MINYOUNG JEONG

SELECTED WORKS

2023-2024

COLUMBIA UNIVERSITY GSAPP

M.S. ADVANCED ARCHITECTURAL DESIGN

PREFACE

The responsibility of architects in this era is to transform the invisible problems of society, those that were previously nonexistent, and those that have become unnoticed, into tangible manifestations using the language of architecture. At GSAPP Architecture, my responsibility is not merely to research and study these unseen issues but to provide responses to them in the form of actual architectural structures, visible and tangible. Architects should not be mere critics but rather problem-solvers, and their results should be presented in the form of visible and tangible architectural creations. The following portfolio represents three responses to the unseen problems I have encountered over the past three semesters.

The first addresses the issue of things becoming unnoticed due to lack of interest. Have you ever noticed an area substation in the middle of the city? Have you ever taken an interest in the sewage system underground? Despite being essential and core facilities that make up the city, they have become neglected by the public and relegated to being just another eyesore in the urban landscape. The summer semester at GSAPP is a project to bring these “invisible” infrastructures out of the city and integrate them with the public.

The second tackles the issue of minorities obscured by the majority. Have you ever dreamed of sailing through the Arctic Ocean on a massive cruise ship? You might have fantasized about the elegant and mysterious Arctic journey, cruising through the icy waters with buffet meals and occasional stops in the Arctic region. However, hidden behind the glamourous facade are the disrupted indigenous ecosystems, turned villages into tourist attractions, and the marginalization of minority voices in decision-making processes, much like the unregulated financial ecosystem threatening the Arctic environment. The fall semester at GSAPP is an architectural solution for the minorities residing in the Arctic, who have suffered from the indiscriminate damages caused by massive cruise tourism, offering an alternative to existing systems.

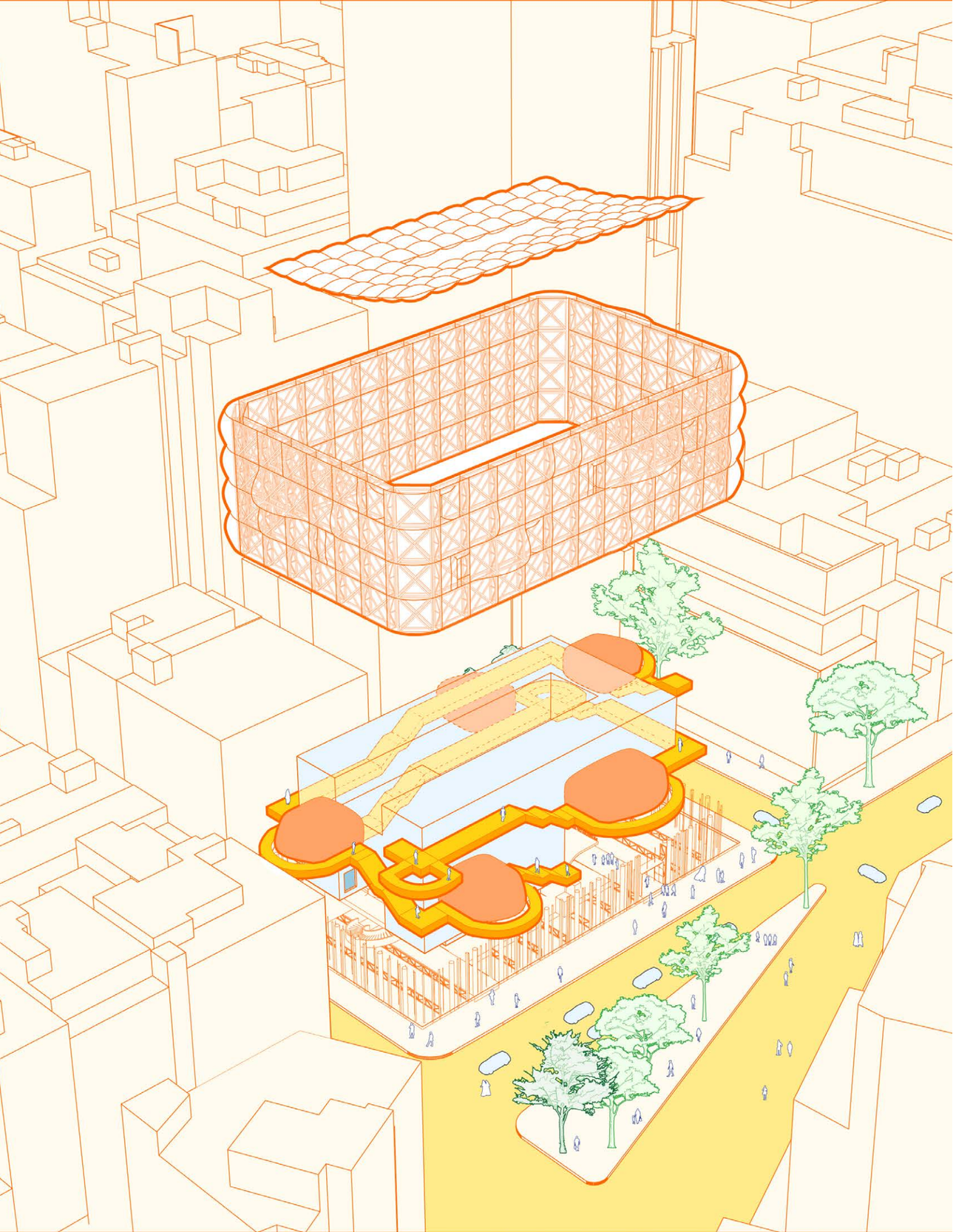
The third tackles the unseen yet profoundly impactful environmental aspect. Often overlooked, architects tend to disregard or minimize the significant carbon footprint associated with construction. How can architects visualize and address this issue using the language of architecture? I don’t believe simply replacing conventional building materials with biogenic ones will solve the problem. Just as steel and concrete have opened new horizons in architecture over the past few centuries, I believe the next hundred years will mark the beginning of a new desire, new methods, and new paradigms. The spring semester at GSAPP is a prototype that actively utilizes mycelium as a building material to lead and visualize this change.

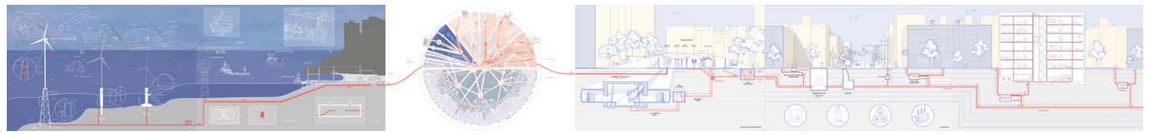
Architects are not agitators, nor are they news anchors sensationalizing issues. They are not critics who comment on issues. Architects are builders who reconcile solutions to societal, environmental, and personal challenges through space, stemming from the Greek ‘arkhi-’ (chief) + ‘tekton’ (builder). Therefore, my portfolio focuses on providing solutions to these problems, serving as a recipe rather than a manifesto.

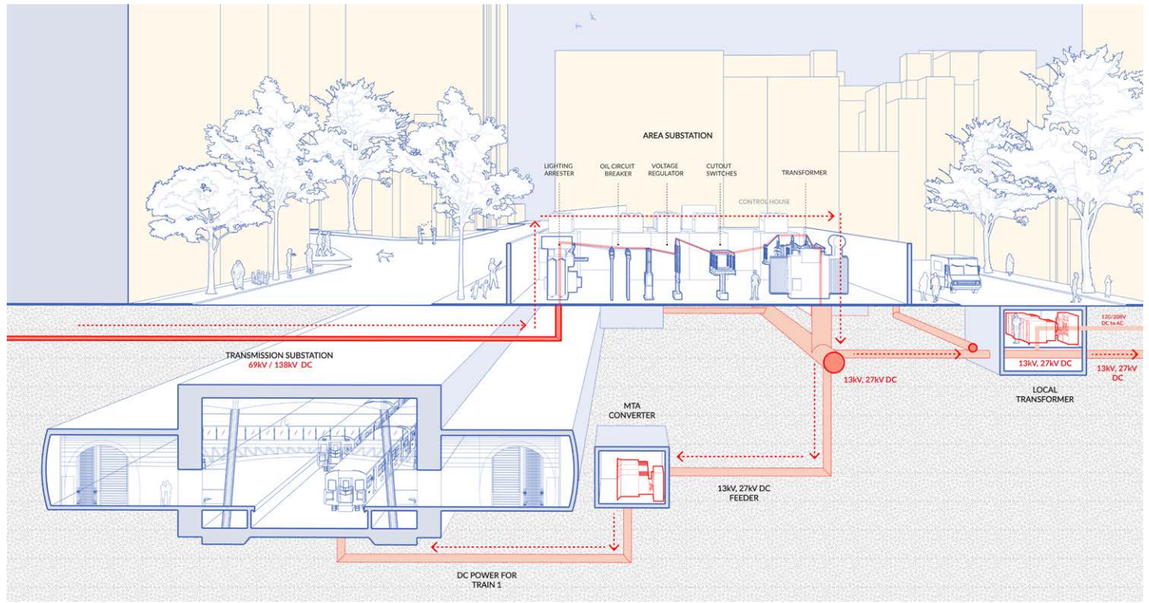
01 INFLATABLE INVISIBILITY

AREA SUBSTATION RENOVATION

Instructor: Professor Dan Wood
Year: Columbia GSAPP 2023 Summer
Location: NYC
Category: Academic
Role: Individual Project







A New Architecture of Invisibility

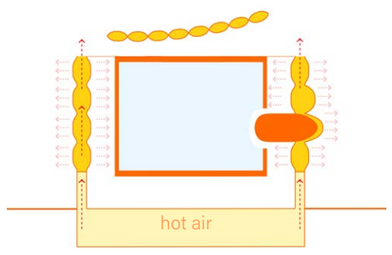
This project examined the history of air architecture to understand how wind power relates to a sustainability agenda. It began by examining research on this green technology via representation, mappings, and interviews to understand its application on different scales from the atmosphere to the apartment. It also looked at the potential future of the septic system and how it can function as an integral part of making cities more ecological. Envisioning wind power as a key to reshaping the future of urban fabric, students designed civic and public wind infrastructure that integrates networks, education, social equity, public space, and design—a new and radical green septic icon for the city.

