

questions

VOLUME 4.

68



20x15

split court
more people can
play
attaching pp/ outside
1 core play ground
court is great



► How does it work? Curiosity drives my creative process.

STUDIOS

STOOPSCAPES
HOW CAN ARCHITECTURE CONNECT RESIDENTS?

IRONBOUND AIR GARDEN
CAN ARCHITECTURE REPAIR INFRASTRUCTURAL DAMAGE?

MARKET MUSEUM
HOW DO YOU QUESTION MUSEUM CONVENTIONS?

TURTLE ISLAND
HOW CAN FORM GESTURE TOWARDS HISTORY?

A SCHOOL THAT CATCHES THE TREES
HOW CAN YOU CHALLENGE SOCIETAL NORMS?

PORT JEFFERSON FERRY TERMINAL
CAN THE NEED FOR FUNDING DESIGN THE FORM OF A BUILDING?

NON STUDIO WORK

PORT NEWARK HOTEL
HOW DO YOU ENHANCE CONCEPTS OF OTHERS?

READING SPACES
CAN YOU QUANTIFY COLLECTIVE EMOTION?

STOOPSCAPES

Group work / Role : Designer / Critic : Erica Goetz

Collaboration with Zach Beim

Harlem, a historically rich neighborhood characterized by African American culture, is defined by the lively streetscape molded by the stoop of brownstone buildings. The building concept **captures** the **spatial and social characteristics of the “Stoop or porch”** as a threshold that **connects communities** together by **providing a space for casual social interaction**.

- How can architectural emulate the social function of the stoop in Harlem?



1939 Harlem Tenement | NYC

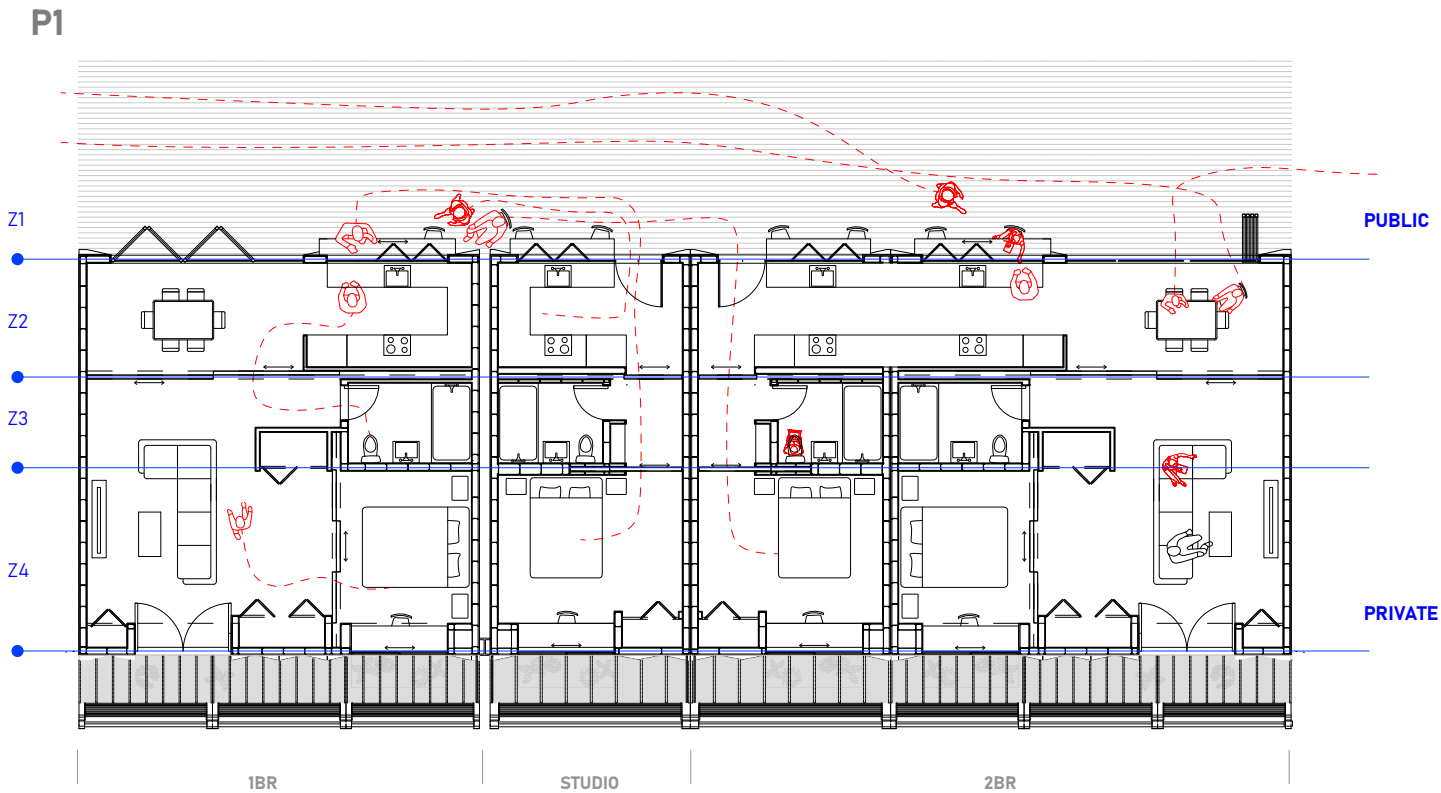


Apartment render from 124st, Harlem NY

KITCHEN AS STOOP

By placing the kitchen and dining (Z1) adjacent to building circulation, the act of sharing, cooking and eating food becomes the main driver that allows for neighbors to interact with one another or passerbys to share a meal strengthening a sense of community.

Utilizing movable windows and walls the building expands and contracts to needs of the host allowing private spaces to be clearly demarcated and hidden from the public. The bathroom (Z2) seperates the private living space from the public dining space.



