



Green Infrastructure & Stormwater Management CASE STUDY

Locust Valley High School Flood Remediation

Location: Locust Valley, NY

Client: Locust Valley Central School District

Design Firm(s): BBS Architects Prime, Greenman Pedersen Inc. Sub, Civil Engineering and Landscape Architecture

Landscape architect/Project contact: James P. Garrahan Jr. RLA, LEED AP

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ASLA Chapter: New York

Project Specifications

Project Description: This project involved the design of site drainage improvements at this high school on Long Island, NY. The school had experienced an increasing frequency of intense rainfall events that had led to flooding of portions of the site and some building locations. The situation had been exacerbated by overflows from the adjacent municipal storm drainage system onto school property. Also, recently added school building facilities complicated the storm flow treatment options on the site and added to the number of school facilities that were threatened by the flood damage. Greenman Pedersen Inc. (GPI) conducted a review of plans for the new buildings as well as the plans for the original school construction that dated back to the 1960's to identify the original intent and capability of the storm drainage system existing on the site. GPI then designed improvements to help channel and control the impacts of increasing storm drainage flows.





System improvement elements included connection of the municipal system to a main trunk drainage line that existed through the school property, and re-grading of key areas on the site to provide additional storm flow detention and absorption through the use of wet meadow or "rain garden" areas in conjunction with an "arroyo" system the district had begun to develop previous to GPI's involvement. Re-grading also addressed smoothing the flow corridor and introducing interim high

points and collection inlets to improve the distribution of storm flows through the existing pipe system and the site in general. Services included data collection, survey, site design and civil engineering, mechanical and electrical engineering, and coordination with local government agencies.

Project Type:

Institutional/education

A retrofit of an existing property

Design features: Rain garden, bioswale, downspout removal, and low flow (initial storm or first flush) by-pass pipes take initial storm flows through vegetated detention and recharge areas. For contractor familiarity we used conventional curb inlet structures in a "natural" location or condition. Diffusion wells were used at the bottom of the chain a of detention pockets in the Owner's "Arroyo" area to increase recharge capability.



This project was designed to meet the following specific requirements or mandates:

Developer/client preference, protection of school facilities

Impervious area managed: 1 acre to 5 acres

Amount of existing green space/open space conserved or preserved for managing

stormwater on site: All on-site existing green/open space was preserved. Some open space was employed to construct a series of detention areas. In fact, the project actually increased green space as paved play area was reconfigured to accommodate an "Arroyo"/recharge area that receives storm flow from the detention areas.

The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? Protection of school property was the major concern and purpose of the project. All officials and staff of the district were receptive to and supportive of our natural or green approach.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$500,000 - \$1,000,000 (Public funding: Local - school district funds)

Related Information: Not Available

Was a green vs. grey cost analysis performed? No

Cost impact of conserving green/open space to the overall costs of the site

design/development project: In this case creating a parallel green stormwater control, detention, and recharge system, protected and supported an existing municipal drainage trunk line and community detention basin that ultimately empties into the Long Island Sound. The system directly protects school buildings and athletic fields.

Cost impact of conserving green/open space for stormwater management over

traditional site design/site development approaches (grey infrastructure)? Significantly reduced costs (10% or greater savings). Using a green stormwater management solution that increased the on-site detention and recharge capacity avoided the costs associated with a conventional grey system solution. That approach would have involved increasing the existing 48" diameter trunk line that runs under existing buildings or installing an additional parallel trunk line for a run of more than 1,500 linear feet.

Number of jobs created: 12 to 20 during construction

Job hours devoted to project:

Planning and Design: 300

Construction: 7,000

Annual Maintenance: 200

Performance Measures

Stormwater reduction performance analysis:

One half of an existing gymnasium roof and the roof of the recently built building extension was removed from the positive (off-site) system. The two-year storm for approximately six (6) acres of the site and approximately two (2) acres of off-site surface is accommodated on the project site by the "Green" Storm Water Drainage System.



Community & economic benefits that have resulted from the project: The school site is also a Red Cross Emergency Shelter for the surrounding community. Controlling stormwater flows and keeping this part of the site accessible is an important community benefit.

Additional Information

Links to images: