

tangents,

offshoots,

and

variables

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2020-2022

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Forward

Attempting to categorize my work is an absurd task. The core element of education that I have invested my time, emotion, and money into is the promise of variety, of exploration, and of multiple passions. Therefore, I cannot promise a definitive theme in the following pages. What I can present, instead, is an exposition of what makes architecture thrilling to me - its capacity to spurn us into new realms of creativity and ingenuity.

Instead of stating empty platitudes about what architecture is, isn't, could, or couldn't be, I will tell a story about what people can do with it.

A week ago I was sitting at the edge of my bed at 3am, sweating. The previous day my team of twenty-five students had worked to prepare for a momentous raising of our semester's work, an inflatable amorphous spider. What I had failed to notice during the day's preparations was a fatal flaw in the design of the entire spider pavilion.

The spider required fans to constantly blow air up and into the legs and body of the spider. The flaw, overlooked in design and fabrication, was that these fans would immediately become suffocated when surrounded by the thousands of pounds of sand that were required to hold the spider down.

I nervously walked to the construction site, hoping the problem was not as bad as I suspected. It was. An oversight that threatened the existence of the pavilion, and the culmination of thirty peoples' work.

What happened next has thrilled me ever since. A group of my peers gathered around the fans and started asking questions. We were all concerned, of course, but also

genuinely curious and up for a challenge. We congregated in a circle, and started throwing out solutions. What if we lifted the fans? Could we re-sew them into the fabric? Could we attach tubes to the fans and send air upwards? What about a chimney? A chimney? A chimney! Stack the weight around a central core to maintain airspace. Stuff the weight wherever we could. Allow the spider to breathe.

The chimney worked. The pavilion went up, and is still standing as I type this. In that instance, the joy of architecture hit me. Rather than be a solemn and solitary experience envisioned by an all-powerful hero architect, architecture can be the space wherein minds and passions come together in exuberance to solve problems and revel in solutions. We had our own Apollo 13 moment. Fitting a square peg into a round hole. Working together, accepting our shortcomings, celebrating our ingenuity, all in service of constructing an experience for the rest of the world.

This final moment of catharsis in architecture has spurred me to go forth and create, with the knowledge that those around me are as committed to creating beautiful things as I am. If nothing else, this book showcases explorations of where I might find that joy in the future, as a designer, an architect, a team member, a human.

Ryan Hansen

05
08
22

The Web

inflatable pavilion

Morningside Heights, NYC - 2022

Course: The Outside Project

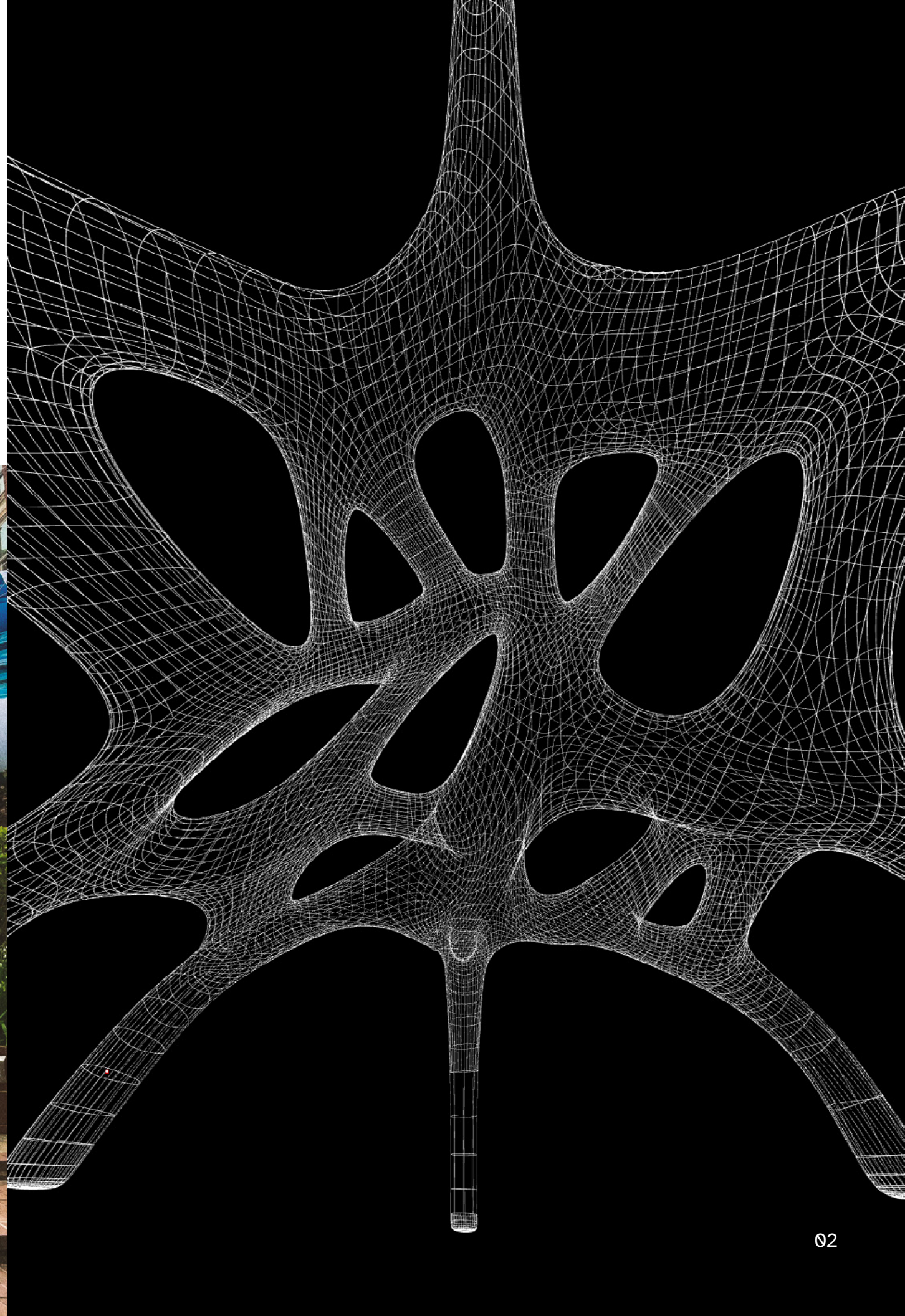
Instructor: Galia Solomonoff & Laurie Hawkinson

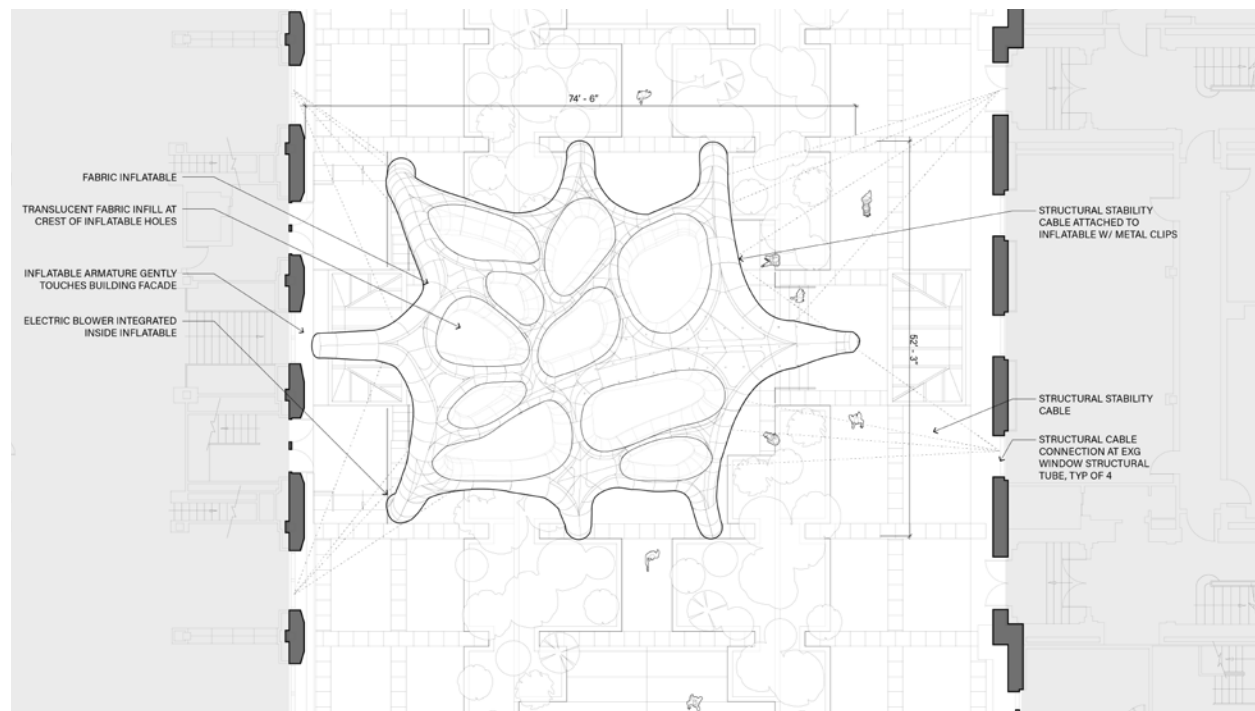
Partners: Hazel Villena, Gustavo Lopez Mendoza, & Hannah Stollery

The Web is a continuation of the Outside Project, a collaborative effort within GSAPP that began in 2021, with the mission of bringing an interactive, student sourced, and joyful pavilion to Avery Plaza. This year's pavilion consisted of a giant inflatable structure, which covered much of the plaza, casted blue shadows onto the plaza's bricks, and excited visitors of all ages with its whimsical and boisterous forms. I served as the project manager during the class, coordinating and communicating with manufacturers and organizing the overall assembly.

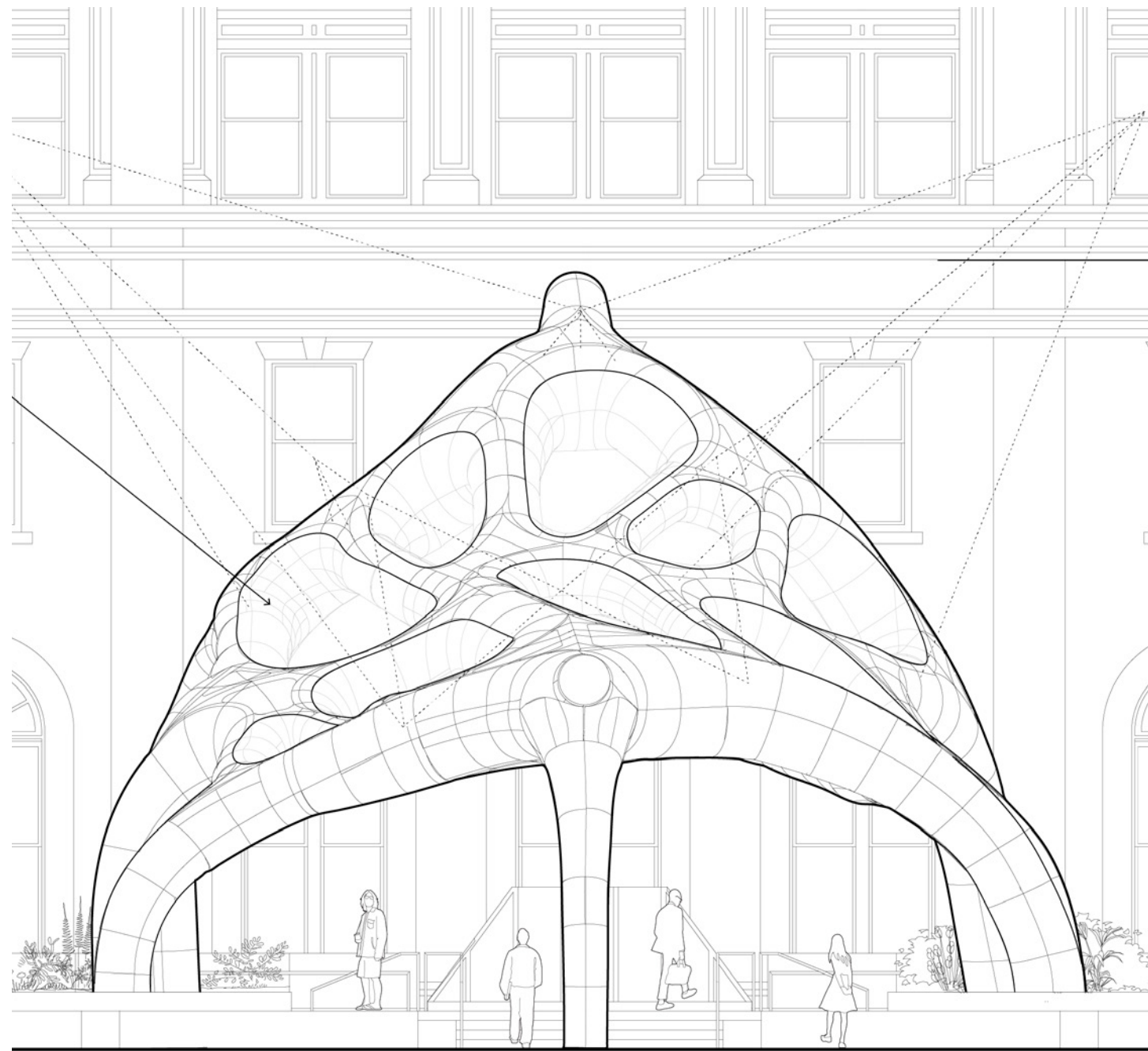
Massive yet buoyant, WEB touches ground at just seven points and frames entrances into the courtyard evoking a feeling of organic intrigue and uneasy uncertainty, questioning the solidity of architecture. Walking through it, The Web feels more like an organism than a building as 1010 patches of white and blue hues undulate to invite visitors to experience a myriad of different perspectives and interpretations.

I thoroughly enjoyed the project management process and was overwhelmed with gratitude when the entire class put their collective effort into making The Web a success on the final assembly day.

