

Storm Water Storage Aids Self-Storage Company

CubeSmart, the fourth-largest owner and operator of self-storage facilities in the country, expanded its presence in Pennsylvania by opening a location in East Whiteland. Originally, the town envisioned that the site would consist entirely of office space, but when CubeSmart purchased the space, the company decided to relocate its corporate headquarters there and use half of the space for storage and the other half for office space. The space includes Class-A offices for 160 employees currently operating out of the Wayne, Penn., office, as well as self-storage facilities.

Engineers from Nave Newell Inc., based in King of Prussia, Pa., were tasked with designing the new location, which would include the installation of a storm water management system. The engineering team collaborated with Lyons & Hohl Site Contractors to develop the new layout for the site. The team faced a number of onsite challenges when designing the storm water management system. The engineers had to overcome a 60-ft topographic grade in order to establish the building pad and parking area. Also, the site is the last piece of land to be developed at a prominent intersection and is located at the top of a steep bluff. Because of this, engineers were under close scrutiny by the township, county and state regulators and stakeholders, and had to be mindful of the quality of the receiving watershed.

The engineers selected the Cultec storm water system to detain or temporarily store excess storm water on site and allow for infiltration in accordance with township and state regulations. Because the site is located atop a steep bluff, the engineers had to be careful in establishing the discharge location. Runoff could not be discharged directly over the side of the bluff for fear of erosion down the slope.

Because only half of the site was dedicated to office space, the demand for parking was greatly reduced. Still, engineers had to optimize the grading to create enough level pads for the main and reserve parking areas. The most efficient solution was to install a subsurface storm water system. A grass field for reserve parking was placed atop the storm water system, leaving space for approximately 100 additional parking spots.

Given the constrictions of the site terrain and the storage requirement of 93,397 cu ft, the engineers chose to install Cultec's Recharger 330XL model. With a capacity of more than 400 gal, this chamber is one of the largest available. It maximized storage while using a small footprint, and satisfied the requirements of the site. Because of its size, the



chamber can help save land space and offer design flexibility. In all, the subsurface system provided 94,319 cu ft of storage.

"We prefer to install an open-chamber system over a pipe system because you get a much better overall footprint," said John Hogan, design engineer for Nave Newell. "The Recharger 330XL is a very efficient chamber that has a lower volume in the early stages of a storm."

Representatives of Lyons & Hohl Site Contractors, which specializes in residential and commercial turnkey site work projects, installed the subsurface system in less than three weeks. The extensive bed included more than 700 chambers placed in 45 rows. Cultec's No. 410 filter fabric encases the entire bed. The fabric prevents soil intrusion into the chamber bed. The system occupies 33,088 sq ft. It also required 7,264 tons of stone, which provided a 40% void for the water. The void spaces between the stone add to the storage provided while also assisting in alleviating the load above the system.

"The entire system was installed with only a handful of workers," said Mike Hohl, project manager for Lyons & Hohl Site Contractors. "The chambers are durable and corrosion-resistant and their interlocking connections help facilitate a fast and fool-proof operation."

Town regulations required a cost-effective yet environmentally friendly solution for the storm water management system. According to Alex Tweedie, design engineer for Nave Newell, the systems were a good decision due to the nature of the onsite conditions. The subsurface system solved the challenges of the extensive topography while maximizing the space above for reserve parking. **SWS**

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