

1 ADDENDUM #1

All clauses set forth in the Bidding Documents, Contract Documents and General Requirements of the original Contract Documents shall apply to and govern this work. The addendum refers to changes and additions to the original Contract Documents and is to be read in conjunction with the same. All other parts of the original Contract Documents are to be considered as applying to the work of this Contract with the exceptions and changes as noted below.

1.1 SPECIFICATIONS

.1 Reference Section 00 01 18 - Appendices:

.1 Reference Paragraph 1.1:

.1 Add new Paragraph .2 as follows:

"2 APPENDIX 'B' Geotechnical Investigation Report
By EastTech Engineering Consultants
Dated: January 6, 2021."

Note: New Appendix 'B' is attached and forming part of this addendum.

.2 Reference Section 00 21 13 - Instructions to Bidders:

.1 Reference Paragraph 1.27.1.1.2:

.1 **The Site Meeting will take place at 2:00 PM on March 24th, 2021. Bidders to meet at 20 Innovation Way, in Parking Lot. Please Note: Masks are mandatory.**

.3 Reference Section 00 41 13 - Bid Form:

.1 Reference Paragraph 1.12 - Appendix 'E'.

.1 Delete Appendix 'E' as originally issued and replace with version, dated March 23, 2021, attached and forming part of this addendum.

1.2 DRAWINGS

.1 Reference Drawing A200 Exterior Elevations:

.1 Reference Sun Shades:

.1 Acceptable material: Kawneer, Versoleil SunShade.

.1 36" Rounded outriggers, airfoil blades, bullnose fascia, shallow cover, clear anodized aluminum in colour for all parts, provide brackets for wall mounting and mullion mounting.

.2 Reference Drawing M100 - Expansion Plan, Plumbing Floor Plan:

.1 Reference Detail 1, Room 100 Processing:

.1 Add Note as follows: "Add note: Contractor to coordinate exact location and final position of floor drain, trench basin, hub drains and catch basin with owner during installation."

.3 Reference Drawing M200 - Expansion Plan, Heating First Floor:

.1 Reference Detail 1:

.1 Add Note as follows: "The Controls Subcontractor as part of this package is responsible for providing zone valves, thermostat wiring of the unit heaters and baseboard heaters. Controls Subcontractor to provide for relays as required to control unit heater fan. Provide 3 way zone modulating valves for heating coils. Control wiring for 3 way valves and

air handling units by others. Zone valves and thermostats to be standard low voltage. Wiring of boiler controls, guarded plant control panel, fuel oil tank anti-siphon valves to be performed by a certified electrician/controls technician under the responsibility of the boiler Subcontractor as part of this package."

.4 Reference Drawing M201 - Expansion Plan, Second First Floor:

.1 Reference Detail 1:

- .1 Add Note as follows: "The Controls Subcontractor as part of this package is responsible for providing zone valves, thermostat wiring of the unit heaters and baseboard heaters. Controls Subcontractor to provide for relays as required to control unit heater fan. Provide 3 way zone modulating valves for heating coils. Control wiring for 3 way valves and air handling units by others. Zone valves and thermostats to be standard low voltage. Wiring of boiler controls, guarded plant control panel, fuel oil tank anti-siphon valves to be performed by a certified electrician/controls technician under the responsibility of the boiler Subcontractor as part of this package."

.5 Reference Drawing M203 - Boiler Room Plans, Details:

.1 Reference Detail 8:

- .1 Delete reference "to system control"

.2 Reference Detail 9:

- .1 Add Note as follows: "This work is to be performed by boiler Subcontractor as part of this package."

.3 Reference Detail 10:

- .1 Delete Reference to UH-5, 208 V NEMA 4X.
.2 Delete reference to Div. 26.
.3 Add Note as follows: "Controls work to be performed by Controls Subcontractor as part of this package."

.4 Reference Detail 11:

- .1 Add Note as follows: "This work is to be performed by boiler Subcontractor as part of this package."

.5 Reference Detail 12:

- .1 Add Note as follows: this work is to be performed by boiler Subcontractor as part of this package. See Drawings M300 and M301."

.6 Reference Drawing M300 - Expansion Plan, Ventilation First Floor:

.1 Reference Detail 1:

- .1 Add Note as follows: "The Controls Subcontractor as part of this package is responsible for providing a low voltage reverse acting thermostat to control supply fan SF-1 and exhaust fan EF-1. Exhaust fan to operate low speed continuously, and operate high speed on activation of a reverse acting thermostat. Supply fan SF-1 to start on activation of a reverse acting thermostat. Controls Contractor to provide relays for supply fan SF-1 and exhaust fan EF-1."

.7 Reference Drawing M401 - Expansion Plan, Sprinkler Second Floor:

.1 Reference Detail 1, Gridline C.5 and Gridline 13:

- .1 Add Note as follows: "This Contract is to provide a window sprinkler zone for both sides of the windows located between Room 100 Processing and the elevated walkway. Typical seven (7) windows, with four (4)

window sprinklers per window."

END OF SECTION

1.12 APPENDIX 'E'

.1 CASH ALLOWANCES

The undersigned hereby acknowledges that the sum of:

TWO THOUSAND FIVE HUNDRED DOLLARS - \$2,500.00

is included in the total tender amount as Cash Allowances, to perform the following work:
This money to be expended in accordance with the requirements of CCDC2 2008
General Condition GC4.1 - Cash Allowances, only on consultant's written instructions.

WORK:

- .1 Contractor to include for a \$2,500.00 dollar cash allowance to cover utility costs including all labour, material and plant associated with the removal of existing 1.5MW transformer with new 2.5MW padmounted transformer. This allowance is to be adjusted to the actual utility service cost and be supported by invoices from the utility. No Contractor mark-ups will be accepted on this item.

Contractors are advised to carry sufficient overhead and administration cost to administer and coordinate this work.

The undersigned hereby acknowledges that the sum of:

THREE HUNDRED SEVENTY-FIVE DOLLARS - \$375.00

Is also included in the total tender amount as a separate amount to cover the cost of the Harmonized Sales Tax (HST) related to the above Cash Allowances.

In the event that the Owner decides not to proceed with any or all of this work, we agree to credit the Contract with the unused portion of the full amount of these Cash Allowances, as applicable, and the related HST.

COMPANY: _____

AUTHORIZED SIGNATURE: _____

END OF SECTION

APPENDIX 'B'

Geotechnical Investigation Report



GEOTECHNICAL INVESTIGATION REPORT

Island Abbey Foods Expansion

20 Innovation Way
Charlottetown
Queens County
Prince Edward Island
PID#s 1046283 & 386524

Project # 201214
January 6, 2021

Prepared for:
Coles Associates
c/o Mr. Nazmi Lawen, P.Eng.
85 Fitzroy Street – Suite #201
Charlottetown, Prince Edward Island
C1A 1R6
nlawen@colesassociates.com

Prepared By:
EastTech Engineering Consultants Inc.
1509 Bethel Road
Bethel, Prince Edward Island
C1B 3L5

Introduction

EastTech Engineering Consultants Inc. was retained by Coles Associates to complete a geotechnical investigation at a site located 20 Innovation Avenue in Charlottetown, Prince Edward Island (see Figure 1). The site is the location of Island Abbey Foods. An expansion has been proposed to the south end of the existing building that will consist of additional warehouse and office space, with loading docks on the south end of the expansion. A conceptual site plan showing the proposed layout of the expansion has been provided in Figure 2, which has been appended to this report. The purpose of this geotechnical investigation was to collect detailed information pertaining to the soils, bedrock, and groundwater conditions on the site and to provide recommendations for the construction of the building's foundations, and general earthworks associated with the proposed building and parking lot & driveway construction.

Scope of Work

In agreement with Coles Associates, the following scope of work has been completed as a part of this geotechnical investigation:

- ✓ A preliminary evaluation was conducted with the City of Charlottetown municipal department, Maritime Electric, Eastlink, & Bell Aliant to identify the presence of any underground infrastructure that may be present in the dig area.
- ✓ Three (3) geotechnical test pits were excavated on the site to collect geotechnical data for this investigation.
- ✓ A geotechnical report outlining the findings of this investigation, detailed test pit logs, and recommendations for the building foundation construction and project earthworks has been included herein.

Site Description

The site is located to the east of Innovation Way in the BioCommons Research Park in East Royalty, Charlottetown, Prince Edward Island. The building expansion area consists of a cleared grass area with a wooded section at the southernmost end of the site. An earth berm runs along the east side of the existing building on the site, and extends around the south side of the structure towards Innovation Avenue through the building expansion area. A propane tank and fuel tank are also located to the south of the building in the expansion area. The general topography of the site and surrounding areas gently to moderately trends west towards the North River.

