ENVIRONMENTAL PROTECTION INDUSTRIES

Public Building Commission of Chicago
50 West Washington Street, Room 200
Chicago, Illinois 60602

Mr. Carl Graves

Geotechnical Subsurface Investigation Report

Proposed Haas Park Field House
2404 North Washtenaw Street
Chicago, Illinois

PS1763
PBC Project #11030
EPI Project No. 09-1161.00

February 10, 2010

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February 10, 2010

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APPENDICES

1.0 EXECUTIVE SUMMARY

A geotechnical subsurface investigation was performed to evaluate the subsurface soils for the proposed Haas Park Field House to be constructed at 2404 North Washtenaw Street in Chicago, Illinois (the Site). The scope of the investigation included drilling, sampling and analytical testing of soil at seven (7) soil boring locations in the proposed building footprint area. Six (6) of the noted borings – SB-2 through SB-7 - were advanced to depths of approximately fifteen (15) feet below existing ground surface, whereas the remaining boring (SB-1) was advanced to a depth of fifty (50) feet below grade. All of the borings were drilled by utilizing a truck-mounted D-25 rotary drill rig. Field and laboratory testing data is presented in the Appendices to this report.

The subsurface soils at the site generally consisted of approximately 2 to 3 inches of topsoil, followed by approximately 2.5 to 4.5 feet of fill, composed of gray to brown silty clay, cinders, bricks, sand and gravel. Underlying the noted fill materials, a layer of stiff to very stiff (tough to very tough as per the Chapter 13-132 of Municipal Code of Chicago), brown to brownish-gray silty clay with trace amounts of sand and gravel was encountered to approximately 10 to 14 feet below grade, followed by a layer of soft to very stiff (soft to very tough as per the Chapter 13-132 of Municipal Code of Chicago) gray silty clay with trace amounts of sand and gravel to the boring termination depths of approximately fifteen (15) to fifty (50) feet below the existing ground surface. However, please note that intermediate layers of medium dense to dense gray sandy to clayey silt were also encountered at the site, as indicated on soil boring log SB-1. Based on the field penetrometer testing results, the native silty clays, in general, are soft to very stiff (soft to very tough as per the Chapter 13-132 of Municipal Code of Chicago) in consistency with unconfined compressive strengths of 0.2 to 3.0 tons per square foot (tsf).

On the basis of the field and laboratory soil testing performed, EPI recommends that the proposed structure should be supported upon a shallow foundation system consisting of isolated column and continuous wall footings. Footings, proportioned on the basis of a net allowable bearing capacity of 3,000 psf, should be supported at normal frost-protection design level (3.5 and 4.0 feet below the adjoining grade in both heated and non-heated areas, respectively), to 4.5 feet below grade in the vicinity of boring SB-5, upon an underlying layer of stiff to very stiff brown to brownish-gray silty clay. The net allowable soil bearing pressure

refers to that pressure which may be imposed on the foundation soils in excess of the final surrounding overburden pressure.

It is EPI's understanding that several previously-demolished structures are present in the vicinity of the proposed Field House building. Due to the non-uniformity and historical lack of compactive effort associated with the backfilling operations, it is EPI's opinion that the noted backfill soils, if present, should be removed through the depth encountered from the future building envelope areas. Excavated material should then be replaced with approved backfill, such as CA-6 crushed limestone aggregate. This fill should be placed in 8-inch thick lifts (measured loose), then compacted to at least 95% of aggregate's maximum obtainable density, as determined by Modified Proctor analysis in accordance with ASTM Standard D 1557, by using the vibratory equipment to properly compact the fill material of each lift. Footings, proportioned on the basis of a net allowable bearing capacity of 3,000 psf, should be supported at normal frost-protection design level (3.5 and 4.0 feet below the adjoining grade in both heated and non-heated areas, respectively) upon properly compacted granular fill. The width of the excavation should extend at least one foot horizontally beyond the outside edge of the exterior perimeter wall footing for each foot of vertical undercut below the bottom of the footing, thus providing for adequate lateral distribution of the foundation stresses.

As an alternative, the proposed structure may be supported upon a deep foundation system consisting of belled drilled piers (caissons). Based upon the present elevation of the site, the caisson bells should be constructed at approximately 45 feet below grade upon an underlying layer of dense gray clayey silt. This soil layer possesses a net allowable bearing capacity of 9,000 pounds per square foot (psf). The net allowable bearing pressure refers to that pressure which may be imposed on the foundation soils in excess of the final surrounding overburden pressure. Due to the non-cohesive nature of the sandy silt deposits soils encountered on-site, it is EPI's opinion that a temporary casing will be required in order to stabilize the sides of the caisson excavations during construction. At least three feet of fresh concrete should be maintained above the bottom of the casing during withdrawal in order to prevent the possibility of soil cave-ins. If the final design of the structure changes so that the deep foundation system becomes economically feasible, additional soil borings and rock cores will have to be drilled on-site in order to determine the RQD value of the rock layer and to further increase the net allowable bearing capacity of the in-situ soil for a more cost-efficient structural design.

Any trenches left open following the removal of the in-situ foundations or utilities during the demolition phase of the project should be backfilled with CA-6 crushed limestone placed in 8-

inch thick lifts (measured loose). This aggregate should be compacted to at least 95% of maximum density, as determined by Modified Proctor analysis, ASTM Standard D-1557, by utilizing appropriate vibratory equipment. Please note that in the future footing areas the width of the excavation and granular backfill should extend at least one foot horizontally beyond the perimeter of the footing on all sides for each foot of vertical undercut below the bottom of the footing, thus providing for adequate lateral distribution of the foundation stresses.

EPI further recommends that following the demolition of the existing field house structure, which is located in the Eastern quadrant of the proposed construction area, and the removal of the existing foundation system and the slab components, exposed sub-grade should be proofrolled with a fully loaded semi. Any unsuitable soils encountered during this proof-roll should be removed. The excavation should then be backfilled with approved backfill, such as CA-6 aggregate. This fill should be placed in 8-inch thick lifts (measured loose). Each lift should be compacted by using the appropriate vibratory equipment to at least 95% of its maximum obtainable density, as determined by Modified Proctor analysis (ASTM Standard D-1557).

Based upon the site-specific subsurface data collected to date and EPI's calculations, the proposed structure may experience a long-term total settlement of approximately 0.65 inches. Potential differential settlements of approximately 0.35 inches are possible across the building area due to variations in subsurface conditions and foundation loadings.

EPI also recommends that the future paved areas should be proof-rolled with a fully loaded semi following the removal of the surficial pavement and topsoil. Any unsuitable soils present should be removed through the depth encountered. The site grade can then be brought to the desired sub-grade elevation with an approved inorganic fill material, which should be free of deleterious debris, placed and compacted in lifts, as described above.

The base course for the paved areas should consist of CA-6 crushed stone per the State of Illinois Specifications for Road and Bridge Construction. Bituminous binder and surface courses should conform to the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction Manual. The design of pavements should incorporate provisions for drainage of both the pavement surface and the base course layer. Base course subdrains may be used if a typical gravitational flow can not be achieved. Should standing water be allowed to accumulate on the pavement surface or within the base course, the subgrade will soften and it is likely that the pavement will deteriorate.

Any groundwater encountered during the foundation excavation should be promptly removed. We also recommend that in order to ensure full specification compliance, a qualified materials testing engineer should be present at the site during the construction phase of the project.

2.0 PROJECT INFORMATION

2.1 Project Authorization

In accordance with our agreement dated November 24, 2009, EPI has completed a Geotechnical Investigation for the proposed Haas Park Field House to be constructed at 2404 North Washtenaw Street in Chicago, Illinois (the Site).

2.2 Project Description

According to the information provided to EPI, current plans include the construction of the new Field House Building with associated parking lot and driveway areas following the demolition of the existing field house facility located in the Eastern quadrant of the site. The new Haas Park Field House will consist of a single- to two-story structure with a slab-on-grade floor. The final grades will probably not differ appreciably from the existing grade. Although the exact design loads were not provided, they are expected to be relatively light to moderate in magnitude, as follows:

Small Size Building:
-Maximum Column Loads: 50 kips
-Typical/Maximum Wall Loads: 4/6 klf (6-inch CMU) and 4/10 klf (10-inch CMU)

Large Size Building:
-Column Loads: 150 kips (small size footings) to 240 kips (large size footings)
-Wall Loads: 4.5 klf (typical 3.0 ft wall footing) to 10 klf (along grid 6)

Maximum Canopy Load: 24 kips

The geotechnical information presented in this report is based on the available project information and the subsurface materials described in this report. Please note that the information provided should be evaluated and the structural site improvements should be designed by a licensed structural engineer and/or architect.

2.3 Purpose and Scope of Services

The purpose of this study was to explore and assess the subsurface conditions present at the site. The scope of geotechnical services included drilling seven (7) soil borings in the future building area, field and laboratory testing of the representative samples, and preparation of the geotechnical report. This report briefly outlines the project description, presents available project information and testing procedures, describes the site and subsurface conditions, and develops geotechnical assessments regarding the following:

- Geotechnical Evaluation of the Project Site
- Anticipated Site Preparations and Grading Requirements
- Assessment of the most economical Foundation types
- Preliminary Assessment of Pavement Sections and potential Subgrade conditions
- Comments regarding factors that may impact planning, construction and performance of the proposed facility.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Site Location and Description

The project site is located at the northwest corner of West Fullerton Avenue and North Washtenaw Street in Chicago, Illinois. The site is currently occupied by an athletic field with the exception of the Eastern quadrant, which is occupied by the field house structure. The ground surface of the site is relatively flat. Noted structure will be demolished prior to the construction of the new Haas Park Field House.

3.2 Soil Boring Advancement

On January 14 and 15, 2010, EPI advanced a total of seven (7) soil borings at the site. In addition to the DIGGER Underground Locator and Chicago Park District notifications, each soil boring location was screened with a magnetometer. The exact placement of the soil boring(s) was based on actual site conditions, site accessibility and underground / overhead utility location. The scope of the investigation included drilling, sampling and analytical testing of soil at seven (7) soil boring locations in the proposed building footprint area. Six (6) of the noted borings – SB-2 through SB-7 - were advanced to depths of approximately fifteen (15) feet below existing ground surface, whereas the remaining boring (SB-1) was advanced to a depth of fifty (50) feet below grade. All of the borings were drilled by utilizing a truck-mounted D-25 rotary drill rig. Field and laboratory testing data is presented in the Appendices to this report. A soil boring location diagram is included as **Figure 1, Tab 1** of this report.

3.3 Soil Sampling

Representative soil samples were obtained from each sampling interval using the split barrel sampling procedure performed in accordance with ASTM Standard D-1586, "Method for Penetration Test and Split Barrel Sampling of Soils". In the split barrel sampling procedure, a 140-pound hammer falls 30 inches and drives a two-inch outer diameter split barrel sampler 18 inches into the soil. Counting the number of blows required to drive the sampling device the final 12 inches allows the derivation of the Standard Penetration Test (SPT) N-value. This test result indicates the soil's relative density and comparative consistency, and provides a basis for estimating the relative strength and compressibility of soil. In addition, relatively undisturbed

shelby tube samples (ASTM Standard D-1587) were obtained from the cohesive (clay) soil strata in order to determine the consolidation properties of the in-situ soils.

EPI's drill crew recorded a field log of the soils encountered in each boring. Each soil sample was visually classified on the basis of texture and color in accordance with the Unified Soil Classification System. These field logs were later used to prepare the final geotechnical boring logs, which are included under **Tab 2** of this report. The estimated unconfined compressive strength values for cohesive soil samples were obtained in the field by using a calibrated spring-loaded penetrometer. In the penetrometer test, the unconfined compressive strength of a soil sample is estimated, to a maximum of 4.5 tons per square foot (tsf) by measuring the resistance of a soil sample to the penetration of a small, calibrated spring-loaded cylinder. Penetrometer test results are presented on soil boring logs.

Soil samples obtained from the drilling operations were identified by the boring number and sampling depth, immediately sealed in the appropriate container, and delivered to the analytical testing laboratory for further examination.

4.0 LABORATORY TESTING AND FIELD OBSERVATIONS

4.1 Laboratory Testing

A natural moisture content test was conducted for each soil sample from each soil boring in accordance with ASTM Standard D 2216. Unconfined compressive strength tests were also performed on selected cohesive soil samples in accordance with ASTM Standard D 2166. Dry soil density, Atterberg Limits (ASTM Standard D-4318), Grain Size (ASTM Standards D-422 / 1140) and consolidation (ASTM Standard D-2435) tests were also performed on selected soil samples. The results of the testing have been indicated on the individual boring logs included under **Tab 2a,** as well as on the laboratory testing results under **Tabs 5, 6 and 7**.

After completion of the laboratory testing, an experienced soil engineer visually classified each soil sample in accordance with the Unified Soil Classification System (ASTM Standards D 2487 and D 2488). A brief description of the Unified Soil Classification System has been included under **Tab 3** of this Report.

4.2 Subsurface Conditions

The subsurface soils at the site generally consisted of approximately 2 to 3 inches of topsoil, followed by approximately 2.5 to 4.5 feet of fill, composed of gray to brown silty clay, cinders, bricks, sand and gravel. Underlying the noted fill materials, a layer of stiff to very stiff (tough to very tough as per the Chapter 13-132 of Municipal Code of Chicago), brown to brownish-gray silty clay with trace amounts of sand and gravel was encountered to approximately 10 to 14 feet below grade, followed by a layer of soft to very stiff (soft to very tough as per the Chapter 13-132 of Municipal Code of Chicago) gray silty clay with trace amounts of sand and gravel to the boring termination depths of approximately fifteen (15) to fifty (50) feet below the existing ground surface. However, please note that intermediate layers of medium dense to dense gray sandy to clayey silt were also encountered at the site, as indicated on soil boring log SB-1. Based on the field penetrometer testing results, the native silty clays, in general, are soft to very stiff (soft to very tough as per the Chapter 13-132 of Municipal Code of Chicago) in consistency with unconfined compressive strengths of 0.2 to 3.0 tons per square foot (tsf).

