TRITON™ STORMWATER SOLUTIONS

Underground Water Retention Part of Fast Food Restaurant Upgrade

The Situation

An existing fast food restaurant, located within the fully developed St. Paul, MN city limits, was greatly in need of an update. Not only did the store itself need a facelift, but the property needed to be redeveloped to meet the new watershed requirements that had been put in place since the area was originally developed. Requirements dictated infiltration, filtration and rate control of stormwater to be used on redevelopment projects within its watershed districts.

The site contained an above ground detention holding pond that was not adequate with current standards for water retention. Heavy rains would cause the pond to overflow and flood the local area.

The land itself was more valuable than the pond due to the small confines of the site, so the stormwater system needed to be underground in order to use the site of the pond as a parking lot.

The Solution

Triton Stormwater Solution's underground detention system was selected for its high storage volume capacity. "We worked closely with Royal Environmental Systems to look at which system holds the most volume and its price, and Triton came up as the best solution," says Eric Kellogg, Design Engineer, LandForm, who managed the project. "This is a good filtration system because of the volume it holds based on the price per square foot."

When Joe Miskovich, president of Triton Stormwater Solutions in Brighton, Mich., was originally developing the system, one of his main goals was to create a system with high volume capacity.

High volume capacity was the driving factor in selecting the Triton stormwater system for the fast food restaurant renovation project. An added benefit of Triton modular design allowed the contractor flexibility to assemble the systems as they had time in between other tasks.

"Some of the feedback I received from civil engineers, architects and contractors when I first started designing the product is that they were looking for a system that offered a larger storage volume in a smaller footprint," says Miskovich. "By listening to the feedback from those that actually work with the systems, I was able to implement that into my original design and deliver what the end user really wants."

The Installation

The tight confines of the site posed a challenge. "The stormwater line that was discharging to the Triton system runs very close between the property boundary and underground storage," explains Lance Hoff, Water Resource Engineer at Royal Environmental Systems.

The site is backfilled with stones up to six inches past the crown of the chambers and the geo fabric is folded back down. The Triton system will be under 12 feet of cover after the backfill process is complete.

Because the street had to be shut down, the team was only able to tackle the Triton installation in-between working on the other utilities that were a priority in order to reopen the street to traffic. "Luckily the contractor was able to multi-task and assemble the Triton as they had time," says Hoff. "It worked out well because the nice thing about the Triton system is that it is modular. They didn't have to have the hole open and shut in a certain timeframe; they could tackle it as they had time."

First, the crew dug down to elevation and put down a six-inch base layer of stone. Next, the chambers were put in and the walls of the trench were lined with a Class 2 non-woven geo fabric. The site was backfilled with stones up to six inches past the crown of the chambers and the geo fabric was folded back down and backfilled with material to the desired elevation which left the Triton system under 12 feet of cover.

The drainage area to the Triton system is 1.02 acres at 85% impervious, which is the maximum allowed by city zoning. With 174 chambers, the Triton system is designed with 7,732 cubic feet of storage.

The fact that the Triton system requires less cover is another appealing feature to Kellogg. "When it makes sense, we try to design sites to only have 18 inches of cover, which is helpful when elevation and inverts are a concern."

"It went very smoothly with no issues," says Kellogg. "We had it all done within three or four days with the hole dug and backfilled."

Summary

Triton's proprietary design and patented construction offer larger-capacity, lighter-weight, easier-to-install stormwater chambers that are more than 50 percent stronger than traditional products. Triton stormwater chambers also have 46 percent greater capacity per linear foot and are able to withstand 16,000 more pounds of pressure than traditional chambers, according to independent tests.

Triton is also environmentally friendly, using manufacturing materials from soy-based resin helping to achieve its carbon neutral certification. The products come with an industry-leading lifetime system guarantee and provide up to 21 LEED credits.

"At Triton we are committed to go the extra mile to earn the business and I know that Royal Enterprises feels the same way," says Miskovich.

The Triton system allows the designer to target different goals - infiltration, filtration (as shown above), and/or storage for control of peak flow rates.

Triton Stormwater Solutions is the proven, comprehensive solution to stormwater management challenges. On your next project, turn to Triton Stormwater Solutions, the stronger, lighter, larger, greener, easier to install, cost-effective stormwater solution. Triton gives you Power Over Water.

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