

# Education Tools for Landscape Performance

Recipient: Landscape Architecture Foundation

Grant: \$25,000 PI: Heather Whitlow

Completion: 2015

Project Summary: 8



**icpi**

Foundation for  
Education and Research

## Background and Need

The Landscape Architecture Foundation maintains a website with tools and models that assist practicing landscape architects in measuring economic, environmental and social performance of landscape systems. In addition, the LA Foundation maintains a growing stable of project case studies demonstration how performance is measured.

## Objectives

### CAPTURE surface runoff

**Capture:** The directional collection of rainfall into defined permeable regions for infiltration

Direct or contain surface runoff (often referred to as stormwater) in order to infiltrate rainfall into permeable land cover.

Many techniques capture and infiltrate stormwater. Green Infrastructure is often used to describe a network of decentralized stormwater management practices.



SW 12th Avenue Green Street Project  
Portland, Oregon  
Kevin Robert Perry, ASLA

With a grant from the ICPI Foundation, the LA Foundation sponsored ten grants, each at \$2,500 awarded to university landscape architecture faculty. During the 2013-2014 academic year, grants were awarded to: Arizona State University, Boston Architectural College, Mississippi State University, Temple University, University of Idaho

Determinate Variables:  
rain event data  
area in sq ft of infiltration permeability  
types of runoff surfaces  
% coefficient contaminants  
capacity  
maintenance of system  
landscape capacity

During the 2014 and 2015 academic years, grants were awarded to:

| Benefit  | Reduces Stormwater Runoff     |                        |                                   |                    |                                  |                                |                  |                    |                      |                                     | Improves Community Livability |                     |                                    |                         |                              |                   |                  |   |
|----------|-------------------------------|------------------------|-----------------------------------|--------------------|----------------------------------|--------------------------------|------------------|--------------------|----------------------|-------------------------------------|-------------------------------|---------------------|------------------------------------|-------------------------|------------------------------|-------------------|------------------|---|
|          | Reduces Water Treatment Needs | Improves Water Quality | Reduces Grey Infrastructure Needs | Reduces Flooding   | Increases Available Water Supply | Increases Groundwater Recharge | Reduces Soil Use | Reduces Energy Use | Improves Air Quality | Reduces Atmospheric CO <sub>2</sub> | Reduces Urban Heat Island     | Improves Aesthetics | Increases Recreational Opportunity | Reduces Noise Pollution | Increases Community Cohesion | Urban Agriculture | Improves Habitat | Increases Public Infiltration Opportunities |
| Practice | Green Roofs                   | Tree Planting          | Bioretention & Infiltration       | Permeable Pavement | Water Harvesting                 |                                |                  |                    |                      |                                     |                               |                     |                                    |                         |                              |                   |                  |   |
|          | ●                             | ●                      | ●                                 | ●                  | ●                                | ○                              | ○                | ○                  | ○                    | ○                                   | ○                             | ○                   | ○                                  | ○                       | ○                            | ○                 | ○                | ○   |
|          | ●                             | ●                      | ●                                 | ●                  | ○                                | ○                              | ○                | ○                  | ○                    | ○                                   | ○                             | ○                   | ○                                  | ○                       | ○                            | ○                 | ○                | ○   |
|          | ●                             | ●                      | ●                                 | ●                  | ○                                | ○                              | ○                | ○                  | ○                    | ○                                   | ○                             | ○                   | ○                                  | ○                       | ○                            | ○                 | ○                | ○   |
|          | ●                             | ●                      | ●                                 | ●                  | ○                                | ○                              | ○                | ○                  | ○                    | ○                                   | ○                             | ○                   | ○                                  | ○                       | ○                            | ○                 | ○                | ○   |
|          | ●                             | ●                      | ●                                 | ●                  | ○                                | ○                              | ○                | ○                  | ○                    | ○                                   | ○                             | ○                   | ○                                  | ○                       | ○                            | ○                 | ○                | ○   |

Center for Neighborhood Technology, Green Infrastructure Values Guide

2014

- Arizona State University
- Boston Architectural College
- Mississippi State University
- Temple University
- University of Idaho

2015

- Arizona State University
- California Polytechnic State University, San Luis Obispo
- Kent State University
- Rhode Island School of Design
- Texas Tech

The grants helped develop, deploy, test, and evaluate teaching models to integrate landscape performance into a variety of standard landscape architecture course offerings such as site planning and analysis, research methods, and communications courses. This helped accelerate the adoption of landscape performance in the academia and give students the awareness and skills they need to design for, assess, and communicate landscape performance. This contributed to student skills and

exposure to resources to help them as practitioners to design, select materials, and prescribe maintenance practices that optimize performance.

Deliverables included documentation of instructional processes for replication among landscape architecture professors in universities. Participating faculty produced new syllabi, assignments, and other content for the “Resources for Educators” section of the LA Foundation website. The grants also allowed participating faculty to their teaching methods (pedagogy) through regular interactions and support from LAF staff, the LAF Education Committee, and each other.

The ten grant proposals were reviewed and evaluated by an independent committee of educators. Selection criteria included innovative teaching methods, geographic diversity and a variety of course types (e.g., research and methods, lecture courses, studio courses, seminars, and thesis/capstone work). Consideration was given to proposals for instructional resources that use segmental concrete paving systems as a vehicle for landscape design performance assessment. All students were introduced to the [LA Foundation Performance Series Case Studies](#) which provide various performance measuring tools.

## Outcomes

The deliverables from the universities, [Resources for Educators](#), are available to landscape architecture faculty and students. Deliverables that directly benefitted the ICPI Foundation include landscape performance evaluation tools applicable to segmental concrete pavements. Some of these tools include:

- USDA Technical Release 55 – A well-known runoff calculation model applied to permeable interlocking concrete pavements.
- Pedestrian environmental quality index (PEQI) – A survey tool that can measure the visual and social impact and preference of segmental concrete pavements compared to other pavements. The tool measures differences in perception between segmental and monolithic pavements as shown below:



- Water Harvesting Calculator by Wahaso Water Harvesting Solutions estimates the volume of water required for toilet flushing in a building and compares it to the amount of water that a rainwater harvesting system could capture from roofs and parking lots which could come from permeable pavements.