ROC GEOTECHNICAL
CONSULTING ENGINEERS | SOIL TESTING

SUBSURFACE EXPLORATION AND GEOTECHNICAL INVESTIGATION FOR PROPOSED CITY PUBLIC MARKET IMPROVEMENTS 280 NORTH UNION STREET ROCHESTER, MONROE COUNTY, NEW YORK

Prepared For:

T.Y. LIN INTERNATIONAL
255 EAST AVENUE
ROCHESTER, NEW YORK 14604

Project No.: ROC.RPT.13.019
MAY 30, 2013

3445 Winton Place, Suite 117, Rochester, New York 14623 / Phone: (585) 424-6360
www.ROCGeotechnical.com

Table of Contents

Tables:

Appendices:

ROC GEOTECHNICAL
CONSULTING ENGINEERS | SOIL TESTING

SUBSURFACE EXPLORATION AND GEOTECHNICAL INVESTIGATION FOR PROPOSED CITY PUBLIC MARKET IMPROVEMENTS 280 NORTH UNION STREET ROCHESTER, MONROE COUNTY, NEW YORK

I. INTRODUCTION

ROC Geotechnical Consulting Engineers, PLLC. (**ROC**) is pleased to present our report for the subsurface exploration and geotechnical investigation for the proposed improvements to the City Public Market located at 280 North Union Street in Rochester, New York, Monroe County, New York. This investigation was performed per the request of Mr. Randy Bebout, P.E. with T.Y. Lin International (**T.Y. Lin**).

Our scope of services, which is outlined in our proposal dated April 22, 2013, includes subsurface exploration in or within proximity to the proposed building footprints using test borings; preparation of subsurface exploration logs; geotechnical evaluation of the subsurface conditions; and preparation of this report. Our report presents the results of our subsurface investigations and geotechnical evaluation, and includes a description of the existing site conditions and proposed construction; a description of the subsurface conditions; geotechnical engineering recommendations for foundation types and allowable bearing pressures, anticipated settlements, lateral earth pressure design parameters; and a discussion of construction considerations such as site preparation, earthwork and excavations, fill and backfill material and placement criteria, and control of water. The appendices include a site vicinity map, subsurface exploration location plan, and subsurface exploration logs.

II. BACKGROUND INFORMATION

Information pertaining to the project, including site plans, was provided by **T.Y Lin**. Additional information was obtained during site visits by our personnel. The proposed construction is shown in plan on drawing No.2 in **Appendix A.** The site address is 280 North Union Street, Rochester, New York. The project site is bordered by a railroad right of way to the south beyond which are commercial properties; by 1st Street, a paved area and a mix of residential and commercial properties to the east; by commercial properties to the north beyond which is Pennsylvania Avenue; and by Union Street to the west beyond which are a mix of commercial and residential properties.

The proposed project consists of the renovation of the existing "Shed B" into "Wintershed B" and the construction of a new "Open Shed D" to be located in the northeastern portion of the property. At the time of our subsurface investigation, the footprint of the new "Open Shed D" structure consisted of a paved area with a landscaped island. No surficial evidence of bedrock, such as outcroppings, was observed on the site.

The topography across the site is generally level and that there will be minimal cut and fill required. We understand that the foundations may consist of load bearing exterior walls and/or isolated columns. Structural loading information was not provided for the structures, however, we anticipate that maximum wall loads will be less than 10 kips per lineal foot (klf) and maximum column loads will be less than 100 kips.

III. SUBSURFACE EXPLORATION

The subsurface exploration performed at the project site for this investigation consisted of a total of 8 test borings performed on May 3, May 6, and May 8, 2013. The approximate test boring locations are shown on the drawings in Appendix **A**, and the test boring logs are presented in Appendix **B**. The test boring locations were established and staked in the field by **ROC**, using tape measurements, referenced to existing site features.

The borings were performed in or within proximity to the footprints of the existing Shed B and the planned Open Shed D, and were advanced to depths ranging from approximately 23.3 to 25.3 feet below the existing ground surface, whereupon split-spoon sampler refusal was encountered.

The test borings were advanced using hollow stem augers, and the soil samples were obtained from the borings using the Standard Penetration Test (SPT) in general accordance with the procedures set forth in test standard ASTM D1586. Sampling by using a 2-inch diameter split-spoon sampler was generally performed continuously to a depth of 12 feet, and at 5-foot intervals thereafter to boring completion. Representative portions of the soil samples recovered from the test borings were transported to our office for visual classification by a geotechnical engineer.

IV. SUBSURFACE CONDITIONS

A. Subsurface Conditions

The subsurface conditions discussed in this report were inferred from the test borings performed for this geotechnical evaluation. Subsurface conditions between exploration locations will vary. Subsurface conditions discussed in this report are representative of the locations at which the test borings were performed. **The contractor should not rely solely upon the subsurface conditions discussed in this report for bidding purposes, and is encouraged to perform site observations as needed to obtain representative information.** The stratification lines indicated on the subsurface exploration logs are approximate and may indicate gradational changes.

A brief summary of the subsurface conditions encountered at the test boring locations is presented below. For more details, please refer to the test boring logs presented in Appendix **B. Subsurface Information.**

Borings B-1 through B-6 and B-8 encountered 1 to 8 inches of asphalt at the ground surface. Boring B-7 encountered 2.5 inches of concrete at the ground surface. Five-inch thick brick pavers were encountered beneath the asphalt in borings B-2, B-4, and B-6. The pavers were underlain by 2 inches of sand and gravel fill in boring B-2 and 4 to 7 inches of sand fill in boring locations B-4 and B-6. A 3 to 5 inch thick layer of crushed concrete was encountered beneath the asphalt in borings B-3 and B-5. Five inches of sand and gravel fill with inclusions of crushed concrete and slag was encountered beneath the surface concrete at boring B-7. Fill materials consisting of sand and gravel with inclusions of slag overlying a layer of slag with trace sand were encountered beneath the asphalt in boring B-8 to a depth of approximately 2 feet. Native soils were encountered beneath the asphalt in boring B-1, beneath the crushed concrete in borings B-3 and B-5, and underlying the existing fill materials in the remaining borings. The native soils generally consist of mixtures of sand, gravel, and silt (in varying proportions), with occasional layers of silt. The color of the native soils is generally brown to reddish brown to a depth of approximately 15 feet where the color generally changes to brownish gray, and then changes to gray at approximately 20 feet. The native soils are generally moist to very moist (occasionally wet) and loose to firm in density in the upper 10 to 15 feet of overburden. Below these depths, the in-situ soils are generally very moist to wet and compact to very compact in density, as indicated by the SPT N-values. The borings were completed with split-spoon sampler refusal, at depths ranging from approximately 23 to 25 feet.

