



THURBER ENGINEERING LTD.

September 21, 2021

File: 31256

Metrolinx
Metrolinx Subway Program
130 Adelaide St. W, 15th Floor
Toronto, ON
M5H 3P5

Attention: Mr. Damien Forbes, P. Eng.
Senior Project Manager – Ontario Line

**WORK PLAN FOR ACCESS
PRELIMINARY GEOTECHNICAL INVESTIGATION
TOC EXHIBITION STATION
ONTARIO LINE
TORONTO, ONTARIO**

Dear Mr. Forbes:

Further to your request, Thurber Engineering Ltd. (Thurber) is pleased to submit a Work Plan to conduct geotechnical investigation activities for the Exhibition Station Transit Oriented Communities (TOC) site in Toronto, Ontario in support of the Metrolinx Ontario Line TOC development. The Site spans from Jefferson Ave. to Hanna Ave. along the Lakeshore West Rail Corridor, as presented on the attached borehole plans in Appendix A.

PROJECT UNDERSTANDING AND APPROACH

We have reviewed the Scope of Work, to develop our proposed work plan to support the proposed Geotechnical data report (i.e., geotechnical, geo-environmental and hydrogeological) for Corktown Commons Station TOC site.

Thurber's scope of work can be broken down into the following components:

1. Develop a work program for the investigations.
2. Carry out the geotechnical field investigation and in-situ testing.
3. Carry out the hydrogeological field investigation and in-situ testing.
4. Carry out the environmental sampling.
5. Carry out geotechnical and analytical laboratory testing of soil samples, rock samples and water samples recovered during the investigations.
6. Preparation of Geotechnical data report



Further details of the various components of the work program are presented below.

Work Program Development

Thurber will put together a scope of work for the Corktown TOC geotechnical investigations with the input from the input from the geotechnical, hydrogeological and environmental TA teams. The proposed borehole locations and details are presented in Appendix A and B.

Thurber will work with the demolition contractor and their schedule so there are no conflicting work areas.

Geotechnical Investigation and Reporting

Thurber will submit a work plan and health and safety plan for approval. Once approved Thurber will execute the geotechnical field investigation. The geotechnical field investigation will include 26 sampled boreholes. Additional boreholes located on the Exhibition TOC properties will be drilled by others (Stantec), additional other boreholes could be added as required by the TA team.

Next, boreholes will be advanced through overburden using the technique most suited to the depth of the borehole and the anticipated soil conditions. Soil sampling will be carried out using a split spoon sampler in conjunction with Standard Penetration Testing. SPT sampling will be carried at regular intervals, at 0.75 m interval up to 5 m depth, increasing to 1.5 m interval until termination depth of borehole. Where very soft to firm plastic soils are encountered Shelby tube samples will also be retrieved and in situ vane testing will be carried out.

Once bedrock is encountered, bedrock cores will be retrieved in selected boreholes using HWT coring equipment. Rock core samples will be logged in the field, wrapped to slow deterioration and stored in wooden core boxes.

Monitoring wells (50 mm diameter) will be installed in strategic borehole locations. Monitoring wells will be used for the hydrogeological investigation to measure groundwater levels, sample groundwater and carry out single well response tests.

As part of the field investigation, Thurber will carry out the following tasks:

- lay out the borehole locations in the field relative to existing site features and using a GPS unit. The borehole co-ordinates determined by GPS will be documented.
- obtain utility clearances of all underground utilities and infrastructure through the Ontario One-call process and private locator as needed.
- If needed, daylight to clear borehole locations of utilities.
- provide traffic protection in accordance with the Ontario Traffic Manual, Book 7 (Temporary Conditions) during drilling operations or loading/unloading on travelled roadways, where required.



- engage a specialist geotechnical drilling company to carry out the drilling, and sampling operations as well as monitoring well installation in accordance with the approved work program.
- access to borehole locations will be determined with demolition contractor to avoid any conflicting work areas.
- work area required at each borehole location will be approximately 8 m by 8 m and will be configured to minimize site access disruption. If required, temporary fencing will also be set up in manner to delineate the work zone from the demolition contractor. Drill rigs would be left at borehole locations between shifts, assuming no conflicts with the other contractors working in the area.
- soil cuttings and any other debris generated during the drilling program will be contained within the work area and transferred into drums for disposal. Drums will be removed from site upon completion of drilling. Any soil residue on the asphalt surface will be swept up and power washed (in non-freezing weather), as required to maintain a clean and safe work area.
- provide an engineering technologist for full time supervision of the drilling operations and to log and transport the samples.
- Survey the locations and elevations of all boreholes, and testing locations in MTM-10, NAD27 coordinate system, The vertical accuracy of survey readings shall be within 0.15 m. Horizontal accuracy shall be < 0.5 m.
- reinstate the site to original conditions, as far as is reasonably practicable, including borehole abandonment in accordance with MOE Regulation 903 and patching pavement holes with cold mix asphalt.

Geotechnical laboratory testing will be carried out on soil and rock core samples obtained from the boreholes as required in the Scope of Work. Sufficient testing will be carried out to support detailed design. Testing is expected to include the following:

- Routine geotechnical testing including water content on all samples, as well as gradation analysis, Atterberg Limits and organic content on representative samples.
- Rock lab testing including unit weight/density, point load tests and UCS.
- Environmental testing of samples, as required by Environmental TA.

A hydrogeological/environmental investigation will be conducted to establish baseline hydrogeological conditions, assess groundwater conditions, and evaluate groundwater quality.

The investigation will include the following:

- Measure groundwater levels in the monitoring wells installed during the concurrent geotechnical investigation. Groundwater levels will be measured four times in each well, including an initial level and quarterly thereafter. When monitoring the wells gas headspace readings will be taken using an Eagle 2 Infrared gas detector.



- Single well response tests (slug tests) in selected monitoring wells to estimate the in-situ hydraulic conductivity of the screened soil.
- Groundwater sample collection from selected monitoring wells, as required by Environmental TA.

The results of the field investigation and laboratory testing will be summarized in a Geotechnical Data Report (GDR). Factual information presented in the GDR will include a description of the field investigation procedures, borehole logs, a borehole plan, a summary of the subsurface stratigraphy and groundwater conditions, and geotechnical laboratory test results. Borehole logs will be entered into to gINT.

SCHEDULE

Once the properties are approved for entry the duration of the borehole drilling and monitoring well installation within the property is estimated at 10 hours/day, conducted between approximately 07:00 and 17:00, and will require approximately four to six weeks to complete the borehole drilling depending on drill rig availability, weather and the locations and work areas of the demolition contractor.

It is our understanding buildings will only be demolished to grade, and then leave the slab and foundation in place at all building in the area. Any drilling within a building footprint will be on the floor slab, this could slow down some of the drilling progress.

A more detailed drilling schedule will be provided once the staging of the demolition is determined with the contractor.

Water level monitoring and sampling will be completed monthly for up to six months after completion of the well installation. Each monthly visit will be completed in one day. Equipment used for the water level monitoring and sampling is hand-held and the Thurber employee will use a pick-up truck to access the site.

CLOSURE

We trust that our submission provides the information you require at this time. If you have any questions regarding our proposal or planned investigation, please contact either of the undersigned at your earliest convenience.

Yours truly,
Thurber Engineering Ltd.

