

Elliot Lake Arena Soil Investigation



Wood Research and Development	Attention to:	Date of Quote
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		Quote Validity
		7 days
		Quote No.
		Q7405A

Terms and Conditions
All payment received over (28 days) is subject to a 2% interest which compounds monthly.

Project info:	
Job Name:	Elliot Lake Arena Soil Investigation
Site Location:	Elliot Lake, ON
GPS Coord:	46.39269404, -82.657191349

Client's approval signature:
Date:
PO#:

Items	Amount
Soil investigation by EXP	\$22,600.00
WRD administration, interpretation and Coordination	\$2,973.00
TOTAL	\$25,573.00
One-day site visit during the soil investigation, if required	\$5,076.00

All Prices are Before Taxes

Scope of Work
<i>The Scope of Work will consist of the following:</i> Reference to the EXP proposal report attached to this quote, EXP proposes to complete three (3) boreholes, outside of the arena in accessible locations to assess the native subsoils on site. The boreholes will extend to a depth of 5.0 m. The boreholes will be completed to the recommended depths or to bedrock refusal, whichever occurs first. Due the anticipated cobble/boulder till coring procedures to advance the borehole will be completed as part of the scope of work. Furthermore, it has been assumed that all work will be completed in non-freezing conditions. In addition, an additions three (3) boreholes would extend to a maximum depth of 5.0 m or equipment refusal by means of hollow stem augers, in further delineate the various soil layers on site.
<i>Deliverables:</i> Geotechnical evaluation report to include the required soil parameters and recommendations needed for footing design. More details are in the EXP proposal.
<i>Products and Services Provided by the Client (the City):</i> 1- Approval and permission to access the Site, carry out the fieldwork, etc., 2- Water supply during site work. 2- Consent to work in the community outside normal business hours (e.g., evenings and weekends), 3- Site utility plans, if available, 4- Escorts if or when required, 5- Site clearing and access (e.g., snow removal, tree clearing, etc.) if required, 6- Excavator and operator for foundation mapping operations, 7- Private utility locates.
Site visits or construction supervision is not included.
Anything not mentioned in the above is considered not included.



Geotechnical Engineering Services Proposal

Wood Research and Development

Type of Document:

Proposal

Project Name:

Centennial Arena Rehabilitation
Elliot Lake, ON

Proposal Number:

24/063/GP_rev.2

Prepared By:

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Date Submitted:

2024-05-01

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1. Project Understanding

It is understood upgrades/rehabilitation of the existing Centennial Arena located in Elliot are proposed to be undertaken. It has been requested that a geotechnical investigation be completed to confirm the bearing capacity of the soils on site for foundation re-design as the existing foundations can not support the future rehabilitated structure.

It is further understood that existing footings will be exposed for inspection by others, and that some cores will be obtained for compressive strength testing. EXP confirms that our forces can obtain the cores and complete the laboratory testing provided the excavations are large enough, and properly sloped for EXP's team to enter with equipment, in a dry environment.

To assist with the engineering design, EXP has prepared this proposal to provide the requested engineering consultation services.

2. Geotechnical Scope of Work

Prior to completing the field investigation, EXP will have all public and private utilities cleared. EXP have reviewed their historical geotechnical investigations in the Elliot Lake area, and unfortunately no data is available to assist in preparation of this proposal. However, well records immediately east of the site have been reviewed, and the soils on site appear to consist of surficial fills soils overlying a dense glacial till containing cobbles and boulders.

EXP proposes to complete three (3) boreholes, outside of the arena in accessible locations to assess the native subsoils on site. The boreholes will extend to a depth of 5.0 m. The boreholes will be completed to the recommended depths or to bedrock refusal, whichever occurs first. Due to the anticipated cobble/boulder till coring procedures to advance the borehole will be completed as part of the scope of work. Furthermore, it has been assumed that all work will be completed in non-freezing conditions. In addition, an additional three (3) boreholes would extend to a maximum depth of 5.0 m or equipment refusal by means of hollow stem augers, in further delineate the various soil layers on site.

Soil samples will be obtained within the sampled boreholes at 0.75 m intervals. The Standard Penetration Test (SPT) "N" values will be recorded at each sample interval. If cohesive soils are encountered, field vane tests will be performed to establish the undrained shear strength of the material. Coring of bedrock or equipment refusal, if encountered, has been included as part of this scope of work within the original 3 boreholes. All boreholes will be backfilled with soil cuttings and sealed with bentonite pellets.

During the field investigation, a Sr. Technician from our office will be on site to supervise the boreholes and collect and log the soil samples. All samples will be carefully packaged and transported to our laboratory for further examination and testing.

