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**COMPREHENSIVE GEOTECHNICAL REPORT**  
**For Joint Public Safety Training Campus**  
**4301 W. Chicago Avenue**  
**Chicago, Illinois**

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**Prepared for:**

**AECOM**  
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**Prepared by:**

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**JOB NO. 19059**

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AECOM  
303 E. Wacker Drive, Suite 1400  
Chicago, IL 60601-5276  
Attn: Mr. Frank Louis, PMP

GSI Project No. 19059

Re: Comprehensive Geotechnical Report for  
Proposed Site Development at  
Joint Public Safety Training Campus  
4301 W. Chicago Avenue,  
Chicago, Illinois

Dear Mr. Louis:

The following report presents the geotechnical analysis and recommendations for the Joint Public Safety Training Campus (JPSTC) Project located at the 4301 W. Chicago Avenue in Chicago, Illinois. The scope of services was conducted in general accordance with GSI proposal No.19560-R5 dated June 6, 2019 and 19560-R6 dated July 14, 2020. This comprehensive investigation report has been prepared based upon information obtained in nineteen (19) soil borings and twenty-five (25) soil test pits (TP-01 to TP-25) performed at the site by Geo Services Inc. in June-July 2019 and August 2020. Copies of the Soil boring logs along with a location diagram are included in this report.

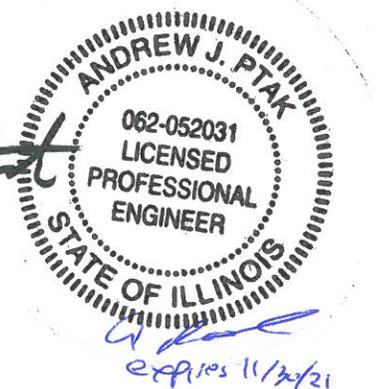
If there are any questions regarding the information submitted herein, please do not hesitate to contact us.

Very truly yours,

GEO SERVICES, Inc.

Arun Tailor  
Project Engineer

Drew Ptak, P.E.  
Principal



enc.

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## **EXECUTIVE SUMMARY OF FINDINGS AND RECOMMENDATIONS**

Geo Services Inc. has completed a geotechnical investigation performed for the Joint Public Safety Training Campus (JPSTC) Project which consisting a multi-story Academy Building located at the 4301 W. Chicago Avenue in Chicago, Illinois. This Executive Summary is provided as a brief overview of our geotechnical engineering evaluation for the project and is not intended to replace more detailed information contained elsewhere in this report. A summary of our findings, opinions, and recommendations is provided below.

- A multi-story Academy Building i.e., Main Building, including a 3 - story office/classroom area at the northern portion of the building, a 1-story Range on the western side, and 1 story Tactical area, a 2-story Scenario area and a 6-story Drill Hall in the Southeast corner of the building “footprint”.
- A total of nineteen (19) soil borings were performed for this evaluation. Due to onsite tree clearing issue borings are completed in two stages –Soil borings SB-05 thru SB-13 were drilled in June-July 2019 and soil borings SB-01 thru SB-03, SB-35 and SB-38 thru SB-43 drilled in August 2020 after tree clearance. All borings were advanced to approximately 50.0 feet below grade surface.
- The subgrade soils encountered at the boring locations consist of variable material types and thickness of non-engineered fills above +/-22.0 to +/- 27.00 CCD. Underlying the fill materials soil types encountered silty sand/ clayey sand/clayey silt/sandy silt layer up to an elevation of +/-8.0 to +/-15.00 CCD followed by stiff clay / very stiff clay/ hard clay layer up to an elevation of - 6.0 CCD. The soil stratigraphy then continues with strata of dense to medium dense silt / clayey silt to termination of borings at approximate 50 feet below grade surface at an elevation of -12.0 to -20.0 CCD.
- Perched groundwater was encountered in the fill during drilling at an approximate depth of 5.5 feet to 13.0 ft. below grade surface. We estimate the ground water at 8.0 feet to 10 feet below the current grade surface.
- The project site is considered to be in a low seismic area and is considered to be design using Seismic Site Class B for Soil Site Class D.
- Based on the provided loading conditions, we recommend Deep Foundation drilled-shafts for the proposed building except small 5K to 30K load carrying pier of mezzanine and balcony post will be supporting the spread footing foundation as recommend in this report.

The owner/designer/contractor should not rely solely upon the summary above. This report should be read in its entirety prior to implementing the recommendations in the preparation of design and construction documents. Geo Services Inc. should be retained to perform sufficient services to determine plan/specification compliance with the recommendations in this report.

## **SECTION 01: INTRODUCTION**

This report presents the results of the geotechnical investigation performed for the Joint Public Safety Training Campus (JPSTC) Project located at the 4301 W. Chicago Avenue in Chicago, Illinois. This preliminary report has been prepared based upon information obtained in nineteen (19) soil borings and twenty-five (25) soil test pits (TP-01 to TP-25) performed at the site by Geo Services Inc. in June-July 2019 and August 2020 for Joint Public Safety Training Campus (JPSTC).

The purposes of this report are to describe the subsurface conditions encountered in the soil borings, to analyze and evaluate the data obtained, and to submit recommendations relating to the design and construction of foundations support to a multi-story Academy Building i.e., Main Building, including a 3 - story office/classroom area at the northern portion of the building, a 1-story Range on the western side, and 1 story Tactical area, a 2-story Scenario area and a 6-story Drill Hall in the Southeast corner of the building "footprint". In addition to the Main Building, in Phase II there will be a 3-story Tactical house and 6-story Burn Tower, both located to the east of the Main Building which is not included in GSI Scope.

### **Site Description**

The project is located in City of Chicago, Cook County, Illinois with the following range/township information: T39N R13E, Section 10. Figure 1 shows the project location map. The project site location map included in the Appendix B.



Figure 1: Project Location, from Google Earth

As shown in above image the site is a roughly triangular shaped property that lies south of W. Chicago Avenue, between Kilbourn Avenue and CTA Access Road, in the Garfield Park/Humboldt Park neighborhood in Chicago. The site dimensions are roughly 2300 feet east to west and 740 feet north to south in the middle. The property is a former railyard currently overgrown with vegetation/shrubs/trees and berms of soil fill located along a good portion of the north line and to about the west half of the south line. Previously, the site had railroad spur tracks that led into the site at W. Chicago Street and Kilbourn Avenue, and then dead ended on the east side of the site. The tracks have been removed with occasional wood ties and ballast exposed at the ground surface. The west end of the site is elevated above street level and contained by retaining wall structures.

**TABLE 1  
 SOIL BORING LOCATION INFORMATION**

<b>Boring #</b>	<b>Boring Location *</b>	<b>Northing</b>	<b>Easting</b>	<b>Approximate Surface Elevation* (CCD)</b>
SB-01	NW Corner of 1-Story Range	1904774.3	1146314.7	35.7
SB-02	NW Corner of 3-Story Office/ Classroom	1904878.6	1146373.1	31.8
SB-03	NE Corner of 3-Story Office/ Classroom	1904887.9	1146662.1	30.1
SB-05	West Edge of Main Building	1904649.1	1146284.7	37.3
SB-06	Center of Main Building	1904661.2	1146464.3	35.9
SB-07	East Edge of Main Building	1904660.0	1146630.1	34.7
SB-08	NE Corner of the property	1904680.5	1147267.5	40.2
SB-09	SW Corner of Main Building	1904404.2	1146309.1	41.5
SB-10	South Edge of Main Building	1904409.0	1146471.3	35.1
SB-11	SE Corner of Main Building	1904413.9	1146633.3	35.7
SB-12	East side of property	1904505.8	1147550.9	31.0
SB-13	South of 6 Story Burn Tower	1904289.5	1146826.9	33.1

Boring #	Boring Location *	Northing	Easting	Approximate Surface Elevation* (CCD)
SB-35	North Edge of 3-Story Office/ Classroom	1904882.9	1146517.5	30.8
SB-38	Center of Tactical	1904731.9	1146568.6	35.2
SB-39	NW Corner of 2-Story Scenario	1904666.3	1146679.6	34.7
SB-40	West Edge of 2-Story Scenario	1904545.9	1146585.5	36.9
SB-41	SE Corner of 6 Story Burn Tower	1904391.8	1146688.0	34.8
SB-42	South Edge of 1-story Range	1904517.1	1146403.7	37.6
SB-43	SW Corner of 1-Story Range	1904588.9	1146320.8	37.4

- Figure 1: \*Project Soil Boring Location obtained from handheld GPS device and elevations estimated from site survey dated 12/18/2017.
- \*Soil borings SB-01 thru SB-03, SB-35 and SB-38 thru SB-43 drilled in August 2020 after tree clearance.

A description of soil and groundwater conditions, general construction considerations for the site, along with general notes in Appendix A, site location map found in Appendix B, boring location diagram in Appendix C, Environmental Test pit Location diagram in Appendix D, Soil boring logs in Appendix E, Test Pits logs/records found in Appendix F, Soil boring Profile in Appendix G, Lab test results found in Appendix H, Environmental Testing Analytical Report from TestAmerica found in Appendix I, Pile Tables in Appendix J, Drilled Shafts end bearing, settlement Calculation and Squeeze analysis in Appendix K, concept drawing found in Appendix L and Environmental Finding report in Appendix M are included with this report.

## **SECTION 02: PROJECT DESCRIPTION**

The scope of the project is intended to potentially replace or consolidate various existing public safety training facilities located throughout Chicago and develop a new centralized and consolidated Joint Public Safety Training Academy, which will provide state-of-the-art indoor and outdoor training spaces that improve upon the current facilities. The Project is envisioned to include the construction of two primary buildings: 1) a multi-story Academy building, designed primarily for classroom instruction and physical fitness training, and 2) a single-story building, designed for active scenario training. The two primary buildings, along with ancillary unoccupied outdoor training

facilities, will be constructed on a 30-acre city owned site located at 4301 W Chicago Avenue, Chicago, Illinois.

In addition, site improvements include parking lot to the west side of the main building for staff, recruits and in-service trainee vehicles. The latest concept drawing also shows in phase II Grass area (future development) consisting Drive Training Classroom, conex boxes for Scenario and Drive Training, a berm with confined space and trench rescue structures, and a grass area for future development. No other information about these areas, all located in the eastern half of the property has been provided.

### **SECTION 03: SUBSURFACE INVESTIGATION PROCEDURES**

Boring and Test Pit locations were selected by AECOM and were provided to Geo Services, Inc. Boring and Test Pit locations were laid out in the field by Geo Services, Inc personnel at the proposed locations. All locations in field were verified by Geo Services, Inc. personnel using a handheld GPS device before and after the borings were completed. Elevations at the boring locations were estimated based on the topographic survey provided by AECOM (American Surveying and Engineering, P.C drawing dated 12/18/2017. The approximate ground surface elevations at the borings are indicated on the boring logs. The as-drilled locations are illustrated on the boring location diagram in the Appendix.

The soil borings were performed in June-July 2019 and August 2020. The soil borings were performed with a truck-mounted drilling and with an all-terrain vehicle (ATV) rigs equipped with a CME automatic hammer, advanced by continuous flight hollow stem augers to a depth of 10 or 15 feet, and then switching to rotary drilling in accordance with ASTM D-6151 to a full depth of 50 feet from the surface to the completion of the borings.

Representative soil samples were obtained employing split spoon sampling procedures in accordance with ASTM specifications D-1586, "Standard Test Method for Standard Penetration Test and Split Barrel Sampling of Soils." Soil samples were obtained with the use of a split spoon sampler, at interval of 2.5 feet to a depth of 10 or 15 feet and then at 5 feet intervals thereafter. Split-spoon sampling involves driving a 2.0-inch 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 inch 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.

Geo Services Inc. field representative visually classified and logged the soil samples during the subsurface exploration activities, and performed unconfined compressive strength tests on cohesive soil samples using a calibrated Rimac compression tester or

a hand penetrometer. Samples obtained in the field were brought to our laboratory for further examination and testing.

Water levels observations were taken while drilling and after completion of drilling at each soil boring and are summarized in section 6 on page 8 of this report.

Upon completion, the borings were backfilled with soil cuttings.

## **SECTION 04: LAB TESTING PROGRAM**

The laboratory-testing program consisted of performing water content tests per ASTM D-2216, unconfined compression testing with a Rimac test device, and/or a hand penetrometer tests on the cohesive samples recovered. Water content tests were performed on non-cohesive samples recovered. These tests were performed upon representative portions of the samples obtained in the field. The results of all testing performed, along with a visual classification of the material are based upon both a textural analysis and the Unified Soil Classification System, and are indicated on the boring logs in Appendix G.

In addition to the regular lab testing program, Atterberg Limits (ASTM D 4318) and Particle Size Analysis (ASTM D 422) or Grain Size Analysis (ASTM D 6913) tests were performed on select samples from the borings. The tests were performed upon representative portions of the samples obtained in the field. Graphs for the particle size or grain size can be found in Appendix G.

## **SECTION 05: SUBSURFACE CONDITIONS**

The subsurface soil conditions described in this section were developed based on the results of both the site investigation and laboratory results. Detailed descriptions of the subsurface soils, as well as, the approximate ground surface elevations and laboratory test results are provided on the soil boring logs. Variations in the general subsurface soil profile were noted during the drilling activities. The stratifications shown on the boring logs represent the conditions only at the actual boring locations, and represent the approximate boundary between subsurface materials; however, the actual transition may be gradual.

Specific soil conditions encountered in the borings are indicated on the soil boring logs included in the Appendix E. General descriptions of the soil profile encountered are provided below.

**Proposed Multi-Story Academy Building i.e. Main Building including 3 story office/classroom (Borings SB-01 to SB-03, SB-05 to SB-07, SB-09 to SB-11,SB-35 and SB-38 thru SB-43)**

Soil borings (SB-01 to SB-03, SB-05 to SB-07,SB-09 to SB-11,SB-35 and SB-38 to SB-43) were completed within the proposed location of the main building structure. The surficial soil conditions encountered at the above listed boring locations consist of approximately 4 to 15 inches of topsoil/sandy topsoil. Underlying the topsoil, a 5 to 13 feet layer of non-cohesive fill material was encountered and consisted of medium dense to loose, poorly graded sand/silty sand with varying gravel contents with the exception of soil boring SB-02 where silty clay fill material encountered, soil borings SB-03 and SB-35 where 5 feet layer of loose to medium dense sand, cinders and gravel fill material encountered. Below the fill materials, the soil stratigraphy continues with strata of stiff to very stiff lean clay with sand/silty clay, dense clayey silt and intermittent strata of medium dense silty sand to depths of approximately 10 feet to 32 feet below grade surface with the exception of soil boring SB-02,SB-03 and SB-35 where clayey silty layer encountered at shallower depth from 13 to 22 feet,17 to 22 feet and 13 to 22 feet respectively. The soil stratigraphy then continues with strata of very stiff to hard lean clay with sands and dense to very dense silt / clayey silt to termination of boring at approximate 50 feet below the grade surface.

In the above listed borings, the soil samples above 17 feet, predominately granular fill materials, had moisture contents ranging from 2% to 55% with an average of 8 %. Similarly, moisture content of the soil samples below 17 feet to 35 feet, predominately cohesive soils, had moisture contents ranging from 10% to 29% with an average of 15 %. The unconfined compressive strengths (Qu) for cohesive soil samples below 17 feet ranging from 1.1 to 4.5+ tons per square foot (tsf) with an average of 4.1 tons per square foot (tsf).

**Phase II Future Development of 1-Story Building (Apparatus Bay/Driving School/Indoor Water Training) (Borings SB-08 and SB-12)**

Soil borings (SB-08 and SB-12) were completed near the future development location for a 1-story building (Apparatus Bay/Driving School/Indoor Water Training) as per previously provided geotechnical investigations drawing. The surficial soil conditions encountered at the soil boring SB-08 location consist of approximately 12 inches of topsoil. Underlying the topsoil, the soil stratigraphy continues with predominately very stiff to hard lean clay/silty clay with sand to approximately 47 feet below grade surface, with an exception of approximate 5 feet thick layer of poorly graded sand at an approximate depth of 13 feet below grade surface. Boring SB-08 terminated in strata of dense silt / clayey silt at approximately 50 feet below the grade surface.

The soil conditions encountered at boring SB-12 consisted of approximately 12 inches of clayey sand and gravel fill, underlain by 2 feet thick fill layer of medium dense, crushed asphalt and stone layer (fuel odor noted during the soil classification at lab),

and a 5 feet thick layer of loose to medium dense clayey sand and gravel fill to an approximate depth of 8 feet below grade surface. Below the fill materials, the soil stratigraphy continues with strata of stiff to very stiff to hard silty clay/lean clay with sand extending to approximately 8 feet to 42 feet below grade surface. An approximate 5 feet thick layer of dense silt was encountered at an approximate depth of 17 feet below grade surface. Below a depth of 42 feet strata of silty sand and gravel/poorly graded gravel were found to termination of boring SB-12 at approximately 50 feet below the grade surface.

In the above listed borings, the soil samples above 17 feet, had moisture contents that typically ranged from 6% to 24% with an average of 17 %. Similarly, moisture content of the soil samples below 17 feet to 35 feet, predominately cohesive soils, had moisture contents typically ranging from 13% to 25% with an average of 18 %. The unconfined compressive strengths ( $Q_u$ ) for cohesive soil samples below 17 feet ranged from 1.5 to 4.5+ tons per square foot (tsf) with an average of 3.0 tons per square foot (tsf).

### **Phase II Proposed Future Technical Rescue/Future Taxpayer/Future 1-Story Residential/6-Story Burn Tower Building (Boring SB-13)**

Soil boring SB-13 was completed at the original location shown for the 6-story Burn Tower structure. (Current plans show this structure adjacent to the southeast corner of Main Building). The soil conditions encountered at boring SB-13 consisted of approximately 12 inches of topsoil underlain by a 5 to 7 feet layer of non-cohesive fill material consisting of medium dense poorly graded sand and gravel/sand and silty sandy clay. Below the fill materials, the soil stratigraphy continues with strata of stiff to very stiff to hard silty clay/lean clay with sand to approximately 37 feet below grade surface. The soil stratigraphy then continues with strata of very dense sandy silt/silt to termination of boring at approximate 50 feet below the grade surface.

Moisture contents of the granular soil samples in above listed boring typically ranged from 6% to 17% with an average of 13%. Similarly, moisture content of cohesive soils sampled in above listed boring ranged from 13% to 25% with an average of 18%. The representative soil samples collected from the borings were tested and had unconfined compressive strengths ( $Q_u$ ) ranging from 2.0 to 4.5 tons per square foot (tsf) with an average of 3.5 tons per square foot (tsf).

## **SECTION 06: WATER TABLE CONDITIONS**

Water levels were checked in each soil boring to determine the general groundwater conditions present at the site, and were measured while drilling. None of the borings were left open (for 24 hours water level reading) after leaving the site due to safety reasons. The majority of the borings were dry to a depth of 10 feet prior to switching to wash-rotary drilling techniques. Due to the nature of rotary-wash drilling; it was not possible to obtain accurate water level readings below 10 feet of depth or after drilling.

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Our drilling crew obtained the water level reading during the drilling operation in the soil borings SB-01, SB-02, SB-05 to SB-07, SB-12 to SB-13, SB-38 to SB-43 at 5.5 feet to 13.5 feet below the ground surface and this reading is shown on boring log. Based on the coloration change in the soils from dark brown, gray and black to gray, we estimate a depth of 8 to 10 feet below existing ground surface for the long-term groundwater table. The brown color of the soil is typically caused by oxidation that occurs above the long term water level. This color transition did not occur at a consistent elevation in all of the borings, which may indicate seasonal fluctuations from the above average rainfall and climatic conditions or impacts from the drainage of the surrounding area.

**TABLE 2  
 GROUND WATER OBSERVATIONS**

Boring No.	Approximate Ground Surface Elevation (CCD)	Ground Water Observations While Drilling / Upon Completion	
		Depth below Ground Surface (ft.)	Elevations(CCD)
SB-01	35.7	9.5 / n/a	26.2 / n/a
SB-02	31.8	13.5 / n/a	18.3 / n/a
SB-05	37.3	9.0 / n/a	28.3 / n/a
SB-06	35.9	8.5 / n/a	27.4 / n/a
SB-07	34.7	7.0 / n/a	27.7 / n/a
SB-12	31.0	5.5 / n/a	25.5 / n/a
SB-13	33.1	6.0 / n/a	27.1/ n/a
SB-38	35.2	9.5 / n/a	25.7 / n/a
SB-39	34.7	7.5 / n/a	27.2 / n/a
SB-40	36.9	11.0 / n/a	25.9 / n/a
SB-41	34.8	9.5 / n/a	25.3 / n/a
SB-42	37.6	10.0 / n/a	27.6 / n/a
SB-43	37.4	11.0 / n/a	26.4 / n/a

• n/a= Not Available

## **SECTION 07: ANALYSIS AND RECOMMENDATIONS**

### **General**

This section provides recommendations regarding foundation design and construction for the proposed Joint Public Safety Training Campus (JPSTC) Project, including the 1 to 6-story Academy Building (Main Building) and 6-story Burn Tower and 1 story Tactical House. The recommendations were developed based on the project information provided by AECOM and the results of the site investigation. If there are any significant changes to the project characteristics or if significantly different subsurface conditions are encountered during construction, Geo Services, Inc should be consulted so that the recommendations of this report can be reviewed.

We understand that the building locations and “footprints” have been changed relative to the soil boring locations proposed based on latest concept site plan drawing provided by AECOM, as shown in boring location map in Appendix.

The approximate proposed finish floor elevations and estimated substructure loads for the proposed structures provided by AECOM are shown below in Table 3.

**TABLE 3  
 SUMMARY OF ESTIMATED FINISHED FLOOR ELEVATIONS AND  
 ESTIMATED FOUNDATION LOADS**

Type of Structure	Estimated Proposed F.F Elevation (CCD)	Column Load (KIPS)	Wall Load (KIPS/FT)	Nearest soil Borings	Soil Boring Ground Surface Elevations (ft., CCD)
3 Story Office / Classroom	+27.00	300 (50 % D.L+50% L.L)	4	SB-02 SB-35 SB-03	+31.8 +30.8 +30.1
1 Story Range	+40.00	100 (50 % D.L+50% L.L)	3 to 4	SB-01 SB-05 SB-06 SB-42 SB-43	+35.7 +37.3 +35.9 +37.6 +37.4
1 Story Tactical	+40.00	100 (50 % D.L+50% L.L)	2 to 3	SB-06 SB-07 SB-38 SB-39	+35.9 +34.7 +35.2 +34.7
2 Story Scenario	+40.00	100 (50 % D.L+50% L.L)	2 to 3	SB-06 SB-07 SB-10 SB-11 SB-39 SB-40	+35.9 +34.7 +35.1 +35.7 +34.7 +36.9
6 Story Drill Hall	+40.00	150 (50 % D.L+50% L.L)	4	SB-10 SB-11 SB-41	+35.1 +35.7 +34.8
3 Story Tactical House Phase II	+38.00	80 (40 % D.L+60% L.L)	2	SB-7 SB-11	+34.7 +35.7
6 Story Burn Tower Phase II	+38.00	480 (60 % D.L+40% L.L)	4	SB-11 SB-13 SB-41	+35.7 +33.1 +34.8

**TABLE 3 (a)**  
**LOAD BEARING VALUES**

(Approx. Elevation) (CCD)	Class	Description	Unco. Comp. Strength Qu (tsf)	SPT (N avg.) Value (blows/ft)	Consistency / Relative Density	Maximum Net Allowable Bearing Pressure (psf)	Lateral Pressures		
							Lateral Bearing Pressure	Lateral Sliding Friction Co-efficient	Lateral Sliding Cohesion
38.0 To 22.0	Fill	Poorly Graded Sand / Sand and Gravel / Clayey Sand and Gravel	n/a	8-15	Loose to Med. Dense	1000	100	0.25	-
22.0 To 8.0	SM SC ML	Silty Sand Clayey Sand Clayey Silt Sandy Silt	n/a	15 to 35	Med. Dense to. Dense	2000	150	0.25	-
8.00 To -6.0	CL	Lean Clay / Silty Clay	2.0 to 4.5+	30-50	Stiff to V. Stiff Very Stiff to Hard	12000	1200	0.33	50
-6.0 To -20.0	ML	Clayey Silt / Silt (Hard Pan)	n/a	50+	Very Dense	12000+	300	0.25	-

**7.1 Seismic Consideration**

Based on site soil properties, the project site is classified as soil site class D in accordance with the chapter 20 of the ASCE 7. The project site has a horizontal Response Spectral Acceleration ( $S_1$ ) of 0.063 at a period of 1.0 second and 5% critical dampening. The site also has a horizontal Response Spectral Acceleration ( $S_s$ ) of 0.118 at a period of 0.2 seconds and 5% critical dampening. The following table shows recommended seismic design data in accordance to the Chicago Building Code (CBC) 2019.

**TABLE 4  
 SEISMIC DESIGN (APPROXIMATELY 1000-YEAR RETURN PERIOD)**

Seismic Performance Zone (SPZ)	1
Horizontal Response Spectral Acceleration ( $S_1$ ) 1.0 second and 5%	0.063
Horizontal Response Spectral Acceleration ( $S_s$ ) 0.2 seconds and 5%	0.118
Spectral Acceleration at 1 second ( $S_{D1}$ )	0.101
Design Spectral Acceleration at 0.2 seconds ( $S_{Ds}$ )	0.126
Peak ground acceleration coefficient (PGA)	0.059g
Soil Site Class	D
Site Seismic Design Category (SDC)	B

The project site is considered to be in a low seismic area and is considered a non-extreme event. Liquefiable layers are not expected to impact the design of the proposed new buildings.

**7.2 Expansive Soil**

Expansive soil or clay is considered to be one of the more problematic soils and it causes damage to various civil engineering structures because of its swelling and shrinking potential when it comes into contact with water. Expansive soils behave differently from other normal soils due to their tendency to swell and shrink. Because of this swelling and shrinking behavior, expansive soils may cause the problems in structures. Based on our soil investigation and visual inspection of soils for this project there is no expansive soil encountered at any of the soil borings. We have performed soil laboratory analysis and test results of cohesive materials  $LL < 30$  and  $PI < 12$  which indicate low probability of swelling soils.

**7.3 Potential Effect of Excavations on Existing Structures and Utilities**

Based on our review of site and Google Earth® aerial imagery, the existing site is very far away from the nearest structure; adjacent to the proposed structure. Based on utility locate there were no existing utility observed or marked at the site.

**SECTION 08: FOUNDATION RECOMMENDATIONS**

Soil borings SB-01 to SB-03, SB-05 to SB-07, SB-10 to SB-11, SB-35 and SB-38 to SB-43 were drilled in and around the “footprint” of the proposed Main Academy building which includes 1 to 6 story portions. Soil borings SB-08 and SB-12 were drilled near the

phase II proposed 1-story Apparatus Bay/Driving School/Indoor Water Training building and soil boring SB-13 was drilled near the original proposed location of the 6-story Burn Tower building to be constructed on the project site.

Based on the existing soil conditions and the provided site development information, feasible foundation systems include shallow spread footings or drilled-shaft caissons or driven pile foundations.

While shallow footing foundations are typically the most economical system for buildings such as those proposed for the JPSTC development, the presence of variable material types and thickness of non-engineered fills such as found in the borings will require significant undercuts and replacement with engineered fill, or other ground improvement methods, such as dynamic compaction, to provide more uniform support conditions.

Deep foundations systems such as concrete-filled drilled shafts (caissons) or driven piles are also considered feasible. Driven piles would extend to the hard clay/dense silt strata and derive support mostly through end bearing. Cost for steel piles, as well as, noise and vibration concerns may be factors to make driven piles less desirable for this site adjacent to residential areas.

Caissons extending to bear on the hard clay/dense silt strata are a common foundation type and would reduce potential for differential settlements that could occur for footings supported above variable fill thickness.

We recommend that an economic analysis for each foundation option presented below be considered before choosing a foundation system for the structures.

### **8.1 Deep Foundation Caisson Foundation Recommendations**

A deep foundation system consisting of drilled shafts (caisson) may be considered for the support of the proposed Main Building and 6-story Burn Tower structure. Due to the variable loose to dense fill materials encountered in a majority of soil borings and extending up to 13 feet depth, the use of shallow spread footings may be not economical for support of the building foundations.

The foundation may be constructed using a foundation system of straight shaft or belled caissons bearing at or below depths of about 27 to 35 feet below existing grade (within +5 CCD to -5 CCD), in the very stiff to hard clay stratum encountered at this depth. A maximum allowable bearing of 12.0 kips per square foot (ksf) could be used for design using Service Load Design Method, SLD, (also known as Allowable Stress Design, ASD).

**TABLE 5**

**ESTIMATED ELEVATION OF  
 SUITABLE DRILLED SHAFT BEARING MATERIAL**

BORING	EXISTING GRADE*	Drilled Shafts Bearing 12 ksf	
		DEPTH (FEET)	ELEVATION* (CCD)
SB-01	+35.7	35	+0.7
SB-02	+31.8	30	+1.8
SB-03	+30.1	30	+0.1
SB-05	+37.3	32	+5.3
SB-06	+35.9	30	+5.9
SB-07	+34.7	30	+4.7
SB-08	+40.2	40	+0.2
SB-09	+41.5	25	+16.5
SB-10	+35.1	25	+10.1
SB-11	+35.7	30	+5.7
SB-12	+31.0	25	+6.0
SB-13	+33.1	25	+8.1
SB-35	+30.8	30	+5.8
SB-38	+35.2	35	+0.2
SB-39	+34.7	30	+4.7
SB-40	+36.9	30	+6.9
SB-41	+34.8	30	+4.8
SB-42	+37.6	30	+7.6
SB-43	+37.4	30	+7.4

- Note: 1 verify in field
- \* Elevations in feet, Chicago City Datum (CCD)

If necessary the bases of the foundations should be enlarged by belling to achieve the required bearing area. Belling should be feasible in the very stiff clay soils that overlie the recommended soil bearing layer. Where silt strata cause caving problems, it may be necessary to extend temporary casing deeper and form the bell at a lower elevation.

Based on the estimated bearing pressures, the consistency of the soils encountered and the magnitude of the loads expected, we estimate a maximum settlement of 1/2

inch. It should be noted that these settlement values are for soil compression only and that elastic compression of the caisson concrete should be added to these values.

Based on soil strength data collected from in-situ  $Q_p$  test, laboratory Rimac test, water content of the cohesive soil, calculated overburden stress, ground water level, depth of excavation and recommended shaft diameter, we have calculated squeeze analysis for the worst case scenario and attached in Appendix of this report. There was no soft soils encountered at any of the borings and squeeze potential is calculated as low.

To prevent groundwater, as well as, upper fill materials and silt, sand and gravel soil granular fill present in the borings from sloughing/caving into the caisson boreholes during construction, we recommend that a temporary steel casing be employed at the surface during construction. Potential use for temporary casing will be required to a depth of approximately 20 to 25 feet below the ground surface; the temporary casing should be extended through the granular fill and at least 2 feet into the underlying cohesive soils to provide a seal.

If casing is used for drilled shaft construction, it should be withdrawn in a slow continuous manner maintaining a sufficient head of concrete above the bottom of the casing at all times to prevent infiltration of water or the creation of voids in shaft concrete. The caisson bell should have a base angle of at least 60 degrees (from horizontal) and the bell diameter should not exceed 3 times the shaft diameter.

Care should be taken to assure that soils do not slough into the caisson shaft and that voids do not occur during concrete placement. After the bearing materials have been reached, bellling (if used on hard clay soils), cleaning, testing and concrete placement should occur as quickly as possible. Because the caisson technician will likely not be lowered into the excavation to observe the base of the caisson excavation directly due to safety concerns, it will be necessary to oversize the bell area by 15% or 1 foot diameter, whichever is smaller, and any loose spoils be back bladed to the outside edge prior to placing concrete. As an alternative, a camera can be used to inspect the bottom of the bell

A minimum caisson shaft diameter of 4.0 feet is recommended. The concrete slump should be in the range of 5 to 7 inches. The recommended minimum 28-day compression strength of the concrete should be a minimum of 4,000 psi. Caisson concrete may be placed by the free fall method into the clean and dry shaft excavations as long as concrete does not hit the sides of the shaft or the rebar cage during placement. The caissons should be excavated and backfilled with concrete in one work-day shifts.

## **8.2 Deep Foundation Pile Foundation Recommendations**

Although we expect the cost of a pile foundation system and concerns for noise and vibration will render this option less desirable, a deep foundation system consisting of driven piles may be considered for the support of the proposed Main Building and 6-story Burn Tower structure. Pile capacities and lengths were calculated to the piles maximum Nominal Required Bearing (NRB) for 12 inch dia. and 14 inch dia. pipe pile as prescribed by IDOT for drivability. We assumed soil layer below 50 ft. remain consistent for the soil below 50-feet to determine the pile capacity below the termination depth of the boring at 50 feet.

As per the IDOT Design Guide AGMU Memo 10.2, dated October 2011, the Washington State DOT (WSDOT) formula has replaced the FHWA Gates Formula as the standard method of construction verification. A modified IDOT static method was used to develop the SGR pile design tables. Nominal required bearing was calculated from LRFD skin-friction (with pile type correction factors) and end-bearing calculations. A value of 1.04 is used for Bias Factor Ratio ( $I_G$ ). A geotechnical resistance factor ( $\Phi_G$ ) of 0.55 was used in calculations for the Strength Limit State. At the service limit state, we estimate that the piles will compress/settle less than 1/2 inch, excluding elastic compression of the pile itself.

The pile tables, provided in Appendix I, are estimates, and 1 to 2 test piles are recommended for final pile length selections. The piles should be driven until satisfactory driving resistance is developed in accordance with an appropriate pile driving formula. The test piles shall be driven to 110 percent of the Nominal Required Bearing indicated in the pile data information. The pile size and capacity selected should be based on economic considerations and the loads imposed on the structure.

## **8.3 Deep Foundation Lateral Soil Properties**

The following Table 6 contains a tabulation of soil parameters to be used design for deep foundation lateral resistance.

**TABLE 6  
 LATERAL SOIL PARAMETERS**

<b>Material (Elevation, ft.)</b>	<b>Unit Weight (pcf)</b>	<b>Drained Friction Angle (°)</b>	<b>Undrained Cohesion (psf)</b>	<b>Lateral Modulus of Subgrade Reaction k (pci)<sup>1</sup></b>	<b>Strain ε<sub>50</sub></b>
Loose to Medium Dense Poorly Graded Sand / Sand and Gravel / Clayey Sand and Gravel (Fill)	120	28	-	60	-
Stiff Lean Clay / Silty Clay (CL)	125	28	1,500	650	0.005
Very Stiff to Hard Lean Clay (CL)	125	28	4,000	2,000	0.004
Very Dense Clayey Silt / Silt ( ML)	125	30	-	90	-

Note: 1. Values recommended for use in design from L-Pile software manual.

**8.4 Shallow Foundation General Overview / Bearing Table**

Top of finished floor elevations (FF) for the proposed structures are provided in Table 3 (page 10).

FF for 1-3 Story office / class room building is estimated to be at elevation +/- 27.0 feet, which is +/- 5 feet below the existing grade elevation, requiring that existing grade be cut by about +/-5 feet as a part of final grading for the building pad.

FF for 1 story Range, 1 story Tactical, 2 story Scenario and 6 story Drill Hall is estimated to be at elevation +/- 40.0 feet, which ranges from about 2 to 5 feet above the existing grade elevation, so the grade will need to be raised by about 2 to 5 feet above the existing grade elevation.

Phase II FF for 3 story Tactical House and 6 story Burn Tower are estimated to be at elevation +/- 38.0 feet, which is 3 to 5 feet above the existing grade elevation, so the grade will need to be raised by about 3 to 5 feet above the existing grade elevation.

Interior, exterior footings for the new building are expected to bear at

- -11.0 ft. BGS (as per SB-01), or approximate Elevation 25.0.

- -15 ft. BGS (as per SB-02) or approximate Elevation 17.0.
- -10 ft. BGS (as per SB-03) or approximate Elevation 20.0.
- -13.0 ft. BGS (as per SB-05), or approximate Elevation 24.0
- -10 ft. to -12.0 BGS (as per SB-06 & SB-07), or approximate Elevation 23.0 to 26.0
- -10ft. to -12 ft. BGS (as per SB-09 to SB-11) or approximate Elevation 23.0 to 30.0
- -10 ft. BGS (as per SB-35) or approximate Elevation 21.0.
- -15 ft. BGS (as per SB-38) or approximate Elevation 20.0.
- -12 ft. BGS (as per SB-39) or approximate Elevation 23.0.
- -17 ft. BGS (as per SB-40) or approximate Elevation 20.0.
- -12 ft. BGS (as per SB-41) or approximate Elevation 23.0.
- -12 ft. BGS (as per SB-42) or approximate Elevation 26.0.
- -17 ft. BGS (as per SB-43) or approximate Elevation 20.0.

Based on the borings, the proposed FF elevations will place interior and exterior footings on new or existing fill materials in most areas.

Fill materials were present at all of the borings drilled in and around the proposed building “footprints”. The fill was variable in consistency with poorly graded sand with gravel/silty, sand/clayey sand and gravel materials. Previous borings (by others) also found layers of variable cohesive fill materials and buried topsoil/organic soils. An apparent “perched” water table was also present in the fill layer at many locations. The existing fill is considered to be suitable for support of pavements and floor slabs, but not suitable for supporting the foundation loads using conventional shallow depth wall and column footings.

There are two main options for dealing with the existing fill. One is to completely remove and replace / re-compact the in-place fill materials as part of building pad construction. This would be most applicable if heavy floor slab loads and/or relative low floor slab settlement/flatness tolerances were anticipated. The other option is to leave existing fill in-place under the floor slab and extend the footings through it to bear on underlying very stiff to hard native silty clay soils or on new engineered fill.

Summarized in the following table are the depth/elevations at which in-situ native soils are considered capable of supporting a net allowable bearing pressure of 3000 pounds per square foot (psf). Ground surface elevations at the boring locations and depths of existing fill and clayey topsoil are also indicated. The 3000 psf bearing value is typical and generally satisfactory for structure structures such as those proposed for this project.

**TABLE 7  
 ESTIMATED ELEVATION OF SUITABLE FOOTING FOUNDATION BEARING  
 MATERIAL**

BORING	EXISTING GRADE*	EXISTING FILL DEPTH (FEET)	3000 PSF NATIVE BEARING		DEPTH OF UNDERCUT FOR ASSUMED FOOTING
			DEPTH (FEET)	ELEVATION (FEET)* (CCD)	UNDERCUT (FEET)
SB-01	35.7	10.5	11.0	24.7	11.0
SB-02	31.8	13.0	15.0	16.8	15.0
SB-03	30.1	5.5	10.0	20.1	10.0
SB-05	37.3	12.0	13.0	24.3	13.0
SB-06	35.9	8.5	10.0	25.9	10
SB-07	34.7	7.0	12.0	22.7	12
SB-08	40.2	3.0	3.0	37.2	N/A
SB-09	41.5	8.0	12.0	29.5	12
SB-10	35.1	12.0	12.0	23.1	12
SB-11	35.7	11.0	11.0	24.7	11
SB-12	31.0	8.0	8.0	23.0	N/A
SB-13	33.1	8.0	8.0	25.1	8
SB-35	30.8	5.5	10	20.8	10
SB-38	35.2	13.0	15	20.2	15
SB-39	34.7	10.5	12	22.7	12
SB-40	36.9	10.5	17.0	19.9	17.0
SB-41	34.8	9.5	12.0	22.8	12
SB-42	37.6	10.0	12.0	25.6	12.0
SB-43	37.4	13.0	17.0	20.4	17.0

- Note: 1. verify in field
- Note: 2 Borings SB-08 and SB-12 no FF elev. Provided.
- Chicago City datum (CCD)

### **8.5 Footing Foundations and Floor Slabs**

The new engineered fill to be placed as part of building pad construction, i.e. compacted to 95 percent Modified Proctor density, will be suitable for 3000 psf bearing. This includes existing fill which is to be removed and replaced/re-compacted to the 95 percent criterion. Footings may extend through existing fill down to native bearing materials. These consist of stiff to hard silty clay soils which are also considered suitable for 3000 psf bearing. However, minor undercuts may be required if marginal bearing soils are revealed right at footing grade.

Foundation undercuts are anticipated if existing fill is left in-place at footing locations. (As indicated in Table 7, the depth of undercuts may be significant and render the footing foundation uneconomical). The base of the undercuts should exceed footing dimensions by at least 12 inches along each side, 6 inches for every foot of over dig where the undercut exceeds 2.0 feet in depth. Replacement materials in foundation excavations should consist of crushed stone or crushed gravel between 1/4 to 3 inches in size and containing no fines (typically comprising 3" rock). This "structural" fill should be spread in 12-inch layers loose thickness, each lift to be densified using vibratory compaction equipment or approved method. Footings constructed on the crushed stone or crushed gravel backfill may also be proportioned for 3000 psf bearing.

For frost considerations, all exterior footings should be constructed at least 3.5 feet below outside finished grade and 4.0 feet for foundations located outside of heated building limits. Interior footings may be constructed at higher elevations as long as they are protected against frost heave in the event of winter construction.

The 3000 psf bearing value may be increased by up to 33 percent for intermittent loads such as wind and seismic loading. The 33% increase may also be applied to the toe pressure of eccentrically loaded footings as long as the average bearing pressure does not exceed 3000 psf. The above recommendations should otherwise result in total foundation settlements of less than 1.0 inch. Differential settlement is typically 1/2 to 3/4 the total settlement.

Floor slabs are typically provided with an aggregate base for load distribution and as a leveling course and capillary break. Typical base course materials include IDOT gradations CA-6 (well-graded sand and gravel with fines) or CA-7 (1/4" to 3/4" chips). The CA-6 material should be compacted using vibratory equipment to 95 percent Modified Proctor density, the CA-7 until a dense and stable state is achieved. The CA-7 material is considered free-draining, providing a superior capillary break.

Concrete floors should be isolated from foundation elements, i.e. jointed around columns and foundation walls, to permit minor differential settlement to occur without causing undue cracking or other distress. They should also be provided with adequate reinforcement and jointing to minimize the effects of any slab movement and control minor cracking. In this regard, slab-on-grade construction and jointing should be in

accordance with ACI 360-10 (Guide to Design of Slabs-on-Ground). A subgrade modulus of up to 150 pci is recommended for concrete floor slab design, with a higher value possible if the upper subgrade is lime stabilized.

### **8.6 Site Preparation**

The site has been filled to raise the grade for the former rail yard, and fill was used to form berms along the north and a portion of the south property lines. This fill is mostly granular, sands to sand and gravel with varying amounts of silt and clay and cinders or slag.

In all building and pavement areas, all surface vegetation, railroad debris, or unsuitable support materials should be removed at the start of fill operations. Depending on site design grades, the large fill berms along portions of the north and south property lines will be removed or used as site fill. The site is a former rail yard and the existing fill is expected to have some debris throughout, including slag and cinders. Larger items such as clay and concrete pipe, and/or concrete slabs should not be incorporated in the fill unless crushed to 3 inches or less. Wood railroad ties should be removed from the site. Other debris, exposed in the site grading, may occur that should not be allowed in the structural fill.

Depending on proposed new pavement grades, the existing fill layer can be considered to remain in place if stable for proof-roll inspection of subgrade. A new berm area along the eastern and northeastern portions of the property is shown on the latest concept plan. We would anticipate that most of the on-site fill materials could be used to construct the new berms provided proper moisture conditioning and compaction criteria are maintained.

Surface preparation in the building and new pavement area should include the removal of existing pavement material, organic topsoil and vegetation. After the removal of unsuitable surface materials and prior to placement of any new fill, the exposed subgrade should be thoroughly proof-rolled to detect areas of unstable yielding soils. Any such areas detected should be over-excavated or improved by appropriate preparation and compaction techniques.

It is recommended that fill materials used for pavement support consist of well-graded granular soils or low plasticity lean clays. Fill should be placed on firm subgrades, in layers of not more than 8-inches in loose thickness, and be compacted to at least 95 percent of the maximum dry density as determined by ASTM D 1557 (Modified Proctor) method of test.

### **8.7 Pavement Design and Construction**

Pavement subgrade preparation should include stripping of any surficial topsoil or root zone materials. Existing fill may be left in-place subject to proof-rolling. The exposed

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subgrade and any new fill should then be compacted to 95 percent Modified Proctor density.

Based on the predominately cohesive fill anticipated at subgrade level, an Illinois Bearing Ratio (IBR) value of 3.0 could be used in the design of pavements. This value considers that any soft or unstable areas will be remediated during subgrade preparation.

Base course and subbase materials should otherwise conform to IDOT gradation CA-6 and be compacted to 95 percent Modified Proctor density or 100 percent of the Standard Proctor (ASTM D 698) maximum density value. Bituminous materials should be an approved IDOT Superpave minimum design, with N30 or N50 typical for light-duty parking lots and N50 or N70 for heavy-duty pavements. Standard Specifications for Road and Bridge Construction, Sections 406 and 1032 should also be referenced. They should be compacted to between 93 and 97 percent of their theoretical maximum density, as determined by the supplier.

Portland Cement Concrete (PCC) or heavy duty bituminous concrete is recommended for pavements with heavy truck traffic and high traffic load areas such as garbage truck dumpster loading areas. Standard Specifications for Road and Bridge Construction should be followed.

## **SECTION 09: GENERAL CONSTRUCTION CONSIDERATIONS**

All excavations that extend greater than 4 feet in depth should be designed in accordance with OSHA regulations with properly sloped or braced sides to prevent excavation instability. Excavation safety is the responsibility of the contractor; however, we recommend that excavation sides be sloped at 1-1/2H:1V or flatter above the water table for this purpose. Stockpiles of material or equipment should not be placed near the top of excavation slopes.

All soils which become softened or loosened at the base of foundation excavation areas or subgrade areas should be carefully re-compacted or removed prior to placement of foundation concrete or fill material. No foundation concrete or structural fill should be placed in areas of ponded water or frozen soil.

It is recommended that all foundation subgrade soils be observed by an experienced geotechnical engineer or his field representative prior to placement of concrete or fill, in order to confirm that the subgrade conditions are consistent with the design assumptions and recommendations contained in this report. Periodic density testing should be performed on any fill in order to document that density requirements have been met.

During excavation for the proposed improvements, movement of adjacent soils into the

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excavation should be prevented. All excavations should be performed in accordance with the latest Occupational Safety and Health Administration (OSHA) requirements

## **SECTION 10: GENERAL QUALIFICATIONS**

The analysis and recommendations presented in this report are based upon the data obtained from 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 cores or borings across the site. 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. 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.

If there are any questions regarding the information submitted herein, please do not hesitate to contact us.

