Information To Build On
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January 26, 2009

Mr. Nick Willis
Cuyahoga County Commissioners
Department of Central Services
1642 Lakeside Avenue
Cleveland, Ohio 44114

Re: Geotechnical Subsurface Exploration Report
Proposed Wind Turbine
Cuyahoga County Fairgrounds
Middleburg Heights, Ohio
PSI File Number: 142-95003

Dear Mr. Willis:

In compliance with your instructions, we have conducted a geotechnical subsurface exploration and analysis for the above-referenced project. The results of this exploration, together with our recommendations, are to be found in the accompanying report, three (3) copies of which are being transmitted herewith. After the plans and specifications are complete, PSI should review the final design and specifications in order to verify that the earthwork and recommendations are properly interpreted and implemented.

It is considered imperative that the geotechnical engineer and/or its representative be present during earthwork operations and foundation installations to observe the field conditions with respect to the design assumptions and specifications. PSI will not be held responsible for interpretations and field quality control observations made by others.

Please advise us of the appropriate time to discuss the field quality control and engineering services, and we will be pleased to meet with you at your convenience.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Surya Thapa, EI
Staff Engineer

A. Veeramani, P.E.
District Manager

REPORT OF
GEOTECHNICAL SUBSURFACE EXPLORATION

FOR THE

PROPOSED WIND TURBINE
CUYAHOGA COUNTY FAIRGROUNDS
MIDDLEBURG HEIGHTS, OHIO

PREPARED FOR

CUYAHOGA COUNTY COMMISSIONERS
DEPARTMENT OF CENTRAL SERVICES
1642 LAKESIDE AVENUE
CLEVELAND, OHIO 44114

PREPARED BY

PROFESSIONAL SERVICE INDUSTRIES, INC.
5555 CANAL ROAD
CLEVELAND, OHIO 44125

PSI FILE NUMBER: 142-95003

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PROJECT INFORMATION

Project Authorization

This report presents the results of a subsurface exploration and foundation analysis, conducted for Cuyahoga County Commissioners, Department of Central Services, in connection with the proposed Wind Turbine foundation at Cuyahoga County Fairgrounds in Middleburg Heights, Ohio. PSI's services for this project were performed in accordance with PSI Proposal No. 142-850093, dated May 15, 2008. The proposal included a proposed scope of services, estimated cost, unit rates and PSI's General Conditions. Authorization to perform this exploration and analysis was in the form of signed acceptance of the aforementioned proposal, acknowledged by Mr. Nick Willis, Project Manager of Cuyahoga County Commissioners Department of Central Services on January 7, 2009.

Project Description

Based upon the information provided by Mr. Nick Willis, Project Manager of Cuyahoga County Commissioners Department of Central Services, it is understood that the proposed project will include the installation of a wind turbine measuring approximately eighty-two (82) meters in overall height, including a sixty (60) meter monopole and twenty-two (22) meter blades. No other structural and loading information are available at the time of this report. However, we have assumed maximum compressive load about 65 kips for this submittal.

If any of the noted information is incorrect or has changed, please inform PSI so that we may amend the recommendations presented in this report, if appropriate.

Purpose and Scope of Services

The purpose of this exploration was to evaluate the soil and groundwater conditions at the site, and to provide recommendations, from a geotechnical engineering viewpoint, for foundation design and construction, site preparation and other construction considerations. The scope of the exploration and analysis included a reconnaissance of the project site, drilling one (1) standard test boring to a depth of about 50 feet below the existing surface grades, a laboratory testing program, and an engineering analysis and evaluation of the subsurface materials with respect to the proposed Wind Turbine foundation.

The scope of services did not include an environmental assessment for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site. Any statements in this report or on the boring logs regarding odors, colors or unusual or suspicious items or conditions are strictly for the information of the client.

SITE AND SUBSURFACE CONDITIONS

Site Location and Description

The site area for the proposed Wind Turbine, upon which this soils exploration has been performed, is located at Cuyahoga County Fairgrounds, in the City of Middleburg Heights, Cuyahoga County, Ohio. Specifically, the proposed Wind Turbine will be located at the northeastern part of the Cuyahoga County Fairgrounds.

The surface of the site is covered with gravel. Based on the visual site observations, the site slopes is relatively flat. Surface drainage appeared to be good. We recommend that all utility lines be located prior to construction activities.

