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**ROADWAY GEOTECHNICAL REPORT**  
**IL Route 56 and IL Route 53 Roadway Improvements**  
**IDOT Project No. P-91-439-01, Contract No 60P75**  
**FAU Rte. 365, Section 634X-N-3**  
**DuPage County, Illinois**

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**Prepared for:**

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**GSI Job No. 12195**  
**November, 2013**  
**Revised August 20, 2021**



November 14, 2013  
Revised August 20, 2021

Bollinger, Lach and Associates, Inc.  
333 Pierce Road, Suite 200  
Itasca, IL 60143

Attn: Mr. John P. O'Neill, P.E.

GSI Project 12195

Re: Roadway Geotechnical Report  
IL Route 56/53 Roadway Improvements  
FAU Rte. 365, Section 634X-N-3  
IDOT Project No. P-91-439-01, Contract No. 60P75  
DuPage County, IL

Dear Mr. O'Neill:

The following report presents the geotechnical analysis and recommendations roadway improvements along IL Route 56 between Arboretum Road to Briarcliff Road, and along IL Route 53 between Arboretum Road to Pinegrove Court in DuPage County, Illinois. A total of thirty-two (32) roadway soil borings (SGB-01 through SGB-32) were completed for this project. Copies of the boring logs, along with a boring location diagram, are included in this report.

If there are any questions with regard to the information submitted in this report, or if we can be of further assistance to you in any way, please do not hesitate to contact us.

Very truly yours,

GEO SERVICES, INC.

Sean Kirwan, E.I.T.  
Assistant Project Engineer

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Office Manager

enc.

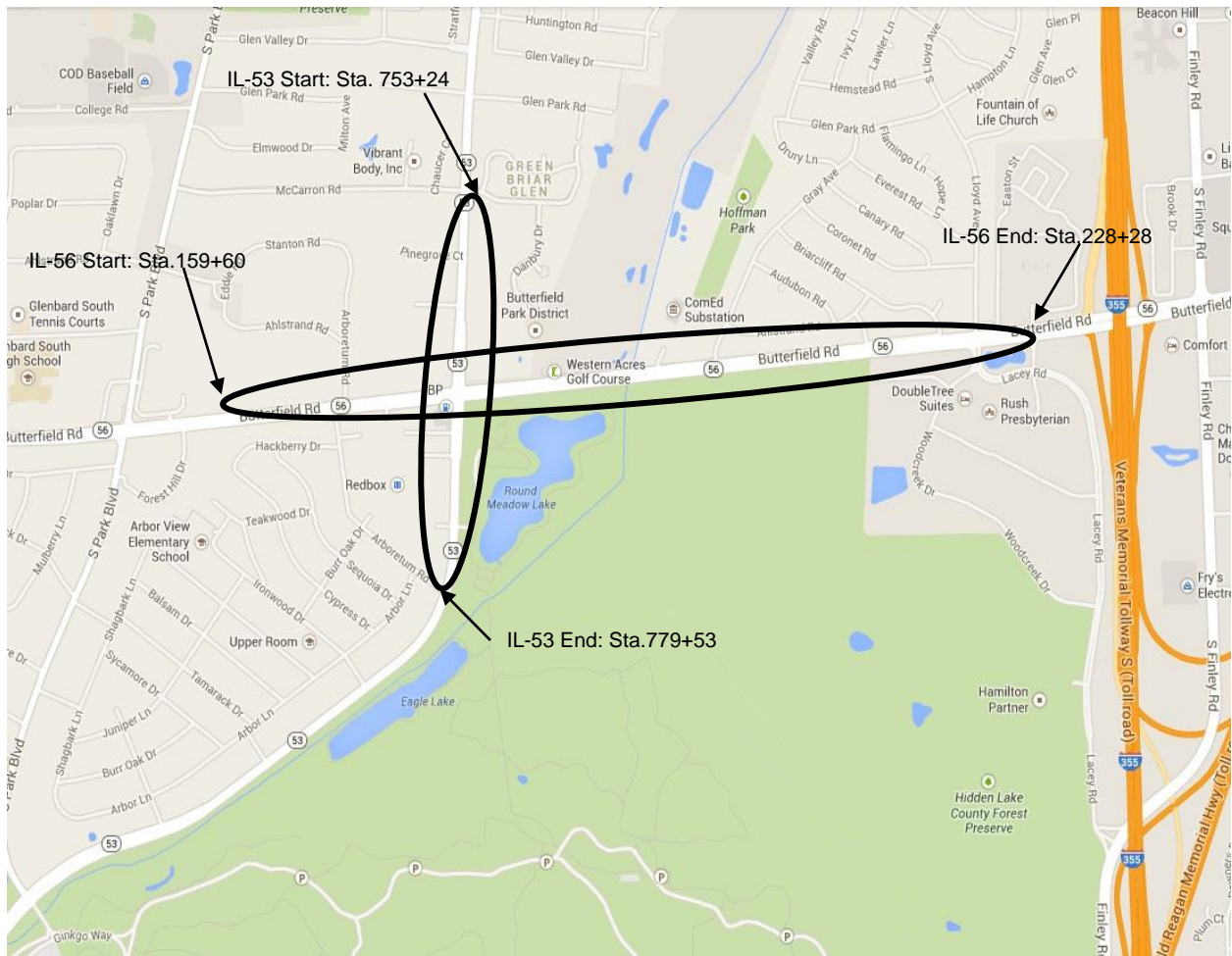
## **SECTION 01: INTRODUCTION**

This report presents the results of the geotechnical investigation for the proposed roadway improvements along IL Route 56 between Arboretum Road to Briarcliff Road, and along IL Route 53 between Arboretum Road to Pinegrove Court in DuPage County, Illinois (IDOT Job No. P-91-439-01). Geo Services, Inc. (GSI) selected the boring locations in cooperation with Bollinger, Lach and Associates, Inc. (BLA). The soil boring locations were laid out by GSI personnel using a mapping grade Trimble GPS unit. The elevations of each boring were interpolated from the topographic maps provided by BLA. The results of the thirty-two (32) roadway borings completed by GSI, along with a site location map, soil boring location diagrams, laboratory test results and soil profiles are included with this report.

The proposed improvements along IL Route 56 will begin near the intersection of Arboretum Road and IL Route 56 (Station 159+60) and extend approximately 1.3 miles east to the intersection of Briarcliff Road and IL Route 56 (Station 228+28). Along IL Route 53, the proposed improvements will begin near the intersection of Arboretum Road and IL Route 53 (Station 753+24) and extend approximately 0.5 mile north to the intersection of Pinegrove Court and IL Route 53 (Station 779+53). The project location is shown on the site map on the following page. The improvements will consist of widening the roadway from two lanes to three/four lanes with curb and gutter and center raised median. The proposed centerline grade will be similar to existing grade for the majority of the alignment with new embankment fills for the widening about 2 to 8 feet.

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
**PLANS FOR PROPOSED**

Section 634X-N-3, FAU Rte. 365  
IL Route 56/53  
Roadway Improvements  
DuPage County, IL.  
GEO SERVICES JOB NO.12195



## **SECTION 02: CLIMATIC CONDITIONS**

According to the USDA/NRCS Soil Survey of DuPage County, Illinois, the climate within the area of this project site falls within the temperate humid, continental range and is characterized by cold conditions in the winter and warm conditions in the summer. The winter average daily temperature is 25° F and the average daily minimum temperature is 17° F. The summer average temperature is 71° F and the summer average daily maximum temperature is 81° F. The total annual precipitation for this area is 35.8" with approximately 63% falling between April and September. The average seasonal snowfall for this area is 38.7".

Local Climatological Data, as measured at O'Hare International Airport (ORD), for the three (3) month period prior to and during drilling, including total precipitation, average temperature and snowfall are summarized below:

**Table 1 – Climate Conditions**

MONTH-Yr	ppt (inches)		Temp (°F)		Snow (inches)	
	Total	Departure From Norm	Average Temp.	Departure From Norm	Total	Monthly Norm
July 13	2.22	-1.48	73.2	-0.8	0.0	0.0
Aug-13	1.69	-3.21	73.0	0.6	0.0	0.0
Sept-13	2.57	-0.64	67.2	2.6	0.0	0.0

borings performed 09/30 to 10/09/13

Total precipitation during the three months preceding drilling was below normal and temperatures were higher than normal during this period. The climatic conditions encountered prior to drilling operations suggest that the soils should be drier than normal moisture levels.

## **SECTION 03: GEOLOGY**

According to the 1971 ISGS Circular #460: Summary of the Geology of the Chicago Area/ISGS Geologic Materials to a Depth of 20' – Du Page County, the project corridor is located in an area where the surficial soils to the east of the East Branch of the DuPage River are categorized as belonging to the Wadsworth Till Member of the Wedron Formation which were deposited during Woodfordian Substage of the Wisconsin glacialiation between 12,500 to 22,000 years ago and generally consist of gray clayey and silty clay tills. The soils on either side of the river consist of Cahokia Alluvium soils overlying soils belonging to the Batavia Member of the Henry Formation and the surficial soils away from the river bank area generally consist of Batavia

Member deposits. Cahokia Alluviums consist of recent flood plain deposits of silt, sand and gravel which can be organic and Batavia Member soils generally consist of sands and gravels deposited in outwash plains.

The ISGS Circular C542 15 Meter Stack Map confirms that surficial soils in the vicinity of the project corridor are as noted above and that bedrock is in excess of 50.0-ft below ground surface. A review of ISGS on-line well records and glacial drift thickness maps confirms that bedrock is encountered within a depth range of 50.0' to 100.0' below ground in the western portion of the project corridor and within 100' to 200' of the surface along the eastern portion of the site.

According to the 1984 ISGS Berg Circular #532: "Potential for Contamination of Shallow Aquifers in Illinois, the far western portion of the project corridor and the eastern half of the site are located in an E Zone and the area on either side of the river are located in an AX Zone. AX Zones are defined as an area with alluvium stream deposits of gravel, sand, silt and clay and E Zones are areas with in excess of 50-ft of relatively impermeable silty or clayey tills with no evidence of interbedded granular layers.

The Wetland Inventory database reviewed on-line at the US Fish & Wildlife Service website identified several nearby wetland areas that are summarized as follows:

- The areas on the north and south sides of Butterfield Road where it crosses the East Branch of the Du Page River are identified as 79.7 and 10.4 acre Palustrine System/Emergent Class wetlands respectively that are located in a Seasonally Flooded Water Regime and are noted to be partially drained/ditched. Located immediately adjacent to the southwest corner of the northern wetland is an approximately 0.4 acre Palustrine System/Unconsolidated Bottom Class wetland that is located in an Intermittently Exposed Water Regime that is noted to be excavated.
- Located on the west side of Illinois Route 53 at the south end of the project corridor is a 2.4 acre Palustrine System/Emergent Class wetland that is in a Temporary Flooded Water Regime.

The USDA Natural Resources Conservation Service Soil Survey database indicates that surficial soils in the vicinity of the project corridor are various silt loams and silty clay loams. None of these soils are overly organic (0.75 to 5.5%) and potential frost action ranges from moderate to high.

According to readily available ISGS sources, there are no documented coal mining operations in near vicinity to the project site and seismic activity is noted to be very low.

The available geologic information indicates that the subgrade soils along the eastern half and the far western portion of the project corridor should generally consist of clay tills and the remainder of the soils closer to the Eastern Branch of the Du Page River

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should consist of variable silts, sand and gravel deposits overlying clays.

## **SECTION 04: SUBSURFACE INVESTIGATION PROCEDURES**

The borings were performed during the months of September and October, 2013 with a truck-mounted drilling rig equipped with an automatic hammer, and were advanced by means of hollow stem augers. Representative soil samples were obtained employing split spoon sampling procedures in accordance with AASHTO Method T-206. Samples obtained in the field were returned to our laboratory for further examination and testing.

Split spoon sampling involves driving a 2.0-inch outside diameter split-barrel sampler into the soil with a 140-pound weight falling freely through a distance of 30 inches. Blow counts are recorded at 6" intervals and the blow counts are shown on the boring logs. The number of blows required to advance the sampler the last 12 inches is termed the Standard Penetration Resistance (N). The N value is an indication of the relative density of the soil.

## **SECTION 05: LAB TESTING PROGRAM**

The test procedures were performed in accordance with test procedures discussed in the IDOT Geotechnical Manual. All split-spoon samples obtained from the drilling operation were visually classified in the field. Cohesive samples were tested for unconfined compressive strength using an IDOT modified RIMAC test device and/or calibrated penetrometer in the field.

The soil testing program included performing water content, density and either unconfined compression and/or calibrated penetrometer tests on the cohesive samples recovered. These tests were performed upon representative portions of the samples obtained in the field. The results of the above testing, along with a visual classification of the material based upon both the Illinois textural classification and the AASHTO Soil Classification System, are indicated on the boring logs.

In addition to the regular lab testing program, Atterberg Limits (AASHTO T-89/90), Particle Size Analysis (AASHTO T-88) or Grain Size Analysis (AASHTO T-311) and Organic Content (AASHTO T-194) tests were performed on select samples from the borings. The tests were performed upon representative portions of the samples obtained in the field. The lab testing results are attached in the Appendix D, and are also noted in the BBS 2640 forms in the Appendix E of this report.

## **SECTION 06: SOIL CONDITIONS**

Boring logs can be found in Appendix C. The stratification lines shown on the boring logs represent the approximate boundary between soil types, and the actual transition may be gradual.

Surface conditions at the boring locations varied from existing asphalt or concrete pavement to crushed stone to underlying mixed soil fill materials (to approximately 12 to 36 inches deep) for borings performed on the roadway or on the shoulder areas, to topsoil or mixed soil fill materials (to approximately 12 to 48 inches deep) for borings performed off the roadway.

Below the surface and fill materials, cohesive soils were encountered at varying depths at approximately 1 to 8 feet. These soils included strata of clay, silty clay, clay loam, sandy clay loam, and silty clay loam. Beneath the cohesive soils were mainly strata of sand and gravel to boring termination at approximately 10 feet (approximately 15 feet deep at SGB-05). Moisture contents of the stiff to very stiff clay soils were typically in the low-teens to mid-twenties range.

Organic soil deposits (organic silty clay and/or buried topsoil) were encountered at various depths in isolated borings as summarized in Table 2 of this report. The buried topsoil sampled was typically stiff in consistency with moisture contents ranging from about 26% to 28%. The organic silty clay deposits were typically described as medium stiff in consistency with moisture content of 34%.

**Table 2 – Buried Topsoil/ Organic Clay Summary**

Boring No.	Approx. depth from existing ground surface (feet)	Moisture Content (%)	Material Description
SGB-05	5.5 – 8	34	Organic Silty Clay
SGB-13	3 – 5.5	28	Buried Topsoil
SGB-23	8 – 13	26	Buried Topsoil

## **SECTION 07: GROUND WATER CONDITIONS**

Approximately one third of the roadway borings (10 out of 32) taken for this investigation encountered groundwater at depths ranging from 3.5 to 9 feet, either during drilling or after the completion of drilling. Where borings extended deep enough to encounter the gray colored soils that typically represent a saturated condition and therefore the



estimated long term water level, the depth of the color change was generally in the range of 7 to 10 feet below existing ground surface. Fluctuations in the amount of water accumulated and in the hydrostatic water table can be anticipated depending upon variations in precipitation and surface runoff.

## **SECTION 08: ANALYSIS**

### **Slope Stability**

Proposed cross sections provided by IDOT indicate that new fill will be constructed at varying slopes (majority at 3H:1V) and cut slopes will be no steeper than 2H:1V. Maximum cut slope heights of about 2 to 4.5 feet occur at westbound side of the proposed road near Station 173+50 (Boring SGB-05). The new embankment fill heights for the widened cross section will range from 2 to 8 feet. For the proposed cut and fill slopes and the stiff to very stiff clay soils encountered in these borings no slope stability concerns were identified.

### **Settlement**

The proposed centerline grades for the majority of the alignment will generally match or be similar to existing pavement grades. Embankment fills are planned throughout the alignment for the widened roadway cross section. Based on the boring SGB-05, which encountered organic silty clay soils beneath the existing fill layers (taken as worst-case scenario), and a maximum fill height of 8 feet at the sidewalk/widening area, the estimated primary settlement is approximately 1/4 inch. For the rest of the borings, which had mainly stiff to very stiff clay or clay loam fill to medium dense granular soils, and new embankment fill heights ranging from 2 to 6 feet, the estimated primary settlement is less than 1/4 inch. No settlement issues were identified.

### **Drainage Conditions**

Boring logs can be found in Appendix C of this report. The soils encountered fill or native cohesive soils (clay, clay loam, and silty/sandy clay loam). These soils are extended to 1 to 5 feet depth below existing grade. Moisture contents for the clay soils were typically in the range of mid-teens to mid-twenties (percent). According to the IDOT Geotechnical Manual (Section 6.3.4.1, Table 6.3.4.1-1), these soils would classify as having "fair" drainage, with the exception of an area at approximate Station 190+00 to 192+50 (boring SGB-11), to which soils would classify as having "poor" drainage.

It is planned that 2 to 8 feet of clay fill will be added to fill the ditch areas at various widening portions of the roadway alignment. Considering this new embankment fill (more than 2 feet of A-6 soil and constructed to the IDOT Standard Specifications manual), the proposed curb and gutter section, greater than 0.5% grade slope and anticipated sloped ditches, the majority of the drainage conditions is rated as "fair".

Soil erosion factors (K factors), erosion ratings, and slope percentages can be found in Appendix G of this report. These values were taken from the NRCS website for the area of interest shown in Appendix G.

## **SECTION 09: RECOMMENDATIONS**

### **General Recommendations**

Any undercutting should be performed in such a manner as to minimize disturbance to the undercut subgrade. Heavy equipment traffic directly on the undercut subgrade should be minimized. The actual need for the recommended treatment should be determined in the field at the time of construction based on guidelines presented in the Illinois Department of Transportation Geotechnical Manual under the direction of a licensed geotechnical engineer. Evaluation of soils in the field should be performed based on the guidelines presented in the IDOT Subgrade Stability Manual.

Prior to placing any fill at the site, it is recommended that the exposed surface at or near grade be proofrolled with the heaviest available equipment to determine if there are any localized deposits of soft or unsuitable materials. During the proofrolling procedure, the exposed surface is rolled with the heaviest piece of construction equipment available at the site, such as a heavily loaded tandem axle dump truck having a gross weight of not less than 25 tons. Any such deposits, as observed by deflection of the subgrade under the wheels of the proofrolling equipment, should be removed and replaced with an approved fill free of organic matter and debris. The clay, clay loam and sandy/silty clay loam soils are sensitive to moisture changes and some softening/disturbance of the exposed soils should be expected following periods of precipitation. The remediation may include lime stabilization or undercutting and placement of a stabilization stone such as IDOT gradation CA-1 or PGEs materials or approved fill material.

In addition, borrow and excavation material should be in accordance with section 205 of the IDOT Standard Specifications for Road and Bridge Construction (SSRBC) 2016. Materials that do not meet the permissible limits should be confined to the embankment

core encompassed with at least 24-inches of cover material, which meet testing requirements.

Fill materials placed in 8-inch-thick lifts at the site should consist of an approved, inorganic material, compacted to a minimum 90% of AASHTO T-99 (Method C), standard proctor method. When the fill depth is less than 1.5 ft, all lifts should be compacted to a minimum of 95% of AASHTO T-99 (Method C). Moisture levels for fill material should be maintained within a maximum +/- 3% of the optimal moisture content or as directed by the engineer. The dry density of the compacted embankments should be determined by an engineer on site at regular intervals according to AASHTO T 191.

