F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta 741+50

Borning Location.	Sta. 741+50						
Boring Surface Ele	ev.: + 19.0		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140 Split-Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	5	0.0
Water Level Readings Date 1/21/2009	Time	Depth of Hole 20.0	Depth of Casing		of Water 6.4	Elev. of Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 101.0) Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

1/20/09 1 0.5' 22 10 11 Moist medium dense orange coarse to fine sand w/some gravel and silt. A-1-b Topsoil - 3". 2 2.0' 11 14 Moist medium dense orange fine to coarse A-2-4(0) 3 4.0' 10 10 10	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
3 4.0' ³⁰ _{50/4} . Moist very dense gray gravel w/some coarse A-1-a	
5.0' to fine sand, trace of silt. 2" RECOVERY	
4 6.0' 15 14 Some silt, trace of gravel. A-1-b	
8.0' 23" RECOVERY	
9 5 8.0' 19 25 31 39 Moist very dense orange coarse to fine sand w/some silt, trace of gravel. A-1-b	
10.0' 22" RECOVERY	
6 10.0' $\frac{30}{27}$ Moist very dense orange coarse sand w/some A-1-b 6 10.0' $\frac{30}{27}$ fine sand, silt and gravel. A-1-b	
12 12.0' 17" RECOVERY	
712.0' $9 \\ 6 \\ 5 \\ 3$ Wet medium dense brown silty coarse to fine sand w/some gravel.A-2-4(0)	
14.0' 19" RECOVERY	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
16.0' 11" RECOVERY	
9 $16.0'$ $\frac{2}{2}$ Saturated very loose orange fine sand w/some A-2-4(0) coarse sand and silt, trace of gravel.	

Remarks: Mud Rotary @ 50.0'.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
18	-		18.0'		14" RECOVERY		
		10	18.0'	2 3 3 2	Saturated loose orange fine sand w/some coarse sand and silt, trace of gravel.	A-2-4(0)	
				2			
			20.0'		17" RECOVERY		
21							
24							
	1/21/09	11	24.0'	1 W/R W/R 1	Saturated very loose brown fine sand w/some	A-2-4(0)	
				1	silt and coarse sand.		
			26.0'		20" RECOVERY		
27					DRAFT		
		12	29.0'	3 3 5 9	Saturated loose brown silty fine sand w/some	A-2-4(0)	
30				9	coarse sand, trace of gravel.	UII	
	_		31.0'	_	22" RECOVERY		
					DIICT OO	1 5	
33					GUST 20	CI	
			_				
		13	34.0'	23	Saturated loose light brown silty fine sand w/	A-2-4(0)	
				3 4	trace of coarse sand and gravel.		
36			36.0'		21" RECOVERY		
39		14	39.0'	3 3 3	Saturated loose light brown silty fine sand w/	A-2-4(0)	
			40.5'	3	trace of coarse sand. 17" RECOVERY		
		14A	40.5' 41.0' /	5	Saturated loose gray silty fine sand w/trace of	A-2-4(0)	
42			′		coarse sand, organic matter and gravel. 6" RECOVERY		
		15	44.0'	2	Saturated loose gray silty fine sand w/trace of	A-2-4(0)	
45				2 2 4 4	coarse sand, organic matter and gravel.		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily		Sample	DI (
(ft.)	Progress	No.	Depth	Blows/6"		Remarks
48			46.0'		18" RECOVERY	
		16	49.0' 51.0'	4569	Saturated stiff gray clayey fine sandy silt w/ trace of gravel, coarse sand and organic matter. A-4(0) Mud Rota 21" RECOVERY 1 1 1	ry @ 50.0'.
54		17	54.0' 56.0'	6 10 13 12	Saturated very stiff gray clayey fine sandy silt A-4(0) w/trace of organic matter and coarse sand. 24" RECOVERY	
60		18	59.0' 61.0	6 10 17 27	Saturated medium dense grayish green silty A-2-4(0) Glauconite Saturated medium dense grayish green silty file Glauconite Saturated medium dense grayish green silty file file Saturated medium dense grayish green silty file Glauconite Saturated medium dense grayish green silty file file Satu	e
63		19	64.0'	10 13 21 17	Saturated dense green silty fine sand w/trace of coarse sand, organic matter and gravel. A-2-4(0) Glauconite	2
66			66.0'		23" RECOVERY	
72		20	69.0' 71.0'	4 6 11 14	Saturated very stiff gray clayey silt w/some organic matter, trace of fine sand. A-7-6(24) 24" RECOVERY Image: state of the same of the sam	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
75		21	74.0'	17 21 31 32	Saturated very dense green silty fine sand w/ some organic matter, trace of gravel.A-2-4(0)Glauconite
			76.0'	32	22" RECOVERY
78					
		22	79.0'	13 19 32 43	Saturated very dense green silty fine sand w/ some organic matter, trace of gravel.A-2-4(0)Glauconite
81			81.0'	£2	22" RECOVERY
84					
	1/22/09	23	84.0'	6 12 19 25	Saturated hard gray fine sandy silt w/trace of A-4(0) organic matter.
			86.0'		
87					ORBIDDING
				-	
					211CT 2015
90		24	89.0'	6 11 15 19	Saturated very stiff gray fine sandy silt w/ A-4(0) some organic matter.
			91.0'		21" RECOVERY
93					
		- 05	04.0	6	
		25	94.0'	6 8 13 17	Saturated very stiff gray clay w/some organic A-7-6(13) matter and fine sand.
96			96.0'		18" RECOVERY
99		26	99.0'	8	Soturated hard grow fine conductory w/come A 7.6(14)
		20	00.0	8 13 18 22	Saturated hard gray fine sandy clay w/some A-7-6(14) organic matter.
			101.0'		24" RECOVERY
102					End of Boring

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty sand

Poorly graded gravel with silt



Poorly graded clayey silty sand



Clayey sand



Low plasticity clay

Silt

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory borings were drilled on 1/20/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Track CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta 743+00

Boring Surface Ele			Ref	erence:			
Wt. of Casing Hammer Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140 Split-Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" em Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	34.0)
Water Level Readings Date 1/26/2009	Time	Depth of Hole	Depth of Casing		of Water 4.0	Elev. of Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	101.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Dering Contractory W11 C				

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	1/23/09	1	1.0' 2.0' 2.0'	6 5		Moist medium dense orange coarse to fine sand w/some silt and gravel. 12" RECOVERY	A-1-b	Topsoil - 8".
3		2	2.0	9 13 14 13		Moist medium dense orange fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			4.0'	5	(11) (11) (11) (11)	19" RECOVERY		
		3	4.0'	5 10 14 14	11 14 14 11 14 14 12 14 1	coarse sand, trace of silt and gravel.	A-3	
6			6.0'	45	1993.39 1993.39 1993.39 1994.39	17" RECOVERY		
		4	6.0'	15 15 16 16		Wet dense orange fine sand w/some coarse sand and silt, trace of gravel.	A-2-4(0)	
			8.0'			21" RECOVERY		
9		5	8.0'	5 10 12 14	126 / 144) 14 126 / 1390 126 / 1390 126 / 14 20 126 / 14 20 126 / 14 20 126 / 14 20 126 / 14 20	w/some silt, trace of gravel.	A-2-4(0)	
			10.0'			19" RECOVERY		
12		6	10.0'	12 16 23 22			A-3	
		7	12.0'	13 20 18 15		Wet dense orange fine to coarse sand w/some	A-2-4(0)	
15		8	14.0' 15.0'	4 10		Wet medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
		8A	15.0' 16.0'	12 12		• Wet medium dense orange fine to coarse sand	A-3	
		9	16.0'	7 6 8 9	101110 101110 101110 1010 1010 1010 1010 1010 1000000	w/trace of silt and gravel. <u>12" RECOVERY</u> Saturated medium dense orange fine to coarse send w/trace of silt and gravel	A-3	
			<u> </u>		91230 91230	i sana witace of sht and graver.		

Remarks: Mud Rotary @ 34.0'.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
	1/26/09	10	<u>18.0'</u> 18.0' 20.0'	2 3 4 2	21" RECOVERY Saturated loose brown coarse to fine sand w/ some silt and gravel. 17" RECOVERY	
21			20.0			
		11	24.0'	W/R W/R 2 12	Saturated very loose light brown coarse sand A-1-b and gravel w/some fine sand, trace of silt. A-1-b	
			26.0'		10" RECOVERY	
					DRAFT	
30		12	29.0' 31.0'	2 3 5 5	Saturated loose gray clayey fine sand w/some A-2-4(0) coarse sand, trace of gravel and organic matter. 24" RECOVERY	
33			Α		GUST 2015	
		13	34.0'	3 4 4 5	Saturated firm gray clayey fine sandy silt w/A-4(0)Mud Rotary @ 34.0'.trace of coarse sand and organic matter.4.0'	
36			36.0'		24" RECOVERY	
39						
		14	39.0'	3 3 4 5	Saturated loose gray silty fine sand w/trace of A-2-4(0) coarse sand and organic matter.	
42			41.0'		19" RECOVERY	
45		15	44.0'	4 5 7 9	Saturated medium dense gray silty fine sand w/trace of clay, organic matter, coarse sand and gravel.	
			46.0'		and gravel. 19" RECOVERY	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

48 16 49.07 3 0 5 Saturated stiff gray fine sandy silt w/some clay, trace of organic matter and coarse sand. A-4(0) 51 51.07 21" RECOVERY A-24(0) Glauconie 53 17 54.07 5 22 Saturated medium dense grayish green silty fine sand w/trace of organic matter, coarse sand and grayel. A-2.4(0) Glauconie 54 17 54.07 5 22 Saturated medium dense grayish green silty fine sand w/trace of organic matter, coarse sand and grayel. A-2.4(0) Glauconie 57 10 50 50 50 50 50 57 10 5 50 50 50 50 58 19 64.07 5 50 50 50 60 5 50 50 50 50 50 61 19 64.07 5 50 50 50 62 50 5 50 50 50 50 63 19 64.07 5 50 50 50 64 19 64.07 5 50 50 50 65 20 69.7 5 50 50 50 64 5 5	Depth Da (ft.) Prog	ily ress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
54 17 54.0' 60 Saturated medium dense grayish green silty fine sand wirace of organic matter, coarse send and argued. A-2.4(0) Glauconite 57 57 57 57 57 Glauconite Glauconite 57 58 58 60 50 Glauconite Glauconite 60 10 50 51 Glauconite Glauconite 60 10 51 Glauconite Glauconite 60 10 51 Glauconite Glauconite 61 10 51 Glauconite Glauconite 63 19 64.0' 6 Glauconite Glauconite 63 19 64.0' 6 Glauconite Saturated medium dense green fine sand w/ A-2.4(0) Glauconite 68 66.0' 21' RECOVERY 20 Glauconite Saturated medium dense green fine sand w/ A-2.4(0) Glauconite 68 20 60.0' 5 Saturated medium dense green fine sand A-2.4(0) Glauconite 70 70 20 10 Saturated medium dense green	48		16	49.0'	3 7 8 10	clay, trace of organic matter and coarse sand.	
57 56.0° 30° PROVERY 57 57 57 57 57 57 60 10° PROVERY 58 58 57 60 10° PROVERY 57 61.0° 50° PROVERY 61.0° 61.0° 10° PROVERY 200 155 61.0° 61.0° 61.0° 63 19° PA.0° 10° PROVERY 200 155 61.0° 61.0° 63 19° PA.0° 10° PROVERY 200 155 61.0° 66 10° PROVERY 200 155 61.0° 61.0° 66 10° PROVERY 200 155 61.0° 61.0° 66 10° PROVERY 20° PROVERY 20° PROVERY A-2.4(0) 66 10° PROVERY 10° PROVERY A-2.4(0) Glauconite 66 10° PROVERY 10° PROVERY 10° PROVERY A-2.4(0) 69 10° PROVERY 10° PROVERY 10° PROVERY A-2.4(0) 72 70.5° 12° PROVERY 10° PROVERY A-2.4(0) 72 71.0° 10° PROVERY 10° PROVERY A-2.4(0) <			17		6		
61.0 61.0 GUCORECOVERY 200 15 63 19 64.0' 6 Saturated medium dense green fine sand w/ some clay, trace of organic matter and coarse sand. A-2-4(0) Glauconite 66 66.0' 21" RECOVERY A-2-4(0) Glauconite 69 20 69.0' 5 Saturated very stiff gray clay w/some organic matter, trace of fine sand. A-7-6(27) 70.5' 20A 70.5' 23 Saturated medium dense gray silty fine sand w/some gravel, trace of organic matter and coarse sand. A-2-4(0) 72 71.0' 6' RECOVERY A-2-4(0)				56.0'	13 22	fine sand w/trace of organic matter, coarse sand and gravel.	
19 64.0' 6 13 14 Saturated medium dense green fine sand w/ some clay, trace of organic matter and coarse sand. A-2-4(0) Glauconite 66 66.0' 21" RECOVERY A A-2-4(0) Glauconite 69 20 69.0' 5 12 Saturated very stiff gray clay w/some organic matter, trace of fine sand. A-7-6(27) 70.5' 20A 70.5' 23 Saturated medium dense green fine sand. A-2-4(0) 72 71.0' Saturated very stiff gray clay w/some organic matter, trace of organic matter and coarse sand. A-2-4(0) 72 71.0' 70.5' 23 Saturated medium dense gray silty fine sand w/some gravel, trace of organic matter and coarse sand. A-2-4(0)	60		18	•	10 20 24 37	of organic matter and coarse sand.	
20 69.0' 5 8 Saturated very stiff gray clay w/some organic matter, trace of fine sand. A-7-6(27) 70.5' 12 Istractor of fine sand. A-7-6(27) 20A 70.5' 23 Saturated medium dense gray silty fine sand v/some gravel, trace of organic matter and coarse sand. A-2-4(0) 72 6'' RECOVERY 6'' RECOVERY Image: Comparison of the same section of the same se			19		6 8 13 14	some clay, trace of organic matter and coarse sand.	
72 W/some graver, frace of organic matter and coarse sand. 6" RECOVERY	69			70.5'		matter, trace of fine sand. 18" RECOVERY	
	72		20A 21	70.5' 71.0' 74.0'		w/some gravel, trace of organic matter and coarse sand.	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
75	-			14 19 27	Saturated dense grayish green silty fine sand w/trace of organic matter and coarse sand.	A-2-4(0)	
			76.0'		22" RECOVERY		
78							
	1/27/09	22	79.0'	7	Contracted and diverse denses arresticht annen silter	A 2 4(0)	
	1/21/05	22	73.0	7 12 13 21	Saturated medium dense grayish green silty fine sand w/trace of organic matter.	A-2-4(0)	
81			81.0'		21" RECOVERY		
84		23	84.0'	7		A 4/0	
		23	04.0	7 10 16 19	Saturated very stiff grayish green fine sandy silt w/trace of organic matter.	A-4(0)	
		_	86.0'		22" RECOVERY		
87				Т	OR BID		IG
		0.4		5	DILICT ON	<u> </u>	
90		24	89.0'	5 8 15 16	Saturated very stiff gray fine sandy silt w/ some organic matter.	A-4(1)	
			91.0'		22" RECOVERY		
93							
		25	94.0'	4 6 11 14	Saturated very stiff gray fine sandy clay w/ some organic matter.	A-7-6(12)	
96			96.0'		24" RECOVERY		
99							
		26	99.0'	5 8 11 13	Saturated very stiff gray fine sandy clay w/ some organic matter.	A-7-6(12)	
			101.0'		24" RECOVERY		
102					End of Boring		

KEY TO SYMBOLS

Symbol Description

Strata symbols

Silty sand

Poorly graded sand with silt



Well graded sand with silt

Poorly graded clayey silty sand

High plasticity



clay

Silt



Low plasticity clay

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory borings were drilled on 1/23/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Track CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Во

Boring No.: BR1-2-01

Boring Location: Sta. 742+29.90, 45' R	t. C.L.			
Boring Surface Elev.: 12.40		Ref	erence:	
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Ball Sampler Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	N. N. N. N. N.
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0' To: 0.0' To:	31.0'
Water Level Readings Date Time 3/20/08	Depth of Hole 14.0'	Depth of Casing 12.0'	Depth of Water 11.0'	Elev. of Water 1.4 12.4 12.4 12.4 12.4
Pay Quantities: 2 1/2 in. Dia. Dry Sample Boring: No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Bor		Ft.; 3 ; No. of: Ft.; Core Drillin	Dia. U-Sample Boring U-Samples ng in Rock:	

No. of 2 in. Dia. Dry Sample Boring: No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	101.
Deriver Contractory W/1/ C /	

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
		1	1.5' 2.0'	14	19733.1977 1971 (d. 197	Moist medium dense brown coarse to fine	A-1-b	Asphalt - 12". Stone - 8" .
2.49		2	2.0	11 10		sand and gravel, trace of silt.	A-2-4(0)	Fill material.
				9 11		Moist medium dense brown fine to coarse		
						sand w/ some silt, trace of gravel.		
			4.0'			16" RECOVERY		
		3	4.0'	6 17 20		Wet hard brown and black fine sandy silt w/	A-4(0)	Fill material.
4.98				18		some coarse sand and gravel, trace of organic		
			_			matter and clay.		
			6.0			14" RECOVERY	15	
		4	6.0'	8 10 12 18		Wet very stiff brown and black fine sandy silt	A-4(0)	Fill material.
				18		w/ some coarse sand and clay, trace of gravel.		
7.47								
			8.0'			18" RECOVERY		
		5	8.0'	5 12 10 10		Wet very stiff brown fine to coarse sandy silt,	A-4(0)	Fill material.
				10		trace of gravel.		
9.96			10.0'			20" RECOVERY		
		6	10.0'	10 12 24 18		Wet hard brown fine to coarse sandy silt w/	A-4(0)	Fill material, gas smell.
				18		some gravel.		
			12.0'			19" RECOVERY		
12.45		7	12.0'	4 8 8 8		Saturated medium dense brown silty coarse to	A-2-4(0)	Fill material, gas smell.
				8		fine sand w/ some gravel.		
			14.0'			15" RECOVERY		
		8	14.0'	3 4 9 9		Saturated medium dense light brown coarse to	A-2-4(0)	Fill material.
14.94				9		fine sand w/ some clay, trace of gravel.		

Remarks: Mud Rotary at 31.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample	Blows/6"		Sample Description	Class./G.I.	Remarks
(ft.)	Progress	110.	Depth	010003/0		1 1	01000./0.1.	Romano
		9	16.0' 16.0'	6	HHH	14" RECOVERY Saturated loose light brown silty coarse to	A-2-4(0)	Fill material.
				6 4 5 7		fine sand, trace of gravel.	.(*)	
17.43			17.5'			18" RECOVERY		
		9A	17.5' 18.0' /	7		Visual Desription: Saturated firm dark brown		
		10	18.0'	7 10 12 17		organic coarse sandy silt w/ some fine sand.	A-5(5)	
				17		Saturated very stiff dark brown organic (peat) coarse sandy silt w/ some fine sand, trace of		
19.92			20.0'			gravel.		
		U-1	20.0			11" RECOVERY Saturated dark brown coarse sand w/ some silt	A-1-b	Bottom half of sample in tube
						and organic matter, trace of fine sand and		fell out; peat material on top half.
						gravel.		11411.
00.44		11	22.0' 22.0'	24		12" RECOVERY Saturated very dense light brown gravel and	A-1-a	
22.41			0	24 26 27 35		coarse sand $w/$ some fine sand, trace of silt.	A-1-ä	
			24.0'			18" RECOVERY		
		12	24.0'	3 2 4		Saturated loose gray clayey fine sand, trace of	A-2-4(0)	
24.9	_			4		coarse sand and gravel.		
				T				
		13	26.0' 26.0'	2		20" RECOVERY Visual Description: Saturated loose gray	ノロ	Sample brought to GTA lab
	-			2 1 2 2		clayey fine sand, trace of coarse sand.		for pH testing.
27.39								
			28.0'			20" RECOVERY	15	
		14	29.0'	2		Saturated firm gray clayey fine sandy silt,	A-4(0)	
29.88			-	2 2 4 6		trace of coarse sand and gravel.	11 T(U)	
			31.0'			23" RECOVERY		
20.07								
32.37								
		15	34.0'	5 6 7 9		Saturated medium dense gray silty fine sand,	A-2-4(0)	
34.86				9		trace of coarse sand and gravel.		
			36.0'			16" RECOVERY		
37.35								

PAGE 3 OF 5

STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
39.84	. 1091000	16	39.0'	3 3 5 6	Saturated firm gray fine sandy silt w/ s clay, trace of coarse sand and gravel.	some A-4(0)	
			41.0'		16" RECOVERY		
42.33							
44.82		17	44.0'	4 9 11 19	Saturated very stiff gray clayey fine sa silt, trace of organic matter and gravel.	ndy A-4(0)	
			46.0'		23" RECOVERY		
47.31					DRAFT	•	
49.8		18	49.0'	4 9 15 19	Saturated medium dense dark gray silt sand w/ some clay, trace of organic ma	y fine A-2-4(0)	IG
	•		51.0	19	gravel, and coarse sand.	015	
52.29							
54.78		19	54.0'	16 25 29 44	Saturated hard dark green fine sandy si trace of organic matter, coarse sand, ar gravel.		Glauconitic
			56.0'		22" RECOVERY		
57.27							
		20	59.0'	7			
59.76		20	59.0	7 9 11 17	Saturated medium dense dark green sil sand, trace of organic matter and coars		Glauconitic
			61.0'		24" RECOVERY		
62.25							

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
		21	64.0'	4			
64.74		21	04.0	4 8 8 11	Saturated very stiff dark green silty clay w/ some organic matter, trace of fine to coarse sand.	A-7-6(17)	
			66.0'		22" RECOVERY		
67.23							
69.72		22	69.0'	9 14 21 23	Saturated hard dark green fine sandy silt, trace of organic matter and gravel.	A-4(0)	Glauconitic
					NDAET		
			71.0'		22" RECOVERY		
72.21	N		.	-			
					OR BIDI	יוע	IG
74.7		23	74.0'	7 18 22 24	Saturated dense dark green silty fine sand,	A-2-4(0)	Glauconitic
			$ $	24	trace of organic matter.	15	
			76.0'		15" RECOVERY		
77.19							
		24	79.0'	5	Saturated very stiff dark green fine sandy silt,	A-4(0)	
79.68			-	5 8 12 16	trace of organic matter and mica.	23 T(V)	
			81.0'		18" RECOVERY		
82.17							
84.66		25	84.0'	8 9 12 15	Saturated very stiff dark gray clay w/ some fine sand and organic matter, trace of gravel	A-7-6(15)	
					and mica.		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(11.)	FIUGIESS		86.0'		24" RECOVERY		
87.15							
89.64		26	89.0'	6 12 13 14	Saturated very stiff dark gray fine sandy clay,	A-7-6(8)	
09.04				13 14	trace of organic matter and mica.		
			91.0'		24" RECOVERY		
92.13							
		27	94.0'	9	Sotunted ways at 65 and 1 have a start	A 7 6(17)	
94.62		~	34.0	9 10 12 16	Saturated very stiff gray silty fine sandy clay w/ some organic matter, trace of coarse sand.	A-7-6(17)	
				16	w some organic matter, trace or coarse saild.		
			96.0'		OR BIDI		
97.11							
57.11							
						16	
		28	99.0'	11 17	Saturated hard gray clay w/ some fine sand	A-6(11)	
99.6				11 17 21 20	and organic matter.		
			101.0		24" RECOVERY		
			101.0'		24" RECOVERY Boring terminated at 101.0 feet.		
					borning terminated at 101.0 feet.		
102.09							
104.58							
107.07							
107.07							
			1				

KEY TO SYMBOLS

Symbol Description

Strata symbols

with silt Silty sand

Poorly graded clayey silty sand

Poorly graded sand



Elastic silt



Poorly graded sand



Low plasticity



clay

Silt



DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory boring was drilled on 3/20/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 743+62.04, 44' Rt. C.L.

...)2

Boring Surface Elev.: 12.50		Re	ference:	
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Ball Sampler Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	IN. IN. IN. IN. IN. IN.
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0' To:	36.0'
Water Level Readings Date Time 3/20/08	Depth of Hole 14.0'	Depth of Casing 12.0'	Depth of Water 11.3'	Elev. of Water 1.2 12.5 12.5 12.5 12.5
Pay Quantities: 2 1/2 in. Dia. Dry Sample Boring	: 101.0	Ft.; 3	Dia. U-Sample Borin	
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Bo	ring:	; No. of: Ft.; Core Drilli	U-Samples	s: Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver, Sr. Helpers: D. Zmijewski

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
		1	0.0'		DRAFI	From 0.0 to 1.0', 12" of hot mix asphalt; from 1.0' to 2.0', 12" of crushed stone.
			2.0'		0" RECOVERY	
2.49		2	2.0	4 6 12 6	Moist medium dense brown coarse to fine A-1-b sand and gravel w/ some clay.	Fill material.
			4.0'		13" RECOVERY	
4.98		3	4.0'	4 6 5 5	Wet stiff brown gravelly silt w/ some fine to A-4(0) coarse sand and clay.	Fill material.
			6.0'		17" RECOVERY	
7.47		4	6.0'	4 8 9 10	Wet very stiff brown clayey silt w/ some fine to coarse sand, trace of gravel. A-4(2)	Fill material.
			8.0'		17" RECOVERY	
		5	8.0'	1 3 4 3	Wet firm brown clayey silt w/ some fine to coarse sand, trace of gravel.A-4(2)	Fill material.
9.96			10.0'	3	18" RECOVERY	
		6	10.0'	3 3 3 3	Saturated firm brown clayey silt, trace of fine A-4(3) to coarse sand and gravel.	Fill material.
—		U-1	12.0' 12.0'		21" RECOVERY	
12.45	rke. Mud				Saturated firm brown clayey silt, trace of fine to coarse sand and gravel.	Press Sample - Shelby Tube. Fill material.

Remarks: Mud Rotary at 36.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress	INO.	Depth	BIOWS/6	 	Class./G.I.	Remarks
14.94		7	\ <u>14.0'</u> 14.0'	1 1 3 3	21" RECOVERY Saturated soft brown organic (peat) silt w/ some coarse sand, trace of fine sand and gravel.	A-5(9)	
		0	16.0'	3	22" RECOVERY	A (2)	
17.43		8	16.0'	3 5 6 6	Saturated stiff brown organic (peat) silt w/ some coarse to fine sand, trace of gravel.	A-5(3)	
			18.0'		24" RECOVERY		
		9	18.0' 19.0'	1 3 12 6	Saturated very loose brown organic fine to coarse sand w/ some silt, trace of gravel. 8" RECOVERY	A-2-4(0)	
19.92		9A	19.0' 20.0'	12 16 12 6	Saturated medium dense brown gravel and coarse sand w/ some fine sand, trace of silt. 8" RECOVERY	A-1-a	
					DRAFT		
24.9		10	24.0'	1 3 3 4	Saturated firm gray clayey fine sandy silt, trace of coarse sand and gravel.	A-4(0)	IG
27.39		11	26.0' 26.0'	3 4 5 6	24" RECOVERY Visual Description: Saturated firm gray clayey fine sandy silt, trace of coarse sand and gravel.	15	Sample brought to GTA lab for pH testing.
			28.0'		24" RECOVERY		
29.88		12	29.0'	2 2 3 4	Saturated firm gray fine sandy silt, trace of coarse sand and gravel.	A-4(0)	
			31.0'		24" RECOVERY		
32.37		U-2	32.0'		Saturated medium dense gray fine sand w/ some silt, trace of coarse sand and gravel.	A-2-4(0)	Press Sample - Shelby Tube.
			34.0'		24" RECOVERY		
34.86		13	34.0'	3 5 8 9	Saturated stiff gray fine sandy silt, trace of coarse sand and gravel.	A-4(0)	
			36.0'		24" RECOVERY		
37.35							

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description 0	Class./G.I.	Remarks
39.84		14	39.0'	4 7 10 9	Saturated very stiff gray fine sandy silt, trace of coarse sand and gravel.	A-4(0)	
			41.0'		24" RECOVERY		
42.33							
44.82		15	44.0'	5 9 13 16	Saturated very stiff gray clayey fine sandy silt, trace of coarse sand and gravel.	A-4(1)	
			46.0'		DR 22" RECOVERY		
47.31			~ .				
					OR BIDD	יווי	U
49.8		16	49.0'	9 11 17 24	Saturated very stiff dark gray fine sandy silt, trace of coarse sand, organic matter, and gravel.	A-4(0)	
			51.0'		23" RECOVERY	. •	
52.29							
		17	54.0'	15	Saturated hard dark groop first and heilt	A 4(0)	Glauconitic
54.78			04.0	15 23 40 50	Saturated hard dark green fine sandy silt, trace of coarse sand and organic matter.	A-4(0)	Grauconitic
			56.0'		18" RECOVERY		
57.27							
		18	59.0'	9	Saturated hard dark green clayey fine sandy	A-4(2)	Glauconitic
59.76				9 11 19 19	silt, trace of organic matter, coarse sand, and gravel.	(=)	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth ∖_61.0'_/	2.0110/0	19" RECOVERY		
62.25							
64.74		19	64.0'	6 11 21 30	Saturated hard dark green clay w/ some fine sand and organic matter, trace of coarse sand	A-7-6(15)	Glauconitic
04.74				30	and gravel.		
			66.0'		14" RECOVERY		
67.23							
			00.01	12			~
69.72		20	69.0'	12 16 21 29	Saturated hard dark green fine sandy silt, trace of organic matter and coarse sand.	A-4(0)	Glauconitic
				29			
			71.0'				
			11.0		24 RECOVER I		
		VV			24" RECOVERY		
72.21							
					HISE 70	15	
		21	74.0'	10	Saturated hard dark green fine sandy silt,	A-4(0)	Glauconitic
74.7				10 19 25 30	trace of organic matter and mica.	A-4(U)	
			76.0'		17" RECOVERY		
77.19							
11.13							
		22	79.0'	8	Saturated very stiff dark green fine sandy silt	A-4(0)	Glauconitic
79.68				8 10 20 35	w/ some organic matter and mica.		
			81.0'		22" RECOVERY		
82.17							
		23	84.0'	8 11	Saturated very stiff dark green clayey fine	A-4(6)	Glauconitic

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
84.66				15 19	sandy silt w/ some organic matter, trace of gravel and mica.	
			86.0'		23" RECOVERY	
			00.0			
87.15						
89.64		24	89.0'	8 10 13 15	Saturated very stiff dark green clay w/ some A-7-6(16) fine sand and organic matter, trace of gravel	Glauconitic
				15	and mica.	
			91.0'		22" RECOVERY	
92.13						
		<mark>2</mark> 5	94.0'	11	Saturated very stiff dark green silty clay w/ A-7-5(15)	Glauconitic
94.62				11 13 15 18	some fine sand and organic matter, trace of coarse sand and mica.	
			96.0'	•	24" RECOVERY	
97.11					GUST 2015	
99.6		26	99.0'	8 14 18 22	Saturated hard dark green and gray mottled A-7-6(24) clay w/ some organic matter, trace of fine	Glauconitic
				22	sand and mica.	
			101.0'		24" RECOVERY Boring terminated at 101.0 feet.	
102.09						
104.58						
107.07						

KEY TO SYMBOLS

Symbol Description

Strata symbols



Poorly graded clayey silty sand



Low plasticity

clay

Silty low plasticity clay



Elastic silt



Silty sand



Poorly graded sand



Clayey sand



sile DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory boring was drilled on 3/20/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Boring elevation was obtained from Figure A-2, Structure BR1-2 Exploration Plan.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 713+36.63, 4' Lt. C.L.

3-01

Boring N	O.: BR1-3
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Boring Surface Ele	V.: 47.10		Re		
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel Ball Sampler	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:		IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Ster	3 1/4 n Auger:	Inches	From Depth of: From Depth of:	0.0' To: To:	74.0'
Water Level Readings Date 4/11/08	Time	Depth of Hole 32.0'	Depth of Casing 30.0'	Depth of Water 28.0'	Elev. of Water 19.1 47.1 47.1 47.1 47.1
Pay Quantities: 2 1/2 in. Dia. Dry		101.0	Ft.; 3	Dia. U-Sample Bori	
No. of 2 in. Dia. S 2 1/2 in. Dia. Con		ring:	; No. of: Ft.; Core Drillin	U-Samplo ng in Rock:	es: Ft.

2 1/2 in. Dia. Contin. Sample Boring: Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Hillebrand

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample D	escription	Class./G.I.	Remarks
		1	1.0' 2.0'	2 2	Moist soft brown cl some coarse sand, t 12" R	ayey fine sandy silt w/ race of gravel.	A-4(3)	Cultivated Soil - 8".
2.49		2	2.0'	6 8 7 8		e orange coarse sand and	A-1-b	
			4.0'			ECOVERY		IG
4.98	-	3	4.0'	4 4 4 4	Moist loose orange some silt, trace of g	coarse to fine sand w/ ravel.	A-1-b	
			6.0'		20" R	ECOVERY 20	15	
		4	6.0'	4 6 8 3	Moist medium dens some fine sand and	e orange coarse sand w/ silt, trace of gravel.	A-1-b	
7.47			8.0'	2		ECOVERY		
		5	8.0'	3 3 4 4	Moist loose orange trace of gravel.	silty fine to coarse sand,	A-2-4(0)	
9.96			10.0'			ECOVERY		
		6	10.0'	4 4 5 4	Moist loose orange some silt, trace of g	fine to coarse sand w/ ravel.	A-2-4(0)	
40.45		7	12.0' 12.0'	2		ECOVERY silty fine to coarse sand,	A-2-4(0)	
12.45				2 2 4 3	trace of gravel.	sity fine to coarse sand,	Α-2-τ(0)	
			14.0'			ECOVERY		
	rke. Mud	8	14.0'	3 4 4 4	Moist loose orange some silt, trace of g	coarse to fine sand w/ ravel.	A-1-b	

Remarks: Mud Rotary at 74.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
		9	16.0' 16.0'	4 6 4 5		22" RECOVERY Moist loose orange coarse to fine sand w/ some silt, trace of gravel.	A-1-b	
17.43		10	<u>18.0'</u> 18.0'			21" RECOVERY Moist loose orange coarse sand w/ some fine	A-1-b	
19.92			20.0'	2 4 4 5		sand, silt, and gravel. 19" RECOVERY		
22.41						DRAFT		
24.9	N	11	24.0' 26.0'	5 3 3 4		Wet loose orange coarse to fine sand w/ some silt, trace of gravel.	A-1-b	IG
27.39			A	U		GUST 20		
29.88		12	29.0' 30.0'	50		Wet very dense orange coarse sand and gravel w/ some fine sand, trace of silt. 7" RECOVERY	A-1-b	
32.37		13	34.0'	9		Soturated madium dance because fires to second	A 2 4(0)	
34.86			36.0'	11	2001 (1990) 1000	Saturated medium dense brown fine to coarse sand w/ some silt, trace of gravel. 15" RECOVERY	A-2-4(0)	
37.35								

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress	INU.	Depth	50003/0		01000./0.1.	I CHIRINS
<u>39.84</u>		14	39.0' 41.0'	13 11 11 15	Saturated medium dense brown fine sand w/ some silt and coarse sand, trace of gravel. 16" RECOVERY	A-2-4(0)	
42.33		15	44.0'	10 15 19 22	Saturated dense brown fine sand w/ some silt	A-2-4(0)	
44.82			46.0'	19 22	and coarse sand, trace of gravel.		
49.8		16	49.0 ⁷ 51.0 ¹	10 15 17 25	Saturated dense brown fine sand w/ some coarse sand and silt, trace of gravel. 22" RECOVERY	A-2-4(0)	IG
52.29						13	
54.78		17	54.0' 56.0'	12 16 18 20	Saturated dense brown fine sand w/ some coarse sand, trace of silt.	A-3	
57.27					NE C * 7 / F *		
59.76		18	59.0' 61.0'	10 15 21 24	Saturated dense light brown fine sand w/ some silt, trace of coarse sand. 18" RECOVERY	A-2-4(0)	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
62.25	i logiess		Deptil				
		19	64.0'	14 23 31 48	Saturated very dense gray silty fine sand w/	A-2-4(0)	
64.74				31 48	some coarse sand, trace of gravel.		
			00.0				
			66.0'		19" RECOVERY		
67.23							
01.20							
		20	69.0'	11	Seturated damage and silter fine and set some	A 2 4(0)	
69.72		20	09.0	11 14 24 25	Saturated dense gray silty fine sand w/ some coarse sand.	A-2-4(0)	
					DRAFI		
			71.0'		20" RECOVERY		
72.21		U-1	72.0'		Saturated gray silty fine to coarse sand with a	A-2-4(0)	Press Sample - Shelby Tube.
			73.0'		trace of gravel. 11.5" RECOVERY		
74.7		21	74.0'	6 14 21 34	Saturated hard gray clayey fine sandy silt, trace of coarse sand and gravel.	A-4(0)	
				34	trace of coarse said and graver.		
			76.0'		24" RECOVERY		
77.19							
		22	79.0'	8 14	Saturated hard gray clayey fine sandy silt,	A-4(0)	
79.68				8 14 21 48	trace of coarse sand and gravel.		
			81.0'		23" RECOVERY		
82.17							
84.66		23	84.0'	6 12 20 30	Saturated hard dark gray clayey fine sandy silt w/ some coarse sand, trace of organic matter.	A-4(1)	
				30			

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	-		86.0'			23" RECOVERY		
87.15								
		24	89.0'	6		Saturated very stiff dark gray clayey fine	A-4(0)	
89.64				6 10 14 26		sandy silt w/ some coarse sand, trace of gravel and organic matter.		
			91.0'			24" RECOVERY		
92.13								
		25	94.0'	10			A 4(0)	
94.62		25	94.0	10 17 24 39		Saturated hard gray-green fine sandy silt, trace of coarse sand, gravel, and organic	A-4(0)	
			96.0'	Т		24" RECOVERY		JG
			90.0					
97.11								
			μ			4UST 20	15	
					77.00			
99.6		26	99.0'	9 12 16 22		Saturated very stiff gray-green clayey fine sandy silt, trace of organic matter, gravel, and	A-4(0)	
						coarse sand.		
			101.0'			24" RECOVERY Boring terminated at 101.0 feet.		
102.09								
104.58								
107.07								
$\left - \right $								

KEY TO SYMBOLS

Symbol Description

Strata symbols

Low plasticity clay

Silty sand



Well graded sand with silt



Poorly graded sand with silt



Clayey sand

Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING **AUGUST 2015**

Notes:

- 1. Exploratory boring was drilled on 4/11/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Surveyed boring locations and elevations were provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 726+60.00, 35' Rt. C.L.

Borina Na

Boring	No.:	BR1-3-02
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Boring Surface Elev	V.: 19.96		Re		
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel Ball Sampler	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:		IN. IN. IN. IN. IN.
Casing Size: Hollow Sten	3 1/4 n Auger:	Inches	From Depth of: From Depth of:	0.0' To: To:	41.0'
Water Level Readings Date 3/20/08	Time	Depth of Hole 10.0'	Depth of Casing 8.0'	Depth of Water 6.2'	Elev. of Water 13.8 20.0 20.0 20.0 20.0
Pay Quantities: 2 1/2 in. Dia. Dry 3		101.0	Ft.; 3	Dia. U-Sample Bor	
No. of 2 in. Dia. S 2 1/2 in. Dia. Cont		ring:	; No. of: Ft.; Core Drillin	U-Sampl ng in Rock:	es: Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Hillebrand

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
		1	0.0'	2 3 4 5		Wet firm brown clayey fine to coarse sandy silt, trace of gravel. 17" RECOVERY	A-4(1)	Boring started in drainage swale - no ground cover; fill material.
2.49		2	2.0'	7 8 7 6		Wet medium dense brown fine to coarse sand w/ some silt and gravel. 18" RECOVERY	A-2-4(0)	Fill material.
4.98		3	4.0' 6.0'	13 15 12 6		Wet medium dense brown gravel and fine to coarse sand w/ some silt. 13" RECOVERY	A-1-b	Fill material.
7.47		4	6.0' 8.0'	3 6 9 11		Saturated medium dense brown fine to coarse sand w/ some silt, trace of gravel. 24" RECOVERY	A-2-4(0)	
9.96		5	8.0'	4 4 4 8		Saturated loose brown silty fine sand w/ some coarse sand, trace of gravel. 16" RECOVERY	A-2-4(0)	
		6	10.0'	10 6 8 8	10000000000000000000000000000000000000	Saturated medium dense brown fine to coarse sand, trace of silt and gravel. 24" RECOVERY	A-3	
12.45		7	12.0'	5 4 6 8		Saturated loose orange-brown fine sand w/ some silt and coarse sand, trace of gravel.	A-2-4(0)	

Remarks: Mud Rotary at 41.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
()		8	14.0' /	1		20" RECOVERY	A-2-4(0)	
		Ŭ	14.0'	1 3 6		Saturated loose orange-brown fine sand w/	A-2-4(0)	
14.94				8		some silt and coarse sand, trace of gravel.		
			16.0'			24" RECOVERY		
		9	16.0'	6 8 13 15		Saturated medium dense orange-brown silty	A-2-4(0)	
				13 15		fine sand w/ some coarse sand, trace of		
17.43						gravel.		
			18.0'			24" RECOVERY		
		10	18.0'	5		Saturated medium dense orange-brown fine	A-2-4(0)	
				5 6 7 8		sand w/ some coarse sand and silt, trace of		
				Ũ		gravel.		
10.00								
19.92			20.0'			24" RECOVERY		
						DRAFT		
22.41								
		11	24.0'	4		Saturated medium dense brown fine sand w/	A-2-4(0)	
24.9				4 7 4 6		some coarse sand and silt, trace of gravel.		
24.0								
			26.0'			22" RECOVERY 20		
						GUST 20		
27.39								
		12	29.0'	3 4 4 7		Saturated loose brown-red fine sand w/ some	A-2-4(0)	
29.88				4 7		silt and coarse sand, trace of gravel.		
			31.0'			22" RECOVERY		
			00			1200 - 2441		
32.37								
02.07								
		13	34.0'	3				
		13	34.0	3 4 3 3	[]]]	Saturated loose gray clayey fine sand, trace of coarse sand and gravel.	A-2-4(0)	
34.86				3	[]]]]	Coarse sand and graver.		
					[]]]			
			36.0'			18" RECOVERY		
		U-1	36.0'		[]]]]	No Recovery - pushed tube 11" to refusal.		Press Sample - Shelby Tube.
			36.9'		[]]]]	0" RECOVERY		
37.35								

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
39.84		14	39.0'	4 7 7 11	Saturated medium dense gray clayey fine sand A-2-4(0) w/ some coarse sand.	
		U-2	41.0' 41.0'		20" RECOVERY No Recovery - pushed tube 18" to refusal.	Press Sample - Shelby Tube.
42.33			42.5'		0" RECOVERY	
		15	44.0'	6	Saturated stiff gray fine sandy silt w/ some A-4(0)	
44.82				6 6 7 10	clay, trace of coarse sand and gravel.	
			46.0'		24" RECOVERY	
47.31			0	Т	FOR BIDDIN	IG
49.8		16	49.0'	6 7 8 14	Saturated stiff gray fine sandy silt, trace of A-4(0) coarse sand, gravel, and seashells.	
52.29			51.0'		24" RECOVERY	
54.78		17	54.0'	4 6 11 11	Saturated very stiff gray clayey fine sandy silt, trace of gravel and coarse sand.A-4(2)	
			56.0'		24" RECOVERY	
57.27						
		18	59.0'	8	Saturated very stiff dark gray fine sandy silt, A-4(0)	
59.76				8 13 15 27	trace of coarse sand, gravel, and organic matter.	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	0		61.0'		24" RECOVERY		
62.25							
02.20							
		19	64.0'	23			
64.74		19	04.0	23 34 50/5"	Saturated very dense green silty fine sand, trace of organic matter and coarse sand.	A-2-4(0)	
			65.5'		15" RECOVERY		
67.23							
00.70		20	69.0'	6 8 14 17	Saturated very stiff gray fine sandy silt w/	A-4(0)	
69.72				14 17	some organic matter, trace of coarse sand.		
			71.0'				
							l(j
72.21							
					LIST 20	15	
		21	74.0'	7	Saturated very stiff gray silty clay w/ some	A-7-6(18)	
74.7				7 7 8 7	fine sand and organic matter, trace of	A-7-0(10)	
					seashells.		
			76.0'		24" RECOVERY		
77.19							
79.68		22	79.0'	9 15 20 27	Saturated hard gray fine sandy clay w/ some organic matter, trace of coarse sand and	A-4(5)	
				27	seashells.		
			81.0'		24" RECOVERY		
82.17							
		23	84.0'	18 26	Saturated hard gray fine sandy silt w/ some	A-4(0)	
			-	26	Surdraced hard gray the sundy she w/ solite	11 T(U)	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
84.66	. 109.000		Dopui	30 36		organic matter, trace of coarse sand and mica.		
			86.0'			16" RECOVERY		
87.15								
		24	89.0'	12 16		Saturated hard gray clayey fine sandy silt w/	A-4(0)	
89.64				12 16 17 23		some organic matter, trace of coarse sand, gravel, and mica.		
			91.0'			10" RECOVERY		
			91.0			IU KLCOVEKI		
92.13								
						DRAFT		
94.62	N	25	94.0'	12 13 14 17	KKKK	Saturated very stiff gray fine sandy silt, trace	A-4(0)	
				17		of organic matter and gravel.	DIN	IG
	-		96.0'	-		9" RECOVERY		
			Λ			DI ICT OO	15	
97.11						GUST 20	CI	
99.6		26	99.0'	12 15 18 23		Saturated hard gray fine sandy silt, trace of organic matter.	A-4(0)	
				23				
			101.0'			14" RECOVERY Boring terminated at 101.0 feet.		
102.09						bornig terminateu at 101.0 leet.		
104.58								
107.07								

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty low plasticity clay



Silty sand



Poorly graded sand with silt



Clayey sand



Poorly graded clayey silty sand



Low plasticity clay

Silt

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory boring was drilled on 3/20/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Surveyed boring locations and elevations were provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 725+39.99, 5' Lt. C.L.

orina Na B)3

Borin	g No.:	BR1-3-03
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Boring Surface Elev	28.40		Ref		
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel Ball Sampler	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Sten	3 1/4 n Auger:	Inches	From Depth of: From Depth of:	0.0' To: To:	59.0'
Water Level Readings Date 3/24/08	Time	Depth of Hole 12.0'	Depth of Casing 10.0'	Depth of Water 9.5'	Elev. of Water 18.9 28.4 28.4 28.4 28.4
Pay Quantities: 2 1/2 in. Dia. Dry S		: 100.0	Ft.; ³	Dia. U-Sample Borin	
No. of 2 in. Dia. Si 2 1/2 in. Dia. Cont		ring:	; No. of: Ft.; Core Drillir	U-Sample ng in Rock:	s: Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	- J 9	1	0.5'	7 8 10		Wet very stiff brown clayey coarse to fine sandy silt, trace of gravel.	A-4(0)	Topsoil - 4"; fill material.
			2.0'			8" RECOVERY		
2.49		2	2.0'	6 5 4 5		Wet stiff brown clayey coarse to fine sandy silf, trace of gravel. 19" RECOVERY	A-4(0)	Fill material.
4.98		3	4.0'	3 4 6 4		Wet loose brown clayey fine to coarse sand, trace of gravel	A-2-4(0)	Fill material.
7.47		4	6.0' 8.0'	2 4 3 6		Wet loose light brown coarse to fine sand and gravel w/ some clay. 13" RECOVERY	A-2-4(0)	Fill material.
9.96		5	8.0'	3 2 2 3		Saturated very loose orange silty fine sand, trace of coarse sand and gravel. 9" RECOVERY	A-2-4(0)	Fill material.
		6	10.0'	15 16 20 18		Saturated dense orange silty fine sand and gravel w/ some coarse sand.	A-2-4(0)	Fill material; geotextile in spoon.
12.45		7	12.0'	3 7 7 9		Saturated medium dense orange-brown fine sand w/ some silt and coarse sand, trace of gravel. 12" RECOVERY	A-2-4(0)	
		8	14.0'	5	198 19 998 8 198 19 998 8 198 197 198 19	Saturated medium dense orange-brown fine to	A-3	
Domo	rke Mud	Datam		÷		č –		

Remarks: Mud Rotary at 59.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
14.94				10 15	coarse sand, trace of silt and gravel.	
		9	16.0' 16.0'	4	20" RECOVERY	
		9	16.0	4 6 12 20	Saturated medium dense orange-brown fineA-2-4(0)sand w/ some coarse sand and silt, trace ofImage: Saturated medium dense	
17.43				20	gravel.	
			18.0'		24" RECOVERY	
		10	18.0'	20 19 26 27	Saturated dense orange-brown fine to coarse A-2-4(0)	
				27	sand w/ some silt, trace of gravel.	
19.92			20.01			
19.92			20.0'		24" RECOVERY	
22.41					DRAFT	
	N	11	24.0'	17 14 11 10	Saturated medium dense orange-brown fine to A-2-4(0) coarse sand w/ some silt, trace of gravel.	
24.9				10	coarse sand w some sin, frace of graver.	
			26.0'	-	20" RECOVERY	
			20.0			
					GUST 2015	
27.39						
		12	29.0'	10 7 9 10	Saturated medium dense orange-brown silty A-2-4(0)	
29.88				9 10	fine sand, trace of coarse sand.	
			31.0'		20" RECOVERY	
32.37						
		13	34.0'	6	Saturated loose orange-brown silty fine sand A-2-4(0)	
34.86				6 4 5 4	w/ some coarse sand, trace of gravel.	
			36.0'		24" RECOVERY	
37.35						

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
39.84		14	39.0' 41.0'	5 12 15 17	Saturated medium dense gray and brown fi sand w/ some silt and coarse sand, trace of gravel. 24" RECOVERY		
44.82		15	44.0' 46.0'	5 4 6 11	Saturated stiff gray clayey fine sandy silt, trace of coarse sand.	A-4(0)	
47.31	N	16	49.0'	5 7 8 12	Saturated medium dense gray clayey fine s w/ some coarse sand, trace of gravel.	and A-2-4(0)	IG
52.29			51.0'		24" RECOVERY)15	
54.78		17	54.0' 56.0'	4 6 7 8	Saturated medium dense gray clayey fine sand, trace of coarse sand. 24" RECOVERY	A-2-4(0)	
57.27		U-1	56.5' 57.8'		Saturated gray silty fine to coarse sand. 16" RECOVERY	A-2-4(0)	Press Sample - Shelby Tube.
		18	58.0'	5 6 7 7	Saturated medium dense gray clayey fine s w/ some coarse sand.	and A-2-4(0)	
			60.0'		24" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
62.25 64.74 67.23		19	64.0' 66.0'	6 9 9 11	Saturated medium dense gray silty fine sand, trace of coarse sand and gravel. A-2-4(0) 19" RECOVERY In the second sec	
69.72		20	69.0'	8 11 14 17	Saturated very stiff gray clayey fine sandy silt, trace of coarse sand and gravel. A-4(0) 24" RECOVERY 24" RECOVERY	
72.21				Т	ORBIDDING	6
74.7		21	74.0'	9 10 13 17	Saturated very stiff gray clayey fine sandy silt, trace of organic matter, coarse sand, and gravel.	
77.19			76.0'		20" RECOVERY	
79.68		22	79.0'	10 20 23 25	Saturated dense dark gray silty fine sand w/ A-2-4(0) some coarse sand, organic matter, and gravel.	
82.17						
84.66		23	84.0'	14 21 27 31	Saturated dense green silty fine sand, trace of coarse sand, organic matter, gravel, andA-2-4(0)Glauco	nitic.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(11.)	1 1091655		Берш		seashells.		
			86.0'		16" RECOVERY		
87.15							
89.64		24	89.0'	8 10 14 16	Saturated very stiff green-gray fine sandy silt w/ some clay, trace of coarse sand, organic	A-4(0)	Glauconitic.
				16	matter, and gravel.		
			91.0'		18" RECOVERY		
92.13							
94.62		25	94.0'	8 9 11 10	Saturated very stiff gray clay w/ some organic matter, trace of fine to coarse sand.	A-7-6(28)	
				10			IG
			96.0'		24" RECOVERY	ノニ	
97.11			Λ		NO TOIL	1 [
		26	98.0'	10 15 17 24	Saturated hard gray silty clay w/ some organic	A-7-6(29)	
				24	matter, trace of fine sand.		
99.6			100.0				
			100.0'		24" RECOVERY Boring terminated at 100.0 feet.		
102.09							
104.58							
107.07							

KEY TO SYMBOLS

Symbol Description

Strata symbols



Poorly graded clayey silty sand



Silty sand



Poorly graded sand with silt



Clayey sand



Low plasticity clay

High plasticity clay

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory boring was drilled on 3/24/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a ATV CME 55.
- Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Surveyed boring locations and elevations were provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 724+29.41, 20' Rt. C.L.

