

Landscape Performance Case Study

Underwood Family Sonoran Landscape Laboratory

Tucson, Arizona

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Project

Underwood Family Sonoran Landscape Laboratory
1040 N Olive Road, University of Arizona, Tucson, Arizona 85721

Project Type

Courtyard/Plaza
School/University

Climate Zone

Hot semi-arid

Budget

\$1,050,000

Size

1.2 acres

Designer

Ten Eyck Landscape
Architects, Inc.

Completion Date

2007

Former Land Use

Greyfield

Project Overview:

This project reclaimed and converted 1.2 acres of a parking lot into a usable plaza with interpretation, outdoor classroom space, and on-going monitoring by the university.

Challenges and solutions:

One of the challenges with this site was in converting a parking lot with runoff that drained into the new building entry area, into a fun, usable space for students and professors doubled as an interpretive area with a range of materials. The solution was to create an entry with a cleansing biosponge garden and interpretive space.

Cost comparison:

The cost of the project was relatively low-cost with a large volunteer-base to pull from.

Materials, as well as, labor for planting, irrigation, and lighting were donated (estimated value: \$650,000). The hardscape construction cost was \$400,000.

Lessons learned:

- Appropriate plant selection reduces maintenance and long-term cost
- Despite the high traffic urban area, wildlife habitat can be created and utilized in an opportunistic way
- Integration of social and educational spaces increases learning opportunities

Sustainable features summary:

- Five Sonoran Desert biomes are represented
- Stormwater runoff is reduced with two desert arroyo micro-basins and the lower patio with a 5,500 gallon retention capacity total
- A sunken court, made of permeable stabilized decomposed granite and concrete, is multi-use and serves as an outdoor classroom, gathering space, and wet-weather retention pond
- The landscape is irrigated with the reused water consisting of roof runoff, HVAC condensate, and drinking fountain greywater
- Native vines help cover southern exposure reducing solar heat and building costs
- A bosque of native mesquite creates a shady entry plaza
- A high-efficiency drip irrigation system was used
- Terrestrial and aquatic wildlife habitat was created with the introduction of two threatened and endangered fish.
- Brick and concrete was reused from the on-site partial building demolition
- Extensive cooperative efforts among landscape architects, the university, and the Arizona green industry allowed for materials and labor to be donated

Performance benefits and methodology:

Sustainable feature:

- Reclaimed 1.2 acres of former university parking lot to create a viable Sonoran Desert landscape

Performance benefit:

- Created an outdoor usable space using rainwater harvesting, water reuse

Method:

- Based on scope of work and installation

Sustainable feature:

- Reduced potable water use for the initial planted establishment period (first 1-5 years)

Performance benefit:

- Potable water use was reduced by 87% (280,000 gallons) annually
- After the establishment period, irrigation with potable water should be eliminated

Method:

- Based on design estimates, calculated overall landscape water needs in comparison to potential capture and storage of non-potable water sources

Sustainable feature:

- Utilizes university well water backwash from sand filter well that was previously sent to stormwater drainage system

Performance benefit:

- Reduces potable water use by up to 250 gallons/day which helps maintain pond water levels that supports the wetland vegetation and fish habitat

Method:

- Based on university and design data

Sustainable feature:

- Sourced all materials and labor from within Arizona with few exceptions

Performance benefit:

- Kept materials more localized
- Reduced project cost

Method:

- Based on project and designer data and installation

Works Cited

"Landscape Performance Series: Underwood Family Sonoran Landscape Laboratory."

Http://landscapeperformance.org/case-study-briefs/underwood-sonoran-landscape-laboratory. Landscape Architecture Foundation. 29 Jan. 2015.

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