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Mastering Storm Water

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DEVELOPER
OF SUSTAINABLE SOLUTIONS
FOR MASTERING STORM WATER



COMPLETE HDPE STORM WATER SEWER FOR CANDIAC SQUARE

Storm water management: a complete solution in HDPE offered by Soleno.

Initiated in 2016, the construction project of the Candiac Square, the second most important residential project of Greater Montreal that year, represents a successful achievement using products made of high-density polyethylene (HDPE). Executed over a three-year period, the development of two underground retention system and a complete network of HDPE storm water sewer and treatment system responding to the municipal and provincial governments requirements for storm water management was a first for the various stakeholders of the project. Supported by our specialized consulting services, this large-scale project was carried out in several phases. The benefits of this economical, simple and fast installation system won over the city of Candiac, the FNX-INNOV engineering firm (formerly known as Consultants firm S.M. Inc.) and the contractor, A & J.L. Bourgeois Ltd, to install the first storm water sewer network completely in HDPE.

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THE CONTEXT

The Candiac Square, a multi-generational POD type project (pedestrian-oriented development) of more than 600 million dollars of infrastructure investment, revolves around a large central square of 10,000 m² (107,639 ft²). This 16,537 m² (178,000 ft²) project is located on the southern portion of the Montcalm Industrial Park, close to one of the main entrances of the city of Candiac. Wishing to establish a living environment based on the best practices in sustainable development and urbanization, the Candiac Square is fully dedicated to active transportation to promote pedestrians and cyclists' circulation, and is adjacent to the Metropolitan Transport network (RTM) incentive parking.

This large-scale development project, planned for more than 2000 diverse housing units, involves the installation of a storm water sewer completely made of HDPE and of two underground retention system without replenishment of ground water, and fitted with a treatment system compliant to the regulatory requirements. Initiated in the spring of 2017, the first two phases of the project consisted in the development of the first part of the storm sewer network and a first retention basin (spring-summer of 2017), followed by the installation of the second part of the storm sewer network and the second basin (spring-summer 2018). The development of the last part of the storm sewer network will follow in the spring of 2019.

THE SOLUTION

For the first part of the storm sewer network, the contractor proceeded with the installation of over 630 linear meters of Solflo Max pipes of 1200 mm (48 in) in diameter, as well as around 15 manholes chimney type of 900 mm (36 in) in diameter, welded directly to the Solflo Max pipes. Several Solflo Max pipes of diameters ranging from 450 mm (18 in) to 1500 mm (60 in) were also used. In addition, in order to treat retained water, an AS-10 Aqua-Swirl hydrodynamic separator was integrated at the end of the network, before connecting it to the city storm sewer network. Finally, more than 1290 linear meters of 1200 mm (48 in) diameter Solflo Max pipes will form this HDPE storm sewer network.

For each of the two 16 rows retention systems, nearly 480 HydroStor HS180 chambers were installed on a stabilization geogrid, and then surrounded by clean stone covered with TX-90 geotextiles. The first retention basin will store 2,505 m³ (88,463 ft³) of water for heavy rain events, and the second retention basin will store 2,475 m³ (87403,8 ft³) of water. A waterproof geomembrane as well as two protective geotextiles were installed on the two excavated areas, measuring 35,27 m (115.7 ft.) in width and more than 66 m (216.5 ft.) in length.



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THE BENEFITS

Corrosion, abrasion, de-icing salts and vibration resistant, the use of high-density polyethylene (HDPE) ensures the sustainability of the infrastructure. The development of a storm sewer system completely made of HDPE, an efficient and durable material, can therefore ensure the longevity of the new Candiac Square network.

Lightweight and easy to handle, HDPE products don't require the use of specialized equipment, such as a crane, thus making the installation easier and the execution of the work quicker, key factors that were much appreciated by the contractor, A & J.L. Bourgeois Ltd. The length of the Solflo Max pipes reduces the installation time as well as the number of joints required, compared to traditional concrete pipes. In addition, unlike the traditional concrete manhole, the HDPE manhole does not require oversizing, which allows to reduce the manhole diameter and brings substantial savings both in terms of purchase price and excavation-installation costs. Its welded HDPE design allows the assembly of the inlets and outlets at the factory, which facilitates piping connection on the job site. In addition, thanks to the watertight bells with o-ring gasket (BG) or with integrated gasket (BGI) - patented and exclusive to Soleno - slightly oversized, Solflo Max pipes quickly and easily fit together, bringing significant benefits on the job site. Fitted with clips to validate the quality of the installation as well as the depth of the nesting, the use of watertight bells provides powerful joints and ensure the watertightness of the storm sewer network.

The HydroStor HS180 retention system, made of polypropylene and high-density polyethylene, is easy to install, thanks to the lightweight retention chambers. Its capacity to absorb heavy rain prevents sudden flooding. The HydroStor HS180 retention chambers, designed for heavy volume or restricted available space projects, can store 5.1 m³ (180.1 ft³) of storm water per chamber, making them more cost-efficient by greatly reducing the area of the site. The installation of a HydroStor geogrid helps to ensure a solid and stable foundation at the base of the chambers, by distributing linear workloads over a larger surface area.

Installed at the outlet of the storm sewer, the Aqua-Swirl treatment unit retrieves suspended solids, oil and grease, while ensuring the system's sustainability. Its direct access from the surface eliminates the need for work in confined space and facilitates the periodic maintenance.



The realization of this project was made possible thanks to: the contractor [A & JL Bourgeois Ltd](#) and the distributor [Wolseley](#).

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