UNIT PLAN

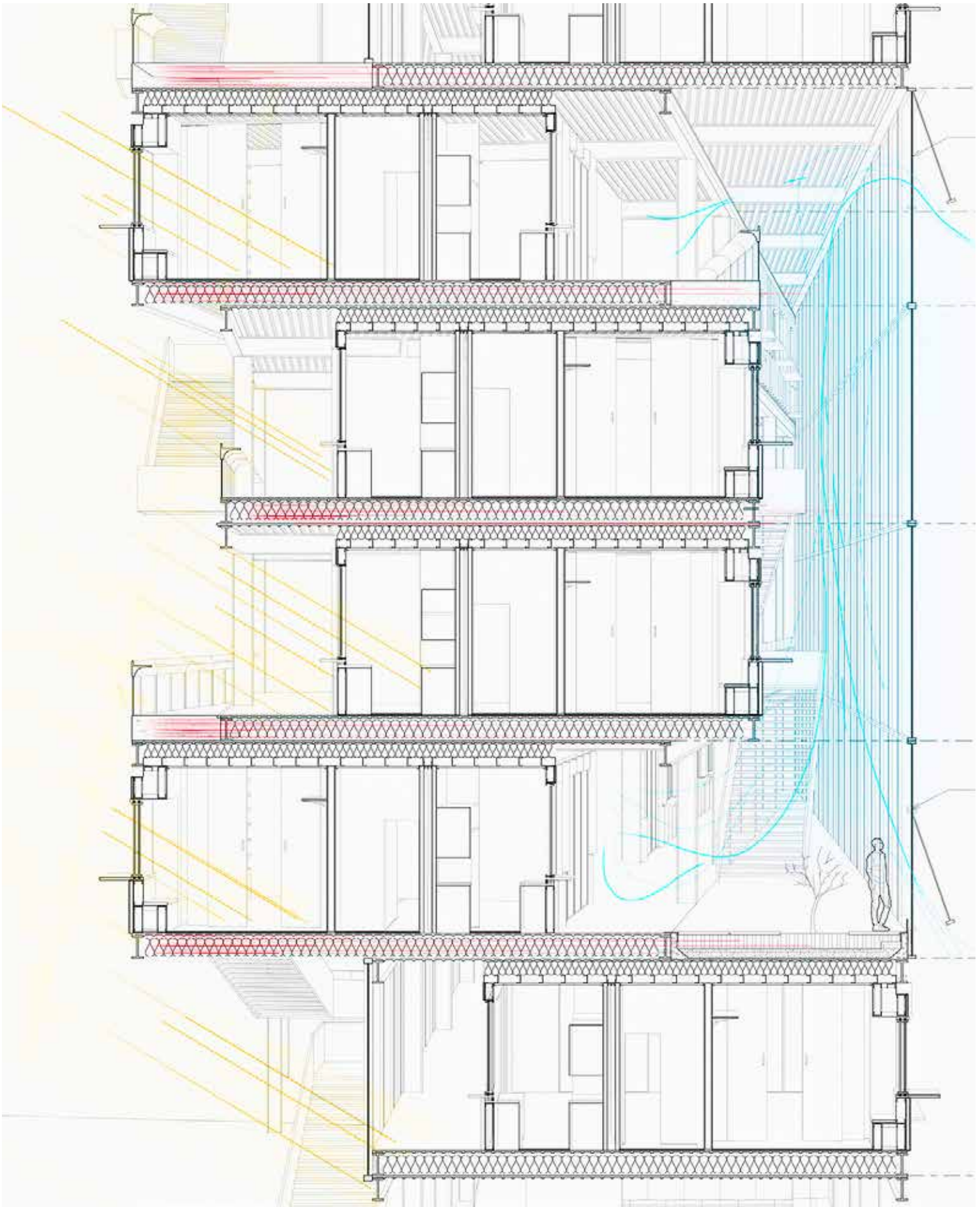
FLOOR PLAN LVL 6



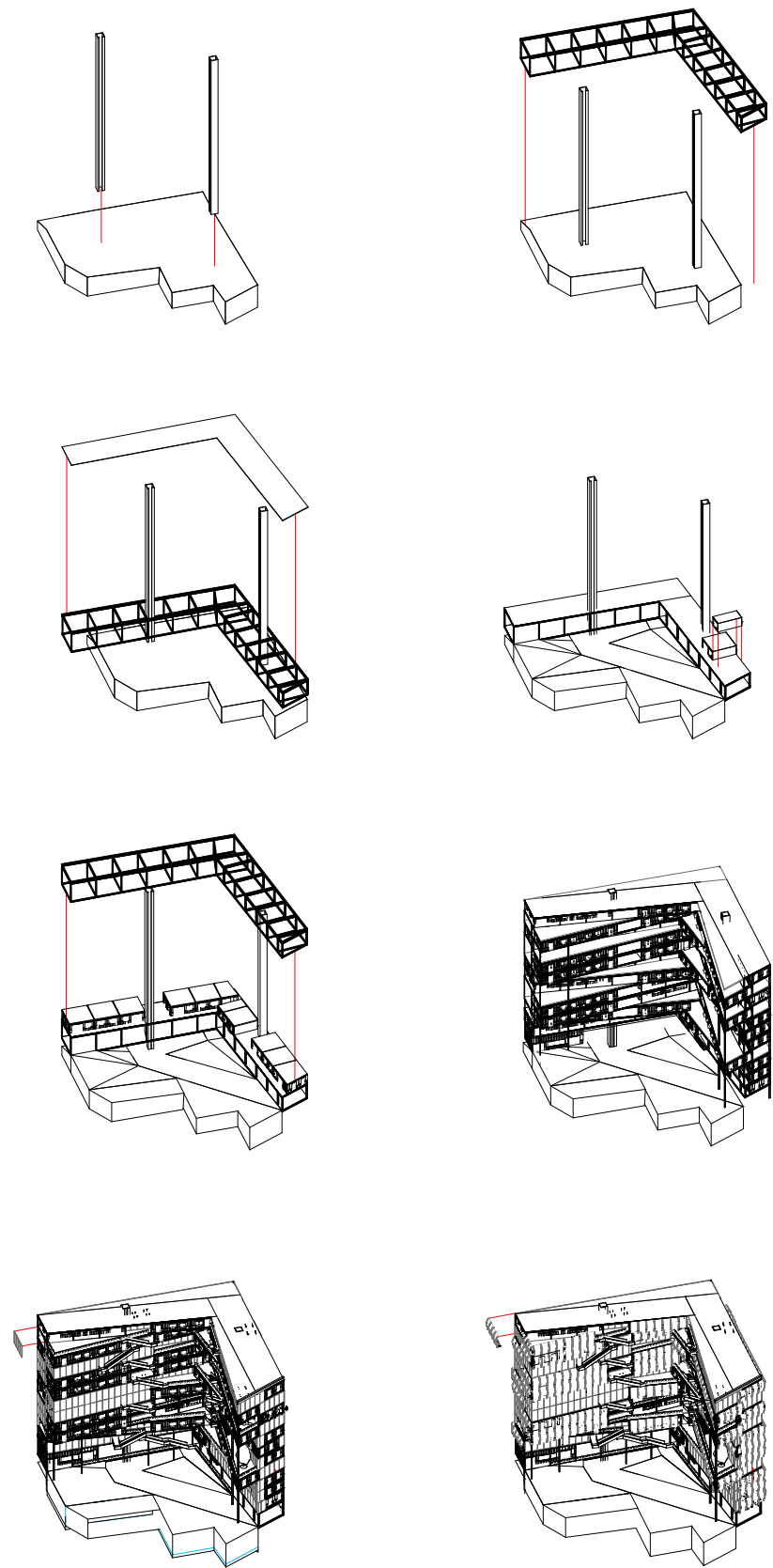
The social function of the stoop is emulated on multiple scales ranging from the unit scale to the building plan scale. Neighborhoods of stoopscales spill into an atrium space that allows for larger gatherings creating a neighborhood within the building.



