STRUCTURE GEOTECHNICAL REPORT

Proposed Retaining Wall

S.N. 081-7001

IL Route 5 (John Deere Road) FAP Route 595 Section 142R Rock Island County

PTB 155 - Item 026 IDOT Job No. D-92-003-06 Contract No. 64B84

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Exhibits: A

- A) Location Map
- B) Boring Locations
- C) Boring Logs
- D) Subsurface Data Profile
- E) Slope Stability Outputs

Project Description and Proposed Structure Information

The geotechnical study summarized in this report was performed for the proposed retaining wall for IL Route 5 (John Deere Road) from station 312+00.00 to station 333+32.00 in Rock Island County, Illinois. The retaining wall is part of the IL Rte. 5 widening and resurfacing project. The purpose of this report is to investigate the subsurface conditions and present design and construction recommendations for the proposed structure. On the USGS Coal Valley quadrangle map, the project site lies in Sections 14 & 15, Range 1W, Township 17N, in the 4th Principal Meridian. A *Location Map* is presented in Exhibit A.

The proposed structure is located approximately 1.3 miles east of US Rte. 6/ I-74. The retaining wall will be approximately 92'-0" right of the centerline for IL Rte. 5. The wall will be $2,157'-15_{/8}$ " length and is expected to run between stations 312+00.00 and 333+32.00. The proposed wall will retain the new embankment resulting from widening of existing eastbound IL Rte. 5. The estimated maximum exposed height for the wall is 13.6 feet with the average retained height estimated to be around 8.2 feet. The proposed structure design will follow the LRFD design specifications. A noise wall will be constructed on top of the proposed retaining wall and will extend 120 feet to the west at the west end of the wall and 158 feet to the south at the east end of the wall. In order to construct the retaining wall, lane closure or shoulder closure may be required. Drainage structures cross the wall at multiple locations.

The project also requires separate SGR's to be prepared for SN 081-1118, SN 081-1120, and the 44th Avenue culvert.

Existing Information

No structure currently exists at the proposed wall location. IL Rte. 5 is built on a horizontal curved alignment at this location. Stationing increases from west to east.

Site Investigation, Subsurface Exploration and Generalized Subsurface Conditions

The site is located in an urban area approximately one mile north of the Rock River. Utilities in the vicinity of the proposed retaining wall include, but are not limited to, an underground water main approximately 13 feet south of the proposed wall which crosses IL Route 5 at station 320+50; an underground sanitary sewer approximately 19 feet south of the proposed wall; and underground and aerial telephone lines are located within the proposed location of the wall and also cross over IL Route 5 at approximately station 315+90. There is also a gas line at station 315+90. The subsurface investigation consisted of 28 borings (B-1 through B-28) drilled by IDOT District 2 in September/October of 2011. The borings were drilled south of the centerline of IL Route 5 at offset distances ranging from 54.0 feet to 90.0 feet. A rock core was taken at boring locations B-1, B-15, and B-28.

Beginning at the ground surface, standard penetration tests (SPT) were conducted every 2.5 feet according to AASHTO T 206 using a hollow stem auger drill. Most borings were terminated when the rock layer caused auger refusal. As previously stated above, borings B-1, B-15, and B-28 continued with 10 feet of rock coring into shale.

Structure Geotechnical Report

Rock was encountered in the elevation range of 562.0 to 575.7, with depths to rock ranging from 4 to 22 feet. The rock core B-1 had a RQD value of 100% and strengths ranging from 113.0 to 262.0 tsf. The rock core B-15 had a RQD values between 58 and 75% with strengths ranging from 10.0 to 29.0 tsf. The rock core B-28 had RQD values between 78 and 92% with strengths ranging from 11.0 to 31.0 tsf.

While drilling, groundwater was encountered at varying depths. The boring data depicts mostly silty clay loam material with traces of sand layers on top of rock, having Q_u values of 0.2 to 4.5 tsf, SPT (N) values ranging from 2 to 20 blows per foot, and moisture contents ranging between 10% and 75%.

Data given in borings B-25, B-26, and B-27 was established using Penetrometer. The soils immediately below the footing at these locations were very soft clay with Qu values of 0.2 tsf and moisture contents ranging between 30% and 35%. According to IDOT Geotechnical Manual 2.3.2, values derived using Penetrometer should not be used in recommendations, stability or settlement analysis. Due to this reason, these borings are only used for estimations of subgrade soil treatment depths.

Further descriptions of the soil conditions encountered in the borings are presented in the *Boring Logs* attached in Exhibit C and the *Subsurface Data Profile* in Exhibit D. *Boring Locations* can be found in Exhibit B.

Geotechnical Evaluations

Settlement. Primary settlement analysis was performed for concrete cantilever and MSE wall types for various boring locations. The estimated settlements were found to be as high as 1.29 inches. The analysis was done assuming preliminary TSL footing elevations; 8 foot wide footing and 120 pcf back fill for concrete cantilever wall. If the actual dimensions are different, settlements shall be checked using actual values.

Slope Stability. Stability analyses using Bishop's Method were performed using temporary excavation 1:1 slope model at multiple locations along the wall using different borings. According to AASHTO LRFD 11.6.2.3, the required resistance factor for slope stability is 0.75 which is equivalent to factor of safety of 1.3. Slope stability checks were performed at various boring locations and minimum factor of safety was found to be over 3 at all locations.

Seismic Considerations. Based on the method described in the IDOT AGMU Memo and Design Guide 09.1 (LRFD Seismic Site Class Definition), Soil Site Class C controls. The Design Spectral Acceleration at 1.0 sec (S_{D1}) is 0.062g and at 0.2 sec (S_{Ds}) is 0.096g. According to AASHTO LRFD 3.10.6 the Seismic Performance Zone is 1 based on the 1.0 second Design Spectral Acceleration.

Liquefaction. Per the IDOT AGMU Memo and Design Guide 10.1 (LRFD Liquefaction Analysis), a liquefaction analysis is not required for Seismic Performance Zone 1.

Mining Activity. A review of The Illinois State Geological Survey (ISGS) "Directory of Coal Mines in Illinois" for Rock Island County indicates that no mining activity has been present at the project location for the retaining wall. It should be noted that an "underground mine proximity region" is just to the west of 41st street around station 300+00.

Retaining Wall Evaluations and Design Recommendations

Retaining Wall

The maximum retained height is to be approximately 12.7 feet (from bottom-of-wall grade to top-of-wall grade). The soil retained will be a fill area for new roadway embankment. Feasible wall types include a T-type cantilever wall supported by spread footing, mechanically stabilized earth (MSE) wall, soldier pile wall, and permanent sheet pile wall. The following provides a general discussion of soil conditions as they relate to the retaining wall construction. Considering the soil conditions, wall heights and fill situation, it is expected that the T-type Concrete Cantilever wall will be the most appropriate option for construction. However, economic, construction and scheduling factors should be evaluated for the decision of retaining wall design.

T-type Concrete Cantilever. A conventional reinforced concrete retaining wall supported on a spread footing appears to be a feasible option for the proposed wall. The footing for the wall can be dimensioned using the nominal soil bearing pressures given in Table 1. The bottom of the footings would need to be placed at a minimum depth of 4 feet below final lowest adjacent grade for the frost protection. At boring location B-17, rock was encountered at less than 4 feet below the existing ground surface and, thus, would require the wall footing to be set in rock. It is typically recommended that if one section of the wall is set into rock, the remainder of the wall foundation should be set into rock as to prevent differential settlement along the wall. Since rock ranges from depths of 3.5 to 16.5 feet below existing ground surface and the wall is roughly 2,157 feet in length, the footing could be placed in rock and soil as long as there is adequate bearing pressure in the soil beneath the footing. The footing should be sized to provide sufficient weight to resist sliding and overturning.

	Bottom Of	Max. Factored	Min. Factored
Stations	Footing	Bearing	Bearing
	Elev.	Pressure	Resistance
Sta. 312+00 to Sta. 316+15.11	574.30	3.1 ksf	5.7 ksf
Sta. 316+15.11 to Sta. 317+33.17	572.75	4.0 ksf	4.0 ksf
Sta. 317+33.17 to Sta. 322+67.42	572.75	5.3 ksf	6.3 ksf
Sta. 322+67.42 to Sta. 325+34.27	574.75	4.7 ksf	11.0 ksf
Sta. 325+34.27 to Sta. 329+79.03	572.00	7.3 ksf	12.0 ksf
Sta. 329+79.03 to Sta. 331+56.93	574.50	4.0 ksf	9.9 ksf
Sta. 331+56.93 to Sta. 332+45.88	576.00	2.9 ksf	9.7 ksf
Sta. 332+45.88 to Sta. 333+32.00	577.50	2.8 ksf	5.0 ksf
	Table 1		

The maximum allowable settlement was established as 1 inch after conversation with the Structural Engineer at Ciorba Group. The amount of differential settlement was limited as per LRFD AASHTO C 11.6.2.2 to 1/1000. Settlement analysis showed settlements in excess of 1 inch as well as differential settlements exceeding 1/1000 ratio towards the west and east ends of the wall. It is recommended the soil below the footing be removed and replaced with Porous Granular Embankment with CA-7 gradation at the following locations down to the elevations shown in Table 2. The removal and replacement shall extend at least 1 foot outside limits of the toe and heel of the footing.

Stations	Bottom of Removal & Replacement Limits
Sta. 312+00.00 to Sta. 316+15.11	571.0
Sta. 316+15.11 to Sta. 317+04.06	568.5
Sta. 330+67.98 to Sta. 333+32.00	571.0
Table	2

Lateral loads on the wall may be resisted by the frictional resistance between the footings and supporting soil. A Geocomposite Wall Drain should be placed over the entire length of the back face of the wall and either connected to a perforated drain pipe in accordance with IDOT Bridge Manual or weep holes should be put into the wall at 8 foot centers.

Mechanically Stabilized Earth (MSE) Wall. The MSE wall does not appear to be a viable option. The drainage ditch located between the wall and the roadway would limit the ability to provide soil reinforcement behind the upper portion of the wall. Additionally, the foundation for the proposed noise wall would not be able to be mounted to the MSE wall. The noise wall foundation would need to be located behind the retaining wall and its foundation may interfere with the soil reinforcement. Another concern with using an MSE wall at this location would be future possible utilities excavating behind the wall and damaging the soil reinforcement. The location of this wall makes it highly susceptible for future utility placement.

Soldier Pile Wall. A Soldier pile wall appears to be an expensive option for the wall at this location. With a high rock elevation occurring at some of the boring locations, piles would need to be drilled in rock at those locations in order to obtain the adequate embedment depth needed, which would drive the cost up for this option. However, if it is determined in final design that the soldier pile option is needed for the proposed wall, Table 3 contains a tabulation of lateral soil parameters to be used for design of piles and the retaining wall. Drainage should be provided behind the wall.

Material	Unit Weight (pcf)	Friction Angle (deg)	Undrained Cohesion (psf)	Strain
Granular Backfill	120	28	-	-
Soft Clay	110	-	300	0.02
Medium Clay	120	-	500	0.01
Stiff Clay	120	-	1000	0.007
Very Stiff Clay	125	-	2000	0.005
Hard Clay	125	-	4000	0.004
		Table 3		

Permanent Sheet Pile Wall. Steel sheet piles with cast-in-place concrete facing do not appear to be a viable option due to the fact that rock is located at shallow depths and the sheet piles will not be able to obtain the appropriate embedment depth required to retain the soil behind it.