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the appendix of this report should be reviewed for specific information at individual boring locations. These records include soil descriptions, stratifications, penetration resistances, and locations of the samples and laboratory test data. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be more gradual. The samples that were not altered by laboratory testing will be retained until the installation of the foundation system is completed.

4.3 Ground Water Level Measurements

The groundwater level was measured while drilling the borings, at the completion of the drilling operations and at a 24-hour interval following the completion at each boring location. Ground water was encountered at approximately 9 to 10 feet below grade during drilling, however, borings SB-3 and SB-5 remained dry through the depth penetrated. Ground water elevation was measured at approximately 5 to 10 feet below grade 24 hours after drilling, possibly due to the melting of the surficial snow cover. It should be noted that the water level may vary within the depths explored during other times of the year depending upon climatic and rainfall conditions and other factors not immediately apparent at the time of this exploration. Additionally, discontinuous zones of perched water may exist within both the miscellaneous urban fill and the silty clay soils; and may be encountered during construction. Surface water runoff could be a factor during the general construction activities, and precautions should be taken to control surface water runoff and to remove any that may accumulate in the proposed building and pavement areas.

5.0 GEOTECHNICAL ASSESSMENT AND DEVELOPMENT RECOMMENDATIONS

The following geotechnical related assessments have been developed on the limited basis of the subsurface conditions encountered and our understanding of the proposed development.

5.1 Assessment of Foundation Types

On the basis of the field and laboratory soil testing performed, EPI recommends that the proposed structure should be supported upon a shallow foundation system consisting of isolated column and continuous wall footings. Footings, proportioned on the basis of a net allowable bearing capacity of 3,000 psf, should be supported at normal frost-protection design level (3.5 and 4.0 feet below the adjoining grade in both heated and non-heated areas, respectively), to 4.5 feet below grade in the vicinity of boring SB-5, upon an underlying layer of stiff to very stiff brown to brownish-gray silty clay. The net allowable soil bearing pressure refers to that pressure which may be imposed on the foundation soils in excess of the final surrounding overburden pressure.

It is EPI's understanding that several previously-demolished structures are present in the vicinity of the proposed Field House building. Due to the non-uniformity and historical lack of compactive effort associated with the backfilling operations, it is EPI's opinion that the noted backfill soils, if present, should be removed through the depth encountered from the future building envelope areas. Excavated material should then be replaced with approved backfill, such as CA-6 crushed limestone aggregate. This fill should be placed in 8-inch thick lifts (measured loose), then compacted to at least 95% of aggregate's maximum obtainable density, as determined by Modified Proctor analysis in accordance with ASTM Standard D 1557, by using the vibratory equipment to properly compact the fill material of each lift. Footings, proportioned on the basis of a net allowable bearing capacity of 3,000 psf, should be supported at normal frost-protection design level (3.5 and 4.0 feet below the adjoining grade in both heated and non-heated areas, respectively) upon properly compacted granular fill. The width of the excavation should extend at least one foot horizontally beyond the outside edge of the exterior perimeter wall footing for each foot of vertical undercut below the bottom of the footing, thus providing for adequate lateral distribution of the foundation stresses.

As an alternative, the proposed structure may be supported upon a deep foundation system consisting of belled drilled piers (caissons). Based upon the present elevation of the site, the

caisson bells should be constructed at approximately 45 feet below grade upon an underlying layer of dense gray clayey silt. This soil layer possesses a net allowable bearing capacity of 9,000 pounds per square foot (psf). The net allowable bearing pressure refers to that pressure which may be imposed on the foundation soils in excess of the final surrounding overburden pressure. Due to the non-cohesive nature of the sandy silt deposits soils encountered on-site, it is EPI's opinion that a temporary casing will be required in order to stabilize the sides of the caisson excavations during construction. At least three feet of fresh concrete should be maintained above the bottom of the casing during withdrawal in order to prevent the possibility of soil cave-ins. If the final design of the structure changes so that the deep foundation system becomes economically feasible, additional soil borings and rock cores will have to be drilled on-site in order to determine the RQD value of the rock layer and to further increase the net allowable bearing capacity of the in-situ soil for a more cost-efficient structural design.

Any trenches left open following the removal of the in-situ foundations or utilities during the demolition phase of the project should be backfilled with CA-6 crushed limestone placed in 8-inch thick lifts (measured loose). This aggregate should be compacted to at least 95% of maximum density, as determined by Modified Proctor analysis, ASTM Standard D-1557, by utilizing appropriate vibratory equipment. Please note that in the future footing areas the width of the excavation and granular backfill should extend at least one foot horizontally beyond the perimeter of the footing on all sides for each foot of vertical undercut below the bottom of the footing, thus providing for adequate lateral distribution of the foundation stresses.

EPI further recommends that following the demolition of the existing field house structure, which is located in the Eastern quadrant of the proposed construction area, and the removal of the existing foundation system and the slab components, exposed sub-grade should be proofrolled with a fully loaded semi. Any unsuitable soils encountered during this proof-roll should be removed. The excavation should then be backfilled with approved backfill, such as CA-6 aggregate. This fill should be placed in 8-inch thick lifts (measured loose). Each lift should be compacted by using the appropriate vibratory equipment to at least 95% of its maximum obtainable density, as determined by Modified Proctor analysis (ASTM Standard D-1557).

Based upon the site-specific subsurface data collected to date and EPI's calculations, the proposed structure may experience a long-term total settlement of approximately 0.65 inches. Potential differential settlements of approximately 0.35 inches are possible across the building area due to variations in subsurface conditions and foundation loadings.

EPI recommends that the excavation for the proposed building foundation and potential backfilling be monitored, full-time, by a Geotechnical Engineer or his representative to verify that the soil bearing pressure is consistent with the boring log information obtained during the subsurface investigation. EPI also recommends that continuous footings have a minimum width of 24 inches and that isolated column footings have a minimum lateral dimension of 30 inches. In order to minimize the possibility of potential differential settlement it is recommended that the footings be reinforced with structural steel reinforcing bars.

5.2 Assessment of Concrete Slab-on-Grade

Based upon the field and laboratory testing of the soil, EPI recommends that following the removal of the surficial topsoil and prior to the placement of the base fill materials, the future floor slab areas should be proof-rolled with a fully loaded semi or a 6-wheel dump truck. Proof rolling should identify weak zones that may be present below the sub-grade elevation. Any unsuitable soils encountered within the future floor slab areas should be removed through the depth encountered. The site grade can then be brought to the desired sub-grade elevation with an approved structural fill material, which should be free of deleterious debris, placed and compacted in lifts not to exceed 8 inches in thickness (measured loose). Each lift should be compacted by using the appropriate vibratory equipment to at least 95% of its maximum obtainable density, as determined by Modified Proctor analysis (ASTM Standard D-1557).

The final four inches of fill beneath all interior slabs-on-grade should consist of free-draining crushed stone or gravel. This lift will not only facilitate fine grading of the slab sub-grade surface, but will also serve as a capillary cutoff layer, which will minimize the migration of moisture through the floor slab. Areas of floor slab sub-grade where standing water accumulates may experience soil softening, which can lead to premature slab deterioration. All floor slabs-on-grade should be isolated from the foundation system and contain the proper number of isolation and contraction joints to maintain the integrity of the slab should minor differential movements take place. EPI estimates that the Modulus of Vertical Sub-Grade reaction *Kv* of the in-situ brown to brownish-gray silty clay soil varies from 75 pci (stiff soil) to 150 pci (very stiff soil; however, these values need to be corrected for the actual footing size, since they are based upon 1' x 1' plate measurements (Ref. Table AV-2, "Basic Soils Engineering", by B. K. Hough, 2nd Edition for both values).

5.3 Assessment of Pavement Sections and Subgrade Conditions

Based upon the site development plans, it is likely that most paved areas will be subjected to AASHTO-H-20 loading as a maximum. As a result, a flexible pavement section should be designed according to the State of Illinois Department of Transportation, Division of Highways, design manual. Please note that concrete pavement may be required in areas of heavier loading.

Based upon the field and laboratory testing of the soil, EPI recommends that the future paved areas should be proof-rolled with a fully loaded semi or a 6-wheel dump truck following the removal of the surficial topsoil layer. Any unsuitable soils encountered within the future pavement areas should be removed through the depth encountered. The site grade can then be brought to the desired sub-grade elevation with an approved structural fill material (CA-6 crushed limestone), which should be free of deleterious debris, placed and compacted in lifts not to exceed 8 inches in thickness (measured loose) and compacted to at least 95% of Modified Proctor density (ASTM Standard D-1557).

The base course for the parking lot and driveway areas should consist of CA-6 crushed stone per the State of Illinois Specifications for Road and Bridge Construction. Bituminous binder and surface courses should conform to the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction design manual. The design of pavements should incorporate provisions for drainage of both the pavement surface and the base course layer. Base course subdrains may be used if a typical gravitational flow can not be achieved. Should standing water be allowed to accumulate on the pavement surface or within the base course, the subgrade will soften and it is likely that the pavement will deteriorate.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Drainage Considerations

When considering the depth of the true groundwater table to the proposed average excavation depth, it is EPI's opinion that the groundwater infiltration problems may be present. Therefore, the site should be thoroughly dewatered prior to the placement on the new structural fill. Please note that the watertable is currently located below the typical frost-protection depth in the borings drilled on-site. Surficial water run-off should not be allowed to collect in the foundation excavations or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of collected rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the building and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

6.2 Excavations

All soil removal projects, whether they be utility trenches or footing excavations, should be performed within OSHA guidelines. On-site native brown to brownish-gray silty clay soils can be classified as "Soil Type A". The soil base of all excavations should be protected during construction from deteriorating or softening caused by frost and construction activity.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. EPI is providing this information solely as a service to our client. EPI is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

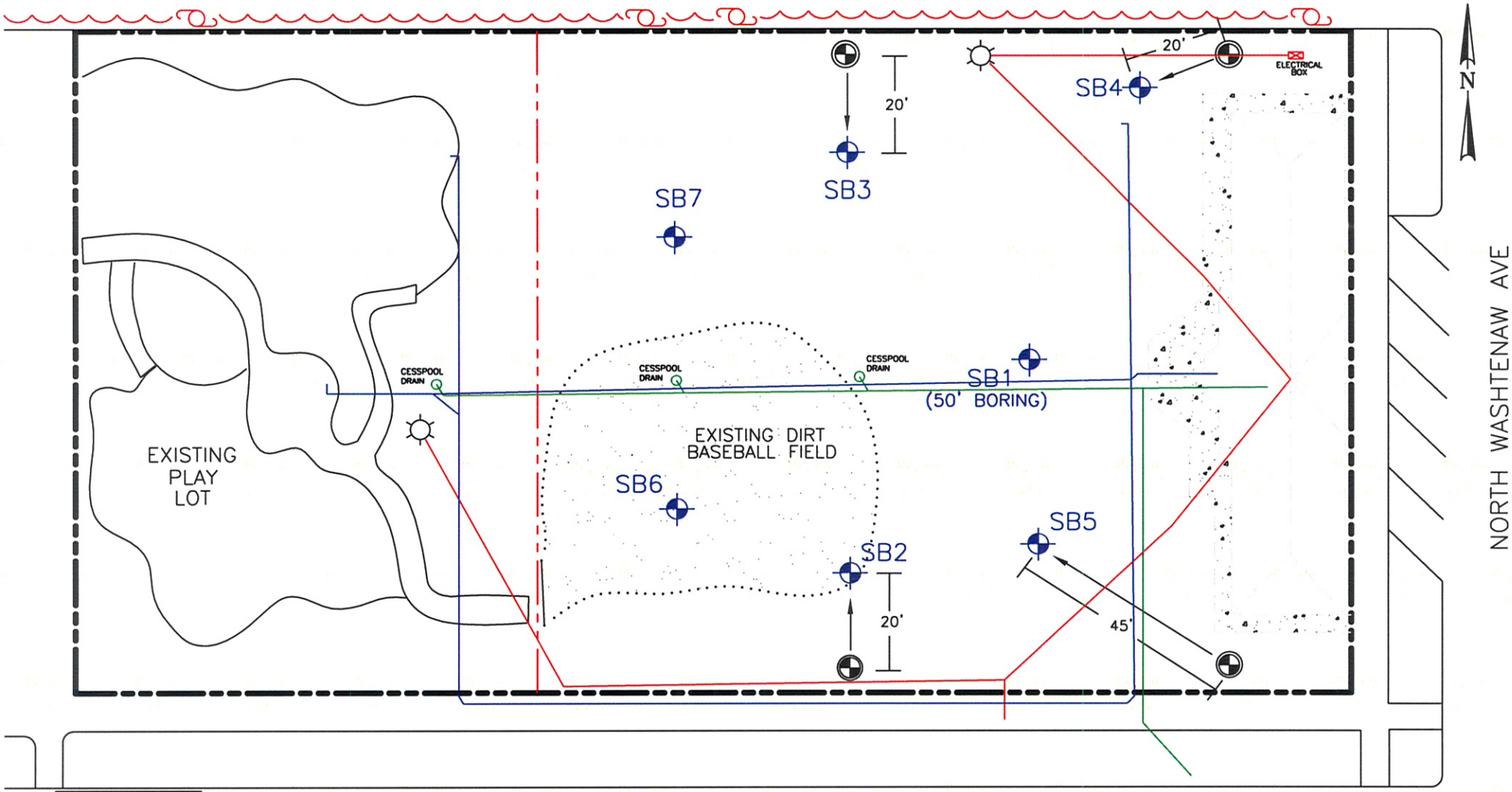
REPORT LIMITATIONS

The recommendations submitted are based on the available subsurface information obtained by EPI and development details furnished to EPI. Please note that the information provided in this report should be evaluated by and the structural site improvements should be designed by a licensed structural engineer and/or architect. This report does not reflect any variations that may occur between or beyond these borings. If there are revisions to the plans for this project or if deviations from the subsurface conditions noted in this report are encountered during construction, EPI should be notified immediately to determine if changes in our recommendations are required.

