PULLMAN FACILITY REPLACEMENT PROJECT:
SITE AND BUILDING DEMOLITION

ADDENDUM NO. 1

FOR

Chicago Family Health Center
9119 S. Exchange Avenue
Chicago, IL 60617
SMNG-A Project No. 1106

DATE: September 22, 2011

NOTICE OF CHANGES IN CONTRACT DOCUMENTS

The following changes are hereby made in the Contract Documents. Insofar as the prior Contract Documents were inconsistent herewith, the changes mentiones hereinafter shall govern unless original language takes precedence according to the Order of Preference of Components of the Contract Documents.

CHANGES TO TECHNICAL SPECIFICATIONS:

1. Table of Contents: Under Division 00, add Section 003132, Geotechnical Data, 16 pages.
2. Division 00 – Procurement and Contracting Requirements: In Section 003126, Existing Hazardous Material Information, delete subparagraph F in its entirety and substitute the following paragraphs F and G:

    F. Abatement of existing asbestos materials will be performed under a separate contract by others prior to commencement of the work described in these specifications.

    G. Related Requirements:

        1. Document 002113, Instructions to Bidders, for the Bidder's responsibilities for examination of Project site and existing conditions.
        2. Document 003132, Geotechnical Data, for reports and soil-boring data from geotechnical investigations that are made available to bidders.
        3. Section 024116, Structure Demolition, for notification requirements if materials suspected of containing hazardous materials are encountered.

3. Division 00 – Procurement and Contracting Requirements: Add Section 003132, Geotechnical Data, 9/21/2011,16 pages, attached.
4. Division 31 – Earthwork: Delete Section 312000, Earth Moving, 9/9/2011, in its entirety and substitute Section 312000, Earth Moving, 9/21/2011, 8 pages, attached.

END OF ADDENDUM NO. 1

DOCUMENT 003132

GEOTECHNICAL DATA

1.1 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.

B. A geotechnical investigation report for Project, prepared by Ground Engineering Consultants, Inc., dated June 28, 2011, is available for viewing as appended to this Document.

C. Related Requirements:

1. Document 002113 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.
2. Document 003126 "Existing Hazardous Material Information" for hazardous materials reports that are made available to bidders.

END OF DOCUMENT 003132

GROUND ENGINEERING CONSULTANTS, INC.

350 PFINGSTEN ROAD, SUITE 106
NORTHBROOK, ILLINOIS 60062
TELEPHONE: 847-559-0085
FAX: 847-559-0181

June 28, 2011

Ms. Molly Kinsella, AIA, LEED AP
SMNG-A Architects Ltd.
936 West Huron Street
Chicago, Illinois 60642

SUBJECT: *Subsurface Exploration and Geotechnical Engineering Report for the Proposed Chicago Family Health Center - Pullman Center Replacement Project at 556 East 115th Street, Chicago, Illinois 60628*

Dear Ms. Kinsella:

As per your authorization we have completed the subsurface exploration for the above noted project. Four soil borings labeled B-2 to B-5 extending to a depth of 30 ft. each were performed in the proposed building area. One boring labeled B-1 was performed in the proposed parking area at the southeast corner of the existing facility. One boring labeled B-6 located in the remote parking area was not performed as access to that site was not available. A location diagram of the borings is enclosed.

This letter report presents the results of the exploration and our recommendations for the design of foundations for the proposed facility.

Subsurface Exploration Procedures

The soil borings were performed by our subcontractor Ground Breaking Exploration, Inc. A truck mounted power auger type drilling rig equipped with an automatic hammer was used for the drilling and sampling. Soil samples were obtained by the split barrel sampling procedures in accordance with ASTM specifications D-1586. In this procedure a sample is obtained by driving a heavy walled split barrel sampler 2 ft. long, 2 inch OD and 1.375 inch ID by a 140 pound hammer falling freely a distance of 30 inches. The number of blows required to drive the sampler for each 6 inch of penetration is recorded. The sum of the resistance values for the second and third penetration intervals is called the standard penetration resistance (SPT or N) value. This value gives an indication of the relative density of granular soils in place. To some extent it can also be used to estimate the consistency of cohesive soils. The soil samples so

obtained were classified by the drill crew and then placed in sealed glass jars for further examination and testing in the laboratory. Water level readings were also taken in the boreholes at the time of drilling and on completion. Thereafter the boreholes were backfilled with the soil cuttings and the surface was restored.

At the location of boring B-1 in the parking area a water infiltration test was performed by our subcontractor Construction Testing and Instrumentation, Inc. The testing was performed in accordance with Chicago Storm Water Ordinance Manual using the method approved by the City of Chicago Department of Water Management. A single ring infiltrometer method was used for the infiltration test. In this method a 10 inch diameter open cylinder 14 inches long is partially driven into the ground at the proposed test location with the bottom of the cylinder in fill soils below the existing pavement. The ring was filled with clean water and then readings were taken of the water depth over time. The testing was repeated 2 times by refilling the infiltration test cylinder. The results of the test are enclosed.

Laboratory Testing

In the laboratory each of the soil samples was tested for its natural moisture content. The cohesive soils were tested for their unconfined compressive strength by using a calibrated hand penetrometer. Each of the soil samples was examined by an experienced soil engineer and classified according to the Unified Soil Classification System. The group symbol according to this method of classification is shown in parentheses following the textural description of the soil on the boring logs. Based on an examination of the soils and a review of the test data, the soils were grouped into various strata as noted on the boring logs. However, the demarcation lines should be considered approximate because in situ the transition between the soil types is more gradual. All the laboratory test data and the field SPT values are shown on the boring logs opposite to each sampling interval.

Ground Surface Elevations

Ground surface elevations were taken at each of the boring locations and referenced to the Chicago City Datum (CCD). These elevations are shown on the top of each of the boring logs and are also shown at the strata changes. Ground surface is nearly level

Soil Conditions

The soil conditions encountered at each of the borings are shown on the enclosed boring logs. Average conditions may be described in terms of the following strata.

1. Fill

The near surface soil consisted of fill containing silty clay, some top soil, crushed stone or gravel and sand. At some locations the surface had asphaltic concrete pavement with crushed stone or gravel and sand layer underneath. The fill extended to a depth of 2.5 to 3 ft. below grade.