**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	

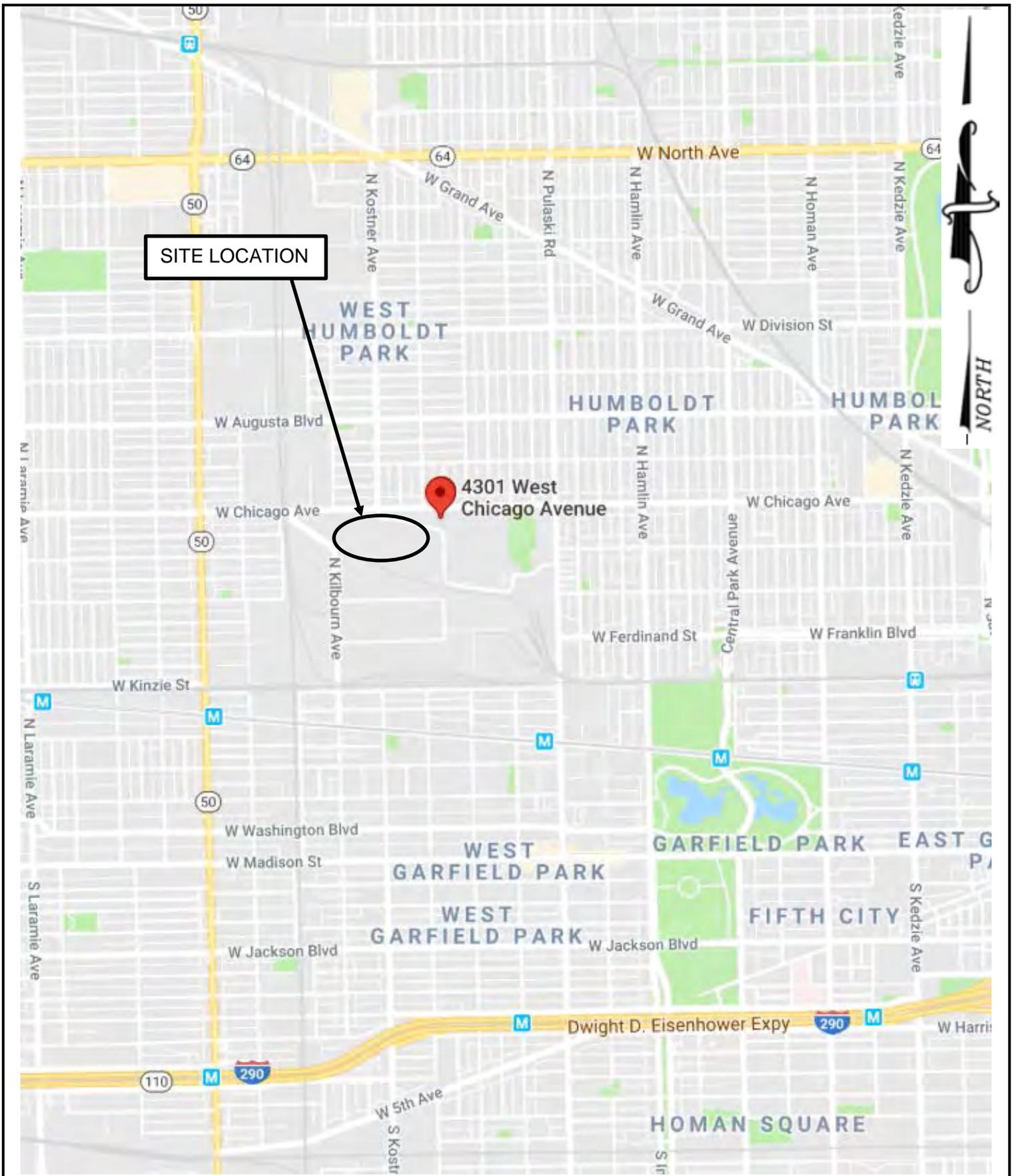
Standard "N" Penetration: Blows per foot of a 140 lb. hammer falling 30" on a 2" O.D. Split Spoon

### 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.

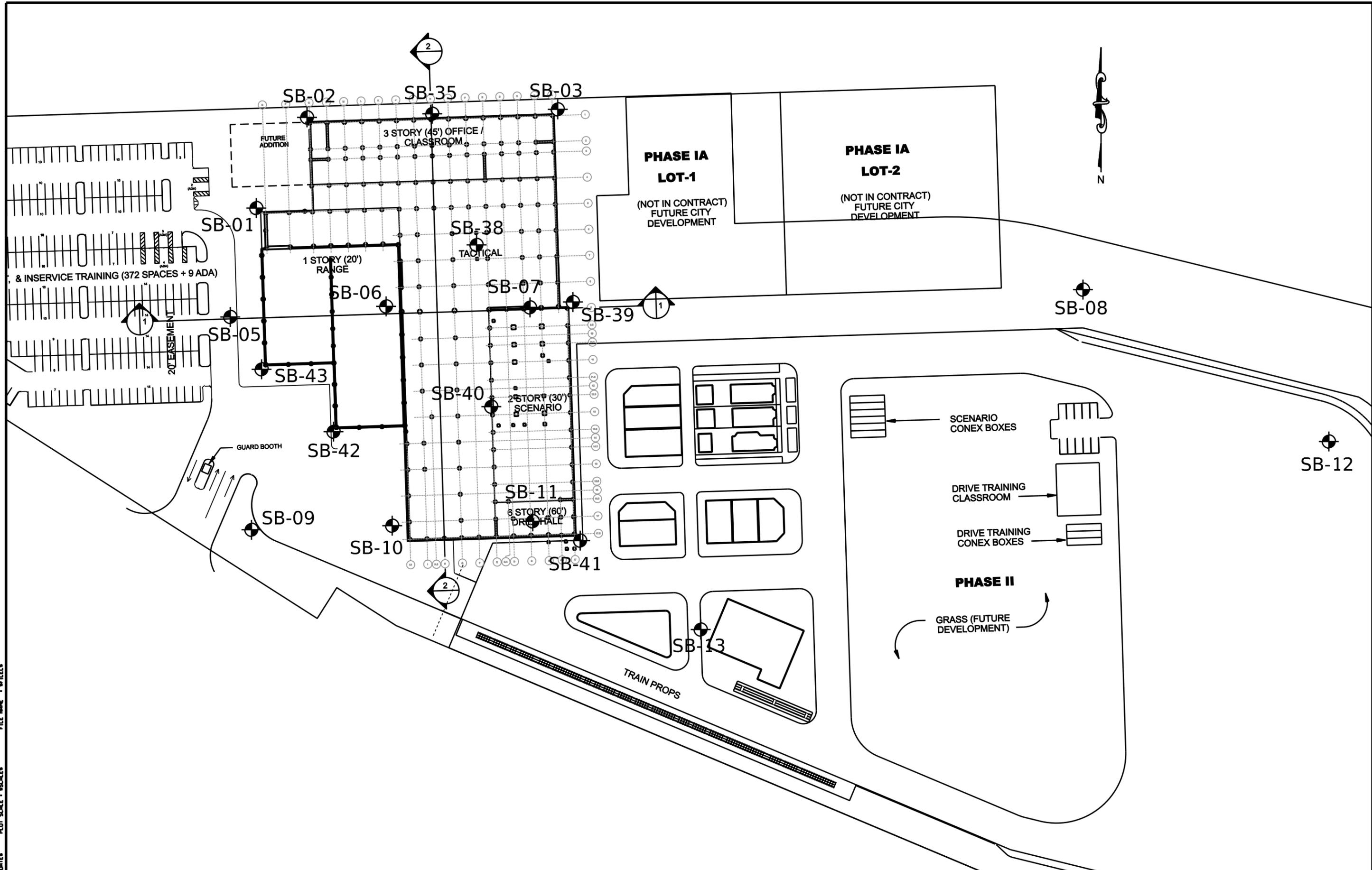
**APPENDIX B**  
**SITE LOCATION MAP**



<p>SITE LOCATION PLAN</p>	 <p><b>Geo Services, Inc.</b>          Geotechnical, Environmental &amp; Civil Engineering          805 Amherst Court, Suite 204          Naperville, Illinois 60565          (630) 355-2638</p>	<p>DRAWN BY</p>	<p>AT</p>
<p>Joint Public Safety Training Campus</p>		<p>APPROVED BY</p>	<p>AJP</p>
<p>4301 W. Chicago Avenue</p>		<p>DATE</p>	<p>November 11, 2020</p>
<p>Chicago, Illinois</p>		<p>GSI JOB No.</p>	<p>19059</p>
		<p>SCALE</p>	<p>NTS</p>

**APPENDIX C**

**SOIL BORING LOCATION DIAGRAM**



PLOT TIME: 1.51 MIN  
 PLOT DATE: 9/25/2020  
 FILE NAME: sfiles  
 PLOT SCALE: 1/8"=1'-0"  
 SOFTWARE: AutoCAD

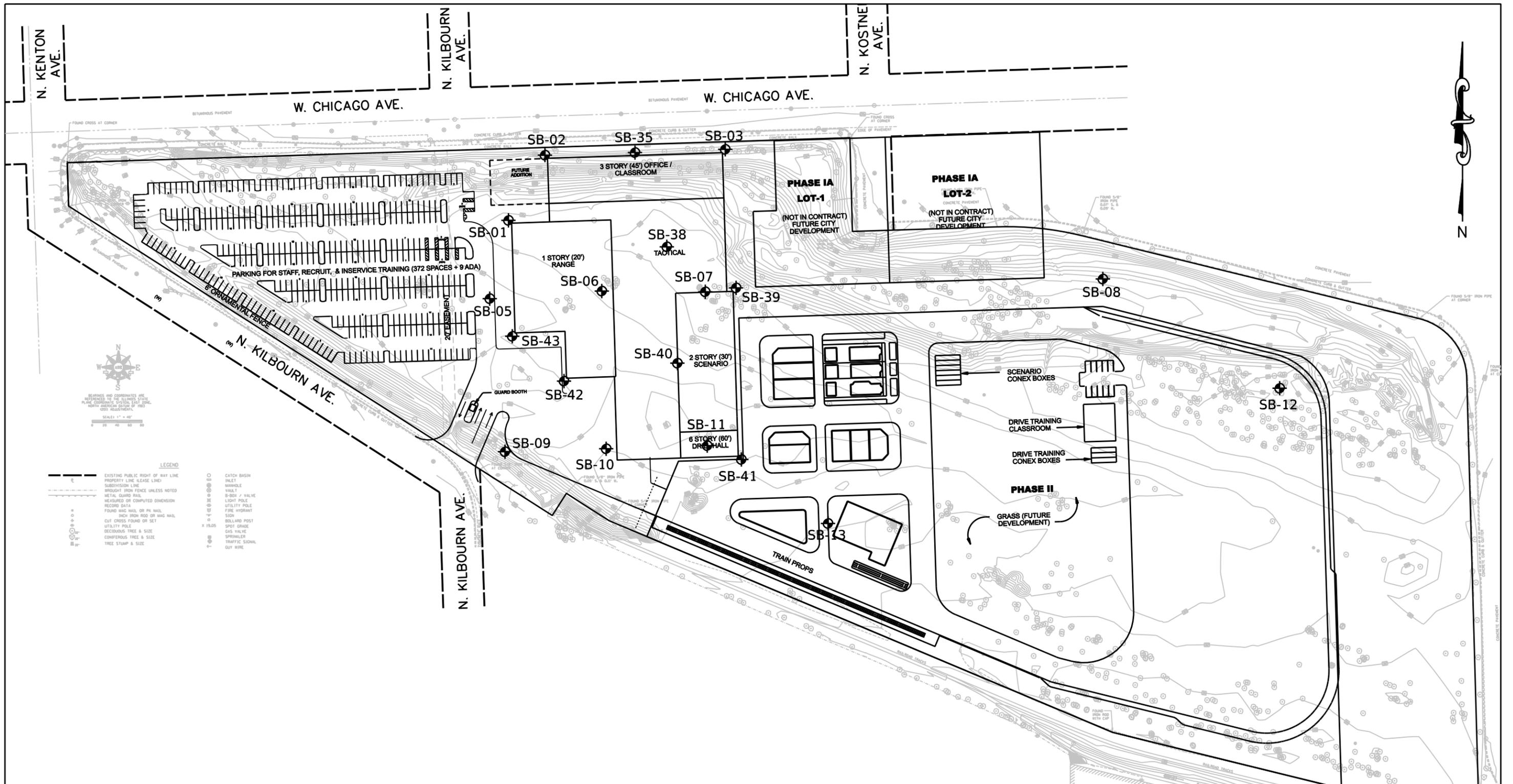
DRAWN BY . . . RWC . . . DATE . . 9/25/2020 .  
 CHECKED BY . . . AJP . . . DATE . . 9/25/2020 .



REVISIONS		DESCRIPTION
NO.	DATE	

CONTRACT NO.  
 JOINT PUBLIC SAFETY TRAINING CAMPUS  
 SOIL BORING PLAN

SHEET 1  
 DRAWING NO.  
 . . . 1 . . . OF . . . 1 . . .



**LEGEND**

---	EXISTING PUBLIC RIGHT OF WAY LINE	○	CATCH BASIN
- - -	PROPERTY LINE, LEASE LINE	○	INLET
- · - · -	SUBDIVISION LINE	○	MANHOLE
- · - · -	BROUGHT IRON FENCE UNLESS NOTED	○	VALVE
- · - · -	METAL GUARD RAIL	○	B-BOX / VALVE
- · - · -	MEASURED OR COMPUTED DIMENSION	○	LIGHT POLE
- · - · -	RECORD DATA	○	UTILITY POLE
- · - · -	FOUND IRON NAIL OR PE NAIL	○	FIRE HYDRANT
- · - · -	FOUND IRON ROD OR WAG NAIL	○	SIGN
- · - · -	CUT CROSS FOUND OR SET	○	BOLLARD POST
- · - · -	1" HIGH IRON ROD OR WAG NAIL	○	GAS VALVE
- · - · -	UTILITY POLE	○	SPOT GRADE
- · - · -	DECIDUOUS TREE & SIZE	○	CONCRETE CURB & GUTTER
- · - · -	CONIFEROUS TREE & SIZE	○	TRAFFIC SIGNAL
- · - · -	TREE STUMP & SIZE	○	CUT WIRE

SOIL BORING SB-XX

**Geo Services, Inc.**  
 Geotechnical, Environmental & Civil Engineering  
 805 Amherst Court, Suite 204  
 Naperville, Illinois 60565  
 (630) 355-2838

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

**GEOTECHNICAL INVESTIGATION  
 FOR THE PROPOSED SITE DEVELOPMENT  
 JOINT PUBLIC SAFETY TRAINING CAMPUS  
 4301 W. CHICAGO AVENUE,  
 CHICAGO, ILLINOIS**

**SOIL BORING LOCATION DIAGRAM**

SIZE B	REV. 1	GSI Job No. 19059	DRAWN BY RWC	APPROVED BY AJP
SCALE: 1"=150'		DATE: 8/19/2020	SHEET: 1 OF 1	

## **APPENDIX D**

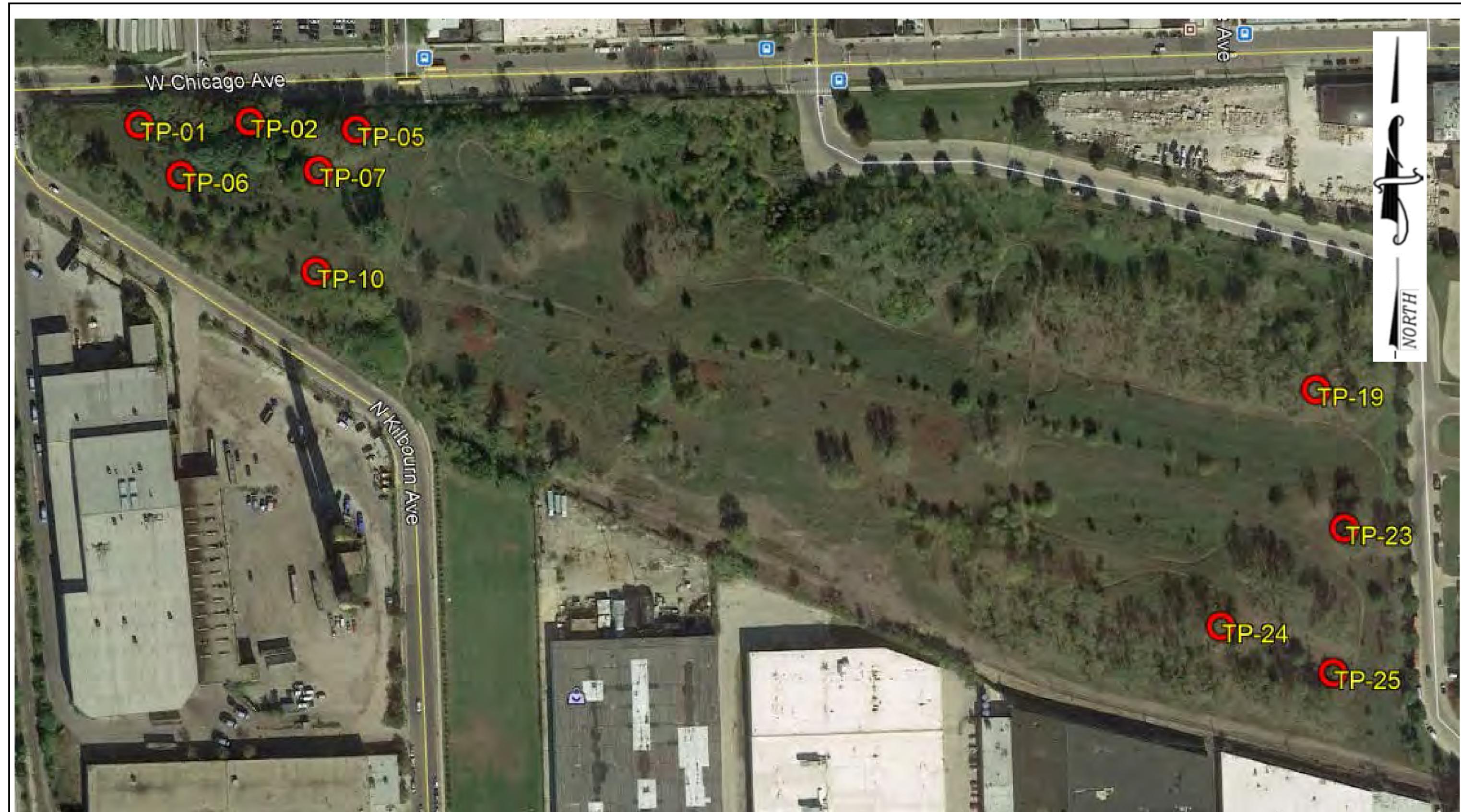
### **ENVIRONMENTAL TEST PIT LOCATION**



<p>TEST PIT LOCATION MAP</p> <p>Joint Public Safety Training Campus</p> <p>4301 W. Chicago Avenue</p> <p>Chicago, Illinois</p>
--

  
**Geo Services, Inc.**  
 Geotechnical, Environmental & Civil Engineering  
 805 Amherst Court, Suite 204  
 Naperville, Illinois 60565  
 (630) 355-2838

DRAWN BY	DT
APPROVED BY	AJP
DATE	July 11, 2019
GSI JOB No.	19059
SCALE	NTS



ENVIRONMENTAL TEST PIT LOCATION MAP

Joint Public Safety Training Campus  
 4301 W. Chicago Avenue  
 Chicago, Illinois

**Geo Services, Inc.**  
 Geotechnical, Environmental & Civil Engineering  
 805 Amherst Court, Suite 204  
 Naperville, Illinois 60565  
 (630) 355-2838

DRAWN BY	DT
APPROVED BY	AJP
DATE	July 11, 2019
GSI JOB No.	19059
SCALE	NTS

**APPENDIX E**  
**SOIL BORING LOGS**



# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-01

Northing: 1904774.3

Easting: 1146314.7

Ground Surface Elev. +35.7 CCD

D E P T H	B L O W S	U C S Qu	M O I S T	Surface Water Elev. <u>n/a</u>	D E P T H	B L O W S	U C S Qu	M O I S T	Stream Bed Elev. <u>n/a</u>
				Groundwater Elevation:					
				First Encounter <u>-9.5'</u> ▼					
				Upon Completion <u>n/a</u> ▼					
				After _____ Hrs. _____ ▼					
(ft)	(/6")	(tsf)	(%)		(ft)	(/6")	(tsf)	(%)	

8.0" SANDY TOPSOIL-black	—	—	—		—	—	—	
		AS	12	SILTY CLAY with Sand-gray-very stiff (CL)				
		10						
		13						
POORLY GRADED SAND with Gravel-brown-medium dense (GP) Fill		14	2					
		6		SILT with Sand-gray-medium dense (ML)		14		
		8				17		
		-5	10	3		-25	29	18
		4						
		4						
		6	3					
POORLY GRADED SAND-brown-loose (SP) Fill		3				13		<b>119</b>
		3				17		
		-10	3	21	SILTY CLAY with Sand-gray-very stiff (CL)	-30	25	3.8B 13
		3						
		4						
SILTY CLAY-brown & gray-stiff (CL)		5	1.3B	25				
		3				17		
		4				18		
		-15	4	1.1B	29	-35	22	4.5P 14
		3						
		6				22		
		6				29		
SILTY CLAY with Sand-gray-very stiff (CL)		-20	8	2.5P	15	-40	41	4.5P 10

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST=Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR-No Recovery NP-Nonplastic



# STRUCTURE FOUNDATION BORING LOG

PAGE 2 of 2  
 DATE 8/12/2020  
 LOGGED BY RT  
 GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-01

Northing: 1904774.3

Easting: 1146314.7

Ground Surface Elev. +35.7 CCD

D E P T H	B L O W S	U C S  Qu	M O I S T	Surface Water Elev. <u>n/a</u>	D E P T H	B L O W S	U C S  Qu	M O I S T	Stream Bed Elev. <u>n/a</u>	D E P T H	B L O W S	U C S  Qu	M O I S T
				Groundwater Elevation:					First Encounter <u>-9.5'</u> ▼				
				Upon Completion <u>n/a</u> ▼					After _____ Hrs. _____ ▼				
(ft)	(/6")	(tsf)	(%)		(ft)	(/6")	(tsf)	(%)		(ft)	(/6")	(tsf)	(%)

SILTY CLAY with Sand-gray-very stiff (CL)													
---	--	--	--	--	--	--	--	--	--	--	--	--	--

SANDY SILT with Gravel-gray-very dense (SM)													
				21									
				50/5"									
				-45			14			-65			

				50/4"									
				-50			16			-70			

End Of Boring @ -50.0'													
Hollow Stem Augers To -10.0'													
Rotary Drilling To Completion													
10.0' Of 4.0"Ø Casing Used													
CME Automatic Hammer													

				-55						-75			

				-60						-80			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST=Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR-No Recovery NP-Nonplastic























# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-08

Northing: 1904680.5

Easting: 1147267.5

Ground Surface Elev. +40.2 CCD

DEPTH (ft)	BLOW (/6")	UCS (tsf)	MOIST (%)	Surface Water Elev.	DEPTH (ft)	BLOW (/6")	UCS (tsf)	MOIST (%)
				Stream Bed Elev.				
				<u>n/a</u>				
				<u>n/a</u>				
				Groundwater Elevation:				
				First Encounter <u>Dry to -10.0'</u> ▼				
				Upon Completion <u>n/a</u> ▼				
				After _____ Hrs. _____ ▼				

TOPSOIL—black	—	AS	38	SILTY CLAY—dark brown & gray— very stiff (CL)	—	5	19
SILTY CLAY with Sand, Asphalt & Stone—dark brown, gray & black— stiff (Fill)	—	5			—	5	
	—	5	1.0P 14		—	5	
LEAN CLAY with Sand—brown & gray— very stiff (CL)	—	6		LEAN CLAY with Sand—gray— stiff to hard (CL)	—	6	
	—	7	3.0P 17		—	7	1.5P 19
	—	2			—	8	<i>114</i>
	—	3	2.0P 22		—	10	
	—	3			—	17	2.6B 17
	—10	3	2.0P 24		—30	17	2.6B 17
POORLY GRADED SAND—brown— medium dense (SP)	—	5			—	8	
	—	8			—	11	
	—15	9	19		—35	19	2.0P 15
SILTY CLAY—dark brown & gray— very stiff (CL)	—	2			—	10	<i>122</i>
	—	3			—	18	
	—20	4	2.0P 25		—40	21	2.6B 14

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer) ST—Shelby Tube Sample VS—Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR—No Recovery NP—Nonplastic





# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-09

Northing: 1904404.2

Easting: 1446309.1

Ground Surface Elev. +41.5 CCD

D E P T H	B L O W S	U C S  Qu	M O I S T	Surface Water Elev. <u>n/a</u>	D E P T H	B L O W S	U C S  Qu	M O I S T
				Stream Bed Elev. <u>n/a</u>				
				Groundwater Elevation:				
				First Encounter <u>Dry to -10.0'</u> ▼				
				Upon Completion <u>n/a</u> ▼				
				After _____ Hrs. _____ ▼				
(ft)	(/6")	(tsf)	(%)		(ft)	(/6")	(tsf)	(%)

TOPSOIL—black									
	AS		24						
	8								
	9								
	11		7						
POORLY GRADED SAND with Gravel— brown—loose to medium dense (GP) Fill				LEAN CLAY with Sand—gray— very stiff to hard (CL)					
	2					17			
	3					17			
	-5	4	4			-25	19	4.5+P	14
	3								
	3		9						
	5								
	5					30			121
	6					32			
SILTY CLAY—dark gray to black— stiff (CL)	-10	6	1.0P		26	-30	35	3.9B	12
SILTY CLAY to CLAYEY SILT—gray— hard (CL/ML)				CLAYEY SILT—gray—very dense (ML)					
	7					41			
	15					50/3"			
	-15	18	4.5+P	17	-35			15	
LEAN CLAY with Sand—gray— very stiff to hard (CL)									
	7					30			
	17					32			
	-20	20	3.0P	17	-40	32		11	

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer) ST—Shelby Tube Sample VS—Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR—No Recovery NP—Nonplastic





# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-10

Northing: 1904409.0

Easting: 1146471.3

Ground Surface Elev. +35.1 CCD

	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)	Surface Water Elev. <u>n/a</u>	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)
					Stream Bed Elev. <u>n/a</u>				
TOPSOIL—black				29					
POORLY GRADED SAND & GRAVEL— brown—very loose to medium dense (GP) Fill		AS			SILT—gray—medium dense (ML)				
		10							
		8							
		6		7					
		6				LEAN CLAY with Sand—gray— hard (CL)		16	
		5					24		
		-5	5	5			-25	40	4.5+P 11
		8							
		9							
		10		4					
SILTY CLAY—brown & gray—stiff (CL)		3					13		
		2					20		
		-10	2	10			-30	23	4.5+P 13
SILT—gray—medium dense (ML)					SILT—gray—very dense (ML)				
		3		103			35		
		4					50/9"		
	-15	4	1.6B	24		-35		18	
SILT—gray—medium dense (ML)					SILTY SAND—gray—very dense (SM)				
		8					36		
		10					41		
		-20	12		14		-40	48	14

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer) ST—Shelby Tube Sample VS—Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
NR—No Recovery NP—Nonplastic





# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-11

Northing: 1904413.9

Easting: 1146633.3

Ground Surface Elev. +35.7 CCD

D E P T H	B L O W S	U C S Qu	M O I S T	Surface Water Elev. <u>n/a</u>	D E P T H	B L O W S	U C S Qu	M O I S T	Stream Bed Elev. <u>n/a</u>
				Groundwater Elevation:					
				First Encounter <u>Dry to -10.0'</u> ▼					
				Upon Completion <u>n/a</u> ▼					
				After _____ Hrs. _____ ▼					
(ft)	(/6")	(tsf)	(%)		(ft)	(/6")	(tsf)	(%)	

TOPSOIL—black	—	AS	28	SILTY SAND—dark gray—medium dense (SM)	—	—	—	—
	7							
	7							
POORLY GRADED SAND & GRAVEL—brown—medium dense (GP) Apparent Fill	7		5					
	5			CLAYEY SILT—gray—dense (ML)				
	5				13			<b>118</b>
	-5	8	5		16			
becoming dark brown @ -5.5'					-25	24	1.8B	15
	4							
	5							
	6		8					
	4			LEAN CLAY with Sand—gray—hard (CL)				
	6				15			
	-10	7	12		17			
					-30	22	4.5+P	14
SILTY CLAY—brown & gray—very stiff (CL)								
	3			CLAYEY SILT—gray—very dense (ML)				
	5				49			
	-15	6	2.5P	22	50/1"			
					-35		4.5+P	17
SILTY SAND—dark gray—medium dense (SM)				SILT—gray—very dense (ML)				
	5				38			
	11				41			
	-20	7	14		-40	50/1"		21

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer) ST—Shelby Tube Sample VS—Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR—No Recovery NP—Nonplastic





# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-12

Northing: 1904505.8

Easting: 1147550.9

Ground Surface Elev. +31.0 CCD

D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)	Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>-5.5'</u> ▼ Upon Completion <u>n/a</u> ▼ After _____ Hrs. _____ ▼	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)
-----------------------------------	------------------------------------	--------------------------------	----------------------------------	---	-----------------------------------	------------------------------------	--------------------------------	----------------------------------

CLAYEY SAND & GRAVEL—dark brown (Fill)								
	AS		18	SILT—gray—dense (ML)				
CRUSHED ASPHALT & STONE—black—medium dense Fuel odor noted	9							
	8							
	7		6					
CLAYEY SAND & GRAVEL—dark brown & gray—loose to medium dense (GC) Fill	8			LEAN CLAY with Sand—gray—very stiff to hard (CL)	11			
	9				21			
	-5	6	11		-25	30	4.5+P	16
	6							
	5							
	3		11					
SILTY CLAY—dark brown & gray—stiff (CL)	2				15			
	3				15			
	-10	5	2.0P	24	-30	20		16
LEAN CLAY with Sand—brown & gray—very stiff (CL)	5				15			
	7				17			
	-15	9	2.5P	21	-35	29		13
SILT—gray—dense (ML)	16				10			122
	16				14			
	-20	21		14	-40	14	2.8B	14

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer) ST—Shelby Tube Sample VS—Vane Shear Test  
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
NR—No Recovery NP—Nonplastic











# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-38

Northing: 1904731.9

Easting: 1146568.6

Ground Surface Elev. +35.2 CCD

	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)	Surface Water Elev. <u>n/a</u> Stream Bed Elev. <u>n/a</u> Groundwater Elevation: First Encounter <u>-9.5'</u> ▼ Upon Completion <u>n/a</u> ▼ After _____ Hrs. _____ ▼	D E P T H (ft)	B L O W S (/6")	U C S Qu (tsf)	M O I S T (%)
SANDY TOPSOIL—black		AS		10					
		13							
		11							
		10		4					
POORLY GRADE SAND & GRAVEL— brown—medium dense (GP) Fill		7					12		
		9					15		
		-5	9	6		-25	21		20
		3							
		5		4					
		5							
soom wood froem -8.5' to -10.0'		3					11		<b>117</b>
		7					17		
		-10	5	55		-30	29	3.8B	16
		4							
GRAVEL & STONE—gray— medium dense (Fill)		5							
		5		5					
		3		<b>102</b>			15		<b>117</b>
SILTY CLAY—brown & gray— very stiff (CL)		5					18		
		-15	7	3.1B	22	-35	27	4.4B	13
		11					38		
SILTY CLAY with Sand—gray— very stiff (CL)		13					50/5"		
		-20	17	3.0P	13	-40			10

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer) ST—Shelby Tube Sample VS—Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR—No Recovery NP—Nonplastic





# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-39

Northing: 1904666.3

Easting: 1146679.6

Ground Surface Elev. +34.7 CCD

DEPTH H (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)	Surface Water Elev.	DEPTH H (ft)	BLOW S (/6")	UCS Qu (tsf)	MOIST T (%)
				Stream Bed Elev.				
				<u>n/a</u>				
				<u>n/a</u>				
				Groundwater Elevation:				
				First Encounter <u>-7.5'</u>				
				Upon Completion <u>n/a</u>				
				After _____ Hrs.				
SANDY TOPSOIL with Cinders-black			15					
	AS			SILTY SAND & GRAVEL-gray-medium dense (GM)				
	3							
	7							
POORLY GRADE SAND-brown-medium dense (SP) Fill	9		4					
	3			SILTY CLAY with Sand-gray-very stiff (CL)		19		<b>125</b>
	4					39		
	-5	6	6			-25	50/5"	3.8B 11
POORLY GRADE SAND w/ Gravel-brown-medium dense (GP) Fill	3							
	4							
	7		12					
SILTY SAND, CINDERS & GRAVEL-black-medium dense (Fill)	9					17		<b>126</b>
	11					21		
	-10	16	15			-30	43	4.4B 12
SILTY CLAY-brown & gray-stiff (CL)	3		<b>104</b>					
	4							
	8	1.7B	23					
	3		<b>101</b>			17		
	4					20		
	-15	7	1.8B 25			-35	50/5"	4.5P 15
				CLAYEY SILT-gray-very dense (ML)				
SILTY SAND with Gravel-gray-medium dense (SM)	9					29		
	12					50/5"		
	-20	14	10			-40		11

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST=Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR-No Recovery NP-Nonplastic





# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-40

Northing: 1904545.9

Easting: 1146585.5

Ground Surface Elev. +36.9 CCD

	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)		D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)
TOPSOIL & STONE—black				2	CLAYEY GRAVEL with Sand—gray— loose to dense (GC)				
		AS							
		7							
POORLY GRADED SAND w/ Gravel— dark brown & gray—medium dense (GP) Fill		8		4					
		9							
becoming gray @ -3.0'									
		7					16		<b>118</b>
		9					19		
		-5	12	2	SILTY CLAY with Sand—gray— stiff to very stiff (CL)	-25	33	3.3B	14
		5							
		6		6					
		8							
		9					27		<b>122</b>
		9					39		
		-10	8	7		-30	50/1"	4.4B	12
SILTY SAND w/ Gravel—gray— medium dense (GM)		16							
		11							
		9		18					
		6					21		
		2					37		
CLAYEY GRAVEL with Sand—gray— loose to dense (GC)		-15	3	27		-35	50/4"	4.5P	12
		19			SILT—gray—very dense (ML)		39		
		21					50/4"		
		-20	17	9		-40			16

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer) ST—Shelby Tube Sample VS—Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR—No Recovery NP—Nonplastic





# STRUCTURE FOUNDATION BORING LOG

PAGE 1 of 2

DATE 8/10/2020

LOGGED BY RT

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-41

Northing: 1904391.796

Easting: 1146687.975

Ground Surface Elev. +34.8 CCD

DEPTH (ft)	BLOW (/6")	UCS (tsf)	MOIST (%)	Surface Water Elev.	DEPTH (ft)	BLOW (/6")	UCS (tsf)	MOIST (%)
				Stream Bed Elev.				
				<u>n/a</u>				
				<u>n/a</u>				
				First Encounter <u>-8.5'</u> ▼				
				Upon Completion <u>n/a</u> ▼				
				After _____ Hrs. _____ ▼				
12.0" TOPSOIL-black								
	AS		13	SILTY SAND & GRAVEL-gray-medium dense (GM)				
POORLY GRADED SAND-brown-medium dense (SP) Fill	4							
	5							
	6		1					
POORLY GRADED SAND & GRAVEL-gray-loose to medium dense (GP) Fill	4			SILTY CLAY with Sand-gray-very stiff (CL)		14		<i>117</i>
	7					12		
	-5	8	3			-25	17	3.2B 15
becoming brown @ -5.5'								
	4							
	6		3					
	6							
	3					12		<i>121</i>
	3		10			16		
	-10	4	2.5P			-30	50/4"	4.4B 13
SILTY CLAY-brown & gray-stiff to very stiff (CL)								
	3							
	4							
	5	2.5P	23					
becoming gray @ -13.0'				SILTY CLAY-gray-very stiff (CL-ML)				
	2					20		
	2					50/5"		
	-15	2	1.25P			-35	4.5P	17
SILTY SAND & GRAVEL-gray-medium dense (GM)				SILTY GRAVEL & FRACTURED ROCK-gray-very dense (GM)				
	5					50/4"		
	6							
	-20	7	15			-40		12

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST=Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR-No Recovery NP-Nonplastic



# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-41

Northing: 1904391.796

Easting: 1146687.975

Ground Surface Elev. +34.8 CCD

					Surface Water Elev.					
D E P T H	B L O W S	U C S	M O I S T	Qu			D E P T H	B L O W S	U C S	M O I S T
(ft)	(/6")	(tsf)	(%)				(ft)	(/6")	(tsf)	(%)
SILTY GRAVEL & FRACTURED ROCK— gray—very dense (GM)	50/3"				-45					
FRACTURED ROCK—gray— very dense (GM)	50/1"				-50					
End Of Boring @ -50.0' Hollow Stem Augers To -10.0' Rotary Drilling To Completion 10.0' Of 4.0"Ø Casing Used CME Automatic Hammer					-55					
					-60					

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer) ST—Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR—No Recovery NP—Nonplastic



# STRUCTURE FOUNDATION BORING LOG

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-42

Northing: 1904517.123

Easting: 1146403.689

Ground Surface Elev. +37.6 CCD

	D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)		D E P T H  (ft)	B L O W S  (/6")	U C S  Qu (tsf)	M O I S T  (%)
15.0" TOPSOIL-black		AS		16	SILT-gray-medium dense (ML)				
		7							
POORLY GRADED SAND & CINDERS-black-medium dense (Fill)		10		12					
		15							
		10			SILTY SAND & GRAVEL-dark gray-medium dense (GM)		5		
POORLY GRADED SAND & GRAVEL-brown-medium dense (GP) Fill		5		4			11		10
		-5					-25	15	
		5							
		7		3					
		8							
		3			LEAN CLAY with Sand-gray-very stiff (CL)		5		
		5					19		
		-10		12			-30	39	4.5P 23
SILTY CLAY-dark gray-stiff (CL)		3							
		4							
		5	1.3B	28					
		3					12		
CLAYEY SAND & GRAVEL-dark gray-loose (GC)		3		20			25		
		-15					-35	31	4.0P 14
		5			SILT-gray-very dense (ML)		41		
		7					50/3"		
		-20		17			-40		11

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST=Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR-No Recovery NP-Nonplastic







**APPENDIX F**  
**TEST PITS LOGS/RECORDS**



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/27/2019

LOGGED BY VH

GSJ JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Kevin

Client: AECOM Time Started: 9:55 am Capacity: 2 c.y.

Test Pit No.: TP-01 Time Completed: 10:25 AM Make: Caterpillar

Northing: 1904854.5 Ground Elev: XX Model: 308 E

Easting: 1145785.5 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	24.0" SANDY TOPSOIL—black		—	Moist
10	POORLY GRADED SAND—brown (SP) Fill		NP	P.I.D. Reading 2.0'–5.0' (2.4 ppm) Moist
15			NP	Moist P.I.D. Reading 5.0'–10.0' (2.1 ppm)
20	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			

Remarks: No Odors Encountered

Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/28/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Robert

Client: AECOM Time Started: 10:37 AM Capacity: 2 c.y.

Test Pit No.: **TP-02** Time Completed: 11:12 AM Make: Caterpillar

Northing: 1904887.7 Ground Elev: XX Model: 308 E

Easting: 1145995.1 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
0	20.0" SANDY TOPSOIL—black		—	
5	POORLY GRADED SAND—brown (SP) Fill		NP	Moist P.I.D. Reading 3.0'–5.0' (1.7 ppm @ 10:4AM)
10			NP	Moist P.I.D. Reading 5.0'–10.0' (3.3 ppm @ 10:58 AM)
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered

Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼



# TEST PIT FIELD RECORD

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DATE 6/27/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Kevin

Client: AECOM Time Started: 10:30 AM Capacity: 2 c.y.

Test Pit No.: **TP-03** Time Completed: 10:46 AM Make: Caterpillar

Northing: 1904834.6 Ground Elev: XX Model: 308 E

Easting: 1145786.8 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	24.0" SANDY TOPSOIL—black		—	
10	POORLY GRADED SAND—brown (SP) Fill		NP	P.I.D. Reading 2.0'–10.0' (1.9 ppm) Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)



# TEST PIT FIELD RECORD

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DATE 6/28/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Mostly Sunny, 90's Operator: Robert

Client: AECOM Time Started: 11:20 AM Capacity: 2 c.y.

Test Pit No.: TP-04 Time Completed: 11:40 AM Make: Caterpillar

Northing: 1904885.7 Ground Elev: XX Model: 308 E

Easting: 1145955.2 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
10.0"	10.0" TOPSOIL-black		-	
	SANDY TOPSOIL-black		-	P.I.D. Reading 10.0"-3.0' (1.6 ppm)
5	SILTY SAND with Gravel-black (SM) Fill		NP	P.I.D. Reading 3.0'-10.0' (1.1 ppm)
10				
15				
20	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			

Remarks: No Odors Encountered

Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼



# TEST PIT FIELD RECORD

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DATE 6/28/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Mostly Cloudy, 90's Operator: Robert

Client: AECOM Time Started: 9:45 AM Capacity: 2 c.y.

Test Pit No.: **TP-05** Time Completed: 10:30 AM Make: Caterpillar

Northing: 1904889.1 Ground Elev: XX Model: 308 E

Easting: 1146144.8 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
0	12.0" SANDY TOPSOIL—black		—	
5	SILTY SAND with Gravel—black (SM) Fill		NP	P.I.D. Reading 3.0'–5.0' (3.6 ppm @ 9:55 AM)
10			NP	P.I.D. Reading 5.0'–10.0' (3.1 ppm @ 10:12 AM)
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B–Bulge, S–Shear, P–Penetrometer NP–Nonplastic



# TEST PIT FIELD RECORD

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DATE 6/27/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Kevin

Client: AECOM Time Started: 9:22 AM Capacity: 2 c.y.

Test Pit No.: **TP-06** Time Completed: 9:45 AM Make: Caterpillar

Northing: 1904770.7 Ground Elev: XX Model: 308 E

Easting: 1145855.9 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
24.0	SANDY TOPSOIL with Gravel—black		—	Moist
5	POORLY GRADED SAND—brown (SP) Fill		NP	Moist P.I.D. Reading 2.0'–5.0' (1.7 ppm)
10			NP	Moist P.I.D. Reading 5.0'–10.0' (1.3 ppm)
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)

# TEST PIT FIELD RECORD

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Kevin

Client: AECOM Time Started: 8:20 AM Capacity: 2 c.y.

Test Pit No.: TP-07 Time Completed: 9:15 AM Make: Caterpillar

Northing: 1904779.4 Ground Elev: XX Model: 308 E

Easting: 1146080.8 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
	6.0" SANDY TOPSOIL—black		—	Moist
	CRUSHED STONE (Ballast)		NP	
5	POORLY GRADED SAND—brown (SP) Fill		NP	P.I.D. Reading 2.0'–5.0' (4.4 ppm)
10			NP	Moist P.I.D. Reading 5.0'–10.0' (1.3 ppm)
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level  
 \_\_\_\_\_ First Encounter: Dry ▼  
 \_\_\_\_\_ At Completion: Dry ▼  
 \_\_\_\_\_



# TEST PIT FIELD RECORD

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DATE 6/27/2019

LOGGED BY VH

GSJ JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Kevin

Client: AECOM Time Started: 2:20 PM Capacity: 2 c.y.

Test Pit No.: TP-08 Time Completed: 2:35 PM Make: Caterpillar

Northing: 1904799.8 Ground Elev: XX Model: 308 E

Easting: 1146380.4 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	17.0" SANDY TOPSOIL—black		NP	Moist
	POORLY GRADED SAND with Gravel—brown (SP) Fill		NP	Moist
10	POORLY GRADED SAND—brown (SP) Fill		NP	P.I.D. Reading 17.0"—10.0' (1.3 ppm) Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic



# TEST PIT FIELD RECORD

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DATE 6/28/2019

LOGGED BY VH

GSJ JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Robert

Client: AECOM Time Started: 8:05 AM Capacity: 2 c.y.

Test Pit No.: **TP-09** Time Completed: 8:47 AM Make: Caterpillar

Northing: 1904805.2 Ground Elev: XX Model: 308 E

Easting: 1146542.3 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	14.0" SANDY TOPSOIL—black		—	Moist
10	POORLY GRADED SAND—brown (SP) Fill		NP	Moist  P.I.D. Reading 14.0"—10.0' (3.3 ppm)
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)



# TEST PIT FIELD RECORD

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DATE 6/27/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Kevin

Client: AECOM Time Started: 7:35 AM Capacity: 2 c.y.

Test Pit No.: TP-10 Time Completed: 8:15 AM Make: Caterpillar

Northing: 1904614.9 Ground Elev: XX Model: 308 E

Easting: 1146076.9 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
0	18.0" SANDY TOPSOIL—black		—	Moist
5	POORLY GRADED SAND—brown (SP) Fill		NP	Moist P.I.D. Reading 3.0'–5.0' (9.5 ppm)
10			NP	Moist P.I.D. Reading 5.0'–10.0' (8.7 ppm)
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered

Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼



# TEST PIT FIELD RECORD

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DATE 6/27/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Kevin

Client: AECOM Time Started: 12:25 PM Capacity: 2 c.y.

Test Pit No.: TP-11 Time Completed: 12:40 PM Make: Caterpillar

Northing: 1904639.7 Ground Elev: XX Model: 308 E

Easting: 1146464.5 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	24.0" SANDY TOPSOIL—black		—	Moist
10	POORLY GRADED SAND—brown (SP) Fill		NP	Moist P.I.D. Reading 2.0'–5.0' (2.5 ppm)
15			NP	P.I.D. Reading 5.0'–10.0' (1.9 ppm) Moist
20	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			

Remarks: No Odors Encountered Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 1:56 PM Capacity: 2 c.y.

Test Pit No.: **TP-12** Time Completed: 2:10 PM Make: Caterpillar

Northing: 1904573.9 Ground Elev: XX Model: 308 E

Easting: 1146762.3 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	23.0" SANDY TOPSOIL—black		—	
10	POORLY GRADED SAND with Gravel—brown (SP) Fill		NP	Moist  P.I.D. Reading 23.0"—10.0' (0.7 ppm)
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS		NP	Wet
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: -9.0' ▼

At Completion: Cave In ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 8:05 AM Capacity: 2 c.y.

Test Pit No.: TP-13 Time Completed: 8:30 AM Make: Caterpillar

Northing: 1904591.1 Ground Elev: XX Model: 308 E

Easting: 1147402.0 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
	12.0" TOPSOIL—black		—	
	SILTY CLAY—black (CL)	30	—	
5	SILTY CLAY with Sand & Stone—dark brown (CL)	24	2.0P	
10	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
15				
20				

Remarks: No Odors Encountered

Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/27/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 90's Operator: Kevin

Client: AECOM Time Started: 11:23 AM Capacity: 2 c.y.

Test Pit No.: **TP-14** Time Completed: 11:40 AM Make: Caterpillar

Northing: 1904485.8 Ground Elev: XX Model: 308 E

Easting: 1146390.2 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	20.0" SANDY TOPSOIL—black			Moist
10	POORLY GRADED SAND with Gravel—brown (SP) Fill		NP	P.I.D. Reading 20.0"—10.0' (0.9 ppm)
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 2:14 PM Capacity: 2 c.y.

Test Pit No.: **TP-15** Time Completed: 2:30 PM Make: Caterpillar

Northing: 1904494.3 Ground Elev: XX Model: 308 E

Easting: 1146544.1 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	12.0" SANDY TOPSOIL—black		—	
10	POORLY GRADED SAND with Gravel—brown (SP) Fill		NP	P.I.D. Reading 23.0"—10.0' (0.7 ppm) Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 1:36 PM Capacity: 2 c.y.

Test Pit No.: TP-16 Time Completed: 1:50 PM Make: Caterpillar

Northing: 1904391.3 Ground Elev: XX Model: 308 E

Easting: 1146719.8 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
0	20.0" SANDY TOPSOIL—black		—	
5	POORLY GRADED SAND with Gravel—brown (SP) Fill		NP	P.I.D. Reading 16.0"—10.0' (1.9 ppm) Moist
10	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
15				
20				

Remarks: No Odors Encountered

Ground Water Level

First Encounter: Dry ▼

At Completion: Dry ▼



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 1:19 PM Capacity: 2 c.y.

Test Pit No.: TP-17 Time Completed: 1:32 PM Make: Caterpillar

Northing: 1904395.2 Ground Elev: XX Model: 308 E

Easting: 1146823.7 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	16.0" SANDY TOPSOIL—black		NP	
10	POORLY GRADED SAND with Gravel—brown (SP) Fill		NP	P.I.D. Reading 16.0"—10.0' (0.6 ppm) Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered

Ground Water Level

First Encounter: Dry ▼

At Completion: Cave In ▼



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 11:44 AM Capacity: 2 c.y.

Test Pit No.: TP-18 Time Completed: 12:01 PM Make: Caterpillar

Northing: 1904399.8 Ground Elev: XX Model: 308 E

Easting: 1146967.8 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	16.0" SANDY TOPSOIL—black		—	
10	POORLY GRADED SAND with Gravel—brown (SP) Fill		NP	P.I.D. Reading 15.0"—10.0' (0.8 ppm) Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level

First Encounter: -7.0' ▼

At Completion: -10.0' ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)

# TEST PIT FIELD RECORD

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 8:45 AM Capacity: 2 c.y.

Test Pit No.: TP-19 Time Completed: 9:12 AM Make: Caterpillar

Northing: 1904426.2 Ground Elev: XX Model: 308 E

Easting: 1147716.0 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	14.0" SANDY TOPSOIL—black		—	
	POORLY GRADED SAND with Gravel—brown (SP) Fill		NP	Moist P.I.D. Reading 3.0'–5.0' (4.8 ppm)
10	TOPSOIL—black	36	0.75P  1.5P	Moist P.I.D. Reading 5.0'–8.0' (6.9 ppm)  Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered Ground Water Level  
 \_\_\_\_\_ First Encounter: -5.0' ▼  
 \_\_\_\_\_ At Completion: Dry ▼  
 \_\_\_\_\_



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 1:04 PM Capacity: 2 c.y.

Test Pit No.: **TP-20** Time Completed: 1:17 PM Make: Caterpillar

Northing: 1904267.2 Ground Elev: XX Model: 308 E

Easting: 1146828.0 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	16.0" SANDY TOPSOIL—black		—	
10	POORLY GRADED SAND—brown (SP) Fill	▼	NP	P.I.D. Reading 16.0"—10.0' (0.5 ppm) Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS	▼		
20				

Remarks: No Odors Encountered

Ground Water Level

First Encounter: -6.0' ▼

At Completion: -10.0' ▼



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 11:23 AM Capacity: 2 c.y.

Test Pit No.: TP-21 Time Completed: 11:40 AM Make: Caterpillar

Northing: 1904251.8 Ground Elev: XX Model: 308 E

Easting: 1147613.7 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	15.0" SANDY TOPSOIL—black POORLY GRADED SAND—brown (SP) Fill		—	Moist
10		▼	NP	
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered

Ground Water Level

First Encounter: -8.0' ▼

At Completion: -10.0' ▼



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 12:05 PM Capacity: 2 c.y.

Test Pit No.: **TP-22** Time Completed: 12:20 PM Make: Caterpillar

Northing: 1904130.5 Ground Elev: XX Model: 308 E

Easting: 1146935.5 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	10.0" SANDY TOPSOIL—black POORLY GRADED SAND—brown (SP) Fill		—	
10		▼	NP	P.I.D. Reading 10.0"—10.0' (1.5 ppm) Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20		▽		

Remarks: No Odors Encountered Ground Water Level

First Encounter: -6.0' ▼

At Completion: -10.0' ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 9:24 AM Capacity: 2 c.y.

Test Pit No.: **TP-23** Time Completed: 9:50 AM Make: Caterpillar

Northing: 1904200.3 Ground Elev: XX Model: 308 E

Easting: 1147763.8 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
	20.0" SANDY TOPSOIL—black		—	
5	POORLY GRADED SAND—brown (SP) Fill		NP	Moist P.I.D. Reading 3.0'–5.0' (3.9 ppm)
10	POORLY GRADED SAND with Gravel—brown (SP) Fill	▼	NP	P.I.D. Reading 5.0'–10.0' (2.3 ppm) Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: No Odors Encountered

Ground Water Level

First Encounter: -6.0' ▼

At Completion: -10.0' ▼



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 10:34 AM Capacity: 2 c.y.

Test Pit No.: **TP-24** Time Completed: 11:20 AM Make: Caterpillar

Northing: 1904040.0 Ground Elev: XX Model: 308 E

Easting: 1147560.8 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
	16.0" SANDY TOPSOIL—black		—	
5	POORLY GRADED SAND & Gravel—brown (GP) Fill		NP	P.I.D. Reading 3.0'–5.0' (1.1 ppm)  Moist
10	TOPSOIL—black	49	<0.25P	P.I.D. Reading 8.0'–10.0' (5.1 ppm)  Moist
15	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			
20				

Remarks: Fuel Odors Encountered From -5.0' to -10.0' Ground Water Level

First Encounter: -6.0' ▼

At Completion: -10.0' ▼

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B—Bulge, S—Shear, P—Penetrometer NP—Nonplastic)



# TEST PIT FIELD RECORD

PAGE 1 of 1

DATE 6/26/2019

LOGGED BY VH

GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Weather: Sunny, 80's Operator: Kevin

Client: AECOM Time Started: 9:55 AM Capacity: 2 c.y.