This geotechnical report has been prepared for the sole use of the client identified in the report and cannot be relied upon by other persons or entities without the joint permission of the client and EPI. The observations and conclusions contained herein are limited by the scope and intent of the work mutually agreed upon by the client and EPI and the work actually performed.

There are no warranties, implied or expressed, concerning the integrity of the areas and/or mediums not analytically tested. The geotechnical engineer warrants that the findings, recommendations, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area.

SITE BASE MAP and SOIL BORING LOCATION MAP



LEGEND

- PROPERTY LINE
- ACTUAL SOIL BORING (EPI)
- PROPOSED BORING LOCATION
- POWER POLES
- OVERHEAD UTILITY LINES
- LIGHT POLES
- SEWER
- ELECTRICAL
- WATER

NOTES: 1 – Borings SB2 through SB5 were offset from original proposed location

2 – Borings SB1, SB6 and SB7 are located in the original proposed boring locations

ENVIRONMENTAL PROTECTION INDUSTRIES
16650 SOUTH CANAL, SOUTH HOLLAND, IL 60473

DATE	DESIGNED	CAD	CHECKED	APP'D
2/11/10	M.F.	M.F.	A.L.	S.M.

JOB LOC. Haas Park Field House
2404 N. Washtenaw Ave., Chicago, IL

TITLE: SOIL BORING LOCATION MAP

DWG NO.	JOB NO.	SCALE	FIG.
091161	091161	1"=30'	1

14 FT. ALLEY

266'-3½"

NORTH FAIRFIELD AVENUE

141'

GIRL'S PLAYFIELD

BOY'S PLAYFIELD

PRESENT SEWER STUB

TRAIN GATE

GATE

TETTER BOARDS

MERRY GO ROUND

LIGHT TOWER

GIANT STRIDE

PARALLEL BAR

TETTER LADDERS

ROPE SWINGS

COMB FRAME

HORIZONTAL BAR

2" WATER PLUG

CUTOFF & WASTE VALVE

2" WATER SUPPLY

SLIDE

CIRCLE BAR

WADING POOL

See Typical Sheet No. 1 of 3 Sheets Inspl. Number 1113 for pool & sprinkler and sewer layout and water supply

WATER SUPPLY TO POOL

PLAYGROUND BALL

DIAMOND

BACK STOP

6" SEWER

CROSS POOL DRAIN

VOLLEY BALL COURT

RODOUT BASIN

SHELTER

LINE OF SHELTER

LINE OF PLATFORM

LINE OF ROOF

LINE OF BUILDING

SEE SHEET No. 1A of 3 SHEETS SEWER LAYOUT

SANITARY MANHOLE

SAND COURT

LINE OF SAND COURT

6" TILE SEWER

GREASE & WASTE VALVE

DRINKING FOUNTAIN

TABLE

8" WATER SUPPLY

WATER METER

CEMENT WALK

FULLERTON AVENUE

5" C.I. WATER SUPPLY FROM MAIN.

15' PRESENT SEWER STUB

266'-4"

Note: On Grades
"Playground" shall be pitched to drains and graded as shown on this section. Planting spaces shall be level with sidewalks and alley pavement. Grading of playground not included in this contract

O.K. Theo. A. Gross
Superintendent of Playgrounds

Public Building Commission of Chicago
Scanned ☐ File Original ☐ Copy Rec'd
01 PBC:
02 Prin:
03 Uni:
04 PROJECT Rec
REC'D MAY 05 2009
Authority 01-
Counties 02-
Museums 03-
Plan/Engr 04-
Construct 05-
FFE 06-
Close/Out 07-

-Typical Section Showing Various Levels of Playground-
Scale ⅛" = 1'-0"

LAYOUT OF BUILDINGS - APPARATUS - ETC.
ALSO
WATER & SEWER DIAGRAM
Scale: ⅛" = 1'-0"

JOSEPH F. HAAS PLAYGROUND

WEST FULLERTON AVE. BETWEEN NORTH FAIRFIELD AVE. & NORTH WASHTENAW AVE.
FOR THE
BUREAU OF PARKS - PUBLIC PLAYGROUNDS & BATHING BEACHES
CITY OF CHICAGO

CITY OF CHICAGO
WM. HALE THOMPSON, MAYOR

DEPARTMENT OF PUBLIC WORKS RICHARD W. WOLFE COMMISSIONER OF PUBLIC WORKS		BUREAU OF ARCHITECTURE PAUL GERHARDT, JR. CITY ARCHITECT	
INDEX NO.	IN CHARGE OF	J.M.M.	SHEET NO.
1111	DRAWN BY	M.S.T.	1 OF 1
	TRACED BY	M.S.T.	
	DATE	COMPLETED JULY 20, 1928	
APPROVED	Edward Bennett		CITY ARCHITECT
APPROVED	Paul Gerhardt		SECRETARY OF BUREAU OF PARKS - PLAYGROUNDS, ETC.
APPROVED	Richard W. Wolfe		COMMISSIONER OF PUBLIC WORKS.

Joseph F. Haas Playground
2

SOIL BORING LOGS

Job Number: 091161 Client Name: PUBLIC BUILDING COMMISSION	Geotechnical Boring Number: SB1	Page: 1 OF 2 Date: 1/14/10 Start: ____ Finish: ____
Address: Haas Park Field House 2404 N. Washtenaw Ave. Chicago, Illinois	Boring Location: See Attached Site Map	

Geotechnical Sample Number	Sample Type	Sample Recovery (inches)	Depth (feet)	Detailed Soil and Rock Description	"N" Blow Count	"Q_p" Calibrated Penetrometer (TSF)	"Q_u" Unconfined Compression (TSF)	"w_c" Moisture Content (%)	"γ_d" Dry Density (PCF)	Compaction (%)	PID (PPM)	Incremental Blow Count		
			0.0'	Surface Elevation +16.38 CCD										
				2" TOPSOIL										
1	AS	–	2.0'	FILL [BROWN SILTY CLAY WITH SAND AND GRAVEL] +14.38 CCD	–	2.25	–	18.6				–	–	–
2	SS	22"	4.0'	STIFF TO VERY STIFF BROWN SILTY CLAY, TRACE OF SAND AND GRAVEL	13	3.0	3.62	16.9	106.8			5	6	7
3	SS	18"	6.0'	[CL] +9.38 CCD	7	1.5	1.67	19.4				4	3	4
4	SS	15"	8.0'	LOOSE BROWN SANDY SILT, SOME CLAY (MOIST)	5	1.0	0.83	28.7				3	2	3
4a	ST	FULL	10.0'	+5.88 CCD	–	0.8	0.90	19.9				PUSH		
5	SS	24"	12.0'	SOFT TO VERY STIFF GRAY SILTY CLAY LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL	3	0.25	0.40	26.0				2	2	1
6	SS	24"	14.0'	[CL]	5	0.5	0.63	20.2				2	2	3
7	SS	18"	16.0'		17	3.0	–	17.1				4	6	11
8	SS	18"	18.0'		20	1.0	–	18.6				6	10	10
			20.0'											
			22.0'											
			24.0'											
			26.0'											
			28.0'											
			30.0'											

Note: Stratification lines are approximate; in-situ transition between soil types may be gradual.

▼ Groundwater Data
Depth While Drilling
9 FEET

▽ Depth After Drilling
6'/ 5' AFTER 24HRS

Auger Depth 50 Feet Rig Type DIEDRICH D-25
Rotary Depth N/A Geologist Sergio Meilman
Driller ENVIRO CLEAN CONTR.

Note: Boring backfilled unless otherwise noted.

EPI
ENVIRONMENTAL PROTECTION INDUSTRIES

Job Number: 091161 Client Name: PUBLIC BUILDING COMMISSION	Geotechnical Boring Number: SB1	Page: 2 OF 2 Date: 1/14/10 Start: _____ Finish: _____
Address: Haas Park Field House 2404 N. Washtenaw Ave. Chicago, Illinois	Boring Location: See Attached Site Map	

Geotechnical Sample Number	Sample Type	Sample Recovery (inches)	Depth (feet)	Detailed Soil and Rock Description Surface Elevation	"N" Blow Count	"Q_p" Calibrated Penetrometer (TSF)	"Q_u" Unconfined Compression (TSF)	"w_c" Moisture Content (%)	"γ_d" Dry Density (PCF)	Compaction (%)	PID (PPM)	Incremental Blow Count		
			30.0'	(CONT.'D)										
9	SS	20"	32.0' 34.0'	VERY STIFF GRAY SILTY CLAY [CL] LITTLE COARSE TO FINE SAND, TRACE FINE GRAVEL	12	2.0	–	17.7				6	7	5
10	SS	18"	36.0' 38.0' 40.0'	-20.62 CCD [WET] DENSE GRAY SILTY SAND WITH GRAVEL [SM]	32	–	–	15.0				7	12	20
11	SS	10"	42.0' 44.0'	-26.62 CCD	36	3.0	–	16.3				11	17	19
11a	ST	FULL	46.0'	MEDIUM DENSE GRAY CLAYEY SILT WITH SAND AND GRAVEL	–	4.5	9.9	11.1				PUSH		
12	SS	0"	48.0' 50.0'	[CL-ML] -33.62 CCD	27	4.0	NO	RECOVERY				10	10	17
			52.0' 54.0' 56.0' 58.0' 60.0'	END OF BORING @ 50 FEET										

Note: Stratification lines are approximate; in-situ transition between soil types may be gradual.

▼ Groundwater Data
Depth While Drilling
9 FEET

▽ Depth After Drilling
6' / 5' AFTER 24 HRS

Auger Depth 50 Feet Rig Type DIEDRICH D-25
Rotary Depth N/A Geologist Sergio Meilman
Driller ENVIRO CLEAN CONTR.

Note: Boring backfilled unless otherwise noted.

ENVIRONMENTAL PROTECTION INDUSTRIES

Job Number: 091161 Client Name: PUBLIC BUILDING COMMISSION	Geotechnical Boring Number: SB2	Page: 1 OF 1 Date: 1/15/10 Start: _____ Finish: _____
Address: Haas Park Field House 2404 N. Washtenaw Ave. Chicago, Illinois	Boring Location: See Attached Site Map	

Geotechnical Sample Number	Sample Type	Sample Recovery (inches)		Detailed Soil and Rock Description Surface Elevation +17.41 CCD	"N" Blow Count	"Q_p" Calibrated Penetrometer (TSF)	"Q_u" Unconfined Compression (TSF)	"w_c" Moisture Content (%)	"γ_d" Dry Density (PCF)	Compaction (%)	PID (PPM)	Incremental Blow Count		
			0.0'	2" TOPSOIL/SAND										
1	AS	–	2.0'	FILL [BROWNISH-GRAY SILTY CLAY WITH SAND, GRAVEL AND CINDERS] +15.41 CCD	–	1.5	–	19.3				–	–	–
2	ST	FULL	4.0'	STIFF TO VERY STIFF BROWNISH-GRAY SILTY CLAY, LITTLE FINE SAND, TRACE GRAVEL	–	3.0	–	16.8	107.0			PUSH		
3	SS	18"	6.0'	[CL]	9	1.6	–	18.6				4	5	4
4	SS	20"	8.0'	+8.41 CCD ▼	7	2.0	2.48	21.4				3	4	3
5	SS	18"	10.0' 12.0'	STIFF TO VERY STIFF [CL] GRAY SILTY CLAY LITTLE COARSE TO FINE SAND TRACE FINE GRAVEL +2.41 CCD	8	1.0	0.70	23.5				3	4	4
			14.0' 16.0'	END OF BORING @ 15 FEET										
			18.0' 20.0' 22.0' 24.0' 26.0' 28.0' 30.0'											

Note: Stratification lines are approximate; in-situ transition between soil types may be gradual.

▼ Groundwater Data
Depth While Drilling
10 FEET

▽ Depth After Drilling
10' / 6' AFTER 24HRS

Auger Depth 15 Feet Rig Type DIEDRICH D-25
Rotary Depth N/A Geologist Sergio Meilman
Driller ENVIRO CLEAN CONTR.

Note: Boring backfilled unless otherwise noted.

