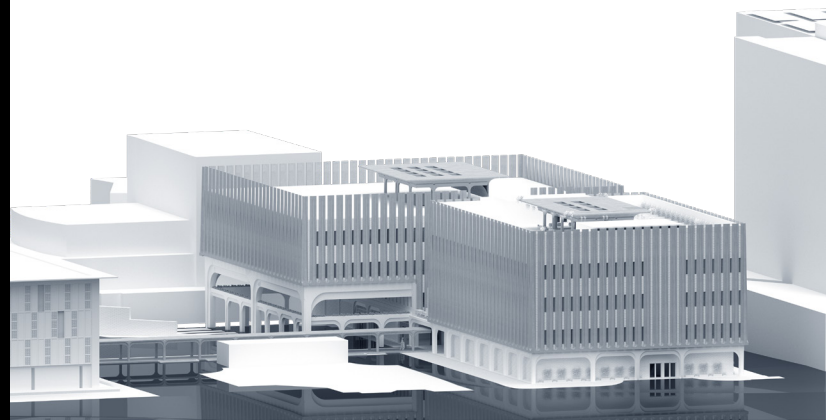
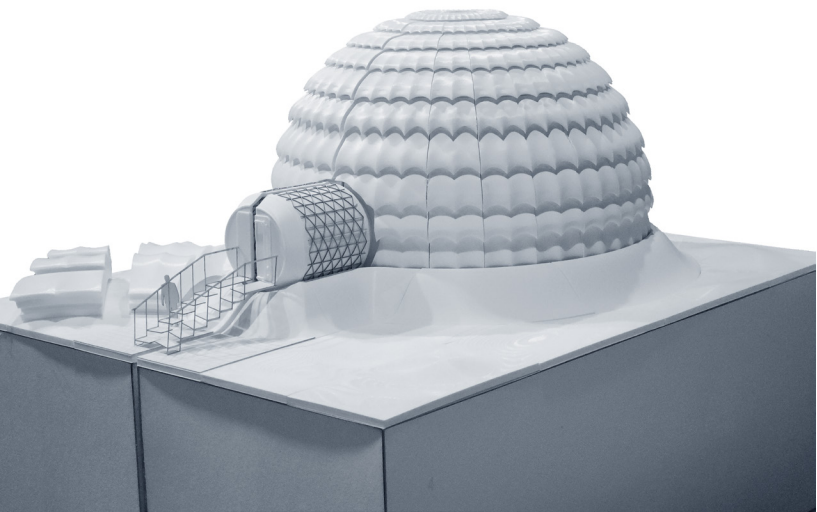


SHUBH AGRAWAL

---

ARCHITECTURE PORTFOLIO





**SHUBH AGRAWAL**

B.Tech Civil Engineering | M.Arch Architecture

Assoc. AIA · LEED AP BD+C

**SOFTWARES**

**CAD**

- Revit ●●●●○
- Rhino 3D ●●●●●
- AutoCAD ●●●●●
- Sketchup ●●●○○
- Blender ●●●○○
- 3Ds Max ●●●●○
- Grasshopper ●●○○○

**ADOBE SUITE**

- InDesign ●●●●●
- Illustrator ●●●●○
- Photoshop ●●●●○
- Premiere Pro ●●●○○
- Aero ●●○○○

**RENDERING**

- V-Ray ●●●●●
- Unreal Engine ●●●●○
- Enscape ●●●●●
- Lumion ●●●○○
- D5 Render ●●○○○
- Twinmotion ●●●○○

**OTHER SOFTWARE**

- Sefaira ●●●●○
- SOLIDWORKS ●●○○○
- Ladybug ●●●○○
- StaadPro ●●○○○
- SAP2000 ●●●○○
- Primavera P6 ●○○○○
- MS Office ●●●●○

**PROGRAMMING & TOOLS**

- Arduino ●●●○○
- MATLAB ●●○○○
- Python ●●○○○

**LINKS**

**WEBSITE**

[shubhagrawal.site](http://shubhagrawal.site)

**LINKEDIN**

[linkedin.com/in/shubhmax23](https://linkedin.com/in/shubhmax23)

**REFERENCES**

- Philip Horton**  
Instructor  
+1 480 861 4325  
[Philip.Horton@asu.edu](mailto:Philip.Horton@asu.edu)
- Guillermo Trotti**  
Instructor  
+1 781 244 0034  
[gui@trottistudio.com](mailto:gui@trottistudio.com)

**PROFESSIONAL EXPERIENCE**

May 2020 - July 2024

**Er. Umesh R. Agrawal Consulting Firm - Maharashtra, India**  
Assistant Supervisor - Hybrid, Part-time

June 2021 - July 2021

**YSTA Architects - Maharashtra, India**  
Architectural Internship - Summer

**EDUCATION**

August 2022 - May 2025

**Arizona State University**  
Master Of Architecture, M.Arch  
GPA: 3.85/4

July 2018 - May 2022

**Visvesvaraya National Institute Of Technology**  
Civil Engineering, B.Tech  
GPA: 8.34/10

**ACADEMIC WORKS**

Spring 2025

**HyperVeil**  
Hyperloop Transportation Hub

Fall 2024

**Mycelodome**  
Architecture Of Extreme Environments | Lunar Habitat

Spring 2024

**Habitat**  
Net-Zero Urban High-Rise Design

Fall 2023

**Ira D. Payne Hall**  
Architecture of Casting Aggregates | Adaptive Reuse

Spring 2023

**Monsoon Pavilion**  
A Tree Canopy Structure | Youth Centre Design

Spring 2023

**Tranquil Terrace**  
A Mat Building Typology | Collective Housing & Community Design

Fall 2022

**The 9-Square Grid**  
Conceptual | Program Based Design

**ACHIEVEMENTS**

April 2025

**Mycelodome Model Exhibition - Design For The Moon**  
Milan Design Week 2025 | Italy

**THESIS**

July 2021 - May 2022

**A Survey And Analysis On Critical Chain Method**  
Project Planing & Management | Civil Engineering

**CONTACT**

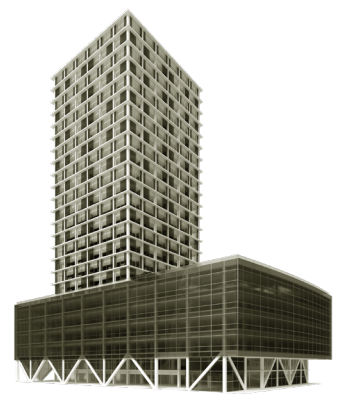
[sagraw68@asu.edu](mailto:sagraw68@asu.edu)  
[suagrawal28@gmail.com](mailto:suagrawal28@gmail.com)



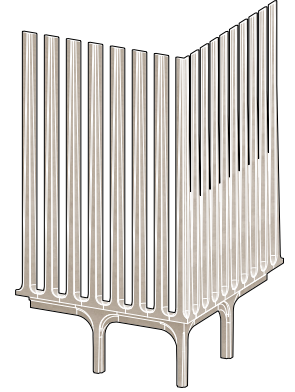
CONNECT



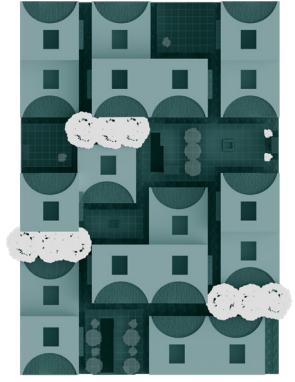
MYCELODOME  
*Architecture Of  
Extreme Environments*



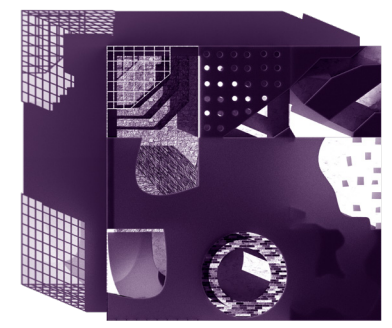
HABITAT  
*Net-Zero Urban  
High-Rise*



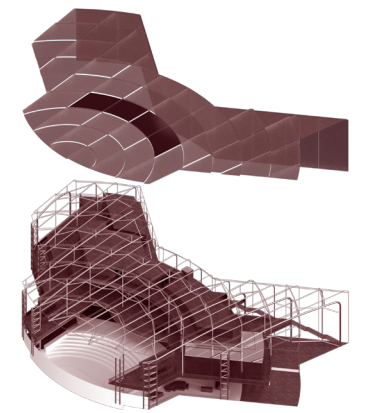
IRA D. PAYNE HALL  
*Adaptive Reuse &  
Expansion*



TRANQUIL TERRACE  
*Collective Housing &  
Community Design*



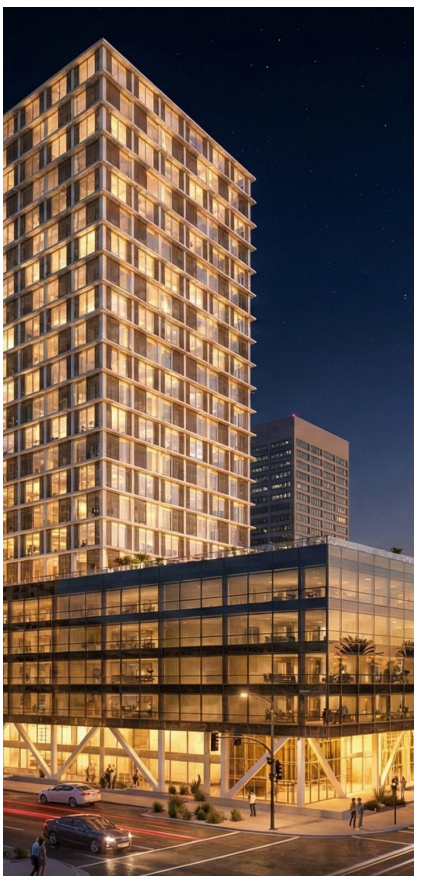
THE 9-SQUARE GRID  
*"Program" Based Design*



MONSOON PAVILION  
*Youth Centre Design*



Fall 2024



Spring 2024



Fall 2023



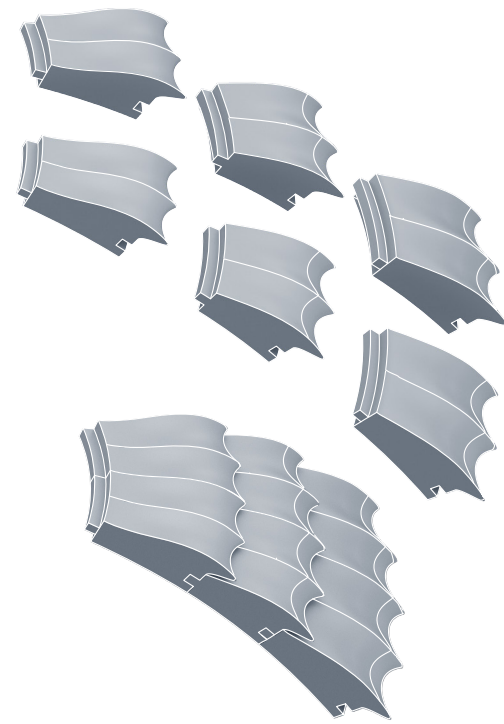
Spring 2023



Fall 2022

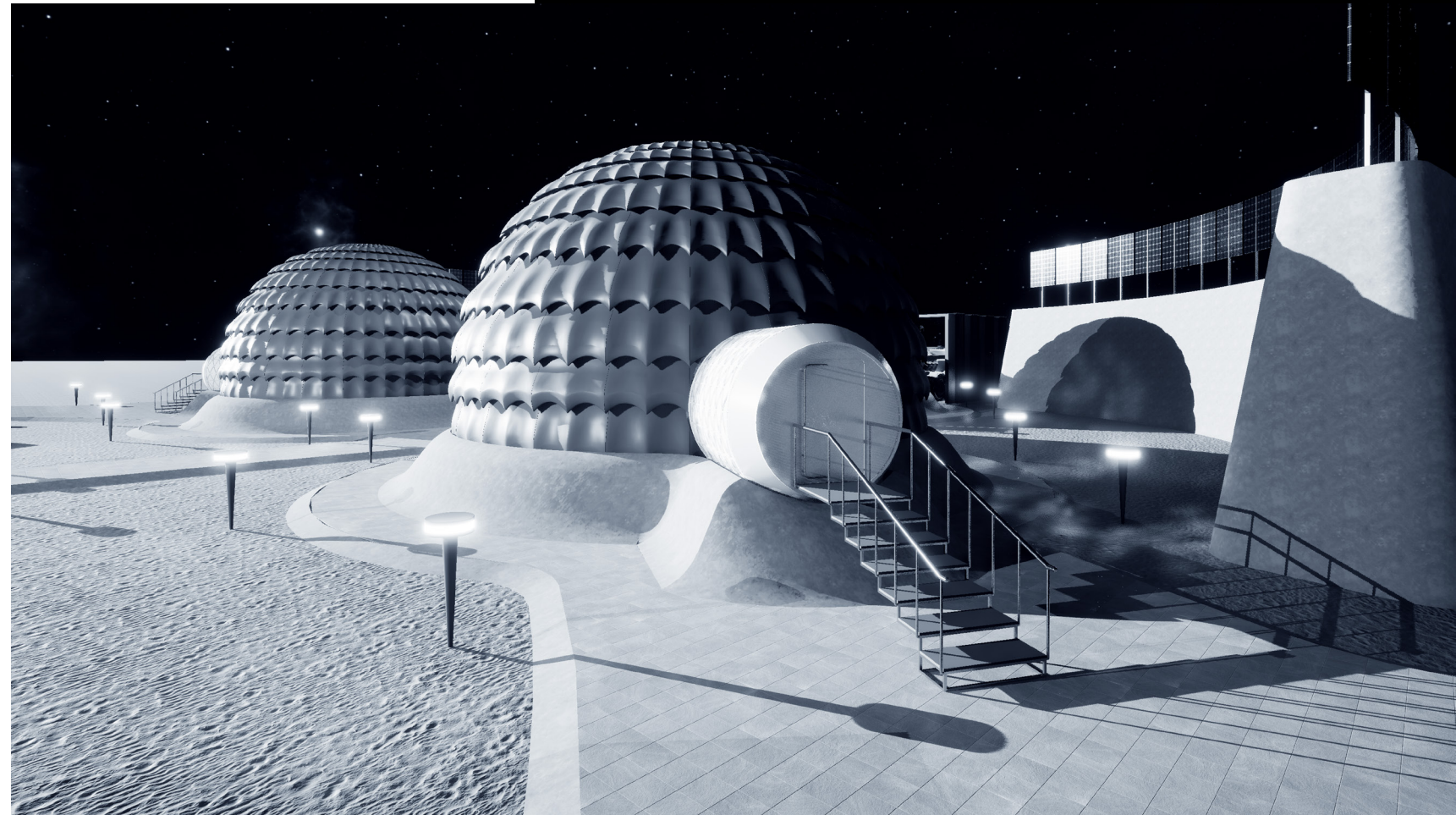


Spring 2023



# MYCELODOME

SPACE ARCHITECTURE | LUNAR HABITAT DESIGN



# MODULAR SCALES

HYBRID INFLATABLE DOME & MYCOLITH SHIELDING

Mycolith Biocomposites = Mycelium + Regolith Composite

Resilient & Easy Construction

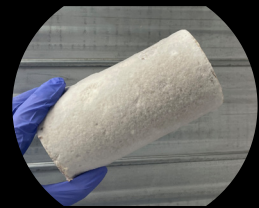
Radiation Shielding | Micro-Meteorite Protection | ISRU



LUNAR REGOLITH  
Abundant

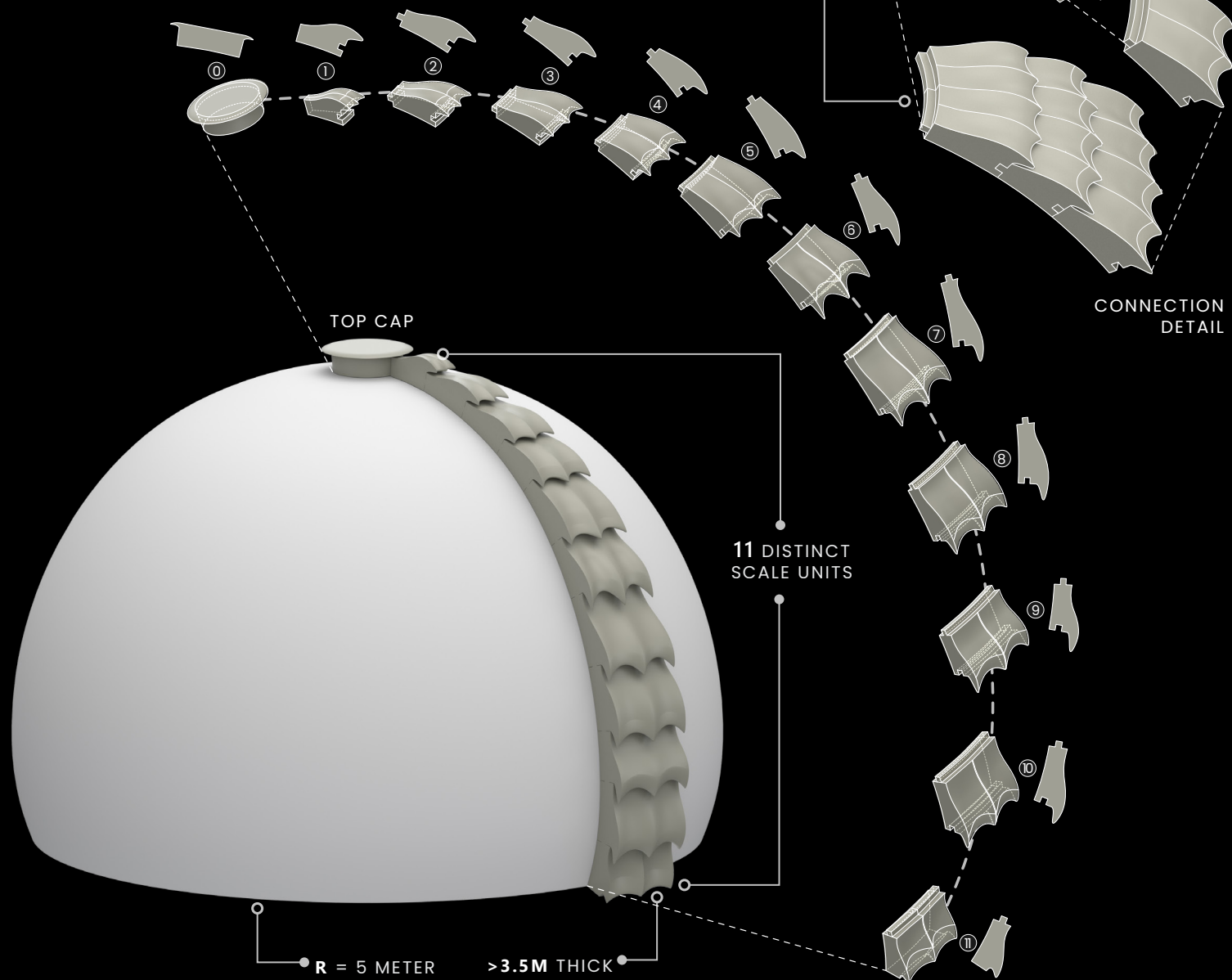


MYCELIUM  
Renewable



MYCOLITH  
Radiation Resistant  
Durable  
3D Printable

**PROOF OF CONCEPT:** In the event of an inflatable component failure, the scaled structure is engineered to maintain its integrity independently, effectively preventing collapse.



