Landscape Architecture Foundation
Fall 2017 Landscape Performance Education Grant

Instructor Reflection for LARC 230: Site Systems I – Materiality in Landscape Architecture (Fall 2017)
Core course offered by University of Nebraska – Lincoln, College of Architecture, Landscape Architecture Program
Class: Tu/Th, 12:30–2:20pm, 3 Credits
Instructor: Catherine De Almeida, Assistant Professor (cdealmeida2@unl.edu)

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]
C – Landscape Performance Evaluation of Material Assembly [11/28-12/7]

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

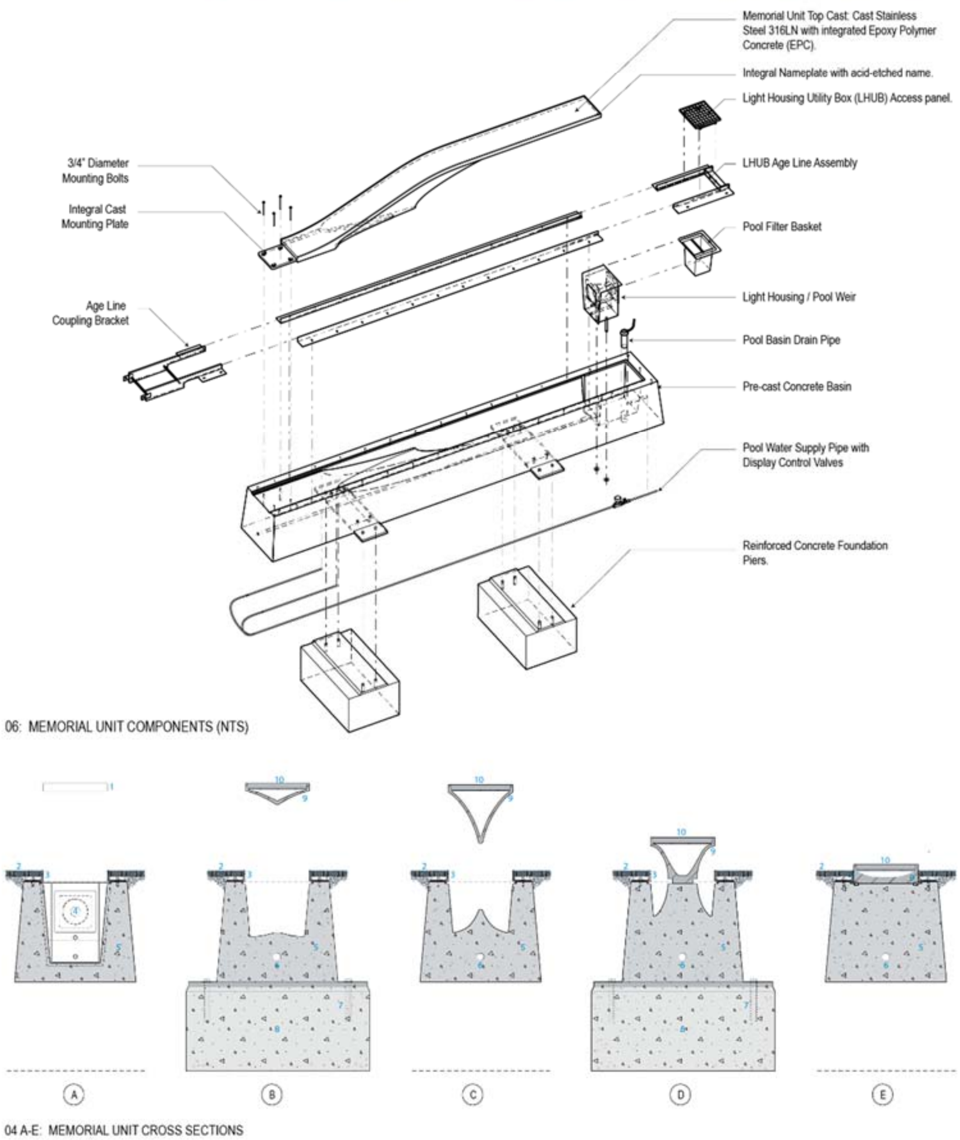
- Some students noted the difficulty and learning curve of applying AutoCAD as a new digital tool. In Phase 1, students received a tutorial and handout that describes how to set up and draft in the program, export drawings to scale, and annotate and lineweight their drawings. By the end of Phase 2, students 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

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

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 assemblages, 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]
C – Landscape Performance Evaluation of Material Assembly [11/28-12/7]

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.

<u>Projects</u>

Phase 1A: Material Assemblies as Performative Systems -	-10%
Phase 1B: Integration of AutoCAD -	-05%
Phase 2: Material Palette, Assembly, and Landscape Performance Catalogue -	-40%
Phase 2C: Spanning and Loading (Bridge Project) -	-05%
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:

A+ 100-96.67	A 96.66-93.34	A- 93.33-90
B+ 89.99-86.67	B 86.66-83.34	B- 83.33-80
C+ 79.99-76.67	C 76.66-73.34	C- 73.33-70
D + 69.99-66.67	D 66.66-63.34	D - 63.33-60
F 59.99 or 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 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:

Up to 18 credit hours	0 hours
13-16 credit hours	8-16 hours
10-12 credit hours	17-20 hours
Up to 6 credit hours	Full time

Course Schedule:

LARC 230: Materiality in Landscape Architecture - Tentative Weekly Schedule					
Week	Day	Date	Description	Deliverables	Required Readings (see syllabus for more details)
1	Tu	22-Aug	Introductions, Course Description and Briefing, Schedule, & Format Phase 1 Description and Presentation Technical Detailing + Drawing Lecture	Kick - Off	X
	Th	24-Aug	LAF Landscape Performance Webinar #1 Emily Casper Lecture + Site Visit	Required Reading + Discussion Review LAF Performance; select strategy	Loidl-Reisch, "Constructing Landscape," p. 9-11. Kirkwood, "Introduction," p.1-9. Yglesias, "Preface," "Conclusion," and "Afterword," p. 1-4; 179-184.
2	Tu	29-Aug	Group Pin-up Phase 1B Description and Presentation Intro to AutoCAD 3D Tutorial and Handout	Material / Detail selections; photos with technical plans and sections on 11x17 Download AutoCAD 3D onto computers Required Reading + Discussion	Kirkwood, "Fundamentals: Landscape and Detail," p. 11-44.
	Th	31-Aug	Group Pin-up	Technical sketches translated into AutoCAD Selected benefits for evaluation Precedent images for diagramming	X
3	Tu	5-Sep	Group Pin-up	Final draft board with plan + section details; diagrams; landscape performance evaluation	X
	Th	7-Sep	*Phase 1: Pin-up - CAD Details Phase 2 Description and Presentation Phase 2A: Materials Lecture - Compressive forces; Foundations	Final Drawings and Presentations Required Readings + Discussion	Sovinski, "Ch. 1, 2, and 4," p. 5-12; 13-24; 57-76. Zimmerman, "Foundations," p. 159-169.
4	Tu	12-Sep	*Cathy away for conference* Phase 2A: Lecture by Eric Casper on P Street Project - Street Assemblies	Required Reading	Zimmerman, "Paths and Squares," p. 215-240.
	Th	14-Sep	LAF Landscape Performance Webinar #2 Field Trip - Concrete Plant	Camera + Notebook	Hutton, "Reciprocal Landscapes," p. 40-47. Yglesias, "Concrete," p. 5-21.
5	Tu	19-Sep	Phase 2A: General Discussion Desk Crits / Meetings Working Session	Detail Selections Drawing Development + Preliminary Layout	X
	Th	21-Sep	*Phase 2A: Pin-up - CAD Details + Materials Palette [Streets] Phase 2B Begins	Final Drawings and Presentations	X
6	Tu	26-Sep	Phase 2B: Materials Lecture - Pathways + Paving Patterns Nebraska Masonry Alliance Lecture	Required Readings + Discussion	Zimmerman, "Cut Stone; Brick and Clinker; and Concrete," p. 67-102.
	Th	28-Sep	Field Trip - Brick Plant	Camera + Notebook	X
7	Tu	3-Oct	Phase 2B: Lecture - Walls + Stairs	Required Readings + Discussion Detail Selection Drawing Development + Preliminary Layout	Zimmerman, "Steps; and Walls," p. 243-263; 295-323.
	Th	5-Oct	Phase 2B: General Discussion Desk Crits / Meetings Working Session	Detail Selection Final Draft of Board	X
8	Tu	10-Oct	*Phase 2B: Pin-up - CAD Details + Materials Palette [Paving + Pathways; Walls + Stairs] Phase 2C Begins; Group Selection	Final Drawings and Presentations	X
	Th	12-Oct	Phase 2C: Materials Lecture - Tensile Forces; Spans; Structures	Required Readings + Discussion Sketches / Study Models of Spans	Zimmerman, "Wood; and Metals," p. 53-63; 105-119. Zimmerman, "Load-bearing Structures," p. 137-157; (173-195).
9	Tu	17-Oct	*Fall Break*		
	Th	19-Oct	*Span Project - Testing Working Session	Final Models	X
10	Tu	24-Oct	Phase 2C: Materials Lecture - Seating + Fences + Rails Desk Crits / Meetings Working Session	Required Readings + Discussion Detail Selections	Zimmerman, "Railings and Fences," p. 267-291.
	Th	26-Oct	Phase 2C: General Discussion Desk Crits / Meetings Working Session	Drawing Development + Preliminary Layout	X

11	Tu	31-Oct	*Phase 2C: Pin-up - CAD Details + Materials Palette [Seating + Fences + Rails]	Final Drawings and Presentations	X
	Th	2-Nov	Phase 2D: Materials Lecture - Soil + Plantings + Erosion Control	Required Readings + Discussion	Zimmerman, "Planting Technique and Care of Vegetation Surface; Lawns and Meadows," p. 369-396.
12	Tu	7-Nov	Phase 2D: General Discussion Desk Crits / Meetings Working Session	Detail Selection Drawing Development + Preliminary Layout	X
	Th	9-Nov	*Phase 2D: Pin-up - CAD Details + Materials Palette [Soil + Plantings + Erosion Control] Phase 3 Description and Presentation	Final Drawings and Presentations	X
13	Tu	14-Nov	Phase 3A: Designing Detail Desk Crits / Meetings Working Session	Required Readings + Discussion Detail Selection + Sketches Drawing Development + Preliminary Layout	Kirkwood, "Practices: Constructing Detail," p. 109-155.
	Th	16-Nov	*Phase 3A: Pin-up - CAD Details + Materials Palette - Design Project Phase 3B Discussion	Final Drawings and Presentations	X
14	Tu	21-Nov	Phase 3B: Constructing Tectonic Details Desk Crits / Meetings Working Session	Sketches of Assembly; In progress Model Construction	X
	Th	23-Nov	*Thanksgiving*		
15	Tu	28-Nov	*Phase 3B: Pin-up - 3A Sheet with Tectonic Model Phase 3C Discussion	Final Drawings, Model, and Presentations	X
	Th	30-Nov	Phase 3C: Landscape Performance Evaluation Group Pin-ups / Working Session	Selection of Landscape Performance Evaluations; Sketches of Diagrams	X
16	Tu	5-Dec	Phase 3C: Landscape Performance Evaluation Group Pin-ups / Working Session	Final Drafts of Phase 3 Deliverables	X
	Th	7-Dec	*Phase 3: Full Design Project Pin-up	Final Drawings, Models, and Presentations	X

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:
<u>Tuesday, December 12 by 8AM</u> [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 <u>at least 2 quotes in Canvas by 10am the day of class</u>. 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:
Zimmermann, Astrid (ed.), *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015).

Course Readings:

<u>Week</u>	<u>References</u>
1	Required (Phase 1A) Loidl-Reisch, Cordula, "Constructing Landscape" in *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 9-11. Kirkwood, Niall, "Introduction" in *The Art of Landscape Detail: Fundamentals, Practices, and Case Studies*, (New York: John Wiley & Sons, 1999): 1-9. Yglesias, Caren, "Preface," "Conclusion," and "Afterword," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 1-4, 179-184. Supplemental Zimmermann, Astrid (ed.), *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015). Hopper, Leonard J., *Landscape Architectural Graphic Standards*, Student Edition, (Hoboken: John Wiley & Sons, 2007). Harris, Charles W. and Dines, Nicholas T., *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988).
2	Required (Phase 1B) Kirkwood, Niall, "Fundamentals: Landscape and Detail" in *The Art of Landscape Detail: Fundamentals, Practices, and Case Studies*, (New York: John Wiley & Sons, 1999): 11-44. Supplemental Zimmermann, Astrid (ed.), *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015). Hopper, Leonard J., *Landscape Architectural Graphic Standards*, Student Edition, (Hoboken: John Wiley & Sons, 2007).

3-4 **Required (Phase 2A)**

Hutton, Jane, "Reciprocal Landscapes: Material Portraits in New York City and Elsewhere," *Journal of Landscape Architecture* 8(1), 2013: 40-7.

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.

Yglesias, Caren, "Concrete," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 5-21.

Zimmermann, Astrid (ed.), "Foundations", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 159-169.

Zimmermann, Astrid (ed.), "Paths and Squares", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 215-240.

Supplemental

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 58-61; 70-71; 114-117; 160; 171.

Harris, Charles W. and Dines, Nicholas T., "Asphalt; Concrete; and Paving, Paving Joints, Edges, Dividers, and Curbs Details and Devices" *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 820-1 - 820-23; 830-1 - 830-21; Sections 910-914.

Hopper, Leonard J., *Landscape Architectural Graphic Standards*, Student Edition, (Hoboken: John Wiley & Sons, 2007).

6-7 **Required (Phase 2B)**

Zimmermann, Astrid (ed.), "Cut Stone; Brick and Clinker; and Concrete", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 67-102.

Zimmermann, Astrid (ed.), "Steps; and Walls", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 243-263; 295-323.

Supplemental

Yglesias, Caren, "Brick," "Ceramics," and "Stone," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 49-73; 101-114.

Sovinski, Rob W., "Chapters 3, 5, and 7" in *Materials and their Applications in Landscape Design* (Hoboken: John Wiley & Sons, 2009): 25-55; 79-89; 111-133.

Zimmermann, Astrid (ed.), "Paths and Squares", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 215-240.

Harris, Charles W. and Dines, Nicholas T., "Retaining Walls and Devices; Surfacing and Paving; Masonry; and Steps", *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 410-1 - 410-10; 440-1 -440-7; 840-1 - 840-34; Section 920.

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 58-61; 70-71; 114-117; 160; 171.

McLeod, Virginia, *Detail in Contemporary Landscape Architecture*, (London: Laurence King, 2008): 62-65; 76-79; 96-99; 156-159; 172-175.

8; 10

Required (Phase 2C)

Zimmermann, Astrid (ed.), "Wood; and Metals", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 53-63; 105-119.

Zimmermann, Astrid (ed.), "Load-bearing Structures", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 137-157 (173-195).

Zimmermann, Astrid (ed.), "Railings and Fences", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 267-291.

Supplemental

Yglesias, Caren, "Metals," and "Wood," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 34-48; 115-129.

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

Zimmermann, Astrid (ed.), "Small Bridges; and Seating Elements", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 347-354; 490-500.

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

Architecture: Design and Construction Data, (New York: McGraw-Hill, 1988): 450-1 - 450-14; 850-1 - 850-32; 860-1 - 860-32 Section 931.

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)
Zimmermann, Astrid (ed.), "Planting Technique and Care of Vegetation Surface; Lawns and Meadows", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 369-396.

Supplemental
Zimmermann, Astrid (ed.), "Soil; Plants; Lawns and Other Seeded Areas", *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 15-50.

Harris, Charles W. and Dines, Nicholas T., "Plants and Planting; Soils and Aggregates; Planting", *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 550-1 - 550-8; 810-1 810-14; Section 950.

McLeod, Virginia, *Detail in Contemporary Landscape Architecture*, (London: Laurence King, 2008): 18-21; 22-25; 26-29; 46-49; 58-61; 76-79; 134-137; 140-141; 172-175.

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 42-43; 44-47; 64-67; 96-99; 150-158; 161-162; 168-170.

13

Required (Phase 3)
Kirkwood, Niall, "Practices: Constructing Detail" in *The Art of Landscape Detail: Fundamentals, Practices, and Case Studies*, (New York: John Wiley & Sons, 1999): 109-155.

Supplemental
Pasnik, Mark, "The Material Autograph" in *Materials: Architecture in Detail* eds. Oscar Riera Ojeda and Mark Pasnik (Gloucester: Rockport Publishers, 2003): 9-12.

Mori, Toshiko ed., "Introduction", *Immaterial | Ultramaterial*, (New York: George Braziller, 2002): xiii-xvii.

Course References

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

Design Workshop, *Landscape Architecture Documentation Standards: Principles, Guidelines, and Best Practices* (New York: John Wiley & Sons, 2015).

Hutton, Jane, "Reciprocal Landscapes: Material Portraits in New York City and Elsewhere," *Journal of Landscape Architecture* 8(1), 2013: 40-7.

Hopper, Leonard J., *Landscape Architectural Graphic Standards*, Student Edition (Hoboken: John Wiley & Sons, 2007).

Kirkwood, Niall, *The Art of Landscape Detail: Fundamentals, Practices, and Case Studies* (New York: John Wiley & Sons, 1999).

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

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture* (Basel: Birkhauser, 2007).

McLeod, Virginia, *Detail in Contemporary Landscape Architecture* (London: Laurence King, 2008).

Yglesias, Caren, *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015).

Zimmermann, Astrid (ed.), *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015).

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

Faculty of Landscape Architecture, College of Architecture, University of Nebraska-Lincoln

Love Library Learning Commons Plaza [under construction]: Aerial View; Clark Enersen
The plaza, which is on the north side of Love Library, includes three methods to help redirect rainfall into the ground and away from storm sewers. The project is part of UNL's new commitment to stormwater management. [from article "Love North Plaza highlights new focus on managing stormwater" by Troy Fedderson]

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 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:

8/22	Course Description, Format, Schedule, Phase 1 Project Description, Technical Detailing and Drawing Lecture
8/24	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
8/29	Phase 1A: Final Drawings and Presentations – 8.5x11 photos, definition of landscape performance strategy, and 11x17 drawings pinned up in Room 305.
8/29	Phase 1B: Required Reading with Quotes and Discussion; Intro to AutoCAD Tutorial + Handout
8/31	Phase 1B: Group Pin-up of hand drawings translated into AutoCAD; selected benefits for evaluation; precedent images for diagramming
9/5	Phase 1: Group Pin-up of final draft board with plan + section details; diagrams; landscape performance evaluation
9/14	Phase 1: Final Drawings and Presentations – 18x24 drawings + plots pinned up in Room 305. Phase 2A Readings

Final Requirements:

Phase 1A

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
Scale:	Plans and Sections at 1/2"=1'-0" scale
Description:	Landscape Performance Strategy with definition
Presentation:	Each project has 6 minutes total; ~3 minutes for presentation, and ~3 minutes for discussion.

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:

Week 1

References

Required (Phase 1A)

Loidl-Reisch, Cordula, "Constructing Landscape" in *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 9-11.

Kirkwood, Niall, "Introduction" in *The Art of Landscape Detail: Fundamentals, Practices, and Case Studies*, (New York: John Wiley & Sons, 1999): 1-9.

Yglesias, Caren, "Preface," "Conclusion," and "Afterword," in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 1-4, 179-184.

Supplemental

Zimmermann, Astrid (ed.), *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015).

Hopper, Leonard J., *Landscape Architectural Graphic Standards*, Student Edition, (Hoboken: John Wiley & Sons, 2007).

Harris, Charles W. and Dines, Nicholas T., *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988).

Week 2

Required (Phase 1B)

Kirkwood, Niall, "Fundamentals: Landscape and Detail" in *The Art of Landscape Detail: Fundamentals, Practices, and Case Studies*, (New York: John Wiley & Sons, 1999): 11-44.

Supplemental

Zimmermann, Astrid (ed.), *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015).

Hopper, Leonard J., *Landscape Architectural Graphic Standards*, Student Edition, (Hoboken: John Wiley & Sons, 2007).

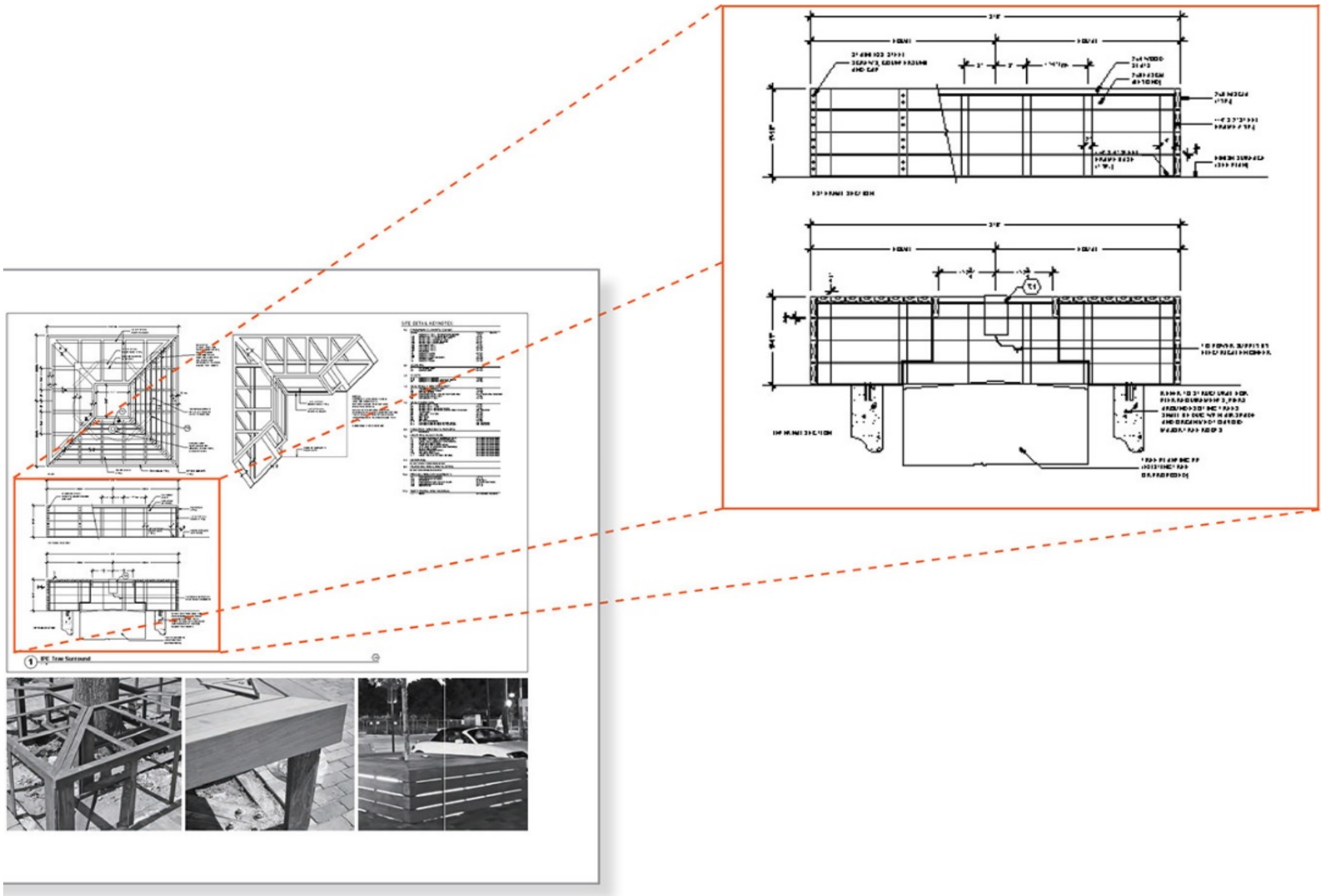
Online Resources

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

Faculty of Landscape Architecture, College of Architecture, University of Nebraska-Lincoln



Excerpt from the book Landscape Architecture Documentation Standards: Principles, Guidelines, and Best Practices *by Design Workshop, Inc. 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 vie 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 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, 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 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 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 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 <u>Thursday, October 31st</u>. <u>PDFs must be submitted by 11:00 AM in the Box folder</u>, and panels pinned up in <u>Room 305 by 12:25 PM</u> 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 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 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:

9/7 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

9/12 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

9/14 Phase 2A: Working Session / Desk Crits – Drawing Development and Preliminary Layout
Field Trip to Concrete Plant

9/19 LAF Webinar #2
Phase 2A: Working Session / Desk Crits – Drawing Development and Final Layout

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

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:

<u>Week</u>	<u>References</u>
3	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.

Zimmermann, Astrid (ed.), “Foundations”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 159-169.

4 Zimmermann, Astrid (ed.), “Paths and Squares”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 215-240.

Hutton, Jane, “Reciprocal Landscapes: Material Portraits in NYC and Elsewhere,” *Journal of Landscape Architecture* 8(1), 2013: 40-7.

Yglesias, Caren, “Concrete,” in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 5-21.

Supplemental

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 58-61; 70-71; 114-117; 160; 171.

Harris, Charles W. and Dines, Nicholas T., "Asphalt; Concrete; and Paving, Paving Joints, Edges, Dividers, and Curbs Details and Devices" *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 820-1 - 820-23; 830-1 - 830-21; Sections 910-914.

Hopper, Leonard J., *Landscape Architectural Graphic Standards*, Student Edition, (Hoboken: John Wiley & Sons, 2007).

6 Required (Phase 2B)

Zimmermann, Astrid (ed.), “Cut Stone; Brick and Clinker; and Concrete”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 67-102.

Yglesias, Caren, “Brick,” in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 49-62.

7 Zimmermann, Astrid (ed.), “Steps; and Walls”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 243-263; 295-323.

Supplemental

Sovinski, Rob W., “Chapters 3, 5, and 7” in *Materials and their Applications in Landscape Design* (Hoboken: John Wiley & Sons, 2009): 25-55; 79-89; 111-133.

Yglesias, Caren, “Stone,” in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 101-114.

Zimmermann, Astrid (ed.), “Paths and Squares”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 215-240.

Harris, Charles W. and Dines, Nicholas T., "Retaining Walls and Devices; Surfacing and Paving; Masonry; and Steps", *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 410-1 - 410-10; 440-1 -440-7; 840-1 - 840-34; Section 920.

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 58-61; 70-71; 114-117; 160; 171.

McLeod, Virginia, *Detail in Contemporary Landscape Architecture*, (London: Laurence King, 2008): 62-65; 76-79; 96-99; 156-159; 172-175.

8 Required (Phase 2C)
Zimmermann, Astrid (ed.), “Wood; and Metals”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 53-63; 105-119.

Zimmermann, Astrid (ed.), “Load-bearing Structures”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 137-157 (173-195).

Yglesias, Caren, “Wood; and Metals,” in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 115-129; 34-48.

10 Zimmermann, Astrid (ed.), “Railings and Fences”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 267-291.

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.

Zimmermann, Astrid (ed.), “Small Bridges; and Seating Elements”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 347-354; 490-500.

Harris, Charles W. and Dines, Nicholas T., "Fences, Screens, and Walls; Wood; Metals; and Seatwalls", *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 450-1 - 450-14; 850-1 - 850-32; 860-1 - 860-32 Section 931.

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)

Zimmermann, Astrid (ed.), “Planting Technique and Care of Vegetation Surface; Lawns and Meadows”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 369-396.

Yglesias, Caren, “Earth,” in *The Innovative Use of Materials in Architecture and Landscape Architecture: History, Theory, and Performance* (McFarland & Company, 2015): 130-142.

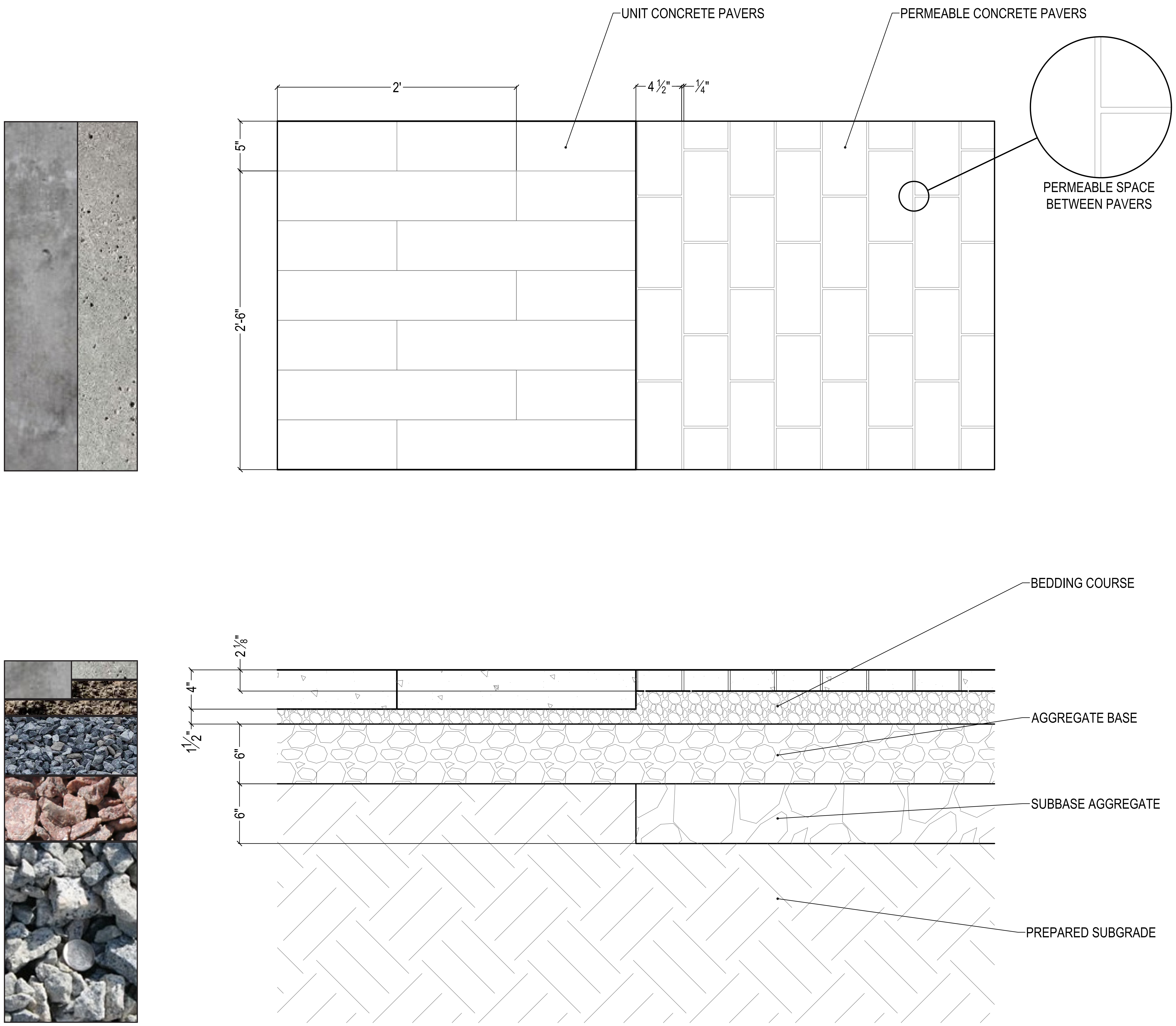
Supplemental

Zimmermann, Astrid (ed.), “Soil; Plants; Lawns and Other Seeded Areas”, *Constructing Landscape: Materials, Techniques, Structural Components*, 3rd Edition (Basel: Birkhauser, 2015): 15-50.

Harris, Charles W. and Dines, Nicholas T., "Plants and Planting; Soils and Aggregates; Planting", *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, (New York: McGraw-Hill, 1988): 550-1 - 550-8; 810-1 810-14; Section 950.

McLeod, Virginia, *Detail in Contemporary Landscape Architecture*, (London: Laurence King, 2008): 18-21; 22-25; 26-29; 46-49; 58-61; 76-79; 134-137; 140-141; 172-175.

Margolis, Liat and Robinson, Alexander, *Living Systems: Innovative Materials and Technologies for Landscape Architecture*, (Basel: Birkhauser, 2007): 42-43; 44-47; 64-67; 96-99; 150-158; 161-162; 168-170.

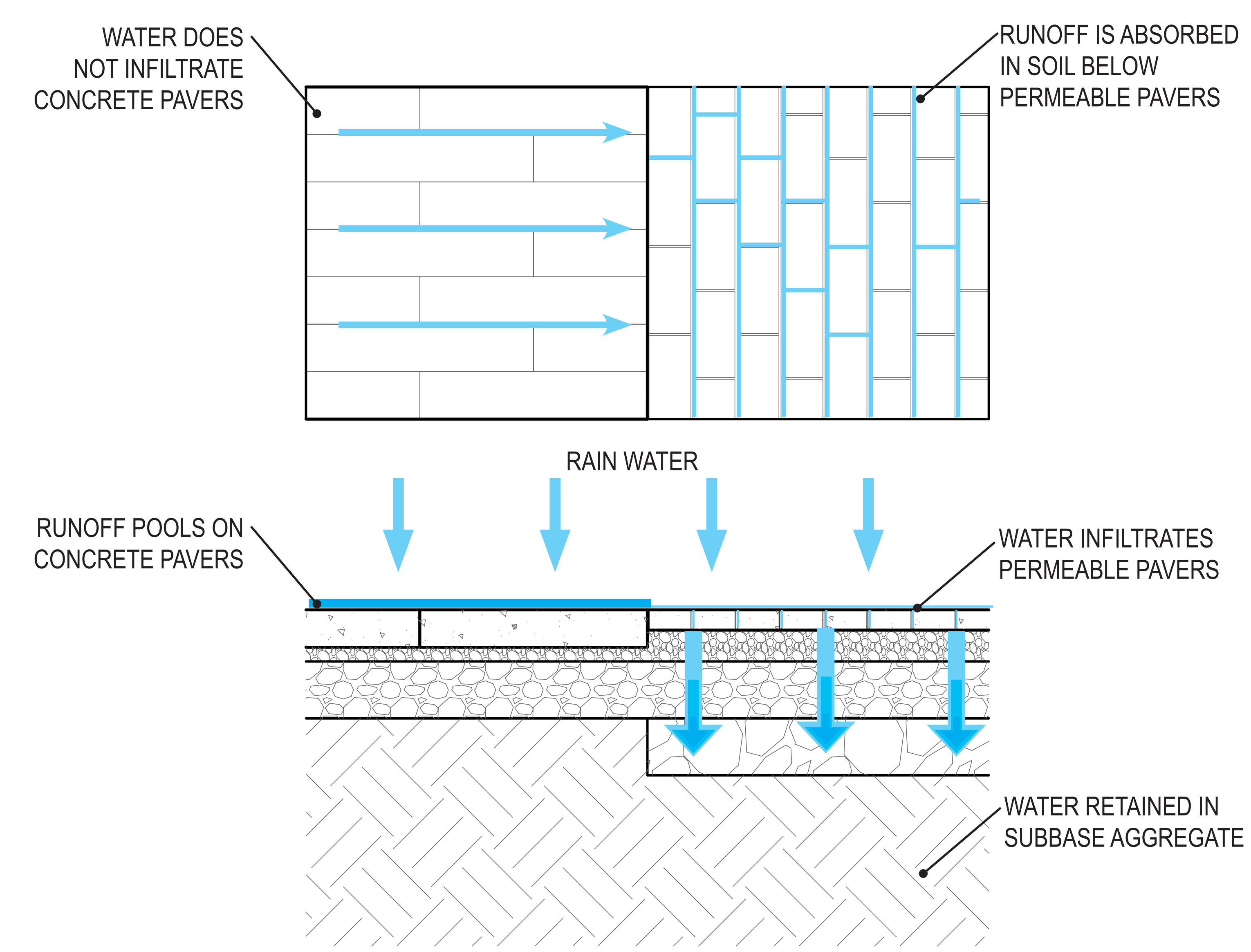


SOURCE: LOVE LIBRARY NORTH PLAZA

1 UNIT PAVER TO PERMEABLE PAVER TRANSITION

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

PERSPECTIVE VIEW OF TRANSITION BETWEEN CONCRETE PAVER AND PERMEABLE PAVERS



SOURCE: LOVE LIBRARY NORTH PLAZA

2 STORMWATER MANAGEMENT

SCALE: 3/4" = 1'-0"

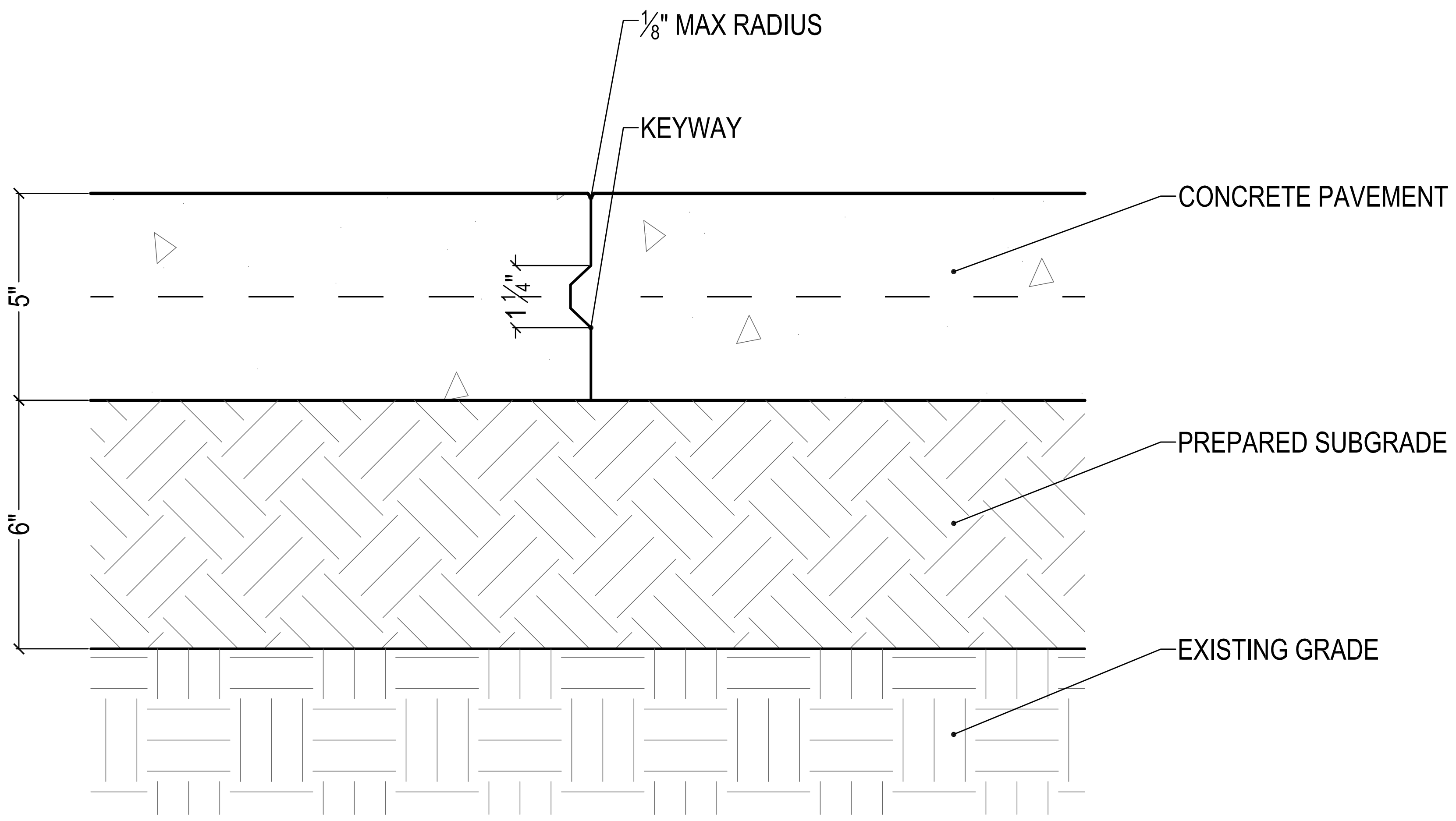
KATIE NIMIC

PHASE 1B:
LOVE LIBRARY NORTH PLAZA

TITLE:	INNOVATIVE PAVEMENT: STORMWATER MANAGEMENT
SCALE:	SEE DETAIL
DATE:	NOVEMBER 9, 2017

DWG. NO.

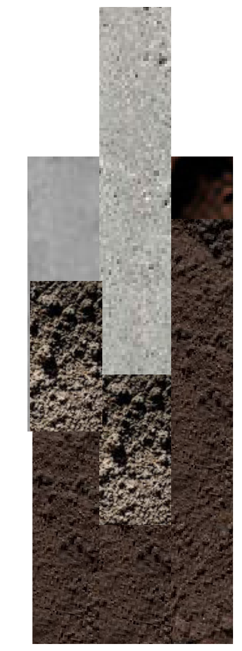
L3-01

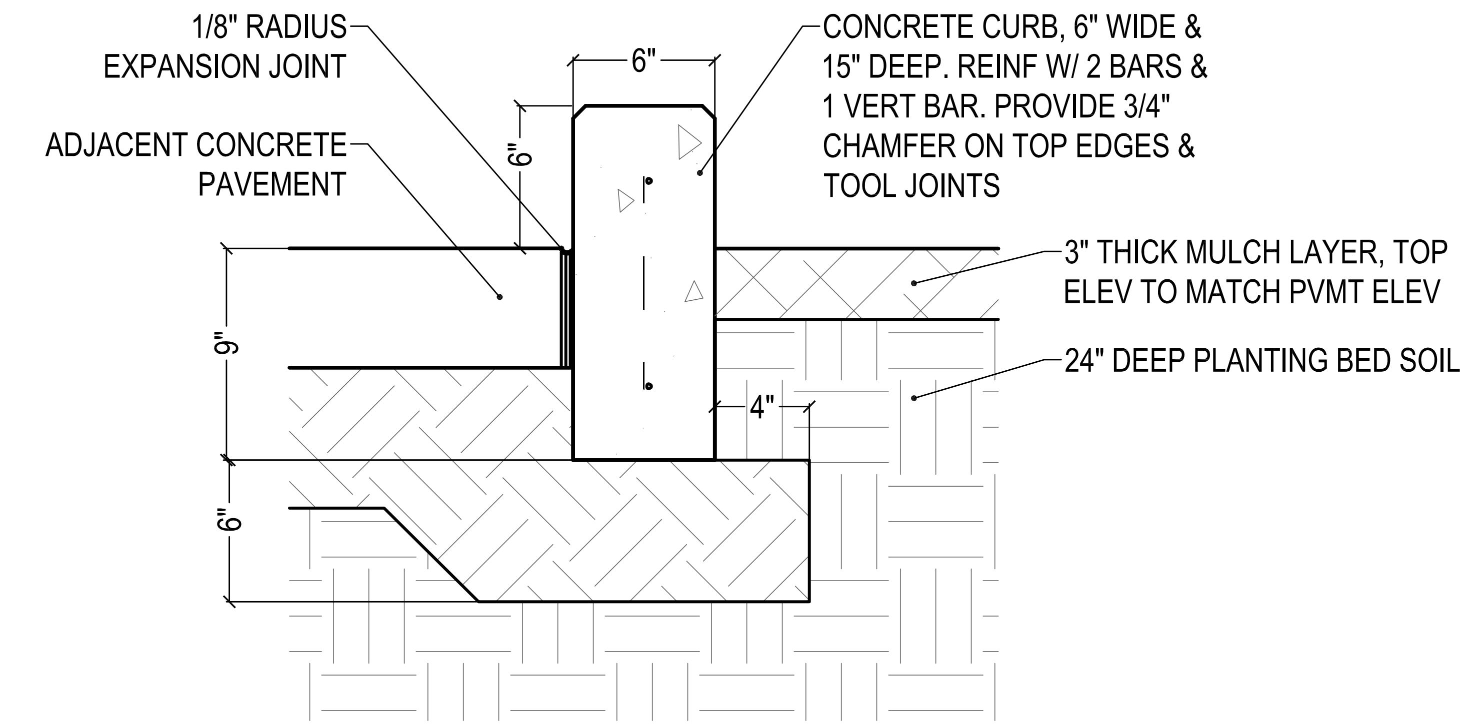


SOURCE: P STREET STREETSCAPE

1 CONCRETE CONSTRUCTION JOINT

SCALE: 3" = 1'-0"

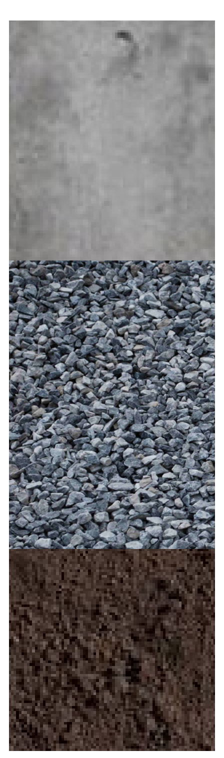


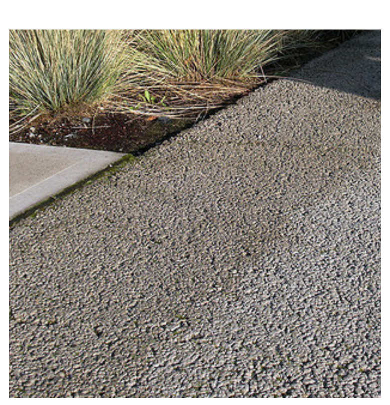


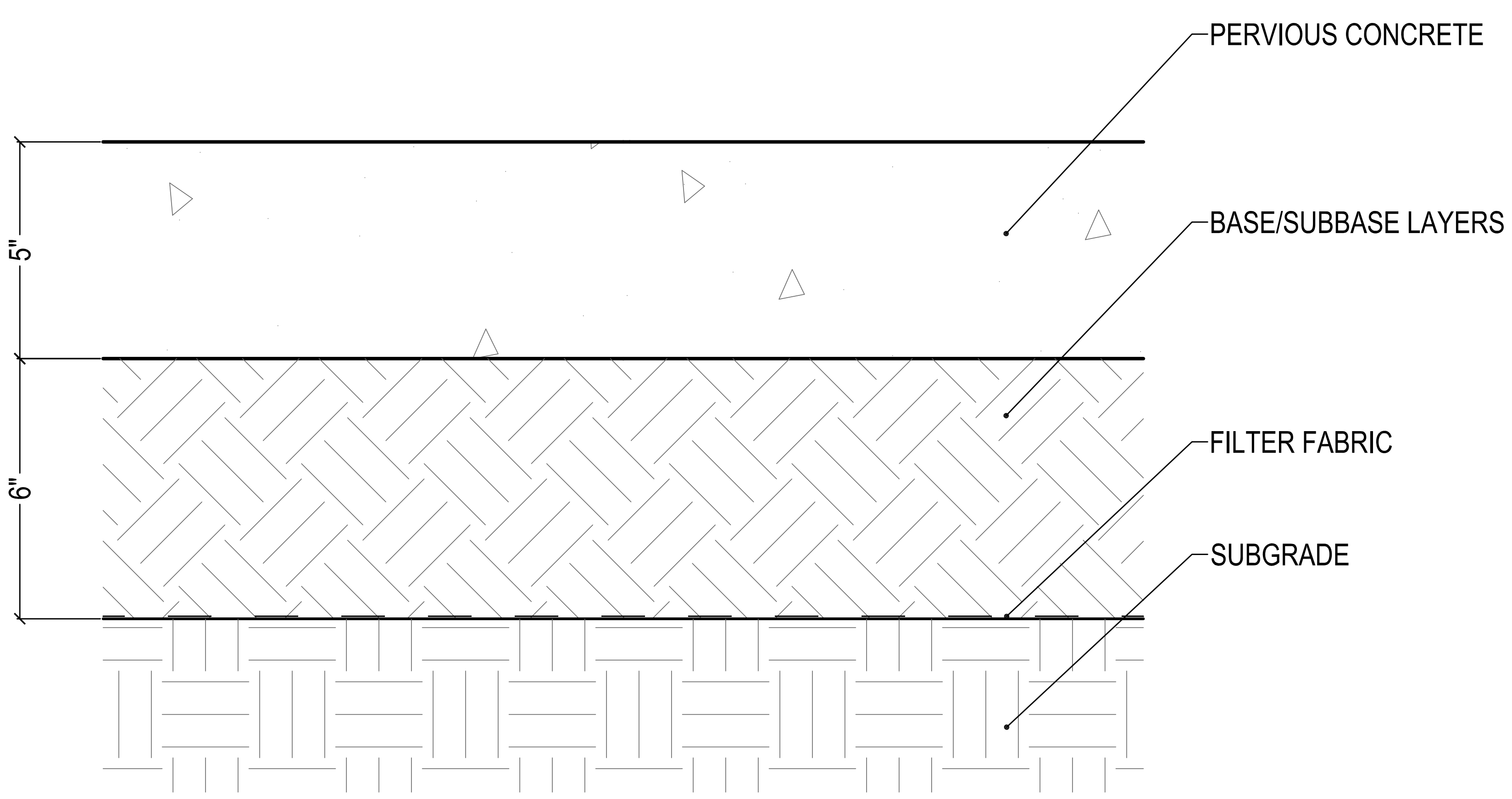
SOURCE: P STREET STREETSCAPE

2 PLANTING BED CURB

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







SOURCE: TECHBRIEF TYPICAL DETAIL`

3 PERMEABLE CONCRETE

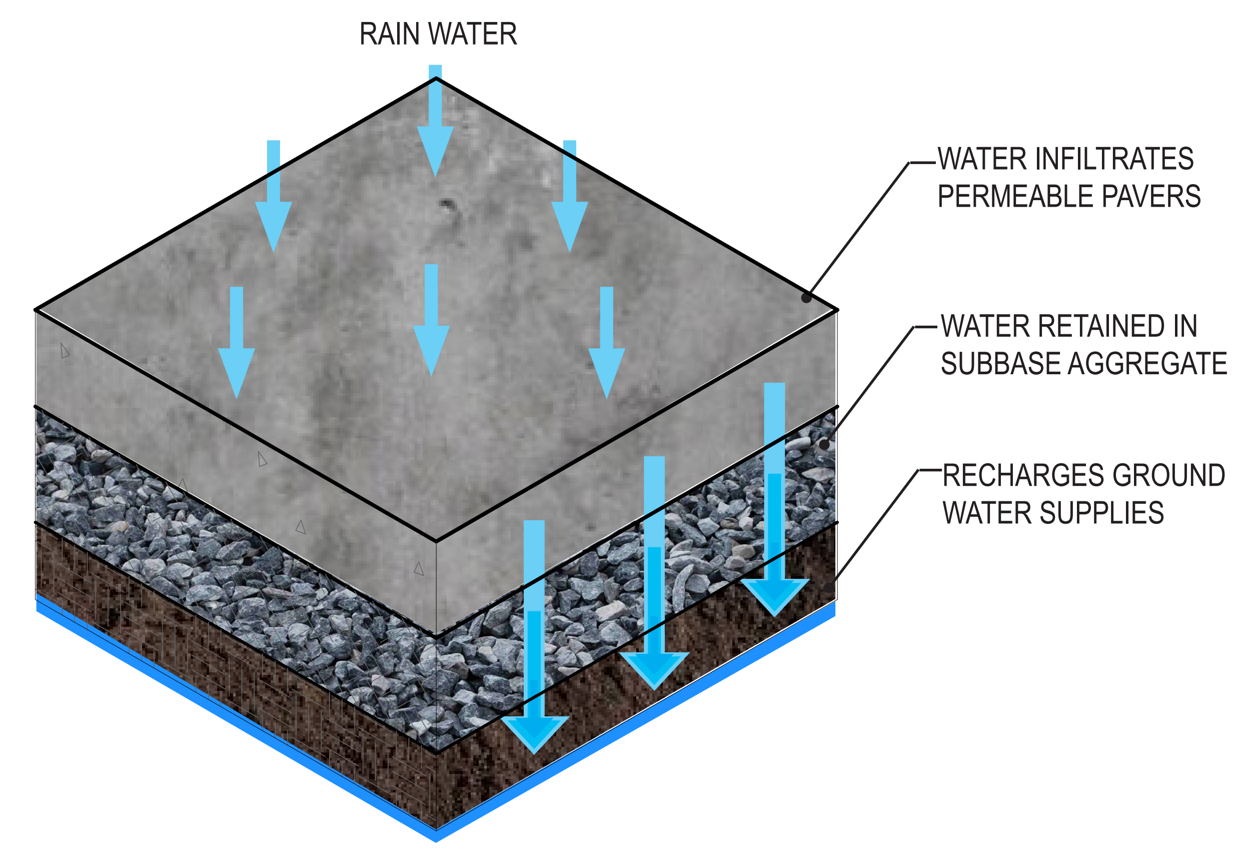
SCALE: 3" = 1'-0"

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 98% WHERE ASPHALT ONLY REDUCES RUNOFF BY 38%

SOURCE: UC DAVIS



4 STORMWATER MANAGEMENT

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

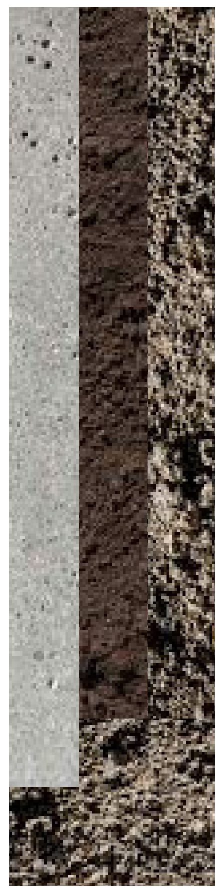
KATELYN NIMIC

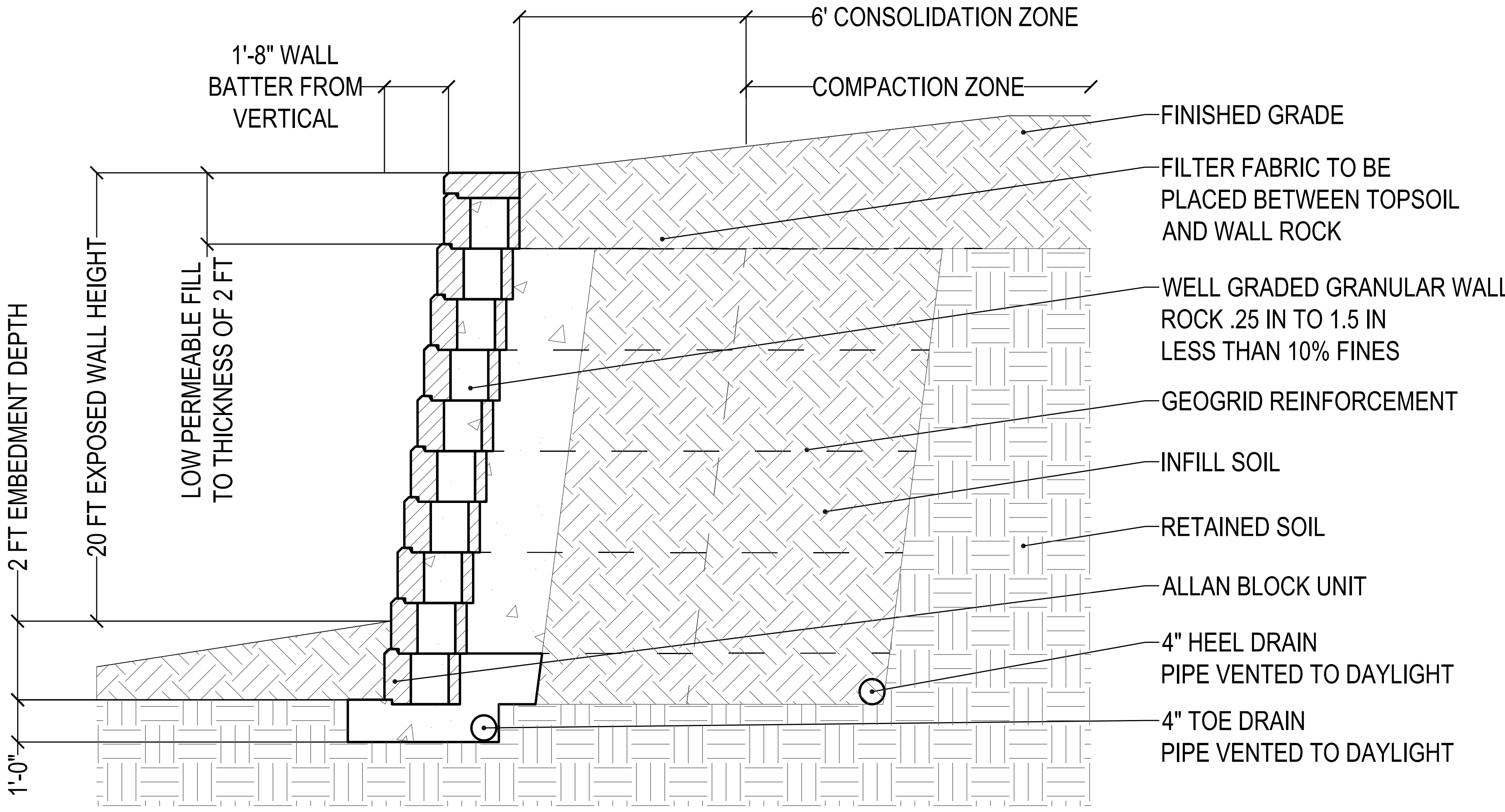
PHASE 2A: AGGREGATE + ASPHALT + POURED-IN-PLACE CONCRETE - FOUNDATIONS + STREET ASSEMBLIES

TITLE:	INNOVATIVE CONCRETE ALTERNATIVES: STORM WATER MANAGEMENT
SCALE:	SEE DRAWINGS
DATE:	NOVEMBER 7, 2017

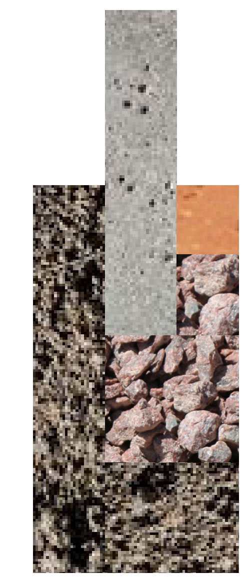
DWG. NO.

L3-02



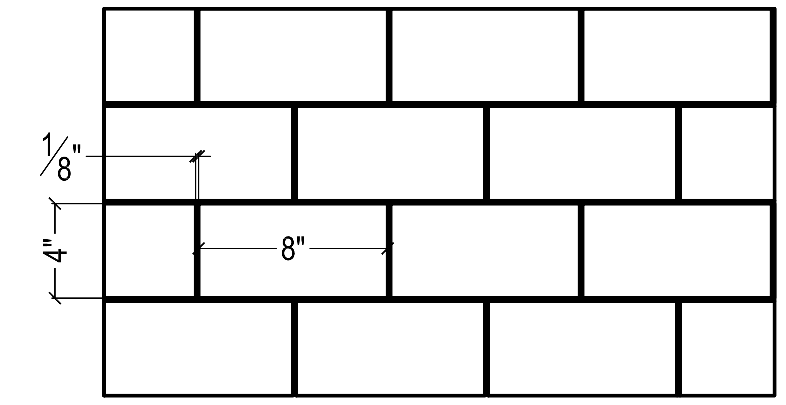


SOURCE: ALLAN BLOCK CONSTRUCTION

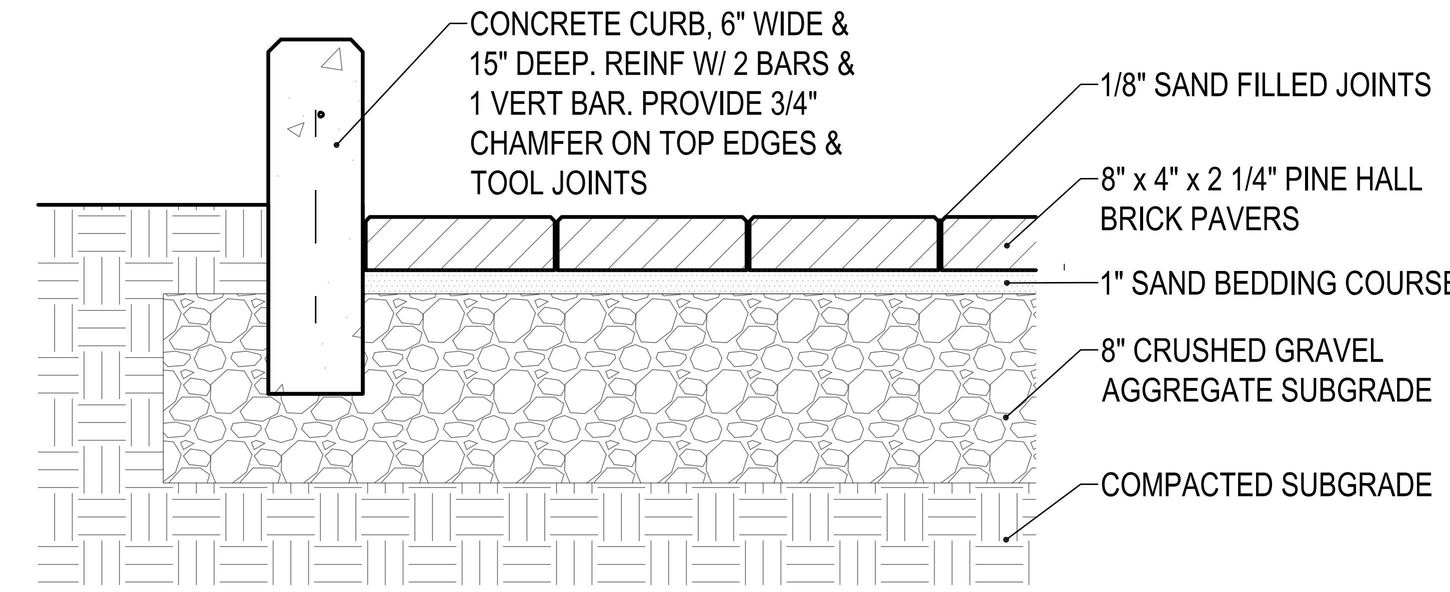


1 PRECAST REINFORCED WALL

SCALE: 1/4" = 1'-0"



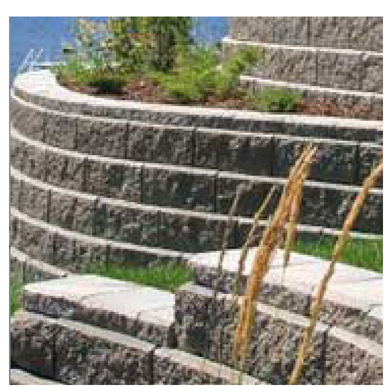
RUNNING BOND PAVING PATTERN

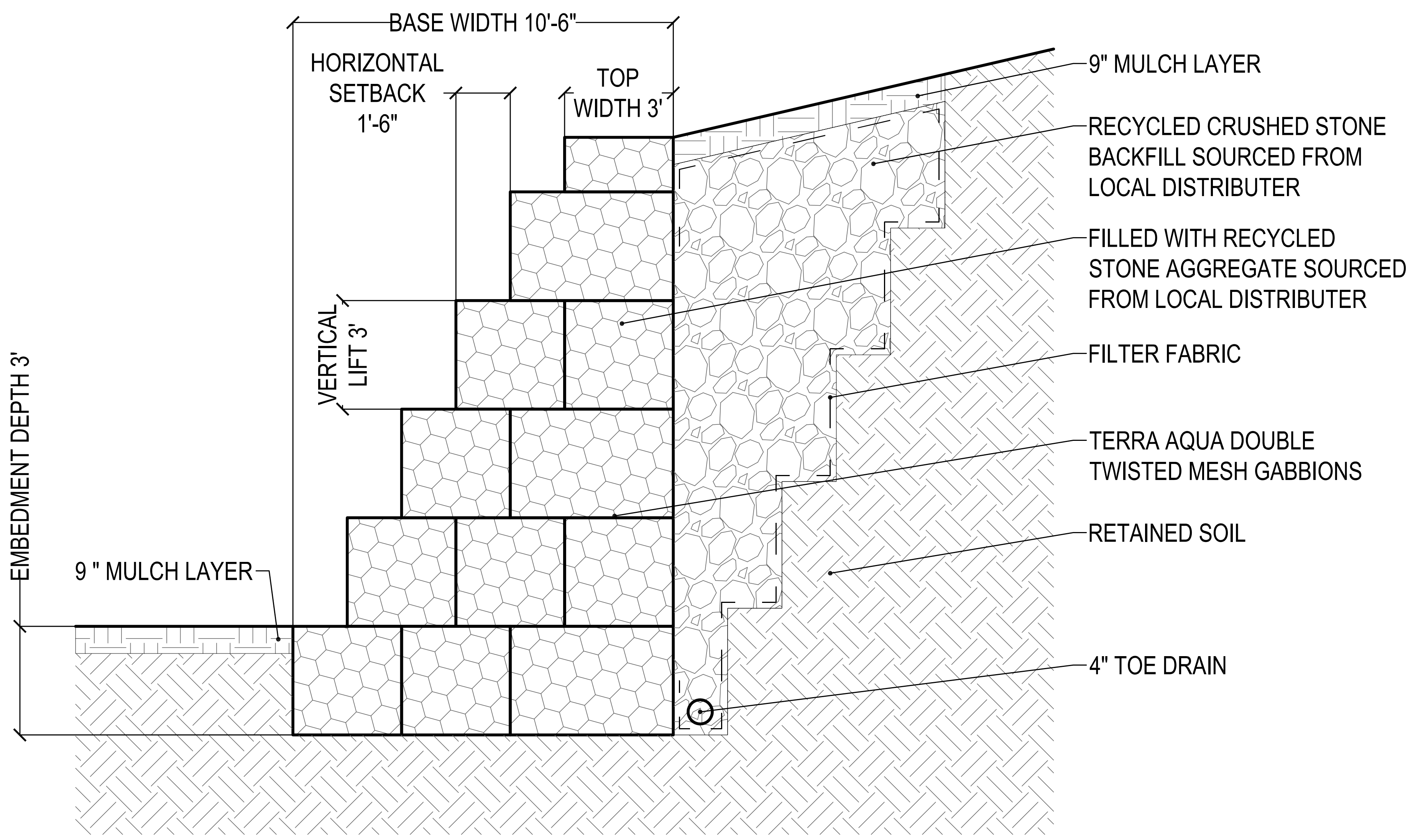


SOURCE: PINE HALL BRICK

2 BRICK PAVERS

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





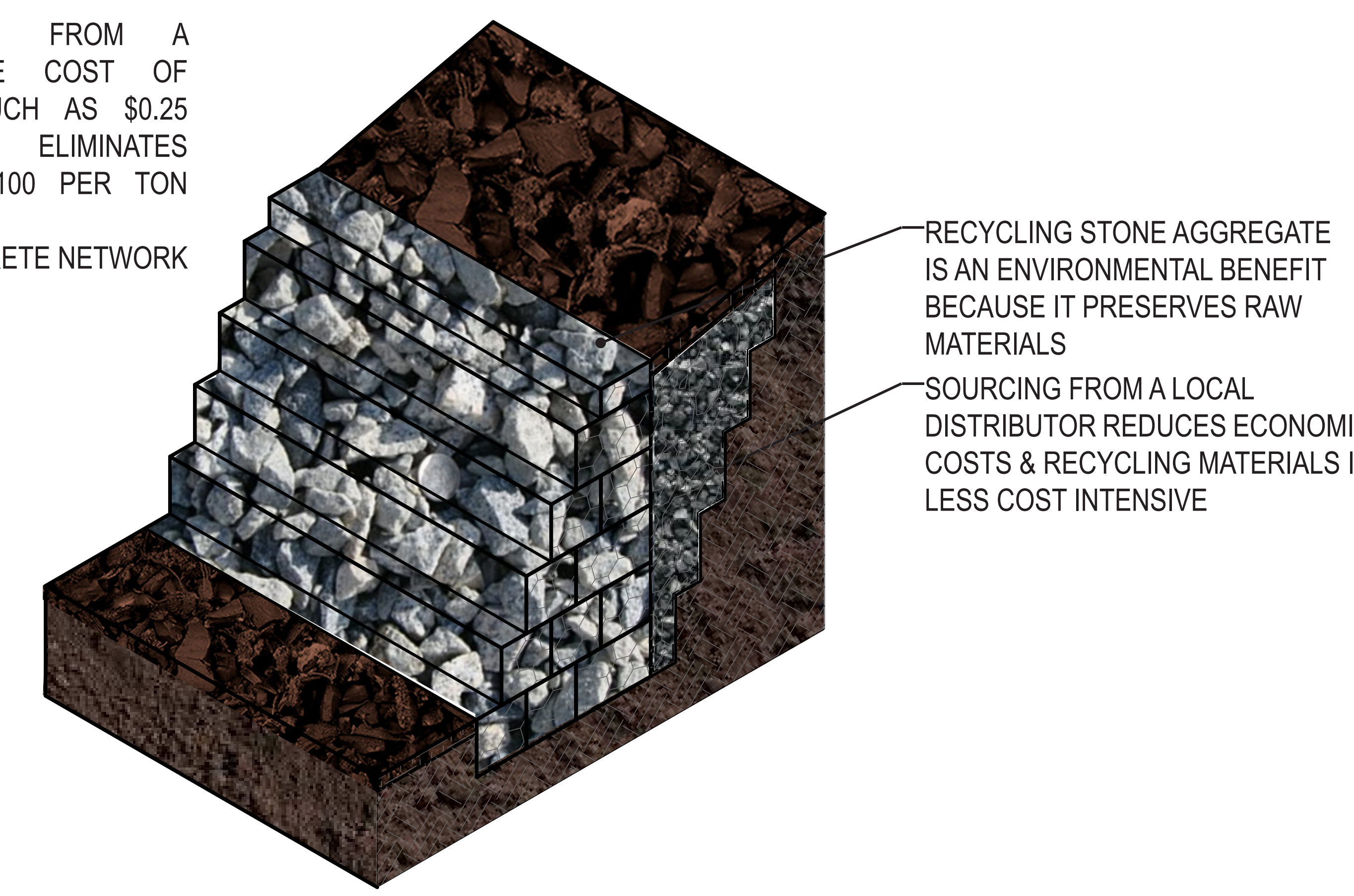
SOURCE: TERRA AQUA INC.

3 GABION GRAVITY WALL

SCALE: 1/4" = 1'-0"

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



4 RECYCLING MATERIALS

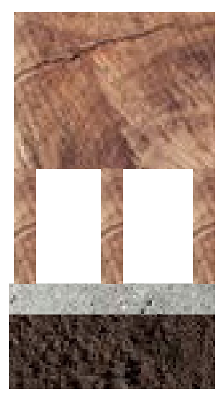
SCALE: 1/8" = 1'-0"

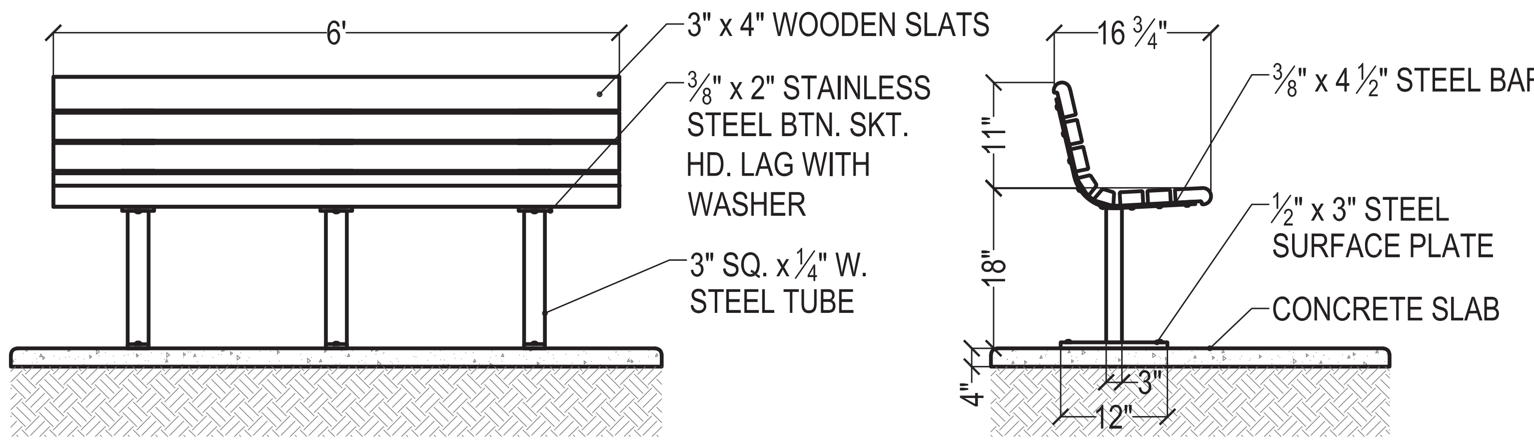
KATELYN NIMIC

PHASE 2B:
PRECAST CONCRETE + BRICK + STONE

TITLE:	ECONOMIC INNOVATIONS: RECYCLED MATERIALS
SCALE:	SEE DRAWINGS
DATE:	NOVEMBER 8, 2017

DWG. NO.
L3-03

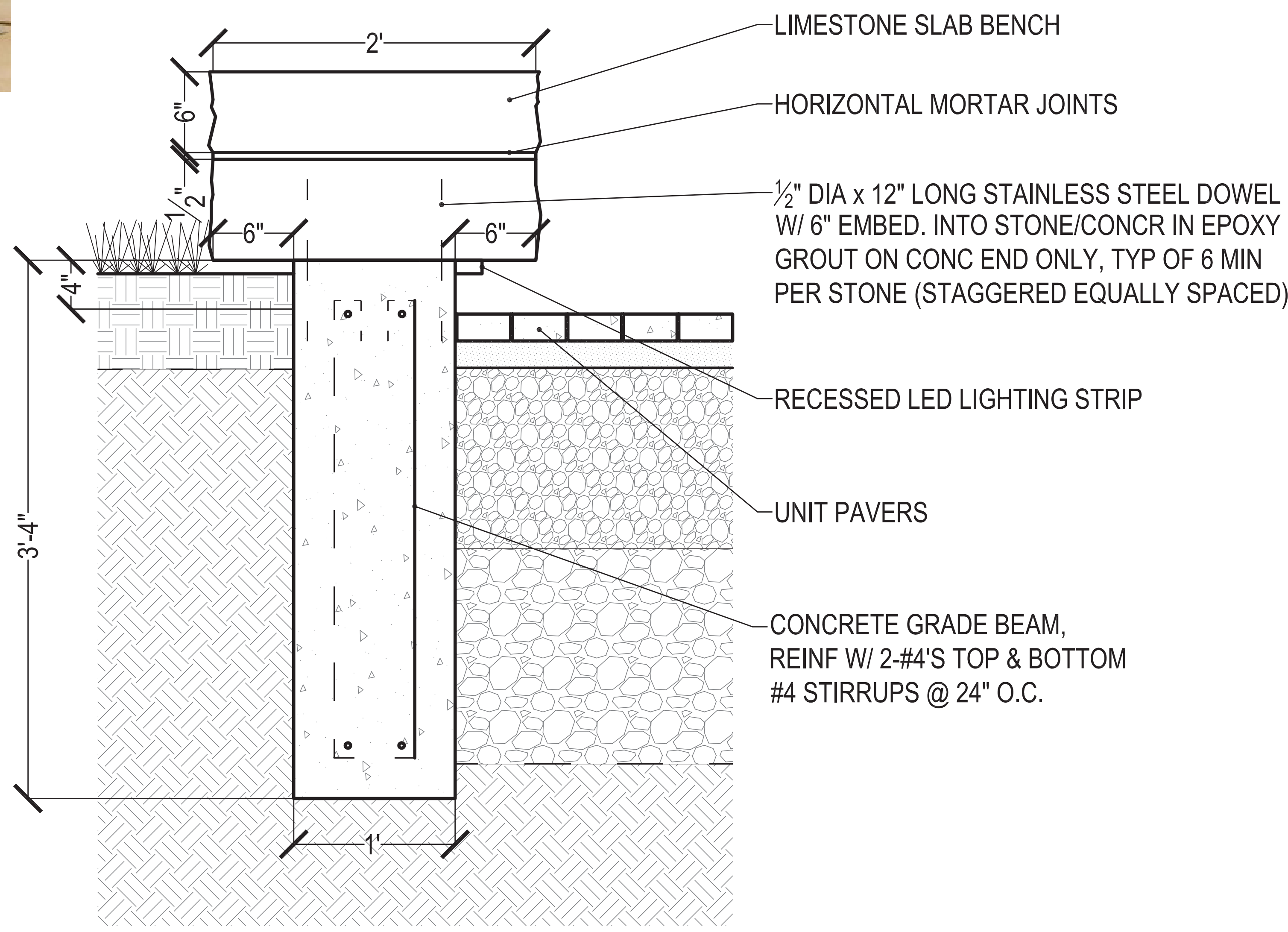




SOURCE: TOWN OF CARY, NORTH CAROLINA

1 STANDARD BENCH

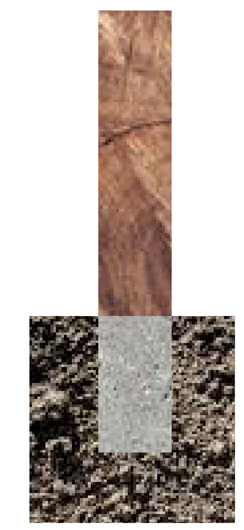
SCALE: 1/2" = 1'-0"

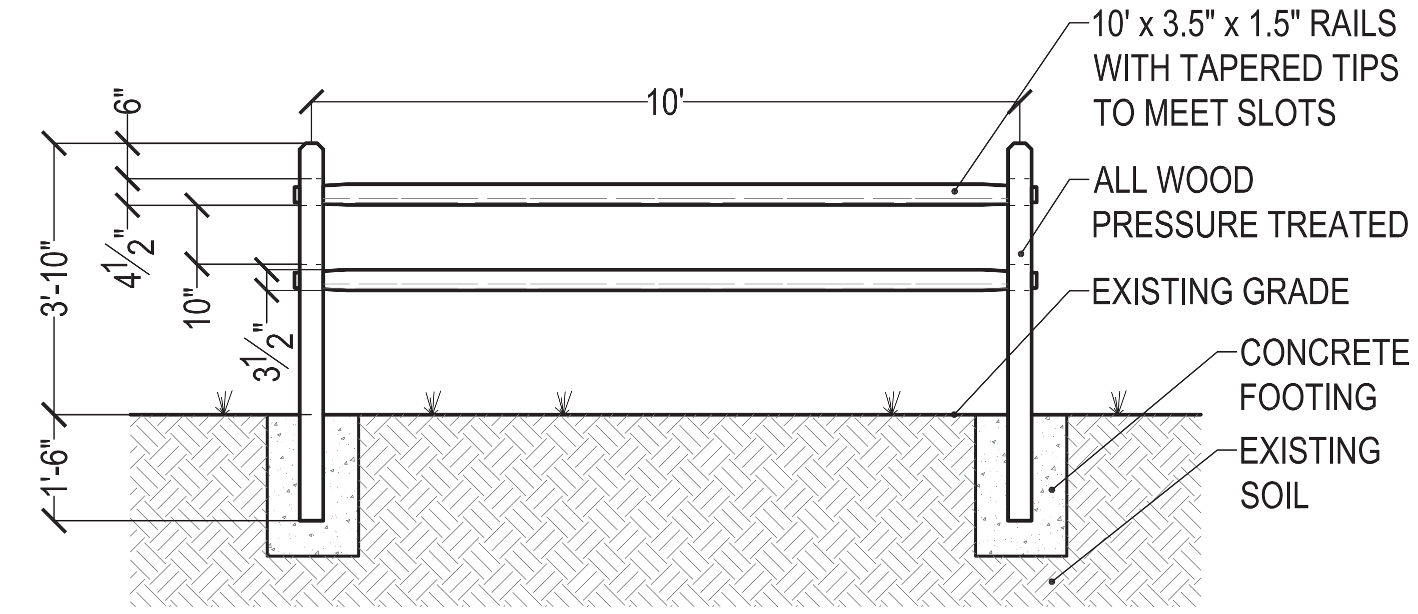


SOURCE: LOVE LIBRARY NORTH

3 STONE BENCH ADJACENT TO TURF

SCALE: 1" = 1'-0"





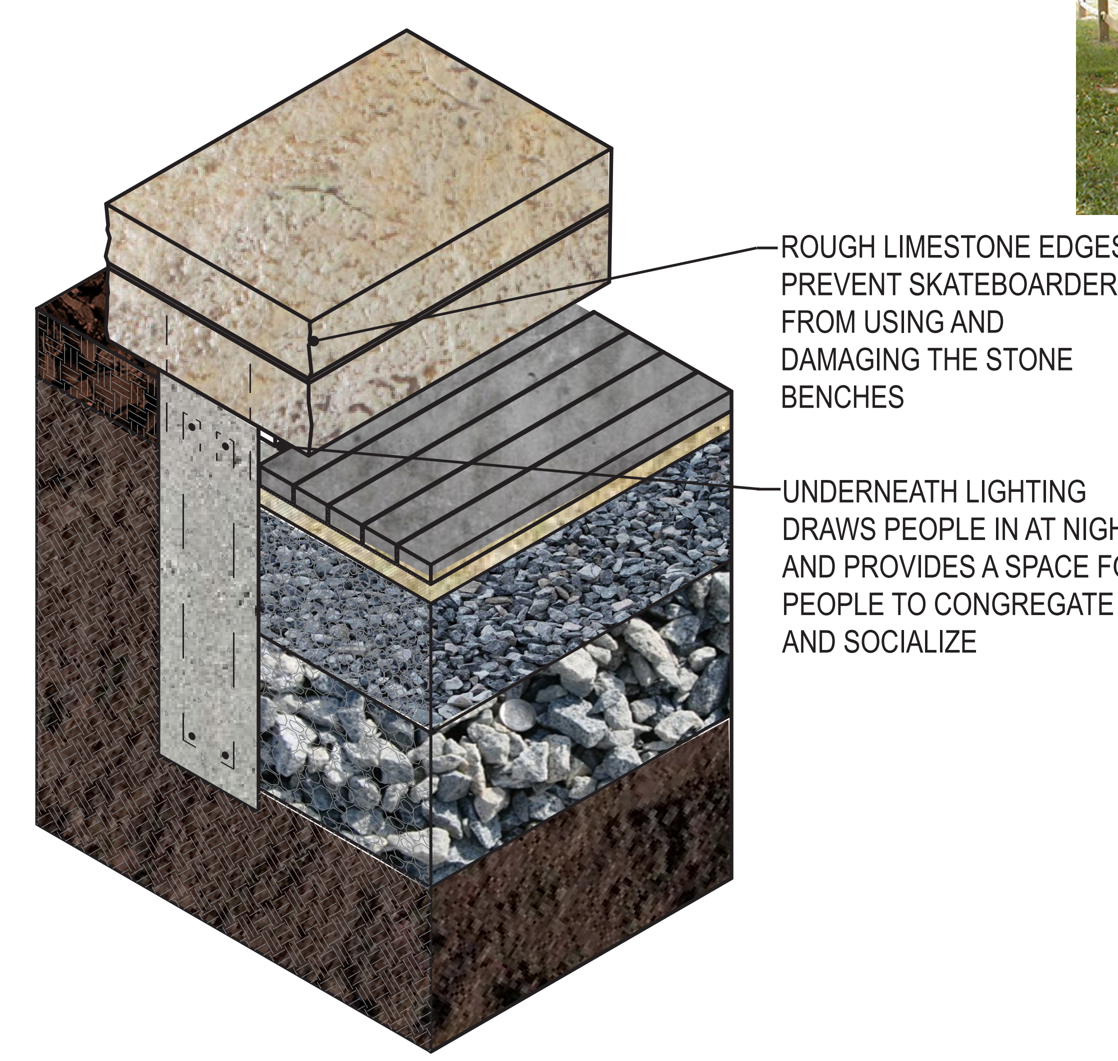
SOURCE: TOWN OF CARY, NORTH CAROLINA

2 STANDARD SPLIT-RAIL FENCE

SCALE: 3/8" = 1'-0"

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: NATIONAL CENTER FOR BIOTECHNOLOGY INFORMATION



4 SOCIAL SEATING

SCALE: 3/4" = 1'-0"

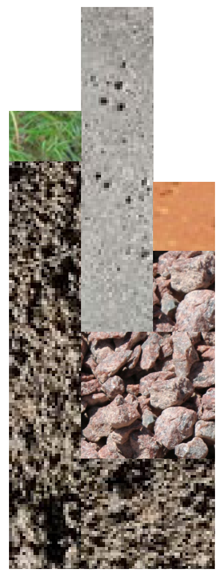
KATELYN NIMIC

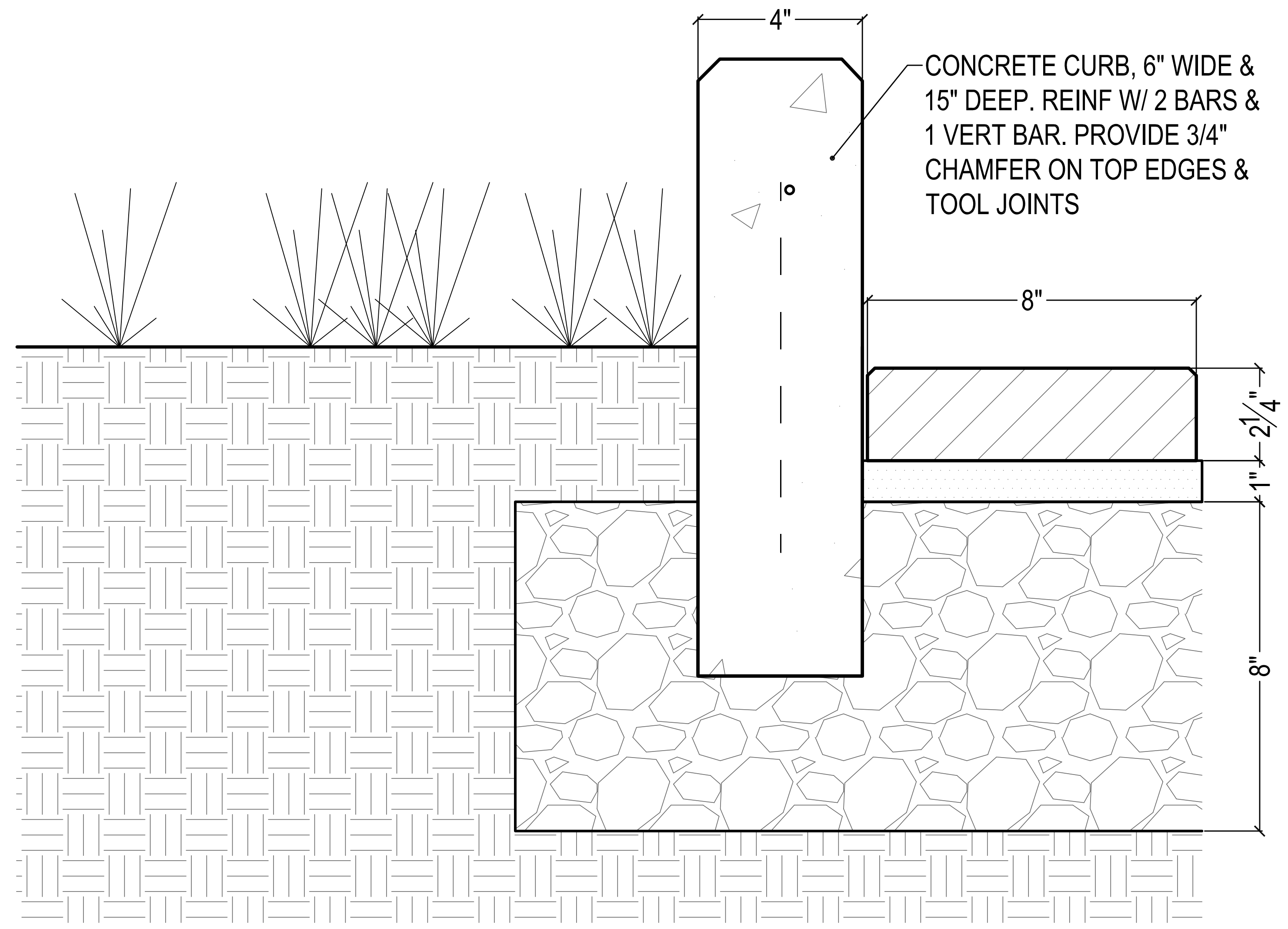
PHASE 2C:
FENCES + RAILS + SEATING

TITLE:	INNOVATIVE SOCIAL & ECONOMICAL ALTERNATIVES: MATERIAL CHOICE
SCALE:	SEE DRAWINGS
DATE:	NOVEMBER 7, 2017

DWG. NO.

L3-04

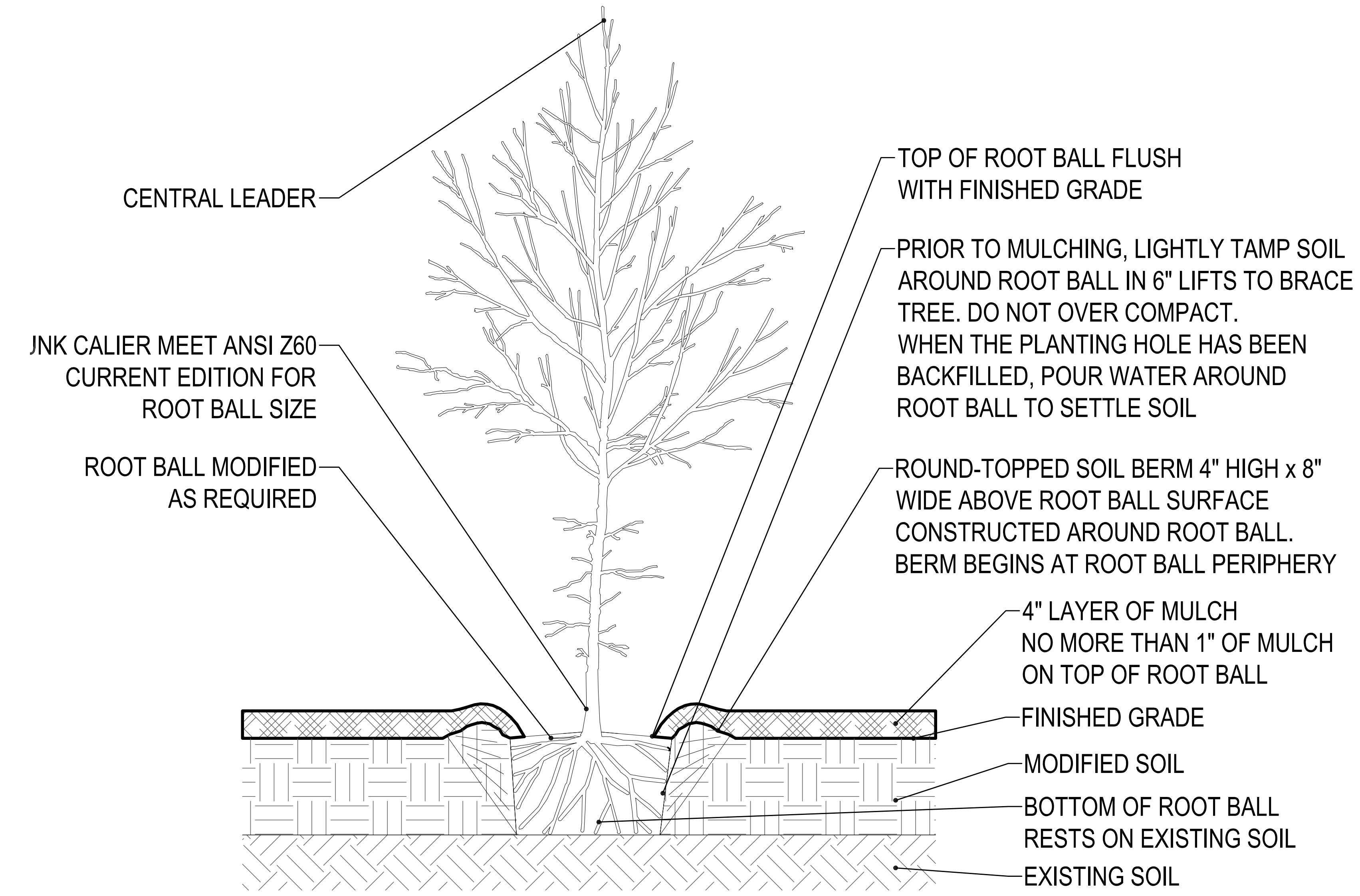




SOURCE: P STREET STREETSCAPE

1 PLANTING BED CURB

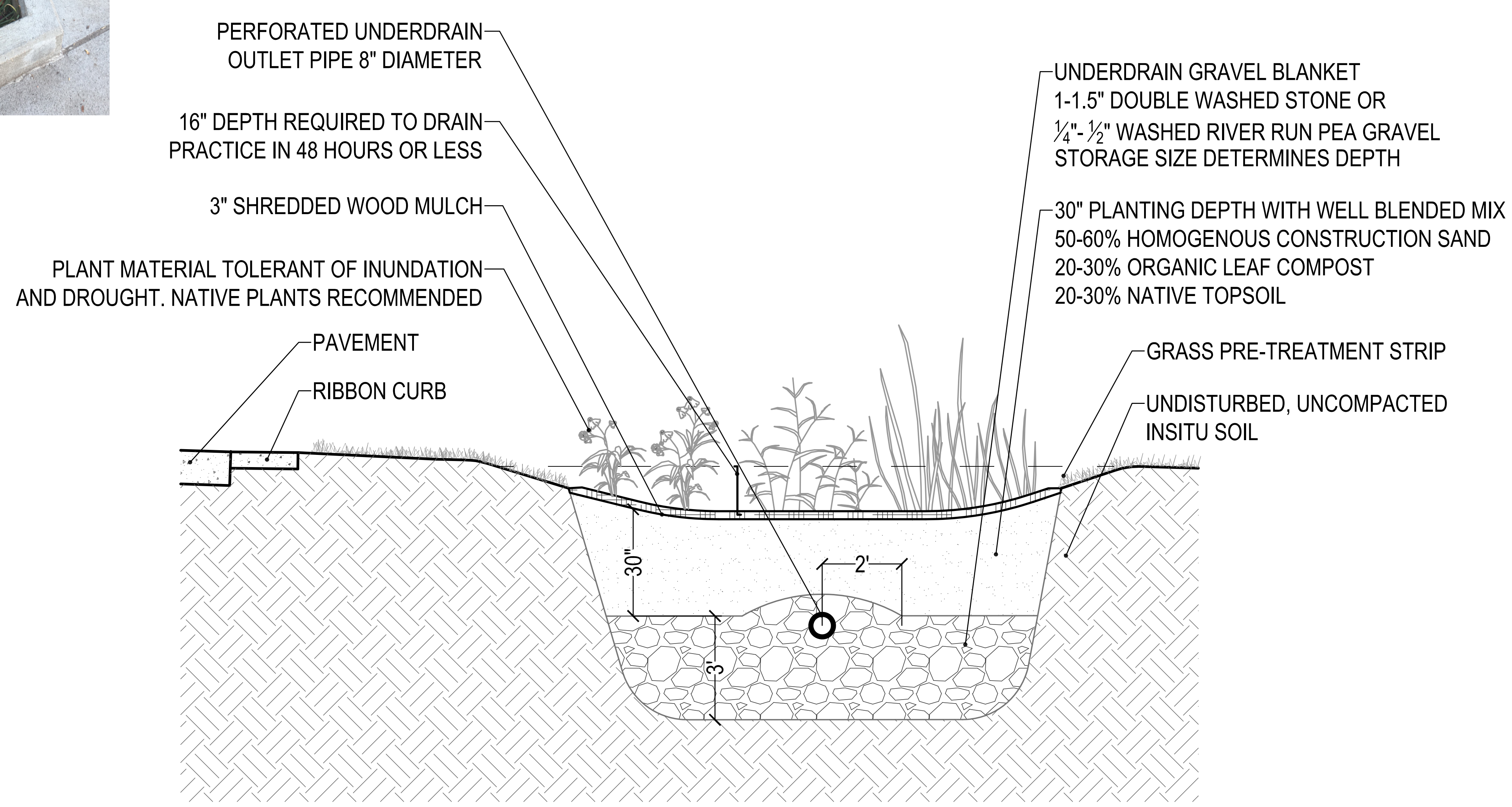
SCALE: 3" = 1'-0"



SOURCE: INTERNATIONAL SOCIETY OF ARBORICULTURE

2 TREE W/ BERM

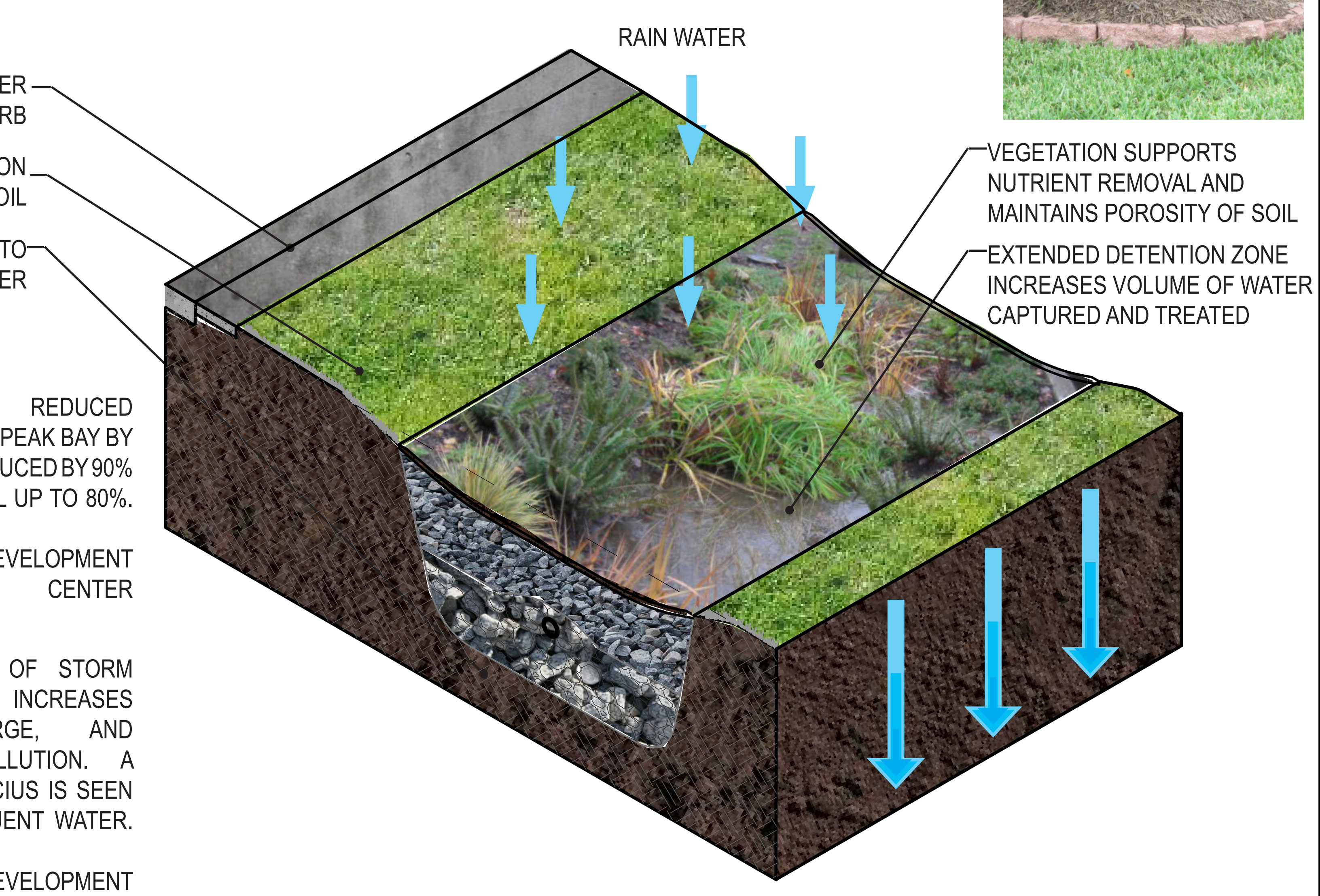
SCALE: 1/2" = 1'-0"



SOURCE: MINNESOTA STORMWATER MANUAL

3 BIORETENTION FACILITY

SCALE: 1/4" = 1'-0"



BIORETENTION SYSTEMS REDUCED NUTRIENT RUNOFF IN CHESAPEAK 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

4 STORMWATER MANAGEMENT

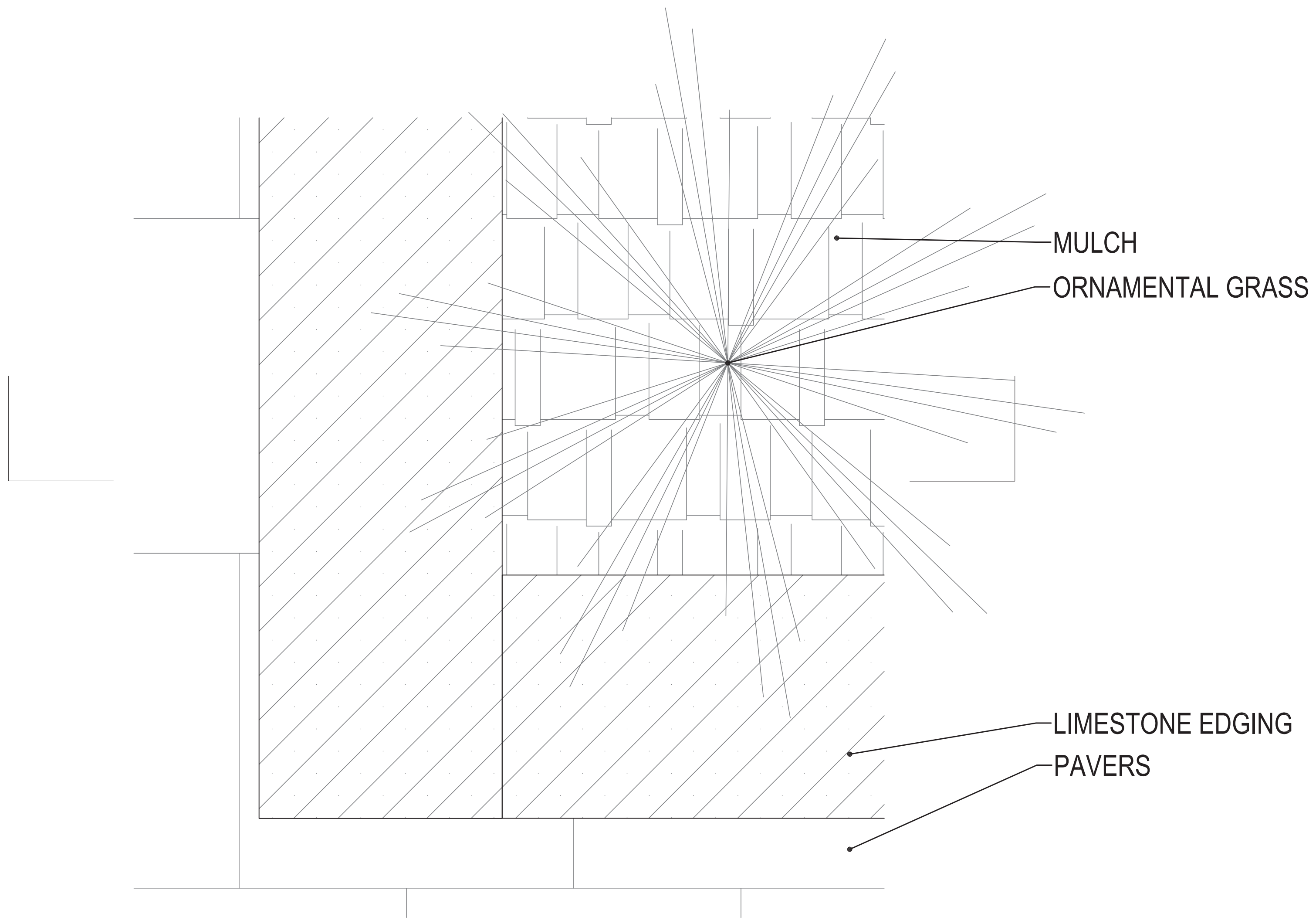
SCALE: 3/16" = 1'-0"

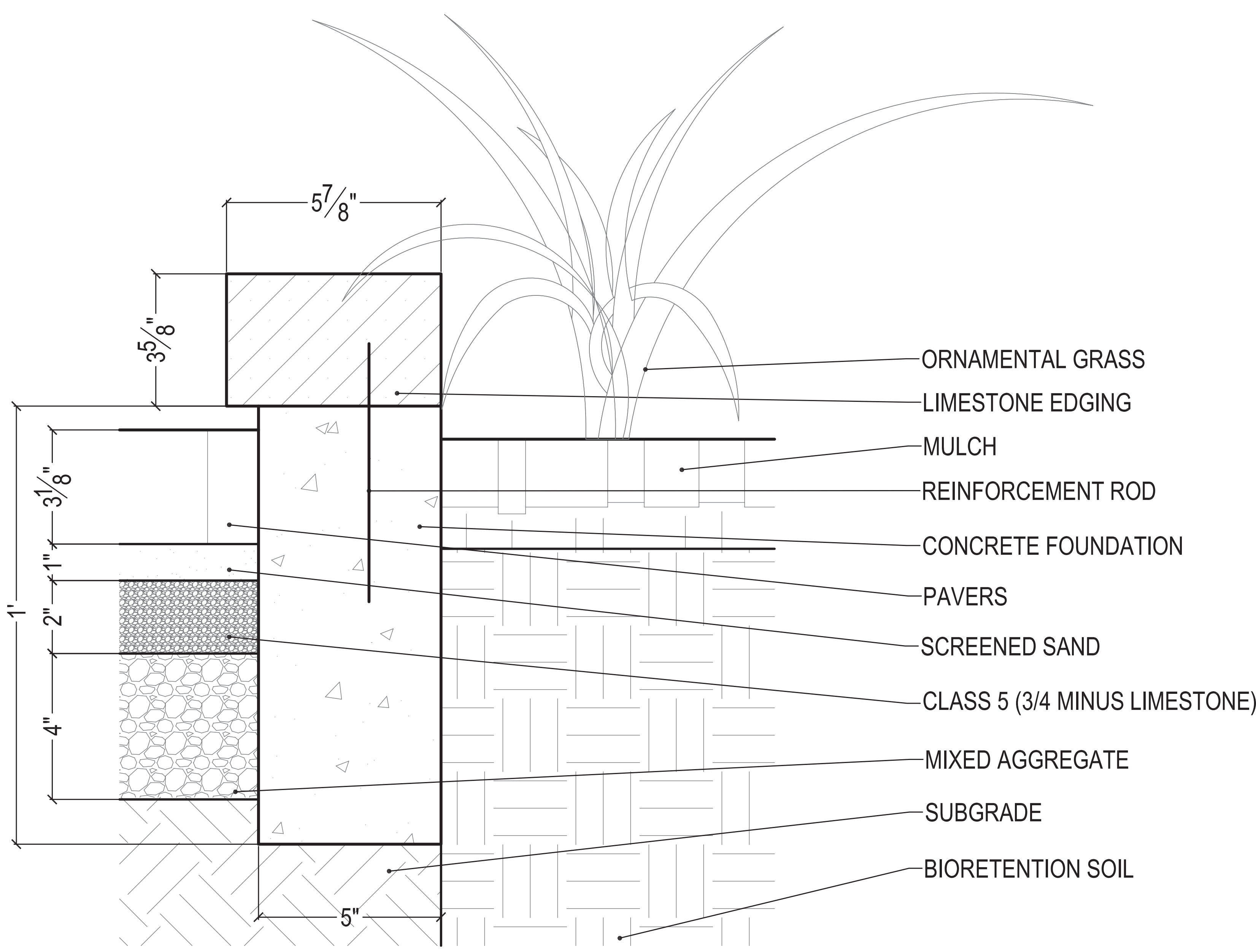
KATELYN NIMIC

PHASE 2D:
PLANTING TECHNIQUE + LAWNS AND MEADOWS

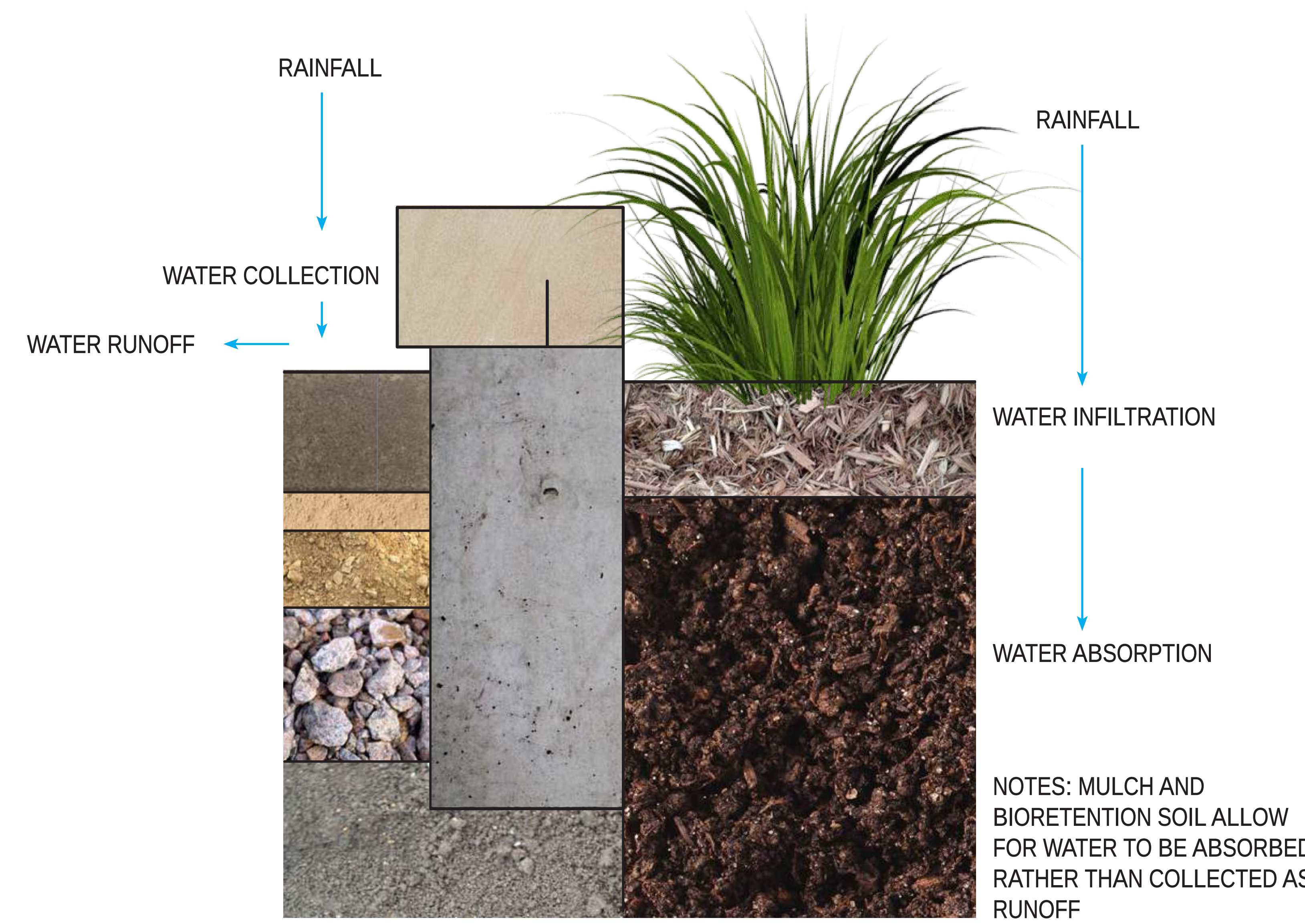
TITLE:	INNOVATIVE PLANTING ALTERNATIVES: STORM WATER MANAGEMENT
SCALE:	SEE DRAWINGS
DATE:	NOVEMBER 7, 2017

DWG. NO.
L3-05





SOURCE: LOVE LIBRARY



1 PLANTER EDGING CONDITION

SCALE: 3" = 1'-0"

2 RAINWATER PERFORMANCE

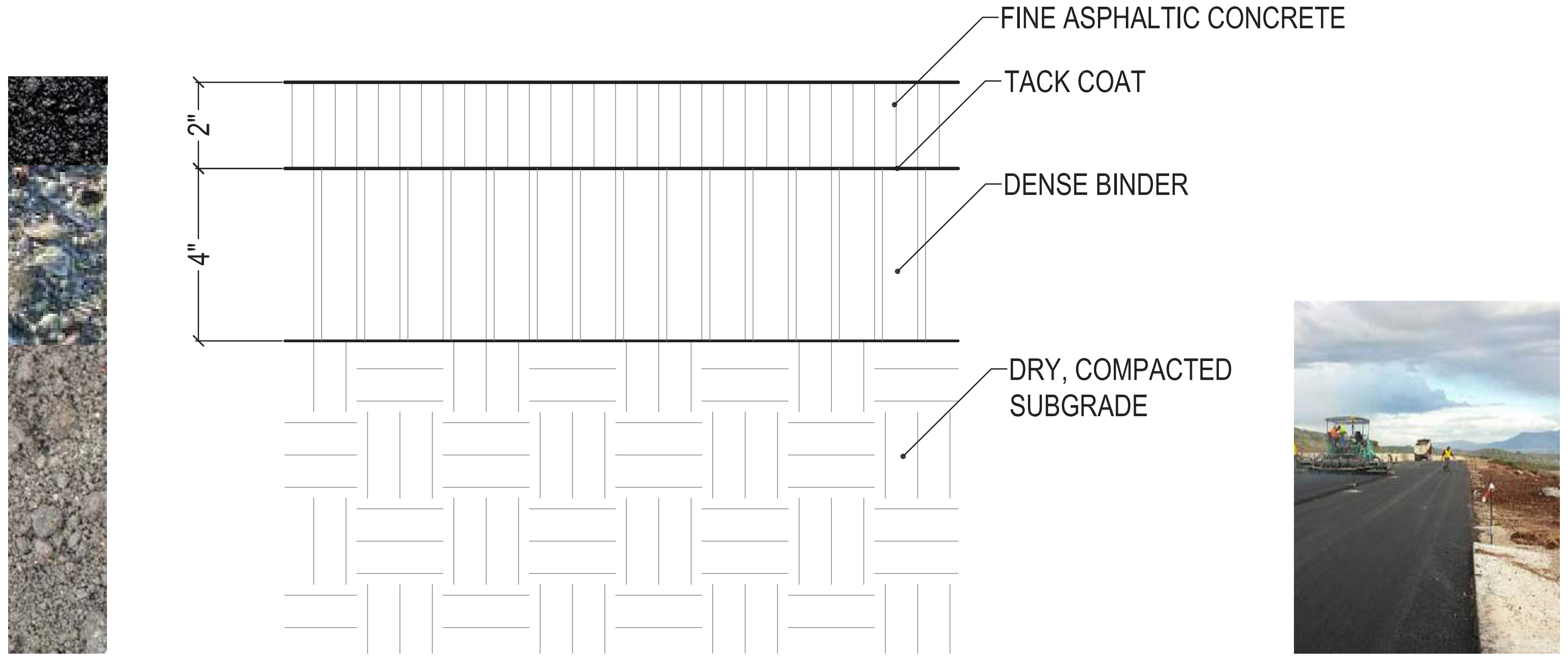
SCALE: 3" = 1'-0"

HANNAH LOPRESTO

PHASE 1B:
MATERIAL ASSEMBLIES

TITLE: LOVE LIBRARY: PLANTER EDGING CONDITION
SCALE: 3" = 1'-0"
DATE: SEPTEMBER 7, 2017

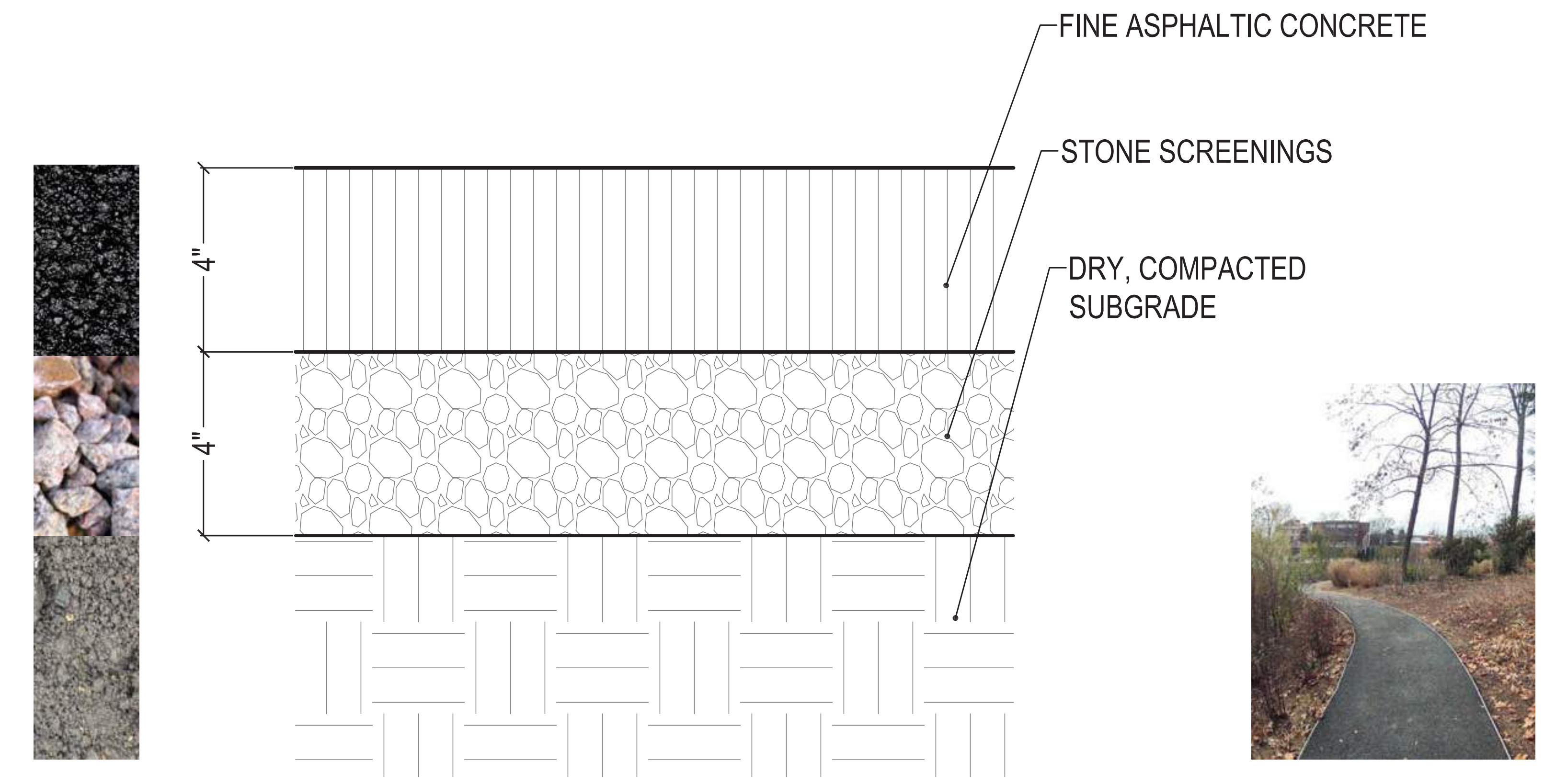
DWG. NO.
L3-01



SOURCE: SOVINSKI

1 HEAVY-DUTY ASPHALT

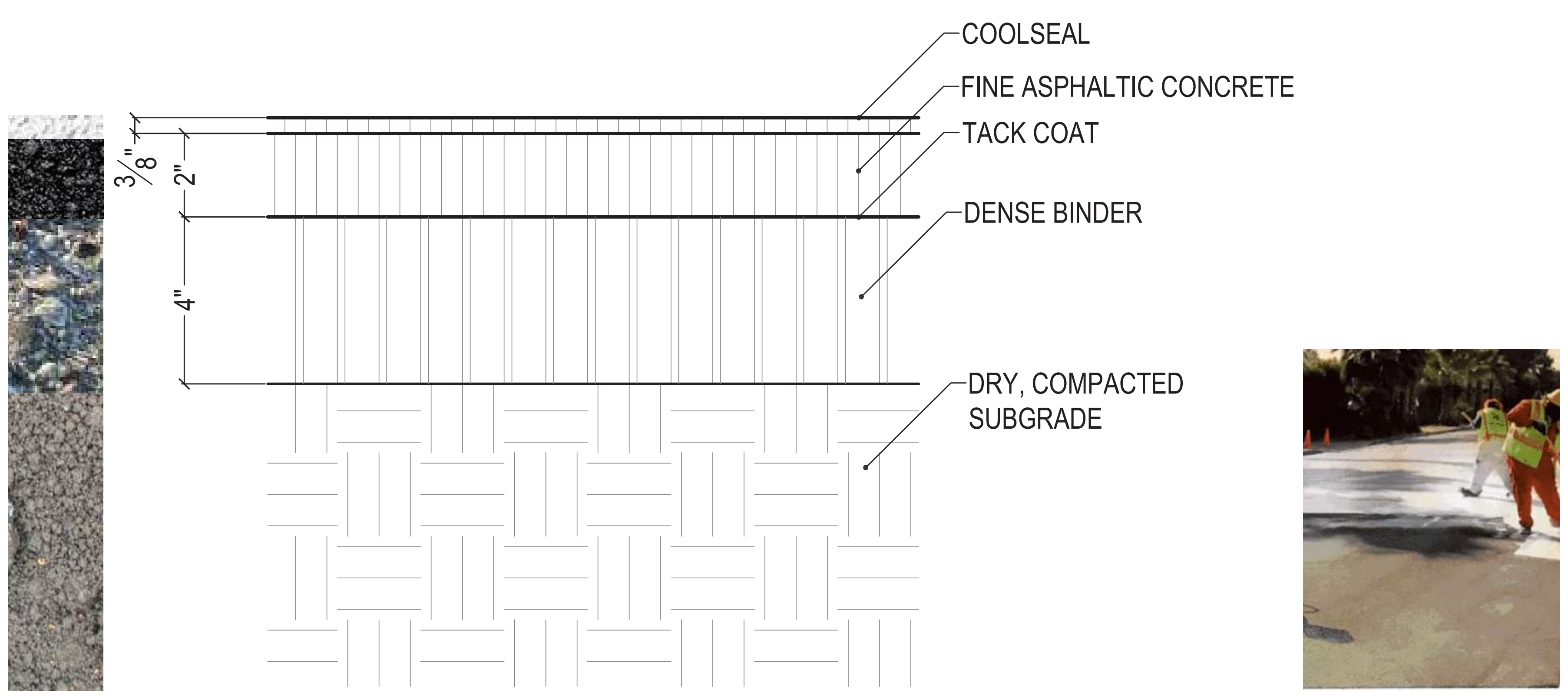
SCALE: 3" = 1'-0"



SOURCE: SOVINSKI

2 LIGHT-DUTY ASPHALT

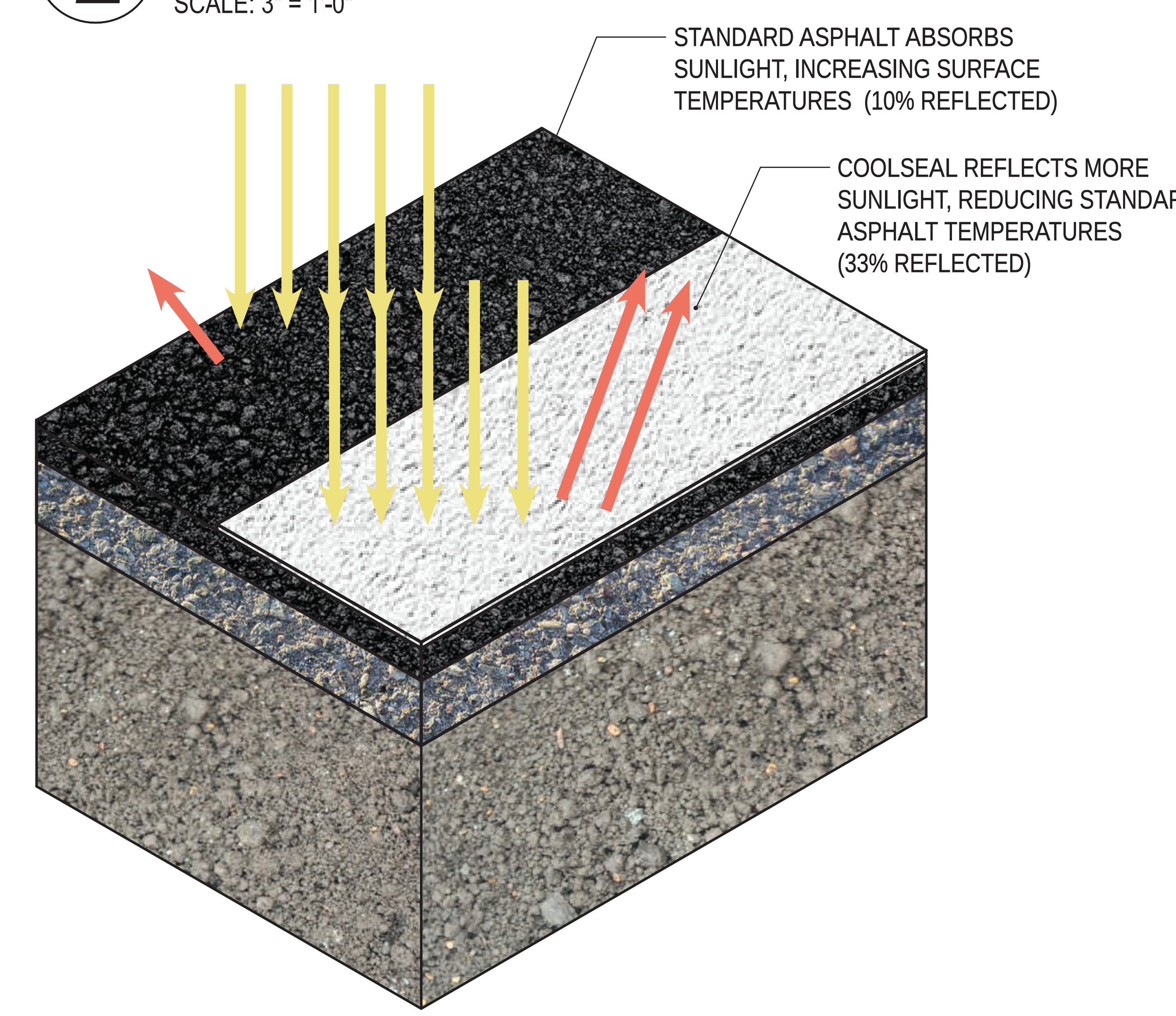
SCALE: 3" = 1'-0"



SOURCE: SOVINSKI AND GUARD TOP

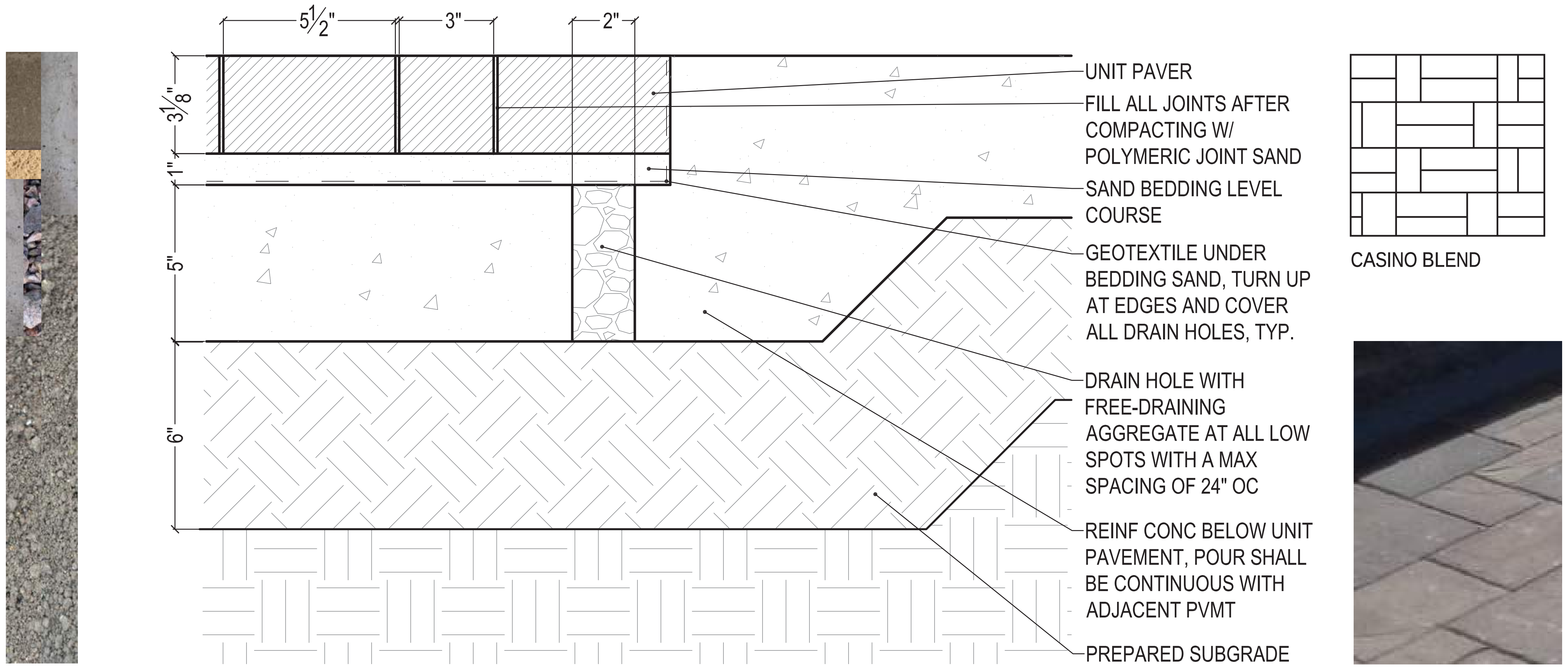
3 COOLSEAL OVER HEAVY-DUTY ASPHALT

SCALE: 3" = 1'-0"



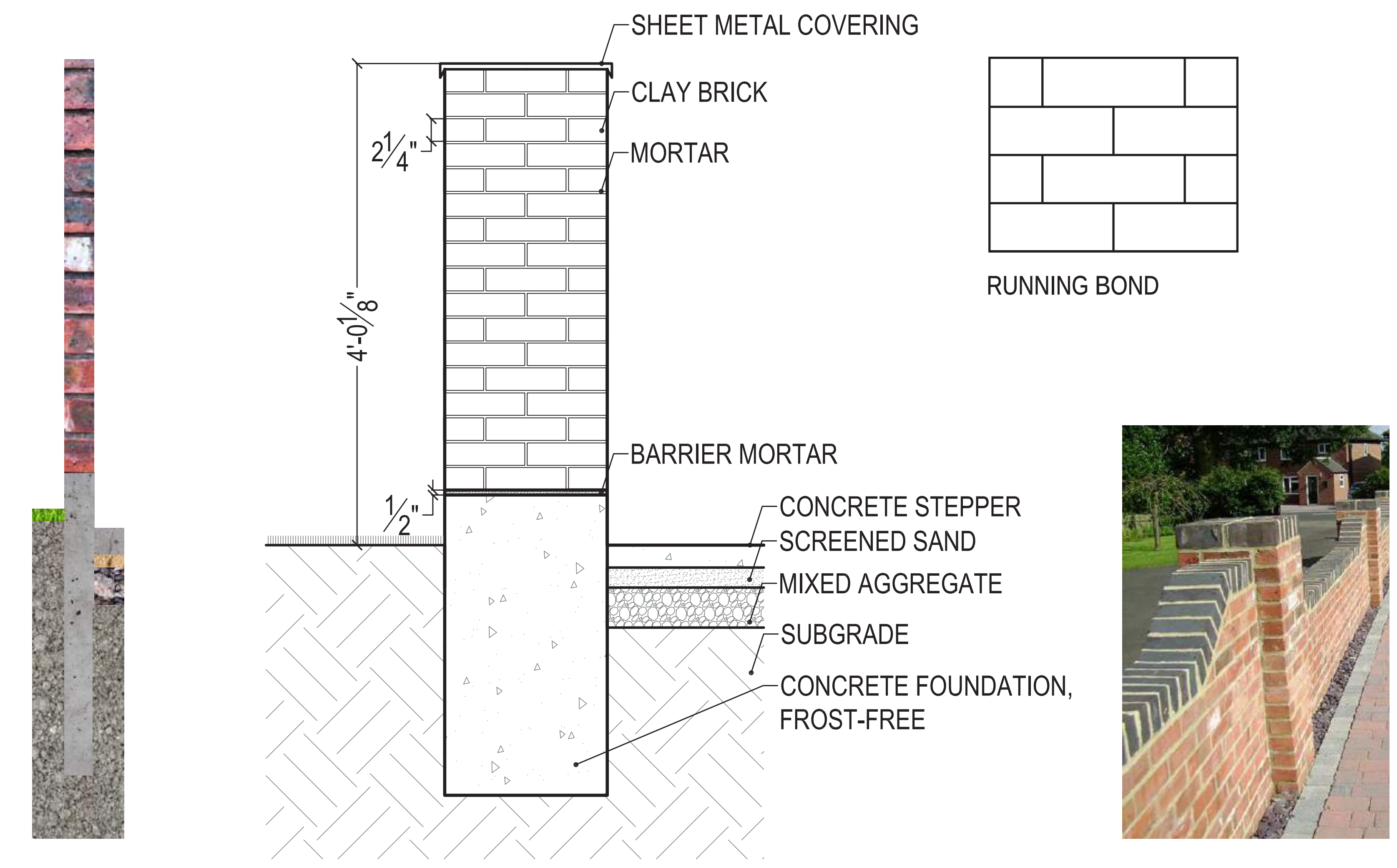
4 URBAN HEAT ISLAND REDUCTION

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



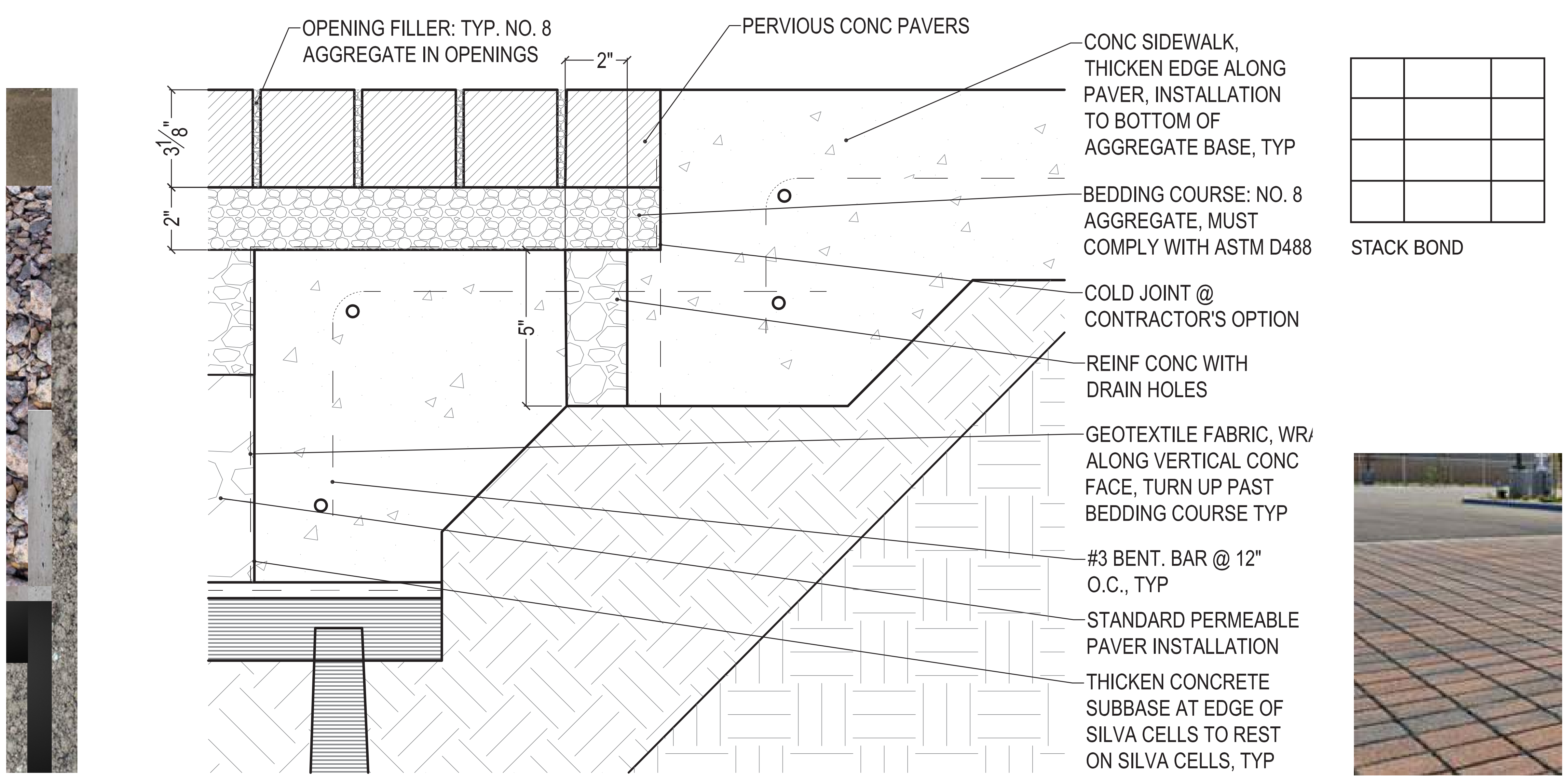
1 UNIT PAVER W/ CONC BASE

SCALE: 3" = 1'-0"



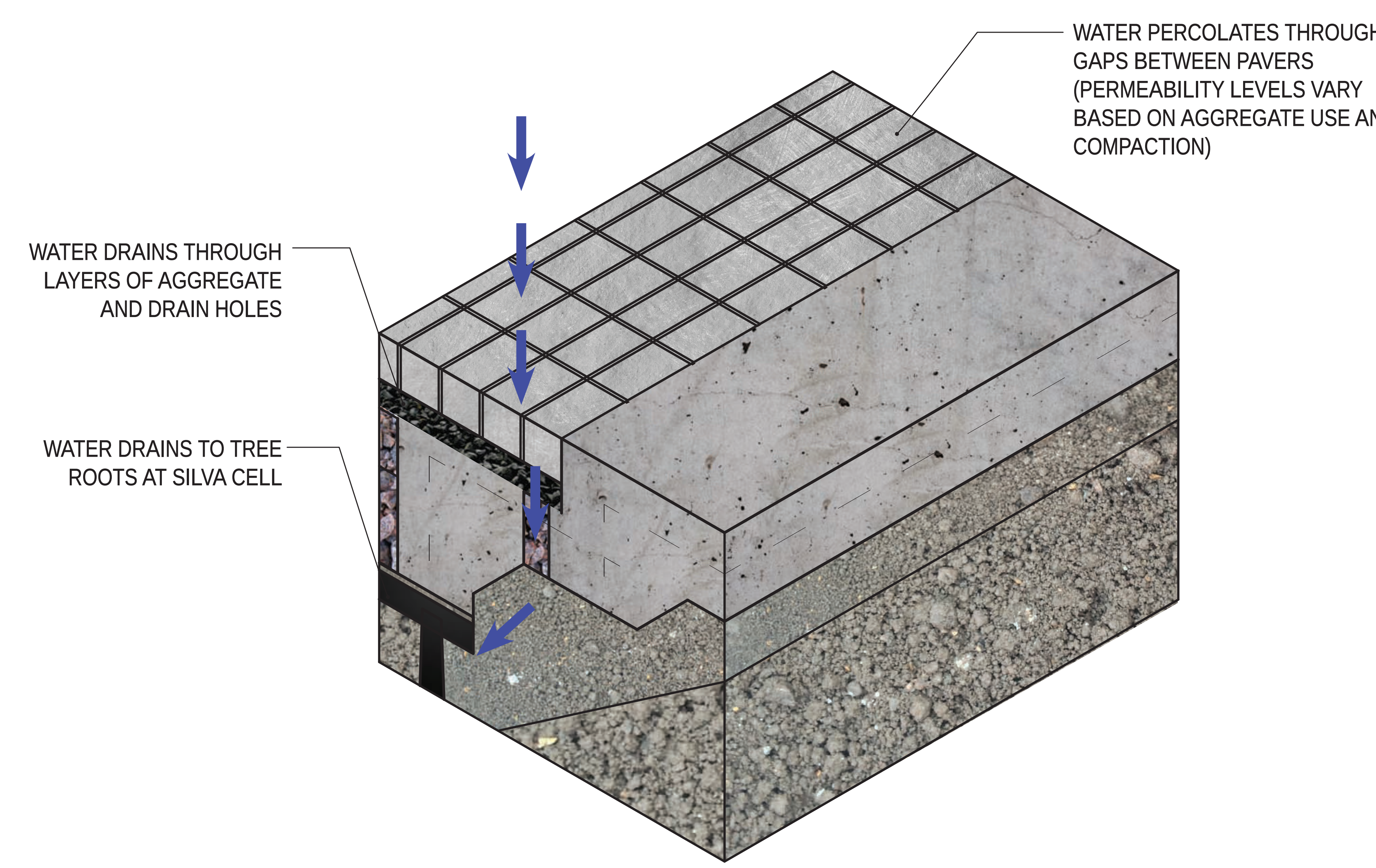
2 FREESTANDING BRICK WALL

SCALE: 3/4" = 1'-0"



3 PERMEABLE PAVERS OVER CONCRETE

SCALE: 3" = 1'-0"



4 STORMWATER MANAGEMENT

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

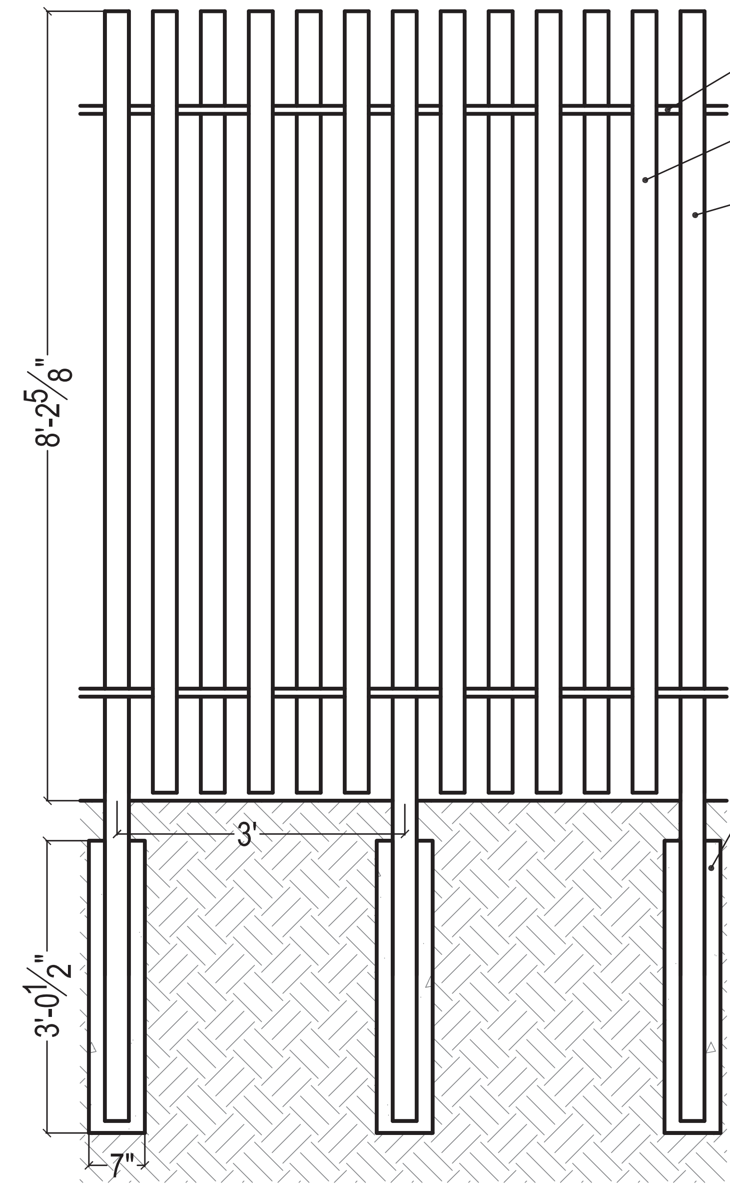
HANNAH LOPRESTO

PHASE 2B:
PRECAST CONCRETE + BRICK + STONE

TITLE:	CONSTRUCTION METHODS OF VARIOUS PAVING
SCALE:	VARIES
DATE:	OCTOBER 10, 2017

DWG. NO.

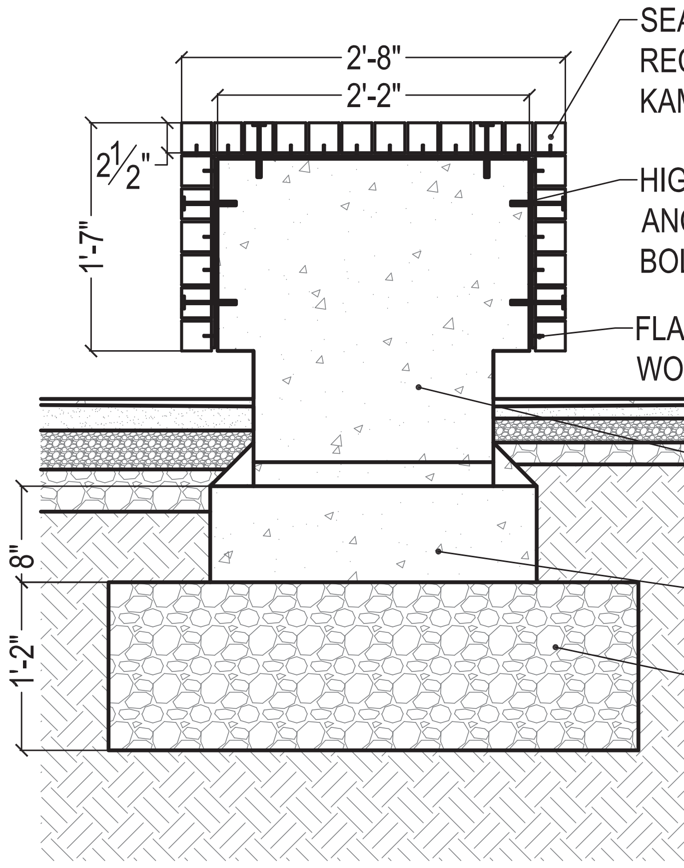
L3-03



SOURCE: ARHUS, COPENHAGEN

1 VERTICAL GRILL TIMBER + STEEL FENCE

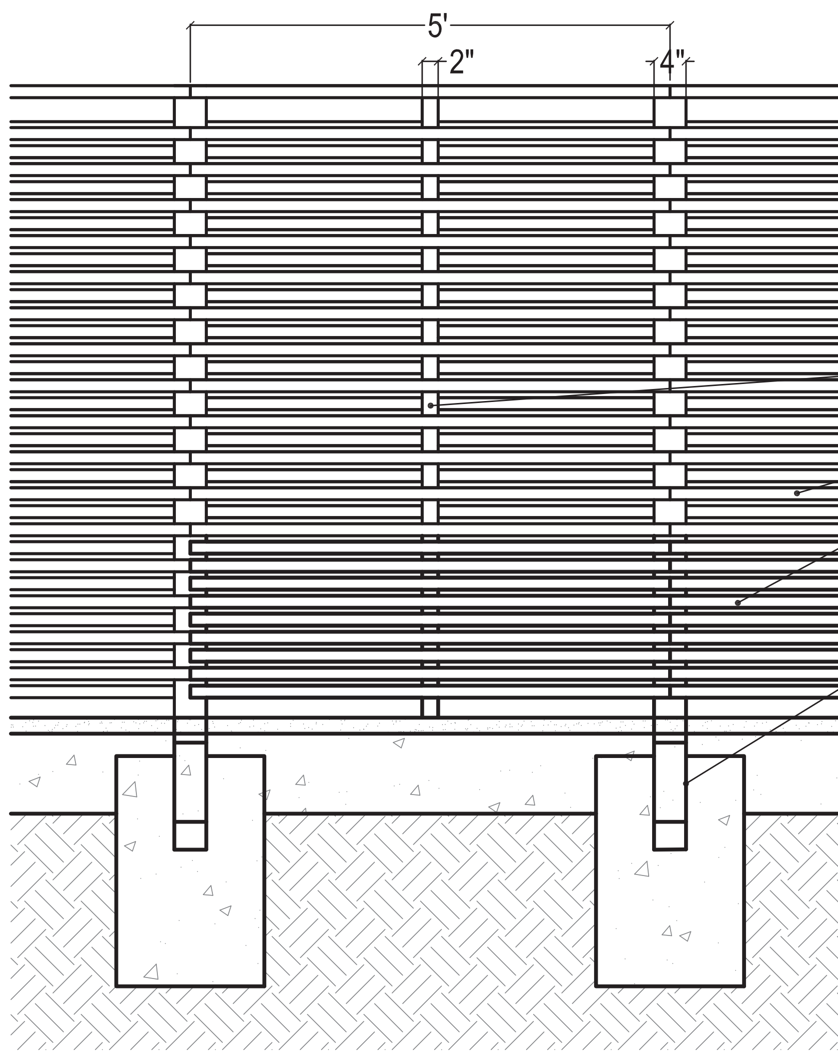
SCALE: 1/2" = 1'-0"

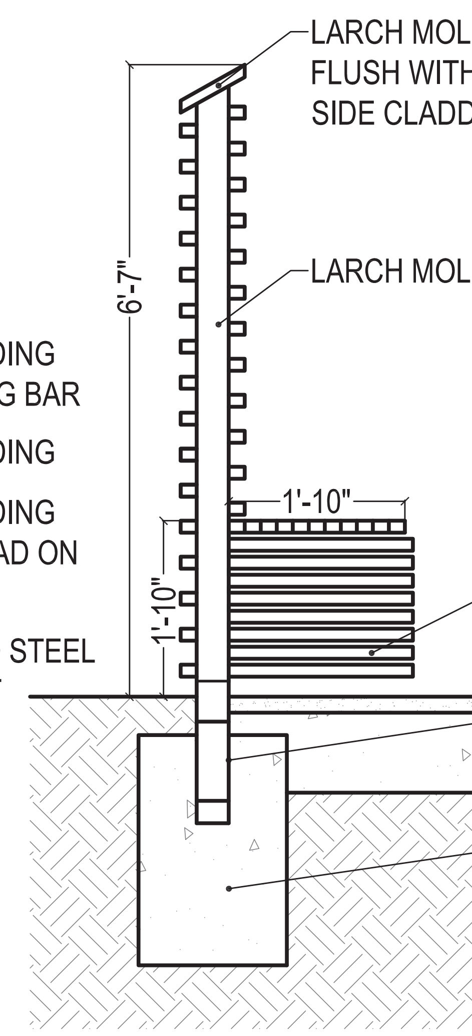


SOURCE: WEIDINGER, OSCHATZ, GERMANY

2 BENCH WITH WOOD COVERING

SCALE: 3/4" = 1'-0"

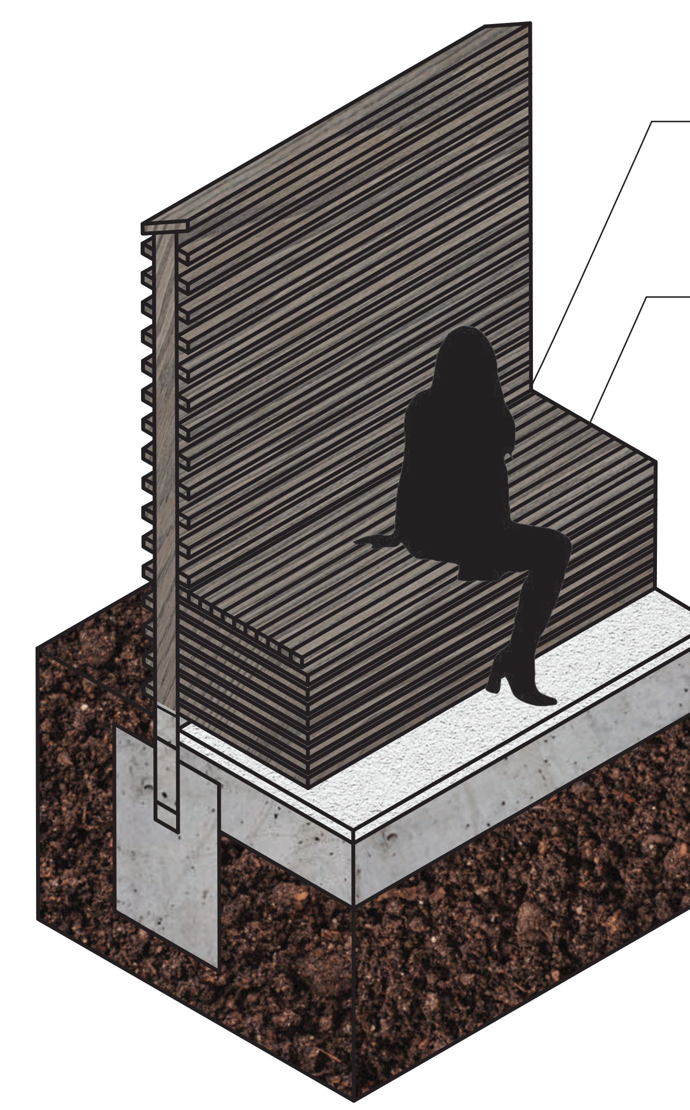




SOURCE: HUTTERREIMANN + CEJKA, BERLIN

3 HORIZONTAL GRILL SLATTED WOOD FENCE

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



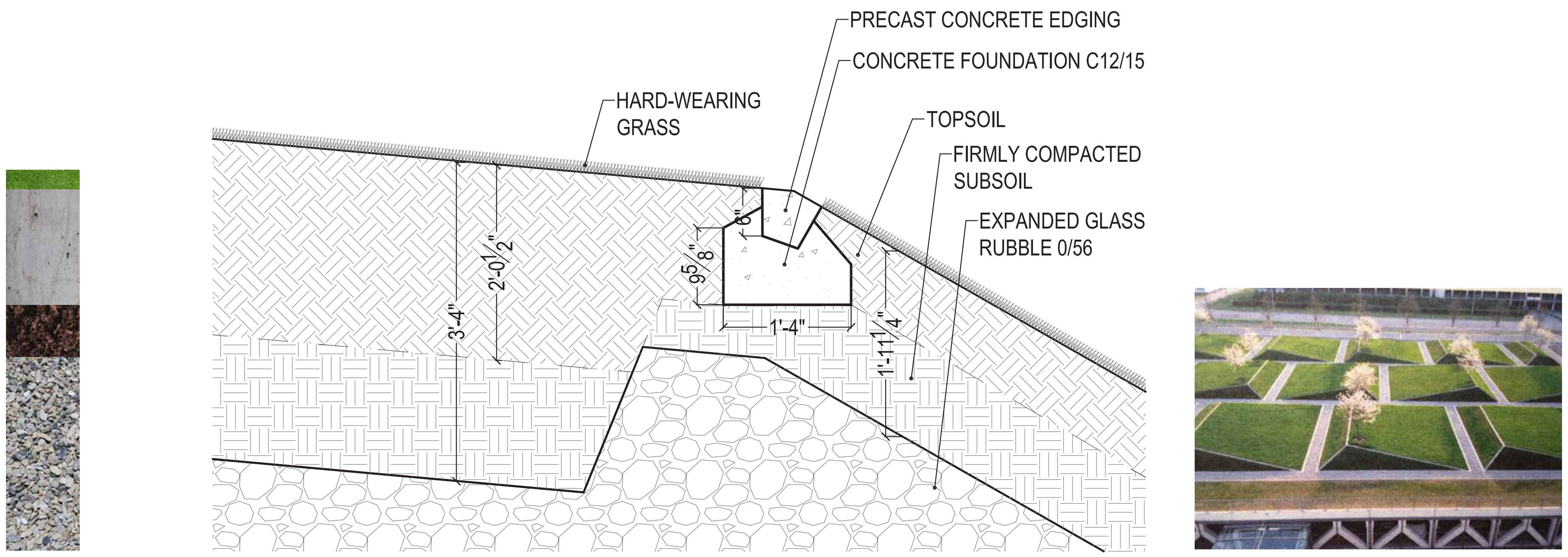
FENCING AND BENCH ARE CONSTRUCTED TOGETHER AS ONE UNIT FROM THE SAME MATERIAL: LARCH MOLDING

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

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

4 DUAL PROGRAM: FENCE + SEAT

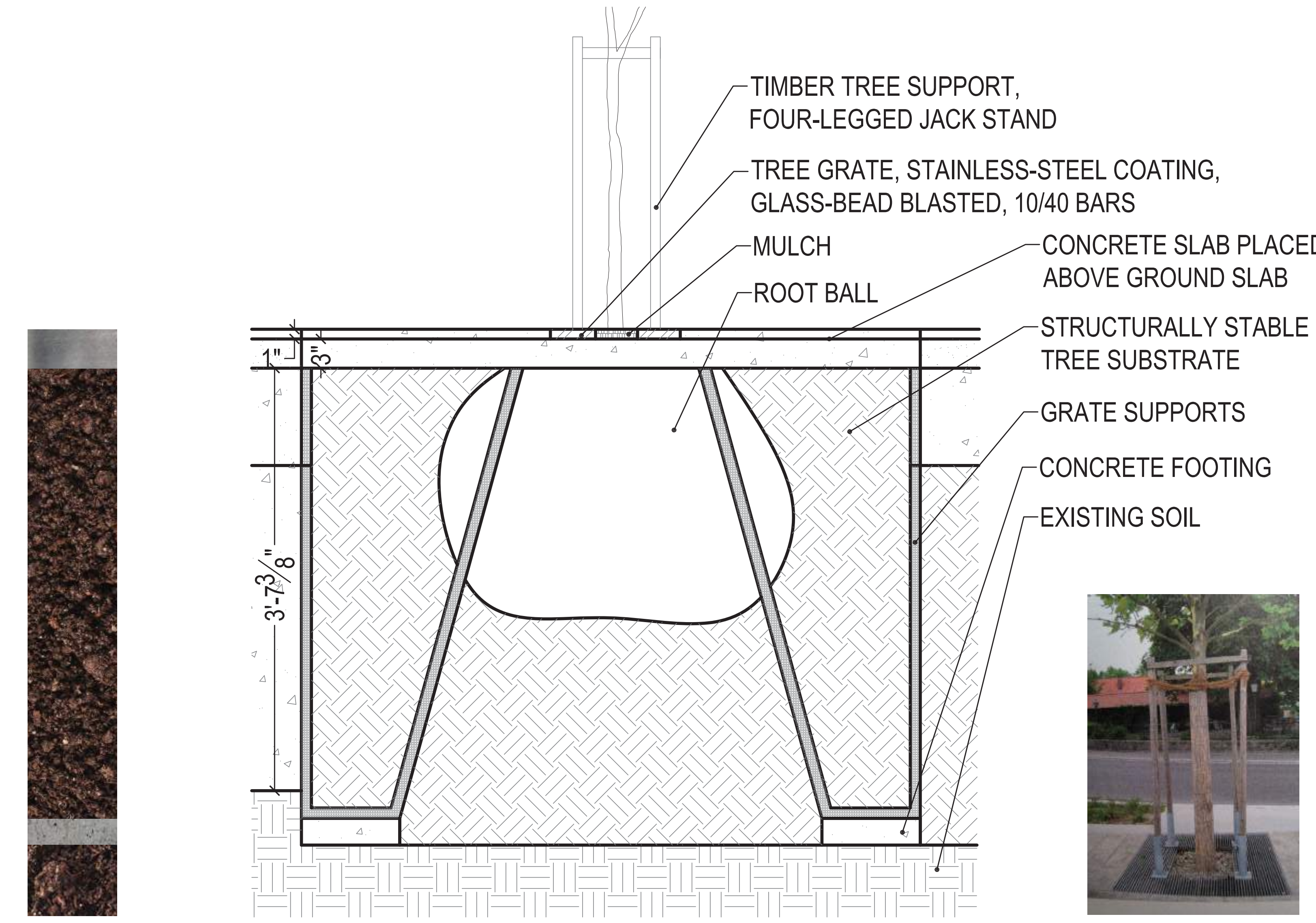
SCALE: 1/2" = 1'-0"



SOURCE: SCHMIDT, MUNICH AIRPORT, GERMANY

1 GRASSY MOUND EDGE CONDITION

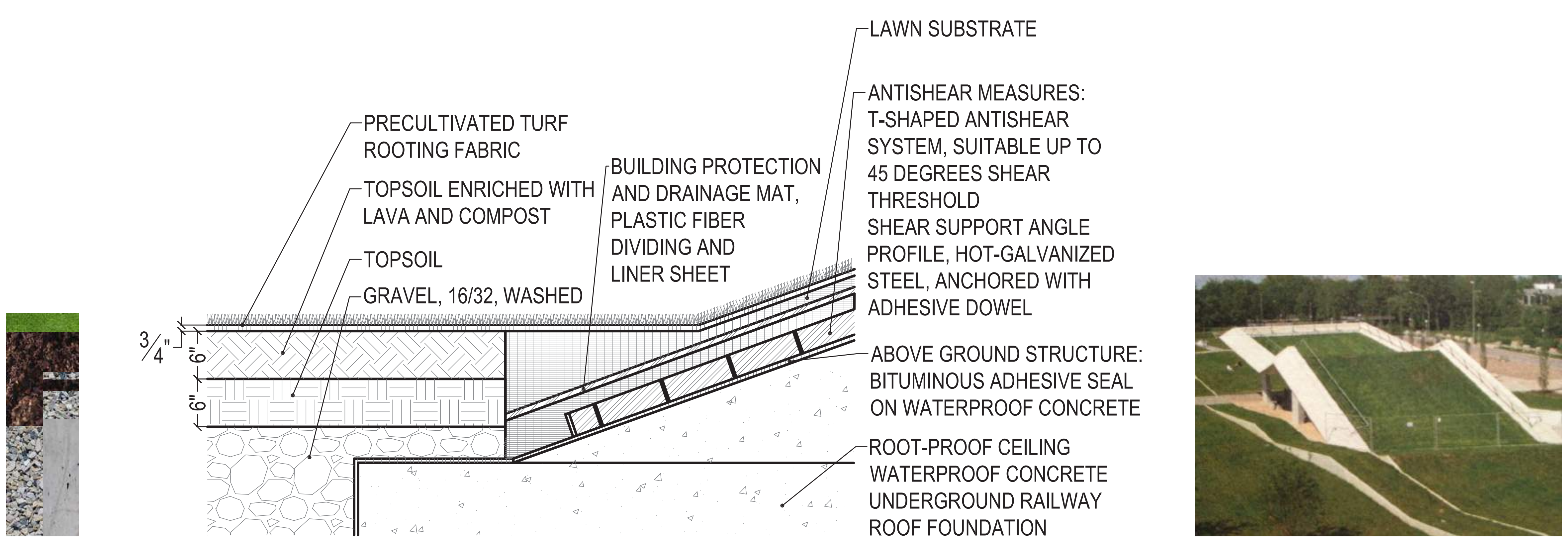
SCALE: 3/4" = 1'-0"



SOURCE: KELLER, NEUBURG, GERMANY

2 TREE GRATE, SELF-SUPPORTING

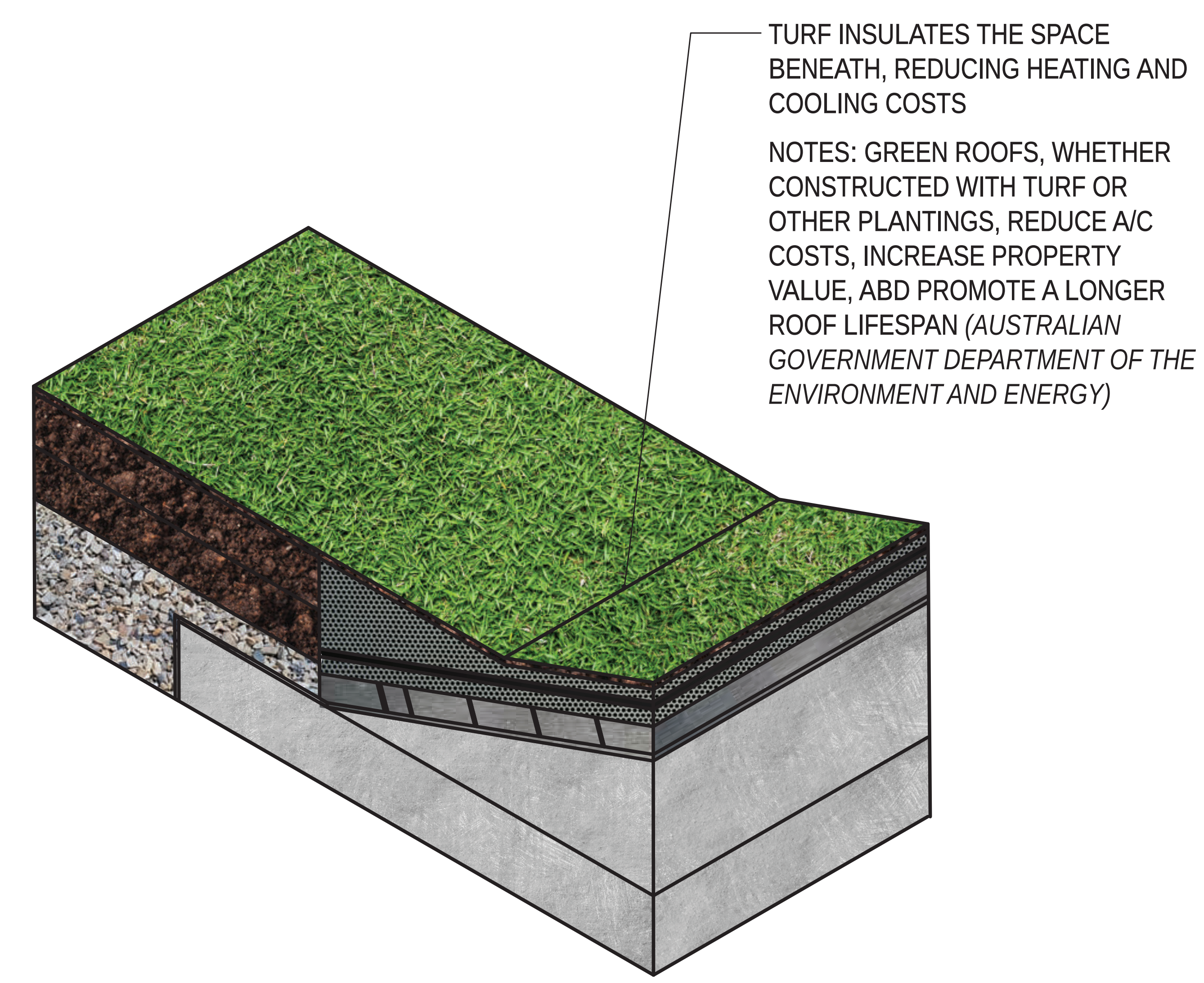
SCALE: 3/4" = 1'-0"



SOURCE: LA.BAR, GARCHING, GERMANY

3 SUBWAY STATION GREEN ROOF LAWN

SCALE: 3/4" = 1'-0"



4 GREEN ROOF: ECONOMIC BENEFIT

SCALE: 3/4" = 1'-0"

HANNAH LOPRESTO

PHASE 2D:
SOIL + PLANTINGS + EARTHWORKS

TITLE:	STREETS + PLAZAS + PARKS
SCALE:	3/4" = 1'-0"
DATE:	NOVEMBER 9, 2017

DWG. NO.

L3-05

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.

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 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 <u>Thursday, December 7th</u>. <u>PDFs must be submitted by 5:00 PM on Canvas</u>. 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 Crits Draft print of CAD Detail + Materials Palette Paving Pattern Mock-Up in class with a partner using tape	
11/16	Group Crits 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 Crits Final Model Performance evaluation discussion	
11/30	Group Crits Selection and in progress landscape performance evaluations	
12/5	Desk Crits 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

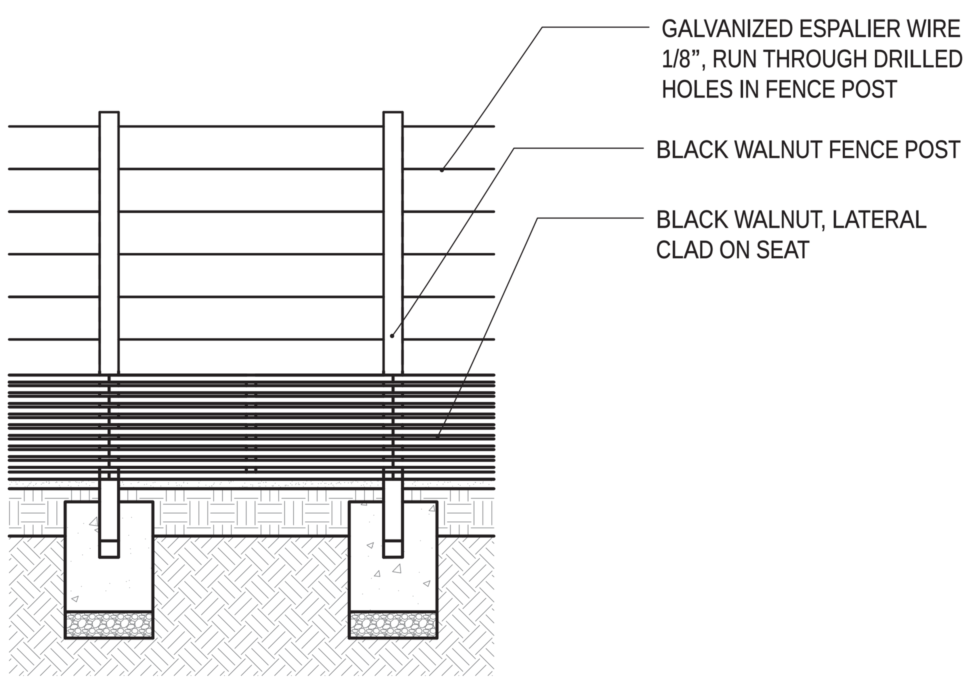
Boards:	1 - 24”x36” plotted panel, Portrait format, 1 technical detail drawing of paving (hardscape), edge transition, and softscape, with material swatches, photographs of paving pattern mock-up and model, and landscape performance analysis pinned up for your final review on 12/8 (?).
Scale:	Detailed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

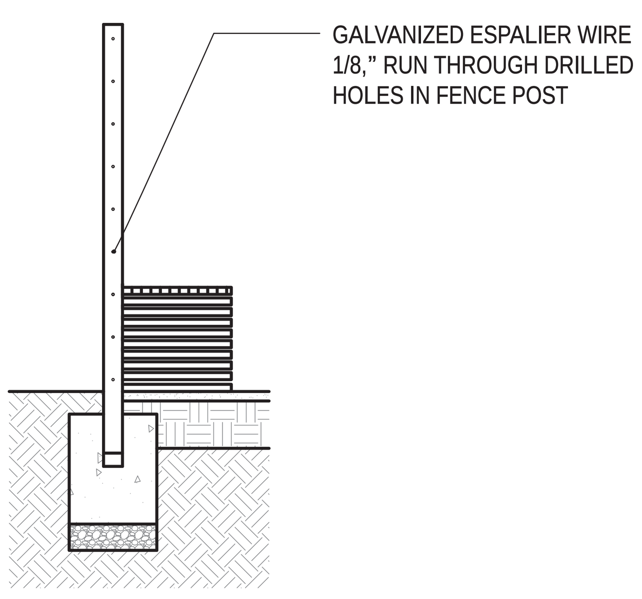
Phase 3 Readings:

Week	References
13	Required (Phase 3) Kirkwood, Niall, “Practices: Constructing Detail” in *The Art of Landscape Detail: Fundamentals, Practices, and Case Studies*, (New York: John Wiley & Sons, 1999): 109-155. Supplemental Pasnik, Mark, “The Material Autograph” in *Materials: Architecture in Detail* eds. Oscar Riera Ojeda and Mark Pasnik (Gloucester: Rockport Publishers, 2003): 9-12. Mori, Toshiko ed., “Introduction”, *Immaterial | Ultramaterial*, (New York: George Braziller, 2002): xiii-xvii.



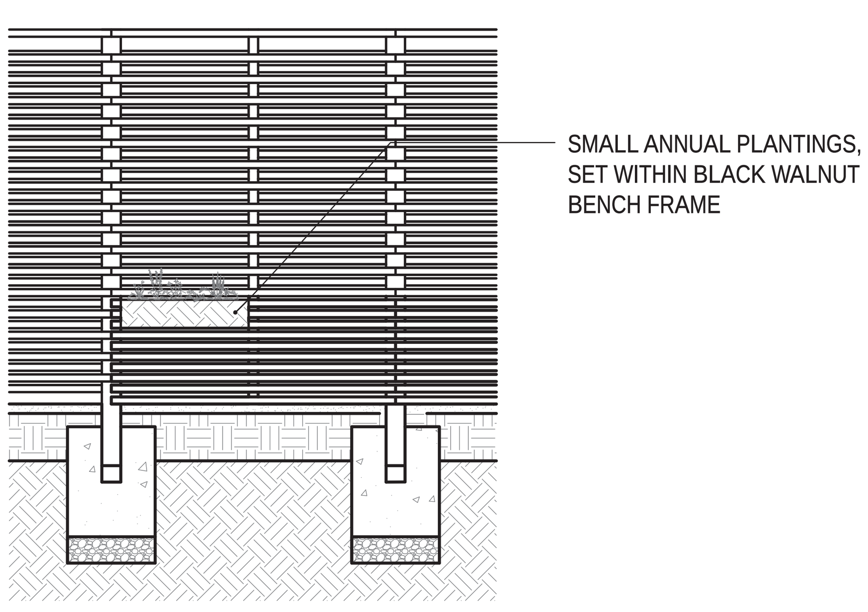
1 ESPALIER SEATING: ELEVATION

SCALE: 3/8" = 1'-0"



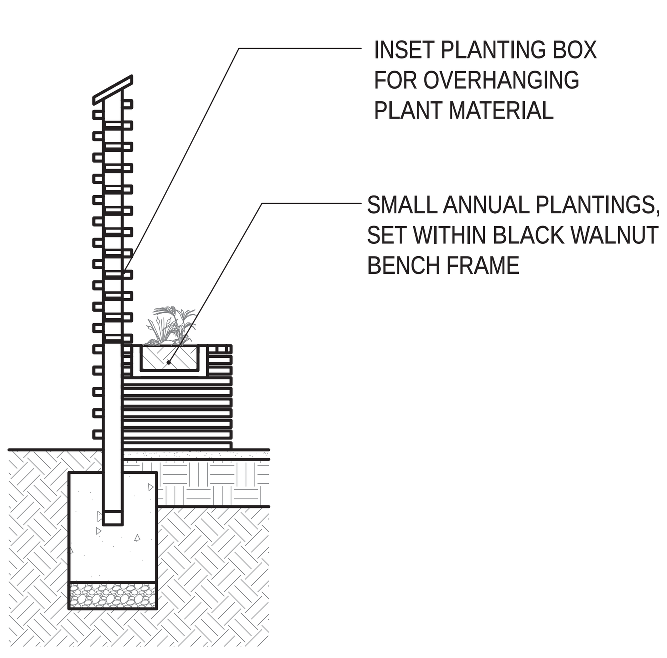
2 ESPALIER SEATING: SECTION

SCALE: 3/8" = 1'-0"



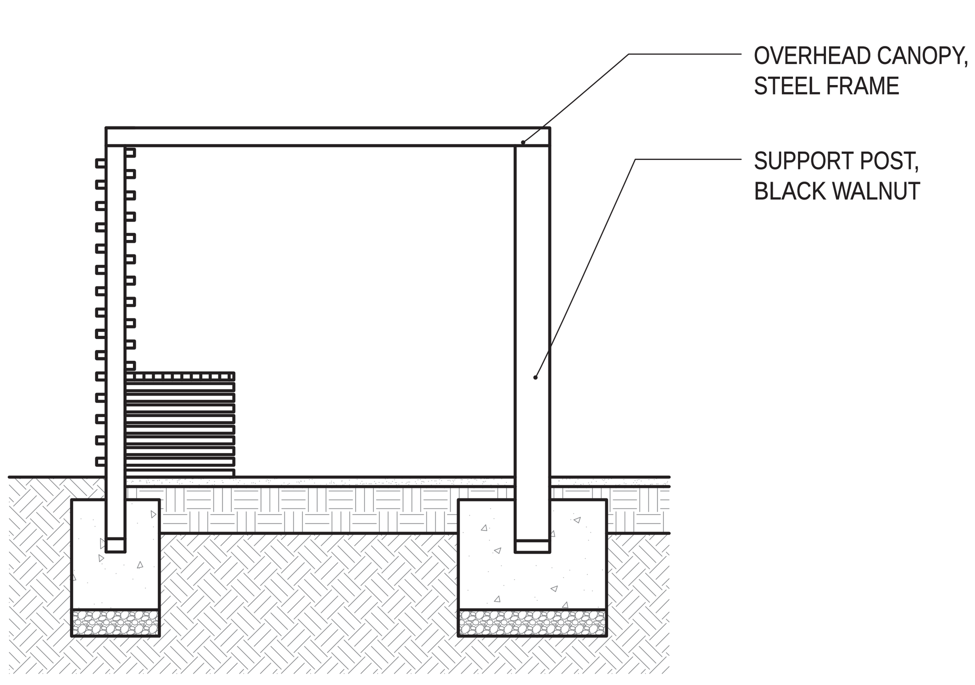
3 PLANTER ADDITION: ELEVATION

SCALE: 3/8" = 1'-0"



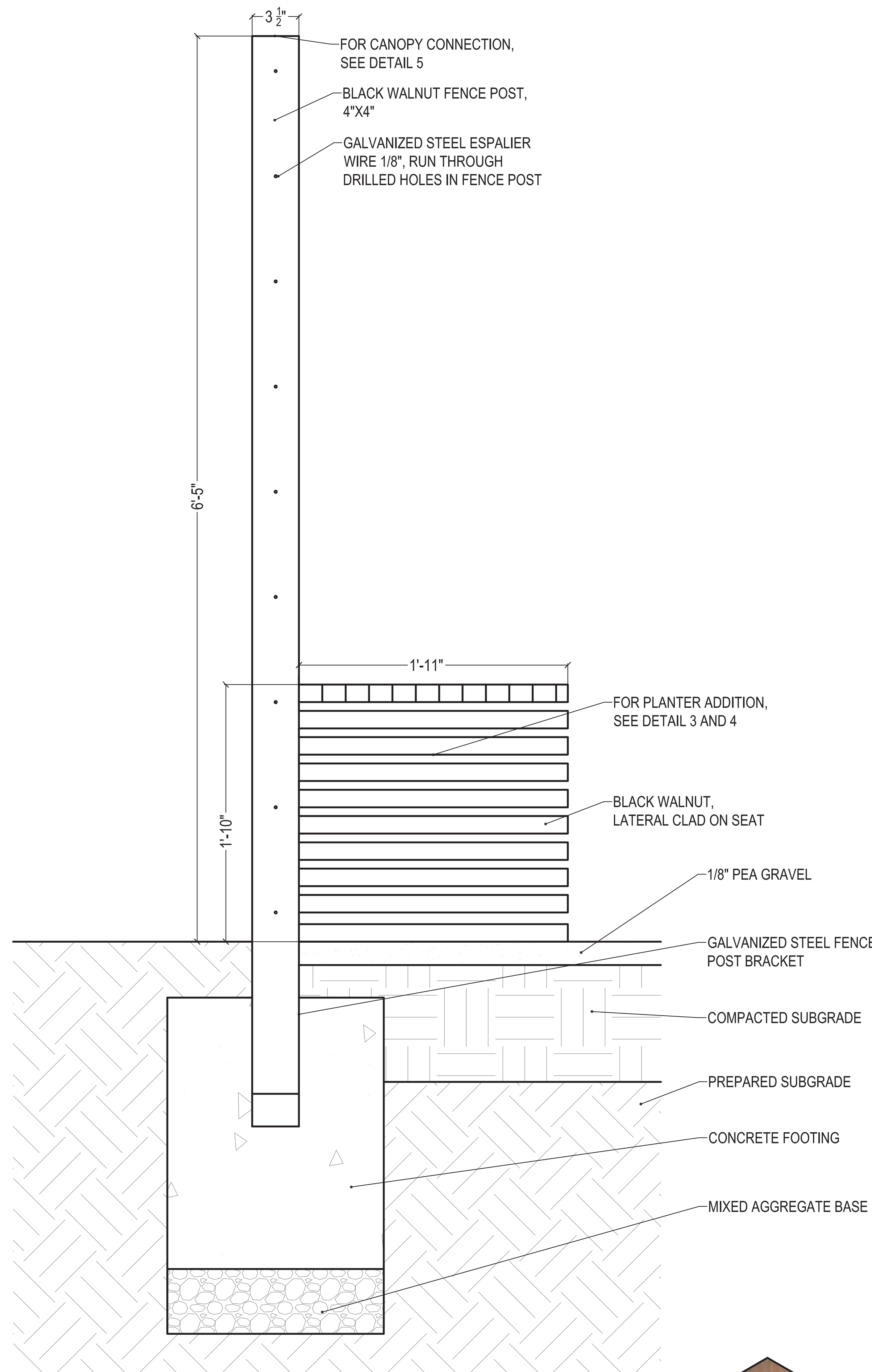
4 PLANTER ADDITION: SECTION

SCALE: 3/8" = 1'-0"



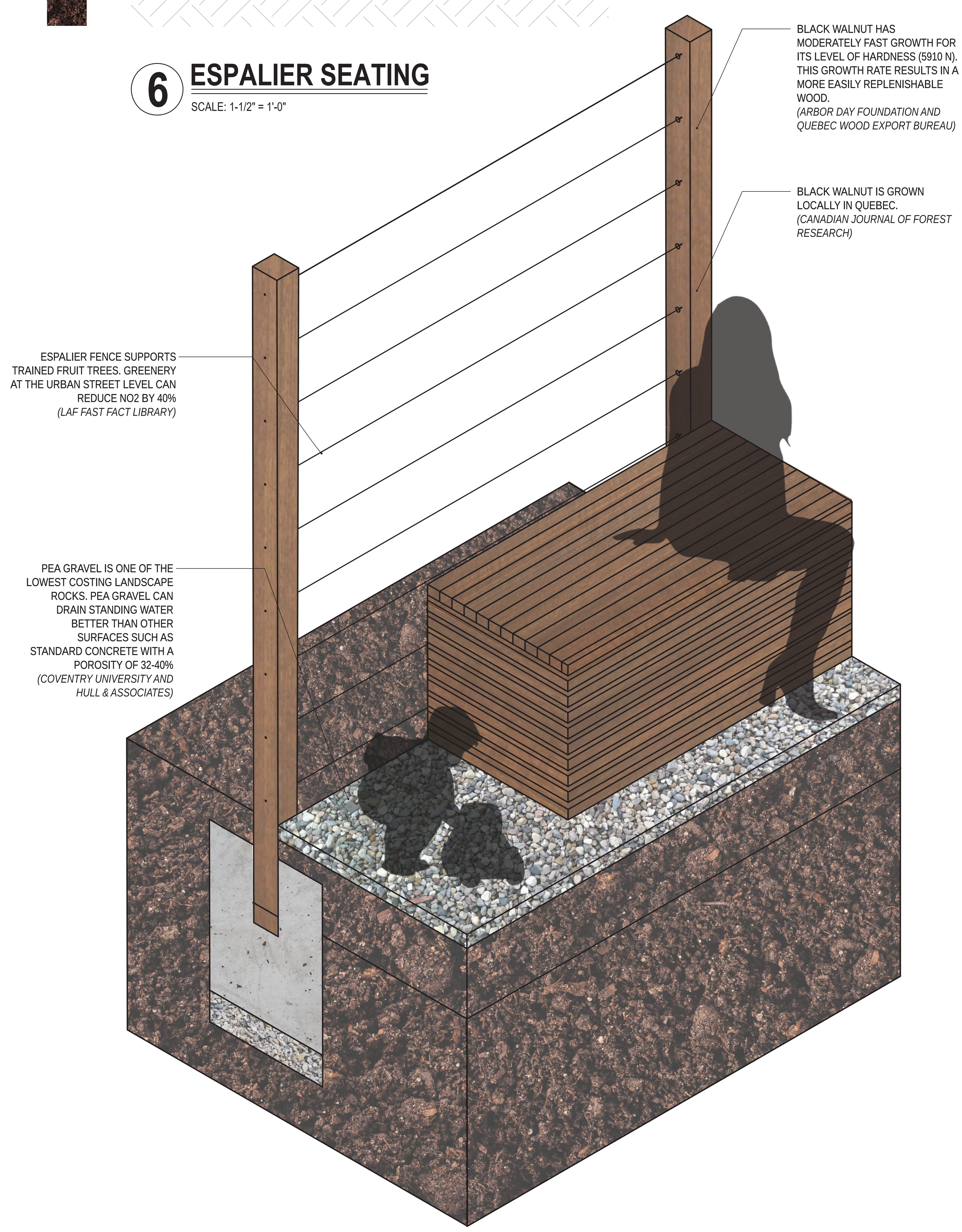
5 CANOPY CONNECTION: SECTION

SCALE: 3/8" = 1'-0"



6 ESPALIER SEATING

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



7 ADAPTIVE PERFORMANCE: TRANSFORMATIVE FENCE

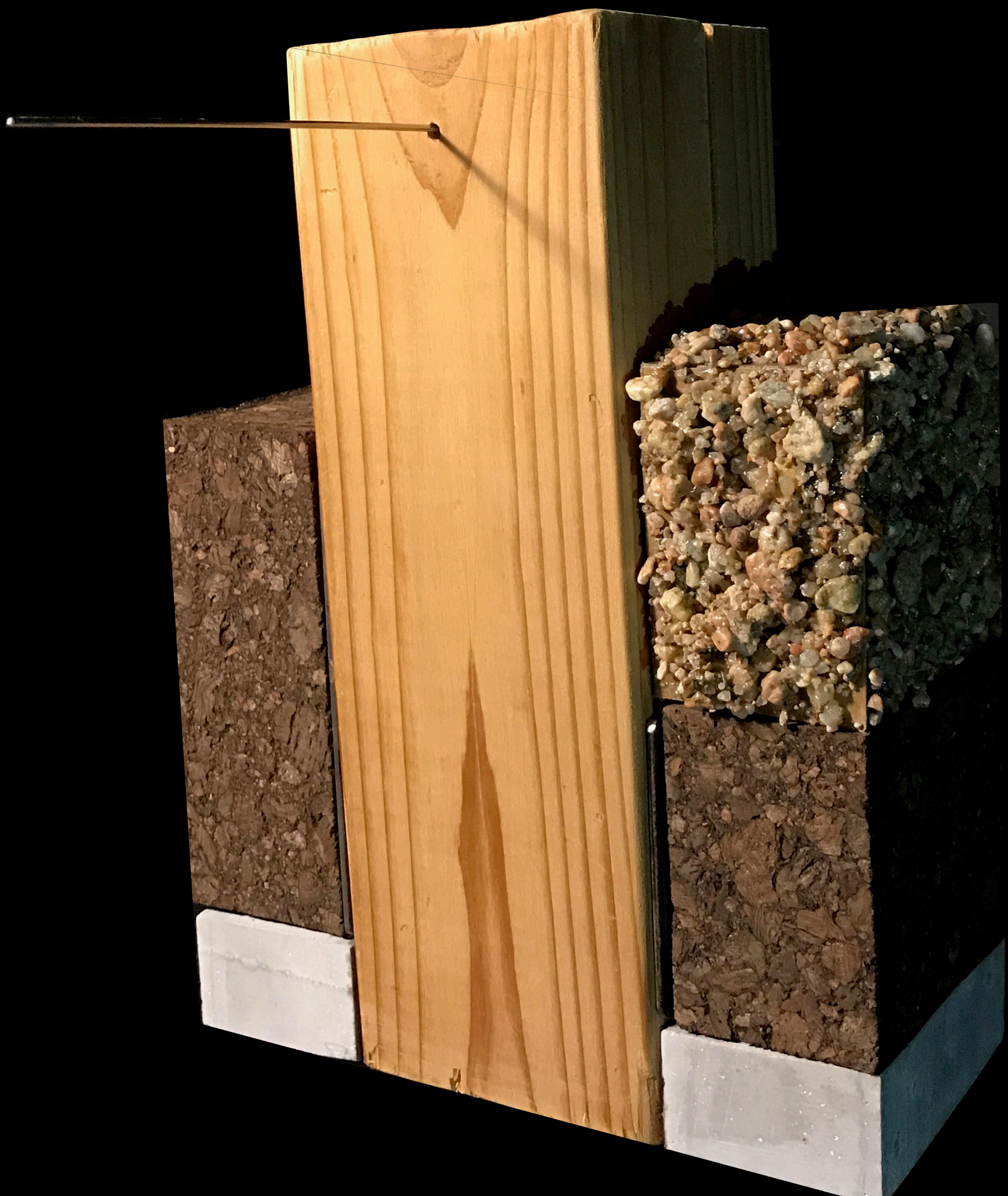
SCALE: 1-1/2" = 1'-0"

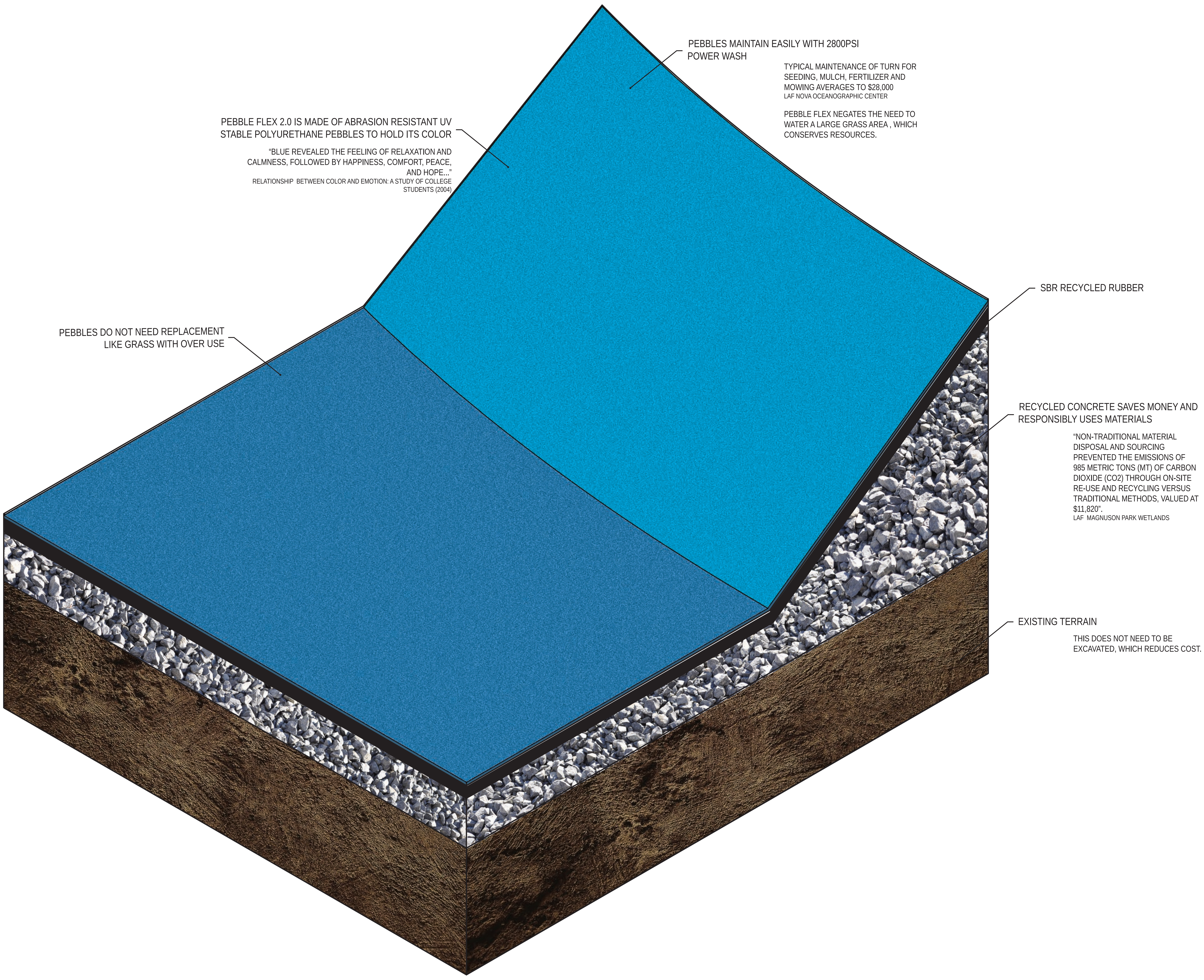
HANNAH LOPRESTO

PHASE 3:
"LET'S HANG" PLAYSCAPE

TITLE: ADAPTIVE FENCE DETAILING
SCALE: VARIES
DATE: DECEMBER 7, 2017

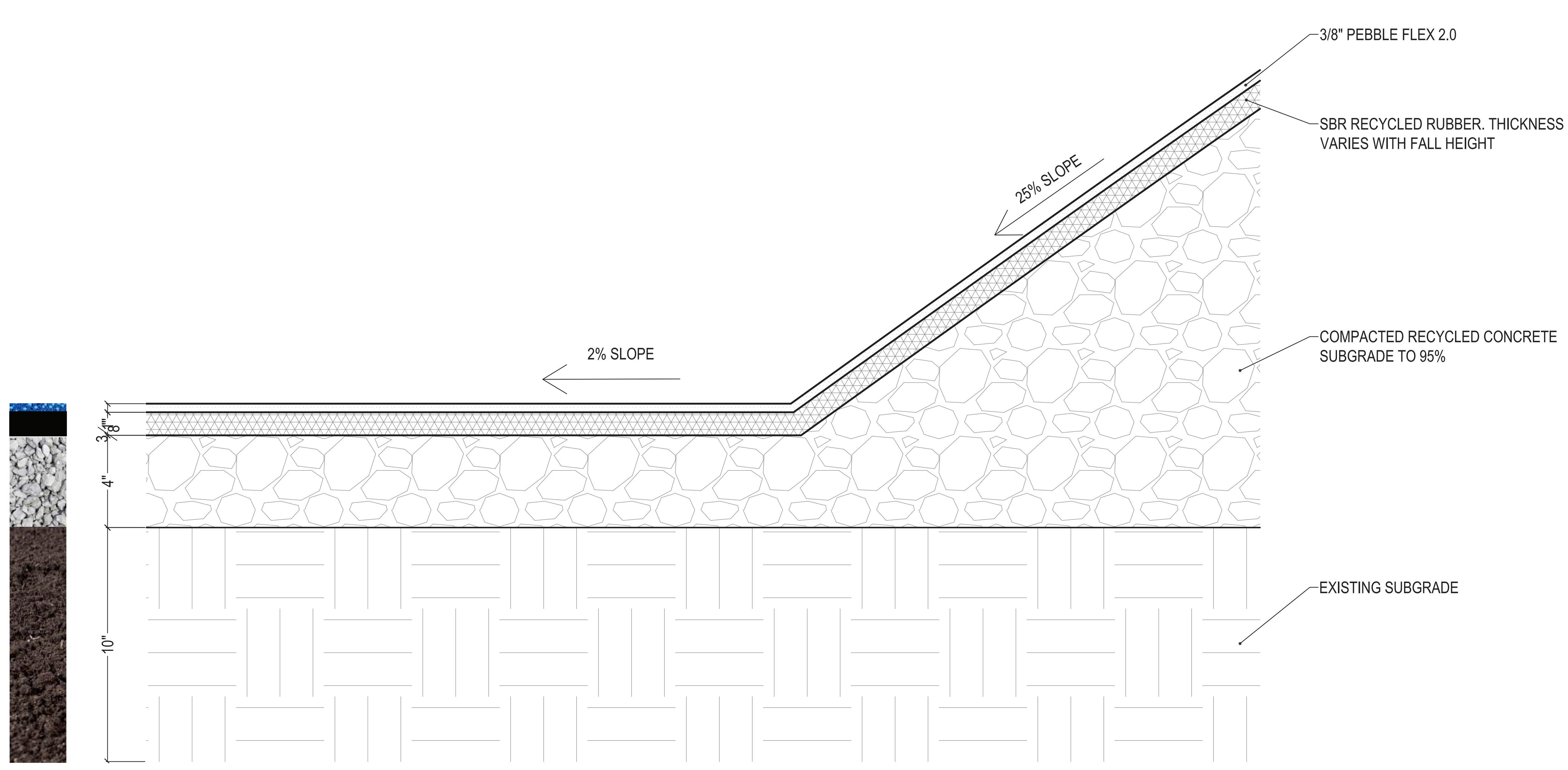
DWG. NO.
L4-01





1 PERFORMANCE ANALYSIS

SCALE: 3" = 1'-0"



2 PEBBLE FLEX 2.0 SLOPE CHANGE

SCALE: 3" = 1'-0"

SOURCE: LANDSCAPE STRUCTURES

RACHEL REYNOLDS

PHASE 3: BUBBLE PARK

TITLE: PEBBLE FLEX 2.0 SLOPE DETAIL
SCALE: 3"= 1'-0"
DATE: DECEMBER 8, 2017

DWG. NO.
L4-01