EPI
ENVIRONMENTAL PROTECTION INDUSTRIES

Job Number: 091161 Client Name: PUBLIC BUILDING COMMISSION	Geotechnical Boring Number: SB3	Page: 1 OF 1 Date: 1/15/10 Start:
Address: Haas Park Field House 2404 N. Washtenaw Ave. Chicago, Illinois	Boring Location: See Attached Site Map	Finish:

Geotechnical Sample Number	Sample Type	Sample Recovery (inches)		Detailed Soil and Rock Description Surface Elevation +16.61 CCD	"N" Blow Count	"Q_p" Calibrated Penetrometer (TSF)	"Q_u" Unconfined Compression (TSF)	"w_c" Moisture Content (%)	"γ_d" Dry Density (PCF)	Compaction (%)	PID (PPM)	Incremental Blow Count		
			0.0'	2" TOPSOIL										
1	AS	–	2.0'	FILL [BROWN SILTY CLAY WITH SAND, GRAVEL AND CINDERS] +14.11 CCD	–	1.0	–	17.6				–	–	–
2	SS	18"	4.0'		9	2.0	3.63	20.3	104.0			3	4	5
3	SS	18"	6.0'	STIFF TO VERY STIFF BROWNISH-GRAY SILTY CLAY LITTLE COARSE TO FINE SAND	8	1.5	–	19.6				5	5	3
4	SS	20"	8.0' 10.0'	[CL] +6.61 CCD	9	2.0	2.41	17.9				4	4	5
5	SS	16"	12.0' 14.0'	STIFF GRAY SILTY CLAY [CL] LITTLE COARSE TO FINE SAND TRACE FINE GRAVEL +1.61 CCD	5	1.0	–	18.5				3	2	3
			16.0' 18.0' 20.0' 22.0' 24.0' 26.0' 28.0' 30.0'	END OF BORING @ 15 FEET										

Note: Stratification lines are approximate; in-situ transition between soil types may be gradual.

Groundwater Data
▼ Depth While Drilling DRY
▽ Depth After Drilling DRY / 7' AFTER 24HRS

Auger Depth 15 Feet Rig Type DIEDRICH D-25
Rotary Depth N/A Geologist Sergio Meilman
Driller ENVIRO CLEAN CONTR.

Note: Boring backfilled unless otherwise noted.

EPI
ENVIRONMENTAL PROTECTION INDUSTRIES

Job Number: 091161 Client Name: PUBLIC BUILDING COMMISSION	Geotechnical Boring Number: SB4	Page: 1 OF 1 Date: 1/15/10 Start: ____ Finish: ____
Address: Haas Park Field House 2404 N. Washtenaw Ave. Chicago, Illinois	Boring Location: See Attached Site Map	

Geotechnical Sample Number	Sample Type	Sample Recovery (inches)	Depth	Detailed Soil and Rock Description Surface Elevation +16.51 CCD	"N" Blow Count	"Q_p" Calibrated Penetrometer (TSF)	"Q_u" Unconfined Compression (TSF)	"w_c" Moisture Content (%)	"γ_d" Dry Density (PCF)	Compaction (%)	PID (PPM)	Incremental Blow Count		
			0.0'	2" TOPSOIL										
1	AS	–	2.0'	FILL [BROWN SILTY CLAY WITH SAND, GRAVEL AND CINDERS]	–	0.5	–	16.0				–	–	–
				+12.51 CCD										
2	SS	16"	4.0'		6	2.2	4.5	18.1	107.2			3	2	4
3	SS	18"	6.0'	STIFF TO VERY STIFF BROWNISH-GRAY SILTY CLAY TRACE FINE SAND, GRAVEL	9	2.0	–	18.4				4	3	6
4	SS	18"	8.0'	[CL]	7	2.0	2.41	17.6				3	4	3
			10.0'	▼ +6.51 CCD										
5	ST	FULL	12.0'	STIFF GRAY SILTY CLAY LITTLE COARSE TO FINE SAND TRACE FINE GRAVEL [CL]	–	1.0	–	18.3				PUSH		
			14.0'	+1.51 CCD										
			16.0'	END OF BORING @ 15 FEET										
			18.0'											
			20.0'											
			22.0'											
			24.0'											
			26.0'											
			28.0'											
			30.0'											

Note: Stratification lines are approximate; in-situ transition between soil types may be gradual.

▼ Groundwater Data
Depth While Drilling
10 FEET

▽ Depth After Drilling
DRY/ 10' AFTER 24 HRS

Auger Depth 15 Feet Rig Type DIEDRICH D-25
Rotary Depth N/A Geologist Sergio Meilman
Driller ENVIRO CLEAN CONTR.

Note: Boring backfilled unless otherwise noted.

EPI
ENVIRONMENTAL PROTECTION INDUSTRIES

Job Number: 091161 Client Name: PUBLIC BUILDING COMMISSION	Geotechnical Boring Number: SB5	Page: 1 OF 1 Date: 1/15/10 Start: Finish:
Address: Haas Park Field House 2404 N. Washtenaw Ave. Chicago, Illinois	Boring Location: See Attached Site Map	

Geotechnical Sample Number	Sample Type	Sample Recovery (inches)	Depth	Detailed Soil and Rock Description	"N" Blow Count	"Q_p" Calibrated Penetrometer (TSF)	"Q_u" Unconfined Compression (TSF)	"w_c" Moisture Content (%)	"γ_d" Dry Density (PCF)	Compaction (%)	PID (PPM)	Incremental Blow Count		
			0.0'	Surface Elevation +17.32 CCD										
1	AS	–	2.0'	TOPSOIL WITH GRAVEL, STONE, BRICK [FILL]	–	–	–	26.3				–	–	–
2	SS	20"	4.0'	+12.82 CCD	4	1.5	2	21.1	102.4			2	2	2
3	SS	18"	6.0'		8	2.0	2.47	18.0				3	3	5
4	SS	18"	8.0'	VERY STIFF BROWNISH-GRAY SILTY CLAY LITTLE COARSE TO FINE SAND TRACE GRAVEL	7	2.5	–	17.6				3	3	4
			10.0'	[CL]										
			12.0'											
				+3.32 CCD										
5	SS	15"	14.0'	SOFT SILTY GRAY CLAY [CL] +2.32 CCD	6	0.5	–	23.1				4	3	3
			16.0'	END OF BORING @ 15 FEET										
			18.0'											
			20.0'											
			22.0'											
			24.0'											
			26.0'											
			28.0'											
			30.0'											

Note: Stratification lines are approximate; in-situ transition between soil types may be gradual.

Groundwater Data
▼ Depth While Drilling DRY
▽ Depth After Drilling DRY/ 6' AFTER 24 HRS

Auger Depth 15 Feet Rig Type DIEDRICH D-25
Rotary Depth N/A Geologist Sergio Meilman
Driller ENVIRO CLEAN CONTR.

Note: Boring backfilled unless otherwise noted.

ENVIRONMENTAL PROTECTION INDUSTRIES

Job Number: 091161 Client Name: PUBLIC BUILDING COMMISSION	Geotechnical Boring Number: SB6	Page: 1 OF 1 Date: 1/15/10 Start: _____ Finish: _____
Address: Haas Park Field House 2404 N. Washtenaw Ave. Chicago, Illinois	Boring Location: See Attached Site Map	

Geotechnical Sample Number	Sample Type	Sample Recovery (inches)		Detailed Soil and Rock Description Surface Elevation +17.47 CCD	"N" Blow Count	"Q_p" Calibrated Penetrometer (TSF)	"Q_u" Unconfined Compression (TSF)	"w_c" Moisture Content (%)	"γ_d" Dry Density (PCF)	Compaction (%)	PID (PPM)	Incremental Blow Count		
			0.0'	3" SAND, TOPSOIL										
1	AS	–	2.0'	FILL [BROWN SAND, GRAVEL, CINDERS] +14.47 CCD	–	1.5	–	6.3				–	–	–
2	SS	24"	4.0'	BROWN SILTY CLAY WITH GRAVEL [CL] +13.47 CCD ▽	7	2.5	3.48	21.0				3	3	4
3	SS	22"	6.0'	STIFF TO VERY STIFF BROWNISH-GRAY SILTY CLAY LITTLE COARSE TO FINE SAND TRACE OF GRAVEL [CL]	7	1.5	2.1	19.6				3	4	3
4	SS	18"	8.0'	▼ +7.47 CCD	8	2.0	–	19.1	104.4			3	4	4
5	SS	24"	10.0'	GRAY SILTY CLAY SOFT LITTLE COARSE TO FINE SAND TRACE GRAVEL [CL] +2.47 CCD	5	0.5	–	22.9				2	2	3
			12.0'											
			14.0'											
			16.0'	END OF BORING @ 15 FEET										
			18.0'											
			20.0'											
			22.0'											
			24.0'											
			26.0'											
			28.0'											
			30.0'											

Note: Stratification lines are approximate; in-situ transition between soil types may be gradual.

▼ Groundwater Data
Depth While Drilling
10 FEET

▽ Depth After Drilling
8 FEET/ 5' AFTER 24 HRS

Auger Depth 15 Feet Rig Type DIEDRICH D-25
Rotary Depth N/A Geologist Sergio Meilman
Driller ENVIRO CLEAN CONTR.

Note: Boring backfilled unless otherwise noted.

ENVIRONMENTAL PROTECTION INDUSTRIES

Job Number: 091161 Client Name: PUBLIC BUILDING COMMISSION	Geotechnical Boring Number: SB7	Page: 1 OF 1 Date: 1/15/10 Start:
Address: Haas Park Field House 2404 N. Washtenaw Ave. Chicago, Illinois	Boring Location: See Attached Site Map	Finish:

Geotechnical Sample Number	Sample Type	Sample Recovery (inches)	Detailed Soil and Rock Description Surface Elevation +16.54 CCD	"N" Blow Count	"Q_p" Calibrated Penetrometer (TSF)	"Q_u" Unconfined Compression (TSF)	"w_c" Moisture Content (%)	"γ_d" Dry Density (PCF)	Compaction (%)	PID (PPM)	Incremental Blow Count		
			0.0' 3" SAND, TOPSOIL										
1	AS	–	2.0' FILL [BROWN SAND, GRAVEL, CINDERS, CLAY] +13.54 CCD	–	–	–	12.4				–	–	–
2	SS	16"	4.0' BROWN SILTY CLAY WITH GRAVEL [CL] +12.54 CCD ▽	9	2.2	2.70	18.3	105.4			3	5	4
3	SS	18"	6.0' VERY STIFF BROWNISH-GRAY SILTY CLAY LITTLE COARSE TO FINE SAND TRACE GRAVEL [CL]	8	2.0	2.46	18.5				3	3	5
4	SS	18"	8.0' ▼ +6.54 CCD 10.0'	9	2.4	–	17.6				2	5	4
5	SS	24"	12.0' GRAY SILTY CLAY [CL] SOFT LITTLE COARSE TO FINE SAND TRACE GRAVEL 14.0' +1.54 CCD	4	0.4	–	23.9				2	2	2
			16.0' END OF BORING @ 15 FEET 18.0' 20.0' 22.0' 24.0' 26.0' 28.0' 30.0'										

Note: Stratification lines are approximate; in-situ transition between soil types may be gradual.

▼ Groundwater Data
Depth While Drilling
10 FEET

▽ Depth After Drilling
8 FEET/ 5' AFTER 24 HRS

Auger Depth 15 Feet Rig Type DIEDRICH D-25
Rotary Depth N/A Geologist Sergio Meilman
Driller ENVIRO CLEAN CONTR.

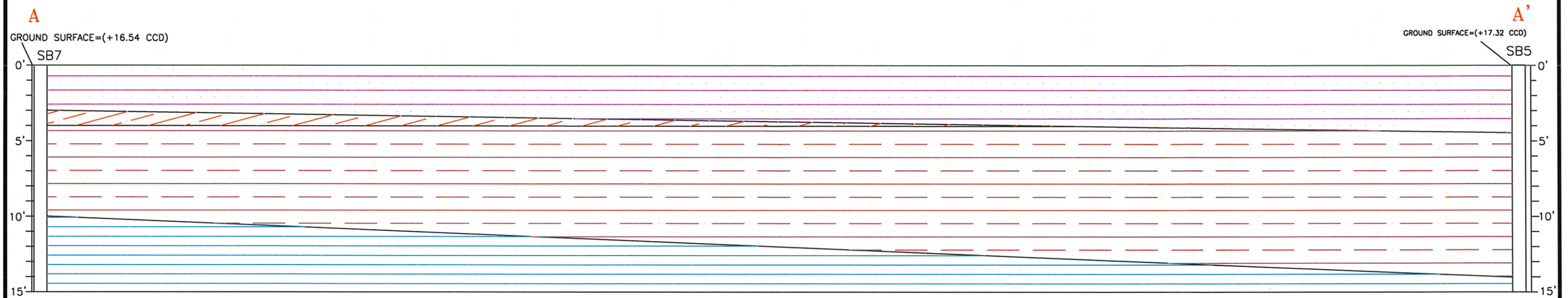
Note: Boring backfilled unless otherwise noted.

