

2014

Assessment, Design and Construction of Linear Infrastructure



Why PROF&E?

PROF&E provides technical services for a wide range of Water infrastructure including treatment, transmission, conveyance, collection and storage. Our senior engineers have been providing services to the water sector for over 20 years. We are committed to client satisfaction through the quality and excellence of our services. We place considerable emphasis on communication skills and close partnership with our clients by providing support and technical knowledge to achieve goals jointly. We combine innovative approaches using the latest technology and ideas with sound practical skills and experience.

Assessment and rehabilitation of existing pipelines takes a large proportion of our linear infrastructure portfolio. We were involved in both water and sewer pipelines. Our rehabilitation projects include cast-in place concrete aqueducts, concrete lined steel pipelines buried and exposed under the bridges, and large diameter interceptor sewers. Our methodology is usually implemented in several steps: During pre-assessment stage we review any information provided to us by the owner that helps us understand potential problems. We then recommend field investigation technique(s) that range from CCTV inspection, robot inspection, GPR, most recent sounding techniques, man-entry, etc. During this stage we are able to provide clients with the engineering recommendations of the nature of the defects, extent of defects, and alternate solutions. Our asset management team then processes this data, adds estimated costs to it and based on life-cycle cost analysis, presents several operations and maintenance solutions for both immediate rehabilitation and long-term maintenance.

For selection of rehabilitation techniques we keep in touch with the latest technologies in the areas of pipe interior and exterior lining, robotic repairs, concrete repair techniques and corrosion.

Speaking of new installations, PROF&E performed installations of concrete, FRP, steel and iron pipelines of various diameters. Almost all our water projects have water and sanitary yard piping as part of it. However, we have designed and constructed major water headers and sewer forcemains stretching through heavily developed urban cores in GTA.

Uncompromised
client service



We use state-of-the-art design tools: Finite Element Modelling and Soil-Structure Interaction

Linear Infrastructure

Planning, condition assessment, design of new infrastructure, rehabilitation design of existing infrastructure, engineering support during construction



Our Projects

SHOAL LAKE AQUEDUCT

After some major areas of concern were identified in the condition assessment report, our project team implemented a 10 year rehabilitation program of the 100 mile long Shoal Lake Aqueduct that at the time was a sole source of potable water for the City of Winnipeg. Due to a complexity of the assignment, our team has divided the program into projects that was dealing with individual types of repairs and certain stretches of the pipeline. Our team was involved with uplift (buoyancy) protection, external repairs of the aqueduct, manhole repairs and culvert/siphon repairs. We worked closely with the City of Winnipeg during assessment, design and construction of various projects at SLA. In order to minimize costs and to ensure quality of work, we have pre-qualified general contractors. To maximize communication and keep delays to the minimum, design team was directly engaged during construction. The program was completed on time and on budget.

Client: City of Winnipeg
Engineering budget: \$10,000,00

AURORA AND NEWMARKET YDSS SANITARY SEWER CORROSION ASSESSMENT PROJECT

In 2008, our staff was retained by York Region to conduct a review on critical components of the overall York Durham Sewer System (YDSS) by reviewing existing investigative survey reports related to both the internal inspection of Aurora and Newmarket Sanitary Sewer components. This incorporated additional destructive and non-destructive testing that included on-site condition assessment of concrete core sampling, H₂S, crown pH, BOD₅ and dissolved sulphide sampling to remove, reduce and/or mitigate hydrogen sulphide from the affected portion(s) of the sanitary sewer. The requirement for the condition assessment report includes for the development of a system analysis, an evaluation of hydrogen sulphide and corrosion control alternatives and recommendations for both systems, both short term and long term.

Client: York Region
Engineering Fee: \$401,000

CONDITION ASSESSMENT OF REBECCA ST. SEWER MAIN

After history of leaks and repairs, Region of Halton engaged PROF&E to carry out field condition assessment. The sewer is located under a bridge and crosses over a public parking lot and a marina. The objective was to evaluate the condition and structural integrity of the sewer, assess any performance issues and to identify and recommend the best alternative solution using an optimized decision making process of multi-criteria analysis considering life cycle cost.

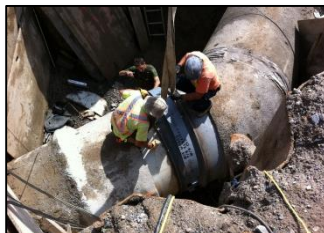
After conducting review of existing documents including CCTV and carrying out external field inspections, defect mapping and sounding, a structural and hydraulic assessment of the sewer main was conducted. Areas of failure, risk and potential failure were identified in order to establish appropriate rehabilitation methods.

Client: Region of Halton
Engineering Fee: \$4,500

JACK DARLING TWIN SANITARY FORCEMAIN AND PUMPING STATIONS

The project included construction of two new sewage pumping stations, construction of twin sanitary forcemain and sewers connecting to existing Peel's sewer network. By working closely with the contractor and our geotechnical sub-consultants, our project team successfully dealt with the challenges associated with the unforeseen soil conditions. Our field inspectors kept daily records of additional material requested by the geotechnical engineers, communicated changes to the client and our contract administration team and the approach resulted in minimal cost to the client. During startup, our team successfully communicated with the design team to ensure safe implementation of temporary by-pass system of the existing sewer line.

Client: Region of Peel
Engineering construction budget: \$650,000



Linear Infrastructure

Contact us.

With two offices in Newmarket and Toronto, and a project field office in Mississauga we are strategically positioned to serve our clients in GTA area and Southern Ontario. Although our core business hours are 8:30 AM to 5:00 PM Monday through Friday, our uncompromised client service is based on 24/7 client and project support. We have a full appreciation of demands of the construction industry and non-stop operations of water systems our clients deal with.

P (Toronto): 647.502.3127, F: 416.850-5460
15 Allstate Parkway, Ste. 600, Markham, ON L3R 5B4

www.profe.ca