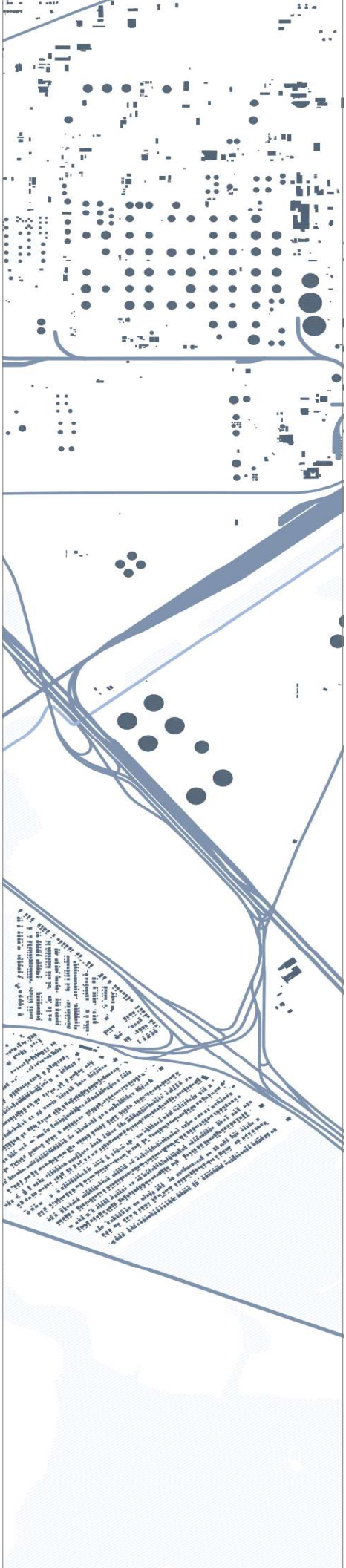
selected works

portfolio

MEGHANA KANKARIA



MEGHANA KANKARIA

4th Year Architecture Student

I'm an architecture student exploring immersive, community-driven and environmentally responsive design. My work blends narrative spaces, material experimentation and structural logic. I thoroughly enjoy creating spatial visualisations. I value curiosity, iteration and designing spaces that connect people, place and purpose.

+1 (832)-709-7353

kankariameghana4@gmail.com

Meghana Kankaria

EDUCATION

2013 - 2020 BHAVAN'S B.P. VIDYA MANDIR, CIVIL LINES - India
Elementary & Middle School

2020 - 2022 CENTER POINT SCHOOL, KATOL ROAD - India
High School

2022 - present UNIVERSITY OF HOUSTON - USA
Bachelor of Architecture, minor in Business Administration

LANGUAGES

English
C1

Hindi
Native

Marathi
Intermediate

French
Beginner

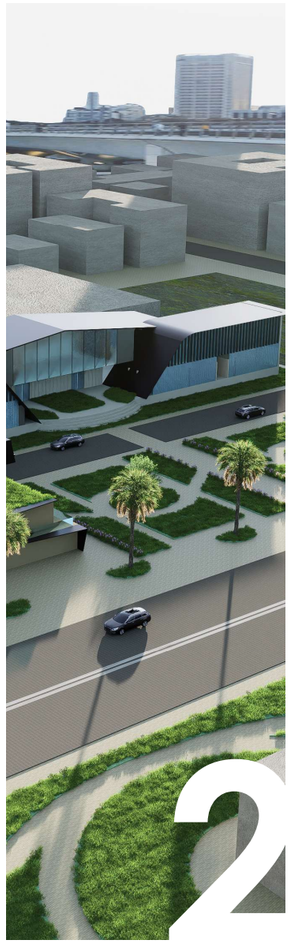
SKILLS

Adobe
- Photoshop
- Illustrator
- Indesign
- Acrobat

3D Model
- Rhino
- Grasshopper
- AutoCAD
- Revit
- Sketchup

Rendering
- D5
- Twinmotion
- Enscape

CONTENT



01

Harrisburg Art Museum

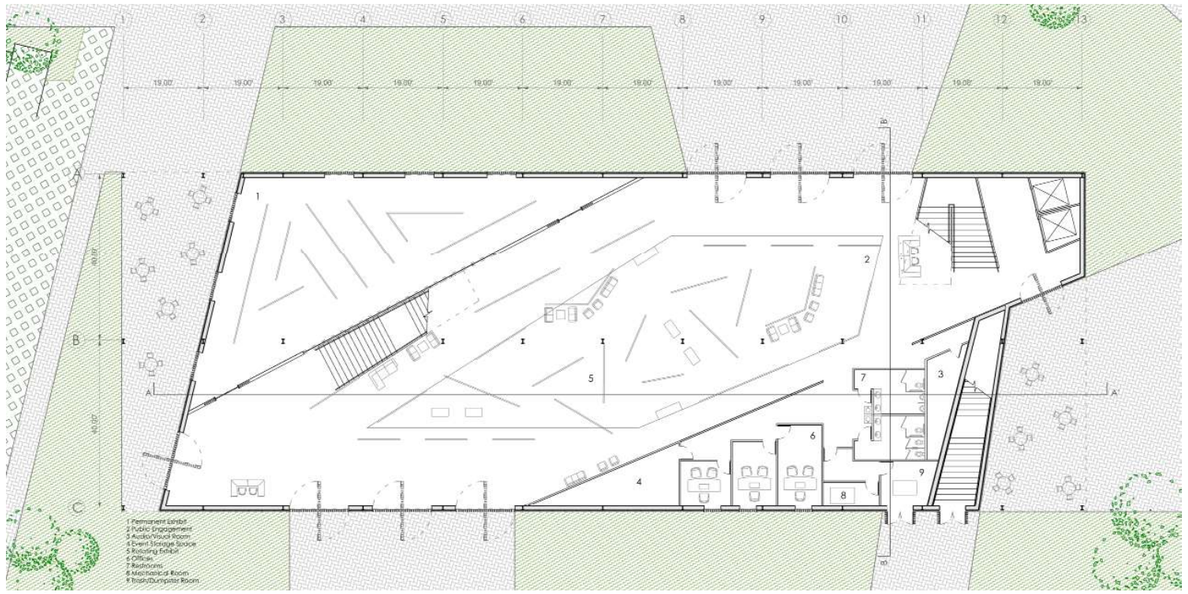
Street Art Museum

Location: Second Ward, Houston, TX

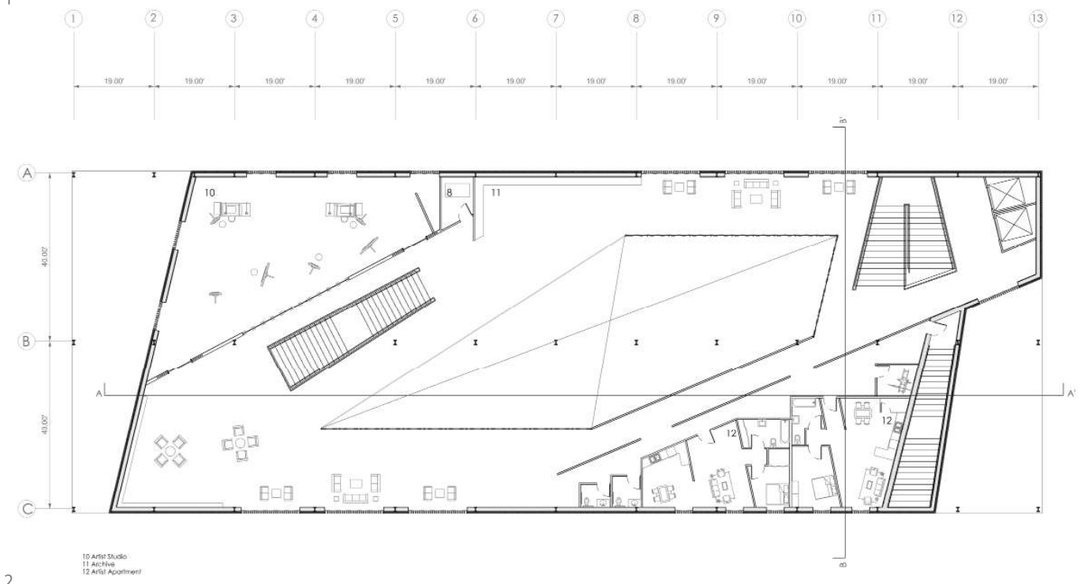
Site Area: 18,000 sq.ft.

This project reimagines an existing street art museum as an open, community-driven cultural space shaped by creative practice rather than age or background. Local street artists and youth use the building as a safe environment for making and experimentation, while skaters, cyclists, and urban sport communities activate the surrounding outdoor spaces. Neighborhood families engage through workshops, gathering areas, and a semi-open library, and artists-in-residence balance privacy with public interaction through studios and events. Visitors are guided through clear circulation that offers an authentic introduction to local street-art culture. The design prioritizes flexibility, durability, and visual openness, transforming the historic structure into an immersive and adaptable platform for contemporary urban art.

Interior Perspective



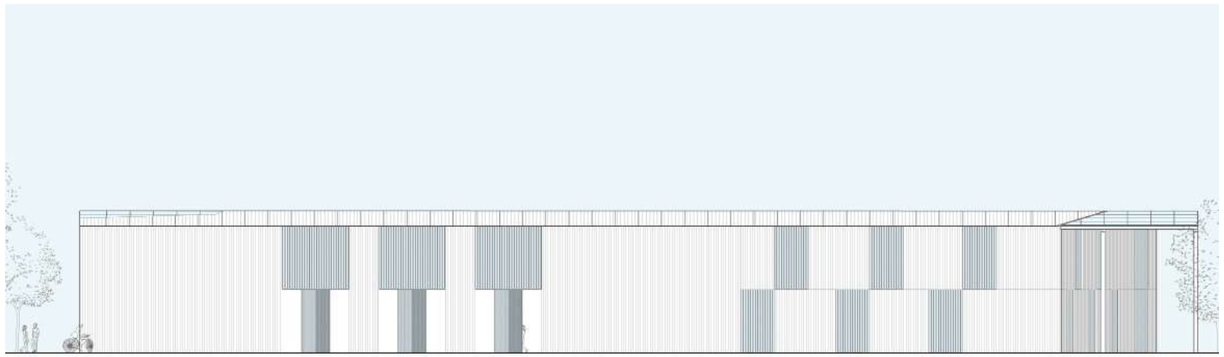
Level 1



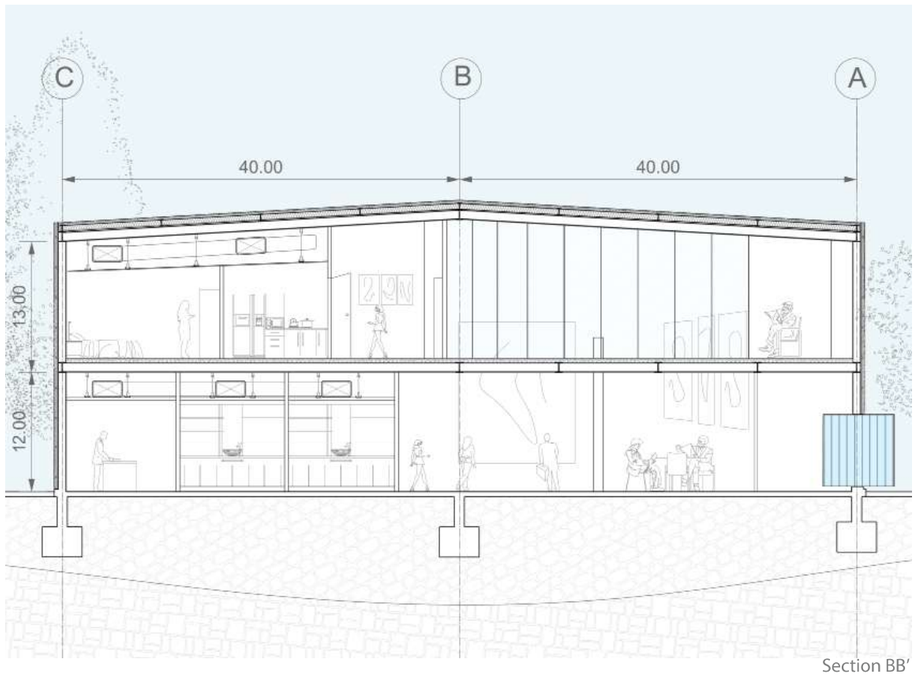
Level 2

The design's spatial strategy organizes program components around a central open volume, preserving strong visual connections between floors and maintaining a sense of transparency throughout the building. Outdoor areas, including shaded seating, circulation paths and the interface with the skate park extend the building's function beyond its walls, strengthening relationships between recreation, community activity and art-focused programming.

The building operates as a porous, flexible environment rather than a closed institution. Natural light enters through strategic façade openings and canopy elements, illuminating both public and private zones. Spacial hierarchy is emphasized - support spaces remain compact and efficient while public zones remain open and visually connected.

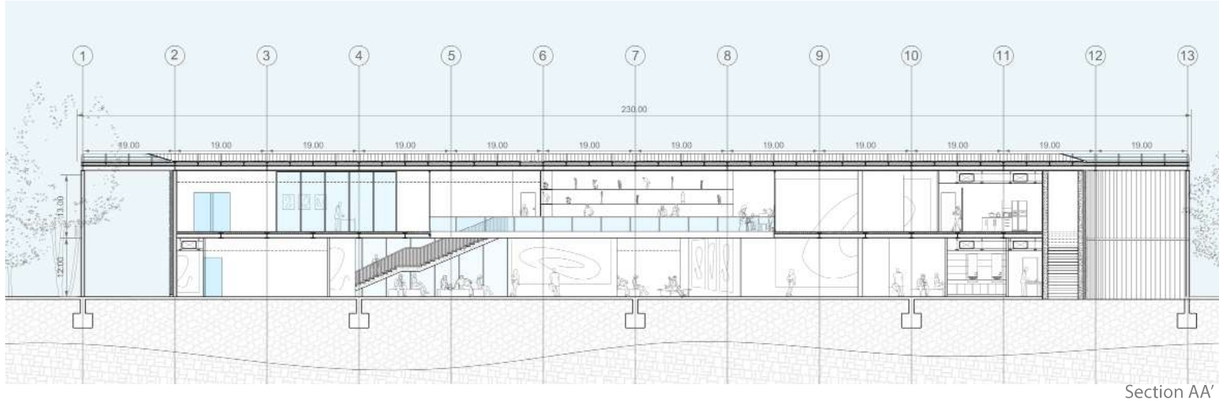


North Elevation

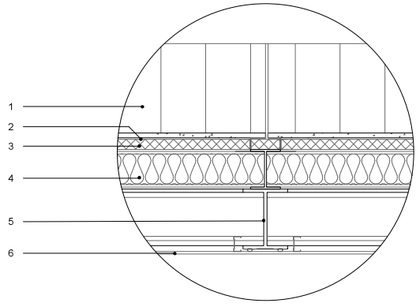


Section BB'

Open circulation, indoor–outdoor overlap, and double-height volumes ensure the building remains highly adaptable for changing uses, from exhibitions and workshops to community meetings and seasonal events. Residential components accommodate short-term artists-in-residence, enabling them to live in apartments, create in studios and exhibit within one integrated environment.

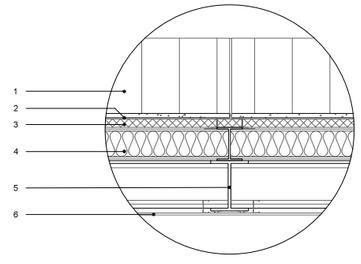


Section AA'

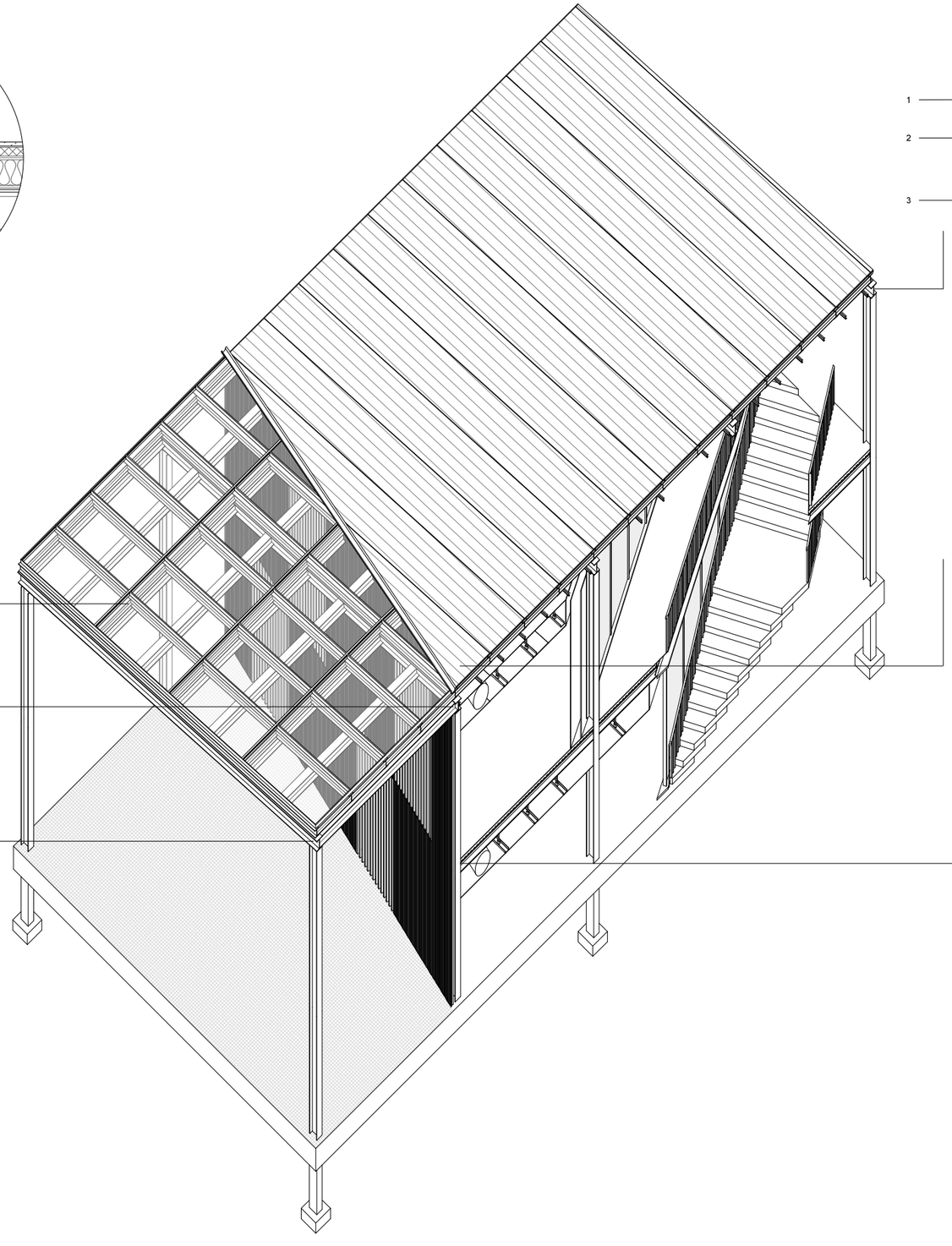


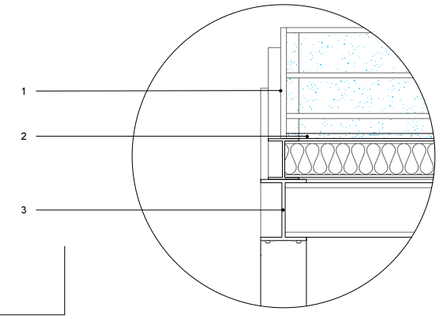
1. GFRC Roof Panel — 4"
Exterior roof cladding matching facade system.
2. Metal Gutter Profile with Drip Edge
Fabricated drainage component directing roof runoff.
3. Aluminum Mullion + Glazing Support Frame
Structural extrusion supporting the glass canopy assembly.
4. Glass Canopy Support System
Connection accommodating glass slope, weight, and movement.
5. Sealant Joint w/ Backer Rod
Flexible joint providing watertight transition between materials.
6. Structural Steel Support Beam — 12"
Primary framing member supporting gutter and canopy structure.

