American Engineers Group, LLC
Geotechnical | Transportation | Structural | Environmental
Water Resources | Surveying | Construction & Testing Services
MBE/DBE/SDB/SBE | www.aegroup-llc.com

June 3, 2019

Johnson, Mirmiran and Thompson (JMT)
1600 Market Street, Suite 250
Philadelphia, PA 19103

Attention: Mr. James Maloney

RE: Geotechnical Evaluation for
Nelson Community Center Expansion at:
301 W. Cumberland Street
Philadelphia, PA 19133
AEG Project No. 18093

Dear Mr. Maloney:

The subsurface investigation and preparation of this report was performed by American Engineers Group, LLC (AEG) as a subconsultant to JMT. AEG provided full-time drilling inspection, and geotechnical drilling operations were performed by CGC Geoservices, LLC. (CGC), subcontracted to AEG.

This letter report presents the results of subsurface investigations and geotechnical evaluations to confirm the bearing stratum to be used for the design of the foundations for the proposed addition to the existing building at the Nelson Community Center in Philadelphia, PA. This work is performed as a part of the Rebuild Philadelphia initiative.

Subsurface Investigation

One (1) test boring was performed to confirm the subsurface conditions at the site. The boring was drilled to confirm the presence of a layer of "gray clay" noted on the design plans as the proposed bearing stratum for the drilled pier foundations. Due to the completion of site improvements prior to the drilling operations, the boring was drilled from the sidewalk along N. Orianna Street, approximately 2.0 feet from the edge of the existing community center fence and approximately 10.0 feet from the proposed addition, with an estimated elevation of 0.0 feet. Refer to the attached Boring Location Plan.

The boring encountered a layer of fill immediately below the 0.5-foot thick concrete sidewalk. The fill was very loose to loose and visually classified as silty sand with gravel. Between elevations -6.0 and -11.5 feet a layer of alluvial gray silty clay was encountered, which is presumed to be the "gray clay" layer noted in the design plans. This material was medium to hard. Medium to very dense residuum material was encountered below the alluvial material. This stratum was laboratory classified as Silty Sand with Gravel [SM, A-2-4(0)]. Refer to the attached boring log.

American Engineers Group

Laboratory Testing

One (1) representative sample of the on-site soils was tested to confirm the field classification. According to the design plans, the proposed bottom of drilled pier elevation is at elevation -11.0 feet. The boring performed during this investigation indicated that the bottom of the "gray clay" layer was at elevation -11.5 feet; therefore, the residuum material below the "gray clay" was laboratory classified to confirm the visual classification of silty sand, which allows for a higher presumptive bearing capacity in accordance with the International building code (IBC) Table 1806.2. The following table presents the results of the soil laboratory testing. Refer to the attached lab testing results.

SOIL LABORATORY TESTING SUMMARY

Sample Depth (feet)	Classification	Natural Moisture Content (%)	LL (%)	PI (%)	Silt and Clay (%)
12.0-22.0	silty SAND with gravel [SM, A-2-4(0)]	17.4	NP	NP	27.1

Site Recommendations

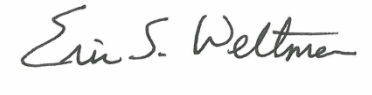
The foundation plans provided by JMT indicate that the proposed drilled pier foundation is proposed to bear on the alluvial "gray clay", with a bottom of shaft elevation of -11.0 feet. This material was confirmed in the boring from elevations -6.0 to -11.5 feet. The subsurface conditions assumed in the design plans were confirmed by the subject boring and 1,500 psf is an appropriate bearing capacity at -11.0 feet according to the IBC Table 1806.2. Silty sand was encountered at elevation -11.5 feet, 0.5 feet below the currently proposed bottom of drilled pier elevation. Per the IBC Table 1806.2, silty sand has a presumptive bearing capacity of 2,000 psf, while clay has a value of 1,500 psf. Extending the bottom of pier elevation to a minimum of -12.0 feet to bear on the residuum would increase the end bearing capacity of the piers and may allow for more cost effective foundation design.

