

CASE STUDY

D'Youville Life & Wellness Community

Lowell, Massachusetts

Storage Provided:	39,142 cubic feet
Model:	Recharger® 330XLHD
Number of Units:	473
Installed:	October 2014
Engineer:	Noonan & McDowell Engineering Billerica, Massachusetts
Contractor:	Lee A. Vinal, Inc. Dracut, Massachusetts



For over 50 years the 100-acre D'Youville Life & Wellness Community has been an integral part of the physical and cultural landscape of greater Lowell, Mass. Founded in 1960 by the Sisters of Charity of Ottawa, D'Youville Life & Wellness Community has earned the trust of the community and the respect of its peer organizations for providing area seniors with superior care.

D'Youville Life & Wellness Community is an ever-evolving site, and over the years the organization has undergone a number of different upgrades and improvements that included rehabbing existing structures and building new ones. The start of the next major upgrade to the site, which will include a three-phase new construction project, kicked off in 2014.

Building new structures will increase the amount of impervious area on the site, so engineers from Noonan & McDowell, located in Billerica, Mass., collaborated with

contractors from Dracut, Mass. — Lee A. Vinal, Inc., to design three new stormwater management systems that would be able to accommodate the additional parking lot and roof stormwater runoff. The first system is located under a grassy area and the second and third systems are beneath a parking lot for the wellness facility. The team chose to keep the systems separate because of differences in the water quality and volume. Since parking lot runoff is generally more contaminated than roof runoff to begin with, this water requires additional pre-treatment before entering the chamber system.

Several stormwater solutions were considered for this project, but the contractors ultimately selected CULTEC's cost-efficient, underground stormwater management chambers to provide detention, or temporary storage of excess stormwater on-site, and allow for infiltration in accordance with Massachusetts State stormwater



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regulations. Engineers utilized HydroCAD® software to prepare pre- and post-development drainage calculations as well as the system design.

The project designers chose CULTEC's Recharger® 330XLHD model, which can withstand traffic loading with minimal cover — a major site requirement, since the chambers will largely be covered by parking areas. This particular project included a total of 473 chambers that provide the site with 39,142 cubic feet of storage when surrounded by stone. A single chamber measures 30.5" high, 52" wide and 8.5' long and holds 475 gallons.

"We considered other systems for this project, some pre-cast concrete chambers and other plastic products," said John Noonan, Engineer at Noonan & McDowell.

"But CULTEC supplies an excellent, quality product that gets the same job done at half the price. In addition, the job required a solution that can withstand a heavy load, and CULTEC's Recharger® 330XLHD meets this requirement."

The CULTEC chambers provided efficient stormwater detention and were installed in conjunction with a number of other management solutions, including catch basins, manholes and HDPE and concrete pipe. Approximately 44% of total suspended solids are removed prior to the stormwater being directed into the CULTEC units, which then eliminate 80% of suspended solids via infiltration. The system was organized this way to meet Massachusetts Department of Environmental Protection Stormwater Requirements.