Laminated glass canopy supported by an exposed steel frame, providing weather protection with visible structure, integrated drainage, and a light, transparent architectural presence.



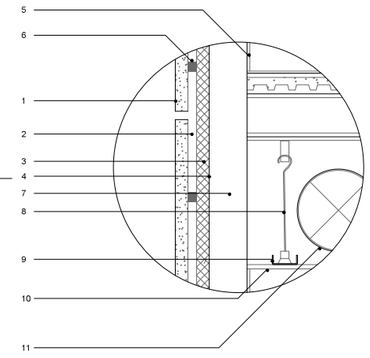
1. Precast GFRC Exterior Panel — 4"
Primary facade cladding providing exterior weather protection.
2. Ventilated Air Cavity — 1"
Pressure-equalized cavity supporting drainage and ventilation.
3. Continuous Rigid Insulation — 2"
Exterior thermal layer improving envelope performance.
4. Metal Furring with Batt Insulation
Secondary framing providing thermal and acoustic performance.
5. Structural Steel Beam — 12"
Primary structural support member for the wall assembly.
6. Interior Gypsum Board — 1/2"
Interior finish layer completing the wall enclosure.





1. Aluminum Mullion / Glazing Support Frame
Structural framing receiving and anchoring the canopy glass.
2. Tempered/Laminated Glass Panel
Overhead glazing providing weather protection and daylight.
3. Structural Steel Support Beam — 12"
Primary structural support for the mullion and glazing system.

Corrugated GFRC cladding system providing durable, lightweight, and moisture-resistant exterior surfacing with vertical rhythm and a monolithic appearance.



1. Precast GFRC Cladding Panel — 4"
Exterior rainscreen component providing façade finish.
2. Ventilated Air Cavity — 1"
Pressure-modulated cavity supporting drainage and ventilation.
3. Continuous Rigid Insulation — 2"
Exterior insulation improving building envelope performance.
4. Self-Adhered WRB
Continuous air and water-resistive barrier.
5. Interior Gypsum Board — 1/2"
Interior finish surface.
6. GFRC Support Bracket / Clip
Concealed attachment transferring cladding loads to structure.
7. Structural Steel Beam — 12"
Primary structural framing member.
8. Ceiling Hanger Wire
Suspended support element for the ceiling system.
9. Suspended Ceiling Track / Grid
Ceiling framework supporting tile and integrated systems.
10. Acoustic Ceiling Tile (ACT) — 5/8"
Acoustic panel providing sound absorption and finished ceiling surface.
11. Mechanical Duct / Diffuser
Integrated HVAC distribution component providing conditioned airflow.

Structure, material and environmental systems work together to support an open and adaptable building. A durable GFRC façade wraps the steel frame, creating a layered envelope that balances protection, ventilation and visual texture. The sloped roof and glass canopy bring daylight deep into the space while providing shade and weather protection for both interior and exterior activity zones. Interior systems are integrated within the structural grid to maintain openness and flexibility, allowing spaces to evolve with changing exhibitions and programs. This building is designed for long-term use, one that supports creative expression, public engagement and everyday activity through clarity, resilience and thoughtful construction.

Chunk Axonometric with Section Details

Exterior Perspective

Interior Perspective

02

Grigg Residencies

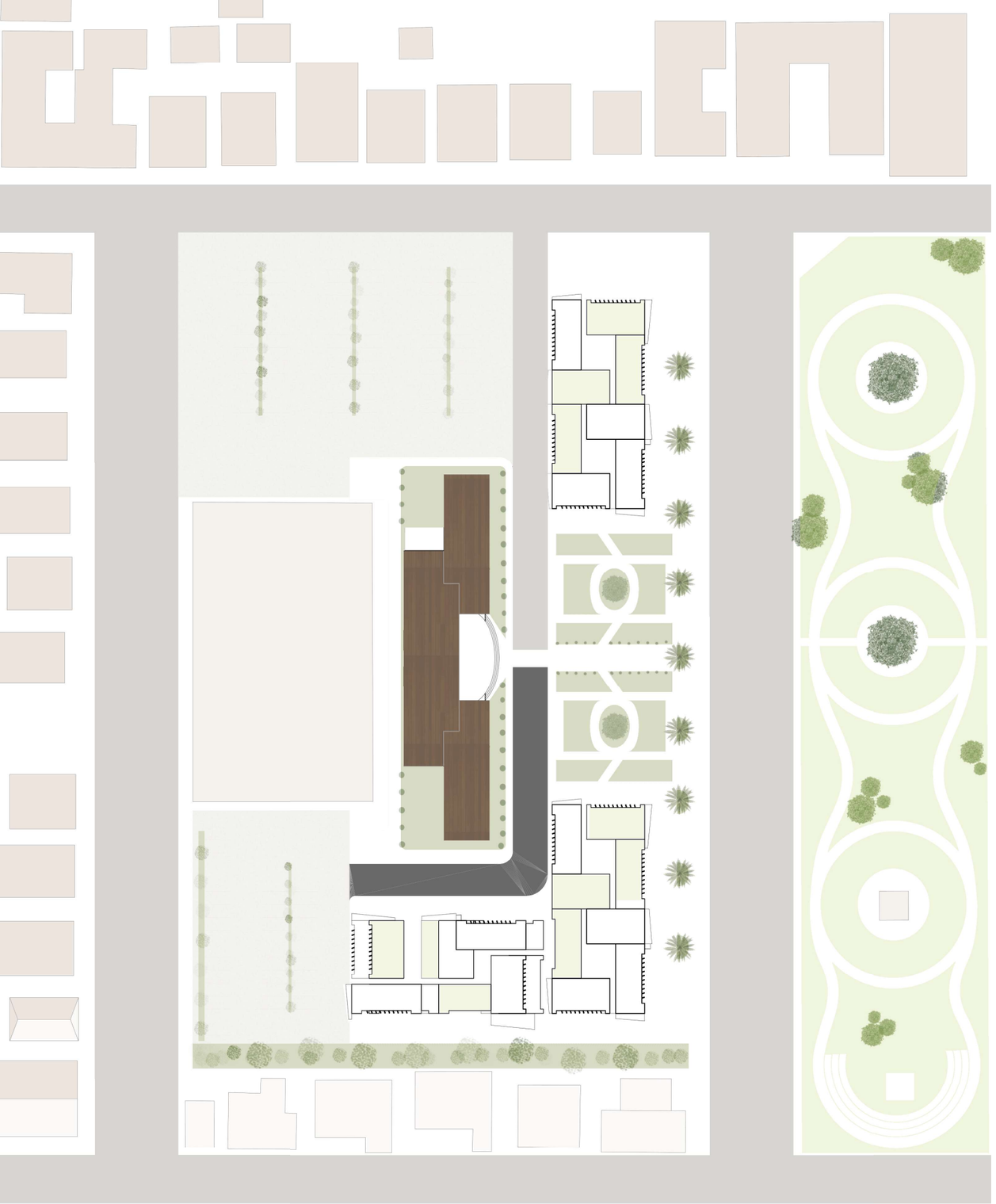
Communal Housing + Community Center

Location: Greater Third Ward, Houston, TX

Site Area: 96,000 sq.ft.

The project explores dwelling as a form of anchoring, both physically and psychologically, within an evolving urban and social context. The building reimagines an underutilized parking site beside the Palm Center Transit Center Metro Station as a multi-generational residential environment supported by shared community infrastructure. Instead of treating housing as an isolated condition, the design integrates living, learning and support spaces to foster long-term stability, ownership and connection. Programs are organized to encourage interaction while still preserving moments of privacy, allowing residents and visitors to engage with the building at varying levels of intensity. The stacking and overlapping of uses reinforce continuity between gathering, growth,\ and rest, ensuring that community functions remain embedded within everyday life.

Aerial View

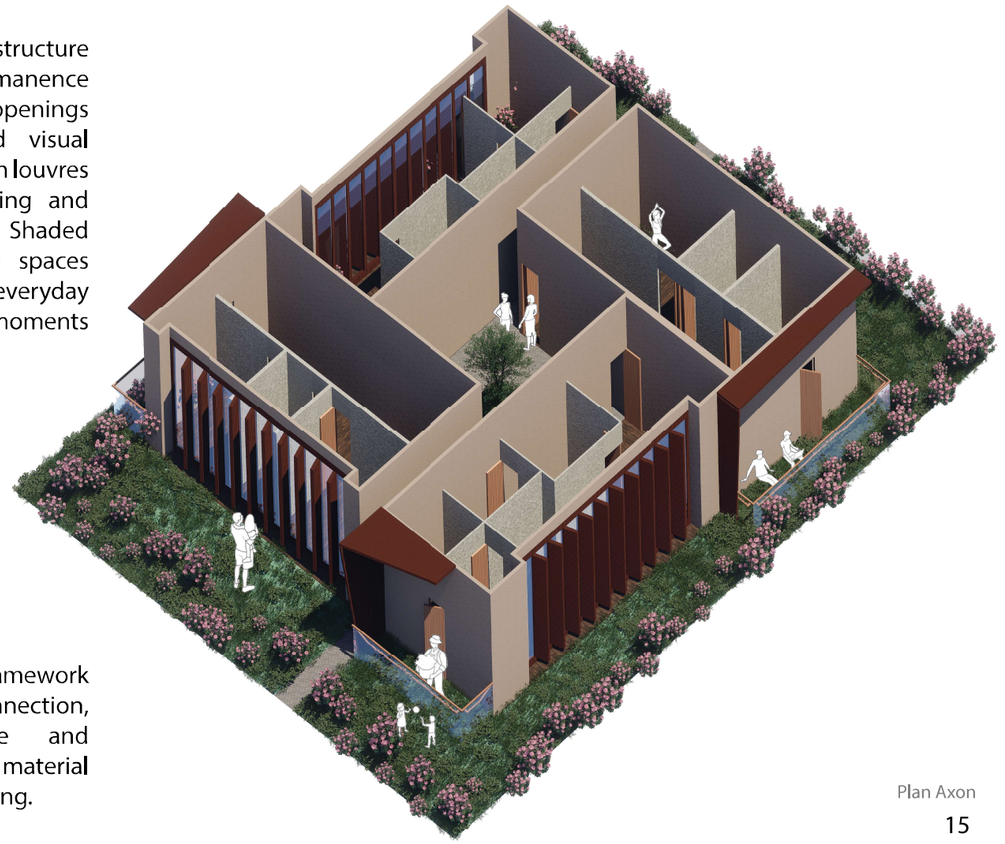


Site Plan

Exterior Perspective

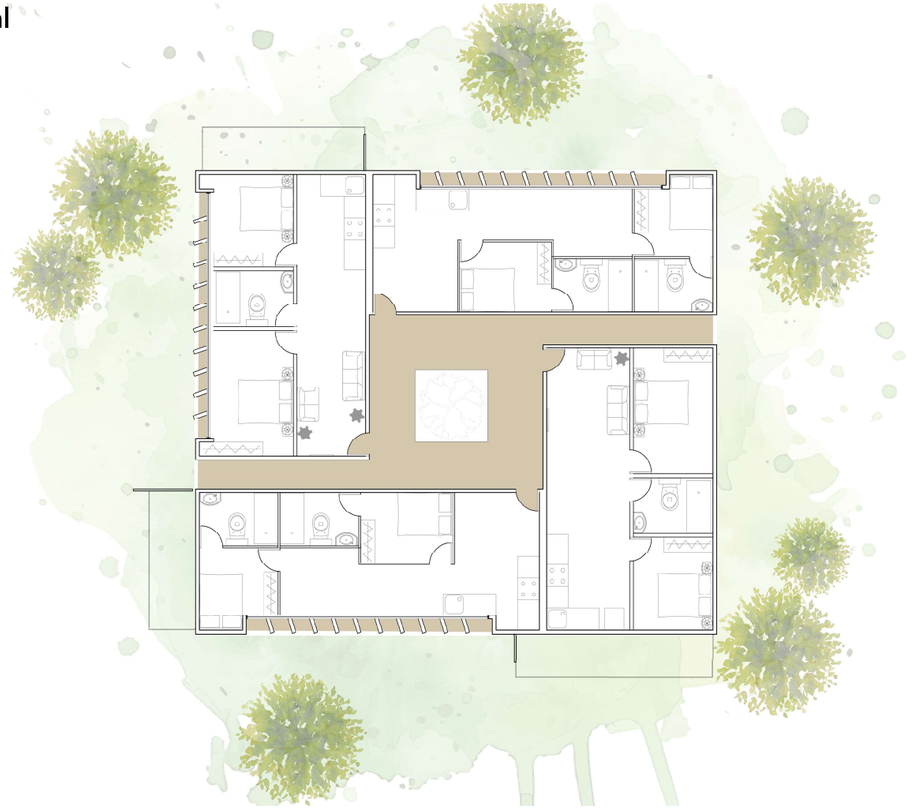
A robust concrete structure establishes a sense of permanence and refuge. Large glass openings introduce daylight and visual connection, while wooden louvres moderate privacy, shading and environmental comfort. Shaded balconies extend living spaces outward, encouraging everyday interaction and offering moments of retreat.

Architecture is used as a framework for stability and connection, balancing permanence and openness through material contrast and spatial layering.



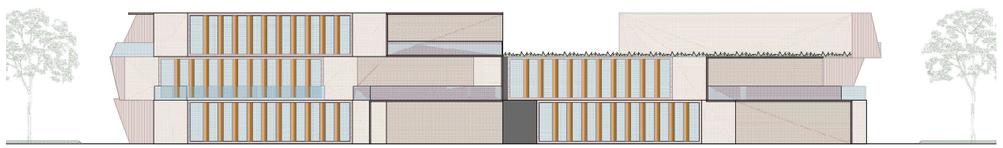
Plan Axon

Residential

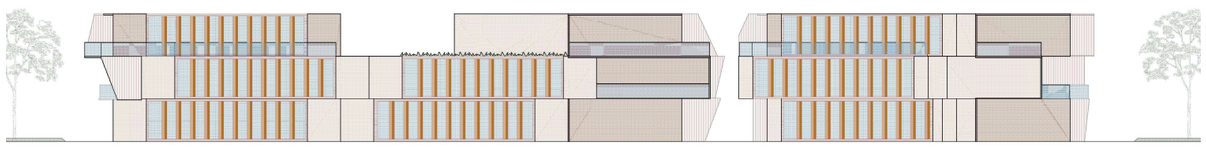


House Plan

The residential component is designed to support communal and independent living while remaining embedded within a larger familial and social network. Shared circulation, porches and adjacent community spaces encourage visibility and interaction. Green roofs further soften the massing, contributing to thermal performance while reinforcing the relationship between dwelling and landscape. This layered approach balances refuge and connectivity, allowing residents to participate in communal life at their own pace.

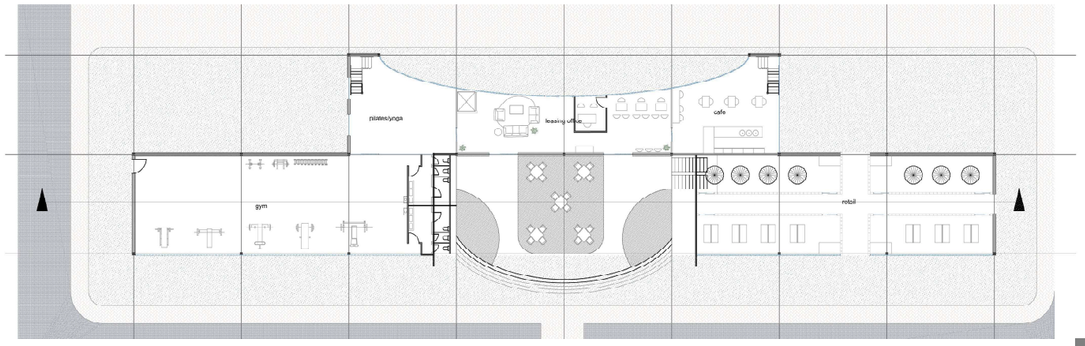


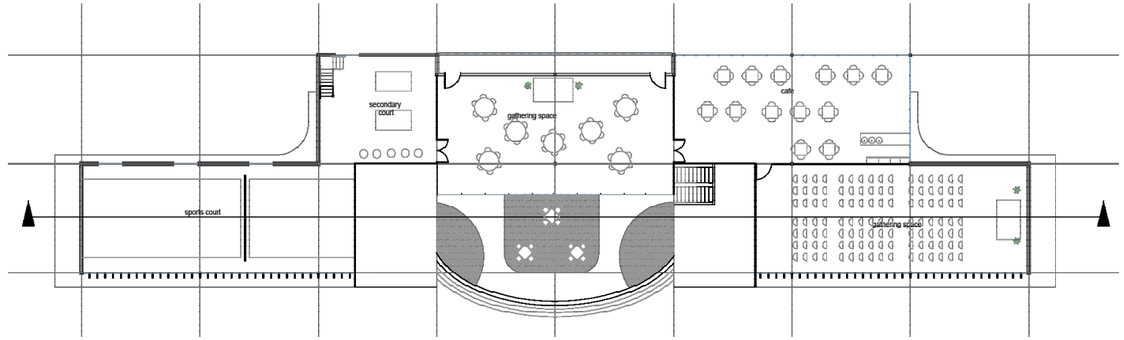
Elevation 1



Elevation 2

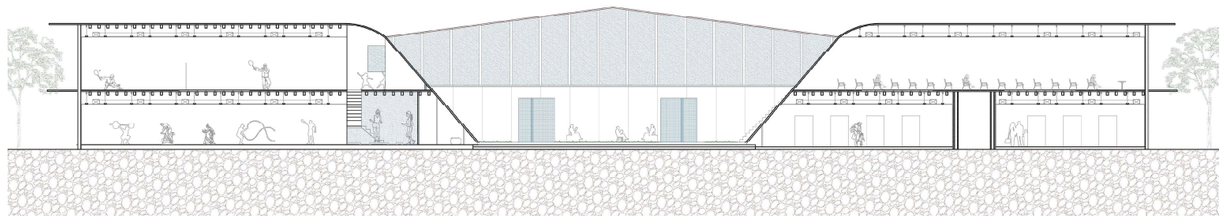
Community Center



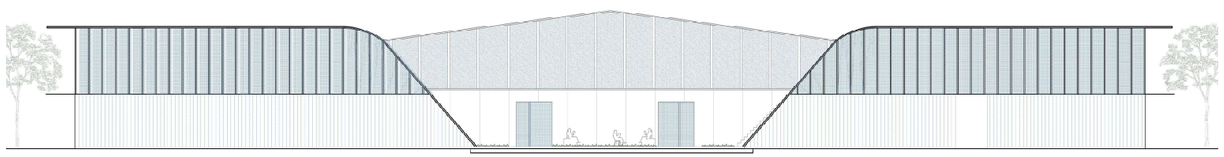


Level 2

The community center is a social anchor of the project, expressed through a durable yet inviting architectural language. Concrete and CMU establish permanence, while channel glass introduces diffused light and visual openness. Wooden louvres soften the massing and enhance comfort. The building supports a range of daily and communal activities, including a gym, café, retail spaces, gathering areas and a sports complex. These programs are organized to promote movement, visibility and interaction, making it an active and inclusive civic space.



