

harvesting. Together, they protect the downstream drainage system from increased flow rate and higher volume of storm water runoff from the Walmart site, and also provide a viable option for water reuse or irrigation.

A construction crew excavated a 12-ft-deep area below the planned parking lot and set the 10-ft detention system on a compacted aggregate base. To ensure that the system was watertight, an impermeable liner and geotextile fabric were wrapped around it. The detention system is designed to store more than 50,000 cu ft of storm water runoff. The runoff from the parking areas flows through the onsite storm sewer conveyance system and is treated by storm water quality devices prior to entering the detention system.

The stage-storage sizing of the underground detention system was designed for the SCS Type II, 24-hour storm interval for various storm events. Unit hydrographs and computed flood hydrographs for the existing and proposed conditions were developed using the Natural Resources Conservation Service hydrograph method. The outlet structure of the detention system was sized to regulate the release to the downstream storm water conveyance system at levels lower than historical flow rates.

SMC Consulting Engineers performed testing on the rainwater harvesting system prior to commissioning it. A sequence of operations was developed to simulate various phases of the harvesting system and evaluate its response mechanism to different scenarios. Similar testing was done for the storm water detention system. Both systems functioned per intended design and were commissioned once they met the set operational benchmarks.

The rainwater harvesting system is composed of 50 10-ft DoubleTrap pieces and holds more than 15,000 cu ft of storm water runoff collected from the roof catchment area. The stored water is utilized to irrigate the site's landscaping.

The storm water management systems allowed the project engineers to maximize the storage volume and minimize the project footprint to allow room for additional parking and reduce the overall cost. SMC Consulting Engineers found that both systems were easy to install, and their clear open configuration allows walk-through access for future inspection and maintenance. **SWS**

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