Ground-Mounted Noise Wall

Ground Mounted Noise Walls are proposed at each end of the Retaining Wall. Foundation support will be required at each Ground Mounted Noise Wall post. Per IDOT Bridge Manual section 3.12, the preferred foundation type is drilled shafts.

The noise walls will be a performance based design developed by the Contractor. Tables 4 and 5 define the soil properties to be used in designing the shaft depths.

Soil Type	Elevation at Bottom of Soil Layer	Effective Unit Weight (pcf)	Friction Angle (deg)	c (ksf)	Strain
Stiff Silty Clay Loam	576.1	128	-	1.8	0.007
Medium Silty Loam	568.6	*51	28	0.5	0.01
Soft Silty Loam	563.1	*46	26	0.3	0.02
Medium Shale	561.1	*66	34	-	-
Very Dense Shale	554.1	*83	44	-	-

Table 4 – Ground Mounted Noise Wall at West End

Soil Type	Elevation at Bottom of Soil Layer	Effective Unit Weight (pcf)	Friction Angle (deg)	c (ksf)	Strain
Soft Sandy Loam	578.6	108	27	0.3	0.02
Medium Silty Loam	576.1	113	29	0.5	0.01
Very Soft Silty Loam	571.6	*42	25	0.2	0.02
Medium Shale	561.6	*66	34	-	-

Table 5 – Ground Mounted Noise Wall at East End *Assumed to be below water table.

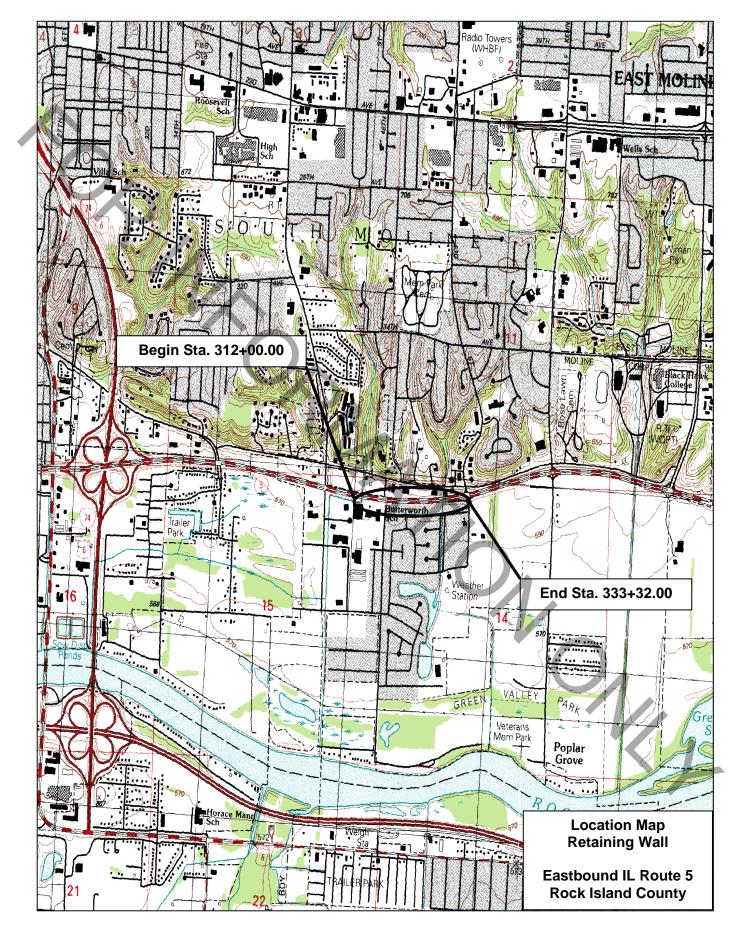
Construction Considerations

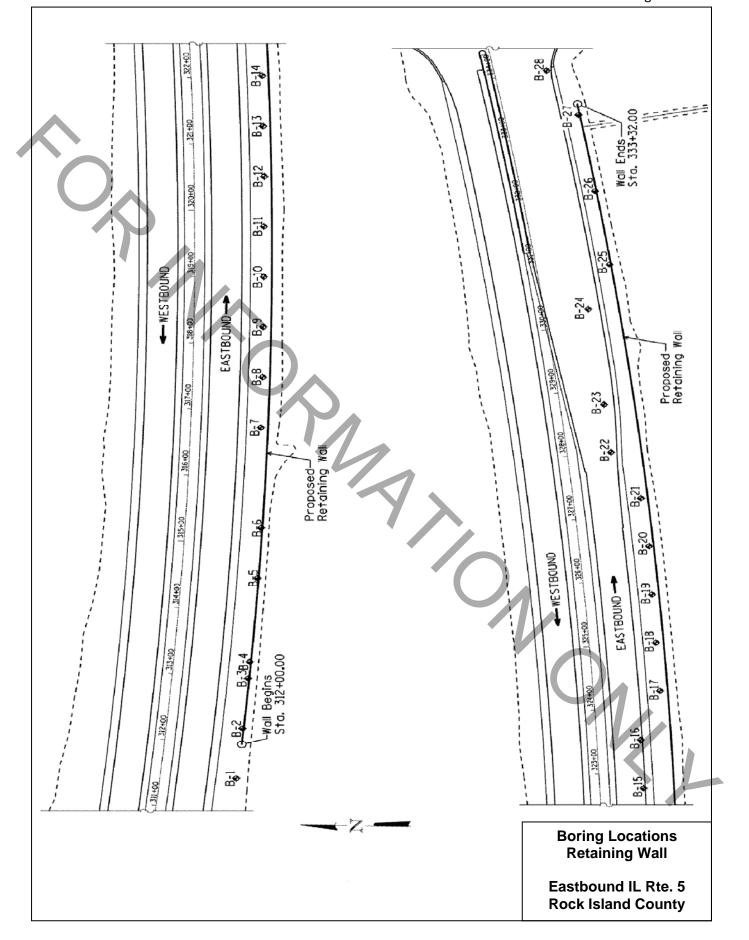
Temporary Soil Retention System. The wall type selected will dictate what type of traffic control, if any, will be required for the construction of the retaining wall at this project site location. The site may constitute the need for shoulder closures and even possible lane closures in order to construct the proposed retaining wall and retained backfill. If this appears to be the case, Temporary Soil Retention System may be needed. Temporary construction cross slopes should be examined to avoid the use of a retention system.

Excavation. If excavation for the proposed improvements is in excess of 4 feet, a 1:1 temporary excavation slope for construction clearance has adequate resistance. Movement of adjacent soils near the edge of and into excavation areas should be prevented. All excavations should be performed in accordance with the latest Occupational Safety and Health Administration (OSHA) requirements. Allowances should be made for any surcharge loads adjacent to the excavation areas.

Embankment Construction. Granular soil material should be specified as the embankment fill. The fill should be constructed as early as possible in the project construction period in order to allow the embankments to adjust or settle.

Ground Improvement. If Concrete cantilever retaining wall is selected, then unsuitable material down to depths shown in Table 2 shall be removed and replaced with Porous Granular Embankment with CA-7 gradation to limits discussed in design recommendations.





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COUNTY Rock Island Co	ORING METHOD			R E	R	CORE	S T
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Shale: as above. t.s.f.: 548.4 to 547.9 End of Boring			2	100	92	6.6	262.0
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Color pictures of the cores

Cores will be stored for examination until

The "Strength" column represents the uniaxial compressive strength of the core sample (ASTM D-2938)

BBS, form 138 (Rev. 8-99)

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ROUTE FAF	Highways Partment of Transp	ortation/D)-2 SCR				06 Retaining/Noise Wall on John Dee Road, 1,000' E. of 41st Street			Date	9/1	15/11
SECTION	142 P					<u> </u>	Road, 1,000 E. of 41st Street	LC	GG	ED BY	<u>W. (</u>	Garz
	172-11		L	-004	HON_	<u>S. Mo</u>	line Twp 15NE, SEC. , TWP. 17N, F	<u>RNG. 1</u> \	<u>N</u>			
COUNTY Rock Isl	and DR		S ME	THO	<u> </u>	Ho	Ilow Stem Auger HAMMER		CI	<u>ME-45</u>	Autom	natic
STRUCT. NO Station		_	D E	B L	U C	M O	Surface Water Elev Stream Bed Elev	ft	D E	BL	U C	M
BORING NO.	B.3	_	P T	O W	S	I S			P T	0	s	I
BORING NO Station Offset90.001	313+00	_	н		Qu	Ť	Groundwater Elev.: First Encounter571.5 Upon Completion557.5	ft 🗶		W S	Qu	S T
Ground Surface Elev	. 578.50	ft	(ft)	(/6'')	(tsf)	(%)	Upon Completion 557.5 After Hrs.	ft⊈∣ ff	(ft)	(/6'')	(tsf)	(%
STIFF brown SILTY CL	AY LOAM					1	VERY DENSE gray SHALE (continued)		. ,			
		-			1.8 P	18.0	(conunued)	557.50 <u>7</u>	7			
MEDIUM brown SILTY	CLAY	576.50 _		4			VERY DENSE gray SHALE	-	_			
LOAM			-	3	0.9	27.0	VERT DENSE gray SHALE		-	100/6"		
	5	575.00	+	5	В		End of Boring	555.00	-			
VERY SOFT brown SA		-						-				
LOAM		-	-5	2	0.2	19.0		-	-25			
	5	72.50 _	_	3	Р			_				
									-			
MEDIUM redish brown LOAM	CLAY	-	-+	1	0.7	29.0	Y X	_				
	5	70.00		3	В			-				
		_						_				
SOFT light gray SILT w lens	th SAND	_	-10	1 2	0.3	27.0		_	-30			
	5	67.50	_	2	P	27.0			-			
			\neg						_			
MEDIUM gray SILTY LC	DAM		1	1 2	0.5	20.0	· V	_				
	50	 55.00		23	0.5 B	29.0		-	-			
MEDIUM gray SILTY LC SAND lens	DAM with		-15	2					-35		1	
			-	2 4	0.5 P	29.0						
	56	52.00	_					_				
VERY DENSE gray SHA	LE	_	_	16					_			
	EA			31 40								
	50	50.00		<u> </u>								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, from 137 (Rev. 8-99)

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	F Transp sion of Highways os Department of Trai	orta	tio	n		S	DIL BORING LOG
	os Department of Tra	nsportation	^{/D-2}		D92	2-003-0	Date <u>9/15/1</u> 06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street LOGGED BY W. Gar.
							line Twp 15NE, SEC. , TWP. 17N, RNG. 1W
							Ilow Stem Auger HAMMER TYPECME-45 Automatic
STRUCT. NO		<u>.</u>	D E P	B L O	U C S	M O	Surface Water Elev ft Stream Bed Elev ft
BORING NO Station Offset9	0.00ft Rt Existin)g	T H	W S	Qu	I S T	Groundwater Elev.: First Encounter564.2 ft ▼ Upon Completion560.7 ft 文
Ground Surface VERY STIFF brow			(ft)	(/6'')	(tsf)	(%)	After Hrs ft
LOAM					3.0	19.0	
STIFF brown SILT	Y CLAY LOAM	576.70		4	P 1.1	24.0	
		575.20		4	В	24.0	
MEDIUM tan/gray, CLAY LOAM	brown SILTY		-5	2	0.8	28.0	
		572.70		3	В		
STIFF tan SILTY L	.OAM			2			
				4	1.1	26.0	
		570.20		_4	В		
SOFT gray SILTY	LOAM		-10	1			
		567.70	-	1 2	0.3 B	28.0	
			_				
SOFT tan SILTY L SAND lens	OAM with			1	0.3	26.0	
		565.20		3	0.3 B	20.0	
			T				
SOFT gray SILTY SAND and ORGAN	LOAM with IICS lens		-15	1	0.4	34.0	
		562.20		5	Р	{	
VERY DENSE gray	(SHALE			38			
Auger Refusal at 1	8.5'	Σ	<u>z</u> _1	38		{	
End of Boring		560.20	-+				

