Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

March 1, 2011

SUBJECT: FOX RIVER BIKEWAY
Project TCSP-TE-CMM-00D1(667)
Section 05-F3000-06-BT
Kane County
Contract No. 63517
Item 118
March 11, 2011 Letting
Addendum (A)

TO PROSPECTIVE BIDDERS:

Due to clarify information necessary to revise the following:

Proposal – Added Soils Reports.

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

Scott Stitt
Acting Engineer of Design and Environment

By: Ted B. Walschleger
Engineer of Project Development
and Implementation

Revised 3-1-11

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Geotechnical & Environmental Engineering

Construction Materials Engineering & Testing

Laboratory Testing of Soils, Concrete & Asphalt

Geo-Environmental Drilling & Sampling

Report of Soils Exploration

Proposed Fox River Bike Trail

Hurd's Island Park

Aurora, Illinois

Robert H. Anderson & Associates, Inc.

GEOTECHNICAL GROUP
CAROL STREAM

August 18, 2008
L - 71,205

REPORT OF SOILS EXPLORATION
PROPOSED FOX RIVER BIKE TRAIL
HURD'S ISLAND PARK
AURORA, ILLINOIS

PREPARED FOR:
ROBERT H. ANDERSON & ASSOCIATES, INC.
TIMBERS PROFESSIONAL CENTER
220 WEST RIVER DRIVE
ST. CHARLES, ILLINOIS 60174

PREPARED BY:
TESTING SERVICE CORPORATION
457 EAST GUNDERSEN DRIVE
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August 18, 2008
L-71,205

REPORT OF SOILS EXPLORATION
PROPOSED FOX RIVER BIKE TRAIL
HURD'S ISLAND PARK
AURORA, ILLINOIS

1.0 INTRODUCTION

This report presents the results of a soils exploration performed for the proposed construction of a portion of the Fox River Bike Trail which will be constructed on Hurd's Island in Aurora, Illinois. This section, which covers approximately 2500 feet, extends from just south of the Burlington Northern Railroad to North Avenue in Aurora, Illinois.

These geotechnical services were provided in accordance with TSC Proposal No. 39,056 dated August 7, 2007 and the attached General Conditions, which are incorporated herein by reference. This report presents the results of soil borings, laboratory testing and recommendations based on that work.

2.0 FIELD WORK AND LABORATORY TESTING

Six (6) soil borings were drilled to a depth of 6 feet each for this study. At each of the borings, the first sample was advanced between a depth of 6 inches and 2 feet, with the subsequent samples being obtained between 2 to 4 feet and also between 4 and 6 feet.

The borings were drilled and samples tested according to currently recommended American Society for Testing and Materials specifications. Soil sampling was performed at 2.5 foot intervals in conjunction with the Standard Penetration Test, for which driving resistance to a 2" split-spoon sampler (N value in blows per foot) provides an indication of the relative density of granular materials and consistency of cohesive soils. Water level readings were taken during and following completion of drilling operations.

Soil samples were examined in the laboratory to verify field descriptions and to classify them in accordance with the AASHTO Soil Classification System. Laboratory testing included moisture content determinations for all cohesive and intermediate (silt or loamy) soil types. An estimate of unconfined compressive strength was obtained for all inorganic native clay soils using a calibrated pocket penetrometer, with actual measurements of unconfined compressive strength performed on representative cohesive samples. Dry unit weight tests were also run on specimens of clay fill.

For classification purposes and to verify field identifications, tests for Atterberg limits and grain size analysis were performed on representative subgrade samples. Results of these tests are summarized in the Appendix on the Soil Test Data Sheets.

Reference is made to the boring logs in the Appendix which indicate subsurface stratigraphy and soil descriptions, results of field and laboratory tests, as well as water level observations. Definitions of descriptive terminology are also included. While strata changes are shown as a definite line on the boring logs, the actual transition between soil layers will probably be more gradual.

3.0 DISCUSSION OF TEST DATA

Ground surface elevations at the borings were referenced to an elevation of 623.06 for a PK nail set in the pavement of the park road approximately 200 feet north of the center of the cul-de-sac at the south end of the park road. Based on this reference point, the ground surface elevations at the borings were noted to range from a low of approximately 622.9 at Boring 3 to a high of approximately 625.0 at Boring 6.

At the surface of all of the borings except Boring 6, sandy or clay topsoil (fill) was encountered. The topsoil was noted to variable approximate depths in the range of 4 to 8 inches. At the surface of Boring 6 and

extending to an approximate depth of 1.6 feet, a silty loam was encountered. Below this material and extending to an approximate depth of 2 feet, a sandy topsoil was sampled.

Below the previously mentioned soils at all of the borings except Boring 2, fill soils consisting of sandy loam or sand with cinders or gravel were encountered. Below the topsoil layer at Boring 2, silty loam or clay loam soils were encountered. The majority of these fill soils revealed generally poor compaction characteristics with the water contents often exceeding 30 percent and/or the Standard Penetration values often being below 5 blows per foot (bpf).

Underlying the fill soils at Boring 4 and extending to a boring termination depth of 6 feet, an organic clay in a soft and very moist condition (WC= 57 percent) was found. The remaining soils encountered at the other locations were observed to consist of sand/ sandy loams (loose to very loose condition) and/or silty loam (stiff condition).

Water level observations were performed at the borings both while drilling and upon completion of the borings. No free water was encountered at Borings 1, 2 or 4 during either of these times. At the other boring locations water was observed at an approximate depth of 5.5 feet both while drilling and upon completion of the borings.

4.0 RECOMMENDATIONS

At all of the proposed boring locations except Boring 6, the proposed finished grade elevations were within 6 inches to one foot of the existing ground surface. At the location of Boring 6, the proposed finished grade will be almost 2½ feet higher than the existing ground surface elevation. In Table 1 which follows, we have summarized the existing ground surface, the proposed top of pavement elevation and the expected subgrade material at each of the boring locations.

TABLE 1

BORING NUMBER	GROUND SURFACE ELEVATION	APPROXIMATE PROPOSED TOP OF PAVEMENT ELEVATION	ESTIMATED SUBGRADE SOILS
1	623.6	624.1	On new fill
2	623.1	624.1	On new fill
3	622.8	622.5	FILL - Sandy Loam N=6
4	624.1	624.0	Fill - Sand and Gravel
5	624.2	623.7	Fill - Sandy Loam N=8
6	625.0	627.4	On new fill

It is our understanding that the proposed bike path will consist of approximately 2 inches of bituminous concrete over approximately 8 inches of compacted crushed stone. We also understand that the bike path will be constructed according to IDOT standards.

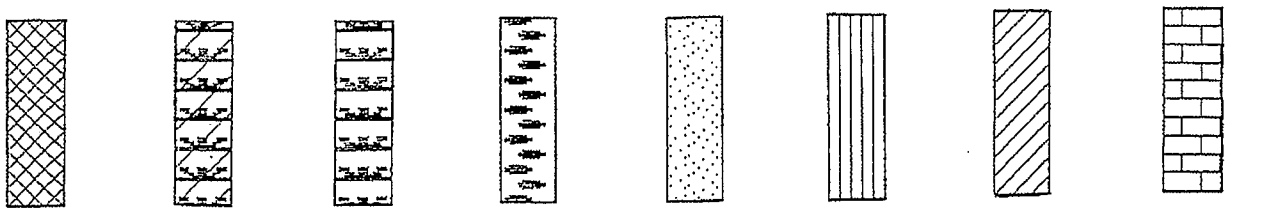
Guidelines for Subgrade Remediation

Initial site work should include the removal of the existing topsoil and vegetation. In cases where the grade will be essentially maintained or reduced, it will also be necessary to perform an additional cut in order to achieve the proposed subgrade elevation. The exposed subgrade should be tested with a Cone Penetrometer in accordance with the IDOT Subgrade Stability Manual to determine if remedial treatment is required. In addition, observations of heavy construction vehicles on subgrade areas or a proof rolling procedure will help to delineate deficient subgrade conditions.

At the location of Boring 3, Sandy Loam materials were encountered at the proposed subgrade elevation. Since this material exhibited a water content of approximately 30 percent, it is expected to fail a proof roll and therefore remedial work is expected in these areas. At the other boring locations Silty Loam soils, sand with cinders and/or sandy loam with cinders were encountered. These soils may also need to be reworked prior to the placement of engineered fill soils.

TESTING SERVICE CORPORATION

LEGEND FOR BORING LOGS



FILL TOPSOIL PEAT GRAVEL SAND SILT CLAY DOLOMITE

SAMPLE TYPE:

SS = Split Spoon
ST = Thin-Walled Tube
A = Auger

FIELD AND LABORATORY TEST DATA:

N = Standard Penetration Resistance in Blows per Foot
Wc = In-Situ Water Content
Qu = Unconfined Compressive Strength in Tons per Square Foot
* Pocket Penetrometer Measurement; Maximum Reading = 4.5 tsf
γD = Dry Unit Weight in Pounds per Cubic Foot

WATER LEVELS:

▼ While Drilling
▽ End of Boring
▼ 24 Hours

SOIL DESCRIPTION:

MATERIAL	PARTICLE SIZE RANGE
BOULDER	Over 12 inches
COBBLE	12 inches to 3 inches
Coarse GRAVEL	3 inches to ¾ inch
Small GRAVEL	¾ inch to No. 4 Sieve
Coarse SAND	No. 4 Sieve to No. 10 Sieve
Medium SAND	No. 10 Sieve to No. 40 Sieve
Fine SAND	No. 40 Sieve to No. 200 Sieve
SILT and CLAY	Passing No. 200 Sieve

COHESIVE SOILS

CONSISTENCY	Qu
Very Soft	Less than 0.3
Soft	0.3 to 0.6
Stiff	0.6 to 1.0
Tough	1.0 to 2.0
Very Tough	2.0 to 4.0
Hard	4.0 and over

COHESIONLESS SOILS

RELATIVE DENSITY	N
Very Loose	0 - 4
Loose	4 - 10
Firm	10 - 30
Dense	30 - 50
Very Dense	50 and over

MODIFYING TERM	PERCENT BY WEIGHT
Trace	1 - 10
Little	10 - 20
Some	20 - 35

PROJECT Hurd's Island Park, Fox River Trail Bike Path, Aurora, Illinois

CLIENT Robert H. Anderson & Associates, Inc., St. Charles, Illinois

BORING 1 DATE STARTED 8-1-08 DATE COMPLETED 8-1-08 JOB L - 71,205

ELEVATIONS

GROUND SURFACE 623.6

END OF BORING 617.6

WATER LEVEL OBSERVATIONS

▼ WHILE DRILLING Dry

▽ AT END OF BORING Dry

▼ 24 HOURS

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0.4	623.2	FILL - Black silty CLAY A-7-6
	A						0.8	622.8	FILL - Black SAND and CINDERS, moist A-1
	1B	SS	3 5-6	34.9					FILL - Gray SAND, trace gravel, moist A-1-b 7% Gravel, 81% Sand, 12% Silt and Clay
	C			6.6			1.7	621.9	FILL - Brown SAND, trace gravel, moist (SP) A-1-b
							2.0	621.6	
	2	SS	4-2 2-2	26.7					Loose black SANDY LOAM, trace organic, very moist A-2
							4.0	619.6	
	3	SS	2-2 1-2	25.6					Loose brown SANDY LOAM, very moist A-2
									End of Boring at 6.0'

DISTANCE BELOW SURFACE IN FEET

0

5

10

DRILL RIG NO. 256

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.

TSC 71205.GPJ TSC_ALL.GDT 8/18/08

PROJECT Hurd's Island Park, Fox River Trail Bike Path, Aurora, Illinois

CLIENT Robert H. Anderson & Associates, Inc., St. Charles, Illinois

BORING 2 DATE STARTED 8-1-08 DATE COMPLETED 8-1-08 JOB L - 71,205

ELEVATIONS

GROUND SURFACE 623.1

END OF BORING 617.1

WATER LEVEL OBSERVATIONS

▼ WHILE DRILLING Dry

▽ AT END OF BORING Dry

▼ 24 HOURS

DISTANCE BELOW SURFACE IN FEET	LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
0								0.3	622.8	FILL - Black clayey TOPSOIL (A-7-6
		A			13.6		118.9			FILL - Brown and gray SILTY LOAM, moist A-6 (3)
		1	SS	4 3-4						19% Gravel, 23% Sand, 43% Silt and 15% Clay LL=32/ PL=14/ PI=18
		B			26.1		87.9	1.6	621.5	FILL - Black CLAY LOAM, very moist A-7-6
								2.0	621.1	
		A			13.3		97.0			FILL - Black and gray SILTY LOAM, TRACE ORGANIC moist A-6
		2	SS	2-2 3-3				3.0	620.1	
		B			39.9		77.8			FILL - Black CLAY LOAM, very moist A-7-6
		A			37.0		81.9			
5		3	SS	4-3 3-3				5.0	618.1	
		B			39.1	0.75*				Stiff gray SILTY LOAM, very moist A-7-6
										End of Boring at 6.0'
										* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.
10										

DRILL RIG NO. 256

Division lines between deposits represent approximate boundaries between soil types. in-situ, the transition may be gradual.

TSC 71205.GPJ TSC_ALL.GDT 8/18/08

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PROJECT Hurd's Island Park, Fox River Trail Bike Path, Aurora, Illinois

CLIENT Robert H. Anderson & Associates, Inc., St. Charles, Illinois

BORING 3 DATE STARTED 8-1-08 DATE COMPLETED 8-1-08 JOB L - 71,205

ELEVATIONS

GROUND SURFACE 622.8

END OF BORING 616.8

WATER LEVEL OBSERVATIONS

▼ WHILE DRILLING 5.5 '

▽ AT END OF BORING 5.5 '

▼ 24 HOURS

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0.3	622.5	FILL - Black clayey TOPSOIL A-7-6
1	SS		3 3-3	29.6					FILL - Black to brown sandy LOAM, trace gravel, very moist A-2
							2.0	620.8	
A				28.7					Very loose brown SANDY LOAM, very moist to wet A-2
2	SS		2-1 2-2				3.0	619.8	
B				30.9					Loose brown SANDY LOAM, moist A-2 79% Sand, 21% Silt and Clay
							4.0	618.8	
A				34.7	1.0*				Stiff to tough brown and gray SANDY LOAM, very moist A-7-6
3	SS		2-2 3-3						
B				12.7			5.5	617.3	▼
									Loose gray SAND, trace gravel, saturated A-3
									End of Boring at 6.0' * Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

0

5

10

DRILL RIG NO. 256

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.

TSC 71205.GPJ TSC_ALL.GDT 8/18/08

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PROJECT Hurd's Island Park, Fox River Trail Bike Path, Aurora, Illinois

CLIENT Robert H. Anderson & Associates, Inc., St. Charles, Illinois

BORING 4 DATE STARTED 8-1-08 DATE COMPLETED 8-1-08 JOB L - 71,205

ELEVATIONS

GROUND SURFACE 624.1

END OF BORING 618.1

WATER LEVEL OBSERVATIONS

▼ WHILE DRILLING Dry

▽ AT END OF BORING Dry

▼ 24 HOURS

DISTANCE BELOW SURFACE IN FEET

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
0									
	A			2.3			0.7	623.4	FILL - Black clayey TOPSOIL A-7-6
	1	SS	4 8-10				1.3	622.8	FILL - Black SAND and CINDERS, trace glass, moist
	B			39.8					FILL - Dark gray SANDY LOAM, very moist A-2
	A			41.8					
	2	SS	6-7 7-4				3.0	621.1	
	B			15.8					FILL - Black SANDY LOAM, moist A-2
							4.0	620.1	
5	3	SS	5-4 5-4	57.0	0.5*				Soft brown and gray ORGANIC CLAY, some sand, very moist A-8 L-O-I = 6.9%
									End of Boring at 6.0'
10									* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

DRILL RIG NO. 256

Division lines between deposits represent approximate boundaries between soil types, in-situ, the transition may be gradual.

TSC 71205.GPJ TSC_ALL.GDT 8/18/08

PROJECT Hurd's Island Park, Fox River Trail Bike Path, Aurora, Illinois

CLIENT Robert H. Anderson & Associates, Inc., St. Charles, Illinois

BORING 5 DATE STARTED 8-1-08 DATE COMPLETED 8-1-08 JOB L - 71,205

ELEVATIONS

GROUND SURFACE 624.2

END OF BORING 618.2

WATER LEVEL OBSERVATIONS

▼ WHILE DRILLING 5.5 '

▽ AT END OF BORING 5.5 '

▼ 24 HOURS

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0		
							0.4	623.8	FILL - Black clayey TOPSOIL (OL) A-7-6
A				9.8					FILL - Black and brown SANDY LOAM and CINDERS
1	SS		6-4-4				1.2	623.0	
B				22.4					FILL - Black SANDY LOAM, trace Cinders, very moist to moist A-2
A				9.6			2.5	621.7	
2	SS		3-2 1-1						Very loose black SAND and CINDERS, very moist A-1-b
B				4.2					
							4.0	620.2	
A				84.2					Very loose black SANDY LOAM and CINDERS, very moist A-2
3	SS		1-0 1-0						
B				24.9			5.5	618.7	▽ Very loose brown and gray SANDY LOAM, very moist A-2
									End of Boring at 6.0'

* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

0

5

10

DRILL RIG NO. 256

Division lines between deposits represent approximate boundaries between soil types, in-situ, the transition may be gradual.

TSC 71205.GPJ TSC_ALL.GDT 8/18/08

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PROJECT Hurd's Island Park, Fox River Trail Bike Path, Aurora, Illinois

CLIENT Robert H. Anderson & Associates, Inc., St. Charles, Illinois

BORING 6 DATE STARTED 8-1-08 DATE COMPLETED 8-1-08 JOB L - 71,205

ELEVATIONS

GROUND SURFACE 625.0

END OF BORING 619.0

WATER LEVEL OBSERVATIONS

▼ WHILE DRILLING 5.5 '

▽ AT END OF BORING 5.5 '

▼ 24 HOURS

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
	A			12.7		106.7			FILL - Dark brown to black =SILTY LOAM, moist A-6
	1	SS	4-5 5-4						
	B			22.9		96.1	1.6	623.4	FILL - Black sandy TOPSOIL, moist A-8
							2.0	623.0	
	2	SS	3-2 3-3	13.9					FILL - Black SANDY LOAM, trace gravel, very moist
							4.0	621.0	
	A			30.3		89.9			FILL - Dark brown CLAY LOAM, trace organic, very moist A-6
	3	SS	2-2 1-2						
	B			25.1			5.5	619.5	▼ Loose brown SANDY LOAM, trace shells, saturated A-2
									End of Boring at 6.0'

* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

0

5

10

DRILL RIG NO. 256

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.

TSC 71205.GPJ TSC_ALL.GDT 8/18/08

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In the event the soils either fail a proof roll or are determined to be deficient by the use of the Cone Penetrometer, it will be necessary to either remediate these soils or to remove and replace them. In the event time and weather conditions allow these soils to be reworked, the soils should be disced, dried and recompacted according to Section 301 of the IDOT Standard Specifications. Compaction for subgrade materials should be to at least 95 percent according to Standard Proctor density (AASHTO T-99). This same compaction requirement should also be used for any new subgrade fill soils. Solutions to persistent pumping should include the removal of the deficient soils and the replacement of these soils with granular fill soils.

Loamy type soils which were commonly encountered at the proposed subgrade elevation are moisture sensitive and will exhibit a significant decrease in strength with an increase in moisture content. The prevailing temperature and precipitation experienced during construction will have a significant influence on the amount of undercutting required. In order to help control undercutting, it is recommended that temporary drainage ditches be maintained. In addition, it is recommended that water be pumped from low areas so that the water can not infiltrate the subgrade.

Aggregate fill will be required in order to bridge over weak subgrade soils which can not be properly densified. Aggregate materials needed beneath the Aggregate Subgrade or subbase layer may consist of the IDOT Porous Granular Embankment-Subgrade (PGES).

The need for undercutting unstable subgrade and PGES replacement fill should be based on direct observations made during construction once the subgrade soils are exposed and proof-rolling or cone penetrometer testing procedures can be conducted. Normal IDOT procedures require that cone penetrometer testing be performed immediately to the subgrade being undercut. This is done to so that the need for undercutting is documented.

5.0 CLOSURE

The analysis and recommendations submitted in this report are based upon the data obtained from the six (6) soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings, the nature and extent of which may not

become evident until during the course of construction. If variations are then identified, recommendations contained in this report should be re-evaluated after performing on-site observations.

We are available to review this report with you at your convenience.

Charles DuBose
Vice President
Registered Professional Engineer
Illinois No. 062-041049

CHARLES R. DUBOSE
062-041049
REGISTERED
PROFESSIONAL
ENGINEER
STATE OF ILLINOIS

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

As the client of a consulting geotechnical engineer, you should know that site subsurface conditions cause more construction problems than any other factor. ASFE/The Association of Engineering Firms Practicing in the Geosciences offers the following suggestions and observations to help you manage your risks.

A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Your geotechnical engineering report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. These factors typically include: the general nature of the structure involved, its size, and configuration; the location of the structure on the site; other improvements, such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask your geotechnical engineer to evaluate how factors that change subsequent to the date of the report may affect the report's recommendations.

Unless your geotechnical engineer indicates otherwise, do not use your geotechnical engineering report:

- when the nature of the proposed structure is changed, for example, if an office building will be erected instead of a parking garage, or a refrigerated warehouse will be built instead of an unrefrigerated one;
- when the size, elevation, or configuration of the proposed structure is altered;
- when the location or orientation of the proposed structure is modified;
- when there is a change of ownership; or
- for application to an adjacent site.

Geotechnical engineers cannot accept responsibility for problems that may occur if they are not consulted after factors considered in their report's development have changed.

SUBSURFACE CONDITIONS CAN CHANGE

A geotechnical engineering report is based on conditions that existed at the time of subsurface exploration. Do not base construction decisions on a geotechnical engineering report whose adequacy may have been affected by time. Speak with your geotechnical consultant to learn if additional tests are advisable before construction starts.Note, too, that additional tests may be required when subsurface conditions are affected by construction operations at or adjacent to the site, or by natural events such as floods, earthquakes, or ground water fluctuations. Keep your geotechnical consultant apprised of any such events.

MOST GEOTECHNICAL FINDINGS ARE PROFESSIONAL JUDGMENTS

Site exploration identifies actual subsurface conditions only at those points where samples are taken. The data were extrapolated by your geotechnical engineer who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your geotechnical engineer can work together to help minimize their impact. Retaining your geotechnical engineer to observe construction can be particularly beneficial in this respect.

A REPORT'S RECOMMENDATIONS CAN ONLY BE PRELIMINARY

The construction recommendations included in your geotechnical engineer's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Because actual subsurface conditions can be discerned only during earthwork, you should retain your geotechnical engineer to observe actual conditions and to finalize recommendations. Only the geotechnical engineer who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations are valid and whether or not the contractor is abiding by applicable recommendations. The geotechnical engineer who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS

Consulting geotechnical engineers prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your geotechnical engineer prepared your report expressly for you and expressly for purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the geotechnical engineer. No party should apply this report for any purpose other than that originally contemplated without first conferring with the geotechnical engineer.

GEOENVIRONMENTAL CONCERNS ARE NOT AT ISSUE

Your geotechnical engineering report is not likely to relate any findings, conclusions, or recommendations

about the potential for hazardous materials existing at the site. The equipment, techniques, and personnel used to perform a geoenvironmental exploration differ substantially from those applied in geotechnical engineering. Contamination can create major risks. If you have no information about the potential for your site being contaminated, you are advised to speak with your geotechnical consultant for information relating to geoenvironmental issues.

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a geotechnical engineering report. To help avoid misinterpretations, retain your geotechnical engineer to work with other project design professionals who are affected by the geotechnical report. Have your geotechnical engineer explain report implications to design professionals affected by them, and then review those design professionals' plans and specifications to see how they have incorporated geotechnical factors. Although certain other design professionals may be familiar with geotechnical concerns, none knows as much about them as a competent geotechnical engineer.

BORING LOGS SHOULD NOT BE SEPARATED FROM THE REPORT

Geotechnical engineers develop final boring logs based upon their interpretation of the field logs (assembled by site personnel) and laboratory evaluation of field samples. Geotechnical engineers customarily include only final boring logs in their reports. Final boring logs should not under any circumstances be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to minimize the possibility of contractors misinterpreting the logs during bid preparation. When this occurs, delays, disputes, and unanticipated costs are the all-too-frequent result.

To minimize the likelihood of boring log misinterpretation, give contractors ready access to the complete geotechnical engineering report prepared or authorized for their use. (If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared and that developing construction cost estimates was not one of the specific purposes for which it was prepared. In other words, while a contractor may gain important knowledge from a report prepared for another party, the contractor would be well-advised to discuss the report with your geotechnical engineer and to perform the additional or alternative work that the contractor believes may be needed to obtain the data specifically appropriate for construction cost estimating purposes.) Some clients believe that it is unwise or unnecessary to give contractors access to their geotechnical engineering reports because they hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems. It also helps reduce the adversarial attitudes that can aggravate problems to disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY

Because geotechnical engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against geotechnical engineers. To help prevent this problem, geotechnical engineers have developed a number of clauses for use in their contracts, reports, and other documents. Responsibility clauses are not exculpatory clauses designed to transfer geotechnical engineers' liabilities to other parties. Instead, they are definitive clauses that identify where geotechnical engineers' responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your geotechnical engineering report. Read them closely. Your geotechnical engineer will be pleased to give full and frank answers to any questions.

RELY ON THE GEOTECHNICAL ENGINEER FOR ADDITIONAL ASSISTANCE

Most ASFE-member consulting geotechnical engineering firms are familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a construction project, from design through construction. Speak with your geotechnical engineer not only about geotechnical issues, but others as well, to learn about approaches that may be of genuine benefit. You may also wish to obtain certain ASFE publications. Contact a member of ASFE or ASFE for a complimentary directory of ASFE publications.

ASFE PROFESSIONAL FIRMS PRACTICING IN THE GEOSCIENCES
8811 COLESVILLE ROAD/SUITE G106/SILVER SPRING, MD 20910
TELEPHONE: 301/565-2733 FACSIMILE: 301/589-2017

IIGP0294

TESTING SERVICE CORPORATION

GENERAL CONDITIONS

Geotechnical and Construction Services

1. PARTIES AND SCOPE OF WORK: If Client is ordering the services on behalf of another, Client represents and warrants that Client is the duly authorized agent of said party for the purpose of ordering and directing said services, and in such case the term "Client" shall also include the principal for whom the services are being performed. Prices quoted and charged by TSC for its services are predicated on the conditions and the allocations of risks and obligations expressed in these General Conditions. Unless otherwise stated in writing, Client assumes sole responsibility for determining whether the quantity and the nature of the services ordered by Client are adequate and sufficient for Client's intended purpose. Unless otherwise expressly assumed in writing, TSC's services are provided exclusively for client. TSC shall have no duty or obligation other than those duties and obligations expressly set forth in this Agreement. TSC shall have no duty to any third party. Client shall communicate these General Conditions to each and every party to whom the Client transmits any report prepared by TSC. Ordering services from TSC shall constitute acceptance of TSC's proposal and these General Conditions.

2. SCHEDULING OF SERVICES: The services set forth in this Agreement will be accomplished in a timely and workmanlike manner. If TSC is required to delay any part of its services to accommodate the requests or requirements of Client, regulatory agencies, or third parties, or due to any cause beyond its reasonable control, Client agrees to pay such additional charges, if any, as may be applicable.

3. ACCESS TO SITE: TSC shall take reasonable measures and precautions to minimize damage to the site and any improvements located thereon as a result of its services or the use of its equipment; however, TSC has not included in its fee the cost of restoration of damage which may occur. If Client desires or requires TSC to restore the site to its former condition, TSC will, upon written request, perform such additional work as is necessary to do so and Client agrees to pay to TSC the cost thereof plus TSC's normal markup for overhead and profit.

4. CLIENT'S DUTY TO NOTIFY ENGINEER: Client represents and warrants that Client has advised TSC of any known or suspected hazardous materials, utility lines and underground structures at any site at which TSC is to perform services under this agreement.

5. DISCOVERY OF POLLUTANTS: TSC's services shall not include investigation for hazardous materials as defined by the Resource Conservation Recovery Act, 42 U.S.C.§ 6901, et, seq., as amended ("RCRA") or by any state or Federal statute or regulation. In the event that hazardous materials are discovered and identified by TSC, TSC's sole duty shall be to notify Client.

6. MONITORING: If this Agreement includes testing construction materials or observing any aspect of construction of improvements, Client's construction personnel will verify that the pad is properly located and sized to meet Client's projected building loads. Client shall cause all tests and inspections of the site, materials and work to be timely and properly performed in accordance with the plans, specifications, contract documents, and TSC's recommendations. No claims for loss, damage or injury shall be brought against TSC unless all tests and inspections have been so performed and unless TSC's recommendations have been followed.

TSC's services shall not include determining or implementing the means, methods, techniques or procedures of work done by the contractor(s) being monitored or whose work is being tested. TSC's services shall not include the authority to accept or reject work or to in any manner supervise the work of any contractor. TSC's services or failure to perform same shall not in any way operate or excuse any contractor from the performance of its work in accordance with its contract. "Contractor" as used herein shall include subcontractors, suppliers, architects, engineers and construction managers.

Information obtained from borings, observations and analyses of sample materials shall be reported in formats considered appropriate by TSC unless directed otherwise by Client. Such information is considered evidence, but any inference or conclusion based thereon is, necessarily, an opinion also based on engineering judgment and shall not be construed as a representation of fact. Subsurface conditions may not be uniform throughout an entire site and ground water levels may fluctuate due to climatic and other variations. Construction materials may vary from the samples taken. Unless otherwise agreed in writing, the procedures employed by TSC are not designed to detect intentional concealment or misrepresentation of facts by others.

7. DOCUMENTS AND SAMPLES: Client is granted an exclusive license to use findings and reports prepared and issued by TSC and any sub-consultants pursuant to this Agreement for the purpose set forth in TSC's proposal provided that TSC has received payment in full for its services. TSC and, if applicable, its sub-consultant, retain all copyright and ownership interests in the reports, boring logs, maps, field data, field notes, laboratory test data and similar documents, and the ownership and freedom to use all data generated by it for any purpose. Unless otherwise agreed in writing, test specimens or samples will be disposed immediately upon completion of the test. All drilling samples or specimens will be disposed sixty (60) days after submission of TSC's report.

8. TERMINATION: TSC's obligation to provide services may be terminated by either party upon (7) seven days prior written notice. In the event of termination of TSC's services, TSC shall be compensated by Client for all services performed up to and including the termination date, including reimbursable expenses. The terms and conditions of these General Conditions shall survive the termination of TSC's obligation to provide services.

9. PAYMENT: Client shall be invoiced periodically for services performed. Client agrees to pay each invoice within thirty (30) days of its receipt. Client further agrees to pay interest on all amounts invoiced and not paid or objected to in writing for valid cause within sixty (60) days at the rate of twelve (12%) per annum (or the maximum interest rate permitted by applicable law, whichever is the lesser) until paid and TSC's costs of collection of such accounts, including court costs and reasonable attorney's fees.

10. WARRANTY: TSC's professional services will be performed, its findings obtained and its reports prepared in accordance with these General Conditions and with generally accepted principles and practices. In performing its professional services, TSC will use that degree of care and skill ordinarily exercised under similar circumstances by members of its profession. In performing physical work in pursuit of its professional services, TSC will use that degree of care and skill ordinarily used under similar circumstances. This warranty is in lieu of all other warranties or representations, either express or implied. Statements made in TSC reports are opinions based upon engineering judgment and are not to be construed as representations of fact.

Should TSC or any of its employees be found to have been negligent in performing professional services or to have made and breached any express or implied warranty, representation or contract, Client, all parties claiming through Client and all parties claiming to have in any way relied upon TSC's services or work agree that the maximum aggregate amount of damages for which TSC, its officers, employees and agents shall be liable is limited to $50,000 or the total amount of the fee paid to TSC for its services performed with respect to the project, whichever amount is greater.

In the event Client is unwilling or unable to limit the damages for which TSC may be liable in accordance with the provisions set forth in the preceding paragraph, upon written request of Client received within five days of Client's acceptance of TSC's proposal together with payment of an additional fee in the amount of 5% of TSC's estimated cost for its services (to be adjusted to 5% of the amount actually billed by TSC for its services on the project at time of completion), the limit on damages shall be increased to $500,000 or the amount of TSC's fee, whichever is the greater. This charge is not to be construed as being a charge for insurance of any type, but is increased consideration for the exposure to an award of greater damages.

11. INDEMNITY: Subject to the provisions set forth herein, TSC and Client hereby agree to indemnify and hold harmless each other and their respective shareholders, directors, officers, partners, employees, agents, subsidiaries and division (and each of their heirs, successors, and assigns) from any and all claims, demands, liabilities, suits, causes of action, judgments, costs and expenses, including reasonable attorneys' fees, arising, or allegedly arising, from personal injury, including death, property damage, including loss of use thereof, due in any manner to the negligence of either of them or their agents or employees or independent contractors. In the event both TSC and Client are found to be negligent or at fault, then any liability shall be apportioned between them pursuant to their pro rata share of negligence or fault. TSC and Client further agree that their liability to any third party shall, to the extent permitted by law, be several and not joint. The liability of TSC under this provision shall not exceed the policy limits of insurance carried by TSC. Neither TSC nor Client shall be bound under this indemnity agreement to liability determined in a proceeding in which it did not participate represented by its own independent counsel. The indemnities provided hereunder shall not terminate upon the termination or expiration of this Agreement, but may be modified to the extent of any waiver of subrogation agreed to by TSC and paid for by Client.

12. SUBPOENAS: TSC's employees shall not be retained as expert witnesses except by separate, written agreement. Client agrees to pay TSC pursuant to TSC's then current fee schedule for any TSC employee(s) subpoenaed by any party as an occurrence witness as a result of TSC's services.

13. OTHER AGREEMENTS: TSC shall not be bound by any provision or agreement (i) requiring or providing for arbitration of disputes or controversies arising out of this Agreement or its performance, (ii) wherein TSC waives any rights to a mechanics lien or surety bond claim; (iii) that conditions TSC's right to receive payment for its services upon payment to Client by any third party or (iv) that requires TSC to indemnify any party beyond its own negligence These General Conditions are notice, where required, that TSC shall file a lien whenever necessary to collect past due amounts. This Agreement contains the entire understanding between the parties. Unless expressly accepted by TSC in writing prior to delivery of TSC's services, Client shall not add any conditions or impose conditions which are in conflict with those contained herein, and no such additional or conflicting terms shall be binding upon TSC. The unenforceability or invalidity of any provision or provisions shall not render any other provision or provisions unenforceable or invalid. This Agreement shall be construed and enforced in accordance with the laws of the State of Illinois. In the event of a dispute arising out of or relating to the performance of this Agreement, the breach thereof or TSC's services, the parties agree to try in good faith to settle the dispute by mediation under the Construction Industry Mediation Rules of the American Arbitration Association as a condition precedent to filing any demand for arbitration, or any petition or complaint with any court. Paragraph headings are for convenience only and shall not be construed as limiting the meaning of the provisions contained in these General Conditions.

REV 02/08

APPENDIX

SOIL DATA SHEET
(4 pages)

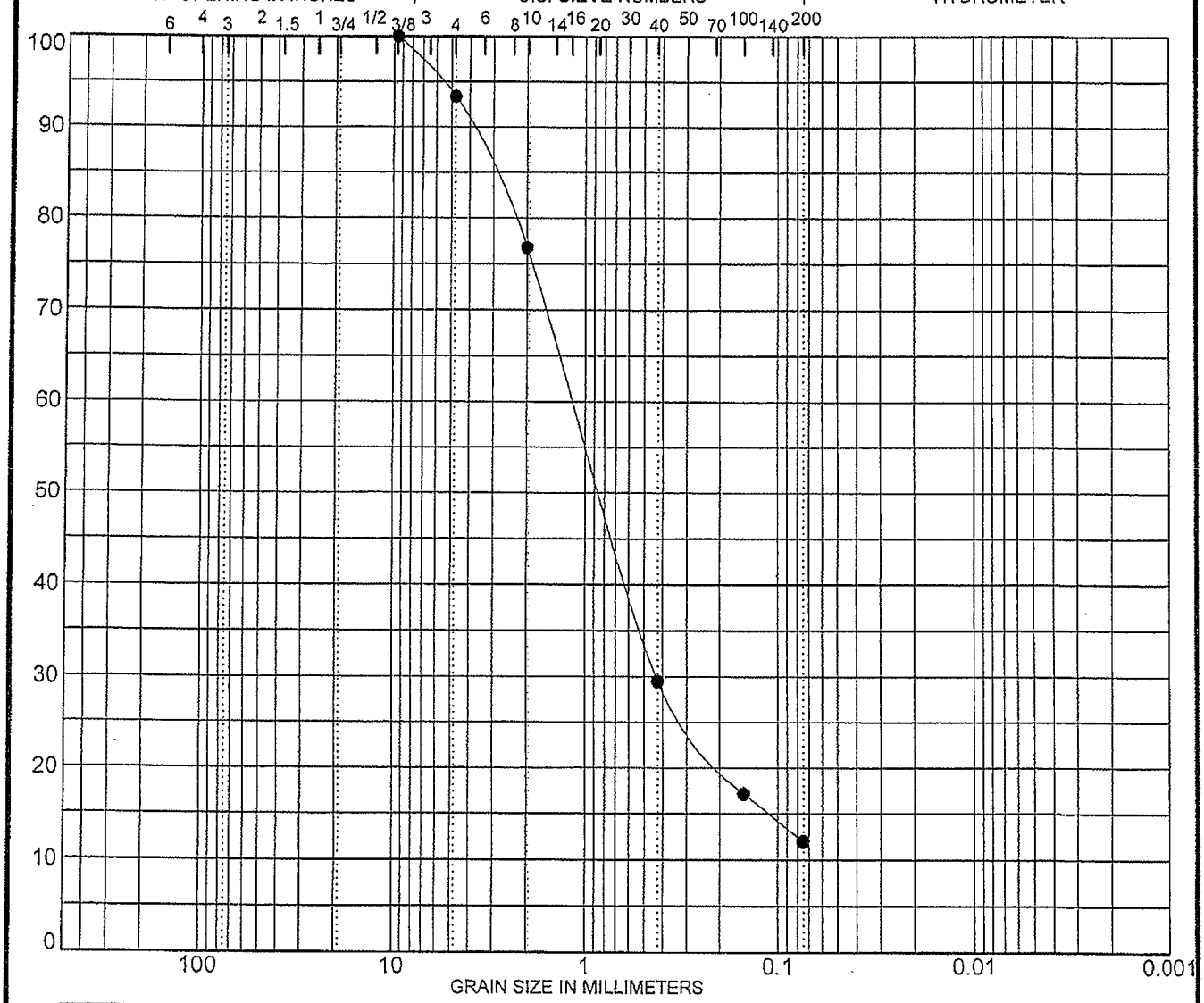
SOIL TEST DATA
(1 page)

UNIFIED CLASSIFICATION CHART

LEGEND FOR BORING LOGS

BORING LOGS
(6 pages)

BORING LOCATION PLAN



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

SPECIMEN IDENTIFICATION	SIEVE	% PASS
Boring: 1	3 inch	100
Sample: 1A	2	100
	1 1/2	100
	1	100
NOTES:	3/4	100
	3/8	100
	# 4	93
	# 10	77
	# 40	30
	# 100	17
	# 200	12

SOIL CLASSIFICATION

Dark brown to black SANDY LOAM, trace gravel, A-1-b

%GRAVEL	%SAND	%SILT	%CLAY
7	81	(12% Combined)	

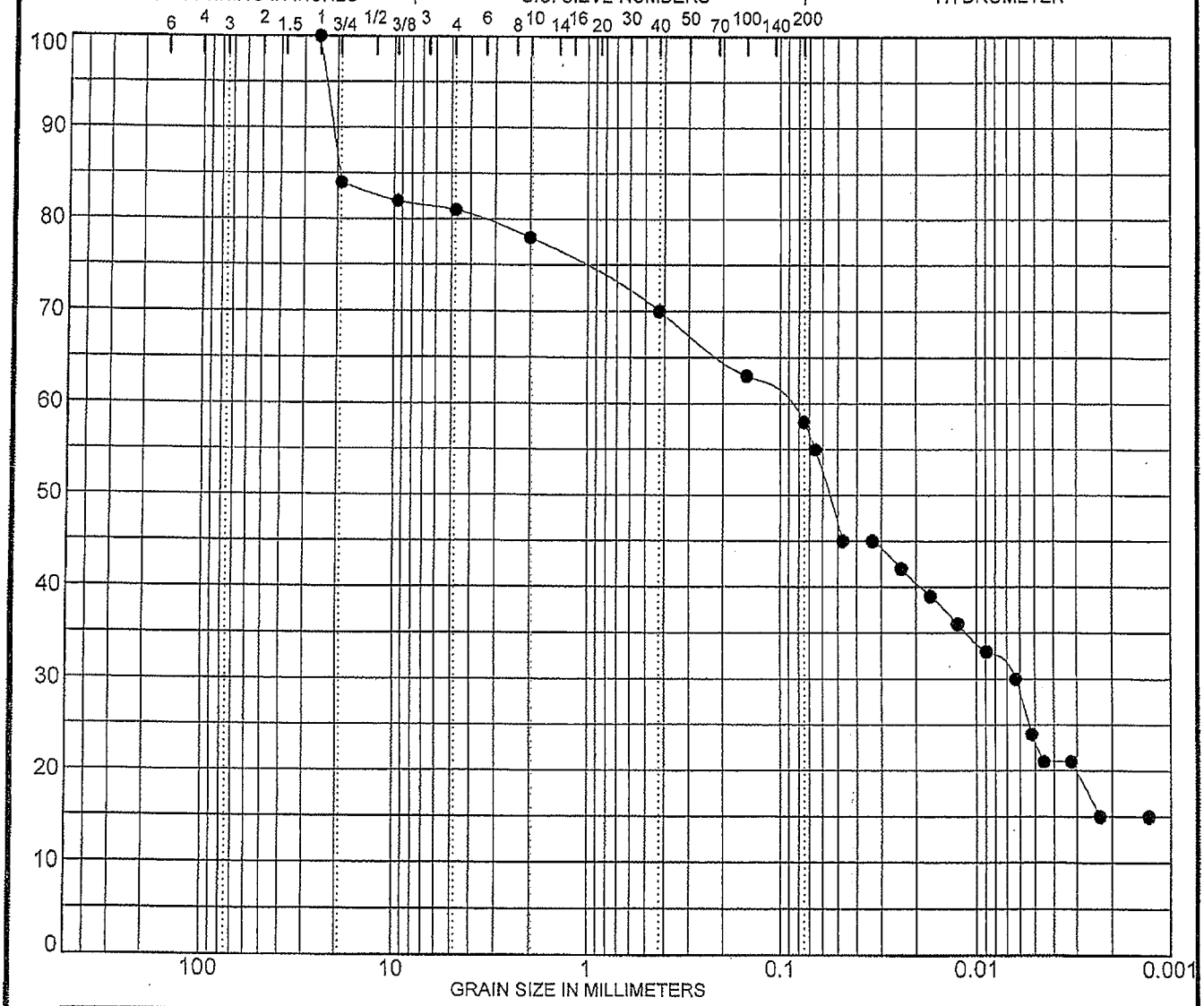
PROJECT Hurd's Island Park Geotechnical Investigation
LOCATION Aurora, Illinois
JOB NO. L - 71,205
DATE August 13, 2008

1

SOIL DATA SHEET

Testing Service Corporation
Carol Stream, IL 60188

SOILGENR 71205.GPJ TSC ALL.GDT 8/19/08



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

SPECIMEN IDENTIFICATION	SIEVE	% PASS
Boring: 2	3 inch	100
Sample: 1A	2	100
	1 1/2	100
	1	100
NOTES:	3/4	84
	3/8	82
	# 4	81
	# 10	78
	# 40	70
	# 100	63
	# 200	58

SOIL CLASSIFICATION: Brownish gray SILTY LOAM, little gravel,

A-6(3)

%GRAVEL	%SAND	%SILT	%CLAY
19	23	43	15

LL	PL	PI
32	14	18

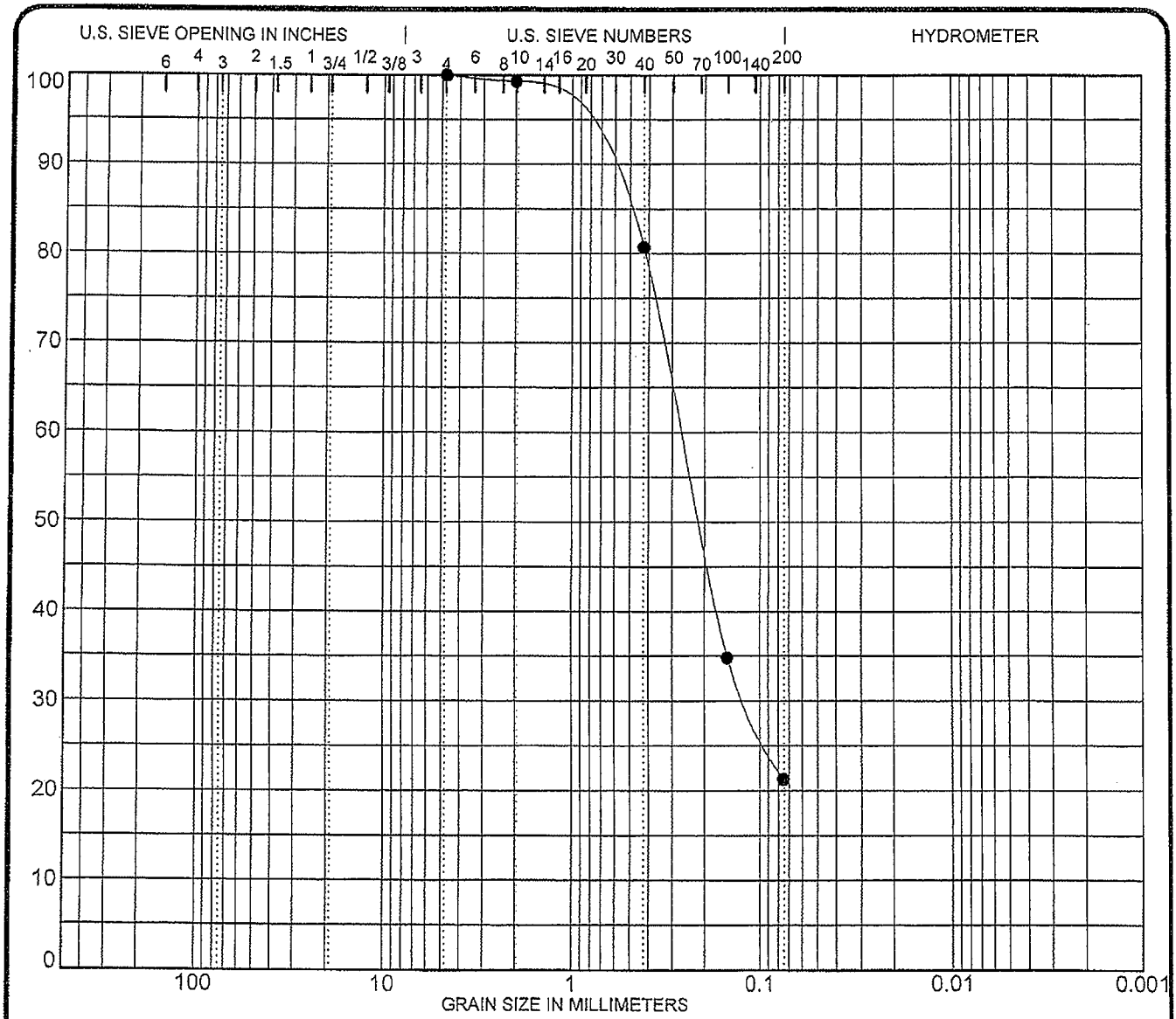
PROJECT Hurd's Island Park Geotechnical Investigation
LOCATION Aurora, Illinois
JOB NO. L - 71,205
DATE August 13, 2008

2

SOIL DATA SHEET

Testing Service Corporation
Carol Stream, IL 60188

SOILGENR 71205.GPJ TSC ALL.GDT 8/14/08



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

SPECIMEN IDENTIFICATION	SIEVE	% PASS	SOIL CLASSIFICATION
Boring: 3	3 inch	100	Brown SANDY LOAM, A-2
Sample: 2B	2	100	
	1 1/2	100	
	1	100	%GRAVEL / %SAND / %SILT / %CLAY
NOTES:	3/4	100	0 / 79 / (21% Combined)
	3/8	100	
	# 4	100	
	# 10	99	
	# 40	81	
	# 100	35	
	# 200	21	

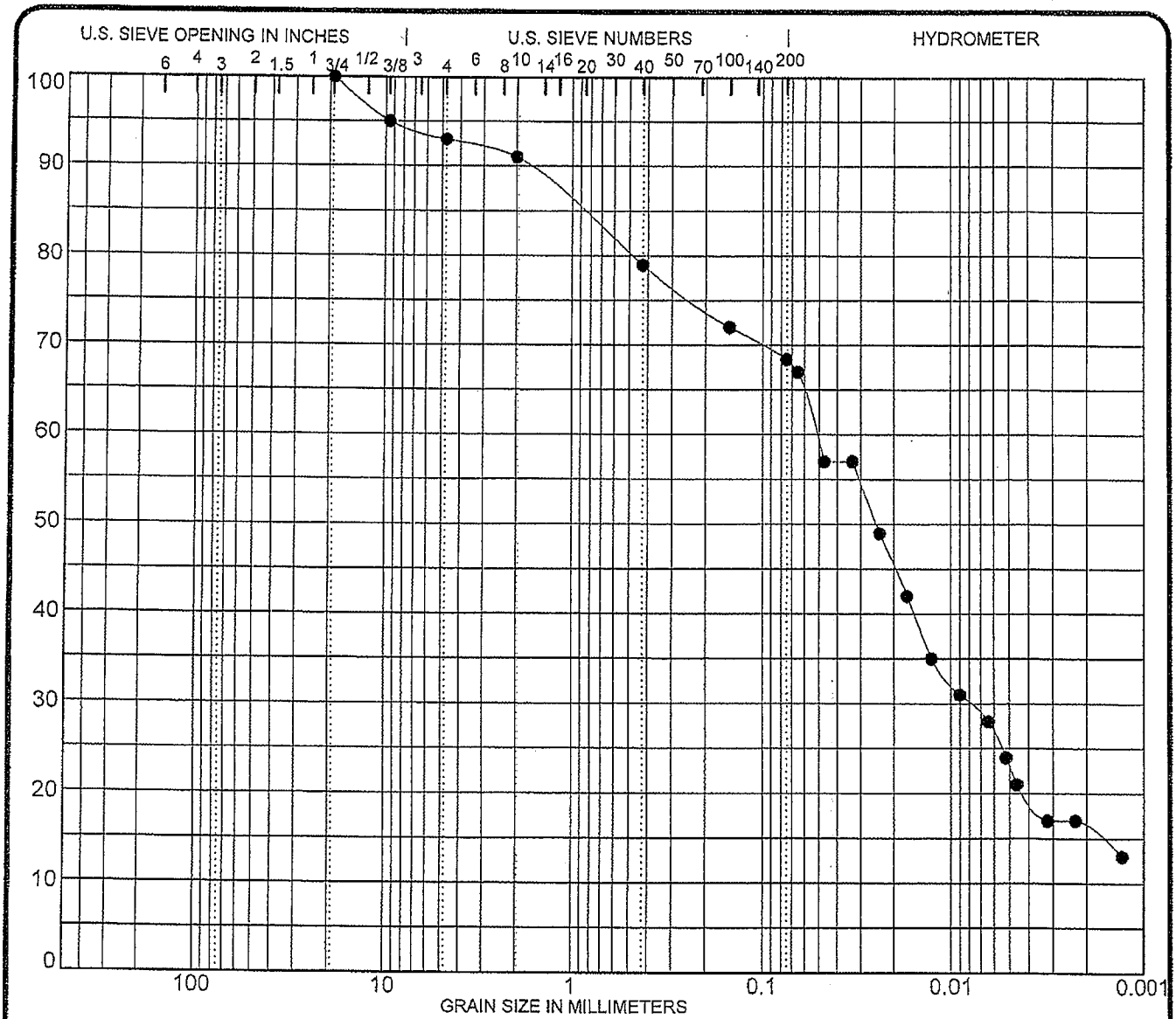
PROJECT Hurd's Island Park Geotechnical Investigation
LOCATION Aurora, Illinois
JOB NO. L - 71,205
DATE August 13, 2008

3

SOIL DATA SHEET

Testing Service Corporation
Carol Stream, IL 60188

SOILGENR_71205.GPJ TSC_ALL.GDT 8/14/08



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

SPECIMEN IDENTIFICATION	SIEVE	% PASS
Boring: 6	3 inch	100
Sample: 2	2	100
	1 1/2	100
	1	100
NOTES:	3/4	100
	3/8	95
	# 4	93
	# 10	91
	# 40	79
	# 100	72
	# 200	68

SOIL CLASSIFICATION: Dark brown SILTY LOAM, trace gravel, A-7-6(11)

%GRAVEL	%SAND	%SILT	%CLAY
7	25	52	16

		LL	PL	PI
		45	22	23

PROJECT Hurd's Island Park Geotechnical Investigation
LOCATION Aurora, Illinois
JOB NO. L - 71,205
DATE August 13, 2008

6

SOIL DATA SHEET
Testing Service Corporation
Carol Stream, IL 60188

SOILGENR 71205.GPJ TSC ALL.GDT 8/14/08

TESTING SERVICE CORPORATION
457 East Gundersen Drive
Carol Stream, Illinois

TSC Job No. L-71,205
Date August 18, 2008

CLIENT: Robert H. Anderson & Associates, Inc.
220 West River Drive
St. Charles, Illinois 60174

PROJECT: Fox River Bike Trail
Hurd's Island Park
Aurora, Illinois

SOIL TEST DATA

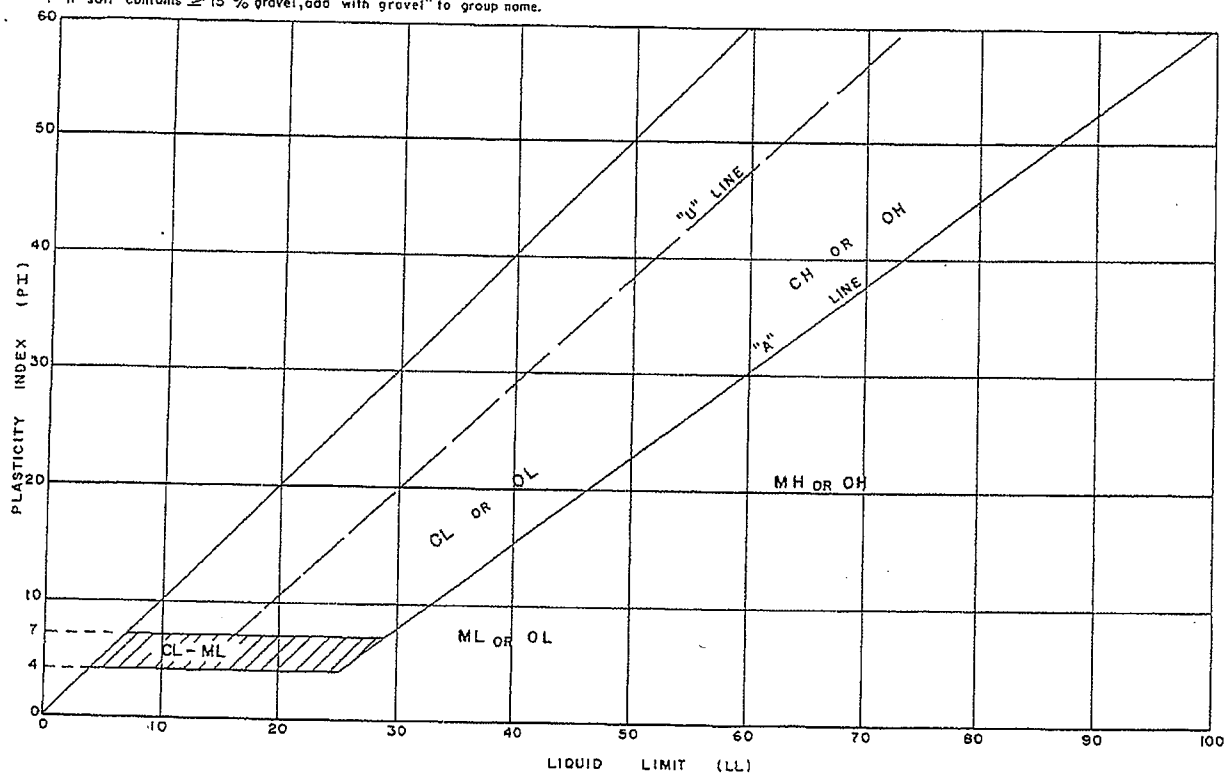
LOCATION				
BORING NUMBER	1	2	3	6
SAMPLE NUMBER	1A	1A	2B	2
DEPTH IN FEET	20" - 24"	4" - 19"	3' - 4'	2' - 4'
HRB CLASSIFICATION & GROUP INDEX	A-1-b	A-6 (3)	A-2	A-7-6 (11)
UNIFIED CLASSIFICATION				
GRAIN SIZE CLASSIFICATION	Sandy LOAM	Silty LOAM	Sandy LOAM	Silty LOAM
GRADATION - PASSING 1" SIEVE %		100		
GRADATION - PASSING 3/4" SIEVE %		84		100
GRADATION - PASSING 3/8" SIEVE %	100	82		95
GRADATION - PASSING # 4 SIEVE %	93	81	100	93
GRADATION - PASSING # 10 SIEVE %	77	78	99	91
GRADATION - PASSING # 40 SIEVE %	30	70	81	79
GRADATION - PASSING # 100 SIEVE %	17	63	35	72
GRADATION - PASSING # 200 SIEVE %	12	58	21	68
GRAVEL %		19		7
SAND %	81	23	79	25
SILT %	(12% Silt	43	(21% Silt	52
CLAY % (<0.002 MM)	& Clay)	15	& Clay)	16
LIQUID LIMIT %		32		45
PLASTIC LIMIT %		14		22
PLASTICITY INDEX %		PI		23
NATURAL MOISTURE CONTENT %				
LIQUIDITY INDEX				
BEARING RATIO % (SOAKED IBR)				
STANDARD DRY DENSITY AASHTO T-99 PCF				
OPTIMUM MOISTURE %				
ORGANIC CONTENT — L-O-I %				
ORGANIC CONTENT — WET COMBUSTION %				

TESTING SERVICE CORPORATION

UNIFIED CLASSIFICATION CHART

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 No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS Less than 5 % fines [c]	$C_u \geq 4$ and $1 \leq C_c \leq 3$ [e]	GW	Well graded gravel [f]
			$C_u < 4$ and/or $1 > C_c > 3$ [e]	GP	Poorly graded gravel [f]
		GRAVELS WITH FINES More than 12% fines [c]	Fines classify as ML or MH	GM	Silty gravel f,g,h
			Fines classify as CL or CH	GC	Clayey gravel f,g,h
	SANDS 50 % or more of coarse fraction passes No. 4 sieve	CLEAN SANDS Less than 5 % fines [d]	$C_u \geq 6$ and $1 \leq C_c \leq 3$ [e]	SW	Well-graded sand [i]
			$C_u < 6$ and/or $1 > C_c > 3$ [e]	SP	Poorly graded sand [i]
		SANDS WITH FINES More than 12 % fines [d]	Fines classify as ML or MH	SM	Silty sand g,h,f
			Fines classify as CL or CH	SC	Clayey sand g,h,f
FINE-GRAINED SOILS 50 % or more passed the No. 200 sieve	SILTS & CLAYS Liquid limit less than 50 %	Inorganic	PI > 7 and plots on or above "A" line j	CL	Lean clay k,l,m
			PI < 4 or plots below "A" line j	ML	Silt k,l,m
		Organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OL	Organic clay k,l,m,n Organic silt k,l,m,o
	SILTS & CLAYS Liquid limit 50 % or more	Inorganic	PI plots on or above "A" line	CH	Fat clay k,l,m
			PI plots below "A" line	MH	Elastic silt k,l,m
		Organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OH	Organic clay k,l,m,p Organic silt k,l,m,q
Highly organic soils		Primarily organic matter, dark in color, and organic odor		PT	Peat

a. Based on the material passing the 3-in (75-mm) sieve.
b. If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" 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. $C_u = D_{60}/D_{10}$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
f. If soil contains $\geq$ 15 % sand, add "with sand" to group name.
g. If fines classify as CL-ML, use dual symbol GC-GM, SC-SM.
h. If fines are organic, add "with organic fines" to group name.
i. If soil contains $\geq$ 15 % gravel, add "with gravel" to group name.
j. If Atterberg Limits plot in hatched area, soil is a CL-ML, silty clay.
k. If soil contains 15 to 29 % plus No. 200, add "with sand" or "with gravel" whichever is predominant.
l. If soil contains $\geq$ 30 % plus No. 200, predominantly sand, add "sandy" to group name.
m. If soil contains $\geq$ 30 % plus No. 200, predominantly gravel, add "gravelly" to group name.
n. PI $\geq$ 4 and plots on or above "A" line.
o. PI $\geq$ 4 or plots below "A" line.
p. PI plots on or above "A" line.
q. PI plots below "A" line.



SOIL AND MATERIAL CONSULTANTS, INC.
8 W. COLLEGE DR. • ARLINGTON HEIGHTS, IL 60004 • 847-870-0544 • FAX 847-870-0661

December 17, 1999
File No. 15635

Mr. Douglas P. Breunlin, P.E.
Robert H. Anderson & Associates, Inc.
220 W. River Drive
St. Charles, Illinois 60174

Re: Geotechnical Investigation
Aurora Bike Path
Aurora, Illinois

Dear Mr. Breunlin:

We are submitting the results of the geotechnical investigation completed for the proposed Aurora Bike Path Bridge over the Fox River in the City of Aurora, Illinois.

The investigation was requested to determine existing subsurface soil and water conditions at select boring locations. The findings of the field investigation and the results of laboratory testing are intended to assist in the design and construction of the proposed bridge foundations.

SCOPE OF THE INVESTIGATION

The field investigation included obtaining 4 borings at the locations as indicated on the enclosed sketch. Surface elevations were determined using the benchmarks provided by your firm. Borings extended to depths of 31.0 feet to 48.5 feet below existing surface elevations. The soils at each location were rotary drilled and samples obtained using a split barrel sampler. Upon encountering refusal the limestone was cored.

Soil profiles were determined in the field and soil samples returned to our laboratory for additional testing including determination of moisture content. Cohesive soils were tested further for determination of dry unit weight and unconfined compressive strength. Select samples of limestone bedrock were tested to determine compressive strength and unit weight.

The results of all field determinations and laboratory testing are included in summary with this report.

RESULTS OF THE INVESTIGATION

The enclosed boring logs indicate the soil conditions encountered at each location. Site surface conditions on the west bank of the Fox River as represented by borings 1, 2 and 3 include vegetation and topsoil. The topsoil is classified as black silt/clay with traces of roots present. The underlying soil conditions include the presence of predominantly granular soils. These are classified as medium dense to dense sand, sand/silt, sand/gravel and silt/clay mixtures. These granular soils are in a very damp to saturated condition due to the presence of the adjacent Fox River. Cobbles and boulders may be present in the overburden soils at all elevations. We encountered particularly difficult drilling in the deposits located above the bedrock. A minor lense of tough to hard clay/silt is present within the granular soils at borings 2 and 3. An extremely weathered gray limestone with sand is present at El. 613.6', El. 609.3' and El. 606.2' at borings 1, 2 and 3 respectively. Underlying gray limestone is present at El. 603.6', El. 604.8' and El. 604.2' at these respective locations.

Deep fill conditions were encountered at boring 4. These include the presence of predominantly loose cinders extending to a depth of 19.0 feet, or El. 617.6'. The fill conditions are found to overlie a topsoil underlaid by organic silt/sand to El. 614.6'. The underlying soils are medium dense to very dense sand/gravel mixtures. An extremely weathered limestone is present at El. 600.6' with integrity occurring at about El. 598.1'.

Included with this report are copies of core photographs. RDQ values ranged from 58% (fair) to 100% (excellent). Compressive strength values ranged from 7030 psi to 9880 psi.

The following table summarizes the depth ranges below existing grade at which bearing soils are encountered in the overburden soils, the magnitude of bearing within these ranges and other information:

Boring	Surface Elevation (feet)	Depth Range Below Existing Surface (feet)	Obtainable Bearing (lbs./sq.ft.)	Highest Recorded Water Level (feet)
West Piers				
1	621.6	1.5 to 8.5	5,000	4.0
		8.5 to 18.0	8,000	
		below 18.0	bedrock	
2	619.8	2.0 to 11.0	5,000	4.0
		11.0 to 15.0	8,000	
		below 15.0	bedrock	
3	619.7	4.5 to 13.5	5,000	3.5
		13.5 to 15.5	8,000	
		below 15.5	bedrock	
East Pier				
4	636.6	22.5 to 36.0	5,000	22.0
		36.0 to 38.5	8,000	
		below 38.5	bedrock	

The boring logs and the above table indicate the depth at which subsurface water was encountered in the bore holes at the time of the drilling operations and during the period of these readings. These levels correspond to the water level of the Fox River. It should be expected that fluctuations from the water levels recorded may occur due to variations in subsurface soil conditions, rainfall, temperature, soil permeability and other factors not evident at the time of the water level measurements.

FOUNDATIONS

Due to the presence of deep granular soil conditions on the west embankment, the presence of deep fill conditions on the east embankment, and a high water table that is readily recharged, a deep foundation system can be considered. A pile foundation system designed by a licensed structural engineer can be utilized to transmit loads soil into the high strength soils present at the deeper elevations. The piles will likely extend to variable depths and are expected to extend to the bedrock. Specific driving depths are dependent upon factors which include the required load carrying capacity of the pile, pile diameter, variations in soil conditions and other factors.

SUBGRADE PREPARATION

Subgrade soil preparation will be needed in the trail approaches to the structure. The procedure should include the removal of unsuitable surface conditions including vegetation, topsoil, soft or unstable soils, debris and other deleterious conditions. The exposed subgrade soil should be proof-rolled and the soil compacted to a minimum of 90% compaction based on a modified proctor, ASTM D-1557. Proof-rolling may reveal unstable soil conditions. Unstable soils can be bridged by use of an effective depth of coarse crushed granular material. The placement of the crushed granular bridging material, possibly in conjunction with the use of an appropriate geotextile fabric, should only proceed after review of the proof-roll conditions by a soil engineer.

Where structural fill is required the fill should be placed in lifts not to exceed 8.0 inches when uncompacted. Each lift should exceed the minimum compaction requirement prior to placement of the next lift. Compaction requirements also apply to backfill placement around foundations and within trench excavations located below subgrade supported improvements. The use of coarse crushed granular material may be desirable near the river due to its free draining characteristics.

CONCLUSION

The information within this report is intended to provide initial information concerning subsurface soil and water conditions on the site. Some variation in subsurface conditions may be present between boring locations due to naturally changing soil conditions as well as disturbed (filled) soil conditions.

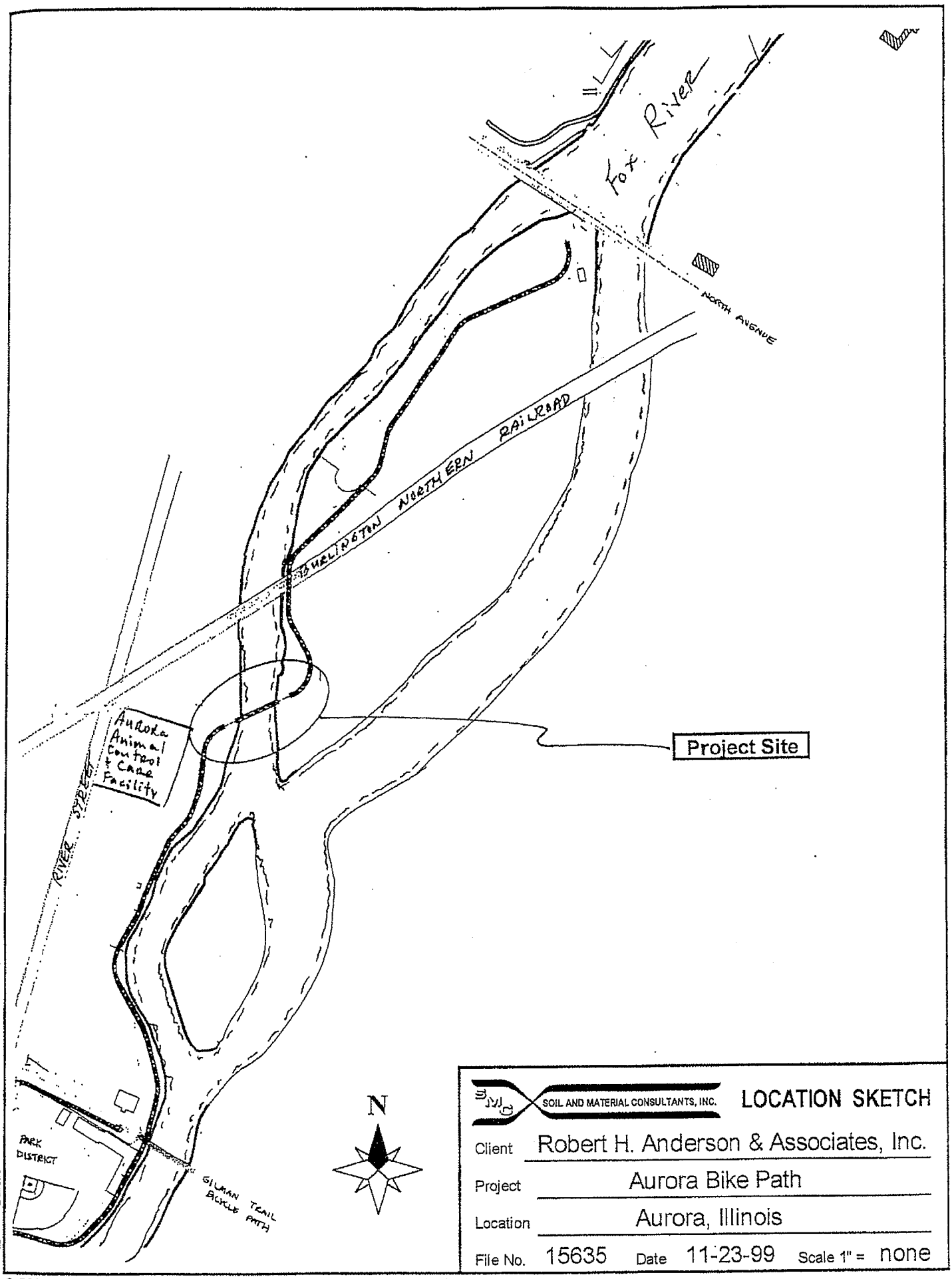
If you have any questions concerning the enclosed information, please let us know.

