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FOR MASTERING STORM WATER

solar
UNIQUARTIER™

Quebec's most
forward-thinking
development

THE FIRST ADVANCED DISTRICT IN QUEBEC: SOLAR UNIQUARTIER, A MAJOR REAL ESTATE DEVELOPMENT

Adapted storage solution: the design of 4 retention systems totalling 13,827 m³ (488,296 ft³), installed under the central park and parking lots.

As part of the construction of Solar Uniquartier, the first advanced district in Quebec, the contractor Allia Infrastructure had to build a large retention system with groundwater replenishment under the future park located in the heart of the district. Backed by Soleno's expertise, GBi Consulting's design team chose to rely on polymer products as HydroStor retention solutions offered many advantages.

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THE CONTEXT

A leader in real estate development in Quebec, Devimco Immobilier develops and implements the largest integrated project in Québec, Solar Uniquartier, a total investment of \$1.3 billion. Strategically located at the crossroads of Highways 10 and 30 in Brossard, this avant-garde neighbourhood in its design wishes to create a true community that satisfies all needs by offering its residents and visitors a unique way of life.

When completed in 2027, this living environment will include more than 2500 residential units, office towers, a convention centre, one hotel and 500,000 ft² of commercial space. A TOD project, Solar will provide direct access to the future REM station, and the whole district is also designed to encourage pedestrian and cyclist traffic. Inspired by the best practices in sustainable development, an immense 12,000 m² park will be located in the heart of the district. Designed to be people-friendly, the park will invite them to relax and play with its water basins, playgrounds, jogging trails and, in wintertime, a skating rink.

Begun in winter 2018, the first two phases of the project include the development of the underground infrastructure with retention systems 1 and 2, while two other systems will be incorporated in winter 2019.

THE SOLUTION

GBi's design team, composed of Valérie Aubé, P.Eng., Geoffroy Dumouchel, P.Eng. and Simon Desrosiers, P.Eng. M.Eng, chose to build four retention systems made of HydroStor underground chambers. For the first system of 15 rows, 1078 HydroStor HS180 chambers were installed under the future large park of 12,000 m², occupying an area of 5290 m². This large system will store 5600 m³ (197,762 ft³) of water for heavy rain events. In addition, to treat the water before it is retained, a HydroStor pre-treatment unit has been incorporated into the retention system.

For the second system, 728 HydroStor HS75 chambers on 27 rows were installed underneath a future parking lot. This system will store 1593 m³ (56,256 ft³.) of water and occupies an area of 2490 m². In addition, two HydroStor pre-treatment units, an Aqua-Swirl and an Aqua-Filter were incorporated into the retention system to treat stormwater.

The last two retention systems, located underneath future parking lots, will be installed in January 2019. These two systems will combine nearly 1475 HS180 HydroStor chambers that will store 6634 m³ (234,277 ft³) of water for heavy rain events. Three HydroStor pre-treatment units will be incorporated to ensure the durability of the systems by treating the water beforehand.



THE BENEFITS

According to Marie Bernier-Roy, an engineer at Soleno, the selection of retention solutions in HydroStor chambers is based on the quality of the product, Soleno's expertise and compliance with plans and specifications.

Renowned for their durability, light weight and ease of handling and installation, HydroStor chambers, made of high-density polypropylene and polyethylene, represent considerable savings in time, labour and heavy equipment. Designed for large volume projects, the HydroStor HS180 retention chambers can store 5.1 m³ (180.1 ft³) of rainwater per chamber, making them more economical by greatly reducing the footprint area. The use of an underground retention system ensures the full development potential, making it possible to meet the development requirements planned on the surface for this large-scale project, such as an immense 12,000 m² park and parking areas.

Unique to Soleno, the pre-treatment unit captures sediments, oils and floating debris to prevent their migration into the chambers, thus avoiding any risk of clogging the clean stone. The pre-treatment system, made of extremely durable material, facilitates periodic maintenance, without any confined space work, and ensures the system's durability.

At the outlet of the second retention system, a treatment system, meeting MDDELCC (Quebec Ministry of Environment) requirements, was installed to remove suspended solids, heavy metals and hydrocarbons before returning to the municipal network. According to a specific flow rate, and depending on the project requirements, the rainwater is removed from the contaminants by means of a filter medium specific to the pollutants to be eliminated. In this case, the filter cartridges are composed of perlite, a siliceous sand of volcanic origin with a very high retention capacity.

Ms. Aubé also underlines the involvement of the Soleno team in this project: *"There was excellent technical assistance from your team during the design phase. You offered a complete service that facilitates the implementation of solutions for us. Thank you!"* Mr. Eric Boucher, Chief Estimator at Devimco, supports and says that *"At the early stages of the project, Soleno was able to develop a configuration that met our needs. In addition to providing exemplary support, budgets have been respected."*



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