September 6, 2023

Halifax Regional Municipality
PO Box 1749
Halifax, Nova Scotia
Attention: [redacted]

Subject: **Geotechnical Summary Report**
Lot 13-1-10, Burnside Business Park Phase 13-1 Burnside, NS
Englobe reference: 00018473.002

[redacted]

On behalf of Halifax Regional Municipality, Englobe Corp. has carried out field inspection of the ongoing lot preparation at the above-mentioned site. The purpose of the work was to provide quality control inspection of select fills placed within the proposed lots and to evaluate existing site native soil for its competency as foundation subgrade material.

Inspection summary

At the commencement of construction, the proposed building lot was underlain with trees/shrubs, organic soils, cobble/boulders with elevated bedrock and site native soils in select areas. These conditions necessitated clearing, removal of all topsoil/organics, and cut and fill operations to reach the desired lot subgrade elevation(s).

Field inspection commenced in the winter of 2022, during initial site preparation and mass excavation. Cut and fill operations were undertaken to reach proposed lot subgrade elevation(s). Processed site rock and site native till were placed in successive lifts as structural fill. Large vibratory rollers and on-site excavation equipment were utilized to compact the structural fill with good results obtained throughout. The site was prepared to nominal elevations as indicted on the attached site plan.

Summary

Englobe Corp. has been in attendance at the site to provide quality control inspection during lot preparation at Burnside Business Park Phase 13-1 for Lot 13-1-10. See the “Recommendations” section below regarding geotechnical evaluation of lot prior to construction.

In general, for analysis using Limits States Design, footings placed on glacial till or structural fill can be designed using 200 kPa (SLS) and 325 (ULS). Depending on final selection of design grade, foundations may be considered for placement on bedrock. Footings on overblast bedrock can be designed for 350 kPa (SLS) and 600 kPa (ULS). Footings on intact bedrock can be designed for 1.5 MPa (ULS). These values are based on strip footings with minimum widths of 0.6 metres and square footings with a minimum width of 1.2 metres and a minimum burial depth of 1.2 metres below finished grade. A resistance factor of 0.5 has been applied to the ULS.

Final surface preparation for intact bedrock should include removal of smaller particles and debris by the use of high-pressure air. Final approval of prepared rock surface to be conducted by project geotechnical engineering personnel.
The serviceability limit states are based on a maximum allowable settlement of 25 mm for total settlement and 19 mm for differential settlement. Unfactored loads should be used with the SLS bearing pressures in accordance with the 2015 National Building Code of Canada (NBCC).

The site may be considered as Class C for seismic site response (NBCC 2015 Table 4.1.8.4.A). If all footings are founded on bedrock, Class B can be utilized.

Recommendations

Cut and fill earthworks were carried out to reach the design subgrade elevation for the building pad for Lot # 13-1-10. Subsequent to the work, softening of soils was observed in select areas of the pad due to ground water seepage and sheet flow of surface water from adjacent properties flowing onto and collecting on the prepared building pad. Potential developers/purchasers should take into account the presence of the groundwater/sheet flow surface water conditions at the site and the possible impact on the proposed development of the lot, including the effects of seasonal frost action. Prior to foundation construction, a geotechnical engineer should evaluate the surface and subsurface conditions as they pertain to the proposed site development and building construction.

If winter construction is being considered for the lot, it is imperative that the exposed subgrade(s) be protected (prior to and during construction) from frost penetration and the formation of ice lenses at the ground surface or within the prepared fill (or native soils). Any ice or significant frost build-up will require sub-excavation and replacement with approved engineered fill. During building construction, sufficient measures must be implemented to protect foundation/floor subsoil areas from frost penetration. Typical measures would include straw, insulated tarps, heated blankets, heaters, etc.

Englobe recommends that bearing capacity confirmation be carried out prior to construction to ensure bearing capacity meets the requirements for the proposed structures.

We trust that this information meets your present requirements. If you have any questions concerning the enclosed information, please do not hesitate to contact the undersigned.

Yours truly,
Englobe Corp.

[redacted]

Project Manager, Geotechnical Engineering

REGISTERED PROFESSIONAL ENGINEER
DATE 09-06-23
R. W. Henry
9869
PROVINCE OF NOVA SCOTIA

Attachment (Site Plan)