Boring I	No.:	BR1-3-0
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Boring Surface Elev.: 23.31		Re		
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Ba S-Sampler: U-Sampler: Ball Sar Core Bit:	O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	IN. IN. IN. IN. IN. IN.
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0' To:	49.0'
Water Level Readings Date Time 3/26/08	Depth of Hole 12.0'	Depth of Casing 10.0'	Depth of Water 8.7'	Elev. of Water 14.6 23.3 23.3 23.3
Pay Quantities: 2 1/2 in. Dia. Dry Sample E		Ft.; ³	Dia. U-Sample Borin	
No. of 2 in. Dia. Shelby Tu 2 1/2 in. Dia. Contin. Samp		; No. of: Ft.; Core Drillin	U-Sample ng in Rock:	s: Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers: J. Hillebrand

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
		1	0.5'	4 4 8		Wet stiff brown silt w/ some clay, trace of fine to coarse sand, gravel, and organic	A-4(2)	Topsoil - 3"; fill material.
			2.0'			matter. 15" RECOVERY		
2.49		2	2.0'	6 7 11 12		Wet very stiff brown clayey silt w/ some fine to coarse sand, trace of gravel.	A-4(3)	Fill material.
				12		to coarse said, frace of graver.		
			4.0'			9" RECOVERY		
		3	4.0'	3 8 8	HH	Wet very stiff brown silt w/ some coarse to	A-4(0)	Fill material.
4.98				8 10		fine sand and clay, trace of gravel.	15	
					TH			
			6.0'		HH	18" RECOVERY		
		4	6.0'	6 5 5 7		Wet stiff brown coarse to fine sandy silt w/	A-4(0)	Fill material.
				7		some clay, trace of gravel.		
7.47								
			8.0'			18" RECOVERY		
		5	8.0'	1 4 8 7		Saturated medium dense brown fine to coarse	A-2-4(0)	Fill material.
				7		sand w/ some clay, trace of gravel.		
9.96			10.0'			18" RECOVERY		
		6	10.0'	6 10 20 10		Saturated medium dense brown silty fine sand	A-2-4(0)	Fill material.
				10		w/ some gravel and coarse sand.		
			12.0'			24" RECOVERY		
12.45		7	12.0'	6 8 10		Saturated medium dense orange-brown fine to	A-2-4(0)	Fill material.
				10		coarse sand w/ some silt, trace of gravel.		
			14.0'			20" RECOVERY		
	ke Mud	8	14.0'	6 16		Saturated medium dense orange-brown fine to	A-2-4(0)	

Remarks: Mud Rotary at 49.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
14.94				8 9	coarse sand w/ some silt, trace of gravel.	
		9	16.0' 16.0'	6	18" RECOVERY	
		9	10.0	6 12 10 13	Saturated medium dense orange-brown fine to A-2-4(0) coarse sand w/ some silt, trace of gravel.	
17.43				10		
			18.0'		24" RECOVERY	
		10	18.0'	10 14 17 20	Saturated dense orange-brown fine sand w/ A-2-4(0) some coarse sand and silt.	
				20	some coarse sand and snt.	
19.92			20.0'		24" RECOVERY	
			20.0		24 RECOVERT	
22.41						
					DRAFT	
	_	11	24.0'	6		
24.9			24.0	6 6 8 10	Saturated medium dense orange-brown fine A-3	
		N (gravel. DDDD	NO I
	_		26.0'		16" RECOVERY	
27.39					GUST 2015	
21.55						
					1/3/10 139167 119167	
		12	29.0'	4 4 5 6	Saturated loose orange-brown fine sand w/A-3some coarse sand, trace of silt.	
29.88				б	initial some course said, frace of sitt.	
			31.0'		18" RECOVERY	
			-			
32.37						
		13	34.0'	5 6 6 9	Saturated medium dense orange-brown fine A-2-4(0)	
34.86				9	sand w/ some silt, trace of coarse sand, gravel, and seashells.	
			36.0'		16" RECOVERY	
			30.0			
37.35						

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
		14	39.0'	3	Saturated medium dense gray fine sand w/	A-2-4(0)	
39.84				3 6 6 7	some silt and coarse sand, trace of gravel.		
			41.0'		13" RECOVERY		
			41.0		IJ RECOVERT		
42.33							
44.82		15	44.0'	6 7 7 8	Saturated medium dense gray silty fine sand w/ some coarse sand, trace of gravel.	A-2-4(0)	
44.02				8	w/ some coarse sand, trace of graver.		
			46.0'		24" RECOVERY		
		U-1	46.5'		Saturated gray silty clayey fine to coarse sand	A-2-4(0)	Press Sample - Shelby Tube.
47.31					with a trace of gravel.		
			48.5'		24" RECOVERY		
		16	48.5'	4 5 5 7	Saturated loose gray clayey fine sand w/ some coarse sand, trace of gravel.	A-2-4(0)	
49.8							
			50.5'		21" RECOVERY	15	
52.29							
		17	53.5'	3	Saturated medium dense gray clayey fine	A-2-4(0)	
54.78				3 5 6 6	sand, trace of coarse sand and gravel.		
54.78			55.5'		18" RECOVERY		
			00.0				
57.27							
		18	59.0'	3			
59.76		10	39.0	3 4 5 6	Saturated loose gray silty fine sand w/ some coarse sand.	A-2-4(0)	
			61.0'		17" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
62.25	-					
64.74		19	64.0'	3 4 4 6	Saturated firm gray clayey fine sandy silt, A-4(0) trace of coarse sand and gravel.	
			66.0'		20" RECOVERY	
67.23		U-2	66.5'		Saturated gray fine sand w/ some silt, trace of A-2-4(0) gravel.	Press Sample - Shelby Tube.
69.72		20	68.5' 68.5' 70.5'	4 8 14 26	11" RECOVERY Saturated medium dense gray silty fine sand, trace of coarse sand and gravel. 21" RECOVERY	
72.21	N		О.	T	FOR BIDDIN	١G
74.7		21	74.0'	10 14 14 15	Saturated very stiff gray clayey fine sandy A-4(1) silt, trace of coarse sand.	
			76.0'		20" RECOVERY	
77.19						
79.68		22	79.0'	10 13 23 31	Saturated hard dark gray fine sandy silt, trace A-4(0) of coarse sand.	
			81.0'		24" RECOVERY	
82.17						
84.66		23	84.0'	10 20 33 42	Saturated very dense green silty fine sand, trace of organic matter, gravel, and coarseA-2-4(0)	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
					sand.		
			86.0'		20" RECOVERY		
87.15							
		24	89.0'	10 12 26 29	Saturated hard green fine sandy silt, trace of	A-4(0)	
89.64				26 29	organic matter, coarse sand, and gravel.		
			91.0'		24" RECOVERY		
92.13							
		25	94.0'	8			
94.62		25	94.0	8 9 12 17	Saturated very stiff gray clay w/ some organic matter, trace of fine to coarse sand.	A-7-6(19)	
						JIN	lG
			96.0'	-	24" RECOVERY		
97.11			Δ		GUIST 20	15	
		26	98.0'	8 9 15 17	Saturated very stiff gray clay w/ some organic	A-7-6(26)	
				15 17	matter, trace of fine sand and gravel.		
99.6			100.0'		24" RECOVERY		
					Boring terminated at 100.0 feet.		
102.09							
104.58							
107.07							

KEY TO SYMBOLS

Symbol Description

Strata symbols

Silty low plasticity clay

Poorly graded clayey silty sand



Silty sand

Poorly graded sand with silt



Clayey sand

Low plasticity clay

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory boring was drilled on 3/26/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 75.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Surveyed boring locations and elevations were provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 722+94.26, 5' Lt. C.L.

orina M B)5

Soring N	NO.:	BR1-3-05
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Boring Surface Ele	EV.: 31.00		Ref		
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0' To: To:	51.0'
Water Level Readings Date 3/24/08	Time	Depth of Hole 16.0'	Depth of Casing 14.0'	Depth of Water 13.4'	Elev. of Water 17.6 31.0 31.0 31.0 31.0
Pay Quantities: 2 1/2 in. Dia. Dry		: 101.0	Ft.; ³	Dia. U-Sample Bo	
No. of 2 in. Dia. 2 1/2 in. Dia. Cor		ring:	; No. of: Ft.; Core Drillir	U-Samp ng in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: D. Zmijewski

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
		1	0.5'	3 8 4	Wet stiff brown clayey silt w/ some fine to coarsesand, trace of gravel.	A-4(2)	Topsoil - 5"; fill material.
			2.0'		10" RECOVERY		
2.49	N	2	2.0'	5 6 4 6	Wet stiff brown clayey fine sandy silt w/ some coarse sand, trace of gravel.	A-4(1)	Fill material.
			4.0'		9" RECOVERY		9
		3	4.0'	2 3	Wet firm brown clayey silt w/ some fine sand,	A-4(5)	Fill material.
4.98			6.0'	24	trace of coarse sand and gravel.	15	
		4	6.0'	7 5 4 5	Wet stiff brown silt w/ some coarse to fine sand, trace of gravel.	A-4(0)	Fill material.
7.47			8.0'		16" RECOVERY		
		5	8.0'	1 1 5 7	Wet loose brown-orange clayey fine to coarse sand w/ some gravel.	A-2-4(0)	Fill material.
9.96			10.0'		17" RECOVERY		
		6	10.0'	7 10 7 10	Wet medium dense brown-orange silty fine to coarse sand, trace of gravel.	A-2-4(0)	
			12.0'		21" RECOVERY		
12.45		7	12.0	4	Saturated loose brown fine sand w/ some silt,	A-2-4(0)	
12.45				4 3 5 7	trace of coarse sand and gravel.	11 2 7(0)	
			14.0'		21" RECOVERY		
		8	14.0	W/R	Saturated loose brown fine sand w/ some silt	A-2-4(0)	
Bomo	rke: Mud	Datam	L				

Remarks: Mud Rotary at 51.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
14.94				5 5		and coarse sand, trace of gravel.		
			16.0'			20" RECOVERY		
		9	16.0'	4 6 8 12	1217121 6111226 611226	Saturated medium dense brown fine to coarse sand w/ some silt.	A-2-4(0)	
17.10				12	1001111100 100111100 100111100	sand w/ some sitt.		
17.43			18.0'		nic saliter. NGS (ANGE Nic 13 Succ Nic 13 Succ	21" RECOVERY		
		10	18.0'	4 4		Saturated medium dense brown fine sand w/	A-2-4(0)	
				4 4 8 9		some silt and coarse sand.		
19.92			20.0'			17" RECOVERY		
22.41								
						DRAFT		
	_	4_1	24.0'	3				
24.9			24.0	3 5 5 6		Saturated loose brown silty fine sand w/ some coarse sand, trace of gravel.	A-2-4(0)	
24.9		N (0			ノロ	
	-	-	26.0'			17" RECOVERY		-
						GUST 20	15	
27.39								
		12	29.0'	5 4 4 5	4.14)446 4.14)446 4.14)446 4.14)446	Saturated loose brown fine sand w/ some	A-3	
29.88				4 5	1919996 19171921 19171921 1919966 1919966	coarse sand, trace of silt and gravel.		
					1997 (1997) (1997) 1997 (1996) 1997 (1997) (1997) 1997 (1997) (1997)			
			31.0'			12" RECOVERY		
32.37					11111111111111111111111111111111111111			
					CELLER CELLER CELLER			
					1961 / 1996 1963 / 1966 1963 / 1966 1963 / 1966			
					utiitiiti veraace uutiut			
		13	34.0'	5 6 2 1	16133366 2017260 2017260	Saturated loose brown fine sand w/ some	A-3	
34.86				Ī	6693,4967, 1009333,000 1009433,666 200933,000	coarse sand, trace of silt.		
					664))))) 1963),1967, 1963),1967,			
			36.0'		1969 9 996 C Dan Turin 464 9 996 C 196 Dan Sec	13" RECOVERY		
37.35								

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
		14	39.0'	9	Saturated medium dense brown fine sand w/	A-2-4(0)	
39.84				9 12 15 20	some silt and coarse sand, trace of gravel.		
			41.0'		22" RECOVERY		
42.33							
42.55							
		15	44.0'	5	Saturated medium dense gray fine sand w/	A-2-4(0)	
44.82				5 6 6 14	some silt and coarse sand, trace of gravel.		
			46.0'		18" RECOVERY		
			40.0				
47.31		U-1	47.0'		Saturated gray silty sand with a trace of	A-4(0)	Press sample - Shelby Tube.
			.		coarse sand.		
			48.5'		18" RECOVERY	UII	NG
40.0	_	16	49.0'	2 2 7	Saturated loose gray clayey fine sand w/ some	A-2-4(0)	
49.8			Λ	10	coarse sand, trace of gravel.	15	
			51.0'		21" RECOVERY	CI	
52.29							
54.78		17	54.0'	9 10 11 11	Saturated medium dense gray clayey fine sand w/ some coarse sand, trace of gravel.	A-2-4(0)	
			56.0'		24" RECOVERY		
57.27							
		18	59.0'	5	Soturotod modium dance cree down fi		
59.76		10	09.0	5 4 7 7	Saturated medium dense gray clayey fine sand w/ some coarse sand.	A-2-6(0)	
			61.0'		24" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
62.25							
02.20							
		19	64.0'	4	Saturated stiff gray clayey fine sandy silt,	A-4(0)	
64.74			00	4 6 6 8	trace of coarse sand and gravel.	A-4(0)	
			66.0'		23" RECOVERY		
67.23							
07.25							
		20	69.0'	6	Saturated medium dense gray silty fine sand,	A-2-4(0)	
69.72		_•		6 6 10 12	trace of coarse sand and gravel.	A-2-4(0)	
			71.0'		22" RECOVERY		
72.21					OR BID		
		21	74.0'	11	Saturated very stiff gray clayey fine sandy	A-4(1)	
74.7				11 8 8 12	silt, trace of coarse sand.	73-4(1)	
			76.0'		24" RECOVERY		
77.19							
		22	79.0'	10	Saturated medium dense dark gray clayey fine	A-2-4(0)	
79.68			-	10 10 10 22	sand, trace of organic matter, coarse sand,	11 2 T(U)	
					gravel, and seashells.		
			81.0'		23" RECOVERY		
82.17							
		23	84.0'	11	Saturated dense dark green silty fine sand,	A-2-4(0)	Glauconitic.
84.66				11 17 27 36	trace of organic matter and coarse sand.	n-2 - 4(0)	Glaucolinite.

PAGE 5 OF 5

STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
			86.0'		18" RECOVERY
87.15					
89.64		24	89.0' 91.0'	6 9 12 17	Saturated medium dense dark green clayey A-2-4(0) Glauconitic. fine sand, trace of organic matter and coarse sand. 24" RECOVERY Glauconitic.
92.13			51.0		DRAFT
94.62		25	94.0' 96.0'	688	Saturated very stiff dark green silty clay w/ some organic matter, trace of fine to coarse sand and gravel. 24" RECOVERY
97.11			A		GUST 2015
99.6		26	99.0' 101.0'	6 9 9 11	Saturated very stiff dark green silty clay w/ some fine sand and organic matter, trace of coarse sand.A-7-6(18)Pocket penetrometer = 3.2524" RECOVERY24" RECOVERY
102.09					Boring terminated at 101.0 feet.
104.58					
107.07					

KEY TO SYMBOLS

Symbol Description

Strata symbols

Silty low plasticity clay Low plasticity

Silt

clay



Poorly graded clayey silty sand



Silty sand

Poorly graded sand with silt



Clayey sand



clay

DRAFT High plasticity NOT FOR BIDDING **AUGUST 2015**

Notes:

- 1. Exploratory boring was drilled on 3/24/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Boring elevation was obtained from Figure A-2, Structure BR1-3 Exploration Plan.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 721+66.66, 35' Rt. C.L.

Boring No 6

Boring I	lo.: 1	BR1-3-06
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Boring Surface Elev.: 31.00		Ref	erence:	
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Ball Sampler Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	N. N. N. N. N. N.
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0' To: To:	49.0'
Water Level Readings Date Time 3/28/08	Depth of Hole 10.0'	Depth of Casing 8.0'	Depth of Water 6.0'	Elev. of Water 25.0 31.0 31.0 31.0 31.0
Pay Quantities: 2 1/2 in. Dia. Dry Sample Boring	100.0	Ft.; 3	Dia. U-Sample Boring	
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Bo	ring:	; No. of: Ft.; Core Drillir	U-Samples ng in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
		1	0.5'	5 6 6	Wet stiff brown clayey silt w/ some fine to coarse sand, trace of gravel.	A-4(3)	Topsoil - 4"; fill material.
			2.0'	6	12" RECOVERY		
2.49		2	2.0'	6 5 4	Wet loose orange silty fine to coarse sand, trace of gravel. 12" RECOVERY	A-2-4(0)	Fill material.
	_	2A	3.5' 4.0'	4	Wet soft gray clayey fine to coarse sandy silt,	A-4(2)	Fill material.
		3	4.0'	2 2 2 3	trace of gravel.	A-6(8)	Fill material.
4.98			6.0'	VU	Wet soft brown clay, trace of coarse to fine sand. 19" RECOVERY	15	
7.47		4	6.0'	2 17 17 20	Saturated hard brown clay w/ some coarse to fine sand, trace of gravel.	A-6(6)	Fill material; rock in spoon.
1.41			8.0'		8" RECOVERY		
		5	8.0'	5 6 7 7	Saturated medium dense orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
9.96			10.0'		19" RECOVERY		
		6	10.0'	4 8 11 8	Saturated medium dense orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
			12.0'		18" RECOVERY		
12.45		7	12.0'	W/R 1 2 3	Saturated very loose orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
		8	14.0' 14.0'	1	13" RECOVERY		
	nko. Mud	÷	14.0	1	Saturated loose orange fine to coarse sand w/ $\hfill \hfill \hf$	A-2-4(0)	

Remarks: Mud Rotary at 49.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Rema	arks
14.94				5 6	some silt, trace of gravel.	
		9	16.0' 16.0'	5	16" RECOVERY	
		Э	10.0	5 6 6 6	Saturated medium dense orange fine sand w/ $A-2-4(0)$ some coarse sand and silt, trace of gravel.	
17.43						
			18.0'		16" RECOVERY	
		10	18.0'	1 5 6 7	Saturated medium dense orange fine sand w/ A-2-4(0)	
				7	some coarse sand and silt, trace of gravel.	
19.92			20.0'		13" RECOVERY	
10.02			20.0			
22.41						
				2		
	N		24.0'	3 6 10 11	Saturated medium dense orange fine sand w/ A-2-4(0) some coarse sand and silt, trace of gravel.	
24.9				11		
	-		26.0'		10" RECOVERY	
					J GUST 2015	
27.39						
		12	29.0'	5 6 10 14	Saturated medium dense orange fine sand w/ A-2-4(0)	
29.88				14	some coarse sand and silt, trace of gravel.	
			24.0			
			31.0'		17" RECOVERY	
32.37						
		13	34.0'	76	Saturated medium dense brown fine to coarse A-2-4(0)	
34.86				7 6 7 6	sand w/ some silt.	
			36.0'		15" RECOVERY	
37.35						

PAGE 3 OF 5

STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
39.84		14	39.0' 41.0'	8 5 8 9	Saturated medium dense brown fine sand w/ some silt, trace of coarse sand and gravel. 18" RECOVERY	A-2-4(0)	
42.33							
44.82		15	44.0'	5 8	Saturated medium dense brown fine sand w/ some silt and coarse sand.	A-2-4(0)	
47.31		15A	45.0' 45.0' 46.0'	7 10	7" RECOVERY Saturated medium dense gray silty fine sand w/ some coarse sand, trace of gravel. 12" RECOVERY	A-2-4(0)	
49.8	ľ	U-1	49.0'	Τ	No Recovery.		Press Sample - Shelby Tube.
52.29			51.0'	U	0" RECOVERY	15	
		- 10	54.01				
54.78		16	54.0'	5 7 13 15	Saturated medium dense gray fine sand w/ some clay and coarse sand, trace of gravel.	A-2-4(0)	
			56.0'		22" RECOVERY		
57.27							
59.76		17	59.0'	5 4 6 8	Saturated stiff gray clayey fine sandy silt w/ some coarse sand.	A-4(0)	
			61.0'		24" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
62.25 64.74 67.23		18	64.0' 66.0'	6 7 10 13	Saturated medium dense gray silty fine sand, trace of coarse sand and gravel. 24" RECOVERY
<u>69.72</u> 		19	69.0' 71.0'	9 12 16 24	Saturated medium dense gray silty fine sand, trace of coarse sand and gravel. 23" RECOVERY ORBDDDIG
74.7		20	74.0' 76.0'	8 9 11 14	Saturated very stiff gray and green fine sandy clay, trace of coarse sand. A-6(2) Glauconitic. 24" RECOVERY
79.68		21	79.0' 81.0'	8 13 14 16	Saturated very stiff dark green clayey fine sandy silt, trace of gravel, organic matter, and coarse sand. A-4(0) Glauconitic. 24" RECOVERY 400 A-4(0) Glauconitic.
82.17		22	84.0'	16 24 34 50/5"	Saturated very dense dark green silty fine sand, trace of coarse sand and organic matter. A-2-4(0) Glauconitic.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
87.15			86.0'		22" RECOVERY	
89.64		23	89.0' 91.0'	11 12 16 21	Saturated very stiff dark green fine sandy silt A-4(0) Glauconitic. w/ some clay, trace of organic matter and coarse sand. 23" RECOVERY Glauconitic.	
92.13					DRAFT	
94.62		24 24A	94.0' 94.5' 94.5' 96.0'	9	Saturated loose dark green silty fine sand, trace of coarse sand, organic matter, and gravel. 6" RECOVERY Saturated hard gray clay w/ some organic matter and fine sand. 18" RECOVERY	
97.11				10	GUST 2015	
99.6		25	98.0' 100.0'	10 9 14 15	Saturated very stiff gray silty clay w/ some organic matter, trace of fine sand. A-7-6(30) 24" RECOVERY A-7-6(30)	
					Boring terminated at 100.0 feet.	
102.09						
104.58						
107.07						

KEY TO SYMBOLS

Symbol Description

Strata symbols



Low plasticity clay



Silty sand



Silty low plasticity clay



Poorly graded sand with silt



Poorly graded clayey silty sand



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory boring was drilled on 3/28/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a ATV CME 55.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Boring elevation was obtained from Figure A-2, Structure BR1-3 Exploration Plan.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 720+42.99, 5' Lt. C.L.

Boring l	No.:	BR1-3-0
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Boring Surface Ele	V.: 30.00		Ref		
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel Ball Sampler	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Ster	3 1/4 n Auger:	Inches	From Depth of: From Depth of:	0.0' To: To:	54.0'
Water Level Readings Date 4/2/08	Time	Depth of Hole 14.0'	Depth of Casing 12.0'	Depth of Water 11.2'	Elev. of Water 18.8 30.0 30.0 30.0
Pay Quantities: 2 1/2 in. Dia. Dry		: 100.0	Ft.; 3	Dia. U-Sample Bori	
No. of 2 in. Dia. S 2 1/2 in. Dia. Con		ring:	; No. of: Ft.; Core Drillir	U-Sample ng in Rock:	es: Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers: J. Hillebrand

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
		1	0.5'	4 4 8	Visual Description: Wet firm brown clayey silt w/ sand.	No sieve analysis; ; Topsoil - 6"; fill material.
			2.0'		2" RECOVERY	
2.49		2	2.0'	4 5 5 7	No Sample Recovery	
			4.0'	7		NG
		3	4.0'	3 6	Wet very stiff brown coarse to fine sandy silt, A-4(0)	Fill material.
4.98			6.0'	14 12	trace of gravel. 2015	
		4	6.0'	4 5 5 8	Wet loose brown silty coarse to fine sand,A-2-4(0)	Fill material.
				5 8	trace of gravel.	
7.47						
			8.0'		18" RECOVERY	
		5	8.0'	3 4 4 4	Wet loose brown coarse to fine sand w/ someA-1-bsilt, trace of gravel.	
9.96		6	10.0' 10.0'	2	15" RECOVERY	
		0	10.0	2 4 4 4	Saturated loose orange-brown coarse to fineA-2-4(0)sand w/ some silt, trace of gravel.	
				4	sund w/ some sit, trace of graver.	
		7	12.0'	5	24" RECOVERY	
12.45			12.0'	5 5 6 7	Saturated medium dense orange-brown coarse A-2-4(0) to fine sand w/ some silt, trace of gravel.	
				7	faith the same w/ some sitt, trace of graver.	
			14.0'	10	24" RECOVERY	
Ļ	rks: Mud	8	14.0'	12 5	Saturated medium dense orange-brown fine to A-2-4(0)	

Remarks: Mud Rotary at 54.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
14.94	1 1091000		Dopin	6 12	coarse sand w/ some silt, trace of gravel.		
			16.0'		13" RECOVERY		
		9	16.0'	8 7 8 9	Saturated medium dense orange-brown coarse to fine sand and gravel.	A-1-b	
17.40				9	to fine sand did gravel.		
17.43			18.0'		24" RECOVERY		
		10	18.0'	14 9 14 16	Saturated medium dense orange-brown coarse	A-1-b	
				14 16	to fine sand w/ some silt, trace of gravel.		
19.92			20.0'		24" RECOVERY		
22.41							
					DRAFT		
		11	24.0'	26 20	Saturated dense brown coarse to fine sand w/	A-1-b	
24.9				26 20 16 12	some silt and gravel.		
			26.0'		20" RECOVERY		
			Λ		GUST 20	15	
27.39							
		40	20.0	15			
		12	29.0'	15 5 14 17	Saturated medium dense brown fine sand w/ some coarse sand and silt, trace of gravel.	A-2-4(0)	
29.88				17	some course said and shi, trace of graver.		
			31.0'		12" RECOVERY		
			01.0				
32.37							
		13	34.0'	14 8 11 9	Saturated medium dense brown fine sand w/	A-2-4(0)	
34.86				11 9	some coarse sand and silt, trace of gravel.		
			36.0'		16" RECOVERY		
37.35							

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
39.84		14	39.0'	12 7 3 10		Saturated loose brown fine sand w/ some coarse sand, trace of silt.	A-3	
			41.0'		446 3 7 3 3 6 1 1 2 3 3 7 3 6 6 1 2 3 4 4 1 5 6 7 1 2 5 4 4 4 1 5 6 7 1 2 5 4 4 4 1 5 6 7 1 2 5 4 4 4 1 5 6 7 1 2 5 4 4 4 4 5 6 7 1 2 5 4 4 4 4 5 6 7	14" RECOVERY		
42.33					1993 1999 6 1993 1996 6 1993 1997 9 1993 1997 9 2003 1997 9 1993 1997 6 1993 1997 6 1993 1997 6 1993 1997 6 1993 1997 9 1993 1997 9			
					1217252 12172521 1213212 1213212 1213212 1213212 1213212 1213212 12132 12132 1212			
44.82		15	44.0'	11 13 13 16		Saturated medium dense gray-brown silty fine sand, trace of coarse sand and gravel.	A-2-4(0)	
47.31			46.0'			24" RECOVERY		
		16	49.0'	5		OR BIDI		IG
49.8		16	49.0	5 9 11 13		Saturated medium dense gray silty fine sand w/ some coarse sand, trace of gravel.	A-2-4(0)	
52.29		U-1	51.0'			Saturated gray silty clayey fine to coarse sand with a trace of gravel.	A-2-4(0)	Press Sample - Shelby Tube.
			52.8'			22" RECOVERY		
54.78		17	54.0'	4 4 5 8		Saturated stiff gray clayey fine sandy silt, trace of coarse sand and gravel.	A-4(0)	
			56.0'			24" RECOVERY		
57.27								
59.76		18	59.0'	5 10 15 18		Saturated very stiff gray clayey fine sandy silt w/ some coarse sand, trace of gravel.	A-4(0)	
			61.0'			20" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
62.25 64.74		19	64.0'	5 7 8 10	Saturated medium dense gray clayey fine sand w/ some coarse sand. A-2-4(0) 19" RECOVERY 19" RECOVERY	
67.23						
69.72		20	69.0' 71.0'	4 9 11 13	Saturated very stiff gray fine sandy silt w/ A-4(0) some clay, trace of coarse sand and gravel. 20" RECOVERY	
72.21			D.	T	FOR BIDDING	3
74.7		21	74.0'	12 12 15 16	Saturated medium dense gray silty fine sand, A-2-4(0) trace of coarse sand.	
77.19			76.0'		18" RECOVERY	
79.68		22	79.0' 81.0'	10 11 15 17	Saturated very stiff gray fine sandy silt w/ A-4(0) some clay, trace of organic matter, gravel, and coarse sand. 24" RECOVERY	
84.66		23	84.0'	8 11 15 19	Saturated very stiff dark green fine sandy silt, trace of organic matter, coarse sand, and A-4(0) Glauce	nitic.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
	1 1091000		Dopui		gravel.	
			86.0'		19" RECOVERY	
87.15						
00.04		24	89.0'	8 12 21 24	Saturated hard dark green fine sandy silt, A-4(0) Glauconitic.	
89.64				21 24	trace of organic matter and coarse sand.	
			91.0'		15" RECOVERY	
			91.0			
92.13						
		25	94.0'	7	Saturated very stiff dark green fine sandy silt A-4(0) Glauconitic.	
94.62				7 10 15 19	w/ some organic matter, trace of coarse sand.	
			96.0'		20" RECOVERY	
97.11						
		26	98.0'	10 13 16 19	Saturated medium dense dark green silty fine A-2-4(0) Glauconitic.	
				16 19	sand, trace of organic matter rand coarse sand.	
99.6			100.0		19" RECOVERY	
			100.0'		19" RECOVERY Boring terminated at 100.0 feet.	
102.09						
104.58						
107.07						

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silt

Silty sand



Poorly graded sand with silt



Poorly graded clayey silty sand



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- Exploratory boring was drilled on 4/2/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 75.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Boring elevation was obtained from Figure A-2, Structure BR1-3 Exploration Plan.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 718+66.33, 89' Rt. C.L.

Boring No.: BR1-3-08

Boring Surface Ele	V.: 30.00		Ret		
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0' To: To:	74.0'
Water Level Readings Date 3/31/08	Time	Depth of Hole 14.0'	Depth of Casing 12.0'	Depth of Water 10.0'	Elev. of Water 20.0 30.0 30.0 30.0 30.0
Pay Quantities: 2 1/2 in. Dia. Dry		100.0	Ft.; 3	Dia. U-Sample Boring	
No. of 2 in. Dia. S 2 1/2 in. Dia. Con		ing:	; No. of: Ft.; Core Drillin	U-Samples ng in Rock:	s: Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers: J. Hillebrand

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
		1	0.5'	2 7 8		Wet stiff brown clayey coarse sandy silt w/ some fine sand, trace of gravel.	A-4(1)	Topsoil - 3"; fill material.
			2.0'			18" RECOVERY		
2.49		2	2.0'	14 19 22 24		Wet hard brown and dark brown clayey	A-4(0)	Fill material.
	N			22 24		coarse to fine sandy silt, trace of gravel.		
			4.0'	-		20" RECOVERY		
		3	4.0'	8 12 20 17		Wet hard brown clayey coarse to fine sandy	A-4(1)	Fill material.
4.98				20 17		silt, trace of gravel.	1 5	
			6.0'			18" RECOVERY		
		4	6.0'	9 7 4		Wet medium dense brown silty fine to coarse	A-2-4(0)	Fill material.
				4		sand, trace of gravel.		
7.47								
			8.0'			16" RECOVERY		
		5	8.0'	1 2 3 4		Wet loose light brown coarse to fine sand,	A-1-b	
				4	1:1:1:1:1:1:1:1: 1:1:1:1:1:1:1:1:1:1:1:	trace of gravel and silt.		
9.96			10.0'		1:1:1:1:1:1:1:1: 1:1:1:1:1:1:1:1:1: 1:	12" RECOVERY		
		6	10.0'	2 4 6 8		Saturated loose light brown fine to coarse	A-2-4(0)	
				8		sand w/ some silt, trace of gravel.		
			12.0'			24" RECOVERY		
12.45		7	12.0'	2 2 4 5		Saturated loose orange-brown fine to coarse	A-2-4(0)	
				5		sand w/ some silt, trace of gravel.		
			14.0'			18" RECOVERY		
	rke : Mud	8	14.0'	7 4		Saturated loose orange-brown fine to coarse	A-2-4(0)	

Remarks: Mud Rotary at 74.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
14.94				6 6	sand w/ some silt, trace of gravel.		
			16.0'		12" RECOVERY		
		9	16.0'	8 10 10 17	Saturated medium dense orange-brown fine to coarse sand w/ some gravel and silt.	A-2-4(0)	
17.40				17	coarse sand w/ some graver and site.		
17.43			18.0'		24" RECOVERY		
		10	18.0'	12 10 12 17	Saturated medium dense orange-brown fine to	A-2-4(0)	
				12 17	coarse sand w/ some silt, trace of gravel.		
19.92			20.0'		24" RECOVERY		
22.41							
					DRAFT		
		<u>1</u> 1	24.0'	10	Saturated dense orange-brown silty fine sand	A-2-4(0)	
24.9				10 20 22 25	w/ some gravel and coarse sand.		
		N V					
			26.0'		17" RECOVERY		
			Λ				
27.39					GUST 20	15	
21.39							
		12	29.0'	5 10 13 15	Saturated medium dense fine sand w/ some	A-2-4(0)	
29.88				15	silt and coarse sand, trace of gravel.		
			31.0'		24" RECOVERY		
32.37							
		13	34.0'	9	Saturated medium dense brown fine sand w/	A-3	
34.86			20	9 11 13 14	some coarse sand trace of silt and gravel	A-3	
					1999 999 999 Data Tayar 19 Hara Jayar 6		
			36.0'		HIAINE MIANE HIJJIEL 15" RECOVERY		
07.05							
37.35							

PAGE 3 OF 5

STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
(11.)	1 1091833		Берш		() 			
		44	20.01	9		Ê l		
39.84		14	39.0'	8 16 13 15		Saturated medium dense brown fine sand w/ some silt and coarse sand, trace of gravel.	A-2-4(0)	
			41.0'			24" RECOVERY		
42.33								
44.82		15	44.0'	12 22 20 20		Saturated dense gray silty fine sand, trace of coarse sand.	A-2-4(0)	
				20				
			46.0'			14" RECOVERY		
47.31								
	N							
							ノル	NG
40.0		16	49.0'	8 15 22 <mark>2</mark> 6		Saturated dense gray silty fine sand, trace of	A-2-4(0)	
49.8			Λ	26		coarse sand.	15	
			51.0'		1	24" RECOVERY	CI	
			_					
52.29								
		17	54.0'	9 10 11 17		Saturated medium dense gray silty fine sand,	A-2-4(0)	
54.78				11 17		trace of coarse sand and gravel.		
			56.0'			24" RECOVERY		
			00.0					
57.27								
		18	59.0'	9 4		Saturated medium dense gray silty fine sand	A-2-4(0)	
59.76				9 4 11 21		w/ some coarse sand, trace of gravel.		
			64.0					
			61.0'			24" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
62.25						
		19	64.0'	9 10 13 22	Saturated medium dense gray clayey fine sand A-2-4(0)	
64.74				13 22	w/ some coarse sand.	
			66.0'		24" RECOVERY	
67.23						
69.72		20	69.0'	4 6 9 9	Saturated medium dense gray clayey fine sand A-2-4(0) w/ some coarse sand, trace of gravel.	
				3		
			71.0'		24" RECOVERY	
72.21						
12.21		U-1	72.0'		Saturated gray fine sand w/ some silt, trace of A-4(0) gravel.	Press Sample - Shelby Tube.
			73.3'		15" RECOVERY	
		21	74.0'	7	Saturated medium dense gray clayey fine A-2-6(0)	
74.7				7 9 13 17	sand, trace of coarse sand.	
			76.0'		24" RECOVERY	
			. 0.0			
77.19						
79.68		22	79.0'	6 7 14 16	Saturated very stiff gray clayey fine sandy organic silt, trace of coarse sand and gravel.	
				16		
			81.0'		20" RECOVERY	
00 47						
82.17						
		23	84.0'	6	Saturated very stiff gray clayey fine sandy A-4(1)	
84.66				6 12 16 17	silt, trace of organic matter, coarse sand, and	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
(ft.)	Progress	140.	Depth	510 10 0	(] []]]]]	gravel.	01000.70.1.	Romano
			86.0'			24" RECOVERY		
07.45								
87.15								
		24	89.0'	10		Saturated very dense dark gray silty fine sand,	A-2-4(0)	
89.64				10 24 34 47		trace of coarse sand and organic matter.		
			91.0'			17" RECOVERY		
92.13								
		25	94.0'	14			A 4/0	
94.62		23	94.0	14 16 15 15		Saturated hard dark gray fine sandy silt, trace of organic matter, coarse sand, and gravel.	A-4(0)	
				10				
			96.0'			16" RECOVERY		
97.11			Λ					
						っしろ トノロ	15	
		26	98.0'	17 15 23 20		Saturated hard dark gray fine sandy silt, trace	A-4(0)	
				23 20		of organic matter, coarse sand, and gravel.		
99.6								
			100.0'			18" RECOVERY Boring terminated at 100.0 feet.		
						bornig terminated at 100.0 reet.		
102.09								
104.58								
104.00								
107.07								

KEY TO SYMBOLS

Symbol Description

Strata symbols



Low plasticity clay



Clayey sand



Silty sand



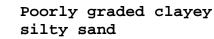
Well graded sand



with silt



Poorly graded sand with silt



DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory boring was drilled on 3/31/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 75.
- Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Boring elevation was obtained from Figure A-2, Structure BR1-3 Exploration Plan.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 716+88.76, 78' Lt. C.L.

Poring Surfa _.

Boring I	lo: 1	3R1-3-09
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Boring Surface Elev	30.00		Ref	erence:	
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel Ball Sampler	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	IN. IN. IN. IN. IN.
Casing Size: Hollow Stem	3 1/4 Auger:	Inches	From Depth of: From Depth of:	0.0' To: To:	54.0'
Water Level Readings Date 4/7/08	Time	Depth of Hole 14.0'	Depth of Casing 12.0'	Depth of Water 10.0'	Elev. of Water 20.0 30.0 30.0 30.0 30.0
Pay Quantities: 2 1/2 in. Dia. Dry S		98.5	Ft.; 3	Dia. U-Sample Borin	
No. of 2 in. Dia. Sh 2 1/2 in. Dia. Conti		ing:	;	U-Samples ng in Rock:	S: Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
		1	0.5'	6 12 13	Moist medium dense orange silty coarse sand w/ some fine sand and gravel.	A-1-b	Topsoil - 6".
			2.0'		16" RECOVERY		
2.49		2	2.0'	9775	Moist medium dense orange coarse to fine sand w/ some silt, trace of gravel. 20" RECOVERY	A-1-b	IG
		3	4.0'	2 3 5 5	Moist loose orange fine to coarse sand w/	A-2-4(0)	
4.98			6.0'	5	some silt, trace of gravel. 20	15	
		4	6.0'	4 5 4 5	Moist loose orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
7.47			8.0'		21" RECOVERY		
		5	8.0'	2 3 4 6	Wet loose orange coarse to fine sand w some silt, trace of gravel.	A-2-4(0)	
9.96			10.0'		16" RECOVERY		
		6	10.0'	7 5 4 3	Wet loose orange coarse to fine sand w/ some silt, trace of gravel.	A-1-b	
			12.0'		 10" RECOVERY		
12.45		7	12.0'	2 2 5 11	Saturated loose orange coarse to fine sand w/ some silt, trace of gravel.	A-1-b	
		8	14.0' 14.0'	4	12" RECOVERY	A 1 L	
L	ke. Mud	-	14.0	4 13	Saturated dense brown coarse sand and gravel	A-1-b	

Remarks: Mud Rotary at 54.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
14.94	1 1091000		Dopin	18 10	w/ some fine sand and silt.		
			16.0'		10" RECOVERY		
		9	16.0'	3 4 7 9	Saturated medium dense brown coarse to fin sand w/ some silt, trace of gravel.	e A-2-4(0)	
17.43				9	Sand II, Some Sit, flace of glavel.		
17.45			18.0'		15" RECOVERY		
		10	18.0'	4 6 10 14	Saturated medium dense brown fine to coars	e A-2-4(0)	
				10	sand w/ some silt, trace of gravel.		
40.00							
19.92			20.0'		14" RECOVERY		
22.41					DRAFT		
		11	24.0'	13 14 14 18	Saturated medium dense brown fine sand w/	A-2-4(0)	
24.9		N (18	some coarse sand and silt, trace of gravel.		
			26.0				
			26.0'		16" RECOVERY		
					GUST 20	115	
27.39							
		12	29.0'	2 2 6 8	Saturated loose brown fine sand w/ some	A-2-4(0)	
29.88				6 8	coarse sand and silt, trace of gravel.		
			31.0'		12" RECOVERY		
32.37							
		13	34.0'	8	Saturated medium dense brown fine sand w/	A-3	
34.86				8 6 8 11	some coarse sand, trace of silt and gravel.		
					11/3/10 13/3/00 11/3/00 11/3/00 13/3/00		
			36.0'		21" RECOVERY		
37.35							

PAGE 3 OF 5

STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
					C 6 9 10:00 12:			
39.84		14	39.0' 41.0'	9 6 14 11		Saturated medium dense brown fine sand w/ some silt and coarse sand. 17" RECOVERY	A-2-4(0)	
42.33		- 15	44.0	5				
44.82		15	44.0' 45.0'	5 20		Saturated medium dense brown fine sand w/ some coarse sand, trace of silt. 12" RECOVERY	A-3	
47.31		15A	45.0' 46.0'	30 32		Saturated very dense gray fine sand w/ some silt, trace of coarse sand and gravel. 12" RECOVERY	A-2-4(0)	Fossils present.
				T		OR BIDI		IG
49.8		16	49.0' 5 <u>1</u> .0'	5 16 22 30		Saturated dense gray fine sand w/ some silt and coarse sand, trace of gravel. 20" RECOVERY	A-2-4(0)	
52.29		U-1	52.0' 53.0'		IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Saturated gray fine to coarse sand with a trace of silt and gravel. 11" RECOVERY	A-2-4(0)	Press Sample - Shelby Tube.
54.78		17	54.0'	4 11 27 50		Saturated dense gray silty fine sand w/ some coarse sand, trace of gravel. 19" RECOVERY	A-2-4(0)	
			56.0'			17 RECOVER I		
57.27								
59.76		18	59.0'	8 12 22 30		Saturated dense gray silty fine sand w/ some coarse sand, trace of gravel.	A-2-4(0)	
			61.0'			22" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Clas	ss./G.I.	Remarks
62.25							
64.74		19	64.0'	7 8 14 12	w/ some coarse sand.	2-4(0)	
67.23			66.0'		19" RECOVERY		
69.72		20	69.0' 71.0'	6 7 14 25	Saturated medium dense gray silty fine sand A-2 w/ some coarse sand.	2-4(0)	
72.21			0	T	FORBIDD	IN	IG
74.7		21	74.0'	8 9 17 27	Saturated medium dense gray silty fine sand, trace of coarse sand and gravel.	2-4(0)	
77.19			76.0'		23" RECOVERY		
		22	79.0'	8	Soturated medium danse grou and groop	2 4(0)	Glauconitic.
79.68			81.0'	8 11 12 13	Saturated medium dense gray and green A-2 clayey fine sand, trace of coarse sand and gravel. 19" RECOVERY	2-4(0)	Giauconitic.
82.17							
84.66		23	84.0'	11 15 17 30	Saturated dense gray and green clayey fine A-2 sand, trace of organic matter, coarse sand, and	2-4(0)	Glauconitic.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
			200		gravel.	
			86.0'		22" RECOVERY	
87.15						
89.64		24	89.0'	8 12 19 24	Saturated dense dark gray silty fine sand, A-2-4(0)	
00.04				24	trace of organic matter, coarse sand, and seashells.	
			91.0'		17" RECOVERY	
			0110			
92.13						
		25	94.0'	24 50	Saturated very dense dark green silty fine A-2-4(0)	Glauconitic.
94.62	N		95.0'	50	sand, trace of organic matter, coarse sand, and	
					seashells.	
97.11			_			
					<u> - IISI 2015</u>	
		26	98.0' 98.5'	52	Saturated very dense dark green silty fine A-2-4(0)	Glauconitic; driller/logger
			<u>98.5</u> -		sand, trace of organic matter, coarse sand, and gravel.	noted that hole at the top of the boring caved and opened
99.6					5" RECOVERY	up to a large hole when
					Boring terminated at 98.5 feet.	augers were pulled.
102.09						
104 50						
104.58						
$\left - \right $						
107.07						

KEY TO SYMBOLS

Symbol Description

Strata symbols

Silty sand

Poorly graded sand with silt



Poorly graded sand

Poorly graded clayey silty sand



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory boring was drilled on 4/7/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a ATV CME 55.
- Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Boring elevation was obtained from Figure A-2, Structure BR1-3 Exploration Plan.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 **Contract:** 25-113-01

Boring Location: Sta. 715+13.00, 35' Rt. C.L.

Boring No.: BR1-3-10

Boring S	Surface Ele	V.: 36.44		Ref			
	ing Hammer: nple Hammer: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel Ball Sampler	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3	IN. IN. IN. IN. IN. IN.	
Casing Size: 3 1/4 Hollow Stem Auger:		Inches	nches From Depth of: From Depth of:		То: То:	69.0'	
Water Lev Dat 4/7/(Time	Depth of Hole 18.0'	Depth of Casing 16.0'	Depth of 14.0		Elev. of Water 22.4 36.4 36.4 36.4
	2 in. Dia. Dry	Sample Boring	: 99.5	Ft. ; 3		mple Boring:	Ft.
		helby Tubes: tin. Sample Bo	ring:	; No. of: Ft.; Core Drillin	ng in Rock:	U-Samples:	Ft.

2 1/2 in. Dia. Contin. Sample Boring: Boring Contractor: Walton Corporation Driller: Jason Truver/Dave Burt Helpers: A. Joseph

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I	Remarks
2.49		1 2	1.5' 2.0' 2.0'	2 5 4 3 3	Moist very loose light brown silty fine sand A-2-4(0) w/ some gravel, trace of coarse sand. 3" RECOVERY Moist loose light brown fine to coarse sand w/ some silt, trace of gravel.	7" of hot mix asphalt; 12" of stone base; fill material. Fill material.
		3	4.0' 4.0'	2 3 3 4	13" RECOVERY Moist loose light brown coarse to fine sand w/ A-1-b	Fill material.
4.98	-		6.0	4	some silt, trace of gravel.	
7.47		4	6.0	4 3 3 2	Moist loose light brown coarse to fine sand, A-1-b trace of silt and gravel.	
1.41			8.0'		18" RECOVERY	
		5	8.0'	2 2 3 3	Moist loose light brown silty coarse to fine A-2-4(0) sand, trace of gravel.	Fill material.
9.96		6	10.0' 10.0'	3	16" RECOVERY Moist loose light brown coarse to fine sand A-1-b	Fill material.
			10.0	3 3 4 3	and gravel w/ some silt.	
12.45		7	12.0' 12.0'	2 3 5 5	14" RECOVERY Wet loose orange-brown coarse sand w/ some fine sand and gravel, trace of silt.	
14.94		8	14.0' 14.0'	3 4 3 3	17" RECOVERY Saturated loose light brown fine to coarse sand w/ some silt, trace of gravel.	

Remarks: Mud Rotary at 69.0'

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
()			16.0'		16" RECOVERY		
		9	16.0'	6 7 8 5	Saturated medium dense orange-brown coarse	A-2-4(0)	
				8 5	to fine sand w/ some silt, trace of gravel.		
17.43							
		4.6	18.0'		19" RECOVERY		
		10	18.0'	3 2 11 19	Saturated medium dense orange-brown coarse to fine sand and gravel, trace of silt.	A-1-b	
				19	to fine sand and graver, trace of sitt.		
19.92							
13.32			20.0'		18" RECOVERY		
22.41							
		11	24.0'	13	Saturated very dense orange-brown coarse	A-1-b	
24.9				13 40 38 40	sand w/ some fine sand, trace of silt and	A-1-0	
27.5				.0	gravel.		
			26.0'		18" RECOVERY		IG
27.39							
					GUST 20	15	
		12	29.0'	8	Saturated medium dense orange-brown silty	A-2-4(0)	
29.88				8 8 12 10	fine sand w/ some coarse sand, trace of	11.75-4(0)	
				-	gravel.		
			31.0'		16" RECOVERY		
32.37							
		13	34.0'	12	Saturated dense red-brown fine sand w/ some	A-2-4(0)	
34.86				12 15 22 19	silt and coarse sand.		
			36.0'		17" RECOVERY		
37.35							

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
39.84		14	39.0'	7 9 14 18		urated medium dense red-brown fine sand some coarse sand and silt, trace of gravel.	A-2-4(0)	
				18	(† 1 4 4 6 6 († 1 4 4 6 6			
			41.0'		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	18" RECOVERY		
					269 / J960 269 / J560 269 / J660 269 / J560 269 / J560 260 / J560 200 / J560 / J560 200 / J560 / J56			
42.33					20175100 20175100 20175100 20175100 20175100 20175100 20175100			
					20173):00 51173:60 51173:60 51173:60 51173:60 51173:60			
		15	44.0'	11	Sat	urated medium dense brown fine sand w/	A-2-4(0)	
44.82				11 11 13 24	son	ne silt and coarse sand, trace of gravel.		
			46.0'			18" RECOVERY		
47.31)RAFT		
	N			40				
49.8		16	49.0'	18 19 28 40		urated dense brown fine to coarse sand w/ ne silt, trace of gravel.	A-2-4(0)	NG I
			51.0'			19" RECOVERY	15	
52.29					D	001 20		
54.78		17	54.0'	11 18 26 36		urated dense gray silty fine sand, trace of rse sand and gravel.	A-2-4(0)	
				36	604			
			56.0'			18" RECOVERY		
57.27								
		18	59.0'	11 14	Sat	urated dense gray silty fine sand w/ some	A-2-4(0)	
59.76				11 14 18 35	coa	rse sand, trace of gravel and seashells.		
			61.0'			22" RECOVERY		
62.25								

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STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
	5					
64.74		19	64.0'	7 20 50	Saturated very dense gray clayey fine sand w/ A-2-4(0) some coarse sand, trace of gravel.	
			65.5'		18" RECOVERY	
67.23		U-1	67.0'		No Recovery.	Press Sample - Shelby Tube.
		0	68.1'		0" RECOVERY	
69.72		20	69.0'	9 12 19 24	Saturated dense gray silty fine sand w/ some A-2-4(0) coarse sand.	
				24		
			71.0'		22" RECOVERY	
72.21						
					FOR BIDDIN	IG
74.7		21	74.0'	2 7 14 23	Saturated medium dense gray fine sand w/ A-2-4(0) some clay and coarse sand, trace of seashells.	
			\square			
			76.0'		21" RECOVERY	
77.19						
79.68		22	79.0'	8 13 17 14	Saturated very stiff gray fine sandy silt w/A-4(0)some clay, trace of gravel, coarse sand, and	
					seashells.	
			81.0'		18" RECOVERY	
82.17						
84.66		23	84.0'	4 8 14 21	Saturated very stiff gray fine sandy silt, trace A-4(0) of coarse sand.	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
	Ŭ		86.0' /		22" RECOVERY	
87.15						
89.64		24	89.0'	6 9 14 20	Saturated very stiff gray clayey fine sandy A-4(1)	
				20	silt, trace of organic matter, coarse sand, and seashells.	
		-	91.0'		23" RECOVERY	
92.13						
						ľ
		25	04.0'	5		
94.62		25	94.0'	5 9 21 31	Saturated very stiff dark green fine sandy silt, A-4(0) Glauconitic.	
		_			seashells.	
			96.0'		TOR ^{23' RECOVERY} IDDING	
97.11						
		26	98.0'	14 34 50	Saturated hard dark green fine sandy silt, A-4(0) Glauconitic. trace of organic matter and coarse sand.	
99.6			99.5'		11" RECOVERY	
					Boring terminated at 99.5 feet.	
						ľ
102.09						ľ
						ľ
						ľ
104.58						ľ
107.07						

KEY TO SYMBOLS

Symbol Description

Strata symbols

Silty sand

Well graded sand



Poorly graded sand with silt



Poorly graded clayey silty sand



Silty low plasticity clay

Silt

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- Exploratory boring was drilled on 4/7/2008 using a 3 1/4-inch diameter continuous flight power auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at time of drilling. Boring backfilled upon completion.
- 3. Surveyed boring locations and elevations were provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All SPT blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Boring Location: Sta. 857+12, 20' Lt. C.L.