Illinois De of Transp	ortat	ior	ent 1		S	DIL BORING LO	G		Page	<u>1</u>	of _
Division of Highways Illinios Department of Tr ROUTE FAP 595			ΡΤΙΟ	D92	2-003-0	06 Retaining/Noise Wall on John De Road, 1,000' E. of 41st Street	ere .			9/2	_
						line Twp 15NE, SEC., TWP. 17N,			ED BY	Г <u>М. J</u>	acoby
						Ilow Stem Auger HAMMER	R TYPE	 	<u>ME-45</u>	Autom	atic
STRUCT. NO Station		D E	BL	U C	M O	Surface Water Elev Stream Bed Elev	ft	D E	BL	U C	M O
BORING NOB-5		P T	o W	S	I S	Groundwater Elev.:	_ "	P	o w	S	I S
Station 314+50 Offset 90.00ft Rt Existi	ĥa	н	S	Qu	т	First Encounter 567.3	_ ft 🕎		S	Qu	т
Ground Surface Elev. 579.3 STIFF dark brown SILTY CLAY	0 ft	(ft)	(/6")	(tsf)	(%)		_π⊻_ _ft	(ft)	(/6'')	(tsf)	(%)
LOAM		_		1.8	14.0	VERY DENSE gray SHALE (continued)	558.30	_			
· ·	577.30			P			000.00				
HARD brown SILTY CLAY LOAN	1	-	3	4.5	14.0	VERY DENSE gray SHALE		1	100/6"		
	575.80	4	3	Р.			555.80				
	-					End of Boring					
MEDIUM brown SILTY CLAY	-	5	2	1.0	26.0			-25			
	573.30 _	_	3	В							
SOFT tan SILTY LOAM	-		0								ĺ
	_	_	2	0.5	27.0			-			
	570.80		3	<u>B</u>				_			
VERY SOFT tan SILTY LOAM		-10	0				-	_			
		-	23	0.4 B	30.0		-	-30			
				_			-				
SOFT tan SILTY LOAM	7		1				-	-			
			1 2	0.3 B	26.0						
	565.30						-				
MEDIUM gray weathered SHALE		-15	3				_	-35		7	
	563.30	_	17								
		_					-	_			
VERY DENSE gray weathered SHALE			60 00/9"				-				
	560.80						-				Ψ.

Wision of Highways Division of Highways Illinios Department of Tra	ortati	on	•	S	OIL BORING LOG	rag	je <u>1</u>	or
ROUTE FAP 595			D9	2-003-	06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street LO		е <u>9//</u> кум	
SECTION142-R		LOC			Dline Twp 15NE, SEC., TWP. 17N, RNG. 1W		<u>IVI. (</u>	
					bliow Stem Auger HAMMER TYPE			
STRUCT. NO.	ſ						5 Auton	natic
Station		EL	C	M O		D B E L	UC	M
BORING NOB-6		P O T W		I S		P O T W	S	I S
Station 315+25 Offset 90.00ft Rt Existin		H S	Qu	Т	First Encounter 564.2 ft V	H S	Qu	Τ
Ground Surface Elev. 578.70	<u>)</u> ft (ft) (/6'	') (tsf)	(%)		ft) (/6")	(tsf)	(%
CLAY LOAM			3.3	22.0	VERY DENSE gray SHALEY SANDSTONE (continued) 557.70	_		
	576.70		P		End of Boring			
STIFF brown SILTY CLAY LOAM	510.70	5						
	575.20	6	1.8 B	19.0		\neg		
			P		_			
STIFF tan SILTY CLAY LOAM		<u>-5</u> 3	1.0	07.0		-25		
	572.70	4	B	27.0				
		-				_		
STIFF reddish/tan SILTY CLAY LOAM		1	0.9	28.0				
	570.20	4	B	20.0		_		
						7		
MEDIUM reddish/tan SILTY CLAY LOAM	<u></u>	10 2 2	0.7	43.0		30		
		4	В					
MEDIUM gray weathered SHALE						-		
with SAND lens	-	7	╆╌╌┥			_		
	565.20	16						
VERY DENSE gray SHALE	T .				-			
Las - Live gray of ALL	<u>-</u> 1	19	+			35		
	562.70	43				_		
VERY DENSE gray weathered		100/3			-			
SANDSTONE	-				-	-		
	560.20 _		<u> </u>					

VERY SOFT tan SILTY LOAM 0 -1 0 -1 0 -1 0 -1 0 -1 0 -1 0.2 3.0 -10 3 -10 3 -10 -10 3 -10	Division of Highways Illinios Department of Tran	sportation/D-2		OIL BORING LOG	Date <u>9/21/11</u>
COUNTY Rock Island DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME-45 Automatic STRUCT. NO.	ROUTE FAP 595	DESCRIP		Road, 1,000' E. of 41st Street	LOGGED BY W. Garz
STRUCT. NO. Borname Borname <td>SECTION142-R</td> <td> LO</td> <td>CATION S. N</td> <td>oline Twp 15NE, SEC., TWP. 17N, RNG</td> <td>i. 1W</td>	SECTION142-R	LO	CATION S. N	oline Twp 15NE, SEC., TWP. 17N, RNG	i. 1W
STRUCT. NO. Borname Borname <td>COUNTY Rock Island D</td> <td>RILLING METH</td> <td></td> <td>ollow Stem Auger HAMMER TYP</td> <td>ECME-45 Automatic</td>	COUNTY Rock Island D	RILLING METH		ollow Stem Auger HAMMER TYP	ECME-45 Automatic
BORING NO. B-7 P O S I Stream Bed Elev. ft BORING NO. B-7 H S Qu T Groundwater Elev.: First Encounter 565.5 ft V Offset B3.00ft Rt Existing ft V/V V/V V/V Stream Bed Elev. First Encounter 565.5 ft V SOFT light brown SILTY LOAM 0.3 10.0 P No Stream Bed Elev. First Encounter 565.5 ft V MEDIUM tan SILTY CLAY LOAM 575.50 4 A Stream Bed Elev. ft No Recovery	STRUCT. NO.	D	вим		
BORING NO. B-7. T W S Qu S Station 316475 (ft) (ft) <td< td=""><td></td><td></td><td></td><td>Stream Bed Elev ft</td><td></td></td<>				Stream Bed Elev ft	
Offset 33.00ff Rt Existing Upon Completion 368.5 ft Ground Surface Elev. 577.50 ft (ft) (/6") (tsf) (%) SOFT light brown SILTY LOAM 0.3 10.0 P 10.0 Ft Ft MEDIUM tan SILTY CLAY LOAM 576.50 4 - - - - No Recovery -5 2 - - - - - VERY SOFT tan SILTY LOAM 0 - - - - - - 0 - 1 0.2 30.0 - - - - - VERY SOFT tan SILTY LOAM 0 -	BORING NO. B-7	T Λ	N S	Groundwater Elev.:	
SOFT light brown SILTY LOAM (is)	Offset 83.00ft Rt Existin	a		Upon Completion 565.5 ft	7
MEDIUM tan SILTY CLAY LOAM No Recovery VERY SOFT tan SILTY LOAM 566.00 DENSE gray SHALE 11 564.00 21 10.0 P 10	Ground Surface Elev. 577.50) ft (ft) (/(6'') (tsf) (%	After Hrs ft	<u> </u>
MEDIUM tan SILTY CLAY LOAM 4 4			0.3 10.	5	
MEDIUM tan SILTY CLAY LOAM A 4 0.5 23.0 574.00 A B 574.00 	•	575 50	P		
No Recovery $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	MEDIUM tan SILTY CLAY LOAM				
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$				<i>,</i>	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$					
571.50 3 0 1 0 1 1 0.2 3 P 568.50	No Recovery				
LOOSE tan fine moist SAND 					
LOOSE tan fine moist SAND 					
3 P 568.50	VERY SOFT tan SILTY LOAM				
LOOSE tan fine moist SAND					
DENSE gray SHALE		568.50			
DENSE gray SHALE	LOOSE tan fine moist SAND	3			
DENSE gray SHALE 11 564.00 21			1 1		
					•
564.00 21	DENSE gray SHALE				
			· I I I		
VERY DENSE gray SHALE with COAL lens Auger Refusal at 16.5' End of Boring			·	-	
Auger Refusal at 16.5' 34 End of Boring 561.00	VERY DENSE gray SHALE with				
Auger Refusal at 16.5'		34			
			<u>·</u>		
	CIU OF BOIING				

Illinios Department of T	ansportation/D-2	SOIL BORING	Date 9/21/11
		S. Moline Twp 15NE, SEC. , TW	
		T	AMMER TYPE CME-45 Automatic
STRUCT. NO Station	D B U E L C	M Surface Water Elev O Stream Bed Elev	ft
	P 0 S T W	I	π
BORING NO. <u>B-8</u> Station <u>317+50</u>	H S Qu		566.1 ft 🗶
Offset 83.00ft Rt Exist Ground Surface Elev. 578.	ng 0ft (ft) (/6'') (tsf	Upon Completion	566.1 ft. ⊠
			N
STIFF light brown SILTY CLAY	576.104		
LOAM	3 1.8	20.0	
	574.60 4 P		
MEDIUM reddish brown CLAY	- 1		
LOAM	1 0.9	42.0	
	572.10 <u>2</u> B		
STIFF tan SILT			
		25.0	
	4 B		
	569.10		
LOOSE tan SAND with medium GRAVEL	<u>-10</u> 4		
	4		
	566.60		
VERY STIFF gray SHALE	- <u>6</u> 10 3.3	14.0	V
	564.60 18 S		
VERY DENSE gray SHALE	<u>-15</u> 24 36	+	
Auger Refusal at 16'	562.10 40		
End of Boring			N

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, from 137 (Rev. 8-99)

