March 13, 2021
Reference Number: T21837

Mattamy Development Corporation
433 Steeles Ave. E., Suite #110
Milton, Ontario
L9T 8Z4

Attention: **Mr. Ryan Oosterhoff**

Subject: **Geotechnical Borehole Information**
Proposed Residential Development
Erin Property
5520 8th Line, Erin, Ontario

1.0 INTRODUCTION

Considering the presence of areas with higher topography at the above captioned property and potential concerns with encountering rock during the cut-fill operation, as requested, two deep boreholes were drilled at relatively higher grounds, as shown in Figure 1, and this information report is prepared to summarise our findings.

It should be noted that geotechnical test pit investigations were previously carried out at the property, consisting of excavating a total of twenty-three test pits across the site. The test pits were extended down to depths ranging from approximately 4.1 to 5.3 below existing grade and their approximate locations are also provided in Figure 1. For additional details on these investigations together with preliminary geotechnical recommendations for the various subdivision elements, reference should be made to Shad Reports T20828 dated November 6, 2020 and T20828-1 dated January 18, 2021.

2.0 INVESTIGATION PROCEDURES

The fieldwork was performed on February 23 to 26, 2021 and consisted of augering and sampling two boreholes (i.e., Boreholes 1 and 3). The borehole locations were staked out in the field and surveyed by Dekay Construction Limited. The boreholes were drilled to 19.8 m and 18.3 m below the existing ground surface at Boreholes 1 and 3, respectively. We wish to mention that at Borehole 3, practical refusal to augering was reached at shallower depths of 4.7 and 7.3 m below existing ground surface on possible cobbles and/or boulders within the soil matrix and the borehole location had to be revised three times to be able to drill to a lower elevation.

The boreholes were advanced using hollow stem continuous flight augers, with track-mounted power auger drilling rigs, under the full-time supervision of experienced geotechnical personnel from Shad & Associates Inc. Soil samples were taken at 0.76 to 3.0 m intervals for the full depth of the investigation and Standard Penetration Tests (SPT) were performed in accordance with ASTM D1586. This consists of freely dropping a 63.5 kg (140 lbs) hammer a vertical distance of 0.76 m (30 inches) to drive a 51 mm (2 inches) diameter o.d. split-barrel (split spoon) sampler into the ground. The number of blows of the hammer required to drive the sampler into the relatively undisturbed ground by a vertical distance of 0.30 m (12 inches) is recorded as SPT 'N' value of the soil and this gives an indication of the consistency or the relative density of the soil deposit.

Upon completion of boreholes, the soil samples were transported to our Soil Laboratory for further examination and laboratory testing. Laboratory testing, consisting of moisture content determination was performed on selected representative samples. The results of the in-situ and laboratory tests are presented on the corresponding Record of Borehole Sheets presented in Appendix A.

It should be noted that the samples obtained during this investigation will be stored in our Soil Laboratory for three months and will be disposed thereafter.

3.0 SUB-SURFACE CONDITIONS

The stratigraphic units and groundwater conditions are briefly discussed in the following sections. For more information, reference should be made to the Record of Borehole Sheets.

3.1 Topsoil, Fill and Possible Fill

The boreholes were drilled within a farmland and they both encountered topsoil and fill extending down to 1.4 and 1.7 m below existing ground surface at Boreholes 1 and 3, respectively. The fill deposit at Borehole 3 was further underlain by a loose and moist 'possible' fill layer , that extended down to a depth of about 2.1 m below existing grade.

It should be noted that the thickness and quality of topsoil and fill may vary significantly in between and beyond the borehole locations. Considering this, the extent of fill, the limited diameter of the auger hole as well as the time of fieldwork, it is recommended that allowance be made for possible variations when making construction estimates.

3.2 Silty Sand Till to Sandy Silt Till

Silty sand till to sandy silt till is the predominant deposit at the site and it was encountered below the fill and 'possible' fill layers at both boreholes, extending down to their completion at 19.8 and 18.3 m below existing ground surface at Boreholes 1 and 3, respectively.