B. Free Standing Water

Free standing water was encountered in borings B-3, B-5, B-6, and B-8 at depths ranging from approximately 16 to 22 feet below the ground surface immediately upon completion of sampling. Free standing water was encountered at a depth of 22 feet approximately one hour after sampling in boring B-7. It should be noted that water may also be encountered at shallower depths in "trapped" conditions within overburden layers of varying compactness.

Samples which are brownish gray to gray in color were generally observed at depths ranging from approximately 15 to 20 feet. The gray color may represent anaerobic conditions, and the transition between brown (which is an indication of possible oxidation) to gray may be an indication of the groundwater table, or fluctuations in the groundwater level.

It should be noted that post drilling free water observations may not accurately represent groundwater levels as a result of the short time allowed for stabilization of the water level. Groundwater levels will be influenced by seasonal and construction related fluctuations.

C. Laboratory Analyses Results

The results of the laboratory analyses are presented in Appendix **C. Laboratory Analyses Results.**

Thirty six (36) natural moisture contents were performed on samples recovered from the test borings. The tests were completed in accordance with the procedure set forth in ASTM D2216. The moisture contents ranged from 8 to 15%. The average moisture content value for the samples tested is approximately 11%.

V. CONCLUSIONS AND RECOMMENDATIONS

A. General

A.1 Geology, Hydrology and Subsurface Conditions

The project, which is in the central portion of Monroe County, is located within the Ontario Lowlands physiographic province. The soil deposits within this province generally consist of glacially-derived deposits, such as glacial till (i.e. terminal moraines and ground moraine), granular deposits (i.e. kame, glacial outwash, and beach ridges) and glacio-lacustrine deposits (i.e. varved silts, clay, and fine sand deposits). Based upon the *Surficial Geologic Map of New York, Finger Lakes Sheet, 1986,* the overburden soils encountered at the project site may be identified as lacustrine silt and clay (lsc).

A.2 Foundations and Floor Slabs

The following is herein presented for your consideration:

- It is our opinion that the subsurface conditions encountered in the test borings are suitable to support the proposed structures on shallow foundation systems. We recommend that foundations bear upon stable native soils, or upon properly compacted structural fill placed upon stable native soils. Refer to Section **D. Foundation Design Recommendations** for more details.
- It is our opinion that the existing subsurface conditions are suitable to support proposed floor slab on grade areas. We highly recommend that a qualified geotechnical engineer representative be present during construction to evaluate and approve floor slab area subgrades.

- It should be noted that the above observations are based solely upon the results of borings completed at discrete locations and significant spacing. Therefore, it is anticipated that subsurface conditions between exploration locations may vary. We recommend that during construction the owner's testing representative implement a comprehensive testing program for evaluation of foundations bearing grades. Unstable material (i.e. soft or containing organic material, if encountered) should be undercut to a more suitable substratum and replaced with properly compacted **imported structural fill** material.

A.3 Reuse of On-Site Materials as Structural Fill

We anticipate that the on-site **non-organic** native soils may be reused as subgrade fill beneath proposed structural areas associated to attain proposed subgrade elevations, provided that they do not contain substantial amounts of debris and/or organics. We recommend that on-site natural soils reused as fill have a maximum particle size of 3 inches. Reuse of the on-site natural soils is contingent upon proper placement and compaction. Proper compaction may be difficult to attain if construction is performed during wet seasons (i.e. late fall, winter, early spring), or if the material is above the optimum moisture content. If proper compaction cannot be achieved, an **imported structural fill** or **base course material** should be used.

B. Seismic Design Parameters

Based upon the subsurface information obtained from the borings (i.e. visual-manual classification, SPT N–values), and our knowledge of the local geology, it is our opinion that **Site Class C**, as referenced on page 291 of the 2010 Building Code of New York State (Chapter 16, Table 1613.5.2, Site Class Definitions) may be used for the site. Interpolated probabilistic ground motion parameters for the project site were obtained from the USGS web site by using the USGS latitude-longitude earthquake ground motion parameters obtained for the 2002 data. Based upon the 2002 data, the following ground motion parameters for 2% probability of exceedance, in 50 years, may be used for the project site:

- Peak Ground Acceleration (PGA): 0.10g;
- 0.2 second period spectral acceleration (S_s): 0.20g;
- 1.0 second period spectral acceleration (S_1): 0.06g

Finally, a brief discussion of liquefaction potential. Based upon data obtained from the USGS National Seismic Hazard Mapping Project, the probability that a magnitude 6.0 earthquake on the Richter scale might occur within 100 years and 50 Km of the project area is less than 1%. Based upon these parameters, the subsurface condition encountered in the test borings, and our analyses, it is our opinion that the potential for liquefaction of the soils is negligible, and that the risk of settlement of the underlying soils resulting from these seismic loads is also negligible.

C. Earthwork and Excavations

We anticipate that the site work can generally be performed by conventional open cut methods using standard construction techniques and equipment for excavations in the overburden soils.

Earthwork should commence with the complete removal of all surficial asphalt and organic soils (i.e. topsoil; organic subsoil) and any needed cut quantities from the proposed structure's footprint. Upon completion of the stripping and excavation, and prior to any fill placement, the building subgrade should be examined by a representative of **ROC**. Subgrades located beneath the proposed structural areas should be thoroughly proofrolled (**in static mode**), using a smooth drum roller with a minimum static drum weight of 10 tons. We recommend a minimum of 2 overlapping passes in one direction, followed by 2 overlapping passes in a direction

perpendicular to the first 2 passes. The intent is to compact areas which have relatively loose surficial soil, to re-compact areas loosened by stripping operations, and to identify unacceptable subgrade areas. Areas which are unsuitable and which cannot be stabilized by repeated compactive effort shall be over-excavated to a suitable subgrade, and backfilled with properly compacted **imported structural fill.** The undercut should be of adequate depth such that, after backfilling is complete, the resulting subgrade surface is firm and stable under the passing roller.