Subsurface Conditions

The general subsurface conditions at the site were explored with one (1) soil test boring at the proposed Wind Turbine location, drilled to a depth of approximately 50 feet below the existing surface grades utilizing ATV-mounted drill rig. The approximate location of the boring is shown on the Boring Location Plan presented in the Appendix of this report. The number and location of the test boring was selected and field located by the representatives of PSI.

Field and laboratory testing were accomplished in general accordance with ASTM standards. The types of foundation bearing materials encountered in the test boring have been visually classified. The results of the visual classifications, the Standard Penetration tests and water level observations are presented on the boring logs in the Appendix. Representative samples of the soils and rock were placed in sample jars, and are now stored in the laboratory for further analysis, if requested. Unless notified to the contrary, all samples will be disposed of after 60 days from the date of this report.

The surface of the site at test boring location B-1 was underlain by miscellaneous fill materials to the depths about 2.5 feet below the existing surface grades. The fill materials exhibited a moisture content of about 14 percent. The depth and engineering characteristics of the fill materials, such as composition, strength and compressibility, are considered to be variable.

The miscellaneous fills soils, at the test boring location B-1, were underlain by natural soils to the terminal depths about 50 feet below the existing surface grades. The natural soils consisted of various combinations of silty clay, silt, clayey sand, and clayey silt, containing varying degrees of rock fragments. The natural soils exhibited a moisture content ranging from approximately 9 to 23 percent. The natural cohesive soils exhibited a stiff to hard consistency and granular soils exhibited a medium dense relative density, based on the Standard Penetration tests.

The subsurface description is of a generalized nature provided to highlight the major strata encountered. The boring logs included in the Appendix of this report should be reviewed for specific information at the individual boring location. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected. The stratifications represent the approximate boundary between the subsurface materials, and the transition may be gradual or not clearly defined.

Groundwater Conditions

Groundwater was encountered during and after the field drilling operations at the test boring location B-1 to a depth of about 35 feet below the existing surface grades. However, groundwater levels fluctuate seasonally as a function of rainfall. During a time of year or weather different from the time of drilling, there may be a considerable change in the water table or the occurrence of water where not previously encountered. Furthermore, the water levels in the boreholes often are not representative of the actual groundwater level, because the boreholes remain open for a relatively short time. Therefore, we recommend that the contractor determine the actual groundwater levels at the time of construction to evaluate groundwater impact on the construction procedures.

EVALUATION AND FOUNDATION RECOMMENDATIONS

Site Preparation and Earthwork Construction

Prior to placing any structural fill, soft/loose, excessively wet or obviously compressible materials should be completely removed from the proposed construction areas. Additionally, unsuitable fill soils, as evidenced at the test boring location B-1 to the depths about 2.5 feet, should be completely removed from the proposed mat foundation area. The final decision in connection with the precise extent of required cut and fill should be determined in the field by a representative of PSI following observation of the exposed subgrades and proofrolling operations.

The bottom of the foundation excavations should be compacted with either a vibratory or an impact compactor weighing at least two hundred (200) pounds and imparting a minimum of four (4) kips of force to the subgrade. Field compaction operations should be observed by a representative of PSI and should continue until a firm and unyielding condition exists. Unstable soils which are revealed by proofrolling and which cannot be adequately densified in place should be removed and replaced under the recommendations of the PSI representative. Areas to be cut to achieve subgrade elevation should also be excavated prior to performing the proofrolling and compaction operation.

During site preparation, burn pits, trash pits or other isolated disposal areas may be encountered. All too frequently such buried material occurs in isolated areas outside boring locations. Any such material encountered during site work or foundation construction should be excavated and removed from the site.

Foundation Recommendations

The test borings, laboratory test results, the proposed construction and analysis indicate that the proposed Wind Turbine tower can be supported on either a shallow bearing concrete rigid mat foundation bearing on the natural soils or compacted engineered fill, or deep seated foundations consisting of drilled piers bearing on the natural soils.

Mat Foundation

Based on the field drilling operations and proposed construction, a rigid concrete mat foundation can be utilized to support the proposed Wind Turbine. An allowable bearing pressure of 2,500 psf and subgrade modulus reaction (k) of 120 pci can be used for the foundation design.

