

Underground Detention System

Installation

Gloucester Crossing
200,000 square foot, grocery-anchored development
Gloucester, MA

Civil Engineer

RJ O'Connell & Associates
Stoneham, MA

Site Contractor

McManus Excavating
Northborough, MA

Structure Description

Project consisted of 4 Underground Detention Areas using Precast Concrete Galley Chambers. Largest Detention Area (Storage Area #3A) used 1100 Galleys for a total storage of 90,000 cubic feet. System #3A is rectangular in shape with 25 chambers wide by 44 chambers long. Each chamber is 4' long x 4' wide x 51" high (50 cf chamber) with an installed storage capacity of 70 cubic feet with 6" stone below. Stone above chamber is not required to maintain strength and stability. 82 cubic feet was the average storage per chamber.



Comments

Another concept evaluated was the use of 48" diameter HDPE (a competing product), which uses an expensive manifold design, and a larger footprint with more cover than required by Precast Concrete Chambers to maintain H-20 Loading. Using precast the contractor was able to reduce the cost of the underground system as well as complete the project quicker by using Precast Concrete Galleys. In addition the contractor was able to drive site equipment over

the chambers without the need of bringing the site up to final grade. The Precast Concrete Galley system had an overall footprint 15% smaller than the HDPE designed saving stone, excavation and backfill as well as time; while still meeting the designed storage capacity required.

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