Construction of the proposed roadway improvements should be performed in accordance with the current Illinois Department of Transportation (IDOT) "Standard Specifications for Road and Bridge Construction". In particular, refer to Section 202, "Earth and Rock Excavation", Section 205, "Embankment" and Section 301, "Subgrade Preparation".

### **Roadway Recommendations**

Based on the results of the soil borings, the subgrade soils are generally considered suitable for support of the roadway embankment and new pavement with exception of unsuitable bearing soils encountered in the widening areas outlined on the following Table 3 (Remedial Treatment Recommendations).

**Table 3 – Remedial Treatment Recommendations**

Station (EB/WB) Boring No.	Subgrade Description (water content)	Unconfined Compressive Strength (tsf)	Proposed (-)cut/ (+)fill (feet) <sup>(1)</sup>	Approximate Remedial Treatment, Depth (feet) <sup>(2)</sup>	Remedial Treatment <sup>(3)</sup>
172+50 to 174+50 (WB) SGB-05	Silty Clay Fill over Organic Silty Clay (23-34%)	0.6 (at Organic Silty Clay)	+2 to +6	2.5	Remove fill and organic silty clay to elevation 681.0 and replace with approved structural fill material
197+75 to 199+50 (WB) SGB-13	Clay Loam Fill over Topsoil (15 to 28%)	--	+2 to +3.5	3	Remove fill and buried topsoil to elevation 674.5 and replace with approved structural fill material.
201+50 to 204+50 (WB) SGB-15	Clay Loam Fill over Medium Stiff Silty Clay (20-30%)	0.6 (at Medium Stiff Silty Clay)	+1 to +2	3	Remove fill and high moisture silty clay to elevation 673.0 and replace with approved structural fill material
225+50 to 228+28 (WB) SGB-23	Topsoil (26%)	--	+1 to +2	2	Remove buried topsoil to elevation 735.5 and replace with approved structural fill material

- 1) Cut / fill estimated from existing grade at cross-section nearest referenced boring.
- 2) Depths referenced to existing grade at boring location. Verify undercuts in field.
- 3) Remedial treatments required in existing ditch area as well as in roadway widening area.

The subsurface conditions within the proposed widened roadway and/or sidewalk have been evaluated according to cross sections provided. Undercut depths are considered from the estimated existing grade at the boring locations. In addition, it is anticipated that the majority of the widening (not under the existing pavement) area is to be within existing ditch areas and/or areas of vegetation. Per Section 201 of the IDOT Standard Specifications, we recommend that a nominal 6" of surficial topsoil encountered be stripped to remove the rootmat in the remaining areas of the project. Further removal may be necessary if the presence of roots or soft material is present beyond the nominal 6 inches estimated. The actual removal depth and quantity of topsoil removal should be verified in the field.

Where the soil at the base of the undercut is soft, yielding and/or non-cohesive, undercut areas should be backfilled with IDOT gradation CA-01 (open-graded stone) and underlain with a non-woven geotextile filter fabric (4 to 6 oz/yd<sup>2</sup>). For the undercuts of organic silty clay and buried topsoil, a minimum 2 feet thickness of the CA-01 should be anticipated at the base of the undercut on top of the non-woven geotextile filter fabric to provide a stable base for placement of backfill. Additional fill placed above the CA-01 should consist of suitable materials meeting the criteria for Embankment per Section

205. Geotextile filter fabric should meet the requirements outlined in SSRBC 2016 Article 210, Fabric for Ground Stabilization.

Any undercutting should be performed in such a manner as to minimize disturbance to the undercut subgrade. Heavy equipment traffic directly on the undercut subgrade should be minimized. The actual need for the recommended treatment should be determined in the field at the time of construction based on guidelines presented in the Illinois Department of Transportation Geotechnical Manual under the direction of a licensed geotechnical engineer or soils inspector. All potentially unstable soils should be tested with a dynamic cone penetrometer and treated in accordance with Article 301.04 of SSRBC 2016. Evaluation of soils in the field and determination of undercut depths should be performed based on the guidelines presented in the IDOT Subgrade Stability Manual.

**Drainage Recommendations**

As noted previously from the **SECTION 08: ANALYSIS** section, there is an area of the project site that is noted with a drainage class of “Poor”. On the following Table 4 is a summary of the area(s) that underdrains are recommended.

**Table 4 – Site Drainage Conditions**

Station Range	Soil Type	Profile (Cross Section)	Approximate Grade Slope	Moisture Condition	Drainage Class	Remedial Treatment
190+00 to 192+50	Silty Clay Loam	<3ft Fill/ 6 ft Cut (Shallow Ditch or Gutter)	-1.5% to -2.5%	Wet	Poor to Fair	Underdrains

Underdrains are required on State routes to properly drain the 12 inch aggregate subgrade, and at low areas in the profiles. Both longitudinal and transverse drains are recommended to be installed below the pavement. Transverse underdrains should also be installed at an interval of 300 feet between low points and at the base of any undercuts performed. Transverse underdrains are not needed at high points along the roadway. The drains should be a perforated pipe, without fabric, installed in a fabric lined trench backfilled with coarse aggregate (Type II Pipe Underdrain). The underdrains should be tied into the storm water drainage system, and installed in accordance with section 601.04 Pipe Underdrain Installation from the IDOT 2016 Standard Specifications for Road and Bridge Construction.

**Traffic Signal Structure Recommendations**

Design plans indicate that new traffic signal structures will be installed at two different intersections within the project area. The two different intersections include the intersection of IL 56 and IL 53 as well as the intersection of IL 56 and Lloyd Ave/Woodcreek Dr. The details of the traffic signal structures and the respective foundations for each traffic signal structure are shown in the table below. In this table, each traffic signal structure is described by the intersection/corner it resides at, the approximate station/offset, the planned mast arm length, the planned foundation diameter, the planned depth of foundation, and whether a custom foundation design is required or not. A custom foundation design is only applicable when the soil conditions do not meet the requirements of Standard 878001-10.

**Table 5 – Traffic Signal Structure General Information**

Intersection (Nearby Boring(s))	Corner (NE, SE, SW, NW)	Approx. Station & Offset	Mast Arm Length(s) (ft)	Foundation Diameter (in)	Foundation Depth (ft)	Custom Design Required/ Not Required
IL-53 & IL-56 (CB-16 thru CB-18)	NW	177+23.0, 59.7 LT	46	36	13	Required
IL-53 & IL-56 (CB-16 thru CB-18)	SW	177+03.8, 57.6 RT	48	36	13	Required
IL-53 & IL-56 (CB-16 thru CB-18)	SE	178+14.6, 57.9 RT	46	36	13	Required
IL-53 & IL-56 (CB-16 thru CB-18)	NE	178+60.1, 88.2 LT	38, 62	42	22	Required
IL-56 & Lloyd Ave/ Woodcreek Dr (NW-24)	NW	231+81.5, 52.7 LT	48	36	13	Not Required
IL-56 & Lloyd Ave/ Woodcreek Dr (NW-24)	SW	231+96.0, 91.4 RT	42	36	13	Not Required
IL-56 & Lloyd Ave/ Woodcreek Dr (NW-24)	SE	233+23.8, 79.9 RT	50	36	15	Not Required
IL-56 & Lloyd Ave/ Woodcreek Dr (NW-24)	NE	232+81.1, 66.6 LT	30	36	11	Not Required

The foundations for the traffic signal structures found at the intersection of IL-56 & Lloyd Ave/Woodcreek Dr do not require a custom designed foundation because they meet the requirements for soil of Standard 878001-10. These requirements state that the soils along the foundation shaft must be cohesive in nature, with an unconfined compressive strength of at least 1 ton per square foot. Low strength cohesive soils and granular deposits do not meet the requirements to use the design tables. The soils encountered in the vicinity of the proposed traffic signals were primarily cohesive, with unconfined compressive strengths greater than 1.0 tsf. These soils found at the intersection of IL-56 & Lloyd Ave/Woodcreek Dr meet the requirements of the standard details and the foundations for the proposed traffic signal structures can be designed using the standard details.

To prevent groundwater as well as the loose sand present in the borings from sloughing/caving into the drilled boreholes during construction, we recommend that a temporary steel casing be employed at the surface during construction. The temporary casing should be extended to at least 2 feet into the underlying soils of the drilled shafts to provide a seal. Another option to prevent loose sand sloughing/caving into the drilled boreholes during construction is to use a slurry method as outlines in SSRBC 2016 Section 516.07.

## **SECTION 10: GENERAL QUALIFICATIONS**

The analysis and recommendations presented in this report are based upon the data obtained from the soil borings performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations that may occur between borings or across the site. In addition, the soils samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to reevaluate the recommendations of the report. In addition, it is recommended that Geo Services Inc. be retained to perform construction observation and thereby provide a complete professional geotechnical engineering service through the observational method.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranties, either expressed or implied, are intended or made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the geotechnical engineer. Also note that Geo Services Inc. is not responsible for any claims, damages, or liability associated with any other party's interpretation of this report's subsurface

data or reuse of the report's subsurface data or engineering analyses without the express written authorization of Geo Services Inc.



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APPENDIX A: General Notes

APPENDIX B: Soil Boring Plan and Profile Sheets

APPENDIX C: Soil Boring Logs

APPENDIX D: Lab Data

APPENDIX E: BBS 2630 and BBS 2640

APPENDIX F: Subgrade Stability Rating (SSR) Triangle

APPENDIX G: Soil Erosion Factors

**APPENDIX A**  
**GENERAL NOTES**

## GENERAL NOTES

### CLASSIFICATION

American Association of State Highway & Transportation Officials (AASHTO) System used for soil classification.

#### Cohesionless Soils

<u>Relative Density</u>	<u>No. of Blows per foot N</u>
Very Loose	0 to 4
Loose	4 to 10
Medium Dense	10 to 30
Dense	30 to 50
Very Dense	Over 50

#### TERMINOLOGY

**Streaks** are considered to be paper thick. **Lenses** are considered to be less than 2 inches thick. **Layers** are considered to be less than 6 inches thick. **Stratum** are considered to be greater than 6 inches thick.

#### Cohesive Soils

<u>Consistency</u>	<u>Unconfined Compressive Strength - qu (tsf)</u>
Very Soft	Less than 0.25
Soft	0.25 - 0.5
Medium Stiff	0.5 - 1.0
Stiff	1.0 - 2.0
Very Stiff	2.0 - 4.0
Hard	Over 4.0

### DRILLING AND SAMPLING SYMBOLS

SS: Split Spoon 1-3/8" I.D., 2" O.D.	HS: Housel Sampler
ST: Shelby Tube 2" O.D., except where noted	WS: Wash Sample
AS: Auger Sample	FT: Fish Tail
DB: Diamond Bit - NX: BX: AX	RB: Rock Bit
CB: Carboloy Bit - NX: BX: AX	WO: Wash Out
OS: Osterberg Sampler	

Standard "N" Penetration: Blows per foot of a 140 lb. hammer falling 30" on a 2" O.D. Split Spoon

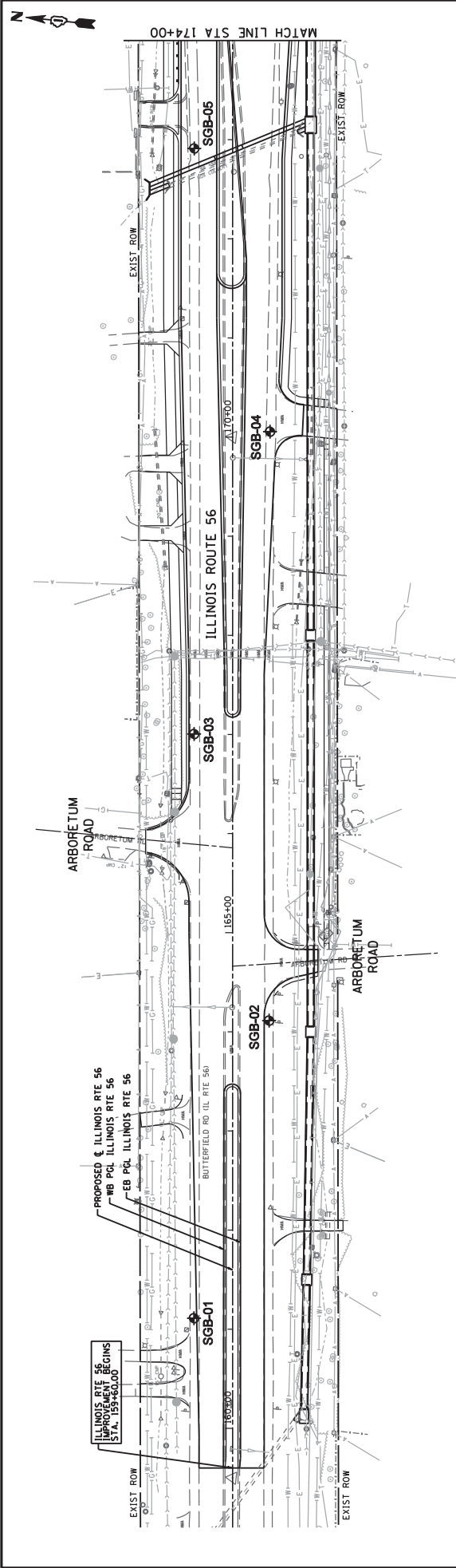
### WATER LEVEL MEASUREMENT SYMBOLS

WL: Water	WD: While Drilling
WCI: Wet Cave In	BCR: Before Casing Removal
DCI: Dry Cave In	ACR: After Casing Removal
WS: While sampling	AB: After Boring

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable ground water levels. In impervious soils, the accurate determination of ground water elevations is not possible in even several days observation, and additional evidence on ground water elevations must be sought.

**APPENDIX B**

**SOIL BORING PLAN & PROFILE SHEETS**



STATION	BORING NO.	DEPTH (FT)	SOIL TYPE	WATER ELEV. (FT)	GROUNDWATER ELEV. (FT)	REMARKS
710	SGB-01	0	PAVEMENT			
		1	CLAYEY GRAVEL & SAND (FILL)			
		2	CLAY LOAM (FILL)			
		3	CLAY LOAM			
		4	CLAY			
		5	SILT CLAY			
		6	CLAY (FILL)			
		7	PAVEMENT			
		8	CLAY (FILL)			
		9	CLAY			
705	SGB-02	0	PAVEMENT			
		1	CLAY (FILL)			
		2	CLAY			
		3	SILT CLAY			
		4	CLAY			
		5	CLAY			
		6	CLAY			
		7	CLAY			
		8	CLAY			
		9	CLAY			
700	SGB-03	0	PAVEMENT			
		1	CLAY LOAM			
		2	CLAY LOAM			
		3	CLAY LOAM			
		4	CLAY LOAM			
		5	CLAY LOAM			
		6	CLAY LOAM			
		7	CLAY LOAM			
		8	CLAY LOAM			
		9	CLAY LOAM			
695	SGB-04	0	PAVEMENT			
		1	CLAY LOAM			
		2	CLAY LOAM			
		3	CLAY LOAM			
		4	CLAY LOAM			
		5	CLAY LOAM			
		6	CLAY LOAM			
		7	CLAY LOAM			
		8	CLAY LOAM			
		9	CLAY LOAM			
690	SGB-05	0	PAVEMENT			
		1	CLAY LOAM			
		2	CLAY LOAM			
		3	CLAY LOAM			
		4	CLAY LOAM			
		5	CLAY LOAM			
		6	CLAY LOAM			
		7	CLAY LOAM			
		8	CLAY LOAM			
		9	CLAY LOAM			
685	SGB-06	0	PAVEMENT			
		1	CLAY LOAM			
		2	CLAY LOAM			
		3	CLAY LOAM			
		4	CLAY LOAM			
		5	CLAY LOAM			
		6	CLAY LOAM			
		7	CLAY LOAM			
		8	CLAY LOAM			
		9	CLAY LOAM			
680	SGB-07	0	PAVEMENT			
		1	CLAY LOAM			
		2	CLAY LOAM			
		3	CLAY LOAM			
		4	CLAY LOAM			
		5	CLAY LOAM			
		6	CLAY LOAM			
		7	CLAY LOAM			
		8	CLAY LOAM			
		9	CLAY LOAM			
675	SGB-08	0	PAVEMENT			
		1	CLAY LOAM			
		2	CLAY LOAM			
		3	CLAY LOAM			
		4	CLAY LOAM			
		5	CLAY LOAM			
		6	CLAY LOAM			
		7	CLAY LOAM			
		8	CLAY LOAM			
		9	CLAY LOAM			
670	SGB-09	0	PAVEMENT			
		1	CLAY LOAM			
		2	CLAY LOAM			
		3	CLAY LOAM			
		4	CLAY LOAM			
		5	CLAY LOAM			
		6	CLAY LOAM			
		7	CLAY LOAM			
		8	CLAY LOAM			
		9	CLAY LOAM			

**LEGEND**

SOIL STRENGTH (TSF)  
 B-BULGE  
 S-SHEAR  
 P-POCKET PENETROMETER  
 MOISTURE CONTENT (%)  
 N-VALUE  
 MRANO RECOVERY

**BORING NUMBER**  
 10' - 2.5P - 22  
 9' NP - 7  
 16' 1.5B - 14  
 27' N - 12

**GROUNDWATER ELEVATION**  
 ▲ FIRST ENCOUNTER  
 ▼ AT COMPLETION  
 ▼ 24 HRS WATER LEVEL

**SOIL INFORMATION**  
 ①  
 SILTY CLAY CLASSIFICATION  
 LOAM (A-6) LL = LIQUID LIMIT  
 LL = 35 PL = PLASTIC LIMIT  
 PI = 18 O.C. = ORGANIC CONTENT  
 C.I. = GROUP INDEX

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**IL ROUTE 56**  
**SOIL BORING PLAN & PROFILE**

HORIZ. VERT. 1"=50'  
 SCALE: VERT. 1"=5'

SHEET NO. 1 OF 5 SHEETS STA. 159+50 TO STA. 174+00

ILLINOIS RTE 56 IMPROVEMENT PROJECT

NO.	DATE	BY	REVISIONS
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**PROJECT**  
 ILLINOIS RTE 56 IMPROVEMENT PROJECT

