Appendix D

Geotechnical Report Limitations and Guidelines for Use

EXHIBIT _____

Appendix D Geotechnical Report Limitations and Guidelines for Use Report No. 28-00500

D.1 REFERENCE

This appendix provides information to help you manage your risks relating to subsurface problems which are caused by construction delays, cost overruns, claims, and disputes. This information was developed and provided by ASFE¹, of which, we are a member firm.

D.2 RISK MANAGEMENT INFORMATION

D.2.1 Geotechnical Services are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. And no one, not even you, should apply the report for any purpose or project except the one originally contemplated.

D.2.2 Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

D.2.3 A Geotechnical Engineering Report is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typically factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- · composition of the design team, or
- project ownership.

As a general rule, always inform your geotechnical engineer of project changes, even minor ones, and request an assessment of their impact. Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.

D.2.4 Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. Do not rely on a geotechnical engineering report whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. Always contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

¹ ASFE, 8811 Colesville Road/Suite G106, Silver Spring, MD 20910 Telephone: 301/565-2733: www.asfe.org

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D.2.5 Most Geotechnical Findings Are Professional Opinions

Site exploration identified subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

D.2.6 A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

D.2.7 Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognizes that separating logs from the report can elevate risk.

D.2.8 Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, but preface it with a clearly written letter of transmittal. In the letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

D.2.9 Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their report. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.

D.2.10 Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a geoenvironmental study differ significantly from those used to perform a geotechnical study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Unanticipated environmental problems have led to numerous project failures. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. Do not rely on an environmental report prepared for someone else.

AASHTO SOIL CLASSIFICATION SYSTEM

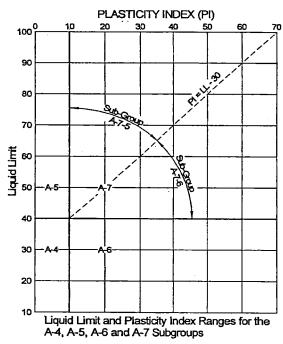
AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

Classification of Soils and Soil-Aggregate Mixtures

General Classification			Gra	nular Mate	rials				Silt-Clay	Materials	
General Classification		(3	5% or less	passing N	o. 200 sie	ve)		(More tha	n 35% pa	ssing No. 2	200 sieve
	Α	-1			Α	-2					A-7
Group Classification	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	A-7-5 A-7-6
Sieve Analysis, Percent passing:											76.40
No. 10 (2.00 mm)	50 max.	<i>.</i> .									
No. 40 (0.425 mm)	30 max.	50 max.	51 min.								
No. 200 (0.075 mm)	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.	36 min.	36 min.	36 min.	36 min.
Characteristics of Fraction Passing No. 40 (0.425 mm)											
Liquid limit				40 max.	41 min.	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.
Plasticity index	6 п	nax.	N.P.	10 max.	10 max.	11 min.	11 min.	10 max.	10 max.	11 min.	11 min.
Usual Types of Significant Constituent Materials	s of Significant Constituent Materials Stone Fragme Gravel and S						Sand	Silty	Soils	Claye	y Soils
General Ratings as Subgrade			Exc	ellent to G	iood				Fair to	Poor	

The placing of A-3 before A-2 is necessary in the "left to right elimination process" and does not indicate superiority of A-3 over A-2.

Plasticity index of A-7-5 subgroup is equal to or less than LL minus 30. Plasticity index of A-7-6 subgroup is greater than LL minus 30.



Definitions of Gravel, Sand and Silt-Clay

The terms "gravel", "coarse sand", "fine sand" and "sit-clay", as determinable from the minimum test data required in this classification arrangement and as used in subsequent word descriptions are defined as follows:

GRAVEL - Material passing sleve with 3-in. square openings and retained on the No. 10 sieve.

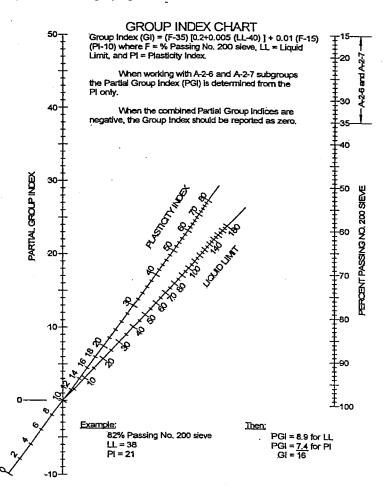
COARSE SAND - Material passing the No. 10 sieve and retained on the No. 40 sieve.

FINE SAND - Material passing the No. 40 sleve and retained on the No. 200 sleve.

COMBINED SILT AND CLAY - Material passing the No. 200 sleve

BOULDERS (retained on 3-in, sieve) should be excluded from the portion of the sample to which the classification is applied, but the percentage of such material, if any, in the sample should be recorded.

The term "sity" is applied to fine material having plasticity index of 10 or less and the term "clayey" is applied to fine material having plasticity index of 11 or greater.



UNIFIED SOIL CLASSIFICATION SYSTEM ASTM Designations: D 2487, D2488

AMERICAN ENGINEERING TESTING, INC.



					Soil Classification
Criteria fo	or Assigning Group Sy	mbols and Group Na	mes Using Laboratory Tests ^A	Group Symbol	Group Name ^B
Coarse-Grained Soils More	Gravels More than 50% coarse	Clean Gravels Less than 5%	Cu≥4 and 1≤Cc≤3 ^E	GW	Well graded gravel
than 50% retained on	fraction retained on No. 4 sieve	fines ^C	Cu<4 and/or 1>Cc>3 ^E	GP	Poorly graded gravel
No. 200 sieve		Gravels with Fines more	Fines classify as ML or MH	GM	Silty gravel ^{F.G.H}
		than 12% fines ^C	Fines classify as CL or CH	GC	Clayey gravel FG.H
	Sands 50% or more of coarse	Clean Sands Less than 5%	Cu≥6 and 1≤Cc≤3 ^E	sw	Well-graded sand
	fraction passes No. 4 sieve	fines ^D	Cu<6 and/or 1>Cc>3 ^E	SP	Poorly-graded sand
	•	Sands with Fines more	Fines classify as ML or MH	SM	Silty sand ^{GRI}
··		than 12% fines D	Fines classify as CL or CH	SC	Clayey sand G.E.I
Fine-Grained Soils 50% or	Silts and Clays Liquid limit less	inorganic	PI>7 and plots on or above "A" line	CL	Lean clay
more passes the No. 200	than 50		PI<4 or plots below "A" line	ML	Silt ^{KLM}
sieve	•	organic	Liquid limit-oven dried <0.75	OL	Organic clay
(see Plasticity Chart below)			Liquid limit - not dried		Organic silt KLMO
•	Silts and Clays Liquid limit 50	inorganic	PI plots on or above "A" line	СН	Fat clay ^{KLM}
	or more		PI plots below "A" line	МН	Elastic silt ^{ELM}
	•	organic	Liquid limit-oven dried <0.75	OH	Organic clay
 			Liquid limit – not dried		Organic silt ^{KLMQ}
Highly organic soil			Primarily organic matter, dark in color, and organic in odor	PT	Peat ^R .
s	IEVE ANALYSIS		80/		

Notes ABased on the material passing the 3-in (75-mm) sieve.

Bif field sample contained cobbles or

boulders, or both, add "with cobbles or boulders, or both" to group name. Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt

GW-GC well-graded gravel with clay GP-GM poorly graded gravel with silt GP-GC poorly graded gravel with clay DSands with 5 to 12% fines require dual symbols:

SW-SM well-graded sand with silt SW-SC well-graded sand with clay SP-SM poorly graded sand with silt SP-SC poorly graded sand with clay

 $(D_{30})^2$ $E_{Cu} = D_{60} / D_{10}$ Cc= D10 X D60

FIf soil contains ≥15% sand, add "with sand" to group name.

GIf fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

HIf fines are organic, add "with organic fines" to group name. If soil contains ≥15% gravel, add "with gravel, and with gravel, and with gravel to group name.

If Atterberg limits plot is hatched area, soils is a CL-ML silty clay.

If soil contains 15 to 29% plus No. 200 add "with sand" or "with gravel", whichever is predominant.

LIf soil contains ≥30% plus No. 200, predominantly sand, add "sandy" to

group name. MIf soil contains ≥30% plus No. 200, predominantly gravel, add "gravelly" to group name.

NPl≥4 and plots on or above "A" line. OPI<4 or plots below "A" line. PPl plots on or above "A" line.

QPI plots below "A" line.

RFiber Content description shown below.

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7	For classification of fine-contract soles and fine-grained hadden of converse stranged soles.
	Equation of A-line
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ער אלא	
	MH or OH
	ML or OL
١	.0 16 20 20 40 50 60 70 80 80 100 UQUD LIMT (LL) Plasticity Chart

	ADDITIONAL TERM	UNOLOGY N	OTES USED BY AE	T FOR SOIL II	DENTIFICATION AN	DESCRIPTION	
Term Boulders Cobbles Gravel Sand	Grain Size Particle Size Over 12" 3" to 12" #4 sieve to 3" #200 to #4 sieve	Grave Term A Little Grav With Gravel Gravelly	l Percentages Percent	Consistent Term Very Soft Soft Firm	oy of Plastic Soils N-Value, BPF less than 2 2 - 4 5 - 8	Relative Density Term Very Loose Loose Medium Dense	v of Non-Plastic Soils N-Value, BPF 0 - 4 5 - 10 11 - 30
Fines (silt & cl	ay) Pass #200 sieve			Stiff Very Stiff Hard	9 - 15 16 - 30 Greater than 30	Dense Very Dense	31 - 50 Greater than 50
Mo D (Dry): M (Moist): W (Wet/ Waterbearing): F (Frozen):	isture/Frost Condition (MC Column) Absense of moisture, dusty, dry to touch. Damp, although free water not visible. Soil may still have a high water content (over "optimum"). Free water visible intended to describe non-plastic soils. Waterbearing usually relates to sands and sand with silt. Soil frozen		Layers less than ½" thick of differing material or color. Pockets or layers greater than ½" thick of differing material or color.	Peat Term Fibric Peat: Hemic Peat: Sapric Peat:	Description Fiber Content (Visual Estimate) Greater than 67% 33 - 67% Less than 33%	Soils are described as and is judged to have content to influence it Slightly organic used Root Ing. With roots: Judged of roots properti. Trace roots: Small root be in a	lusions to have sufficient quantity to influence the soil

Symbol

qu:

R: RQD:

SA:

TRX: VSR:

VSU:

WC:

%-200:

Symbol	Definition
B,H,N:	Size of flush-joint casing
CA:	Crew Assistant (initials)
CAS:	Pipe casing, number indicates nominal diameter in inches
CC:	Crew Chief (initials)
COT:	Clean-out tube
DC:	Drive casing; number indicates diameter in inches
DM:	Drilling mud or bentonite slurry
DR:	Driller (initials)
DS:	Disturbed sample from auger flights
FA:	Flight auger; number indicates outside diameter in inches
HA:	Hand auger; number indicates outside diameter
HSA:	Hollow stem auger; number indicates inside diameter in inches
LG:	Field logger (initials)
MC:	Column used to describe moisture condition of samples and for the ground water level symbols
N (BPF):	
NQ:	NQ wireline core barrel
PQ:	PQ wireline core barrel
RD:	Rotary drilling with fluid and roller or drag bit
REC:	In split-spoon (see notes) and thin-walled tube sampling, the recovered length (in inches) of sample. In rock coring, the length of core recovered (expressed as percent of the total core run). Zero indicates no sample recovered.
REV:	Revert drilling fluid
SS:	Standard split-spoon sampler (steel; 1%" is inside diameter; 2" outside diameter); unless indicated otherwise
SU	Spin-up sample from hollow stem auger
TW:	Thin-walled tube; number indicates inside diameter in inches
WASH:	Sample of material obtained by screening returning rotary drilling fluid or by which has collected inside the borehole after "falling" through drilling fluid
WH:	Sampler advanced by static weight of drill rod and 140-pound hammer
WR:	Sampler advanced by static weight of drill rod
94mm:	94 millimeter wireline core barrel