WINTER GARDEN INTERIOR RENDER



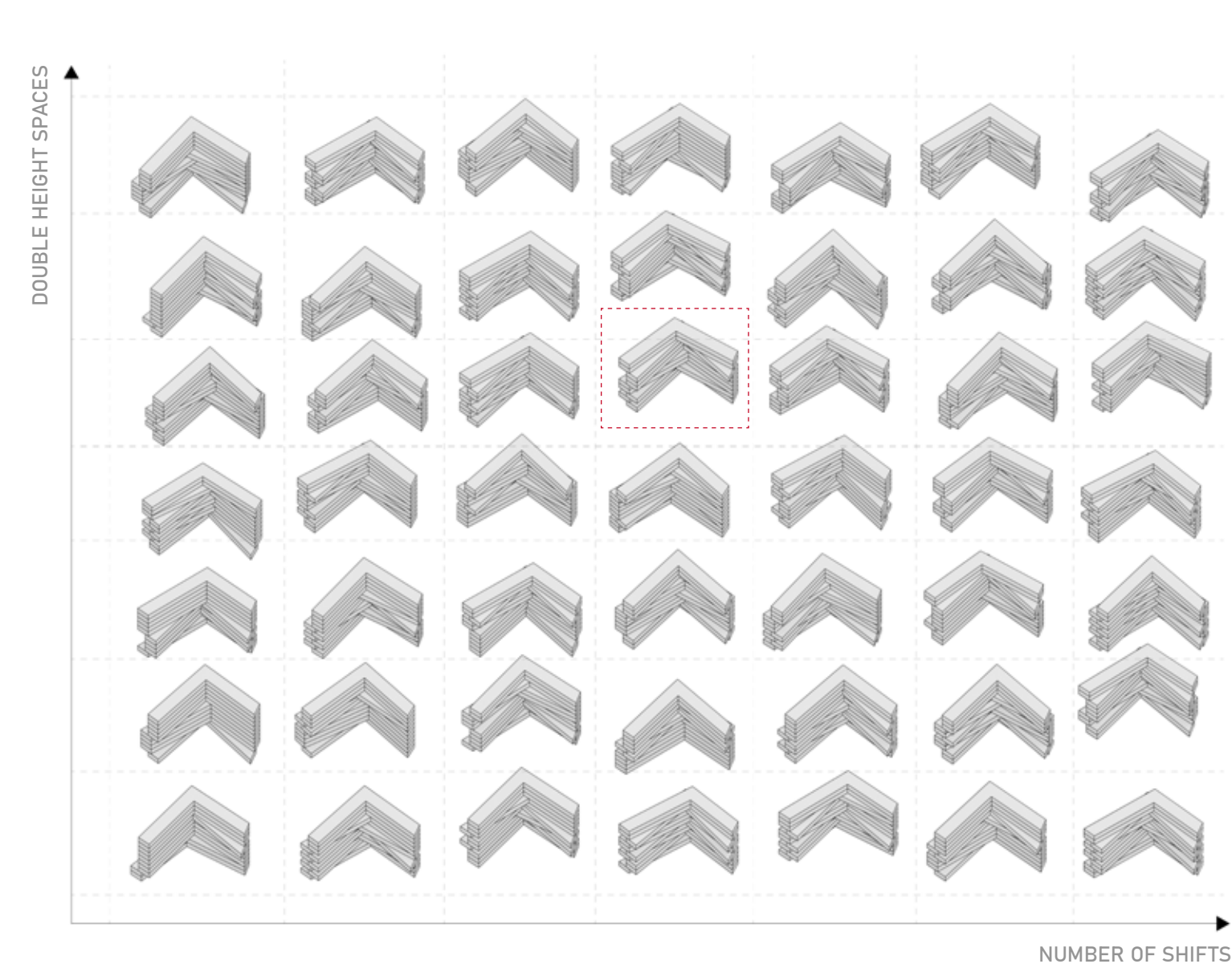
ENVIRONMNETAL DESIGN SECTION DIAGRAM



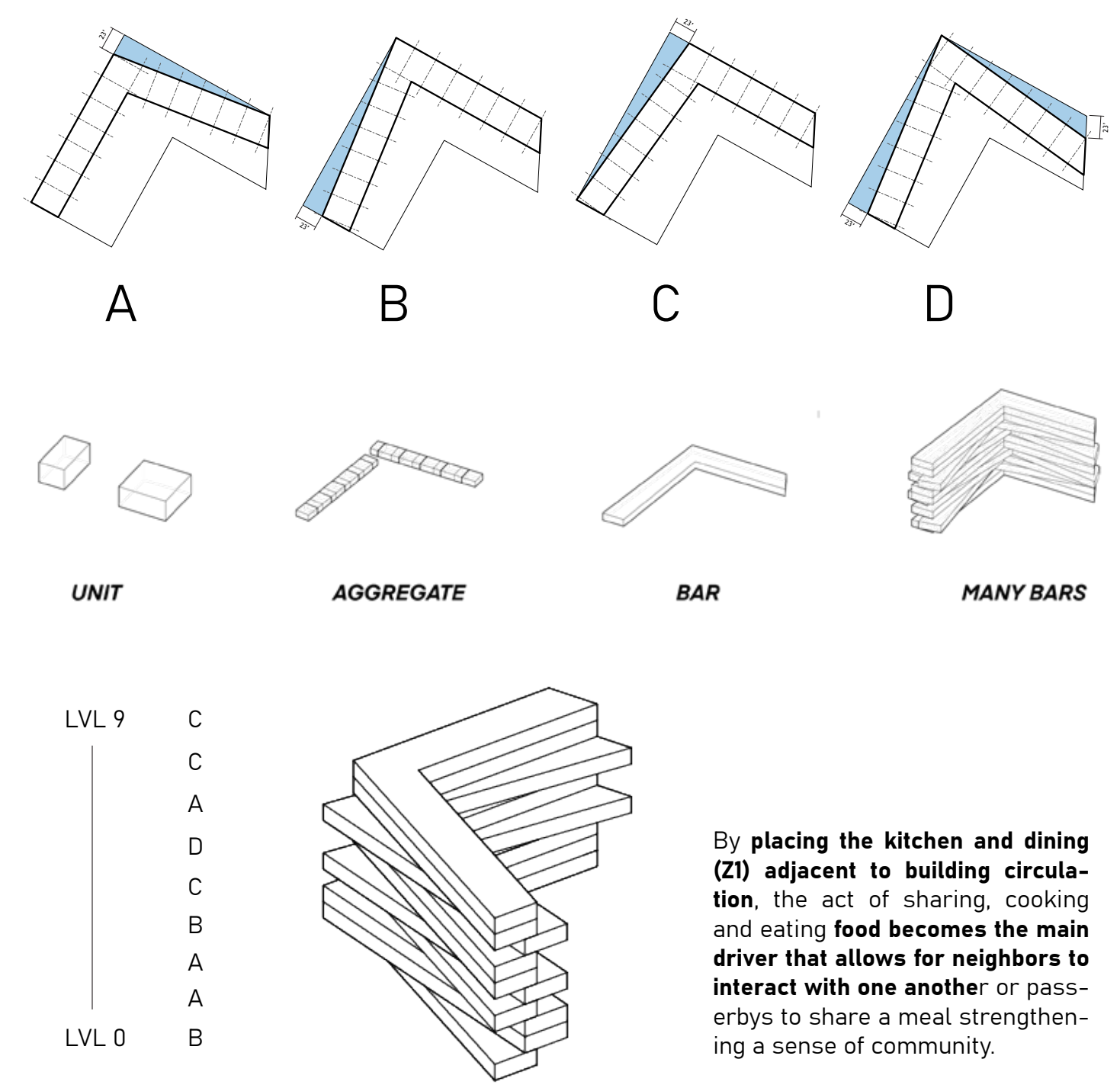
CONSTRUCTION SEQUENCE



MODELS AND AXON



FORM TAXONOMY DIAGRAM



FORM LOGIC



128th

Convent Ave

127th

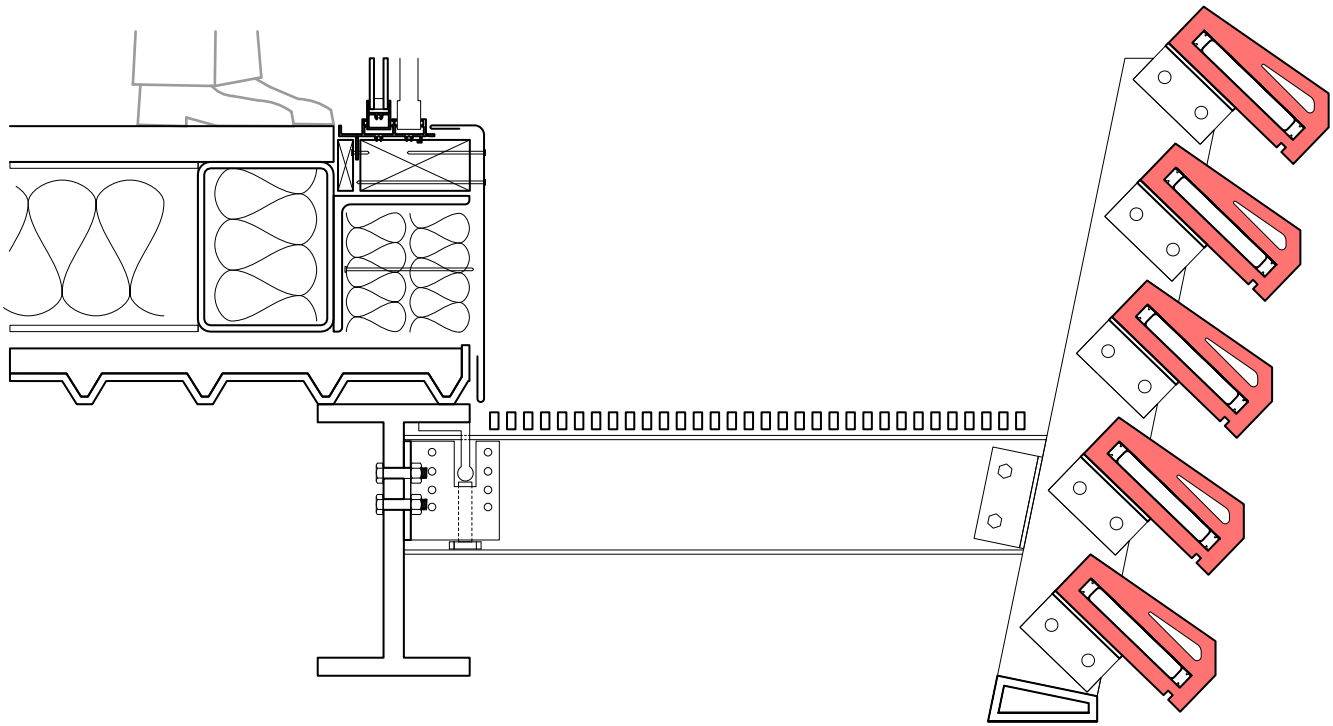
PLAN LVL 5



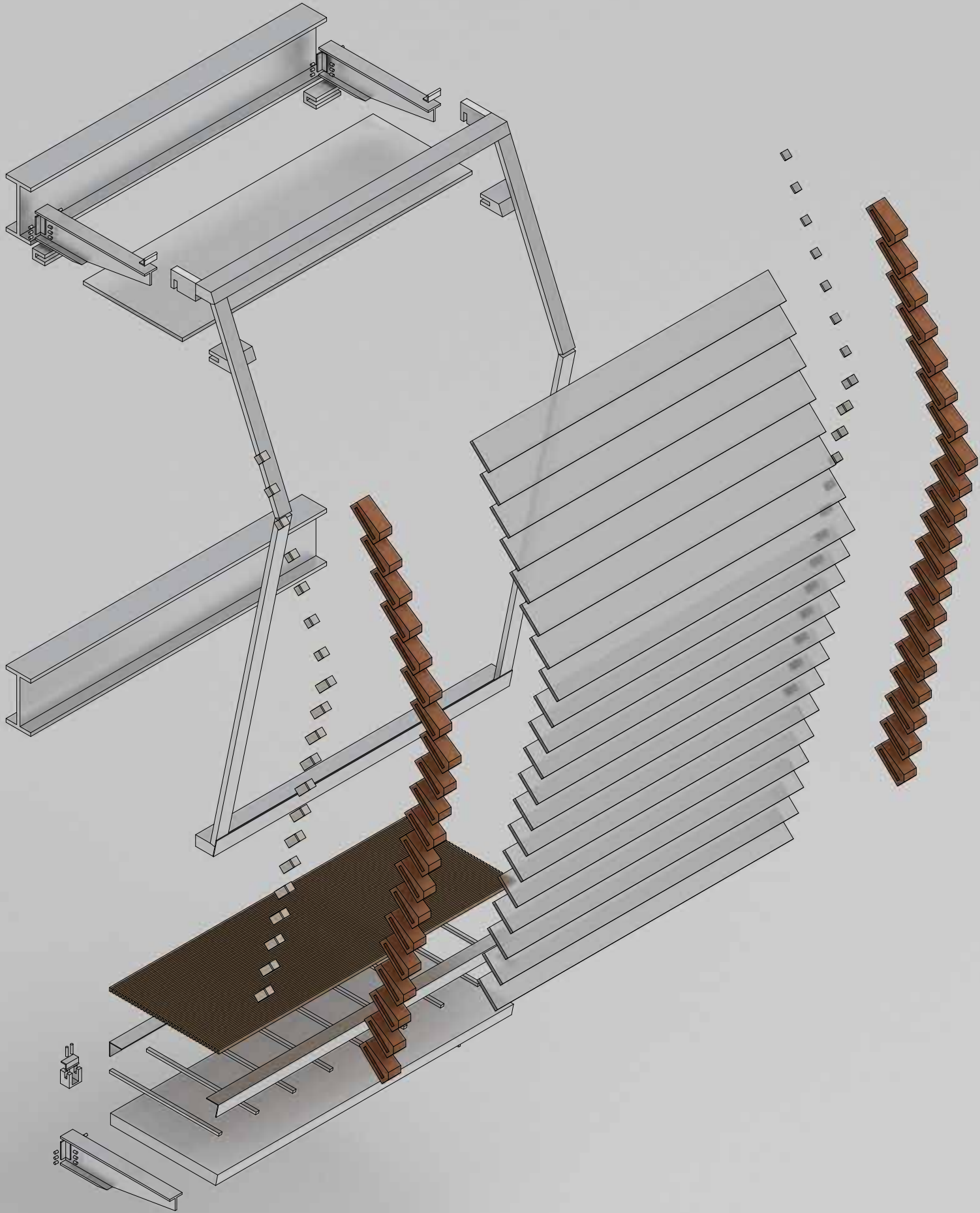
PLAN LVL 6

DOUBLE SKIN FACADE AS BACKYARD

With the double skin facade, I wanted to utilize the terracotta caps to reference the local Dutch historical context creating a visual image that allows for the building to be connected with its surroundings to give a contemporary but familiar feel



ANCHOR CONNECTION DETAIL





PORT JEFFERSON FERRY TERMINAL

Individual / Role : Designer / Critic : Rachely Rotem

The project reimagines a ferry terminal structure at 567 Seaview Avenue, Bridgeport, as a mediator between the community and institutional stakeholders. The terminal balances transit infrastructure with public access as well as ecological sensitivity. The project challenges the car dominating infrastructure, rebridges the connection to nature, and integrates ecological resilience strategy for the local community of the future.