**CLIENT**  
 ILLINOIS DEPARTMENT OF TRANSPORTATION

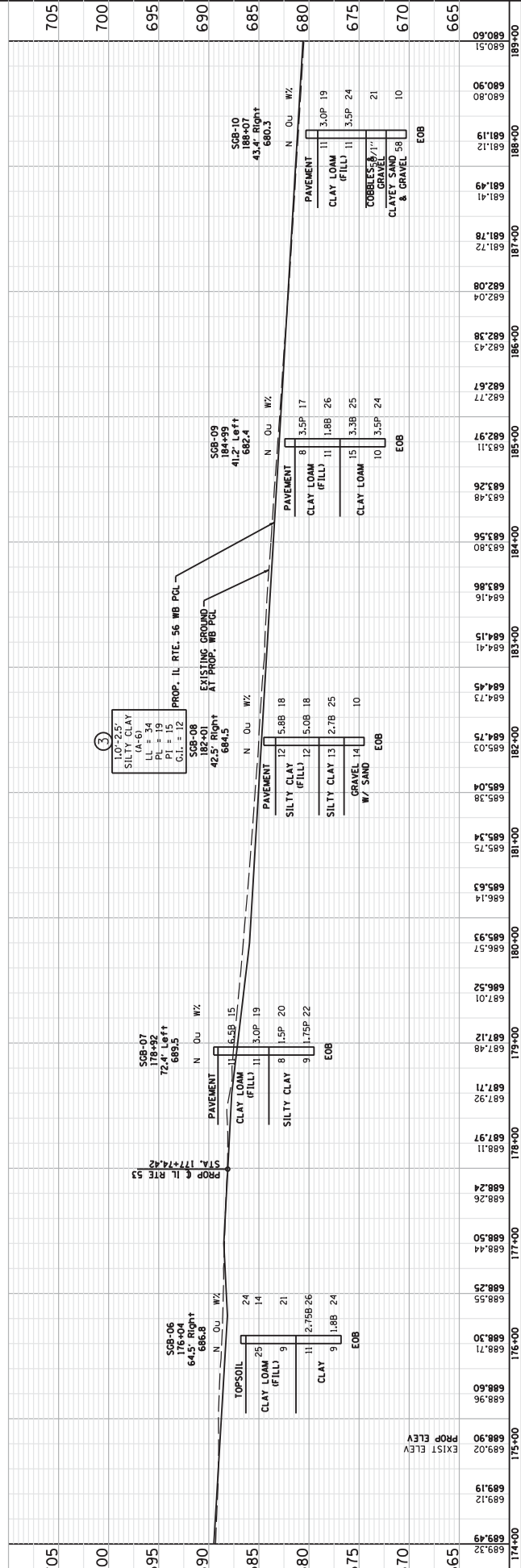
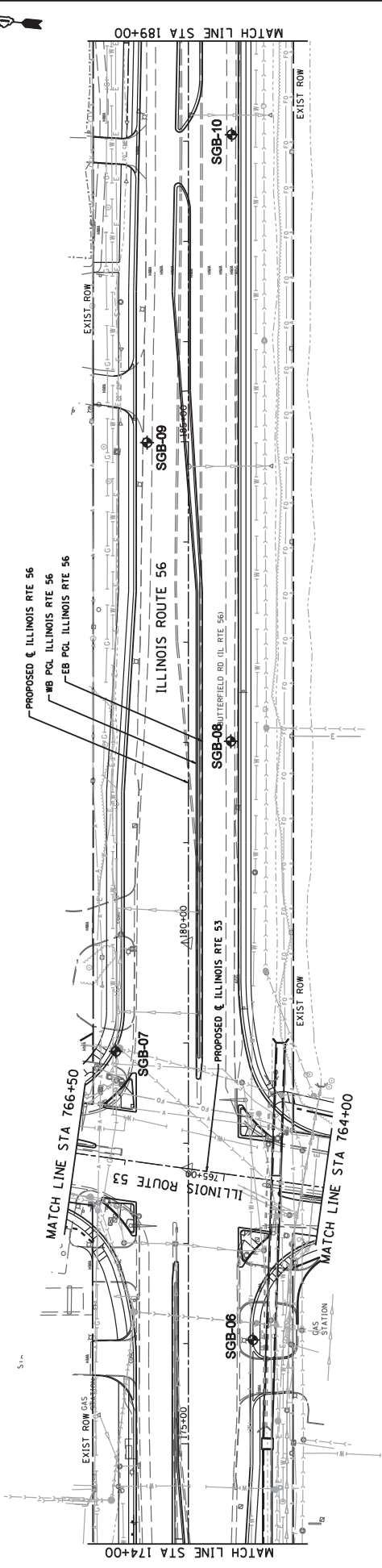
**DESIGNED** - RWC  
**DRAWN** - RWC  
**CHECKED** - AJP  
**DATE** - 10/18/2013

**REVISIONS**  
 REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

**CONTRACT NO.** 60P75  
**DISTRICT** 1  
**SECTION** 634H-N-3  
**COUNTY** ILLINOIS

**SCALE:** VERT. 1"=50'  
 HORIZ. 1"=50'

**PROJECT NO.** 60P75  
**SHEET NO.** 1 OF 5 SHEETS  
**STA.** 159+50 TO STA. 174+00



STATION	PROF. ELEV.	EXIST. ELEV.	SOIL TYPE	DEPTH (FT)	PAVEMENT	THICKNESS (IN)	SOIL BORE LOG
174+00	669.32	669.49					
175+00	669.12	669.19					
176+00	668.60	668.71					
177+00	668.44	668.50					
178+00	668.24	668.26					
179+00	667.12	667.18					
180+00	665.57	665.63					
181+00	665.34	665.34					
182+00	664.75	664.75					
183+00	664.45	664.45					
184+00	663.86	663.86					
185+00	663.26	663.26					
186+00	662.43	662.43					
187+00	661.72	661.72					
188+00	661.19	661.19					
189+00	660.55	660.55					

MATCH LINE STA 174+00  
 MATCH LINE STA 189+00  
 MATCH LINE STA 194+00  
 PROPOSED & ILLINOIS RTE 56  
 WB PCL ILLINOIS RTE 56  
 EB PCL ILLINOIS RTE 56  
 ILLINOIS ROUTE 56  
 SGB-06  
 SGB-07  
 SGB-08  
 SGB-09  
 SGB-10  
 EXIST. ROW  
 PROPOSED ROW  
 GAS STATION  
 PROPOSED ILLINOIS RTE 56  
 BUTTERFIELD RD (IL RTE 56)

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**  
**IL ROUTE 56**  
**SOIL BORING PLAN & PROFILE**  
 SHEET NO. 2 OF 5 SHEETS STA. 174+00 TO STA. 189+00  
 HORIZ. VERT. 1"=50'  
 SCALE: VERT. 1"=5'  
 COUNTY: ILLINOIS  
 DISTRICT: 7  
 CONTRACT NO.: G0P75  
 ILLINOIS PROJECT

PLN	DATE	BY
REVISED		
DATE		
BY		

PROF	DATE	BY
REVISED		
DATE		
BY		

DESIGNED	DATE	BY
DRAWN		
CHECKED		
DATE		

DESIGNED	DATE	BY
DRAWN		
CHECKED		
DATE		

DESIGNED	DATE	BY
DRAWN		
CHECKED		
DATE		

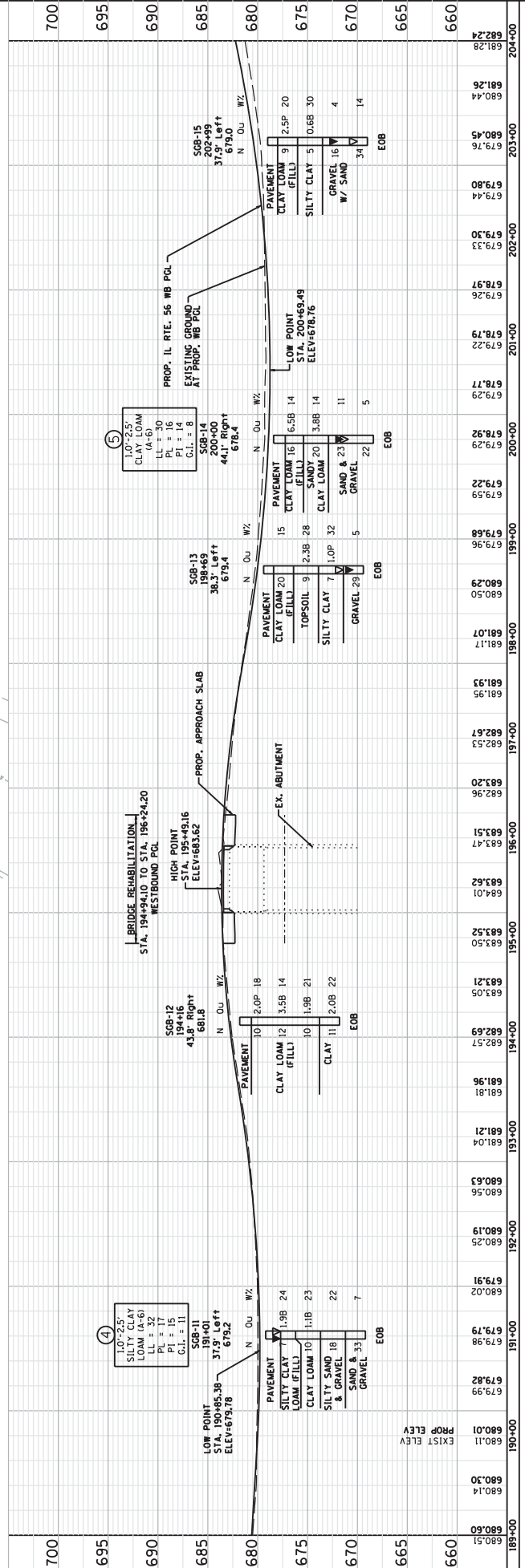
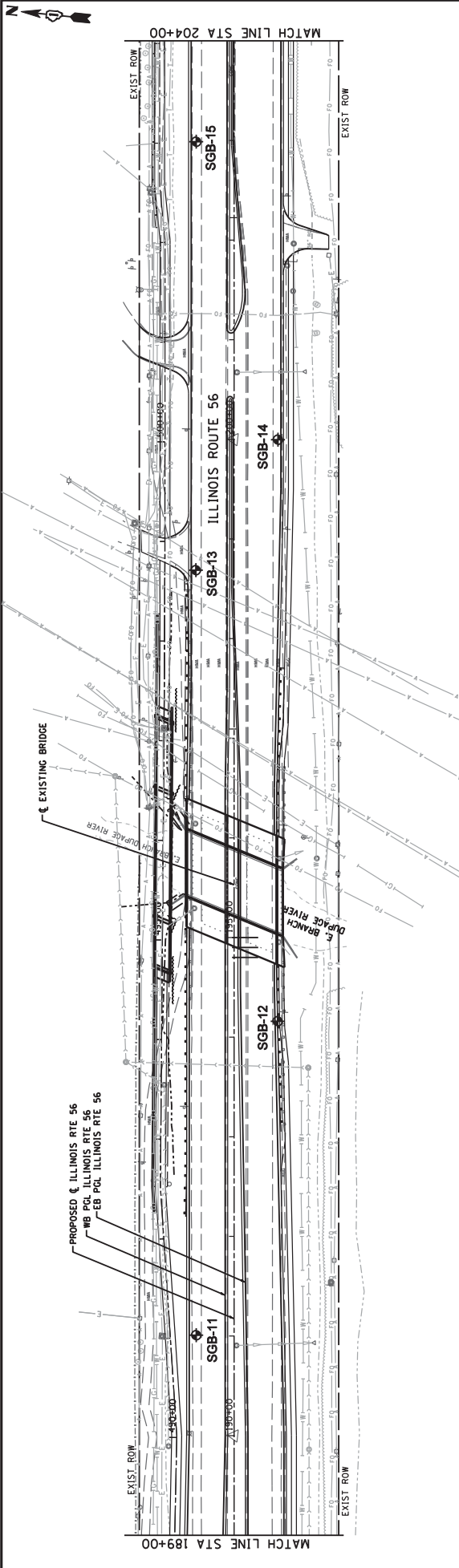
DESIGNED	DATE	BY
DRAWN		
CHECKED		
DATE		

DESIGNED	DATE	BY
DRAWN		
CHECKED		
DATE		

DESIGNED	DATE	BY
DRAWN		
CHECKED		
DATE		

DESIGNED	DATE	BY
DRAWN		
CHECKED		
DATE		

**Bollinger, Leach & Associates, Inc.**  
 ILLINOIS, ILLINOIS  
 1000 N. WASHINGTON ST.  
 SUITE 200  
 CHICAGO, IL 60610  
 TEL: 312.467.1000  
 FAX: 312.467.1001  
 WWW: WWW.BOLLINGERLEACH.COM



STATION	ELEVATION	SOIL BORE LOG	PAVEMENT
189+00	660.51		
189+00	660.51		
189+00	660.14		
189+00	660.14		
190+00	660.11	PROP. ELEV	
190+00	660.01	EXIST. ELEV	
191+00	679.98		
191+00	679.79		
191+00	679.91		
192+00	680.25		
192+00	680.19		
192+00	680.56		
192+00	680.63		
193+00	681.21		
193+00	681.04		
193+00	681.96		
194+00	682.57		
194+00	682.69		
194+00	683.05		
194+00	683.21		
195+00	683.50		
195+00	683.52		
195+00	684.01		
195+00	683.62		
195+00	683.47		
196+00	685.51		
196+00	682.96		
197+00	682.20		
197+00	682.53		
197+00	682.67		
197+00	681.95		
198+00	681.07		
198+00	680.50		
198+00	680.29		
199+00	679.96		
199+00	679.68		
199+00	679.59		
199+00	679.22		
200+00	679.29		
200+00	679.29		
200+00	679.92		
201+00	679.29		
201+00	679.17		
201+00	679.22		
201+00	679.79		
201+00	679.96		
202+00	679.33		
202+00	679.30		
202+00	679.44		
202+00	679.80		
202+00	679.76		
203+00	680.45		
203+00	680.45		
203+00	680.44		
203+00	681.26		
203+00	681.28		
204+00	682.24		

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**IL ROUTE 56**  
**SOIL BORING PLAN & PROFILE**

HORIZ. VERT. 1"=50' 1"=50' SHEET NO. 3 OF 5 SHEETS STA. 189+00 TO STA. 204+00

SCALE: VERT. 1"=50'

DESIGNED - RWC  
 DRAWN - RWC  
 CHECKED - AJP  
 DATE - 10/18/2013

REVISOR -  
 REVISION -  
 REVISION -  
 REVISION -

Geo. Sankoska, Inc.  
 Geotechnical Engineering  
 1001 N. Lake Street, Suite 201  
 Naperville, IL 60563  
 (630) 335-8888

**Bollinger, Lach & Associates, Inc.**  
 PRACTICE: ILLINOIS

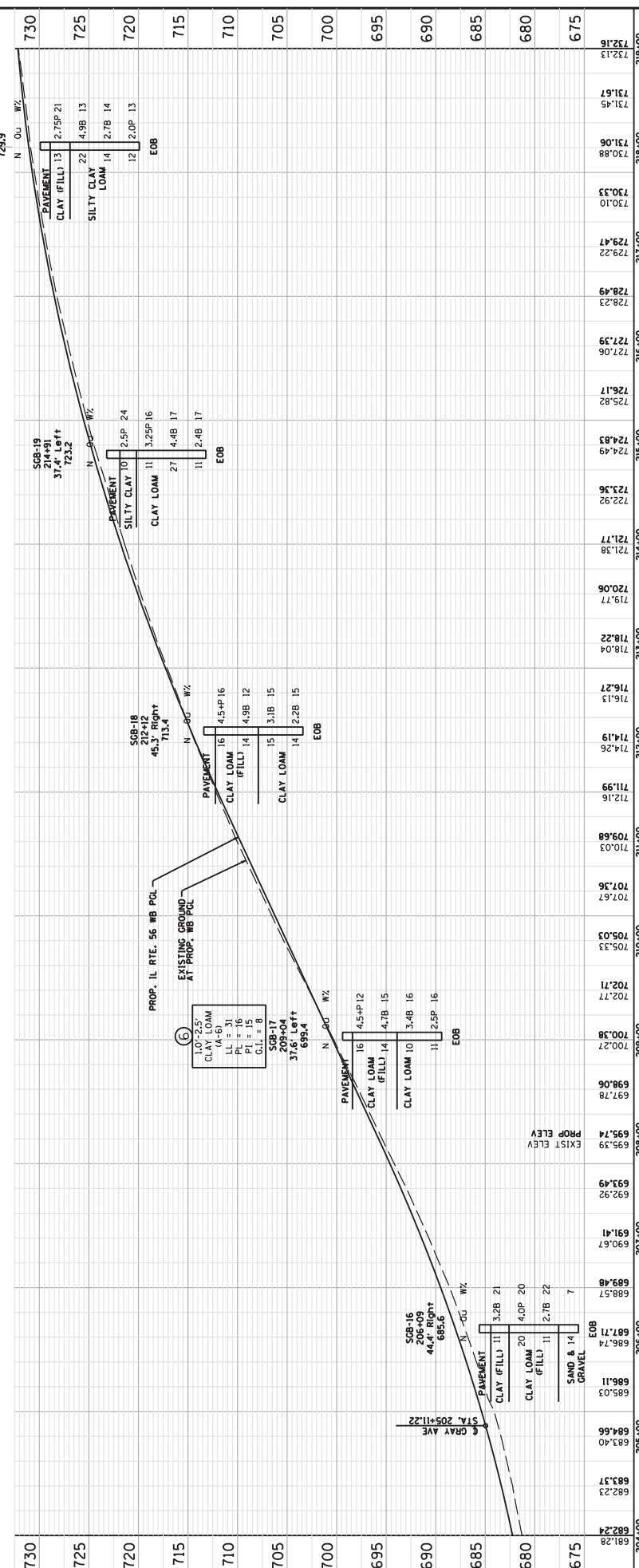
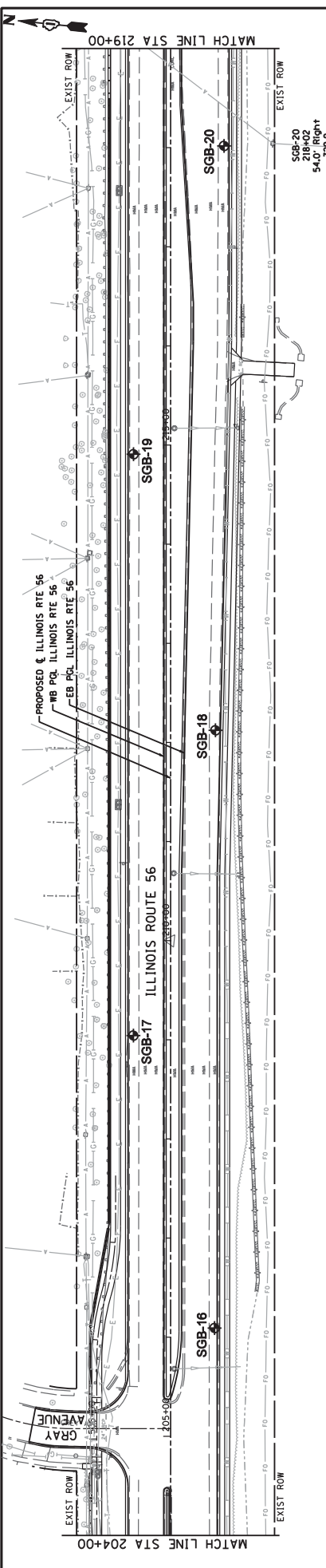
NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS

PROJECT: ILLINOIS ROUTE 56  
 DRAWN: RWC  
 CHECKED: AJP  
 DATE: 10/18/2013

NOTE: SEE SHEET 2 FOR SOIL BORING LOGS

CONTRACT NO. 60P75  
 COUNTY: DU PAGE  
 DISTRICT: 3  
 ILLINOIS PROJECT



STATION	ELEVATION	SOIL BORE LOG	SOIL DESCRIPTION
204+00	682.24	SGB-16	PAVEMENT
204+00	682.23	SGB-16	CLAY (FILL) 11
204+00	682.37	SGB-16	CLAY LOAM 20
204+00	683.40	SGB-16	CLAY (FILL) 11
204+00	684.66	SGB-16	SAND & GRAVEL
205+00	685.03	SGB-16	SAND & GRAVEL
206+00	686.74	SGB-16	PAVEMENT
206+00	687.74	SGB-16	CLAY (FILL) 11
206+00	688.57	SGB-16	CLAY LOAM 20
206+00	689.48	SGB-16	CLAY (FILL) 11
207+00	691.41	SGB-16	CLAY LOAM 10
207+00	692.92	SGB-16	CLAY LOAM 14
207+00	693.49	SGB-16	CLAY LOAM 14
208+00	695.39	SGB-16	CLAY LOAM 14
208+00	695.74	SGB-16	CLAY LOAM 14
208+00	697.08	SGB-16	CLAY LOAM 14
209+00	700.27	SGB-16	CLAY LOAM 14
209+00	700.38	SGB-16	CLAY LOAM 14
209+00	702.71	SGB-16	CLAY LOAM 14
210+00	705.33	SGB-16	CLAY LOAM 14
210+00	707.67	SGB-16	CLAY LOAM 14
211+00	710.03	SGB-16	CLAY LOAM 14
211+00	712.16	SGB-16	CLAY LOAM 14
212+00	714.92	SGB-16	CLAY LOAM 14
212+00	716.27	SGB-16	CLAY LOAM 14
213+00	718.04	SGB-16	CLAY LOAM 14
213+00	719.77	SGB-16	CLAY LOAM 14
214+00	721.38	SGB-16	CLAY LOAM 14
214+00	721.77	SGB-16	CLAY LOAM 14
214+00	722.92	SGB-16	CLAY LOAM 14
215+00	724.49	SGB-16	CLAY LOAM 14
215+00	725.82	SGB-16	CLAY LOAM 14
216+00	727.06	SGB-16	CLAY LOAM 14
216+00	727.39	SGB-16	CLAY LOAM 14
217+00	728.49	SGB-16	CLAY LOAM 14
217+00	729.22	SGB-16	CLAY LOAM 14
218+00	730.10	SGB-16	CLAY LOAM 14
218+00	730.33	SGB-16	CLAY LOAM 14
218+00	730.88	SGB-16	CLAY LOAM 14
218+00	731.45	SGB-16	CLAY LOAM 14
219+00	731.67	SGB-16	CLAY LOAM 14
219+00	732.13	SGB-16	CLAY LOAM 14
219+00	732.16	SGB-16	CLAY LOAM 14

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**  
**IL ROUTE 56**  
**SOIL BORING PLAN & PROFILE**  
 SHEET NO. 4 OF 5 SHEETS STA. 204+00 TO STA. 219+00  
 HORIZ. VERT. 1"=50'  
 SCALE: VERT. 1"=5'

DESIGNED	RWC
DRAWN	RWC
CHECKED	AJP
DATE	10/18/2013

Geo. Sankoski, Inc.  
 Geotechnical Engineering  
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 (630) 335-8888

Bollinger, Leach & Associates, Inc.  
 1000 N. 1st Street, Suite 201  
 Naperville, IL 60563  
 (630) 335-8888

NO. _____	DATE _____
BY _____	DATE _____

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BY _____	DATE _____

NO. _____	DATE _____
BY _____	DATE _____

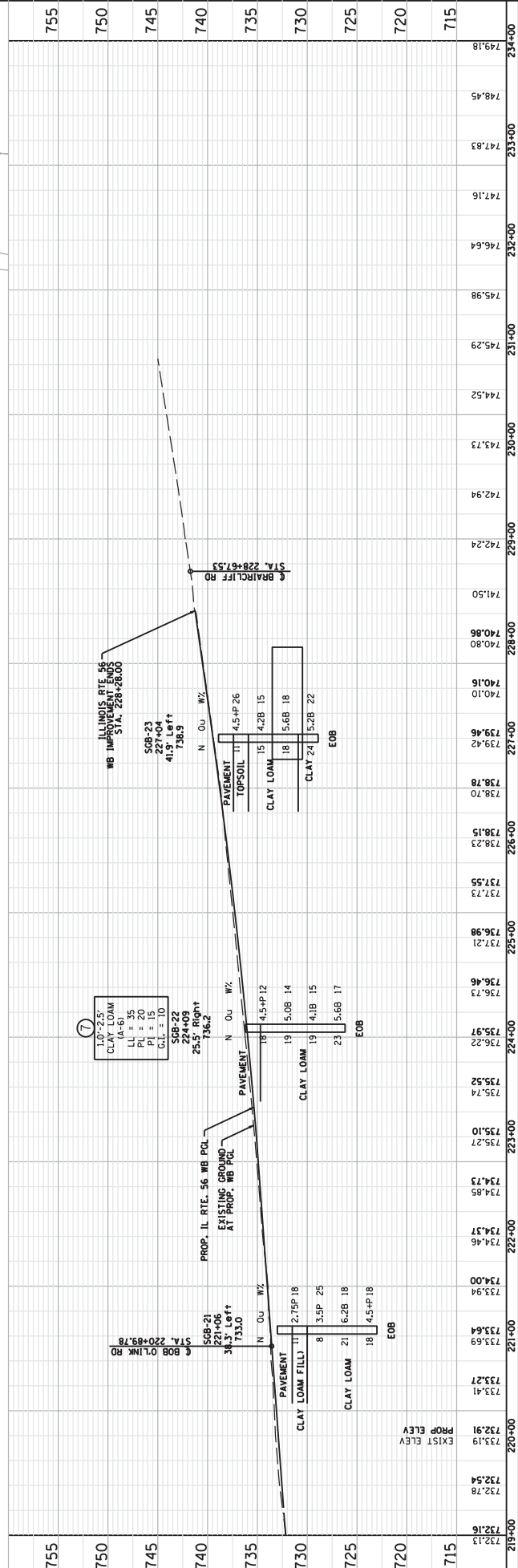
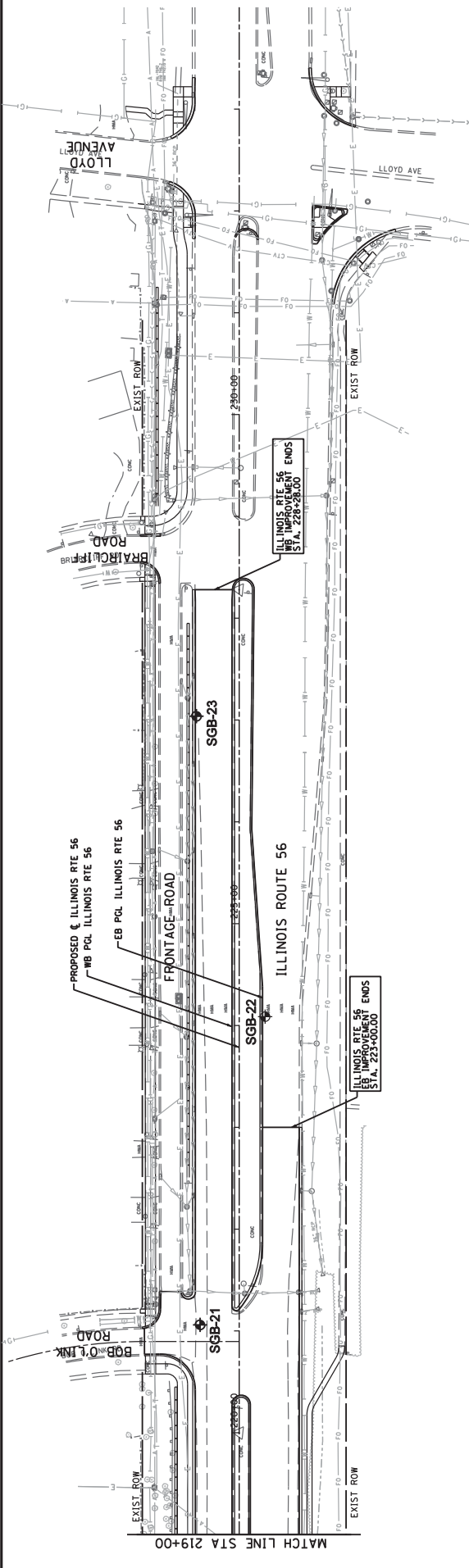
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BY _____	DATE _____

NO. _____	DATE _____
BY _____	DATE _____

NO. _____	DATE _____
BY _____	DATE _____

NO. _____	DATE _____
BY _____	DATE _____





STATION	EXIST ELEV	PROP ELEV	PAVEMENT	SOIL	THICKNESS
219+00	723.16	723.16			
220+00	722.78	722.54			
221+00	723.69	723.27	PAVEMENT	CLAY LOAM FILL	11
222+00	724.46	724.37			
223+00	725.27	725.10			
224+00	726.22	725.97			
225+00	727.21	726.46			
226+00	728.23	728.15			
227+00	729.42	729.18	PAVEMENT	TOPSOIL	11
228+00	730.16	730.10			
229+00	741.50	741.24			
230+00	743.73	742.94			
231+00	745.29	744.52			
232+00	746.64	745.98			
233+00	747.83	747.16			
234+00	749.18	748.45			

PROJECT: ILLINOIS ROUTE 56  
 COUNTY: ILLINOIS  
 SHEET NO.: 5 OF 5  
 CONTRACT NO.: G0P75  
 SCALE: VERT. 1"=5'  
 HORIZ. 1"=50'  
 DATE: 10/18/2013  
 DESIGNED: RWC  
 DRAWN: RWC  
 CHECKED: AJP  
 DATE: 10/18/2013  
 REVISIONS:

NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS

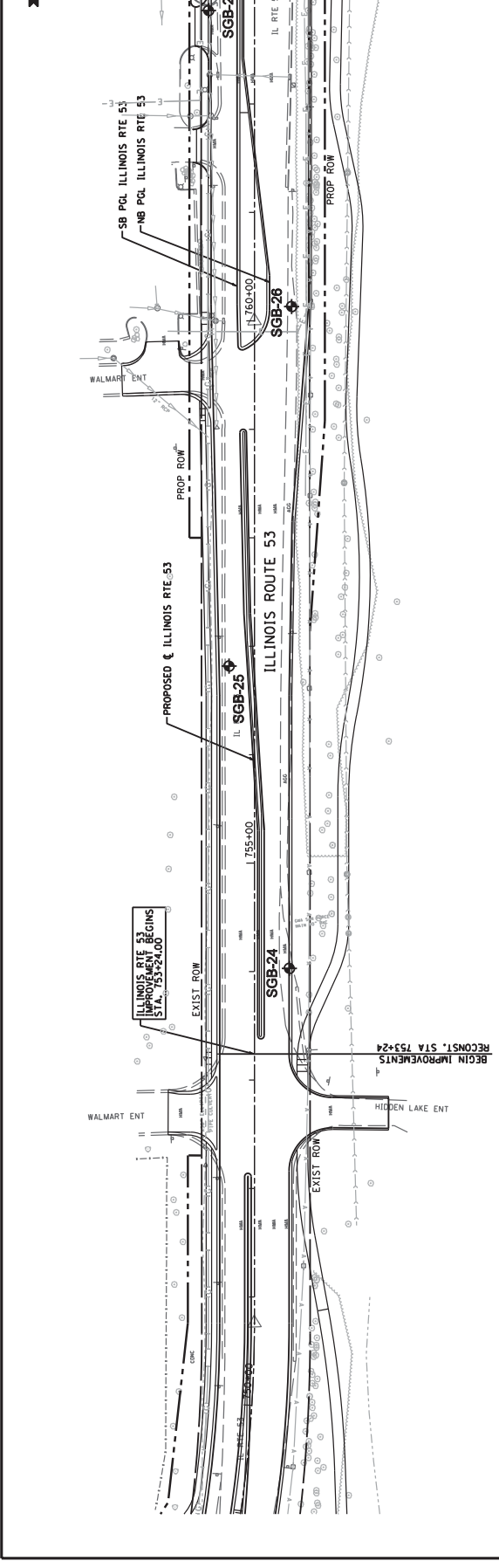
NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS

NO.	DATE	BY	REVISIONS



STATION	BORING NUMBER	DEPTH (FT)	SOIL CLASSIFICATION	TESTS	REMARKS
695	SGB-24	10	CLAY	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' CLAY
695	SGB-25	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-26	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-27	10	CLAY	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' CLAY
695	SGB-28	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-29	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-30	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-31	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-32	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-33	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-34	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-35	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-36	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-37	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-38	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-39	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-40	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-41	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-42	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-43	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-44	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-45	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-46	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-47	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-48	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-49	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-50	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-51	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-52	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-53	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-54	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-55	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-56	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-57	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-58	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-59	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-60	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-61	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-62	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-63	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-64	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-65	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-66	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-67	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-68	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-69	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-70	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-71	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-72	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-73	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-74	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-75	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-76	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-77	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-78	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-79	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-80	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-81	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-82	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-83	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-84	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-85	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-86	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-87	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-88	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-89	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-90	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-91	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-92	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-93	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-94	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-95	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-96	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-97	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-98	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-99	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM
695	SGB-100	10	SANDY LOAM	LL=39, PL=24, PI=15, O.C.=12	3.5'-5.0' SANDY LOAM

**LEGEND**

SOIL STRENGTH (15F)  
S-SURF  
P-POCKET PENETROMETER  
M-MOISTURE CONTENT (%)  
N-NO RECOVERY

GROUNDWATER ELEVATION  
▽ FIRST ENCOUNTER  
▽ AT COMPLETION  
▽ 24 HRS WATER LEVEL

BOILING NUMBER  
STATION  
ELEVATION

SOIL CLASSIFICATION

TESTS

REMARKS

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**IL ROUTE 53**  
**SOIL BORING PLAN & PROFILE**

HORIZ: 1"=50'  
VERT: 1"=5'

SCALE: VERT. 1"=5'

SHEET NO. 1 OF 2 SHEETS STA. 751+24 TO STA. 764+00

ILLINOIS DIST. IMPROVEMENT REGIONS  
STA. 753+24.00

RECONSTR. STA 753+24

WALMART ENT

HIDDEN LAKE ENT

EXIST ROW

PROPOSED & ILLINOIS RTE. 53

IL ROUTE 53

PROF ROW

SB PCL ILLINOIS RTE 53

NB PCL ILLINOIS RTE 53

PROF ROW

WALMART ENT

GAS STATION

MATCH LINE STA 764+00

SGB-24

SGB-25

SGB-26

SGB-27

SGB-28

SGB-29

SGB-30

SGB-31

SGB-32

SGB-33

SGB-34

SGB-35

SGB-36

SGB-37

SGB-38

SGB-39

SGB-40

SGB-41

SGB-42

SGB-43

SGB-44

SGB-45

SGB-46

SGB-47

SGB-48

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SGB-88

SGB-89

SGB-90

SGB-91

SGB-92

SGB-93

SGB-94

SGB-95

SGB-96

SGB-97

SGB-98

SGB-99

SGB-100

NO.	DATE	BY	REVISION
1			ISSUED FOR BIDDING

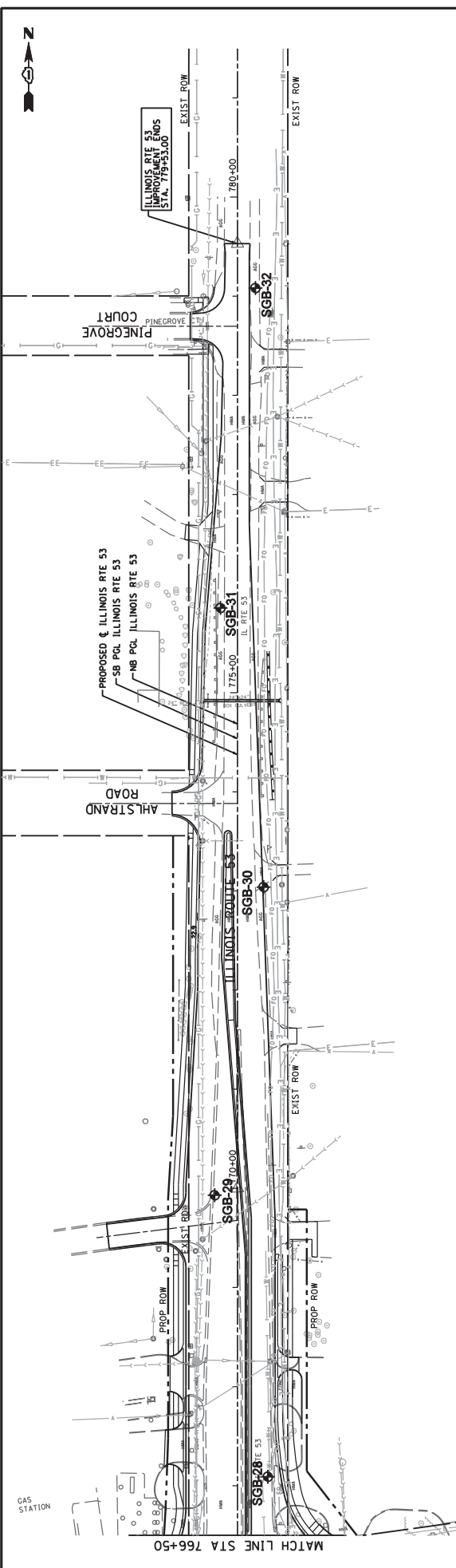
NO.	DATE	BY	REVISION
1			ISSUED FOR BIDDING

DESIGNED	CHK	DATE
		10/18/2013

DESIGNED	CHK	DATE
		10/18/2013

NO.	DATE	BY	REVISION
1			ISSUED FOR BIDDING

NO.	DATE	BY	REVISION
1			ISSUED FOR BIDDING



STATION	SOIL BORE	DEPTH (FEET)	SOIL TYPE	ELEVATION (FEET)
715				
710				
705				
700				
695				
690				
685				
680				
675				
715				
710				
705				
700				
695				
690				
685				
680				
675				
715				
710				
705				
700				
695				
690				
685				
680				
675				
715				
710				
705				
700				
695				
690				
685				
680				
675				

**Soil Boring Log**

DATE: \_\_\_\_\_

BY: \_\_\_\_\_

**STATE OF ILLINOIS**

**DEPARTMENT OF TRANSPORTATION**

**ROUTE 53**

**SOIL BORING PLAN & PROFILE**

HORIZ. VERT. 1"=50'

SCALE: NO. 2 OF 2 SHEETS STA. 766+50 TO STA. 779+53

**PROJECT**

CONTRACT NO. 60P75

**COUNTY**

DUPAGE

**SECTION**

63A-N-3

**DATE**

10/18/2013

**DESIGNED** - PWC

**DRAWN** - PWC

**CHECKED** - ALP

**DATE** - 10/18/2013

**REVISIONS**

NO.	DESCRIPTION	DATE

**Geotechnical Engineering**

**Geo Services, Inc.**

1000 W. 10th Street, Suite 200

Normal, IL 62451

TEL: 618-298-8888

WWW.GEOSERVICESINC.COM

**Soil Engineering**

**Bollinger, Lach & Associates, Inc.**

1000 W. 10th Street, Suite 200

Normal, IL 62451

TEL: 618-298-8888

WWW.BOLLINGERLACH.COM

NO.	DATE	BY	DESCRIPTION

NO.	DATE	BY	DESCRIPTION

NO.	DATE	BY	DESCRIPTION

**APPENDIX C**  
**SOIL BORING LOGS**







# SOIL BORING LOG

ROUTE F.A.P. RTE. 365 DESCRIPTION LOGGED BY TZ

SECTION 634X-N-3 LOCATION SE 1/4, SEC. 26, TWP. T39N, RNG. R10E, 3<sup>rd</sup> PM

COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. Station

BORING NO. SGB-03  
Station 167+00  
Offset 38.80ft Left  
Ground Surface Elev. 692.70 ft

DEPTH (ft)	BLOW S (ft/6")	UCS (tsf)	MOIST (%)
------------	----------------	-----------	-----------

Surface Water Elev. n/a ft  
Stream Bed Elev. n/a ft  
Groundwater Elev.:  
First Encounter Dry ft  
Upon Completion Dry ft  
After Hrs. ft

4.0" ASPHALT 692.37

SAND & GRAVEL-brown-medium dense

6			
7	4.5		16
10	P		

5			
6	4.2		17
-5	9	B	

Boulder @ -7.0'

7			
11	4.0		16
19	P		

7			
10			5
13			

682.70 -10

End Of Boring @ -10.0'. Boring backfilled with cuttings.

