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Fisher Project #: FE-16-7971

D. B. Gray Engineering Inc  
700 Long Point Circle  
Ottawa, Ontario

Attn: Nico Church, M.Pl.  
Email: <mailto:church@fotenn.com>  
Telephone: 613.730.5709 ext. 287

c.c. - Jason Sheldrick, email: [jsheldrick@dymon.ca](mailto:jsheldrick@dymon.ca)

**Re: Geotechnical Recommendations – 1375 Clyde Avenue, Ottawa, Ontario**

Fisher Environmental Limited carried out a geotechnical investigation at the subject property in 2016. Fourteen (14) boreholes were advanced to depths ranging from 0.40m to 3.85m below existing grade during the field investigation conducted in October 2016. The boreholes were terminated at refusal to auger on suspected bedrock which was estimated at depths of 0.30m to 2.75m below existing grade. Monitoring wells were installed in BH5 to BH11 to facilitate groundwater level measurement and sampling.

Based on the Site Servicing Plan, prepared by D.B Gray Engineering Inc dated Dec 17, 2019, stormwater storage facilities, in the form of Soleno Hydrostor Chambers, will be installed on the site. Specific geotechnical recommendations relating to the underground stormwater storage facility are detailed as follows:

1. The general conditions noted in the geotechnical report are still applicable. Regarding the change in foundation wall level, comment **No 36.2**, the bearing capacities and approximate depths of the foundation given in Table 3 of the Geotechnical Report, dated November 18, 2016 are relevant.
2. Regarding comment **36.35**, it is noted that the proposed stormwater storage structures are to be located in the area covered by BH10, BH13, BH14 and MWD. The bearing capacity applicable for the stormwater storage structures is 1000 kPa if founded on bedrock at depths of 2.28m, 1.10m and 1.90m bgs in the areas of BH10, BH13 and BH14 respectively. Refer to Table 3 in the Geotechnical Report for bearing capacities and elevations.
3. Groundwater levels in the wells generally covering the proposed stormwater storage chambers are in the range 2.40 to 2.83m bgs as observed in MW11 and MWD respectively. The stormwater storage chambers should be placed at a depth of not less than 1.5m below the finished ground grade for frost protection. If this condition cannot be met, then equivalent insulation must be provided as outlined in Section 6.2 of the geotechnical investigation report.

4. Geotechnical parameters applicable to the design of the retaining walls are:

**In the overburden soils**

- Active earth pressure coefficient  $K_a = 0.45$  for the walls in areas where structures or sensitive services are being supported.
- Active earth pressure coefficient  $K_a = 0.28$  for remaining areas.
- Natural unit weight of soil = 21.0 KN/m<sup>3</sup>
- Any surcharge loads must be included in the lateral earth pressure calculations.
- Lateral movement for the shoring wall, designed using  $K_a = 0.28$ , are expected to be in order of 15mm and are expected to be less if  $K_a$  value of 0.45 is used.
- Anchors, if required, should be designed for 35KPa.

**In the bedrock**

- $K_a = 0.2$ ,
  - $K_p = 5.0$
  - Natural unit weight of soil = 25.0 KN/m<sup>3</sup>
  - Anchors, if required, should be designed for 200KPa.
5. Regarding to **36.41**, for asphalt pavement structure, a minimum thickness of 300mm granular 'A' base should be provided.

We trust that the above is satisfactory. If you have any questions, please feel free to call and discuss.

Fisher Environmental Limited,



Frank Fan, P. Eng.,  
Geotechnical Engineer  
[frank@fisherenvironmental.com](mailto:frank@fisherenvironmental.com)



Clive Wiggan, PhD, EIT.  
Geotechnical Technician  
[clive@fisherenvironmental.com](mailto:clive@fisherenvironmental.com)