Boring	No.:	BR1-3-
--------	------	--------

Boring Surface Elev.: + 32.1		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	20.0		
Water Level Readings Date Time 7/7/2009	Depth of Hole	Depth of Casing 8.0		of Water	Elev. of Water		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 100	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Denimer Operations IVI 1/ C /			

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	7/7/09	1	0.5'	8 9 8	100 10 100 200 100 200 10 6 2 2 2 20 20 6 10 2 2 2 20 20 6 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Moist medium dense brown fine to coarse sand w/trace of silt and gravel. 17" RECOVERY	A-3	5" of Topsoil.
		2	2.0'	11 8 9		Moist medium dense orange fine to coarse	A-2-4(0)	
3			4.0'	7		sand w/some silt, trace of gravel.		JG
	•	3	4.0'	5 7 8 10	13. 13. 13. 13. 14. 13. 14. 14. 14. 14. 14. 14. 14. 14. 14. 14	Moist medium dense brown coarse to fine sand and gravel w/some silt.	A-1-b	
6			6.0'			20" RECOVERY	15	
		4	6.0'	8 8 7 8		Moist medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			8.0'			22" RECOVERY		
9		5	8.0'	3 5 6 6		Moist medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'			21" RECOVERY		
		6	10.0'	5 4 4 5		Wet loose brown coarse to fine sand w/some gravel and silt.	A-1-b	
12			12.0'			18" RECOVERY		
		7	12.0'	2 2 2 2		Wet very loose brown fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
			14.0'		19733,1977 1977 - 1979 1977 - 1977 - 1977 1977 - 1977 - 1977 1977 - 1977 - 1977 1977 - 1977	18" RECOVERY		
15		8	14.0'	3 3 3 5	1444 1441 1441 1441 1441 1441 1441 144	Wet loose brown coarse to fine sand w/some silt, trace of gravel.	A-1-b	
			16.0'			17" RECOVERY		
		9	16.0'	11 11 10 5		Wet medium dense brown coarse to fine sand w/some silt and gravel.	A-1-b	

Remarks: Mud Rotart @ 20.0 ft.

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STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18	1.1591000		18.0'			20" RECOVERY		
		10	18.0' 18.0' 20.0'	1 3 5 8		of silt and gravel.	A-1-b	Switched to Mud Rotary at 20.0'.
24		11	23.0' 25.0'	7 9 9 10			A-3	
27					1223-1226 1235-1226 1255-1226 1255-1256 1255-1255-1256 1255-1255-1255-1255-1255-1255-1255-1255			
		12	28.0'	8 10 12 17		Wet medium dense orange fine sand w/some coarse sand.	A-2-4(0)	
30			30.0'			20" RECOVERY		IG
33		13	33.0'	8		Wet medium dense orange fine sand w/some	1 <u>5</u>	
			35.0'	8 10 13 15		coarse sand, trace of gravel. 21" RECOVERY		
36								
39		14	38.0' 40.0'	6 10 15 15		Wet medium dense brown fine sand w/some coarse sand and silt. 17" RECOVERY	A-2-4(0)	
42			40.0			1/ KECOVEK I		
		15	43.0'	15 15 20 23		Wet dense brown fine sand w/some silt, trace of coarse sand.	A-2-4(0)	
45			45.0'			20" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	-						
48		16	48.0'	11 17 19 27	Wet dense grayish green silty fine sand w/ trace of coarse sand and gravel.	A-2-4(0)	
51			50.0'		20" RECOVERY		
54		17	53.0'	11 17 16 20	Wet dense grayish green silty fine sand w/ some coarse sand.	A-2-4(0)	
			55.0'		DR ^{23"} RECOVERY		
57		18	59.0	7			
60		18	58.0' 60.0'	7 8 10 11	Wet medium dense gray fine sand w/some clay, trace of coarse sand and gravel. 24" RECOVERY	A-2-4(0)	
			A		GUST 20	15	
63		19	63.0'	7 11 11 13	Wet very stiff gray fine sandy silt w/some	A-4(0)	
			65.0'	11 13	clay, trace of coarse sand and sea shell fragments. 23" RECOVERY		
66							
69		20	68.0'	5 9 15 21	Wet very stiff gray clayey fine sandy silt w/ trace of coarse sand, organic matter and sea	A-4(0)	
			70.0'		shell fragments. 24" RECOVERY		
72							
		21	73.0'	5 7 9	Wet very stiff gray clayey fine sandy silt w/ trace of coarse sand, gravel and organic	A-4(0)	

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
(11.)			- Bopui	15		matter.		
75			75.0'			23" RECOVERY		
78								
		22	78.0'	8 11 15 17		Wet very stiff gray fine sandy silt w/trace of	A-4(0)	
				15		coarse sand, organic matter and gravel.		
			80.0'			23" RECOVERY		
01								
81								
		23	83.0'	8 9 11 17		Wet very stiff grayish green clayey fine sandy	A-4(0)	
84				17		silt w/trace of organic matter, coarse sand and sea shell fragments.		
			85.0'			23" RECOVERY		
						OR BID		
87							ノニ	
		24	88.0'	7 17 31 41	HNNK!	Wet dense green silty fine sand w/trace of	A-2-4(0)	Glauconitic
				31 41		organic matter and coarse sand.	15	
90			90.0'			23" RECOVERY		
93								
33		25	93.0'	17 28 40 50/3"		No Sample Recovery		
				40 50/3"				
			95.0'			0" RECOVERY		
96								
		26	98.0'	7 12		Wet dense green silty fine sand w/trace of	A-2-4(0)	Glauconitic.
99				7 12 22 23		organic matter and coarse sand.		
			100.0'			23" RECOVERY		
						End of Boring		
102								

KEY TO SYMBOLS

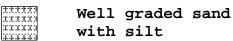
Symbol Description

Strata symbols

Poorly graded sand (1.1.1.1.1.1 (1.1.1.1.1 with silt



Silty sand





Poorly graded sand



Poorly graded clayey silty sand



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- Exploratory borings were drilled on 7/7/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Boring Location: Sta. 857+12, 80' Rt. C.L.

Borir	ng N	o.:	BR1-

Boring Surface Ele	V.: + 33.7		Ref				
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ster	3 1/4 n Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	18.0	
Water Level Readings Date 7/10/2009	Time	Depth of Hole 16.0	Depth of Casing 14.0		of Water 3.0	Elev. of Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	100	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
	7/10/09	1	0.5' 2.0'	13 17 15	Moist dense brown coarse sand w/some silt A-1-b Topsoil - 5". and fine sand, trace of gravel. 11" RECOVERY
		2	2.0'	11 16	Moist dense brown coarse to fine sand w/ A-1-b
3			4.0'	16 11	some silt, trace of gravel.
		3	4.0'	3 4 3 3	Moist loose brown coarse sand w/some fine A-1-b sand, trace of silt and gravel.
6			6.0'		20" RECOVERY
		4	6.0'	4 4 4	Moist loose brown coarse sand w/some fine A-1-b sand and silt, trace of gravel.
			8.0'		16" RECOVERY
9		5	8.0'	4 4 6 6	Moist loose orange coarse to fine sand w/ A-1-b some silt and gravel.
			10.0'		15" RECOVERY
		6	10.0'	4 5 5 5	Moist loose orange coarse to fine sand w/ A-1-b some silt and gravel.
12			12.0'		16" RECOVERY
		7	12.0'	2 2 3 3	Wet loose brown coarse to fine sand w/some A-1-b
			14.0'	2	1/1/07 14" RECOVERY
15		8	14.0'	3 3 4 5	Wet loose brown fine to coarse sand w/some A-2-4(0) silt, trace of gravel.
		9	16.0' 16.0'	3	16" RECOVERY Wet loose brown fine to coarse sand w/trace A-3
		9		3 3 5 5	Wet loose brown fine to coarse sand w/trace A-3

Remarks: Mud Rotary @ 18.0 Ft.

PAGE 2 OF 4

STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'		4.6434966 120323;07 120343;07	22" RECOVERY		
		10	18.0'	5 9 11 13	19999944 1999994 1999994 199994	Wet medium dense brown coarse to fine sand	A-1-b	Mud Rotary @ 18.0'.
				13	1763 Y 1761 1763 Y 1766 1763 Y 1766 1769 Y 1766	and gravel w/trace of silt.		
			20.0'		1:6133:66 4:6133:66 1:6133:66 1:6133:66 1:6133:66	15" RECOVERY		
21					1:6919:00 1:6199:06 1:6199:06 1:6199:06 1:6199:06			
					2011-2300 2012-1200 1003-1200 1003-1200 1003-1200 1003-1200			
					16199366 2617967 2693926 2693926			
		11	23.0'	6		Wet medium dense orange fine sand w/some	A-2-4(0)	
24				6 9 9 11		coarse sand and silt, trace of gravel.		
			25.0'			19" RECOVERY		
			-					
27						NDAET		
		12	28.0'	9 14 15 14	1.233.127. 1223.127. 1233.127. 1233.127. 1233.127.127. 1243.133.127.	Wet medium dense orange fine sand w/some coarse sand and silt, trace of gravel.	A-2-4(0)	
	N			14	1			
30			30.0'		1:	14" RECOVERY	JIN	JG
					1: 13 13:00 1:0133:06 1:0133:00 1:0133:00 1:0143:00			
					19919999999 19919999 1993999 1993999 1993999			
						HUSE 70	15	
33		13	33.0'	66		Wet medium dense brown fine sand w/some	A-2-4(0)	
				6 6 7 11		silt and coarse sand, trace of gravel.		
			35.0'			19" RECOVERY		
36								
30								
39		14	38.0'	7 8 8 9		Wet medium dense brown fine sand w/some coarse sand, trace of silt.	A-3	
				9				
			40.0'			19" RECOVERY		
42								
		15	43.0'	5 5		Wet loose brown fine sand w/some coarse	A-3	
				5 5 5 6	(6)}})60 (6)} (6)} (6)} (6)} (6)} (6)} (6)} (6)}	sand, trace of silt.		
45			45.0'		1201 (420) 1201 (420) 1201 (420) 1201 (420) 1201 (420) 1201 (420)	21" RECOVERY		
					1993, 1997. 1997 - Jacob 1997 - Jacob			

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
					100 17 5000 500 17000 60 1 1300 6 10 33.100 10 33.100 10 33.000			
					(611)66 (61)966 (61)966 (61)966 (61)966			
48		16	48.0'	6 10 21 17		Wet dense brown fine sand w/some silt, trace	A-2-4(0)	
				17		of coarse sand and gravel.		
			50.0'			20" RECOVERY		
51								
54		17	53.0'	12 15 17 23		Wet dense gray silty fine sand w/trace of coarse sand, gravel and organic matter.	A-2-4(0)	
			55.0'	23		23" RECOVERY		
						DRAFI		
57								
				9				
		18	58.0'	9 12 12 12 12		Wet medium dense gray silty fine sand w trace of coarse sand, gravel and organic	A-2-4(0)	
60			60.0'			matter. 23" RECOVERY	A [
				NU		JUSI 20	15	
63		19	63.0'	47		Wet medium dense gray silty fine sand w/	A-2-4(0)	Glauconitic
				4 7 10 18		some coarse sand, trace or organic matter and gravel.		
			65.0'			23" RECOVERY		
66								
		20	68.0'	3 5 7 9		Wet medium dense gray clayey fine sand w/ some coarse sand, trace of organic matter.	A-2-4(0)	Glauconitic
69			70.0'	9		23" RECOVERY		
			10.0			25 RECOVERT		
72								
		21	73.0'	5 8 9		Wet medium dense gray silty fine sand w/ trace of coarse sand and organic matter.	A-2-4(0)	Glauconitic

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Cl	Class./G.I.	Remarks
	-		75.0'	14	23" RECOVERY		
75			13.0		23 RECUVER I		
70							
78		22	78.0'	7 11 14 16	Wet medium dense gray silty fine sand w/ A trace of coarse sand and organic matter. A	A-2-4(0)	Glauconitic
			80.0'	16	22" RECOVERY		
81			80.0		22 RECOVERT		
81							
84		23	83.0'	7 10 13 13	Wet very stiff grayish green fine sandy silt w/ trace of organic matter and coarse sand.	A-4(0)	Glauconitic
04			85.0'	13	21" RECOVERY		
			00.0				
87					FOR BIDD) \	J(j
		24	88.0'	13 17 19 26	Wet hard greenish gray clayey silt w/some organic matter, trace of coarse sand and sea	A-4(0)	Glauconitic
90			90.0'	20	shell fragments. 24" RECOVERY	I Ü	
93							
		25	93.0'	13 17 37 50/4"	Wet very dense green silty fine sand w/trace A of organic matter and sea shell fragments.	A-2-4(0)	Glauconitic
			95.0'	50/4	22" RECOVERY		
96							
99		26	98.0'	12 13 21 29	Wet hard green fine sandy silt w/some organic matter, trace of coarse sand and sea	A-4(0)	Glauconitic
			100.0'		shell fragments. 24" RECOVERY		
					End of Boring		
102							

KEY TO SYMBOLS

Symbol Description

Strata symbols

Silty sand

Poorly graded sand with silt



Poorly graded sand

Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- Exploratory borings were drilled on 7/10/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 25-113-01

Boring Location: Sta. 860+71, 50' Lt. C.L.

Boring No.: BR1-3-14

Boring Surface E	Elev.: + 33.3		Ref				
Wt. of Casing Hamm Wt. of Sample Hamm Type of: D-Sample S-Sample U-Sample Core Bit:	ner: 140 er: Split Barrel er: er:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow S	3 1/4 Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		18.0
Water Level Reading Date 7/15/2009	ls Time	Depth of Hole 18.0	Depth of Casing		of Water 2.0	Elev. d	of Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 100	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Dering Contractory W 10 C			

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class	./G.I. Remarks
	7/15/09	1	0.0'		DRAFT	Asphalt - 18". Stone - 3" . Fill - 3".
			2.0'		0" RECOVERY	
3		2	2.0'	9 9 11 9	Moist medium dense brown and tan clayey A-2- coarse to fine sand w/trace of gravel.	
		3	4.0'	12 21 17	Moist dense brown and tan silty coarse to fine A-2-	4(0)
6			6.0'	18	sand w/trace of gravel. 16" RECOVERY	5
		4	6.0'	14 21 22 26	Moist hard brownish tan clayey coarse to fine A-4	(0)
				26	sandy silt w/trace of gravel.	
			8.0'		24" RECOVERY	
9		5	8.0'	9 21 17 13	Moist dense brownish tan coarse to fine sand A-1 w/some silt and gravel.	l-b
			10.0'		17" RECOVERY	
		6	10.0'	6 7 8 9	Wet stiff brown clay w/some fine to coarse A-6 sand, trace of gravel.	(6)
12			12.0'		17" RECOVERY	
		7	12.0'	5 5 11 12	Wet medium dense brown fine to coarse sand A-2- w/some clay and gravel.	4(0)
			14.0'		16" RECOVERY	
15		8	14.0'	5 6 7 8	Wet medium dense brown fine to coarse sand A-2- w/some silt, trace of gravel.	4(0)
			16.0'		13" RECOVERY	
		9	16.0'	10 9 11	Wet medium dense tan fine to coarse sand w/ A-2-	4(0)

Remarks: Mud Rotary at 18.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	1 1091000			16	some silt, trace of gravel.		
18		40	18.0'	10	22" RECOVERY		
		10	18.0'	10 11 17 10	Wet medium dense brown gravel and coarse to fine sand w/some silt.	A-1-b	Mud Rotary @ 18.0'.
			20.0'		11" RECOVERY		
21							
24		11	23.0'	6 7 8 9	Wet medium dense brown fine sand w/some coarse sand, trace of silt and gravel.	A-3	
4				9	16:13:17:16 16:13:17:16 16:13:17:16		
			25.0'		16" RECOVERY		
27							
		12	28.0'	12 16 19	Wet dense brown fine sand w/some gravel,	A-2-4(0)	
				14) \	
30			30.0'		8"RECOVERY		
					AUST 20	15	
33							
		13	33.0'	7 9 13	Wet medium dense brown fine sand w/some	A-3	
				15	coarse sand, trace of silt.		
			35.0'		20" RECOVERY		
36							
					period and a second		
		14	38.0'	7 6 8 11	Wet medium dense brown fine sand w/some coarse sand, trace of silt.	A-3	
39				11	coarse sand, trace of silt.		
			40.0'		18" RECOVERY		
42					V2101111 1233300 1233106 1233100 123310		
		15	43.0'	7 11 15 15	Wet medium dense brown fine sand w/some	A-2-4(0)	
$\left - \right $				15 15	silt, trace of coarse sand and gravel.		
45			45.0'		18" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remark	s
48		16	48.0'	9	Wet medium dense brown fine sand w/some A-2-4(0)	
			50.0'	9 8 14 19	wet medium dense brown fine sand w/some A-2-4(0) silt and coarse sand, trace of gravel. 22" RECOVERY	
51						
54		17	53.0' 55.0'	4 8 10 13	Wet very stiff gray clayey fine sandy silt w/ trace of coarse sand and organic matter.	
57		18	58.0'	6 6 9 11	Wet stiff gray fine sandy silt w/some clay, A-4(0)	
60			60.0'	9 11	trace of coarse sand, organic matter and gravel. 24" RECOVERY 2015	
63		19	63.0' 65.0'	6 11 17 19	Wet medium dense green clayey fine sand w/ A-2-4(0) trace of coarse sand and organic matter. 24" RECOVERY	
66			00.0		24 RECOVERT	
69		20	68.0' 70.0'	6 9 10 18	Wet medium dense gray fine sand w/some A-2-4(0) clay, trace of coarse sand and organic matter. 24" RECOVERY	
72						
		21	73.0'	11		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description 0	Class./G.I.	Remarks
(ft.)	Progress		Depth	13 16 21	Wet very stiff gray fine sandy silt w/trace of	A-4(0)	
			75.01	21	coarse sand, organic matter and gravel.		
75			75.0'		24" RECOVERY		
78							
		22	78.0'	15 13 17 28		A-2-4(0)	Glauconitic
				28	trace of organic matter, coarse sand and gravel.		
			80.0'		24" RECOVERY		
81							
		23	83.0'	10 13 14 21	Wet very stiff green clayey fine sandy silt w/	A-4(0)	Glauconitic
84				21	some organic matter, trace of gravel, coarse sand and crushed sea shells.		
			85.0'		24" RECOVERY		
					FOR BIDE) N	
87							
			_				
	7/16/09	24	88.0	16 18		A-2-4(0)	Glauconitic
				32	organic matter, coarse sand and crushed sea shells.		
90			90.0'		19" RECOVERY		
93		25	93.0'	16 25	Wet very dense green silty fine sand w/some	A-2-4(0)	Glauconitic
				16 25 35 30	organic matter, trace of coarse sand and crushed sea shells.	×-7	
			95.0'		17" RECOVERY		
96							
		26	98.0'	10	Wet very stiff green fine sandy silt w/some	A-4(0)	Glauconitic
99		-		10 12 18 22	organic matter, trace of coarse sand, gravel	(0)	
			100.0'		and crushed sea shells. 21" RECOVERY		
					End of Boring		
				<u> </u>			

KEY TO SYMBOLS

Symbol Description

Strata symbols

silty sand

Poorly graded sand

Poorly graded clayey



Silty sand



Low plasticity clay

with silt



Silt



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- Exploratory borings were drilled on 7/15/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 25-113-01

Во

Boring Location:	Sta. 860+71, 50' Lt.	C.L.					
Boring Surface Ele	ev.: + 31.0		Reference:				
Wt. of Casing Hammer Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 em Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		18.0
Water Level Readings Date 7/8/2009	Time	Depth of Hole 14.0	Depth of Casing 12.0		of Water 0.9	Elev	v. of Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: No. of 2 in. Dia. Shelby Tubes:	100	Ft.;	Dia. U-Sample Boring: No. of: U-Samples:	Ft.
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	7/8/09	1	0.5'	13 18 21	100 10 10 100 100 10 10 10 100 10 10 10 100 10 10 10 100 10 10 10 100 10 10 10 10 10 10 10 10 10 10 10 10 10 1	Moist dense gray gravel w/some fine to coarse sand, trace of silt. 11" RECOVERY	A-1-a	Topsoil - 5".
		2	2.0'	14 9 7 9		Moist medium dense brown silty coarse sand	A-1-b	
3			4.0'			w/some fine sand and gravel. 22" RECOVERY		IG
	•	3	4.0'	9 11 20 18		Moist dense brown silty fine to coarse sand w/some gravel.	A-2-4(0)	
6			6.0'			16" RECOVERY	15	
		4	6.0'	14 13 17 17		Moist very stiff brown clayey silt w/some fine to coarse sand, trace of gravel.	A-4(3)	
			8.0'			17" RECOVERY		
9		5	8.0'	4 8 12 14		Moist very stiff brown clayey gravelly coarse sandy silt w/some fine sand.	A-4(0)	
			10.0'			18" RECOVERY		
		6	10.0'	13 13 10 7		Moist medium dense brown coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
12			12.0'			20" RECOVERY		
		7	12.0'	2 3 5 5		Wet loose brown coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			14.0'		13633.3366 173366 173366	15" RECOVERY		
15		8	14.0'	2 8 8 7		Wet medium dense brown fine to coarse sand and gravel w/some silt.	A-2-4(0)	
		9	16.0' 16.0'	5		21" RECOVERY Wet medium dense brown fine to coarse sand	A 2 4(0)	
		5		5 7 9 11		wet medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	

Remarks: Mud Rotary @ 18.0 Ft.

PAGE 2 OF 4

STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'			24" RECOVERY		
		10	18.0'	6 6 8 21		Wet medium dense orange fine to coarse sand	A-3	Mud Rotary @ 18.0'.
				21		w/trace of gravel and silt.		
			20.0'			15" RECOVERY		
21								
		11	23.0'	5	4-1 1 J 1 - E	Wet medium dense orange fine sand w/some	A-3	
24			20.0	5 6 7 7		annual sound the set of silt and success	A-3	
			25.0'			16" RECOVERY		
			23.0		1.(141); (444); (444);			
27					1999 1999 1999 1999 1999 1999 1999 199			
					176177956 16631396 16633396 16633196 16633196			
		12	28.0'	6 6 13 21		Wet very stiff orange fine sandy silt w/some	A-4(0)	
			-	13		coarse sand.		
30			30.0'			19" RECOVERY		
	•							
						21 IQT 20	15	
33		13	33.0'			Wet medium dense brown fine sand w/some	A-3	
		10	00.0	7 7 9 10		coarse sand, trace of silt.	A-3	
			35.0'			17" RECOVERY		
			35.0			17 RECOVERT		
36								
		14	38.0'	6 7 8 7	4449444 1993-1994 1993-1994 1993-1994 1993-1994	Wet medium dense brown fine sand w/some	A-3	
39				7				
			40.0'		1999 (1994) 1999 (1994) 1999 (1999) 1999 (1999) 1999 (1999)	20" RECOVERY		
42					1999 - 1999 1999 - 1999 1999 - 1999 1999 - 1999 1999 - 1999			
		15	43.0'	5	1993,199 2017,239 2017,239 2017,239	č	A 2 4/0	
		15	43.0	5 8 7 7		Wet medium dense brown fine sand w/some silt and coarse sand, trace of gravel.	A-2-4(0)	
45			45.01					
45			45.0'			20" RECOVERY		
		•	•		active restated a			

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
48		16	48.0' 50.0'	7 11 10 17	Wet medium dense greenish gray silty fine sand w/some coarse sand, trace of gravel and sea shell fragments. 20" RECOVERY	A-2-4(0)	Glauconitic
		17	53.0' 55.0'	4 6 5 7	Wet medium dense gray fine sand w/some clay, trace of coarse sand, organic matter and sea shell fragments.	A-2-4(0)	Glauconitic
 		18	58.0' 60.0'	7 9 16 19	Wet very stiff gray fine sandy silt w/some clay, trace of coarse sand, organic matter an sea shell fragments. 23" RECOVERY	A-4(0)	Glauconitic
63	7/9/09	19	63.0' 65.0'	5 8 12 13	Wet medium dense gray silty fine sand w/ some coarse sand, trace of organic matter. 23" RECOVERY	A-2-4(0)	Glauconitic
<u>66</u> <u>69</u>		20	68.0'	5 9 13 16	Wet medium dense gray silty fine sand w/ some clay, trace of gravel, coarse sand and organic matter.	A-2-4(0)	Glauconitic
		21	70.0'	6 13 17	22" RECOVERY wet very stiff gray fine sandy silt w/trace of	A-4(0)	Glauconitic

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	-			18			
75			75.0'		22" RECOVERY		
78		22	78.0'	8	XX7 / 1' 1 1 1 ('' 1 /		
		22	78.0	8 10 11 17	Wet medium dense gray clayey fine sand w/ trace of coarse sand.	A-2-6(0)	
			80.0'		23" RECOVERY		
81							
		23	83.0'	10 10 14 20	Wet medium dense green fine sand w/some	A-2-4(0)	Glauconitic
84				14 20	clay, trace of coarse sand.		
			85.0'		23" RECOVERY		
			.				
87					OR BID	ノル	IJ
		24	88.0'	19 26 43 50/4"	Wet very dense green silty fine sand w/trace of coarse sand.	A-2-4(0)	Glauconitic
90			90.0'		20" RECOVERY	IJ	
					20 12200 1211		
93		25	93.0'	7	Wet medium dense green silty fine sand w/	A-2-4(0)	Glauconitic
				7 11 16 19	trace of coarse sand.	~ /	
			95.0'		20" RECOVERY		
96							
99		26	98.0'	5 7 10 15	Wet very stiff black clay w/some fine sand.	A-6(17)	
			400.0	15			
			100.0'		24" RECOVERY End of Boring		
102							

KEY TO SYMBOLS

Symbol Description

Strata symbols

Poorly graded sand with silt



Silty sand



Low plasticity clay



Poorly graded clayey silty sand

Poorly graded sand



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

- 1. Exploratory borings were drilled on 7/8/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Boring Location: Sta. 862+51, 9' Rt. C.L.

Bo	prin	q	No.:	BR1-3-10
----	------	---	------	----------

Boring Surface Elev.: + 31.0		Ref			
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	29.0
Water Level Readings Date Time 7/9/2009	Depth of Hole	Depth of Casing		of Water 5.6	Elev. of Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	101 F t	L;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		; No. of:	U-Samples:	
2 1/2 in. Dia. Contin. Sample Boring:	Ft	t.; Core Drilling	j in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class	./G.I. Remarks
	7/9/09	1	0.0' 1.0'	5 6	Wet stiff gray silt w/some fine to coarse sand, A-4 clay and gravel.	(0) Topsoil - 2".
		1A	1.0'	5 4	8" RECOVERY	
			2.0'		No Sieve Analysis - Indication of wet	
		2	2.0'	6 7 10	5" RECOVERY A-2-	4(0)
3				9	Wet medium dense brown clayey coarse sand	
			4.0'		w/some fine sand, trace of gravel.	
		3	4.0'	3 9 15	Wet medium dense brown coarse to fine sand A-2-	4(0)
				15 20	w/some clay and gravel.	
6			6.0'		18" RECOVERY	5
		4	6.0'	22 25 17 32	Wet dense brown silty fine to coarse sand w/ A-2-	4(0)
				17 32	trace of gravel.	
		5	8.0' 8.0'	15	15" RECOVERY Wet very dense brown coarse to fine sand w/ A-1	1
9			0.0	15 28 32 14	some silt, trace of gravel.	0
				14	some sin, nuce of graver.	
			10.0'		20" RECOVERY	
		6	10.0'	28 18 16 11	Wet dense brown coarse to fine sand w/some A-1	b
				11	silt, trace of gravel.	
12			12.0'		23" RECOVERY	
12		7	12.0	5 5	Wet loose brown coarse to fine sand w/some A-1	b
			13.0'		gravel and silt.	
		7A	13.0'	4 3	8" RECOVERY A-4 Wet stiff brown silt w/some fine sand, trace of	(0)
			14.0' 14.0'	1	wet suit brown sit w/some time sand, trace of $\langle \cdot \cdot \rangle$	
		8	14.0	1 2 6	coarse sand and gravel.	(3)
15				6	Wet soft green w/orange and tan mottles	
			16.0'		clayey silt w/some fine to coarse sand, trace	
		9	16.0'	16 16	A-1	-b
				16		

Remarks: Mud Rotary @ 29.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth	Daily	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth	17	Wet dense brown gravel and fine to coarse		
18			18.0'		sand w/some silt. 14" RECOVERY		
		10	18.0'	7 8 8 9	Wet medium dense brown silty fine to coarse sand w/trace of gravel.	A-2-4(0)	
				9			
			20.0'		18" RECOVERY		
21							
24		11	24.0'	6 13	Wet medium dense orange fine to coarse sand	A-3	
				6 13 13 13	w/trace of silt and gravel.		
			26.0'		17" RECOVERY		
27							
	_				në i zane Në zakë Viti Takë Viti Taki		
		12	29.0'	9	Wet medium dense orange fine sand w/some	A-2-4(0)	Mud Rotary @ 29.0'.
30		N		9 11 12 15	coarse sand and silt, trace of organic matter		V U y e 27.0.
			31.0'		(1)))) and gravel.		
					BUST 20	1 5	
				NU			
33					nei 730eu nei 730eu nei 730eu nei 730eu	_	
		10	24.0	8			
		13	34.0'	8 8 10 14	Wet medium dense orange fine sand w/somecoarse sand and silt, trace of organic matter.	A-2-4(0)	
			36.01		16" RECOVERY		
36			36.0'		IU KEUVEKI		
39							
		14	39.0'	7 12 17 17	Wet medium dense brown fine sand w/some coarse sand and organic matter, trace of silt.	A-3	
				17			
			41.0'		17" RECOVERY		
42							
		15	44.0' 44.5' /	10	Wet dense brown fine sand w/some silt, trace	A-2-4(0)	
45		15A	44.5	13 20	of coarse sand, organic matter and gravel.	A-2-4(0)	

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth	25	6" RECOVERY	0.000, 0.1.	
48			46.0'	23	Wet dense brownish gray silty fine sand w/ trace of coarse sand, organic matter and gravel. 14" RECOVERY		
51		16	49.0' 51.0'	9 18 21 25	Wet dense gray silty fine sand w/some organic matter and coarse sand, trace of gravel. 22" RECOVERY	A-2-4(0)	
54		17	54.0'	9	Wet dense gray silty fine sand w/some coarse	A-2-4(0)	
			56.0'	9 13 30 38	sand, trace of gravel and organic matter.		
60		18	59.0'	14 24 28 29	Wet very dense gray silty fine sand w/trace of coarse sand, gravel and organic matter.	A-2-4(0)	IG
63			61.0'	\U		C I	
		19	64.0'	6	Wet dense gray clayey fine sand w/some	A-2-4(0)	
66			66.0'	6 12 23 29	coarse sand, trace of organic matter and sea shell fragments. 24" RECOVERY	<u>μ</u> 2 τ(0)	
 		20	69.0' 71.0'	16 17 18 34	Wet hard gray clayey fine sandy silt w/trace of coarse sand, gravel, organic matter and sea shell fragments. 23" RECOVERY	A-4(0)	
72							

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
	0					
75		21	74.0'	7 13 18 26	Wet hard gray fine sandy silt w/trace of gravel, coarse sand and organic matter.A-4(0)	
- 10			70.01	20		
			76.0'		24" RECOVERY	
78						
				10		
		22	79.0'	12 16 28 28	Wet dense gray clayey fine sand w/trace of A-2-4(0) organic martter, coarse sand, gravel and sea	Glauconitic
0.1			81.0'	20	shell fragments.	
81			01.0			
84			84.0'	32		
		23	84.0'	32 32 27 37	Wet very dense gray fine sand w/some clay,A-2-4(0)trace of organic matter, gravel, coarse sand	Glauconitic
	N		86.0'	T	and sea shell fragments. 24" RECOVERY	
						NG
87						
			Λ			
	7/10/09	24	89.0'	22	Wet very dense gray silty fine sand w/trace of A-2-4(0)	Glauconitic
90	1110/00	27		22 47 50/3"	organic matter, gravel and coarse sand.	Glaucomtic
			90.5'		15" RECOVERY	
93						
		25	94.0'	11	Wet dense gray silty fine sand w/trace of A-2-4(0)	Glauconitic
		-	-	11 20 24 31	organic matter and coarse sand.	Giudeointite
96			96.0'		24" RECOVERY	
99		26	99.0'	8	Wet very stiff dark gray clay w/some fine A-6(15)	
				8 10 15 16	sand and organic matter.	
			101.0'		24" RECOVERY	
					End of Boring	

KEY TO SYMBOLS

Symbol Description

Strata symbols

Silty low plasticity clay

Poorly graded clayey silty sand



Silt



Low plasticity clay

Silty sand



Poorly graded sand with silt



Poorly graded sand



DRAFT Clayey sand NOT FOR BIDDING **AUGUST 2015**

Notes:

- 1. Exploratory borings were drilled on 7/9/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: IT1-53

Boring Location:	Sta. 708+00, 171.00	' Lt. C.L.					
Boring Surface Ele	ev.: + 50.71		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		14.0
Water Level Readings Date 7/6/2009	Time	Depth of Hole 16.0	Depth of Casing 14.0		of Water Dry	Elev. c	of Water

Pay Quantities:

Contract: 28-113-01

2 1/2 in. Dia. Dry Sample Boring: No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	16.0	Ft.; ; Ft.;	Dia. U-Sample Boring: No. of: U-Samples: Core Drilling in Rock:	Ft. Ft.
Boring Contractor: Walton Corporation				

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

F.A. Project: U.S. 301 Maryland State Line to S.R. 1

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	7/6/09	1	0.5' 2.0'	4 6 8	Moist medium dense brown clayey coarse sand w/some gravel and fine sand.	A-1-b	Topsoil - 5".
		2	2.0'	5 5	Moist loose brown coarse sand w/some gravel, trace of silt and fine sand.		
3			4.0'	6	IN THE RECOVERY		
		3	4.0'	9 5 5 6	Moist loose brown coarse to fine sand w/some clay, trace of gravel.	A-2-4(0)	
6			6.0'		19" RECOVERY		
		4	6.0'	5 5 6 10	Moist medium dense brown silty fine sand w/some gravel, trace of coarse sand.	A-2-4(0)	
			8.0'		18" RECOVERY		
9		5	8.0'	6 8 7 9	Moist medium dense brown coarse sand and gravel w/some silt, trace of fine sand and clay.		USDA Classifica - Sand
			10.0'		1149 RECOVERY		
		6	10.0'	7 7 6 7	Moist medium dense tan coarse sand and gravel w/some fine sand, trace of silt.	A-1-b	
12			12.0'		17" RECOVERY		
		7	12.0'	5 6 6 6	Moist medium dense tan coarse to fine sand w/some silt, trace of gravel.	A-1-b	
			14.0'		17" RECOVERY		
15		8	14.0'	5 7 6 7	Moist medium dense tan coarse to fine sand w/trace of silt and gravel.	A-1-b	
			16.0'		16" RECOVERY		
Poma	_				End of Boring		

Remarks:

Symbol Description

Strata symbols

Poorly graded clayey silty sand

Poorly graded sand



10 10 10 10 10 10 10 10 10 10 10 10 10 10 Silty sand

Well graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

1. Exploratory borings were drilled on 7/6/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Track CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.

F.A. Project: U.S. 301 Maryland State Line to S.R. 1 Contract: 28-113-01

Boring Location: Sta. 712+90, 67.00' Rt. C.L.

Boring No.: IT1-54

Boring Surface E	ev.: + 48.1		Ref	erence:			
Wt. of Casing Hamme Wt. of Sample Hamme Type of: D-Sample S-Sampler U-Sampler Core Bit:	er: 140 r: Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow S	3 1/4 tem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		14.0
Water Level Readings Date 7/6/2009	3 Time	Depth of Hole 16.0	Depth of Casing 14.0		of Water _{Dry}	Elev	v. of Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 16.0 No. of 2 in. Dia. Shelby Tubes:	Ft.;	Dia. U-Sample Boring: No. of: U-Samples:	Ft.
2 1/2 in. Dia. Contin. Sample Boring:	Ft.;	Core Drilling in Rock:	Ft.
Paring Contractory Walton Comparation			

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	7/6/09	1	0.5' 2.0'	4 3 5	Moist firm brown clayey silt w/some coarse sand, trace of fine sand and gravel. 13" RECOVERY	A-4(4)	Cultivated Soil - 6".
		2	2.0'	4 5	Moist medium dense orange coarse to fine sand w/some gravel and silt.	A-1-b	
3			4.0'	6	E COVERY		
		3	4.0'	6 6 15 11	Moist medium dense orange coarse to fine sand w/some silt and gravel, trace of clay.	A-2-4(0)	USDA Classifica - Sandy
6		4	6.0' 6.0'	6	17" RECOVERY Moist loose orange coarse to fine sand w/some silt, trace of gravel.	A-1-b	Loam
			8.0'	6 5 4 5	20" RECOVERY	A-1-0	
9		5	8.0'	5 4 3 4	MOist loose brown coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'	4	21" RECOVERY		
		6	10.0'	4 4 3 4	Moist loose brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
12			12.0'		19" RECOVERY		
		7	12.0'	5 5 4 4	Moist loose brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			14.0'		22" RECOVERY		
15		8	14.0'	4 4 4 4	Moist loose brown coarse to fine sand w/some silt, trace of gravel.	A-1-b	
			16.0'		20" RECOVERY End of Boring		
Remai	rko.						

Symbol Description

Strata symbols



Low plasticity clay

Poorly graded sand with silt



Silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

1. Exploratory borings were drilled on 7/6/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Track CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.

Boring No.: IT1-55

Boring Location:	Sta. 718+00, 274.00	Lt. C.L.					
Boring Surface Ele	V.: + 38.07		Ref	erence:			
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		14.0
Water Level Readings Date 7/2/2009	Time	Depth of Hole 16.0	Depth of Casing 14.0	Depth o Dr		Elev. of Wat	er

Pay Quantities:

Contract: 28-113-01

2 1/2 in. Dia. Dry Sample Boring: No. of 2 in. Dia. Shelby Tubes:	16.0	Ft.; _;	Dia. U-Sample Boring: No. of: U-Samples:	Ft.
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.
Boring Contractor: Walton Corporatio	n			

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

F.A. Project: U.S. 301 Maryland State Line to S.R. 1

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	7/2/09	1	0.5' 2.0'	4 5 6	Moist stiff brown clayey fine sandy silt w/trace of coarse sand.	A-4(0)	Cultivated Soil - 7".
		2	2.0'	4 5	Moist medium dense brown silty fine sand w/some gravel, trace of coarse	A-2-4(0)	
3			4.0'	6	sand. 17' RECOVERY		
		3	4.0'	2 3 4 5	Moist loose brown fine to coarse sand w/some silt.	A-2-4(0)	
6		4	6.0'	2	15" RECOVERY		
		4	6.0'	2322	Moist loose tan fine to coarse sand w/some silt, trace of clay.	A-2-4(0)	USDA Classifica - Sand
		_	8.0'		19" RECOVERY	A-2-4(0)	
9		5	8.0'	2 2 3 3	Moist loose tan fine to coarse sand w/some silt.		
			10.0'		18" RECOVERY		
		6	10.0'	3 3 3 3	Moist loose tan coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
12			12.0'		20" RECOVERY		
		7	12.0'	4 5 4 4	Moist loose tan fine to coarse sand w/trace of silt and gravel.	A-3	
			14.0'		18" RECOVERY		
15		8	14.0'	3 4 4 5	Moist loose tan fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			16.0'		19" RECOVERY		
Remark					End of Boring		

Symbol Description

Strata symbols

Poorly graded clayey silty sand



Silty sand

Poorly graded sand (1)(1)(1) with silt



Poorly graded sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

1. Exploratory borings were drilled on 7/2/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Track CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.

Boring No.: IT1-56

Dia. U-Sample Boring: U-Samples:

Contract: 28-113-01 Boring Location:	Sta. 723+00, 177.00						
Boring Surface Ele	ev.: + 30.0		Ref	erence:			
Wt. of Casing Hammer Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	r: 140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 em Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		14.0
Water Level Readings Date 7/2/2009	Time	Depth of Hole 16.0	Depth of Casing 14.0		of Water 1.0	Elev	of Water

Pay Quantities:

-	2 1/2 in. Dia. Dry Sample Boring:	16.0	Ft.;	Dia. U-Sa
	No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: Core Drilling in Rock:
_				

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

F.A. Project: U.S. 301 Maryland State Line to S.R. 1

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	7/2/09	1	0.5'	5 7 8	Moist medium dense orange silty fine to coarse sand w/trace of gravel. 12" RECOVERY	A-2-4(0)	Topsoil - 4".
	1 1	2	2.0'	9	Moist medium dense orange fine to coarse sandw/some silt.	A-2-4(0)	
3			4.0'	4	FOR BIG'RECOVERY		
6		3	4.0' 6.0'	3 3 4 4	Moist loose tan fine to coarse sand w/some silt, trace of clay.	A-2-4(0)	USDA Classifica - Sand
		4	6.0'	4 3 2 3	Moist loose tan fine sand w/some coarse sand and silt.	A-2-4(0)	
├ ──	1	5	8.0' 8.0'	6	17" RECOVERY		
9		с С	0.0	6 6 6	Moist medium dense tan coarse sand and gravel w/some fine sand and silt.	A-1-b	
<u> </u>			10.0'		15" RECOVERY		
		6	10.0'	4 4 5 4	Wet loose tan coarse to fine sand w/some silt, trace of gravel.	A-1-b	
12	1		12.0'		20" RECOVERY		
		7	12.0'	6 11 6 11 5 4	Wet medium dense orange coarse to fine sand w/some gravel, trace of silt	t. A-1-b	
			14.0'	i	16" RECOVERY	A-1-b	ļ
15		8	14.0'	8 12 50/2"	Wet very dense orange coarse to fine sand and gravel w/trace of silt.		
			15.5'		8" RECOVERY		
Romar				i i	End of Boring		

Remarks:

Ft. Ft.

Symbol Description

Strata symbols

Silty sand

Poorly graded sand with silt



Well graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

1. Exploratory borings were drilled on 7/2/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Track CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.

Boring No.: IT1-57

Boring Location:	Sta. 728+00, 251.00	' Lt. C.L.					
Boring Surface Ele	ev.: + 35.00		Ref	erence:			
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		14.0
Water Level Readings Date 7/2/2009	Time	Depth of Hole 14.0	Depth of Casing 12.0		of Water 8.7	Elev. of V	Vater

Pay Quantities:

Contract: 28-113-01

2 1/2 in. Dia. Dry Sample Boring: 16.0 No. of 2 in. Dia. Shelby Tubes:	Ft.;	Dia. U-Sample Boring: No. of: U-Samples:	Ft.
2 1/2 in. Dia. Contin. Sample Boring:	Ft.;	Core Drilling in Rock:	Ft.
Paring Contractory Walton Comparation			

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

F.A. Project: U.S. 301 Maryland State Line to S.R. 1

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	7/2/09	1 1A 2	0.5' 1.5' 1.5' 2.0' /	5 5 9	Moist firm brown silt w/some clay and fine sand, trace of coarse sand and gravel. 10" RECOVERY	A-2-4(0)	Topsoil - 3".
3		2	2.0' 2.0' 4.0'	8 7 7 12	Moist loose orange silty fine to coarse sand w/trace of gravel. 6" RECOVERY Moist medium dense tan coarse to fine sand w/some silt, trace of gravel. 17" RECOVERY	A-1-b	
6		3	4.0' 6.0'	3 4 4 4	Moist loose tan coarse to fine sand w/some silt, trace of clay and gravel.	A-1-b	USDA Classifica - Sand
		4	6.0' 8.0'	5 4 3 4	Moist loose orange coarse to fine sand w/trace of silt and gravel. 18" RECOVERY	A-1-b	
9		5	8.0'	3 2 2 6	Wet very loose orange fine to coarse sand w/trace of silt and gravel.	A-3	
12		6	10.0'	8 9 16 12	Wet medium dense orange fine to coarse sand and gravel w/some silt. 16" RECOVERY	A-1-b	
		7	12.0'	5 4 8 6	Wet medium dense brown fine sand w/some coarse sand, trace of gravel and silt.	A-3	
15		8	14.0'	4 5 5 4	Wet loose brown fine sand w/some coarse sand, trace of silt and gravel.	A-3	
Rema	rke				End of Boring		

Symbol Description

Strata symbols

Silt

Silty sand

Well graded sand with silt



10 10

Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

1. Exploratory borings were drilled on 7/2/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Track CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.

F.A. Project: U.S. 301 Maryland State Line to S.R. 1 **Contract:** 25-113-01

Boring Location: STA. 1010+00 90' Rt. C.L.

Boring I	No.:	R1-110
----------	------	--------

Boring Surface Ele	ev.: + 46.74		Ref	erence:		
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	19.0
Water Level Readings Date 2/9/10	Time	Depth of Hole 19.0	Depth of Casing 19.0		of Water	Elev. of Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: No. of 2 in. Dia. Shelby Tubes:	50.0	Ft.;	Dia. U-Sample Boring: No. of: U-Samples:	Ft.
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Cla	ass./G.I.	Remarks
	2/8/11	1	0.5' 2.0' 2.0'	16 21 31 50/4"	w/some fine sand, silt and clay. 16" RECOVERY	A-1-b	Topsoil - 4". Fill Fill
3.5	N	2	4.0'	30/4	No Sieve Analysis - Indication of moist dense brown clayey sand w/some fine gravel, trace of clay.	IN	
		3	4.0' 6.0'	21 18 50/2"	Moist very dense red fine gravel w/trace of coarse to fine sand and silt. 6" RECOVERY	A-1-a	Fill Large boulders/concrete in fill.
7	2/9/11	4	6.0' 8.0'	7 7 13 16		A-4(0)	
		5	8.0'	7 16 13 21	144004	-2-4(0)	
10.5		6	10.0'	17 13 13 19		A-1-b	
		7	12.0'	3 6 5 5 5	Moist medium dense orange coarse to fine sand w/some silt, trace of fine gravel.	-2-4(0)	
14		8	14.0' 14.0'	4 4 3 5	some silt, trace of fine gravel.	-2-4(0)	
17.5		9	16.0' 16.0' 18.0'	5 5 5 5	18" RECOVERY Moist loose orange coarse to fine sand w/ A some silt, trace of fine gravel. 16" RECOVERY	A-1-b	
		10	18.0' 18.0' 20.0'	4 5 4 5		-2-4(0)	Mud Rotary @ 18.0'.

F.A. Project: U.S. 301 Maryland State Line to S.R. 1 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
21	1 1091000		Dopui			
1						
24.5		11	24.0'	2 4 5 7	Wet loose orangish brown coarse to fine sand A-1-b	
				5 7	w/some silt, trace of fine gravel.	
			26.0'		15" RECOVERY	
28						
		12	29.0'	7 7 8	Wet medium dense orangish brown coarse to A-1-b	
				8 8	fine sand w/some silt, trace of fine gravel.	
31.5			31.0'		17" RECOVERY	
		13	34.0	9		
35			04.0	9 10 10 9	Wet medium dense orangish brown fine sand w/some coarse sand and fine gravel, trace of silt. 15" RECOVERY	
			36.0'		silt. 15" RECOVERY	
38.5						
		14	39.0'	16 25 16 14	Wet dense orangish brown fine sand w/some A-2-4(0) coarse sand and silt.	
			41.0'	14	7" RECOVERY	
42						
		15	44.0'	9 10 13 20	Wet medium dense orange fine to coarse sand A-2-4(0)	
45.5			46.0'	20	Wixie w/some silt.	
			46.0'		De () 4 3 C C De () 3 C C De () 3 C C De () 4 C C C C C DE () 4 C C C C C C DE () 4 C C C C C C C C C C C C C C C C C C	
					6439966 1739.1127 1839.1127 1819.1127 1819.1127 1819.112	
		16	48.0'			
49				6 10	ENAME coarse sand and silt.	
			50.0'		End of Boring	
52.5						
02.0						

Symbol Description

Strata symbols



Poorly graded clayey silty sand



Poorly graded gravel with silt



Clayey sand



Silty sand



Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on February 8, 2011 using 3 1/4 inch continuous flight power auger. Rig is an ATV mounted CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301 Maryland State Line to S.R. 1 **Contract:** 25-113-01

Boring Location: STA. 1014+25 90' Rt. C.L.

Boring No.: R1-111

Boring Surface Ele	••••• + 35.40		Ref	erence:		
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	30.0
Water Level Readings Date 2/8/11	Time	Depth of Hole 24.0	Depth of Casing 24.0		of Water 2.2	Elev. of Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 30.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Dering Contractory W11 C		U U	

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
	2/8/11	1	0.0'		No Sampling	Asphalt - 4".
			2.0'		0" RECOVERY	
		2	2.0'	12 24 27 32	Moist very dense brown clayey fine gravel A-1-b	
3.5				32	and coarse to fine sand w/some silt.	
0.0			4.0		7" RECOVERY	
		3	4.0'	4 4 5 14	Wet stiff tan silt w/some clay, trace of fine to A-4(3)	
				5 14	coarse sand.	
			6.0'		15" RECOVERY	
		4	6.0'	5	Wet very stiff tannish orange fine sandy silt A-4(0)	
7				5 9 9 11	w/some coarse sand, trace of fine gravel.	
			8.0'		18" RECOVERY	
		5	8.0'	4	Wet medium dense orange fine sand w/some A-2-4(0)	
				4 6 6 7	silt, trace of coarse sand.	
			40.01			
10.5		6	10.0' 10.0'	6	17" RECOVERY Wet medium dense tannish orange fine sand A-2-4(0)	
10.5		Ŭ	10.0	6 8 10 11	we the dum dense tannish orange time sand $A-2-4(0)$ w/some coarse sand and silt.	
				11		
		7	12.0' 12.0'		18" RECOVERY	
_			12.0		No Sample	
14			14.0'		0" RECOVERY	
		8	14.0'	4 5 6 6	Wet medium dense tannish orange fine toA-2-4(0)	
				6	coarse sand w/some silt, trace of fine gravel.	
			16.0'		18" RECOVERY	
		9	16.0'	7 6	Wet medium dense tannish orange coarse to A-1-b	
17.5				6 6 9	fine sand w/some silt, trace of fine gravel.	
<u> </u>			18.0'		19" RECOVERY	
		10	18.0'	4 4	Wet loose orange coarse to fine sand w/trace A-1-b	
				4 4 6 6	of silt and fine gravel.	

F.A. Project: U.S. 301 Maryland State Line to S.R. 1 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
()			20.0'			15" RECOVERY		
21								
					1:1:1:1:1:1:1: 1:1:1:1:1:1:1:1:1 1:			
):):):):):):):)):):):):):):):):):):):):):):):):			
					1-1-1-1-1-1-1-1-1 1-1-1-1-1-1-1-1-1-1 1-1-1-1-1-1-1-1-1-1			
24.5		11	24.0'	6		Wet medium dense orange fine sand w/some	A-3	
				6 8 9 10		coarse sand, trace of fine gravel and silt.	11.5	
			26.0'		6619366 20172302 6613366 6613366	19" RECOVERY		
					1997 (4969) 1997 (4969) 1997 (4999)			
					46433466 10033.107. 14034466			
28				42				
		12	28.0'	10 16 14 13	11133,1107. 120174,207 10174,207	Wet medium dense orange fine sand w/some	A-3	
				13	1761 Y 166 464) 496 6 476 1 41 46 476 1 41 46 146 146 146 146 146 146 146 14	coarse sand, trace of fine gravel and silt.		
			30.0'			21" RECOVERY		
31.5								
	_	_	_					
35		N (OR BIDI		
35	•			-				
			_					
						GUST 20	1 [
							15	
38.5								
42								
45.5								
49								
52.5								

Symbol Description

Strata symbols

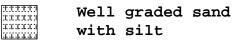
Poorly graded clayey silty sand

Silty low plasticity clay



Silty sand

Silt



Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on February 8, 2011 using 3 1/4 inch continuous flight power auger. Rig is an ATV mounted CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: US 301 Maryland State Line to SR-1 Contract: 28-113-01

Boring Location: Sta. 890+00 0' C.L

Boring Surface Elev.:		Ref	erence:		
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Spl S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. it Barrel O.D. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.
Casing Size: 3 1/ Hollow Stem Au		From Depth of: From Depth of:	0.0	To: To:	10.0
Water Level Readings Date Time 7/20/10	e Depth of Hole	Depth of Casing 8.0	Depth o Dr		Elev. of Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 10.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Dering Contractory W/10 C			

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
	7/20/10	1	0.0'	7 8 10 8	Moist medium dense brown silty fine to A-2-4(0) Topsoil - 3". coarse sand w/some fine gravel.
2.6		2	2.0' 2.0 4.0'	8 9 11 10	14" RECOVERY Moist medium dense brown fine sand w/some silt and coarse sand, trace fine gravel. 16" RECOVERY
5.2		3	4.0' 6.0'	10 10 8 9	Moist medium dense brown fine sand w/some coarse sand, trace silt.
7.8		4	6.0' 8.0'	6 8 7 9	Wet medium dense brown silty fine sand w/ A-2-4(0) trace coarse sand. 18" RECOVERY
		5	8.0'	6 6 7 6	Wet medium dense brown fine sand w/some A-2-4(0) silt, trace coarse sand.
10.4					End of Boring
13					

Symbol Description

Strata symbols



Silty sand

Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 20, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: US 301 Maryland State Line to SR-1 **Contract:** 28-113-01

Boring Location: Sta. 1000+00 0' C.L.