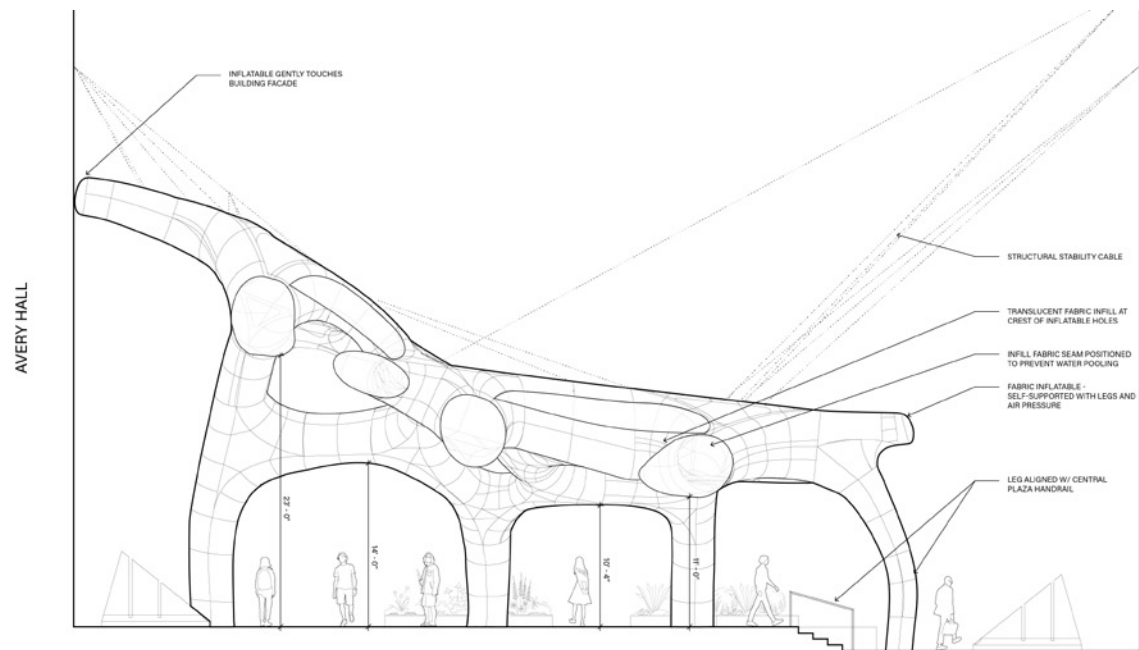




03



05



FAVERWEATHER HALL

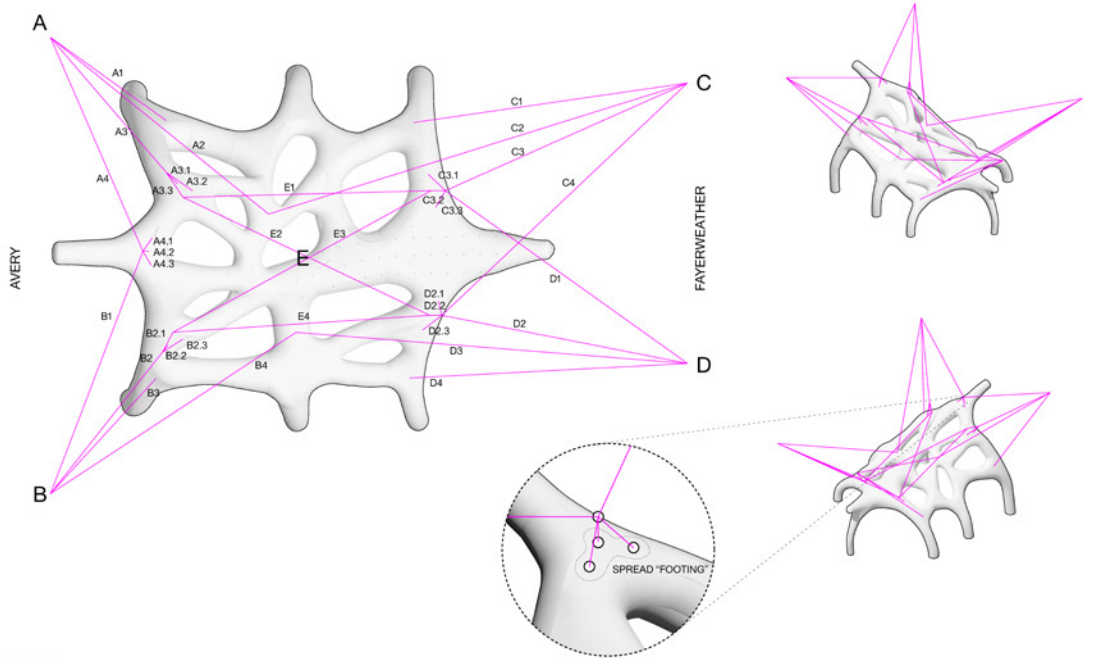
04

01 Post-construction review, from the north plaza

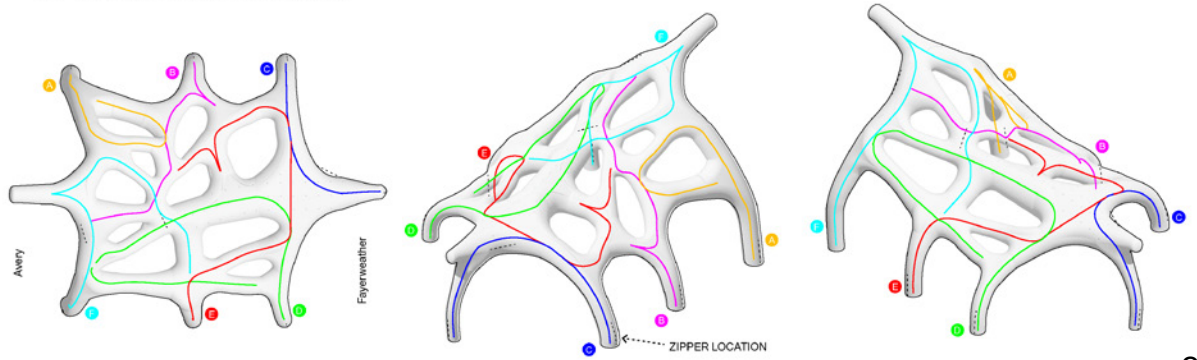
02 Wireframe analysis of original model sent to fabricator

03 - 05 Construction document drawings submitted to university facilities



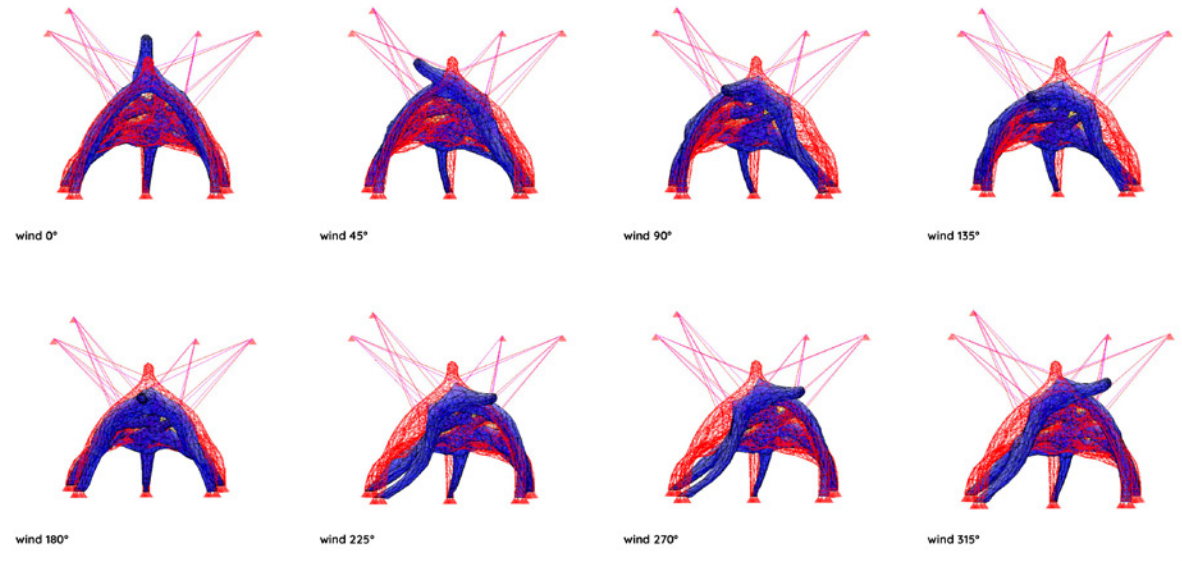


03



04

5.1 Deformation Summary



05



06



This page Views from assembly day; rigging ropes to structural beams, inflating the spider, pulling into place, lifting off of sensitive trees, placing sandbag ballasts, and celebrating our success.

Ø7 View from Avery Architectural & Fine Arts Library

Ø8 View from the east side of the plaza



Ø1 Testing fabric samples for LED light penetration

Ø2 Preliminary 3D printed model

Ø3 Structural rope installation reference sheet

Ø4 LED light installation reference sheet

Ø5 Fabricator's structural wind analysis and movement summary for determining required loads

Ø6 Assembly reference drawings on the day of installation







Hunts Point 2080

climate futures

Hunts Point, The Bronx, NYC - 2022
 Course: Advanced Studio VI
 Instructor: David Benjamin
 Partner: Yi Liang

In 2040, New York is regularly slammed with massive hurricanes and inundated with costly floods. With supply chains cut off, food is in short supply. How will the city, the government, and communities react to the uncertainty of a disastrous climate future?

Hunts Point 2080 is a story of a future in which New York takes drastic action to stabilize the food supply chain and maintain necessary pipelines for food vitality. It follows characters in Brooklyn who navigate through a new food infrastructure to secure a place for their community

amidst a landscape of shifted priorities, interests, and infrastructures.

As a reaction to flooding and reduced crop yields, the future NYC government invests in floating megafarms which 'power' the city's caloric needs during disasters. Passing by these farms, the main characters encounter the downstream effects of these megafarms in the form of the adapted Hunts Point Produce Market, a massive distribution center for the city's food. Floating in their repurposed NYC ferry, the group must negotiate for fresh food, and engage with a new localized food supply system, wherein innovative urban and aquatic crops have become the norm for a city that must feed itself, rather than depend on the rest of the world.



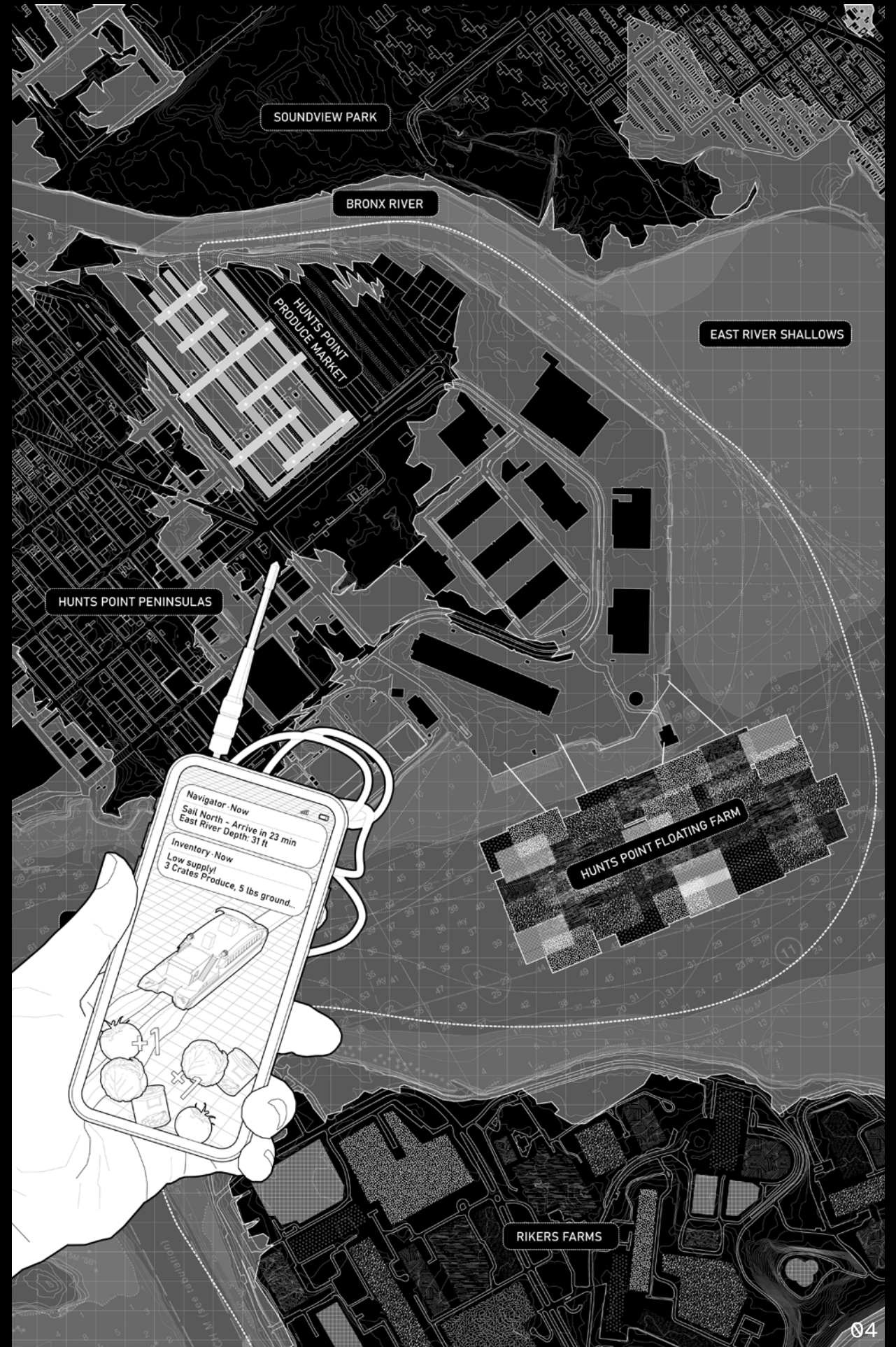
01 The Bushwick Ayuda Mutua group spots the East River Megafarm

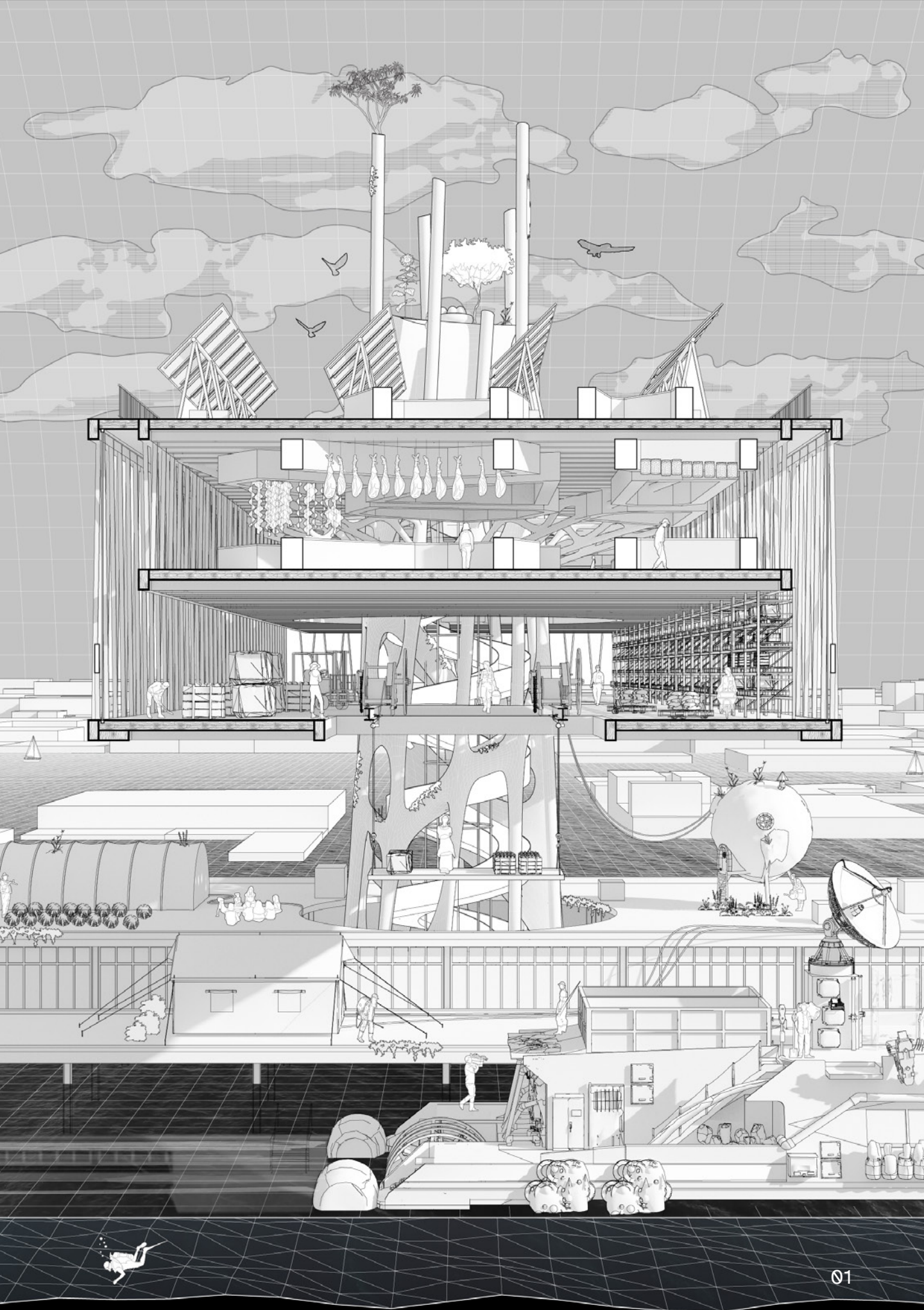
02 Low-tech navigation instruments are a new need for a flooded future