Water level directly measured in boring

Estimated water level based solely on sample

Cymbol	Definition
CONS:	One-dimensional consolidation test
DEN:	Dry density, pcf
DST:	Direct shear test
E:	Pressuremeter Modulus, tsf
HYD:	Hydrometer analysis
LL:	Liquid Limit, %
LP:	Pressuremeter Limit Pressure, tsf
OC:	Organic Content, %
PERM:	Coefficient of permeability (K) test; F - Field;
	L - Laboratory
PL:	Plastic Limit, %
\mathbf{q}_{p} :	Pocket Penetrometer strength, tsf (approximate)
q _c :	Static cone bearing pressure, tsf

Unconfined compressive strength, psf

Rock Quality Designation of Rock Core, in percent (aggregate length of core pieces 4" or more in length

Electrical Resistivity, ohm-cms

as a percent of total core run)

Triaxial compression test

Sieve analysis

TEST SYMBOLS

Definition

STANDARD PENETRATION TEST NOTES

Water content, as percent of dry weight

Percent of material finer than #200 sieve

Vane shear strength, remoulded (field), psf

Vane shear strength, undisturbed (field), psf

The standard penetration test consists of driving the sampler with a 140 pound hammer and counting the number of blows applied in each of three 6" increments of penetration. If the sampler is driven less than 18" (usually in highly resistant material), permitted in ASTM:D1586, the blows for each complete 6" increment and for each partial increment is on the boring log. For partial increments, the number of blows is shown to the nearest 0.1' below the slash.

The length of sample recovered, as shown on the "REC" column, may be greater than the distance indicated in the N column. The disparity is because the N-value is recorded below the initial 6" set (unless partial penetration defined in ASTM:D1586 is encountered) whereas the length of sample recovered is for the entire sampler drive (which may even extend more than 18").

appearance



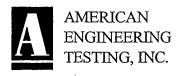
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0-3	3.8' Direct Push	DATE	TIME	SAMPI DEPT	LED	CASING DEPTH	CAV DE	E-IN PTH	FI	DRILLIN UID LE	VEL	WATE LEVE	R L	THE A'	TTACI	ÆD
														SHEET		
BORING COMPL	G ETED: 3/30/12				-				L					XPLA1 ERMIN		
DR: NO						 			-				\dashv		IS LOG	



	AET JC	B NO: 28-00500						LC	G OF	ВС	RING N	O	В	-13	(p. 1	of 1))
	PROJE	Pepin Co. Roads	s; Pepin	County, V	WI_			-						-			
	DEPTH IN FEET	SURFACE ELEVATION: MATERIAL I)FSCRIPTIO	 ON		GE	EOLOGY	N	МС	S.	AMPLE TYPE	REC IN.	FIELI	r	BORA	г	$\overline{}$
	LEET	4.5" Bituminous pavement			<u> </u>	FILI	<u></u>			Ш			WC	DEN	LL	PL ———	% - #20(
		9.5" FILL, sand with silt ar dark brown (A-1-a)	nd gravel,	brown and		=											
	1						•										
		FILL, silty sand, fine grain brown (A-2-4)	ed, a little	gravel, dar	k												
	_										DP	35		,			
	2 –																
	3 -																
																	
		END OF BORING															-
4/20/12																	
CORP 28-00500.GPJ AET+CPT+WELL.GDT 4/20/12																	
CPT+W	DEP'	TH: DRILLING METHOD			WAT	ERIF	EVEL MEA	य वा 12	MEN	27							
PJ AET	0-3		DATE	TIME	SAMPI DEPI		CASING DEPTH	CAV		<u> </u>	ORILLIN UID LE	IG VEL	WATE LEVE		VOTE: THE A		
00500.C							-		- .					— i	SHEET		į
1RP 28-	BORING	3/20/22													XPLAI ERMIN		- 1
AET CO	DR: NO	ÉTED: 3/30/12 D LG: TD Rig: 77										+		_ ''		SLOG	1



AET JO	OB NO: 28-00500	•	LO	G OF	во	RINGN	0	B-	-14	(p. 1	of 1)					
PROJEC	CT: Pepin Co. Roads	; Pepin C	County, V	VI								-				
DEPTH IN FEET	SURFACE ELEVATION:				GE	EOLOGY	N	мс	SĄ	MPLE TYPE	REC IN.			BORAT	ORY 7	ESTS
FEET	MATERIAL D		N 		FIL				m	ITE	ш.	WC	DEN	LL	PL '	%-#200
	2.25" Bituminous pavemen		3		FIL											
. •	6.5" FILL, sand with silt ar dark brown (A-1-a)	id gravei, o	rown and			į									;	
1 -	FILL, silty sand, fine grain (A-2-4)	ed, dark bro	awo													
2 —	SAND WITH SILT, a little		1.11	CO	ARSE				DP	37				e.		
	(SP-SM) (A-1-b)	ЭМП		ALI	LUVIUM											
	•									·						
	•														i	
3 —																
												1				
	·															
									Ш							
	END OF BORING				 			<u> </u>	Ш				_	 		
	END OF BORING		•													
DEP	TH: DRILLING METHOD			WAT	ER L	EVEL MEA	SURE	EMEN	rs	L	L	ـــــــــــــــــــــــــــــــــــ	'	NOTE:	REFE	R TO
Λ.	3.8' Direct Push	DATE	TIME	SAMPI DEPT	LED	CASING DEPTH	CAV	Æ-IN PTH	F	DRILLI JUID LE	NG VEL	WATI		THE A		- 1
U	2.0 Diffect i fight												=	SHEET	S FOR	AN
													I	EXPLA	NATIC	N OF
BORIN COMPI	G LETED: 3/30/12												T	ERMIN		t
DR: N	O LG: TD Rig: 77		_					L					TH	IS LOC	j .	



	AET JC	B NO: 28-00500		LC	G OF	ВС	RING N	0	B	-15	(p. 1	of 1))			
	PROJE	CT: Pepin Co. Roads	s; Pepin Co	unty, W	<u>Л</u>											
	DEPTH IN FEET	SURFACE ELEVATION:			_	GEOLOGY	N	MC	S	AMPLE TYPE	REC	FIELI	& LA	BORA	TORY '	TESTS
	FEET	MATERIAL I 3" Bituminous pavement	DESCRIPTION			THE T				TYPE	IN.	WC	DEN	LL	PL	6-#20
		5" Bituminous pavement				FILL										
		6" FILL, sand with silt and dark brown (A-1-a)	gravel, brow	n and												
		dark blown (A-1-a)														
		Y TO A Y CY A Y Y	(677.)	•	7///											
		LEAN CLAY, gray to bro	wn (CL) (A-6))		FINE ALLUVIUM										
	1 -															
								ŀ								
										DP	37					
	2 –								Dr	37						
														·		
	3 -															
																ļ.
ı																
	Ī	END OF BORING							111							
20/12					ŀ											
3DT 4/	-															
WELL.																
CORP 28-00500.GPJ AET+CPT+WELL.GDT 4/20/12	DEP	TH: DRILLING METHOD	· 		WATE	ER LEVEL MEA	SURF		rs			L				
AET		•	DATE	TIME S	SAMPL DEPT				_	DRILLIN UID LE	īĢ.	WATE LEVE			REFEI LTACI	
500.GP	0-3	0-3.8' Direct Push				n DEFIH	DEI	1H	rL	OID LE	VEL	LEVE			S FOR	
28-00															OITA	
S S	BORING COMPL	FIED: 3/30/12											TI	ERMIN	OLOG	Y ON
Ā	DR: NO	D LG: TD Rig: 7 7												THI	S LOC	}



AET JO							LC	G OF	ВС	RING N	Ю	В	-16	(p. 1	of 1))
PROJE	CT: Pepin Co. Roads	; Pepin (County,	WI	,											
DEPTH IN FEET	SURFACE ELEVATION:				GEO:	LOGY	N	мс	S	AMPLE TYPE	REC IN.			BORA		
FEET	MATERIAL I 2.5" Bituminous pavement)N		FILL				 	T	111.	WC	DEN	LL	PL	%-#2 0
i e	6" FILL, sand with silt and limestone, light brown (A-	gravel, cri	ushed													
1	11.5" FILL, sand, fine grai	ned, brown	ı (A-3)													
2 —	LEAN CLAY, gray to brow	CL-ML)		FINE ALLU	VIUM				DP	36	18		27	20		
							·									
3 —										-						
DEP 0-3 BORIN COMPI	END OF BORING															
					<u></u>											
DEP	TH: DRILLING METHOD					EL MEA			_		TC 1			NOTE:	REFE	R TO
0-3	0-3.8' Direct Push DATE TIME				ED C	ASING EPTH	DE	Æ-IN PTH	FI	DRILLI LUID LE	VEL	WATE	IR IL	THE A	TTAC	HED
				<u> </u>										SHEET		
BORIN	G			 		_			\vdash					EDLO		
	LETED: 3/30/12								\vdash				1	ERMIN TH	IS LO	
DR: N	O LG: TD Rig: 77		<u> </u>	1			1		1		1		- 1	ın	יים דיסר	,



AET JO	DB NO: 28-00500					LO	G OF	во	RING N	Ю	В	-17	(p. 1	of 1)		
PROJE	CT: Pepin Co. Roads	s; Pepin (County, V	VI												
DEPTH IN FEET	SURFACE ELEVATION:				GEO	LOGY	N	МС	SĄ	AMPLE LYPE	REC		1	BORA	ORY 1	ESTS
FEET	MATERIAL I 3.5" Bituminous pavement		ON	-1	FILL				100	IXPE	īN.	WC	DEN	LL	PL '	% -# 200
	3.3 Dituminous pavement				FILL											
	5.5" FILL, sand with silt at crushed limestone (A-1-a)	nd gravel, l	ight brown	,	-											
	9" FILL, sand, fine grained	l, brown (A	A-3)	 	-											
1 -					ļ											
							-									
	2.5" FILL, sand with silt at limestone, light brown (A-	nd gravel,	crushed													
	LEAN CLAY, gray to brown		N-6)		FINE	JVIUM										
2 -					ALL	O V I O IVI				DP	35					
		•														
3																
						;										
	END OF BORING															
DEP	TH: DRILLING METHOD			WAT	ER LEV	VEL MEA	SURE	MEN	rs L	L	<u> </u>	1	1	NOTE:	BEEE	R TO
n_	3.8' Direct Push	DATE	TIME	SAMPI DEP1	LED C	CASING DEPTH	CAV DE	Æ-IN PTH	FI	DRILLII JUID LE	NG VEL	WATI		THE A		·
	DI OCC I USII												-	SHEET	S FOR	AN
יינו מיט מ	G													XPLA		
	BORING COMPLETED: 3/30/12								-				r	ERMIN		
DR: N	DR: NO LG: TD Rig: 77								<u></u>					IH	IS LOC	ı



AET JO	DB NO: 28-00500						LC	G OF	BO	RING N	О.	B	-18	(p. 1	of 1))
PROJE		; Pepin (County, V	WI .												
DEPTH	SURFACE ELEVATION:				GE	EOLOGY			SA	MPI E	REC	FIELI	D&LA	BORA	ORY	TESTS
DEPTH IN FEET	MATERIAL I	DESCRIPTIO	DN .			CECCI	N	MC	ָ֖֖֖֖֖֓֞֓֓֓֓֓֓֓֓֓֟֟֓֓֓֟֟֓֓֓֟֟֓֓֓֟֟֓֓֓֟֟֓	MPLE TYPE	ĬŇ.	WC	DEN	LL	PL	⁄6-#200
	2.5" Bituminous pavement				FILI	L										
	4.5" FILL, sand with silt ar and brown (A-1-a)	nd gravel, o	dark brown													4
	8.5" FILL, sand, fine grain	ed, brown	(A-3)			:										
						,										
												3	ļ			3
1 -									H							
	FILL, silty sand with grave and gray (A-1-b)	el, brown, o	dark brown	١							:					
	and gray (TTT 5)															
	LEAN CLAY, gray (CL) (A-6)			FIN	E					-					
2 -	1				ALI	LUVIUM				DP	37					
,						•										
3 -																
						•										
									Ш		L.		<u> </u>	<u> </u>		
	END OF BORING															
7 15																
} 5																
DEL	TH: DRILLING METHOD			WAT	FDII	EVEL MEA	C1 1D1	- NENT	TC		<u></u>		1	<u> </u>	L	<u> </u>
	DATE TIME				LED	CASING DEPTH		VE-IN		DRILLI	NG	WAT		NOTE:		_
0-	0-3.8' Direct Push				TH	DEPTH	DE	PTH	FI	DRILLI LUID LE	EVEL	WAT LEVI	EL	THE A		
<u> </u>		<u> </u>	 				<u> </u>		-	<u> </u>			,	SHEE EXPLA		
BORIN	NG LETED: 3/30/12			-				·	-							H ÖN
1	NO LG: TD Rig: 77								-						IS LO	



AET JO	DB NO: 28-00500					LC	G OF	BC	RING N	Ю	В	3-2	(p. 1	of 1)		
PROJE	CT: Pepin Co. Road	s; Pepin (County, V	VI												
DEPTH IN FEET	SURFACE ELEVATION:				GE	OLOGY	N	мс	Sz	AMPLE	REC	FIELI) & L	ABORA:	TORY 7	TESTS
FEET	MATERIAL		ON				IN	MC		AMPLE TYPE	REC IN.	WC	DEN	ILL	PL	⁄ ₆ -#200
	3.25" Bituminous pavemen	at			FILI											
,	10" FILL, sand with silt ar	d gravel, b	rown and		-											
į	dark brown (A-1-a)															
								:								
e e]		
1 -			•													
	FILL, sand with silt, fine g	rained, bro	wn, lenses													
	of lean clay (A-3)															
			•										}			
										DP	37					
2 -									Ш							
												1.				
				ļ												
3 —																Ì
37																
	END OF BORING			-	-	 -			Ш			ļ		<u> </u>		
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DEP	DEPTH: DRILLING METHOD					VEL MEA	SURE	MENT	L TS			<u></u>	^{L}T		n Drugg	
	0-3.8' Direct Push DATE TIME				ED	CASING DEPTH	CAV DEI	E-IN	Fr	ORILLIN	ig. T	WATE	R	NOTE: THE A'		- 1
0-3	0-3.8 Direct Fusii					DELTH	DE	111	rL	UID LE	VEL	LEVE	<u>-</u>	SHEET		
					\dashv							_	,	EXPLAN		- 1
BORIN COMPL	G LETED: 3/30/12								-			ERMIN				
	DR: NO LG: TD Rig: 77							-			_		\dashv	THI	S LOG	.



