	68.8
5172	60				⬠ MC	50/2							
			Bottom of hole at 60.3 feet.	⊗ SS	50/3								

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12




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**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/17/12 **COMPLETED** 1/17/12 **GROUND ELEVATION** 5223.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687439.0 **EAST** 953982.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** \_\_\_\_\_ **BORING LOCATION:** Median Shoulder WB US6, West of Bryant St  
**LOGGED BY** H. Ochoa \_\_\_\_\_ **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/17/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5223	0		(Asphalt) PAVEMENT, approximately 10"										
			(Fill) SAND, gravel, slightly moist, light brown to brown, dense (aggregate base course)										
			(Fill) CLAY, with sand, slightly moist, brown, stiff	SS	40/28/9								
5218	5		(US 6 Embankment)	MC	14/12								
				SS	5/6/7								
5213	10												
				MC	16/12								
5208	15		Bottom of hole at 15.0 feet.										






LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/13/11 **COMPLETED** 12/13/11 **GROUND ELEVATION** 5205.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687460.0 **EAST** 954509.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 6" **BORING LOCATION:** Lane 2 NB Bryant, North of US6  
**LOGGED BY** J. Biller **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 12/13/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5205	0		(Asphalt) PAVEMENT, approximately 6"				0.00			19	21	NP	24.6
			(Fill) SAND, silty with traces of clay and gravel, slightly moist, light brown, dense	MC	39/12			117.2	3.0	NP	NP	NP	5.8
			(Native) SAND, gravelly, slightly moist, light brown, medium dense	MC	28/12			118.0	1.7	NP	NP	NP	2.4
5200	5		Bottom of hole at 5.0 feet.										


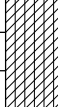
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**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/17/12      **COMPLETED** 1/17/12      **GROUND ELEVATION** 5230.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 687478.0      **EAST** 953283.0  
**DRILLING METHOD** Solid Stem      **HOLE SIZE** 4.25"      **BORING LOCATION:** Lane 2 WB US6, West of Bryant St  
**LOGGED BY** H. Ochoa      **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer      **WATER DEPTH** None Encountered on 1/17/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5230	0		(Asphalt) PAVEMENT, approximately 11.5"				0.00			26	16	10	51.7
			(Fill) SAND, with gravel, slightly moist, light brown, dense	SS	35/40/19				3.6	NP	NP	NP	12.2
			(Native) CLAY, with sand, moist, light brown to brown, stiff to very stiff										
5225	5		Chloride @ 11.5" - 5' = 0.0486%	MC	19/12	1.7		103.9	18.3				
5220	10			SS	7/12/12				25.2				
5215	15			MC	17/12			91.3	30.8				
			Bottom of hole at 15.0 feet.										


LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/17/12 **COMPLETED** 1/17/12 **GROUND ELEVATION** 5225.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687422.0 **EAST** 953739.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Lane 1 EB US6, West of Bryant St  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/17/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5225	0		(Asphalt) PAVEMENT approximately 7"				0.00			NP	NP	NP	30.2
			(Fill) SAND, with gravel, slightly moist, light brown to brown, dense	SS	30/40/36				5.0	NP	NP	NP	10.5
			Chloride @ 7.5"-5' = 0.0113%										
5220	5		(Fill) CLAY, sandy, moist, brown, very stiff	MC	20/12	0.8		99.2	24.2				
5215	10			SS	8/11/11				21.5	45	18	27	57.9
5210	15			MC	26/12			115.2	15.0				
			Bottom of hole at 15.0 feet.										



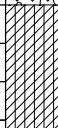


LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/18/12 **COMPLETED** 1/18/12 **GROUND ELEVATION** 5227.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687400.0 **EAST** 954251.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Lane 1 WB US6, West of Bryant St  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/18/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5227	0		(Asphalt) PAVEMENT, approximately 7.5" Aggregate Base Course, approximately 2" (Fill) CLAY, with sand, moist, light brown to brown, very stiff  Chloride @ 7.5" - 5' = 0.320%				0.00			33	16	17	32.0
5222	5			SS	10/12/14				20.4				
5217	10			MC	16/12	-0.2	0.00	103.8	22.6				
5212	15			SS	6/7/10				23.8				
			Bottom of hole at 15.5 feet.										





LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/17/12 **COMPLETED** 1/17/12 **GROUND ELEVATION** 5227.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687381.0 **EAST** 954243.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Lane 1 EB US6, West of Bryant St  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/17/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5227	0		(Asphalt) PAVEMENT, approximately 8"				0.00			26	16	10	41.1
			(Fill) SAND with gravel, slightly moist, brown, dense (aggregate base course)	SS	37/37/20			4.7		NP	NP	NP	30.0
			Chloride @ 8"-5' = 0.0207%										
5222	5		(Fill) CLAY, with sand, slightly moist, light brown to brown, very soft	MC	18/12	0.7		102.7	22.2				
5217	10			SS	8/11/15				20.9				
5212	15			MC	13/12			103.3	22.3				
			Bottom of hole at 15.0 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12










**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/6/12 **COMPLETED** 1/6/12 **GROUND ELEVATION** 5218.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687486.0 **EAST** 955691.0  
**DRILLING METHOD** Hollow Stem Auger **HOLE SIZE** 8" **BORING LOCATION:** Lane 1 WB US6, West of I-25  
**LOGGED BY** J. Biller **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/6/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5218	0		(Asphalt) PAVEMENT, approximately 12"				0.00			NP	NP	NP	32.3
			(Fill) SAND, gravelly with clay in parts, slightly moist to moist, brown, medium dense Chloride @ 1-5 feet = 0.0157%	MC	33/12	0.7		114.3	16.4				
5213	5			MC	13/12				13.5				
			(Fill) CLAY, sandy, moist, brown grey, stiff										
5208	10			MC	13/12			105.0	21.1	44	14	30	59.8
			Bottom of hole at 11.0 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12








**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/18/12      **COMPLETED** 1/18/12      **GROUND ELEVATION** 5210.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 687309.0      **EAST** 955635.0  
**DRILLING METHOD** Solid Stem      **HOLE SIZE** 4.25"      **BORING LOCATION:** Inside Shoulder SB I-25 to EB US6 Loop Ramp  
**LOGGED BY** H. Ochoa      **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer      **WATER DEPTH** None Encountered on 1/18/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5210	0		(Asphalt) PAVEMENT, approximately 11"				0.00						
			(Fill) CLAY, sandy, moist, brown, very stiff						17.6	40	19	21	52.3
				SS	10/10/10								
5205	5			MC	17/12	0.3		103.5	21.4				
													
5200	10		(Native) SAND, with silt, slightly moist, light brown to brown, medium dense	SS	14/16/18				2.0				
													
5195	15			SS	6/8/11				3.0	NP	NP	NP	8.2
													
			Bottom of hole at 15.5 feet.										







LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/18/12 **COMPLETED** 1/18/12 **GROUND ELEVATION** 5207.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 686975.0 **EAST** 955807.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Inside Shoulder SB I-25 to EB US6 Loop Ramp  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 14.0 ft on 1/18/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5207	0		(Asphalt) PAVEMENT, approximately 11"				0.00			37	19	18	43.4
			(Fill) CLAY, sandy in parts, moist, brown, very stiff	SS	10/11/11				14.1				
5202	5		(Native) SAND, with silt, moist to wet, brown to reddish brown, medium dense	MC	12/12	0.0		92.6	9.7				
5197	10			SS	4/6/7				2.2				
5192	15			SS	2/4/6								
Bottom of hole at 15.0 feet.													

