Paul Wang

Selected Works

Master of Architecture

UC Berkeley College of Environmental Design

2023

Cirriculum Vitae

Education

Master of Architecture — **2020-2023**
University of California, Berkeley

Bachelor of Science in Civil Engineering — **2014-2019**
National Taiwan University

Experience

Junior Developer — **2023-Present**
FLOZ. Inc.

Graduate Student Researcher — **2022-2023**
Dr. Maria Paz Gutierrez, UC Berkeley

Technical Artist — **2022-2023**
XR Lab, UC Berkeley

Junior Designer — **2019-2020**
S2 Design Architect & Associates

Teaching Assistant — **2018-2021**
National Taiwan University

Awards

Chester Miller Fellowship — **2023**
For outstanding thesis project

Ministry of Education (Taiwan) Scholarship — **2022**
For distinguished graduate works

Skills

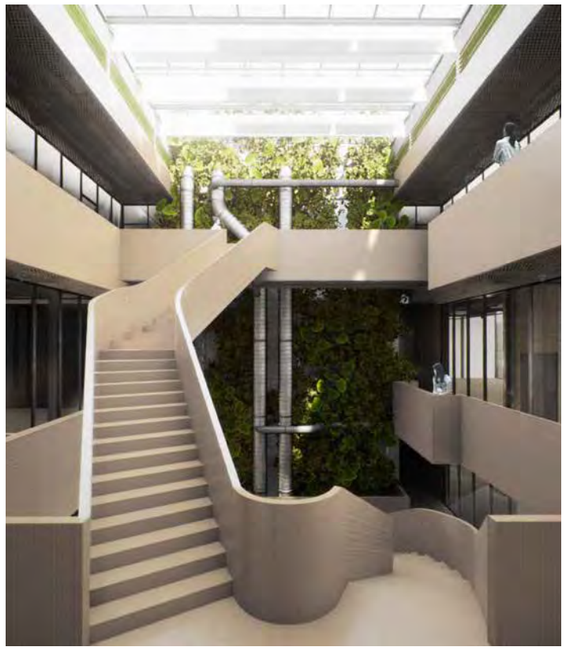
Software
Architecture: Rhino, AutoCAD, Grasshopper, Sketchup, Revit
Mixed Media: Unreal Engine, Unity, Blender, Maya, Adobe Suite
Programming: C++, C#, Java, Python

Technical Skills
Parametric Design, Virtual Reailty, Animation, 3D-printing, Robotic, Photogrammetry

Contents

Detours & Deviations
detoursdeviations.myportfolio.com

Animation Reel
https://youtu.be/8uDjEs0tmIo



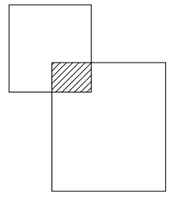
Cafe Verde Acero

Integrated Studio Fall 2022
Paul Wang, Qingyue Gao
Advisor: Simon Schleicher

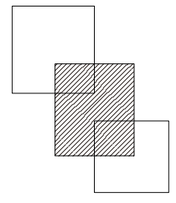
Location: 1298 Valencia St, San Francisco
Software: Rhinoceros, Karamba, VRay, Unreal Engine

Cafe Verde Acero is a four storeyed coffee roastery located in the Mission District of San Francisco. The coffee-making process involves a variety of machinery, which the interior thematically echoes with the juxtaposition of natural elements with industrial objects along the concrete walls.

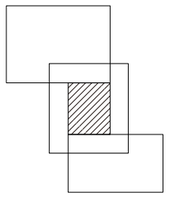
The spacious atrium puts the Coffee Production zone as the performance stage, while the fragrance of coffee and the green permeate within the space.