03 Regular street flooding in inland Brooklyn complicates food supplies

04 The path up the East River leads the group to the Hunts Point Produce Market







01



02

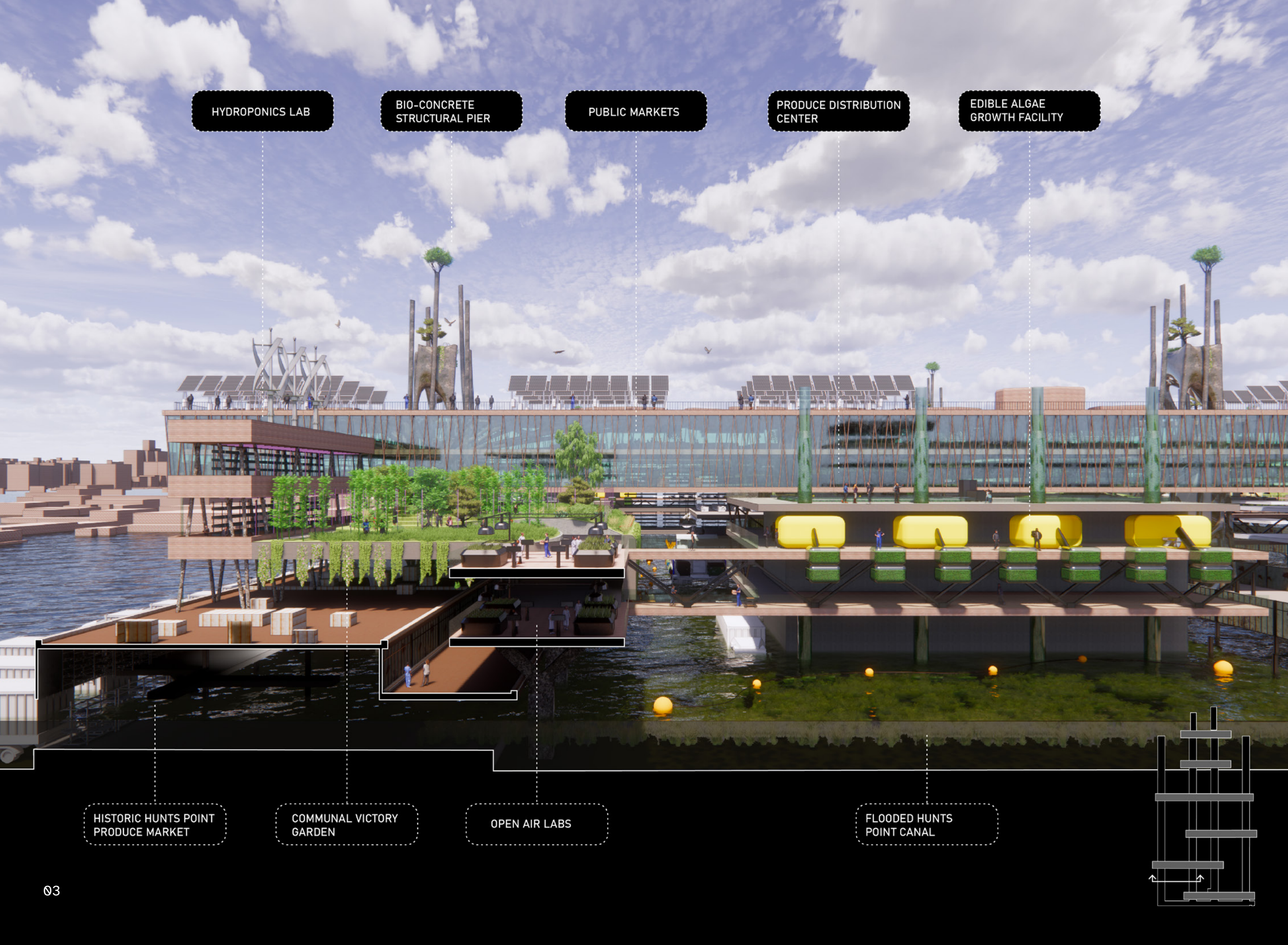
HYDROPONICS LAB

BIO-CONCRETE STRUCTURAL PIER

PUBLIC MARKETS

PRODUCE DISTRIBUTION CENTER

EDIBLE ALGAE GROWTH FACILITY



HISTORIC HUNTS POINT PRODUCE MARKET

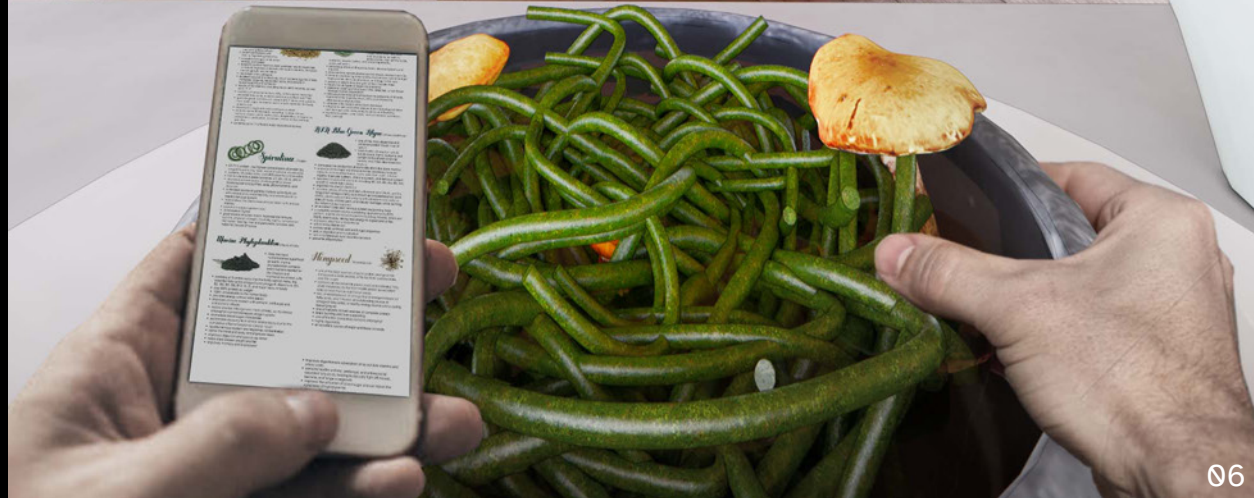
COMMUNAL VICTORY GARDEN

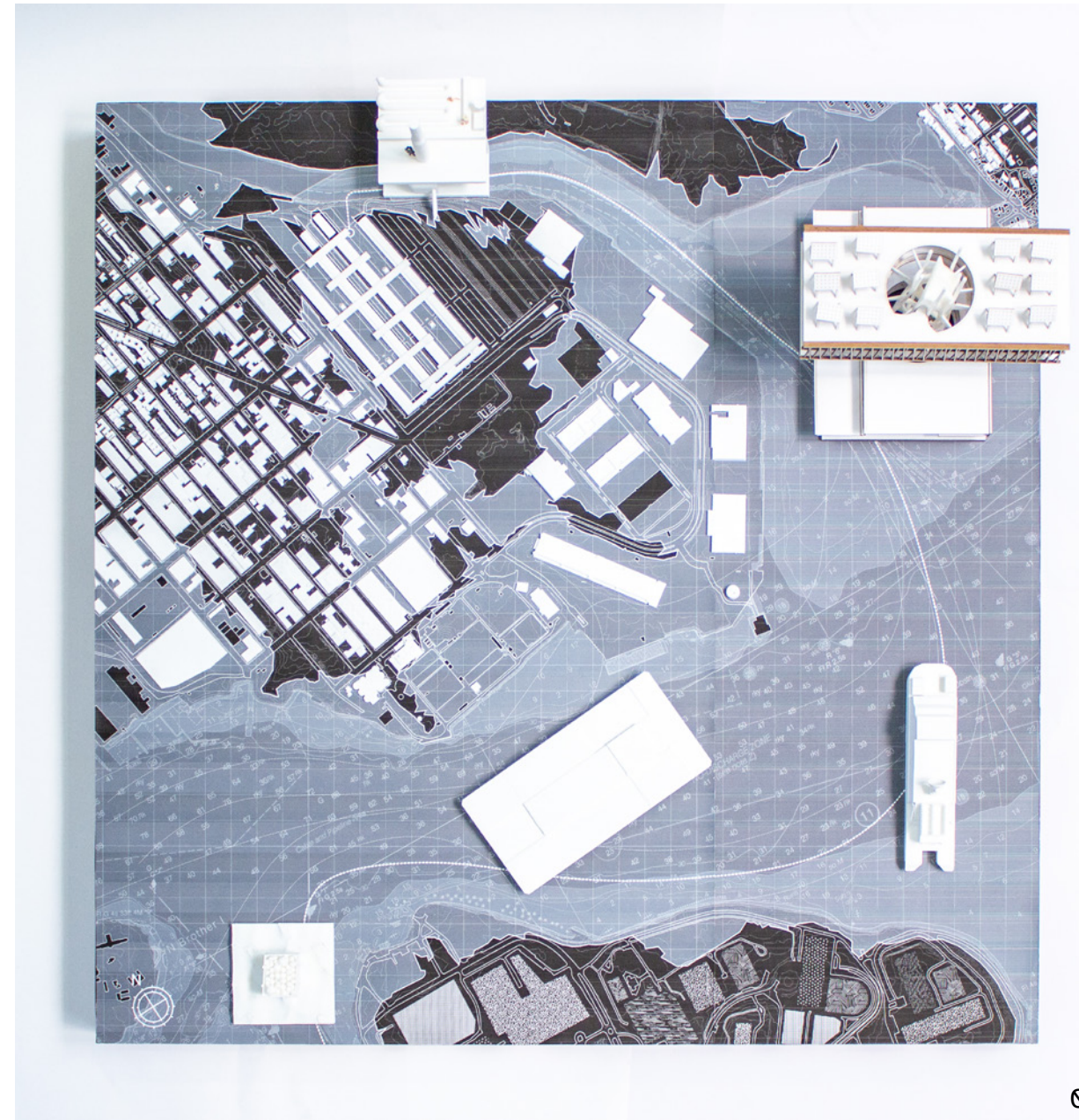
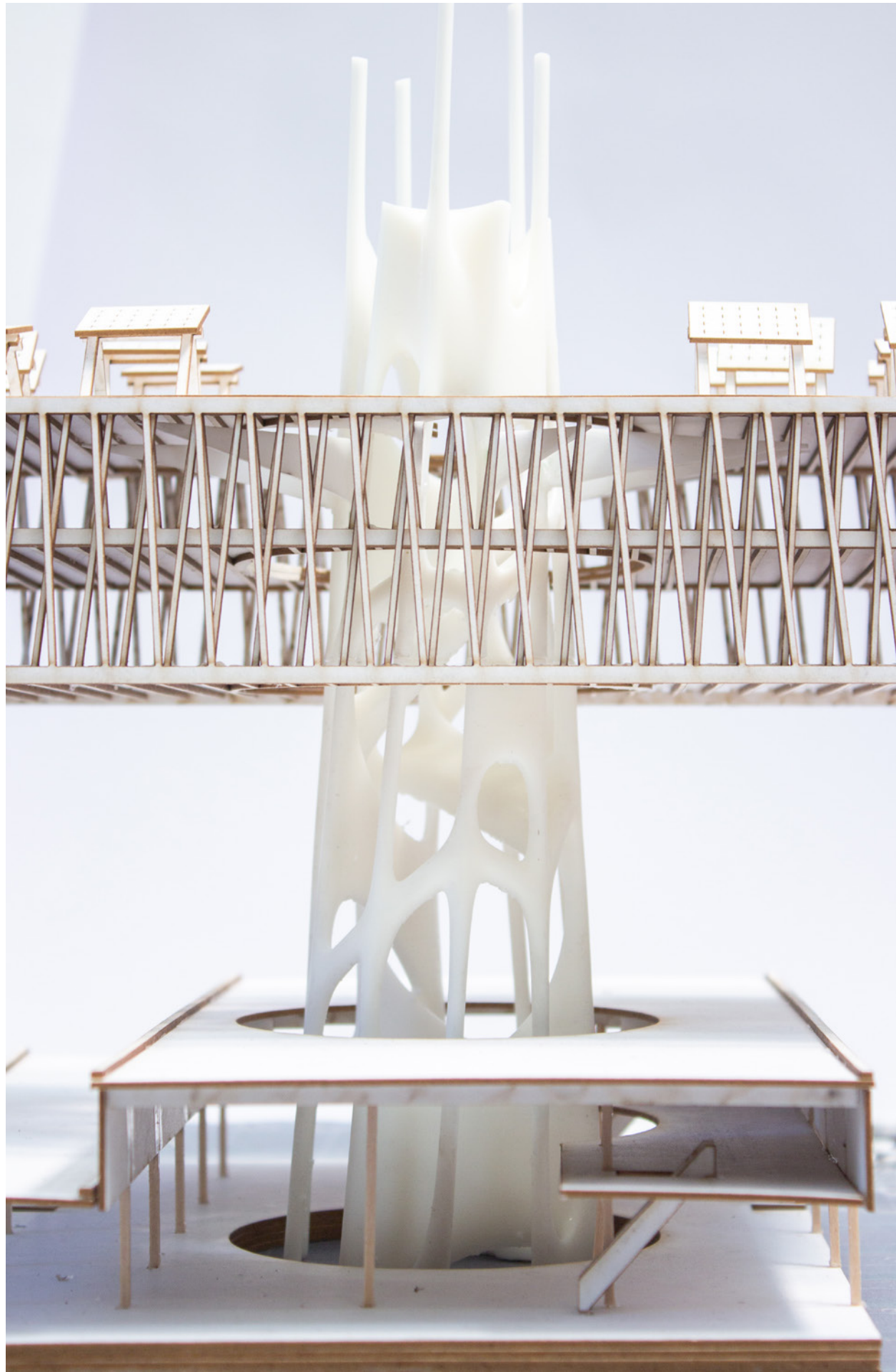
OPEN AIR LABS

FLOODED HUNTS POINT CANAL









08



01 - 02 *The Hunts Point Produce Market, a mid-century concrete megastructure, has been adapted and lifted off of the flooded ground.*

03 - 07 *Scenes from the new markets; a localized food culture and industrial process has grown and cultivated above the water.*

08 *Physical model showing remnants of the journey, along with the structural detail model of the adapted and lifted market bar.*



