MARK T. PORTER
Superintendent of Schools

Bid No: ITB 2019910
Name of Bid: Upper Keys Annex Renovation
Post Date: 1/17/19
Notice Post Time: 11:00 AM

Addendum No.1

The following are clarifications/revisions to the released spec:

- The metal building is selected by the contractor. The metal building manufacturer must meet the specified project requirements, building code, and wind speed requirements. The architect will review and approve the building manufacturer's shop drawings once they meet the requirements listed. This was done to allow fair competition among metal building manufacturers.

- All roll up doors should be replaced with new roll up doors.

- All interior and exterior walls are to be patched and repaired.

See also attached RFI response from K2M Design (Attachments S.02 and S1 are posted separately due to size):

R.F.I. RESPONSE

DATE: 16 January 2019

PROJECT: Monroe County School; District
North Building Remodel
90050 Overseas Hwy.
Tavernier, FL, 33070

RESPONSE BY: Edward J Goodwin, RA, LEED AP, NCARB
K2M Design

RESPONSE TO: Jeff Barrow, Project Manager
MCSD

Job Number: 16347.0

Response to Request for Interpretation No. 01

1) The Drawing Index on sheet G0.0.1 lists all the drawings in the bid package. It appears this index is incorrect, or drawings are missing.
The index lists:
S0.01 Structural Notes and Specification
S1.1.0 Foundation Plan
S1.1.1 Ground Floor Column Plan
S2.1.0 First Floor Framing Plan
S2.1.1 Second Floor Framing Plan
S2.1.2 Roof Framing Plan
S5.1.1 Structural Details

The drawings in the RFP are:
S0.1 General Notes Part 1
S2 First Floor Framing
S3 Second Floor Framing Plan
S4 Roofing Framing Plan
S5 Details
S6 Sections
Can you please clarify this conflict?
RESPONSE:
Following is the correct Structural Drawing List:
S0.1 General Notes Part 1
S0.2 General Notes Part 2
S1 Foundation/Ground Floor Plan
S2 First Floor Framing
S3 Second Floor Framing Plan
S4 Roofing Framing Plan
S5 Details
S6 Sections

K2M Design, Inc.
95360 Overseas Hwy.
Suite 9
Key Largo, FL 33037
Phone: (305) 307-5849
egoodwin@k2mdesign.com

2) Future dumpster pad on sheet C1.1.1, please provide additional information on what this dumpster pad consists of?

RESPONSE:

6" fiber mesh concrete slab on grade, for ½ yard dumpster.

3) Coded Note 3 on sheet C1.1.1 is listed but not found on the Site Demolition Plan anywhere. Is this not indicated on the plan or is not used?

RESPONSE:

Contractor to remove and dispose of canopies and concrete slabs on grade.

4) Note used.

5) Is there any fire sprinkler system required on any of these buildings? If yes, please provide criteria and water supply location and volume/pressure, etc.?

RESPONSE:

No fire sprinklers system required.

6) Panel E on the ground floor of the existing building is located below flood level AE8. Will this panel need to be raised and or relocated to meet the floor zone elevation requirement? If yes, please provide location, height, etc.?

RESPONSE:

This is an electrical existing panel it doesn't need to relocate above flood..

7) On sheet E1.1.0 it states to "*Coordinate final location of fuel pump with owner. Connect to fuel equipment per manufacturers recommendations. Route power underground to tank location*"

Coded Notes 1 on sheet C1.1.2 States "*New unleaded tank*".

RESPONSE:

Contractor to provide an unleaded tank that matches our diesel tank size. They are to be located side by side. MCSD will handle the control interface. Contractor to provide slab, tank, pump head, wiring, and wiring to the controller panel. MCSD will make the connection at the controller.

a) Who is responsible to provide this new unleaded tank?

RESPONSE:

Contractor to provide tank.

b) If the contractor is furnishing and installing the unleaded fuel tank, please provide tank size, approved manufactures, model numbers to be able to price up the correct tank.

RESPONSE:

Unleaded Tank to match Diesel size and manufacture.

c) If the contractor is furnishing and installing the unleaded fuel tank, please provide the accessories required.

RESPONSE:

Contractor to provide tank and pump head, fuel level gauge, wire, and conduit.

d) Will this tank need a fire alarm system? If yes, will this fire alarm need to be integrated with the new fire alarm system?

RESPONSE:

No Fire alarm system is required for fuel tank.

8) Coded Notes 2 on sheet C1.1.2 States "*Relocated Diesel Tank*". We have searched the drawings and did not find any type of information for the tank support pad.

RESPONSE:

Diesel tank is existing and operational.

a) Can you please provide details, size, information and elevation for this new pad?

RESPONSE:

Diesel tank and Pad is existing. New unleaded tank and pad to be located next to diesel tank.

b) Will this new pad be elevated to be above flood?

RESPONSE:

No.

c) Will this new pad require pile(s)?

RESPONSE:

No.

9) We have not found any foundation and or slab details for the pre-engineered building. Please provide pile, pile cap if any, slab on grade, rebar size and spacing?

RESPONSE:

It appears drawings S.02 Part 2 and S1 were missing from the bid set. See attached drawings S.02 and S1, also see drawing S5.

10) Please provide the geotech surface exploration report by Wingerter as stated on sheet S0.1 2.6 paragraph K.

RESPONSE:

See attached Geotech report.

11) Please provide information on the subsoil surface preparation for the foundations and SOG for the pre-engineered building?

RESPONSE:

See attached Geotech report.

12) At the site visit, we observed the existing sheds were full of equipment and materials. Who is responsible to remove these items prior to moving the sheds?

RESPONSE:

MCSD will remove materials from inside the sheds. Contractor to demolish and dispose of sheds.

13) Coded Notes 1 on sheet C1.1.1 states: "*The existing shed to be relocated contractor to coordinate with MCSD.*" Are these shed relocated on site? If no how far do these sheds have to be transported and unloaded?

RESPONSE:

See comments to note 11.

14) The parking lines on sheet C1.1.2 have changed relative to C1.1.1.

a) Who is responsible to install the new lines and what looks like wheel stops?

RESPONSE:

The contractor should repaint lines and add parking stops. We want the solid recycled plastic type.

b) If the contractor is responsible to restripe these lines, please provide the specifications for the line materials and size, width, length etc.?

RESPONSE:

Yes, to DOT specification.

d) If the contractor is responsible to restripe what type of wheel stop are required?