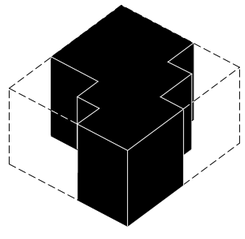
OVERLAPPING ZONES

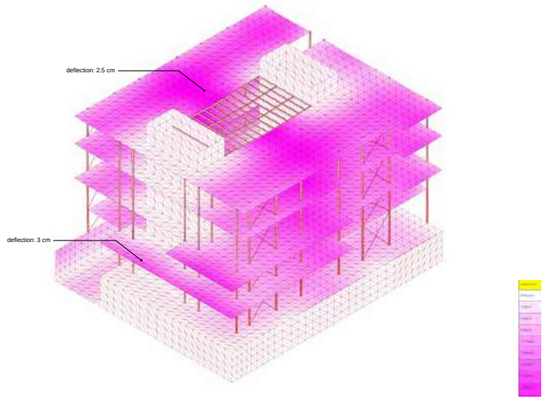


PUBLIC, PRIVATE, CENTER COFFEE STAGE

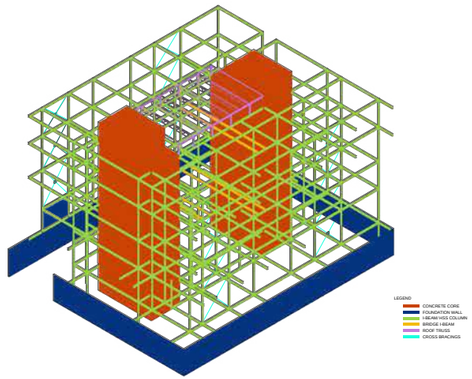


THE ATRIUM

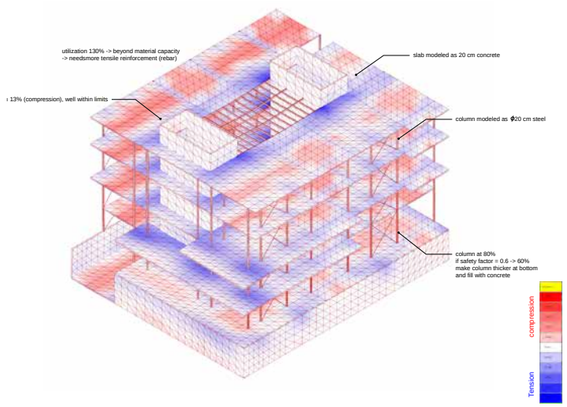




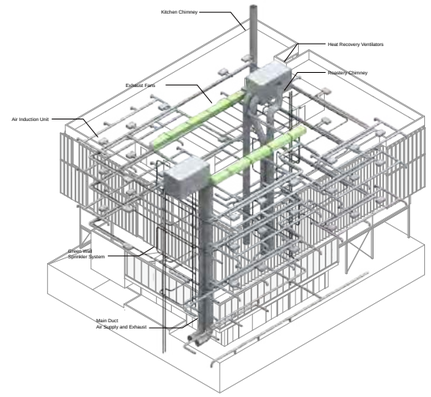
Deflections



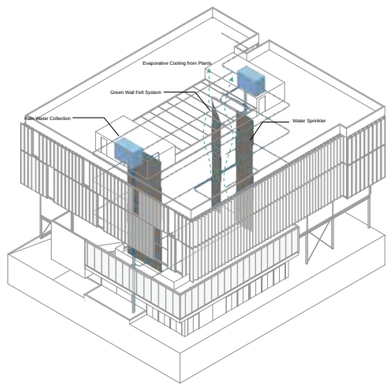
Structural Members



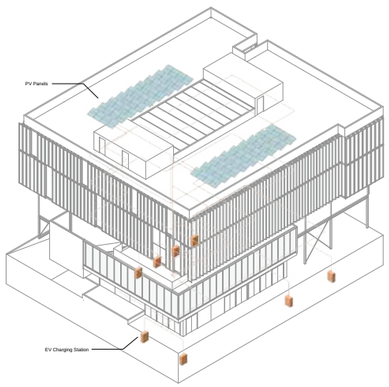
Utilization



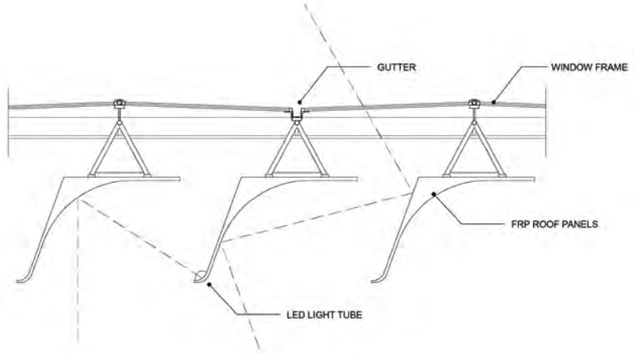
MEP System

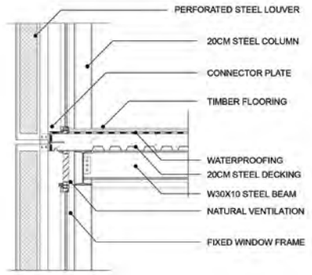


Water System

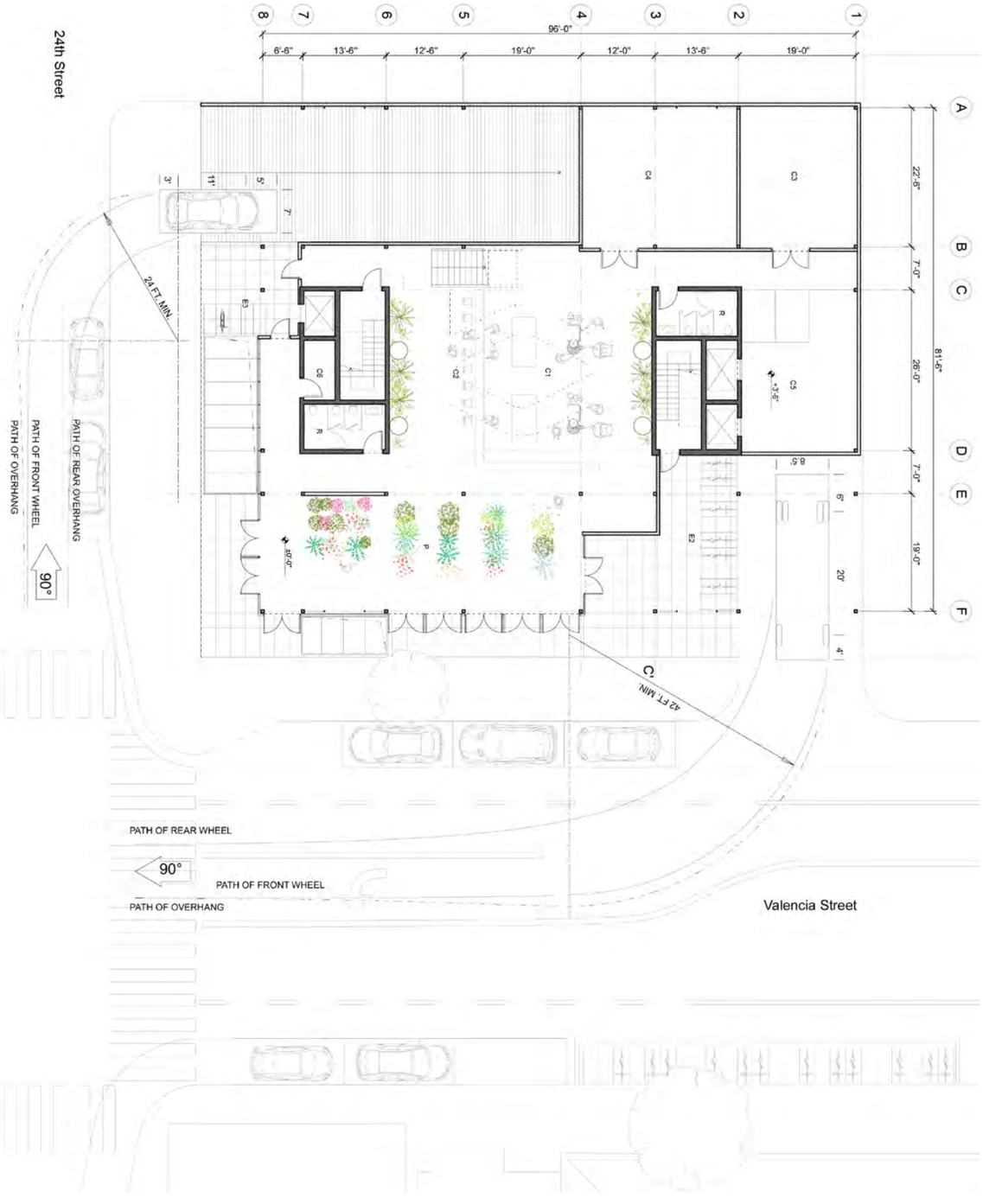


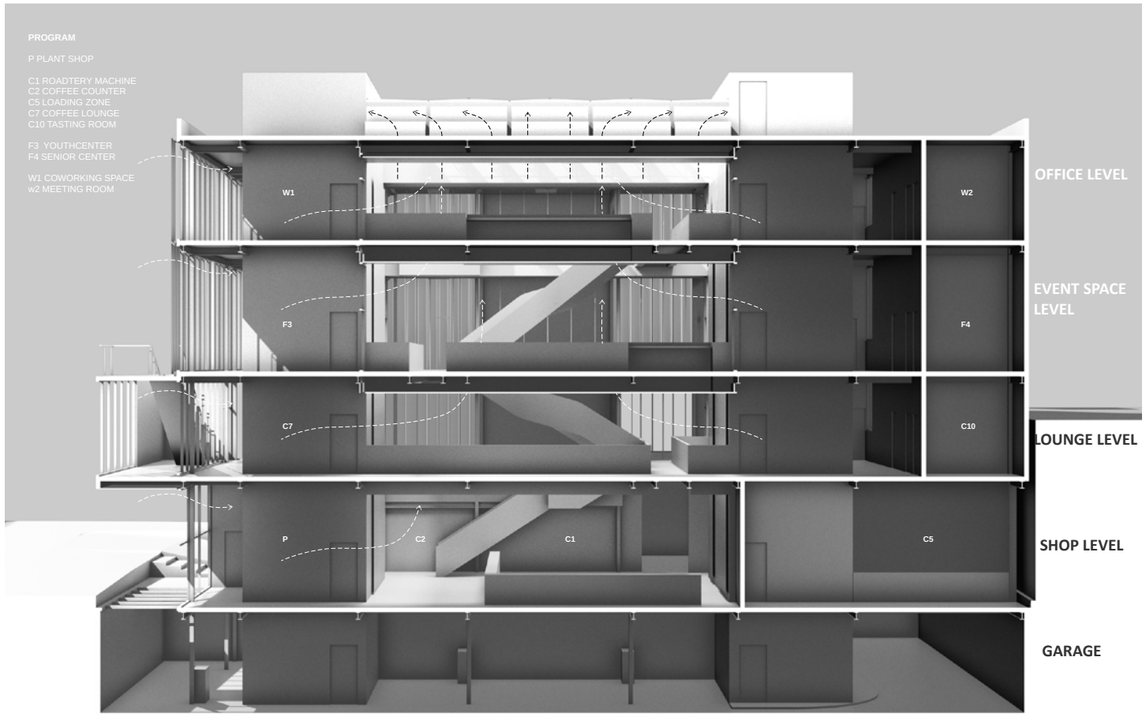
Electrical System


GUTTER
WINDOW FRAME
FRP ROOF PANELS
LED LIGHT TUBE

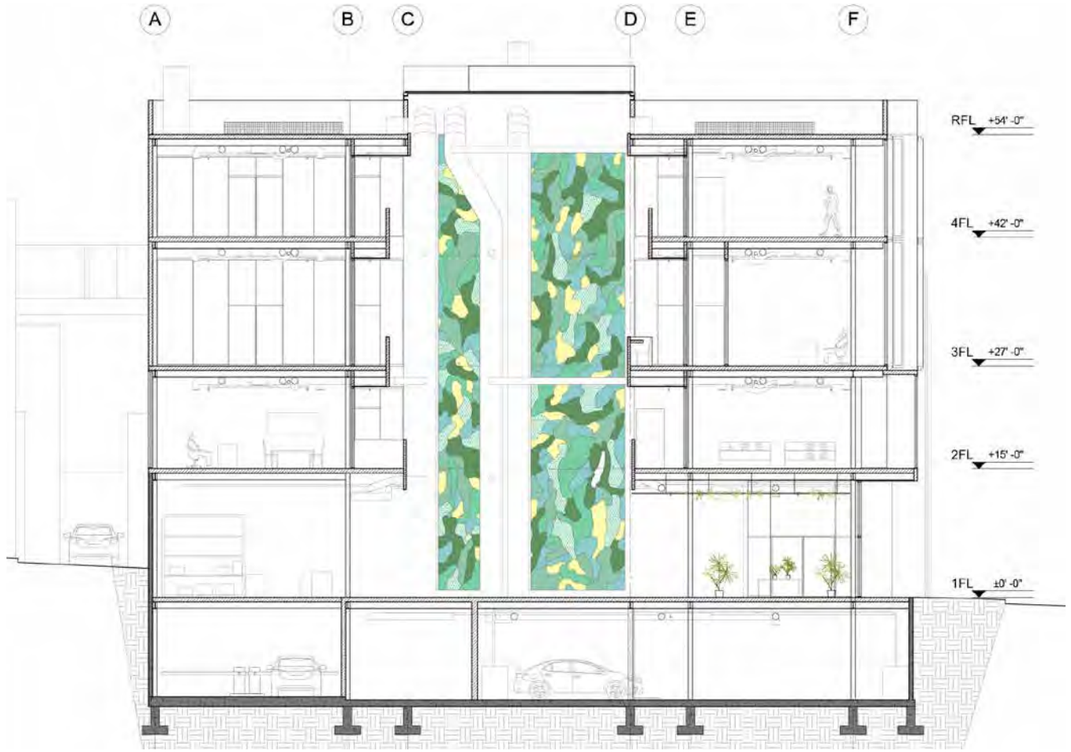

PERFORATED STEEL LOUVER
20CM STEEL COLUMN
CONNECTOR PLATE
TIMBER FLOORING
WATERPROOFING
20CM STEEL DECKING
W30X10 STEEL BEAM
NATURAL VENTILATION
FIXED WINDOW FRAME


HEAT RECOVERY VENTILATOR
RIGID INSULATION
PERFORATED LOUVER
POROUS FLOOR PLATE
DRAINAGE
AIR INDUCTION UNIT
TIMBER FLOORING
20CM STEEL DECKING
W30X10 STEEL BEAM
EV CHARGING STATION
CONCRETE FOUNDATION


24th Street
96'-0"
6'-6"
13'-6"
12'-6"
19'-0"
12'-0"
13'-6"
19'-0"
81'-6"
22'-6"
7'-0"
26'-0"
7'-0"
19'-0"
24 FT. MIN.
42 FT. MIN.
PATH OF FRONT WHEEL
PATH OF OVERHANG
PATH OF REAR OVERHANG
90°
C1
C2
C3
C4
C5
C6
E1
E2
E3
Valencia Street



West Section Ventilation Diagram



North Section Green Wall

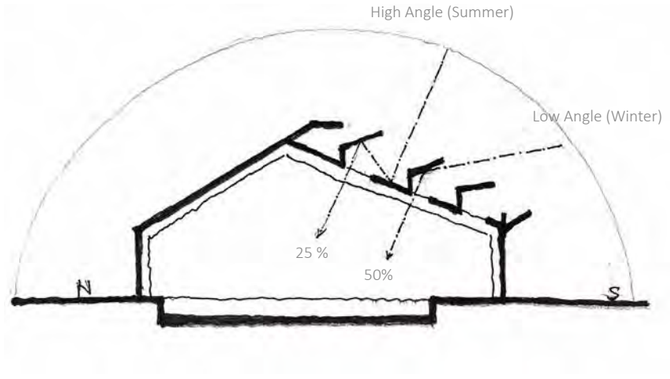
Folding Light

Advanced Study of Energy & Environment Fall 2022
Collaborated Group Project
Advisor: Luisa Caldas

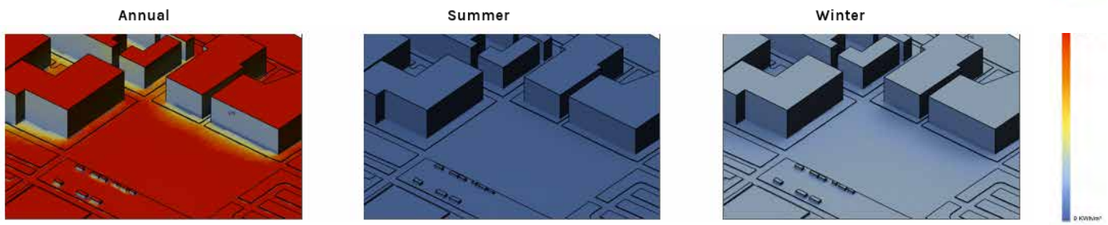
Location: 650 Nelson Rising Ln, San Francisco
Software: Rhinoceros, Climate Studio, Unreal Engine

The design approach takes soft lighting as its main initiative. The development and negotiation between daylighting and thermal strategies looked at indirect lighting to deliver a comfortable swimming experience.

The project utilized EnergyPlus (ClimateStudio) to perform climate & energy analysis. Initial challenge involved high solar glare, suboptimal insulation, poor natural ventilation and high EUI results. These insights lead to optimizing material properties and building schedules for better building performance.



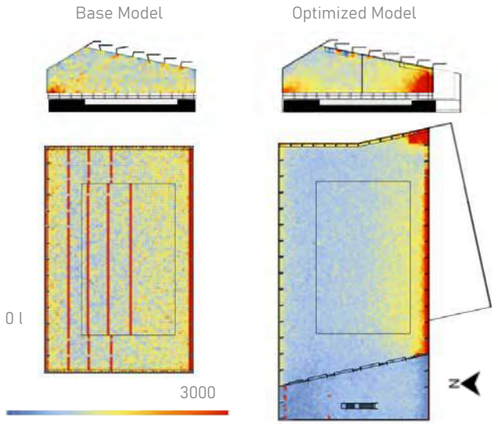
Site Analysis- Solar Radiation

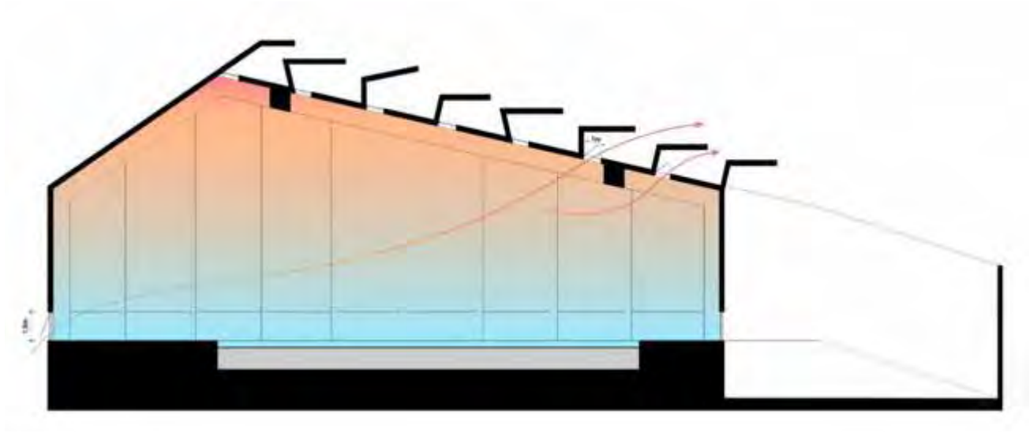


Natural Ventilation Strategy

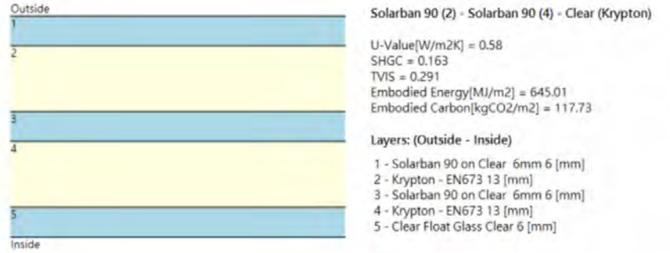
Base Model Mean Daylight Factor (DF) - 19.7%
Optimized Model Mean DF - 2.0%

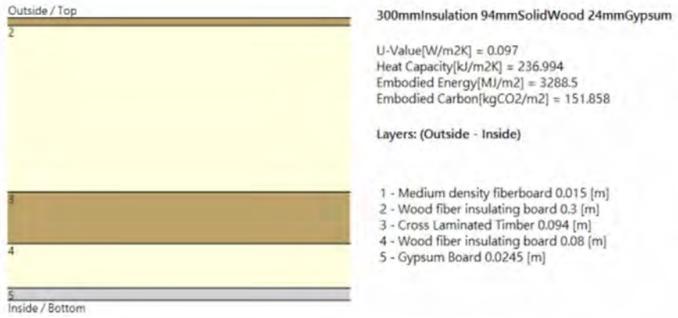
The CLT timber frame shears at an angle of 13 degrees to the west to better shade the afternoon sun. The optimized model was able to reduce the mean daylight factor from 19.7% to 2% (minimum requirements is between 2% to 5%). Although DF exceeds 5% around the perimeter (seen on plan), the core area for swimming remains comfortably lit.



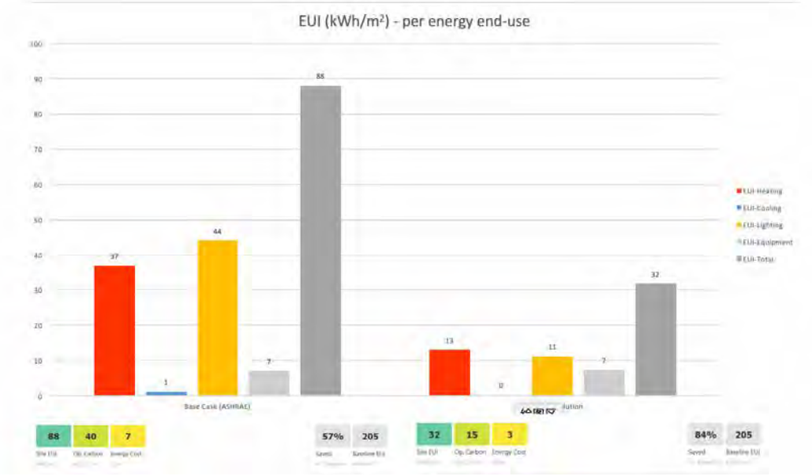


Natural Ventilation Strategy





Insulation Strategy



EUI Improvements

Tintagel Pedestrian Bridge

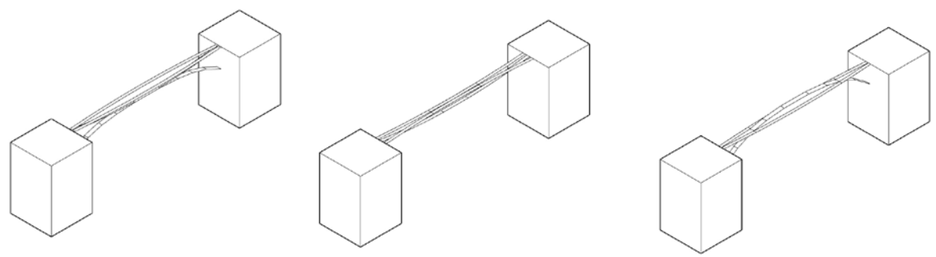
Introducition to Structures Fall 2021
Collaborated Group Project
Advisor: Simon Schleicher

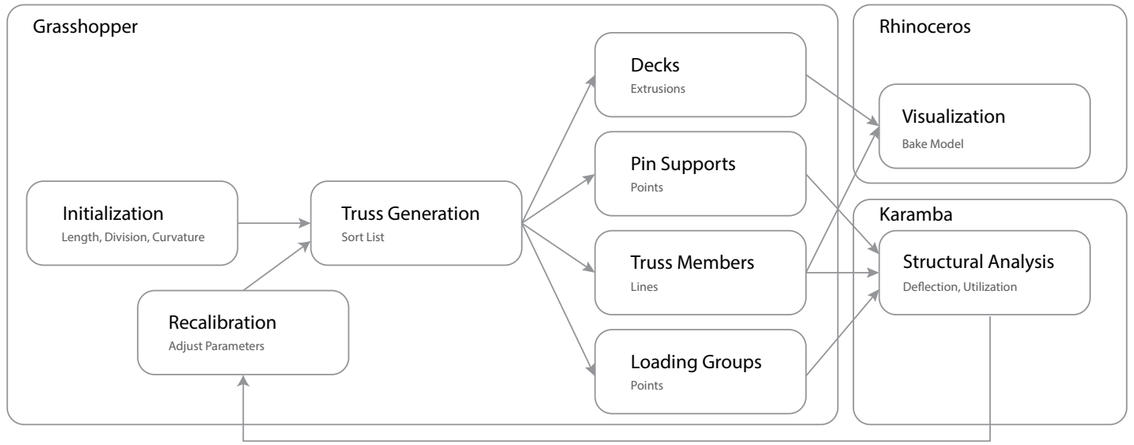
Location: Tintagel Castle, Cornwall, UK
Software: Rhinoceros, Karamba, VRay

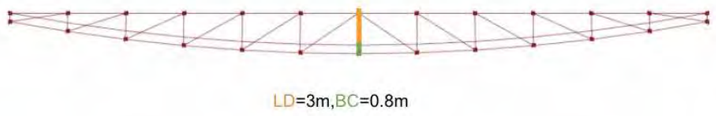
Tintagel Castle sits on the peninsula of Tintagel Island, its natural terrain keeping itself well-isolated over Centuries. The site used to be a medieval fortification, and has now become a popular tourist attraction for its ancient ruins and fantastic view.

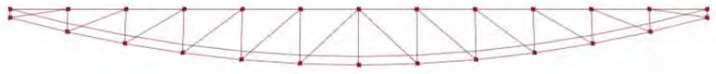
Away from busy towns, this secluded rock grants entry only to humbled pedestrians. In return, travelers are enveloped with breathtaking scenes as they traverse across. The truss creates oscillating paths for visitors to delve and to immerse between the ocean, the hills, and the sky.

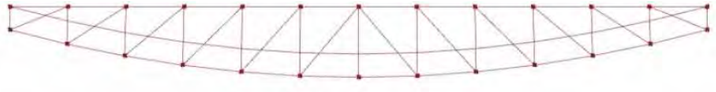
I am responsible for Grasshopper scripting and Karamba structural simulations.

