

Abstract No 16

ABSTRACT

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The Hamilton Mountain Trunk Sewer(HMTS) is a 5410mm by 4496mm diameter, 6.3 km long loaf-shaped large diameter storm sewer. This sewer was constructed in four stages between 1971 and 1978.

The sewer was constructed as an open cut, where the concrete walls were casted directly against the existing rock trench walls. Significant structural deterioration and failures have been observed in several locations along a 400m long segment where the sewer runs directly underneath a bridge over pass.

Several sewer investigations, both man-entry and multi-Sensor inspections by Redzone Robotics have been completed since 2011. A monitoring program was implemented to determine if the deformation of the sewer is ongoing and to quantify any continued movements. Optical Extensometers were installed on the walls and crown at two locations in the arch roof box sewer cross-section. One additional optical strand Extensometer was also installed to monitor the most sever crown deterioration underneath the bridge overpass.

Several types of structural distress and failures have been found in previous investigations of the HMTS. The cause of these observed areas of distress can be attributed to several factors, but most predominately rock movements that occurred during the construction period, and rock movements that occurred over the period since construction.

A solution had been engineered to repair this large diameter sewer by installing large concrete arch shaped panels that will be lowered down through a shaft, then moved down the sewer where they will be connected together.

This paper will focus on the past investigations, the ongoing live monitoring and the actual trenchless repair to the Hamilton Mountain Trunk Sewer.