2. Brown and Gray Silty Clay

The fill soils were underlain by silty clay with a trace of sand and gravel extending to depths of 10 to 13 ft. below grade. The silty clay had a brown and gray color and consistency was generally very stiff except for certain samples which showed lower strength in the range of stiff. Lower strength soils were encountered at boring number B-3 and B-4. At B-3 the soil sample from 6 to 7.5 ft. depth indicated a minor petroleum odor.

3. Gray Silty Clay

Gray silty clay was encountered below the above described soils to depths of 22 to 24 ft. below grade. The consistency of the soil was mostly very stiff with compressive strengths of 2 to 3.5 tons per square foot.

4. Hard Silty Clay

Below the above described soils and extending to the end of borings at 30 ft. the soils encountered were hard silty clay, or clayey silt and occasionally very dense silt. These soils are commonly referred as hardpan in the Chicago area. The natural moisture content is low and the compressive strength is high which indicates very low compressibility.

Water Table Conditions

Ground water readings were taken in the boreholes at the time of drilling and on completion. All the boreholes were found to be dry. The soils encountered were low permeability silty clay soils through which ground water seeps very slowly. The boreholes were backfilled soon after the drilling for safety reasons and hence enough time was not available for the ground water to seep into the boreholes and equilibrate with the water table. Long term water level can usually be inferred from a change in the color of the soils from brown and gray to totally gray. The brown color of the soils is due to oxidation which necessarily occurs above the water table. Based on this hypothesis it is our opinion that the long term water table had been at a depth of 10 to 11 ft. below grade. Seasonal fluctuations in the water table and a higher water table following periods of precipitation should be anticipated.

Analysis and Recommendations

It is our understanding that the proposed structure will consist of a two story facility with a basement. The structure will have a steel framing with exterior cavity wall assembly consisting of masonry veneer with cold form steel framing back-up on a cavity wall assembly consisting of precast concrete panels with light gage steel framing back-up. The anticipated column grid will be 25 ft. by 25 ft. with a maximum anticipated interior column load of 170 kips. Continuous wall footing load is estimated to be in the range of 3 to 4 kips per foot. There will be 2 proposed parking areas, one just east of the present facility and one at a remote parking lot located at the corner of East 115th street and south Champlain Avenue. As mentioned earlier, soil boring number B-6 located in this remote facility could not be performed due to lack of access.

Foundations

For support of the proposed structure we recommend spread footing type foundations. It is anticipated that the foundations in the basement area will be located at a depth of 14 to 15 ft. below grade for a basement which is anticipated to be 12 ft. deep. The soil conditions are suitable for support of spread footing foundations. We recommend a net allowable design bearing pressure of 4,000 pounds per square foot for foundations located at these depths. We estimate settlement of less than 0.5 inch and differential settlement of less than 0.25 inch for foundations so designed and constructed on natural undisturbed soils.

If any portion of the structure is to be constructed at grade without a basement, it can also be supported on spread footing type foundations. The soil conditions are somewhat variable in strength at the normal footing depth. We recommend a design bearing pressure of 3,000 pounds per square foot for foundations in the area without a basement. The footings should be placed on the natural soil of adequate strength below the existing fill. Exterior foundations should be located at least 3.5 ft. below adjacent finished grade for protection against frost. Interior footings should be located at least 2 ft. below finished grade for providing adequate confinement.

Where unsuitable soils are encountered at the design footing levels the unsuitable soils should be removed down to the level of natural soil of adequate strength. Backfilling to the design footing level should consist of an approved inorganic material such as IDOT gradation CA-6 placed in 9 inch loose lifts and each lift compacted to 95% of ASTM D-1557 maximum density. The zone of over excavation and backfill should extend beyond the edges of the foundations by 6 inches for each 1 ft. thickness of fill below the foundation. Foundations placed on the compacted fill can also be designed for the same bearing pressure. For foundations located in the area without a basement we estimate settlement of less than ¾ inch and differential settlement of less than ⅜ inch.

The above given bearing pressures can be increased by 25% for transient loading conditions such as seismic or wind loading.

Modulus of Subgrade Reaction

For the design of foundations in the non basement area we recommend using a modulus of subgrade reaction of 100 kips per cubic foot. For the basement area foundations we recommend designing for a modulus of subgrade reaction of 150 kips per cubic foot.

Basement Walls

For design of basement walls we recommend a drainage system and linearly increasing lateral pressure of 45 pounds per square foot per foot of depth below finished grade. The backfill within a thickness of at least 2 ft. should consist of a clean granular material to facilitate drainage of any seepage water into the perimeter drainage system at the base of the wall.

In order to prevent the buildup of hydrostatic pressure on the basement walls a drainage system is required. This may consist of a perimeter drain located at footing level. The drain line should

be a perforated pipe with the perforations compatible with gradation of the granular backfill. A minimum of 6 inch of free draining granular material should be provided around the drain pipes to facilitate drainage. The drainage layer should also have an envelope of nonwoven geotextile to prevent migration of fine soils into the drainage layer and thus to prevent clogging of the drain pipe. The drain pipe should lead into suitably located sub-basins provided with automatic sump pumps for removal of seepage water.

We anticipate intermittent operation of the sump pumps in the normal times and with more frequency of operation during periods of precipitation and for some time following the precipitation. The natural soils are of very low permeability and so seepage water is anticipated to be relatively minor.

Ground surface adjacent to the basement walls should be sloped away from the walls to minimize infiltration into the drainage system. The top 2 ft. of the backfill should consist of a low permeability material such as inorganic silty clay to minimize infiltration of surface water into the drainage system. The basement wall should be damp proofed or water proofed and construction joints provided with water stops.

Backfill should not be placed until the walls are restrained by the floor slab and the ground level floor. Backfill should be placed in lifts of 12 inches or less, uniformly along the basement walls and gently compacted to 90% of standard proctor density. Over compaction will increase the lateral pressure against the walls.

Floor Slab Support

The natural soils at the basement level will provide adequate support for the basement slab. For removal of any seepage water we recommend interior perimeter drains and drains under the floor slab at a spacing of 25 to 30 ft. An 8 inch layer of free draining granular materials should be provided below the floor slab in which the drain lines should be located. The drain lines should lead into suitably located sub-basins from where the seepage water can be pumped out. The natural very stiff silty clay subgrade and overlying granular layer for support of the floor slab will provide modulus of subgrade reaction of 150 kips per cubic foot.

For support of the floor slab in the non basement areas, the existing fill soils and any other unsuitable soils should be removed. The exposed surface should then be proof rolled with a fully loaded truck of 20 ton weight to detect the existence of any unsuitable or weak soils below the exposed surface. Proof rolling can be avoided if the surface is observed by an experienced soil engineer to confirm that all the unsuitable soils have been removed. In any event if unsuitable soils are encountered they should be removed and backfilled with crushed stone or gravel such as IDOT gradation CA-6 placed in 9 inch loose lifts and each lift compacted to 90% of ASTM D-1557 maximum density. The same backfilling procedures should be used in the over excavated areas to attain the design subgrade for the floor slab. A 6 inch layer of clean crushed stone such as IDOT gradation CA-7 should be provided below the floor slab to provide a more uniform support and also to act as a capillary cut off layer and thus the minimize dampness in the floor slab. The floor slab should be provided with some reinforcement to prevent cracking from thermal stresses and minor differential settlement.

Parking Areas

Infiltration tests performed in the area of boring at the location of boring B-1 indicated infiltration rate of 2.4 inches per hour. This reflects the condition of relatively porous fill soils below the existing pavement at the test depth. The natural soils below the fill are silty clays of low permeability. A lower infiltration rate is anticipated for the clayey soils. For porous base course below the proposed pavement we recommend using infiltration rate of 1 inch per hour. Once the base course is saturated, infiltration through the underlying clayey soil will control. We recommend using a lower rate of 0.1 inch per hour through the natural soil..

For support of the pavement, the existing fill should be stripped to at least 12 inches below the existing grade. The exposed surface should then be proof rolled with a fully loaded tandem axle dump truck of 20 ton weight covering the entire area in 2 perpendicular directions. The purpose of proof rolling is to compact the subgrade and also to detect the presence of any loose, weak and soft soils or hard objects. Areas of loose and weak spots will be indicated by the sponginess of the subgrade and weaving of the wheels of the proof rolling vehicle. Hard areas will also be evident by the obstructions. These areas should be dug out and replaced with an approved inorganic material. A suitable material is IDOT gradation CA-6, placed in 9 inch loose lifts and compacted to 90% of ASTM D-1557 maximum density. The compacted subgrade will provide a California Bearing Ratio of 3.0 or better.

Pavement in the car parking areas should consist of 3 inches of asphaltic concrete over 10 inches of crushed stone base course. In the driveway areas the crushed stone base course should be increased to 12 inches and the asphaltic concrete surface to 4 inches. The pavement materials should conform to IDOT Standard Specifications. The surface should be adequately sloped for drainage of surface water into suitably located catch basins.

The design of the porous pavement, if desired, should be performed by the civil engineer.

Construction Problems and Procedures

Excavation for the basement areas will require a side slope of 1 horizontal to 1 vertical through the existing very stiff silty clays. If space is not available for sloping then some kind of sheeting and shoring should be provided. Similar slope should be provided for excavations for shallow footings. Ground water seepage is not anticipated for the proposed foundation excavations and even for the basement excavation. For removal of minor seepage which may occur at the lower levels and for removal of surface water due to precipitation, ordinary sump pumps can be utilized.

Some obstructions from existing and previous construction should be anticipated. No other unusual construction problems are anticipated.

General Qualifications

The recommendations presented above are based on our understanding of the proposed project and a review of the test data from the soil borings. Variations in conditions away from the borings should be anticipated. If significant variations are observed we should be informed so that we may review these conditions and revise or modify our recommendations as appropriate. The scope of our services does not include environmental aspects or presence or otherwise of contaminants or hazardous materials in the soil.

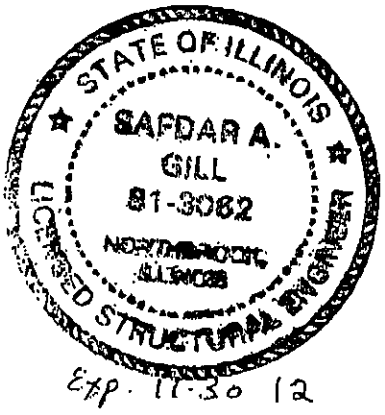
We appreciate this opportunity to be of service. If there are any questions on this letter report or if you need any additional information please do not hesitate to contact us.

Very truly yours,

GROUND ENGINEERING CONSULTANTS, INC.

Safdar A. Gill

Safdar A. Gill, Ph. D., P.E.
Consultant



Project: Chicago Family Health Center
Address: 115th Street; between St. Lawrence Avenue and Forestville Avenue in Chicago, Illinois

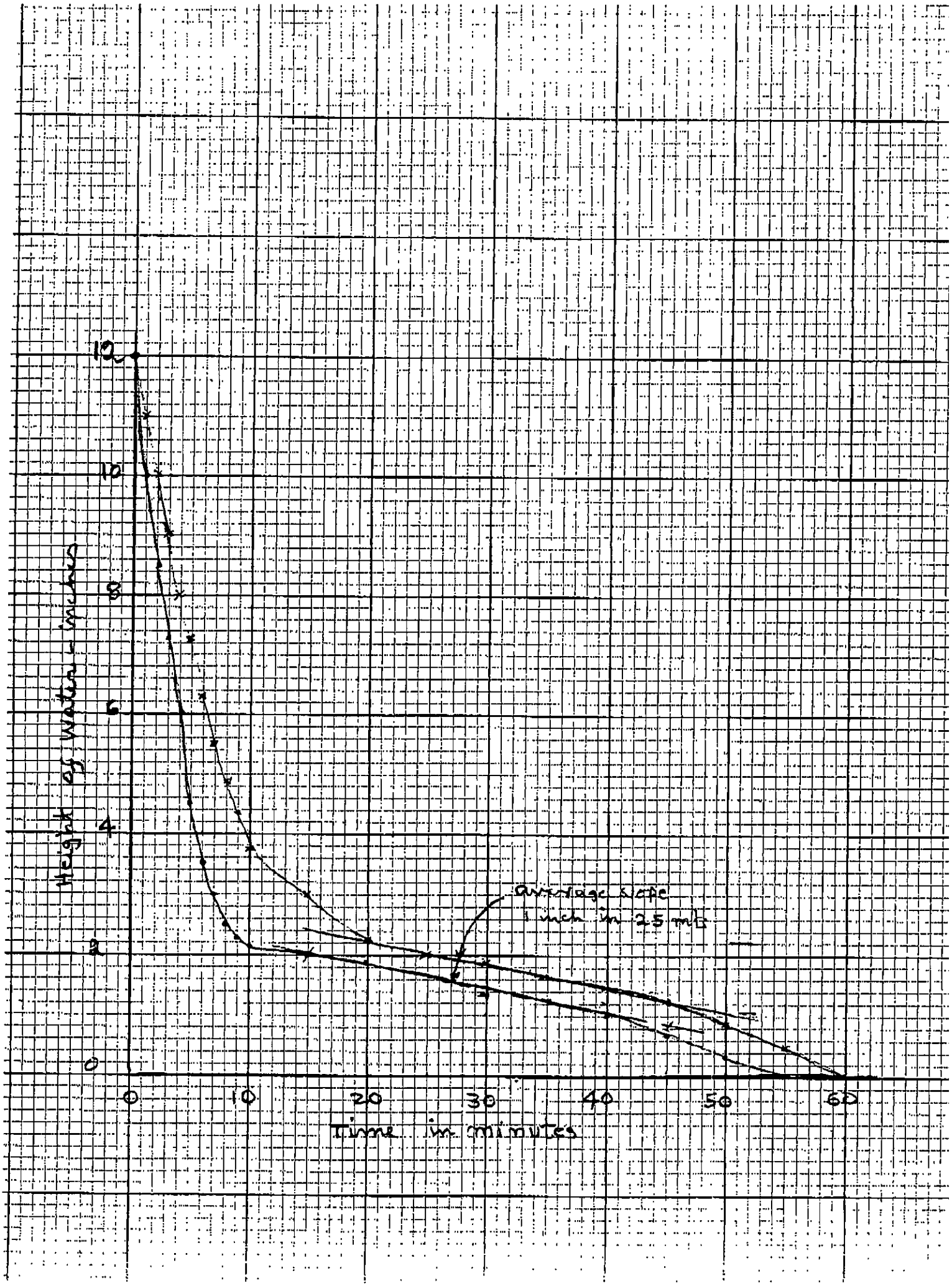
Date: June 20, 2011

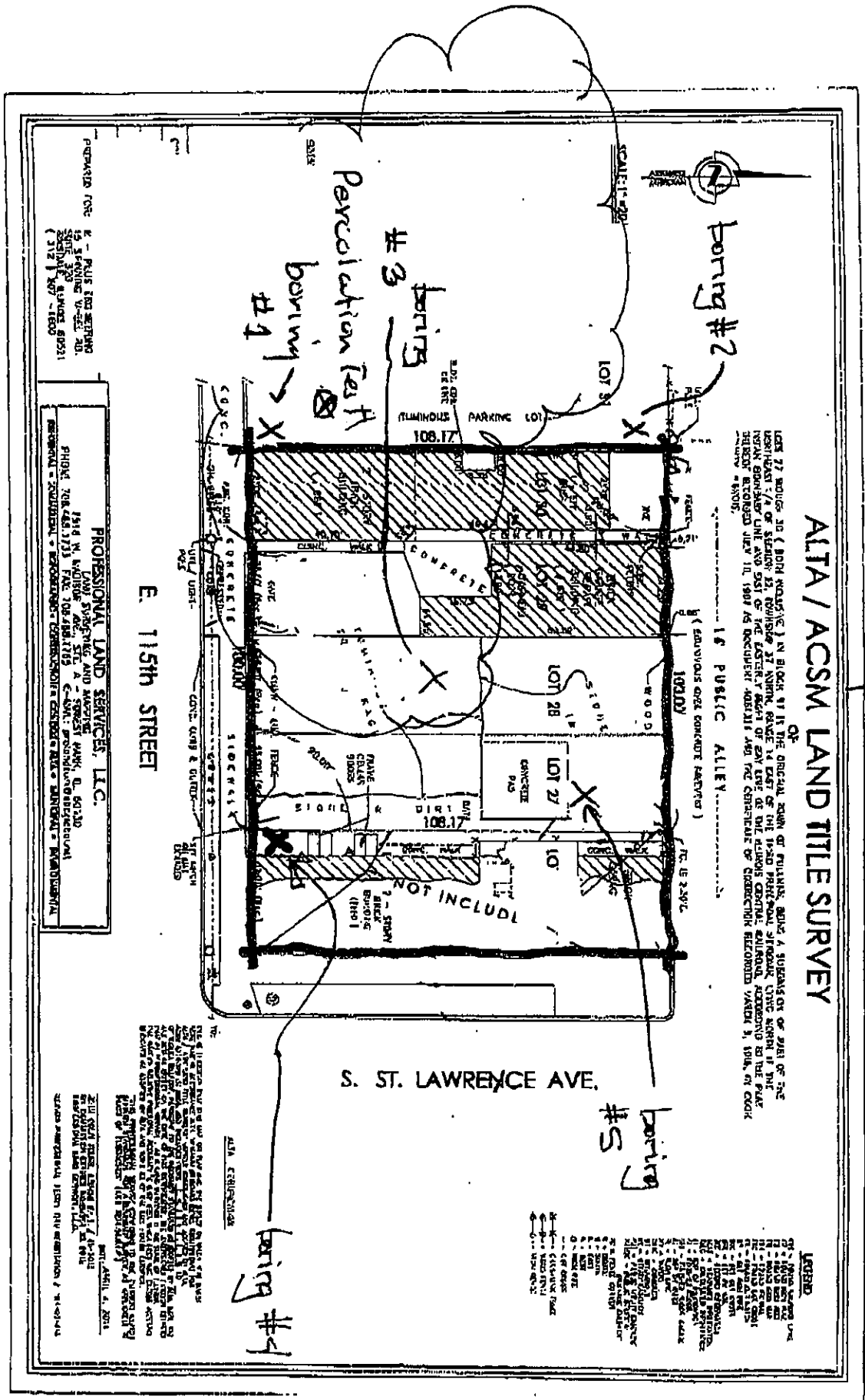
Percolation Test for Future Parking Lot

Test Number 1		Test Number 2	
TIME/Min.	**Drop in Water**	**TIME/Min.**	**Drop in Water**
9:30am	12"	10:30am	12"
9:31	10"	10:31	11"
9:32	8.5"	10:32	10"
9:33	7.25"	10:33	9"
9:34	6"	10:34	8"
9:35	4.5"	10:35	7.25"
9:36	3.5"	10:36	6.25"
9:37	3"	10:37	5.5"
9:38	2.5"	10:38	4.875"
9:39	2.25"	10:39	4.375"
9:40	2.125"	10:40	3.75"
9:45	2"	10:45	3"
9:50	1.875"	10:50	2.25"
9:55	1.625"	10:55	2"
10:00	1.375"	11:00	1.875"
10:05	1.25"	11:05	1.626"
10:10	1"	11:10	1.5"
10:15	0.625"	11:15	1.25"
10:20	0.375"	11:20	0.875"
10:25	0"	11:25	0.5"
		11:30	0"

Both holes measured 10-inches in diameter and 4-inches deep below the ground surface.

Locations of Percolation Tests:
Test #1 – From existing 2-story Brick Bldg- West12'CFHC Existing Parking Lot SEC
Test #2 - Same Location


Height of water - inches
12
10
8
6
4
2
0
0
10
20
30
40
50
60
Time in minutes
average slope
1 inch in 2.5 min


CF14C Boring Location dia
ALTA / ACSM LAND TITLE SURVEY
Percolation Test
#3
boring
#1
boring #2
boring #4
boring #5
E. 115th STREET
S. ST. LAWRENCE AVE.
NOT INCLUDED
PROFESSIONAL LAND SERVICES, LLC.
LOT 27
LOT 28
ALUMINUM
PARKING LOT
108.17
108.00
CONCRETE
WOOD
FRAME GARAGE

GEC Job #

LOG OF BORING NO. B-1

SHEET 1 OF 1

CLIENT: SMNG-A Architects Ltd.

PROJECT: Chicago Family Health Center - Pullman

COORDINATES:

LOCATION: 556 East 115th Street Chicago, Illinois

DEPTH BELOW GROUND SURFACE	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	% RECOVERY	GRAPHIC LOG	DESCRIPTION OF MATERIAL	Blows / 6 inches
						GROUND SURFACE ELEVATION (CCD) 10.39 CCD	
	S-1	SS		50		1.0 — 7 inches asphalt over sand & gravel, moist, (FILL)	
						9.4 — Silty clay, trace topsoil, sand, & gravel, dark brown, stiff, (FILL)	
						3.0 — 7.4 — Silty clay, trace sand & gravel, brown & gray, very stiff, silt seam at 9 feet, (CL)	
5	S-2	SS		100			
	S-3	SS		89			
10	S-4	SS		100		10.0 — 0.4 — End Of Boring	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.2

CALIBRATED PENETROMETER TONS/FT.2

1 2 3 4 5 6+

WATER ● CONTENT %

STANDARD "N" PENETRATION BLOWS/FT.

10 20 30 40 50 60+

WATER LEVEL OBSERVATIONS

W.L.	Dry	▽
W.L.		▼
W.L.		▼

Ground Engineering Consultants, Inc.
350 Pfingsten Road, Suite 106
Northbrook, Illinois 60062
Tel: (847) 559-0085 Fax: (847) 559-0181