Excavations must be performed in accordance with the current Occupational Safety and Health Administration (OSHA) Standards for Excavations (29 CFR dated October 31, 1989). It is our opinion that the on-site soils may be classified as Type "B". Recommendations for excavation slopes and procedures are presented in the OSHA reference. The reference recommends a maximum slope of 1 Vertical to 0.75 Horizontal (1V:0.75H) for temporary excavations in Type "A" soil, 1 Vertical to 1 Horizontal (1V:1H) for temporary excavations in Type "B" soil, and 1 Vertical to 1.5 Horizontal (1V:1.5H) for temporary excavations in Type "C" soil.

The contractor should select the means and methods for providing support of excavations in accordance with safety requirements, plans, and project specifications. The contractor must evaluate soil conditions during excavations since variations in the soil can occur across the site. We recommend that the excavations be monitored continuously for signs of deterioration such as seepage of water or sloughing of soil into the excavation. The contractor is ultimately responsible for excavation safety.

D. Foundation Design Recommendations

As discussed in Section **A. General**, it is our opinion that the anticipated subsurface conditions encountered at the site are suitable for support of the proposed structure on a shallow foundation system. The following recommendations are herein presented for your consideration:

- All foundations shall bear upon stable native soils, or upon properly compacted structural fill placed upon stable native soils.
- We recommend that a net allowable bearing pressure of **2,500** pounds per square foot (psf) may be used for the design of isolated spread foundations for the proposed structure.
- Net allowable bearing pressure is defined as the soil pressure at the recommended bearing elevation in excess of the overburden pressure at the adjacent finished grade. We recommend that all exterior foundations or those in un-heated areas bear at a minimum depth of 4 feet below the lowest exterior finished grade as protection against frost action.
- We recommend a minimum lateral dimension for isolated spread footings of 3.0 feet.
- Based upon the anticipated structural loads and the net allowable bearing pressure discussed above, we anticipate total settlements for the structure's foundations will be less than 1 inch, and that differential settlements within the new structure will be less than 1/2 inch.
- We recommend that the geotechnical engineer of record or his representative observe and approve all bearing grades and subgrades (prior to the placement of reinforcing steel and concrete forms) to make sure that they are stable, and free of any loose soil, mud, water or frost.

E. Floor Slab Design Parameters

We recommend that prior to the placement of the **base course** material, the exposed grades located beneath the proposed floor slab areas be thoroughly proofrolled using a drum roller with a minimum static drum weight of 10 tons operated in static mode. We recommend that the floor slab subgrade be approved by a ROC geotechnical representative before the placement of the base course material.

Based upon the anticipated subsurface conditions, it is our opinion that a modulus of subgrade reaction of **100 pci** may be used for the on-site native soils. A modulus of "subbase" reaction of **150 pci** may then be used for the floor slab that bears on a minimum of **8 inches** of compacted base course.

The floor slab should be designed to be structurally independent of the proposed foundations to reduce the risk of cracking of the slabs.

F. Lateral Earth Pressure Design Parameters

The following design parameters are provided for the design for lateral earth pressures including active (K_a), passive (K_p), and at-rest (K_o) lateral earth pressure coefficients.

TABLE I: LATERAL EARTH PRESSURE DESIGN PARAMETERS

PARAMETER		VALUE
Static coefficient of sliding friction between the concrete and:		
• on-site soil		0.30
• imported structural fill/base/subbase		0.50
Unit weight of :		
• compacted on-site soils reused as fill		125 pcf
• in-situ soils		120 pcf
• compacted imported structural fill/base/subbase		140 pcf
Imported structural fill, base/subbase, ($\phi = 36^o$):		
• K_a		0.26
• K_p		3.85
• K_o		0.41
On-site native soils ($\phi = 32^o$):		
• K_a		0.31
• K_p		3.25
• K_o		0.47
Equivalent fluid weight, imported granular structural fill:		
• active pressures (Ka):	undrained conditions	80 psf/ft width of wall
	drained conditions	40 psf/ft width of wall
• passive earth pressures (Kp):	undrained conditions	280 psf/ft width of wall
	drained conditions	405 psf/ft width of wall
• at-rest earth pressures (Ko):	undrained conditions	95 psf/ft width of wall
	drained conditions	60 psf/ft width of wall

In designing the retaining structures, consideration must be given to surcharge loads and their contribution to the lateral earth pressures on the structures. Surcharges may include vehicle and/or pedestrian traffic, floor slabs, pavement, sidewalks, and adjacent foundations.

G. Structural Fill and Backfill Criteria

Imported structural fill placed as fill beneath proposed foundations, sidewalks, and as backfill against proposed foundations should be a material consisting of predominately granular soils, free from organic matter, clay, ice, debris, or other deleterious material. The **imported structural fill** should have a maximum particle size of 3 inches, less than 40% by weight passing the No. 40 sieve, and less than 10% by weight passing the No. 200 sieve. For example, materials which meet the gradation criteria for NYSDOT Items No. 304.11, 304.12 and 304.14 would be acceptable.

Base course material used beneath floor slabs and **subbase course** material placed beneath rigid pavement areas should meet the criteria for NYSDOT Items No. 304.11, 304.12 or 304.14. **Subbase course** material used beneath flexible pavement areas should meet the criteria for NYSDOT Items No. 304.12.

We anticipate that the native soils may be reused as subgrade fill within the building footprints. **Reuse of the on-site fill is contingent upon achieving proper compaction**. If placed during dry, warm weather, we anticipate that tilling or disking of the native soils, combined with air drying of the material during compaction, may be sufficient to reduce the natural moisture content of the native soils. If construction is performed during the wet season, we anticipate that proper compaction of this soil may be more difficult to achieve. If proper compaction cannot be achieved, an **imported structural fill** or **base course material** should be used.

Select imported structural fill (also designated to as **Drainage Fill**) should consist of any material that complies with New York State Department of Transportation, Standard Specifications, Section 703-02, Coarse Aggregate, with the requirements for blend of Size Designation No. 1 & 2, with 100 percent passing a 1-1/2-inch sieve and not more than 15 percent passing a 1/4-inch sieve.

On-site or imported structural fill, select imported structural fill, backfill, base course, and subbase course materials should be placed in horizontal lifts not to exceed 8 inches loose thickness, and should be compacted to 95% of maximum dry density according to the Modified Proctor Test (ASTM D1557). In confined areas such as over-excavated areas beneath foundations, the fill should be placed in horizontal lifts not to exceed 6 inches loose thickness and compacted to 95% of maximum dry density using a manually operated compactor.

The following frequency is recommended for in place-moisture/density testing:

TABLE II: IN PLACE-MOISTURE/DENSITY TESTING

Location	Minimum number of tests
Backfilling along trenches and foundation walls	1 test per 50 lineal feet per lift
Backfilling isolated excavations (i.e. column foundations, manholes, etc.)	1 test per lift
Filling in open areas for slab-on-grade construction	1 test per 2,500 square feet per lift

H. Control of Groundwater

The contractor should be required to conduct all excavation and backfill operations in-the-dry. Provisions should be made to remove infiltrating groundwater, perched water, and surface runoff resulting from rainfall or other sources which may discharge to the excavations. Design, construction, and maintenance of water control methods during excavation and backfill procedures should be made the responsibility of the contractor. We anticipate that proper grading of the ground surface to direct surface runoff away from excavations and

subgrades, and occasional pumping from properly filtered sumps will be adequate to control infiltrating water and normal surface runoff. Excavations performed in wet seasons may require more frequent pumping.

VI. CLOSING

We prepared this report for the exclusive use of **TY LIN INTERNATIONAL,** and their designated agents for design of the proposed renovated and new Sheds at the City Public Market in Rochester, New York. Our recommendations in this report are based upon the information obtained from the subsurface investigation, and our understanding of the proposed construction. Changes to our recommendations may be warranted if the actual subsurface conditions vary from those anticipated, or if the proposed construction varies from our understanding, as discussed in this report. Generally accepted soil mechanics and foundation engineering practices were used to develop our recommendations. We conducted our services in a manner consistent with that level of skill ordinarily exercised by members of the profession currently practicing under similar conditions.

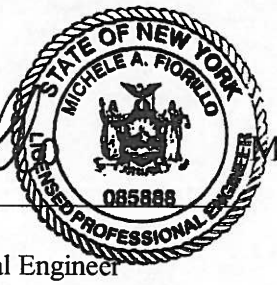
We recommend that the geotechnical engineer be provided the opportunity to generally review the foundation and site work drawings and contract specifications to evaluate their consistency with our recommendations. The recommendations presented in this report are contingent upon continuous geotechnical monitoring by the geotechnical engineer during the earthwork, foundation construction, and floor slab subgrade preparation. We recommend that the monitoring include observation of site preparation, proofrolling, floor slab subgrades, foundation bearing grades, and monitoring of fill placement and compaction.

We recommend that this report be made available to prospective bidders of the construction by incorporating it into the contract documents. **Bidders should be informed that this report was prepared for design purposes only and may not contain sufficient information to prepare an accurate bid**. Isolated information is not to be reproduced, copied or transferred from this report.

We appreciate the opportunity to be of service to you on this project. If you have any questions regarding this report, or if we may provide additional services, please contact us.

Respectfully submitted,
ROC GEOTECHNICAL CONSULTING ENGINEERS, PLLC

Reviewed By:



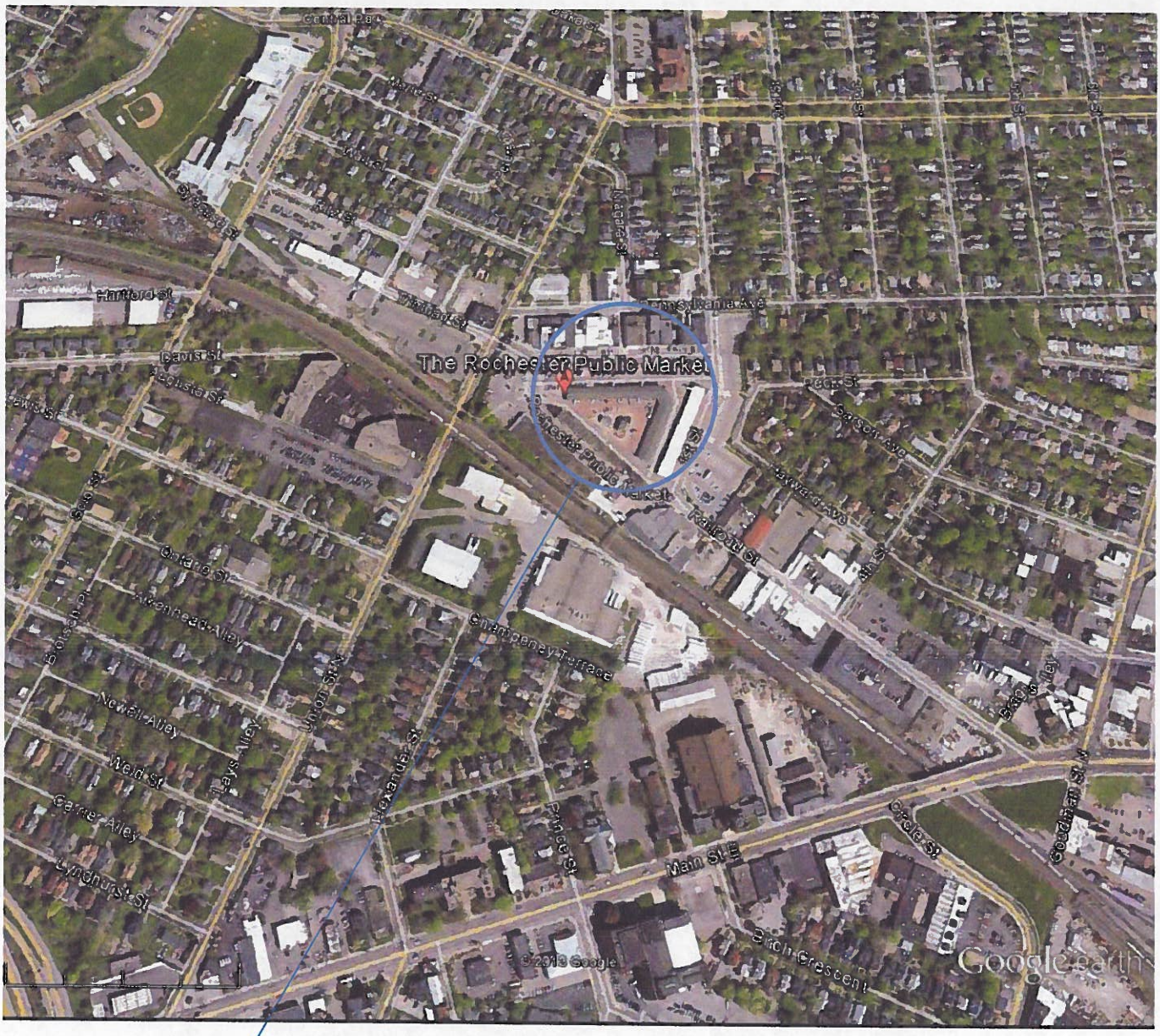
May 30, 2013

Michele A. Fiorillo, P.E.
Member/ Senior Geotechnical Engineer

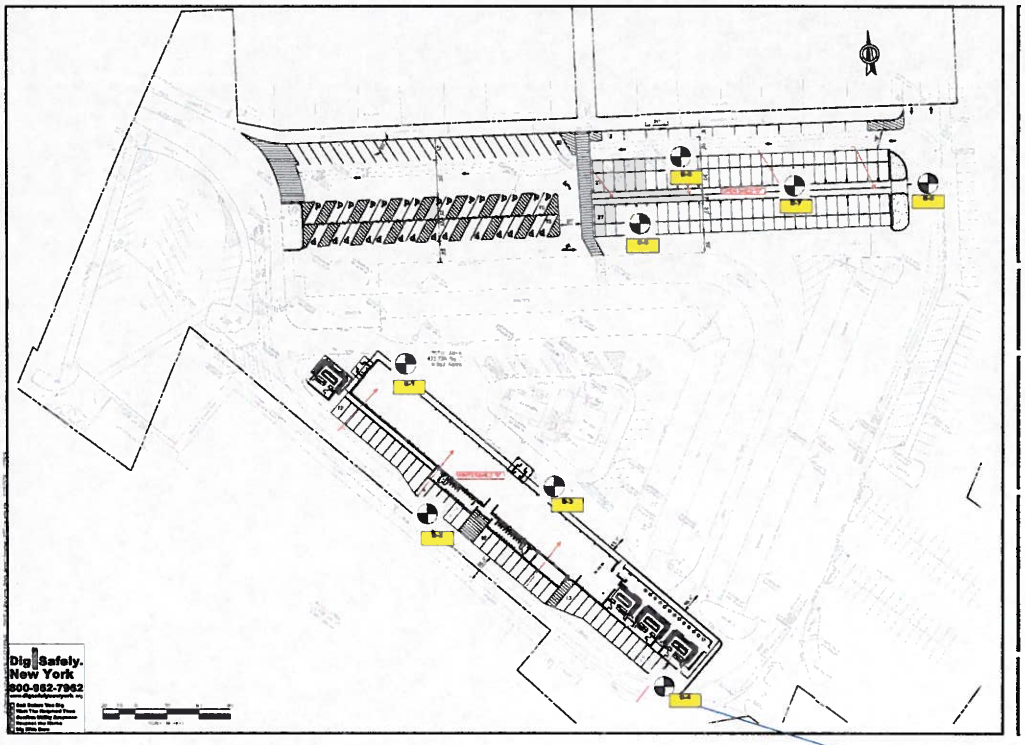
Prepared by:

Thomas J. Zaso, P.E.
Member / Senior Geotechnical Engineer

Appendix A: Drawings



ROC GEOTECHNICAL 3445 Winton Place, Suite 117 Rochester, New York 14623 (585) 424-6360 **PHONE** **www.rocgeotechnical.com**	**PROJECT:** Rochester Public Market 280 Union Street Rochester, New York **CLIENT:** T.Y. Lin International 255 East Avenue Rochester, New York 14604	**Site Vicinity Map** PROJECT No.: ROC.RPT.13.019 PREPARED BY: MJF DATE: April 26, 2013 SCALE: NTS — Drawing No.1



This drawing was prepared from a drawing provided by T.Y. Lin International

ROC GEOTECHNICAL 3445 Winton Place, Suite 117 Rochester, New York 14623 (585) 424-6360 PHONE www.rocgeotechnical.com	PROJECT: Rochester Public Market 280 Union Street Rochester, New York	Boring Plan	
		PROJECT No.: ROC RPT 13.019	
	CLIENT: T.Y. Lin International 255 East Avenue Rochester, New York 14604	PREPARED BY: MJF	
		DATE: May 9, 2013	
		SCALE: NTS	Drawing No.2

Appendix B: Subsurface Information

Test Boring Logs

HOLE NO. B-1 SURF. ELEV. _____ PROJECT NO. _____

PROJECT TGE. XX. XXX LOCATION _____

CLIENT _____

DATE STARTED _____ COMPLETED _____

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0		1	2	2	3	5	5		SAND and GRAVEL, trace silt (moist, loose)	Water was encontered at 2.0 feet
2.5		2							Gray SHALE, soft to medium hard, some fractures	Run no. 1 2.5 ft to 5.0 ft Recovery 95% RQD 50%
5										

SAMPLE SYMBOLS

- Spilt-Spoon Sampe
- Shelby Tube Sample
- Auger Sample or Test Pit Sample Bulk Sample
- Rock Core or Pavement Core

PARTICLE SIZE

Identification of soil type is made on the basis of an estimate of particle sizes, and in the case of fine grained soils, also on the basis of plasticity.

SOIL TYPE	SOIL PARTICLE SIZE	DESCRIPTION
Boulder	> 12"	
Cobble	12" to 3"	
Gravel -course	3" to 3/4"	Course Grained (Granular)
Gravel -fine	3/4" to No 4	
Sand -course	No 4 to No 10	
Sand -medium	No 10 to No 40	
Sand -fine	No 40 to No 200	
Silt -Non Plasic (Granular)	< No 200	Fine Grained
Clay-Plastic (Cohesive)	< No 200	

QUANTIFYING SOIL MIXTURES

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimates are based on weight of total sample.

TERM	PERCENT OF TOTAL SAMPLE
"and"	35% to 50%
"some"	20% to 35%
"little"	10% to 20%
"trace"	less than 10%

When sampling gravelly soils with a standard split-spoon sampler, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.

RELATIVE COMPACTNESS AND CONSISTENCY

The relative compactness or consistancy is described in accord with the following terms.

GRANULAR SOILS		COHESIVE SOILS	
Term	Blows per Foot (SPT N-value)	Term	Blows per Foot (SPT N-value)
Loose	< 11	Very Soft	< 3
Firm	11 to 30	Soft	3 to 5
Compact	31 to 50	Medium	5 to 15
Very Compact	> 50	Stiff	15 to 25
		Hard	> 25

Large particles encountered in the soils during sampling, such as large gravel, cobbles and boulders, will often significantly influence the blows per foot (SPT N-values) recorded during the penetration test.

