



Green Infrastructure & Stormwater Management CASE STUDY

Taylor Mall - City of Phoenix and Arizona State University Downtown Campus

Location: Phoenix, AZ

Client: City of Phoenix

Design Firm(s): Ten Eyck Landscape Architects, Inc.

Landscape architect/Project contact: Judeen Terrey, RLA, ASLA

Email: terrey@teneyckla.com

ASLA Chapter: Arizona

Project Specifications

Project Description: As the heart of the downtown ASU campus, this project serves as an outdoor classroom for all students wanting to learn about current green building techniques. Its use of permeable surfaces, permeable pavers, water harvesting techniques, natural local materials, and its reduction of the urban heat island effect are exemplary of these techniques. By utilizing air conditioner condensate, this creative and thoughtful use of water provides a mini-oasis when condensate is available for the cistern, and maintains the memory of water and the importance of it in our climate when dry, all while celebrating and demonstrating the beauty of the Sonoran Desert vegetation.

Project Type:

Institutional/education

Part of a redevelopment project

Design features: Bioswale, cistern, porous pavers, curb cuts, and permeable pavement: stabilized decomposed granite and open cell pavers with permeable sub-base. Curb cuts: along street and sidewalk. Bioswale: swaled for water harvesting, surface texture with decomposed granite and plant materials to slow and purify water.

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

Local ordinance, developer/client preference, Arizona State University

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: 5,000 sq/ft to 1 acre. 2nd Street-3rd Street: Existing street was removed entirely and replaced with a narrower road with permeable paver parking bays. Curb cuts installed along the north side of the street to collect street stormwater into a bioswale. The bioswale provides a much needed green space which supports Palo Brea trees whose shade reduce the heat island.

Central Ave to 1st Street: Previously completely covered with asphalt as a parking lot. Removed vehicle traffic with exception of fire and loading access. As a pedestrian area surface materials are concrete, stabilized decomposed granite and pavers. A continuous bioswale through the project collects stormwater for use within the landscape.

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? As the center for the downtown ASU campus, usable green space was a priority. The University if forward thinking in sustainability techniques so was integral for design support.

Cost & Jobs Analysis

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

Related Information: This project covers 3 blocks of downtown Phoenix which are: Central to 1st Street; 1st Street to 2nd Street and 2nd Street to 3rd Street. Central to 1st Street: LS approximately \$850,000.00 1st Street to 2nd Street: unknown, only the north half of the project has been implemented 2nd Street to 3rd Street: LS approximately \$750,000.00

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: Sq/ft costs reduced since less non-permeable surfaces were installed.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Slightly increased. Cost for the open celled pavers was slightly higher than asphalt.

Number of jobs created: Not available

Job hours devoted to project:

Planning and Design: 1700 (Landscape Architect only)

Construction: Not available

Annual Maintenance: Not available

Performance Measures

Stormwater reduction performance analysis:

No data available, but would assume at least 50% of the stormwater is retained on site.

Community & economic benefits that have resulted from the project: As part of the new campus, this area has been completely renovated with the addition of student housing, renovated structures which now house classrooms, reduction of street width resulting in a pedestrian corridor which now links students and downtown visitors to adjacent entertainment venues and a central park.

Project Recognition

2009 Valley Forward Environmental Excellence Merit Award

Additional Information

The bioswale was inspired by the historic canals that once traversed this area just south of Taylor Street. Canals were integral to the settling of this region and were used to move and regulate water throughout the community. This project was an opportunity to re-envision the canals as stormwater and air conditioning condensate collection points from the adjacent structures for use in the landscape. Curb cuts were included along the street and sidewalk to collect stormwater. Air conditioner condensate, which normally is destined for the stormwater sewer, is now re-directed to a beautiful rectangular natural cast-in-place cistern. The cistern, located at the entry to the journalism building, not only provides a focal element for the Journalism Building, but provides a much needed oasis in this highly traveled gathering space. This water feature, dependent on water previously destined for the sewer, now nourishes the landscape and provides a visual story of our connection to nature.