RESPONSE:

Solid recycled plastic. Similar to https://www.trafficsafetystore.com/parking-blocks/plastic-6#PBI6YS

e) If the contractor is responsible to restripe will the contractor have to remove and dispose of existing wheel stops or can they be reused?

RESPONSE:

Dispose of existing wheel stops.

15) Coded Notes 2 on sheet C1.1.1 states "*Contractor to demo existing trailer*". At the site visit, we observed a septic tank of some kind between the two trailers. Will the contractor be responsible to pump and remove this septic system?

RESPONSE:

The leasing company will remove the two office trailers. The septic system is a holding tank that will be removed by the rental company.

16) Coded Notes 15 on sheet A2.1.3 states: "New flat roof". Please provide additional information on the type of roof material, structure, columns, beams, manufacturer, etc.?

RESPONSE:

Roof material will be 60 mil TPO roof membrane. See Architectural drawings A311,312,321 and S4. The structure is a premanufacture aluminum structure to match existing adjacent structure.

Attachments: (3) Geotech Report, S.02, S1.

REPORT OF SUBSURFACE EXPLORATION & GEOTECHNICAL ENGINEERING EVALUATION OF SUBSURFACE CONDITIONS

Project:

NORTH BUILDING REMODEL
90050 (MM 89.5) Overseas Highway, Plantation Key
Tavernier, Monroe County, Florida

WLI Order No. 18-1298

Issued: **AUGUST 2018**

Prepared for:

Concrete Analysis & Testing Laboratories, Inc.
P. O. Box 500875
Marathon, Florida 33050

WINGERTER LABORATORIES INC.
Professional Engineering & Testing
Established 1949

WINGERTER LABORATORIES, INC.
1820 N.E. 144th Street
North Miami, Florida 33181

WINGERTER
LABORATORIES INC.
Engineering Testing and Inspection Service
Established 1949

September 6, 2018

Concrete Analysis & Testing Laboratories, Inc.
Attention: Ms. Lisa Littlefield
P. O. Box 500875
Marathon, Florida 33050

Reference: Report of Subsurface Soil Exploration and
Geotechnical Engineering Evaluation of Subsurface Conditions
Project: North Building Remodel
Location: 90050 (MM 89.5) Overseas Highway (Plantation Key)
Tavernier, Monroe County, Florida
WLI Order No. 18-1298

Ladies/Gentlemen:

We are pleased to present this report of our subsurface soil exploration and geotechnical engineering evaluation for the subject site. These services were performed in general accordance with the Professional Services Agreement dated August 16, 2018. This report presents our evaluation and specific recommendations for the proposed construction together with the field data.

This report was prepared in compliance with the 6th Edition of the Florida Building Code (2017).

We appreciate this opportunity to be of service to you during this phase of the project. If you have any questions or comments regarding the information contained in this report, please contact the undersigned.

DONALD J. FLOOD LICENSE No 44847 STATE OF FLORIDA PROFESSIONAL ENGINEER

Respectfully submitted,
WINGERTER LABORATORIES, INC.

9/12/18

Donald J. Flood, Jr., P.E.
Florida Registration No. 44847

enc: Report

In accordance with Rule 61G15-23.001 of the Florida Administrative Code, an original signature is hereby provided for the owner (or owner's representative) and the building official.

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APPENDIX

- A. TEST BORING LOGS
- B. SITE AND TEST LOCATIONS MAPS
- C. ENGINEERING CALCULATIONS

INTRODUCTION

Wingerter Laboratories, Inc. (WLI) is pleased to present this report of our subsurface soil exploration and geotechnical engineering evaluation for the subject site. The purpose of this investigation was to obtain specific subsurface data in order to provide an engineering evaluation of the subsurface conditions including recommendations for foundation design for the support of a proposed new commercial building and the remodel of an existing two story building.

Our subsurface exploration consisted of a total of four (4) Standard Penetration Test Borings performed on the subject property, as shown in Appendix B of this report.

The following presents a review of the project information provided to us, a discussion of the subsurface conditions, detailed geotechnical engineering recommendations and our Report of Test Boring Numbers B-1 through B-4.

PROJECT INFORMATION

We were provided with Sheet C1.1.2: Site Improvement Plan prepared for the Monroe County School District by K2M Architect in February 2018. The subject property consists of 12 lots lying two east-west by six north-south, between Overseas Highway (U.S. Highway A1A) on the east side and Gardenia Street on the west side. The subject property and streets extend north-northeast to south-southwest. The two south lots are improved with an existing two story building. The remainder of the property is paved for school bus parking.

The proposed work, as indicated on the Site Improvement Plan, includes a new elevator/stairs addition on the west side and new stairs on the east side for the existing building. A new bus maintenance facility is proposed. It is a pre-engineered 40 foot by 50 foot building, to be located north of the existing building.

The Monroe County Property Appraiser website was also reviewed. The subject property is addressed at Mile Marker 89.5 Overseas Highway. The existing building date was not shown, but improvements were added in 1988. The subject property was last purchased in 2002. Photos show a vehicular ramp to the building's second floor is located on the building's west side. The ground floor has been enclosed, reportedly in 2003.

The Google Maps website was also reviewed. The subject property is located in a commercial strip on the west side of Overseas Highway (U.S. Highway 1). Coral Shores High School and Plantation Key Elementary School are located in the vicinity, south of the subject property.

A site reconnaissance was conducted prior to our work commencement in order to observe and document the existing surface conditions, and to establish the testing locations. This information was used in our interpretation of the subsurface data and also to detect any conditions which could affect our evaluation of the site. The proposed test boring locations were marked with white road paint. Sunshine State One Call was contacted for utility clearances. Once the clearances were obtained, the work was scheduled to commence.

INVESTIGATIVE PROCEDURES

The proposed locations were accessible with the truck-mounted drilling equipment, which was utilized. Soil samples (disturbed) were obtained in accordance with ASTM D-1586 utilizing a 2-foot long, 2-inch diameter split spoon sampler which is advanced by successive blows of a 140 pound hammer free-falling 30 inches. The number of blows for each 6 inches of penetration is recorded. The sum of the second and third blow counts for each 2-foot sampling interval constitutes the Standard Penetration Resistance in blows per foot, which is referred to as the "N" Value. The following tables may be used in interpreting the consistency of the materials based on the "N" Value:

SOIL CONSISTENCY vs. "N VALUE"					
Cohesionless Soils		**Cohesive Soils**		**Rock and Gravels**	
"N Value" (blows/ft)	Consistency Designation	"N Value" (blows/ft)	Consistency Designation	"N Value" (blows/ft)	Consistency Designation
0 to 4	Very Loose	0 to 2	Very Soft	0 to 25	Loose or Soft
5 to 10	Loose	3 to 4	Soft	26 to 50	Medium Dense
11 to 30	Medium Dense	5 to 8	Medium	51 to 90	Dense
31 to 50	Dense	9 to 15	Stiff	-	-
50 or More	Very Dense	16 to 30	Very Stiff	-	-
-	-	31 or More	Hard	-	-

The Standard Penetration Test, "N" value curve shown on the boring logs indicates the general variation of the "N" value throughout the depth of the boring. This curve is plotted in a straight line which connects each "N" value. However, it should not be assumed that the changes in the "N" value are a linear function. The graphical representations shown on the boring logs should not be substituted for the actual material descriptions included in the logs.

