

CASE STUDY



60 STELCOR PILES FOR 4 STORY HOUSING UNITS IN ASTORIA, NY

GENERAL CONTRACTOR:

GKC Industries
Port Washington, NY

INSTALLER:

Rich Anastasio/Procomm Systems
Phillipsburg, NJ

STRUCTURAL ENGINEER:

Wexler Associates
New York, NY

ARCHITECT:

PM Architecture
New York, NY

LOADS:

100 kips compression

SPECIFICATIONS:

STELCOR 1200
14" tip or drive plate
12" corrugated grout column
9" solid grout column
8" reverse auger
5.5" steel core
.361 wall thickness 80 ksi

SOILS + EMBEDMENT DEPTH:

25'

TIME FRAME:

6 days



TESTED TO 100 TON ULTIMATE WITH ONLY .300" OF MOVEMENT AT FULL TEST LOAD.



OVERVIEW:

A new construction 5 story residential building in Astoria NY. Helical piles were originally specified for this project.

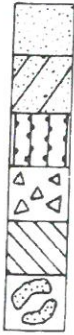
CHALLENGE:

The developer faced several challenges at this site. The biggest concern was the high water tables present. A redesign was issued and the loading changed and helical piles were rejected due to the high load restrictions placed on helical piles in the NYC metro area

SOLUTION:

IDEAL teamed up with Rich Anastasio to offer STELCOR Micropiles as an alternate foundation solution. STELCOR Micropiles were a perfect fit not only from an engineering perspective, they were much more cost-effective compared to alternative piles. After a 48 hr load test at full test load, there was essentially ZERO MOVEMENT - .300" to be technical. Engineers on site told the installer they had never seen a test that went that well.

**SUBSOIL
INVESTIGATIONS**



SOIL MECHANICS DRILLING CORP.

3770 MERRICK ROAD • SEAFORD, L. I., NEW YORK 11783
(516) 221-2333 • FAX (516) 221-0254

April 1, 2015

GKC Industries, Inc.
22 Willowdale Avenue
Port Washington, NY 11050
Attn: Gary K. Constantopes
Via E-Mail: gconstantopes@gkcindustries.com

Re: 30-83 23rd Street
Astoria, NY
Job #15-155

Gentlemen:

Forwarded herewith is the boring log for drilling work completed recently at the above-referenced site. Our investigation consisted of the drilling of one (1) test boring at the location shown on our Boring Location Plan.

The boring was advanced using a truck mounted drill rig and hollow stem auger casing. Please note that sample recovery was obtained using a CME automatic trip hammer and a standard 2- inch split spoon sampler. The number of blows required to advance the samples each 6- inch increment were recorded and are shown on our boring logs, along with a written description of the recovered soil sample per our geologist's visual identification of same. The CME automatic hammer operates with an efficiency of approximately 90%. The original conventional use of rope, cathead and drop weight, on the other hand, operates with an efficiency of approximately 60%. As a consequence, the standard penetration test results obtained using CME auto-hammer are on the order of two-thirds the value that would have been obtained had the original rope and cathead method been used. This is significant if you are using design charts for soil strength parameters based on historical data associated with the rope and cathead method. If so, you should adjust our data accordingly.

Our investigation revealed that the area drilled was blanketed by a loose soil fill extending down to 7 feet below existing grade. The fill was in turn underlain by a soft layer of silty clay overlying a soft silty sand formation. These upper materials were in turn underlain by a loose to moderately dense or moderately stiff silty sands and silt layers extending down to approximately 18 feet below existing grade. These were followed by a dense to very dense sand formation extending down to 30 feet, at which point we encountered auger refusal due most likely to the presence of bedrock.

Ground water was encountered at a depth of 6' 2" below existing grade at the time the work was done and was visibly evident in the open excavation previously dug for the proposed building.

TEST BORINGS • GROUND WATER DETERMINATIONS • FOUNDATION RECOMMENDATIONS • HOLLOW STEM AUGER BORINGS
LABORATORY ANALYSES • CONTROLLED LANDFILL • DIAMOND CORE DRILLING • SAND & GRAVEL PROSPECTING
BEARING VALUES • WELL POINT INSTALLATIONS • ENGINEERING SUPERVISION • PERCOLATION TESTS
SANITARY INVESTIGATIONS • UNDISTURBED SAMPLING • TEST PITS • TOP SOIL ANALYSES

GKC Industries, Inc.
Attn: Gary K. Constantopes

April 1, 2015
Page 2

The soil profile generated by this investigation best fits that of Site Class "D."

Liquefaction at this site is possible and, therefore, should be a design consideration.

Based on all of the above, we recommend that the proposed building be supported on deep foundations ie. piles installed through the fill, clay and silt layers into the underlying moderately dense to dense sand formation or down to bedrock. We do not recommend piles that have to be dynamically installed ie. driven with an impact hammer, as doing so is likely to cause vibrations that may in turn cause damage to the adjoining property and/or structures.