In view of the subsurface conditions, it is anticipated that total foundation settlements will be less than 1 inch for the above recommended bearing pressure. However, actual settlements will be dependent upon the depth of the foundations, structural loads and other related factors.

It is recommended that the proposed mat foundation be supported on at least four (4) feet of compacted non-frost susceptible soils. Bottom depth of the mat can be twelve (12) inches below the finished grades. Alternatively, the mat foundation can be supported about 3.5 feet below the surface grades with twelve (12)-inch compacted granular base.

Sand and gravel with less than 10 percent finer (smaller than #200 sieve opening) by weight will have negligible potential for frost heave and should be specified for support of the mat. The fill should be placed in eight (8) inch lifts and compacted to 100% of the maximum ASTM D-698 density. It should be noted that the moisture-density compaction curve for the fill will not be sensitive to placement moisture. Accordingly, the density defined for an energy corresponding to ASTM D-698 should be used for control of fill placement.

Based on table 1615.1.1 of the OBC Building Code, the test boring results and review of the geology in vicinity to the project area, a Site Classification of 'D' can be utilized for the seismic design.

Pier Foundation

Alternatively, we recommend that pier foundations bearing within the area's natural soil formation can be used to support the proposed Wind Turbine tower. We recommend that the design parameters shown in the following Table No. 1 be used to design the tower foundations:

TABLE NO. 1

Depth Range Ft.	Ultimate Shear Strength	Ultimate Friction (psf)	Ultimate End Bearing (psf)	Lateral Modulus (k,pci)	Strain Factor (E_{50})
0-4	Neglect	--	--	--	--
4-23	C = 1,500	1200	5,000	200	0.007
23-33	ø =30°, C = 0	1500	6,000	90	--
Below 33	C = 2,500	1800	8,000	400	0.004

Total Density: 120 pcf

Design Groundwater Depth: 20 feet

A factor of safety of 2.0 should be applied to the design loads to define required pier diameter and depth. The overburden soils would not be expected to be free standing in an open excavation for the depths of the piers. Therefore, for the caisson excavations, temporary protective steel casing and possibly slurry will be required. Temporary casing should be at least as large in outside diameter as the nominal shaft size and of sufficient wall thickness to resist crushing by hydrostatic and earth pressures.

Pier excavations are to be concreted immediately following inspection and approval and are to be protected to the fullest extent possible from groundwater ingress and inundation. In the event that it is impossible to dewater any given excavation, concreting operations are to be carried out employing carefully controlled full depth tremie devices and procedures. It is recommended that concrete in a caisson be poured the same day that the caisson is drilled and have a slump of 7-9 inches. Reinforcement for the individual caisson units should be designed for the maximum bending moment and shear force expected at any section of the caisson member during the worst loading conditions. Every precaution is to be taken during the course of casing removal procedures to preclude the possibility of groundwater or soil "blow in" below the bottom of the casing.

During the course of the concreting operations care is to be exercised to protect and to prevent misalignment of the included reinforcing steel.

Excavations

In Federal Register, Volume 54, No. 209 (October, 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, Part 1926, Subpart P." This document was issued to better insure the safety of workers entering trenches or excavations. It is mandated by this federal regulation that all excavations, whether they be utility trenches, basement excavations or foundation excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced. If they are not followed closely, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person" as defined in "CFR Part 1926," should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. PSI is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred. Materials removed from the excavation should not be stockpiled immediately adjacent to the excavation, inasmuch as this load may cause a sudden collapse of the embankment.

Weather Considerations

The fill soils and natural soils encountered at this site are known to be sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, further increases in the moisture content of the soils can cause significant reduction in the soil strength and support capabilities. Care should be exercised during the grading operations at the site. Due to the fine-grained nature of the surficial soils, the traffic of heavy equipment, including heavy compaction equipment, may very well create pumping and a general deterioration of those soils in the presence of water. Therefore, the grading should, if at all possible, be performed during a dry season.

A layer of crushed stone may be required to allow the movement of construction traffic over the site during the rainy season. The contractor should maintain positive site drainage and if wet/pumping conditions occur, the contractor will be responsible to over excavate the wet soils and replace them with a properly compacted structural fill.

