

Reflections on Teaching Landscape Performance in an Undergraduate Studio Context

Ellen Burke, PLA

Lecturer, Department of Landscape Architecture

California Polytechnic State University, San Luis Obispo, CA

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Studio Background

LA 405 Project Design and Implementation Studio is part of a five studio sequence for third and fourth year students in the 5-year BLA program at California Polytechnic State University, San Luis Obispo. The studio typically focuses on small-scale sites and explores issues of building technology, materiality, and design documentation. Twelve students enrolled in the studio during the grant period: 10 third-year students, and 2 fourth-year students who had just returned from a study abroad program in Italy. The studio met three times per week, in four hour sessions, over a 10-week quarter.

At the request of the University President, the studio focused on the President's on-campus residence, and specifically on re-designing the front yard, which is currently largely a turf grass lawn. The primary goal of the re-design project was reducing lawn areas to demonstrate a more sustainable landscape model, and to reduce water use. As a symbolic landscape within the campus, and the site of many official functions throughout the year, this landscape was envisioned to become a model of a new landscape paradigm on campus, one that is both more sustainable, and better related to the environmental context of the campus. In addition to regular studio meetings with presentations and workshops, the studio hosted a guest lecture by Dr. Rebekah Oulton of the Civil Engineering faculty, a site walk-through with Campus Facilities staff, and a field trip to a private residence designed with on-site stormwater infiltration systems and low-water native plantings.

Process

Activities focused on landscape performance were integrated into the studio schedule consistently throughout the quarter, with the goal of introducing the concept of Landscape Performance, and of creating opportunities for students to carry out their own performance assessments for designed landscapes at varying scales.

- Students were introduced to the Landscape Architecture Foundation (LAF) and the Landscape Performance Series via a webinar hosted by Arianna Koudounas. Directly following the webinar, students completed a short exercise in finding different types of information (case studies, calculators) on the LAF website.
- The first assignment was a precedent study in which half the class researched and presented case studies of built works with a landscape sustainability focus (including case studies from the LAF website); and the other half presented on technologies such as rain barrels or bioswales. All case studies were chosen to be relevant to the scale and program of the studio project.
- As a warm-up design project, students worked in two groups to assess how water conservation could be implemented by reducing lawn areas in the central campus by 10%, 20% and 50%. They presented their suggestions as diagrams at the end of the class period, and came to their conclusions by weighing the usefulness of lawn areas based on their lived experience of the campus.

- Before the midterm presentation all groups analyzed the landscape performance benefit of Water Conservation by estimating and comparing before and after irrigation volumes for the project site.
- Individually, students chose one landscape performance benefit (beyond Water Conservation) by which to assess the performance of their design proposal. The assignment began with a literature review, in which students read peer-reviewed journal articles and LAF case studies, and noted how each source defined and assessed the benefit, including methods used. Following this research, students identified the method they would use to assess their own design, calculated the “value” of the benefit, and documented the steps used in assessment. The goal of this exercise was to engage critical thinking around how designers decide what metric and method to use in assessing a benefit, and to convey the value of documenting the process so that others can later determine the validity of the assessment.
- Finally students were asked to create visual diagrams or infographics to communicate the benefits of their design.

Reflection

Several aspects of the studio were very successful in relation to the goal of teaching landscape performance as part of the studio process. In particular:

- The literature review was successful in that it allowed students to clearly define both the benefit, and the metric for assessing it. In conversation after the literature review, students began to understand that assessing performance benefits is a process, and that there is authorship to it. The way in which the benefit is described, and the methods used to assess it can lead to drastically different outcomes. By performing a literature review students could more confidently articulate their decision-making process, and better stand behind their results.
- The availability of the LAF website as a one-stop source of reliable resources and case studies was a useful tool for students of the digital age, as a starting point in understanding the benefits, and for identifying methods to calculate benefit outcomes.
- Diagramming the results was successful in that it helped communicate the idea to those outside the studio, for whom the concept of landscape performance was less familiar.
- One of the key success factors was returning to the material several times over the course of the quarter. Although the LAF website had been introduced during the first week, through both a presentation and a hands-on exercise, by Week 8 some students did not recall it as a potential resource. Because the Week 8 exercise required students to use the LAF website, its availability as a resource was reinforced, and has for some students become a “go-to” resource for research.
- Precedent studies were useful in creating a vocabulary of solutions for students to draw from.

