STORM WATER MANAGEMENT & FLOODS
Storm Chambers Satisfy New Construction Needs to Support Heavy Loads

The design engineers used StormTech® MC-4500 chambers to meet the significant volume requirement.

By Advanced Drainage Systems (ADS)

A NEW NURSING home complex here required four stormwater drainage units in order to meet the volume requirement of more than 79,000 cubic feet of water. Installed under parking lots, the ability to handle top load strength was another critical design criteria for the contractor, especially with heavy equipment being used during construction. Scheduled to be completed during the fall of 2018, the five-acre Brightview Senior Housing Development will include 140 apartment homes, 69 independent living apartment homes, 45 assisted living apartment homes and a 26 apartment unit designed for dementia and Alzheimer's Care.

The large chamber design of these chambers allowed design engineers to maximize the storage volume provided in a limited footprint, an important consideration on this site where space constraints required efficiency in each square foot. The ability to handle top load strength was another critical design aspect met by the StormTech chambers, which can be installed under parking lots.

A total of 458 chambers were used to construct the underground sub-surface detention basins. System A1 with a capacity of 36,158 cu. ft. and A2 with 11,872 cu. ft. are connected while Systems B and C are separate with a capacity of 17,000 and 14,000 cu. ft respectively. The footprint for System A1 is 240.98 x 37.58 feet with 213 chambers. System A2 with 69 chambers is 108 x 28.5 feet and connects to System A-1. System B, in the southeast corner of the site, is 112.18 x 37.58 feet and has 96 chambers. System C has 80 chambers installed in a 120 x 28.50 foot pit.

Each system had 12 inches of stone and 12 inches of backfill and has a StormTech Isolator® Row that catches sediment in the rainwater preventing it from settling at the bottom of the bed and slowing the infiltration rate. This Isolator Row can be cleaned out using the JET-VAC® process.

The StormTech chamber is designed in accordance with ASTM F2787 and AASHTO standards and manufactured in accordance with ASTM F2418, "Standard Specification for Polypropylene (PP) Corrugated Wall Stormwater Collection Chambers", making it a qualified choice for use in commercial and municipal projects. The chambers have a 75-year design service life and are manufactured using a high-performance impact modified polypropylene (PP). The MC-4500 measures five feet from the bottom to the top of the corrugation and has a base of more than eight feet. According to ADS, StormTech chambers exceed AASHTO 12.12 LRFD requirements for both live load and dead loads for a 2-1 safety factor.

ADS N-12® corrugated High-Density Polyethylene (HDPE) pipe was used for connections, in addition to Nyloplast® inline drains. ADS is a leading global manufacturer of water management products and solutions for commercial, residential, infrastructure and agricultural applications.

"The stormwater collection area spanned five-acres, with limited detention space" explained Tori Durliat, Director of Marketing for ADS. "An underground detention system was the least invasive and most cost-effective choice. The StormTech chambers are designed to easily split the system into multiple beds, allowing design engineers to direct the pipe to multiple locations where the water is stored until it is infiltrated back into the dryer. The stormwater collection area spanned five-acres, with limited detention space. An underground detention system was the least invasive and most cost-effective choice.
“Designs using the pipe or other sub-surface detention systems would have required larger excavations. Using the chambers proved to be cost-effective and provided a structurally robust design, which was required in order to withstand loads from heavy construction equipment such as cranes, concrete pumps, and dump trucks.”

Advanced Drainage Systems (ADS) is the leading manufacturer of high-performance thermoplastic corrugated pipe, providing a comprehensive suite of water management products and superior drainage solutions for use in the construction and infrastructure marketplace. Its innovative products are used across a broad range of end markets and applications, including non-residential, residential, agriculture and infrastructure applications. The company has established a leading position in many of these end markets by leveraging its national sales and distribution platform, its overall product breadth and scale and its manufacturing excellence.

Founded in 1966, the company operates a global network of approximately 57 manufacturing plants and over 33 distribution centers.

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