ENVIRONMENTAL PROTECTION INDUSTRIES

SOIL PROFILE

CROSS SECTION DIAGRAM
A – A'

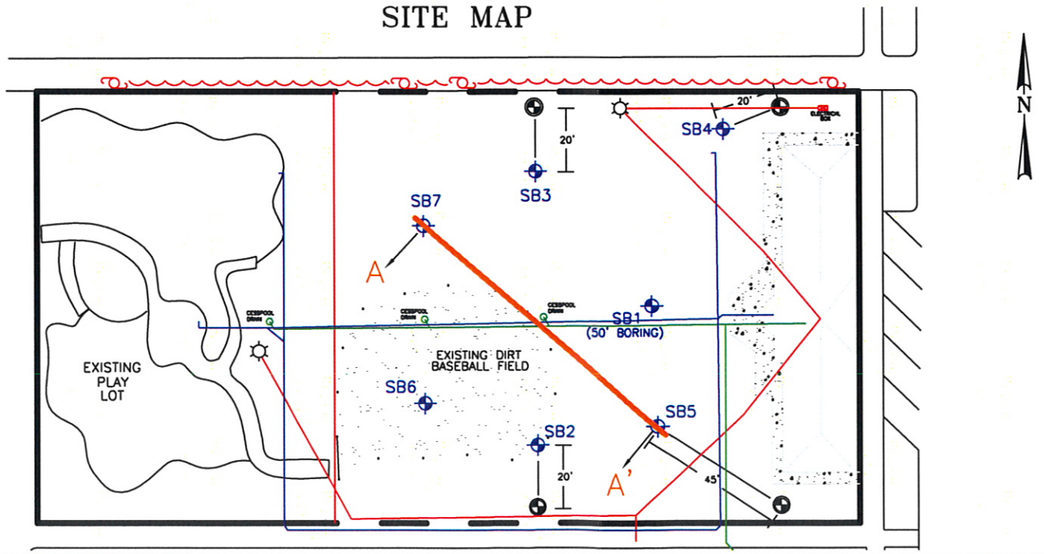
HAAS PARK
2404 N. WASHTENAW AVENUE, CHICAGO, IL



VERTICAL & HORIZONTAL SCALE
1 INCH=6.25 FEET

- FILL MATERIAL (TOPOSIL, SAND, GRAVEL, CINDERS, CLAY)
- BROWN SILTY CLAY WITH GRAVEL
- BROWNISH–GRAY SILTY CLAY LITTLE TO COARSE SAND TRACE GRAVEL
- GRAY SILTY CLAY TRACE FINE SAND AND GRAVEL

SITE MAP



ENVIRONMENTAL PROTECTION INDUSTRIES 16650 SOUTH CANAL, SOUTH HOLLAND, IL 60473				
DATE	DESIGNED	CAD	CHECKED	APP'D
2/11/10	A.L.	A.L.	S.M.	A.N.

JOB LOC.	HAAS PARK 2404 NORTH WASHTENAW AVENUE, CHICAGO, IL		
TITLE:	A–A' CROSS SECTION DIAGRAM		
DWG NO. 091161	JOB NO. 091161	SCALE: 1'=6.25'	FIG. 1

SOIL CLASSIFICATION SYSTEM

Environmental Protection Industries, Inc.
16650 S. Canal Street, South Holland, IL 60473

LEGEND FOR BORING LOGS

MATERIAL	SIZE RANGE
Boulder	over 8 inches
Cobble	2.5 inches to 8 inches
Coarse Gravel	1 inch to 2.5 inches
Medium Gravel	3/8 inch to 1 inch
Small Gravel	No. 4 sieve to 3/8 inch
Coarse Sand	No. 20 sieve to No. 4 sieve
Medium Sand	No. 60 sieve to No. 20 sieve
Fine Sand	No. 200 sieve to No. 60 sieve
Silt or Clay	Finer than No.200 sieve

COHESIVE SOILS

Classification	Qu
Very Soft	0.00 - 0.25
Soft	0.25 - 0.50
Stiff	0.50 – 0.99
Tough	1.00 – 1.99
Very Tough	2.00 – 3.99
Hard	4.00 – 8.00
Very Hard	Over 8.00

COHESIONLESS SOILS

Classification	N (per ft)
Very Loose	0 – 3
Loose	4 – 9
Medium Dense	10 – 29
Dense	30 – 49
Very Dense	50 – 80
Extremely Dense	Over 80

MAJOR MODIFIERS

Silty, Sandy, Clayey and Gravelly

Modifying Term	Percent by Weight
Trace	1 – 10
Little	10 – 20
Some	20 – 35
And	35 – 50

SOIL COMPONENTS, FRACTIONS, TERMS AND ABBREVIATIONS FOR VISUAL IDENTYFICATION OF SOILS

DEFINITION OF TERMS RELATING TO STRATIFIED SOILS:

Parting	0 to 1/16 inch thickness
Seam	1/16 inch to ½ inch thickness
Layer	½ inch to 12inch thickness
Stratum	Usually greater than 12 inches thick: Occasionally less, e.g. topsoil
Verved Silt	Fresh water lake deposit usually in seams, But occasionally in layers
Pocket	Small, erratic deposit usually less then 12 "
Lens	Lenticular deposit, larger than pocket
Occasional	One or less per 12 inches of thickness
Frequent	More than one per 12 inch of thickness

GLOSSARY OF MODIFYING TERMS

CATEGORY	*SYMBOL*	*TERM*	*SYMBOL*	*TERM*
Colors	bk	black	rd	red
	bl	blue	tn	tan
	br	brown	wh	white
	gr	gray	yw	yellow
	gn	green	dk	dark
	or	orange	lt	light
Organic Soils	dec	decayed	rts	roots
	dec'g	decaying	ts	topsoil
	lig	lignite	veg	vegetation
	o	organic	pt	peat
Stratification	alt	alternating	pkt	pocket
	lns	lens	prt	parting
	lyr	layer	sm	seam
	occ	occasional	vvd	verved
	frqt	frequent	w	with

IDENTIFYING TERMS FOR COMPOSITION OF GRANULAR SOILS

IDENTIFICATION		TERMS IDENTIFYING PROPORTIONS *		DEFINING RANGE OF PERCENT AGES BY WEIGHT	
COMPONENT	***WRITTEN***	***SYMBOL***	***WRITTEN***	***SYMBOL***	
Principal Component	Gravel Sand Silt	G Sa Si		50 or more	
Minor Component	Gravel Sand Silt	G Sa Si	and some little trace	a s l t	35 to 50 20 to 35 10 to 20 1 to 10

* Proportions refer to the percentage of the whole soil finer and coares than the principal component

Plus (+) nearer the upper limits of a proportion.

Minus (-) nearer the lower limits of a proportion.

No sign. Middle range of a proportion.

IDENTIFYING TERMS FOR COMKP. CLAY – SOIL ON OVERALL PLASTICITY BASIS

DEGREE OF OVERALL PLASTICITY		*OVERALL PLASTICITY INDEX SAND-SILT-CLAY*	*IDENTIFICATION OF PRINCIPAL COMPONENTS*	
Written	***Symbol***		***Written***	***Symbol***
Non-plastic		0	Silt	S
Slight	Sl	1 to 5	Clayey Silt	CyS
Low	L	5 to 10	Silt and Clay	S&C
Medium	M	10 to 20	Clay and Silt	C&S
High	H	20 to 40	Silty Clay	SyC
Very High	VH	over 40	Clay	C

PAVEMENT DESIGN CONSIDERATIONS

PAVEMENT DESIGN CONSIDERATIONS

Design Date

Minimum Design Consideration

	Vehicle Use	Axle Load	Desired Gross Structural Value Number
A.	Cars & Light Trucks	6,000 lbs.	1.80
B.	Medium Trucks & Buses	12,000 lbs	2.50
C.	Heavy Trucks	18,000 lbs	3.20

Product Structural Coefficients per Inch Thickness

1.	CA-6 (#7) Aggregates (Base Construction – Section 301 Type B)	
	#7 Road Gravel	0.1
	#9 Crushed Road Gravel	0.12
	#8 Crushed Limestone	0.13
2.	Waterbound Macadam (Base Construction – Section 301 Type B)	0.14
3.	Pozzolanic Base	0.28
4.	Bituminous Aggregate Material Base using:	
	CA-6(#7) Aggregates	0.25
	CA-6 (#8 or 9) Crush Aggregates	0.30
5.	Asphalt Surfaces, Class I-II	0.40
6.	Portland Cement Concrete	0.50
7.	Cement Treated Aggregate Base	0.23

Sample Pavement Designs

		"A" Light Duty		"B" Med. Duty		"C" Heavy Duty	
	Coeff.	Thick	Str. No.	Thick	Str. No.	Thick	Str. No.
CA-6 Agg. Base	.12	8"	.96	12"	1.44	15"	1.8
Asphalt I-11 Surface	.40	2"	.80	2.5"	1.0	3"	1.2
			1.76		2.44		3.00
Pozzolanic Base	.28	5"	1.40	7"	1.96	8"	2.24
Asphalt I-11 Surface	.40	2"	.80	2"	.80	2.5"	1.00
			2.20		2.76		3.24
Bituminous Aggregate Material Base	.30	5"	1.50	7"	2.10	8"	2.40
Asphalt I-11 Surface	.40	1.5"	.60	2"	.60	2"	1.00
			2.10		2.70		3.40

Consider the following to provide better final designs.

1. Minimum thickness of pavement should be adequate to support the equipment required to build the pavement.
2. Unsuitable subgrade materials should be removed and properly replaced.
3. Subgrade water problems, if any, should be properly considered.
4. Surface pitch of bituminous pavement should be minimum 1" in 10' , on longest distance from high point to low point.
5. Combined concrete curbs and gutters function as collection sewers, vehicle wheel stops, pavement edge support, and can be placed at minimum pitch for future water runoff if resurface is done.
6. Allowance for thickness for future asphalt resurfacing should be made in original elevations where pavements abut door openings or concrete slabs. For example, provide extra 2" pitch in first 10 to 20 feet, thereby providing for future water runoff if resurfacing is done.
7. Variations in earthwork cut and fill related to thickness of pavement should be considered as a cost factor in type of pavement selection.
8. Asphalt surfaces should be minimum 2" thick for light duty use and 3" thick for heavy trucking to offset tearing action of tandem rear end units.
9. Normal accepted work tolerances are:
   Base Course- 0.5" in 10' straight edge.
   Surface Courses- 0.25" in 10' straight edge.

CONSOLIDATION TEST RESULTS

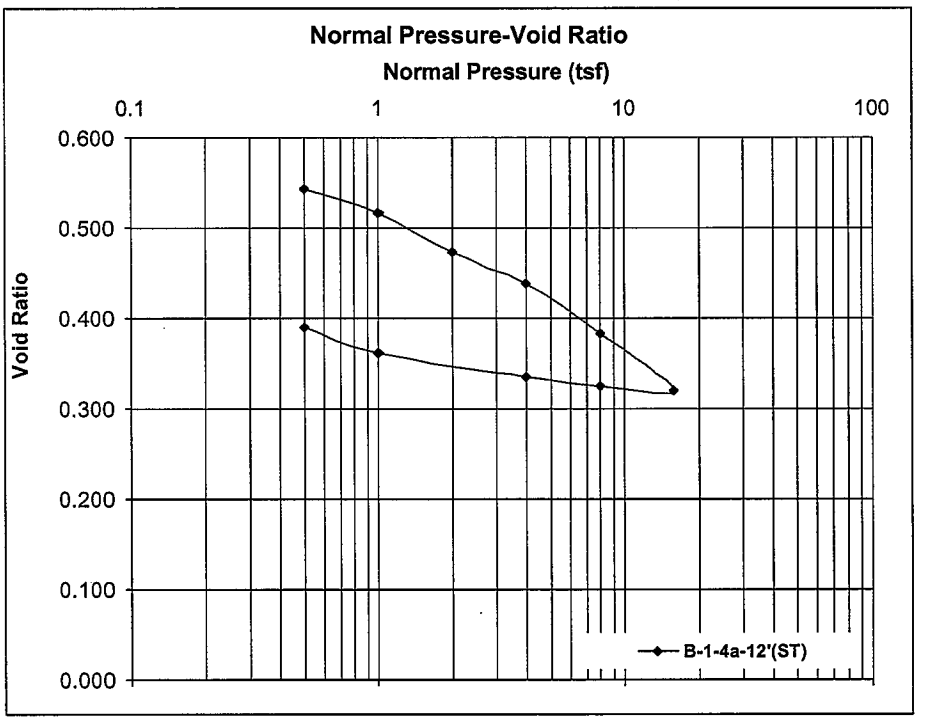
STAT Analysis Corporation:
2242 West Harrison, Suite 200, Chicago, Illinois 60612
Tel: 312.733.0551; Fax: 312.733.2386; e-mail address: STATinfo@STATAnalysis.com
Laboratory Accreditation Numbers: IEPA NELAP 100445; AIHA 10248; NVLAP 101202-0

One Dimensional Consolidation Properties of Soils Using Incremental Loading (ASTM D2435)

Client: Environmental Protection Industries
Project Name: 09-1161, Haas Park, 2404 N. Washtenaw, Chicago

Results:

Sample Number	B-1-4A-12'(ST)
Tested By	STAT/UIC
Test Date	01/20/10 – 02/03/10
Sample Depth (ft)	12'
As Rec'd Water Cont. (%)	19.9
Initial Dry Unit Weight (pcf)	109
Initial Void Ratio	0.569
Final Water Content (%)	18.7
Final Dry Unit Weight (pcf)	111
Final Void Ratio	0.391
Compression Index (C_c)	0.207
Recompression Index (C_r)	0.063