In addition there were some challenges in integrating landscape performance in the undergraduate design studio. In particular:

- Uneven background knowledge of the natural sciences, and of research methods, became apparent as students pursued individual projects. In some cases, flawed understandings of biology, ecology, or other sciences led to faulty conclusions. Students also struggled with the

idea of picking an appropriate metric to measure benefits, and sometimes defaulted to metrics which were more readily available in online calculators.

- Making a connection between site analysis and performance benefits was also a challenge. This in part may have been because of the scale and characteristics of the site in question, which was both confined and small, and because students are so familiar with the campus that they take many aspects of it for granted, rather than forming new understandings through the analysis. Because it was a “real” project, with planned implementation by the University, students also often tended to default to assumptions about what was “realistic” rather than optimizing performance.

Conclusion

Students in general reported a positive experience with using the lens of Landscape Performance as a design tool. As an instructor, particularly for a construction-focused Implementation Studio, Landscape Performance was a valuable framework for moving students deeper into deliberate decision-making, and for engaging critical thinking around sustainability claims. Finally, Landscape Performance proved to be an effective method to communicate student goals to outside reviewers, which include the University President, faculty members of the Campus Planning Committee, and staff from University Facilities.

Wayne Nemec
Third Year Student
Cal Poly, San Luis Obispo

Landscape Performance

Throughout my curriculum most of what I have learned is how the designs I create affect people, and how the methods I have used help support my overall design concept. Often it feels that curriculum is more heavily based on design and graphical representation and not as heavily influenced by the multiple benefits that can be achieved by a landscape beyond just its physical appearance. There needs to be a better way to learn about sustainability as a tool to better improve our designs so that students do not see it as a roadblock that limits creativity. Teaching about sustainability can be difficult and it can take a lot of research to stay on top of it, but it is important for the future landscape architect to be aware of and excel in it.

In the winter quarter of 2015 my studio, with Ellen Burke as our instructor, focused on landscape performance. Even though the term “landscape performance” was somewhat new to me, I did have an understanding of what it means for a landscape to be sustainable. I knew about things like bioswales, retention ponds, and rain gardens, but there was not a strong focus to implement them into our designs. The biggest question for me was how much these features actually benefit the environment, and if they could be implemented in a way that does not inhibit the overall design intention. What I really needed were some visual examples of projects that are both good at landscape performance and physically attractive places to be in. I did not just want to implement rain barrels all over my project and call it good, I wanted to create a space that was both captivating and beneficial to the surrounding area.

As a class we were given a glimpse of the Landscape Performance Series from the Landscape Architecture Foundation, and I was surprised to see how much information is presented on the website, with various landscape examples of different calibers. There are examples from constructed wetlands to highly designed urban spaces, and the website fully breaks down all these by explaining how the sites achieve sustainability. Some of the best information the website has to offer is not just about how these projects help the environment, but how some of these spaces have also helped spark economic revenue by rejuvenating depressed urban areas. By looking at these great projects that are both aesthetically pleasing and great examples of landscape performance it gave me a better understanding of how I could make my own designs serve a greater overall purpose.

With the help of the Landscape Performance Series, the students in my studio were given the task of turning our project into a performance landscape. Our project site was to redesign the front yard for the president of the university. The class was broken up into teams of three with each one of the team members being in charge of studying a certain aspect of a performance landscape and incorporating it into our group design. The benefit I chose to incorporate into my team’s landscape was to control stormwater runoff and better the overall quality for the potential water that could leave the site and go into the nearby creek. I researched how to improve the

water quality by looking up projects from the landscape performance series and reading the case studies about how the different landscape architects were able to achieve their goals. After gathering our information, my team decided to reduce the slope on our site by implementing a series of retaining walls while having a swale and planted retention garden at the bottom of the slope to hold as much water as possible and to filter out the fertilizers and pesticides as the water seeps through the soil. With the calculations I found through my professor and the Landscape Performance Series, my team's project reduced the amount of surface runoff by 50% and we were able to capture all site runoff from a five-year storm event in our retention pond, which basically eliminated all the runoff since we live in the dry climatic area of California's central coast.

Learning about performance landscapes is beneficial to our education and I think it should be taught more due to the state our planet is in at the moment. If I had to critique any aspect of our performance studio it would be that I wish we could have done more with it. There were still ways that we could have learned more about being sustainable, but due to time restrictions, by being on a quarterly schedule, I can see how it would have been hard to cram more within our class time. Honestly there needs to be more non-studio classes addressing landscape performance. Also now that I know about the Landscape Performance Series website I have been able to use it on current projects in other studios, and whenever I recommend it to other students they are pretty surprised by how much information can be found there. Again there needs to be a better way to teach sustainability in schools so that it does not sound restrictive to student's design capability. Having students read case studies about performance landscapes on the Landscape Performance Series website I think is a great way to promote sustainability. Some of my favorite parks that I did not realize to be sustainable actually turned out to be great performance landscapes, and I would have not known that if I were never shown the Landscape Performance Series.

LA 405: Design and Implementation Focus Studio

Teaching Proposal

Instructor: Ellen Burke

Course Introduction

President Armstrong has commissioned the students of LA 405 to re-design the gardens of his on-campus residence, with the primary goal of reducing lawn areas to demonstrate a more sustainable landscape model. As a symbolic landscape within the campus, and the site of many official functions throughout the year, this site is envisioned to become a model of a new landscape paradigm on campus, one that is both more sustainable, and better related to the environmental context of the campus.

Using the lens of Landscape Performance, the studio will make proposals for landscape strategies at the campus-wide scale, and site-specific design proposals for the President's garden. We will work in interdisciplinary teams with students from Civil Engineering majors.

Through lectures, field trips, workshops and design projects, students will engage with concepts and practices of implementation and of landscape performance. The course will include analysis and interpretation; project design and phasing; representation and design of landscapes as dynamic and evolving systems with social, environmental and generative capacity; and engagement of a life-cycle understanding of landscape materiality. Students will be introduced to the implementation process of a landscape project through both industry standards and more speculative approaches.

Learning Outcomes

As a result of this course, students will be able to:

- Produce and communicate an original design from concept to implementation level.
- Demonstrate an understanding of procedures, relationships and tools for collaboration with other disciplines, users and clients in project construction.
- Demonstrate an understanding of landscape performance and evidence-based design, and evaluate design proposals through the use of landscape metrics.
- Communicate the ways in which the proposals achieve environmental, social and/or economic benefits.
- Demonstrate an understanding of the importance of integrating the principles of aesthetics and site engineering.
- Demonstrate the application of principles of construction to working drawings.
- Demonstrate an awareness of the ethical dimension in material choices, restoration, rehabilitation and remediation in current and future practices.

Studio Structure

Studio Introduction

The studio objectives will be introduced through a lecture on Landscape Performance, using project examples from LAF's database and from other sources.

Field Trips

Throughout the quarter, we will have field trips to local stormwater management and native plant projects, both on campus and in the larger surrounds. We will also have a potential field trip to the office of Bernard Trainor in Monterey, CA.

Module 1: Precedent (1 week)

Students will be assigned a precedent study from a list of built works and landscape technologies. Students will individually research and present their case study to the class, as part of building a collective knowledge base. Following the presentations, students will be quizzed on the main points of the presentations to test comprehension of the material.

Proposed Built Works: Medlock Ames Tasting Room, Arizona State University Campus, Snake River Retreat, Underwood Family Laboratory, Chicago Museum of Science Smart Home, 168 Elm Avenue Residence, Kresge Foundation Headquarters, Baldwin Hills Scenic Overlook

Proposed Technologies: Swale, Hedgerow, Stormwater Harvesting, Greywater Systems, Tree Cover, Rain Garden, Gabion, Permeable Paving

Deliverable: Poster design, quiz

Module 2: Campus Plan (2 weeks)

Working in groups, students will study the landscape of the overall main campus, and make a strategic plan proposal for achieving lawn reductions of 10%, 30% and 50%. Using performance metrics, students will assess environmental, social and economic impacts of their proposals. A workshop on Performance Metrics will be embedded in Module 2.

Deliverable: Campus Master Plan for Lawn Reduction, Performance Metrics

Module 3: Site Analysis (1 week)

Working in groups, students will perform a site analysis at regional, campus/city and site scales. Site analysis will include environmental, social, cultural/historical, and architectural and climactic factors.

Deliverable: Poster Design for Site Analysis, short essay on site opportunities and constraints

Module 4: Site Design (6 weeks)

Working in groups, students will make design proposals for the University President's garden that address the client's programmatic concerns of lawn reduction, water conservation, and creation of a visually pleasing context for official social functions. In addition, students will be asked to propose a programmatic enhancement of habitat, educational, or stormwater management value.

Project Milestones include Concept Design presentation at mid-term (week 6), Design Development drawings and presentation, and Construction Drawings. At the end of the quarter students will make a formal presentation to the President of their design, it's derivation from site analysis and project goals, and metrics addressing performance of the landscape. Two workshops on Performance Metrics, including lectures, will be embedded in Module 4. Following the workshops, a quiz on Performance Metrics will be assigned.

Deliverables: Full design proposal including relevant site analysis; illustrative concept plans, sections and perspectives; developed planting and grading plans that address existing irrigation on site; developed enlargement plan design with sections; site diagrams; cost estimates for construction; phasing strategy; and performance metrics for stormwater management and at least two additional indicators. The proposal is to be formatted on boards for presentation to President, and in booklet form.

Assessment/Evaluation

Students will be assessed based on successful completion of four projects and presentations; one short written essay and two quizzes; a class portfolio; and participation.

Evaluation criteria for the projects will be presented when each project is introduced. In general, evaluation in this course is subjective, and relies on the expertise and experience of the instructor and other faculty. You are being asked to develop and articulate your own set of intentional, thoughtful criteria for design decision-making and for presentations, rather than simply following a checklist. Emphasis will be on improvement throughout the quarter, quality of explorations and of finished product, engagement with conceptual and performance aspects of design, and a demonstrated understanding of basic design principles and methods. Evaluation will be made primarily by the instructor, and will reflect the feedback of other faculty from pin-ups and reviews.

Course Work/Design Projects

1. Precedent Study and Quiz - 15%
2. Campus Plan - 15%
3. Site Analysis (includes essay) – 15%
4. Final Project (includes quizzes) – 50%
5. Booklet – 5%

Materials

Readings - Books

Charles Waldheim, *Landscape Infrastructure: Case Studies by SWA*, Birkhauser, 2011
Anne Whiston Spirn, *The Language of Landscape*, Yale University Press, 1998
Susan Heeger, *Landprints: The Landscape Designs of Bernard Trainor*, Princeton Architectural Press

Readings – Articles

Mary Myers, "Multivalent Landscape: The Salvation Army Kroc Community Center Case Study," *Landscape Journal* 32:2
Gretchen C Daily et al, "Ecosystem Services in Decision Making: Time to Deliver," *Frontiers in Ecology and the Environment*, Vol 7, No 1 (Feb 2009)
Sarah Taylor Lovell and Douglas Johnston, "Designing Landscapes for Performance Based on Emerging Principles in Landscape Ecology," *Ecology and Society* 14

Technical Guides

Charles Harris, Nicholas Dines, *Time-Saver Standards for Landscape Architecture*, McGraw Hill, 1997
Liat Margolis, Alexander Robinson, *Living Systems*, Birkhauser, 2007
Carol Bornstein, David Fross, *California Native Plants for the Garden*, Cachuma Press, 2005
Sunset Magazine, *The New Western Garden Book*, Oxmoor House, 2012
United States Department of Agriculture Natural Resources Conservation Service (NRC), *Urban Hydrology for Small Watersheds, Technical Release 55*. Washington DC: Government Printing Office

Online Resources

Landscape Architecture Foundation Case Study Briefs
<http://landscapeperformance.org/>

Sustainable Sites Initiative, ASLA <http://www.sustainableites.org/>

LEED Credit Library, US Green Building Council <http://www.usgbc.org/credits>

Bowman's Hill Wildflower Preserve (BHWP) Plant Stewardship Index
<http://www.bhwp.org/psi/What-is-the-Plant-Stewardship-Index>

Performance Benefits – Calculate and Communicate

Working individually, each student will:

1. Calculate the performance benefit they researched for their group project.
2. Communicate the result of all performance benefits using an infographic approach. Total performance benefits for each project include reduced water use for irrigation, and the individually chosen benefit, for a total of two.
3. Integrate the infographics into the final presentation.

DUE: Wednesday, March 4, 8am via PolyLearn as a pdf.

Performance Benefits

"We are drowning in information, while starving for wisdom. The world henceforth will be run by synthesizers, people able to put together the right information at the right time, think critically about it, and make important choices wisely." E.O. Wilson

Each student in the group will choose a performance benefit related to the design proposal. The benefit cannot be water conservation, as the entire group is doing this one together.

STEP ONE: Modified Literature Review

The first step is to create a clear definition of your chosen performance benefit. You are becoming your group's expert on this topic. Performing a literature review will help you do this.

1. Review three recent sources related to your topic. These may be journal articles or chapters from books. Note that the Fast Facts Library on the LAF website is one source for these articles, as is Kennedy Library. For each source, identify a definition of the benefit, ways that benefit might be achieved, and measures or metrics related to the benefit.