REPORT LIMITATIONS

The recommendations submitted are based on the available subsurface information obtained by PSI and design details furnished by Mr. Nick Willis, Project Manager of Cuyahoga County Commissioners Department of Central Services for the proposed Wind Turbine foundation. If there are any revisions to the plans for the proposed structure, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be retained to determine if changes in the foundation recommendations are required. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the geotechnical recommendations for the project.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein, have been presented after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

After the plans and specifications are complete, it is recommended that PSI be provided the opportunity to review the final design and specifications, in order to verify that the earthwork and foundation recommendations are properly interpreted and implemented. At that time, it may be necessary to submit supplementary recommendations. This report has been prepared for the exclusive use of Cuyahoga County Commissioners, Department of Central Services, for the specific application to the proposed Wind Turbine foundation at the Cuyahoga County Fairgrounds in the City of Middleburg Heights, Cuyahoga County, Ohio.

APPENDIX

Boring Location Plan

Boring Log

General Notes

USCS Soil Classification Chart

Proposed Wind Turbine
Cuyahoga County Fairgrounds
Middleburg Heights, Ohio

Boring Location Plan

psi Information To Build On
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Scale: NA	Date:01/26/2009	Drawn By: ST	PSI Project No.: 142-95003

Client: Cuyahoga County Commissioners, Department of Central Services	PSI Project #: 142-95003 Sheet: 1 of 2	Boring Log Number: B-1	Professional Service Industries, Inc.
Project: Proposed Wind Turbine	Location: Cuyahoga County Fairgrounds, Middleburg Heights, Ohio		

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Description of Material Surface Elevation:	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)
1SS				Loose, Wet, Black/Gray, Sandy SILT, With Gravel, Little Clay, Trace Organics (Fill)		4 6-2-2	14		
2SS				Stiff, Moist, Brown with Molted Gray, Silty CLAY, Little Sand, Trace Rock Fragments (CL)		10 2-4-6	23		
3SS				Stiff, Wet, Brown, SILT, Some Clay, Some Sand, Trace Rock Fragments (ML) ** PI = 1	5	14 4-7-7	18	20	21
4SS					10	12 4-5-7	16		
5SS				Stiff, Moist, Gray, Silty CLAY, Little Sand, Trace Rock Fragments (CL)	15	13 5-6-7	12		
6SS					20	13 3-6-7	15		
7SS				Medium Dense, Moist, Gray, Clayey SAND, Little Silt, Some Rock fragments (SC)	25	22 11-11-11	11		
8SS				** PI = 9	30	12 3-6-6	10	18	27

"N" Blows Per Foot: 0 20 40 60
Unconfined Compressive Strength (tsf)
Calibrated Hand Penetrometer (tsf): 0 2 4 6

Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

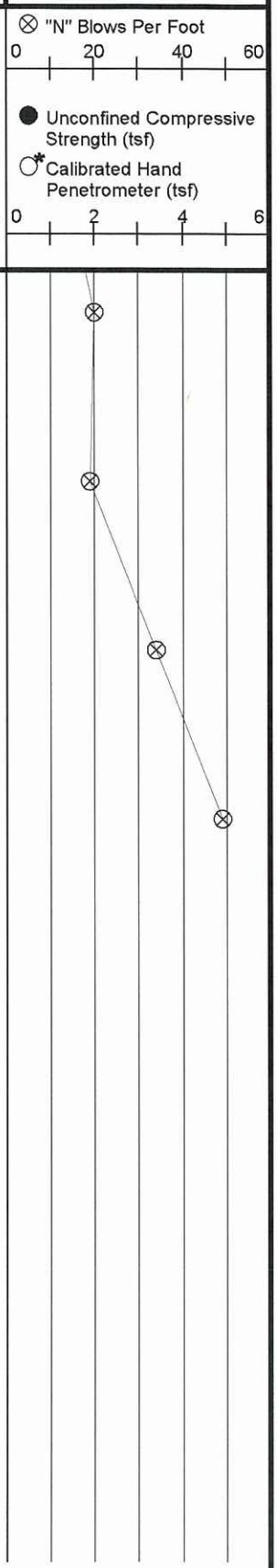
▽ Water Level While Drilling 35 feet
▼ Water Level At Completion 45 feet
_____ After Completion

Boring Started: 1/21/2009	Completed: 1/21/2009		Engineer: ST
Drilling Method: 2.25" HSA		Office: Cleveland	Drawn By: ST
Driller: B.T.	Drill Rig: CME-55	Hole Depth (ft): 50	Approved:

Note: Boring backfilled with soil unless otherwise noted.