Section



North Elevation

Aerial View

03

The Resource Box

Plastic-to-Yarn Recycling Center

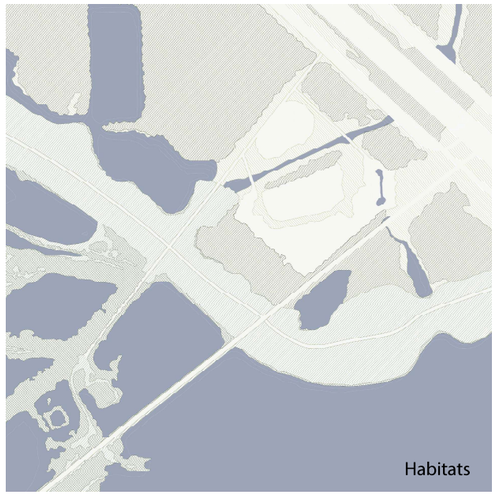
Location: La Marque, Houston, TX

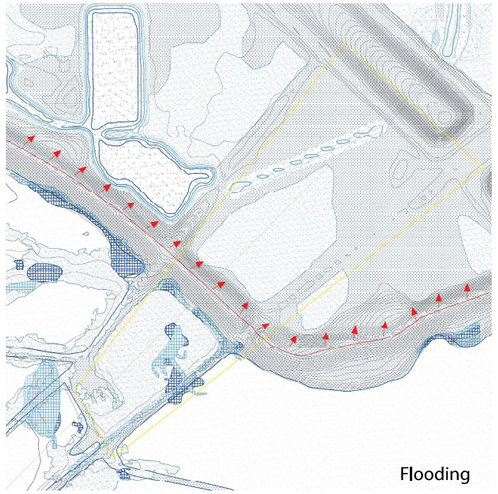
Site Area: 36,000 sq.ft.

Located within the marshland landscape of Bayou Vista, Resource Box is a hybrid industrial and educational facility that combines post-consumer plastic recycling with wetland restoration. The project is designed to make environmental processes visible and accessible, transforming infrastructure into a public learning experience. By pairing functional efficiency with transparency and education, Resource Box reframes industrial work as a shared civic resource, reinforcing the role of architecture in supporting environmental awareness and long-term ecological resilience.

Exterior Perspective

SITE ANALYSIS





Estuarine Wetlands

Short/Maintained Grass

Wild Grass (Spartina Flora)

Palustrine Wetlands

Trees/Shrubs

Grasses

Water & Submerged Lands

Developed Land

Direction the leeve protects

Depth

0
-1
-2
-3
-4
-5

Wetlands

Freshwater

Freshwater Emerergent

Estuarine and Marine

Ocean

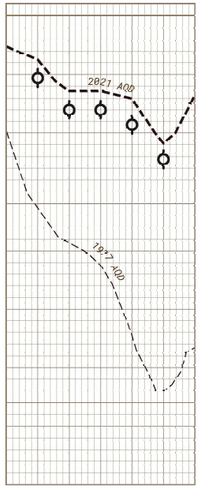
Depth of flooding (ft)

0 .5 1 2 3+

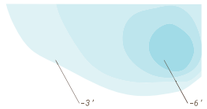
When water is pumped out of an aquifer, the pressure that once supported the soil and rock layers decreases. This reduction in pressure causes the pore spaces in the soil or rock to collapse and compress, leading to a gradual sinking of the land surface.

Land subsidence in Texas City was pronounced before 1977, leading to limitations set by the Lone Star Groundwater Conservation District.

Today ,due to the use of surface water in the PETRO industry and legislature, aquifer depths are back to normal



Subsidenece in texas city has decreased due to diminshed use of GRND water extraction.

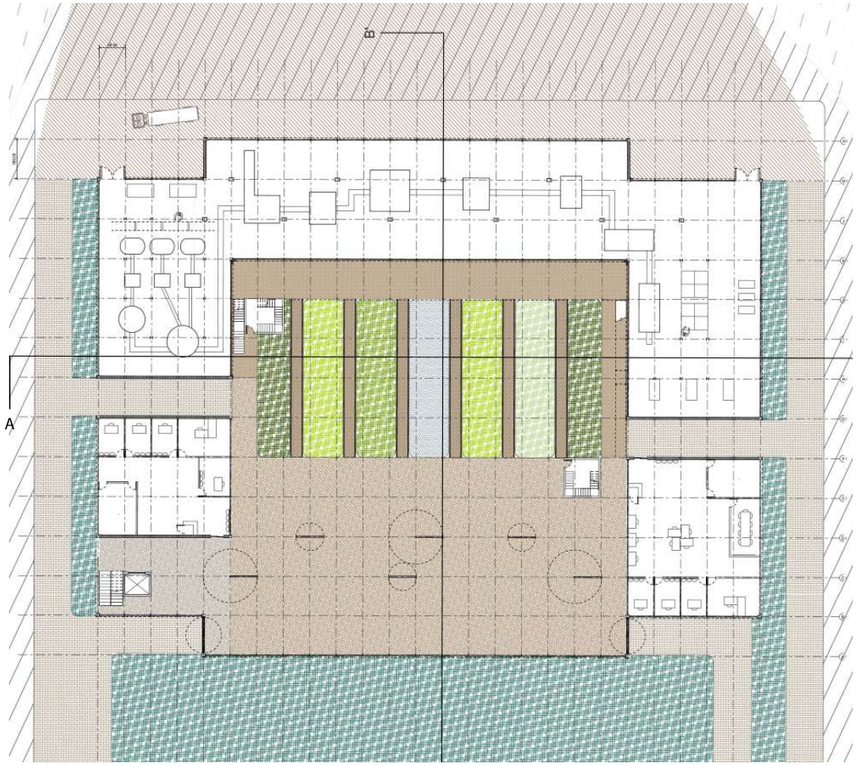


The greater Houston area still suffers from subsidence due to the prolonged use of ground water extraction for non - potable use, Inluding irrigation, and single family dwellings.

Over 55% of texan water is extracted from the aquifers. With 2021 totaling 9 million acre-ft of water. Subsidence will exasterbate inland flooding calling for the implemintation of sustainable water collection

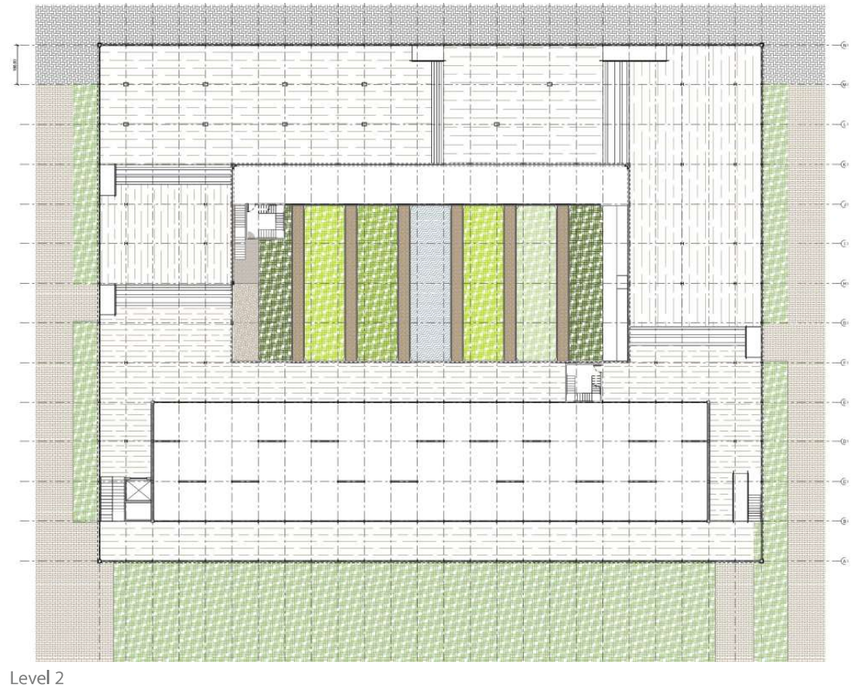
By integrating industrial processes, public education and ecological restoration within a single architectural framework, the project demonstrates how built form can actively contribute to environmental resilience rather than simply minimizing harm.

Site Axon



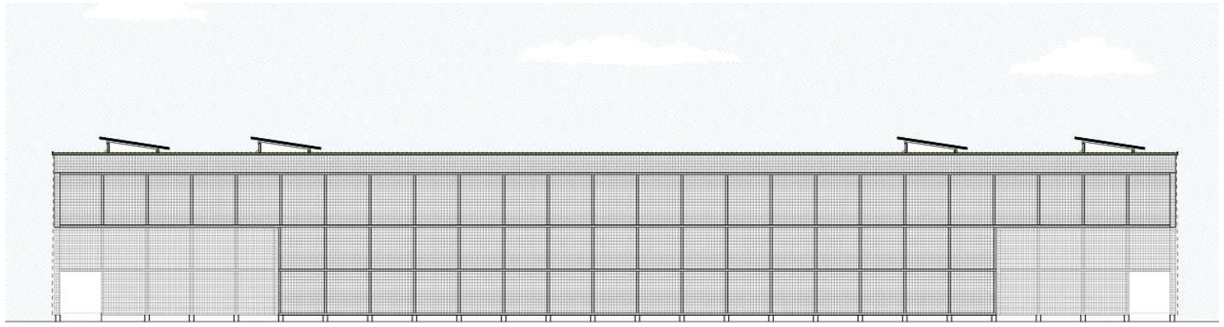
Level 1

The architectural layout is rooted in a binary program, with two distinct yet interconnected zones: the Plastic Recycling Wing and the Wetland Restoration Gallery to optimize efficiency. The recycling area houses advanced waste-processing systems, while the restoration gallery supports research and educational initiatives to rehabilitate local wetlands. The large central courtyard, visible from multiple vantage points, serves as a green oasis that bridges industrial activity with natural tranquility.

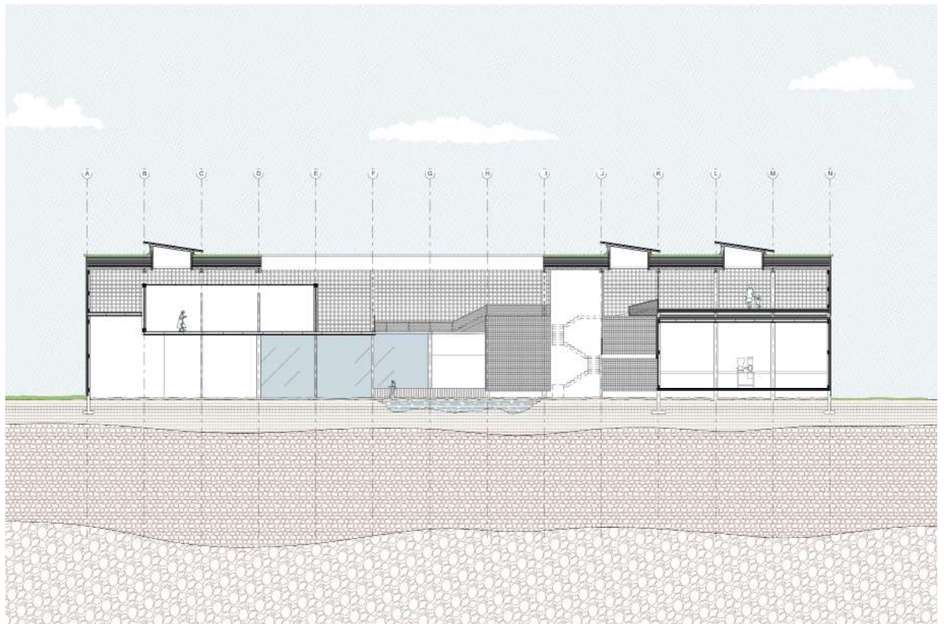


Level 2

The visitor circuit offers an immersive experience, tracing the journey from waste to renewal. Visitors witness the lifecycle of recycled plastics being transformed into usable yarn while also exploring exhibits on wetland conservation. The rooftop serves as an observation deck and communal gathering space, offering sweeping views of the surrounding marshlands and promoting ecological awareness.

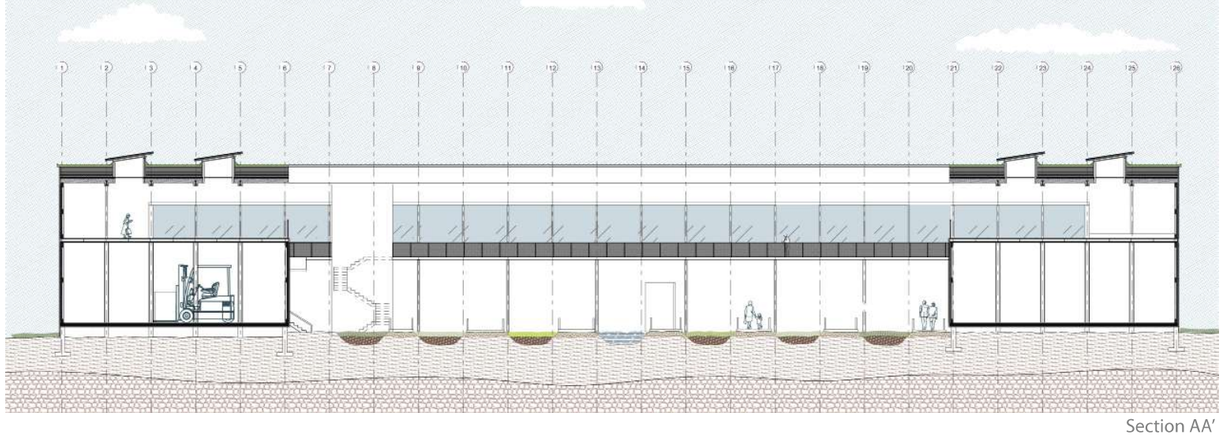


Southeast Elevation

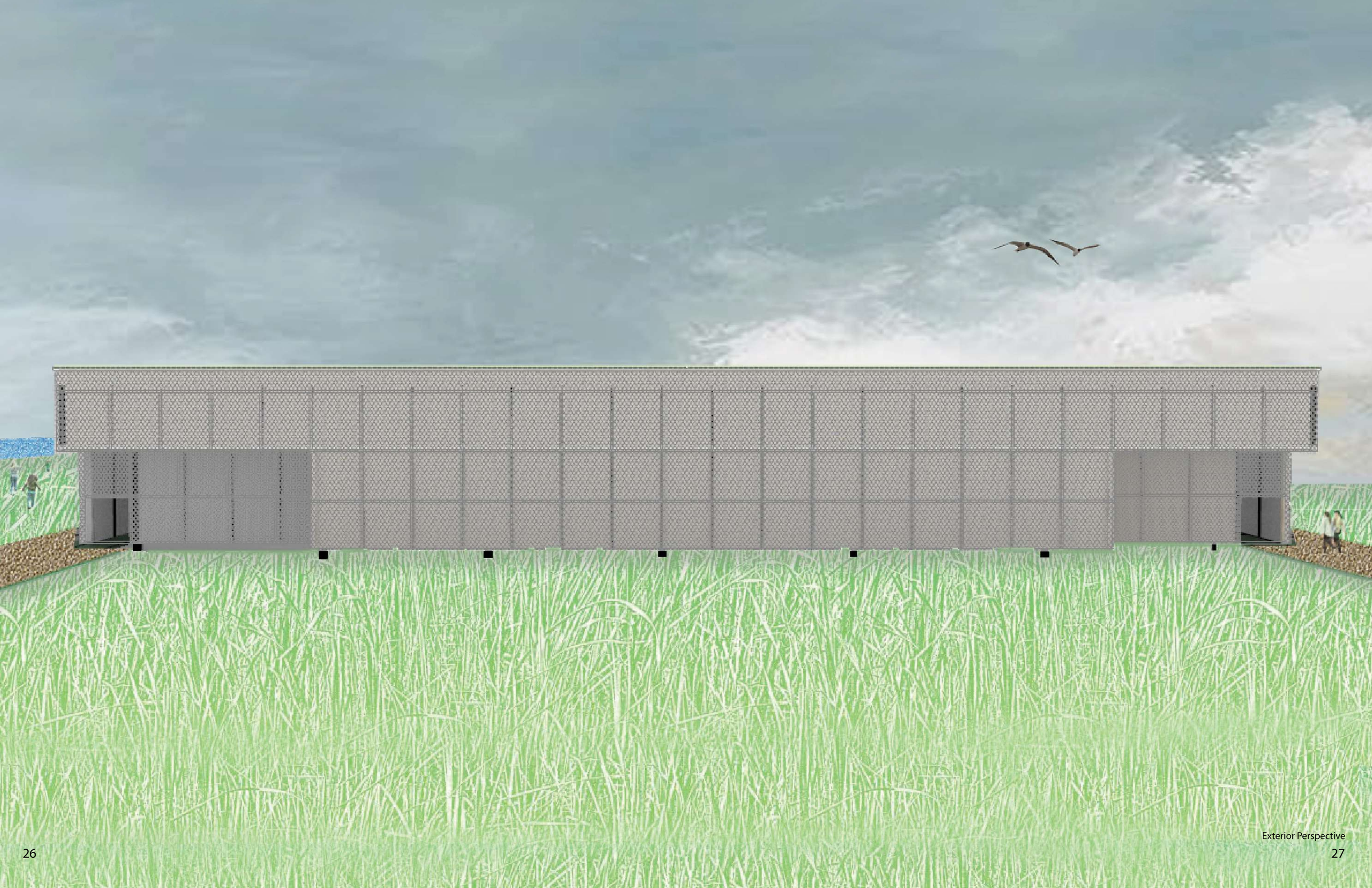


Section BB'

The facade is defined by expanded metal mesh panels, creating a visually striking and functional envelope. These panels provide essential sun shading, visibility control and ventilation while reflecting the modularity and transformation inherent in recycling processes. The material's perforated texture allows the building to interact dynamically with light and wind, reinforcing the facility's sustainable ethos.



Section AA'



Exterior Perspective

04

F.I.L.M. Center

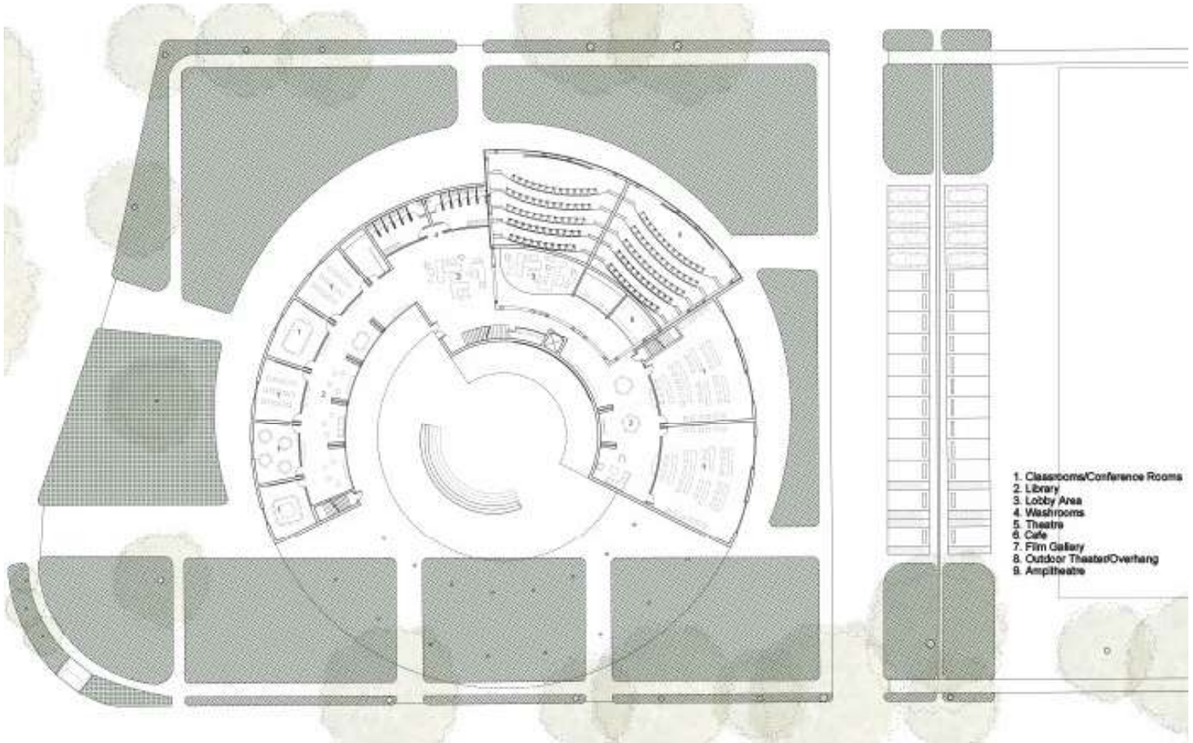
Cultural & Educational Museum of Filmmaking

Location: Montrose, Houston, TX

Site Area: 85,000 sq.ft.

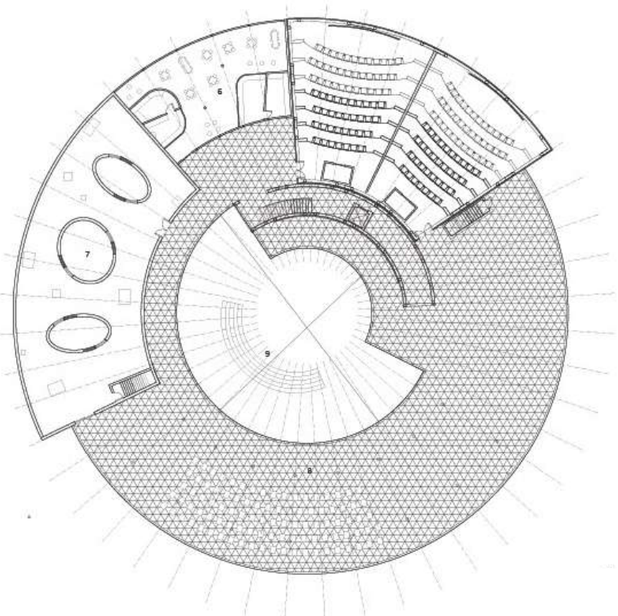
The F.I.L.M. (Fusion of Immersion, Light and Motion) Centre is designed as a cultural destination where film, education and public engagement intersect. The project is organized as a continuous spatial sequence that guides visitors through varied cinematic experiences, blurring the boundary between spectator and space. Its circular form reinforces ideas of continuity, inclusivity and collective gathering, while also referencing the design of a reel of film. A balance of transparency and enclosure shapes moments of openness and immersion, allowing light and movement to become active components of the architecture. Program spaces support screenings, learning and informal interaction, encouraging visitors to experience film beyond the screen. More than a single-use venue, the F.I.L.M. Centre operates as an architectural framework for storytelling, one that uses form, light and motion to create an engaging environment that connects people through shared cultural experience.

Aerial View



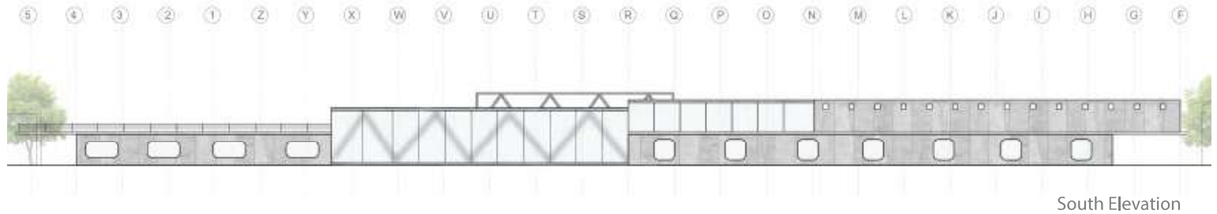
Level 1

Diagrams

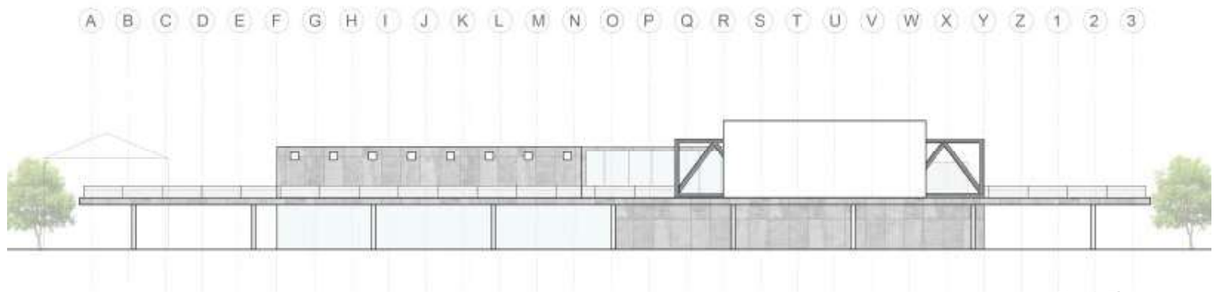


Level 2

The building is organized as a continuous spatial journey shaped by a circular form that encourages exploration and collective engagement. Public programs such as the lobby, film gallery, café and theaters are positioned to remain visually and physically connected, while quieter educational and archival spaces are layered to provide moments of focus and retreat. This arrangement allows visitors to move fluidly between learning, viewing and gathering, reinforcing the idea of film as an immersive and shared experience rather than a static destination.

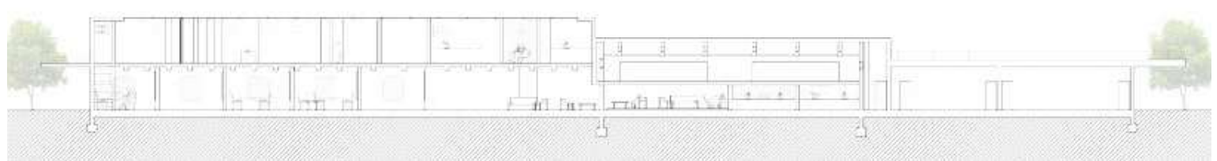


South Elevation

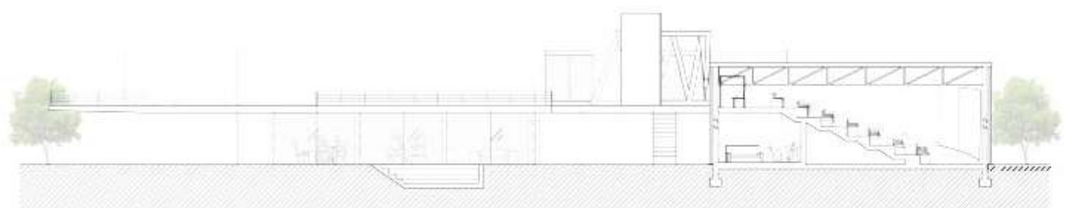


North Elevation

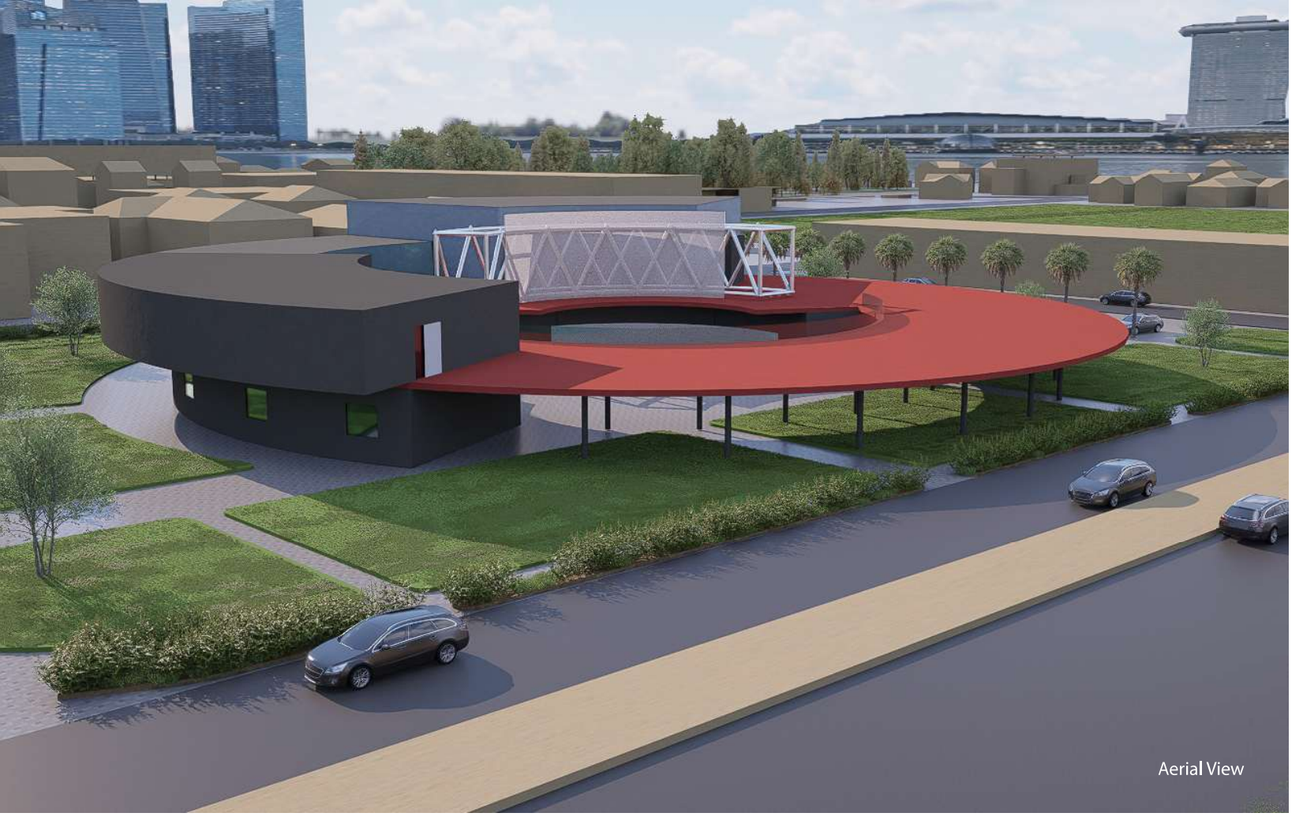
The exterior reflects the dynamic nature of the programs housed within. A balance of solid and transparent surfaces controls light, frames views and establishes a dialogue between the interior experience and the surrounding environment. The building envelope emphasizes movement and rhythm, reinforcing the cinematic identity of the project while maintaining openness and accessibility. Material shifts and façade articulation express the transition between public, semi-public and performance spaces. The sectional layering supports both large-scale public events and intimate moments of engagement.



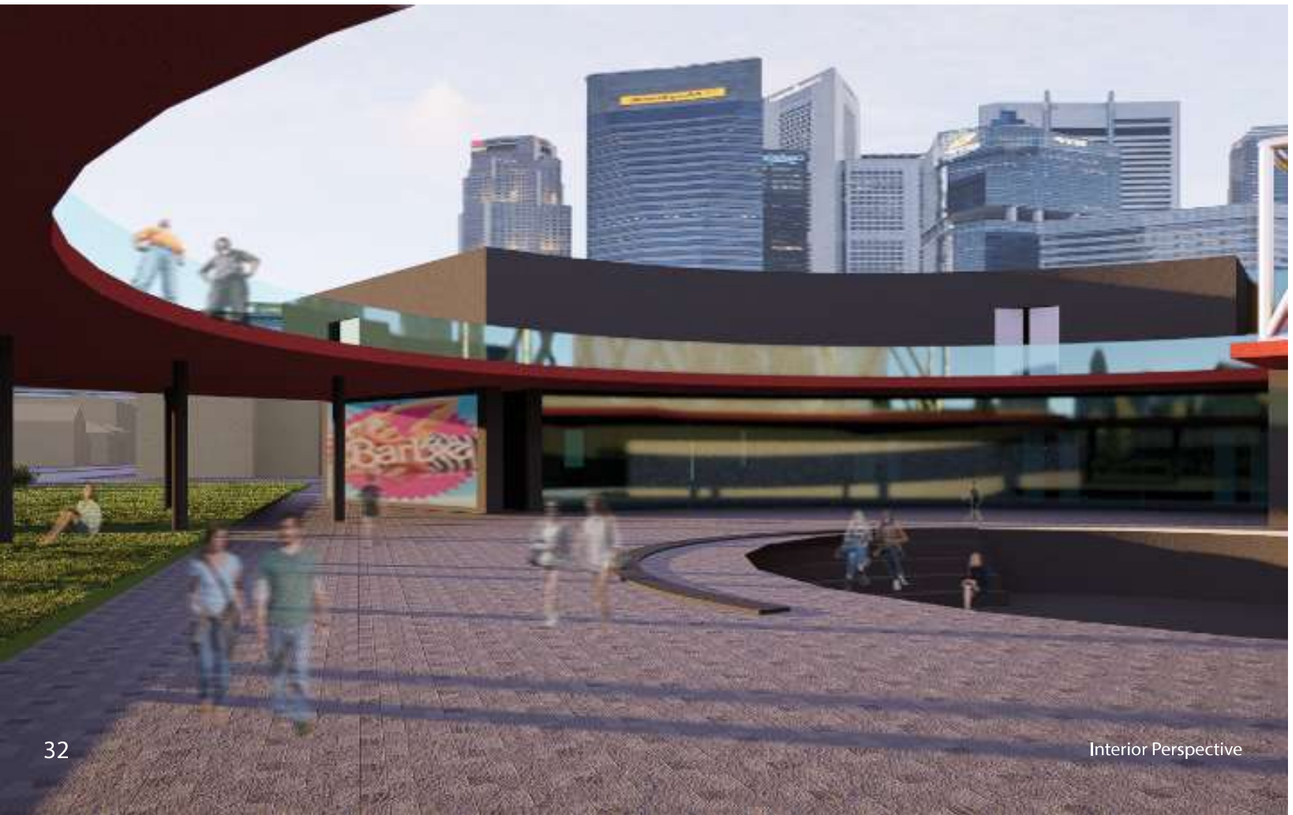
Section AA'



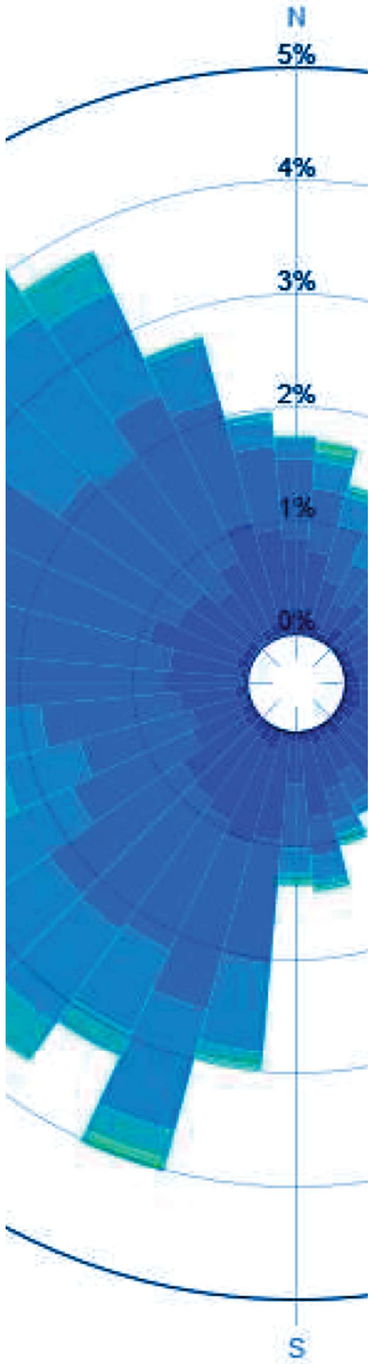
Section BB'



Aerial View



Interior Perspective



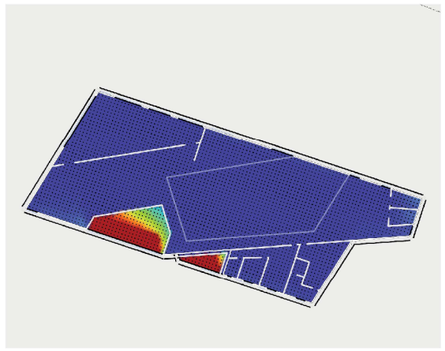
tech work

Environment Analysis

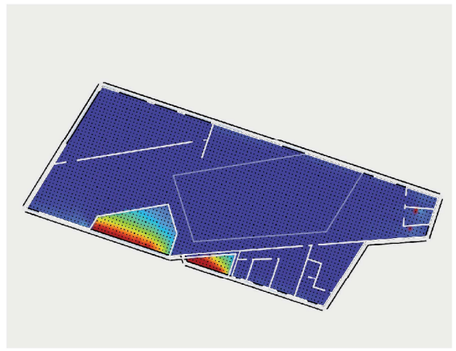
Daylight Quality and Interior Comfort

The building integrates controlled daylight through clerestory glazing, VIG facade windows, and operable steel shading panels. These elements diffuse sunlight, creating balanced illumination for art display and comfortable living conditions.
Daylight analysis shows high Spatial Daylight Autonomy (sDA) in gallery areas, while Annual Sunlight Exposure (ASE) remains low due to external shading. Interior comfort is further enhanced by natural airflow through operable panels, reducing mechanical cooling needs.