If unexpected or problematic soil conditions are encountered during the field investigation, which may affect the scope of work, you will be notified prior to the removal of the drill from site in order to determine a suitable plan of action.

In addition, EXP's forces will mobilize to site, upon scheduled to do so, to complete the coring of the footings. It is understood that two footing locations will be exposed and that 4 concrete cores will be obtained. Prior to obtaining the cores, concrete cover meter will be used to avoid encountering reinforcing steel. The cores obtained will be 100 mm in diameter and EXP will endeavor to obtain a minimum core length of 200 mm.

2.1 Laboratory Testing

A laboratory testing program will be completed on the select soil samples obtained from the field investigation. The testing will consist of Hydrometer/Sieve Analyses, Atterberg Limit Determinations, and Moisture Content Analyses.

Should bedrock be encountered one selected bedrock core will be submitted to our CCIL certified laboratory of Unconfined Compressive Strength Testing.

In addition, the four (4) cores obtained from footing will be returned to our CCIL certified laboratory and will be submitted for Unconfined Compressive Strength Testing.

2.2 Office Program

At the completion of the field investigation and laboratory testing, EXP will conduct an evaluation of subsurface conditions and prepare a geotechnical report for the proposed development which will provide the following:

- A plan showing the locations of the boreholes;
- Borehole logs;
- Detailed descriptions and properties of soil and groundwater conditions encountered;
- Laboratory test results;
- The appropriate types of foundations and associated recommendations that are best suited for the anticipated foundation loads on the subgrade, and any additional recommendations required for the specific site;
- Limit States design parameters;
- Modulus of subgrade reaction, coefficient of friction between concrete and encountered founding soils;
- The total and differential settlements expected;
- Unit density of soil and coefficients of active and passive earth pressures for design of members resisting lateral loads;
- Site Classification for Seismic Response and other seismic recommendations;
- Frost considerations;
- Excavation and dewatering requirements;
- Engineered fill requirements and limitations;
- Recommendations for the re-use of excavated soils;
- Disposal options for excavated soils and excess soil requirements;
- Backfill requirement including types of imported fill and level of compaction; and,
- General construction recommendations.

All design recommendations shall be in accordance with the appropriate codes and legislation. The final report will be signed and sealed by a qualified geotechnical engineer registered in the Province of Ontario.

3. Cost Estimates

The estimated cost to provide the proposed geotechnical scope of work have been separated into Fees and Disbursements and are outlined below. The rates note below will remain valid up to October 31, 2024 and may be subject to adjustments thereafter.

3.1 Geotechnical Cost Estimate

Fees

Borehole Layout and Public Underground Service Locate Coordination	\$250.00
Borehole Supervision (including travel time)	\$2,850.00
Routine Geotechnical Laboratory Testing	\$875.00
Drafting	\$250.00
Geotechnical Engineering/Reporting	\$2,100.00
Project Management.....	\$410.00
Report Publishing (pdf copies only).....	<u>No charge</u>
Total Estimated Fees (excluding HST) \$6,735.00	

Disbursements

Private Underground Utility Locates	\$1,850.00
Drill Mobilization	\$1,900.00
Borehole Drilling.....	\$6,490.00
Drill Rig Diamond Core Barel Wear	\$2,100.00
Water Delivery to Site	\$No Charge See Note Below
Water Tote Rental	\$500.00
Drill Crew Per Diem	\$1,425.00
EXP Supervisor Per Diem	\$750.00
Borehole expenditures (flagging, paint, sand, grout, etc.)	\$250.00
Service Vehicle	<u>\$600.00</u>
Total Estimated Disbursements (excluding HST) \$15,865.00	

ESTIMATED TOTAL (excluding HST) \$22,600.00

Cost Estimate Notes:

1. The above rate is based on the assumption that the borehole program will not extend beyond 3 business day. Should the borehole program require additional time or days due to unforeseen circumstances beyond EXP's control, the estimated cost will be adjusted to reflect the additional time required.
2. It is understood that the City of Elliot Lake would supply water delivery to site as required. Should the City not provide water delivery, a unit rate for water delivery as been included in section 4.0 of this proposal.
3. The above estimate does not account for any extreme weather delays. Should extreme weather delays occur you will be invoiced standby time and per-diems until work can proceed.

3.2 Concrete Sample Retrieval and Testing

The estimated cost to provide the proposed concrete testing scope of work have been separated into Fees and Disbursements and are outlined below.