Site Geology

The bedrock formations that are predominantly found in the province of Prince Edward Island consist of the characteristically red colored flat lying sedimentary deposits commonly referred to as the PEI Redbeds. The PEI Redbeds are a part of the Pictou Group of deposits that make up a section of the Maritime Plane and lie within the Appalachian Mountain System. The PEI Redbeds can be broken down into four cyclic sequences generally comprised of conglomerate, sandstone, and siltstone, from the Late Pennsylvanian to Early Permian ages (*i.e.*, formed 286 million years ago to 320 million years ago) which fine upward (*i.e.*, conglomerate at the base and siltstone at the top), with the oldest deposits found along the south shore of the island and the youngest found along the north shore. The PEI Redbeds generally dip 1 – 3 degrees towards the northeast.

Bedrock in Prince Edward Island is generally covered by a thin drift of Ground Morain or Basal Till with occurrences of Residual, Ablation Till, and minor Glaciofluvial and Marine Deposits. Basal Till, which

covers approximately 75% of the province are often local in origin and can be generally described as reddish brown, strongly acid, and compact to dense soils further defined by their Clay and Silt content.

An initial review of available soils information for the area revealed that the natural surficial soils identified on the site consist of the Tignish type soils, which are described as a well-drained, medium textured, glacial moraine or residual deposits on gently to moderately undulating relief (MacDougall, Veer, & Wilson, 1988).

Geotechnical Site Work

On Tuesday December 22nd, 2020 EastTech Engineering staff were on-site to complete the site work for this geotechnical investigation. Three (3) test pits were excavated on the site using a rubber tire backhoe provided by Tim's Mini Excavating under the direction of Dave Richard, CET, of EastTech Engineering. The test pits were put down to a maximum depth of 3.05 m. A test pit location plan has been included with this report as Figure 3.

Summary Site Findings

Soils encountered during this geotechnical investigation can be generally described as Rootmat & Topsoil overlying a deposit of Glacial Till that can be generally described as Compact Reddish Brown Silty Sand with Some Gravel and Traces of Cobbles. Fill materials that were placed as backfill during the construction of the existing building were encountered to 1.52 m depth in test pit TP3, which was put down in the north end of the building expansion area. An earth berm is present to the south of the existing between the locations of test pits TP2 and TP3, which sits approximately 1.1 – 1.5 m above the floor grade of the existing building.

Bedrock was not encountered in any of the test pits.

Groundwater was not observed in any of the test pits which were extended to a maximum depth of 3.05 m below the existing ground surface.

A more detailed account of the sub-surface conditions that were encountered in this investigation can be found in the test pit logs that have been appended to this report.

Site Preparation for Building Foundation Construction

Given the proposed building type we recommend that the building foundation consist of conventional concrete perimeter strip footings, combined with spread footings as required for the structural design. All footings should be supported by the insitu Glacial Till deposit, or by a Building Pad comprised of compacted structural fill prepared as described below. Site preparation should consist of the removal of all existing Fill and Topsoil materials from the proposed building expansion area. The excavation should extend into the undisturbed Glacial Till deposit that was identified at depths ranging from 0.61 m – 1.52 m below the existing ground surface in the proposed building expansion area. The Glacial Till bearing surface that is to support the footings of the building expansion or the building pad material should be inspected by a geotechnical consultant. Any soft, suspect, or deformable areas should be remediated at the discretion of the geotechnical consultant. All excavation walls should be cut back and sloped as per applicable PEI Occupational Health & Safety Regulations.

If the desired footing elevation for any of the building's footings is above the elevation of the top surface of the insitu Glacial Till deposit in any areas of the building expansion area, a Building Pad will be required to support the footings of the structure. The Building Pad should be constructed of structural fill meeting the Prince Edward Island Department of Transportation Infrastructure & Energy (PEIDTIE) specifications for Select Borrow, or an alternative structural fill that has been approved by the geotechnical consultant.

Structural fill should be placed in lifts not exceeding 300 mm in thickness and should be compacted to 100% of its Standard Proctor Dry Density at optimum moisture content. The outer edges of the top of the building pad should extend beyond the outer limits of the footings by a minimum of 600 mm. The toe of the building pad should extend outward from the outer edges of the pad at a minimum slope of 1H:1V. All Building Pad construction should be completed under the supervision of a geotechnical consultant to ensure that the required degree of compaction is achieved during the placement of the structural fill.

Excavated Glacial Till from site earthworks may be used as building pad construction material for any cut fill activities under the direct supervision of the geotechnical consultant. If excavated Glacial Till is to be used for building pad construction it must be maintained at a suitable moisture content to allow for sufficient re-compaction of the material. Efforts should be made to stockpile any Glacial Till that is intended for re-use as to prevent excessive moisture from infiltrating the material if it is not to be used immediately after excavations are completed.

Footing Design Considerations

For limit state design (NBCC 2015), footings placed on the undisturbed Glacial Till or Structural Fill Building Pad constructed as described above has a bearing resistance of 330 kPa at the Ultimate Limit State (ULS). A maximum recommended bearing resistance for concrete strip and spread footings of 165 kPa is recommended for the above noted bearing soils for Serviceability Limit State (SLS) design, to prevent maximum total and differential settlements from exceeding 25 mm and 15 mm, respectively. All concrete strip & spread footings should have a minimum of 1500 mm of soil cover (or equivalent in soil and insulation) for frost protection.

All footings should also have a minimum of 1200 mm coverage above groundwater. Groundwater was not encountered in any of the test pits that were put down on the site and is not anticipated to have any effect on the foundation design, given the anticipated footing depths for the building expansion.

A ditching bucket should be used for excavations into the Glacial Till or Building Pad where footings are to be placed to minimize the disturbance of the bearing surface. The Glacial Till bearing surface should be inspected by a geotechnical consultant prior to the placement of footings or structural fill for Building Pad construction. Any suspect or soft areas identified should be removed and replaced with suitable fill that is approved by the geotechnical consultant and compacted to 100% of its standard proctor dry density. Efforts should be made to direct surface water from the Glacial Till bearing surface once it has been exposed as it may be susceptible to softening under conditions of high moisture. Traffic should also be minimized on the bearing surface if it becomes wet.

Foundation Backfilling

Backfill material placed in the building interior after the foundations have been installed should meet the current PEIDTIE specification for Select Borrow or an equivalent structural fill that has been improved by the geotechnical consultant. All structural fill material placed within the building area should be installed and compacted in lifts to 100% of its Standard Proctor Maximum Dry Density at optimum moisture content. The lift thickness must be compatible with the compaction equipment used. A maximum lift thickness of 300 mm is recommended for all fill material placed during the backfilling of the building interior. Interior backfilling should be monitored by the geotechnical consultant to ensure that the required degree of compaction is achieved during placement.

Backfill material placed for the exterior foundation walls should also consist of Select Borrow compacted in lifts to 98% of its Standard Proctor Maximum Dry Density at optimum moisture content. Common Borrow or excavated site materials may be used in place of Select Borrow for exterior backfilling if the material is approved by the geotechnical consultant prior to placement. Soils immediately surrounding

the building should be graded to direct surface water away from the building's foundation once backfilling has been completed.

Concrete Slabs on Grade

The concrete floor slabs may be cast over structural fill installed as described above. The concrete floor slabs should be placed on a compacted free draining granular base material that is a minimum of 200 mm thick. Material meeting the PEIDTIE specifications for Drainage Class D Gravel would be acceptable for use as concrete slab granular base material. A vapor barrier is also recommended for use under all concrete slab on grade construction. Concrete floor slabs constructed as described herein may be designed with a modulus of subgrade reaction of 25 MN/m³.

Site Seismic Classification

The proposed structure may be designed using a Site Seismic Classification of Class "D" as per the National Building Code of Canada building requirements (NBCC 2015).

Exterior Concrete Structures

Any exterior concrete structures such as sidewalks, curbs, or slabs that are to be installed should be supported by a minimum 300 mm granular sub-base and a 150 mm granular base constructed of material meeting the PEIDTIE specifications for Select Borrow and Class A Gravel, respectively. All insitu subgrade soils should be inspected by the geotechnical consultant prior to the placement of sub-base and base granular materials. Any suspect areas in the insitu subgrade should be remediated at the discretion of the geotechnical consultant. Exterior concrete structures should be graded to allow for positive drainage as to avoid collection and retention of surface water.

Parking Lots & Driveways

Site preparation for all parking lot and driveway construction should consist of the excavation of existing Rootmat & Topsoil and Fill Materials to Glacial Till prior to the placement of granular and asphalt materials as prescribed below. The subgrade soils at the base of the excavation should be compacted with a vibratory roller under the direct supervision of the geotechnical consultant. Efforts should be made to direct surface water away from subgrade soils below all parking lot and driveway areas, as they may be susceptible to softening under conditions of high moisture. Traffic should also be minimized on all subgrade soils if they become wet.

For driveway and parking lot construction, the following quantities of materials are recommended using the installation procedures as provided in the table below:

Component	Material	Minimum Thickness	Installation Instructions
Asphalt	B Seal	40 mm	- Install as per PEIDTIE General Provisions and Contract Specifications for Highway Construction. - Testing of asphalt hot mixes is recommended to ensure compliance with PEIDTIE General Provisions and Contract Specifications for Highway Construction - Collection and testing of asphalt core samples is recommended after placement to evaluate thickness and compaction requirements as per PEIDTIE General Provisions and Contract Specifications for Highway Construction.
	A Base	60 mm	
Granular Base	Class A Gravel	150 mm	Material should comply with PEIDTIE specifications for Class A Gravel.

			• Compact to 100% Standard Proctor Dry Density at Optimum Moisture Content • Material to be installed in one or two lift(s).
Granular Sub-Base	Select Borrow	300 mm	• Material should comply with PEIDTIE specifications for Select Borrow. • Compact to 100% Standard Proctor Dry Density at Optimum Moisture Content in a one or two lifts. • Additional Select Borrow, excavated site material, or an approved alternative may be required to build site up to desired subgrade elevations.

Parking lot and driveway areas should be designed to allow for adequate drainage of stormwater. All paved surfaces and ditching should be graded to allow for positive drainage towards an appropriate collection and/or discharge point and to prevent standing water from accumulating in localized areas.

Winter Construction Activities

If construction activities are to be conducted during winter months or during periods when sub-zero temperatures are encountered, additional efforts must be made to ensure that all insitu bearing soils and Structural Fill Materials (*i.e.*, building pad materials, granular base, granular sub-base, *etc.*) are not subject to freezing conditions. The installation of winter shelters, heating sources, or other measures may be required to prevent bearing soils and structural fill materials from freezing. Efforts should also be made to ensure that structural fill materials are not subject to freezing conditions prior to their delivery to the site. Additional inspection and oversight by the geotechnical consultant is recommended during all winter construction activities associated with site earthworks, foundation installation, and parking lot / driveway construction.

Limitations

The recommendations provided in this report are based on the observations made during the field investigation, the site conditions at the time of the investigation, and our understanding of the projects geotechnical requirements as documented herein. Further excavation or investigation may reveal unforeseen issues that may influence our recommendations. Furthermore, weather and seasonal conditions may also alter the geotechnical conditions on the site. As such, EastTech Engineering Consultants Inc. should be notified immediately if the conditions as documented herein do not reflect the conditions on the site at the time of construction.

Conclusions & Closing Remarks

We trust that the information provided is sufficient for your current needs but do not hesitate to contact the undersigned if further clarification is required. We thank you for choosing EastTech Engineering Consultants Inc. as your geotechnical consultant for this undertaking.

Sincerely;

Chris MacPherson
Chris MacPherson P.Eng. CESA
EastTech Engineering Consultants Inc.

Attachments: **Figures (3 pages)**
 Test Pit Logs (4 pages)



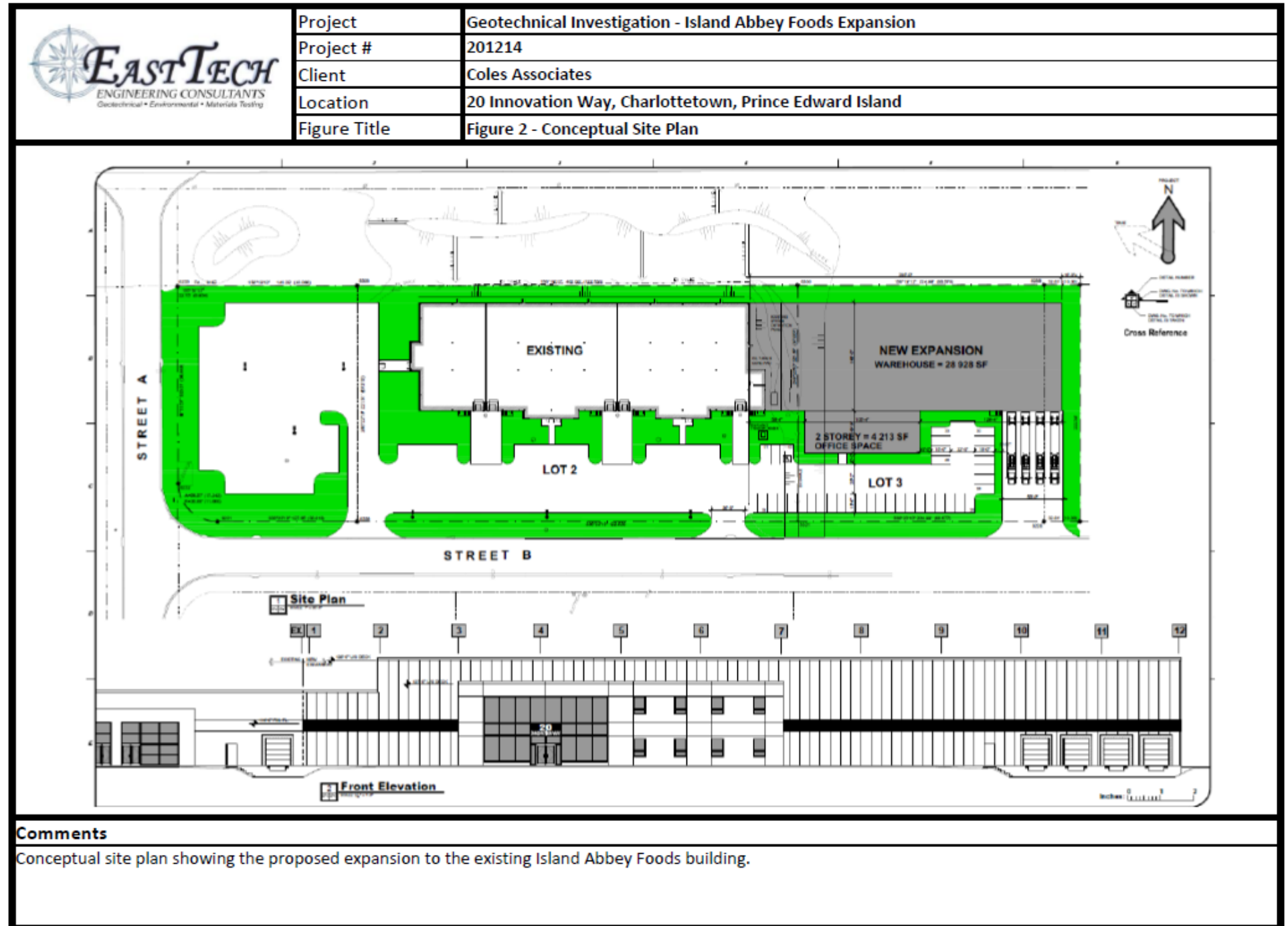


Project	Geotechnical Investigation - Island Abbey Foods Expansion
Project #	201214
Client	Coles Associates
Location	20 Innovation Way, Charlottetown, Prince Edward Island
Figure Title	Figure 1 - Project Location Map



Comments

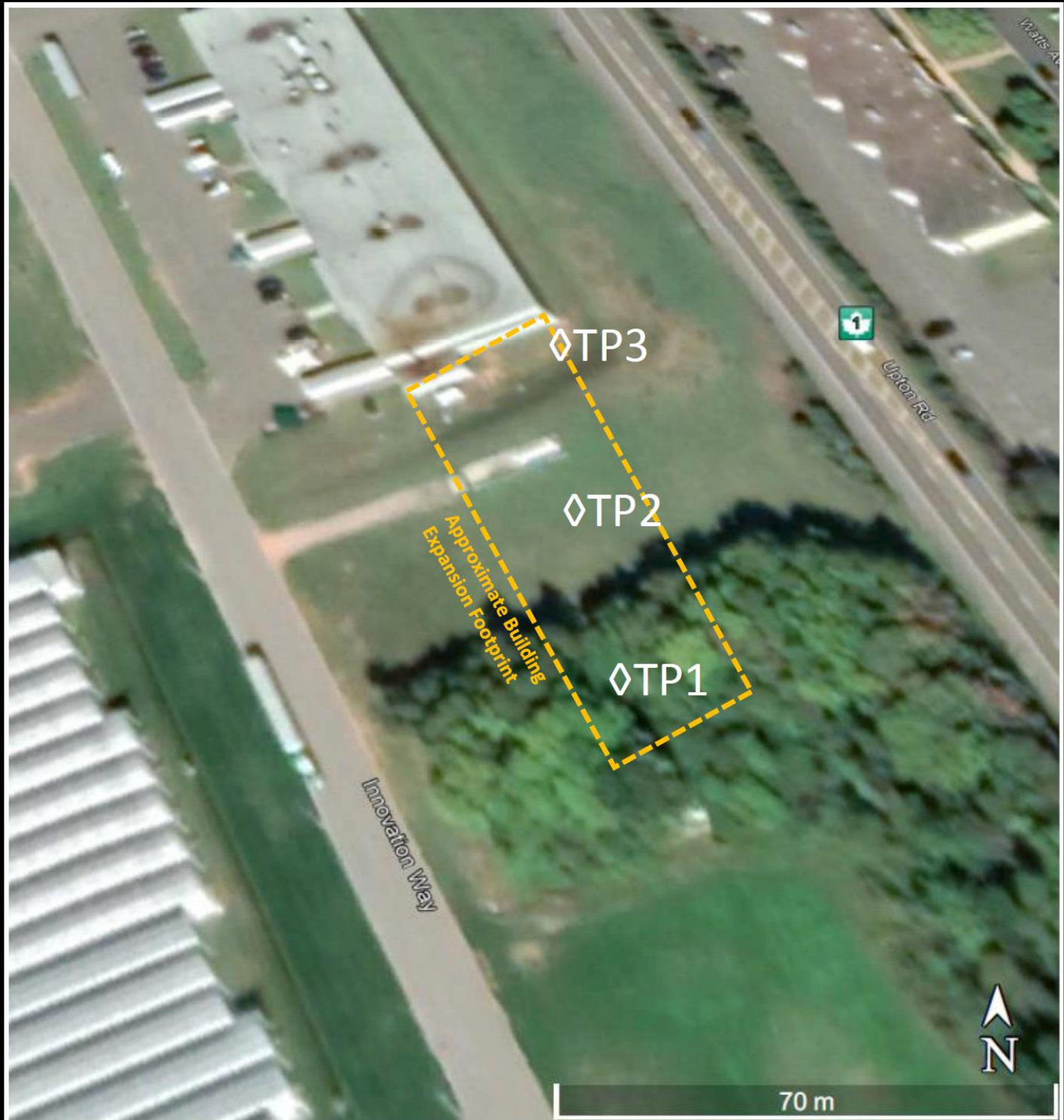
Project location plan showing the site located at 20 Innovation Way in Charlottetown, Queens County, Prince Edward Island, which was the subject of this geotechnical investigation.



Comments

Conceptual site plan showing the proposed expansion to the existing Island Abbey Foods building.

	Project	Geotechnical Investigation - Island Abbey Foods Expansion
	Project #	201214
	Client	Coles Associates
	Location	20 Innovation Way, Charlottetown, Prince Edward Island
	Figure Title	Figure 3 - Test Pit Location Plan



Comments



GEOTECHNICAL TEST PIT LOG TP1

(Page 1 of 1)

Geotechnical Investigation Island Abbey Foods Expansion 20 Innovation Way, Charlottetown			Client : Coles Associates	Logged By : P. Donahoe					
Queens County, Prince Edward Island			Excavation Date : December 22, 2020	Reviewed By : C. MacPherson					
File# 201214			Contractor : Tim's Mini Excavating	Test Pit Elevation : 9.79 m					
			Equipment : Rubber Tire Backhoe	Test Pit Depth : 3.05 m					
			Datum : Floor Slab Assumed 10.0 m	Groundwater Depth : N/A					
Depth in Meters	Surf. Elev. 9.79 m	GRAPHIC	DESCRIPTION	Water Level	% Moisture	% Gravel	% Sand	% Fines < #200	REMARKS
0.0	9.79		ROOTMAT & TOPSOIL- Loose Moist Brown to Orange Brown Silty Sand with Traces of Fine Roots & Organics						
0.5	9.29		GLACIAL TILL- Compact Reddish Brown Silty Sand with Some Gravel & Traces of Cobbles						
1.0	8.79								
1.5	8.29								
2.0	7.79								
2.5	7.29								
3.0									



GEOTECHNICAL TEST PIT LOG TP2

(Page 1 of 1)

Geotechnical Investigation Island Abbey Foods Expansion 20 Innovation Way, Charlottetown			Client : Coles Associates		Logged By : P. Donahoe				
Queens County, Prince Edward Island			Excavation Date : December 22, 2020		Reviewed By : C. MacPherson				
File# 201214			Contractor : Tim's Mini Excavating		Test Pit Elevation : 10.72				
			Equipment : Rubber Tire Backhoe		Test Pit Depth : 2.74 m				
			Datum : Top of Floor Slab Assumed 10.0 m		Groundwater Depth : N/A				
Depth in Meters	Surf. Elev. 10.72 m	GRAPHIC	DESCRIPTION	Water Level	% Moisture	% Gravel	% Sand	% Fines < #200	REMARKS
0.0	10.72		ROOTMAT & TOPSOIL- Loose Moist Dark Brown to Orange Brown Silty Sand with Traces of Fine Roots & Organics						
0.5	10.22								
1.0	9.72		GLACIAL TILL- Compact Reddish Brown Silty Sand with Some Gravel & Traces of Cobbles						
1.5	9.22								
2.0	8.72								
2.5	8.22								
3.0									