Soil samples will be retained by **WLI** for a period of 30 days. The elevations were not established for the test boring locations. Depths reported on the logs represent depths below ground surface as they existed on the date drilled. The client is cautioned that if subsequent filling or excavation of the site occurs, the reported depth must be so adjusted. **WLI** can not assume responsibility for the accuracy of reported depths if the site is disturbed subsequent to the date drilled.

TESTING PROGRAM AND CONDITIONS REVEALED

Our subsurface investigation consisted of a total of four (4) Standard Penetration Test Borings, conforming to the requirements of ASTM D 1586 that were performed at the site on August 27, 2018. Please refer to Appendix A for our Report of Test Boring Nos. B-1 through B-4 for detailed description of the materials encountered and the depth intervals at which they were encountered. The Test Boring locations are shown on the site map in Appendix B of this report.

The number, location and depth of the test borings were determined by WLI and the client, taking into consideration the requirements of the project, site accessibility and the subsurface conditions revealed. The discussions, opinions and recommendations contained in this report are based upon the conditions revealed in the referenced test borings.

Test Boring Number B-1 was located on the west side of the existing building. The boring logs indicate the testing location has surficial layers of medium dense limesand with trace fragmented limestone to two feet below the existing land surface, then dense layers of fragmented limestone and limesand to four feet deep. The boring then encountered medium dense to dense layers of fragmented limestone with trace limesand to eight feet deep. Thereafter, the boring found medium dense to very dense layers of limesand with trace fragmented limestone to the maximum explored depth of 20 feet below land surface. The ground water level at the time of our investigation was encountered at the depth of four feet, seven inches (4'-7") below the existing land surface at the test boring location.

Test Boring Number B-2 was located on the north side of the existing building, at the southwest corner of the proposed building's footprint. The boring logs indicate the testing location has surficial layers of dense fragmented limestone with trace to some limesand to four feet below the existing land surface, then medium dense layers of fragmented limestone to eight feet deep. The boring then encountered medium dense to dense layers of limesand with some fragmented limestone to 18 feet deep. Thereafter, the boring found very dense layers of fragmented limestone with trace limesand to the maximum explored depth of 20 feet below land surface. The ground water level at the time of our investigation was encountered at the depth of five feet, five inches (5'-5") below the existing land surface at the test boring location.

Test Boring Number B-3 was located on the north side of the existing building, at the northeast corner of the proposed building's footprint. The boring logs indicate the testing location has surficial layers of dense limesand with trace fragmented limestone to two feet below the existing land surface, then medium dense layers of fragmented limestone and limesand to four feet deep. The boring then encountered medium dense layers of fragmented limestone to 15 feet deep, then very dense layers to 18 feet. Thereafter, the boring found very dense layers of fragmented limestone with trace limesand to the maximum explored depth of 20 feet below land surface. The ground water level at the time of our investigation was encountered at the depth of five feet, five inches (5'-5") below the existing land surface at the test boring location.

Test Boring Number B-4 was located on the east side of the existing building. The boring logs indicate the testing location has surficial layers of medium dense to dense limesand with trace fragmented limestone to two feet below the existing land surface, then medium dense layers of fragmented limestone with trace limesand to 15 feet deep. Thereafter, the boring found very dense layers of fragmented limestone with trace limesand to the maximum explored depth of 20 feet below land surface. The ground water level at the time of our investigation was encountered at the depth of five feet, eight inches (5'-8") below the existing land surface at the test boring location.

The ground water level at the time of our investigation was encountered at depths ranging from four feet, seven inches to five feet, eight inches (4'-7" to 5'-8") below the existing land surface at the test boring locations. Fluctuations in the ground water level should be expected due to seasonal climatic changes, tidal action, rainfall variation, surface runoff, construction activity and other site specific factors.

GEOTECHNICAL ENGINEERING EVALUATION

Auger Cast-in-place (ACIP) Piles

Evaluation of the subsurface data obtained from the test boring logs, using accepted geotechnical engineering criteria, indicates that the existing subsurface soil soils are suitable for the proposed new construction if founded upon those existing soils. The test borings revealed the presence of dense to very dense layers of fragmented limestone in the test boring locations

Auger cast-in-place (ACIP) piles can generally provide uplift resistance in the case of a hurricane force stormwater surge. Auger cast piles are are the most commonly used deep foundation system in the Southern Florida area because they can attain relatively high shear resistance against the sedimentary rocks, and thus provide large axial capacities. The high shear is primarily due to ability to cast the piles in-place, directly against a roughened surface without the use of drilling fluids.

Additional advantages of the ACIP piles, which have led to its preference in the local area, are their rapid rate of installation, negligent vibration levels, and their ability to provide uplift resistance during storm surge conditions.

Therefore, it is our recommendation that the foundations be designed with 14 inch diameter auger cast piles to a minimum depth of 15 feet. This will result in an axial pile capacity of 38 tons and an uplift capacity of 9 tons. Expect a minimum embedment into the limestone formation of 7 to 11 feet.

The test borings encountered the limestone formation at varying levels throughout the site. The limestone strata listed above is dense to very dense from 8 to 15 feet. Based upon the results of the test borings, we estimated that the piles will require minimum installation depths of approximately 15 feet below the existing ground surface elevation. Pile installation depths will need to be determined by the contractor and geotechnical inspector during placement to achieve the minimum strata embedment. Alternatively, additional deeper soil borings could be performed, prior to commencing the pile installation program, in order to establish the required installation depth.

Continuous Spread Footings

If selected for this project, shallow spread footings proportioned for a maximum allowable soils bearing capacity of 4000 pounds per square foot (psf) can be used. At this bearing pressure, the anticipated total settlements are expected to be less than one-half inch, with differential settlements approaching one-quarter inch across the area. This is based upon a 20-inch wide continuous footing at a depth of 2 feet below the ground surface.