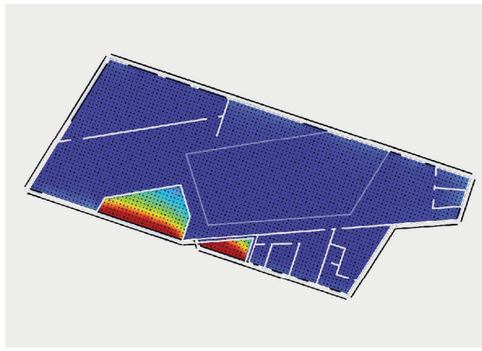
Daylight source: North-facing clerestory + filtered facade glazing
Performance: High sDA, low ASE → glare minimized
Visual comfort: Diffuse light enhances gallery experience
Thermal link: Shading reduces interior heat buildup



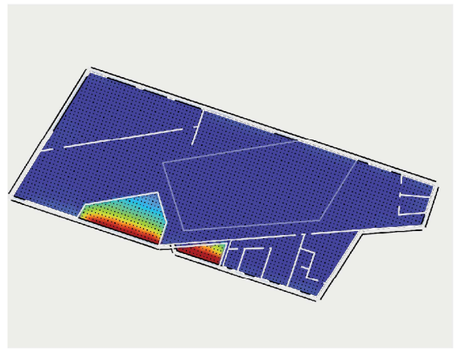
Winter Solstice - December 21 - 12 PM



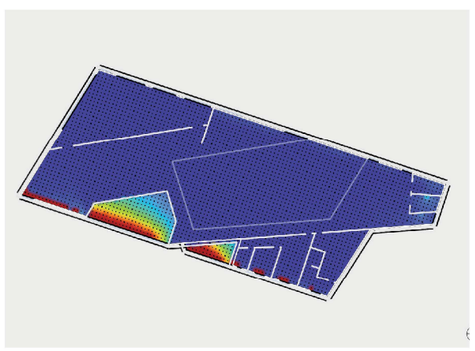
Spring Equinox - March 21 - 10 AM



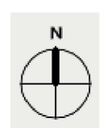
Summer Solstice - June 21 - 12PM



Summer Solstice - June 21 - 3PM



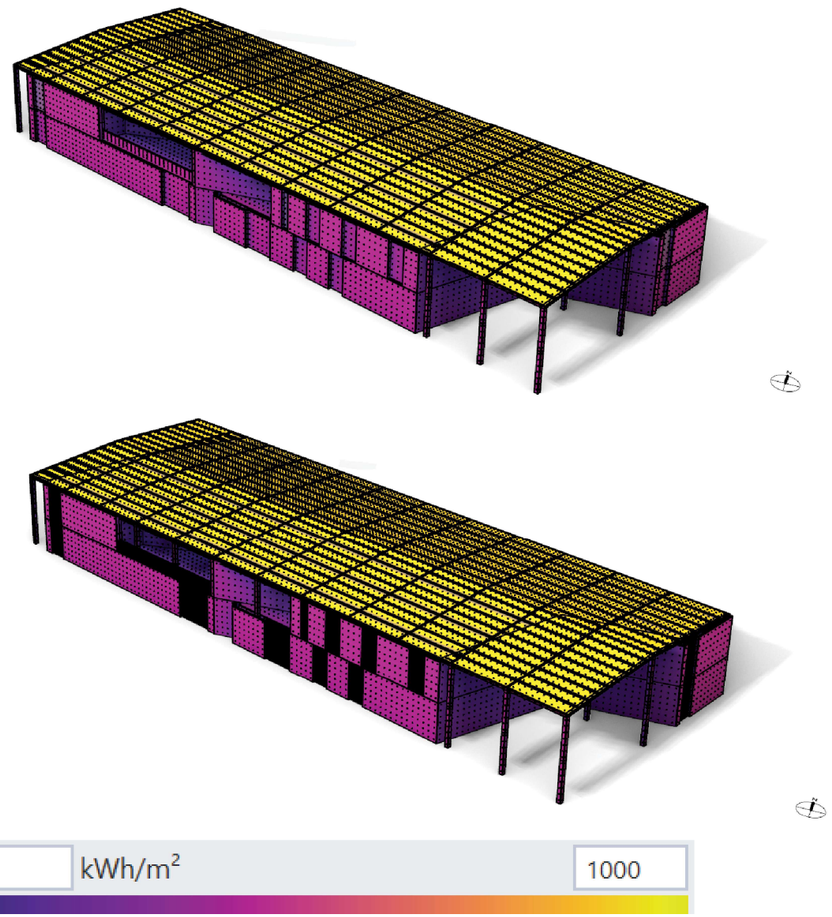
Fall Equinox - September 21 - 10 AM

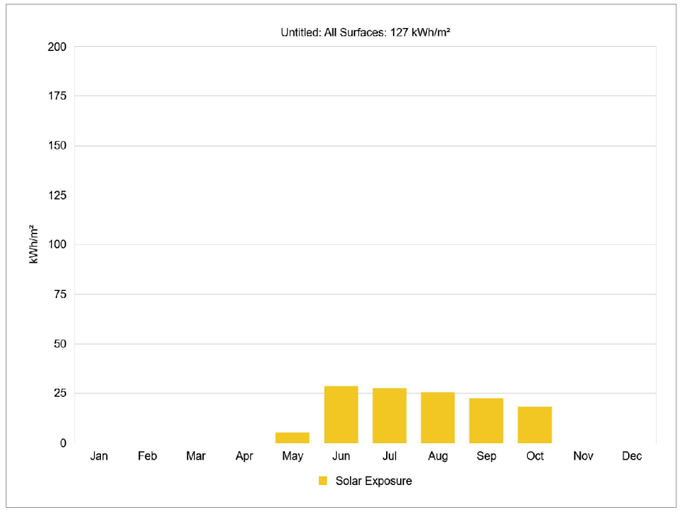


Glazing and Shading Performance

The facade integrates Vacuum Insulated Glazing (VIG) for high transparency and low heat transfer. This advanced glazing achieves a low U-value and solar heat gain coefficient (SHGC) suited to Houston's hot-humid climate.
Steel shading panels and GFRC overhangs minimize solar radiation on the south and west facades, reducing cooling loads while maintaining daylight levels. The combination of VIG and external shading creates a responsive system that adapts to seasonal and daily sun changes.

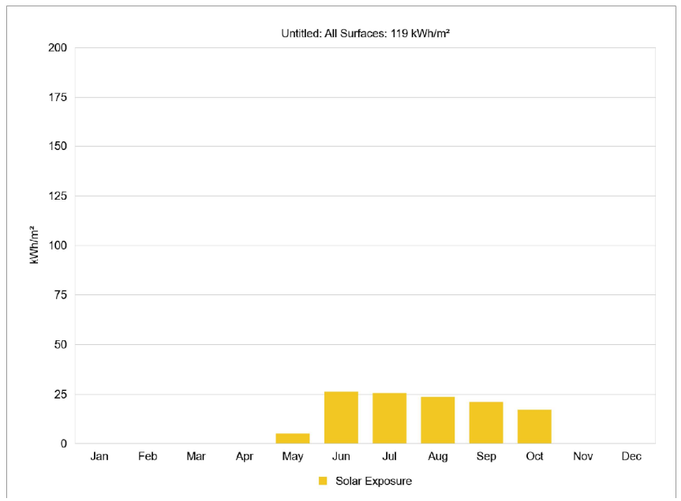
Glazing: VIG panels with low-e coating
Thermal performance: Lower U-value + SHGC
Shading: Steel fins + operable panels on south/west façades
Effect: Minimized glare, reduced heat gain, controlled daylight
Result: Lower energy demand + improved occupant comfort





Without Shading Panels

High solar exposure on northwest façades. Annual radiation reaches 127 kWh/m², showing direct afternoon sun on the west face and upper glazing. Surfaces absorb significant heat, increasing cooling demand and glare potential.

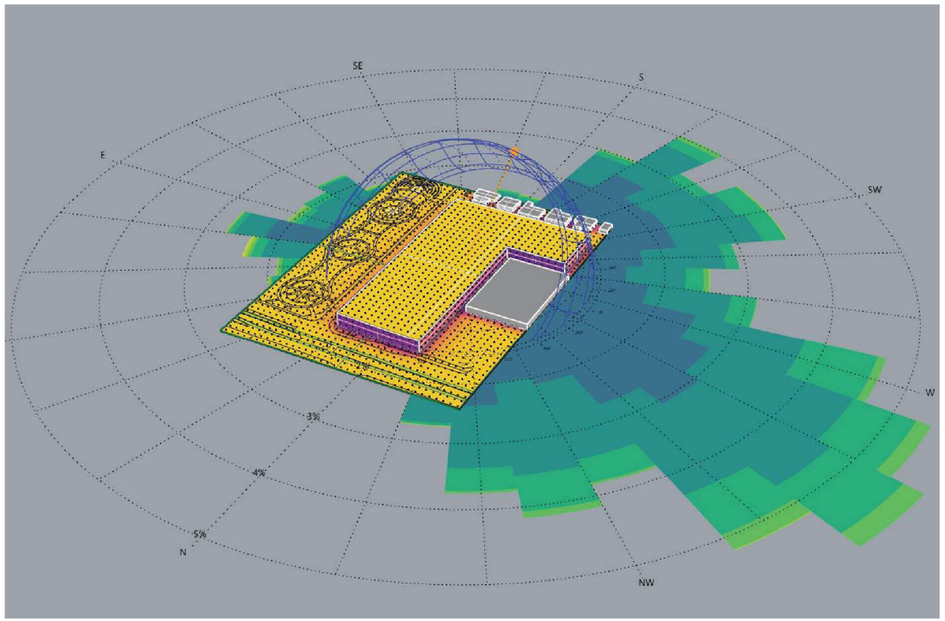


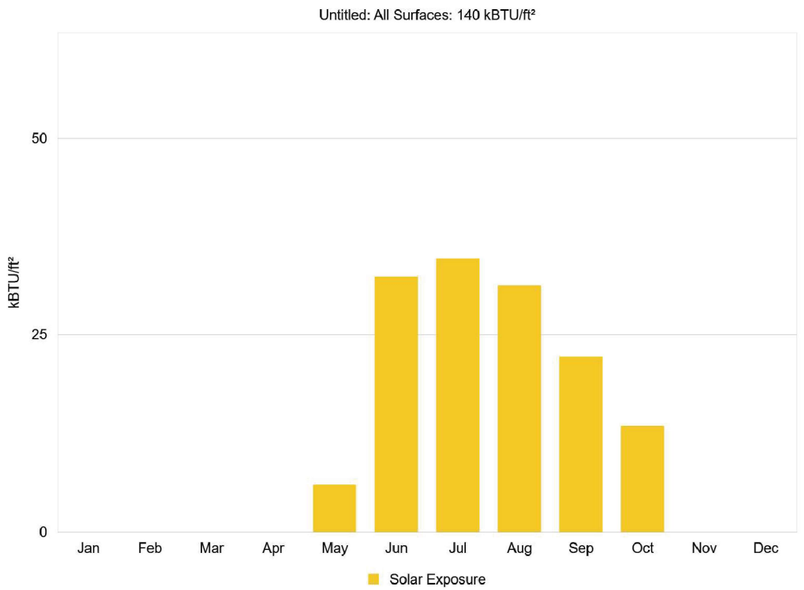
With Shading Panels

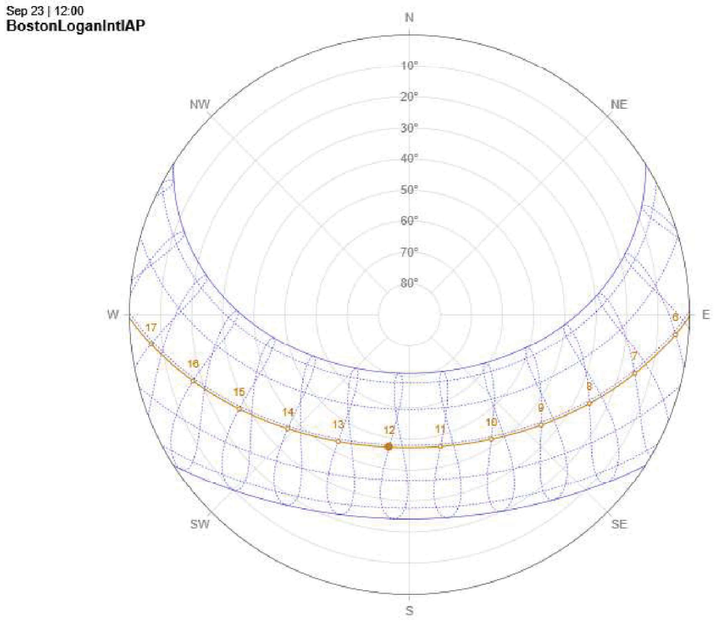
Reduced heat gain through façade shading. Annual radiation decreases to 119 kWh/m². Steel panels filter low-angle west sun while VIG glazing maintains interior daylight, cutting overall solar load and improving comfort.

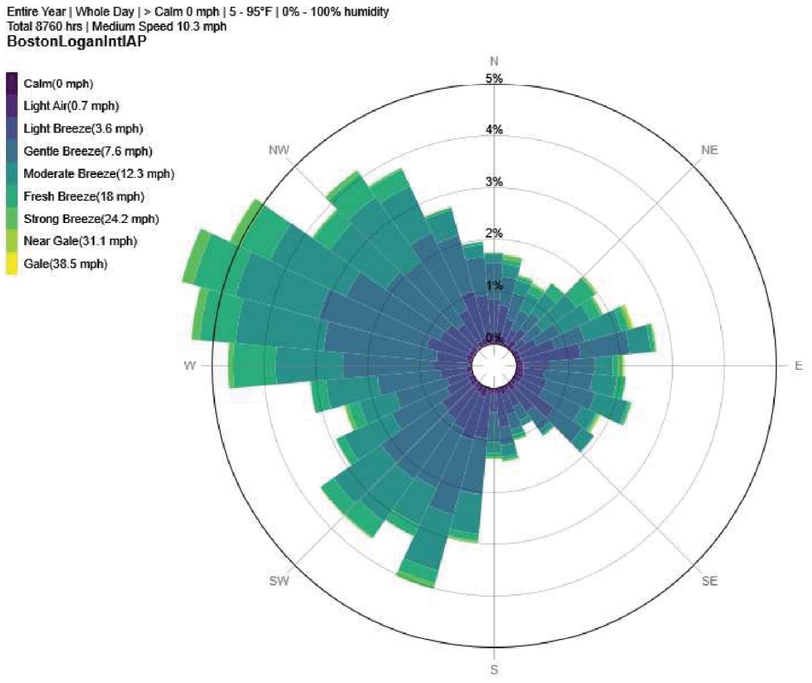
Grigg Residencies - Site

Resilience plan









Goals, Codes, and Benchmarking

Resilience plan

The site faces critical environmental challenges, including flooding, urban heat retention, and high energy consumption. To address these risks, a comprehensive resilience strategy has been developed.

- **Flood mitigation** measures include permeable surfaces, bioswales, rain gardens, and underground retention systems to improve water infiltration and reduce runoff. Elevated structures and reinforced foundations enhance flood resistance.
- To combat the **urban heat island effect**, the plan incorporates green roofs, vegetated landscaping, and high-albedo materials to reduce heat absorption. Passive cooling strategies, such as operable shading devices and natural ventilation, further optimize thermal comfort.
- **Energy efficiency** is prioritized through optimized building orientation for maximum daylighting, high-performance glazing, and dynamic shading systems to reduce artificial cooling needs. Smart HVAC and lighting controls, along with solar panel integration, enhance sustainability.
- **Structural resilience** is achieved through wind-resistant materials and modular building systems that allow adaptability to future environmental changes.

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Grigg Residencies - Iteration

