CASE STUDY

Amazon® StormTech® System Designed for Stormwater Quality

Kansas City, MO

OWNER
Amazon, Seattle, WA

ENGINEER
Olsson, North Kansas City, MO

CONTRACTOR
Global Earthwork & Underground, Kansas City, MO

INSTALLATION DATE
Summer 2025

PRODUCTS
23 36” (900 mm) Nyloplast® Drain Basins
6 30” (750 mm) Nyloplast Drain Basins
308 StormTech MC-3500 Chambers
22 Flamp®
4,000 yd^2 (3,345 m^2) of ADS Plus 125 Geotextile
5,000 yd^2 (4,181 m^2) of 601TG Non-Woven Geotextile
12,100’ (3,688 m) of 15”-60” (375-1,500 mm) HP Storm
170’ (52 m) of 24” (600 mm) N-12®
1,280’ (390 m) of 6” (150 mm) N-12 Perforated
22 8” x 4” (200 x 100 mm) Nyloplast Inspection Port Kits
44 36” (900 mm) x 2’ (0.6 m) Nyloplast risers
10 Inserta Tee® OneFit™ Lateral Connections

CHALLENGE

During the design of the stormwater storage system at a new Amazon distribution center, removing stormwater pollutants was a priority. To meet this requirement, the system was sized for stormwater quality over quantity.

SOLUTION

To meet the water quality numbers, 308 MC-3500 chambers were utilized. The system, which is in green space, was unique as all 22 chamber rows were built as an Isolator® Row to enable the entire footprint to function as a large infiltration basin for sediment capture.

The stormwater was captured from the center’s roof, parking lot and green spaces. The stormwater was conveyed to the StormTech system via HP Storm polypropylene pipe. The

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stormwater enters the system on one corner and after the water enters the first chamber it will push the water down the manifold pipe to the other chambers. Ideally, each chamber should have the same amount of stormwater in it since the rows are on the same elevation.

Once in the chambers, stormwater infiltrates through ADS Plus geotextile fabric to remove sediments. With every row acting as its own Isolator Row, the system provides simultaneous treatment. After sediment is removed, the stormwater enters a layer of stone, which contains the system's underdrain.

The underdrain consists of 6" (150 mm) N-12 perforated pipe and ran under every other Isolator Row. The pipe collects the clean water and conveys it to a 24" (600 mm) N-12 main outlet line. The underdrain pipe was connected to the main line using Inserta Tee OneFit for a watertight connection. The outlet line allows the water to leave the system and flow to a downstream body of water. The water is released by a weir wall, so that it does not overwhelm the nearby body of water and cause flooding.

Inspection and maintenance accessibility is crucial to stormwater systems. Twenty-two 36" (900 mm) Nyloplast drain basins were installed at the end of each Isolator Row to provide accessibility to the Isolator Rows. The basins will provide a direct connection to the chambers for jetting equipment. Since the 10' (3 m) Nyloplast basins were not tall enough to reach the surface, 44 2' (0.6 m) risers - two per basin - were added to reach required 14' (4.2 m). Another 36" (900 mm) Nyloplast basin was used as a curb inlet on the site. Six 30" (750 mm) Nyloplast basins were incorporated - four as curb inlets and one at each end of the systems' mainline outlet pipe.

The system's preliminary layout was developed on the StormTech Design Tool. ADS reviewed the plan and recommended increasing spacing between chamber rows to accommodate the high number of adjacent Nyloplast drain basins. This adjustment ensured enough room for manifold piping to connect to basin bells without interference.