Boring Surface Elev			Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ster	3 1/4 n Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	10.0	
Water Level Readings Date 7/19/10	Time	Depth of Hole	Depth of Casing 8.0		of Water Pry	Elev. of Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	10.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		;	No. of: U-Samples:	
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
	7/19/10	1	0.5'	6 7 7	Moist medium dense brown fine gravel w/A-1-aTopsoil - 4".some coarse sand, trace fine sand and silt.	
			2.0' 2.0'	4	6" RECOVERY	
2.6		2	4.0'	4 5 6 6	Moist medium dense brown coarse to fine A-1-b sand w/some fine gravel and silt.	
5.2		3	4.0' 6.0'	6 10 12 14	Moist medium dense brown coarse to fine sand w/some fine gravel, clay and silt.	
		4	6.0'	17 18 14 13	Moist dense brown coarse to fine sand w/trace A-1-b fine gravel and silt.	
7.8		5	8.0' 8.0'	13 11 10 9	20" RECOVERY Moist medium dense brown coarse to fine sand w/some silt and fine gravel.	
			10.0'		22" RECOVERY	
10.4					End of Boring	
13						

Symbol Description

Strata symbols

Well graded gravel with silt



Silty sand

Poorly graded clayey silty sand



Poorly graded sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 19, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: US 301 Maryland State Line to SR-1 Contract: 28-113-01

Boring Location: Sta. 1005+00 0' C.L.

Boring Surface Ele			Ref				
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		10.0
Water Level Readings Date 7/19/10	Time	Depth of Hole	Depth of Casing 8.0		of Water Dry	Elev. of V	Vater

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	10.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		_;	No. of: U-Samples:	_
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	7/19/10	1	0.5'	8 8 5	Moist medium dense brown coarse sandy fine gravel w/some fine sand, trace silt.	A-1-a	Topsoil - 6".
			2.0'		6" RECOVERY		
2.6		2	2.0'	7 3 1 5	No Sample Recovery		
			4.0'		ORBIDI 0'RECOVERY		JG
		3	4.0'	5 8	Moist medium dense brown coarse to fine	A-1-b	
5.2			6.0'	15 17	sand w/some fine gravel and silt.	15	
		4	6.0'	17 13 12 17	Moist medium dense brown fine to coarse sand w/some silt and fine gravel.	A-2-4(0)	
7.8			8.0'		18" RECOVERY		
		5	8.0'	17 25 50/4"	Moist very dense brown fine to coarse sand and fine gravel w/some silt.	A-1-b	
			10.0'		12" RECOVERY		
10.4					End of Boring		
13							

Symbol Description

Strata symbols



Poorly graded gravel with silt

Silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 19, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: US 301 Maryland State Line to SR-1 Contract: 28-113-01

Boring Location: Sta. 1010+00 0' C.L.

Boring Surface El	ev.: + 26.64		Reference:					
Wt. of Casing Hammer Wt. of Sample Hamme Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	r: 140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow Ste	3 1/4 em Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		10.0	
Water Level Readings Date 7/19/10	Time	Depth of Hole	Depth of Casing		of Water Dry	Elev. of W	later	

Pay Quantities:

	10.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
	7/19/10	1	1.0' 2.0'	5 3	Moist medium dense brown silty coarse to fine sand w/trace fine gravel and clay. 6" RECOVERY
2.6		2	2.0'	4 5 4	Moist loose brown coarse to fine sand w/some A-1-b silt, trace fine gravel.
			4.0'		
	•	3	4.0'	4 4 3	Moist loose brown fine to coarse sand w/some A-2-4(0) silt, trace fine gravel.
5.2			6.0'	4	
		4	6 <mark>.</mark> 0'	4 5 5 6	Moist loose brown fine sand w/some coarse A-2-4(0) sand and silt, trace fine gravel.
7.8			8.0'		20" RECOVERY
		5	8.0'	4 5 5 5	Moist loose brown fine to coarse sand w/some A-2-4(0) silt, trace fine gravel.
			10.0'		22" RECOVERY
10.4					End of Boring
13					

Symbol Description

Strata symbols



Poorly graded clayey silty sand

Poorly graded sand with silt



Silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 19, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: US 301 Maryland State Line to SR-1 Contract: 28-113-01

Boring Location: Sta. 1013+00 0' C.L.

Boring Surface Elev.: + 2	4.62	Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split H S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. Barrel O.D. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.		
Casing Size: 3 1/4 Hollow Stem Auge	Inches	From Depth of: From Depth of:	0.0	To: To:	10.0		
Water Level Readings Date Time 7/19/10	Depth of Hole	Depth of Casing 8.0		of Water 5.5	Elev. of Water		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 10.0 No. of 2 in. Dia. Shelby Tubes:	Ft.;	Dia. U-Sample Boring: No. of: U-Samples:	Ft.
2 1/2 in. Dia. Contin. Sample Boring:	, Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Paring Contractor: Walton Composition			

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./C	i.I. Remarks
	7/19/10	1	0.5'	2 9 13 14	No Sieve Analysis - Indication of wet medium dense brown silty sand.	Topsoil - 4".
			2.0'		2" RECOVERY	
2.6		2	2.0'	8 10 9 10	No Sample Recovery	
			4.0'		FORBIDDI 0" RECOVERY	NG
		3	4.0'	54	Wet loose orange coarse sand w/some fineA-1-tsand and silt, trace fine gravel.	
5.2			6.0'		SUSERECOVERY 2015	5
		4	6.0'	4 5 5 7	Wet loose brown coarse to fine sand w/some A-1-t silt, trace fine gravel.	
7.8			8.0'		20" RECOVERY	
		5	8.0'	7 6 7 9	Wet medium dense brown fine to coarse sand A-3 w/trace silt. 16" RECOVERY	
10.4					End of Boring	
13						

Symbol Description

Strata symbols



Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 19, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

Boring No.: RW1-1-01

Boring Location:	Sta. 741+00, 180.00	Lt. C.L.					
Boring Surface Ele	V.: + 20.5		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140 Split-Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	29.0	
Water Level Readings Date 1/30/2009	Time	Depth of Hole 16.0'	Depth of Casing 14.0'		of Water 3.1'	Elev. of Water	

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring: 51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Paring Contractory Walton Comparation			

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	1/30/09	1	0.0'		No Sieve Analysis		Asphalt - 12". Subgrade - 12".
		2	2.0' 2.0'	12	0" RECOVERY		
2.45	ľ			12 13 13 14	Moist medium dense orange coarse to fine sand w/some silt and gravel.	A-1-b	IG
		3	4.0'	8	20" RECOVERY Moist medium dense orange fine to coarse	A-1-b	
4.9		Ū	P	8 9 9 14	sand w/some gravel and silt.	15	
			6.0'		18" RECOVERY		
7.35		4	6.0'	22 19 19 16	Moist dense orange coarse to fine sand and gravel w/some silt.	A-1-b	
			8.0'		19" RECOVERY		
		5	8.0'	6 6 7 11	Moist medium dense orange coarse to fine sand w/some silt, trace of gravel.	A-1-b	
9.8			10.0'		19" RECOVERY		
		6	10.0'	10 8 18 28	Moist medium dense orange fine to coarse sand w/some gravel and silt.	A-1-b	
12.25		7	12.0' 12.0'	9	13" RECOVERY Wet medium dense orange gravel and fine	A-1-b	
				9 12 7 4	sand w/trace of coarse sand and silt.	A-1-0	

Remarks: Mud Rotary @ 29.0'.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

PAGE 2 OF 3

No. Deckyr No. Deckyr Staturated Deckyr Class.6.1. Remarks 14.7 8 14.0 1 1 3' RECOVERY A.3 14.7 9 16.0' 16' RECOVERY A.3 14.7 9 16.0' 16' RECOVERY A.3 12.15 18' RECOVERY A.3 A.3 12.16 18.0' 18' RECOVERY A.3 18' RECOVERY A.3 Saturated low connege fine sand wisome coarse sand, trace of silt and gravel. A.3 18.6 20.0' 19' RECOVERY A.3 19 18.0' 19' RECOVERY A.3 19.0' 19' RECOVERY Saturated low connege fine sand wisome coarse sand, trace of silt and gravel. A.3 22.6 19' P'''' Saturated very loose orange fine sand wisome coarse sand, trace of silt and gravel. A.3 22.6 19''''' 20''''''''''''''''''''''''''''''''''''	Depth	Daily		Samplo					
142 1	(ft.)	Progress	No.		Blows/6"		Sample Description	Class./G.I.	Remarks
142 16 16 20 18 <					1	10 8 3 1 3 10 0 10 8 3 4 4 4 6 6 10 8 1 9 3 10 8			
12.06 10.0 10.0 16.7 16.7 16.7 16.7 16.7 12.16 9 18.0 1 10.0 17.7 RECOVERY A-3 12.16 10 18.0 10 10.0 17.7 RECOVERY A-3 13.6 20.0 14.7 RECOVERY A-3 13.6 20.0 14.7 RECOVERY A-3 13.6 20.0 14.7 RECOVERY A-3 14.7 20.0 14.7 RECOVERY A-3 22.06 10 10.0 10.0 10.0 RECOVERY 22.07 10.7 10.0 10.0 10.0 12.2 20.0 14.7 RECOVERY A-3 22.06 10.7 10.0 10.0 10.0 12.2 10.7 10.0 10.0 10.0 22.06 10.7 10.0 10.0 10.0 22.07 10.0 10.0 10.0 10.0 22.08 10.0 10.0 10.0 10.0 22.01 10.0 10.0 10.0 10.0 22.02 10.0 10.0 10.0 10.0 22.01 10.0 10.	147		8	14.0	23	12171111 46411266 120121		A-3	
15.0 15.0 15.0 15.0 15.0 17.18 17.15 10 15.0 17.18 17.18 17.18 17.18 18.0 1.0 1.2 17.18 17.18 17.18 17.18 19.0 1.00 1.00 17.18 17.18 17.18 17.18 19.0 1.00 1.00 17.18 17.18 17.18 14.15 19.0 1.00 1.00 1.00 17.18 14.16 14.16 20.0 14 14.16 14.16 14.16 14.16 14.16 20.0 14 14.16 14.16 14.16 14.16 14.16 20.0 14.16 14.16 14.16 14.16 14.16 14.16 20.0 1.00 1.00 14.16 14.16 14.16 14.16 14.16 20.0 1.00 1.00 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16 14.16	14.7				3	1.01 (1.0.0 1.01 (1.0.0	coarse sand, trace of silt and gravel.		
17.15 15.07 15.07 15.07 15.07 15.07 15.07 15.07 15.07 15.07 15.07 15.07 17.15 17.15 9 16.07 1 2 20.07 17.15 17.15 A-3 18.0 19 19.07 19 19.07 19 19.07 Saturated very loose orange fine sand w/some carse sand, trace of silt and gravel. A-3 19.0 19.07 14 20.07 14* RECOVERY A-3 22.05 14 20.07 14* RECOVERY A-3 22.05 14 24.07 14* RECOVERY A-3 22.05 14 24.07 14* RECOVERY A-3 22.05 14 24.07 14* RECOVERY 20.07 A-4 22.05 10 5 Saturated very logoe orange fine sand w/some D-A-3 A-3 22.05 12 24 14* Saturated or silt and gravel. A-3 28.6 12 20.07 2 Saturated medium dense light brown silty fine A-2-4(0) Mud Rotary @ 29.0* 31.07 31.07 21* RECOVERY <						461))))))) 11(11,101)			
8 16.0 3 3 Saturated loos orange fine sand wixome coarse sand, trace of silt and grivel. A.3 121.15 10 18.0' 10 18.0' 17' RECOVERY 100 20.0' 14' RECOVERY A.3 120.6 20.0' 14' RECOVERY A.3 100 20.0' 14' RECOVERY A.3 101 20.0' 14' RECOVERY A.3 102 20.0' 14' RECOVERY A.3 103 20.0' 14' RECOVERY A.3 104 10''''''''''''''''''''''''''''''''''''				16.0'		1.6 1 1 1:0 1 1.6 1 1 1:0 1	18" RECOVERY		
12.15 18.0 i<			9		1			A-3	
12.15 10 18.0 19" RECOVERY A.3 10 18.0 Saturated very loose orange fine sand wisome coarse sand, trace of sil. A.3 12.6 20.0 14" RECOVERY A.3 22.06 A.3 22.06 A.3 22.06 22.06 22.06 22.07 22.08 22.09 22.11 22.11 22.11 23.					3	D.C.1.4.3.C.C.		11.5	
10 18.0 10 <	17.15				4	00000000000000000000000000000000000000			
10 16.0 WR 12 Saturated very loose orange fine sand w/some 200 A.3 196 20.0 14" RECOVERY A.3 2205 20.0 14" RECOVERY DRAFT 24.5 14" RECOVERY DRAFT 24.5 24.9 10" Saturated very loose orange file sand w/some coarse sand, trace of silt and gravel. A 3 26.5 26.0 24.9 10" Saturated very loose orange file sand w/some coarse sand, trace of gravel. A 3 28.6 12 28.0 2 2 Saturated medium dense light brown silty fine sand w/some coarse sand, trace of gravel. A-2-4(0) Mud Rolary @ 29.0'. 31.0 21" RECOVERY 31.0 A 2-4(0) A 2-4(0) 34.3 34.0 2 8 Saturated medium dense light brown silty fine sand w/some coarse sand, trace of gravel. A 2-4(0) 34.3 34.0 2 8 Saturated medium dense light brown silty fine sand w/some coarse sand, trace of gravel. A 2-4(0)						har i rasseri			
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198 2007 14* RECOVERY DRAFT			10	18.0'	W/R			A-3	
19.6 20.0" 1" RLCOVERY 22.05 11 24.0" 11 24.5 11 24.0" 11 26.6 11 24.0" 11 26.7 11 24.0" 11 26.8 11 24.0" 11 26.9 12 29.0" 2 12 29.0" 2 2 31.6" 31.0" 21" RECOVERY 31.8 13 34.0" 2 13 34.0" 2 36.0" 13 34.0" 2 36.0" 14 24.0" 21" RECOVERY 21" RECOVERY 2.1" RECOVERY					2	12613329U 166133269	coarse sand, trace of silt.		
190 20.0 14° RECOVERY 22.06 10 24.9 10° 24.5 10 24.9 10° 26.6 28.0 28.0 28.0 12 29.0° 28.0 28.0 12 29.0° 26.0 28.0 12 29.0° 26.0 21° RECOVERY 28.4 31.0° 21° RECOVERY A-2-4(0) 13 34.0° 2.0 3.0° 21° RECOVERY 13 34.0° 2.0 3.0° 21° RECOVERY 21° RECOVERY 21° RECOVERY A-2-4(0)						10000000			
22.06 1 24 11 24 24 11 24 24 11 24 <	19.6			20.01		1991 J J 1990 1993 J 1994 P			
206 215 24.5 26.6 26.7 28.95 28.95 28.95 12 29.0 28.0 12 29.0 31.0 21.* RECOVERY 20.13 31.85 13 34.0 13 34.0 36.0 21 * RECOVERY 21.* RECOVERY A-2-4(0)				20.0		1993 1999 6 1993 1997 -	14 RECOVERY		
22.05 24.5 24.6 24.6 26.95 26.94 12 28.07 28.95 12 28.07 12 28.07 12 28.07 12 28.07 13 31.07 14 21° RECOVERY 13 34.0 13 34.0 14 21° RECOVERY 13 34.0 14 21° RECOVERY						6611366 Datation			
22.05 24.5 24.5 26.6 1 26.6 1 26.9 1 26.						664)))66 1913,196 1917,196			
24.5 1 24.7 Wint Wint Wint Wint Wint Wint Wint Wint						1:1:1:1:1:1:1: 1:1:1:1:1:1:1:1:			
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245 1 249 WW Suturated very hose orange time sand w/some A-3 G 28.35 28.95 28.97 20 1.5 A A A 29.4 12 29.0 2 A A A A A A 29.4 12 29.0 2 A	22.00					64334646			
24.5 1 24.9 WW Seturated very loose orange fine sand w/some A-3 24.5 26.4 Coarse sand, trace of silt and gravel. A-3 G 26.6 26.4 Coarse sand, trace of silt and gravel. A-3 G 26.9 26.4 Coarse sand, trace of silt and gravel. A-3 G 26.9 26.4 Coarse sand, trace of silt and gravel. A-3 G 28.95 12 29.0' 2 9 4 A 29.4 12 29.0' 2 8 Saturated medium dense light brown sity fine sand w/some coarse sand, trace of gravel. A-2-4(0) Mud Rotary @ 29.0'. 31.65 31.0' 21' RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 34.0' 3 3 3 A-2-4(0) 13 34.0' 3 Saturated medium dense light brown sity fine sand w/some coarse sand, trace of gravel. A-2-4(0) 34.0' 3 21' RECOVERY A-2-4(0) A-2-4(0) 36.0' 21' RECOVERY A-2-4(0) A-2-4(0)									
24.5 1 24.9 With With With Course sand, trace of silt and gravel. A-3 26.0 26.0 Course sand, trace of silt and gravel. DU IS RECOVERY 200 15 28.95 12 29.0 2 6 Course sand, trace of silt and gravel. A-2.4(0) Mud Rotary @ 29.0'. 28.95 31.0' 21' RECOVERY 21' RECOVERY A-2.4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21' RECOVERY A-2.4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21' RECOVERY A-2.4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21' RECOVERY A-2.4(0) A-2.4(0) 31.85 36.0' 21' RECOVERY A-2.4(0)		_	_			66173366			_
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264 264 264 264 264 200 200 155 2835 1 29.0' 2 200' 200' </td <td></td> <td></td> <td></td> <td></td> <td>W/R</td> <td></td> <td>coarse sand, trace of silt and gravel.</td> <td></td> <td></td>					W/R		coarse sand, trace of silt and gravel.		
26.95 12 29.0' 2/4 34.0' 3 34.0' 3 3 Saturated medium dense light brown silty fine and w/some coarse sand, trace of gravel. A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 34.3 13 34.0' 3 A-2-4(0) A-2-4(0) 36.0' 21" RECOVERY A-2-4(0) A-2-4(0) A-2-4(0)						1.6171.61. 1.1171.61			
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26.95 I <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
29.4 12 29.0' 2 7 8 Saturated medium dense light brown silty fine sand w/some coarse sand, trace of gravel. A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 34.3 34.0' 7 8 A 34.3 34.0' 7 8 A A-2-4(0) 13 34.0' 7 8 A A-2-4(0) 13 34.0' 7 8 A A-2-4(0) 13 36.0' 21" RECOVERY A-2-4(0) A-2-4(0)	00.05					1.1.1.1.1.1.1.1			
294 12 29.0' 2 31.0' A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 13 34.0' 3 A-2-4(0) Mud Rotary @ 29.0'. 343 13 34.0' 3 A-2-4(0) A-2-4(0) 13 34.0' 3 A-2-4(0) A-2-4(0) 13 36.0' 21" RECOVERY A-2-4(0) 21" RECOVERY A-2-4(0) A-2-4(0) A-2-4(0)	26.95								
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29.4 12 29.0' $\frac{2}{4}$ Saturated medium dense light brown silty fine sand w/some coarse sand, trace of gravel. A-2-4(0) Mud Rotary @ 29.0'. 31.0' 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 21" RECOVERY A-2-4(0) Mud Rotary @ 29.0'. 31.85 31.0' 31.0' 31.0' A-2-4(0) A-2-4(0) 31.85 13 34.0' $\frac{3}{7}$ Saturated medium dense light brown silty fine sand w/some coarse sand, trace of gravel. A-2-4(0) 34.3 13 36.0' 21" RECOVERY A-2-4(0)						1999 - 1999 1999 - 1999 1999 - 1999 - 1999 1999 - 1999 - 1999 - 1999			
29.4 12 29.0' 21/8 Saturated medium dense light brown silty fine sand w/some coarse sand, trace of gravel. A-2-4(0) Mud Rotary @ 29.0'. 11 31.0' 1 <td< td=""><td></td><td></td><td></td><td></td><td></td><td>1:111:11:11 1:11:12:12:1 1:11:12:12:12:12:12:12:12:12:12:12:12:12</td><td></td><td></td><td></td></td<>						1:111:11:11 1:11:12:12:1 1:11:12:12:12:12:12:12:12:12:12:12:12:12			
31.85 31.0' 21" RECOVERY 31.85 34.0' $\frac{3}{7}$ 34.3 36.0' 21" RECOVERY									
31.0' 31.0' 21" RECOVERY 31.85 31.0' 21" RECOVERY 31.85 34.0' 7 34.3 13 34.0' 7 10 36.0' 21" RECOVERY 36.0' 21" RECOVERY	29.4		12	29.0'	2 4			A-2-4(0)	Mud Rotary @ 29.0'.
31.85 13 34.0' 3					7 8		sand w/some coarse sand, trace of gravel.		
31.85 13 34.0' 3									
31.85 13 34.0' 3									
Image: Set of the set				31.0'			21" RECOVERY		
Image: Second secon									
36.0' 21" RECOVERY	31.85								
36.0' 21" RECOVERY									
36.0' 21" RECOVERY									
36.0' 21" RECOVERY									
36.0' 21" RECOVERY									
36.0' 21" RECOVERY	34.3		13	34.0'	3		Saturated medium dense light brown silty find	$\Delta_2 2_4(0)$	
36.0' 21" RECOVERY					7 8			A-2-4(0)	
					10		sale wisome course sand, trace of gravel.		
				36.0'			21" RECOVERY		
36.75									
	36.75								

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
<u> 39.2 </u>		14	39.0' 41.0'	3 3 5 5	Saturated loose gray silty fine clayey sand w/ some coarse sand, trace of organic matter and gravel. 19" RECOVERY	A-2-4(0)	
41.65							
44.1		15	44.0'	3 4 7 9	Saturated medium dense gray silty fine sand w/trace of coarse sand, gravel and organic matter. 22" RECOVERY	A-2-4(0)	
46.55			0	Т	FOR BID	DIN	IG
		16	49.0' 51.0'	6 9 9 13	Saturated medium dense gray silty fine sand w/trace of gravel, organic matter and coarse sand. 24" RECOVERY	A-2-4(0)	
51.45					End of Boring		
53.9							
56.35							
58.8							

Symbol Description

Strata symbols



Silty sand

Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/30/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: RW1-1-02

Boring Location: Sta. 742	2+00, 180.00' Lt. C.L.				
Boring Surface Elev.:	+ 19.7	Reference:			
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Spli S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. it-Barrel O.D. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.
Casing Size: 3 1/4 Hollow Stem Aug		From Depth of: From Depth of:	0.0	To: To:	34.0
Water Level Readings Date Time 1/29/2009	Depth of Hole	Depth of Casing		of Water 4.7'	Elev. of Water

Pay Quantities:

Contract: 25-113-01

	101.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		F 4	No. of: U-Samples:	F 4
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.
Bering Contractory Walter Comparison				

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	1/29/09	1	0.0'		No Sieve Analysis		Asphalt - 6". Subgrade - 18".
			2.0'		0" RECOVERY		
2.45		2	2.0'	8 15 13 13	Moist medium dense orange fine to coarse sand w/some silt and gravel.	A-2-4(0)	IG
			4.0'		18" RECOVERY		
4.9		3	4.0	5 6 5 6	Moist medium dense orange coarse to fine sand w/some silt and gravel.	A-1-b	
			6.0'		16" RECOVERY		
7.35		4	6.0'	9 11 11 8	Moist medium dense orange coarse to fine sand w/some silt and gravel.	A-1-b	
		5	8.0' 8.0'	7	20" RECOVERY	A-1-b	
		5	0.0	7 6 9 20	Moist medium dense orange coarse to fine sand w/some gravel and silt.	A-1-0	
9.8			10.0'		19" RECOVERY		
		6	10.0'	20 25 29 28	Moist very dense orange coarse to fine sand w/some silt, trace of gravel.	A-1-b	
10.05			12.0'		19" RECOVERY		
12.25		7	12.0'	33 38 45 30	No Sample Recovery		
			<u> </u>				I

Remarks: Mud rotary @ 34.0'.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	NI-	Sample	Diame (0)	
(ft.)	Progress	No.	Depth	Blows/6"	Sample Description Class./G.I. Remarks
14.7		8	<u>14.0'</u> 14.0'	5 8 6 5	0" RECOVERY Wet medium dense light brown coarse to fine sand w/some gravel and silt.
		9	16.0' 16.0' 17.0'	5 2	17" RECOVERY Wet loose light brown coarse to fine sand w/ some silt, trace of gravel.
17.15		9A	17.0'	2 4	12" RECOVERY Wet loose gray silty fine to coarse sand w/ some gravel.
		10	18.0'	6 14 14 15	A-1-a Wet medium dense orange gravel and coarse sand w/some fine sand, trace of silt. A-1-a
19.6			20.0'		18" RECOVERY
22.05					DRAFT
24.5	ľ	11	24.0' 25.0'	25	Saturated loose brown silty fine sand w/some A-2-4(0) coarse sand. 8" RECOVERY
26.95		11A	25.0' 26,0'	67	Saturated medium dense gray silty fine sand w/some coarse sand. 12" RECOVERY
29.4	•	12	29.0'	2 4 5 6	Saturated stiff gray fine sandy silt w/trace of coarse sand and organic matter. A-4(0)
31.85			31.0'		21" RECOVERY
34.3		13	34.0'	3 4 6 8	Saturated loose gray silty fine sand w/trace of A-2-4(0) Mud rotary @ 34.0'.
36.75			36.0'		24" RECOVERY

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
39.2		14	39.0' 41.0'	4 4 5 7	Saturated stiff gray fine sandy silt w/trace of coarse sand and organic matter. A-4(0) 20" RECOVERY 20	
41.65		15	44.0'	5	Saturated medium dense gray silty fine sand A-2-4(0)	
46.55			46.0'	5 7 10 11	w/trace of coarse sand. 20" RECOVERY	
49		16	49.0'	5	Saturated very stiff gray fine sandy silt w/ A-4(1)	
			51.0'	5 8 9 11	Saturated very stiff gray fine sandy silt w/ some clay, trace of organic matter, coarse sand and gravel. 22" RECOVERY	
53.9		17	54.0'	5 7 14 15	Saturated very stiff gray fine sandy silt w/ A-4(0) some clay, trace of organic matter and coarse sand. A-4(0)	
56.35			56.0'		21" RECOVERY	
58.8		18	59.0'	11 13 24 25	Saturated dense green silty fine sand w/trace or organic matter and coarse sand. A-2-4(0) Glauconite	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	 Sample Description	Class./G.I.	Remarks
			04.01				
61.25			61.0'		21" RECOVERY		
63.7		10	64.0'	7			
		19	64.0	7 10 11 15	Saturated medium dense green silty fine sand w/trace of coarse sand, organic matter and	A-2-4(0)	Glauconite
			66.0'		gravel. 21" RECOVERY		
66.15			00.0		21 RECOVER I		
					DRAFT		
68.6		20	69.0'	4	Saturated stiff gray clay w/some organic	A-7-6(26)	
	N	20		4 6 8 11	matter, trace of fine sand.	A-7-0(20)	
71.05			71.0'		23" RECOVERY	ノル	Ð
11.05							
					GUST 20	15	
73.5							
		21	74.0'	5	Saturated medium dense grayish green silty	A-2-4(0)	
				10 15 20	fine sand w/trace of organic matter, gravel and coarse sand.		
75.95			76.0'		21" RECOVERY		
78.4							
		22	79.0'	6 10 17 16	Saturated very stiff gray silty fine sand w/	A-4(0)	
				17 16	trace of organic matter.		
80.85			81.0'		20" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
83.3							
		23	84.0'	12 14 21 30	Saturated hard gray fine sandy silt w/trace of organic matter.	A-4(0)	
85.75			86.0'		24" RECOVERY		
88.2							
	1/30/09	24	89.0'	4 6 13 17	Saturated very stiff gray clayey fine sandy silt w/some organic matter.	A-4(4)	
90.65			91.0'		 22" RECOVERY		
93.1			\mathbf{O}				IG
95.55		25	94.0'	6 8 13 17	Saturated very stiff gray silty clay w/some fine sand and organic matter.	A-7-6(16)	
			96.0'		23" RECOVERY	IJ	
98							
		26	99.0'	7 8 10 10	Saturated very stiff gray silty clay w/some organic matter and fine sand.	A-7-5(15)	
100.45			101.0'		24" RECOVERY		
					End of Boring		
102.9							
105.35							

Symbol Description

Strata symbols

Silty sand

Poorly graded sand

Poorly graded clayey silty sand



Low plasticity clay

Silt

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/29/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: RW1-1-03

Boring Location:	Sta. 743+00, 180.00	Lt. C.L.					
Boring Surface Elev.: + 17.20			Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split-Barrel S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		49.0
Water Level Readings Date 1/12/2009	Time	Depth of Hole 16.0'	Depth of Casing 14.0'		of Water 3.0'	Elev. of Wate	r

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring:	51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		;	No. of: U-Samples:	
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G	I. Remarks
	1/12/09	1	1.0'	5 9	Moist medium dense orange fine sand w/some A-2-4(C coarse sand, silt and gravel.) Topsoil - 9".
			2.0'		9" RECOVERY	
2.45		2	2.0'	9 16 20 18	Moist dense orange silty fine to coarse sand A-2-4(0)
				18	w/trace of gravel.	
			4.0'		12" RECOVERY	
		3	4.0'	8 12 14 14	Moist medium dense orange fine sand w/some A-2-4(0)
4.9			_	14 14	coarse sand and silt, trace of gravel.	
					DICT 2010	
			6.0'		20" RECOVERY	
		4	6.0'	15	Moist dense orange fine to coarse sand w/ A-2-4(0	
				15 16 19 21	some silt, trace of gravel.	
7.35						
		5	8.0' 8.0'	10	13" RECOVERY Wet dense orange fine to coarse sand w/some A-2-4(0))
			0.0	10 18 18 21	silt, trace of gravel.)
				21	sin, nace of gravel.	
9.8			10.0'		13" RECOVERY	
		6	10.0'	25 26 23 26	Wet dense orange fine sand w/some coarseA-2-4(0))
				23 26	sand and silt, trace of gravel.	
			12.0'		24" RECOVERY	
12.25		7	12.0'	6	Wet medium dense orange fine to coarse sand A-3	
				6 8 11 13	w/some silt, trace of gravel.	
		8	14.0' 14.0'	8 12	18" RECOVERY Wet medium dense brown fine sand w/some A-2-4(0	<u> </u>
14.7		Ĭ		12 11	Wet medium dense brown fine sand w/some A-2-4(,
Poma		-				•

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description C	lass./G.I.	Remarks
(ft.)	Progress	110.	Depth	9	coarse sand and silt, trace of gravel.		Komano
					course saile and shi, duce of graven		
			16.0'		18" RECOVERY		
		9	16.0'	7 8 8 9		A-2-4(0)	
17.15				9	w/some silt, trace of gravel.		
17.10							
		- 10	18.0'	2	16" RECOVERY		
		10	18.0'	3 8 13 6	Wet medium dense brown fine to coarse sand w/some gravel and silt.	A-3	
				6			
19.6							
			20.0'		13" RECOVERY		
					n 1 / J. (.) 1 / J. (.) 2 / Yung / J. (.) 2 / Yung / J. (.)		
					rāg 5 k. 1907. Mē 1 4 k. 1997. Rē 1 3 statu		
22.05							
					No Sample Recovery		
24.5		11	24.0' 24.5'	50/2"	No Sample Recovery		Cobble blocking spoon.
					0" RECOVERY		
	_						
26.95					GUST 201	6	
-					TE 1 3 DIE 1 FE 3		
		12	29.0'	W/H	Soturated losse area silty fine and w/area	2.4(0)	
29.4		12	20.0	W/H 2 3 3	Saturated loose gray silty fine sand w/some A coarse sand.	A-2-4(0)	
				3			
			24.01				
			31.0'		20" RECOVERY		
31.85							
34.3		13	34.0'	1 3 4 4		A-2-4(0)	
				4 4	coarse sand and organic matter.		
			36.0'		21" RECOVERY		
36.75							
30.75							

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
	0					
39.2		14	39.0'	3 5 5 6	Saturated loose gray silty fine sand w/trace of coarse sand, organic matter and gravel. A-2-4(0)	
41.65			41.0'		21" RECOVERY	
44.1						
		15	44.0'	3 8 7 10	Saturated medium dense gray silty fine sand w/trace of gravel, organic matter and coarse sand.A-2-4(0)	
46.55			46.0'		21" RECOVERY	
				_		
49					FOR BIDDING	
		16	49.0' 51.0'	3 6 11 12	Saturated very stiff gray clayey fine sandy silt A-4(0) w/trace of organic matter, coarse sand and gravel. 400 23" RECOVERY 400	
51.45			01.0		End of Boring	
53.9						
56.35						
58.8						

Symbol Description

Strata symbols

Silty sand

Poorly graded sand with silt



1.1.1.1.1. 1.1.1.1.1. 1.1.1.1.1.1.

Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/12/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a ATV CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: RW1-1-04

Boring Location:	Sta. 744+00, 180.00'	Lt. C.L.					
Boring Surface Ele	V.: + 16.50		Ref	erence:			
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140 Split-Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		49.0
Water Level Readings Date 1/12/2009	Time	Depth of Hole	Depth of Casing 24'		of Water 7.0'	Elev. of Wate	r

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring: 51.0 No. of 2 in. Dia. Shelby Tubes:	Ft.;	Dia. U-Sample Boring: No. of: U-Samples:	Ft.
2 1/2 in. Dia. Contin. Sample Boring:	Ft.;	Core Drilling in Rock:	Ft.
Devine Contractory Walter Comparties			

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Cla	lass./G.I.	Remarks
	1/12/09	1	0.5'	5 10 8	silt w/some fine sand, trace of gravel.	A-4(1)	Topsoil - 5".
2.45		2	2.0'	12 15 17 21	15" RECOVERY Moist dense orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	IG
		3	4.0' 4.0'	5 15 20 28		A-2-4(0)	
4.9			6.0'	VU	some silt, trace of gravel. 201 14" RECOVERY	15	
7.35		4	6.0'	20 20 26 30	Moist dense orange silty coarse to fine sand A w/trace of gravel.	A-2-4(0)	
			8.0'		20" RECOVERY		
9.8		5	8.0'	5 16 15 16	silt and gravel.	A-2-4(0)	
		6	10.0' 10.0'	23 25 27 28	18" RECOVERY Wet very dense orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
12.25		7	12.0' 12.0'	7 12 13 17	21" RECOVERY Wet medium dense orange fine to coarse sand w/some silt, trace of gravel. A	A-2-4(0)	
Boma			14.0'	6	17" RECOVERY		

Remarks:

PAGE 2 OF 3

STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
14.7		8	14.0'	10 8 7	100 1 4 100 100 1 4 100 100 1 4 100 100 1 4 10 100 1 4 10 100 1 100 100 100	Wet medium dense brown fine to coarse sand w/trace of silt and gravel.	A-3	
			16.0'		1.6143.69 2.6173.61 8.6313.00 8.6313.00	18" RECOVERY		
		9	16.0'	3 4 3 5	1911999919 20172207 20133220 20133220	Saturated loose brown fine sand w/some	A-3	
17.15			40.01	5	1001 4300 1001 4300 2017 200 1003 2017 200 1003 2017 200 1003 2017 200 1003 200 1003 200 1003 200 1003 200 1003 200 1000 2000 1000 200 1000 2000 1000 2000 10000 10000000000	coarse sand and gravel, trace of silt.		
		10	18.0' 18.0'	1		19" RECOVERY Saturated loose brown fine to coarse sand w/	A-3	
				1 2 3 4	199393999 19939399 19939399 19939399 19939399 19939399 19939399	trace of gravel and silt.		
19.6			20.0'		100133000 100133060 200103000 200103000	13" RECOVERY		
					10033.0007. NGC 333000 SALTOUG SALTOUG 66433866 NGC 330007. NGC 330007. NGC 330007. NGC 330007. NGC 330007. NGC 330007. NGC 33007. NGC 33007.			
22.05					100 1 4 4 100 f 4 6 1 4 4 10 f 4 6 1 7 4 4 6 6 6 6 7 4 4 6 7 4 6 6 6 6 7 4 6 7 7 7 6 6 7 6 7 4 7 7 6 6	DRAFT		
					1944-494-649 1949-1990 1961-939-66 1961-939-66			
24.5		11	24.0'	6 14 6 8		Saturated medium dense gray clayey fine sand w/some coarse sand, trace of gravel and organic matter.	A-2-4(0)	IG
			26.0'			10" RECOVERY	1 -	
26.95						10" RECOVERY	15	
29.4		12	29.0'	3 4		Saturated loose gray clayey fine sand w/trace	A-2-4(0)	
				3 4 4 6		of coarse sand, organic matter and gravel.	~ /	
			31.0'			19" RECOVERY		
31.85								
					[]]]			
34.3		13	34.0'	2 4 4 5		Saturated firm gray fine sandy silt w/trace of	A-4(0)	
				4 5		coarse sand, clay, organic matter and gravel.		
			36.0'			24" RECOVERY		
36.75								

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
39.2		14	39.0'	4 6 7 10	Saturated medium dense gray silty fine sand w/trace of coarse sand and organic matter. A-2-4(0)
41.65			41.0'		21" RECOVERY
44.1		15	44.0'	6 7 10 12	Saturated very stiff gray clayey fine sandy silt w/trace of organic matter, gravel and coarse sand. 21' RECOVERY
46.55			0	T	OR BIDDING
		16	49.0' 51.0'	6 12 13 17	Saturated very stiff gray clayey fine sandy silt A-4(0) w/trace of organic matter, coarse sand and gravel. 24" RECOVERY
51.45					End of Boring
53.9					
56.35					
58.8					

Symbol Description

Strata symbols



Silty low plasticity clay



Silty sand



Poorly graded sand with silt



Poorly graded clayey silty sand



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/12/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Track CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: RW1-1-05

Boring Location:	Sta. 745+00, 180.00	Lt. C.L.				
Boring Surface Ele	ev.: + 16.45		Ref	erence:		
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	49.0
Water Level Readings Date 1/13/2009	Time	Depth of Hole 12.0'	Depth of Casing 10.0'		of Water).0'	Elev. of Water

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring:	51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.:	No. of: U-Samples: Core Drilling in Rock:	E+
2 1/2 III. Dia. Contini. Sample Bornig.		г.,	Core Drining in Rock.	FL.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
	1/13/09	1	0.5'	5 5 5	Moist firm brown clayey coarse sandy silt w/ A-4(0) Topsoil - 4".
2.45		2	2.0' 2.0' 3.5'	6 9 50	15" RECOVERY Moist very dense orange fine to coarse sand w/some silt, trace of gravel. 10' RECOVERY
4.9		3	4.0' 6.0'	5 15 21 19	Moist dense orange fine to coarse sand w/ A-2-4(0) some silt, trace of gravel.
7.35		4	6.0' 8.0'	25 23 23 18	Moist dense orange coarse to fine sand w/ A-1-b some gravel and silt.
9.8		5	8.0'	6 18 29 23	Wet dense brown coarse to fine sand w/some A-1-b silt and gravel.
		6	10.0'	21 20 20 12	Wet dense brown coarse to fine sand and A-1-b gravel w/some silt.
12.25		7	12.0'	2 2 3 6	Wet loose brown fine to coarse sand w/trace A-3 of gravel and silt.
Boma			14.0'	2	13" RECOVERY

Remarks:

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
14.7		8	14.0'	2 4 4	Wet loose brown fine to coarse sand w/some A-1-b gravel, trace of silt.
		9	16.0' 16.0'	2	12" RECOVERY Saturated very loose gray fine sand w/some A-2-4(0)
		Ű	10.0	2 2 2 1	coarse sand and silt, trace of gravel.
17.15					
			18.0'		17" RECOVERY
		10	18.0'	W/H W/R W/R 1	Saturated very loose brownish red fine sandA-2-4(0)w/some coarse sand and silt.
				1	
19.6			20.0'		17" RECOVERY
22.05					DRAFT
	N	11	24.0'	3	Saturated loose gray clayey fine sand w/some A-2-4(0)
24.5				3 3 5 5	coarse sand, trace of organic matter and
				-	gravel.
			26.0'		21" RECOVERY
26.05					$FUST_{2015}$
26.95					
00.4		12	29.0'	2	Saturated loose gray silty fine sand w/trace of A-2-4(0)
29.4				2 4 4 10	coarse sand and organic matter.
			31.0'		19" RECOVERY
31.85					
51.60					
34.3		10	34.0'	3	
34.3		13	34.0	3 5 6 8	Saturated stiff gray fine sandy silt w/trace of coarse sand and organic matter.A-4(0)
				U	
			36.0'		22" RECOVERY
26.75					
36.75					

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
39.2		14	39.0'	4	Second and investment of the first and A 24(0)	
			41.0'	4 7 10 15	Saturated medium dense gray silty fine sand w/trace of coarse sand, organic matter and gravel. A-2-4(0) 21" RECOVERY 21" RECOVERY	
41.65						
44.1		15	44.0'	6 8 9 12	Saturated very stiff gray fine sandy silt w/ A-4(0) trace of organic matter and coarse sand.	
46.55	N		О.	Т	FOR BIDDIN	G
49		16	49.0' 51.0'	6 9 13 13	Saturated very stiff gray fine sandy silt w A-4(1) trace of organic matter and clay.	
51.45					End of Boring	
53.9						
56.35						
58.8						

Symbol Description

Strata symbols

Poorly graded clayey silty sand



Silty sand

Poorly graded sand with silt



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/13/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Track CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: RW1-1-06

Boring Location:	Sta. 746+00, 180.00'	Lt. C.L.					
Boring Surface Ele	V.: + 16.0		Ref	erence:			
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		51.0
Water Level Readings Date 1/5/2009	Time	Depth of Hole 14.0'	Depth of Casing 12.0'		of Water	Elev. of W	/ater

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring:	66.0	Ft.;	3 Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		_ ;	No. of: 3" U-Samples: 2	_
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	1/5/2009	1	0.5'	3 5 4		Moist stiff orange coarse to fine sandy silt w/ trace of clay and gravel.	A-4(0)	Topsoil - 2".
2.45		2	2.0' 2.0' 4.0'	5 14 18 22		15" RECOVERY Moist dense orange fine to coarse sand w/ some silt and gravel.	A-2-4(0)	IG
4.9		3	4.0' 6.0'	7 15 16 18		Moist dense orange coarse to fine sand w/ some silt and gravel.	A-1-b	
7.35		4	6.0' 8.0'	38 39 45 42		No Sample Recovery 0" RECOVERY		Driving a cobble.
9.8		5	8.0'	3 14 10 6		Wet medium dense orange coarse to fine sand w/some gravel and silt.	A-1-b	
		6	10.0'	4 3 2		Wet loose orange coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
12.25		7	12.0' 12.0'	W/R W/R 1 1		20" RECOVERY No Sample Recovery		
			14.0'	W/R	_	0" RECOVERY		

Remarks: Mud Rotary @ 51.0'.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description Class./G.I.	Remarks
(ft.)	Progress	8	Depth 14.0'		No Sieve Analysis - Indication of saturated	
14.7				W/R W/R W/R	soft gray clayey silt.	
			16.0'	1	2" RECOVERY	
		9	16.0'	1 2 2 3	Saturated very loose grayish brown silty fine A-2-4(0) sand w/some coarse sand.	
17.15				3	sand w/some coarse sand.	
			40.0			
		10	18.0' 18.0'	2	12" RECOVERY Saturated loose gray silty fine sand w/some A-2-4(0)	
				2 4 3 3	coarse sand, trace of organic matter.	
19.6						
19.0			20.0'		16" RECOVERY	
22.05						
24.5		11	24.0'	2 2 3 4	Saturated loose gray silty fine sand w/trace of A-2-4(0)	
		N (3 4	coarse sand, organic matter and gravel.	
	_					
			26.0'		19" RECOVERY	
					GUST 2015	
26.95		U-1	27.0'		No Sample Recovery	Press Sample - Shelby Tube.
			29.0'		0" RECOVERY	
29.4		12	29.0'	1 2 2 2	Saturated very loose gray silty fine sand w/ A-2-4(0)	
				2 2	trace of coarse sand, organic matter and	
					gravel.	
			31.0'		24" RECOVERY	
24.05						
31.85						
34.3		13	34.0'	1	Saturated soft gray fine sandy silt w/trace of A-4(0)	
				1 1 3 4	coarse sand, organic matter and gravel.	
			36.0'		20" RECOVERY	
36.75						
30.75						

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
39.2							
		14	39.0'	2 2 2 3	Saturated very loose gray silty fine sand w/ trace of coarse sand and organic matter.	A-2-4(0)	
			41.0'		23" RECOVERY		
41.65			41.0		25 RECOVERT		
44.1		15	44.0'	2 4 6 6	Saturated stiff gray clayey fine sandy silt w/	A-4(0)	
				6	trace of organic matter, coarse sand and gravel.		
40.55			46.0'		23" RECOVERY		
46.55	ĸ	U-2	47.0'	_	Saturated gray clayey fine to coarse sand.	A-4(0)	
							JG
49		10	49.0'	5	24" RECOVERY		
		16	49.0'	5 7 10 10	Saturated very stiff gray fine sandy silt w trace of organic matter, clay, coarse sand and gravel.	A-4(0)	
			51.0'		17" RECOVERY		
51.45							
50.0							
53.9	1/6/2009	17	54.0'	7 11 15 23	Saturated medium dense green silty fine sand w/trace or organic matter and coarse sand.	A-2-4(0)	Mud Rotary @ 51.0'. Glauconite
				23	with the of organic matter and coarse sand.		Shucome
56.35			56.0'		19" RECOVERY		
58.8		18	59.0'	6	Saturated medium dense green silty fine sand	A-2-4(0)	Glauconite
			00.0	6 9 16 23	w/trace of organic matter and coarse sand.	A-2-4(0)	Grauconne

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
61.25	-		61.0'		20" RECOVERY		
01.23							
63.7							
		19	64.0'	7 10 18 20	Saturated very stiff green clay w/some fine sand and organic matter, trace of coarse sand.	A-7-6(25)	Glauconite
				20			
66.15			66.0'		20" RECOVERY End of Boring		
					Lid of Doring		
68.6					NDAET		
					DRAFT		
			Ο.		FOR BIDI		
71.05							
					GUST 20	15	
73.5							
75.95							
78.4							
80.85							
83.3							

Symbol Description

Strata symbols



Silty sand

Poorly graded sand with silt



Poorly graded clayey silty sand



Low plasticity clay

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/5/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Track CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: RW1-1-07

ION	

Boring Location:	Sta. 747+00, 180.00'	Lt. C.L.					
Boring Surface Ele	V.: + 16.25		Ref	erence:			
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		49.0
Water Level Readings Date 1/13/2009	Time	Depth of Hole 14.0'	Depth of Casing 12.0'	Depth o 8.		Elev. of W	ater

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring:	51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: Ú-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G	.I. Remarks
	1/13/08	1	1.0' 2.0'	7 7	Moist medium dense orange clayey gravel A-2-4(and fine to coarse sand.)) Topsoil - 8".
2.45		2	2.0'	10 16 16	Moist dense orange fine to coarse sand w/ A-2-4())
			4.0'	17	some silt, trace of gravel.	NG
		3	4.0'	11 17 23 34	Moist dense orange coarse sand w/some silt, A-1-b fine sand and gravel.	
4.9			6.0'		BUSING UND STATE OVERY 2015	5
		4	6.0'	16 17 16	Wet dense light brown coarse to fine sand w/ A-1-b some silt, trace of gravel.	
7.35			8.0'	15	18" RECOVERY	
		5	8.0'	7 7 6 6	Wet medium dense light brown coarse to fine A-1-b	
				6 6	sand w/some silt, trace of gravel.	
9.8			10.0'		14" RECOVERY	
		6	10.0'	3 3 3 2	Wet loose light brown coarse to fine sand w/ A-2-4(6 some silt, trace of gravel.)
40.05			12.0'		23" RECOVERY	
12.25		7	12.0' 13.0'	2 1	Saturated very loose brown fine sand w/some silt, coarse sand and gravel, trace of organic A-2-4(0)
		7A	13.0' 14.0'	3 4	Matter. A-2-4(0 Saturated loose brown silty fine sand w/some)
14.7		8	14.0'	10 4 4	coarse sand, trace of gravel. 12" RECOVERY A-2-4()
 Domo	-			7		

Remarks:

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description Cla	lass./G.I.	Remarks
(ft.)	Progress		Depth	5	Saturated loose gray silty fine sand w/some		
					coarse sand, trace of gravel.		
		9	16.0' 16.0'	3	16" RECOVERY Saturated loose gray silty fine sand w/trace of A-	A-2-4(0)	
			-	3 4 5 7	coarse sand and organic matter.	1 2 T(U)	
17.15							
			18.0'		16" RECOVERY		
		10	18.0'	2 3 3 5	Saturated loose gray silty fine sand w/someA-coarse sand, trace of organic matter.	A-2-4(0)	
				5	course sand, race of organic matter.		
19.6			20.0'		20" RECOVERY		
22.05							
		4.4	04.0'	1		0.1.5	
24.5		11	24.0'	1 2 3 5	Saturated loose gray silty fine sand w/some A- coarse sand, trace of organic matter.	A-2-4(0)	
		NI		5		/ \	
			26.0'		21" RECOVERY		
26.95					GUST 201	5	
29.4		12	29.0'	2 3 3 5	Saturated loose gray silty fine sand w/trace of A- coarse sand, clay and organic matter.	A-2-4(0)	
				5	coarse sand, eray and organic matter.		
			31.0'		20" RECOVERY		
			51.0				
31.85							
34.3		13	34.0'	4 5 6 6		A-2-4(0)	
				6 6	w/trace of coarse sand, gravel and organic matter.		
			36.0'		20" RECOVERY		
36.75							

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
39.2		14	39.0'	3 5 6 8	Saturated medium dense gray silty fine sand w/trace of coarse sand and organic matter.A-2-4(0)
41.65			41.0'		21" RECOVERY
44.1	1/14/08	15	44.0'	6 7 10 16	Saturated very stiff gray fine sandy silt w/ A-4(0)
			46.0'	16	some clay, trace of organic matter and coarse sand.
46.55	_	_			
49			O	Г	FOR BIDDING
		16	49.0'	8 14 18 44	Saturated hard gray fine sandy silt w/some elay, trace of organic matter.
51.45			51.0'		End of Boring
53.9					
56.35					
58.8					

Symbol Description

Strata symbols



Poorly graded clayey silty sand

Poorly graded sand with silt



Silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/13/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a ATV CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
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- 6. All blow counts are uncorrected.

