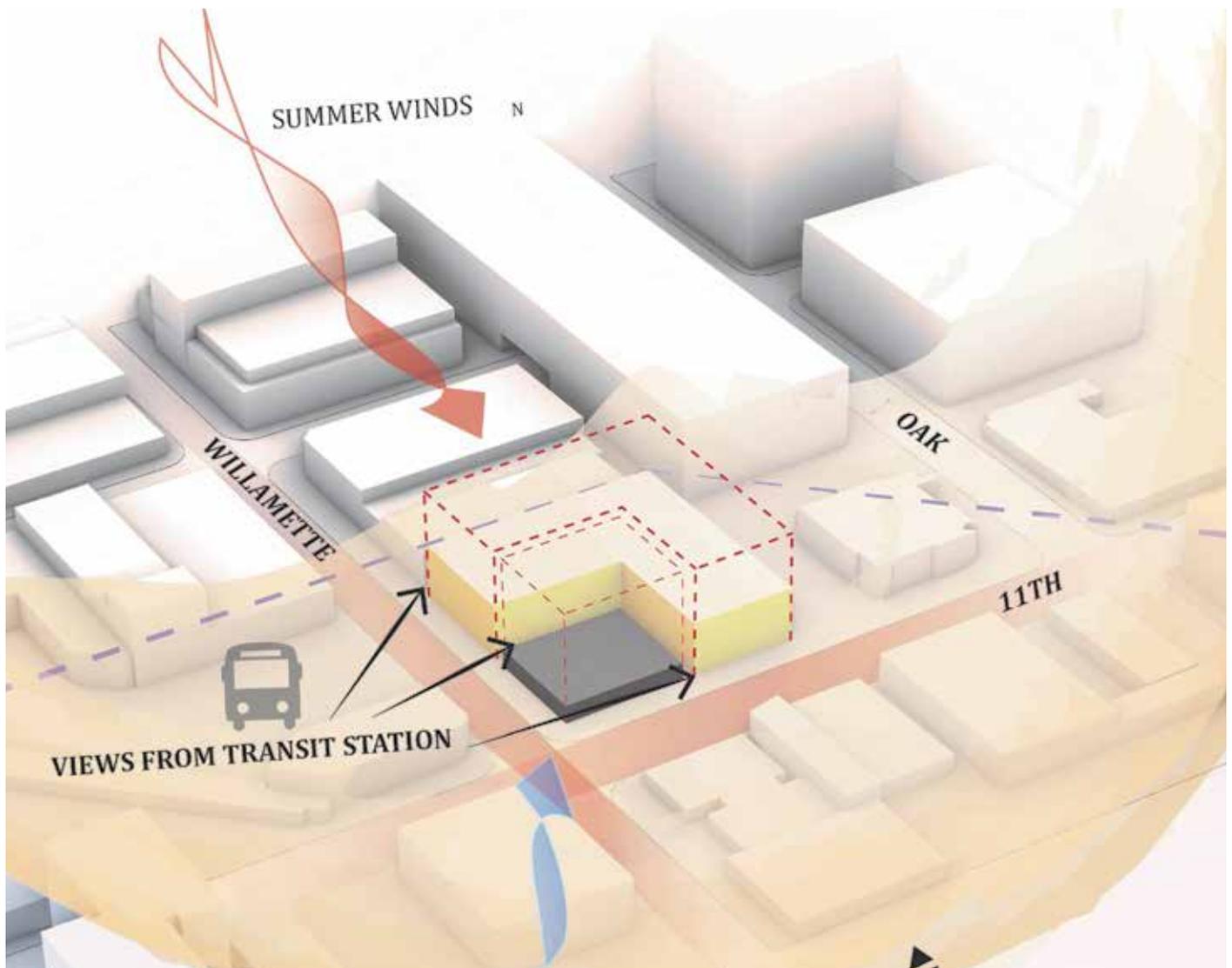


2020

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ARCH 683 Studio Report



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Isabel Rivera, Instructor, Architecture

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Joseph Moore, Architect, GMA Architects

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01.

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 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:

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 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 solution for the creation of a sustainable society.

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, SCY Program Director, University of Oregon

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.

02.

COURSE
PARTICIPANTS

This report represents original student work and recommendations prepared by students in the University of Oregon's Sustainable City Year Program for the City of Eugene and Lane Transit District. Text and images contained in this report may not be used without permission from the University of Oregon.

Course Participants

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Amy Arroyo

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Pooria Golestanirad

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Vayle Khala

Alan Lai

Kyhetica Lattin

Katherine Marple

Will Ogburn

Jocelyn Reynolds

Courtney Sigloh

Alex Tapia-Vargas

Kyle Tasik

Sean Thurston

EXECUTIVE

SUMMARY

Students planned and designed a new downtown “Enoteca,” Italian for a local and regional agricultural library, in Downtown Eugene, Oregon. The Enoteca is a space to educate the public about southern Willamette Valley wine production. In addition to the Enoteca, the program includes a ballroom and a restaurant providing farm-to-table cuisine. In addition to the program, students had the freedom to incorporate any other use they believed would enhance the city of Eugene lifestyle and needs. The location, on Willamette Street, would help enhance the LTD’s Eugene Station environment and expand an active part of Downtown Eugene.

The city of Eugene and LTD envision the site ideally including a housing component to increase housing density in Downtown Eugene. Currently, downtown is an “eight to five” business district; increased housing could help improve activity after business hours.

Sustainable design solutions were proposed, beginning with:

- a) Setting a budget and a program.
- b) Establishing a rule for the design solutions to include the AIA Cote Ten Measures.
- c) Create a project schedule.

A budget is an architect’s road map. The measures are the soul of the project. The schedule is the “road map + soul = profit.”

INTRODUCTION

This report is divided into nine sections that include research about the site, climate data, history, and students' design solutions. Student designs focus on "green" strategies, incorporating the American Institute of Architects Committee of the Environment (COTE) ten Measures, listed on the following page.

Students were introduced to Eugene through research and presentations on the following topics: Eugene's History, Eugene's Architecture Form and City Organization, Eugene's Site Topography and Code, and Eugene's Climate. This report includes these findings and how the students incorporated them in their various designs and recommendations.



MEASURE 1

Design for Integration



MEASURE 2

Design for Community



MEASURE 3

Design for Ecology



MEASURE 4

Design for Water



MEASURE 5

Design for Economy



MEASURE 6

Design for Energy



MEASURE 7

Design for Wellness



MEASURE 8

Design for Resources



MEASURE 9

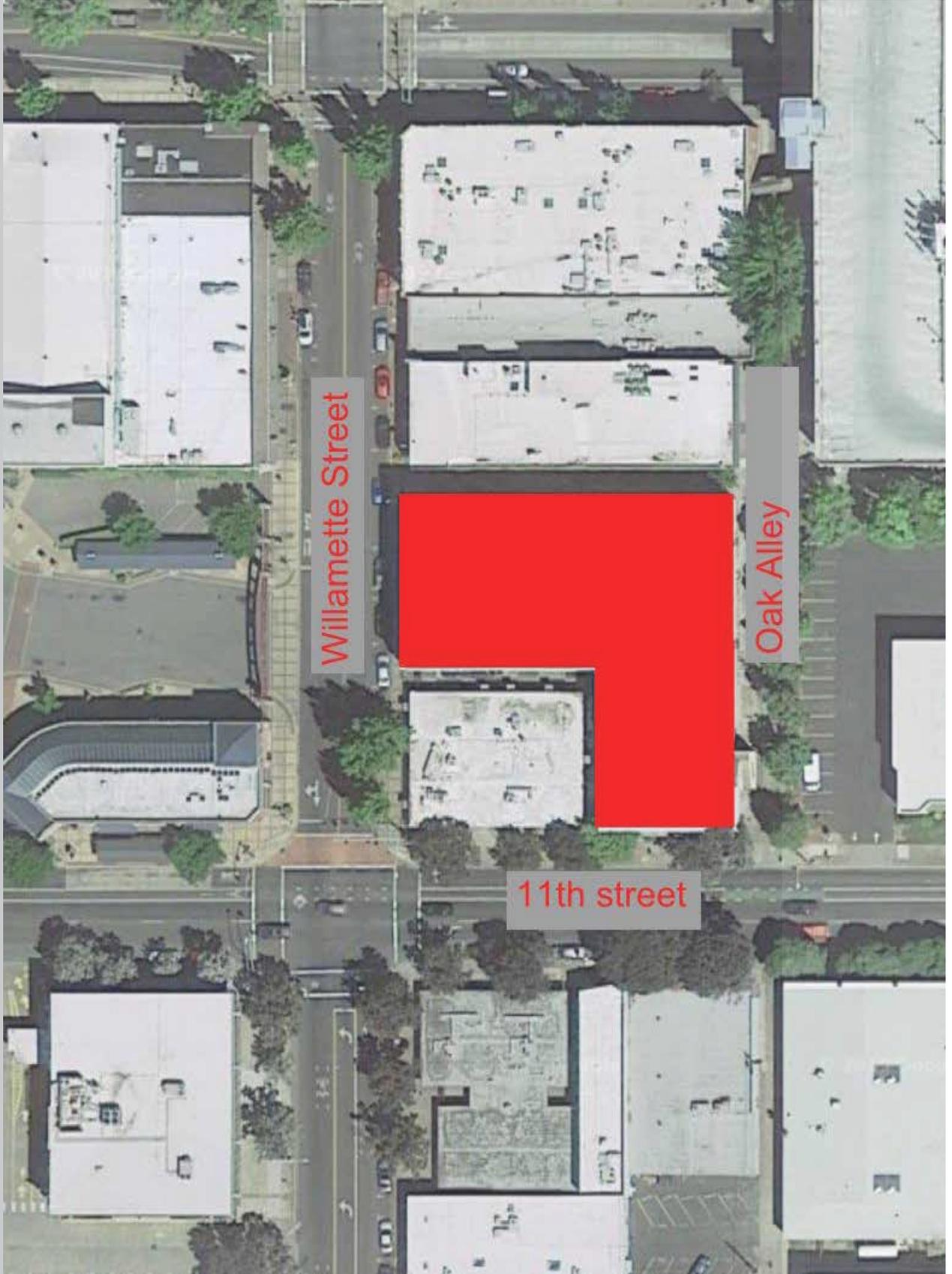
Design for Change



MEASURE 10

Design for Discovery

03.



SITE

The site is located at Willamette Street and West 11th Avenue in Downtown Eugene. Since the early 1900's, Willamette Street has been Eugene's main business street. In 1910, the street was paved and 6.2 miles of road were added across the city. Electric lighting came in 1912 and the first water line was added in 1914. The city built concrete sidewalks in 1915.

A pair of streets, 11th Avenue and 13th Avenue, are considered minor arterials while Willamette Street is considered a neighborhood collector.



- MAJOR ARTERIAL
- MINOR ARTERIAL
- MAJOR COLLECTOR
- NEIGHBORHOOD COLLECTOR
- LOCAL STREET

NEIGHBORHOOD HISTORY

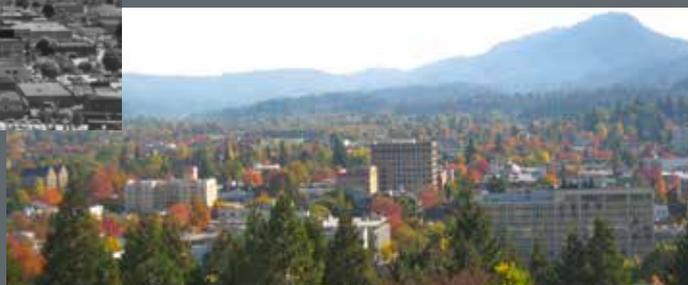
By the turn of the 21st century, more ornate buildings, such as the Montgomery Ward Building, were replaced by simpler façades. The scale and volume of the buildings frequently remained the same.

CHANGES IN THE URBAN FORM



View of Willamette Street from Skinner's Butte

- Top Right - 1910
- Middle Left - 1950
- Bottom Right - 2018



Lane County Historical Museum



NEIGHBORHOOD CHANGES

Before the 1870s, timber-frame dominated the building industry. By the 1930s, taller buildings started to appear in downtown. Willamette Street buildings remained smaller scale, most at 30' to 35' in height. Additionally, most of the buildings on Willamette Street are brick.

CHANGES IN WILLAMETTE STREET



1910
Electric street car
Timber-framed false-front buildings & Brick buildings
Horse & buggy



1950
Personal cars / No electric street car
Bustling Main Street
Paved street
Big storefront signage



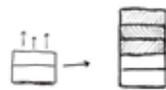
Present
Personal modern cars / Traffic lights
Entrance to Transit Hub
Trees in the street-scape
Less human-scaled store fronts

Changes in the Urban Form

CHANGES IN BUILDING FORMS AND TYPES



Pre - 1870's
Timber Framed False-Front
Commercial Structures



1930's
"Tall" Buildings Emerge
5 to 8 Story Buildings
Multi-Level Commercial Block



1960's
Car-centric Buildings Types Emerge
Drive-throughs, Parking lots



1900's
Ornate, Multi-storied
Brick Buildings
(fire-resistant)



1950's
Big Boom of Residential Growth
First Apartment Buildings



1970's
Demolition of Older, Historic
Buildings to Prepare for Modern Era

HISTORIC BUILDINGS

ON WILLAMETTE



3. US POST OFFICE Stripped Classical (Art Deco) - 1937

This Stripped Classical, Art Deco style building was designed by government architect Gilbert Stanley Underwood and built 1937-39. Underwood is known for designing other prominent federal buildings, such as the Seattle Federal Courthouse and the Los Angeles Federal Building. Several murals can be found at either end of the lobby- they are the work of an internationally renowned Oregon artist, Carl Morris.



7. MCDONALD THEATRE Classical Greek/Roman (Mediterranean) - 1925

Built in 1925, the McDonald Theatre is the sole architecturally intact example of a movie palace remaining in Eugene. Of the four original movie houses in town, the McDonald was the largest with a seating capacity of 1,400. Designed by Lee Thomas, a Portland architect, the stage was made to accommodate live theatre and motion picture productions. The McDonald Theatre represented the largest endeavor of the McDonald-Schaefers Company. The space is now a performing arts theater as well as a music venue.



8. SCHAEFERS BUILDING Modernistic (Art Deco) - 1929

This building was constructed in 1929, the single example of a modernistic style applied to a commercial building. The design of the building was the product of Truman Phillips, a recent graduate of the University of Oregon's School of Architecture. The Schaefers brothers were important to the development of the local downtown business community. The building is now a Senior and Disability Services center.

TRANSPORTATION CHANGES

CHANGES IN URBAN TRANSPORTATION

1907 & 1910
Electric Street Car begins operating
& passes directly beside site on Willamette



TRANSIT TOMORROW

LTD knows the importance of a healthy transit system. LTD is taking steps to improve ridership in Eugene by decreasing wait times, expanding carrying capacity, and planning for the future. Their main downtown station is across the street from the site redesigned by students.

ROUTE FREQUENCY

15 MINUTES 30 MINUTES



Site Aerial View

LTD Downtown Station

EUGENE CLIMATE

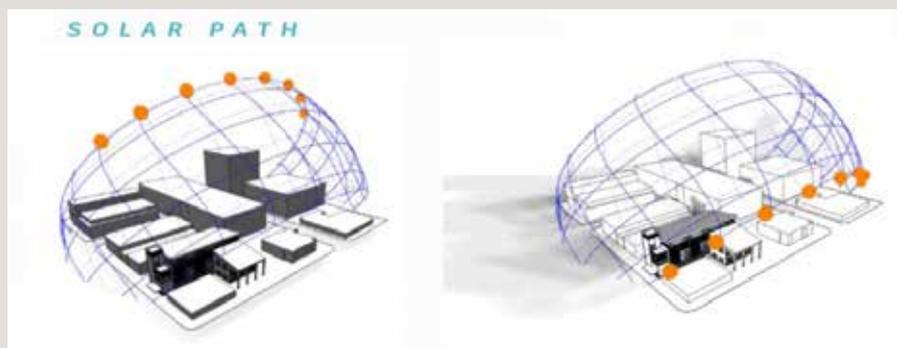
HOW WILL EUGENE'S CLIMATE CHANGE?



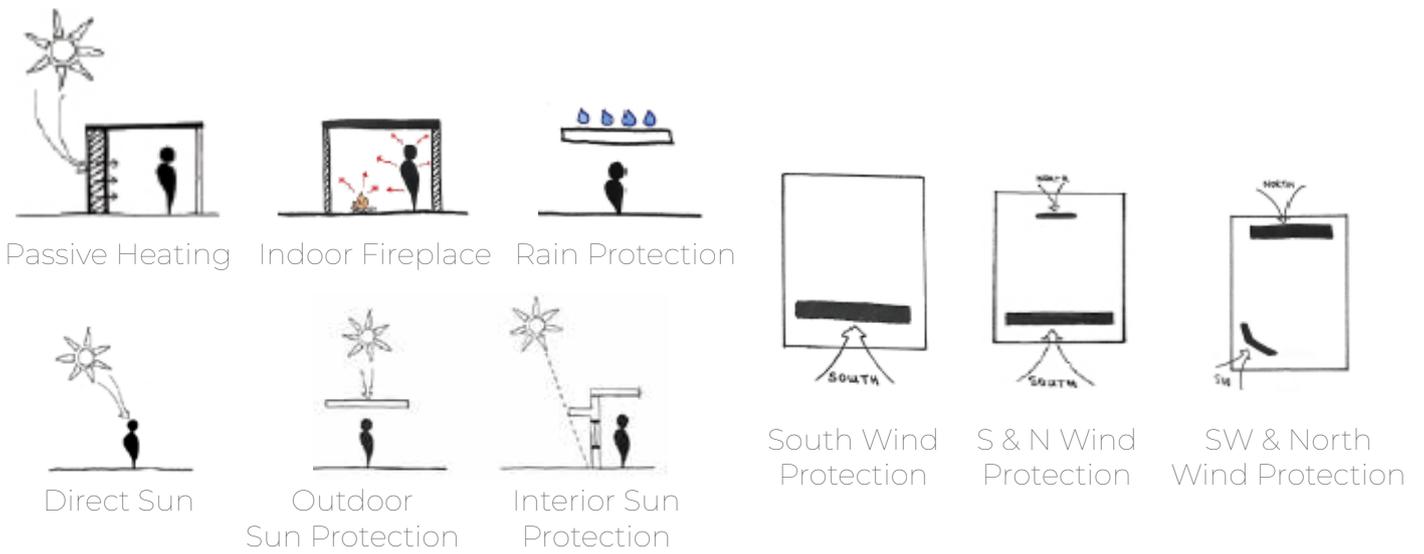
CLIMATE ACTION PLAN 2.0

Changing Climate in Eugene

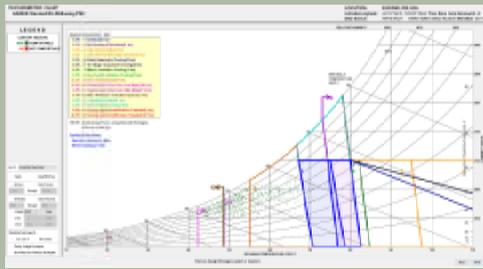
Eugene's Climate Action Plan discusses the potential changes of Eugene's climate in temperature, snow levels, drought, and wildfires. As designers, students remained aware of these changes and encourage green strategies for LTD through their designs.



