Engineered Systems

Engineered systems are designed to store storm water below ground or infiltrate storm water into the ground. Some systems can do both. Compared to traditional storm water ponds, engineered systems reduce the footprint of storm water infrastructure and conserve buildable space. Several examples have been installed locally.

Considerations:

- Suitable for high density sites where space is limited.
- Suitable for all sites with porous soils.
- Factors used in determining an appropriate system type are soil permeability, distance to the high water table, size of the site, and availability of outlet.
- Engineered systems free up space, but cost more for installation and maintenance.
- Pre-treatment is required to prevent clogging, increase longevity and maintain water quality.
- Periodic inspection and maintenance will improve performance and help avoid system failure.

Aspen Ridge Condominiums

Robert J. Delonis Center

Elbel Field

Evans Scholars

Aspen Ridge Condominiums

Location: Munger Rd. and Textile Rd., Ypsilanti
Developer: Centex Homes
Engineer: Atwell-Hicks, Inc.
Size of Site: 50 acres
Type of System: Retention & Infiltration
Installation Date: 2004

At Aspen Ridge, storm water retention ponds were used because there was no available area to discharge off site. Sandy soils allowed for trenches to be placed below the retention ponds, providing infiltration and groundwater recharge. The result was a reduction in the size of the required ponds, allowing for the addition of 5-6 more lots on site.

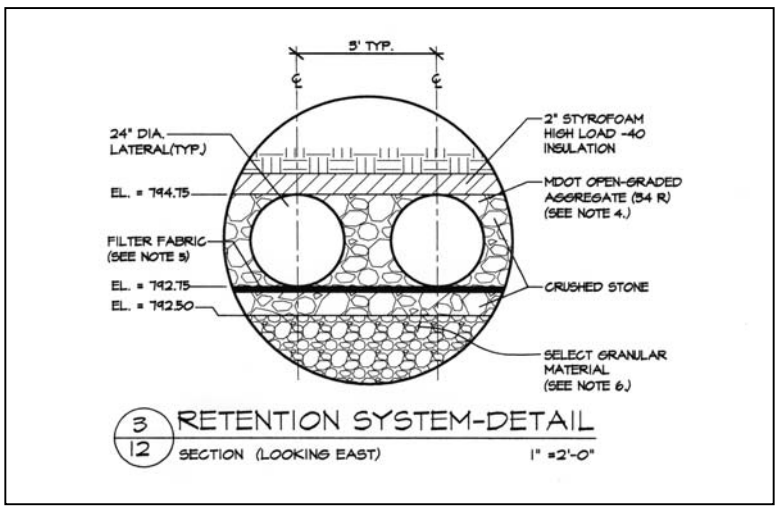
Michigan's Nonpoint Source Program

Office of the Washtenaw County Drain Commissioner, Janis Bobrin. Funded by the United States Environmental Protection Agency; administered by the Michigan Department of Environmental Quality.

For more information, contact Harry Sheehan at (734)222-6851
www.ewashtenaw.org/government/drain_commissioner/dc_lid.html

Robert J. Delonis Center

Location: 312 West Huron St., Ann Arbor
Engineer: Smith Group JJR
Size of Site: .4 acre
Type of System: Retention and Infiltration
Installation Date: 2003



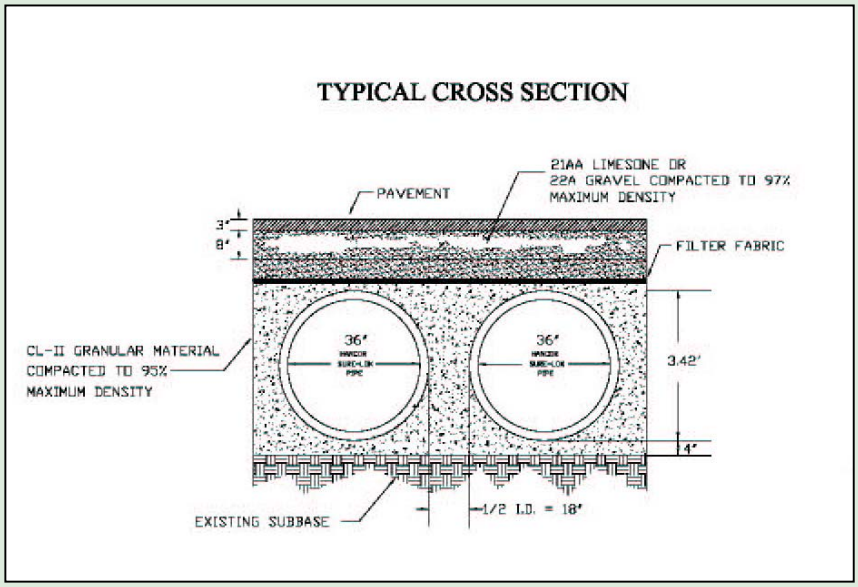
University Of Michigan Elbel Field Lot

Location: Hill St. and Division St., Ann Arbor
Engineer: U of M Plant Services Division
Size of System: 3730 CF
Type of System: Detention
Manufacturer: Invisible Structures – Rainstore 3
Installation Date: 2003
Installation Cost: $12.00/CF

Evans Scholars

Location: 1800 Washtenaw Ave.
Ann Arbor
Engineer: Perimeter LLC
Size of Site: .87 acre
Type of System: Detention
Installation Date: 2004
Installation Cost: $85,000 approx.

The underground detention basin is located beneath the parking lot and receives storm water from two catch basin inlets, and roof drain run-off piped underground. Storm water flows through a sediment chamber that allows sediment to settle out. It then flows into the detention area, a series of pipes totaling approximately 1000 linear feet. The pre-treated storm water enters the municipal storm sewer.



Resources

For more information about engineered systems:

USEPA Storm Water Fact Sheets
www.epa.gov/owm/mtb/runoff.pdf

International Storm Water Best Management Practices Database
www.bmpdatabase.org

Stormwater Magazine
www.forester.net/sw_0111_profile_going.html

Other local projects with engineered systems:

Fifth Third Bank
3315 Washtenaw Avenue
Ann Arbor

Colony/Packard Dental Offices
2715 Packard Road
Ann Arbor

The Discovery Center
775 South Maple Road
Ann Arbor

Whole Foods
3135 Washtenaw Avenue
Ann Arbor

Ashley Mews
414 South Main Street
Ann Arbor