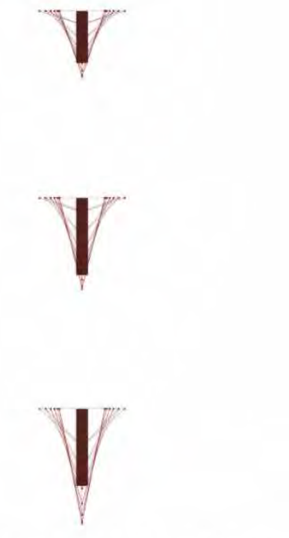





LD=3m,BC=0.8m


LD=4.9m, BC=0.8m

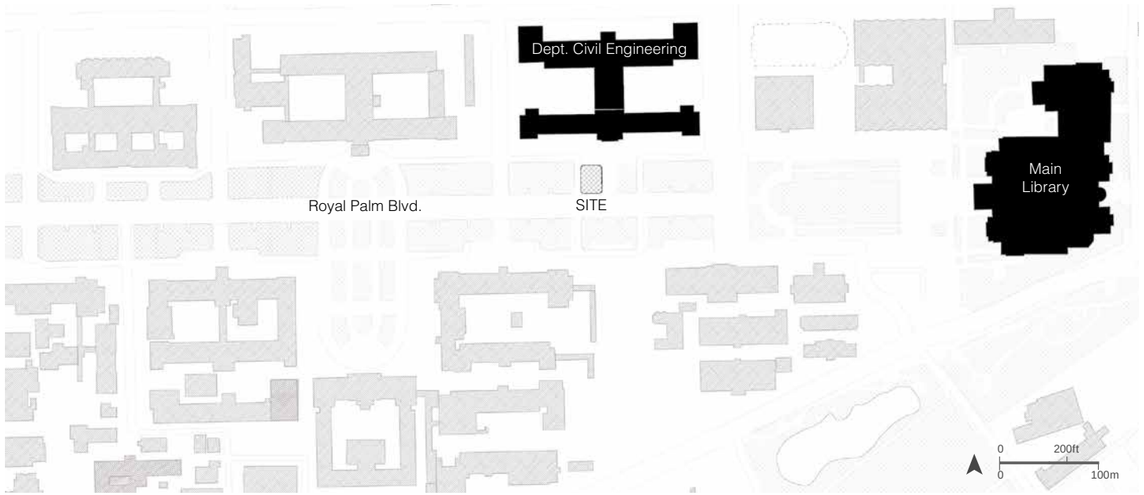

LD=4.9m, BC=2.4m

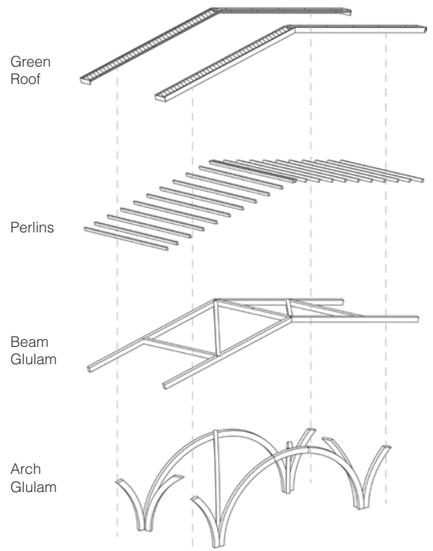

Lower Deck(LD), Bottom Chord(BC)

Bike Shed

Civil Engineering Capstone Spring 2018
Collaborated Class Project
Instructor: Herve Capart, Masatoshi Tomita

Location: Dept of Civil Engineering, NTU, Taiwan

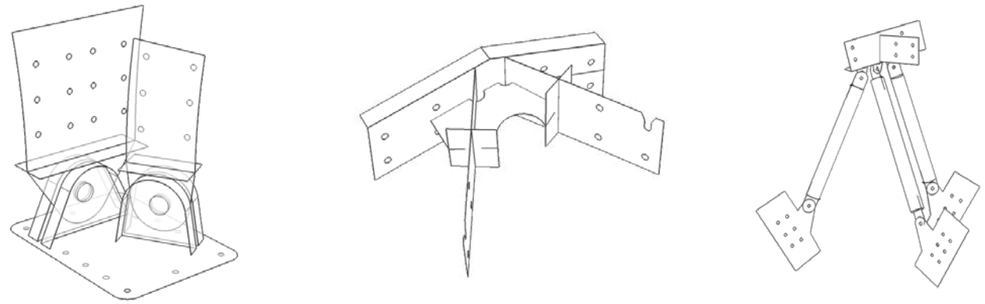




The bike shed sits in front of the Civil Engineering Dept as a welcoming shelter for bicycles. The project was built in collaboration with the National Taiwan University Experimental Forest, which is dedicated to forest conservation, ecological research and education.

The shed employed Glue-Laminated Timber (GLT) and drought resistant plants as green roof for sustainable engineering. The structure serves as an initiative for integrating academic learning and hands-on practice. while also commissioned as a landmark gift to NTU's 90th anniversary.

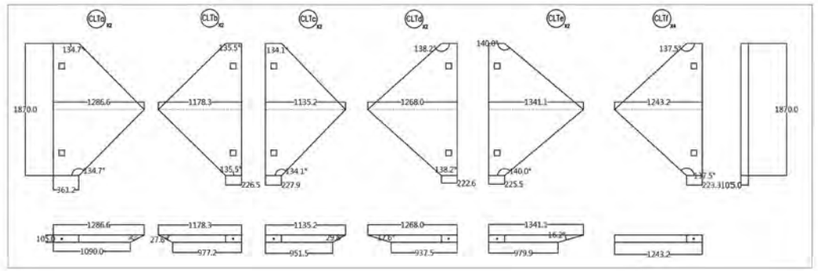
I am responsible for designing the rooftop and participated in woodworking as a member of the construction team.

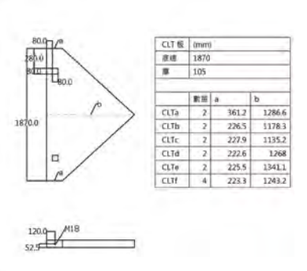


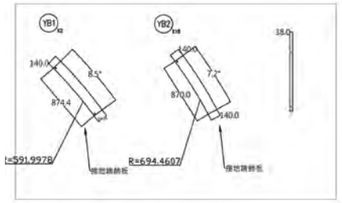
Steel Joint Types

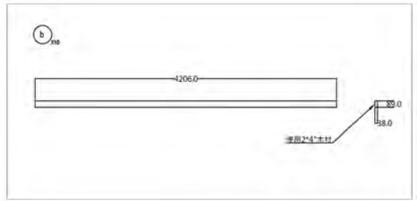
Shed II

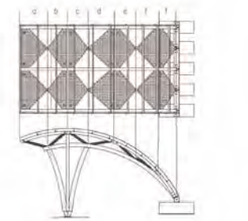
NTU Class Project 2020-2021
Teaching Assistant
Location: Civil Engineering Research Building, NTU, Taiwan

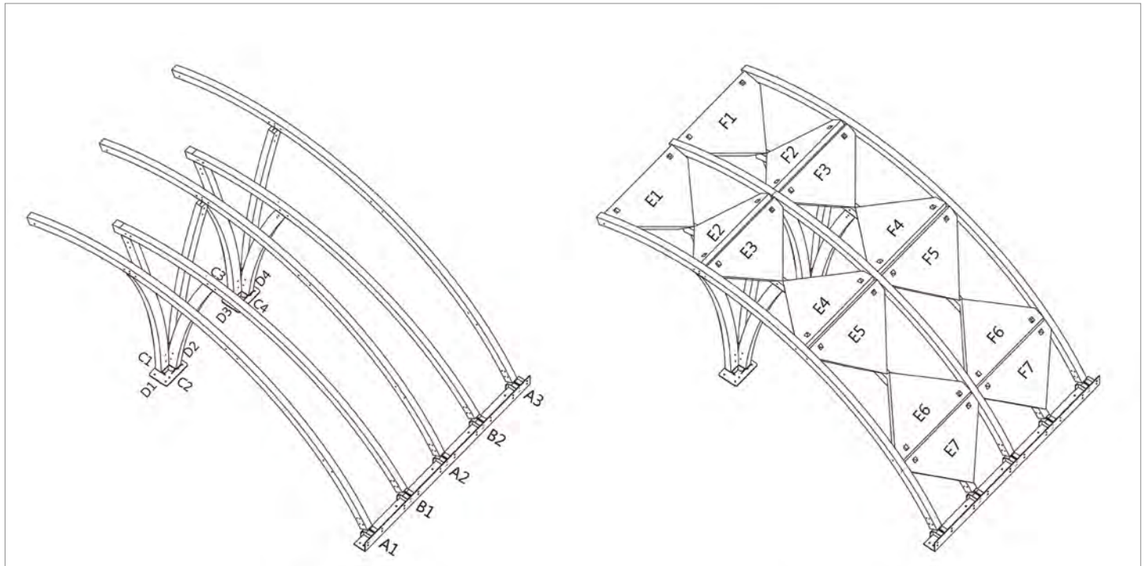


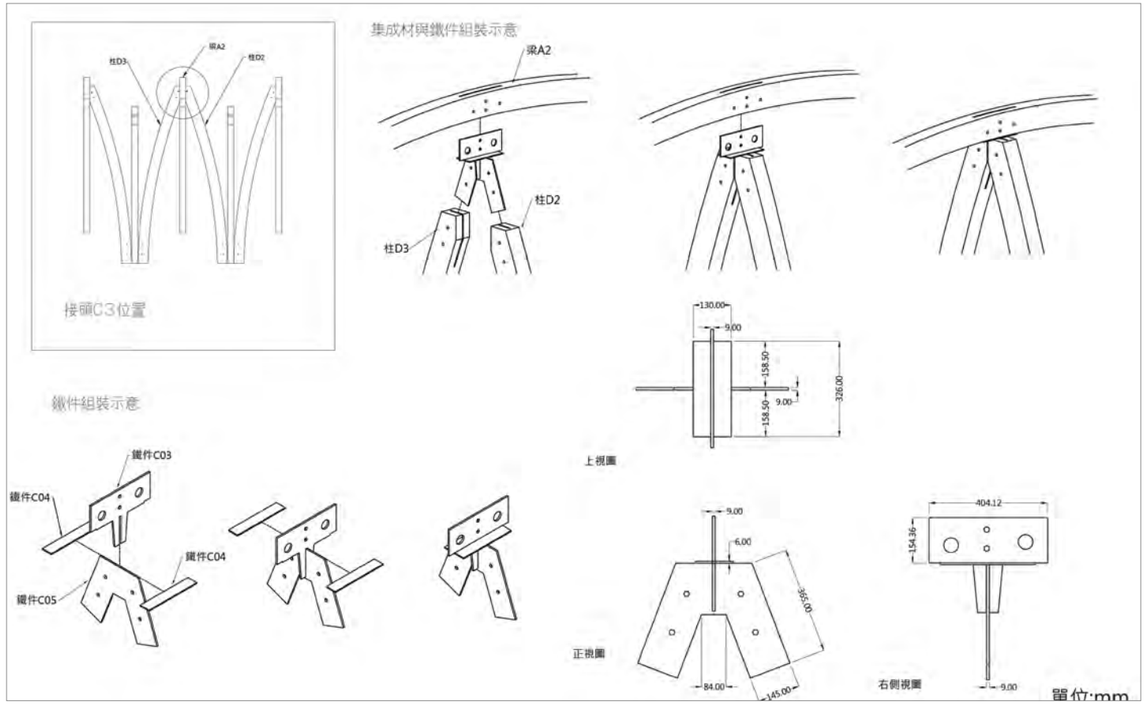






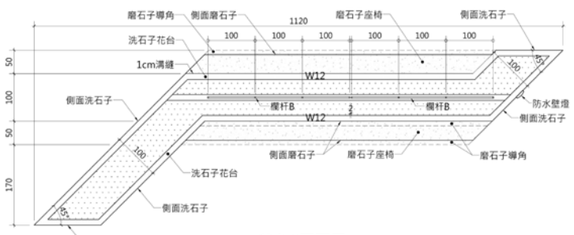


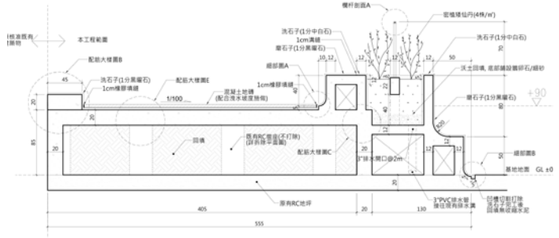


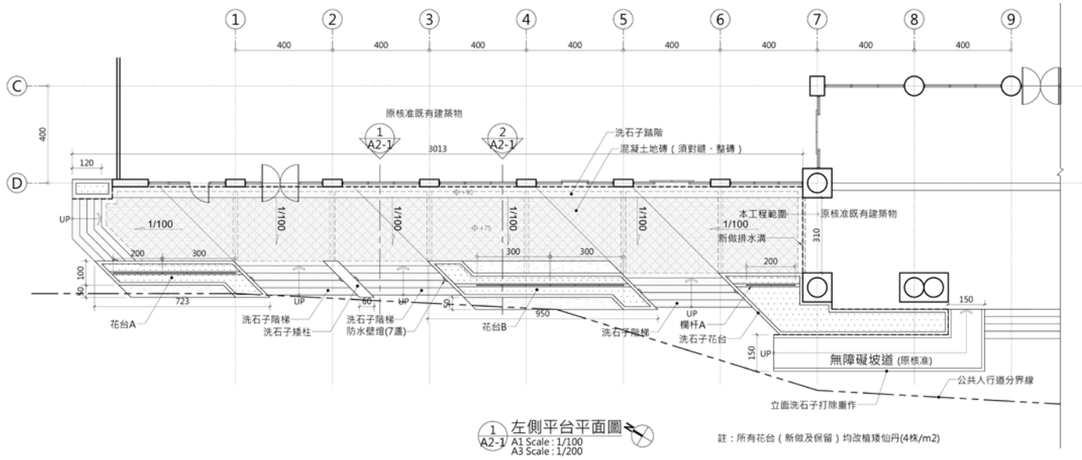


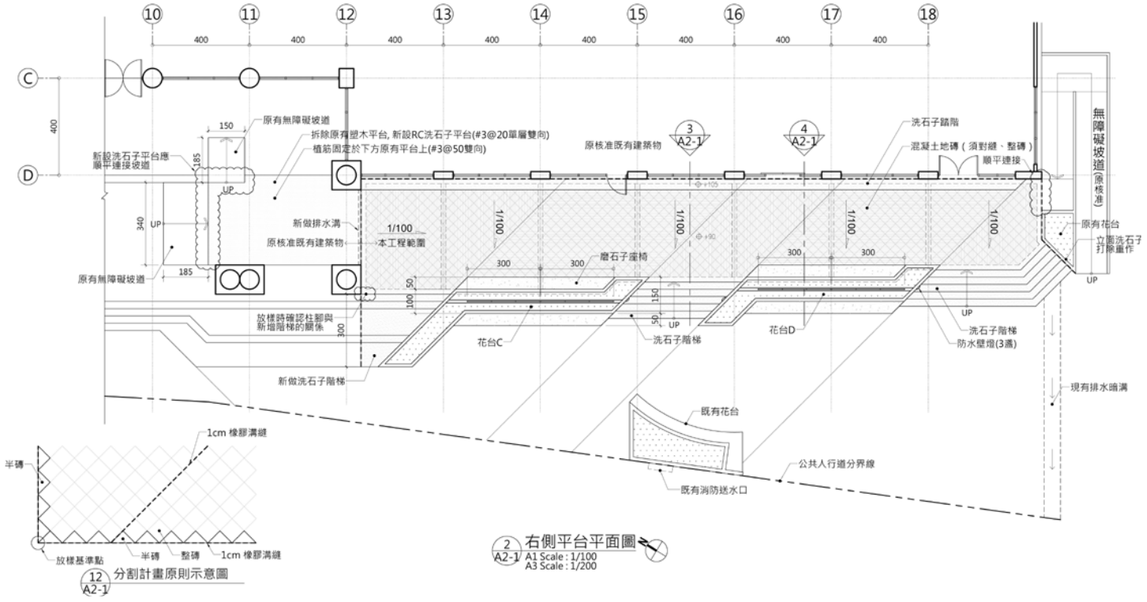
Platform Renovation

S2 Design 2019
Junior Designer
Location: Student Activity Center, NTU, Taiwan









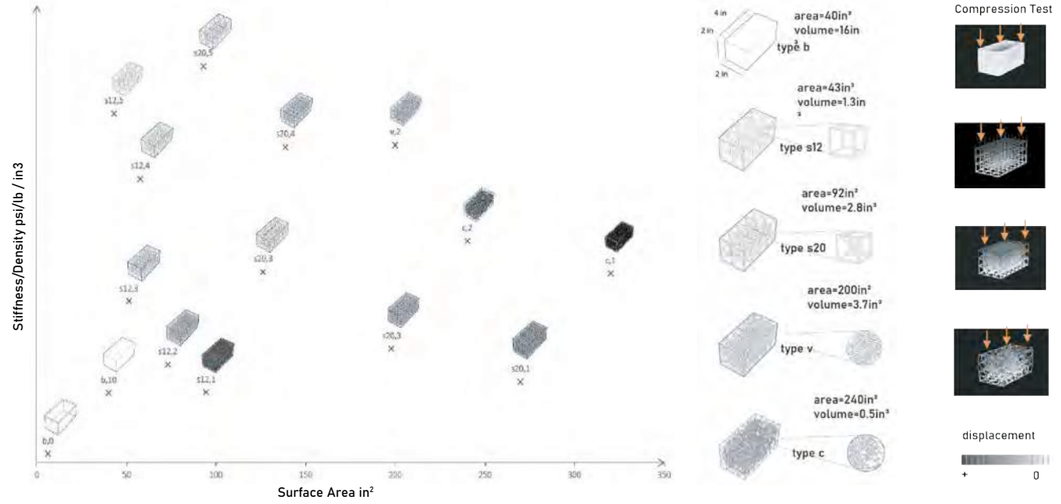
Parakeet Perch

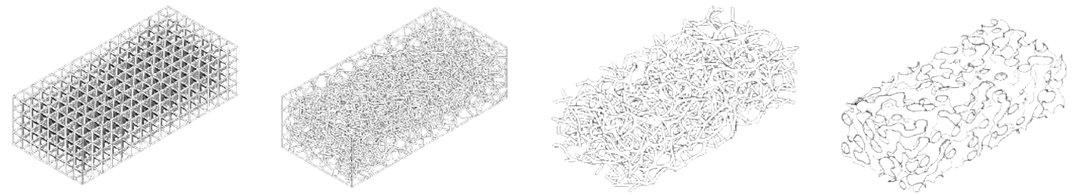
Graduate Student Researcher 2022-2023
With Dr. Maria Paz Gutierrez

Location: Sacramento Valley, CA
Software: Grasshopper, Rhino, PrusaSlicer

P² – Parakeet's Perch is a house commissioned by 11 parakeets in the Sacramento Valley. This design work explores a context of severe drought/extreme heat/flood prone in the Sacramento valley subject to decay acceleration and microbial growth.

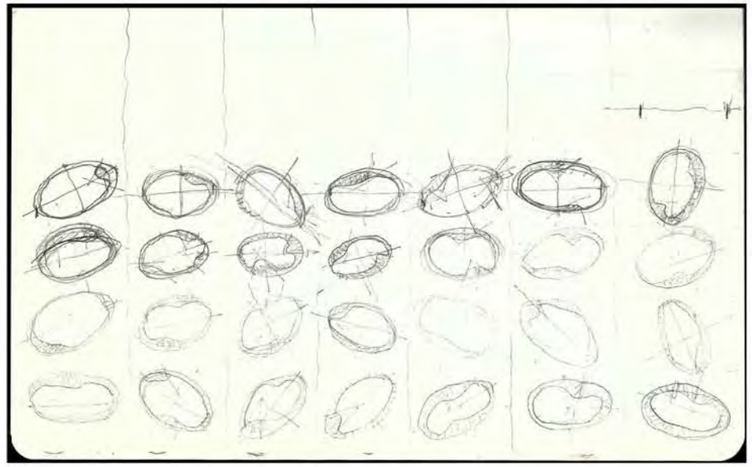
The structure comprises 3D printed lignocellulose scaffolds (cork) that implements porous structures of variable density and orientation to optimize parakeets' visual stimulus, air flow, and water transport. Earlier studies explored the optimal lattice formation of these criteria, which led to gyroid. A parallel analysis in the lab on controlled weathering and determination of microbial growth is being used to assess the 3D printed cork with a new non-planar/steam agglomeration for high antimicrobial resistance.

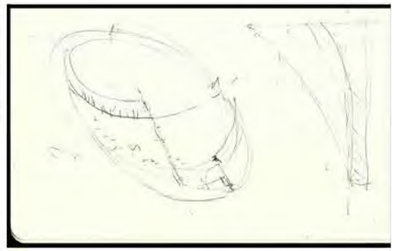


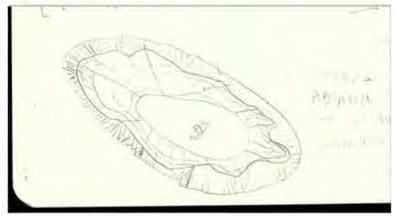


Initial Parametric studies of the 3D Lignocellulosic substrates

3D Lignocellulosic substrate for optimized lichen growth

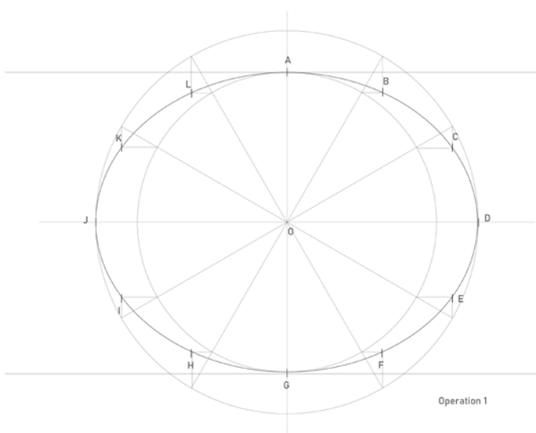




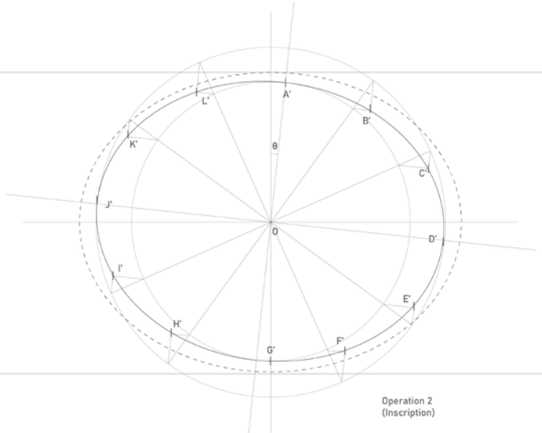


The Penguin Pool by Berthold Lubetkin and the Tecton Group in 1934 uses ellipses as a center for interaction of penguins, challenging our notions of the role of a client. Inspired by the egg as the cycle of life of the parakeet's and Lubetkin's work, a series of ellipses nesting creates both positive and double negative spaces.

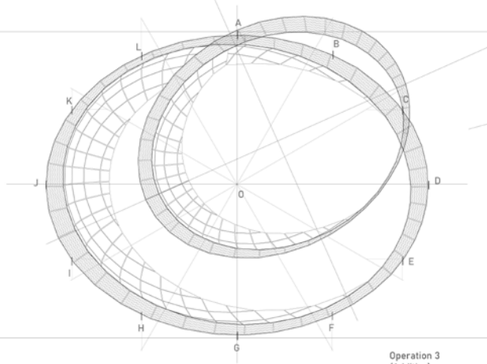
The research explores geometric generation method for subdivided egg-shell structure with gyroid infill. The tilted ellipse leads to unique size and curvature for each panel, demanding a fully parameterized model and semi-automated pipeline. The gyroid surfaces are created as modular building blocks, or genomes, then inserted as a sub-matrix inside each panel within a larger matrix of rows and columns. For easier assembly, a joint system is implemented by shifting the sub-matrix by 1 and labeled with their row_column number. The process automates panel generation with key dimension inputs, bound limit detector for unprintable panels, material/time estimator, and to further conserve support materials, an optimum print angle algorithm written with Galapagos.



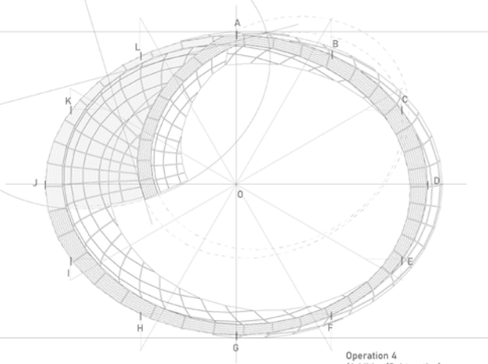
Operation 1



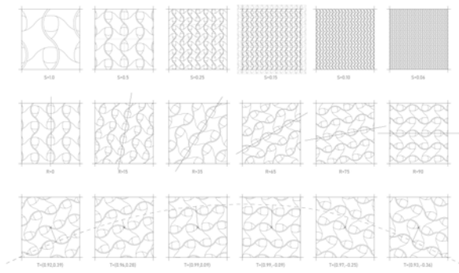
Operation 2
(Inscription)

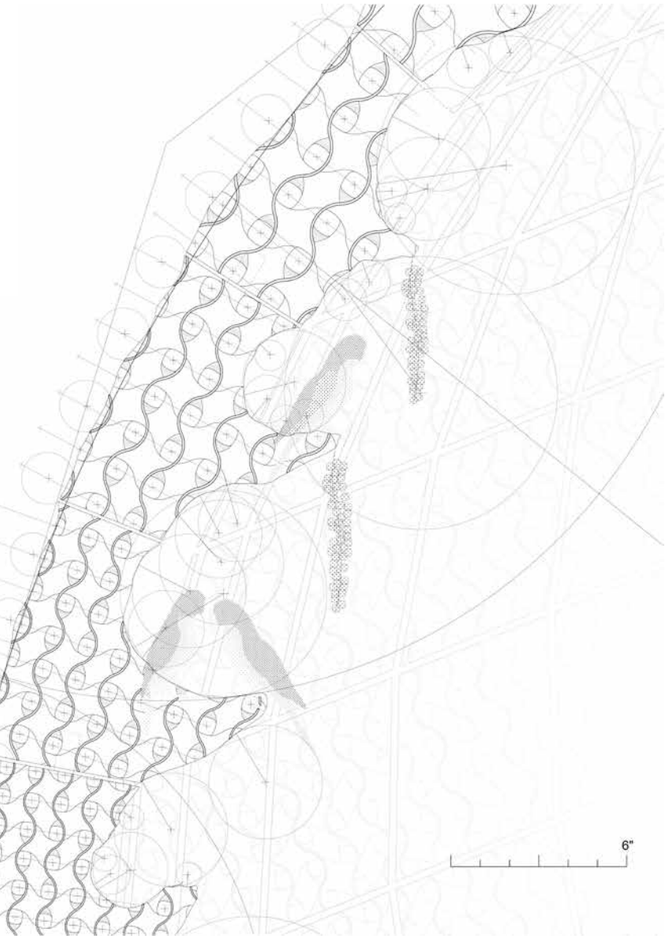


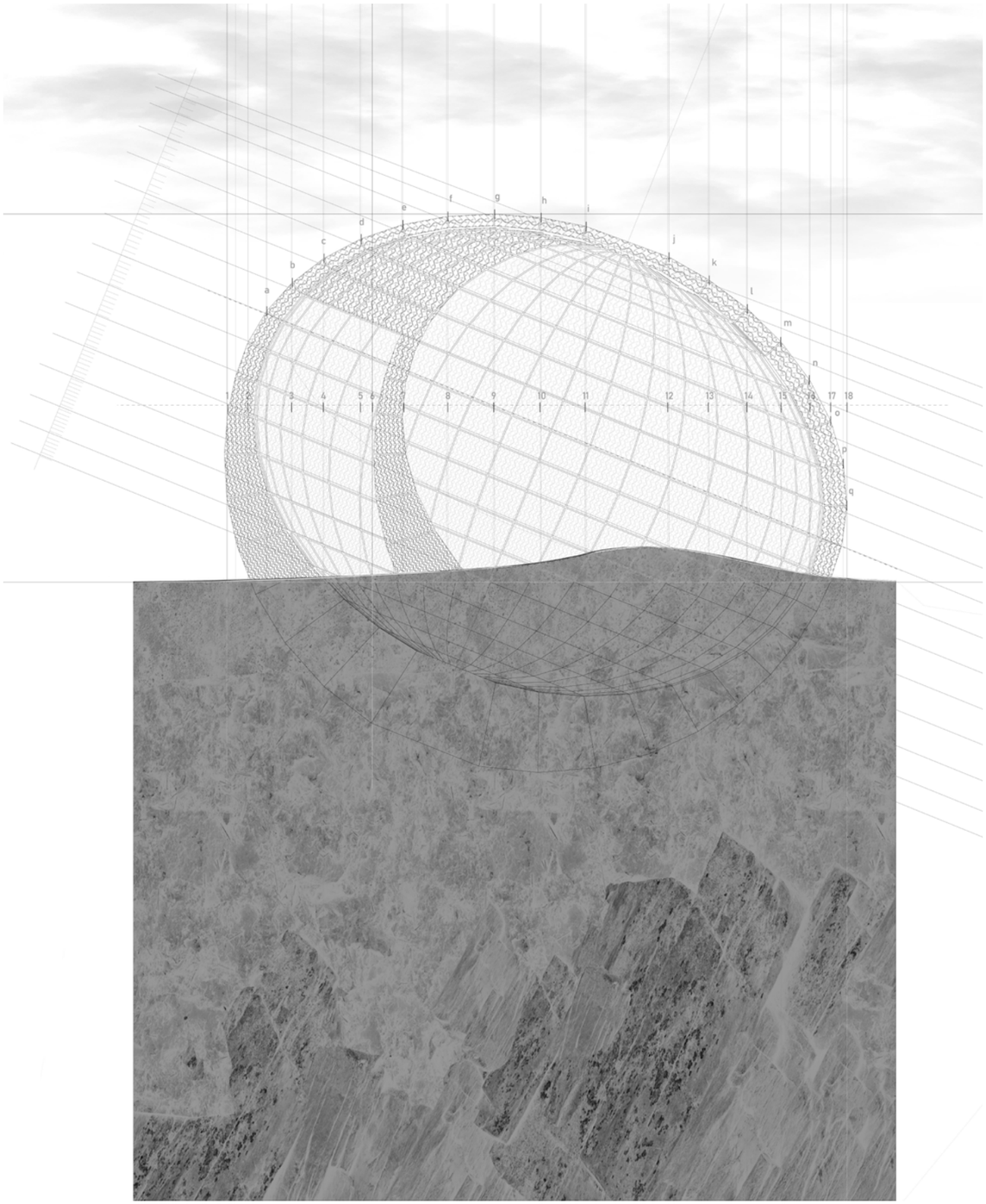
Operation 3
(Additive)



Operation 4
(Additive/Subtractive)



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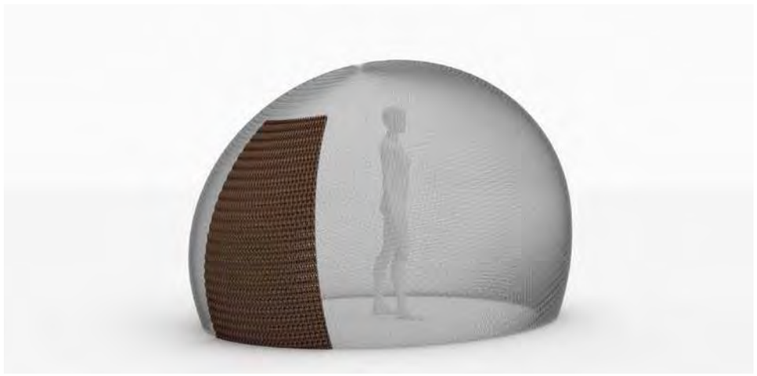


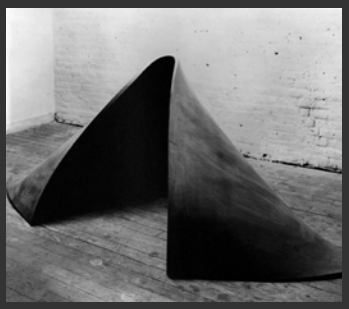
Fog Lab

Immersive Environment Fall 2022
Paul Wang, Wanning Liao, Qingdong Hu
Advisor: Luisa Caldas
Software: Blender, Virtual Baur Wurster(Unity)

Virtual Bauer Wurster (VBW) is an online interactive platform developed by XR Lab in UC Berkeley. Fog Lab, one of the virtual exhibitions featured in VBW, sought to blur the presence of form and visitors, elevating strange encounters within the space. I am responsible for modeling and material shading of the digital environment.

In Antony Gormley's Blind Light, participants were immersed in a primitive experience created by the inundated air, whereas the Blur Building by DS+R encourages interaction and exploration through formless space. Richard Serra's steel sculpture materialized actions into forms and boundaries.

We carved out spaces with translucent surfaces, then placed cloud/mist video footage to complete the fog-sculpture. The exhibition experiences a gradient of atmospheres, from tranquility to reactive. Players wander lost, spotted and reconvened.



Leftmost: Blind Light, Antony Gormley
Second Left: To Lift, Richard Serra
Bottom: Blur Building, DILLER SCOFIDIO + RENFRO