Solar Study

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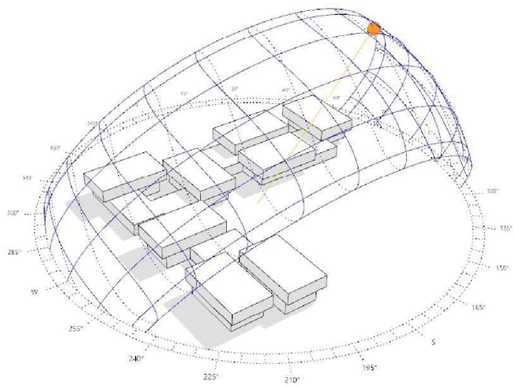
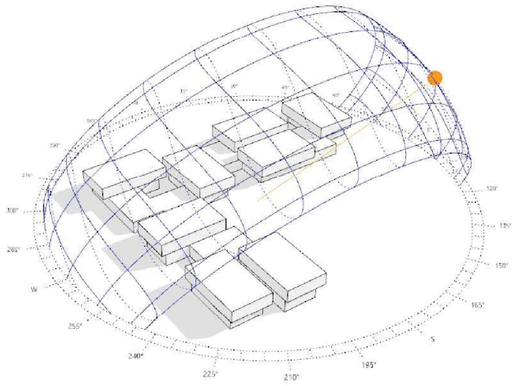
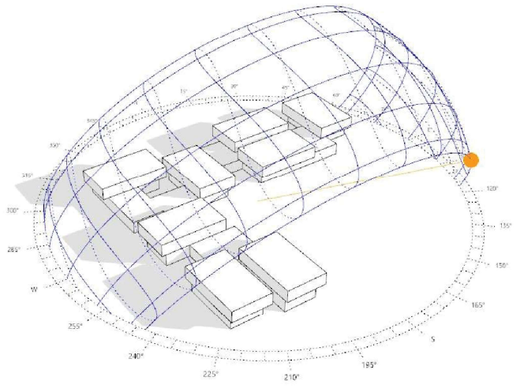
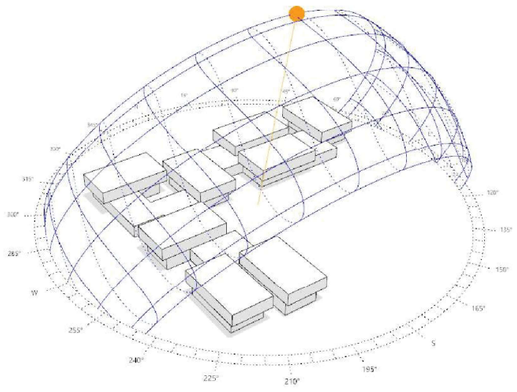
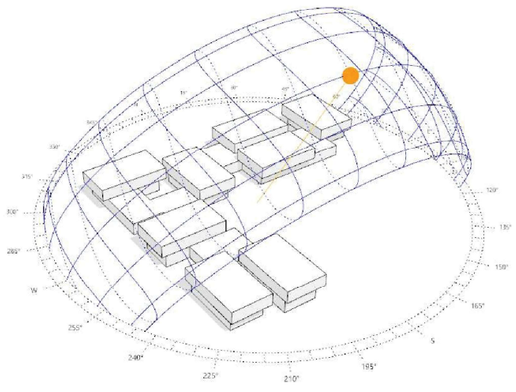
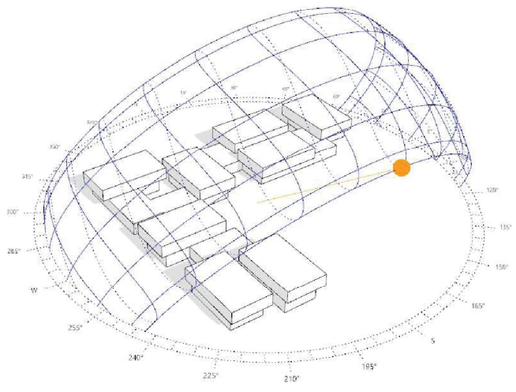
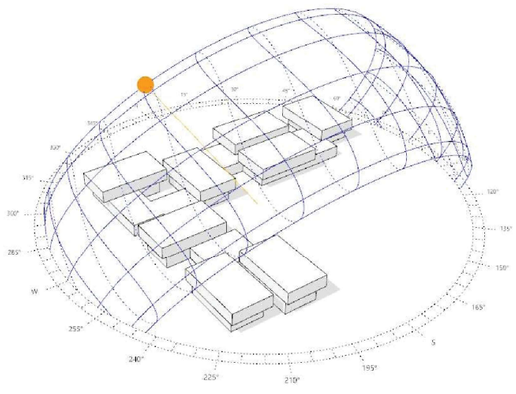
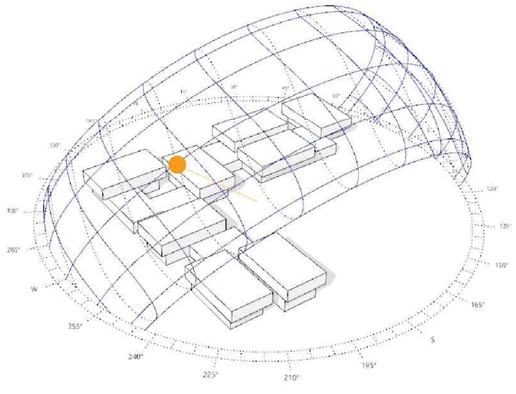
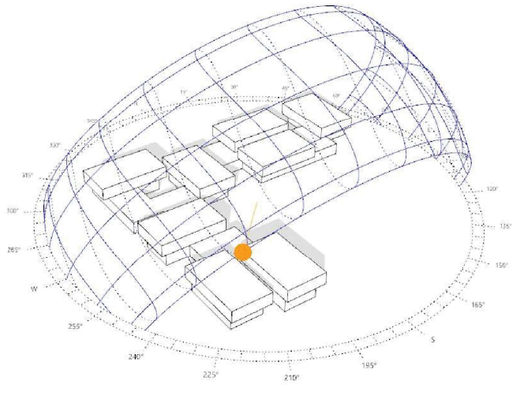
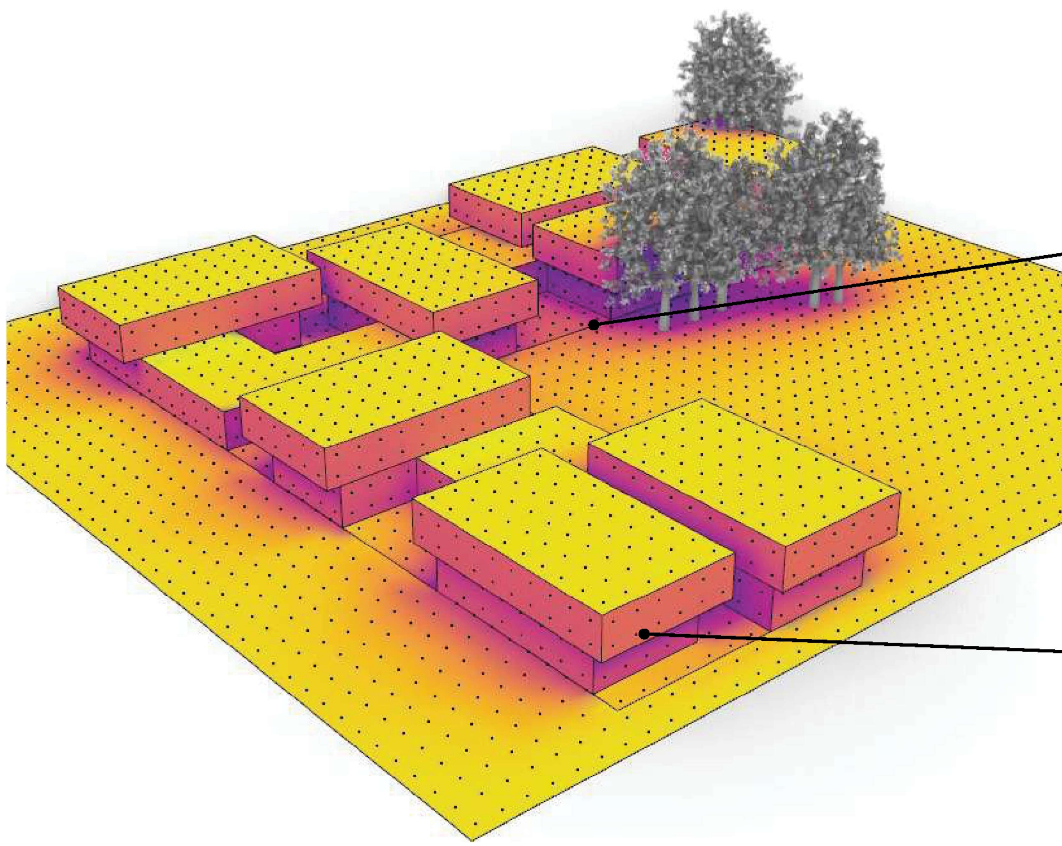
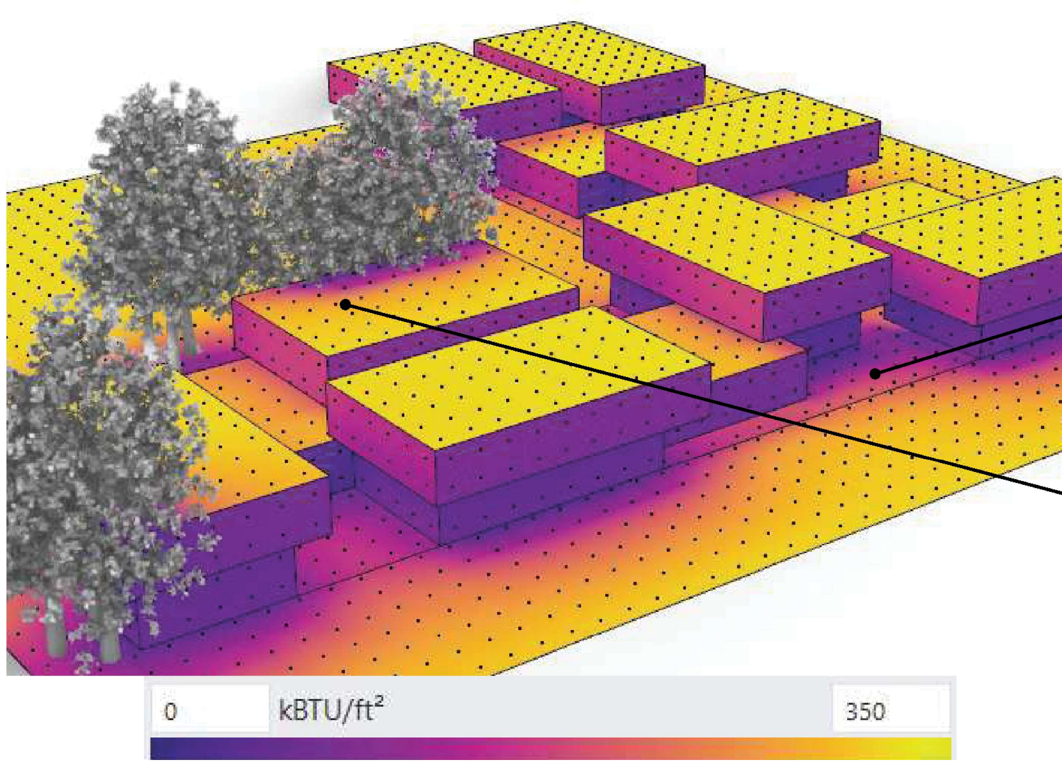
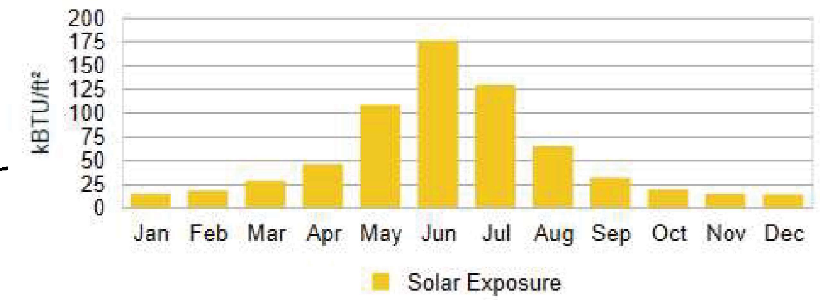
9AM			
12PM			
3PM			

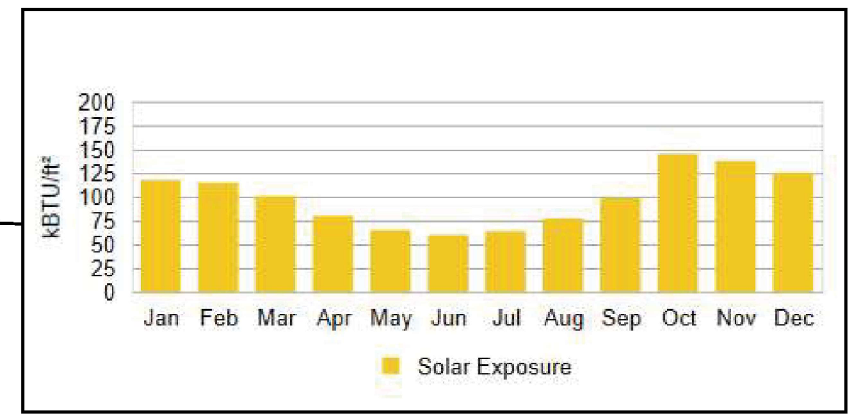
SOLAR RADIATION

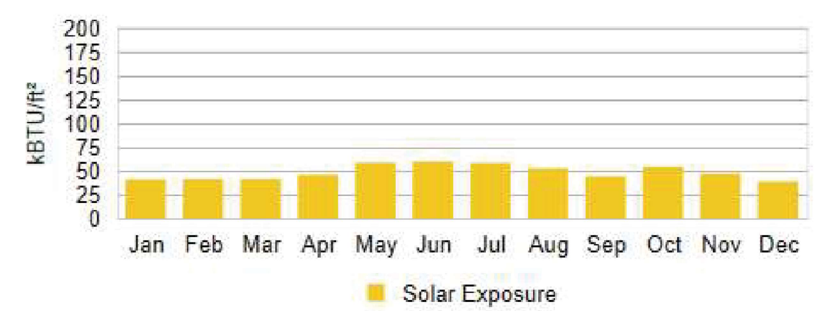


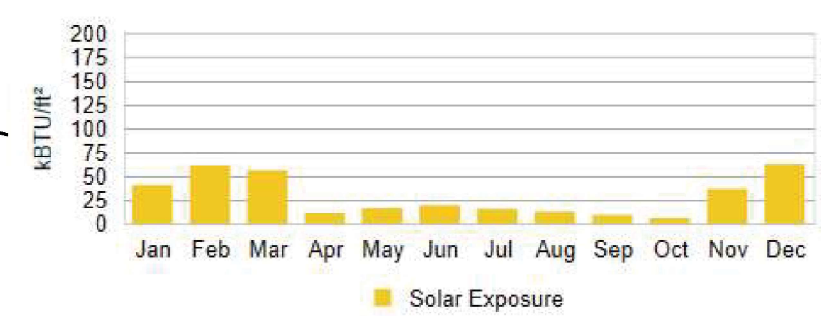


TEMPORAL DIAGRAMS





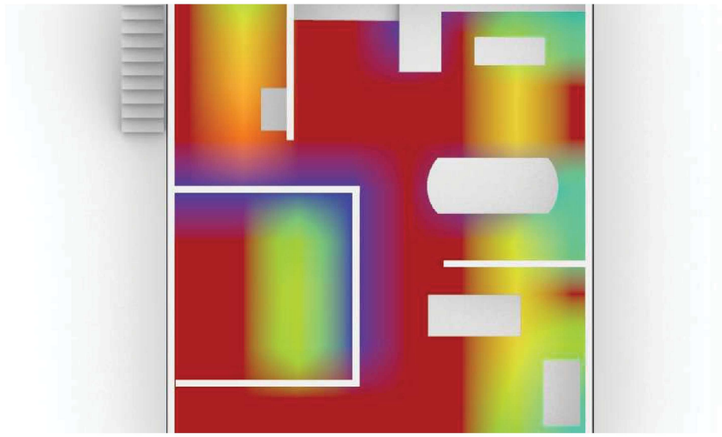
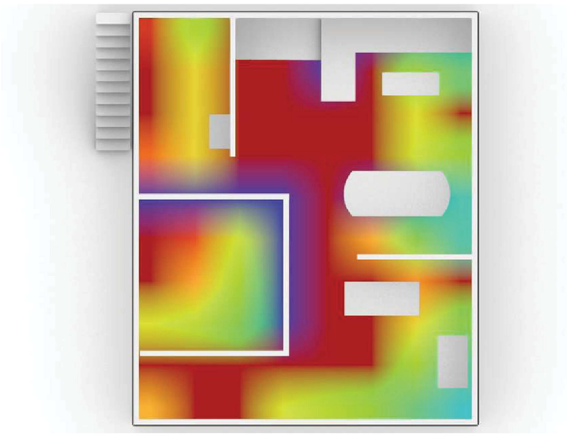
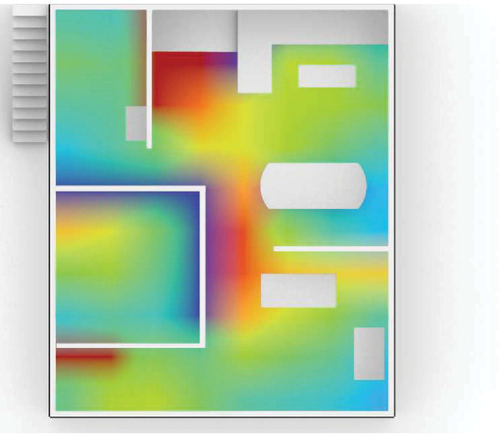
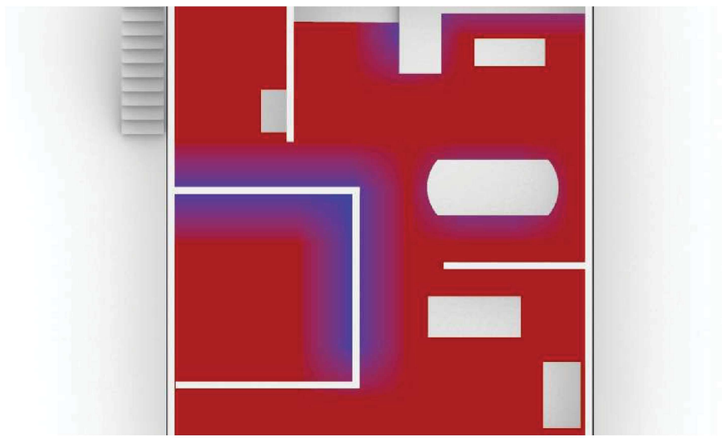
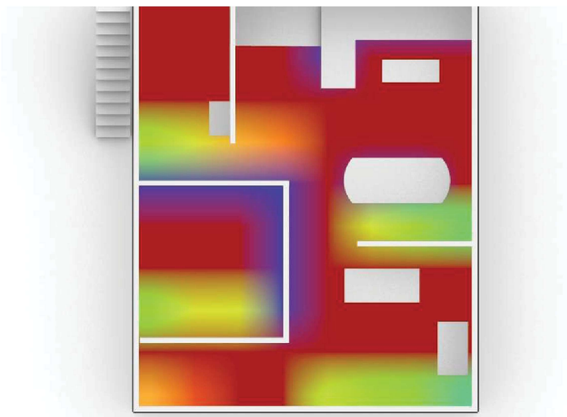
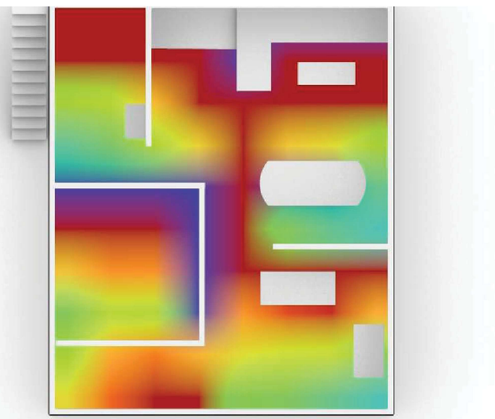
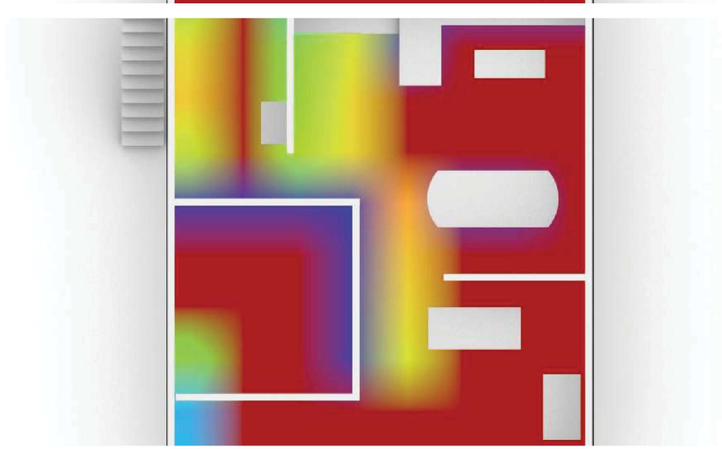
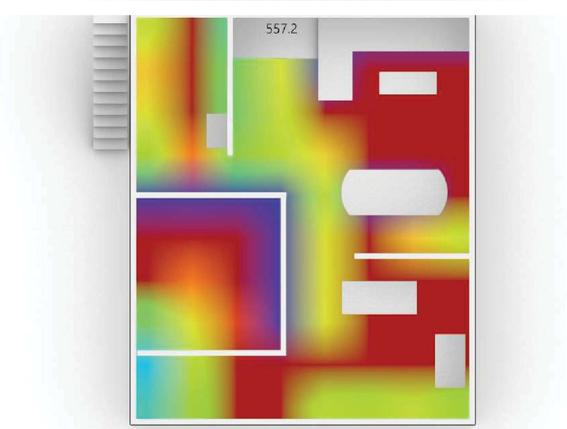
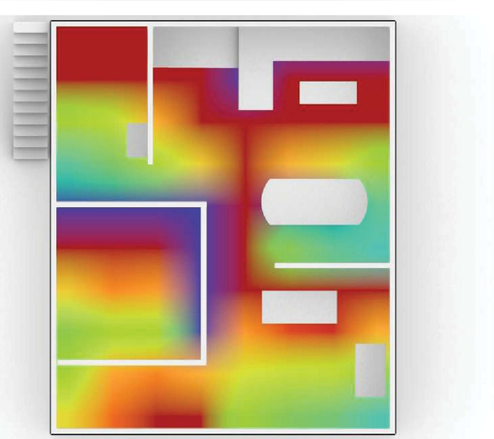




Shadow and solar studies observations
Based on the available solar radiation data, the highest exposure occurs during the summer and fall months, particularly in June and October. The charts show a clear seasonal trend, with solar radiation peaking in late spring and summer and decreasing in the winter. This suggests that during these months, residential units receive significant solar exposure, which can contribute to increased indoor temperatures and higher cooling demands. While the charts provided do not include hourly data, typical solar patterns indicate that peak radiation levels likely occur from late morning to mid-afternoon, with west-facing facades experiencing the most heat in the afternoon.