Standard Penetration Tests were carried out at the site and the recorded 'N'-values within the

silty sand till to sandy silt till were predominantly well in excess of 50 blows/0.3 m, with the slightly lower values of 37 and 43 blows/0.3 m measured at immediately below the fill and 'possible' fill layers. Considering these results and the visual and tactile examination of the recovered soil samples, the glacial till deposit is dense to very dense, but predominantly very dense. Representative samples from this deposit were selected for natural moisture content determination and the results were found to range from 5 to 10%. Considering these results as well as visual and tactile examination of the recovered soil samples, the silty sand till to sandy silt till were generally damp to moist.

It should be noted that due to the formation of glacial till deposits, the occurrence of cobbles and boulders should always be expected. In fact, at Borehole 3, practical refusal to augering on possible cobbles and/or boulders was reached at 4.7 and 7.3 m below existing ground surface.

3.3 Groundwater Conditions

Groundwater conditions were monitored during and upon the completion of drilling as well as in the standpipe piezometer installed in Borehole 1. The results are summarized in the Table 1.

Table 1: Measured Groundwater Data

	Measured Ground Surface Elevation (m)	Measured Groundwater Depth/Elevation (m)		
		On Completion	March 5, 2021	March 12, 2021
1	442.6	Dry	Dry	Dry
3	446.8	Dry	N/A	N/A

Considering the above information and the soil colour change from brow to grey, we are of the opinion that the long-term groundwater level at the site should be below a depth of about 8.4 m below existing ground surface.

It should be pointed out that the groundwater levels at the site would fluctuate seasonally and can be expected to be somewhat higher during the spring months and in response to major weather events. A perched water condition may also be present at the site due to the presence of fill overlying the relatively less-permeable native deposits.

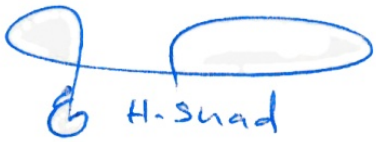
4.0 DISCUSSION

The two boreholes drilled at the higher grounds at the site, down to approximately 19.8 and 18.3 m below existing ground surface at Boreholes 1 and 3, respectively, did not contact a rock formation. Furthermore, at both locations, below some near-surface topsoil and fill, the site was predominantly underlain by dense to very dense but generally very dense silty sand till to sandy silt till. The glacial till deposit was noted to contain cobbles and/or boulders which are normally expected due to the nature of their formation. The findings were quite similar to those contacted at the two test pit investigations that were previously carried out at the property. For geotechnical recommendations, reference should be made to our Reports T20828 dated November 6, 2020

and T20828-1 dated January 18, 2021. It should be mentioned that should the excavations during the cut-fill operation extend deeper, extra effort would be required to deal with the relatively very dense till matrix as well as to handle cobbles/boulders that randomly occur when working within the till deposits.

We trust that this information report meets your current requirements. Should you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,
Shad & Associates Inc.



Stephen Chong, P. Eng.
Senior Engineer

Houshang Shad, Ph. D., P. Eng.
Principal

STATEMENT OF LIMITATION

The conclusions and recommendations given in this report are based on information obtained at the testhole locations. Subsurface and groundwater conditions between and beyond the testholes may differ from those encountered at the testhole locations, and conditions may become apparent during construction which could not be detected or foreseen at the time of the site investigation.

The information contained herein in no way reflects on the environmental aspects of the project, unless stated otherwise.

The benchmark and elevations used in this report are primarily to establish relative elevation differences between the testhole locations and should not be used for other purposes, such as planning, grading, excavating, etc.

The design recommendations given in this report are project as well as site specific and then only if constructed substantially in accordance with the details stated in this report. We recommend, therefore, that we be retained during the final design stage to review the design drawings and to verify that they are consistent with our recommendations or the assumptions made in our analysis.

