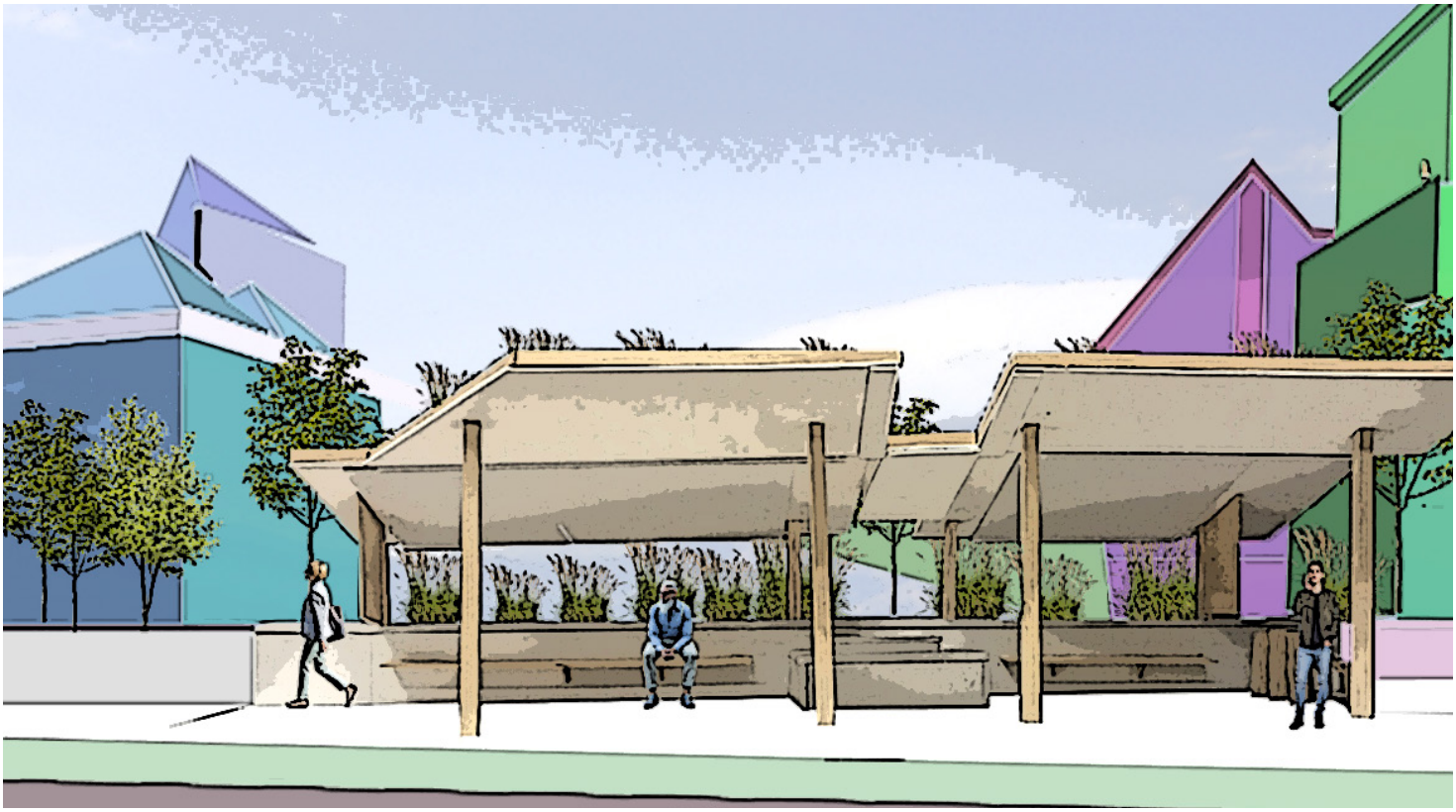

Bus Stops as Community Gateways

Fall 2019
LTD

EJ Del Rosario • Daisy Williams

ARCH 399 Design Thinking

UNIVERSITY OF OREGON
SCI Sustainable Cities Institute
SCYP Sustainable City Year Program

Fall 2019 LTD

Bus Stops as Community Gateways

EJ Del Rosario
Report Author • Department of Architecture

Daisy-O'lice Williams
Associate Professor • School of Architecture and Environment

COLLEGE OF DESIGN

UNIVERSITY OF OREGON
LTD
SCI Sustainable Cities Institute
SCYP Sustainable City Year Program

Acknowledgments

The author wishes to acknowledge and thank Lane Transit District for making this project possible. We also appreciate LTD staff and faculty who critiqued mid-term and final pin-ups.

Jennifer Zankowski, Senior Development Planner LTD
Jerolim Mladinov, Professor of Architecture and Practice
Javier L. Bonnin, Professor of Architecture
Juli Brode, Professor of Architecture and Interior Architecture

Contents

About SCI

The Sustainable Cities Institute (SCI) is an applied think tank focusing on sustainability and cities through applied research, teaching, and community partnerships. We work across disciplines that match the complexity of cities to address sustainability challenges, from regional planning to building design and from enhancing engagement of diverse communities to understanding the impacts on municipal budgets from disruptive technologies and many issues in between.

SCI focuses on sustainability-based research and teaching opportunities through two primary efforts:

1. Our Sustainable City Year Program (SCYP), a massively scaled university-community partnership program that matches the resources of the University with one Oregon community each year to help advance that community's sustainability goals; and

2. Our Urbanism Next Center, which focuses on how autonomous vehicles, e-commerce, and the sharing economy will impact the form and function of cities.

In all cases, we share our expertise and experiences with scholars, policymakers, community leaders, and project partners. We further extend our impact via an annual Expert-in-Residence Program, SCI China visiting scholars program, study abroad course on redesigning cities for people on bicycle, and through our co-leadership of the Educational Partnerships for Innovation in Communities Network (EPIC-N), which is transferring SCYP to universities and communities across the globe. Our work connects student passion, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

About SCYP

The Sustainable City Year Program (SCYP) is a year-long partnership between SCI and a partner in Oregon, in which students and faculty in courses from across the university collaborate with a public entity on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner agency through a variety of studio projects and service-learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCYP's primary value derives from collaborations that result in on-the-ground impact and expanded conversations for a community ready to transition to a more sustainable and livable future.

About Lane Transit District

LTD provides more than 10 million trips per year on its buses and EmX Bus Rapid Transit line in Lane County, Oregon. Encompassing the Eugene-Springfield metro area, LTD is a special district of the state of Oregon and led by a seven-member board of directors appointed by Oregon's Governor.

LTD also operates RideSource, a paratransit service for people with disabilities, and numerous transportation options programs to promote sustainable travel county wide, and Point2Point, an initiative that provides community members with the necessary information and resources to assist them in identifying opportunities to drive less by discovering transportation choices that meet their individual lifestyles.

Course Participants

AUSTIN BENDER, Third Year Transfer Architecture Prospective
ANTHONY DELEON, First Year Architecture Prospective
EARL JOSEPH Del Rosario, Environmental Studies Undergraduate
ZHONGYANG HUANG, Art Undergraduate
SEAN KIM, First Year Architecture Prospective
ALICE LI, First Year Architecture Prospective
STEPHEN MACK, Environmental Studies Undergraduate
ANTONIO RINELLA, First Year Architectural Prospective
KEVIN RUIZ GUTIERREZ, Third Year Transfer Architecture Prospective
BRADEN SHULTZ, First Year Architecture Prospective
JACOB STOLLBERG, First Year Architecture Prospective
CRYSTAL VOOGD, Family & Human Services Undergraduate
HAKI WOODS, General Social Science Undergraduate

Executive Summary

This report summarizes the design proposals for conceptual bus stops that are responses to the current environments at two existing Lane Transit District (LTD) sites. This 10-week course led students with little to no formal design experience in understanding the connection and process of designing a functional and replicative structure.

General requirements of the project included design of a bus stop that matched LTD's considerations such as rider amenities and security. Additional design possibilities included creating unique structures that would improve the experience of users.

Through practical experience, a class of fourteen students built on their ability to communicate their proposals through drawing, 3D modeling, and Photoshop, software that allows users to create visualizations. Students also learned traditional forms of architectural communication through drafting, elevations, and site plans.

Through site visits, the class learned common strategies to study space and observed the environment that commuters experience while using the buses and stations.

Four student proposals were chosen to provide a range of designs. The completed designs offered different and unique elements, such as introducing unique amenities, technology, and designed environmental responses to the bus stops. Each design emphasized the common themes of increased user interaction and sustainability.

Introduction

In this studio-based course, students had the opportunity to learn multiple techniques and skills needed to produce 3-D models, renderings, and perspectives. The curriculum allowed students to explore architectural design and work with an actual client.

In this course, the students were given the challenge of reimagining two existing bus stops that have different conditions and characteristics. Students were tasked with improving the stops to encourage and enhance ridership. Students began by analyzing the sites and reviewing program requirements. Students were then asked to design an improved physical space while introducing unique amenities to enhance user experience and improving connections to the built and natural environments. More detail about these processes follows.

Community Relationship

Lane Transit District provides public transportation to the greater Lane County region. They strive to provide efficient and reliable service that will support its users and their ability to reach different areas of the county. Additionally, LTD seeks to foster more sustainable modes of transportation throughout the Lane County community. Though LTD's design requests were minimal, they emphasized the value of providing a safe and accessible environment for all users while improving the quality of the environment.

EXPERIENCE ECONOMY

During the design process, students focused on studying and understanding the experience of a rider and the type of environment a bus stop produces. This was vital to introduce the relationship between people and space as well as how to study it.

Often the most effective and efficient bus stops are built from straightforward designs. However, to create a structure that naturally attracts users and generates meaningful memories, designers must consider unique forms and qualities that could positively affect riders' experiences. Each student tried to achieve this key concept through individual, unique designs that establish their structure's identity and connect it to the space it occupies.

Existing Conditions

Eugene is the second largest city in Oregon and has a rich history and culture surrounding the University of Oregon. With the exponential growth of the state's population, Eugene has incorporated sustainability into their comprehensive plan to further support its citizens' wellbeing.

A continued focus of the city's development is fostering citizens' access to alternative forms of transportation in order to reach all parts of the city. To encourage increased ridership, LTD requested students refurbish two existing bus stops located near a west side commercial area as well as a portion of Lane Community College's (LCC) transit hub.

Both sites feature a structure that provides riders an overhanging roof to shield from rain and excessive heat. Most of the space is open and provides minimal protection from prevailing winds. There are benches, lean-on railings, and trash bins for riders to use. Additionally, the stops feature infographics depicting bus intervals and commuting etiquette.

At the LCC site, the bus stop operates in conjunction with a transportation hub located on the west side of campus, creating a border between the main entrance of campus and the largest parking lots where most of the students enter. The current stop provides access to amenities such as waste disposal, bike racks, and different forms of seating. Some of the issues that the stop creates are a lack of cohesion with the campus aesthetic, failure of the design to provide the most efficient use of space given area limitations, and decreased passenger flow when loading and unloading.

FIG. 1
Lane Community College Station: View of the project site from the west.

The second site, Commerce Station, is unique considering that buses are larger and come at more frequent intervals. This bus stop is located in the west side of Eugene. The stop is in a commercial area and located directly on an arterial road. Two large commercial stores are in the front of and behind the stop. The site offers waste disposal and rider information.

FIG. 2
Commerce Station: View of the project site from the north.

SITE ANALYSIS

In conjunction with the program partners, Lane Transit District, students were offered two different bus stops taking into account the following considerations:

Station Purpose

- The LCC stop primarily caters to students and college employees. The station receives buses at 30-minute intervals and is the primary line connecting LCC to the University of Oregon. The stop can experience an influx of ridership during peak hours of the day from students entering and leaving class.
- Commerce Station caters to traditional commuters that use this line to access major stores. The route also hosts a larger bus (EmX), which comes in 15-minute intervals. Peak ridership hours can vary but are often influenced by the hours of operation of the surrounding businesses.

Different Utilities Offered

- Both stations offer rider amenities such as waste disposal, benches, and bus route and schedule infographics. Both stations provide adequate roofing coverage and nighttime lighting.
- LTD is open to more unique features and utilities that can be implemented within its bus stops.

Commuter Demographics

- Most of the commuters that use LCC are students. Age ranges can be very large considering LCC's status as a local educational institution providing a diverse scale of programs.
- Commerce Station caters to a wider range of commuters who use the stop as a gateway to the commercial area with the intention of shopping.

Necessary Design Details

- LTD asks that designs must comply with necessary aspects like ridership safety and accessibility to disabled riders. The design should also plan for the possibility of vandalism and provide sufficient lighting.

Surrounding Environment

- LCC Station is located on the southern portion of the college's transportation hub. On the east face of the stop is a retaining wall that holds three large trees and various types of shrubs. Further east of the stop is a large garden that lines the street and parallels the stop. A trail to the east leads to the main entrance of campus.
- Commerce Station sits on a portion of the sidewalk that lines West 11th Avenue, which follows an east-to-west road orientation. On the north and south face of the station are large parking lots for two commercial stores.

PROGRAM REQUIREMENTS

This program required students to study a range of details and improve current structures using modern design interpretations that are functional yet visual appealing. Students also studied ridership experience wherein, depending on which station that they choose, they rode a portion of the bus route to the stop and documented their experiences and areas for improvement. This helped create a baseline for their designs. Students went through multiple critiques of their work where LTD communicated their interests as well as a final critique at the course's end where proposals were critiqued by UO architecture professors.

DESIGN METHODOLOGY

A major portion of the course was focused on introducing the fundamental language of design. Students began by creating concept models for their initial designs. One of the first student exercises involved analyzing a precedent study of different bus stops located in Europe. The city of Krumbach, Germany initiated a design exposition where they challenged architects to create a bus stop that harmonized with the surrounding environment. The challenge did not give any design limitations except for scale. Students studied the unique aspects of an assigned station to better understand how designers addressed composition, function, and assembly.

Students also conducted a site visit and documented their experience of taking the bus to the stop. This helped students personalize what commuters experience, develop different design elements and strategies that addressed riders' challenges, and incorporate their own considerations into their designs. Students took on the roles of different commuters who needed different levels of accessibility. This also altered student perceptions and ultimately their designs.

The course then applied the architectural practice of accurately communicating their thoughts and processes through architectural drafting and presentation, photoshop, modeling, and multiple phases of design development. One phase of design development included a midterm pin-up session where LTD examined the developing designs and offered additional thoughts, critiques, and considerations. Lastly, students presented their final models and posters, which included elevations, a site plan, cross sections, and renderings.

Student Proposals

EJ DEL ROSARIO

This student focused on refabricating the LCC Station.

The title of the design is "Boxed Water." This design integrates sustainable design and passive technology into the bus stop. The main features of this design include a green roof, which would cover 70% of the stop's surface area. Portions of the roof in the east face would have a steep pitch. During rainstorms, run-off water unabsorbed by the grass would cascade down to the current retaining wall holding vegetation, creating a natural waterfall and providing water to existing plants.

The overall composition of this design mimics the current physical aesthetic of LCC's campus and takes a minimalistic approach to emphasize the cohesion of the natural environment surrounding the space. The design is a physical representation of the accessibility of passive technology. "Green technology" is often considered expensive and inefficient; this design helps combat that assumption (Hughes, 2008).

The design emphasizes creating a strong connection between the structure and its environment and the benefits of more natural features. Studies have shown that increased exposure to natural elements reduces stress, which could benefit students and college staff that will occupy the space (Taylor, 2018).

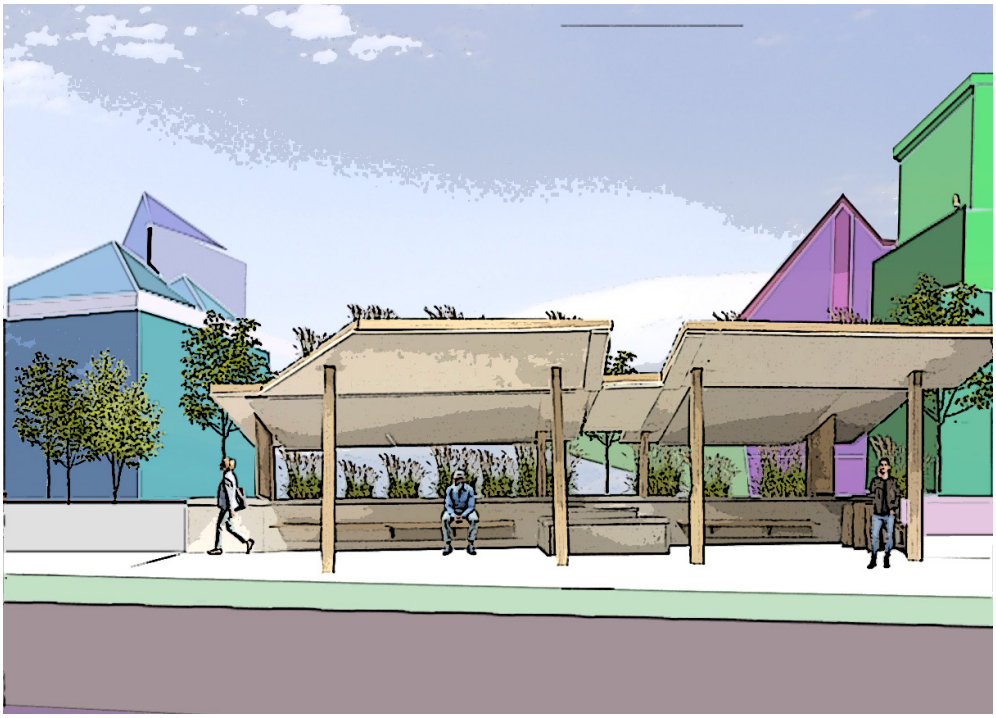

FIG. 3
Boxed Water rendering, facing west.

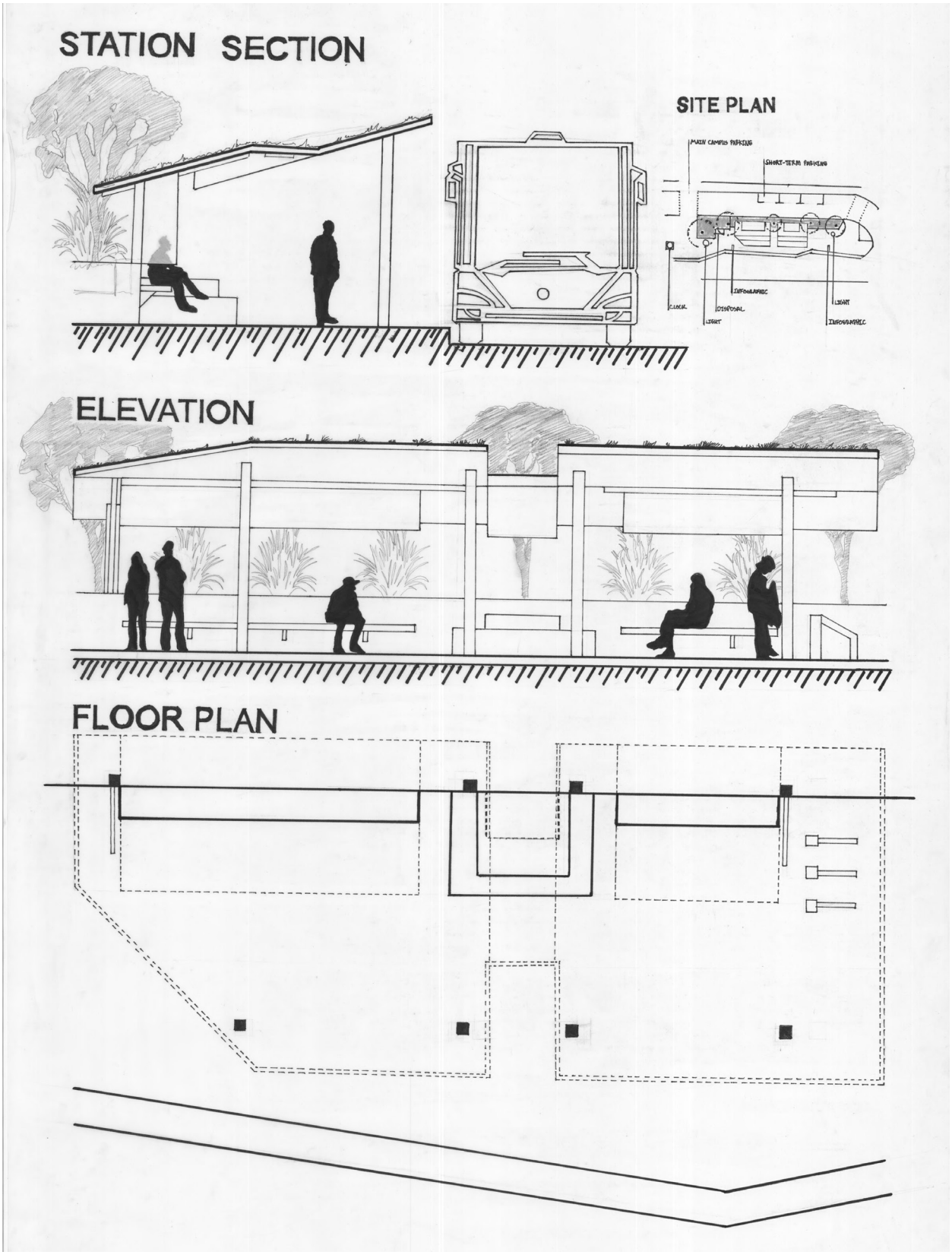

FIG. 4
Full scope of Boxed Water design.

ALICE LI

This design reimagines Commerce Station.

The design is titled “Bubbles” and examines rider interaction with their environment. The design provides unique and modern necessities while retaining the ability to adapt and evolve. Among the design’s distinctive characteristics are stacked cylindrical roofing tiles, which hold a green roof and a cylindrical layer below holding photovoltaic panels. “Bubbles” would integrate electric outlets, a vending machine, and small storage spaces with LTD’s desired necessities.

Goals that this design addresses include: providing a comfortable stop for riders who are there to shop; complying with LTD’s design standards; and creating a station that allows users to be mindful of their natural setting.

FIG. 5
Bubbles rendering, facing south.

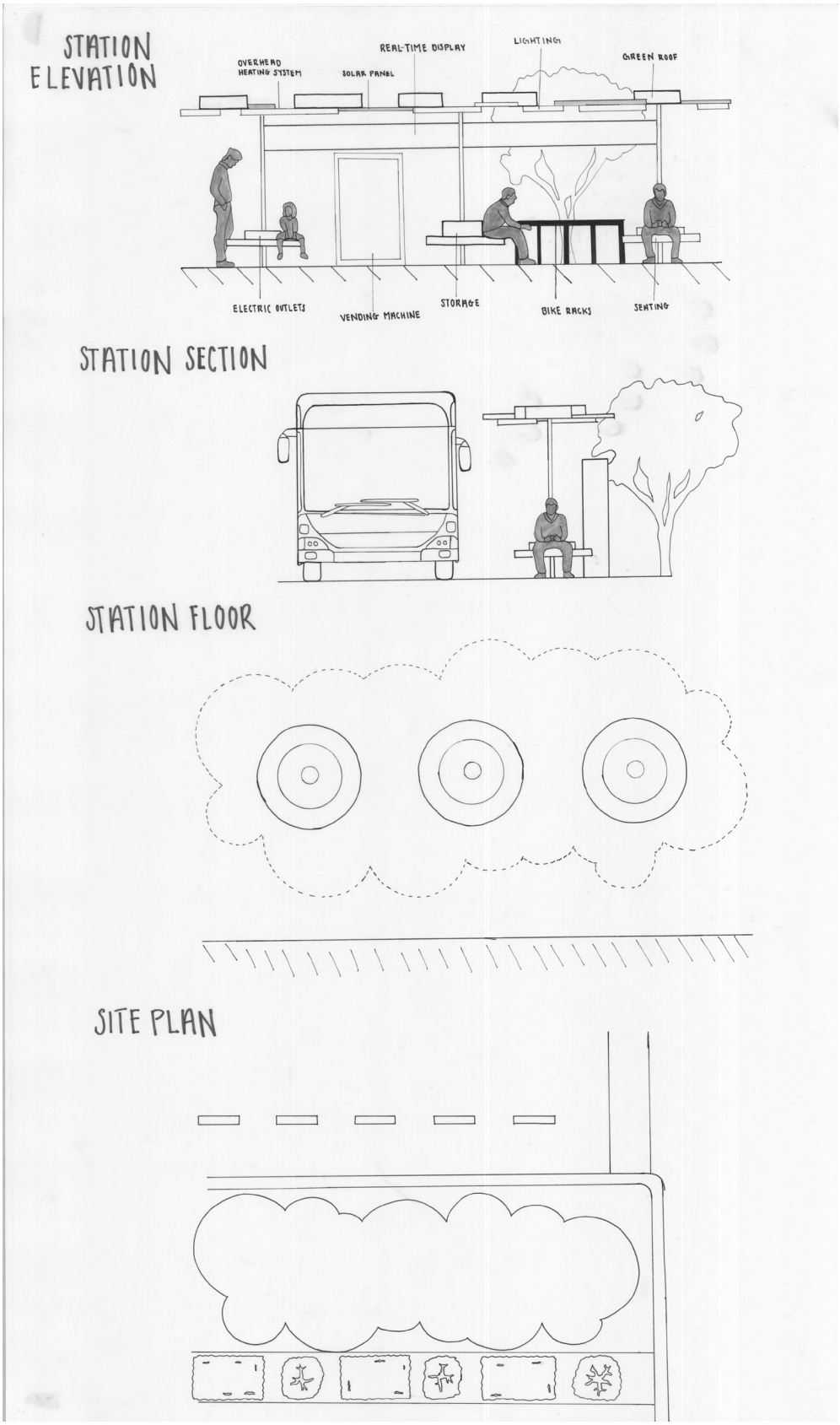

FIG. 6
Full scope of Bubbles design.

ZHONGYANG HUANG

This student chose to redesign Commerce Station.

The name of this design is "Glass House," with the main feature representing a contemporary small house with a glass roof. The design features an identical double structure. Some of the goals the design seeks to address include providing amenities to support users throughout the day that may not be accessible elsewhere and to become a landmark location in west Eugene. In the center of the stop, a vending machine would make a variety of items available to commuters. The design appeals to users of all age ranges and complements the natural environment that surrounds it. The design also emphasizes shelter from Oregon's variable climate with its more enclosed design.

FIG. 7
Glass House rendering facing south.

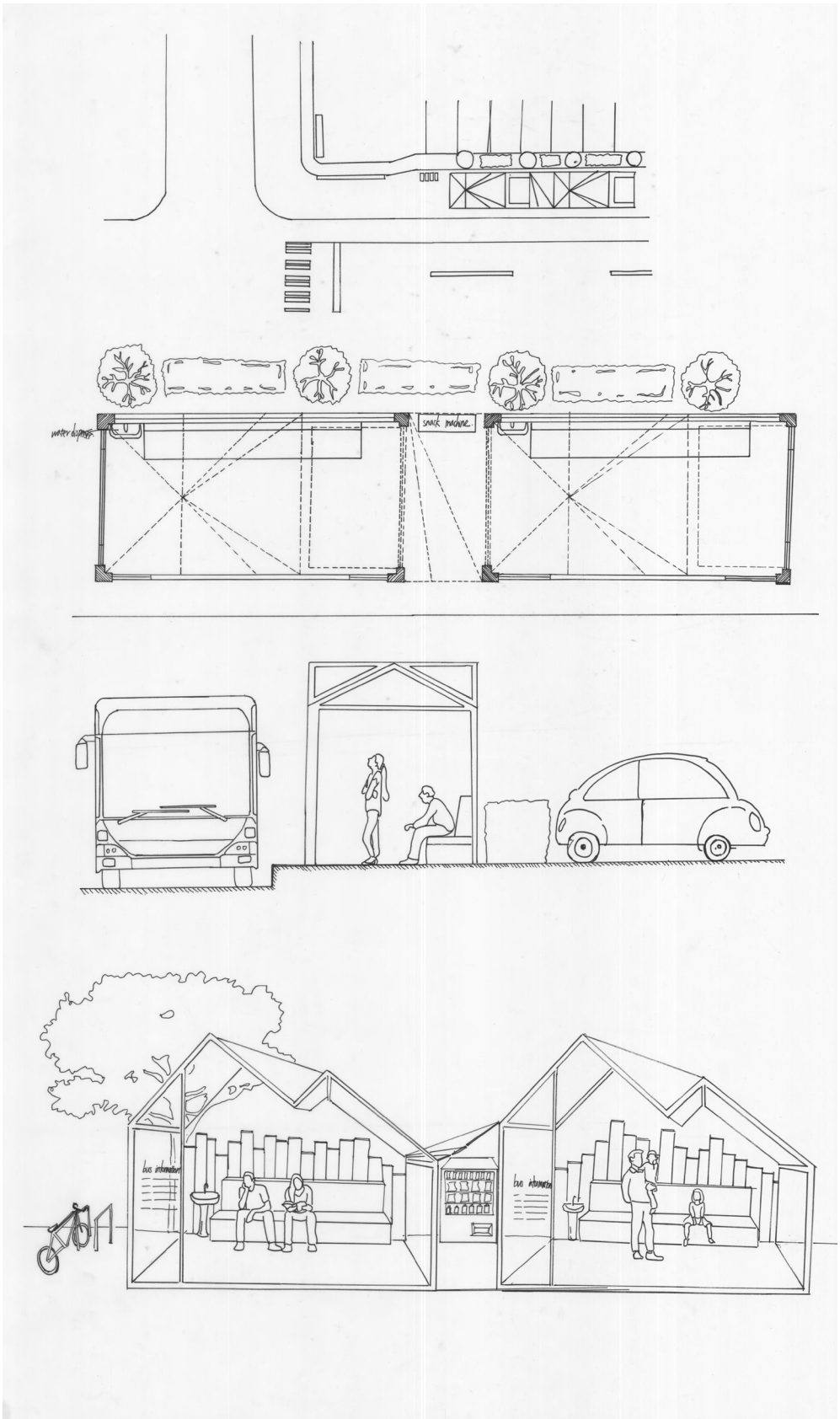

FIG. 8
Full scope of Glass House design.

CRYSTAL VOOGD

This student chose to redesign the LCC Station.

Some of the goals in her design were to mimic the rolling hills that surrounds Lane Community College, and to create interactive seating element that can integrate with the users' preferences. The design is composed of mixed materials, and intended to complement the current environment of the stop.

The structure holds three umbrella-like units that have an ergonomic seating design under each supporting post. The seating consists of three plates that stack on top of each other and that can be moved to three different optional seating heights.

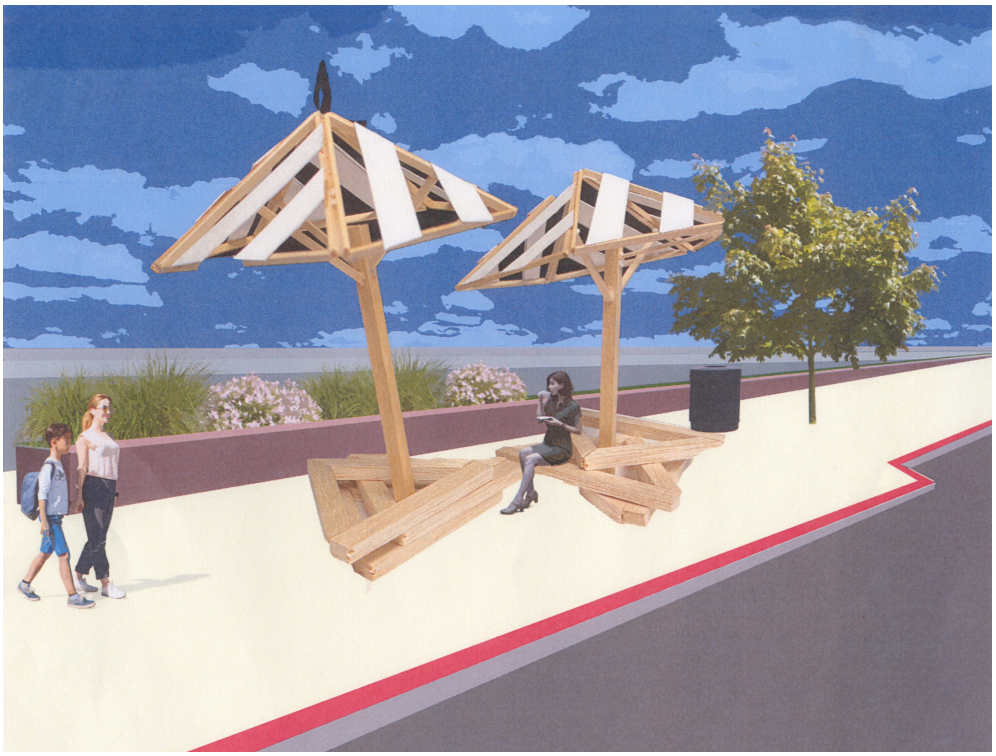

FIG. 9
Proposed Structure rendering facing west.