SOIL DEPOSITION STRUCTURE

The following terms are used to describe the deposition structure of the soils, particularly fine grained soils.

TERM	DEFINED BY
Varved	horizontal uniform layers or seams of soils(s).
Layer	soil deposit more than 6" thick.
Seam	soil deposit less than 6" thick
Parting	soil deposit less than 1/4" thick
Laminated	irregular, horizontal and angled seams and partings of soil(s).

ROCK CLASSIFICATION TERMINOLOGY

CLASSIFICATION	TERM	DEFINED BY
Hardness	Soft	Scratched by fingernail
	Medium Hard	Scratched easily by pocketknife
	Hard	Scratched with difficulty by pocketknife
	Very Hard	Cannot be scratched by a pocketknife
Weathering	Very Weathered	Estimated from the relative amounts of disintegration (of the rock), iron staining, rock core recovery, soil seams, etc.
	Weathered	
	Sound	
Bedding		Natural breaks in the rock layers
	Laminated	< 1" thick
	Thin Bedded	1" to 4" thick
	Bedded	4" to 12" thick
	Thick Bedded	12" to 36" thick
	Massive	> 36" thick
Fracturing	Quantitative descriptions such as "highly", "moderately" or "slightly" fractured, depths over which fractures are noted, and relative angles of the fractures (if applicable).	Fracturing refers to natural breaks in the rock core. Breaks may be oriented parellel to the horizontal rock layers, or at some angle to the (horizontal) rock layers.

KEY TO SYMBOLS

Symbol Description

Strata symbols

 ASPHALT

 SAND

 Pavment Brick

 FILL

 CONCRETE

 SAND and SILT

 SAND and GRAVEL

Misc. Symbols

 Water table at date indicated

Soil Samplers

 Auger

 Standard penetration test

Notes:

1. These subsurface logs form a part of the geotechnical report and should not be seperated from the report.

2. The information presented on these subsurface logs are subject to the limitations, discussions and conclusions presented in the report.

3. The subsurface conditions between the subsurface exploration locations, including topsoil and fill thicknesses, will vary.

4. The subsurface logs should not be used as the sole means of estimating material quantities, including fill, topsoil and/or organic subsoils, for bidding purposes. Discussions presented in this report of subsurface conditions may aid in estimating quantities. The contractor is ultimately responsible for performing any additional site observations/explorations to aid in bidding.

ROC GEOTECHNICAL

HOLE NO. B-1 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/3/13 COMPLETED 5/3/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									7" ASPHALT	
		1	4	5	6		11		.6 Brown SAND, some Gravel, little Silt (moist, firm)	
2.5		2	3	4	4	5	8		grades to "some" Silt, "little" Gravel (moist, loose)	
		3	7	9	13	10	22		(firm)	
5										
		4	8	9	10	11	19			
7.5										
		5	9	11	11	13	22		grades to "trace" gravel	
10		6	6	11	15	13	26		color changes to Reddish Brown	
12.5										
15		7	15	28	28	30	56		color changes to Brownish Gray (very compact)	
17.5										
20										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 1 OF 2

ROC GEOTECHNICAL

HOLE NO. B-1 **SURF. ELEV.** _____ **PROJECT NO.:** ROC.13.019

PROJECT Public Market **LOCATION** Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/3/13 **COMPLETED** 5/3/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
20		8	14	28	32	36	60		color changes to Gray	
22.5										
		9	13	46	50/3		REF			REF=sampler refusal
25									25.3	
									Boring complete at 25.3 feet, upon sampler refusal.	No free standing water recorded, upon completion.
27.5										
30										
32.5										
35										
37.5										
40										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 2 OF 2

ROC GEOTECHNICAL

HOLE NO. B-2 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/3/13 COMPLETED 5/3/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									7" ASPHALT	
									.6 5" BRICK PAVERS	
		1	10	11			n/a		1 2" SUBBASE: Dark Brown SAND and GRAVEL, trace silt (moist)	
2.5		2	10	9	7	5	16		1.2 Brown SAND, some Silt, trace gravel (moist, firm)	
		3	5	7	7	9	14		color changes to Reddish Brown (very moist)	
5										
		4	10	15	11	11	26		grades to "some" Gravel / possible cobbles	
7.5									8	
		5	5	7	10	8	17		Brown SAND, some Silt, little Gravel (wet, firm)	
10		6	10	10	12	11	22		seam of Brown SILT grades to "trace" gravel	
12.5										
15		7	11	12	12	21	24			Drillers note water encountered at approximately 15 feet.
17.5										
20										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 1 OF 2

ROC GEOTECHNICAL

HOLE NO. B-2 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/3/13 COMPLETED 5/3/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
20	■	8	13	50/4			REF		(very compact)	REF=sampler refusal
22.5	■	9	23	48	50/2		REF		color changes to Gray	
25									25.2 Boring complete at 25.2 feet, upon sampler refusal.	No free standing water recorded, upon completion.
27.5										
30										
32.5										
35										
37.5										
40										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 2 OF 2

ROC GEOTECHNICAL

HOLE NO. B-3 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/6/13 COMPLETED 5/6/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									8" ASPHALT	
		1	5	11	11		22		.67 3" Crushed CONCRETE	
									.9 Brown SAND, some Silt, little Gravel (moist, firm)	
2.5		2	12	12	11	15	23		2 Brown SAND and SILT, trace gravel (moist, firm)	
		3	12	14	12	10	26			No recovery for sample #3. Coarse gravel fragments were lodged in the tip of the sampler spoon.
5										
		4	8	12	18	18	30		6 Brown SAND, some Silt, little Gravel (very moist, firm)	
7.5										
		5	6	21	18	40	39		(moist, compact)	
10		6	9	11	10	12	21		grades to "trace" gravel (firm)	
12.5										
15		7	8	12	25	35	37		grades to "some" Gravel, "little" Silt (very moist, compact)	
17.5										
20										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 1 OF 2

ROC GEOTECHNICAL

HOLE NO. B-3 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/6/13 COMPLETED 5/6/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
20		8	15	18	23	17	41			Drillers note water encountered at approximately 20 feet.
22.5		9	40	50/5			REF		23 Brown SAND, some Silt, trace gravel (wet, very compact) 23.9 Boring complete at 23.9 feet, upon sampler refusal.	REF=sampler refusal. Free standing water recorded at 18 feet, upon completion.
25										
27.5										
30										
32.5										
35										
37.5										
40										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 2 OF 2

ROC GEOTECHNICAL

HOLE NO. B-4 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/6/13 COMPLETED 5/6/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									1" ASPHALT (.1)	
		1	3	7	7		14		5" Paver BRICKS (.5)	
									7" Fill: SAND (1.1)	
2.5		2	12	14	14	17	28		Brown SAND, little Silt trace gravel (very moist, firm) grades to "some" Silt (moist, firm)	
		3	5	14	16	13	30			
5										
		4	9	12	10	15	22		(very moist)	▽ Drillers note water encountered at approximately 6 feet.
7.5										
		5	9	13	12	12	25		(wet)	
10										
		6	8	12	14	16	26		(moist)	
12.5									seam of Dark Brown SILT	
15		7	16	18	18	20	36		color changes to Reddish Brown (very moist, compact)	
17.5										
20										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 1 OF 2

ROC GEOTECHNICAL

HOLE NO. B-4 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/6/13 COMPLETED 5/6/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
20		8	28	50/4			REF		grades to "little" Gravel (moist, very compact)	REF=sampler refusal
22.5		9	18	32	50/3		REF		grades to "trace" gravel (wet)	
									24.3' Boring complete at 24.3 feet, with sampler refusal.	No free standing water recorded, upon completion.
25										
27.5										
30										
32.5										
35										
37.5										
40										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 2 OF 2

ROC GEOTECHNICAL

HOLE NO. B-5 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/6/13 COMPLETED 5/6/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									3" ASPHALT	
		1	3	9	3		12		.25 5" Crushed CONCRETE .67 Brown SAND, some Silt, little Gravel (moist, firm)	
2.5		2	3	5	7	8	12		grades to "trace" gravel (very moist)	
		3	5	7	9	9	16		color changes to Brownish red	
5										
		4	8	8	7	11	15		color changes to Brown	
7.5										
		5	8	9	9	12	18			
10										
		6	11	30	48	50/3	78		grade to "little" Gravel (moist, very compact)	
12.5										
15									15	▽ Drillers note water encountered at approximately 15 feet.
		7	28	32	47	50	79		Grayish Brown SAND, some Silt, trace gravel (very moist, very compact)	
17.5										
20										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 1 OF 2

HOLE NO. B-5 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/6/13 COMPLETED 5/6/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
20		8	37	50/3			REF		color changes to Gray (moist)	REF=sampler refusal
22.5		9	40	50/2			REF		23.7	No recovery for sample #9.
									Boring complete at 23.7 feet, upon sampler refusal.	Free standing water recorded at 17 feet, upon completion.
25										
27.5										
30										
32.5										
35										
37.5										
40										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 2 OF 2

ROC GEOTECHNICAL

HOLE NO. B-6 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/8/13 COMPLETED 5/8/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									5" ASPHALT	
									.4	
		1	3	3	4		7		5" Brick PAVERS	
									.8	
									4" FILL: Sand	
									1.1	
2.5		2	7	11	11	10	22		Brown SAND, some Gravel, little Silt (moist, loose) grades to "some" Silt, trace gravel	
		3	3	4	7	8	11		(very moist, firm)	
									4	
5									Reddish Brown SAND and GRAVEL, little Silt (very moist, firm)	
		4	20	12	12	15	24		6	
									Brown SAND, little Silt, trace gravel (very moist, firm)	
7.5										
		5	4	11	10	12	21			
10		6	7	11	11	22	22		grades to "some" Silt (wet)	Drillers note water was encountered at approximately 10 feet.
12.5										
15		7	30	50	50/2		REF		color changes to Grayish Brown (moist, very compact)	REF=sampler refusal
17.5										
20										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 1 OF 2

HOLE NO. B-6 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/8/13 COMPLETED 5/8/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
20		8	21	38	50/5		REF		color changes to Gray (wet)	
22.5		9	50/4				REF		(moist)	
									23.3 Boring complete at 23.3 feet, upon sampler refusal.	Free standing water recorded at 20 feet, upon completion.
25										
27.5										
30										
32.5										
35										
37.5										
40										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 2 OF 2

ROC GEOTECHNICAL

HOLE NO. B-7 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/8/13 COMPLETED 5/8/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									2.5" CONCRETE	
									.2	
		1	3	5	7		12		5" FILL: SAND and GRAVEL with inclusions of crushed Concrete and Slag	Poor recovery for Sample #1 due to coarse gravel fragment in tip of sampler spoon.
2.5		2	5	6	17	10	23		.67 Brown SAND, some Gravel, little Silt (moist, firm)	No recovery for Sample #2. White coarse gravel fragments were lodged in the tip of the sampler spoon.
		3	7	9	13	13	22			
5										
		4	6	10	12	11	22		grades to "some" Silt, "trace" gravel (very moist)	
7.5										
		5	7	11	12	12	23		grades to "little" Gravel	
10		6	12	15	20	24	35		(moist, compact)	
12.5										
15		7	21	36	50/4		REF		grades to "trace" gravel (very compact)	REF=sampler refusal
17.5										
20										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 1 OF 2

HOLE NO. B-7 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/8/13 COMPLETED 5/8/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
20		8	17	35	50		85		color changes to Gray (very moist, very compact)	
22.5		9	36	50/2			REF		Boring complete at 23.7 feet, upon sampler refusal.	Free standing water recorded at 22 feet after borehole was left open for an hour.
25										
27.5										
30										
32.5										
35										
37.5										
40										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb

WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 2 OF 2

ROC GEOTECHNICAL

HOLE NO. B-8 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/8/13 COMPLETED 5/8/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
0									5" ASPHALT	
		1	36	25	25		50		FILL: SAND and GRAVEL with inclusions of Slag (42)	
									(5)	
2.5		2	1	8	8	7	16		FILL: Dark Red SLAG, trace brown sand (2)	
									Brown SAND, some Silt, trace gravel (very moist, firm)	
		3	6	6	8	8	14			
5										
		4	7	10	13	14	23		grades to "little" Gravel	
7.5										
		5	8	9	8	8	17			
10										
		6	3	7	10	10	17			
12.5										
15		7	18	21	37	50	58		grades to "trace" gravel (moist, very compact)	
17.5										
20									20	

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb
WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 1 OF 2

