



RIVER VALLEY TESTING CORP.

1280 Parkview Road
Green Bay, WI 54304
Telephone: 920/347-9040
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October 15, 2012

Mr. Michael Kaster
Village of Howard
1336 Cornell Road
Green Bay, WI 54313

Re: Report of Geotechnical Exploration
Proposed Development
Village of Howard, Wisconsin
RVT #G12-263

Mr. Kaster:

In accordance with your instructions, River Valley Testing Corp (RVT) has prepared this letter to document our services for the above referenced project. In fulfillment of the requested scope of services, RVT mobilized to the site to conduct six (6) standard penetration test soil borings in the vicinity of the proposed development, and prepared a letter to document the encountered subsurface soil and groundwater conditions. You authorized these services on August 7, 2012.

RVT performed the soil borings on October 11, 2012, using an all-terrain vehicle mounted rotary drilling rig. We extended all of the borings to a depth of 20' below the existing grade. Mr. Michael Kaster of the Village of Howard determined the general boring locations and depths, and RVT personnel located the soil borings at the site. The "Boring Location Sketch" included with this letter illustrates the location of the borings. After completion of the field exploration, a Geotechnical Engineer visually and manually classified the samples in the laboratory in accordance with the Unified Soil Classification System (USCS) and the American Association of State Highway and Transportation Officials (AASHTO) Classification System. The attached "Test Boring Logs" describe the depth and identification of the various strata, the groundwater level, and other pertinent information encountered in the borings. A description of the USCS soil classification system can also be found attached to this letter.

Further, RVT performed laboratory tests on some of the collected samples to determine in-situ moisture content (W) and percent material passing the #200 sieve (P200). The laboratory test results can be found on the boring logs adjacent to the number of the tested sample. In addition, we obtained calibrated spring penetrometer readings, P_q , for a majority of the cohesive soil samples. The P_q test results can be found on the boring logs in the unconfined compressive strength (Q_u) column. Portions of the soil samples will be held at RVT for a period of 30 days from the date of this letter and then will be discarded unless you request them to be shipped to a designated location.

The stratification of the soils and groundwater levels shown on the boring logs represent the subsurface conditions in the actual boring location; however, variations may occur at other times and locations at the site. Lines of demarcation represent the approximate boundary between the soil types, but the transition may be gradual.


The generalized soil profile indicated by the borings consisted of a 6" topsoil layer overlying existing fill soils that extended to a depth of between 18" and 4½' below the existing grade. Below the existing fill soils, glacial till soils extended to the termination depth of the borings. The existing fill consisted of sandy silt, silt, and sandy silty clay. In our opinion, the existing fill is more likely disturbed native soils from crop tillage and not imported material. The glacial till consisted of a variety of soil types that included lean clay, sandy lean clay, silt, sandy silt, silty clay, sandy silty clay, sand, sand with silt, silty sand and clayey sand. An exception to this profile occurred in Boring 5-12 and 6-12 because the borings did not encounter existing fill strata.

The drill crew observed a measureable groundwater level in all of the borings during drilling and noted it at a depth of between 6½' and 16' below the existing grade. Please note, the crew used drilling mud to advance the borings below the groundwater level. Therefore, the water level at the completion of drilling could not be determined because the drilling mud obscures it. The majority of the soils encountered in the borings have relatively free draining characteristics. Therefore, in our opinion, the observed groundwater level in the borings should be a reasonable indication of the static groundwater level depth at the time of this exploration program. However, groundwater levels can fluctuate with time due to seasonal variations in precipitation, lateral drainage conditions, and from location to location. The time of year and the weather history during the advancement of the borings should be considered when estimating groundwater levels at other points in time.

RVT prepared this letter in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this letter.

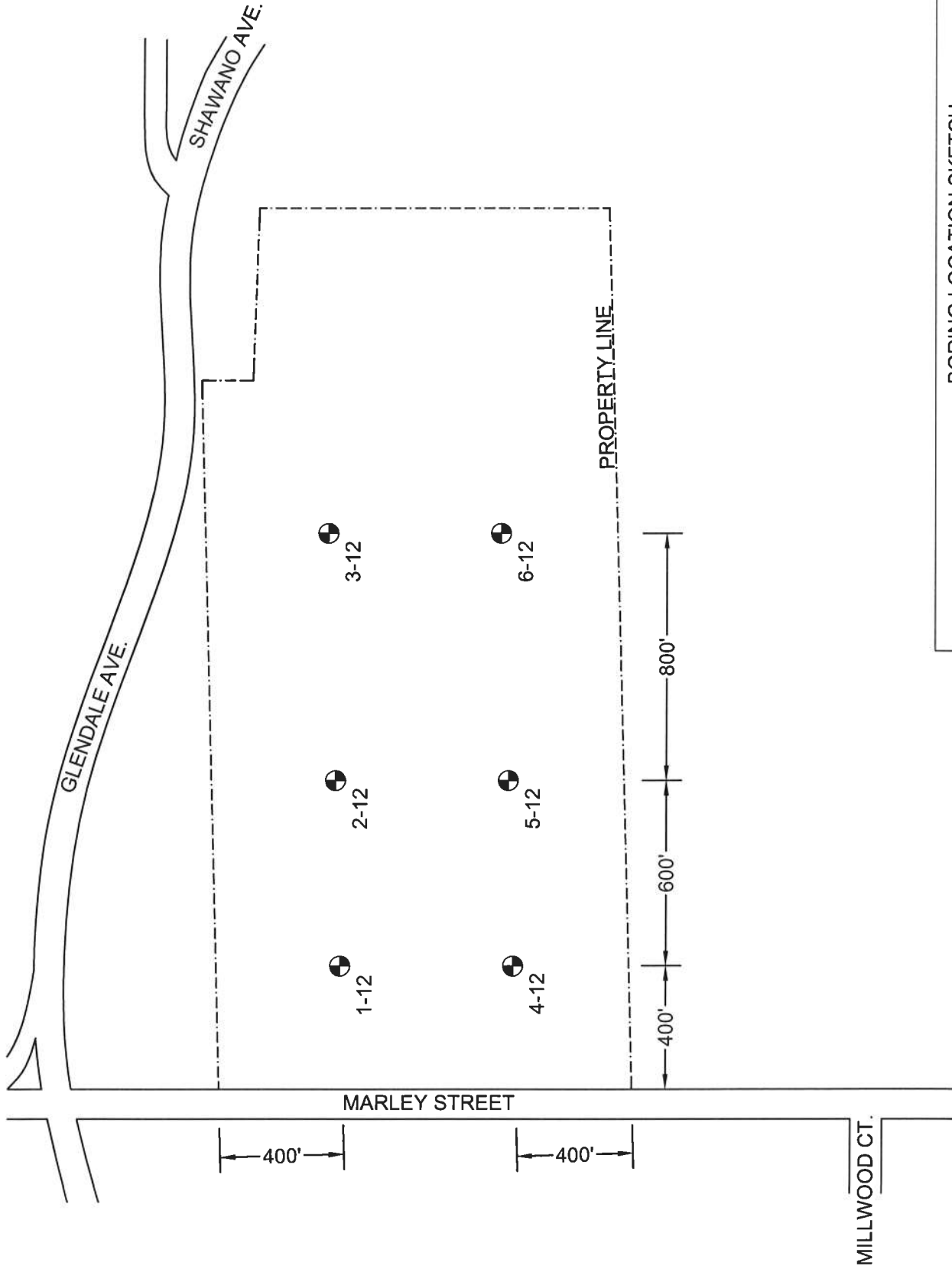
Sincerely,

RIVER VALLEY TESTING CORP.



Mark E. King, P.E.
Branch Manager

Attachments: Boring Location Sketch
Test Boring Logs
Unified Soil Classification System



LEGEND

- SOIL BORING LOCATION

NOTE: DRAWING NOT TO SCALE.