Very truly yours,

SOIL AND MATERIAL CONSULTANTS, INC.

Gerald J. Kissner, P.E.
President

GJK:kg
Enc.

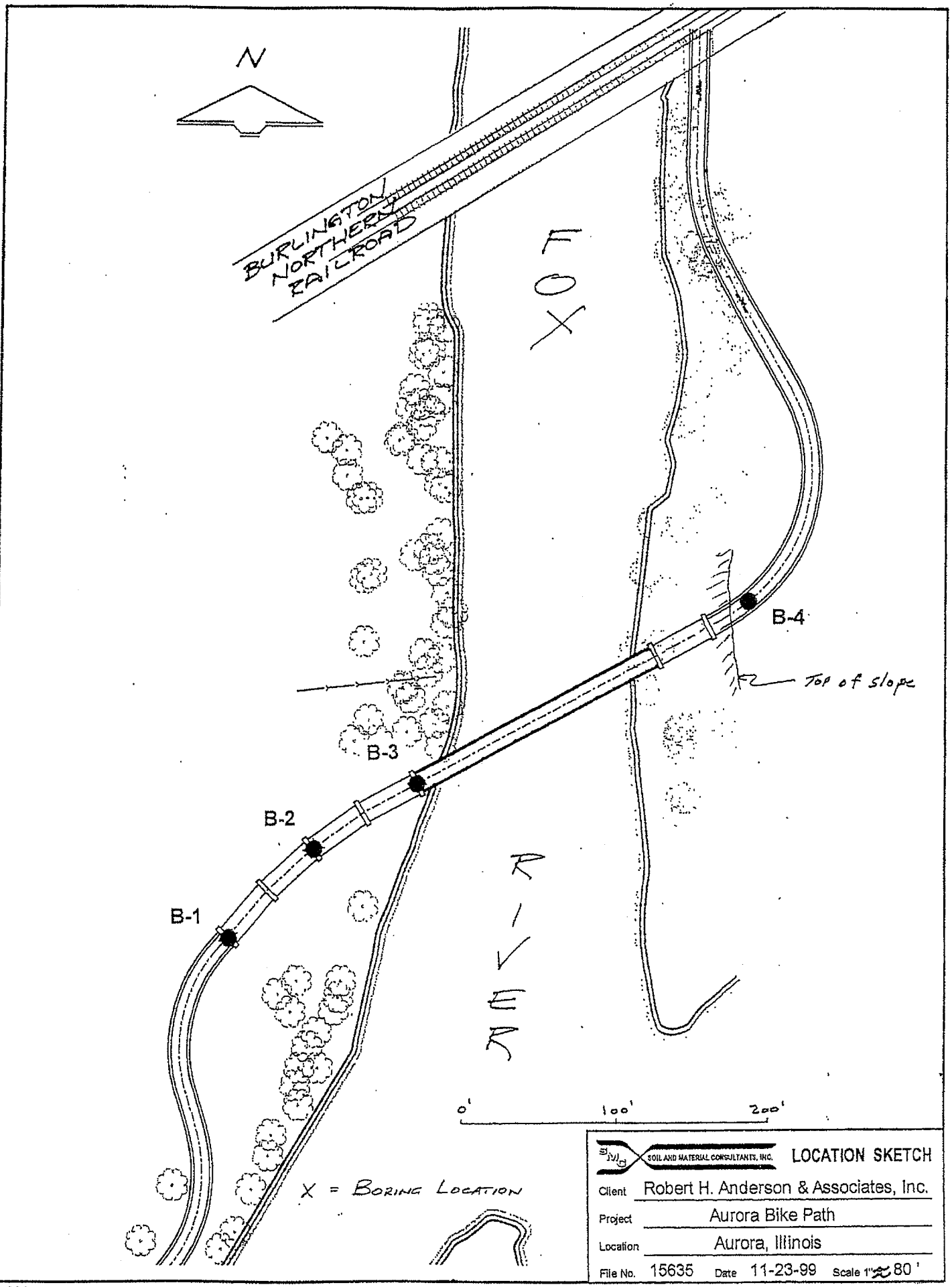


SOIL AND MATERIAL CONSULTANTS, INC.

LOCATION SKETCH

Client	Robert H. Anderson & Associates, Inc.
Project	Aurora Bike Path
Location	Aurora, Illinois
File No.	15635 Date 11-23-99 Scale 1" = none

G-300



SOIL AND MATERIAL CONSULTANTS, INC.

LOCATION SKETCH

Client: Robert H. Anderson & Associates, Inc.

Project: Aurora Bike Path

Location: Aurora, Illinois

File No. 15635 Date 11-23-99 Scale 1" ≈ 80 '

G-300

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 1

Client ROBERT H. ANDERSON & ASSOC.,INC. Sheet 1 of 2

Comments Pier 3 Project Aurora Bike Path Date 11/23/99

N 350, 661.2420 Location Aurora, IL Drilled By R & S

E 1, 659.0860 Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft. 621.6' Description Depth, ft. 0	S	T	R	B	N	Pen.	W	Uw	Qu
Black silt, some clay, trace sand & roots, damp									
620.6'									
				11					
Brown fine-medium sand, some gravel, trace coarse sand & silt, damp, dense	1	SS	10"	14 21	35		8.3		
617.6'									
				15					
Brown fine-medium sand & gravel, some coarse sand, very damp-saturated, dense	2	SS	10"	21 28	49		8.5		
615.1'									
				13					
Brown fine-medium sand, some gravel, trace coarse sand & gravel, very				5					
613.6' damp, medium dense	3	SS	8"	8	12		9.8		
Gray limestone, some sand, trace clay & silt, very damp, dense to very dense (extremely weathered)				15					
				21					
10	4	SS	4"	26	47		11.4		
				22					
				37					
	5	SS	11"	40	77		8.1		
				50-2"					
15	6	SS	0"		50+				
603.6'									
Gray limestone RQD = 100% (excellent)									
20									

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

Water Level — depth, ft. elev., ft.
- while drilling: 4.0 617.6
- after drilling: ____ ____
- hrs. after drilling: ____ ____

F-111b

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15636

BORING LOG 1

Client ROBERT H. ANDERSON & ASSOC.,INC. Sheet 2 of 2

Project Aurora Bike Path Date 11/23/99

Location Aurora, IL Drilled By R & S

Comments Pier 3

Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft.	Description	Depth, ft.	S	T	R	B	N	Pen.	W	Uw	Qu
	Gray Limestone RQD = 100% (excellent)										
	El. 598.6' Compressive Strength: 7,030 psi Unit Weight: 164.5 pcf	25									
595.3'											
	Gray Limestone RQD = 79% (good)	30									
588.6'											
	End of Boring	35									
		40									

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

Water Level —	depth, ft.	elev., ft.
- while drilling:	4.0	617.6
- after drilling:		
- hrs. after drilling:		

F-111b

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 2

Client ROBERT H. ANDERSON & ASSOC.,INC. Sheet 1 of 2

Comments Pier 5 Project Aurora Bike Path Date 11/23/99

N 350, 718.4080 Location Aurora, IL Drilled By R & S

E 1, 714.8400 Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft. 619.8' Description	Depth, ft. 0	S	T	R	B	N	Pen.	W	Uw	Qu
Black silt, some clay, trace sand & roots, damp										
					6					
Brown fine-medium sand, some gravel, trace coarse sand & silt, damp, medium dense		1	SS	12"	10	20		8.3		
					10					
616.3'										
Brown fine sand, trace medium-coarse sand & gravel, damp-saturated, medium dense	5	2	SS	11"	11	28		13.6		
					17					
614.3'										
Brown fine-medium sand, some gravel, trace coarse sand & silt, very damp, dense					17					
					27					
		3	SS	4"	15	37		13.3		
611.8'										
Gray fine-medium sand, some silt, trace coarse sand, gravel & clay, very damp					7					
610.3' medium dense		4		-	8			10.4		
Gray clay & silt, trace sand &	10	5	SS	12"	7	15	1.5	10.5		
609.3' gravel, damp, tough										
Gray limestone, some sand, very damp, very dense (extremely weathered)					18					
					50-4"					
		6	SS	4"		50+		7.1		
					50-4"					
604.8'	15	7	SS	0"		50+				
Gray Limestone RQD = 77% (good)										
El. 602.3' Compressive Strength: 8,965 psi Unit Weight: 168.5 pcf										
	20									

Water Level — depth, ft. elev., ft.
- while drilling: 4.0 615.8
- after drilling: ____ ____
- ____ hrs. after drilling: ____ ____

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

F-111b

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 2

Client ROBERT H. ANDERSON & ASSOC., INC. Sheet 2 of 2

Comments Pier 5

Project Aurora Bike Path Date 11/23/99

Location Aurora, IL Drilled By R & S

Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft.	Description	Depth, ft.	S	T	R	B	N	Pen.	W	Uw	Qu
		20									
	Gray limestone RQD = 77% (good) El. 592.3' Compressive Strength: 8,090 psi Unit Weight: 167.9 pcf	25									
		30									
588.8	End of Boring	35									
		40									

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

Water Level —	depth, ft.	elev., ft.
- while drilling:	4.0	615.8
- after drilling:		
- hrs. after drilling:		

F-111b

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 3

Client ROBERT H. ANDERSON & ASSOC., INC. Sheet 1 of 2

Comments Pier 7 Project Aurora Bike Path Date 11/24/99

N 350,760.3870 Location Aurora, IL Drilled By R & S

S 1,782.7680 Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft. 619.7' Description	Depth, ft.	S	T	R	B	N	Pen.	W	Uw	Qu
Black silt, some clay, trace sand & roots, damp										
618.2'					6					
Brown silt, some sand & gravel, damp-very damp, medium dense		1	SS	9"	8	16		11.2		
615.7'					6					
Brown fine-medium sand & gravel, trace coarse sand & gravel, very damp-saturated, medium dense	5	2	SS	12"	11 17	28		13.2		
613.7'					8					
Gray clay, some silt, trace sand & gravel, damp, hard		3	SS	14"	9 11	20	4.0	19.0	110.7	4.6
611.7'					6					
Gray silt, some clay, trace sand & gravel, damp, medium dense	10	4	SS	14"	10 15	25		17.5		
609.2'					21					
Brown medium-coarse sand & gravel, some fine sand, saturated, medium dense (extremely weathered)		5	SS	3"	15 14	29		7.6		
606.2'					9					
Gray limestone, some sand, trace clay & silt, very damp, dense	15	6	SS	10"	16 17	33		7.9		
604.2'										
Gray limestone RQD = 70% (fair)	20									

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

Water Level — depth, ft. elev., ft.
- while drilling: 3.5 616.2
- after drilling: ____ ____
- hrs. after drilling: ____ ____

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SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 3

Client ROBERT H. ANDERSON & ASSOC., INC. Sheet 2 of 2

Project Aurora Bike Path Date 11/24/99

Location Aurora, IL Drilled By R & S

Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Comments Pier 7

Elev., ft.	Description	Depth, ft.	S	T	R	B	N	Pen.	W	Uw	Qu
	El. 596.7' Compressive Strength: 7,030 psi Unit Weight: 163.0 pcf	20									
	Gray Limestone RQD = 70% (fair)	25									
	El. 590.0' Compressive Strength: 7,410 psi Unit Weight: 175.0 pcf	30									
588.2'	End of Boring	35									
		40									

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

Water Level —	depth, ft.	elev., ft.
- while drilling:	3.5	616.2
- after drilling:		
- hrs. after drilling:		

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SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 4

Client ROBERT H. ANDERSON & ASSOC. INC. Sheet 1 of 3

Comments Pier 9

35' N.E. of N 350, 862.0360

E 1, 972.2220

Project Aurora Bike Path Date 11/20/99

Location Aurora, IL Drilled By R & S

Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft. 636.6 Description	Depth, ft. 0	S	T	R	B	N	Pen.	W	Uw	Qu
Gray fine sand, trace sand & gravel, damp, loose - Fill										
635.1'		1			4			25.5		
					5					
Brown-black cinders, trace sand & gravel, damp, loose to very loose - Fill		2	SS	12"	3	8		2.2		
					1					
	5	3	SS	9"	2	4		7.5		
					5					
					4					
		4	SS	10"	1	5		12.0		
					3					
					1					
	10	5	SS	6"	1	2		9.5		
					2					
					2					
		6	SS	9"	1	3		5.4		
623.1'										
					4					
Brown-black cinders, trace sand & gravel, damp, loose to medium dense Fill					4					
	15	7	SS	10"	3	7		9.1		
					7					
					10					
		8	SS	12"	3	13		19.1		
617.6'										
					6					
Brown-gray-black silt, some clay, trace sand & gravel, damp, loose-Fill					4					
	20	9	SS	14"	2	6		46.0		

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.

B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.

N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".

Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.

Qu - unconfined compressive strength, tons./ sq. ft..

Water Level —

	depth, ft.	elev., ft.
- while drilling:	22.0	614.6
- after drilling:		
- hrs. after drilling:		

F-111b

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 4

Client ROBERT H. ANDERSON & ASSOC.,INC. Sheet 2 of 3

Comments

Project Aurora Bike Path Date 11/20/99

Location Aurora, IL Drilled By R & S

Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft.	Description	Depth, ft.	S	T	R	B	N	Pen.	W	Uw	Qu
616.1'(a)	see page 3 of 3										
	Gray silt, some fine sand, trace clay & organic matter, very damp,					3					
614.6'	loose		10			3			42.4		
			11	SS	13"	14	1%		24.5		
	Gray medium-coarse sand & gravel, some fine sand, very damp-saturated, medium dense to very dense (probable cobbles and boulders)										
						50-3"					
		25	12	SS	3"		50+		12.4		
						47					
						50-4"					
			13	SS	0"		50+				
						50-3"					
		30	14	SS	7"		50+		13.8		
	Gray clay & silt, trace sand										
605.6'											
	Gray medium-coarse sand & gravel, some fine sand, saturated (probable cobbles and boulders)					20					
						35					
			15	SS	0"	50-2"	85+		11.9		
601.6'		35									
	Gray clay & silt, some fine sand										
600.6'											
	Gray limestone (extremely weathered)										
598.1'											
	Gray limestone RQD = 58% (fair)	40									

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

Water Level — depth, ft. elev., ft.
- while drilling: 22.0 614.6
- after drilling: ____ ____
- hrs. after drilling: ____ ____

F-111b

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 4

Client ROBERT H. ANDERSON & ASSOC.,INC. Sheet 3 of 3

Comments _____ Project Aurora Bike Patch Date 11/20/99

Location Aurora, IL Drilled By R & S

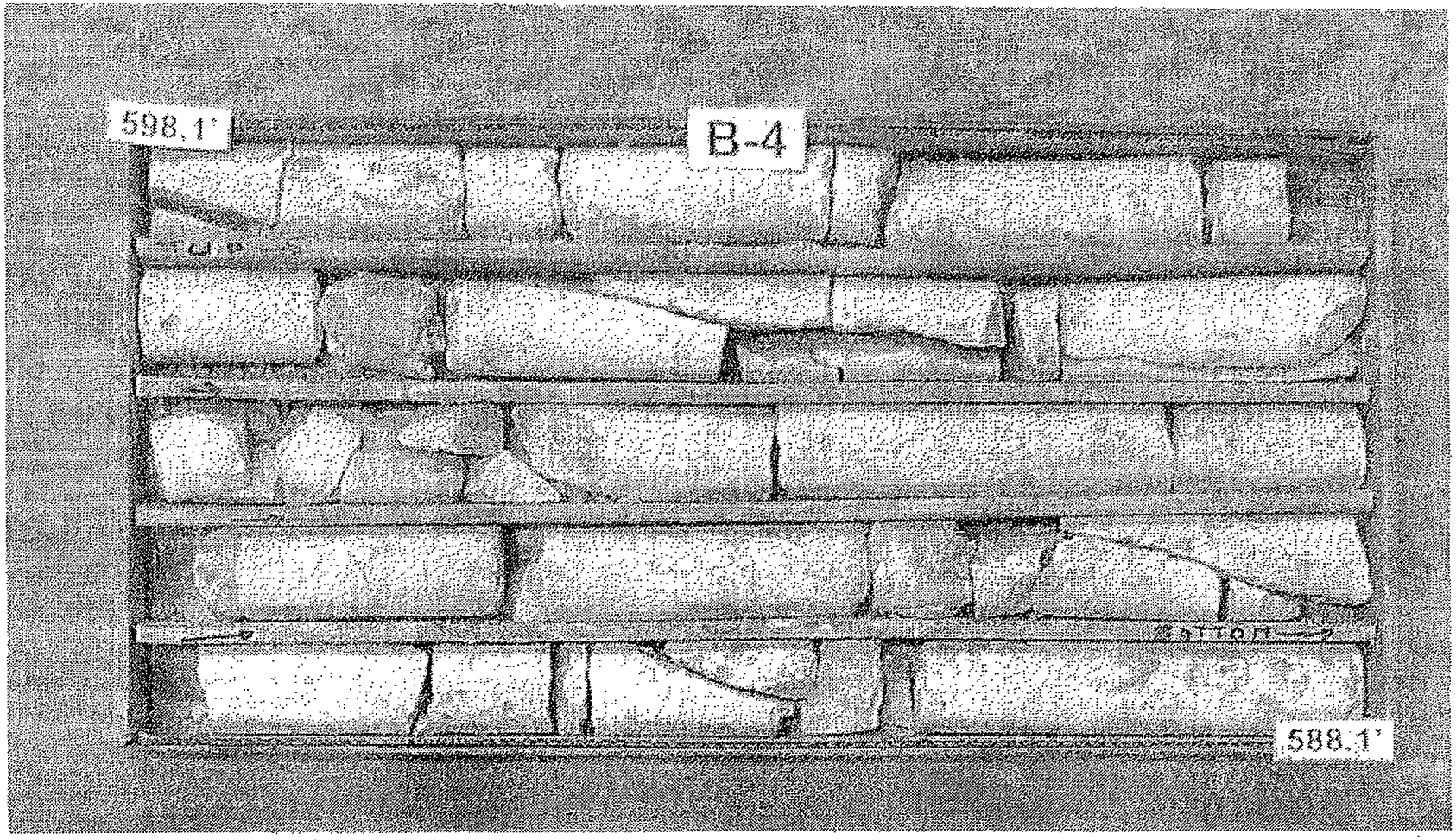
Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

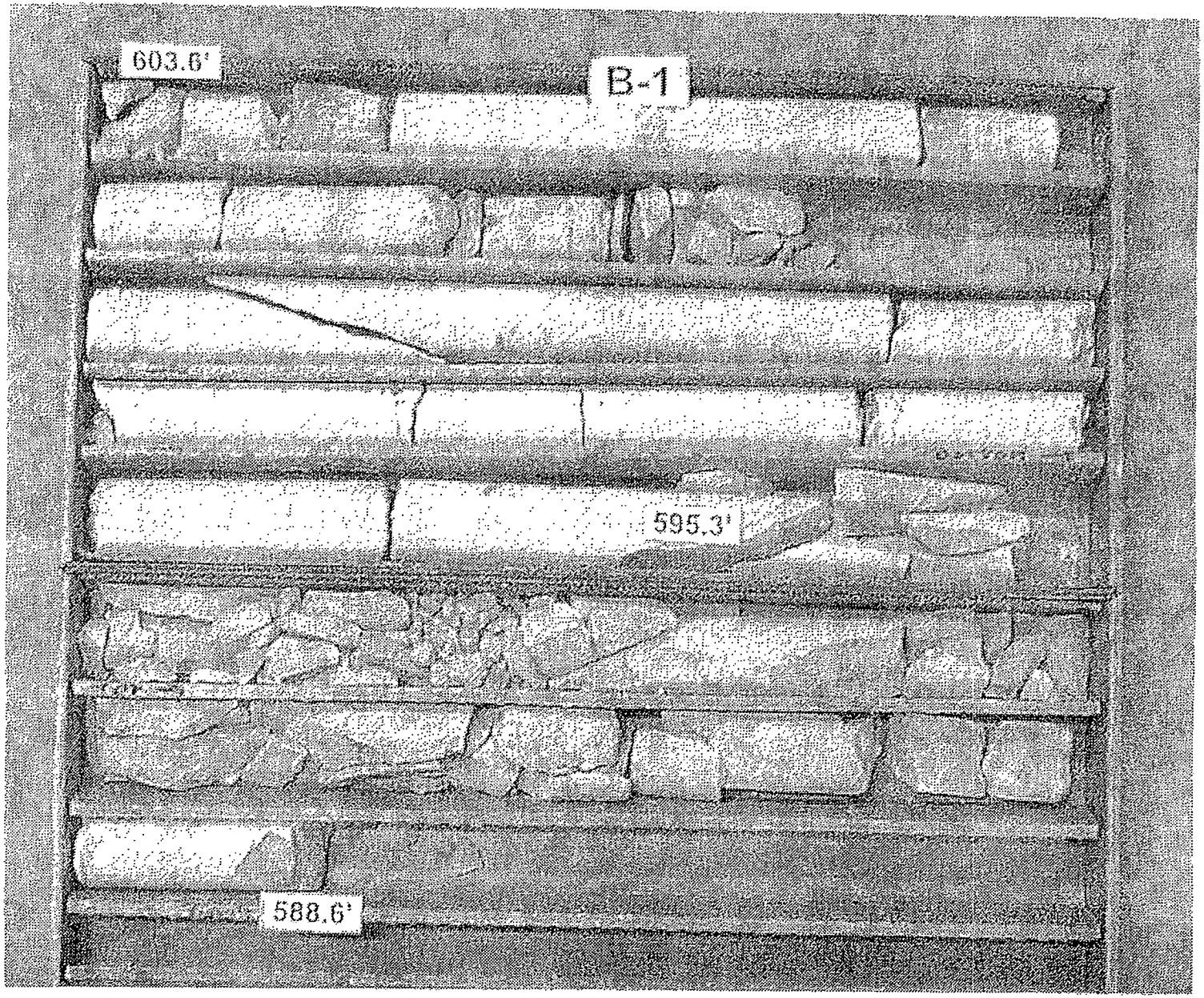
Elev., ft.	Description	Depth, ft.	S	T	R	B	N	Pen.	W	Uw	Qu
	Gray Limestone RQD = 58% (fair) El. 592.6' Compressive Strength: 9,880 psi Unit Weight: 173.3 pcf	40 45									
588.1'	End of Boring	50									
	(a) Brown-gray-black silt, some clay, trace sand & gravel, damp, loose - Fill	55									
		60									