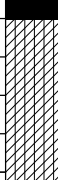



LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/20/12 **COMPLETED** 1/20/12 **GROUND ELEVATION** 5215.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687220.0 **EAST** 956103.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Outside Shoulder SB I-25, South of US6  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/20/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5215	0		(Asphalt) PAVEMENT, approximately 12"				0.06			43	16	27	68.9
			Aggregate Base Course, approximately 4"	SS	13/9/7				16.2				
			(Fill) CLAY, sandy, moist, stiff to very stiff										
			Chloride @ 12"-5' = 0.0637%										
5210	5		(Native) CLAY, sandy in parts, moist, dark brown, medium stiff to medium stiff	MC	18/12	1.1		102.5	24.0				
			(Native) SAND, trace silt, slightly moist, light reddish brown, medium dense	SS	3/4/11				15.2				
5205	10		Bottom of hole at 11.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/20/12 **COMPLETED** 1/20/12 **GROUND ELEVATION** 5210.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687959.0 **EAST** 955723.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Outside Shoulder SB I-25, North of US6  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/20/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5210	0		(Asphalt) PAVEMENT, approximately 13"				0.00			37	15	22	50.7
			(Fill) CLAY, sandy, with gravel, moist, brown, medium stiff to stiff	SS	6/4/4				14.0				
5205	5		(Native) CLAY, with sand, moist, light brown, very stiff	MC	22/12	1.3		114.0	13.7				
			(Native) SAND, with clay in parts, slightly moist, reddish brown, medium dense										
5200	10			SS	11/7/6				3.8				
			Bottom of hole at 11.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/20/11 **COMPLETED** 12/20/11 **GROUND ELEVATION** 5205.2 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687459.6 **EAST** 954509.2  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25 **BORING LOCATION:** In Grass SB I-25 to WB US6 Loop Ramp  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** Not Encountered on 12/20/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5205	0		(Topsoil), Approximately 6", grass and weeds at ground surface							NP	NP	NP	21.7
			(Fill) SAND, silty with traces of clay, slightly moist, dark brown, medium dense	MC	28/12	-0.1	0.00	115.9	7.3				
5200	5			MC	9/12			106.9	7.3				
			(Native) SAND with gravel, slightly moist, reddish brown, medium dense										
5195	10			MC	18/12					NP	NP	NP	3.1
			Bottom of hole at 10.0 feet.										


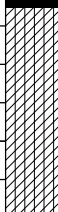


**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/19/12 **COMPLETED** 1/19/12 **GROUND ELEVATION** 5233.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 686845.0 **EAST** 956544.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Outside Shoulder NB I-25, South of US6  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/19/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5233	0		(Asphalt) PAVEMENT, approximately 13"										
			(Fill) SAND, gravel, moist, medium stiff	SS	6/7/9				14.7				
			(Fill) CLAY, with sand, moist, brown, medium stiff to stiff	MC	12/12	0.1		104.3	20.3	40	18	22	55.6
5228	5			SS	4/4/8				23.8				
5223	10			MC	15/12			101.0	22.5				
			Bottom of hole at 10.0 feet.										

<b>CLIENT</b> Hartwig and Associates	<b>PROJECT NAME</b> US6 Bridges
<b>PROJECT NUMBER</b> 280.01	<b>PROJECT LOCATION</b> Denver, Colorado
<b>DATE STARTED</b> 1/19/12 <b>COMPLETED</b> 1/19/12	<b>GROUND ELEVATION</b> 5214.0 ft
<b>DRILLING CONTRACTOR</b> Dakota Drilling	<b>NORTH</b> 687278.0 <b>EAST</b> 956221.0
<b>DRILLING METHOD</b> Solid Stem <b>HOLE SIZE</b> 4.25"	<b>BORING LOCATION:</b> Outside Shoulder NB I-25, South of US6
<b>LOGGED BY</b> H. Ochoa	<b>GROUND WATER LEVELS:</b>
<b>NOTES</b> Manual Hammer	<b>WATER DEPTH</b> None Encountered on 1/19/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5214	0		(Asphalt) PAVEMENT, approximately 16"				0.02			38	18	20	62.5
			(Fill) CLAY, sandy, moist, brown, stiff	SS	4/5/5				20.7				
			(Native) CLAY, with sand, moist, brown, very stiff	MC	26/12	1.1		96.9	26.0				
5209	5		Chloride @ 16"-5' = 0.0557%	SS	5/8/10				22.7				
			(Native) SAND, with gravel, slightly moist, light reddish brown, medium dense	MC	25/12			102.5	1.0				
5204	10		Bottom of hole at 10.0 feet.										