# MYCELODOME

HABITAT FOR FUTURE LUNAR COMMUNITIES | ASU, TEMPE, AZ

MILAN DESIGN WEEK 2025 EXHIBITION

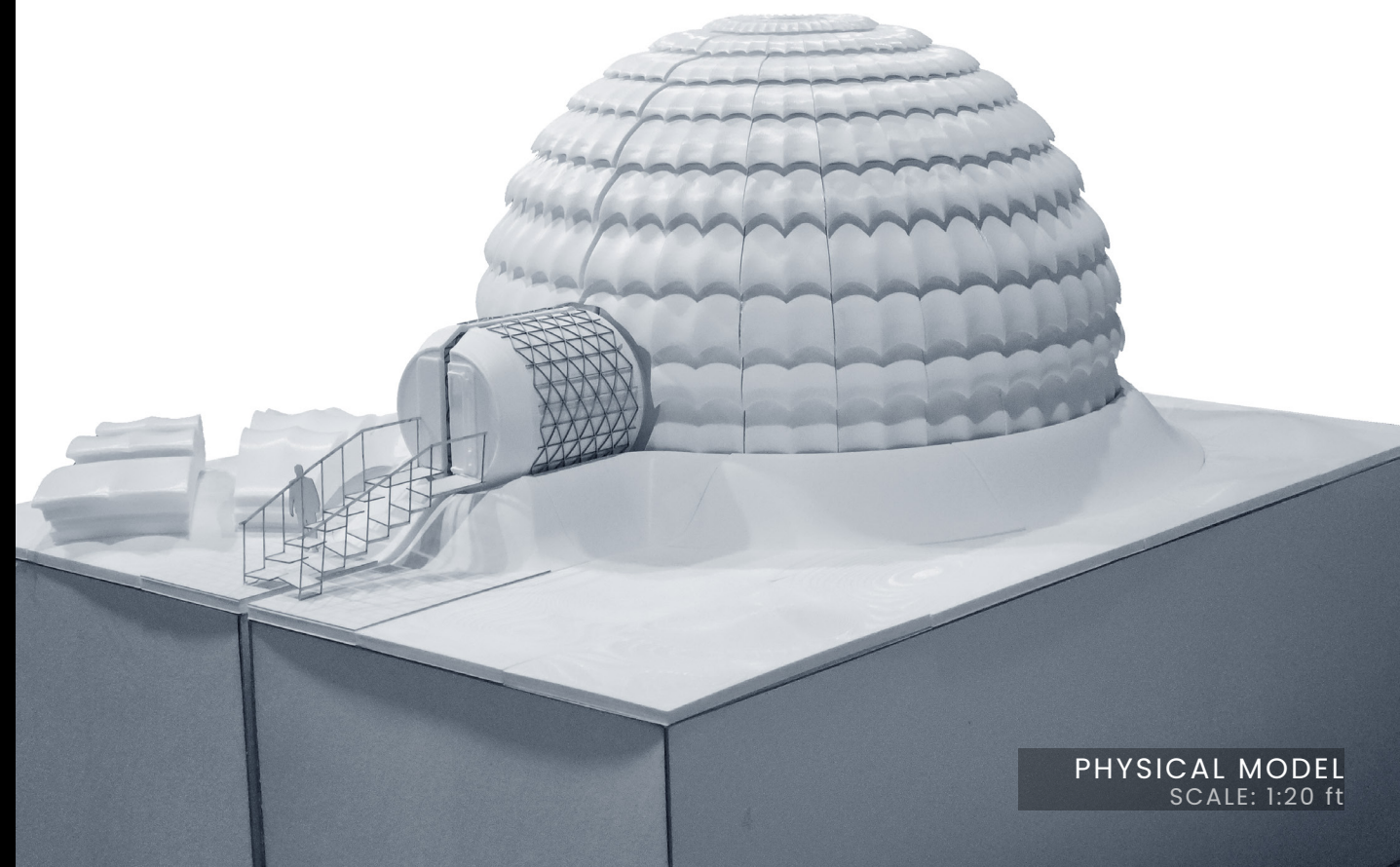
Project Type - Architecture Of Extreme Environments

6th Year Advanced Architecture Studio - III | Academic Group Project (2) | Fall 2024

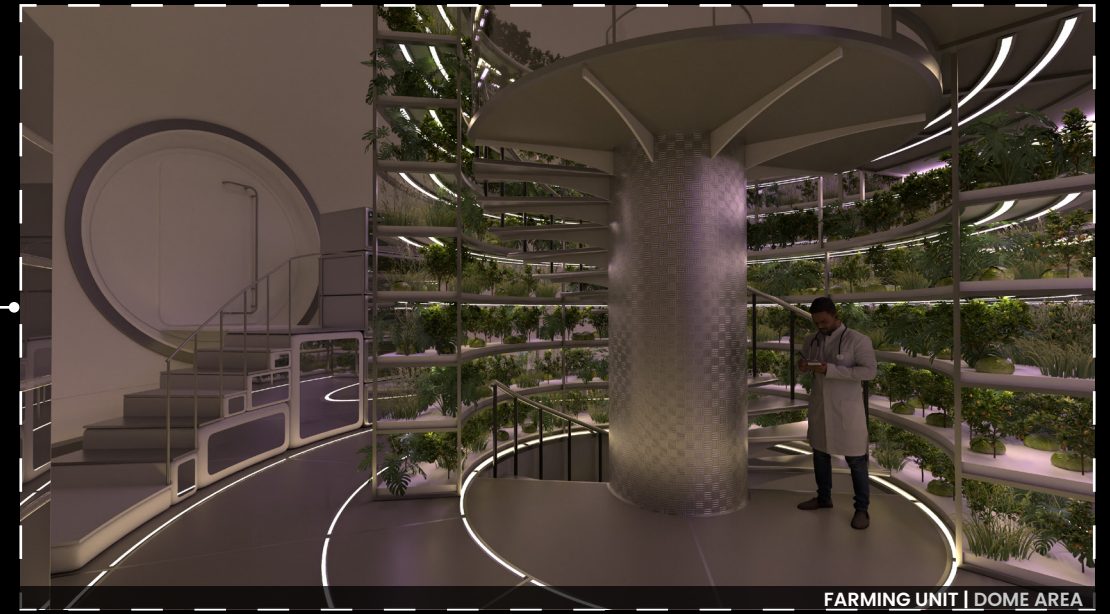
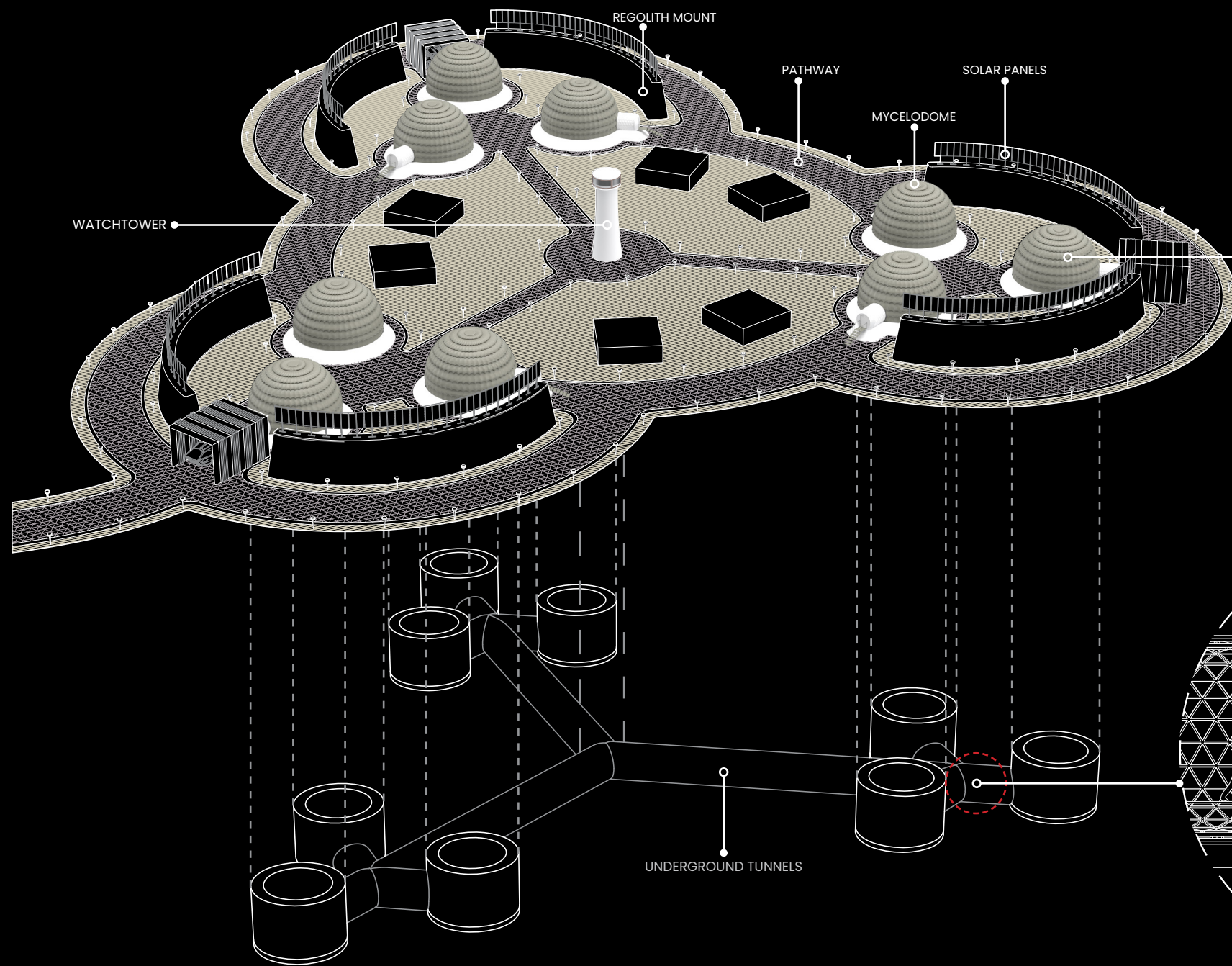
Studio Instructors - Dr. Elena Rocchi, Assoc. AIA, Guillermo Trotti, Trotti & Associates

## "A Cap That Supports Underground Dwelling"

Mycelodome is a visionary concept for a rapid-deployment lunar habitat that merges innovation, sustainability, and resilience. This dome-shaped structure utilizes Mycolith—a newly researched material combining the strength of regolith and the flexibility of mycelium, offering the benefits of both as a concrete-like solution. Modular scales crafted from Mycolith provide exceptional protection against radiation and micrometeorite impacts while addressing the challenges of the Moon's extreme environment.

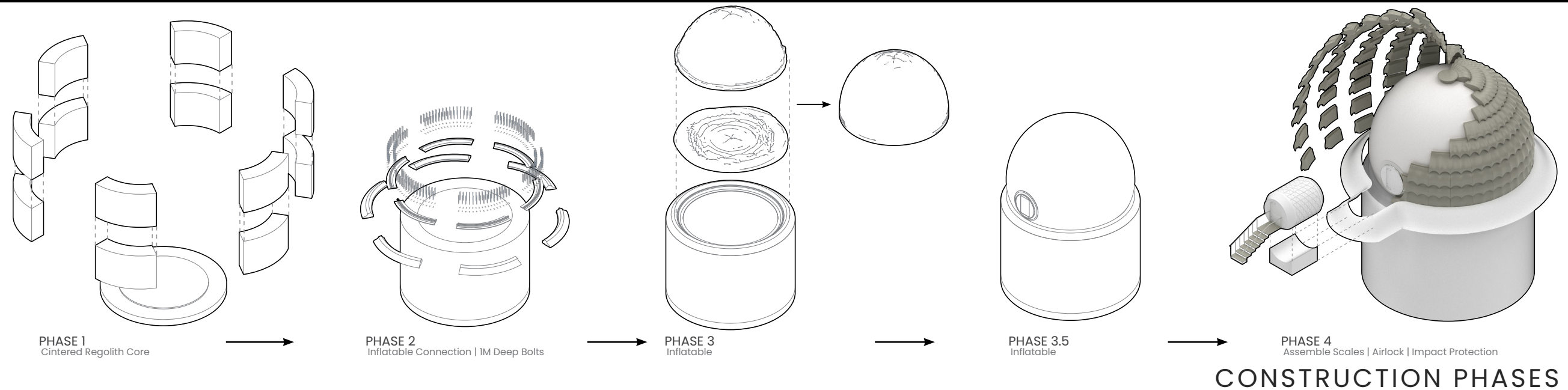
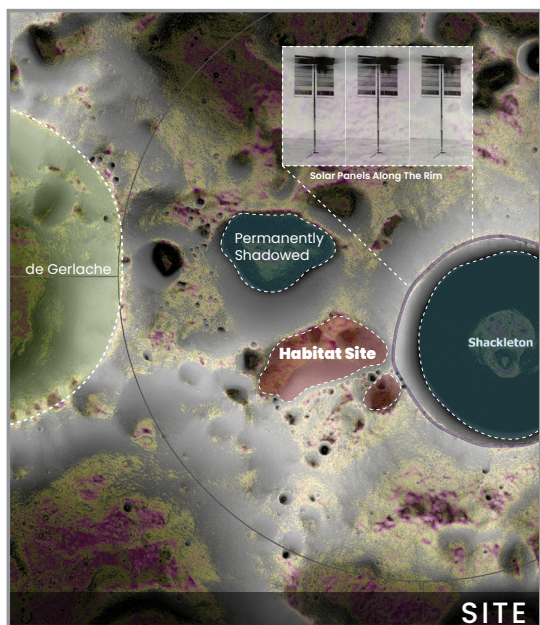


PHYSICAL MODEL  
SCALE: 1:20 ft



# MASTER PLAN

## BASE CONNECTIVITY



# DETAIL SECTION

SCALE | INFLATABLE | UNDERGROUND CONNECTION

INFLATABLE SHIELD  
MYCELIUM + REGOLITH  
COMPOSITE SCALES

## MEZZANINE LEVEL

Lounge Area -

## GROUND LEVEL

Airlock -  
Vertical Farming Unit -  
Storage Units -  
Vegetation Exp. Lab -

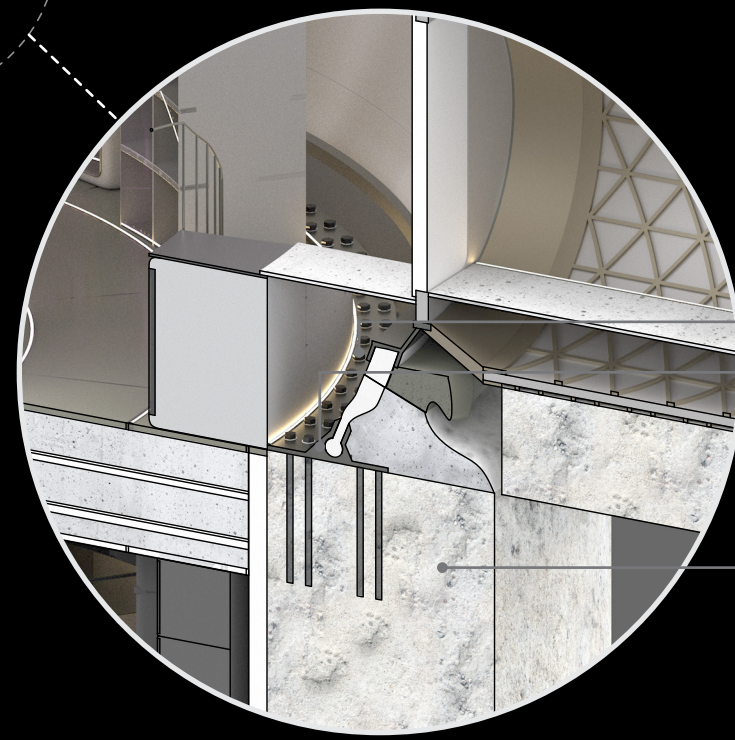
## LOWER LEVEL 1

Communications -  
Experimental Labs -  
Storage Units -  
Medical Bay -  
Work Cabin -  
Hygiene Room -

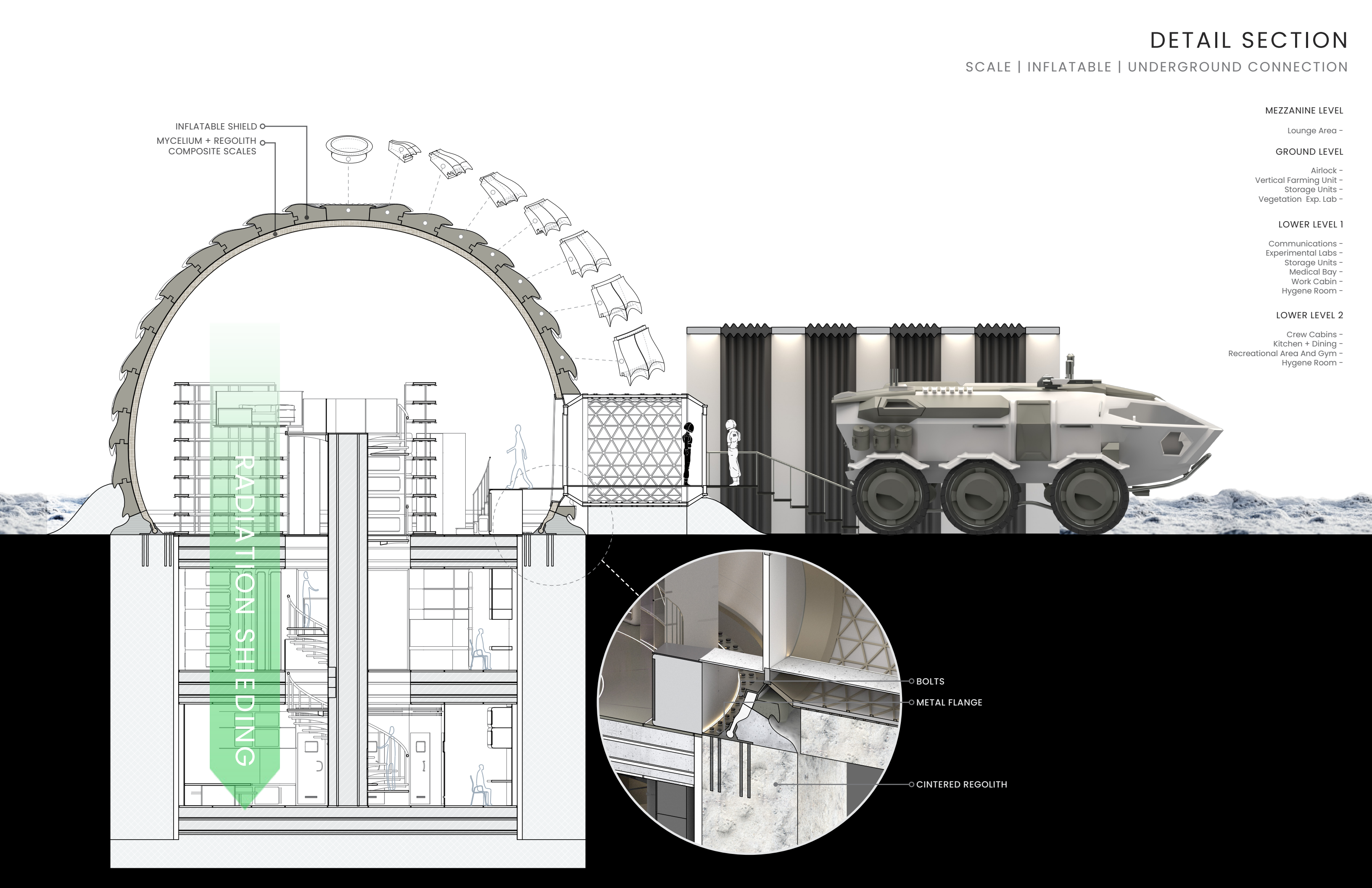
## LOWER LEVEL 2

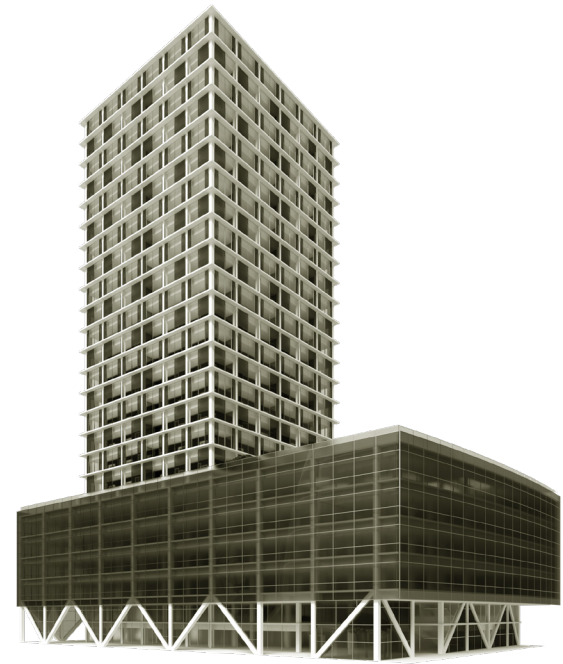
Crew Cabins -  
Kitchen + Dining -  
Recreational Area And Gym -  
Hygiene Room -

RADIATION SHIELDING



BOLTS  
METAL FLANGE  
COMPACTED REGOLITH





**HABITAT**  
NET-ZERO URBAN HIGH-RISE



# HABITAT

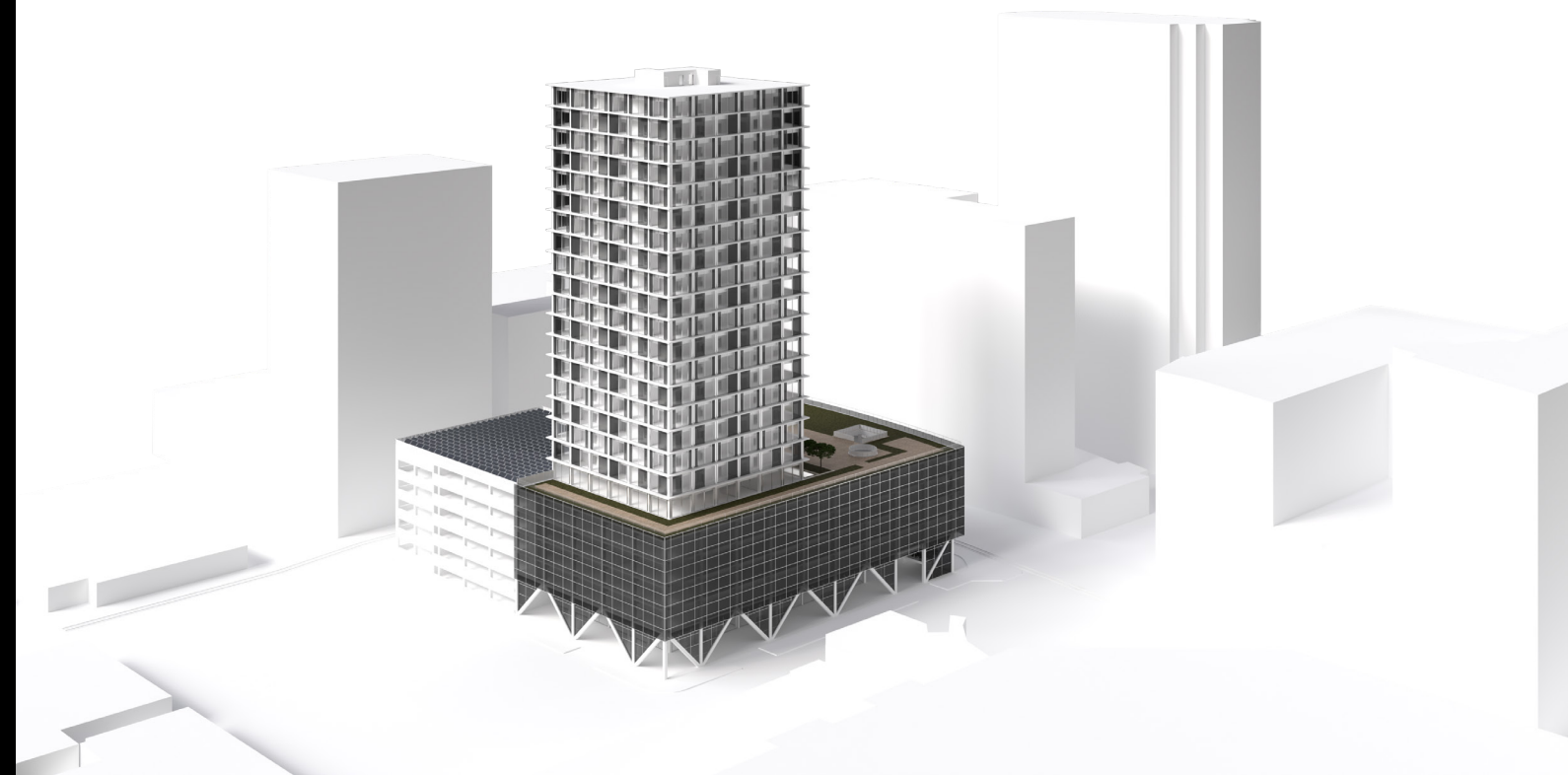
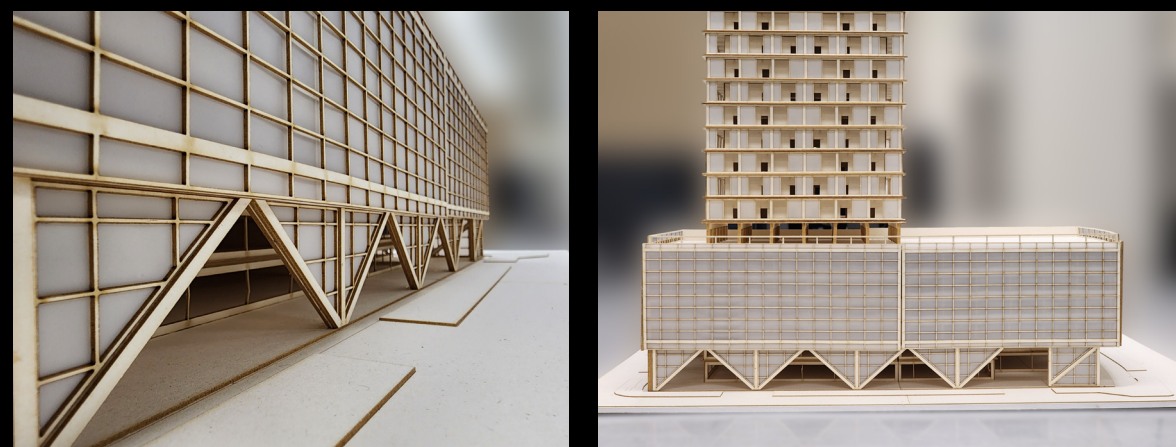
A SUSTAINABLE MASS TIMBER HIGH-RISE | PHOENIX, AZ

Project Type - Net-Zero Urban High-Rise | 26-Story  
5th Year Advanced Architecture Studio - II | Spring 2024  
Studio Instructor - Elizabeth McLean, AIA

## “A Structure Designed For The Well-Being Of People”

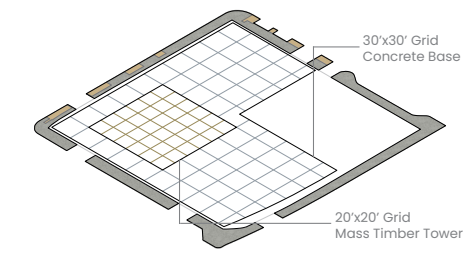
Situated at 101 S Central Avenue in Phoenix, HABITAT challenges the conventions of desert high-rise typology by prioritizing well-being and self-sufficiency. The project serves as a “vertical city,” transitioning logically from public engagement at the street level to private sanctuary in the sky. The concrete podium hosts a vibrant mix of public amenities, including a grocery store, entertainment venues, and a black-box theatre. Above, a 20x20 ft mass timber grid supports residential units, offering a warmer, lower-carbon alternative to traditional steel and concrete construction.