Kinne week travels; ventures to Arcosanti, Biosphere 2, and Tuzigoot

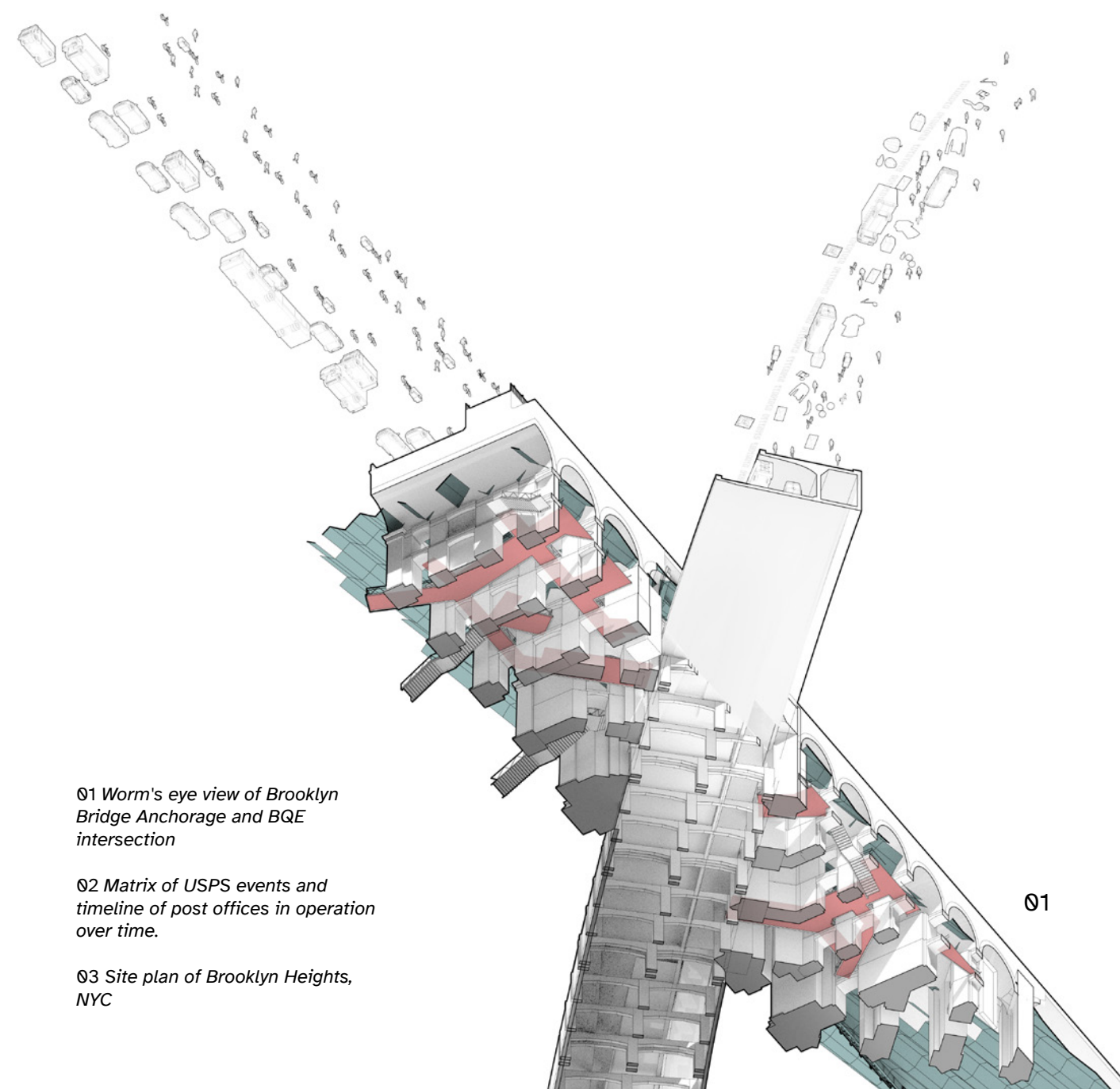
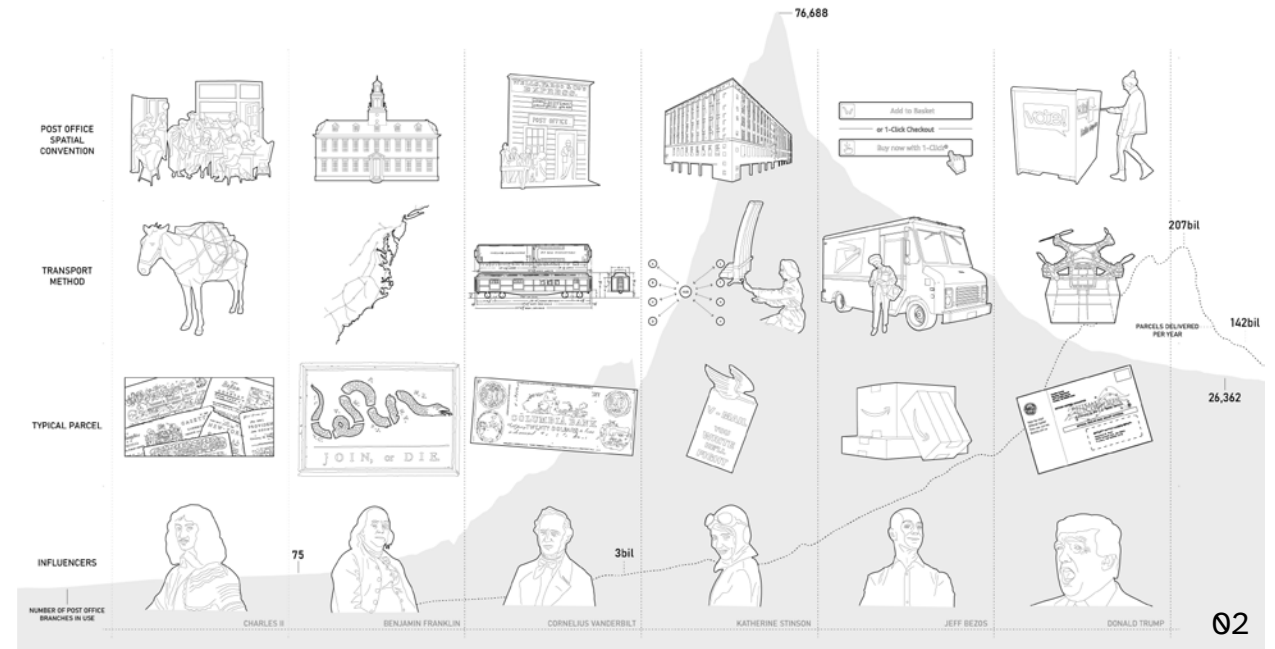
Post-Office post office

Brooklyn Heights, NY - 2021
Course: Advanced Studio V
Instructor: Laurie Hawkinson

The post-office post office is a proposal to place a United States Post Office along the reclaimed bed of the Brooklyn-Queens Expressway and within the vaulted spaces of the Brooklyn Bridge. By connecting the post office and its terminals with spaces for community-driven creative expression and material recycling, it aims to reorient the institution of the post office to local connectivity and communication, as it served the U.S. earlier in its history. With the premise that the Brooklyn-Queens Expressway in Brooklyn will soon be shut down to vehicle traffic, the space would be considered a public asset and useful for community programs. Along with other proposed

public programs, like urban farms, art conservancies, and recycling plants, this project considers the post office to be a vital piece of human infrastructure which can tie communities together.

This project uses the post office as an anchor and point of passage for both parcels and ideas. First, a terminal for USPS vehicles is placed on the bed of the reclaimed highway. Then, spaces for sorting and sending are situated on platforms which extend from the highway into the underused masonry caverns of the Brooklyn Bridge Anchorage, a space previously used for wine storage. Lastly, maker spaces, fabric recycling workshops, and media classrooms extend below the USPS platforms on the ground floor.



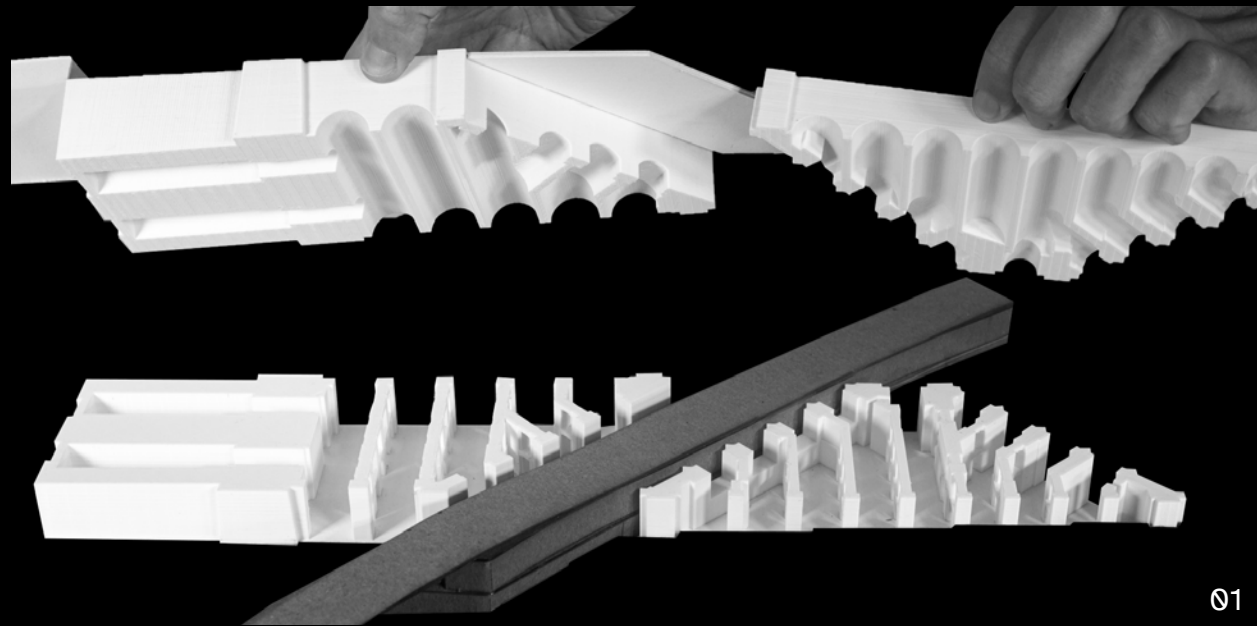
01 Worm's eye view of Brooklyn Bridge Anchorage and BQE intersection

02 Matrix of USPS events and timeline of post offices in operation over time.

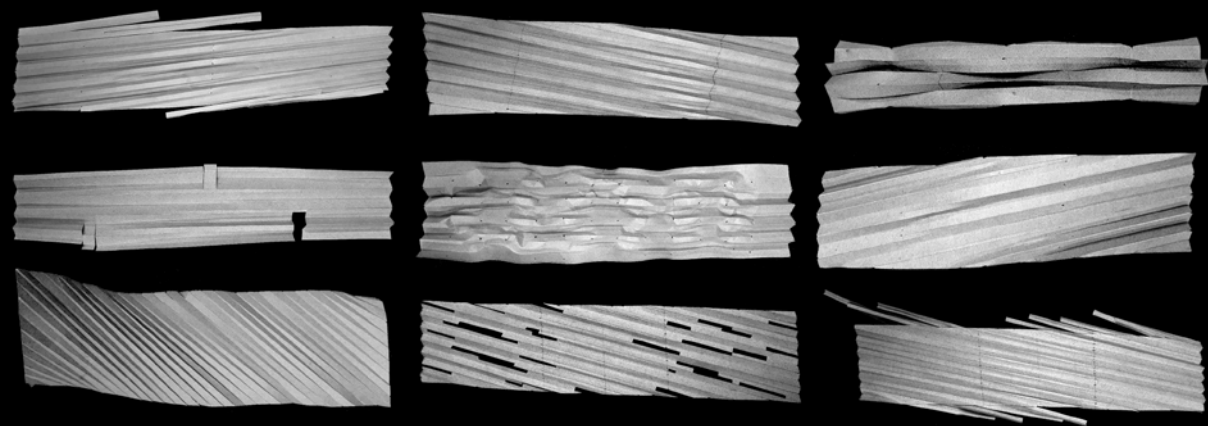
03 Site plan of Brooklyn Heights, NYC



03



01



02



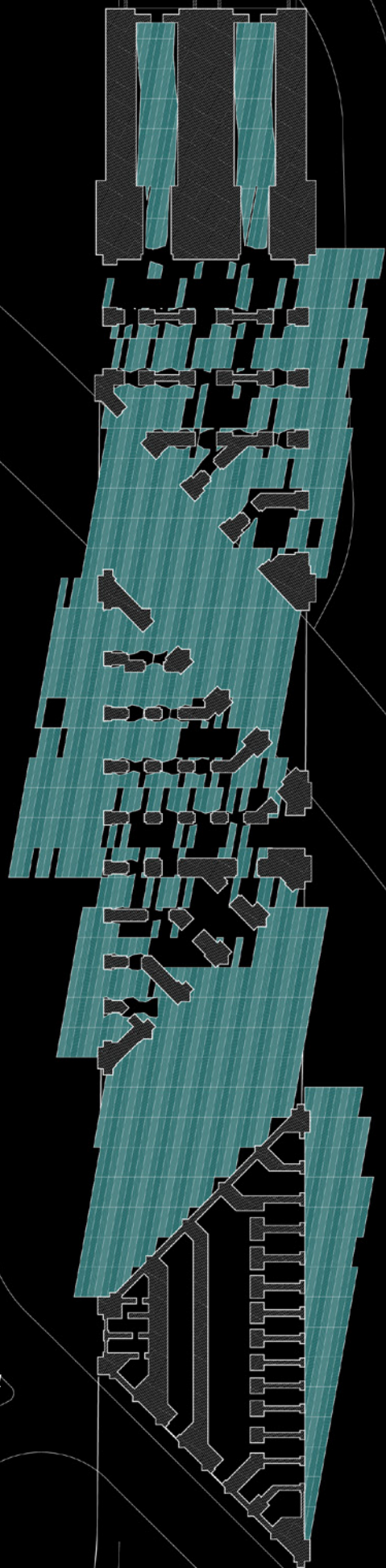
03

01 - 03 Physical models of anchorage, canopy iterations, and BQE site with other proposals

04 Perspective in anchorage

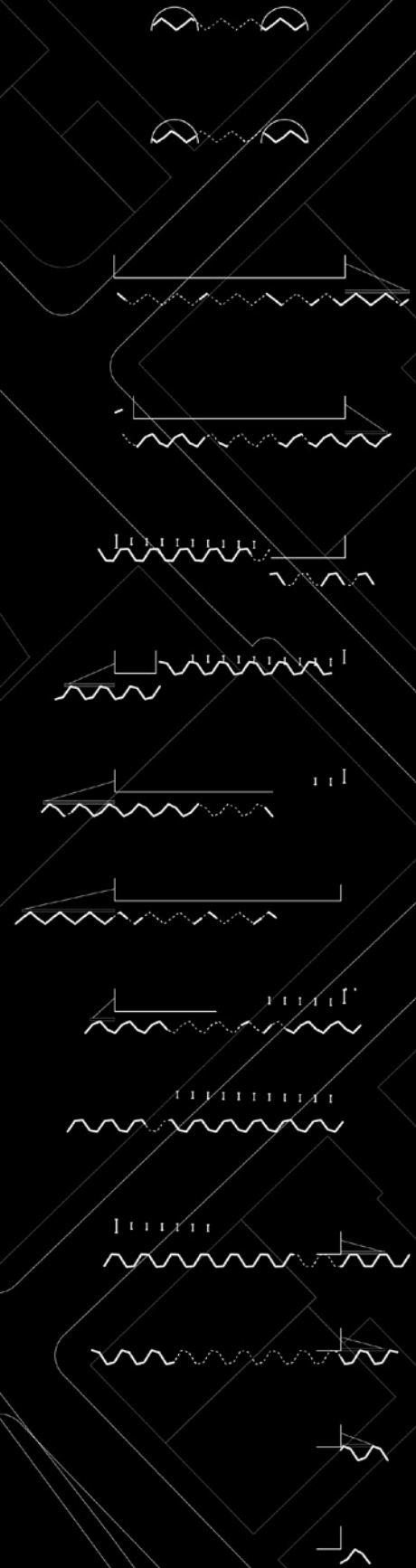


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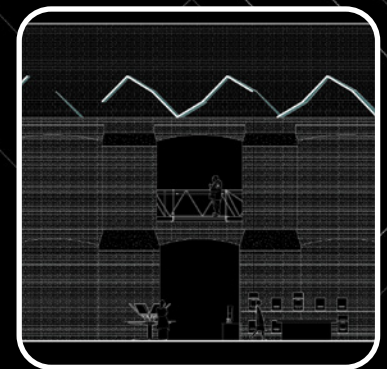
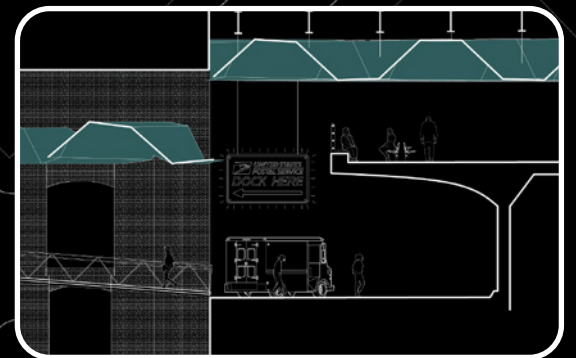
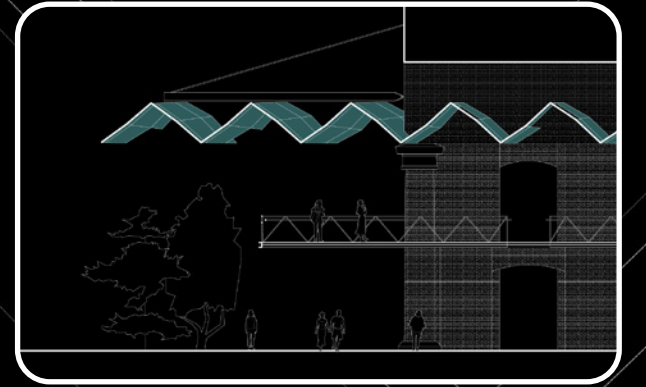