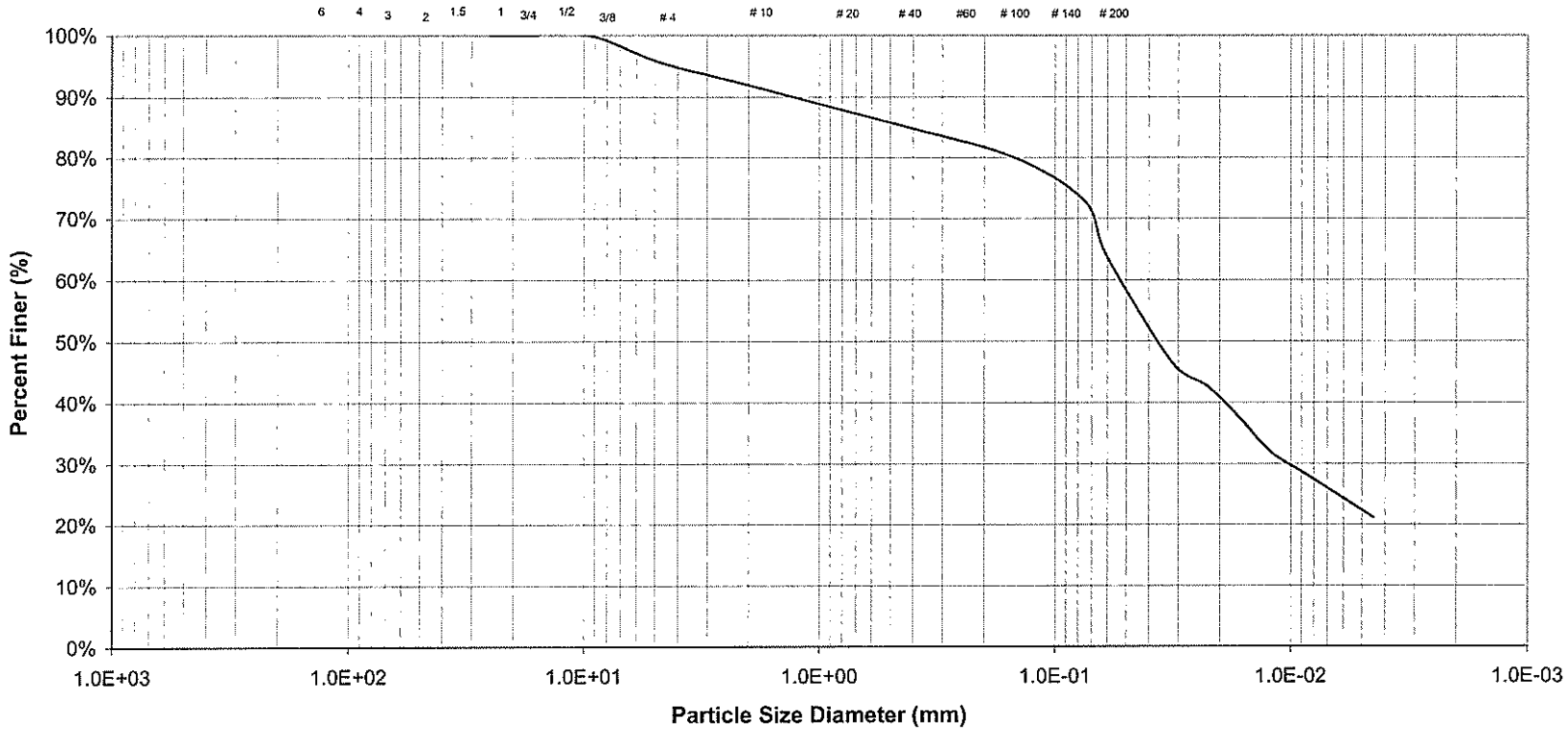
Client: Cuyahoga County Commissioners, Department of Central Services	PSI Project #: 142-95003 Sheet: 2 of 2	Boring Log Number: B-1	Professional Service Industries, Inc.
Project: Proposed Wind Turbine	Location: Cuyahoga County Fairgrounds, Middleburg Heights, Ohio		