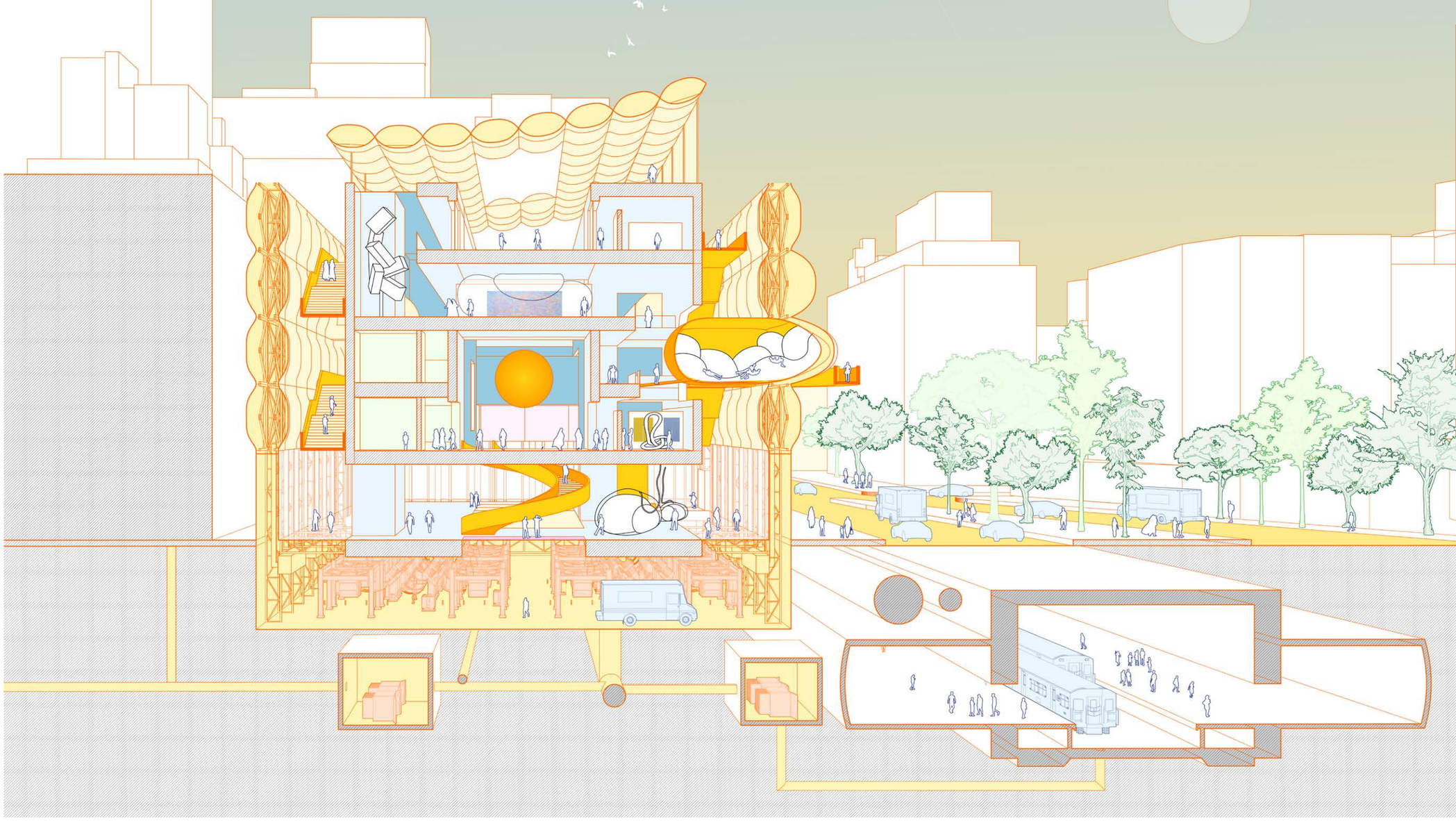
Reimagining Invisibility: The Area Substation Museum

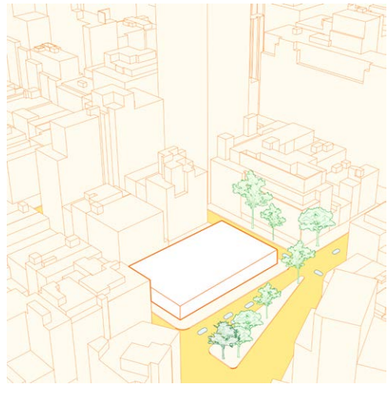
In our modern world, there are elements that play crucial roles in our lives but often go unnoticed, just like the area substations that supply electricity to our local areas. Despite their importance, they remain invisible to the public eye. This project aims to change that by reintroducing area substations to the public consciousness through a creative approach that combines an inflatable structure with an interactive cultural complex.

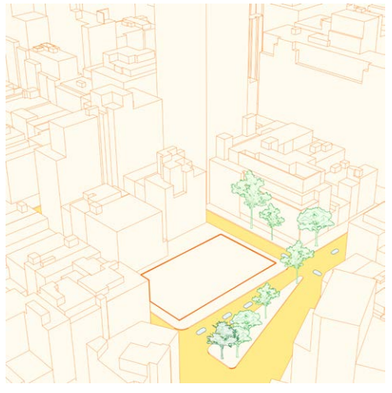
The main concept of the project revolves around making area substations visible by using inflatable structures. The exterior of the substation will be transformed into an interactive facade, creating a visually dynamic and engaging experience for the public. The innovative "Box in box" design relocates the substation underground, and the heat generated by its operations inflates the outer surface of the substation, resembling bubbles.

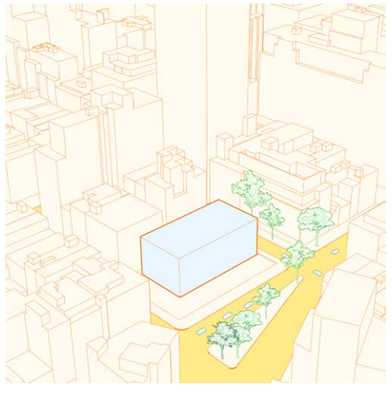
The inflatable facade's dynamicity will serve as a representation of electricity demand in the area. When the demand for electricity is high, the facade will inflate further, signaling the increased activity within the substation. This creative display not only makes the invisible visible but also raises awareness about the importance of substations in our daily lives.

