SQUARE MERCIER: HOUSING PROJECT IN MERCIER, QUÉBEC

Storm water storage : a customized solution offered by Soleno.

Nowadays, it is essential to mitigate the hydrological impacts of urbanization in all new residential construction projects. To do so, the designer has several options for the storage of storm water : notably, a detention system. This system can temporarily hold large quantities of water to minimize the loading of municipal storm water sewer systems during peak periods, prior to its discharge towards an outlet.

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THE CONTEXT

Square Mercier, a 6-million-dollar infrastructure and housing project in Mercier, is located at the corner of St-Denis and Lorraine streets. This major project, in which 300 detached, semi-detached, multifamily and townhouses are to be built, includes the construction of a detention system. Challenges posed by the basin construction include limited available space, a deep storm drainage system, a high ground water table and riparian strip requirements.

THE SOLUTION

Faced with these constraints, Consultants S.M. chose a retention system on two levels. To comply with the performance specification requirements, the contractor Pavages Chenail Inc. chose a system combining StormChamber and HydroStor chambers. The installation of 911 chambers, surrounded by clean stone, will allow the retention of 3804 m^3 (134,337 ft^3) of water during harsh rainstorm. The 21 rows of the first level of the basin consist of 504 StormChamber chambers, and the second level with 26 rows, contains 407 HydroStor HS180 chambers. A watertight geomembrane was placed on the entire excavated surface, measuring 59 m (193 ft) wide, 41 m (134.5 ft) in length and at a depth of 4.6 m (15 ft). In addition, in order to treat the stored water, a HydroStor pretreatment unit and an Aqua-Swirl AS-6 with a bypass manhole were incorporated into the chamber system.

THE BENEFITS

This system, made of high density polypropylene and polyethylene, is easy to install due to its lightweight. It avoids the oversizing of storm sewer pipes, can absorb heavy downpours and avoids the occurrence of flash floods. The HS180 Hydrostor chambers designed for large volume projects, as well as with restrained areas, permit to store over 5.1 m^3 (180.1 ft^3) of storm water per chamber and provide 5 % more volume than originally specified to the plan, making it more economic by reducing by a large amount the construction site's surface area. Thanks to its structural capacity, the StormChamber chamber is the only chamber system that can be stacked. Its combination with the HydroStor chamber was the only economically viable solution, given the limited space available for installation of the chamber system. In addition, the HydroStor pretreatment unit, exclusive to Soleno, is made of extremely durable material, can capture hydrocarbons and floating debris, and eliminates the possibility of sediment migration towards the network. The Aqua-Swirl treatment system allows the recuperation of the suspended solids, oils and grease, while ensuring the sustainability of the system. As well, it eliminates the work in confined spaces, which facilitates the overall periodical maintenance.

SOLENO
Mastering Storm Water

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1160, route 133 C.P. 837, succ. Iberville Saint-Jean-sur-Richelieu, QC Canada J2X 4J5
Free : 800.363.1471 web site : soleno.com