ENGINEERING RECOMMENDATIONS

Auger Cast (Cast-In-Place) Pile Foundations

1. Recommended size: 14 inch diameter.

2. Bearing capacity: 38 tons for 14 inch diameter, at a minimum of 15 feet deep.

3. Tension capacity: Piles may be considered to develop uplift resistance of 9 tons (18 kips) for the 14 inch diameter piles, presuming that the reinforcing design is adequate for the stated uplift.

4. Lateral capacity: Piles may be considered to develop a lateral resistance of 6 kips for 14 inch diameter, presuming that the reinforcing design is adequate for the stated shear.

5. The minimum center to center spacing of piles shall be not less than 2-1/2 times the pile diameter.

6. Installation depth: Auger shall be advanced to achieve a minimum embedment of 7 feet into the native limestone formation.

7. Installation Specifications

   6.1. Augered shaft shall remain plumb within one-eighth of the shaft diameter, that is within 2.0 inches for a 14-inch pile.

   6.2. Augering and pumping equipment, and technique shall be at the contractor's discretion on a performance basis by using acceptable installation procedures to deliver an integral pile.

   6.3. The volume of grout per linear foot of pile shall exceed the theoretical pile volume with a minimum grout factor of 1.15.

   6.4. Grout shall be a mixture of Portland cement, fine aggregate, and water with proportions and admixtures at the contractor's discretion on a performance basis. A design mix with confirming strength test results shall be submitted to the project structural engineer for approval prior to installation of the piles. The minimum 28-day compressive strength of the grout shall be no less than 4000 psi.

   6.5. Grouting shall be performed in a continuous operation. During extraction of the auger, should volume of grout-take markedly increase and/or injection pressure markedly decrease, auger shall be reinserted to a minimum five feet below the point in question, and grouting resumed. The procedure shall be repeated as frequently as necessary to insure vertical continuity of the grout shaft.

   6.6. Down-shaft reinforcing details shall be at the discretion of the contractor on a performance basis; however, reinforcing details shall be presented to the project structural engineer for approval prior to installation of the piles. It is, however, recommended that a reinforcing cage consisting of a minimum of four #6 bars, grade 60, extending the full depth of the pile.

   6.7. Piles shall be installed in a sequence so that the grout in adjacent piles has had time to set such that adjacent piles are not disturbed.

7. Testing and inspection:

7.1. For pile loads of less than 40 tons, a static load test is not required by Section 1808.2.8.2 of the Florida Building Code.

7.2. Pile installation shall be witnessed and logged by the geotechnical inspector. Geotechnical inspector shall confirm shaft plumbness, compliance with depth requirements, continuity of grouting, and reinforcing details; inspector's log shall include the preceding and all other pertinent data including pile identification.

7.3. Grout shall be sampled and test cubes shall be cast for 28-day strength confirmation at the frequency of no less than one sampling per 50 cubic yards placed, but at least one sampling in each sustained grouting operation.

Spread Footings (On in-situ limestone - option)

Parameters used for spread footing capacities are based upon a minimum footing width of 20 inches and a depth of 2 feet for continuous footings. The allowable bearing capacity for these footings is 4000 psf. Note, however, that shallow spread footings can not be expected to have the uplift resistance during a high wind or storm surge event that the recommended auger cast concrete piles can provide.

Fill and Compaction, (if necessary)

1. Placing fill:

1.1. Fill shall be placed in lifts not greater than 12-inches loose thickness for material compacted by heavy compaction equipment, and not more than 6 inches loose thickness for material compacted by hand-operated tampers.

1.2. Suitable fill material is defined for the engineering purposes of this report to be a clean select material, containing no more than 5 percent by weight organic matter and no man-made debris of any description, which meets the requirement of ASTM D 2487 Unified Classifications GW, GP, GP-GM or SW.

1.3. Since large size particles interfere with compaction of the finer soil fraction, all backfill and fill materials shall be free of rock or gravel larger than 3 inches or 50 percent of the compacted layer thickness, whichever is the lesser.

2. Compaction:

2.1. The cleared surface and each fill lift shall be compacted to a minimum relative compaction of 95 percent. Relative compaction is defined as the ratio, expressed as a percent, of the dry soil density as determined in the field by ASTM D 2922 (nuclear method) with a probe depth of 12-inches, divided by the maximum dry soil density as determined in the laboratory by ASTM D 1557 ("Modified Proctor"). Compaction shall be verified by the geotechnical inspector who shall also confirm that the fill material being placed is the same material as tested in the laboratory. To avoid delay during compaction operations, candidate fill material should be supplied to the geotechnical inspector a minimum 72 hours in advance of placement.

2.2. Compaction of suitable fill as defined herein is most readily achieved by the use of vibratory rollers when space allows. For small restricted areas, mechanical hand-operated tampers usually perform satisfactorily. Prior to commencing compaction, the moisture content of the fill material shall be adjusted to within plus/minus 2 percent of the optimum moisture determined by ASTM D 1557; by so wetting or drying the fill material, the amount of compactive energy required to attain compaction is minimized. Attempting compaction of fill material which is more than 5 percent below or 3 percent above optimum moisture will generally yield unsatisfactory results.

2.3. A minimum of one in-place field density test shall be performed for each 2,500 square feet, or fraction thereof, for each lift of compacted soil for building pad/ slab.

Geotechnical Inspector

Experience indicates that the actual subsoil conditions at a site could vary from those generated on the basis of test borings made at specific locations. Therefore, it is essential that a geotechnical engineer be retained to provide soil engineering services during the site foundation phase of the proposed project. This is to observe compliance with the design concepts, specifications and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

The geotechnical inspector as referenced hereinbefore shall be a Registered Professional Engineer licensed in the State of Florida and experienced in the practice of geotechnical engineering, or his designated field agent. The results of all inspections by the geotechnical inspector shall be submitted on report or log forms duly signed and sealed in accordance with Rule 61G15-23.001 of the Florida

Administrative Code. The geotechnical inspector shall be retained by the owner, project architect, or project structural engineer.

SPECIAL REMARKS & ANNOTATIONS

In dealing with the unseen subsurface dimension, a prudent test boring program acts to identify the general range of conditions and to reduce, but not eliminate, the risks of unknown conditions. Therefore, **WLI** cannot offer a warranty, expressed or implied, that materials or conditions other than those revealed in the test borings will not be encountered, nor that the relative proportions and density of the materials will not vary from those reported.

Furthermore, **WLI** assumes no responsibility for the accuracy of the reported depths should any excavation, filling or alteration of the site grade occur, subsequent to the date of the drilling operation, without surveying the existing conditions.

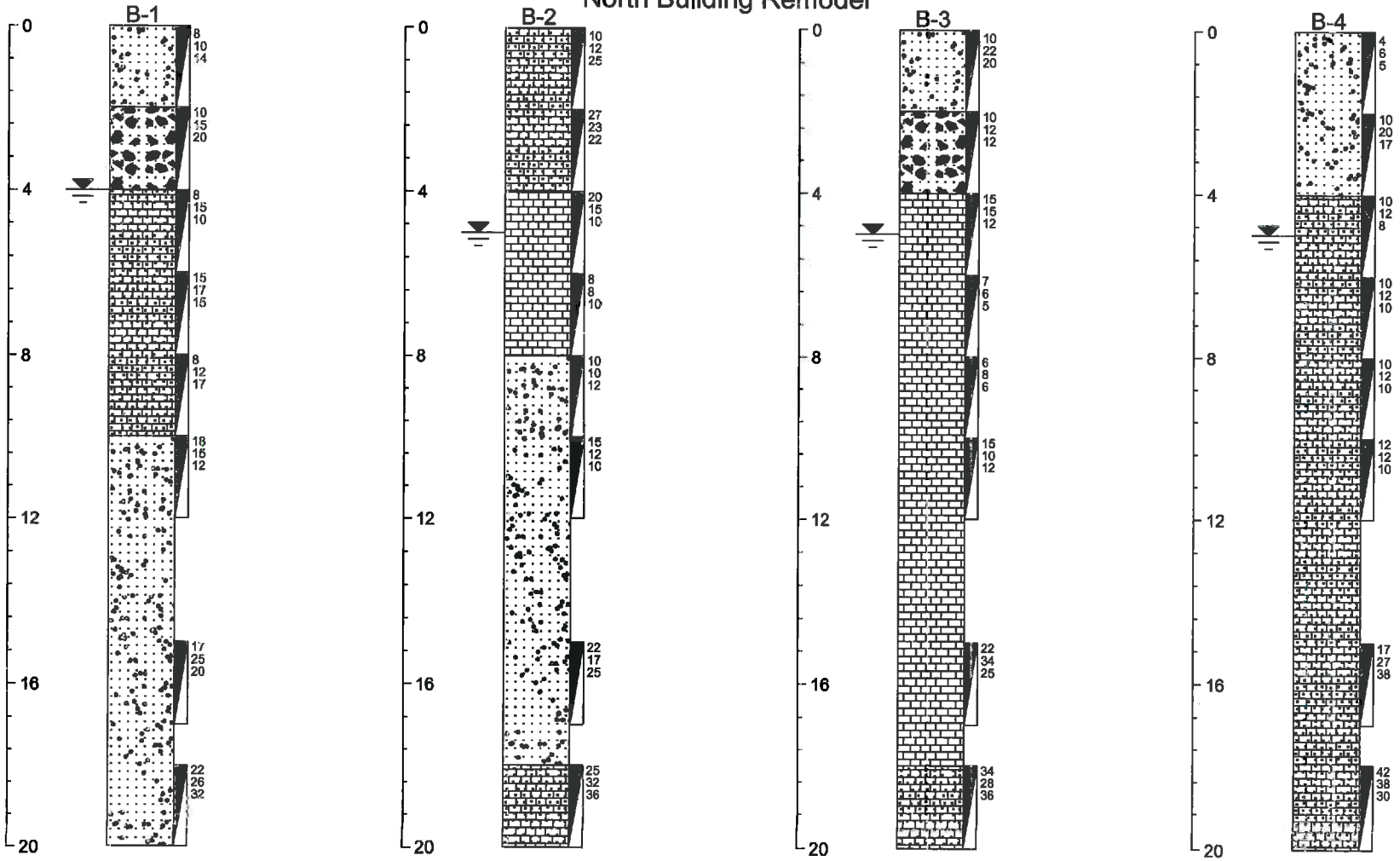
Also, since the criteria furnished to **WLI** constitutes our total knowledge and understanding of the project; inaccuracies, deviations or alterations of the criteria may invalidate these recommendations to the extent they impact the magnitude, distribution, and elevation of applied loads, or impact the nature of the construction.

APPENDIX A

TEST BORING LOGS

LOG OF BORINGS

North Building Remodel



WINGERTER LABORATORIES INC.
Professional Engineering & Testing

LOG OF TEST BORING

BORING NO.: B-1

PROJECT: *North Building Remodel*
CLIENT: *Concrete Analysis and Testing Laboratories, Inc.*
LOCATION: *90050 (MM 89.5)Overseas Hwy, Tavernier(Plantation Key) FL*
DRILLER: *JC*
DRILL RIG: *CMS*
DEPTH TO WATER> INITIAL *4"-7"; 4"-7"*

PROJECT NO.: *18-1298*
DATE DRILLED: *8/27/2018*
ELEVATION: *existing*
LOGGED BY: *ET*

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	Description	STANDARD PENETRATION TEST SAMPLE NO.	DEPTH	N
0	8 10 14 12	Brown LIMESAND with trace fragmented limestone	1	0.0-2.0	24
	10 15 20 23	Tan FRAGMENTED LIMESTONE and LIMESAND	2	2.0-4.0	35
4	8 15 10 10	Tan FRAGMENTED LIMESTONE with trace limesand	3	4.0-6.0	25
	15 17 15 15		4	6.0-8.0	32
8	8 12 17 12		5	8.0-10.0	29
	18 15 12 22	Tan LIMESAND with trace fragmented limestone	6	10.0-12.0	27
12					
	17 25 20 20		7	15.0-17.0	45
16					
	22 26 32 34		8	18.0-20.0	58
20		Boring terminated at 20 feet below existing land surface.			
24					

N-Value Curve: 20, 40, 60, 80, 100

Boring located at west side of existing 2 story building

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

WINGERTER LABORATORIES, INC. 1820 N.E. 144th Street * North Miami, FL 33181
(305) 944-3401 1-800-345-SOIL