-15

-20

Z:\PROJECTS\2012\12195.BLA, IL-56 OVER DUPAGE RIVER PTB 161-006\12195 BORING LOGS\12195\_LOG.GPJ 11/14/13

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)





# SOIL BORING LOG

ROUTE F.A.P. RTE. 365 DESCRIPTION LOGGED BY TZ

SECTION 634X-N-3 LOCATION SE 1/4, SEC. 26, TWP. T39N, RNG. R10E, 3<sup>rd</sup> PM

COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

<b>STRUCT. NO.</b> _____ Station _____	<b>D E P T H</b> (ft)	<b>B L O W S</b> (/6")	<b>U C S</b>  Qu (tsf)	<b>M O I S T</b> (%)	Surface Water Elev. _____ n/a ft
					Stream Bed Elev. _____ n/a ft
<b>BORING NO.</b> SGB-05 Station 172+91 Offset 38.70ft Left Ground Surface Elev. 689.60 ft					Groundwater Elev.:
					First Encounter 681.1 ft ▼
					Upon Completion 683.6 ft ▼
					After _____ Hrs. _____ ft

Soil Description	Depth (ft)	Blow Count (/6")	UCS (tsf)	Moisture (%)
12.0" ASPHALT	688.60			
SILTY CLAY-brown-stiff (Fill)	5			
	4	1.8	25	
	3	B		
CLAY LOAM-dark brown, gray & black-stiff to very stiff (Fill)	2			
	2	3.5	23	
	-5	2	P	
	684.10			
	ORGANIC SILTY CLAY-black-medium stiff	2		
	3	0.6	34	
	4	B		
	681.60			
CLAY LOAM-brown-stiff to very stiff	2			
	3	1.8	29	
	-10	6	B	
	4			
	4	2.4	23	
	5	B		
	676.60			
SILTY SAND & GRAVEL-gray-medium dense	4			
	6		24	
	674.60 -15	6		
End Of Boring @ -15.0'. Boring backfilled with cuttings.				
	-20			

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The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)  
 BBS, from 137 (Rev. 8-99)

# SOIL BORING LOG

ROUTE F.A.P. RTE. 365 DESCRIPTION \_\_\_\_\_ LOGGED BY TZ

SECTION 634X-N-3 LOCATION SE 1/4, SEC. 26, TWP. T39N, RNG. R10E, 3<sup>rd</sup> PM

COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. _____	D E P T H  B L O W S  U C S  M O I S T	Surface Water Elev. _____ n/a ft	
Station _____		Stream Bed Elev. _____ n/a ft	
BORING NO. <u>SGB-06</u>		Groundwater Elev.:	
Station <u>176+04</u>		First Encounter _____ Dry ft	Upon Completion _____ Dry ft
Offset <u>64.50ft Right</u>		After _____ Hrs. _____ ft	
Ground Surface Elev. <u>686.80</u> ft	(ft)	(/6")	(tsf)

Soil Description	Depth (ft)	Blow Count (/6")	UCS (tsf)	Moisture (%)
6.0" TOPSOIL-black (Fill)	686.30			
CLAY LOAM-dark brown & spotted black-loose to medium dense (Fill)		9		24
		12		14
		13		
		4		
		4		21
CLAY-brown-stiff to very stiff	681.30	5		
		5	2.7	26
		6	B	
CLAY-brown-stiff to very stiff		2		
		4	1.8	24
		5	B	
End Of Boring @ -10.0'. Boring backfilled with cuttings.	676.80 -10			
	-15			
	-20			

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The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



# SOIL BORING LOG

ROUTE F.A.P. RTE. 365 DESCRIPTION LOGGED BY TZ

SECTION 634X-N-3 LOCATION SW 1/4, SEC. 25, TWP. T39N, RNG. R10E, 3<sup>rd</sup> PM

COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

<p>STRUCT. NO. _____ Station _____</p> <p>BORING NO. SGB-08 Station 182+01 Offset 42.50ft Right Ground Surface Elev. 684.50 ft</p>	<p><b>D</b> <b>E</b> <b>P</b> <b>T</b> <b>H</b></p> <p><b>B</b> <b>L</b> <b>O</b> <b>W</b> <b>S</b></p> <p><b>U</b> <b>C</b> <b>S</b>  <b>Qu</b></p> <p><b>M</b> <b>O</b> <b>I</b> <b>S</b> <b>T</b></p> <p>(ft) (/6") (tsf) (%)</p>	<p>Surface Water Elev. n/a ft Stream Bed Elev. n/a ft</p> <p>Groundwater Elev.: First Encounter Dry ft Upon Completion Dry ft After _____ Hrs. _____ ft</p>
--	--	---

14.0" ASPHALT				
	683.33			
SILTY CLAY-brown-hard		7		
		5	5.8	18
	682.00	7	B	
CLAY LOAM-brown & gray-hard (Fill)		4		
		5	5.0	18
		-5	7	B
	679.00			
SILTY CLAY-dark brown & spotted black-very stiff		4		
		6	2.7	25
		7	B	
	676.50			
GRAVEL with SAND-brown-medium dense		5		
		5		10
	674.50	-10	9	
End Of Boring @ -10.0'. Boring backfilled with cuttings.				
		-15		
		-20		

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The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

























# SOIL BORING LOG

ROUTE F.A.P. RTE. 365 DESCRIPTION \_\_\_\_\_ LOGGED BY TZ

SECTION 634X-N-3 LOCATION SE 1/4, SEC. 25, TWP. T39N, RNG. R10E, 3<sup>rd</sup> PM

COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. _____ Station _____	D E P T H  B L O W S  U C S  M O I S T  Qu  (ft) (1/6") (tsf) (%)	Surface Water Elev. _____ n/a ft
BORING NO. <u>SGB-20</u> Station <u>218+02</u> Offset <u>54.00ft Right</u> Ground Surface Elev. <u>729.90</u> ft		Stream Bed Elev. _____ n/a ft
		Groundwater Elev.:
		First Encounter _____ Dry ft Upon Completion _____ Dry ft After _____ Hrs. _____ ft

Description	Elev. (ft)	Depth (ft)	Blow Count	UCS (tsf)	Moisture (%)
12.0" ASPHALT	728.90				
CLAY-dark brown & black-very stiff (Fill)	726.90	12			
		6	2.8	21	
SILTY CLAY LOAM-brown-medium dense	719.90	7	P		
		8			
		10	4.9	13	
		-5	12	B	
End Of Boring @ -10.0'. Boring backfilled with cuttings.	-10	5			
		7	2.7	14	
		7	B		
		4			
		5		13	
		7			
		-15			
		-20			

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# SOIL BORING LOG

ROUTE F.A.P. RTE. 365 DESCRIPTION \_\_\_\_\_ LOGGED BY TZ

SECTION 634X-N-3 LOCATION SE 1/4, SEC. 25, TWP. T39N, RNG. R10E, 3<sup>rd</sup> PM

COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. _____ Station _____	D E P T H  (ft)	B L O W S  (/6")	U C S  (tsf)	M O I S T  (%)	Surface Water Elev. _____ n/a ft
					Stream Bed Elev. _____ n/a ft
BORING NO. <u>SGB-21</u> Station <u>221+06</u> Offset <u>38.30ft Left</u> Ground Surface Elev. <u>733.00</u> ft					Groundwater Elev.:
					First Encounter _____ Dry ft
					Upon Completion _____ Dry ft
					After _____ Hrs. _____ ft

12.0" ASPHALT					
732.00					
6.0" CRUSHED STONE	10				
CLAY LOAM-dark brown & gray-very stiff (Fill)	5	2.8	18		
730.00	6	P			
CLAY to CLAY LOAM-brown & gray-very stiff to hard	3				
	4	3.5	25		
	-5	4	P		
	5				
	9	6.2	18		
	12	B			
	5				
723.00	8	4.5	18		
End Of Boring @ -10.0'. Boring backfilled with cuttings.	10	P			
	-15				
	-20				

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The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)



















# SOIL BORING LOG

ROUTE F.A.P. RTE. 365 DESCRIPTION LOGGED BY TZ

SECTION 634X-N-3 LOCATION SE 1/4, SEC. 26, TWP. T39N, RNG. R10E, 3<sup>rd</sup> PM

COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. \_\_\_\_\_  
 Station \_\_\_\_\_

BORING NO. SGB-30  
 Station 773+04  
 Offset 26.40ft Right  
 Ground Surface Elev. 695.20 ft

DEPTH (ft)	BLOW S (1/6")	UCS (tsf)	MOIST (%)
------------	---------------	-----------	-----------

Surface Water Elev. n/a ft  
 Stream Bed Elev. n/a ft  
 Groundwater Elev.:  
 First Encounter 691.7 ft ▼  
 Upon Completion 687.7 ft ▼  
 After \_\_\_\_\_ Hrs. \_\_\_\_\_ ft

SAND, GRAVEL & STONE-brown & gray-medium dense

10			
12			7
12			

692.20

CLAY to CLAY LOAM-stiff to hard

3			
5	1.2	27	
-5	7	B	
4			
7	5.1	18	
10	B		

685.20

End Of Boring @ -10.0'. Boring backfilled with cuttings.

5			
9	3.0	17	
11	B		

-10			
-15			
-20			

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The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)

**SOIL BORING LOG**

ROUTE F.A.P. RTE. 365 DESCRIPTION \_\_\_\_\_ LOGGED BY TZ

SECTION 634X-N-3 LOCATION SE 1/4, SEC. 26, TWP. T39N, RNG. R10E, 3<sup>rd</sup> PM

COUNTY DuPage DRILLING METHOD Hollow Stem Auger HAMMER TYPE CME Automatic

STRUCT. NO. Station	B L O W S	U C S Qu	M O I S T	Surface Water Elev. _____ ft Stream Bed Elev. _____ ft
BORING NO. _____ Station _____ Offset _____ Ground Surface Elev. _____ ft	(ft)	(/6")	(tsf)	(%)
12.0" CRUSHED STONE 695.80				Groundwater Elev.: First Encounter _____ ft Upon Completion _____ ft After _____ Hrs. _____ ft
CLAY-dark brown & spotted black-hard (Fill) 693.80	5 6 9	4.5 P	20	
CLAY-black-stiff to very stiff	4 5 6	2.5 P	24	
becoming brown @ -5.5'	4 4 5	1.6 B	31	
686.80	3 4 5	2.0 B	21	
End Of Boring @ -10.0'. Boring backfilled with cuttings.				
	-15			
	-20			

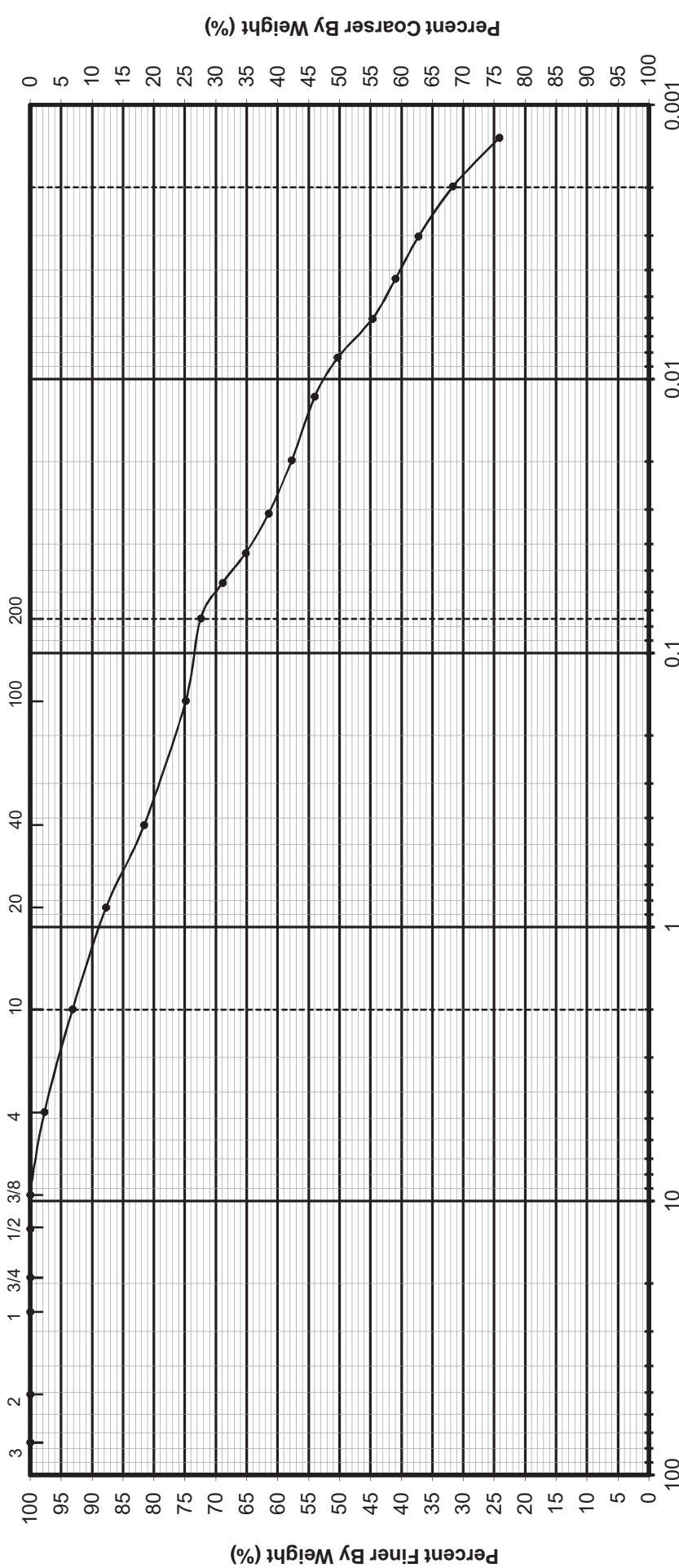
Z:\PROJECTS\2012\12195.BLA, IL-56 OVER DUPAGE RIVER PTB 161-006\12195 BORING LOGS\12195\_LOG.GPJ 11/14/13

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)




## **APPENDIX D**

### **LAB DATA**



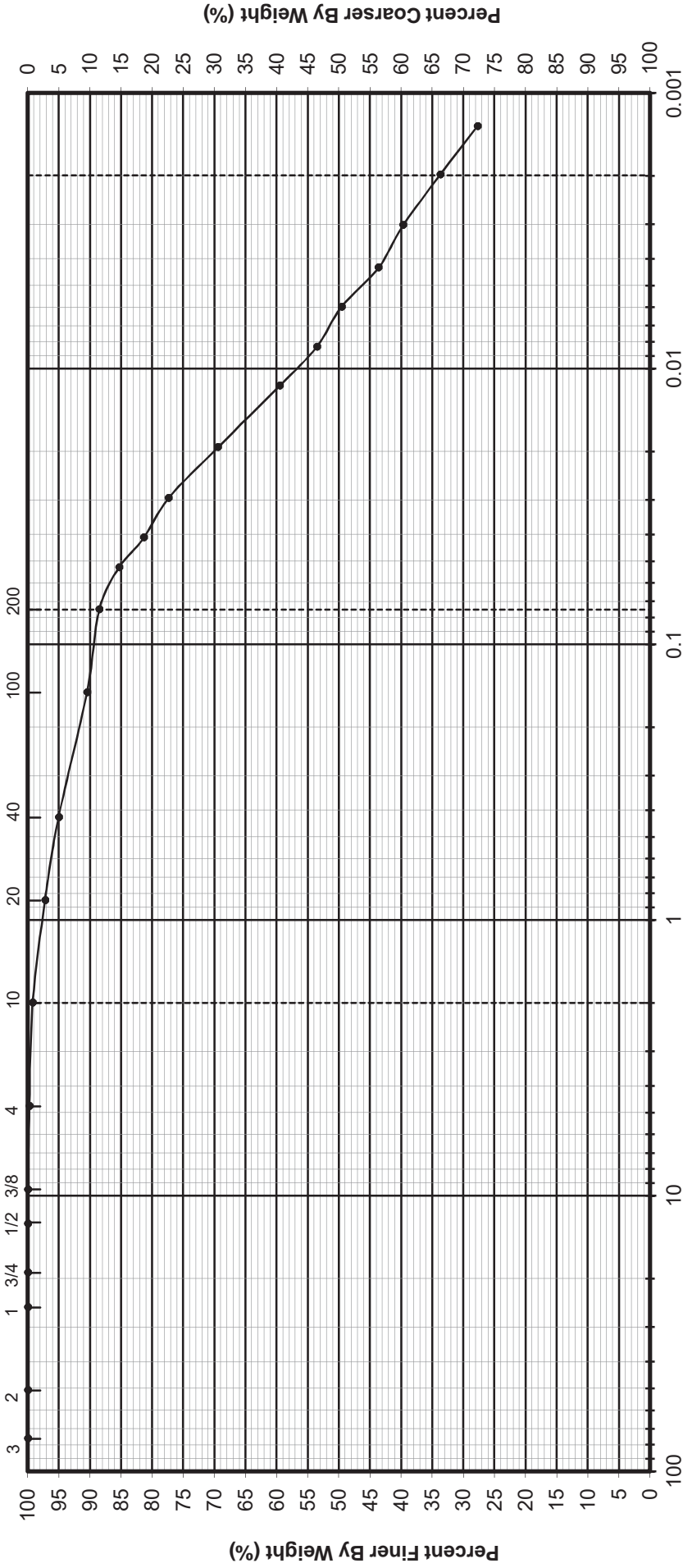
Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

Boring No.		PARTICLE SIZE ANALYSIS-AASHTO T88	
Sample No.	2	IL-56 / Route 53	
Depth	1.0'-2.5'	IDOT P-91-439-01	
Liquid Limit	33	DuPage County, Illinois	
Plastic Limit	19	 <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering <small>An ABE - DBE Firm</small>	
Plasticity Index	14	1235 E. Davis St., Arlington Heights, IL 60005	
Test By	CC	Phone 847-253-3845 • Fax 847-253-0482	
Date	10/17/13		
Reviewed By	RR		
Job No	12195		