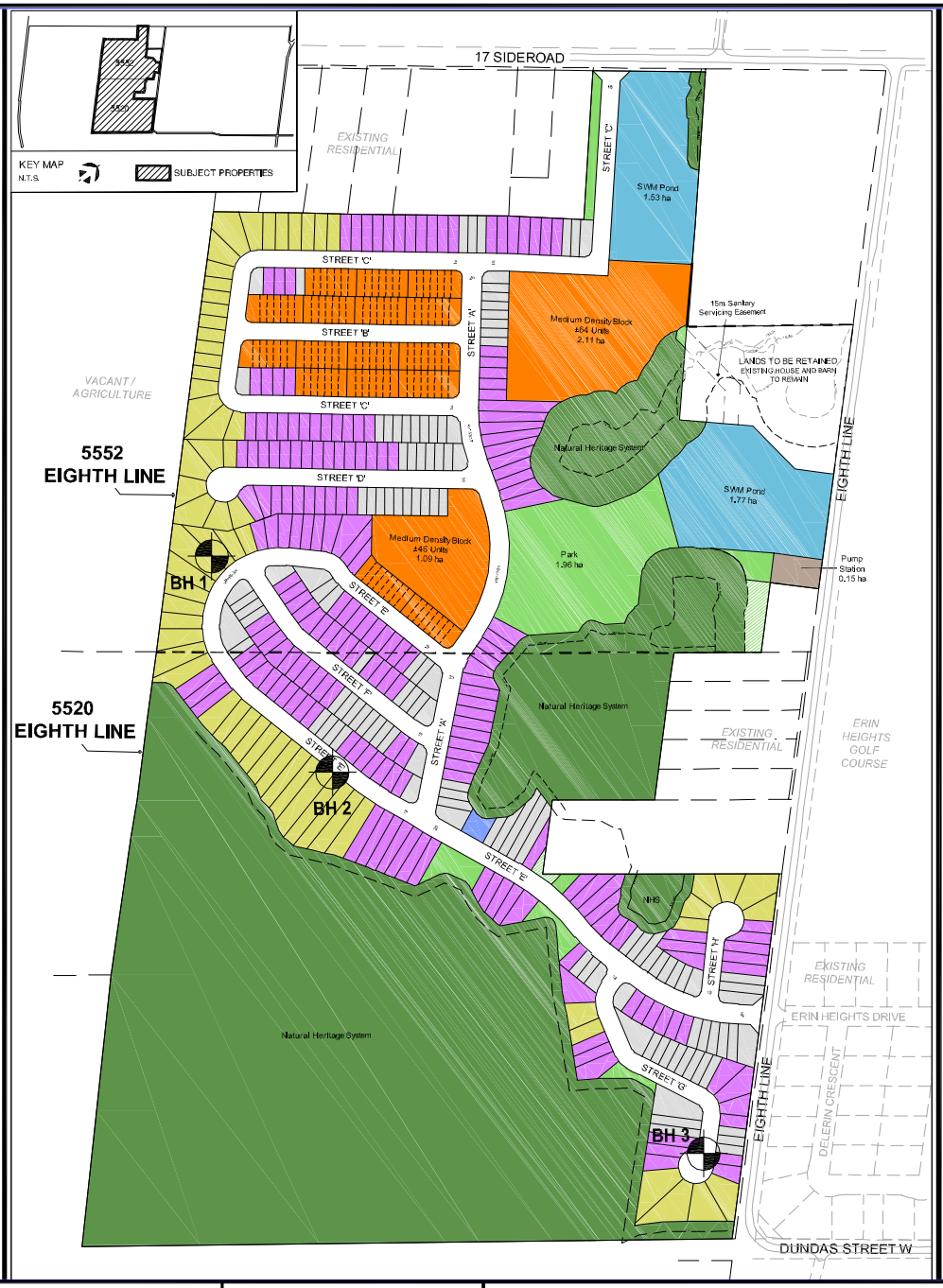
The comments given in this report on potential construction problems and possible methods are intended only for the guidance of the designer. The number of the testholes may not be sufficient to determine all the factors that may affect construction methods and costs. The contractors bidding on this project or undertaking construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work.

We recommend that we be retained during construction to confirm that the subsurface conditions throughout the site do not deviate materially from those encountered in the testholes.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, is the responsibility of such third party. We accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

FIGURES

Figure 1: Borehole Location Plan



LEGEND:

BH 1

Borehole Locations

NOTES:

1. Borehole locations are approximate.
2. Drawing not to scale.
3. The base drawing was provided by the Client.
4. The drawing should be read in conjunction with the associated reports by Shad & Associates Inc., T21837.

