Application: Storm Water

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Site-Friendly Storm Water Management

A Minnesota car dealership utilizes underground chambers to control runoff

Located south of the Twin Cities in Burnsville, Minn., Walser Honda was looking to expand the parking lot at its current dealership to maximize the usable area for retail sales and customer parking. The site did not allow room for traditional storm water storage, requiring an underground system to be installed under the entire parking lot. Triton Stormwater Solutions, Brighton, Mich., was selected as the storm water provider.

Triton's proprietary design and patented construction offers large-capacity, lightweight, easy-to-install storm water chambers that are more than 50% stronger than traditional products. The chambers have 46% greater capacity per linear foot and withstand 16,000 more lb of pressure than traditional chambers, according to independent tests.

Excavation work for the 420 chambers was completed in five days.

The company is also environmentally friendly, manufacturing materials from the same soy-based resin that has been in use for more than 50 years in the heavy equipment and automotive industries, and achieving its carbon neutral certification. The products come with a lifetime system guarantee and provide up to 21 LEED credits.

"Once you add in the sustainable materials, the fact that there is less work involved to install the system and you get more LEED credits, it is a smart choice all around," said Lance Hoff, water resource engineer for Royal Environmental Systems, Royal Enterprises.

The Triton retention system was chosen for its strength, design flexibility and ability to be serviced and maintained with the use of the patented main header row system. The 106-ft-long by 70-ft-wide excavation uses 420 chambers that can retain more than 135,500 gal of storm water.

The site of the Walser Honda dealership was very sandy, and the local watershed district encourages infiltration to minimize the impact of development. "The district wants to keep runoff conditions as close to existing conditions as possible, and the only way to get rid of volume is to infiltrate," Hoff said. "That's why systems like Triton are beneficial—because you do get that infiltration component."

The Installation

The crew first dug down to elevation and placed a 6-in. base layer of stone. The chambers were then installed and the walls of the trench lined with a Class 2 nonwoven geofabric. The site was backfilled with stones up to 6 in. past the crown of the chambers, and the geofabric was folded back down and backfilled with material to the desired elevation, leaving the system under 12 ft of cover.

The depth of the installation required a lot of excavation work, including hauling dirt to another site. It took two days to dig the hole, two days to install and backfill the chamber system and another day to get it back to grade.

A sediment pond on the site feeds the system. This way the use of the main header row system ensures the water infiltrating back into the ground is clean and the infiltration rate for which the system was designed will not be reduced over time.

"The sediment pond is said to collect 65% to 70% of all sediments, and the rest is collected into the Triton main header row," said Joe Miskovich, president of Triton Stormwater Solutions. "Any water now in the Triton drainage field is virtually free of fines and sediments."

According to Miskovich, the infiltration rate used to determine the footprint size, amount of chambers and drainage rate ensures that the system should last a long time as long as the pond and the system maintenance cycles are not neglected. "Even if the pond maintenance is delinquent," he said, "the Triton main header system serves as a secondary fail-safe backup system to help catch and reduce the sediment that is coming from the pond." WWD

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