December 16, 2015

Mr. Bernard Reid
Capital Planning Branch, Design & Construction Division/
Direction de l'aménagement de la capitale, Division de Désign et construction
National Capital Commission
202 - 40 Elgin Street
Ottawa (Ontario) K1P 1C7

Subject: Technical review following the issuance of the plans at 99% - Geotechnical Comments
Leamy Creek Pedestrian Bridge
O/Ref.: 033-B-0012112-1-GE-R-0005-01

Sir,

You will find below our geotechnical comments regarding the water control in the excavation along the creek. To ensure the proper understanding, this document should be read in conjunction with the geotechnical investigation report (O / Ref. 033-B-0012112-1-GE-R-0001-00).

1. Summary of recommendations

The geotechnical investigation report (O / Ref. 033-B-0012112-1-GE-R-0001-00) indicated in Section 5.3.4, "Temporary Drainage" that:

"On June 5, 2015, the groundwater level was at a depth of about 3-4 meters below the ground surface. Depending on the time of year when the work would be performed, groundwater may be intercepted.

For this purpose, a surface water drainage system must be planned prior to excavation to avoid coming surface water in excavations. In addition, during the work, it is required to install an adequate and efficient pumping system to evacuate runoff and infiltration water as it accumulate at the bottom of excavations, to perform work in a dry environment. Given the purpose of the site, it will probably be required to undertake the construction of cofferdams. The directives listed in CCDG can be used. "

2. Comments on the monitoring of groundwater

The plans issued for 99% (Ref. G003546), the following comments were made:

Impermeability at the bottom of excavations

Even if the natural soil in place have a low permeability (K = 10^{-6} to 10^{-8} m / s for the silty sand and 10^{-7} to 10^{-10} m/s), important water inflows can occur in remolded areas or from the cracks in the clay. Therefore, it is recommended to lower the watertable at the level or lower than the bottom of the excavation at all times with the appropriate equipment. We believe that with the appropriate equipment it is possible to work in a relatively dry environment.

To be able to excavate close to the water and in a reasonably dry and secure environment, special care must be taken to the management of groundwater. In addition to constantly pumping the inflow water as it comes in the excavation, a particular attention must be given to the groundwater. In clayed soil, an hydraulic gradient lower to 0.50 must be maintained. By gradient we mean the water head difference report on flow distance. In silty soils, it will be required to lower and maintain at all times the level of the water table 0.30 meter below the level of the bottom of the excavation. This can be achieved by the use of pumping wells or drainage trench. The permeability of silty sand silt is estimated between 5 and 50 x 10^{-4} cm / s.

These precautions should be planned before the beginning of excavation. The contractor shall hire a specialized hydrogeologist or an engineer in the field to validate the working methodology.

We hope that this meet your expectations. However, if more information were needed, please contact the undersigned.

Best regards,

Tommy Lampron, Eng.
Discipline Manager – Geotechnics

Yaya Coulibaly, Eng., P.Eng.
Project Manager

TL/yc/mp

\\gatineau-sf1\projets\033\b-0012112_ccn-pont-leamy\b-0012112-1\2_tech\livrbrouillon\livrable 0005-00\en\033-b-0012112-1-ge-l-0005-01.docx