HOLE NO. B-8 SURF. ELEV. _____ PROJECT NO.: ROC.13.019

PROJECT Public Market LOCATION Union Street

CLIENT T.Y. Lin Rochester, NY

DATE STARTED 5/8/13 COMPLETED 5/8/13

DEPTH (FEET)	Sample	Sample No.	BLOWS ON SAMPLE 0-6	6-12	12-18	18-24	N	GRAPHIC LOG	DESCRIPTION & CLASSIFICATION	WATER TABLE & REMARKS
20		8	23	35	50		85		Brownish Gray SAND, some Silt, little Gravel (very moist, very compact)	
22.5		9	15	32	50		82		grades to "trace" gravel	
									23.5 Boring complete at 23.5 feet, upon sampler refusal.	Free standing water recorded at 22 feet, upon completion.
25										
27.5										
30										
32.5										
35										
37.5										
40										

N=NUMBER OF BLOWS TO DRIVE 2 " SPOON 24 " WITH 140 lb

WT. FALLING 30 " PER BLOW

LOGGED BY Ian Muir SHEET 2 OF 2

Appendix C: Laboratory Test Results

Moisture Content Tests

ROC GEOTECHNICAL
CONSULTING ENGINEERS | SOIL TESTING

Project Name:	Public Market	Project No.:	ROC. RPT.13.019
Client:	T.Y. Lin	Location:	Rochester, New York
Date:	5/20/13	Test Performed By:	Ian Muir

Moisture Content Results (ASTM D2216)

Test No.	Location	Depth (ft)	Tare	Weight					Moisture Content
				Tare (grams)	Tare+Soil Moist (grams)	Tare+Soil Dry (grams)	Soil Dry (grams)	Water (grams)	
1	B-1 S-2	2 - 4	ST-19	11.20	48.85	44	32.8	4.85	**15%**
2	B-1 S-3	4 - 6	ST-24	11.08	69.62	64.75	53.67	4.87	**9%**
3	B-1 S-4	6 - 8	ST-36	11.20	73.29	68.01	56.81	5.28	**9%**
4	B-1 S-5	8 - 10	ST-30	11.49	65.33	60.40	48.91	4.93	**10%**
5	B-1 S-6	10 - 12	ST-16	11.39	62.69	57.76	46.37	4.93	**11%**
6	B-1 S-7	15 - 17	ST-34	11.24	57.48	53.84	42.6	3.64	**9%**
7	B-1 S-8	20 - 22	ST-5	11.17	50.89	47.79	36.62	3.1	**8%**
8	B-1 S-9	25.3	ST-31	11.09	62.23	57.74	46.65	4.49	**10%**
9	B-2 S-1	1 - 2	ST-18	11.23	65.95	61.11	49.88	4.84	**10%**
10	B-2 S-2	2 - 4	ST-26	11.16	77.15	70.93	59.77	6.22	**10%**
11	B-2 S-3	4 - 6	ST-32	11.43	83.54	76.54	65.11	7	**11%**
12	B-2 S-4	6 - 8	ST-12	11.26	78.47	72.16	60.9	6.31	**10%**
13	B-2 S-5 (1)	8 - 10	ST-33	11.02	84.81	75.99	64.97	8.82	**14%**
14	B-2 S-5 (2)	8 - 10	ST-11	11.15	64.77	59.63	48.48	5.14	**11%**
15	B-2 S-6	10 - 12	ST-6	11.20	67.59	61.31	50.11	6.28	**13%**
16	B-2 S-7	15 - 17	ST-14	11.06	77.17	71.23	60.17	5.94	**10%**
17	B-2 S-8	20 - 22	ST-23	11.18	73.32	67.13	55.95	6.19	**11%**
18	B-2 S-9	24 - 25.3	ST-7	11.24	66.39	61.28	50.04	5.11	**10%**
19	B-3 S-1	0.9 - 2	ST-27	11.16	57.79	54.46	43.3	3.33	**8%**
20	B-3 S-2	2 - 4	ST-15	11.29	47.58	43.91	32.62	3.67	**11%**

ROC GEOTECHNICAL
CONSULTING ENGINEERS | SOIL TESTING

Project Name:	Public Market	Project No.:	ROC. RPT.13.019
Client:	T.Y. Lin	Location:	Rochester, New York
Date:	5/20/13	Test Performed By:	Ian Muir

Moisture Content Results (ASTM D2216)

Test No.	Location	Depth (ft)	Tare	Weight					Moisture Content
				Tare (grams)	Tare+Soil Moist (grams)	Tare+Soil Dry (grams)	Soil Dry (grams)	Water (grams)	
21	B-3 S-4	6 - 8	ST-3	11.10	77.24	71.08	59.98	6.16	**10%**
22	B-3 S-9	23 - 25	ST-35	11.12	76.32	71.02	59.9	5.3	**9%**
23	B-4 S-1	1.5	ST-29	11.40	63.84	58.35	46.95	5.49	**12%**
24	B-4 S-2	2 - 4	ST-9	11.39	53.40	49.95	38.56	3.45	**9%**
25	B-4 S-3	4 - 6	ST-17	11.06	45.62	42.75	31.69	2.87	**9%**
26	B-4 S-4	6 - 8	ST-8	11.28	59.95	55.18	43.9	4.77	**11%**
27	B-5 S-2	2 - 4	ST-28	11.40	66.65	60.58	49.18	6.07	**12%**
28	B-5 S-3	4 - 6	ST-21	11.21	77.58	70.36	59.15	7.22	**12%**
29	B-5 S-4	6 - 8	ST-2	11.15	107.15	96.50	85.35	10.65	**12%**
30	B-6 S-2	2 - 4	ST-25	11.22	67.02	61.66	50.44	5.36	**11%**
31	B-6 S-3	4 - 6	ST-6	11.19	71.10	65.60	54.41	5.5	**10%**
32	B-6 S-4	6 - 8	ST-31	11.05	72.67	65.54	54.49	7.13	**13%**
33	B-7 S-3	4 - 6	ST-32	11.42	70.19	65.74	54.32	4.45	**8%**
34	B-7 S-4	6 - 8	ST-36	11.18	81.30	74.25	63.07	7.05	**11%**
35	B-8 S-3	4 - 6	ST-18	11.23	66.32	60.08	48.85	6.24	**13%**
36	B-8 S-4	6 - 8	ST-24	11.13	88.35	80.75	69.62	7.6	**11%**