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/19/12 **COMPLETED** 1/19/12 **GROUND ELEVATION** 5205.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687844.0 **EAST** 955913.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Outside Shoulder NB I-25, North of US6  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 9.0 ft on 1/19/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5205	0		(Asphalt) PAVEMENT, approximately 17.5"				0.24			36	20	16	64.6
			(Fill) CLAY, with sand, sandy in parts, moist, brown, medium stiff to stiff	SS	8/10/11				15.5				
			Chloride @ 17.5"-5' = 0.1054%	MC	7/12	0.2		92.7	25.2				
5200	5		(Native) SAND, with silt, wet, brown, medium dense	SS	4/5/7				26.1				
5195	10		Bottom of hole at 10.0 feet.	SS	6/11/12				13.1	NP	NP	NP	6.6






**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/19/12 **COMPLETED** 1/19/12 **GROUND ELEVATION** 5212.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 688290.0 **EAST** 955783.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Outside Shoulder NB I-25, North of US6  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/19/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5212	0		(Asphalt) PAVEMENT, approximately 9"				0.00			33	17	16	4.6
			(Fill) CLAY, with sand to sandy, moist, brown, very stiff to stiff	SS	5/16/24				15.5				
				MC	20/12			110.2	15.4				
5207	5			SS	6/5/4				17.0				
			(Fill) SAND, with gravel, moist, dark brown to black, medium dense	MC	25/12			89.5	18.5				
5202	10		Bottom of hole at 10.0 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

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**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/19/12      **COMPLETED** 1/19/12      **GROUND ELEVATION** 5220.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 688539.0      **EAST** 955693.0  
**DRILLING METHOD** Solid Stem      **HOLE SIZE** 4.25"      **BORING LOCATION:** Outside Shoulder NB I-25, North of US6  
**LOGGED BY** H. Ochoa      **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer      **WATER DEPTH** None Encountered on 1/19/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5220	0		(Asphalt) PAVEMENT, approximately 15"				0.00			25	16	9	39.6
			(Fill) SAND, with gravel, slightly moist, light brown to brown, medium dense	SS	29/14/14				6.2				
			(Fill) SAND, clayey, moist, brown, medium dense	MC	31/12	0.2		113.8	17.2				
5215	5												
													
5210	10			SS	7/13/13		0.02		15.0	35	17	18	40.5
			Bottom of hole at 10.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

DRAFT

**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/20/12      **COMPLETED** 1/20/12      **GROUND ELEVATION** 5220.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 688541.0      **EAST** 955546.0  
**DRILLING METHOD** Solid Stem      **HOLE SIZE** 4.25"      **BORING LOCATION:** Lane 6 SB I-25, North of US6  
**LOGGED BY** H. Ochoa      **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer      **WATER DEPTH** None Encountered on 1/20/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5220	0		(Asphalt) PAVEMENT, approximately 21"				0.00			41	20	21	36.3
			Aggregate Base Course, approximately 4"	SS	12/4/7				16.8				
			(Fill) SAND, clayey, moist, brown, medium dense	MC	10/12	0.4		107.4	15.3				
5215	5		Chloride @ 21" - 5' = 0.0826%	SS	5/5/6				9.6				
			Auger grinding on concrete at 7.5' no penetration by sampler										
			Bottom of hole at 7.5 feet.	MC	50/0								