This leaves you with the following alternatives: Helical Piles, Auger Cast Piles, or Mini Piles. All of the above are installed using rotary drilling techniques and generate little to no vibrations.

If Helical Piles are used, they can be installed to capacities of 10 tons each without load testing. They can, however, achieve capacities considerably higher ie. 25 to 30 tons or more, but their use at these higher capacities would require that the design capacity be confirmed by performing at least one load test. That can cost on the order of \$15,000 to \$25,000.

The use of Auger Cast Piles would require load testing regardless of capacity. However, these can readily achieve capacities of 50 tons or more. Again, a load test would likely cost on the order of \$20,000 to \$30,000.

The Mini Piles can be installed to capacities of 50 tons or more; and like the Auger Cast Piles, their capacities would need to be confirmed by a load test. Again, cost would be in the range of \$20,000 to \$30,000. They can also be installed and drilled into the bedrock where they can achieve even higher capacities. If rock sockets are installed, the load test can be waived provided the sockets are visually inspected with a camera.

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GKC Industries, Inc.
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April 1, 2015
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Of the three, we believe the Helical Pile solution would be the least expensive. We recommend that the preliminary design be done limiting the pile capacity to 10 tons followed by a comparison of a similar design based on perhaps 25 or 30 ton capacity helical piles. The purpose of this examination would be to determine whether using fewer of the high capacity piles would offset the cost of the greater number of 10-ton piles to pay for the pile load test.

Consideration should also be given to any possible increased cost of the foundation substructure because of potential differences in quantities of concrete and reinforcing steel needed to accommodate the higher pile load and greater spans. In effect, we are recommending that a cost comparison be made not just between pile type and pile capacities, but rather between the overall foundation costs to determine the least expensive solution to support the proposed building. Minimum dimensions for the recommended piles would be 3½ inch diameter pipe shaft for the Helical Piles, 12 inch diameter concrete shafts for the Auger Cast Piles, and 7 inch diameter pipe shafts for the Mini Piles.

Prior to the start of pile installation, the existing excavation would have to be dewatered and backfilled with suitable material to support construction equipment and provide a base for the proposed foundation construction. We recommend that you consider placing road stabilization fabric such as Mirafi 600X. You can then place clean recycled concrete over the fabric to bring the subgrade up to or above the water table. The stabilization fabric will serve to prevent the RCA from being “swallowed up” by the existing soft subgrade.

Soil samples recovered during drilling operations will be stored in our lab for a period of 30 days, after which they will be destroyed. During this period we will deliver these samples to any prescribed location upon request.

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GKC Industries, Inc.
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April 1, 2015
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If after you examine the enclosed you have any further questions, please feel free to call and discuss them with us.

Billing is enclosed.

Very truly yours,

SOIL MECHANICS DRILLING CORP.

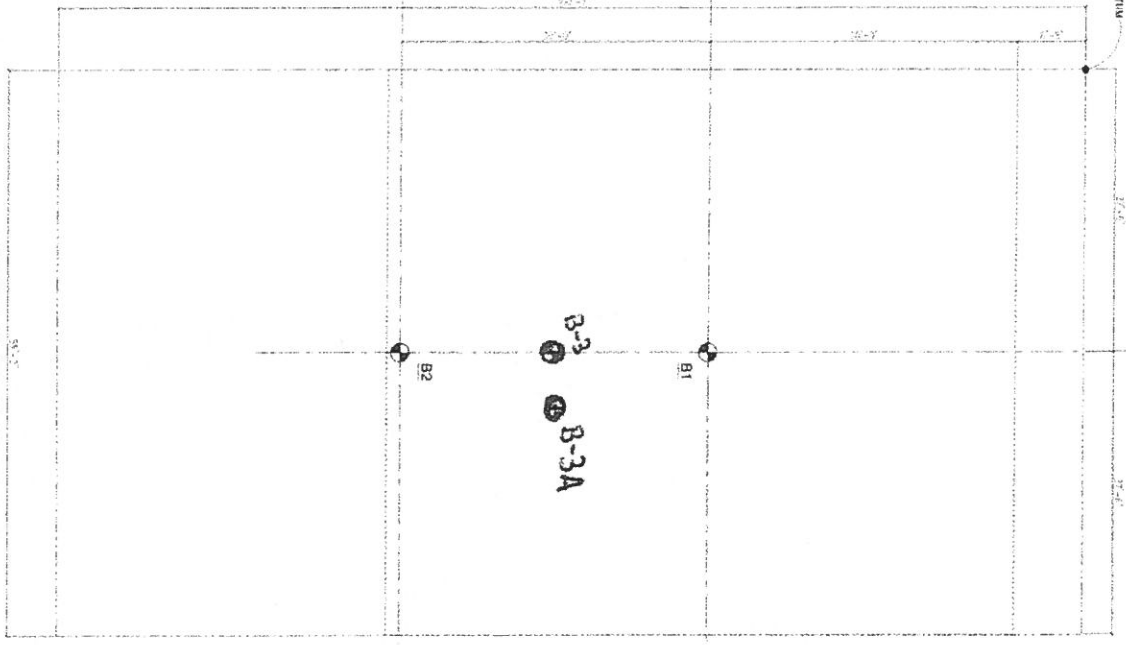


Vincent Nantista, P.E.
Vice President

VN/sbg
Enclosures

23rd STREET

DATE



BORING INVESTIGATION PLAN
SCALE: 1/8"=1'-0"