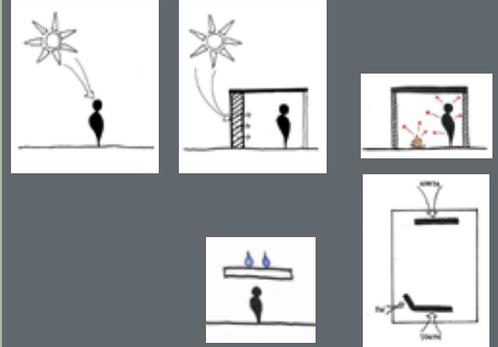
For climate analysis, the students used ASHRAE Psychometric Charts and usclimatedata.com. These analyses on climate data accompanied diagrams that explain the various building form needs to meet human comfort.



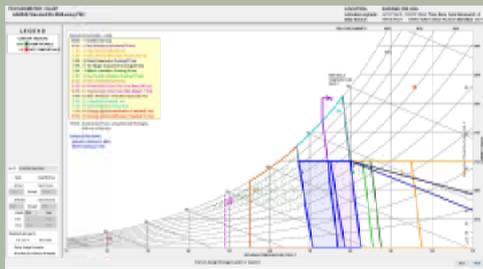
MAY



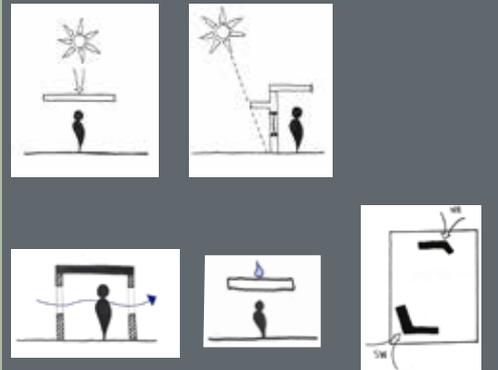
Average Temperature:
 Low: 43.8 F
 High: 67 F
 Average Rainfall:
 Rainfall Days: 11.7 days
 Amount: 2.7"
 Average Daylight:
 Daylight Hours: 15 hrs
 Sunshine Hours: 9 hrs
 Relative Humidity:
 60%
 Wind:
 25mph Southwestern



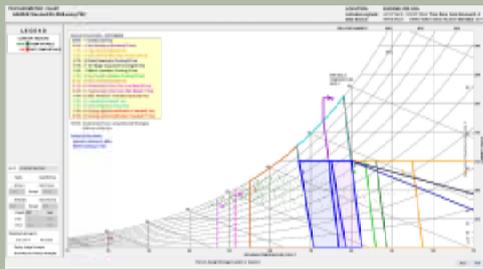
JUNE



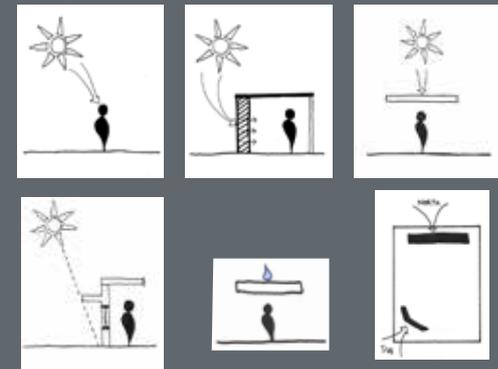
Average Temperature:
 Low: 47.9 F
 High: 73.2 F
 Average Rainfall:
 Rainfall Days: 7.9 days
 Amount: 1.5"
 Average Daylight:
 Daylight Hours: 15 hrs
 Sunshine Hours: 11 hrs
 Relative Humidity:
 56%
 Wind:
 20mph Western Wind



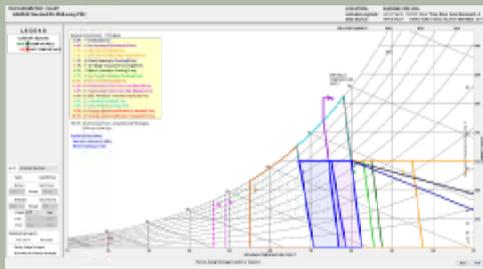
SEPTEMBER



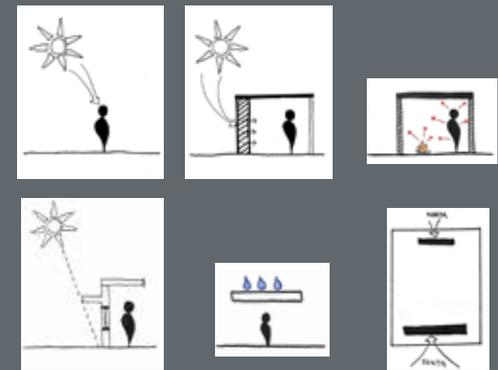
Average Temperature:
 Low: 47.3 F
 High: 76.9 F
 Average Rainfall:
 Rainfall Days: 5.4 days
 Amount: 1.3"
 Average Daylight:
 Daylight Hours: 12 hrs
 Sunshine Hours: 9 hrs
 Relative Humidity:
 50%
 Wind:
 20mph Northern Wind



OCTOBER



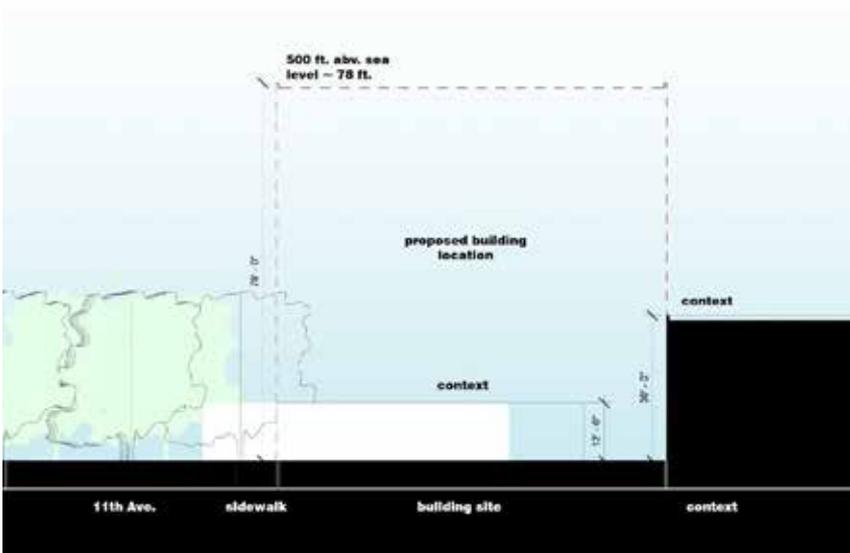
Average Temperature:
 Low: 64.2 F
 High: 41.5 F
 Average Rainfall:
 Rainfall Days: 11.4 days
 Amount: 3.3"
 Average Daylight:
 Daylight Hours: 11 hrs
 Sunshine Hours: 6 hrs
 Relative Humidity:
 49%
 Wind:
 20mph Northern Wind



WILLAMETTE STREET AS A FRONT DOOR

04.

Willamette Street serves as the front door to many businesses, past and present. The street contains wide lanes for cars and bikes, wide sidewalks, and space for parked cars. Wide sidewalks make it a more pedestrian-friendly street than West 11th Avenue. Therefore, students recommend orienting the main entrance of the new building towards Willamette Street. LTD’s main station is across the street. Hundreds of thousands of riders travel through the hub each year, making this site a very visible location.



This diagram illustrates the maximum allowable height in this district.

STUDENT SOLUTIONS FOR THE FRONT DOOR

The following images illustrate the students' creative designs for the building facade on Willamette Street. The site is framed by LTD's downtown station, therefore students paid special attention to its composition and character. Students hoped to inspire Eugene residents with designs that are worthy additions to the neighborhood.



Will Ogburn Design



David Deussen Design



Jocelyn Reynolds Design



Kyle Tasik Design



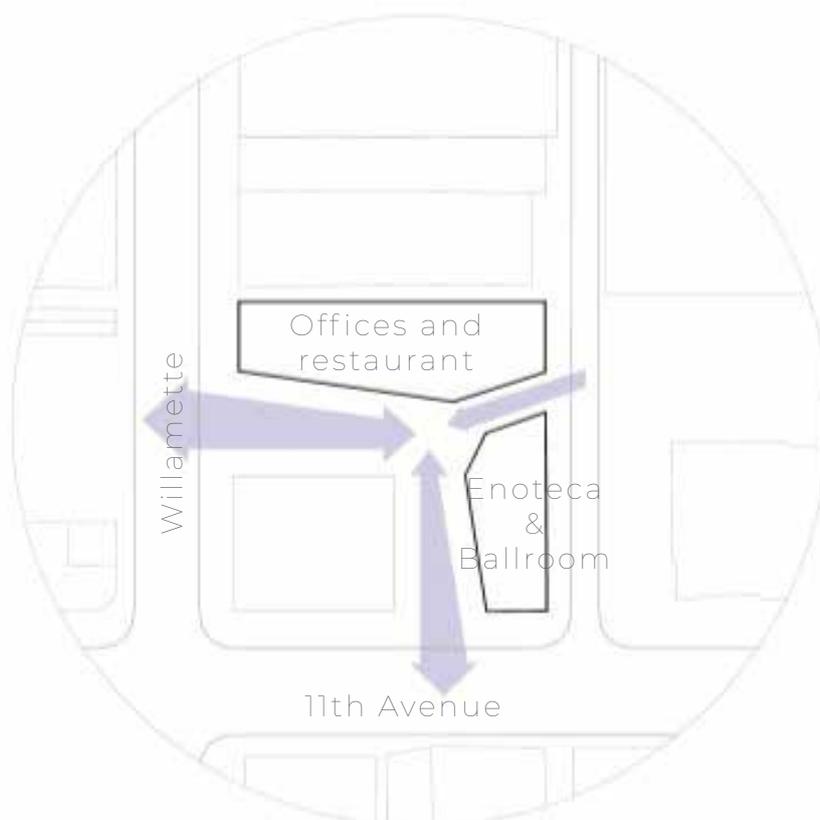
Alex Tapia Design

STUDENT SOLUTIONS FOR

MIXED-USE PROGRAMS

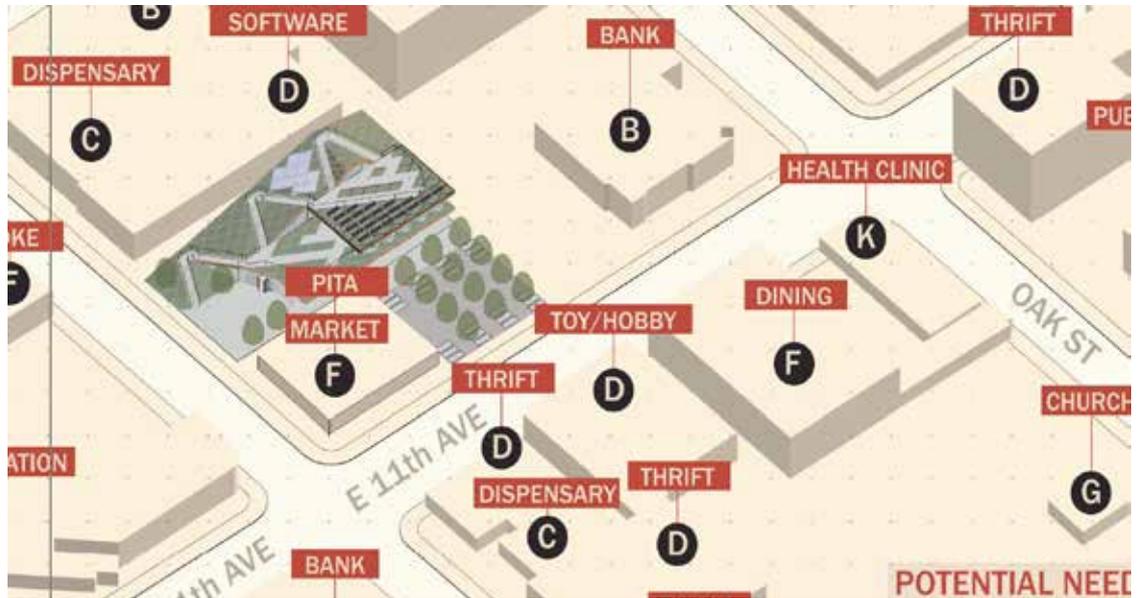
Mixed-use can create community partnerships and vibrant neighborhoods by offering a variety of services to residents within the same block. Mixed-use developments may include apartments, offices, coffee shops, retail, restaurants, and event spaces. The site is easily accessible with parking along Willamette Street, bike lanes on 10th and 11th Avenues, and transit access across the street. Students considered these transportation assets when creating their designs. The following student designs incorporated class objectives to create a space for an enoteca, a restaurant, and a ballroom.

David Deussen Design

**3. FUNNELING**

Creates an open gesture towards Eugene station.

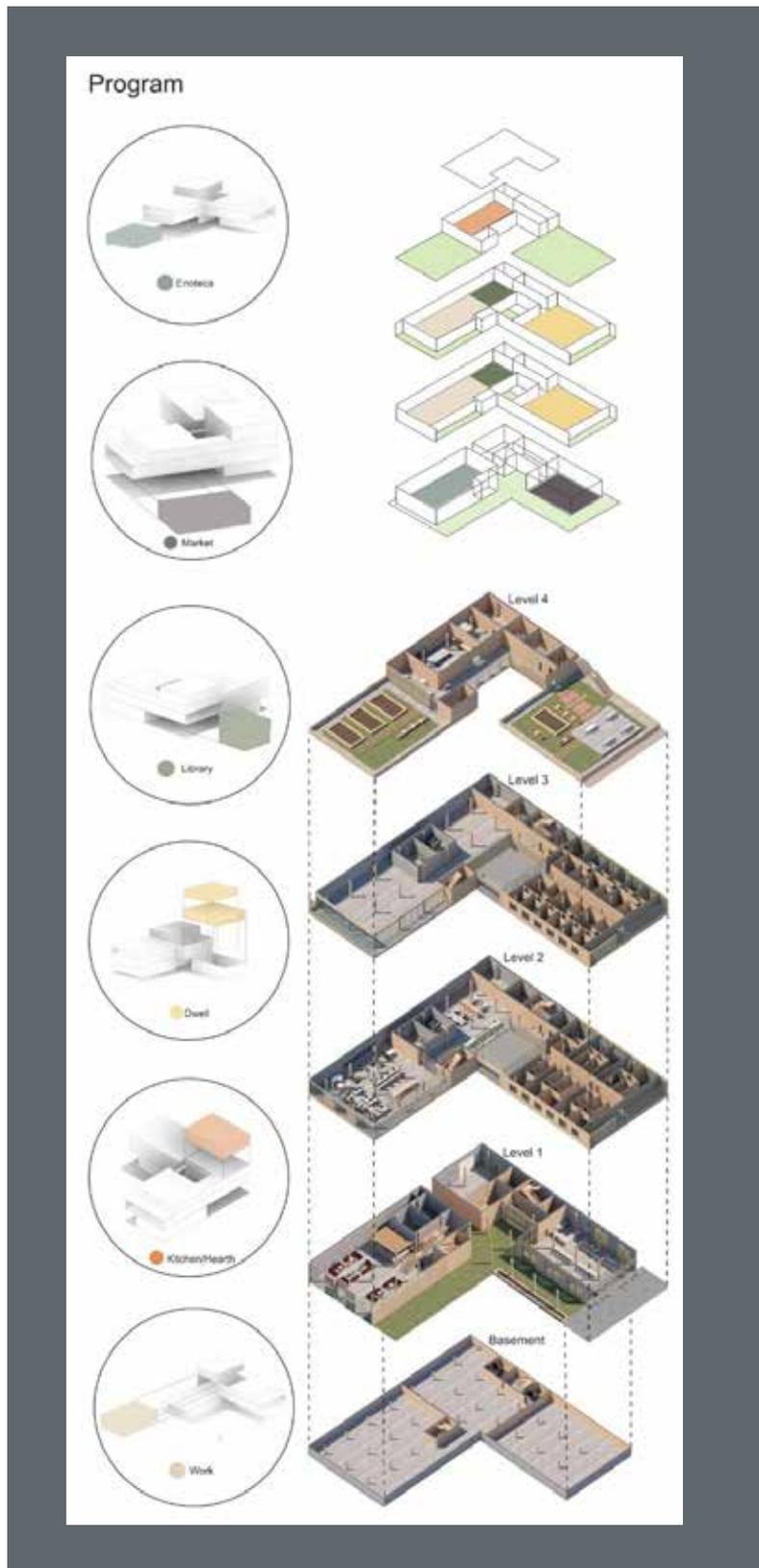
This student created a site that users can enter via three main points: Willamette Street, 11th Avenue, and Oak Alley. A central plaza is nestled between the three entrances and is the perfect spot to enjoy a drink or meal without vehicle or noise pollution.



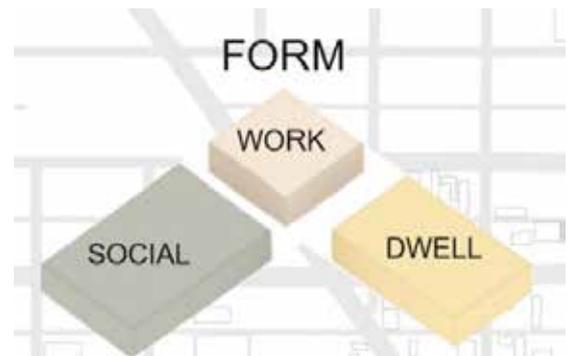
Katherine Marple Design

This student planned a block that incorporates green space in downtown Eugene, creating a park-like setting where residents and visitors can relax.

STUDENT SOLUTIONS FOR MIXED-USE SOLUTIONS



Vayle Khalaf Design



This student planned her program using the existing building structure. She designed social gathering spaces, work spaces, residential units, and outdoor spaces. The image above depicts the main view at street level on Willamette Street. The image below shows work spaces on second floor facing Willamette.



GREEN

STRATEGIES

Students also incorporated sustainable elements into their designs. Students utilized the AIA COTE 2020 Student Competition standards as their main performance measures for their designs.

These ten measures are briefly highlighted in this section. Student boards depict the full extent of their design decision and solutions.



M1

Integration



M2

Community



M3

Ecology



M4

Water



M5

Economy



M6

Energy



M7

Wellness



M8

Resources



M9

Change



M10

Discovery

MEASURE 1

DESIGN FOR INTEGRATION

Student designs incorporated buildings into the existing built and natural environment. Integrated designs promote sustainability and create a more attractive building.

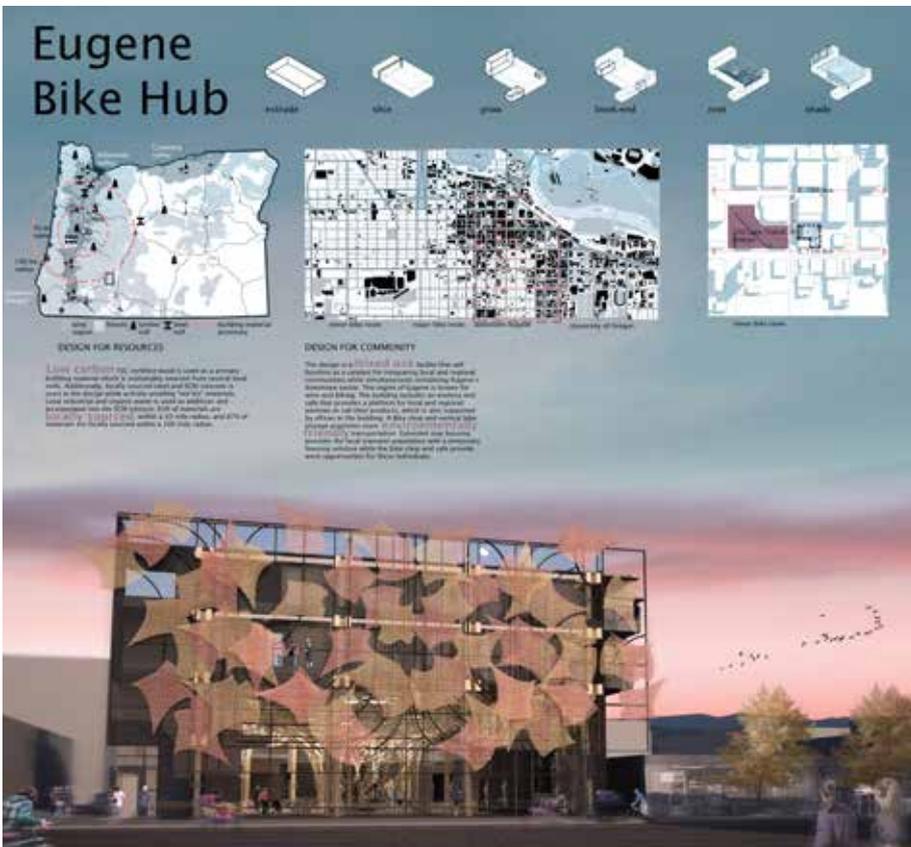


This student's design incorporates seven sustainability strategies: solar panels, thermal mass, rain water collection, solar shading, vegetative roof, cross ventilation, and daylight.

MEASURE 2

DESIGN FOR COMMUNITY

Students included design aspects that contributed to community wellness. These included aspects that improved walkability, human-scaled design, as well as aspects to address equity. Students also sought to reduce emissions by incorporating sustainable transportation modes into their designs. LTD's station across the street helped students better incorporate sustainable transportation.



Will Osburn community solution and Words

DESIGN FOR COMMUNITY

The design is a **mixed use** facility that will function as a catalyst for integrating local and regional communities while simultaneously revitalizing Eugene's downtown sector. The region of Eugene is known for wine and biking. The building includes an enoteca and cafe that provides a platform for local and regional wineries to sell their products, which is also supported by offices in the building. A Bike shop and vertical bike storage promotes more **environmentally friendly** transportation. Extended stay housing provides the local transient population with a temporary housing solution while the bike shop and cafe provide work opportunities for these individuals.

MEASURE 3

DESIGN FOR ECOLOGY

Students designed buildings that benefit the natural ecosystem and habitat.

Designs included rainwater harvesting and vegetation into the building design to promote integration with the surrounding ecosystem.



Native plants, a rainwater collection system, and on-site composting technology combine to create an innovative living machine. The living machine takes harvested rainwater and channeled grey water from the Enoteca and filters it through a series of constructed ecosystems, composed of vegetation and microorganisms, to improve water quality and create on-site habitats. The garden beds of the living machine are designed with subterranean composting pods that use worms and microbes to break down food waste while simultaneously providing nutrients to the water-purifying plants above. The system closes the loop for water on-site and composting generated locally and from regional wineries

Courtney Sigloh Design for Ecology and words



Jocelyn Reynolds Design for Ecology and Words

MEASURE 4

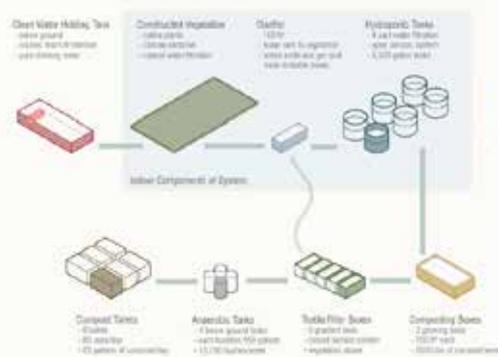
DESIGN FOR WATER

Designs incorporated water conservation methods including rainwater harvesting, natural water filtration elements, and greywater reuse systems. These elements could help the building save up to 500,000 gallons of water annually.

Save Water, Drink Wine

WATER:

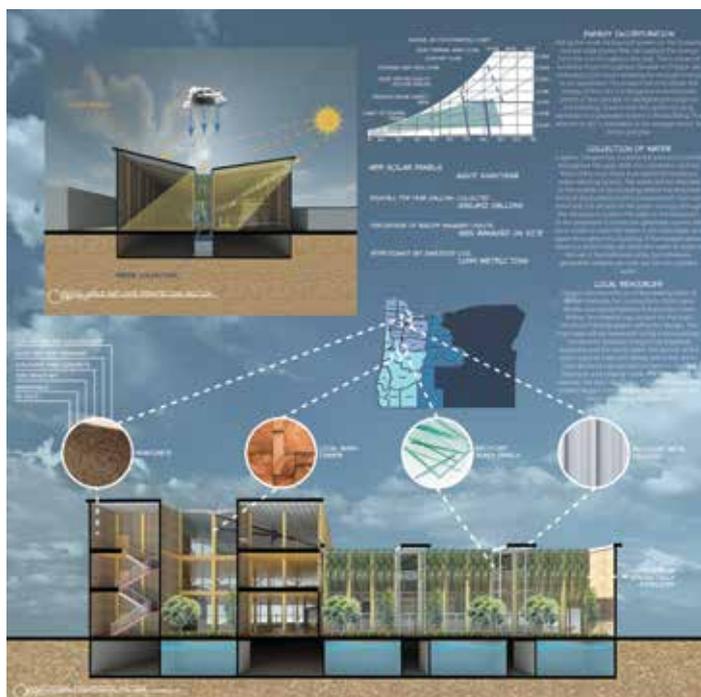
Water isn't the only input scored on site at the Enoteca; water (with both harvested rainwater and greywater that has been processed for reuse) creates a nearly net-zero water system, with the potential of > 500,000 gallons of rainwater collected annually and the incorporation of a living machine system, the site's approach to water creates a sustainable and resilient solution for managing the resource into the future. In addition, dual flush toilets, low-flow faucets, and native landscaping cut back on usual high water use sources. Restaurant buildings generally have the highest water use, especially across different programs, but not this water smart Enoteca complex.



LIVING MACHINE: cultureDive wastewater filter



Courtesy Sigloh Design for Water



Emma Davis Design for Water and Words

COLLECTION OF WATER
 Eugene, Oregon has a substantial amount of rainfall throughout the year. With the orientation and the form of the roof, there is an option of creating a water catching system. The water will be directed to the middle of the building where the structural form of the butterfly roof is located which then will travel into the atriums or the pipes running through the structure to collect the water in the basement. In the basement is where the greywater system will be in order to clean the water to be used again and again throughout the building. If the budget allows there is a system that can clean the water in order to be use in the bathroom sinks, but otherwise greywater systems can only use for non-potable water.

MEASURE 5

DESIGN FOR ECONOMY

Students created an economically sustainable space by incorporating spaces that can be used for a variety of purposes over time. Creating adaptable space creates a building that can remain economically sustainable well into the future.

CORE VALUES:

- UNIVERSAL DESIGN:** A place for multiple types of people to be
- FOSTERING AWARENESS:** A place for learning opportunities
- NO STRINGS ATTACHED:** A place to rest, wait, or take respite from the weather without having to purchase
- EARTH CONSCIOUS:** A place to gather resources- rain, sun, food- for the site and community members
- WELLBEING:** A place that promotes connection to the outdoors and transitional experiences while providing spaces full of light and fresh air

Render View: Dining Hall

ADAPTATION OF THE BUILDING OVER TIME:

FOR COMMUNITY

COMMUNITY / ADAPTABLE SPACE

GREEN SPACE

+ COMMERCIAL

RENT TO COMMERCIAL TENANTS

+ RESIDENTIAL

INCORPORATE RESIDENTIAL FACILITIES

M5: ECONOMY + M9: CHANGE

HOW COULD INTERIOR FUNCTIONS ADAPT OVER TIME?

With the intent to respond to the changing needs and economics of the city over time, the space plan remains open while providing central necessities and access points to allow different tenants to inhabit the space and multiple uses to be possible.

74% FLOOR AREA ADAPTABLE FOR MULTIPLE USES (EXCLUDING ROOFS)

M10: DISCOVERY

HOW COULD THE BUILDING FACILITATE PERFORMANCE EVALUATION & UNDERSTANDING OF COMMUNITY NEEDS?

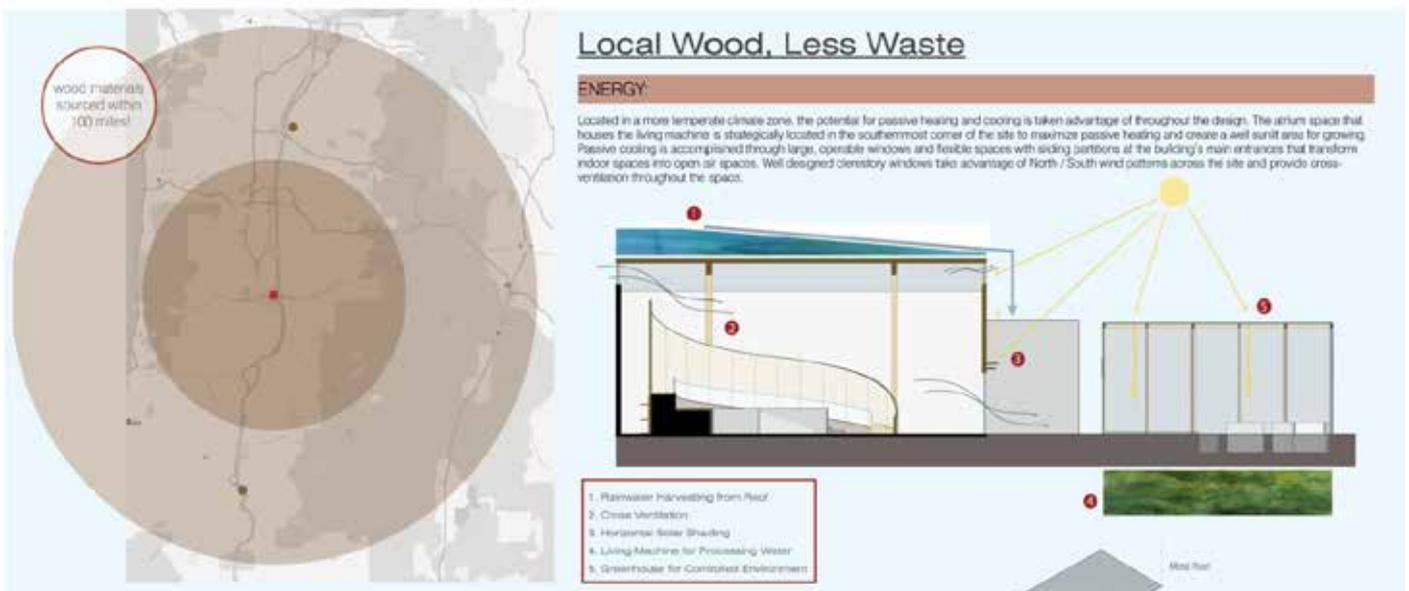
The building is intended for continuous discovery. This includes evaluations of what the community needs and adapting interior uses to follow, as well as allowing the occupants to explore and discover the buildings systems and learn about local ecological systems.

Katherine Marple Design
for Economy-Percentage
of Reusable Space

MEASURE 6

DESIGN FOR ENERGY

Students sought to minimize energy use in their designs. Student designs embraced passive heating to promote more sustainable energy use and used operable windows to improve building ventilation. Additionally, students recommended using materials from within 100 miles of the building site to promote the local economy while utilizing more sustainable materials.



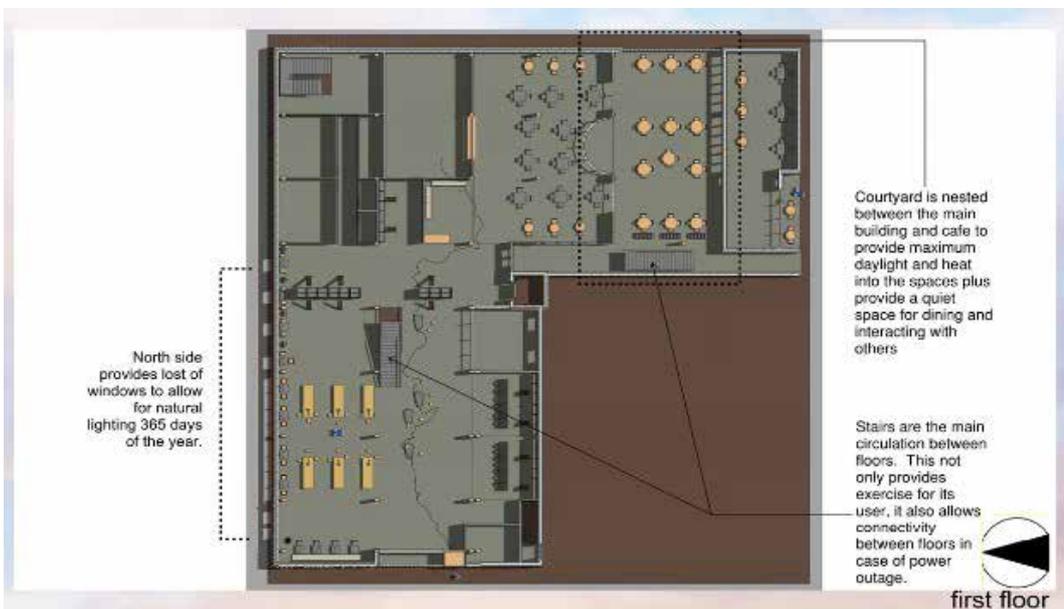
Located in a more temperate climate zone, the potential for passive heating and cooling is taken advantage of throughout the design. The atrium space that houses the living machine is strategically located in the southernmost corner of the site to maximize passive heating and create a well sunlit area for growing. Passive cooling is accomplished through large, operable windows and flexible spaces with sliding partitions at the building's main entrances that transform indoor spaces into open air spaces. Well designed clerestory windows take advantage of North / South wind patterns across the site and provide cross-ventilation throughout the space.

Courtney Sigloh Design for Energy and Words

MEASURE 7

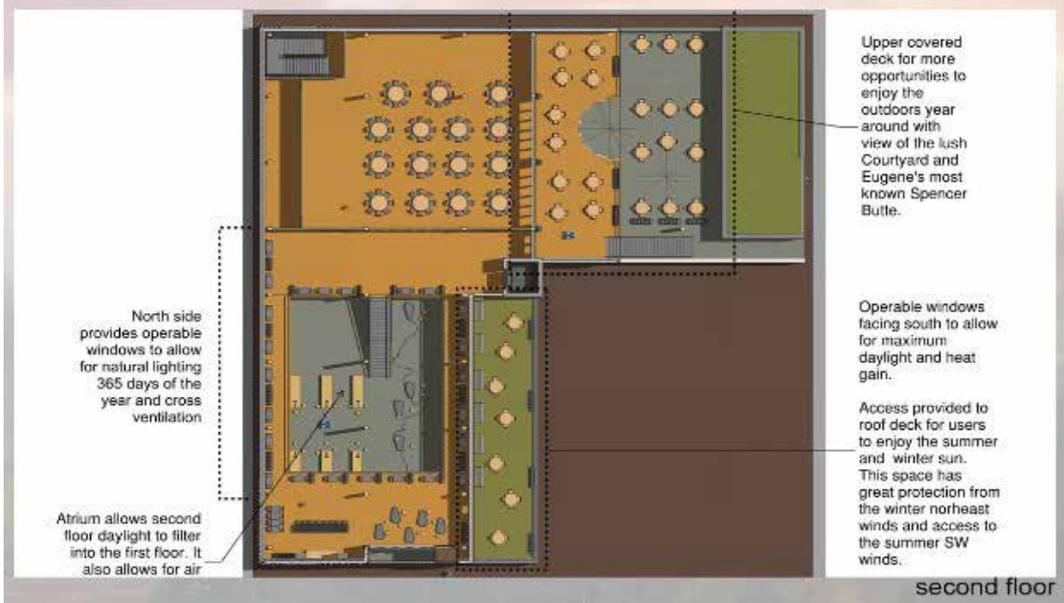
DESIGN FOR WELLNESS

Student designs promote resident and user wellness. Student designs included operable windows, access to green spaces, use of natural light, and spaces for activity and relaxation. These features incorporate human activity and wellness into the built environment.



m7: design for wellness

operable windows to harvest the prevailing winds, spaces for activity and relaxation are laid out to take advantage of the sun path, access to spaces free of cars with gardens and views, stairs to move from one level to another, natural materials that are durable and warm are all elements for the wellness of its users.

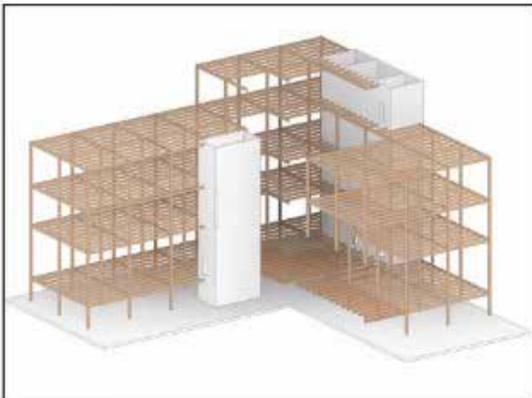


MEASURE 8

DESIGN FOR RESOURCES

Student designs emphasized the use of sustainable resources, in particular cross laminated timber (CLT), hempcrete, and cork materials. These materials have similar durability to common materials like concrete and steel but come from more sustainable resources. Additionally, these materials are recyclable and give the structure embodied carbon savings.