Boring No.: RW1-1-08

Boring Location:	Sta. 748+00, 180.00	' Lt. C.L.					
Boring Surface Ele	ev.: + 17.44		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140 split-Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		49.0
Water Level Readings Date 1/14/2009	Time	Depth of Hole 12.0'	Depth of Casing		of Water	Elev. of Wa	ter

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring: 51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Deriver Contractory W11 C			

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
	1/14/08	1	0.5'	6 7 8	Moist stiff brown clayey silt w/some coarse to A-4(3) Topsoil - 6".
2.45	N	2	2.0' 2.0' 4.0'	8 11 14 13	13" RECOVERY Moist medium dense orange silty coarse to fine sand w/some gravel. 17" RECOVERY
4.9		3	4.0' 6.0'	11 18 21 20	Moist dense orange coarse to fine sand w/ A-1-b some silt, trace of gravel.
7.35		4	6.0' 8.0'	14 10 11 9	Wet medium dense orange fine to coarse sand w/some silt, trace of gravel. 20" RECOVERY
9.8		5	8.0'	6 6 5	Wet medium dense orange fine sand w/some silt and coarse sand, trace of gravel.
		6	10.0'	6 4 4 4	Saturated loose brown fine sand w/some A-2-4(0) coarse sand and silt.
12.25		7	12.0'	1 3 5 4	Saturated loose brown fine sand w/some silt and coarse sand, trace of gravel. A-2-4(0)
Poma			14.0'	3	19" RECOVERY

Remarks:

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
14.7	0	8	14.0'	4 7 9	Saturated medium dense brown silty fine sand w/some coarse sand, trace of gravel.	A-2-4(0)	
		9	16.0' 16.0'	6	20" RECOVERY Saturated medium dense gray silty fine sand	A-2-4(0)	
		Ũ		6 8 8 8	w/some coarse sand.	A-2-4(0)	
17.15				Ŭ			
			10.0		20% DECOVERY		
		10	18.0' 18.0'	2	20" RECOVERY Saturated loose gray clayey fine sand w/some	A-2-4(0)	
				2 4 4 5	coarse sand, trace of organic matter.		
19.6			20.0'		20" RECOVERY		
			20.0				
22.05							
22.00					DRAFT		
24.5		11	24.0'	3 3 4 6	Saturated firm gray fine sandy silt w/trace of	A-4(0)	
		N V		4 6	coarse sand and organic matter.		
	-	-					
			26.0		21" RECOVERY		
					21" RECOVERY	15	
26.95							
			_				
29.4		12	29.0'	3 3 5 8	Saturated loose gray silty fine sand w/trace of	A-2-4(0)	
				8 8	coarse sand and organic matter.		
			31.0'		21" RECOVERY		
31.85							
34.3		13	34.0'	4	Contracted may live here with the	A 2 4(0)	
J 4 .J		13	54.0	4 5 8 10	Saturated medium dense gray silty fine sand w/trace of coarse sand, organic matter and	A-2-4(0)	
				10	gravel.		
			36.0'		23" RECOVERY		
36.75							
			1	1		I	

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
39.2		14	39.0'	6 8 7 11	Saturated medium dense gray silty fine sand w/trace of coarse sand, organic matter and gravel.A-2-4(0)
41.65			41.0'		22" RECOVERY
44.1					
		15	44.0' 46.0'	7 9 11 14	Saturated very stiff gray fine sandy silt w/ trace of organic matter and coarse sand.
46.55	N		46.0		FOR BIDDING
49		16	49.0	8	Saturated very stiff gray fine sandy silt w/ A-4(0)
			51.0'	8 10 13 18	trace of clay and organic matter.
51.45					End of Boring
53.9					
56.35					
58.8					

Symbol Description

Strata symbols



Low plasticity clay

Silty sand



Poorly graded sand with silt



Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/14/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Track CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: RW1-1-09

Boring Location:	Sta. 749+00, 180.00	Lt. C.L.				
Boring Surface Ele	ev.: + 19.37		Reference:			
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	49.0
Water Level Readings Date 1/9/2009	Time	Depth of Hole	Depth of Casing 8.0'		of Water .0'	Elev. of Water

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring:	51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		;	No. of: U-Samples:	
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	1/8/2008	1	1.0' 2.0'	7 8	Moist medium dense orange coarse to fine sand w/some gravel and silt.	A-1-b	Topsoil - 8".
2.45		2	2.0'	10 8 18 26	10" RECOVERY Moist medium dense orange coarse to fine sand w/some silt and gravel.	A-1-b	
			4.0'				JG
4.9		3	4.0'	10 21 22 22	Moist dense orange silty fine to coarse sand w/trace of gravel.	A-2-4(0)	
4.9			6.0'		GUStreevery 20	15	
		4	6.0'	15 18 20 12	Wet dense brown fine sand w/some silt and coarse sand, trace of gravel.	A-2-4(0)	
7.35			8.0'	12	19" RECOVERY		
		5	8.0'	3 5 5 5	Saturated loose brown fine sand w/some silt and coarse sand.	A-2-4(0)	
9.8			10.0'		16" RECOVERY		
		6	10.0'	4 4 5 5	Saturated loose brown fine sand w/some silt and coarse sand.	A-2-4(0)	
10.05			12.0'		21" RECOVERY		
12.25	1/9/2008	7	12.0'	3 4 2 1	Saturated loose brown fine sand w/some coarse sand and silt.	A-2-4(0)	
		8	14.0' 14.0'	1	21" RECOVERY	A 2 4(0)	
14.7		5	1-1.0	1	Saturated very loose brown fine sand w/some	A-2-4(0)	

Remarks:

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth	Daily	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
(ft.)	Progress		Depth	1	silt and coarse sand.
		9	16.0' 16.0'	2	18" RECOVERY Saturated loose brown fine sand w/some silt A-2-4(0)
				2 3 3 3	and coarse sand.
17.15					
			18.0'		15" RECOVERY
		10	18.0'	W/R W/R W/R 1	Saturated very loose brown fine sand w/some A-2-4(0) silt and coarse sand.
				1	Sin and Coalse Sand.
19.6			20.0'		
			20.0'		18" RECOVERY
22.05					
24.5		11	24.0'	5 7 10 10	Saturated medium dense gray silty fine sand A-2-4(0)
				10	w/trace of coarse sand and gravel.
			26.0'		22" RECOVERY
26.95					GUST 2015
29.4		12	29.0'	3 4	Saturated stiff gray fine sandy silt w/trace of A-4(0)
				3 4 5 5	coarse sand and gravel.
$\left - \right $			31.0'		21" RECOVERY
31.85					
		40	04.01	E	
34.3		13	34.0'	5 7 9 13	Saturated medium dense gray silty fine sandA-2-4(0)w/trace of coarse sand and gravel.
				13	
			36.0'		22" RECOVERY
			00.0		
36.75					

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
-						
	14	39.0'	5 7 11 12	Saturated very stiff gray fine sandy silt w/ trace of coarse sand.	A-4(0)	
		41.0'		20" RECOVERY		
	15	44.0'	5	Saturated very stiff gray fine sandy silt w/	A-4(2)	
			10 15	some clay, trace of organic martter, coarse sand and gravel.		
		46.0'		24" RECOVERY		
		О.	Т	OR BID	DIN	IG
	16	49.0'	5 10 13 20	Saturated very stiff gray fine sandy silt w/ trace of coarse sand and gravel. 22" RECOVERY	A-4(0)	
				End of Boring		
	Daily Progress	Progress NO. 14 14 15 15	Progress NO. Depth 14 39.0' 41.0' 15 44.0' 46.0'	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	14 39.0' 5 7 11 12 Saturated very stiff gray fine sandy silt w/ trace of coarse sand. 41.0' 20' RECOVERY 41.0' 20' RECOVERY 15 44.0' 15 44.0' 16 49.0' 16 49.0' 5 5 5 5 16 49.0' 5 5 16 49.0' 10 10 12 30 16 49.0' 10 10 12 30 16 49.0' 10 10 12 30 16 49.0' 10 10 10 10 115 10 116 49.0' 117 10 118 10 119 10 120 10 121 10 122 10 123 10 130 10 140 10	14 39.0' 5/11/12 Saturated very stiff gray fine sandy silt w/ trace of coarse sand. A-4(0) 41.0' 20' RECOVERY 10 20' RECOVERY A-4(2) 15 44.0' 5/10 Saturated very stiff gray fine sandy silt w/ some clay, trace of organic martter, coarse sand and gravel. A-4(2) 16 49.0' 5/10 Saturated very stiff gray fine sandy silt w/ trace of coarse sand and gravel. A-4(0) 16 49.0' 5/10 Saturated very stiff gray fine sandy silt w/ trace of coarse sand and gravel. A-4(0) 16 49.0' 5/10 Saturated very stiff gray fine sandy silt w/ trace of coarse sand and gravel. A-4(0) 16 49.0' 5/10 Saturated very stiff gray fine sandy silt w/ trace of coarse sand and gravel. A-4(0) 16 49.0' 5/10 Saturated very stiff gray fine sandy silt w/ trace of coarse sand and gravel. A-4(0) 16 49.0' 5/10 Saturated very stiff gray fine sandy silt w/ trace of coarse sand and gravel. A-4(0)

Symbol Description

Strata symbols



Silty sand

Low plasticity clay

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/8/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a ATV CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
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- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Boring Location:

Boring Surface Ele	Y.: + 19.00		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		8.0	
Water Level Readings Date 1/9/2009	Time	Depth of Hole 12.0'	Depth of Casing 10.0'		of Water	Elev. o	f Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 30.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Dering Contractory Welter Comparties			

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
4.9	1/9/2008	1	4.0'	10 13 15 21	Moist medium dense orange silty fine to coarse sand w/trace of gravel.	A-2-4(0)	
7.35	ľ		6.0'	T	OR BID		IG
9.8		2	8.0	3 5 5 4	Saturated loose brown fine sand w/some coarse sand and silt.	A-2-4(0)	Mud Rotary @ 8.0'.
		3	10.0' 10.0' 12.0'	5 4 4 5	18" RECOVERY Saturated loose brown fine sand w/some silt and coarse sand. 21" RECOVERY	A-2-4(0)	
12.25		4	12.0'	1 2 2 2	Saturated very loose brown fine sand w/some silt and coarse sand.	A-2-4(0)	
14.7		5	14.0'	W/H 1 1 2	Saturated very loose brown fine sand w/some silt and coarse sand. 18" RECOVERY	A-2-4(0)	
17.15		6	16.0'	1 2 2 2	Saturated very loose brown fine sand w/some silt and coarse sand.	A-2-4(0)	

Remarks: Mud Rotary @ 8.0'.

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

	D "			1	1 1
Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
		_	18.0'	M/P	21" RECOVERY
		7	18.0'	W/R W/R 1	Saturated very loose brown fine sand w/some A-2-4(0)
				1 2	coarse sand and silt.
19.6					
13.0			20.0'		19" RECOVERY
		8	20.0'	2 2 5 5	Saturated loose brown silty fine sand w/some A-2-4(0)
				5 5	coarse sand, trace of gravel.
00.05			22.0'		22" RECOVERY
22.05		9	22.0	3	Saturated firm gray clayey fine sandy silt w/ A-4(0)
				3 2 3 4	trace of coarse sand and gravel.
		10	24.0' 24.0'	3	22" RECOVERY Saturated loose gray silty fine sand w/trace of A-2-4(0)
24.5				3 3 4 4	clay and coarse sand.
				4	
		11	26.0' 26.0'	4	20' RECOVERY
			20.0	4 5 7 9	Saturated medium dense gray silty fine sand A-2-4(0) w/trace of coarse sand and gravel.
26.95				9	w/trace of coarse sand and graver.
			28.0'	-	18" RECOVERY
		12	28.0'	5 7 7 7 7	Saturated stiff gray clayey fine sandy silt w/ A-4(0)
				7	trace of coarse sand and gravel.
29.4					
			30,0'		24" RECOVERY
					End of Boring
31.85					
34.3					
36.75					
39.2					

Symbol Description

Strata symbols



Silty sand



Clayey sand

Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/9/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a ATV CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: RW1-1-10

Boring Location:	Sta. 750+00, 180.00	Lt. C.L.					
Boring Surface Ele	••••• + 22.18		Ref	erence:			
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4" m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		49.0
Water Level Readings Date 1/8/2009	Time	Depth of Hole 12.0'	Depth of Casing 10.0'		of Water	Elev. of	Water

Pay Quantities:

Contract: 25-113-01

2 1/2 in. Dia. Dry Sample Boring:	51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		_;	No. of: U-Samples:	-
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

F.A. Project: U.S. 301, Maryland State Line to I-95

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
	1/8/09	1	0.5'	7 10 9	Moist medium dense brown silty coarse to A-1-b Topsoil - 2". fine sand and gravel.
			2.0'		12" RECOVERY
2.45		2	2.0'	12 14 22 22	Moist dense orange coarse to fine sand w/ A-2-4(0) some clay, trace of gravel.
4.9		3	4.0'	4 25 17 20	Moist dense orange coarse to fine sand w/ A-2-4(0) some silt, trace of gravel.
7.35		4	6.0' 8.0'	21 15 11 10	Wet medium dense orange fine sand w/some coarse sand and silt, trace of gravel. A-2-4(0) 21" RECOVERY 21" RECOVERY
9.8		5	8.0'	3 4 5 5	Saturated loose orange fine sand w/some silt and coarse sand, trace of gravel. 14" RECOVERY
		6	10.0'	7 9 9 11	Saturated medium dense orange fine sand w/ A-2-4(0) some silt and coarse sand.
12.25		7	12.0' 12.0'	1 4 5 6	Saturated loose orange fine sand w/some silt and coarse sand. A-2-4(0)
			14.0'	2	15" RECOVERY
Bomo				L	

Remarks:

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

	25-113-	01					
Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
14.7		8	14.0'	2 4 3	Saturated loose brownish red fine sand w/ some coarse sand and silt.	A-2-4(0)	
				Ū	some coarse sand and sint.		
			16.0'		18" RECOVERY		
		9	16.0'	4 4 5 4	Saturated loose brownish red fine sand w/ some silt and coarse sand.	A-2-4(0)	
17.15				4	some sint and coarse sand.		
			18.0'		16" RECOVERY		
		10	18.0'	1 1 1	Saturated very loose brown fine sand w/some	A-2-4(0)	
				1 1	silt and coarse sand.		
19.6							
			20.0'		15" RECOVERY		
22.05							
					DRAFT		
24.5		11	24.0'	1 1 2 2	Saturated very loose brown fine sand w/some	A-2-4(0)	
				2	coarse sand and silt.		
			00.01				
			26.0'		20" RECOVERY	15	
26.95					GUST 20	CI	
			_	-			
29.4		12	29.0'	3 6 10 13	Saturated medium dense light brown silty fine	A-2-4(0)	
				10 13	sand w/trace of coarse sand and gravel.		
			31.0'		24" RECOVERY		
31.85							
34.3		13	34.0'	2 5	Saturated medium dense gray silty fine sand	A-2-4(0)	
				2 5 11 12	w/some clay, trace of coarse sand and gravel.		
			36.0'		18" RECOVERY		
36.75							

F.A. Project: U.S. 301, Maryland State Line to I-95 Contract: 25-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	5						
39.2		14	39.0'	1 4 6 5	Saturated loose gray silty fine sand w/trace of coarse sand and gravel.	A-2-4(0)	
41.65			41.0'		18" RECOVERY		
44.1		15	44.0'	4 8 9 11	Saturated very stiff gray fine sandy silt w/	A-4(1)	
46.55			46.0'	9 11	trace of organic matter, clay and coarse sand.		
			О.	T	FOR BIDI		IG
49		16	49.0'	4 7 12 15	Saturated very stiff gray clayey fine sandy silt w/trace of organic matter and gravel.	A-4(0)	
51.45			51.0'		22" RECOVERY End of Boring		
53.9							
56.35							
58.8							

Symbol Description

Strata symbols

Silty sand

Poorly graded clayey silty sand



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/8/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a ATV CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 883+66, 35' Rt. C.L.

Bo	oring	3 NO.:	RW1-2-0
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Boring Surface El	ev.: + 10.9		Reference:					
Wt. of Casing Hammer Wt. of Sample Hamme Type of: D-Sampler S-Sampler: U-Sampler Core Bit:	r: 140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2 3		IN. IN. IN. IN. IN.		
Casing Size: Hollow St	3 1/4 em Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	29.0		
Water Level Readings Date 6/19/2009	Time	Depth of Hole	Depth of Casing 6.0	Depth	of Water	Elev. of Water		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51	Ft.;	3 Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: Ú-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: D. Zmijewski/J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	6/19/09	1	0.0'		DRAFI		Asphalt - 12". Augered to 2' to start SPT.
			2.0'		0" RECOVERY		
3		2	2.0'	10 10 11 10	Moist medium dense orangish brown silty coarse sand and gravel w/some fine sand. 14" RECOVERY	A-2-4(0)	IG
		3	4.0'	2 4 5 6	Moist stiff brownish gray fine sandy silt w/ some clay and coarse sand, trace of gravel.	A-4(0)	Organics
6		4	6.0' 6.0'	4 2 2 2	14" RECOVERY Wet soft gray fine to coarse sandy silt w/some clay, trace of gravel.	A-4(0)	Organics
			8.0'		20" RECOVERY		
9		5	8.0'	W/H W/H 1 2	Wet soft gray clayey silt w/some fine sand, trace of coarse sand and gravel. 7" RECOVERY	A-4(4)	Organics
		U-1	10.0'		Wet gray clayey silt w/some gravel, trace of fine sand.	A-4(5)	Press Sample - Shelby Tube
12		7	12.0'	3 6 5 6	Wet stiff gray silt w/some coarse to fine sand, trace of gravel.	A-4(2)	
			14.0'		17" RECOVERY		
15		8 8A	14.0' 15.0' 15.0'	1 2 5 5	Wet firm gray clayey silt w/some fine sand, trace of coarse sand and gravel. 12" RECOVERY No Sieve Analysis - Indication of saturated	A-4(6)	Possibly peat.
		U-2	16.0' 16.0'		firm black organic silt. 12" RECOVERY	A-5(4)	Press Sample - Shelby Tube

Remarks: Mud Rotary @ 29.0 feet

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(10.)	riogrooo		Doptil		Wet gray silty peat w/trace of sand and		
18			18.0'		gravel. 24" RECOVERY		
		10	18.0'	2 13 31 38	Wet dense blackish gray gravel and fine to coarse sand w/trace of silt.	A-1-b	Organics
				38	Coarse sand w/frace of sitt.		
			20.0'		15" RECOVERY		
21							
24		14	24.0	W/R			
		11	24.0'	1 2 3	Wet very loose gray clayey fine sand w/trace of coarse sand and gravel.	A-2-4(0)	
			26.0'		24" RECOVERY		
27							
	6/22/09	12	29.0'	4 8 10 14	Wet medium dense gray silty fine sand w/	A-2-4(0)	Mud Rotary @ 29.0'.
30				10 14	trace of coarse sand and gravel.		
			31.0'		23" RECOVERY	_	
					GUST 20	15	
				NU		IJ	
33							
		13	34.0'	5 8 9 11	Wet very stiff gray fine sandy silt w/trace of coarse sand and gravel.	A-4(0)	
				11			
36			36.0'		21" RECOVERY		
39		14	39.0'	67	Wet medium dense gray fine sand w/trace of	A-3	
				6 7 7 9	organic matter, silt, gravel and coarse sand.	-	
			41.0'		21" RECOVERY		
42							
		15	44.0'	3 5 6 11	Wet stiff gray clayey fine sandy silt w/some	A-4(0)	
45				11	organic matter, trace of coarse sand and		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(,			46.0'		gravel. 20" RECOVERY		
48							
		16	49.0'	9 14 21 31	Wet hard dark gray fine sandy silt w/some	A-4(0)	Glauconitic
				31	organic matter, trace of coarse sand and gravel.		
51			51.0'		24" RECOVERY End of Boring		
54							
					DRAFT		
57	N		 .				
					FOR BIDI	JII	U
60					GUST 20	15	
63							
66							
69							
72							

Symbol Description

Strata symbols



Silty sand

Poorly graded clayey silty sand



Low plasticity clay



Silty low plasticity clay

Poorly graded sand



Silt



Poorly graded sand with silt

DRAFT Clayey sand NOT FOR BIDDING **AUGUST 2015**

- 1. Exploratory borings were drilled on 6/19/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 886+66, 35' Rt. C.L.

Boring l	No.:	RW1-2-03
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Boring Surface Elev.:	+ 13.2	Reference:				
	40 Lbs. plit Barrel O.D. O.D. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: 3 Hollow Stem A	1/4 Inches uger:	From Depth of: From Depth of:	0.0	To: To:	29.0	
Water Level Readings Date Tin 6/19/2009	ne Depth of Hole 6.0	Depth of Casing 4.0		of Water	Elev. of Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.:	No. of: U-Samples: Core Drilling in Rock:	Ft.
Bering Contractory Walter Commention	,	••••••••••••••••••••••••••••••••••••••	

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: D. Zmijewski

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	6/19/09	1	0.0'		DRAFT		Asphalt - 12".
			2.0'		0" RECOVERY		
3		2	2.0'	6 18 13 17	Moist dense orange fine sand and gravel w/ some coarse sand, trace of silt.	A-3	JG
		3	4.0'	8	Wet medium dense orange fine sand w/some	A-2-4(0)	
6			6.0'	о 4	14" RECOVERY	15	
		4	6.0'	4 6 8 10	Wet medium dense orange fine to coarse sand w/trace of silt and gravel.	A-3	
			8.0'		18" RECOVERY		
9		5	8.0'	1 2 4 1	Wet firm orange fine sandy silt w/some coarse sand, trace of gravel.	A-4(0)	
			10.0'	4	12" RECOVERY		
		6	10.0'	4 3 4 5	Wet loose orange fine sand w/some coarse sand and silt.	A-2-4(0)	
12		_	12.0'	1	20" RECOVERY		
		7	12.0'	1 2 3	Wet very loose orange silty fine sand w/some coarse sand.	A-2-4(0)	
			14.0'		18" RECOVERY		
15		8	14.0'	W/H W/H 1 1	Wet very loose orange fine sand w/some coarse sand and silt, trace of gravel.	A-2-4(0)	
			16.0'		16" RECOVERY		
		9	16.0'	W/H 2 3	Wet loose orange fine sand w/some coarse	A-3	

Remarks: Mud Rotary @ 29.0 feet

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily	No.	Sample	Blows/6"		Sample Description	Class./G	.l. Remarks
(ft.)	Progress		Depth	6	sand. tr	ace of silt and gravel.		
40			18.0'		Alistic Alistic Alistic	22" RECOVERY		
18		10	18.0'	1 2	Wet loo	ose brown silty fine sand w/some	e A-2-4(0))
				1 2 4 5	coarse	sand, trace of gravel.		
			20.0'			18" RECOVERY		
21								
24		11	24.0'	4	XX7 - 1		£	2)
			24.0	4 4 6 6		ose gray silty fine sand w/trace of sand, organic matter and gravel.	f A-2-4(0))
			26.0'			24" RECOVERY		
27						RAFI		
	N	12		5				
30		12	29.0'	5 6 6 8		m gray clayey fine sandy silt w/t se sand and organic matter.	race A-4(0)) Mud Rotary @ 29.0'.
	-			8				
			31.0'			21" RECOVERY		_
						JST 2	()1!	
33								
		10	24.01	4		1' 1		2)
		13	34.0'	4 7 7 7 7		edium dense gray silty fine sand f coarse sand, organic matter and		J)
					gravel.	-		
36			36.0'			20" RECOVERY		
39		4.4	20.01	7				<u> </u>
		14	39.0'	7 10 12 16		ry stiff gray fine sandy silt w/trac matter, coarse sand and gravel.	ce of $A-4(0)$)
				16	or guille	-		
			41.0'			24" RECOVERY		
42								
				-				
AE		15	44.0'	7 12 22 23		nse gray fine sand w/some clay a matter, trace of coarse sand.	and A-2-4(0))
45				23		matter, trace of coalse saile.		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		24" RECOVERY		
48							
		16	49.0'	12 15 24 34	Wet hard gray clayey fine sandy silt w/some organic matter, trace of coarse sand.	A-4(0)	
51			51.0'	34	24" RECOVERY		
					End of Boring		
54							
					DRAFT		
57						-	
					FOR BIDI		IG
60			μ		GUST 20	15	
63							
66							
69							
72							

Symbol Description

Strata symbols

Poorly graded sand with silt



Silty sand

Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/19/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 889+66, 35' Rt. C.L.

B	orir	ng N	lo.:	RW1-2-05
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Boring Surface El	ev.: + 21.2		Reference:					
Wt. of Casing Hammer Wt. of Sample Hamme Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	r: 140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow St	3 1/4 em Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		20.0	
Water Level Readings Date 7/7/2009	Time	Depth of Hole 12.0	Depth of Casing		of Water 3.5	Elev. of V	Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Dening Organization, Will, C	,	U U	

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: M. Derr

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	7/7/09	1	0.0'			Moist brown gravel w/some coarse to fine sand, trace of silt.	A-1-a	Asphalt - 12". Crusher Run - 12". Sample from Auger Cuttings.
			2.0'		8.3 %	0" RECOVERY		
3		2	2.0'	13 4 4 4		Moist firm brown silt w/some fine to coarse sand and clay, trace of gravel. 16" RECOVERY	A-4(1)	IG
		3	4.0'	7 6 7		Moist medium dense brown coarse sand and	A-1-b	
6			6.0'	11		gravel w/some fine sand and silt. 18" RECOVERY	15	
		4	<mark>6.</mark> 0'	13 11 7 6		Moist medium dense brown fine to coarse	A-2-4(0)	
			8.0'	7 6		sand w/trace of clay and gravel.		
		5	8.0'	5		Wet medium dense brown fine sand w/some	A-2-4(0)	
9			40.01	5 6 7	1993 1996 1993 1996 1993 1996 1993 1996 1993 1996 1993 1996 1993 1996 1993 1996	silt, trace of coarse sand and gravel.		
		6	10.0' 10.0'	6		20" RECOVERY Wet medium dense brown fine sand w/some	A-2-4(0)	
		0		6 7 8 9	1993949 1993949 1993949 1993949 1993949 1993949 1993949 1993949 199394 199394 199494 1	silt and coarse sand.	A-2-4(0)	
12		_	12.0'	2		24" RECOVERY		
		7	12.0'	3 4 6 6		Wet loose brown fine sand w/some coarse sand and silt, trace of gravel.	A-2-4(0)	
			14.0'			20" RECOVERY		
15		8	14.0'	2 2 2 2	1999 1999 1999 1999 1999 1999 1999 199	Wet very loose brown fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
			16.0'			24" RECOVERY		
	rke: Mud	9	16.0'	1 1 1		Wet very loose brown fine sand w/some	A-2-4(0)	

Remarks: Mud Rotarty @ 20.0 feet

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth	1	coarse sand and silt.	_	
18			18.0'		24" RECOVERY		
		10	18.0'	1 1 2 3	Wet very loose brown fine sand w/some	A-3	Mud Rotary @ 20.0'.
				3	coarse sand, trace of silt and gravel.		
			20.0'		24" RECOVERY		
21							
24		11	24.0'	2	Wet loose grayish green mottled clayey fine	A-2-4(0)	
				2 3 5 4	sand w/some coarse sand, trace of organic	(~)	
			26.0'		matter. 20" RECOVERY		
					NDAET		
27							
		12	29.0'	222	Wet firm grayish green mottled clayey fine	A-4(0)	
30				2 2 3 3	sandy silt w/trace of coarse sand and organic		
			31.0'		matter. 24" RECOVERY		
			Λ		GUST 20	1 [
33							
		13	34.0'	2 2	Wet firm grayish green clayey fine sandy silt	A-4(0)	
				2 3 3	w/trace of coarse sand, organic matter and gravel.		
36			36.0'		24" RECOVERY		
39							
		14	39.0'	6 6 7 7	Wet medium dense grayish green fine sand w/	A-2-4(0)	
				7	some silt and gravel, trace of coarse sand.		
			41.0'		14" RECOVERY		
42							
42							
		15	44.0'	4 5 6 7	Wet medium dense grayish green silty fine	A-2-4(0)	
45				7	sand w/some coarse sand, trace of organic		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Depth	Daily		Sample		• • • • • •	a	
(ft.)	Progress	No.	Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		matter and gravel. 20" RECOVERY		
			10.0				
48							
		16	49.0'	5	Wet very stiff grayish green clayey fine sandy	A-4(1)	
				5 9 11 13	silt w/some organic matter, trace of coarse	A-4(1)	
			F 4.0		sand and gravel.		
51			51.0'		24" RECOVERY End of Boring		
					č		
54							
					NDAET		
					DRAFT		
57							
					FOR BID		
60			Λ		GUST 20	1 [
63							
66							
69							
72							

Symbol Description

Strata symbols



Well graded gravel

Silty low plasticity clay



Silty sand



Poorly graded sand with silt

Poorly graded sand





Clayey sand



Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 7/7/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 892+66, 30' Rt. C.L.

Boring Surface Ele	V.: + 25.9		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.		
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		29.0	
Water Level Readings Date 7/8/2009	Time	Depth of Hole 14.0	Depth of Casing 12.0		of Water 2.3	Elev. of Wat	er	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Devine Contractory Walter Comparties			

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class	./G.I. Remarks
	7/8/09	1	0.0'		DRAFT	Asphalt - 12". Crushed Stone - 12".
			2.0'		0" RECOVERY	
3		2	2.0'	12 11 10 7	Moist very stiff brown clayey silt w/some fine A-4 to coarse sand.	(4) NG
		3	4.0'	5 10	Moist medium dense brown fine to coarse A-2-	4(0)
6			6.0'	16 16	12" RECOVERY	5
		4	6.0'	5	Moist very stiff brown clayey coarse to fine A-4	(1)
				19 19	sandy silt w/trace of gravel.	
			8.0'		22" RECOVERY	
9		5	8.0'	6 11 12 13	Moist medium dense brown coarse to fine A-2- sand w/some silt, trace of gravel.	4(0)
			10.0'		17" RECOVERY	
		6	10.0'	14 12 12 33	Moist medium dense brown coarse to fine A-2- sand w/some silt, trace of gravel.	4(0)
12			12.0'	-	18" RECOVERY	
		7	12.0'	8 9 7 9	Wet medium dense brown fine to coarse sand A- w/some gravel, trace of silt.	3
			14.0'			
		8	14.0	2	Wet loose brown fine sand w/some coarse A-	.3
15				2 4 6 8	sand, trace of silt.	
			16.0'		18" RECOVERY	
		9	16.0'	7 8 9	Wet medium dense brown fine sand w/some A-2-	4(0)

Remarks: Mud Rotary @ 29.0 feet

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily	No.	Sample	Blows/6"		Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth	8		silt and coarse sand.		
18			18.0'			21" RECOVERY		
10		10	18.0'	2 4 6 8		Wet loose brown fine sand w/some silt and	A-2-4(0)	
				6 8		coarse sand.		
			20.0'			17" RECOVERY		
21								
24		11	24.0'	W/R 3		Wet loose brown fine sand w/some coarse	A-2-4(0)	
				W/R 3 2 3		sand and silt, trace of gravel.		
			26.0'			15" RECOVERY		
07						NDAET		
27								
		12	29.0'	4 4 6 6		Wet loose brownish black clayey fine sand w/	A-2-4(0)	Mud Rotary @ 29.0'.
30				6		some coarse sand, trace of gravel.		
			31.0'			20" RECOVERY		
ſ						GUST 20	15	
ſ								
33								
		13	34.0'	Δ			A 0 4/0	
		13	34.0	4 4 6 6		Wet loose gray silty fine sand w/some coarse sand, trace of organic matter.	A-2-4(0)	
36			36.0'			19" RECOVERY		
39		14	39.0'	3		Wet firm gray fine sandy clay w/trace of	A-6(0)	
				3 3 5 6	[]]]	coarse sand, organic matter and gravel.		
			41.0'			24" RECOVERY		
42								
		15	44.0'	4 5		Wet loose gray silty fine sand w/trace of	A-2-4(0)	
45				4 5 5 5		coarse sand, organic matter and gravel.		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		19" RECOVERY		
48							
		16	49.0'	4 6 8 8	Wet stiff gray fine sandy silt w/trace of	A-4(0)	
51			51.0'	8 8	organic matter, coarse sand and gravel.		
			51.0		End of Boring		
54							
					DRAFT		
57	_	_					
				Т	FOR BIDI		IG
60			Δ		GUST 20	15	
63							
66							
69							
72							

Symbol Description

Strata symbols



Low plasticity clay



Silty sand



Clayey sand



Poorly graded sand with silt

Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 7/8/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 895+66, 30' Rt. C.L.

Bo	rin	g٢	IO.:	RW1	-2-0
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Boring Surface Ele	ev.: + 31.4		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	20 2		IN. IN. IN. IN. IN.		
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	18.0		
Water Level Readings Date 6/26/2009	Time	Depth of Hole	Depth of Casing		of Water	Elev. of Water		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 50	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:	F 4	No. of: U-Samples:	F 4
2 1/2 in. Dia. Contin. Sample Boring:	Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	6/26/09	1	0.5'	2 3 11		Moist stiff brown silt w/some clay and fine to coarse sand, trace of gravel. 14" RECOVERY	A-4(1)	Topsoil - 5".
		2	2.0'	8 9 9 11		Moist medium dense silty coarse to fine sand	A-2-4(0)	
3			4.0'			w/trace of gravel.		JG
		3	4.0'	9 11 12 11		Moist medium dense tan silty coarse to fine sand w/trace of gravel.	A-2-4(0)	
6			6.0'			15" RECOVERY	15	
		4	6.0'	13 13 11 10		Moist medium dense tan fine to coarse sand w/trace of silt.	A-3	
			8.0'		6914,1967. CT1735CC	16" RECOVERY		
9		5	8.0'	5 7 8 9		Moist medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'			14" RECOVERY		
		6	10.0'	11 8 7 11		Wet medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
12			12.0'			18" RECOVERY		
		7	12.0'	11 7 7 7	111111111111 111111111111 111111111111	Wet medium dense brown fine sand w/some coarse sand and gravel, trace of silt.	A-3	Cemented sands
			14.0'		1993), 1966. 1973 - Jacob 1973 - Jacob 1973 - Jacob	15" RECOVERY		
15		8	14.0'	4 5 8 8		Wet medium dense brown fine sand w/some coarse sand, trace of silt and gravel.	A-3	
			16.0'			16" RECOVERY		
		9	16.0'	5 8 7 11		Wet medium dense brown fine sand w/some coarse sand, trace of silt and gravel.	A-3	

Remarks: Mud Rotary @ 18.0 feet

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'			19" RECOVERY		
		10	18.0' 18.0' 20.0'	3 4 4 5		Wet loose brown fine sand w/some coarse sand, trace of silt. 21" RECOVERY	A-3	Mud Rotary @ 18.0'.
24		11	23.0' 25.0'	5 4 8 11		Wet medium dense brown clayey fine sand w/ some coarse sand. 17" RECOVERY	A-2-4(0)	
27						DRAFT		
		12	28.0'	4 6 9 11		No Sieve Analysis - Indication of wet medium dense gray clayey sand w/trace of		
			30.0'			organic matter and gravel. 20" RECOVERY		IG
33		40				GUST 20	15	
		13	33.0' 35.0'	6 7 15 18		Wet medium dense gray clayey fine sand w/ trace of coarse sand, organic matter and gravel. 16" RECOVERY	A-2-4(0)	
36								
39		14	38.0' 40.0'	9 10 16 20	-	Wet medium dense gray silty fine sand w/ trace of coarse sand, organic matter and gravel. 22" RECOVERY	A-2-4(0)	
42								
		15	43.0'	9 13 18 23		Wet hard gray fine sandy silt w/trace of organic matter and coarse sand.	A-4(0)	
45			45.0'			15" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
48		16	48.0'	7 11 12 14	Wet medium dense gray clayey fine sandy silt w/trace of organic matter, coarse sand and gravel.	A-4(1)	
51			50.0'		18" RECOVERY End of Boring		
54							
57	N		О.		DRAFT FOR BIDI	אור	IG
60			Δ		GUST 20		
63							
66							
69							
72							

Symbol Description

Strata symbols

clay Silty sand

Poorly graded sand with silt

Silty low plasticity



Poorly graded sand



Clayey sand

Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/26/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 898+68, 12' Rt. C.L.

В	orir	ng l	No.:	RW1-2-1
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Boring Surface Elev.: + 35.5		Reference:						
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.			
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	18.0			
Water Level Readings Date Time 6/24/2009	Depth of Hole	Depth of Casing 16.0		of Water 5.9	Elev. of Water			

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: D. Zmijewski

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	6/24/09	1	0.5' 2.0'	7 8 14		Moist very stiff brown silt w/some coarse to fine sand and clay, trace of gravel. 11" RECOVERY	A-4(1)	Topsoil - 3".
		2	2.0'	21 17	20144-1227- 20144-1227- 20144-12007 20144-12007	Moist dense orange coarse to fine sand and	A-1-b	
3			4.0'	19 21	6 11160 141267 15 11267 15 11267 15 1267 15 1267	gravel w/trace of silt. 16" RECOVERY		JG
		-3	4.0'	7 11 12 14		Moist medium dense orange fine to coarse sand w/some silt.	A-2-4(0)	
6			6.0'			18" RECOVERY	15	
		4	6.0'	11 10 9 9		Moist medium dense orange fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			8.0'			24" RECOVERY		
9		5	8.0'	3 4 5 4		Moist loose yellowish orange silty fine to coarse sand w/trace of gravel.	A-2-4(0)	
			10.0'			20" RECOVERY		
		6	10.0'	10 10 8 8	1444 1557 1557 1557 1557 1557 1557 1557	Moist medium dense orangish tan fine to coarse sand w/trace of silt and gravel.	A-3	
12			12.0'		19733197. 97173299	24" RECOVERY		
		7	12.0'	5 8 9		Moist medium dense orange fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			14.0'			21" RECOVERY		
15		8	14.0'	7 8 6 8	141443966 15113966 15113966 15113966 15113966 15143966 16143966	Moist medium dense orange coarse to fine sand w/trace of silt and gravel.	A-1-b	
			16.0'	12	1993, 1997, 1997, 1997, 1997, 1997, 1997 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 19	18" RECOVERY		
		9	16.0'	13 14 16 16	128 14 1906 198 14 199 198 14 199 198 14 199 198 14 1995	Wet medium dense orange fine to coarse sand and gravel w/some silt.	A-1-b	

Remarks: Mud Rotary @ 18.0 feet.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

One provide by Provide No. 2010th No. 2010th BlowsW Sample Description Class.(5.) Rumarks 18 10 10.0 10.0 197 RECOVERY 197 RECOVERY 197 RECOVERY 21. 20.0 10.0	Depth	Daily		Sample					
10 18.0 4 7 20.0 0° RECOVERY 21 11 23.0° 1 0° RECOVERY 0° RECOVERY 22 11 23.0° 1 0° RECOVERY A-2-4(0) 24 25.0° 21° RECOVERY A-2-4(0) 25.0° 21° RECOVERY A-2-4(0) 27 12 28.0° 2 12 28.0° 2 0° RECOVERY 30 12 28.0° 2 13 33.0° 2 0° RECOVERY 33 13 33.0° 2 14 37.0° 2 0° RECOVERY 38 39.0° 0° RECOVERY 39 39.0° 0° RECOVERY 42 14 37.0° 2 42 14 37.0° 2 39 39.0° 0° RECOVERY 14 37.0° 2 14 37.0° 2 14 37.0° 2 39 0° RECOVERY 14 37.0° 2		Progress	No.	Sample Depth	Blows/6"	Merchant	Sample Description	Class./G.I.	Remarks
21 1 20.0 0° RECOVERY 21 1 23.0° 0° RECOVERY 21 1 23.0° 0° RECOVERY 22 25.0° 21° RECOVERY 22 12 28.0° 21° RECOVERY 23 12 28.0° 21° RECOVERY 30 12 28.0° 21° RECOVERY 30 12 28.0° 21° RECOVERY 30 13 33.0° 2° 4 37.0° 2° 10° RECOVERY 30 13 33.0° 2° 14 37.0° 2° 14 37.0° 2° 30 14° 0° RECOVERY 30 0° RECOVERY <td>18</td> <td></td> <td></td> <td>18.0'</td> <td></td> <td></td> <td></td> <td></td> <td></td>	18			18.0'					
21 1 20.0 0° RECOVERY 21 1 23.0° 0° RECOVERY 21 1 23.0° 0° RECOVERY 22 25.0° 21° RECOVERY 22 12 28.0° 21° RECOVERY 23 12 28.0° 21° RECOVERY 30 12 28.0° 21° RECOVERY 30 12 28.0° 21° RECOVERY 30 13 33.0° 2° 4 37.0° 2° 10° RECOVERY 30 13 33.0° 2° 14 37.0° 2° 14 37.0° 2° 30 14° 0° RECOVERY 30 0° RECOVERY <td></td> <td></td> <td>10</td> <td>18.0'</td> <td>/ 8 4</td> <td>1997) 1997) 1997) 1997)</td> <td>No Sample Recovery</td> <td></td> <td></td>			10	18.0'	/ 8 4	1997) 1997) 1997) 1997)	No Sample Recovery		
21 20.0" 0" RECOVERY 21 11 23.0" 0" RECOVERY 22 11 23.0" 21" RECOVERY 22 25.0" 21" RECOVERY 22 12 25.0" 21" RECOVERY 23 12 28.0" 21" RECOVERY 23 12 28.0" 21" RECOVERY 23 13 33.0" 2" 13 33.0" 2" Wet loose gray fine sand w/some clay, trace of course sand and gravel. A-2-4(0) 23 13 33.0" 2" Wet loose gray fine sand w/some clay, trace of course sand and gravel. A-2-4(0) 24 4 35.0" Wet loose gray fine sand w/some clay, trace of course sand and gravel. A-2-4(0) 23 14 35.0" Wet loose gray fine sand w/some clay, trace of course sand and gravel. A-2-4(0) 24 4 35.0" Wet loose gray fine sand w/some clay, trace of course sand and gravel. A-2-4(0) 24 0 0 Sample Recovery No Sample Recovery A-2-4(0) 29 38.0" 0" RECOVERY No Sample Recovery 0" RECOVERY A-2-4(0)					7	1993,1997, 1993,1997, 1993,1997,1997,1997,1997,1997,1997,1997,			
21 11 23.0' 11 23.0' 11 23.0' 21' RECOVERY 22 12 28.0' 11 28.0' 11' 21' RECOVERY 21 12 28.0' 11' 28.0' 11' 21'' RECOVERY 30 12 28.0' 11' 12''''''''''''''''''''''''''''''''''''				20.0'		1763 (C)1617 664 () 396 (116 (3.1767) 116 (3.1767)	0" RECOVERY		
24 11 23.0° 1/2 Wet loose orange fine sand w/some silt and coarse sand. A-2-4(0) 24 25.0° 21° RECOVERY DRAFT 12 28.0° 2/2 0 12 28.0° 2/2 0 30 30.0 0 0 13 33.0° 2/2 0 13 33.0° 2/2 0 14 37.0° 2/4 0 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 37.0° 2/4 14 38.0° 0° RECOVERY 0° RECOVERY 0° RECOVERY 14 38.0° 0° RECOVERY	21					14111146 174171212 174171212			
24 11 23.0° 1/2 Wet loose orange fine sand w/some silt and coarse sand. A-2-4(0) 27 25.0° 21° RECOVERY DRAFT 12 28.0° 1/2 28.0° 1/2 30 30.0° 1/2 28.0° 1/2 31 33.0° 1/2 1/2 1/2 32 30.0° 1/2 1/2 33 1/3 3.0° 1/2 34 37.0° 1/2 1/2 35 1/3 3.0° 1/2 38 39.0° 0° RECOVERY 42 1 1/4						1919-1919 1919-1919 1919-1919 1919-1919			
24 25.0 21" RECOVERY 27 12 28.0 20 30.0 30 30.0 31 13 32 13 33 13 34 37.0 35 30.0 36 30.0 37 14 37.0 3 38 39.0 39 39.0 42 42 42 42 42 42 42 42 43 44 45 46 47 47 48 47 47 47 47 47 47 47 47 47 47 47 47 47 47 47 47 <						111121121 21122121 21122121 21122121 21122121			
24 25.0 21" RECOVERY 27 12 28.0 20 30.0 30 30.0 31 13 32 13 33 13 34 37.0 35 30.0 36 30.0 37 14 37.0 3 38 39.0 39 39.0 42 42 42 42 42 42 42 42 43 44 45 46 47 47 48 47 47 47 47 47 47 47 47 47 47 47 47 47 47 47 47 <			11	22.0'	1	4763)734414 1453,73544 1453,7354		1.2. 1(0)	
27 25.0 21° RECOVERY 27 12 28.0° 21° RECOVERY 30 12 28.0° 21° RECOVERY 30 30.0° 12 28.0° 21° RECOVERY 30 12 28.0° 21° RECOVERY A-2-4(0) 30 30.0° 13 33.0° 20° A-2-4(0) 33 13 33.0° 20° A A 34 13 33.0° 20° A A 35 0° 40° A A A 36 13 33.0° 20° A A A 36 14 37.0° 0° A A A A 37 14 37.0° 0° 0° RECOVERY No Sample Recovery No Sample Recovery No Sample Recovery A A 39 39.0° 0° RECOVERY No Sample Recovery A A A A 42 14 37.0° 0° B A A A A 42 <	24		11	23.0	2 3			A-2-4(0)	
27 12 28.0° 2 2 30 Wet loose brown to gray silty fine sand w/ some coarse sand, trace of organic matter and gravel. A-2-4(0) 30 30.0° Wet loose gray fine sand w/some clay, trace of coarse sand and gravel. A-2-4(0) 33 13 33.0° 2 2 4 Wet loose gray fine sand w/some clay, trace of coarse sand and gravel. A-2-4(0) 36 U-1 35.0° 24° RECOVERY No Sample Recovery A-2-4(0) 36 9 37.0° 0° RECOVERY No Sample Recovery A-2-4(0) 38 39.0° 0° RECOVERY Press Sample - Shelby Tube.					2				
12 28.0' 2 30 30.0' 0.0' 30 30.0' 0.0' 31 33.0' 2 13 33.0' 2 13 33.0' 2 14 37.0' 0 14 37.0' 0 14 37.0' 0 14 37.0' 0 14 37.0' 0 0' RECOVERY No Sample Recovery No Sample Recovery No Sample Recovery 0'' RECOVERY No Sample Recovery 0'' RECOVERY No Sample Recovery 0'' RECOVERY No Sample Recovery 0''' RECOVERY No Sample Recovery 0''''''''''''''''''''''''''''''''''''				25.0'			21" RECOVERY		
12 28.0' 2 30 30.0' 0.0' 30 30.0' 0.0' 31 33.0' 2 13 33.0' 2 13 33.0' 2 14 37.0' 0 14 37.0' 0 14 37.0' 0 14 37.0' 0 14 37.0' 0 0' RECOVERY No Sample Recovery No Sample Recovery No Sample Recovery 0'' RECOVERY No Sample Recovery 0'' RECOVERY No Sample Recovery 0'' RECOVERY No Sample Recovery 0''' RECOVERY No Sample Recovery 0''''''''''''''''''''''''''''''''''''									
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30 30 30 30 30 30 30 30 30 30									
30 30 30 30 30 30 30 30 30 30			12	28.0'	2		Wat loose brown to gray silty fine and w/	A 2 4(0)	
30 300 FRCOVERY DDING 33 13 33.0° 2/3 Wet loose gray fine sand w/some clay, trace of coarse sand and gravel. A-2-4(0) 36				20.0	2 3 4		some coarse sand, trace of organic matter and	A-2-4(0)	
33 13 33.0' 2 34 Wet loose gray fine sand w/some clay, trace of coarse sand and gravel. A-2-4(0) 36 35.0' 24" RECOVERY No Sample Recovery Press Sample - Shelby Tube. 36 37.0' 0" RECOVERY No Sample Recovery Press Sample - Shelby Tube. 39 39.0' 0" RECOVERY No Sample Recovery 42 0'' RECOVERY 0" RECOVERY							gravel.		
13 33.0' 2/3 Wet loose gray fine sand w/some clay, trace of coarse sand and gravel. A-2-4(0) 36 24" RECOVERY No Sample Recovery Press Sample - Shelby Tube. 36 37.0' 0" RECOVERY No Sample Recovery Press Sample - Shelby Tube. 39 39.0' 0" RECOVERY 0" RECOVERY 42 1 1 0" RECOVERY 42 1 1 1	30			30.0			24" RECOVERY		
13 33.0' 2/3 Wet loose gray fine sand w/some clay, trace of coarse sand and gravel. A-2-4(0) 36 24" RECOVERY No Sample Recovery Press Sample - Shelby Tube. 36 37.0' 0" RECOVERY No Sample Recovery Press Sample - Shelby Tube. 39 39.0' 0" RECOVERY 0" RECOVERY 42 1 1 0" RECOVERY 42 1 1 1		_			-				
13 33.0' 2/3 Wet loose gray fine sand w/some clay, trace of coarse sand and gravel. A-2-4(0) 36 24" RECOVERY No Sample Recovery Press Sample - Shelby Tube. 36 37.0' 0" RECOVERY No Sample Recovery Press Sample - Shelby Tube. 39 39.0' 0" RECOVERY 0" RECOVERY 42 1 1 0" RECOVERY 42 1 1 1									
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36 35.0' 24'' RECOVERY Press Sample - Shelby Tube. 36 37.0' 0'' RECOVERY 14 37.0' 0'' RECOVERY 39 39.0' 0'' RECOVERY 42 1 1	33		13	33.0'	2		Wet loose gray fine sand w/some clay trace	A-2-4(0)	
36 0-1 35.0' Press Sample - Shelby Tube. 36 37.0' 0'' RECOVERY 14 37.0' 0'' RECOVERY 39 39.0' 0'' RECOVERY 42 0'' RECOVERY 42 0'' RECOVERY					3 3 4			112 ((0)	
36 0-1 35.0' Press Sample - Shelby Tube. 36 37.0' 0'' RECOVERY 14 37.0' 0'' RECOVERY 39 39.0' 0'' RECOVERY 42 0'' RECOVERY 42 0'' RECOVERY				35.0'			24" RECOVERY		
36 37.0' 0'' RECOVERY 14 37.0' 0'' RECOVERY 39 39.0' 0'' RECOVERY 42 14 14 42 14 14			U-1	35.0					Press Sample - Shelby Tube.
14 37.0' 3/4 5/5 39 39.0' 0'' RECOVERY 42 1 1 1 42 1 1 1	36								
14 37.0' 3/4 5/5 39 39.0' 0'' RECOVERY 42 1 1 1 42 1 1 1				37.0'			0" RECOVERY		
39 39.0' 0' RECOVERY 42 42 42			14	37.0'	3 4 5				
					5				
	39			39.0'			0" RECOVERY		
	42								
45 15 44.0' 5 5 10 Wet loose gray silty fine sand w/trace of coarse sand and gravel. A-2-4(0)									
45 15 44.0' 5 5 10 Wet loose gray silty fine sand w/trace of coarse sand and gravel. A-2-4(0)									
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			45	44.01	5		XXY / 1 11. 01 1 / 0	A 2 4/2	
	45		15	44.0	5 5 10		Wet loose gray silty fine sand w/trace of coarse sand and gravel.	A-2-4(0)	
					10		<u> </u>		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		24" RECOVERY		
48							
		16	49.0'	4 8 10 10	Wet medium dense gray silty fine sand w/ trace of coarse sand and gravel.	A-2-4(0)	
			-	10			
51			51.0'		24" RECOVERY End of Boring		
54							
					DRAFT		
57							
	N		Ο.				
					FOR BIDI	יווכ	U G
60			_				
					GUST 20	15	
63							
66							
69							
70							
72							

Symbol Description

Strata symbols



Silty low plasticity clay

Poorly graded sand with silt



Silty sand

Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/24/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 901+70, 4' Rt. C.L.

	or	ing	N	0.:	RW	-2-1
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Boring Surface Ele	ev.: + 34.0		Reference:						
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.			
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		18.0		
Water Level Readings Date 6/25/2009	Time	Depth of Hole 20.0	Depth of Casing 18.0		of Water 7.3	Elev. of V	Nater		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	60.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
			-	

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: D. Zmijewski

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	6/25/09	1	0.0'	3 4 4 5		Moist firm brown clayey fine sandy silt w/ trace of coarse sand and gravel.	A-4(2)	Forest Duff - 2".
			2.0'			14" RECOVERY		
3		2	2.0'	4 4 8		Moist firm brown clayey silt w/some fine to coarse sand.	A-4(3)	IG
		3	4.0'	5 6 8		Moist medium dense tan clayey coarse to fine	A-2-4(0)	
6			6.0'	8		sand w/some gravel.	15	
		4	6.0'	8 9 8 8		Moist medium dense orange fine to coarse sand w/some silt.	A-2-4(0)	
			8.0'	-		19" RECOVERY		
9		5	8.0'	3 5 6 7		Moist medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'	4		16" RECOVERY		
		6	10.0'	4 9 7 7		Moist medium dense orange fine to coarse sand w/some silt.	A-2-4(0)	
12			12.0'			20" RECOVERY		
		7	12.0'	4 5 8 6		Moist medium dense orange coarse to fine sand w/some silt, trace of gravel.	A-1-b	
			14.0'			20" RECOVERY		
15		8	14.0'	5 6 6 7	10000000000000000000000000000000000000	Moist medium dense orange coarse to fine sand w/some silt, trace of gravel.	A-1-b	
			16.0'		1999 1999 1999 1999 1999 1999 1999 199	19" RECOVERY		
		9	16.0'	9 8 7		Moist medium dense orange silty coarse to	A-2-4(0)	

Remarks: Mud Rotary @ 18.0 feet

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
				10	fine sand w/trace of gravel.		
18			18.0'		20" RECOVERY		
		10	18.0'	8 10 10 13	Wet medium dense orange fine to w/trace of silt and gravel.	coarse sand A-3	Mud Rotary @ 18.0'. Cemented sands
				13	w/trace of silt and gravel.		Cemented sands
			20.0'		14: RECOVERY		
21					1996 1996 1996 1996		
					i a sice 1996:1 1 Jacob		
					1771-0 17165 17165		
					1410) 17300 17300		
					170200 19200 19200 19200		
24		11	24.0'	5	Wet medium dense brown fine san	nd w/some A-3	Cemented sands
				5 6 5 7	coarse sand, trace of silt and grave	1.	
			26.0'		18" RECOVERY		
					NDAC		
27							
					21 3000 13.1001 17.3000 17.3000	-	
		12	29.0'	4 5	Wet loose orange fine sand w/som	e coarse A-2-4(0)	
30				4 5 5 6	sand and silt.		
			31.0'		20" RECOVERY		
			Λ		171111		
					GUST (2015	
33							
					1 9 20 4 9 20 4 9 20 4 1 4 20 4		
		13	34.0'	1 2	Wet very loose orange fine sand w	/some silt A-2-4(0)	
				1 2 2 3	and coarse sand.		
36			36.0'		24" RECOVERY		
39							
		14	39.0'	2 4 5 5	Wet loose grayish orange mottled		
				55	sand w/trace of coarse sand and gr	avel.	
			41.0'		18" RECOVERY		
42							
		15	44.0'	4 5 10 15	Wet medium dense gray clayey fir	ne sand w/ A-2-4(0)	
45				10 15	trace of coarse sand and gravel.		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily	No.	Sample Depth	Blows/6"	Sample Description Class./0	G.I. Remarks
(ft.)	Progress					
			46.0'		24" RECOVERY	
48						
		16	49.0'	1 1 2 1	Wet very loose brown fine sand w/trace of A-3 silt, coarse sand and gravel.	
				1		
51			51.0'			
					1993 (1967) 1993 (1967) 1993 (1993) 1993 (1993) 1994 (1993)	
54					4 = 1 3 m c 6 1 = 2 3 m c 6 1 = 2 3 m c 7 1 = 2	
		17	54.0'	10 10 10 11	Wet very stiff gray clayey fine sandy silt w/ A-4(0 trace of coarse sand and gravel.	
			56.0'		24" RECOVERY	
			30.0		24 KEUUVEKI	
57						
$\left - \right $		18	58.0'	8	Wet very stiff gray clayey fine sandy silt w/ A-4(1	
				8 8 9 10	some organic matter.	<i>,</i>
60			60.0'		24" RECOVERY	
					End of Boring	J
63						
$\left - \right $						
66						
69						
72						

Symbol Description

Strata symbols



Low plasticity clay

Silty low plasticity clay



Clayey sand



Silty sand



Poorly graded sand with silt

Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 6/25/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 904+73, 7' Rt. C.L.

