COURSE INTRODUCTION + BACKGROUND
Landscape architects must have the ability to understand, design, assess, and oversee the implementation of material assemblies that compose landscapes. Each assembly requires the designer to combine a range of heterogeneous materials within a specific context for particular performative criteria, and communicate their design intent to other professionals through drawings and specifications.

This first required core course in the Site Systems sequence is an introduction to the range of materials landscape architects use, and their performative capabilities and applications in the built environment. It serves as an introduction to an extensive body of knowledge and techniques related to the performance of landscape materials and material assemblies for undergraduate sophomore landscape architecture students.

The focus of the course is three-fold: material characteristics (lifecycle and performance assessment including sourcing materials, structural behavior, textural and phenomenological qualities); material assemblies (agglomerations of different materials operate and perform as systems); and technical and qualitative representation (investigating and communicating design intent and landscape performance metrics through drawing). Conventional and innovative materials and assemblies are examined in the context of sustainability using landscape performance metrics to evaluate their environmental, economic, and social benefits.

10 students were enrolled in the course for the Fall 2017 semester. Through the coursework, students engaged in landscape performance in their selection and visual description of innovative details, the performative comparison between innovative and conventional details covered in class, field trips to local material manufacturing plants, and the design of their own performative, innovative detail in coordination with their studio course.

COURSE LEARNING GOALS + OUTCOMES
The primary goal of this course is to provide students with a foundation to landscape materials and assemblies, and their performative benefits through detailing, research, and technical and qualitative representation.

Learning Goal One:
Knowledge of Materials and their Assemblies
Students gain a broad understanding of materials, material applications in designed landscapes, how individual materials are assembled into heterogeneous material systems, and the landscape performance of material systems by using metrics to convey the environmental, economic, and social/cultural benefits of contemporary and innovative details.

Learning Outcomes:
1. Describe characteristics (rot resistance, water resistance, etc.) and qualities (texture, color, strength, behavior, etc.) relevant to the performance of landscape materials and assemblies.
2. Understand the significance of material lifecycles by synthesizing issues related to social, cultural, and environmental dimensions in their selection, assembly, and detailing.
3. Identify the material components above and below the surface within an assembly system.
Learning Goal Two:
Research Methods and Applications of Materials and Detailing to Design
Students develop research methods and skills for understanding, documenting, and analyzing material applications, material and assembly performance, technical detailing, and construction as part of an iterative design process.

Learning Outcomes:
1. Develop a vocabulary and proficiency in conventional, sustainable, and innovative landscape materials and construction techniques through the lens of landscape performance, and apply this knowledge to design proposals.
2. Ensure design intent with an accumulated technical knowledge of material innovation and selection, construction detailing and assembly performance, and basic structural theory.

Learning Goal Three:
Skills and Methods in Technical and Qualitative Representation
Students build a literacy of technical detailing as a visual language for investigating design ideas and communicating design intent using AutoCAD and other programs as digital tools.

Learning Outcomes:
1. Demonstrate an understanding of the conventional visual language of technical detailing in material assemblies, consisting of drawing types, line weights/line types, textures and poche, labeling and annotation, dimensioning, and scaling.
2. Utilize drawing as a communicative tool to convey design intent, and as an investigative method exploring assembly performance.
3. Apply AutoCAD as a tool for drafting and technical detailing, and InDesign as a tool for integrating qualitative and quantitative information to produce professional quality technical drawings.

COURSE FORMAT
This course uses illustrated lectures, readings, class discussions, experimental model-making, cumulative assignments, field trips, independent research, analysis, drawing and computer drafting, design development, experimentation and evaluation to accomplish the above learning goals and outcomes.

COURSE STRUCTURE + SCHEDULE + ASSIGNMENTS
This course is organized into 3 Phases with Subphases. The Phases are structured as a cumulative sequence, in which each assignment builds on the previous one(s). Detailed project briefs are provided at the beginning of each Phase. Below is an outline of the course structure with general assignment summaries describing how landscape performance is integrated throughout the course:

Phase 1: Introduction to Landscape Performance through Material Assemblies;
Technical Representation and Detailing [3 weeks]
This Phase consists of 2 Subphases:
A – Material Assemblies as Performative Systems [8/22-9/7]
B – Introduction to AutoCAD [8/31-9/5]

In this first phase, students analyze innovative details that perform as green infrastructure. Following the first webinar provided by LAF, which introduced students to concepts of landscape performance, students select an assembly on
or around UNL campus, such as Love Library Learning Commons Plaza or P Street. On-site observations guide
students to select a performative landscape strategy (i.e. stormwater filtration, native plantings, placemaking, etc.)
that is explored throughout the exercise.

The outcome of this Phase is an introduction to AutoCAD as a drafting tool and students’ first detail sheet. Detailed
material assemblages are drawn using scaled plans and sections, with diagrams that convey and evaluate the
quantitative and qualitative benefits of the material assembly, combining environmental and technical performance.

**Phase 2: Materials, Lifecycles, and Assemblies–Performance + Applications [9 weeks]**
This Phase consists of 4 Subphases:
A – Aggregate + Asphalt + Cast-in-Place Concrete [9/12-9/21]
B – Pre-Cast Concrete + Brick + Stone [9/21-10/10]
C – Metal + Wood [10/10-10/26]
D – Soils + Plantings + Earthworks [10/26-11/9]

Phase 2 exposes students to materials used in constructed landscapes, and how assembled materials perform as
systems. Material groupings in each subphase are paired with assemblies, both building in complexity. This phase
also introduces students to material lifecycles and their landscape impacts in the context of designing sustainable
landscapes. This ranges from extraction/sourcing and manufacture, to their performance and landscape applications,
to their end-of-life fates. Students develop an understanding of the range of conventional materials and techniques
used to construct landscapes, paired with innovations and technologies associated with those materials and
assemblies. Emphasis is placed on highlighting the material components that make up detailed assemblages, and
their performative benefits.

For each Subphase, students select and draw details of 2 conventional material assemblies that relate to both the
materials and the assemblies covered in lectures and readings. Each student selects a conventional assembly to pair
with an innovative counterpart. Students select a landscape performance benefit criteria (social, economic, or
environmental) to evaluate and compare the innovative detail’s benefits to those of its conventional counterpart using
illustrated axonometric drawings.

**Phase 3: Synthesis of Landscape Materiality–Designing a Performative Material Assembly [4 weeks]**
This Phase consists of 3 Subphases:
A – Designing Details [11/9-11/16]
B – Constructing Assemblies [11/16-11/28]

Phase 3 grants students more freedom in the detailing process, and tests students’ understanding and application of
landscape materiality, material assemblies, and their performative capacities in constructed landscapes by designing
a construction detail for their design studio projects.

Students draw and model a design detail referencing conventional and innovative materials and assemblies that
were covered throughout the course. The designed details emphasize material components, tectonic relationships,
and how the assembly performs as a system. After drawing and modeling their details, students use landscape
performance metrics to evaluate their benefits in the context of their studio design proposals in LARC 210.
REFLECTIONS ON COURSE CONTENT + TEACHING

Many aspects of the course were very successful, and others require further development for next year based on my observations, conversations with students, and student reflections. The following is a summary of both student and instructor reflections that assess the course’s strengths and areas for development, with a specific focus on landscape performance.

Strengths

- Based on reflections, students enjoyed and greatly benefitted from the webinars, guest lectures from industry professionals, material lectures provided by me, and the field trips to local material manufacturing plants. One student noted the importance of understanding the greater social benefits and impacts of regional material selection, and the laborers that contribute to the materials landscape architects select. Another student noted the benefits of the material lectures, and the importance of understanding how to source materials, the performance of the individual materials, and how they function as a system within an assembly. It was also noted that students came to quickly realize the importance of what occurs within the detail below grade, and the differences between conventional and innovative details that contribute to their performance, for example the size and amount of aggregate in permeable paving versus impermeable paving details.

- Overall, students enjoyed and appreciated the introduction and application of landscape performance in the course. Many noted that their interests in landscape architecture parallel sustainability, and appreciated LAF’s approach to quantifying landscape benefits and sustainability. Students also noted that exposure to landscape performance through the course enabled them to develop a greater understanding of sustainability in design and the importance of material selection and assembly by using landscape performance as a lens and framework. The comparisons students made between conventional and innovative details in Phase 2, and understanding how an innovative detail performs based on landscape performance benefits, was noted as a helpful approach to understanding materials, assemblies, and their differences.

- Many students noted the benefits of coordinating the course with their studio for their final project in Phase 3. It allowed them to not only design and develop a performative detail within the course, but in doing so, also allowed them to develop stronger design proposals by using the detail to inform their design process and vice versa. In this sense, the detail became a design tool that was developed in parallel with their overall design, ultimately informing their designs, rather than an afterthought in the design process. Evaluating the performance of their detail also proved to be helpful and insightful for the students, and enabled them to make stronger material palette and assembly decisions that resulted in higher-performing projects and a greater awareness of the performative benefits of their designs. This allowed both their details and design projects to be more performance-driven.

Areas for Further Development

- Some students noted the difficulty and learning curve of applying AutoCAD as a new digital tool. In Phase 1, students received a tutorial and handout that describes how to set up and draft in the program, export drawings to scale, and annotate and lineweight their drawings. By the end of Phase 2, students were much more comfortable with the program by practicing through the drafting of details. Students noted that having some background information about the tool before beginning a drafting exercise would be beneficial. Based on feedback and conversations with students, I plan to dedicate more time to the AutoCAD tutorial by extending it to be a week-long workshop. The first day would generally go over tools, setting up drawings, and exporting their drawings. The second day would be what I presented this semester. I also provide students with standards for their drawings, and they noted that a graphic standard template with sizes, margins, and spacing would be helpful and is something I plan on providing with greater detail. I also plan to
provide an optional session outside of class to answer questions about the program. Developing more efficiency in learning the program will allow for more time to explore material and assembly performance.

- Although students gained a strong breadth of knowledge in regards to landscape performance, some referenced LAF’s websites and materials more than others, and is reflective of the level of performance analysis completed by students in their assignments. As a College, we are currently exploring information literacy across curriculums and programs, and the ways in which students can develop stronger research skills in coursework. Students were provided with general knowledge and access to evaluating landscape performance benefits through both lectures I gave and LAF’s webinars. To strengthen this, I plan to adjust the Phase 1 and 2 assignments to include more information about how landscape benefits are quantified (particularly in the context of material selection and assembly), access and use of reference documents, such as LAF’s Landscape Performance Series Case Study Briefs, and more directly apply this information to the project. Providing more rigor in this process will likely strengthen the integration and application of landscape performance within the course.

CONCLUSION
Formal and informal feedback collected from both students enrolled in the Materiality course and peers suggest that the course’s organization, delivery, content, format, and integration of landscape performance were effective in achieving the learning objectives and outcomes of the course. Overall, students greatly enjoyed the collaboration with LAF and benefitted greatly from the integration of landscape performance within the course, particularly within their first semester of discipline-specific coursework. This has given students a better understanding of what makes a landscape architecture project sustainable and how to evaluate its performance benefits, and as many noted, is an aspect they plan to continue developing in their work.

As a major goal of this course, integrating landscape performance within technical coursework enabled students to understand and develop a greater appreciation for how material selection and material detailing contributes to the performance of a project. I plan to keep many aspects of the course intact, such as its structure, sequence, and assignments, but plan to strengthen them by providing more clarity in both learning a new digital drafting program and more detailed instructions and outcomes for integrating and applying landscape performance to the assignments. Some students noted that the integration of landscape performance “sets a progressive tone for the curriculum” and that they would like to see more topics related to landscape performance integrated into other coursework. I plan on doing so in both my upper-level studio and professional research seminar. As a program, we are also beginning discussions for how to integrate stormwater management more strategically within our BLA curriculum, and through these discussions, also develop more opportunities to integrate landscape performance within other coursework.
Pentagon Memorial: Axonometric Bench Assembly and Section Details, KBAS: Keith Kaseman and Julie Beckman
Catalogue Description: Relationship between design and implementation through construction processes; technical representation; detailing as an extension of design; landscape architectural materials; material assemblies as performative systems; basic structural theory; detailing and structures; conventional and innovative materials and construction methods; and technical specifications as a means of ensuring design intent.

Course Prerequisites: Admission to the College of Architecture
This course is a prerequisite for:
LARC 231: Site Systems II – Site Engineering

Course Introduction: Landscape architects must have the ability to understand, design, assess, and oversee the implementation of material assemblies that compose landscapes. These assemblies include, but are not limited to, sidewalks, stairs, retaining walls and plantings, overhead structures, and seating. Each assembly requires the designer to combine a range of heterogeneous materials within a specific context for particular performative criteria, and communicate their design intent to other professionals through drawings and specifications.

This first course in the Site Systems sequence is an introduction to the range of materials landscape architects use (concrete, masonry, metals, wood, soil, and plantings), their performative capabilities, and their applications in the built environment. It serves as an introduction to an extensive body of knowledge and techniques related to the performance of landscape materials and assemblies, and their detailing.

The focus of the course is three-fold: material characteristics (lifecycle and performance assessment including sourcing materials, structural behavior, textural and phenomenological qualities); material assemblies (agglomerations of different materials operate and perform as systems); and technical and qualitative representation (investigating and communicating design intent and landscape performance metrics through drawing). Conventional and innovative materials and assemblies are examined in the context of sustainability using landscape performance metrics to evaluate their environmental, economic, and social benefits.

The course’s sequence reflects the process oriented, interconnected qualities of landscape design. Rather than specifically focusing on material class or type of assembly, this course takes an integrative approach by using material types as an organizational structure for understanding their qualities, heterogeneous assemblies, and applications in design.

“Realization is Realization in Form, which means a nature. You realize something has a certain nature...In such consultation you can discover the Order of water, the Order of wind, the Order of light, and the Order of certain materials...The beauty of what you create comes if you honor the material for what it really is. Never use it in a subsidiary way so as to make the material wait for the next person to come along and honor its character.”

Louis I. Kahn, Between Silence and Light
Learning Goals and Outcomes: The primary goal of this course is to provide students with a foundation to landscape materials and assemblies, and their performative benefits through detailing, research, and technical and qualitative representation.

Learning Goal One:
Knowledge of Materials and their Assemblies -
Students gain a broad understanding of materials, material applications in designed landscapes, how individual materials are assembled into heterogeneous material systems, and the landscape performance of material systems by using metrics to convey the environmental, economic, and social/cultural benefits of contemporary and innovative details.

Learning Outcomes:
1. Describe the characteristics (rot resistance, water resistance, etc.) and qualities (texture, color, strength, behavior, etc.) relevant to the performance of landscape materials and assemblies.
2. Understand the significance of material lifecycles by synthesizing issues related to social, cultural, and environmental dimensions in their selection, assembly, and detailing. Some considerations include, but are not limited to, material extraction, material processing, construction, assembly, activation and use, and decomposition, disposal, or reuse.
3. Identify the material components above and below the surface within an assembly system.
4. Investigate material assemblies for their performative effects in relation to structure, function, and aesthetics.

Learning Goal Two:
Research Methods + Applications of Materials and Detailing to Design -
Students develop research methods and skills for understanding, documenting, and analyzing material applications, material and assembly performance, technical detailing, and construction as part of an iterative design process.

Learning Outcomes:
1. Develop a vocabulary and proficiency in conventional, sustainable, and innovative landscape materials and construction techniques through the lens of landscape performance, and apply this knowledge to design proposals.
2. Ensure design intent with an accumulated knowledge of material innovation and selection, construction detailing and assembly performance, and basic structural theory.

Learning Goal Three:
Skills + Methods in Technical and Qualitative Representation -
Students build a literacy of technical detailing as a visual language for investigating design ideas and communicating design intent.
Learning Outcomes:
1. Demonstrate an understanding of the conventional visual language of technical detailing in material assemblies, consisting of drawing types, line weights / line types, textures and poche, labeling and annotation, dimensioning, and scaling.
   - Draw plans and sections with explanatory notes to adequately convey design intent and ensure its proper fabrication and installation by a professional.
   - Become familiar with construction nomenclature and utilize standard dimensions systems, symbols, layout, and description of materials and processes.
2. Utilize drawing as a communicative tool to convey design intent, and as an investigative method exploring assembly performance.
3. Build a library with a wide range of material palettes and assemblies that reflect their implementation and performance in the landscape.
4. Apply AutoCAD as a tool for drafting and technical detailing, and InDesign as a tool for integrating qualitative and quantitative information to produce professional quality technical drawings.

Course Format and Structure: To accomplish the above learning goals and outcomes, this course uses illustrated lectures, readings, class discussions, experimental model-making, cumulative assignments, field trips, independent research, analysis, drawing and computer drafting, design development, experimentation and evaluation.

Illustrated Lectures / Readings / Discussions
Lectures consist of illustrated and visual examples accompanied by verbal explanations. They are largely organized by materials, their lifecycles, their structural, visual, and sensorial characteristics, and their applications in constructing landscapes. Lectures include discussions of the physical attributes of materials, tectonics (the art of material connections), and the function of common landscape assemblies and their relationships to site systems.

Course readings relate to landscape materials and detailing, and accompany each Phase of the class. Readings are assigned before each lecture (see Course Schedule and Course Readings for details). Students are required to read for each class with the expectation they may be tested on their knowledge and asked to participate in class discussions. Supplemental readings are provided as reference material to the course, lectures, and for completing assignments.

Students are encouraged to ask questions during lectures. Topics in the readings and covered in lectures are designed to stimulate discussion and build a literacy and knowledge in construction materials and technical detailing. Students will also present their assignments and projects in a pin-up format in order to receive continual feedback from fellow peers and contribute to the overall discussion of projects.
Field Trips
Field trips will occur within Lincoln. They will consist of constructed landscapes, landscapes under construction, and material production facilities. Trips will introduce students to material production / disposal and material assemblies in constructed landscapes.

Course Structure – Phases
This course is structured into 3 Phases with Subphases. The Phases are structured as a cumulative sequence, in which each assignment builds on the previous one(s). Detailed project briefs are provided at the beginning of each Phase. Below is an outline of the course structure:

**Phase 1: Intro to Landscape Performance through Material Assemblies; Technical Representation + Detailing [3 weeks]**
This Phase is divided into 2 Subphases:
A – Material Assemblies as Performative Systems [8/22-9/7]
B – AutoCAD [8/29-9/5]

In this first phase, students will analyze innovative details that perform as green infrastructure. Students will select an assembly on or around UNL campus, such as Love Library Learning Commons Plaza or P Street. On-site observations will guide students to select a performative landscape strategy (i.e. stormwater filtration, native plantings, placemaking, etc.) that will be explored throughout the exercise. Detailed material assemblages will be drawn using scaled plans and sections, with diagrams that convey and evaluate the quantitative and qualitative benefits of the material assembly, combining ecological and technological performance.

**Phase 2: Materials, Lifecycles, and Assemblies – Performance + Applications [9 weeks]**
This Phase is divided into 4 Subphases:
A – Aggregate + Asphalt + Cast-in-Place Concrete [9/7-9/21]
B – Pre-Cast Concrete + Brick + Stone [9/21-10/10]
C – Metal + Wood [10/10-10/31]
D – Soil + Plantings + Earthworks [10/31-11/9]

Phase 2 will expose students to materials used in constructed landscapes, and how assembled materials perform as systems. This phase will emphasize material lifecycles and their landscape impacts in the context of designing sustainable landscapes. This ranges from extraction/sourcing and manufacture, to their performance and landscape applications, to their end-of-life fates. Students will develop an understanding of the range of conventional materials and techniques used to construct landscapes, paired with innovations and technologies associated with those materials and assemblies. Emphasis will continue to be placed on
highlighting the material components that make up detailed assemblies, and their ecologically performative conditions. In each Subphase, students will select and draw details of conventional assemblies paired with an innovative counterpart selected from a case study in LAF’s Landscape Performance Series. Students will use landscape performance metrics to evaluate and compare the innovative detail’s benefits to those of its conventional counterpart.

Phase 3: Synthesis of Landscape Materiality – Designing a Performative Material Assembly [~4 weeks]
This Phase is divided into 3 Subphases:
A – Designing Details [11/9-11/16]
B – Constructing Assemblies [11/16-11/28]

Phase 3 will test students’ understanding of landscape materiality, material assemblies, and their performative capacities in constructed landscapes through designing a construction detail for their design studio projects. Students will draw and model a design detail referencing conventional and innovative materials and assemblies that were covered throughout this course. The details will emphasize material components, tectonic relationships, and how the assembly performs as a system. After drawing and modeling their details, students will use landscape performance metrics to evaluate their benefits in the context of their studio design proposals (LARC 210).

Projects and Evaluation
Course projects are mostly individual work, with a group project mid-semester. Project briefs provided at the start of each Phase contain a project description, requirements, and expectations for submission and presentation. See “Grading” and “Definitions” for more information.

Projects
Phase 1A: Material Assemblies as Performative Systems - 10%
Phase 1B: Integration of AutoCAD - 5%
Phase 2: Material Palette, Assembly, and Landscape Performance Catalogue - 40%
Phase 2C: Spanning and Loading (Bridge Project) - 5%
Phase 3: Designing, Constructing, and Evaluating Performative Assemblies - 30%
Participation - 10%
Criteria + Rubric

A rubric will be used to evaluate projects, with each project worth 100 points. Work will be evaluated according to the following criteria [Note: not all criteria apply to all projects]:

- **Craft + Representation [30 pts.]** (technical quality, legibility, precision, annotation) –
  Drawings will be evaluated for technical quality and legibility. This includes precision, composition, craft, and systematic presentation of information. Line weights, line types, appropriate notation system, accuracy in dimensioning, scale, and the overall organization of technical information are critical to achieving professional drawing quality. Sufficient level of information in drawing, annotation, and description must be presented to address a given scenario in order for design intent to be realized in a constructed landscape.

- **Rigorous Investigation [30 pts.]** (quality and depth of analysis; exploration and use of metrics in landscape performance evaluations) –
  Demonstrate the ability to analyze the landscape performance of a material assembly. Additionally, demonstrate the ability to investigate and communicate design intent for fit, capacity, and performance relative to site and technical considerations.

- **Evolution [15 pts.]** (growth of technical ability; response to feedback; iteration of work) –
  Design and learning are iterative processes that allow students to evolve their work. The course is structured for students to learn by doing and making. This criterion will evaluate the ability for students to use feedback to evolve their work, techniques, and design approaches throughout the course.

- **Critical Thinking [15 pts.]** (critically evaluate design ideas; question conventional modes of working; develop ethical considerations of materials, their assemblies, and performative capacities) –
  Self-critically evaluate a design idea, including responding to the evaluation and criticism of peers by improving the work. This includes thinking critically about conventional modes of representation, materials and assemblies, material sourcing, and methods of construction, and the ways in which they may be rethought.

- **Timely Submission [10 pts.]** all work is submitted and completed on time.

**Required Material:**

The following are required materials for this course:

- A notebook or sketchbook for notes and drawings in the classroom and in the field, and for keeping course handouts.
- Architectural and Engineering Scales
- Appropriate clothing and footwear for field trips (rain or shine)
- For Phase 2C and 3: Physical modelling materials will be required; students are expected to procure their own supplies for these projects. **Sharing of materials + buying in bulk are highly encouraged, as well as finding and reusing scrap materials throughout Arch Hall.**
Computer Requirements: A computer or laptop with AutoCAD 3D and plotting capabilities. External hard drive – Students are required to back up their work every week.

Grading: The following schedule of grades applies to all:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>100-96.67</td>
</tr>
<tr>
<td>A</td>
<td>96.66-93.34</td>
</tr>
<tr>
<td>A-</td>
<td>93.33-90</td>
</tr>
<tr>
<td>B+</td>
<td>89.99-86.67</td>
</tr>
<tr>
<td>B</td>
<td>86.66-83.34</td>
</tr>
<tr>
<td>B-</td>
<td>83.33-80</td>
</tr>
<tr>
<td>C+</td>
<td>79.99-76.67</td>
</tr>
<tr>
<td>C</td>
<td>76.66-73.34</td>
</tr>
<tr>
<td>C-</td>
<td>73.33-70</td>
</tr>
<tr>
<td>D+</td>
<td>69.99-66.67</td>
</tr>
<tr>
<td>D</td>
<td>66.66-63.34</td>
</tr>
<tr>
<td>D-</td>
<td>63.33-60</td>
</tr>
<tr>
<td>F</td>
<td>59.99 or below</td>
</tr>
</tbody>
</table>

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 arrive after attendance is taken, it will count as a late. Two (2) late attendances will equal one (1) absence.
If you are absent for three (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 your instructor and the Department Chair).

Projects are due on the date, time, and location specified by your instructor. Late work will not be accepted at all without instructor’s prior approval and written agreement, to be signed by both student and instructor, as to revised due dates. Absences from any scheduled review will also result in no credit given for that particular project.

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.

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.

Studio Etiquette: This course will abide by the College of Architecture studio culture document. This document can be downloaded from the syllabus section of Blackboard. We will maintain a professional atmosphere in the course at all times this semester. This not only refers to the attitude and seriousness of each of us in the course, but also to the physical environment. Students are highly encouraged to work in the studio in addition course hours, rather than at home. Students are permitted to work in studio at all hours but sleeping overnight in studio is not allowed.

Employment Policy: The study of architecture and 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:

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Work Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 18 credit</td>
<td>0 hours</td>
</tr>
<tr>
<td>13-16 credit hours</td>
<td>8-16 hours</td>
</tr>
<tr>
<td>10-12 credit hours</td>
<td>17-20 hours</td>
</tr>
<tr>
<td>Up to 6 credit</td>
<td>Full time</td>
</tr>
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</table>
## Course Schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Date</th>
<th>Description</th>
<th>Deliverables</th>
<th>Required Readings (see syllabus for more details)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tu</td>
<td>22-Aug</td>
<td>Introductions, Course Description and Briefing</td>
<td>Kick - Off</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Schedule, &amp; Format</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tu</td>
<td>29-Aug</td>
<td>Group Pin-up</td>
<td>Material / Detail selections; photos with technical plans and sections on 11x17</td>
<td>Kirkwood, “Fundamentals: Landscape and Detail,” p. 11-44.</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>31-Aug</td>
<td>Group Pin-up</td>
<td>Technical sketches translated into AutoCAD</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Tu</td>
<td>5-Sep</td>
<td>Group Pin-up</td>
<td>Final draft board with plan + section details; diagrams; landscape performance evaluation</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tu</td>
<td>19-Sep</td>
<td>Phase 2A: General Discussion</td>
<td>Detail Selections</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>21-Sep</td>
<td>*Phase 2A: Pin-up - CAD Details + Materials Palette [Streets]</td>
<td>Final Drawings and Presentations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tu</td>
<td>26-Sep</td>
<td>Phase 2B: Materials Lecture - Pathways + Paving Patterns</td>
<td>Required Readings + Discussion</td>
<td>Zimmerman, “Cut Stone; Brick and Clinker; and Concrete,” p. 67-102.</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>28-Sep</td>
<td>Field Trip - Brick Plant</td>
<td>Camera + Notebook</td>
<td></td>
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<tr>
<td></td>
<td>Th</td>
<td>5-Oct</td>
<td>Phase 2B: General Discussion</td>
<td>Detail Selection</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Tu</td>
<td>10-Oct</td>
<td>*Phase 2B: Pin-up - CAD Details + Materials Palette [Paving + Pathways; Walls + Stairs]</td>
<td>Final Drawings and Presentations</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Tu</td>
<td>17-Oct</td>
<td>*Span Project - Testing</td>
<td>Final Models</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Tu</td>
<td>24-Oct</td>
<td>Phase 2C: General Discussion</td>
<td>Drawing Development + Preliminary Layout</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>Fall Break</td>
<td></td>
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<tr>
<td>11</td>
<td>Tu</td>
<td>31-Oct</td>
<td>Phase 2C: Pin-up - CAD Details + Materials Palette [Seating + Fences + Rails]</td>
<td>Final Drawings and Presentations</td>
<td>X</td>
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<tr>
<td></td>
<td>Th</td>
<td>2-Nov</td>
<td>Phase 2D: Materials Lecture - Soil + Plantings + Erosion Control</td>
<td>Required Readings + Discussion</td>
<td>Zimmerman, &quot;Planting Technique and Care of Vegetation Surface; Lawns and Meadows,&quot; p. 369-396.</td>
</tr>
<tr>
<td>12</td>
<td>Tu</td>
<td>7-Nov</td>
<td>Phase 2D: General Discussion Desk Crits / Meetings Working Session</td>
<td>Detail Selection Drawing Development + Preliminary Layout</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>9-Nov</td>
<td>*Phase 2D: Pin-up - CAD Details + Materials Palette [Soil + Plantings + Erosion Control] Phase 3 Description and Presentation</td>
<td>Final Drawings and Presentations</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>16-Nov</td>
<td>*Phase 3A: Pin-up - CAD Details + Materials Palette - Design Project Phase 3B Discussion</td>
<td>Final Drawings and Presentations</td>
<td>X</td>
</tr>
<tr>
<td>14</td>
<td>Tu</td>
<td>21-Nov</td>
<td>Phase 3B: Constructing Tectonic Details Desk Crits / Meetings Working Session</td>
<td>Sketches of Assembly; In progress Model Construction</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>23-Nov</td>
<td>Thanksgiving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Tu</td>
<td>28-Nov</td>
<td>*Phase 3B: Pin-up - 3A Sheet with Tectonic Model Phase 3C Discussion</td>
<td>Final Drawings, Model, and Presentations</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>30-Nov</td>
<td>Phase 3C: Landscape Performance Evaluation Group Pin-ups / Working Session</td>
<td>Selection of Landscape Performance Evaluations; Sketches of Diagrams</td>
<td>X</td>
</tr>
<tr>
<td>16</td>
<td>Tu</td>
<td>5-Dec</td>
<td>Phase 3C: Landscape Performance Evaluation Group Pin-ups / Working Session</td>
<td>Final Drafts of Phase 3 Deliverables</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>7-Dec</td>
<td>*Phase 3: Full Design Project Pin-up</td>
<td>Final Drawings, Models, and Presentations</td>
<td>X</td>
</tr>
</tbody>
</table>

**Note:** The final presentation of Phase 3 will coincide with your Final Studio Presentation.

Your Phase 3 Project must be submitted to Canvas no later than: **Tuesday, December 12 by 8AM [no exceptions]**

**Readings and Bibliography:**

Required readings are to be completed before the specified class date (see schedule for more details of dates). A short discussion of the readings will take place at the beginning of class. For select readings, students are to submit **at least 2 quotes in Canvas by 10am the day of class.** These help fuel discussion and allow students to keep a collective body of important ideas that develop throughout the semester. Readings are intended to compliment the Phases of the course and provide a theoretical and technical basis of knowledge. Skipped weeks indicate no required readings for those weeks. Supplemental readings and bibliography are provided as additional resources to course material.

Students are expected to obtain copies of required texts (provided on Canvas), and read the portions noted in the schedule. Additional reference texts are available in my office or in Architecture Hall library.
**Required Text:**  

**Course Readings:**

<table>
<thead>
<tr>
<th>Week</th>
<th>References</th>
</tr>
</thead>
</table>
| 1 | **Required (Phase 1A)**  
**Supplemental**  
| 2 | **Required (Phase 1B)**  
**Supplemental**  
3-4

**Required (Phase 2A)**


Sovinski, Rob W., “Chapters 1, 2, and 4” in *Materials and their Applications in Landscape Design* (Hoboken: John Wiley & Sons, 2009): 5-12; 13-24; 57-76.


**Supplemental**


6-7

**Required (Phase 2B)**


**Supplemental**


Required (Phase 2C)


Supplemental

Sovinski, Rob W., “Chapters 6, and 8” in Materials and their Applications in Landscape Design (Hoboken: John Wiley & Sons, 2009): 91-109; 135-150.


Harris, Charles W. and Dines, Nicholas T., "Fences, Screens, and Walls; Wood; Metals; and Seatwalls", Time-Saver Standards for Landscape

McLeod, Virginia, Detail in Contemporary Landscape Architecture, (London: Laurence King, 2008): 38-41; 54-57; 68-71; 72-75; 130-133; 140-143; 160-163.

11
Required (Phase 2D)

Supplemental


13
Required (Phase 3)

Supplemental

Course References
Calkins, Meg, Materials for Sustainable Sites (Hoboken: John Wiley & Sons, 2009).


Sovinski, Rob W., Materials and their Applications in Landscape Design (Hoboken: John Wiley & Sons, 2009).


Online Resources
Landscape Architecture Foundation: Landscape Performance Series https://landscapeperformance.org/

Landscape Architecture Foundation: Benefits Toolkit https://landscapeperformance.org/benefits-toolkit

Landscape Architecture Foundation: Case Study Briefs https://landscapeperformance.org/case-study-briefs
Phase 1: Introduction to Landscape Performance through Material Assemblies; Technical Representation + Detailing

Project Description:

In this first phase, students will analyze innovative details that perform as green infrastructure. Students will select an assembly on or around UNL campus, such as Love Library Learning Commons Plaza or P Street. On-site observations will guide students to select a performative landscape strategy (i.e. stormwater filtration, native plantings, placemaking, etc.) that will be explored throughout the exercise. Detailed material assemblages will be drawn using scaled plans and sections, with diagrams that convey and evaluate the quantitative and qualitative benefits of the material assembly, combining ecological and technological performance.
The main objective of this phase is to begin understanding ways of graphically representing technical details, their material components and assemblages, and their performative qualities. The purpose of this mode of analysis is to develop methods of seeing and representing the landscape at the material scale. Throughout the semester, we will continue to explore materials used in landscape and how they are assembled. Students will develop methods for translating observation and research into technical forms of representation through interpreting and graphically synthesizing complex layers of site design. The components developed in this Phase will be the first sheet for individual material and detail libraries further developed in Phase 2.

**Project Format and Structure:**

Phase 1 is divided into 2 parts:

**Phase 1A: Material Assemblies as Performative Systems**

After the first LAF Landscape Performance Webinar, and a lecture from the campus landscape architect, Emily Casper, students will select a site on or around UNL campus that uses green infrastructure components. Students will select a performative landscape strategy, and document green infrastructure components found on-site by presenting 3 photographs of individual materials details accompanied by a measured plan and section drawn to scale of their preferred / most interesting detail. Material connections will be examined between at least 3 different materials as a condition in the landscape. To understand the wide gradient of materials present, students must select hybrid conditions (both hardscape and softscape) for analysis.

Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to insure accuracy in the material conditions hidden beyond the surface. In addition to drawing the physical conditions of their material assemblies, students must produce diagrams that convey and evaluate the quantitative and qualitative performance benefits of the assembly, combining ecological and technological performance.

Technical drawings in plan and section with dimensions (students will measure existing conditions on-site) and labels must be used to illustrate these conditions. Drawings should highlight how your performative landscape strategy operates within your selected condition. Initial drawings will be drawn by hand using pencil (2B and HB), straight edges (parallel rulers, T-squares, and adjustable triangles), at 1/2”=1'-0” scale on 11”x17” vellum, landscape format.

Drawings are to be technically accurate, and each element carefully articulated with the use of line weights, textures, and construction lines. Initial drawings and photographs are due **Tuesday, August 29**, and must be pinned up in **Room 305 by 12:25pm** for an in-class pin up.
Phase 1B: AutoCAD
Students will be introduced to AutoCAD, and learn basic commands and a workflow for digital drafting. An AutoCAD tutorial will be provided, which will cover a variety of drafting tools and commands, and help students establish a workflow for creating a .ctb file for lineweights, using paper space to create a title block, scale and lay out drawings from model space in paper space, and add images and diagrams to sheets using InDesign.

Students will take their drawings from Phase 1A and draft them in AutoCAD as they may have been drafted before installation. Details will be revised per comments from Phase 1A pin-up. Students will create 18”x24” sheets and pin up their plotted sheets with their Phase 1A drawings for discussion.

This AutoCAD file will become each student’s foundational file for the remainder of the course. By the end of Phase 2, students will have built a library and palette of material assemblages in the landscape within a single file.

Project Schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/22</td>
<td>Course Description, Format, Schedule, Phase 1 Project Description, Technical Detailing and Drawing Lecture</td>
</tr>
<tr>
<td>8/24</td>
<td>Phase 1A: Required Reading with Quotes and Discussion, LAF Landscape Performance Webinar #1, Emily Casper (Campus Landscape Architect) Lecture and Tour of Love Library Learning Commons North Plaza</td>
</tr>
<tr>
<td>8/29</td>
<td>Phase 1A: Final Drawings and Presentations – 8.5x11 photos, definition of landscape performance strategy, and 11x17 drawings pinned up in Room 305.</td>
</tr>
<tr>
<td>8/29</td>
<td>Phase 1B: Required Reading with Quotes and Discussion; Intro to AutoCAD Tutorial + Handout</td>
</tr>
<tr>
<td>8/31</td>
<td>Phase 1B: Group Pin-up of hand drawings translated into AutoCAD; selected benefits for evaluation; precedent images for diagramming</td>
</tr>
<tr>
<td>9/5</td>
<td>Phase 1: Group Pin-up of final draft board with plan + section details; diagrams; landscape performance evaluation</td>
</tr>
<tr>
<td>9/14</td>
<td>Phase 1: Final Drawings and Presentations – 18x24 drawings + plots pinned up in Room 305.</td>
</tr>
</tbody>
</table>

Phase 2A Readings

Final Requirements:

<table>
<thead>
<tr>
<th>Phase 1A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boards: Photos of green infrastructure material assemblies; one 11x17 vellum panel, Landscape format, technical hand drawings with construction lines, pinned up in Room 305 by 12:25pm on 8/29</td>
</tr>
<tr>
<td>Scale: Plans and Sections at 1/2”=1'-0” scale</td>
</tr>
<tr>
<td>Description: Landscape Performance Strategy with definition</td>
</tr>
<tr>
<td>Presentation: Each project has 6 minutes total; ~3 minutes for presentation, and ~3 minutes for discussion.</td>
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</tbody>
</table>
Phase 1B
Boards: One 18”x24” panel, Landscape format, technical AutoCAD drawings and Landscape Performance Evaluation, pinned up in Room 305 by 12:25pm on 9/7
Scale: Plans and Sections at 1/2”=1'-0” scale
Description: Landscape Performance Strategy and Evaluation
Presentation: Each project has 10 minutes total; ~6 minutes for presentation, and ~4 minutes for discussion.

Project Evaluation:
Phase 1 is worth 15% of your overall grade for the course (1A=10% and 1B=5%). Grading will place emphasis on graphic craft, development, and clarity, research synthesis and precision, quality of visual description, and final presentation.

Phase 1 Readings:

<table>
<thead>
<tr>
<th>Week</th>
<th>References</th>
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<tbody>
<tr>
<td></td>
<td>Required (Phase 1A)</td>
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<td></td>
<td>Supplemental</td>
</tr>
<tr>
<td>2</td>
<td>Required (Phase 1B)</td>
</tr>
</tbody>
</table>
Supplemental


**Online Resources**
Landscape Architecture Foundation: Landscape Performance Series
https://landscapeperformance.org/

Landscape Architecture Foundation: Benefits Toolkit
https://landscapeperformance.org/benefits-toolkit

Landscape Architecture Foundation: Case Study Briefs
https://landscapeperformance.org/case-study-briefs

A sample Construction Drawing for a custom bench planter utilizing three-dimensional graphics to convey design intent. In-progress and finished photographic documentation are provided to depict the final product outcome. A primary principle suggests the importance of three-dimensional design and documentation, to assure fully resolved components.

LARC 230: Site Systems I – Materiality in Landscape Architecture
Class: Tu / Th, 12:30 – 2:20, Architecture Hall 305, 3 Credits
Instructor: Catherine De Almeida, Assistant Professor
Contact: cdealmeida2@unl.edu; 2-4900
Semester: Fall 2017

Phase 2: Materials, Lifecycles, and Assemblies – Performance + Applications
Project Description:

Phase 2 of the course will expose students to materials used in constructed landscapes, and how assembled materials perform as systems. This phase will emphasize material lifecycles and their landscape impacts in the context of designing sustainable landscapes. This ranges from extraction / sourcing and manufacture, to their performance and landscape applications, to their end-of-life fates. Students will develop an understanding of the wide range of conventional materials and techniques used to construct landscapes, paired with innovations and technologies associated with those materials and assemblies. Emphasis will continue to be placed on highlighting the material components that make up detailed assemblages, and their ecological and performative conditions within a designed landscape.

One main objective of this phase is to continue building an understanding of the graphic representation of technical details as a form of communicating design intent, including their material components and assemblages, and applications in the constructed landscape. Students will continue to explore materials and their assemblies in landscapes while developing methods for translating observation and research into technical forms of representation through interpreting and graphically synthesizing complex layers of site design.

In each Subphase, students will select and draw details of conventional assemblies paired with an innovative counterpart selected from a case study in LAF’s Landscape Performance Series. Students will use landscape performance metrics to evaluate and compare the innovative detail’s benefits to those of its conventional counterpart.

The components developed in Phase 1, particularly the AutoCAD file and work flow created in Phase 1B, will be used throughout Phase 2 and 3 for students to develop their individual material assemblies and detail libraries. Red lines of the drawings will be given to students via Canvas after each Subphase submission for revisions in preparation for the final submission for Phase 2.

Project Format and Structure:

Phase 2 is divided into 4 parts, each building on the last:

**Phase 2A: Aggregate + Asphalt + Poured-in-Place Concrete – Foundations + Street Assemblies**

Students will be exposed to how aggregate, asphalt, and poured-in-place concrete are sourced, processed, and used as components to form the ground plane and foundations. Material connections and details encompassing these 3 different materials will be examined. Students will analyze and draw 3 different material assemblies using these materials, in conditions such as streetscapes (sidewalks, roads, and curbs) and foundations, referencing constructed landscape precedents. Additionally, students will find one alternative innovation in a material and/or condition as a counterpoint to one conventional detail that is explored. This will be diagrammed to illustrate the performative aspects to the detail.
Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to ensure accuracy in the material conditions hidden beyond the surface. For more innovative and contemporary materials and techniques, students can reference texts such as *Living Systems* and *Detail in Contemporary Landscape Architecture*.

Technical drawings in section with dimensions and labels using AutoCAD, scaled with a title block in Paper space (as was done in Phase 1B) are the required format for material and detailed assemblies. Conditions should be chosen based on a performative theme of the students’ choice. Details are to be scaled at 1/2”=1'-0" to 3”=1'-0” scale (depending on the type of detail) on 1 sheet at 18”x24”, landscape format.

Students will have 4 detail drawings for this submission, with 2 conventional details and 1 innovative detail as a counterpoint to one of the conventional details. The fourth drawing on the sheet will illustrate a performative analysis of the innovative detail, highlighting environmental, social, and economic performance. Conventional detail drawings must include 1 overall photo of the assembly (3-Dimensional) and images of the textures / palette of the materials used. The innovative detail must include the same content as the conventional details (photo of detail in context; textures/materials palette), and in addition, include a performative analysis of the detail based on the topic selected for the set of drawings.

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students will also create a performance-based title for their submission. Final drawings are due **Thursday, September 21st**. PDFs must be submitted by 11:00 AM in the Box folder, and panels pinned up in Room 305 by 12:25 PM for an in-class pin up and discussion.

**Phase 2B: Precast Concrete + Brick + Stone – Pathways / Paving Patterns + Walls and Stairs**

Students will be exposed to how precast concrete, brick, and stone are sourced, processed, and used as components to form ground plane pathways and paving patterns, and walls and stairs. Material connections and details encompassing these 3 different materials (as well as previous materials studied) will be examined. Students will analyze and draw 3 different material assemblies using these materials, in conditions such as plazas, paths, retaining walls, and stairs, referencing constructed landscape precedents. Additionally, students will find one alternative innovation in a material and/or condition as a counterpoint to one conventional detail that is explored.

Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to ensure accuracy in the material conditions hidden beyond the surface. For more innovative and contemporary materials and techniques, students can reference texts.
such as Living Systems and Detail in Contemporary Landscape Architecture.

Technical drawings in section (and plan if relevant) with dimensions and labels using AutoCAD, scaled with a title block in Paper space are the required format for material and detailed assemblies. Conditions should be chosen based on a theme of the students’ choice. Details are to be scaled at 1/2"=1'-0" to 3"=1'-0" scale (depending on the type of detail) on 1 sheet at 18”x24”, landscape format.

Students will have 4 detail drawings for this submission, with 2 conventional details and 1 innovative detail as a counter point to one of the conventional details. The fourth drawing on the sheet will illustrate a performative analysis of the innovative detail, highlighting environmental, social, and economic performance. Conventional detail drawings must include 1 overall photo of the assembly (3-Dimensional) and images of the textures / palette of the materials used. The innovative detail must include the same content as the conventional details (photo of detail in context; textures/materials palette), and in addition, include a performative analysis of the detail based on the topic selected for the set of drawings.

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students will also create a performance-based title for their submission. Final drawings are due Thursday, October 10th. PDFs must be submitted by 11:00 AM in the Box folder, and panels pinned up in Room 305 by 12:25 PM for an in-class pin up and discussion.

Phase 2C: Metal + Wood – Tensile Forces / Spans / Structures + Seating / Fences / Rails
Students will be exposed to how metal and wood are sourced, processed, and used as components to form spans and structures, and seating, fences, and rails. Material connections and details encompassing these 2 different materials (as well as previous materials studied) will be examined. This Subphase consists of two submissions.

The first will be a group project in which students construct 36” spans using 1/8” basswood square strips and wood glue. The spans must have a flat area along the top (either part way or across the full span) to accommodate and hold a minimum of 1 brick. A group will receive extra credit if their span is able to hold 3 or more bricks. This project will require students to use their understanding of tensile and compressive forces, and how assembled structures can resist these forces. Spans are due Thursday, October 19th. Students must submit professional quality photos of their spans (no iPhone photos) BEFORE the span testing into the Box folder by 11:00 AM. Spans must be in Room 305 by 12:25 PM to begin the span testing on time.
As with the previous 2 Subphases, for the second submission, students will analyze and draw 3 different material assemblies using metal and wood as the main materials, in conditions such as pergolas, canopies, seating, fences, and rails, referencing constructed landscape precedents. 1 of the 3 details will consist of alternative innovations in a material and/or condition as a counterpoint to a conventional detail that is explored.

Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to insure accuracy in the material conditions hidden beyond the surface. For more innovative and contemporary materials and techniques, students can reference texts such as *Living Systems* and *Detail in Contemporary Landscape Architecture*.

Technical drawings in section (and plan if relevant) with dimensions and labels using AutoCAD, scaled with a title block in Paper space are the required format for material and detailed assemblies. Conditions should be chosen based on a theme of the students’ choice. Details are to be scaled at 1/2”=1'-0” to 3’=1'-0” scale (depending on the type of detail) on 1 sheet at 18”x24”, landscape format.

Students will have 4 detail drawings for this submission, with 2 conventional details and 1 innovative detail as a counterpoint to one of the conventional details. The fourth drawing on the sheet will illustrate a performative analysis of the innovative detail, highlighting environmental, social, and economic performance. Conventional detail drawings must include 1 overall photo of the assembly (3-Dimensional) and images of the textures / palette of the materials used. The innovative detail must include the same content as the conventional details (photo of detail in context; textures/materials palette), and in addition, include a performative analysis of the detail based on the topic selected for the set of drawings.

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students will also create a performance-based title for their submission. Final drawings are due Thursday, October 31st. PDFs must be submitted by 11:00 AM in the Box folder, and panels pinned up in Room 305 by 12:25 PM for an in-class pin up and discussion.

**Phase 2D: Soil + Plantings + Earthworks – Streets + Plazas + Parks**

Students will be exposed to how soil and plant materials are sourced, manipulated, processed, and used as components to form streets, plazas, and parks. Material connections and details encompassing these 2 different materials (as well as previous materials studied) will be examined.

Students will analyze and draw 3 different material assemblies using soil and plant material as the main materials, in conditions such as planting beds, sidewalk tree pits, and larger open greenspaces. Additionally,
students will find 1 alternative innovations in a material and/or condition as a counterpoint to a conventional detail that is explored.

Students must reference texts such as *Landscape Architectural Graphic Standards* for their assemblages to insure accuracy in the material conditions hidden beyond the surface. For more innovative and contemporary materials and techniques, students can reference texts such as *Living Systems* and *Detail in Contemporary Landscape Architecture*.

Technical drawings in section (and plan if relevant) with dimensions and labels using AutoCAD, scaled with a title block in Paper space are the required format for material and detailed assemblies. Conditions should be chosen based on a theme of the students’ choice. Details are to be scaled at 1/2”=1'-0” to 3”=1'-0” scale (depending on the type of detail) on 1 sheet at 18"x24”, landscape format.

Students will have 4 detail drawings for this submission, with 2 conventional details and 1 innovative detail as a counterpoint to one of the conventional details. The fourth drawing on the sheet will illustrate a performative analysis of the innovative detail, highlighting environmental, social, and economic performance. Conventional detail drawings must include 1 overall photo of the assembly (3-Dimensional) and images of the textures / palette of the materials used. The innovative detail must the same content as the conventional details (photo of detail in context; textures/materials palette), and in addition, include a performative analysis of the detail based on the topic selected for the set of drawings.

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students will also create a performance-based title for their submission. Final drawings are due Thursday, November 9th. PDFs must be submitted by 11:00 AM in the Box folder, and panels pinned up in Room 305 by 12:25 PM for an in-class pin up and discussion.

**Project Schedule:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/7</td>
<td>Phase 2 Format, Description, Schedule; Phase 2A Project Description, Aggregate + Asphalt + Poured-in-Place Concrete Materials / Compressive forces + Foundations lecture Required Reading with Quotes and Discussion</td>
</tr>
<tr>
<td>9/12</td>
<td>Phase 2A: Cathy away for conference Required Reading; Eric Casper (Associate Principal at Clark Enersen Partners) Lecture and Tour of P Street Project – Street Assemblies</td>
</tr>
<tr>
<td>9/14</td>
<td>Phase 2A: Working Session / Desk Cirts – Drawing Development and Preliminary Layout Field Trip to Concrete Plant</td>
</tr>
<tr>
<td>9/19</td>
<td>LAF Webinar #2 Phase 2A: Working Session / Desk Cirts – Drawing Development and Final Layout</td>
</tr>
</tbody>
</table>
9/21  **Phase 2A: Final Drawings and Presentations – 18x24 plots pinned up in Room 305.**

9/26  Phase 2B: Required Reading with Quotes and Discussion, Precast Concrete + Brick + Stone / Pathways + Paving Patterns lecture

         Nebraska Masonry Alliance Lecture

9/28  Phase 2B: Field Trip to Brick Plant

10/3  Phase 2B: Required Readings with Quotes and Discussion, Walls and Stairs lecture

         Detail Selection / Desk Crits – Working Session

10/5  Phase 2B: Working Session / Desk Crits – Drawing Development and Preliminary Layout

10/10  **Phase 2B: Final Drawings and Presentations – 18x24 plots pinned up in Room 305.**

         Phase 2C: Group Selections

10/12  Phase 2C: Required Reading with Quotes and Discussion, Metal + Wood Materials lecture; Tensile Forces + Spans + Structures lecture

         Sketches / Study models of spans

10/17  **FALL BREAK**

10/19  **Phase 2C: Span Project – Final Models Due - Testing of Spans**

10/24  Phase 2C: Required Readings with Quotes and Discussion, Seating + Fences + Rails lecture

         Working Session / Desk Crits – Drawing Development and Preliminary Layout

10/26  Phase 2C: General Discussion

         Working Session / Desk Crits – Drawing Development and Final Layout

10/31  **Phase 2C: Final Drawings and Presentations – 18x24 plots pinned up in Room 305.**

11/2  Phase 2D: Required Reading with Quotes and Discussion, Soil + Plantings + Earthworks Materials Lecture

         Working Session / Desk Crits – Drawing Development and Preliminary Layout

11/7  Phase 2D: General Discussion

         Working Session / Desk Crits – Drawing Development and Final Layout

11/9  **Phase 2D: All Phase 2 Final Drawings and Presentations – 18x24 plots pinned up in Room 305.**

         Phase 3 Description and Presentation

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**Final Requirements:**

**Phase 2A**

**Boards:** 1 18”x24” plotted panel, Landscape format, technical detail drawings (2 conventional; 2 innovative), pinned up in Room 305 by 12:25pm on 9/21

**Scale:** Sections at 1/2”=1'-0” to 3”=1'-0” scale

**Description:** Performance-based title

**Presentation:** Each project has 10 minutes total; ~4 minutes for presentation, and ~6 minutes for discussion.
Phase 2B
Boards: 1 18"x24" plotted panel, Landscape format, technical detail drawings (2 conventional; 2 innovative), pinned up in Room 305 by 12:25pm on 10/10
Scale: Sections (and Plans if applicable) at 1/2"=1'-0" to 3"=1'-0" scale
Description: Performance-based title
Presentation: Each project has 10 minutes total; ~4 minutes for presentation, and ~6 minutes for discussion.

Phase 2C
Model: 36" (3') long span capable of holding at least 1 brick
Photos: A minimum of 3 professional quality photos of span before testing
Presentation: Each span must be ready for testing by 12:25 in Room 305 on 10/19
Boards: 1 18"x24" plotted panel, Landscape format, technical detail drawings (2 conventional; 2 innovative), pinned up in Room 305 by 12:25pm on 10/31
Scale: Sections (and Plans if applicable) at 1/2"=1'-0" to 3"=1'-0" scale
Description: Performance-based title
Presentation: Each project has 10 minutes total; ~6 minutes for presentation, and ~4 minutes for discussion.

Phase 2D
Boards: 1 18"x24" plotted panel, Landscape format, technical detail drawings (2 conventional; 2 innovative), pinned up in Room 305 by 12:25pm on 11/9
Scale: Sections (and Plans if applicable) at 1/2"=1'-0" to 3"=1'-0" scale
Description: Performance-based title
Presentation: Each project has 10 minutes total; ~4 minutes for presentation, and ~6 minutes for discussion.

Project Evaluation:
Phase 2 is worth 45% of your overall grade for the course (each Subphase is worth 10%, and the span project in Phase 2C is 5%). Grading will place emphasis on graphic development and clarity, research synthesis and precision, quality of visual description, and final presentation.

Phase 2 Readings:
Week 3
References
Required (Phase 2A)
Sovinski, Rob W., “Chapters 1, 2, and 4” in Materials and their Applications in Landscape Design (Hoboken: John Wiley & Sons, 2009): 5-12; 13-24; 57-76.


Supplemental


Required (Phase 2B)


Supplemental


**Required (Phase 2C)**


**Supplemental**

Sovinski, Rob W., “Chapters 6, and 8” in Materials and their Applications in Landscape Design (Hoboken: John Wiley & Sons, 2009): 91-109; 135-150.


Required (Phase 2D)


Supplemental


RUNOFF POOLS ON CONCRETE PAVERS
RAIN WATER INFILTRATES PERMEABLE PAVERS
WATER RETAINED IN SUBBASE AGGREGATE
WATER DOES NOT INFILTRATE CONCRETE PAVERS
RUNOFF IS ABSORBED IN SOIL BELOW PERMEABLE PAVERS

UNIT PAVER TO PERMEABLE PAVER TRANSITION
SCALE: 1 1/2˝ = 1'-0"
WATER INFILTRATES PERMEABLE PAVERS
WATER RETAINED IN SUBBASE AGGREGATE
RECHARGES GROUND WATER SUPPLIES

PERMEABLE CONCRETE
WATER INFILTRATES AT AN AVERAGE OF 480 IN/HR REDUCING THE AMOUNT OF TIME WATER POOLS ON PAVEMENT
SOURCE: RMC RESEARCH FOUNDATION
PERMEABLE PAVEMENT REDUCES RUNOFF BY 88% WHERE ASPHALT ONLY REDUCES RUNOFF BY 38%
SOURCE: UC DAVIS

STORMWATER MANAGEMENT

PHASE 2A: AGGREGATE + ASPHALT + Poured-in-Place CONCRETE - FOUNDATIONS + STREET ASSEMBLIES

CONCRETE CONSTRUCTION JOINT

PLANTING BED CURB

PERMEABLE CONCRETE

SOURCE: P STREET STREETSCAPE
SCALE: 1" = 1'-0"

SOURCE: TECHVIEW TYPICAL DETAIL
SCALE: 1" = 1'-0"

SOURCE: P STREET STREETSCAPE
SCALE: 1" = 1'-0"

SOURCE: P STREET STREETSCAPE
SCALE: 1" = 1'-0"

SOURCE: P STREET STREETSCAPE
SCALE: 1" = 1'-0"

KATELYN KIMIC

TITLE:
BROADWAY CONCRETE ALTERNATIVES STORMWATER MANAGEMENT
SCALE: 1" = 1'-0"
DATE: NOVEMBER 1, 2017
L3-02

CONCRETE PAVEMENT
KEYWAY

PREPARED SUBGRADE

EXISTING GRADE

CONCRETE CURB, 6" INDE & 19" DEEP, RISE 1/2" BARS & 1" VERT BAR, PROVIDE 5/4" CHAMfers ON TOP EDGES & TOOD JOINTS

6" THICK MULCH LAYER, TOP ELEV TO MATCH PAVT ELEV
24" DEEP PLANTING BED SOIL

1/2 MAX RADIUS

18" RADIUS EXPANSION JOINT

ADJACENT CONCRETE PAVEMENT
SOURCING FROM A LOCAL DISTRIBUTOR REDUCES ECONOMIC COSTS & RECYCLING MATERIALS IS LESS COST INTENSIVE

RECYCLING STONE AGGREGATE IS AN ENVIRONMENTAL BENEFIT BECAUSE IT PRESERVES RAW MATERIALS SOURCING FROM A LOCAL DISTRIBUTOR REDUCES ECONOMIC COSTS & RECYCLING MATERIALS IS LESS COST INTENSIVE

RECYCLING MATERIAL FROM A PROJECT SAVES THE COST OF TRANSPORTING AS MUCH AS $0.25 PER TON/MILE AND ELIMINATES COST OF DISPOSAL $100 PER TON

SOURCE: CONCRETE NETWORK

PHASE 2B:
PRECAST CONCRETE + BRICK + STONE
UNDERNEATH LIGHTING DRAWS PEOPLE IN AT NIGHT AND PROVIDES A SPACE FOR PEOPLE TO CONGREGATE AND SOCIALIZE.

ROUGH LIMESTONE EDGES PREVENT SKATEBOARDERS FROM USING AND DAMAGING THE STONE BENCHES.

STUDIES SHOW THAT HUMAN'S EXPOSURE TO LIGHT SUPPRESSES MELATONIN AND INCREASES ALERTNESS MAKING AREAS OF LIGHT HOTSPOTS FOR PEOPLE TO GATHER AND SOCIALIZE.

SOURCE: TOWN OF CARY, NORTH CAROLINA

SOURCE: LOVE LIBRARY NORTH

SOURCE: NATIONAL CENTER FOR BIOTECHNOLOGY INFORMATION

PHASE 2C:
FENCES + RAILS + SEATING
RAIN WATER OVERFLOW OVER THE CURB
INFILTRATION THROUGH SOIL
INFILTRATION INTO UNDERDRAIN LAYER

TOP OF ROOT BALL FLUSH WITH FINISHED GRADE
PRIOR TO MULCHING, LIGHTLY TAMP SOIL AROUND ROOT BALL. 4" HIGH X 6" WIDE EMBOSSING TREE, DO NOT OVER COMPACT, WHEN THE PLANTING HOLE HAS BEEN BACKFILLED, POUR WATER AROUND ROOT BALL TO SETTLE SOIL.
ROUND-TOPPED SOIL BERM 4" HIGH X 6" WIDE ABOVE ROOT BALL SURFACE CONSTRUCTED AROUND ROOT BALL. BERM BEGINS AT ROOT BALL PERIPHERY
4" LAYER OF MULCH NO MORE THAN 1" OF MULCH ON TOP OF ROOT BALL
FINISHED GRADE MODIFIED SOIL
BOTTOM OF ROOT BALLRESTS ON EXISTING SOIL

BIORETENTION SYSTEMS REDUCED NUTRIENT RUNOFF IN CHESAPEAKE BAY BY 40%.  HEAVY METALS ARE REDUCED BY 90% AND PHOSPHORUS REMOVAL UP TO 80%.
SOURCE: LOW IMPACT DEVELOPMENT CENTER

REDUCES VOLUME LOAD OF STORM DRAIN SYSTEMS, INCREASES GROUNDWATER RECHARGE, AND REDUCES THERMAL POLLUTION.  A DROP OF 12 DEGREES CELCIUS IS SEEN FROM INFLUENT AND EFFLUENT WATER.
SOURCE: LOW IMPACT DEVELOPMENT

PHASE 2D:
PLANTING TECHNIQUE + LAWNS AND MEADOWS

KATELYN KIMIC

L3-05
RAINFALL
WATER INFILTRATION
WATER ABSORPTION
WATER COLLECTION
WATER RUNOFF

NOTES: MULCH AND BIORETENTION SOIL ALLOW FOR WATER TO BE ABSORBED RATHER THAN COLLECTED AS RUNOFF

PHASE 1B:
MATERIAL ASSEMBLIES

1 PLANTER EDGING CONDITION
SCALE: 1" = 1'-0"

2 RAINWATER PERFORMANCE
SCALE: 1" = 1'-0"

SOURCE: LOVE LIBRARY
STANDARD ASPHALT ABSORSbs SUNLIGHT, INCREASING SURFACE TEMPERATURES (10% REFLECTED)

COOLSEAL REFLECTS MORE SUNLIGHT, REDUCING STANDARD ASPHALT TEMPERATURES (33% REFLECTED)

1. HEAVY-DUTY ASPHALT

SCALE: 1" = 1'-0"

2. LIGHT-DUTY ASPHALT

SCALE: 1" = 1'-0"

3. COOLSEAL OVER HEAVY-DUTY ASPHALT

SCALE: 1" = 1'-0"

4. URBAN HEAT ISLAND REDUCTION

SCALE: 1/16" = 1'-0"

PHASE 2A:
AGGREGATE + ASPHALT + C.I.P. CONCRETE

HANNAH LOPRESTO
WATER PERCOLATES THROUGH GAPS BETWEEN PAVERS (PERMEABILITY LEVELS VARY BASED ON AGGREGATE USE AND COMPACTION)

WATER DRAINS THROUGH LAYERS OF AGGREGATE AND DRAIN HOLES

WATER DRAINS TO TREE ROOTS AT SILVA CELL

WATER PERCOLATES THROUGH HOLE IN CORED BLOCK

PHASE 2B:
PRECAST CONCRETE + BRICK + STONE

HANNAH LOPRESTO
VERTICAL GRILL TIMBER + STEEL FENCE

SCALE: 1/2" = 1'-0"

1 LARCH MOLDING SIDES BEVELED, FLUSH WITH WOODEN SLATS OF SIDE CLADDING

LARCH MOLDING AS CLAMPING BAR
LARCH MOLDING LATERAL CLAD ON SEAT
GALVANIZED STEEL FENCE POST BRACKET

14" BALLAST BASE COURSE 0/4.5
FINISHED CONCRETE BLOCK
FLATHEAD COUNTERSUNK WOOD SCREWS 2" X 1"

SEAT COVERING: RECTANGULAR TIMBERS, KAMIKA GLAZE COLORLESS
HIGH PERFORMANCE ANCHOR WITH HEX BOLT GEY/INCH MH

SOURCE: WEININGER, OSCHATZ, GERMANY

HORIZONTAL GRILL SLATTED WOOD FENCE

SCALE: 1/2" = 1'-0"

LARCH MOLDING: THE USE OF LARCH WOOD PROMOTES RESONSIBLE FORESTRY. LARCH HAS MODERATELY HIGH DENSITY, BUT GROWS RAPIDLY AND THEREFORE MAY BE REPLENISHED MORE EASILY THAN OTHER WOOD OPTIONS (CANADIAN JOURNAL OF FOREST RESEARCH)

NOTES: COMBINING THE FENCE AND BENCH UNIT CAN HAVE MULTIPLE BENNETS. ECONOMICALLY, TOTAL MATERIAL COSTS CAN BE REDUCED AS SEGMENTS ARE CONSTRUCTED TOGETHER. SOCIALLY, SPACES ARE OPENED UP FOR PEOPLE TO EXPERIENCE IN NEW WAYS.

DUAL PROGRAM: FENCE + SEAT

SCALE: 1/2" = 1'-0"

PHASE 2C:
METAL + WOOD

HANNAH LOPRESTO
TURF INSULATES THE SPACE BENEATH, REDUCING HEATING AND COOLING COSTS

NOTES: GREEN ROOFS, WHETHER CONSTRUCTED WITH TURF OR OTHER PLANTINGS, REDUCE A/C COSTS, INCREASE PROPERTY VALUE, AND PROMOTE A LONGER ROOF LIFESPAN (AUSTRALIAN GOVERNMENT DEPARTMENT OF THE ENVIRONMENT AND ENERGY)

1. **GRASSY MOUND EDGE CONDITION**
   - Scale: 1/4" = 1'-0"

2. **TREE GRATE, SELF-SUPPORTING**
   - Scale: 1/4" = 1'-0"

3. **SUBWAY STATION GREEN ROOF LAWN**
   - Scale: 1/4" = 1'-0"

4. **GREEN ROOF: ECONOMIC BENEFIT**
   - Scale: 1/4" = 1'-0"

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PHASE 2D:
SOIL + PLANTINGS + EARTHWORKS

HANNAH LOPRESTO
Testing design details with full scale prototypes and mock-ups are an important aspect to the design process. It allows designers to get a full sense of what a paving pattern or bench detail will feel and look like when it is constructed. The top image is a full-scale mock-up by Peter Walker + Partners of paving patterns for plaza components for the National 9/11 Memorial, using chalk. The bottom image contains full-scale prototypes of bench details made of high-density foam by Sasaki Associates. These studies were integral to understanding details, scale, and proportions.

Phase 3: Synthesis of Landscape Materiality – Designing a Performative Assembly System
Project Description: This third and final phase of the course will test students’ skills and knowledge gained throughout the semester. This phase will emphasize the synthesis of understanding landscape materiality, material assemblies, and their performative capacities in constructed landscapes by designing a construction detail for their design projects in Studio. Students must draw and model an innovative, performative design detail using the wide array of conventional and innovative materials and techniques used to construct landscapes that were covered throughout this course. The details will emphasize material components, tectonic relationships, and the performance of the assembly. Detail drawings must have technical precision and high craft, and models will study the tectonic relationships and connections between multiple materials at 1:1 using materials as close to the design intent as possible. After drawing and modeling their details, students will use landscape performance metrics to evaluate their environmental, social, and economic benefits in the context of their design studio projects in LARC 210.

One main objective of this phase is to continue using the graphic representation of technical details as a form of communicating design intent, including their material components and assemblages as applications in the constructed landscape. Students will develop a palette of materials used in their landscape detail. The construction drawing must describe how the materials are assembled, translating technical forms of representation through interpreting and graphically synthesizing complex layers of site design.

Materials and assemblies covered throughout this course should be used, referenced, integrated, and synthesized into a newly developed designed detail specific to their current design projects.

Project Format and Structure: Students will select a moment in their design projects for Studio to develop as a material assembly detail at 1-1/2”=1'-0”. The detail should encompass hardscape (paving), softscape (planting or water), and the transition between the two conditions (seating, curb, flushed, etc.). The detail chosen should also be a synthesis and representative of the design proposal and concept. Details must be drawn in AutoCAD and submitted on an 24”x36” sheet, portrait format. Students must maintain the drawing standards established for the course, including dimensions, labels / leaders, and a title block in paper space. The standards include scale, font, and other styles.

Detailed material assembly drawings must include images of the textures / palette of the materials used, as was done in Phase 2. Additionally, students will make full-scale (1:1) mock-ups of their paving patterns with a partner using tape. Students are required to take professional quality photos (no iPhone photos) to document this 1:1 mock-up from multiple angles.

Finally, students will make a 1:1 tectonic model of their detail. The model must fit within a 1’x1’x1’ area. It should emphasize how different
materials are assembled to form the overall detail (above and below ground). Students are required to take professional quality photos (no iPhone photos) to document this model. Images of both the paving pattern and model will be included on your final sheet.

The final submission for Phase 3 will consist of 1 - 24"x36" sheet with the following:
- 1-1/2"=1'-0" detail
- Materials palette for the detail
- Photograph of 1:1 mock-up of paving pattern (placed above paving area of detail drawing)
- Photograph of 1:1 model (1`x1`x1`) using a black or white background
- Axonometric landscape performance study
- NOTE: Detail and axon study can be combined as an exploded axon. However, all the information required of both drawings must be present and clear

Drawings are to be technically accurate, and each element carefully articulated with the appropriate use of line weights, line types, and textures. Students must integrate their studio project’s concept in the design and construction of the detail. Final submissions are due Thursday, December 7th. PDFs must be submitted by 5:00 PM on Canvas. The sheet and project will be presented with your final studio presentation of your project.

You have the opportunity to incorporate feedback and adjust your details for a final submission of your work for the course to Canvas on Tuesday, December 12th by 8:00 AM.

Project Schedule:

11/9 Phase 3 Format, Description, Schedule, Project Description,
11/14 Required Reading with Quotes and Discussion
   Desk Critz
   Draft print of CAD Detail + Materials Palette
   Paving Pattern Mock-Up in class with a partner using tape
11/16 Group Critz
   Print of Final sheet- in progress
   Model discussion
11/21 Desk crits
   Detail Material Assembly – 1:1 model in progress
11/23 Thanksgiving – No Class
11/28 Group Critz
   Final Model
   Performance evaluation discussion
11/30 Group Critz
   Selection and in progress landscape performance evaluations
12/5 Desk Critz
   Project refinement; final drafts
12/7 Desk crits
   Final Production; Submission of Sheet to Canvas by 5PM
12/8  Final presentation of Design Detail Sheet + Model with Studio project
12/12  Final Submission due in Canvas by 8AM

**Final Requirements:**

**Phase 3**

**Board:** 1 - 24"x36" plotted panel, Portrait format, 1 technical detail drawing of paving (hardscape), edge transition, and softscape, with material swatches, photographs of paving pattern mock-up and model, and landscape performance analysis pinned up for your final review on 12/8 (?)

**Scale:** Detailed Section at 1-1/2"=1'-0"

**Models:** (1) full scale mock-up of paving pattern using tape or chalk
(1) 1:1 tectonic study model of drawn design detail; model should emphasize material connection and behavior of the overall assembly

**Photos:** A minimum of 3 professional quality photos of model and of paving pattern (each)

**Description:** Conceptual / thematic title

**Presentation:** The presentation of this project will occur with your final presentation of your studio project. Presentation of this project should emphasize how your overall design concept is implemented at the detail and material scale.

**Project Evaluation:**

Phase 3 is worth 30% of your overall grade for the course. Grading will place emphasis on graphic development and clarity, synthesis of skills and knowledge gained throughout the semester, research synthesis, precision and accuracy of detail, quality of visual description, and final presentation.

**Phase 3 Readings:**

**Week**  
13

**Required (Phase 3)**


**Supplemental**


1. **ESPALIER SEATING: ELEVATION**

   BLACK WALNUT FENCE POST
   GALVANIZED ESPALIER WIRE 1/8", RUN THROUGH DRILLED HOLES IN FENCE POST

2. **ESPALIER SEATING: SECTION**

   BLACK WALNUT LATERAL CLAD ON SEAT
   GALVANIZED STEEL FENCE POST BRACKET
   COMPOSITE U-CHANNEL
   PROFILES IN WHITE
   CONCRETE YD RED
   SMALL ANNUAL PLANTINGS, SET WITHIN BLACK WALNUT BENCH FRAME

3. **PLANTER ADDITION: ELEVATION**

   PEABLAST PLANTING BOX FOR OVERHANGING PLANT MATERIAL
   SMALL ANNUAL PLANTINGS, SET WITHIN BLACK WALNUT BENCH FRAME

4. **PLANTER ADDITION: SECTION**

   OVERHEAD CANOPY, STEEL FRAME
   SUPPORT POST, BLACK WALNUT

5. **CANOPY CONNECTION: SECTION**

6. **ESPALIER SEATING**

   BLACK WALNUT IS GROWN LOCALLY IN QUEBEC.
   BLACK WALNUT IS GROWN LOCALLY IN QUEBEC.
   BLACK WALNUT HAS MODERATELY FAST GROWTH FOR ITS LEVEL OF HARDNESS (5910 N).
   THIS GROWTH RATE RESULTS IN A MORE EASILY REPLENISHABLE WOOD.
   (ARBOR DAY FOUNDATION AND QUEBEC WOOD EXPORT BUREAU)

7. **ADAPTIVE PERFORMANCE: TRANSFORMATIVE FENCE**

   PEABLAST PLANTING BOX FOR OVERHANGING PLANT MATERIAL
   SMALL ANNUAL PLANTINGS, SET WITHIN BLACK WALNUT BENCH FRAME

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PEA GRAVEL IS ONE OF THE LOWEST COSTING LANDSCAPE ROCKS. PEA GRAVEL CAN DRAIN STANDING WATER BETTER THAN OTHER SURFACES SUCH AS STANDARD CONCRETE WITH A POROSITY OF 32-40%.

(COVENTRY UNIVERSITY AND HULL & ASSOCIATES)

REDUCE NO2 BY 40% (LAF FAST FACT LIBRARY)

BLACK WALNUT AND MEDICINAL FAST GROWTH FOR ITS LEVEL OF HARDNESS ORIGINAL TREE SPECIES HAVE BEEN REPLACED WITH BLACK WALNUT.

(ANNE DAY FOUNDATION AND LOCALLY SOURCED BUREAU)

BLACK WALNUT IS GROWN LOCALLY IN QUEBEC.

(CANADIAN JOURNAL OF FOREST RESEARCH)

(PHASE 3:
"LET'S HANG" PLAYSCAPE

(HOARD STREET)

SCALE: 1:4

DATE: AUGUST 2017

L4-01

(Hand Drawn By: Louise L. Marchand)
PEBBLE FLEX 2.0 IS MADE OF ABRASION RESISTANT UV STABLE POLYURETHANE PEBBLES TO HOLD ITS COLOR SBR RECYCLED RUBBER PEBBLES MAINTAIN EASILY WITH 2800PSI POWER WASH RECYCLED CONCRETE SAVES MONEY AND RESPONSIBLY USES MATERIALS PEBBLES DO NOT NEED REPLACEMENT LIKE GRASS WITH OVER USE EXISTING TERRAIN “NON-TRADITIONAL MATERIAL DISPOSAL AND SOURCING PREVENTED THE EMISSIONS OF 985 METRIC TONS (MT) OF CARBON DIOXIDE (CO2) THROUGH ON-SITE RE-USE AND RECYCLING VERSUS TRADITIONAL METHODS, VALUED AT $11,820”. LAF MAGNUSON PARK WETLANDS THIS DOES NOT NEED TO BE EXCAVATED, WHICH REDUCES COST. TYPICAL MAINTENANCE OF TURN FOR SEEDING, MULCH, FERTILIZER AND MOWING AVERAGES TO $28,000 LAF NOVA OCEANOGRAPHIC CENTER PEBBLE FLEX NEGATES THE NEED TO WATER A LARGE GRASS AREA, WHICH CONSERVES RESOURCES. “BLUE REVEALED THE FEELING OF RELAXATION AND CALMNESS, FOLLOWED BY HAPPINESS, COMFORT, PEACE, AND HOPE…” RELATIONSHIP BETWEEN COLOR AND EMOTION: A STUDY OF COLLEGE STUDENTS (2004)