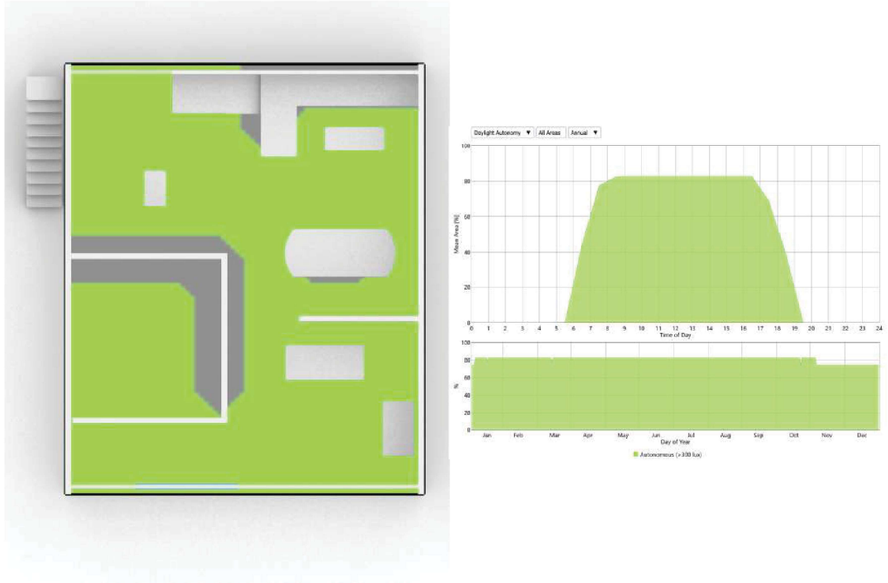
Recommended actions
To address these concerns, I recommend installing extended sunshades on all residential unit roofs. These shades are effective in blocking direct sunlight while still allowing natural daylight and airflow. Given the seasonal variation in solar exposure, adjustable sunshades would provide flexibility, allowing residents to control sunlight entry based on the time of year. Using durable, glare-free reflective materials would further enhance performance, reducing heat gain and improving indoor comfort while lowering cooling energy consumption.

00: BASELINE

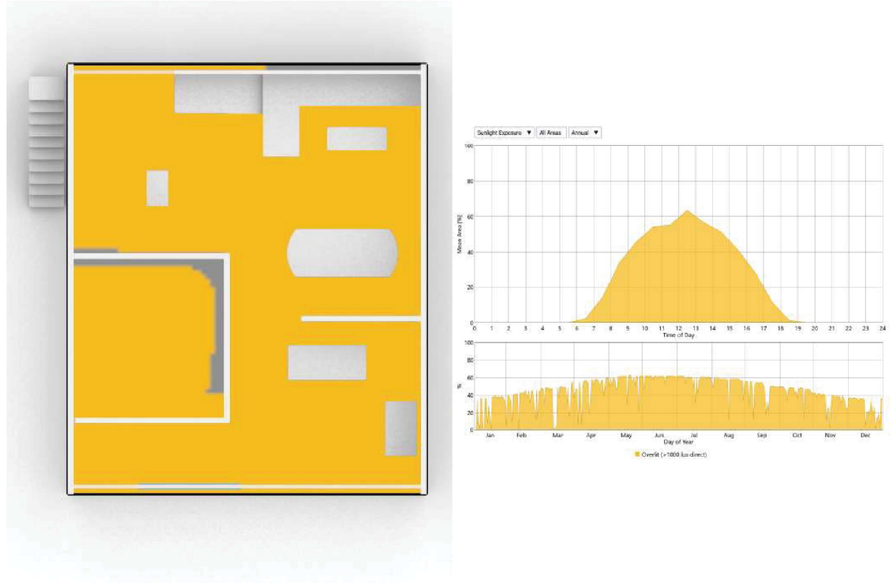
	JUNE 21	SEPTEMBER 21	DECEMBER 21
9AM			
12PM			
3PM			

00: BASELINE

sDA:



ASE:



01 RECOMMENDED

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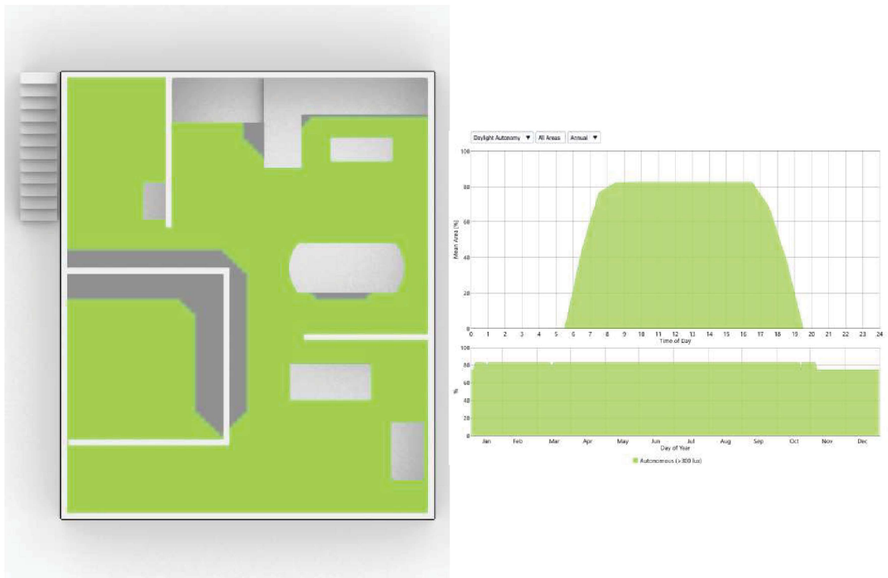
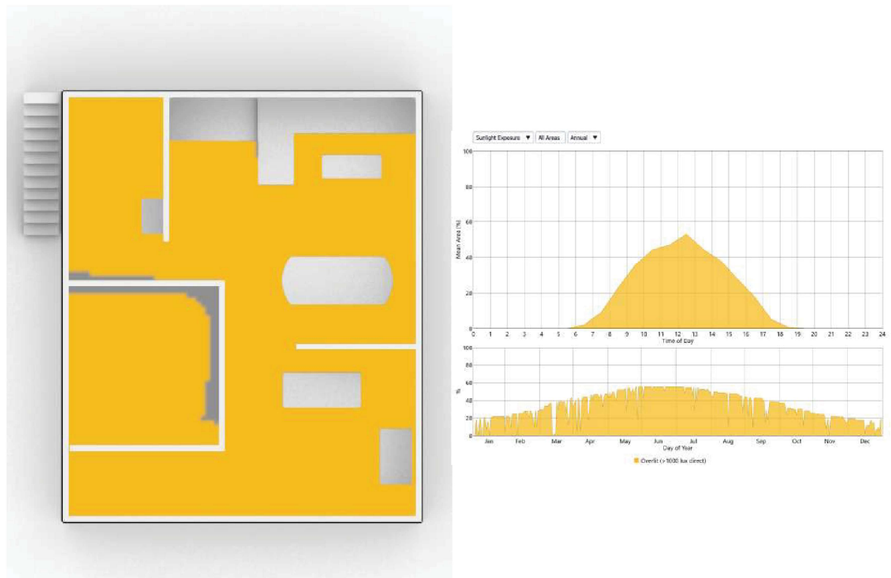


ASE:



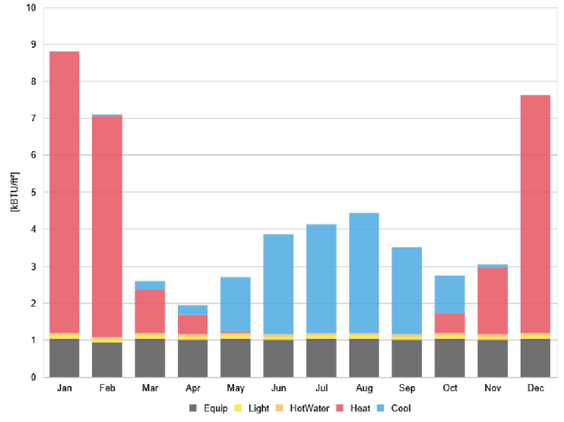
Baseline observations

In this scenario, the spatial Daylight Autonomy (SDA) is 81.3%, meaning that a large portion of the space receives sufficient daylight for at least 50% of the occupied hours, which is generally considered good for natural lighting. However, the Annual Sunlight Exposure (ASE) is 65.1%, indicating a high level of direct sunlight, which can cause glare and excessive heat gain. While the high sDA suggests good daylight access, the high ASE may lead to discomfort and increased cooling demands, making it less ideal in terms of overall energy efficiency and occupant comfort.

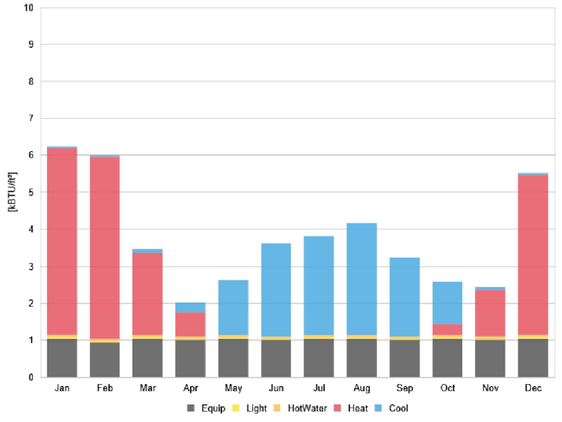
Recommended observations

With the addition of vertical shading planes, the SDA slightly decreased to 54%, meaning there is a small reduction in daylight availability. However, the ASE increased to 43.3%, which suggests that despite the shading elements, direct sunlight exposure is slightly higher. This unexpected result could be due to the angle and positioning of the shading elements, which may block diffuse daylight but still allow direct sun penetration at certain times. Since the goal of shading is typically to reduce ASE and improve thermal comfort, this design may need adjustments, such as optimizing the size or positioning of the horizontal overhangs to ensure they effectively reduce unwanted sunlight while maintaining good daylight levels.

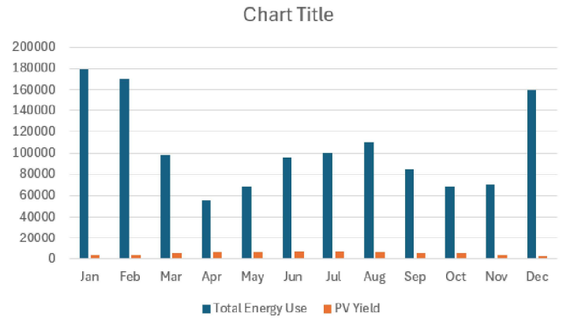
EUI Baseline
53kBTU/ft^2



EUI Optimized
45kBTU/ft^2



EUI Optimized with PVs
42kBTU/ft^2

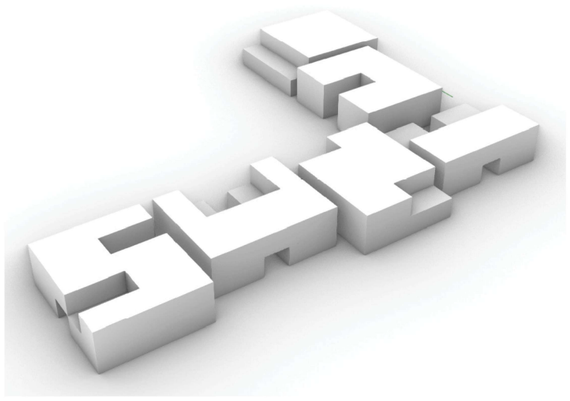


Energy modeling

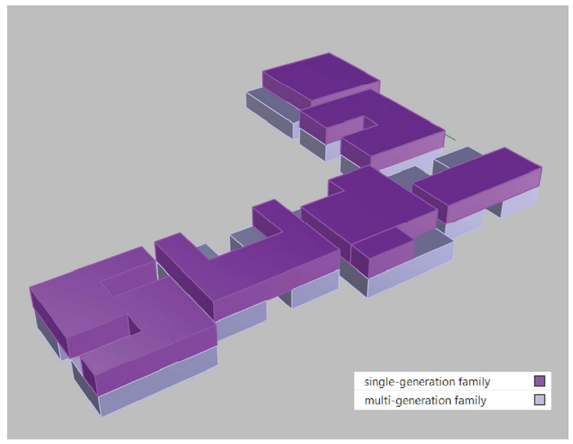
Baseline description and observations
The baseline model comprises of one of the two neighbourhoods of my project. The baseline EUI was 53 kBTU/ft², which was reduced to 45 kBTU/ft² with design optimization-shading, WWR adjustments, and material upgrades. In the optimized version, heating and equipment loads are noticeably reduced, especially in winter months. Cooling loads also decrease slightly in summer, indicating improved envelope performance and efficiency measures. Iterative design changes significantly lowered energy and carbon impacts.

Energy model 3d model views

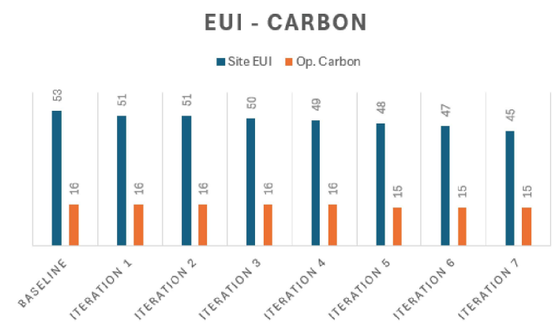
Model Geometry



Space Use



Optimization bar chart

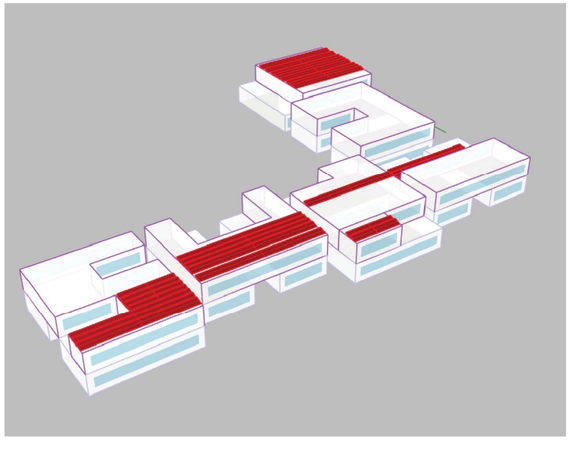


Optimization iterations table

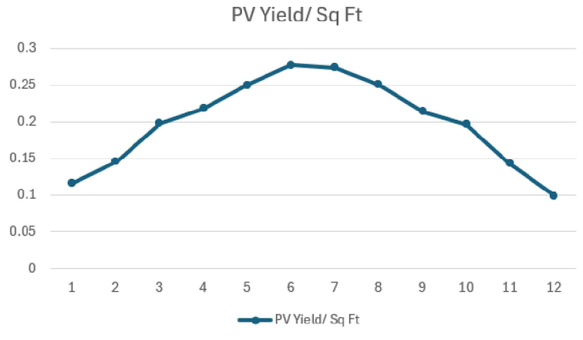
	Site EUI	Op. Carbon	Notes
Baseline	53	16	Default, WWR - 0.4
Iteration 1	51	16	It1 + 90 deg rotate
Iteration 2	51	16	It2 + perpendicular shading on S
Iteration 3	50	16	Shading roof added
Iteration 4	49	16	base + WWR - E-W: 0, N - 0.4, S - 0.5
Iteration 5	48	15	Dimming
Iteration 6	47	15	Façade material U value change - 0.0979
Iteration 7	45	15	Lower SHGC to all orientations (0.147)

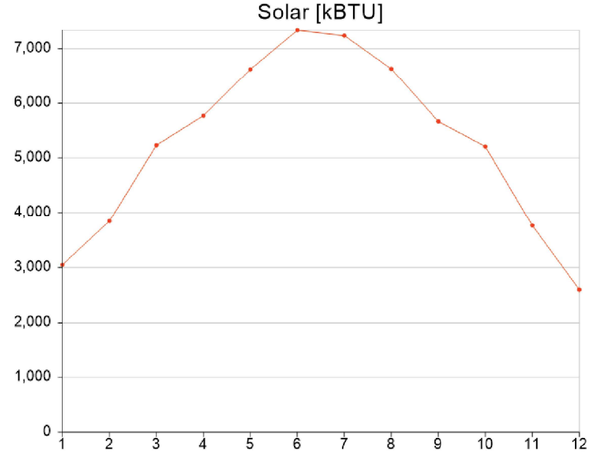
Solar radiation study to place PV panels

PV panels location - 3d model



Monthly PV electricity generated - Total (kBTU/sqft)

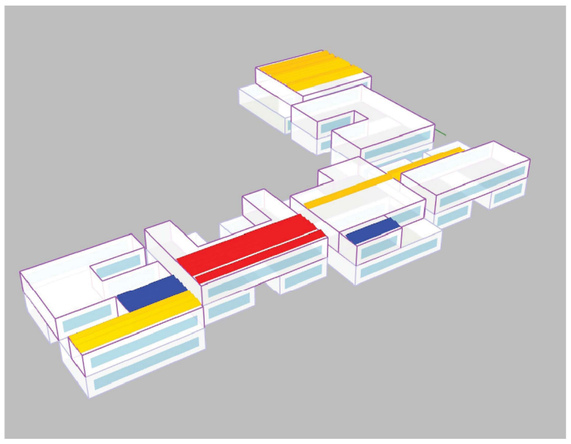




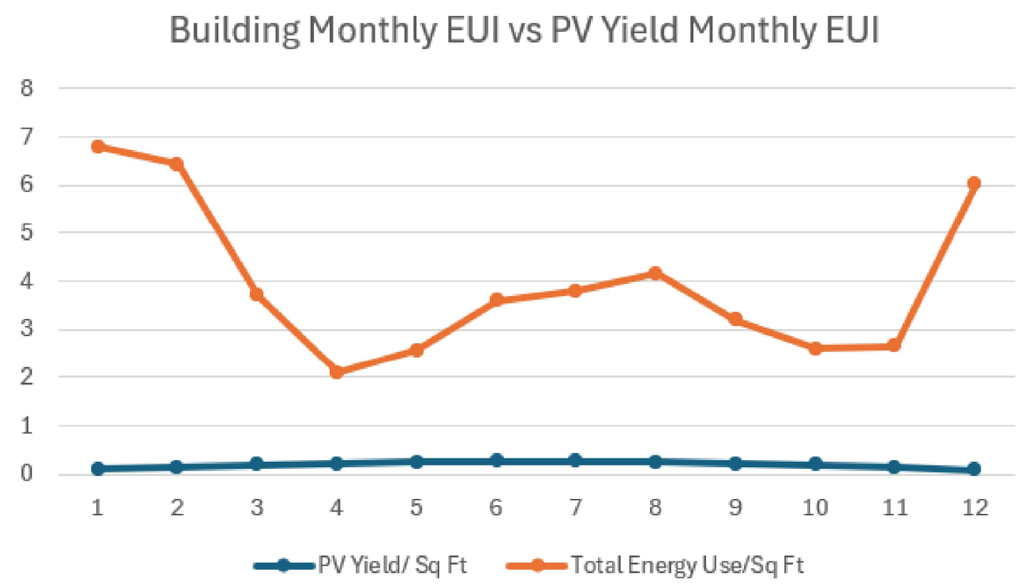
Photovoltaic panels

Photovoltaic panels were placed on high solar exposure zones,at an 18 degree angle, to improve the building performance. The PV yield gradually increases from January, peaking around June–July, and then tapers off. This reflects expected solar gain trends aligned with longer summer daylight hours. Solar radiation follows a curve, peaking in June, confirming ideal PV performance during late spring to mid-summer. This comparative graph shows that although PV yield remains relatively constant throughout the year, energy use (EUI) spikes in January and December due to heating demand and again in summer due to cooling. The PV system offsets a portion of this demand, especially in mid-year, but is less effective during winter months when solar input is low, indicating further passive strategies are needed.

