

## Implementation - Detail Mock-up

Mock-up Feature \_\_\_\_\_

### Goals and Objectives

The goals of this exercise are to investigate, design and fabricate an interlocking concrete pavement module to assist in understanding structural and aesthetic considerations of connections (edge and unit-to-unit conditions) and/or innovative environmental function(s). The exercise's learning objectives include the following:

- Gain exposure to the technical aspects needed to develop a unique and innovative interlocking concrete pavement module to achieve the desired look, feel and function of a related site design proposal.
- Achieve technical accuracy, environmental and structural function, and the desired aesthetic outcome(s) of a construction detail through real-time fabrication and troubleshooting.

### Assignment

Select one (1) custom detail from either the ICPI Construction Documentation and Detailing exercise or a site design proposal from another studio course. This material/constructability study requires that you use the actual materials proposed to construct a 1-to-1 mock-up of a proposed material(s) connection, condition and/or function. As the case with construction details, this study isolates a distinct portion of a larger, usually repetitive, design condition. This project does not necessarily require the construction of the entire system (scale dependent), i.e., focus may be placed on the actual paving unit rather than the structural base conditions. Fabrication of the mock-up should carefully consider the final object display, i.e., horizontal- or vertical-mount (materials board).

Instructor approval is required for both the proposed detail area and specific detail condition prior to the commencement of detail design and fabrication activities.

- **STEP 1:**  
Design – Work from your studio detail drawings to quickly refine a material concept and any/all technical drawings needed to fabricate the mock-up. Utilize 3D drawings (section(s), axon(s), etc.) to study how materials connect and any other important design considerations (dimensions, fasteners, formwork, etc.).
- **STEP 2:**  
Fabrication – Use the refined detail drawing(s) as construction documents/shop drawings to assemble all the necessary elements of your design.

### Special Note

It is highly recommended that certified and staffed University Materials Shops be used in the delivery of this project. For the students' safety, individual certification on all equipment related to the safe and successful completion of this project should be required prior to the commencement of any/all fabrication activities. Safety cannot be overemphasized, and should be strictly enforced.

## Project Name

Mock-up

## Project Title

Solar-powered LED Unit Paver

## Student Name + Semester/Year Completed

Noah Steel, Spring 2010

## Program + Institution

MLA, Department of Landscape Architecture, North Carolina State University

## Design Approach (principal values, concepts and/or strategies that define your project)

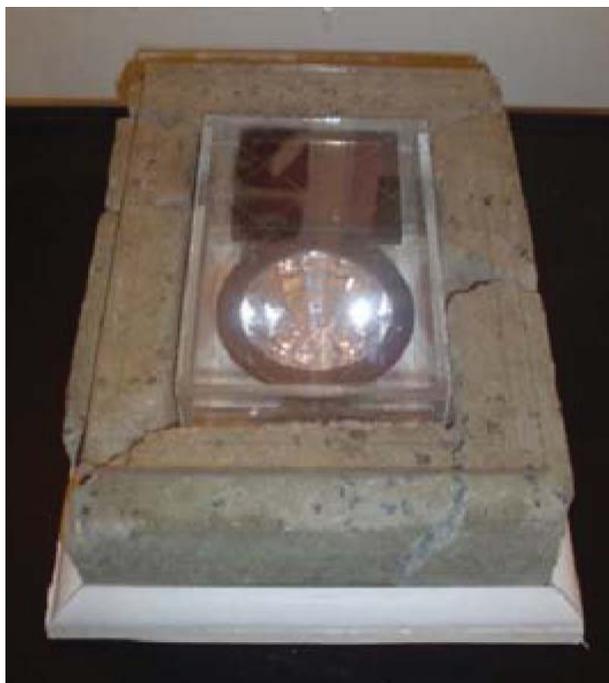
Sustainability via lowering infrastructure cost and carbon footprint; and innovation of lighting system flexibility and effects within the built environment. As proposed, this module could be installed in exactly the same manner as other paving units without the need for hardwired electrical connections. The LED fixture conserves energy, is very compact, and has a long lifespan (as compared to traditional incandescent fixtures).

## Design Process (process(es) you have undertaken to understand and successfully accomplish the items listed above)

Conducted case studies of interlocking concrete paving dimensionality and patterning, electrical systems and leading-edge technologies, and concrete mixtures + form assemblies. Used sketch-up to perform 3D studies and receive reviews/crits prior to fabrication. Concrete/fixture connection is critical -- a number of additional prototypes are required to successfully realize the design as envisioned.

## Design Products (please annotate and use additional pages if needed)

### Solar Powered LED Paver



### THIS PAVER:

- Solar Powered 
- Affordable 
- Easy to install 
- Saves electricity 
- No wiring required 
- Extra bright LED bulbs 

## Learning Outcomes (please provide a statement and/or list of the lessons you have learned during this project)

Manufacturing and production forming is essential to quality and durability. Understanding installation processes and addressing maintenance issues is also critical. When designing for underfoot conditions, developing conditions that remain cool to touch is imperative as it relates to the user experience and legal considerations tied to issues of health, safety and welfare.