

Undergraduate + Graduate

Portfolio

Fatima Castro

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TRILLIUM
2025 BUILDFEST

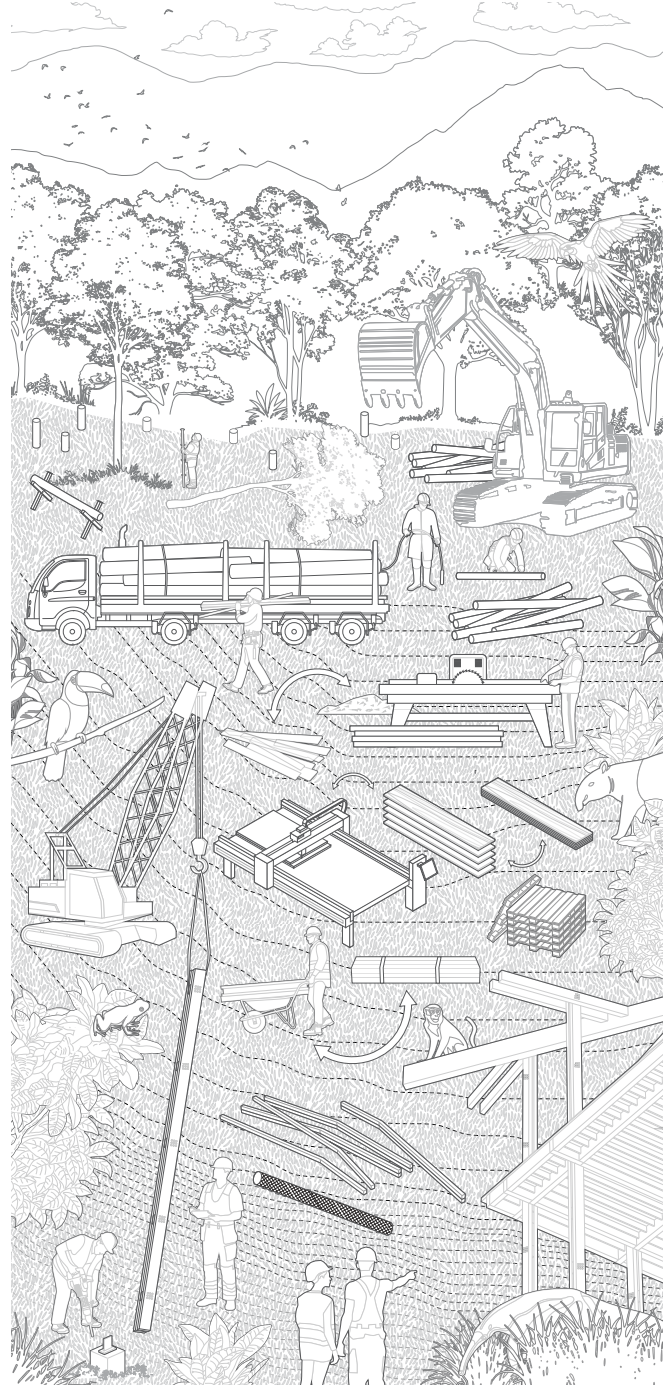
BIODIVERSITY RESEARCH CENTER

Guanacaste Peninsula, Costa Rica

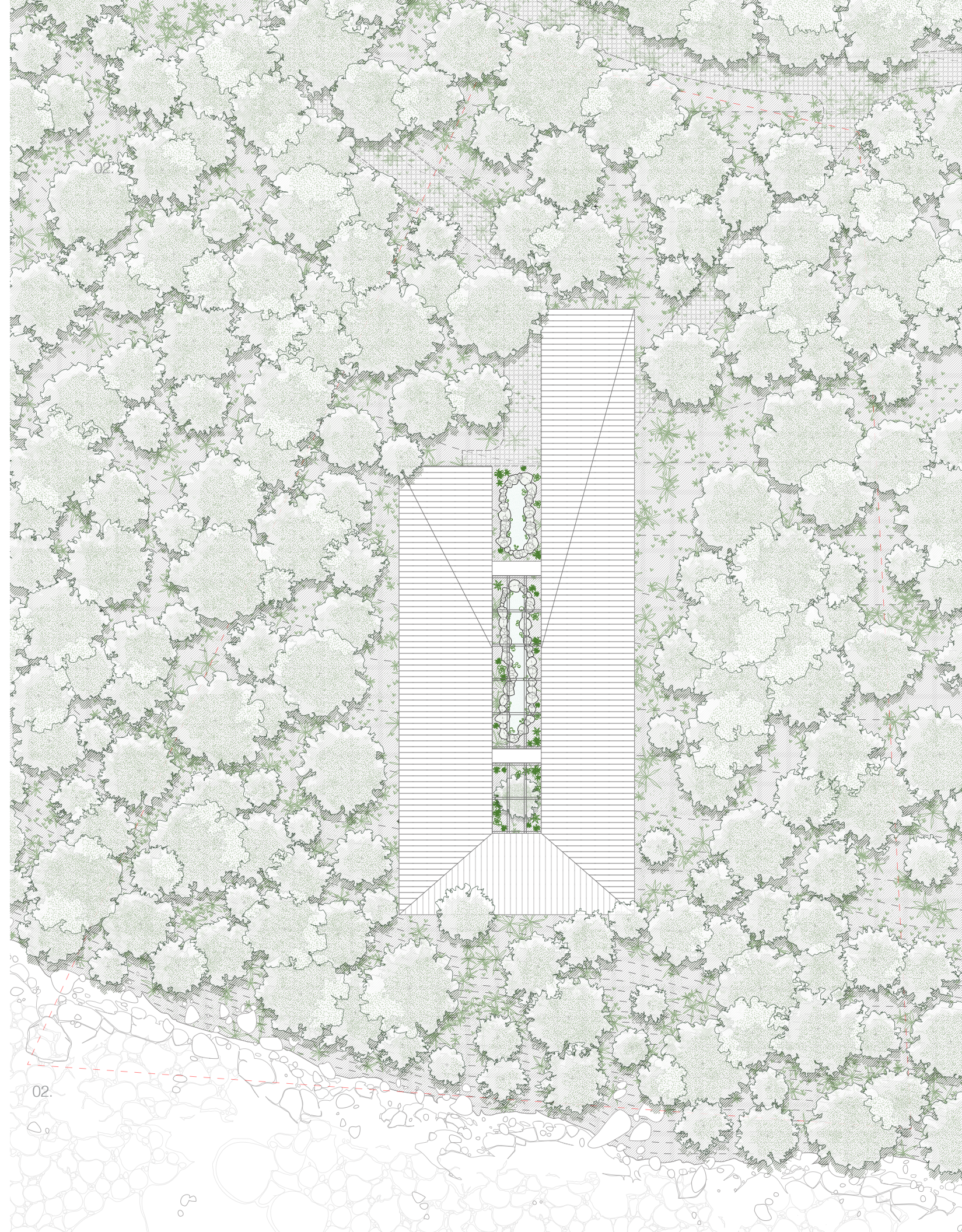
01

Professor: **Carlos Jimenez**
Year: **Fall 2025**

In the early twentieth century, commercial logging and cattle ranching drove economic growth in Costa Rica while steadily eroding its ecological richness. Towards the end of the century, a movement toward forest regeneration through policymaking reestablished a hierarchy in which nature takes precedence over human infrastructure. The question is then posed: how can we align the built environment with Costa Rica's ecological values? In this framework, it positions the research center as secondary to the forest, using assembly and hierarchy to support ecological processes rather than imposing on the site.



01. Material Narrative, Repurposing and Sourcing Locally
02. Playa Isleta Site, Cliff's Edge





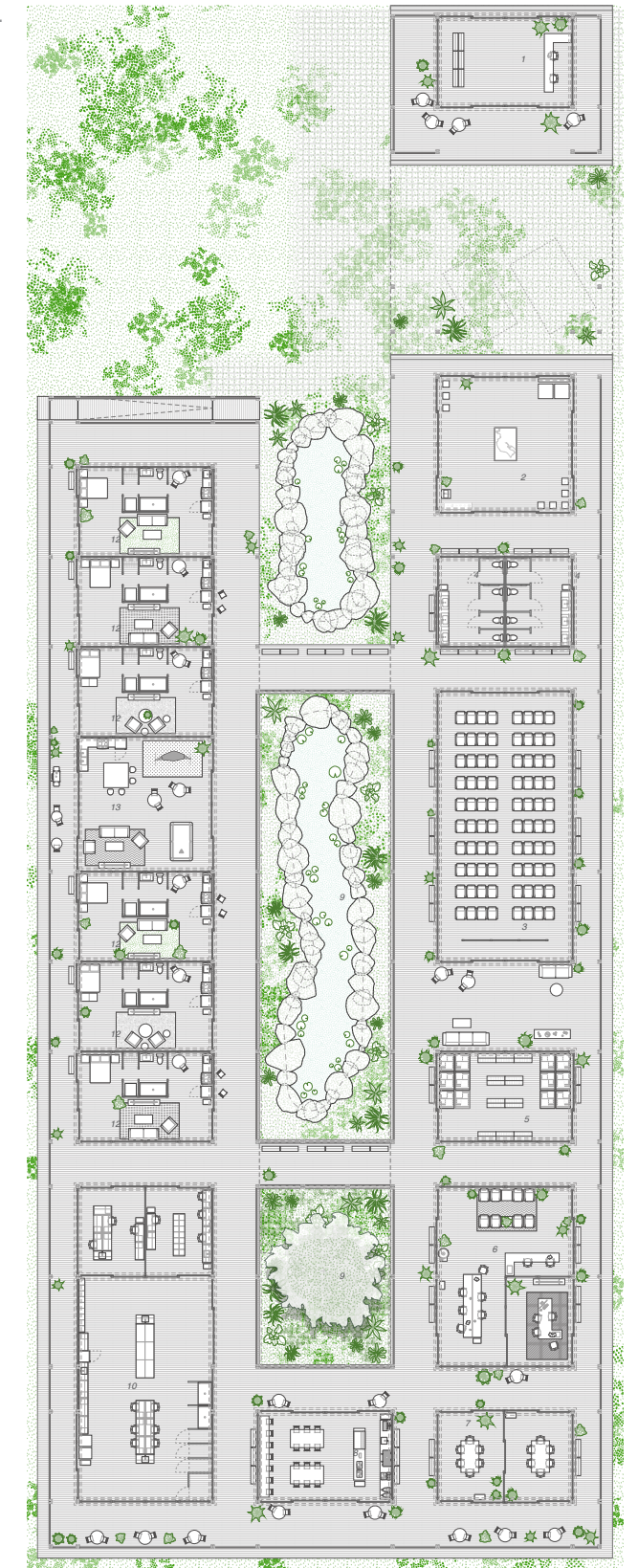
03.

Drawing from Costa Rica's historic occupation and extraction of the land, the project adopts teak as its primary structure but reframes it within a regenerative logic. The building uses a combination of onsite hardwoods and locally sourced recycled and scrap teak from a nearby mill in the city of Samara, reducing transportation demand, avoiding new clear-cutting, and extending the life of materials already harvested. Glue-laminated teak beams and columns scale this material up to an institutional frame while maintaining a thin structure. In a context where contemporary institutional buildings are largely constructed with concrete and steel, the project treats teak as a precise, high-performance structural medium that ties the research center to managed forestry and rural economies.

The center's footprint minimizes excavation, allowing the ground to remain largely intact. The center is conceived as secondary to the landscape. It touches the ground at spaced 4x10 GLT columns locked to a 10' grid. The rigid regularity of the column grid serves as a means to soften the building's edge, allowing water, soil, and wildlife to move freely beneath. At the heart of the project, the aviary and plant nursery actually anchor the courtyard into the ground, dropping the floor of the enclosures and marking the reintegration of the species into their habitat. Together, they set the ground conditions and organize circulation, so that paths wrap the aviary and move through apertures that maintain clear visual continuity between programs.

03. Interior View of the Gallery

04.



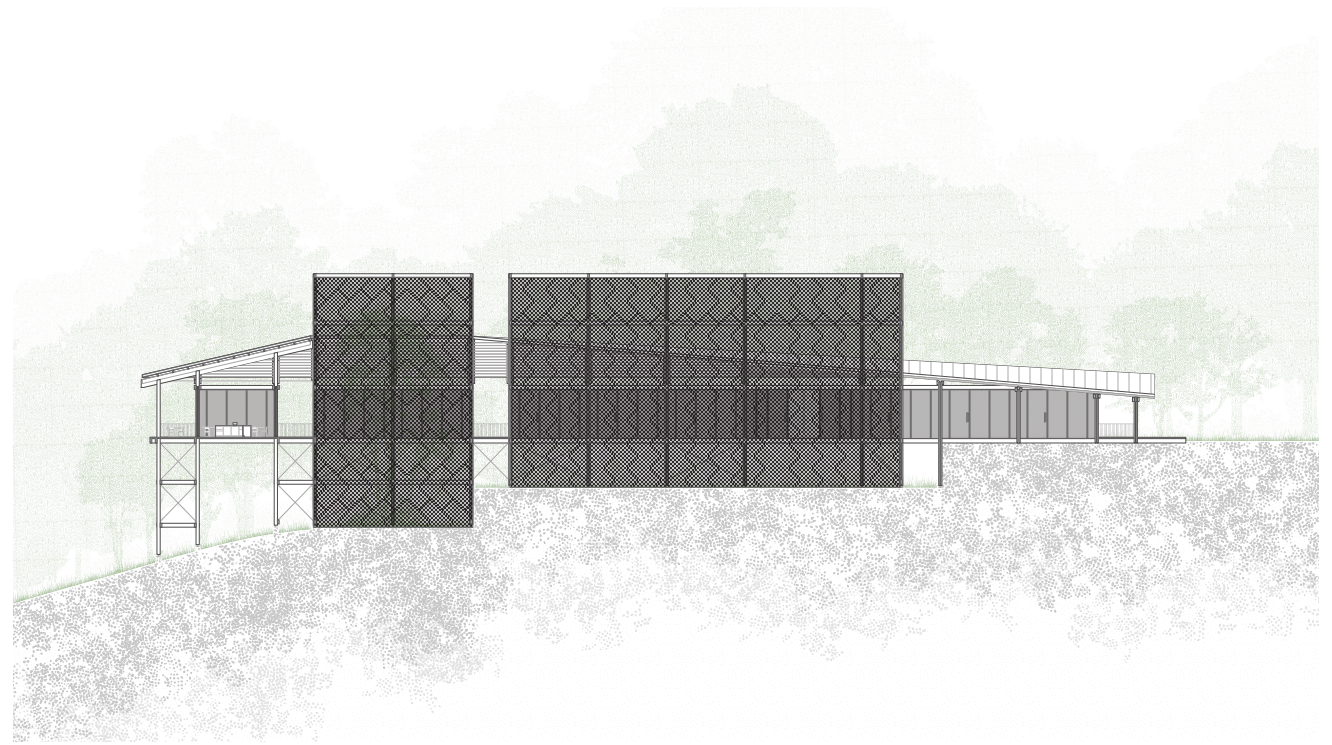
The two primary bars, one public and one private, are distinguished by their prominence and recession. The public wing is more open and lightly programmed, with interstitial zones between rooms that can absorb more exhibitions, gatherings, or informal use. The private wing is recessed and dense, positioning labs and housing. Both sandwich the courtyard, using it as an orienting core that organizes movement and sets up continuous views across ponds, planting, and enclosures.

04. Ground Plan

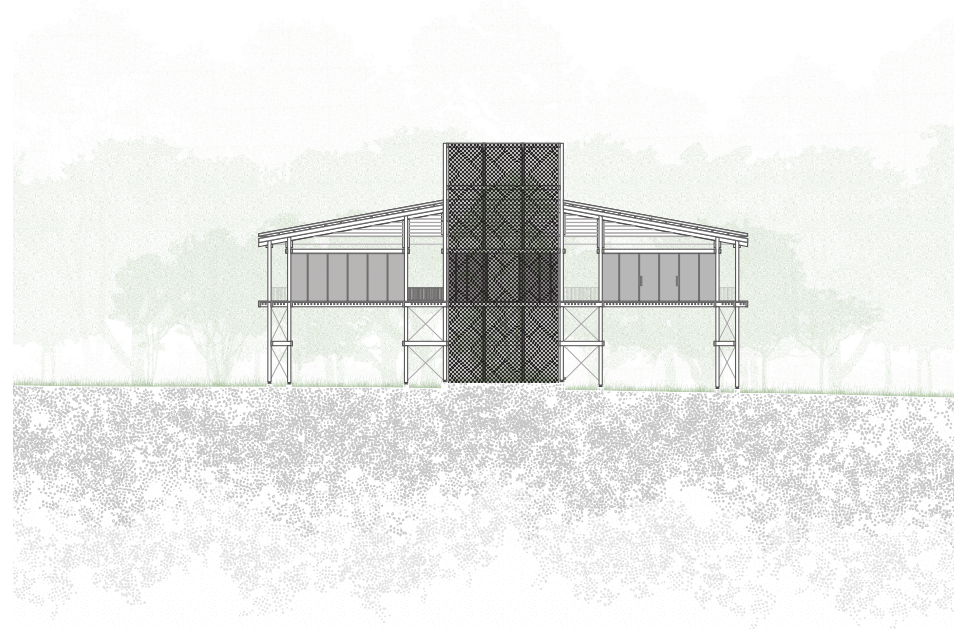


8. Aviary View

06.



07.

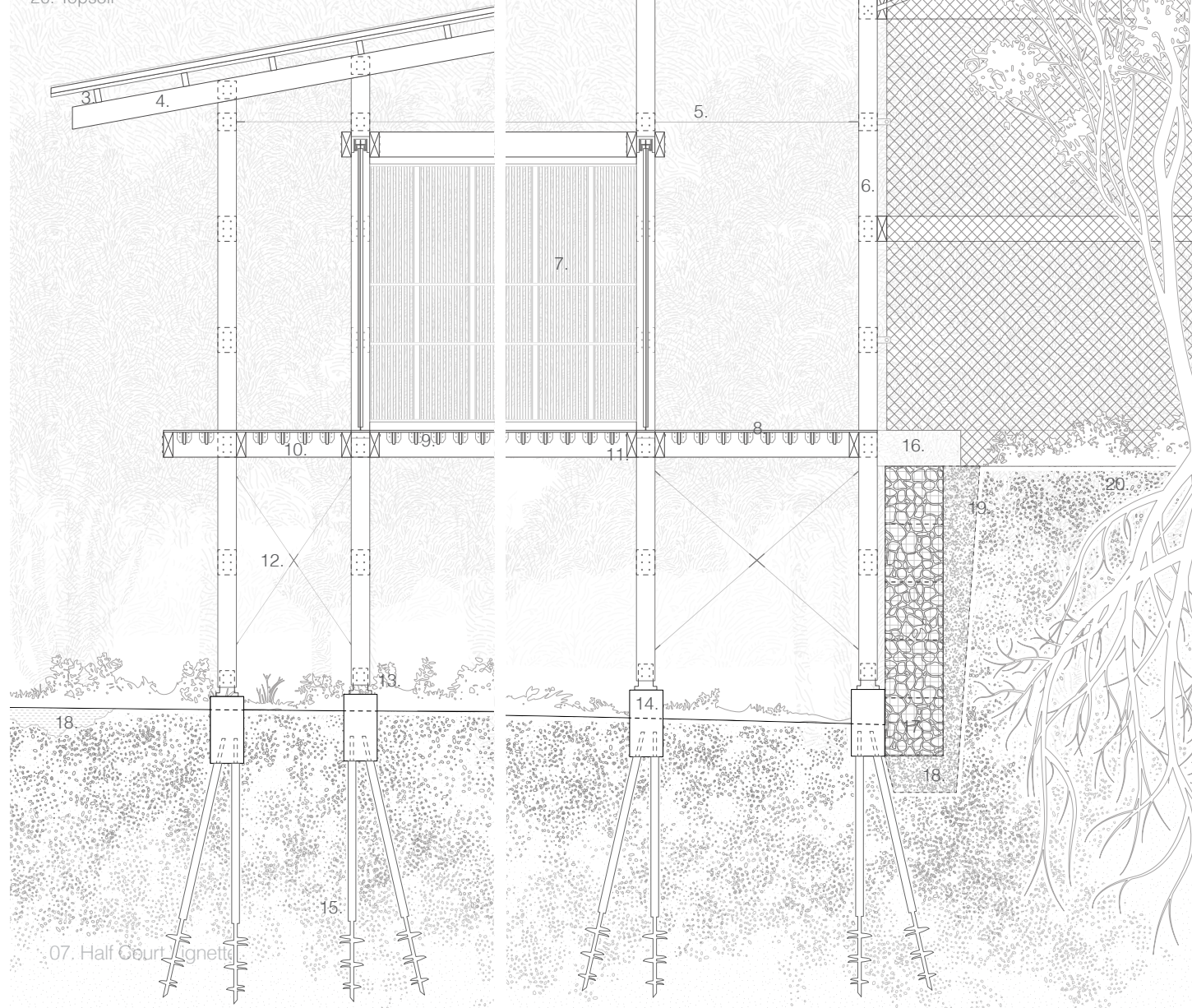


06. Longitudinal Section
07. Cross Section

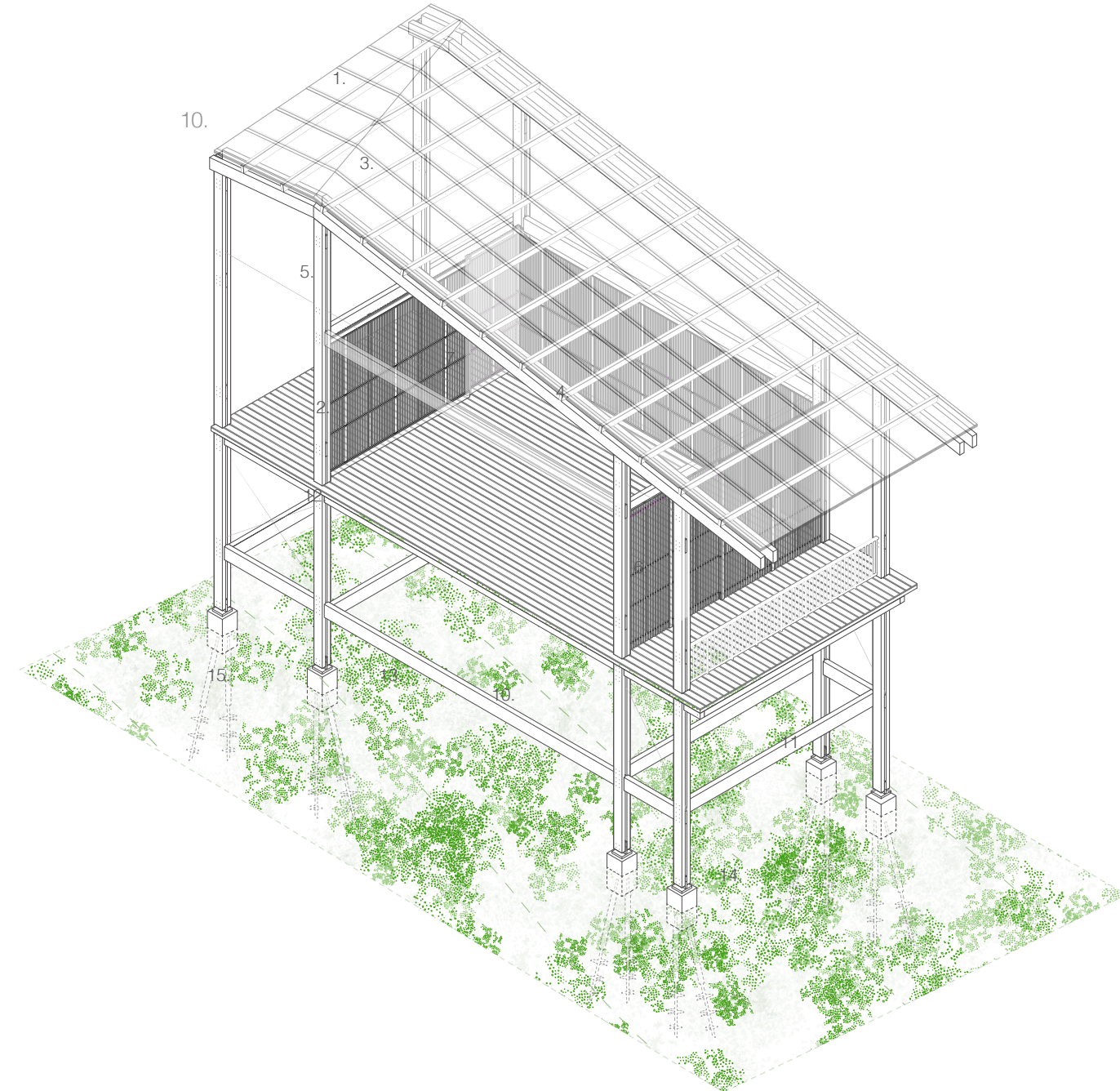
1. Standing Seam Metal Roof Panel System
2. T&G Decking
3. 3x8 GLT Purlins @ 4' Spacing
4. 4x10 GLT Rafters @ 24" OC
5. Galvanized Steel Cable Tension Tie
6. 4x10 GLT Paired Columns w/ 2" Separation

7. 1x3 Wood Slats @ 2" OC
8. T&G Decking
9. 2x8 Joists @ 16" OC
10. 5x14 GLT Primary Girder
11. 5x14 GLT Secondary Beam

12. Galvanized Cable Cross Bracing
13. 1/2" Galvanized Steel Base Plate
14. 30" Reinforced Concrete Foundation Cores
15. Helical Pile Anchors
16. Concrete Cap
17. Gabion Retaining Wall
18. Gravel
19. Geotextile Fabric
20. Topsoil



09.



