R-Tank\textsuperscript{HD}: High Efficiency Capture and Reuse Underground Stormwater Storage

95% Internal Void Space. Modular Versatility. Minimum Excavation For Maximum Storage & Footprint Efficiency
The R-Tank$^{\text{HD}}$ system was used as a high efficiency underground runoff harvesting basin that was connected to a spray irrigation system as part of a comprehensive post construction stormwater management plan. This progressive design approach represents a good example of Low Impact development (LID / Green Infrastructure (GI) Design:

What the U.S. EPA say about Low Impact Development:
• “LID is an approach to land development, redevelopment or retrofits …to manage stormwater as close to its source as possible”…

What the U.S. EPA say about Green Infrastructure:
• “In terms of implementation, EPA intends the term “Green Infrastructure” to generally refer to systems and practices that infiltrate…or reuse stormwater or runoff on the site where it is generated”
Minimum Excavation For Maximum Storage & Footprint Usage

95% Void Space for Storage
R-Tank\textsuperscript{HD} Modules were delivered as unassembled panels and constructed on-site to reduce delivery costs.

Assembled R-Tank\textsuperscript{HD} Modules are easily placed without the need for heavy (or even light) equipment, some laborers with a couple of hand trucks got it done!
Modular Versatility: Depth & Storage

R-Tank\textsuperscript{HD} Modules can be constructed to a wide variety of depths.

To take maximum advantage of the depth and footprint of this site, Double + Mini modules were specified.

Standard R-Tank\textsuperscript{HD} Modules:
- Depth = 9.45” to 83.46”
- Storage = 2.30 cf to 20.34
Structural Stability – R-Tank$^{HD}$ Provides:

#1: Eliminates Low Void Space and Compaction Issues.
#2: Stability for Lateral and Vertical Pressures.
#3: Easy To Calculate and Fit in Excavated Area.
R-TankHD’s unique modular versatility allowed the system to conform to the irregular shape required to maximize the available footprint.
R-Tank\textsuperscript{HD} Eliminates the Need for Header Manifolds: Reduce Cost & Complexity

This project used a direct connection from the r-Tank\textsuperscript{HD} modules to the catch basins.
The R-Tank$^{HD}$ reuse or “Cistern” application uses a combination of plastic liner and protective geotextile.
A key aspect of any R-Tank$^{HD}$ project, and especially the H-20 and H-25 loading rating, is proper placement and compaction of the backfill around and on top of the system.

Minimum Fills:
- Min 20” Cover
- 24” Perimeter
- 3” Base
Cover Profile is Built Above the R-Tank^{HD} System up to Final Grade. Project is complete and parking lot is taking truck traffic per H-20 load design.

Project Design: Pennoni Associates Inc., Bethlehem, PA Office
Contractor: Muschlitz Excavating, Bath, PA
ACF’s Engineering Team can provide project specific support or you can access the tools below:

- Specifications
- Load Support Documentation
- CAD Details
- Pre-treatment Options
- Inspection Guidelines
- Maintenance Support Kit
- Installation & Maintenance Manuals
- Project Pictorials & Case Studies