Green Infrastructure & Stormwater Management
CASE STUDY

1050 K. Street

Location: Washington, DC
Client: The Tower Companies, The Lenkin Company Management Inc., Bethesda, MD
Design Firm(s): Timmons Group, Hickok-Cole
Landscape architect/Project contact: Lu Gay Lanier, FASLA, LEED AP
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Project Specifications

Project Description: Timmons Group collaborated closely with the architect, Hickok Cole, to cultivate the concept of a "living" building that would blur the lines between inside and out. The resulting design involves two levels of green roof, with one level doubling as an overlook and entertaining terrace. Roof water, chiller water and plaza run-off is collected in a cistern underneath the building. Cistern water is then filtered and pumped through a water feature bordering the entrance lobby, and into a series of three urban bio-retention areas integrated into the plaza design. Drip irrigation has been designed for all planting areas to conserve and optimize use of water from the cistern. The irrigation control system utilizes state of the art ET referenced programming via satellite which downloads information from local NOAA weather stations. For this ultra urban site, there is no runoff anticipated in a 2-year storm or less.

Project Type:
Part of a redevelopment project

Design features: Bioretention facility, green roof, cistern, porous pavers, collection of air handler condensate, utilization of collected water as irrigation source, smart irrigation controller, drip irrigation, and integrated fountain planter for infiltration utilized recycled water.

This project was designed to meet the following specific requirements or mandates:
Local ordinance, developer/client preference, and LEED NC-Gold certified.

Impervious area managed: 5,000 sq/ft to 1 acre

Amount of existing green space/open space conserved or preserved for managing stormwater on site: Less than 5,000 sq/ft. The existing site was an impervious parking lot. Green space was created as bio-retention flow through planters in the streetscape, a two-tiered green roof, and street tree plantings.

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? The Owners were committed to utilize all applicable technologies recommended by the design team.

- The curb appeal was paramount in the streetscape design.
- A green roof garden that absorbs rays of sun preventing "heat island effect".
- Condensation from air handlers is used to water planters and green roof.
- Building uses an energy recovery wheel designed to save 70 tons of air conditioning capacity.
- Air inside the building is replaced every 55 minutes.
- Fresh air is "triple scrubbed" to remove 85% of airborne toxins
- EcoDisk elevator system uses a 2:1 roping system and uses only half the energy of a typical elevator
- Chiller is most efficient in the market with an increased efficiency of 15% over the norm
- Waterless urinals, dual flush high efficiency toilets, shower and faucet aerators increase water and sewer efficiency by nearly 52% savings two million gallons every year

- The facility was designed to save over 550,000 kilowatts per year in energy consumption. The estimates savings per year are nearly $60,000. 100% of the electricity used to power 1050 K. Street will come from renewable resources.
- Finally, the floor to floor windows increase daylight which are estimated to increase productivity by up to 16%.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: $100,000-$500,000 (Public funding: None)

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 Owner/Developer estimates that the cost of the project was an additional 10%. The project achieved LEED Gold and was only trying to achieve LEED Silver. It is estimated that all of these costs can be recouped within 10-15 years. To help achieve that, there will be significant reductions in the fees for discharge into the combined storm/sewer.

What this does not take into consideration is that by being a "green" project, committed businesses chose to locate in the facility, with pre-leasing ahead of projections in a major recession. Additionally, there is a height limit on buildings in Washington, D.C. By adding the green roof, it created a terrace overlooking the Washington Monument that is used year-round by tennants and guests.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? The initial costs were slightly increased, but the Owner is convinced that these costs were well spent and is now committed to utilizing "green" building practices.

Number of jobs created: Building Staff: Approx. 5, Tennants: Unknown

Job hours devoted to project:

Planning and Design: Landscape/Civil-1,000 hours
Construction: Not available
Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

95% of the stormwater in a 2-year storm event is retained on site.

Community & economic benefits that have resulted from the project: 1050 K. Street has been a model stormwater project for Washington, D.C. The environmental education signage in the streetscape allows full time community access to the bioretention planter cells and recycled water feature. Tours, articles, and presentations are given weekly on the project. Now, Washington, D.C. reviewers have a built model for exceptional stormwater mitigation.

In the building, many of the tennants are committed to sustainability. One example is Tesla Motors; a premium electric carmaker, Tesla Motors signed a 3,469 rentable sq/ft, 5-year showroom lease at 1050 K. Street, the company's first entry into the Washington area. Based in Palo Alto, CA, Tesla is the first carmaker permitted to open an automobile showroom and servicing center in an office building in downtown D.C.

Project Recognition

- AIA Merit Award, District of Columbia, Hickok Cole
- 2009 Mayor's Environmental Excellence Awards - Case Study 2 - Big Business Luxury Features for Smaller Firms
- 2010 NAIOP Award of Excellence - Best Urban Office Less than 150,000 sq/ft

Additional Information

Links to images: There have been many articles written on this project including exquisite professional photographs. We will be glad to share them but will need to post them for you to retrieve. http://www.1050kstreet.com/

LEED Gold element:

- Designed to be EPA Energy Star Rated
- Renewable power meets 100% of energy needs
- Significantly reduces the carbon footprint of tenants
- 26% more energy efficient than ASHRAE 90.1 standards
- Saves 2 million gallons of water every year
- Removes 85% of airborne pollutants from the air
- Uses non-toxic building mateials to improve indoor air quality
- Over 60% of building materials sourced locally