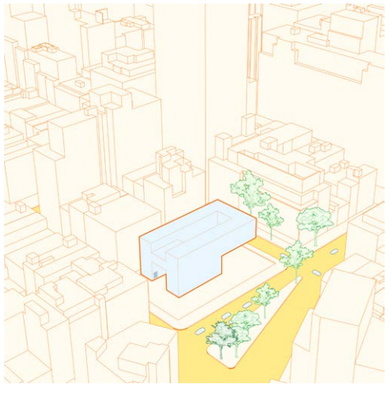


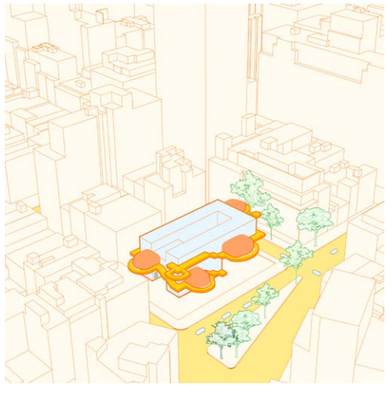


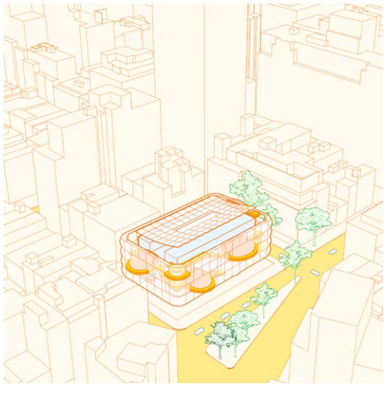






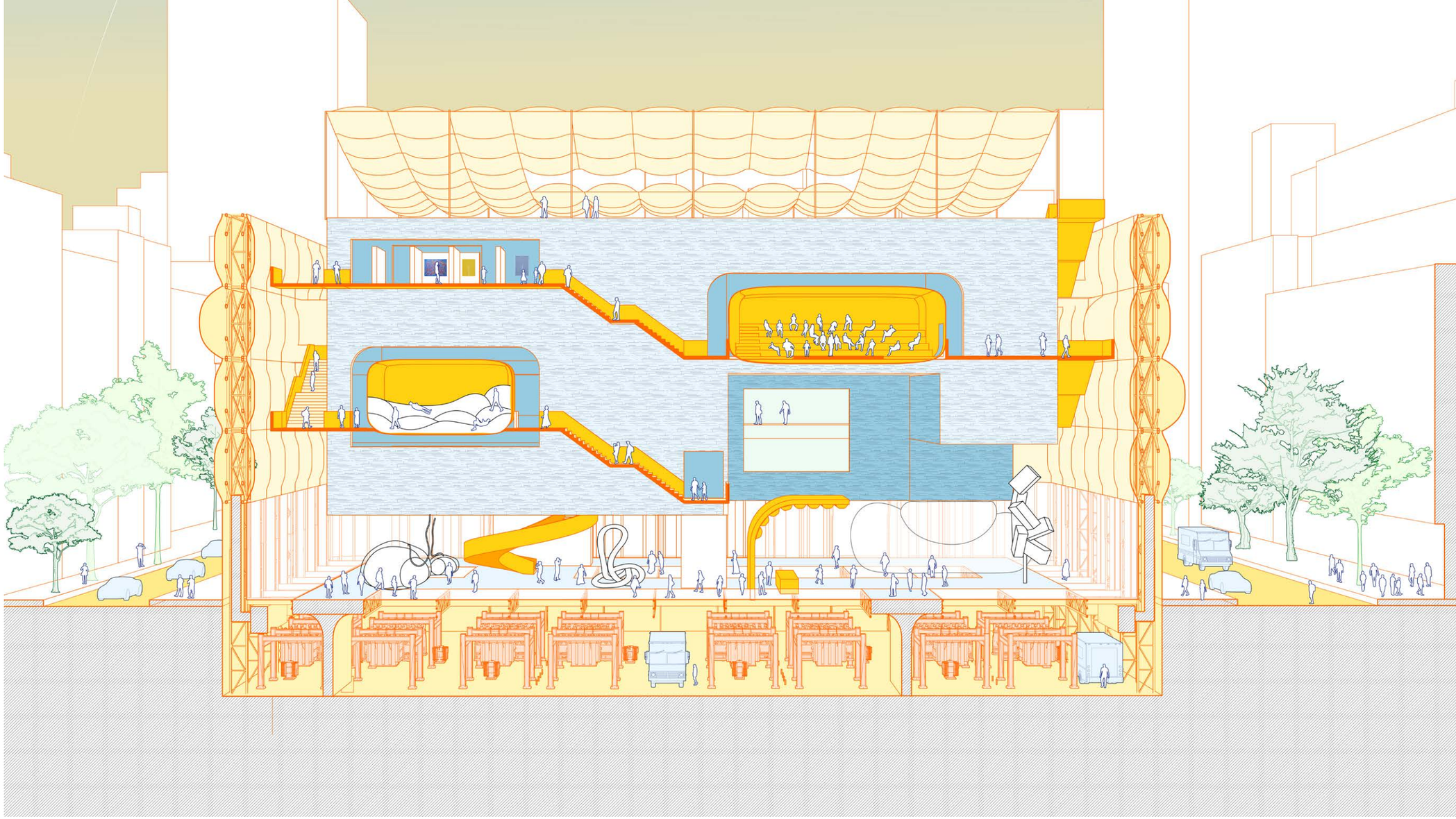


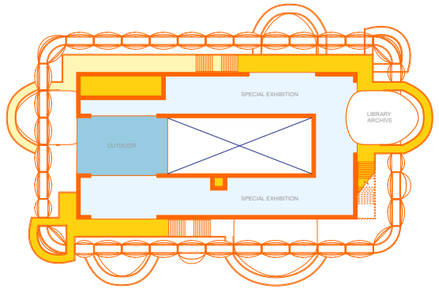


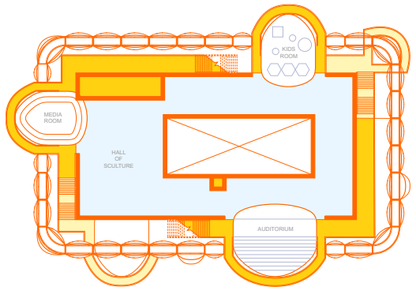


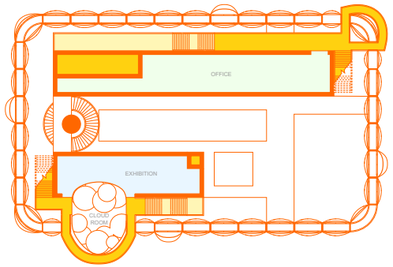
The project also aims to establish a direct relationship between the public and the area substation within the cultural complex. Through the use of transparent floor glass, visitors can get a closer look at the operations of the substation, demystifying its functions and enhancing the overall experience.

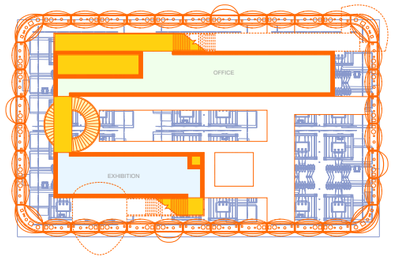
To further engage the public, the interior of the cultural complex will be illuminated at night, transforming the substation into a mesmerizing and vibrant space. The play of lights and shadows within the museum will create an awe-inspiring spectacle, offering visitors something they have never seen before.

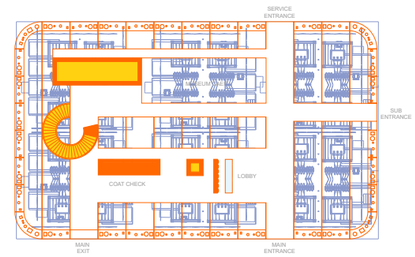












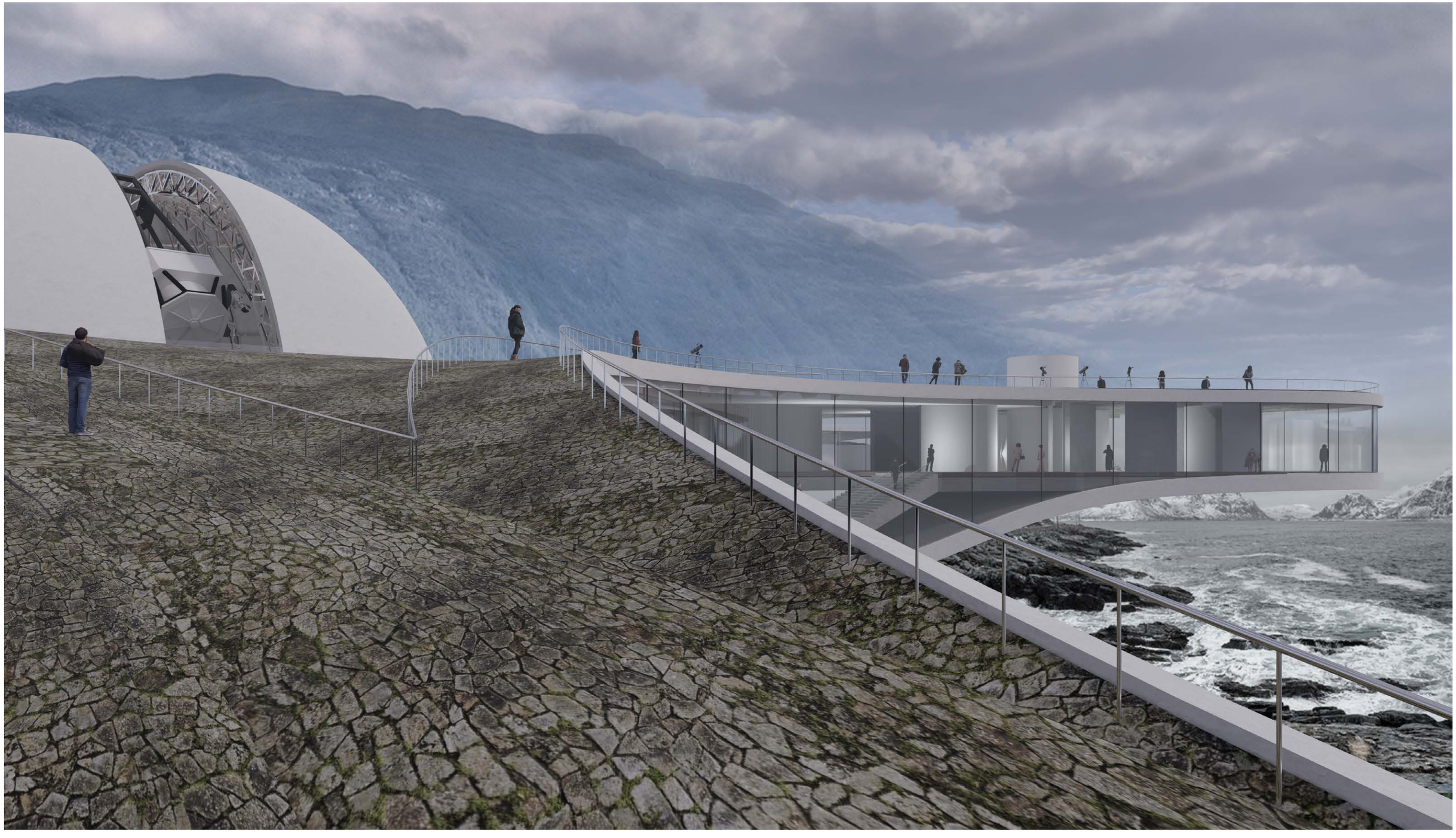
In addition to making the area substation visible, the project also aims to revitalize the cultural complex, making it an integral part of the community. By incorporating interactive spaces and cultural exhibits, the complex will become a hub of knowledge and entertainment, attracting people of all ages and interests.

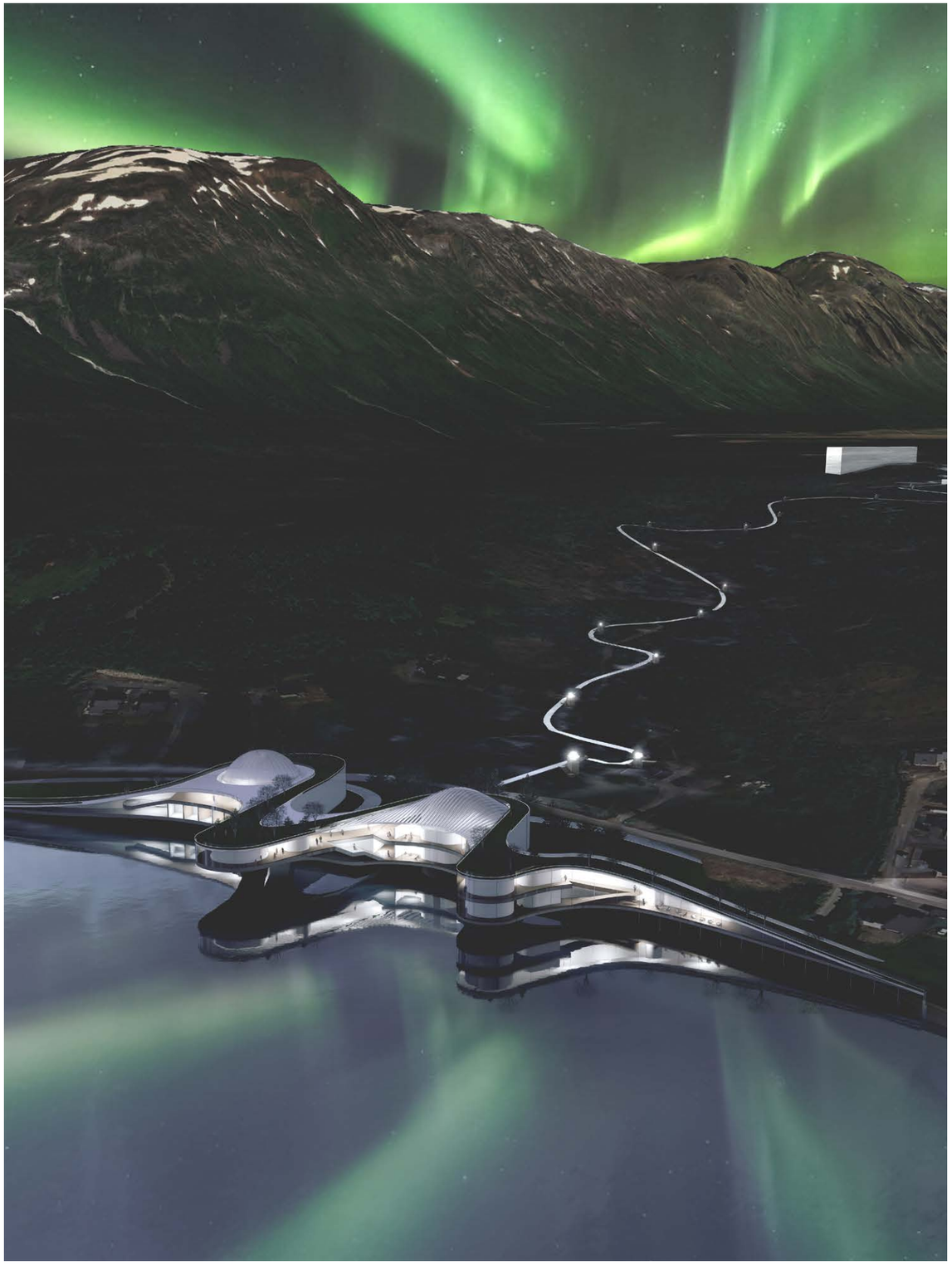
The concept of invisibility is redefined in this project, where the once overlooked area substation becomes an interactive, captivating, and educational experience for the public. Through the innovative use of inflatable structures, transparent floors, and captivating lighting, the area substation cultural complex bridges the gap between the critical infrastructure and the people it serves, enhancing appreciation for its essential role in supplying electricity to our local areas. This transformation not only makes the invisible visible but also creates a lasting impact on the way we perceive and interact with crucial elements in our everyday lives.