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Illinois De of Transp	epart portat	tior	nt 1		S	DIL BORING LOG		Page	9 <u>1</u>	of
Division of Highways Illinios Department of Tr ROUTE FAP 595			חודםו	D92	2-003-0	06 Retaining/Noise Wall on John Deere			9/2	
						Road, 1,000' E. of 41st Street line Twp 15NE, SEC., TWP. 17N, RN (ED B	r <u>w.</u>	Garz
	URILLIN			T -	<u>Ho</u>	Ilow Stem Auger HAMMER TY	PE	ME-45	Autom	natic
STRUCT. NO Station		D E	BL	U C	M	Surface Water Elev ft Stream Bed Elev ft	DE		U C	M
BORING NOB-9		P T	o W	S	I S		P	0	S	I S
Station 318+25 Offset 82,00ft Rt Existi		н		Qu	T	Groundwater Elev.: First Encounter <u>None</u> ft	н	1	Qu	T
Ground Surface Elev. 578.4	ngft	(ft)	(/6'')	(tsf)	(%)	Upon Completion ft After Hrs ft	(ft)	(/6'')	(tsf)	(%
MEDIUM brown SILTY CLAY		-		0.5	14.0	VERY DENSE gray SHALE		00/11	•	
				Р		End of Boring 557	.40			
VERY STIFF brown SILTY CLAY	576.40		6							
	574.90		7 7	3.5 B	18.0					
VERY SOFT tan SILTY LOAM		-5	2				25			
	572.40		3 3	0.2 P	27.0					
		_				1				
STIFF gray SHALEY CLAY	-		1	10	19.0					
	· -		4	1.2 S	19.0					
	569.40									
MEDIUM gray SHALE	-	-10	7				-30			
	567.40	_	14							
	-	_					-			
VERY DENSE gray SHALE		_	14 22							
	564.90	7	38			Ť				
VERY DENSE gray SHALE	-		20							
S - LICE gray OFFICE	-		28				-35			
	562.40 _		33					*		
	-	_	18							
VERY DENSE grav SHALE								1		
VERY DENSE gray SHALE	559.90		0/11							

Illinois De of Transp Division of Highways Illinios Department of Tra	epart orta	me tio	ent n		S	DIL BORING LOO	3	•	9 <u>1</u>	-
Illinios Department of Tra ROUTE FAP 595			IPTIO	D92	2-003-0	8 Retaining/Noise Wall on John Deer Road, 1,000' E. of 41st Street	e LOGO		<u> </u>	
SECTION142-R		Ĺ		TION		line Twp 15NE, SEC., TWP. 17N, R				00120
						llow Stem Auger HAMMER T				
STRUCT. NO.		D	в	U	1			1		
Station		Е	L	C	M O	Surface Water Elev Stream Bed Elev	ft D ft E	BL	U C	M O
BORING NO B-10		P T	0 W	S	I S	Groundwater Elev.:	Р Т	O W	S	I S
Station 319+00 Offset 82.00ft Rt Existin		н	S	Qu	Т	First Encounter	ft H		Qu	т
Ground Surface Elev. 578.30 STIFF brown SILTY CLAY LOAM	0 ft	(ft)	(/6'')	(tsf)	(%)		ft (ft)	(/6'')	(tsf)	(%)
STIFF DIOWN SILTY CLAY LOAM	$\langle \rangle$	-		1.0	24.0	VERY DENSE gray SHALE (continued)	57.30	100/9"		
	576.30			Р		End of Boring	<u>57.30</u>			
STIFF tan SILTY LOAM	576.30		3					-		
	574.80		5 6	1.6 S	21.0					
		_								
MEDIUM light gray SILTY LOAM		-5	2				-25			
	572.30	_	4 5	0.9 B	25.0					
		-								
MEDIUM gray dirty SANDY GRAVEL with bottom 6" SHALEY		_	4	4.1	14.0					
CLAY			7	4.1 P	14.0					
	569.30									
MEDIUM gray SHALE	-	-10	9 12				-30			
	567.30		15				_			
							-			
VERY DENSE gray SHALE	-	-	16 25			· V				
	564.80		43							
	-						(ĺ
VERY DENSE gray SHALE	-	-15	26 40				-35		1	
	562.30 _		65							
	_						_			
VERY DENSE gray SHALE		+	22 42							
	559.80	-	58							
	-									ĺ
VERY DENSE gray SHALE			23							

BBS, from 137 (Rev. 8-99)

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Division of Highways Illinios Department of Tr ROUTE FAP 595	ansportation/D-2	חודפוס	D92-	003-06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street LOGGED BY W. Gar
SECTION 142-R	52001		" TION (S. Moline Twp 15NE, SEC. , TWP. 17N, RNG. 1W
COUNTY Rock Island		ETHO	ויטא <u>י</u>	Hollow Stem Auger HAMMER TYPE CME-45 Automatic
STRUCT. NO.		в	 u	
Station	E P	L	C	M Surface Water Elev ft O Stream Bed Elev ft
BORING NO. B-11 Station 319+75 Offset 82.000 B E Suist	Т	0 W	S	S Groundwater Flev
	H H	S	Qu	First Encounter <u>569.2</u> ft ▼ Upon Completion 565.7 ft ▼
Ground Surface Elev. 578.7	<u>'0</u> ft (ft)	(/6")	(tsf)	(%) After Hrs ft
STIFF tan SILTY CLAY LOAM	576.70			
STIFF TAN SILTY CLAY LUAM	7	7 5	1.8	24.0
	575.20	6	Р	
STIFF light gray SILTY LOAM				7
	5	2	1.2 2	25.0
	572.20	3	В	
MEDIUM gray clean SAND with		5		
medium moist GRAVEL		6		
	569.70	9		
VERY DENSE gray SHALE with	▼	8		
DOLOMITE fragments	567.70	12 43		
VERY DENSE gray SHALE		32		
	<u>√</u> 565.20	42 50		
VERY DENSE gray SHALE		26		
F		00/10		
End of Boring				

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ROUTE FAP 595	ransportation/D-2	D92-0	003-06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street LO	Date <u>9/23/1</u>
			S. Moline Twp 15NE, SEC., TWP. 17N, RNG. 1V	GGED BY <u>W. Gar.</u> /
COUNTY Rock Island	DRILLING MET	HOD	Hollow Stem Auger HAMMER TYPE	
STRUCT. NO Station BORING NOB-12	D E P	BULCOS	M Surface Water Elev ft O Stream Bed Elev ft S Groundwater Elev.:	
Station <u>320+50</u> Offset <u>83.00ft Rt Existit</u> Ground Surface Elev. 578.5	ing 50 ft (ft) (/	S Qu /6'') (tsf)	T Groundwater Elev.: T First Encounter 569.0 ft ▼ Upon Completion ft (%) AfterHrs.	
STIFF brown SILTY CLAY LOAN	4	1.0	15.0	
STIFF light brown SILTY CLAY LOAM		P 3 2 1.0 2 3 P	22.0	
SOFT tan SILTY LOAM		1 2 0.2 2 2 P	9.0	
VERY DENSE gray SHALE	2	52 20 16		
MEDIUM/DENSE gray SHALE	1	4 3 7		
VERY DENSE gray SHALE	2 3 565.005	1		
VERY DENSE gray SHALE	 	9		N
VERY DENSE gray SHALE		13'		

Illinios Department of Tra	insportation/D-2			Page 1 of OIL BORING LOG 06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street LOGGED BY W. Garz
SECTION 142-R			N S M	Dine Twp 15NE, SEC., TWP. 17N, RNG. 1W
COUNTY Rock Island		THOD	на <u>о. инс</u> На	bllow Stem Auger HAMMER TYPE CME-45 Automatic
STRUCT. NO	DE	в	U M C O	Surface Water Elev. ft
			S I	Stream Bed Elev ft
BORING NO. B-13 Station 321+25 Offset 83.00ft Rt Existing	H H	s d	Qu T	Groundwater Elev.: First Encounter571.2 ft ▼ Upon Completion Dry ft
Ground Surface Elev. 578.2	<u>0</u> ft (ft)	(/6") (t	sf) (%)	After Hrs ft
				-
	576.20			
STIFF light brown SILTY CLAY LOAM		2 3 1	.1 24.0	
	574.70	3 1	3	-
MEDIUM gray/tan SILTY LOAM				
with CLAY LOAM lens		2 0	7 27.0	
	571.70	3 E	3	
DENSE gray SHALE	<u></u>	7		
		12		
	569.70	37	_	
VERY DENSE gray SHALE		27		
0 - ,		35		ľ ()
	567.20	48		
VERY DENSE gray SHALE with		27		
COAL lens		00/6'	-	
	564.70			
VERY DENSE gray SHALE	-151	00/5'		
End of Boring	562.20			

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Division of I Illinios Depa	bis Depart ansportat	D-2		SOIL BORING		Date <u>10/3/1</u>
ROUTE FAP	595 DE	SCRIPTIC	D92-		et Lo	OGGED BY W Gar
SECTION	142-R	LOCA		S. Moline Twp 15NE, SEC., TW	/P. 17N, RNG. 1	W
COUNTY Rock Isla	nd DRILLING	З МЕТНО	D	Hollow Stem Auger H	AMMER TYPE	CME-45 Automatic
STRUCT. NO.	22+00	D B E L	U C	M Surface Water Elev	ft	
BORING NO3	B-14	PO TW HS	S Qu	S Groundwater Elev.:		
Offset 84.00ft Ground Surface Elev.	Rt Existing	(ft) (/6")		Upon Completion	None ft Dry ft	
MEDIUM brown SILTY (CLAY				ft	
			0.5 P	18.0		
STIFF tan SILTY CLAY	577.00 LOAM	3				
	575.50	3	1.0 2 P	23.0		
SOFT light gray SILTY L	-					
fine SAND lens	OAM with -	<u>-5</u> 1		6.0		
	572.50	2	В			
MEDIUM gray SHALE	-	2				
	570.50	7 14				
VERY DENSE gray SHA	_E _	-10 14 22		_		
	568.00	25				
VERY DENSE gray SHAI	.E	26				
	565.50	100/12				
	_				(
VERY DENSE gray SHAL	.E	15 25 36				N
	563.00	37		_		
VERY DENSE gray SHAL	e -	-100/11				
	_					

ROUTE FAP 595	DESCR		D92-003-	06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street LOGGED BY W. Garz
				Dine Twp 15NE, SEC., TWP. 17N, RNG. 1W
COUNTY Rock Island		THOD	Ho	bllow Stem Auger HAMMER TYPE CME-45 Automatic
STRUCT. NO.	D	в	U M	Surface Water Elev ft
Station	— E P		C 0 S 1	Stream Bed Elev ft
BORING NO. B-15 Station 322+75	— Т	W S	Qu T	Groundwater Elev.: First Encounter572.2_ft ▼
Offset 54.00ft Rt Exist Ground Surface Elev. 586.	ing 70 ft (ft)	(/6'') (tsf) (%)	Upon Completion ft
MEDIUM brown LOAM	<u> </u>			
			0.6 12.0 P	
VERY STIFF tan SILTY LOAM	584.70	7		
	583.20	9 9	2.1 15.0 P	
VERY STIFF gray SILTY LOAM		8	2.0 20.0	
	580.70		P	
STIFF gray SILTY CLAY LOAM		2		
		1	.7 23.0	
	577.70	4	B	
LOOSE gray dirty SAND		2		
		4 3		
	575.20			
MEDIUM tan DOLOMITE		0		
	573.20	15		
VERY DENSE tan DOLOMITE	¥	00/5		
Auger Refusal at 15' Borehole continued with rock	<u>571.70 -15</u> 1	00/5"		
coring.				· //

ROUTE FAP 595	portation/D-2 DESCRIPTION D92-003-06 Retaining/No D92-003-06 Retaining/No	oise Wall on J of 41st Stree	lohn [et	Deere	LOG	Date GED BY _V	
	LOCATION S. Moline Twp 15N						
	DRING METHOD			ſ	R	CORE	S
STRUCT. NO.			[]		E C	R . T	T R
Station	Core Diameter 2 in		DE	C O	V I	Q . M	EN
BORING NOB-15	Top of Rock Elev. 575.20 ft		P T	R	E	DE	G
Station 322+75 Offset 54.00ft Rt Existing	Begin Core Elev571.70ft		н	-	R Y	•	T H
Ground Surface Elev. 586.70	🔔 ft		(ft)	(#)	(%) (%) (min/ft)	(tsf)
Shale: light gray, dense, massively t.s.f.: 571.4 to 570.9	bedded, moderately fissile.	571.70	-	1	100 9	58 2	29.0
			_				
01.1		566.70	-20				
Shale: as above. t.s.f.: 564.4 to 563.7			_	2 1	00 7	5 2.4	10.0
		-					
		-	{				
		<u> </u>	_				
			-				
		E 64 70	H				
End of Boring		561.70	-25				
U U U U U U U U U U U U U U U U U			4				
			4				
		-					
			4				
		-			U.		
		-	-30				
		_					
		_	_				
				ł			

Color pictures of the cores

BBS, form 138 (Rev. 8-99)

Division of Highways Illinios Department of ROUTE FAP 595	DESCRI	D92	-003-06 Retaining/Noise Wa Road, 1,000' E. of 41s	all on John Deere	Date <u>9/27/11</u>
SECTION142-R	L L		S. Moline Twp 15NE, SEC	., TWP. 17N. RNG. 1V	v
COUNTY Rock Island		THOD	Hollow Stem Auger		CME-45 Automatic
STRUCT. NO. Station BORING NO. B-16 Station 323+50 Offset 54.00ft Rt Exis	D E P T H Sting	BU LC OS W SQu	M Surface Water Elev O Stream Bed Elev. S Groundwater Elev.: T First Encounter	ft ft ft	
Ground Surface Elev. 586	<u>1.80</u> ft (ft)	(/6'') (tsf)	(%) After Hrs.	ft	
LOAM VERY STIFF light brown SILTY LOAM	584.80	P 7	17.0		
STIFF dark brown LOAM	580.80	5 6 1.7 9 B	18.0		
MEDIUM brown LOAM		1 2 0.7 4 P	17.0		
VERY LOOSE light brown dirty SAND		1 1 2		\mathcal{D}_{Λ}	
VERY DENSE tan weathered LIMESTONE on DOLOMITE	10	0/1'			
Auger Refusal @13.5' End of Boring	573.30			(
	<u>15</u> 				1

 $\frac{1}{1}$ $\frac{1}{2}$

			N		06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street LOGGED BY W. Garz
					line Twp 15NE, SEC., TWP. 17N, RNG. 1W
COUNTY Rock Island DRILL	ING ME	THOD)	Но	Ilow Stem Auger HAMMER TYPECME-45 Automatic
STRUCT. NO	D E P	B L O	U C S	M O I	Surface Water Elev ft Stream Bed Elev ft
BORING NO	T H	W S	Qu		Groundwater Elev.: First Encounterft Upon CompletionDry_ft
Ground Surface Elev. 579.70 MEDIUM brown SILTY CLAY	ft (ft)	(/6'')	(tsf)	(%)	After Hrs ft
LOAM	.70		0.8 P	22.0	
VERY STIFF brown SILTY CLAY LOAM		3 5 5	2.9 S	16.0	
VERY DENSE tan weathered LIMESTONE	-5	3			
Auger Refusal @ 6.5'					
End of Boring 573.	.20 				TX,
					V

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, from 137 (Rev. 8-99)

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ROUTE FAP 595	Isportation/D-2	IDT:0-	D92-	03-06 Retaining/Noise Wall on John De	Date ere
SECTION 440 D	DESCR	IP HON	·	Road, 1,000' E. of 41st Street	LOGGED BY W. Garz
	L	-OCAT	10N <u>- 8</u>	. Moline Twp 15NE, SEC. , TWP. 17N,	RNG. 1W
COUNTY Rock Island D		THOD		Hollow Stem Auger HAMMER	TYPECME-45 Automatic
STRUCT. NO Station	D E	BL	U C	M Surface Water Elev.	ft
	P	0	s	I Stream Bed Elev.	ft
BORING NOB-18 Station325+00	— Т	W S	Qu	S Groundwater Elev.: T First Encounter 572.3	a T
Offset 82.00ft Rt Existing Ground Surface Elev. 579.30	g ft (ft)	(/6'')	(tsf)	Upon Completion 572.3	ft.⊽
MEDIUM brown SILTY CLAY	1 100		(131)	%) After Hrs	_ft
LOAM			0.8 P	9.0	
STIFF light gray SILTY CLAY	577.30				
		23	1.6	3.0	
	575.80	3	P		
MEDIUM light gray SILTY CLAY	5	0	0.7 2	9.0	
		3	В		
	572.80 572.30				
WERY DENSE tan/light gray		00/1'			
Auger Refusal at 7.0' End of Boring					
	-				
	-15				
	-				
	_				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, from 137 (Rev. 8-99)

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ROUTE FAP 595	DESCI	RIPTIC	N	092-00 Dee	Page <u>1</u> of DIL BORING LOG Date <u>10/2/1</u> Date <u>10/2/1</u> Date <u>10/2/1</u> LOGGED BY <u>W. Garz</u>
SECTION 142-R		LOCA		<u>S. Mo</u>	line Twp 15NE, SEC., TWP. 17N, RNG. 1W
COUNTY Rock Island	DRILLING M	ETHO	o c	Ho	llow Stem Auger HAMMER TYPE CME-45 Automatic
STRUCT. NO	D E P	B L O	U C S	M O	Surface Water Elev ft Stream Bed Elev ft
BORING NO. B-19 Station 325+75 Offset 83.00ft Rt Existit	T H	w s	Qu	I S T	Groundwater Elev.: First Encounter 571.9 # ▼
Ground Surface Elev. 578.9 STIFF brown SILTY CLAY LOAN	90 ft (ft)	(/6'')	(tsf)	(%)	Upon Completion571.9 ft ⊻ After Hrs ft
	E70.00		1.0 P	25.0	
MEDIUM light gray SILTY LOAM	575.40	3 3 4	0.7 B	28.0	
SOFT light gray SILTY LOAM	-5	1		1	
		2	0.3 P	29.0	
	572.40				1
VERY DENSE black COAL	¥	5			V N
Auger Refusal @ 9.0']	00/11			
End of Boring	569.90				
	-				
	_				
	-15				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, from 137 (Rev. 8-99)

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ROUTE FAP 595	DESCR	IPTIO	D92 N	D03-06 Retaining/Noise Wall Road, 1,000' E. of 41st	on John Deere St. LOGGED BY W. G
SECTION142-R	L	.0CA1		. Moline Twp 15NE, SEC.,	TWP. 17N, RNG. 1W
COUNTY Rock Island	RILLING ME	тнор)	Hollow Stem Auger	HAMMER TYPECME-45 Automa
STRUCT. NO Station BORING NO B-20		B L O	U C S	M Surface Water Elev. O Stream Bed Elev.	ft
Station <u>326+50</u> Offset <u>86.00ft Rt Existin</u> Ground Surface Elev. 579.00	Н	W S (/6")	Qu (tsf)	S Groundwater Elev.: T First Encounter Upon Completion (%) After Hrs	572 5 ft 🗸
MEDIUM brown SILTY CLAY LOAM			0.5 P	20.0	
MEDIUM light gray SILTY CLAY LOAM	577.00	2 2 3	0.9 B	3.0	
Soft light gray SILTY LOAM		1	0.3	4.0	
VERY DENSE tan weathered LIMESTONE Auger Refusal at 6.5'	572.50	2 00/11	В		
End of Boring		@ 6.5'			
	10 				
					V_
					O ₁
					Í V

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SECTION142-R		RIPTION	N 1092-	03-06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street	
		LOCAT		Moline Two - 15NE SEC TWP 17N PNC	.OGGED BY <u>W. Garz</u>
COUNTY Rock Island		THOD		Hollow Stem Auger HAMMER TYPE	
STRUCT. NO	DE	BL	U C	M Surface Water Elev. ft	CME-45 Automatic
BORING NOB-21	—— р	o w	S	Stream Bed Elev ft	
Station 327+25 Offset 83.00ft Rt Exist	I H	S	Qu	T First Encounter 571.8 ft ▼	
Ground Surface Elev. 578	.80 ft (ft)	(/6'')	(tsf)	Upon Completion 571.8 ft ∑ %) After Hrs ft	
SOFT brown SILTY CLAY LOA with 16% ORGANICS	M _		0.3		
			P	5.0	
STIFF light gray SILTY CLAY	576.80	2			
LOAM	575.30	5 5	1.2 2 P	4.0	
STIFF light gray SILTY LOAM	5	2			
		2 3	1.0 2 B	3.0	
	572.30				
VERY DENSE gray SHALE	571.30	00/5"			
Auger Refusal @ 7.5'					
End of Boring					
	-10				
				(

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, from 137 (Rev. 8-99)

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of Transpo	ortatio	ient Dn		S	OIL BORING LOG		Page	<u>1</u> c	of _
ininios Department of Trans	portation/D-2		_				Date	10/4	1/11
ROUTE FAP 595	_ DESC	RIPTIC	JN		Road, 1,000' E. of 41st Street	LOGG	ED BY	_ <u>W. G</u>	arza
SECTION142-R		LOCA	TION	<u>S. M</u>	oline Twp 15NE, SEC. TWP. 17N, RNG	. 1W			
COUNTY Rock Island DR	RILLING	ІЕТНО	D	Но	bliow Stem Auger HAMMER TYP		/E-45	Automa	atic
STRUCT. NO.			U	м				· · · · · · · · · · · · · · · · · · ·	
Station	- E		C S	0	Surface Water Elev ft Stream Bed Elev ft	D E	BL	U C	M O
BORING NO. B-22	Т	Ŵ		S	Groupdwater Flaue	P T	o W	S	। S
Station <u>328+00</u> Offset <u>54.00ft Rt Existing</u>	— Н		Qu		First Encounter <u>None</u> ft Upon Completion <u>Dry</u> ft	н		Qu	Ť
Ground Surface Elev. 588.60 Shoulder Rock	ft (ft) (/6'')	(tsf)	(%)	After Hrs. ft	(ft)	(/6'')	(tsf)	(%)
	-	+			VERY DENSE gray SHALE (continued)		21 44		
	586.60				567.0	50			
MEDIUM tan SILT		2		<u> </u>	VERY DENSE gray SHALE		29		
	585.10	4	0.5 S	22.0			00/11		
	_				565.1	• +			
STIFF gray SILT		3			VERY DENSE gray SHALE		00/11		
 		5 10	1.1 S	19.0					
					End of Boring 562.6	<u> </u>			
VERY STIFF brown/tan CLAY		4							
	80.10	6 6	3.7 B	19.0					
			-						
STIFF tan SILTY LOAM		2				_			
5	77.60	4	1.0 B	25.0					
J									
MEDIUM light gray SILTY LOAM		1							
E-	75 10	2 3	1.0 S	26.0					
57	75.10		<u> </u>			-			
SOFT light gray SILTY LOAM with	-15	0							
ORGANICS		1	0.4 B	33.0		-35			
57	2.10								
MEDIUM gray SHALE		9							
		9	-+	9.0					
57	0.10	16				-			
VERY DENSE gray SHALE	-20	12							

BBS, from 137 (Rev. 8-99)