CLASSIFICATION

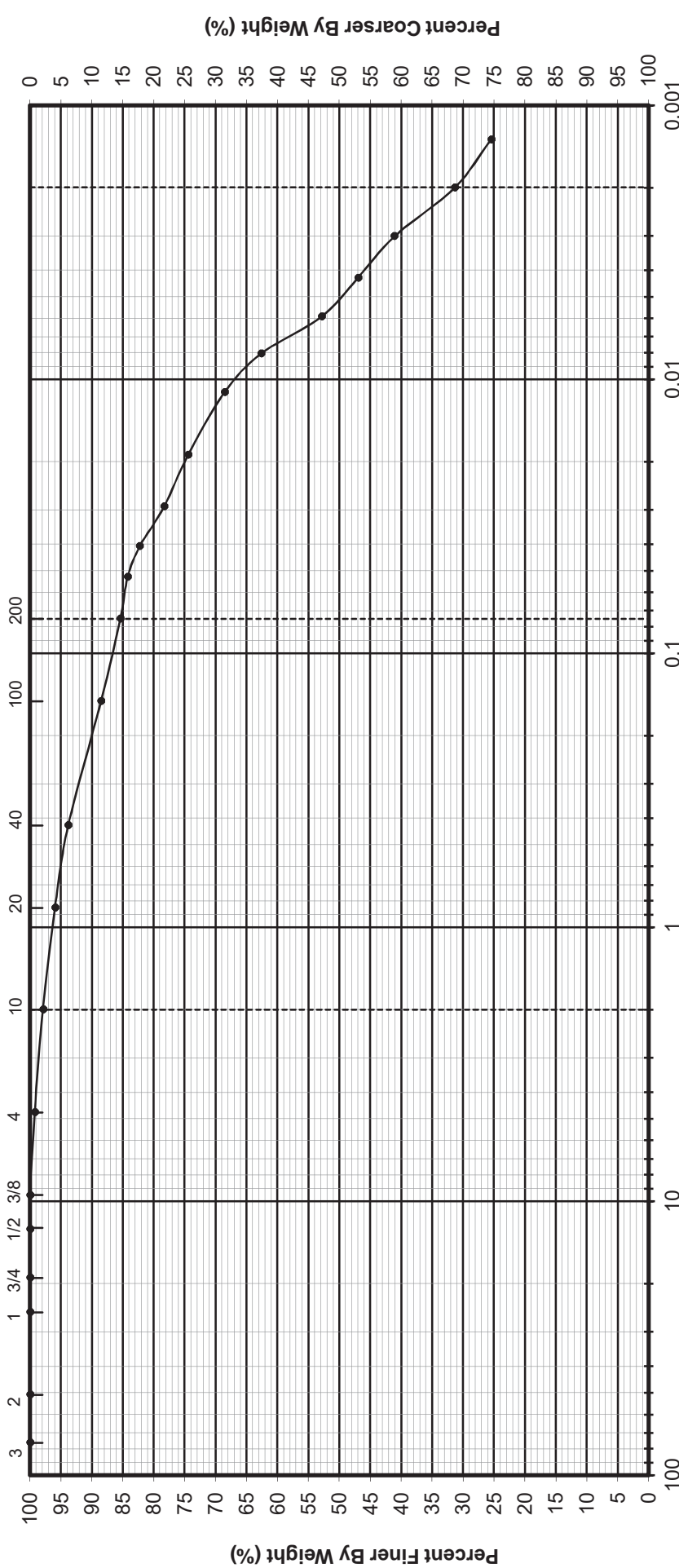
CLAY  
 A-6  
 brown  
 Group Index 8  
 % Gravel 6.9  
 % Sand 20.7  
 % Silt 40.8  
 % Clay 31.7



Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

Boring No.	SGB-05	CLASSIFICATION		PARTICLE SIZE ANALYSIS-AASHTO T88	
Sample No.	2	SILTY CLAY		IL-56 / Route 53	
Depth	1.0'-2.5'	A-6		IDOT P-91-439-01	
Liquid Limit	33	brown		DuPage County, Illinois	
Plastic Limit	20	Group Index	11	 <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering <small>An ABE - DBE Firm</small>	
Plasticity Index	13	% Gravel	0.8		
Test By	CC	% Sand	10.7		
Date	10/17/13	% Silt	54.8		
Reviewed By	RR	% Clay	33.7		
Job No	12195			1235 E. Davis St., Arlington Heights, IL 60005 Phone 847-253-3845 • Fax 847-253-0482	



Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

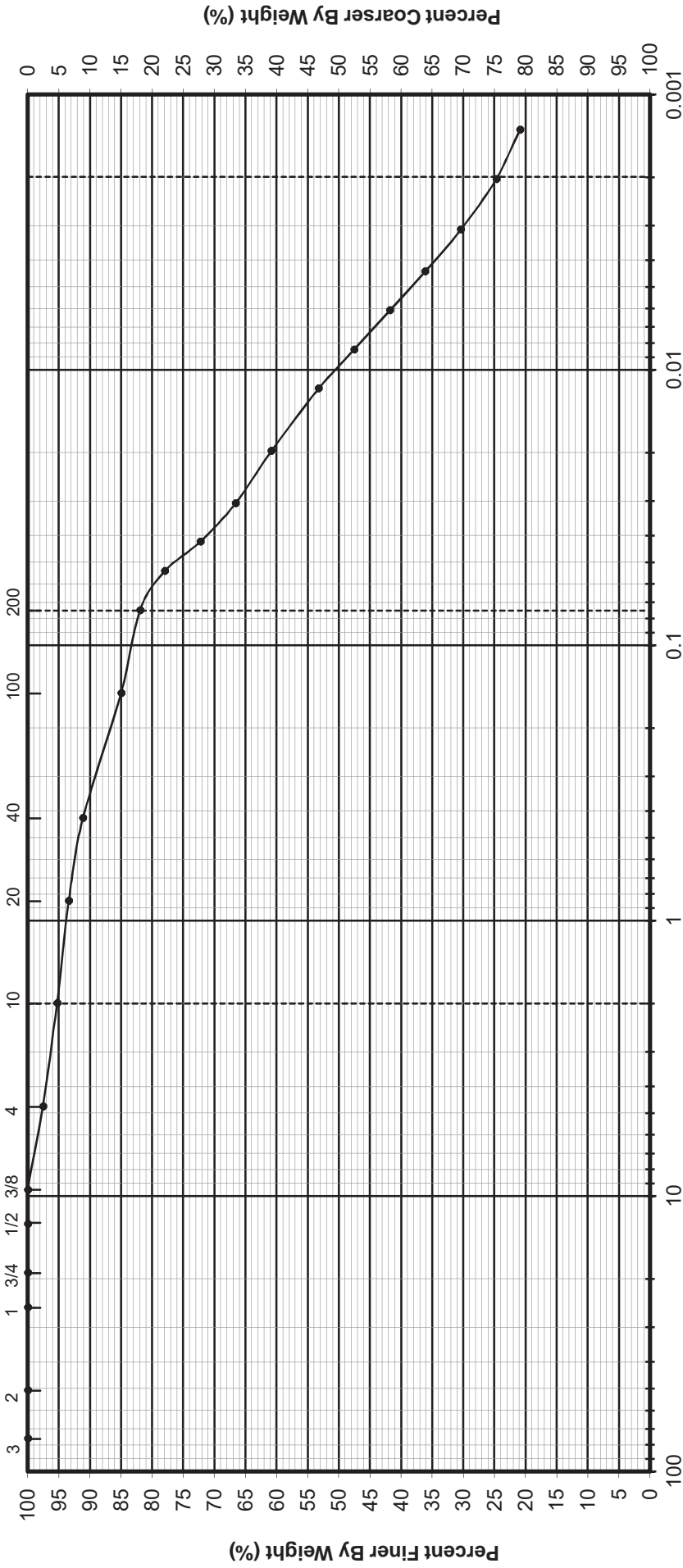
<b>Boring No.</b>	SGB-08	<b>PARTICLE SIZE ANALYSIS-AASHTO T88</b>
<b>Sample No.</b>	2	IL-56 / Route 53
<b>Depth</b>	1.0'-2.5'	IDOT P-91-439-01
<b>Liquid Limit</b>	34	DuPage County, Illinois
<b>Plastic Limit</b>	19	<b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering An ABE - DBE Firm
<b>Plasticity Index</b>	15	1235 E. Davis St., Arlington Heights, IL 60005
<b>Test By</b>	CC	Phone 847-253-3845 • Fax 847-253-0482
<b>Date</b>	10/17/13	
<b>Reviewed By</b>	RR	
<b>Job No</b>	12195	

**CLASSIFICATION**

**SILTY CLAY**  
A-6  
brown


Group Index 12  
 % Gravel 2.1  
 % Sand 12.5  
 % Silt 54.1  
 % Clay 31.3





Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

<b>Boring No.</b>	SGB-11	<b>PARTICLE SIZE ANALYSIS-AASHTO T88</b>
<b>Sample No.</b>	2	IL-56 / Route 53 IDOT P-91-439-01 DuPage County, Illinois
<b>Depth</b>	1.0'-2.5'	 <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering An ABE - DBE Firm
<b>Liquid Limit</b>	32	1235 E. Davis St., Arlington Heights, IL 60005 Phone 847-253-3845 • Fax 847-253-0482
<b>Plastic Limit</b>	17	
<b>Plasticity Index</b>	15	
<b>Test By</b>	CC	
<b>Date</b>	10/17/13	
<b>Reviewed By</b>	RR	
<b>Job No</b>	12195	

**CLASSIFICATION**

**SILTY CLAY LOAM**

A-6

dark brown

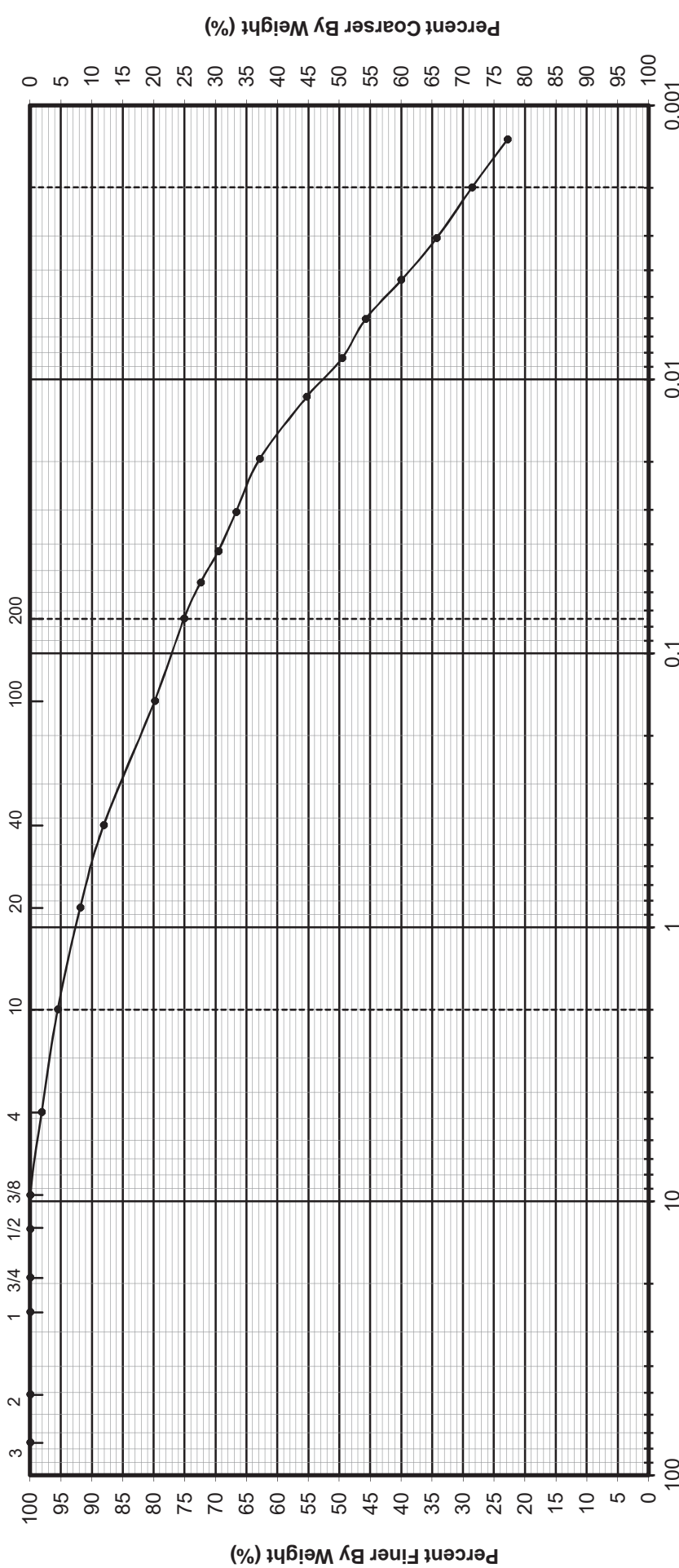
Group Index 11

% Gravel 4.7

% Sand 13.3


% Silt 57.3

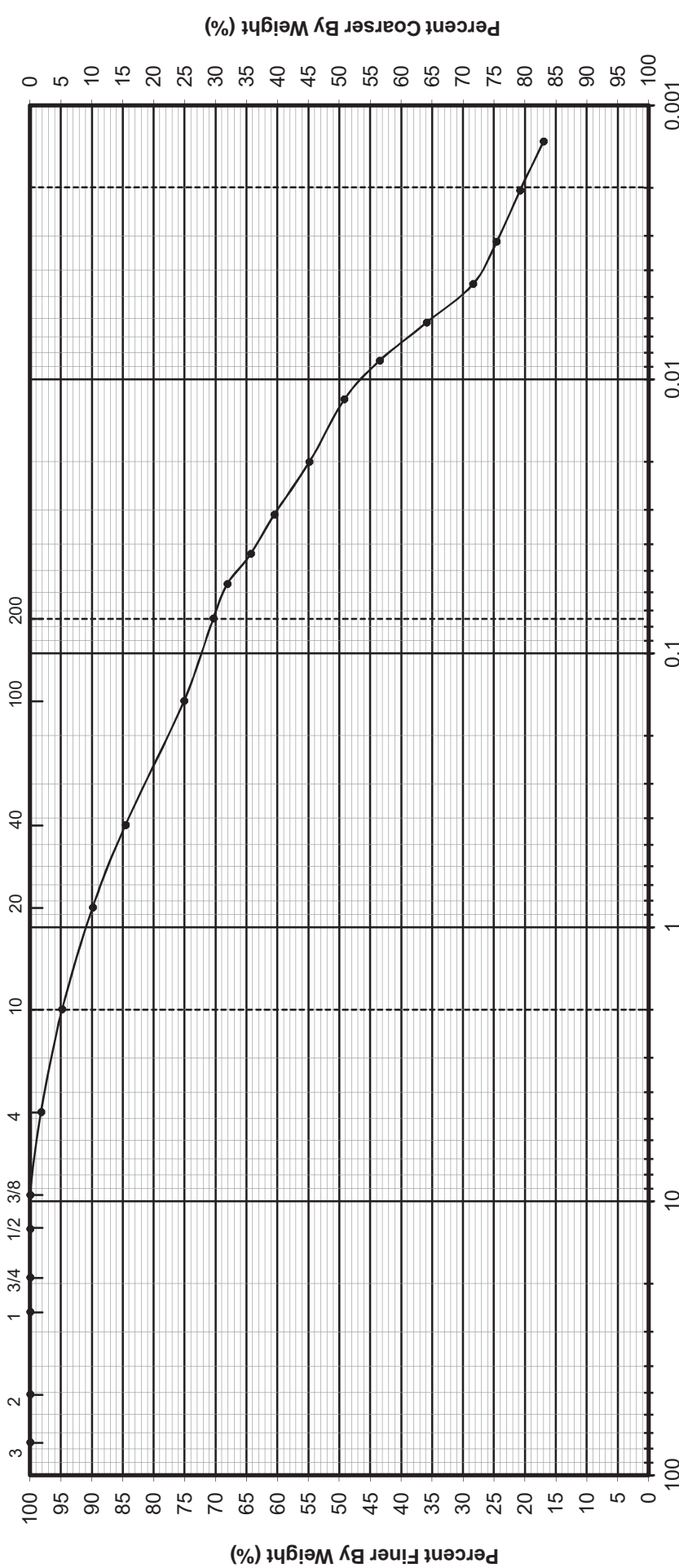
% Clay 24.7



Grain Size in Millimeters


GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

<b>Boring No.</b>	SGB-14	<b>CLASSIFICATION</b>	<b>PARTICLE SIZE ANALYSIS-AASHTO T88</b>
<b>Sample No.</b>	2	<b>CLAY LOAM</b>	IL-56 / Route 53
<b>Depth</b>	1.0'-2.5'	A-6	IDOT P-91-439-01
<b>Liquid Limit</b>	30	brown	DuPage County, Illinois
<b>Plastic Limit</b>	16	Group Index	 <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering An ABE - DBE Firm
<b>Plasticity Index</b>	14	% Gravel	1235 E. Davis St., Arlington Heights, IL 60005
<b>Test By</b>	CC	% Sand	Phone 847-253-3845 • Fax 847-253-0482
<b>Date</b>	10/17/13	% Silt	
<b>Reviewed By</b>	RR	% Clay	
<b>Job No</b>	12195		



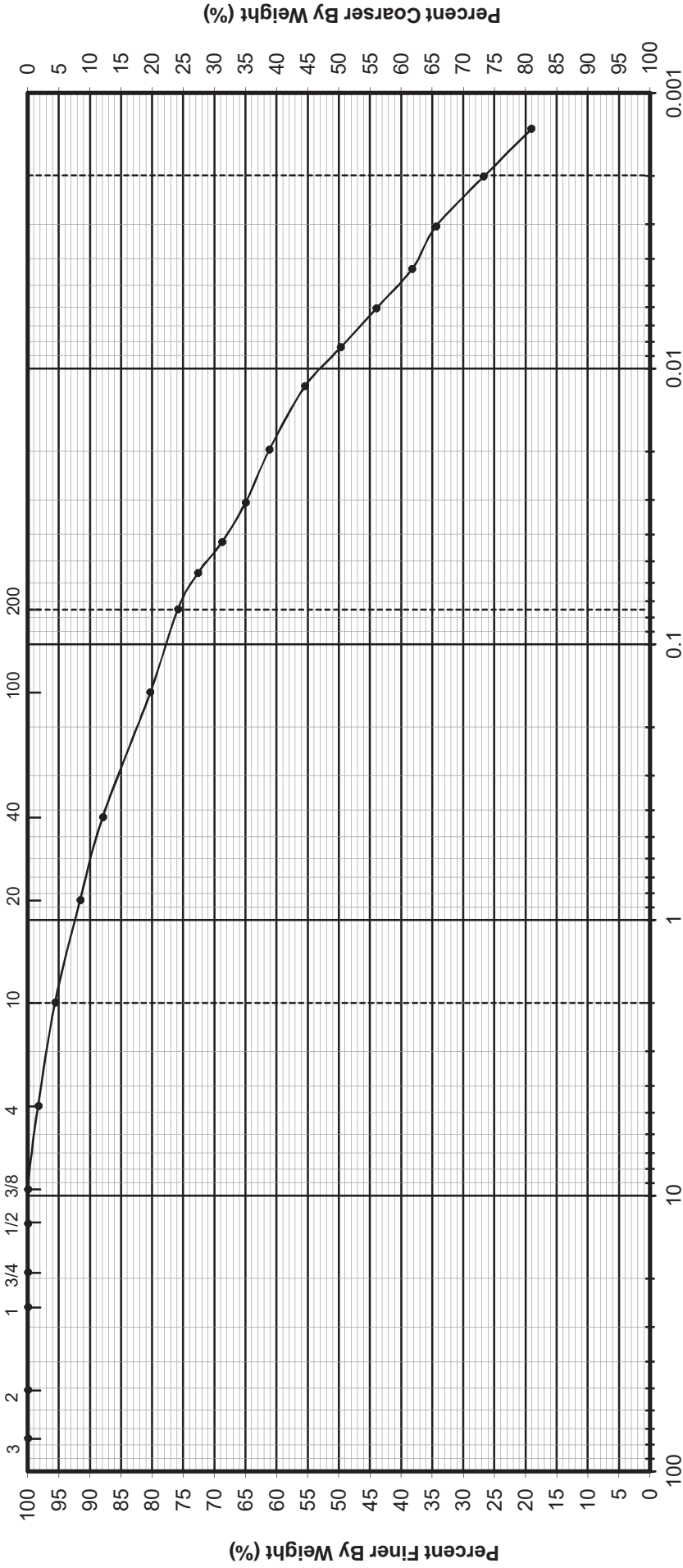
Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

