2014

LARC 331: Site Systems III: Landscape Implementation—A Peer Review of Teaching Project Inquiry Portfolio

Bret Betnar

University of Nebraska-Lincoln, bbetnar2@unl.edu

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Inquiry Portfolio
Advanced Peer Review of Teaching Project

LARC 331 - Site Systems III: Landscape Architecture Implementation

Bret Betnar
Assistant Professor of Landscape Architecture
University of Nebraska-Lincoln
College of Architecture

2014
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1.0 Course Description + the Broader Curriculum

LARC 331 Site Systems III: Landscape Implementation is a 3rd year undergraduate course that focuses on the implementation of landscape architectural designs. The course is the final in a 3-course Site Systems sequence. It is a required course for landscape architecture majors.

The first in the sequence, LARC 230 Site Systems I: Materiality in Landscape Architecture, introduces students to materials and methods for landscape architectural construction. Materiality provides the initial framework for students’ construction knowledge.

The second course in the Site Systems sequence is LARC 330 (now 231) Site Systems II: Site Engineering. In this course students learn how to sensitively manipulate the Earth’s surface for human use and environmental necessities.

In LARC 331 (future 330), students take the final design proposal from the previous semester’s Site Design studio, LARC 210 or 211, and develop a set of construction documents for that design. Two-dimensional drawings sets are still primarily how designers communicate with other interests in the design process. Most importantly, the document sets become a visual and annotated guidebook for the various contractors associated with any given project. The experience of moving from design idea to design drawings is meant to have the students think in greater detail about their proposals and to consider obstacles and opportunities that come with those decisions. Engaging in this process should inform future design decisions and resolutions. Technical proficiency in understanding both construction technique and representation is a cornerstone of design literacy and a fundamental tool of design. Therefore, students are graded on their ability to produce clear, refined and informative plans, sections and details.

This course is part of the relatively new landscape architecture program. Since my arrival in the fall of 2011, I have been tasked with the development and delivery of this course. With assistance from the landscape architecture program faculty, the primary course objective of taking a studio design as the basis of the course was established. I have taught the course in the spring of 2012, 2013, and 2014. It will be offered only in the fall semester beginning in the fall of 2014. A course benchmark portfolio was developed as part of the UNL Peer Review of Teaching Project in spring 2013.

2.0 Course Goals + Learning Outcomes

The learning outcomes for the course correlate to the types of activities students will be participating in. The students must take general ideas and common construction techniques and apply them as they relate to their individual design solutions. Usually, this requires the students to re-think original assumptions, and in many cases, re-design some component or components of their site. The following list contains the learning outcomes for the course:
2.1 Course Goals + Learning Outcomes

GOAL 1: Comprehend and organize the completion of a partial Design Development (DD) document package.

1. Prepare and compile a set of DD drawings for a pre-selected studio (schematic design) project.

2. Comprehend components of various DD sheets and their relation to other sheets within a set.

3. Develop details for selected hardscape materials and furnishings.

4. Demonstrate common site layout systems and procedures.

5. Demonstrate basic design, grading, and structural principles of grade changing devices, including but not limited to: stairs, ha-ha’s, gravity walls, retaining walls, gabion walls, and bin walls.

6. Demonstrate the use of standard slope, width constraints, and spot elevation for walks, plazas, gathering spaces and drives (when applicable).

GOAL 2: Develop an ability to graphically communicate design intent through black and white linework in plan, section, and detail.

7. Demonstrate ability to legibly communicate design intent through hand and AutoCAD line drawings.

GOAL 3: Describe and demonstrate basic AutoCAD file and layer management.

8. Demonstrate ability to organize AutoCAD files, manage layers, utilize callouts, dimensioning, labels, and plant tags.

Complete learning outcomes can be found in Appendix A - Syllabus.

It should be noted that this course is a difficult one to master. Much of the work requires a precision and tedium that the students are not used to. Design ideas in studio are by their nature not completely developed designs from the perspective of constructability. This course is their first time being asked to consider many questions of their design’s buildability. Nearly all students are capable of achieving some degree of success in terms of completing course goal number one. The results, however, are sub-par when measured against what they will need to be able to achieve in the workplace. While it is desirable to have students excel in the outcomes of goal number one, course goals two and three support the success of the primary goal of the course. Therefore, they become the critical agents of success and a major focus of the course.
2.2 Benchmarking Outcomes

When assessing the results from the benchmark portfolio, it became clear that students were underperforming in many important areas of focus. Ten categories of drafting basics, known as *The Ten Fundamentals*, are tracked on every project throughout the semester, so they represent a large portion of the course (Figure 1). The 2013 class achieved an average of 71.5% on the ten measured categories. The lowest two were *Lineweight Hierarchy (B)* and *Linetype (C)* at 53% and 49%, respectively.

Results from the benchmark portfolio, 2013, also illustrated generally poor performance on the construction drawing sheets themselves (Figure 2). This relates directly to Course Goal One. Students are graded in a variety of categories that have to do with each drawing sheet assigned. Their average score on drawing sheets was 65%, with only one sheet, Composite Plan, above 80%.