- How will finance drive the design logic of a project?



air pollution visualization | Bridgeport CT

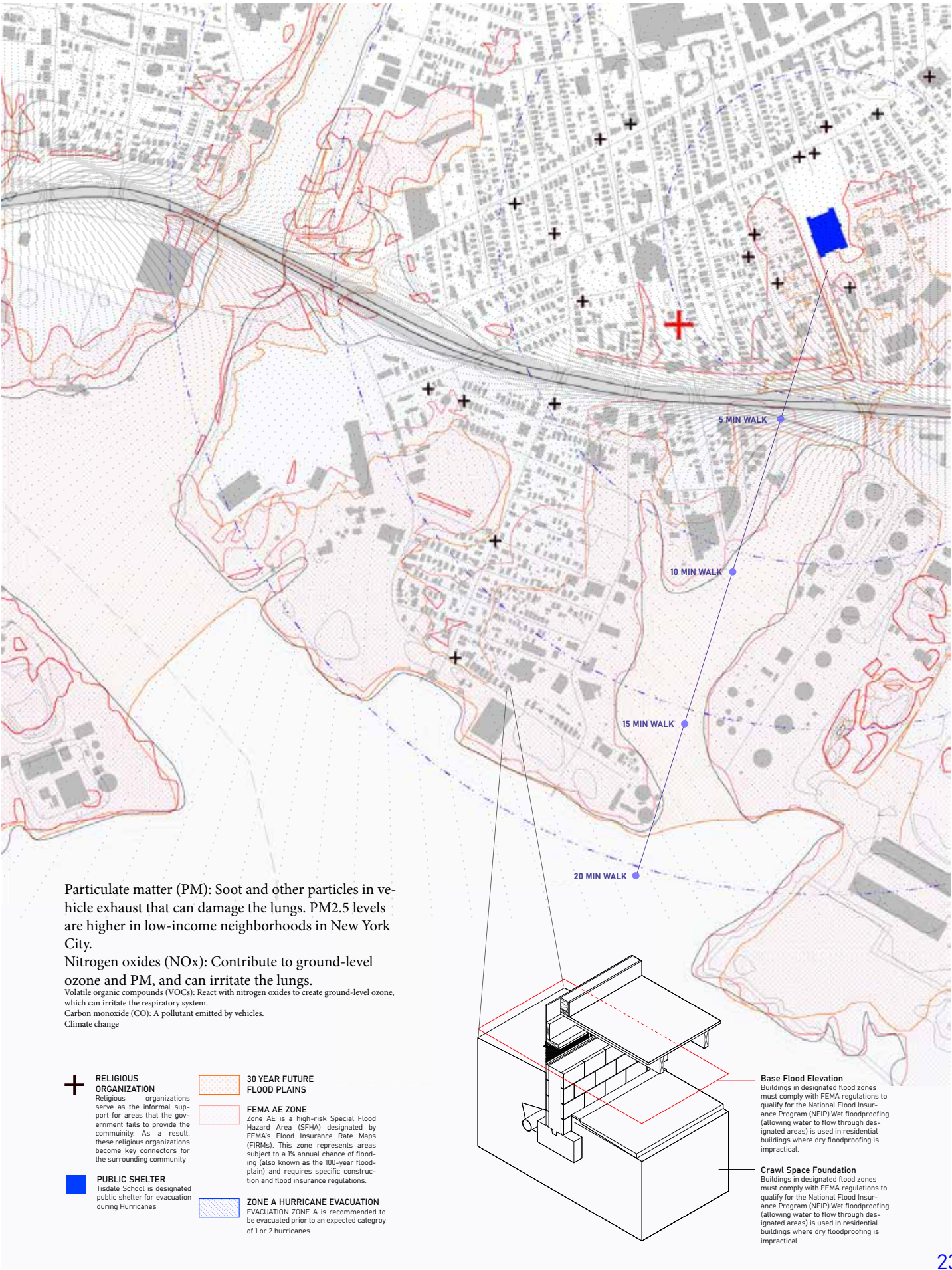
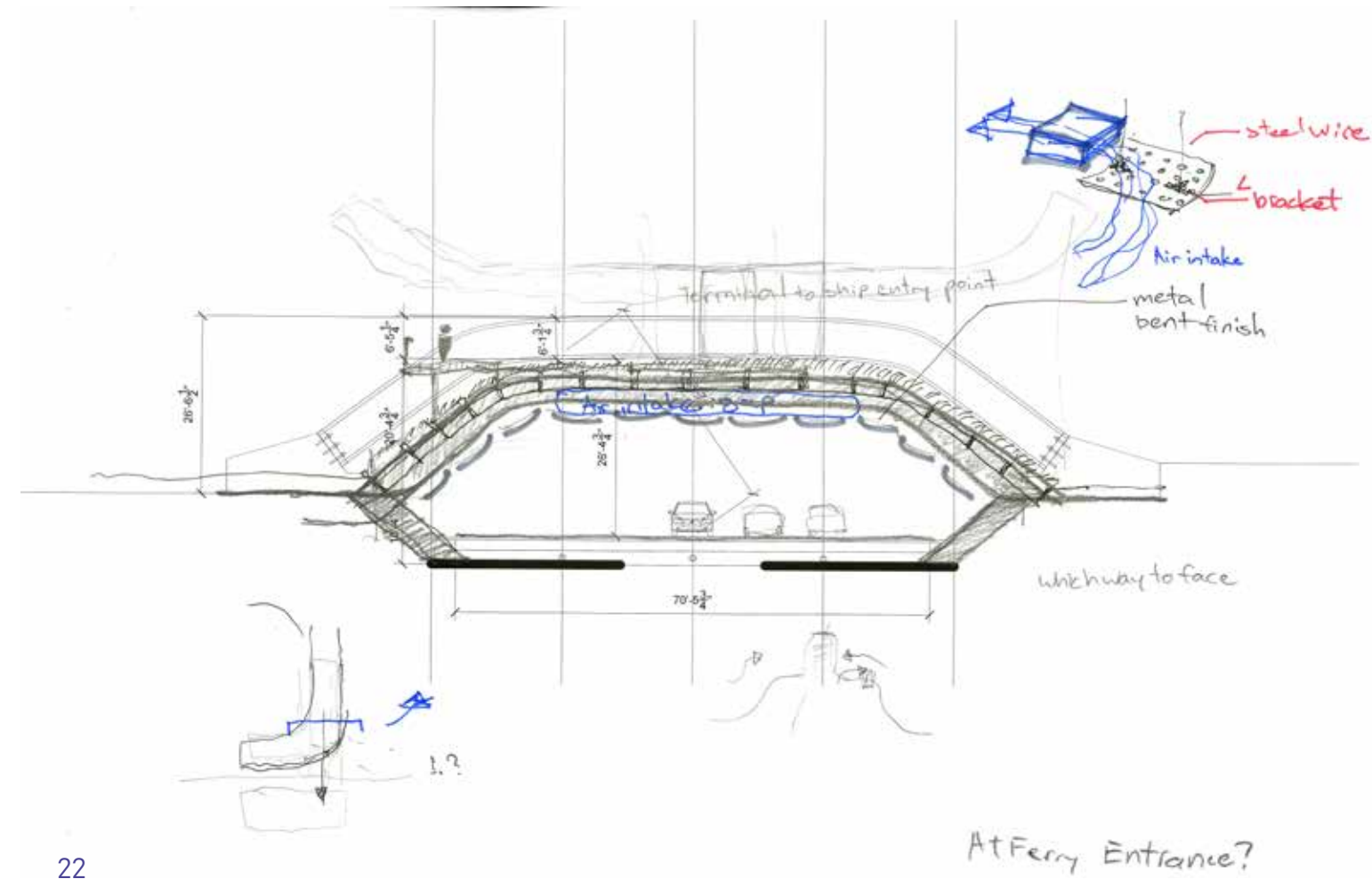