Boring	No.:	RW1-2-1
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Boring Surface Elev.: + 36.6		Ref	erence:		
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barro S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	29.0
Water Level Readings Date Time 6/25/2009	Depth of Hole 24.0	Depth of Casing 24.0		of Water 0.4	Elev. of Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	6/25/09	1	0.5' 2.0'	12 11 12	Moist very stiff brown clayey fine to coarse sandy silt w/trace of gravel. 14" RECOVERY	A-4(0)	Topsoil - 5".
		2	2.0'	11 14 16 16	Moist very stiff grayish brown clay w/trace of	A-6(11)	
3			4.0'		fine to coarse sand and gravel.		JG
		3	4.0'	2 6 11	Moist very stiff brown clayey silt w/trace of	A-4(8)	
			_	27	fine to coarse sand and gravel.		
6			6.0'		13" RECOVERY	15	
		4	6.0'	21 28 25 22	Moist very dense silty coarse tof ine sand w/ trace of gravel.	A-2-4(0)	
			8.0'		19" RECOVERY		
9		5	8.0'	7 12 13 11	Moist medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'		17" RECOVERY		
		6	10.0'	9 8 8 9	Moist medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
12			12.0'		20" RECOVERY		
		7	12.0'	5 10 12 12	Moist medium dense brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			14.0'		18" RECOVERY		
15		8	14.0'	6 10 10 9	Moist medium dense tan coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			16.0'		17" RECOVERY		
		9	16.0'	6 6 9 10	Moist medium dense tan fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	

Remarks: Mud Rotary @ 29.0 feet

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18		10	18.0' 18.0'	8		19" RECOVERY Wet medium dense tan fine to coarse sand w/	A-2-4(0)	
				8 13 13 15		some silt, trace of gravel.	A-2-4(0)	
			20.0'			18" RECOVERY		
21								
24		11	24.0'	W/R 3 8 10		Wet medium dense tan coarse sand and gravel	A-1-b	
			26.0	10		w/trace of fine sand and silt.		
27			26.0'					
						DRAFI		
30		12	29.0'	41 22 17 15		Wet dense tan coarse sand and gravel w/trace of silt and fine sand.	A-1-b	IG
			31.0'			14" RECOVERY		
			Λ			GUST 20	15	
33						JUJI ZU	IJ	
		13	34.0'			Wet medium dense tan coarse sand w/some	A-1-b	
				15 15 15 20		gravel and fine sand, trace of silt.		
36			36.0'			17" RECOVERY		
39		14	39.0'	16 22 26 44		Wet dense tan coarse sand w/some gravel and fine sand, trace of silt.	A-1-b	Mud Rotary @ 39.0'.
			41.0'	44		fine sand, trace of silt. 13" RECOVERY		
42			41.0			15 KECOVEKI		
					1:1:1:1:1:1:1:1:1 1:1:1:1:1:1:1:1:1:1 1:			
45		15	44.0'	25 45 50/5"		Wet very dense tan coarse sand and gravel w/ trace of silt and fine sand.	A-1-b	

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

10 10005 2000 10 100 0	Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
10 48.0° 10	(11.)	1 1091000				16" RECOVERY		
10 48.0° 10								
10 48.0° 10	10							
51 51.0" INTRECOVERY End of Boring End of Boring 54 DRAFT 57 NOT FOR BIDDING 60 AUGUST 20 15 63 Interference 64 Interference 69 Interference	40							
51 51.0" INTRECOVERY End of Boring End of Boring 54 DRAFT 57 NOT FOR BIDDING 60 AUGUST 20 15 63 Interference 64 Interference 69 Interference			16	49.0'	10 15	Wet dense brown fine sand w/some silt, trace	A-2-4(0)	
End of Boring Find of Boring F					19 20	of coarse sand and gravel.		
Image: series of the series	51			51.0'		18" RECOVERY		
Image: Construction of the construc						End of Boring		
Image: Construction of the construc								
Image: Construction of the construc								
57 NOT FOR BIDDING 60 AUGUST 20 15 63 I 66 I 68 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I	54							
57 NOT FOR BIDDING 60 AUGUST 20 15 63 I 66 I 68 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I								
57 NOT FOR BIDDING 60 AUGUST 20 15 63 I 66 I 68 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 61 I 62 I 63 I						UKALI		
60 AUGUST 20 15 63 I 66 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 100 I <t< td=""><td>57</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	57							
60 AUGUST 20 15 63 I 66 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 100 I <t< td=""><td></td><td>N</td><td></td><td> </td><td></td><td></td><td></td><td></td></t<>		N						
60 AUGUST 20 15 63 I 66 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 69 I 60 I 61 I 62 I 63 I 64 I 65 I 66 I 67 I 68 I 100 I <t< td=""><td></td><td></td><td>N (</td><td></td><td></td><td>LOK RIDI</td><td>JIN</td><td>IJ</td></t<>			N (LOK RIDI	JIN	IJ
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	60						1 [
				$ $ μ				
	63							
	66							
	60							
	09							
	72							

Symbol Description

Strata symbols

Poorly graded clayey silty sand



Low plasticity clay



Silty sand



10 Poorly graded sand

Well graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 6/25/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 726+50, 10.00' Lt. C.L.

Boring I	No.:	RW1-3-
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Boring Surface	Elev.: + 25.0		Reference:					
Wt. of Casing Hamm Wt. of Sample Hamn Type of: D-Sampl S-Sample U-Sampl Core Bit:	ner: 140 er: Split-Barrel er: er:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.		
Casing Size: Hollow	3 1/4" Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	49.0		
Water Level Reading Date 1/19/2009	gs Time 8:00 a.m.	Depth of Hole 10.0'	Depth of Casing 8.0'		of Water	Elev. of Water		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		_ ;	No. of: U-Samples:	_
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers:

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	1/19/09	1	0.5' 2.0'	15 16 20		Moist dense brown fine to coarse sand w/ some clay, trace of gravel. 12" RECOVERY	A-2-4(0)	Topsoil - 4".
		2	2.0'	7 10 18 16		Moist very stiff brown coarse to fine sandy	A-4(0)	
3			4.0'			silt w/some clay and gravel.		JG
		3	4.0'	2 4 5 7		Moist stiff brown clayey silt w/some fine	A-4(4)	
	-			7		sand, trace of coarse sand and gravel.		
6			6.0			16" RECOVERY	1 5	
		4	6.0'	12 12 12 12		Moist medium dense orange coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			8.0'			18" RECOVERY		
9		5	8.0'	9 10 9 13		Wet medium dense orange fine sand w/some coarse sand and silt, trace of gravel.	A-2-4(0)	
			10.0'			18" RECOVERY		
		6	10.0'	17 8 7 5		Wet medium dense orange fine to coarse sand w/some gravel and silt.	A-2-4(0)	
12			12.0'			18" RECOVERY		
		7	12.0'	1 2 3 5		saturated loose orange fine sand w/some silt and coarse sand, trace of gravel.	A-2-4(0)	
			14.0'			16" RECOVERY		
15		8	14.0'	9 8 8 10		Saturated medium dense orange fine sand w/ some coarse sand and silt, trace of gravel.	A-2-4(0)	
			16.0'			18" RECOVERY		
		9	16.0'	10 10 8 11	129 13 33 15 129 13 33 15 129 13 33 15 129 13 33 15 129 13 15 129 13 15 129 13 15 129 13 129 13 129 15 129 15 15 15 15 15 15 15 15 15 15 15 15 15 1	Saturated medium dense orange fine sand w/ some coarse sand, trace of silt and gravel.	A-3	

Remarks:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'		1.1.1.1.1.1.1.1. 1.1.1.1.1.1.1.1 1.1.1.1.1.1.1.1 1.1.1.1.1.1.1.1.1	13" RECOVERY		
		10	18.0'	6 10 14 14	1:012.1:01 1:012.1:01 1:014.1:01	Saturated medium dense orange fine sand w/	A-3	
				14		some coarse sand, trace of sint and gravel.		
			20.0'			16" RECOVERY		
21					(*************************************			
					, , , , , , , , , , , , , , , , , , ,			
					1.6193.66 1.6193.66 1.6193.66 1.6193.66			
					1993, 1997 1997 - Jane Jane Jane Jane Jane Jane Jane Jane			
24					1000 (1000) 1000 (1000) 1000 (1000) 1000 (1000) 1000 (1000)			
		11	24.0'	2 3 6 9	120 3 3 4 9 4 0 120 3 3 1 2 0 120 3 3 1 2 0 120 3 3 3 3 3 1 0 120 3 3 3 3 1 0 1 0	Saturated loose brown fine sand w/some	A-3	
				9	1763 Y 1761 H 1 1 9 9 16 6 H 1 9 9 16 6 H 1 9 19 19 16 7 H 1 9 19 19 19 1			
			26.0'		1:6131:66 1:61771:66 1:61771:66	1/" RECOVERY		
27					10 6 J 1 J 1 J 1 C 1 10 6 J 1 3 1 J 1 C 6 10 6 J 1 3 1 C 6			
					11111111 111111 111111 1111111 11111111			
					14199344 2017720 2017720 2017220 2017220			
		12	29.0'	4	1263 / 3200 1263 / 3206 /		A-3	
30				4 6 7	11. 3.3107 12. 4306 12. 3 400 12. 4400 13. 4400 14. 4400 14. 4400 14. 14.	coarse sand, trace of silt.		
			31.0'					
					1.11111 1.11111 1.11111 1.11111			
						GUST 20	15	
33					1993 (6) 1993 (6) 1993 (6)			
					076171960, 200113200 1601241967 1601241967			
		13	34.0'	1 3 5		Saturated loose brown fine sand w/some silt,	A-2-4(0)	
				5 6		trace of coarse sand and gravel.		
36			36.0'			17" RECOVERY		
39			20.0	A				
		14	39.0'	4 6 9		Saturated medium dense brown silty fine sand w/some coarse sand, trace of gravel.	A-2-4(0)	
		4.4.4	40.5'	13		16" RECOVERY		
		14A	40.5' 41.0'/	13		Saturated medium dense gray silty fine sand w/trace of coarse sand and gravel.	A-2-4(0)	
42						w/trace of coarse sand and gravel. 4" RECOVERY		
	1/20/09	15	44.0'	4		Saturated medium dense gray silty fine ssand	A-2-4(0)	
45				4 6 10 15		w/trace of coarse sand and gravel.		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		22" RECOVERY		
48							
		16	49.0'	6 9 12 16	Saturated medium dense gray silty fine sand w/trace of coarse sand and gravel.	A-2-4(0)	
51			51.0'	10	23" RECOVERY		
			01.0		End of Boring		
54							
					DRAFT		
57		_					
					FOR BID		
60							
					IGUST 20	15	
63							
66							
69							
72							

Symbol Description

Strata symbols



Poorly graded clayey silty sand



Low plasticity clay



Silty sand

Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/19/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 727+50, 10.00' Lt. C.L.

Boring I	NO.: :	RW1-3-0
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Boring Surface Elev.	+ 25.0		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split-Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow Stem	3 1/4" Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		48.0	
	Гі те)0 а.т.	Depth of Hole 14.0'	Depth of Casing 12.0'	Depth of 12.		Elev. of Wat	ter	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	50.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: Ú-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers:

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
	1/14/09	1	0.5'	8 6 7 14	Moist medium dense brown silty fine to coarse sand and gravel w/trace of clay. 15" RECOVERY	
		2	2.0'	9 8 10 14	Moist very stiff brown fine to coarse sandy A-4(0)	
3			4.0'		silt w/some clay and gravel.	
		3	4.0'	3 6 7 8	Moist stiff brown clayey fine sandy silt w/ A-4(4)	
				8	trace of coarse sand and gravel.	
6			6.0		15" RECOVERY	
		4	6.0'	10 10 9 8	Moist medium dense orange silty fine sand w/ A-2-4(0) some coarse sand, trace of gravel.	
			8.0'		20" RECOVERY	
9		5	8.0'	3 10 7 7	Moist medium dense yellowish orange coarse A-1-b to fine saand w/some silt, trace of gravel.	
			10.0'		18" RECOVERY	
		6	10.0'	10 10 7 7	Wet medium dense orange coarse to fine sand w/some silt, trace of gravel.A-2-4(0)	
12			12.0'		21" RECOVERY	
		7	12.0'	3 6 3 5	Wet loose orange gravel and coarse sand w/ A-1-a some fine sand, trace of silt.	
			14.0'		7" RECOVERY	
15		8	14.0'	3 4 6 9	Saturated loose orange fine sand w/some A-3 coarse sand, trace of silt and gravel. Image: Coarse sand, trace of silt and gravel.	
			16.0'		20" RECOVERY	
		9	16.0'	7 8 12 19	Saturated medium dense orange fine sand w/ A-3 some coarse sand and silt, trace of gravel. Image: Comparison of the sand w/	

Remarks:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
		10	18.0' 18.0'	3 6 6 8		18" RECOVERY Saturated medium dense orange fine sand w/ some coarse sand, trace of silt and gravel.	A-3	
21			20.0'			20" RECOVERY		
		11	24.0' 26.0'	3 4 7 12		Saturated medium dense orange fine sand w/ some coarse sand, trace of silt. 21" RECOVERY	A-3	
			20.0		1:(1 4 9:1; 0 (4 4 4 4 4 4 6 6 6 7 (8 4 4 4 4 4 6 6 6 7 (8 4 4 4 4 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	DRAFT		
30		12	29.0' 31.0'	5 9 11 15		Saturated medium dense brown fine sand w/ some coarse sand, trace of silt. 23" RECOVERY	A-3	IG
33			A			SUST 20	15	
26		13	34.0' 36.0'	3 4 4 5	649626920	Saturated loose brown fine sand w/trace of silt and coarse sand. 23" RECOVERY	A-3	
36			30.0		12232 12332 1	23 KECOVEKI		
<u></u>		14	39.0' 41.0'	3 5 5 9		Saturated loose brown fine sand w/some coarse sand, trace of silt and gravel. 24" RECOVERY	A-3	
42					12222 1222 1222			
45		15	44.0'	8 10 20 19		Saturated medium dense brownish gray silty fine sand w/some coarse sand, trace of gravel.	A-2-4(0)	

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(11.)	Flogless		46.0'		19" RECOVERY		
40							
48		16	48.0'	8 9 14 19	Saturated medium dense gray silty fine sand	A-2-4(0)	
				14 19	w/some coarse sand, trace of gravel.		
			50.0'		12" RECOVERY End of Boring		
51					Lid of bornig		
54							
					DRAFT		
57							
	N				FOR BID		
					FUR BIDI	JIN	JG
60			Λ		OLICT OO		
					GUST 20	15	
63							
66							
60							
69							
72							
<u>د ا</u>							

Symbol Description

Strata symbols



Silty sand

Poorly graded clayey silty sand



Low plasticity clay



Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/14/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
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- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 728+50, 10.00' Lt. C.L.

В	orin	ig N	lo.:	RW1-3-0
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Boring Surface	Elev.: + 26.0		Reference:					
Wt. of Casing Ham Wt. of Sample Han Type of: D-Samp S-Samp U-Samp Core Bi	nmer: 140 bler: Split-Barrel bler: bler:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollov	3 1/4" v Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		48.0	
Water Level Readin Date 1/15/2009	ngs Time 8:00 a.m.	Depth of Hole 14.0'	Depth of Casing 12.0'		of Water 2.1'	Elev. o	f Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	50.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers:

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	1/15/09	1	1.0' 2.0'	10 11		Moist medium dense brown silty fine sand and gravel w/some coarse sand.	A-2-4(0)	Topsoil - 8".
		2	2.0'	8 7		11" RECOVERY	A-2-4(0)	
3				8 10		Moist medium dense brown silty fine sand w/ some gravel and coarse sand, trace of clay.		
	N		4.0'			13" RECOVERY		
		3	4.0'	4 5 5 7		Moist loose brown silty gravel and fine to coarse sand.	A-1-b	NG
6			6.0'			11" RECOVERY		
		4	6.0'	6 4 6 8	1	Moist loose yellow fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
			8.0'			22" RECOVERY		
		5	8.0'	6 7 8 8	1997 - 1997 1997 - 1997 1997 - 1997	Moist medium dense yellow coarse to fine	A-1-b	Sample obtained after offset.
9				8	4.4.1.7.9.4.1. 1.1.1.4.1.6.4 7.4.1.4.1.6.4	sand w/some silt, trace of gravel.		
			10.0'		1999 1999 1999 1999 1999 1999 1999 1999	17" RECOVERY		
		6	10.0'	10 11 14 17		Moist medium dense orange fine to coarse	A-2-4(0)	
				17		sand w/some silt, trace of gravel.		
12			12.0'			9" RECOVERY		
		7	12.0'	17 10 7 7		Wet medium dense brownish orange fine sand	A-2-4(0)	
				777		and gravel w/some coarse sand and silt.		
			14.0'			18" RECOVERY		
		8	14.0'	3	1999 - 19	Saturated medium dense brown fine sand w/	A-3	
15				3 6 6 8		some coarse sand, trace of silt and gravel.		
			16.0'		1993 1995 1993 1995 1993 1995 1993 1995	18" RECOVERY		
		9	16.0'	9 10		Saturated medium dense brown fine sand w/	A-2-4(0)	
				10 10 12	664)))66 111111107 11111107	some coarse sand and silt, trace of gravel.	. /	
					66113366 1.617166 6613466			
Roma	rke	•		•				

Remarks:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily	No.	Sample	Blows/6"		Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth 18.0'	2.0110/0		20" RECOVERY	0.000./ 0.1.	Romano
		10	<u>18.0'</u> 18.0' <u>20.0'</u>	5 6 9 7		Saturated medium dense brown fine sand w/	A-3	
21								
		11	24.0'	3 5 7 10		some coarse sand, trace of sint and graver.	A-3	
27			26.0'		4764 7936 100 1930 100 100 100 100 100 100 100 100 100 10			
		40		1	1933 1933 1933 1933 1934 1934 1934 1934	DRAFI		
		12	29.0' 31.0'	1 4 5	1223.127 1463 (43.14 123 (43.14) 124 (43.14)	some coarse sand, trace of silt.		IG
33			Α			GUST 20	15	
		13	34.0'	3 4 10 10	100 13 43 6 100 13 43 6 100 13 13 10 100 13 13 10 100 100	some coarse sand, trace of silt.	A-3	
36			36.0'			18" RECOVERY		
39		14	39.0'	3 2 6 12		Saturated loose brownish gray fine sand w/ some silt and coarse sand.	A-2-4(0)	
42			41.0'			24" RECOVERY		
					8994			
45		15	44.0'	8 10 17 24		Saturated medium dense gray clayey fine sand w/trace of coarse sand and gravel.	A-2-4(0)	
			46.0'			18" RECOVERY		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
48							
		16	48.0'	10 11 14 20	Saturated medium dense gray silty fine sand w/some coarse sand, trace of gravel.	A-2-4(0)	
			50.0'		18" RECOVERY End of Boring		
51							
54							
					DRAFT		
57							
			О.	T	FOR BIDI		
60							U
			Λ		GUST 20	15	
			F		GUSI 20	10	
63							
66							
69							
72							

Symbol Description

Strata symbols



Silty sand

Poorly graded sand



Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 1/14/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
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- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 729+50, 10.00' Lt. C.L.

Boring	No.:	RW1-3-0
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Boring Surface	Elev.: + 26.0		Reference:					
Wt. of Casing Ham Wt. of Sample Han Type of: D-Samı S-Samı U-Samı Core B	nmer: 140 bler: Split-Barrel bler: bler:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollov	3 1/4" v Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	48.0		
Water Level Readin Date 1/13/2009	ngs Time 8:00 a.m.	Depth of Hole 14.0'	Depth of Casing 12.0'		of Water 2.8'	Elev. of Water		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	50.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers:

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	1/13/09	1	0.5'	6 24 34		Moist very dense brownish black gravel and fine to coarse sand w/some silt. 18" RECOVERY	A-1-b	Topsoil - 6".
		2	2.0'	45 50/5"		Moist very dense black gravel and coarse	A-1-a	
3			3.0'	T		sand w/trace of fine sand and silt. 11" RECOVERY		JG
		3	4.0'	4 5 5 6		Moist loose brownish orange coarse to fine sand w/some silt and gravel.	A-1-b	
6			6.0'			16" RECOVERY	15	
		4	6.0'	14 13 11 12		Moist medium dense orangish brown fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			8.0'			20" RECOVERY		
9		5	8.0'	3 4 4 5	, , , , , , , , , , , , , , , , , , ,	Moist loose orangish brown coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'		1993, 1996 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997	15" RECOVERY		
		6	10.0'	6 5 6 6	, , , , , , , , , , , , , , , , , , ,	Moist medium dense orangish brown fine to coarse sand w/trace of silt and gravel.	A-3	
12			12.0'		1993, 1996. 1997 - 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	19" RECOVERY		
		7	12.0'	5 6 13 10		Wet medium dense orangish brown coarse to fine sand and gravel w/some silt.	A-1-b	
			14.0'	5		12" RECOVERY		
15		8	14.0'	5 4 6 9	144 (44) (5 (5 () 19) (5 () 19) (5) (5) (5) (5) (5) (5) (5) (5) (5) (5	Saturated loose orangish brown fine sand w/ some coarse sand, trace of silt and gravel.	A-3	
			16.0'		196333966 196333966 196333966	24" RECOVERY		
		9	16.0'	4 6 11 12	1993 1996 1993 1994 (J 1993 1994 (J 1993 1996 (J 1993 1996 (J 1993 1996 (J 1993 1996 (J	Saturated medium dense orangish brown fine sand w/some coarse sand, trace of silt and	A-3	

Remarks:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'		18" RECOVERY			
		10	18.0'	4 5 6 6	111111111 111111111111 111111111111111	Saturated medium dense orangish brown fine	A-3	
				6 6	1281339966 12817121212 488134966 188134966	sand w/some coarse sand, trace of silt and gravel.		
			20.0'		1.61111066 1.61111106 1.61111106 1.61111106	20" RECOVERY		
21					1414-141 1111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 11111-1 111111			
					1.6141.60 /4171.61 /61113.66			
					19173990 16173960 271773960 271773960			
					1883), 1967. 1967 - Jacober 1967 - Jacober 1967 - Jacober			
24					0.0170900 66333906 100301060 100301060			
		11	24.0'	10 10 10	1999 - 1999 -	Saturated medium dense orange fine sand w/	A-3	
				10 13	1.611.11.1. 1.613.1.1.6 1.613.1.67	some coarse sand, trace of silt.		
			26.0'		8.6919966 189193966 499193946 189193946 189193946	22" RECOVERY		
27					1944-1946 1941-1946 1941-1946 1941-1946 1941-1946			
					1.6143.67 1.6171.60 1.6111.00 1.6111.00 1.611.100	IJKAFI		
					1997 - 1997 -			
		12	29.0'	5	197331973 197173220 197173220 197173220 1971730 1971730 1971730 1971730 1971730 1971730 1971730 1971730 1971730 1971730 1971730 197170000000000	Saturated medium dense orange fine sand w/	A 2	
30			20.0	5 5 6 8		some coarse sand, trace of silt and gravel.	A-3	
			31.0'		11111111111111111111111111111111111111	22" RECOVERY		
			51.0		100139100 100340161 100319100	22 RECOVERT	_	
						GUST 20	15	
33				NU		JUJI 20	IJ	
					976179760 269333766 101331767 101331767			
		13	34.0'	2 5	1.1.1.1.1.1.1. 1.1.1.1.1.1.1.1.1.1.1.1.	Saturated medium dense orange fine sand w/	A-3	
				6 6	1.63311.61. 4.63391.60 4.63391.60	some coarse sand, trace of silt.		
36			36.0'			24" RECOVERY		
					1414) 1917 1917 1917 1917			
					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
					1997 - 1997 -			
39		14	39.0'	10	12(12,1)(1) 12(17)(2)(17)(2)(17)(17)(17)(17)(17)(17)(17)(17)(17)(17	Saturated dance brownish eren as silter first	A-2-4(0)	
		14	00.0	10 12 22 28		Saturated dense brownish orange silty fine sand w/some coarse sand, trace of gravel and	A-2-4(0)	
			44.01			shell fragments. 18" RECOVERY		
			41.0'			10 RECOVERT		
42								
		15	44.0'	6 8 12 24		Saturated very stiff dark gray fine sandy silt	A-4(0)	
45				12 24		w/trace of coarse sand and clay.		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(11.)	T TOGICOS		46.0'		17" RECOVERY		
48							
		16	48.0'	6 8 12 16	Saturated medium dense dark gray silty fine	A-2-4(0)	
				16	sand w/trace of coarse sand, organic matter and gravel.		
			50.0'		22" RECOVERY End of Boring		
51					C C		
54							
<u> </u>							
					DRAFT		
57							
					FOR RIDI		
					FOR BID		
60							
					GUST 20	15	
63							
66							
69							
72							

Symbol Description

Strata symbols



Silty sand



Well graded sand



Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 1/13/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 730+50, 10.00' Lt. C.L.

Boring	No.:	RW1-3-05
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Boring Surface	Elev.: + 26.0		Reference:					
Wt. of Casing Ham Wt. of Sample Han Type of: D-Samı S-Samı U-Samı Core B	nmer: 140 bler: Split-Barrel bler: bler:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollov	3 1/4" v Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	48.0		
Water Level Readin Date 1/13/2009	ngs Time 9:00 a.m.	Depth of Hole 18.0'	Depth of Casing		of Water 7.1'	Elev. of Water		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 50	.0 Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:	;	No. of: U-Samples:	
2 1/2 in. Dia. Contin. Sample Boring:	Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers:

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	1/13/09	1	0.5'	8 20 30 50		Moist very dense black gravel w/some coarse sand, trace of fine sand and silt. 15" RECOVERY	A-1-a	Topsoil - 7".
		2	2.0'	50/5"		No Sieve Analysis - Indication of moist very		
3			2.5'			dense black gravel w/some coarse sand, trace of fine sand and silt. 4" RECOVERY		JG
		3	4.0'	8 16 13 20		Moist medium dense black silty fine to coarse sand w/some gravel, trace of clay.	A-2-4(0)	
6			6.0'			19" RECOVERY	15	
		4	6.0'	27 13 12 11		Moist medium dense orange coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			8.0'			15" RECOVERY		
9		5	8.0'	3 3 3 2	1997 1997 1997 1997 1997 1997 1997 1997	Moist loose orange coarse to fine sand w/ some silt, trace of gravel.	A-1-b	
			10.0'		18613,4966. 961173999	16" RECOVERY		
		6	10.0'	5 4 7 9	11 14 19 19 19 14 19 19 14 19 19 14 19 19 14 19 19 19 19 19 19 19 19 19 19 19 19 19 1	Moist medium dense orangish brown coarse to fine sand w/some silt, trace of gravel.	A-1-b	
12			12.0'		1993,996 001779900 001779900	17" RECOVERY		
		7	12.0'	8 3 4 5	1994 1995 1995 1995 1995 1995 1995 1995	Wet loose orangish brown fine sand w/some coarse sand and gravel, trace of silt.	A-3	
			14.0'		1993, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 199	10" RECOVERY		
15		8	14.0'	1 3 4 4	1994 - 1996 - 1994 - 1996 - 1994 - 1996 - 1996 - 1997 1994 - 1997	Wet loose orange fine sand w/some coarse sand, trace of silt and gravel.	A-3	
			16.0'		18633,3966. 1973-9966 1973-9966	19" RECOVERY		
		9	16.0'	3 4 5 6	CC 9 1920 CC 9 1920 CC 9 1930 CC 9 1930 CC 9 1930 CC 9 1920 CC 9 1	Wet loose orange fine sand w/some coarse sand, trace of silt and gravel.	A-3	

Remarks:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'			22" RECOVERY		
		10	18.0' 20.0'	4 4 4 5		Saturated loose orange fine sand w/some coarse sand, trace of silt and gravel. 22" RECOVERY	A-3	
		11	24.0'	1 2 5 5		Saturated loose orange fine sand w/some coarse sand, trace of silt.	A-3	
			26.0'			24" RECOVERY		
						DRAFT		
		12	29.0' 31.0'	1 3 4 3		Saturated loose orange fine sand w/some coarse sand, trace of silt. 24" RECOVERY	A-3	IG
			A	U		GUST 20	15	
36		13	34.0' 36.0'	5 6 9 14		Saturated medium dense brownish gray fine sand w/some silt and coarse sand, trace of gravel. 21" RECOVERY	A-2-4(0)	
39		14	39.0'	3		Saturated very stiff gray clayey fine sandy silt	A-4(0)	
			41.0'	3 5 12 12		w/trace of coarse sand and organic matter.	A-4(0)	
42			41.0			17 RECOVERY		
45		15	44.0'	6 7 10 10	RANAR	Saturated medium dense gray silty fine sand w/trace of coarse sand, organic matter and gravel.	A-2-4(0)	

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth 46.0'		24" RECOVERY		
48		16	48.0'	5	Saturated medium dense gray clayey fine sand	A-2-4(0)	
				5 7 9 9	w/trace of coarse sand, organic matter and		
			50.0'		gravel. 23" RECOVERY		
			00.0		End of Boring		
51							
54							
					DRAFT		
57					FOR BID		
60							
00			Λ		IGUST 20	15	
					IGUSI ZU	U	
63							
66							
69							
72							

Symbol Description

Strata symbols



Poorly graded gravel



Silty sand



Poorly graded sand with silt



Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 1/13/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 860+66, 10' Lt. C.L.

Boring No	RW1-3-
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Boring Surface Elev.: + 25.9		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	20.0	
Water Level Readings Date Time 6/15/2009	Depth of Hole	Depth of Casing 14.0		of Water 3.6	Elev. of Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Dealers Oranta at any XVII (

Boring Contractor: Walton Corporation Driller: jason Truver Helpers: J. Laffert

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	6/15/09	1	0.5'	61 50/2"	Moist very dense blackish gray gravel (asphalt millings) w/some coarse sand, trace of fine sand and silt.	A-1-a	Topsoil - 6".
3		2	2.0' 3.0'	38 30	8" RECOVERY Moist very dense blackish gray gravel	A-1-a	
		2A	3.0' 4.0'	40 45	of fine sand and silt.	A-1-a	IG
	•	3	4.0'	10 14 10 9	Moist very dense gray gravel w/trace of coarse to fine sand and silt. 12" RECOVERY	A-2-4(0)	
6		4	6.0' 6.0'	7 7 6	Moist medium dense coarse to fine sand w/	A-1-b	
		5	8.0' 8.0'	5	Moist medium dense orangish brown coarse to fine sand w/trace of silt and gravel. 21" RECOVERY		
9		5		5 5 6 7	Moist medium dense orangish brown coarse to fine sand w/some silt and gravel.	A-1-b	
		6	10.0' 10.0'	11 7 7 6	13" RECOVERY Wet medium dense orangish brown fine sand w/some coarse sand, trace of silt and gravel.	A-3	
12			12.0'		3" RECOVERY		
		7	12.0'	5 4 4 4	Wet loose orangish brown fine sand w/some coarse sand and gravel, trace of silt.	A-3	
			14.0'		13" RECOVERY		
15		8	14.0'	4 4 5 7	Wet loose brown fine sand w/some coarse sand, trace of silt and gravel.	A-3	
			16.0'	5	20" RECOVERY		
		9	16.0'	5 6 9 10	Wet medium dense brown fine sand w/some coarse sand, trace of silt.	A-3	

Remarks: Mud Rotary @ 20.0 ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'		44474486 146324786 146324786	23" RECOVERY		
		10	18.0'	3 6 8 10	nisaier. Nisaier Histiaer Nisaier. Nisaier.	Wet medium dense brown fine sand w/some	A-3	Mud Rotary @ 20.0'.
				8 10	121712121 121712121 121712121 121712121	coarse sand, trace of silt.		
			20.0'		669 (966) 1993 9966 469 9984 1993 9966	23" RECOVERY		
21					66444366 66919366 6693966 6693966			
					10149188 6414946 6414946 6414946			
					67173760 16173760 1617360			
24					00179900 0013990 0033990 0034990 0014900			
		11	24.0'	1 5		Wet medium dense brown fine sand w/some	A-3	
				9	111111111 11111111 1111111111111111111	coarse sand, trace of silt.		
			26.0'		1999 1999 1999 1993 1996 1 1993 1996 1997 1993 1997 1996 1997 1997 1997 1997 1997	20" RECOVERY		
27								
						DRAFI		
					16111366 2017366 2017360			
		40	20.01	2	1999, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 19 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 199 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 199 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997			
30		12	29.0'	3 4 5 7		Wet loose brown fine sand w/some silt and coarse sand.	A-2-4(0)	
				/			J 11	
			31.0'			17" RECOVERY		
			Λ				1 [
33						GUST 20		
							• •	
		13	34.0'	5		Wet medium dense brown silty fine sand w/	A-2-4(0)	
				5 8 9		some coarse sand, trace of gravel.	<u>\-</u> /	
36			36.0'			24" RECOVERY		
			-					
39								
		14	39.0'	7 8 11 13		Wet medium dense tan and gray clayey fine	A-2-4(0)	
				13		sand w/some coarse sand.		
			41.0'			17" RECOVERY		
42								
		45	44.0	Ω				
45		15	44.0'	8 10 11 15		Wet very stiff gray fine sandy silt w/trace of coarse sand, clay and organic matter.	A-4(0)	
				15				

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
()			46.0'		22" RECOVERY		
48							
		16	49.0'	6 15 11 11	Wet medium dense gray clayey fine sand w/	A-2-4(0)	
				11 11	trace of coarse sand and organic matter.		
51			51.0'		22" RECOVERY End of Boring		
54							
					DRAFT		
57							
					FOR BID		
60					GUST 20		
					IGUSE20	15	
63							
66							
60							
69							
72							

Symbol Description

Strata symbols



Well graded gravel

Poorly graded gravel with silt



Silty sand



Well graded sand with silt



Poorly graded sand with silt



Clayey sand



Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/15/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 873+66, 10' Lt. C.L.

Boring l	No.:	RW1-3-0
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Boring Surface Elevent	V.: + 24.12		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow Ster	3 1/4 n Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		18.0	
Water Level Readings Date 6/16/2009	Time	Depth of Hole 14.0	Depth of Casing 12.0		of Water	Elev.	of Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		; Ft.:	No. of: U-Samples:	E 4
2 1/2 in. Dia. Contin. Sample Boring:		г.,	Core Drilling in Rock:	гι.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
	6/15/09	1	0.5'	6 8 10	Moist medium dense gray gravel w/some silt, A-1-a trace of fine to coarse sand. 8" RECOVERY	Topsoil - 6".
		2	2.0'	13 16 23 26	Moist dense brown silty fine to coarse sand A-2-4(0) w/trace of gravel.	_
3			4.0'		19" RECOVERY	IG
		-3	4.0'	10 12 12 12 12	Moist medium dense orangish brown fine to A-2-4(0) coarse sand w/some silt, trace of gravel.	
6			6.0'		17" RECOVERY	
		4	6.0'	8 13 13 16	Moist medium dense orangish brown coarse to fine sand w/some silt, trace of gravel.	
			8.0'		13" RECOVERY	
9		5	8.0'	8 11 13 10	Moist medium dense orangish brown gravel A-1-b and fine to coarse sand w/some silt.	
	-		10.0'	24	12" RECOVERY	
		6	10.0'	31 30 6 4	Moist dense orangish brown fine sand and A-1-b gravel w/some coarse sand, trace of silt.	Fractured pieces of gravel in top 6" of spoon.
12			12.0'		171700 17" RECOVERY	
		7	12.0'	5 5 7 10	Wet medium dense brown fine sand w/some A-2-4(0) coarse sand and silt, trace of gravel.	
			14.0'		113161 17970 19" RECOVERY	
15		8	14.0'	5 5 6 7	Wet medium dense brown fine sand w/trace A-3 of silt, coarse sand and gravel.	
			16.0'		20" RECOVERY	
		9	16.0'	6 8 11 14	Wet medium dense brown fine sand w/someA-3coarse sand and silt, trace of gravel.	

Remarks: Mud Rotary @ 18.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	22" RECOVERY		
		10	18.0'	6 7 6 6	1111111 1111111 1111111 1111111	Wet medium dense brown fine sand w/some	A-3	Mud Rotary @ 18.0'.
				6	199399999 129379241 19939999 19939999 199399999 199399999			
			20.0'		1:0193:00 4:6194:00 1:0197:00	17" RECOVERY		
21					44444444 01919404 019194906 019194906			
1					1.(141.cr (4.14).() (
					12119990 16149369 9217990			
					1999 - 1999 -			
24					0261709001 406333900 100934100 100934100			
4		11	24.0'	4 4 5 6		Wet loose brown fine sand w/some silt and	A-2-4(0)	
				5 6		coarse sand.		
			26.0'			17" RECOVERY		
07								
27						DRAFI		
	_	_						
		12	29.0'	3 3 4 4	111 (A.1)07. 14466 121 (A.107	wet loose brown line sand w/some course	A-3	
30		N V		4	1. 94.64 99760 1. 49760 1. 49760 1. 19769		ノニ	V
			31.0'		1287432006 428773446 126733260 126733260	20" RECOVERY		
			Λ		000010000 0010000 00100000000000000000			
						GUST 20	15	
33					1419994 JATTJAC 4419946			
		13	34.0'	6			A 4(0)	
				6 6 7 7		Wet stiff gray clayey fine sandy silt w/some coarse sand, trace of organic matter.	A-4(0)	
						_		
36			36.0'			19" RECOVERY		
39		14	39.0'	7		Wet very stiff gray fine sandy silt w/trace of	A-4(0)	
				7 10 15 17		coarse sand, organic matter and gravel.	~ /	
			41.0'			21" RECOVERY		
42								
		15	44.0'	5 8 13 17		Wet very stiff gray fine sandy silt w/some	A-4(0)	
45				13 17		coarse sand, trace of organic matter.		
								l

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		22" RECOVERY		
48							
		16	49.0'	5 8 10 13	Wet very stiff gray fine sandy silt w/trace of coarse sand, organic matter and gravel.	A-4(0)	
51			51.0'	13	20" RECOVERY		
51			51.0		End of Boring		
54							
					DRAFT		
					UKAFI		
57	_						
			Ο.		FOR BID		
60					GUST 20		
					(GUS 20	15	
63							
66							
69							
72							

Symbol Description

Strata symbols



Silty gravel

Silty sand



Poorly graded sand with silt



Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 6/15/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 876+66, 10' Lt. C.L.

Boring Surface Ele	ev.: + 20.58		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	29.0	
Water Level Readings Date 6/15/2009	Time	Depth of Hole 14.0	Depth of Casing 12.0		of Water 1.4	Elev. of Water	

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	6/15/09	1	0.0'	11 50/4"		Moist hard brown gravelly coarse sandy silt w/some fine sand and clay.	A-4(0)	Topsoil - 2".
			2.0'			4" RECOVERY		
3		2	2.0' 3.0'	10 12		Moist very stiff gray clayey silt w/some fine to coarse sand, trace of grayel.	A-4(2)	
		2A	3.0' 4.0'	14 20		8" RECOVERY Moist medium dense orange coarse to fine	A-2-4(0)	
		3	4.0'	8 12 9		sand w/some silt, trace of gravel.	A-2-4(0)	
6			6.0'	8		Moist medium dense brown fine to coarse sand w/some silt, trace of gravel. 12" RECOVERY	15	
		4	6.0'	9 19 12 8		Moist dense brown fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
			8.0'			8" RECOVERY		
9		5	8.0'	6 6 9 10		Moist medium dense brown fine sand w/some coarse sand, trace of silt and gravel.	A-3	
			10.0'	11	11111111111 11111111111111111111111111	14" RECOVERY		
		6	10.0'	11 14 16 16		Wet medium dense brown fine sand w/some coarse sand and silt, trace of gravel.	A-2-4(0)	
12			12.0'			18" RECOVERY		
		7	12.0'	3 4 6 6		Wet loose brown fine sand w/some coarse sand, trace of silt.	A-3	
			14.0'			13" RECOVERY		
15		8	14.0'	4 9 11 12		Wet medium dense brown fine sand w/some coarse sand, trace of silt.	A-3	
			16.0'		12111200 1211200 1211200 1211200 12112000	19" RECOVERY		
		9	16.0'	8 12 13		Wet medium dense brown fine sand w/some	A-2-4(0)	

Remarks: Mud Rotary @ 29.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
(11.)	FIUGIESS			15		silt, trace of coarse sand.		
18			18.0'			12" RECOVERY		
		10	18.0'	1 3 5 8		Wet loose brown fine sand w/some coarse	A-3	
				8		sand, trace of silt.		
			20.0'			12" RECOVERY		
24								
21								
24		11	24.0'	4		Wet medium dense brown fine sand w/some	A-3	
				4 6 7 13	1999 (4999) 1999 (4999) 1999 (4999) 1999 (4999) 1999 (4999)	coarse sand, trace of silt and gravel.		
						18" RECOVERY		
			26.0'			18 RECOVERY		
27								
					20111000 10111000 101111000 101111000			
		_			6417367 23172502 24123226			
		12	29.0'	14	hi fantu A Ange	Wet hard grayish brown fine sandy silt w/	A-4(0)	Mud Rotary @ 29.0'.
30				14 27 21 25		some coarse sand, trace of gravel.	A-+(0)	
	_		0.1.5					
			31.0'			21" RECOVERY		
						GUST 20	15	
22								
33								
		13	34.0'	17		Wat dance any fine cond w/come silt trace of	A 2 4(0)	
		15	0.40	17 22 27 19		Wet dense gray fine sand w/some silt, trace of coarse sand and organic matter.	A-2-4(0)	
36			36.0'			24" RECOVERY		
39		14	39.0'	8			A Q 4/0	
		14	39.0	8 21 19 18		Wet dense gray clayey fine sand w/some coarse sand, trace of organic matter.	A-2-4(0)	
				18				
			41.0'			22" RECOVERY		
42								
45		15	44.0'	6 17 13 18		Wet medium dense gray silty fine sand w/ trace of coarse sand, gravel and organic	A-2-4(0)	
45				18		trace of coarse sand, graver and organic		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(10.)	1 1091000		46.0'		matter.		
			40.0		22" RECOVERY		
48							
		16	49.0'	12	Wet hard gray clayey fine sandy silt w/trace	A-4(0)	
		10	10.0	12 17 25 30	of coarse sand, organic matter and gravel.	A-4(0)	
51			51.0'		22" RECOVERY		
					End of Boring		
54							
<u> </u>							
					DRAFT		
57	N		.	T	FOR BID		
						PIL	U
60			Λ		GUST 20	15	
					GUST ZU		
63							
66							
69							
72							

Symbol Description

Strata symbols

Poorly graded clayey silty sand

Silty low plasticity clay



Silty sand



Poorly graded sand with silt

Poorly graded sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 6/15/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Boring Location: Sta. 879+66, 10' Lt. C.L.

Boring No.: RW1-3-12

Ft. Ft.

Boring Surface Ele	ev.: + 18.05		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		18.0
Water Level Readings Date 6/16/2009	Time	Depth of Hole 14.0	Depth of Casing 12.0		of Water 1.2	Elev. of V	Vater

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 51.0	Ft.;	Dia. U-Sample Boring:
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:
Paring Contractory Walton Comparation		-

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	6/16/09	1	0.5' 2.0'	4 5 5		Moist stiff brown clayey coarse to fine sandy silt w/trace of gravel.	A-4(0)	Topsoil - 4".
3		2	2.0' 3.0'	3 4		No Sieve Analysis - Indication of moist firm brown sandy lean clay.		
		2A	3.0' 4.0'	3 3		Moist loose orangish brown coarse to fine sand and gravel w/some silt. 5" RECOVERY	A-1-b	
		3	4.0'	3 4 3 4	1999 1999 1999 1999 1999 1999 1999 199	Moist loose orangish brown coarse to fine sand w/some silt and gravel.	A-1-b	
6			6.0'		186 1 1 1 1 6 6 1 1 1 1 1 1 1 6 6 1 1 1 1	16" RECOVERY		
		4	6.0'	7 11 9 9		Moist medium dense orangish brown gravel w/some fine to coarse sand, trace of silt.	A-1-a	Pieces of gravel stuck in
		5	8.0' 8.0'	4		4" RECOVERY		tip of
9		5	8.0	4 4 4		Wet loose orangish brown fine sand w/some silt and coarse sand, trace of A-2-4(0) gravel.		spoon.
			10.0'			16" RECOVERY		
		6	10.0'	3 4 4 5	122 44.1267 126 4 1266 126 14 1266 126 14 1266 126 1 1	Wet loose brown fine sand w/some coarse sand, trace of silt and gravel.	A-3	
12		7	12.0' 12.0'	4	11111111 11111111 11111111	20" RECOVERY	A 2	
		,	12.0	6 4 3	(1997) (1	Wet loose brown fine sand w/some coarse sand, trace of silt and gravel. A-3		
		8	14.0	2		16" RECOVERY Wet loose orangish brown fine sand w/some coarse sand, trace of silt and	A-3	
15			16.0'	2 3 3 3	1993 1996 1 1993 2006 1993 2006 1993 2006 1993 2006 1993 2006 1993 2006 1993 2006	gravel. 21" RECOVERY	A-3	
		9	16.0'	2 3 3 4	1919 1919 1919 1919 1919 1919 1919 191	Wet loose orangish brown fine sand w/some gravel, coarse sand and silt.	A-2-4(0)	Piece of gravel

Remarks: Mud Rotary @ 16.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
18			18.0'		7" RECOVERY		stuck in
		10	18.0'	3 4 4 5	Wet loose orangish brown fine sand w/some coarse sand, trace of silt and	A-3	tip of spoon.
				4 5	gravel.		Mud
			20.0'		23" RECOVERY		Rotary @ 18.0'.
							10.0.
21							
24							
		11	24.0'	1 2 2 3	Wet soft brown fine sandy silt w/some coarse sand.	A-4(0)	
				3			
			26.0'		20" RECOVERY		
27					DRAFT		
		12	29.0'	5	Wet medium dense brownish orange and gray fine sand w/some coarse	A-3	
30				5 10 16	sand, trace of silt	11.5	
			31.0'		22" RECOVERY		
					GUST 2015		
33							
		13	34.0'	3 4 4	Wet loose gray clayey fine sand w/some coarse sand, trace of organic	A-2-4(0)	
				3	matter.		
36			36.0'		21" RECOVERY		
39							
39		14	39.0'	2 3	Wet loose gray fine sandy silt w/some clay, trace of coarse sand and	A-4(0)	
				2 3 3 5	organic matter.		
			41.0'		23" RECOVERY		
			41.0				
42							
		15	44.0'	5		A 4/0	
45		10	44.0	5 7 8 8	Wet stiff gray fine sandy silt w/trace of coarse sand, organic matter and gravel.	A-4(0)	
				ö			
-	•					•	·

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Dent	D-1		Care I				
Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		23" RECOVERY		
48							
		16	49.0'	5	Wet stiff gray fine sandy silt w/trace of coarse sand and organic matter.	A-4(0)	
				5 6 8 9			
51			51.0'		20" RECOVERY		
					End of Boring		
54							
					DRAFT		
57							
		N			FOR BIDDING		
60							
					JGUST 2015		
63							
66							
60							
69							
72							

Symbol Description

Strata symbols



Poorly graded clayey silty sand



Silty sand



Poorly graded sand with silt



Poorly graded gravel with silt



Poorly graded sand

DRAFT NOT FOR BIDDING AUGUST 2015

Notes:

1. Exploratory borings were drilled on 6/16/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Truck CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 865+00 15' Lt C.L.

Boring No.: RW1-3-13

Boring Surface Elev	+ 27.07		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow Sten	3 1/4 n Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	19.0		
Water Level Readings Date 7/19/10	Time	Depth of Hole	Depth of Casing 14.0		of Water	Elev. of Water		

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	60.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring	:	; Ft.;	No. of: Ú-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remark	S
	7/19/10	1	0.5'	3 3 4	Moist loose brown clayey coarse to fine sand A-2-4(0) Topsoil - 5". w/some silt, trace fine gravel.	
		2	2.0'	5 4	Moist firm brownish gray coarse to fine sandy A-4(0)	
3			4.0'	4	silt w/some clay, trace fine gravel.	
		3	4.0'	5 6 8 7	Moist stiff brownish gray clayey coarse to A-4(0)	
			_	7	fine sandy silt w/trace fine gravel.	
6			6.0'		18" RECOVERY	
		4	6.0'	7 8 8 10	Moist very stiff brownish gray clayey coarse A-4(0) to fine sandy silt w/trace fine gravel.	
			8.0'		21" RECOVERY	
9		5	8.0'	5 6 6	Moist medium dense brown silty fine to coarse sand and fine gravel. A-1-b	
			10.0'		8" RECOVERY	
		6	10.0'	6 3 3 6	Wet loose brown fine to coarse sand w/someA-2-4(0)silt, trace fine gravel.	
12			12.0'		16" RECOVERY	
		7	12.0'	2 3 5 7	Wet loose brown fine to coarse sand w/someA-2-4(0)silt.	
			14.0'	2	18" RECOVERY	
15		8	14.0'	3 3 3 4	Wet loose brown fine sand w/some coarse A-2-4(0) sand and silt, trace fine gravel.	
			16.0'		16" RECOVERY	
		9	16.0'	8 7 7 9	Wet medium dense brown fine sand w/some A-3 coarse sand, trace silt and fine gravel.	