General

The evaluations and recommendations presented in this report are based on the information available to AEG at the time of the writing of this report and the on-site surface and subsurface conditions that existed at the time the investigations were performed. A further assumption has been made that the conditions encountered in the limited subsurface investigation program are representative of the subsurface in general. If subsurface conditions are encountered during construction that vary significantly from those reported herein, the project Geotechnical Engineer should be contacted immediately so that the impact of any unanticipated conditions can be properly evaluated.

Thank you for the opportunity for AEG to be of service. Please contact the undersigned with any questions.

Respectfully submitted,
American Engineers Group, LLC

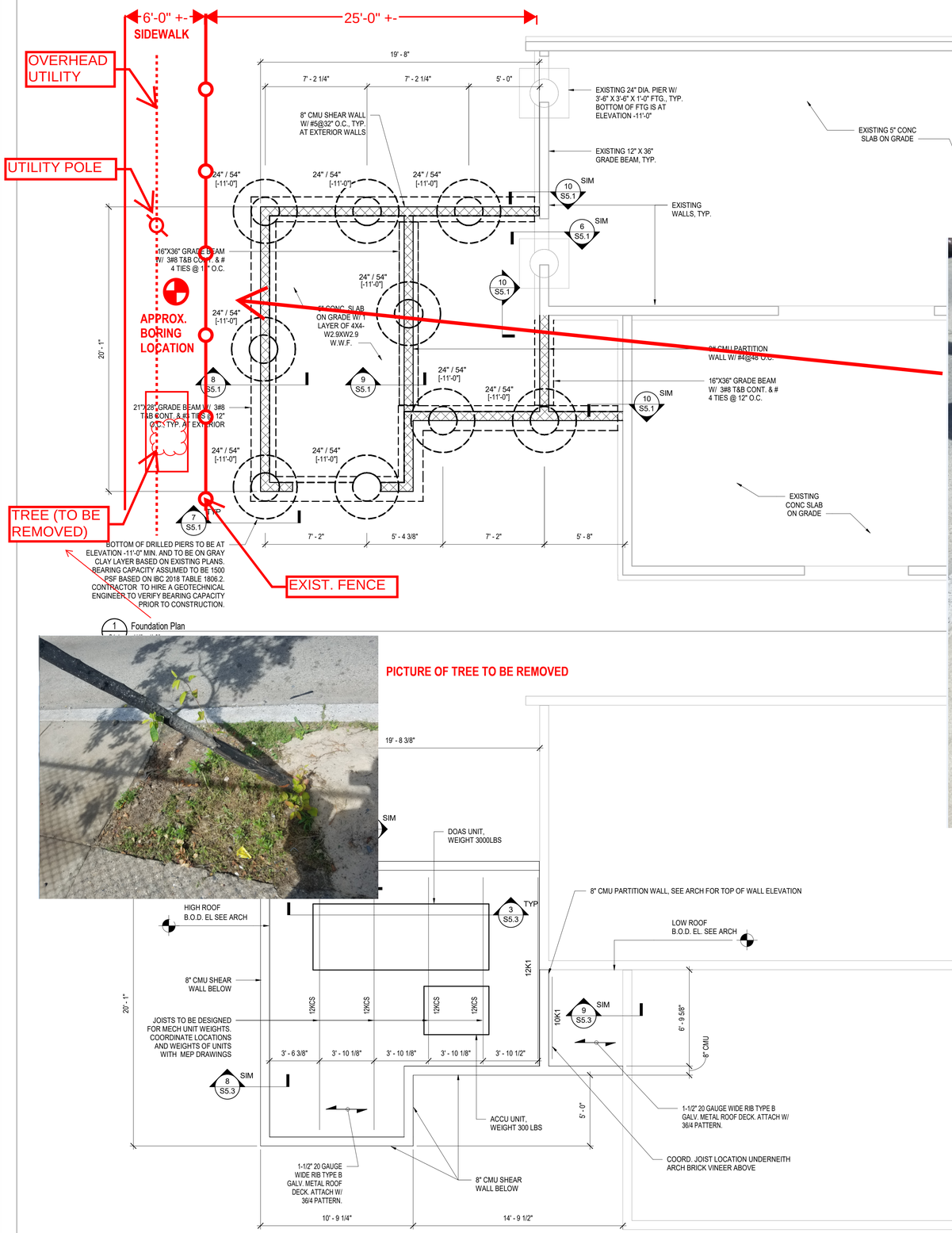


Craig T. Welfer, P.E.
Vice President/Director of Geotechnical Services
717-920-7053
cwelfer@aegroup-llc.com
441 Friendship Road
Harrisburg, PA 17111

Eric S. Weltmer
Construction Services Manager
717-920-7054
eweltmer@aegroup-llc.com
441 Friendship Road
Harrisburg, PA 17111

Attachments:
Boring Location Map
Typed Boring Logs
Laboratory Testing Results
IBC Table 1806.2

BORING LOCATION MAP



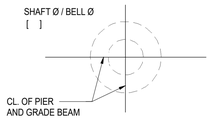
1 Foundation Plan
S1.1 1/4" = 1'-0"

PICTURE OF TREE TO BE REMOVED