Several reasons are proposed in the benchmark portfolio for the lack of success in these categories. The reasons listed are as follows: unfamiliarity with the AutoCAD software, confusion about relevance of the subject matter, lack of familiarity with construction or drawing conventions, and lack of course prioritization by students.
2.3 Issue Under Investigation

In an attempt to improve upon the issues identified in the benchmark portfolio, an additional component was added to the course. The component, known informally as The Bench Project (Appendix B), asks the students to design and construct an 18”x18” wooden bench. The project was developed over the course of several years by Assistant Professor of Landscape Architecture Sarah Thomas Karle. The phases of the project emulate the phases of design and construction found in the field of landscape architecture. The four phases of the project ask the student to do the following: develop a design concept, draw or model that concept, construct an artifact, and finally submitting completed drawings that can be used to construct another bench. In asking them to go through this process, it is hoped that they see the importance of accurate and legible drawings. These drawings represent the idea and later the physical artifact. Thus, by participating in all, they should gain an understanding of the mission of construction drawings in context. The course itself only asks the students to complete a Design Development document set for a previous landscape architectural design. This is the phase between Conceptual Design and Construction Documents. The latter, along with specifications, will be the legal documents that a project is built upon.

It is hoped that by including this exercise, students will further develop their comprehension of basic drafting conventions and improve their visual thinking through the making of an artifact. The purpose of this project is to enhance the students’ ability to successfully complete Course Goal One and Two.

Complete student work for the 2014 Bench Project can be located in Appendix C - Wooden Bench Results.
2.4 Significance of Issue

As stated above, the transition from the world of schematic design ideas in studios and the construction of these ideas is a very difficult process for most students and young practitioners. Many have not built much of anything themselves, nor have they worked in the construction industry. The volume of information and knowledge takes a lifetime of practice to master. It is our intention as a faculty to introduce them to these topics systematically, realizing it will take them years to master. It is for this reason that emphasis, in the form of learning outcomes, is placed upon drafting fundamentals and the completion of a document set. Both of these skill sets are the foundation with which they will grow their knowledge. It is believed that the experience will benefit them not only in their studio courses, but also during internships and in their work after graduation.

3.0 Research Methodology

3.1 Research Question

The research question asked through this inquiry is as follows: Can the inclusion of a drawing and building exercise improve students' understanding of The Ten Fundamentals of drafting?

3.2 Method of Inquiry

*The Bench Project* asks the students to “explore detailing through the creation of an object for sitting”. I intentionally chose an exercise that had been previously developed in order to eliminate the variable of including a brand-new exercise. All students have the requirements for final bench size (18”x18”x18”) and lumber dimension (2”x6”x96”). The purpose, as stated in the project brief, is “to have [students] go through the entire process from design to construction”, in order for them to “see the importance of making legible and accurate construction drawings”.

Students must not only design the bench, but also must plan the sequences of cuts in the wood and diagram how they will be achieved. The project was graded on six categories including “Legibility and Accuracy of Detail Drawings”. These results were compared directly to the course results in *The Ten Fundamentals* for both 2013 and 2014 to see what difference, if any, would occur. The particular interest of this study was on the categories *Lineweight Hierarchy* and *Linetype*.

Students were to be asked a reflection question before beginning, after the exercise, and at the end of the course. However, due to uniform lack of participation, just one reflection from each student was received.
3.3 Method of Data Collection

For the remainder of the semester, the course continued as it normally does with challenges due every two to three weeks. Usually, students spend the first three weeks doing skill-building exercises with AutoCAD and drafting their designs using the software. The previous semester’s course, also taught by me, gave them an introduction into AutoCAD in order to allow room for the introductory exercise. On each challenge throughout the semester, students were assessed on The Ten Fundamentals, as well as a number of other criteria based upon the requirements of the Challenge. This data was then used to compare to the same data set from the previous year’s course, 2013. For complete rubric see Appendix D.

4.0 Research Findings

4.1 Course Changes and Results

Looking at the chart entitled “Points Allocated by Category” (Figure 4,5), one can see an increased emphasis in the 2014 course on The Ten Fundamentals and the Design Development Package. When assessing the 2013 course, it was believed that too many points were being earned by students in categories that were not directly related to the learning outcomes; examples of this are Setup, etc., Peer Redlines, and Progress (Figure 6). As a result, the points for DD Package and Ten Fundamentals made up nearly 60% of the course grade in 2014, whereas, in 2013, they were roughly 50%. Including The Bench Project increases the 2014 percentage to nearly 70% of the course grade.
In assessing where students are earning their points (Figure 6, 7), one can see that performance in *The Ten Fundamentals* and the *Design Development Package* are effectively being subsidized by the other categories including *Multipliers*. The Multipliers function to assist students in increasing their point totals throughout the semester by doing additional work. They are given on each Challenge for completion of such things as, Timesheets, Progress Prints, Additional Details, and a Cover Sheet. Multipliers add a bonus based on percentage of points achieved, not straight points. This is intended to create an incentive to perform well on the requirements of the Challenges.

It should be noted that the student count for 2013 was only five. For 2014, there were six students enrolled in the course. While there is not a large enough sample size to prove or disprove this inquiry based upon statistics only, there does appear to be some correlation between the students’ performance in the drawing portion of *The Bench Project* and their success in the two categories being studied (Figure 8, 9).