Test Pit No.: **TP-25** Time Completed: 10:20 AM Make: Caterpillar

Northing: 1903964.1 Ground Elev: XX Model: 308 E

Easting: 1147745.8 Contractor: Taylor Excavating Reach: 10'-12'

DEPTH (ft)	SOIL DESCRIPTION	WATER CONTENT (%)	UCS $Q_u$ (tsf)	REMARKS
5	18.0" SANDY TOPSOIL—black		—	
10	POORLY GRADED SAND & Gravel—dark brown & black (GP) Fill  becoming brown & —5.0'	▼	NP	Moist P.I.D. Reading 3.0'–5.0' (4.4 ppm)
15		▼	NP	P.I.D. Reading 5.0'–10.0' (5.8 ppm) Moist
20	END OF TEST PIT AT -10.0' TEST PIT BACKFILLED WITH EXCAVATED SOILS			

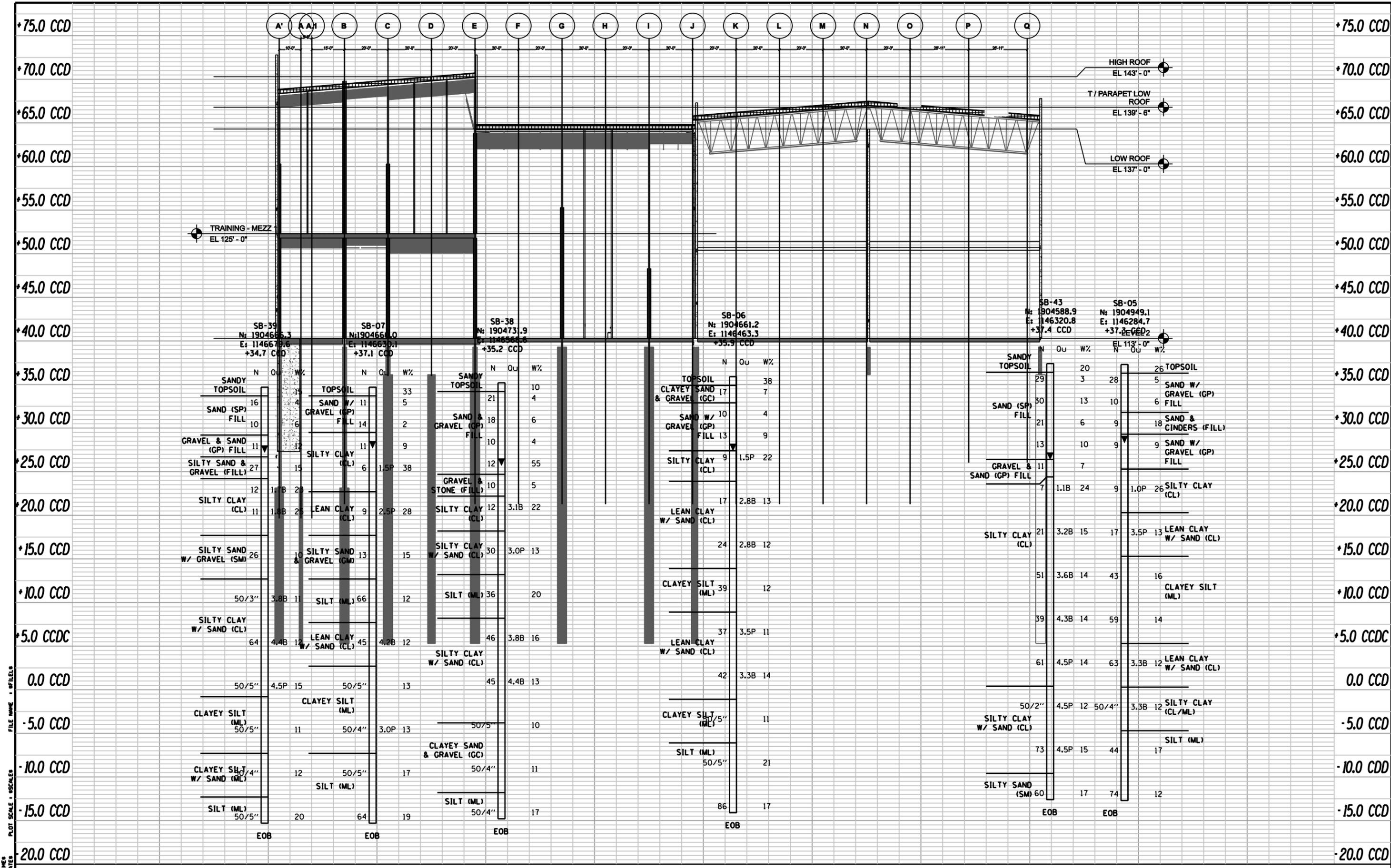
Remarks: No Odors Encountered

Ground Water Level

First Encounter: –5.0' ▼

At Completion: –10.0' ▼

**APPENDIX G**  
**SOIL BORING PROFILE**



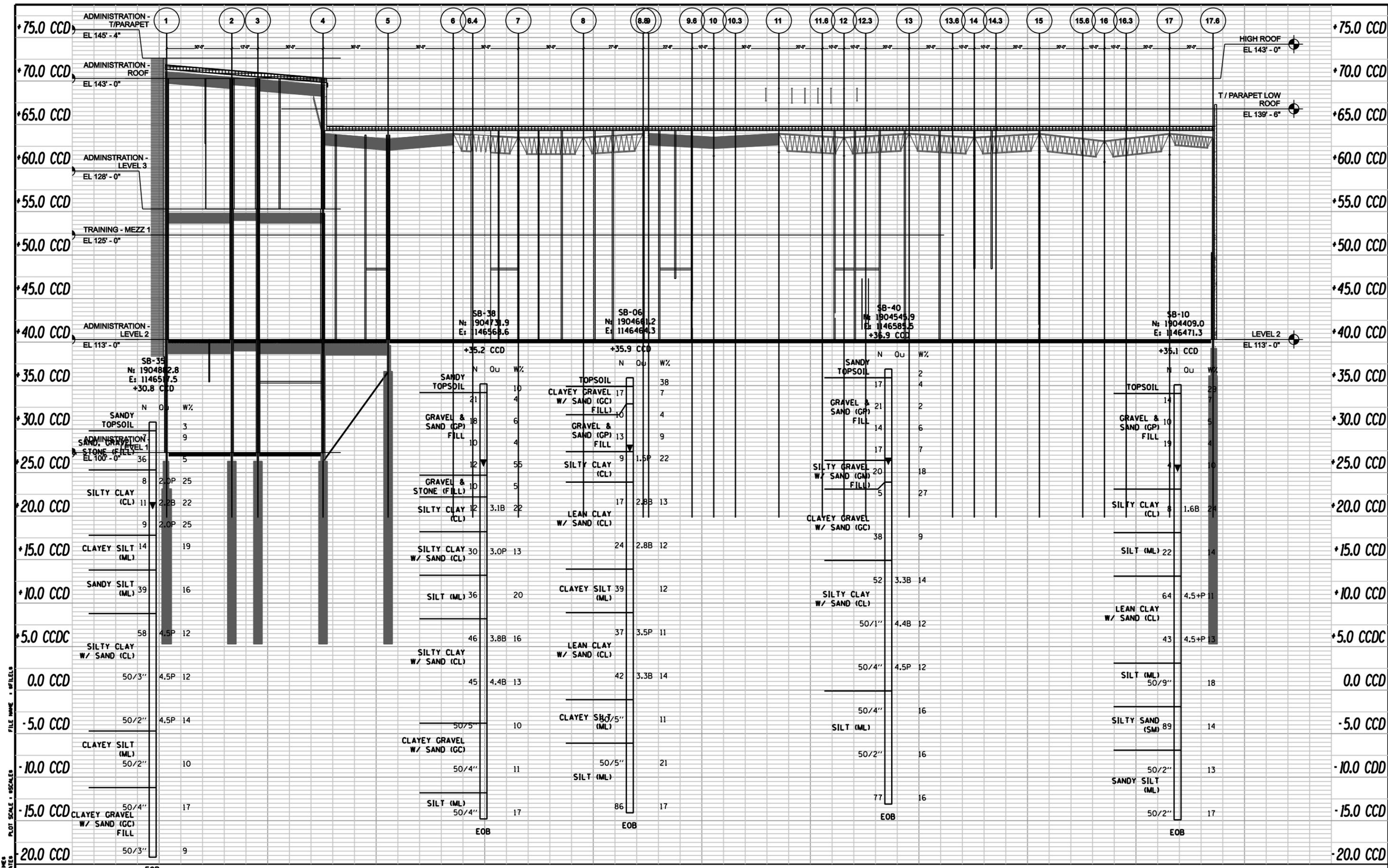
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 PLOT DATE : #DATE  
 PLOT SCALE : #SCALES  
 DRAWN BY ...RWC... DATE ..9/25/2020.  
 CHECKED BY ...AJR... DATE ..9/25/2020.



REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO.  
 JOINT PUBLIC SAFETY TRAINING CAMPUS  
 SECTION 1 SOIL BORING PROFILE

SHEET 2  
 DRAWING NO.  
 ...1... OF ...1...



FILE NAME: 19059\_section 2 prf-01.dgn  
 DRAWN BY: RWC DATE: 9/25/2020  
 CHECKED BY: AJR DATE: 9/25/2020



REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. JOINT PUBLIC SAFETY TRAINING CAMPUS SECTION 2 SOIL BORING PROFILE  
 SHEET 3 OF 1  
 DRAWING NO. 1 OF 1

**APPENDIX H**  
**LAB TEST RESULTS**

**Standard Method of Test for  
Determining the Liquid Limit,  
Plastic Limit and Plasticity Index of Soils**

**(ASTM D 4318)**

**Liquid Limit, Plastic Limit, and Plasticity Index of Soils**  
ASTM D 4318

Project Name Joint Public Safety Training Campus (JPSTC)

Job No 19059

Location 4301 W. Chicago Avenue, Chicago, IL

Date 8/21/20

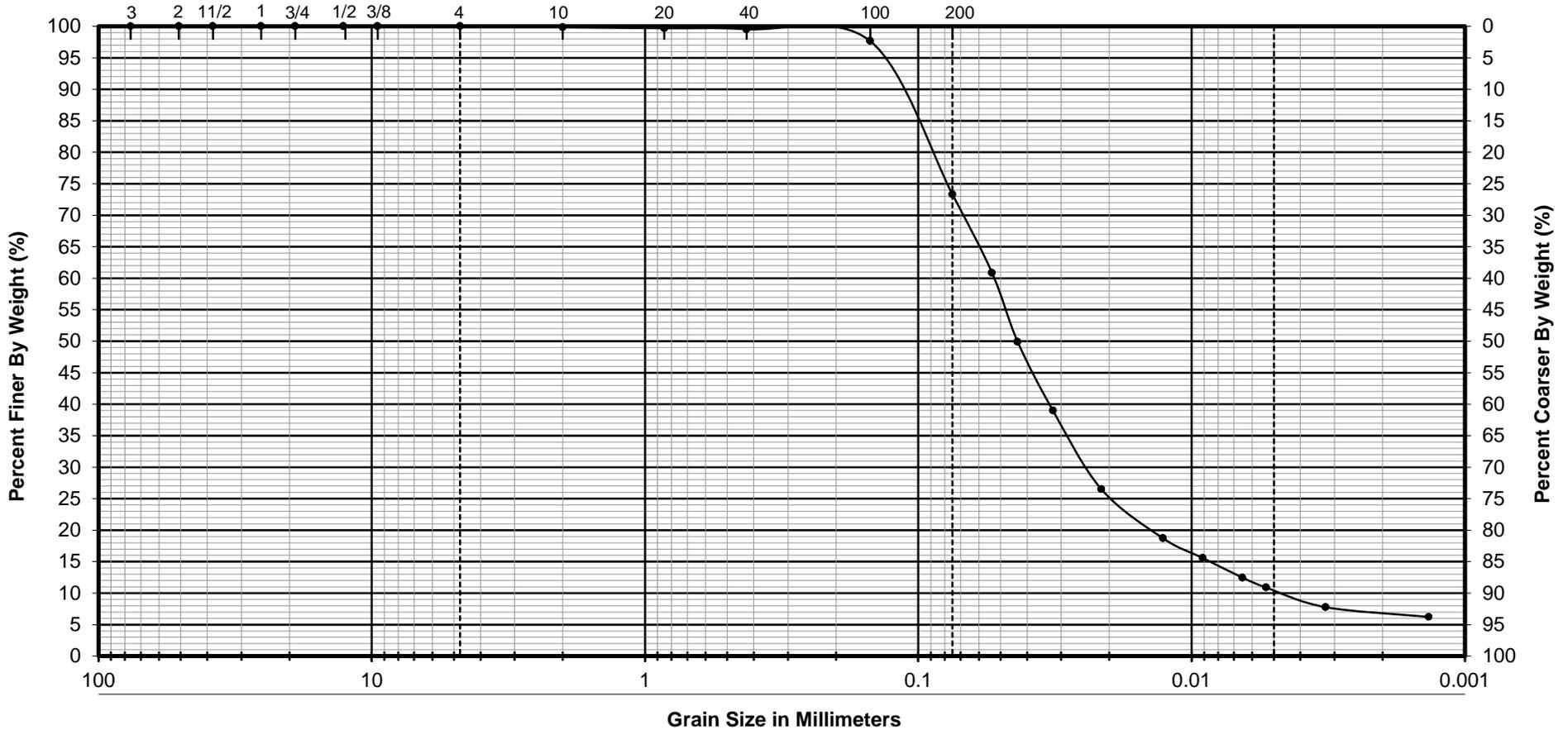
Client AECOM

Boring No.	SB-01	SB-02	SB-35	SB-41	SB-42			
Sample No.	9	10	11	11	10 & 11			
Depth	23.5'-25.0'	28.5'-30.0'	33.5'-35.0'	33.5'-35.0'	28.5'-35.0'			
LIQUID LIMIT (LL)	18	27	21	22	26			
PLASTIC LIMIT (PL)	17	16	16	17	15			
PLASTICITY INDEX (PI)	1	11	5	5	11			

Tested by VH/MT

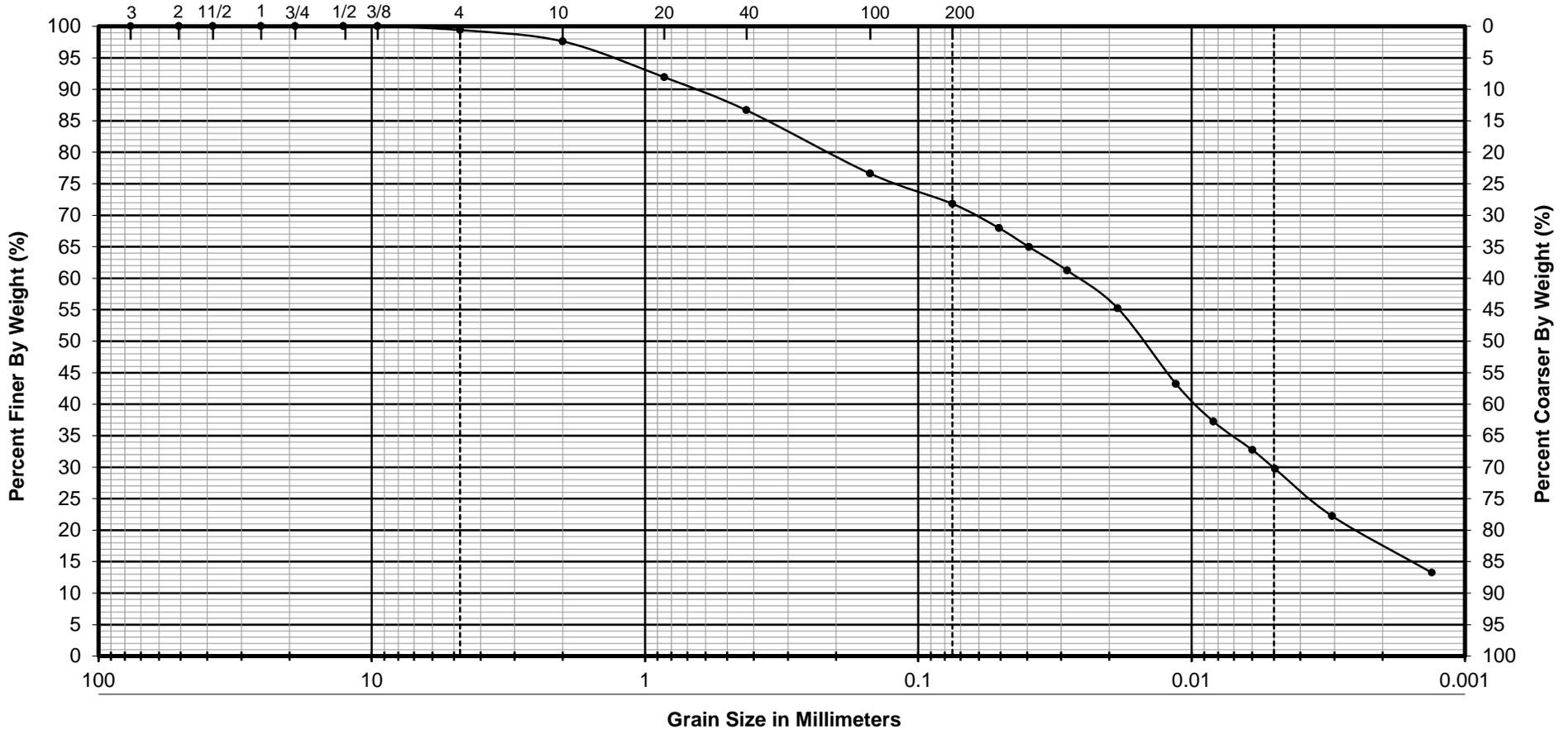
**Standard Test Method for Particle-Size  
Analysis of Soils**

**(ASTM D 422)**



GRAVEL	SAND			SILT	CLAY
	COARSE	MEDIUM	FINE		

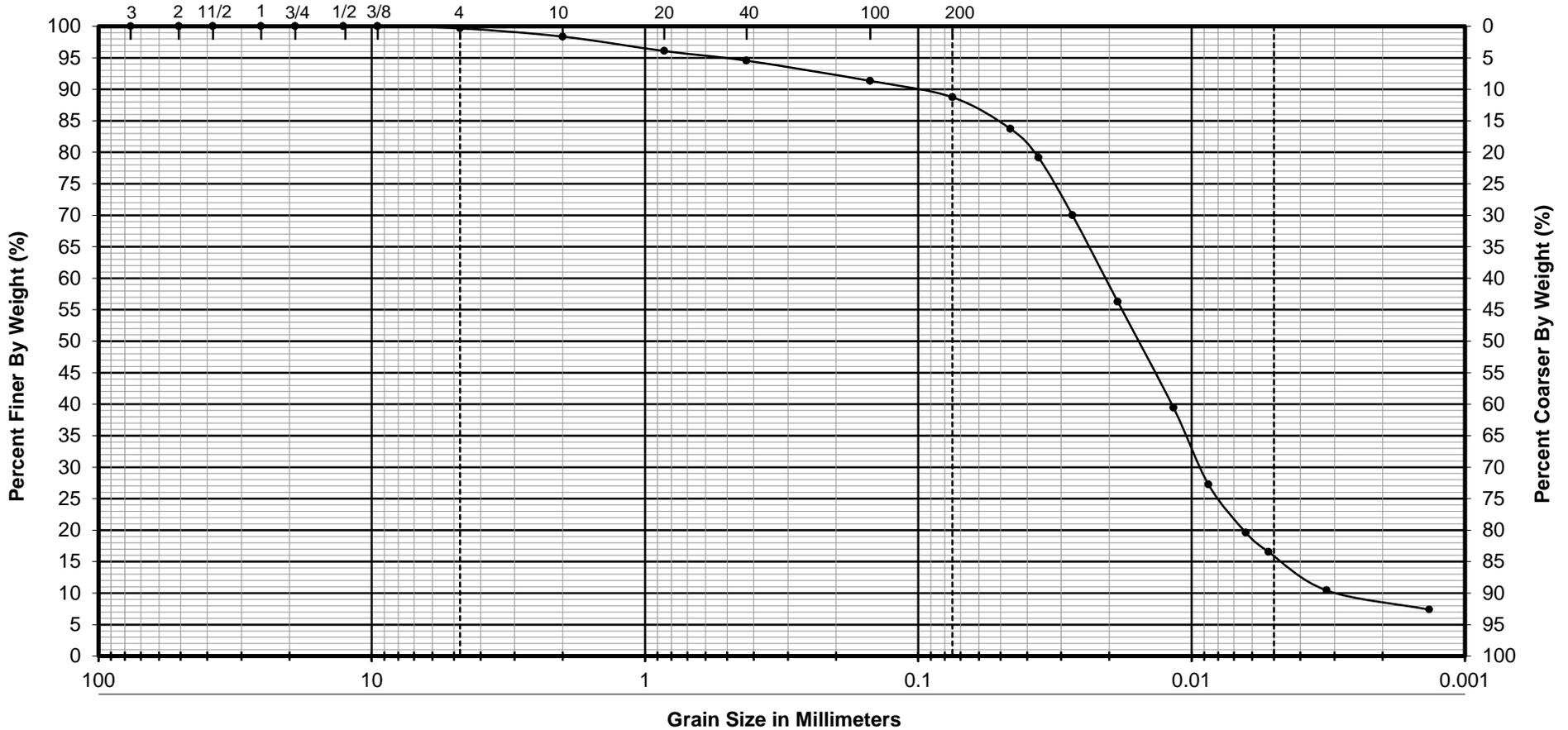
Boring No.	SB-01	CLASSIFICATION-ASTM D 2487	PARTICLE SIZE ANALYSIS-ASTM D 422
Sample No.	9	SILT with SAND (ML)  gray Cu 11.4 Cc 2.2 % Gravel 0.0 % Sand 26.7 % Silt 60.9 % Clay 12.5	Joint Public Safety Training Campus (JPSTC) 4301 W. Chicago Avenue Chicago, Illinois   <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering An MBE - DBE Firm 1235 E. Davis St., Arlington Heights, IL 60005 Phone 847-253-3845 • Fax 847-253-0482
Depth	23.5'-25.0'		
Liquid Limit	18		
Plastic Limit	17		
Plasticity Index	1		
Test By	MT		
Date	8/21/20		
Reviewed By	AT		
Job No	19059		



GRAVEL	SAND			SILT	CLAY
	COARSE	MEDIUM	FINE		

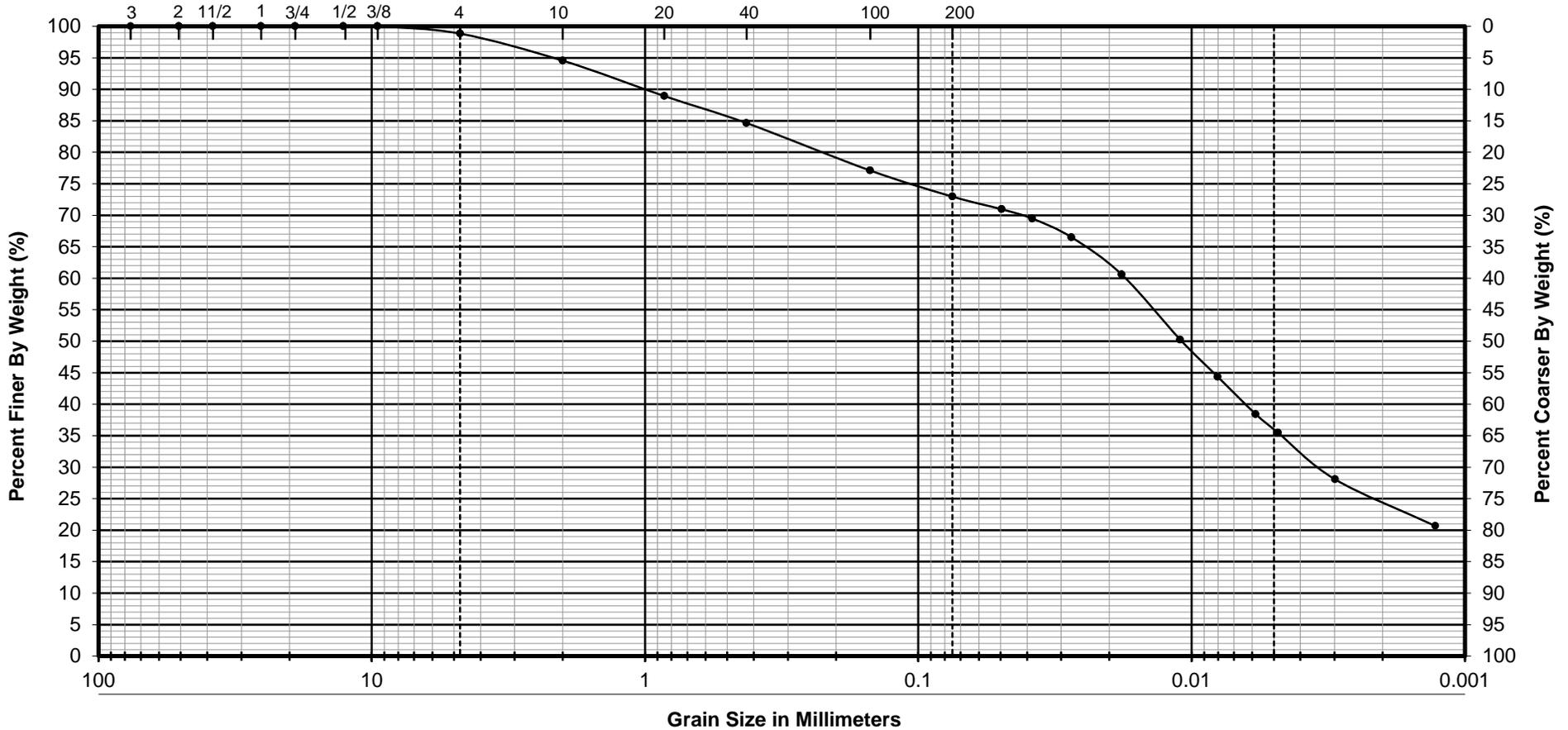
Boring No.	SB-02	CLASSIFICATION-ASTM D 2487		PARTICLE SIZE ANALYSIS-ASTM D 422	
Sample No.	10	<b>LEAN CLAY with SAND (CL)</b>  gray Cu            30.0 Cc            1.0 % Gravel    0.6 % Sand       27.6 % Silt        39.1 % Clay       32.7		Joint Public Safety Training Campus (JPSTC) 4301 W. Chicago Avenue Chicago, Illinois   <b>Geo Services, Inc.</b> <small>Geotechnical, Environmental and Civil Engineering An MBE - DBE Firm</small> 1235 E. Davis St., Arlington Heights, IL 60005 Phone 847-253-3845 • Fax 847-253-0482	
Depth	28.5'-30.0'				
Liquid Limit	27				
Plastic Limit	16				
Plasticity Index	11				
Test By	MT				
Date	8/21/20				
Reviewed By	AT				
Job No	19059				





GRAVEL	SAND			SILT	CLAY
	COARSE	MEDIUM	FINE		

Boring No.	SB-41	CLASSIFICATION-ASTM D 2487	PARTICLE SIZE ANALYSIS-ASTM D 422
Sample No.	11	<b>SILTY CLAY (CL-ML)</b>  gray Cu 7.0 Cc 143.3 % Gravel 0.3 % Sand 10.9 % Silt 69.2 % Clay 19.6	Joint Public Safety Training Campus (JPSTC) Maintenance Facility Chicago, Illinois   <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering An MBE - DBE Firm 1235 E. Davis St., Arlington Heights, IL 60005 Phone 847-253-3845 • Fax 847-253-0482
Depth	33.5'-35.0'		
Liquid Limit	22		
Plastic Limit	17		
Plasticity Index	5		
Test By	MT		
Date	8/21/20		
Reviewed By	AT		
Job No	19059		

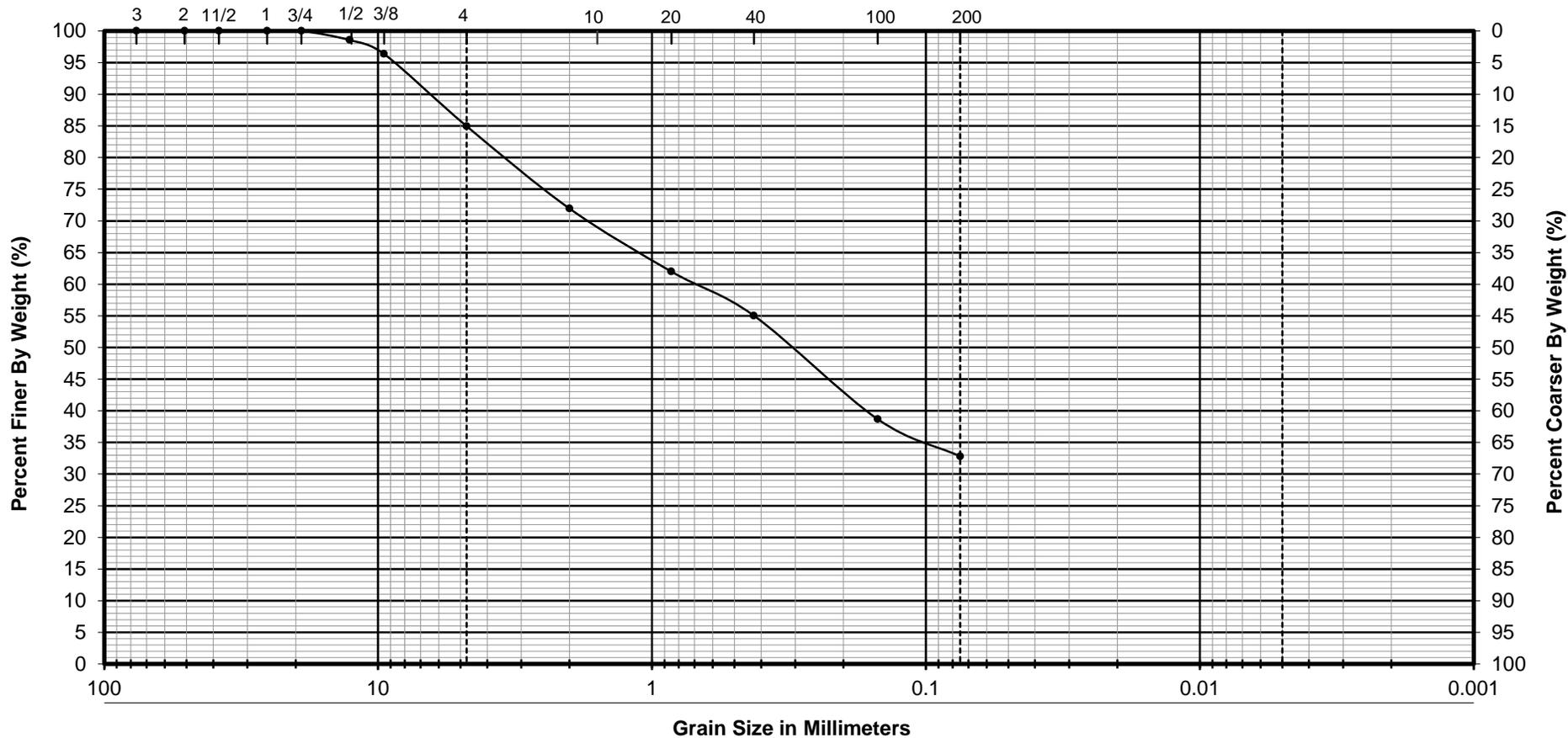


GRAVEL	SAND			SILT	CLAY
	COARSE	MEDIUM	FINE		

Boring No.	SB-42	CLASSIFICATION-ASTM D 2487	PARTICLE SIZE ANALYSIS-ASTM D 422
Sample No.	10 & 11	<b>LEAN CLAY with SAND (CL)</b>  gray Cu            31.6 Cc            1.2 % Gravel    1.2 % Sand       25.9 % Silt        34.5 % Clay       38.4	<b>Joint Public Safety Training Campus (JPSTC)</b> <b>Maintenance Facility</b> <b>Chicago, Illinois</b>  <b>Geo Services, Inc.</b> <small>Geotechnical, Environmental and Civil Engineering An MBE - DBE Firm</small> <b>1235 E. Davis St., Arlington Heights, IL 60005</b> <b>Phone 847-253-3845 • Fax 847-253-0482</b>
Depth	28.5'-35.0'		
Liquid Limit	26		
Plastic Limit	15		
Plasticity Index	11		
Test By	MT		
Date	8/21/20		
Reviewed By	AT		
Job No	19059		

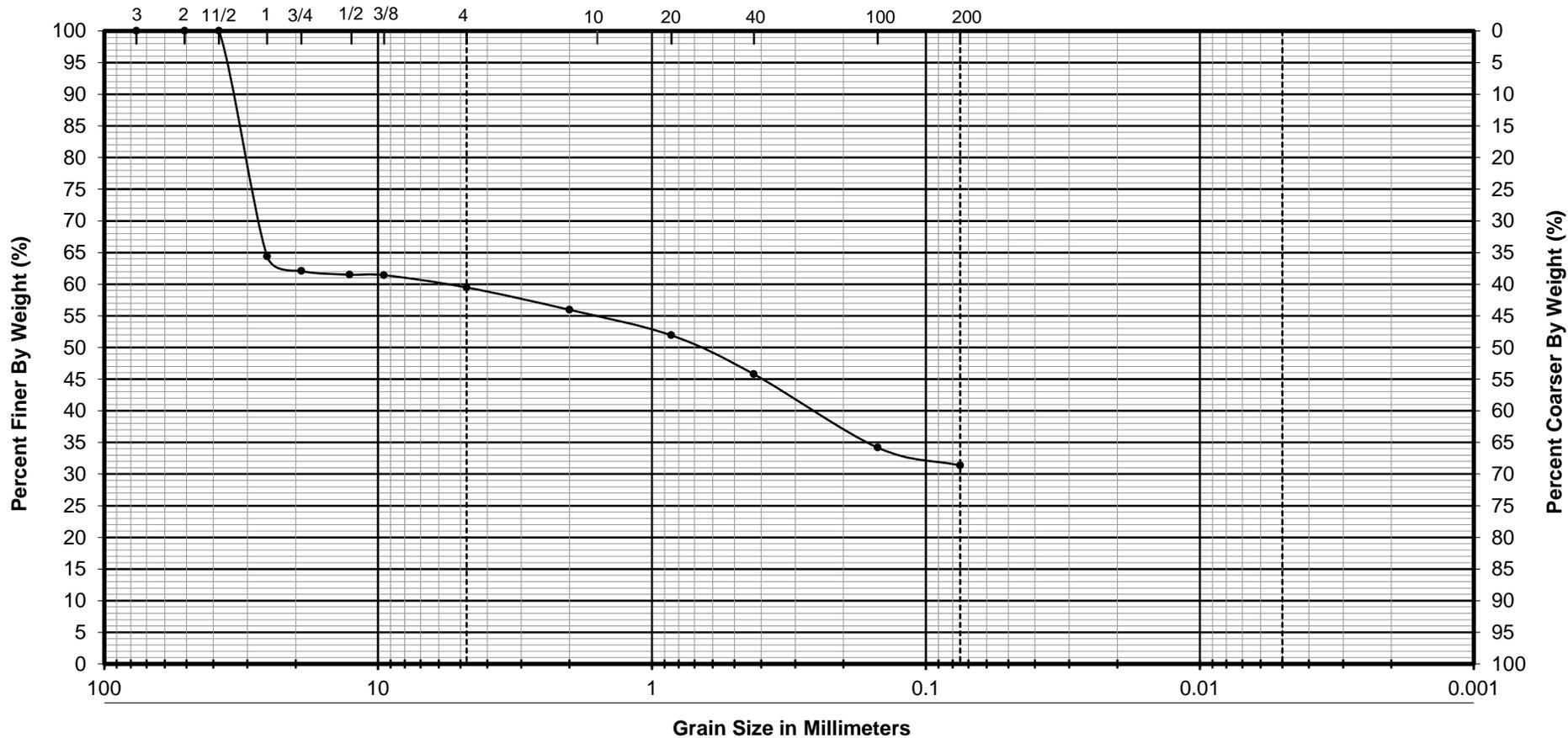
**Standard Test Methods for Particle-Size  
Distribution (Gradation) of Soils Using Sieve  
Analysis**

**(ASTM D 6913)**



GRAVEL	SAND			SILT	CLAY
	COARSE	MEDIUM	FINE		

Boring No.	SB-39	CLASSIFICATION-ASTM D 2487		GRAIN SIZE ANALYSIS-ASTM C117/C136	
Sample No.	8	SILTY SAND with GRAVEL (SM)		Joint Public Safety Training Campus (JPSTC)	
Depth	18.5'-20.0'	gray		4301 W. Chicago Avenue	
Test By	MT	Cu	700	Chicago, Illinois	
Date	8/21/20	Cc	0	 <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering An MBE - DBE Firm	
Reviewed By	AT	% Gravel	15.0		
Job No	19059	% Sand	52.2		
		% Silt/Clay	32.8	1235 E. Davis St., Arlington Heights, IL 60005	
				Phone 847-253-3845 • Fax 847-253-0482	



GRAVEL	SAND			SILT	CLAY
	COARSE	MEDIUM	FINE		

Boring No.	SB-40	CLASSIFICATION-ASTM D 2487		GRAIN SIZE ANALYSIS-ASTM C117/C136	
Sample No.	7 & 8	CLAYEY GRAVEL with SAND (GC)		Joint Public Safety Training Campus (JPSTC)	
Depth	13.5'-20.0'	gray		4301 W. Chicago Avenue	
Test By	MT	Cu	3000	Chicago, Illinois	
Date	8/21/20	Cc	0	 <b>Geo Services, Inc.</b> Geotechnical, Environmental and Civil Engineering An MBE - DBE Firm	
Reviewed By	AT	% Gravel	40.5		
Job No	19059	% Sand	28.1		
		% Silt/Clay	31.4	1235 E. Davis St., Arlington Heights, IL 60005	
				Phone 847-253-3845 • Fax 847-253-0482	

**Standard Test Methods for Moisture,  
Ash, and Organic Matter of Peat and  
Other Organic Soils  
(ASTM D 2974)**



1235 East Davis Street  
 Arlington Heights, IL 60005  
 Phone (847) 253-3845  
 Fax (847) 253-0482

**ORGANIC MATTER OF SOILS  
 ASTM D 2974**

**Project Name** Joint Public Safety Training Campus (JPSTC) **Date** 07/15/19  
**Location** 4301 W. Chicago Avenue, Chicago, IL **Job No** 19059  
**Boring No.** TP-24 **Sample No.** Jar Sample **Depth** 5.0'-10.0'  
**Sample Description** Topsoil-Black **Testing Furnace Temp °C.:** 440

<b>Moisture Content</b>	Wet Soil+Tare (g)	Dry Soil+Tare (g)	Tare Mass (g)	w (%)
Oven-Dry Method	105.36	87.77	53.2	50.9

<b>Ash Content</b>	Dry Soil+Tare (g)	Ash+Tare (g)	Tare Mass (g)	Ash content (%)
Loss on Ignition	87.77	85.05	53.2	92.1

**Organic Content (%) =** 7.90%

**Notes:** \_\_\_\_\_

**Test By** MT



1235 East Davis Street  
 Arlington Heights, IL 60005  
 Phone (847) 253-3845  
 Fax (847) 253-0482

**ORGANIC MATTER of SOILS  
 ASTM D 2974**

**Project Name** Joint Public Safety Training Campus (JPSTC) **Date** 07/15/19  
**Location** 4301 W. Chicago Avenue, Chicago, IL **Job No** 19059  
**Boring No.** TP-24 **Sample No.** BULK **Depth** 8.0'-10.0'  
**Sample Description** Topsoil-Black **Testing Furnace Temp °C.:** 440

<b>Moisture Content</b>	Wet Soil+Tare (g)	Dry Soil+Tare (g)	Tare Mass (g)	w (%)
Oven-Dry Method	120.5	105.36	51.7	28.2

<b>Ash Content</b>	Dry Soil+Tare (g)	Ash+Tare (g)	Tare Mass (g)	Ash content (%)
Loss on Ignition	105.36	103.69	51.7	96.9

**Organic Content (%) =** 3.10%

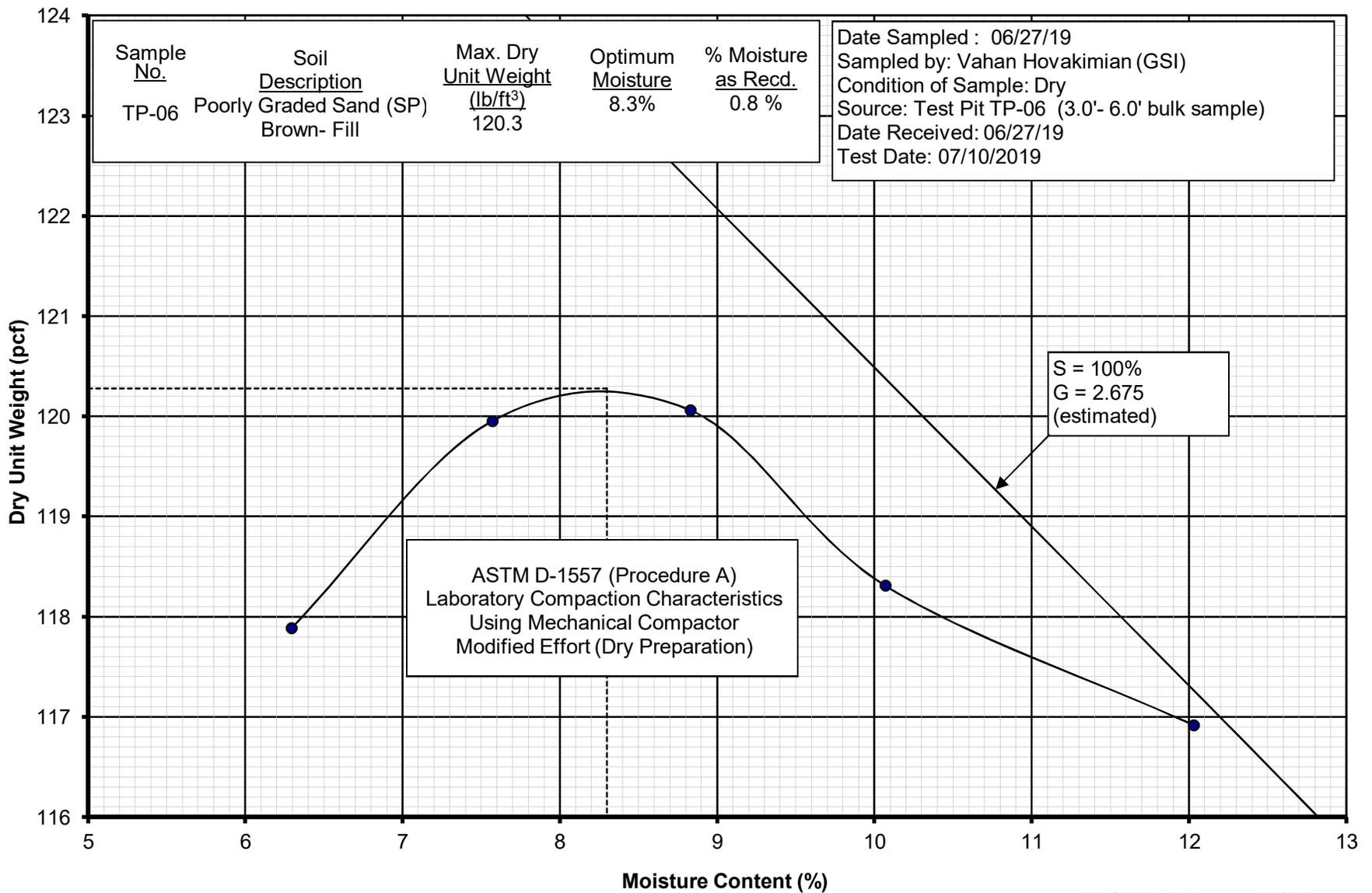
**Notes:** \_\_\_\_\_

**Test By** MT

# **Standard Method of Test for Moisture–Density Relations of Soils**

**(Using a 4.5-kg (10.0-lb) Rammer and a 457-mm (18-in.) Drop**

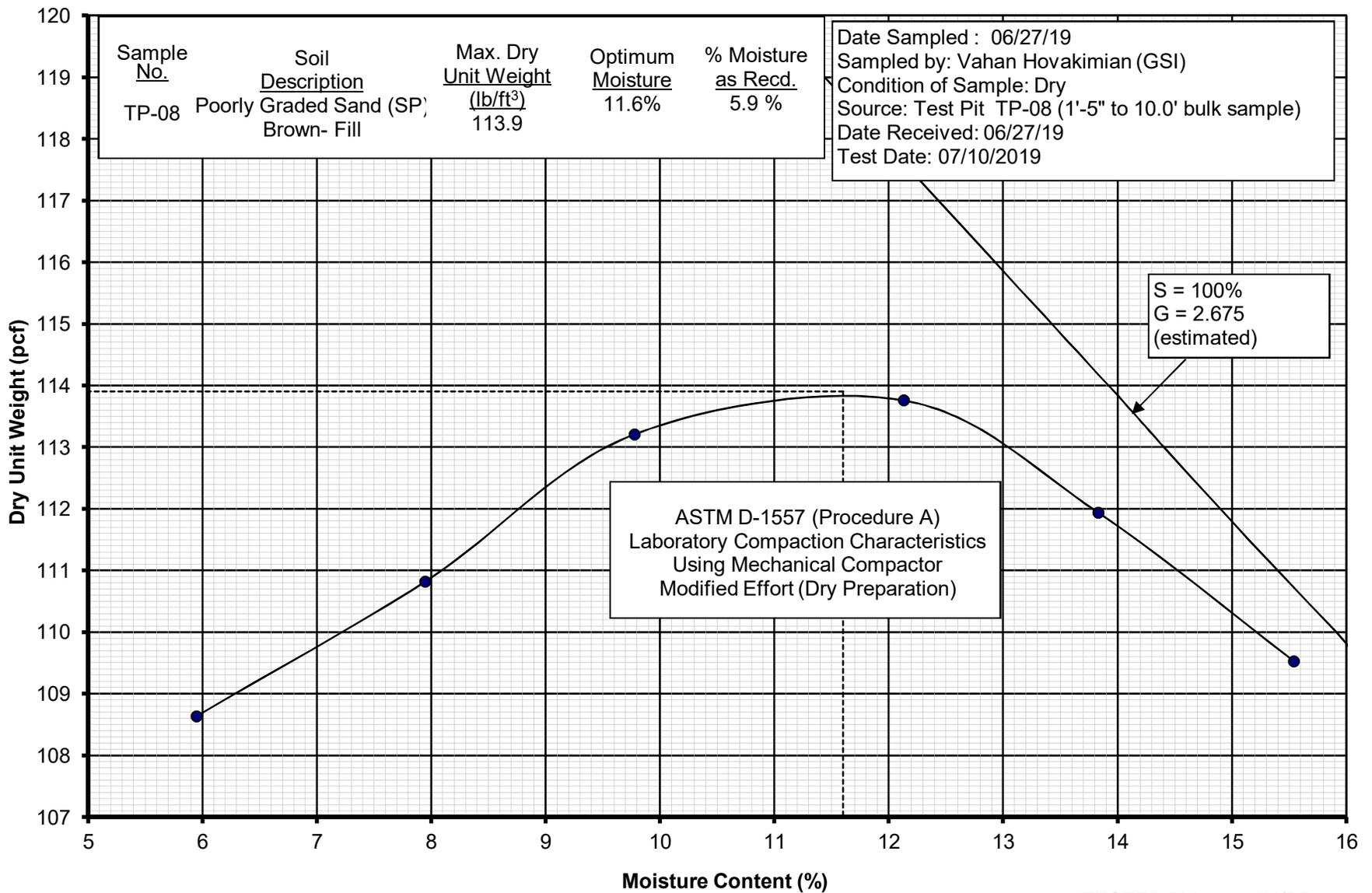
**(ASTM D 1557)**



**MOISTURE DENSITY CURVE**  
 Joint Public Safety Training Campus  
 (JPSTC)  
 4301 W Chicago Avenue,  
 Chicago, IL  
 Test Pit TP-06 ( Depth 3.0'-6.0')

**GEO SERVICES, INC.**  
 CONSULTING ENGINEERS  
 1235 E. DAVIS ST.  
 ARLINGTON HEIGHTS, ILLINOIS  
 (847) 253-3845

TESTED BY JM/DP  
 DRAWN BY AT  
 APPROVED BY WC  
 DATE ISSUED 07/16/19  
 JOB NO. 19059



Sample No.	Soil Description	Max. Dry Unit Weight (lb/ft <sup>3</sup> )	Optimum Moisture	% Moisture as Recd.
TP-08	Poorly Graded Sand (SP), Brown- Fill	113.9	11.6%	5.9 %

Date Sampled : 06/27/19  
 Sampled by: Vahan Hovakimian (GSI)  
 Condition of Sample: Dry  
 Source: Test Pit TP-08 (1'-5" to 10.0' bulk sample)  
 Date Received: 06/27/19  
 Test Date: 07/10/2019

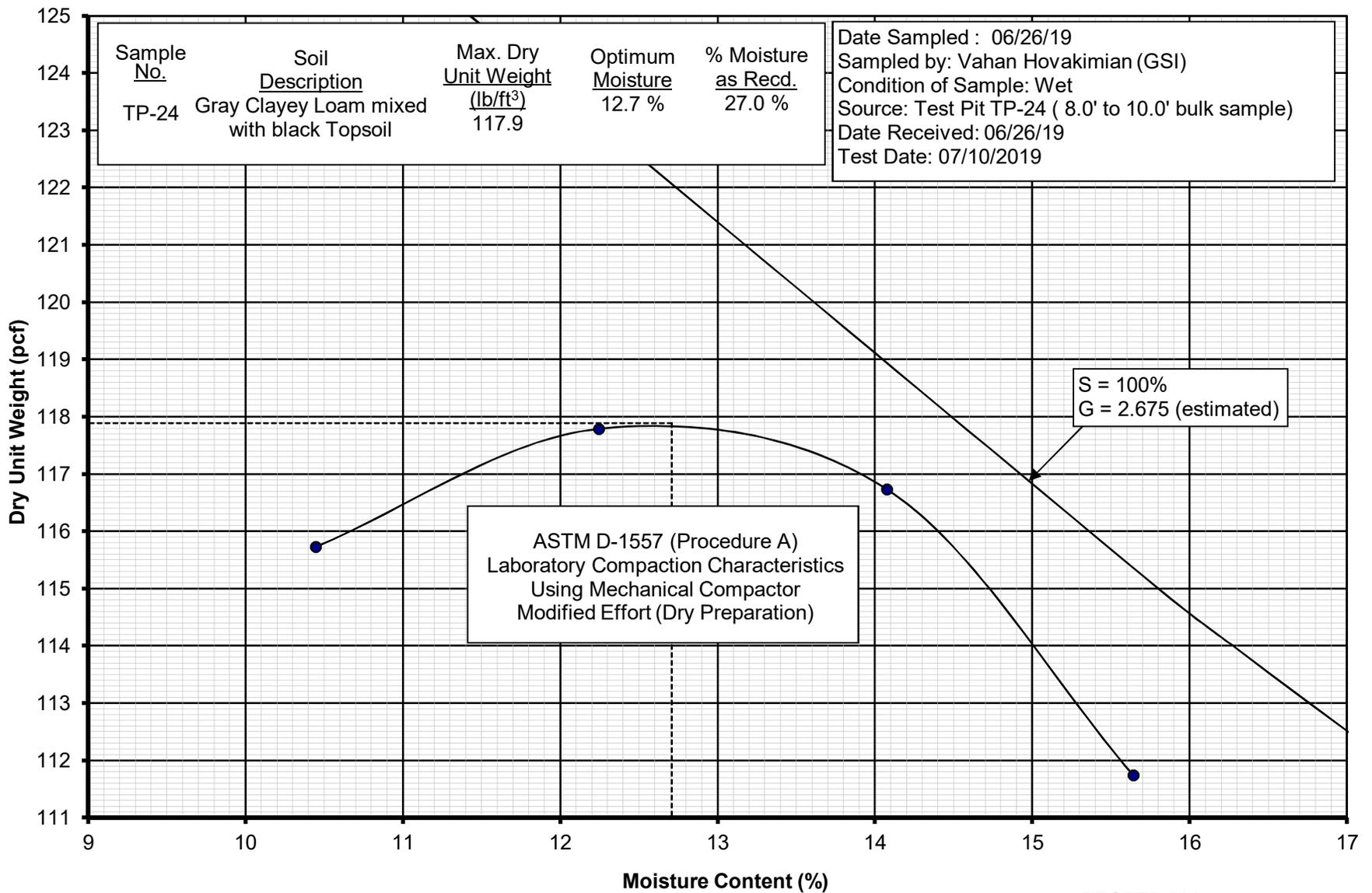
S = 100%  
 G = 2.675  
 (estimated)

ASTM D-1557 (Procedure A)  
 Laboratory Compaction Characteristics  
 Using Mechanical Compactor  
 Modified Effort (Dry Preparation)

**MOISTURE DENSITY CURVE**  
 Joint Public Safety Training Campus  
 (JPSTC)  
 4301 W Chicago Avenue,  
 Chicago, IL  
 Test Pit TP-08 ( Depth 1'-5"-10.0')

**GEO SERVICES, INC.**  
 CONSULTING ENGINEERS  
 1235 E. DAVIS ST.  
 ARLINGTON HEIGHTS, ILLINOIS  
 (847) 253-3845

TESTED BY JM/DP  
 DRAWN BY AT  
 APPROVED BY WC  
 DATE ISSUED 07/16/19  
 JOB NO. 19059



**MOISTURE DENSITY CURVE**  
 Joint Public Safety Training Campus  
 (JPSTC)  
 4301 W Chicago Avenue,  
 Chicago, IL  
 Test Pit TP-08 ( Depth 8.0'-10.0')

**GEO SERVICES, INC.**  
 CONSULTING ENGINEERS  
 1235 E. DAVIS ST.  
 ARLINGTON HEIGHTS, ILLINOIS  
 (847) 253-3845

TESTED BY JM/DP  
 DRAWN BY AT  
 APPROVED BY WC  
 DATE ISSUED 07/16/19  
 JOB NO. 19059

**APPENDIX I**

**ENVIRONMENTAL TESTING ANALYTICAL REPORT FROM  
TESTAMERICA**

## ANALYTICAL REPORT

Eurofins TestAmerica, Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

Laboratory Job ID: 500-165943-1

Client Project/Site: Joint Public Safety Train. Campus(19059)

**For:**

Geo Services, Inc  
1235 E Davis Street  
Arlington Heights, Illinois 60004

Attn: Arun Tailor



Authorized for release by:  
7/10/2019 4:47:55 PM

Jim Knapp, Project Manager II  
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*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Case Narrative

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

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**Job ID: 500-165943-1**

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**Laboratory: Eurofins TestAmerica, Chicago**

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**Narrative**

**Job Narrative  
500-165943-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 6/28/2019 2:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4° C.