01 Reflected ceiling plan with metal canopy in green

02 Periodical sections of canopy and vignette sections throughout anchorage



01

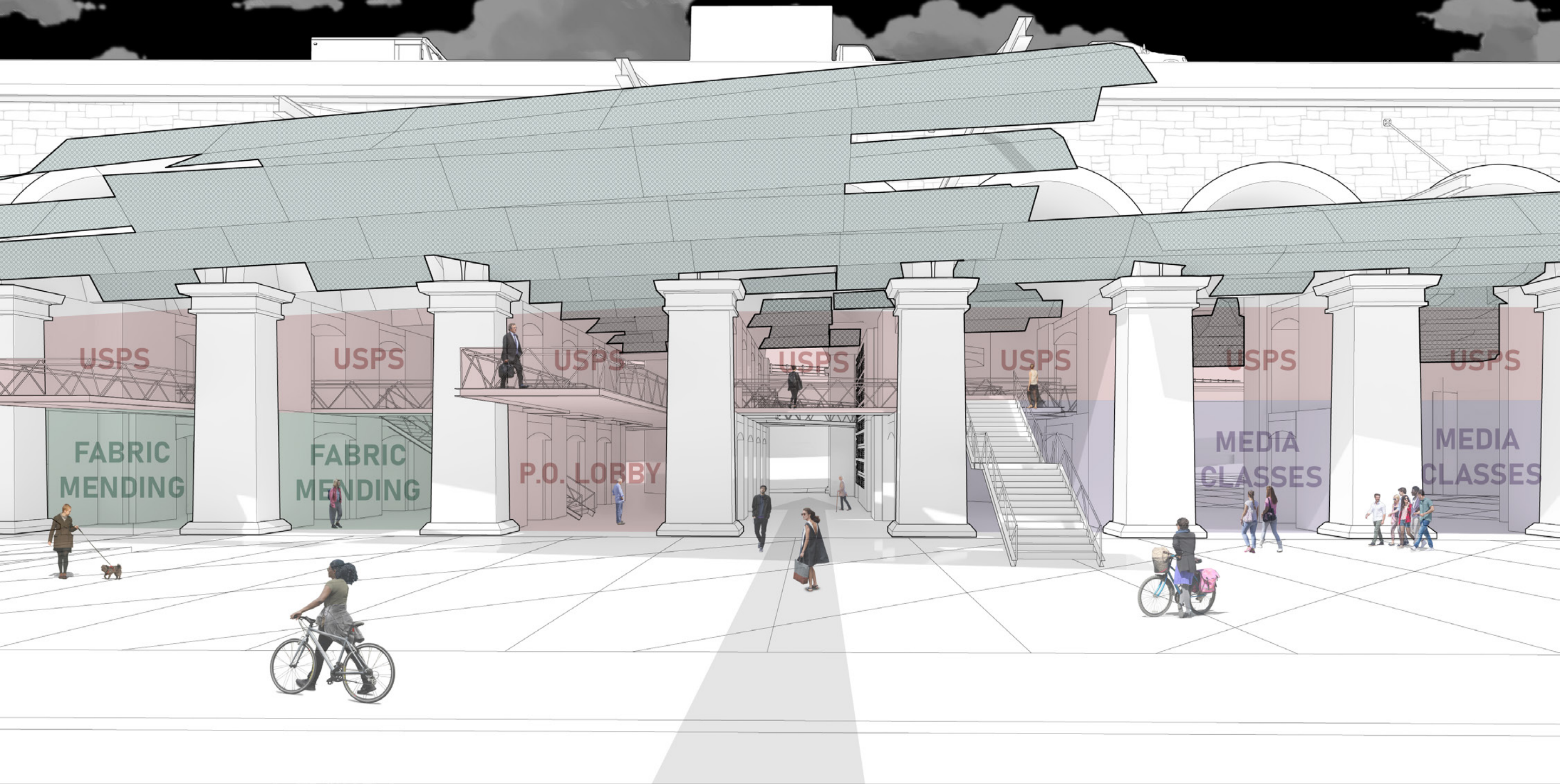


02

A crimped metal canopy extends through the Anchorage and out into its adjacent public plaza, providing light, shade, and a surface for equipment. This continuous surface unifies the Anchorage space, which had been split by the highway in the 1950s, into an entirely accessible space, similar to its original intent in the 1870s as a two-story shopping mall.

The proposal takes advantage of juxtapositions - between masonry and steel, secret and public, and creative and menial - to draw attention to an overlooked but essential part of American infrastructure.

Perspective from anchorage plaza looking into post office, public creative programs, and plaza passage.



Philodendron

open streets canopy

New York City - 2021

Course: Generative Design

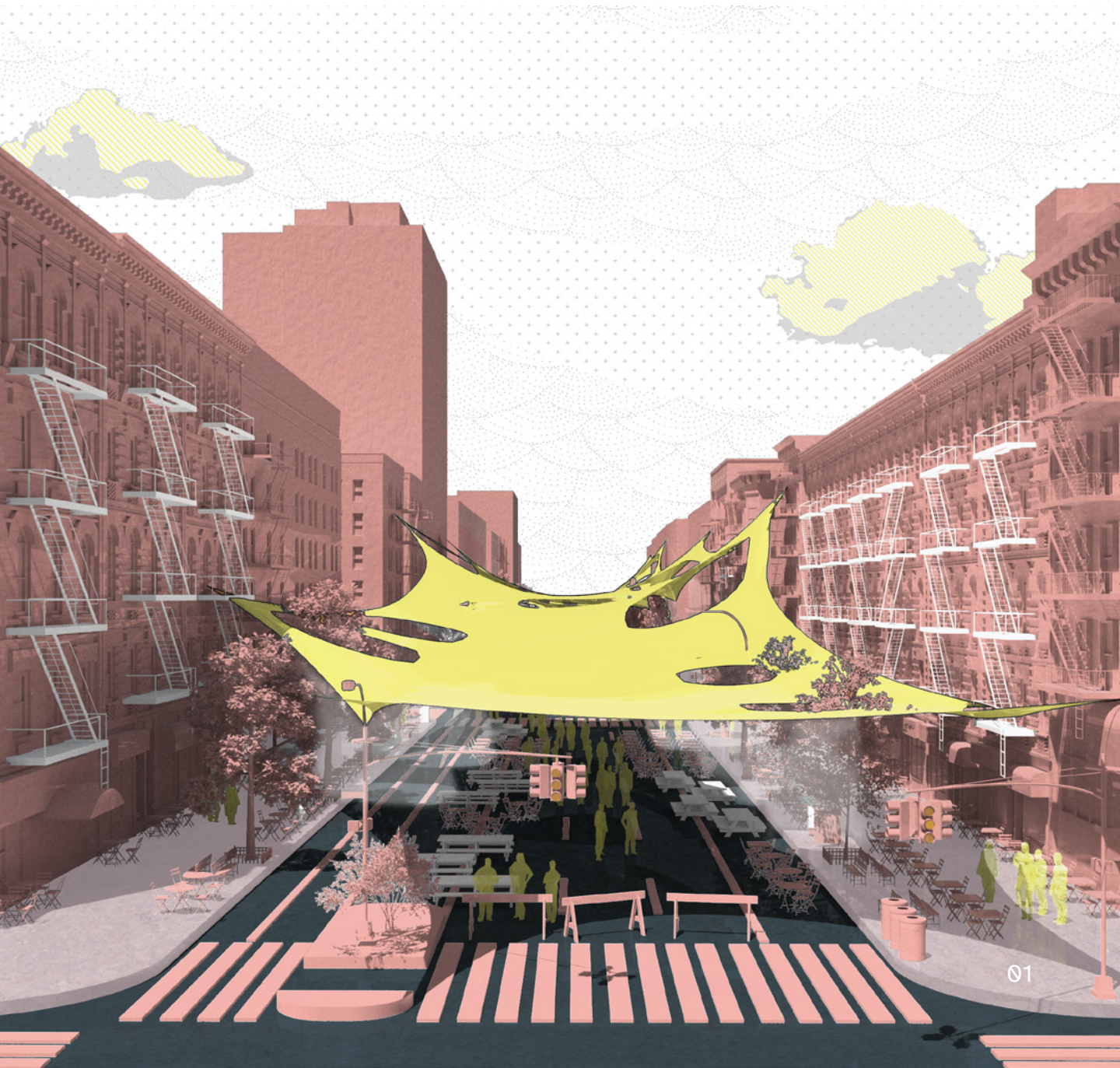
Instructor: Danil Nagy

Team: Jacob Hu, Jules Klein, Andrew Magnus, Mickaella Pharaon

This project uses parametric and genetic optimization computing techniques to find novel solutions for a biophilic Open Streets canopy in New York City. In 2020 and 2021, a fundamentally new culture of outdoor dining and street life formed. My team decided to seize on this culture to define a new typology of street coverage. Playing off of the expedient forms of tents and wooden outdoor dining structures, this project iterates on a street-wide canopy that would create more opportunities for dining and commercial activities for a whole neighborhood.

By using Rhino, Grasshopper, and Discover (a genetic optimization algorithm), thousands of tensile forms were created parametrically and evaluated with two metrics: minimal extreme moments of shadow and maximum rain coverage. The resulting optimal forms cut small holes into the stretched canopy mesh, like the philodendron plant genus, which strikes a clever balance between the two metrics.

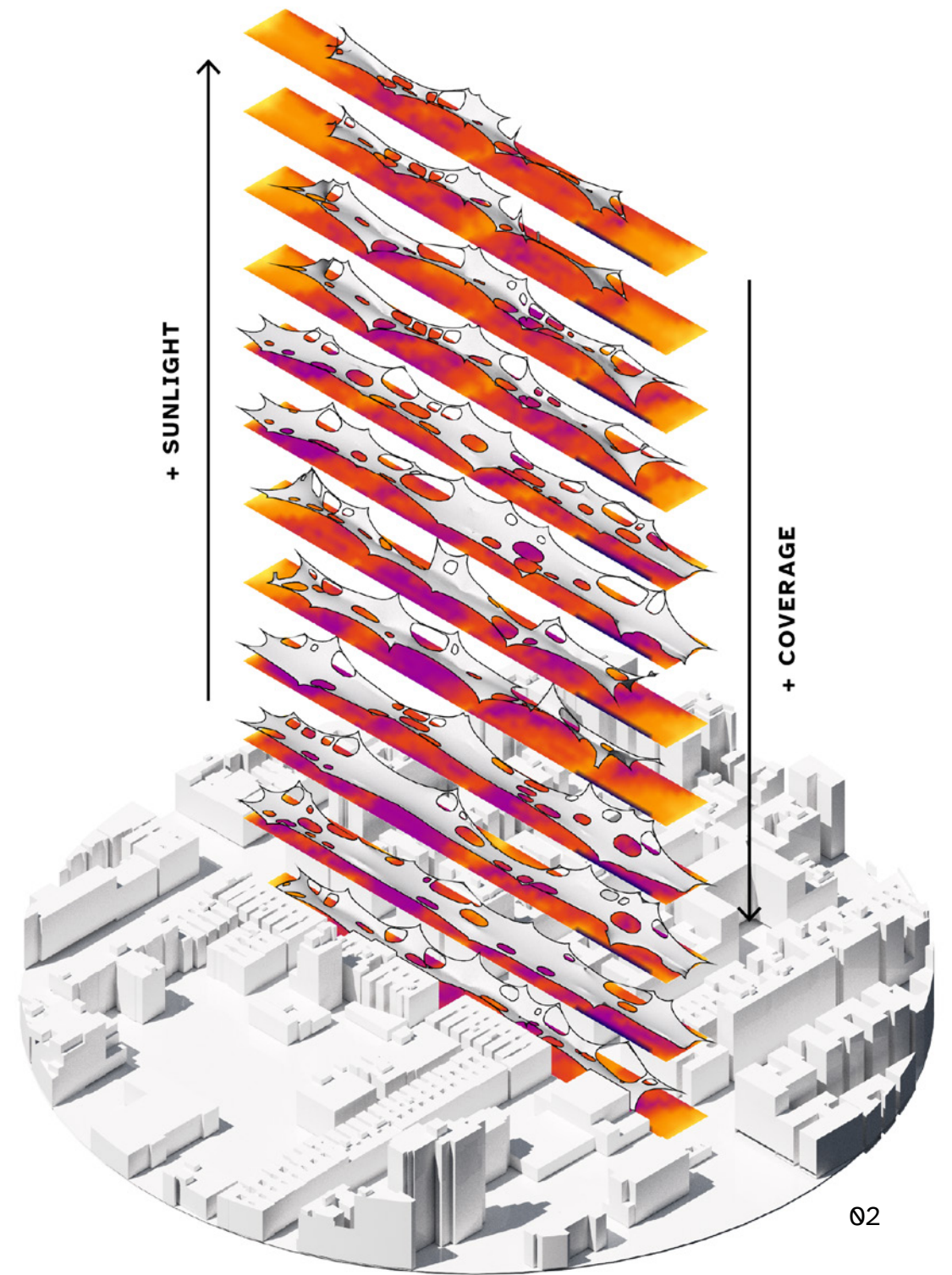
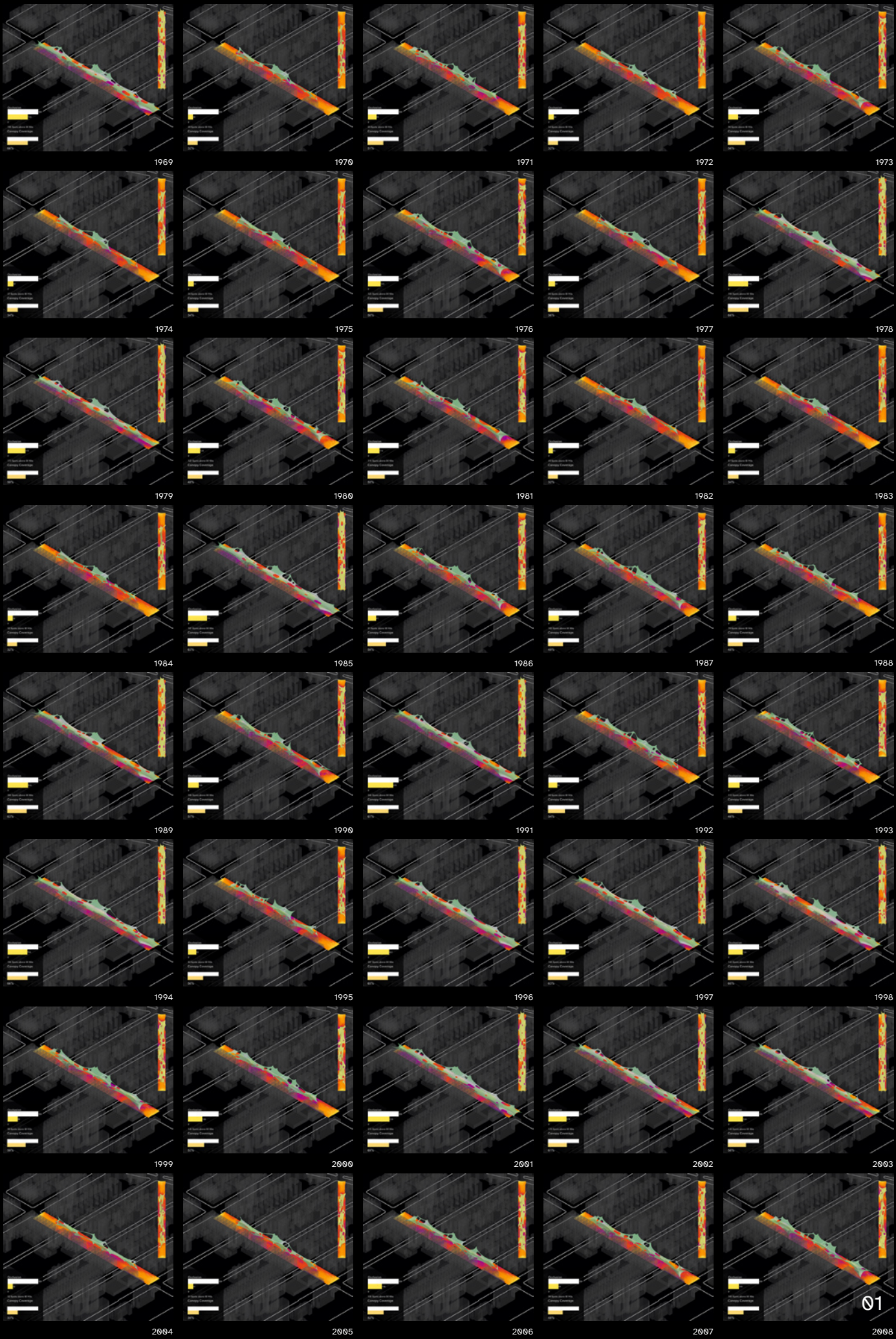
This project showcases the opportunities and limitations of machine learning in design. Although the process of evaluating a design by its data outputs is powerful, I found that a designer must be present and judgemental of the starting goals - does this street want to be covered at all?