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Division of Highways Illinios Department of ROUTE FAP 595			IPTIC	D92	2-003-	06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street		Date	10	/5/11
SECTION 142-F	3		004		S M	line Twp 15NE, SEC. , TWP. 17N, RNG.	LOGO	GED BY	<u>w.</u>	<u> Sarza</u>
COUNTY Rock Island	DRILLIN			n n		Illow Stem Auger HAMMER TYP	<u>1W</u>			
STRUCT. NO.		1 1					EC	ME-45	Autom	atic
Station		D E	BL	U C	M O	Surface Water Elev ft Stream Bed Elev ft	DE	BL	U C	M
BORING NOB-23 Station328+75		P T	o W	S	I S	Groundwater Elev.:	P	o W	s	I S
Offset 54.00ft Rt Exi	stina	H	S	Qu	Т	First Encounter572.8_ ft	н		Qu	T
Ground Surface Elev. 580 MEDIUM tan SILTY LOAM	<u>8.80</u> ft	(ft)	(/6'')	(tsf)	(%)		(ft)	(/6'')	(tsf)	(%)
	$\langle \rangle$			0.5	19.0	VERY DENSE gray 568.3 SHALE/SANDSTONE	0	100/2"		
	586.80			Р		Auger Refusal at 20.5' (continued) End of Boring				
VERY SOFT tan SILTY LOAM		_	2	0.2	22.0					
	585.30	1	3	P	22.0					
VERY STIFF dark brown SILT	-									
CLAY LOAM	r -	5	3	2.7	26.0		25			
	582.80 _		12	В						
VERY STIFF tan SILTY LOAM	-		5							
	_		8		21.0		_			
	580.30		12	В						
VERY STIFF gray SILTY CLAY		-10	5							
LOAM	- 577.80		5 6	2.3 B	21.0	· ()	-30			
	577.80 _		Ť							
MEDIUM light gray SILTY LOAN	- N		1				\neg			
	575.30		23	0.7 B	25.0					
		_								
SOFT gray SILTY LOAM	_	-15	1				-35			
	Ţ	_	2 3	0.3 : B	32.0					
	<u> </u>	-		T						
MEDIUM gray SHALE		_	2							
			4							
	570.30 又	<u> </u>								

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Division of Highways Illinios Department of T ROUTE FAP 595	ransportation/D-2		D92	2-003-	06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street	•		Date	10	/5/11
SECTION 142-R				S M4	Dline Twp 15NE, SEC., TWP. 17N, RM	LC	GG	ED B	r_ <u>W. (</u>	<u>Garz</u>
COUNTY Rock Island			יייי.		Dilow Stem Auger HAMMER TY	NG. 1V	<u>v</u>			
STRUCT. NO.						T	C	<u>ME-45</u>	Autom	<u>natic</u>
Station	D	BL	U C	M O	Surface Water Elev f Stream Bed Elev f	t	D E	BL	U C	M O
BORING NOB-24	P T	o W	S	I S	Groundwater Elev.:		P T	o W	S	I S
Station 330+25 Offset 54.00ft Rt Exist	ing H	S	Qu	Т	First Encounter569.9 ff Upon Completion572.9 ft		н	S	Qu	Т
Ground Surface Elev. 589.4	<u>40</u> ft (ft)	(/6'')	(tsf)	(%)	After Hrs ff	t¥.	(ft)	(/6'')	(tsf)	(%)
	<u> </u>				STIALE/SANDSTONE	8.90	_			
	587.40				Auger Refusal at 20.5' (continued) End of Boring	-	_			
STIFF light brown SANDY LOAN		4	1.1	13.0		-				
	585.90	9	Ρ			_	_			
MEDIUM light brown dirty SAND										
	5	3 6					-25			
	583.40	7								
HARD tan/gray CLAY LOAM		5					_			
		7 8		15.0			-			
	580.90	<u> </u>	В							
MEDIUM light gray SILTY LOAM with SAND lens	-10	1								
with SAIND lefts	578.40	23	0.6 P	21.0			30			
			-+							
MEDIUM light gray SILTY LOAM		0								
	575.90	2 3	0.7 B	26.0						
SOFT gray SILT		1 2	0.5	32.0			35			
		2	B				-			
	_ <u>572.907</u>					-]			
VERY DENSE gray SHALE	-+	5								

ROUTE	FAP 595	DE	ESCR	IPTIO	D92	2-003-	06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street LOGGED BY W. Gara
							vine Twp 15NE, SEC., TWP. 17N, RNG. 1W
	ock Island	DRILLIN	g me	THO	D C	Ho	Nov Stem Auger HAMMER TYPE CME-45 Automatic
STRUCT. NO	331+00		D E P T	B L O W	U C S	M O I S	Surface Water Elev ft Stream Bed Elev ft Groundwater Elev.:
Offset Ground Surfac	90.00ft Rt Exist e Elev. 584.0	ing 00 ft	H (ft)	-		т (%)	First Encounterft
		582.00			0.3 P	19.0	
VERY STIFF tan	SILTY LOAM	580.50			2.1 P	16.0	
MEDIUM brown S	SANDY LOAM		5	7	0.5	16.0	
VERY SOFT light LOAM	gray SILT	578.00 - - 575.50			P 0.2 P	29.0	1
VERY SOFT gray	SILT LOAM	- - 573.00	-10		0.2 P		
VERY SOFT gray	SILT LOAM	- <u>- 571.00</u>					
DENSE gray SHALE/SANDSTC Hard Drilling Auger Refusal at 1 End of Boring		<u>568.50</u> 	-15				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) BBS, from 137 (Rev. 8-99)

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Division of Highwa illinios Department	Departm sportatio			OIL BORING LOG	Date10/6/*
ROUTE FAP 595	DESC	RIPTION	D92-00	3-06 Retaining/Noise Wall on John Deere Road, 1,000' E. of 41st Street	.OGGED BY _W. Gar
SECTION142	-R	LOCAT	ION <u>s.</u>	Moline Twp 15NE, SEC., TWP. 17N, RNG.	1W
COUNTY Rock Island		ETHOD		Hollow Stem Auger HAMMER TYPE	CME-45 Automati
STRUCT. NO	D 32+50 E	BL	U N C C	A Surface Water Elevft	
BORING NOB-26 Station332+0	P T	0 W	S S	Groundwater Elev	
Offset 90.00ft Rt E	xisting		Qu 1	First Encounterft Upon Completion 575.7 ft ▽	
Ground Surface Elev. 5 STIFF tan SILTY CLAY LOA	<u>85.20</u> ft (ft) M	(/6'')	(tsf) (%	6) After Hrs ft	
		$\frac{1}{1}$	1.8 22 P	0	
SOFT tan SILTY CLAY LOAN	583.20			_	
			0.3 24	0	
	581.70		P -		
VERY SOFT tan SILTY LOAI	VI		1		
	 579.20		0.2 27. P	0	
VERY SOFT light gray SILTY LOAM			0.3 28.		
VERY SOFT gray SILTY LOA	576.70		0.3 28. P		
VERY SOFT gray SILTY LOA	575 7057		0.2 35.	0	
VERT SOFT gray SILTY LOA	M	<u> </u>	<u>P_/</u>		
	574.20				
VERY MOIST gray dirty SANI	,			l V	
DENSE gray SANDSTONE	571.20			(
Auger Refusal at 17'					V
	568.20				
End of Boring					

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Division of Highways Illinics Department of Tr ROUTE FAP 595			D9	2-003-0	06 Retaining/Noise Wall on John Der	ere		€ <u>10</u>	
					Road, 1,000' E. of 41st Street		GED B	Y <u>W. (</u>	Garz
COUNTY Rock island		THO)	Ho	Ilow Stem Auger HAMMER	TYDE		Autom	
STRUCT. NO Station BORING NOB-27	D E P	B L O	U C S	M O I	Surface Water Elev Stream Bed Elev	ft I ft I	D B E L D O	U C S	M
Station 333+25 Offset 90.00ft Rt Existit Ground Surface Elev. 585.6	T H 0 ft (ft)	W S (/6'')	Qu (tsf)	S T (%)	Groundwater Elev.: First Encounter Upon Completion 576.6 After Hrs.	ft I ft.∇	T W I S t) (/6'')	Qu (tsf)	S T
SOFT brown/tan SILTY CLAY LOAM			1.5 P	19.0	MEDIUM/DENSE gray SHALE No Refusal to 24'	<u> </u>	-		(70)
SOFT tan SANDY LOAM	583.60 582.10	Z	0.4	16.0					
VERY SOFT tan SANDY LOAM			0.0	24.0	End of Boring	<u>-2</u>	25		
VERY SOFT light gray SILTY LOAM MEDIUM light gray SILTY LOAM	579.60 578.60		P	20.0	1.				
MEDIUM light gray SILTY LOAM	577.10		0.2	26.0		 			
VERY SOFT gray SILTY LOAM	576.10		0.8 0.2	35.0 30.0			-		
	571.60						5		
First Encounter at 14.5' MEDIUM/DENSE gray SHALE						-35		1	
Dry gray SHALE	569.60						Ť		
	565.60 -20								

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Division of Highways Illinios Department of ROUTE FAP 595			סוסני	D9	2-003-	06 Retaining/Noise Wall on John Deer	re			10/	1.0
				JN	-	Road, 1,000 E. of 41st Street	LO	GGE	D BY	<u>W.</u>	Garz
COUNTY Rock Island	DRILLI		ETUO		<u>5. M</u>	Dline Twp 15NE, SEC., TWP. 17N, R	RNG. 11	/			
STRUCT. NO.	BRIELI		1			Dilow Stem Auger HAMMER T		CM	E-45	Autom	natic
Station 334+00		DE	Ē	U C	M O	Surface Water Elev Stream Bed Elev.	ft	D E	BL	U C	M
BORING NOB-28		P T	0 W	S	I S	Crownell		P T	o w	s	I S
Station 334+00 Offset 64.00ft Rt Exist	ling	Н		Qu	Т	First Encounter571.4	ft 👤	н́	s	Qu	T
Ground Surface Elev. 590. MEDIUM brown SILTY LOAM	<u>90</u> ft	(ft)	(/6'')	(tsf)	(%)	After Hrs.	ft ft (ft) ((/6'')	(tsf)	(%
				0.5	12.0	MEDIUM gray fine SAND (continued)		-	0		
	588.90			P				_	6		
STIFF gray SILTY CLAY LOAM		7	5	1.5	20.0	VERY DENSE gray SHALE	68.90		25		
	587.40		6	P		50	67.40	0	0/10"		
STIFF brown SILTY CLAY LOAN		_					_	-			
CONTROLLIN CLATEDAIL	Л	5	3 4	1.5	23.0	VERY DENSE gray SHALE		201	37 10/9'		
	584.90		5	В		Borehole continued with rock	64.90	1			
MEDIUM tan gray SILTY LOAM			1			coring.		_			
			2		23.0		-	_			
	581.90		3	В				-			
LOOSE tan dirty SANDY GRAVEL		-10	0								
		-	2 3				<u></u>	-			
	579.40	_									
SOFT light gray SILT			0	0.4	20.0			-			
	577.40		2	B	20.0						
SOFT gray SILTY LOAM with	-]			l
ORGANICS	-	-15	0	0.4	39.0		-3	5			
	574.90 _	7	3	В							
SOFT gray SILT	-	-	0				-				
	-	_	0		10.0			-			
	571.90	-	1	В				1			
MEDIUM gray fine SAND	1	-20									

