SOIL-MAT ENGINEERS & CONSULTANTS LTD.

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PROJECT NO.: SM 260171.GEO May 25, 2026

SVEDAS ARCHITECTS INC.
3600 Billings Court
Burlington, Ontario
L7N 3N6

Attention: Monika Maxwell

PRELIMINARY GEOTECHNICAL CONSIDERATIONS
PROPOSED NEW ELEVATOR
ST. JEAN DE BREBEUF CSS – 200 ACADIA DRIVE
HAMILTON, ONTARIO

Dear Ms. Maxwell,

Further to your authorisation, SOIL-MAT ENGINEERS has prepared this Preliminary Geotechnical Considerations letter in connection with the above noted project. The purpose of this Geotechnical Considerations letter is to provide our comments and recommendations with respect to the excavations and site preparation during construction of the foundations for the proposed elevator, from a geotechnical point of view. It is noted that our office has been retained to advance boreholes on-site, and a more detailed report will be provided following completion of the fieldwork.

BACKGROUND

We understand that it is proposed to construct a new elevator located at the southeast corner of the existing courtyard at St. Jean De Brebeuf Catholic Secondary School located at 200 Acadia Drive in Hamilton, Ontario. It is noted that our office has completed numerous geotechnical investigations on the property previously, with the investigation for the recent addition being in closest proximity to the project area [Project No. SM 167103-G, dated December 21, 2016]. The soils encountered in this investigation included stiff to very stiff silty clay/clayey silt, overlying limestone bedrock at depths ranging between 1.7 and 4.2 metres. As shallow depths of bedrock could have a significant impact on project costs, the advancement of boreholes was recommended, with fieldwork to be completed shortly.

PRELIMINARY FOUNDATION CONSIDERATIONS

On a preliminary basis, footings within the undisturbed native soils, may be designed on the basis of a conservative bearing value of 200 kPa SLS, 300 kPa ULS and footings on bedrock may be designed on the basis of a nominal bearing value of 750 kPa SLS/ULS. However, should the findings of the boreholes differ from what is anticipated, the design should be altered to reflect the differing conditions. Nonetheless, the founding conditions should be reviewed by a senior member of this office at the time of construction to review the founding soils in comparison to the assumptions of this report and the findings of our investigation. The founding surfaces must be hand cleaned of any loose or disturbed material, along with any ponded water, immediately prior to placement of foundation concrete.

It is noted that the SLS value represents the Serviceability Limit State, which is governed by the tolerable deflection [settlement] based on the proposed building type, using unfactored load combinations. The ULS value represents the Ultimate Limit State and is intended to reflect an upper limit of the available bearing capacity of the founding soils in terms of geotechnical design, using factored load combinations. There is no direct relationship between ULS and SLS; rather they are a function of the soil type and the tolerable deflections for serviceability, respectively. Evidently, the bearing capacity values would be lower for very settlement sensitive structure and larger for more flexible buildings.

In areas where it will be necessary to provide adjacent footings at different founding elevations, the lower footing should be constructed before the higher footing is constructed, if possible, and the higher footing should be set below an imaginary line drawn up from the edge of the lower footing at 10 horizontal to 7 vertical. This practice will limit stress transfer from the higher footings to lower footings. The founding level of the proposed foundations should be designed to ‘match’ the existing structure, stepping up or down as necessary.

As some differential movement is expected between the addition and the existing building, expansion/movement joints should be provided where connections are made to the existing structure to allow for differential movements to occur, both vertically due to compression of the soil under the weight of the addition, and horizontally as the walls expand and contract with fluctuations in humidity and temperature. The foundations should be structurally reinforced to account for such movements, as well as variability in loading and support conditions.

Depending on the depth of the existing founding elevations and the depth of the elevator pits, there may be a need for some limited underpinning of the exiting foundations, though the depth of underpinning is generally anticipated to be relatively minor. Based on the clay content of the soil, the onsite native soils are anticipated to allow for conventional underpinning and when excavated to these depths would be expected to stay near vertical for the short underpinning construction period. Conventional underpinning would typically consist of 1.2 metre wide 'panels', excavated using the "A, B, C, D" method, such that only 'A' panels are excavated and poured at once, followed by C, B, and then D. Concrete should be allowed to reach sufficient strength prior to excavation of the next panel.

All footings exposed to the environment must be provided with a minimum of 1.2 meters of earth or equivalent insulation to protect against frost penetration. This frost protection would also be required if construction were undertaken during the winter months. All footings must be proportioned to satisfy the requirements of the Ontario Provincial Building Code.

It is imperative that a soils engineer be retained from this office to provide geotechnical engineering services during the excavation and foundation construction phases of the project. This is to observe compliance with the design concepts and recommendations outlined in this report, and to allow changes to be made in the event that subsurface conditions differ from the conditions noted in this letter.

We trust that this information is satisfactory for your purposes. Should you have any queries please do not hesitate to contact the undersigned.

Yours very truly,
SOIL-MAT ENGINEERS & CONSULTANTS LTD.

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