BORING STARTED	6/20/11
BORING COMPLETED	6/20/11
DRILLING COMPANY	FOREMAN GS
Groundbreaking	APPR. BY SG

LOG OF BORING CHICAGO FAMILY HEALTH CENTER.GPJ

GEC Job #

LOG OF BORING NO. B-2

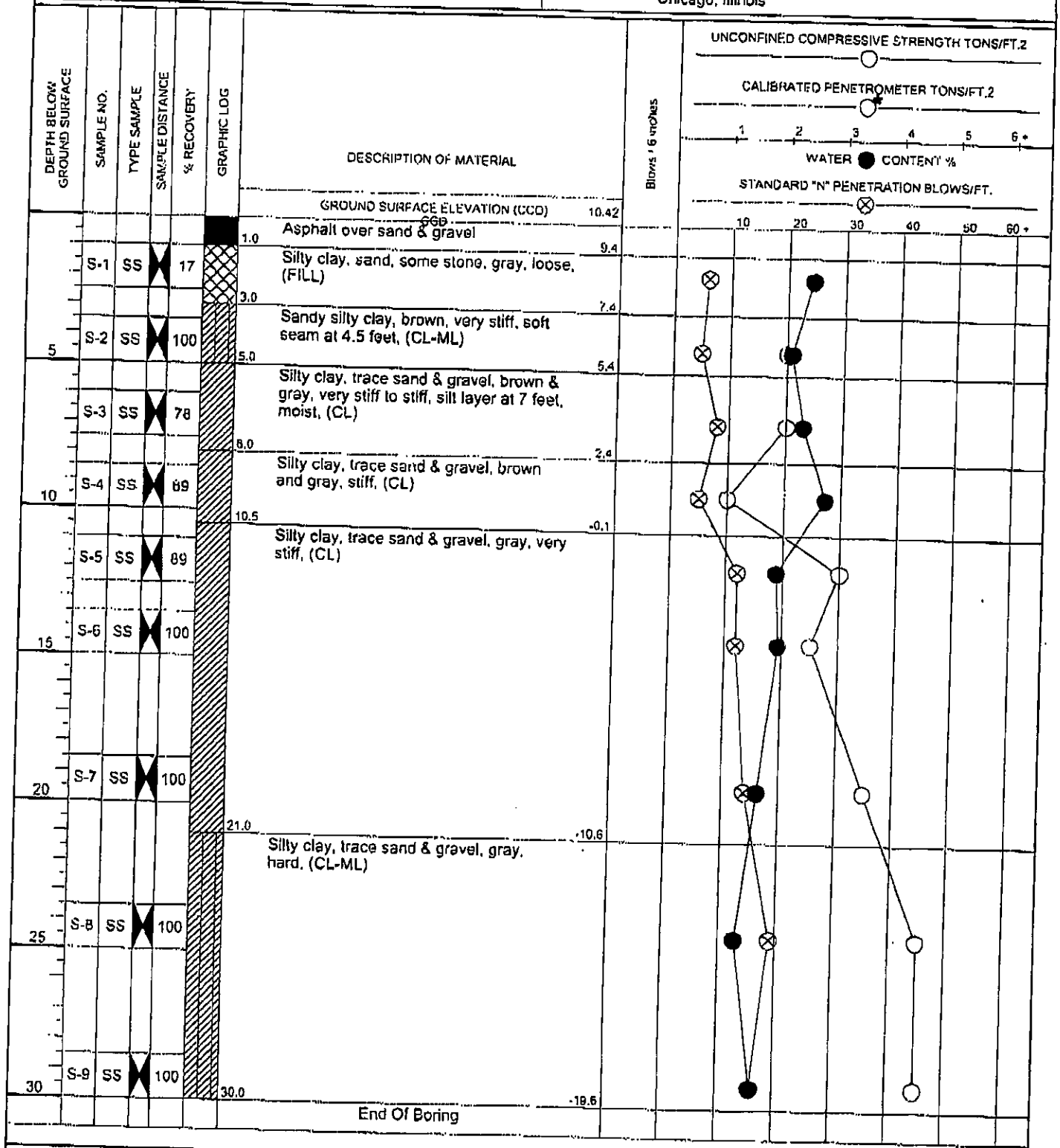
SHEET 1 OF 1

CLIENT: SMNG-A Architects Ltd.

PROJECT: Chicago Family Health Center - Pullman

COORDINATES:

LOCATION: 556 East 115th Street Chicago, Illinois



WATER LEVEL OBSERVATIONS		
W.L.	Dry	▽
W.L.		▼
W.L.		▼

Ground Engineering Consultants, Inc.

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BORING STARTED	6/20/11
BORING COMPLETED	6/20/11
DRILLING COMPANY	FOREMAN GS
Groundbreaking	APPR. BY SG

LOG OF BORING CHICAGO FAMILY HEALTH CENTER.GPJ

GEC Job #

LOG OF BORING NO. B-3

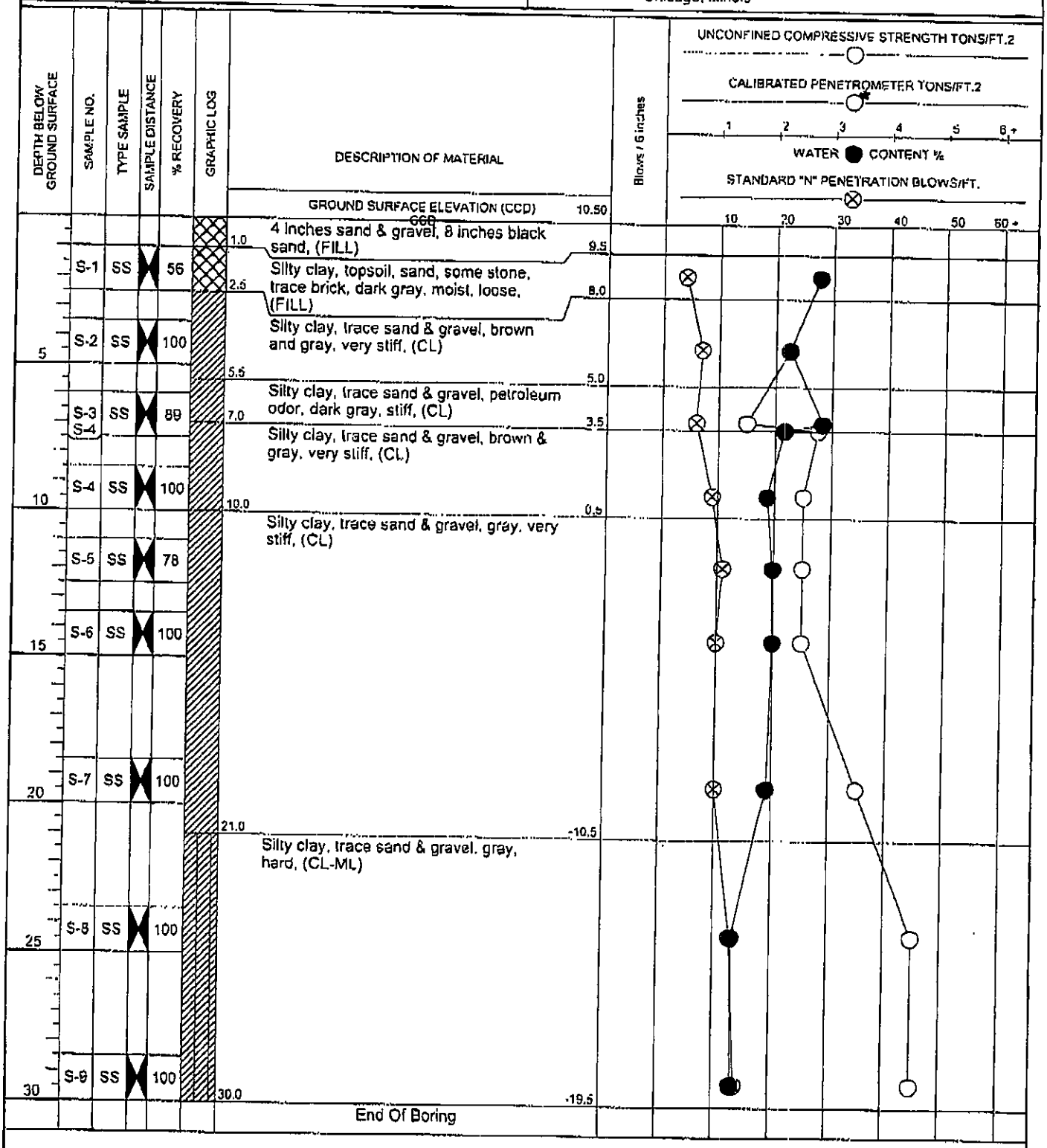
SHEET 1 OF 1

CLIENT: SMNG-A Architects Ltd.

