



August 15, 2019

Skyline Asset Management Inc.
5 Douglas Street
Guelph, Ontario N1H 2S8

Attention: Greg Jones

Re: Geotechnical Peer Review

70 Fountain Street East and 75 Farquhar Street, Guelph, Ontario
Pinchin File: 245320

Pinchin Ltd. (Pinchin) is pleased to provide the findings of our Geotechnical Peer Review (PR) to Skyline Asset Management Inc. (Client) for the property located at 70 Fountain Street East and 75 Farquhar Street, Guelph, Ontario (Site).

The Site is currently developed with a two-storey commercial building (Site Building). It is Pinchin's understanding that Client is in the planning stages of a proposed mixed-use redevelopment. The redevelopment is to comprise a 20-storey building with four levels of underground parking.

Pinchin was advised by the Client that the purpose of the PR was to assess potential issues of geotechnical concern in relation to the proposed mixed-use redevelopment of the Site.

REPORT REVIEWED

The Client provided Pinchin with the following document:

- Report entitled "*Geotechnical Engineering Report, Proposed 18 Storey High-rise Building, 70 Fountain Street, Guelph, Ontario*", prepared by Englobe Corp. (Englobe) and dated December 15, 2015 (Englobe 2015 Report).

SUMMARY OF REPORT REVIEWED

Englobe 2015 Report

The Englobe 2015 Report was prepared for a proposed eighteen storey building with two levels of underground parking. The Site Plan within the Englobe 2015 Report does not provide a layout of the proposed development.



The purpose of the Englobe 2015 Report was to investigate the subsurface conditions at the Site via a borehole drilling program and provide geotechnical recommendations for the design of the foundations and pavements.

The field investigation was completed November 19, 2015 and consisted of advancing a total of five (5) boreholes to depths ranging from approximately 3.2 to 8.2 metres below existing ground surface (mbgs). No monitoring wells were installed in any of the boreholes. The elevations of the boreholes provided in the Englobe 2015 Report were relative to a "T" cut in the sidewalk on the west side of Farquhar Street, as provided by Callon Dietz Land Surveyors.

Based on the borehole logs provided for the Site, the subsurface conditions consist of surficial asphalt and fill materials overlying natural sand and gravel soils, followed by glacial till. Presumed bedrock refusal was encountered at depths of 3.2 to 8.2 mbgs (Elevation 313.5 to 314.7 meters above sea level (masl)). The bedrock was not proven or cored in any of the boreholes, and therefore the Rock Quality Designation of the bedrock at the Site has not been obtained. No assessment was made in the Englobe 2015 Report about the type, quality and extent of the fill material for future off-Site disposal.

Water levels were measured at the completion of drilling at depths of 5.2 to 7.3 mbgs; however, no monitoring wells were installed as part of the geotechnical investigation and the stabilized water levels may be different than what was observed at the completion of drilling. Additionally, as the bedrock was not cored and proven, the quantity of water which may come from a bedrock excavation has not been determined.

The Englobe 2015 Report indicates that the soil at the Site which is not excessively wet would be classified as a Type 3 soil as per the Occupational Health and Safety Act and Regulations for Construction Projects, and that saturated or submerged soil shall be classified as Type 4. In addition, the Englobe 2015 Report anticipates that the groundwater entering open excavations could be controlled using gravity drainage and filtered pumps; however, the hydraulic conductivity ranges provided for the materials were from 10^{-1} to 10^{-3} cm/sec, which would may results in significant flows and an in-situ dewatering system may be required to control the groundwater. Additional monitoring wells and hydraulic conductivity testing should be completed to provide anticipated daily dewatering rates.

Preliminary shoring recommendations were provided in the Englobe 2015 Report and included soldier piles with lagging and continuous caisson wall. No design parameters were provided for either shoring option.

The foundation recommendations provided in the Englobe 2015 Report assumed that the proposed building would be constructed with two levels of underground parking. In Section 3.3 of the Englobe 2015 Report, Elevations of 214 and 215 are assumed for the basement; however, based on the measured ground surface elevations Pinchin believes that this should be 314 and 315 which matches the elevations



provided in the Englobe 2015 Report Table 1. A factored geotechnical resistance at Ultimate Limit States (ULS) of 430 kPa and a geotechnical resistance at Serviceability Limit States (SLS) of 287 kPa were provided by Englobe. Table 1 provides the highest elevation at each borehole location where conventional foundations founded on the native glacial till material or bedrock can support these bearing resistances.

Several ancillary foundation recommendations were provided in the Englobe 2015 Report, including the following:

- A minimum soil cover of 1.2 m is to be provided for all exterior footings and footings in unheated areas;
- The total and differential settlement for a 3 metre wide foundation would be 20 and 15 mm, respectively; and,
- To minimize disturbance to soil subgrades, the excavations should be carried out with a smooth-blade bucket.

Earthquake design parameters were provided based on Table 4.1.8.4.a of the Ontario Building Code (OBC). Englobe provided a Site Class C for the above noted foundation options, based on the results of the field investigation. A higher Site Classification may be available for the Site if a Shear Wave Velocity Measurement is completed.

Preliminary slab-on-grade recommendations were provided, including supporting the slab on 300 mm of 19 mm clear crushed stone draining into an interior and/or exterior perimeter drainage. The perimeter drainage recommendations are to prevent hydrostatic pressure against the parking garage walls and floor slab, but the actual stabilized water levels and quantity of water are unknown. No design details were included relating to the modulus of subgrade reaction. Further groundwater information is required to complete the design of the basement walls and to determine the long-term maximum water height against the walls for the calculation.

Lateral earth pressure parameters were provided for retaining walls with rigid lateral support that assumes level grades behind the wall and that the backfill is drained. The following geotechnical parameters were provided:

- An at-rest earth pressure coefficient of 0.5; and
- Unit weight of soil 22.0 kN/m³



Pavement design recommendations were provided including the preparation of the subgrade soil for the support of the recommended pavement structure. Pavement structures were provided for light duty areas and heavy duty areas/shipping docks/access roads. The recommended composition for the asphaltic concrete pavement was HL3 surface course, and HL8 base course. Additionally, a recommendation for a haul road during construction was provided.

CONCLUSIONS

The geotechnical comments and recommendations provided within the Englobe 2015 Report are considered suitable for the preliminary design of the proposed development, consisting of a twenty storey building, with four levels of underground parking; however, the recommendations provided in the report are not sufficient for final design purposes. Additional geotechnical investigations including rock coring to the depth of the lowest level of parking garage, unconfined compressive strength testing of bedrock cores, physical property testing and ongoing groundwater monitoring should be completed once final building designs have been determined to confirm the design bearing resistances, provide design recommendations for the parking garages, dewatering requirements and concrete slabs.

TERMS AND LIMITATIONS

This PR was performed for Skyline Asset Management Inc. (Client) in order to identify potential issues of geotechnical concern associated with the property at 70 Fountain Street East and 75 Farquhar Street, Guelph, Ontario (Site), based on information collected and provided by others.

This letter was prepared for the exclusive use of the Client, subject to the terms, conditions and limitations contained within the duly authorized work plan for this project. Any use which a third party makes of this letter, or any reliance on or decisions to be made based on it, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

If additional parties require reliance on this letter, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. Furthermore, this letter should not be construed as legal advice. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law.



This PR was performed in general accordance with currently acceptable practices for geotechnical site investigations, as applicable to the Site. The information provided in this letter is based upon analysis of available documents, records and drawings and personal interviews. In evaluating the Site, Pinchin has relied in good faith on information provided by other individuals noted in this letter. Pinchin has assumed that the information provided is factual and accurate. Pinchin accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this letter as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this letter, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

CLOSING REMARKS

We trust that the foregoing information is satisfactory for your present needs. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Pinchin Ltd.

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Template: Master Letter Template, March 15, 2019