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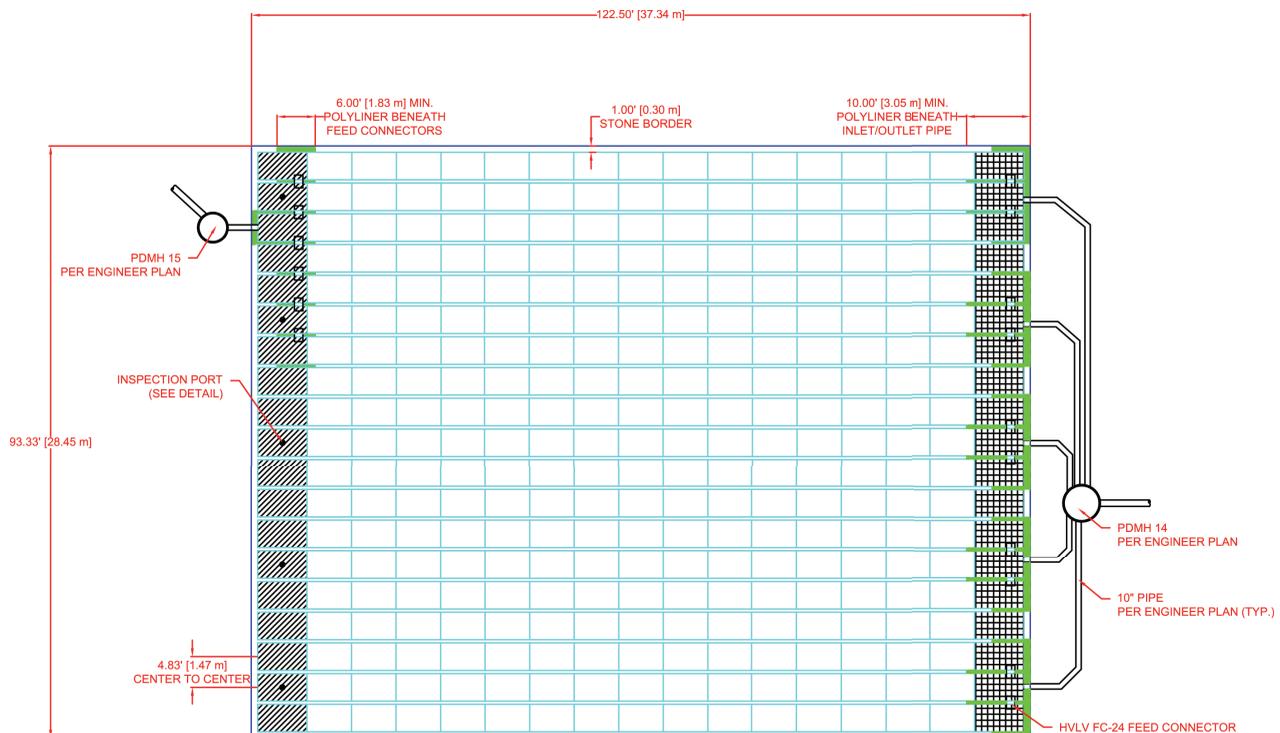
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In addition to working within the confines of a limited area for a large expansion, the team of engineers and contractors were presented with other challenges, including high groundwater and narrow space to set the underground systems. Additionally, the center is adjacent to wetland area, so the team had to find a solution for extra stormwater runoff that would not impact the wetland resource.

“Our biggest challenge was trying to keep above the seasonal high groundwater. The building is almost 600 feet long and all the drainage is at one end. So when you carry drainage for that distance, you’re getting farther and farther into the ground. In this situation, we had cover over the chambers,” explained Noonan.”



As of May 2015, two of the three stormwater fields are in the ground and backfilled and the foundation for the new assisted living facility is complete. The rest of the improvements are expected to finish in 2015.



