

Burrard Street Storm Tunnel – Success in Difficult Ground

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As part of the Burrard Bridge Rehabilitation and Pacific Intersection Safety Improvements Project, the City of Vancouver investigated options to replace an existing 600 mm diameter storm sewer with a new 750 mm diameter line beneath the very busy intersection of Pacific Street and Burrard Street. The proposed sewer segment was approximately 107 m in length at a grade of 5.44%; from a proposed upstream manhole in the intersection of Pacific Street and Burrard Street at an invert depth of 10 m, to a downstream manhole just north of the intersection of Burrard and Beach Avenue with an invert depth of 7m. This alignment ran within the Burrard Street right-of-way, beneath a significant retaining wall structure on the south corner of the Burrard Street and Pacific Street intersection. With the amount of traffic at this intersection, being within a built-up commercial and residential area, along a critical commuting route, and beneath a retaining wall, open cut construction was not an option, and necessitated the use of trenchless construction. Associated Engineering assessed alternative trenchless methods for the installation of 750 mm diameter HOBAS centrifugally cast fibreglass reinforced polymer mortar pipe, within a 1200 mm diameter jacked steel casing which would allow the City the flexibility for future expansion and capacity, and provide enhanced structural support beneath the retaining wall footings. The geotechnical investigation indicated that the casing installation would be within compact granular and fine grained soils including silts, sands and gravels with the possibility of encountering cobbles and boulders. The project was tendered and awarded to B. Cusano Contracting in the first quarter of 2016, construction commenced in May of that year. Utilizing an Akkerman 5000 Pump Unit System with a WM 48SC TBM cutter head, the installation proceeded from the Beach Avenue shaft upslope to Pacific Street. During tunnelling operations, Cusano encountered difficult ground conditions that required alternative mitigation measures to complete the casing installation. This presentation will provide an overview of the design and construction of this challenging project, highlighting some lessons learnt and mitigation strategies utilized to successfully complete the installation of this storm sewer installation.