

**TRENCHLESS REHABILITATION OF THE CHAPMAN SANITARY TRUNK SEWER:
DESIGN CONSIDERATIONS AND LESSON LEARNED**

Bashir Ahmed, City of Toronto; Jayne Harris, CH2M; Laurel Murphy, CH2M

CH2M, 245 Consumers Road, Suite 400, Toronto, ON M2J 1R3

Bashir Ahmed | Bashir.Ahmed@toronto.ca

ABSTRACT:

Large diameter concrete trunk sewers are the backbone of municipal collection systems. Some of these sewers, upwards of 50 years old, are showing significant signs of deterioration.

While open cut replacement of trunk sewers with new construction has traditionally been the only means to repair leaky or deteriorating sewers, this option is not only expensive, but depending on the location, can involve serious inconvenience and damage to the existing environment and infrastructure within the construction zone. Creek crossings, private property, existing roads and highways, utility conflicts, environmentally sensitive areas, and highly populated areas are among the most difficult issues to try to manage when considering a large open cut construction project.

Traditional construction techniques generally require favorable weather conditions which in colder climates, means confining the major construction activities to spring and summer, resulting in conflict with many local events and negatively impacting the enjoyment of both public and private property for local residents and visitors to the area.

In-situ rehabilitation provides an alternative to open cut construction which minimizes some of these conflicts. While access to the sewer is still required, often through existing maintenance holes or temporary shafts, these can be located strategically to minimize the impact on the surrounding area.

In-situ pipe rehabilitation has been used extensively in the United Kingdom for some time now, and is gaining popularity in North America. As more local projects are undertaken, in-situ pipe rehabilitation is proving to be an effective means of quickly and cost-efficiently mitigating existing inflow and infiltration and structural deterioration of buried large diameter concrete sewers.

In the City of Toronto, within the Humber sewershed, a section of the Chapman Sanitary Trunk Sewer (750mm to 825mm diameter reinforced concrete pipe) was identified for rehabilitation through an inspection and condition assessment program undertaken by the City. The trunk sewer is located in Douglas Ford and Chapman Valley Park, a natural ravine environment between residential properties, regulated by the Toronto and Region Conservation Authority (TRCA). The sewer is laid within the valley bottom, alongside the Humber Creek and crosses the creek at three locations.

This paper will describe the design considerations, constructability challenges, and the lessons learned during trenchless rehabilitation of Chapman Sanitary Trunk Sewer.