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

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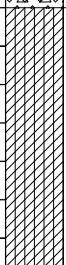
**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/20/12 **COMPLETED** 1/20/12 **GROUND ELEVATION** 5201.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687717.0 **EAST** 955996.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Inside Shoulder NB I-26 to WB US6 Loop Ramp  
**LOGGED BY** H. Ochoa **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** 7.0 ft on 1/20/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5201	0		Topsoil, approximately 6" off shoulder landscape area (Fill) SAND, with silt and gravel, clayey in parts, slightly moist, dark brown, medium dense	SS	7/4/3		0.01		15.3	29	20	9	34.4
			Chloride @ 0-5 Ft. = 0.1392%										
5196	5		(Native) SAND, with silt and gravel, slightly moist to wet, brown, loose to medium dense	MC	11/12			96.4	20.2				
				SS	3/3/3				3.6				
5191	10		Bottom of hole at 10.0 feet.	MC	30/12			129.9	9.5				

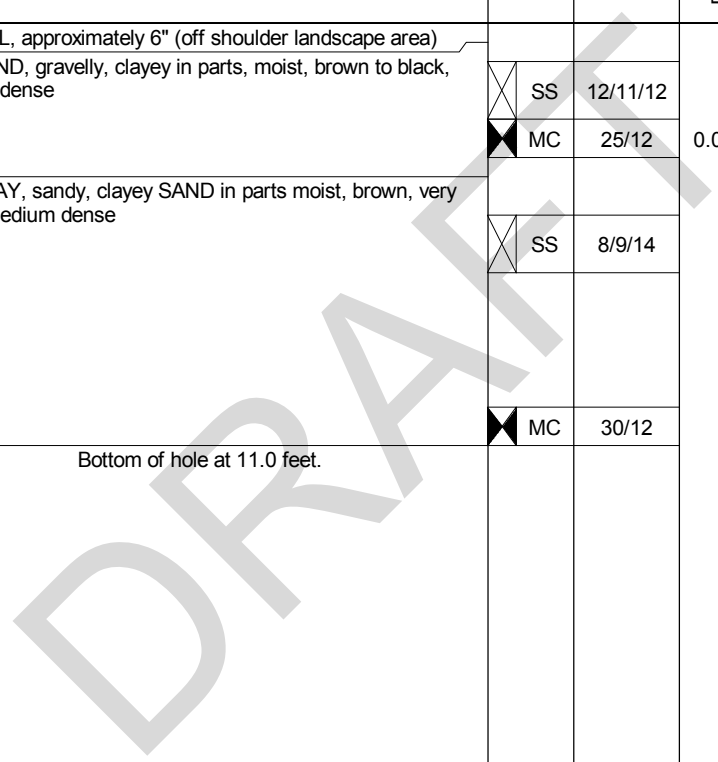
LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

DRAFT

**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/20/12      **COMPLETED** 1/20/12      **GROUND ELEVATION** 5228.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 687705.0      **EAST** 956271.0  
**DRILLING METHOD** Solid Stem      **HOLE SIZE** 4.25"      **BORING LOCATION:** Inside Shoulder NB I-26 to WB US6 Loop Ramp  
**LOGGED BY** H. Ochoa      **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer      **WATER DEPTH** None Encountered on 1/20/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5228	0		TOPSOIL, approximately 6" (off shoulder landscape area)				0.00			26	18	8	31.1
			(Fill) SAND, gravelly, clayey in parts, moist, brown to black, medium dense	SS	12/11/12				8.0				
				MC	25/12	0.0		117.6	9.4				
5223	5		(Fill) CLAY, sandy, clayey SAND in parts moist, brown, very stiff to medium dense										
				SS	8/9/14				18.0				
5218	10			MC	30/12			117.8	13.3				
			Bottom of hole at 11.0 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12