WINGERTER LABORATORIES INC.
Professional Engineering & Testing

LOG OF TEST BORING

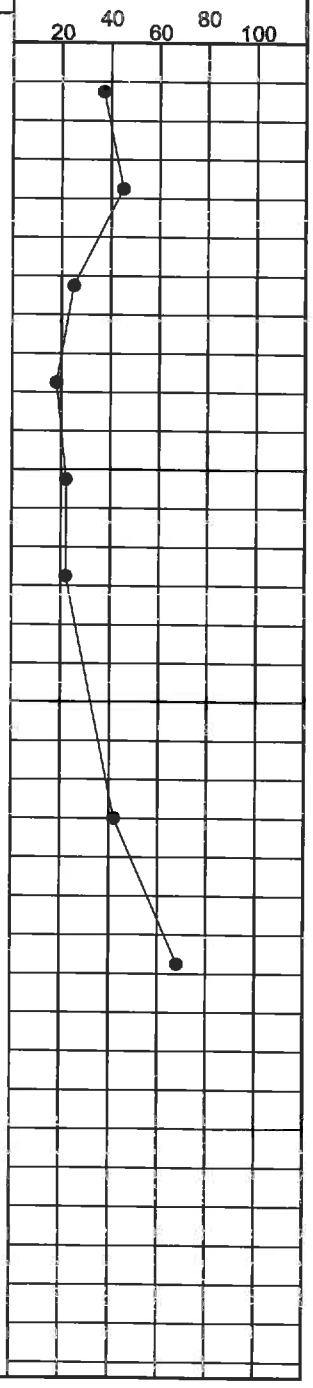
BORING NO.: B-2

PROJECT: *North Building Remodel*
CLIENT: *Concrete Analysis and Testing Laboratories, Inc.*
LOCATION: *90050 (MM 89.5)Overseas Hwy, Tavernier(Plantation Key) FL*
DRILLER: *JC*
DRILL RIG: *CMS*
DEPTH TO WATER> INITIAL *5'-5" : 5'-5"*

PROJECT NO.: *18-1298*
DATE DRILLED: *8/27/2018*
ELEVATION: *existing*
LOGGED BY: *ET*

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	Description	STANDARD PENETRATION TEST SAMPLE NO.	DEPTH	N
0	10 12 25 25	Tan FRAGMENTED LIMESTONE with trace limesand	1	0.0-2.0	37
	27 23 22 22	Tan FRAGMENTED LIMESTONE with some limesand	2	2.0-4.0	45
4	20 15 10 10	Tan FRAGMENTED LIMESTONE	3	4.0-6.0	25
	8 8 10 12		4	6.0-8.0	18
8	10 10 12 14	Tan LIMESAND with some fragmented limestone	5	8.0-10.0	22
	15 12 10 17		6	10.0-12.0	22
12					
16	22 17 25 20		7	15.0-17.0	42
	25 32 36 30	Tan FRAGMENTED LIMESTONE with trace limesand	8	18.0-20.0	68
20		Boring terminated at 20 feet below existing land surface.			
24					

N-Value Curve



Boring located north of existing 2 story building at SW corner of proposed new building.

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

WINGERTER LABORATORIES INC.
Professional Engineering & Testing

LOG OF TEST BORING

BORING NO.: B-3

PROJECT: *North Building Remodel*
CLIENT: *Concrete Analysis and Testing Laboratories, Inc.*
LOCATION: *90050 (MM 89.5)Overseas Hwy, Tavernier(Plantation Key) FL*
DRILLER: *JC*
DRILL RIG: *CMS*
DEPTH TO WATER> INITIAL *5'-5" : 5'-5"*

PROJECT NO.: *18-1298*
DATE DRILLED: *8/27/2018*
ELEVATION: *existing*
LOGGED BY: *ET*

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	Description	STANDARD PENETRATION TEST SAMPLE NO.	DEPTH	N
0	10 22 20 20	Brown LIMESAND with trace fragmented limestone	1	0.0-2.0	42
	10 12 12 10	Tan FRAGMENTED LIMESTONE and LIMESAND	2	2.0-4.0	24
4	15 15 12 10	Tan FRAGMENTED LIMESTONE	3	4.0-6.0	27
	7 6 5 5		4	6.0-8.0	11
8	6 8 6 17		5	8.0-10.0	14
	15 10 12 15		6	10.0-12.0	22
12					
	22 34 25 30		7	15.0-17.0	59
16					
	34 28 36 30	Tan FRAGMENTED LIMESTONE with some limesand	8	18.0-20.0	64
20		Boring terminated 20 feet below existing land surface.			
24					

N-Value Curve: 20, 40, 60, 80, 100

Boring located north of existing 2 story building at SW corner of proposed new building.

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

WINGERTER LABORATORIES, INC. 1820 N.E. 144th Street * North Miami, FL 33181 (305) 944-3401 1-800-345-SOIL

WINGERTER LABORATORIES INC.
Professional Engineering & Testing

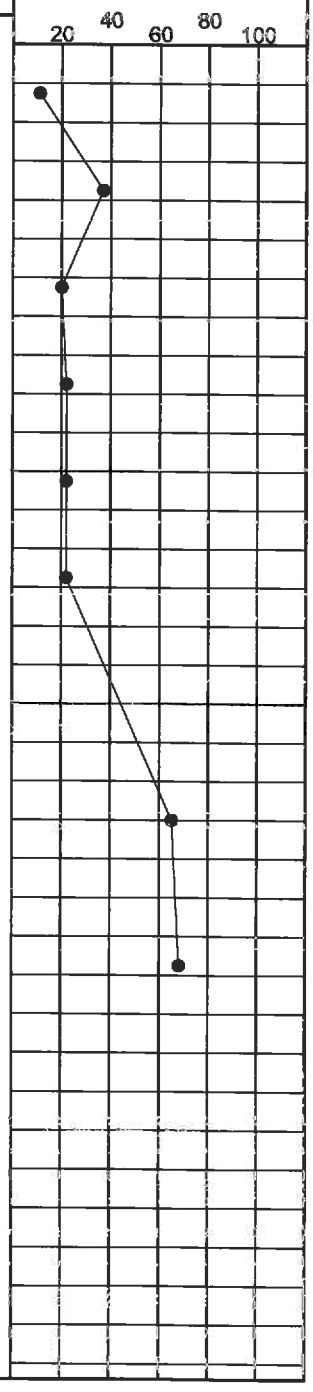
LOG OF TEST BORING

BORING NO.: B-4

PROJECT: *North Building Remodel*
CLIENT: *Concrete Analysis and Testing Laboratories, Inc.*
LOCATION: *90050 (MM 89.5)Overseas Hwy, Tavernier(Plantation Key) FL*
DRILLER: *JC*
DRILL RIG: *CMS*
DEPTH TO WATER> INITIAL *5'-8" : 5'-8"*

