

Storm drain system succeeds in salt marsh for mega-mall complex

In early 2014, the Tsawwassen First Nation started construction of two mega-malls. To accommodate storm-water runoff from this 73-hectare project, a large-diameter pipeline was designed and installed under the public roads surrounding the sites. The selection of the pipe needed to take into consideration corrosion resistance, due to the salt water environment, and had to offer structural strength because of the poor deltaic soil conditions in this seismically active region of British Columbia.

The two projects on the peninsula jutting into Boundary Bay are Tsawwassen Mills, an enclosed shopping mall with approximately 111,500 square metres (1.2 million square feet) of retail space and Tsawwassen Commons, a retail outlet with 51,500 square metres (555,000 square feet) of outdoor retail space. The project is expected to be completed in the summer of 2016, and will include 6,000 parking spaces.

For the stormwater drainage system, SaniTite HP from Advanced Drainage Systems, Inc. (ADS) was selected. More than 1,500 metres of SaniTite HP was used ranging in diameters from 300 to 1,500 millimetres. In addition, there are 12 risers that were fabricated by ADS using SaniTite HP pipe, all equipped with ladders to provide access to the system. Cover over the pipe ranged from 450 mm to 2.3 metres and the backfill used was Class 1 crushed 20-mm angular stone. Installed on a zero percent grade, the pipeline acts as a holding tank as well as a conveyance system. This allows water to enter nearby ditches used by local farmers for irrigation.

SaniTite HP pipe in 300 to 1,500-mm diameters provides a smooth interior for hydraulic performance and a profile wall (open or closed depending on diameter) for stiffness and beam strength. The high beam strength, in addition to the pipe's light weight and simple bell-and-spigot joints,



A 6-metre-long section of large diameter SaniTite HP pipe is moved into place. The polypropylene pipe provides the additional stiffness plus the long bell and dual gaskets needed to compensate for the area's soft soils.

allowed contractors to more than double expected production rates, installing more than 60 metres per day in many cases.

“The SaniTite HP pipe was selected because of its inherent added pipe stiffness,” said Greg Bohn, director of national engineering and product development for ADS. “The two malls are built on a tidal marsh near the Strait of Georgia with weak native soils. SaniTite HP provides excellent structural strength and joint integrity to perform in this challenging site environment.”

SaniTite HP pipe is certified to meet CSA Standard B182.13 by Intertek, a third party certification body authorized by the Standards Council of Canada (SCC) to certify products. Additionally, the structural performance of SaniTite HP is evaluated in accordance with American Association of State Highway and Transportation Officials (AASHTO) Load Resistance Factor Design (LRFD) Bridge Design Specifications. SaniTite HP is accepted by the British Columbia and Ontario Ministries of Transportation (BC-MOT and MTO), the Ontario Provincial Standards (OPS) and meets ASTM F2736,

and ASTM F2764 with 100 kPa (15 psi) joints tested in accordance with ASTM D3212 for water tightness.

According to Larry Martin, manager, regional infrastructure, Associated Engineering, “Despite the large diameter and integral manholes, the handling and installation of the SaniTite storm sewers on this project was straightforward and trouble-free. ADS was prompt, thorough, and professional with their technical support services. I would recommend SaniTite HP for any application where durability, constructability or post-installation settlement are expected to be an issue. SaniTite HP has raised the bar for large-diameter storm sewer applications.”

According to Bohn, “When the pipeline was completed, we were told that the pipe provided a quick, contractor-friendly installation. This was also a significant benefit given the high water table and sand present in the trench. The original design plan called for an installation speed of 30 metres of pipe a day. The reality was that the crew achieved 60 metres a day with the SaniTite HP pipe.”

ADS Canada