Green Infrastructure & Stormwater Management CASE STUDY

Carroll Village - A Traditional Neighborhood Development

Location: Carroll Township, York County, PA
Client: Presbyterian Homes Inc.
Design Firm(s): Land Logics Group
Landscape architect/Project contact: Sally B. Holbert, RLA
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ASLA Chapter: Pennsylvania

Project Specifications

Project Description: In the early planning stages, Land Logics Group led a design charette that built support in the community for the implementation of low-impact stormwater management techniques. The plan incorporated the use of multiple rain gardens, bioinfiltration areas, and a large stormwater wet pond in place of a conventional stormwater detention pond. Using a treatment train approach, LLG designed a comprehensive SWM system whereby rooftop runoff would flow into rain gardens wrapped around the perimeter of buildings. Overflow from the rain gardens and sheet flow from parking lots run into distributed bioretention areas that have additional storage capacity to hold runoff from large storm events. From these bioretention beds, overflow is channeled by underground pipes to a large wet pond for final treatment and infiltration. The entire system is designed to achieve effective pollutant removal, sediment reduction, and peak rate mitigation. In order to maintain the efficiency of these integrated features, LLG provided management guidelines for each component that addressed the need for regular inspections, debris removal, plant maintenance, and problems to look for in system performance. Guidelines were also developed for all common open space areas, riparian buffers, and areas to be reforested. Stormwater designs incorporated riparian buffers and urban reforestation plans to reduce the need for structural stormwater controls and to save on infrastructure costs.

Project Type:
Mixed use
Part of a new development

Design features: Bioretention facility, rain garden, bioswale, downspout removal, curb cuts, stormwater wetpond, restored woodlands, urban forestry project to increase urban canopy for

improved stormwater catchment of small rain events, riparian buffers, proposed wetlands restoration and mitigation plans.

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

Impervious area managed: 1 acre to 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: greater than 5 acres

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? Yes.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: $1,000,000-$5,000,000 (Public funding: State, regional)

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: Due to the higher residential density and compactness of the project that was able to be achieved, a greater area of green space was conserved and integrated into the overall open space plan that provides for both passive recreation and a working landscape that manages and treats stormwater runoff.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Slightly reduced costs (1-9% savings).

Number of jobs created: Information not available

Job hours devoted to project:

Planning and Design: Three-year project
Construction: Currently under construction
Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

The variety of low impact design techniques implemented on this project is able to effectively

manage approximately 95% of the stormwater runoff generated from a two-year storm event on the project site.

Community & economic benefits that have resulted from the project: This project was one of the first designed Traditional neighborhood developments in the area. It was the first project of its kind that developed a senior living facility as a TND. First of its kind to introduce low impact design technicques for stormwater management. First project in this township to allow a stormwater wetpond design and disconnected down spouts and sheet flow into open space area. Project designers and planners worked collaboratively with the municipality to developed new ordinances that would allow for mixed use, green streets and low impact stormwater management design.

Additional Information

Links to images: Can be provided upon request in pdf file format - graphics and photos
http://www.landlogicsgroup.com/pdfs/cpbj_4_11_08.pdf

www.landlogicsgroup.com - see projects / Carroll Village

In the early planning stages of the project, LLG led a multi-disciplinary team in a two and ½ day design charrette held in June 2005. The design team included architects, a landscape architect, civil engineers, a hydrologist and two urban designers. The charrette schedule consisted of community stakeholder meetings, a site walk with various members of township staff, planning commission members and supervisors, and evening open houses for the general public to stop by the design studio to view concepts, ask questions and provide comments. The general public also had an opportunity to view a short slide presentation illustrating the principles of Traditional Neighborhood Development and Smart Growth. Carroll Village will blend commercial and office space on the same campus with different housing options for seniors, including apartments, single-family homes, duplexes and some manor homes. Plans also include a restaurant, recreation center and two assisted-living buildings. A farm house dating to around 1840 may be turned into a bed and breakfast. The first stage of the project was taken through final sub-division land development approval in early 2006 with ground-breaking ceremonies held in March of 2006. PHI - Carroll