

Combining Grey & Green

The Thomas R. Beecher Jr. Innovation Center, located in downtown Buffalo, N.Y., is a LEED-certified building with a collaborative environment designed to foster innovation and creativity.

The project came about because the city of Buffalo was under a federal mandate to reduce the volume of combined sewer overflow entering the Buffalo River. The site comprises approximately 2 acres of impervious surface, including sidewalks and asphalt pavement. Initially, a bioretention facility was proposed as the water quality and volume treatment practice.

“We explored traditional grey infrastructure options for storm water on this site. At the time, [the site] had no catch basins, and sheet [flow] drained to the southern end of the lot,” said Mark McGovern, senior project manager for the Innovation Center. “Rather than redirect the water through traditional grey infrastructure, we looked to deploy green in combination with grey infrastructure for both aesthetic and environmental considerations.”

The site design included a large asphalt parking lot graded to direct runoff and snow melt toward a Jellyfish Filter located just prior to the bioretention cell. The compact 4-by-4-ft unit houses three membrane cartridges with a total filtration surface area of 847 sq ft. It is designed to accept runoff through a curb inlet with a driving head of 12 in., provide treatment and discharge treated water through an open back over riprap into the bioretention cell. The bioretention cell extends the full width of the parking lot, approximately 200 ft, with a filtration surface area of 1,900 sq ft.

“The volume of rainwater held on site and pollutants removed from the surface overflow via the Jellyfish Filter not only provide benefit to the medical campus, but directly improve the visitor experience at Canalside, one of Buffalo’s emerging centers of recreation and commerce. This is because the combined sewer overflow this lot would eventually feed would enter the Buffalo River at Canalside,” McGovern said.

Combining grey treatment technology with green treatment practices as part of a treatment train approach offers



several benefits. Using the Jellyfish Filter to pretreat bioretention on a site with limited available drop makes the flexibly designed filter a good fit. The unit’s placement—along the curb line with a hatch—provides a single point of access for easy inspection and maintenance.

When considering the urban setting and snowmelt pollutant loading, the treatment approach provides trash and debris removal, making the overall site more aesthetically pleasing while extending the service life of the bioretention cell. This keeps the long-term cost of inspection and maintenance to a minimum. Without the curbside pretreatment, unsightly debris, hydrocarbons and sediment could easily clog the bioretention’s surface filtration area and create an eyesore.

The filter catch basin configuration requires no confined space entry for inspection or maintenance. The membrane cartridges are lightweight, and easy to remove, rinse, reuse and eventually replace.

“Personally, I was amazed at the ease with which the membrane cartridges were removed from the concrete vault,” McGovern said. “I was also taken aback at the amount of sediment and pollutants retained in the cartridges.”

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