The detached roof acts as a protective canopy, shading the rooms below while allowing air to circulate freely between the two layers, reducing heat gain and promoting passive cooling through natural ventilation. With prevailing winds arriving from the south, the wood slat walls work in concert with the angled roof, acting simultaneously as a shading device and temperature

Finally, the roof ties the rooms together as a campus; its angled planes frame views toward the aviary and surrounding landscape so including the people, thus fostering a sense of connection and collaboration among all users, and grounds a space underneath where all parties can converge.

09. Courtyard Render and Interior
10. Train Platform Render and Interior



EIEIO

Sunset District, San Francisco, California

02

Professor: **Andrew Colopy**

Collaborators:

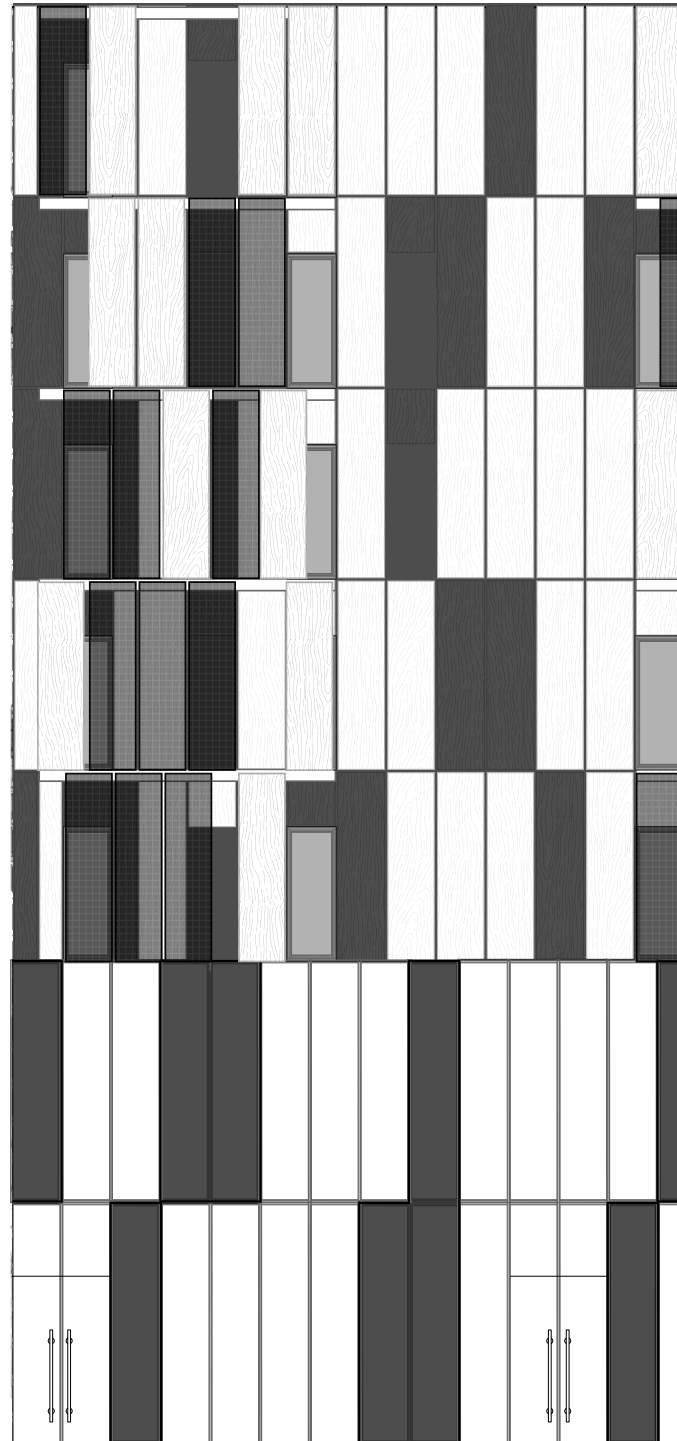
Ryan Carlton

Amelia Vasquez

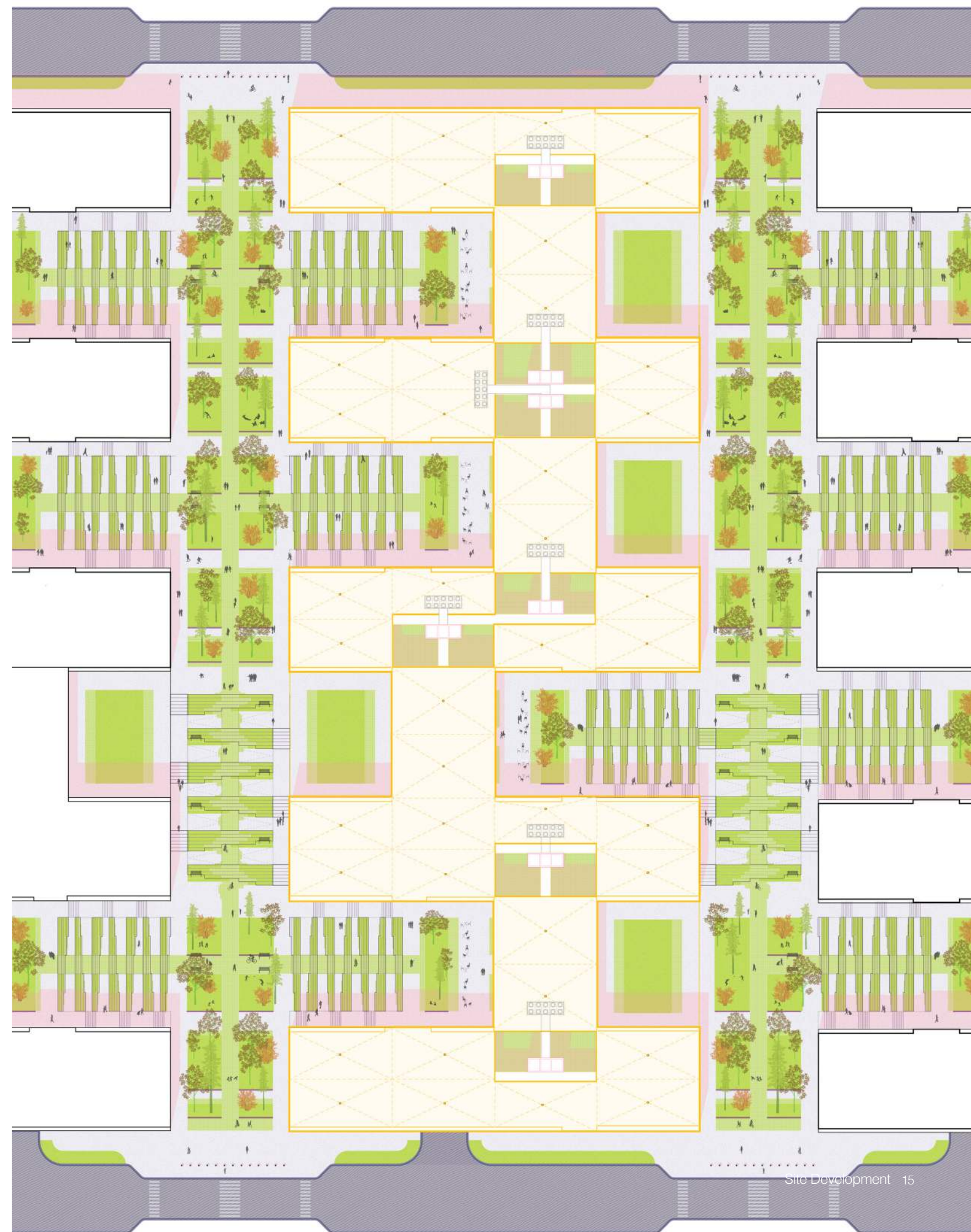
Year: **Spring 2025**

Our project begins by mapping San Francisco's existing landscape of institutional and cultural programs that support social development across age, cultural, and economic groups. Through the Existing Institutional Map, we questioned whether their current distribution sustains social space at an equitably accessible neighborhood scale. To argue for redistribution, we examined the transit network and reconsidered how roadway utility could support new zoning while accommodating increased density. This led to a reconfiguration of transit that reduces roadways in favor of greenways and expands vertical public transit lines, strengthening cross connections typically secondary to car movement.

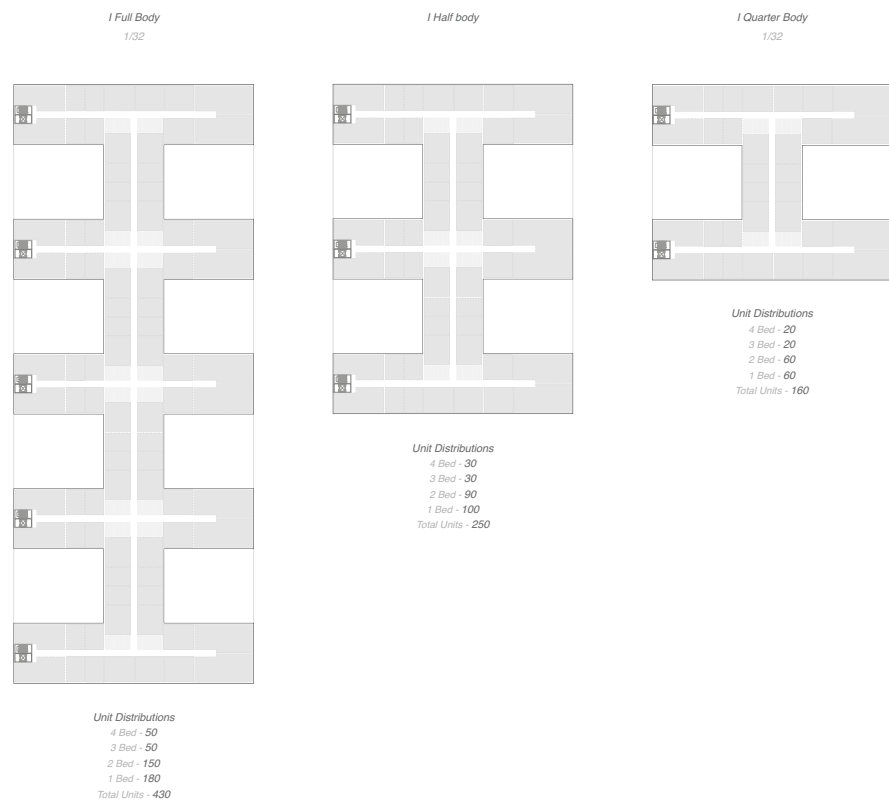
01.