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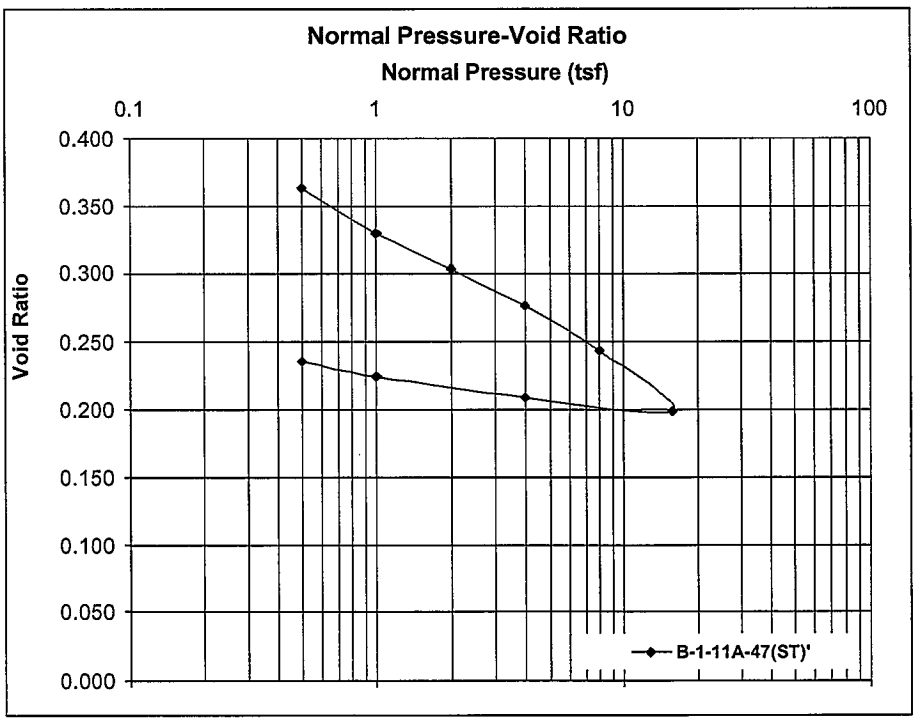
Laboratory Accreditation Numbers: IEPA NELAP 100445; AIHA 10248; NVLAP 101202-0

One Dimensional Consolidation Properties of Soils Using Incremental Loading (ASTM D2435)

Client: Environmental Protection Industries
Project Name: 09-1161, Haas Park, 2404 N. Washtenaw, Chicago

Results:

Test Number	1
Sample Number	B-1-11a-47'(ST)
Tested By	STAT/UIC
Test Date	01/20/10 – 02/03/10
Sample Depth (ft)	47'
As Rec'd Water Cont. (%)	11.1
Initial Dry Unit Weight (pcf)	117
Initial Void Ratio	0.418
Final Water Content (%)	10.1
Final Dry Unit Weight (pcf)	118
Final Void Ratio	0.235
Compression Index (C_c)	0.116
Recompression Index (C_r)	0.031



ATTERBERG LIMITS TEST RESULTS

STAT Analysis Corporation
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Tel: (312) 733-0551 Fax: (312) 733-2386 STATinfo@STATAnalysis.com
Accreditation Numbers: IEPA ELAP 100445; ORELAP IL300001; AIHA 101160; NVLAP LabCode 101202

Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-1-4-10'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/14/2010
Lab ID:	10010354-003A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	41		*		1	1/29/2010
PI	16		*		1	1/29/2010
PL	25		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	57.0		*	%	1	1/29/2010
Gravel	0		*	%	1	1/29/2010
Sand	10.7		*	%	1	1/29/2010
Silt	32.3		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	89.3		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	28.7		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	1651		*	lb/ft²	1	1/29/2010

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- HT - Sample received past holding time
- * - Non-accredited parameter
- RL - Reporting / Quantitation Limit for the analysis
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-1-4a-12' (ST)
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/14/2010
Lab ID:	10010354-001A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	33		*		1	1/29/2010
PI	14		*		1	1/29/2010
PL	19		*		1	1/29/2010
Consolidation	**D2435**					Analyst: **SUB**
Compression Index	0.207		*		1	2/3/2010
Recompression Index	0.063		*		1	2/3/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	48.0		*	%	1	1/29/2010
Gravel	3.1		*	%	1	1/29/2010
Sand	17.5		*	%	1	1/29/2010
Silt	31.4		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	79.4		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	19.9		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	1773		*	lb/ft²	1	1/29/2010

Qualifiers:

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HT - Sample received past holding time
* - Non-accredited parameter
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R - RPD outside accepted recovery limits
E - Value above quantitation range
H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-1-5-15'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/14/2010
Lab ID:	10010354-004A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	37		*		1	1/29/2010
PI	17		*		1	1/29/2010
PL	20		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	52.0		*	%	1	1/29/2010
Gravel	6.7		*	%	1	1/29/2010
Sand	11.3		*	%	1	1/29/2010
Silt	30.0		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	82.0		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	26.0		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	803		*	lb/ft²	1	1/29/2010

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- HT - Sample received past holding time
- * - Non-accredited parameter
- RL - Reporting / Quantitation Limit for the analysis
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-1-6-20'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/14/2010
Lab ID:	10010354-005A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	39		*		1	1/29/2010
PI	20		*		1	1/29/2010
PL	19		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	66.0		*	%	1	1/29/2010
Gravel	0.2		*	%	1	1/29/2010
Sand	8.4		*	%	1	1/29/2010
Silt	25.4		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	91.4		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	20.2		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	1262		*	lb/ft²	1	1/29/2010

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- HT - Sample received past holding time
- * - Non-accredited parameter
- RL - Reporting / Quantitation Limit for the analysis
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-1-11a-47' (ST)
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/14/2010
Lab ID:	10010354-002A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	27		*		1	1/29/2010
PI	13		*		1	1/29/2010
PL	14		*		1	1/29/2010
Consolidation	**D2435**					Analyst: **SUB**
Compression Index	0.116		*		1	2/3/2010
Recompression Index	0.031		*		1	2/3/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	29.0		*	%	1	1/29/2010
Gravel	3.7		*	%	1	1/29/2010
Sand	33.7		*	%	1	1/29/2010
Silt	33.6		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	62.6		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	11.1		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	19873		*	lb/ft²	1	1/29/2010

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- HT - Sample received past holding time
- * - Non-accredited parameter
- RL - Reporting / Quantitation Limit for the analysis
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-2-4-10'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/15/2010
Lab ID:	10010354-006A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	39		*		1	1/29/2010
PI	14		*		1	1/29/2010
PL	25		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	55.0		*	%	1	1/29/2010
Gravel	2.3		*	%	1	1/29/2010
Sand	12.5		*	%	1	1/29/2010
Silt	30.2		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	85.2		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	21.4		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	4963		*	lb/ft²	1	1/29/2010

Qualifiers:

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- B - Analyte detected in the associated Method Blank
- HT - Sample received past holding time
- * - Non-accredited parameter
- RL - Reporting / Quantitation Limit for the analysis
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-2-5-15'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/15/2010
Lab ID:	10010354-007A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	36		*		1	1/29/2010
PI	16		*		1	1/29/2010
PL	20		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	56.0		*	%	1	1/29/2010
Gravel	1.7		*	%	1	1/29/2010
Sand	11.2		*	%	1	1/29/2010
Silt	31.1		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	87.1		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	23.5		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	1392		*	lb/ft²	1	1/29/2010

Qualifiers:

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HT - Sample received past holding time
* - Non-accredited parameter
RL - Reporting / Quantitation Limit for the analysis
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R - RPD outside accepted recovery limits
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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-3-2-5'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/15/2010
Lab ID:	10010354-008A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	49		*		1	1/29/2010
PI	23		*		1	1/29/2010
PL	26		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	65.0		*	%	1	1/29/2010
Gravel	0		*	%	1	1/29/2010
Sand	11.2		*	%	1	1/29/2010
Silt	21.6		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	86.6		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	20.3		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	7264		*	lb/ft²	1	1/29/2010

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- HT - Sample received past holding time
- * - Non-accredited parameter
- RL - Reporting / Quantitation Limit for the analysis
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-4-2-5'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/15/2010
Lab ID:	10010354-009A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	43		*		1	1/29/2010
PI	21		*		1	1/29/2010
PL	22		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	56.0		*	%	1	1/29/2010
Gravel	0.8		*	%	1	1/29/2010
Sand	10.3		*	%	1	1/29/2010
Silt	32.9		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	88.9		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	18.1		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	9127		*	lb/ft²	1	1/29/2010

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- HT - Sample received past holding time
- * - Non-accredited parameter
- RL - Reporting / Quantitation Limit for the analysis
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-5-2-5'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/15/2010
Lab ID:	10010354-010A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	45		*		1	1/29/2010
PI	25		*		1	1/29/2010
PL	20		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	60.0		*	%	1	1/29/2010
Gravel	0.4		*	%	1	1/29/2010
Sand	14.0		*	%	1	1/29/2010
Silt	25.6		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	85.6		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	21.1		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	4004		*	lb/ft²	1	1/29/2010

Qualifiers:

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- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- HT - Sample received past holding time
- * - Non-accredited parameter
- RL - Reporting / Quantitation Limit for the analysis
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range
- H - Holding time exceeded

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Report Date: February 08, 2010
Print Date: February 08, 2010

Client:	Environmental Protection Industries	**Client Sample ID:**	B-6-2-5'
Lab Order:	10010354	**Tag Number:**	
Project:	09-1161, Haas Park, 2404 N. Washtenaw, Chicago	**Collection Date:**	1/15/2010
Lab ID:	10010354-011A	**Matrix:**	Soil

Analyses	Result	RL	Qualifier	Units	DF	Date Analyzed
Atterberg Limits	**D4318**					Analyst: **SUB**
LL	48		*		1	1/29/2010
PI	26		*		1	1/29/2010
PL	22		*		1	1/29/2010
Grain Size	**D422**					Analyst: **SUB**
Clay	65.0		*	%	1	1/29/2010
Gravel	0		*	%	1	1/29/2010
Sand	10.1		*	%	1	1/29/2010
Silt	24.9		*	%	1	1/29/2010
Percent Finer than #200	**D1140**					Analyst: **SUB**
Percent Finer than #200	89.9		*	%	1	1/29/2010
Moisture Content	**D2216**					Analyst: **SUB**
Moisture Content	21.0		*	wt%	1	1/29/2010
Unconfined Compressive Strength	**D2166**					Analyst: **SUB**
Unconfined Compressive Strength	6967		*	lb/ft²	1	1/29/2010

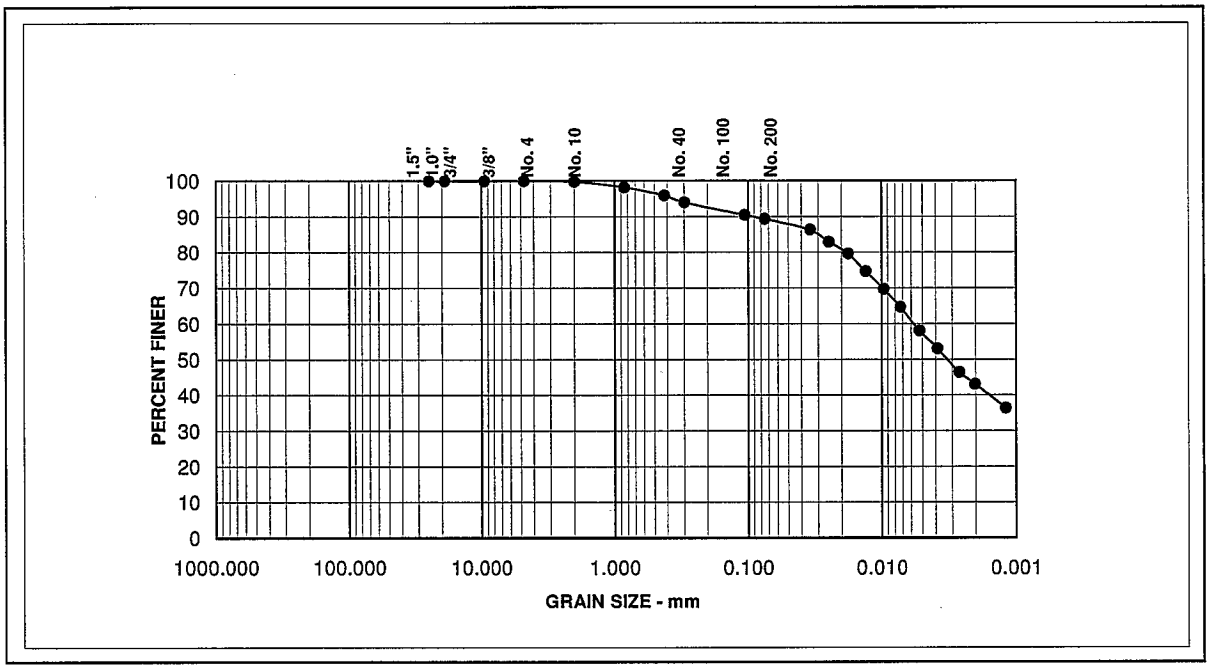
Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
HT - Sample received past holding time
* - Non-accredited parameter
RL - Reporting / Quantitation Limit for the analysis
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
H - Holding time exceeded

GRAIN SIZE TEST RESULTS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE:B-1 (4-10)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	0.0	10.7	32.3	57.0

