

Storm Water Collection & Distribution

Fort Saint John, British Columbia, Canada



Project:

The City of Fort St. John, situated in the province of British Columbia, has experienced a substantial population growth within the past few years. To support the population growth, the city installed many new hard surface roads and sidewalks. As the number of these hard surfaces grew, the amount of rainfall that could be absorbed into the ground decreased, and the volume of stormwater to be managed increased. As a result, the existing stormwater piping could no longer handle the increased volume flow after large rain storms and in turn street flooding would occur. To solve the street flooding issue, the city commissioned the development of a new Stormwater Master Plan in 2013, prepared by Urban Systems Ltd.

The plan examined current and future storm water capacity requirements in the south central area and concluded that the size of drainage piping system needed to be increased to address flooding, soil erosion and minimize any impact on aquatic life.

Project Information

Country:	Canada
Completion:	September, 2015
Project Type:	Major Storm Relief
Building Type:	Municipal
Application:	Drainage
Size of Infra Pipe Products:	84"RSC100 and 84"RSC160
	Total Length 600 meters plus 5 elbows and 5 manholes
Distributor:	Corix
Contractor:	Chilliwack-based Jakes Construction Ltd.
Sales Manager:	Darrell Sallenbach

In 2015, Chilliwack-based Jakes Construction Ltd. was selected to perform the proposed stormwater upgrades to the existing storm water piping system in Fort St. John, located along 96A Street just north of Frontage Road. In addition

to the new piping system requiring to handle the higher stormwater flow rates, the it also needed to provide connections to tie in the existing storm drains, catch basins and laterals.

The second phase included the construction and installation of 660 meters of 84" diameter Weholite storm sewer piping

Challenges:

Since stormwater piping can be subjected to large swings in pH, hydrogen sulfide attack, microbiological growth, corrosion, etc. a piping material which would be able to withstand these types of aggressive environments, with no or minimal effect, over its design life needed to be selected. By selecting a robust material, Life Cycles Costs could be significantly reduced.

The new stormwater piping to be installed would be required to tie in existing stormwater infrastructure, consisting of catch basins, laterals and storm drains. The challenge with these tie-ins were that that the existing stormwater infrastructure piping was made from various piping materials; concrete, PVC and possibly ductile iron. Any solution being proposed would be required to provide connections that could easily join these different materials into the new piping.

Solution:

Weholite was selected as the Stormwater piping system of choice due to its structural high density polyethylene (HDPE) construction, making it one of the most robust and chemically inert materials on the market today. Selecting a material which is 100% chemically inert and not simply coated, means that over the 100 year design life of the material, operations and maintenance costs remain low as there are no coatings to be worn out. In addition, as stormwater passes over the surfaces of roads and sidewalks, it absorbs many contaminants such as fertilizers, gas, oil, salt, battery acid, etc. These contaminants can easily dissolve/corrode materials such as concrete and steel where HDPE remains inert.

Due to the high strength-to-weight ratio of Weholite, the pipe was easier to load, transport, handle and install in comparison to concrete which is extremely heavy and cumbersome to handle. For example, a 25 ft. length of Weholite weighs 4,750 lbs while a 25ft concrete pipe weighs 62,500lbs. The light weight of Weholite resulted in an increase in installation efficiency and a decrease in machinery and labor costs. Another benefit of the Weholite, which contributed to completing the project on time, were its long lengths of pipe. Longer lengths meant fewer joints which resulted in fewer welds and accelerated installation in comparison to other piping materials.

When Phase II of the project was completed 2,165 ft (660 m) of 84" Weholite pipe had been installed. Since Weholite was selected, it was possible to take advantage of a newer, tougher and structurally advanced piping system. The installation was completed on schedule and on budget and the pipe has performed as it was designed to do todate; relieve the City of Fort St. John of its storm water overflows.

Phase III will be a continuation of this pipeline along 94 Avenue from 96A Street to 100 Street and will form part of the 2016 Capital Budget. Given our successful delivery with this project, Infra Pipe is expecting to fully participate in this new development.

Straight from the customers:

"Infra Pipe came through with delivery on all Pipe and Welding services which allowed for the installation to conclude on schedule. It was very important to complete on schedule given that winter months were rapidly approaching." - Eric Sears, Urban Systems Design Engineer

"City of Fort St. John; Installation went smoothly and was completed on-time. The advantage Weholite has over other materials is that it is light and that the long lengths allowed for a much faster installation compared with other materials. We look forward to the next Phase in 2016." - Victor Shopland, Director of Integrated Services