01. Facade Dithering

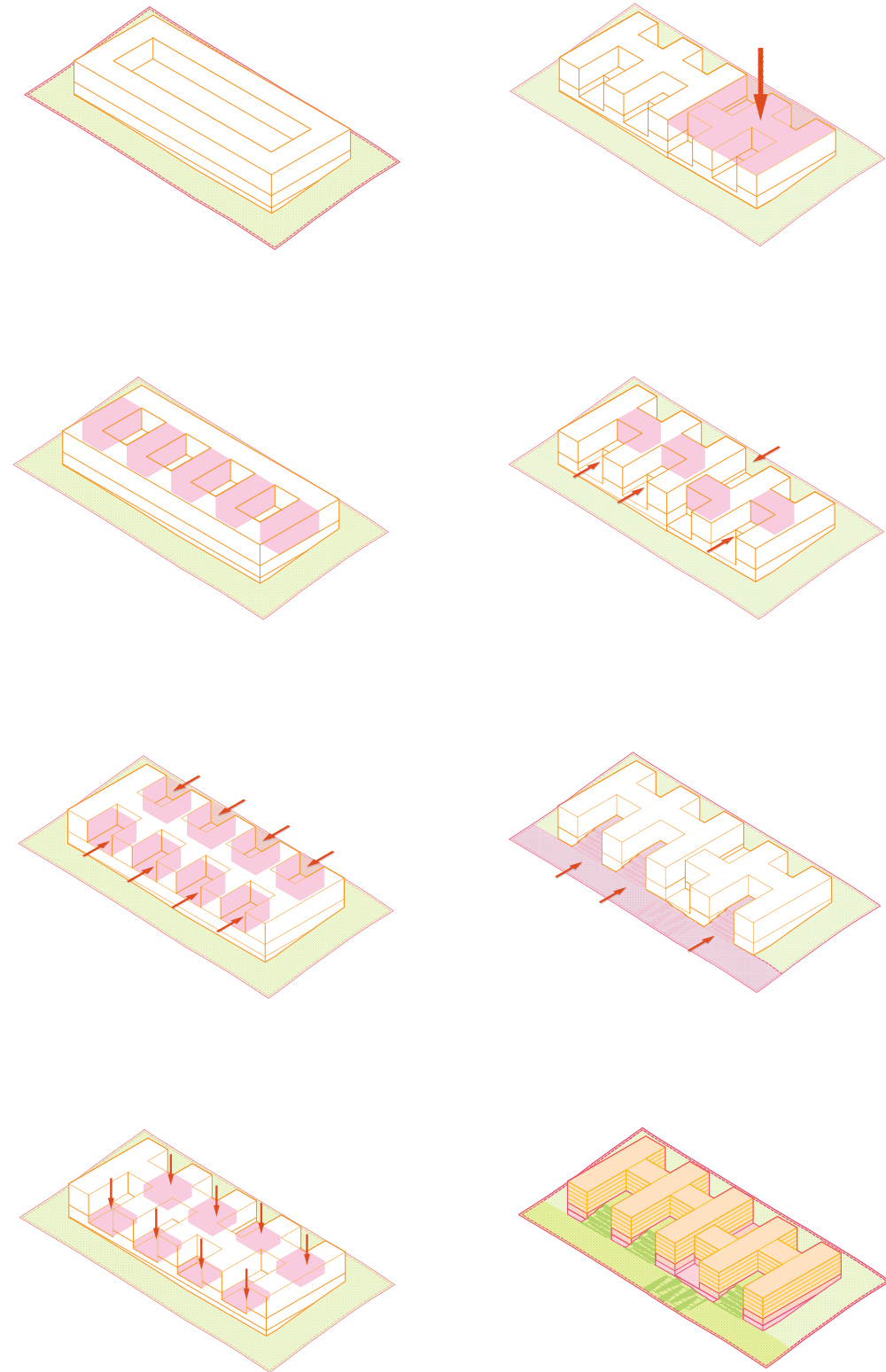


03.



Population	
Number of Residents	257,390
Percentage of 0 - 13 Years Olds	13
Percentage of 14 - 18 Years Olds	3
Unbuilt Area	
Unbuilt Type	Area (sqft)
Public Right of Way	30,344,578
Preservation	1,390,500
Recreation and Open Space	5,683,992
Residential	
Gross Area	136,086,610
Number of Units	128,895
Number of Units per Block	354
Sqft per Resident	550
Commercial	
Gross Area	52,864,616
Retail Distribution	26,442,308
Office Distribution	26,442,308
Public Institutional	
Gross Area	3,661,368
Elementary Middle School	1,634,384
High School Distribution	911,954
Public Service Distribution	519,682
Cultural Institution Distribution	615,378
Transportation Public Parking	
Gross Area of Parking	14,695,061
Total Number of Spaces	79,200
Average Number per Resident, per Block	0.31
Analysis	
Ratio of R.O.W. to Private Public Property	0.455
Units per Acre - Gross	73
Units per Acre - Net	35
People per Square Mile	85,797

04.



From these infrastructural shifts, we developed an adjacency based zoning logic informed by roadways, public service lines, and greenways, with a simple objective: every inhabitant is within walking distance of a social program, or a short walk to transit that leads to one. At the district scale, this organizes programs along transportation networks, promoting equal access and informal interaction. Once stratified, relationships between institutional nodes and public space become legible, with institutional programs paired to proportional green space so densification coincides with a densification of public life. These nodes are stitched together by a horizontal greenway network that supports pedestrian movement and establishes a hierarchy of green spaces. As the network consolidates, typologies open up, micro neighborhoods emerge, and courtyards become essential rather than residual. Through zoning iterations and massing studies, the project narrows to a selected site and tests greenways and courtyards as a continuous social armature. The conventional podium is deliberately blurred, with the first two levels served by the greenway to complicate street level and extend public access above grade, making the social spine readable, accessible, and continuous with the district's pedestrian infrastructure.

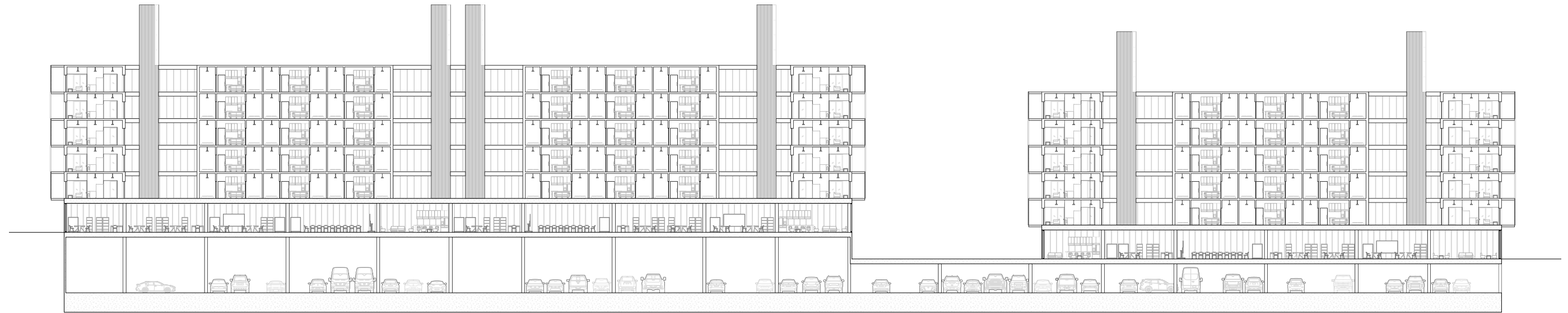
03. Program Massing

04. Preliminary Distributions



05. Facade Breakdown

06.



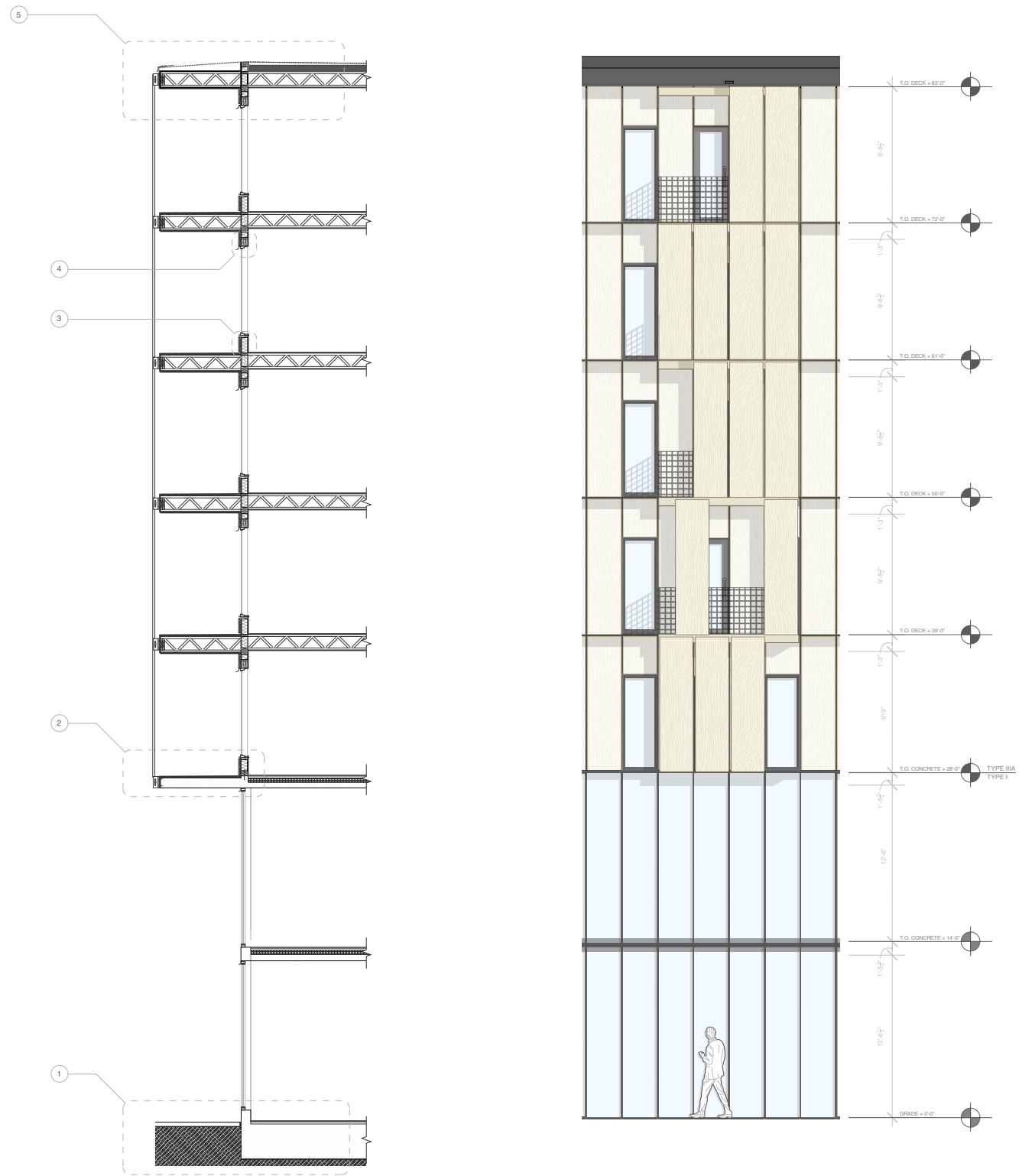
07.



The building's organization reinforces hierarchy through vertical bars that blur the spine into five parallel site-wide bars. This logic draws people from greenways into courtyards, allowing them to function as civic pockets rather than private voids. Sections through the spine reveal an intended ambiguity between interior and exterior, with the spine as a porous condition negotiating the building's edges and internal social space. Porosity is reinforced through structural and egress planning: a fluid second floor enables continuous courtyard movement, with public retail in the spine and adjacent space for offices. Column geometry, balconies, lobbies, and double-loaded corridors remain legible while supporting social overlap, and egress aligns with layered publicness, moving through courtyards before descending to reinforce the courtyard network as infrastructural rather than decorative.

