REALIZATION | SEPTEMBER 2017

INSTALLATION OF A 3-LEVELS STORMCHAMBER RETENTION BASIN IN ROSEMERE, QUEBEC

Construction of a pumping station and a retention basin for watersheds of rainwater.

In the context of the construction of a pumping station for stormwater watersheds, the contractor, Les Entreprises Charles Maisonneuve, needed to install a watertight retention system under a section of a school bus parking lot, between William and Couture streets, in Rosemere, Quebec. By allowing to temporarily retain large quantities of water, this type of system reduces to its minimum the input of water into the municipal storm water sewers system in peak period, before its release to an outlet. Supported by the expertise of Soleno, the designing team of BHP Conseils chose to trust the StormChamber retention chambers, since this HDPE storage solution offered many benefits.

READ MORE

THE CONTEXT

In recent years, the frequency of events of rains resulting in water overflows in sewer systems has been increasing in several municipalities in the province of Quebec. Faced with this problem, the city of Rosemere has invested in several large-scale projects in order to solve these overflows, particularly in residential environment. For this project, a preliminary study allowed to calculate the retention capacity needed to reduce the problem in this sector, 865.5 m^3 (30547.2 ft^3) and to select the appropriate location to carry out the development of the retention system, a restricted space of 450 m^2 (4843.8 ft^2). The narrowness of the allotted site for the development of a basin of such a scale represented a significant challenge and restricted the choice of possible alternatives.

THE SOLUTION

Appointed by the city as consulting engineers for the execution of the project, BHP Conseils consulting firm had to propose a solution that was sustainable and well adapted to the designated lot, as well as being able to withstand CL-625 load classes (in accordance with CAN/CSA-S6 standards) and HS-25 (in accordance with the AASHTO standards). Following the analysis of the different proposal, Mr. Maxime Latendresse, partner and Project Director at BHP Conseils, retained Soleno's solution, the installation of a StormChamber three level retention system, for the development of plans and specifications.

In September 2017, the contractor, Les Entreprises Charles Maisonneuve installed a 219 retention chambers StormChamber, distributed on three separate levels, capable of storing 865.5 m^3 (30547.2 ft^3) of water during heavy rain events. A watertight geomembrane was installed on all the excavated area, measuring 35.5 m (116.25 ft) in width, 12.3 m (40.5 ft) in length and 5.7 (18.7 ft) deep, as well as above the basin. A low-density geogrid combined with a high-density geogrid was also installed under all chambers, then backfilled with clean stones. In addition, in order to limit intrusion of oils, debris and suspended solids contained in the stormwater, two pretreatment units were included, as well as two manholes with smooth exterior wall of 1200 mm (48 in) in diameter.

In order to ease the system's maintenance, Soleno suggested the integration of pretreatment units at the two inlets of the system. Exclusive to Soleno, the pretreatment unit - made of durable HDPE materials - captures sediments, oils and floating debris to eliminate their migration to the chambers, thus avoiding any risk of clogging of the clean stone. Surface accesses facilitate inspection and regular scheduled maintenance without the need for work in confined space, which helps ensure the sustainability of the system. Specialized companies, such as Soleno Service, can perform the inspection and maintenance of this type of system.

THE BENEFITS

The installation of the three levels of this StormChamber retention system was carried out in as little as three weeks. Durable, light, easy handling and installation, the StormChamber chambers, built of high-density polyethylene, result in considerable savings in terms of time, manpower and heavy equipment use. Thanks to its structural capacity, the StormChamber retention chamber is the only one on the market to allow multiple levels installation. Its multi-levels design was the only economically viable solution, given the limited space for the installation of this retention basin.

Installed under all retention chambers, the combination of a low-density and a high-density geogrid ensures a solid and stable foundation at the bottom of the system, by distributing the linear loads on a greater surface area and limiting the foundation stone displacement that could cause the water flow.

SOLENO
Mastering Storm Water

The realization of this project was made possible thanks to: the contractor Les entreprises Charles Maisonneuve.

For more information and to learn more about our services and products, please visit soleno.com. Other case studies are also available.

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