**CLIENT** Hartwig and Associates      **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01      **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/18/12      **COMPLETED** 1/18/12      **GROUND ELEVATION** 5204.8 ft  
**DRILLING CONTRACTOR** Dakota Drilling      **NORTH** 687552.8      **EAST** 954540.5  
**DRILLING METHOD** Solid Stem      **HOLE SIZE** 4.25"      **BORING LOCATION:** Shoulder 6th Ave Frontage Road, East of Bryant St  
**LOGGED BY** H. Ochoa      **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer      **WATER DEPTH** 15.0 ft on 1/18/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5205	0		(Asphalt) PAVEMENT, approximately 5.5"				0.00			NP	NP	NP	45.3
			(Fill) SAND, with gravel, clayey in parts, moist, brown, soft,						16.4	49	23	26	49.1
			(Fill) SAND, silty, moist, brown	SS	7/8/11								
5200	5		(Native) SAND, with silt, slightly moist, reddish brown, medium dense to dense	MC	37/12			122.2	5.8	NP	NP	NP	14.4
5195	10			SS	10/14/14				2.5				
5190	15		(Native) SAND, gravelly, wet, brown, medium dense	MC	15/12				9.1				
			Bottom of hole at 15.0 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 1/4/12 **COMPLETED** 1/4/12 **GROUND ELEVATION** 5222.2 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687473.1 **EAST** 954002.3  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4" **BORING LOCATION:** Median, Bryant St to Federal Blvd Ramp  
**LOGGED BY** J. Biller **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 1/4/12

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5222	0		(Asphalt) Pavement, approximately 6"				0.00			22	17	5	29.4
			(Fill) SAND, silty to clayey, sandy clay in parts, moist, brown, medium dense and stiff	MC	21/12	0.6		97.1	24.6				
5217	5			MC	14/12	-0.1		99.5	24.2				
5212	10			SS	5/5/8				25.5	46	17	29	71.7
			(Native) SAND, clayey, moist, brown and grey, medium dense										
5207	15			MC	26/12			107.4	19.9				
			(Native) CLAY, sand, moist, brown, very stiff										
5202	20		(Native) SAND, with gravel, moist, light brown, medium dense to dense	SS	7/14/43				15.7				
			Bottom of hole at 20.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12







<b>CLIENT</b> Hartwig and Associates	<b>PROJECT NAME</b> US6 Bridges
<b>PROJECT NUMBER</b> 280.01	<b>PROJECT LOCATION</b> Denver, Colorado
<b>DATE STARTED</b> 12/30/11 <b>COMPLETED</b> 12/30/11	<b>GROUND ELEVATION</b> 5211.0 ft
<b>DRILLING CONTRACTOR</b> Dakota Drilling	<b>NORTH</b> 687498.0 <b>EAST</b> 954971.0
<b>DRILLING METHOD</b> Solid Stem <b>HOLE SIZE</b> 4.25"	<b>BORING LOCATION:</b> In vegetation, US6 WB to Bryant St Ramp
<b>LOGGED BY</b> J. Biller	<b>GROUND WATER LEVELS:</b>
<b>NOTES</b> Manual Hammer	▼ <b>WATER DEPTH</b> 20.0 ft on 12/30/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5211	0		(Topsoil) TOPSOIL, silt with sand, very moist, dark brown, loose to medium dense				0.00			35	17	18	36.4
			(Fill) SAND, clayey, very moist, dark brown to black, medium dense	MC	18/12	-0.2		117.8	11.9				
5206	5			MC	20/12	-0.1		112.8	14.2				
			(Native) SAND, clayey, moist, brown, loose										
5201	10			SS	6/3/2				16.3				38.0
			(Native) SAND, trace silt and gravel, moist to wet, light brown, very loose	MC	4/12				2.6	NP	NP	NP	1.8
5196	15												
5191	20			SS	2/1/1				13.0				
			Bottom of hole at 20.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

