

# CASE STUDY

## Compass Business Center, LLC Lehigh County, Pennsylvania

<b>Storage Provided:</b>	43,560 cu. ft.
<b>Area:</b>	21,358 SF
<b>Models:</b>	Recharger® 280HD
<b>Number of Units:</b>	600
<b>Installed:</b>	April 2013
<b>Project Engineer:</b>	Base Engineering Allentown, Pennsylvania
<b>Contractor:</b>	A. Scott Enterprises Saylorsburg, Pennsylvania



Upper Macungie Township in Lehigh County, Pennsylvania, is located in the corridor between Philadelphia and New York City, and regular commuters have realized the ultimate convenience of the county's central location. Therefore, it became the ideal location for Compass Business Center, LLC to build 11 flex-office, warehouse-type buildings of varying configuration. The facilities, which are arranged in nine groups of two, one group of four and one group of five, are situated on approximately four-and-a-half acres of land which was previously an open field. The development is designed in a loop, and a road separates the North and South units. The rest of the site is surrounded by an existing industrial park.

While planning for this new development, engineers from Base Engineering, located in Allentown, Pennsylvania, coordinated with contractors from Saylorsburg-based A. Scott Enterprises to install a stormwater management system that would provide detention and infiltration to the site.

The team faced a number of challenges during this project, including the infiltration potential of the soil itself. The infiltration rate turned out to be very slow, so the site needed to be over-excavated in order to replace the existing soil with a two-foot layer of engineered fill. This special fill is a combination of 80% sand and 20% compost, which allows water to soak into the ground at a rate that is neither too fast nor too slow. This amended soil comes with a certain pre-established infiltration rate that had to be assumed. Once the fill was in place, the engineers were required to recheck the in-place infiltration rate to be sure it either matched or exceeded the rate that was assumed, which was a condition of the permit when it was issued.

"The use of CULTEC chambers was very useful in this instance because engineered fill cannot be compressed or it nullifies the infiltration capacity and capability," said Amit Mukherjee, MS, P.E., Base Engineering. "The CULTEC chambers

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## Compass Business Center, LLC Lehigh County, Pennsylvania *(continued)*

are rigid, which helped to even out the load distribution so the fill placed directly beneath them was not compacted.”

The site consists of two separate systems, North and South, and CULTEC’s Recharger® 280HD was chosen for the project because the model would provide the 43,560 cu. ft. of total storage required within the smallest footprint while accommodating the site parameters. Each unit is 47 inches wide, 26.5 inches high and offers a bare chamber capacity of 6.08 cubic feet per linear foot of storage capacity. It is designed to retain water until the soil is no longer saturated and is suitable for infiltration back into the ground.

The North system contains 18 rows and 369 chambers while the South system has eight rows with 231 chambers. The 600 chambers combined with a layer of stone provide 44,249 cu. ft. of storage for the site.

A second challenge was encountered by contractors when they were installing the chambers in the South basin. A utility pole and guide wire, which prevents the pole from leaning, was anchored in concrete directly in the middle of the infiltration basin. In order to progress on the site, the contractors installed chambers up to the guide wire and then skipped approximately 15 - 20 feet while a utility company moved the wire and pole. Once the pole and wire were safely relocated, the contractors were able to return to the South basin and complete the middle section, effectively joining all of the chambers together.

“The design plans for the Compass Business Center were reviewed by the township engineer, Keystone Consulting, to verify CULTEC’s products satisfied a number of Department of Environmental Protection requirements, specifically the infiltration rate could not be less than 1.02 inches per hour,” said Frank Daddona, Estimator and Project Manager for A. Scott Enterprises. “Since CULTEC’s system passed this inspection, and they were competitively priced, they were chosen over a number of other brands.”



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