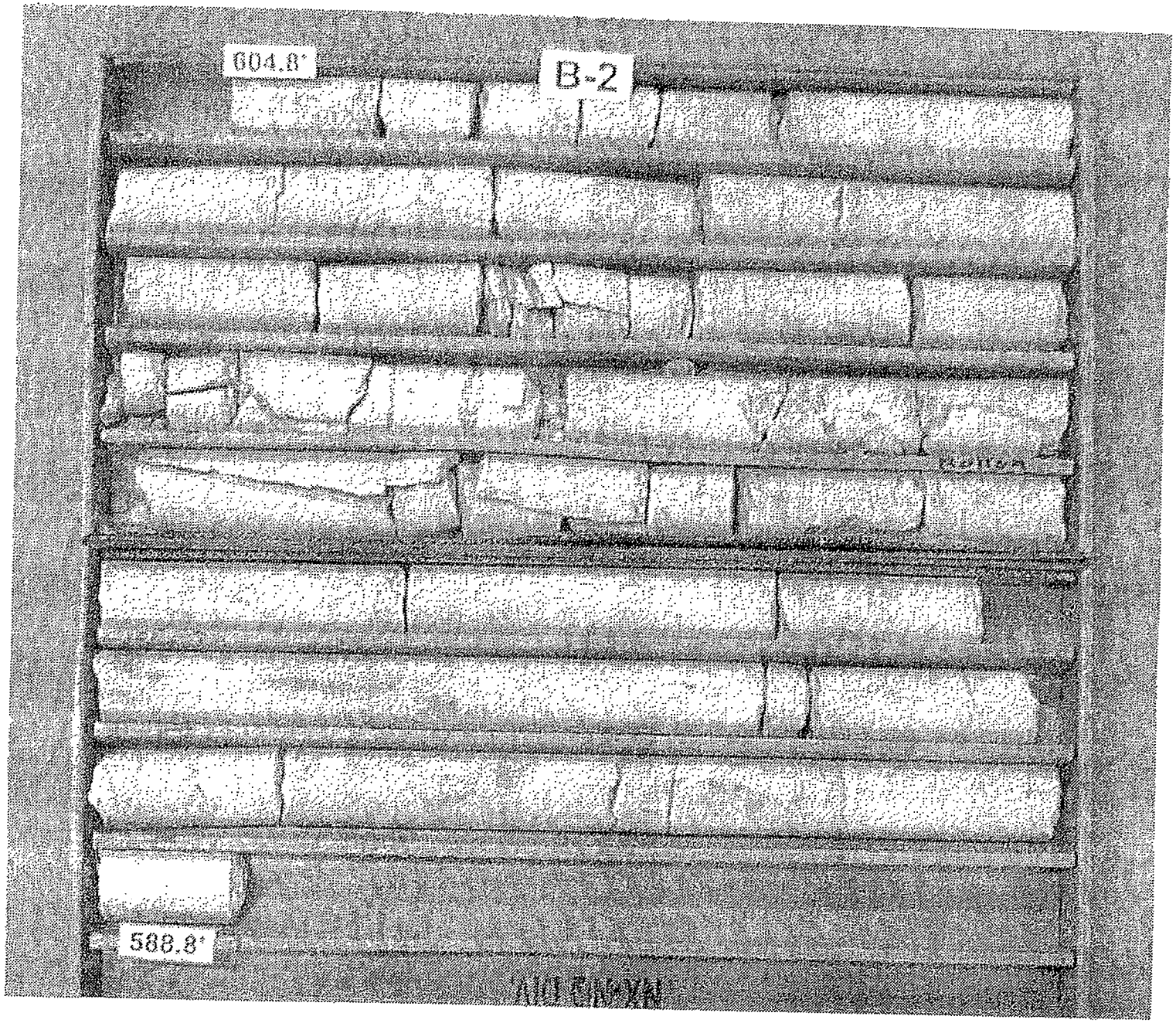
Water Level — depth, ft. elev., ft.
- while drilling: 22.0 614.6
- after drilling: _____ _____
- hrs. after drilling: _____ _____

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

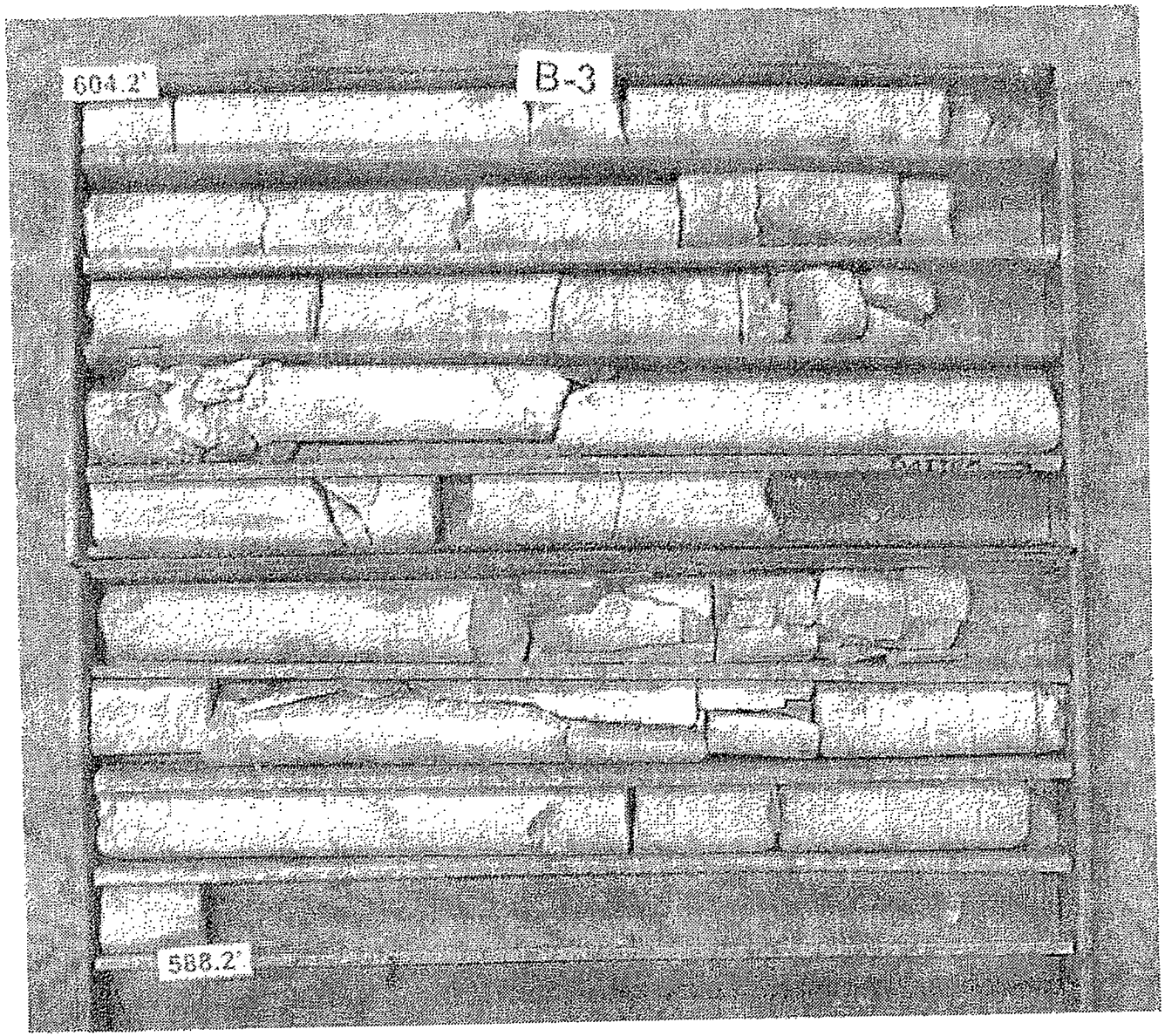
-111b


598.1'
B-4
588.1'


603.6'
B-1
595.3'
588.6'



316


B-3
604.2'
588.2'

TESTING SERVICE CORPORATION
Corporate Office:
360 S. Main Place, Carol Stream, IL 60188-2404
630.462.2600 • Fax 630.653.2988

Local Office:
457 E. Gundersen Drive, Carol Stream, IL 60188-2492
630.653.3920 • Fax 630.653.2726

Local Office
Carol Stream, Illinois

March 1, 2010

Mr. David Smoot
Wills Burke Kelsey Associates, Ltd.
116 West Main Street
St. Charles, Illinois 60174

Re: L-74,411
MSE Retaining Wall
Structure No. 045-9001
Fox River Trail
Aurora, Illinois

Dear Mr. Smoot:

This structure geotechnical report (SGR) has been prepared in connection with the MSE Retaining Wall which is proposed in connection with Structure No. 045-9001, Bicycle Bridge Over Fox River in Aurora, Illinois. These geotechnical services have been provided in accordance with TSC Proposal No. 43,193 dated August 11, 2009 and the attached General Conditions, incorporated herein by reference. The geotechnical report for the bridge itself was prepared by Soil and Material Consultants (SMC) under File No. 15635 dated December 17, 1999.

The proposed bicycle bridge is to be part of the Fox River Trail system. It is to span the west channel of the Fox River and connect to the southern tip of Hurd's Island. The project site lies within the Northeast 1/4 of Section 28 of Aurora Township (T38N, R8E).

The MSE retaining wall is to be located behind the east abutment of the proposed bicycle bridge (SN 045-9001). Grade is being cut up to approximately 6 feet in this area, with the wall to be located along the east/right side of the curving trail. It will begin at Sta. 23+70 and end at Sta. 25+10, having an overall length of 150' measured along the face of the wall. The maximum wall height to the top of coping is 9'-6", including a minimum of 3'-6" embedment.

Site Description

The project site is at the southern tip of Hurd's Island in the Fox River channel. It lies south of Burlington Northern (BNSF) railroad tracks which bisect the island, being located on railroad property. In this regard, a BNSF permit had to be obtained in order to perform the field work. A steel barrier blocking access under the BNSF bridge also had to be temporarily removed and replaced.

The project site lies at the top of the east bank along the Fox River's west channel. It is located approximately 10 to 15 feet above the rivers edge, with a small berm present right at the top of slope. This area contains weeds and scattered trees.

The Pedological Soil Map prepared by the Natural Resources Conservation Service has mapped all of Hurd's Island as 82 Millington Loam. These soils are given a Poor rating as road fill material due to wetness and low strength. However, Boring 4 originally drilled by SMC at the east bridge abutment had revealed over 20 feet of fill, consistent with the elevated setting of the site.

Geologically the project site and Fox River channel are mapped as Cahokia Aluvium. This primarily consists of poorly sorted silt and sand deposited in floodplains, with sand and gravel also encountered locally. Bedrock consisting of Dolomitic limestone of Silurian Age is expected to be relatively shallow.

Field Investigation and Laboratory Testing

SMC B-4 was drilled at the start of the proposed MSE Retaining Wall (by east bridge abutment). Boring 101 and 102 were added along the wall alignment as part of the present study, with B-102 falling beyond the end of it based on a previous design layout. A Boring Location Plan is attached.

Drilling, sampling and testing procedures were performed in accordance with IDOT structure boring criteria. Soil sampling was performed in conjunction with the Standard Penetration Test (SPT), for which driving resistence to a 2" split-spoon sampler (in blows per 6" interval) provides an indication of the relative density of granular materials and consistency of cohesive soils. Please note that an automatic hammer which has a relatively high rated energy was used to obtain the SPT samples in the TSC borings. A 10-foot rock core was also obtained in SMC B-4. Water level readings were taken during and following completion of drilling operations.

All soil samples from the TSC borings were examined in the laboratory to verify field descriptions and to classify them in accordance with the AASHTO Classification System and the Illinois Department of Transportation Classification Chart. Laboratory testing included moisture content determinations for all cohesive and intermediate (silt or loamy) soil types. An estimate of unconfined compressive strength was obtained for all cohesive samples using a calibrated pocket penetrometer, with actual measurements of unconfined compressive strength also being performed. For classification purposes and to verify field identifications, four (4) Atterberg limit determinations, two (2) grain-size analyses, four (4) organic content by LOI tests and two (2) specific gravities were performed on representative subgrade samples. Results of these tests are summarized on a Soil Test Data sheet appended.

Reference is made to the boring logs also appended which indicate subsurface stratigraphy and soil descriptions, results of field and laboratory tests, as well as water level observations. Definitions of descriptive terminology are also included. While strata changes are shown as a definite line on the boring logs, the actual transition between soil layers will probably be more gradual.

Discussion of Test Data

Primarily sand and cinder fill extended to approximately 20 feet below existing grade in SMC B-4. Samples of the fill had N-values typically ranging from 3 to 8 blows per foot (bpf). Approximately 3 feet of silt was encountered at the fill/native transition, exhibiting moisture contents on the order of 45 percent. Sand and gravel deposits otherwise predominated from 22 to 36 feet in depth, containing occasional silt/clay layers. These granular materials had N-values which were typically 50 blow for 3 inches (probable cobbles and boulders).

Apparent bedrock was encountered at 36 feet in SMC B-4, the augers being able to penetrate about 2½ feet into it. A 10-foot core was taken at that point, being described as gray limestone and having an RQD of 58 percent. Free water was encountered at 22 feet in B-4.

Borings 101 and 102 both revealed approximately 12 inches of surficial topsoil. Fill was then encountered, extending 13 to 18 feet below existing grade. The fill primarily consisted of medium to fine sand and silt materials, also containing sand and cinder layers. Blow counts were typically in the range of 4 to 12 bpf. The silt/sand materials had relatively high moisture contents ranging from 35 to 63 percent.

Additional testing was performed on the silt/sand materials to help in characterizing them. Separate samples from Borings 101 and 102 had liquid limits of 46 and 72, respectively, with plastic limits not being possible to determine (A-5 Loam/Sandy Loam classifications indicated). LOI values were 4.2 and 6.2 percent, i.e. trace organic matter present. Specific gravities were 2.68 and 2.78, a normal range for native soils found in this area.

Approximate 2½ to 5-foot thick layers of soft to tough native silty clay were found underlying the fill materials. They had unconfined compressive strengths ranging from 0.4 to 1.2 tons per square foot (tsf) at moisture contents on the order of 40 percent. These cohesive materials had liquid limits and plasticity indices on the order of 51 and 25, respectively. LOI values were 3.3 and 5.5 percent, indicative of trace organic matter.

Firm to very dense sand, gravel and silty sand and gravel were encountered at approximately 20 and 18 feet below existing grade in Borings 101 and 102 and extended to 28 and 22 feet in depth, respectively. These granular materials had N-values of 24 bpf and higher (cobbles and boulders presumably present). Hard drilling indicative of weathered/fractured rock or boulder zone materials were encountered at the above depths, able to be penetrated 3 to 4 feet before virtual auger refusal was met. Dolomitic limestone cuttings were sampled at the bottom of the borings.

Free water was initially encountered at 1 foot in B-101 (apparent perched condition), dropping to 11 feet below existing grade at the end of drilling. Free water was initially encountered at 15 feet in B-102, rising to within 10 feet of ground surface. The boreholes caved within a short time after the end of drilling.

Analysis and Recommendations

Boring 101 was drilled near the center of the proposed MSE retaining wall at Sta. 24+50. The bike path at that location is set at Elevation 628.2, requiring an approximate 8-foot cut. The top of wall is

set at Elevation 633.0, i.e. the exposed face is about 5 feet high. The top of leveling pad is at Elevation 624.1, giving an overall wall height of about 9 feet (near maximum H).

Silty medium to fine sand fill was encountered at the elevation of the leveling pad in B-101. These materials had relatively high moisture contents in the range of 35 to 45 percent, extending up to 6 feet below the leveling pad (with interbedded sand and cinder layer). They most likely represent dredgings from the river, presumably having been placed at the site many years ago. A 2½-foot thick layer of soft clay was found underlying the fill materials, having an unconfined compressive strength of 0.4 tsf at a moisture content of 40 percent. Firm to dense silty sand and gravel was found underlying the soft clay layer, with bedrock encountered a short distance below.

A global stability analysis was performed through the MSE retaining wall cross-section at Sta. 24+50/Boring 101. The soil reinforcement zone was assumed to be a minimum 0.70 x H or approximately 6½ feet. Relatively low friction angles of 29 to 31 degrees were assigned to the fill materials, with 34 degrees used for the CA7 in the reinforced zone.

The SLIDE computer program by Rocscience Inc. was used to run the slope stability analysis, employing the Bishop method for critical arc failures. The results of the stability analysis can be seen on the computer generated figure which is attached. It shows the geometry of the wall cross-section, subsurface soil stratigraphy, material properties as well as most critical slip surfaces and associated factors of safety (FOS).

A minimum factor of safety of 2.9 was determined by the global stability analysis. This meets IDOT's requirement that the FOS should be 1.5. Please note that internal stability of the MSE retaining wall, including the width of the soil reinforcement zone, will have to be checked by the wall designer. An allowable bearing pressure of 1000 psf is recommended for the leveling pad, based on the strength of the underlying soft clay layer.

The silty/sand fill materials in Borings 101 and 102 exhibited relatively high moisture contents, to have relatively low unit weights accordingly. Based on moisture content data and specific gravities determined, they have moist unit weights estimated to be on the order of 105 pounds per cubic foot (pcf). In order to minimize/eliminate settlement along the wall, the backfill in the soil reinforcement zone should ideally have moist weights which are similar. IDOT gradation CA-7, i.e. 1/4" to 3/4" chips with no fines, will also have moist unit weights on the order of 105 pcf. It is therefore recommended that IDOT gradation CA-7 be specified as backfill in the soil reinforcement zone, with CA-6 material which is much heavier to be excluded. On this basis we would expect little or no settlement of the MSE retaining wall.

Silt/sand fill materials or cinders are expected to be present at subgrade level along the bike path. They may be unstable when exposed in cut areas, especially under the traffic of heavy construction equipment. Subgrade undercuts and replacement with PGES should therefore be anticipated, on the order of 12 to 24 inches deep.

Drain tile should be provided behind the MSE retaining wall. This would be to collect any seepage associated with perched groundwater as was present at B-101. A drainage fill layer will not be required behind the wall due to the use of CA-7 backfill which is free draining.

Closure

The analyses and recommendations submitted in this report are based upon the data obtained from the Three (3) soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings or elsewhere on the site, the nature and extent of which may not become evident until during the course of construction. If variations are then identified, recommendations contained in this report should be re-evaluated after performing on-site observations.

It has been a pleasure to assist you with this work. Please call if there are any questions or if we may be of further service.

Respectfully submitted,

TESTING SERVICE CORPORATION

Michael V. Machalinski
Vice President
Registered Professional Engineer
Illinois No. 062-038559

Timothy R. Peceniak, P.E.
Project Engineer

MVM:TRP:cn
Enc.

TESTING SERVICE CORPORATION

GENERAL CONDITIONS

Geotechnical and Construction Services

1. PARTIES AND SCOPE OF WORK: If Client is ordering the services on behalf of another, Client represents and warrants that Client is the duly authorized agent of said party for the purpose of ordering and directing said services, and in such case the term "Client" shall also include the principal for whom the services are being performed. Prices quoted and charged by TSC for its services are predicated on the conditions and the allocations of risks and obligations expressed in these General Conditions. Unless otherwise stated in writing, Client assumes sole responsibility for determining whether the quantity and the nature of the services ordered by Client are adequate and sufficient for Client's intended purpose. Unless otherwise expressly assumed in writing, TSC's services are provided exclusively for client. TSC shall have no duty or obligation other than those duties and obligations expressly set forth in this Agreement. TSC shall have no duty to any third party. Client shall communicate these General Conditions to each and every party to whom the Client transmits any report prepared by TSC. Ordering services from TSC shall constitute acceptance of TSC's proposal and these General Conditions.

2. SCHEDULING OF SERVICES: The services set forth in this Agreement will be accomplished in a timely and workmanlike manner. If TSC is required to delay any part of its services to accommodate the requests or requirements of Client, regulatory agencies, or third parties, or due to any cause beyond its reasonable control, Client agrees to pay such additional charges, if any, as may be applicable.

3. ACCESS TO SITE: TSC shall take reasonable measures and precautions to minimize damage to the site and any improvements located thereon as a result of its services or the use of its equipment; however, TSC has not included in its fee the cost of restoration of damage which may occur. If Client desires or requires TSC to restore the site to its former condition, TSC will, upon written request, perform such additional work as is necessary to do so and Client agrees to pay to TSC the cost thereof plus TSC's normal markup for overhead and profit.

4. CLIENT'S DUTY TO NOTIFY ENGINEER: Client represents and warrants that Client has advised TSC of any known or suspected hazardous materials, utility lines and underground structures at any site at which TSC is to perform services under this agreement.

5. DISCOVERY OF POLLUTANTS: TSC's services shall not include investigation for hazardous materials as defined by the Resource Conservation Recovery Act, 42 U.S.C.§ 6901, et, seq., as amended ("RCRA") or by any state or Federal statute or regulation. In the event that hazardous materials are discovered and identified by TSC, TSC's sole duty shall be to notify Client.

6. MONITORING: If this Agreement includes testing construction materials or observing any aspect of construction of improvements, Client's construction personnel will verify that the pad is properly located and sized to meet Client's projected building loads. Client shall cause all tests and inspections of the site, materials and work to be timely and properly performed in accordance with the plans, specifications, contract documents, and TSC's recommendations. No claims for loss, damage or injury shall be brought against TSC unless all tests and inspections have been so performed and unless TSC's recommendations have been followed.

TSC's services shall not include determining or implementing the means, methods, techniques or procedures of work done by the contractor(s) being monitored or whose work is being tested. TSC's services shall not include the authority to accept or reject work or to in any manner supervise the work of any contractor. TSC's services or failure to perform same shall not in any way operate or excuse any contractor from the performance of its work in accordance with its contract. "Contractor" as used herein shall include subcontractors, suppliers, architects, engineers and construction managers.

Information obtained from borings, observations and analyses of sample materials shall be reported in formats considered appropriate by TSC unless directed otherwise by Client. Such information is considered evidence, but any inference or conclusion based thereon is, necessarily, an opinion also based on engineering judgment and shall not be construed as a representation of fact. Subsurface conditions may not be uniform throughout an entire site and ground water levels may fluctuate due to climatic and other variations. Construction materials may vary from the samples taken. Unless otherwise agreed in writing, the procedures employed by TSC are not designed to detect intentional concealment or misrepresentation of facts by others.