**GC/MS Semi VOA**

Method(s) 8270D: Due to the large number of spiked analytes, there is a high probability that one or more analytes will recover outside acceptance limits. The laboratory's SOP allows for 1 analyte to recover outside criteria for this method when utilizing this list of analytes. LCS 500-493684/2-A had 1 analyte outside control limits: Anthracene. These results have been reported and qualified. (LCS 500-493684/2-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**Metals**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**Organic Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



# Detection Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Client Sample ID: TP-01-S1 (2-5')

## Lab Sample ID: 500-165943-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.2		0.95		mg/Kg	1	☒	6010B	Total/NA
Barium	8.5		0.95		mg/Kg	1	☒	6010B	Total/NA
Cadmium	0.33		0.19		mg/Kg	1	☒	6010B	Total/NA
Chromium	4.1		0.95		mg/Kg	1	☒	6010B	Total/NA
Lead	3.8		0.47		mg/Kg	1	☒	6010B	Total/NA
Silver	0.82		0.47		mg/Kg	1	☒	6010B	Total/NA
pH	8.5		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-01-S2 (5-10')

## Lab Sample ID: 500-165943-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.5		0.92		mg/Kg	1	☒	6010B	Total/NA
Barium	7.5		0.92		mg/Kg	1	☒	6010B	Total/NA
Cadmium	0.28		0.18		mg/Kg	1	☒	6010B	Total/NA
Chromium	3.4		0.92		mg/Kg	1	☒	6010B	Total/NA
Lead	6.7		0.46		mg/Kg	1	☒	6010B	Total/NA
Silver	1.0		0.46		mg/Kg	1	☒	6010B	Total/NA
pH	8.5		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-06-S1 (2-5')

## Lab Sample ID: 500-165943-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluoranthene	0.056		0.034		mg/Kg	1	☒	8270D	Total/NA
Phenanthrene	0.038		0.034		mg/Kg	1	☒	8270D	Total/NA
Pyrene	0.054		0.034		mg/Kg	1	☒	8270D	Total/NA
Arsenic	2.3		0.92		mg/Kg	1	☒	6010B	Total/NA
Barium	7.1		0.92		mg/Kg	1	☒	6010B	Total/NA
Cadmium	0.28		0.18		mg/Kg	1	☒	6010B	Total/NA
Chromium	3.0		0.92		mg/Kg	1	☒	6010B	Total/NA
Lead	8.4		0.46		mg/Kg	1	☒	6010B	Total/NA
Silver	0.95		0.46		mg/Kg	1	☒	6010B	Total/NA
pH	8.6		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-06-S2 (5-10')

## Lab Sample ID: 500-165943-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.1		0.95		mg/Kg	1	☒	6010B	Total/NA
Barium	9.2		0.95		mg/Kg	1	☒	6010B	Total/NA
Cadmium	0.36		0.19		mg/Kg	1	☒	6010B	Total/NA
Chromium	4.7		0.95		mg/Kg	1	☒	6010B	Total/NA
Lead	9.5		0.47		mg/Kg	1	☒	6010B	Total/NA
Silver	0.85		0.47		mg/Kg	1	☒	6010B	Total/NA
pH	8.5		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-07-S1 (2-5')

## Lab Sample ID: 500-165943-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.9		1.0		mg/Kg	1	☒	6010B	Total/NA
Barium	6.1		1.0		mg/Kg	1	☒	6010B	Total/NA
Cadmium	0.28		0.20		mg/Kg	1	☒	6010B	Total/NA
Chromium	3.0		1.0		mg/Kg	1	☒	6010B	Total/NA
Lead	3.4		0.50		mg/Kg	1	☒	6010B	Total/NA
Silver	0.75		0.50		mg/Kg	1	☒	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

# Detection Summary

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Client Sample ID: TP-07-S1 (2-5') (Continued)

Lab Sample ID: 500-165943-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH	8.6		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-07-S2 (5-10')

Lab Sample ID: 500-165943-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.2		0.87		mg/Kg	1	*	6010B	Total/NA
Barium	8.2		0.87		mg/Kg	1	*	6010B	Total/NA
Cadmium	0.28		0.17		mg/Kg	1	*	6010B	Total/NA
Chromium	3.5		0.87		mg/Kg	1	*	6010B	Total/NA
Lead	4.1		0.44		mg/Kg	1	*	6010B	Total/NA
Silver	0.94		0.44		mg/Kg	1	*	6010B	Total/NA
Mercury	0.017		0.016		mg/Kg	1	*	7471B	Total/NA
pH	8.3		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP10-S1 (3-5')

Lab Sample ID: 500-165943-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.2		1.0		mg/Kg	1	*	6010B	Total/NA
Barium	7.9		1.0		mg/Kg	1	*	6010B	Total/NA
Cadmium	0.31		0.20		mg/Kg	1	*	6010B	Total/NA
Chromium	4.8		1.0		mg/Kg	1	*	6010B	Total/NA
Lead	4.4		0.50		mg/Kg	1	*	6010B	Total/NA
Silver	0.95		0.50		mg/Kg	1	*	6010B	Total/NA
pH	8.1		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP10-S2 (5-10')

Lab Sample ID: 500-165943-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.4		0.91		mg/Kg	1	*	6010B	Total/NA
Barium	7.5		0.91		mg/Kg	1	*	6010B	Total/NA
Cadmium	0.28		0.18		mg/Kg	1	*	6010B	Total/NA
Chromium	3.3		0.91		mg/Kg	1	*	6010B	Total/NA
Lead	4.0		0.45		mg/Kg	1	*	6010B	Total/NA
Silver	0.74		0.45		mg/Kg	1	*	6010B	Total/NA
pH	8.4		0.2		SU	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

# Method Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

Method	Method Description	Protocol	Laboratory
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
6010B	Metals (ICP)	SW846	TAL CHI
7471B	Mercury (CVAA)	SW846	TAL CHI
9045D	pH	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI
3050B	Preparation, Metals	SW846	TAL CHI
3541	Automated Soxhlet Extraction	SW846	TAL CHI
7471B	Preparation, Mercury	SW846	TAL CHI

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Sample Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-165943-1	TP-01-S1 (2-5')	Solid	06/27/19 10:09	06/28/19 14:00	
500-165943-2	TP-01-S2 (5-10')	Solid	06/27/19 10:15	06/28/19 14:00	
500-165943-3	TP-06-S1 (2-5')	Solid	06/27/19 09:30	06/28/19 14:00	
500-165943-4	TP-06-S2 (5-10')	Solid	06/27/19 09:38	06/28/19 14:00	
500-165943-5	TP-07-S1 (2-5')	Solid	06/27/19 08:38	06/28/19 14:00	
500-165943-6	TP-07-S2 (5-10')	Solid	06/27/19 08:49	06/28/19 14:00	
500-165943-7	TP10-S1 (3-5')	Solid	06/27/19 07:40	06/28/19 14:00	
500-165943-8	TP10-S2 (5-10')	Solid	06/27/19 07:55	06/28/19 14:00	

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-01-S1 (2-5')**

**Lab Sample ID: 500-165943-1**

**Date Collected: 06/27/19 10:09**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 95.8**

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Acenaphthylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Anthracene	ND	*	0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Benzo[a]anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Benzo[a]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Benzo[b]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Benzo[g,h,i]perylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Benzo[k]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Chrysene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Dibenz(a,h)anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Indeno[1,2,3-cd]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Naphthalene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Phenanthrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Fluorene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 10:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	103		37 - 147				07/08/19 07:37	07/09/19 10:56	1
2-Fluorobiphenyl	101		43 - 145				07/08/19 07:37	07/09/19 10:56	1
Terphenyl-d14 (Surr)	134		42 - 157				07/08/19 07:37	07/09/19 10:56	1

## Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.2		0.95		mg/Kg	☼	07/02/19 07:46	07/02/19 18:41	1
Barium	8.5		0.95		mg/Kg	☼	07/02/19 07:46	07/02/19 18:41	1
Cadmium	0.33		0.19		mg/Kg	☼	07/02/19 07:46	07/02/19 18:41	1
Chromium	4.1		0.95		mg/Kg	☼	07/02/19 07:46	07/02/19 18:41	1
Lead	3.8		0.47		mg/Kg	☼	07/02/19 07:46	07/02/19 18:41	1
Selenium	ND		0.95		mg/Kg	☼	07/02/19 07:46	07/02/19 18:41	1
Silver	0.82		0.47		mg/Kg	☼	07/02/19 07:46	07/02/19 18:41	1
Antimony	ND		1.9		mg/Kg	☼	07/02/19 07:46	07/02/19 18:41	1

## Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg	☼	07/02/19 14:25	07/03/19 09:32	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.5		0.2		SU			07/03/19 14:28	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-01-S2 (5-10')**

**Lab Sample ID: 500-165943-2**

**Date Collected: 06/27/19 10:15**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 95.5**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Acenaphthylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Anthracene	ND	*	0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Benzo[a]anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Benzo[a]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Benzo[b]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Benzo[g,h,i]perylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Benzo[k]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Chrysene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Dibenz(a,h)anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Indeno[1,2,3-cd]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Naphthalene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Phenanthrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Fluorene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:24	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	94		37 - 147				07/08/19 07:37	07/09/19 11:24	1
2-Fluorobiphenyl	88		43 - 145				07/08/19 07:37	07/09/19 11:24	1
Terphenyl-d14 (Surr)	118		42 - 157				07/08/19 07:37	07/09/19 11:24	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.5		0.92		mg/Kg	☼	07/02/19 07:46	07/02/19 19:01	1
Barium	7.5		0.92		mg/Kg	☼	07/02/19 07:46	07/02/19 19:01	1
Cadmium	0.28		0.18		mg/Kg	☼	07/02/19 07:46	07/02/19 19:01	1
Chromium	3.4		0.92		mg/Kg	☼	07/02/19 07:46	07/02/19 19:01	1
Lead	6.7		0.46		mg/Kg	☼	07/02/19 07:46	07/02/19 19:01	1
Selenium	ND		0.92		mg/Kg	☼	07/02/19 07:46	07/02/19 19:01	1
Silver	1.0		0.46		mg/Kg	☼	07/02/19 07:46	07/02/19 19:01	1
Antimony	ND		1.8		mg/Kg	☼	07/02/19 07:46	07/02/19 19:01	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg	☼	07/02/19 14:25	07/03/19 09:35	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.5		0.2		SU			07/03/19 14:31	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-06-S1 (2-5')**

**Lab Sample ID: 500-165943-3**

Date Collected: 06/27/19 09:30

Matrix: Solid

Date Received: 06/28/19 14:00

Percent Solids: 96.3

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Acenaphthylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Anthracene	ND	*	0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Benzo[a]anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Benzo[a]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Benzo[b]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Benzo[g,h,i]perylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Benzo[k]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Chrysene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Dibenz(a,h)anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
<b>Fluoranthene</b>	<b>0.056</b>		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Indeno[1,2,3-cd]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Naphthalene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
<b>Phenanthrene</b>	<b>0.038</b>		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
<b>Pyrene</b>	<b>0.054</b>		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Fluorene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 11:51	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	84		37 - 147				07/08/19 07:37	07/09/19 11:51	1
2-Fluorobiphenyl	82		43 - 145				07/08/19 07:37	07/09/19 11:51	1
Terphenyl-d14 (Surr)	108		42 - 157				07/08/19 07:37	07/09/19 11:51	1

## Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>2.3</b>		0.92		mg/Kg	☼	07/02/19 07:46	07/02/19 19:05	1
<b>Barium</b>	<b>7.1</b>		0.92		mg/Kg	☼	07/02/19 07:46	07/02/19 19:05	1
<b>Cadmium</b>	<b>0.28</b>		0.18		mg/Kg	☼	07/02/19 07:46	07/02/19 19:05	1
<b>Chromium</b>	<b>3.0</b>		0.92		mg/Kg	☼	07/02/19 07:46	07/02/19 19:05	1
<b>Lead</b>	<b>8.4</b>		0.46		mg/Kg	☼	07/02/19 07:46	07/02/19 19:05	1
Selenium	ND		0.92		mg/Kg	☼	07/02/19 07:46	07/02/19 19:05	1
<b>Silver</b>	<b>0.95</b>		0.46		mg/Kg	☼	07/02/19 07:46	07/02/19 19:05	1
Antimony	ND		1.8		mg/Kg	☼	07/02/19 07:46	07/02/19 19:05	1

## Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg	☼	07/02/19 14:25	07/03/19 09:37	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>8.6</b>		0.2		SU			07/03/19 14:33	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-06-S2 (5-10')**

**Lab Sample ID: 500-165943-4**

**Date Collected: 06/27/19 09:38**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 93.7**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Acenaphthylene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Anthracene	ND	*	0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Benzo[a]anthracene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Benzo[a]pyrene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Benzo[b]fluoranthene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Benzo[g,h,i]perylene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Benzo[k]fluoranthene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Chrysene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Dibenz(a,h)anthracene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Fluoranthene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Indeno[1,2,3-cd]pyrene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Naphthalene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Phenanthrene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Pyrene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Fluorene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 14:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	86		37 - 147				07/08/19 07:37	07/09/19 14:08	1
2-Fluorobiphenyl	82		43 - 145				07/08/19 07:37	07/09/19 14:08	1
Terphenyl-d14 (Surr)	105		42 - 157				07/08/19 07:37	07/09/19 14:08	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.1		0.95		mg/Kg	☼	07/02/19 07:46	07/02/19 19:09	1
Barium	9.2		0.95		mg/Kg	☼	07/02/19 07:46	07/02/19 19:09	1
Cadmium	0.36		0.19		mg/Kg	☼	07/02/19 07:46	07/02/19 19:09	1
Chromium	4.7		0.95		mg/Kg	☼	07/02/19 07:46	07/02/19 19:09	1
Lead	9.5		0.47		mg/Kg	☼	07/02/19 07:46	07/02/19 19:09	1
Selenium	ND		0.95		mg/Kg	☼	07/02/19 07:46	07/02/19 19:09	1
Silver	0.85		0.47		mg/Kg	☼	07/02/19 07:46	07/02/19 19:09	1
Antimony	ND		1.9		mg/Kg	☼	07/02/19 07:46	07/02/19 19:09	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.016		mg/Kg	☼	07/02/19 14:25	07/03/19 09:43	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.5		0.2		SU			07/03/19 14:36	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-07-S1 (2-5')**

**Lab Sample ID: 500-165943-5**

**Date Collected: 06/27/19 08:38**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 95.4**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Acenaphthylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Anthracene	ND	*	0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Benzo[a]anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Benzo[a]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Benzo[b]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Benzo[g,h,i]perylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Benzo[k]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Chrysene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Dibenz(a,h)anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Indeno[1,2,3-cd]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Naphthalene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Phenanthrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Fluorene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:18	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	87		37 - 147				07/08/19 07:37	07/09/19 12:18	1
2-Fluorobiphenyl	80		43 - 145				07/08/19 07:37	07/09/19 12:18	1
Terphenyl-d14 (Surr)	110		42 - 157				07/08/19 07:37	07/09/19 12:18	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.9		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:13	1
Barium	6.1		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:13	1
Cadmium	0.28		0.20		mg/Kg	☼	07/02/19 07:46	07/02/19 19:13	1
Chromium	3.0		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:13	1
Lead	3.4		0.50		mg/Kg	☼	07/02/19 07:46	07/02/19 19:13	1
Selenium	ND		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:13	1
Silver	0.75		0.50		mg/Kg	☼	07/02/19 07:46	07/02/19 19:13	1
Antimony	ND		2.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:13	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.016		mg/Kg	☼	07/02/19 14:25	07/03/19 09:45	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.6		0.2		SU			07/03/19 14:39	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-07-S2 (5-10')**

**Lab Sample ID: 500-165943-6**

**Date Collected: 06/27/19 08:49**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 95.6**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Acenaphthylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Anthracene	ND	*	0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Benzo[a]anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Benzo[a]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Benzo[b]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Benzo[g,h,i]perylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Benzo[k]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Chrysene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Dibenz(a,h)anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Indeno[1,2,3-cd]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Naphthalene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Phenanthrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1
Fluorene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 12:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	90		37 - 147	07/08/19 07:37	07/09/19 12:46	1
2-Fluorobiphenyl	86		43 - 145	07/08/19 07:37	07/09/19 12:46	1
Terphenyl-d14 (Surr)	117		42 - 157	07/08/19 07:37	07/09/19 12:46	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.2		0.87		mg/Kg	☼	07/02/19 07:46	07/02/19 19:17	1
Barium	8.2		0.87		mg/Kg	☼	07/02/19 07:46	07/02/19 19:17	1
Cadmium	0.28		0.17		mg/Kg	☼	07/02/19 07:46	07/02/19 19:17	1
Chromium	3.5		0.87		mg/Kg	☼	07/02/19 07:46	07/02/19 19:17	1
Lead	4.1		0.44		mg/Kg	☼	07/02/19 07:46	07/02/19 19:17	1
Selenium	ND		0.87		mg/Kg	☼	07/02/19 07:46	07/02/19 19:17	1
Silver	0.94		0.44		mg/Kg	☼	07/02/19 07:46	07/02/19 19:17	1
Antimony	ND		1.7		mg/Kg	☼	07/02/19 07:46	07/02/19 19:17	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.017		0.016		mg/Kg	☼	07/02/19 14:25	07/03/19 09:47	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.3		0.2		SU			07/03/19 14:44	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP10-S1 (3-5')**

**Lab Sample ID: 500-165943-7**

**Date Collected: 06/27/19 07:40**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 93.4**

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Acenaphthylene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Anthracene	ND	*	0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Benzo[a]anthracene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Benzo[a]pyrene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Benzo[b]fluoranthene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Benzo[g,h,i]perylene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Benzo[k]fluoranthene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Chrysene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Dibenz(a,h)anthracene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Fluoranthene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Indeno[1,2,3-cd]pyrene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Naphthalene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Phenanthrene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Pyrene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Fluorene	ND		0.035		mg/Kg	☼	07/08/19 07:37	07/09/19 13:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	80		37 - 147				07/08/19 07:37	07/09/19 13:13	1
2-Fluorobiphenyl	82		43 - 145				07/08/19 07:37	07/09/19 13:13	1
Terphenyl-d14 (Surr)	109		42 - 157				07/08/19 07:37	07/09/19 13:13	1

## Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.2		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:33	1
Barium	7.9		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:33	1
Cadmium	0.31		0.20		mg/Kg	☼	07/02/19 07:46	07/02/19 19:33	1
Chromium	4.8		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:33	1
Lead	4.4		0.50		mg/Kg	☼	07/02/19 07:46	07/02/19 19:33	1
Selenium	ND		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:33	1
Silver	0.95		0.50		mg/Kg	☼	07/02/19 07:46	07/02/19 19:33	1
Antimony	ND		2.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:33	1

## Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg	☼	07/02/19 14:25	07/03/19 09:49	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.1		0.2		SU			07/03/19 14:50	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP10-S2 (5-10')**

**Lab Sample ID: 500-165943-8**

**Date Collected: 06/27/19 07:55**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 95.5**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Acenaphthylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Anthracene	ND	*	0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Benzo[a]anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Benzo[a]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Benzo[b]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Benzo[g,h,i]perylene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Benzo[k]fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Chrysene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Dibenz(a,h)anthracene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Fluoranthene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Indeno[1,2,3-cd]pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Naphthalene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Phenanthrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Pyrene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1
Fluorene	ND		0.034		mg/Kg	☼	07/08/19 07:37	07/09/19 13:41	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	92		37 - 147	07/08/19 07:37	07/09/19 13:41	1
2-Fluorobiphenyl	87		43 - 145	07/08/19 07:37	07/09/19 13:41	1
Terphenyl-d14 (Surr)	113		42 - 157	07/08/19 07:37	07/09/19 13:41	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.4		0.91		mg/Kg	☼	07/02/19 07:46	07/02/19 19:37	1
Barium	7.5		0.91		mg/Kg	☼	07/02/19 07:46	07/02/19 19:37	1
Cadmium	0.28		0.18		mg/Kg	☼	07/02/19 07:46	07/02/19 19:37	1
Chromium	3.3		0.91		mg/Kg	☼	07/02/19 07:46	07/02/19 19:37	1
Lead	4.0		0.45		mg/Kg	☼	07/02/19 07:46	07/02/19 19:37	1
Selenium	ND		0.91		mg/Kg	☼	07/02/19 07:46	07/02/19 19:37	1
Silver	0.74		0.45		mg/Kg	☼	07/02/19 07:46	07/02/19 19:37	1
Antimony	ND		1.8		mg/Kg	☼	07/02/19 07:46	07/02/19 19:37	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.016		mg/Kg	☼	07/02/19 14:25	07/03/19 09:52	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.4		0.2		SU			07/03/19 14:53	1

# Definitions/Glossary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Qualifiers

### GC/MS Semi VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.

### Metals

Qualifier	Qualifier Description
F3	Duplicate RPD exceeds the control limit
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## GC/MS Semi VOA

### Prep Batch: 493684

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-1	TP-01-S1 (2-5')	Total/NA	Solid	3541	
500-165943-2	TP-01-S2 (5-10')	Total/NA	Solid	3541	
500-165943-3	TP-06-S1 (2-5')	Total/NA	Solid	3541	
500-165943-4	TP-06-S2 (5-10')	Total/NA	Solid	3541	
500-165943-5	TP-07-S1 (2-5')	Total/NA	Solid	3541	
500-165943-6	TP-07-S2 (5-10')	Total/NA	Solid	3541	
500-165943-7	TP10-S1 (3-5')	Total/NA	Solid	3541	
500-165943-8	TP10-S2 (5-10')	Total/NA	Solid	3541	
MB 500-493684/1-A	Method Blank	Total/NA	Solid	3541	
LCS 500-493684/2-A	Lab Control Sample	Total/NA	Solid	3541	
500-165943-1 MS	TP-01-S1 (2-5')	Total/NA	Solid	3541	
500-165943-1 MSD	TP-01-S1 (2-5')	Total/NA	Solid	3541	

### Analysis Batch: 493897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-1	TP-01-S1 (2-5')	Total/NA	Solid	8270D	493684
500-165943-2	TP-01-S2 (5-10')	Total/NA	Solid	8270D	493684
500-165943-3	TP-06-S1 (2-5')	Total/NA	Solid	8270D	493684
500-165943-4	TP-06-S2 (5-10')	Total/NA	Solid	8270D	493684
500-165943-5	TP-07-S1 (2-5')	Total/NA	Solid	8270D	493684
500-165943-6	TP-07-S2 (5-10')	Total/NA	Solid	8270D	493684
500-165943-7	TP10-S1 (3-5')	Total/NA	Solid	8270D	493684
500-165943-8	TP10-S2 (5-10')	Total/NA	Solid	8270D	493684
MB 500-493684/1-A	Method Blank	Total/NA	Solid	8270D	493684
LCS 500-493684/2-A	Lab Control Sample	Total/NA	Solid	8270D	493684
500-165943-1 MS	TP-01-S1 (2-5')	Total/NA	Solid	8270D	493684
500-165943-1 MSD	TP-01-S1 (2-5')	Total/NA	Solid	8270D	493684

## Metals

### Prep Batch: 492882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-1	TP-01-S1 (2-5')	Total/NA	Solid	3050B	
500-165943-2	TP-01-S2 (5-10')	Total/NA	Solid	3050B	
500-165943-3	TP-06-S1 (2-5')	Total/NA	Solid	3050B	
500-165943-4	TP-06-S2 (5-10')	Total/NA	Solid	3050B	
500-165943-5	TP-07-S1 (2-5')	Total/NA	Solid	3050B	
500-165943-6	TP-07-S2 (5-10')	Total/NA	Solid	3050B	
500-165943-7	TP10-S1 (3-5')	Total/NA	Solid	3050B	
500-165943-8	TP10-S2 (5-10')	Total/NA	Solid	3050B	
MB 500-492882/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 500-492882/2-A	Lab Control Sample	Total/NA	Solid	3050B	
500-165943-1 MS	TP-01-S1 (2-5')	Total/NA	Solid	3050B	
500-165943-1 MSD	TP-01-S1 (2-5')	Total/NA	Solid	3050B	
500-165943-1 DU	TP-01-S1 (2-5')	Total/NA	Solid	3050B	

### Prep Batch: 493065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-1	TP-01-S1 (2-5')	Total/NA	Solid	7471B	
500-165943-2	TP-01-S2 (5-10')	Total/NA	Solid	7471B	
500-165943-3	TP-06-S1 (2-5')	Total/NA	Solid	7471B	

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# QC Association Summary

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Metals (Continued)

### Prep Batch: 493065 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-4	TP-06-S2 (5-10')	Total/NA	Solid	7471B	
500-165943-5	TP-07-S1 (2-5')	Total/NA	Solid	7471B	
500-165943-6	TP-07-S2 (5-10')	Total/NA	Solid	7471B	
500-165943-7	TP10-S1 (3-5')	Total/NA	Solid	7471B	
500-165943-8	TP10-S2 (5-10')	Total/NA	Solid	7471B	
MB 500-493065/12-A	Method Blank	Total/NA	Solid	7471B	
LCS 500-493065/13-A	Lab Control Sample	Total/NA	Solid	7471B	

### Analysis Batch: 493192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-1	TP-01-S1 (2-5')	Total/NA	Solid	6010B	492882
500-165943-2	TP-01-S2 (5-10')	Total/NA	Solid	6010B	492882
500-165943-3	TP-06-S1 (2-5')	Total/NA	Solid	6010B	492882
500-165943-4	TP-06-S2 (5-10')	Total/NA	Solid	6010B	492882
500-165943-5	TP-07-S1 (2-5')	Total/NA	Solid	6010B	492882
500-165943-6	TP-07-S2 (5-10')	Total/NA	Solid	6010B	492882
500-165943-7	TP10-S1 (3-5')	Total/NA	Solid	6010B	492882
500-165943-8	TP10-S2 (5-10')	Total/NA	Solid	6010B	492882
MB 500-492882/1-A	Method Blank	Total/NA	Solid	6010B	492882
LCS 500-492882/2-A	Lab Control Sample	Total/NA	Solid	6010B	492882
500-165943-1 MS	TP-01-S1 (2-5')	Total/NA	Solid	6010B	492882
500-165943-1 MSD	TP-01-S1 (2-5')	Total/NA	Solid	6010B	492882
500-165943-1 DU	TP-01-S1 (2-5')	Total/NA	Solid	6010B	492882

### Analysis Batch: 493285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-1	TP-01-S1 (2-5')	Total/NA	Solid	7471B	493065
500-165943-2	TP-01-S2 (5-10')	Total/NA	Solid	7471B	493065
500-165943-3	TP-06-S1 (2-5')	Total/NA	Solid	7471B	493065
500-165943-4	TP-06-S2 (5-10')	Total/NA	Solid	7471B	493065
500-165943-5	TP-07-S1 (2-5')	Total/NA	Solid	7471B	493065
500-165943-6	TP-07-S2 (5-10')	Total/NA	Solid	7471B	493065
500-165943-7	TP10-S1 (3-5')	Total/NA	Solid	7471B	493065
500-165943-8	TP10-S2 (5-10')	Total/NA	Solid	7471B	493065
MB 500-493065/12-A	Method Blank	Total/NA	Solid	7471B	493065
LCS 500-493065/13-A	Lab Control Sample	Total/NA	Solid	7471B	493065

## General Chemistry

### Analysis Batch: 492862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-1	TP-01-S1 (2-5')	Total/NA	Solid	Moisture	
500-165943-2	TP-01-S2 (5-10')	Total/NA	Solid	Moisture	
500-165943-3	TP-06-S1 (2-5')	Total/NA	Solid	Moisture	
500-165943-4	TP-06-S2 (5-10')	Total/NA	Solid	Moisture	
500-165943-5	TP-07-S1 (2-5')	Total/NA	Solid	Moisture	
500-165943-6	TP-07-S2 (5-10')	Total/NA	Solid	Moisture	
500-165943-7	TP10-S1 (3-5')	Total/NA	Solid	Moisture	
500-165943-8	TP10-S2 (5-10')	Total/NA	Solid	Moisture	

# QC Association Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## General Chemistry

### Analysis Batch: 493301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165943-1	TP-01-S1 (2-5')	Total/NA	Solid	9045D	
500-165943-2	TP-01-S2 (5-10')	Total/NA	Solid	9045D	
500-165943-3	TP-06-S1 (2-5')	Total/NA	Solid	9045D	
500-165943-4	TP-06-S2 (5-10')	Total/NA	Solid	9045D	
500-165943-5	TP-07-S1 (2-5')	Total/NA	Solid	9045D	
500-165943-6	TP-07-S2 (5-10')	Total/NA	Solid	9045D	
500-165943-7	TP10-S1 (3-5')	Total/NA	Solid	9045D	
500-165943-8	TP10-S2 (5-10')	Total/NA	Solid	9045D	
LCS 500-493301/5	Lab Control Sample	Total/NA	Solid	9045D	
LCSD 500-493301/6	Lab Control Sample Dup	Total/NA	Solid	9045D	
500-165943-6 DU	TP-07-S2 (5-10')	Total/NA	Solid	9045D	

# Surrogate Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

**Matrix: Solid**

**Prep Type: Total/NA**

## Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ	FBP	TPHL
		(37-147)	(43-145)	(42-157)
500-165943-1	TP-01-S1 (2-5')	103	101	134
500-165943-1 MS	TP-01-S1 (2-5')	96	88	93
500-165943-1 MSD	TP-01-S1 (2-5')	95	90	97
500-165943-2	TP-01-S2 (5-10')	94	88	118
500-165943-3	TP-06-S1 (2-5')	84	82	108
500-165943-4	TP-06-S2 (5-10')	86	82	105
500-165943-5	TP-07-S1 (2-5')	87	80	110
500-165943-6	TP-07-S2 (5-10')	90	86	117
500-165943-7	TP10-S1 (3-5')	80	82	109
500-165943-8	TP10-S2 (5-10')	92	87	113
LCS 500-493684/2-A	Lab Control Sample	111	100	103
MB 500-493684/1-A	Method Blank	103	98	127

### Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl

TPHL = Terphenyl-d14 (Surr)

# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 500-493684/1-A**  
**Matrix: Solid**  
**Analysis Batch: 493897**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 493684**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Acenaphthylene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Anthracene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Benzo[a]anthracene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Benzo[a]pyrene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Benzo[b]fluoranthene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Benzo[g,h,i]perylene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Benzo[k]fluoranthene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Chrysene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Dibenz(a,h)anthracene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Fluoranthene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Indeno[1,2,3-cd]pyrene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Naphthalene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Phenanthrene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Pyrene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1
Fluorene	ND		0.033		mg/Kg		07/08/19 07:37	07/09/19 10:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	103		37 - 147	07/08/19 07:37	07/09/19 10:02	1
2-Fluorobiphenyl	98		43 - 145	07/08/19 07:37	07/09/19 10:02	1
Terphenyl-d14 (Surr)	127		42 - 157	07/08/19 07:37	07/09/19 10:02	1

**Lab Sample ID: LCS 500-493684/2-A**  
**Matrix: Solid**  
**Analysis Batch: 493897**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 493684**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	1.33	1.40		mg/Kg		105	65 - 124
Acenaphthylene	1.33	1.34		mg/Kg		101	68 - 120
Anthracene	1.33	1.54 *		mg/Kg		116	70 - 114
Benzo[a]anthracene	1.33	1.47		mg/Kg		110	67 - 122
Benzo[a]pyrene	1.33	1.49		mg/Kg		112	65 - 133
Benzo[b]fluoranthene	1.33	1.37		mg/Kg		103	69 - 129
Benzo[g,h,i]perylene	1.33	1.44		mg/Kg		108	72 - 131
Benzo[k]fluoranthene	1.33	1.61		mg/Kg		121	68 - 127
Chrysene	1.33	1.37		mg/Kg		102	63 - 120
Dibenz(a,h)anthracene	1.33	1.50		mg/Kg		113	64 - 131
Fluoranthene	1.33	1.35		mg/Kg		101	62 - 120
Indeno[1,2,3-cd]pyrene	1.33	1.54		mg/Kg		116	68 - 130
Naphthalene	1.33	1.39		mg/Kg		104	63 - 110
Phenanthrene	1.33	1.42		mg/Kg		106	62 - 120
Pyrene	1.33	1.39		mg/Kg		105	61 - 128
Fluorene	1.33	1.37		mg/Kg		103	62 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5 (Surr)	111		37 - 147
2-Fluorobiphenyl	100		43 - 145
Terphenyl-d14 (Surr)	103		42 - 157

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# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: 500-165943-1 MS**

**Matrix: Solid**

**Analysis Batch: 493897**

**Client Sample ID: TP-01-S1 (2-5')**

**Prep Type: Total/NA**

**Prep Batch: 493684**

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	Limits
	Result	Qualifier	Added	Result	Qualifier				
Acenaphthene	ND		1.38	1.31		mg/Kg	☼	95	65 - 124
Acenaphthylene	ND		1.38	1.26		mg/Kg	☼	91	68 - 120
Anthracene	ND	*	1.38	1.20		mg/Kg	☼	87	70 - 114
Benzo[a]anthracene	ND		1.38	1.38		mg/Kg	☼	100	67 - 122
Benzo[a]pyrene	ND		1.38	1.42		mg/Kg	☼	103	65 - 133
Benzo[b]fluoranthene	ND		1.38	1.20		mg/Kg	☼	87	69 - 129
Benzo[g,h,i]perylene	ND		1.38	1.28		mg/Kg	☼	92	72 - 131
Benzo[k]fluoranthene	ND		1.38	1.58		mg/Kg	☼	115	68 - 127
Chrysene	ND		1.38	1.32		mg/Kg	☼	96	63 - 120
Dibenz(a,h)anthracene	ND		1.38	1.35		mg/Kg	☼	98	64 - 131
Fluoranthene	ND		1.38	1.24		mg/Kg	☼	90	62 - 120
Indeno[1,2,3-cd]pyrene	ND		1.38	1.38		mg/Kg	☼	100	68 - 130
Naphthalene	ND		1.38	1.30		mg/Kg	☼	94	63 - 110
Phenanthrene	ND		1.38	1.31		mg/Kg	☼	95	62 - 120
Pyrene	ND		1.38	1.29		mg/Kg	☼	93	61 - 128
Fluorene	ND		1.38	1.30		mg/Kg	☼	94	62 - 120

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
Nitrobenzene-d5 (Surr)	96		37 - 147
2-Fluorobiphenyl	88		43 - 145
Terphenyl-d14 (Surr)	93		42 - 157

**Lab Sample ID: 500-165943-1 MSD**

**Matrix: Solid**

**Analysis Batch: 493897**

**Client Sample ID: TP-01-S1 (2-5')**

**Prep Type: Total/NA**

**Prep Batch: 493684**

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	Limits	RPD	Limit
	Result	Qualifier	Added	Result	Qualifier						
Acenaphthene	ND		1.38	1.33		mg/Kg	☼	96	65 - 124	2	30
Acenaphthylene	ND		1.38	1.29		mg/Kg	☼	93	68 - 120	2	30
Anthracene	ND	*	1.38	1.37		mg/Kg	☼	99	70 - 114	13	30
Benzo[a]anthracene	ND		1.38	1.39		mg/Kg	☼	101	67 - 122	1	30
Benzo[a]pyrene	ND		1.38	1.40		mg/Kg	☼	101	65 - 133	1	30
Benzo[b]fluoranthene	ND		1.38	1.20		mg/Kg	☼	87	69 - 129	0	30
Benzo[g,h,i]perylene	ND		1.38	1.23		mg/Kg	☼	89	72 - 131	3	30
Benzo[k]fluoranthene	ND		1.38	1.61		mg/Kg	☼	117	68 - 127	2	30
Chrysene	ND		1.38	1.36		mg/Kg	☼	98	63 - 120	3	30
Dibenz(a,h)anthracene	ND		1.38	1.34		mg/Kg	☼	97	64 - 131	1	30
Fluoranthene	ND		1.38	1.29		mg/Kg	☼	93	62 - 120	4	30
Indeno[1,2,3-cd]pyrene	ND		1.38	1.35		mg/Kg	☼	98	68 - 130	2	30
Naphthalene	ND		1.38	1.28		mg/Kg	☼	93	63 - 110	1	30
Phenanthrene	ND		1.38	1.36		mg/Kg	☼	98	62 - 120	4	30
Pyrene	ND		1.38	1.33		mg/Kg	☼	96	61 - 128	3	30
Fluorene	ND		1.38	1.30		mg/Kg	☼	94	62 - 120	0	30

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
Nitrobenzene-d5 (Surr)	95		37 - 147
2-Fluorobiphenyl	90		43 - 145
Terphenyl-d14 (Surr)	97		42 - 157

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# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-492882/1-A**  
**Matrix: Solid**  
**Analysis Batch: 493192**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 492882**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Barium	ND		1.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Cadmium	ND		0.20		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Chromium	ND		1.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Lead	ND		0.50		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Selenium	ND		1.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Silver	ND		0.50		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Antimony	ND		2.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1

**Lab Sample ID: LCS 500-492882/2-A**  
**Matrix: Solid**  
**Analysis Batch: 493192**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 492882**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	10.0	8.91		mg/Kg		89	80 - 120
Barium	200	197		mg/Kg		99	80 - 120
Cadmium	5.00	4.95		mg/Kg		99	80 - 120
Chromium	20.0	19.3		mg/Kg		96	80 - 120
Lead	10.0	9.26		mg/Kg		93	80 - 120
Selenium	10.0	8.86		mg/Kg		89	80 - 120
Silver	5.00	4.52		mg/Kg		90	80 - 120
Antimony	50.0	46.6		mg/Kg		93	80 - 120

**Lab Sample ID: 500-165943-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 493192**

**Client Sample ID: TP-01-S1 (2-5')**  
**Prep Type: Total/NA**  
**Prep Batch: 492882**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Arsenic	2.2		9.76	11.2		mg/Kg	☼	93	75 - 125
Barium	8.5		195	193		mg/Kg	☼	94	75 - 125
Cadmium	0.33		4.88	5.16		mg/Kg	☼	99	75 - 125
Chromium	4.1		19.5	21.5		mg/Kg	☼	90	75 - 125
Lead	3.8		9.76	13.8		mg/Kg	☼	103	75 - 125
Selenium	ND		9.76	8.21		mg/Kg	☼	84	75 - 125
Silver	0.82		4.88	5.67		mg/Kg	☼	99	75 - 125
Antimony	ND		48.8	39.0		mg/Kg	☼	78	75 - 125

**Lab Sample ID: 500-165943-1 MSD**  
**Matrix: Solid**  
**Analysis Batch: 493192**

**Client Sample ID: TP-01-S1 (2-5')**  
**Prep Type: Total/NA**  
**Prep Batch: 492882**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Arsenic	2.2		9.25	10.6		mg/Kg	☼	91	75 - 125	6	20
Barium	8.5		185	181		mg/Kg	☼	93	75 - 125	6	20
Cadmium	0.33		4.62	4.96		mg/Kg	☼	100	75 - 125	4	20
Chromium	4.1		18.5	20.3		mg/Kg	☼	88	75 - 125	6	20
Lead	3.8		9.25	14.2		mg/Kg	☼	112	75 - 125	3	20
Selenium	ND		9.25	7.64		mg/Kg	☼	83	75 - 125	7	20
Silver	0.82		4.62	5.35		mg/Kg	☼	98	75 - 125	6	20

Eurofins TestAmerica, Chicago

# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 500-165943-1 MSD  
 Matrix: Solid  
 Analysis Batch: 493192

Client Sample ID: TP-01-S1 (2-5')  
 Prep Type: Total/NA  
 Prep Batch: 492882

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		46.2	35.7		mg/Kg	☼	76	75 - 125	9	20

Lab Sample ID: 500-165943-1 DU  
 Matrix: Solid  
 Analysis Batch: 493192

Client Sample ID: TP-01-S1 (2-5')  
 Prep Type: Total/NA  
 Prep Batch: 492882

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	2.2		2.66	F5	mg/Kg	☼	21	20
Barium	8.5		8.58		mg/Kg	☼	0.6	20
Cadmium	0.33		0.298		mg/Kg	☼	9	20
Chromium	4.1		3.72		mg/Kg	☼	9	20
Lead	3.8		4.90	F3	mg/Kg	☼	25	20
Selenium	ND		ND		mg/Kg	☼	NC	20
Silver	0.82		0.922		mg/Kg	☼	12	20
Antimony	ND		ND		mg/Kg	☼	NC	20

## Method: 7471B - Mercury (CVAA)

Lab Sample ID: MB 500-493065/12-A  
 Matrix: Solid  
 Analysis Batch: 493285

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 493065

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg		07/02/19 14:25	07/03/19 09:28	1

Lab Sample ID: LCS 500-493065/13-A  
 Matrix: Solid  
 Analysis Batch: 493285

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 493065

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.167	0.159		mg/Kg		95	80 - 120

## Method: 9045D - pH

Lab Sample ID: 500-165943-6 DU  
 Matrix: Solid  
 Analysis Batch: 493301

Client Sample ID: TP-07-S2 (5-10')  
 Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	8.3		8.3		SU		0.2	

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-01-S1 (2-5')**

**Date Collected: 06/27/19 10:09**

**Date Received: 06/28/19 14:00**

**Lab Sample ID: 500-165943-1**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 14:28 (Start) 07/03/19 14:31 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-01-S1 (2-5')**

**Date Collected: 06/27/19 10:09**

**Date Received: 06/28/19 14:00**

**Lab Sample ID: 500-165943-1**

**Matrix: Solid**

**Percent Solids: 95.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493684	07/08/19 07:37	JVD	TAL CHI
Total/NA	Analysis	8270D		1	493897	07/09/19 10:56	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 18:41	JEF	TAL CHI
Total/NA	Prep	7471B			493065	07/02/19 14:25	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493285	07/03/19 09:32	MJG	TAL CHI

**Client Sample ID: TP-01-S2 (5-10')**

**Date Collected: 06/27/19 10:15**

**Date Received: 06/28/19 14:00**

**Lab Sample ID: 500-165943-2**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 14:31 (Start) 07/03/19 14:33 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-01-S2 (5-10')**

**Date Collected: 06/27/19 10:15**

**Date Received: 06/28/19 14:00**

**Lab Sample ID: 500-165943-2**

**Matrix: Solid**

**Percent Solids: 95.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493684	07/08/19 07:37	JVD	TAL CHI
Total/NA	Analysis	8270D		1	493897	07/09/19 11:24	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:01	JEF	TAL CHI
Total/NA	Prep	7471B			493065	07/02/19 14:25	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493285	07/03/19 09:35	MJG	TAL CHI

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-06-S1 (2-5')**

**Lab Sample ID: 500-165943-3**

**Date Collected: 06/27/19 09:30**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 14:33 (Start) 07/03/19 14:36 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-06-S1 (2-5')**

**Lab Sample ID: 500-165943-3**

**Date Collected: 06/27/19 09:30**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 96.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493684	07/08/19 07:37	JVD	TAL CHI
Total/NA	Analysis	8270D		1	493897	07/09/19 11:51	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:05	JEF	TAL CHI
Total/NA	Prep	7471B			493065	07/02/19 14:25	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493285	07/03/19 09:37	MJG	TAL CHI

**Client Sample ID: TP-06-S2 (5-10')**

**Lab Sample ID: 500-165943-4**

**Date Collected: 06/27/19 09:38**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 14:36 (Start) 07/03/19 14:39 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-06-S2 (5-10')**

**Lab Sample ID: 500-165943-4**

**Date Collected: 06/27/19 09:38**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 93.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493684	07/08/19 07:37	JVD	TAL CHI
Total/NA	Analysis	8270D		1	493897	07/09/19 14:08	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:09	JEF	TAL CHI
Total/NA	Prep	7471B			493065	07/02/19 14:25	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493285	07/03/19 09:43	MJG	TAL CHI

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

**Client Sample ID: TP-07-S1 (2-5')**

**Lab Sample ID: 500-165943-5**

**Date Collected: 06/27/19 08:38**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 14:39 (Start) 07/03/19 14:42 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-07-S1 (2-5')**

**Lab Sample ID: 500-165943-5**

**Date Collected: 06/27/19 08:38**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 95.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493684	07/08/19 07:37	JVD	TAL CHI
Total/NA	Analysis	8270D		1	493897	07/09/19 12:18	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:13	JEF	TAL CHI
Total/NA	Prep	7471B			493065	07/02/19 14:25	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493285	07/03/19 09:45	MJG	TAL CHI

**Client Sample ID: TP-07-S2 (5-10')**

**Lab Sample ID: 500-165943-6**

**Date Collected: 06/27/19 08:49**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 14:44 (Start) 07/03/19 14:47 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-07-S2 (5-10')**

**Lab Sample ID: 500-165943-6**

**Date Collected: 06/27/19 08:49**

**Matrix: Solid**

**Date Received: 06/28/19 14:00**

**Percent Solids: 95.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493684	07/08/19 07:37	JVD	TAL CHI
Total/NA	Analysis	8270D		1	493897	07/09/19 12:46	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:17	JEF	TAL CHI
Total/NA	Prep	7471B			493065	07/02/19 14:25	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493285	07/03/19 09:47	MJG	TAL CHI

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Client Sample ID: TP10-S1 (3-5')

Date Collected: 06/27/19 07:40

Date Received: 06/28/19 14:00

## Lab Sample ID: 500-165943-7

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	(Start) 07/03/19 14:50 (End) 07/03/19 14:53	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

## Client Sample ID: TP10-S1 (3-5')

Date Collected: 06/27/19 07:40

Date Received: 06/28/19 14:00

## Lab Sample ID: 500-165943-7

Matrix: Solid

Percent Solids: 93.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493684	07/08/19 07:37	JVD	TAL CHI
Total/NA	Analysis	8270D		1	493897	07/09/19 13:13	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:33	JEF	TAL CHI
Total/NA	Prep	7471B			493065	07/02/19 14:25	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493285	07/03/19 09:49	MJG	TAL CHI

## Client Sample ID: TP10-S2 (5-10')

Date Collected: 06/27/19 07:55

Date Received: 06/28/19 14:00

## Lab Sample ID: 500-165943-8

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	(Start) 07/03/19 14:53 (End) 07/03/19 14:55	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

## Client Sample ID: TP10-S2 (5-10')

Date Collected: 06/27/19 07:55

Date Received: 06/28/19 14:00

## Lab Sample ID: 500-165943-8

Matrix: Solid

Percent Solids: 95.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493684	07/08/19 07:37	JVD	TAL CHI
Total/NA	Analysis	8270D		1	493897	07/09/19 13:41	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:37	JEF	TAL CHI
Total/NA	Prep	7471B			493065	07/02/19 14:25	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493285	07/03/19 09:52	MJG	TAL CHI

### Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Accreditation/Certification Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165943-1

## Laboratory: Eurofins TestAmerica, Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Illinois	NELAP	5	100201	04-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids



# Login Sample Receipt Checklist

Client: Geo Services, Inc

Job Number: 500-165943-1

**Login Number: 165943**

**List Source: Eurofins TestAmerica, Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.4
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



## ANALYTICAL REPORT

Eurofins TestAmerica, Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

Laboratory Job ID: 500-165855-1

Client Project/Site: Joint Public Safety Train. Campus(19059)

**For:**

Geo Services, Inc  
1235 E Davis Street  
Arlington Heights, Illinois 60004

Attn: Arun Tailor



Authorized for release by:  
7/9/2019 12:23:25 PM

Jim Knapp, Project Manager II  
(630)758-0262  
[jim.knapp@testamericainc.com](mailto:jim.knapp@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Case Narrative

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

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**Job ID: 500-165855-1**

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**Laboratory: Eurofins TestAmerica, Chicago**

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**Narrative**

**Job Narrative  
500-165855-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 6/27/2019 2:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.4° C.