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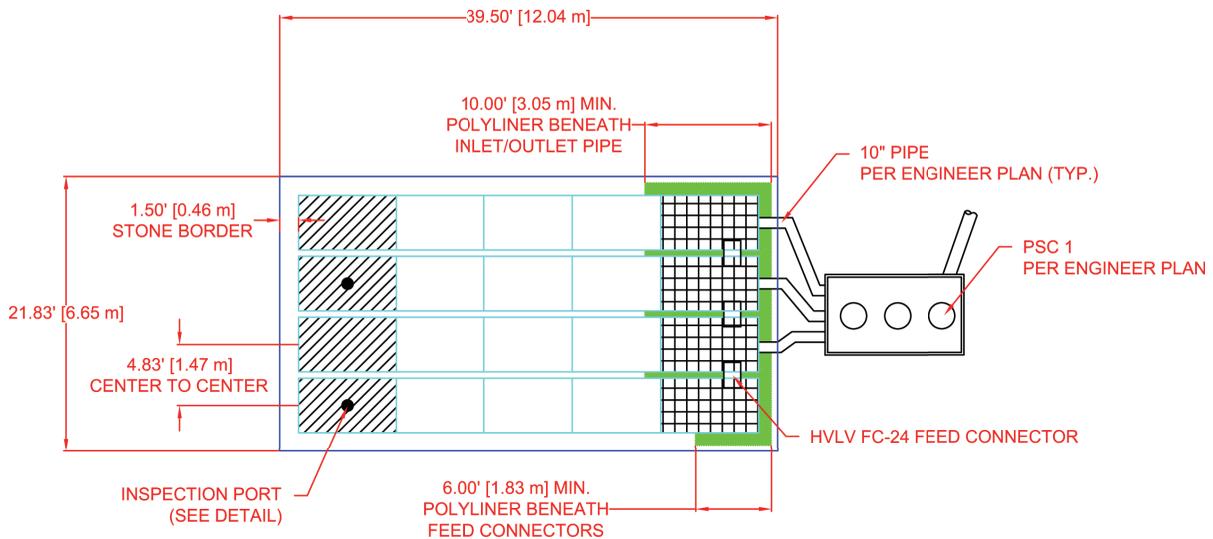
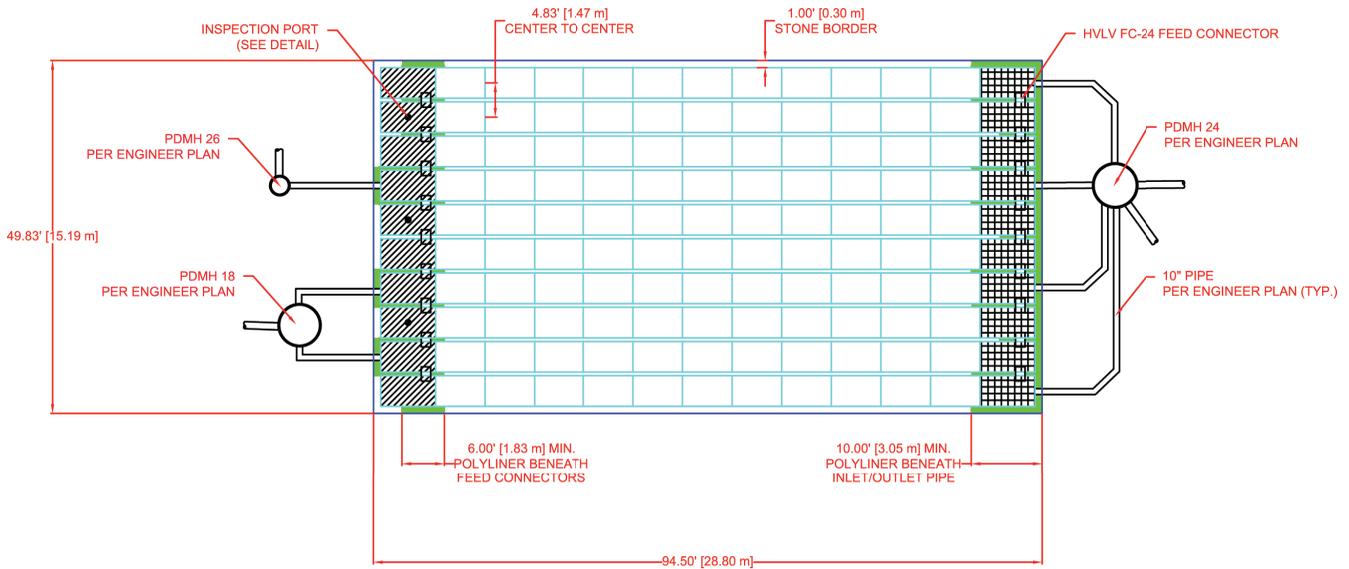
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