Kurtis Lawes, P.Eng.
Geotechnical Engineer

Renato Pasqualoni, P.Eng.
Project Manager, Principal



Attachments:
Appendix A – Borehole Location Plan
Appendix B – Borehole details

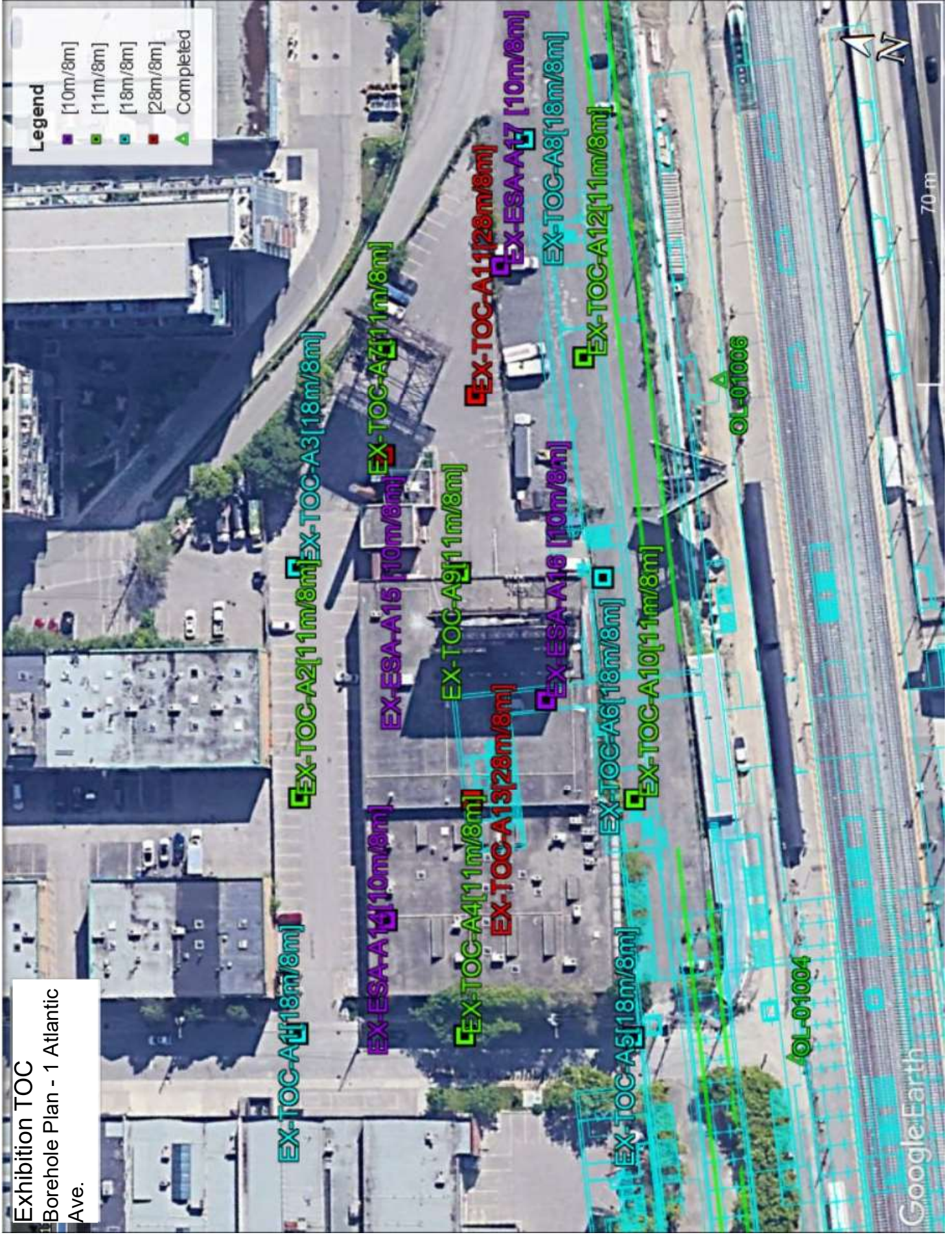
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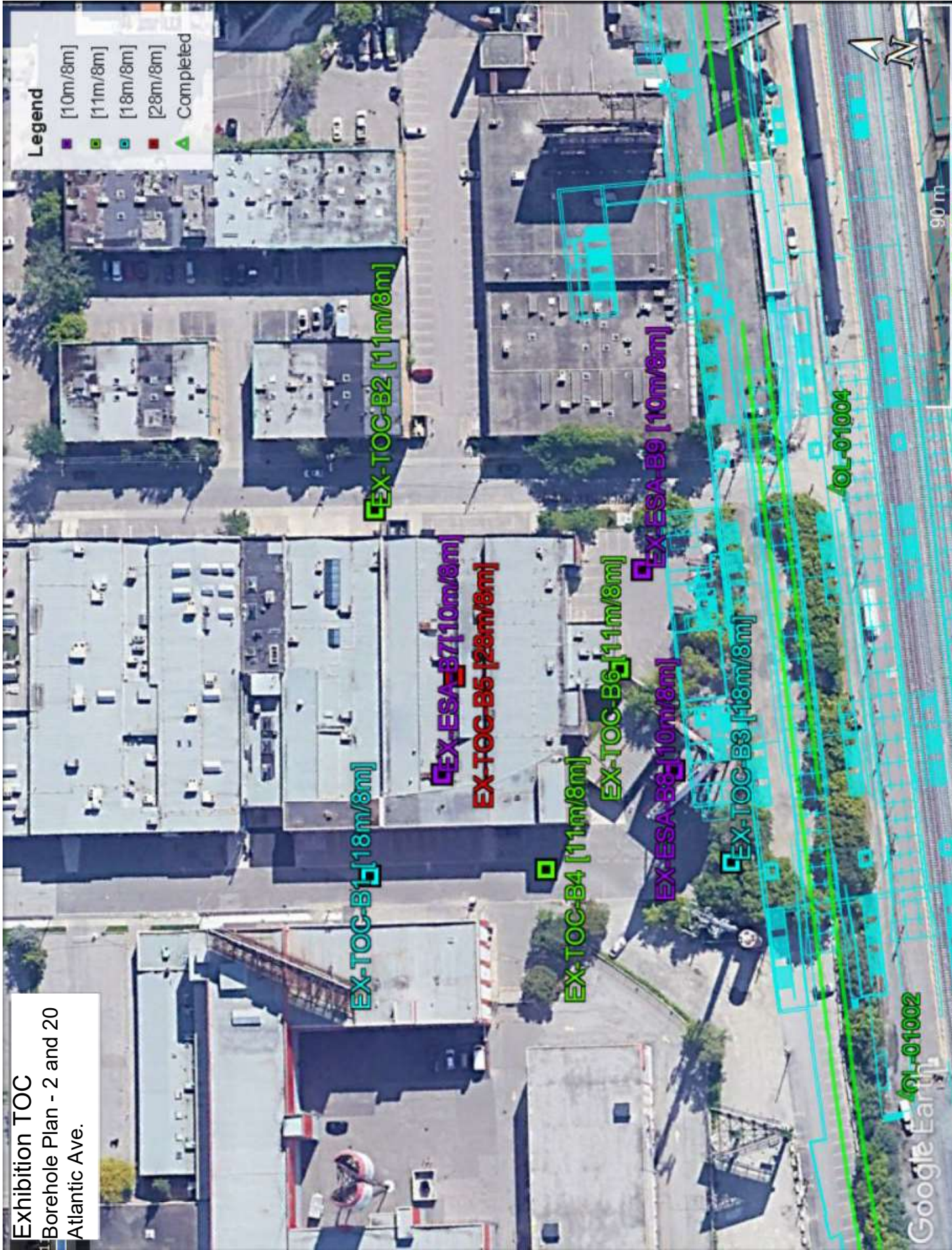
**APPENDIX A
BOREHOLE LOCATION PLAN**