**GC/MS Semi VOA**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**Metals**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**Organic Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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# Detection Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Client Sample ID: TP-19-S1 (3-5')

## Lab Sample ID: 500-165855-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.1		1.0		mg/Kg	1	☼	6010B	Total/NA
Barium	26		1.0		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.38		0.20		mg/Kg	1	☼	6010B	Total/NA
Chromium	6.6		1.0		mg/Kg	1	☼	6010B	Total/NA
Lead	13		0.50		mg/Kg	1	☼	6010B	Total/NA
Silver	1.4		0.50		mg/Kg	1	☼	6010B	Total/NA
pH	8.2		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-19-S2 (5-8')

## Lab Sample ID: 500-165855-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.8		1.3		mg/Kg	1	☼	6010B	Total/NA
Barium	91		1.3		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.36		0.26		mg/Kg	1	☼	6010B	Total/NA
Chromium	26		1.3		mg/Kg	1	☼	6010B	Total/NA
Lead	16		0.66		mg/Kg	1	☼	6010B	Total/NA
Silver	4.0		0.66		mg/Kg	1	☼	6010B	Total/NA
pH	7.4		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-23-S1 (3-5')

## Lab Sample ID: 500-165855-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.1		1.1		mg/Kg	1	☼	6010B	Total/NA
Barium	9.3		1.1		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.34		0.23		mg/Kg	1	☼	6010B	Total/NA
Chromium	3.8		1.1		mg/Kg	1	☼	6010B	Total/NA
Lead	2.5		0.57		mg/Kg	1	☼	6010B	Total/NA
Selenium	1.2		1.1		mg/Kg	1	☼	6010B	Total/NA
Silver	0.83		0.57		mg/Kg	1	☼	6010B	Total/NA
pH	8.2		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-23-S2 (5-10')

## Lab Sample ID: 500-165855-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Phenanthrene	0.094		0.035		mg/Kg	1	☼	8270D	Total/NA
Pyrene	0.038		0.035		mg/Kg	1	☼	8270D	Total/NA
Arsenic	2.6		1.0		mg/Kg	1	☼	6010B	Total/NA
Barium	9.0		1.0		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.31		0.21		mg/Kg	1	☼	6010B	Total/NA
Chromium	4.3		1.0		mg/Kg	1	☼	6010B	Total/NA
Lead	36		0.52		mg/Kg	1	☼	6010B	Total/NA
Silver	0.89		0.52		mg/Kg	1	☼	6010B	Total/NA
pH	8.5		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-25-S1 (3-5')

## Lab Sample ID: 500-165855-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Anthracene	0.064		0.035		mg/Kg	1	☼	8270D	Total/NA
Benzo[a]anthracene	0.21		0.035		mg/Kg	1	☼	8270D	Total/NA
Benzo[a]pyrene	0.20		0.035		mg/Kg	1	☼	8270D	Total/NA
Benzo[b]fluoranthene	0.31		0.035		mg/Kg	1	☼	8270D	Total/NA
Benzo[g,h,i]perylene	0.078		0.035		mg/Kg	1	☼	8270D	Total/NA
Benzo[k]fluoranthene	0.12		0.035		mg/Kg	1	☼	8270D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

# Detection Summary

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Client Sample ID: TP-25-S1 (3-5') (Continued)

## Lab Sample ID: 500-165855-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chrysene	0.26		0.035		mg/Kg	1	☼	8270D	Total/NA
Fluoranthene	0.35		0.035		mg/Kg	1	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	0.064		0.035		mg/Kg	1	☼	8270D	Total/NA
Naphthalene	0.082		0.035		mg/Kg	1	☼	8270D	Total/NA
Phenanthrene	0.47		0.035		mg/Kg	1	☼	8270D	Total/NA
Pyrene	0.31		0.035		mg/Kg	1	☼	8270D	Total/NA
Arsenic	5.2		1.1		mg/Kg	1	☼	6010B	Total/NA
Barium	38		1.1		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.45		0.22		mg/Kg	1	☼	6010B	Total/NA
Chromium	7.4		1.1		mg/Kg	1	☼	6010B	Total/NA
Lead	33		0.54		mg/Kg	1	☼	6010B	Total/NA
Silver	1.3		0.54		mg/Kg	1	☼	6010B	Total/NA
Mercury	0.029		0.017		mg/Kg	1	☼	7471B	Total/NA
pH	8.1		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-25-S2 (5-10')

## Lab Sample ID: 500-165855-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzo[a]anthracene	0.048		0.038		mg/Kg	1	☼	8270D	Total/NA
Benzo[a]pyrene	0.043		0.038		mg/Kg	1	☼	8270D	Total/NA
Benzo[b]fluoranthene	0.061		0.038		mg/Kg	1	☼	8270D	Total/NA
Chrysene	0.054		0.038		mg/Kg	1	☼	8270D	Total/NA
Fluoranthene	0.090		0.038		mg/Kg	1	☼	8270D	Total/NA
Phenanthrene	0.092		0.038		mg/Kg	1	☼	8270D	Total/NA
Pyrene	0.075		0.038		mg/Kg	1	☼	8270D	Total/NA
Arsenic	3.0		1.1		mg/Kg	1	☼	6010B	Total/NA
Barium	15		1.1		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.33		0.22		mg/Kg	1	☼	6010B	Total/NA
Chromium	4.8		1.1		mg/Kg	1	☼	6010B	Total/NA
Lead	11		0.56		mg/Kg	1	☼	6010B	Total/NA
Silver	1.1		0.56		mg/Kg	1	☼	6010B	Total/NA
pH	8.3		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-24-S1 (3-5')

## Lab Sample ID: 500-165855-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.3		1.0		mg/Kg	1	☼	6010B	Total/NA
Barium	17		1.0		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.26		0.21		mg/Kg	1	☼	6010B	Total/NA
Chromium	5.8		1.0		mg/Kg	1	☼	6010B	Total/NA
Lead	4.1		0.52		mg/Kg	1	☼	6010B	Total/NA
Silver	1.7		0.52		mg/Kg	1	☼	6010B	Total/NA
pH	8.4		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-24-S2 (8-10')

## Lab Sample ID: 500-165855-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	4.7		1.3		mg/Kg	1	☼	6010B	Total/NA
Barium	91		1.3		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.44		0.26		mg/Kg	1	☼	6010B	Total/NA
Chromium	28		1.3		mg/Kg	1	☼	6010B	Total/NA
Lead	20		0.65		mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

# Detection Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-24-S2 (8-10') (Continued)**

**Lab Sample ID: 500-165855-8**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Selenium	1.4		1.3		mg/Kg	1	☼	6010B	Total/NA
Silver	4.0		0.65		mg/Kg	1	☼	6010B	Total/NA
Mercury	0.024		0.022		mg/Kg	1	☼	7471B	Total/NA
pH	7.2		0.2		SU	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago



# Method Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

Method	Method Description	Protocol	Laboratory
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
6010B	Metals (ICP)	SW846	TAL CHI
7471B	Mercury (CVAA)	SW846	TAL CHI
9045D	pH	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI
3050B	Preparation, Metals	SW846	TAL CHI
3541	Automated Soxhlet Extraction	SW846	TAL CHI
7471B	Preparation, Mercury	SW846	TAL CHI

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Sample Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-165855-1	TP-19-S1 (3-5')	Solid	06/26/19 08:48	06/27/19 14:40	
500-165855-2	TP-19-S2 (5-8')	Solid	06/26/19 09:05	06/27/19 14:40	
500-165855-3	TP-23-S1 (3-5')	Solid	06/26/19 09:28	06/27/19 14:40	
500-165855-4	TP-23-S2 (5-10')	Solid	06/26/19 09:40	06/27/19 14:40	
500-165855-5	TP-25-S1 (3-5')	Solid	06/26/19 10:00	06/27/19 14:40	
500-165855-6	TP-25-S2 (5-10')	Solid	06/26/19 10:08	06/27/19 14:40	
500-165855-7	TP-24-S1 (3-5')	Solid	06/26/19 10:43	06/27/19 14:40	
500-165855-8	TP-24-S2 (8-10')	Solid	06/26/19 10:50	06/27/19 14:40	

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-19-S1 (3-5')**

**Lab Sample ID: 500-165855-1**

**Date Collected: 06/26/19 08:48**

**Matrix: Solid**

**Date Received: 06/27/19 14:40**

**Percent Solids: 87.2**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Acenaphthylene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Anthracene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Benzo[a]anthracene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Benzo[a]pyrene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Benzo[b]fluoranthene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Benzo[g,h,i]perylene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Benzo[k]fluoranthene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Chrysene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Dibenz(a,h)anthracene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Fluoranthene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Indeno[1,2,3-cd]pyrene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Naphthalene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Phenanthrene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Pyrene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1
Fluorene	ND		0.036		mg/Kg	☼	07/02/19 17:39	07/03/19 18:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	74		37 - 147	07/02/19 17:39	07/03/19 18:05	1
2-Fluorobiphenyl	74		43 - 145	07/02/19 17:39	07/03/19 18:05	1
Terphenyl-d14 (Surr)	78		42 - 157	07/02/19 17:39	07/03/19 18:05	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:41	1
<b>Arsenic</b>	<b>3.1</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:41	1
<b>Barium</b>	<b>26</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:41	1
<b>Cadmium</b>	<b>0.38</b>		0.20		mg/Kg	☼	07/02/19 07:46	07/02/19 19:41	1
<b>Chromium</b>	<b>6.6</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:41	1
<b>Lead</b>	<b>13</b>		0.50		mg/Kg	☼	07/02/19 07:46	07/02/19 19:41	1
Selenium	ND		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:41	1
<b>Silver</b>	<b>1.4</b>		0.50		mg/Kg	☼	07/02/19 07:46	07/02/19 19:41	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg	☼	07/01/19 15:10	07/02/19 10:11	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>8.2</b>		0.2		SU			07/02/19 16:19	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-19-S2 (5-8')**

**Lab Sample ID: 500-165855-2**

**Date Collected: 06/26/19 09:05**

**Matrix: Solid**

**Date Received: 06/27/19 14:40**

**Percent Solids: 72.2**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Acenaphthylene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Anthracene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Benzo[a]anthracene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Benzo[a]pyrene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Benzo[b]fluoranthene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Benzo[g,h,i]perylene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Benzo[k]fluoranthene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Chrysene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Dibenz(a,h)anthracene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Fluoranthene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Indeno[1,2,3-cd]pyrene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Naphthalene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Phenanthrene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Pyrene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1
Fluorene	ND		0.045		mg/Kg	☼	07/02/19 17:39	07/03/19 18:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	48		37 - 147	07/02/19 17:39	07/03/19 18:34	1
2-Fluorobiphenyl	49		43 - 145	07/02/19 17:39	07/03/19 18:34	1
Terphenyl-d14 (Surr)	58		42 - 157	07/02/19 17:39	07/03/19 18:34	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.6		mg/Kg	☼	07/02/19 07:46	07/02/19 19:45	1
<b>Arsenic</b>	<b>3.8</b>		1.3		mg/Kg	☼	07/02/19 07:46	07/02/19 19:45	1
<b>Barium</b>	<b>91</b>		1.3		mg/Kg	☼	07/02/19 07:46	07/02/19 19:45	1
<b>Cadmium</b>	<b>0.36</b>		0.26		mg/Kg	☼	07/02/19 07:46	07/02/19 19:45	1
<b>Chromium</b>	<b>26</b>		1.3		mg/Kg	☼	07/02/19 07:46	07/02/19 19:45	1
<b>Lead</b>	<b>16</b>		0.66		mg/Kg	☼	07/02/19 07:46	07/02/19 19:45	1
Selenium	ND		1.3		mg/Kg	☼	07/02/19 07:46	07/02/19 19:45	1
<b>Silver</b>	<b>4.0</b>		0.66		mg/Kg	☼	07/02/19 07:46	07/02/19 19:45	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.022		mg/Kg	☼	07/01/19 15:10	07/02/19 10:13	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>7.4</b>		0.2		SU			07/02/19 16:21	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-23-S1 (3-5')**

**Lab Sample ID: 500-165855-3**

**Date Collected: 06/26/19 09:28**

**Matrix: Solid**

**Date Received: 06/27/19 14:40**

**Percent Solids: 80.0**

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Acenaphthylene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Anthracene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Benzo[a]anthracene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Benzo[a]pyrene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Benzo[b]fluoranthene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Benzo[g,h,i]perylene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Benzo[k]fluoranthene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Chrysene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Dibenz(a,h)anthracene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Fluoranthene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Indeno[1,2,3-cd]pyrene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Naphthalene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Phenanthrene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Pyrene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1
Fluorene	ND		0.040		mg/Kg	☼	07/02/19 17:39	07/03/19 19:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	54		37 - 147	07/02/19 17:39	07/03/19 19:03	1
2-Fluorobiphenyl	55		43 - 145	07/02/19 17:39	07/03/19 19:03	1
Terphenyl-d14 (Surr)	66		42 - 157	07/02/19 17:39	07/03/19 19:03	1

## Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.3		mg/Kg	☼	07/02/19 07:46	07/02/19 19:49	1
<b>Arsenic</b>	<b>1.1</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:49	1
<b>Barium</b>	<b>9.3</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:49	1
<b>Cadmium</b>	<b>0.34</b>		0.23		mg/Kg	☼	07/02/19 07:46	07/02/19 19:49	1
<b>Chromium</b>	<b>3.8</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:49	1
<b>Lead</b>	<b>2.5</b>		0.57		mg/Kg	☼	07/02/19 07:46	07/02/19 19:49	1
<b>Selenium</b>	<b>1.2</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:49	1
<b>Silver</b>	<b>0.83</b>		0.57		mg/Kg	☼	07/02/19 07:46	07/02/19 19:49	1

## Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.020		mg/Kg	☼	07/01/19 15:10	07/02/19 10:15	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<b>8.2</b>		0.2		SU			07/02/19 16:24	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-23-S2 (5-10')**

**Lab Sample ID: 500-165855-4**

**Date Collected: 06/26/19 09:40**

**Matrix: Solid**

**Date Received: 06/27/19 14:40**

**Percent Solids: 93.7**

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Acenaphthylene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Anthracene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Benzo[a]anthracene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Benzo[a]pyrene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Benzo[b]fluoranthene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Benzo[g,h,i]perylene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Benzo[k]fluoranthene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Chrysene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Dibenz(a,h)anthracene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Fluoranthene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Indeno[1,2,3-cd]pyrene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Naphthalene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
<b>Phenanthrene</b>	<b>0.094</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
<b>Pyrene</b>	<b>0.038</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1
Fluorene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/03/19 19:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	76		37 - 147	07/02/19 17:39	07/03/19 19:32	1
2-Fluorobiphenyl	77		43 - 145	07/02/19 17:39	07/03/19 19:32	1
Terphenyl-d14 (Surr)	82		42 - 157	07/02/19 17:39	07/03/19 19:32	1

## Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:53	1
<b>Arsenic</b>	<b>2.6</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:53	1
<b>Barium</b>	<b>9.0</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:53	1
<b>Cadmium</b>	<b>0.31</b>		0.21		mg/Kg	☼	07/02/19 07:46	07/02/19 19:53	1
<b>Chromium</b>	<b>4.3</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:53	1
<b>Lead</b>	<b>36</b>		0.52		mg/Kg	☼	07/02/19 07:46	07/02/19 19:53	1
Selenium	ND		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 19:53	1
<b>Silver</b>	<b>0.89</b>		0.52		mg/Kg	☼	07/02/19 07:46	07/02/19 19:53	1

## Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.016		mg/Kg	☼	07/01/19 15:10	07/02/19 10:18	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>8.5</b>		0.2		SU			07/02/19 16:26	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-25-S1 (3-5')**

**Lab Sample ID: 500-165855-5**

Date Collected: 06/26/19 10:00

Matrix: Solid

Date Received: 06/27/19 14:40

Percent Solids: 90.8

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
Acenaphthylene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Anthracene</b>	<b>0.064</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Benzo[a]anthracene</b>	<b>0.21</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Benzo[a]pyrene</b>	<b>0.20</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Benzo[b]fluoranthene</b>	<b>0.31</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Benzo[g,h,i]perylene</b>	<b>0.078</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Benzo[k]fluoranthene</b>	<b>0.12</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Chrysene</b>	<b>0.26</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
Dibenz(a,h)anthracene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Fluoranthene</b>	<b>0.35</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Indeno[1,2,3-cd]pyrene</b>	<b>0.064</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Naphthalene</b>	<b>0.082</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Phenanthrene</b>	<b>0.47</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
<b>Pyrene</b>	<b>0.31</b>		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1
Fluorene	ND		0.035		mg/Kg	☼	07/02/19 17:39	07/05/19 15:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	92		37 - 147	07/02/19 17:39	07/05/19 15:51	1
2-Fluorobiphenyl	82		43 - 145	07/02/19 17:39	07/05/19 15:51	1
Terphenyl-d14 (Surr)	107		42 - 157	07/02/19 17:39	07/05/19 15:51	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.2		mg/Kg	☼	07/02/19 07:46	07/02/19 19:57	1
<b>Arsenic</b>	<b>5.2</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:57	1
<b>Barium</b>	<b>38</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:57	1
<b>Cadmium</b>	<b>0.45</b>		0.22		mg/Kg	☼	07/02/19 07:46	07/02/19 19:57	1
<b>Chromium</b>	<b>7.4</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:57	1
<b>Lead</b>	<b>33</b>		0.54		mg/Kg	☼	07/02/19 07:46	07/02/19 19:57	1
Selenium	ND		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 19:57	1
<b>Silver</b>	<b>1.3</b>		0.54		mg/Kg	☼	07/02/19 07:46	07/02/19 19:57	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Mercury</b>	<b>0.029</b>		0.017		mg/Kg	☼	07/01/19 15:10	07/02/19 10:20	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>8.1</b>		0.2		SU			07/02/19 16:28	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-25-S2 (5-10')**

**Lab Sample ID: 500-165855-6**

Date Collected: 06/26/19 10:08

Matrix: Solid

Date Received: 06/27/19 14:40

Percent Solids: 83.5

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
Acenaphthylene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
Anthracene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
<b>Benzo[a]anthracene</b>	<b>0.048</b>		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
<b>Benzo[a]pyrene</b>	<b>0.043</b>		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
<b>Benzo[b]fluoranthene</b>	<b>0.061</b>		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
Benzo[g,h,i]perylene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
Benzo[k]fluoranthene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
<b>Chrysene</b>	<b>0.054</b>		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
Dibenz(a,h)anthracene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
<b>Fluoranthene</b>	<b>0.090</b>		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
Indeno[1,2,3-cd]pyrene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
Naphthalene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
<b>Phenanthrene</b>	<b>0.092</b>		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
<b>Pyrene</b>	<b>0.075</b>		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
Fluorene	ND		0.038		mg/Kg	☼	07/02/19 17:39	07/03/19 20:01	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Nitrobenzene-d5 (Surr)	70		37 - 147				07/02/19 17:39	07/03/19 20:01	1
2-Fluorobiphenyl	67		43 - 145				07/02/19 17:39	07/03/19 20:01	1
Terphenyl-d14 (Surr)	74		42 - 157				07/02/19 17:39	07/03/19 20:01	1

## Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.2		mg/Kg	☼	07/02/19 07:46	07/02/19 20:01	1
<b>Arsenic</b>	<b>3.0</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 20:01	1
<b>Barium</b>	<b>15</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 20:01	1
<b>Cadmium</b>	<b>0.33</b>		0.22		mg/Kg	☼	07/02/19 07:46	07/02/19 20:01	1
<b>Chromium</b>	<b>4.8</b>		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 20:01	1
<b>Lead</b>	<b>11</b>		0.56		mg/Kg	☼	07/02/19 07:46	07/02/19 20:01	1
Selenium	ND		1.1		mg/Kg	☼	07/02/19 07:46	07/02/19 20:01	1
<b>Silver</b>	<b>1.1</b>		0.56		mg/Kg	☼	07/02/19 07:46	07/02/19 20:01	1

## Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.019		mg/Kg	☼	07/01/19 15:10	07/02/19 10:26	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>8.3</b>		0.2		SU			07/02/19 16:31	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-24-S1 (3-5')**

**Lab Sample ID: 500-165855-7**

Date Collected: 06/26/19 10:43

Matrix: Solid

Date Received: 06/27/19 14:40

Percent Solids: 88.7

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Acenaphthylene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Anthracene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Benzo[a]anthracene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Benzo[a]pyrene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Benzo[b]fluoranthene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Benzo[g,h,i]perylene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Benzo[k]fluoranthene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Chrysene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Dibenz(a,h)anthracene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Fluoranthene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Indeno[1,2,3-cd]pyrene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Naphthalene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Phenanthrene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Pyrene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Fluorene	ND		0.037		mg/Kg	☼	07/02/19 17:39	07/03/19 17:08	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	64		37 - 147				07/02/19 17:39	07/03/19 17:08	1
2-Fluorobiphenyl	65		43 - 145				07/02/19 17:39	07/03/19 17:08	1
Terphenyl-d14 (Surr)	74		42 - 157				07/02/19 17:39	07/03/19 17:08	1

## Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.1		mg/Kg	☼	07/02/19 07:46	07/02/19 20:05	1
<b>Arsenic</b>	<b>2.3</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 20:05	1
<b>Barium</b>	<b>17</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 20:05	1
<b>Cadmium</b>	<b>0.26</b>		0.21		mg/Kg	☼	07/02/19 07:46	07/02/19 20:05	1
<b>Chromium</b>	<b>5.8</b>		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 20:05	1
<b>Lead</b>	<b>4.1</b>		0.52		mg/Kg	☼	07/02/19 07:46	07/02/19 20:05	1
Selenium	ND		1.0		mg/Kg	☼	07/02/19 07:46	07/02/19 20:05	1
<b>Silver</b>	<b>1.7</b>		0.52		mg/Kg	☼	07/02/19 07:46	07/02/19 20:05	1

## Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.018		mg/Kg	☼	07/01/19 15:10	07/02/19 10:28	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.4		0.2		SU			07/02/19 16:33	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-24-S2 (8-10')**

**Lab Sample ID: 500-165855-8**

Date Collected: 06/26/19 10:50

Matrix: Solid

Date Received: 06/27/19 14:40

Percent Solids: 68.9

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Acenaphthylene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Anthracene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Benzo[a]anthracene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Benzo[a]pyrene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Benzo[b]fluoranthene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Benzo[g,h,i]perylene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Benzo[k]fluoranthene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Chrysene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Dibenz(a,h)anthracene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Fluoranthene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Indeno[1,2,3-cd]pyrene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Naphthalene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Phenanthrene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Pyrene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1
Fluorene	ND		0.048		mg/Kg	☼	07/02/19 17:39	07/03/19 17:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	64		37 - 147	07/02/19 17:39	07/03/19 17:37	1
2-Fluorobiphenyl	64		43 - 145	07/02/19 17:39	07/03/19 17:37	1
Terphenyl-d14 (Surr)	74		42 - 157	07/02/19 17:39	07/03/19 17:37	1

## Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.6		mg/Kg	☼	07/02/19 07:46	07/02/19 20:09	1
<b>Arsenic</b>	<b>4.7</b>		1.3		mg/Kg	☼	07/02/19 07:46	07/02/19 20:09	1
<b>Barium</b>	<b>91</b>		1.3		mg/Kg	☼	07/02/19 07:46	07/02/19 20:09	1
<b>Cadmium</b>	<b>0.44</b>		0.26		mg/Kg	☼	07/02/19 07:46	07/02/19 20:09	1
<b>Chromium</b>	<b>28</b>		1.3		mg/Kg	☼	07/02/19 07:46	07/02/19 20:09	1
<b>Lead</b>	<b>20</b>		0.65		mg/Kg	☼	07/02/19 07:46	07/02/19 20:09	1
<b>Selenium</b>	<b>1.4</b>		1.3		mg/Kg	☼	07/02/19 07:46	07/02/19 20:09	1
<b>Silver</b>	<b>4.0</b>		0.65		mg/Kg	☼	07/02/19 07:46	07/02/19 20:09	1

## Method: 7471B - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Mercury</b>	<b>0.024</b>		0.022		mg/Kg	☼	07/01/19 15:10	07/02/19 10:30	1

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>7.2</b>		0.2		SU			07/02/19 16:38	1

# Definitions/Glossary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## GC/MS Semi VOA

### Prep Batch: 493154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-1	TP-19-S1 (3-5')	Total/NA	Solid	3541	
500-165855-2	TP-19-S2 (5-8')	Total/NA	Solid	3541	
500-165855-3	TP-23-S1 (3-5')	Total/NA	Solid	3541	
500-165855-4	TP-23-S2 (5-10')	Total/NA	Solid	3541	
500-165855-5	TP-25-S1 (3-5')	Total/NA	Solid	3541	
500-165855-6	TP-25-S2 (5-10')	Total/NA	Solid	3541	
500-165855-7	TP-24-S1 (3-5')	Total/NA	Solid	3541	
500-165855-8	TP-24-S2 (8-10')	Total/NA	Solid	3541	
MB 500-493154/1-A	Method Blank	Total/NA	Solid	3541	
LCS 500-493154/2-A	Lab Control Sample	Total/NA	Solid	3541	

### Analysis Batch: 493220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-1	TP-19-S1 (3-5')	Total/NA	Solid	8270D	493154
500-165855-2	TP-19-S2 (5-8')	Total/NA	Solid	8270D	493154
500-165855-3	TP-23-S1 (3-5')	Total/NA	Solid	8270D	493154
500-165855-4	TP-23-S2 (5-10')	Total/NA	Solid	8270D	493154
500-165855-6	TP-25-S2 (5-10')	Total/NA	Solid	8270D	493154
500-165855-7	TP-24-S1 (3-5')	Total/NA	Solid	8270D	493154
500-165855-8	TP-24-S2 (8-10')	Total/NA	Solid	8270D	493154

### Analysis Batch: 493226

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-493154/1-A	Method Blank	Total/NA	Solid	8270D	493154
LCS 500-493154/2-A	Lab Control Sample	Total/NA	Solid	8270D	493154

### Analysis Batch: 493447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-5	TP-25-S1 (3-5')	Total/NA	Solid	8270D	493154

## Metals

### Prep Batch: 492881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-1	TP-19-S1 (3-5')	Total/NA	Solid	7471B	
500-165855-2	TP-19-S2 (5-8')	Total/NA	Solid	7471B	
500-165855-3	TP-23-S1 (3-5')	Total/NA	Solid	7471B	
500-165855-4	TP-23-S2 (5-10')	Total/NA	Solid	7471B	
500-165855-5	TP-25-S1 (3-5')	Total/NA	Solid	7471B	
500-165855-6	TP-25-S2 (5-10')	Total/NA	Solid	7471B	
500-165855-7	TP-24-S1 (3-5')	Total/NA	Solid	7471B	
500-165855-8	TP-24-S2 (8-10')	Total/NA	Solid	7471B	
MB 500-492881/12-A	Method Blank	Total/NA	Solid	7471B	
LCS 500-492881/13-A	Lab Control Sample	Total/NA	Solid	7471B	
500-165855-8 MS	TP-24-S2 (8-10')	Total/NA	Solid	7471B	
500-165855-8 MSD	TP-24-S2 (8-10')	Total/NA	Solid	7471B	
500-165855-8 DU	TP-24-S2 (8-10')	Total/NA	Solid	7471B	

### Prep Batch: 492882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-1	TP-19-S1 (3-5')	Total/NA	Solid	3050B	

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# QC Association Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Metals (Continued)

### Prep Batch: 492882 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-2	TP-19-S2 (5-8')	Total/NA	Solid	3050B	
500-165855-3	TP-23-S1 (3-5')	Total/NA	Solid	3050B	
500-165855-4	TP-23-S2 (5-10')	Total/NA	Solid	3050B	
500-165855-5	TP-25-S1 (3-5')	Total/NA	Solid	3050B	
500-165855-6	TP-25-S2 (5-10')	Total/NA	Solid	3050B	
500-165855-7	TP-24-S1 (3-5')	Total/NA	Solid	3050B	
500-165855-8	TP-24-S2 (8-10')	Total/NA	Solid	3050B	
MB 500-492882/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 500-492882/2-A	Lab Control Sample	Total/NA	Solid	3050B	

### Analysis Batch: 493079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-1	TP-19-S1 (3-5')	Total/NA	Solid	7471B	492881
500-165855-2	TP-19-S2 (5-8')	Total/NA	Solid	7471B	492881
500-165855-3	TP-23-S1 (3-5')	Total/NA	Solid	7471B	492881
500-165855-4	TP-23-S2 (5-10')	Total/NA	Solid	7471B	492881
500-165855-5	TP-25-S1 (3-5')	Total/NA	Solid	7471B	492881
500-165855-6	TP-25-S2 (5-10')	Total/NA	Solid	7471B	492881
500-165855-7	TP-24-S1 (3-5')	Total/NA	Solid	7471B	492881
500-165855-8	TP-24-S2 (8-10')	Total/NA	Solid	7471B	492881
MB 500-492881/12-A	Method Blank	Total/NA	Solid	7471B	492881
LCS 500-492881/13-A	Lab Control Sample	Total/NA	Solid	7471B	492881
500-165855-8 MS	TP-24-S2 (8-10')	Total/NA	Solid	7471B	492881
500-165855-8 MSD	TP-24-S2 (8-10')	Total/NA	Solid	7471B	492881
500-165855-8 DU	TP-24-S2 (8-10')	Total/NA	Solid	7471B	492881

### Analysis Batch: 493192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-1	TP-19-S1 (3-5')	Total/NA	Solid	6010B	492882
500-165855-2	TP-19-S2 (5-8')	Total/NA	Solid	6010B	492882
500-165855-3	TP-23-S1 (3-5')	Total/NA	Solid	6010B	492882
500-165855-4	TP-23-S2 (5-10')	Total/NA	Solid	6010B	492882
500-165855-5	TP-25-S1 (3-5')	Total/NA	Solid	6010B	492882
500-165855-6	TP-25-S2 (5-10')	Total/NA	Solid	6010B	492882
500-165855-7	TP-24-S1 (3-5')	Total/NA	Solid	6010B	492882
500-165855-8	TP-24-S2 (8-10')	Total/NA	Solid	6010B	492882
MB 500-492882/1-A	Method Blank	Total/NA	Solid	6010B	492882
LCS 500-492882/2-A	Lab Control Sample	Total/NA	Solid	6010B	492882

## General Chemistry

### Analysis Batch: 492862

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-1	TP-19-S1 (3-5')	Total/NA	Solid	Moisture	
500-165855-2	TP-19-S2 (5-8')	Total/NA	Solid	Moisture	
500-165855-3	TP-23-S1 (3-5')	Total/NA	Solid	Moisture	
500-165855-4	TP-23-S2 (5-10')	Total/NA	Solid	Moisture	
500-165855-5	TP-25-S1 (3-5')	Total/NA	Solid	Moisture	
500-165855-6	TP-25-S2 (5-10')	Total/NA	Solid	Moisture	
500-165855-7	TP-24-S1 (3-5')	Total/NA	Solid	Moisture	
500-165855-8	TP-24-S2 (8-10')	Total/NA	Solid	Moisture	

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# QC Association Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## General Chemistry

### Analysis Batch: 493099

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-165855-1	TP-19-S1 (3-5')	Total/NA	Solid	9045D	
500-165855-2	TP-19-S2 (5-8')	Total/NA	Solid	9045D	
500-165855-3	TP-23-S1 (3-5')	Total/NA	Solid	9045D	
500-165855-4	TP-23-S2 (5-10')	Total/NA	Solid	9045D	
500-165855-5	TP-25-S1 (3-5')	Total/NA	Solid	9045D	
500-165855-6	TP-25-S2 (5-10')	Total/NA	Solid	9045D	
500-165855-7	TP-24-S1 (3-5')	Total/NA	Solid	9045D	
500-165855-8	TP-24-S2 (8-10')	Total/NA	Solid	9045D	
LCS 500-493099/5	Lab Control Sample	Total/NA	Solid	9045D	
LCSD 500-493099/6	Lab Control Sample Dup	Total/NA	Solid	9045D	

# Surrogate Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		NBZ (37-147)	FBP (43-145)	TPHL (42-157)
500-165855-1	TP-19-S1 (3-5')	74	74	78
500-165855-2	TP-19-S2 (5-8')	48	49	58
500-165855-3	TP-23-S1 (3-5')	54	55	66
500-165855-4	TP-23-S2 (5-10')	76	77	82
500-165855-5	TP-25-S1 (3-5')	92	82	107
500-165855-6	TP-25-S2 (5-10')	70	67	74
500-165855-7	TP-24-S1 (3-5')	64	65	74
500-165855-8	TP-24-S2 (8-10')	64	64	74
LCS 500-493154/2-A	Lab Control Sample	87	93	93
MB 500-493154/1-A	Method Blank	82	93	98

#### Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl

TPHL = Terphenyl-d14 (Surr)

# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 500-493154/1-A**  
**Matrix: Solid**  
**Analysis Batch: 493226**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 493154**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Acenaphthylene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Anthracene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Benzo[a]anthracene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Benzo[a]pyrene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Benzo[b]fluoranthene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Benzo[g,h,i]perylene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Benzo[k]fluoranthene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Chrysene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Dibenz(a,h)anthracene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Fluoranthene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Indeno[1,2,3-cd]pyrene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Naphthalene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Phenanthrene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Pyrene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1
Fluorene	ND		0.033		mg/Kg		07/02/19 17:39	07/03/19 12:33	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	82		37 - 147	07/02/19 17:39	07/03/19 12:33	1
2-Fluorobiphenyl	93		43 - 145	07/02/19 17:39	07/03/19 12:33	1
Terphenyl-d14 (Surr)	98		42 - 157	07/02/19 17:39	07/03/19 12:33	1

**Lab Sample ID: LCS 500-493154/2-A**  
**Matrix: Solid**  
**Analysis Batch: 493226**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 493154**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	1.33	1.20		mg/Kg		90	65 - 124
Acenaphthylene	1.33	1.22		mg/Kg		92	68 - 120
Anthracene	1.33	1.21		mg/Kg		90	70 - 114
Benzo[a]anthracene	1.33	1.18		mg/Kg		88	67 - 122
Benzo[a]pyrene	1.33	1.25		mg/Kg		94	65 - 133
Benzo[b]fluoranthene	1.33	1.19		mg/Kg		89	69 - 129
Benzo[g,h,i]perylene	1.33	1.29		mg/Kg		96	72 - 131
Benzo[k]fluoranthene	1.33	1.18		mg/Kg		89	68 - 127
Chrysene	1.33	1.15		mg/Kg		86	63 - 120
Dibenz(a,h)anthracene	1.33	1.25		mg/Kg		93	64 - 131
Fluoranthene	1.33	1.28		mg/Kg		96	62 - 120
Indeno[1,2,3-cd]pyrene	1.33	1.30		mg/Kg		97	68 - 130
Naphthalene	1.33	1.15		mg/Kg		86	63 - 110
Phenanthrene	1.33	1.16		mg/Kg		87	62 - 120
Pyrene	1.33	1.14		mg/Kg		85	61 - 128
Fluorene	1.33	1.21		mg/Kg		91	62 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5 (Surr)	87		37 - 147
2-Fluorobiphenyl	93		43 - 145
Terphenyl-d14 (Surr)	93		42 - 157

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# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-492882/1-A**  
**Matrix: Solid**  
**Analysis Batch: 493192**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 492882**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Arsenic	ND		1.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Barium	ND		1.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Cadmium	ND		0.20		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Chromium	ND		1.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Lead	ND		0.50		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Selenium	ND		1.0		mg/Kg		07/02/19 07:46	07/02/19 18:21	1
Silver	ND		0.50		mg/Kg		07/02/19 07:46	07/02/19 18:21	1

**Lab Sample ID: LCS 500-492882/2-A**  
**Matrix: Solid**  
**Analysis Batch: 493192**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 492882**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Antimony	50.0	46.6		mg/Kg		93	80 - 120
Arsenic	10.0	8.91		mg/Kg		89	80 - 120
Barium	200	197		mg/Kg		99	80 - 120
Cadmium	5.00	4.95		mg/Kg		99	80 - 120
Chromium	20.0	19.3		mg/Kg		96	80 - 120
Lead	10.0	9.26		mg/Kg		93	80 - 120
Selenium	10.0	8.86		mg/Kg		89	80 - 120
Silver	5.00	4.52		mg/Kg		90	80 - 120

## Method: 7471B - Mercury (CVAA)

**Lab Sample ID: MB 500-492881/12-A**  
**Matrix: Solid**  
**Analysis Batch: 493079**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 492881**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg		07/01/19 15:10	07/02/19 10:07	1

**Lab Sample ID: LCS 500-492881/13-A**  
**Matrix: Solid**  
**Analysis Batch: 493079**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 492881**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.167	0.175		mg/Kg		105	80 - 120

**Lab Sample ID: 500-165855-8 MS**  
**Matrix: Solid**  
**Analysis Batch: 493079**

**Client Sample ID: TP-24-S2 (8-10')**  
**Prep Type: Total/NA**  
**Prep Batch: 492881**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	0.024		0.111	0.127		mg/Kg	☼	93	75 - 125

# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Method: 7471B - Mercury (CVAA) (Continued)

**Lab Sample ID: 500-165855-8 MSD**  
**Matrix: Solid**  
**Analysis Batch: 493079**

**Client Sample ID: TP-24-S2 (8-10')**  
**Prep Type: Total/NA**  
**Prep Batch: 492881**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Mercury	0.024		0.111	0.127		mg/Kg	☼	93	75 - 125	0	20

**Lab Sample ID: 500-165855-8 DU**  
**Matrix: Solid**  
**Analysis Batch: 493079**

**Client Sample ID: TP-24-S2 (8-10')**  
**Prep Type: Total/NA**  
**Prep Batch: 492881**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Mercury	0.024		0.0236		mg/Kg	☼	0.5	20



# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Client Sample ID: TP-19-S1 (3-5')

Date Collected: 06/26/19 08:48

Date Received: 06/27/19 14:40

## Lab Sample ID: 500-165855-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493099	07/02/19 16:19 (Start) 07/02/19 16:21 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

## Client Sample ID: TP-19-S1 (3-5')

Date Collected: 06/26/19 08:48

Date Received: 06/27/19 14:40

## Lab Sample ID: 500-165855-1

Matrix: Solid

Percent Solids: 87.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493154	07/02/19 17:39	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493220	07/03/19 18:05	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:41	JEF	TAL CHI
Total/NA	Prep	7471B			492881	07/01/19 15:10	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493079	07/02/19 10:11	MJG	TAL CHI

## Client Sample ID: TP-19-S2 (5-8')

Date Collected: 06/26/19 09:05

Date Received: 06/27/19 14:40

## Lab Sample ID: 500-165855-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493099	07/02/19 16:21 (Start) 07/02/19 16:24 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

## Client Sample ID: TP-19-S2 (5-8')

Date Collected: 06/26/19 09:05

Date Received: 06/27/19 14:40

## Lab Sample ID: 500-165855-2

Matrix: Solid

Percent Solids: 72.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493154	07/02/19 17:39	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493220	07/03/19 18:34	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:45	JEF	TAL CHI
Total/NA	Prep	7471B			492881	07/01/19 15:10	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493079	07/02/19 10:13	MJG	TAL CHI

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-23-S1 (3-5')**

**Date Collected: 06/26/19 09:28**

**Date Received: 06/27/19 14:40**

**Lab Sample ID: 500-165855-3**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493099	07/02/19 16:24 (Start) 07/02/19 16:26 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-23-S1 (3-5')**

**Date Collected: 06/26/19 09:28**

**Date Received: 06/27/19 14:40**

**Lab Sample ID: 500-165855-3**

**Matrix: Solid**

**Percent Solids: 80.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493154	07/02/19 17:39	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493220	07/03/19 19:03	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:49	JEF	TAL CHI
Total/NA	Prep	7471B			492881	07/01/19 15:10	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493079	07/02/19 10:15	MJG	TAL CHI

**Client Sample ID: TP-23-S2 (5-10')**

**Date Collected: 06/26/19 09:40**

**Date Received: 06/27/19 14:40**

**Lab Sample ID: 500-165855-4**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493099	07/02/19 16:26 (Start) 07/02/19 16:28 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-23-S2 (5-10')**

**Date Collected: 06/26/19 09:40**

**Date Received: 06/27/19 14:40**

**Lab Sample ID: 500-165855-4**

**Matrix: Solid**

**Percent Solids: 93.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493154	07/02/19 17:39	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493220	07/03/19 19:32	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:53	JEF	TAL CHI
Total/NA	Prep	7471B			492881	07/01/19 15:10	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493079	07/02/19 10:18	MJG	TAL CHI

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-25-S1 (3-5')**

**Lab Sample ID: 500-165855-5**

**Date Collected: 06/26/19 10:00**

**Matrix: Solid**

**Date Received: 06/27/19 14:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493099	07/02/19 16:28 (Start) 07/02/19 16:31 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-25-S1 (3-5')**

**Lab Sample ID: 500-165855-5**

**Date Collected: 06/26/19 10:00**

**Matrix: Solid**

**Date Received: 06/27/19 14:40**

**Percent Solids: 90.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493154	07/02/19 17:39	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493447	07/05/19 15:51	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 19:57	JEF	TAL CHI
Total/NA	Prep	7471B			492881	07/01/19 15:10	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493079	07/02/19 10:20	MJG	TAL CHI

**Client Sample ID: TP-25-S2 (5-10')**

**Lab Sample ID: 500-165855-6**

**Date Collected: 06/26/19 10:08**

**Matrix: Solid**

**Date Received: 06/27/19 14:40**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493099	07/02/19 16:31 (Start) 07/02/19 16:33 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-25-S2 (5-10')**

**Lab Sample ID: 500-165855-6**

**Date Collected: 06/26/19 10:08**

**Matrix: Solid**

**Date Received: 06/27/19 14:40**

**Percent Solids: 83.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493154	07/02/19 17:39	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493220	07/03/19 20:01	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 20:01	JEF	TAL CHI
Total/NA	Prep	7471B			492881	07/01/19 15:10	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493079	07/02/19 10:26	MJG	TAL CHI

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

**Client Sample ID: TP-24-S1 (3-5')**

**Date Collected: 06/26/19 10:43**

**Date Received: 06/27/19 14:40**

**Lab Sample ID: 500-165855-7**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493099	07/02/19 16:33 (Start) 07/02/19 16:36 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-24-S1 (3-5')**

**Date Collected: 06/26/19 10:43**

**Date Received: 06/27/19 14:40**

**Lab Sample ID: 500-165855-7**

**Matrix: Solid**

**Percent Solids: 88.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493154	07/02/19 17:39	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493220	07/03/19 17:08	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 20:05	JEF	TAL CHI
Total/NA	Prep	7471B			492881	07/01/19 15:10	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493079	07/02/19 10:28	MJG	TAL CHI

**Client Sample ID: TP-24-S2 (8-10')**

**Date Collected: 06/26/19 10:50**

**Date Received: 06/27/19 14:40**

**Lab Sample ID: 500-165855-8**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493099	07/02/19 16:38 (Start) 07/02/19 16:40 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	492862	07/01/19 10:28	LWN	TAL CHI

**Client Sample ID: TP-24-S2 (8-10')**

**Date Collected: 06/26/19 10:50**

**Date Received: 06/27/19 14:40**

**Lab Sample ID: 500-165855-8**

**Matrix: Solid**

**Percent Solids: 68.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493154	07/02/19 17:39	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493220	07/03/19 17:37	AJD	TAL CHI
Total/NA	Prep	3050B			492882	07/02/19 07:46	SAH	TAL CHI
Total/NA	Analysis	6010B		1	493192	07/02/19 20:09	JEF	TAL CHI
Total/NA	Prep	7471B			492881	07/01/19 15:10	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493079	07/02/19 10:30	MJG	TAL CHI

**Laboratory References:**

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Accreditation/Certification Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-165855-1

## Laboratory: Eurofins TestAmerica, Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Illinois	NELAP	5	100201	04-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids



**Chain of Custody Record**

<b>Client Information</b>		Sampler: <u>Lauren Houakimian</u>	Lab PM: Knapp, Jim D	Carrier Tracking No(s):	COC No: 500-72154-33712.1		
Client Contact: <u>Drew Ptak (547) 253-3845</u>		Phone:	E-Mail: jim.knapp@testamericainc.com		Page: Page 1 of 5		
Company: Geo Services, Inc			<b>Analysis Requested</b>				
Address: 805 Amherst Court Suite 204 City: Naperville State, Zip: IL, 60565 Phone: 500-165855 COC		Due Date Requested:	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) CCDD			Job #: <u>500-165855</u>	
		TAT Requested (days):				Total Number of Containers	Preservation Codes: A - HCL                      M - Hexane B - NaOH                    N - None C - Zn Acetate              O - AsNaO2 D - Nitric Acid              P - Na2O4S E - NaHSO4                 Q - Na2SO3 F - MeOH                     R - Na2S2O3 G - Amchlor                 S - H2SO4 H - Ascorbic Acid          T - TSP Dodecahydrate I - Ice                         U - Acetone J - DI Water                 V - MCAA K - EDTA                    W - pH 4-5 L - EDA                      Z - other (specify)
Email: drewptak@geoservicesinc.net		PO #: <u>C5i Proj # 1905Q</u>					
Project Name: General Testing		WO #:					
Site:		Project #: 50006371					
SSOW#:							
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Special Instructions/Note:	
					Preservation Code		
1	TP-19-S1 (3-5')	6-26-19	8:48 AM	G	Solid		
2	TP-19-S2 (5-10')	6-26-19	9:05 AM	G	Solid		
3	TP-23-S1 (3-5')	6-26-19	9:28 AM	G	Solid		
4	TP-23-S2 (5-10')	6-26-19	9:40 AM	G	Solid		
5	TP-25-S1 (3-5')	6-26-19	10-AM	G	Solid		
6	TP-25-S2 (5-10')	6-26-19	10:08 AM	G	Solid		
7	TP-24-S1 (3-5')	6-26-19	10:43 AM	G	Solid		
8	TP-24-S2 (5-10')	6-26-19	10:50 AM	G	Solid		
					Solid		
					Solid		
					Solid		
<b>Possible Hazard Identification</b>			<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>				
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological			<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify)			Special Instructions/QC Requirements:				
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:			
Relinquished by: <u>Lauren Houakimian</u>		Date/Time: <u>6/26/19 5:20 PM</u>	Company: <u>Gsi</u>	Received by: <u>[Signature]</u>		Date/Time: <u>6/27/19 1025</u>	
Relinquished by: <u>[Signature]</u>		Date/Time: <u>6/27/19 1440</u>	Company: <u>TA</u>	Received by: <u>[Signature]</u>		Date/Time: <u>6/27/19 1440</u>	
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <u>24</u>			



## Login Sample Receipt Checklist

Client: Geo Services, Inc

Job Number: 500-165855-1

**Login Number: 165855**

**List Source: Eurofins TestAmerica, Chicago**

**List Number: 1**

**Creator: Scott, Sherri L**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.4
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

## ANALYTICAL REPORT

Eurofins TestAmerica, Chicago  
2417 Bond Street  
University Park, IL 60484  
Tel: (708)534-5200

Laboratory Job ID: 500-166010-1

Client Project/Site: Joint Public Safety Train. Campus(19059)

**For:**

Geo Services, Inc  
1235 E Davis Street  
Arlington Heights, Illinois 60004

Attn: Arun Tailor



Authorized for release by:  
7/11/2019 5:28:59 PM

Jim Knapp, Project Manager II  
(630)758-0262  
[jim.knapp@testamericainc.com](mailto:jim.knapp@testamericainc.com)

### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.*

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Case Narrative

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

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**Job ID: 500-166010-1**

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**Laboratory: Eurofins TestAmerica, Chicago**

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**Narrative**

**Job Narrative  
500-166010-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 7/1/2019 11:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.0° C.