Remarks:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18	Ŭ		18.0'		1111111111 11111111111 11111111111	16" RECOVERY		
	7/20/10	10	18.0'	5 6 6 9	1014191. NGI (4994 1014191. NGI (4945)	Wet medium dense brown fine sand w/some	A-2-4(0)	
				6 9	1.4171.41. 4.4171.41. 4.4111.41.41.4	coarse sand and silt.		
			20.0'		1.63 (1.64) 1.61 (1.94) 1.61 (1.94) 1.61 (1.94)	15" RECOVERY		
21					(1144).6() (1111).() (1144).()			
					1.6149.64 74477767 64477767			
					00173700 16173360 2017300			
					1999, 1999, 1999 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 199 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 19			
24					0.61709000 0.6170900 0.017070 0.0170700 0.0170700			
4		11	24.0'	4 5 6 8	1999 1999 1999 1999 1999 1999 1999 199	Buturated mediatin dense brown time suite w	A-3	Mud Rotary @ 19.0'
				6 8	1.61111.61 1.61111.60 1.61141.67	some coarse sand, trace snt.		
			26.0'		1999 1999 1999 1991 1990 1990 1990 1991 1993 1994 199 1991 1993 1994 199	16" RECOVERY		
27					1994-1996 1996 1994-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1996-1996 1			
					1614369 7417787 6171366 6171366			
					00173300 06173300 7017300 6617300			
				-				
30		12	29.0'	5 6 7 7	ist Antor. Million Million Million Million	Saturated medium dense brown fine sand w/ some coarse sand, trace silt.	A-3	
					* * * * * * * * * * * * * * * * * * * * *		ノニ	
			31.0'		4-6-1774-60 1601-516 6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6-6	18" RECOVERY		
					1993 1996 1993 1996 1993 1996 1993 1996 1993 1996 1993 1996 1993 1996		1 [
33					riti i fici Carlonae Africae Carlonae Carlonae Carlonae	GUST 20		
					1969999 <mark>966</mark> 200109900 20010900 20010900			
		13	34.0'	4 5		Saturated loose brown fine sand w/some	A-2-4(0)	
				5 5 5		coarse sand and silt.	(0)	
36			36.0'			20" RECOVERY		
						······································		
39								
		14	39.0' \ 39.5' /	5		Saturated medium dense brown silty fine sand		
		14A	39.5'	6 8 12		w/some coarse sand. 6" RECOVERY	A-2-4(0)	
			41.0'			Saturated medium dense gray silty fine sand w/some coarse sand.		
42						18" RECOVERY		
42								
45		15	44.0'	7 9 8 9		Saturated medium dense gray silty fine sand w/some coarse sand, trace fine gravel and	A-2-4(0)	
40				9		organic matter.		
	-	-	•	•				-

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
(ft.)	Progress		Depth 46.0'		24" RECOVERY
48					
		16	49.0'	7 9 7 9	Saturated medium dense gray silty fine sand A-2-4(0)
				7 9	w/trace coarse sand and fine gravel.
51			51.0'		23" RECOVERY
54					
- 54		17	54.0'	4 4 7 7	Saturated medium dense gray clayey fine sand A-2-4(0)
				7 7	w/some coarse sand and silt.
			56.0'		24" RECOVERY
57	_	_			
				T	
	_	18	59.0'	5 6 6	Saturated stiff gray fine sandy silt w/some A-4(0)
60				6 7	clay, trace coarse sand and fine gravel.
			61.0'		24" RECOVERY
					End of Boring
63					
66					
60					
69					
72					
			I		

Symbol Description

Strata symbols



Poorly graded clayey silty sand



Silty sand



Poorly graded sand with silt

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 19, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 862+16, 35' Rt. C.L.

Boring	No.:	RW1-3R-02
--------	------	-----------

Boring Surface Elev.: + 22.9	Ref				
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	18.0
Water Level Readings Date Time 6/22/2009	Depth of Hole	Depth of Casing 12.0	Depth o		Elev. of Water

Pay Quantities:

	50 Ft.	; Dia. U-Sa	mple Boring: Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	Ft.	No. of: Core Drilling in Rock:	Ú-Samples: Ft.
Denime Orienteer Willie Const			

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: D. Zmijewski

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class	./G.I.	Remarks	
	6/22/09	1	0.0'		DRAFT	12" of Stone	Asphalt and 12" of Base	
			2.0'		24" RECOVERY			
3		2	2.0'	12 13 20 20	Moist dense brownish orange silty gravel and A- fine to coarse sand. 21" RECOVERY	- ^b)	
		3	4.0'	6 7 6	Moist medium dense orange fine to coarse A-2-	4(0)		
6			6.0'	6	sand w/some silt, trace of gravel.	5		
		4	6.0'	5 5 8 9	Moist medium dense orange fine sand w/some A-2-	4(0)		
				9	coarse sand, gravel and silt.			
			8.0'		19" RECOVERY			
9		5	8.0'	6 8 3 1	Moist medium dense orange gravel w/some A-1 fine to coarse sand and silt.	-b		
			10.0'		7" RECOVERY			
		6	10.0'	5 4 5 5	Wet loose brown fine to coarse sand and A-1 gravel w/trace of silt.	b		
12			12.0'		111ATEL			
		7	12.0'	1 3 5 6	Wet loose brown fine sand w/some silt and A-2- coarse sand.	4(0)		
			14.0'		24" RECOVERY			
15		8	14.0'	3 5 7 8	Wet medium dense brown fine sand w/some A- coarse sand, trace of silt.	3		
			16.0'		19" RECOVERY			
		9	16.0'	5 8 11	Wet medium dense brown fine sand w/some A-2-	4(0)		

Remarks: Mud Rotary @ 18.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily	No.	Sample	Blows/6"		Sample Description	Class./G.I.	Remarks
(ft.)	Progress	110.	Depth	16		silt and coarse sand.	01000./0.1.	Romano
18			18.0'			15" RECOVERY		
10		10	18.0'	6 8 9 9		Wet medium dense brown fine sand w/some	A-2-4(0)	Switched to Mud Rotary at
				9 9		silt and coarse sand.		18.0'.
			20.0'			18" RECOVERY		
21								
		11	23.0'	5	40179700 40174.1.07 40174.1.07	Wet medium dense brown fine sand w/some	A-2-4(0)	
24				5 6 6 13	1.61111.00 1.61111.00 1.61111.00	silt, trace of coarse sand.		
			25.0'		1999 1997 1997 1997 1997	12" RECOVERY		
					1.1.1.1.1.1.1.1 1.1.1.1.1.1.1.1 1.1.1.1.1.1.1.1.1 1.			
					10013300 1013300 20114300 20114300			
27					1999,999 1999,999 1999,999 1999,999	I)RAFI		
					2011-1200 2011-1200 1012-1200 1012-1200 1012-1200			
		12	28.0'	6 8		Wet medium dense brown fine sand w/some	A-2-4(0)	
			 .	86		silt, trace of coarse sand.		
30		N (30.0'			18" RECOVERY	ノロ	IG
	-							
						4UST 20	15	
33		13	33.0'	1 3		Wet very loose brown fine sand w/some silt	A-2-4(0)	
				1 5		and coarse sand, trace of gravel.		
			35.0'			22" RECOVERY		
36								
		14	38.0'	7		Wet medium dense tan silty fine sand w/some	A-2-4(0)	
39				7 8 7 6		coarse and, trace of gravel.	~ /	
			40.0'			24" RECOVERY		
			10.0					
42								
		15	43.0'	6		Wet medium dense gray fine sand w/trace of	A-2-4(0)	
				6 7 8 8		clay, coarse sand and gravel.		
AE			45.0'			24" RECOVERY		
45			40.0			24 NECOVENI		

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
48							
		16	48.0'	6 8 13 15	Wet very stiff gray clayey fine sandy silt w/ some coarse sand.	A-4(0)	
			50.0'		24" RECOVERY		
51					End of Boring.		
54							
					DRAFT		
57			О.	Т	FOR BID		
60			Λ			1 5	
					GUST 20	CI	
63							
66							
69							
72							

Symbol Description

Strata symbols



Silty sand



Silty gravel

Poorly graded sand



Poorly graded clayey silty sand

DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/22/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 871+16, 35' Rt. C.L.

orina Na Bo

Boring	No.:	RW1-3R-04
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Boring Surface Elev.: 24.6		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2	IN. IN. IN. IN. IN. IN.			
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0 To: To:	24.0			
Water Level Readings Date Time 6/22/2009	Depth of Hole 14.0	Depth of Casing 12.0	Depth of Water 12.0	Elev. of Water 12.6 24.6 24.6 24.6 24.6			
Pay Quantities: 2 1/2 in. Dia. Dry Sample Boring	j: 51.0	Ft.;	Dia. U-Sample Bori				
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Bo	oring:	; No. of: Ft.; Core Drillin	U-Sample ng in Rock:	es: Ft.			

2 1/2 in. Dia. Contin. Sample Boring: Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
	6/22/09	1	0.0'		Indication of moist brown silty fine to coarse A-2-4(0) sand w/trace of gravel.	Asphalt - 12". Stone - 12". Sample from Auger Cuttings.
			2.0'		0" RECOVERY	
3		2	2.0'	14 27 13 12	Moist hard brown fine to coarse sandy silt w/ A-4(0) some clay, trace of gravel.	١G
6		3	4.0'	4 3 5 5	Moist stiff brown fine sandy silt w/some clay and coarse sand.	
		4	6.0'	6 6 7 6	Moist stiff brown clayey silt w/some fine A-4(3) sand, trace of coarse sand and gravel.	
9		5	8.0' 8.0' 10.0'	4 9 15 17	21" RECOVERY Moist very stiff brown silt w/some fine to coarse sand, trace of clay and gravel. 13" RECOVERY	
		6	10.0'	20 18 20 19	Moist dense brown silty fine sand and gravel A-2-4(0) w/some coarse sand.	
12		7	12.0'	8 10 14 13	12" RECOVERY Wet medium dense brown fine sand w/some coarse sand and silt.	
15		8	14.0' 14.0' 16.0'	6 10 14 17	19" RECOVERY Wet medium dense brown silty fine sand w/ some coarse sand, trace of gravel. A-2-4(0) 17" RECOVERY 17" RECOVERY	
		9	16.0'	10 8 8	Wet medium dense brown fine sand w/some A-3	

Remarks: Mud Rotary @ 24.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
(11.)	1 1091000			18	coa	rse sand, trace of silt and gravel.		
18			18.0'			23" RECOVERY		
		10	18.0'	W/R 6 16 18		t medium dense brown fine sand w/some	A-2-4(0)	
				18	s1lt	and coarse sand.		
			20.0'			24" RECOVERY		
21								
24		11	24.0'	8	91(19)	A model and the second Constant of	A 2	Mad Data and Ot Of
		11	24.0	8 8 9 15	5 8 2 3 2 3 2 3 2 5 5 6	t medium dense brown fine sand w/trace coarse sand and silt.	A-3	Mud Rotary @ 24.0'.
				15				
			26.0'			18" RECOVERY		
27					CE 9 19:07 GE 19 19:07 GE 19 19:07			
					00173300 00173000 00173000			
			C.					
		12	29.0'	7 7 12 16		t medium dense brown fine sand w/some	A-2-4(0)	
30				16	cõa	rse sand and silt.		
			31.0'			16" RECOVERY	_	
						UST 20	1 5	
						USI 20		
33								
		13	34.0'	8 15		t dense brown fine snad w/some clay and	A-2-4(0)	
				8 15 26 30		rse sand, trace of gravel.		
36			36.0'			20" RECOVERY		
39		14	39.0'	11	We We	t hard gray fine sandy silt w/some clay and	A-4(0)	
				11 15 21 23		rse sand.	A-+(0)	
			41.0'			24" RECOVERY		
42								
		15	44.0'	9 18 19 30		t dense gray clayey fine sand w/trace of	A-2-4(0)	
45				30	CO2	rse sand.		<u> </u>

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		22" RECOVERY		
48							
		16	49.0'	5	Wet medium dense gray clayey fine sand w/	A-2-4(0)	
				5 6 9 11	trace of coarse sand.	112 ((0)	
51			51.0'		24" RECOVERY End of Boring		
54							
					DRAFT		
					URAFI		
57	R		-	-			
					FOR BIDI	JIN	IG
60			Δ		GUST 20	15	
63							
66							
69							
72							
12							

Symbol Description

Strata symbols



Silty sand

Poorly graded clayey silty sand



Silty low plasticity clay



Poorly graded sand



Poorly graded sand with silt



Clayey sand

DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 6/22/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 874+16, 35' Rt. C.L

Boring No.: RW1-3R-06

Doring Location.	Sta. 874+10, 55 Kt.	C.L.					
Boring Surface Ele	ev.: + 23.2		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		16.0
Water Level Readings Date 6/22/2009	Time	Depth of Hole 12.0	Depth of Casing 12.0		of Water 1.3	Elev. of	Water

Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 50	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Devine Contractory W11 C			

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: D. Zmijewski

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	6/22/09	1	0.0'			DRAFI		12" of HMA and 12" of Stone Base.
			2.0'			24" RECOVERY		
3		2	2.0'	2 8 8 6		Moist medium dense orangish brown gravel and coarse sand w/some fine sand and silt. 10" RECOVERY	А-1-b	JG
		3	4.0'	4 6 8		Moist medium dense orange fine sand w/some	A-1-b	
6			6.0'	8		fine sand and silt, trace of gravel. 12" RECOVERY	15	
		4	6.0'	11 13 13		Moist medium dense orangish brown gravel	A-1-b	
				8	6417146 1614167 1614167	and coarse sand w/some fine sand and silt.		
			8.0'		11111111111 11111111111111111111111111	13" RECOVERY		
9		5	8.0'	4 6 6 7		Moist medium dense orange fine sand w/some coarse sand and silt, trace of gravel.	A-2-4(0)	
			10.0'	6		19" RECOVERY		
		6	10.0'	6 7 6 5		Wet medium dense orange silty fine sand w/ some coarse sand, trace of gravel.	A-2-4(0)	
12			12.0'			18" RECOVERY		
		7	12.0'	3 3 4		Wet loose orange fine sand w/some coarse sand and silt.	A-2-4(0)	
			14.0'		1111111111 111111111111111111111111111	18" RECOVERY		
15		8	14.0'	WOR 1 2 3		Wet very loose orange fine sand w/some coarse sand, trace of silt and gravel.	A-3	
		9	16.0' 16.0'	3	001133000 00143000 00143000 00143000 00143000	10" RECOVERY Wet loose orange fine sand w/some coarse	A-3	Mud Rotary @ 16.0'.
		Ŭ		3 2 3		wet toose orange thie sand w/some coalse	A-3	Muu Kotary @ 10.0.

Remarks: Mud Rotary @ 16.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth	3	· ·		
18			18.0'		sand, trace of silt.		
		10	18.0'	2 4 5 6	Wet loose orange fine sand w/some coarse	A-3	
				6	sand, trace of silt.		
			20.0'		10" RECOVERY		
21					A 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
24		11	23.0'	3 4 6 6	Wet loose orange fine sand w/some silt and coarse sand.	A-2-4(0)	
24				6			
			25.0'		19" RECOVERY		
27							
		10	28.0'	Λ			
		12	28.0	4 12 14 14	Wet medium dense orangish brown silty fine sand w/some coarse sand, trace of gravel.	A-2-4(0)	
				14			
30			30.0'				
			_				
					GUST 201	1 5	
				١U		IU	
33		13	33.0'	5	wet medium dense gray silty fine sand w/	A-2-4(0)	
				5 8 9 13	some coarse sand, trace of organic matter and	4 1-2- 4 (0)	
			25.01		gravel.		
			35.0'		24" RECOVERY		
36							
		14	38.0'	4	Wet medium dense gray silty fine sand w/	A-2-4(0)	
39				4 6 8 10	trace of coarse sand and organic matter.	~ /	
			40.0'		24" RECOVERY		
42							
		15	43.0'	57	Wet stiff gray fine sandy silt w/some clay,	A-4(0)	
				5 7 8 13	trace of coarse sand and organic matter.		
45			45.0'		24" RECOVERY		
40			-J.U	1			

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
48		16	48.0'	5	Wet medium dense gray fine sand w/some	A-2-4(0)	
				5 7 17 18	silt, trace of coarse sand, organic matter and gravel.	A-2-4(0)	
			50.0'		24" RECOVERY End of Boring.		
51					2.1.0 or 2 oring.		
54							
					DRAFT		
57			О.	Т	FOR BID		
60			Λ		GUST 20	1 5	
					GUSI 20	CI	
63							
66							
69							
72							

Symbol Description

Strata symbols



Silty sand

Poorly graded sand



Poorly graded clayey silty sand

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/22/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

#### Во

Boring Location:	Sta. 877+16, 35' Rt.	C.L.					
Boring Surface Ele	<b>ev.:</b> + 14.0		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 <b>m Auger:</b>	Inches	From Depth of: From Depth of:	0.0	To: To:	18.0	)
Water Level Readings Date 6/19/2009	Time	Depth of Hole	Depth of Casing		of Water	Elev. of Water	

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Dening Organization, Will Const			

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Re	emarks
	6/19/09	1	1.0' 2.0'	50/2"	No Sample Recovery Asphalt - 12	2".
		2	2.0'	11	Moist dense orangish brown coarse to fine A-1-b	
3				11 17 15 14	sand w/some silt, trace of gravel.	
			4.0'			
		3	4.0'	6 11 8 5	Moist medium dense orangish brown gravel A-1-b	
				5	and fine to coarse sand w/some silt.	
6			6.0'		16" RECOVERY	
		4	6.0	5 6 6 8	Moist medium dense orangish brown fine	
				6 8	sand w/some coarse sand, trace of silt and	
			8.0'		24" RECOVERY	
		5	8.0	1	Wet loose orangish brown fine sand w/some A-3	
9				1 2 3 2	coarse sand, trace of silt.	
				-		
			10.0'		17/3/17/ 17/ RECOVERY	
		6	10.0'	2 2 2 3	Wet very loose orangish brown fine sand w/ $A-2-4(0)$ some coarse sand and silt.	
				3		
12			12.0'		19" RECOVERY	
		7	12.0'	2 3 5 6	Wet loose orangish brown fine sand w/some A-2-4(0)	
				5 6	silt and coarse sand.	
		8	14.0' 14.0'	W/H	10" RECOVERY       Wet very loose orangish brown silty fine sand       A-2-4(0)	
15				W/H 2 2 3	w/trace of coarse sand.	
			16.0'		20" RECOVERY	
		9	16.0'	3 3 4 6	Wet loose orangish brown fine sand w/trace A-3	
				6	of coarse sand and silt.	
	rke: Mud					

Remarks: Mud Rotary @ 18.0 Ft.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	-	10	<u>18.0'</u> 18.0'	2 3 3 2	20" RECOVERY Wet loose orangish brown fine sand w/some silt and coarse sand.	A-2-4(0)	Mud Rotary @ 18.0'.
			20.0'	2	19" RECOVERY		
21			20.0				
<u> </u>							
24							
		11	24.0'	4 1 1 7	Wet very loose brownish orange and gray fine sand w/some silt and coarse sand, trace of	A-2-4(0)	
			26.0'	,	gravel. 20" RECOVERY		
27							
					DRAFT		
30	N	12	29.0'	4 4 7 11	Wet medium dense gray fine sand w/some clay and coarse sand.	A-2-4(0)	
			31.0'		16' RECOVERY	ノル	IJG
						_	
33			Δ		GUST 20	15	
		13	34.0'	3 6 11 10	Wet very stiff gray clayey fine sandy silt w/ trace of coarse sand.	A-4(0)	
36			36.0'		19" RECOVERY		
39		14	39.0'	4	Wat stiff arou alouse fine son to silt as the set	A 4(0)	
		14	33.0	4 6 7 10	Wet stiff gray clayey fine sandy silt w/trace of coarse sand.	A-4(0)	
			41.0'		21" RECOVERY		
42							
		15	44.0'	4	Wet stiff gray clayey fine sandy silt w/trace of	A-4(0)	
45			0.171	4 5 7 8	coarse sand.	A-4(0)	
			46.0'		21" RECOVERY		

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	1 1091000		Dopin				
48							
40							
		16	49.0'	11 13 17 21	Wet medium dense gray silty fine sand w/ trace of coarse sand and gravel.	A-2-4(0)	
51			51.0'	21	20" RECOVERY		
51			51.0		End of Boring		
54							
					DDAET		
57					DRAFT		
					FOR BIDI		J(f
60							
			Λ		GUST 20	15	
				VU	1003 I 20	1 D	
63							
66							
69							
72							

Symbol Description

Strata symbols

Silty sand

Poorly graded sand with silt



Poorly graded sand

Poorly graded clayey silty sand

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/19/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 880+06, 35' Rt. C.L.

B	oring	No.:	RW1-3R-1
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Ft. Ft.

Boring Surface Ele	<b>••••</b> + 13.2		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 <b>m Auger:</b>	Inches	From Depth of: From Depth of:	0.0	To: To:	18.0	
Water Level Readings Date 6/19/2009	Time	Depth of Hole 10.	Depth of Casing 8.0		of Water	Elev. of Water	

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51	Ft.;	Dia. U-Sample Boring:	
No. of 2 in. Dia. Shelby Tubes:		;	No. of: U-Samples:	
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	

Boring Contractor: Walton Corporation Driller: jason Truver Helpers: J. lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	6/19/09	1	1.0' 2.0'	50/2"	Moist gray silty gravel w/trace of fine to coarse sand.	A-2-4(0)	12" of HMA and 12" of Stone Base
3		2	2.0' 3.0'	10 20	2" RECOVERY Moist very dense brown coarse to fine sand	A-1-b	
	N	2A	3.0' 4.0'	50/3"	W/some gravel, trace of silt, 5" RECOVERY Moist very dense grayish black gravel w/trace-	A-1-a	
		3	4.0'	10 14 10 9	of coarse to fine sand and silt. 4" RECOVERY	A-4(0)	ŊĠ
6			6.0'		Moist very stiff brown fine to coarse sandy silt w/some clay and gravel.		
		4	6.0	13 15 14 11	16" REČOVERY Moist medium dense orangish brown fine	A-2-4(0)	
			8.0'		sand w/some silt and coarse sand, trace of gravel.		
9		5	8.0'	4 3 3 4	Wet loose orangish brown fine sand w/some coarse sand, trace of silt.	A-2-4(0)	
			10.0'		111167 1711167 1711167 1711167 16" RECOVERY		
		6	10.0'	2 3 3 2	Wet loose orangish brown fine sand w/some coarse sand, trace of silt.	A-3	
12			12.0'		23" RECOVERY		
		7	12.0'	WOR 1 1 2	wet very loose orangish brown fine sand w/ some coarse sand and silt.	A-2-4(0)	
			14.0'		15" RECOVERY		
15		8	14.0'	WOR 1 2 2	wet very loose orangish brown fine sand w/ some coarse sand and silt.	A-2-4(0)	
			16.0'		17" RECOVERY		
		9	16.0'	2 1 1 2	Wet very loose orangish brown fine sand w/	A-2-4(0)	
			. @ 19.0		1613 3166 4 2014 72 14 1 615 3 3 3166 9		

Remarks: Mud Rotary @ 18.0 Ft.

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
		10	18.0'	2	i i i i i i i i i i i i i i i i i i i	20" RECOVERY		
			18.0'	2 3 4 6		Wet loose brownish red silty fine sand w/	A-2-4(0)	
				6		some coarse sand, trace of gravel.	1	
			20.0'			18" RECOVERY	1	
							1	
21							1	
							1	
							1	
24			L					
		11	24.0'	5 5 5 6		Wet stiff gray fine sandy silt w/some coarse	A-4(0)	
				6		sand, trace of organic matter and gravel.	1	
			26.0'			22" RECOVERY	1	
			20.0				1	
27							1	
							1	
						DRAFI		
							1	
		12	29.0'	2	<b>ANN</b>	Wet loose gray clayey fine sand w/trace of	A-2-4(0)	
30				2 3 3 5		coarse sand and organic matter.		
			]				└ <b>}      </b>	
			31.0'			22" RECOVERY		
						si 1	1	
33						AUSI 20	16	
		13	34.0'	2 3 3 5		Wet firm gray fine sandy silt w/some clay,	A-4(0)	
				5		trace of coarse sand and organic matter.	1	
36			36.0'			24" RECOVERY		
							1	
							1	
							1	
						۹ 	1	
							1	
39		14	39.0'	1		Wet very loose gray silty fine sand w/trace of	A-2-4(0)	
				1 2 2 3		coarse sand, gravel and organic matter.		
				_			1	
			41.0'			20" RECOVERY		
							1	
42							1	
							1	
							1	
			<u> </u>	<u> </u>				
		15	44.0'	5 7 8 11		Wet stiff gray fine sandy silt w/trace of	A-4(0)	
45				o 11		organic matter and coarse sand.	1	
			46.0'			22" RECOVERY	1	
		<u> </u>	40.0	11				

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
48		16	49.0'	4 6 8 10	Wet stiff grayish black clayey fine sandy silt w/some organic matter.	A-4(0)	
51			51.0'		22" RECOVERY		
					End of Boring.		
54							
57					DRAFT		
					FOR BIDI		JG
60							
			Δ		GUST 20	15	
63							
66							
69							
70							
72							

Symbol Description

Strata symbols



Silty gravel

Poorly graded sand



Poorly graded gravel with silt



Poorly graded clayey silty sand



Silty sand

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/19/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 147+80 55' LT C.L.

Boring I	No.:	RW1-3
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Boring Surface Elev.: + 24.27		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barrel S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	14.0		
Water Level Readings Date Time 7/21/10	Depth of Hole 8.0	Depth of Casing 8.0	Depth	of Water	Elev. of Water		

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	61.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		_ ;	No. of: U-Samples:	_
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	7/21/10	1	0.5'	4 8 12		Moist medium dense brown coarse to fine sand w/some silt and fine gravel. 14" RECOVERY	A-1-b	Topsoil - 4".
		2	2.0'	8 7 5 5		Moist medium dense brown coarse to fine	A-1-b	
3			4.0'			sand w/some silt, trace fine gravel.		JG
	•	-3	4.0'	7 2 3 4		Wet loose coarse to fine sand w/trace silt and fine gravel.	A-1-b	
6			6.0'			11" RECOVERY	15	
		4	6.0'	2 2 2 3		Wet very loose brown coarse to fine sand w/ some fine gravel, trace silt.	A-1-b	
			8.0'			20" RECOVERY		
9		5	8.0'	2 2 2 2		Wet very loose orange silty fine sand w/some coarse sand.	A-2-4(0)	
		6	10.0' 10.0'	3 2 3 7		14" RECOVERY Wet loose orange fine to coarse sand w/some silt, trace fine gravel.	A-2-4(0)	
12			12.0'			14" RECOVERY		
		7	12.0'	5 7 5 5		No Sieve Analysis - Indication of wet medium dense orange silty sand w/some fine gravel. 6" RECOVERY		
		8	14.0'	10 4 5 7		Wet loose brown fine sand w/some coarse	A-3	Mud Rotary @ 14.0'
15			16.0'	57	1913306 1917340 1017310 1017300 1017300 1017300 1017300	sand, trace silt and fine gravel.		
Bomo		9	16.0'	8 13 9 8	100343166 100343166 100343166 100343166 100343166 1003431000 10031000	Wet medium dense brown fine sand w/some coarse sand and silt, trace fine gravel.	A-2-4(0)	

Remarks:

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18	_		18.0'		kessek Ressier Vessek	19" RECOVERY		
		10	18.0'	10		Saturated medium dense brown fine sand w/	A-3	
				12	14171411 8 14111416 1411416 1411416 1411416	some coarse sand, trace silt.		
			20.0'		128 1 4 120 f 4 6 1 7 4 4 6 6 4 6 1 7 4 4 6 6 4 6 1 4 4 6 6 6	18" RECOVERY		
21					1993 1996 1 1993 1996 1 1993 1996 1 1993 1996 19			
					99494966 2003 1920 2 2019 2020 2019 2020 2			
					199943968 20177300 20177300 20177300 20177300 199733967			
					1997 7 2000 1997 7 2000 2007 7 2000 4997 7 2000			
24		11	24.0'	5	ittiniter. Vei rahev Heitanier	Saturated loose brown fine sand w/some	A-3	
				5 6 3 5		coarse sand, trace silt and fine gravel.	11-5	
			26.0'			16" RECOVERY		
27						)RAFI		
		40	20.01	10				
30		12	29.0'	10 9 8 10	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Saturated medium dense brown fine sand w/ some coarse sand, trace silt.	A-3	
			31.0'		4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4. 4	20" RECOVERY		
			51.0		100 1 2 2 7 10 100 1 2 2 10 10 2 2 2 4 4 1 4 6 4 10 2 3 1 2 10 10 10 2 3 1 2 10 10			
						BUST 20	15	
33								
					263 1352 C 151 53,197, 197 53,197, 197 53,197 197 54,197 197 54,197 197 54,197			
		13	34.0'	7 6 6 7		Saturated medium dense brown silty fine sand w/trace coarse sand.	A-2-4(0)	
			0.0	· ·				
36			36.0'			17" RECOVERY		
39								
		14	39.0'	10 15 18 17		Saturated dense brown coarse to fine sand w/ trace silt.	A-1-b	
				17				
			41.0'			19" RECOVERY		
42								
		15	44.0'	12 15 15 14		Saturated medium dense gray silty fine sand	A-2-4(0)	
45				15 14	1	w/some coarse sand.		
		L	Ļ	ı l				

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth	Daily		Sample				
(ft.)	Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		23" RECOVERY		
		16	49.0'	11			
		16		11 8 11 13	Saturated medium dense gray silty fine sand w/some coarse sand.	A-2-4(0)	
			51.0'		24" RECOVERY		
		17	54.0'	5 8 11 14	Saturated medium dense gray silty fine sand w/some clay, trace coarse sand. 24" RECOVERY	A-2-4(0)	
57	N						
60		18	59.0'	7 12 20 17	Saturated dense gray silty fine sand w/some coarse sand, trace clay.	A-2-4(0)	NG
			61.0'	U	12" RECOVERY End of Boring	15	
63							
66							
69							
72							
		I	1	1		1	l

Symbol Description

Strata symbols

Silty sand

Well graded sand with silt



Poorly graded sand with silt



Poorly graded sand

Poorly graded clayey silty sand

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 21, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 149+30 55' LT C.L.

Boring Surface Ele			Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		14.0
Water Level Readings Date 7/22/10	Time	Depth of Hole 8.0	Depth of Casing 8.0		<b>of Water</b> 5.6	Elev. of Wate	r

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	60.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
	7/22/10	1	0.5' 2.0'	3 5 6	Moist loose brown silty coarse to fine sand w/ A-2-4(0) Topsoil - 6". some fine gravel. 14" RECOVERY	
		2	2.0'	5 6 3	Wet loose brown coarse to fine sand w/some         A-2-4(0)	
3			4.0'	3	silt, trace fine gravel.	
		3	4.0'	3 2 1 1	Wet very loose brown fine to coarse sand w/ A-2-4(0) some silt, trace fine gravel.	
6			6.0'		15" RECOVERY	
		4	6.0'	1 2 1 3	Wet very loose brown fine to coarse sand w/ A-2-4(0) some silt, trace fine gravel.	
			8.0'		INTERNET 18" RECOVERY	
9		5	8.0'	1 2 1 2	Wet very loose brown fine to coarse sand w/ A-3 trace silt and fine gravel.	
	-		10.0'		10" RECOVERY	
		6	10.0'	2 5 5 7	Wet loose brown fine gravelly fine to coarse A-1-b sand w/trace silt.	
12	-		12.0'		11/100 3" RECOVERY	
		7	12.0'	5 8 4 10	Wet medium dense brown coarse to fine sand w/trace fine gravel and silt.A-1-b	
	-	0	14.0' 14.0'	3	18" RECOVERY	
15		8	14.0	3 3 4 5	Wet loose brown fine sand w/some coarse A-3 Mud Rotary @ 14.0 sand, trace silt and fine gravel.	
	-		16.0'	E	1/1/1/ 23" RECOVERY	
		9	16.0'	5 4 5 6	Wet loose brown fine sand w/some coarse       A-2-4(0)         sand and silt, trace fine gravel.	

Remarks:

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'		1. 1 1 1 1 1 1 1 1 1. 1 1 1 1 1 1 1 1 1	4" RECOVERY		
		10	18.0'	5 5 7 9	11111111111111111111111111111111111111	Wet medium dense orange fine sand w/some coarse sand, trace silt.	A-3	
			20.0'			18" RECOVERY		
24				_				
		11	24.0'	7 8 12 10	1993.1997 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1996 1993.1997 1993.1997 1993.1997 1994.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1995.1997 1997.1997 1997.1997 1997.1997 1997.1997.	Wet medium dense ofdinge fine sand w/some	A-3	
			26.0'			18" RECOVERY		
27					1993 1993 1993 1993 1993 1993 1993 1993			
					1619366 2017300 2017300 2013200 10132100 10132100 1013200			
30		12	29.0' 31.0'	6 10 10 13		Wet medium dense brown fine sand w/some coarse sand, trace silt and fine gravel. 19" RECOVERY	A-3	IG
33				U		GUST 20	15	
		13	34.0'	3 3 5 5		Wet loose brown fine sand w/trace coarse sand and silt.	A-3	
36			36.0'			20" RECOVERY		
					00133300 1013330 1013330 1013330 1013330 1013330 1013330 1013330 1013330 1013330 1013330 1013330 1013330 1013330 101330 101330 101330 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 10130 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 10000 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000 10000 10000 100000 1000000			
39		14	39.0'	10 14 19 22	1913.1997. 1923 - Jane 1933 - Jane 1933 - Jane 1933 - Jane 1937 -	Wet dense brown silty fine sand w/trace coarse sand and fine gravel.	A-2-4(0)	
			41.0'			24" RECOVERY		
42								
		15	44.0'	9		Wet medium dense gray silty fine sand w/	A-2-4(0)	
45				9 8 8 9		some coarse sand, trace fine gravel.		

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

(i).         Progress         (ii)         Depth         Variable         Complete Conceptual         Conceptual	Depth	Daily	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
45       16       49.0       5       1       Wet medium dense gray silty fine sand w/ frace coarse sand and fine gravel.       A-2-4(0)         51       51.0       24* RECOVERY       A-2-4(0)         54       10       24* RECOVERY       A-2-4(0)         54       10       10       24* RECOVERY       A-2-4(0)         54       10       10       10       24* RECOVERY         57       56.0*       10       10       10         50       60.7       10       10       10         51       60.7       10       10       10         51       60.7       10       10       10         52       60.7       10       10       10       10         53       60.7       10       10       10       10       10         54       60.7       10       10       10       10       10       10       10         65       10       10       10       10       10       10       10       10       10       10         66       10       10       10       10       10       10       10       10       10       10       10	(ft.)	Progress			2.010/0		
10       48.0°       0       10       48.0°       0       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10							
10       48.0°       0       10       48.0°       0       10       48.0°       0       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10							
51       51.0°       51.0°       24° RECOVERY         54       17       54.0°       9       0         54       17       54.0°       9       0         56.0°       56.0°       56.0°       56.0°       56.0°         57       56.0°       56.0°       56.0°       56.0°         58       60.0°       56.0°       56.0°       56.0°         58       60.0°       56.0°       56.0°       56.0°         58       58.0°       60.0°       56.0°       56.0°         58       58.0°       60.0°       20° RECOVERY       56.0°         60       60.0°       20° RECOVERY       56.0°       56.0°         61       60.0°       20° RECOVERY       56.0°       56.0°         62       60.0°       20° RECOVERY       56.0°       56.0°         63       60.0°       20° RECOVERY       66.0°       66.0°         63       61.10°       70° RECOVERY       70° RECOVERY       70° RECOVERY         63       61.10°       70° RECOVERY       70° RECOVERY       70° RECOVERY         69       61.10°       70° RECOVERY       70° RECOVERY       70° RECOVERY         63	48						
51       51.0°       24° RECOVERY         54       17       54.0°       0         17       54.0°       0       0         56.0°       0       0       0         57       0       0       0         60       0       0       0         60       0       0       0         61       18       56.0°       0         18       56.0°       0       0         18       56.0°       0       0         18       56.0°       0       0         18       56.0°       0       0         18       56.0°       0       0         20° RECOVERY       0       0         18       56.0°       0         20° RECOVERY       0       0         18       56.0°       0         20° RECOVERY       0       0         18       56.0°       0         19       0       0         19       0       0         19       0       0         10       0       0         10       0       0         10							
51       51.0°       24° RECOVERY         54       17       54.0°       0         17       54.0°       0       0         56.0°       0       0       0         57       0       0       0         60       0       0       0         60       0       0       0         61       18       56.0°       0         18       56.0°       0       0         18       56.0°       0       0         18       56.0°       0       0         18       56.0°       0       0         18       56.0°       0       0         20° RECOVERY       0       0         18       56.0°       0         20° RECOVERY       0       0         18       56.0°       0         20° RECOVERY       0       0         18       56.0°       0         19       0       0         19       0       0         19       0       0         10       0       0         10       0       0         10			16	49.0'	6	Wet medium dense gray silty fine sand w/         A-2-4(0)	
17       54.0"       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0 <td></td> <td></td> <td></td> <td></td> <td>9 10</td> <td>trace coarse sand and fine gravel.</td> <td></td>					9 10	trace coarse sand and fine gravel.	
17       54.0"       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0 <td>51</td> <td></td> <td></td> <td>51.0'</td> <td></td> <td>24" RECOVERY</td> <td></td>	51			51.0'		24" RECOVERY	
17       54.0"       9/3       Wet very stiff gray fine sandy silt w/trace fine area (0)       A-4(0)         57       56.0"       D       23' RECOVERY       A-2-400         57       60       60.0"       20' RECOVERY       A-2-400         60       60.0"       20' RECOVERY       A-2-400         61       60.0"       20' RECOVERY       A-400         63       63       64       64       65         64       64       65       65       65         65       65       65       65       65         66       66       66       66       66         66       66       66       66       66         67       67       68       66       66         68       69       60       60       60         69       60       60       60       60       60         69       60       60       60       60       60         66       60       60       60       60       60         66       60       60       60       60       60         69       60       60       60       60       60							
17       54.0"       9/3       Wet very stiff gray fine sandy silt w/trace fine area (0)       A-4(0)         57       56.0"       D       23' RECOVERY       A-2-400         57       60       60.0"       20' RECOVERY       A-2-400         60       60.0"       20' RECOVERY       A-2-400         61       60.0"       20' RECOVERY       A-400         63       63       64       64       65         64       64       65       65       65         65       65       65       65       65         66       66       66       66       66         66       66       66       66       66         67       67       68       66       66         68       69       60       60       60         69       60       60       60       60       60         69       60       60       60       60       60         66       60       60       60       60       60         66       60       60       60       60       60         69       60       60       60       60       60							
17       54.0"       9/3       Wet very stiff gray fine sandy silt w/trace fine area (0)       A-4(0)         57       56.0"       D       23' RECOVERY       A-2-400         57       60       60.0"       20' RECOVERY       A-2-400         60       60.0"       20' RECOVERY       A-2-400         61       60.0"       20' RECOVERY       A-400         63       63       64       64       65         64       64       65       65       65         65       65       65       65       65         66       66       66       66       66         66       66       66       66       66         67       67       68       66       66         68       69       60       60       60         69       60       60       60       60       60         69       60       60       60       60       60         66       60       60       60       60       60         66       60       60       60       60       60         69       60       60       60       60       60							
17       54.0"       9/3       Wet very stiff gray fine sandy silt w/trace fine area (0)       A-4(0)         57       56.0"       D       23' RECOVERY       A-2-400         57       60       60.0"       20' RECOVERY       A-2-400         60       60.0"       20' RECOVERY       A-2-400         61       60.0"       20' RECOVERY       A-400         63       63       64       64       65         64       64       65       65       65         65       65       65       65       65         66       66       66       66       66         66       66       66       66       66         67       67       68       66       66         68       69       60       60       60         69       60       60       60       60       60         69       60       60       60       60       60         66       60       60       60       60       60         66       60       60       60       60       60         69       60       60       60       60       60	54						
56.0'       56.0'       56.0'       56.0'       56.0'         57       58.0'       58.0'       58.0'       58.0'       58.0'         60       60.0'       20' RECOVERY       60.0'       20' RECOVERY         60       60.0'       20' RECOVERY       60.0'       60.0'       20' RECOVERY         63       60.0'       10'       20' RECOVERY       60.0'       60.0'       60.0'         63       60.0'       60.0'       10'       20' RECOVERY       60.0'       60.0'         63       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'         63       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'       60.0'			17	54.0'	9 12 13		
57       18       58.0       0       0       12       Wet modum dense grav silty fine sand w       A-2-4(0)       C         60       60.0       20° RECOVERY       0       12       C       10       12         60       60.0       20° RECOVERY       10       10       10       10       10         63       60.0       10       10       10       10       10       10         63       10       10       10       10       10       10       10       10         63       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       10       1					17		
60 60.0   60 60.0   61 60.0   62 60.0   63   64   65   66   68   69   60				56.0'		23" RECOVERY	
60 60.0   60 60.0   61 60.0   62 60.0   63   64   65   66   68   69   60	57						
60       60.0'       20'RECOVERY         63       63       64         66       69       64         69       64       65							
60       60.0'       20'RECOVERY         63       63       64         66       69       64         69       64       65			18	58.0'	6	Wet medium dense gray silty fine sand w/ A-2-4(0)	
Bit Augusta     63     66     69     61     62     63     64     65     67     68     69     61     62     63     64     65     67     68     69     69     61     62     63     64     65     67     68     69     61     62     63     64     65     67     68     69     69     69     69     69     69     69     69     69     69     61     62     63     64     65     66     67     68     69     69     69     69     69     69 <td></td> <td></td> <td></td> <td></td> <td>10 14</td> <td>some coarse sand.</td> <td></td>					10 14	some coarse sand.	
Bit Augusta     63     66     69     61     62     63     64     65     67     68     69     61     62     63     64     65     67     68     69     69     61     62     63     64     65     67     68     69     61     62     63     64     65     67     68     69     69     69     69     69     69     69     69     69     69     61     62     63     64     65     66     67     68     69     69     69     69     69     69 <td>60</td> <td></td> <td></td> <td>60.0'_</td> <td></td> <td>20" RECOVERY</td> <td></td>	60			60.0'_		20" RECOVERY	
						End of Boring	
	63						
	66						
	60						
	69						
	72						

Symbol Description

Strata symbols

Silty sand

Poorly graded sand (11)(11) with silt



Well graded sand with silt

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 22, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Boring Location: Sta. 150+80 55' LT C.L.

Boring Surface Ele			Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.		
Casing Size: Hollow Ste	3 1/4 <b>m Auger:</b>	Inches	From Depth of: From Depth of:	0.0	To: To:	18.0		
Water Level Readings Date 7/26/10	Time	Depth of Hole 8.0	Depth of Casing 8.0		of Water	Elev. of Water		

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	60.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		_;	No. of: U-Samples:	-
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: M. Derr

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	7/26/10	1	1.0' 2.0'	11 13		Moist medium dense brown coarse to fine sand w/some silt and fine gravel.	A-1-b	Asphalt - 12".
		2	2.0'	13		12" RECOVERY	A-1-b	
3				13 9 9 7		Moist medium dense brownish orange coarse		
						to fine sand w/some fine gravel and silt.		
			4.0	-		14" RECOVERY		
		3	4.0'	5 1 2 6		Wet soft gray silt w/some fine to coarse sand.	A-4(0)	NG
				6				
6			6.0'			12" RECOVERY		
- 0		4	6.0	2		Wet loose gray silty coarse to fine sand w/	A-2-4(0)	
				2 3 6 6		some fine gravel.		
			8.0' 8.0'	12		18" RECOVERY		
		5	8.0	12 18 20 28	1:1:1:1:1:1:1:1: 1:1:1:1:1:1:1:1:1: 1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:	Wet dense brown fine gravel and coarse sand w/some fine sand, trace silt.	A-1-b	
9				28		w/some line sand, trace slit.		
			10.0'		):):):):):):):):) ):):):):):):):):): }:):):):)	15" RECOVERY		
		6	10.0'	18 13		Wet medium dense orangish brown fine	A-1-b	
				18 13 14 12	106 1 4 300 6 406 1 7 7 7 4 6 106 1 4 30 6 6	gravelly fine to coarse sand w/trace silt.		
					(*********** ***********			
12			12.0'	4	00173900 00133900	20" RECOVERY		
		7	12.0'	4 4 7 9	14444444 15171545 161743465	Wet medium dense orangish brown fine sand	A-2-4(0)	
				9	1-1-1-1-1-1-1 1-(-1-1-1-1-1-1-1-1-1-1-1-	w/some coarse sand and silt, trace fine gravel.		
			14.0'		11111111111111111111111111111111111111	18" RECOVERY		
		8	14.0'	4 4		Wet medium dense orangish brown fine sand	A-2-4(0)	
15				4 4 8 9		w/some silt and coarse sand, trace fine gravel.		
			16.0'			24" RECOVERY		
		9	16.0'	6 9 12 15	6613366 2817260 6643366	Wet medium dense orangish brown fine sand	A-2-4(0)	
				15	1:()),()(), 1:(),(),(),(),(),(),(),(),(),(),(),(),(),(	w/some coarse sand and silt, trace fine gravel.		
					12171211 41111411 41111414			

Remarks:

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
		10	18.0'	5	<u></u>	24" RECOVERY	A <b>A</b> 4(0)	
		10	18.0'	5 5 11 9	11(12,12)(1) 	Wet medium dense orange fine sand w/some	A-2-4(0)	Mud Rotary @ 18.0'
				9		coarse sand and silt.		
			20.0'		6 6 9 1 9 6 6 6 6 1 9 1 9 6 6 6 6 9 9 9 6 6	18" RECOVERY		
			20.0		1. ( 1. J 1. ( ) ( 4. ( 4. ( )) ( 4. ( ))			
21								
					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
					2011200 19112190 19112190			
		11	23.0'	6		Wet medium dense orange fine sand w/some	A-2-4(0)	
24				6 8 11 12		coarse sand and silt.	11 2 4(0)	
<u> </u>				12	1417141 401946 4014147			
			25.0'		88919966 18939366 19999366 19999366	18" RECOVERY		
					,4,44,14,7 ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
07								
27					1997-99966 1997-99966 1997-99966			
					(,,,)))))))  )))))  )))))))  )))))))			
		12	28.0'	5 5		Wet loose orange fine sand w/trace coarse	A-3	
				5 5 5 5		sand and silt.		
					4 6 4 4 4 4 6 7 4 6 6 4 4 6 6 6 6 6 6 7 6 6 6 6 6			
30			30.0'		4	15" RECOVERY		
		N (			19:01 6 19:01 19:05 19:05			
					1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			
					6614366 1217121 11112 1112 1112 1112 1112 111		A -	
33							15	
		13	3 <mark>3</mark> .0'	12 4 6		Wet loose brown fine sand w/some silt, trace	A-2-4(0)	
				14		coarse sand and fine gravel.		
			35.0'			22" RECOVERY		
			00.0			22 RECOVERT		
36								
		14	38.0'	5		Wet loose gray silty fine sand w/some coarse	A-2-4(0)	
39			00.0	5 5 5 7		sand, trace fine gravel.	A-2-4(0)	
			40.0'			24" RECOVERY		
42								
		15	43.0'	8 7		Wet medium dense gray silty fine sand w/	A-2-4(0)	
				8 7 7 10		some coarse sand.		
45			45.0'			24" RECOVERY		

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description		Class./G.I.	Remarks
48									
		16	48.0'	3 5 10 15		edium dense gray silty parse sand.	fine sand w/	A-2-4(0)	
			50.0'	15		24" RECOVERY			
51			00.0						
54		17	53.0'	7 6 7 11		edium dense gray silty oarse sand.	fine sand w/	A-2-4(0)	
			55.0'			24" RECOVERY			
							T		
57						RAF			
		18	58.0'	8 12 13 16	Wet me fine sar	edium dense gray silty nd w/trace coarse sand.	fine gravelly	A-2-4(0)	
60			60.0'			24" RECOVERY			
					End of	Boring	00	イレ	
			H		G	<b>JJI</b>	20	CI	
63									
66									
69									
72									

Symbol Description

Strata symbols

Silty sand

Silt

Well graded sand with silt



Poorly graded sand with silt

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 26, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location:	Sta. 152+30 55' LT	C.L.					
Boring Surface Ele	<b>ev.:</b> + 21.81		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	То: То:		20.0
Water Level Readings Date 7/26/10	Time	Depth of Hole 14.0	Depth of Casing 14.0		of Water	Elev. of Wat	er

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	60.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		<b>F</b> 4	No. of: Ú-Samples:	<b>F</b> 4
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	гι.

Boring Contractor: Walton Corporation Driller: G. Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
	7/26/10	1	1.0' 2.0'	10 15	Not enough sample for testing 4" RECOVERY Asphalt - 12".
		2	2.0'	10 14 12 8	Moist medium dense brown coarse to fine A-1-b
3		_		8	sand w/some silt, trace fine gravel.
	N		4.0'		22" RECOVERY
		3	4.0	2 2 2 2	Wet soft gray silt w/some clay, trace coarse to A-4(1) fine sand.
6			6.0'		18" RECOVERY
		4	6.0' 7.0'	2 2	Wet soft gray silt w/some coarse to fine sand A-4(1) and clay.
		4A	7.0'	11 13	9" RECOVERY       Wet medium dense gray coarse sandy fine
		5	8.0' 8.0'	15	gravel w/some fine sand and silt.
9		-		15 11 7 7	10" RECOVERY No Sieve Analysis - Indication of wet
					medium dense gray silty sand w/trace fine
		6	10.0' 10.0'	4	gravel. 2" RECOVERY A-2-4(0)
				4 5 5 11	Wet loose orange fine sand w/some silt, trace
					coarse sand and fine gravel.
12		7	12.0' 12.0'	5	20" RECOVERY       Wet medium dense orange fine sand w/some       A-3
		1	12.0	5 5 6 6	Wet medium dense orange fine sand w/some A-3 fine gravel and coarse sand, trace silt.
				0	
			14.0'		111111 21" RECOVERY
45		8	14.0'	2 3 4 6	Wet loose orange fine sand w/some coarse     A-2-4(0)       sand and silt.
15				6	
			16.0'		19" RECOVERY
		9	16.0'	4 6 9	Wet medium dense brown fine sand w/some A-2-4(0)
				10	coarse sand and silt, trace fine gravel.