AI	ET JO	B NO: 28-00500		LC	G OF	ВО	RING N	o	В	-3 (p. 1 c	of 1)				
PR	ROJEC	T: Pepin Co. Roads	; Pepin (County, V	VI											
DEP	TH N ET	SURFACE ELEVATION:				GEOLOGY	N	MC	SĄ	AMPLE TYPE	REC		& LA	BORAT	ORY 1	ESTS
FÉI	ÈT	MATERIAL D	ESCRIPTIC	ON .		FILL			11111	YPE	IN.	WC	DEN	LL	PL	%-#20(
		3.5" Bituminous pavement				FILL										
:	ŀ	15" FILL, sand with silt and	i gravel, b	rown and												
		dark brown (A-1-a)						ļ								
	1 -															
		FILL, sand with silt, fine gr	rained, bro	own (A-3)			<u> </u>									
										DP	38		1			
	2 -															
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	3 —															
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	Ī	END OF BORING							Г	_						
0/12																
)T 4/2													İ			
ELL.G																
M+ Hdo Hdo Hdo Hdo Hdo Hdo Hdo Hdo Hdo Hdo		TH: DRILLING METHOD			XX7 A 'T	ER LEVEL MEA	ימוזט	EN AENT	L TS		<u></u>	<u> </u>	<u> </u>	<u></u>		
<u></u>	DEP'	IH: DRILLING METHOD	DATE	TIME				VE-IN	Τ:	DRILLI	NG	WAT	ER	NOTE:		
CORP 28-00500,GPJ AET+CPT+WELL.GDT 4/20/12	0-3.8' Direct Push				SAMP DEP	TH DEPTH	DE	PTH	FI	LUID LE	VEL	LEVI	EL	THE A		
38-005(\vdash					EXPLA		
BO CO	ORIN OMPI	G LETED: 3/30/12				-				 -				ERMIN		
		O LG: TD Rig: 77												TH	IS LOC	3



	AET JC	DB NO: 28-00500					LC	G OF	BC	RINGN	O	В	-4 (p. 1 (of 1)	
	PROJE	CT: Pepin Co. Road	s; Pepin	County, V	VI			_								
	DEPTH IN FEET	SURFACE ELEVATION:				GEOLOGY	N	MC	S	AMPLE TYPE	REC			BORA		Γ
	FEET	MATERIAL 3.25" Bituminous paveme		ON .	1	FILL			 	1112	111.	WC	DEN	LL	PL	% - #20(
	1	14.5" FILL, sand with silt dark brown (A-1-a) SAND, fine to medium gr	and gravel		i	COARSE ALLUVIUM										
	3 -	(A-3)				ALLUVIUM				DP	37					
CORP 28-00500.GPJ AET+CPT+WELL.GDT 4/20/12		END OF BORING														
T+CP	DEP	TH: DRILLING METHOD				ER LEVEL MEA			rs					VOTE:	REFE	R TO
3PJ AE	0-3	0-3.8' Direct Push DATE TIME			SAMPI DEPT	LED CASING TH DEPTH	CAV DE	Æ-IN PTH	FI	DRILLIN LUID LE	VEL	WATE LEVE		THE A		
00000		O DIS DAN DOLL HUM												SHEET	'S FOR	AN
P 28-0	DARRI	(C												XPLA)		
S		LETED: 3/30/12				_		_				T	ERMIN			
힏	DR: N	O LG: TD Rig: 77												TH	IS LOC	Ì



AET JO	OB NO: 28-00500				LC	G OF	BOR	ING N	0	В	-5 (p. 1 c	of 1)		
PROJE	Pepin Co. Roads	s; Pepin (County, V	WI											
DEPTH IN FEET	SURFACE ELEVATION:				GEOLOGY	N	мс	SAN	MPLE YPE	REC		D & LA	BORAT	FORY 7	TESTS
FËÈT	1		ON .	1	FILL		****	1111	YPE	IN.	WC	DEN	LL	PL '	⁄ ₀ -#20
	2.75" Bituminous pavemen				FILL										
	9" FILL, sand with silt and dark brown (A-1-a)	gravel, bro	own and												
	1.0														
1 -	FILL, sand, fine to medium (A-3)	a grainea, i	orown												
									DP	39					
2 -															
1															
3 -	-								-						
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	END OF BORING			_		<u> </u>					-	-	<u> </u>		
	END OF BOXING														
				'											
		·	·								<u> </u>				
DEI	PTH: DRILLING METHOD		Т		ER LEVEL MEA			1		1			NOTE:	REFE	R TO
0-	3.8' Direct Push	DATE	TIME	SAMP) DEP	LED CASING TH DEPTH	DE	/E-IN PTH	FLU	RILLIN JID LE	VEL VEL	WATI	ER EL	THE A	TTACI	HED
				ļ				_						IS FOR	
BORIN	NG PLETED: 3/30/12					-							EXPLAI ERMIN		
	LETED: 3/30/12 NO LG: TD Rig: 77													IS LOC	