**GC/MS Semi VOA**

Method(s) 8270D: The following samples were diluted due to the nature of the sample matrix: TP-05- S1 (3-5') (500-166010-3) and TP-05- S2 (5-10') (500-166010-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**Metals**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**General Chemistry**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

**Organic Prep**

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



# Detection Summary

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

## Client Sample ID: TP-02- S1 (3-5')

## Lab Sample ID: 500-166010-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	3.0		1.0		mg/Kg	1	☼	6010B	Total/NA
Barium	6.1		1.0		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.28		0.20		mg/Kg	1	☼	6010B	Total/NA
Chromium	3.1		1.0		mg/Kg	1	☼	6010B	Total/NA
Lead	4.1		0.50		mg/Kg	1	☼	6010B	Total/NA
Silver	0.81		0.50		mg/Kg	1	☼	6010B	Total/NA
pH	8.3		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-02- S2 (5-10')

## Lab Sample ID: 500-166010-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	2.8		1.0		mg/Kg	1	☼	6010B	Total/NA
Barium	7.1		1.0		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.28		0.20		mg/Kg	1	☼	6010B	Total/NA
Chromium	3.5		1.0		mg/Kg	1	☼	6010B	Total/NA
Lead	4.5		0.50		mg/Kg	1	☼	6010B	Total/NA
Silver	1.1		0.50		mg/Kg	1	☼	6010B	Total/NA
pH	8.4		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-05- S1 (3-5')

## Lab Sample ID: 500-166010-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Anthracene	0.62		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[a]anthracene	1.6		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[a]pyrene	2.1		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[b]fluoranthene	2.2		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[g,h,i]perylene	0.74		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[k]fluoranthene	1.1		0.18		mg/Kg	5	☼	8270D	Total/NA
Chrysene	1.9		0.18		mg/Kg	5	☼	8270D	Total/NA
Fluoranthene	3.5		0.18		mg/Kg	5	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	0.66		0.18		mg/Kg	5	☼	8270D	Total/NA
Naphthalene	0.19		0.18		mg/Kg	5	☼	8270D	Total/NA
Phenanthrene	2.3		0.18		mg/Kg	5	☼	8270D	Total/NA
Pyrene	4.2		0.18		mg/Kg	5	☼	8270D	Total/NA
Arsenic	5.6		1.1		mg/Kg	1	☼	6010B	Total/NA
Barium	31		1.1		mg/Kg	1	☼	6010B	Total/NA
Cadmium	0.85		0.21		mg/Kg	1	☼	6010B	Total/NA
Chromium	15		1.1		mg/Kg	1	☼	6010B	Total/NA
Lead	76		0.53		mg/Kg	1	☼	6010B	Total/NA
Silver	1.7		0.53		mg/Kg	1	☼	6010B	Total/NA
Mercury	0.090		0.017		mg/Kg	1	☼	7471B	Total/NA
pH	8.0		0.2		SU	1		9045D	Total/NA

## Client Sample ID: TP-05- S2 (5-10')

## Lab Sample ID: 500-166010-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Anthracene	0.36		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[a]anthracene	1.2		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[a]pyrene	1.3		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[b]fluoranthene	1.7		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[g,h,i]perylene	0.57		0.18		mg/Kg	5	☼	8270D	Total/NA
Benzo[k]fluoranthene	0.63		0.18		mg/Kg	5	☼	8270D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago

# Detection Summary

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

**Client Sample ID: TP-05- S2 (5-10') (Continued)**

**Lab Sample ID: 500-166010-4**

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chrysene	1.2		0.18		mg/Kg	5	☼	8270D	Total/NA
Dibenz(a,h)anthracene	0.19		0.18		mg/Kg	5	☼	8270D	Total/NA
Fluoranthene	2.3		0.18		mg/Kg	5	☼	8270D	Total/NA
Indeno[1,2,3-cd]pyrene	0.62		0.18		mg/Kg	5	☼	8270D	Total/NA
Naphthalene	0.28		0.18		mg/Kg	5	☼	8270D	Total/NA
Phenanthrene	1.9		0.18		mg/Kg	5	☼	8270D	Total/NA
Pyrene	2.4		0.18		mg/Kg	5	☼	8270D	Total/NA
Arsenic	9.8		1.0		mg/Kg	1	☼	6010B	Total/NA
Barium	39		1.0		mg/Kg	1	☼	6010B	Total/NA
Cadmium	1.3		0.21		mg/Kg	1	☼	6010B	Total/NA
Chromium	17		1.0		mg/Kg	1	☼	6010B	Total/NA
Lead	120		0.51		mg/Kg	1	☼	6010B	Total/NA
Selenium	1.3		1.0		mg/Kg	1	☼	6010B	Total/NA
Silver	1.5		0.51		mg/Kg	1	☼	6010B	Total/NA
Antimony	2.1		2.1		mg/Kg	1	☼	6010B	Total/NA
Mercury	0.086		0.017		mg/Kg	1	☼	7471B	Total/NA
pH	8.0		0.2		SU	1		9045D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Chicago



# Method Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

Method	Method Description	Protocol	Laboratory
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL CHI
6010B	Metals (ICP)	SW846	TAL CHI
7471B	Mercury (CVAA)	SW846	TAL CHI
9045D	pH	SW846	TAL CHI
Moisture	Percent Moisture	EPA	TAL CHI
3050B	Preparation, Metals	SW846	TAL CHI
3541	Automated Soxhlet Extraction	SW846	TAL CHI
7471B	Preparation, Mercury	SW846	TAL CHI

#### Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

#### Laboratory References:

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Sample Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
500-166010-1	TP-02- S1 (3-5')	Solid	06/28/19 10:48	07/01/19 11:58	
500-166010-2	TP-02- S2 (5-10')	Solid	06/28/19 10:58	07/01/19 11:58	
500-166010-3	TP-05- S1 (3-5')	Solid	06/28/19 09:55	07/01/19 11:58	
500-166010-4	TP-05- S2 (5-10')	Solid	06/28/19 10:12	07/01/19 11:58	

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# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

**Client Sample ID: TP-02- S1 (3-5')**

**Lab Sample ID: 500-166010-1**

**Date Collected: 06/28/19 10:48**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

**Percent Solids: 95.3**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Acenaphthylene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Anthracene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Benzo[a]anthracene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Benzo[a]pyrene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Benzo[b]fluoranthene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Benzo[g,h,i]perylene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Benzo[k]fluoranthene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Chrysene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Dibenz(a,h)anthracene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Fluoranthene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Indeno[1,2,3-cd]pyrene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Naphthalene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Phenanthrene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Pyrene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1
Fluorene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 14:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	97		37 - 147	07/03/19 16:48	07/05/19 14:56	1
2-Fluorobiphenyl	97		43 - 145	07/03/19 16:48	07/05/19 14:56	1
Terphenyl-d14 (Surr)	126		42 - 157	07/03/19 16:48	07/05/19 14:56	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>3.0</b>		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:10	1
<b>Barium</b>	<b>6.1</b>		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:10	1
<b>Cadmium</b>	<b>0.28</b>		0.20		mg/Kg	☼	07/02/19 16:27	07/03/19 18:10	1
<b>Chromium</b>	<b>3.1</b>		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:10	1
<b>Lead</b>	<b>4.1</b>		0.50		mg/Kg	☼	07/02/19 16:27	07/03/19 18:10	1
Selenium	ND		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:10	1
<b>Silver</b>	<b>0.81</b>		0.50		mg/Kg	☼	07/02/19 16:27	07/03/19 18:10	1
Antimony	ND		2.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:10	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg	☼	07/03/19 15:00	07/05/19 10:30	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	<b>8.3</b>		0.2		SU			07/03/19 16:23	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

**Client Sample ID: TP-02- S2 (5-10')**

**Lab Sample ID: 500-166010-2**

**Date Collected: 06/28/19 10:58**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

**Percent Solids: 94.3**

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Acenaphthylene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Anthracene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Benzo[a]anthracene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Benzo[a]pyrene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Benzo[b]fluoranthene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Benzo[g,h,i]perylene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Benzo[k]fluoranthene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Chrysene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Dibenz(a,h)anthracene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Fluoranthene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Indeno[1,2,3-cd]pyrene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Naphthalene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Phenanthrene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Pyrene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1
Fluorene	ND		0.034		mg/Kg	☼	07/03/19 16:48	07/05/19 15:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	76		37 - 147	07/03/19 16:48	07/05/19 15:23	1
2-Fluorobiphenyl	73		43 - 145	07/03/19 16:48	07/05/19 15:23	1
Terphenyl-d14 (Surr)	95		42 - 157	07/03/19 16:48	07/05/19 15:23	1

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.8		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:14	1
Barium	7.1		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:14	1
Cadmium	0.28		0.20		mg/Kg	☼	07/02/19 16:27	07/03/19 18:14	1
Chromium	3.5		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:14	1
Lead	4.5		0.50		mg/Kg	☼	07/02/19 16:27	07/03/19 18:14	1
Selenium	ND		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:14	1
Silver	1.1		0.50		mg/Kg	☼	07/02/19 16:27	07/03/19 18:14	1
Antimony	ND		2.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:14	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg	☼	07/03/19 15:00	07/05/19 10:32	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
pH	8.4		0.2		SU			07/03/19 16:26	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

**Client Sample ID: TP-05- S1 (3-5')**

**Lab Sample ID: 500-166010-3**

Date Collected: 06/28/19 09:55

Matrix: Solid

Date Received: 07/01/19 11:58

Percent Solids: 91.6

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
Acenaphthylene	ND		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Anthracene</b>	<b>0.62</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Benzo[a]anthracene</b>	<b>1.6</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Benzo[a]pyrene</b>	<b>2.1</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Benzo[b]fluoranthene</b>	<b>2.2</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Benzo[g,h,i]perylene</b>	<b>0.74</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Benzo[k]fluoranthene</b>	<b>1.1</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Chrysene</b>	<b>1.9</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
Dibenz(a,h)anthracene	ND		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Fluoranthene</b>	<b>3.5</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Indeno[1,2,3-cd]pyrene</b>	<b>0.66</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Naphthalene</b>	<b>0.19</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Phenanthrene</b>	<b>2.3</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Pyrene</b>	<b>4.2</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
Fluorene	ND		0.18		mg/Kg	☼	07/03/19 16:48	07/05/19 16:18	5
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
Nitrobenzene-d5 (Surr)	78		37 - 147				07/03/19 16:48	07/05/19 16:18	5
2-Fluorobiphenyl	80		43 - 145				07/03/19 16:48	07/05/19 16:18	5
Terphenyl-d14 (Surr)	102		42 - 157				07/03/19 16:48	07/05/19 16:18	5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>5.6</b>		1.1		mg/Kg	☼	07/02/19 16:27	07/03/19 18:18	1
<b>Barium</b>	<b>31</b>		1.1		mg/Kg	☼	07/02/19 16:27	07/03/19 18:18	1
<b>Cadmium</b>	<b>0.85</b>		0.21		mg/Kg	☼	07/02/19 16:27	07/03/19 18:18	1
<b>Chromium</b>	<b>15</b>		1.1		mg/Kg	☼	07/02/19 16:27	07/03/19 18:18	1
<b>Lead</b>	<b>76</b>		0.53		mg/Kg	☼	07/02/19 16:27	07/03/19 18:18	1
Selenium	ND		1.1		mg/Kg	☼	07/02/19 16:27	07/03/19 18:18	1
<b>Silver</b>	<b>1.7</b>		0.53		mg/Kg	☼	07/02/19 16:27	07/03/19 18:18	1
Antimony	ND		2.1		mg/Kg	☼	07/02/19 16:27	07/03/19 18:18	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Mercury</b>	<b>0.090</b>		0.017		mg/Kg	☼	07/03/19 15:00	07/05/19 10:34	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>8.0</b>		0.2		SU			07/03/19 16:29	1

# Client Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

**Client Sample ID: TP-05- S2 (5-10')**

**Lab Sample ID: 500-166010-4**

Date Collected: 06/28/19 10:12

Matrix: Solid

Date Received: 07/01/19 11:58

Percent Solids: 90.5

**Method: 8270D - Semivolatile Organic Compounds (GC/MS)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
Acenaphthylene	ND		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Anthracene</b>	<b>0.36</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Benzo[a]anthracene</b>	<b>1.2</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Benzo[a]pyrene</b>	<b>1.3</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Benzo[b]fluoranthene</b>	<b>1.7</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Benzo[g,h,i]perylene</b>	<b>0.57</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Benzo[k]fluoranthene</b>	<b>0.63</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Chrysene</b>	<b>1.2</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Dibenz(a,h)anthracene</b>	<b>0.19</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Fluoranthene</b>	<b>2.3</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Indeno[1,2,3-cd]pyrene</b>	<b>0.62</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Naphthalene</b>	<b>0.28</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Phenanthrene</b>	<b>1.9</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
<b>Pyrene</b>	<b>2.4</b>		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5
Fluorene	ND		0.18		mg/Kg	☼	07/03/19 16:48	07/08/19 18:14	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	74		37 - 147	07/03/19 16:48	07/08/19 18:14	5
2-Fluorobiphenyl	80		43 - 145	07/03/19 16:48	07/08/19 18:14	5
Terphenyl-d14 (Surr)	86		42 - 157	07/03/19 16:48	07/08/19 18:14	5

**Method: 6010B - Metals (ICP)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Arsenic</b>	<b>9.8</b>		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:22	1
<b>Barium</b>	<b>39</b>		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:22	1
<b>Cadmium</b>	<b>1.3</b>		0.21		mg/Kg	☼	07/02/19 16:27	07/03/19 18:22	1
<b>Chromium</b>	<b>17</b>		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:22	1
<b>Lead</b>	<b>120</b>		0.51		mg/Kg	☼	07/02/19 16:27	07/03/19 18:22	1
<b>Selenium</b>	<b>1.3</b>		1.0		mg/Kg	☼	07/02/19 16:27	07/03/19 18:22	1
<b>Silver</b>	<b>1.5</b>		0.51		mg/Kg	☼	07/02/19 16:27	07/03/19 18:22	1
<b>Antimony</b>	<b>2.1</b>		2.1		mg/Kg	☼	07/02/19 16:27	07/03/19 18:22	1

**Method: 7471B - Mercury (CVAA)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Mercury</b>	<b>0.086</b>		0.017		mg/Kg	☼	07/03/19 15:00	07/05/19 10:36	1

**General Chemistry**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>pH</b>	<b>8.0</b>		0.2		SU			07/03/19 16:32	1

# Definitions/Glossary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# QC Association Summary

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

## GC/MS Semi VOA

### Prep Batch: 493352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-1	TP-02- S1 (3-5')	Total/NA	Solid	3541	
500-166010-2	TP-02- S2 (5-10')	Total/NA	Solid	3541	
500-166010-3	TP-05- S1 (3-5')	Total/NA	Solid	3541	
500-166010-4	TP-05- S2 (5-10')	Total/NA	Solid	3541	
MB 500-493352/1-A	Method Blank	Total/NA	Solid	3541	
LCS 500-493352/2-A	Lab Control Sample	Total/NA	Solid	3541	

### Analysis Batch: 493447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-1	TP-02- S1 (3-5')	Total/NA	Solid	8270D	493352
500-166010-2	TP-02- S2 (5-10')	Total/NA	Solid	8270D	493352
500-166010-3	TP-05- S1 (3-5')	Total/NA	Solid	8270D	493352

### Analysis Batch: 493482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 500-493352/1-A	Method Blank	Total/NA	Solid	8270D	493352
LCS 500-493352/2-A	Lab Control Sample	Total/NA	Solid	8270D	493352

### Analysis Batch: 493720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-4	TP-05- S2 (5-10')	Total/NA	Solid	8270D	493352

## Metals

### Prep Batch: 493137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-1	TP-02- S1 (3-5')	Total/NA	Solid	3050B	
500-166010-2	TP-02- S2 (5-10')	Total/NA	Solid	3050B	
500-166010-3	TP-05- S1 (3-5')	Total/NA	Solid	3050B	
500-166010-4	TP-05- S2 (5-10')	Total/NA	Solid	3050B	
MB 500-493137/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 500-493137/2-A	Lab Control Sample	Total/NA	Solid	3050B	

### Prep Batch: 493271

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-1	TP-02- S1 (3-5')	Total/NA	Solid	7471B	
500-166010-2	TP-02- S2 (5-10')	Total/NA	Solid	7471B	
500-166010-3	TP-05- S1 (3-5')	Total/NA	Solid	7471B	
500-166010-4	TP-05- S2 (5-10')	Total/NA	Solid	7471B	
MB 500-493271/12-A	Method Blank	Total/NA	Solid	7471B	
LCS 500-493271/13-A	Lab Control Sample	Total/NA	Solid	7471B	

### Analysis Batch: 493424

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-1	TP-02- S1 (3-5')	Total/NA	Solid	6010B	493137
500-166010-2	TP-02- S2 (5-10')	Total/NA	Solid	6010B	493137
500-166010-3	TP-05- S1 (3-5')	Total/NA	Solid	6010B	493137
500-166010-4	TP-05- S2 (5-10')	Total/NA	Solid	6010B	493137
MB 500-493137/1-A	Method Blank	Total/NA	Solid	6010B	493137
LCS 500-493137/2-A	Lab Control Sample	Total/NA	Solid	6010B	493137

# QC Association Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

## Metals

### Analysis Batch: 493516

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-1	TP-02- S1 (3-5')	Total/NA	Solid	7471B	493271
500-166010-2	TP-02- S2 (5-10')	Total/NA	Solid	7471B	493271
500-166010-3	TP-05- S1 (3-5')	Total/NA	Solid	7471B	493271
500-166010-4	TP-05- S2 (5-10')	Total/NA	Solid	7471B	493271
MB 500-493271/12-A	Method Blank	Total/NA	Solid	7471B	493271
LCS 500-493271/13-A	Lab Control Sample	Total/NA	Solid	7471B	493271

## General Chemistry

### Analysis Batch: 493100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-1	TP-02- S1 (3-5')	Total/NA	Solid	Moisture	
500-166010-2	TP-02- S2 (5-10')	Total/NA	Solid	Moisture	
500-166010-3	TP-05- S1 (3-5')	Total/NA	Solid	Moisture	
500-166010-4	TP-05- S2 (5-10')	Total/NA	Solid	Moisture	
500-166010-1 DU	TP-02- S1 (3-5')	Total/NA	Solid	Moisture	

### Analysis Batch: 493301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
500-166010-1	TP-02- S1 (3-5')	Total/NA	Solid	9045D	
500-166010-2	TP-02- S2 (5-10')	Total/NA	Solid	9045D	
500-166010-3	TP-05- S1 (3-5')	Total/NA	Solid	9045D	
500-166010-4	TP-05- S2 (5-10')	Total/NA	Solid	9045D	
LCS 500-493301/5	Lab Control Sample	Total/NA	Solid	9045D	
LCSD 500-493301/6	Lab Control Sample Dup	Total/NA	Solid	9045D	

# Surrogate Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Solid

Prep Type: Total/NA

### Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	NBZ	FBP	TPHL
		(37-147)	(43-145)	(42-157)
500-166010-1	TP-02- S1 (3-5')	97	97	126
500-166010-2	TP-02- S2 (5-10')	76	73	95
500-166010-3	TP-05- S1 (3-5')	78	80	102
500-166010-4	TP-05- S2 (5-10')	74	80	86
LCS 500-493352/2-A	Lab Control Sample	88	95	94
MB 500-493352/1-A	Method Blank	77	93	100

#### Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)

FBP = 2-Fluorobiphenyl

TPHL = Terphenyl-d14 (Surr)

# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

## Method: 8270D - Semivolatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 500-493352/1-A**  
**Matrix: Solid**  
**Analysis Batch: 493482**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 493352**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Acenaphthylene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Anthracene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Benzo[a]anthracene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Benzo[a]pyrene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Benzo[b]fluoranthene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Benzo[g,h,i]perylene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Benzo[k]fluoranthene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Chrysene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Dibenz(a,h)anthracene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Fluoranthene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Indeno[1,2,3-cd]pyrene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Naphthalene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Phenanthrene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Pyrene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1
Fluorene	ND		0.033		mg/Kg		07/03/19 16:48	07/05/19 12:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5 (Surr)	77		37 - 147	07/03/19 16:48	07/05/19 12:15	1
2-Fluorobiphenyl	93		43 - 145	07/03/19 16:48	07/05/19 12:15	1
Terphenyl-d14 (Surr)	100		42 - 157	07/03/19 16:48	07/05/19 12:15	1

**Lab Sample ID: LCS 500-493352/2-A**  
**Matrix: Solid**  
**Analysis Batch: 493482**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 493352**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Acenaphthene	1.33	1.23		mg/Kg		92	65 - 124
Acenaphthylene	1.33	1.24		mg/Kg		93	68 - 120
Anthracene	1.33	1.24		mg/Kg		93	70 - 114
Benzo[a]anthracene	1.33	1.20		mg/Kg		90	67 - 122
Benzo[a]pyrene	1.33	1.30		mg/Kg		97	65 - 133
Benzo[b]fluoranthene	1.33	1.26		mg/Kg		95	69 - 129
Benzo[g,h,i]perylene	1.33	1.34		mg/Kg		100	72 - 131
Benzo[k]fluoranthene	1.33	1.25		mg/Kg		94	68 - 127
Chrysene	1.33	1.16		mg/Kg		87	63 - 120
Dibenz(a,h)anthracene	1.33	1.34		mg/Kg		100	64 - 131
Fluoranthene	1.33	1.35		mg/Kg		101	62 - 120
Indeno[1,2,3-cd]pyrene	1.33	1.36		mg/Kg		102	68 - 130
Naphthalene	1.33	1.20		mg/Kg		90	63 - 110
Phenanthrene	1.33	1.21		mg/Kg		91	62 - 120
Pyrene	1.33	1.13		mg/Kg		85	61 - 128
Fluorene	1.33	1.26		mg/Kg		95	62 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5 (Surr)	88		37 - 147
2-Fluorobiphenyl	95		43 - 145
Terphenyl-d14 (Surr)	94		42 - 157

Eurofins TestAmerica, Chicago

# QC Sample Results

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

## Method: 6010B - Metals (ICP)

**Lab Sample ID: MB 500-493137/1-A**  
**Matrix: Solid**  
**Analysis Batch: 493424**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 493137**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0		mg/Kg		07/02/19 16:27	07/03/19 16:54	1
Barium	ND		1.0		mg/Kg		07/02/19 16:27	07/03/19 16:54	1
Cadmium	ND		0.20		mg/Kg		07/02/19 16:27	07/03/19 16:54	1
Chromium	ND		1.0		mg/Kg		07/02/19 16:27	07/03/19 16:54	1
Lead	ND		0.50		mg/Kg		07/02/19 16:27	07/03/19 16:54	1
Selenium	ND		1.0		mg/Kg		07/02/19 16:27	07/03/19 16:54	1
Silver	ND		0.50		mg/Kg		07/02/19 16:27	07/03/19 16:54	1
Antimony	ND		2.0		mg/Kg		07/02/19 16:27	07/03/19 16:54	1

**Lab Sample ID: LCS 500-493137/2-A**  
**Matrix: Solid**  
**Analysis Batch: 493424**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 493137**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Arsenic	10.0	8.93		mg/Kg		89	80 - 120
Barium	200	199		mg/Kg		100	80 - 120
Cadmium	5.00	4.83		mg/Kg		97	80 - 120
Chromium	20.0	19.3		mg/Kg		96	80 - 120
Lead	10.0	8.76		mg/Kg		88	80 - 120
Selenium	10.0	8.86		mg/Kg		89	80 - 120
Silver	5.00	4.42		mg/Kg		88	80 - 120
Antimony	50.0	46.8		mg/Kg		94	80 - 120

## Method: 7471B - Mercury (CVAA)

**Lab Sample ID: MB 500-493271/12-A**  
**Matrix: Solid**  
**Analysis Batch: 493516**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 493271**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.017		mg/Kg		07/03/19 15:00	07/05/19 09:56	1

**Lab Sample ID: LCS 500-493271/13-A**  
**Matrix: Solid**  
**Analysis Batch: 493516**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 493271**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	0.167	0.158		mg/Kg		95	80 - 120

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

**Client Sample ID: TP-02- S1 (3-5')**

**Lab Sample ID: 500-166010-1**

**Date Collected: 06/28/19 10:48**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 16:23 (Start) 07/03/19 16:26 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	493100	07/02/19 13:45	LWN	TAL CHI

**Client Sample ID: TP-02- S1 (3-5')**

**Lab Sample ID: 500-166010-1**

**Date Collected: 06/28/19 10:48**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

**Percent Solids: 95.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493352	07/03/19 16:48	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493447	07/05/19 14:56	AJD	TAL CHI
Total/NA	Prep	3050B			493137	07/02/19 16:27	BDE	TAL CHI
Total/NA	Analysis	6010B		1	493424	07/03/19 18:10	EEN	TAL CHI
Total/NA	Prep	7471B			493271	07/03/19 15:00	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493516	07/05/19 10:30	MJG	TAL CHI

**Client Sample ID: TP-02- S2 (5-10')**

**Lab Sample ID: 500-166010-2**

**Date Collected: 06/28/19 10:58**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 16:26 (Start) 07/03/19 16:29 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	493100	07/02/19 13:45	LWN	TAL CHI

**Client Sample ID: TP-02- S2 (5-10')**

**Lab Sample ID: 500-166010-2**

**Date Collected: 06/28/19 10:58**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

**Percent Solids: 94.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493352	07/03/19 16:48	NRJ	TAL CHI
Total/NA	Analysis	8270D		1	493447	07/05/19 15:23	AJD	TAL CHI
Total/NA	Prep	3050B			493137	07/02/19 16:27	BDE	TAL CHI
Total/NA	Analysis	6010B		1	493424	07/03/19 18:14	EEN	TAL CHI
Total/NA	Prep	7471B			493271	07/03/19 15:00	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493516	07/05/19 10:32	MJG	TAL CHI

# Lab Chronicle

Client: Geo Services, Inc  
 Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

**Client Sample ID: TP-05- S1 (3-5')**

**Lab Sample ID: 500-166010-3**

**Date Collected: 06/28/19 09:55**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 16:29 (Start) 07/03/19 16:32 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	493100	07/02/19 13:45	LWN	TAL CHI

**Client Sample ID: TP-05- S1 (3-5')**

**Lab Sample ID: 500-166010-3**

**Date Collected: 06/28/19 09:55**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

**Percent Solids: 91.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493352	07/03/19 16:48	NRJ	TAL CHI
Total/NA	Analysis	8270D		5	493447	07/05/19 16:18	AJD	TAL CHI
Total/NA	Prep	3050B			493137	07/02/19 16:27	BDE	TAL CHI
Total/NA	Analysis	6010B		1	493424	07/03/19 18:18	EEN	TAL CHI
Total/NA	Prep	7471B			493271	07/03/19 15:00	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493516	07/05/19 10:34	MJG	TAL CHI

**Client Sample ID: TP-05- S2 (5-10')**

**Lab Sample ID: 500-166010-4**

**Date Collected: 06/28/19 10:12**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9045D		1	493301	07/03/19 16:32 (Start) 07/03/19 16:34 (End)	SMO	TAL CHI
Total/NA	Analysis	Moisture		1	493100	07/02/19 13:45	LWN	TAL CHI

**Client Sample ID: TP-05- S2 (5-10')**

**Lab Sample ID: 500-166010-4**

**Date Collected: 06/28/19 10:12**

**Matrix: Solid**

**Date Received: 07/01/19 11:58**

**Percent Solids: 90.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3541			493352	07/03/19 16:48	NRJ	TAL CHI
Total/NA	Analysis	8270D		5	493720	07/08/19 18:14	STW	TAL CHI
Total/NA	Prep	3050B			493137	07/02/19 16:27	BDE	TAL CHI
Total/NA	Analysis	6010B		1	493424	07/03/19 18:22	EEN	TAL CHI
Total/NA	Prep	7471B			493271	07/03/19 15:00	MJG	TAL CHI
Total/NA	Analysis	7471B		1	493516	07/05/19 10:36	MJG	TAL CHI

**Laboratory References:**

TAL CHI = Eurofins TestAmerica, Chicago, 2417 Bond Street, University Park, IL 60484, TEL (708)534-5200

# Accreditation/Certification Summary

Client: Geo Services, Inc  
Project/Site: Joint Public Safety Train. Campus(19059)

Job ID: 500-166010-1

## Laboratory: Eurofins TestAmerica, Chicago

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Illinois	NELAP	5	100201	04-30-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids



## Login Sample Receipt Checklist

Client: Geo Services, Inc

Job Number: 500-166010-1

**Login Number: 166010**

**List Source: Eurofins TestAmerica, Chicago**

**List Number: 1**

**Creator: James, Jeff A**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Customer	Geo Services, Inc
Project	Joint Public Safety Train. Campus(19059)
Sample Date	06/27/2019
Lab Name	Eurofins TestAmerica, Chicago
Job Number	500-165943-1

TACO-Derived Constituents in Uncontaminated Soil Code 1100.Subpart F				Maximum Allowable									
Method	CAS	Analyte	Note	Concentration	SampleID								
				mg/Kg	TP-01-S1 (2-5')	TP-01-S2 (5-10')	TP-06-S1 (2-5')	TP-06-S2 (5-10')	TP-07-S1 (2-5')	TP-07-S2 (5-10')	TP10-S1 (3-5')	TP10-S2 (5-10')	
6010B	7440-36-0	Antimony	d,m	5	<1.9	<1.8	<1.8	<1.9	<2.0	<1.7	<2.0	<1.8	
6010B	7440-38-2	Arsenic Within MSA County	e	13	2.2	4.5	2.3	2.1	1.9	2.2	2.2	2.4	
6010B	7440-38-2	Arsenic Within non-MSA County	e	11.3	2.2	4.5	2.3	2.1	1.9	2.2	2.2	2.4	
6010B	7440-39-3	Barium	d,m	1500	8.5	7.5	7.1	9.2	6.1	8.2	7.9	7.5	
6010B	7440-43-9	Cadmium	d,m	5.2	0.33	0.28	0.28	0.36	0.28	0.28	0.31	0.28	
6010B	7440-47-3	Chromium, Total	d,m	21	4.1	3.4	3.0	4.7	3.0	3.5	4.8	3.3	
6010B	7439-92-1	Lead	d,m	107	3.8	6.7	8.4	9.5	3.4	4.1	4.4	4.0	
6010B	7782-49-2	Selenium	d,m	1.3	<0.95	<0.92	<0.92	<0.95	<1.0	<0.87	<1.0	<0.91	
6010B	7440-22-4	Silver	d,m	4.4	0.82	1.0	0.95	0.85	0.75	0.94	0.95	0.74	
7471B	7439-97-6	Mercury - ionic	d,m,n,1	0.89	<0.017	<0.017	<0.017	<0.016	<0.016	0.017	<0.017	<0.016	
8270D	83-32-9	Acenaphthene	b	570	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	120-12-7	Anthracene	b	12000	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	56-55-3	Benzo[a]anthracene - Chicago Limits	f	1.1	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	56-55-3	Benzo[a]anthracene - In Populated MSA exclude Chicago	f	1.8	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	56-55-3	Benzo[a]anthracene - Populated non MSA/Outside populated	g	0.9	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	50-32-8	Benzo[a]pyrene - Chicago Limits	f	1.3	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	50-32-8	Benzo[a]pyrene - In Populated MSA exclude Chicago	f	2.1	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	50-32-8	Benzo[a]pyrene - Populated non MSA/Outside populated	f	0.98	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	50-32-8	Benzo[a]pyrene - Outside populated	g	0.09	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	205-99-2	Benzo[b]fluoranthene - Chicago Limits	f	1.5	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	205-99-2	Benzo[b]fluoranthene - In Populated MSA exclude Chicago	f	2.1	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	205-99-2	Benzo[b]fluoranthene - Populated non MSA/Outside populated	g	0.9	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	207-08-9	Benzo[k]fluoranthene	g	9	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	218-01-9	Chrysene	g	88	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	53-70-3	Dibenz[a,h]anthracene - Chicago Limits	f	0.2	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	53-70-3	Dibenz[a,h]anthracene - In Populated MSA exclude Chicago	f	0.42	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	53-70-3	Dibenz[a,h]anthracene - Populated non MSA	f	0.15	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	53-70-3	Dibenz[a,h]anthracene - Outside populated	g	0.09	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	206-44-0	Fluoranthene	g	3100	<0.034	<0.034	0.056	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	86-73-7	Fluorene	b	560	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	193-39-5	Indeno[1,2,3-cd]pyrene - In Populated MSA exclude Chicago	f	1.6	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	193-39-5	Indeno[1,2,3-cd]pyrene - Chicago Limits/Populated non MSA/Outside populated	g	0.9	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	91-20-3	Naphthalene	g	1.8	<0.034	<0.034	<0.034	<0.035	<0.034	<0.034	<0.035	<0.034	
8270D	129-00-0	Pyrene	g	2300	<0.034	<0.034	0.054	<0.035	<0.034	<0.034	<0.035	<0.034	
9045D	STL00204	pH	i	6.25-9.0	8.5	8.5	8.6	8.5	8.6	8.3	8.1	8.4	

Customer	Geo Services, Inc
Project	Joint Public Safety Train. Campus(19059)
Sample Date	06/26/2019
Lab Name	Eurofins TestAmerica, Chicago
Job Number	500-165855-1

TACO-Derived Constituents in Uncontaminated Soil Code 1100.Subpart F		Analyte	Note	Maximum Allowable	SampleID								
Method	CAS			Concentration mg/Kg	TP-19-S1 (3-5')	TP-19-S2 (5-8')	TP-23-S1 (3-5')	TP-23-S2 (5-10')	TP-25-S1 (3-5')	TP-25-S2 (5-10')	TP-24-S1 (3-5')	TP-24-S2 (8-10')	
6010B	7440-36-0	Antimony	d,m	5	<2.0	<2.6	<2.3	<2.1	<2.2	<2.2	<2.1	<2.6	
6010B	7440-38-2	Arsenic Within MSA County	e	13	3.1	3.8	1.1	2.6	5.2	3.0	2.3	4.7	
6010B	7440-38-2	Arsenic Within non-MSA County	e	11.3	3.1	3.8	1.1	2.6	5.2	3.0	2.3	4.7	
6010B	7440-39-3	Barium	d,m	1500	26	91	9.3	9.0	38	15	17	91	
6010B	7440-43-9	Cadmium	d,m	5.2	0.38	0.36	0.34	0.31	0.45	0.33	0.26	0.44	
6010B	7440-47-3	Chromium, Total	d,m	21	6.6	26	3.8	4.3	7.4	4.8	5.8	28	
6010B	7439-92-1	Lead	d,m	107	13	16	2.5	36	33	11	4.1	20	
6010B	7782-49-2	Selenium	d,m	1.3	<1.0	<1.3	1.2	<1.0	<1.1	<1.1	<1.0	1.4	
6010B	7440-22-4	Silver	d,m	4.4	1.4	4.0	0.83	0.89	1.3	1.1	1.7	4.0	
7471B	7439-97-6	Mercury - ionic	d,m,n,1	0.89	<0.017	<0.022	<0.020	<0.016	0.029	<0.019	<0.018	0.024	
8270D	83-32-9	Acenaphthene	b	570	<0.036	<0.045	<0.040	<0.035	<0.035	<0.038	<0.037	<0.048	
8270D	120-12-7	Anthracene	b	12000	<0.036	<0.045	<0.040	<0.035	0.064	<0.038	<0.037	<0.048	
8270D	56-55-3	Benzo[a]anthracene - Chicago Limits	f	1.1	<0.036	<0.045	<0.040	<0.035	0.21	0.048	<0.037	<0.048	
8270D	56-55-3	Benzo[a]anthracene - In Populated MSA exclude Chicago	f	1.8	<0.036	<0.045	<0.040	<0.035	0.21	0.048	<0.037	<0.048	
8270D	56-55-3	Benzo[a]anthracene - Populated non MSA/Outside populated	g	0.9	<0.036	<0.045	<0.040	<0.035	0.21	0.048	<0.037	<0.048	
8270D	50-32-8	Benzo[a]pyrene - Chicago Limits	f	1.3	<0.036	<0.045	<0.040	<0.035	0.20	0.043	<0.037	<0.048	
8270D	50-32-8	Benzo[a]pyrene - In Populated MSA exclude Chicago	f	2.1	<0.036	<0.045	<0.040	<0.035	0.20	0.043	<0.037	<0.048	
8270D	50-32-8	Benzo[a]pyrene - Populated non MSA/Outside populated	f	0.98	<0.036	<0.045	<0.040	<0.035	0.20	0.043	<0.037	<0.048	
8270D	50-32-8	Benzo[a]pyrene - Outside populated	g	0.09	<0.036	<0.045	<0.040	<0.035	0.20	0.043	<0.037	<0.048	
8270D	205-99-2	Benzo[b]fluoranthene - Chicago Limits	f	1.5	<0.036	<0.045	<0.040	<0.035	0.31	0.061	<0.037	<0.048	
8270D	205-99-2	Benzo[b]fluoranthene - In Populated MSA exclude Chicago	f	2.1	<0.036	<0.045	<0.040	<0.035	0.31	0.061	<0.037	<0.048	
8270D	205-99-2	Benzo[b]fluoranthene - Populated non MSA/Outside populated	g	0.9	<0.036	<0.045	<0.040	<0.035	0.31	0.061	<0.037	<0.048	
8270D	207-08-9	Benzo[k]fluoranthene	g	9	<0.036	<0.045	<0.040	<0.035	0.12	<0.038	<0.037	<0.048	
8270D	218-01-9	Chrysene	g	88	<0.036	<0.045	<0.040	<0.035	0.26	0.054	<0.037	<0.048	
8270D	53-70-3	Dibenz[a,h]anthracene - Chicago Limits	f	0.2	<0.036	<0.045	<0.040	<0.035	<0.035	<0.038	<0.037	<0.048	
8270D	53-70-3	Dibenz[a,h]anthracene - In Populated MSA exclude Chicago	f	0.42	<0.036	<0.045	<0.040	<0.035	<0.035	<0.038	<0.037	<0.048	
8270D	53-70-3	Dibenz[a,h]anthracene - Populated non MSA	f	0.15	<0.036	<0.045	<0.040	<0.035	<0.035	<0.038	<0.037	<0.048	
8270D	53-70-3	Dibenz[a,h]anthracene - Outside populated	g	0.09	<0.036	<0.045	<0.040	<0.035	<0.035	<0.038	<0.037	<0.048	
8270D	206-44-0	Fluoranthene	g	3100	<0.036	<0.045	<0.040	<0.035	0.35	0.090	<0.037	<0.048	
8270D	86-73-7	Fluorene	b	560	<0.036	<0.045	<0.040	<0.035	<0.035	<0.038	<0.037	<0.048	
8270D	193-39-5	Indeno[1,2,3-cd]pyrene - In Populated MSA exclude Chicago	f	1.6	<0.036	<0.045	<0.040	<0.035	0.064	<0.038	<0.037	<0.048	
8270D	193-39-5	Indeno[1,2,3-cd]pyrene - Chicago Limits/Populated non MSA/Outside populated	g	0.9	<0.036	<0.045	<0.040	<0.035	0.064	<0.038	<0.037	<0.048	
8270D	91-20-3	Naphthalene	g	1.8	<0.036	<0.045	<0.040	<0.035	0.082	<0.038	<0.037	<0.048	
8270D	129-00-0	Pyrene	g	2300	<0.036	<0.045	<0.040	0.038	0.31	0.075	<0.037	<0.048	
9045D	STL00204	pH	i	6.25-9.0	8.2	7.4	8.2	8.5	8.1	8.3	8.4	7.2	

Customer	Geo Services, Inc
Project	Joint Public Safety Train. Campus(19059)
Sample Date	06/28/2019
Lab Name	Eurofins TestAmerica, Chicago
Job Number	500-166010-1

TACO-Derived Constituents in Uncontaminated Soil Code 1100.Subpart F				Maximum Allowable				
Method	CAS	Analyte	Note	Concentration	SampleID			
				mg/Kg	TP-02- S1 (3-5')	TP-02- S2 (5-10')	TP-05- S1 (3-5')	TP-05- S2 (5-10')
6010B	7440-36-0	Antimony	d,m	5	<2.0	<2.0	<2.1	2.1
6010B	7440-38-2	Arsenic Within MSA County	e	13	3.0	2.8	5.6	9.8
6010B	7440-38-2	Arsenic Within non-MSA County	e	11.3	3.0	2.8	5.6	9.8
6010B	7440-39-3	Barium	d,m	1500	6.1	7.1	31	39
6010B	7440-43-9	Cadmium	d,m	5.2	0.28	0.28	0.85	1.3
6010B	7440-47-3	Chromium, Total	d,m	21	3.1	3.5	15	17
6010B	7439-92-1	Lead	d,m	107	4.1	4.5	76	120
6010B	7782-49-2	Selenium	d,m	1.3	<1.0	<1.0	<1.1	1.3
6010B	7440-22-4	Silver	d,m	4.4	0.81	1.1	1.7	1.5
7471B	7439-97-6	Mercury - ionic	d,m,n,1	0.89	<0.017	<0.017	0.090	0.086
8270D	83-32-9	Acenaphthene	b	570	<0.034	<0.034	<0.18	<0.18
8270D	120-12-7	Anthracene	b	12000	<0.034	<0.034	0.62	0.36
8270D	56-55-3	Benzo[a]anthracene - Chicago Limits	f	1.1	<0.034	<0.034	1.6	1.2
8270D	56-55-3	Benzo[a]anthracene - In Populated MSA exclude Chicago	f	1.8	<0.034	<0.034	1.6	1.2
8270D	56-55-3	Benzo[a]anthracene - Populated non MSA/Outside populated	g	0.9	<0.034	<0.034	1.6	1.2
8270D	50-32-8	Benzo[a]pyrene - Chicago Limits	f	1.3	<0.034	<0.034	2.1	1.3
8270D	50-32-8	Benzo[a]pyrene - In Populated MSA exclude Chicago	f	2.1	<0.034	<0.034	2.1	1.3
8270D	50-32-8	Benzo[a]pyrene - Populated non MSA/Outside populated	f	0.98	<0.034	<0.034	2.1	1.3
8270D	50-32-8	Benzo[a]pyrene - Outside populated	g	0.09	<0.034	<0.034	2.1	1.3
8270D	205-99-2	Benzo[b]fluoranthene - Chicago Limits	f	1.5	<0.034	<0.034	2.2	1.7
8270D	205-99-2	Benzo[b]fluoranthene - In Populated MSA exclude Chicago	f	2.1	<0.034	<0.034	2.2	1.7
8270D	205-99-2	Benzo[b]fluoranthene - Populated non MSA/Outside populated	g	0.9	<0.034	<0.034	2.2	1.7
8270D	207-08-9	Benzo[k]fluoranthene	g	9	<0.034	<0.034	1.1	0.63
8270D	218-01-9	Chrysene	g	88	<0.034	<0.034	1.9	1.2
8270D	53-70-3	Dibenz[a,h]anthracene - Chicago Limits	f	0.2	<0.034	<0.034	<0.18	0.19
8270D	53-70-3	Dibenz[a,h]anthracene - In Populated MSA exclude Chicago	f	0.42	<0.034	<0.034	<0.18	0.19
8270D	53-70-3	Dibenz[a,h]anthracene - Populated non MSA	f	0.15	<0.034	<0.034	<0.18	0.19
8270D	53-70-3	Dibenz[a,h]anthracene - Outside populated	g	0.09	<0.034	<0.034	<0.18	0.19
8270D	206-44-0	Fluoranthene	g	3100	<0.034	<0.034	3.5	2.3
8270D	86-73-7	Fluorene	b	560	<0.034	<0.034	<0.18	<0.18
8270D	193-39-5	Indeno[1,2,3-cd]pyrene - In Populated MSA exclude Chicago	f	1.6	<0.034	<0.034	0.66	0.62
8270D	193-39-5	Indeno[1,2,3-cd]pyrene - Chicago Limits/Populated non MSA/Outside populated	g	0.9	<0.034	<0.034	0.66	0.62
8270D	91-20-3	Naphthalene	g	1.8	<0.034	<0.034	0.19	0.28
8270D	129-00-0	Pyrene	g	2300	<0.034	<0.034	4.2	2.4
9045D	STL00204	pH	j	6.25-9.0	8.3	8.4	8.0	8.0