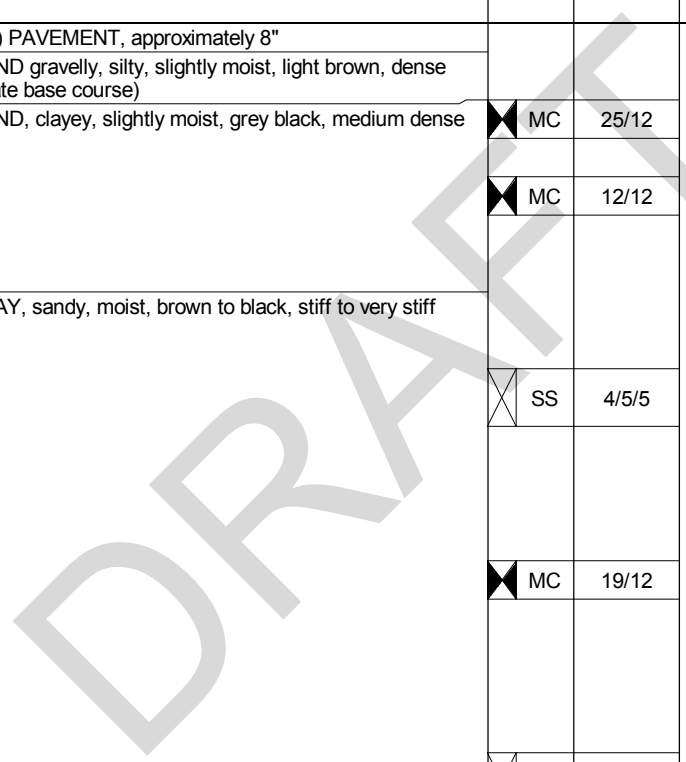




**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/30/11 **COMPLETED** 12/30/11 **GROUND ELEVATION** 5226.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687321.0 **EAST** 954598.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Lane 5 EB US6, East of Bryant St  
**LOGGED BY** J. Biller **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 12/30/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5226	0		(Asphalt) PAVEMENT, approximately 8"				0.00			NP	NP	NP	17.3
			(Fill) SAND gravelly, silty, slightly moist, light brown, dense (aggregate base course)										
			(Fill) SAND, clayey, slightly moist, grey black, medium dense	MC	25/12	0.2		101.1	22.8				
5221	5			MC	12/12	-0.1		99.2	22.5				
			(Fill) CLAY, sandy, moist, brown to black, stiff to very stiff										
5216	10			SS	4/5/5				23.5	43	20	23	68.9
5211	15			MC	19/12			107.7	20.9				
5206	20			SS	10/12/7				16.6				
			Bottom of hole at 20.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12



**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/30/11 **COMPLETED** 12/30/11 **GROUND ELEVATION** 5220.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687344.0 **EAST** 954790.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Median Shoulder EB US6, East of Bryant St  
**LOGGED BY** J. Biller **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 12/30/11

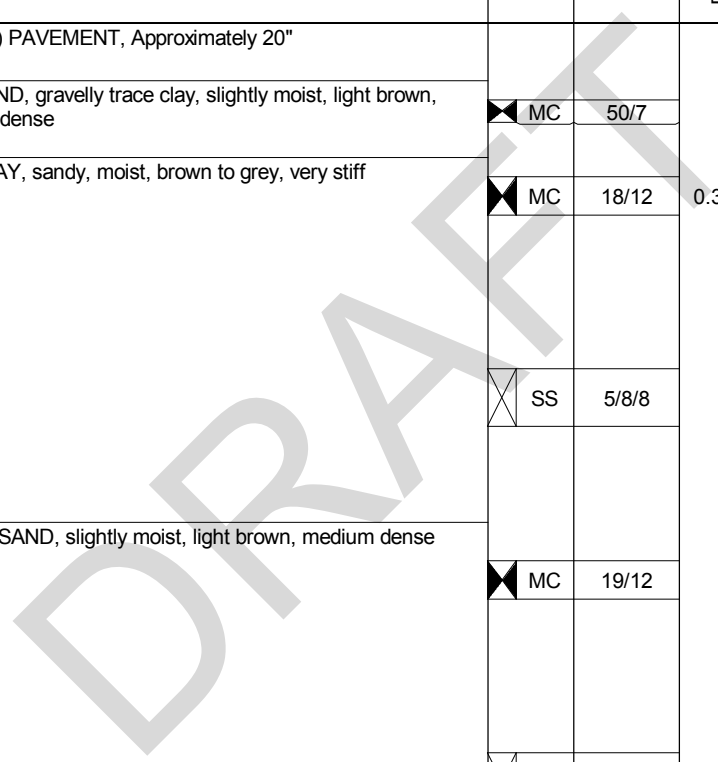
ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5220	0		(Asphalt) PAVEMENT, approximately 8"				0.00			NP	NP	NP	27.6
			(Fill) SAND, slightly moist, light brown (aggregate base course)										
			(Fill) CLAY, sandy with gravel and silt, moist, light brown to gray, stiff to very stiff	MC	14/12	0.6		98.8	26.5				
5215	5			MC	16/12	0.1		98.6	24.8				
5210	10			SS	4/9/15				22.8	40	18	22	57.3
5205	15		(Native) CLAY, sandy, moist, grey to black, very stiff	MC	22/12			83.4	26.9	59	23	36	77.7
5200	20		(Native) SAND, with gravel, slightly moist, light brown, medium dense	SS	17/10/11				2.3	NP	NP	NP	3.2
			Bottom of hole at 20.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12