CONCEPT RENDER

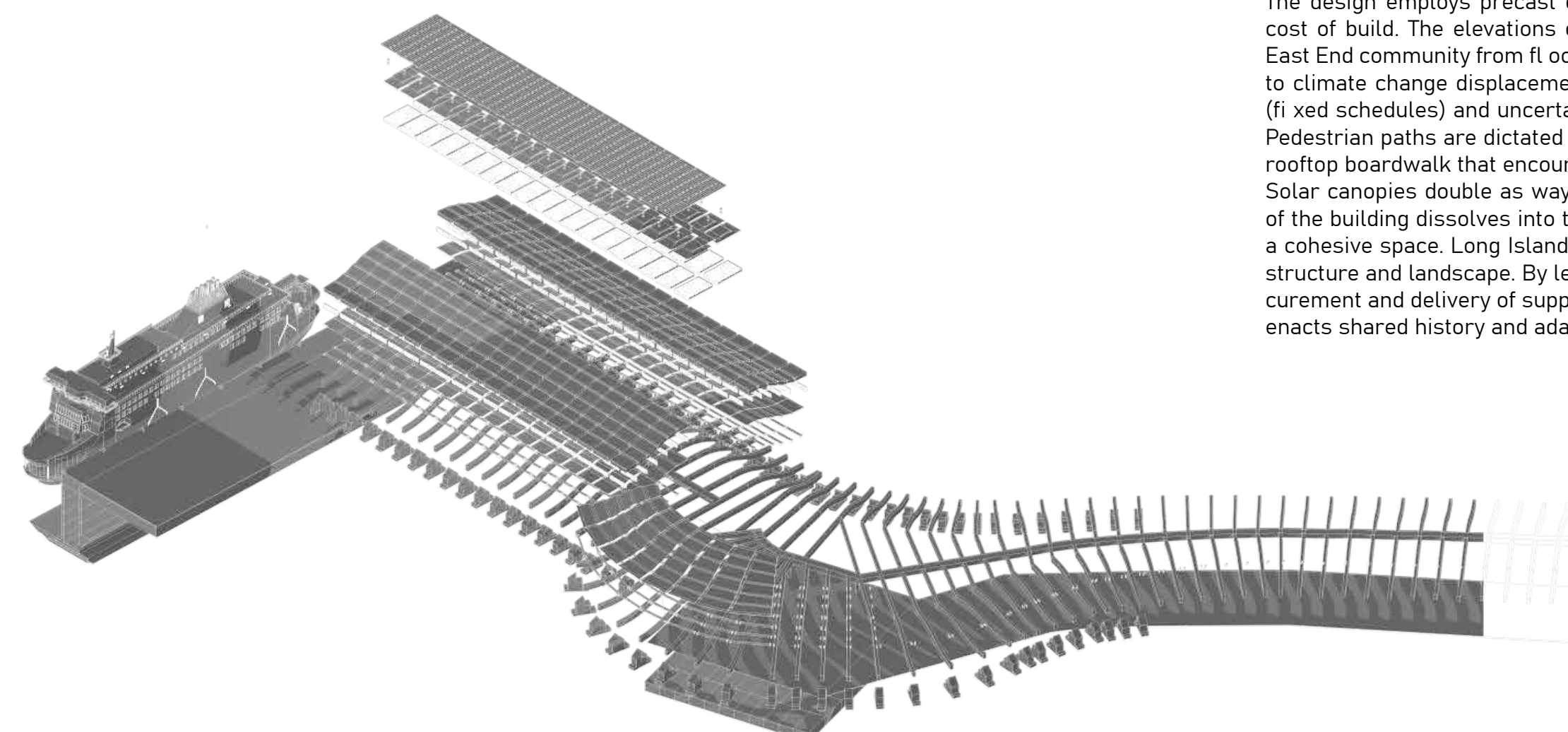
the invisible East end Community

A predominantly low income neighborhood of East End, the local community has been struggling with access to reliable transportation along with **high amouts of air pollution from the highway**. The Red zone indicates FEMA rated high flood areas that cause insurers to raise flood insurance prices to a already low income, infrastructure depleted area.

There is a new proposal that moves a ferry terminal that has over **500,000 cars and over 1 million passengers per year** to the noted area right at the East End. The current **proposal fails to acknowledge the East End resident's** benefits or concerns so the new proposal is created to address both the local community and the private actors financing the project .