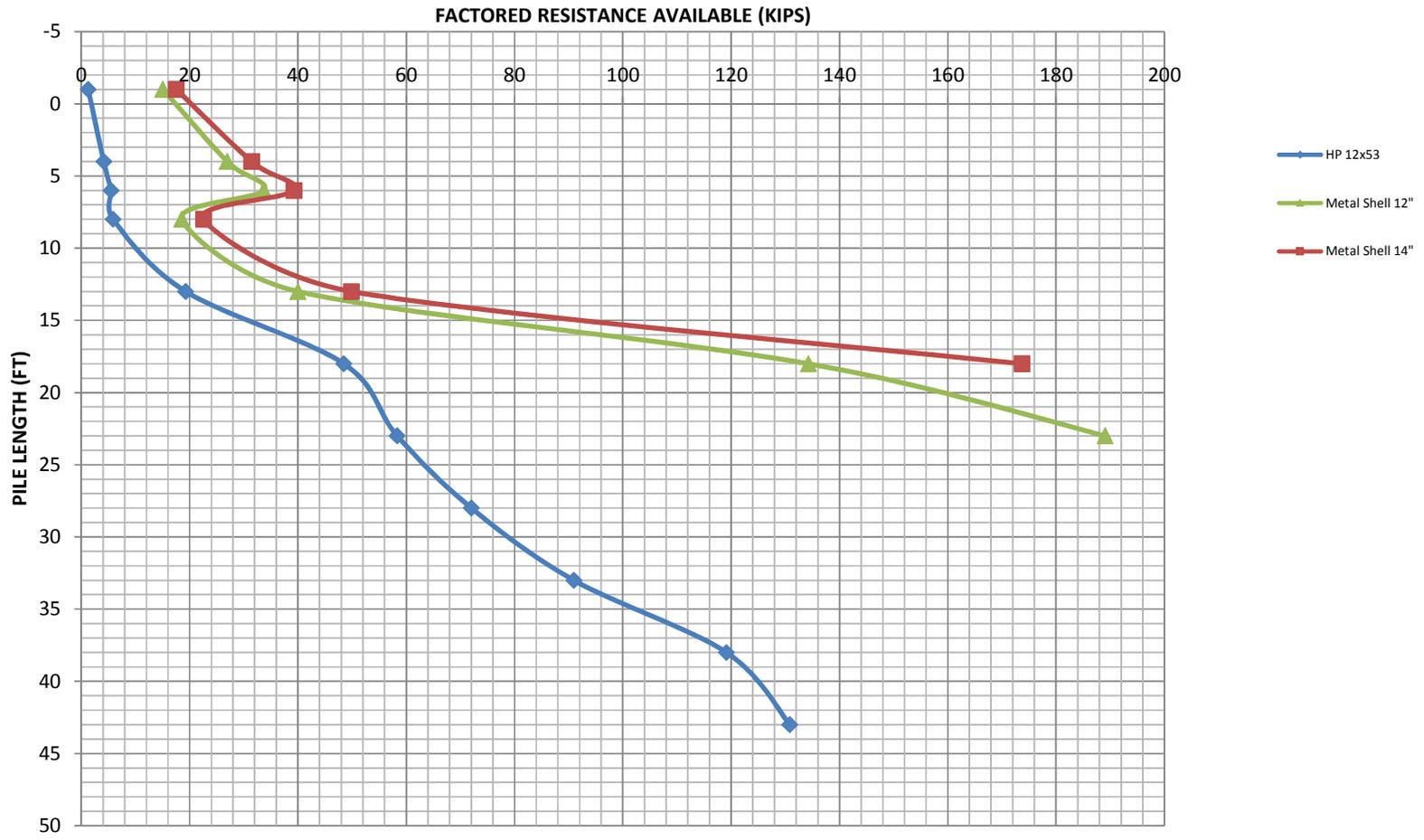
**APPENDIX J**  
**PILE TABLES**



# PILE BEARING (FRA) VS. ESTIMATED PILE LENGTH

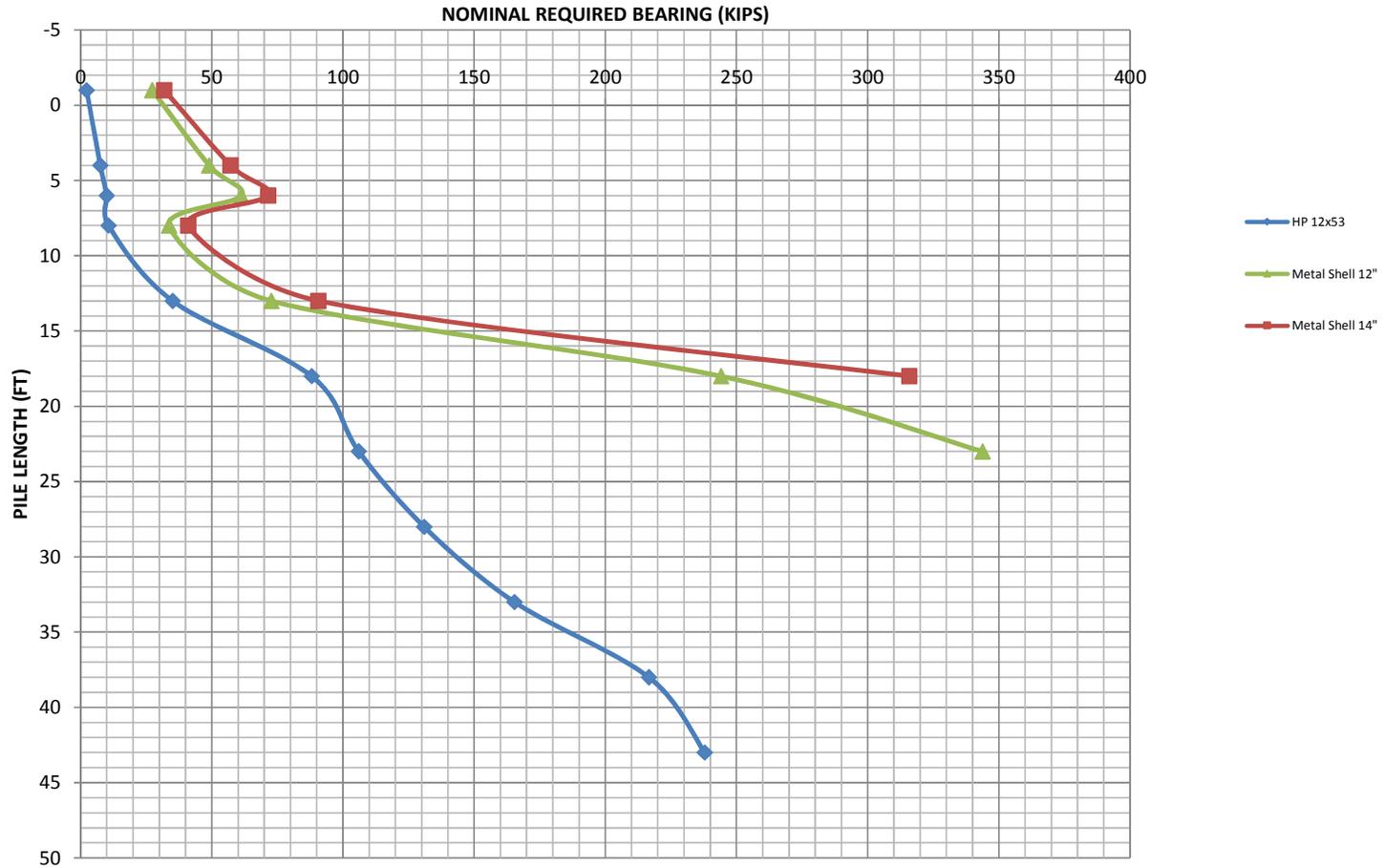
## BORING SB-05

Elevation 36.30 Begin Friction, 35.00 for Pile Cutoff



# PILE BEARING (NRB) VS. ESTIMATED PILE LENGTH BORING SB-05

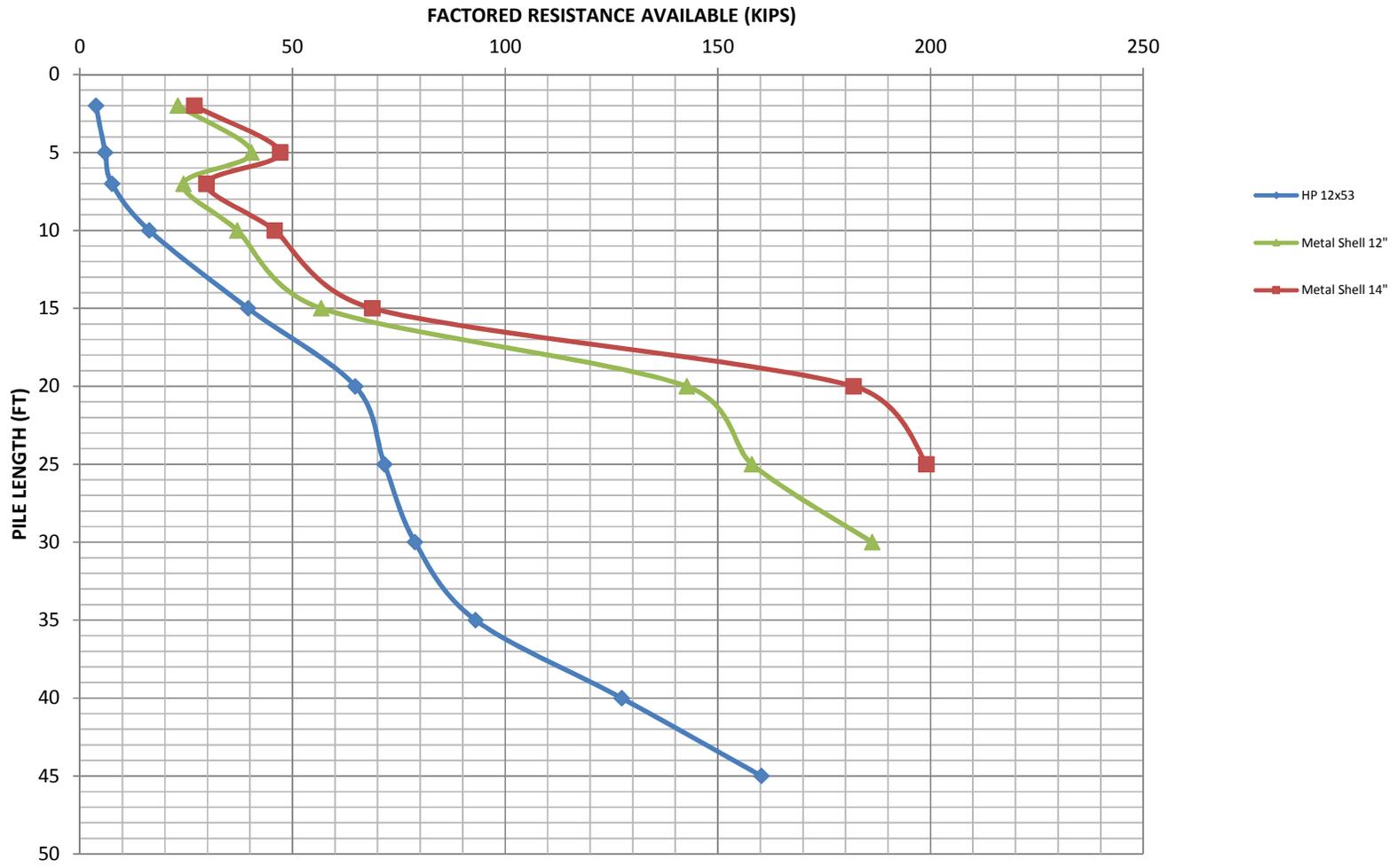
Elevation 36.30 Begin Friction, 35.00 for Pile Cutoff





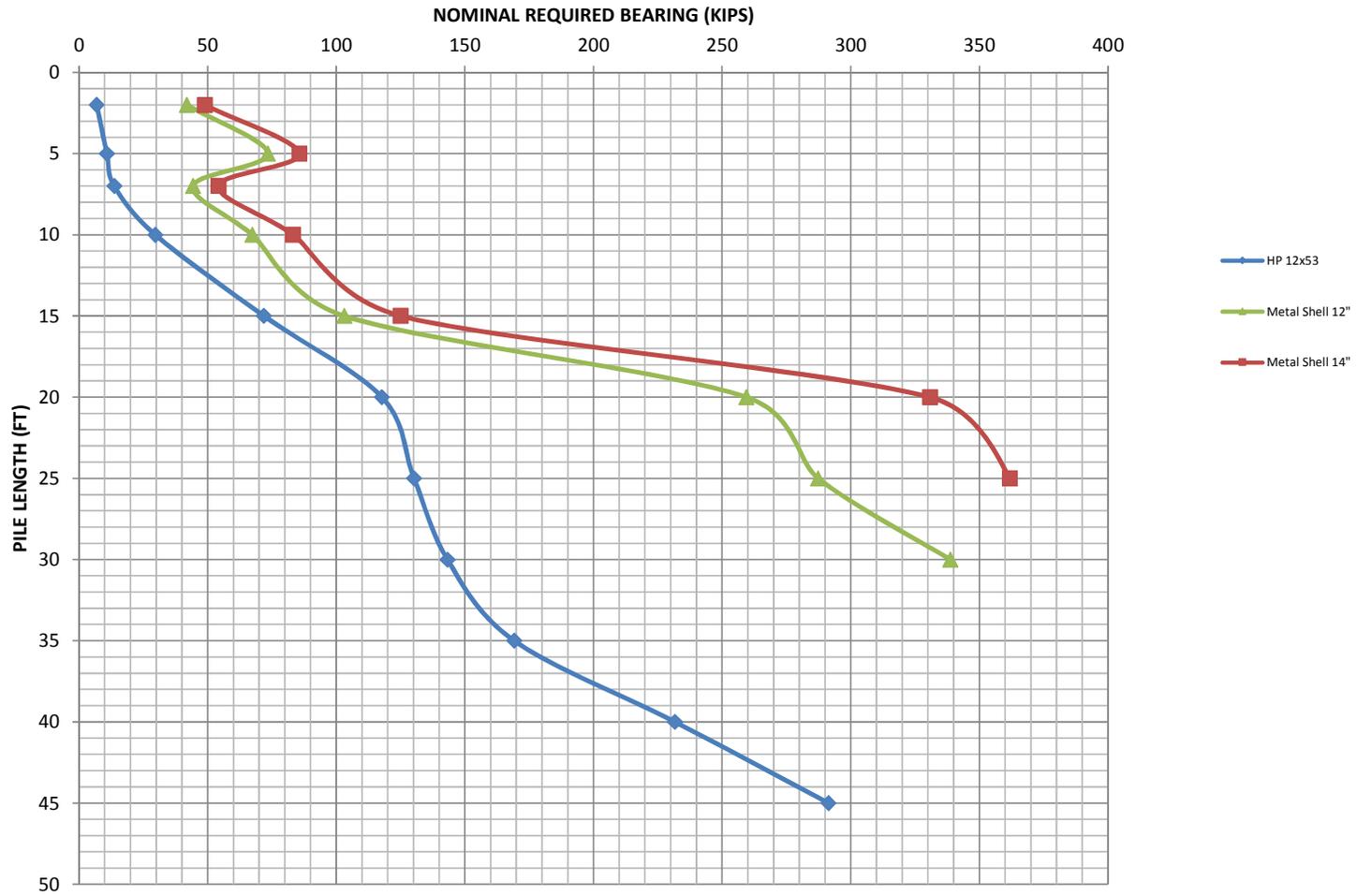
# PILE BEARING (FRA) VS. ESTIMATED PILE LENGTH BORING SB-06

Elevation 35.90 Begin Friction, 35.00 for Pile Cutoff



# PILE BEARING (NRB) VS. ESTIMATED PILE LENGTH BORING SB-06

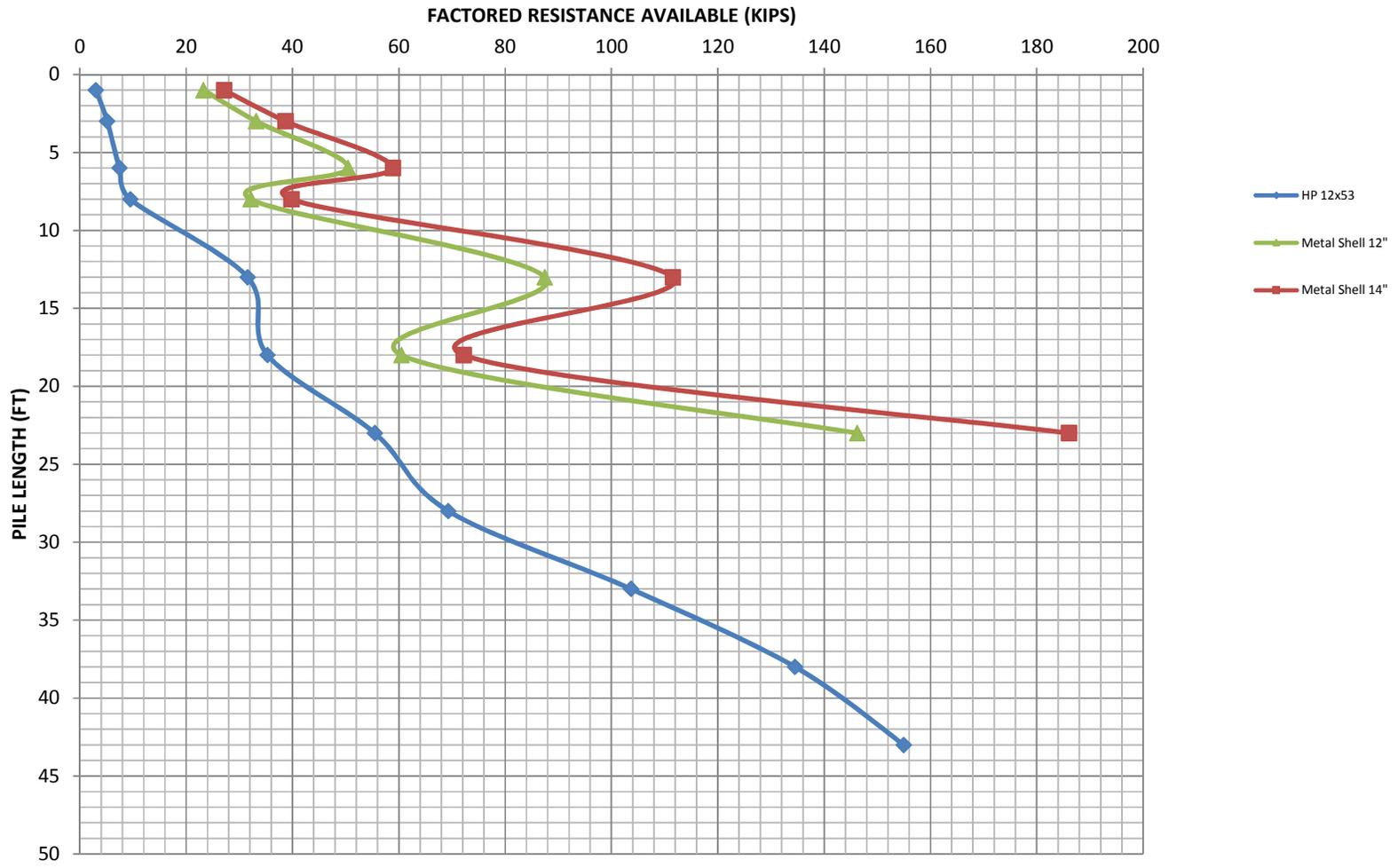
Elevation 35.90 Begin Friction, 35.00 for Pile Cutoff





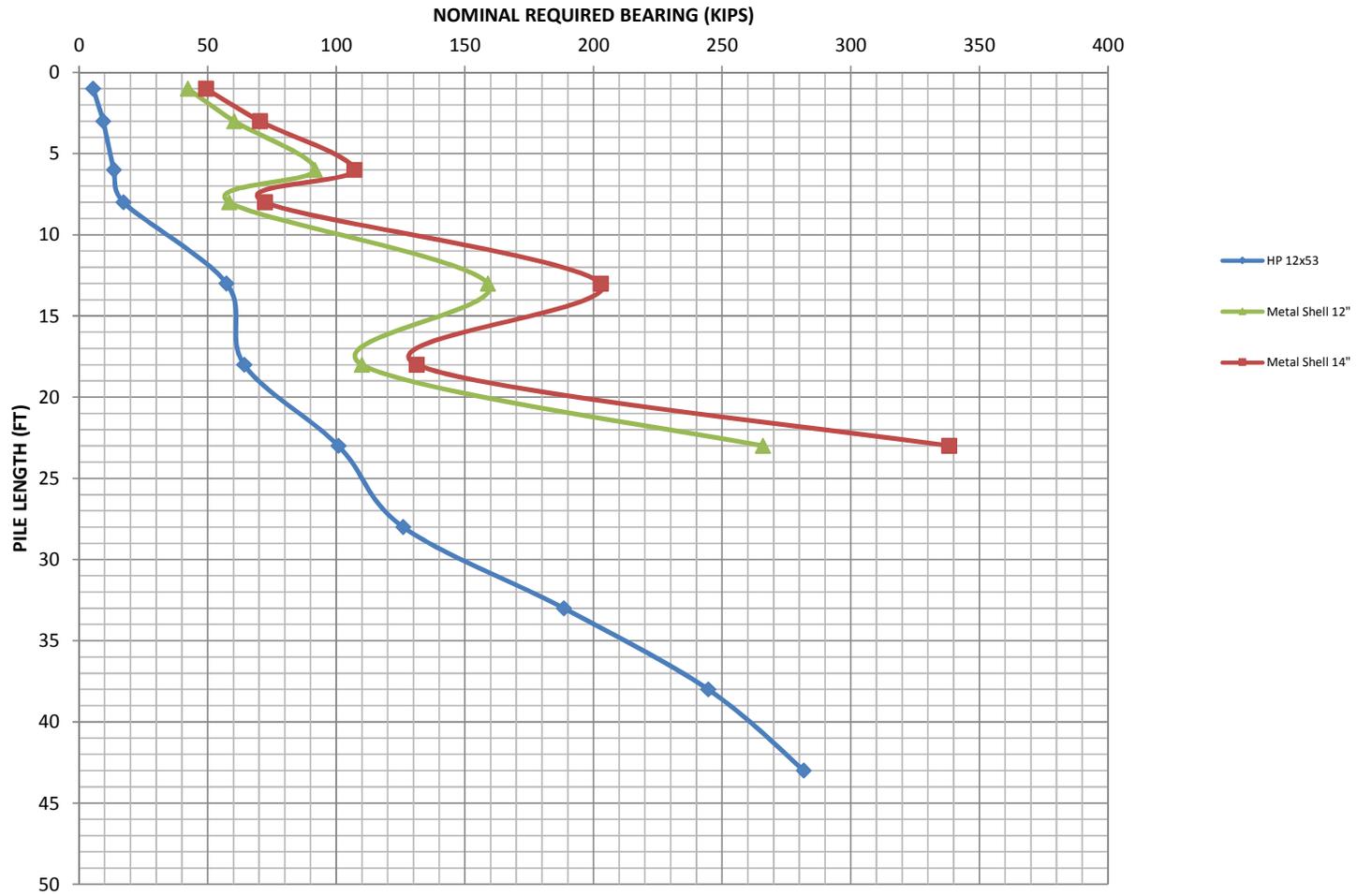
# PILE BEARING (FRA) VS. ESTIMATED PILE LENGTH BORING SB-11

Elevation 35.70 Begin Friction, 34.00 for Pile Cutoff



# PILE BEARING (NRB) VS. ESTIMATED PILE LENGTH BORING SB-11

Elevation 35.70 Begin Friction, 34.00 for Pile Cutoff

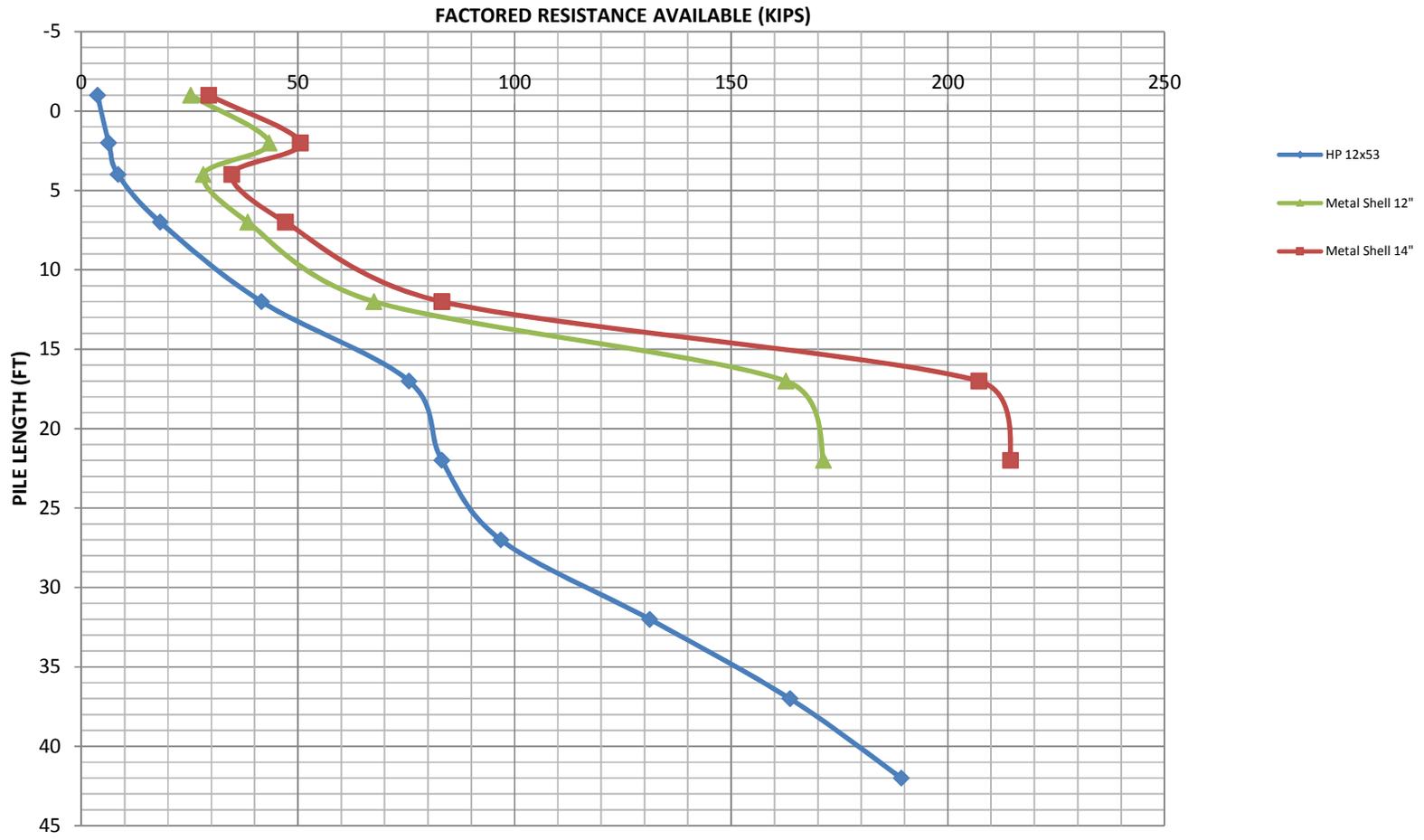




# PILE BEARING (FRA) VS. ESTIMATED PILE LENGTH

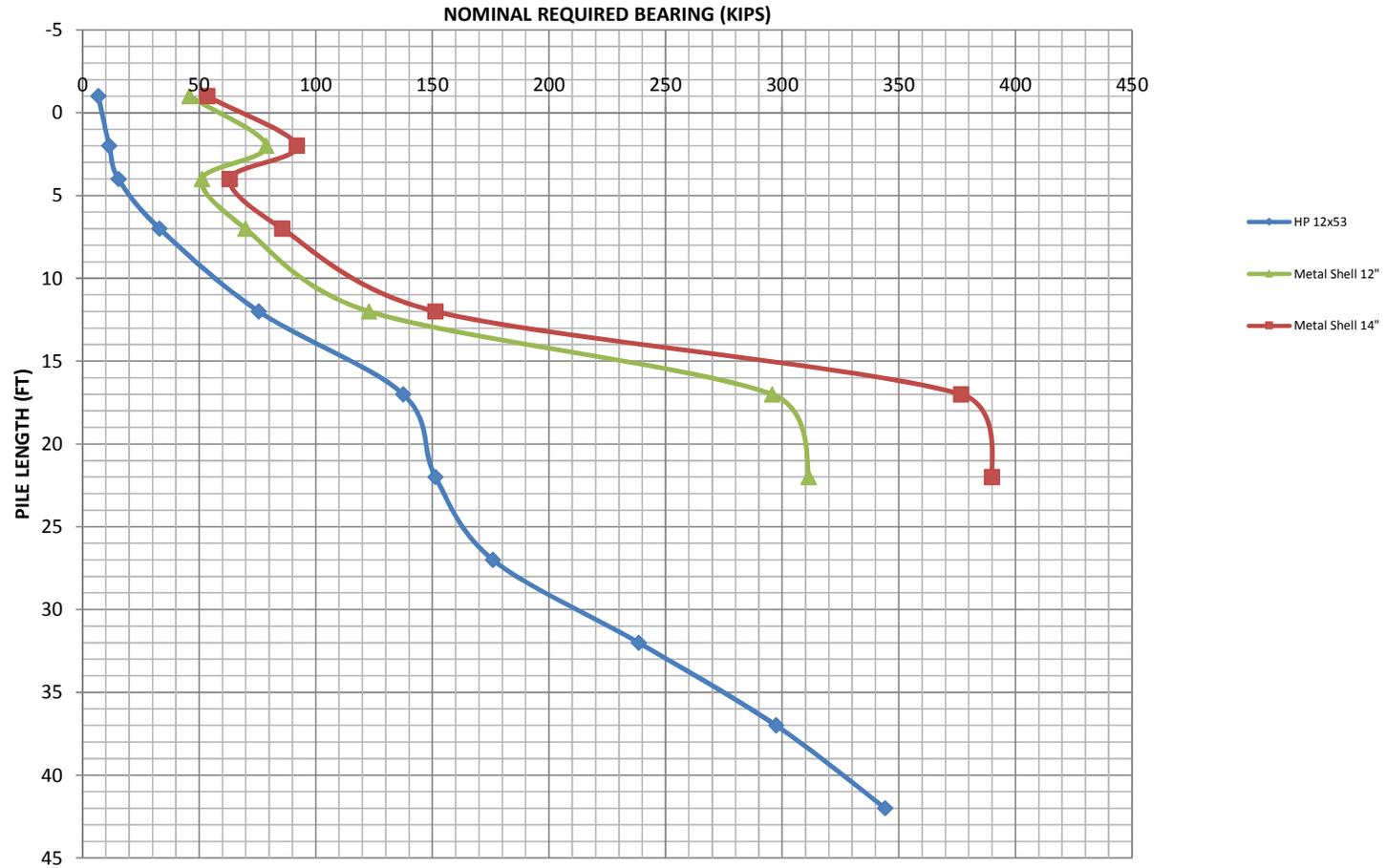
## BORING SB-13

Elevation 33.10 Begin Friction, 30.00 for Pile Cutoff



# PILE BEARING (NRB) VS. ESTIMATED PILE LENGTH BORING SB-13

Elevation 33.10 Begin Friction, 30.00 for Pile Cutoff



## **APPENDIX K**

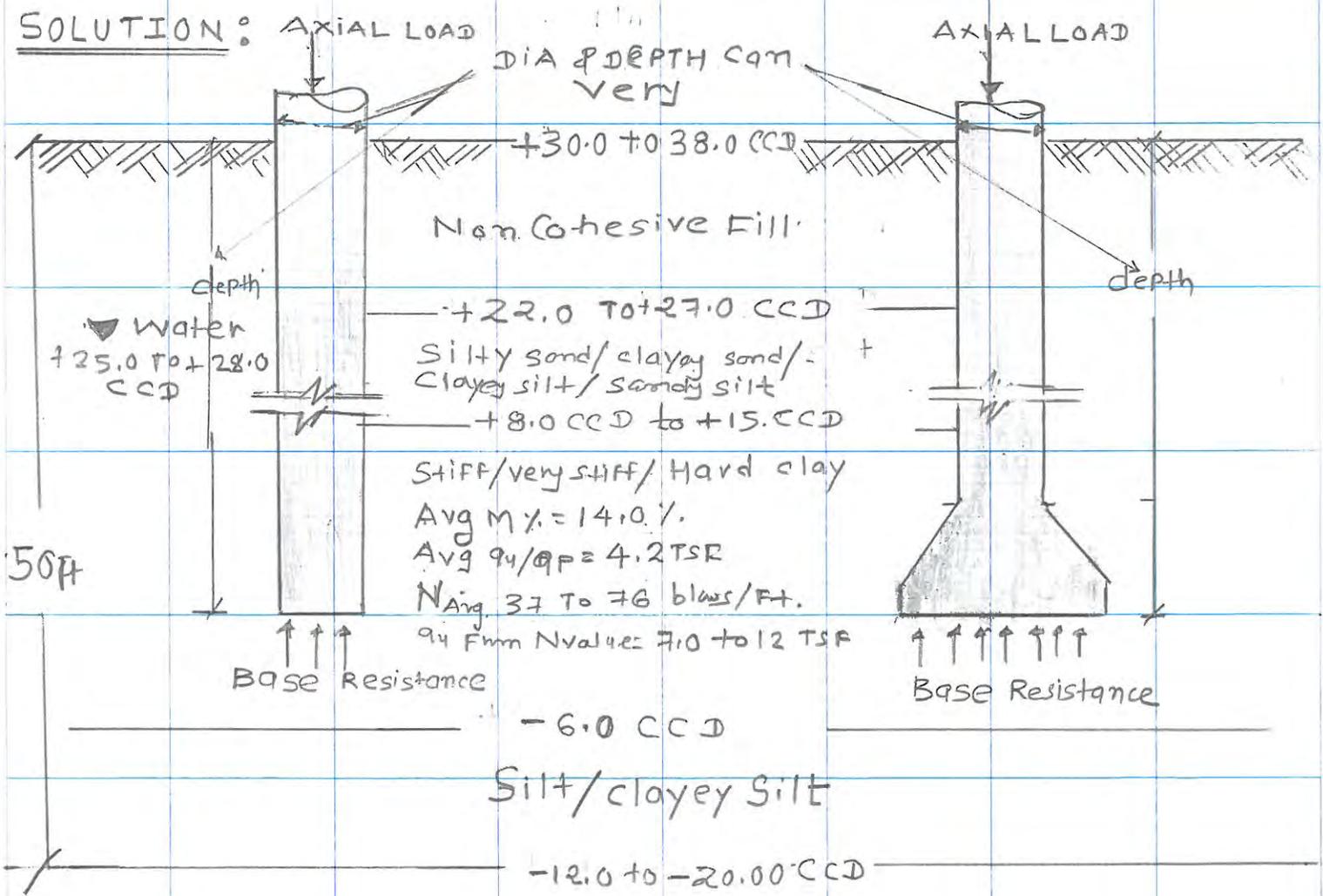
### **DRILLED SHAFTS END BEARING, SETTLEMENT AND SQUEEZE ANALYSIS**

PROBLEM: Calculate Allowable End Bearing Pressure for drilled shaft

GIVEN : Soil boring Logs - For calculation utilize below listed thru Perimeter SB-35, SB-01, SB-43, SB-42, SB-10, SB-41, SB-39 From center SB-38 & SB-40

- \* Based on soil stratigraphy 4-6" diameter drilled shafts bearing on stiff/stiff to very stiff/hard - clay layer @ ± 27.0 to ± 35.0 bgs
- \* Based on provided COLUMN LOAD - Bell may be used or omitted as desired - Bell size varies - No larger than 3 times shaft dia @ base.

SOLUTION:



Clayey layer Soil Data Tabulated 22.0 ~ 27.0 CCD TO -6.0 CCD

Soil Boring	MOISTURE M%		SPT N value blow/ft		Unconfined comp strength tsf			
	Moisture/layer	Avg M%	Blows/Feet/layer	Avg N blows/ft	RIMAC Penetrometer	q <sub>u</sub> Avg	Based on N value	Avg q <sub>u</sub>
SB-01	13+14+10	9	32+40+70	37	3.8+4.5+4.5	4.3	5+6+11	7.3
SB-10	11+13	12	64+43	54	4.5+4.5	4.5	10+7	8.5
SB-35	12+12+14	13	58+80+87	75	4.5+4.5+4.5	4.5	9+13+14	12.0
SB-38	16+13	15	46+45	46	3.8+4.4	4.1	7+7	7
SB-39	11+12+15	13	89+64+70	74	3.8+4.4+4.5	4.2	15+11+12	12
SB-40	14+12+12	13	52+89+87	76	3.3+4.4+4.5	4.1	8+15+14	12
SB-41	15+13+17	15	29+66+50	48	3.3+4.4+4.5	4.1	4+11+8	7
SB-42	23+14	19	58+56	57	4.5+4.0	4.2	9+9	9
SB-43	14+14+14	14	51+39+61	50	3.6+4.3+4.5	4.1	8+16+10	8

- Based on Data Penetrometer/RIMAC Avg q<sub>u</sub>/q<sub>p</sub> Value  
Range From Lowest 4.1 tsf To Max 4.5 with Avg 4.2 Tsf
- Based on SPT N value & unconfined comp. strength Relation developed by Graw & Knapp,  $q_u = N/6$ , Avg q<sub>u</sub> Value Range From Lowest 7.0 Tsf To Max of 12.0 Tsf with Avg q<sub>u</sub> = 9.2 Tsf
- Based on Data Moisture value range of Lowest 9.0% To Max of 19% with an Avg Moisture = 14.0%



CALCULATION : For lowest Avg  $q_u/q_p$  From Rimac/penetration

End bearing Resistance @ TIP elevation varies

From +5.0 CCD To -6.0 CCD

$$q_{BN} = (N_c^*) (S_u)$$
$$= (9.0) \cdot (4,100)$$

$$q_{BN} = 36,900 \text{ PSF}$$

$$N_c^* = \text{Bearing Resistance Factor}$$
$$= 9.0$$

$$S_u = \text{lowest } q_u/q_p \text{ Avg} / 2$$

$$= 4.1 / 2$$

$$= 2.05 \text{ TSF}$$

$$= 2.05 \times 2000$$

$$S_u = 4,100 \text{ PSF}$$

Allowable Resistance

\* Use Factor of safety (F.S) = 3.0 for allowable Resistance

$$q_B = \frac{36,900}{F.S}$$

$$= \frac{36,900}{3.0}$$

$$q_B = 12,300 \text{ PSF} \leq 12.3 \text{ KSF}$$

NOTE: Based on Municipal code of city of Chicago  
13-132-060 Max. Allowable soil bearing  
Pressure For Hardpan Clay layer limited to 12000 PSF

CONCLUSION: Drilled shaft for JPSTC design for End bearing  
Pressure of 12,000 PSF  $\leq$  12.0 KSF.

\* SIDE Resistance should be neglected.

Verify calculated value for based provided COLUMN LOAD & Design Shaft diameter of 4'-6" ft.

Type of STRUCTURE	AXIAL COLUMN LOAD KIPS	Allowable Max. End Bearing Pressure (KSF)	4'-6" DIA. Straight Shaft End Bearing Area (Sq. Ft)	4'-6" DIA Straight Shaft Perimeter (Ft)	Required End bearing Pressure LOAD / Area (KSF)	Meet or Exceed Compare with Allowable	Bell Req. @ Base
1-Story Range/Tactical	100	12.0	15.90	14.137	$100/15.90 = 6.3$	$6.3 < 12.0$ OK	NO
2-Story Scenario	100	12.0	15.90	14.137	$100/15.90 = 6.3 \text{ ksf}$	$6.3 < 12.0$ OK	NO
6-Story Drill Hall	150	12.0	15.90	14.137	$150/15.90 = 9.43$	$9.43 < 12.0$ OK	NO
3-Story OFFICE/CLASSROOM	300	12.0	15.90	14.137	$300/15.90 = 18.87$	$18.87 > 12$ NOT OK	YES
PHASE II 6-Story Burn Tower	480	12.0	15.90	14.137	$480/15.90 = 30.19$	$30.19 > 12$ NOT OK	YES
Phase-II 3-Story Tactical House	80	12.0	15.90	14.137	$80/15.90 = 5.0$ OK	$5.0 < 12.0$ OK	NO



Verify over size / Bell diameter @ Base  
 For 3-story OFFICE/classroom For 4'-6" shaft dia

$$\begin{aligned} \text{Bell Area @ Base} &= \frac{\text{LOAD}}{\text{Allowable End bearing pressure}} \\ &= \frac{300 \text{ k}}{12} \\ &= 25.00 \text{ sq.ft} \end{aligned}$$

$$\text{Area} = \pi \cdot r^2$$

$$25.0 = 3.1416 (r^2)$$

$$\begin{aligned} r^2 &= 25.0 / 3.1416 \\ &= 7.96 \end{aligned}$$

$$r = 2.82 \text{ ft}$$

$$\text{Diameter of Bell @ base} = 2r = 2 \times 2.82 = 5.64 \text{ ft.}$$



PROBLEM: Calculate settlement Drilled shaft-End bearing in clay layer considering 4'-6" Dia Shaft with 6.0" bell size

$$\text{Settlement: } S = \frac{C_{cr}}{1+e_0} \cdot H \cdot \log \frac{P_0 + \Delta P}{P_0}$$

Axial Load = 300 kIPS

Assume 25% of Live Load (LL) is sustained for settlement

$C_{cr} = 0.025$  typical Chicago soil

$$= 0.25 \text{ LL}$$

$G_s = 2.7$  estimated

$$= 0.25 (150)$$

$$W_{c, \text{Avg}} = 14.0\%$$

$$K_0 = 37.5 \text{ K}$$

$$e_0 = W_c \times G_s$$

$$\text{Total Sustained Load} = D.L + 0.25 \text{ LL}$$

$$= \frac{14}{100} \times 2.7$$

$$= 150 + 37.5$$

$$e_0 = 0.378$$

$$= 187.5 \text{ K}$$

Applied Pressure @ Bell Base of 6.0 dia

$I$  = Influence Factor for vertical stress @ any point below UL circular Area.

$$= \frac{187.5}{\pi (3.0)^2} = 6.63 \text{ ksf}$$

Boussinesq formula

$$P_0 = 13 \times 120 + (12 \times (125 - 62.4))$$

$$I = \frac{3/2\pi}{\left[1 + \left(\frac{z}{r}\right)^2\right]^{5/2}}$$

$$= 1560 + 751.2 = 2311.2$$

$$\left[1 + \left(\frac{z}{r}\right)^2\right]^{5/2}$$

$$\Delta P = 0.46 (6630) = 3049.8$$

$$r = 3.0 \quad z = 25.0 \text{ depth}$$

$$S = \frac{0.025}{1.378} (12) \cdot \log \frac{2311 + 3049.8}{2311}$$

$$I = \frac{3/2 (3.1416)}{\left[1 + \left(\frac{3}{25}\right)^2\right]^{5/2}}$$

$$= 0.46$$

$$S = 0.07955' = 0.95''$$

Per IDOT Geotech Manual Actual settlement is  $\frac{1}{4}$  of  $S$  in stiff clay  
 $S_{\text{actual}} = \frac{1}{4} \times 0.95 = 0.2375 \approx \frac{1}{4}$  inch.



PROBLEM: Calculate settlement of Drilled Shaft  
End bearing in clay layer considering  
4'-6" dia Straight shaft

$$\text{Settlement} = S = \frac{C_{cr}}{1 + e_0} \cdot H \cdot \log \frac{P_0 + \Delta P}{P_0}$$

Assume 25% of L.L is sustained for Settlement  
= 0.25 LL = 0.25 (75) =  $K_0 = 18.75 \text{ k}$

$$\begin{aligned} \text{Total Sustained Load} &= \text{D.L} + 0.25 \text{ LL} \\ &= 75 + 18.75 \\ &= 93.75 \text{ k} \end{aligned}$$

$$\begin{aligned} \text{Applied pressure @ 4'-6" dia BASE} \\ &= \frac{93.75}{\pi (r^2)} = \frac{93.75}{3.1416 (2.25)^2} = 5.89 \text{ kSF} \end{aligned}$$

$$\begin{aligned} P_0 &= 13 \times 120 + 12 \times (125 - 62.4) \\ &= 1560 + 751.2 = 2311.2 \end{aligned}$$

$$\Delta P = 0.47 (5890) = 2768$$

$$S = \frac{0.025 (9.0)}{1.378} \log \frac{2311 + 2768}{2311}$$

$$S = 0.0558' = 0.67''$$

per IDOT Geotech Manual Actual settlement  
is 1/4 of calculated S in stiff clay so

$$S_{\text{actual}} = \frac{1}{4} \times 0.67 = 0.1675 \text{ inch } \frac{1}{6} \text{ inch}$$

Axial Load = 150 kIPS

$C_{cr} = 0.025$  for typ. Chicago soil

$G_s = 2.7$

$W_{c, \text{avg}} = 14.0\%$

$$e_0 = W_c \times G_s = 0.378$$

$$H = 2 \cdot B = 2 (4.5) = 9.0$$

I = Influence Factor for  
Vertical stress @ any point

below UL circular Area

$$I = 1.0$$

From Boussinesq Formula

$$I_B = \frac{3/2\pi}{\left[1 + \left(\frac{z}{2}\right)^2\right]^{5/2}}$$

$$z = 2.25 \cdot 2 = 25' \text{ depth}$$

$$I = \frac{3 / (2 \times 3.1416)}{\left[1 + \left(\frac{2.25^2}{25}\right)\right]^{5/2}}$$

$$= 0.47$$



Objective: Determine the Squeeze potential for a 4.5" diameter drilled shafts for this project.

Given: Soil boring SB-01 (Worst Case Scenario)  
SB-35 and SB-38 thru SB-43

Solution: Squeeze can occur if

$$\frac{\sigma_v}{s_u} > \left( \frac{D+B}{4} \right) + 5$$

DEPTH C	CCD	Overburden Pressure (1)	$S_u$ (PSF) (4)	D/B (3)	$\left( \frac{D+B}{4} \right) + 5$	$\sigma_v / s_u$	Squeeze Y or NO
12.5	23.2	1385.2	650	2.77	9.25	2.13	NO
17.0	18.7	1666.9	550	3.77	10.38	3.03	NO
22.0	13.7	1979.9	1250	4.88	11.63	1.58	NO
30.0	5.7	2480.7	1900	6.66	13.63	1.30	NO
35.0	0.7	2793.7	2250	7.77	14.88	1.24	NO
40.0	-4.3	3106.7	2250	8.88	16.13	1.38	NO
42.0	-6.3	3225.6	2250	9.33	16.63	1.43	NO

1) Based on depth x assumed unit weight of fill 120 pcf  
unit weight of clay 125 pcf

2) Water table @ 10.5 ft.

3) B = 4.5 feet drilled shaft dia.

4) Based on min PF, Rmax on  $q_u$  test at that depth.



# STRUCTURE FOUNDATION BORING LOG

PAGE 1 of 2  
 DATE 8/12/2020  
 LOGGED BY RT  
 GSI JOB No. 19059

Project: Geotechnical Investigation For Joint Public Safety Training Campus (JPSTC)

Location: 4301 W. Chicago Avenue, Chicago, Illinois

County: Cook Drilling Method: Hollow Stem Auger/Rotary Hammer Type: CME Automatic

Client: AECOM

BORING No.: SB-01

Northing: 1904774.3

Easting: 1146314.7

Ground Surface Elev. +35.7 CCD

D E P T H	B L O W S	U C S  Qu	M O I S T	Surface Water Elev. <u>n/a</u>	D E P T H	B L O W S	U C S	M O I S T	Stream Bed Elev. <u>n/a</u>	D E P T H	B L O W S	U C S	M O I S T
				Groundwater Elevation:					First Encounter <u>-9.5'</u> ▼				
				Upon Completion <u>n/a</u> ▼					After _____ Hrs. _____ ▼				
(ft)	(/6")	(tsf)	(%)		(ft)	(/6")	(tsf)	(%)					

8.0" SANDY TOPSOIL-black	-	AS	12	SILTY CLAY with Sand-gray-very stiff (CL)	-	-	-	-
		10						
		13						
POORLY GRADED SAND with Gravel-brown-medium dense (GP) Fill		14	2					
		6		SILT with Sand-gray-medium dense (ML)			14	
		8					17	
		-5	10	3			-25	29
								18
		4						
		4						
		6	3					
POORLY GRADED SAND-brown-loose (SP) Fill		3					13	119
		3					17	
		-10	3	21	SILTY CLAY with Sand-gray-very stiff (CL)		-30	25
							3.88	13
		3						
		4		101				
SILTY CLAY-brown & gray-stiff (CL)		5	1.3B	25				
		3					17	
		4					18	
		-15	4	1.1B	29		-35	22
							4.5P	14
		3						
		6					22	
SILTY CLAY with Sand-gray-very stiff (CL)							29	
		-20	8	2.5P	15		-40	41
							4.5P	10

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer) ST-Shelby Tube Sample VS=Vane Shear Test  
 The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206) The Unit Dry Weight (pcf) is noted in italics above moist (%)  
 NR-No Recovery NP-Nonplastic

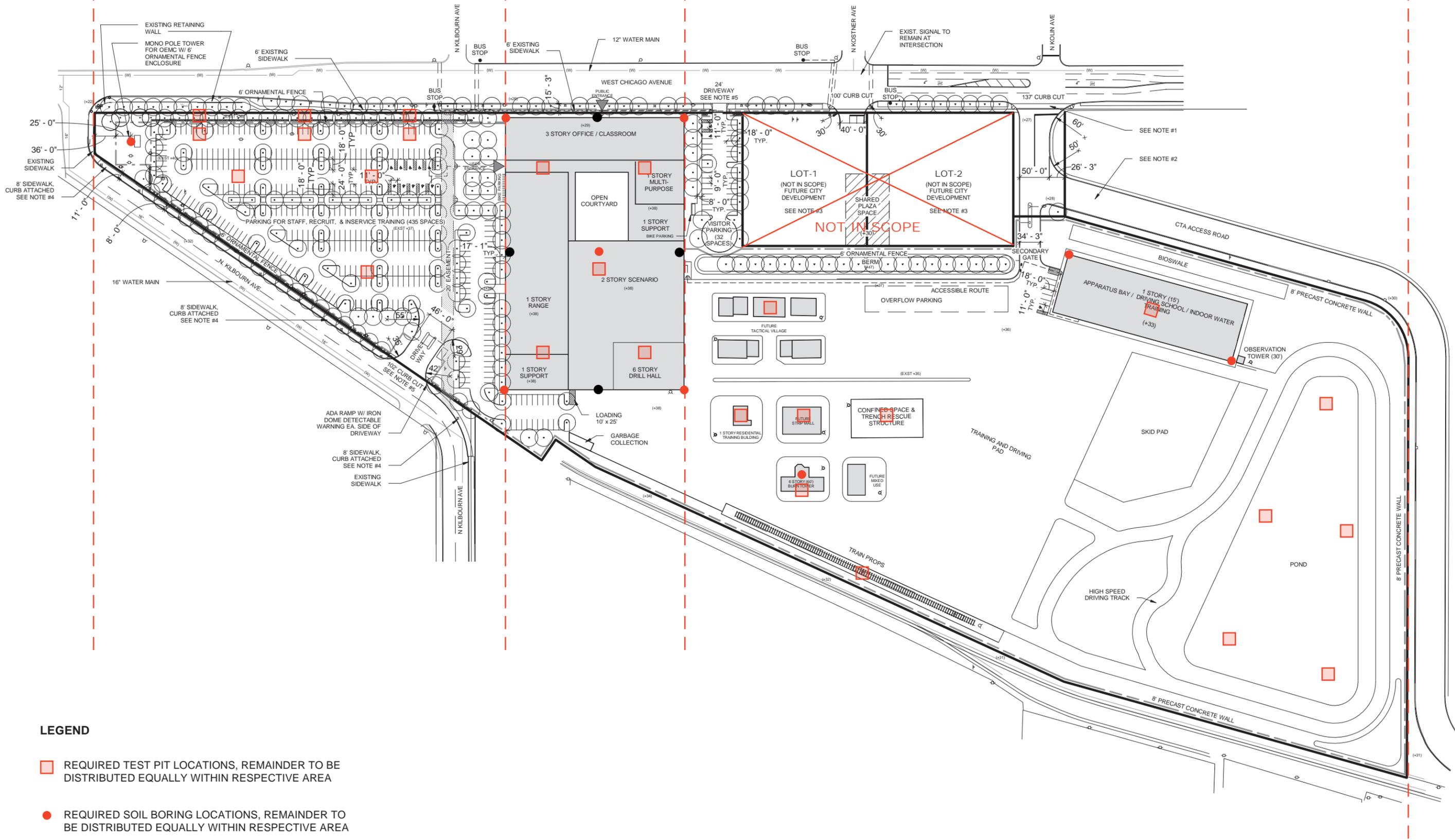


**APPENDIX L**  
**CONCEPT DRAWING**

AREA A  
1 Day of Test Pits

AREA B  
1 Day of Test Pits

AREA C  
1 Day of Test Pits



LEGEND

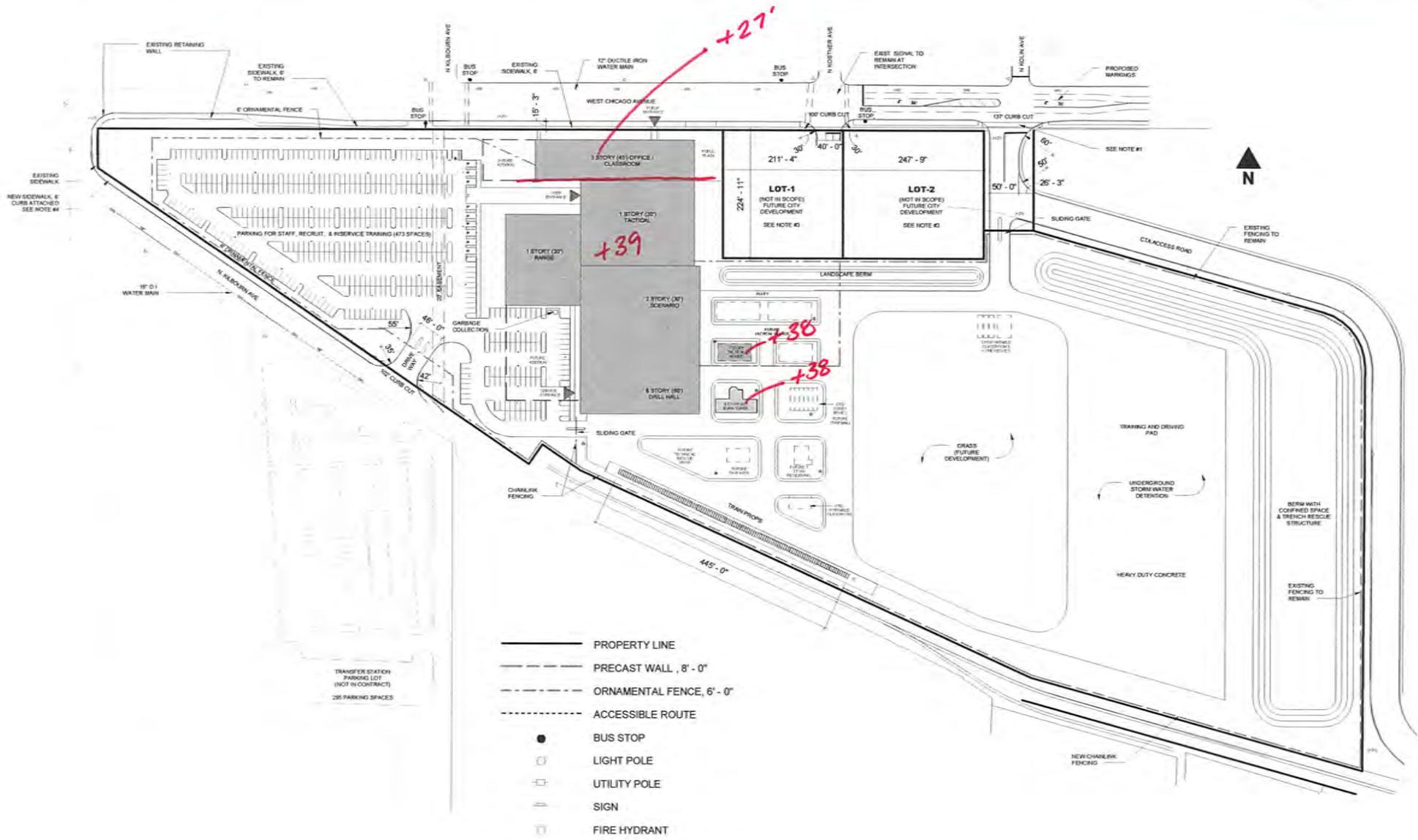
- REQUIRED TEST PIT LOCATIONS, REMAINDER TO BE DISTRIBUTED EQUALLY WITHIN RESPECTIVE AREA
- REQUIRED SOIL BORING LOCATIONS, REMAINDER TO BE DISTRIBUTED EQUALLY WITHIN RESPECTIVE AREA
- PROPOSED SOIL BORING LOCATIONS BASED ON PHONE CALL MEETING BETWEEN GSI & AECOM ON JUNE 17 2019.