CLIENT:
Mattamy Development Corporation

SHAD & ASSOCIATES INC.
GEOTECHNICAL, ENVIRONMENTAL AND MATERIALS CONSULTING ENGINEERS
83 Citation Drive, Unit 9
Vaughan, Ontarulo, L4K 2Z6
Tel: (905) 760-5566
Fax: (905) 760-5567
www.shadinc.com

SHAD & ASSOCIATES INC.

Drawn By:	R.H.
Checked By:	H.S.
Datum:	-
Projection:	-
Scale:	N.T.S.

TITLE:
BOREHOLE LOCATION PLAN

PROJECT:
Proposed Residential Development
Erin Property
5520 8th Line, Erin, Ontario

Date:	May, 2022
Project No.:	T21837
Figure No.:	1

APPENDICES

Appendix A
Record of Boreholes (Boreholes 1 & 3)
Explanation of Borehole Logs

RECORD OF BOREHOLE 1

Project No.: T21837 CLIENT: Mattamy Development Corporation ORIGINATED BY: S.C.

DATE: February 23-26, 2021 LOCATION: 5520 Eighth Line, Erin COMPILED BY: R.H.

DATUM: Geodetic BOREHOLE TYPE: Hollow Stem CHECKED BY: H.S.

SHAD & ASSOCIATES INC.
83 Citation Dr, Unit 9,
Vaughan, Ontario, L4K 2Z6

ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	"N" VALUES	GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH kPa 20 40 60 80 100	WATER CONTENT (%) 5 15 25 35	MONITORING WELL	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
442.6		Ground Surface										
442.4	0	Topsoil		1	SS	30	6			14		Area was covered with snow.
		brown Fine Sand Fill trace to some gravel damp		2	SS	20	10			8		
441.2	1	brown Silty Sand Till damp, dense		3	SS	20	37			10		possible cobbles/boulder
	2	some gravel, moist, very dense		4	SS	15	50/8cm			7		possible cobbles/boulder
	3			5	SS	38	77			7		
	4	damp		6	SS	36	67			8		possible cobbles/boulder
	5											
	6	some fine to occ. coarse sand seams		7	SS	38	87			8		
	7											

RECORD OF BOREHOLE 1

Project No.: T21837 CLIENT: Mattamy Development Corporation ORIGINATED BY: S.C.

DATE: February 23-26, 2021 LOCATION: 5520 Eighth Line, Erin COMPILED BY: R.H.

DATUM: Geodetic BOREHOLE TYPE: Hollow Stem CHECKED BY: H.S.

SHAD & ASSOCIATES INC.
83 Citation Dr, Unit 9,
Vaughan, Ontario, L4K 2Z6

ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS
	8	some coarse sand seams		8	SS	46	93	
	9	grey		9	SS	46	64	
432.6	10	grey Silty Sand/Sandy Silt Till damp to moist, very dense		10	SS	13	50/13cm	
	11			11	SS	46	67	
	12							
	13	damp		12	SS	30	86	
	14							

DYNAMIC CONE PENETRATION RESISTANCE PLOT
20 40 60 80 100
SHEAR STRENGTH kPa
20 40 60 80 100

WATER CONTENT (%)
5 15 25 35
7
6
8
6
6

MONITORING WELL

REMARKS AND GRAIN SIZE DISTRIBUTION (%)
GR SA SI CL

RECORD OF BOREHOLE 1

Project No.: T21837 CLIENT: Mattamy Development Corporation ORIGINATED BY: S.C.

DATE: February 23-26, 2021 LOCATION: 5520 Eighth Line, Erin COMPILED BY: R.H.

DATUM: Geodetic BOREHOLE TYPE: Hollow Stem CHECKED BY: H.S.

