



SOLENO

MASTERING WATER SUSTAINABLY



REHABILITATION OF THE GILLES-VILLENEUVE CIRCUIT: DESIGN OF 5 HYDROSTOR RETENTION SYSTEMS

The installation of HydroStor chambers for the rehabilitation of the Gilles-Villeneuve circuit in Montréal met the requirements imposed by the organizer of Formula 1 and the Société du parc Jean-Drapeau (SPJD). The storage system with sedimentation rows by Soleno was the ultimate solution ensuring effective stormwater management and improving the circuit's safety and performance.

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THE CONTEXT

As part of the rehabilitation of the Gilles-Villeneuve circuit, the contractor Pavages Métropolitain Inc., in collaboration with Les Entreprises Claude Chagnon Inc., had to meet strict criteria in terms of dimensions and depth for the retention systems. Due to its considerable advantages, notably its cost effectiveness and speed of installation, the HydroStor chamber was selected by CIMA – Montréal, Pavages Métropolitain Inc., and Les Entreprises Claude Chagnon Inc. to build five retention systems.

Each of these systems was mandated to fulfill specific volume retention requirements, thereby ensuring optimal stormwater management. The implementation of these innovative solutions not only met performance and durability expectations but also demonstrated the stakeholders' commitment to integrating advanced technologies into major projects.

THE SOLUTION

To meet the project requirements, the Soleno team designed five distinct systems using HydroStor chambers, specifically the HS-31 and HS-75 models. Pavages Métropolitain Inc. installed 377 HS-75 chambers across three systems, capable of storing 639 m³ (22,566 ft³) of water during heavy rainfall. Designed for projects with very limited available depth, the HS-31 chamber, which stored a volume of 115.11 m³, was necessary to complete the last two basins, requiring nearly 158 chambers in total.

In each of the 41-row retention systems, approximately 535 HydroStor chambers were installed on woven polypropylene geotextile to reinforce the ground's load-bearing capacity. These chambers were then surrounded by clean stone covered with TX-90 nonwoven needled geotextile. Installing Soleno geotextiles at the bottom of the excavation, on the excavation walls, and on top of the systems is crucial for isolating the clean stone and stabilizing the chambers.

THE BENEFITS

The HydroStor retention system is recognized for its lightweight, robust profile, and its easy installation. The chambers are made from polypropylene providing significant savings in durability, heavy equipment requirements and labour.



These retention systems are particularly suited for projects with space constraints. Compared to traditional pipe systems, HydroStor retention chambers offer an efficient solution in terms of water volume retained per square metre. They can retain water not only within their internal chamber but also in the clean stone surrounding it, thus maximizing the use of available space. Additionally, they simplify maintenance and adapt easily to the site's varied geometric constraints, providing greater flexibility and efficiency.

All Soleno HydroStor retention chamber models comply with CSA B184.2, ASTM F2418, and ASTM F2787 standards and can withstand CL-625 load classes (according to CAN/CSA-S6) and HS-25 load classes (according to AASHTO standards).

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PRODUCTS USED

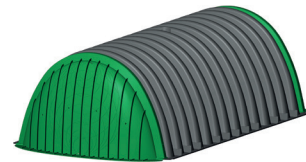
HydroStor® Retention Basin - HS31

Designed for underground storage of runoff water projects, the HS31 chamber is made of a fully recyclable and extremely durable material. When depth is highly limited, each installed HS31 chamber can store up to 0.88 m³ of water.



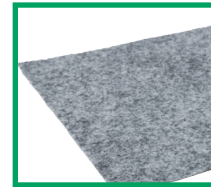
HydroStor® Retention Basin - HS75

Designed for underground storage of runoff water projects, the HS75 chamber is made from a fully recyclable and extremely durable material. When burial depth is limited, each installed HS75 chamber can store up to 2.12 m³ of water.



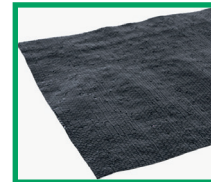
Nonwoven needled geotextile - TX-90

Made of polypropylene, the TX-90 is mainly used for separation function. It offers better permeability compared to woven geotextile due to its three-dimensional structure and filtration openings.



Woven Geotextile - 2006W

Made of polypropylene, the 2006W woven geotextile is mainly used for its reinforcement function when work site constraints are judged to be important.



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HydroStor®
Retention Basin



Geosynthetics



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