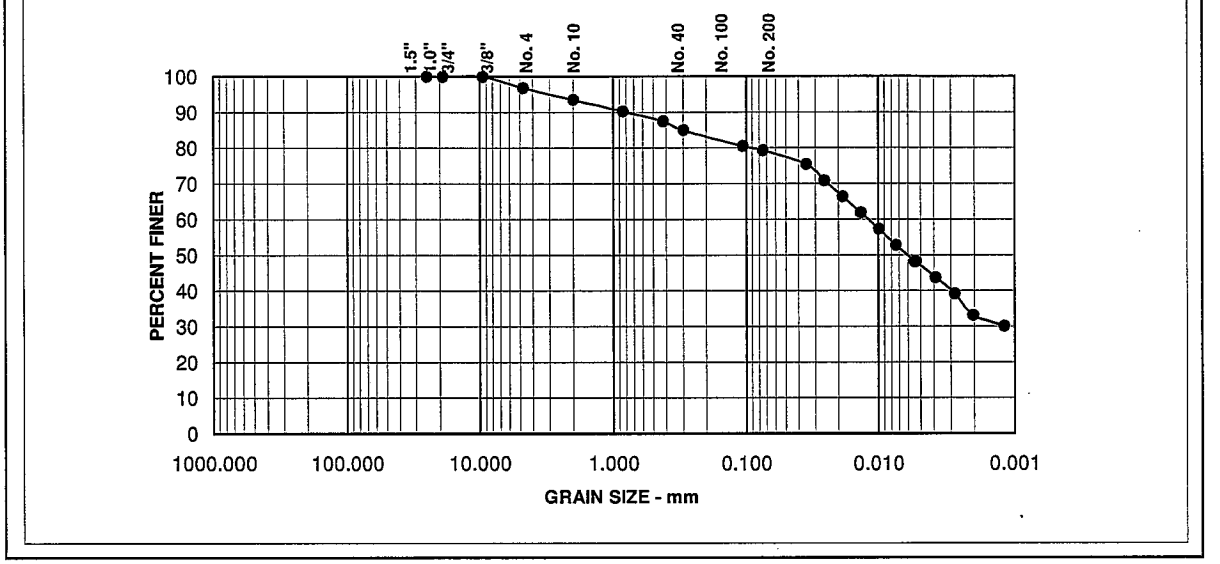
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	100.0
#10	99.8
#20	98.2
#40	96.0
#60	94.0
#140	90.5
#200	89.3

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.006	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand.
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE: B-1 (4a-12)(ST)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	3.1	17.5	31.4	48.0

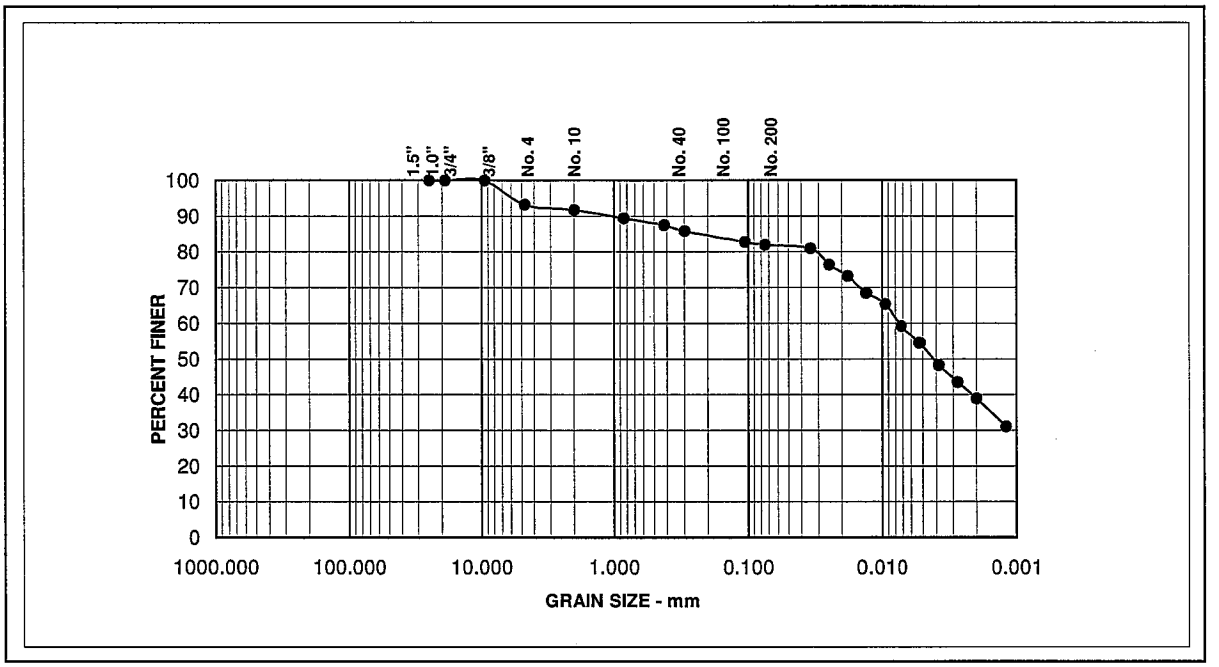
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	96.9
#10	93.5
#20	90.3
#40	87.5
#60	85.0
#140	80.6
#200	79.4

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.012	0.001	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand, trace fine gravel
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE: B-1 (5-15)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	6.7	11.3	30.0	52.0

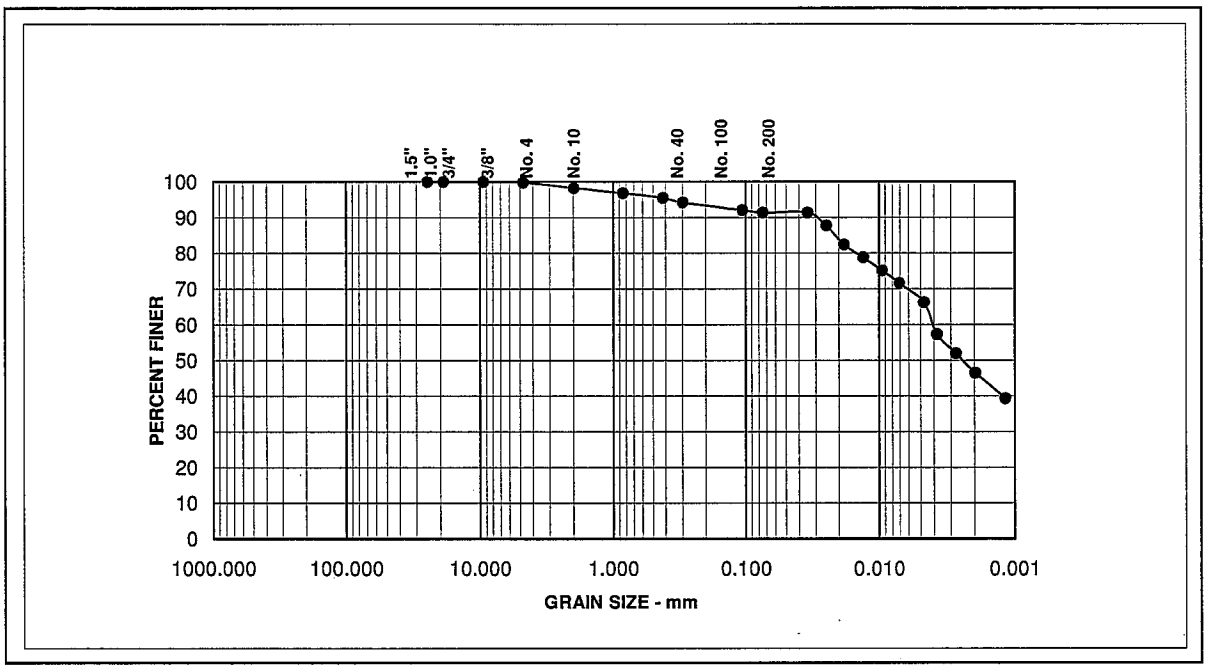
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	93.3
#10	91.7
#20	89.5
#40	87.5
#60	85.9
#140	82.8
#200	82.0

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.0075	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand, trace fine gravel
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE: B-1 (6-20)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	0.2	8.4	25.4	66.0

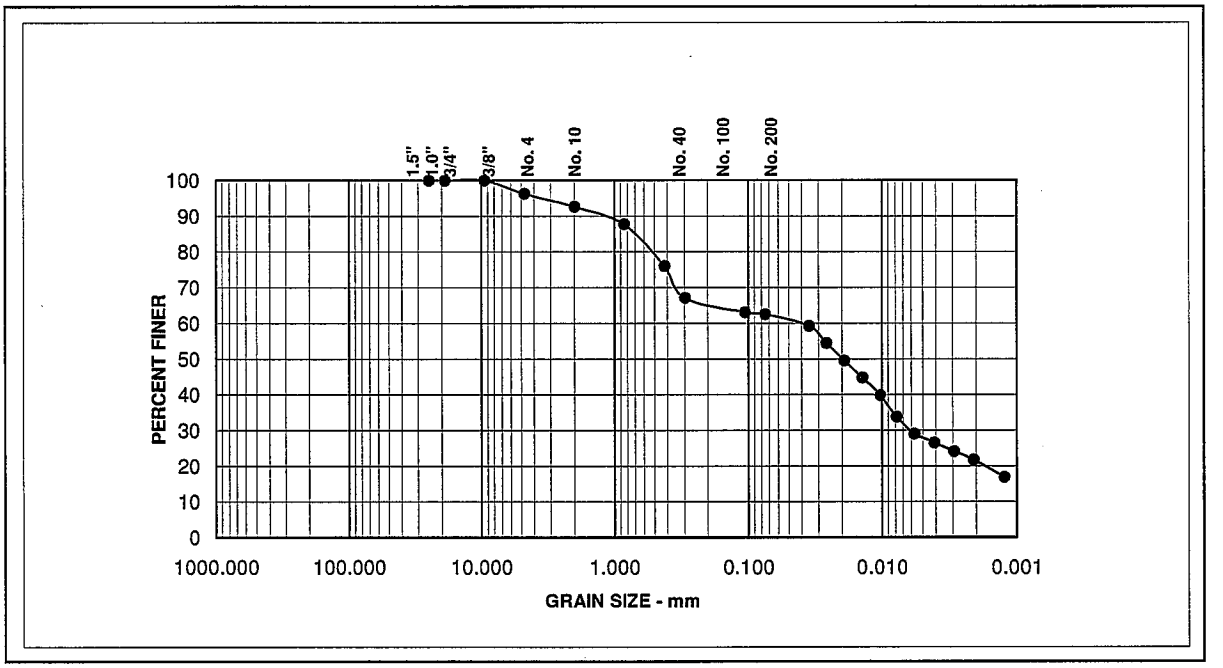
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	99.8
#10	98.3
#20	96.9
#40	95.5
#60	94.3
#140	92.1
#200	91.4

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.004	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand, trace fine gravel
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE: B-1 (11a-47)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	3.7	33.7	33.6	29.0

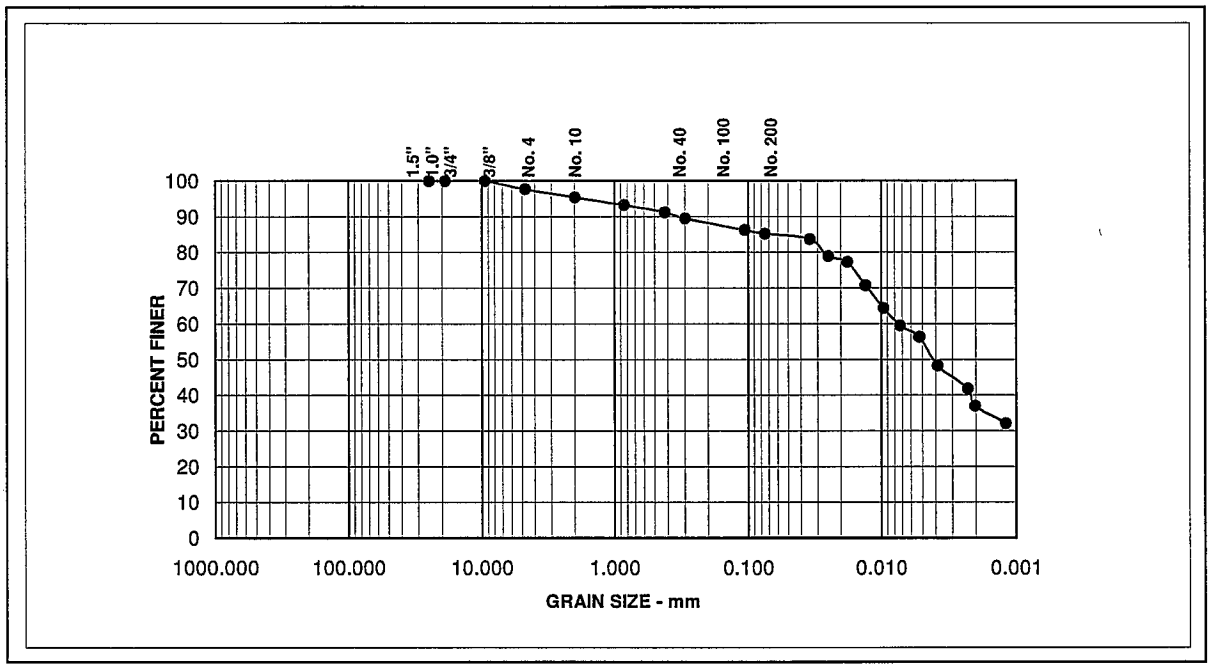
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	96.3
#10	92.7
#20	87.8
#40	76.0
#60	67.1
#140	63.1
#200	62.6

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.035	0.006	-	-	-

Visual Soil Description:	Gray silty clay and coarse to fine sand, trace fine gravel
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE:B-2 (4-10)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	2.3	12.5	30.2	55.0

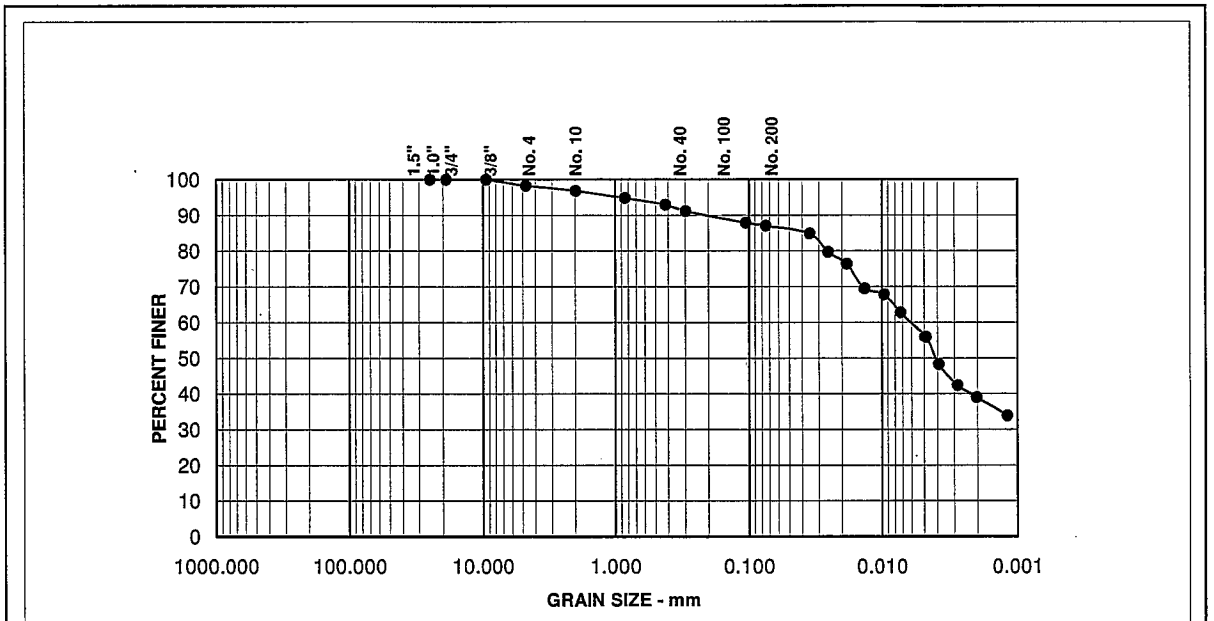
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	97.7
#10	95.4
#20	93.3
#40	91.2
#60	89.5
#140	86.3
#200	85.2

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.007	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand,trace fine gravel
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE: B-2 (5-15)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	1.7	11.2	31.1	56.0

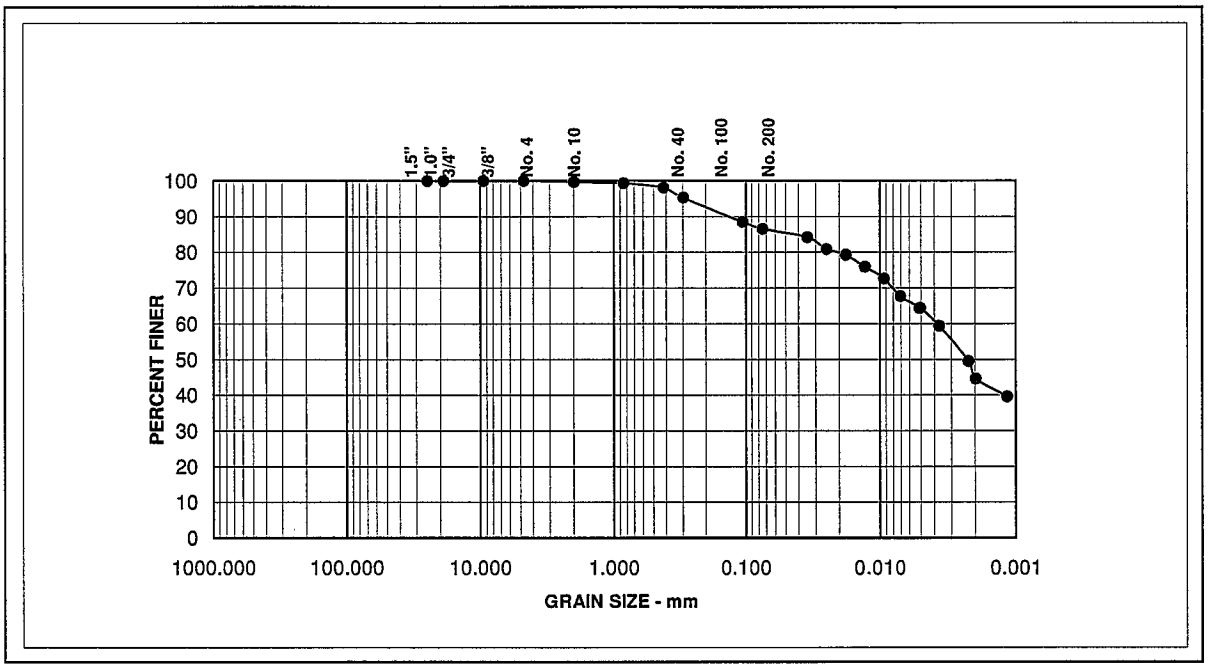
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	98.3
#10	96.9
#20	94.8
#40	93.0
#60	91.2
#140	88.0
#200	87.1

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.006	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand, trace fine gravel
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE:B-3(2-5)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	0.0	13.4	21.6	65.0

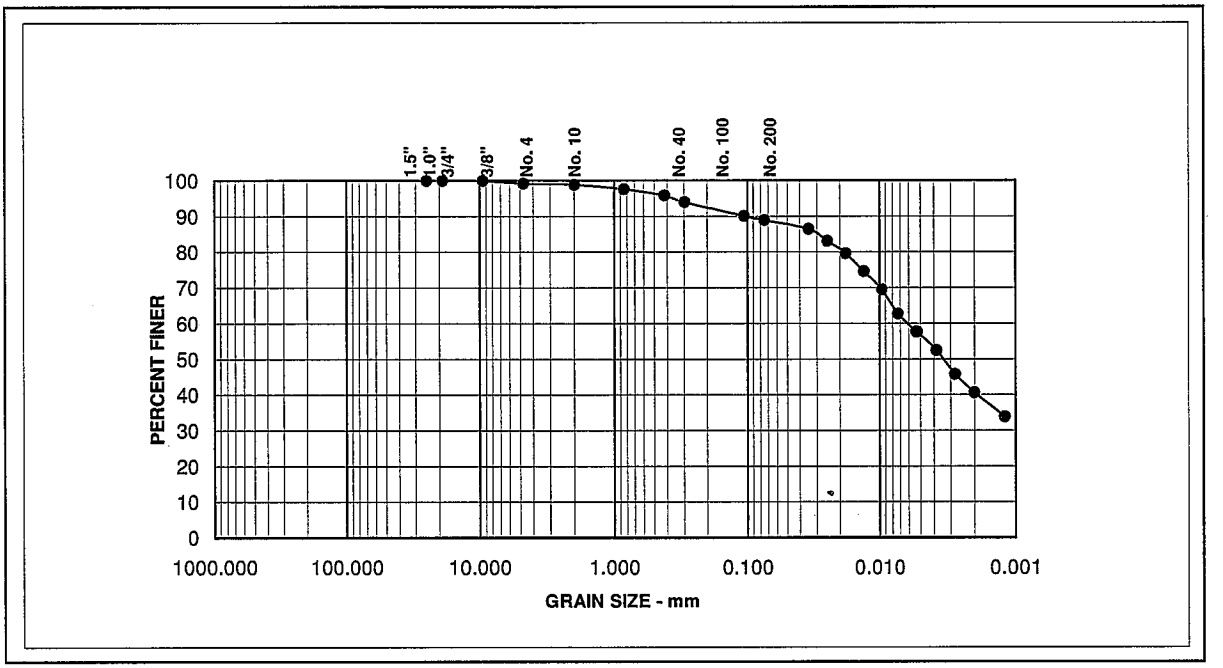
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	100.0
#10	99.8
#20	99.4
#40	98.2
#60	95.3
#140	88.6
#200	86.6

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.005	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand.
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE: B-4 (2-5)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	0.8	10.3	32.9	56.0

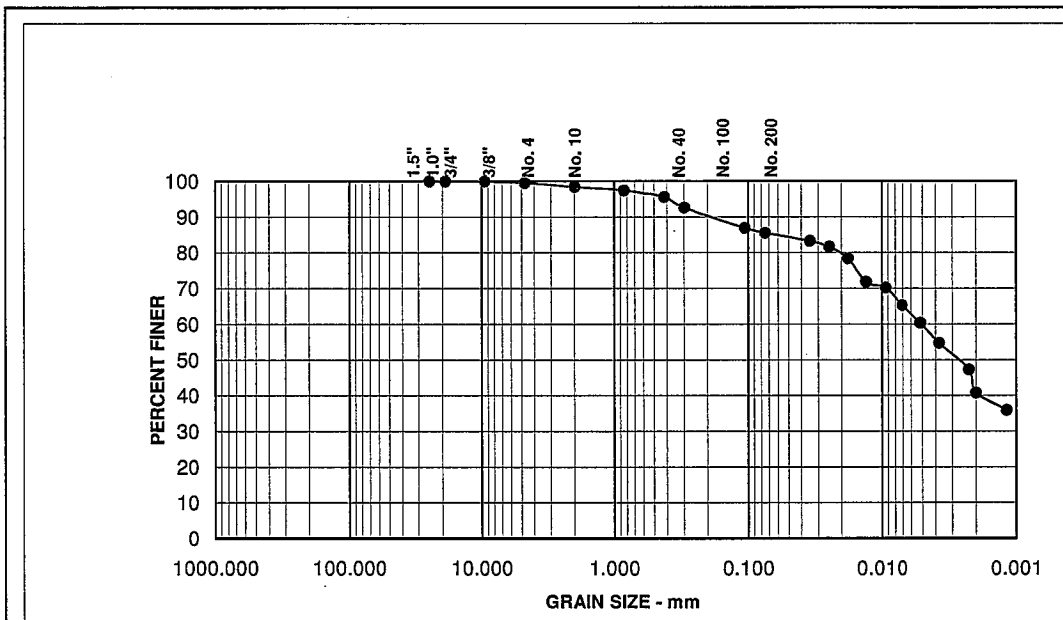
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	99.2
#10	98.9
#20	97.7
#40	95.9
#60	94.0
#140	90.1
#200	88.9

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.006	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand, trace fine gravel
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE:B-5(2-5)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	0.4	14.0	25.6	60.0

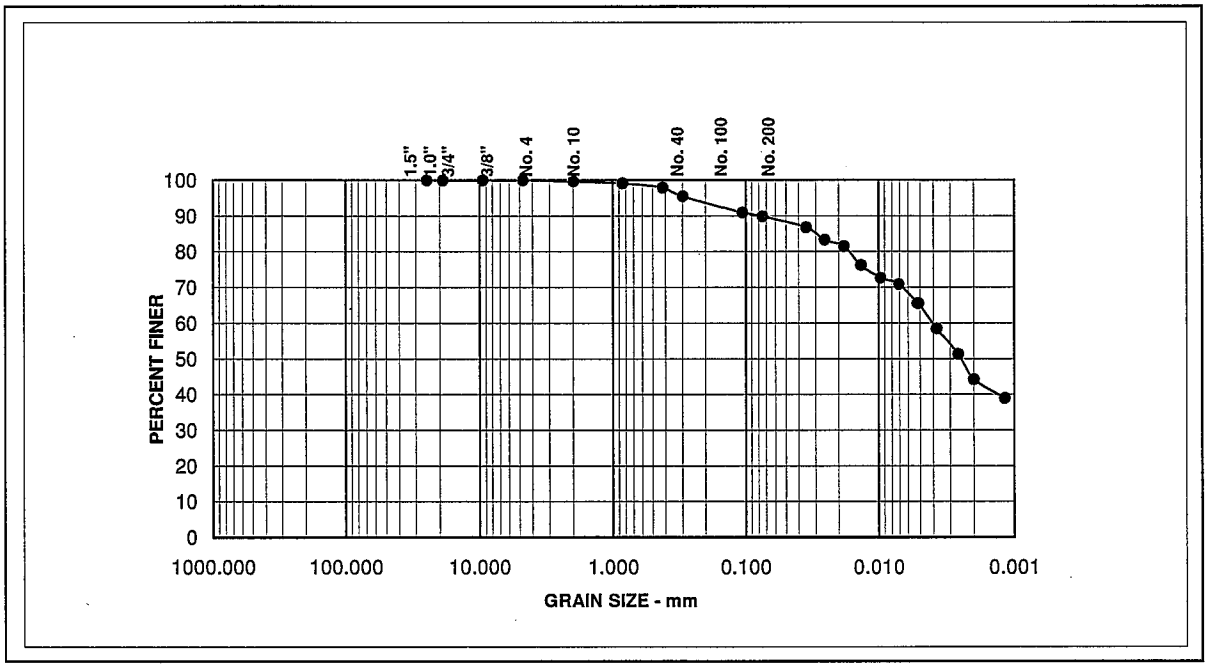
Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	99.6
#10	98.5
#20	97.5
#40	95.7
#60	92.6
#140	87.0
#200	85.6

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.005	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand, trace gravel
Soil Classification:	CL
System:	USCS

GRAIN SIZE ANALYSIS (ASTM D422)

SAMPLE: B-6 (2-5)



% + 3"	% Gravel	% Sand	% Silt	% Clay
0.0	0.0	10.1	24.9	65.0

Sieve Size	Percent Passing
1"	100.0
3/4"	100.0
3/8"	100.0
#4	100.0
#10	99.7
#20	99.2
#40	98.0
#60	95.6
#140	91.0
#200	89.9

D60 (mm)	D30 (mm)	D10 (mm)	Cu	Cc
0.004	-	-	-	-

Visual Soil Description:	Gray silty clay, little coarse to fine sand.
Soil Classification:	CL
System:	USCS