SHAD & ASSOCIATES INC.
83 Citation Dr, Unit 9,
Vaughan, Ontario, L4K 2Z6

ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLES: SAMPLE NUMBER	SAMPLES: TYPE	SAMPLES: RECOVERY (cm)	SAMPLES: " N " VALUES	GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH kPa 20 40 60 80 100	WATER CONTENT (%) 5 15 25 35	MONITORING WELL	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	15											
	16											
	17	damp to moist		13	SS	41	91/25cm			6		
	18											
	19											
422.7				14	SS	5	50/5cm			10		
	20	End of Borehole										
		Cave-in Depth on Completion: None Groundwater Depth on Completion: Dry Measured Groundwater Level in Installed Standpipe Piezometer on: March 05, 2021: Dry March 12, 2021: Dry										
	21											
	22											

RECORD OF BOREHOLE 1

Project No.: T21837 CLIENT: Mattamy Development Corporation ORIGINATED BY: S.C.

DATE: February 23-26, 2021 LOCATION: 5520 Eighth Line, Erin COMPILED BY: R.H.

DATUM: Geodetic BOREHOLE TYPE: Hollow Stem CHECKED BY: H.S.

SHAD & ASSOCIATES INC.
83 Citation Dr, Unit 9,
Vaughan, Ontario, L4K 2Z6

SOIL PROFILE				SAMPLES					DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH kPa 20 40 60 80 100	WATER CONTENT (%) 5 15 25 35	MONITORING WELL	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS				
418.6	23											
	24											
	25											
	26											
	27											
	28											
	29											

RECORD OF BOREHOLE 3,3A,3B,3C

Project No.: T21837 CLIENT: Mattamy Development Corporation ORIGINATED BY: S.C.

DATE: February 23-26, 2021 LOCATION: 5520 Eighth Line, Erin COMPILED BY: R.H.

DATUM: Geodetic BOREHOLE TYPE: Hollow Stem CHECKED BY: H.S.

SHAD & ASSOCIATES INC.
83 Citation Dr, Unit 9,
Vaughan, Ontario, L4K 2Z6

ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH kPa 20 40 60 80 100	WATER CONTENT (%) 5 15 25 35	MONITORING WELL	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
446.8		Ground Surface										
	0	brown to dark brown Topsoil some silty sand/sandy silt fill damp to moist		1	SS	46	5			24		Area was covered with snow.
446.1												
	1	brown Silty Sand Fill trace topsoil damp		2	SS	41	7			10		
445.1												
		brown Silty Sand 'Possible Fill' some gravel moist, loose		3	SS	36	9			11		
444.7	2											
		dense		4	SS	46	43			7		
	3											
		brown Silty Sand Till damp, very dense		5	SS	41	100/28cm			6		
	4											
				6	SS	15	93/25cm			5		possible cobbles/boulder Auger Refusal at 4.7m. Borehole was moved 1m east of stake and re-drilled. (3A)
441.3	5											
		brown Sily Sand/SandySilt Till damp, very dense		7	SS	15	50/3cm			7		
	6											
												Auger Refusal at 7.3m. Borehole was moved 2m west of stake and re-drilled. (3B)
	7											

RECORD OF BOREHOLE 3,3A,3B,3C

Project No.: T21837 CLIENT: Mattamy Development Corporation ORIGINATED BY: S.C.

DATE: February 23-26, 2021 LOCATION: 5520 Eighth Line, Erin COMPILED BY: R.H.

DATUM: Geodetic BOREHOLE TYPE: Hollow Stem CHECKED BY: H.S.

SHAD & ASSOCIATES INC.
83 Citation Dr, Unit 9,
Vaughan, Ontario, L4K 2Z6

ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	" N " VALUES	GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH kPa 20 40 60 80 100	WATER CONTENT (%) 5 15 25 35	MONITORING WELL	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	8	grey		8	SS	15	50/5cm			5		
	9			9	SS	15	50/10cm			8		
	10	grey Silty Sand/Sandy Silt Till damp to moist, very dense		10	SS	13	50/13cm			10		Augur Refusal at 10.1m. Borehole was moved 3m east of stake and re-drilled. (3C)
	11			11	SS	46	71			7		
	12	damp										
	13			12	SS	30	83			6		
	14											
	15											

RECORD OF BOREHOLE 3,3A,3B,3C

Project No.: T21837 CLIENT: Mattamy Development Corporation ORIGINATED BY: S.C.

DATE: February 23-26, 2021 LOCATION: 5520 Eighth Line, Erin COMPILED BY: R.H.

DATUM: Geodetic BOREHOLE TYPE: Hollow Stem CHECKED BY: H.S.

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ELEVATION (metres)	DEPTH SCALE (metres)	DESCRIPTION	STRATA PLOT	SAMPLE NUMBER	TYPE	RECOVERY (cm)	"N" VALUES	GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH kPa 20 40 60 80 100	WATER CONTENT (%) 5 15 25 35	MONITORING WELL	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	16											
	17	damp to moist		13	SS	41	96/25cm			10		
	18											
428.4				14	SS	5	50/8cm			9		
		End of Borehole Cave-in Depth on Completion: None Groundwater Depth on Completion: Dry										
	19											
	20											
	21											
	22											

SHAD & ASSOCIATES INC.

EXPLANATION OF BOREHOLE LOG

This form describes some of the information provided on the borehole logs, which is based primarily on examination of the recovered samples, and the results of the field and laboratory tests. It should be noted that materials, boundaries and conditions have been established only at the borehole locations at the time of investigation and are not necessarily representative of subsurface conditions elsewhere across the site. Additional description of the soil/rock encountered is given in the accompanying geotechnical report.

GENERAL INFORMATION

Project details, borehole number, location coordinates and type of drilling equipment used are given at the top of the borehole log.

SOIL LITHOLOGY

Elevation and depth

This column gives the elevation and depth of inferred geologic layers. The elevation is referred to the datum shown in the Description column.

Lithology Plot

This column presents a graphic depiction of the soil and rock stratigraphy encountered within the borehole.

Description

This column gives a description of the soil stratums, based on visual and tactile examination of the samples augmented with field and laboratory test results. Each stratum is described according to the following classification and terminology (Ref. Unified Soil Classification System):

The compactness condition of cohesionless soils (SPT) and the consistency of cohesive soils (undrained shear strength) are defined as follows (Ref. Canadian Foundation Engineering Manual):

Compactness of Cohesionless Soils	SPT N-Value
Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	> 50

Consistency of Cohesive Soils	SPT N-Value	Undrained Shear Strength kPa	Undrained Shear Strength psf
Very soft	0 to 2	0 to 12	0 to 250
Soft	2 to 4	12 to 25	250 to 500
Firm	4 to 8	25 to 50	500 to 1000
Stiff	8 to 15	50 to 100	1000 to 2000
Very stiff	15 to 30	100 to 200	2000 to 4000
Hard	> 30	Over 200	Over 4000

Soil Sampling

Sample types are abbreviated as follows:

SS	Split Spoon	TW	Thin Wall Open (Pushed)	RC	Rock Core
AS	Auger Sample	TP	Thin Wall Piston (Pushed)	WS	Washed Sample

Additional information provided in this section includes sample numbering, sample recovery and numerical testing results.

Field and Laboratory Testing

Results of field testing (e.g., SPT, pocket penetrometer, and vane testing) and laboratory testing (e.g., natural moisture content, and limits) executed on the recovered samples are plotted in this section.

Instrumentation Installation

Instrumentation installations (monitoring wells, piezometers, inclinometers, etc.) are plotted in this section. Water levels, if measured during fieldwork, are also plotted. These water levels may or may not be representative of the static groundwater level depending on the nature of soil stratum where the piezometer tips are located, the time elapsed from installation to reading and other applicable factors.

Comments

This column is used to describe non-standard situations or notes of interest.

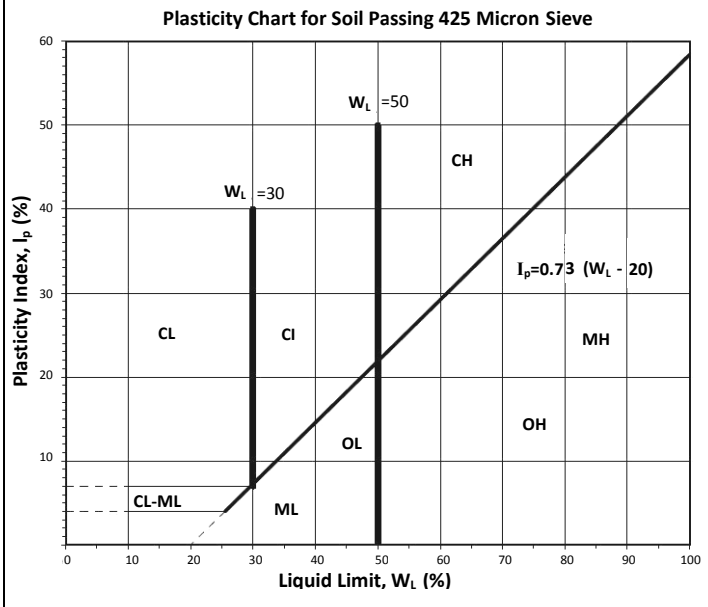
SHAD & ASSOCIATES INC.

MODIFIED * UNIFIED CLASSIFICATION SYSTEM FOR SOILS

*The soil of each stratum is described using the Unified Soil Classification System (Technical Memorandum 36-357 prepared by Waterways Experiment Station, Vicksburg, Mississippi, Corps of Engineers, U.S Army. Vol. 1 March 1953.) modified slightly so that an inorganic clay of "medium plasticity" is recognized.

MAJOR DIVISION			GROUP SYMBOL	TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 75µm)	GRAVELS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75mm	CLEAN GRAVELS (TRACE OR NO FINES)	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 4;\ C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTYGRAVELS (WITH SOME OR MORE FINES)	GM	SILTY GRAVELS, GRAVEL-SAND- SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I. MORE THAN 4
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I. MORE THAN 7
	SANDS MORE THAN HALF THE COARSE FRACTION SMALLER THAN 4.75mm	CLEAN SANDS (TRACE OR NO FINES)	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = \frac{D_{60}}{D_{10}} > 6;\ C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}} = 1 \text{ to } 3$
			SP	POORLY GRADED GRAVELS, GRAVEL- SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY SANDS (WITH SOME OR MORE FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I MORE THAN 4
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR P.I MORE THAN 7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT SMALLER THAN 75µm)	SILTS BELOW "A" LINE NEGLIGIBLE ORGANIC CONTENT	W_L < 50%	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)
		W_L < 50%	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SANDY OR SILTY SOILS	
	CLAY ABOVE "A" LINE NEGLIGIBLE ORGANIC CONTENT	W_L < 30%	CL	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS	
		30% < W_L < 50%	CI	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	
		W_L < 50%	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ORGANIC SILTS & CLAYS BELOW "A" LINE	W_L < 50%	OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	WHENEVER THE NATURE OF THE FINES CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER "F", E.G SF IS A MIXTURE OF SAND WITH SILT OR CLAY
		W_L < 50%	OH	ORGANIC CLAYS OF HIGH PLASTICITY	
HIGH ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS	STRONG COLOUR OR ODOUR, AND OFTEN FIBROUS TEXTURE

SOIL COMPONENTS					
FRACTION	U.S STANDARD SIEVE SIZE		DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS		
GRAVEL	COARSE	PASSING	RETAINED	PERCENT	DESCRIPTOR
		76 mm	19 mm	35-50	AND
				20-35	Y/EY
	FINE	19 mm	4.75 mm	10-20	SOME
				1-10	TRACE
SAND	COARSE	4.75 mm	2.00 mm		
	MEDIUM	2.00 mm	425 µm		
	FINE	425 µm	75 µm		
FINES (SILT OR CLAY BASED ON PLASTICITY)		75 µm			
OVERSIZED MATERIAL					
ROUNDED OR SUBROUNDED: COBBLES 76 mm TO 200 mm BOULDERS > 200 mm				NOT ROUNDED: ROCK FRAGMENTS > 76 mm ROCKS> 0.76 CUBIC METRE IN VOLUME	



Note 1: Soils are classified and described according to their engineering properties and behavior.

Note 2: The modifying adjectives used to define the actual or estimated percentage range by weight of minor components are consistent with the Canadian Foundation Engineering Manual (3rd Edition, Canadian Geotechnical Society, 1992)