Boring No.		PARTICLE SIZE ANALYSIS-AASHTO T88	
Sample No.	2	IL-56 / Route 53	
Depth	1.0'-2.5'	IDOT P-91-439-01	
Liquid Limit	31	DuPage County, Illinois	
Plastic Limit	16	 <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering <small>An ABE - DBE Firm</small>	
Plasticity Index	15	1235 E. Davis St., Arlington Heights, IL 60005	
Test By	CC	Phone 847-253-3845 • Fax 847-253-0482	
Date	10/17/13		
Reviewed By	RR		
Job No	12195		

**CLASSIFICATION**

**CLAY LOAM**  
 A-6  
 brown  
 Group Index 8  
 % Gravel 5.2  
 % Sand 24.4  
 % Silt 49.6  
 % Clay 20.8



Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

Boring No.		SGB-22		PARTICLE SIZE ANALYSIS-AASHTO T88	
Sample No.	2	CLAY LOAM			
Depth	1.0'-2.5'	A-6			
Liquid Limit	35	brown			
Plastic Limit	20	Group Index	10	% Gravel	4.4
Plasticity Index	15	% Sand	19.7	% Silt	49.1
Test By	CC	% Clay	26.8		
Date	10/17/13				
Reviewed By	RR				
Job No	12195				

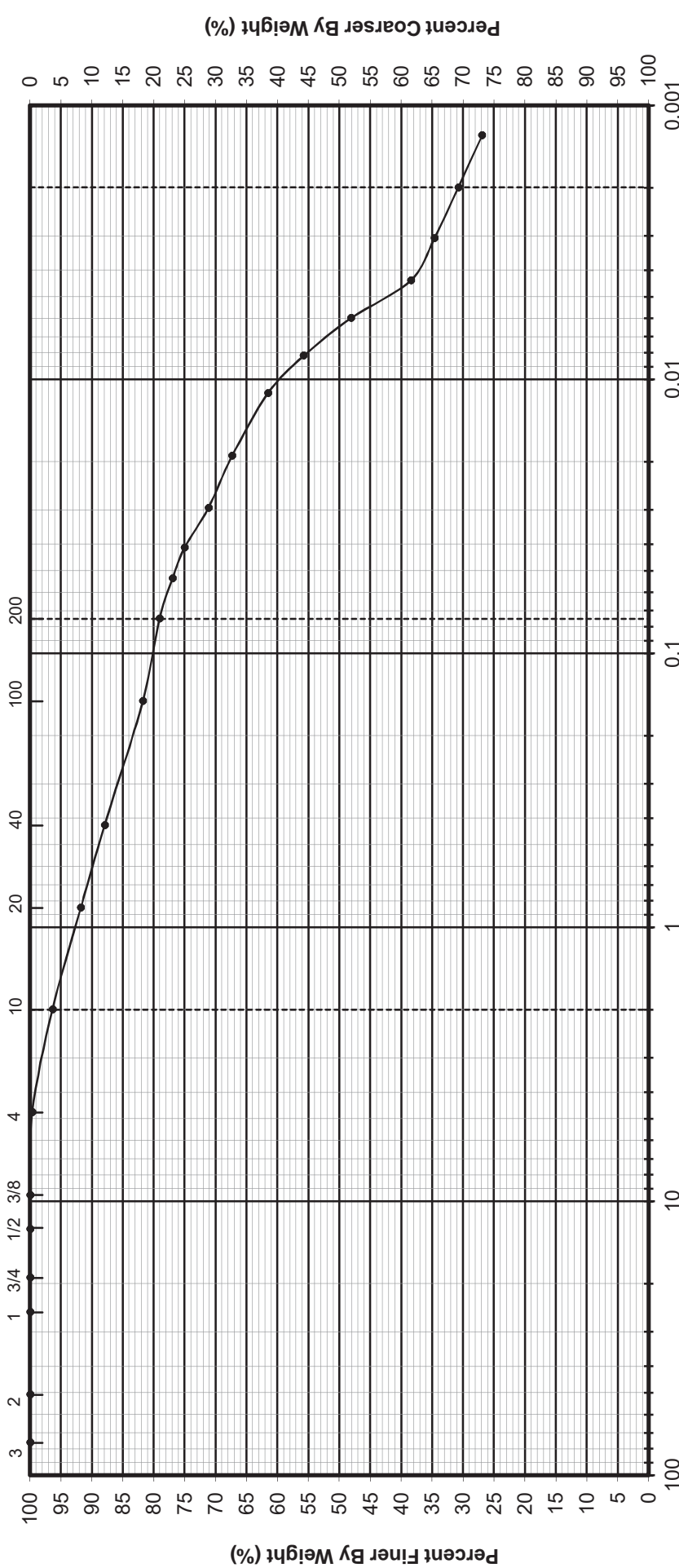
IL-56 / Route 53  
IDOT P-91-439-01

DuPage County, Illinois




**Geo Services, Inc.**  
Geotechnical, Environmental and Civil Engineering  
An ABE - DBE Firm

1235 E. Davis St., Arlington Heights, IL 60005  
Phone 847-253-3845 • Fax 847-253-0482

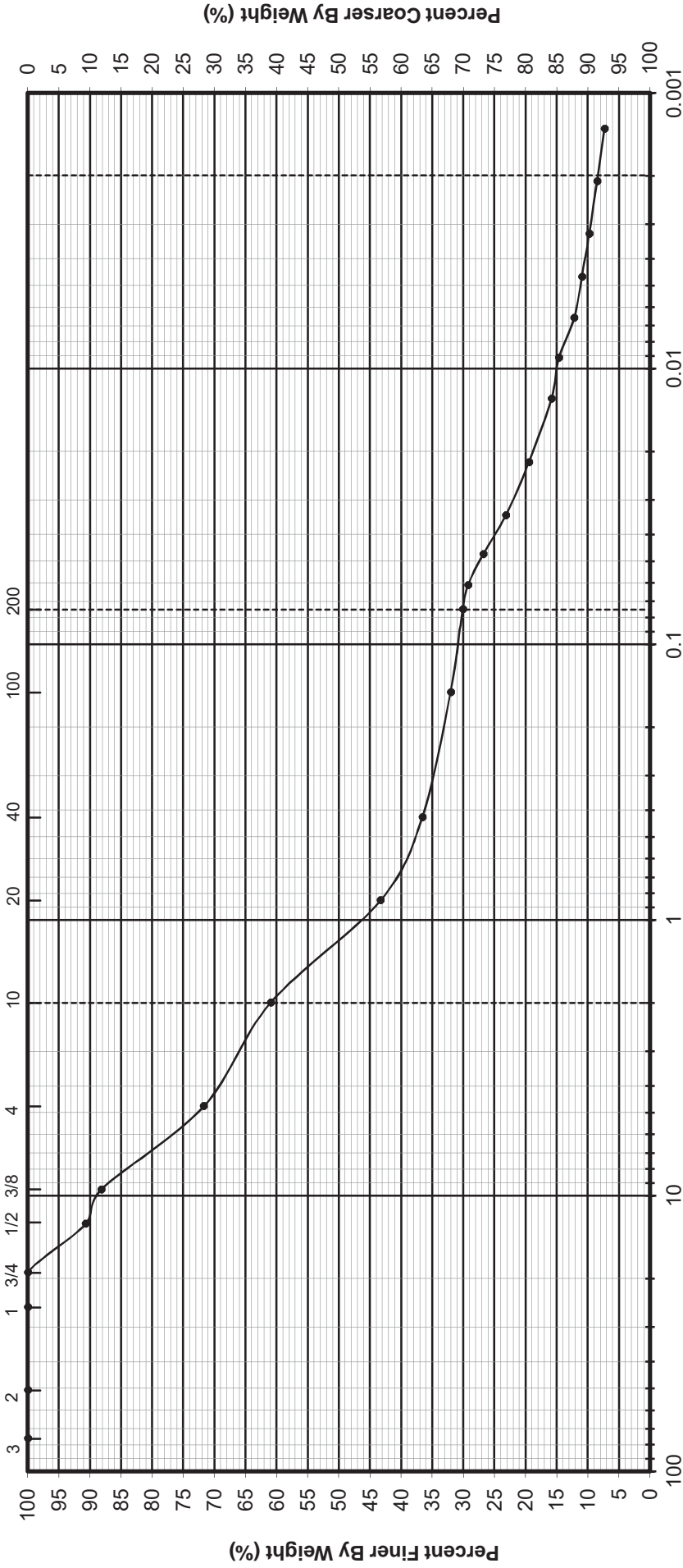


Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		


Boring No.	SGB-25	PARTICLE SIZE ANALYSIS-AASHTO T88	
Sample No.	3	IL-56 / Route 53	
Depth	3.5'-5.0'	IDOT P-91-439-01	
Liquid Limit	39	DuPage County, Illinois	
Plastic Limit	24	 <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering An ABE - DBE Firm	
Plasticity Index	15	1235 E. Davis St., Arlington Heights, IL 60005	
Test By	CC	Phone 847-253-3845 • Fax 847-253-0482	
Date	10/17/13		
Reviewed By	RR		
Job No	12195		

**CLASSIFICATION**  
 CLAY  
 A-6  
 brown  
 Group Index 12  
 % Gravel 3.6  
 % Sand 17.3  
 % Silt 48.3  
 % Clay 30.8



Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

Boring No.		PARTICLE SIZE ANALYSIS-AASHTO T88	
Sample No.	2	IL-56 / Route 53	
Depth	1.0'-2.5'	IDOT P-91-439-01	
Liquid Limit	24	DuPage County, Illinois	
Plastic Limit	14	 <b>Geo Services, Inc.</b> <small>Geotechnical, Environmental and Civil Engineering An ABE - DBE Firm</small>	
Plasticity Index	10	1235 E. Davis St., Arlington Heights, IL 60005	
Test By	CC	Phone 847-253-3845 • Fax 847-253-0482	
Date	10/17/13		
Reviewed By	RR		
Job No	12195		

**CLASSIFICATION**

**SANDY LOAM**

A-2-4

brown

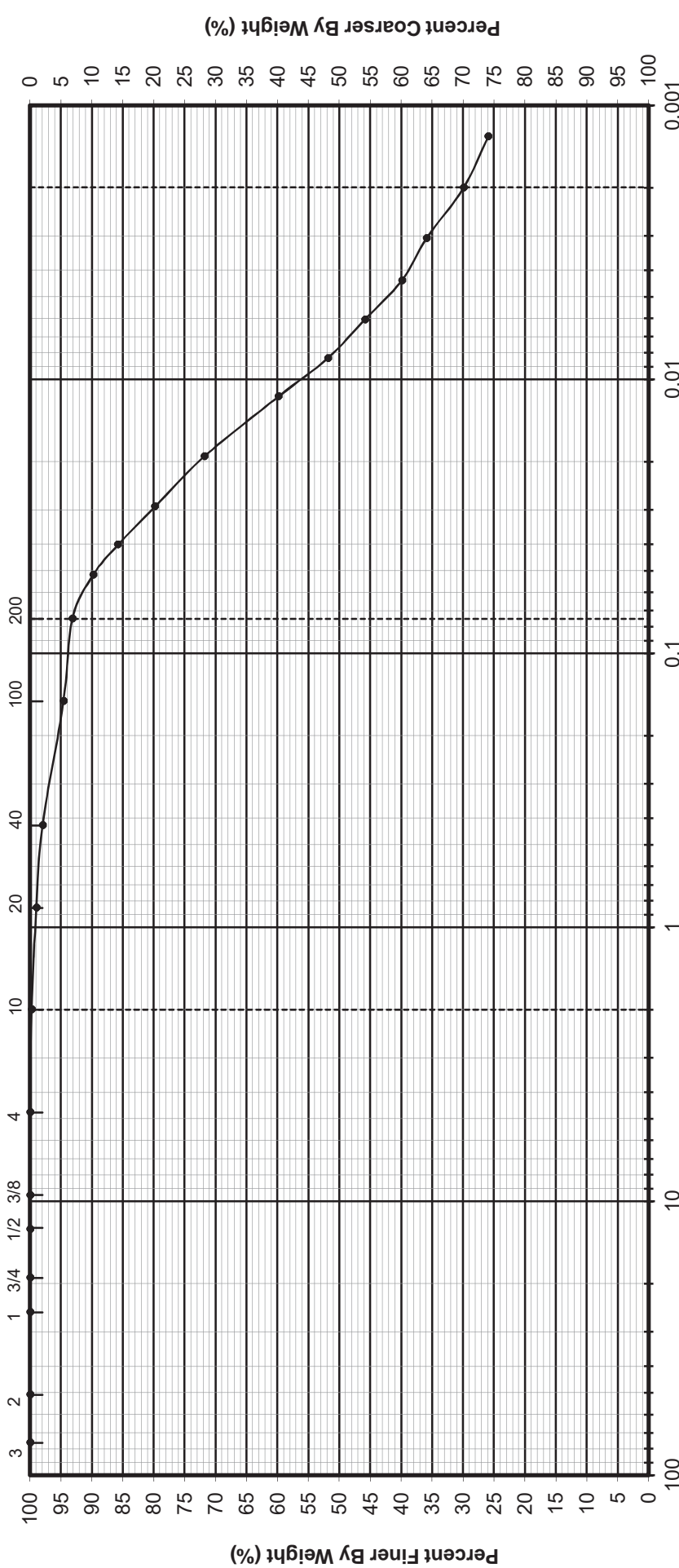
Group Index 0

% Gravel 39.0

% Sand 30.9


% Silt 21.6

% Clay 8.5



Grain Size in Millimeters

GRAVEL	SAND		SILT	CLAY
	COARSE	FINE		

Boring No.	SGB-32	<b>CLASSIFICATION</b>  <b>SILTY CLAY LOAM</b> A-6 brown Group Index 16 % Gravel 0.2 % Sand 6.6 % Silt 63.2 % Clay 29.9	<b>PARTICLE SIZE ANALYSIS-AASHTO T88</b>  IL-56 / Route 53 IDOT P-91-439-01 DuPage County, Illinois  <b>Geo Services, Inc.</b> <small>Geotechnical, Environmental and Civil Engineering An ABE - DBE Firm</small> 1235 E. Davis St., Arlington Heights, IL 60005 Phone 847-253-3845 • Fax 847-253-0482
Sample No.	2		
Depth	1.0'-2.5'		
Liquid Limit	38		
Plastic Limit	21		
Plasticity Index	17		
Test By	CC		
Date	10/17/13		
Reviewed By	RR		
Job No	12195		



**1235 E. DAVIS STREET**  
**ARLINGTON HEIGHTS, IL 60005**  
**(847) 253-3845 FAXES (847) 253-0482**

**Organic Matter in Soils by Wet Combustion**  
**AASHTO T 194**

**Project Name** IL-56 Pedestrian Bridge & Approach Retaining Walls  
over the East Branch of the DuPage River  
**Location** DuPage County, Illinois

**Date** 11/14/13  
**Job No** 12195

<b>Sample Location</b>	<b>SGB-05</b>	<b>SGB-13</b>	<b>SGB-23</b>					
<b>Sample No</b>	4	3	2					
<b>Depth</b>	6.0'-7.5'	3.5'-5.0'	1.0'-2.5'					
<b>Total Organic Matter %</b>	5.0	8.2	5.3					

**Performed by:** JE



## **APPENDIX E**

**BBS 2630 & BBS 2640**



State Job Number:  P-91-439-01  Project:  IL-56/53  Route:  FAI Route 336

Section:  634-N-3  City or County:  DuPage County  Date:  11/10/13

ADT:  --  Year:  --  Design Period:  20 Yr.  Class Highway:  --

Passenger Cars Per Day:  --  Trucks S.U. Per Day:  --  Trucks M.U. Per Day:  --

Pavement Structure:  PCC over Granular Base

Type Surface Course:  PCC  Thickness:  10" (approx.)

Type Base Course:  Granular  Thickness:  6" to 12"

Type Sub-Base Material:  --  Thickness:  --

Sta. to Sta.	162+50 to 165+75	172+50 to 174+50	180+00 to 183+00	190+00 to 192+50
*Sta. of Test	164+11	172+91	182+01	191+00
*Drainage Class	Fair	Fair	Fair	Poor
*Ave. Frost Penetration	48 inches	48 inches	48 inches	48 inches
Grain Size Classification	A-6	A-6	A-6	A-6
HRB Class and Group Index	8	11	12	11
*Percent Silt	40.8%	54.8%	54.1%	57.3%
STD. Dry Density AASHTO T99	--	--	--	--
Bearing Ratio	--	--	--	--
Optimum Moisture	--	--	--	--

\* Indicates worst condition within the above station limits

Remarks:



**Summary Report on Pavement,  
Base and Sub-Base Design**

State Job Number:  P-91-439-01  Project:  IL-56/53  Route:  FAI Route 336   
 Section:  634-N-3  City or County:  DuPage County  Date:  11/10/13   
 ADT:  --  Year:  --  Design Period:  20 Yr.  ADT:  --   
 Passenger Cars Per Day:  --  Trucks S.U. Per Day:  --  Trucks M.U. Per Day:  --   
 Pavement Structure:  PCC over Granular Base   
 Type Surface Course:  PCC  Thickness:  10" (approx.)   
 Type Base Course:  Granular  Thickness:  6" to 12"   
 Type Sub-Base Material:  --  Thickness:  --

Sta. to Sta.	199+00 to 201+00	207+50 to 210+50	222+50 to 226+50	
*Sta. of Test	200+00	209+04	224+09	
*Drainage Class	Fair	Fair	Fair	
*Ave. Frost Penetration	48 inches	48 inches	48 inches	
Grain Size Classification	A-6	A-6	A-6	
HRB Class and Group Index	8	8	10	
*Percent Silt	46.5%	49.6%	49.1%	
STD. Dry Density AASHTO T99	--	--	--	
Bearing Ratio	--	--	--	
Optimum Moisture	--	--	--	

\* Indicates worst condition within the above station limits

Remarks:



State Job Number:  P-91-439-01  Project:  IL-56/53  Route:  FAI Route 336

Section:  634-N-3  City or County:  DuPage County  Date:  11/10/13

ADT:  --  Year:  --  Design Period:  20 Yr.  ADT:  --

Passenger Cars Per Day:  --  Trucks S.U. Per Day:  --  Trucks M.U. Per Day:  --

Pavement Structure:  PCC over Granular Base

Type Surface Course:  PCC  Thickness:  10" (approx.)