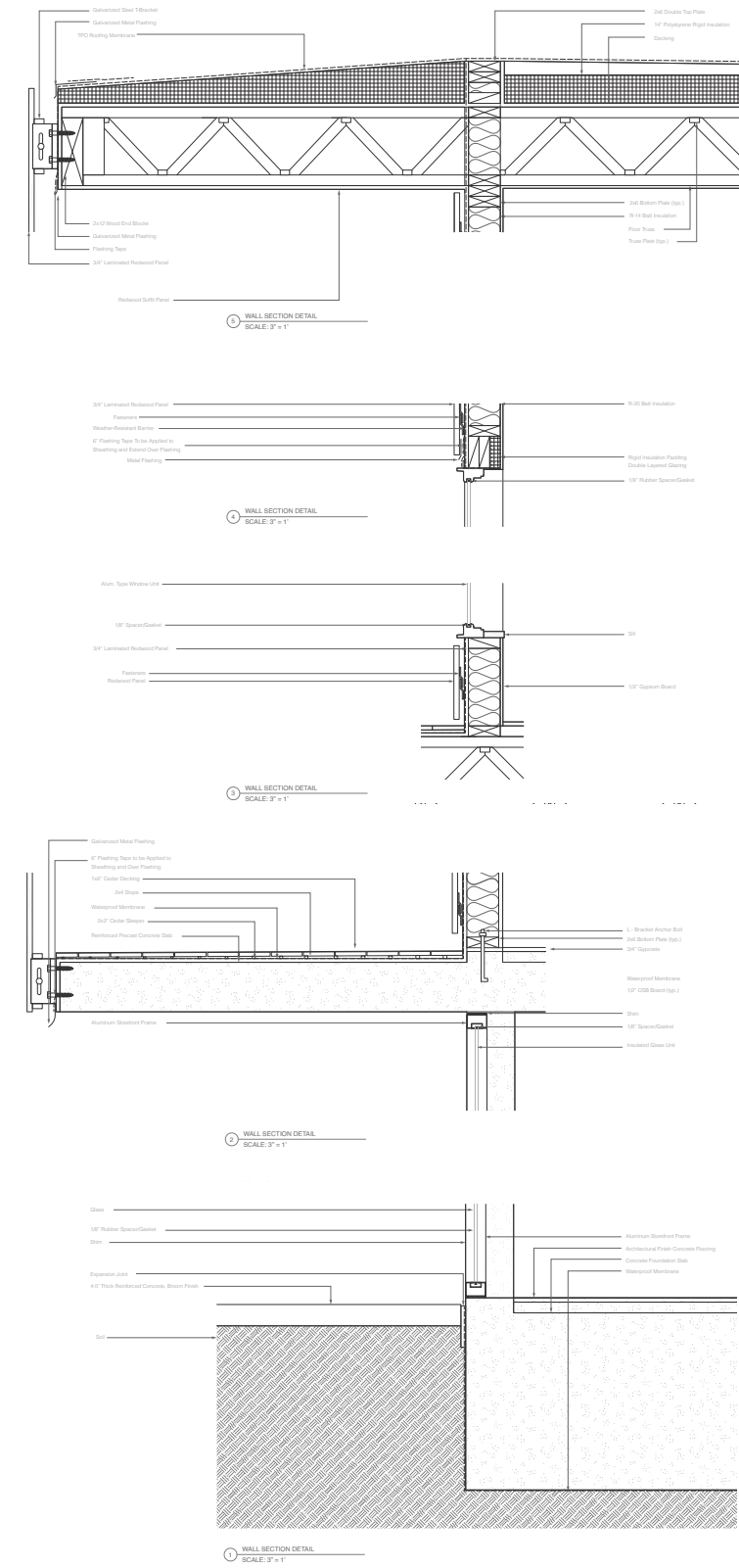
Wood treatment recesses the spine, letting horizontal bars read in relief and clarifying wayfinding, while diffused pressure treated wood and deliberate ambiguity position the building as secondary to the greenway and retail experience. Curtain walls shift in color inward, with black-stained residential units receding into tinted glazing. Across podium and residential levels, curtain wall, aluminum, and redwood panels finished in clear or black stain dissolve scale and soften boundaries between greenways and social programs, maintaining transparency. Continuity intensifies in the residential courtyard, where porosity enables access and visibility, and interior and exterior spaces, from greenway to podium, plaza, courtyard, and balcony, bleed into one another, intentionally blurring connections through the building.

06. Longitudinal Section
07. Cross Section



08. Plans

09.



09. Wall Section and Details

At the unit scale, the project reframes domestic life through a gradient of shared space across typologies. Traditional units follow a service bar to living bar logic, while collective units emphasize flexibility and a recalibrated social contract that reduces reliance on operable doors and increases contribution to shared space. As units scale from one to four bedrooms, shared conditions intensify through internal thresholds, balconies, and shared storage, varying public and private readings. Walnut sliding doors mark moments of exchange, while privacy is maintained through window placement and ambiguous unit boundaries, proposing a social contract based on invitation and movement between collective and private space.

Environmental systems reinforce permeability and seasonal adaptability. A longitudinal section shows how linear unit bars scale into building organization and reveals courtyard chimneys that enable natural ventilation. In temperate seasons, fresh air enters through operable windows while south facing glazed chimneys with masonry thermal mass generate draft.

The chimney connects to a plenum and ducts serving each unit, allowing consistent operation across the residential field. In winter, warmer air is drawn from above the building while the chimney plenum is closed to redirect heat into units and ventilate through windows. Environmental studies indicate moderate annual dry bulb temperatures, supporting extended use of the solar chimney and aligning environmental performance with the project's broader aim to integrate access, social exchange, and comfort.



10.

11.

12.

10. Half Court Vignette
 11. Natural Ventilation During Colder Seasons
 12. Natural Ventilation During Warmer Seasons

INTERSTITIAL SPACE

Texas A&M University Visitor Center

03

Professor: **Marcel Erminy**

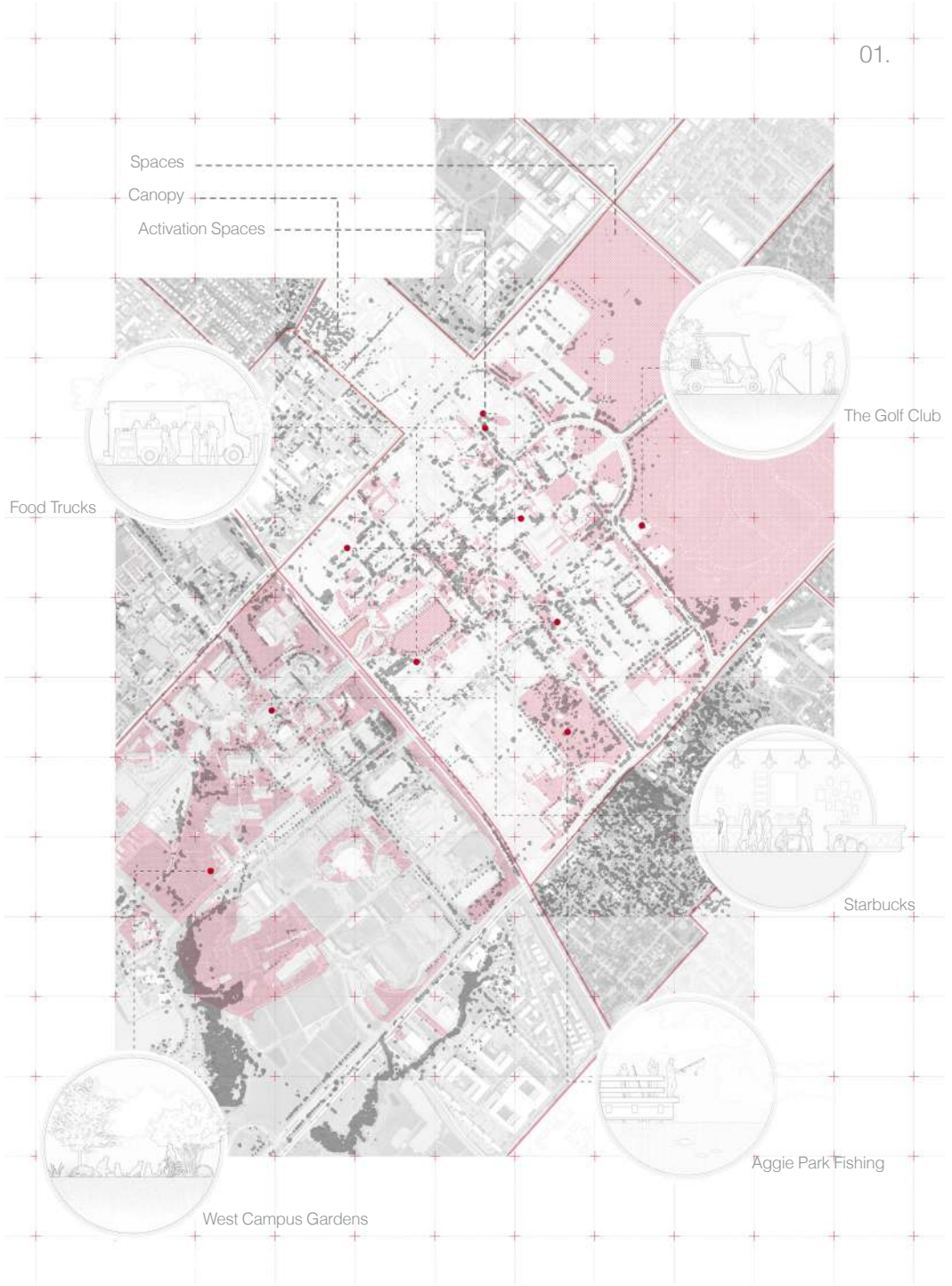
Collaborators:

Junseok Lee

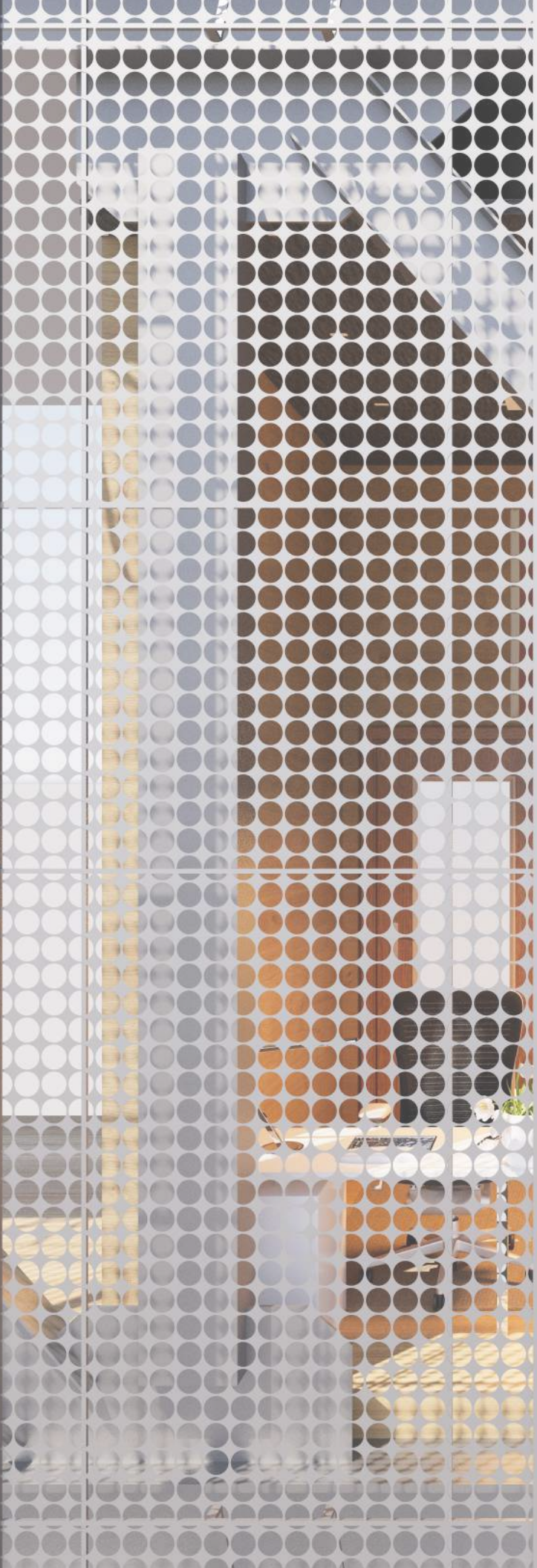
Year: **Fall 2023**

Contribution: *Design, Research, Structure, Drawings, Digital Modelling, Rendering, Post Production, Physical Model*