7. DOCUMENTS AND SAMPLES: Client is granted an exclusive license to use findings and reports prepared and issued by TSC and any sub-consultants pursuant to this Agreement for the purpose set forth in TSC's proposal provided that TSC has received payment in full for its services. TSC and, if applicable, its sub-consultant, retain all copyright and ownership interests in the reports, boring logs, maps, field data, field notes, laboratory test data and similar documents, and the ownership and freedom to use all data generated by it for any purpose. Unless otherwise agreed in writing, test specimens or samples will be disposed immediately upon completion of the test. All drilling samples or specimens will be disposed sixty (60) days after submission of TSC's report.

8. TERMINATION: TSC's obligation to provide services may be terminated by either party upon (7) seven days prior written notice. In the event of termination of TSC's services, TSC shall be compensated by Client for all services performed up to and including the termination date, including reimbursable expenses. The terms and conditions of these General Conditions shall survive the termination of TSC's obligation to provide services.

9. PAYMENT: Client shall be invoiced periodically for services performed. Client agrees to pay each invoice within thirty (30) days of its receipt. Client further agrees to pay interest on all amounts invoiced and not paid or objected to in writing for valid cause within sixty (60) days at the rate of twelve (12%) per annum (or the maximum interest rate permitted by applicable law, whichever is the lesser) until paid and TSC's costs of collection of such accounts, including court costs and reasonable attorney's fees.

10. WARRANTY: TSC's professional services will be performed, its findings obtained and its reports prepared in accordance with these General Conditions and with generally accepted principles and practices. In performing its professional services, TSC will use that degree of care and skill ordinarily exercised under similar circumstances by members of its profession. In performing physical work in pursuit of its professional services, TSC will use that degree of care and skill ordinarily used under similar circumstances. This warranty is in lieu of all other warranties or representations, either express or implied. Statements made in TSC reports are opinions based upon engineering judgment and are not to be construed as representations of fact.

Should TSC or any of its employees be found to have been negligent in performing professional services or to have made and breached any express or implied warranty, representation or contract, Client, all parties claiming through Client and all parties claiming to have in any way relied upon TSC's services or work agree that the maximum aggregate amount of damages for which TSC, its officers, employees and agents shall be liable is limited to $50,000 or the total amount of the fee paid to TSC for its services performed with respect to the project, whichever amount is greater.

In the event Client is unwilling or unable to limit the damages for which TSC may be liable in accordance with the provisions set forth in the preceding paragraph, upon written request of Client received within five days of Client's acceptance of TSC's proposal together with payment of an additional fee in the amount of 5% of TSC's estimated cost for its services (to be adjusted to 5% of the amount actually billed by TSC for its services on the project at time of completion), the limit on damages shall be increased to $500,000 or the amount of TSC's fee, whichever is the greater. This charge is not to be construed as being a charge for insurance of any type, but is increased consideration for the exposure to an award of greater damages.

11. INDEMNITY: Subject to the provisions set forth herein, TSC and Client hereby agree to indemnify and hold harmless each other and their respective shareholders, directors, officers, partners, employees, agents, subsidiaries and division (and each of their heirs, successors, and assigns) from any and all claims, demands, liabilities, suits, causes of action, judgments, costs and expenses, including reasonable attorneys' fees, arising, or allegedly arising, from personal injury, including death, property damage, including loss of use thereof, due in any manner to the negligence of either of them or their agents or employees or independent contractors. In the event both TSC and Client are found to be negligent or at fault, then any liability shall be apportioned between them pursuant to their pro rata share of negligence or fault. TSC and Client further agree that their liability to any third party shall, to the extent permitted by law, be several and not joint. The liability of TSC under this provision shall not exceed the policy limits of insurance carried by TSC. Neither TSC nor Client shall be bound under this indemnity agreement to liability determined in a proceeding in which it did not participate represented by its own independent counsel. The indemnities provided hereunder shall not terminate upon the termination or expiration of this Agreement, but may be modified to the extent of any waiver of subrogation agreed to by TSC and paid for by Client.

12. SUBPOENAS: TSC's employees shall not be retained as expert witnesses except by separate, written agreement. Client agrees to pay TSC pursuant to TSC's then current fee schedule for any TSC employee(s) subpoenaed by any party as an occurrence witness as a result of TSC's services.

13. OTHER AGREEMENTS: TSC shall not be bound by any provision or agreement (i) requiring or providing for arbitration of disputes or controversies arising out of this Agreement or its performance, (ii) wherein TSC waives any rights to a mechanics lien or surety bond claim; (iii) that conditions TSC's right to receive payment for its services upon payment to Client by any third party or (iv) that requires TSC to indemnify any party beyond its own negligence These General Conditions are notice, where required, that TSC shall file a lien whenever necessary to collect past due amounts. This Agreement contains the entire understanding between the parties. Unless expressly accepted by TSC in writing prior to delivery of TSC's services, Client shall not add any conditions or impose conditions which are in conflict with those contained herein, and no such additional or conflicting terms shall be binding upon TSC. The unenforceability or invalidity of any provision or provisions shall not render any other provision or provisions unenforceable or invalid. This Agreement shall be construed and enforced in accordance with the laws of the State of Illinois. In the event of a dispute arising out of or relating to the performance of this Agreement, the breach thereof or TSC's services, the parties agree to try in good faith to settle the dispute by mediation under the Construction Industry Mediation Rules of the American Arbitration Association as a condition precedent to filing any demand for arbitration, or any petition or complaint with any court. Paragraph headings are for convenience only and shall not be construed as limiting the meaning of the provisions contained in these General Conditions.

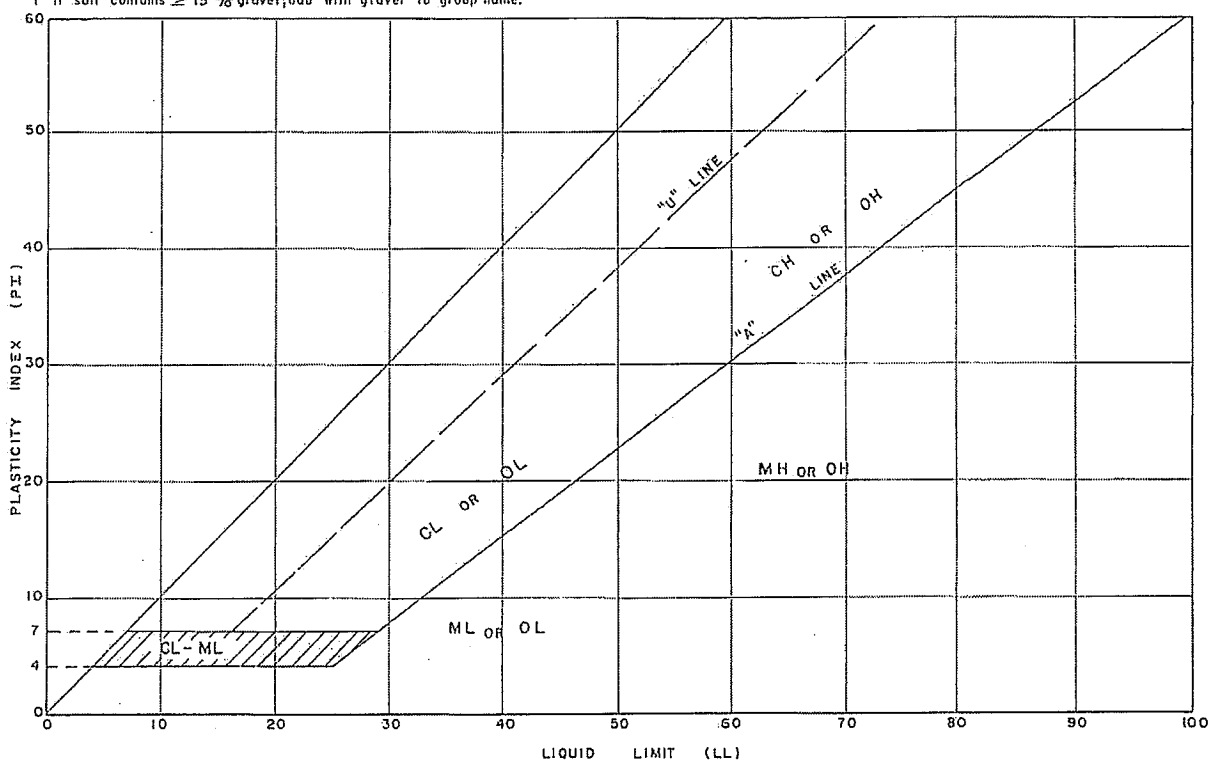
REV 02/08

TESTING SERVICE CORPORATION

UNIFIED CLASSIFICATION CHART

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 No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS Less than 5% fines [c]	$C_u \geq 4$ and $1 \leq C_c \leq 3$ [e]	GW	Well graded gravel [f]
			$C_u < 4$ and/or $1 > C_c > 3$ [e]	GP	Poorly graded gravel [f]
		GRAVELS WITH FINES More than 12% fines [c]	Fines classify as ML or MH	GM	Silty gravel f,g,h
			Fines classify as CL or CH	GC	Clayey gravel f,g,h
	SANDS 50% or more of coarse fraction passes No. 4 sieve	CLEAN SANDS Less than 5% fines [d]	$C_u \geq 6$ and $1 \leq C_c \leq 3$ [e]	SW	Well-graded sand [i]
			$C_u < 6$ and/or $1 > C_c > 3$ [e]	SP	Poorly graded sand [i]
		SANDS WITH FINES More than 12% fines [d]	Fines classify as ML or MH	SM	Silty sand g,h,f
			Fines classify as CL or CH	SC	Clayey sand g,h,f
FINE-GRAINED SOILS 50% or more passed the No. 200 sieve	SILTS & CLAYS Liquid limit less than 50%	Inorganic	PI > 7 and plots on or above "A" line [j]	CL	Lean clay k,l,m
			PI < 4 or plots below "A" line [j]	ML	Silt k,l,m
		Organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OL	Organic clay k,l,m,n Organic silt k,l,m,o
	SILTS & CLAYS Liquid limit 50% or more	Inorganic	PI plots on or above "A" line	CH	Fat clay k,l,m
			PI plots below "A" line	MH	Elastic silt k,l,m
		Organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OH	Organic clay k,l,m,p Organic silt k,l,m,q
Highly organic soils		Primarily organic matter, dark in color, and organic odor		PT	Peat

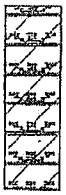
a. Based on the material passing the 3-in (75-mm) sieve.
b. If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" to group name.
c. Gravels with 5 to 12 % fines require dual symbols
GW-GM well graded gravel with silt
GW-GC well graded gravel with clay
GP-GM poorly graded 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. $C_u = D_{60}/D_{10}$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
f. If soil contains ≥ 15 % sand, add "with sand" to group name.
g. If fines classify as CL-ML, use dual symbol GC-GM, 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 clay.
k. If soil contains 15 to 29 % plus No. 200, add "with sand" or "with gravel" whichever is predominant.
l. If soil contains ≥ 30 % plus No. 200, predominantly sand, add "sandy" to group name.
m. If soil contains ≥ 30 % plus No. 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.

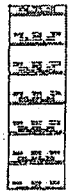


TESTING SERVICE CORPORATION

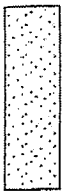
LEGEND FOR BORING LOGS


FILL

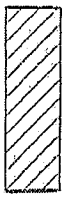

TOPSOIL

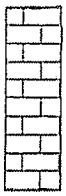

PEAT


GRAVEL


SAND


SILT


CLAY


DOLOMITE

SAMPLE TYPE:

SS = Split Spoon
ST = Thin-Walled Tube
A = Auger

FIELD AND LABORATORY TEST DATA:

N = Standard Penetration Resistance in Blows per Foot
Wc = In-Situ Water Content
Qu = Unconfined Compressive Strength in Tons per Square Foot
* Pocket Penetrometer Measurement; Maximum Reading = 4.5 tsf
γD = Dry Unit Weight in Pounds per Cubic Foot

WATER LEVELS:

▽ While Drilling
▽ End of Boring
▼ 24 Hours

SOIL DESCRIPTION:

MATERIAL	PARTICLE SIZE RANGE
BOULDER	Over 12 inches
COBBLE	12 inches to 3 inches
Coarse GRAVEL	3 inches to ¾ inch
Small GRAVEL	¾ inch to No. 4 Sieve
Coarse SAND	No. 4 Sieve to No. 10 Sieve
Medium SAND	No. 10 Sieve to No. 40 Sieve
Fine SAND	No. 40 Sieve to No. 200 Sieve
SILT and CLAY	Passing No. 200 Sieve

COHESIVE SOILS

CONSISTENCY	Qu
Very Soft	Less than 0.3
Soft	0.3 to 0.6
Stiff	0.6 to 1.0
Tough	1.0 to 2.0
Very Tough	2.0 to 4.0
Hard	4.0 and over

COHESIONLESS SOILS

RELATIVE DENSITY	N
Very Loose	0 - 4
Loose	4 - 10
Firm	10 - 30
Dense	30 - 50
Very Dense	50 and over

MODIFYING TERM	PERCENT BY WEIGHT
Trace	1 - 10
Little	10 - 20
Some	20 - 35

PROJECT Fox River Trail, Hurd's Island, Aurora, IL

CLIENT Wills Burke Kelsey Associates, Ltd., St. Charles, IL

BORING 101 DATE STARTED 1-29-10 DATE COMPLETED 1-29-10 JOB L-74,411

ELEVATIONS

GROUND SURFACE 636.0

END OF BORING 605.0

Sta. 24+50; 12' Rt.

WATER LEVEL OBSERVATIONS

WHILE DRILLING 1.0'

AT END OF BORING 11.0'

24 HOURS

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1.0	635.0	FILL - Black clayey TOPSOIL (OL) A-7-6 Silty Clay
	1	SS	1-3 4	62.5					FILL - Gray silty medium to fine SAND, trace organic, very moist to moist (SM) A-5 Sandy Loam
	2	SS	4-4 4	37.0					
							5.5	630.5	
	3	SS	8-9 11	6.1					FILL - Black SAND and CINDERS, moist
							7.5	628.5	
	4	SS	4-3 2	42.8					FILL - Gray silty medium to fine SAND, trace organic, moist (SM) A-5 Sandy Loam
	5	SS	4-4 4	35.2					
							13.0	623.0	
	6	SS	1-2 1	4.2					FILL - Black SAND and CINDERS, moist
							15.0	621.0	
	7	SS	1-14 3	45.9					FILL - Gray silty medium to fine SAND, trace organic, moist (SM) A-5 Sandy Loam
							18.0	618.0	
	8	SS	1-2 2	40.5	0.40 0.5*				Soft gray silty CLAY, trace sand trace organic and Shells, very moist (CL/CH) A-7-6 Clay
							20.5	615.5	
	9	SS	8-50/0"	14.4					Firm to dense gray silty SAND and GRAVEL, occasional Cobbles and Boulders, wet (SM/GM) A-2-4 Sandy Loam
	10	SS	6-11 13	10.1					
							28.0	608.0	
	11	SS	100/3"						Weathered/Fractured Rock or Boulder Zone [Hard Drilling]
	12	SS	100/0"						Auger Refusal at 31.0'

* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

DRILL RIG NO. 314

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.

TSC2 74411.GPJ TSC_ALL.GDT 3.1.10

326

PROJECT Fox River Trail, Hurd's Island, Aurora, IL

CLIENT Wills Burke Kelsey Associates, Ltd., St. Charles, IL

BORING 102 DATE STARTED 1-29-10 DATE COMPLETED 1-29-10 JOB L-74,411

ELEVATIONS

GROUND SURFACE 631.5

END OF BORING 605.5

WATER LEVEL OBSERVATIONS

▽ WHILE DRILLING 15.0'

▽ AT END OF BORING 10.0'

▼ 24 HOURS

Sta. 25+40; 10' Lt.

SAMPLE NO.	SAMPLE TYPE	LENGTH RECOVERY	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							1.0	630.5	FILL - Black clayey TOPSOIL (OL) A-7-6 Silty Clay
1	SS		1-3 2	36.9					FILL - Gray medium to fine sandy SILT, very moist to moist (ML) A-5 Loam
2	SS		3-4 4	42.3					
							5.5	626.0	
3	SS		1-3 1	4.4					FILL - Black SAND and CINDERS, moist
							8.0	623.5	
4	SS		3-5 6	44.9					▽ FILL - Gray medium to fine sandy SILT, moist (ML) A-5 Sandy Loam
5	SS		4-4 5	53.7					
							13.0	618.5	
6	SS		3-3 3	38.5	1.25*				Tough dark gray silty CLAY, trace sand, trace organic and Shells, very moist (CH) ▼ A-7-6 Clay
							15.5	616.0	
7	SS		1-2 3	40.6	0.50 0.5*				Soft brown and gray silty CLAY, trace organic and Shells, very moist (CL/CH) A-7-6 Clay
							18.0	613.5	
8	SS		19-50/0"	7.2					Dense to very dense gray SAND and GRAVEL, little Cobbles and Boulders, saturated (GP) A-1-a Sand
							22.0	609.5	
9	SS		100/2"						Weathered/Fractured Rock or Boulder Zone [Hard Drilling]
									Auger Refusal at 26.0'

* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

DRILL RIG NO. 314

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.

TSC2 74411.GPJ TSC_ALL.GDT 3.2.10

TESTING SERVICE CORPORATION
457 East Gundersen Drive
Carol Stream, Illinois

CLIENT: Wills Burke Kelsey Associates
St. Charles, Illinois

TSC Job No. L-74,411

PROJECT: Fox River Trail
Aurora, Illinois

SOIL TEST DATA

LOCATION						
BORING NUMBER		101	101	102	102	
SAMPLE NUMBER		5	8	5	6	
DEPTH IN FEET		12½	20	12½	15	
HRB CLASSIFICATION & GROUP INDEX		A-5	A-7-6	A-5	A-7-6	
UNIFIED CLASSIFICATION		SM	CL/CH	ML	CH	
GRAIN SIZE CLASSIFICATION		Sandy Loam	Clay	Loam	Clay	
GRADATION - PASSING 1½" SIEVE %						
GRADATION - PASSING 1" SIEVE %						
GRADATION - PASSING 3/4" SIEVE %						
GRADATION - PASSING 3/8" SIEVE %		100				
GRADATION - PASSING # 4 SIEVE %		100		100		
GRADATION - PASSING # 10 SIEVE %		99		100		
GRADATION - PASSING # 40 SIEVE %		70		85		
GRADATION - PASSING # 100 SIEVE %		55		66		
GRADATION - PASSING # 200 SIEVE %		47		51		
GRAVEL %		0		0		
SAND %		53		49		
SILT %		36		44		
CLAY %		11		7		
LIQUID LIMIT %		46	50	72	52	
PLASTIC LIMIT %		NP	24	NP	28	
PLASTICITY INDEX %			26		24	
NATURAL MOISTURE CONTENT %		35.2	40.5	53.7	38.5	
LIQUIDITY INDEX		--	0.63	--	0.44	
BEARING RATIO % (SOAKED IBR)						
STANDARD DRY DENSITY AASHTO T-99 PCF						
OPTIMUM MOISTURE %						
ORGANIC CONTENT	L-O-I %	4.2	3.3	6.2	5.5	
	WET COMBUSTION %					
SPECIFIC GRAVITY		2.68		2.78		

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 4

Client ROBERT H. ANDERSON & ASSOC. INC. Sheet 1 of 3

Comments Pier 9

35' N.E. of N 350, 862.0360

E 1, 972.2220

Project Aurora Bike Path Date 11/20/99

Location Aurora, IL Drilled By R & S

Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft. 636.6 Description Depth, ft. 0		S	T	R	B	N	Pen.	W	Uw	Qu
Gray fine sand, trace sand & gravel, damp, loose - Fill										
635.1'		1			4 5			25.5		
Brown-black cinders, trace sand & gravel, damp, loose to very loose - Fill		2	SS	12"	3	8		2.2		
	5	3	SS	9"	1 2 2	4		7.5		
		4	SS	10"	5 4 1	5		12.0		
	10	5	SS	6"	3 1 1	2		9.5		
		6	SS	9"	2 2 1	3		5.4		
623.1'										
Brown-black cinders, trace sand & gravel, damp, loose to medium dense Fill	15	7	SS	10"	4 4 3	7		9.1		
		8	SS	12"	7 10 3	13		19.1		
617.6'										
Brown-gray-black silt, some clay, trace sand & gravel, damp, loose-Fill	20	9	SS	14"	6 4 2	6		46.0		

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

Water Level — depth, ft. elev., ft.
- while drilling: 22.0 614.6
- after drilling: ____ ____
- hrs. after drilling: ____ ____

F-111b

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 4

Client ROBERT H. ANDERSON & ASSOC., INC. Sheet 2 of 3

Comments

Project Aurora Bike Path Date 11/20/99

Location Aurora, IL Drilled By R & S

Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft.	Description	Depth, ft.	S	T	R	B	N	Pen.	W	Uw	Qu
616.1'(a)	see page 3 of 3										
	Gray silt, some fine sand, trace clay & organic matter, very damp,					3					
614.6'	loose		10			3			42.4		
			11	SS	13"	14	1%		24.5		
	Gray medium-coarse sand & gravel, some fine sand, very damp-saturated, medium dense to very dense (probable cobbles and boulders)										
						50-3"					
		25	12	SS	3"		50+		12.4		
						47					
						50-4"					
			13	SS	0"		50+				
						50-3"					
		30	14	SS	7"		50+		13.8		
	Gray clay & silt, trace sand										
605.6'											
						20					
	Gray medium-coarse sand & gravel, some fine sand, saturated (probable cobbles and boulders)					35					
			15	SS	0"	50-2"	85+		11.9		
601.6'		35									
	Gray clay & silt, some fine sand										
600.6'											
	Gray limestone (extremely weathered)										
598.1'											
	Gray limestone RQD = 58% (fair)	40									

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

Water Level — depth, ft. elev., ft.
- while drilling: 22.0 614.6
- after drilling: ____ ____
- hrs. after drilling: ____ ____

F-111b

SOIL AND MATERIAL CONSULTANTS, INC.