Sample No./Type	Sample Location	Sample Recovery	Graphical Log	Description of Material	Depth (ft)	Blows Per Foot	Moisture Content (%)	Plastic Limit (%)	Liquid Limit (%)
9SS				Very Stiff, Moist, Gray, Silty Clay, Trace Sand, Trace Rock Fragments (CL)	35	20 5-8-12	20		
10SS					40	19 10-8-11	12		
11SS				Hard, Moist, Gray, Clayey SILT, Little Sand, Trace Rock Fragments (ML) ** PI = 5	45	34 8-15-19	10	16	21
12SS				Hard, Moist, Gray, Silty CLAY, Little sand, Trace Rock Fragments (CL)	50	49 20-23-26	9		
				END OF BORING AT 50 FT					



Note: The stratification lines indicated here are approximate. In-situ, the transition between soil types may be gradual.

U.S. STANDARD SIEVE OPENINGS IN INCHES | U.S. STANDARD SIEVE NUMBERS | HYDROMETER

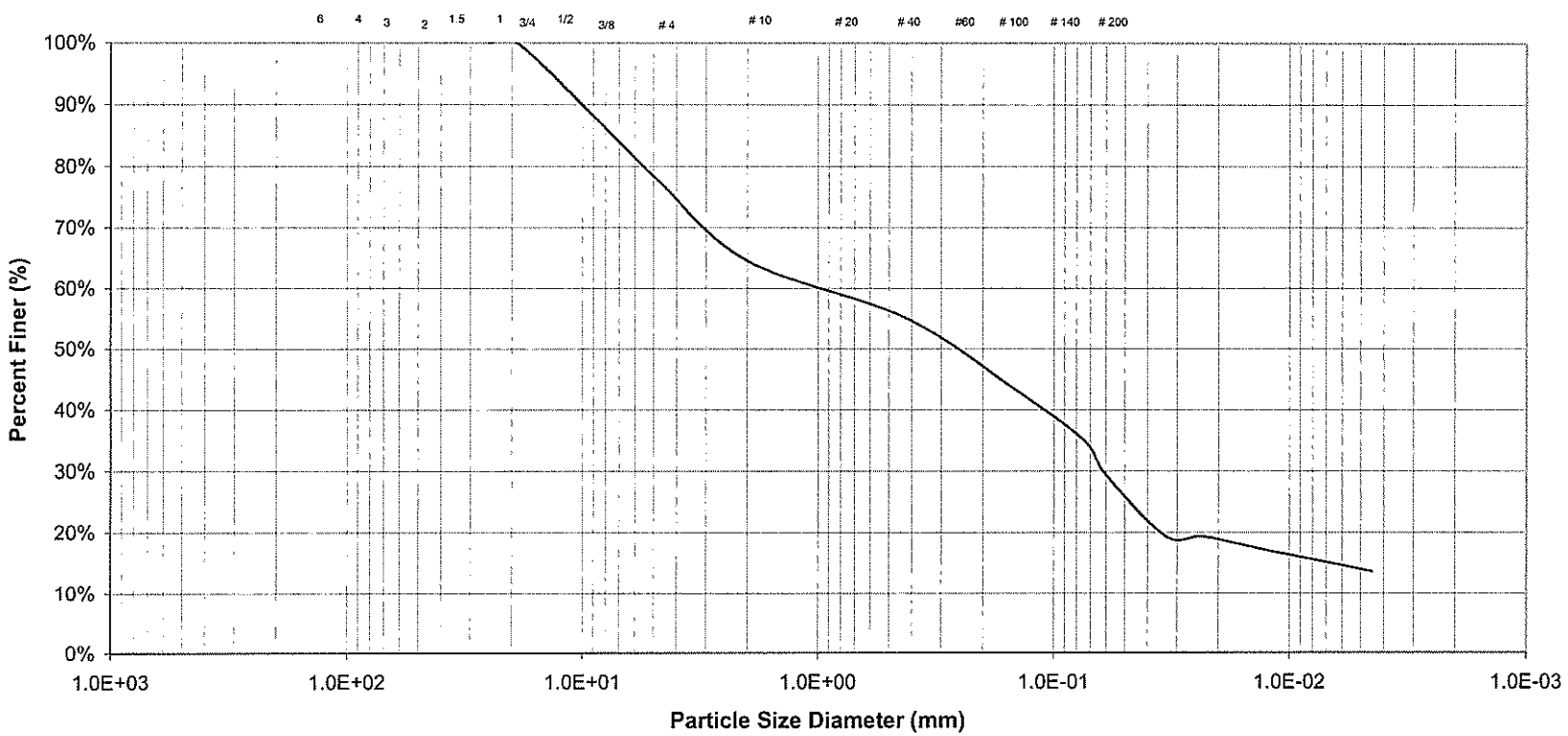


COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Boring No.	Sample No.	Depth	Classification	Nat. w	LL	PL	PI	Project
B-1	SS-3	5.5'-7.0'	Brown, SILT, Some Clay, Some	18	21	20	1	Cuyahoga County Commissioners
			Sand, Trace Rock Fragments					Department of Central Services
			(ML)					Proposed Wind Turbine
Max. Particle Size (in)								Cuyahoga County Fairgrounds
								Middleburg Heights, Ohio

REPORT OF SOIL ANALYSIS

File No. 142-95003

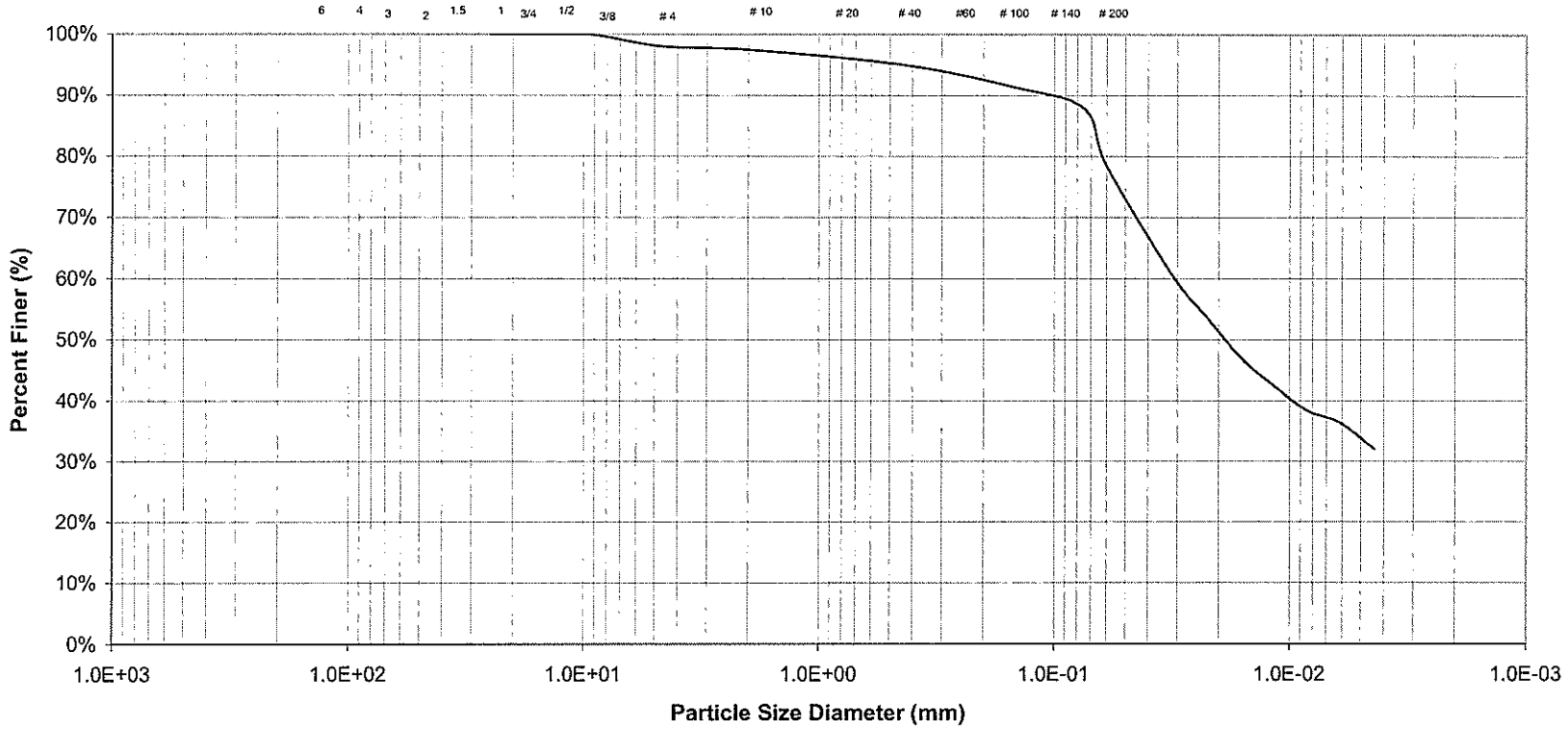


Boring No.	Sample No.	Depth	Classification	Nat. w	LL	PL	PI	Project
B-1	SS-8	28.5'-30.0'	Gray, Clayey SAND, Little Silt	10	27	18	9	Cuyahoga County Commissioners
			Some Rock Fragments (SC)					Department of Central Services
								Proposed Wind Turbine
Max. Particle Size (in)								Cuyahoga County Fairgrounds
								Middleburg Heights, Ohio

REPORT OF SOIL ANALYSIS

File No. 142-95003

U.S. STANDARD SIEVE OPENINGS IN INCHES | U.S. STANDARD SIEVE NUMBERS | HYDROMETER



COBBLE	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Boring No.	Sample No.	Depth	Classification	Nat. w	LL	PL	PI	Project
B-1	SS-11	43.5'45.0'	Gray, Clayey SILT, Little Sand	10	21	16	5	Cuyahoga County Commissioners
			Trace Rock Fragments (ML)					Department of Central Services
								Proposed Wind Turbine
Max. Particle Size (in)								Cuyahoga County Fairgrounds
								Middleburg Heights, Ohio

REPORT OF SOIL ANALYSIS

File No. 142-95003

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N:	Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2 inch O.D. split-spoon.
Qu:	Unconfined compressive strength, tsf.
Qp:	Penetrometer value, index value of unconfined compressive strength, tsf.
Mc:	Water content, %.
PL:	Plastic limit, %.
LL:	Liquid Limit, %.
PI:	Plasticity Index.
γd:	Natural dry density, pcf.