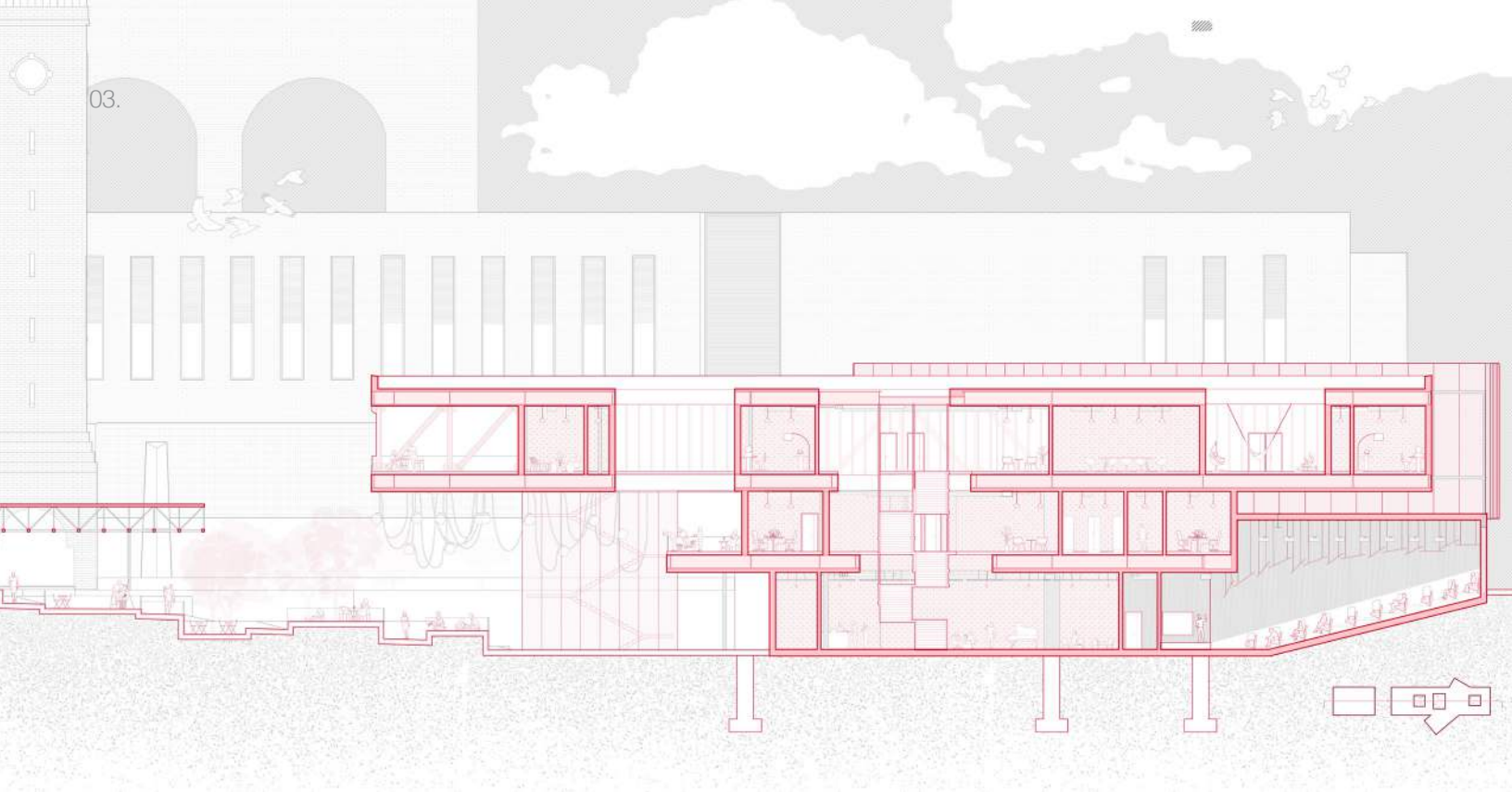
Texas A&M University has been subjugated to the dramatic influx of student body throughout its lifespan resulting in urban sprawl and infrastructural development. Unfortunately, the reliance on motor transportation over the human scale has caused a lack of intentional development of the interstitial spaces between built environments. These spaces are important because they are the brief moments of unpredictable interaction that create a community and ultimately create a shared identity, which is what A&M strives to achieve on campus. Ultimately, This lack of interstitial spaces that benefit the community leads to a scarcity of cultural discourse between prospecting, current, and former students.



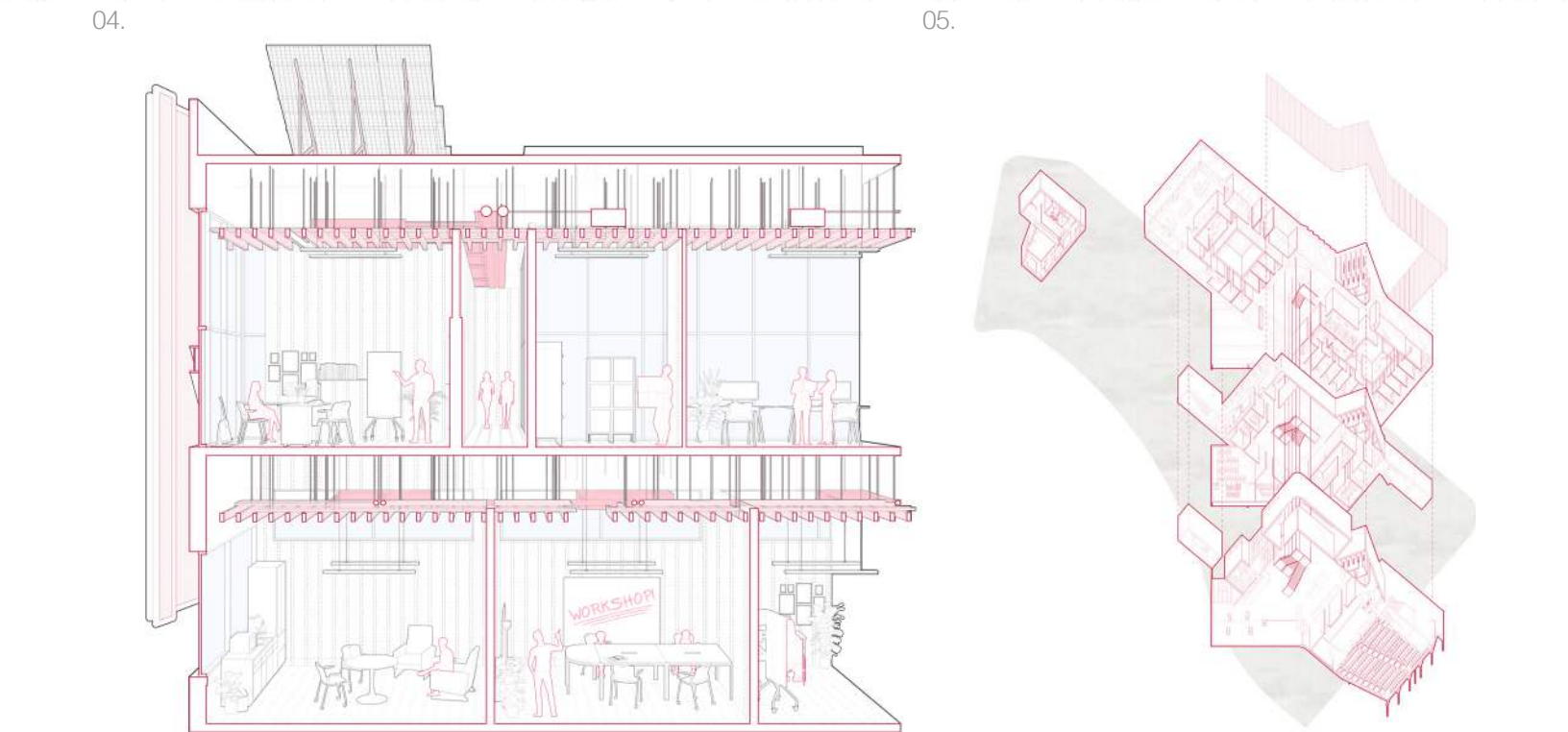
01. Activation Mapping



Facade Render of Office Space 27



03.



04.

05.

Our proposal for The Aggieland Visitor Center aims to create an environment that promotes social engagement, collaboration, and a sense of belongingness among all users. We plan this to happen by activating these interstitial spaces defined earlier. Once activated, these spaces allow the interaction between visitors and students to take place allowing the visitors to see what it truly means to be part of the Aggie community.

- 03. Site Plan of New Addition to the Main Campus
- 04. Section Chunk Through the Truss, Atrium and Auditorium
- 05. Worm's Eye View of Circulation Path



06.

07.

08.

09.

- 06. Section Through Egress Stairs, Truss and Sunken Plaza
- 07. +1 Floor
- 08. 0 Floor
- 09. -1 Floor



10.

The activation of the interstitial spaces within our site will be done through our driving design element: the truss. The truss serves as a conduit for bringing programmatic elements within and a canopy that shapes the interstitial environment underneath. The cantilevering of the truss ultimately blends the transition point, The edge, of campus and our context, playing in part with our plaza to ease our users into our space with full coverage, protection, and integrity from the

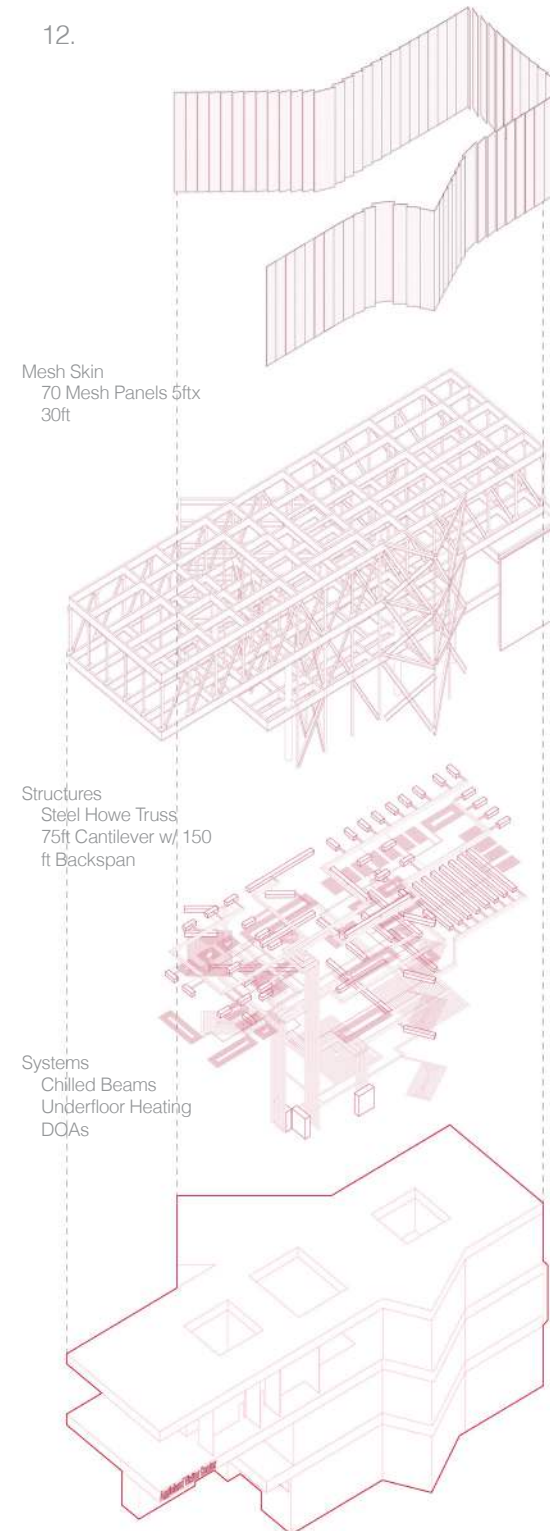
natural elements, such as the summer sun or showers in the spring. Attached to the truss is the mesh skin which serves as a mediary element that diffuses the material transition from the steel truss to the cement fiber facade. Present mainly on the Welborn-facing facades, the mesh provides coverage from noise pollution, and solar radiation, and lowers facade temperatures.



11.

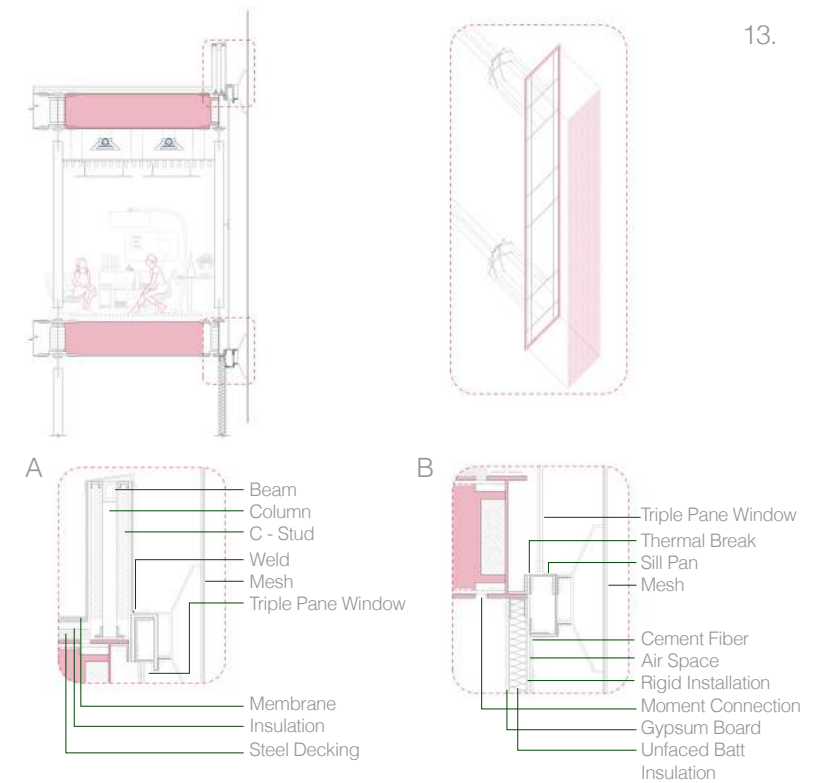
10. Physical Structure model
11. Truss Render Depicting Levels of Engagement

12.