File No. 15635 **BORING LOG** 4

Client ROBERT H. ANDERSON & ASSOC., INC. Sheet 3 of 3

Comments _____ Project Aurora Bike Patch Date 11/20/99

Location Aurora, IL Drilled By R & S

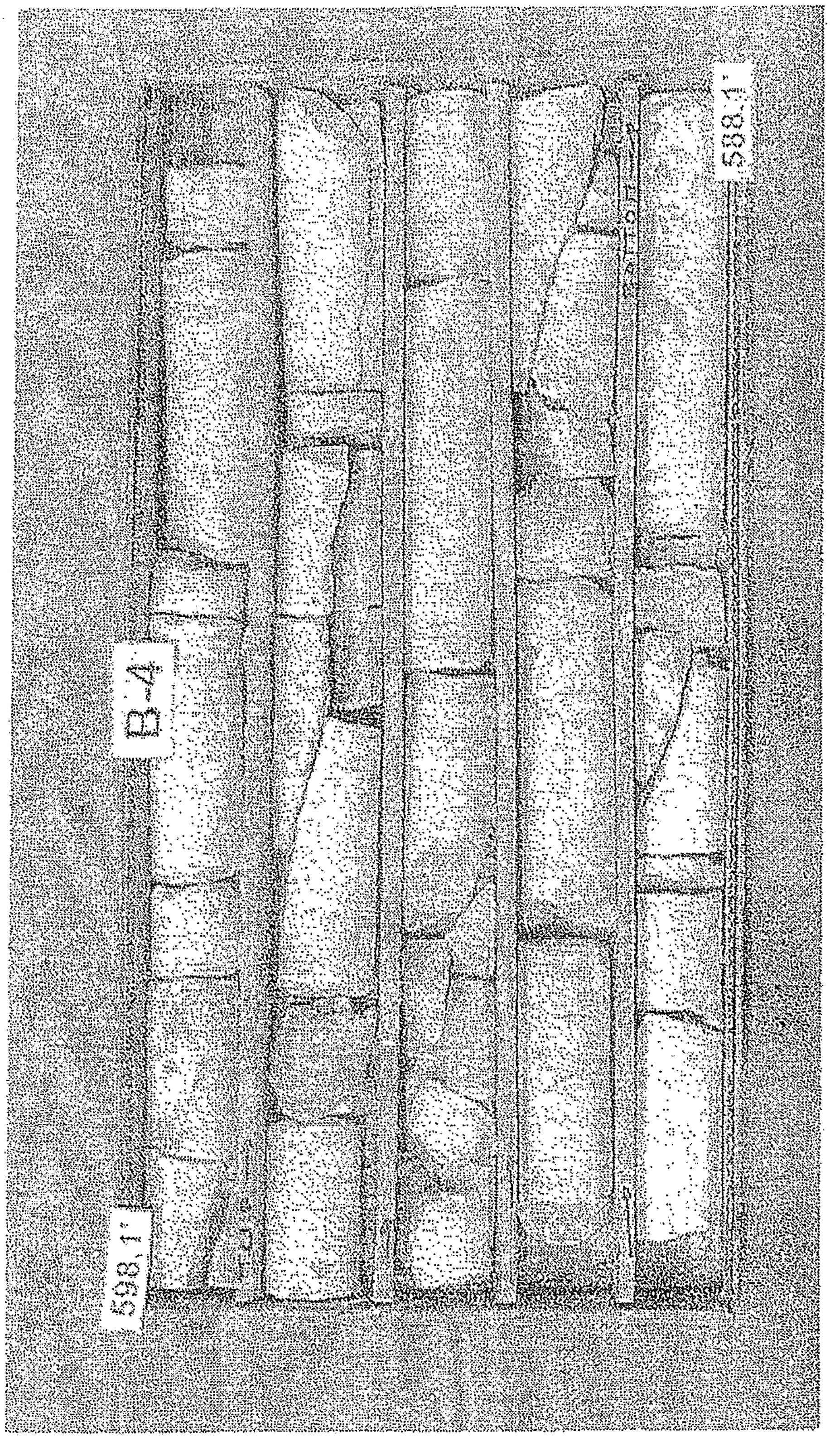
Equipment ☐CME 45B ☐H.A. ☐Other Logged By DA

Elev., ft.	Description	Depth, ft.	S	T	R	B	N	Pen.	W	Uw	Qu
	Gray Limestone RQD = 58% (fair) El. 592.6' Compressive Strength: 9,880 psi Unit Weight: 173.3 pcf	40 45									
588.1'	End of Boring	50									
	(a) Brown-gray-black silt, some clay, trace sand & gravel, damp, loose - Fill	55									
		60									

Water Level — depth, ft. elev., ft.
- while drilling: 22.0 614.6
- after drilling: _____ _____
- hrs. after drilling: _____ _____

S - sample T - type: J(Jar), SS(split-spoon), ST(shelby tube) R - recovery length, in.
B - Standard Penetration Test (SPT), blows/ 6" interval. W - water content, %.
N - SPT, blows/ foot to drive 2" O.D. split-spoon sampler with 140 lb. hammer falling 30".
Pen. - pocket penetrometer reading, tons/ sq. ft.. Uw - dry unit weight of soil, lbs./ cu.ft.
Qu - unconfined compressive strength, tons./ sq. ft..

111b


B-4
598.1'
588.1'

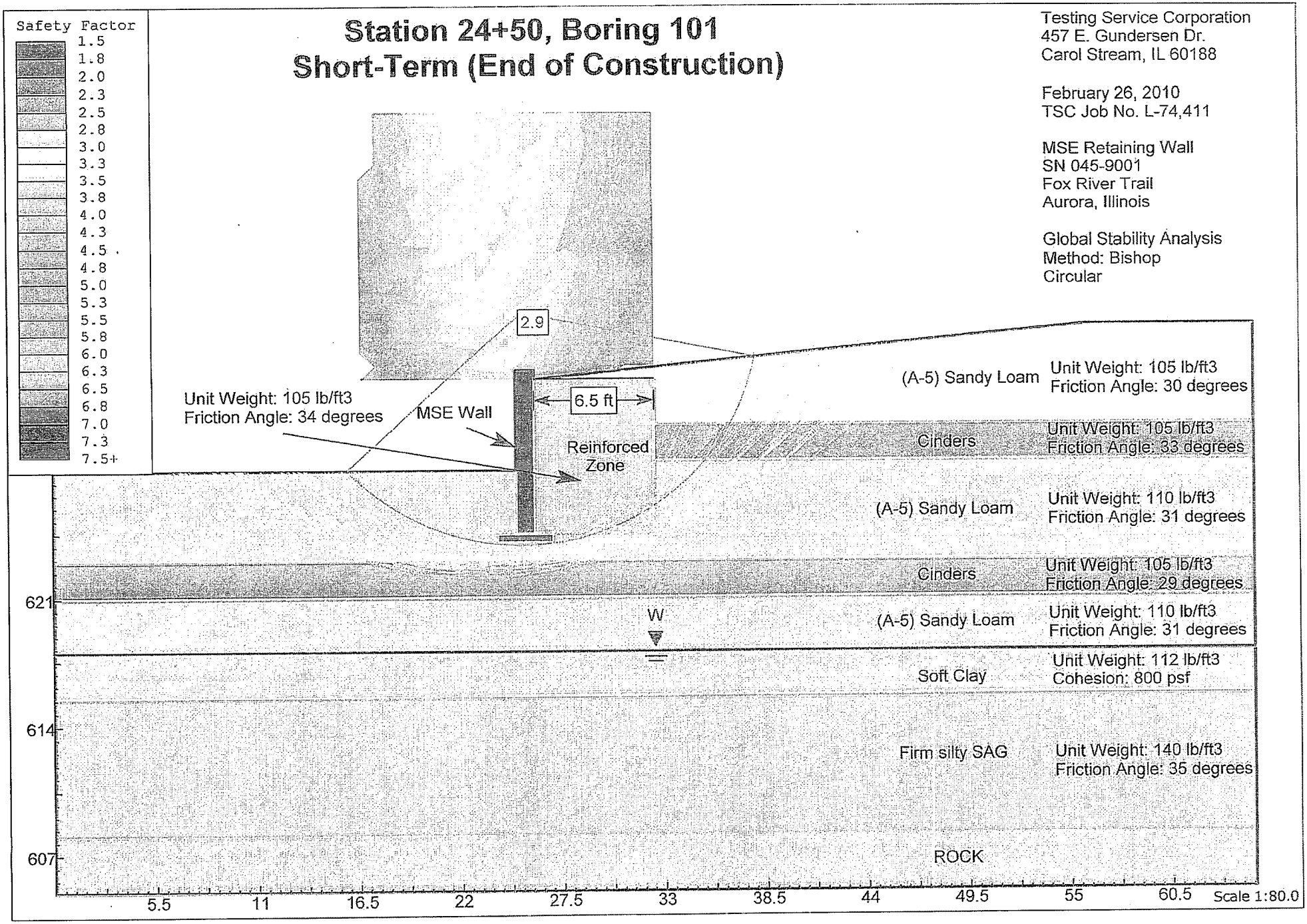
Station 24+50, Boring 101
Short-Term (End of Construction)

Testing Service Corporation
457 E. Gundersen Dr.
Carol Stream, IL 60188

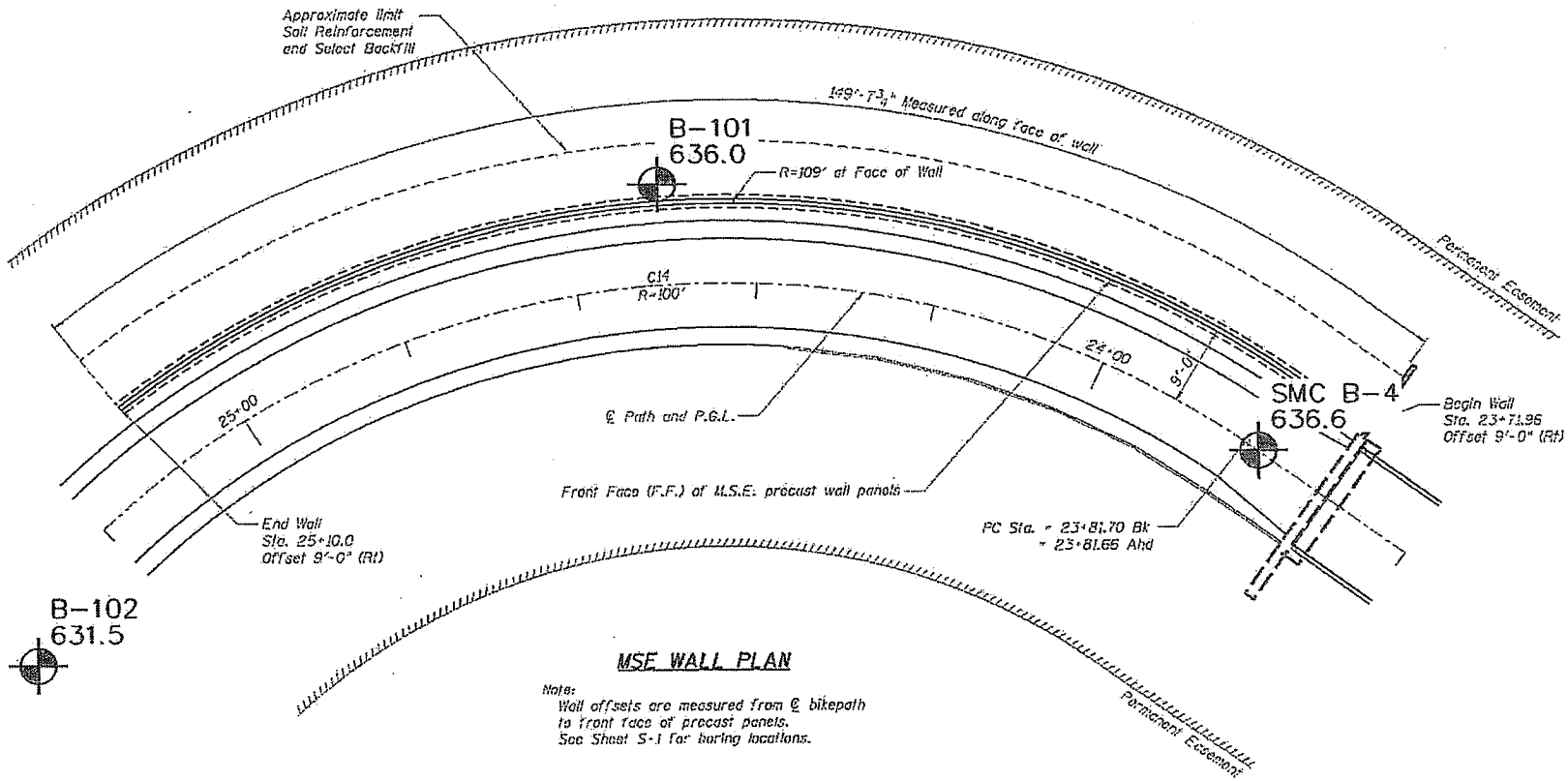
February 26, 2010
TSC Job No. L-74,411

MSE Retaining Wall
SN 045-9001
Fox River Trail
Aurora, Illinois

Global Stability Analysis
Method: Bishop
Circular



SCALE 1" = 20'



MSE WALL PLAN

Note:
Wall offsets are measured from ℄ bikepath to front face of precast panels.
See Sheet S-1 for boring locations.

LEGEND SOIL BORING LOCATION	BORING LOCATION PLAN MSE RETAINING WALL STRUCTURE NO. 045-9001 FOX RIVER TRAIL AURORA, ILLINOIS	TESTING SERVICE CORPORATION 457 EAST GUNDERSEN DRIVE CAROL STREAM, ILLINOIS 60188	DRAWN BY: TRP CHECKED BY: MVM JOB NO. : L-74,411 DATE: 03-01-10	PAGE NO. 1 OF 1

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Geotechnical Report

MSE Retaining Wall

Structure No. 045-9001

Fox River Trail

Aurora, Illinois

Wills Burke Kelsey Associates, Ltd.

TESTING SERVICE CORPORATION
Corporate Office:
360 S. Main Place, Carol Stream, IL 60188-2404
630.462.2600 • Fax 630.653.2988

Local Office:
457 E. Gundersen Drive, Carol Stream, IL 60188-2492
630.653.3920 • Fax 630.653.2726

Local Office
Carol Stream, Illinois

March 4, 2010

Mr. David Smoot
Wills Burke Kelsey Associates, Ltd.
116 West Main Street
St. Charles, Illinois 60174

Re: L-74,411A
Concrete Retaining Wall
Structure No. 045-9001
Fox River Trail
Aurora, Illinois

Dear Mr. Smoot:

This structure geotechnical report (SGR) has been prepared in connection with the Cast-in-Place Concrete (CIPC) Retaining Wall which is proposed in connection with Structure No. 045-9001, Bicycle Bridge Over Fox River in Aurora, Illinois. These geotechnical services have been provided in accordance with TSC Proposal No. 43,193 dated August 11, 2009 and the attached General Conditions, incorporated herein by reference. The geotechnical report for the bridge itself was prepared by Soil and Material Consultants (SMC) under File No. 15635 dated December 17, 1999.

The proposed bicycle bridge is to be part of the Fox River Trail system. It is to span the west channel of the Fox River and connect to the southern tip of Hurd's Island. The CIPC Retaining Wall is to be located at the northern end of Hurd's Island, where the bike path will tie in to North Avenue. The project site lies within the Northeast 1/4 of Section 28 of Aurora Township (T38N, R8E).

The CIPC Retaining Wall is to be located on the west side of the entrance to Hurd's Island. Grade is being raised approximately 1½ to 6 feet in this area, with the wall located on sloping ground which drops down towards the Fox River's west channel. It will begin at Sta. 43+60 and end at Sta. 43+95 (North Avenue Bridge), having an overall length of 35'. The wall footings are to bear at Elevation 630.8 for the first 23', then dropping to Elevation 624.8.

Site Description

The project site is at the northern tip of Hurd's Island in the Fox River. It lies at the eastern end of the North Avenue bridge over the western channel. This area slopes down towards the Fox River, consisting of grass lawn and weeds.

The Pedological Soil Map prepared by the Natural Resources Conservation Service has mapped all of Hurd's Island as 82 Millington Loam. These soils are given a Poor rating as road fill material due to wetness and low strength. However, relatively deep fill is expected based on other borings previously drilled in the general area.

Geologically the project site and Fox River channel are mapped as Cahokia Aluvium. This primarily consists of poorly sorted silt and sand deposited in floodplains, with sand and gravel also encountered locally. Bedrock consisting of Dolomitic limestone of Silurian Age is expected to be relatively shallow.

Field Investigation and Laboratory Testing

Boring 103 was drilled in connection with the CIPC Retaining Wall, being extended to 22½ feet below existing grade. It had to be drilled near the southern end of the wall, due to the presence of a 10" gas line up by North Avenue. A Boring Location Plan is attached.

Drilling, sampling and testing procedures were performed in accordance with IDOT structure boring criteria. Soil sampling was performed in conjunction with the Standard Penetration Test (SPT), for which driving resistence to a 2" split-spoon sampler (in blows per 6" interval) provides an indication of the relative density of granular materials and consistency of cohesive soils. Please note that an automatic hammer which has a relatively high rated energy was used to obtain the SPT samples in the TSC borings. Water level readings were taken during and following completion of drilling operations.

All soil samples were examined in the laboratory to verify field descriptions and to classify them in accordance with the AASHTO Classification System and the Illinois Department of Transportation Classification Chart. Laboratory testing included moisture content determinations for all cohesive and intermediate (silt or loamy) soil types. An estimate of unconfined compressive strength was obtained for all cohesive samples using a calibrated pocket penetrometer, with actual measurements of unconfined compressive strength also being performed.

Reference is made to the boring log appended which indicates subsurface stratigraphy and soil descriptions, results of field and laboratory tests, as well as water level observations. Definitions of descriptive terminology are also included. While strata changes are shown as a definite line on the boring logs, the actual transition between soil layers will probably be more gradual.

Discussion of Test Data

Boring 103 revealed approximately 10 inches of surficial topsoil. Fill was then encountered, extending to approximately 18 feet below existing grade. The fill primarily consisted of clayey sand and gravel with crushed stone and crushed concrete. Blow counts were typically in the range of 3 to 7 blows per foot (bpf). The fill samples had moisture contents ranging from 10 to 24 percent.

Firm to dense sand and gravel were found underlying the fill, extending from approximately 18 feet to the bottom of B-103 at 22½ feet in depth. These granular materials had N-values of 23 to 42 bpf (cobbles and boulders presumably present). Free water was initially encountered at 18 feet (top of sand layer), rising to within 14 feet of ground surface at the end of drilling.

Analysis and Recommendations

The footing foundations for the CIPC Retaining Wall at the north end of Hurd's Island are expected to bear at Elevations 624.8 (north) to 630.8 (south). This places them on clayey sand and gravel fill encountered in B-103. The fill materials extended approximately 18 feet in depth, i.e. 6 to 12 feet below proposed footing grade. Samples of the fill had relatively low N-values typically ranging from 3 to 7 blows per foot, also containing crushed stone and crushed concrete (miscellaneous inclusions). Firm to dense sand and gravel deposits in a saturated condition were found underlying the fill materials.

The existing fill in B-103 appears to have been randomly dumped. We have no reason to believe that it was placed and compacted in a controlled manner. It therefore provides a marginal to deficient base for support of the retaining wall footings, with long-term and variable settlement being the biggest concern.

In order to provide an adequate factor of safety against bearing capacity failure and minimize settlement under the CIPC Retaining Wall, consideration should be given to removal and replacement of the existing fill materials. This will require undercuts of approximately 6 to 12 feet below proposed footing grade (deeper for the higher footing at the south end of the wall). The limits of the undercut should extend at least 1 foot beyond the bottom edge of the footing and then down at a 1H:1V slope until suitable bearing soils are encountered. Structural backfill should consist of crushed stone, crushed gravel or crushed concrete meeting an IDOT coarse aggregate gradation (CA-1 or CA-6 typical). It should be placed and compacted in maximum 12 inch lifts, to at least 100 percent of Standard Proctor (ASTM D698) density or equivalent.

It is our opinion that foundation overexcavation as outlined above will likely not be feasible. This is do in large part to the relatively large undercut depths which are anticipated. The presence of saturated sand and gravel at the base of the undercut (directly underlying existing fill) is also a complicating factor.

It is therefore recommended that consideration be given to the use of Rammed Aggregate Piers (RAP) to improve the existing fill under footing locations. The RAP would have to be extended to the bottom of the fill layer, with it being okay to stop 1 to 2 feet above in order to minimize groundwater problems. Shallow footings constructed on RAP improved ground should be able to be designed for a net allowable bearing pressure in the range of 3000 to 4000 psf with a maximum settlement of 1 inch (0.6" differential settlement).

A third option would be to support the retaining wall on pile foundations. These would most likely consist of H-piles which are driven to refusal on the top of rock. If pile foundations are to be utilized, B-103 would also have to be extended to rock.

Lateral Earth Pressures

Lateral earth pressures for permanent underground structures will be dependent on the type of backfill used, whether it is in a drained or undrained state, as well as loading conditions. Equivalent fluid pressures (EFP) given below for cohesive and granular backfills assuming active (Ka) and passive (Kp) earth pressures. The values shown represent the increase in lateral pressure over a 1.0 foot distance measured in pounds per square foot (psf/ft).

BACKFILL TYPE	EQUIVALENT FLUID PRESSURE (PSF/FT)			
	ACTIVE CONDITION		PASSIVE STATE	
	DRAINED	UNDRAINED	DRAINED	UNDRAINED
GRANULAR	35	80	400	250
COHESIVE	50	85	350	250

The active condition applies to retaining walls which are free to rotate at their top. The passive state is induced in soil which is resisting lateral movement or displacement.

The values shown above are nominal, i.e. are based on average soil conditions. They also assume a level backfill height behind the walls; sloping backfill will increase lateral earth pressures and should be analyzed on an individual basis. It should be noted that for the EFP values given for granular soils be valid, the wedge of granular materials should extend a minimum distance at the top of the wall (or ground surface) equal to the height of the wall.

An appropriate surcharge load should be applied at the top of below grade walls in computing lateral earth pressures; 100 to 200 psf is normally used for sidewalks and/or bike paths. Finally, the height of free-standing retaining walls with clay backfill should be limited to approximately 6 feet, to avoid excessive deflections.

Backfill placed against retaining walls should be compacted to between 90 and 95 percent of Modified Proctor density. Compaction in excess of 95 percent is not desirable, since it can result in higher lateral earth pressures than recommended for design. Also, heavy compaction equipment should not be used on the high side of the wall within a horizontal distance equal to the height of backfilling, as this may result in over-stressing of the wall and excessive deflection.

The sliding resistence at the base of the retaining wall footing will be dependent on the normal load and friction coefficient of underlying soils. For cohesive and granular (coarse aggregate backfill) soil types, nominal friction coefficients may be taken as 0.40 and 0.50, respectively.

Drain lines should be provided behind the CIPC Retaining Wall. This would be to collect any seepage associated with perched groundwater as may be present in the existing fill. A drainage fill layer should be placed directly behind the wall, to consist of a minimum 1'-6" of IDOT gradation CA-7 backfill.

Closure

The analyses and recommendations submitted in this report are based upon the data obtained from the soil boring performed at the location indicated on the Boring Location Plan. This report does not reflect any variations which may occur between it and other borings or elsewhere on the site, the nature and extent of which may not become evident until during the course of construction. If variations are then identified, recommendations contained in this report should be re-evaluated after performing on-site observations.

It has been a pleasure to assist you with this work. Please call if there are any questions or if we may be of further service.

Respectfully submitted,

TESTING SERVICE CORPORATION

Michael V. Machalinski
Vice President
Registered Professional Engineer
Illinois No. 062-038559

Timothy R. Peceniak, P.E.
Project Engineer

MVM:TRP:cn
Enc.

TESTING SERVICE CORPORATION

GENERAL CONDITIONS

Geotechnical and Construction Services

1. PARTIES AND SCOPE OF WORK: If Client is ordering the services on behalf of another, Client represents and warrants that Client is the duly authorized agent of said party for the purpose of ordering and directing said services, and in such case the term "Client" shall also include the principal for whom the services are being performed. Prices quoted and charged by TSC for its services are predicated on the conditions and the allocations of risks and obligations expressed in these General Conditions. Unless otherwise stated in writing, Client assumes sole responsibility for determining whether the quantity and the nature of the services ordered by Client are adequate and sufficient for Client's intended purpose. Unless otherwise expressly assumed in writing, TSC's services are provided exclusively for client. TSC shall have no duty or obligation other than those duties and obligations expressly set forth in this Agreement. TSC shall have no duty to any third party. Client shall communicate these General Conditions to each and every party to whom the Client transmits any report prepared by TSC. Ordering services from TSC shall constitute acceptance of TSC's proposal and these General Conditions.