BORING SPECIFICATIONS

GENERAL

- A. All borings shall comply with all applicable codes and regulations.
- B. The office of N.Y. WELLER, P.E., shall be informed by phone, if the job progress and/or unexpected or special conditions arise or involving equipment from use.
- C. Soil samples shall be retained for at least six (6) months on project unless further foundations are recommended; twelve (12) months on projects where deep foundations are recommended. All testing periods may be acceptable. If durations from the specified periods are proposed, their proposed periods and date they submitted must be approved with the specified periods.
- D. Indicate the time required to complete the soil borings, testing and final report including authorization to proceed.
- E. Total time of every one (1) calendar day or less is preferred.
- F. At the end of the agreed upon time period, submit to N.Y. WELLER, P.E., six (6) copies of the report including block line prints of all logs, test logs, logs, logs, etc. on 8 1/2" sheets.
- G. All reports of all proposed borings shall be used in which the work is performed.
- H. Evidence of suitable levels of Professional Liability, General Liability and Workers' Compensation insurance coverage is required before commencement of work.

II. INSTRUMENTS

- A. Provide the boring logs as the Boring Plan (BP).
- B. Boring logs shall be recorded on a grid system that (10) feet of ground bearing material is encountered (20) feet per foot and one (1) inch (10) inches (10) feet) unless critical is encountered at a shallower depth, in which case borings shall be terminated minimum 5 feet into rock. If no bearing material has been encountered at a depth (20) feet, borings should be extended to suitable material after consulting N.Y. WELLER, P.E., P.C. office for recommendations.
- C. Soil borings shall be as follows:
 - 1. In granular soils, borings shall be installed penetration test employing a 1 1/2" diameter boring bar for all of 30" and using a 2" outside diameter.
 - 2. In cohesive soils, installed penetration test for ASTM D-1586 or this shall use sampling of soils, ASTM D-1587 may be employed.
 - D. Soil samples shall be taken at 2' intervals up to 10' depth and at 3' intervals or at each change of soil condition.
 - E. Indicator is furnished to provide the water table in all holes at the time of boring and hourly from 1201 hours later.
 - F. Where fill is encountered, it shall be described in great detail, including such information as approximate amount of organic material, gravel, wood or other debris, sand, silt or soil composition, amount and type of debris, water content, etc. to be removed, etc.
 - G. Where rock is encountered, rock core samples of a minimum 1 1/2" diameter and minimum 3' of length shall be obtained, recovery must be 100%.
 - H. The type of rock shall be described in detail, including such information as approximate amount and type of debris, water content, etc. to be removed, etc.
 - I. The soil boring contractor shall have clearly identifiable, color, and permanent markers in the ground at the location of each boring.

III. REPORT

- A. The report shall include a statement describing the field investigation technique, include a commentary on the use of ground as well as on the subsurface conditions.
- B. Recommendations regarding type and depth of foundation, bearing capacity, both on natural deposits and on engineered fill, jawed fill, etc., shall be provided, unless otherwise specified.
- C. Test data shall be furnished in tabular form, including such information as approximate amount of organic material, gravel, wood or other debris, sand, silt or soil composition, amount and type of debris, water content, etc. to be removed, etc.
- D. Test data shall be furnished in tabular form, including such information as approximate amount of organic material, gravel, wood or other debris, sand, silt or soil composition, amount and type of debris, water content, etc. to be removed, etc.
- E. Final boring logs shall give a detailed description of the various soil strata and they shall include the ground level on the Uniform Soil Classification System.
- F. Recommended specifications for material and placement of any fills, etc. including granular and cohesive materials. Estimated cost per cubic yard included on these items.
- G. Estimated cost and differential settlement.
- H. Provide an indication of how subsurface conditions are to be measured during the construction, remain at the proposed subgrade elevation and when recommended procedures should be taken to correct possible problems.
- I. At the request of the Owner, foundation plans, supplemental reports and conclusions for any area not sufficiently defined in the original report. These may include, but not limited to, the following:
 - 1. Additional recommendations regarding foundation design and construction.
 - 2. Additional recommendations regarding foundation design and construction.
 - 3. Additional recommendations regarding foundation design and construction.
 - 4. Additional recommendations regarding foundation design and construction.
- J. At the request of the Owner, foundation plans, supplemental reports and conclusions for any area not sufficiently defined in the original report. These may include, but not limited to, the following:
 - 1. Additional recommendations regarding foundation design and construction.
 - 2. Additional recommendations regarding foundation design and construction.
 - 3. Additional recommendations regarding foundation design and construction.
 - 4. Additional recommendations regarding foundation design and construction.
- K. NEW YORK CITY (D.M.A.) All work shall be subject to New York City, Council inspection, provide drawings, signed & sealed archiving all working drawings for filing and for certified inspection, in accordance with the New York State Building Code.

