

re: Geotechnical Desktop Review - Preliminary Design Parameters
Proposed Building Reconstruction
35 & 37 William Street - Ottawa

to: Vittoria Trattoria - **Mr. Domenic Santaguida** - dom@vittoriatrattoria.com

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Further to your request and authorization, Paterson Group (Paterson) carried out a geotechnical desktop review of existing subsurface information based on geotechnical investigations completed in close proximity to the subject site. This report will provide a brief summary of inferred geotechnical design parameters and construction recommendations prior to the completion of the full geotechnical investigation.

Background Information and Proposed Project

It is understood that the existing building was damaged by fire and is currently being demolished at the time of writing this report. It is further understood that the site will be redeveloped with a proposed slab on grade, two storey building within the original building footprint and will maintain the existing heritage building facade. At the time of submitting this memorandum, the subject site is undergoing demolition activities and cannot be accessed to complete a geotechnical investigation.

Subsurface Profile

Overburden

Based on subsurface information obtained from the geotechnical investigations carried out within the vicinity of the subject site, the subsoil profile within the subject site is likely to consist of fill consisting of brown silty sand with gravel underlain by a compact to dense glacial till. The glacial till soil matrix likely consists of brown to grey silty clay with sand, gravel, cobbles and boulders. Practical refusal to augering was encountered on limestone bedrock at depths ranging between 2 and 5 m depth.

Bedrock

Based on available geological mapping, the bedrock in this area consists of an interbedded limestone and shale bedrock from the Verulam formation with an overburden drift thickness of up to 5 m depth.

Groundwater

Based on field observations and groundwater readings obtained from the stand pipes installed in a number of nearby boreholes, that the long-term groundwater table is estimated to be at the bedrock surface level between 2 and 5 m depth below existing grade. It should be noted that groundwater levels are subject to seasonal fluctuations. Therefore, the groundwater level could vary at the time of construction.

Foundation Design

Footings placed on an undisturbed, compact to dense glacial till deposit or engineered fill overlying a compact to dense glacial till deposit can be designed using a bearing resistance value at serviceability limit states (SLS) of **150 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **300 kPa**.

Exterior wall support structures placed on an undisturbed compact silty sand can be designed using a bearing resistance value at serviceability limit states (SLS) of **100 kPa** and a factored bearing resistance value at ultimate limit states (ULS) of **200 kPa**. Poor performing areas should be proof-rolled by an adequately sized compaction equipment making several passes under dry conditions and above freezing temperatures. The compaction program should be reviewed and approved by Paterson personnel at the time of construction.

A geotechnical resistance factor of 0.5 was applied to the reported bearing resistance values at ULS.

An undisturbed soil bearing surface consists of a surface from which all topsoil and deleterious materials, such as loose, frozen or disturbed soil, whether in situ or not, have been removed, in the dry, prior to the placement of concrete for footings.

If a basement level is proposed, footings should be placed on a clean, surface sounded limestone bedrock bearing surface and can be designed using a bearing resistance value of **500 kPa** at ULS incorporating a geotechnical resistance factor of 0.5. A surface sounded bedrock consists of bedrock surface free of significant amounts of cracks and fissures.

Footings and supports designed using the bearing resistance values at SLS provided above will be subjected to potential post construction total and differential settlements of 25 and 20 mm, respectively. Footings placed on clean, surface sounded bedrock surface are subjected to negligible post construction total and differential settlements.

Design for Earthquakes

The site class for seismic site response can be taken as **Class C** for the foundations considered at this site. A higher seismic site classification such as A or B can be provided if a site specific shear wave velocity test is completed. The proposed development will also determine the applicability of a seismic site Class A or B depending on the depth of footings. The soils underlying the proposed shallow foundations are not susceptible to liquefaction for the local seismicity. Reference should be made to the latest revision of the 2012 Ontario Building Code for a full disclosure of the earthquake design requirements.

Design and Construction Precautions

Underpinning

Founding conditions of adjacent structures bordering the site should be assessed and underpinning requirements should be evaluated at the time of construction by the geotechnical consultant.

Groundwater Control

A temporary Ministry of the Environment, Conservation and Parks (MECP) permit to take water (PTTW) may be required for this project if more than 400,000 L/day of ground and/or surface water is to be pumped during the construction phase. A minimum 4 to 5 months should be allowed for completion of the PTTW application package and issuance of the permit by the MECP.

For typical ground or surface water volumes, being pumped during the construction phase, between 50,000 to 400,000 L/day, it is required to register on the Environmental Activity and Sector Registry (EASR). A minimum of two to four weeks should be allotted for completion of the EASR registration and the Water Taking and Discharge Plan to be prepared by a Qualified Person as stipulated under O.Reg. 63/16. If a project qualifies for a PTTW based upon anticipated conditions, an EASR will not be allowed as a temporary dewatering measure while awaiting the MECP review of the PTTW application.

The contractor should be prepared to direct water away from all bearing surfaces and subgrades, regardless of the source, to prevent disturbance to the founding medium.

Site Specific Geotechnical Investigation

For the foundation design and related data provided herein to be applicable for the proposed building, Paterson should be retained to conduct a geotechnical investigation within the subject site to confirm subsoil conditions and to further provide site-specific geotechnical recommendations and construction considerations for the proposed development.

Mr. Domenic Santaguida
Page 4
PG5042-MEMO.01

We trust that this information satisfies your requirements

Best regards,

Paterson Group Inc.



Drew Petahtegoose, EIT



Faisal I Abou-Seido, P.Eng.

Paterson Group

Head Office and Laboratory
154 Colonnade Road South
Ottawa - Ontario - K2E 7J5
Tel: (613) 226-7381 Fax: (613) 226-6344

Northern Office and Laboratory
63 Gibson Street
North Bay - Ontario - P1B 8Z4
Tel: (705) 472-5331 Fax: (705) 472-2334

St. Lawrence Office
993 Princess Street
Kingston - Ontario - K7L 1H3
Tel: (613) 542-7381