8 Resources



1. Mass Timber

60% Embodied carbon savings in the structure alone
-Low-carbon and renewable

2. Hempcrete

100% Recyclable
-Thermal mass
-Soundproofing, insulation, and strength properties are superior to concrete.
-Nontoxic, fireproof, and mold-resistant.

3. Cork

100% Recyclable
-Impermeable, buoyant, elastic and fire-resistant material.
-Cork expands and contracts with heat, making it ideal for radiant surfaces.
-Insulator of heat, cold, and sound.



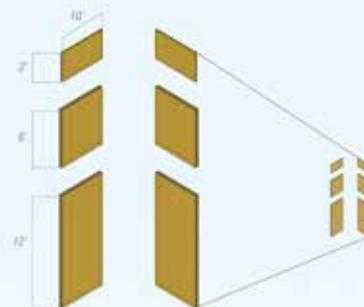
Vayle Khalaf Design for Resources

RESOURCES:

Cross laminated timber was selected for the structural elements and interior finishes. Resource acquisition meets the Living Building Challenge metric for sourcing 20% of all building materials within a 500 kilometer radius. All of the wood is sourced from D.R. Johnson, an Oregon-based manufacturer of CLT panels and glu-lam beams. The wood elements featured across the facades and in interior spaces were designed using the standard panel and member sizes produced by D.R. Johnson. The amount of material needed and, ultimately, wasted was reduced by 10% after altering the design to match with basic sizing from the supplier.



Prefabricated CLT Panel System



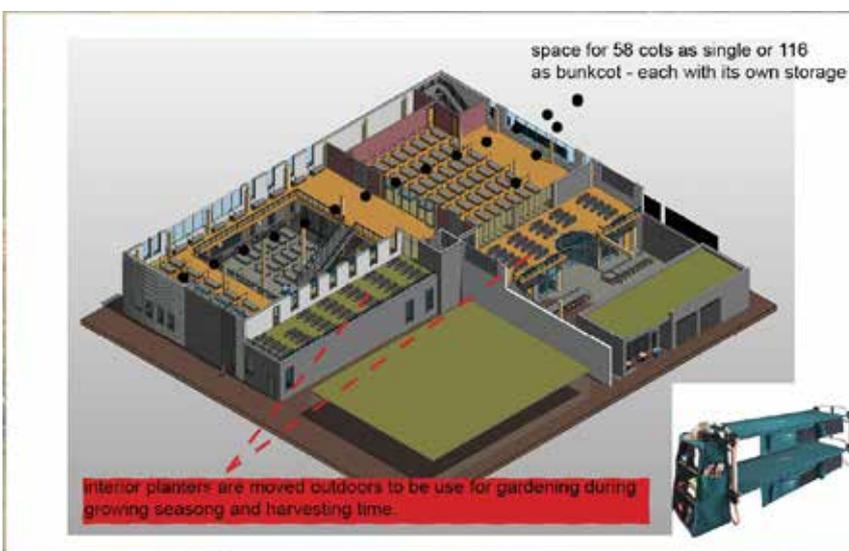
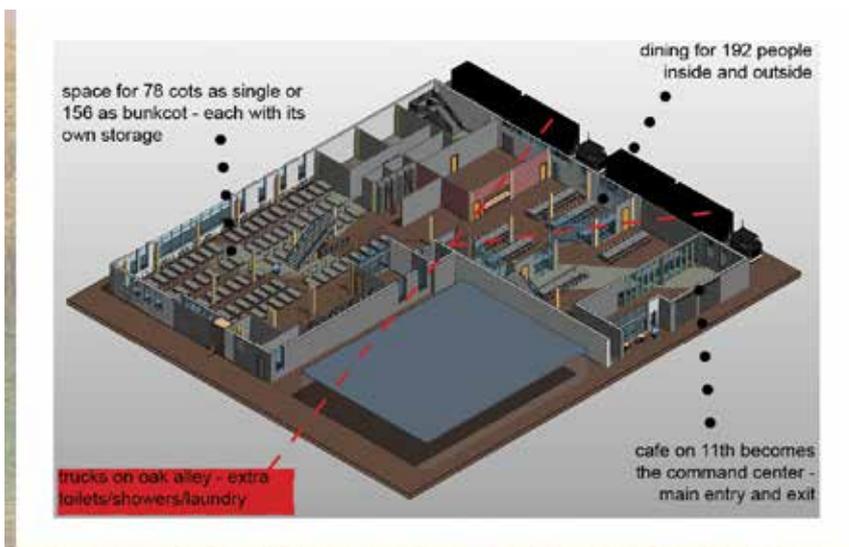
**Design based on manufacturer's sizing to limit waste and cut back on costs. Panels from D.R. Johnson Lumber

Courtney Sigloh Design for Resources

MEASURE 9

DESIGN FOR CHANGE

Some student designs incorporated potential changes in the event of an emergency. These designs included space for cots, restrooms, dining, and other spaces that could be useful during an emergency. Designs also included resources that would be sustainable in an emergency situation, including: water harvesting and storage; solar panels; and operable windows. Student designs were cognizant of potential emergencies including viruses and the Cascadia earthquake.



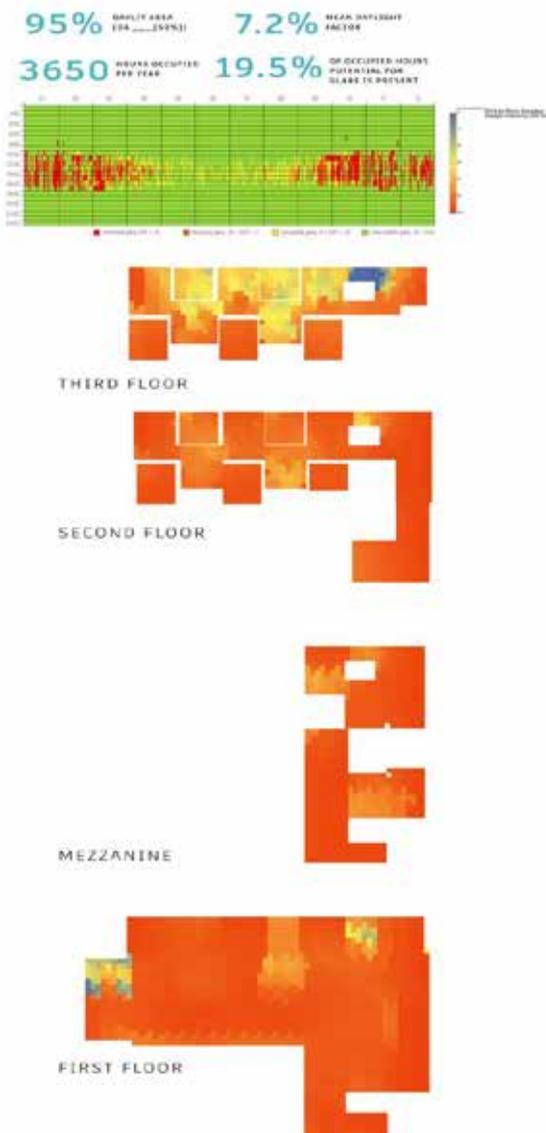
emergency shelter facility

- space for 272 double tier cots
- laundry facilities and two showers in the basement
- natural gas generator in the basement
- 20,000 water retention from rain harvesting in the basement
- solar panels - 60K kWh/Year
- fresh air via operable windows and roof turbines
- gardening capabilities
- ADA accessible

MEASURE 10

DESIGN FOR DISCOVERY

Designing for discovery involves surveying and studying building occupants after the building has been completed and occupied. This allows building occupants to express their opinions about the space and gives designers the chance to learn from their work.



_DISCOVERY

To ensure the building performs as intended several occupant studies will be conducted to ensure the building's system are performing as expected. Additionally, these studies will allow the building's occupants the opportunity to express their opinions about the space and what things can be changed to address their needs. In addition, the advanced buildings monitoring system will have displays in each room that will indicate when it is best to open/close windows to improve the building's energy consumption. This system in return will educate the occupants so they are aware of the consequences of their actions, so they can potentially change their personal habits and consume less energy.

Kyle Tasik Image and Words

05.

CONCLUSION

Student design projects demonstrate potential solutions to designing sustainable buildings within the city core of Eugene by following guidelines established by AIA COTE. Additionally, designs demonstrate what an 'enoteca' for southern Willamette Valley wineries could look like. Students conducted site and climate analyses as well as historical contextualization to better understand underlying conditions and determine what the designs should entail.

The students added other program components to the enoteca program including affordable housing, bicycle repair, office spaces, and a market hall. These program components could enrich the downtown core and reinforce the transportation hub that Lane Transit District has established across Willamette Street.

The principles of AIA COTE informed student designs. Students designs also explored ways to make use of abundant rainwater. Designs reinforced LTD's emphasis on reducing private automobile use through design elements that enhance local pedestrian activity and bicycle use as well as public transportation. In addition to energy solutions, students explored reinforcing local agriculture by featuring market halls, demonstration gardens, and cafes. They tested the use of manufactured wood, including CLT, as the construction systems.

Lastly, the students reinforced the character of existing downtown buildings while demonstrating how increased density might affect the area. The character of the buildings that students proposed reflects their observations of Eugene as both a physical place and as a cultural heart in the Willamette Valley.

STUDENT WORK

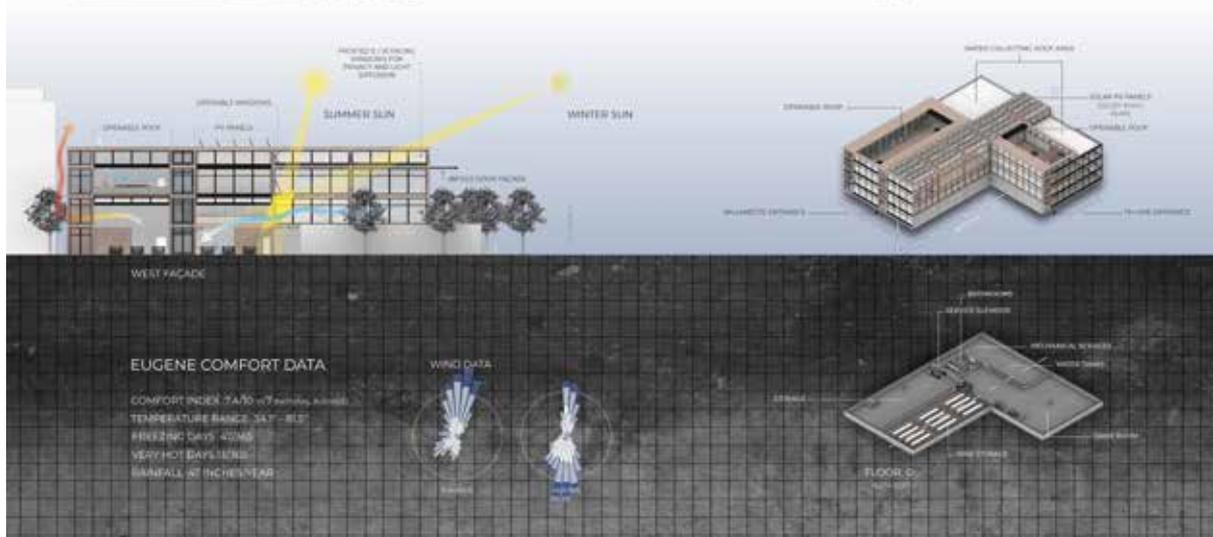
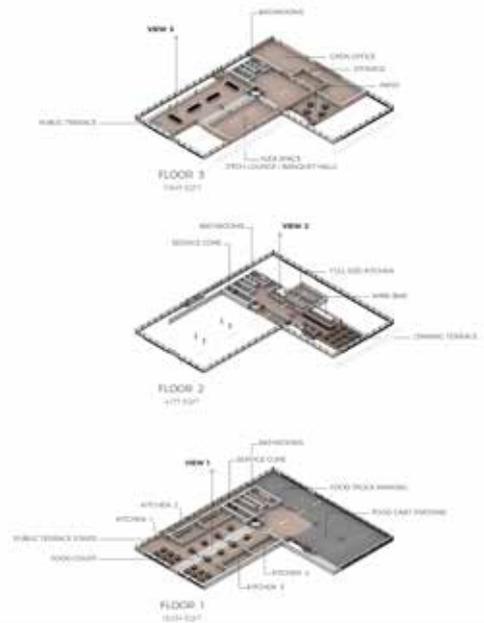
G/T EUGENE

CULINARY & STARTUP INCUBATOR
[LEARNING / CREATING / SHARING]



Alex Tapia

STUDENT WORK



Alex Tapia

STUDENT WORK

G/T EUGENE

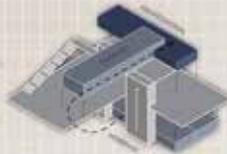
CULINARY & STARTUP INCUBATOR
[LEARNING / CREATING / SHARING]

CULINARY EXPERTISE



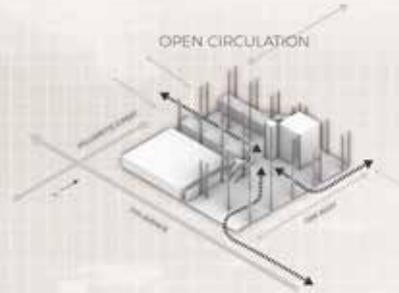
The kitchen area is designed to be a central hub for culinary expertise, featuring a large open-plan layout with a central island and a variety of workstations. The design emphasizes a bright, airy atmosphere with large windows and natural light.

TECH DEVELOPMENT



The tech development area is designed to provide a flexible and collaborative workspace for startups and entrepreneurs. It features a variety of workstations, including private offices, open-plan offices, and a central meeting area.

OPEN CIRCULATION



The open circulation path is designed to encourage movement and interaction between different parts of the building. It features a central atrium and a series of interconnected walkways that provide easy access to all areas.



Alex Tapia

STUDENT WORK

DISCOVERY

THE PREMISE OF THE DESIGN IS BASED ON THE NOTION OF DISCOVERY AS SOMETHING STRIPPED OF THE BUS INTO EUGENE AND THE FIRST TIME THEY ARE FRONTEED WITH THIS BUILDING AND ARE ENCOURAGED TO ENTER. INSIDE THEY WILL FIND A NEW CULTURE AND VARIETY OF LOCAL FOOD. THERE ARE LEVELS OF KNOWLEDGE BOTH FOR THE PROFESSIONALS AND CONSUMERS. THE WINE TASTING ROOM PROVIDES A LOCAL HUB FOR THE OREGON WINE REGION. THE TECH/LEARNING SPACES ALLOW USERS TO DISCOVER TALENTS AND EXPLOIT THEM FOR GROWTH. CUT INTRODUCES EUGENE AND DEVELOPS A PERSONAL UNDERSTANDING OF THE AREA.

INTEGRATION

CUT EMBODIES THE ESSENCE OF OREGON THROUGH ITS TIMBER CONSTRUCTION AND EMPLOYS METHODS TOWARDS A SUSTAINABLE FUTURE. THE LOCAL CLIMATE LENDS ITSELF TO A COMFORTABLE INDOOR ENVIRONMENT IN THE WARM SEASONS THROUGH OPERABLE WINDOWS AND DAYLIGHT CONTROL. PROGRAM IS ARRANGED IN ACCORDANCE TO LIGHTING NEEDS AND SITE ADAPTANCES, SUCH AS WINDS TO SPENCER BLITTE.

WELLNESS

THIS REGION NATURALLY PROMOTES A HEALTHY LIVING. CUT ENHANCES THIS BY PROVIDING LOCAL FOOD AND DINING OPTIONS. (VERY SPACE HAS ACCESS TO A WINDOW FOR DAYLIGHT, NATURAL VENTILATION, OR A MENTAL BREAK.) PROMOTES IMPROVEMENT OF SKILLS AND ENCOURAGES FRIENDLY COMPETITION. THE COMMUNITY CENTERED DESIGN ALLOWS FOR MANY SPACES TO LOUNGE AND RELAX AND MOVE THROUGHOUT.

ENERGY

DUE TO ITS ENVIRONMENT THE BUILDING IS ABLE TO LIVE OFFSET MOST OF THE YEAR. THE IMPERMEABLE NATURE OF THE PROGRAM ENABLES A GREAT REDUCTION OF POWER. IT IS ABLE TO SUSTAIN ITSELF IN LOW OPERATION THROUGH THE SOLAR ENERGY CAPS AND WATER WHEN NEEDED. THE NEEDS FOR COOLING IS MINIMAL IN THIS REGION AND NATURAL VENTILATION CAN DO MOST OF THE WORK. HAVING A MOSTLY TRANSLUCENT SHELL ALLOWS FOR THE REDUCTION OF ELECTRICAL NEEDS.

ECOLOGY

THE REDUCTION OF ENERGY THROUGH SUSTAINABLE MEANS HAS A GOAL FOR THE DESIGN BY MINIMIZING THE ENERGY USAGE. IT MINIMIZES ITS IMPACT ON THE ECOLOGY. THE SYSTEM EMPLOYS RAINWATER COLLECTION TO HELP OFFSET WATER INTAKE. AND THE DESIGN FURTHER ENCOURAGES THE REGION'S ENVIRONMENTALLY CONSCIOUS IDEOLOGY.

CHANGE

THE DESIGN HAS A LOT OF PROGRAMMED SPACE, BUT NOT TOO MUCH PRESCRIBED SPACE. THE FIRST FLOOR ALLOWS FOR INFORMAL FOOD OPTIONS, THAT CAN BE BOTH INSIDE AND OUTDOORS. THE THIRD FLOOR HAS AN OPEN OFFICE AND FEATURES A FLEX SPACE. THE PUBLIC TERRACE OVERLOOKING THE STREET CAN ALSO BE AN EXTENDED SPACE. INDIVIDUALLY OR SERVE AS AN EXTENSION TO THE FLEX SPACE. NO ONE IN THE BUILDING HAS A PERMANENT SPACE. AS THEY ARE ENCOURAGED TO USE THE SPACE AND MOVE ON TO CREATE VENTURES. THE DESIGN ANTICIPATED CHANGE AND BEING DURABLY A CARVED STRUCTURE INSIDE A SHELL, IT WILL EASILY ADAPT.



Alex Tapia

STUDENT WORK

.we-e
site.

project name:
we-e (willamette valley wines & enoteca - eugene's event hall)

project location:
downtown eugene, oregon

project type:
new construction

construction type:
type 4 - heavy timber interior with masonry exterior
fully sprinkled

occupancy type: a (assembly)

maximum occupancy: 500 people

total gross square footage: 33,973 indoors / 4,216 outdoors




design criteria's:

1. be of service to the community.
2. strive for a carbon-neutral operation.
3. adapt to climate and society impacts.
4. design for the future.

we-e is a for profit business interested in the well-being of its community. they will provide entertainment and educational services, as well as, emergency shelter in times of need.





Amy Arroyo

STUDENT WORK

.we-e interior.

The interior of the .we-e has been design for maximum flexibility and low maintenance with the basic idea of servicing the community in times of need.

The key features to achieve these are:

1. first and second floor are mostly open spaces. all casework pieces are designed to be movable (on wheels) and demountable
2. the basement and second floor has four vertical access points. three stairs (two lead directly to the outdoors), and one elevator allowing full access in case of power outage.
3. the interior finishes are part of the structure and enclosure of the spaces to meet the various sound and fire safety requirements. these are: concrete floor, cross-laminated timber vertical structure and horizontal structures, brick on all perimeter walls, wood frame construction with drywall at back of the house spaces.
4. all windows are operable. eugene weather is very mild. december maximum temp is 45-degree fahrenheit and low of 34. daylight hours are 9 and sunshine is 2. relative humidity is 42%. june maximum temp is 73-degree fahrenheit and low is 48. daylight hours are 15 and sunshine is 11. relative humidity is 56%. the need for heating and cooling the space is minimal (one or two weeks per year).
5. the restaurant and event space have accent walls of wood slats made from recycled wine barrels.
6. all spaces are aia accessible.

view of entrance on willamette street

view of interior at entrance on willamette street

view of interior multi-use space

view of interior dining space

view of cafe on 11th street

willamette street

oak alley

first floor

willamette street

oak alley

second floor

Amy Arroyo

STUDENT WORK

.we-e
m6 - m10.

m6: design for energy

the most energy use on this project is in the process of washing and disinfected the dishes for the restaurant, lighting, and heating. the roof solar panels shall supply enough power to heat harvested water stored in the basement, extra energy provided by the solar panels will be store in batteries to support the lighting needs and heating.

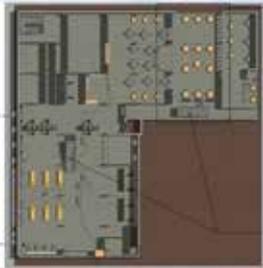
stormwater, gray water and rainwater will be treated on site, the water treatment equipment, laundry room equipment, and emergency generator all run on natural gas. the city of Eugene provides 100% renewable energy as option. their energy is generated by hydropower, wind, and solar.

the water tank and coils

thickly insulated barrel shaped tanks in aluminum sheathing, 5000 Gallons capacity each, since we need water on demand at 150-degree and at 140-degree, we will have two tanks dedicated to the kitchen needs.

this volume of water, 5000 gallons, only loses 1.62 degrees of heat in 24 hrs, a very high insulator value. once it reaches its maximum temperature it should be low energy to maintain constant.

the coils are made of copper, one set of coils is used to distribute heat to the storage tank and the other is used to remove heat energy to supply a demand side load such as the dishwasher in the commercial kitchen.



Countertop is needed between the main kitchen and cafe to provide storage and prep area. Higher window into the cafe area allows for natural lighting and view to the outside.

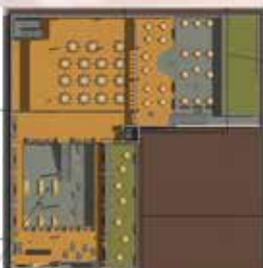
Starts are the main circulation between floors. This is the main circulation route for the building. It is a central corridor that connects the main floor to the second floor.

North side provides natural lighting to allow for natural lighting 20% each of the year.

first floor

m7: design for wellness

operable windows to harvest the prevailing winds, spaces for activity and relaxation are laid out to take advantage of the sun path, access to spaces free of cars with gardens and views, stairs to move from one level to another, natural materials that are durable and warm are all elements for the wellness of its users.



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second floor



Tank dimensions: 12' dia x 7' height



Images of copper coils, each tank will have approximately 20 of these copper coils.



m8: design for resources | m9: design for change

my goal is always to use the least amount of materials. these major materials are used on the project: reseed brick and stone, polished concrete, and wood. all these can be source in and from Oregon.

all these materials are earth based and extremely durable. stone and concrete are use for the walls and floor. it selected these to assist in the passive heating component of the project as well as their long life cycle and easy maintainable. the building is in function as a shelter, therefore durable materials is essential. wood is used for the structure and beauty. the structure is to be advanced creating warmth with its exposed Douglas fir beams and columns wood. the accent red wood panels are added to create interior.





second floor

m10: design for discovery

learning on how to design for integration, community, ecology, water, economy, energy, wellness, resources, all angle, and discovery will form part of my new career. I am an interior designer who practiced for 17 years and this is my first studio work as graduate student in architecture. this base will serve me as platform in everything I will design in the future.



Basement floor plan

water tanks

gray water treatment mechanical

pv batteries storage area

Amy Arroyo

STUDENT WORK

ABUNDANCE CENTRE : SPACES OF OPPORTUNITY

ENOTECA - PRECEDENT

FORM DEVELOPMENT

PROGRAM

- ENOTECA
- WINE TASTE
- RESTAURANT
- LOCAL PRODUCE
- BRACKET HALL
- LOCAL WINE TASTING

ZONING

- COMMUNITY SPACE (URBAN FORM)
- OFFICE
- WINE SPACE
- BRACKET HALL
- RESTAURANT
- ENOTECA
- OFFICE
- WINE SPACE

UNIVERSITY OF OREGON | FALL 2018 | ARCH 683 - PROF. VIRGINIA CARTWRIGHT | ANISHA GOVINDANKUTTY

ABUNDANCE CENTRE : SPACES OF OPPORTUNITY

PERSPECTIVE VIEW

- ADJACENT BUILDING
- COURTYARD
- ROOF-TOP URBAN FARM WITH AQUIAPONICS
- BALCONY
- SUN ROOM
- URBAN FARM
- SHAPE WALKWAY WITH SEATING
- NURSERY/ SHEP
- GABION WALL WITH SEATING
- RAINWATER HARVESTING

MASTERPLAN

IIITHEAST

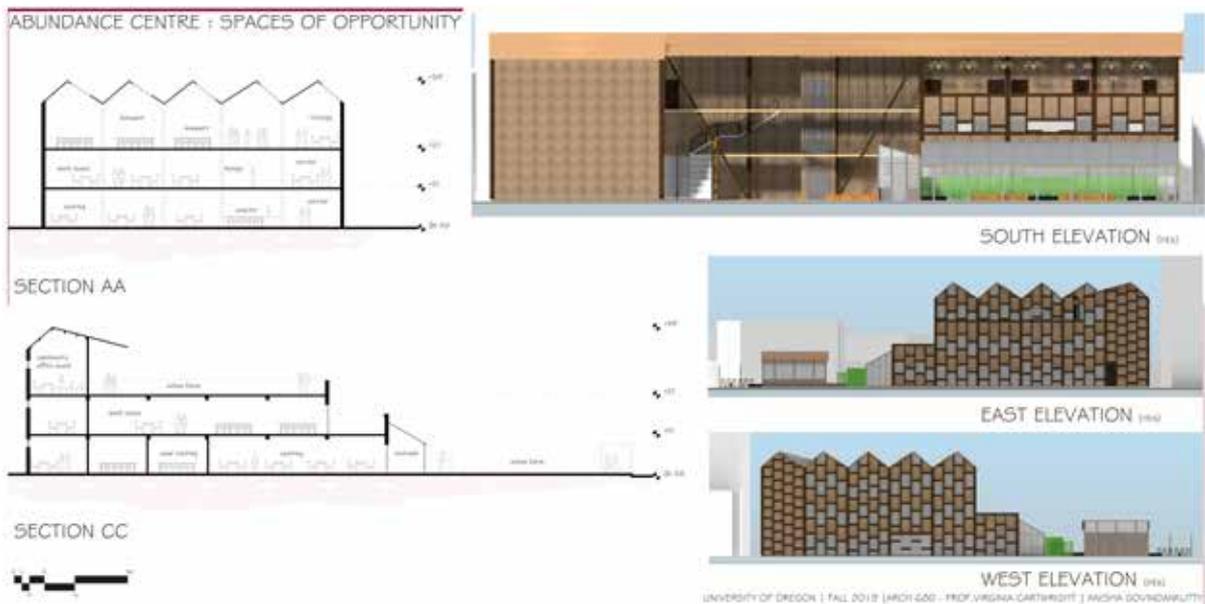
WILLAMETTE STREET

CAK ALLEY

UNIVERSITY OF OREGON | FALL 2018 | ARCH 683 - PROF. VIRGINIA CARTWRIGHT | ANISHA GOVINDANKUTTY

Anisha Govindankutty

STUDENT WORK



Anisha Govindankutty

STUDENT WORK



Anisha Govindankutty

STUDENT WORK

Connecting to Willamette Street

WELLNESS:

Creation of the best health benefits visitors can experience while enjoying a glass of wine, the space was designed with health, wellness in mind. Daylighting and views to the outdoors are present in every corner of the site. A more direct experience of the natural environment can be found by spending time in the being machine's atrium. Movement is encouraged through tactile nature of space tactics such as ramps, ledges, and nozzles. The steel mesh circulation feature - a ramp and stairway (rail) - invites visitors to explore and move around before settling in to enjoy the vibrant, community space.

CHANGE:

The banquet hall, entrance, and cafe areas are designed with future flexibility in mind. The entire structure is constructed separate from the interior wall systems, leaving the programmatic spaces - creating a free plan model. This site is being machine and central ramp space also aid in activating the site throughout long-term program changes. Even as businesses and users come and go from the space, the interior public space and atrium space remain operable and enjoyable. All water collected to become a continuous resource, the on-site ability to process and produce clean water is a multi-phase resilient strategy for sites.

Double space evenly for exercise, being machine, and public space

Locate public space within entrance to encourage movement

Clear public space to Willamette St. and create transparency

Public Ramp
Banquet Hall
Enoteca
Coffee Shop
Constructed Vegetation
Aerobic Tanks
Composting Beds & Anaerobic System
Rainwater Cistern

North

Courtney Sigloh

STUDENT WORK

Save Water, Drink Wine

WATER:

Wine isn't the only liquid stored on-site at the Ecolgia; water tanks hold harvested rainwater and greywater that has been processed for reuse creating a nearly self-sufficient water system. With the potential of ~500,000 gallons of rainwater collected annually and the incorporation of a living machine system, the site's approach to water creates a sustainable and resilient solution for managing this resource into the future. In addition, dual flush toilets, low flow faucets, and native landscaping cut back on usual high water-use sources. Restaurant buildings generally have the highest water-use intensity across different programs, but not the water smart Ecolgia complex.

Green Water Holding Tank
- Store growth
- Harvest from UK section
- with 1000-gallon tank

Constructed Vegetation
- Substrate
- 1000-gallon tank
- Harvest water from tank

Checkoff
- 100 ft
- water supply system
- water supply system with
- back-to-back tanks

Hydroponic Tanks
- 8-gal water through
- dual-water system
- 1000-gallon tank

Compost Tanks
- 4 tanks
- 100-gallon tank
- 100-gallon in composting

Aeration Tanks
- 4 tanks
- 100-gallon tank
- each handles 100 gallons
- 10,000-gallon tank

Native Filter Biomes
- 4 tanks
- 100-gallon tank
- 100-gallon tank
- 100-gallon tank

Composting Biomes
- 4 tanks
- 100-gallon tank
- 100-gallon tank
- 1000 lbs of compost/week

LIVING MACHINE: subsurface wastewater flow

ECOLOGY:

Native plants, a rainwater collection system, and on-site composting technology combine to create an innovative living machine. The living machine takes harvested rainwater and cleaned grey water from the Ecolgia and filters it through a series of constructed ecosystems, composed of vegetation and microorganisms, to improve water quality and create on-site habitat. The garden beds of the living machine are designed with subsurface composting pods that use worms and microbes to break down food waste while simultaneously providing nutrients to the water-purifying plants above. The system closes the loop for water on-site and composting generated locally and from regional wineries.

Average Monthly Rainfall on Site

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Rainfall (inches)	~1.5	~2.5	~3.5	~4.5	~5.5	~6.5	~7.5	~8.5	~7.5	~6.5	~5.5	~4.5

7.83 inches = peak monthly average

56,537 gallons of rain
11" x 36" pipe = 1" x 1"
7,825 ft³ of water

12,000 gal

Courtney Sigloh

STUDENT WORK

Local Wood, Less Waste

wood materials sourced within 100 miles

ENERGY:
Located in a more temperate climate zone, the potential for passive heating and cooling is taken advantage of throughout the design. The atrium space that houses the living machine is strategically located in the southernmost corner of the site to maximize passive heating and create a well-lit area for growing. Passive cooling is accomplished through large, operable windows and flexible spaces with sliding partitions at the building's main entrances that transform indoor spaces into open air spaces. Well-designed clerestory windows take advantage of North / South wind patterns across the site and provide cross-ventilation throughout the space.

1. Biomass Harvesting from Roof
2. Cross Ventilation
3. Horizontal Solar Shading
4. Living Machine for Processing Water
5. Greenhouse for Controlled Environment

RESOURCES:
Cross laminated timber was selected for the structural elements and interior finishes. Resource acquisition meets the Living Building Challenge metric for sourcing 20% of all building materials within a 100 kilometer radius. All of the wood is sourced from D.R. Johnson, an Oregon-based manufacturer of CLT panels and glulam beams. The wood elements featured across the facade and in interior spaces were designed using the standard panel and member sizes produced by D.R. Johnson. The amount of material needed and, ultimately, wasted was reduced by 10% after altering the design to match with basic sizing from the supplier.

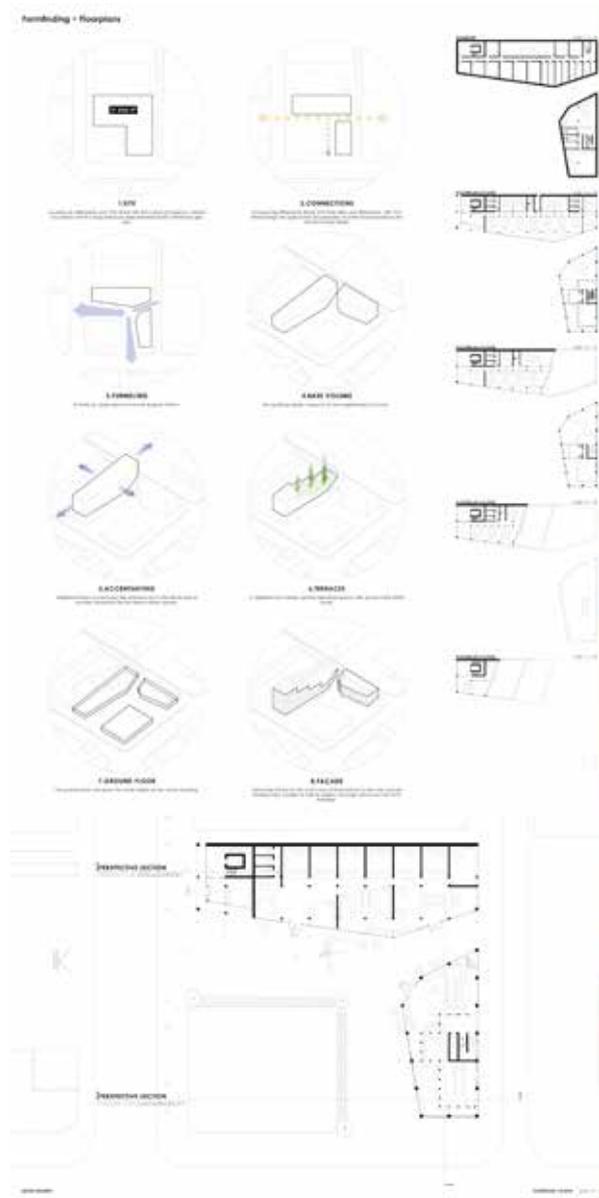
Prefabricated CLT Panel System

Labels in diagram: Metal Roof, Glass Panels, Concrete Utility Shaft, Wood Stairs, Mark Glass, CLT Panels, Concrete Thermal Mass Slab, Concrete Utility Shaft.

*Design based on manufacturer's listing of 40' wide with 10' thick on ends. ©2018 D.R. Johnson Inc.

Courtney Sigloh

STUDENT WORK



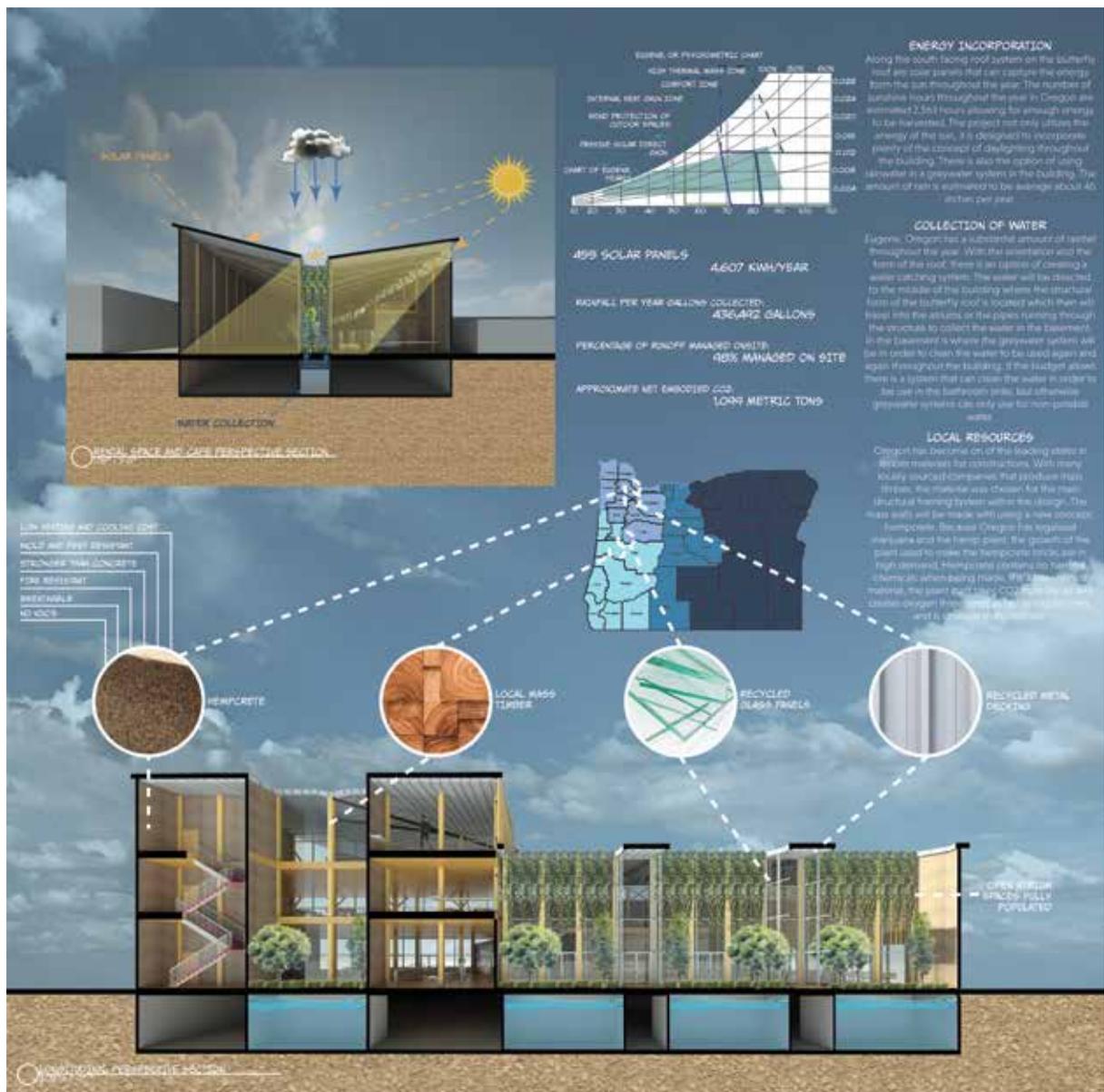
David Deussen

STUDENT WORK



Emma Davis

STUDENT WORK



Emma Davis

STUDENT WORK



Emma Davis

STUDENT WORK

ECONOMICAL VENTURE:
In order to incorporate the design aspect of the economy of the project, the designer must be aware of the performance calculations affecting the performance of a building. The project, even though various aspects of it may be expensive in the construction phase, in the long run will be able to provide in a way that the total cost of the expenses will be cancelled out by the savings. Another aspect of the design though will be the cost of the materials, and doing that majority of them are of local companies, the essential cost will be cheaper than using materials from companies from a long distance away.

OPEN COMMUNITY
When looking at the city of Eugene, the amount of community green space within commercial buildings is very limited. The concept that deals with the community within the design is the idea of incorporating a space for a community garden and a community outdoor space. When the building is under construction, the people of the community that allow them to use it for what ever space they need it to be. There is also a sense of an open floor plan that gives the sense of everything within the building being open and interconnected for public use.

HEALTHY BUILDING
Wellness requires that the design must be healthier for the user and promote a healthier lifestyle for them. The design promotes a healthy lifestyle and a healthier building by using materials such as permeable walls, a breathable wall that doesn't hold or store pollutants, and the use of proper lighting within the building. Another form of wellness based in the design is the motivation of gardening, the community garden and using the community garden as a place for the site. This promotes a healthy lifestyle, as well as bringing the people outdoors into nature.



ENDTECA BAR AREA



CAFE AREA



COMMUNITY GARDEN



COMMUNITY VERANDA



PERMEABLE WALLS



COMMUNITY



GREEN SPACES



DAYLIGHT



COMMUNITY GARDEN



BUS STOP/STATION



Emma Davis

STUDENT WORK

AGORA CASCADIA

INTEGRATION

This project integrates site specific ecological design strategies with diverse program elements to create a new urban gathering hub for Eugene, Oregon. The design supports local community development efforts, Eugene's burgeoning tech cycling culture, South Willamette Valley's agriculture economy, and the Pacific Northwest region's forestry industry. Strategies to achieve this include: flexible co-working offices, a large banquet hall and outdoor terrace for community gathering events, a public indoor market to provide an evening/winter season alternative to the popular Saturday Market with rentable pop-up shops for local artisans, farmers and vendors, a bike garage, store and community workshop along a major cycling artery, a rooftop edible garden used for community education, and a locally-sourced farm to table cafe, an enoteca with a library of regional wines, and a highly visible CLT structure.

SOUTH WILLAMETTE VALLEY WINE MAKING
PACIFIC NORTHWEST TIMBER INDUSTRY
LANE COUNTY PUBLIC TRANSIT
EUGENE TECH INDUSTRY
OREGON CYCLING CULTURE
REGIONAL AGRICULTURE
LOCAL MAKERS + ARTISANS
COMMUNITY DEVELOPMENT

COMMUNITY

Located in the heart of downtown along a primary transportation spine, this project addresses the community's need for more indoor flexible gathering spaces, especially during the rainy season. Local artisans, farmers and vendors can rent pop-up shops within the public market space while local community groups can reserve the second floor banquet hall and terrace, which accommodate larger gatherings and events. The urban enoteca celebrates the region's culture of wine growing and making. The farm to table cafe sources locally to highlight the region's agriculture industry. These spaces all address the City's desire to keep the downtown area occupied during the evenings. Co-working offices support Eugene as an emerging tech hub. The cafe and bike shop draw cyclists and public transit users from the adjacent transit station inside. Community education workshops on rainwater harvesting, greenroof design, gardening and bike maintenance are held.

RESOURCES

This design's CLT structure celebrates and supports the Pacific Northwest region's bountiful natural resources and responsibly-managed forestry industry. Cross-Laminated Timber is a highly sustainable building material because it sequesters carbon and is a local material for this project, thus reducing the carbon footprint of material transportation. Strategies to reduce material use include exposing overhead structure and using unfinished concrete floors that serve as both the structural slab and thermal mass for the radiant heating system. The highly visible wood structure extends beyond the building envelope to frame the terrace event space and is a keystone element in downtown Eugene. It also breaks up the Willamette Street facade pattern and creates a more heterogeneous urban fabric that connects back to the ecology of the Pacific Northwest. Interior finishes use regionally sourced Oregon White Oak panels.

- DOUGLAS FIR CLT
- UNFINISHED CONCRETE
- OREGON WHITE OAK PANELING

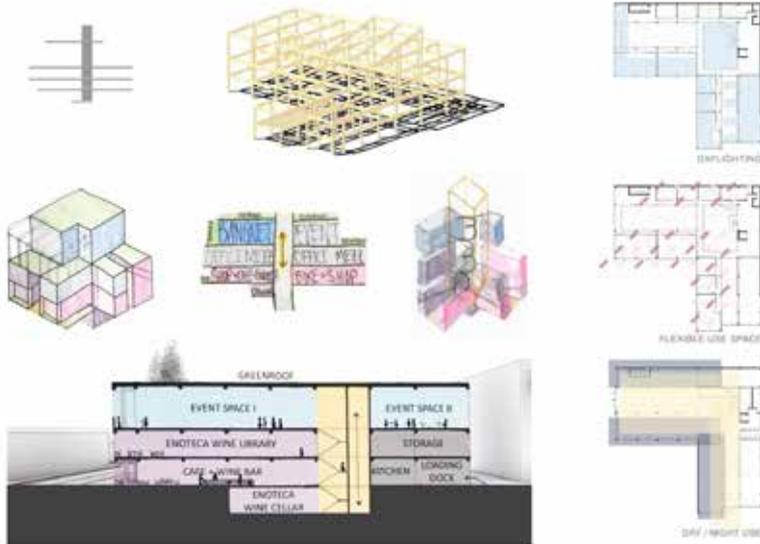
- 64**
TRANSIT SCORE
- 100**
BIKE SCORE
- 96**
WALK SCORE

Jocelyn Reynolds

STUDENT WORK



ATRIUM // HEARTBEAT



WELLNESS

This design promotes occupant well-being through daylighting strategies and user autonomy. Operable windows with natural shades provide natural ventilation and allow users to interact with the building systems to control air comfort. Low-VOC materials are used to ensure good indoor air quality. The radiant heating system of floors requires control and maintenance. A central staircase and pleasant pedestrian experience improve the site permeability and movement through the building, and enhance user experience. A bike garage and workshop with community meetings are provided to encourage cycle commuting.

CHANGE

This building serves as a hub for community engagement programs, including education workshops on sustainable lifestyle elements such as container gardening, alternative management and gardening, all of which increase the community's resiliency. The building itself is resilient as a living machine as its passive cooling strategy and radiant heating design, as well as its innovative heating system and gardening capabilities. The building design includes numerous flexible spaces that can be adapted to suit evolving user and programming needs. The networking office and pop-up stage have easily adjustable partition walls, while the largest hall can support a range of uses and be easily subdivided into four distinct zones.

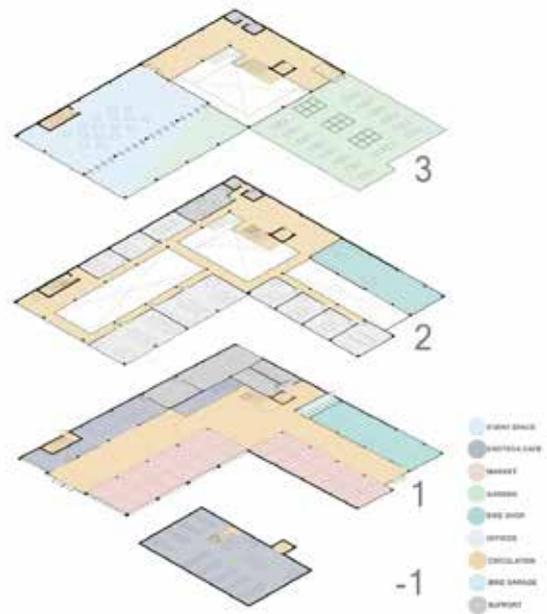
ECONOMY

This urban gathering hub supports local entrepreneurs from a diverse range of disciplines. To allow for day-to-day and future reconfigurations of events and program changes, the spaces are designed to be flexible in use, with sliding partition walls and open concept floor plans. The large event space can be subdivided into smaller spaces or divided by local community groups who will be renting it out. The office reception area can be subdivided into individual meeting work spaces or kept as an open office co-working space, depending on the tenant choice. The highly flexible open plan of the ground floor indoor public market space facilitates various types of program benefits for local artisans and makers. Operational costs are reduced by energy efficient radiant floor heating, passive cooling, and a capacitor harvesting system.

Jocelyn Reynolds

STUDENT WORK

PEDESTRIAN ARCADES

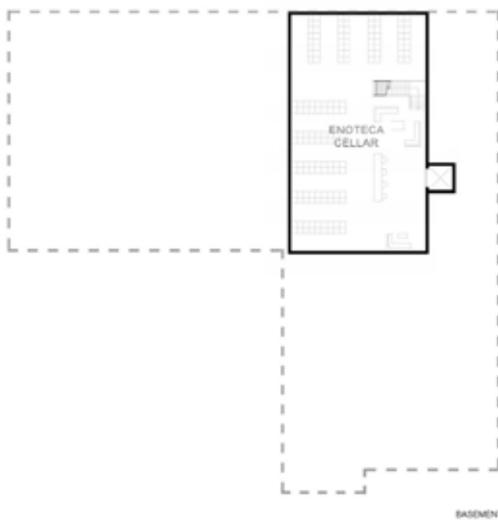


URBAN ENOTECA



Jocelyn Reynolds

STUDENT WORK



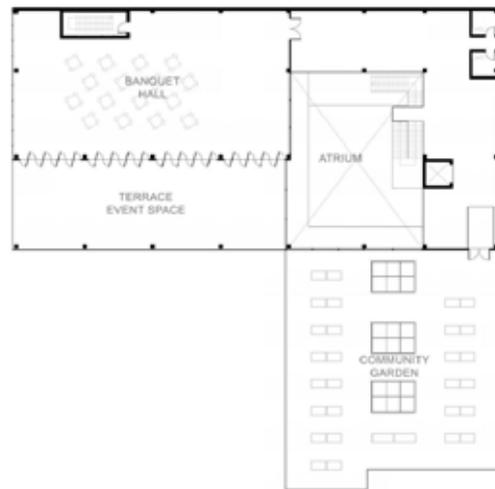
BASEMENT



GROUND FLOOR



SECOND FLOOR



THIRD FLOOR
SCALE: 1" = 20'

Jocelyn Reynolds

STUDENT WORK



Katherine Marple

STUDENT WORK

CORE VALUES:

- UNIVERSAL DESIGN:** A place for multiple types of people to be
- FOSTERING AWARENESS:** A place for learning opportunities
- NO STRINGS ATTACHED:** A place to rest, wait, or take respite from the weather without having to purchase
- EARTH CONSCIOUS:** A place to gather resources- rain, sun, food- for the site and community members
- WELLBEING:** A place that promotes connection to the outdoors and transitional experiences while providing spaces full of light and fresh air

Render: Peter Young Hall

ADAPTATION OF THE BUILDING OVER TIME:

FOR COMMUNITY → **+ COMMERCIAL** → **+ RESIDENTIAL**

- COMMUNITY ADAPTABLE SPACE
- GREEN SPACE
- REUSE OF COMMERCIAL SPACES
- INCORPORATE RESIDENTIAL FACILITIES

M5: ECONOMY + M9: CHANGE
HOW COULD INTERIOR FUNCTIONS ADAPT OVER TIME?
 With the intent to respond to the changing needs and economics of the city over time, the space plan remains open while allowing for flexibility and access points to allow different tenants to inhabit the space and fulfill uses to be possible.

74% FLOOR AREA ADAPTABLE FOR MULTIPLE USER EXCLUDING ROOFS

M10: DISCOVERY
HOW COULD THE BUILDING FACILITATE PERFORMANCE EVALUATION & UNDERSTANDING OF COMMUNITY NEEDS?
 The building is intended for continuous discovery. This includes evaluation of what the community needs and adjusting space use to follow, as well as allowing for incubators to explore and discover the building systems and learn about local ecological systems.

Katherine Marple

STUDENT WORK

EXTENSIVE ROOF SYSTEM

1. ALUMIN FLASHING CAP
2. ALUMIN COUPLER/FLASHING
3. WATERPROOF MEMBRANE
4. DRAINAGE CONTROL FABRIC
5. DRAINAGE MEDIUM
6. DRAINAGE BOARD & ROOT BARRIER
7. TIMBER UNIT
8. WOOD INSULATOR

GREEN ROOF UNIT ASSEMBLY

1. WOOD FRAMING
2. SET BACK TO APPROPRIATE DEPTH
3. FILL IN - GREEN ROOF SYSTEM OR CONCRETE WALL/PATH PANEL
4. CONNECT TO OTHER UNITS

HEMPCRETE WALL DETAIL

1. WOOD BRAN
2. HEMPCRETE
3. LIME PLASTER
4. CONCRETE SLAB

INTENSIVE ROOF SYSTEM

1. SEE EXTENSIVE ROOF SYSTEM

PLANT SPECIES: PACIFIC STORMCROP, SWEETWILEAF STORMCROP, YELLOW STORMCROP, ALTERNATE SHADE, FULL COLOR, WINTER SUN.

M3: ECOLOGY
 HOW COULD THE SITE BE USED TO REDUCE HARDSCAPE & PROVIDE GREEN SPACE?
 By elevating a park and inhabiting the space below, the Urban Stormscape provides a place to cultivate a culture of integration with and rehabilitation of urban areas while teaching the community about local ecology.
85% SITE DESIGNED TO SUPPORT RESTORATION

M4: WATER
 HOW COULD STORMWATER BE EFFECTIVELY MITIGATED & USED ON SITE?
 THE GREEN ROOF ACTS PRIMARILY AS A SPONGE, WHILE EXCESS STORMWATER IS COLLECTED IN AN UNDERGROUND CISTERN, THE WATER IS USED FOR IRRIGATION AS WELL AS HEATED AND PUMPED THROUGH THE RADIANT FLOOR PIPING.
455,993 gal POTENTIAL RAINWATER COLLECTION/RETENTION FROM ROOFS

M5: ENERGY
 HOW COULD THE BUILDING CONSERVE ENERGY WHILE IMPROVING PERFORMANCE & COMFORT?
 SOLAR PANELS, GREEN ROOF, AND SENSITIZING STRATEGIES.
100,584 kWh/yr (4572 kWh/ft² x 22,000ft²) TOTAL ESTIMATED ENERGY OUTPUT

M6: ENERGY
 HOW COULD THE BUILDING CONSERVE ENERGY WHILE IMPROVING PERFORMANCE & COMFORT?
 SOLAR PANELS, GREEN ROOF, AND SENSITIZING STRATEGIES.
100,584 kWh/yr (4572 kWh/ft² x 22,000ft²) TOTAL ESTIMATED ENERGY OUTPUT

M7: ECOLOGY
 HOW COULD THE SITE BE USED TO REDUCE HARDSCAPE & PROVIDE GREEN SPACE?
 By elevating a park and inhabiting the space below, the Urban Stormscape provides a place to cultivate a culture of integration with and rehabilitation of urban areas while teaching the community about local ecology.
85% SITE DESIGNED TO SUPPORT RESTORATION

M8: RESOURCES
 WHAT MATERIAL CHOICES WOULD BE DURABLE, BENEFIT LOCAL ECONOMY, AND REDUCE CARBON EMISSIONS?
8. TIMBER SINCE THE MID 1800'S, TIMBER HAS BEEN A MAIN INDUSTRY IN OREGON. ALL TIMBER FOR THE PROJECT WOULD BE LOCALLY HARVESTED AND MILLED.
9. HEMP/CRETE DORDED FROM THE HEMP PLANT, HEMP/CRETE WITH LIME PLASTER FINISH IS DURABLE AND STRONG, BEING AN EFFECTIVE INSULATING MATERIAL AS WELL AS PEST AND MOLD RESISTANT.
10. CARBON SEQUESTERING CONCRETE CARBON CURE PRODUCT WASTE CO2 EMISSIONS ARE COLLECTED, PURIFIED AND REINJECTED INTO CONCRETE MIXTURES. BY TURNING WASTE INTO A MATERIAL, THIS MATERIAL BECOMES A PART OF THE STRENGTH AND LONGEVITY OF CONCRETE AND WOULD NOT RETURN TO THE ATMOSPHERE UPON DESTRUCTION.
5% REDUCED CARBON EMISSIONS
11. RECYCLED GLASS

Katherine Marple

STUDENT WORK

M7: WELLNESS
 HOW DOES THE SITE CONSIDER NOT JUST OCCUPANTS BUT ALSO COMMUNITY AND WILDLIFE?
 Connection to nature, daylight, and ventilation along with an emphasis on walking and experience become the dominant method of promoting wellness for community and occupants. The green roof provides space for wildlife habitat.
 40% AREA WITH SE OF OPERABLE GLAZING
 75% AREA WITH VIEWS TO OUTDOORS

12 GREEN PATH
13 COMMUNITY GARDEN
14 ARBORETUM
15 DAYLIGHT / FRESH AIR
16 LEARNING CENTER

17 RAINWATER HARVESTING (M4)
 Rainwater is collected from the roof and stored in a cistern, then pumped throughout an irrigation system in the green roof when needed.

