

April 7, 2020

772186 Highway 10 Ltd.
300 New Toronto Street, Unit 38
Toronto, ON M8V 2E8

Attention: Manuel Lima

Dear Mr. Lima:

Re: 772186 Highway 10
Township of Southgate
Preliminary Sanitary Servicing Brief
Our File: P/N 18-3142

1.0 Introduction

Skelton Brumwell & Associates Inc. (SBA) were retained by Landsview Investments to provide consulting civil engineering services for the redevelopment of the property identified as 772186 Highway 10, in the Township of Southgate, County of Grey. We understand that the site is proposed to be redeveloped from its current use as a restaurant with a residential unit, to a self-storage facility with an office. The existing building onsite is to remain in place and be renovated for use as the self-storage facility office. The site also has an asphalt and gravel parking area on the east side of the site.

The existing building is serviced by a private onsite sewage disposal system, which includes a septic tank and leaching bed. The redevelopment of the site does not provide sufficient area to construct a new leaching bed, therefore the site must be connected to the existing municipal sanitary system. There is no municipal sanitary infrastructure along Highway 10, and the nearest connection point would be to the west of the site at Sheffield Drive. This will require the construction of a forcemain and pump chamber to be installed through the Sheffield Drive stormwater management (SWM) pond block to the west of the site.

We understand based on comments provided by the Township of Southgate via Triton Engineering Services Limited (Triton) that a servicing report is required to be submitted discussing the design of the stormwater management system sanitary sewage system, water servicing, and utilities. Details of the stormwater management system are addressed via report prepared by our office under separate cover, and staff from our office will also be providing comments regarding the water servicing and utilizes under separate cover.

The enclosed letter summarizes the design of the proposed sanitary sewage system for the site.

2.0 Sewage System Design

2.1 Design Flow

As noted previously, the site is proposed to be re-developed for use as a self-storage facility with an office. Staffing for the site is anticipated to be minimal, likely with only one (1) full-time employee.

The Ontario Building Code (OBC) Table 8.2.1.3.B specifies flows for a wide variety of occupancies, including an office. Flows for an office are determined based on the greater of the number of employees, or the floor space within the office. A self-storage facility would not be anticipated to generate any flows as they are unoccupied outside of the employees working at the facility.

Flows generated by the employee (1) at the self-storage facility would be calculated as:

$$Q_{\text{employee}} = 75 \text{ L/employee/day} \times 1 \text{ employee} = 75 \text{ L/day}$$

Flows generated by the office floor area would be calculated as:

$$Q_{\text{office}} = 75 \text{ L/9.3m}^2 \text{ floor area} \times 343 \text{ m}^2 = 2,766 \text{ L/day}$$

The office floor area is the governing condition, and as such, flows for the site would be in the order of 2,766 L/day.

2.2 Pump Chamber, Pump Sizing, and Forcemain Design

Flows from the existing building will be conveyed to a sanitary manhole located 1.5 m from the south side of the building via a 150 mm diameter PVC sanitary sewer at a slope of 2.0%, and then west via a 150 mm diameter PVC sanitary sewer at a slope of 2.0% to a pump chamber near the west property line. As the nearest connection point to the municipal sanitary system is at Sheffield Drive to the west of the site, flows will then be pumped to an existing sanitary manhole within the Sheffield Drive SWM block.

The forcemain itself will be a 50 mm diameter high density polyethylene (HDPE), and is to be installed by directional drilling through the Sheffield Drive SWM block to minimize the amount of site disturbance. The forcemain will be drilled at a minimum depth of 1.7 m until it reaches the existing sanitary manhole, where it will then be diverted using 90° bends to meet the manhole. Rigid board insulation will be required above the forcemain when it bends at the manhole to provide frost protection. The forcemain within the pump chamber must also have a 13 mm diameter hole drilled above the check valve in order to allow drainage back into the pump chamber after the pump cycle is complete.

The proposed pump chamber consists of a Wilkinson Heavy Precast 1.5 m Square Manhole, with a total height of 4.2 m. The outlet invert of the pump chamber will be set at an elevation of 516.47 m, which provides 1.23 m depth ($V = 2,766 \text{ L}$) of effluent storage below the invert.

The proposed invert at the existing Sheffield Drive sanitary manhole is to be set at 520.72 m, and as noted previously, the pump chamber outlet invert will be set at 516.47 m. As such, the static head would be 4.24 m. Friction losses through the system would be a result of pump inlet, a gate valve at the pump, pipe elbows/bends, and the inlet to the manhole, which result in an equivalent pipe

length of 5.72 m. The proposed forcemain between the pump chamber and the manhole measures approximately 70 m in length. The friction head would therefore be calculated at 3.25 m, and the Total Dynamic Head (TDH) would be calculated at 7.49 m.

It is proposed to install two (2) 1.0 H.P. Myers VR1 sewage grinder pumps, which convey 36 USGPM (136 L/min) at a TDH of 7.49 m. The grinder pumps will be alternating, and will include lift out ropes, fittings, check valves, gate valves, disconnects, duplex alternating pump control system, and visual and audible high-level alarms. Details for the Myers VR1 sewage grinder pump are included with this brief.

We trust that the enclosed brief is satisfactory in addressing comments provided by the Township of Southgate. If further information is required please do not hesitate to contact our office.

Yours truly,

Skelton, Brumwell & Associates Inc.

Per:



Matt Bertram, P. Eng.
Project Engineer

MJB/hac

C-20-062