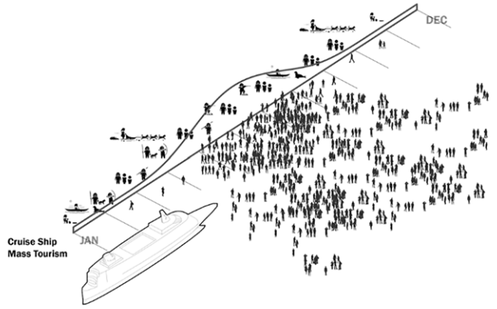
02 ARE ICEBERGS FREE?

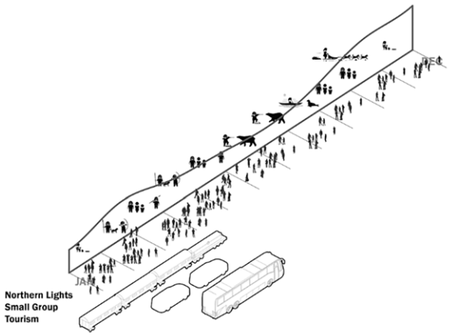
ARCTIC OBSERVATORY

Instructor: Professor Leslie Gill & Khoi A. Nguyen
Year: Columbia GSAPP 2023 Fall
Location: Tromsø, Norway
Category: Academic
Role: Individual Project



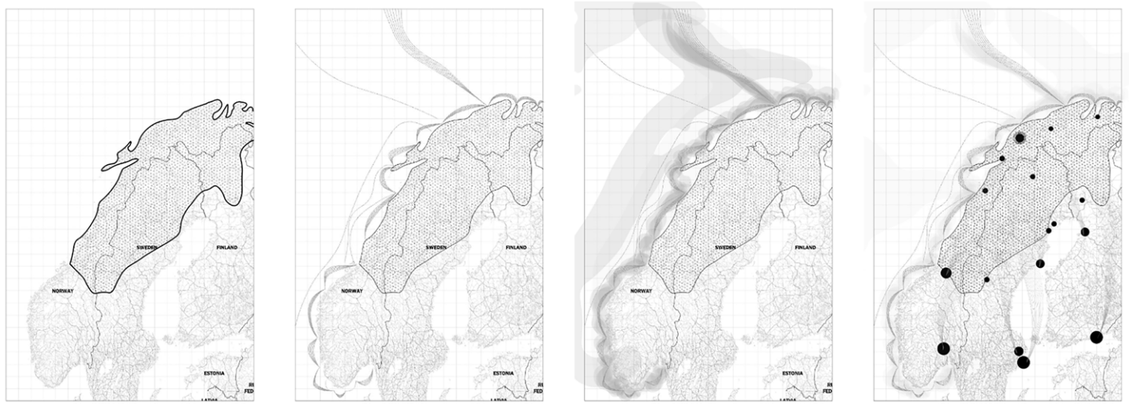




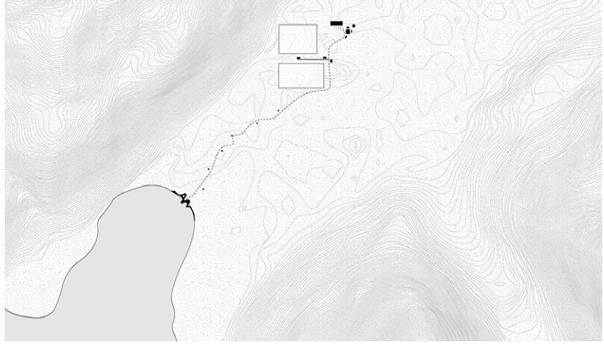


Sustainable Arctic Tourism in Tromsø, Norway

As temperatures rise and the Arctic ice melts, cruise ship tourism in the Arctic Circle has surged, causing detrimental impacts on local communities, particularly the indigenous populations residing in small villages. The influx of massive cruise ships, each carrying over a thousand visitors, has overwhelmed the fragile local infrastructure, leading to a cultural shift and the forced migration of indigenous communities to larger cities. This project aims to address these issues and propose an alternative, sustainable approach to tourism in the Arctic.

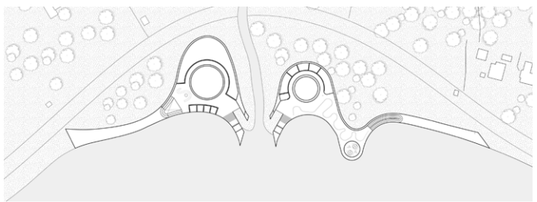


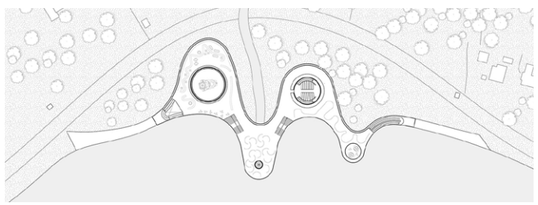
The project is situated in Tromsø, Norway, one of the largest tourist cities in the Arctic, with an average of 2 million tourists annually. The main hub is located 30 minutes from Tromsø University, where existing research facilities spanning 4 million sqft are shared by international partners. The proposal envisions a seamless integration of tourism and scientific research at this central hub.

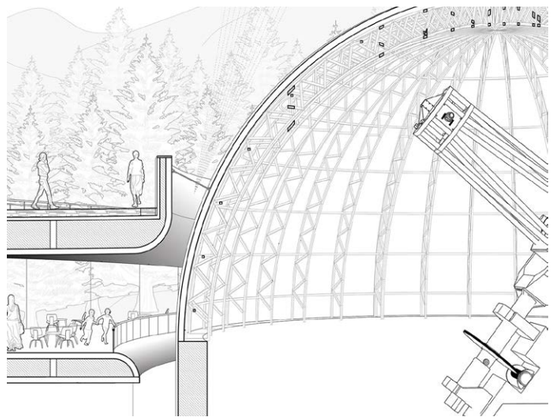


Main Hub

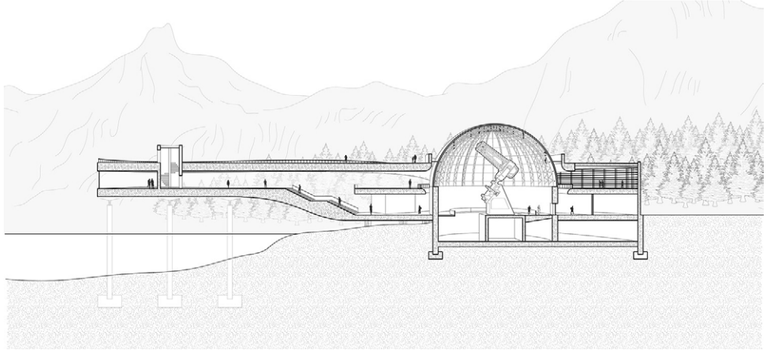
The central hub is designed to blend tourism with scientific exploration seamlessly. The existing research facility, primarily focused on studying the Northern lights and analyzing climate data, operates 24/7. The new addition aims to enhance both scientific research and the tourist experience, harmoniously integrating into the surrounding forest. The main building is divided into two wings, housing telescopes for scientists and a planetarium for tourists. The roof shape allows for an occupiable observatory space, providing visitors with a unique and immersive experience.

