



Green Infrastructure & Stormwater Management CASE STUDY

Front Street Low Impact Development

Location: Wilmington, NC

Client: City of Wilmington, NC

Design Firm(s): Withers & Ravenel

Landscape architect/Project contact: Greg Lambert, ASLA, RLA and Hunter Freeman, PE

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ASLA Chapter: North Carolina

Project Specifications

Project Description: Withers & Ravenel, working with city officials, designed a streetscape project along Front Street for the City of Wilmington to implement an opportunity to improve the quality of water discharged to the Cape Fear River. Because Withers & Ravenel was already working with city officials on environmental-quality planning, company engineers and landscape architects were able to bring together a multi-agency effort that folded stormwater filtration into the streetscape project. The water quality system uses Filterra tree-box filters installed in the existing city-owned right of way to detain and improve runoff before it enters the municipal storm sewer system. The project also includes use of a grassed street median as an infiltration area for runoff, again improving water quality. The project led to a city initiative to identify, design and install multiple water quality retrofits within city-controlled rights of way. The new program also has been tasked with developing a long-term plan to improve water quality in Wilmington's waterways by reducing the impact of runoff from impervious cover on the impaired waters.

Project Type:

Transportation corridor/streetscape

A retrofit of an existing property

Design features: Curb cuts, Filterra tree box filters and bioretention fill.

This project was designed to meet the following specific requirements or mandates: No.

Impervious area managed: 1 acre to 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: 5,000 sq/ft to 1 acre

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? No.

Cost & Jobs Analysis

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

Related Information: Actual Cost: \$1,177,452.77 (included adding milling and resurfacing to the entire project, Filterra devices and numerous other out of scope items)

Was a green vs. grey cost analysis performed? Yes, adding the green infrastructure added +/- \$100,000 to the project.

Cost impact of conserving green/open space to the overall costs of the site design/development project: Increased the cost minimally.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Did not influence costs.

Number of jobs created: none

Job hours devoted to project:

Planning and Design: 900

Construction: 353

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

10 % of the 2-year storm event was retained on site. +/- 60% of the 2-year storm event was treated through filtration prior to discharge to the Cape Fear River.

Community & economic benefits that have resulted from the project: Enhanced visual corridor, reduced health & safety risks, reduced pollutants removed from runoff resulting in discharges with less impact on the Cape Fear River's water quality. This project was the catalyst for a city wide watershed planning effort to increase the use of green technologies on all city projects.