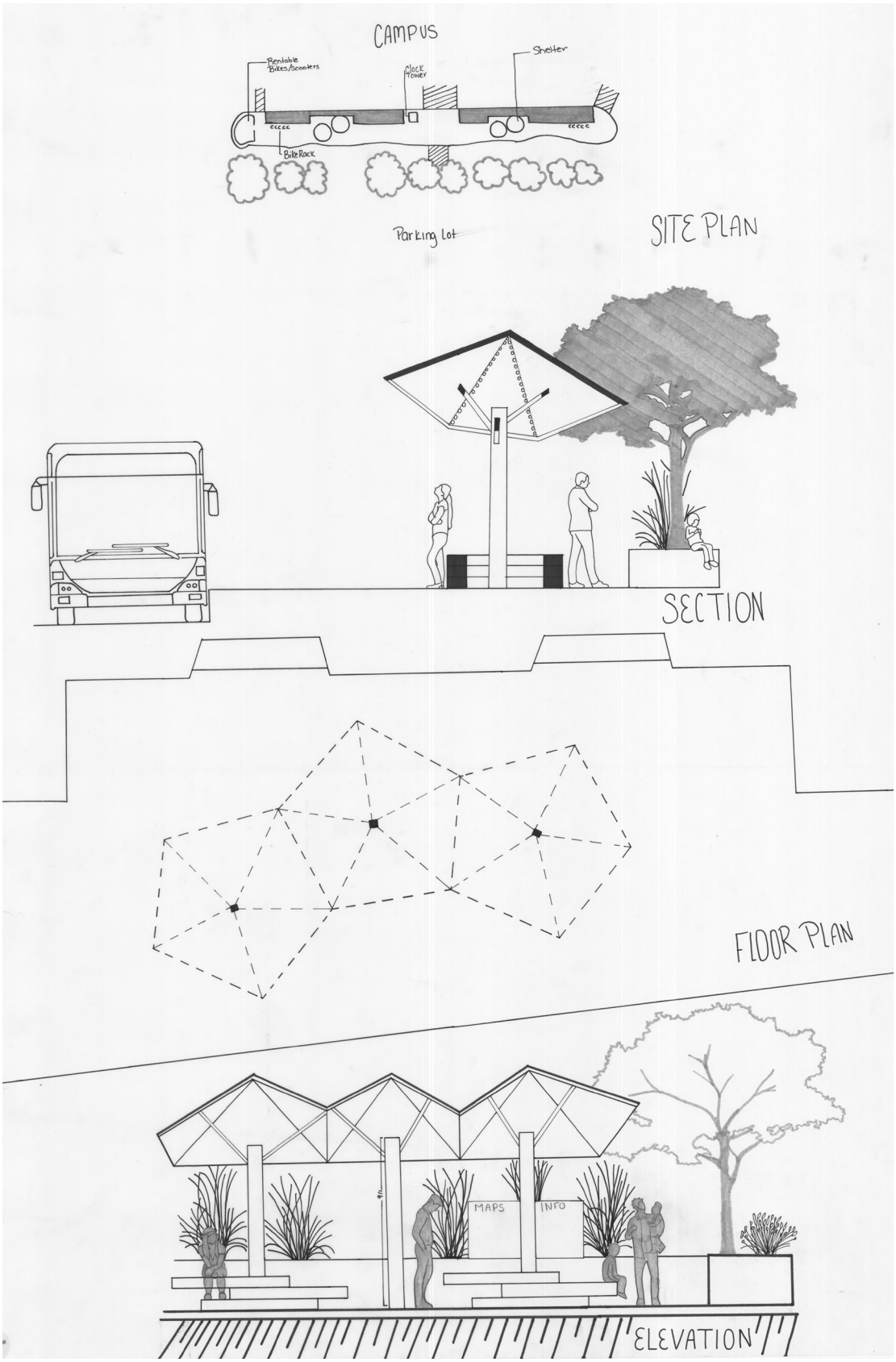

FIG. 10
Full scope of Voogd's design.

Conclusion

This class investigated the idea of the relationship between making and thinking. LTD challenged students to redesign existing stops in line with the agency's goals of increasing riders' amenities, improving safety, and creating a unique environment. Students incorporated feedback from LTD, architecture professors, and industry professionals into their designs. Final designs included a wide range of styles, forms, and compositions. While each design was unique, all sought to create a functional, identifiable, and sustainable bus stop that integrated the surrounding environment. Students ultimately hoped to improve the wellbeing of LTD users and the broader Lane County community through their bus stop designs.

References

Taylor, Lucy, Amy K. Hahs, and Dieter F. Hochuli. “Wellbeing and Urban Living: Nurtured by Nature.” Urban Ecosystems 21, no. 1 (2018): 197-208.

Hughes, Ron. “Green Myths Debunked: The Truth about the Costs of Going Green.” Arkansas Business 25, no. 3 (2008): S32.

SCI Directors and Staff

Marc Schlossberg	SCI Co-Director, and Professor of Planning, Public Policy, and Management, University of Oregon
Nico Larco	SCI Co-Director, and Professor of Architecture, University of Oregon
Megan Banks	SCYP Director, University of Oregon
Sean Vermilya	Report Coordinator
Katie Fields	SCYP Graduate Employee
Danielle Lewis	Graphic Designer