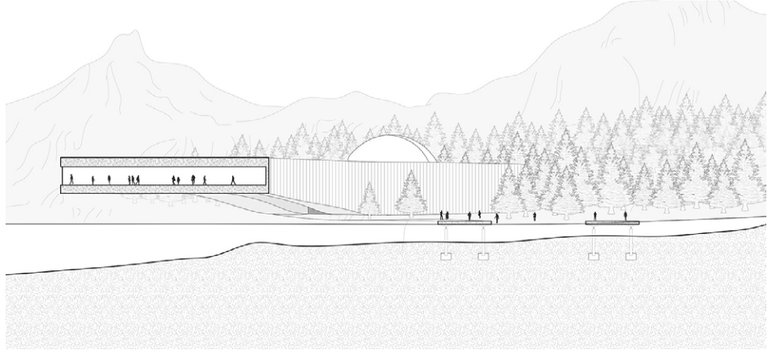


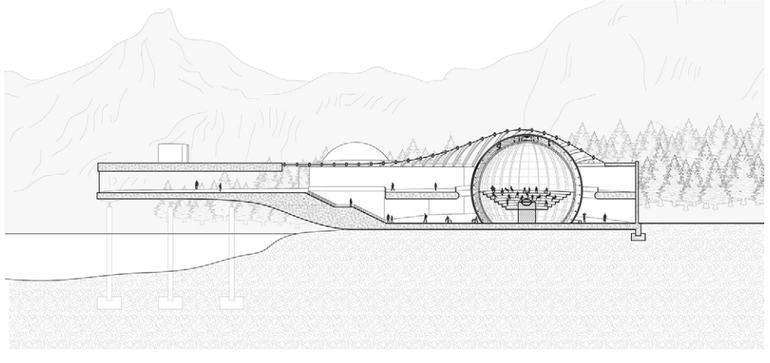


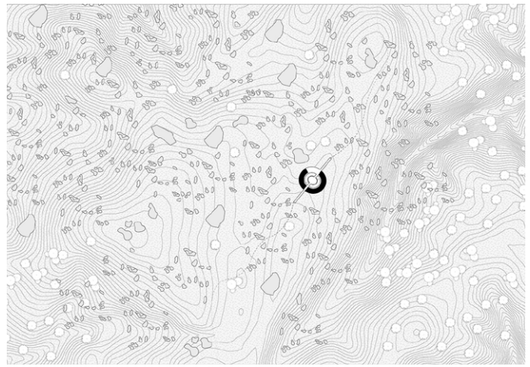


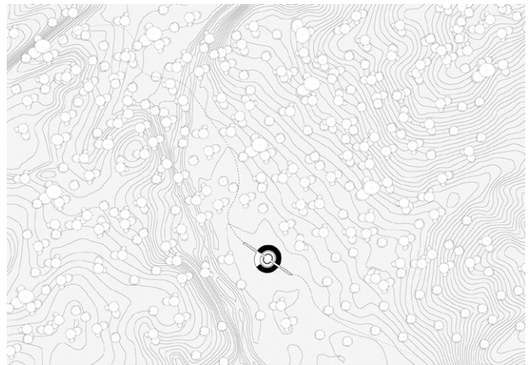
Cruise ship tourism in the Arctic is not just about pollution; it's reshaping the identity of indigenous villages. The influx of visitors is causing the indigenous to leave for bigger cities, which led to significant cultural shifts in these original communities. Rather than having 1000 people disembark from a cruise at once, causing these damage, the proposal suggests a more balanced, sustainable way of tourism. The project delves into how activities like watching Northern lights and sea animals can be done without taking cruise ship. Encouraging the use of sustainable transportation, like trains and buses, will add a new environmentally friendly approach to exploring the region.

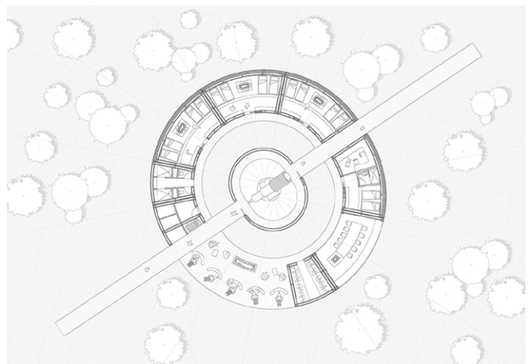


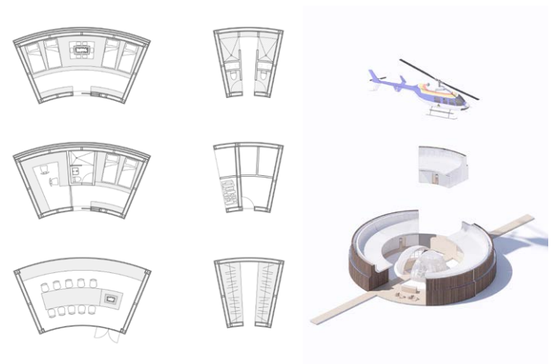












Remote Outposts

The outpost, based on a modular system, is designed for temporary placement in small indigenous villages. Each unit is transportable by helicopter, allowing for flexibility and expansion. The outpost focuses on personal experiences of observing the Northern lights, with rooms for tourists after hiking. A central telescope collects data in locations with minimal light pollution. Artificial lights are strategically positioned to face outward, ensuring a dark center for optimal observation.





Light and Color

Both the main hub and outpost feature curved surfaces designed to observe the Arctic as color and light. The layers of curved surfaces allow soft, diffused light into the main observatory space in the central hub and on a smaller scale in the outpost. The color and design elements aim to enhance the overall experience for both scientists and tourists.

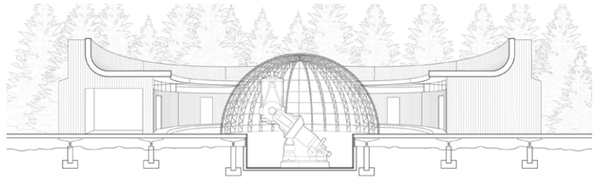


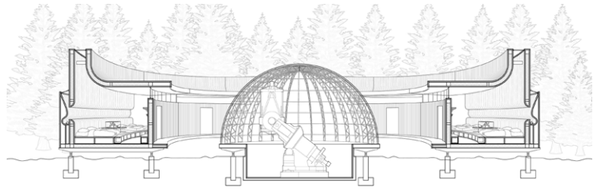


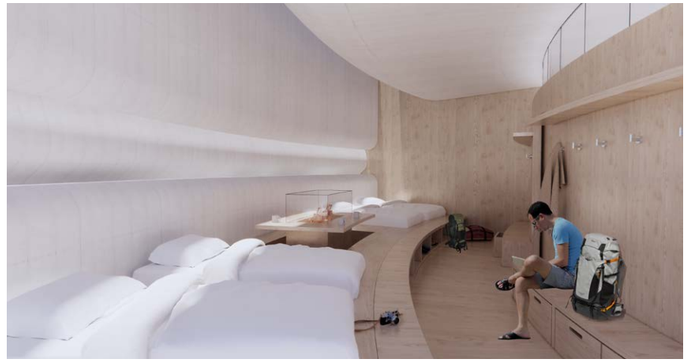


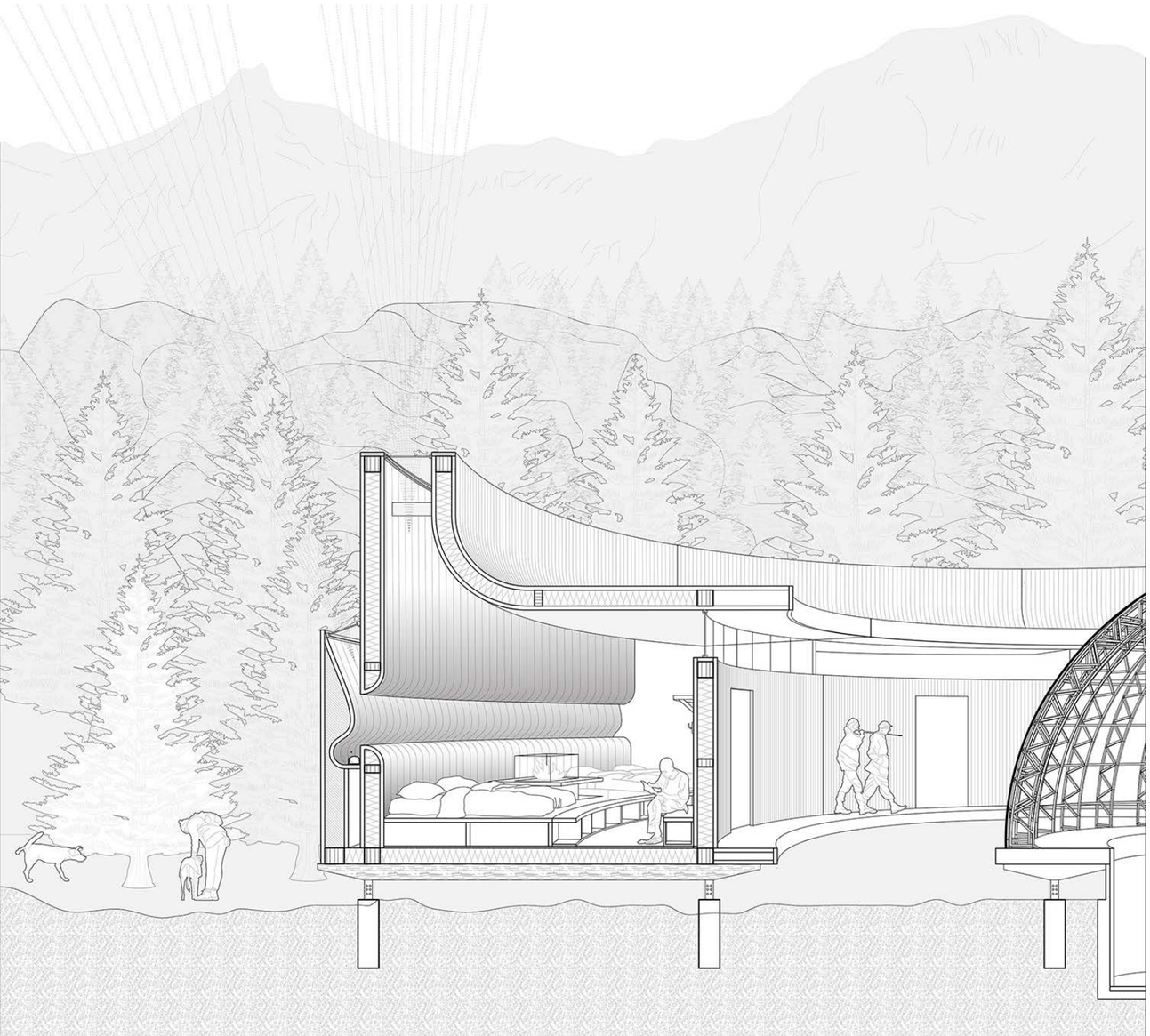












Curved surfaces are chosen not just for their visual appeal but also for their practicality. In the harsh Arctic environment, curved surfaces help deflect wind and snow, reducing the impact of extreme weather conditions on the structures. Additionally, curved surfaces can also help with structural stability, distributing loads more evenly.

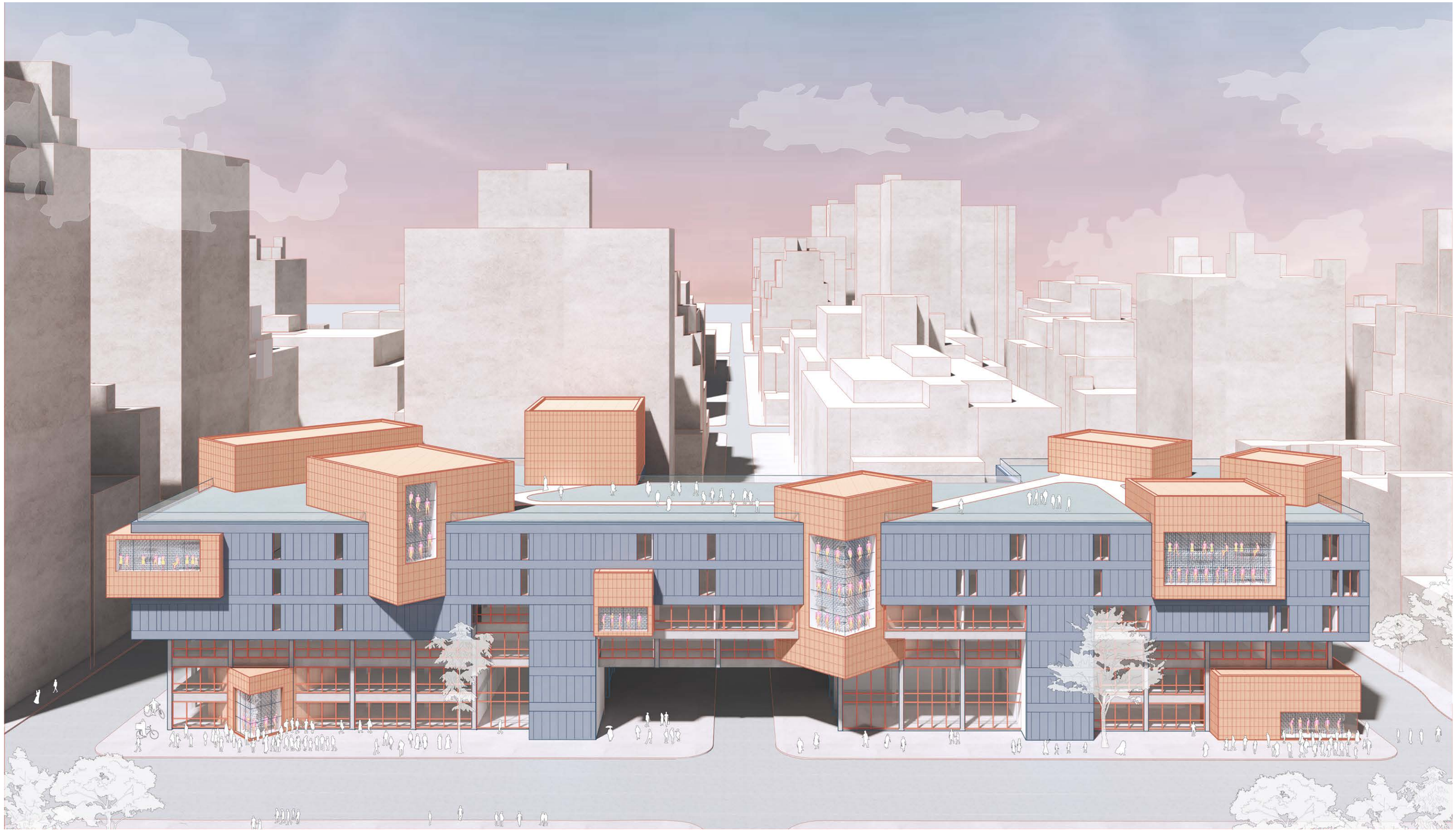
The design prioritizes the observation of color and light, recognizing the unique atmospheric conditions of the Arctic. The soft, diffused light that enters the spaces through the layers of curved surfaces creates a serene and comfortable atmosphere, enhancing the overall experience for occupants.

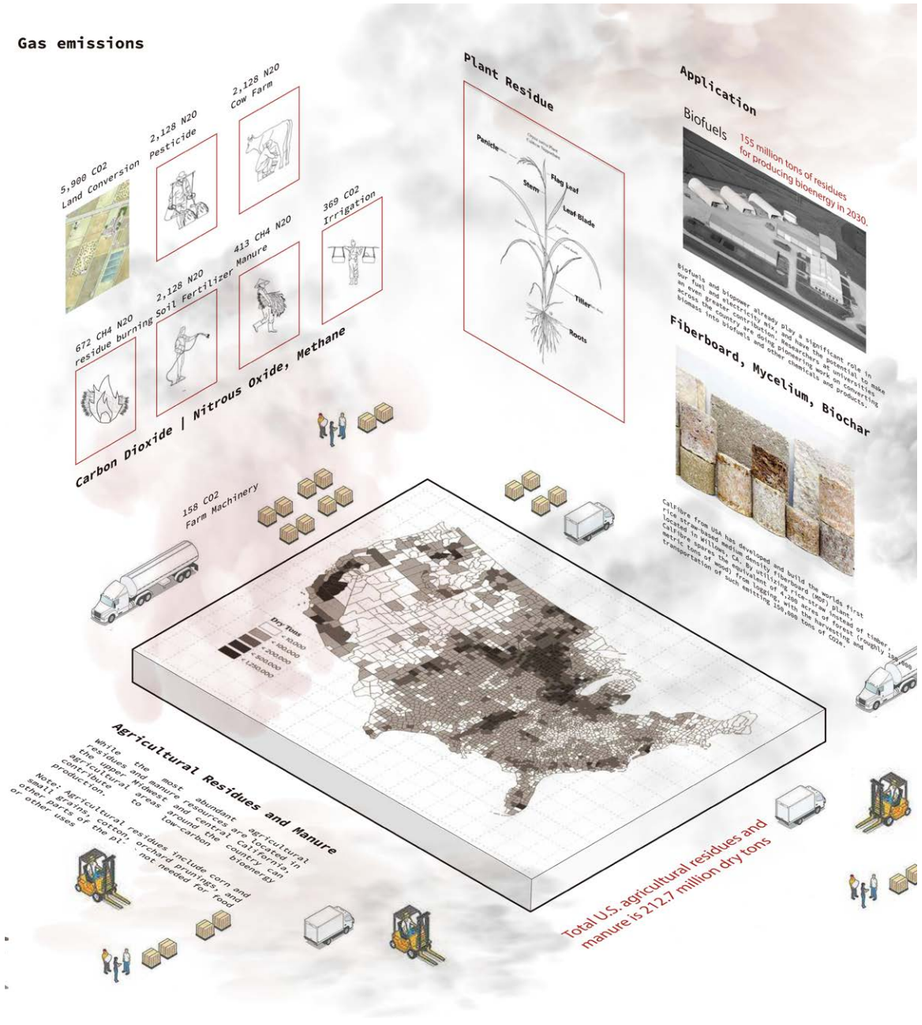
While smaller in scale compared to the main hub, the outpost also incorporates curved surfaces to allow soft, diffused light into its interior spaces. Despite its more compact size, the outpost offers a similar immersive experience, providing researchers and visitors with opportunities for observation and study.

03 MYCELIUM INSERTS

SUSTAINABLE FASHION SCHOOL PROTOTYPE

Instructor: Professor David Benjamin
Year: Columbia GSAPP 2024 Spring
Location: NYC
Category: Academic
Role: Collaborative Work with Minjeong Song





In an era characterized by environmental crises and burgeoning consumerism, the quest for sustainable solutions has never been more urgent. Amidst this backdrop, the integration of mycelium—a fibrous network of fungi—has emerged as a promising avenue for revolutionizing practices in both fashion and architecture. This project explores the transformative potential of mycelium integration, elucidating its profound implications for mitigating environmental degradation and fostering sustainable development.

At the heart of our inquiry lies the recognition of two interconnected challenges plaguing contemporary society: the environmental toll of fast fashion and the ecological footprint of conventional construction practices. The rapid pace of fashion trends, coupled with the relentless pursuit of profit, has culminated in a wasteful cycle of production and disposal, exacerbating carbon emissions and resource depletion. Similarly, conventional construction materials, such as concrete and timber, contribute significantly to greenhouse gas emissions and deforestation, perpetuating a cycle of environmental degradation.

In response to these challenges, our project embarks on a journey of innovation and collaboration, seeking to harness the regenerative potential of mycelium. By repurposing two distinct waste streams—agricultural residues and fabric waste from fast fashion—we endeavor to embed carbon into existing structures, thereby mitigating environmental harm and fostering resilience. This symbiotic approach not only addresses the environmental impact of waste accumulation but also offers a sustainable alternative to conventional construction materials.

Central to our methodology is the integration of mycelium within a hybrid timber and denim structure, meticulously woven to create molds for mycelium growth. This innovative construction method not only sequesters carbon but also imbues architectural spaces with a sense of organic beauty and functionality. By embracing the dynamic properties of mycelium, we redefine the boundaries of architectural design, creating spaces that inspire creativity and environmental consciousness.