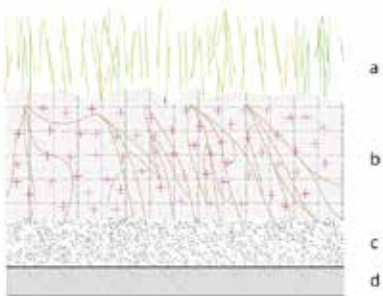
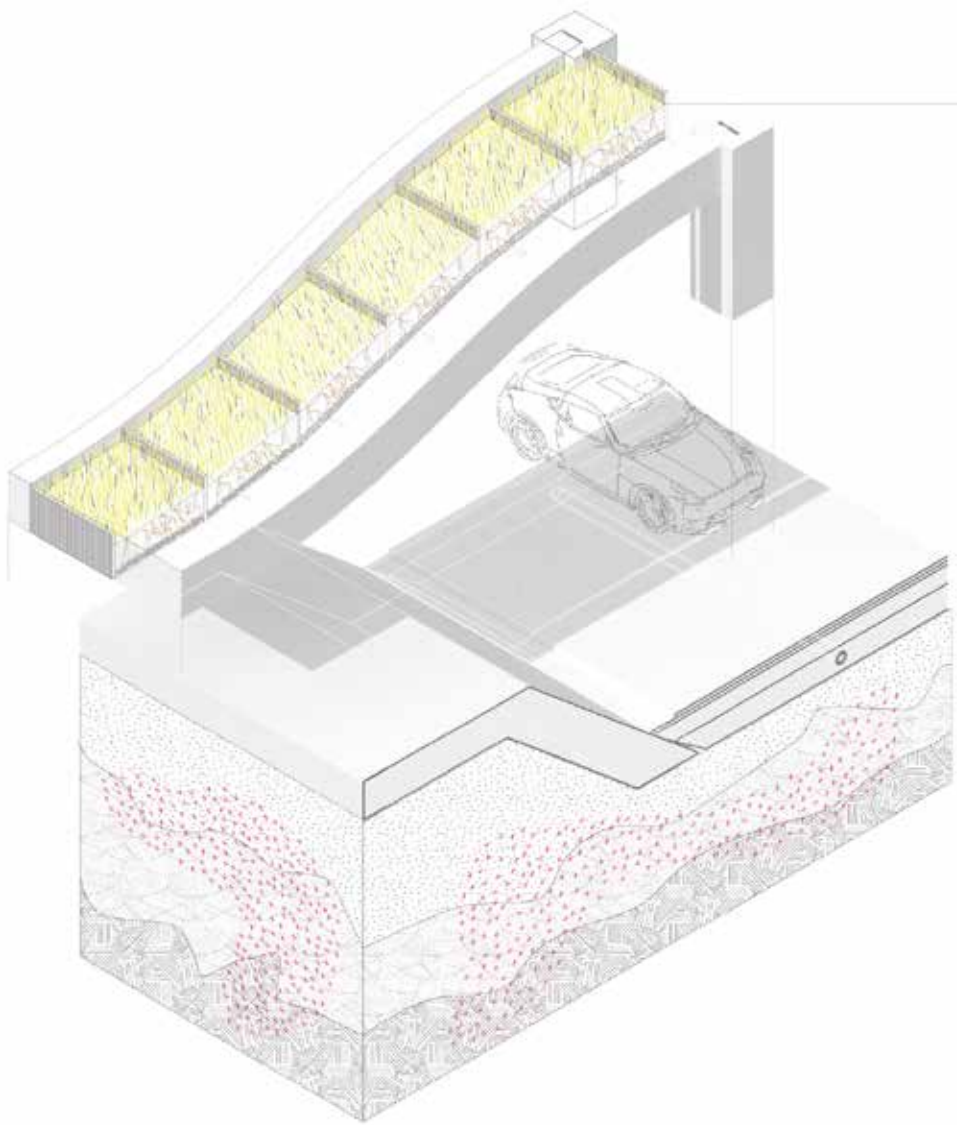
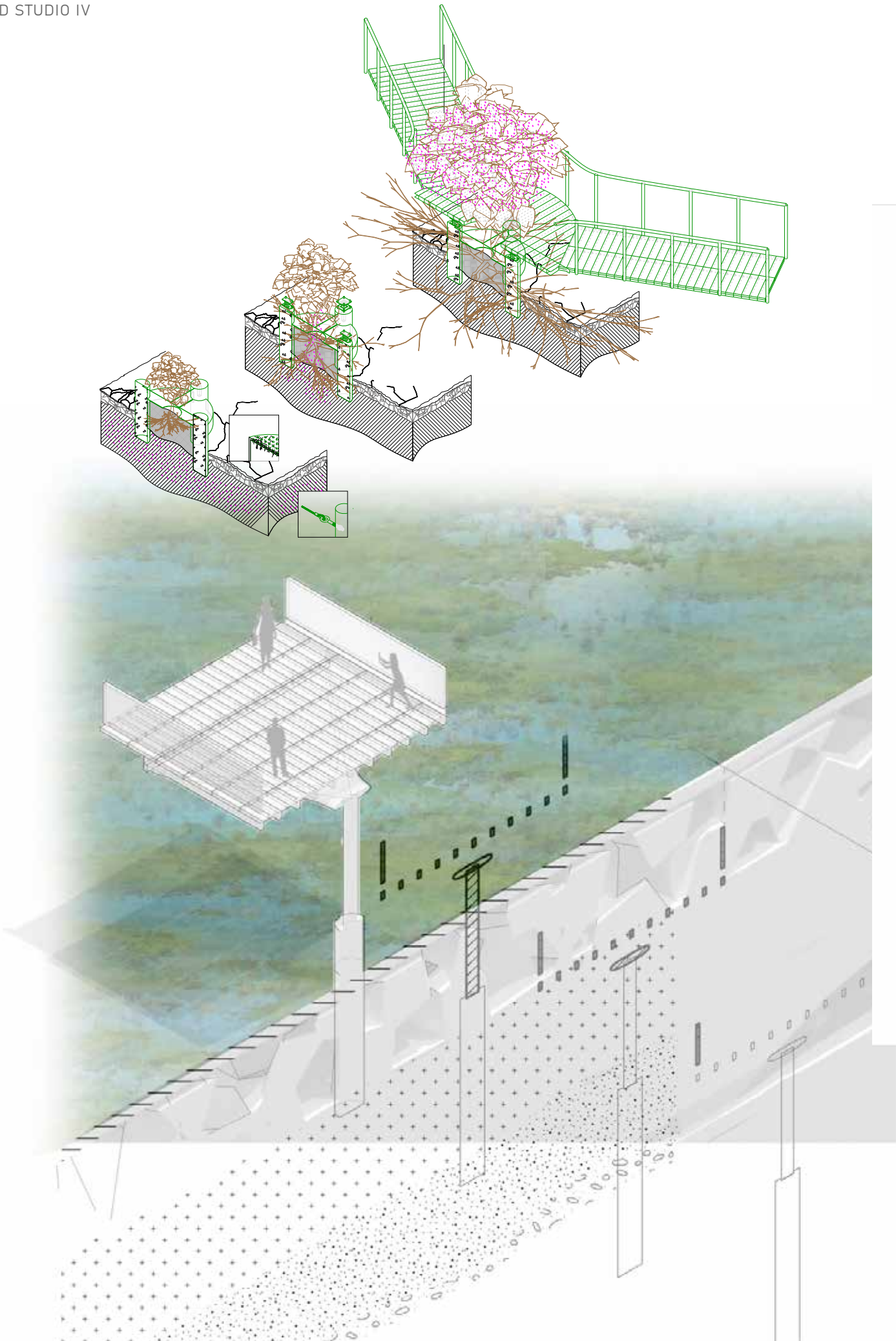






The design employs precast concrete, for efficient construction timelines and lower cost of build. The elevations of these beams creates natural swales that prevent the East End community from flooding directly helping generations of people that are prone to climate change displacement. This creates a spatial “timeline,” embedding certainty (fixed schedules) and uncertainty (tidal fluctuations, weather) into architectural form. Pedestrian paths are dictated by retention ponds and tidal ecosystems culminating in a rooftop boardwalk that encourages residents of Bridgeport to reconnect to the seaside. Solar canopies double as wayfinding, while rain gardens buffer stormwater. The form of the building dissolves into the landscape interweaving infrastructure and nature into a cohesive space. Long Island Sound’s horizon, dissolving the boundary between infrastructure and landscape. By leveraging Bridgeport’s maritime trade infrastructure, procurement and delivery of supplies will be greatly reduced creating a civic landmark that enacts shared history and adaptive futures





- a Indian Grass (*Sorghastrum nutans*)
- b contaminated soil from soil
- c permeable substrate
- d concrete container

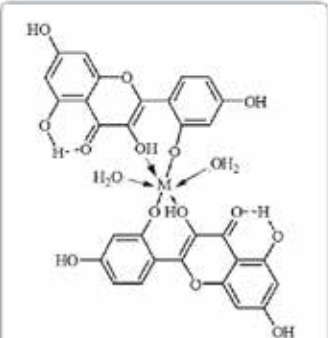


Figure 3: Probable structure of M(II)-neorin complex, M = Pt(II), Pd(II) and Zn(II).