01_The Facade is divided into acceptable anchorage surfaces 02_Cornices, Fire Escapes, and Sidewalk conditions are added 03_An array of anchor points are created 04_Two points are selected per block for building the mesh

01 The selected iteration of the canopy over Amsterdam Avenue in New York.

02 Canopy anchor point selection, street restrictions, and facade anchor point selection process.



01 40 algorithmically determined canopy iterations

02 12 most successful iterations, with varying sunlight and rain coverage values.

Sovereign Living *adaptive building*

Culebra, Puerto Rico - 2021
 Course: Advanced Studio IV
 Instructors: Douglas Woodward, Richard Plunz
 Partner: Teonna Cooksey

Culebra is a small, remote island located about 17 miles east off of the main island of Puerto Rico. The combination of a long history of US naval occupation, traumatic hurricane events, and a dependence on tourism places Culebra residents in the difficult position of negotiating methods of community resilience and wellbeing in the absence of larger supporting entities.

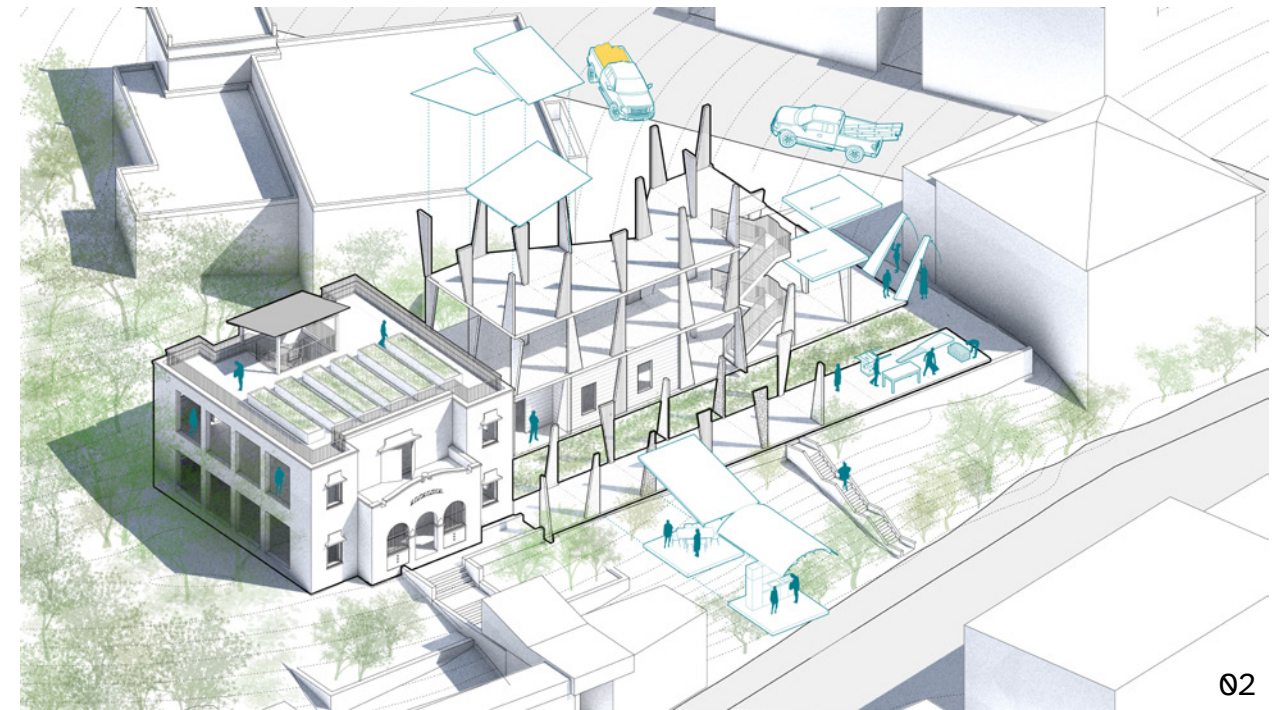
Our analysis of the island's housing challenges led us to address two issues: the lack of affordable housing for the island's 1800 residents due to overwhelming competition

from Airbnb rental units, and the harsh cost of building on Culebra due to an inconsistent ferry connection back to the main island of Puerto Rico.

This project proposes a series of housing and public interventions within vacant lots in downtown Culebra, the most dense part of the island. By strategically locating affordable housing in dense locations with connections to community assets, and by building in an incremental, modular system, the proposal seeks to leverage local construction materials and adaptively respond to changing community needs.



01



02



03

The housing structures are paired with public uses, like community kitchens, retail, restaurants, and entrepreneurship workshops. The system is designed to utilize these public spaces in conjunction with adjacent spaces. In a test case, seen below, the front-facing communal spaces interact collaborate with the abandoned Alcaidia (old mayor's office), which is slated to be converted into offices for the Department of Natural Resources.

The modular grid structure is designed to reflect an organic decision making process, with each subsequent grid piece affecting the nature of the space within and its relationship to the whole. The test case seen below is only one permutation of a multitude of options.

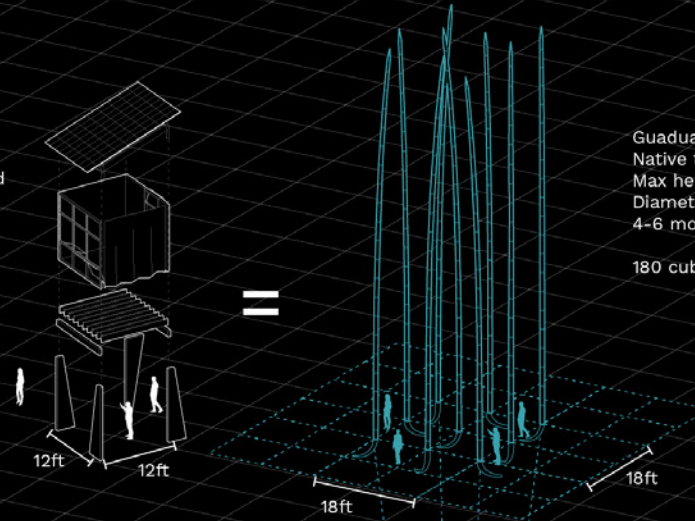
01 Downtown Culebra (referred to as 'Dewey') with land trust infill lots shown in pink

02 - 03 Progression of modular construction housing units around a central garden at the site adjacent to the Alcaidia (old town hall).

Culebra construction material sources
Local and regional

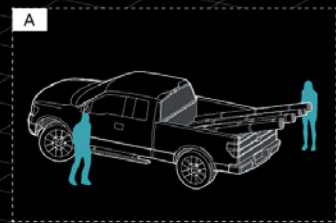
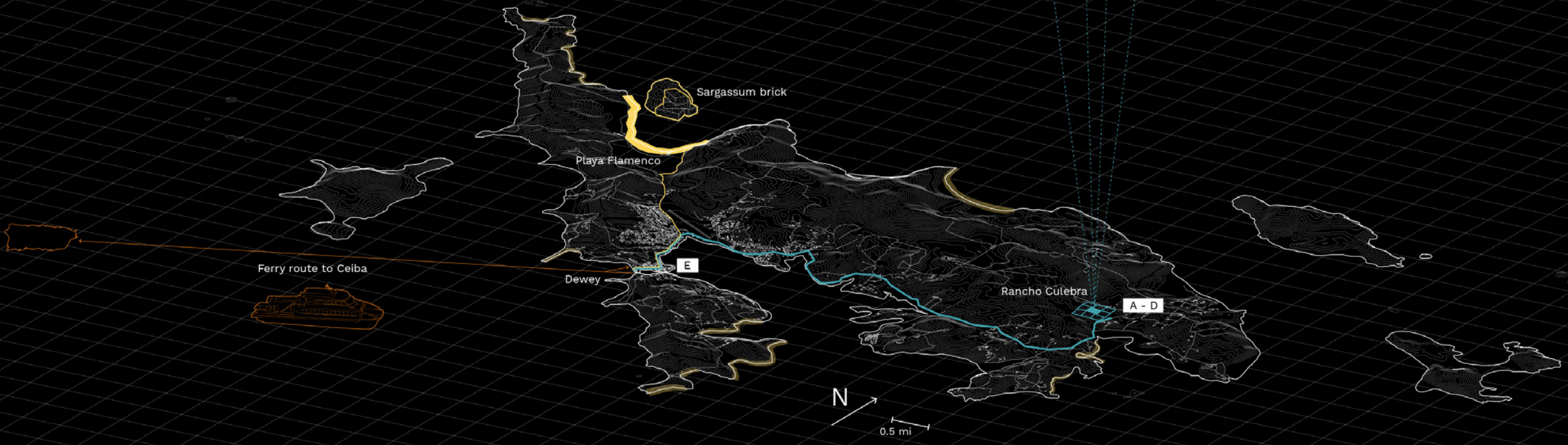
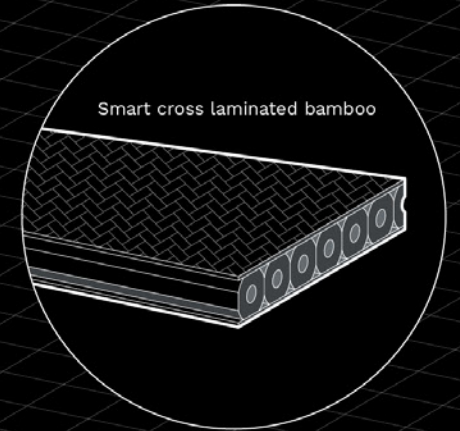


Typical housing module
Piers + slab + roof + partitions
= 180 cubic feet of material required

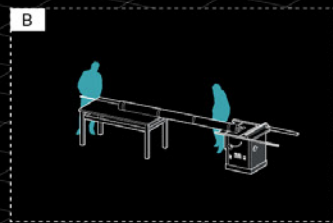


Guadua Bamboo
Native to the Amazon basin
Max height: 65-80 ft
Diameter: 4-6 in
4-6 months growth + 4 years maturation

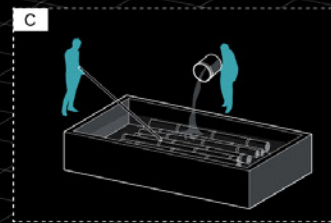
180 cubic feet = approx. 9 culms



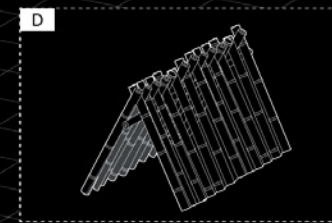
Harvest & transport



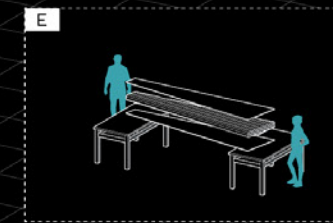
Cut & drill



Borax & boric acid bath
5 days



Drying and bleaching
1-2 weeks



CLT assembly



The dispersed lots are organized in a Community Land Trust (CLT). This legal structure allows the developments to have community decision-making built in to the design. It also maintains ownership priority for essential local stakeholders, like teachers that are currently unable to afford stable housing on Culebra, and must commute in on one of two ferries that run to the main island daily.

One role of the CLT is to provide guidelines for the building process, including:

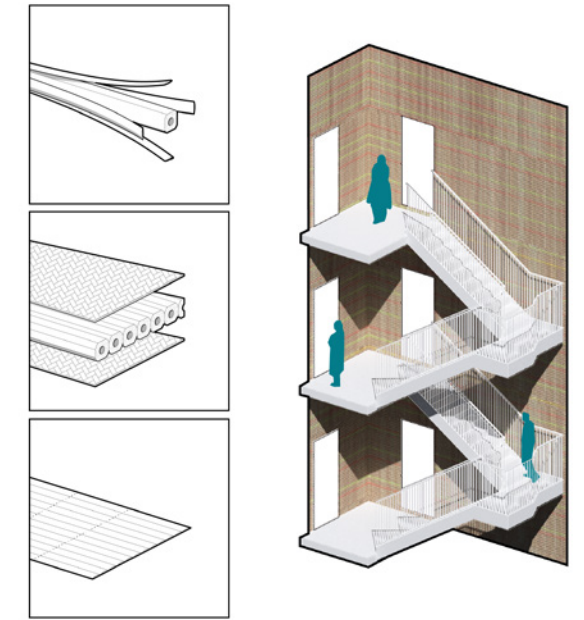
- An organizational scheme around a rainwater collection garden.
- Resilient structural methods, natural ventilation, and solar energy collection priorities.
- Specificity of local materials, like palm timber, bamboo, sargassum brick, and bio-concrete.

Ø1 Physical model of downtown Culebra; showing proposed infill lots in orange

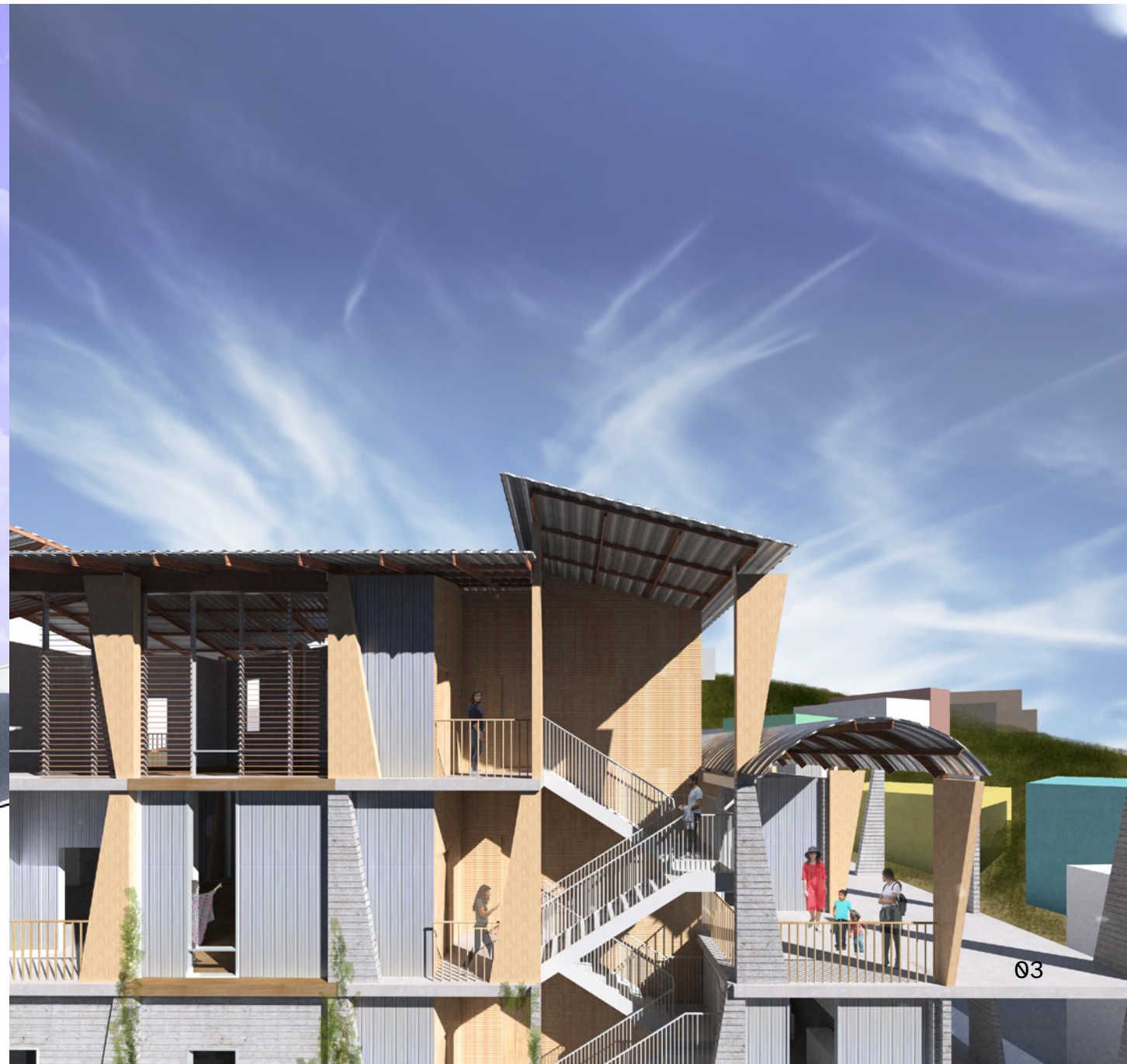
Ø2 The central rain garden, stacked housing units, and community eating area, with the Alcaldía shown in pink.