EXAMPLE:

Roger Kjelgren, et al, "Water Conservation in Urban Landscapes", HortScience October 2000 vol. 35 no. 6 1037-1040

Definition: Water conservation means reducing water used for amenity landscapes while still meeting the expectations of the users.

Methods: Precision landscape irrigation; reduced use of turf

Metrics: Audit water meters; estimated water use of proposed plants; check for runoff to pavement during irrigation (indicates excess irrigation or rapid delivery)

2. Identify three case studies on the Landscape Architecture Foundation website related to your chosen benefit. For each case study, identify how the project addressed your benefit and how the benefit was calculated. Use the "Download Methodology" button to see how the researchers calculated the benefit.

3. Synthesize the six sources by discussing in 300 words your working definition of the benefit (as informed by your sources) and what methods of achieving and measuring your benefit you will use. Make it clear why you chose the ones you did.

DUE WEDNESDAY FEB 18 - A list of the six sources you will use via PolyLearn as a pdf

Due MONDAY FEB 23 – Completed literature review

Exercise 2A: Campus Plan Workshop (Group Work)

As a group we will look at our campus, and estimate ways to reduce water use for landscape by 10%, 20% and 50%. This will require that we consider a holistic view that incorporates social, aesthetic and economic factors along with environmental ones. Each team will brainstorm ways to reduce water use, which might include removing turf, using non-potable (grey) water, and capturing rainwater that would otherwise be lost (like roof runoff) and storing for re-use.

After evolving a suggestion for their assigned target reduction level, each team will assess what other benefits their proposal might have, such as increased habitat for native species, reduced maintenance costs, educational opportunities, or stormwater management.

After a brief introduction to the problem, we will break into three teams and workshop the campus plan during studio class time.

Deliverables

Each team will be responsible for creating a final graphic for their campus plan, formatted on a board. Size of board and scale of plan will be determined during the workshop. The board must also include three performance landscape benefits that the Campus Master Plan proposes, and how those benefits were achieved. **Final graphic due Monday January 26.**

Exercise 1: Precedent Study (Group A)

Exercise 1 is a knowledge sharing exercise. Half the class will research and present a precedent case study site, and the half the class will research a relevant technology. This brief describes the assignment for Group A – Precedent Study.

In this first exercise you will research an assigned case study site. Use books, magazines and reputable websites to find information on all aspects of the design:

- plan, section, photos will describe the dimensions and physical layout of the site, the materials and textures, and the human uses;
- written descriptions will describe the history and challenges of the site, and efforts made to address performance in design.

After gathering your research, proceed to analyze the site through diagrams and drawings. Study and analyze the organization of the site and its program elements; the relationship between site organization and site history; site programming and context. Draw plans, sections, axonometrics, and perspectives to help you study and express these relationships. As well, be specific about any benefits of the design, either intentional or inherent.

The goal of the exercise is for you a) to understand and describe how your assigned site is organized, and how it operates; b) draw your own original reading or interpretation of the site; c) describe how elements of environmental or social benefits were, or were not, addressed and how; and e) describe how the materials of the site's design are related to the site's context. Think of this as a visual essay about the site.

Schedule:

Monday, January 12 – Research

Wednesday, Sept 14 – Desk Crits. Be prepared to show process drawings for items 1-3 below to instructor during studio time.

Friday, January 16 – Pin Up.

REQUIREMENTS AND PRESENTATION

Utilizing verbal presentation skills, layout, and sequencing, students will present an analysis of their assigned space. Your presentation should focus on sharing with your studio colleagues how the site is organized, how it operates, background and context, and any unique environmental strategies in place. Include size of site, design team members, costs, and dates of design and/or construction. What might the designer or client's intentions have been? How do you interpret the resulting design? Is it successful? Be prepared to present evidence of your conclusions through your drawings.

At a minimum each student must present the following, formatted as a 24 x 36 poster (**all original drawings – not cut and paste from internet**):

1. Diagrams: Draw a series of diagrams illustrating what you consider to be the essential relationships and strategies on the site. These might include circulation, spatial configuration, materials, history and use, context, or environmental influences.
2. Plan: Draw a scaled plan (or portion of plan with instructor's permission) that helps you understand, and describe, how the project is organized and operates.
3. Section or Detail: Choose one. Draw one scaled section at a key point in the project, or draw a construction detail of your choosing from the project.
4. Bibliography: An annotated bibliography of all sources (books, magazines, journals, websites, other) that were key to your research. (This can be handed in separately from you boards)

Case Study Assignments:

Project	Student
168 Elm Avenue (One Drop At A Time Garden) de la Fleur Landscape	Nicholas Crump
Chicago Museum of Science Smart Home Jacob Ryans Associates	Chad Evans
Frontier Project, Rancho Cucamonga, CA EPT Design	Blake Faris
Boule and Olives (Sallaberry Residence), Carmel Bernard Trainor Associates	Annie Potter
Ketchum Residence Lutsko Associates	Noah Stricker
Children's Garden, San Francisco Andrea Cochran Landscape Architecture	Samantha Sturtevant

Presidential Retro-fit: Concept Design

President Armstrong has commissioned the students of LA 405 to re-design the gardens of his on-campus residence, with the primary goal of reducing lawn areas to demonstrate a more sustainable landscape model. As a symbolic landscape within the campus, and the site of many official functions throughout the year, this landscape is envisioned to become a model of a new landscape paradigm on campus, one that is both more sustainable, and better related to the environmental context of the campus.

Program

- The President and Mrs. Armstrong are interested in implementing a student design on their front lawn, with the goal of lawn reduction, and a firm budget of \$5000 inclusive for the immediate phase (student plans may suggest future phases).
- The planting design should be drought tolerant and deer resistant, and some smaller areas of lawn should be kept. Nothing is sacred about the landscape that is already there, so students may suggest changes to existing bedding locations and plants.
- No paved access is desired or needed in this area.
- Working with the existing irrigation design will significantly reduce the budget.
- There is no goal for lawn reduction, and students will quantify both amount of lawn reduced and water savings in their presentations.
- An ADA accessible path of travel to the lower patio is needed.
- See attached for Limit of Work.

The development of additional program by the students, based on their reading of site is encouraged. Designs should reflect careful attention to issues of water.

Refer to Studio Schedule for progress milestones.

February 6 – LADAC Pin-up

Monday February 9 – MID TERM REVIEW (Berg Gallery)

Deliverables – Due at Mid Term presentation February 9 (formatted on boards)

1. Illustrative Garden Plan with Planting and Grading (1" = 10')
2. Minimum 2 site sections (1/4" = 1'-0")
3. Minimum one perspective view
4. Site Analysis
5. Materials Images
6. Performance Metrics (for example, how much lawn was replaced)

University HOUSE

SAN LUIS OBISPO



For the remodel of the president's yard, the overall design intent is simple: to reduce the water use on the site and to potentially create a new event space. Our Design gathers information from existing features to expand on the president's mission for his yard and evolve it into a complex system of simple forms. A creek and three seatwalls will blend into the grade to become a natural feature. The lawn will then be reduced and be replaced by native grasses that are healthier for the soil. The Spanish Architecture of the house, the existing landscape, and the inspirations of the surrounding landscape will blend to create a cohesive design that connects the landscape with the house and the house with the landscape.