BORING NOTES

- 1. Borings shall be referenced from datum indicated.
- 2. Boring logs shall be of such depth that 18 centimeters (6") of good bearing material (regarding at least 20' below) for use in the design of foundations is encountered.
- 3. Water table readings shall be taken at 2' intervals.
- 4. Boring logs shall be taken at 2' intervals.

LEGEND



30-81 23rd ST.
ASTORIA

PH. ARCHITECTURE INC.
11 W. 32nd Street, 20th Fl.
New York, NY 10001
Tel: (212) 512-1200
Fax: (212) 512-1201

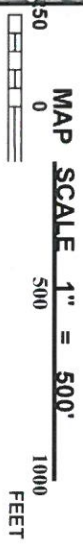
BORING INVESTIGATION PLAN
DATE: 11/11/11
SCALE: 1/8"=1'-0"
BP-1

*The Third Generation of Excellence
In Water Supply, Water Resources, Civil and Environmental Engineering*

FIRM MAP



Flood insurance is available in this community. Contact your National Flood Insurance Program at 1-800-638-6620.



NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0093F

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
 NEW YORK,
 NEW YORK
 BRONX, RICHMOND, NEW YORK,
 QUEENS, AND KINGS COUNTIES

PANEL 93 OF 457

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS
 COMMUNITY NUMBER - PANEL SUFFIX
 NEW YORK CITY OF 360497 0093

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.



Federal Emergency Management Agency

MAP NUMBER
3604970093F
MAP REVISED
SEPTEMBER 5, 2007

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX A
SOIL BORING LOGS



East Coast Geoservices, LLC
 P.O. Box 2806
 Huntington Station, New York 11746
 Phone: (631) 513-8595
 www.info@eastcoastgeoservices.com

SOIL BORING LOG

Page 1 of 1

BORING I.D.		PROJECT NO.	PROJECT NAME			
B-1		ECG# 13244	30-81 23rd Street			
LOGGED BY		APPROVED BY	LOCATION			
Eric Arnesen		Eric Arnesen	30-81 23rd Street Astoria, New York			
DRILLING CONTRACTOR		DRILLER				
East Coast Geoservices, LLC		Steve McGinn				
DRILL BIT DIAMETER/TYPE		BOREHOLE DIAMETER	BORING LOCATION DESCRIPTION			
2.5 inch/Hollow Stem Auger		4 inch	Located 30 feet southwest of the front property line.			
LAND SURFACE ELEVATION		COORDINATES	DRILLING EQUIPMENT/METHOD		SAMPLING METHOD	
Unknown		NA	Power Probe 9600		Split Spoon	
DEPTH OF BORING		DEPTH TO WATER	START/FINISH DATE		BACKFILL	
22 feet		~ 10 feet bgs	9/18/13 to 9/18/13		Cuttings	
Sample Depth (feet)	Sample Interval (feet)	Visual Description	Group Symbol	Blow Counts	PID (ppm)	Remarks
	0 to 2	All brown fine sand, brick and rock. Fill.	Fill	5-9-8-7	NA	1.0 feet recovered
	2 to 4	All same as above.	Fill	8-13-11-8	NA	1.0 feet recovered
5	4 to 6	All same as above.	Fill	5-5-1-1	NA	0.5 feet recovered
	6 to 8	All same as above	Fill	2-2-2-3	NA	1.0 feet recovered
	8 to 10	Top 0.5 feet all same as above. Borrow 1.0 feet gray silt. Wet.	Fill ML	16-18-6-4	NA	1.5 feet recovered
10	10 to 12	All gray silt.	ML	2-1-1-1	NA	1.0 feet recovered
	15 to 17	Reddish brown silt.	ML	2-7-22-19	NA	0.8 feet recovered
20	20 to 22	No recovery		28-50 for 4"	NA	No recovery Auger refusal at ~21 feet. Boring Complete
25						
30						
35						
40						
45						
50						



East Coast Geoservices, LLC
 P.O. Box 2806
 Huntington Station, New York 11746
 Phone: (631) 513-8595
 www.info@eastcoastgeoservices.com

SOIL BORING LOG

Page 1 of 1

BORING I.D.		PROJECT NO.	PROJECT NAME			
B-2		ECG# 13244	30-81 23rd Street			
LOGGED BY		APPROVED BY	LOCATION			
Eric Arnesen		Briana Scarfo	30-81 23rd Street			
DRILLING CONTRACTOR		DRILLER	Astoria, New York			
East Coast Geoservices, LLC		Steve McGinn				
DRILL BIT DIAMETER/TYPE		BOREHOLE DIAMETER	BORING LOCATION DESCRIPTION			
2.5 inch/Hollow Stem Auger		4 inch	Located 30 feet northwestwest of the rear property line.			
LAND SURFACE ELEVATION		COORDINATES	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD		
Unknown		NA	Power Probe 9600	Split Spoon		
DEPTH OF BORING		DEPTH TO WATER	START/FINISH DATE	BACKFILL		
22 feet		~ 10 to 12 feet bgs	9/17/13 to 9/18/13	Cuttings		
Sample Depth (feet)	Sample Interval (feet)	Visual Description	Group Symbol	Blow Counts	PID (ppm)	Remarks
	0 to 2	All brown fine sand, brick and rock. Fill	Fill	5-9-8-7	NA	1.25 feet recovered
	2 to 4	All same as above	Fill	8-6-3-2	NA	1.0 feet recovered
5	4 to 6	All gray silty sand and brick. Fill	Fill	5-7-10-10	NA	2.0 feet recovered
	6 to 8	All same as above.	Fill	6-6-6-8	NA	2.0 feet recovered
	8 to 10	No recovery.		1" for 50	NA	No recovery
10	10 to 12	All brown fine sand, trace silt. Wet.	SM	4-4-5-8	NA	2.0 feet recovered
	15 to 17	All same as above.	SW	8-9-10-7	NA	2.0 feet recovered
20	20 to 22	All brown medium sand.	SW	2-2-5-8	NA	2.0 feet recovered
25						Auger refusal at 25 feet. Boring Complete
30						
35						
40						
45						
50						



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SOIL BORING LOG

Page 1 of 1

BORING I.D.		PROJECT NO.	PROJECT NAME			
B-3		ECG# 13244	30-81 23rd Street			
LOGGED BY		APPROVED BY	LOCATION			
Eric Arnesen		Briana Scarfo	30-81 23rd Street			
DRILLING CONTRACTOR		DRILLER	Astoria, New York			
East Coast Geoservices, LLC		Steve McGinn				
DRILL BIT DIAMETER/TYPE		BOREHOLE DIAMETER	BORING LOCATION DESCRIPTION			
2.5 inch/Hollow Stem Auger		4 inch	Located between B-1 and B-2, approximately 5 feet to the north.			
LAND SURFACE ELEVATION		COORDINATES	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD		
Unknown		NA	Power Probe 9600	Split Spoon		
DEPTH OF BORING		DEPTH TO WATER	START/FINISH DATE		BACKFILL	
42 feet		~ 10 to 12 feet bgs	9/17/13 to 9/18/13		Cuttings	
Sample Depth (feet)	Sample Interval (feet)	Visual Description	Group Symbol	Blow Counts	PID (ppm)	Remarks
						Sampling commenced at 30 feet bgs.
5						
10						
15						
20						
25						
30						
	30 to 32	No Recovery.		50 for 3"	NA	No recovery
	35					
	35 to 37	Reddish brown silty sand, trace gravel.	SM	50 for 5"	NA	0.5 feet recovered
	40					
	40 to 42	All reddish brown fine sand.	SP	50 for 3"	NA	0.5 feet recovered Boring Complete
	45					
	50					

APPENDIX B
SOIL BEARING STRENGTH

APPENDIX B
East Coast Geoservices, LLC
 30-81 23rd Street
 Astoria, New York

Boring Performed September 18, 2013

B-1

Sample Depth (ft bg)		Blows (per 6")	N	Bearing Strength (TSF)
From	To			
0	2	5		
		9		
		8	17	0.85
		7	15	0.75
2	4	8		
		13		
		11	24	1.19
		8	19	0.94
4	6	5		
		5		
		1	6	0.30
		1	2	0.10
6	8	2		
		2		
		2	4	0.20
		3	5	0.25
8	10	16		
		18		
		6	24	1.19
		4	10	0.50
10	12	2		
		1		
		1	2	0.10
		1	2	0.10
15	17	2		
		7		
		22	29	1.44
		19	41	2.04
20	22	28		
		50		
		Refusal	50	2.49

DTW
10'-0"

APPENDIX B
East Coast Geoservices, LLC
 30-81 23rd Street
 Astoria, New York

Boring Performed September 17, 2013 through September 18, 2013

B-2

Sample Depth (ft bg)		Blows	N	Bearing
From	To	(per 6")		Strength (TSF)
0	2	5		
		9		
		8	17	0.85
		7	15	0.75
2	4	8		
		6		
		3	9	0.45
		2	5	0.25
4	6	5		
		7		
		10	17	0.85
		10	20	0.99
6	8	6		
		6		
		6	12	0.60
		8	14	0.70
8	10	50		
		Refusal	50	2.49
10	12	4		
		4		
		5	9	0.45
		8	13	0.65
15	17	8		
		9		
		10	19	0.94
		7	17	0.85
20	22	2		
		2		
		5	7	0.35
		8	13	0.65

DTW
10'-12'

APPENDIX B
East Coast Geoservices, LLC
 30-81 23rd Street
 Astoria, New York

Boring Performed September 17, 2013 through September 18, 2013

B-3

Sample Depth (ft bg)		Blows	N	Bearing
From	To	(per 6")		Strength (TSF)
30	32	50		
		Refusal	50	2.49
35	37	50		
		Refusal	50	2.49
40	42	50		
		Refusal	50	2.49

DTW
10'-12'

APPENDIX C
USGS SEISMIC SUMMARY REPORT

The Third Generation of Excellence
In Water Supply, Water Resources, Civil and Environmental Engineering

USGS Design Maps Summary Report

User-Specified Input

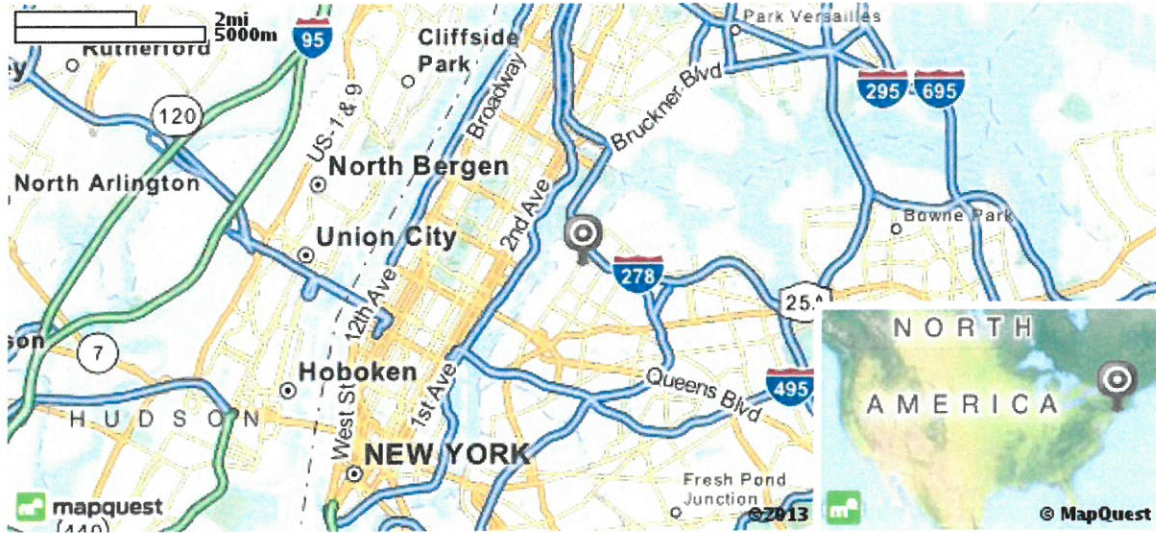
Report Title 30-81 23rd Street, Astoria, NY
 Wed October 9, 2013 20:24:26 UTC

Building Code Reference Document 2012 International Building Code
 (which utilizes USGS hazard data available in 2008)

Site Coordinates 40.77051°N, 73.92546°W

Site Soil Classification Site Class D – “Stiff Soil”

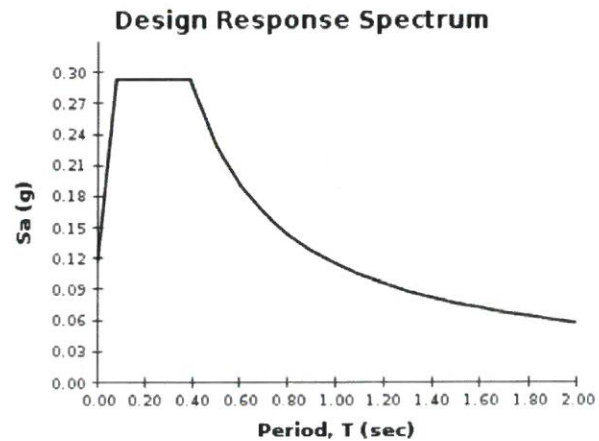
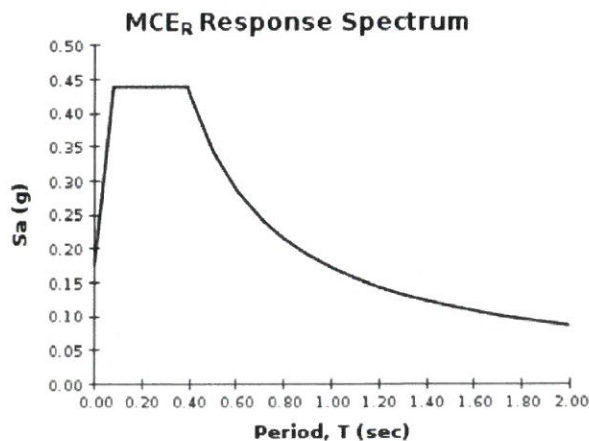
Risk Category I/II/III



USGS-Provided Output

$S_s = 0.279 \text{ g}$	$S_{M5} = 0.439 \text{ g}$	$S_{D5} = 0.293 \text{ g}$
$S_1 = 0.072 \text{ g}$	$S_{M1} = 0.172 \text{ g}$	$S_{D1} = 0.115 \text{ g}$

For information on how the S_s and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.





STATIC PILE LOAD TEST (Test Pile)

Project Name:		30-83 23rd Road, Queens, New York			Project Location:		Astoria/Queens					
		GKC Industries			Begin Date:		7/14/2015					
Contractor:		Procomm Systems			End Date:		7/17/2015					
Column Number:		N/A			Type of Pile:		Helical Pile					
Pile Number:		57			Jack Serial number		WB 237					
Primary Measuring Devices		Dial Gauge			Gauge Serial Number:		WB 1258					
Auxiliary Measuring Devices:		Piano Wire Mirror Scale			Design Load:		50 tons					
Report #		008-GKC-15			Inspector:		Walid Saqer					
Jack Gauge Reading (pl)	Pile Load (tons)	% of Design Load	Date	Read time (minutes)	Primary Readings (in.)			Average (in.)	Primary Dimensions (in.)	Auxiliary Reading (in.)	Auxiliary Dimensions (in.)	Remarks
					A	B	C					
			7/14/2015									
				Increment #4 (3150 PSI)								
3150	50	100										9:15 AM
				1/2	0.573	0.568	0.572	0.571	0.071	2 30/64"	6/64"	
				1	0.573	0.568	0.572	0.571				
				2	0.574	0.569	0.573	0.572				
				4	0.574	0.569	0.573	0.572				
				8	0.574	0.569	0.573	0.572				
				16	0.575	0.570	0.574	0.573				
				32	0.577	0.572	0.576	0.575				
				60	0.578	0.572	0.576	0.575	0.075	2 30/64"	6/64"	
				Increment #5 (4000 PSI)								
4000	62.5	125										10:15 AM
				1/2	0.627	0.620	0.627	0.625	0.125	2 28/64"	8/64"	
				1	0.627	0.620	0.627	0.625				
				2	0.628	0.621	0.628	0.626				
				4	0.628	0.621	0.628	0.626				
				8	0.629	0.622	0.629	0.627				
				16	0.631	0.624	0.631	0.629				
				32	0.633	0.626	0.633	0.631				
				60	0.635	0.629	0.634	0.633	0.133	2 28/64"	8/64"	
				Increment #6 (4700 PSI)								
4700	75	150										11:15 AM
				1/2	0.698	0.691	0.701	0.697	0.197	2 26/64"	10/64"	
				1	0.698	0.691	0.701	0.697				
				2	0.698	0.691	0.701	0.697				
				4	0.699	0.692	0.702	0.698				
				8	0.701	0.694	0.704	0.700				
				16	0.701	0.696	0.706	0.702				
				32	0.703	0.698	0.708	0.704				
				60	0.705	0.699	0.709	0.704	0.204	2 26/64"	10/64"	



STATIC PILE LOAD TEST (Test Pile)

Project Name:		30-83 23rd Road, Queens, New York			Project Location:		Astoria/Queens					
Contractor:		GKC Industries			Begin Date:		7/14/2015					
Column Number:		Procomm Systems			End Date:		7/17/2015					
Pile Number:		N/A			Type of Pile:		Helical Pile					
Primary Measuring Devices:		57			Jack Serial number:		WB 237					
Auxiliary Measuring Devices:		Dial Gauge			Gauge Serial Number:		WB 1258					
Report #:		Piano Wire Mirror Scale			Design Load:		50 tons					
Inspector:		008-GKC-15			Walid Saqer							
Jack Gauge Reading (pl)	Pile Load (tons)	% of Design Load	Date	Read time (minutes)	Primary Readings (in.)			Average (in.)	Primary Dimensions (in.)	Auxiliary Reading (in.)	Auxiliary Dimensions (in.)	Remarks
					A	B	C					
			7/14/2015									
				Increment #7 (5600 PSI)								
5600	87.5	175										12:15 PM
				1/2	0.766	0.759	0.770	0.765	0.265	2 24/64"	12/64"	
				1	0.766	0.759	0.770	0.765				
				2	0.767	0.760	0.771	0.766				
				4	0.767	0.760	0.771	0.766				
				8	0.768	0.761	0.772	0.767				
				16	0.770	0.763	0.774	0.769				
				32	0.772	0.765	0.776	0.771				
				60	0.773	0.766	0.778	0.772	0.272	2 24/64"	12/64"	
				Increment #8 (6200 PSI)								
6200	100	200										1:15 PM
				1/2	0.830	0.832	0.834	0.832	0.332	2 22/64"	14/64"	
				1	0.830	0.832	0.834	0.832				
				2	0.831	0.834	0.837	0.834				
				4	0.832	0.835	0.838	0.835				
				8	0.833	0.836	0.839	0.836				
				16	0.834	0.838	0.840	0.838				
				32	0.838	0.840	0.841	0.841				
				60	0.844	0.843	0.844	0.844	0.344	2 22/64"	14/64"	
				48 Hours Holding Period								
				1	0.844	0.843	0.844	0.844	0.344	2 22/64"	14/64"	2:15 PM
				2	0.845	0.844	0.845	0.845				
				3	0.846	0.845	0.846	0.846				
				4	0.847	0.846	0.847	0.847				Pump Up the Pressure
				5	0.848	0.847	0.848	0.848				
				6	0.849	0.848	0.849	0.849				
				7	0.852	0.851	0.852	0.852				
				8	0.854	0.852	0.854	0.854				
				9	0.854	0.852	0.854	0.854				
				10	0.855	0.853	0.855	0.855				
			7/15/2015	11	0.855	0.857	0.861	0.858				Pump Up the Pressure
				12	0.855	0.857	0.861	0.858				
				13	0.855	0.857	0.861	0.858				
				14	0.855	0.857	0.861	0.858				
				15	0.855	0.857	0.861	0.858				
				16	0.856	0.860	0.863	0.860				
				17	0.856	0.860	0.865	0.861				



STATIC PILE LOAD TEST (Test Pile)

Project Name:		30-83 23rd Road, Queens, New York			Project Location:		Astoria/Queens					
Contractor:		GKC Industries			Begin Date:		7/14/2015					
Column Number:		Procomm Systems			End Date:		7/17/2015					
Pile Number:		N/A			Type of Pile:		Helical Pile					
Primary Measuring Devices:		Dial Gauge			Jack Serial number:		WB 237					
Auxiliary Measuring Devices:		Piano Wire Mirror Scale			Gauge Serial Number:		WB 1258					
Report #:		008-GKC-15			Design Load:		50 tons					
Inspector:		Walid Saqer			Inspector:		Walid Saqer					
Jack Gauge Reading (pl)	Pile Load (tons)	% of Design Load	Date	Read time (minutes)	Primary Readings (in.)			Average (in.)	Primary Dimensions (in.)	Auxiliary Reading (in.)	Auxiliary Dimensions (in.)	Remarks
			7/15/2015	18	0.856	0.860	0.865	0.861	0.361	2 22/64"	14/64"	7:00 AM
				19	0.856	0.861	0.873	0.863				Pump Up the Pressure
				20	0.856	0.861	0.873	0.863				
				21	0.856	0.861	0.873	0.863				
				22	0.857	0.863	0.875	0.865				
				23	0.858	0.865	0.877	0.867				
				24	0.858	0.866	0.878	0.867				
				25	0.858	0.866	0.878	0.867				
				26	0.859	0.866	0.879	0.868				
				27	0.859	0.866	0.879	0.868				
				28	0.859	0.866	0.879	0.868				
				29	0.859	0.866	0.879	0.868				
				30	0.858	0.866	0.878	0.867				
				31	0.858	0.866	0.878	0.867				
				32	0.858	0.866	0.878	0.867				
				33	0.858	0.866	0.878	0.867				
				34	0.858	0.866	0.878	0.867				
			7/16/2015	35	0.857	0.865	0.877	0.866	0.366			12:00 AM
				36	0.857	0.865	0.877	0.866				
				37	0.857	0.865	0.877	0.866				
				38	0.855	0.863	0.875	0.865				
				39	0.854	0.864	0.875	0.864				
				40	0.854	0.864	0.875	0.864				
				41	0.855	0.866	0.880	0.867				Pump Up the Pressure
				42	0.855	0.866	0.880	0.867				
				43	0.855	0.866	0.880	0.867				
				44	0.855	0.866	0.880	0.867				
				45	0.855	0.866	0.880	0.867				
				46	0.855	0.866	0.880	0.867				
				47	0.855	0.866	0.880	0.867				
				48	0.855	0.866	0.880	0.867	0.367			
				Read time (Minutes)								
4700	75	150		Decrement #1 (4700 PSI)								
				1/2	0.836	0.842	0.872	0.850	0.350			
				1	0.836	0.842	0.872	0.850				
				2	0.836	0.842	0.872	0.850				
				4	0.838	0.844	0.874	0.852				
				8	0.838	0.844	0.874	0.852				
				16	0.838	0.844	0.874	0.852				
				32	0.839	0.845	0.875	0.853				
				60	0.840	0.846	0.876	0.854	0.354	2 26/64"	10/64"	
				17	0.856	0.860	0.865	0.861				