Division of Highways Illinios Department of Transport ROUTE FAP 595	D92-003-06 Retaining/No	ise Wall on J	ohn E)eere		Date	
	DESCRIPTION Road, 1,000 E.	or 4 ist Stree	t		LOGO	SED BY <u>V</u>	V. Garz
	NG METHOD		<u>9. 17</u>	<u>, rn</u>	<u>3.1W</u>	CORE	
STRUCT. NO.							Т
Station 334+00	CORING BARREL TYPE & SIZE Core Diameter2 in		D E	C O		а¦ М	REN
BORING NO. <u>B-28</u> Station <u>334+00</u>	Top of Rock Elev. <u>568.90</u> ft Begin Core Elev. <u>564.90</u> ft		P T	R	E	ΣE	G
Offset64.00ft Rt Existing Ground Surface Elev590.90			н		Y		н
Shale: dark to light gray, dense and m t.s.f.: 562.6 to 561.9		564.90	(ft)		(%) (% 100 7	6) (min/ft 8 5.2) (tsf)
		-	_				
		-					
		-					
		-	-30				
Shale: as above, though less fissile.		559.90	_	_			
t.s.f.: 557.4 to 556.4		-		2 1	00 92	2 3.8	31.0
		_					
			_				
			-35				
End of Boring		554.90	-				
			4				
			4				
		-					
		_					
			-40				
		—	_				
			-				•
			45				

-

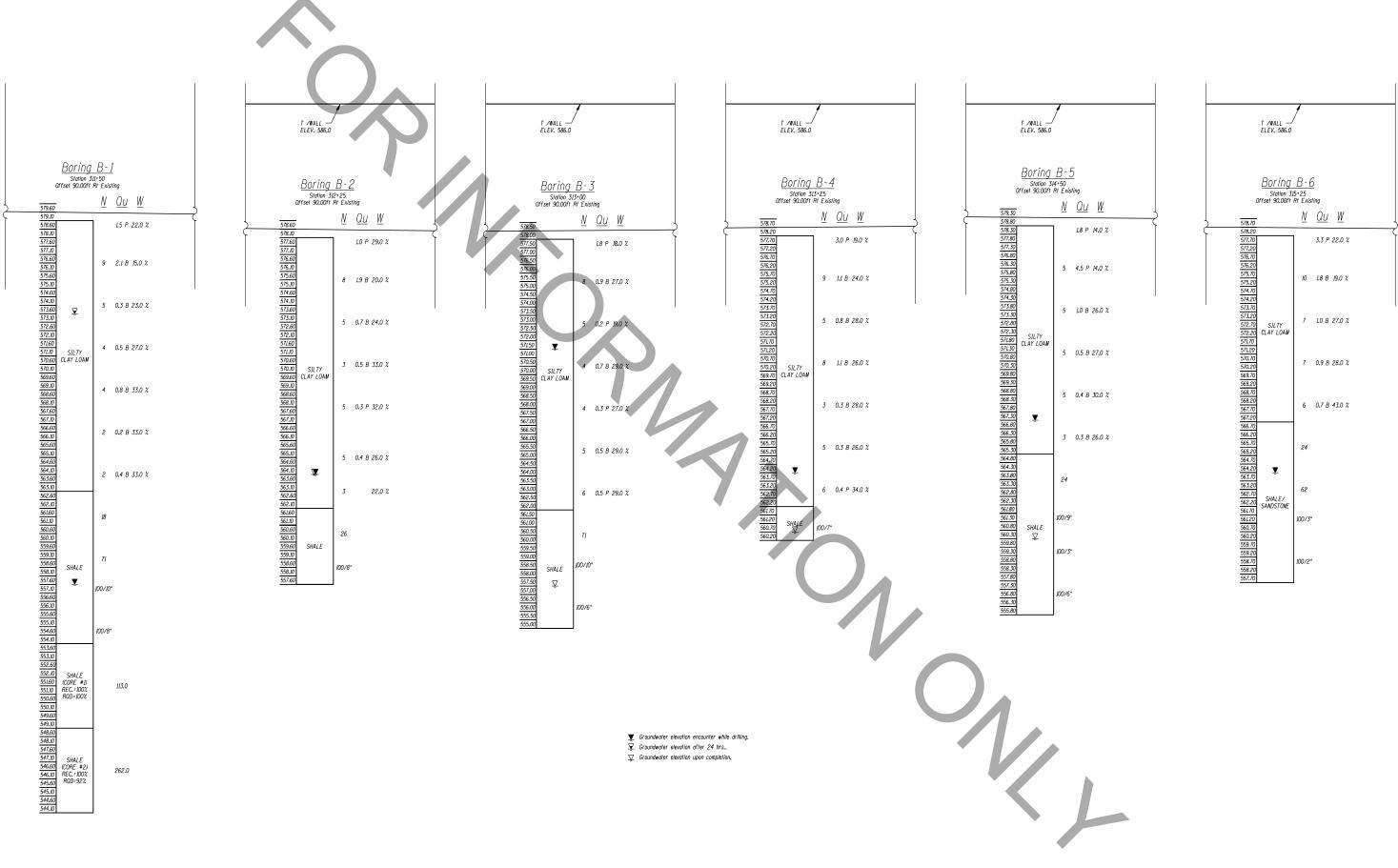
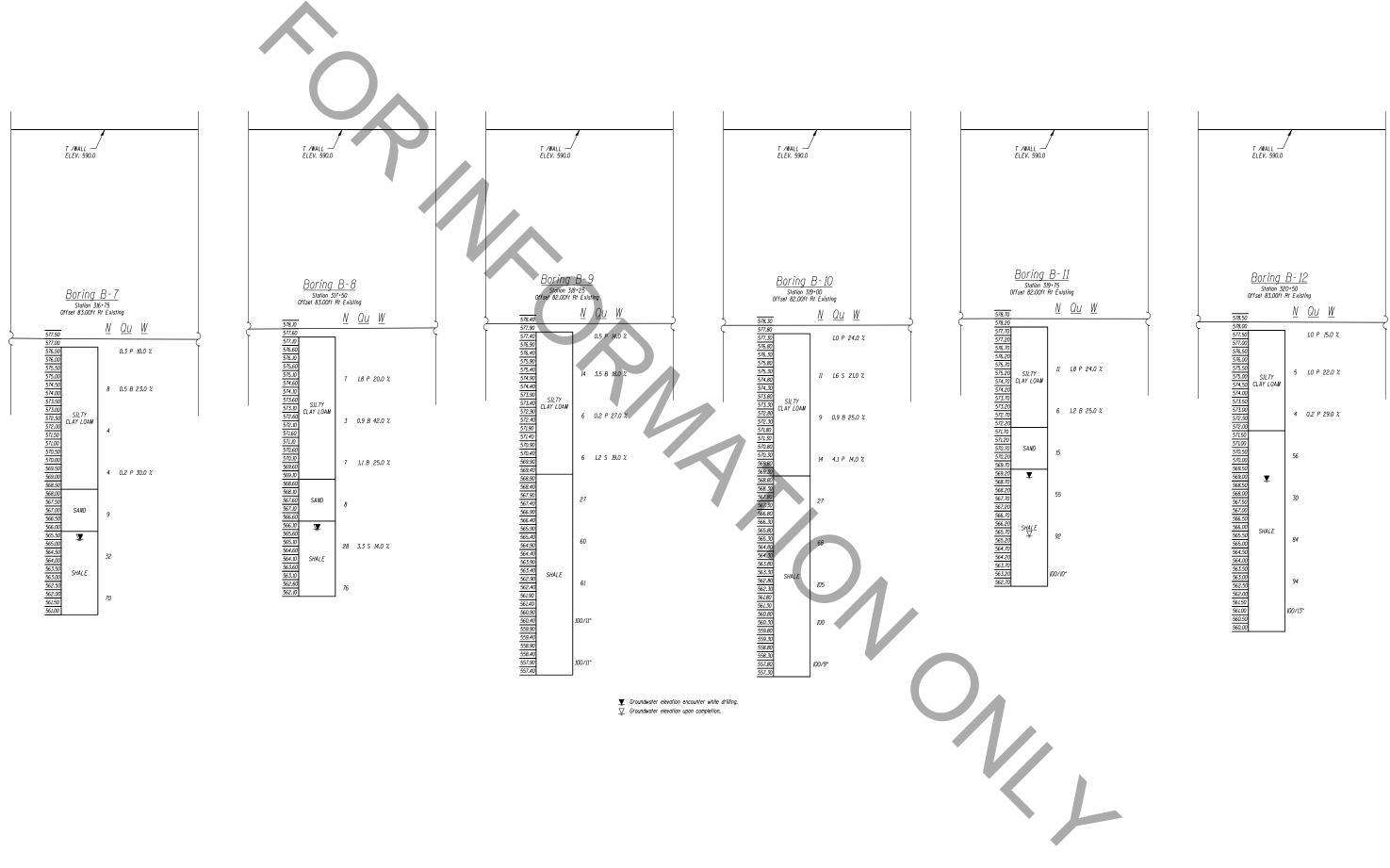
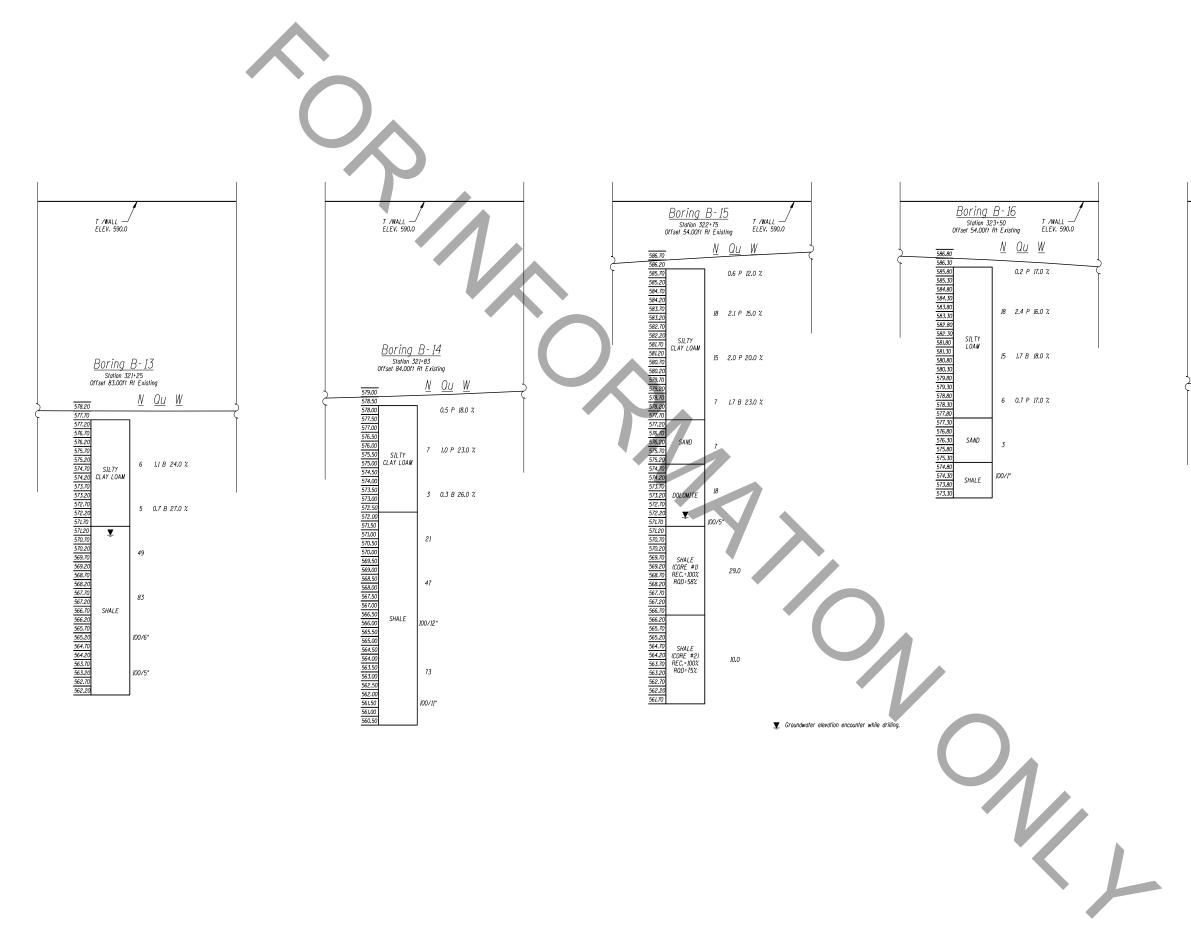