18 COMPOSTING TOILETS (M3, M4)
 TO COMPOST SYSTEM
 Air + Substrating Frame +
 Water / Soap + Human Waste
 AEROBIC DECOMPOSITION
 Toilet Waste + Separated
 Composting Material
 Older Compost
 No Solids (Some Compost)
 Excess Liquid (Reused & Used to
 water constructed wetlands)

19 RADIANT PIPING (M6)
 Water, warmed from solar energy gathered from photovoltaic panels, is pumped through tubes in concrete floor slabs to heat interior spaces.

20 LEARNING MOMENTS (M2, M40)
 Occupants are encouraged to interact with team about the building systems through a series of informational panels at each system/experience.

21 EQUAL ACCESS (M7)
 Spaces are connected by a central elevator core, keeping circulation minimal, but efficient and accessible.

15 GREEN ROOF BENEFITS A PASSELER ROOM SYSTEM CONNECTION
16 LEARNING CENTER
17 MECHANICAL SYSTEM FUNCTIONAL, DURABLE & RELIABLE
18 COMMUNITY GARDEN
19 SOLAR PANELS FUNCTION & AESTHETIC USE
20 COMMUNITY INTEGRATION DESIGN
21 BENEFITS OF GREEN SPACE INCREASES POWER FOR WILDLIFE HABITATS
22 REFLECTOR OF RAIN & PUBLIC TRANSPORT

SCALE 1:50

Katherine Marple

STUDENT WORK

8

...in the heart of Eugene, Oregon, the building is designed to be a catalyst for a new wave of growth and innovation in the city. The building is designed to be a catalyst for a new wave of growth and innovation in the city. The building is designed to be a catalyst for a new wave of growth and innovation in the city.

POWERING THE GROWTH OF THE TECHNOLOGY AND WINE INDUSTRIES

COMMUNITY

...the building is designed to be a catalyst for a new wave of growth and innovation in the city. The building is designed to be a catalyst for a new wave of growth and innovation in the city.

OREGON'S WINE INDUSTRY

- \$3.35B
- \$5.5M
- 564
- 77,170

EUGENE'S TECH INDUSTRY

- \$27.1B
- 29%
- 26%

EUGENE'S CLIMATE

ENERGY

ECOLOGY

WATER

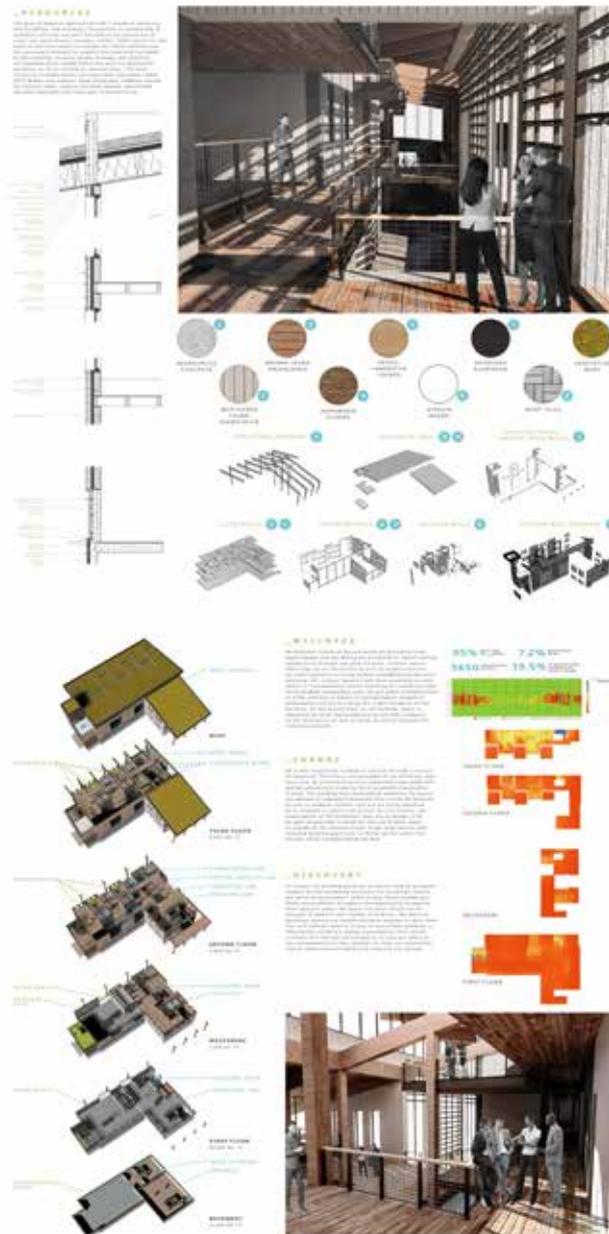
ECONOMY

INTEGRATION

...the building is designed to be a catalyst for a new wave of growth and innovation in the city. The building is designed to be a catalyst for a new wave of growth and innovation in the city.

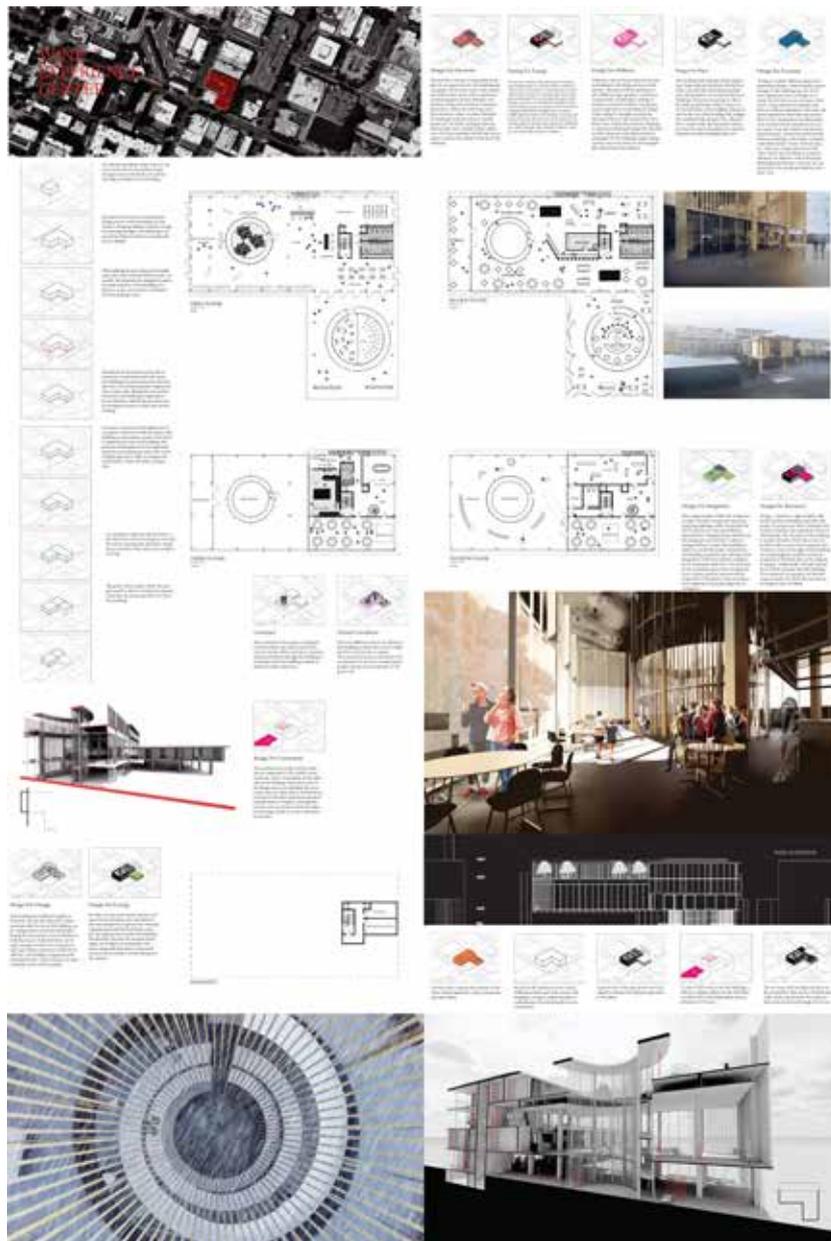
Kyle Tasik

STUDENT WORK



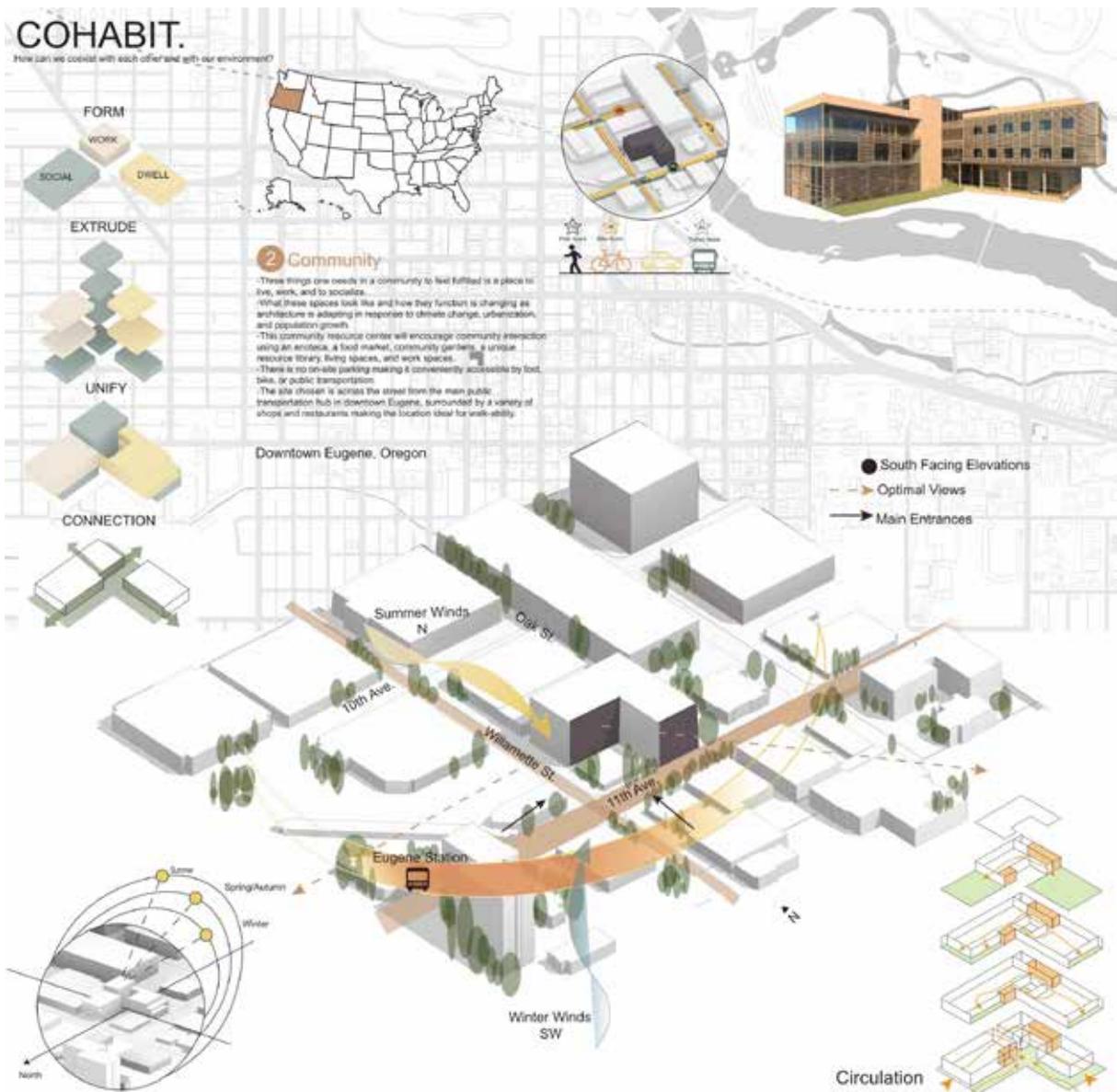
Kyle Tasik

STUDENT WORK



Pooria Golestanirad

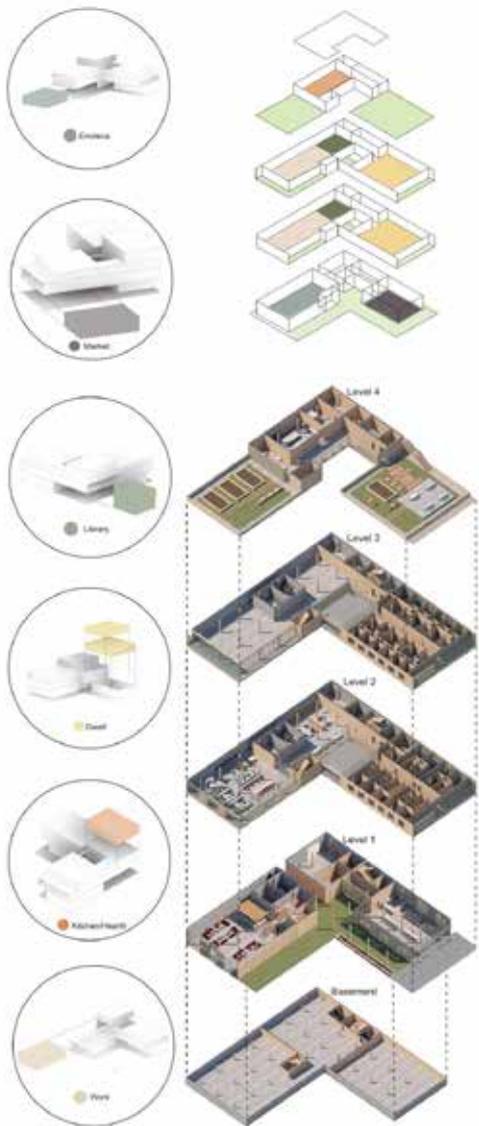
STUDENT WORK



Vayle Khalaf

STUDENT WORK

Program



9 Change

Affordability

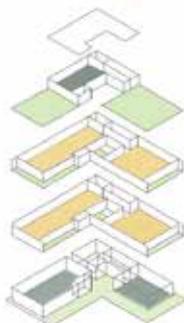
2,165 Homeless in Eugene
 57% of people experiencing homelessness in Lane County are single adults.
 -Single and double bedroom apartments provide affordable housing to the community of Eugene to provide a solution to this issue.
 -Mass timber may be the answer to the affordable housing crisis.

Resiliency

-The materials and structural system of the building enhance versatility and durability.
 -The sustainable mass timber structure is practical, and has safe application and adaptive reuse potential.
 -Mass timber has resistance to fire due to its charring properties, and will survive full burn and remain structurally intact.
 -Mass timber's resilient design makes it easily repaired following an earthquake.
 -In case of power loss the building's radiant heating system will continue to function.
 The site also captures and stores rainwater in case of a natural disaster.

Adaptability

-The spaces are adaptable and easily re-programmable to new uses if so desired.
 Adaptive program allows the building to become a shelter with the rise of climate change.
 -Food resources on site and passive systems will allow the building to still function in the event of a natural disaster.



STUDENT WORK

8 Resources



1. Mass Timber
60% Embodied carbon savings in the structure alone
-Low-carbon and renewable
2. Hempcrete
100% Recyclable
-Thermal mass
-Soundproofing, insulation, and strength properties are superior to concrete.
-Non-toxic, bioprotect, and mold-resistant.
3. Cork
100% Recyclable
-Impermeable, fireproof, elastic and fire resistant material.
-Cork expands and contracts with heat, making it ideal for radiant surfaces.
-Insulator of heat, cold, and sound.



5 Economy



- This project supports the local economy by providing resources to the community.
- Locally sourced wood to contribute to Oregon's timber industry.
 - The building program also supports other local industries, including agriculture and vineyards and construction.
 - The limited palette of materials is used to lower building costs and to ensure occupant health.
 - Maximizing daylight and natural ventilation will ensure major savings on energy.
 - The renewable water system will also contribute to lower operating costs.



7 Wellness



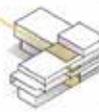
- This building is designed to enhance the physical and psychological well-being of users.
- The building maximizes the use of windows and has an atrium to allow abundant daylight in the spaces.
 - There are operable windows and indoor shades to allow occupants to have control over their environment.
 - The building is naturally ventilated and purifies the air with the use of plants.
 - Hempcrete is used as a thermal mass along with a radiant heating system to allow maximum thermal comfort.
 - The green roof is a main feature in absorbing noise.
 - The building has accessible stairs, a garden that promotes nutritious food.
- 100% Building receives ambient light
53% Receives direct daylight



1 Integration

99.2% Annual comfort hours

- [Calculated with Climate Consultant passive design strategies]
- Cohabit's program incorporates the three things humans need to feel fulfilled: a place to live, a place to work, and a place to socialize.
 - Cohabit is also a living learning center for community environmental education.
 - The program encourages and supports shared community knowledge and local businesses.
 - This program will educate the community about net zero strategies including, but not limited to, water conservation and reuse strategies, growing local food and composting, daylighting and its effects on health and productivity, and about the Oregon timber industry and the importance of building with local materials.
 - Cohabit is welcoming and inclusive for all and focuses on social justice, and provides a solution to affordable housing.
 - The mission is to engage the community to establish stewardship in the downtown area of Eugene.
 - The building balances nature to structure to demonstrate how humanity can coexist with our surrounding natural environment and community. The building has a positive impact on the natural ecosystem as well as on the urban space.

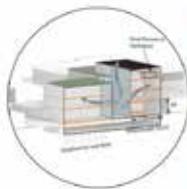


- A Sun shading for windows
- B High thermal mass
- C Natural ventilation cooling
- D Passive solar direct gain
- E Radiant heating



Vayle Khalaf

STUDENT WORK



6 Energy

A. Ventilation

- Depth of spaces are no more than 6x height
- Coverings are at least 5% of the floor area
- The atrium and operable windows are implemented to allow cool air in and recesses warm air up and out of the building.

B. Radiant Heating

- A radiant heating system uses underground perthermal wells to heat water.
- The warm water is then circulated in tubes inside concrete floor plates to heat the building.
- During the summer the system runs in reverse restoring heat back in the ground.

C. Photo Voltaic

- There is also a photo-voltaic system on the roof to capture and use the sun's energy. The energy captured is 17,497 Kw/yr.

D. Thermal Mass

- The building captures the sun's heat by using a thermal mass, hempcrete.
- The green roof acts as an insulator against cold and heat.

The building form is slightly elongated to provide the best balance between heat loss and beneficial water gain.

17,497 Kw/yr



3 Ecology



- This site reinstates lost habitats and increases the amount of land supporting natural ecosystems to counteract the rate of species extinction.
- The site extends natural landscapes into the urban environment creating a green network in the city, facilitating movement of wildlife within and in and out of urban areas.
- The community garden will educate the community on protecting ecosystems and encourages local food networks by having on site growing and composting.
- The landscape includes 100% native plant species that attract pollinators.
- Exterior lighting will be sensorized to turn on at sunset and to turn off when the occupants retire indoors.
- Batteries, shutters, shades, and fitted glass are used to achieve "vision zero" to eliminate building-related bird deaths.

67% of site supports vegetation



4 Water

Total rainwater potential 368,306 gallons/year.

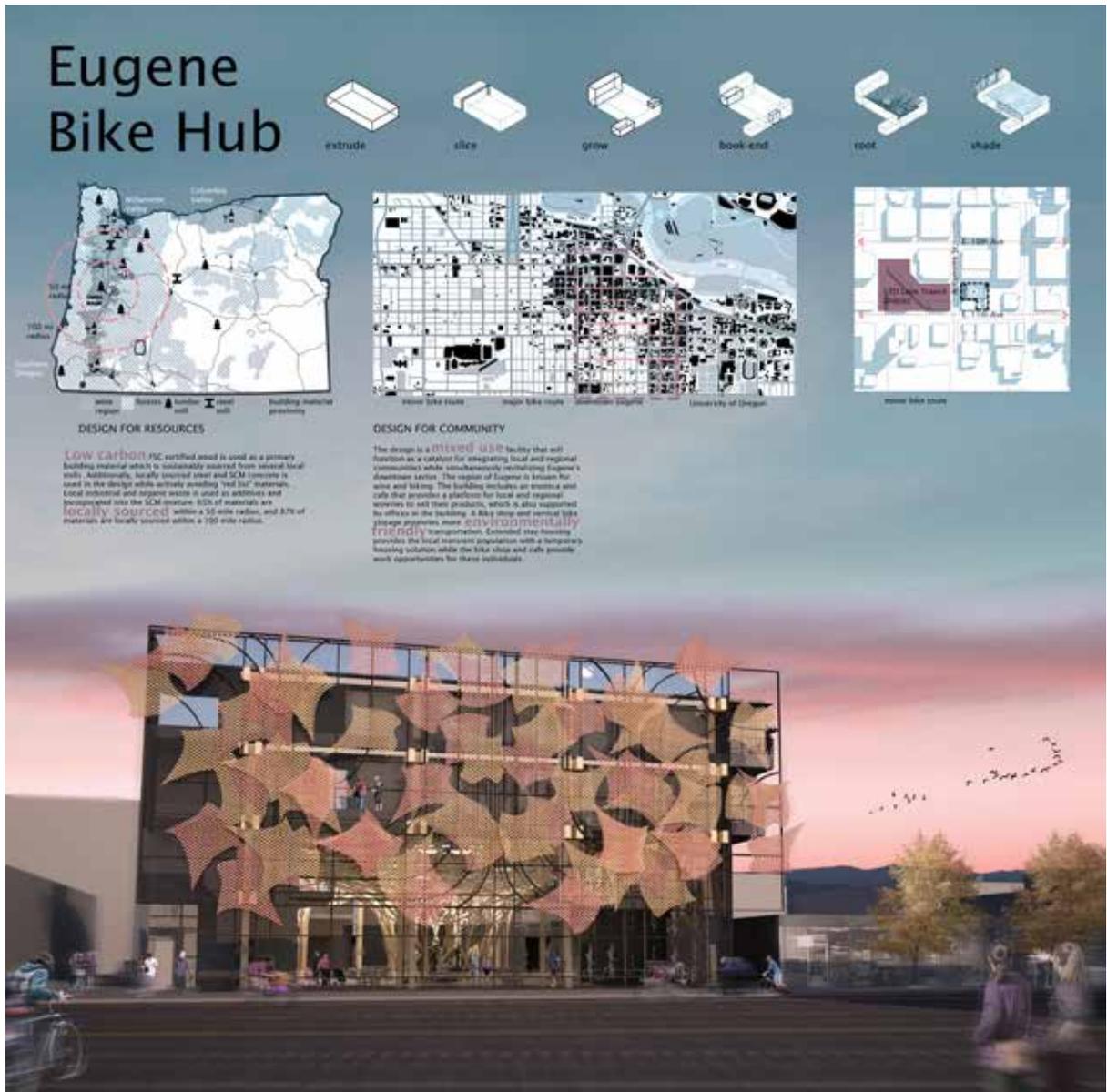
- The design manages storm-water by incorporating a green roof.
- The green roof will reduce water run-off up to 50% and provide a cooling effect by evaporation.
- To capitalize on renewable water sources on site, the design incorporates a rainwater collecting systems that collects water from the roof and send it down to an underground cistern. On its way down the water is filtered to remove large particles.
- Next to the cistern is another tank that stores gray-water and it is cleaned in a constructed bio-sand.
- Most of it is evaporated, and the rest of the clean gray-water is now safe to return to the earth as groundwater.
- The building also uses composting toilets that use 95% less water than standard toilets.



10 Discovery

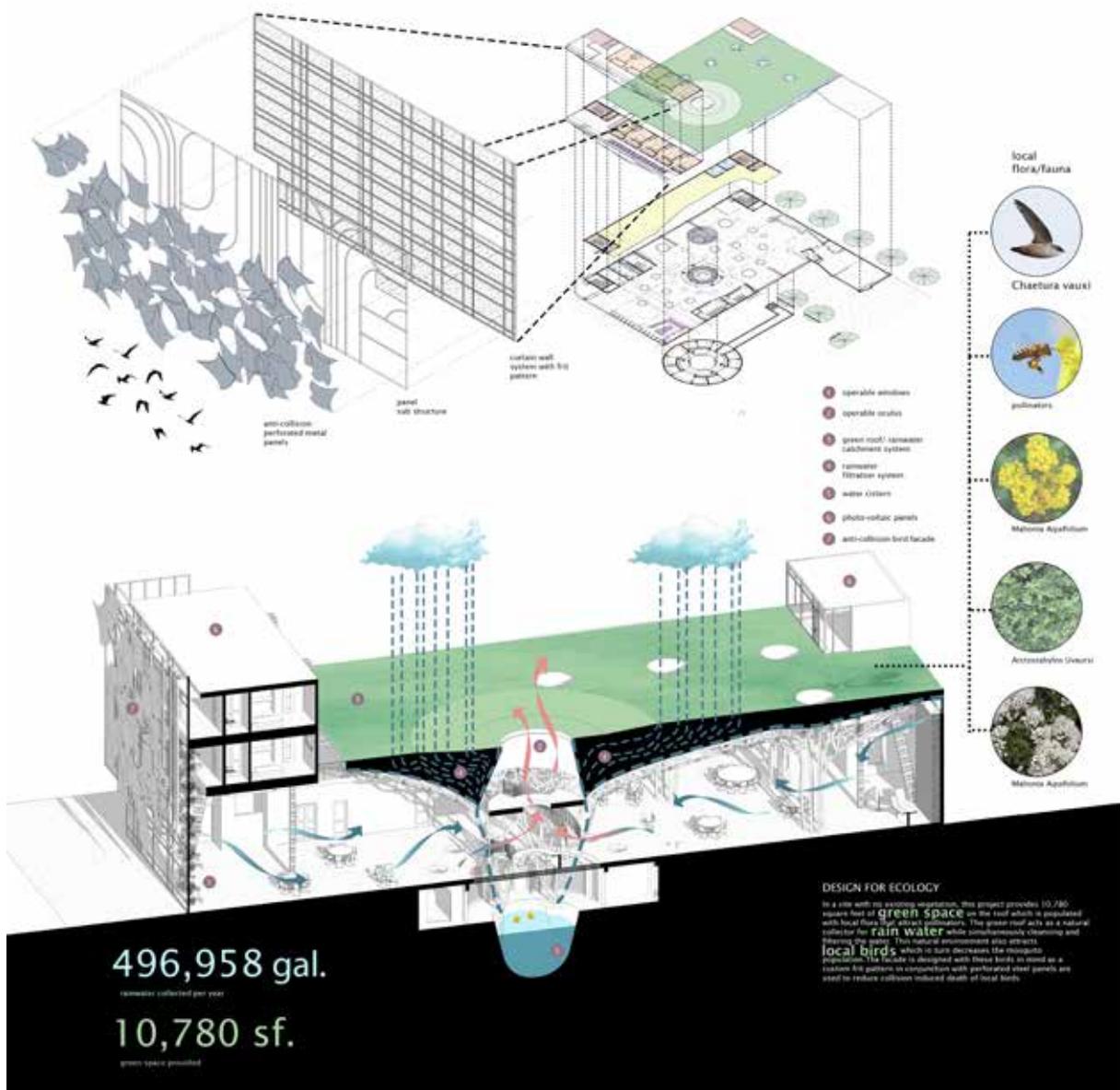
I researched and studied passive heating and cooling systems and water reuse systems in an attempt to achieve a net zero building. In my future projects, I would like to test and further understand these systems. In a post-occupancy study of this building, I would like to investigate the daylighting levels and natural ventilation to see if they improve occupant health. I learned more about Oregon's climate, community, and economy. I would like to further investigate the ability of building with local mass timber to solve the affordable housing crisis occurring in my community and in many others. This building is meant to serve as a learning, demonstration building and will influence all of my future designs to incorporate the ten sustainability measures. I want to share my knowledge and lessons learned to teach my community of the importance of sustainable design.

STUDENT WORK



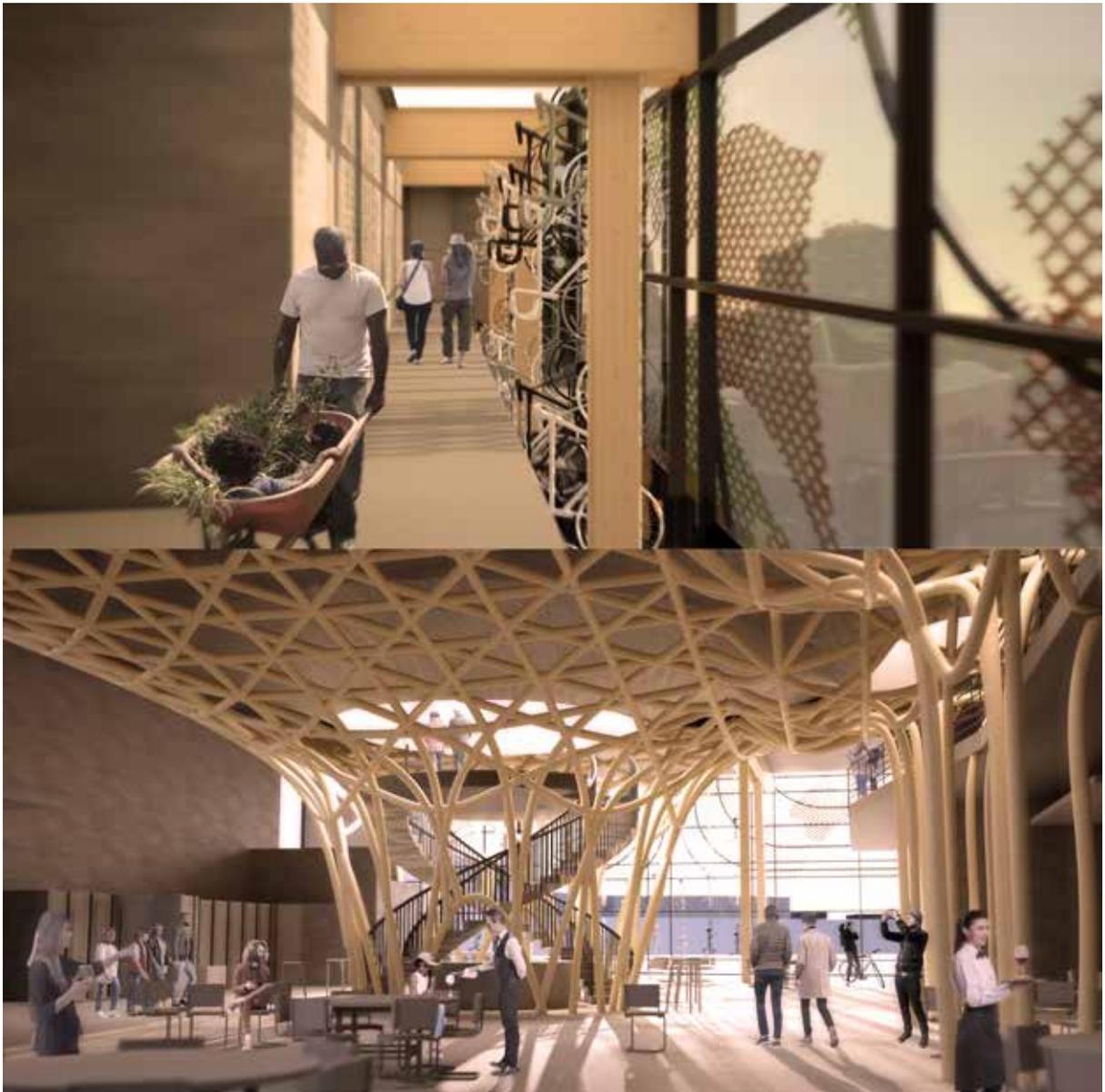
Will Ogburn

STUDENT WORK



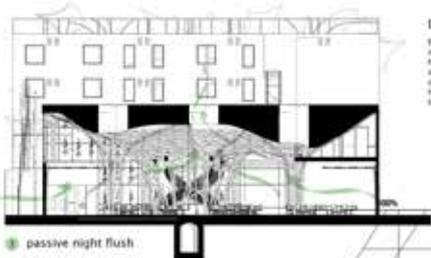
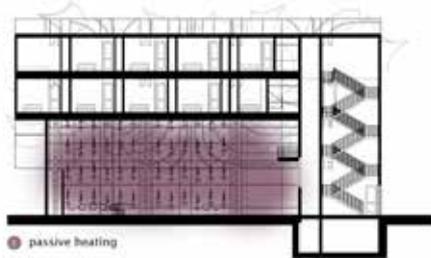
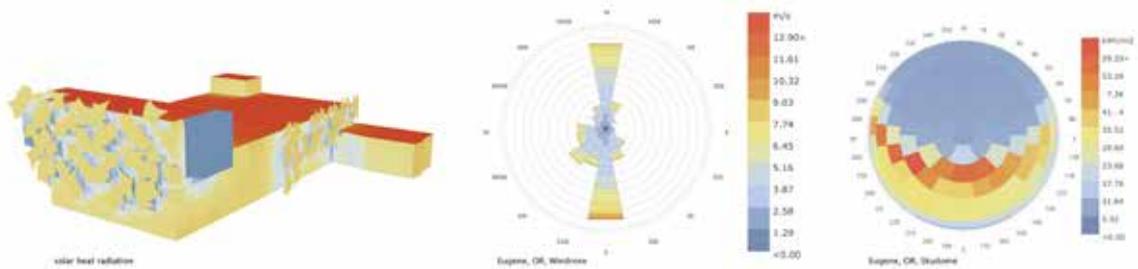
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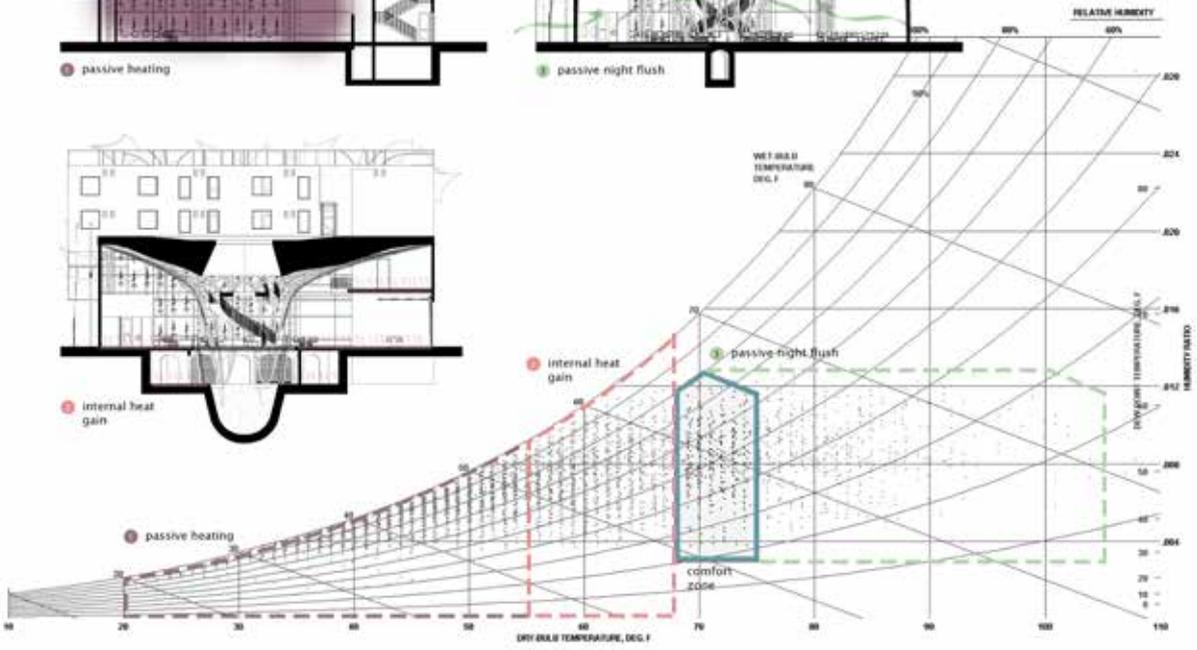
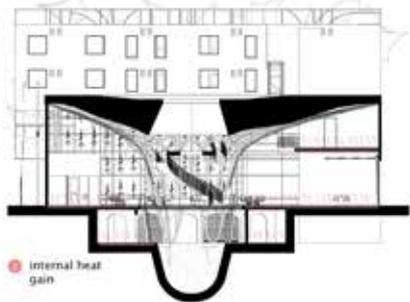


Will Ogburn

STUDENT WORK



DESIGN FOR ENERGY
 Eugene has a temperate oceanic climate with cool and moist seasons. Strategies such as **PASSIVE** heating and cooling were used along with optimized sun screen panels to mitigate the climate extremes of the site. The project also utilizes a **SOLAR** water heating system for the water of the building which in turn cuts down an energy and operational costs.



Will Ogburn

05.

REFERENCES

PAGE 18 - <https://www.eugene-or.gov/DocumentCenter/View/43882/Eugene-Future-Physical-Conditions-White-Paper->

PAGE 15 - <https://transittomorrow.org/> transit

PAGE 10 AND 20 - Google Earth Images