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Exhibition TOC
Borehole Plan - 1 Atlantic
Ave.



Exhibition TOC
Borehole Plan - 2 and 20
Atlantic Ave.





**APPENDIX B
BOREHOLE DETAILS**

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31256 - TOC Exhibition Station
Borehole Details
Sampling and Analysis Plan for Thurber

Facility	Borehole ID	Total Sampling Depth (m)	Soil Sampling Depth (m)	Rock Sampling Depth (m)	Termination Criteria	Proposed Monitoring Well Depth (m)	COCs for Soil and Groundwater	Recommended Soil Sampling	Telescopic Drilling Required
1 Atlantic Ave.	EX-TOC-A1	18	8	10	10 m of bedrock coring	18			
	EX-TOC-A2	11	8	3	3 m of bedrock coring	11			
	EX-TOC-A3	18	8	10	10 m of bedrock coring	18			
	EX-TOC-A4	11	8	3	3 m of bedrock coring	11			
	EX-TOC-A5	18	8	10	10 m of bedrock coring	18			
	EX-TOC-A6	18	8	10	10 m of bedrock coring	18			
	EX-TOC-A7	11	8	3	3 m of bedrock coring	11			
	EX-TOC-A8	18	8	10	10 m of bedrock coring	18			
	EX-TOC-A9	11	8	3	3 m of bedrock coring	11			
	EX-TOC-A10	11	8	3	3 m of bedrock coring	11			
	EX-TOC-A11	28	8	20	20 m of bedrock coring	28			
	EX-TOC-A12	11	8	3	3 m of bedrock coring	11			
	EX-TOC-A13	28	8	20	20 m of bedrock coring	28			
	EX-ESA-A14	10	8	2		10			
	EX-ESA-A15	10	8	2		10			
	EX-ESA-A16	10	8	2		10			
	EX-ESA-A17	10	8	2		10			
2 and 20 Atlantic Ave.	EX-TOC-B1	18	8	10	10 m of bedrock coring	18			
	EX-TOC-B2	11	8	3	3 m of bedrock coring	11			
	EX-TOC-B3	18	8	10	10 m of bedrock coring	18			
	EX-TOC-B4	11	8	3	3 m of bedrock coring	11			
	EX-TOC-B5	28	8	20	20 m of bedrock coring	28			
	EX-TOC-B6	11	8	3	3 m of bedrock coring	11			
	EX-ESA-B7	10	8	2		10			
	EX-ESA-B8	10	8	2		10			
	EX-ESA-B9	10	8	2		10			