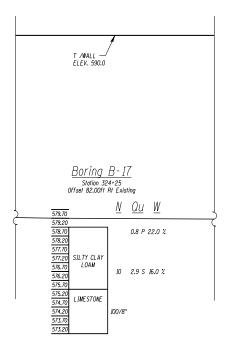
Exhibit D- Subsurface Data Profile

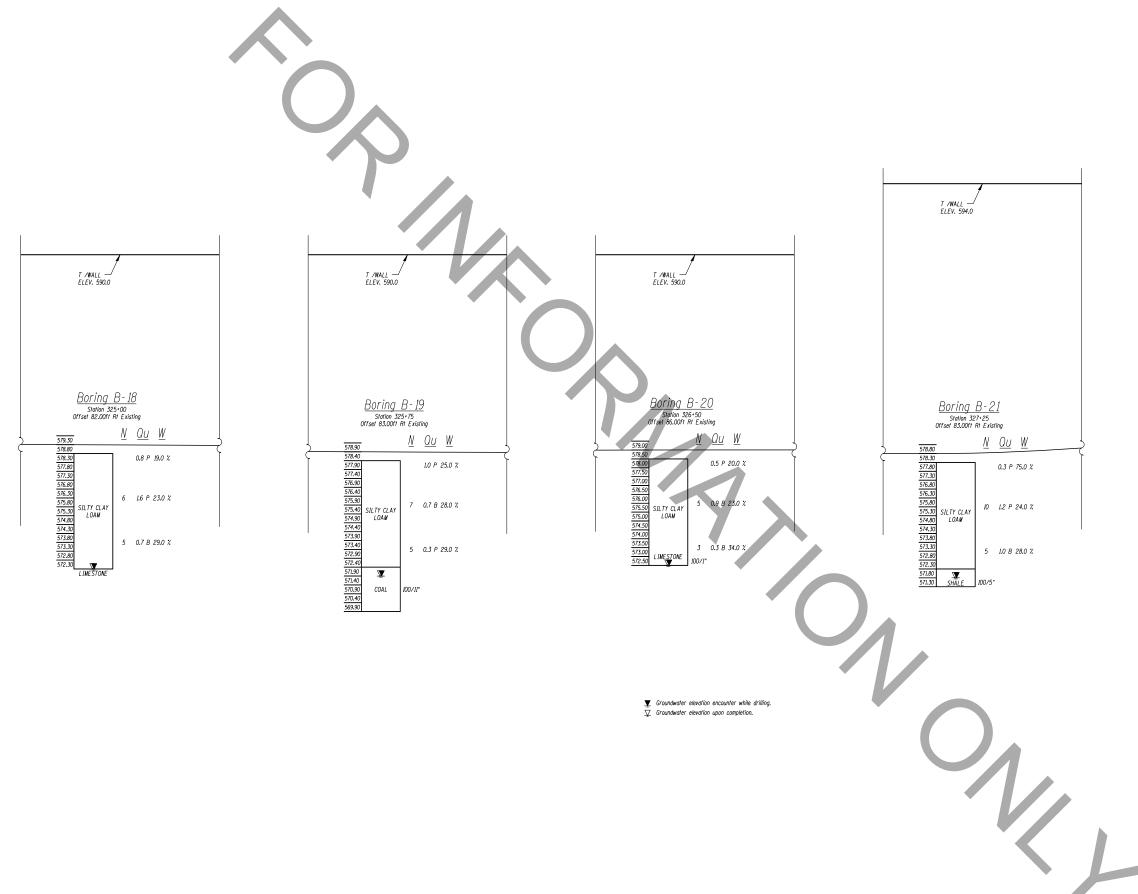


▼ Groundwater elevation encounter while drilling. Groundwater elevation upon completion.









T /WALL —/ ELEV. 594.0 <u>Boring B-22</u> Station 328+00 Offset 54.00ft Rt Existing <u>N Qu W</u> 588.60
 588.0

 587.60

 587.60

 587.10

 586.60

 585.0

 585.0

 585.0

 585.0

 585.0

 585.0

 585.0

 585.0

 585.0

 585.0

 585.0

 585.0

 585.0

 582.0

 581.0

 581.0

 581.0

 581.0

 581.0

 581.0

 581.0

 581.0

 581.0

 581.0

 581.0

 577.0.0

 577.0.0

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 577.0.0

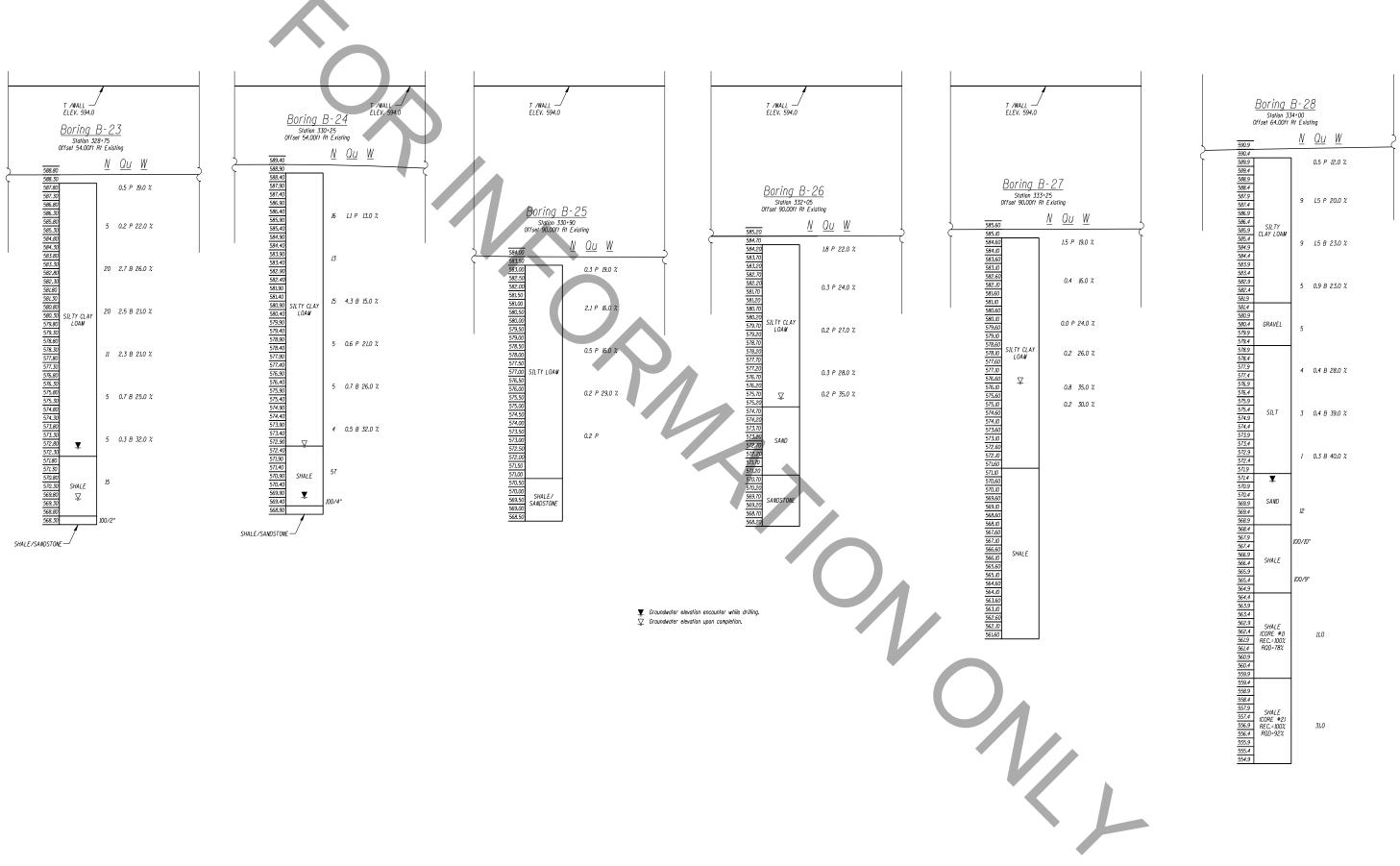
 577.0.0

 570.00

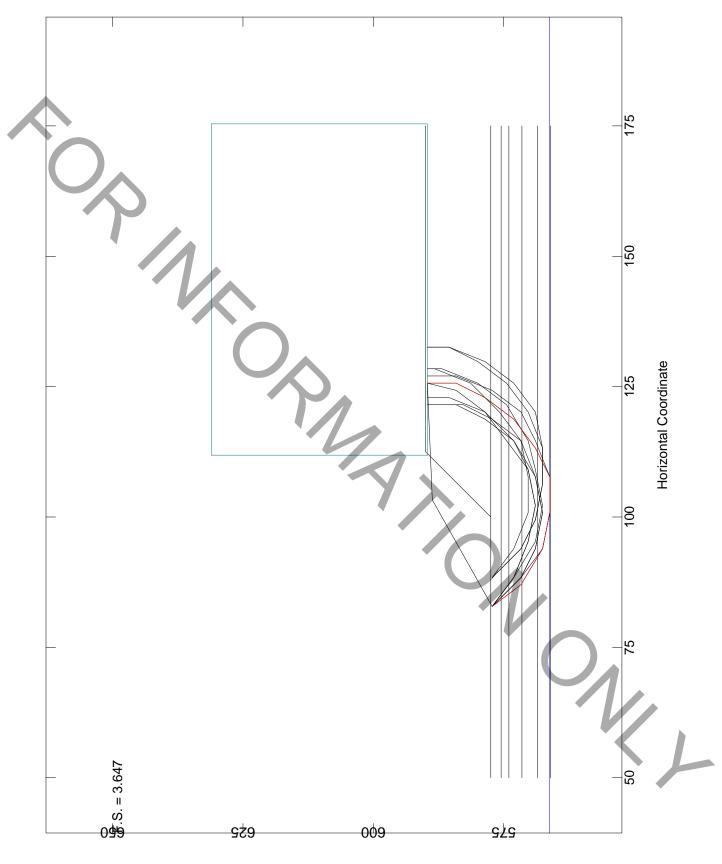
 570.00

 570.00
 8 0.5 S 22.0 % 15 1.1 S 19.0 % 12 3.7 B 19.0 % SILTY CLAY LOAM 8 I.O B 25.0 % 5 1.0 S 26.0 % 4 0.4 B 33.0 % 25 9.0 % 65 SHALE 100/11* 100/11*









Vertical Coordinate