Fees

Concrete Coring	\$1,350.00
Concrete Unconfined Compressive Strength Testing	\$540.00
Drafting	\$Included in Section 3.1 – No additional costs
Geotechnical Engineering/Reporting	\$Included in Section 3.1 – No additional costs
Report Publishing (pdf copies only).....	<u>No charge</u>
Total Estimated Fees (excluding HST) \$1,890.00	

Disbursements

EXP Coring Equipment Wear	\$100.00
Borehole expenditures (Non-Shrink Grout)	\$50.00
Service Vehicle	<u>\$200.00</u>
Total Estimated Disbursements (excluding HST) \$350.00	

ESTIMATED TOTAL (excluding HST) \$2,240.00

Cost Estimate Notes:

1. The above rate is based on the assumption that the concrete coring program will not extend beyond 4 hours on site time. In addition, it has been assumed that the footings will be exposed and excavation properly shaped and dry to allow for coring to commence immediately. Should the coring program require additional time or days due to unforeseen circumstances beyond EXP's control, the estimated cost will be adjusted to reflect the additional time required.
2. The above estimate does not account for any extreme weather delays. Should extreme weather delays occur you will be invoiced standby time and per-diems until work can proceed.

3.3 Additional work (optional)

It has been discussed to potentially attempt to find the depth of top of foundations on site. EXP proposes to attempt CPT testing to refusal at the pier footings located on the east side (parking lot side) of the arena. Eleven (11) pad footings are present along this part of the structure. CPT cone will be driven as close to the footings as possible at the permissible angle set by the drillers to attempt refusal on the concrete footing. Should the first attempt be unsuccessful no further attempt will be made and the cost noted below would not apply. Should the attempt be successful the procedure will be completed at each pad and the cost below would be invoiced. It has been assumed that the work would be completed at the same time as the boreholes noted in Section 4.0, with no additional mobilization.

Fees

CPT Supervision (including travel time).....	\$855.00
Drafting	\$190.00
Report Publishing (pdf copies only).....	<u>No charge</u>
Total Estimated Fees (excluding HST) \$1,045.00	

Disbursements

Borehole Drilling.....	\$2,360.00
Drill Crew Per Diem	\$475.00
EXP Supervisor Per Diem	\$250.00
Borehole expenditures (flagging, paint, sand, grout, etc.).....	\$100.00
Service Vehicle	<u>\$200.00</u>
Total Estimated Disbursements (excluding HST) \$3,385.00	

ESTIMATED TOTAL (excluding HST) \$4,430.00

Cost Estimate Notes:

1. The above rate is based on the assumption that the additional borehole program will not extend beyond 1 business day. Should the borehole program require additional time or days due to unforeseen circumstances beyond EXP's control, the estimated cost will be adjusted to reflect the additional time required.
2. The above estimate does not account for any extreme weather delays. Should extreme weather delays occur you will be invoiced standby time and per-diems until work can proceed.

4. Unit Rates

If additional works, delays, meetings, conference calls, etc. are required beyond the scope of work outlined in this proposal, the following unit rates will also apply. These rates will be valid through to October 31, 2024, and subject to yearly adjustments thereafter.

EXP Staff Unit Rates

Sr. Geotechnical Engineer	\$205.00/hour
Senior Technical Reviewer	\$225.00/hour
Geotechnical Engineer	\$190.00/hour
Laboratory Team Lead	\$115.00/hour
Sr. Geotechnical Drill Supervisor / Field Technician	\$95.00/hour
Draftsperson	\$95.00/hour
Administrative Assistant	\$70.00/hour

Additional Unit Rates

Borehole Drilling	\$295.00/hour
Drill Rig Diamond Core Barrel Wear	\$140.00/m
Water Delivery to Site	\$1,500.00/occurrence
Water Tote Rental	\$250.00/day
EXP Coring Equipment Wear	\$25.00/core
Drill Crew Per Diem	\$475.00/day
EXP Per Diem	\$250.00/day
Service Vehicle	\$200.00/day
All Other Disbursements	Cost +5%

5. Project Schedule

The geotechnical investigation can commence within 10 business days of written authorization to proceed, pending receipt of underground service locates and equipment availability.

The field work is anticipated to be completed within 3.0 business day, based on the scope of work of work developed herein.

The final report will be available within 2.0 weeks days following the completion of the drilling program and laboratory testing based on the current scope of work.

6. Closure

We thank you for the opportunity to submit this proposal and look forward to working with you on this project. Should you have any further questions concerning the above, please do not hesitate to contact the undersigned directly.

Yours truly,

EXP Services Inc.

Yves Beauparlant, P.Eng.
Manager, Earth & Environmental Services
Northeastern Ontario

Legal Notification

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