Ø3 Stacked housing units shown with a diversity of materials, including sheet metal, cross-laminated bamboo, bamboo off-cuts, palm timber, and bio-concrete.

Local material processes were tracked and diagrammed to maintain an intensity of use not usually seen; for example, in the production of bamboo piers, the off-cuts would be reused as facade materials. By intensely managing the material waste and fabrication processes in the making of these modular homes, construction on Culebra could more easily be self-sustained, similar to localized agriculture systems. Extending this logic to more places that are similarly ecologically fragile could future-proof housing and living for changing populations and climate realities.



Ø2



Ø3

Grey Space

curtain wall

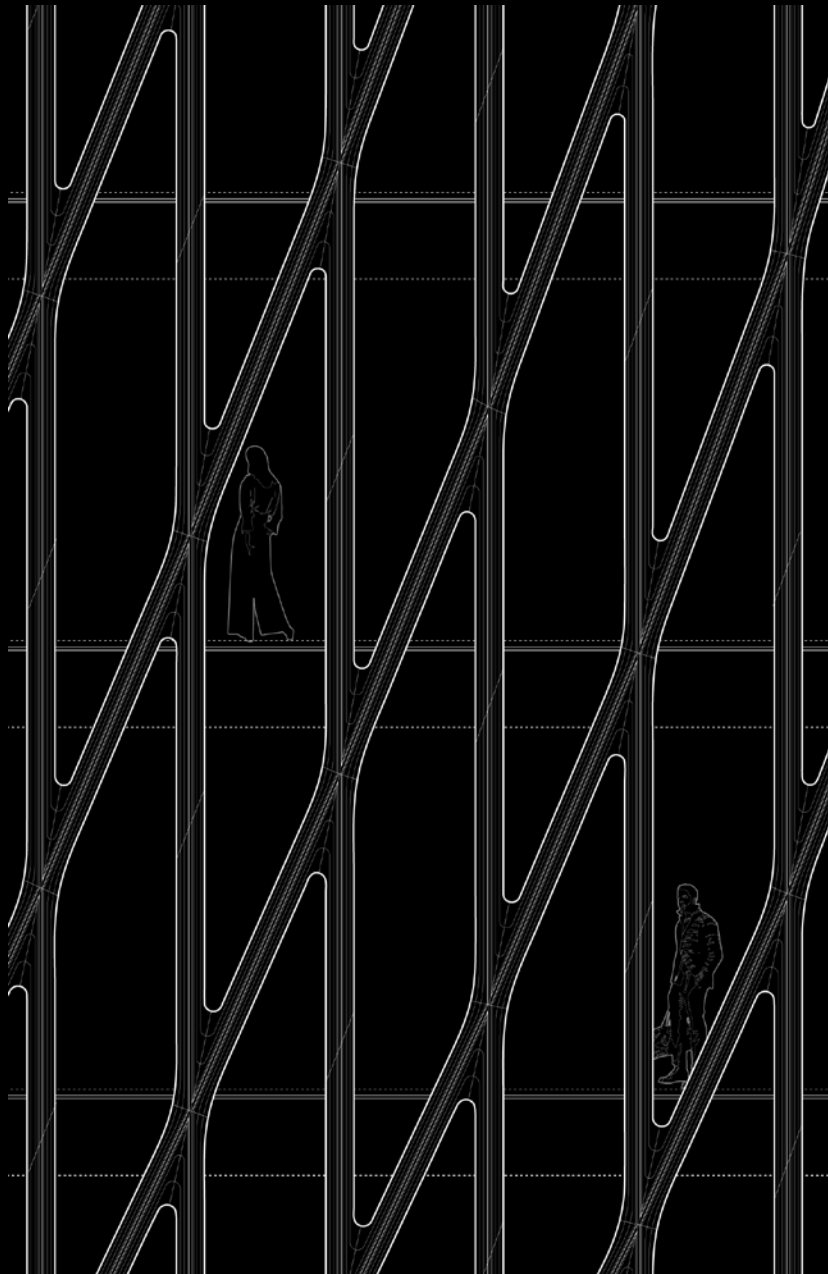
NoHo, NY - 2021
Course: Advanced Curtain Wall
Instructor: Daniel Vos

Grey Space is a technical design for a custom curtain wall facade on a building in New York. Through an understanding of fabrication and assembly constraints, the system achieves a dynamic stone and glass pattern which swirls and curves along the surface.

The swirling motion formed by minute slashes in the canvas of Piero Dorazio's *Grigiore* informed a geometric motion of a bulging sphere which is intersected by consistent vertical members. This creates a large number of slash-like trapezoids, which distort into a larger pattern when viewed from across the street. The unitized facade

is composed of two parts - a rectangular grid of glass and aluminum mullions and stack joints, and clipped-on stone veneer elements which form the swirling face of the building.

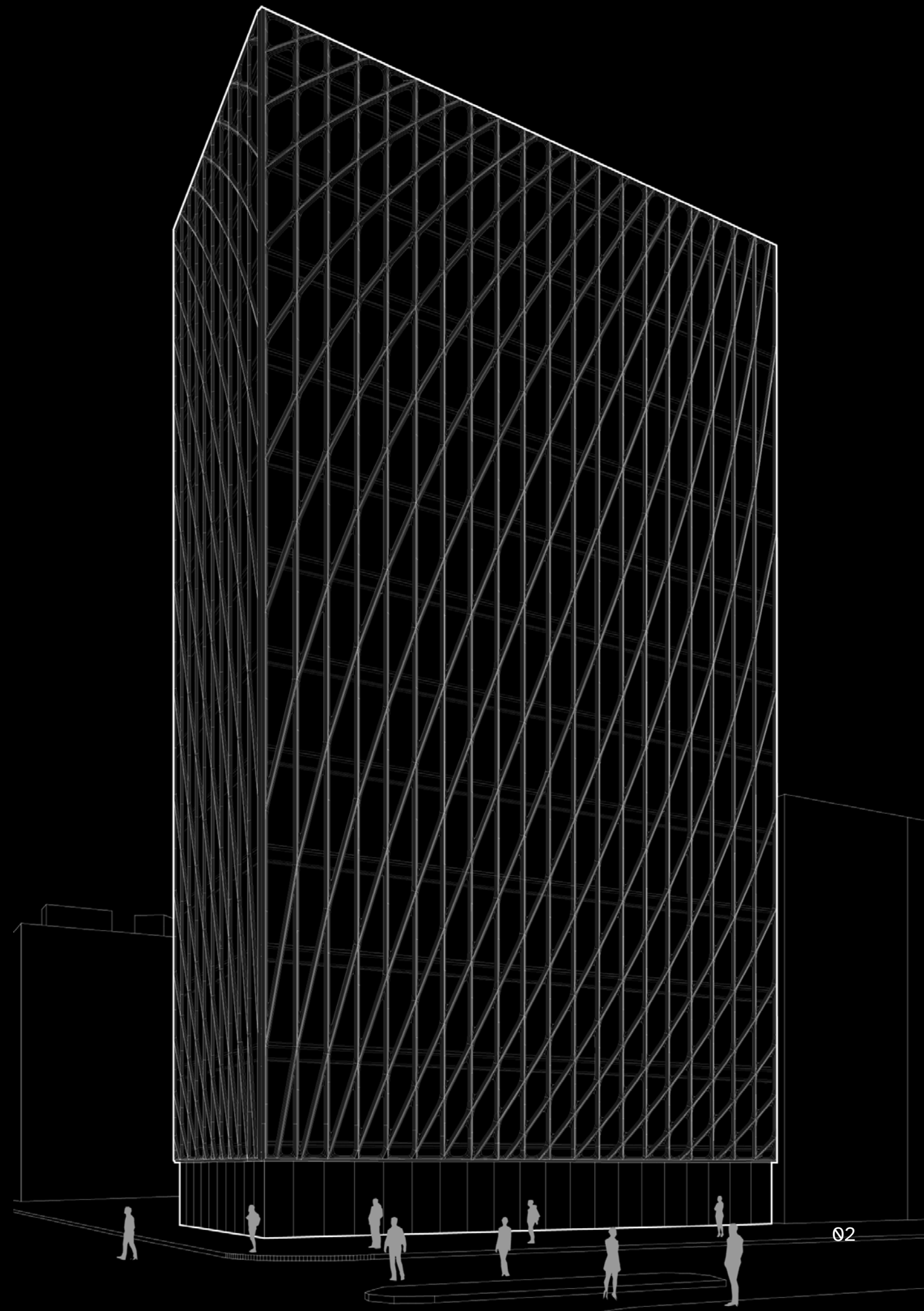
The profile of the stone veneer elements is a triangle with fluted edges, which distorts at the X-shaped intersections. This fluting adds texture and varying light to the facade, while being localized to each panel. The interior structural aluminum split mullions reflect this triangle shape, but in a smoother profile. The horizontal aluminum stack joints are designed to be hidden within the spandrel portion of the facade.



01

01 Roadmap elevation and section

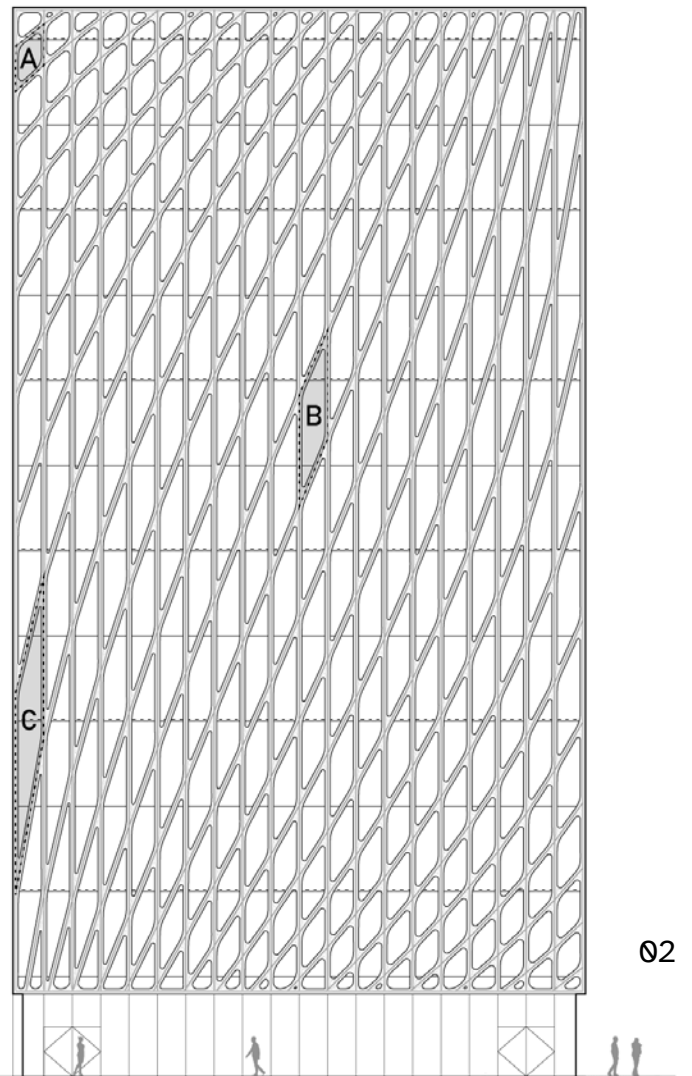
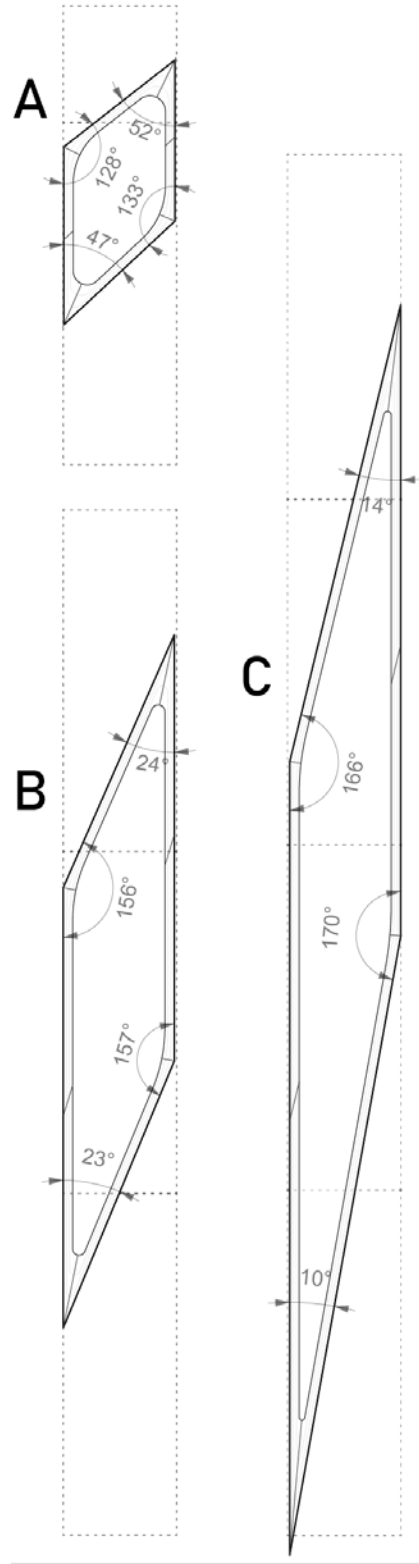
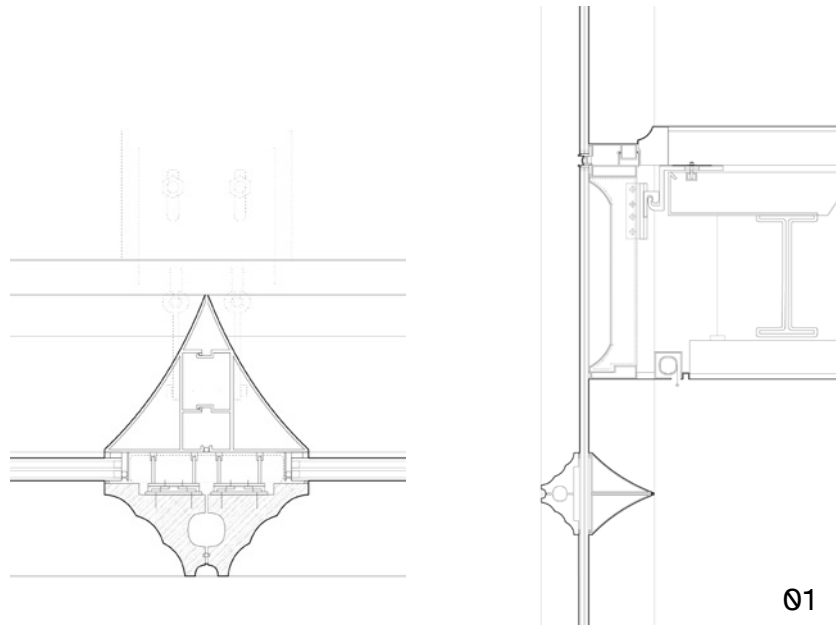
02 Perspective from Lafayette St.