<table>
<thead>
<tr>
<th>Student</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td>Attention to Detail</td>
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<td>90 %</td>
<td>90 %</td>
<td>90 %</td>
<td>90 %</td>
<td>90 %</td>
</tr>
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<td>90 %</td>
<td>100 %</td>
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<td>Detail Drawings</td>
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<td>90 %</td>
<td>65 %</td>
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<td>65 %</td>
<td>65 %</td>
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<td>100 %</td>
<td>90 %</td>
<td>100 %</td>
<td>90 %</td>
<td>100 %</td>
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<tr>
<td>Total - Bench Project</td>
<td>85 %</td>
<td>94 %</td>
<td>83 %</td>
<td>94 %</td>
<td>88 %</td>
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<td>Course Grade</td>
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<td></td>
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Figure 8: Evaluation Results for Bench

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<th>3</th>
<th>4</th>
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<th>6</th>
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<td>88 %</td>
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<td>94 %</td>
<td>77 %</td>
<td>88 %</td>
<td>85 %</td>
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<tr>
<td>Linetype</td>
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<td>100 %</td>
<td>53 %</td>
<td>94 %</td>
<td>65 %</td>
<td>41 %</td>
<td>75 %</td>
<td>49 %</td>
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<td>65 %</td>
<td>30 %</td>
<td>59 %</td>
<td>47 %</td>
<td>94 %</td>
<td>51 %</td>
<td>92 %</td>
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<td>71 %</td>
<td>35 %</td>
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<td>100 %</td>
<td>77 %</td>
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<td>100 %</td>
<td>94 %</td>
<td>92 %</td>
<td>92 %</td>
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<td>50 %</td>
<td>13 %</td>
<td>25 %</td>
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<td>30 %</td>
<td>80 %</td>
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<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>0 %</td>
<td>75 %</td>
<td>▼</td>
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<tr>
<td>UFO’s (Unidentified Floating Objects)</td>
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<td>77 %</td>
<td>65 %</td>
<td>65 %</td>
<td>88 %</td>
<td>94 %</td>
<td>79 %</td>
<td>73 %</td>
<td>▲</td>
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<tr>
<td>AVERAGE</td>
<td>66 %</td>
<td>81 %</td>
<td>51 %</td>
<td>67 %</td>
<td>63 %</td>
<td>73 %</td>
<td>67 %</td>
<td>72%</td>
<td>▼</td>
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</tbody>
</table>

Figure 9: Course Results for The Ten Fundamentals
For *The Bench Project*, students were assessed in the above highlighted category, “Legibility and Accuracy of Detail Drawings” in the following manner:

*Drawings must read as built.*
*There must be clear delineation of lineweights and linetypes.*
*Can another person take your drawings and construct your object?*

### 4.2 Interpreting the Data

Findings for this project were mixed. While on one hand the students performed better on the two categories *Lineweight Hierarchy* and *Linetype*; for *The Ten Fundamentals*, their performance was down slightly from 2013. The chart illustrated on the previous page shows course results for *The Ten Fundamentals* for each student in 2014 (Figure 9, 10)

### 4.3 Student Reflection

Feedback from students in the form of reflection questions was sparse. Most students did not return their first assigned reflection question until mid-semester. Thus, an attempt to document any pre- and post-reflection was discontinued early in the process. All students did turn in one reflection question. The complete text of these can be found in Appendix C. The exception is student 3, whose response was turned in last minute to save a passing grade, and therefore excluded.

The following are excerpts from the student responses:

Student 1:
*Drawing something before you build it, such as a bench, helps you think about and understand how all the pieces fit together and how to assemble it. This enables you to save time and materials during fabrication and especially save time during assembly. The drawings also enable you to better communicate the details of your design that might not be visible on the actual product.*

Student 4:
*I think it is impossible to build something that is structural and beautiful before you at least have some concept of what it will look like prior to erection. This bench for example, took [student 2] and I at least five iterations before we understood how our joints were to interlock, what thickness of wood appeared to be sound for weight bearing and [only then] did the repetitive seventeen inch boards begin come together as one design...*

Student 5:
*...throughout the process of assembling detailed drawings for our bench, we were forced to consider very specific details, which eventually led to us making changes to our bench. By solving these problems during the design phase of our project, it saved us the inconvenience of having to solve these issues during the construction phase. This ensured that our time spent in the woodshop for the construction of the bench was much more efficient and also saved us from having to purchase additional lumber...*

Student 6:
*Drawing will identify problems in a design that you may not be able to recognize in your head. Finally it gives you a record of how to build it again, or even repair it.*
4.4 Conclusions

It is evident from the reflection responses that a drawing-to-making exercise has merit for students, particularly those who have never built anything. The artifacts (benches and drawings) themselves serve as a physical demonstration of ability. The degree to which ‘learning’ has occurred during The Bench Project is still unclear however.

Looking at the Success Rate by Category for 2014, we see the students underperforming in the areas relating to the primary course goals: The Ten Fundamentals and the Design Development Package (Figure 11).

From a course and curriculum perspective, a full analysis of the data should be conducted in order to understand ways to improve student success in the course. Tracking the outcomes that feed into this class, across the three-course Site Systems sequence, could be a good beginning to better understand inputs, course expectations, and future course design.

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**Figure 10: Course Results for The Ten Fundamentals - 2014**

**Figure 11: Success Rate by Category - 2014**
Faculty of Landscape Architecture, College of Architecture, University of Nebraska-Lincoln

LARC 331: Site Systems III: Landscape Implementation
Class: T TH, 9:00 -10:50, ARCH 305, 3 Credits
Instructor: Bret Betnar
Contact: o 217 | e bbetnar2@unl.edu
Semester: Spring 2014

“If you can’t draw something, you probably can’t make it” - Laurie Olin

Catalogue Description:
Investigation and application of landscape architectural design analysis, process and technology to landscape utility/circulation systems, structures, site layout, construction observation and implementation.

Course Prerequisites:
LARC 330 - Site Engineering

Course Introduction:
Implementation

a carry out, accomplish: to give practical effect to and ensure of actual fulfillment by concrete measures
b to provide instruments or means of expression for

Within the practice of landscape architecture there is often the desire to achieve simple, buildable and long-lasting solutions that also resonate with excitement and originality. Regardless of the grandness of an idea, to truly accomplish a design, one must have a practical plan to reach those ends.

The development of construction drawings enable designers to communicate with other interests in the design process. Most importantly, they become a visual and annotated guidebook for the various contractors associated with any given project.

For this course we will take the design ideas of your Fall studio project and develop them an additional step towards realization through the production of a Design Development package. This experience is meant to have you think in greater detail about what you have proposed and to consider the obstacles and opportunities that come with those decisions. It should also inform future design decisions and resolutions.

Like site engineering, technical proficiency in understanding both construction technique and representation is a cornerstone of design literacy and a fundamental tool of design. Therefore, you will be graded on your ability to produce clear, refined and informative plans, sections and details.
Learning Goals and Objectives:

Course Goal One: Comprehend and organize the completion of a partial Design Development (DD) document package.

Learning Outcomes:

1. **Prepare** and **compile** a set of DD drawings for a pre-selected studio (schematic design) project.

   **Method:**
   Complete a series of seven challenges throughout the semester covering a topic, or selection of topics, required for completion of DD set. Two submissions of corrected challenges submitted as a DD package.

   **Assessment:**
   Completion of challenges to an acceptable degree of proficiency.
   Peer-to-Peer redline critique
   Repetition if degree of proficiency is unacceptable
   In-class feedback
   Professor critique and redline of first submission

2. **Comprehend** components of various DD sheets and their relation to other sheets within a set.

   **Method:**
   Lectures and examples of DD sets illustrating components and their relational importance. In-class discussion/workshop relating connection between components.

   **Assessment:**
   Completion of challenges and two submissions to an acceptable degree of proficiency.
   Peer-to-Peer redline critique
   Repetition if degree of proficiency is unacceptable
   In-class feedback
   Professor critique and redline of first submission

3. **Develop** details for selected hardscape materials and furnishings.

   **Method:**
   Assignment of two challenges focussed on detailing hardscape materials. Lectures are provided to introduce detailing in the context of landscape architectural projects throughout the world. Introduction to detail references, design blogs, landscape architecture firms, and site furnishing companies. Possible field trip.

   **Assessment:**
   In-class discussion
   Completion of challenges and two submissions to an acceptable degree of proficiency.
   Peer-to-Peer redline critique
   Repetition if degree of proficiency is unacceptable
   In-class feedback
   Professor critique and redline of first submission
4. **Demonstrate** common site layout systems and procedures.

   **Method:**
   Demonstration of site layout methodology through lecture, readings and example work. Assignment of one challenge where students demonstrate their understanding of the principles and procedures of site layout as it relates to their design projects. In-class assistance is provided.

   **Assessment:**
   In-class discussion
   Completion of challenges and two submissions to an acceptable degree of proficiency.
   Peer-to-Peer redline critique
   Repetition if degree of proficiency is unacceptable
   In-class feedback
   Professor critique in-class

5. **Demonstrate** basic design, grading, and structural principles of grade changing devices, including but not limited to: stairs, ha-ha’s, gravity walls, retaining walls, gabion walls, and bin walls.

   **Method:**
   Lecture and readings are provided to demonstrate principles of design, structure and construction of various grade change devices.
   Students are asked to choose one (or more) structure(s) from design to include in DD package.

   **Assessment:**
   In-class discussion
   Completion of challenges and two submissions to an acceptable degree of proficiency.
   Peer-to-Peer redline critique
   Repetition if degree of proficiency is unacceptable
   In-class feedback
   Professor critique and redline of first submission

6. **Demonstrate** the use of standard slope, width constraints, and spot elevations for walks, plazas, gathering spaces and drives (when applicable).

   **Method:**
   Assignment of two challenges and one submission focussed on grading the schematic design. Students are asked to apply what they have learned in previous course work to complete these challenges.

   **Assessment:**
   In-class discussion
   Completion of challenges and two submissions to an acceptable degree of proficiency.
   Peer-to-Peer redline critique
   Repetition if degree of proficiency is unacceptable
   In-class feedback
   Professor critique and redline of first submission
Course Goal Two:
Develop an ability to graphically communicate design intent through black and white linework in plan, section and detail.

Learning Outcomes:
7. Demonstrate ability to legibly communicate design intent through hand and AutoCAD line drawings.

Method:
Complete a series of seven challenges throughout the semester covering a topic, or selection of topics, required for completion of DD set. Two submissions of corrected document package. Course places and emphasis on lineweight and linetype (including rubric). One fabrication challenge asks students to draft using only hand tools; in-class instruction provided.

Assessment:
Completion of challenges to an acceptable degree of proficiency. Peer-to-Peer redline critique Repetition if degree of proficiency is unacceptable In-class feedback Professor critique and redline of first submission

Course Goal Three:
Describe and demonstrate basic AutoCAD file and layer management.

Learning Outcomes:
8. Demonstrate ability to organize AutoCAD files, manage layers, utilize callouts, dimensioning, labels and plant tags.

Method:
Beginning challenge emphasizes methodology for organizing layers, blocks, drawings, xrefs, and file naming conventions.

Assessment:
Completion of challenges to an acceptable degree of proficiency. Peer-to-Peer redline critique Repetition if degree of proficiency is unacceptable In-class feedback Professor critique and redline of first submission
Required Material:

- Computer and software (see below)
- Engineer’s and Architect’s Scale
- Calculator

Hand Drawing Tools:

- Pencils; HB, 2B, 4B
- Colored Pencils (at least 3 colors including red)
- Sakura Pigma Micron Pens - Black (size 02, 03, 05, 08)
- Tracing Paper 24" and 12" roll (white is better for scanning and copying)
- Vellum tracing paper, 11x17.
- Erasers (white and kneaded)
- Drafting Triangles 90/45, 30/60
- Drafting tape (dots) and scotch tape
- Open Mind
- Passion

Other materials as required:

Computer Requirements:

See UNL CoA Computer Policy.

Students will be using AutoCAD and Rhino exclusively for this course.

Evaluation and Assessment:

Final grades will be based on the information below:

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Submission I

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Total

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UNL College of Architecture 5 of 8
Course Structure: This is a lecture/workshop course that meets 4 hours per week. The format for most class days will be one hour of lecture/instruction and one hour of workshop where students will be able to work on the challenges in class. Challenges and submissions will also require time outside of class.

Grading: The following schedule of grades applies to all (in %):

- **A+**: 100.0 – 96.67
- **A**: 96.66 – 93.34
- **A-**: 93.33 – 90.00
- **B+**: 89.99 – 86.67
- **B**: 86.66 – 83.34
- **B-**: 83.33 – 80.00
- **C+**: 79.99 – 76.67
- **C**: 76.66 – 73.34
- **C-**: 73.33 – 70.00
- **D+**: 69.99 – 66.67
- **D**: 66.66 – 63.34
- **D-**: 63.33 – 60.00
- **F**: 59.99 and below

Definitions:

- **A+, A, A-**: An outstanding performance in which the student demonstrates superior grasp of the subject matter, and an ability to go beyond the given material in a critical and constructive manner. The student demonstrates a high degree of creative and/or logical thinking; a superior ability to organize, to analyze, and to integrate ideas; and a thorough familiarity with the relevant literature and techniques.

- **B+, B, B-**: A good to very good performance in which the student demonstrates a thorough grasp of the subject matter, and an ability to organize and examine the material in a critical and constructive manner. The student demonstrates a good understanding of the relevant issues and a solid familiarity with the relevant literature and techniques.

- **C+, C, C-**: A fair performance in which the student demonstrates a general grasp of the subject matter and a moderate ability to examine the material in a critical and constructive manner. The student displays an adequate understanding of the relevant issues, and a general familiarity with the relevant literature and techniques.

- **D+, D, D-**: A poor performance in which the student demonstrates a minimal familiarity with the subject matter, but whose attempts to examine the material in a critical and constructive manner are inadequate. The student displays minimal understanding of the relevant literature and techniques.

- **F**: An inadequate performance. Failure.

Special Accommodation: Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) Office, 132 Canfield Administration, 472-3787 voice or TTY.
Attendance and Due Date Policy: Your punctual arrival to class is required. Furthermore, attendance (both physical and mental) for the full class period is required. It is your responsibility to be on-time and attentive each day. Partial attendance for only a portion of class and not for the full duration will result in an absence.

If you are absent for (3) or more class periods, you will automatically receive a failing grade for this course, regardless of your course performance. Accidents happen, so please plan accordingly. (Should you have exceptional circumstances, you are personally responsible for explaining the reasons for your absence to the Department Chair)

Challenges and Submissions are due on the date, time and location specified by your instructor. Late work will not be accepted at all without prior approval and written agreement. Students will be evaluated on their work, involvement, progress and attention to detail. This evaluation will be based on the instructor’s observation of student work, process and proficiency, according to the course learning objectives. Projects are graded individually, generally on or shortly after the due date. As a result, deadlines are strictly enforced.

Retention of Work: The College of Architecture has the right to retain any student work, either in part or in its entirety, for display, accreditation, documentation, recruitment or any other educational or legal purpose. You are required to submit at CD of your work for the semester at the end of the course.

Academic Integrity: Any issues which arise relative to academic honesty or integrity will be handled in accordance with UNL Student Code of Conduct (http://stuafs.unl.edu/ja/code/). You are to do your own work on projects, exams, reports, etc. except where a group has been assigned. Any work copied from current or previous student projects or professional work examples will receive a “zero” (0) evaluation for that submittal.

Employment Policy: The study of landscape architecture is a demanding discipline requiring a significant commitment to succeed. For this reason, the department has adopted a policy recommending that students, who are employed, not exceed the following registration guidelines.

Credit Hours Recommended/ Work Load / Week:

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<td>Up to 18</td>
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<tr>
<td>13-16</td>
<td>8-16 hours</td>
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<td>10-12</td>
<td>17-20 hours</td>
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<tr>
<td>Up to 6</td>
<td>Full time</td>
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Textbooks + References

Textbooks and References


Grading for Landscape Architects and Architects, Petschek, Birkhauser, Basel, Switzerland, 2008

Landscape Architecture Construction, Landphair-Klatt, Elsevier, NY, 1999

Grade Easy, Richard Unterman, Landscape Architecture Foundation, Washington, DC, 1973

Landscape Surveying, Field, Harry L., Thomson, Delmar Learning, Clifton Park, NY, 2004


Cities, Halprin, Reinhold Book Corporation, New York, 1963

Contemporary Landscape Architecture, Daab, Cologne, 2008


Appendix B
The Bench Project

Assignment Sheet - 2014
The Bench Project

Bench by: Matthew Macchietto and Heather Tomasek, Spring 2011

Project Background

Benches are a ubiquitous urban landscape assembly that perform a number of useful functions; they serve as a place for gathering; they provide a place for people to rest as they move from place to place; they serve as a marker of place and identity. Bench detailing is often standardized and pervasive in a given urban context. While this helps bring unity to urban streetscapes and protects public safety, it also results in banal environments with little creative expression.*

* adapted from LARC 230, Site Systems I, University of Nebraska, Professor Sarah Thomas Karle

Project Description

This project will explore custom detailing through the creation of an object for sitting. Although our “bench” will be smaller than the typical bench dimensions of, 42” long x 20” deep x 18” wide, the class will explore detailing opportunities for a wood “bench” designed for one. Similar to a studio design project, it should involve precedent studies and creative design exploration. The purpose of this project is to have you go through the entire process from design to construction. Through this process, you will see the importance of making legible and accurate construction drawings. Easy to read drawings make easy to assemble designs; thus decreasing delays during construction which decreases cost.

Project Activities

Each team must purchase a single piece of 2x6x96 (inches) lumber and is required to build an object for sitting. Objects should be built within an 18”x 18” x 18” limitation.

Notes: Be strategic about the use of your material. Plan the sequences of your cuts and how they will be achieved. Consider the tool(s) you will be using. Take into account how the wood grain is used in your project. Do not use glue for end grain connections. Minimize your waste. Do not make a toothpick project.

Project Challenges

Each team should think about design strategies for exposing or hiding joint connections. Objects should be structurally sound and a person should be able to sit on the finished project. Wood should remain in a natural state (do not stain or paint your wood). Students should consider if the selected joint(s) require(s) glue and plan accordingly. No metal hardware can be used to make connections.
Process

1: **Conceptual Design Development:** sketch, model, draft (3) iterations
   
   DUE THURSDAY JAN 16th

2: **Design Development Drawings:** create a set of hand drawings illustrating your design. You need to have a plan, a front elevation, a side elevation and an axonometric view of your joint(s) detail.
   
   DUE THURSDAY JAN 23rd

3: **Purchase:** Buy a 2x6x96 inch dimensional lumber at a local hardware store.

4: **Prepare:** The wood will need to be planed in the shop.

5: **Cut Sheet:** You will need to create a cut sheet of all pieces of wood to be cut in the shop. It is very important that you are not designing but executing in the woodshop!

6: **Time:** Allow for adequate time for elements to dry and test different joint options.

7: **Present:** Final Object and Final DD Drawings. Final DD drawings shall reflect the final design solution. They shall be drafted, not drawn. Final object shall be photographed from the angles
   
   DUE THURSDAY JAN 30th

Evaluation

Projects will be evaluated in terms of the following criteria:

- **Iterative Process and Conceptual Rigor** 50 pts
  
  How robust is your workflow; how varied are your experiments, how resolved is your final choice.

- **Thoughtful Use of Materials** 50 pts
  
  Materials are put to good use. The execution of the woodwork strongly ties to concept. You have wisely considered alternatives in the process.

- **Attention to Detail** 50 pts
  
  How much have you considered all facets of the design, drawing and construction process.

- **Quality of Craft** 100 pts
  
  The care with which the object is put together; its joints and connections. The smoothness of the wood and lack of visible glue.

- **Legibility and Accuracy of Detail Drawings** 100 pts
  
  Drawing must read as built. There must be clear delineation of lineweights and linetypes. Can another person take your drawings and construct your object?

- **Reflection** 50 pts
  
  Questions answered with consideration.

  **TOTAL** 400 pts

DEADLINES

- **01/16/14** Conceptual Design Development
- **01/23/14** Design Development Drawings
- **01/30/14** Final Presentation + Final DD Drawings

PERCENT GRADE - 10%

- **c_1:** The Bench Project, LARC 331, S14
**Learning Objectives**

*Develop* details for selected hardscape materials and furnishings.

*Demonstrate* ability to legibly communicate design intent through hand and AutoCAD line drawings.

**Design Development Drawings**

DUE THURSDAY JAN 30th

Drawings will not be reviewed without the following requirements:

1. All drawings must be drafted to a SCALE
2. All drawings must have a title block with, name, date, graphic scale
3. Each “bench” must have a plan, a front elevation, a side elevation and an axonometric view of every joint used to construct the “bench”.
4. All details shall be dimensioned.
5. All details shall be annotated.
6. All details shall be hand-drafted with appropriate line weights.
7. You must explain how the pieces of your design will be extracted from a 2x6x96 piece of lumber.
8. You must explain your design intent.

It is important that you put in the time needed for the first two portions of this project so that you receive appropriate feedback prior to going to the woodshop. See below for example shop drawings:
Appendix C
Wooden Bench Results + Reflection Responses
Student Drawings and Images of Constructed Benches - 2014
GROUP A: Student 1 and 3
GROUP B: Student 5 and 6
GROUP C: Student 2 and 4 (Images)
**Student 1:**
Drawing something before you build it, such as a bench, helps you think about and understand how all the pieces fit together and how to assemble it. This enables you to save time and materials during fabrication and especially save time during assembly. The drawings also enable you to better communicate the details of your design that might not be visible on the actual product.

**Student 2:**
Drawing out the entire product before it is built is essential in order to understand how the entire design is put together. When drawing the design beforehand, one must understand all dimensions and restraints. If one only has a conceptual or schematic design, one may run out of material, space, money, etc. In this scenario the design will either change completely or will not be completed at all. If one cannot draw it, one cannot make it.

**Student 4:**
I think it is impossible to build something that is structural and beautiful before you at least have some concept of what it will look like prior to erection. This bench for example, took [student 2] and I at least five iterations before we understood how our joints were to interlock, what thickness of wood appeared to be sound for weight bearing and [only then] did the repetitive seventeen inch boards begin come together as one design, or not.

**Student 5:**
In my opinion, it is important to draw something before building it, because the process of assembling a set of detailed drawings, forces the designer to solve problems down to the finest detail. In the example of our bench project, the designer(s) must consider structural integrity of all joints, as well as the aesthetic quality of the way different structural members of the bench interact with the others. The process of assembly is also taken into consideration, because the successful construction of the object (bench) can many times be dependent on the various pieces being assembled in the proper order.

Throughout the process of our bench project, we came up with an initial design for the bench that we wanted to construct. Then, throughout the process of assembling detailed drawings for our bench, we were forced to consider very specific details, which eventually led to us making changes to our bench. By solving these problems during the design phase of our project, it saved us the inconvenience of having to solve these issues during the construction phase. This ensured that our time spent in the woodshop for the construction of the bench was much more efficient and also saved us from having to purchase additional lumber, which we would have needed, if we had to reconstruct the bench, after having already made our cuts.

Drawing something before building it is also very important if the object is going to be built by someone other than the original designer. [When] applying this lesson to our landscape designs, once we are done with school, illustrates the importance of these drawings. The company responsible for constructing these designs, is rarely the same group of professionals that designed them. So, in order to ensure that the design is constructed exactly how the designer intended, a very detailed set of construction documents is assembled. Probably, the best test of the accuracy and thoroughness of the set of construction documents, is if a separate person (or group of people) can complete the construction phase of the project, while only using the set of construction documents.

**Student 6:**
Scaled drawings are the easiest way of determining if a design will work or not, on top of that it lets you know how big components need to be, and how they will connect. Drawing will identify problems in a design that you may not be able to recognize in your head. Finally it gives you a record of how to build it again, or even repair it.
Appendix D
Course Rubric

2014
All content will be checked by professor only.

AutoCAD SETUP

Setup: Name AutoCAD Files
Company name _ your initials _ file content _ year,mo,day

Layers: Edit + Create Layer Names for AutoCAD files
See LARC331_CAD_S14 “Landscape Layer List” for assistance.

Upload: Upload dwgs and pdfs of submission 2
Upload dwgs and pdfs of submission 2 in google drive folder.

TITLEBLOCK

Peer-reviewed Redlines.

TITLEBLOCK INCLUDED *
Titleblock is included on sheet.

SUBMISSION DATE *
All present and past submission dates are included.

KEY MAP *
A key map is included in appropriate location on all sheets (plan view only).

SHEET NAME *
The sheet name is included in appropriate location and reflects sheet content (ALL sheets).

SHEET NUMBER *
The sheet number is included in appropriate location and matches table of contents (ALL sheets).

STUDENT NAME *
The student name is included in appropriate location (ALL sheets).

THE TEN FUNDAMENTALS

Peer-reviewed Redlines.

CLARITY + LEGIBILITY *
Clarity: the quality of being easily understood Legible: capable of being read or deciphered

LINEWEIGHT HIERARCHY *
Minimum of 4 lineweights deployed appropriately.

LINETYPE *
Minimum of 4 linetypes deployed appropriately.

SCALE + NORTH ARROW *
Graphic and written scales for all drawings and North arrow(s).

LABELS *
All major existing and proposed site elements are labelled.

TEXT SIZE *
Hierarchy of text sizes are present and consistent throughout document.

TEXT LEGIBILITY *
All text is legible throughout the document.

SYMBOLS LEGEND *
A symbols legend is included on each sheet (plan view only) for all relevant symbols used.

SHEET NOTES *
Relevant sheet notes are included on each sheet (where applicable).

UFO’s *
There are NO unidentified floating objects on any sheets.

EXISTING CONDITIONS - SURVEY (L-200) 70
Submission 1 Redlines

EXISTING CONDITIONS SHEET *
Existing conditions sheet is included in package.

COMPOSITE PLAN (L-201) 70
Submission 1 Redlines

COMPOSITE PLAN *
Composite Plan is included in package and illustrates ALL major components of schematic design.

MATERIAL PLAN (L-202) 115
Submission 1 Redlines

MATERIAL PLAN *
Material Plan is included in package.

HARDCORE MATERIALS: DESIGNATED + LEGIBLE *
Plan illustrates ALL hardscape material components of schematic design.

MATERIAL SCHEDULE MATCHES PLAN *
Material schedule matches plan, including scale and tone of hatch/symbol.

CALLOUTS INCLUDED FOR ALL HARDCORE MATERIALS *
Callouts included for ALL hardscape materials and intersections of different materials.

FURNISHINGS PLAN (L-203) 115
Submission 1 Redlines

FURNISHINGS Plan *
Composite Plan is included in package.

FURNISHINGS: DESIGNATED + LEGIBLE *
Plan illustrates ALL furnishings for site.

FURNISHING SCHEDULE MATCHES PLAN *
Furnishing schedule matches plan, including scale and tone of hatch/symbol.

CALLOUTS INCLUDED FOR ALL FURNISHINGS *
Callouts included for ALL furnishings.
COMPLETE RUBRIC FOR DOCUMENT SET

**LAYOUT PLAN (L-300)**
- Peer-reviewed Redlines.

**LAYOUT PLAN SHEET**
- Layout Plan sheet is included in package.

**MAJOR SITE ELEMENTS ARE INCLUDED IN LAYOUT PLAN**
- Plan ensures layout of ALL major elements of schematic design.

**MAJOR SITE ELEMENTS ARE DIMENSIONED ACCURATELY**
- ALL elements of schematic design have accurate dimensions.

**POINT OF BEGINNINGS (POB) ARE LOCATED AND LABELED**
- Plan has at least one Point of Beginning located and labeled.

**POINT OF BEGINNINGS (POB) ARE AT APPROPRIATE LOCATION(S)**
- Plan has located POB(s) at locations that can be found during construction.

**HIERARCHY OF ELEMENTS IS CLEAR AND LEGIBLE**
- Layout Plan illustrates hierarchy of designed elements through dimensioning techniques.

**FLEX DIMENSIONS ARE INCLUDED IN LAYOUT PLAN**
- Plan demonstrates hierarchy of importance through use of fixed and flex dimensioning.

**SIMPLIFIED METHODS OF DIMENSIONING ARE utilized (EQ, TYP, MIN)**
- Plan always utilizes simplified dimensioning strategies wherever possible.

**GRADING PLAN (L-400)**
- Submission 1 Redlines + Peer-reviewed Redlines.

**CRITICAL SPOT ELEVATIONS: SITE PERIMETER**
- Spot elevations are provided for ALL site boundaries.

**CRITICAL SPOT ELEVATIONS: CORNERS OF PAVED SURFACES**
- Spot elevations are provided for ALL paved site polygons.

**CRITICAL SPOT ELEVATIONS: CURBS**
- Spot elevations are provided for ALL TC and BC (Top of curb/Bottom of curb).

**CRITICAL SPOT ELEVATIONS: WALLS**
- Spot elevations are provided for ALL TW and BW (Top of Wall/Bottom of Wall).

**CRITICAL SPOT ELEVATIONS: CHANGES IN SLOPE**
- Spot elevations are provided for ALL changes in slope.

**CRITICAL SPOT ELEVATIONS: CHANGES IN MATERIAL**
- Spot elevations are provided for ALL changes in material.

**SLOPE (%) ARE LABELED + ARROW POINTS DOWNHILL**
- ALL slope percentages are labelled and arrow points downhill.

**ADA: WALKS + PATHS ARE 1-4.99% (8.33% W/LANDINGS + RAILINGS)**
- ALL walks and paths are ADA compliant.

**Paved Gathering Spaces are 1-3%**
- ALL paved gathering spaces are ADA compliant and 1-3%.

**CONTOURS: EXISTING 1’ CONTOURS ARE SHOWN + LABELLED**
- ALL existing one foot contours (including on streets) are shown (dashed) and labelled.

**CONTOURS: PROPOSED 1’ CONTOURS ARE SHOWN + LABELLED**
- ALL proposed one foot contours are shown (continuous) and labelled.

**CONTOURS: ACCURATE TIE-IN TO ALL EXISTING CONTOURS + ELEVATIONS**
- All proposed contours tie in to existing contours within property boundaries.

**PLANTING PLAN (L-600)**
- Peer-reviewed Redlines.

**PLANTING PLAN**
- Planting Plan is included in package.

**PLANTING MATERIAL: DESIGNATED + LEGIBLE**
- Plan illustrates ALL plant material included in schematic design and designates them with different symbols/hatches.

**PLANTING MATERIAL: PLANT TAGS**
- All plant material is counted and designated using plant tags (abbreviation + quantity)

**PLANTING MATERIAL: PLANT SELECTION**
- Plant material selection shall support schematic design assumptions. This includes both human and environmental concerns.

**PLANTING SCHEDULE MATCHES PLAN**
- Plant material schedule matches plan, including abbreviation + quantity of plant materials.

**SOFTSCAPE MATERIALS: DESIGNATED + LEGIBLE**
- Plan illustrates ALL softscape material components of schematic design (lawn, swales, mulch, planing beds).

**HARDSCAPE DETAILS (L-800)**
- Submission 1 Redlines

**HARDSCAPE DETAILS**
- A Hardscape Details sheet is included in package.

**MINIMUM 3 HARDSCAPE DETAILS (BB ONLY)**
- Details are consistent with Material Plan.

**DETAILS ARE CONSISTENT BETWEEN THEMSELVES**
- Dimensions, thickness, and type of concrete, brick, etc are the same on all related details.

**DETAILS ARE COMPLETED, NONE INCOMPLETE**
- All details are finished with dimensions, labels, and hatching.
DETAILS ARE LEGIBLE + CORRECT *
All detail dimensions are capable of being read, contain correct measurements, and utilize appropriate dim_styles.

CUSTOM DETAILS (L-803)  200
Submission 1 Redlines

CUSTOM DETAILS *
A Custom Details sheet is included in package. Sheet name should reflect details contained in sheet.

MINIMUM 4 CUSTOM DETAILS - INCLUDING FOOTINGS (BB ONLY)

DETAILS ARE CONSISTENT WITH MATERIAL PLAN *
Details reflect information found in Material Plan.

DETAILS ARE CONSISTENT BETWEEN THEMSELVES *
Dimensions, thickness, and type of concrete, brick, footings, etc are the same on all related details

DETAILS ARE COMPLETED, NONE INCOMPLETE *
All details are finished with dimensions, labels, and hatching.

DETAILS ARE LEGIBLE + CORRECT *
All detail dimensions are capable of being read, contain correct measurements, and utilize appropriate dim_styles.

FURNISHING DETAILS (L-805)  84
Submission 1 Redlines

FURNISHING DETAILS *
A Furnishing Details sheet is included in package.

MINIMUM 4 FURNISHING DETAILS - INCLUDING FOOTINGS OR GROUND ATTACHMENT (BB ONLY)

DETAILS ARE CONSISTENT WITH FURNISHING PLAN *
Details reflect information found in Furnishing Plan.

DETAILS ARE CONSISTENT BETWEEN THEMSELVES *
Dimensions, thickness, and type of furnishing materials are the same on all related details

DETAILS ARE COMPLETED, NONE INCOMPLETE *
All details are finished with dimensions, labels, and hatching.

DETAILS ARE LEGIBLE + CORRECT *
All detail dimensions are capable of being read, contain correct measurements, and utilize appropriate dim_styles.