SCALE 1" = 60'

GEOTECHNICAL INVESTIGATIONS







SCALE 1" = 160'

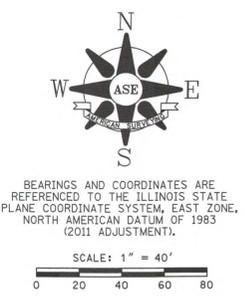
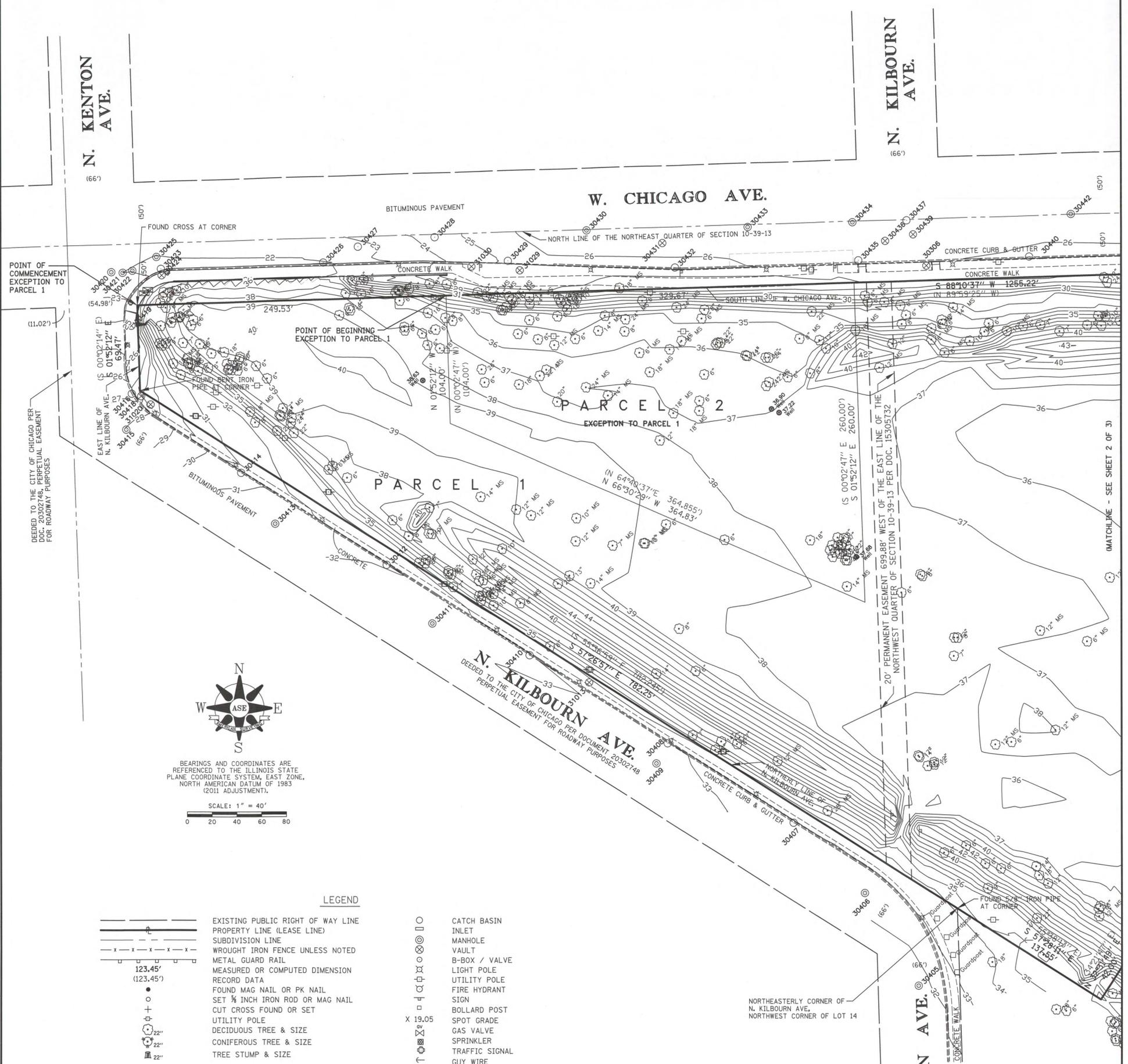
# JOINT PUBLIC SAFETY TRAINING CAMPUS (JPSTC)

CONCEPT SITE PLAN  
09/27/19



# BOUNDARY & TOPOGRAPHIC SURVEY

(SEE LEGAL DESCRIPTION ON SHEET 3 OF 3)



### LEGEND

- EXISTING PUBLIC RIGHT OF WAY LINE
- PROPERTY LINE (LEASE LINE)
- SUBDIVISION LINE
- WROUGHT IRON FENCE UNLESS NOTED
- METAL GUARD RAIL
- MEASURED OR COMPUTED DIMENSION
- RECORD DATA
- FOUND MAG NAIL OR PK NAIL
- SET 1/2 INCH IRON ROD OR MAG NAIL
- CUT CROSS FOUND OR SET
- UTILITY POLE
- DECIDUOUS TREE & SIZE
- CONIFEROUS TREE & SIZE
- TREE STUMP & SIZE
- CATCH BASIN
- INLET
- MANHOLE
- VAULT
- B-BOX / VALVE
- LIGHT POLE
- UTILITY POLE
- FIRE HYDRANT
- SIGN
- BOLLARD POST
- SPOT GRADE
- GAS VALVE
- SPRINKLER
- TRAFFIC SIGNAL
- GUY WIRE

### MANHOLE DETAIL

Point	Elevation	Type	Comment	Pipe1_Label	Pipe2_Label	Pipe3_Label	Pipe4_Label
30405	32.05	SAN MH		INV E: 23.75 12" RCP	INV S: 22.75 12" CLAY	INV WNW: 22.95 12" CLAY	
30406	32.42	ST MH		INV S: 22.12 15" RCP	INV W: 17.77 36" RCP	INV ESE: 17.72 36" RCP	
30407	32.65	ST MH	NO PIPES VISIBLE				
30408	33.37	ST CB	PIPES HAS PLASTIC CAP OVEN END	INV S: 27.87 6" RCP			
30409	33.71	ST MH		INV W: 19.11 36" RCP	INV E: 19.01 36" RCP		
30410	33.23	ST INL	RESTRICTOR IS OFF OF PIPE	INV S: 28.78 8" CLAY			
30411	33.06	ST MH		INV W: 19.56 36" RCP	INV E: 19.56 36" RCP	INV S: 23.36 15" RCP	
30412	32.15	ST CB	NO PIPES VISIBLE				
30413	31.97	ST MH		INV W: 19.97 36" RCP	INV E: 19.97 36" RCP		
30114	31.09	ST INL	FILLED TO RIM W/DEBRIS NO PIPE VISIBLE				
30415	28.37	ST MH		INV NNW: 20.27 12" RCP	INV E: 19.77 36" RCP	INV S: 20.12 12" RCP	
30416	26.90	ST INL	NO PIPES VISIBLE				
30423	22.13	ST INL		INV ENE: 19.83 4" RCP			
30425	22.28	ST MH		INV W: 16.88 15" RCP	INV N: 17.03 15" RCP	INV E: 18.23 6" VCP	INV S: 18.28 6" VCP
30426	22.15	ST INL		INV NW: 20.45 6" VCP			
30427	22.94	ST MH		INV W: 16.74 24" RCP	INV N: 17.84 6" VCP	INV E: 16.54 24" RCP	
30428	24.80	ST MH		INV W: 16.50 24" RCP	INV N: 16.90 15" RCP	INV E: 16.30 24" RCP	
30429	25.48	ST CB	NO PIPES VISIBLE				
30430	27.02	ST MH		INV W: 16.02 24" RCP	INV E: 16.12 24" RCP		
30432	25.95	ST CB	NO PIPES VISIBLE				
30433	26.97	ST MH		INV W: 14.87 24" RCP	INV E: 15.02 24" RCP		
30434	27.00	ST MH		INV W: 13.40 24" RCP	INV S: 13.20 24" RCP		
30435	26.78	ST CB	NO PIPES VISIBLE				
30437	27.13	ST MH		INV W: 15.33 24" RCP	INV E: 15.53 30" RCP		
30440	25.87	ST INL	NO PIPES VISIBLE				
30442	26.94	ST MH		INV W 15.44 30" RCP	INV E: 15.24 30" RCP		
30443	25.89	ST CB	NO PIPES VISIBLE				
30444	26.87	ST MH	NO FLOW	INV W: 15.07 30" RCP	INV N: 19.77 6" VCP	INV E: 15.07 30" RCP	INV S: 19.27 6" VCP
30445	26.80	ST MH		INV E: 15.00 30" VCP	INV E: 14.80 30" VCP		
30446	26.64	ST MH		INV W: 14.89 30" RCP	INV E: 15.14 30" RCP	INV N: 21.34 8" UKN	INV S: 19.14 8" UKN
30448	25.68	ST CB	NO PIPES VISIBLE				
30450	25.47	ST MH		INV N: 17.27 36" RCP	INV E: 18.87 8" VCP	INV SSE: 17.07 36" VCP	
30451	24.88	ST CB	NO PIPES VISIBLE				
30452	25.96	ST MH	WATER FLOWS FROM "3" BUT CANNOT SEE IT	INV WNW: 17.86 30" RCP	INV ESE: 17.86 30" RCP	INV S: UNK	
30453	27.97	ST CB	NO PIPES VISIBLE				
30454	29.86	ST CB	NO PIPES VISIBLE				
30455	29.58	ST CB	NO PIPES VISIBLE				
30456	30.97	ST CB		INV E: 25.37 12" RCP			
30457	31.53	ST CB		INV E: 26.03 12" RCP			

### NOTES:

1.) BOUNDARY INFORMATION & LEGAL DESCRIPTION SHOWN HEREON ARE FROM ALTA/NSPS LAND TITLE SURVEY BY SPACECO INC. JOB NO: 258102, REVISION DATED 07/06/2017, AS PROVIDED BY AMEC FOSTER WHEELER INFRASTRUCTURE.

### SURVEYOR CERTIFICATE:

STATE OF ILLINOIS )  
 ) S.S.  
 COUNTY OF COOK )

I, JOHN A. DYBAS III, AN ILLINOIS PROFESSIONAL LAND SURVEYOR, DO HEREBY CERTIFY THAT I HAVE SURVEYED THE PROPERTY DESCRIBED ABOVE, THAT THE PLAT DRAWN HEREON IS A TRUE REPRESENTATION OF SAID SURVEY, AND THAT THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A TOPOGRAPHIC SURVEY.

FIELD WORK COMPLETED 12/04/2017.  
 DATED AT CHICAGO, ILLINOIS THIS 18TH DAY OF DECEMBER, 2017.

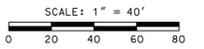
*John A. Dybas III*  
 JOHN A. DYBAS III  
 ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 35-3097  
 LICENSE EXPIRATION DATE 11/30/2018



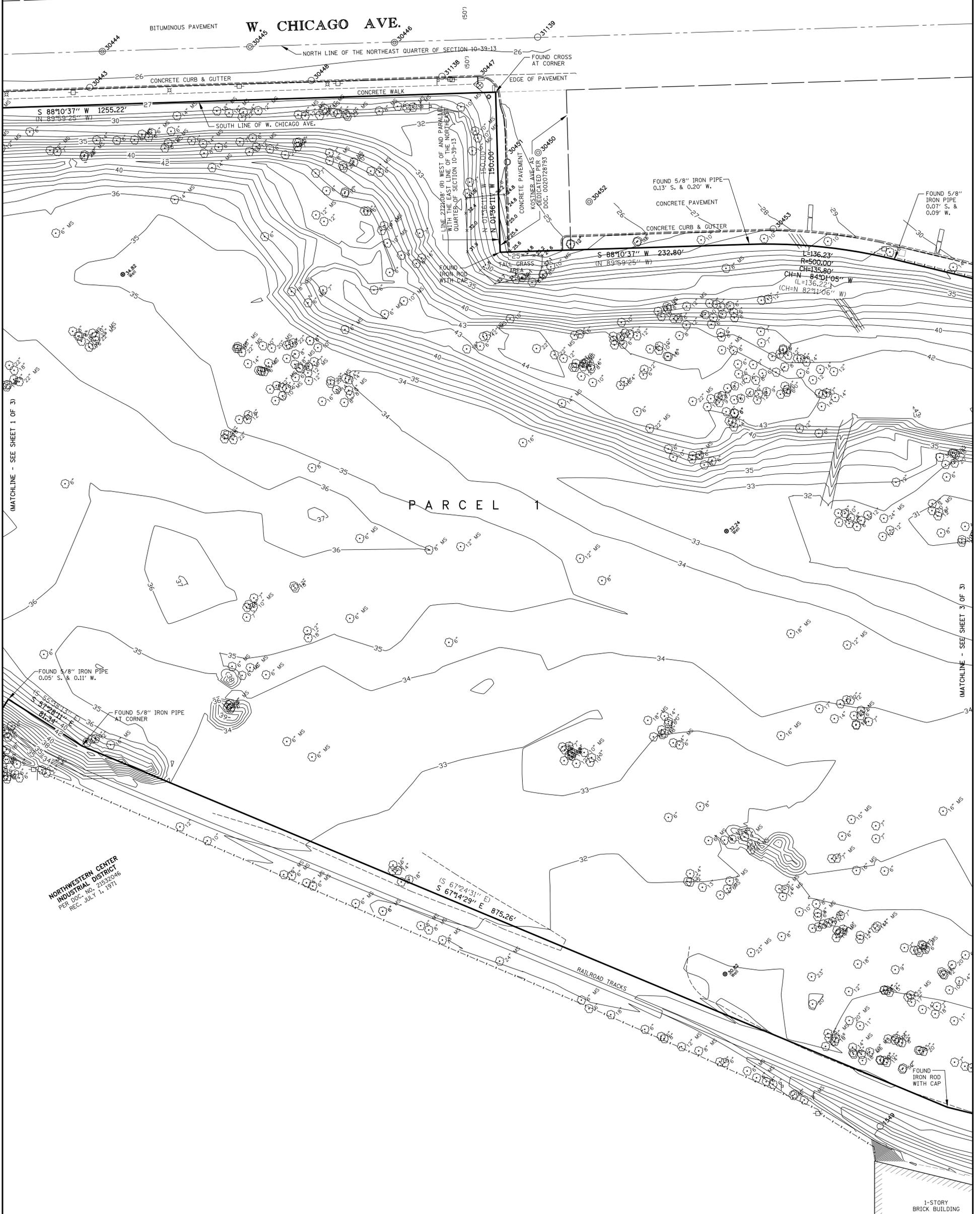
# BOUNDARY & TOPOGRAPHIC SURVEY



BEARINGS AND COORDINATES ARE REFERENCED TO THE ILLINOIS STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983 (2011 ADJUSTMENT).



N. KOSTNER AVE.  
(66')



MATCHLINE - SEE SHEET 1 OF 3

MATCHLINE - SEE SHEET 3 OF 3

**NORTHWESTERN CENTER INDUSTRIAL DISTRICT**  
PER DOC. NO. 21532046  
REC. JULY 1, 1971

1-STORY BRICK BUILDING

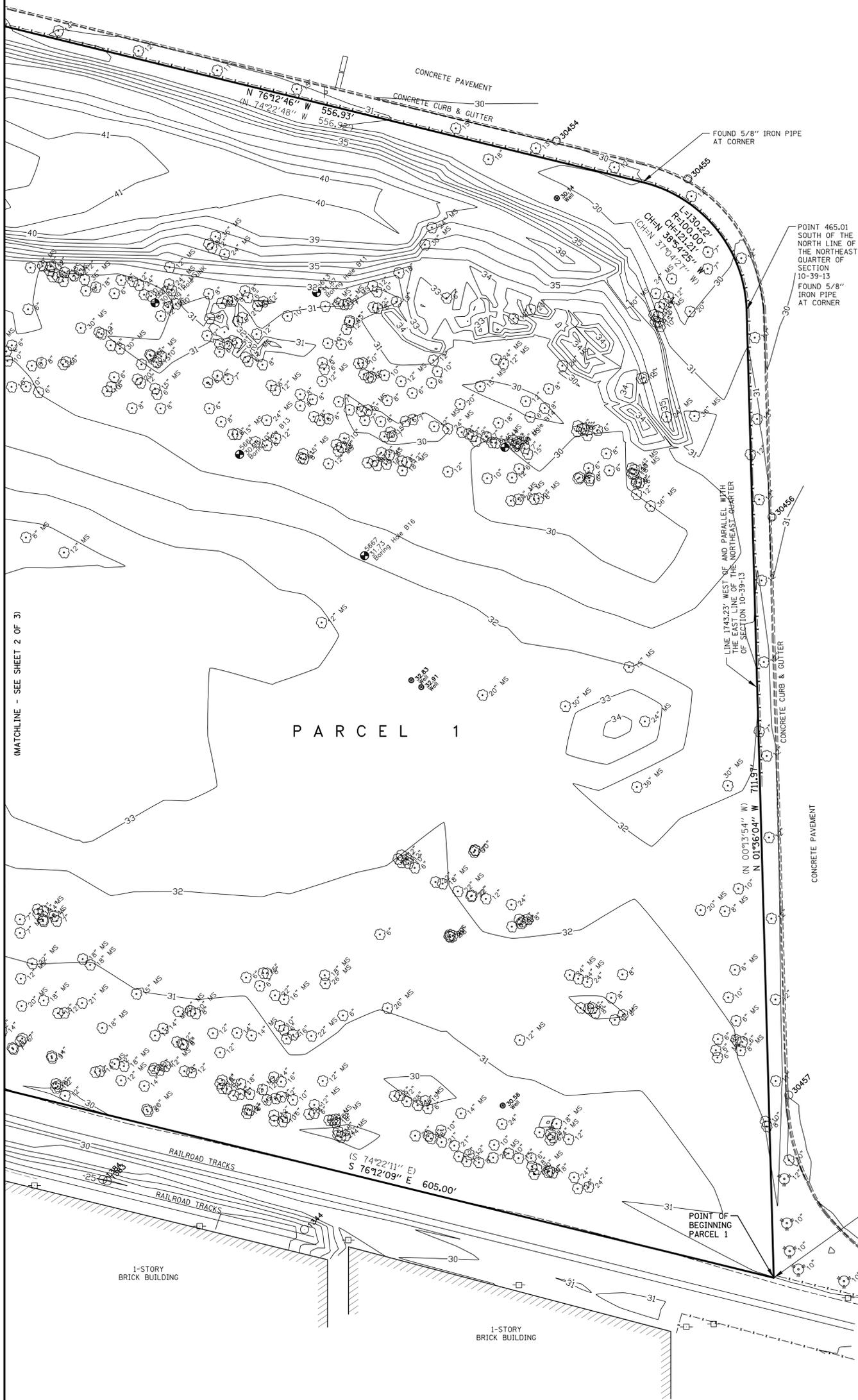
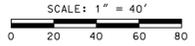
 <p><b>AMERICAN SURVEYING &amp; ENGINEERING, P.C.</b> SURVEYORS - ENGINEERS - GEODESISTS - MAPPING SCIENTIST ILLINOIS PROFESSIONAL DESIGN FIRM NO. 184-003192 841 N. Galena Ave.   150 N. Wacker Dr. Suite 2650   888 S. Edgelawn Dr. Suite 1725 Dixon, IL 61021   Chicago, IL 60606   Aurora, IL 60506 815-288-9231 / Fax 815-288-6277   312-277-2000 / Fax 312-277-2002   630-897-4109 / Fax 630-897-4121</p>	CLIENT: AMEC FOSTER WHEELER ENVIRONMENTAL INFRASTRUCTURE	LOCATION: 4301 W. CHICAGO AVE., CHICAGO	
	PIN SURVEYED: 16-10-200-061-0000	PROJECT NO: 217127	DATE: 12/18/2017
	PROJECT: 4301 W. CHICAGO AVE., CHICAGO	TASK ORDER:	DRAWN BY: J. NOCON

# BOUNDARY & TOPOGRAPHIC SURVEY

## LEGAL DESCRIPTION



BEARINGS AND COORDINATES ARE REFERENCED TO THE ILLINOIS STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983 (2011 ADJUSTMENT).

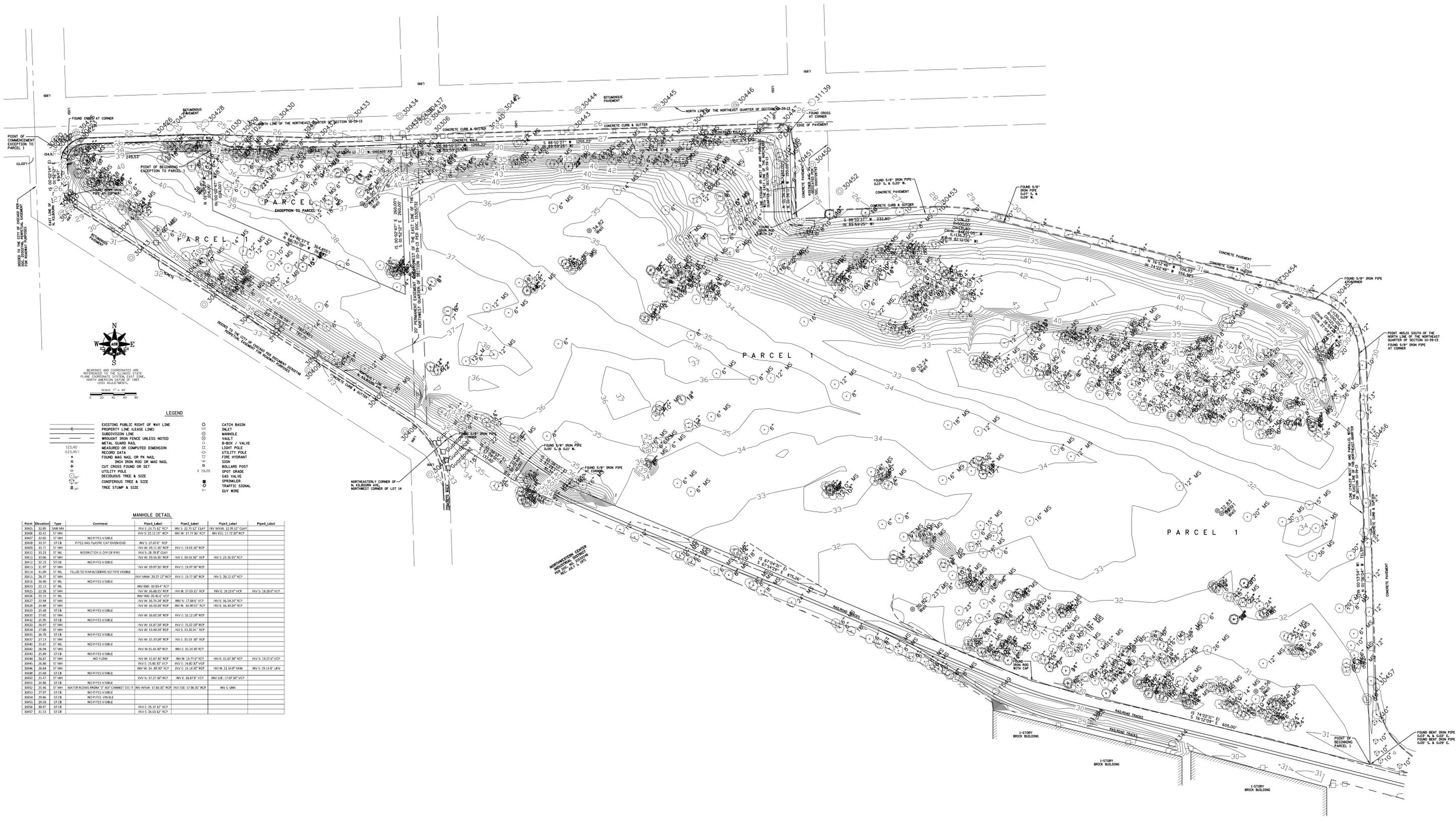


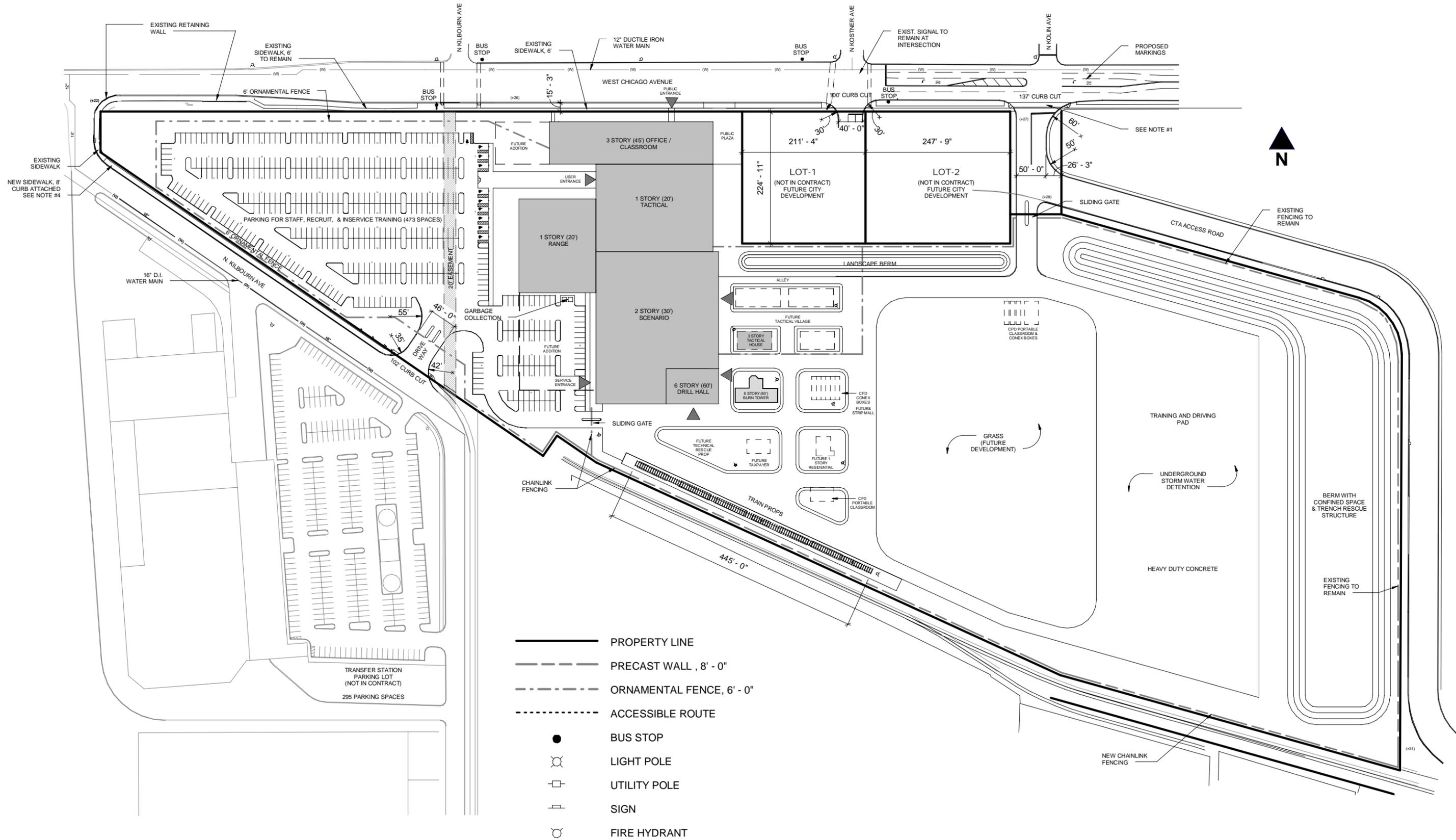
PARCEL 1: THAT PART OF THE NORTHEAST 1/4 AND THE NORTHWEST 1/4 OF SECTION 10, TOWNSHIP 39 NORTH, RANGE 13 EAST OF THE THIRD PRINCIPAL MERIDIAN BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT A POINT ON THE WEST LINE OF NORTH PULASKI ROAD (BEING THE WEST LINE OF THE EAST 33.00 FEET OF THE NORTHEAST 1/4 OF SECTION 10 AFORESAID) SAID POINT BEING ON A LINE DRAWN 970.00 FEET SOUTH OF AND PARALLEL WITH THE SOUTH LINE OF WEST CHICAGO AVENUE (SAID SOUTH LINE BEING A LINE DRAWN 50.00 FEET SOUTH OF AND PARALLEL WITH THE NORTH LINE OF SAID NORTHEAST 1/4 OF SECTION 10); THENCE NORTH 89 DEGREES, 59 MINUTES, 25 SECONDS WEST ALONG SAID PARALLEL LINE 313.92 FEET; THENCE SOUTH 0 DEGREES, 14 MINUTES, 49 SECONDS WEST, 104.05 FEET; THENCE SOUTH 6 DEGREES, 33 MINUTES, 01 SECONDS EAST, 257.53 FEET TO THE SOUTH LINE OF THE NORTH 1379.90 FEET OF THE SAID NORTHEAST 1/4 OF SECTION 10; THENCE NORTH 89 DEGREES, 59 MINUTES, 25 SECONDS WEST ALONG SAID SOUTH LINE 335.22 FEET TO THE INTERSECTION OF A CIRCLE CONVEX NORTHEASTERLY, HAVING A RADIUS OF 566.44 FEET AND BEING 40.00 FEET NORTHEASTERLY OF AND CONCENTRIC WITH THE NORTHEASTERLY LINE OF LOT 2 IN FIRST ADDITION TO NORTHWESTERN CENTER INDUSTRIAL DISTRICT RECORDED MAY 31, 1984 AS DOCUMENT 27109489; THENCE NORTHWESTERLY ALONG THE ARC OF SAID CIRCLE U38.32 FEET (THE CHORD OF WHICH BEARS NORTH/73 DEGREES, 59 MINUTES, 08 SECONDS WEST FOR 187.45 FEET) TO THE POINT OF TANGENCY THEREOF; THENCE NORTH 83 DEGREES, 30 MINUTES, 35 SECONDS WEST PARALLEL WITH THE NORTHERLY LINE OF SAID LOT 2 EXTENDED NORTHWESTERLY IN AFORESAID FIRST ADDITION TO NORTHWESTERN CENTER INDUSTRIAL DISTRICT; THENCE NORTH 74 DEGREES, 25 MINUTES, 26 SECONDS WEST ALONG SAID PARALLEL LINE 229.02 FEET TO THE INTERSECTION WITH A LINE DRAWN 42.00 FEET NORTHEASTERLY OF AND PARALLEL WITH THE WESTERLY MOST NORTHERLY LINE OF LOT 16 IN NORTHWESTERN CENTER INDUSTRIAL DISTRICT RECORDED JULY 1, 1971 AS DOCUMENT 21532046; THENCE NORTH 74 DEGREES, 22 MINUTES, 11 SECONDS WEST ALONG SAID PARALLEL LINE 71.41 FEET TO THE POINT OF BEGINNING OF THE TRACT HEREIN DESCRIBED; THENCE NORTH 0 DEGREES, 13 MINUTES, 54 SECONDS EAST, ALONG A LINE DRAWN 1743.23 FEET WEST OF AND PARALLEL WITH THE EAST LINE OF THE AFORESAID NORTHEAST 1/4 OF SECTION 10, A DISTANCE OF 711.97 FEET TO A POINT WHICH IS 465.01 FEET SOUTH OF THE NORTH LINE OF THE AFORESAID NORTHEAST 1/4 OF SECTION 10 AS MEASURED ALONG SAID PARALLEL LINE; THENCE NORTHWESTERLY 130.22 FEET ALONG THE ARC OF A CIRCLE, TANGENT TO THE LAST DESCRIBED LINE, CONVEX NORTHEASTERLY, HAVING A RADIUS OF 100.00 FEET, AND WHOSE CHORD BEARS NORTH 37 DEGREES, 04 MINUTES, 27 SECONDS WEST, 121.21 FEET TO A POINT OF TANGENCY; THENCE NORTH 74 DEGREES, 22 MINUTES, 48 SECONDS WEST, 556.92 FEET; THENCE WESTERLY 136.22 FEET ALONG THE ARC OF A CIRCLE, TANGENT TO THE LAST DESCRIBED LINE, CONVEX NORTHERLY, HAVING A RADIUS OF 500.00 FEET, AND WHOSE CHORD BEARS NORTH 82 DEGREES, 11 MINUTES, 06 SECONDS WEST, 135.80 FEET TO A POINT OF TANGENCY; THENCE NORTH 89 DEGREES, 59 MINUTES, 25 SECONDS WEST, ALONG A LINE DRAWN 200.00 FEET SOUTH OF AND PARALLEL WITH THE AFORESAID NORTH LINE OF THE NORTHEAST 1/4 AND THE NORTHWEST 1/4 OF SECTION 10, A DISTANCE OF 232.80 FEET; THENCE NORTH 0 DEGREES, 13 MINUTES, 54 SECONDS EAST, 150.00 FEET ALONG A LINE DRAWN PARALLEL WITH THE AFORESAID EAST LINE OF THE NORTHEAST 1/4 OF SECTION 10 AND PASSING THROUGH A POINT ON THE AFORESAID SOUTH LINE OF WEST CHICAGO AVENUE WHICH IS 2721.08 FEET WESTERLY OF THE EAST LINE OF THE NORTHEAST 1/4 OF SECTION 10 AFORESAID, AS MEASURED ALONG THE SOUTH LINE OF WEST CHICAGO AVENUE; THENCE NORTH 89 DEGREES, 59 MINUTES, 25 SECONDS WEST ALONG SAID SOUTH LINE, 1255.22 FEET TO THE EAST LINE OF NORTH KILBOURN AVENUE RECORDED AS DOCUMENT 20302748; THENCE SOUTH 0 DEGREES, 02 MINUTES, 14 SECONDS EAST, ALONG SAID EAST LINE, 69.47 FEET TO AN ANGLE POINT IN SAID NORTH KILBOURN AVENUE; THENCE SOUTH 55 DEGREES, 36 MINUTES, 59 SECONDS EAST, ALONG THE NORTHERLY LINE OF THE AFORESAID NORTH KILBOURN AVENUE, 782.245 FEET TO A NORTHEASTERLY CORNER OF NORTH KILBOURN AVENUE (BEING THE NORTH WEST CORNER OF LOT 14 IN NORTHWESTERN CENTER INDUSTRIAL DISTRICT RECORDED JULY 1, 1971 AS DOCUMENT 21532046); THENCE SOUTH 55 DEGREES, 38 MINUTES, 13 SECONDS EAST, ALONG THE NORTHERLY LINE OF SAID LOT 14, A DISTANCE OF 07.55 FEET; THENCE NORTH 34 DEGREES, 21 MINUTES, 47 SECONDS EAST, 42.00 FEET; THENCE SOUTH 55 DEGREES, 38 MINUTES, 13 SECONDS EAST, ALONG A LINE DRAWN 42.00 FEET NORTH EAST OF AND PARALLEL WITH THE MOST NORTHERLY LINE OF SAID LOT 14, A DISTANCE OF 81.34 FEET TO THE POINT OF INTERSECTION WITH A LINE DRAWN 42 FEET NORTH EAST OF AND PARALLEL WITH THE NORTHERLY LINE OF LOTS 14 AND 15 IN SAID NORTHWESTERN CENTER INDUSTRIAL DISTRICT; THENCE SOUTH 65 DEGREES, 24 MINUTES, 31 SECONDS EAST, ALONG SAID PARALLEL LINE, 875.26 FEET TO THE POINT OF INTERSECTION WITH A LINE DAWN 42.00 FEET NORTH EAST OF AND PARALLEL WITH THE NORTHERLY LINE OF LOT 16 IN SAID NORTHWESTERN CENTER INDUSTRIAL DISTRICT; THENCE SOUTH 74 DEGREES, 22 MINUTES, 11 SECONDS EAST, ALONG SAID PARALLEL LINE, 605.00 FEET TO THE HEREINABOVE DESCRIBED POINT OF BEGINNING, IN COOK COUNTY, ILLINOIS EXCEPTING THEREFROM THE FOLLOWING: THAT PART OF THE NORTH WEST 1/4 OF SECTION 10, TOWNSHIP 39 NORTH, RANGE 13 EAST OF THE THIRD PRINCIPAL MERIDIAN, BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE SOUTH LINE OF WEST CHICAGO AVENUE (SAID SOUTH LINE BEING A LINE DRAWN 50.00 FEET SOUTH OF AND PARALLEL WITH THE NORTH LINE OF SAID NORTH WEST 1/4 OF SECTION 10), WITH THE EAST LINE OF NORTH KILBOURN AVENUE RECORDED OCTOBER 26, 1967 AS DOCUMENT 20302748; THENCE SOUTH 89 DEGREES, 59 MINUTES, 25 SECONDS EAST ALONG THE AFORESAID SOUTH LINE OF WEST CHICAGO AVENUE 249.53 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE CONTINUING EASTERLY ALONG THE SOUTH LINE OF WEST CHICAGO AVENUE 329.67 FEET; THENCE SOUTH 0 DEGREES, 02 MINUTES, 47 SECONDS EAST, 260.00 FEET; THENCE NORTH 64 DEGREES, 40 MINUTES, 37 SECONDS WEST, 364.855 FEET TO A POINT ON A LINE DRAWN THROUGH THE POINT OF BEGINNING AND PARALLEL TO THE EAST LINE OF THE PARCEL OF LAND HEREIN DESCRIBED AND ALSO BEING DISTANT 104.00 FEET SOUTH OF SAID POINT OF BEGINNING; THENCE NORTH 0 DEGREES, 02 MINUTES, 47 SECONDS WEST ALONG SAID PARALLEL LINE 104.00 FEET TO THE HEREINABOVE DESIGNATED POINT OF BEGINNING, IN COOK COUNTY, ILLINOIS.

PARCEL 2: THAT PART OF THE NORTHWEST 1/4 OF SECTION 10, TOWNSHIP 39 NORTH, RANGE 13 EAST OF THE THIRD PRINCIPAL MERIDIAN, BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE SOUTH LINE OF WEST CHICAGO AVENUE (SAID SOUTH LINE BEING A LINE DRAWN 50.00 FEET SOUTH OF AND PARALLEL WITH THE NORTH LINE OF SAID NORTHWEST 1/4 OF SECTION 10), WITH THE EAST LINE OF NORTH KILBOURN AVENUE RECORDED OCTOBER 26, 1967 AS DOCUMENT 20302748; THENCE SOUTH 89 DEGREES, 59 MINUTES, 25 SECONDS EAST ALONG THE AFORESAID SOUTH LINE OF WEST CHICAGO AVENUE 249.53 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE CONTINUING EASTERLY ALONG THE SOUTH LINE OF WEST CHICAGO AVENUE 329.67 FEET; THENCE SOUTH 0 DEGREES, 02 MINUTES, 47 SECONDS EAST, 260.00 FEET; THENCE NORTH 64 DEGREES, 40 MINUTES, 37 SECONDS WEST, 364.855 FEET TO A POINT ON A LINE DRAWN THROUGH THE POINT OF BEGINNING AND PARALLEL TO THE EAST LINE OF THE PARCEL OF LAND HEREIN DESCRIBED AND ALSO BEING DISTANT 104.00 FEET SOUTH OF SAID POINT OF BEGINNING; THENCE NORTH 0 DEGREES, 02 MINUTES, 47 SECONDS WEST ALONG SAID PARALLEL LINE 104.00 FEET TO THE HEREINABOVE DESIGNATED POINT OF BEGINNING, IN COOK COUNTY, ILLINOIS.

TOTAL AREA = 30.403 ACRES OR 1,324,373 SQUARE FEET

<p><b>AMERICAN SURVEYING &amp; ENGINEERING, P.C.</b>                  SURVEYORS - ENGINEERS - GEODESISTS - MAPPING SCIENTIST                  ILLINOIS PROFESSIONAL DESIGN FIRM NO. 184-003192                  841 N. Galena Ave. Dixon, IL 61021 815-288-9231 / Fax 815-288-6277                  150 N. Wacker Dr. Suite 2650 Chicago, IL 60606 312-277-2000 / Fax 312-277-2002                  888 S. Edgelawn Dr. Suite 1725 Aurora, IL 60506 630-897-4109 / Fax 630-897-4121</p>	CLIENT: AMEC FOSTER WHEELER ENVIRONMENTAL INFRASTRUCTURE	LOCATION: 4301 W. CHICAGO AVE., CHICAGO	
	PIN SURVEYED: 16-10-200-061-0000	PROJECT NO: 217127	DATE: 12/18/2017
	PROJECT: 4301 W. CHICAGO AVE., CHICAGO	TASK ORDER:	DRAWN BY: J. NOCON





SCALE 1" = 160'

# JOINT PUBLIC SAFETY TRAINING CAMPUS (JPSTC)

CONCEPT SITE PLAN  
09/27/19





**APPENDIX M**

**TEST PIT EXPLORATION & ENVIRONMENTAL FINDING  
REPORT DATED 07/15/2019**

July 15, 2019

AECOM  
303 E. Wacker Drive, Suite 1400  
Chicago, IL 60601-5276

Attn: Mr. Frank Louis, PMP

Project No. 19059

Re: Summary of the Test Pit Exploration and Environmental Testing  
Joint Public Safety Training Campus  
4301 W. Chicago Avenue,  
Chicago, Illinois

The following section presents a brief summary of the field work performed and subsurface soil conditions observed for the proposed Joint Public Safety Training Campus (JPSTC) Project in Chicago, Illinois.

### **TEST PIT EXPLORATION**

A total of twenty-five (25) soil test pits (TP-01 to TP-25) locations were selected by AECOM and were provided to Geo Services, Inc. (GSI). Test pit locations were laid out in the field by GSI personnel. All twenty-five (25) soil test pits (TP-01 to TP-25) were excavated from 26 June to 28 June, 2019 with a Caterpillar 308E Excavator by a local subcontractor (Taylor Excavating) each to a depth of 10 feet. A field engineer from GSI observed the test pit excavation and prepared a field log of the soil and groundwater conditions. Representative soil samples were obtained in the field and were brought to our laboratory for further examination and testing. All test pits were backfilled with excavated materials before demobilization of the excavator.

The subsurface soils generally consist of approximately 6 inches to 24 inches of sandy topsoil (with an average value of approximately 16 inches) at all soil test pits locations for the proposed JPSTC project. The topsoil was underlain by loose to dense poorly graded sand and / or silty sand with gravel fill materials to the test pits termination depth of 10 feet at all locations except at TP-13. Soil test pit TP-13 encountered approximately 12 inches of sandy topsoil, followed by stiff to very stiff native silty clay to the termination depth of 10 feet below ground surface. The moisture contents at location TP-13 varied between 24% and 30%. Other exceptions were noted at TP-19 and TP-24, where buried topsoil materials were encountered.

Groundwater was noted during and after excavation in some of the test pits at depths ranging from approximately 5 feet to 10 feet below the existing ground surface. Based on the change in soils coloration from brown and gray to gray, we estimate the long-term groundwater table to be in the depth range of approximately 5 to 10 feet below the ground surface. Fluctuations in the amount of water accumulated and in the hydrostatic water table can be anticipated depending on variations in precipitation and surface runoff. Specific subsurface soil and groundwater conditions found at the test pits locations can be found on the attached test pits logs included herein the summary findings.

### **ENVIRONMENTAL TEST RESULTS**

Ten (10) test pits were selected by AECOM for environmental sampling. A total of twenty (20) samples were collected (two samples from each test pit) and placed into glass vials and/or jars

equipped with Teflon lined lids that had been provided by TestAmerica Analytical Testing Corporation (TestAmerica), the IEPA accredited laboratory selected to perform chemical testing. Each sample container was labeled with boring and sample numbers, site name, date and time of recovery. All vial containers were then placed into an iced cooler to maintain a temperature near 4.0 degrees centigrade.

The soils sampled indicated no signs of contamination based on visual/olfactory check and PID screening. One soil sample was obtained from the shallow depth (less than 5 feet deep) of each test pit; a second deeper soil sample was also collected (greater than 5 feet and less than 10 feet deep) at each of the test pit (TP) locations. A total of twenty (20) soil samples were selected, twelve (12) soil samples were collected from test pits performed along the western portion of the site and eight (8) soil samples were collected from test pits performed on the eastern portion of the site.

Below is a list of samples collected from the six (6) test pits performed along western side of property:

- One (1) sample from TP-01 at 2 to 5 feet.
- One (1) sample from TP-01 at 5 to 10 feet.
- One (1) sample from TP-02 at 3 to 5 feet.
- One (1) sample from TP-02 at 5 to 10 feet.
- One (1) sample from TP-05 at 3 to 5 feet.
- One (1) sample from TP-05 at 5 to 10 feet.
- One (1) sample from TP-06 at 2 to 5 feet.
- One (1) sample from TP-06 at 5 to 10 feet.
- One (1) sample from TP-07 at 2 to 5 feet.
- One (1) sample from TP-07 at 5 to 10 feet.
- One (1) sample from TP-10 at 3 to 5 feet.
- One (1) sample from TP-10 at 5 to 10 feet.

Below is a list of the samples collected from the four (4) test pits performed along eastern side of property:

- One (1) sample from TP-19 at 3 to 5 feet.
- One (1) sample from TP-19 at 5 to 8 feet.
- One (1) sample from TP-23 at 3 to 5 feet.
- One (1) sample from TP-23 at 5 to 10 feet.
- One (1) sample from TP-24 at 3 to 5 feet.
- One (1) sample from TP-24 at 8 to 10 feet.
- One (1) sample from TP-25 at 3 to 5 feet.
- One (1) sample from TP-25 at 5 to 10 feet.

The samples were transported following chain of custody procedures within acceptable holding times and were tested by TestAmerica for PNA, RCRA Metals, Antimony and pH as requested by AECOM.

See the attached TestAmerica report for details of the test results.

Note that the total Chromium from TP-19 at 5 to 8 feet indicated concentration of 26 ppm; which is greater than the CCDD MAC limit of 21 ppm. Additionally, Chromium and Selenium from TP-

24 at 8 to 10 feet indicated concentrations of 28 ppm and 1.4 ppm respectively; this is greater than the CCDD MAC limits of 21ppm and 1.3 ppm for Chromium and Selenium.

GSI requested TCLP Chromium analysis be performed on the soils from TP-19 at 5 to 8 feet as well as TCLP Chromium and TCLP Selenium analysis on soils from TP-24 at 8 to 10 feet.

Analytical results of fill soils obtained from TP-05 at 3 to 5 feet indicated various PNA's in concentrations exceeding MAC limits. Furthermore, analytical results of fill soils obtained from TP-05 at 5 to 10 feet indicated Lead and Selenium concentrations above MAC limits as well as various PNA's in excess of several location specific MAC limits. GSI has requested TCLP Lead and TCLP Selenium analysis be performed on soils obtained from TP-05 at 5 to 10 feet.

Results of the subsequent TCLP analysis have not been received at the time of this report and results will be forwarded to AECOM once received.

If there are any questions regarding the information submitted herein, please do not hesitate to contact us.

Very truly yours,  
GEO SERVICES, Inc.



Rajiv Giri, PhD  
Project Engineer



Dan Tonissen  
Project Geologist



Stephen Bucher, P.E.  
Senior Geotechnical Engineer