

Rehabilitation of the Leslie Street Sanitary Trunk Sewer

Sewage from York Region's largest sewage pumping station, with an average flow rate of ~1 m³/sec, is conveyed downstream via twin force mains, for a length of 2.5-km. After crossing the highest point in the topography, the sewage is relayed downstream, by gravity, via a 2100 mm diameter sewer, 79-m long, ~ 4.5-m in depth; referred to as the Leslie St. STS. Commissioned in 1979, recent inspections on the sewer displayed exposed reinforcement bars and protruding aggregates, for a continuous defect of 34-m length, that makes up 43% of the sewer's total length. Maintenance Hole (MH) inspections also revealed similar structural defects. With no redundancy available, the sewer was identified in dire need of rehabilitation. The sewer is located on a congested hydro corridor, with two transmission towers (500 KV and 200 KV), a 900-mm vital gas main, in close proximity to the trunk sewer.

Given the existing flows and site constraints, Slip lining was identified as a cost-effective method to rehabilitate the sewer and installing HDPE liners for MH rehabilitation. To prevent migration of corrosion to the next downstream sewer post rehabilitation, the design includes changing turbulent flow to laminar conditions to limit stripping of hydrogen sulfide, by improving the slope of the MH benching and installation of HDPE liners on the MH walls and roof slab.

The existing site conditions pose construction challenges such as strategically locating construction staging and laydown areas, managing flows during rehabilitation without impacting the normal operation of the sewage pumping station.

Learning objectives include addressing construction challenges, during design such as flow control and construction footprint management. The construction contract is anticipated to be awarded in November 2019, with completion of construction, by May 2020.