2. SCHEDULING OF SERVICES: The services set forth in this Agreement will be accomplished in a timely and workmanlike manner. If TSC is required to delay any part of its services to accommodate the requests or requirements of Client, regulatory agencies, or third parties, or due to any cause beyond its reasonable control, Client agrees to pay such additional charges, if any, as may be applicable.

3. ACCESS TO SITE: TSC shall take reasonable measures and precautions to minimize damage to the site and any improvements located thereon as a result of its services or the use of its equipment; however, TSC has not included in its fee the cost of restoration of damage which may occur. If Client desires or requires TSC to restore the site to its former condition, TSC will, upon written request, perform such additional work as is necessary to do so and Client agrees to pay to TSC the cost thereof plus TSC's normal markup for overhead and profit.

4. CLIENT'S DUTY TO NOTIFY ENGINEER: Client represents and warrants that Client has advised TSC of any known or suspected hazardous materials, utility lines and underground structures at any site at which TSC is to perform services under this agreement.

5. DISCOVERY OF POLLUTANTS: TSC's services shall not include investigation for hazardous materials as defined by the Resource Conservation Recovery Act, 42 U.S.C.§ 6901, et, seq., as amended ("RCRA") or by any state or Federal statute or regulation. In the event that hazardous materials are discovered and identified by TSC, TSC's sole duty shall be to notify Client.

6. MONITORING: If this Agreement includes testing construction materials or observing any aspect of construction of improvements, Client's construction personnel will verify that the pad is properly located and sized to meet Client's projected building loads. Client shall cause all tests and inspections of the site, materials and work to be timely and properly performed in accordance with the plans, specifications, contract documents, and TSC's recommendations. No claims for loss, damage or injury shall be brought against TSC unless all tests and inspections have been so performed and unless TSC's recommendations have been followed.

TSC's services shall not include determining or implementing the means, methods, techniques or procedures of work done by the contractor(s) being monitored or whose work is being tested. TSC's services shall not include the authority to accept or reject work or to in any manner supervise the work of any contractor. TSC's services or failure to perform same shall not in any way operate or excuse any contractor from the performance of its work in accordance with its contract. "Contractor" as used herein shall include subcontractors, suppliers, architects, engineers and construction managers.

Information obtained from borings, observations and analyses of sample materials shall be reported in formats considered appropriate by TSC unless directed otherwise by Client. Such information is considered evidence, but any inference or conclusion based thereon is, necessarily, an opinion also based on engineering judgment and shall not be construed as a representation of fact. Subsurface conditions may not be uniform throughout an entire site and ground water levels may fluctuate due to climatic and other variations. Construction materials may vary from the samples taken. Unless otherwise agreed in writing, the procedures employed by TSC are not designed to detect intentional concealment or misrepresentation of facts by others.

7. DOCUMENTS AND SAMPLES: Client is granted an exclusive license to use findings and reports prepared and issued by TSC and any sub-consultants pursuant to this Agreement for the purpose set forth in TSC's proposal provided that TSC has received payment in full for its services. TSC and, if applicable, its sub-consultant, retain all copyright and ownership interests in the reports, boring logs, maps, field data, field notes, laboratory test data and similar documents, and the ownership and freedom to use all data generated by it for any purpose. Unless otherwise agreed in writing, test specimens or samples will be disposed immediately upon completion of the test. All drilling samples or specimens will be disposed sixty (60) days after submission of TSC's report.

8. TERMINATION: TSC's obligation to provide services may be terminated by either party upon (7) seven days prior written notice. In the event of termination of TSC's services, TSC shall be compensated by Client for all services performed up to and including the termination date, including reimbursable expenses. The terms and conditions of these General Conditions shall survive the termination of TSC's obligation to provide services.

9. PAYMENT: Client shall be invoiced periodically for services performed. Client agrees to pay each invoice within thirty (30) days of its receipt. Client further agrees to pay interest on all amounts invoiced and not paid or objected to in writing for valid cause within sixty (60) days at the rate of twelve (12%) per annum (or the maximum interest rate permitted by applicable law, whichever is the lesser) until paid and TSC's costs of collection of such accounts, including court costs and reasonable attorney's fees.

10. WARRANTY: TSC's professional services will be performed, its findings obtained and its reports prepared in accordance with these General Conditions and with generally accepted principles and practices. In performing its professional services, TSC will use that degree of care and skill ordinarily exercised under similar circumstances by members of its profession. In performing physical work in pursuit of its professional services, TSC will use that degree of care and skill ordinarily used under similar circumstances. This warranty is in lieu of all other warranties or representations, either express or implied. Statements made in TSC reports are opinions based upon engineering judgment and are not to be construed as representations of fact.

Should TSC or any of its employees be found to have been negligent in performing professional services or to have made and breached any express or implied warranty, representation or contract, Client, all parties claiming through Client and all parties claiming to have in any way relied upon TSC's services or work agree that the maximum aggregate amount of damages for which TSC, its officers, employees and agents shall be liable is limited to $50,000 or the total amount of the fee paid to TSC for its services performed with respect to the project, whichever amount is greater.

In the event Client is unwilling or unable to limit the damages for which TSC may be liable in accordance with the provisions set forth in the preceding paragraph, upon written request of Client received within five days of Client's acceptance of TSC's proposal together with payment of an additional fee in the amount of 5% of TSC's estimated cost for its services (to be adjusted to 5% of the amount actually billed by TSC for its services on the project at time of completion), the limit on damages shall be increased to $500,000 or the amount of TSC's fee, whichever is the greater. This charge is not to be construed as being a charge for insurance of any type, but is increased consideration for the exposure to an award of greater damages.

11. INDEMNITY: Subject to the provisions set forth herein, TSC and Client hereby agree to indemnify and hold harmless each other and their respective shareholders, directors, officers, partners, employees, agents, subsidiaries and division (and each of their heirs, successors, and assigns) from any and all claims, demands, liabilities, suits, causes of action, judgments, costs and expenses, including reasonable attorneys' fees, arising, or allegedly arising, from personal injury, including death, property damage, including loss of use thereof, due in any manner to the negligence of either of them or their agents or employees or independent contractors. In the event both TSC and Client are found to be negligent or at fault, then any liability shall be apportioned between them pursuant to their pro rata share of negligence or fault. TSC and Client further agree that their liability to any third party shall, to the extent permitted by law, be several and not joint. The liability of TSC under this provision shall not exceed the policy limits of insurance carried by TSC. Neither TSC nor Client shall be bound under this indemnity agreement to liability determined in a proceeding in which it did not participate represented by its own independent counsel. The indemnities provided hereunder shall not terminate upon the termination or expiration of this Agreement, but may be modified to the extent of any waiver of subrogation agreed to by TSC and paid for by Client.

12. SUBPOENAS: TSC's employees shall not be retained as expert witnesses except by separate, written agreement. Client agrees to pay TSC pursuant to TSC's then current fee schedule for any TSC employee(s) subpoenaed by any party as an occurrence witness as a result of TSC's services.

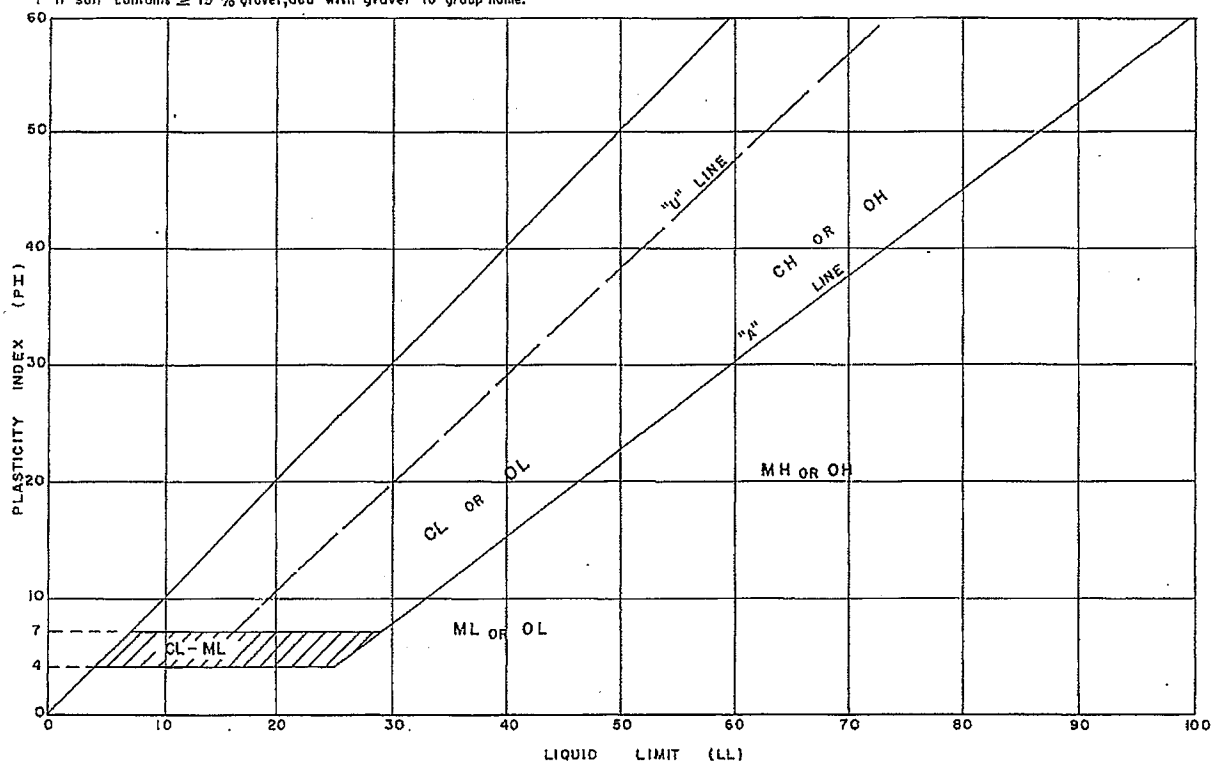
13. OTHER AGREEMENTS: TSC shall not be bound by any provision or agreement (i) requiring or providing for arbitration of disputes or controversies arising out of this Agreement or its performance, (ii) wherein TSC waives any rights to a mechanics lien or surety bond claim; (iii) that conditions TSC's right to receive payment for its services upon payment to Client by any third party or (iv) that requires TSC to indemnify any party beyond its own negligence These General Conditions are notice, where required, that TSC shall file a lien whenever necessary to collect past due amounts. This Agreement contains the entire understanding between the parties. Unless expressly accepted by TSC in writing prior to delivery of TSC's services, Client shall not add any conditions or impose conditions which are in conflict with those contained herein, and no such additional or conflicting terms shall be binding upon TSC. The unenforceability or invalidity of any provision or provisions shall not render any other provision or provisions unenforceable or invalid. This Agreement shall be construed and enforced in accordance with the laws of the State of Illinois. In the event of a dispute arising out of or relating to the performance of this Agreement, the breach thereof or TSC's services, the parties agree to try in good faith to settle the dispute by mediation under the Construction Industry Mediation Rules of the American Arbitration Association as a condition precedent to filing any demand for arbitration, or any petition or complaint with any court. Paragraph headings are for convenience only and shall not be construed as limiting the meaning of the provisions contained in these General Conditions.

REV 02/08

TESTING SERVICE CORPORATION
UNIFIED CLASSIFICATION CHART

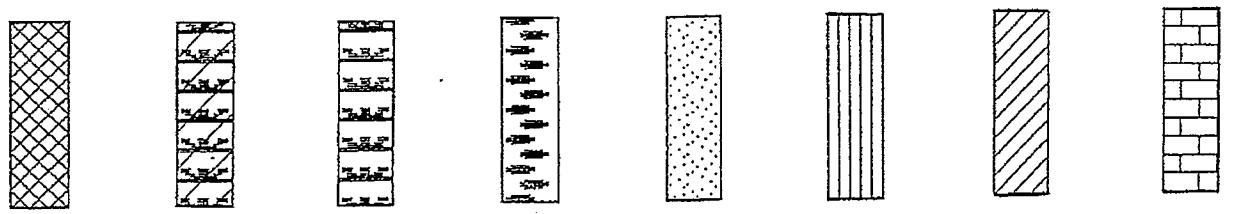
CRITERIA FOR ASSIGNING GROUP SYMBOLS AND GROUP NAMES USING LABORATORY TESTS [a]				SOIL CLASSIFICATION	
				GROUP SYMBOL	GROUP NAME [b]
COARSE-GRAINED SOILS more than 50 % retained on No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS Less than 5 % fines [c]	$C_u \geq 4$ and $1 \leq C_c \leq 3$ [e]	GW	Well graded gravel [f]
			$C_u < 4$ and/or $1 > C_c > 3$ [e]	GP	Poorly graded gravel [f]
		GRAVELS WITH FINES More than 12% fines [c]	Fines classify as ML or MH	GM	Silty gravel f,g,h
			Fines classify as CL or CH	GC	Clayey gravel f,g,h
	SANDS 50 % or more of coarse fraction passes No. 4 sieve	CLEAN SANDS Less than 5 % fines [d]	$C_u \geq 6$ and $1 \leq C_c \leq 3$ [e]	SW	Well-graded sand [i]
			$C_u < 6$ and/or $1 > C_c > 3$ [e]	SP	Poorly graded sand [i]
		SANDS WITH FINES More than 12 % fines [d]	Fines classify as ML or MH	SM	Silty sand g,h,f
			Fines classify as CL or CH	SC	Clayey sand g,h,f
FINE-GRAINED SOILS 50 % or more passed the No. 200 sieve	SILTS & CLAYS Liquid limit less than 50%	Inorganic	PI > 7 and plots on or above "A" line j	CL	Lean clay k,l,m
			PI < 4 or plots below "A" line j	ML	Silt k,l,m
		Organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OL	Organic clay k,l,m,n Organic silt k,l,m,o
	SILTS & CLAYS Liquid limit 50 % or more	Inorganic	PI plots on or above "A" line	CH	Fat clay k,l,m
			PI plots below "A" line	MH	Elastic silt k,l,m
		Organic	$\frac{\text{Liquid limit - oven dried}}{\text{Liquid limit - not dried}} < 0.75$	OH	Organic clay k,l,m,p Organic silt k,l,m,q
Highly organic soils		Primarily organic matter, dark in color, and organic odor		PT	Peat

a. Based on the material passing the 3-in (75-mm) sieve.
b. If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" 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.
$$C_u = D_{60}/D_{10} \qquad C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$
f. If soil contains ≥ 15 % sand, add "with sand" to group name.
g. If fines classify as CL-ML, use dual symbol GC-GM, 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 clay.
k. If soil contains 15 to 29 % plus No. 200, add "with sand" or "with gravel" whichever is predominant.
l. If soil contains ≥ 30 % plus No. 200, predominantly sand, add "sandy" to group name.
m. If soil contains ≥ 30 % plus No. 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.



TESTING SERVICE CORPORATION

LEGEND FOR BORING LOGS



FILL TOPSOIL PEAT GRAVEL SAND SILT CLAY DOLOMITE

SAMPLE TYPE:

SS = Split Spoon
ST = Thin-Walled Tube
A = Auger

FIELD AND LABORATORY TEST DATA:

N = Standard Penetration Resistance in Blows per Foot
Wc = In-Situ Water Content
Qu = Unconfined Compressive Strength in Tons per Square Foot
* Pocket Penetrometer Measurement; Maximum Reading = 4.5 tsf
γD = Dry Unit Weight in Pounds per Cubic Foot

WATER LEVELS:

▽ While Drilling
▽ End of Boring
▼ 24 Hours

SOIL DESCRIPTION:

MATERIAL	PARTICLE SIZE RANGE
BOULDER	Over 12 inches
COBBLE	12 inches to 3 inches
Coarse GRAVEL	3 inches to ¾ inch
Small GRAVEL	¾ inch to No. 4 Sieve
Coarse SAND	No. 4 Sieve to No. 10 Sieve
Medium SAND	No. 10 Sieve to No. 40 Sieve
Fine SAND	No. 40 Sieve to No. 200 Sieve
SILT and CLAY	Passing No. 200 Sieve

COHESIVE SOILS

CONSISTENCY	Qu
Very Soft	Less than 0.3
Soft	0.3 to 0.6
Stiff	0.6 to 1.0
Tough	1.0 to 2.0
Very Tough	2.0 to 4.0
Hard	4.0 and over

COHESIONLESS SOILS

RELATIVE DENSITY	N
Very Loose	0 - 4
Loose	4 - 10
Firm	10 - 30
Dense	30 - 50
Very Dense	50 and over

MODIFYING TERM	PERCENT BY WEIGHT
Trace	1 - 10
Little	10 - 20
Some	20 - 35

PROJECT Fox River Trail, Hurd's Island, Aurora, IL

CLIENT Wills Burke Kelsey Associates, Ltd., St. Charles, IL

BORING 103 DATE STARTED 1-29-10 DATE COMPLETED 1-29-10 JOB L-74,411

ELEVATIONS

GROUND SURFACE 636.5

END OF BORING 614.0

Sta. 43+75; Baseline

WATER LEVEL OBSERVATIONS

▼ WHILE DRILLING 18.0 '

▽ AT END OF BORING 14.0 '

▼ 24 HOURS

LENGTH RECOVERY	SAMPLE NO.	SAMPLE TYPE	N	WC	Qu	γ_{DRY}	DEPTH	ELEV.	SOIL DESCRIPTIONS
							0.8	635.7	FILL - Black clayey TOPSOIL (OL) A-7-6 Silty Clay
	1	SS	4-4 3	14.9					
	2	SS	5-7 11	9.5					
	3	SS	3-3 3	13.6					
	4	SS	1-2 1	22.0					FILL - Brown, gray and black clayey SAND and GRAVEL with Crushed Stone and Crushed Concrete, trace organic, moist to very moist (SC/GC) A-2-4/A-4 Sandy Loam
	5	SS	3-3 2	16.1					
	6	SS	2-2 2	23.4					▽
	7	SS	2-3 2	17.9	1.0*				
							18.0	618.5	▼
	8	SS	8-10 13	25.4					Firm gray medium to fine SAND, trace gravel, saturated (SP) A-1-b Sand
							20.5	616.0	
	9	SS	11-18 24						Dense gray SAND and GRAVEL, little Cobbles and Boulders, saturated (GP) A-1-a Sand
									End of Boring at 22.5'

* Approximate unconfined compressive strength based on measurements with a calibrated pocket penetrometer.

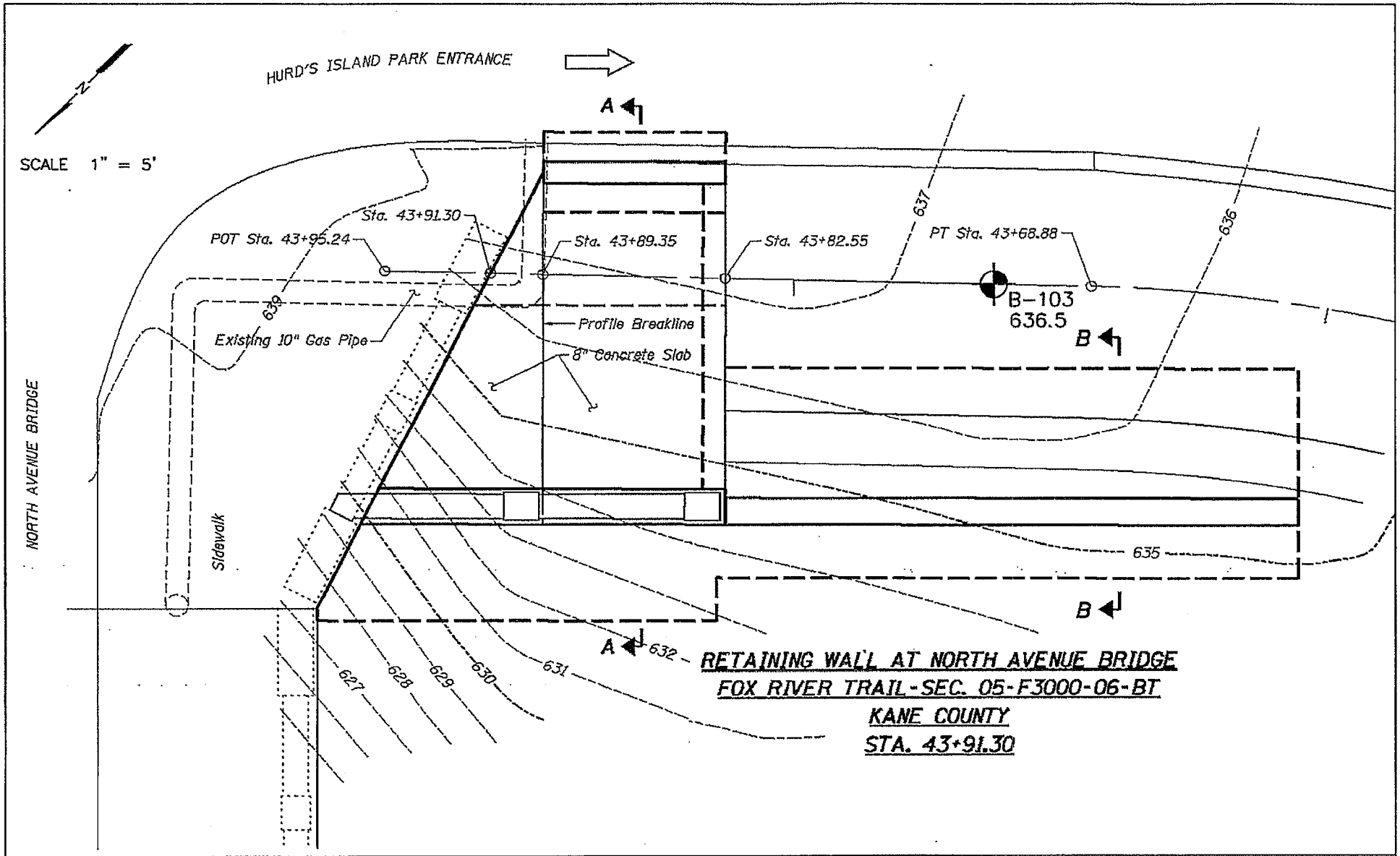
DISTANCE BELOW SURFACE IN FEET

0 5 10 15 20 25 30 35 40

DRILL RIG NO. 314

Division lines between deposits represent approximate boundaries between soil types; in-situ, the transition may be gradual.

TSC2 74411.GPJ TSC_ALLGDT 8 4 10



LEGEND SOIL BORING LOCATION	BORING LOCATION PLAN CONCRETE RETAINING WALL STRUCTURE No. 045-9001 FOX RIVER TRAIL AURORA, ILLINOIS	TSC TESTING SERVICE CORPORATION 457 EAST GUNDERSEN DRIVE CAROL STREAM, ILLINOIS 60188	DRAWN BY: TRP CHECKED BY: MVM JOB NO. : L-74,411A DATE: 03-04-10	PAGE NO. 1 OF 1

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