BORING LOCATION SKETCH

PROJECT: PROPOSED DEVELOPMENT
VILLAGE OF HOWARD, WISCONSIN

FILE NO: G12-263

DATE: 10/11/2012

BY: M. KING



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Madison
Wisconsin

Geotechnical, Environmental, and Construction Consulting

TEST BORING LOG

Project: PROPOSED DEVELOPMENT

Location: VILLAGE OF HOWARD, WISCONSIN

RVT File No: G12-263

Page: 1 of 1

Surface Elev: Not Det'n

Scale: 1" = 4'

Boring No: 1-12

GENERAL NOTES

Drilling Method:

HSA = Hollow Stem Auger
FA = Flight Auger
DM = Drilling Mud
_X = AX, BX, or NX Coring

Sampling Method:

SS = Split Spoon
3T = 3" Shelby Tube
F = Flight Auger Sample
B = Bag Sample
P = Test Pit Sample
CR = Core Recovery
NSR = No Sample Recovery
MH = Manual SPT Hammer
AH = Auto SPT Hammer

Water Level Symbol:

WLD = Water Level During Drilling
WLA = Water Level After Drilling
WL = Water Level At 24 Hours
WL__ = Water Level At __ Hours

Laboratory Test Symbols:

LL/PL = Liquid Limit/Plastic Limit
P200 = Percent Passing #200 Sieve
MA* = Mechanical Analysis
Qu = Unconfined Compressive Str
Pq = Hand Penetrometer Reading
DD = Dry Density
W = Moisture Content (by Weight)
RQD = Rock Quality Designation
* = See attached graph

DRILLING NOTES

3 1/4" HSA 0' to 10',

Started: 10/11/12

Completed: 10/11/12

Driller: GAB/HDS

Method: DM 10' to 18 1/2' (AH)

Depth (ft)	Blow Counts			Field Classification and Remarks Note: [] Indicates Possible Geologic Origin	Water Level Information	Sample		Laboratory Tests						
	0/6	6/12	Total (N)			No.	Type	W (%)	DD (pcf)	LL PL	Qu (psf)	Other		
6"	2	5		ORGANIC SILT, with Sand, dark brown, moist, rather stiff (CL) [A-8]										
18"	8	7	13	[TOPSOIL]		1	SS							
	7	10		FILL, mostly Sandy Silt, with a little Gravel, dark yellowish brown, moist, rather stiff (ML) [A-4]										
	13	15	23	[FILL]		2	SS	13				Pq (tsf) = 4.5	P200 = 62%	
5	4	8		SANDY SILTY CLAY, light olive brown, moist, rather stiff to stiff (CL-ML) [A-4]										
6	12	13	20	[GLACIAL TILL]		3	SS					Pq (tsf) = 4.5		
	12			LEAN CLAY, with Sand and Gravel, reddish brown, moist, stiff (CL) [A-6]										
	17		37	[GLACIAL TILL]		4	SS							
	12			SAND, with Silt, fine grain, brown to dark greyish brown, moist to water bearing, very dense to extremely dense (SP-SM) [A-3]										
	19	22	41	[GLACIAL TILL]	WLD	5	SS							
	13													
	18	20	38			6	SS							
	11													
	19	17	36			7	SS							
	14	21												
	22		43			8	SS							
	15													
20	26	28	54			9	SS							
				End of Boring at 20'										



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TEST BORING LOG

Project:	PROPOSED DEVELOPMENT		
Location:	VILLAGE OF HOWARD, WISCONSIN		
RVT File No:	G12-263	Page:	1 of 1
Surface Elev:	Not Det'n	Scale:	1" = 4'
Boring No:	2-12		

GENERAL NOTES

Drilling Method: HSA = Hollow Stem Auger FA = Flight Auger DM = Drilling Mud _X = AX, BX, or NX Coring	Sampling Method: SS = Split Spoon 3T = 3" Shelby Tube F = Flight Auger Sample B = Bag Sample P = Test Pit Sample CR = Core Recovery NSR = No Sample Recovery MH = Manual SPT Hammer AH = Auto SPT Hammer	Water Level Symbol: WLD = Water Level During Drilling WLA = Water Level After Drilling WL = Water Level At 24 Hours WL__ = Water Level At __ Hours	Laboratory Test Symbols: LL/PL = Liquid Limit/Plastic Limit P200 = Percent Passing #200 Sieve MA* = Mechanical Analysis Qu = Unconfined Compressive Str Pq = Hand Penetrometer Reading DD = Dry Density W = Moisture Content (by Weight) RQD = Rock Quality Designation * = See attached graph
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Started: 10/11/12 Completed: 10/11/12 Driller: GAB/HDS Method: 3 1/4" HSA 0' to 13', DM 13' to 18 1/2' (AH)

Depth (ft)	Blow Counts			Field Classification and Remarks Note: [] Indicates Possible Geologic Origin	Water Level Information	Sample		Laboratory Tests						
	0/6	6/12	Total (N)			No.	Type	W (%)	DD (pcf)	LL PL	Qu (psf)	Other		
6"	3	5		ORGANIC SILT, dark greyish brown, moist, rather stiff (OL) [A-8]										
18"	6	6	11	[TOPSOIL]		1	SS							
	5	6		FILL, mostly Silt, light brownish grey, moist, rather stiff (ML) [A-4]										
	7	6	13	[FILL]		2	SS					Pq (tsf) = 2.5		
4	3	4		SANDY SILTY CLAY, brown and light olive brown, moist, rather stiff (CL-ML) [A-4]										
5	11	12	15	[GLACIAL TILL]		3	SS							
6	5	6		LEAN CLAY, with Sand and Gravel, reddish brown, moist, rather stiff (CL) [A-6]										
	10		16	[GLACIAL TILL]		4	SS							
8		8		SILTY SAND, brown, moist, medium dense (SM) [A-2-4]										
	12	15	27	[GLACIAL TILL]		5	SS							
				SILT, dark yellowish brown, moist, rather stiff (ML) [A-4]										
		11		[GLACIAL TILL]	WLD									
	17	21	38	SAND, with Silt, fine grain, brown, moist to water bearing, dense to very dense (SP-SM) [A-3]		6	SS							
		12		[GLACIAL TILL]										
	17	22	39			7	SS	20					P200 = 6.3%	
	12	18												
	21		39			8	SS							
		12												
20	20	21	41			9	SS							
				End of Boring at 20'										



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TEST BORING LOG

Project:	PROPOSED DEVELOPMENT		
Location:	VILLAGE OF HOWARD, WISCONSIN		
RVT File No:	G12-263	Page:	1 of 1
Surface Elev:	Not Det'n	Scale:	1" = 4'
Boring No:	3-12		

GENERAL NOTES

Drilling Method: HSA = Hollow Stem Auger FA = Flight Auger DM = Drilling Mud _X = AX, BX, or NX Coring	Sampling Method: SS = Split Spoon 3T = 3" Shelby Tube F = Flight Auger Sample B = Bag Sample P = Test Pit Sample CR = Core Recovery NSR = No Sample Recovery MH = Manual SPT Hammer AH = Auto SPT Hammer	Water Level Symbol: WLD = Water Level During Drilling WLA = Water Level After Drilling WL = Water Level At 24 Hours WL__ = Water Level At __ Hours	Laboratory Test Symbols: LL/PL = Liquid Limit/Plastic Limit P200 = Percent Passing #200 Sieve MA* = Mechanical Analysis Qu = Unconfined Compressive Str Pq = Hand Penetrometer Reading DD = Dry Density W = Moisture Content (by Weight) RQD = Rock Quality Designation * = See attached graph
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Started: 10/11/12 Completed: 10/11/12 Driller: GAB/HDS Method: 3 1/4" HSA 0' to 16', DM 16' to 18 1/2' (AH)