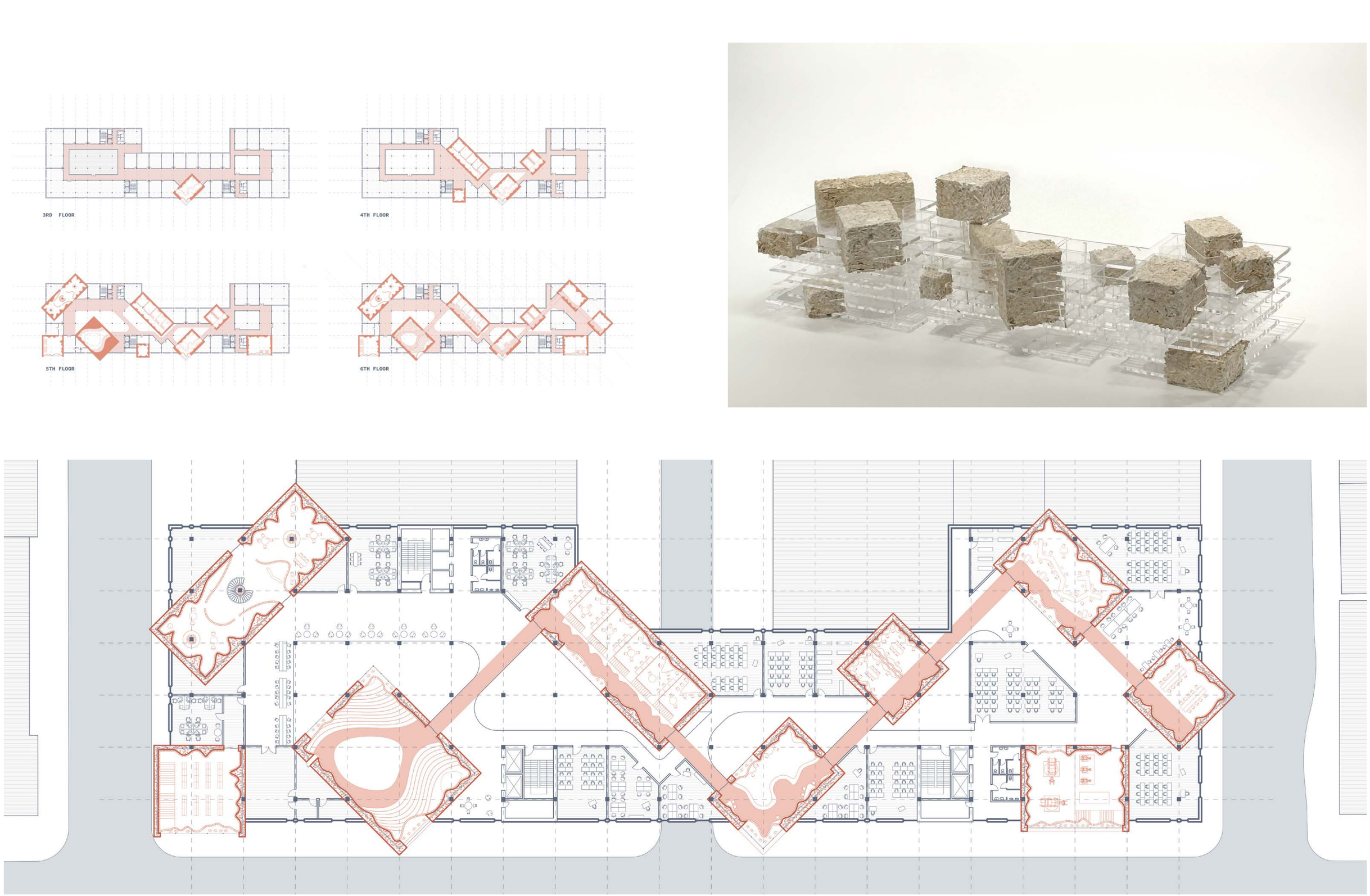
Our collaboration with the Fashion Institute of Technology (FIT) serves as a testament to our commitment to interdisciplinary innovation and sustainability. Through strategic placement of mycelium modules within FIT's campus buildings, we aim to cultivate a culture of innovation and sustainability, nurturing the next generation of designers and architects. These modules will serve as living laboratories, fostering experimentation and collaboration across disciplines, and showcasing the transformative potential of mycelium integration.