PICTURE OF BORING LOCATION

2 ROOF
S1.1 1/4" = 1'-0"

FOUNDATION PLAN NOTES



DRILLED PIER KEY

[0'-0"] INDICATES ELEVATION OF FINISH FLOOR SLAB. SEE CIVIL DRAWINGS FOR DATUM.

[ ]: NUMBER INSIDE OF BRACKETS INDICATES BOTTOM OF FOOTING ELEVATION

NOTE: CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL FLOOR JOINTS WITH THE ARCHITECTURAL JOINTS IN FINISHES. ALL FLOOR JOINTS SHOULD COINCIDE DIRECTLY UNDER A JOINT IN THE ARCHITECTURAL FINISH ABOVE. SEE ARCHITECTURAL DRAWINGS.

NOTE: FOOTINGS HAVE NOT BEEN DROPPED FOR CIVIL,PLUMBING, OR ELECTRICAL LINES. SEE GENERAL NOTES FOR CRITERIA.

NOTE: UNLESS NOTED OTHERWISE ON PLANS, BOTTOM OF GRADE BEAM SHALL BE [-3'-0"] BELOW FINISH FLOOR SLAB.

NOTE: MAXIMUM SPACING OF VERTICAL CONTROL JOINTS IN EXTERIOR MASONRY VENEER IS 16'-0" FROM CORNERS AND 32'-0" FOR INTERMEDIATE VERTICAL JOINTS. SEE ARCHITECT FOR EXACT LOCATIONS.

NOTE: UNLESS NOTED OTHERWISE FOUNDATION SLAB IS 5" CONCRETE SLAB ON A POLYETHYLENE VAPOR BARRIER (SEE ARCHITECT) ON 4" GRAVEL ON GRADE REINFORCED WITH W.W.F.6x6-W2.9xW2.9.

NOTE: GENERAL CONTRACTOR SHALL ENGAGE A SURVEYOR TO PROVIDE LOCATIONS OF ALL EXISTING UTILITES, TRENCHES, ETC. TO ENSURE THAT NEW FOUNDATIONS WILL NOT INTERFERE, UNDERMINE, OR BEAR ON EXISTING UTILITIES.

FRAMING PLAN NOTES

K IS SPANNING.

D. W/ ARCH

NOTE: SEE ARCHITECT AND PLUMBING DRAWINGS FOR LOCATIONS OF ROOF DRAINS.

NOTE: FOR FRAMING AROUND THE PERIMETER OF A MECHANICAL UNIT, SEE TYPICAL DETAIL:

NOTE: CONTRACTOR COORDINATE LOCATION OF OPENINGS AND WEIGHTS OF MECHANICAL UNITS, WITH THE MECHANICAL DRAWINGS. IF WEIGHTS EXCEED WHAT IS SHOWN ON THE STRUCTURAL PLAN, THEN NOTIFY THE STRUCTURAL ENGINEER OF THE CHANGE PRIOR TO ANY DETAILING OR FABRICATION OF JOIST, DECK OR STEEL.

PJM SKETCH 5/21/19

RELEASED FOR CLIENT REVIEW 03/08/19

REVISIONS

ISSUE	DATE	DESCRIPTION

PROJECT COORDINATOR

Philadelphia Parks & Recreation
and Department of Public Property
1515 Arch Street, 11th Floor
Philadelphia, PA 19102
Contact: Charles Mottershead, 215.683-4466

SEAL

PROJECT TEAM

ARCHITECT:
PZS ARCHITECTS
5312 RIDGE AVE
PHILADELPHIA, PA 19128
215.483.1915

STRUCTURAL ENGINEER:

JOHNSON, MIRMIRAN, AND THOMPSON, INC.
1600 MARKET STREET, SUITE 520
PHILADELPHIA, PA 19103
267.256.0300 | WWW.JMT.COM

SYSTEMS ENGINEER:

JOHNSON, MIRMIRAN, AND THOMPSON, INC.
1600 MARKET STREET, SUITE 520
PHILADELPHIA, PA 19103
267.256.0300 | WWW.JMT.COM

CITY OF PHILADELPHIA
DEPARTMENT OF PUBLIC PROPERTY

1515 ARCH STREET
11TH FLOOR, ONE PARKWAY BUILDING
PHILADELPHIA, PENNSYLVANIA

PROJECT TITLE
NELSON PLAYGROUND

DRAWING TITLE
STRUCTURAL PLANS

PROJECT NO.	DRAWING NO.
18-00355-001	S1.1
DATE: 03.08.2019	
SCALE: AS NOTED	
DRAWN BY: SB	
CHECKED BY: CR	FILE:

NOTE: ALL DIMENSIONS AND CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE SITE BEFORE PROCEEDING WITH THE WORK.

TYPED BORING LOGS

pennsylvania
DEPARTMENT OF TRANSPORTATION

ENGINEER'S LOG

Boring **B-1** ECMS

District: ___ County: Philadelphia

SR ___ Section ___

Baseline: ___

Sta. ___ Offset ___

Segment ___ Offset ___

Coordinates:

Lat. ___ Long. ___

E N

Ground Elev. 0.0 ft.

Water Level Elev./Elapsed Time:

▽ Initial NR Elapsed NR

▼ Final NR Elapsed NR

Driller: Eric Blemings

Company: CGC Geoservices, LLC

Drilling Start: 05/23/2019 9:30 am

Drilling Complete: 05/23/2019 10:40 am

Grouting Complete: 05/23/2019 11:00 am

Rig: Truck Mounted Rig

Hammer Type: Automatic

SPT Hammer Efficiency:

Assumed 0.8 Measured ___

Hammer Calibration Date: ___

Hole Type: Continuous SPT

Casing Type: Hollow Stem Auger

Casing I.D.: 3.25 in Casing Depth: 38.0 ft.

Rock Core Method: ___

Inspector: Kyle Eshelman/Logan Gabler

Inspector Cert. No. 422-17

PG/PE Seal, Signature and Date

Final Log Checked and Approved

By: Craig Welfer

Date: 6/3/2019

Lab Testing Performed on Sample

NOTE: N values and all graphical plots are for information only.

ELEV.	GRAPHIC	MATERIAL DESCRIPTION COMMENTS - OBSERVATIONS	AASHTO / USCS	SAMPLE DEPTH	SAMPLE No.	BLOW COUNTS (Blows/ 0.5ft)	N_{60} --- RQD %	REC (ft.)	REC (%)
		CEMENT CONCRETE. 0.5'/El. -0.5		0.5					
		GRAVEL, *subbase*. 2.0'/El. -2.0			S-1	3-2-2	5	0.3	20
		SAND, some Silt, little Gravel, trace Clay, very loose to loose, damp to wet, brown and black, fill, *wet from pavement core*.	a-1-b / sm	2.0	S-2	3-3-2-2	7	1.0	50
-5		*Advanced unsampled through 0.5' thick concrete sidewalk then S-1 spoon was driven 1.5'. 2-foot spoon sampling started at S-2.* 6.0'/El. -6.0		4.0	S-3	1-1-1-1	3	0.7	35
		CLAY, some Silt, trace Sand, medium to hard, damp to wet, gray and green, alluvium, *wet from pavement core water that pooled on sidewalk and drained into the open boring*.	a-6 / cl	6.0	S-4	2-2-2-2	5	0.5	25
				8.0	S-5	4-4-7-7	15	1.2	60
-10		11.5'/El. -11.5		10.0	S-6	8-18-9-7	36	1.2	60
		SAND, some Gravel, some Silt, trace Clay, contains rock fragments, micaceous, medium dense to very dense, damp, brown to gray, residuum.	A-2-4 / SM	12.0	S-7	7-6-8-8	19	1.2	60
		13.5': Color change from gray to brown.		14.0					

◇ RQD % ◇

⊙ Soil/Rock Rec.% ⊙ (20 40 60 80)

▲ SPT (N_{60}) ▲ (10 20 30 40)

PENNDOT ENGINEER'S LOG - PENNDOT_GINT_VERSION_1.2.2.3_9-21-2016.GDT - 6/3/19 11:57 - M:\18000\18093 COP REBUILD JMT\CADD\GEOLOGS\REBUILD.GPJ

pennsylvania
DEPARTMENT OF TRANSPORTATION

ENGINEER'S LOG

Boring **B-1** ECMS _____ District: ____ County: Philadelphia

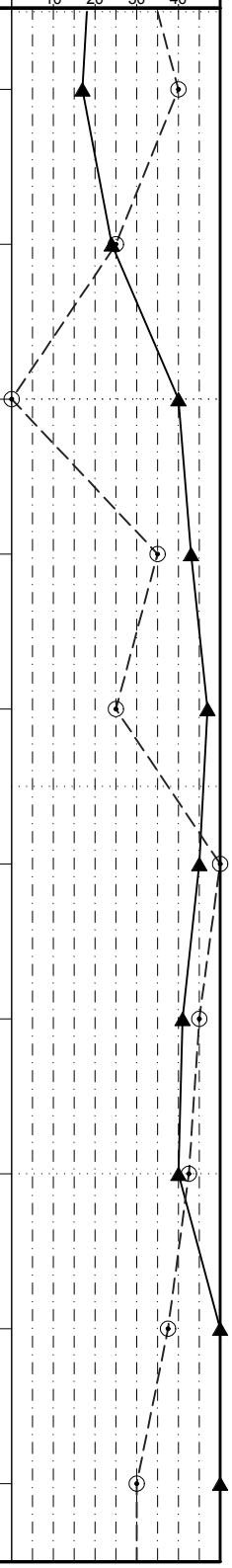
SR _____ Section _____

Sta. _____ Offset _____

NOTE: N values and all graphical plots are for information only.

Lab Testing Performed on Sample

ELEV.	GRAPHIC	MATERIAL DESCRIPTION COMMENTS - OBSERVATIONS	AASHTO / USCS	SAMPLE DEPTH	SAMPLE No.	BLOW COUNTS (Blows/ 0.5ft)	N_{60} --- RQD %	REC (ft.)	REC (%)
		SAND, some Gravel, some Silt, trace Clay, contains rock fragments, micaceous, medium dense to very dense, damp, brown to gray, residuum. *(Layer continued from the previous page.)*			S-8	5-6-7-8	17	1.6	80
				16.0	S-9	7-8-10-10	24	1.0	50
				18.0	S-10	14-14-16-17	40	0.0	0
-20		*S-11: Rock fragments.*		20.0	S-11	11-12-20-22	43	1.4	70
				22.0	S-12	13-20-15-13	47	1.0	50
				24.0					
-25			A-2-4 / SM		S-13	7-16-18-20	45	2.0	100
				26.0	S-14	11-13-18-15	41	1.8	90
		27.0': Color change from brown to gray.		28.0	S-15	15-13-17-25	40	1.7	85
-30				30.0	S-16	25-26-25-20	68	1.5	75
				32.0	S-17	16-32-34-35	88	1.2	60
				34.0					



pennsylvania
DEPARTMENT OF TRANSPORTATION

ENGINEER'S LOG

Boring **B-1** ECMS _____ District: ____ County: Philadelphia

SR _____ Section _____

Sta. _____ Offset _____

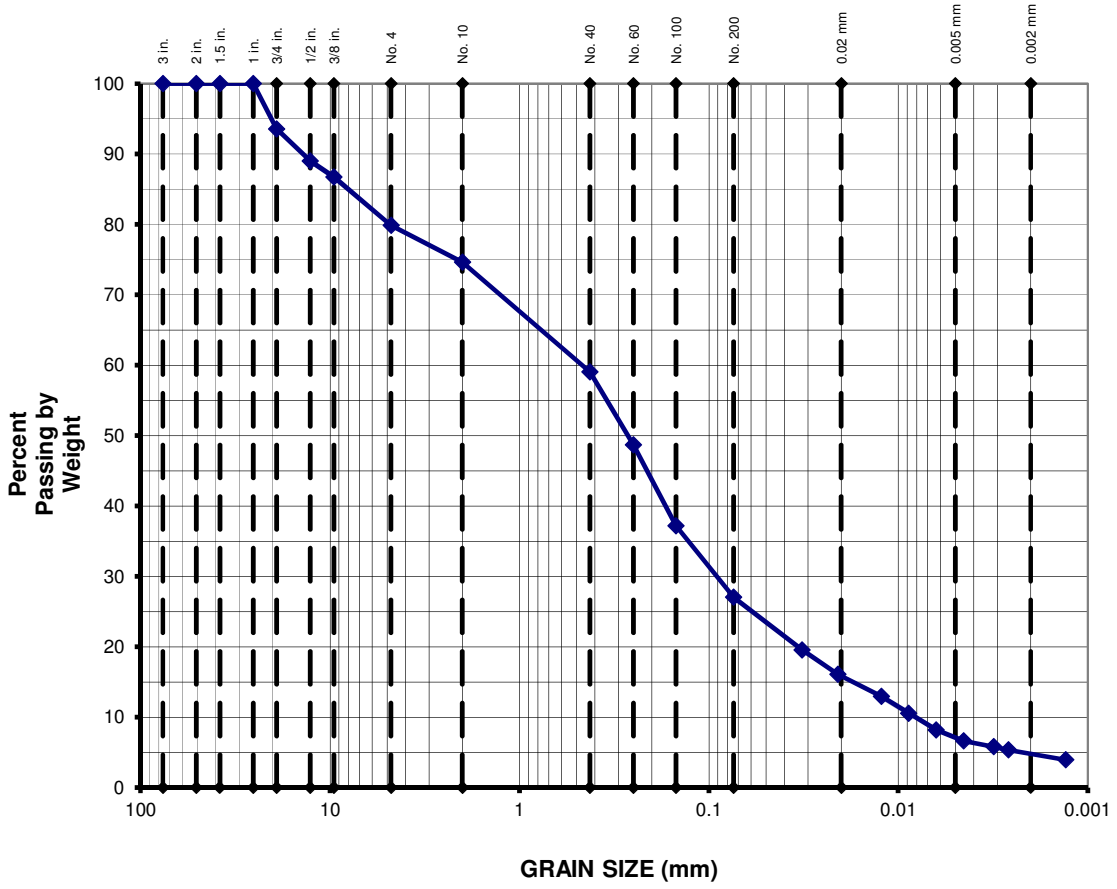
NOTE: N values and all graphical plots are for information only.

Lab Testing Performed on Sample

ELEV.	GRAPHIC	MATERIAL DESCRIPTION COMMENTS - OBSERVATIONS	AASHTO / USCS	SAMPLE DEPTH	SAMPLE No.	BLOW COUNTS (Blows/ 0.5ft)	N_{60} --- RQD %	REC (ft.)	REC (%)	◇ RQD % ◇ ⊙ Soil/Rock Rec.% ⊙ 20 40 60 80 ▲ SPT (N_{60}) ▲ 10 20 30 40
		SAND, some Gravel, some Silt, trace Clay, contains rock fragments, micaceous, medium dense to very dense, damp, brown to gray, residuum. *(Layer continued from the previous page.)* *36.0': Significant increase in coarse material*.	A-2-4 / SM	36.0	S-18	8-14-19-15	44	1.2	60	
					S-19	34-36-38-37	99	1.0	50	
				38.0	S-20	33-33-50/.4'	111	1.0	71	
		39.4'/El. -39.4								
-40		Bottom of boring.								
-45										
-50										

LABORATORY TESTING RESULTS

GRAIN SIZE DISTRIBUTION CURVE



GRAVEL		SAND			FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
20.1%		52.8%			27.1%	
6.4%	13.7%	5.3%	15.6%	32.0%	20.0%	7.1%

GRAVEL			SAND		FINES	
COARSE	MEDIUM	FINE	COARSE	FINE	SILT	CLAY
25.4%			47.6%		27.1%	
0.0%	13.2%	12.1%	15.6%	32.0%	22.3%	4.8%

Project:	Nelson Community Center	**Soil Type:**	silty SAND with gravel
Boring No.:	B-1		
Station:	-	**USCS Classification:**	SM
Offset:	-	**AASHTO Classification:**	A-2-4 (0)
Sample No.:	S-7 to S-11	LL = NP	PL = NP
Depth:	12.0-22.0 ft	PI = NP	w = 17.4%
Spec. Grav.:	2.7 (assumed)		

NAVARRO & WRIGHT CONSULTING ENGINEERS, INC.

AASHTO R18

6/3/2019

Classification Testing Results

USCS & AASHTO

By: JDP Ckd: DFP

IBC TABLE 1806.2

American Engineers Group

Project:	Nelson Community Cener		
	AEG No.: 18093		
Sheet	1	of	1
Des By:	KME	Date	6/3/2019
Ckd By:	ESW	Date	6/3/2019

IBC, Table 1806.2:

TABLE 1806.2
PRESUMPTIVE LOAD-BEARING VALUES

CLASS OF MATERIALS	VERTICAL FOUNDATION PRESSURE (psf)	LATERAL BEARING PRESSURE (psf/ft below natural grade)	LATERAL SLIDING RESISTANCE	
			Coefficient of friction[a]	Cohesion (psf)[b]
1. Crystalline bedrock	12,000	1,200	0.70	—
2. Sedimentary and foliated rock	4,000	400	0.35	—
3. Sandy gravel and gravel (GW and GP)	3,000	200	0.35	—
4. Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)	2,000	150	0.25	—
5. Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)	1,500	100	—	130

For SI: 1 pound per square foot = 0.0479kPa, 1 pound per square foot per foot = 0.157 kPa/m.

a.Coefficient to be multiplied by the dead load.
b.Cohesion value to be multiplied by the contact area, as limited by Section 1806.3.2 .

The currently proposed "gray clay" bearing stratum was confirmed during drilling operations, which indicates that the presumptive bearing capacity of 1,500 psf is appropriate at the proposed bottom of drilled pier elevation of -11.0 feet. At elevation -11.5 feet laboratory classified Silty Sand with Gravel [SM, A-2-4(0)] was encountered and would provide a higher bearing capacity of 2,000 psf.