PROJECT NO.: *18-1298*
DATE DRILLED: *8/27/2018*
ELEVATION: *existing*
LOGGED BY: *ET*

ELEVATION/ DEPTH	SOIL SYMBOLS, SAMPLERS AND TEST DATA	Description	STANDARD PENETRATION TEST		
			SAMPLE NO.	DEPTH	N
0	4 6 5 5	Brown LIMESAND with trace fragmented limestone	1	0.0-2.0	11
	10 20 17 12	Tan LIMESAND with trace fragmented limestone	2	2.0-4.0	37
4	10 12 8 8	Tan FRAGMENTED LIMESTONE with trace limesand	3	4.0-6.0	20
	10 12 10 15		4	6.0-8.0	22
8	10 12 10 15		5	8.0-10.0	22
	12 12 10 17		6	10.0-12.0	22
12					
16	17 27 38 30		7	15.0-17.0	65
	42 38 30 43		8	18.0-20.0	68
20		Boring terminated at 20 feet below existing land surface.			
24					



Boring located north of existing 2 story building at NE corner of proposed new building.

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

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KEY TO SYMBOLS

Symbol **Description**

Strata symbols

Sand with trace fragmented limestone

Fragmented limestone and limesand

Limestone with trace limesand

Limestone

Misc. Symbols

Water table during drilling

Soil Samplers

Standard penetration test

APPENDIX B

SITE MAP
&
MAP OF TEST LOCATIONS

SITE LOCATION MAP

N

WINGERTER LABORATORIES INC.

Professional Engineering & Testing

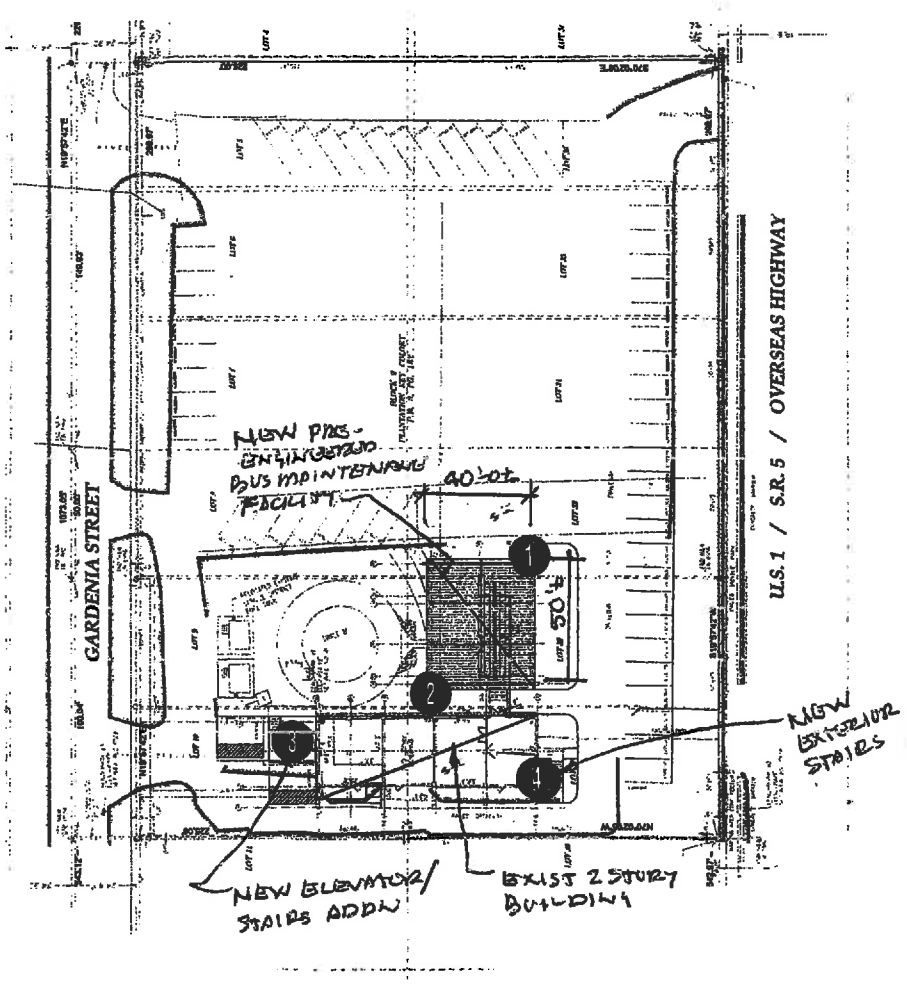
1820 N.E. 144th Street, North Miami, Florida 33181

Concrete Analysis & Testing Laboratories, Inc.

Project: **North Building Remodel**
90050 Overseas Highway
Tavernier, Monroe County, FL

Order No. 18-1298

TEST LOCATION MAP



● Test Boring Location

WINGERTER LABORATORIES INC.

Professional Engineering & Testing

1820 N.E. 144th Street, North Miami, Florida 33181

Concrete Analysis & Testing Laboratories, Inc.

Project: **North Building Remodel**
90050 Overseas Highway
Tavernier, Monroe County, FL

Order No. 18-1298

APPENDIX C

ENGINEERING CALCULATIONS

North Building Remodel: Bus Maintenance Bldg.
90050 (MM 89.5) Overseas Highway,
Tavernier (Plantation Key), FL.

Borings B-2 & B-3

14" ϕ AICP

Bearing Tip Capacity of Piles.

$N := 42$

$\gamma sat := 130$ $\gamma w := 62.4$ $\gamma prime := (\gamma sat - \gamma w)$ $\gamma := 120$

$D := 1.17$ $NtipAvg := 42$ $Df := 15$ $Lb := 9.58$ $Lb1 := 5.42$ $Ab := D^2 \frac{\pi}{4} = 1.075$

$\sigma v := \gamma prime \cdot Lb + \gamma \cdot Lb1 = 1.298 \times 10^3$ $\frac{1298}{2000} = 0.649$ tsf $\sigma v := 0.649$ Tsf

$$Cn := 0.77 \cdot \log\left(\frac{20}{\sigma v}\right) = 1.146$$

$N \cdot 1.146 = 48.132$ $Nbar := 48.1$

$$Qp := \left(0.4 \cdot \frac{Nbar}{D}\right) \cdot Df \cdot Ab = 265.199 \text{ tons}$$