Type Base Course:  Granular  Thickness:  6" to 12"

Type Sub-Base Material:  --  Thickness:  --

Sta. to Sta.	755+00 to 758+00	765+00 to 768+00	777+00 to 779+53	
*Sta. of Test	756+82	767+09	779+08	
*Drainage Class	Fair	Fair	Fair	
*Ave. Frost Penetration	48 inches	48 inches	48 inches	
Grain Size Classification	A-6	A-2-4	A-6	
HRB Class and Group Index	12	0	17	
*Percent Silt	48.3%	21.6%	63.2%	
STD. Dry Density AASHTO T99	--	--	--	
Bearing Ratio	--	--	--	
Optimum Moisture	--	--	--	

\* Indicates worst condition within the above station limits

Remarks:

Route FAP Route 336  
 Section 634-N-3  
 County DuPage  
 Location IL-56/53

Boring No./Sample No.	SGB-02/S-2	SGB-05/S-2	SGB-05/S-4	SGB-08/S-2
Station	164+11	172+91	172+91	182+01
Offset	36.9' Right	38.7' Left	38.7' Left	42.5' Right
Depth	1.0'-2.5'	1.0'-2.5'	6.0'-7.5'	1.0'-2.5'
AASHTO Classification	A-6	A-6	--	A-6
--	CLAY	SILTY CLAY	ORGANIC SILTY CLAY	SILTY CLAY
Gradation Passing – 1"	100%	100%	--	100%
3/4"	100%	100%	--	100%
1/2"	100%	100%	--	100%
No. 4	97.7%	99.7%	--	99.2%
No. 10	93.1%	99.2%	--	97.9%
No. 40	81.6%	95.0%	--	93.8%
No. 100	74.9%	90.5%	--	88.5%
No. 200	72.5%	88.5%	--	85.4%
Gravel (AASHTO T-88)	6.9%	0.8%	--	2.1%
Sand (AASHTO T-88)	20.7%	10.7%	--	12.5%
Silt (AASHTO T-88)	40.8%	54.8%	--	54.1%
Clay (AASHTO T-88)	31.7%	33.7%	--	31.3%
Liquid Limit (AASHTO T-89)	33	33	--	34
Plasticity Index (AASHTO T-90)	14	13	--	15
Std. Dry Density pcf (AASHTO T-99)	--	--	--	--
Optimum Moisture (AASHTO T-99)	--	--	--	--
Subgrade Support Rating	Fair	Fair	--	Fair
Organic Content	--	--	5.0%	--
Insitu Moisture	23%	25%	34%	18%

Route FAP Route 336  
 Section 634-N-3  
 County DuPage  
 Location IL-56/53

Boring No./Sample No.	SGB-11/S-2	SGB-13/S-3	SGB-14/S-2	SGB-17/S-2
Station	191+01	198+69	200+00	209+04
Offset	37.8' Left	38.3' Left	44.1' Right	37.6' Left
Depth	1.0'-2.5'	3.5'-5.0'	1.0'-2.5'	1.0'-2.5'
AASHTO Classification	A-6	--	A-6	A-6
Illinois Textural Classification	SILTY CLAY LOAM	BURIED TOPSOIL	CLAY LOAM	CLAY LOAM
Gradation Passing – 1"	100%	--	100%	100%
--	100%	--	100%	100%
1/2"	100%	--	100%	100%
No. 4	97.6%	--	98.1%	98.2%
No. 10	95.3%	--	95.3%	94.8%
No. 40	91.1%	--	88.1%	84.6%
No. 100	85.0%	--	79.9%	75.1%
No. 200	82.0%	--	75.1%	70.4%
Gravel (AASHTO T-88)	4.7%	--	4.5%	5.2%
Sand (AASHTO T-88)	13.3%	--	20.4%	24.4%
Silt (AASHTO T-88)	57.3%	--	46.5%	49.6%
Clay (AASHTO T-88)	24.7%	--	28.6%	20.8%
Liquid Limit (AASHTO T-89)	32	--	30	31
Plasticity Index (AASHTO T-90)	15	--	14	15
Std. Dry Density pcf (AASHTO T-99)	--	--	--	--
Optimum Moisture (AASHTO T-99)	--	--	--	--
Subgrade Support Rating	Poor	--	Poor	Poor
Organic Content	--	8.2%	--	--
Insitu Moisture	24%	28%	14%	12%

## Soil Test Data

Route FAP Route 336  
 Section 634-N-3  
 County DuPage  
 Location IL-56/53

Boring No./Sample No.	SGB-22/S-2	SGB-23/S-2	SGB-25/S-2	SGB-28/S-2
Station	224+09	227+04	756+82	767+09
Offset	25.5' Right	41.9' Left	23.4' Left	30.7' Right
Depth	1.0'-2.5'	1.0'-2.5'	1.0'-2.5'	1.0'-2.5'
AASHTO Classification	A-6	--	A-6	A-2-4
Illinois Textural Classification	CLAY LOAM	TOPSOIL	CLAY	SANDY LOAM
Gradation Passing – 1"	100%	--	100%	100%
3/4"	100%	--	100%	100%
1/2"	100%	--	100%	90.7%
No. 4	98.3%	--	99.6%	71.7%
No. 10	95.6%	--	96.4%	61.0%
No. 40	88.0%	--	87.9%	36.6%
No. 100	80.3%	--	81.8%	32.1%
No. 200	75.9%	--	79.1%	30.1%
Gravel (AASHTO T-88)	4.4%	--	3.6%	39.0%
Sand (AASHTO T-88)	19.7%	--	17.3%	30.9%
Silt (AASHTO T-88)	49.1%	--	48.3%	21.6%
Clay (AASHTO T-88)	26.8%	--	30.8%	8.5%
Liquid Limit (AASHTO T-89)	35	--	39	24
Plasticity Index (AASHTO T-90)	15	--	15	10
Std. Dry Density pcf (AASHTO T-99)	--	--	--	--
Optimum Moisture (AASHTO T-99)	--	--	--	--
Subgrade Support Rating	Poor	--	Fair	Granular
Organic Content	--	5.3%	--	--
In situ Moisture	12%	26%	6%	5%

Route FAP Route 336  
 Section 634-N-3  
 County DuPage  
 Location IL-56/53

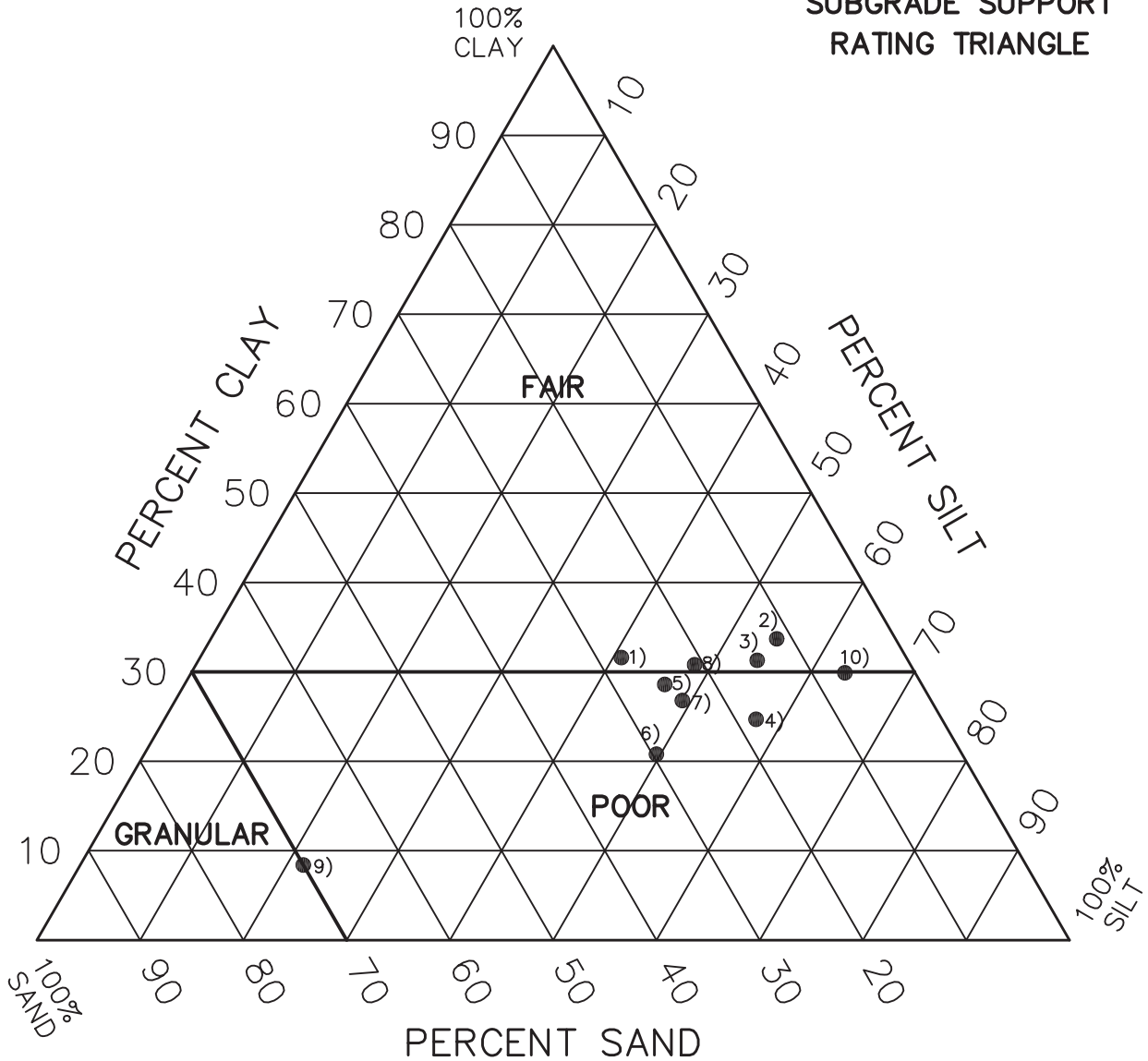
Boring No./Sample No.	SGB-32/S-2			
Station	779+08			
Offset	18.2' Right			
Depth	1.0'-2.5'			
AASHTO Classification	A-6			
Illinois Textural Classification	SILTY CLAY LOAM			
Gradation Passing – 1"	100%			
¾"	100%			
½"	100%			
No. 4	100%			
No. 10	99.8%			
No. 40	98.0%			
No. 100	94.6%			
No. 200	93.2%			
Gravel (AASHTO T-88)	0.2%			
Sand (AASHTO T-88)	6.6%			
Silt (AASHTO T-88)	63.2%			
Clay (AASHTO T-88)	29.9%			
Liquid Limit (AASHTO T-89)	38			
Plasticity Index (AASHTO T-90)	17			
Std. Dry Density pcf (AASHTO T-99)	--			
Optimum Moisture (AASHTO T-99)	--			
Subgrade Support Rating	Poor			
Organic Content	--			
Insitu Moisture	23%			



## **APPENDIX F**

### **SUBGRADE STABILITY RATING (SSR) TRIANGLE**

**SUBGRADE SUPPORT RATING TRIANGLE**



**NOTES:**

1. If granular soils are encountered, the soils report should note alternatives to the 12 inch improved subgrade policy
2. Soil Separate Sizes:  
 Sand: 2.0 mm to 0.074 mm  
 Silt: 0.074 mm to 0.002 mm  
 Clay: Below 0.002 mm

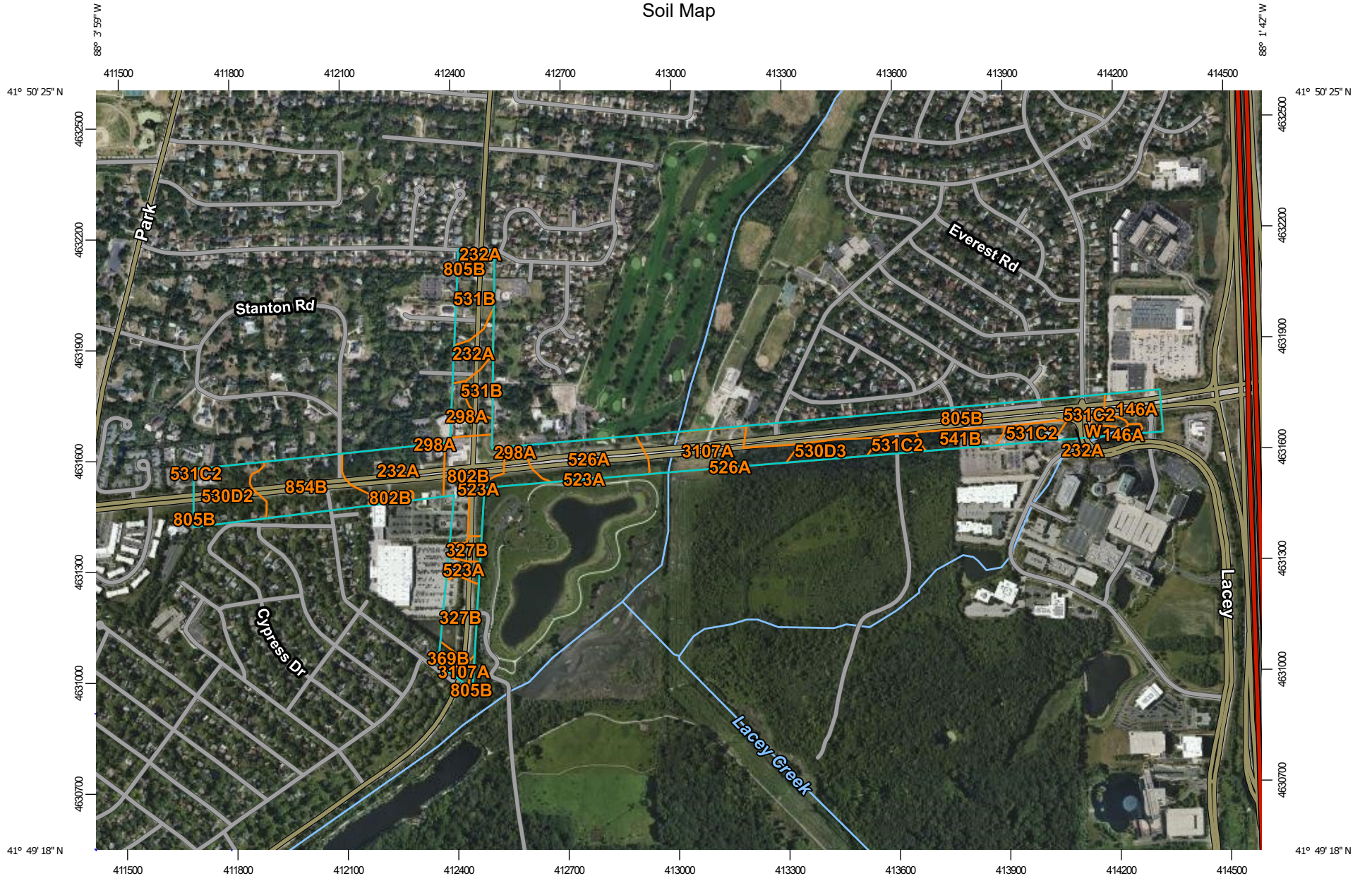
● SAMPLES

- |                         |                          |
|-------------------------|--------------------------|
| 1) ● SGB-02 (1.0'-2.5') | 7) ● SGB-22 (1.0'-2.5')  |
| 2) ● SGB-05 (1.0'-2.5') | 8) ● SGB-25 (3.5'-5.0')  |
| 3) ● SGB-08 (1.0'-2.5') | 9) ● SGB-28 (1.0'-2.5')  |
| 4) ● SGB-11 (1.0'-2.5') | 10) ● SGB-32 (1.0'-2.5') |
| 5) ● SGB-14 (1.0'-2.5') |                          |
| 6) ● SGB-17 (1.0'-2.5') |                          |

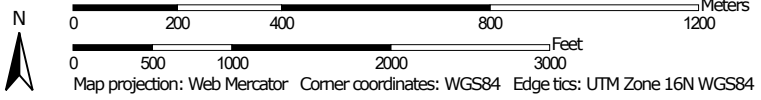
SUBGRADE SUPPORT RATING (SSR)	 <b>Geo Services, Inc.</b> Geotechnical, Environmental & Civil Engineering 805 Amherst Court, Suite 204 Naperville, Illinois 60565 (630) 355-2838	DRAWN BY	MT
Illinois Department of Transportation FAP 365 IL Route 56/53 IDOT P-91-439-01 DuPage County, Illinois		APPROVED BY	AJP
		DATE	11-07-13
		JOB NO.	12195

**APPENDIX G**  
**SOIL EROSION K FACTORS**

# Custom Soil Resource Report Soil Map



Map Scale: 1:14,500 if printed on A landscape (11" x 8.5") sheet.



## Summary by Map Unit — DuPage County, Illinois (IL043)

## Summary by Map Unit — DuPage County, Illinois (IL043)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
146A	Elliott silt loam, 0 to 2 percent slopes	.32	3.4	3.3%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	.20	12.4	11.9%
298A	Beecher silt loam, 0 to 2 percent slopes	.37	3.1	3.0%
327B	Fox silt loam, 2 to 4 percent slopes	.37	5.8	5.6%
369B	Waupecan silt loam, 2 to 4 percent slopes	.37	0.7	0.7%
523A	Dunham silty clay loam, 0 to 2 percent slopes	.24	4.3	4.1%
526A	Grundelein silt loam, 0 to 2 percent slopes	.32	8.0	7.7%
530D2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	.43	6.8	6.5%
530D3	Ozaukee silty clay loam, 6 to 12 percent slopes, severely eroded	.37	2.7	2.6%
531B	Markham silt loam, 2 to 4 percent slopes	.37	7.1	6.8%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	.37	4.4	4.2%
541B	Graymont silt loam, 2 to 5 percent slopes	.28	2.8	2.7%
802B	Orthents, loamy, undulating	.37	7.6	7.3%
805B	Orthents, clayey, undulating	.32	15.4	14.7%
854B	Markham-Ashkum-Beecher complex, 1 to 6 percent slopes	.37	9.5	9.1%
3107A	Sawmill silty clay loam, heavy till plain, 0 to 2 percent slopes, frequently flooded	.28	9.5	9.1%
W	Water		0.8	0.8%
<b>Totals for Area of Interest</b>			<b>104.3</b>	<b>100.0%</b>



## Summary by Map Unit — DuPage County, Illinois (IL043)

Summary by Map Unit — DuPage County, Illinois (IL043)



Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
146A	Elliott silt loam, 0 to 2 percent slopes	0.9	3.4	3.3%
232A	Ashkum silty clay loam, 0 to 2 percent slopes	0.5	12.4	11.9%
298A	Beecher silt loam, 0 to 2 percent slopes	1.0	3.1	3.0%
327B	Fox silt loam, 2 to 4 percent slopes	3.0	5.8	5.6%
369B	Waupecan silt loam, 2 to 4 percent slopes	3.0	0.7	0.7%
523A	Dunham silty clay loam, 0 to 2 percent slopes	0.5	4.3	4.1%
526A	Grundelein silt loam, 0 to 2 percent slopes	1.0	8.0	7.7%
530D2	Ozaukee silt loam, 6 to 12 percent slopes, eroded	9.0	6.8	6.5%
530D3	Ozaukee silty clay loam, 6 to 12 percent slopes, severely eroded	9.0	2.7	2.6%
531B	Markham silt loam, 2 to 4 percent slopes	3.0	7.1	6.8%
531C2	Markham silt loam, 4 to 6 percent slopes, eroded	5.0	4.4	4.2%
541B	Graymont silt loam, 2 to 5 percent slopes	3.0	2.8	2.7%
802B	Orthents, loamy, undulating	3.5	7.6	7.3%
805B	Orthents, clayey, undulating	3.0	15.4	14.7%
854B	Markham-Ashkum-Beecher complex, 1 to 6 percent slopes	3.5	9.5	9.1%
3107A	Sawmill silty clay loam, heavy till plain, 0 to 2 percent slopes, frequently flooded	1.0	9.5	9.1%
W	Water		0.8	0.8%
<b>Totals for Area of Interest</b>			<b>104.3</b>	<b>100.0%</b>