▼	Groundwater level observed at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

SS:	Split-Spoon – 1 3/8" I.D., 2" O.D., except where noted.
ST:	Shelby Tube – 3" O.D., except where noted.
AU:	Auger Sample.
DB:	Diamond Bit.
CB:	Carbide Bit.
WS:	Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION (Terzaghi & Peck, 1948)

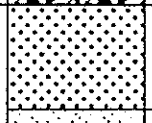
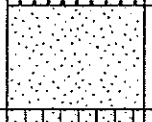
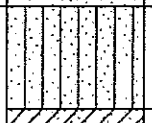
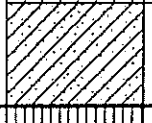
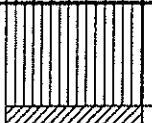
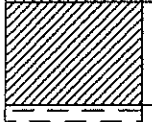
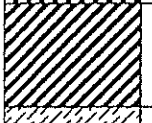
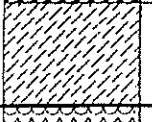
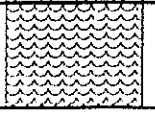
TERM (COHESIONLESS SOILS)	STANDARD PENETRATION RESISTANCE
Very Loose	0 – 4
Loose	4 – 10
Medium	10 – 30
Dense	30 – 50
Very Dense	Over 50

TERM (COHESIVE SOILS)	Qu – (TSF)
Very Soft	0 – 0.25
Soft	0.25 – 0.50
Medium	0.50 – 1.00
Stiff	1.00 – 2.00
Very Stiff	2.00 – 4.00
Hard	4.00+

PARTICLE SIZE (ASTM D2487 AND D422)

Boulders	≥ 12 in. (300mm)
Cobbles	< 12 in.(300mm) to 3 in. (75mm)
Gravel	< 3 in. (75mm) to 4.75mm (#4 sieve)
Coarse Sand	<4.75mm (#4 sieve) to 2mm (#10 sieve)
Medium Sand	<2mm (10 sieve) to 425μm (#40 sieve)
Fine Sand	<425μm (#40 sieve) to 75μm (#200 sieve)
Silt	<75μm (#200 sieve) to 5μm
Clay	<5μm

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS