

August 24, 2022

Ref. # 18-053

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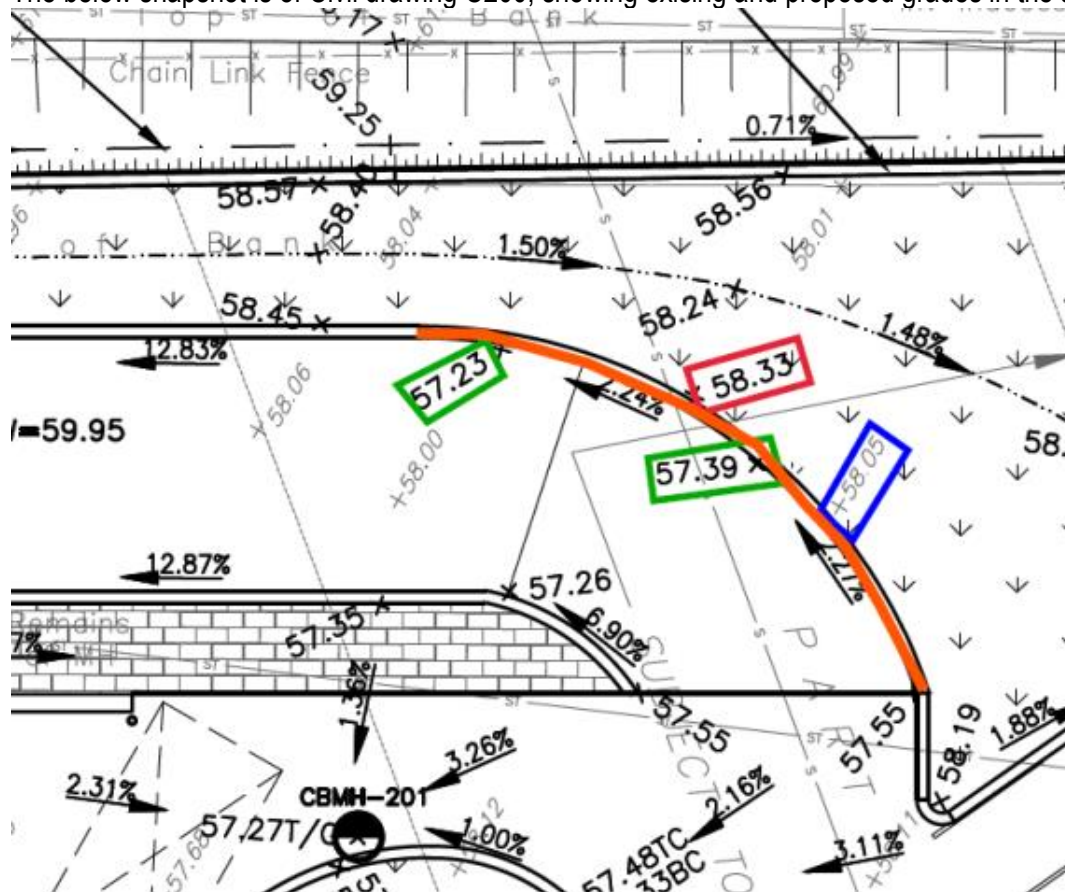
Attention: Mr. Patrick Dubuc, Senior Associate

Dear Patrick;

**Re: 187 Boteler St., Ottawa, ON
Loading of parking ramp retaining wall in easement**

We have reviewed the loading from the proposed parking entrance retaining wall which extends into the easement. The easement bisects the above noted property and has a buried storm trunk line running through it. We understand no drawings of the storm trunk are available or what its design loading conditions are, our analysis is based on information provided by the city of Ottawa. We have been informed that the storm trunk has 4m of soil surcharge above it which we have used for loading consideration.

The below snapshot is of Civil drawing C200, showing existing and proposed grades in the area of the easement.



The existing grade elevation over the storm pipe in the location of the retaining wall is approximately 58.05 (Blue), with the finished grade on the high side being approximately 58.33 (Red), and the low grade varies between 57.39 and 57.23 (Green). This results in a maximum retained height of soil of 1.1m

To minimise the impact on the trunk, we have considered a retaining wall (portion in orange which extends over the storm trunk) with a shallow footing 600mm below the ramp. Insulation will be used for frost protection. Considering a 2.1m wide footing with a 1m toe on the low side, the pressure under the footing varies from 33 kPa to 10 kPa, with an average of 22 kPa under the footing.

The existing surcharge load over the storm trunk is 80 kPa of soil based on 4m, and an additional fire truck live load should have been considered.

With the proposed grading configuration and wall, the underside of the footing would be approximately 2.5m above the storm trunk. This would have an existing soil surcharge of 50 kPa at the u/s of footing, and the 22 kPa of the footing would be additional. The resulting new pressure is 72 kPa, which is less than the current 80 kPa.

In our opinion the final condition of the shallow retaining wall produces no increase in loading beyond its current condition. No drawings have been provided and we have not performed an engineering analysis of the structure, or reviewed its current condition. Our basis for opinion is the comparison of before and after loading with the assumption the structure was designed sufficiently to support its current loads.

We trust that this addresses the concerns regarding the proposed entrance ramp.

Yours truly,

CUNLIFFE & ASSOCIATES



Jordan Cuff, M.Eng, P.Eng, Partner