

HOW THE JOHN WIEBENSON PLAYGROUND'S STORM WATER SYSTEM HELPS THE ENVIRONMENT



This is the old storm drain ↑

Ross Elementary School's new playground hides a carefully engineered underground storm water management system that makes this small urban site one of the most environmentally friendly locations in the surrounding neighborhood.

On the old playground, all of the rain water disappeared immediately into a single central storm sewer drain. This sewer drain contributed to flooding and pollution of our streams.



Underground Holding Chambers Control Overflow and Pollution

Now, instead of the drain, there is a large blue cylindrical nylon tank along with a series of large yellow fiberglass holding chambers under the playing field. The half-round chambers are open at the bottom and sit in a deep bed of gravel. They hold rain water temporarily and let it percolate slowly into the soil underneath which naturally filters pollutants. This helps control storm water before it becomes an overflow or pollution problem.

Artificial Turf Field Collects Rain Water

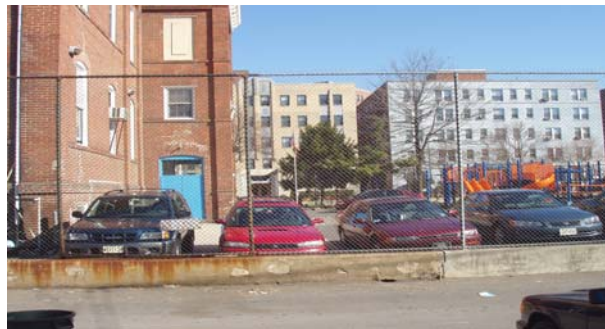
An artificial turf field is installed on top of the holding chambers. A layer of gravel covers the chambers and the entire field surface. On top of the gravel is a thin layer of semi-rigid perforated black plastic that serves as a secure base for the "grass" fabric that covers the field. Rain flows directly through the grass and its plastic base into the gravel making the entire field a big sieve that delivers storm water to the chambers below.





Open Pavers On Top of Pipes and Gravel Help Collect Rain Water

Large perforated pipes line trenches around the north and west perimeters of the playground and connect with the holding chambers. The pipes are embedded in gravel which lets water flow into the pipes; the pipes and gravel are overlaid with open pavers covered with pea-sized stones that let in the water but make it easy to walk on the pavers. These trenches help collect and channel rain water into the holding chambers. The new parking area next to the alley is covered with permeable pavers which are sitting on top of a deep layer of large gravel which holds water in the void space between the gravel and allows it to slowly percolate into the ground.



Old Storm Sewers, Overflow and Pollution

The old piping system under half of the city, including the Dupont neighborhood, combines storm water from streets and roof tops, as well as sewage from toilets and sinks. Consequently, during heavy rains, water from toilets, washing machines, dishwashers and showers combines with street runoff in such large volumes that Blue Plains Wastewater Treatment Plant cannot treat it all. This extremely polluted waste water must then be directed into our rivers untreated.

Also, the piping system in the Dupont neighborhood is undersized for the volume of surface water that is now possible during a heavy storm. With the increase in paved surfaces since the storm sewers were originally built, the volume of storm water reaching the pipes has increased substantially. When rain is heavy during summer rain showers, the old storm sewers in the Dupont area often can't handle all the water. Occasionally, they back up and flood the gutters along the streets.

Although the District government plans to redesign and gradually replace the old system - - at enormous expense - - much of the problem can be solved immediately with simple, comparatively inexpensive projects such as the one under the Ross playground.

From Pavement to Pervious

Before the playground renovation, the entire school site (except the front yard garden and tree box area) was covered with asphalt and part of the playground was used for parking. Because almost all the surfaces were paved, little rain was available to replenish the groundwater or sustain street trees and plants. Any leaking oil or gas from cars went directly into the storm drains, eventually contributing to the pollution downstream during heavy rain events.



Since the 19th century, Ross' neighborhood has been densely built up with row houses, large apartment buildings, paved streets and parking lots. An increasing percentage of the total surface is now impervious: asphalt, cement, roofing tiles, and bricks. The only remaining open grassy spaces and parks nearby are Dupont Circle itself, the Stead playground field, the gardens behind the Scottish Rite Temple on 16th Street and two pocket parks north along New Hampshire Avenue.

Due to all of these impervious surfaces, the Ross playground's storm water management project has become all the more important. If similar holding chambers and permeable pavers were replicated along the neighborhood's alleys and surrounding parking areas there would be much less run-off, flooding and pollution and more water would be available for healthy tree cover.



A Cooperative Project - - Public and Private

This Low Impact Development (LID) storm water mitigation project was funded by the Watershed Protection Division of the District of Columbia Department of Health. The artificial turf field was funded by the District of Columbia Department of Parks and Recreation.

The holding chambers were donated by StormTech LLC; asphalt removal and site work were donated by Cantwell Enterprises; concrete (for the new parking lot wall) was donated by CTI/DC, Inc. The project was also supported by Wiles Mensch Corporation, the engineers who designed the system; John Voight & Son, LLC, who installed the chambers and pipes; and Roche Bros., Inc., who installed the paving system.

Oversight and management was generously provided by Alexi Boado of the District of Columbia Watershed Protection Division, Dave Cantwell of Cantwell Enterprises, Jennifer Battle, of the DC Public Schools Office of Facilities Management and Nancy Huvendick of the 21st Century School Fund. The project enjoyed the invaluable patience and cooperation of Ross' principal, Gloria Smith.

Individual Initiative and Enterprise

Special thanks are due to Maureen Diner and Noreen O'Connor, Ross parents who conceived, developed and coordinated and directed the entire playground project. It would not have been possible without their constant attention and perseverance. Special thanks also to Noreen O'Connor who wrote the \$70,000 grant proposal which was accepted and funded by the District of Columbia Dept. of Health.