**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/30/11 **COMPLETED** 12/30/11 **GROUND ELEVATION** 5214.0 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687356.0 **EAST** 954950.0  
**DRILLING METHOD** Solid Stem **HOLE SIZE** 4.25" **BORING LOCATION:** Outside Shoulder EB US6, West of South Platte  
**LOGGED BY** J. Biller **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer **WATER DEPTH** None Encountered on 12/30/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5214	0		(Asphalt) PAVEMENT, Approximately 20"				0.00			NP	NP	NP	14.3
			(Fill) SAND, gravelly trace clay, slightly moist, light brown, medium dense	MC	50/7			132.5	3.7				
5209	5		(Fill) CLAY, sandy, moist, brown to grey, very stiff	MC	18/12	0.3		105.2	21.6				
5204	10			SS	5/8/8				22.5	45	18	27	60.8
5199	15		(Native) SAND, slightly moist, light brown, medium dense	MC	19/12				2.1	NP	NP	NP	3.6
5194	20			SS	14/14/14				1.7				
			Bottom of hole at 20.5 feet.										

LOG - STANDARD 280.01 6TH AND PLATTE RIVER.GPJ ROCKSOL TEMPLATE.GDT 6/11/12



**CLIENT** Hartwig and Associates **PROJECT NAME** US6 Bridges  
**PROJECT NUMBER** 280.01 **PROJECT LOCATION** Denver, Colorado  
**DATE STARTED** 12/9/12 **COMPLETED** 12/9/12 **GROUND ELEVATION** 5222.4 ft  
**DRILLING CONTRACTOR** Dakota Drilling **NORTH** 687325.8 **EAST** 953995.6  
**DRILLING METHOD** Hollow Stem **HOLE SIZE** 8" **BORING LOCATION:** In vegetation, EB US6 to Bryant St ramp  
**LOGGED BY** R. Lepro **GROUND WATER LEVELS:**  
**NOTES** Manual Hammer/Monitoring Well **WATER DEPTH** 29.0 ft on 12/9/11

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE	BLOW COUNTS	SWELL POTENTIAL (%)	SULFATE (%)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS			FINES CONTENT (%)
										LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
5222	0		(Topsoil) approximately 3" in thickness, sand, clayey, moist, brown										
			(Fill) SAND, slightly silty to gravelly, cobbles in parts, slightly moist, brown, dense	MC	50/6				2.7				
5217	5		(Fill) CLAY, sandy with clayey sand in parts, moist to very moist, brown to dark grey, stiff to very stiff	MC	18/12	0.4		108.7	20.4	34	17	17	48.9
5212	10			MC	18/12	0.1	0.00	109.5	19.5				
5207	15			SS	6/6/8				24.4	47	16	31	69.3
5202	20		(Native) SAND, gravelly, moist to wet, light brown to reddish brown, medium dense to dense	MC	16/12			93.9	8.4				
5197	25			SS	13/19/17/16				3.0				
5192	30			SS	13/14/15				14.6				
5187	35			SS	8/13/15				12.2				

Bottom of hole at 35.5 feet.

LOG - STANDARD 280.01 6TH AND PLATTE RIVER GP.J ROCKSOL TEMPLATE.GDT 6/11/12











