Costs of Green Stormwater Infrastructure through Three Case Studies in Philadelphia

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AKRF has worked on a variety of green stormwater infrastructure (GSI) planning, design and implementation contracts for the Philadelphia Water Department (PWD) and private property owners in Philadelphia. This presentation will include the highlights and lessons learned from three of our GSI projects with an emphasis on the costs associated with implementing GSI in an urban environment.

Design Assistance
AKRF provided concept level stormwater retrofit design, outreach and education, and cost estimating services to commercial, industrial, and institutional property owners within the City who are interested in reducing their parcel-based stormwater fee. AKRF’s services were specifically geared to assisting customers with cost effective opportunities for implementing green stormwater management practices that qualify for a stormwater credit under PWD’s stormwater credit program.

AKRF has performed stormwater assessments and completed stormwater concept designs for over 200 properties totaling nearly 2,000 acres of land. Assessments cover a wide range of property sizes and conditions including very small, highly constrained properties to large campus properties. Concept plans and cost estimates include a variety of green stormwater practices including, rain gardens and bioretention systems, cisterns, blue roofs, and green roofs.

American Street Master Plan
AKRF developed a master plan for transforming an under-developed 14-block section of the North American Street corridor using GSI practices. The master plan included typical layouts, artist’s renderings, and cost estimates for a corridor-wide green streets project. AKRF developed an innovative green streets design that includes modular low-maintenance forebays, curb-less street design to allow sheet flow into curbside bioretention practices, slow-release irrigation trenches, and access ports for private business and residential connections.

AKRF explored a public/private partnership incentive model where private customers could access public stormwater management facilities in exchange for stormwater credits.

School District of Philadelphia Stormwater Retrofit Project

AKRF completed a contract to implement thirteen (13) GSI practices for the School District of Philadelphia on three (3) school properties within the combined sewer area of Philadelphia. The GSI project provides aesthetic and educational amenities and manages 1 inch and up to 1.5 inches of stormwater runoff from on-site impervious areas as well as from the public right-of-way. Now complete, the project manages nearly 9 acres of directly connected impervious area which will help to reduce combined sewer overflows and improve water quality in and around Philadelphia. The design approach looked to minimize construction and maintenance costs by proposing simple practices with native landscaping, utilizing existing on-site soil material and disposing of excess soil material in approved locations on site.