True to its net-zero ambition, HABITAT functions as a living organism. “Neurological” building automation manages daylighting and thermal comfort, while a double-skin facade and vacuum-flush systems minimize resource consumption. By combining high-density programming with aggressive sustainable strategies, HABITAT proposes a future where urban growth and environmental stewardship function in unison.

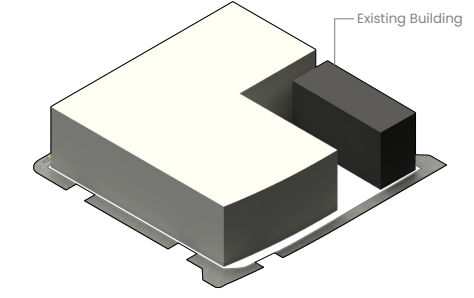


# FORM AND ENVELOPE

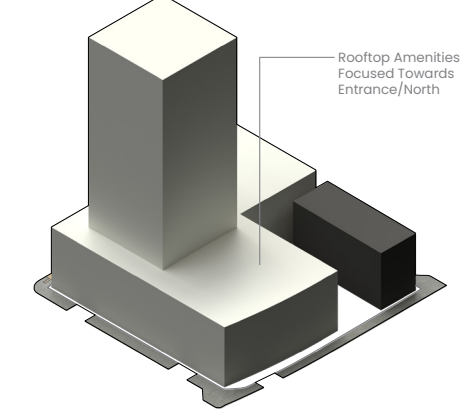
## MASSING | DOUBLE SKIN FACADE



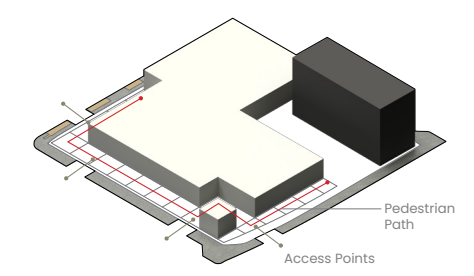
**Grid Placement**  
20'x20' Timber | 30'x30' Concrete



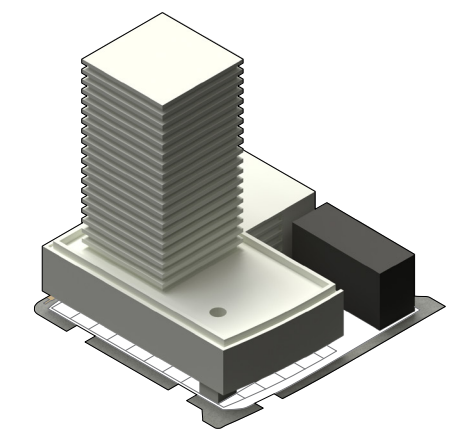
**Base Parallel To Streets**  
As Per Code DTC-BCORE



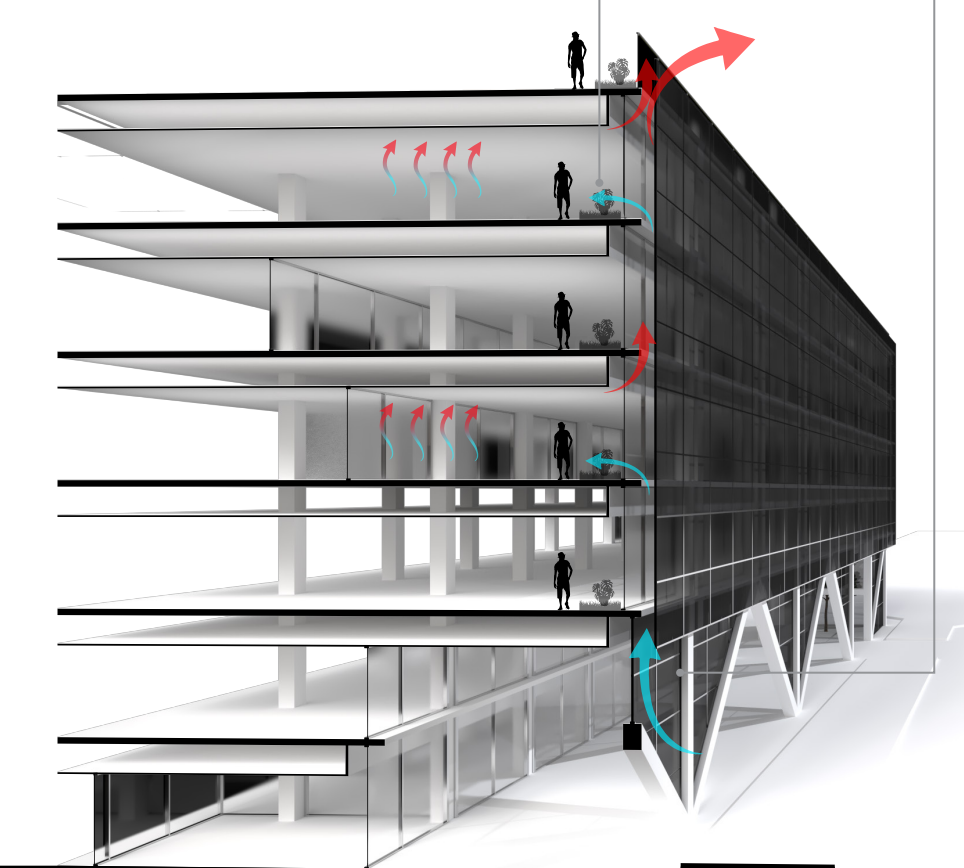
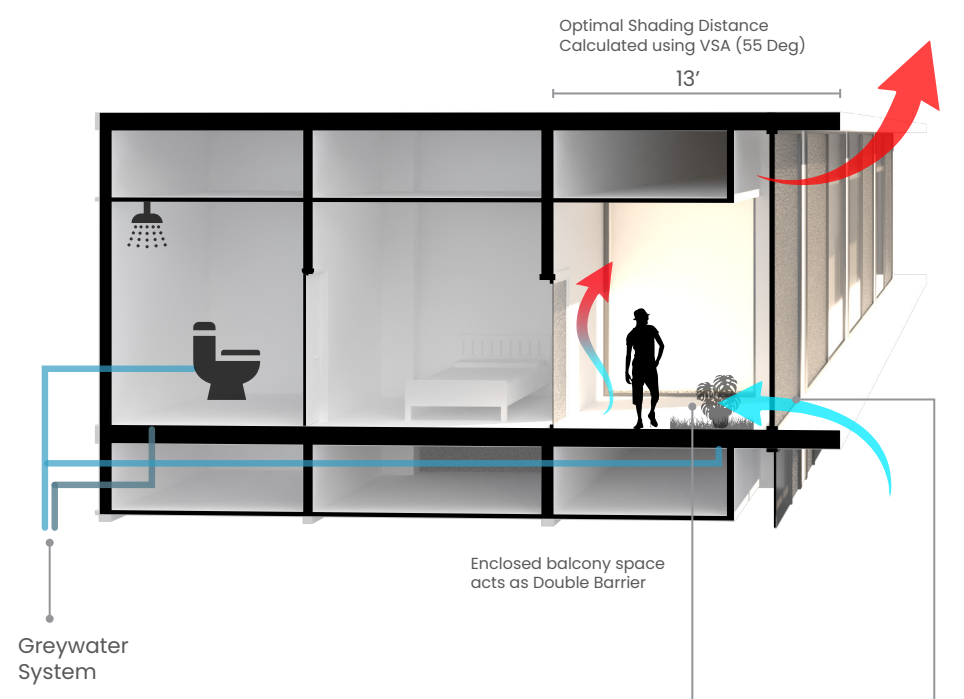
**Timbre Tower**  
Inviting Entrance



**Modifications**  
Pedestrian & Biking Access



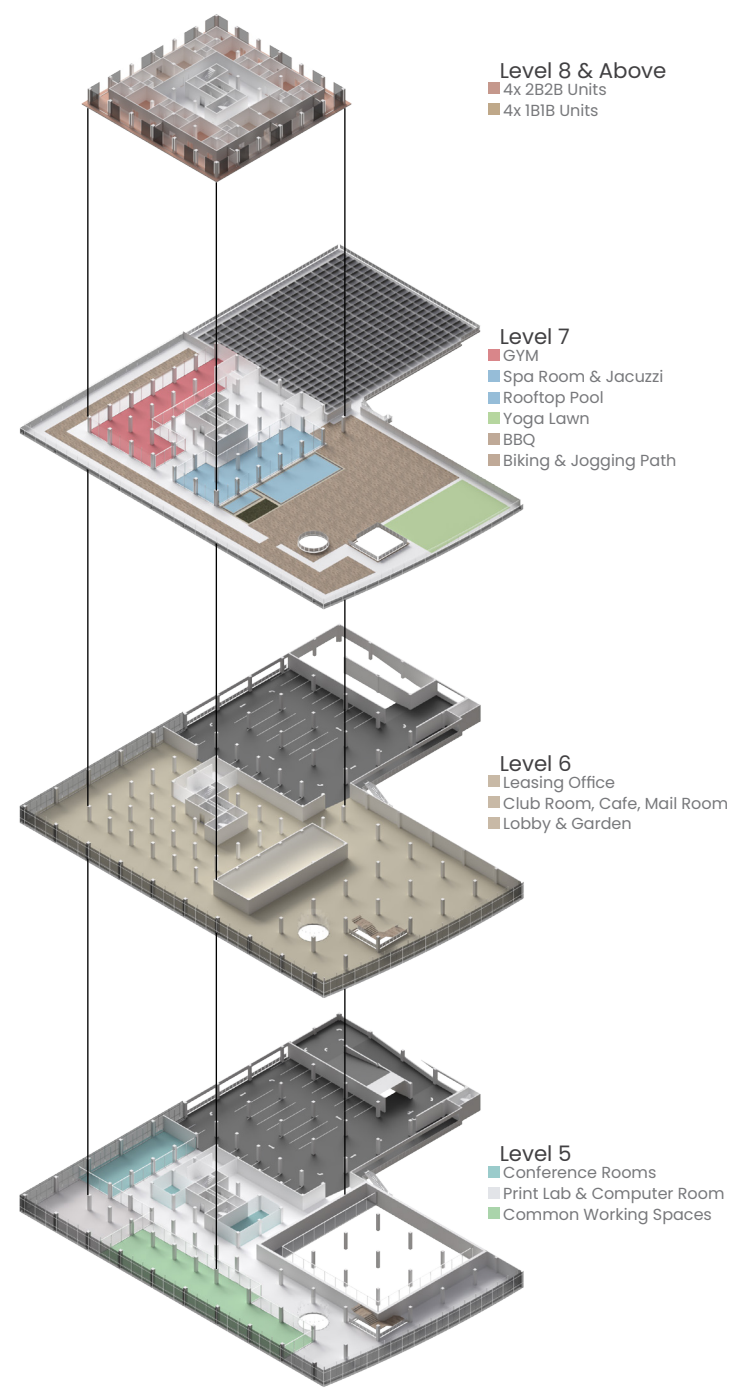
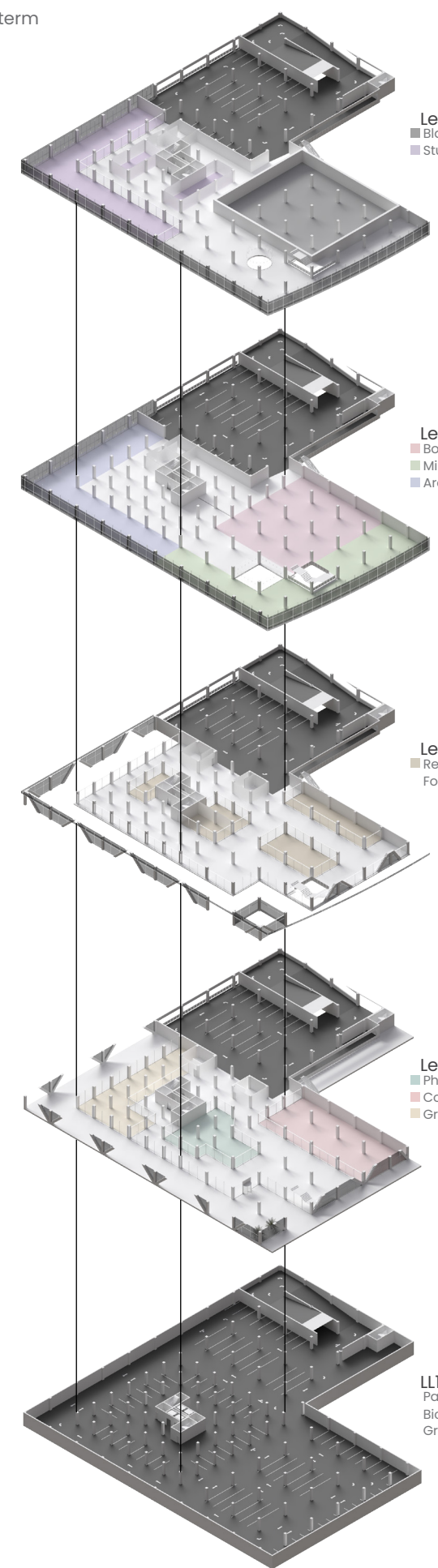
**Final Massing**  
With Facade & Horizontal Shading



Long-term

PROGRAM HIERARCHY BASED ON DURATION OF STAY

Short-term

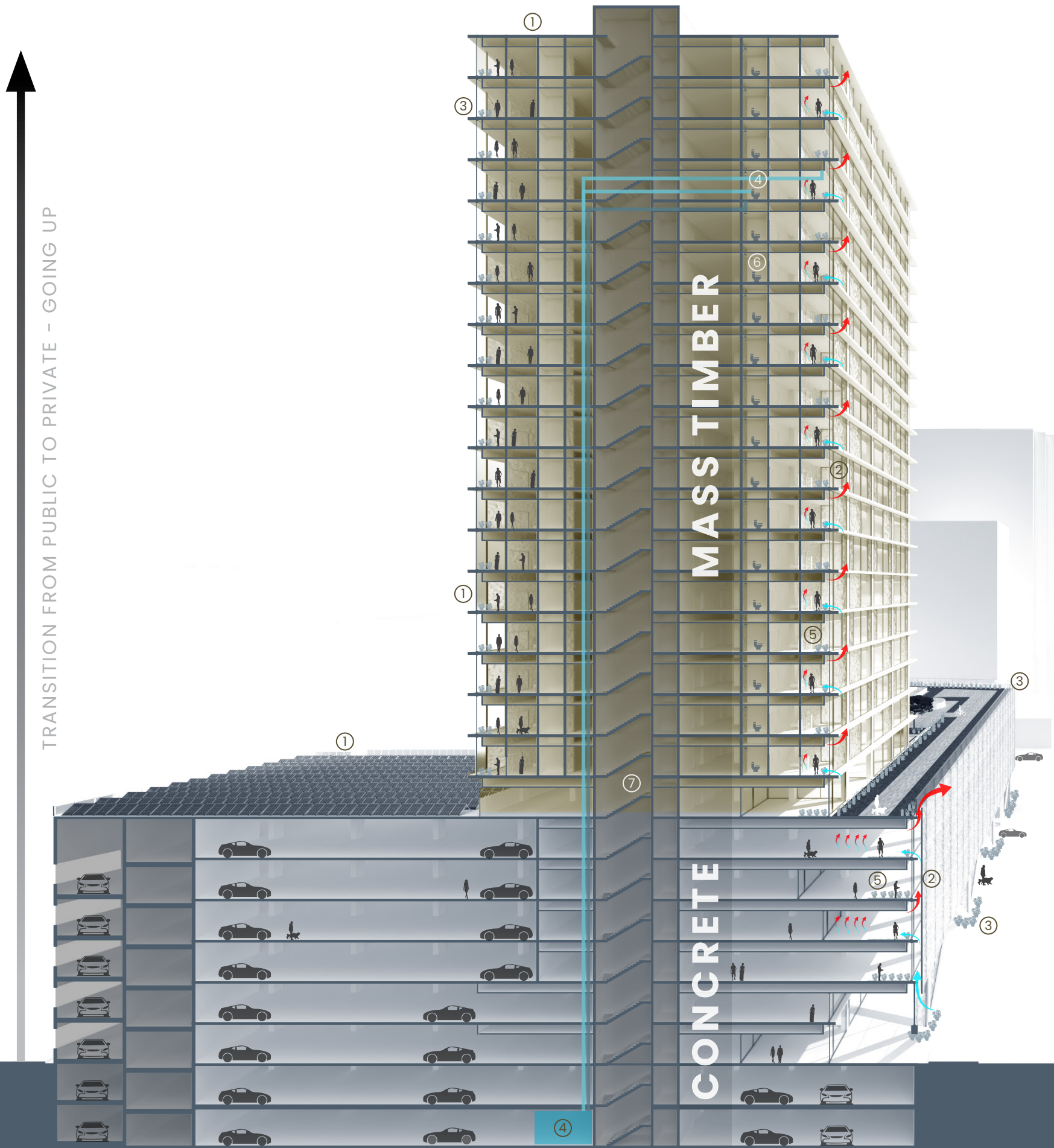


# EXPLODED AXONOMETRIC

## PROGRAMMING | STRUCTURE

# SECTION PERSPECTIVE

## NET-ZERO ENERGY & SUSTAINABILITY GOALS



**SOLAR POWER** 1.  
Solar Panels & Solar Windows

**DOUBLE SKIN FACADE** 2.  
Passive & Evaporative Cooling

**VEGETATION** 3.  
Evaporative Cooling | Connection To Nature

**GREY-WATER SYSTEM** 4.  
Treated Grey-Water Supplied Back To Vegetation & Toilets

**DAYLIGHTING** 5.  
Semi-Transparent Facade Allows Controlled Daylighting

**VACUUM FLUSH TOILETS** 6.  
Reduce Indoor Water Use | Uses Grey-Water

**REGENERATIVE ELEVATORS** 7.  
Potential Energy Harnessed For Electricity

**AUTOMATED SYSTEMS** 8.  
Daylighting | Heating & Cooling | Electrical Equipments & Lighting



**IRA D. PAYNE HALL**  
ADAPTIVE REUSE & EXPANSION



# IRA D. PAYNE HALL

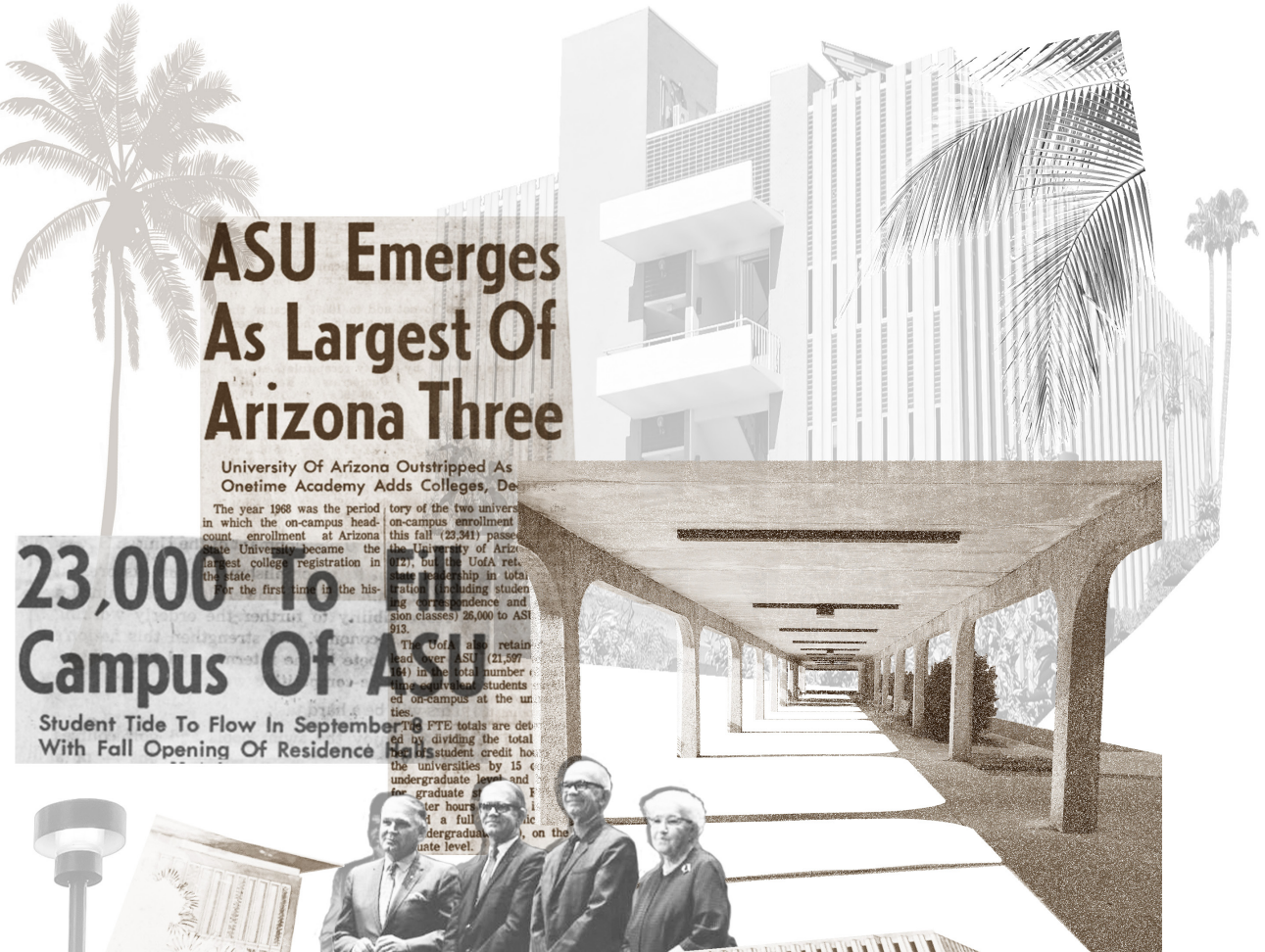
MARY LOU FULTON TEACHERS COLLEGE, ASU | TEMPE, AZ

Project Type - Adaptive Reuse & Expansion

Specific Typology - Architecture of Casting Aggregates

5th Year Advanced Architecture Studio - I | Group Project (3) | Fall 2023

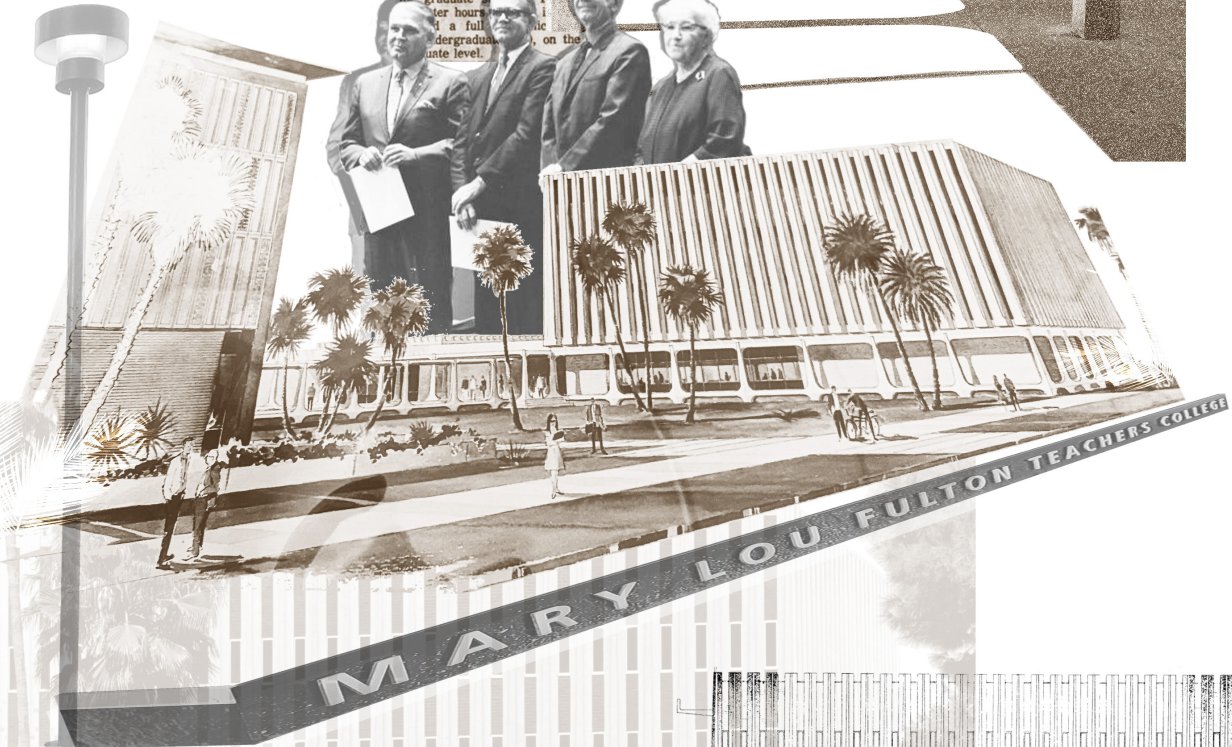
Studio Instructor - Philip Horton, Clinical Associate Professor of Architecture



**ASU Emerges As Largest Of Arizona Three**  
**23,000 To Campus Of A**  
 Student Tide To Flow In September With Fall Opening Of Residence

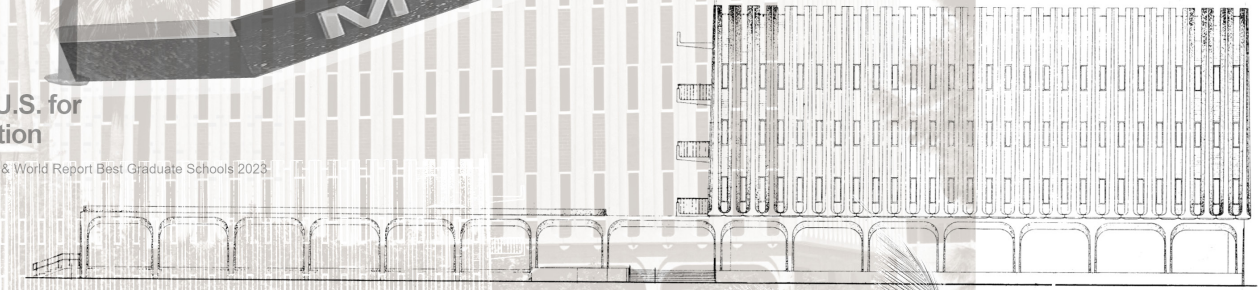
University Of Arizona Outstripped As One-time Academy Adds Colleges, De

The year 1968 was the period in which the on-campus headcount enrollment at Arizona State University became the largest college registration in the state. For the first time in the history of the two universities, on-campus enrollment at ASU (23,341) surpassed the University of Arizona (21,717), but the UofA retained leadership in total registration (including student and non-student classes) 26,000 to ASU's 21,313. The UofA also retained lead over ASU (21,597) in the total number of on-campus students enrolled on-campus at the universities. FTE totals are derived by dividing the total student credit hours by 15 for undergraduate level and for graduate level. For graduate level, a full-time student is defined as one who is enrolled in a full-time program on the graduate level.



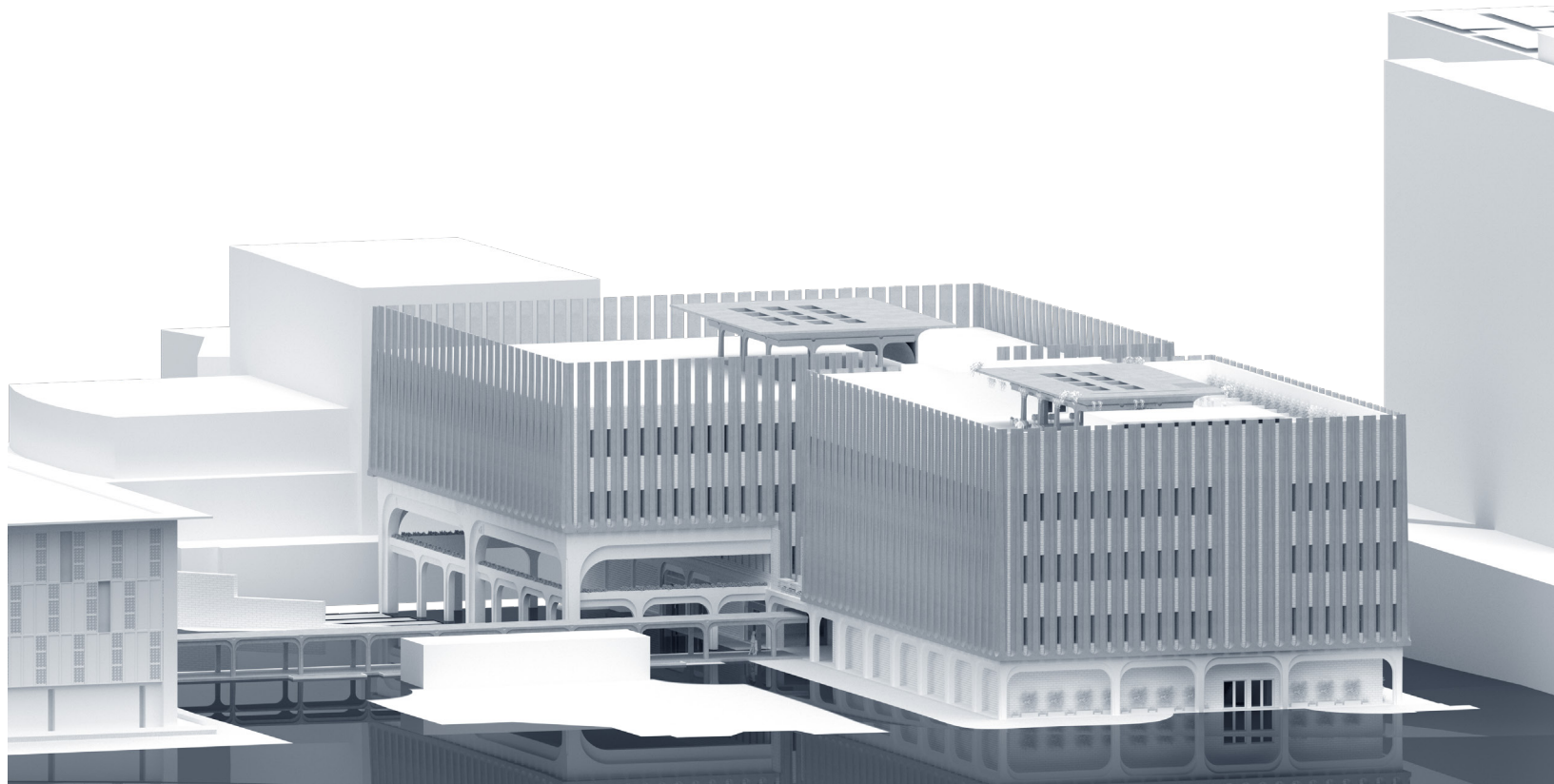
**#12**  
 In the U.S. for Education  
 —U.S. News & World Report Best Graduate Schools 2023

**#8**  
 Online Master's in Education  
 —U.S. News & World Report Best Graduate Schools 2022

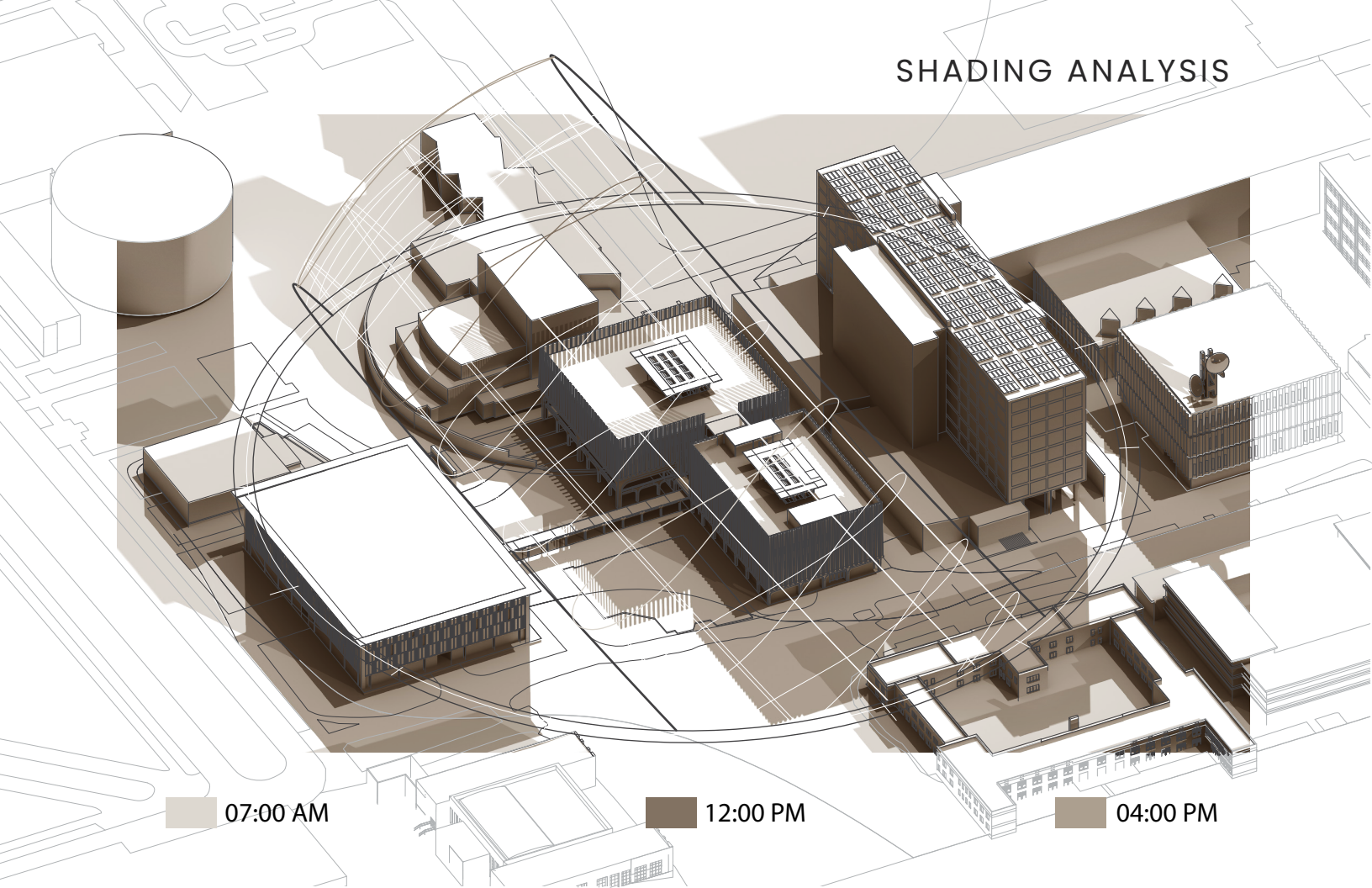


The goal of this project is to learn from previous constructions (avoiding tabula rasa) through new adaptations and expansions, giving them a second life with a current, sustainable, and bioclimatic approach. Specifically, the building in question was built in 1969. Nowadays, the majority of courses offered within this building are conducted online, attracting students globally who aspire to pursue careers in education.

The ultimate result of this project was the development of a design proposal aimed at addressing various issues within the building, effectively revitalizing it and granting it a renewed purpose.

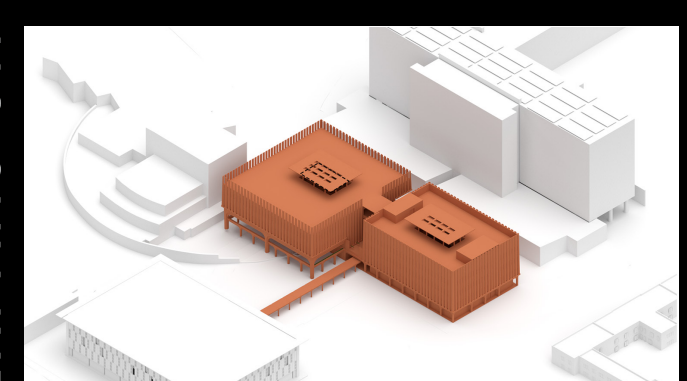
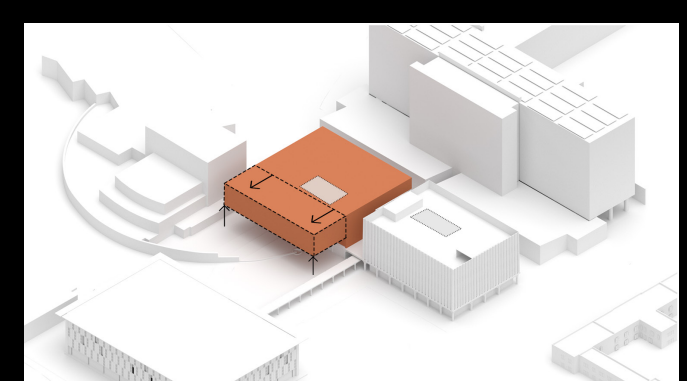
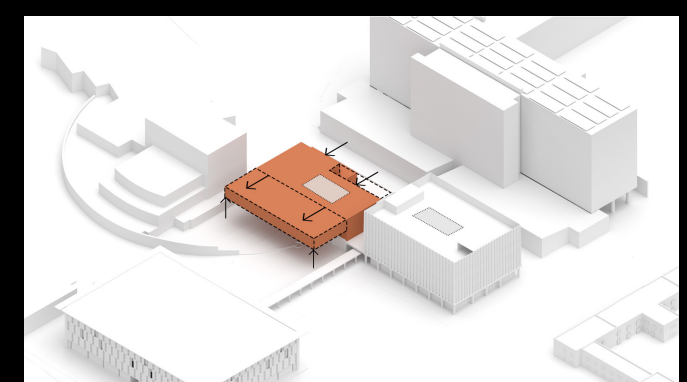
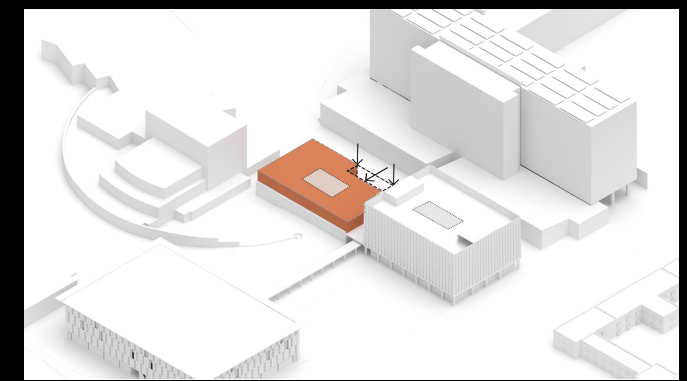
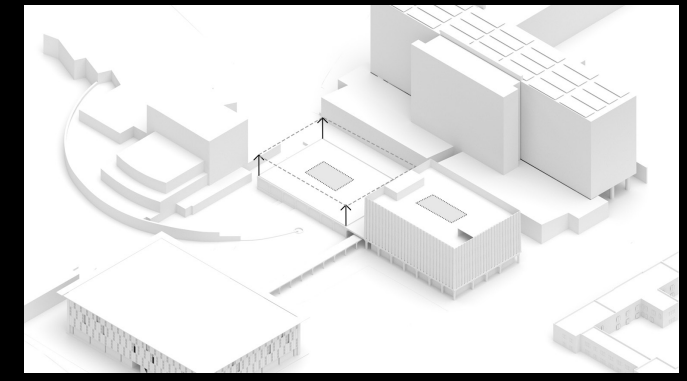
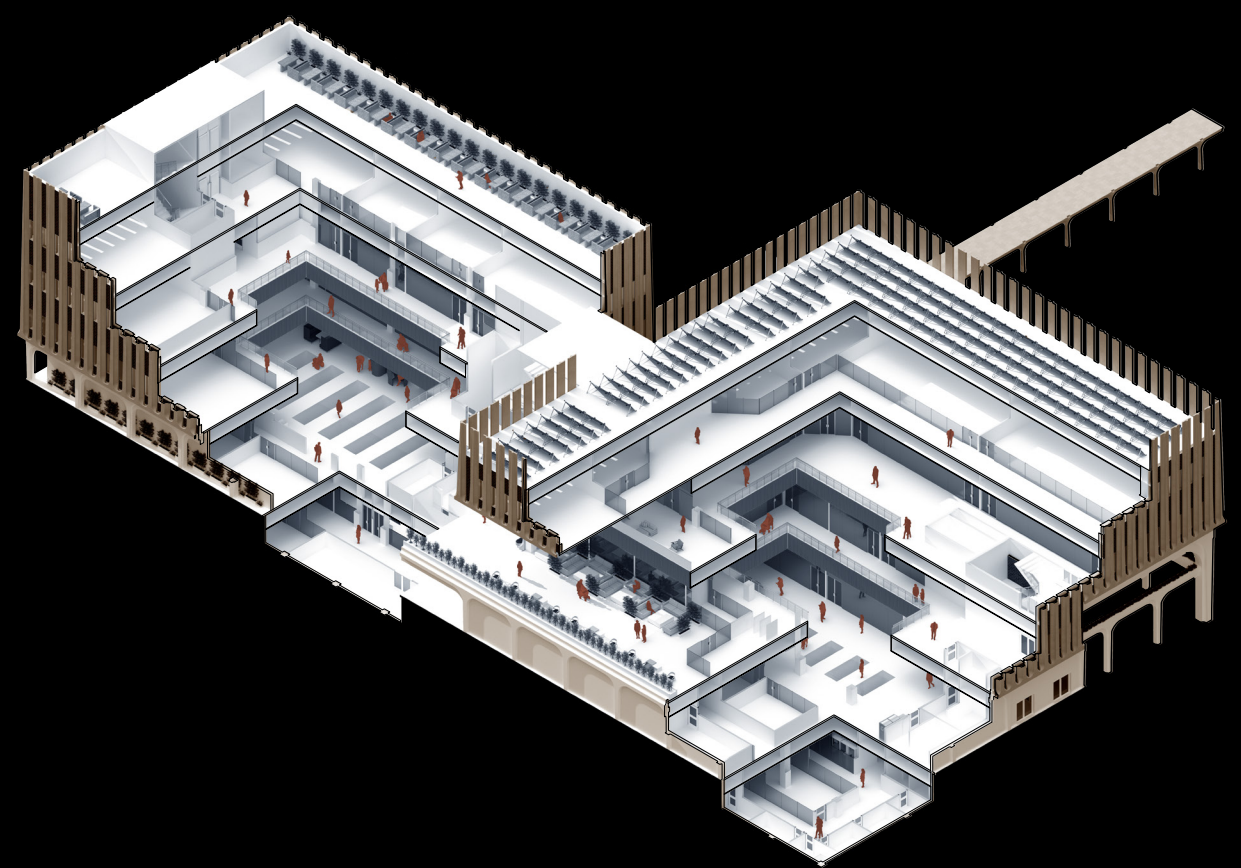


# SHADING ANALYSIS

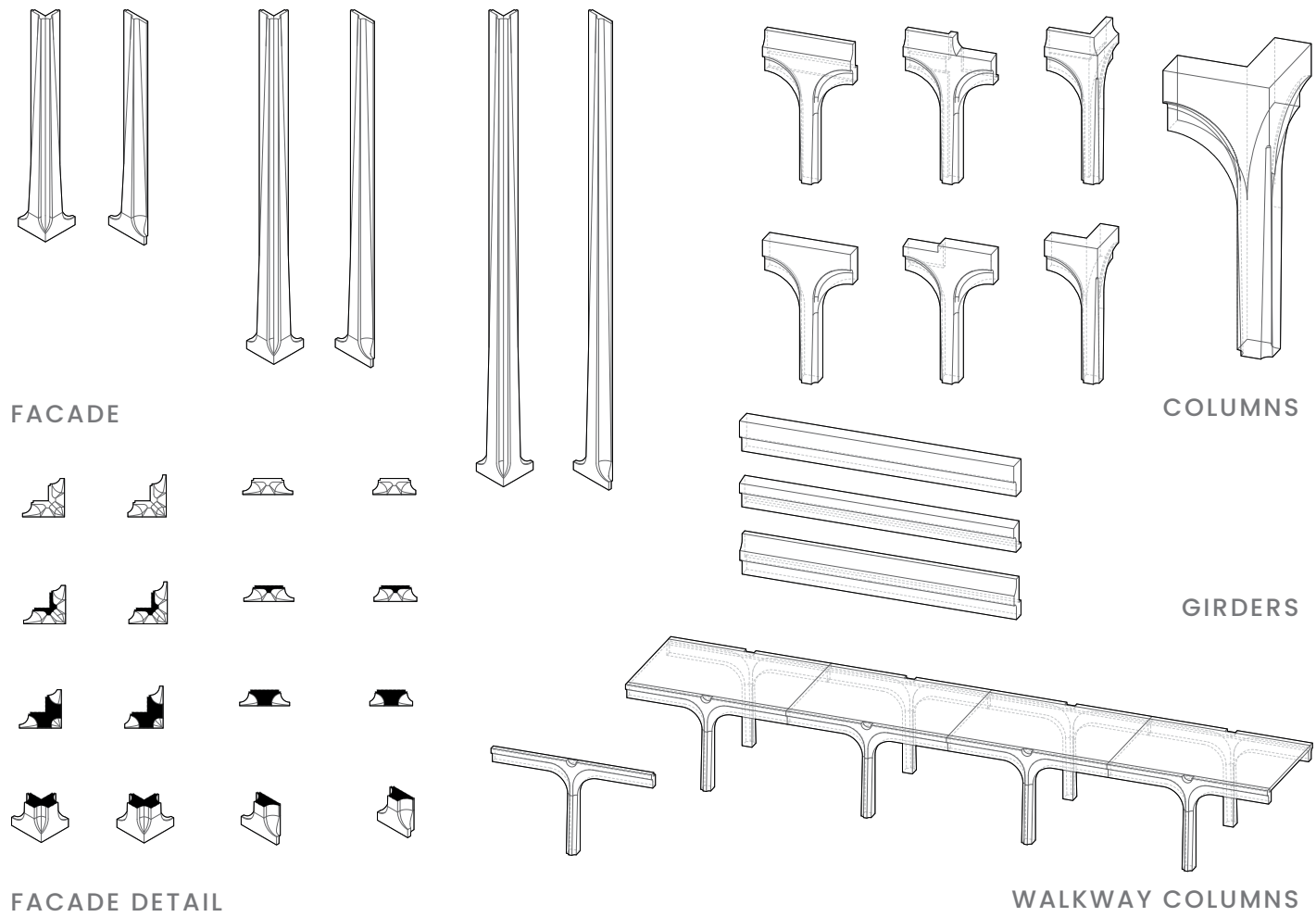


The Building Expansion primarily involved the addition of a new tower adjacent to the original structure and extending the expansion southward. Atriums were added to both towers, effectively addressing most of the building's issues, including circulation, ventilation, and cooling.

# SECTIONED AXONOMETRIC

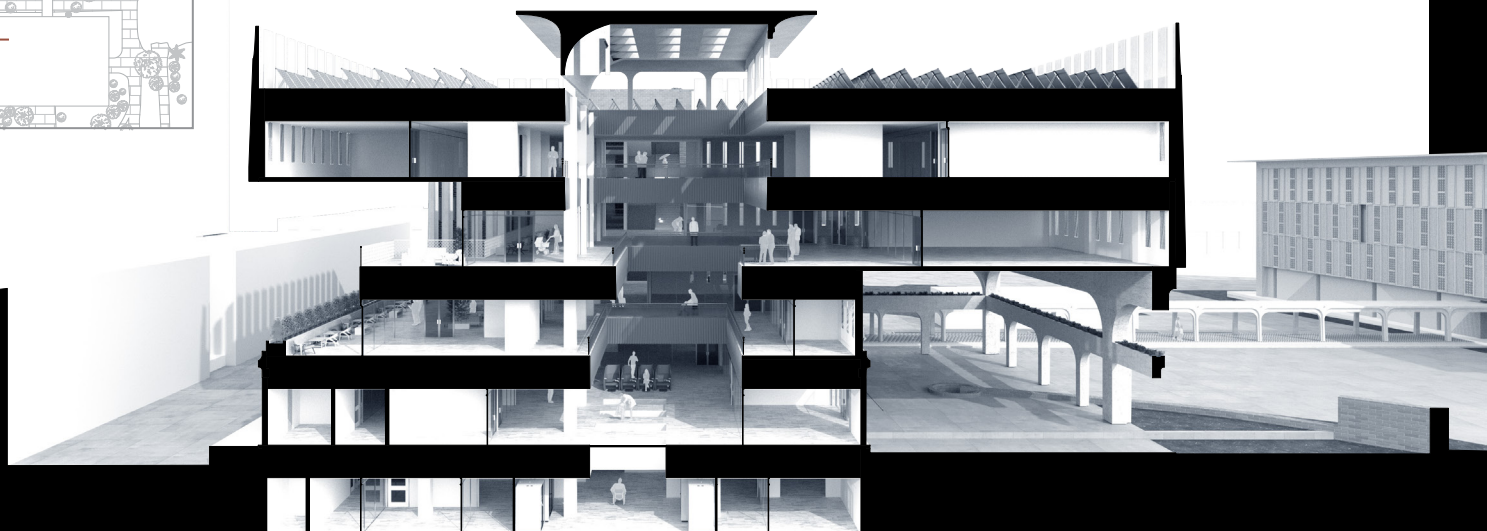
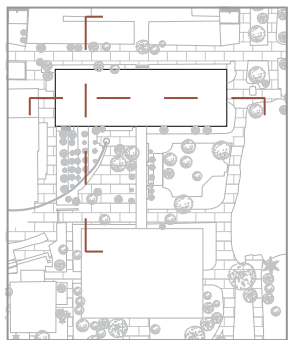


EXPANSION



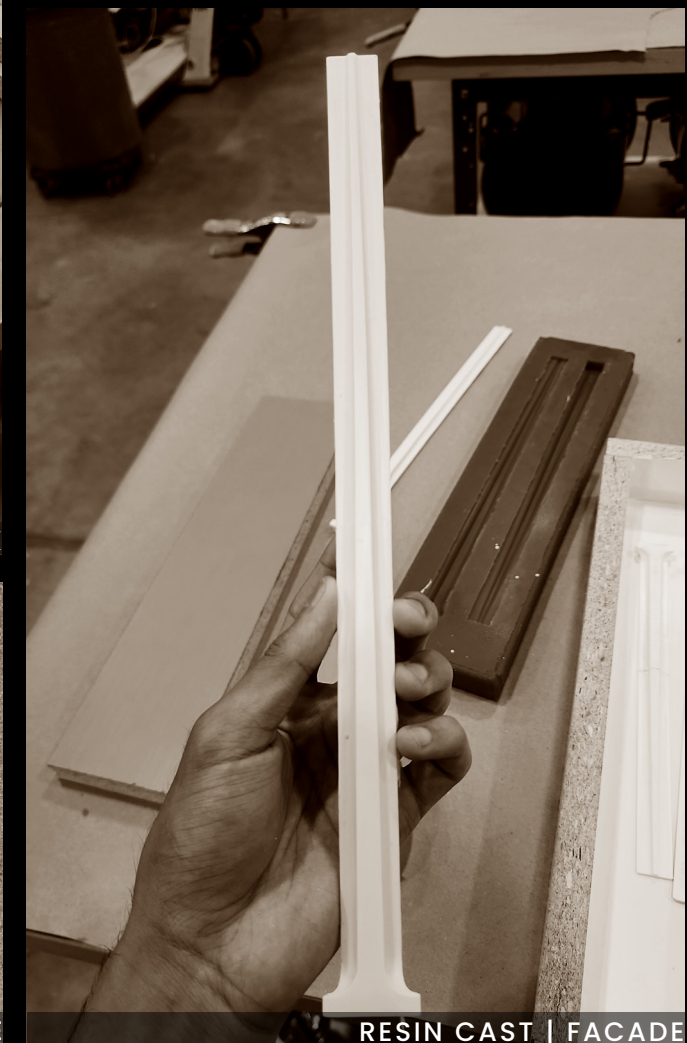
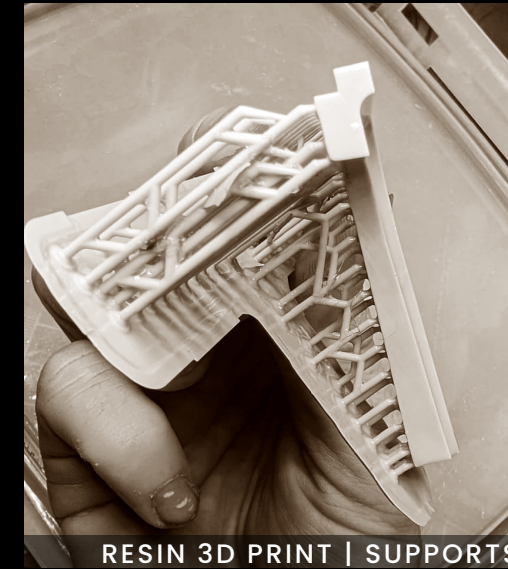
# CONCRETE CAST PIECE STUDY

RE-MODELING & RE-DESIGNING | FOR EXPANSION



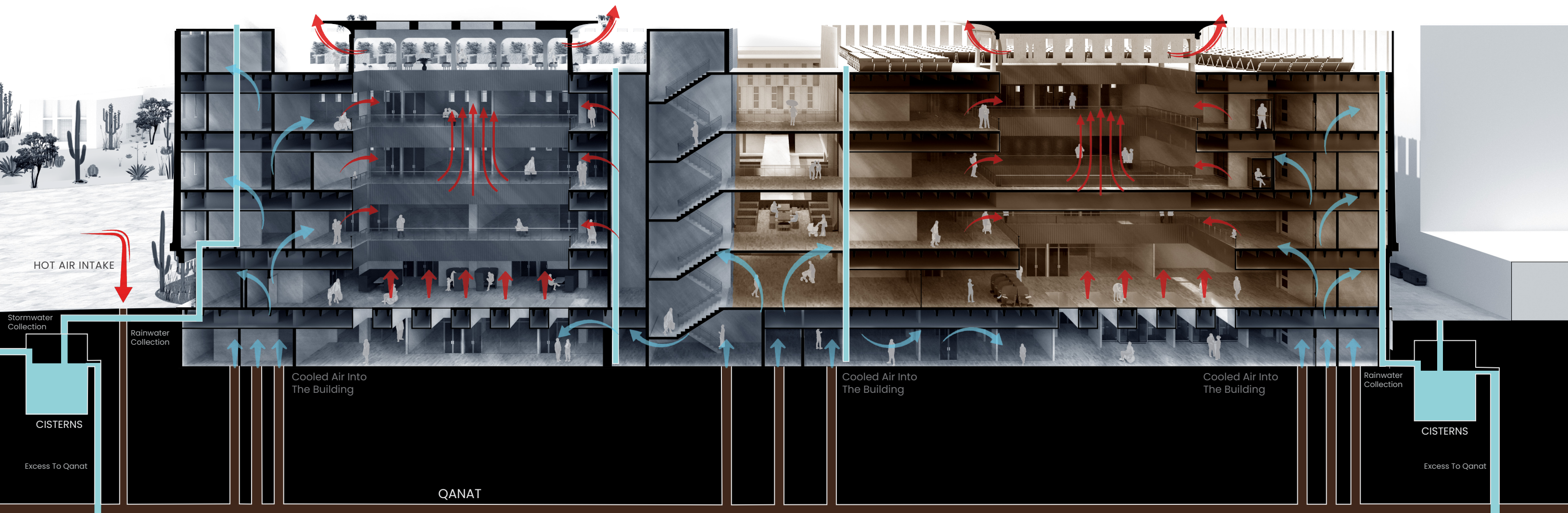
# 3D PRINTING & RESIN CASTING

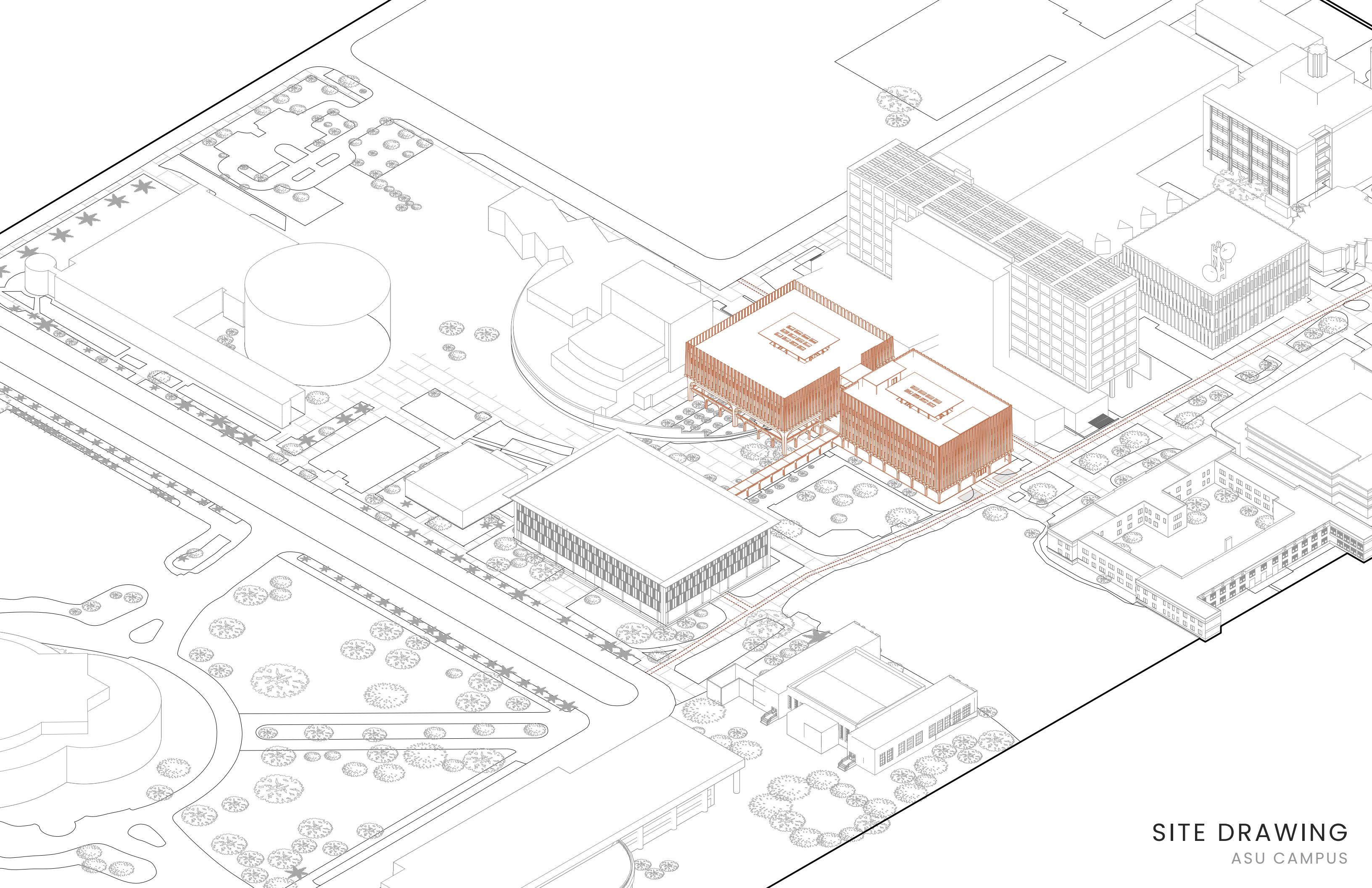
A STUDY OF CONCRETE CASTING PROCESS



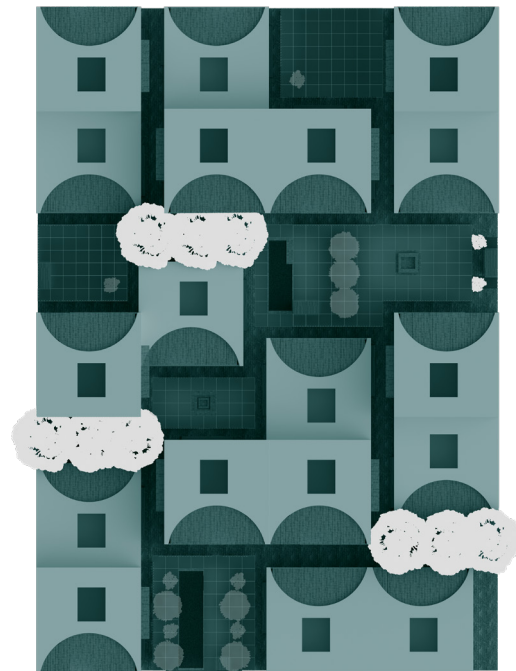
# DETAIL SECTION PERSPECTIVE

PASSIVE COOLING SYSTEMS (QANAT)  
RAINWATER HARVESTING | GRAYWATER & STORMWATER CONSERVATION





**SITE DRAWING**  
ASU CAMPUS



# TRANQUIL TERRACE

HIVE - A MAT BUILDING TOPOLOGY



# TRANQUIL TERRACE

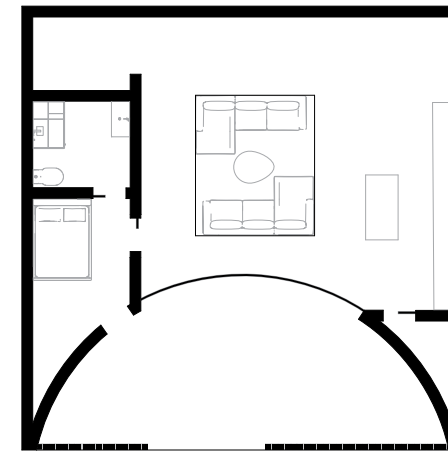
A MAT BUILDING TYPOLOGY | ASU, TEMPE, AZ

Project Program - HIVE | Community Living Space

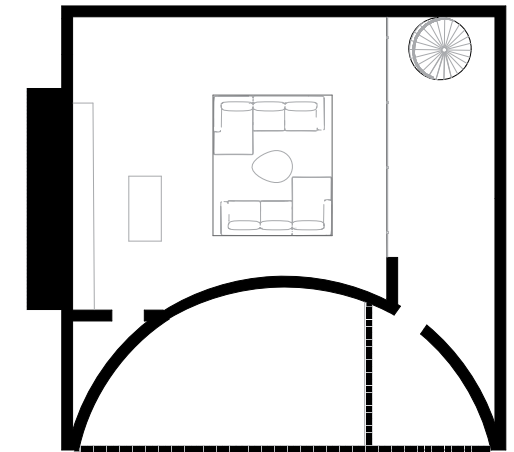
4th Year Architecture Studio - II | Academic Group Project (2) | Spring 2023

Studio Instructor - Nicholas Shekerjian

The Project takes its inspiration from the collective activity and structure of a bee hive. It involves the design of a community planned with reference to the "mat building" typology, "a large-scale, high-density structure organized on the basis of an accurately modulated grid"