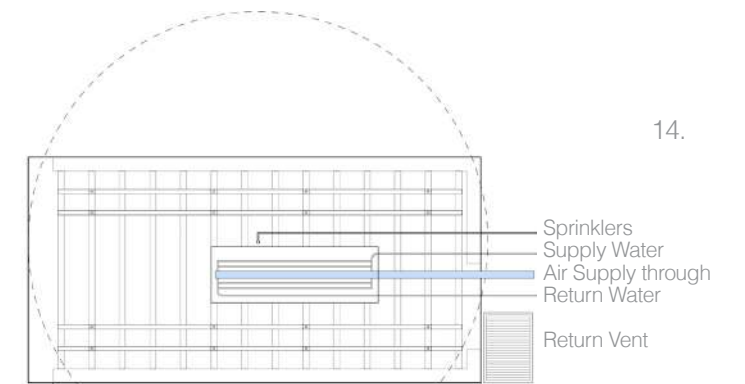


12. Exploded Axonometric
13. Structural Detail Diagram of Skin Mesh to Facade
14. Ceiling Systems - Chilled Beams // Dedicated Outside Air System (DOAs)
15. Slab System - Under-Floor Heating (UFH)

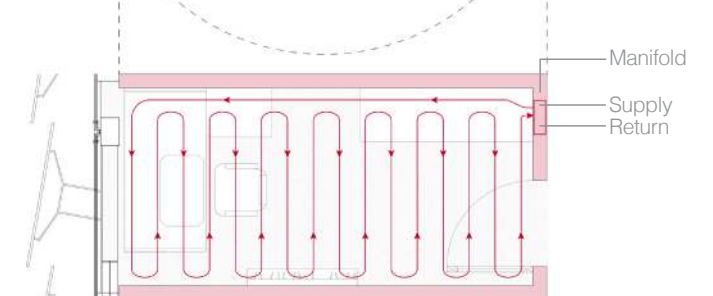
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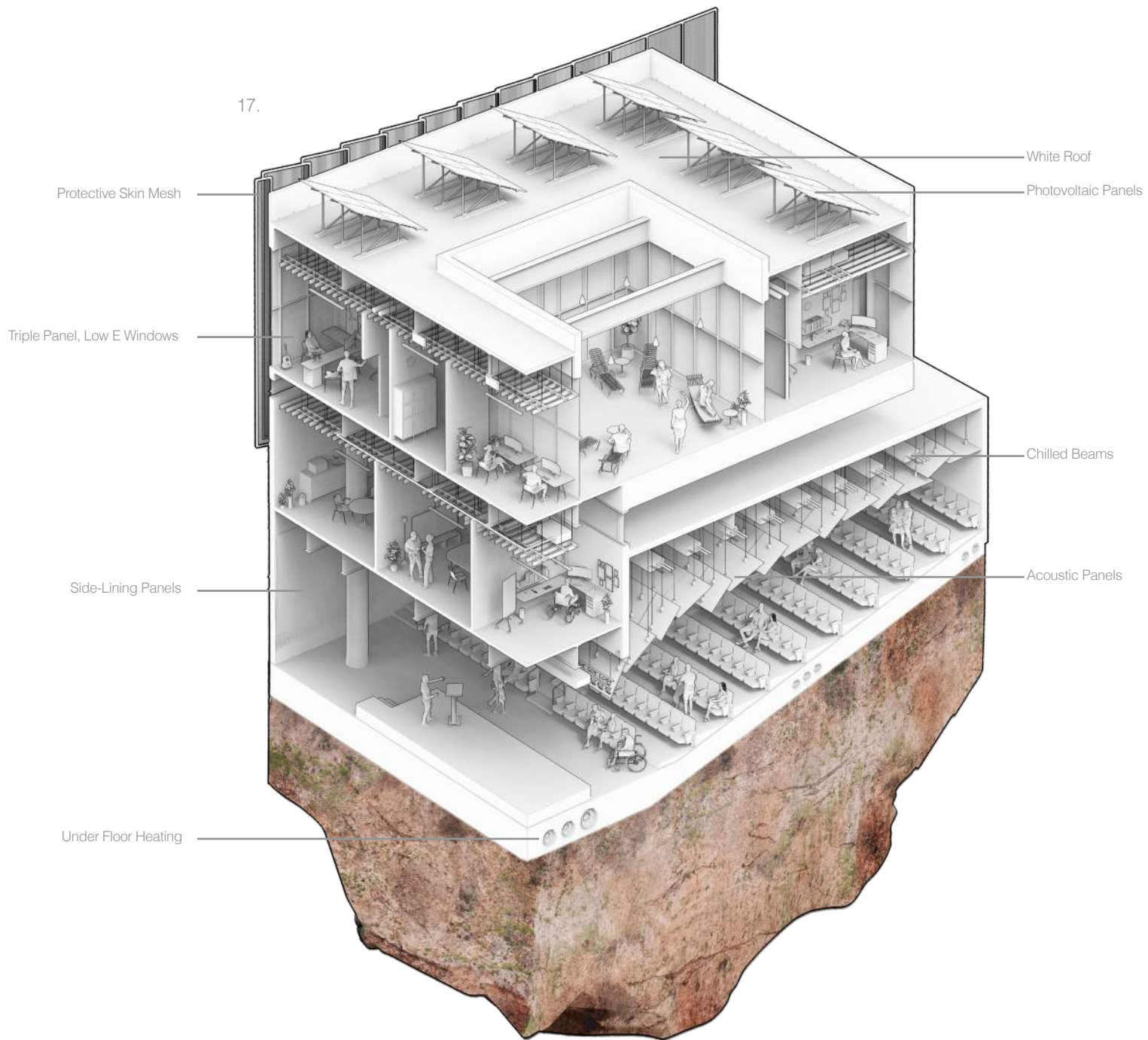
14.



15.







The open layout on each floor caters to user capacity, fostering a balance between spatial design and user experience. Through the ascension of the levels, there's a deliberate increase in space density, promoting a more intimate and engaging interaction among users. This design approach creates an active environment, creating seamless transitions between the semi-private and social engagement across floors. The truss cantilevers create a canopy over the sunken plaza. This overarching structure

helps imply this space between the interior and the exterior. Three components come together to activate the plaza: the space itself, the canopy provided by the truss, the shading structure, and vegetation, and the program from the visitor center and the cafe. This open plaza allows the user to pause and engage with their surroundings including the people, thus fostering a sense of connection and collaboration among all users, and grounds a space underneath where all parties can converge.

17. Section Chunk of Relationship Between Floors



WITHIN THE SCAPE

Redefining The Landscape

04

Professors:

Patrick Danahy
Gabriel Esquivel

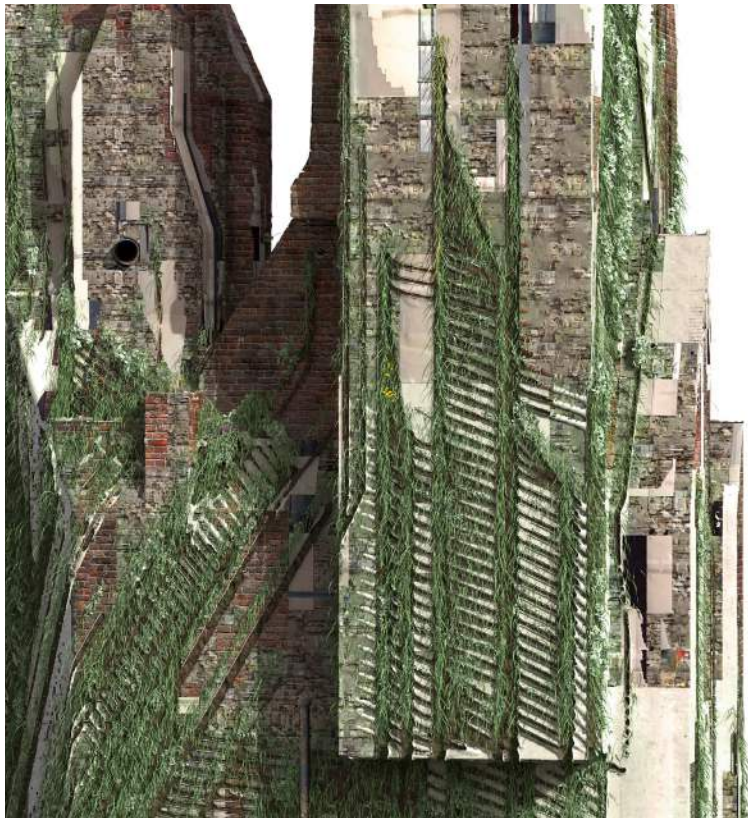
Collaborators:

Armando Basualdo
Maya Rubio
Riley Wemhoener
Kalle Bentson

Year: **Spring 2022**

Contribution: *Design, Research, Drawings, Digital Modelling, Post Production, Physical Model*

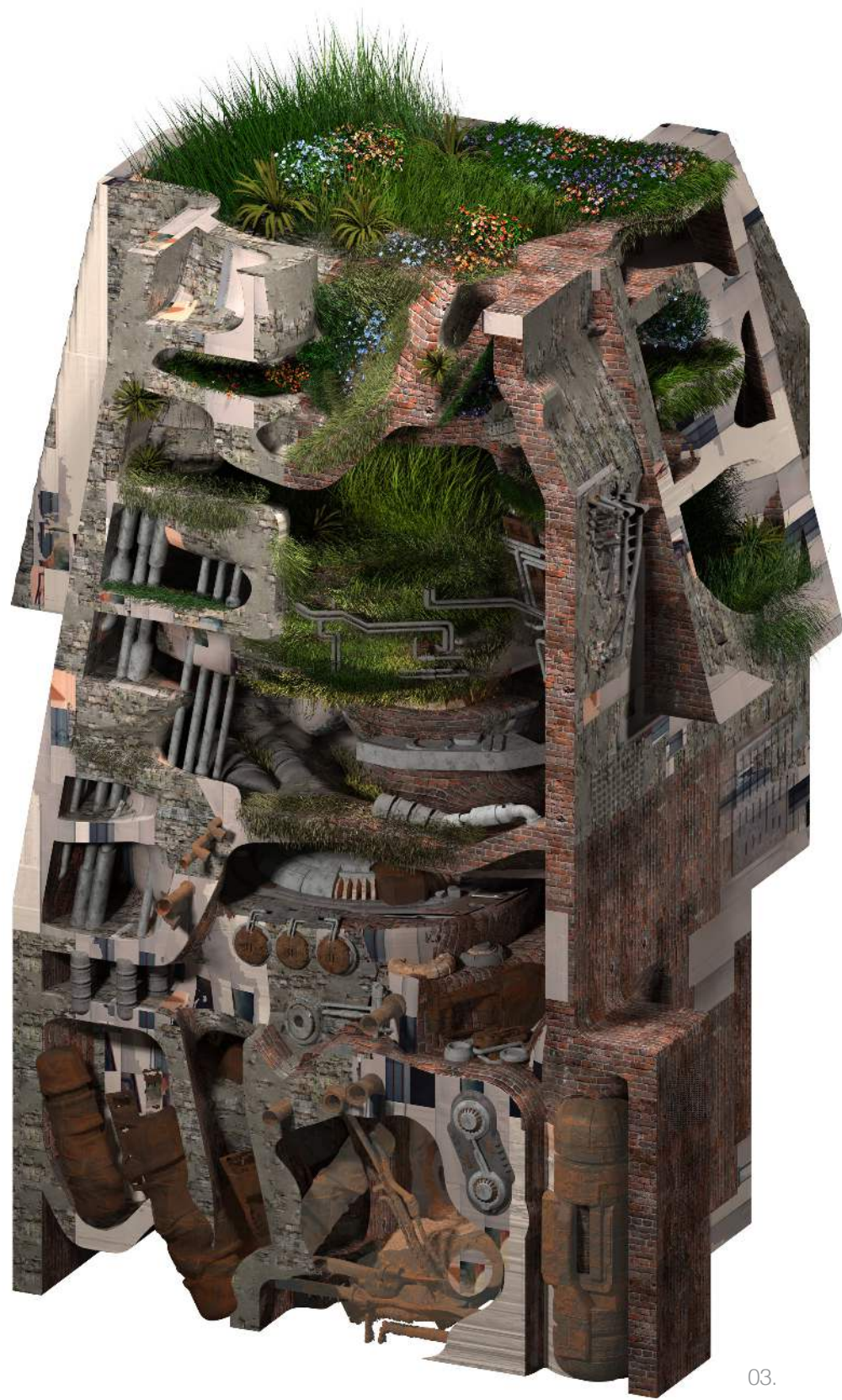
01.



The figure's interior relates to the external context, continuing the material hierarchy. Organic matter disrupts human-imposed order, reflecting a shift to biochemical surface and messy self-organization. This growth originates from an anthropocentric perspective of nature, as the form was intended as an exhibition of idealized natural growth humans often associate with nature. Human absence led to natural growth that often looks unfamiliar to our idealized vision of nature. While human influence is still somewhat recognizable, the imposition of control on nature is not intended to serve them. A formal organization no longer designates spatial zones; instead, microbiomes operate as an ecology of parts. A destroyed organization's remains lay scattered amidst rubble and trash, with human-made machinery left behind and isolated. These pristine, entirely anthropocentric elements are impenetrable, and their isolation produces a sterile environment.

01. Facade Detail of the Deterioration by Vegetative Growth





03.

03. Section Chunk Through the Unfamiliar Vegetation and Human Imposition
04. Elevation Close Up

04.



Both the unfamiliar vegetation and the lack of organic matter on machine parts, detail different outcomes of attempts to control nature. The first fights back against the imposed control to self-organize, and the second is so overly controlled that nature ceases to exist in that biome. The transitions between each microbiome and the variety of growth that occurs outline the shift from an anthropocentric focus, with heavy inorganic machinery, to a biochemical active surface, with self-organizing organic matter. The lack of picturesque growth emphasizes the human desire to display their romanticized view of nature. The relationship between figure and ground is reiterated in the interior by posing the question:

What constitutes a landscape?

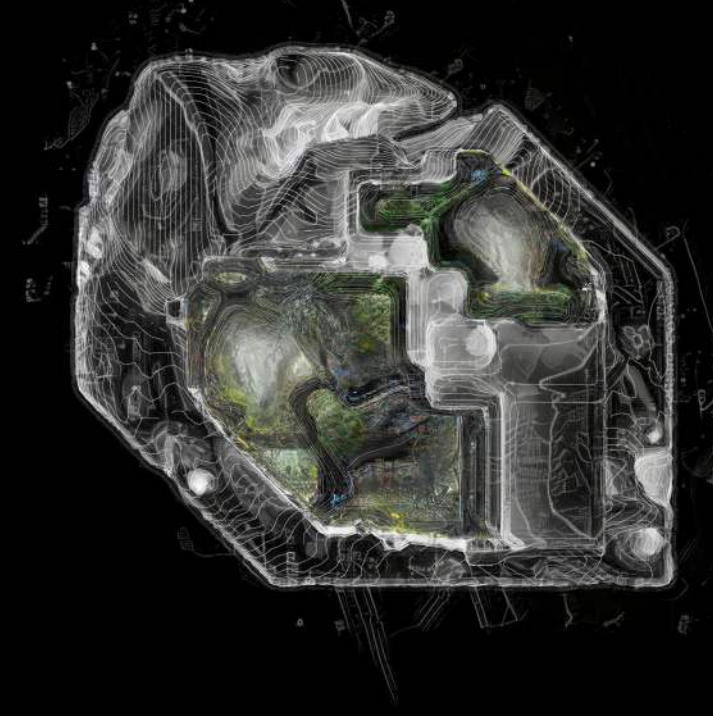
Landscapes are normally thought of as being horizontal planes with a variety of vegetation operating as an ecosystem. Since our object's form is ambiguous from the ground, the figure itself can be perceived as ground, and the vertical growth and natural wilds that self-organize throughout the interior could be considered a landscape. The multitude of microbiomes each constitute a part of the interior and the ecology of parts, interrelated to one another, produce an ecosystem. Natural elements are decontextualized and reorganized for self-organization, and human control causes transition from natural growth to pristine machinery, resulting in diverse vegetation through self-organization.

05.

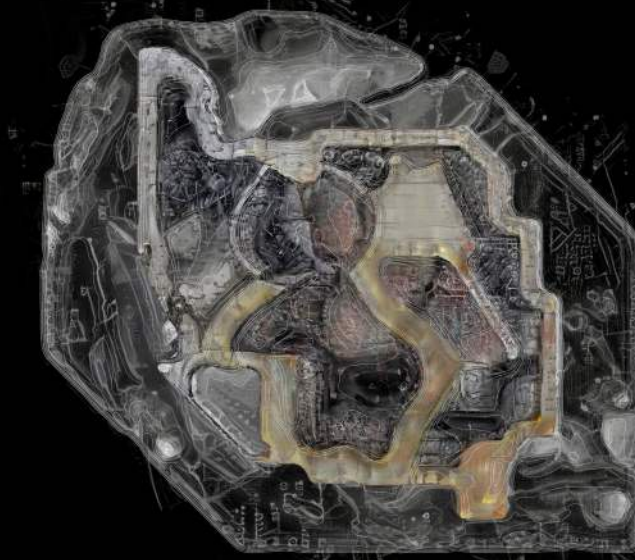


05. Section of the Ecological Narrative Within the form

06.



07.



06. Plan View of Organic Overtake of Inorganic Machinery
07. Plan View of Self-Organizing Organic Matter

2025 BUILDFEST

Bethel Woods Art & Architecture Festival:
Peace Rises

05

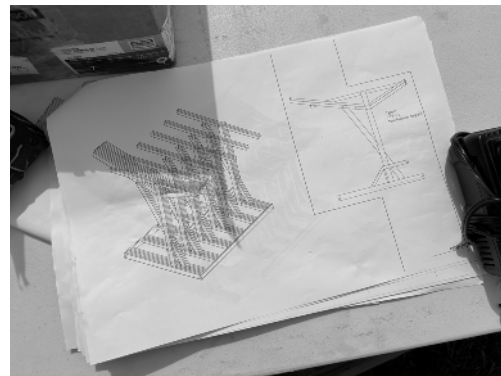
Year: 2025

Collaborators:

Alex Pina
Manuella Gbossou
Jim (Jingping) Wu
Shaelyn Parker
Grace Andrews
Benjamin Rao
Braden Birko



Trillium draws formal and conceptual inspiration from the Trillium flower, associated with renewal and transformation. Echoing the flower's morphology, the pavilion unfolds as a translucent red petal, inviting engagement with light, material, and memory, evoking the ephemerality of nature and the countercultural spirit of Woodstock's "flower power." Central to the project is an investigation of rebirth not only as metaphor, but as material methodology. Extending research into computational design of waste based material assemblies, the pavilion employs reclaimed wood and post industrial plastic. Its structural system adapts traditional timber joinery through fabrication to accommodate the irregularities of salvaged stock. Recycled plastic panels are milled to seat within grooves of reclaimed wood siding, forming a translucent envelope that captures and refracts sunlight. The result is a luminous, contemplative space, a material articulation of peace rooted in cycles of reuse and renewal.



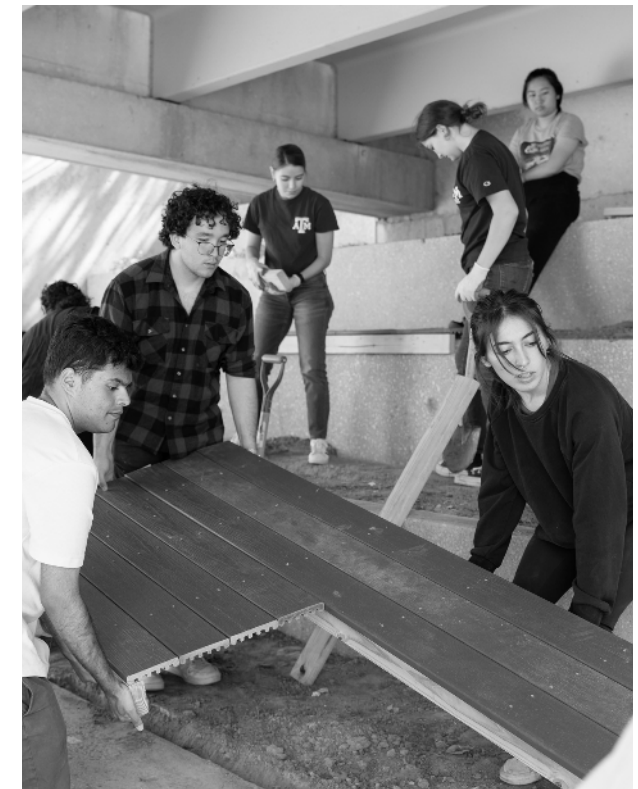
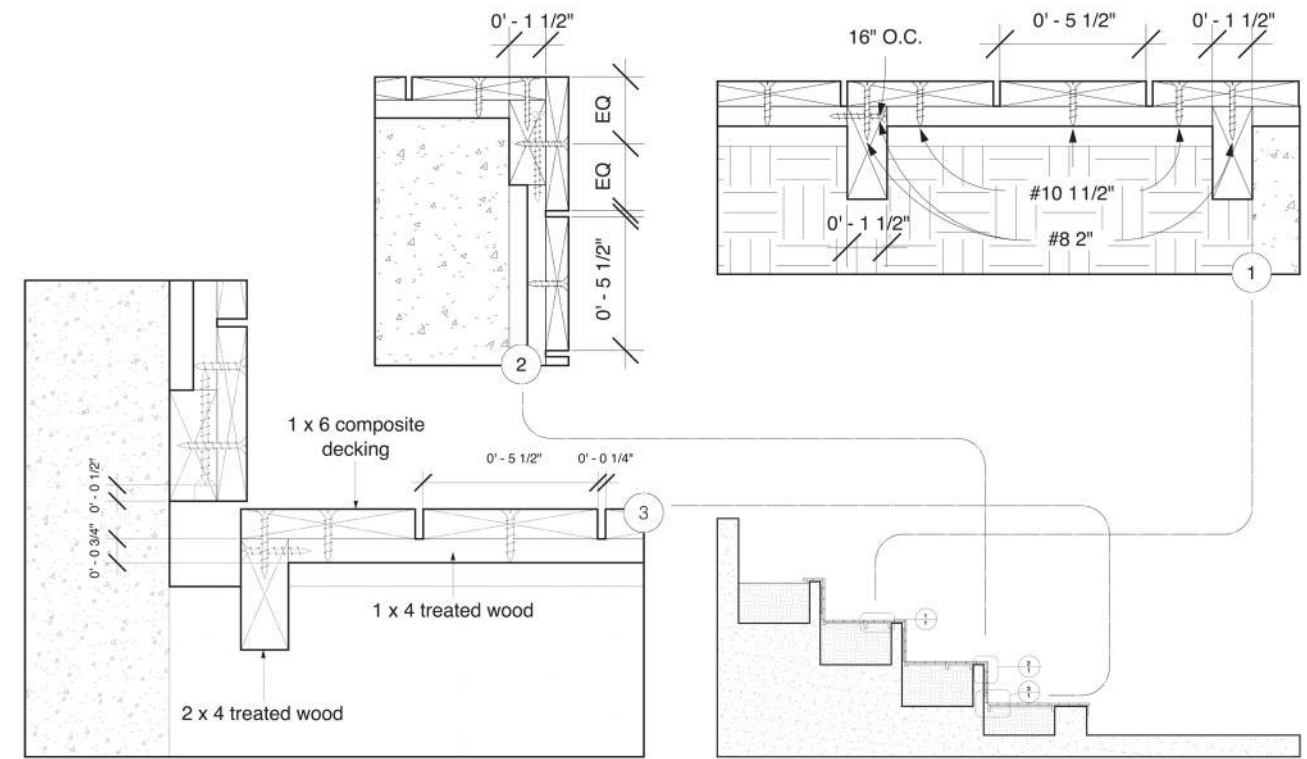
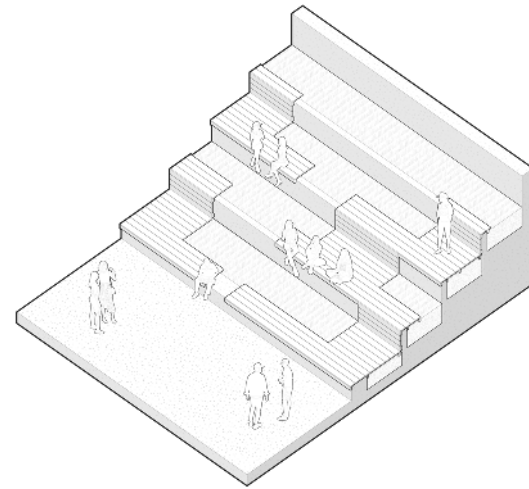
FREEDOM BY DESIGN

Installation Extravaganza

06

Year: 2022
 Photographer: *Junseok Lee*

Freedom by Design Installation Extravaganza was an event dedicated to revitalizing the vacant space underneath Langford's A bridge. In this endeavor, I assumed a leadership role and was responsible for organizing and supervising the fabrication of seating on the first level of Langford A. The project was a collaborative effort involving the school and the architectural community to transform a neglected area into a functional space for studying and recreational events. Our team worked diligently to create an environment that would benefit and be appreciated by all who traversed it. The project's success was a testament to the dedication and hard work of all involved.



fin.

Thank You