3RD FLOOR

4TH FLOOR

5TH FLOOR

6TH FLOOR



+0.9 LB / 1LB
of CONCRETE

EMITTED

STORED

-0.82 LB / 1LB
of M&T HYBRID STRUCTURE

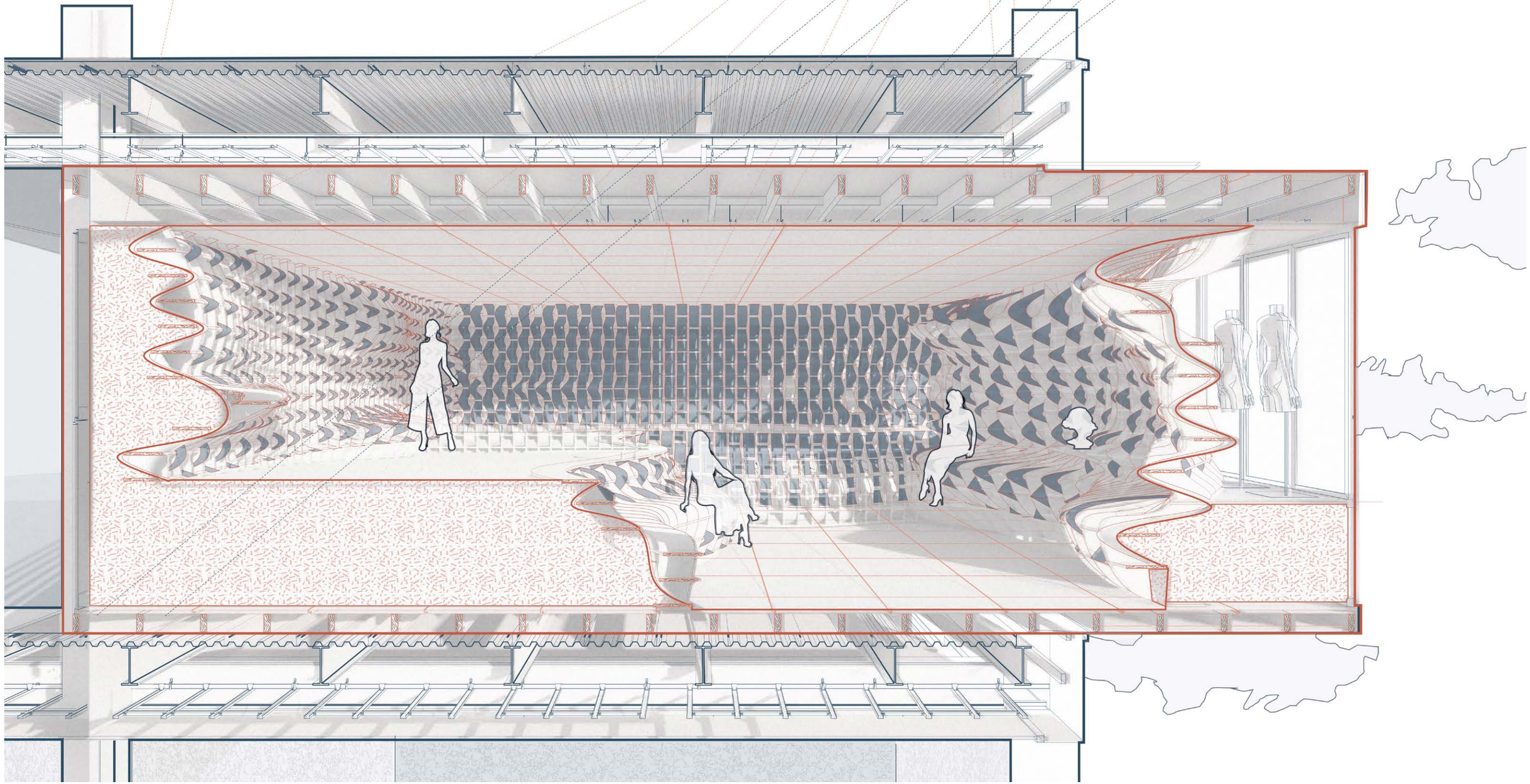
JEAN STRIP

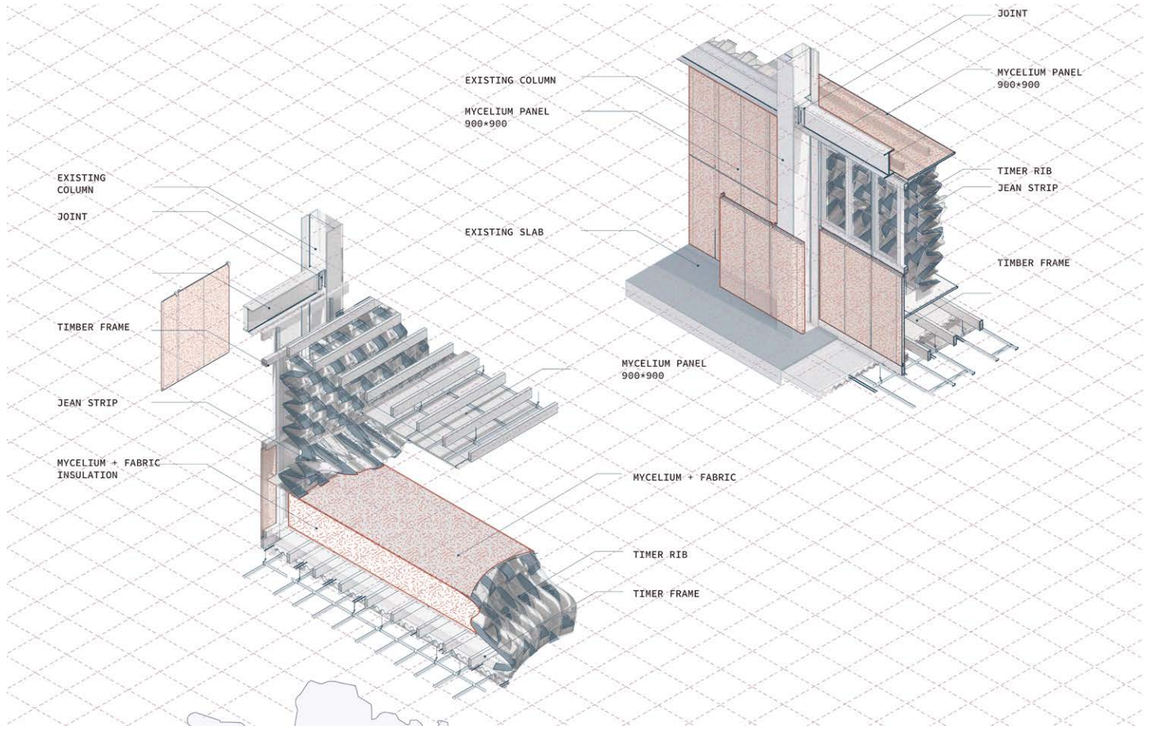
MYCELIUM + FABRIC
INSULATION

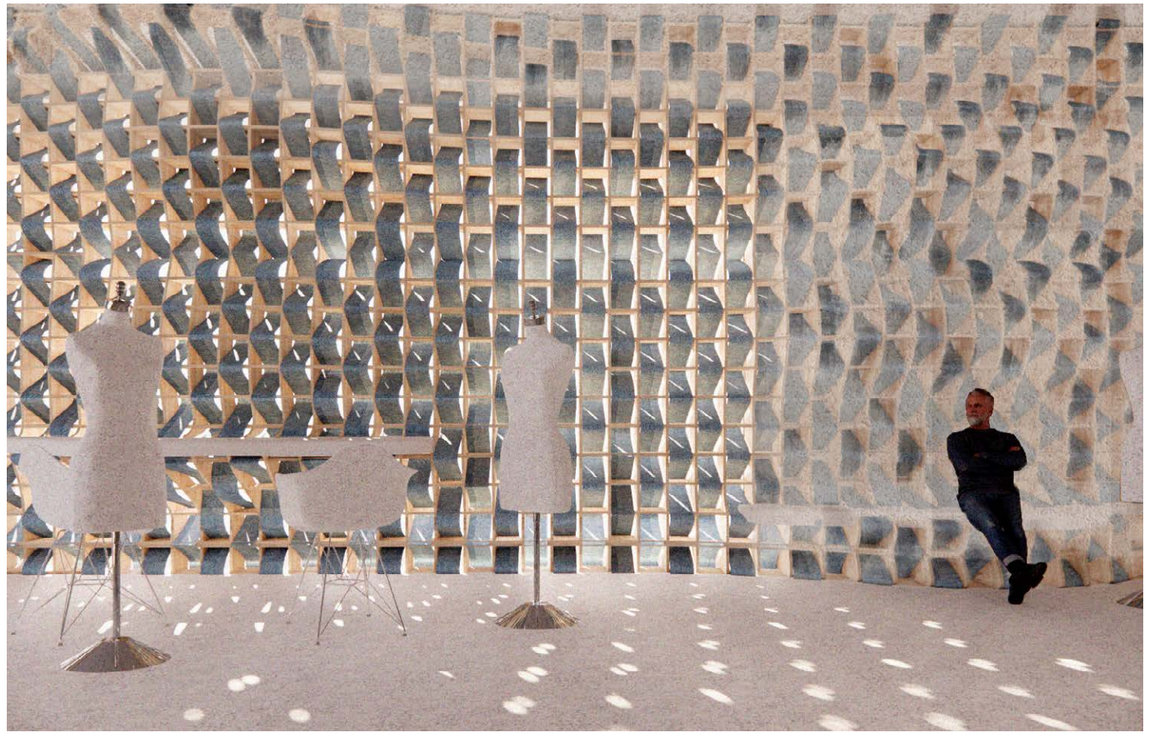
MYCELIUM PANEL
900*900

TIMBER FRAME

TIMER RIB

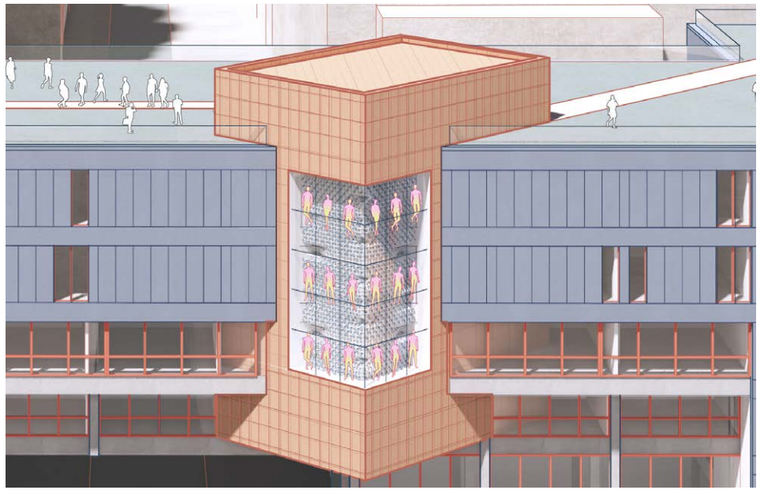


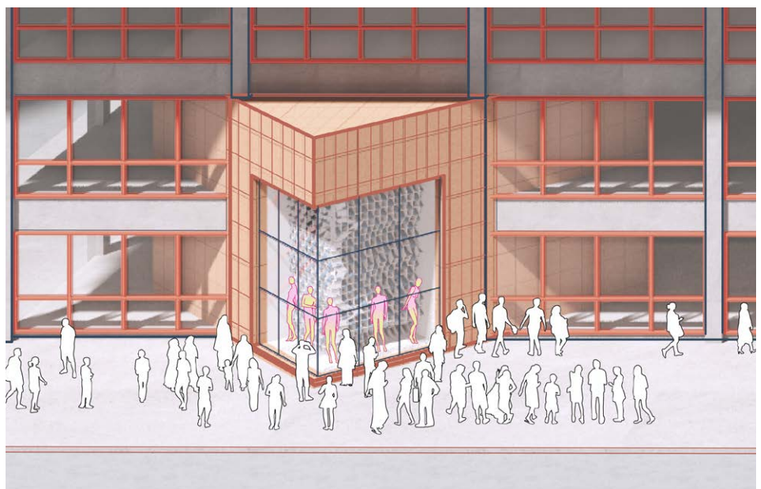


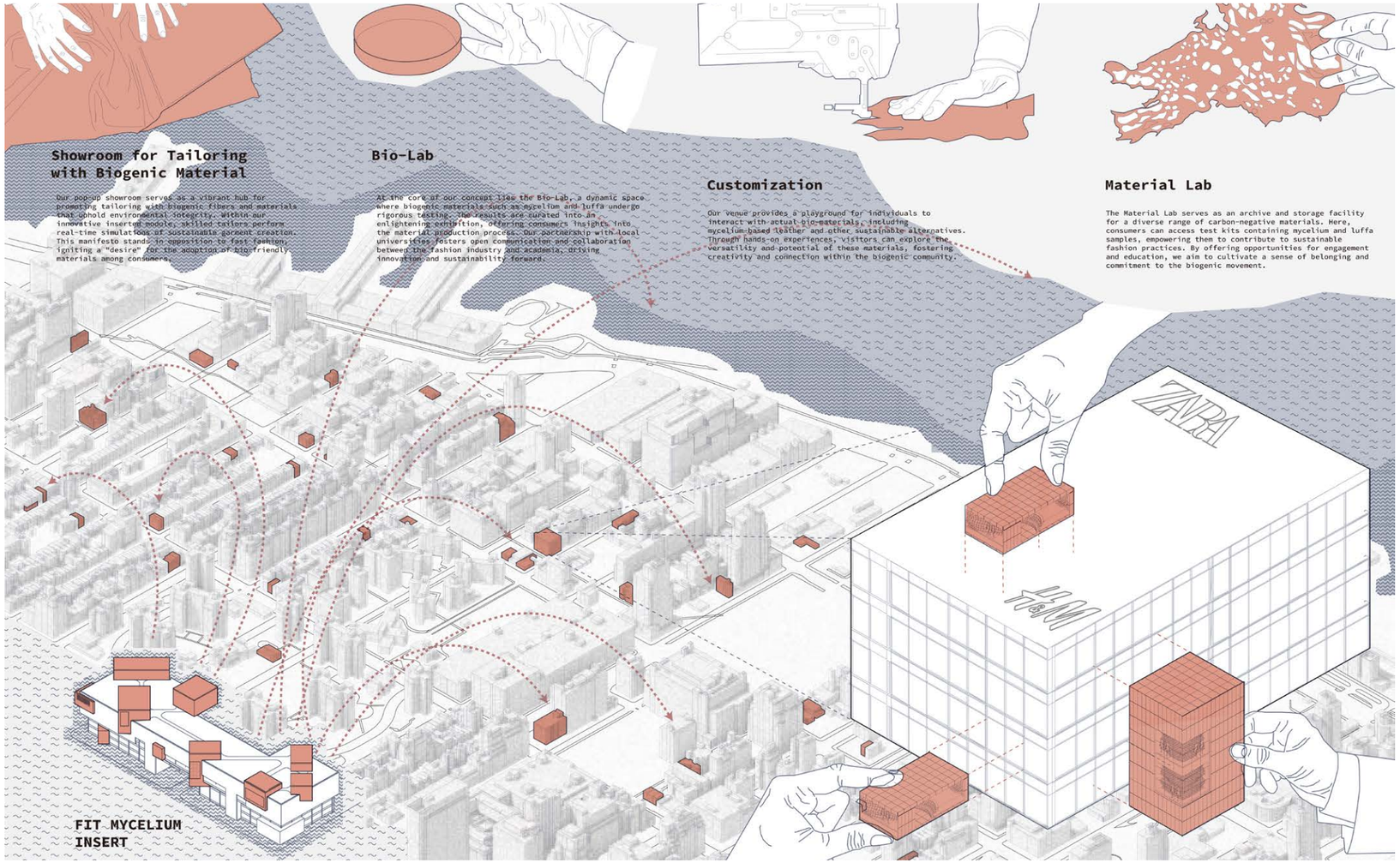


Our approach entails constructing a hybrid timber and denim structure, intricately woven to create molds for mycelium growth. By embedding mycelium within this framework, we craft carbon-embedded walls that redefine architectural norms. The resulting structures not only sequester carbon but also serve as dynamic spaces for interdisciplinary collaboration and exploration.

The environmental toll of fast fashion is staggering, with significant carbon emissions and resource depletion at every stage of production. Through meticulous analysis, we uncovered that 99% of discarded clothing is recyclable, prompting us to utilize fabric waste as a substrate for mycelium integration. Our calculations reveal a remarkable reduction in CO2 emissions, with each pound of recycled clothing saving three pounds of CO2.







Looking beyond educational institutions, our project envisions a broader societal transformation, catalyzed by the strategic placement of mycelium modules in retail settings. By showcasing biomaterials in a compelling light, we seek to inspire consumers to reconsider their relationship with fashion and sustainability, paving the way for a more conscious and regenerative future.

The strategic placement of mycelium modules in retail settings offers a tangible representation of sustainable innovation, captivating consumers' attention and sparking curiosity about alternative materials. As consumers interact with these modules, they witness firsthand the transformative potential of biomaterials, challenging prevailing notions of disposability and encouraging a shift towards more mindful consumption habits. This experiential engagement serves as a catalyst for change, prompting consumers to reconsider their relationship with fashion and material consumption and inspiring them to make choices that align with their values and contribute to a more sustainable future.

Moreover, the presence of mycelium modules in retail settings provides brands with a powerful storytelling opportunity to differentiate themselves in a crowded marketplace. By integrating narratives of sustainability and innovation into their marketing strategies, brands can cultivate trust and loyalty among consumers, positioning themselves as leaders in sustainable fashion and design. Through transparent communication and compelling storytelling, brands can foster a deeper connection with consumers, driving demand for sustainable products and incentivizing manufacturers and suppliers to invest in environmentally friendly practices. This creates a positive feedback loop, driving innovation and sustainability across the entire fashion industry and paving the way for a future where creativity flourishes in harmony with the environment.