SINGLE STOREY PLAN



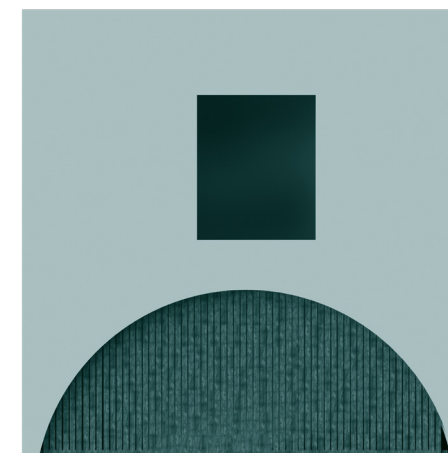
2 STOREY PLAN



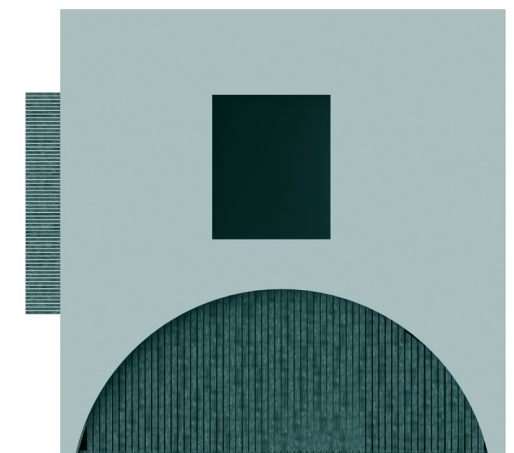
SINGLE STOREY RENDERED PLAN



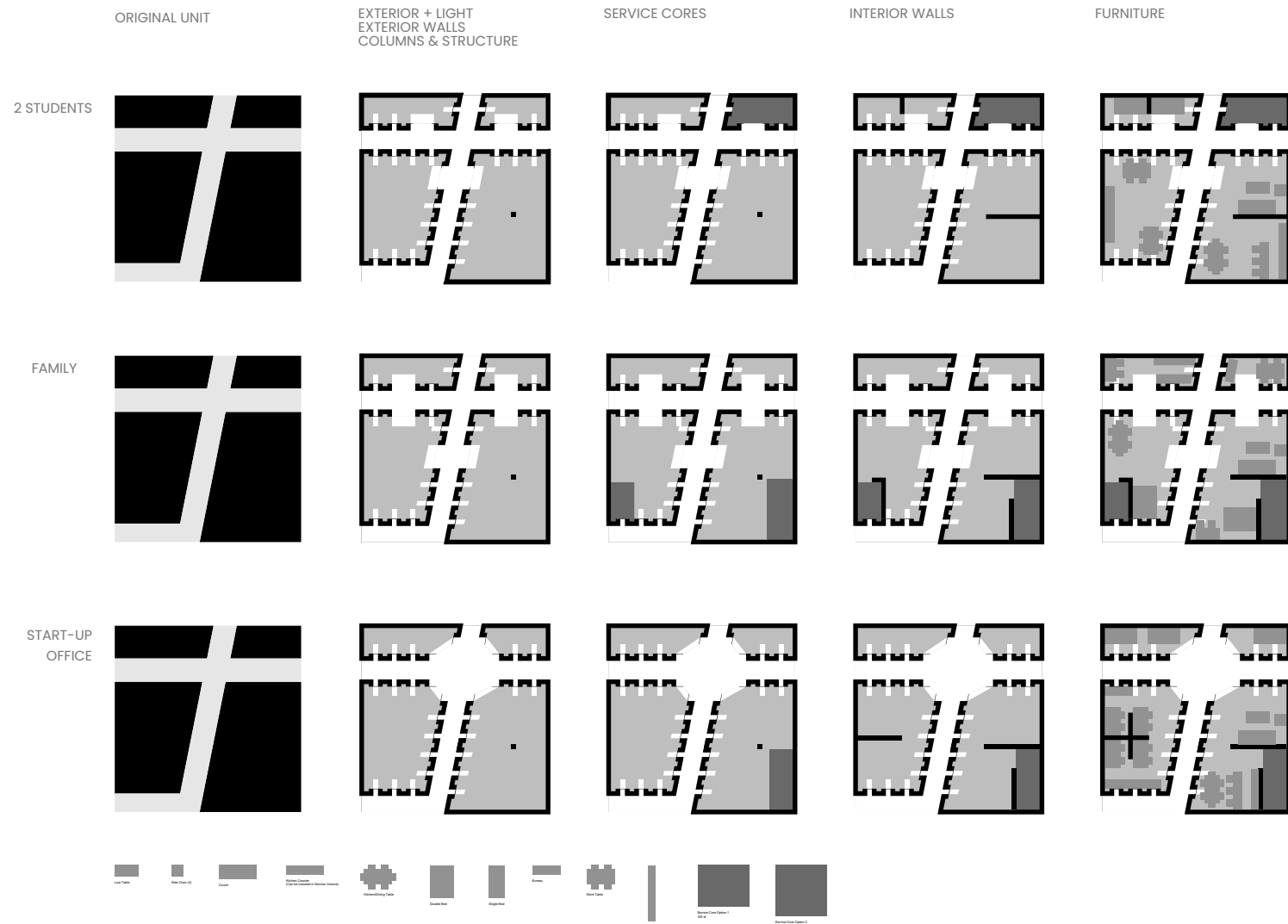
2 STOREY RENDERED PLAN



SINGLE STOREY ROOF



2 STOREY ROOF

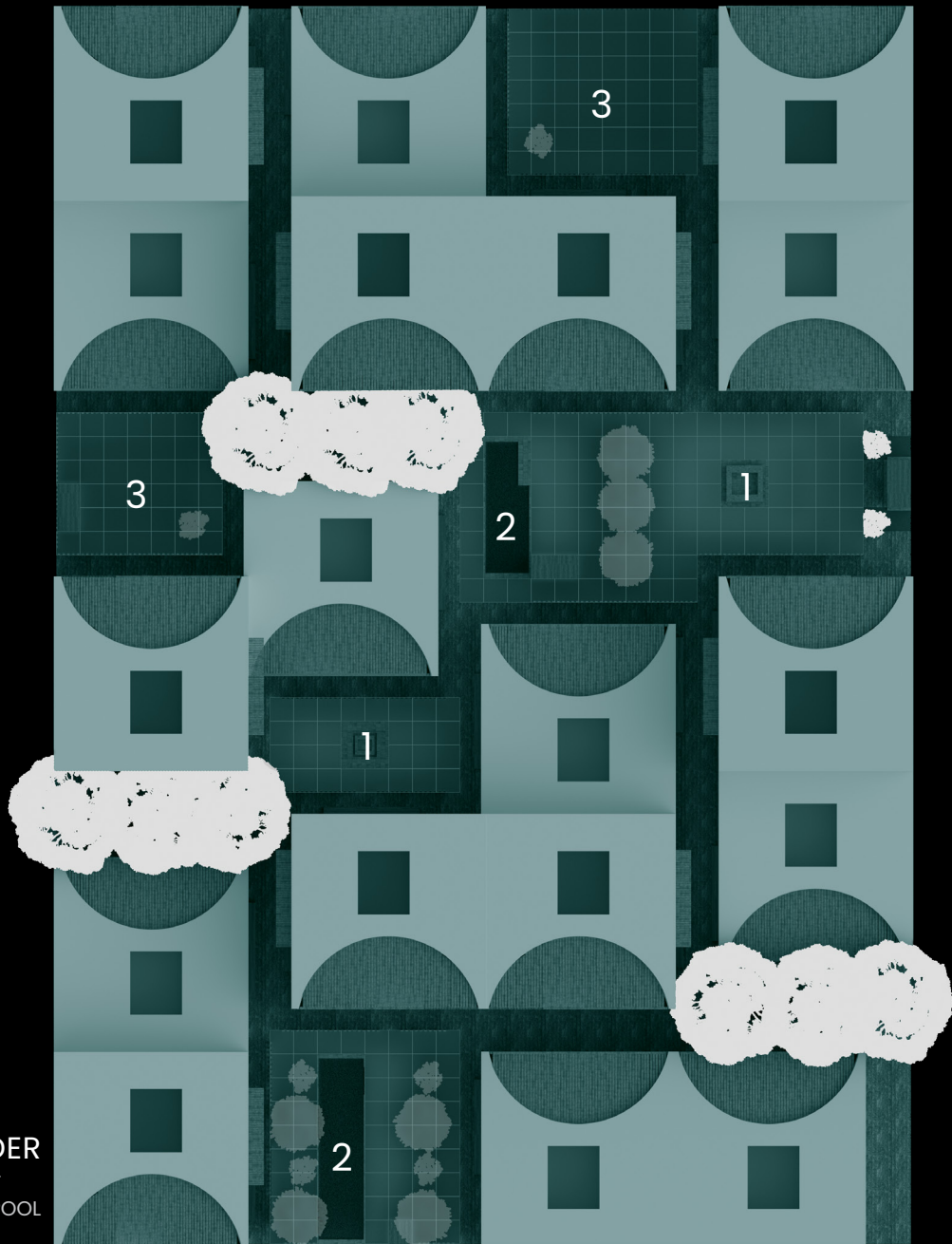


INITIAL UNIT DESIGN

CHOSEN FINAL UNIT | FOR MAT DESIGN

The Young Professional's apartment is a modern living space designed to cater to the needs of young professionals. The apartment features two different styles of living spaces, a two-story mezzanine apartment for a home-working professional and a one-story apartment for a young professional that does not work from home.

Tranquil Terrace offers inviting indoor and outdoor living spaces, ideal for relaxation and socializing. The community center is well-connected and provides a peaceful getaway for young professionals seeking to unwind. Amenities such as spas, green gyms, yoga pads, meditation rooms, and large gathering fireplaces are all designed to help users decompress and rejuvenate.



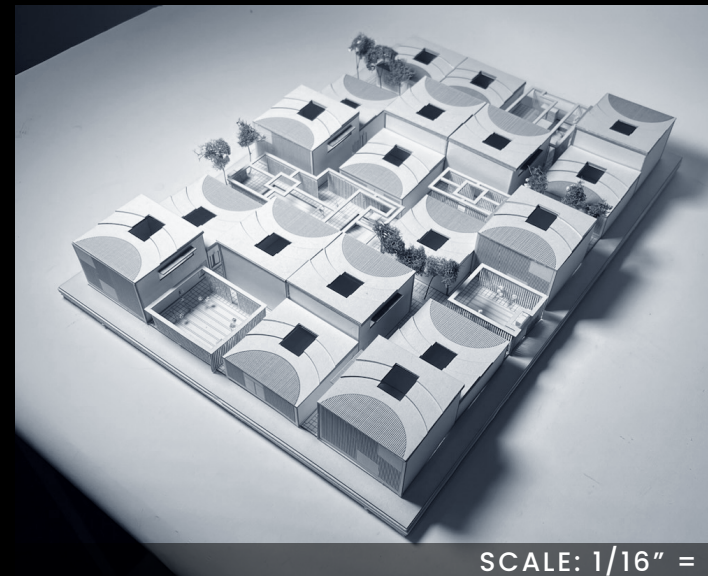
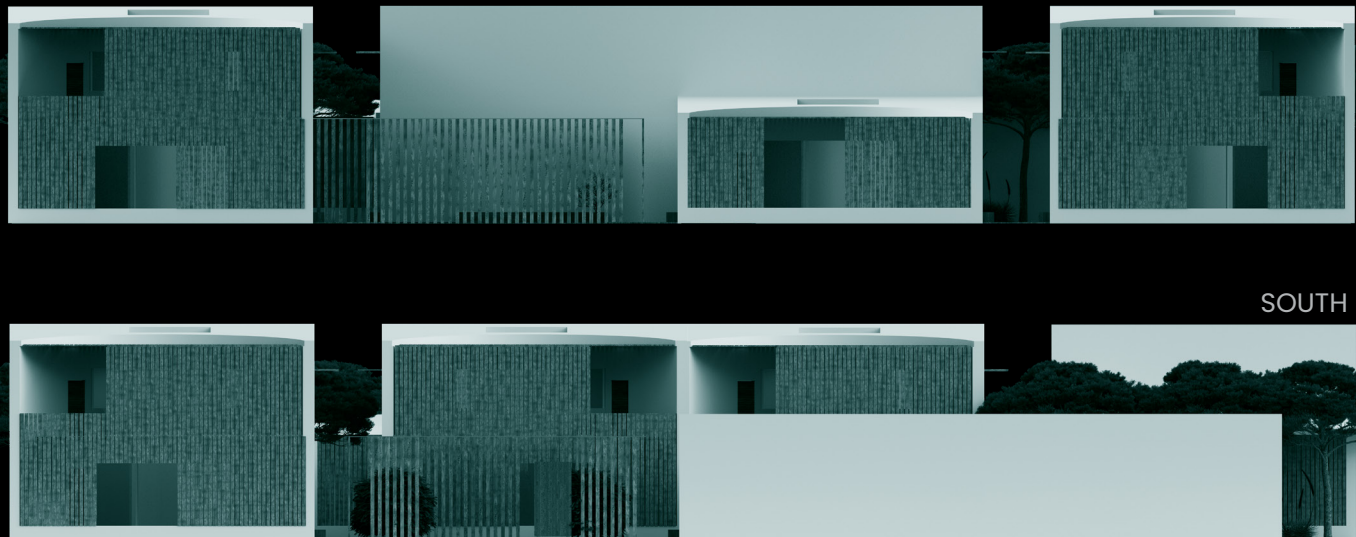
**TOP VIEW RENDER**

- 1 - CAMPFIRE PIT
- 2 - SWIMMING POOL
- 3 - YOGA LAWN

**BUILDING ELEVATIONS**

NORTH

SOUTH

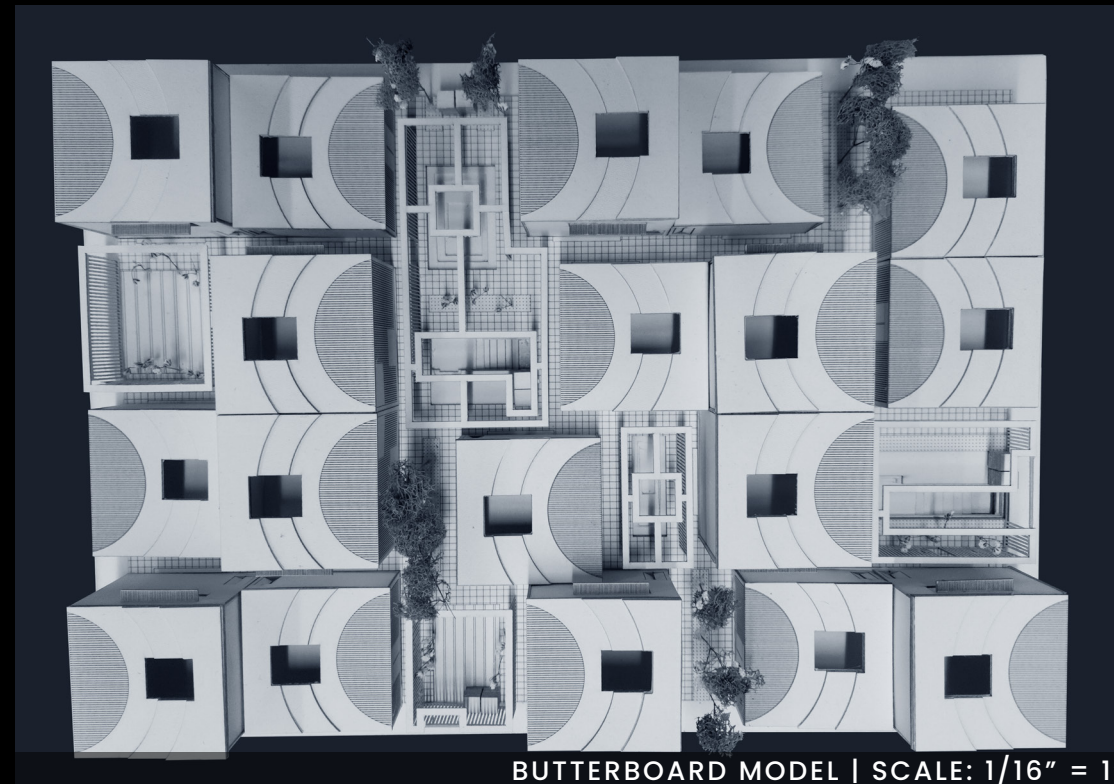


SCALE: 1/16" = 1'

**PHYSICAL MODELS**

The complete Mat Structure is made of Butterboard, Lasercut and Etched to high level of detail, on 16th inch scale. Two additional models are made on a quarter inch scale using Birchwood sheet.

This was one of the most fun & rewarding part of the project as I was able to produce such amazing model, for this was my first time crafting an architectural physical model.



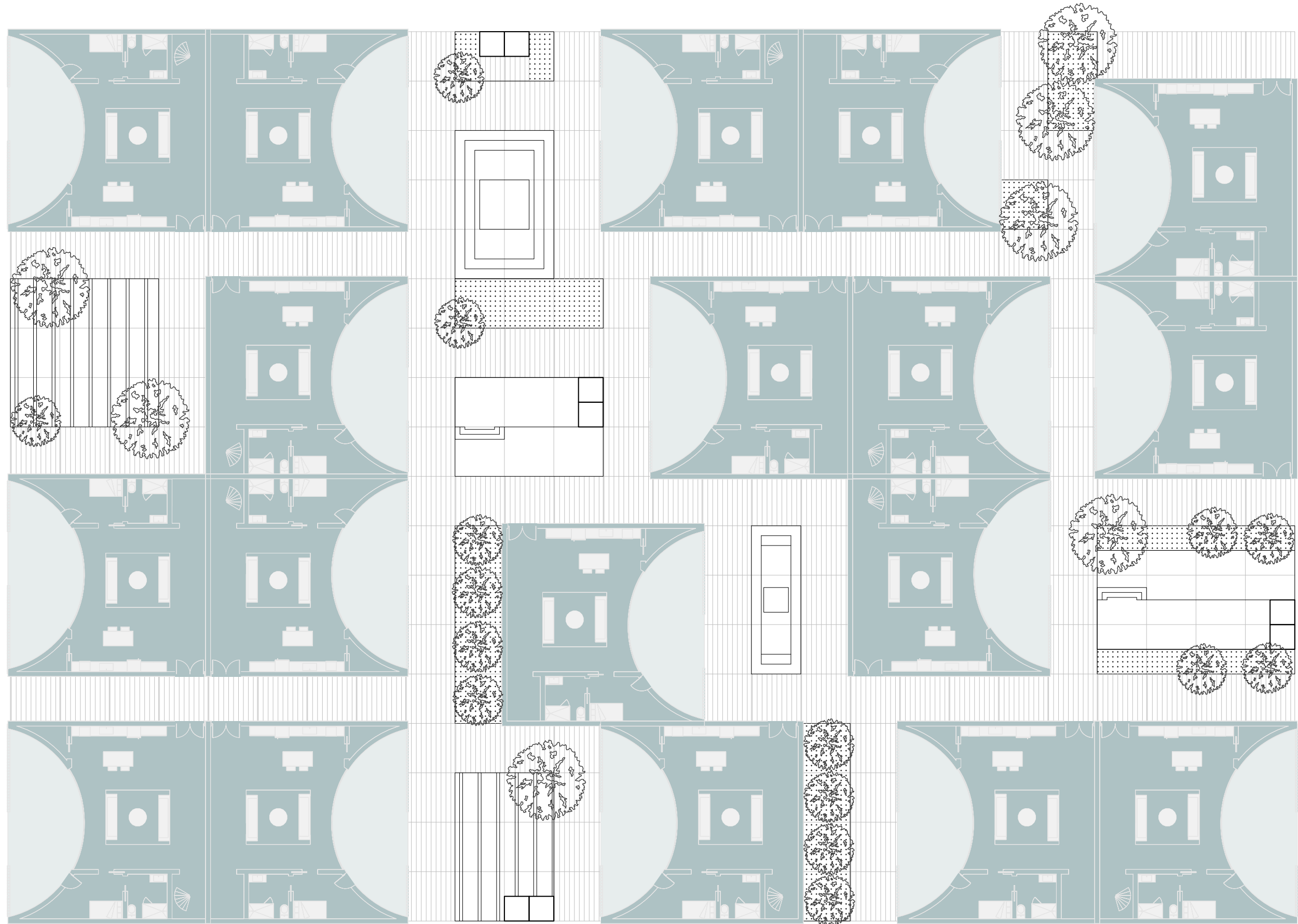
BUTTERBOARD MODEL | SCALE: 1/16" = 1'



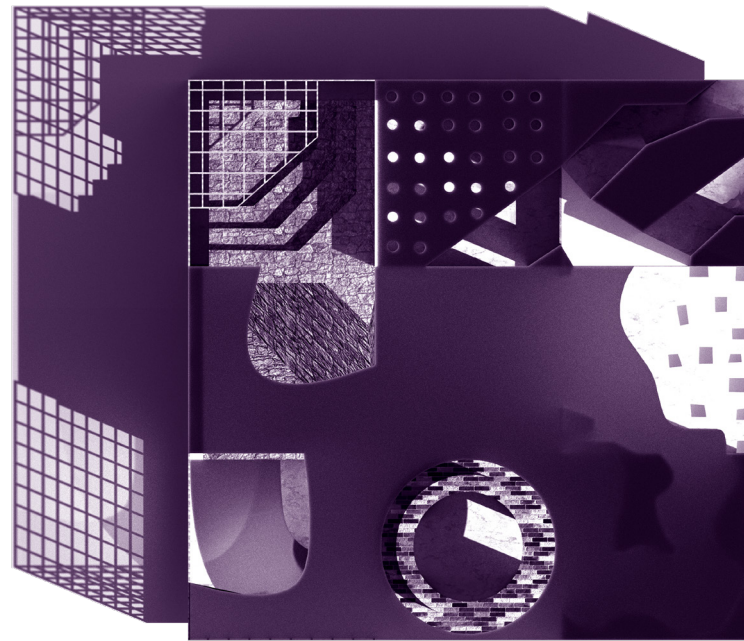
BIRCHWOOD UNIT MODEL | SCALE: 1/4" = 1'