Sand /Limestone: $4 \cdot Nbar \cdot Ab = 206.855$ tons Use 206 ton

Non-Plastic Silt: $3 \cdot Nbar \cdot Ab = 155.141$ tons N/A

Friction of Piles

$r := \frac{D}{2} = 0.585$ $Navg := 28$ along pile $p := 2 \cdot \pi \cdot r$

$$Cn := 0.77 \cdot \log\left(\left(\frac{20}{.5\sigma v}\right)\right) = 1.378$$

$Nbar := 28 \cdot 1.378 = 38.584$

$fs := \frac{Nbar}{50} = 0.772$ tsf

$Qf := fs \cdot p \cdot Df = 42.547$ tons

$(Qvult) := Qp + Qf = 307.746$ tons $Qvall := 206 + 42.547 = 248.547$ tons

$FS := 5$ $\frac{248}{FS} = 49.6$ Tons ***Use 38 Tons*** **Pile Bearing**

$FS := 5$ $\frac{42.547}{FS} = 8.509$ Tons ***Use 9 Tons*** ***Pile Uplift***

North Building Remodel: Elevator/Stairs & Exterior Stairs
90050 (MM 89.5) Overseas Highway,
Tavernier (Plantation Key), FL.

Borings B-1 & B-4

14" ϕ AICP

Bearing Tip Capacity of Piles.

$N := 34$

$\gamma sat := 130$ $\gamma w := 62.4$ $\gamma prime := (\gamma sat - \gamma w)$ $\gamma := 120$

$D := \frac{14}{12}$ $NtipAvg := 34$ $Df := 15$ $Lb := 10.42$ $Lb1 := 4.58$ $Ab := D^2 \frac{\pi}{4} = 1.069$

$\sigma v := \gamma prime \cdot Lb + \gamma \cdot Lb1 = 1.254 \times 10^3$ $\frac{1254}{2000} = 0.627$ tsf $\sigma v := 0.627$ Tsf

$$Cn := 0.77 \cdot \log\left(\frac{20}{\sigma v}\right) = 1.158$$

$N \cdot 1.158 = 39.372$ $Nbar := 39.4$

$$Qp := \left(0.4 \cdot \frac{Nbar}{D}\right) \cdot Df \cdot Ab = 216.613 \text{ tons}$$

Sand /Limestone: $4 \cdot Nbar \cdot Ab = 168.477$ tons Use 168 ton

Non-Plastic Silt: $3 \cdot Nbar \cdot Ab = 126.357$ tons N/A

Friction of Piles

$r := \frac{D}{2} = 0.583$ $Navg := 26$ along pile $p := 2 \cdot \pi \cdot r$

$$Cn := 0.77 \cdot \log\left(\left(\frac{20}{.5\sigma v}\right)\right) = 1.39$$

$Nbar := 26 \cdot 1.39 = 36.14$

$fs := \frac{Nbar}{50} = 0.723$ tsf

$Qf := fs \cdot p \cdot Df = 39.738$ tons

$(Qvult) := Qp + Qf = 256.351$ tons $Qvall := 168 + 34.1 = 202.1$ tons

$FS := 4$ $\frac{202}{FS} = 50.5$ Tons ***Use 38 Tons*** **Pile Bearing**

$FS := 4$ $\frac{39.7}{FS} = 9.925$ Tons ***Use 9 Tons*** ***Pile Uplift***

North Building Remodel: Elevator/Stairs & Exterior Stairs
90050 (MM 89.5) Overseas Highway,
Tavernier (Plantation Key), FL.

Borings B-1 & B-4

PILE UPLIFT CAPACITY

$FS := 4$ $Ku38 := 2.3$ $\phi := 38$ $r := 0.583$ ft

use: $Ku := 2.3$ $\delta := 0.6667\phi = 25.335$ $\sigma v \cdot 2000 = 1.254 \times 10^{3}$

$Ap := Ab = 1.069$ $p := 2\pi r$ $p = 3.663$ $Tan\delta := .473$

$fu := Ku \cdot \sigma v \cdot Tan\delta = 0.682$ tsf

$Tun := fu \cdot p \cdot 15 = 37.48$ tons

$W := \frac{(15 \cdot 150 \cdot Ap)}{2000} = 1.203$ tons $Tug := Tun + W$ tons

$Tug = 38.682$ $\frac{Tug}{FS} = 9.671$ tons

Use 9 tons

Terzaghi's Bearing Capacity

Continuous Footing

North Building Remodel: All Areas
90050 (MM 89.5) Overseas Highway,
Tavernier (Plantation Key), FL.

Borings B-1, B-2, B-3 & B-4

$B := 1.67$ $Df := 2.0$ $d := 4.58 - B = 2.91$ **Case 3: d > B Water table no effect**

$\gamma := 120$ $\gamma w := 62.4$ $\gamma sat := 130$ $\phi := 38$ $c := 0$ $FS := 3.5$

$\gamma prime := (\gamma sat - \gamma w)$

$q := \gamma \cdot Df$ $Nc := 0$ $Nq := 41$ $N\gamma := 42$

$$qu := \frac{(c \cdot Nc + q \cdot Nq + 0.5 \cdot \gamma \cdot B \cdot N\gamma)}{FS}$$

$qu = 4014$

Bearing Capacity Using Shape Factors

Continuous Footing

$\frac{Df}{B} < 1$ $\phi = 38$ $\sin(\phi) := .615$ $\tan(\phi) := .781$ $R := \frac{B}{L}$

$R := 0$ $\tan(\phi) = 0.781$ $\sin(\phi) = 0.615$ $\frac{Nq}{Nc} =$

$Fcs := 1 + (R) \cdot \left(\frac{Nq}{Nq}\right) = 1$ $Fci := 1$

$Fcd := \left[1 + .4 \cdot \left(\frac{Df}{B}\right)\right] = 1.479$ $Fqs := 1 + R \cdot \tan(\phi) = 1$

$F\gamma s := 1 - 0.4 \cdot R = 1$ $Fqd := \left[1 + 2 \cdot \tan(\phi) \cdot (1 - \sin(\phi))^2 \cdot \left(\frac{Df}{B}\right)\right] = 1.277$

$F\gamma d := 1$ $F\gamma i := 1$ $Fqi := 1$

$qu := c \cdot Nc \cdot Fcs \cdot Fcd \cdot Fci + q \cdot Nq \cdot Fqs \cdot Fqd \cdot Fqi + .5 \cdot \gamma \cdot B \cdot N\gamma \cdot F\gamma s \cdot F\gamma d \cdot F\gamma i = 1.678 \times 10^4$

$qu \div FS = 4793.377$

Use 4000 psf