Depth (ft)	Blow Counts			Field Classification and Remarks Note: [] Indicates Possible Geologic Origin	Water Level Information	Sample		Laboratory Tests							
	0/6	6/12	Total (N)			No.	Type	W (%)	DD (pcf)	LL PL	Qu (psf)	Other			
6"	5	6		ORGANIC SILT, dark greyish brown, moist, rather stiff (OL) [A-8]											
	8	10	14	[TOPSOIL]		1	SS								
3	5	5		FILL, mostly Silt, with Sand and a little Gravel, pale brown and brown, moist, rather stiff (ML) [A-4]											
4	8	8	13	[FILL]		2	SS								
	5	7		SILTY SAND, brown, moist, medium dense (SM) [A-2-4]											
	8	9	15	[GLACIAL TILL]		3	SS					Pq (tsf) = 2.5			
7	11			SANDY LEAN CLAY, reddish brown, moist, rather stiff to stiff (CL) [A-6]											
8	14		25	[GLACIAL TILL]		4	SS					Pq (tsf) = 4.5			
	8			SILTY SAND, brown, moist to water bearing, dense to extremely dense to very dense (SM) [A-2-4]											
	11	15	26	[GLACIAL TILL]		5	SS								
		11													
	21	30	51			6	SS								
		12													
	19	21	40			7	SS								
	15	18													
	18		36			8	SS								
		15													
20	19	19	38			9	SS								
				End of Boring at 20'											



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TEST BORING LOG

Project:	PROPOSED DEVELOPMENT		
Location:	VILLAGE OF HOWARD, WISCONSIN		
RVT File No:	G12-263	Page:	1 of 1
Surface Elev:	Not Det'n	Scale:	1" = 4'
		Boring No:	4-12

GENERAL NOTES

<u>Drilling Method:</u> HSA = Hollow Stem Auger FA = Flight Auger DM = Drilling Mud _X = AX, BX, or NX Coring	<u>Sampling Method:</u> SS = Split Spoon 3T = 3" Shelby Tube F = Flight Auger Sample B = Bag Sample P = Test Pit Sample CR = Core Recovery NSR = No Sample Recovery MH = Manual SPT Hammer AH = Auto SPT Hammer	<u>Water Level Symbol:</u> WLD = Water Level During Drilling WLA = Water Level After Drilling WL = Water Level At 24 Hours WL__ = Water Level At __ Hours	<u>Laboratory Test Symbols:</u> LL/PL = Liquid Limit/Plastic Limit P200 = Percent Passing #200 Sieve MA* = Mechanical Analysis Qu = Unconfined Compressive Str Pq = Hand Penetrometer Reading DD = Dry Density W = Moisture Content (by Weight) RQD = Rock Quality Designation * = See attached graph
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DRILLING NOTES

3 1/4" HSA 0' to 13',
Method: DM 13' to 18 1/2' (AH)

Started: 10/11/12 Completed: 10/11/12

Driller: GAB/HDS

Depth (ft)	Blow Counts			Field Classification and Remarks Note: [] Indicates Possible Geologic Origin	Water Level Information	Sample		Laboratory Tests						
	0/6	6/12	Total (N)			No.	Type	W (%)	DD (pcf)	LL PL	Qu (psf)	Other		
6"	3	4		ORGANIC SILT, with Sand, dark brown, moist, rather stiff (OL) [A-8]										
	6	6	10	[TOPSOIL]		1	SS							
	4	5		FILL mostly Sandy Silty Clay, brown and greyish brown, moist, rather stiff to medium (CL-ML) [A-4]										
	4	4	9	[FILL]		2	SS				Pq (tsf) = 4.5			
4 1/2	4	3		SAND, fine grain, brown, moist to water bearing, loose to dense (SP) [A-3]										
	2	3	5	[GLACIAL TILL]		3	SS							
	4	6												
	6		12			4	SS	22					P200 = 3.5%	
		5												
	6	6	12			5	SS							
		3												
	4	8	12			6	SS							
		4												
	6	12	18			7	SS							
		5												
	12		20			8	SS							
		5												
20	9	12	21	End of Boring at 20'		9	SS							



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TEST BORING LOG

Project: PROPOSED DEVELOPMENT

Location: VILLAGE OF HOWARD, WISCONSIN

RVT File No: G12-263

Page: 1 of 1

Surface Elev: Not Det'n

Scale: 1" = 4'

Boring No: 5-12

GENERAL NOTES

Drilling Method:

HSA = Hollow Stem Auger
FA = Flight Auger
DM = Drilling Mud
_X = AX, BX, or NX Coring

Sampling Method:

SS = Split Spoon
3T = 3" Shelby Tube
F = Flight Auger Sample
B = Bag Sample
P = Test Pit Sample
CR = Core Recovery
NSR = No Sample Recovery
MH = Manual SPT Hammer
AH = Auto SPT Hammer

Water Level Symbol:

WLD = Water Level During Drilling
WLA = Water Level After Drilling
WL = Water Level At 24 Hours
WL__ = Water Level At __ Hours

Laboratory Test Symbols:

LL/PL = Liquid Limit/Plastic Limit
P200 = Percent Passing #200 Sieve
MA* = Mechanical Analysis
Qu = Unconfined Compressive Str
Pq = Hand Penetrometer Reading
DD = Dry Density
W = Moisture Content (by Weight)
RQD = Rock Quality Designation
* = See attached graph

DRILLING NOTES

Started: 10/11/12

Completed: 10/11/12

Driller: GAB/HDS

3 1/4" HSA 0' to 16',
Method: DM 16' to 18 1/2' (AH)

Depth (ft)	Blow Counts			Field Classification and Remarks Note: [] Indicates Possible Geologic Origin	Water Level Information	Sample		Laboratory Tests							
	0/6	6/12	Total (N)			No.	Type	W (%)	DD (pcf)	LL PL	Qu (psf)	Other			
6"	2	3		ORGANIC SILT, very dark grey, moist, medium (OL) [A-8]											
	4	4	7	[TOPSOIL]		1	SS								
3	3	5		SANDY SILT, brown, moist, medium (ML) [A-4]											
	6	5	11	[GLACIAL TILL]		2	SS	6							P200 = 14%
4	3	4		SILTY SAND, brown, moist, medium dense (SM) [A-2-4]											
	4	6	8	[GLACIAL TILL]		3	SS								
6	4	7		CLAYEY SAND, dark brown to brown, moist, loose (SC) [A-6]											
	4	7	8	[GLACIAL TILL]		4	SS								
8	13		20	SAND, with Silt, fine grain, pale brown, moist, dense (SP-SM) [A-3]											
	13		13	[GLACIAL TILL]		5	SS								
	21	35	56	SAND, fine grain, brown, moist to water bearing, extremely dense to very dense to extremely dense (SP) [A-3]											
		16		[GLACIAL TILL]		6	SS								
	28	28	56												
		12													
	15	28	43		WLD	7	SS	21							P200 = 4.5%
		13													
	28		51			8	SS								
		13													
20	24	27	51			9	SS								
				End of Boring at 20'											



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TEST BORING LOG

Project: PROPOSED DEVELOPMENT

Location: VILLAGE OF HOWARD, WISCONSIN

RVT File No: G12-263

Page: 1 of 1

Surface Elev: Not Det'n

Scale: 1" = 4'

Boring No: 6-12

GENERAL NOTES

Drilling Method:
HSA = Hollow Stem Auger
FA = Flight Auger
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Sampling Method:
SS = Split Spoon
3T = 3" Shelby Tube
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B = Bag Sample
P = Test Pit Sample
CR = Core Recovery
NSR = No Sample Recovery
MH = Manual SPT Hammer
AH = Auto SPT Hammer

Water Level Symbol:
WLD = Water Level During Drilling
WLA = Water Level After Drilling
WL = Water Level At 24 Hours
WL__ = Water Level At __ Hours

Laboratory Test Symbols:
LL/PL = Liquid Limit/Plastic Limit
P200 = Percent Passing #200 Sieve
MA* = Mechanical Analysis
Qu = Unconfined Compressive Str
Pq = Hand Penetrometer Reading
DD = Dry Density
W = Moisture Content (by Weight)
RQD = Rock Quality Designation
* = See attached graph

Started: 10/11/12 Completed: 10/11/12 Driller: GAB/HDS Method: 3 1/4" HSA 0' to 6', DM 6' to 18 1/2' (AH)

Depth (ft)	Blow Counts			Field Classification and Remarks Note: [] Indicates Possible Geologic Origin	Water Level Information	Sample		Laboratory Tests						
	0/6	6/12	Total (N)			No.	Type	W (%)	DD (pcf)	LL PL	Qu (psf)	Other		
6"	1	3		ORGANIC SILT, black, moist, medium (OL) [A-8]										
	6	6	9	[TOPSOIL]		1	SS							
3	3	5		SANDY SILT, pale brown and brown, moist, medium (ML) [A-4]										
	6	6	11	[GLACIAL TILL]		2	SS				Pq (tsf) = 3.25			
5	2	4		SILTY CLAY, with Sand, light olive brown and brown, moist, rather stiff (CL-ML) [A-4]										
	6	5	10	[GLACIAL TILL]		3	SS	27					P200 = 17%	
	3	5		SILTY SAND, brown, moist to water bearing, medium dense to very dense (SM) [A-2-4]	WLD									
	10		15	[GLACIAL TILL]		4	SS							
	6													
	6	15	21			5	SS							
		10												
	16	16	32			6	SS							
		9												
	13	19	32			7	SS							
		12												
	20		38			8	SS							
		13												
20	18	19	37			9	SS							
				End of Boring at 20'										

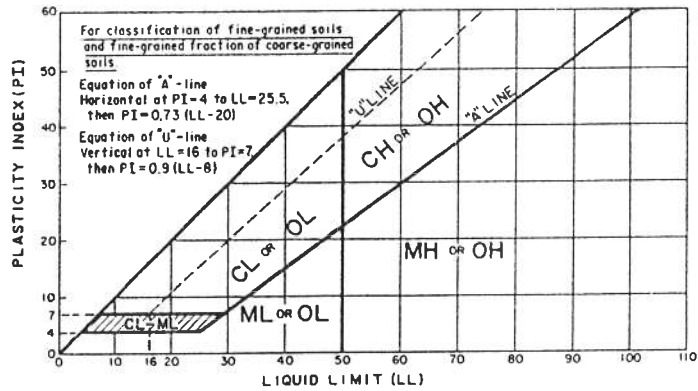
UNIFIED SOIL CLASSIFICATION SYSTEM

ASTM: D2487-90

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests^a

				Soil Classification		
				Group Symbol	Group Name ^b	
Coarse-Grained Soils: More than 50% retained on #200 sieve	Gravels:	Clean Gravels with less than 5% fines ^c	$Cu >= 4$ and $1 <= Cc <= 3^E$	GW	Well-graded gravel ^f	
		Gravels with more than 12% fines ^c	$Cu < 4$ and/or $1 > Cc > 3^E$	GP	Poorly graded gravel ^f	
		Gravels with more than 12% fines ^c	Fines classify as ML or MH	GM	Silty gravel ^{f, G, H}	
		Gravels with more than 12% fines ^c	Fines classify as CL or CH	GC	Clayey gravel ^{f, G, H}	
	Sands:	Clean Sands with less than 5% fines ^d	$Cu >= 6$ and $1 <= Cc <= 3^E$	SW	Well-graded sand	
		Sands with more than 12% fines ^d	$Cu < 6$ and/or $1 > Cc > 3^E$	SP	Poorly graded sand	
		Sands with more than 12% fines ^d	Fines classify as ML or MH	SM	Silty sand ^{d, H, J}	
		Sands with more than 12% fines ^d	Fines classify as CL or CH	SC	Clayey sand ^{d, H, J}	
	Fine-Grained Soils: 50% or more passes the #200 sieve	Silt and Clays: Liquid limit less than 50	Inorganic	$PI > 7$ and plots on or above "A" line ^g	CL	Lean clay ^{K, L, M}
				$PI < 4$ or plots below "A" line ^g	ML	Silt ^{K, L, M}
		Organic ^a	Liquid limit (oven dried) < 0.75	OL	Organic clay ^{K, L, M, N}	
			Liquid limit (not dried) < 0.75		Organic silt ^{K, L, M, O}	
Silt and Clays: Liquid limit 50 or more		Inorganic	$PI > 7$ and plots on or above "A" line	CH	Fat clay ^{K, L, M}	
			$PI < 4$ or plots below "A" line	MH	Elastic Silt ^{K, L, M}	
		Organic ^a	Liquid limit (oven dried) < 0.75	OH	Organic clay ^{K, L, M, P}	
			Liquid limit (not dried) < 0.75		Organic silt ^{K, L, M, O}	
Highly organic soils ^b		Primarily organic matter, dark in color, and organic odor			PT	Peat

- ^a Based on the material passing the 3" (75mm) sieve.
- ^b If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
- ^c 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
- ^d Sands 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
- ^e $Cu = D_{90}/D_{10}$ $Cc = \frac{(D_{60})^2}{D_{10} \times D_{30}}$
- ^f If soil contains >= 15% sand, add "with sand" to group name.
- ^g If fines classify as CL-ML, use dual symbol GC-GM or SC-SM.
- ^h If fines are organic, add "with organic fines" to group name.
- ⁱ If soil contains >= 15% gravel, add "with gravel" to group name.
- ^j If Atterberg limits plot in hatched area, soil is a CL-ML, silty sand.
- ^k If soil contains 15 to 29% plus #200, add "with sand" or "with gravel," whichever is predominant.
- ^l If soil contains >= 30% plus #200, predominantly sand, add "sandy" to group name.
- ^m If soil contains >= 30% plus #200, predominantly gravel, add "gravelly" to group name.
- ⁿ $PI >= 4$ and plots on or above "A" line.
- ^o $PI < 4$ or plots below "A" line.
- ^p PI plots on or above "A" line.
- ^q PI plots below "A" line.
- ^r Organic Content > 5% and <= 30%.
- ^s Organic Content > 30%.



ADDITIONAL DESCRIPTIVE TERMINOLOGY

Soil Type	Size Range	Relative Gravel Contents	
		Descriptive Term	Gravel Content
Boulder	> 12"		
Cobble	12" - 3"		
Gravel	3" - #4'		
Sand:			
Coarse	#4 - #10	A Little Gravel	5 - 14%
Medium	#10 - #40	With Gravel	15 - 49%
Fine	#40 - #200		
Silt & Clay	< #200, based on plasticity	Silt & Clay:	
		A Little Gravel	5 - 14%
		With Gravel	15 - 29%
		Gravelly	30 - 49%

^aU.S. Standard Sieve Sizes

Consistency (Clay)	"N" Blows/Ft	Relative Density (Sand)	Other Descriptive Terms	
Soft	0 - 4	Very Loose	Lamination	Stratum up to 1/16" thick
Medium	5 - 9	Loose	Seam	Stratum 1/16" to 1/2" thick
Rather Stiff	10 - 19	Medium Dense	Layer	Stratum from 1/2" to 6" thick
Stiff	20 - 29	Dense	Lens	Discontinuous stratum or pocket from 1/2" to 6" thick
Very Stiff	30 - 49	Very Dense	Varved	Alternating laminations or seams of clay, silt and/or fine grained sand; or alternating colors
Hard	50+	Extremely Dense	Mottled	Mixture of clay, silt and/or fine sand exhibiting no layering; or mixture of colors exhibiting no layering
			Moist	Below saturation
			Wet	Saturated relatively impervious soils
			Waterbearing	Saturated Pervious soils