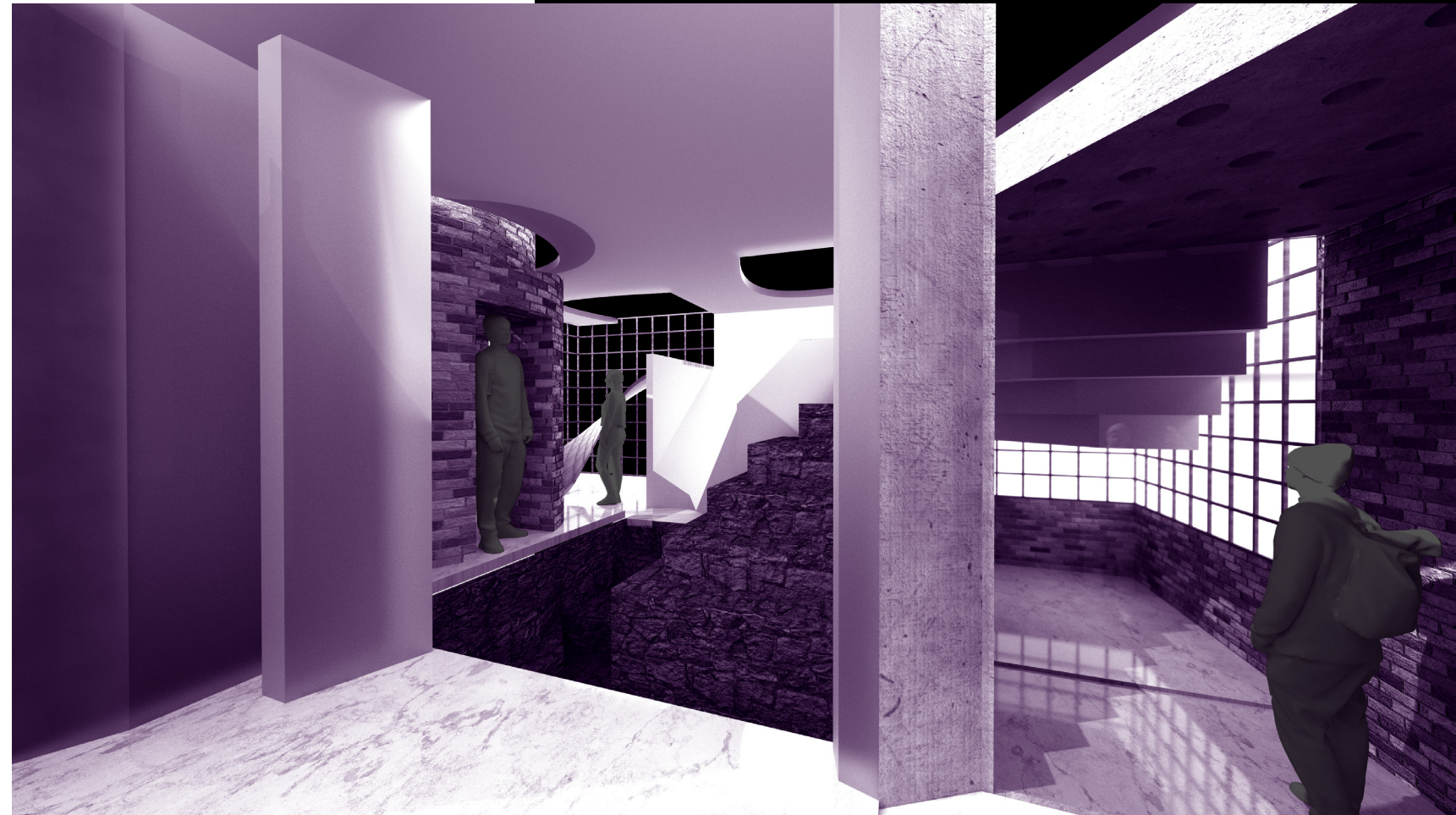
BUTTERBOARD MODEL | INTERIOR PERSPECTIVE



TRANQUIL TERRACE | FLOOR PLAN  
SCALE: 1/20" = 1'



**THE 9-SQUARE GRID**  
CONCEPTUAL | "PROGRAM" BASED DESIGN



# THE 9-SQUARE GRID

"PROGRAM" BASED DESIGN | ASU, TEMPE, AZ

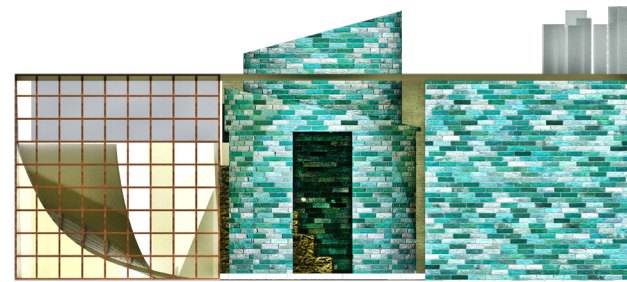
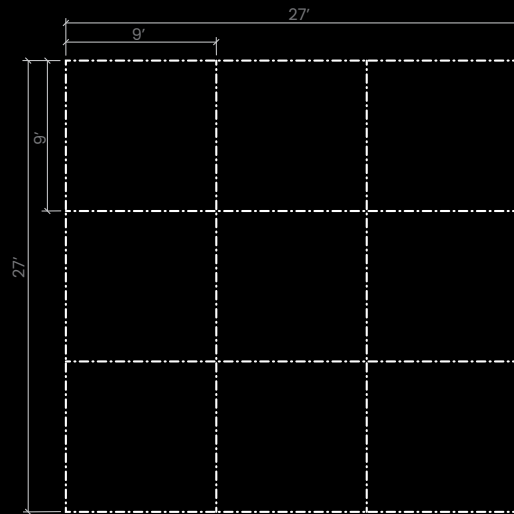
Project Type - Program Design | Conceptual

4th Year Architecture Studio - I | Academic Project | Fall 2022

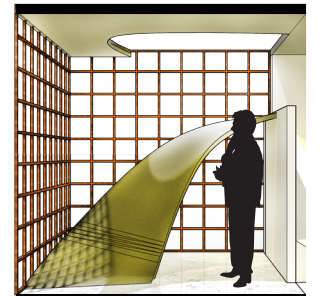
Studio Instructor - Merlin Ellis

This project is about designing a basic 9'x9'x9' space in a 3x3 square grid using multiple "Programs" such as Ascending/descending (ramp, stair), Borrowed light, Filtered (space, light, sound, water, air), Reflection, Minus, Aperture, Resting, Pivot, Enclosed, Slide, Axis, Dissolve & Bridge.

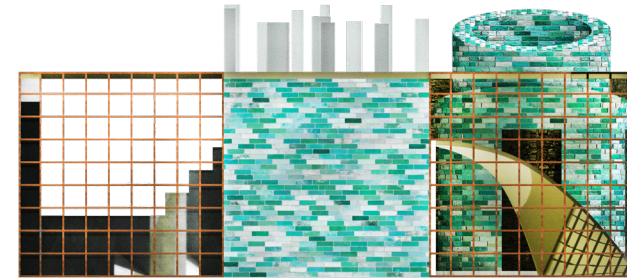
The final design was 'An Adventurous Experience' pushing the limits of the assigned programs to each of these individual units.



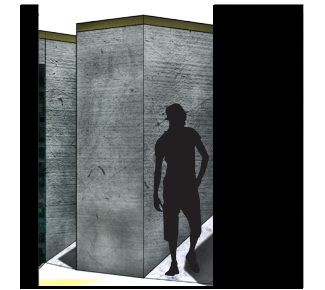
FRONT ELEVATION  
SCALE: 1" = 9'



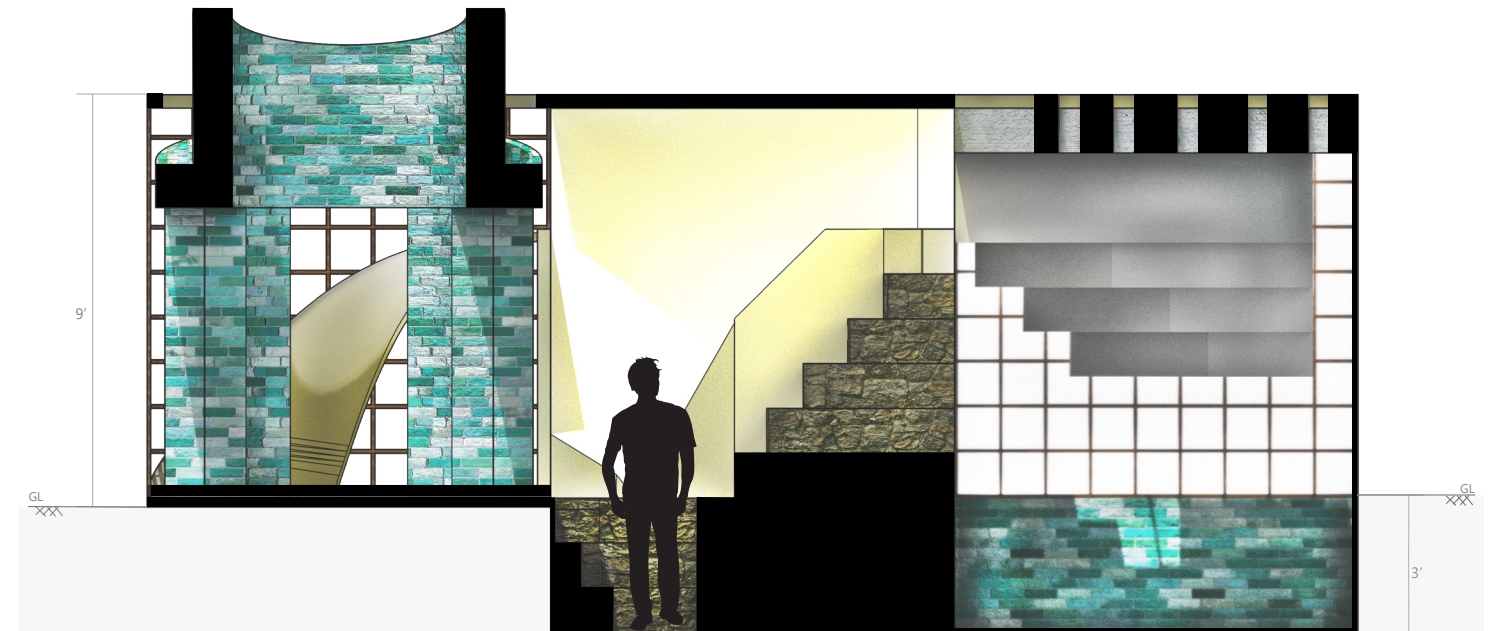
SLIDE & OPEN



LEFT ELEVATION  
SCALE: 1" = 9'



REFLECTION & MINUS



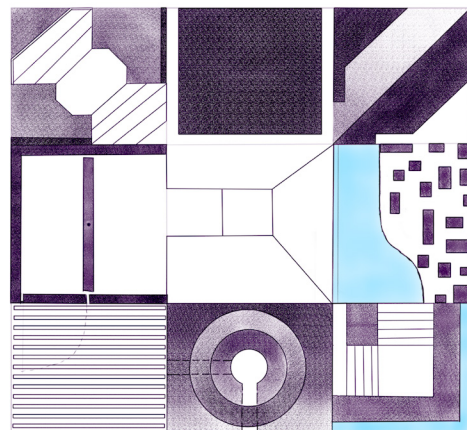
LONGITUDINAL SECTION  
SCALE: 1/4" = 3'

## HAND SKETCHED ITERATIONS

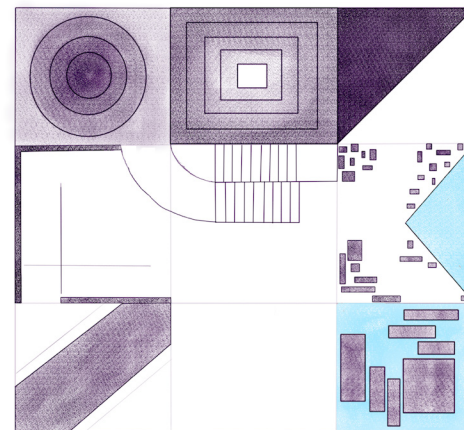
Testing Various Orientations & Program Types



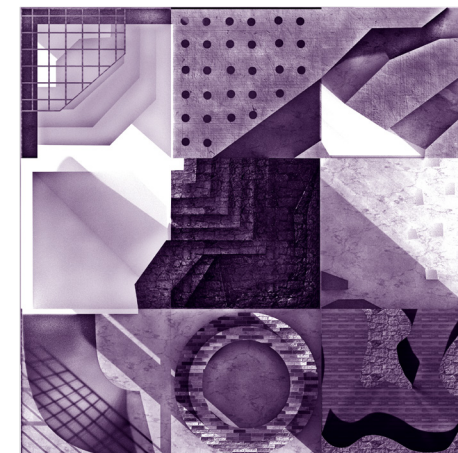
ITERATION 1



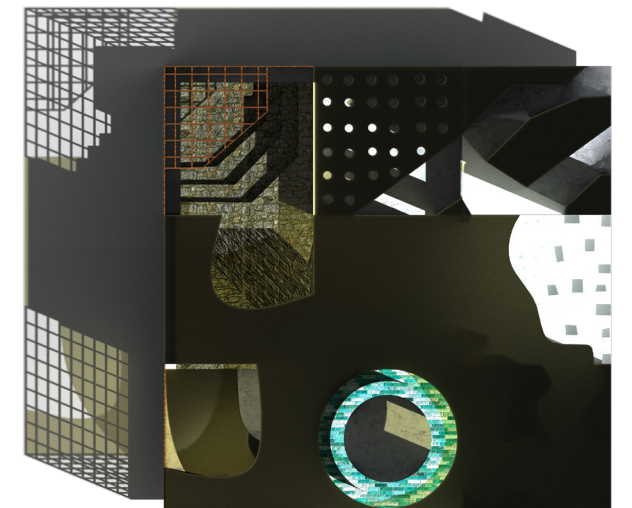
ITERATION 2



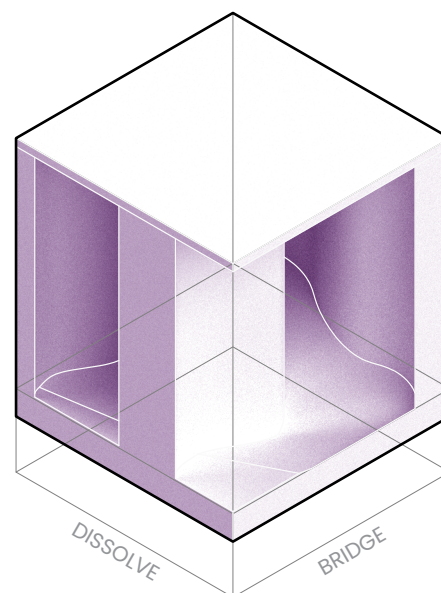
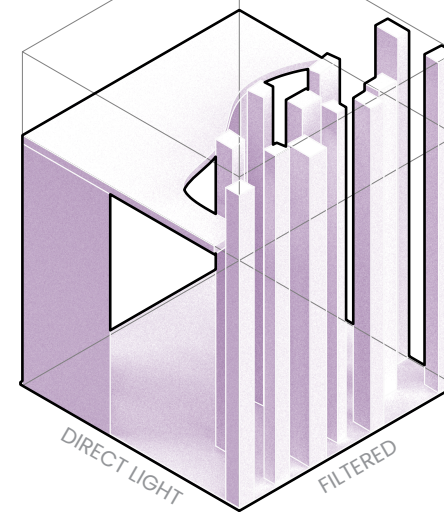
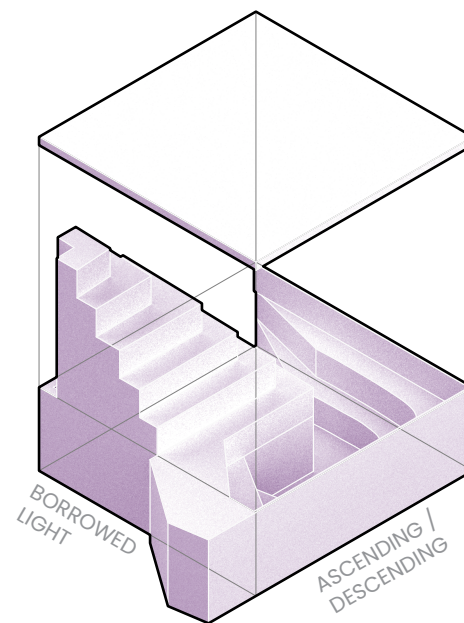
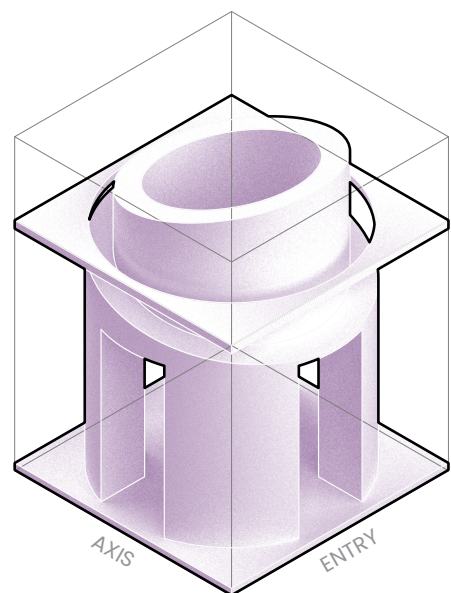
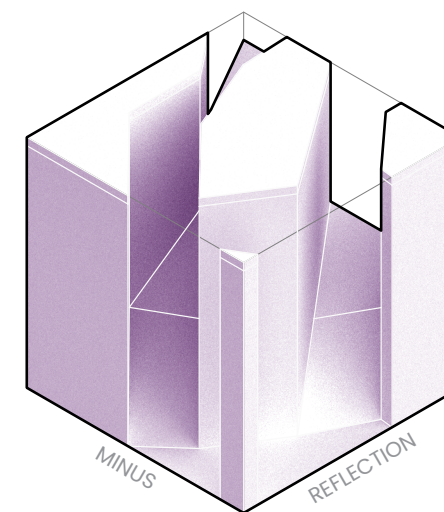
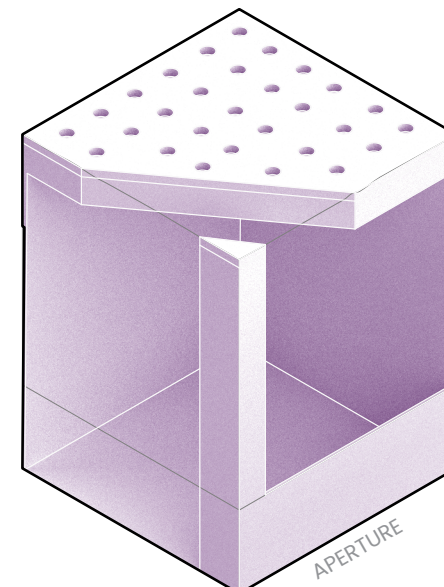
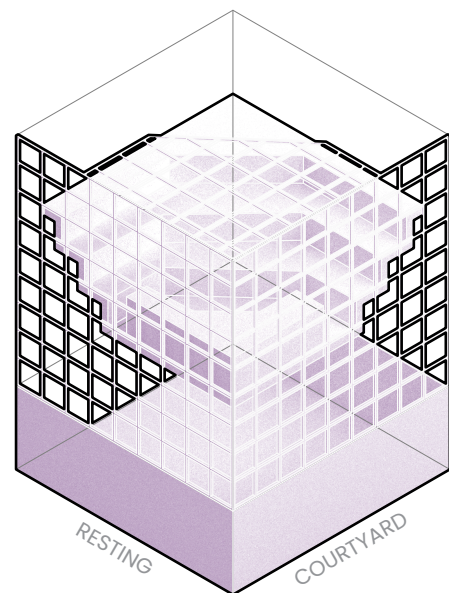
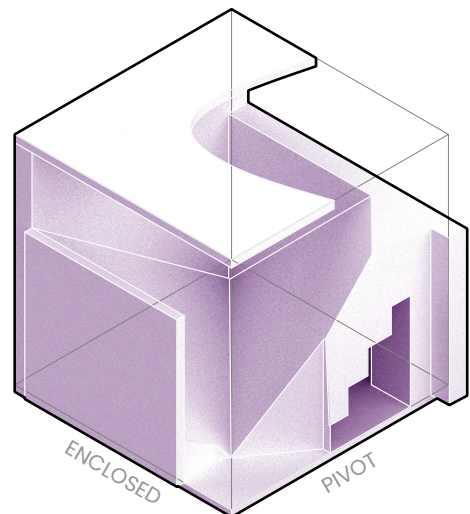
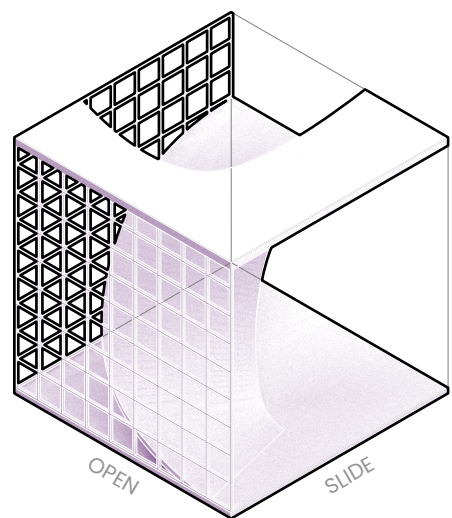
ITERATION 3

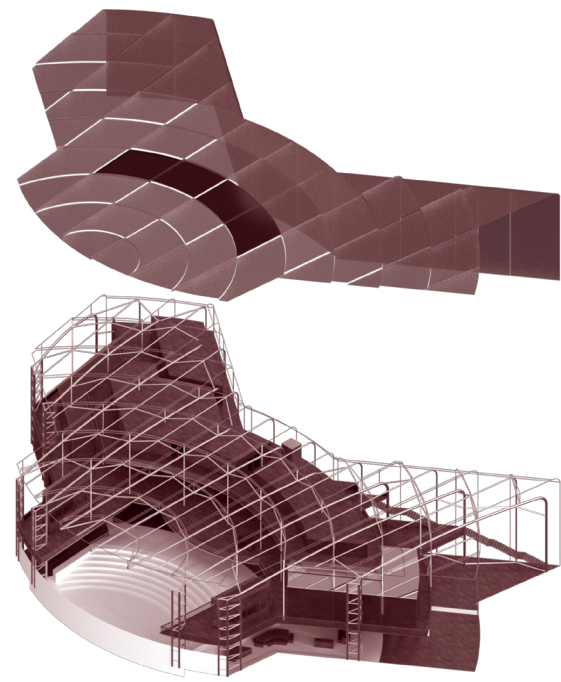


FLOOR PLAN  
SCALE: 1" = 9'