GEOTECHNICAL TEST PIT LOG TP3

(Page 1 of 1)

Geotechnical Investigation Island Abbey Foods Expansion 20 Innovation Way, Charlottetown			Client : Coles Associates		Logged By : P. Donahoe				
Queens County, Prince Edward Island			Excavation Date : December 22, 2020		Reviewed By : C. MacPherson				
File# 201214			Contractor : Tim's Mini Excavating		Test Pit Elevation : 9.88 m				
			Equipment : Rubber Tire Backhoe		Test Pit Depth : 2.13 m				
			Datum : Floor Slab Assumed 10.0 m		Groundwater Depth : N/A				
Depth in Meters	Surf. Elev. 9.88 m	GRAPHIC	DESCRIPTION	Water Level	% Moisture	% Gravel	% Sand	% Fines < #200	REMARKS
0.0	9.88		FILL- Very Loose to Loose Moist Reddish Brown to Brown Silty Sand with Traces of Gravel & Clay						
0.5	9.38								
1.0	8.88								
1.5	8.38		GLACIAL TILL- Compact Reddish Brown Silty Sand with Some Gravel & Traces of Cobbles						
2.0	7.88								
2.5	7.38								
3.0									

Borehole & Test Pit Log Symbols & Terminology

SOIL SYMBOL KEY - TYPES OF SOIL & ROCK

	Sand (0.075 mm - 475 mm)		Fill
	Silty Sand / Sandy Silt		Root Mat / Topsoil
	Glacial Till (Mix of Sand, Silt, Gravel, Clay, Cobbles)		Sandstone Bedrock
	Silt (<0.075 mm)*		Siltstone / Mudstone Bedrock
	Clay (<0.075 mm)*		Other Bedrock as Specified
	Organic Silt		Asphalt
	Gravel (4.75 mm - 75.0 mm)		Concrete
	Cobbles (75 mm - 300 mm) & Boulders (>300 mm)		Wood / Timbers
			Groundwater

* Particle Size Analysis via Hydrometer or Atterburg Limits Used To Distinguish Between Silt & Clay Sized Particles in Cohesive Soils

SOIL DENSITY / CONSISTENCY		FIELD OBSERVED MOISTURE		DESCRIPTIONS	
COHESIVE SOILS		COHESIONLESS SOILS		MOISTURE CONTENTS	
N-Value	Consistency	N-Value	Relative Density	Ranges	Values
0 - 2	Very Soft	0 - 4	Very Loose	0% - 10%	Dry
3 - 4	Soft	5 - 10	Loose	11% - 20%	Moist
5 - 8	Medium Stiff	11 - 30	Compact	21% - 35%	Very Moist
9 - 15	Stiff	31 - 50	Dense	>35%	Saturated
16 - 30	Very Stiff	> 50	Very Dense		
> 30	Hard				
				% PARTICLES	
				Ranges	Descriptor
				0% - 9%	trace
				10% - 25%	some
				26% - 35%	silty / sandy/ gravelly / clayey
				> 35%	and (e.g. , Silt and Sand)

BEDROCK ROCK QUALITY DESIGNATION (RQD)		BEDROCK WEATHERING & FIELD HARNESS DESCRIPTIONS	
% RQD	Rock Description	Terminology	Description
0% - 25%	Very Poor - Severely Fractured & Broken	Highly Weathered	Significant decomposition of rock, broken by hand
25% - 50 %	Poor - Regular Jointing Along Bedding Planes	Moderately Weathered	Discoloration visible and notably weakened
50% - 75%	Fair - Blocky Structure Some Bedding Planes In Tact	Slightly Weathered	Slight discoloration when compared with fresh rock
		Unweathered	No indication of discoloration or fluid movement
75% - 90%	Good - Majority of Bedding Planes & Structure In Tact	Weak	Crumbles with blows of pick end of hammer
		Moderately Weak	Crumbles with moderate blow of hammer
90% - 100%	Very Good - In Tact, Little to No Jointing or Weathering	Moderately Strong	Will indent 5 mm with pick end of hammer
		Strong	Specimen can be broke with single hammer blow
		Very Strong	Requires several blows with hammer to break