



Green Infrastructure & Stormwater Management CASE STUDY

Wilmore Walk Condominium

Location: Worthington Ave. Charlotte, NC

Client: Design Resource Group and Boulevard Centro

Design Firm(s): Estes Design Inc. & Design Resource Group

Landscape architect/Project contact: Christopher J. Estes, RLA, ASLA

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ASLA Chapter: North Carolina

Project Specifications

Project Description: This was the first project of its kind in Charlotte, NC. The project was completed in June of 2005. Estes Design monitored the project for the first 18 months using water level data loggers in the pervious concrete infiltration basin. The University of NC Charlotte for 2 more subsequent years that resulted in a masters thesis. The project has been a grand success for infiltration given the soils are piedmont sandy clays. It has resulted in several magazine articles including Stormwater Magazine January/February 2009 issue.

Project Type:

Multifamily residential

Part of a redevelopment project

Design features: Bioretention facility, rain garden, porous pavers, and pervious concrete pavement over infiltration basin. No subdrains in design.

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

State statute, NC Department of Water Quality 401/404

Impervious area managed: 1 acre to 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: less than 5,000 sq/ft. This was a high density redevelopment.

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: \$100,000-\$500,000 (Public funding: Local - the City of Charlotte funded most of the construction cost for research and public education.)

Related Information: This cost is combined for 8 rain gardens and a 6,355 sq/ft pervious concrete parking / infiltration basin that captures and infiltrates the 2-year storm (\$72k - includes 830 tn of washed stone for the reservoir (\$22K) Pervious Concrete (\$35k) plus incidentals.

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: The redevelopment plan was started as a traditional plan that had been designed before the stormwater quality requirements were realized. All of the BMPs were retrofitted into the existing plan layout and actually resulted in an additional dwelling unit. The BMPs were incorporated into the preplanned landscape and parking area.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Did not influence costs. It is not known how much more the cost savings would have been with more preliminary planning for LID.

Number of jobs created: Not available

Job hours devoted to project:

Planning and Design: 160

Construction: Not available

Annual Maintenance: 6

Performance Measures

Stormwater reduction performance analysis:

93% of the developments impervious surface runoff is treated. The sites BMPs capture and treat from 1" of runoff up to the 2-year storm event. The UNCC study concluded that greater than the 2-year storm event was being infiltrated under the pervious concrete parking area..

Community & economic benefits that have resulted from the project: Unknown.

Additional Information

Links to images:

http://maps.google.com/maps?f=q&source=s_q&hl=en&geocode=&q=Vision+Drive,+Charlotte,+

[NC&aq=0&sl=35.215963,-80.855384&sspn=0.029451,0.054932&ie=UTF8&hq=&hnear=Vision+Dr,+Charlotte,+Mecklenburg,+North+Carolina+28203&ll=35.214328,-80.865217&spn=0.003681,0.0](#)

Publications with more in depth information: Stormwater Magazine Stormwater Infiltration in Clay Soils A case study in the North Carolina Piedmont by Christopher J. Estes, RLA
Monitoring Report for the Wilmore Walk Porous Pavement Monitoring Study Prepared for City of Charlotte Stormwater Services Prepared by Craig J. Allan and Megan Gray Department of Geography and Earth Sciences, UNC Charlotte