ROOF PLAN  
SCALE: 1" = 9'





# MONSOON PAVILION

A TREE CANOPY STRUCTURE | YOUTH CENTRE



# MONSOON PAVILION

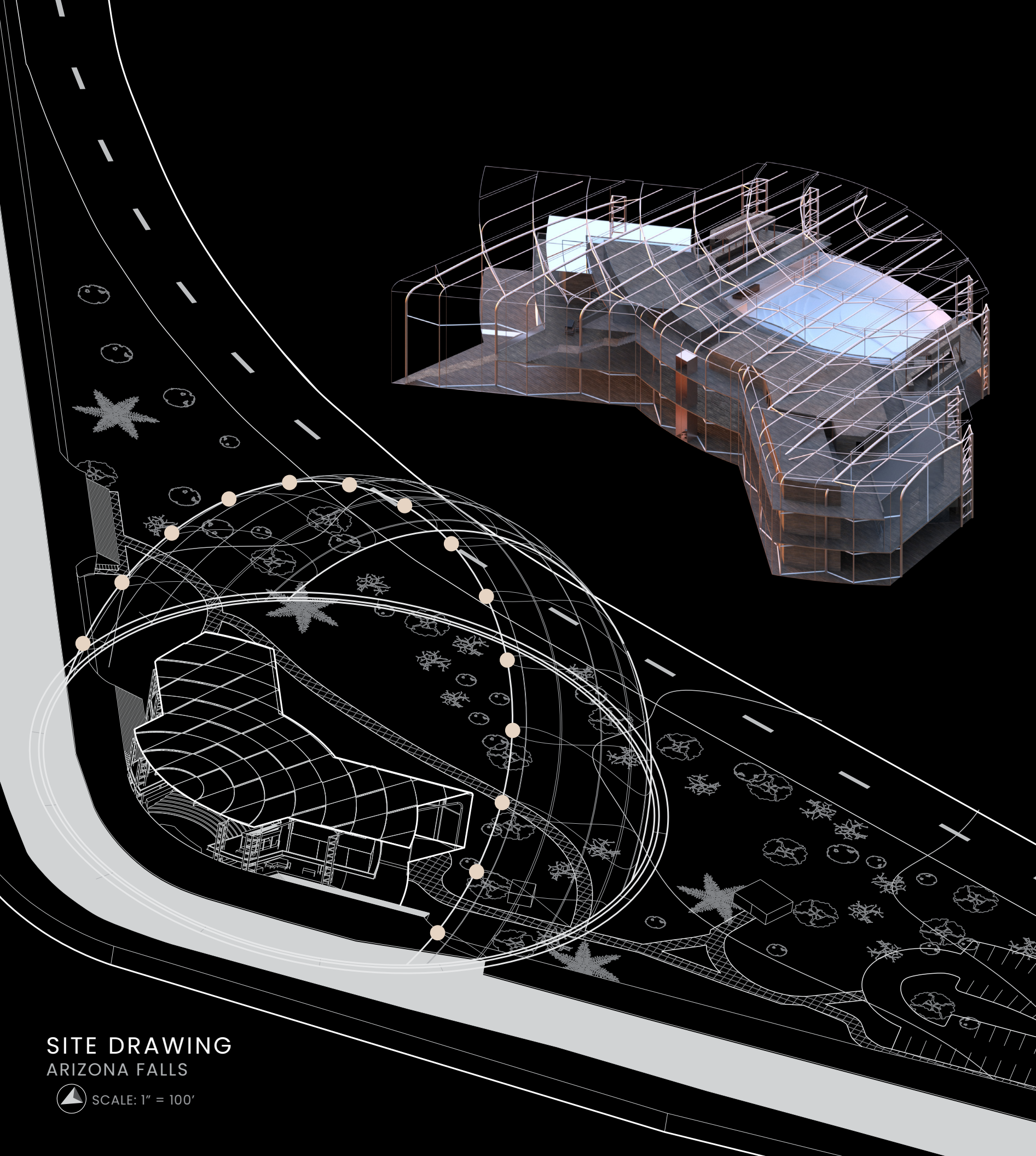
A TREE CANOPY STRUCTURE | ASU, TEMPE, AZ

Project Type & Program - TREE: "Youth Centre" | Location - Arizona Falls  
4th Year Architecture Studio - II | Individual Academic Project | Spring 2023  
Studio Instructor - Nicholas Shekerjian

This Project takes its inspiration from the space and structure of a tree canopy. Located in a park along a canal, the project envisions a place for young people to gather after school and on weekends to engage in a variety of activities.

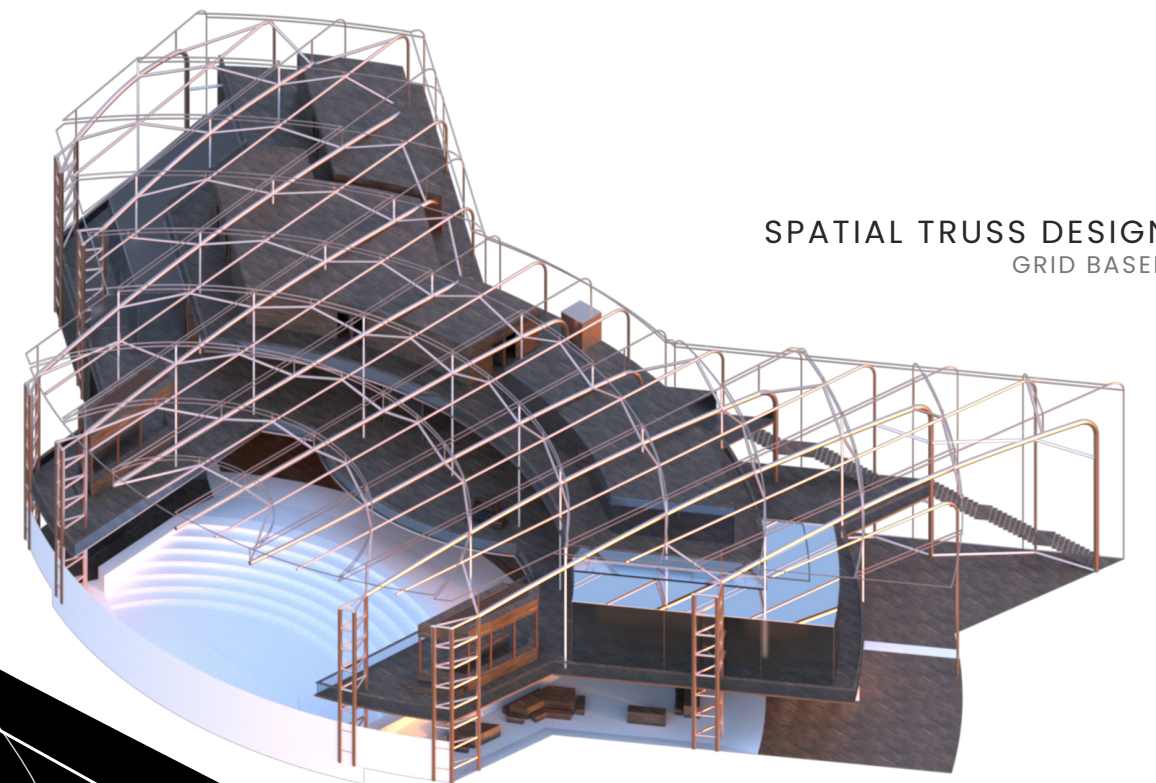
Inspired by the misty experience, Monsoon Pavilion is designed for the rainy weather in Arizona's desert climate.

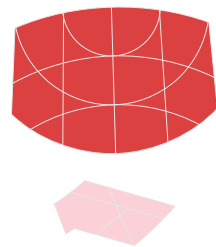
SPATIAL TRUSS DESIGN  
GRID BASED



SITE DRAWING  
ARIZONA FALLS

SCALE: 1" = 100'

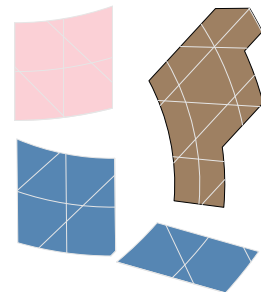




Amphitheater,  
4288 sf  
Storage,  
773 sf



Cafe  
x2, 916 sf

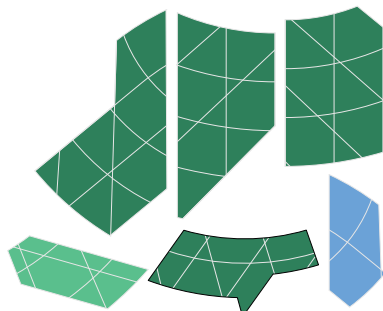


Bicycle & Locker  
1623 sf

Staff Room  
2298 sf

Shower Room  
1630 sf

Toilet  
x3, 893 sf



Open Work/Study Area  
2546 sf

Cooking  
2431 sf

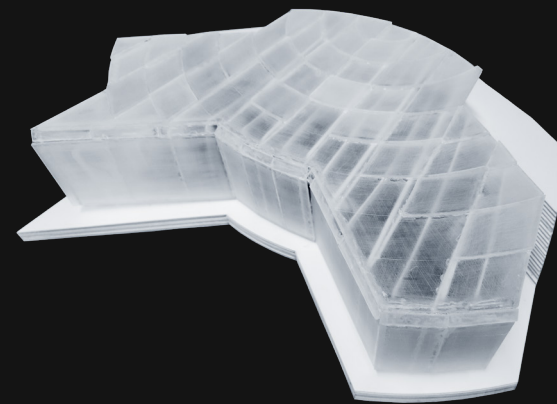
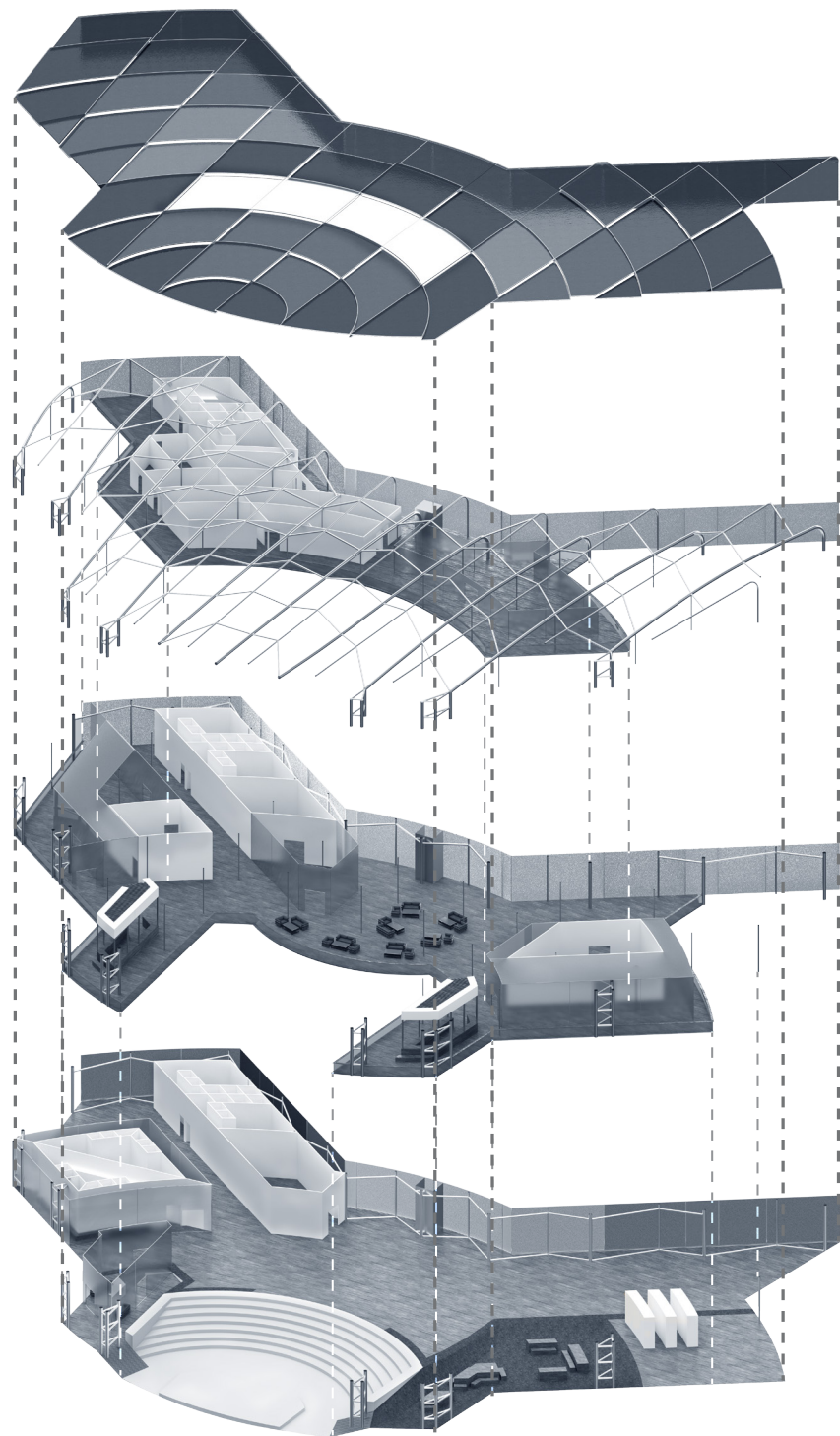
Game/Computer Room  
2391 sf

Music Room  
958 sf

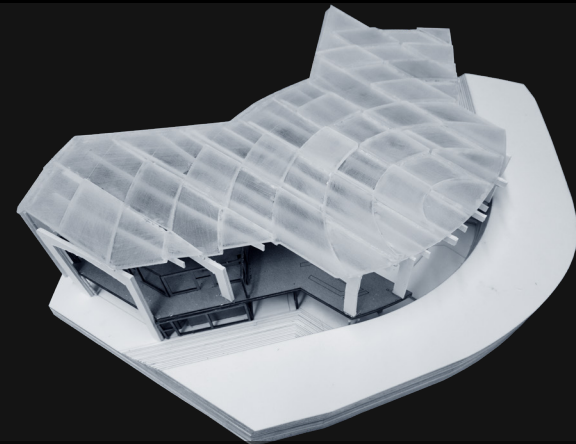
Staff Recreational Room  
1316 sf

Club  
x2, 916 sf

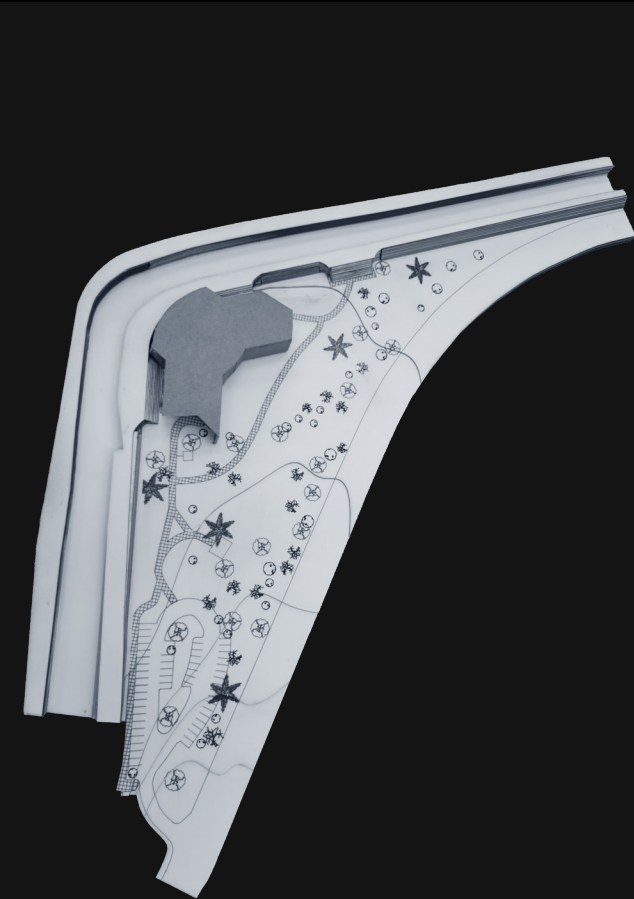
SCALE: 1/64" = 1'  
PROGRAM ELEMENTS



CANOPY MODEL | SCALE: 1/16" = 1'



CANOPY MODEL | SCALE: 1/16" = 1'

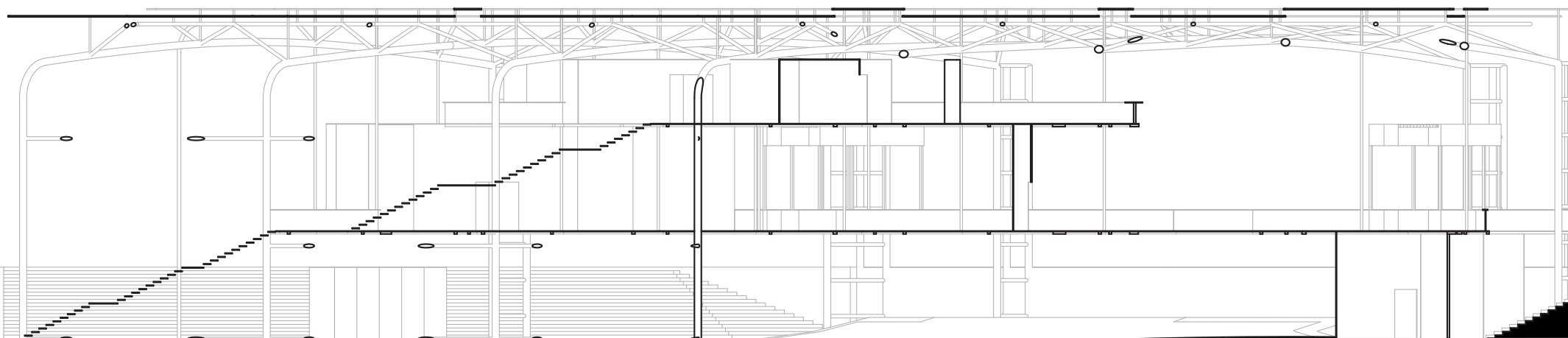


CANOPY MODEL | SCALE: 1/50" = 1'

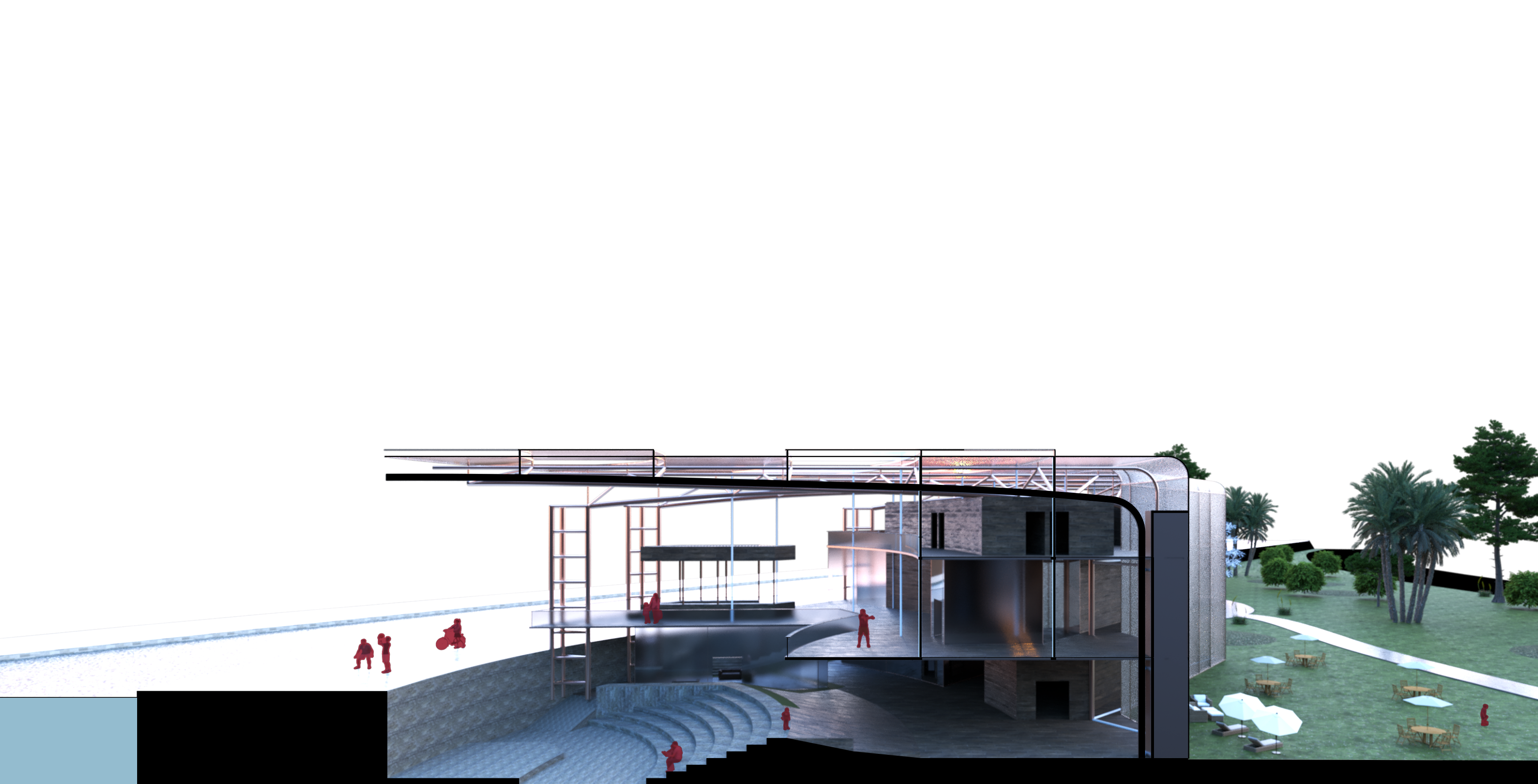


CANOPY MODEL | INTERIOR PERSPECTIVE

PHYSICAL MODELS



SECTION B-B  
SCALE: 1/20" = 1'



SECTION PERSPECTIVE  
LOCATION: ARIZONA FALLS