PV panels solar radiation - 3d model



Monthly EUI and monthly total normalized PV electricity generated (kBTU/sqft)



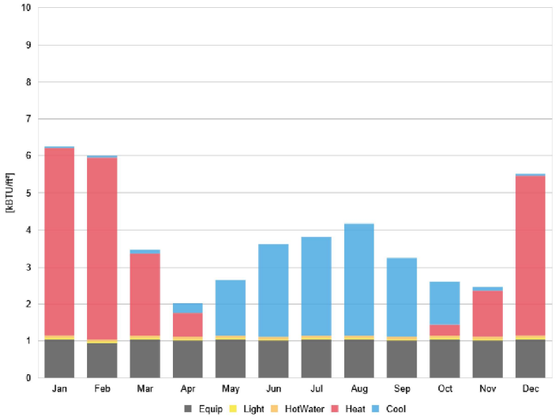
Additional strategies

To further reduce EUI in a mixed-humid climate, strategies include south and west shading, cool roofs, airtight envelopes and smart HVAC zoning. Adding thermal mass in common areas, and night ventilation also helps.

Climate change and resilience

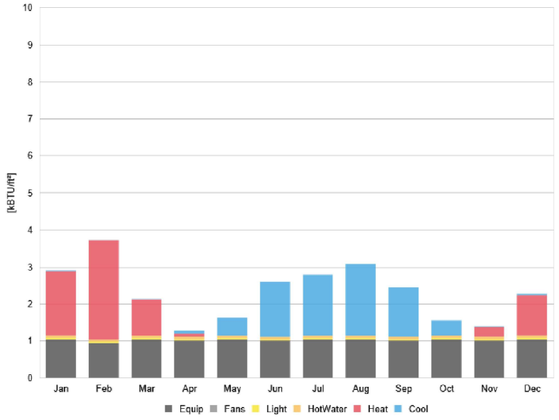
EUI Optimized

53kBTU/ft^2



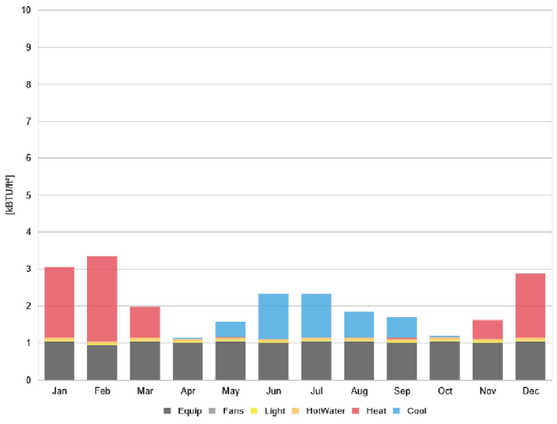
EUI Optimized free running

28kBTU/ft^2

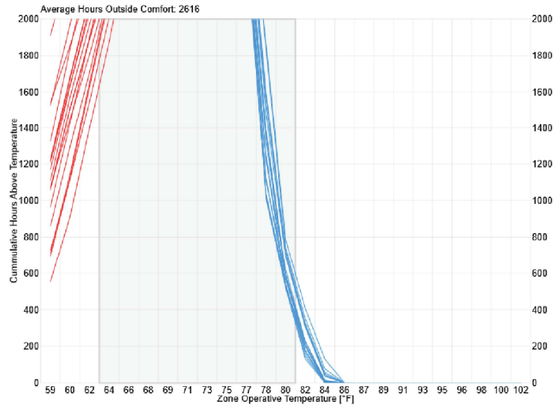


EUI Optimized in 2050

25kBTU/ft^2



Zone temperature curves free running



Free-running building

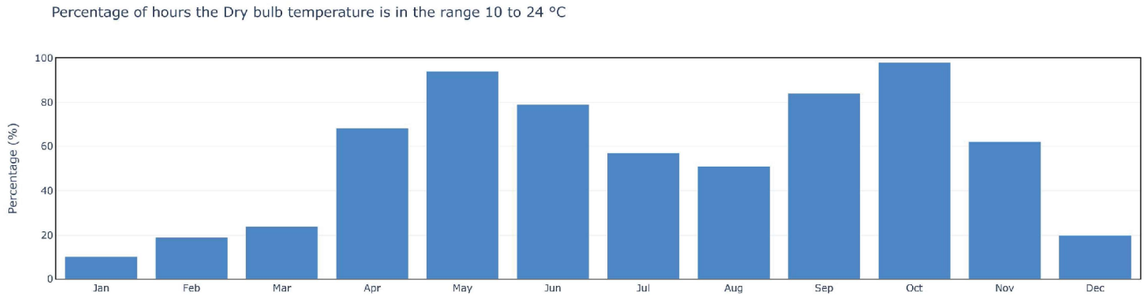
The free-running building scenario demonstrates significant energy savings, reducing EUI from 53 to 28 kBTU/ft² by relying on passive design strategies like natural ventilation, thermal mass, and shading. The zone temperature curve confirms thermal comfort is largely maintained without mechanical systems, highlighting the effectiveness of passive resilience in moderate climates.

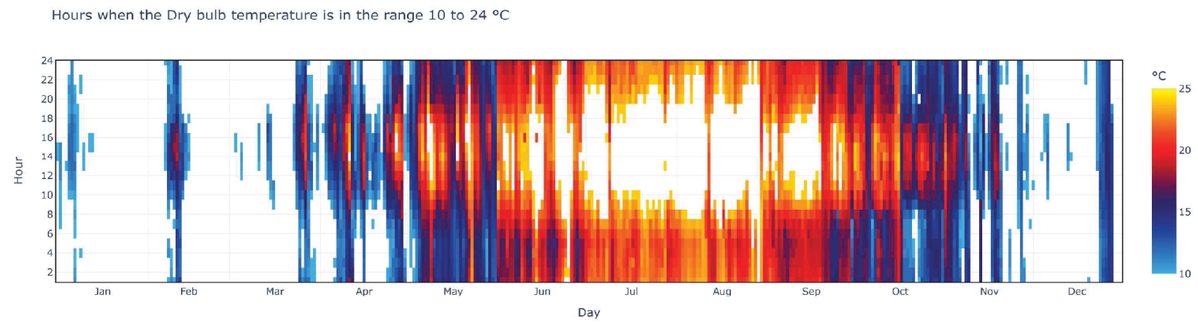
Climate change scenario

In the 2050 climate scenario, the building's EUI drops further to 25 kBTU/ft², indicating strong adaptability to future conditions. Optimizations appear to reduce equipment, lighting, and cooling demands, possibly due to improved envelope design and daylighting strategies. The model emphasizes the need for climate-responsive design to ensure long-term energy efficiency.

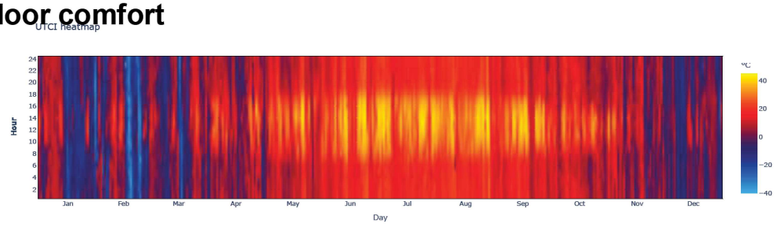
Istanbul Case Study

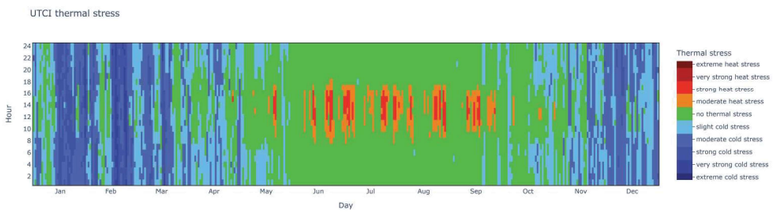
Natural Ventilation potential

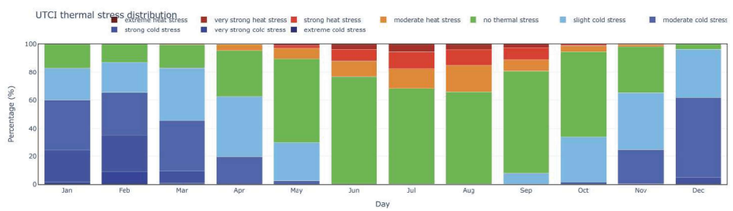


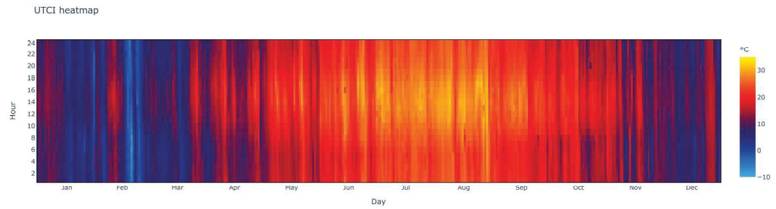


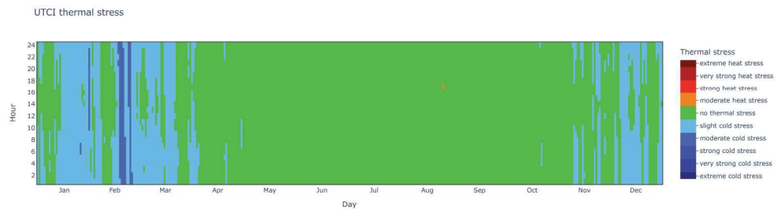
Outdoor comfort

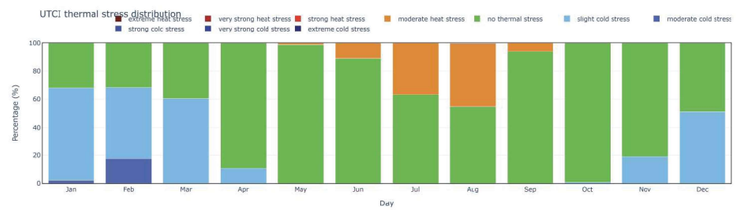












Istanbul, Turkey

Lat/Lon/Alt:
41 °00’49”N, 28 °57’18”E

Koeppen Geiger Classification
Cfa Climate

DOE or other local classifications
Climate zone 4A

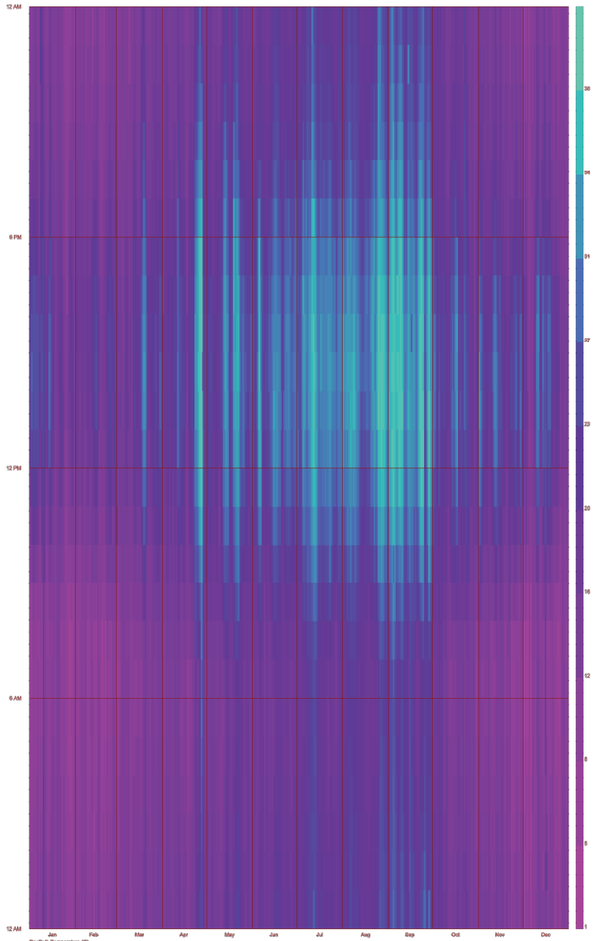
Natural Ventilation potential

The Natural Ventilation Potential analysis reveals that the most favorable conditions for passive ventilation occur during spring (March–May) and fall (September–October) when a significant percentage of hours fall within the comfortable 10°C to 24°C range. In contrast, winter (December–February) experiences minimal natural ventilation potential due to lower temperatures, while summer (June–August) presents challenges as midday temperatures exceed 24°C, limiting effectiveness. Strategies such as cross-ventilation, operable windows, and night cooling can optimize performance in borderline months.

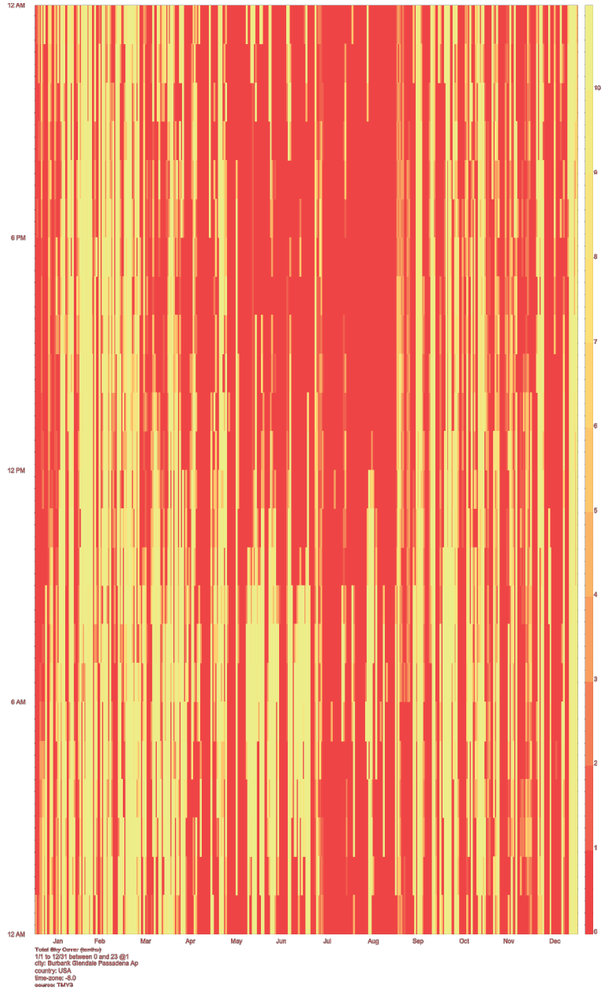
Outdoor comfort

The Outdoor Comfort (UTCI) analysis emphasizes that spring and fall provide the most thermally comfortable outdoor conditions, whereas winter exhibits cold stress requiring wind protection, and summer experiences significant heat stress, necessitating shading and ventilation strategies. To enhance year-round usability, design interventions like adaptive shading, vegetation, and high-albedo materials can mitigate discomfort, extending the comfortable outdoor period while ensuring optimal passive ventilation.

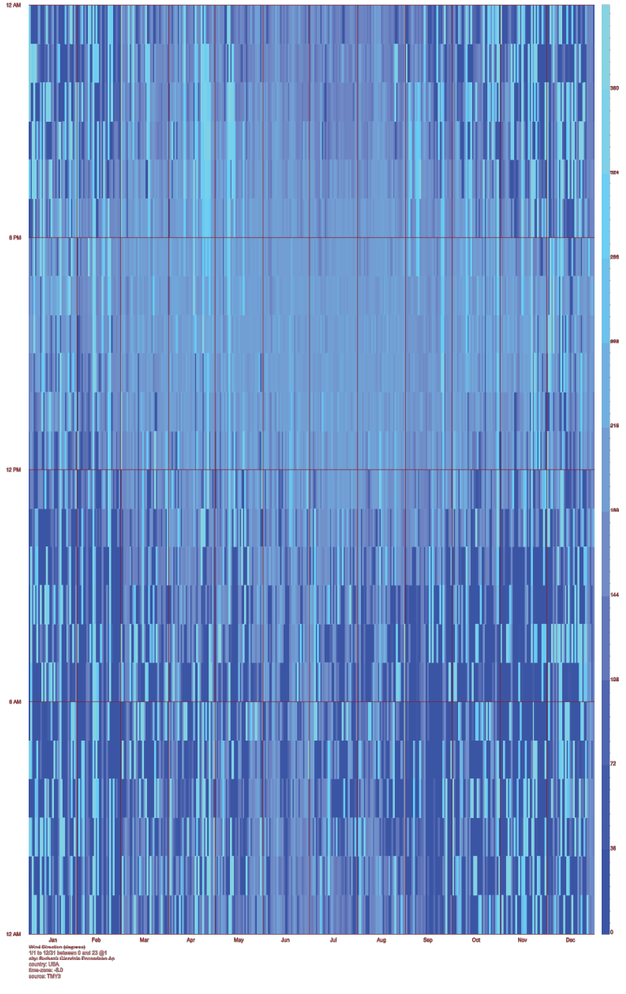
Climate Media - Eames House Case Study



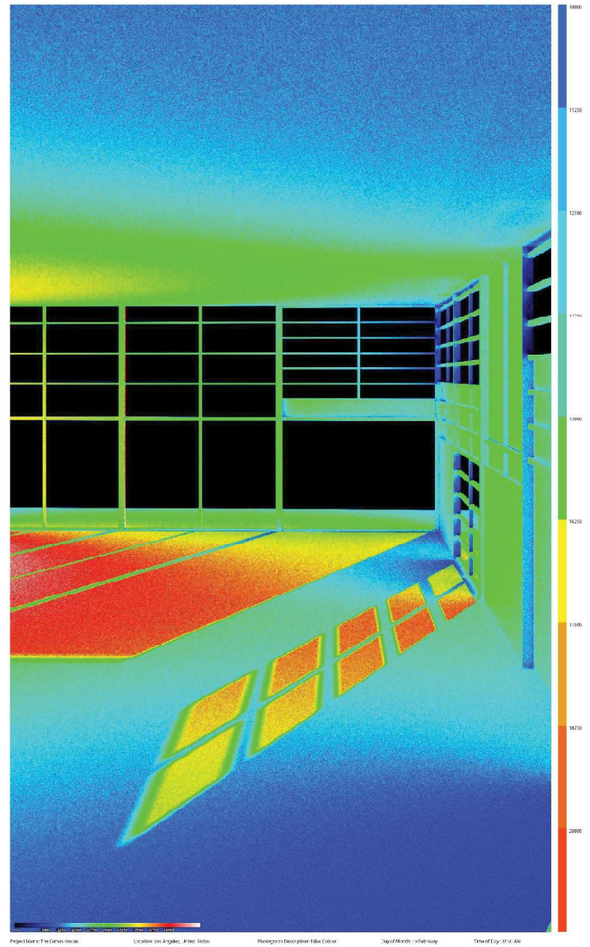
Dry Bulb Temperature Graph



Total Sky Cover Graph



Wind Direction Graph



Luminance

thank you.

Contact : kankariameghana4@gmail.com
Linkedin : Meghana Kankaria