annie POTTER
chad THOMPSON
patrick MCQUOWN
WINTER 2015
LA 405 BURKE



RAIN GARDEN

NATIVE MEADOW

SEAT WALL

FIRE PIT

NATIVE LAWN

DETENTION POND

BIRCH SCREEN

OAK WOODLAND

Carport

Master Bedroom

Dressing Closet

Study

Entry

Living

Dining

Kitchen

Family

Laundry

Caterer's Room

Restroom

Storage

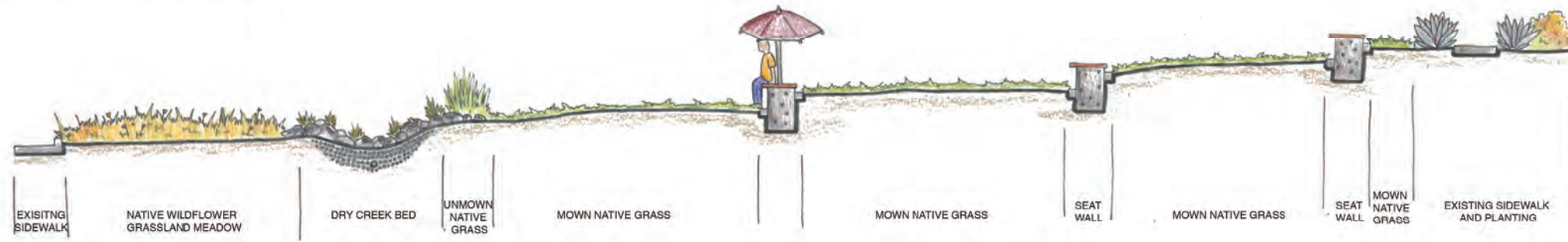
ADA Restroom

University House

illustrative plan

annie POTTER
chad THOMPSON
patrick MCQUOWN
WINTER 2015
LA 405 BURKE

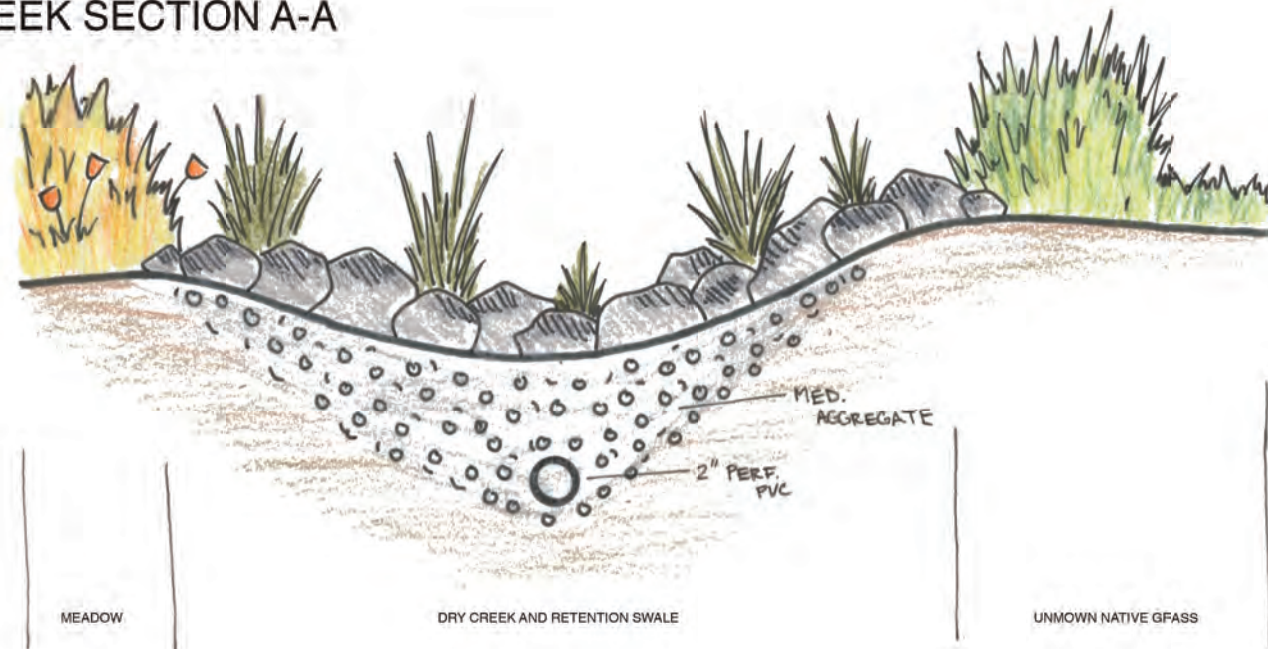
TERRACING SECTION A-A



SEATING AREA SECTION A-A



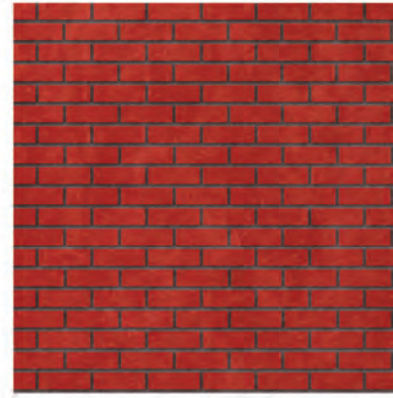
DRY CREEK SECTION A-A



COASTAL MEADOW



SEAT WALL



OAK WOODLAND



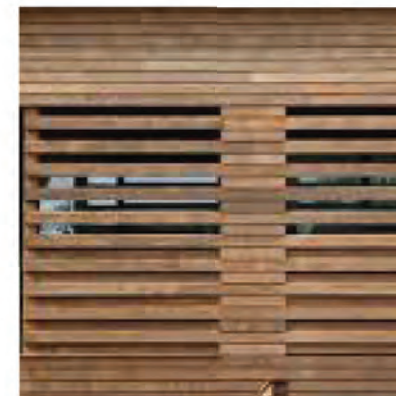
DRY CREEK



RIPARIAN CORRIDOR



TRELLIS



University House material palette

WATER USE FOR IRRIGATION



EXISTING WATER USE:
424.54 GALLON PER DAY

PROPOSED WATER USE:
192.33 GALLONS PER DAY

The deer population on campus is quite large. However, due to the small size of site, attempting to create deer habitat at any beneficial scale would be futile. According to USDA sevicees, a minimum of 12 acres can support one deer. What can be done, feasibly, is provide food and a resting area.

The hummingbird population on site can be drastically changed with a new planting palette. Hummingbirds feed on nectar and live in meadows and trees. The Univeristy House front lawn redesign will be able to support life for over ten times the amount of hummingbird adults currently living there.

Bees are a crucial part in the survival of a garden. They are chief pollenators and produce honey. Bee poulations can even be created easily with built structures. The redesign will potentially triple bee numbers, greatly enhancing the future landscape.

Insects are often the most underlooked and unknown part of a landscape. However, they are one of the most important. With the redesign's increase in plant diversity, beneficial insect habitat increase as well. Insects operate at the small scale, ridding the garden of pests and dead plant and animal material.

LOCAL MATERIALS

GROUND WATER RECHARGE



EXISTING WATER RECHARGE:
872.9 GALLONS OF STORM WATER

PROPOSED WATER RECHARGE:
942.6 GALLONS OF STORM WATER



REDWOOD

19.2 GAL DIESEL
SEQUOIA SEMPERVIRENS

175 MILES DRIVEN (DAVENPORT, CA)

430 LBS CO₂ EMISSIONS



IPE

616 GAL DIESEL
TABEBUIA SERRATIFOLIA

5,600 MILES DRIVEN (BRAZIL)

13,700 LBS CO₂ EMISSIONS

University House
 performance benefits

Exercise 1: Technology/ Landscape Infrastructure Study (Group B)

Exercise 1 is a knowledge sharing exercise. Half the class will research and present a precedent case study site, and the half the class will research a relevant technology. This brief describes the assignment for Group B – Technology Study.

In this first exercise you will research an assigned technology. Use books, magazines and reputable websites to find information on all aspects of the technology:

- technical (plan, section, axonometric, diagram) drawings will show how the technology is constructed, what materials are used and how it works.
- photos will show how the technology looks, and show it in context in a site.
- written descriptions will describe how it works, what can be achieved, what metrics apply to assess efficiency and other relevant information.

After gathering your research, proceed to analyze and describe the technology through diagrams and drawings. The goal of the exercise is for you a) to understand and describe how your technology is used, built and works; b) describe how it works in one site-specific instance c) understand and describe the relevant metrics (eg peak flow reduction); d) understand and describe the ecological and/or biological principles behind the technology and e) make an evaluation of the technology as related to an productive urban landscape.

Schedule:

Monday, January 12 – Research

Wednesday, January 14 – Desk Crits. Be prepared to show process drawings for items 1-3 below to instructor during studio time.

Friday, January 16 – Pin Up

REQUIREMENTS AND PRESENTATION

Utilizing verbal presentation skills, layout, and sequencing, students will present an analysis of their assigned technology. Your presentation should focus on sharing with your studio colleagues what the technology is, how it works and how it is constructed, its materiality and any life cycle issues, and to demonstrate its use in one specific application relevant to the studio. Be prepared to present evidence of your conclusions through your drawings.

At a minimum each student must present the following, formatted on a 24 x 36 poster (**all original drawings – not cut and paste from internet**):

1. Diagrams: Draw a series of diagrams illustrating what issues the technology address and how it works. Be clear about goals, methods, operations and assessment metrics.

2. Detail: Draw a detail (plan, section and/or axonometric) of the construction and materiality of the technology.
3. Case Study: Use photographs and (original) diagrams to describe and analyze how this technology was used in a specific case. Include goals, methods and metrics. Be creative! Do not use only cut and paste diagrams from the internet.
4. Bibliography: An annotated bibliography of all sources (books, magazines, journals, websites, other) that were key to your research. (This can be handed in separately from you boards)

Case Study Assignments:

Technology	Student
Green Roof	Patrick McQuown
Rain Barrel	Wayne Nemece
Rain Garden/Bioswale	Rudy Perez
Permeable Paving	Chad Thompson
Cistern (Rehbein Environmental Solutions or similar)	Claire Thompson
Greywater Systems	Camille Cherry

Recommended General Texts:

Charles Waldheim, *Landscape Infrastructure: Case Studies by SWA*, Birkhauser, 2011 (available electronically via library website)

Liat Margolis and Alexander Robinson, *Living Systems*, Birkhauser, 2007 (library reserves)