PROJECT: Chicago Family Health Center - Pullman

COORDINATES:

LOCATION: 556 East 115th Street
Chicago, Illinois



WATER LEVEL OBSERVATIONS		
W.L.	Dry	▽
W.L.		▼
W.L.		▼

Ground Engineering Consultants, Inc.

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Tel: (847) 559-0085 Fax: (847) 559-0181

BORING STARTED	6/20/11	
BORING COMPLETED	6/20/11	
DRILLING COMPANY	FOREMAN	GS
Groundbreaking	APPR. BY	SG

LOG OF BORING CHICAGO FAMILY HEALTH CENTER.GPJ

GEC Job #

LOG OF BORING NO. B-4

SHEET 1 OF 1

CLIENT: SMNG-A Architects Ltd.

PROJECT: Chicago Family Health Center - Pullman

COORDINATES:

LOCATION: 556 East 115th Street Chicago, Illinois

DEPTH BELOW GROUND SURFACE	SAMPLE NO.	TYPE SAMPLE	SAMPLE DISTANCE	% RECOVERY	GRAPHIC LOG	DESCRIPTION OF MATERIAL	Blows / 6 inches
						GROUND SURFACE ELEVATION (CCD) 10.45	
						3 inches asphalt, 3 inches stone, 6 inches sand & gravel, (FILL) 1.0 / 9.5	
	S-1	SS		5		Silty clay and topsoil, dark brown, (FILL) 3.0 / 7.5	
5	S-2	SS		100		Silty clay, trace sand & gravel, brown & gray, stiff, (CL-ML) 5.0 / 5.5	
	S-3	SS		89		Silty clay, trace sand & gravel, brown & gray, very stiff, (CL)	
10	S-4	SS		100			
	S-5	SS		100		13.0 / -2.6	
15	S-6	SS		100		Silty clay, trace sand & gravel, gray, stiff, (CL) 15.0 / -4.6	
						Silty clay, trace sand & gravel, gray, very stiff, (CL)	
20	S-7	SS		100		22.0 / -11.6	
						Silt, trace clay & sand, gray, dry, medium dense, (ML)	
25	S-8	SS		100		27.0 / -16.6	
						Clayey silt, trace sand & gravel, gray, hard, (ML-CL)	
30	S-9	SS		100		30.0 / -19.6	
						End Of Boring	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.2

CALIBRATED PENETROMETER TONS/FT.2

1 2 3 4 5 6+

WATER ● CONTENT %

STANDARD "N" PENETRATION BLOWS/FT.

10 20 30 40 50 60+

WATER LEVEL OBSERVATIONS

W.L.	Dry	▽
W.L.		▼
W.L.		▼

Ground Engineering Consultants, Inc.

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BORING STARTED	6/20/11	
BORING COMPLETED	6/20/11	
DRILLING COMPANY	FOREMAN	GS
Groundbreaking	APPR. BY	SG

LOG OF BORING CHICAGO FAMILY HEALTH CENTER.GPJ

GEC Job #

LOG OF BORING NO. B-5

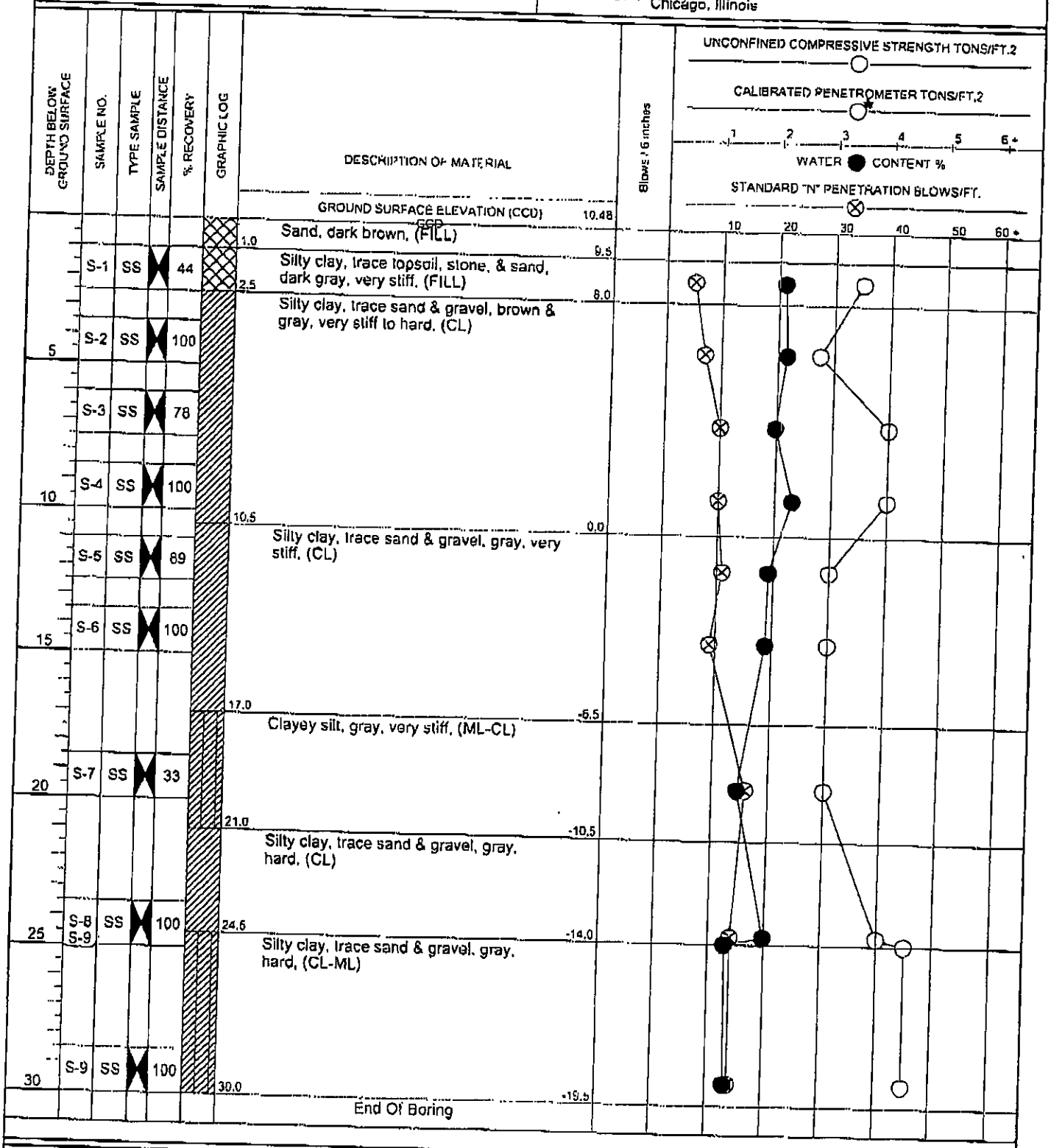
SHEET 1 OF 1

CLIENT: SMNG-A Architects Ltd.

PROJECT: Chicago Family Health Center - Pullman

COORDINATES:

LOCATION: 556 East 115th Street
Chicago, Illinois



WATER LEVEL OBSERVATIONS		
W.L.	Dry	▽
W.L.		▼
W.L.		▼

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BORING STARTED	6/20/11
BORING COMPLETED	6/20/11
DRILLING COMPANY	FOREMAN GS
Groundbreaking	APPR. BY SG

SECTION 312000

EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating and backfilling for demolition operations.

1.2 DEFINITIONS

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.3 QUALITY ASSURANCE

A. Preexcavation Conference: Prior to commencing excavation work, schedule conference with Architect and Engineer.

1.4 PROJECT CONDITIONS

A. Utility Locator Service: Notify City of Chicago's Utility Alert Network, DIGGER at (312) 744-7000 before beginning earth moving operations.

B. Do not commence earth moving operations until erosion control measures are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
   1. All soils materials for usage on site shall conform to the Tiered Approach to Corrective Action Objectives (TACO Tier 1).

B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter. Satisfactory soils shall be approved by Engineer prior to use or installation. Refer to "Subsurface Exploration and Geotechnical Engineering Report" by GEC, June 28, 2011 for onsite soils information and recommendations.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.

   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

2. Refer to "Subsurface Exploration and Geotechnical Engineering Report" by GEC, June 28, 2011 for onsite soils information and recommendations.

3. Refer to "Phase I Environmental Site Assessment" Report by K-Plus Engineering, conducted April 18, 2011 for on site soils information and recommendations.

4. Refer to "Limited Phase II Environmental Site Assessment – Subsurface Investigation" report by K-Plus Engineering, conducted April 20, 2011 for on site soils information and recommendations.

5. Environmentally contaminated soil materials as identified in the K-Plus Engineering reports or as directed by the testing agency Engineer shall be segregated from geotechnical unsatisfactory soils and stockpiled for testing and off-site dispostal.

D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve. Conform to IDOT-SSRBC Section 1003 and 1004 for Fine and Coarse Aggregate material. Material gradation as specified on plans.

E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; Conform to IDOT-SSRBC CA-6 gradation, or otherwise noted.

F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve. Conform to IDOT-SSRBC Section 1003 and 1004 for Fine and Coarse Aggregate material. Engineered Fill shall be review and subject to approval by Engineer prior to use

G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; Refer to IDOT gradations. Bedding and backfill material for utilities shall conform to Chicago Department of Transportation, Chicago Department of Water, and all applicable utility agency standards.

H. Drainage Course: Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; Coarse-aggregate grading size IDOT CA-7 or approved equal as reviewed by engineer.

2.2 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored to comply with local practice or requirements of authorities having jurisdiction-reference DIGGER.

B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is

buried up to 30 inches deep; colored to comply with local practice or requirements of authorities having jurisdiction.

C. Geotextile Fabric: Tencate Mirafi 140N or approved equal, or as specified on plans.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.

B. Protect and maintain erosion and sedimentation controls during earth moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 EXCAVATION AND BACKFILL FOR DEMOLITION OPERATIONS

A. Excavate all underground concrete footing, foundations, basements and remnants to allow for complete structure removal and demolition. Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material and engineered fill as indicated for base, subbase and soil remediation.
3. Under steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
5. Under footings and foundations, use engineered fill.

3.4 SUBGRADE INSPECTION

A. Proof-roll subgrade with a pneumatic-tired dump truck to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

B. For areas not accessible to proof-rolling, a licensed Geotechnical Engineer shall perform alternative soil bearing testing and/or validate and approve the subgrade compaction and conditions prior to construction of pavement, slabs, curbs, or any other structure above said subgrade.

C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.5 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 3500 psi may be used when approved by Architect.

1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.6 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations.
2. Stockpile environmentally contaminated soils on polyethylene sheet. Cover stockpile with a layer of polyethylene sheet. Secure cover layer to resist wind.

a. Polyethylene sheet: ASTM D 4397,10 mils (0.25 mm) thick, with maximum permeance rating of 0.13 perm (7.5 ng/Pa x s x sq. m).

3.7 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.8 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under walks and pavements, use satisfactory soil material and engineered fill as indicated for base, subbase and soil remediation.

3.9 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.10 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to Modified Proctor Method:

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under walkways, scarify and recompact top 12 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.
3. Under turf or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 95 percent.

3.11 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

4. For ADA accessible routes, tolerances are subject to the standards set forth by the agencies with jurisdiction.

3.12 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.13 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.14 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property in conformance with Illinois regulations pertaining to disposal of Clean Construction or Demolition Debris (35 IAC Part 1100).

B. Surplus soil and waste that does not meet the criteria for disposal as Clean Construction or Demolition Debris as well as any identified environmentally contaminated waste shall be disposed of either as special waste or generator certified non-special waste (35 IAC Part 808) at a licensed off-site facility.

END OF SECTION 312000