Remarks:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 Contract: 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I.	Remarks
		10	<u>18.0'</u> 18.0'	3 4 6 6	sand trace silt	d Rotary @ 20.0'
			20.0'		17" RECOVERY	
21						
					ta tracto 19 Jane 19 Jane 19 Jane 19 Jane	
24		11	24.0'	4		
			24.0	4 5 5 6	Wet loose brown fine sand w/some coarse A-2-4(0) sand and silt.	
			26.0'		18" RECOVERY	
27						
		12	29.0'	3	Wet loose brown fine sand w/trace coarse A-3	
30				3 4	sand, silt and fine gravel.	G
			31.0'		18" RECOVERY	
33			Δ		<b>GUST 2015</b>	
		13	34.0'	6	Wet medium dense brown fine sand w/some A-2-4(0)	
		10	0 1.0	6 10 12 12	silt and coarse sand, trace fine gravel.	
36			36.0'		19" RECOVERY	
39		14	39.0'	5 7 11 11	Wet medium dense gray silty fine sand w/         A-2-4(0)	
			44.0	11	some coarse sand.	
42			41.0'		18" RECOVERY	
42						
45		15	44.0'	5 8 9 14	Wet medium dense gray silty fine sand w/A-2-4(0)some coarse sand.	
			46.0'		20" RECOVERY	

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks	
	1 1091033		Берш			
48						
		16	49.0'	6 6 7 12	Wet medium dense gray silty fine sand w/ A-2-4(0)	
				12	trace coarse sand.	
51			51.0'		22" RECOVERY	
54		17	54.0'	6 7 9 13	Wet medium dense gray silty fine sand w/     A-2-4(0)	
				9 13	some coarse sand.	
			56.0'		22" RECOVERY	
57						
	N	18	58.0'	6 8 10 16	Wet very stiff gray fine sandy silt w/trace A-4(0)	
				10	coarse sand and clay.	
60			60.0'		22" RECOVERY End of Boring	
					IGUS I 2015	
63						
66						
69						
72						
			I			

Symbol Description

Strata symbols

Silty sand

Silt

Silty low plasticity clay



Poorly graded sand with silt

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 26, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 153+80 55' LT C.L

Boning Looution	5ul. 155+60 55 E1	С.Ц.					
Boring Surface Ele	<b>ev.:</b> + 21.64		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		19.0
Water Level Readings Date 7/26/10	Time	Depth of Hole 8.0	Depth of Casing 8.0		of Water	Elev. of Wate	er

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 61.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Bering Contractory Walter Comparties		-	

Boring Contractor: Walton Corporation Driller: Dave Burt Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	7/26/10	1	0.0'			DRAFI		Asphalt - 15".
			2.0'			0" RECOVERY		
3		2	2.0' 3.0'	5 5		Moist loose gray fine gravel w/some silt and coarse sand, trace fine sand and clay.	A-1-b	
		2A	3.0' 4.0'	10 8		8" RECOVERY Moist medium dense orange coarse to fine	A-1-b	NO N
		3	4.0'	444		6" ŘECOVERY	A-1-b	
6			6.0'	3		Moist loose orange coarse to fine sand w/ some fine gravel and silt. 7" RECOVERY	15	
		4	6.0'	2 3 4		Wet loose brown silty fine sand w/some	A-2-4(0)	
				4		coarse sand.		
			8.0'			10" RECOVERY		
9		5	8.0'	2 2 2 2		Wet very loose brown fine sand w/some silt and coarse sand, trace fine gravel.	A-2-4(0)	
			10.0'			14" RECOVERY		
		6	10.0'	5 5 9 26		Wet medium dense brown fine to coarse sand w/some silt, trace fine gravel.	A-2-4(0)	
12			12.0'			16" RECOVERY		
		7	12.0'	4 6 6 9		Wet medium dense brown fine sand w/some coarse sand, trace silt.	A-3	
				9				
			14.0'	5		16" RECOVERY		
15		8	14.0'	5 6 6 14	14144) 1914 1914 1914 1914 1917 1917 1917 1917	Wet medium dense brown fine sand w/some coarse sand and silt.	A-2-4(0)	
			16.0'		1.414) 1.6213 1.6243 1.6443 1.6443	16" RECOVERY		
		9	16.0'	11 8 12		Wet medium dense brown fine sand w/some	A-2-4(0)	
Bama		9	16.0' 16.0'	11 8 12	100110 100110 1001100 100100 100100 100100		A-2-4(0)	

Remarks:

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3R-15

Depth	Daily	N1-	Sample	Diama (or				D!
(ft.)	Progress	No.	Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
				12	19131956 19133166 19133169 19133169 19133169 19133169	coarse sand and silt.		
18		10	18.0' 18.0'	6	200313:00 194334:00 194334:00	18" RECOVERY Wet medium dense brown fine sand w/some	A-2-4(0)	Mud Rotary @ 19.0'.
				6 5 6 10	1961 (4996) 1961 (4996) 1961 (4996)	coarse sand and silt.	11 2 T(U)	
					1.64999960 1.6499960 1.6499966 1.6499966 1.6499966			
			20.0'			17" RECOVERY		
21								
					1991 1999 1999 1991 1999 1999 1991 1999 1996 1991 1997 19			
					1997-1996 2017-1997 2017-1997 2017-1997			
					100133000 100133060 20017200			
24					0.6433400 0.633.1307 0.6143.000 0.6143.000			
		11	24.0'	6 10 11 12	100 1 3 490 0 100 3 3 3 10 0 100 1 3 4 4 4 6 6 100 1 3 3 3 10 0	Wet medium dense brown fine sand w/some	A-2-4(0)	
				12	1:0133:00 1:0151:01:0 1:0139:00 1:0139:00 1:0139:00 1:0139:00	coarse sand and silt.		
			26.0'		669 (966) 669 (966) 669 79960 669 79960	17" RECOVERY		
27					64449966 00010000 10014906 10014906			
					120199900 12149309 92119900 1219900			
					1999, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 19 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 199 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 199			
					1993 3 3 3 9 9 9 9 1993 3 3 9 9 9 9 1993 3 3 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			
		12	29.0'	2 4 4 4		Saturated loose brown fine sand w/some	A-2-4(0)	
30				4	1201 2 3 3 12 6 1201 7 12 6 12 1201 7 12 12 6 12 1201 2 12 12 12 12 1201 2 12 12 12 12	coarse sand and silt, trace fine gravel.		
			31.0'		1969 (999) 1969 (999) 1969 (999) 1969 (999) 1969 (999)	20" RECOVERY		
						GUST 20	15	
33					1213.1267. 121133.220 14133.4366 221732.22			
					1000 1000 1000 1000 1001 7000 1001 7000 1001 7000 1001 7000			
		13	34.0'	9 11 14 15		Saturated medium dense gray silty fine sand	A-2-4(0)	
				15		w/trace coarse sand and fine gravel.		
36			36.0'			22" RECOVERY		
39								
		14	39.0'	4 5 8 9		Saturated medium dense gray silty fine sand	A-2-4(0)	
				9		w/some coarse sand.		
			41.0'			22" RECOVERY		
42								
		15	44.0'	8 12 19 23		Saturated dense gray silty fine sand w/trace	A-2-4(0)	
45				19 23		coarse sand and clay.		

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3R-15

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(11.)	1 1091633		46.0'		24" RECOVERY		
			40.0		24 RECOVERT		
48							
		16	49.0'	7 7 10 11	Saturated medium dense gray silty fine sand	A-2-4(0)	
				10 11	w/some coarse sand.		
51			51.0'		24" RECOVERY		
54		17	54.0'	7	Saturated medium dense gray silty fine sand	A-2-4(0)	
			_	7 12 11 13	w/trace coarse sand.		
			56.0'		24" RECOVERY		
57				-			
					FOR BIDI	JIN	IG
	-	10	50.01	5			
60		18	59.0'	5 6 7 11	Saturated stiff gray fine sandy silt w/trace coarse sand.	A-4(0)	
			61.0'		24" RECOVERY	D	
					End of Boring		
63							
66							
60							
69							
72							

Symbol Description

Strata symbols



Silty gravel



Silty sand

Poorly graded sand with silt

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on July 26, 2010 using a 3 1/4-inch diameter continuous flight power auger. Rig is a CME 55 ATV.
- 2. Groundwater levels recorded at the time of drilling and re-checked to following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 855+05, 35' Rt. C.L.

Borning Location.	51a. 855+05, 55 RL	C.L.					
Boring Surface Ele	+ 30.2		Ref	erence:			
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		16.0
Water Level Readings Date 6/28/2009	Time	Depth of Hole	Depth of Casing 8.0		of Water	Elev. of V	Water

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:		; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Jason Truver Helpers: J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	7/23/09	1	0.5' 2.0'	3 4 5		Moist firm brown coarse sandy silt w/some fine sand and clay, trace of gravel. 13" RECOVERY	A-4(0)	Topsoil - 7".
		2	2.0'	6 6 5		Moist medium dense tan and yellow coarse to	A-1-b	
3			4.0'	6		fine sand w/some silt, trace of gravel. 21" RECOVERY		JG
		3	4.0'	3 3 4 5		Moist loose tan coarse to fine sand w/some silt, trace of gravel.	A-1-b	
6			6.0'			12" RECOVERY	15	
		4	6.0'	4 5 4 4		Moist loose tan coarse to fine sand w/some silt, trace of gravel.	A-1-b	
			8.0'		1993 1999 ( 1993 1996 ( 1993 1996 ( 1993 1996 ( 1993 1996 (	18" RECOVERY		
9		5	8.0'	3 3 4 5	(1141) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1111) (1	Moist loose tan fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'		1993 1999 ( 1993 1996 ( 1993 1996 ( 1993 1997 ( 1993 1997 ( 1993 1997 ( 1993 1997 ( 1994 1997 ( 1995 1997 ( 1996 (	15" RECOVERY		
		6	10.0'	2 3 4 3		Wet loose tan coarse to fine sand w/some silt, trace of gravel.	A-1-b	
12			12.0'			23" RECOVERY		
		7	12.0'	3 3 8 16		Wet medium dense orange coarse to fine sand and gravel w/some silt.	A-1-b	
			14.0'			14" RECOVERY		
15		8	14.0'	5 5 2 5		Wet loose orange fine to coarse sand w/some gravel, trace of silt.	A-3	Cemented sands.
			16.0'		1000 1000 10013,1000 10013,1000 10013,200	20" RECOVERY		
		9	16.0'	3 4 5 3		Wet loose orange silty fine to coarse sand w/ some gravel.	A-2-4(0)	Mud Rotary @ 16.0'. Cemented sands.

Remarks: Mud Rotary @ 16.0 Ft.

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3SR-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
18			18.0'		16" RECOVERY		
		10	18.0'	6 9 12 16	Wet medium dense orange fine sand w/some coarse sand, trace of gravel and silt.	e A-3	Cemented sands.
			20.0'		16" RECOVERY		
24		11	24.0'	14	Wet dense orange fine sand w/some silt and	A-2-4(0)	
				14 20 20 14	coarse sand, trace of gravel.		
			26.0'		19" RECOVERY		
27					DRAFT		
		12	29.0'	14	Wetneding		
			<u>31.0'</u>	14 15 15 13	Wet medium dense orange fine sand w/some coarse sand, trace of silt. 22" RECOVERY		NG
33			A	U	BUST 20	)15	
		13	34.0'	11 13 16 19	Wet medium dense orange fine sand w/some coarse sand and silt.	e A-2-4(0)	
36			36.0'		22" RECOVERY		
					Te 1 / J J J L Te 3 / J J L Te 3 / J L		
39		14	39.0'	7 9 13 16	Wet medium dense orange fine sand w/some coarse sand, trace of silt.	e A-3	
			41.0'	10	19" RECOVERY		
42					CE 2 J J J C C CE 2 J J J C C CE 1 J J C C CE 1 J J C C CE 1 J J C C CE 2 J J C C CE 1 J C CE 1 J C CE 1 J C C		
		15	44.0'	10			
45		15	44.0	10 14 20 28	Wet dense brown and tan fine sand w/some silt and coarse sand.	A-2-4(0)	

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3SR-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth 46.0'		20" RECOVERY		
48							
		16	49.0'	9 16 25 32	Wet dense gray silty fine sand w/some coarse sand, trace of gravel.	A-2-4(0)	
51			51.0'		21" RECOVERY		
					End of Boring		
54							
					DRAFT		
57	N		<b>.</b>				
					FOR BIDI		IG
60			Δ		GUST 20	15	
63							
66							
69							
72							

Symbol Description

Silt

Strata symbols

Silty sand

Poorly graded sand with silt



Poorly graded sand

# DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 6/23/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 853+16, 35' Rt. C.L.

Boring Surface Elev.: + 46.18		Ref	erence:		
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barre S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. I O.D. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	51.0
Water Level Readings Date Time 6-23-2009	Depth of Hole 26.0	Depth of Casing 24.0		of Water 3.5	Elev. of Water

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Denimer Operations W/ 1/ C			

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	6/23/09	1	0.5'	3 4 4		Moist firm brown clay w/trace of fine to coarse sand and gravel. 11" RECOVERY	A-6(11)	Topsoil - 8".
		2	2.0'	6 5 6		Moist stiff brown silt w/some clay and fine to	A-4(2)	
3			4.0'			coarse sand, trace of gravel.		JG
		3	4.0'	2 7		Moist hard brown clayey silt w/some coarse	A-4(4)	
						to fine sand, trace of gravel.		
6		ЗA	5.5' 5.5'			10" RECOVERY Moist very dense coarse to fine sand and	A-1-b	
		4	<u>6.0'</u> 6.0'	3 6 6 7		gravel w/some silt. 50/3"" RECOVERY	A-2-4(0)	
			8.0'			Moist medium dense brown coarse to fine sand w/some silt, trace of gravel. 14" RECOVERY		
9		5	8.0'	3 5 5 6		Moist loose brown coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'			16" RECOVERY		
		6	10.0'	3 4 5 4		Moist loose brown coarse sand w/some fine sand and silt, trace of gravel.	A-1-b	
12			12.0'			18" RECOVERY		
		7	12.0'	3 4 5 7		Moist loose brown coarse sand w/some fine sand and silt, trace of gravel.	A-1-b	
			14.0'		1993, 1997. 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	19" RECOVERY		
15		8	14.0'	4 4 5 5	1111111 111111 111111 1111111 11111111	Moist loose brown coarse sand w/some gravel, trace of silt and fine sand.	A-1-b	
			16.0'		64449966 64919966 6493266 6493266 6619966	18" RECOVERY		
		9	16.0'	5 5 6 5	C 6 7 1 7 2 C 6 C 6 7 1 7 2 C 6 C 6 7 7 7 7 6 C 6 C 6 7 7 7 7 6 C 7 C 6 7 1 7 2 C 6 C 6 7 2 C 6 C 7 2 C 7 C 7 2 C 7	Moist medium dense brown coarse sand w/ some fine sand, trace of silt and gravel.	A-1-b	

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3SR-03

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'		1. 1 1 1 1 1 1 1 1 1. 1 1 3 1 1 1 1 1. 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	18" RECOVERY		
		10	18.0'	4 4 4 4		Moist loose brown coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			20.0'			20" RECOVERY		
24		11	24.0'	3 4 5 5		Moist loose orangish brown coarse sand w/ some gravel and fine sand, trace of silt.	A-1-b	
			26.0'		1	21" RECOVERY		
						DRAFT		
30		12	29.0' 31.0'	16 18 18 11		Moist dense orangish brown coarse sand and gravel w/some fine sand, trace of silt. 21" RECOVERY	A-1-b	IG
33			A	U		GUST 20	15	
		13	34.0'	9 15 15 13		Wet medium dense orangish brown fine sand w/some coarse sand and silt, trace of gravel. 18" RECOVERY	A-2-4(0)	
39		14	39.0'	52 50/3"		Wet very dense orangish brown fine to coarse sand w/some silt and gravel.	A-2-4(0)	
			41.0'		1013300 1013300 1013300 1013300 1013300 1013300 1013300 1013300	6" RECOVERY		
42								
45		15	44.0'	11 16 15 19	1001 ( a 200 100 ( a 200) 100 ( a 200) 10	coarse sand and silt.	A-2-4(0)	

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3SR-03

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
			46.0'		19" RECOVERY		
					rig i Antivi I ne i 1 Antiv Ma i 3 Nicel 2017 UZISIJ		
40							
48							
		16	49.0'	10	Wet dense orangish brown fine sand w/some	A-3	
				10 12 21 23	Wet dense orangish brown fine sand w/some coarse sand, trace of silt and gravel.		
51			51.0'		23" RECOVERY		
					End of Boring		
54							
					DRAFT		
57							
- 57	ĸ						
					F()K KII)I		
					FOR BID		
60							
					GUST 20	15	
63							
66							
69							
70							
72							

Symbol Description

Strata symbols

Low plasticity clay

Silty low plasticity clay



Silty sand



10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 10 Poorly graded sand with silt

Well graded sand with silt

# DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on 6/23/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01

Boring Location: STA. 1807+15 0' C.L.

Boring Location:	STA. 1807+15 0' C.	L.					
Boring Surface Ele	<b>ev.:</b> + 20.50		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 <b>m Auger:</b>	Inches	From Depth of: From Depth of:	0.0	To: To:		18.0
Water Level Readings Date 2/10/11	Time	Depth of Hole 12.0	Depth of Casing 12.0		of Water 9.9	Elev. of	Water

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: No. of 2 in. Dia. Shelby Tubes:	60.0	Ft.;	Dia. U-Sample Boring: No. of: U-Samples:	Ft.
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.
Dening a Company Willie C				

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	2/10/11	1	0.5' 2.0'	5 4 5		Moist loose brown fine to coarse sand w/some silt, trace of fine gravel. 15" RECOVERY	A-2-4(0)	Topsoil - 7".
		2	2.0'	6 6 9 8		Moist medium dense brown coarse to fine	A-2-4(0)	
3.5	N		4.0'	8		sand w/some silt, clay and fine gravel. 14" RECOVERY		
		3	4.0'	5 8 9 6		Moist medium dense brownish orange coarse to fine sand w/some fine gravel and silt.	A-1-b	J
			6.0'			4" RECOVERY		
7		4	6.0' 8.0'	2 9 18 16		Moist medium dense brownish orange coarse to fine sand w/some silt and fine gravel. 15" RECOVERY	A-1-b	
		5	8.0'	10 37 36 30	10000000000000000000000000000000000000	Wet very dense brownish orange fine sand w/ some silt, trace of coarse sand and fine gravel.	A-2-4(0)	
			10.0'	22		16" RECOVERY		
10.5		6	10.0'	22 18 14 13		Wet dense brownish orange fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
		7	12.0' 12.0'	4		18" RECOVERY	A 2 4(0)	
		1		4 3 4 6		Wet loose brownish green fine sand w/some coarse silt and silt, trace of fine gravel.	A-2-4(0)	
14		8	14.0' 14.0'	4		16" RECOVERY		
		0	14.0	4 4 4 6	1000.100 100100.000 100100.000 100100.000 400100.000 10010.000	coarse sand, trace of silt.	A-3	
			16.0'			16" RECOVERY		
		9	16.0'	2 3 6 5			A-3	
17.5				5	1261 Y 1261 4 F 1 ) 4 F 1 126 J 2.1 Y 1 126 J 2.1 Y 125			
		10	18.0' 18.0'	4		20 KECOVEKI	A-3	Mud Rotary @ 18.0'.
			10.0	4 4 5	1261 Y 160 664 ) 366 126 1 5.126 126 1 5.126 146 1 5 4 56	sand and silt.	A-3	Muu Kotary @ 18.0.
			20.0'					

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01 Boring No.: SS1-3

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Rem	arks
21	0					
24.5		11	24.0' 26.0'	2 2 3 2	Saturated loose orange fine sand w/some coarse sand and silt. 21" RECOVERY	
31.5		12	29.0' 31.0'	2 6 9 11	Saturated medium dense orange silty fine sand w/some coarse sand, trace of fine gravel.	
35		13	34.0 36.0'	4 7 16 18	Saturated medium dense brown silty fine sand A-2-4(0) w/some coarse sand. 22" RECOVERY A-2-4(0) 22" RECOVERY A-2-4(0) 22" RECOVERY	
42		14	39.0' 41.0'	7 7 8 9	Saturated medium dense gray clayey fine sand w/trace of coarse sand, fine gravel and silt.       A-2-4(0)         21" RECOVERY       21" RECOVERY	
45.5		15	44.0' 46.0'	6 7 11 12	Saturated very stiff gray clayey fine sandy silt       A-4(0)         w/trace of coarse sand and fine gravel.       22" RECOVERY	
52.5		16	49.0' 51.0'	6 7 11 8	Saturated medium dense gray silty fine sand       A-2-4(0)         w/trace of coarse sand.       20" RECOVERY	

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01 Boring No.: SS1-3

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
()					
		17	54.0'	7 9 11 12	Saturated very stiff gray clayey fine sandy silt A-4(1) w/trace of coarse sand.
56			56.0'	12	22" RECOVERY
		18	58.0'	12 10 15 16	Saturated medium dense gray clayey fine sand A-2-4(0) w/some fine gravel, trace of silt, coarse sand
59.5			60.0'		and shell fragments.
					End of Boring
63					
					DRAFT
66.5					
	N		<b></b> .		
					FOR BIDDING
70			Λ		GUST 2015
73.5					
77					
00.5					
80.5					
84					

Symbol Description

Strata symbols



Silty sand

Poorly graded clayey silty sand



Poorly graded sand with silt



Clayey sand

# DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on February 10, 2011 using 3 1/4 inch continuous flight power auger. Rig is a truck mounted CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301 Maryland State Line to SR-1

**Contract:** 25-113-01

Boring Location: STA. 1807+15 90' Lt. C.L.

### Boring No.: SS1-4

Boring Surface Elev.: + 20.30		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: 140 Type of: D-Sampler: Split Barre S-Sampler: U-Sampler: Core Bit:	Lbs. Lbs. I O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: 3 1/4 Hollow Stem Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	19.0		
Water Level Readings Date Time 2/7/11	Depth of Hole 12.0	Depth of Casing		of Water	Elev. of Water		

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	60.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes:		;	No. of: U-Samples:	
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	2/7/11	1	0.5' 2.0'	3 4 3	100313300 10013300 10013300 10013300 10013300 10031300 10031300 10031300 10031300	Moist loose orange coarse to fine sand w/ some silt and fine gravel. 6" RECOVERY	A-1-b	Topsoil - 8".
		2	2.0'	3 3 4		Moist loose orange coarse sand w/some fine	A-1-b	
3.5	N		4.0'	3		sand and silt, trace of fine gravel.		
		3	4.0'	4 6 5 5		Moist medium dense brown coarse to fine sand w/some silt, trace of fine gravel.	A-1-b	NG
			6.0'			15" RECOVERY		
7		4	6.0' 8.0'	6 6 7 6	10121 (101 10121 (101 10131 (101) 10131 (101) 10131 (101) 10131 (101) 10131 (101) 10131 (101)	Moist medium dense brown coarse sand w/ some fine sand, trace of silt and fine gravel. 17" RECOVERY	A-1-b	
		5	8.0'	6		Moist medium dense brown fine gravelly	A-1-b	
				6 7 6 15	erii.iei. Sti rassi	coarse sand w/some fine sand, trace of silt.		
			10.0'		66143666 20172002 664239666	14" RECOVERY		
10.5		6	10.0'		13133,1307. 13133,1307 13133,131	No Sample		
					17217232212 46643339666 1203237272			
			10.0					
		7	12.0' 12.0'	6		0" RECOVERY Wet medium dense brown fine to coarse sand	A-3	
				6 7 6 6	1961 / 430 / 661 / 366 / 661 / 366 /	w/trace of silt and fine gravel.	A-3	
				6	SHAREF.			
14		8	14.0' 14.0'	2		14" RECOVERY	A 2 4(0)	
		0	14.0	2 4 7 9	1993,1997. 1993 (1993) 1993 (1993)	Wet medium dense brown fine sand w/some coarse sand and silt.	A-2-4(0)	
				9	121171211 464133466 11133177	coarse sand and sin.		
			16.0'		1461 ( 436 6 196 19 996 6	16" RECOVERY		
		9	16.0'	6 8 11 12		Wet medium dense brown fine sand w/some	A-2-4(0)	
17.5				12		coarse sand and silt.		
			18.0'			16" RECOVERY		
		10	18.0'	5 6 7 7		Saturated medium dense brown fine sand w/	A-3	Mud Rotary @ 19.0'.
				777	664)3866 1033.107. 1061 (4066	some coarse sand, trace of silt and fine gravel.		
			20.0'		1969 9 9 9 9 9 9 9 9 9 2 6 9 7 9 7 9 6 6 9 2 6 9 9 9 9 9 9 6 6	16" RECOVERY		
Domo					<u>terra a terra</u>			

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01 Boring No.: ss1-4

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	r iogless		Берш			·		
21								
					K 6 J 1300 C 18 J 4 19 0 C 19 J 4 19 0 C 10 1 4 19 0 C			
					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
24.5		11	24.0'	2 4	et 1 1 i ér	Saturated loose brown fine sand w/some silt	A-2-4(0)	
				2 4 4 6		and coarse sand.		
			26.0'			20" RECOVERY		
28								
		12	29.0'	5		Saturated modium dance brown either fine and	A-2-4(0)	
			20.0	5 7 9 14		Saturated medium dense brown silty fine sand w/some coarse sand, trace of fine gravel.	A-2-4(0)	
			31.0'			23" RECOVERY		
31.5								
35		13	34.0	9 11 16		Saturated medium dense brown clayey fine sand w/some silt and coarse sand.	A-2-4(0)	
		13A	35.5' 35.5'	13		Saturated medium dense gray clayey fine sand	A-2-4(0)	
			∖36.0'∫			w/some coarse sand and silt.		
							15	
38.5								
		14	39.0'	5 8 11		Saturated very stiff gray clayey fine sandy silt	A-4(0)	
			44.0	11 11		w/some coarse sand.		
			41.0'			24" RECOVERY		
42								
		15	44.0'	5		Saturated medium dense gray silty fine sand	A-2-4(0)	
45.5				5 7 7 10		w/trace of coarse sand.		
			46.0'			24" RECOVERY		
49				10				
		16	49.0'	10 12 12 18		Saturated medium dense gray silty coarse to fine sand.	A-2-4(0)	
			51.0'	10		22" RECOVERY		
52.5								

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01 Boring No.: SS1-4

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class	s./G.I.	Remarks
		17	54.0' 56.0'	5 11 16 17	Saturated very stiff gray fine sandy silt w/ A-4 trace of coarse sand. 24" RECOVERY	4(0)	
59.5		18	58.0' 60.0'	9 12 19 23	Saturated hard gray fine sandy silt w/some clay, trace of coarse sand, fine gravel and organic matter. 24" RECOVERY End of Boring	4(0)	
63							
66.5	N				DRAFT FOR BIDD	IN	G
70			Α		GUST 201		
73.5							
77							
80.5							
84							

Symbol Description

Strata symbols

Poorly graded sand with silt



Silty sand

Poorly graded clayey silty sand

## DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on February 7, 2011 using 3 1/4 inch continuous flight power auger. Rig is an ATV mounted CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301 Maryland State Line to SR-1 **Contract:** 25-113-01

Boring Location: STA. 1820+50 0' C.L.

Boring Surface Ele	<b>V.:</b> + 25.70		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.		
Casing Size: Hollow Ste	3 1/4 <b>m Auger:</b>	Inches	From Depth of: From Depth of:	0.0	To: To:	16.0		
Water Level Readings Date 2/11/11	Time	Depth of Hole 14.0	Depth of Casing 14.0		of Water 2.2	Elev. of Water		

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 60.0	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: J. Lafferty

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	2/11/11	1	0.5' 2.0'	11 16 15		Moist medium dense gray coarse sandy fine gravel w/some silt, trace of fine sand. 16" RECOVERY	A-1-a	Topsoil - 6".
		2	2.0'	12 19 22		Moist dense brownish orange fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
3.5			4.0'	17		20" RECOVERY		
		3	4.0'	8 8 10 10		Moist medium dense brownish orange silty coarse to fine sand w/trace of fine gravel.	A-1-b	J
			6.0'	10		17" RECOVERY		
7		4	6.0' 8.0'	12 22 16 19	1	Moist dense brown coarse sand w/some fine sand, fine gravel and silt. 19" RECOVERY	A-1-b	
		5	8.0'	8 10 14 23		Moist very stiff tan silt w/some coarse to fine sand, fine gravel and clay.	A-4(0)	
			10.0'	10	REALER OF COMPANY	16" RECOVERY		
10.5		6	10.0'	19 16 12 9		Wet medium dense brownish orange fine to coarse sand w/some silt and fine gravel. 18" RECOVERY	A-2-4(0)	
		7	12.0'	9 5 6 7		Wet medium dense brownish orange silty fine sand w/some coarse sand. 20" RECOVERY	A-2-4(0)	
14		8	14.0	4		Wet loose brownish orange fine sand w/some	A-2-4(0)	
				4 4 4 5		coarse sand and silt.	M-2-4(0)	
			16.0'	2		20" RECOVERY		
		9	16.0'	3 3 3 2		Wet loose brownish orange fine sand w/some coarse sand and silt.	A-2-4(0)	Mud Rotary @ 16.0'.
17.5			18.0'	2		22" RECOVERY		
		10	18.0'	4 4 5 8		Wet loose brownish orange silty fine sand w/ some coarse sand.	A-2-4(0)	
			20.0'			20" RECOVERY		

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01 Boring No.: SS1-5

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
21								
24.5		11	24.0'	3 4 5 7		Wet stiff gray clayey fine sandy silt w/trace of coarse sand and fine gravel.	A-4(0)	
			26.0'			23" RECOVERY		
28								
		12	29.0'	4 5 4 7		Wet stiff gray fine sandy silt w/some clay, trace of coarse sand.	A-4(0)	
31.5			31.0'			DRAF		
		13	34.0	4				
35			36.0'	4 6 8		Wet stiff gray fine sandy silt w/some clay, trace of coarse sand and fine gravel. 21" RECOVERY	A-4(0)	IG
			Δ			<b>GUST 20</b>	15	
38.5		14	39.0'	5				
		14		5 5 7 9		Wet medium dense gray silty fine sand w/ trace of coarse sand.	A-2-4(0)	
40			41.0'			22" RECOVERY		
42								
		15	44.0'	5				
45.5		15	44.0	5 7 8 9		Wet medium dense gray silty fine sand w/ some coarse sand.	A-2-4(0)	
			46.0'			22" RECOVERY		
49		40	40.0		ann an the second s			
		16	49.0'	4 5 5 6		Wet stiff gray fine sandy silt w/some clay, trace of coarse sand and shell fragments.	A-4(0)	
			51.0'			20" RECOVERY		
52.5								

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01 Boring No.: SS1-5

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	<u>v</u>						
		17	54.0'	4 6 9 10	Wet stiff gray fine sandy clay w/some silt, trace of coarse sand, fine gravel and shell	A-6(2)	
56			56.0'		fragments. 22" RECOVERY		
		10	59.0	10		4.4(0)	
50.5		18	58.0'	10 19 24 30	Wet hard green fine sandy silt w/some clay, trace of coarse sand.	A-4(0)	
59.5			60.0'		20" RECOVERY End of Boring		
					End of Bornig		
63							
					DRAFT		
66.5							
			Ο.	T	FOR BID		
						JII	
70							
					<b>GUST 20</b>	15	
73.5							
77							
80.5							
84							

Symbol Description

Strata symbols

Poorly graded sand with silt



Silty sand

Poorly graded clayey silty sand



Clayey sand

# DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on February 11, 2011 using 3 1/4 inch continuous flight power auger. Rig is a truck mounted CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301 Maryland State Line to SR-1 **Contract:** 25-113-01

Boring Location: STA. 1820+50 85' Lt. C.L.

Boring Surface Ele			Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		60.0	
Water Level Readings Date 2/4/11	Time	Depth of Hole 12.0	Depth of Casing 12.0		<b>of Water</b> 11.5	Elev	. of Water	

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	60.0 Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.:	No. of: U-Samples: Core Drilling in Rock:	Ft.
	;	j	

Boring Contractor: Walton Corporation Driller: Bill Holden Helpers: T. Kane

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	2/4/11	1	0.5' 2.0'	4 5 8	Moist loose brown silty fine gravel and coarse sand w/some fine sand and clay.	A-2-4(0)	Topsoil - 6".
		2	2.0'	5 8 8	Moist very stiff brown coarse to fine sandy silt w/some clay, trace of fine gravel.	A-4(0)	
3.5			4.0'	6	sint w/some cray, trace of the graver.		
		3	4.0'	6 9 9 7	Moist medium dense brown silty coarse to fine sand w/trace of fine gravel.	A-1-b	JG
			6.0'		16" RECOVERY		
7		4	6.0' 8.0'	5 13 20 23	Moist dense brown silty coarse sand w/some fine sand and fine gravel. 18" RECOVERY	A-1-b	
		5	8.0'	9 8 7 6	Moist medium dense brown coarse to fine sand w/some silt, trace of fine gravel.	A-1-b	
			10.0'	-	18" RECOVERY		
10.5		6	10.0'	6 5 5 6	Saturated loose brown coarse to fine sand w/ some silt, trace of fine gravel. 20" RECOVERY	A-2-4(0)	
		7	12.0'	6 8 7 7	Saturated medium dense brown fine sand w/ some coarse sand and silt.	A-2-4(0)	
14		8	14.0' 14.0'	4	18" RECOVERY Saturated medium dense brown fine sand w/	<b>A 2</b> 4(0)	
		0		4 4 7 8	some coarse sand and silt.	A-2-4(0)	
		9	16.0' 16.0'	5	16" RECOVERY	<b>1 2 1</b> (0)	
		Э	10.0	5 6 8 9	Saturated medium dense brown fine sand w/ some coarse sand and silt.	A-2-4(0)	
17.5			18.0'		14" RECOVERY		
		10	18.0'	5 7 8 8	Saturated medium dense brown fine sand w/ some coarse sand and silt.	A-2-4(0)	
			20.0'		18" RECOVERY		

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01 Boring No.: SS1-6

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
21	<u> </u>				
04.5		11	24.0'	4	
24.5		11	24.0	4 6 5	Saturated medium dense brown silty fine sand w/some coarse sand.A-2-4(0)
			26.0'		15" RECOVERY
28					
		12	29.0'	4 6 8	Saturated medium dense gray silty fine sand         A-2-4(0)
			04.01	8 8	w/some coarse sand.
31.5			31.0'		18" RECOVERY
35		13	34.0	5 6 6 8	Saturated medium dense gray silty fine sandA-2-4(0)w/trace of coarse sand.
			36.0'	ð	20" RECOVERY
38.5			μ		IGUS   2015
30.5	2/7/11	14	39.0'	4	Saturated medium dense gray silty fine sand       A-2-4(0)
				4 6 7 12	w/trace of coarse sand and fine gravel.
			41.0'		24" RECOVERY
42					
		15	44.0'	4 7 8 11	Saturated medium dense gray silty fine sand         A-2-4(0)
45.5			46.0'	8 11	w/trace of coarse sand. 22" RECOVERY
		<u> </u>	0.0		
49					
		16	49.0'	6 6 9 10	Saturated medium dense gray silty fine sandA-2-4(0)w/trace of coarse sand.
			51.0'		23" RECOVERY
E0 5					
52.5					

F.A. Project: U.S. 301 Maryland State Line to SR-1 Contract: 25-113-01 Boring No.: SS1-6

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	1 1091033		Dopui				
		17	54.0'	6 10 9 14	Saturated very stiff gray clayey fine sandy silt w/trace of coarse sand and organic matter.	A-4(1)	
56			56.0'	14	24" RECOVERY		
		18	58.0'	6 12 16 18	Saturated medium dense gray silty fine sand w/trace of coarse sand and organic matter.	A-2-4(0)	
59.5			60.0'	18	24" RECOVERY		
					End of Boring		
63							
					DRAFT		
66.5							
					FOR BIDI		
70							
					GUST 20	15	
73.5							
77							
80.5							
84							

Symbol Description

Strata symbols

Poorly graded clayey silty sand



Silty sand



Clayey sand

# DRAFT NOT FOR BIDDING AUGUST 2015

- 1. Exploratory borings were drilled on February 4, 2011 using 3 1/4 inch continuous flight power auger. Rig is an ATV mounted CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blows are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 854+16, 15' Lt. C.L.

3oring	No.:	RW1-3SL-0
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Ft. Ft.

Boring Surface El	<b>ev.:</b> + 45.4		Reference:					
Wt. of Casing Hammer Wt. of Sample Hamme Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	r: 140 Split Barrel	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow St	3 1/4 em Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		51.0	
Water Level Readings Date 6/24/2009	Time	Depth of Hole 26.0	Depth of Casing 24.0		of Water	Elev. of W	ater	

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring:	51	Ft.;	Dia. U	J-Sample Boring:	
No. of 2 in. Dia. Shelby Tubes:		;	No. of:	U-Samples:	
2 1/2 in. Dia. Contin. Sample Boring:		Ft.;	Core Drilling in Ro	ck:	

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: J. lafferty/J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"	Sample Description Class./G.I. Remarks
	6/23/09	1	0.5'	3 4 5	Moist stiff brown clay w/trace of coarse to fine sand and gravel. 15" RECOVERY
		2	2.0'	7 10 12 12	Moist very stiff tan and gray silt w/some clay A-4(2)
3			4.0'		and fine to coarse sand, trace of gravel.
		3	4.0'	7 7	Moist very stiff tan and gray clayey silt w/ A-4(3) some fine sand, trace of coarse sand.
6		ЗA	5.0' 5.0' 6.0'	13 14	12" RECOVERY Moist medium dense brown silty coarse to
		4	6.0'	14 13 12 12	fine sand w/trace of gravel. 8" RECOVERY Moist medium dense brown coarse to fine
			8.0'		sand w/some silt, trace of gravel.
9		5	8.0'	3 8 8 7	Moist medium dense tan and orange coarse sand w/some fine sand and silt, trace of gravel.
		6	10.0' 10.0'	7 7 9 8	19" RECOVERY         Moist medium dense tan and orange coarse to fine sand w/some silt, trace of gravel.
12			12.0'		18" RECOVERY
		7	12.0'	5 6 7 8	Moist medium dense tan and orange coarse sand w/some fine sand and silt, trace of gravel.
15		8	14.0'	4 6 6 7	Moist medium dense tan and orange coarse A-1-b sand w/trace of silt, fine sand and gravel.
		9	16.0'	5 6 7 7	Moist medium dense tan and orange coarse to fine sand w/some silt, trace of gravel.

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3SL-01

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18	_		18.0'			20" RECOVERY		
		10	18.0'	4 5 6 5		Moist medium dense tan and orange coarse to fine sand w/some silt, trace of gravel.	A-1-b	
				5		_		
			20.0'			20" RECOVERY		
21								
24		11	24.0'	4		wet mediam dense brown coarse to rme sand	A-1-b	
				7 14	469333966 180333967 180333967	w/some gravel, trace of silt.		
			26.0'		6614366 6613366 6613366 6613366 6613366 8614366	21" RECOVERY		
27								
					66444666 66919466 66919366 66919366			
	6/24/0 <mark>9</mark>	12	29.0'	10	1.61391.69 64444.66 6444.66 645919166 646919166 646919366	No Sample Recovery		
30				10 8 6 12			) [\	IG
			31.0'			0" RECOVERY		
					111111111 1111111111111111111111111111			
						GUST 20	15	
33					1417-1412 4143-444 4143-444 4143-444 4143-444 414-444 414-444			
		40	24.0					
		13	34.0'	16			A-2-4(0)	
			26.01					
36			36.0'		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	21" RECOVERY		
39								
		14	39.0'	12 32 56		Wet very dense brown fine sand w/some silt and coarse sand, trace of gravel.	A-2-4(0)	
			41.0'			17" RECOVERY		
42								
		15	44.0'	7 11 15 21		Wet medium dense brown fine sand w/some	A-2-4(0)	
45				15 21	1999 1997 1997 1997 1997 1997 1997 1997	coarse sand and silt.		
		<b></b>			<u></u>	1		4

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3SL-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth 46.0'		RECOVERY		
					723 TY 124 1.4 6 1 3 3 1 6 6 1 3 4 1 6 7		
48					18 ( 3 3)) 22 ( 7 3) 24 ( 7 3)		
					rat a strate / 1921 / Babe 1921 / Babe 1921 / Babe 1921 / Babe		
		16	49.0'	3 12 15	Wet medium dense brown fine sand w/some	A-3	
				15 18	Wet medium dense brown fine sand w/some coarse sand, trace of silt and gravel.		
51			51.0'		RIANG ITANG ITANG ITANG ITANG ITANG ITANG		
					End of Boring		
54							
					DRAFT		
57							
51							
					F() R R H H	)   <b> </b>	
					FOR BIDI		
60			Λ		ICLICT OO	1 [	
					GUST 20		
63							
66							
69							
72							

Symbol Description

Strata symbols



Low plasticity clay

Silty low plasticity clay



Silty sand

Poorly graded sand with silt

# DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/23/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

F.A. Project: U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01

Boring Location: Sta. 854+6, 35' Rt. C.L.

Boring	No.:	RW1-3SR-0
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Boring Surface Ele	<b>ev.:</b> + 44.8		Reference:						
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN.			
Casing Size: Hollow Ste	3 1/4 <b>m Auger:</b>	Inches	From Depth of: From Depth of:	0.0	То: То:	49.0			
Water Level Readings Date 6-24-2009	Time	Depth of Hole 26.0	Depth of Casing 24.0		<b>of Water</b> 2.8	Elev. of Water			

#### Pay Quantities:

2 1/2 in. Dia. Dry Sample Boring: 51	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
		-	

Boring Contractor: Walton Corporation Driller: Gary Truver Helpers: J. Williams

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
	7/24/09	1	0.5' 2.0'	2 3 3		Moist firm brown coarse sandy silt w/some fine sand, trace of gravel. 12" RECOVERY	A-4(0)	Cultivated Soil - 5".
		2	2.0'	4 3 3		Moist loose brown silty coarse to fine sand w/	A-2-4(0)	
3			4.0'	5		trace of gravel. 13" RECOVERY		IG
		-3	4.0'	4 8 7 8		Moist medium dense tan coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
6			6.0'			13" RECOVERY	15	
		4	6.0'	4 10 10 8		Moist medium dense tan coarse to fine sand w/some silt, trace of gravel.	A-2-4(0)	
			8.0'			16" RECOVERY		
9		5	8.0'	3 5 3 3		Moist loose brown and tan fine to coarse sand w/some silt, trace of gravel.	A-2-4(0)	
			10.0'			18" RECOVERY		
		6	10.0'	3 3 4 3	64 44 1 6 1 6 7 1 9 1 9 10 1 6 7 1 9 10 1 6 7 1 9 7 9 10 1 6 7 1 9 7 10 1 6 7 1 9 7 10 1 6 7 1 9 7 10		A-1-b	
12			12.0'			16" RECOVERY		
		7	12.0'	4 3 2 2		Moist loose tan coarse sand w/some silt, gravel and fine sand.	A-1-b	
			14.0'	1		17" RECOVERY		
15		8	14.0'	1 2 3 4		Moist loose tan coarse to fine sand w/some silt, trace of gravel.	A-1-b	
			16.0'	2		18" RECOVERY		
		9	16.0'	2 3 3 3		Moist loose tan coarse to fine sand w/some silt, trace of gravel.	A-1-b	

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3SR-02

Depth (ft.)	Daily Progress	No.	Sample Depth	Blows/6"		Sample Description	Class./G.I.	Remarks
18			18.0'			19" RECOVERY		
		10	18.0'	2 4 4 5		Moist loose tan coarse sand w/some fine sand and silt, trace of gravel.	A-1-b	
				5				
			20.0'			18" RECOVERY		
21								
0.4								
24		11	24.0'	5		wet mediam dense tan and orange course to	A-1-b	
				5	1:1:1:1:1:1:1:1: 1:1:1:1:1:1:1:1:1: 1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:1:	fine sand w/trace of silt and gravel.		
			26.0'			19" RECOVERY		
27					1			
	N	12	29.0'	5 3 4 5		Wet loose orange fine sand w/some coarse	A-2-4(0)	
30				5	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	sand and silt, trace of gravel.	ノル	NG I
	_		31.0'			20" RECOVERY		
			Λ		88313885 6833366 6833366 6833366 6833366	DI ICT OO	15	
33						GUST 20		
					16939900 20179900 20199900 20199900 20199900 20199900			
		13	34.0'	7 16	<u>-6343666</u>	Wet dense brown fine sand w/some silt and	A-2-4(0)	Cemented sands.
				17 16		coarse sand, trace of gravel.		
36			36.0'			18" RECOVERY		
20								
39		14	39.0'	5 9 15 18		Wet medium dense brown fine sand w/some	A-2-4(0)	
				15 18	111111111 1111111111111111111111111111	coarse sand and silt, trace of gravel.		
			41.0'		1999 1999 1999 1999 1999 1999 1999 199	17" RECOVERY		
42					CC111000 CC111000 CC1111000 CC1111000			
					1991-1992 1991-1993 1991-1995 1991-1995 1991-1995			
					14141146 1417146 1411146 1411146 1411146			
		15	44.0'	6 9	1997 (1997) 1997 (1997) 1997 (1997) 1997 (1997) 1997 (1997)	Wet medium dense brown fine sand w/some	A-3	
45				6 9 12 13		coarse sand, trace of silt and gravel.		
								1

**F.A. Project:** U.S. 301, Maryland State Line to S.R. 1 **Contract:** 28-113-01 Boring No.: RW1-3SR-02

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress		Depth 46.0'		18" RECOVERY		
					4 - 2 - 3 - 4 - 6 - 6 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7		
					72; 172; 172; 174; [4] 13: 12: 14: 14: 14: 14: 14: 14: 14: 14: 14: 14		
48							
					red 3 http:// 1913 4 3 http: 1913 5 http://		
		16	49.0'	9 16 23 29	Wet dense brown fine sand w/some silt and	A-2-4(0)	
				23 29	coarse sand.		
51			51.0'		21" RECOVERY		
					End of Boring		
54							
					DRAFT		
57							
					FOR BIDI		
				•			
60							
					<b>GUST 20</b>	15	
63							
66							
69							
72							

Symbol Description

Strata symbols

Silty sand

Poorly graded sand



Well graded sand with silt

## DRAFT NOT FOR BIDDING AUGUST 2015

- Exploratory borings were drilled on 6/24/2009 using a 3 1/4-inch diameter hollow stem auger. Rig is a Truck CME 55.
- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recommendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All blow counts are uncorrected.

Boring No.: SWM1-41-1

Ft.

Ft.

Boring Location:	Sta. 713+82, 74.00'	Lt. C.L.						
Boring Surface Ele	<b>ev::</b> + 45.0'		Reference:					
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.		
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	14.0		
Water Level Readings Date 2/9/09	Time	Depth of Hole 16.0	Depth of Casing		of Water ^{Pry}	Elev. of Water		

Pay Quantities:	
2 1/2 in. Dia. Dry Sample Boring:	Ft.:
No. of 2 in. Dia. Shelby Tubes:	
2 1/2 in. Dia. Contin. Sample Boring	: Ft.;

Boring Contractor: Walton Corporation Driller: D. Burt Helpers:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1

**Contract:** 25-113-01

Depth	Daily	No.	Sample	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress 2/9/09	1	Depth 1.0'	1	Moist firm brown-gray mottled clayey silt, trace of fine to coarse sand and		Cultivated
	2/0/00	'	2.0'	3 5	gravel.	l A-4(10)	Soil - 9".
		2	2.0'	12 10	12" RECOVERY	A-4(0)	501-7.
0.5				12 10 15 14	Moist very stiff brown-gray mottled silt w/ some coarse sand, trace of fine		
3.5			4.0'		sand and gravel.		
		3	4.0'	2	Misting Moist medium dense orange coarse sand w/ some fine sand, gravel, and	A-1-b	
				9	silt.		
			6.0'	-	13" RECOVERY		
		4	6.0'	8	Moist medium dense orange coarse sand w/ some fine sand, gravel, and	A-1-b	
7				8 8 9 9			
			8.0'	Ĵ	20" RECOVERY		
		5	8.0	4	Moist medium dense orange coarse to fine sand w/ some silt, trace of	A-2-4(0)	
				8	gravel.		
			10.0'		17" RECOVERY		
10.5		6	10.0'	8	Moist medium dense orange coarse sand w/ some fine sand and silt, trace	A-1-b	
				8 9 8 7	within of gravel.		
			12.0'		24" RECOVERY		
		7	12.0	4	Misst loose orange coarse sand w/ some fine sand and silt, trace of gravel	. A-1-b	
				4 5 5 6			
			14.0'	Ū	23" RECOVERY		
14		8	14.0	6 7	Moist medium dense orange coarse to fine sand w/ some silt, trace of	A-1-b	
		_		7 9 4	gravel.	110	
			16.0	7			
			16.0'		End of Boring		
					Lind of Boring		
17.5							
Poma							

Remarks:

Dia. U-Sample Boring: U-Samples:

No. of: Core Drilling in Rock:

Symbol Description

Strata symbols

Low plasticity clay

Silt

Poorly graded sand with silt



Silty sand

# DRAFT NOT FOR BIDDING AUGUST 2015

### Notes:

1. Exploratory borings were drilled on 2/9/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Track CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.

Boring No.: SWM1-42-1

Ft. Ft.

Boring Surface Ele	<b>ev.:</b> + 39.0'		Ref			
Wt. of Casing Hammer: Wt. of Sample Hammer Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:	: 140	Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:	14.0
Nater Level Readings Date 2/9/09	Time	Depth of Hole 16.0	Depth of Casing		of Water Dry	Elev. of Water

Pay Quantities: 2 1/2 in. Dia. Dry Sample Boring: No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	Ft.; ; Ft.;	Dia. U-Sample Boring: No. of: U-Samples: Core Drilling in Rock:
Paring Contractory Walton Comparation		

Boring Contractor: Walton Corporation Driller: D. Burt Helpers:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1

**Contract:** 25-113-01

Depth	Daily		Sample				
(ft.)	Progress	No.	Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
	2/9/09	1	1.0'	9 5 8	Moist medium dense orange coarse sand w/ some fine sand, trace of silt	A-1-b	Cultivated
		2	2.0'		and gravel		Soil - 8".
		2	2.0'	8 8 7	12" RECOVERY	A-2-4(0)	
3.5				6	Moist medium dense orange fine sand w/ some coarse sand and silt, trace of gravel.		
			4.0'		24" RECOVERY		
		3	4.0'	2 3 4 3	Moist loose orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
				4 3			
			6.0'		19" RECOVERY		
		4	6.0'	2 3 3	Moist loose orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
7				3 4	$\square \bigcirc \square \bigcirc$		
			8.0'		17" RECOVERY		
		5	8.0'	2	Moist very loose orange fine to coarse sand, trace of silt.	A-3	
				2 3			
			10.0'		18" RECOVERY		
10.5		6	10.0'	2	Moist very loose yellow fine to coarse sand w/ some silt.	A-2-4(0)	
				2 2 2 3			
			12.0'		14141 19" RECOVERY		
		7	12.0	2	Moist loose yellow coarse to fine sand, trace of silt.	A-1-b	
				2 2 3 4		1110	
				4			
14		8	14.0' 14.0'	2	20" RECOVERY           Moist loose brown coarse to fine sand, trace of silt and gravel.	A-1-b	
			14.0	2 2 3		A-1-0	
					22" RECOVERY		
			16.0'				
					End of Boring		
17.5							
Rema	rks.						

Symbol Description

Strata symbols

Poorly graded sand

10 10 10 10 10 10 10 10 10 10 10 10 10 10 Silty sand

Well graded sand with silt

# DRAFT NOT FOR BIDDING AUGUST 2015

#### Notes:

1. Exploratory borings were drilled on 2/9/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Track CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.

Boring No.: SWM1-43-1

Boring Location:	Sta. 727+00, 432.00	' Lt. C.L.					
Boring Surface Ele	<b>ev.:</b> + 45.0'		Reference:				
Wt. of Casing Hammer: Wt. of Sample Hammer: Type of: D-Sampler: S-Sampler: U-Sampler: Core Bit:		Lbs. Lbs. O.D. O.D. O.D. O.D.	Average Fall: Average Fall: O.D. of Sampler: O.D. of Samp. Tube: O.D. of Samp. Tube: O.D. of Rock Core:	30 2		IN. IN. IN. IN. IN. IN.	
Casing Size: Hollow Ste	3 1/4 m Auger:	Inches	From Depth of: From Depth of:	0.0	To: To:		14.0
Water Level Readings Date 2/9/09	Time	Depth of Hole 16.0	Depth of Casing		of Water ^{ry}	Elev. of V	Water
Pay Quantities:							

2 1/2 in. Dia. Dry Sample Boring:	Ft.;	Dia. U-Sample Boring:	Ft.
No. of 2 in. Dia. Shelby Tubes: 2 1/2 in. Dia. Contin. Sample Boring:	; Ft.;	No. of: U-Samples: Core Drilling in Rock:	Ft.
Devine Contractory Welter Company			

Boring Contractor: Walton Corporation Driller: D. Burt Helpers:

F.A. Project: U.S. 301, Maryland State Line to S.R. 1

**Contract:** 25-113-01

Depth	Daily	No.	Sample Depth	Blows/6"	Sample Description	Class./G.I.	Remarks
(ft.)	Progress 2/9/09	1	0.5'	3 4 5	Moist stiff brown clayey silt w/ some coarse sand, trace of fine sand.	A-4(6)	Topsoil -
			2.0'	5			6".
		2	2.0'	4	Moist firm brown fine sandy silt w/ some coarse sand, trace of gravel.	A-4(0)	
3.5				4			
		3	4.0' 4.0'	3 4	18" RECOVERY Moist loose brown silty coarse to fine sand w/ some gravel.	A-2-4(0)	
				6 5			
		4	6.0' 6.0'	7	16" RECOVERY Moist loose orange coarse sand w/ some fine sand and silt, trace of gravel	. A-1-b	
7			8.0'	7 3 5 7			
		5	8.0'	1 4 4 5	Moist loose yellow coarse to fine sand w/ some silt, trace of gravel.	A-1-b	
			10.0'		13" RECOVERY		
10.5		6	10.0'	6 6 6 6	Moist medium dense yellow coarse to fine sand w/ some silt, trace of gravel.	A-1-b	
			12.0'		20" RECOVERY		
		7	12.0'	3 4 5 6	Moist loose orange-yellow coarse to fine sand w/ some silt, trace of gravel.	A-2-4(0)	
14			14.0'		16" RECOVERY		
		8	14.0'	6 6 6	Moist medium dense orange fine to coarse sand w/ some silt, trace of gravel.	A-2-4(0)	
			16.0'	Ŭ	18" RECOVERY		
			10.0		End of Boring		
17.5							
Rema	rke						

Symbol Description

Strata symbols

Low plasticity clay

Silt



Silty sand



Poorly graded sand with silt

# DRAFT NOT FOR BIDDING AUGUST 2015

### Notes:

1. Exploratory borings were drilled on 2/9/2009 using a 3 1/4- inch diameter hollow stem auger. Rig is a Track CME 55.

- 2. Groundwater levels recorded at the time of drilling and re-checked the following day.
- 3. Surveyed boring location and elevation was provided by Century Engineering.
- 4. These logs are subject to the limitations, conclusions, and recomendations in this report.
- 5. Results of tests conducted on samples recovered are reported on the logs.
- 6. All Blows are un corrected.