

October 15, 2015

TO: Dr. Ming-Han Li and the Schob Nature Preserve Mini Grant Review Board
FROM: Eric Bardenhagen, Ph.D.
SUBJECT: Project proposal for the 2015-16 Schob Scholars LAUP Mini-Grant Program

1. **Principal Investigators:** Eric Bardenhagen, Ph.D., Mike Teal, MLA
2. **Project Title:** Deck and Boardwalk Construction as High Impact Learning:
Design, Material Selection, Construction, and Long Term Observation
3. **Project Abstract (150 Words):**

This project will engage students enrolled in LAND 330, Landscape Construction II during the Spring of 2016 in a process to design and construct a small boardwalk and wooden deck within Schob Preserve. The primary purpose of this effort will be to connect classroom learning of construction materials, techniques and documentation with the actual hands-on construction of what students have designed. The boardwalk and deck spanning approximately 40-60 feet is proposed to be built near the newly-added rain garden and will allow managed access and viewing of this amenity. Benefits to students will include 1) an increased ability to visualize not only the final product of their construction drawings, but also the *process* by which they are built, 2) exposure to the capabilities of and increased comfort in using construction tools and equipment, and 3) a built feature in the preserve that provides both an added amenity and a future learning tool.
4. **Objectives of the Project:**
 - Create construction documents to guide deck and boardwalk construction
 - Use several different wood species to better understand characteristics and requirements.
 - Put into practice construction techniques for wood structures
 - Create a deck/boardwalk section within Schob Preserve as a user amenity and teaching tool.
 - Allow future student groups to observe aging and wear characteristics of a variety of wood construction materials over time.
5. **Work Plan:**
 - Task 1: **Design of boardwalk and construction documents**

In this task, the design, materials and construction techniques will be documented as a package to guide materials purchasing and the construction process.
 - Task 2: **Construction on-site and in CARC Woodshop**

During this task, construction of the deck and boardwalk will be carried out both on-site (layout, footings and plant relocations if necessary) and in the CARC Woodshop. The purpose of completing some of the work as prefabrication in the workshop is to utilize a climate controlled and supervised workshop for repetitive and time-consuming construction activities.
 - Task 3: **Final documentation package and presentation/video completion**

During this task changes to the construction documents will be made to reflect as-built conditions once construction is complete. Concurrently, the project process documentation (recorded during design and construction) will be completed.

6. Student Learning Outcomes:

The existing course content within LAND 330 includes four basic units that are fundamental to construction documentation and feasible construction of landscape elements. These include:

1. **Horizontal dimensioning control techniques** (layout design)
2. **Materials for landscape construction** (design organization and assembly)
3. **Site construction details** (design assembly and connectors)
4. **Construction documentation** (plans, sections, working drawing reference)

Further, objectives for successful completion of the course include:

- Familiarity with basic landscape architecture layout techniques and ability to apply them to develop a clear and efficient layout plan for design proposals.
- Understanding of the performance characteristics of basic types of materials for landscape construction including masonry, wood, concrete, asphalt, and typical construction process.
- Understanding of the process, methods, and principles of site construction detail design.
- Demonstration of an ability to develop landscape construction details with minimum supervision.
- Demonstration of an ability to draft and produce construction drawings of professional quality using manual and CAD graphic conventions.
- Ability to identify, locate and access needed information efficiently and apply it to detail design requirements.

This proposed project is ideally suited to engage students in all of these components and course objectives. This will enhance classroom learning by allowing students to gain hands-on experience in the process, challenges and best practices of safe and efficient construction.

7. Schedule of Activities:

The project schedule will be coordinated with the overall course schedule for LAND 330 and is anticipated to follow these milestones in 2016:

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|------------------|--|
| March 11 | Completion of design of boardwalk and construction documents (Task 1) |
| March 28-April 7 | Construction on-site and in CARC Woodshop (Task 2) |
| April 7 | Boardwalk construction complete |
| April 19 | Final documentation package and presentation/video completion (Task 3) |

Anticipated Deliverables:

1. Construction documents required for the construction of the deck and boardwalk. This is anticipated to include a cover sheet, plan/layout sheet, and one to two sheets of details. This record can then be made available to future instructors and students.
2. Constructed boardwalk and decking section of approximately 40’-60’ in total length.
3. Student-created video or narrated PowerPoint presentation of the design and construction process.

9. Funds Request Breakdown:

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| Construction supplies | \$2,200 |
| Safety supplies | \$100 |
| Tool rental | \$100 |
| Process documentation and video | \$100 |
| Replacement plant allowance (for unintentional damage) | \$150 |
| Instructor time reimbursement | <u>\$350</u> |
| | \$3,000 |