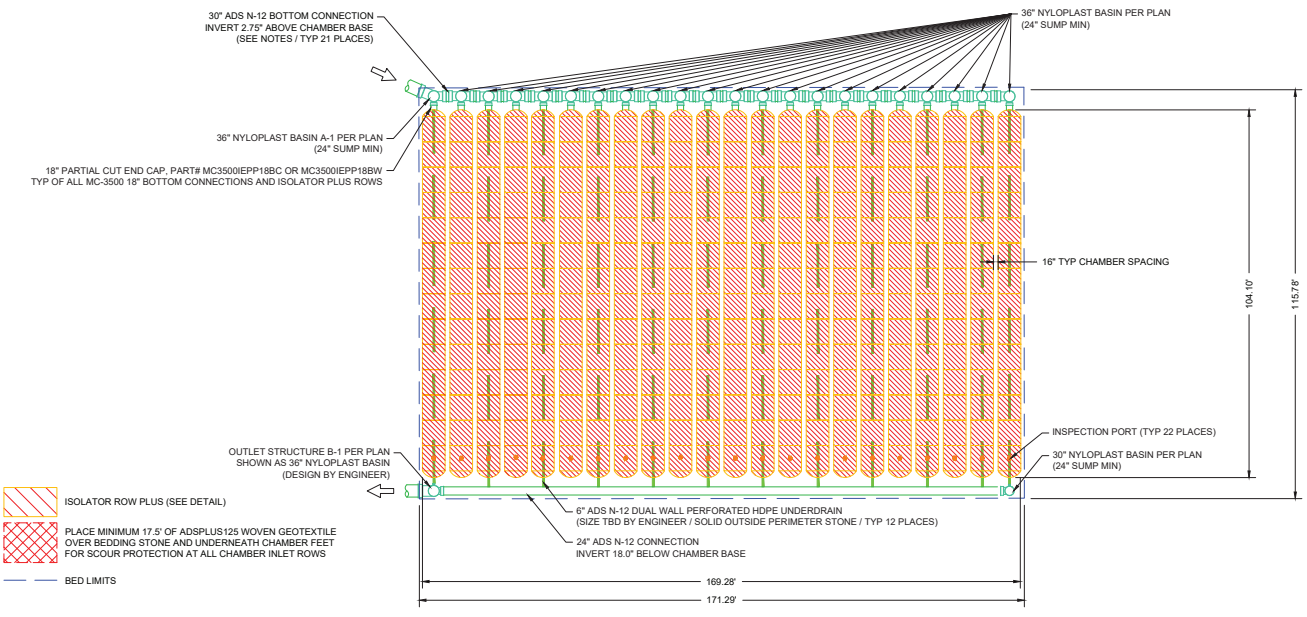
In addition, the entire system, which held 64,564 ft^3 (1,828 m^3) of stormwater, was wrapped with 5,000 square yards (4,181 m^2) of a non-woven geotextile. Twenty-two Nyloplast inspection port kits were also placed near the outlet end of each chamber row so the site can be inspected and maintained more easily.

This project demonstrates how early design colloboration and a store-and-treat approach can turn stormwater infrastructure into a site asset to protect downstream waterways and preserve valuable land.

PRODUCT DESCRIPTIONS

StormTech chambers are designed to save valuable land, reduce flooding risks and protect water resources. The chambers provide a durable structural system and are designed in accordance with AASHTO LRFD Bridge Design specification for the HS-20 Live loads. StormTech chambers are available in a variety of sizes to meet any project need and are injection molded for uniform wall thickness.

Nyloplast Drain Basins and Curb Inlets were custom built for the project as they are for each application. Nyloplast products are more durable and corrosion resistant than precast basins and combine a rugged PVC



structure with ductile iron grates. The basins can be easily adjusted in the field to meet the final grade. The structures are shipped with rubber gaskets to ensure a watertight connection.

HP Storm polypropylene pipe provides superior pipe stiffness, longer bells and spigots and a premium joint performance for a longer service life. The smooth interior wall offers additional strength and high flow capacity. HP Storm pipe meets or exceeds the standards specified in ASTM F2881 and AASHTO M330 and the extended bell and spigot meets ASTM D3212. Polypropylene is resistant to the effects of chemicals, abrasion, hot soils and effluent.

N-12 Dual Wall Pipe has a corrugated exterior and smooth interior wall that provide exceptional hydraulics, strength and corrosion resistance. N-12 is available in 4”-60” (100-1500 mm) diameters and in 20’ (6 m) lengths to provide faster installation and lower installation costs. The integrated inline bell design allows for easy installation and eliminates chipping and cracking that is common to concrete bells. N-12 addresses subsurface and stormwater gravity-flow drainage needs.

Advanced Drainage Systems, Inc. provides a wide variety of geosynthetics to meet drainage, separation, stabilization and soil reinforcement needs. Woven and nonwoven fabrics prevent ruts in unpaved roads, stabilize the ground under waste ponds, and help keep silt and fine soil out of collector pipes. ADS Plus geotextile achieves over 80% total suspended solids (TSS) removal and maintains durability and sediment removal, while allowing for high water quality flow rates.

Inserta Tee is a high-performance, easy-to-install lateral service connection. Inserta Tee consists of a PVC hub, rubber sleeve and stainless steel band. Inserta Tee’s watertight seal provides superior performance and is used to connect ADS N-12 and PVC laterals to all known corrugated, solid wall, profile wall and concrete pipe, regardless of manufacturer.

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