02

Ø1 Split mullion plan & stack joint section

Ø2 Extreme angles of stone unitization, with hidden rectangular units shown dotted.



Assembly diagram, with CNC'd stone units numbered

Collected Stories

housing

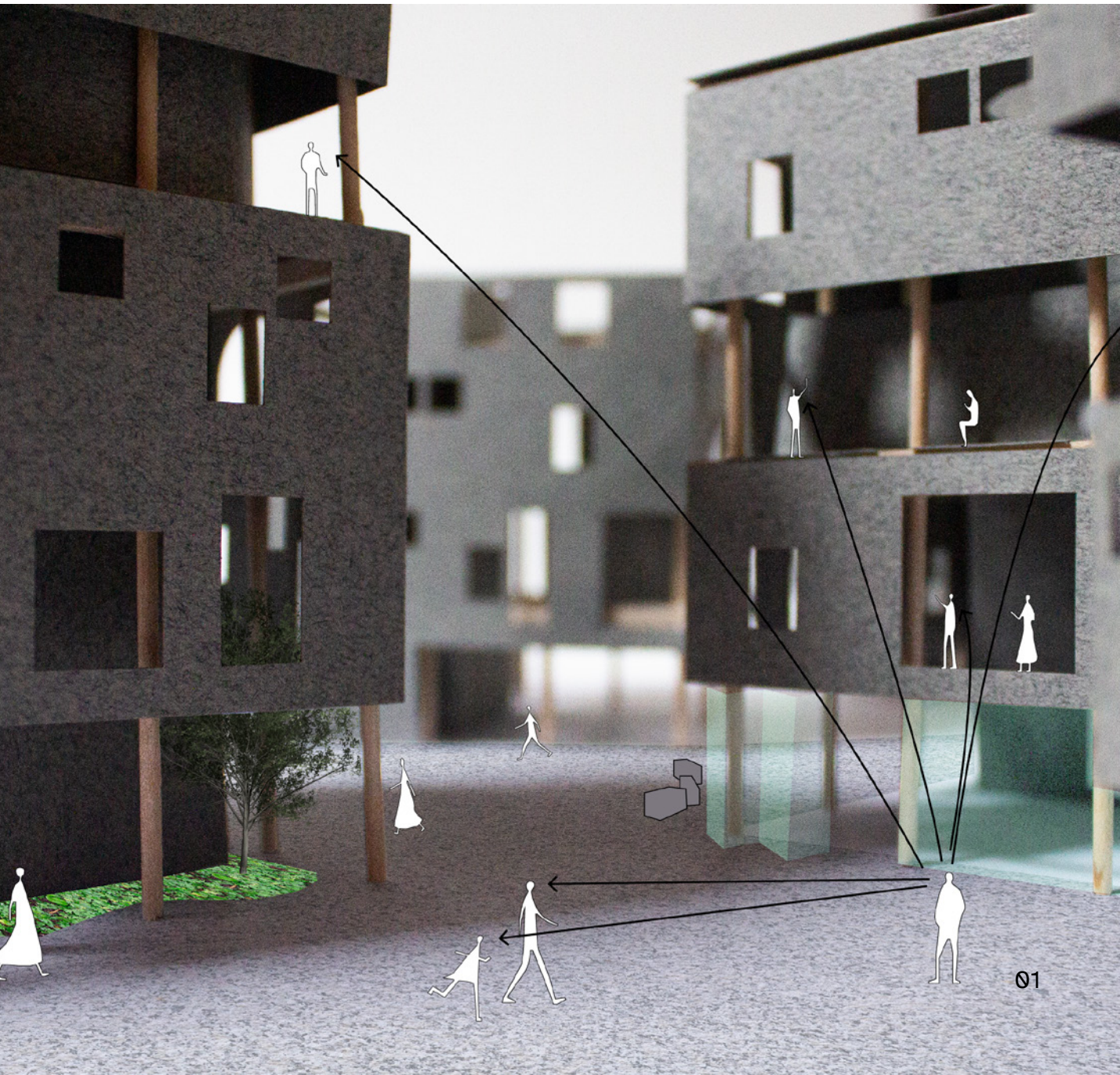
Melrose, The Bronx, NY - 2020
Course: Core III Studio - Housing
Instructor: Benjamin Cadena
Partners: Johane Cleremont & Stephanie McMorran

Collected Stories is a proposal for a series of housing micro-towers, defined by the injection and juxtaposition of small shared spaces between individual units. The site of the Melrose neighborhood of The Bronx introduced sparked many of the design choices made. For example, the energetic sidewalk culture of the Melrose "Hub," adjacent to the site, prompted a layering of filters from the sidewalk to the bedroom.

The proposal reduces the scale of the interaction between individual and city in three ways. First, the skewed

placement of the towers on the site abrupts the traditional street wall defined by buildings meeting the sidewalk harshly. Second, the transition from ground to building is softened by public uses and transparent forms on the ground floor, and the distance between ground and upper floors is maintained at a scale acceptable for conversation. Lastly, individual units were coalesced around small shared spaces, like reading rooms, kitchens, and art studios.

The 50ft x 50ft micro-towers provide opportunities for residents to develop interdependencies, from young to old, family to single, individual to community. The heights of the towers were limited to that which visual and auditory connection could still be maintained. A natural porosity through shared spaces could then juxtapose with the private nature of individual units, clad in bluestone bricks.



01 Axonometric with various public spaces, slotted in on each floor

02 Physical model showing ground level plaza space.

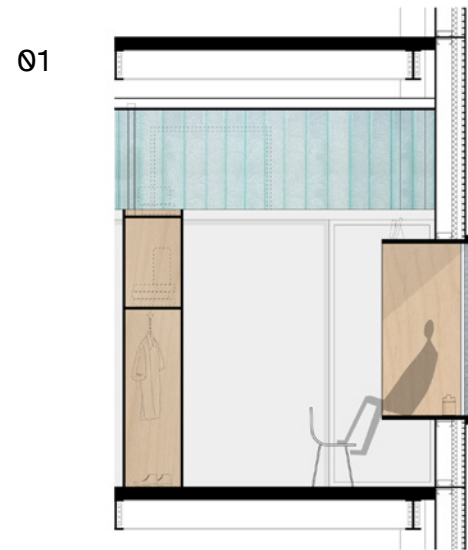
Formally, each micro-tower is composed of disparate floors slotted into a frame. On each floor, communal spaces with varying programs act as injected opportunities for connections between residents. The proximity of the living units to these communal spaces encourages chance encounters and relationship building between residents of different generations.

If every barrier and partition is considered a layer between the city and the self, the extruded window detail in the bedroom represents the innermost layer, apart from clothing.

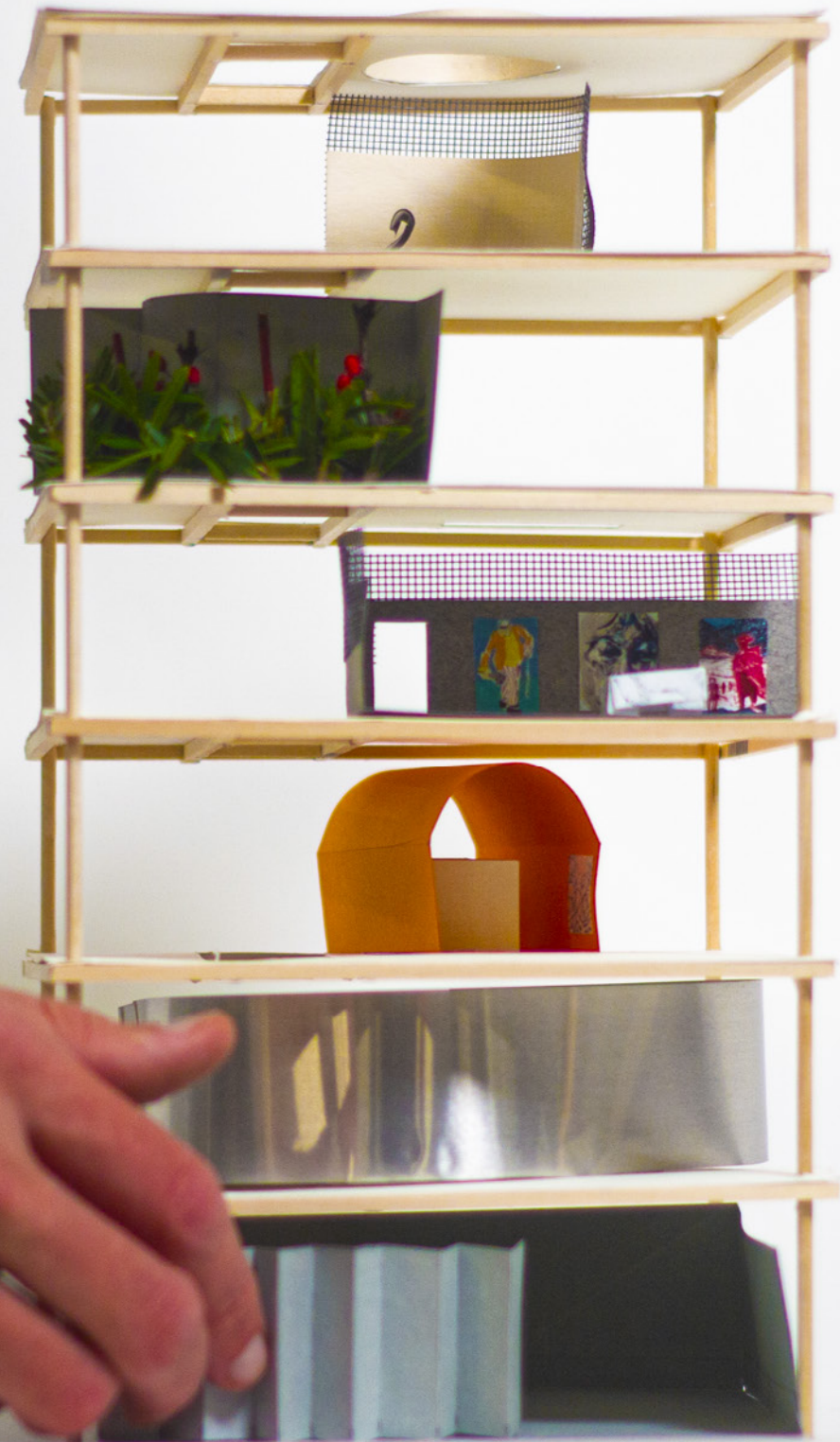
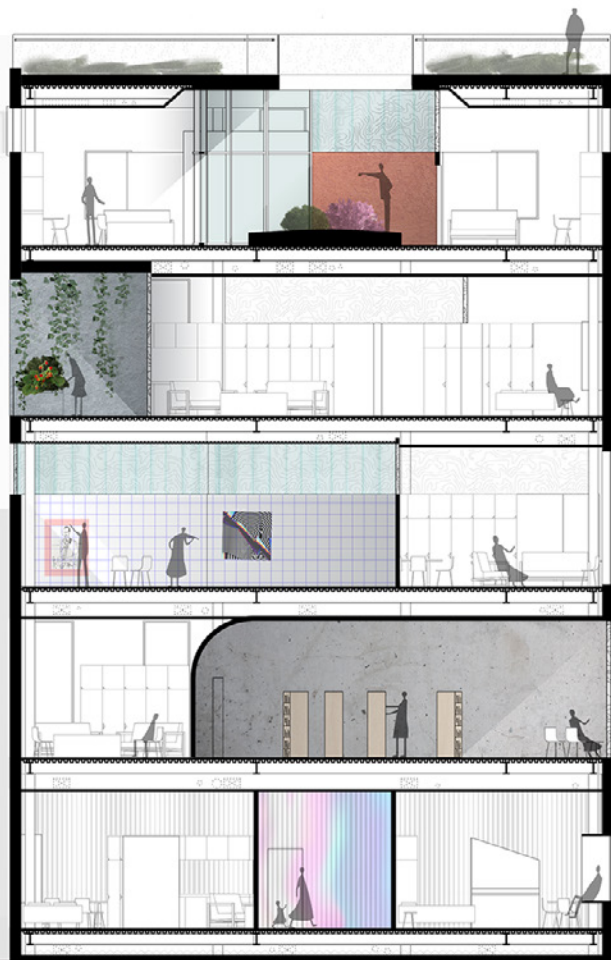
01 Section of bedroom and window extruded window.

02 Overall section with communal spaces in color

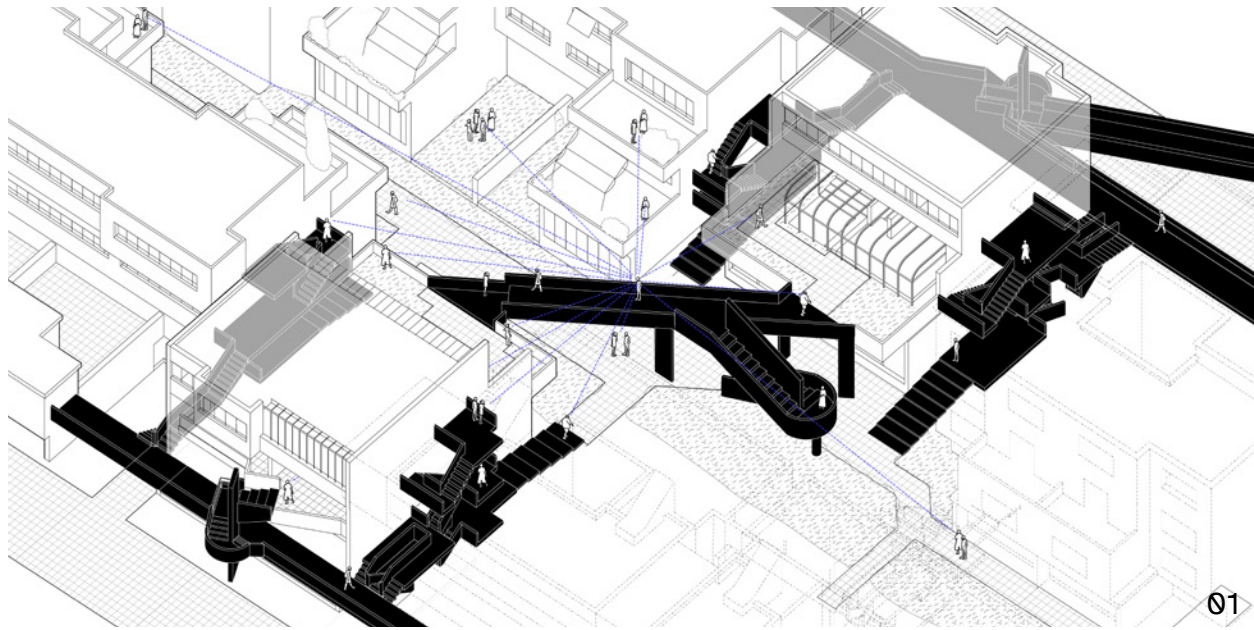
03 Physical model calling out communal spaces on each floor.



02



03



01



02



03



04

01 Axonometric analysis of precedent project Villaggio Matteotti in Terni, Italy.

02 Micro tower floor plans with levels of privacy highlighted in color.

03 Model collage of tower balcony.

04 Collage of reading room.

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