A SCHOOL THAT CATCHES THE TREES

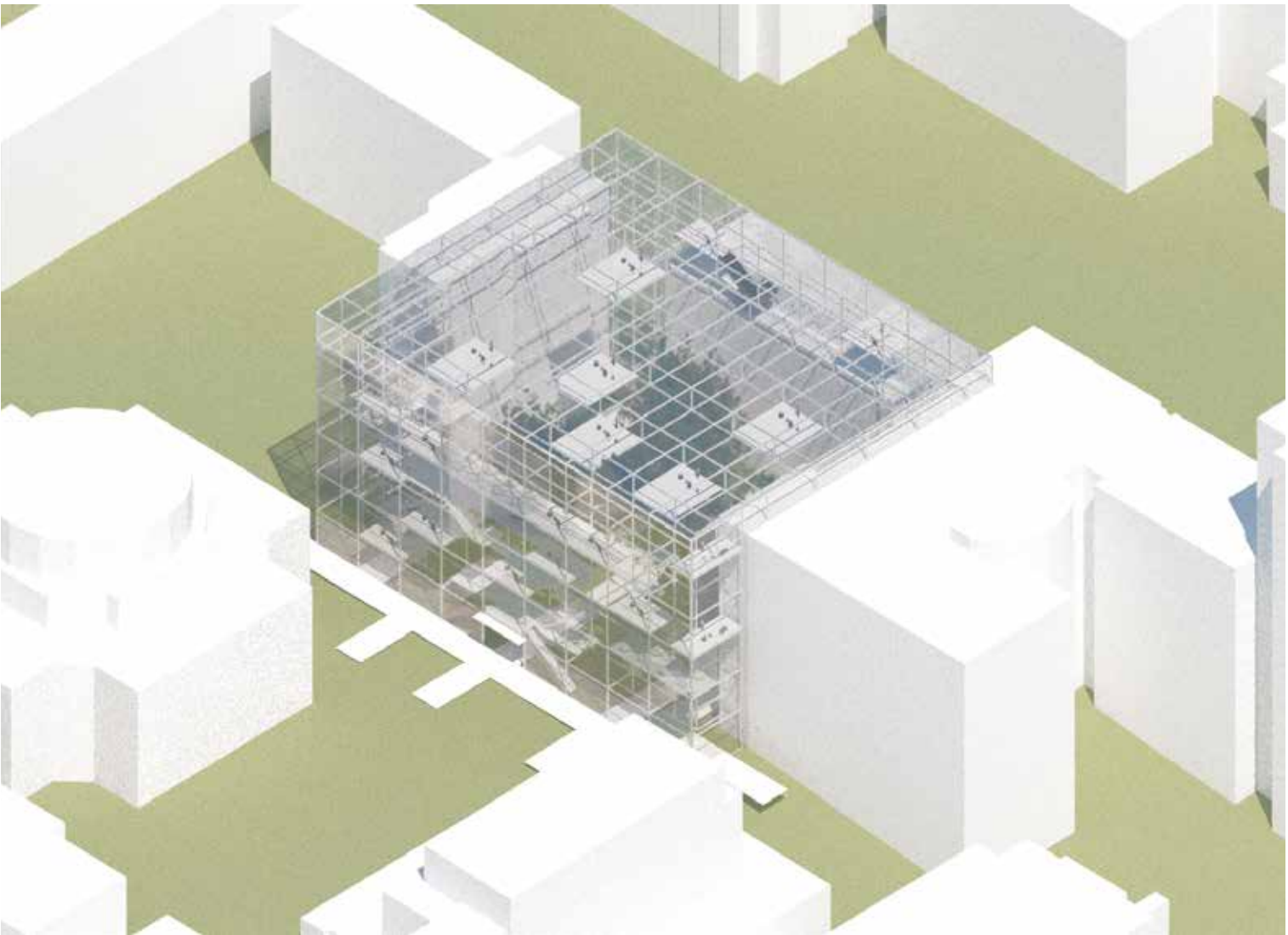
Individual / Role : Designer / Critic : Yui and Takaharu Tezuka

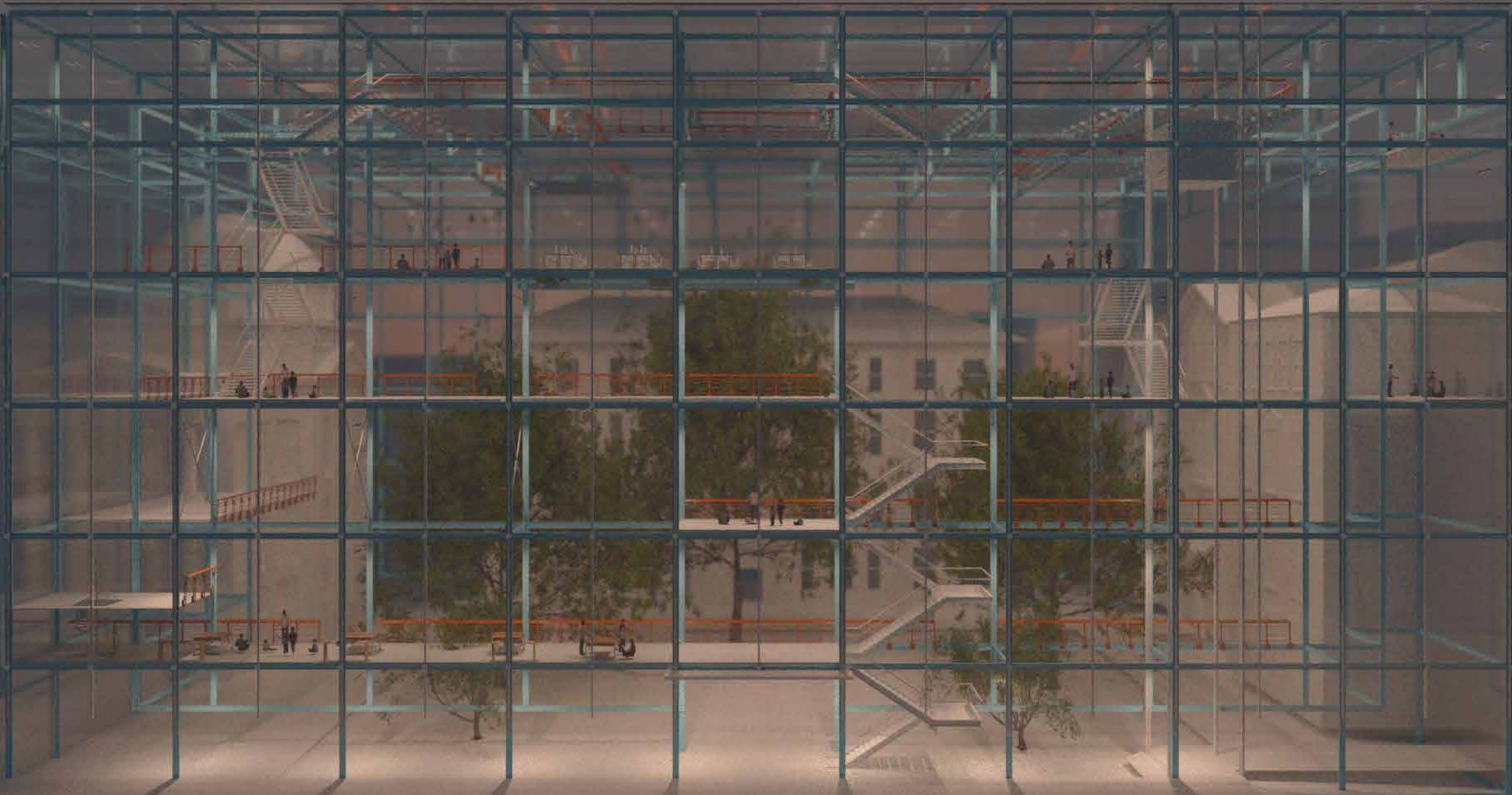
This project reimagines the school as a greenhouse-like environmental vessel organized between 地 and 天. At the ground, 地 is a pedagogical landscape of embodied learning: messy, loud, playful, and ecological, where students encounter trees, soil, water, and climate directly. At the roof, 天 becomes a quiet, luminous attic for reflective learning through reading, contemplation, and observation, suspended between tree canopy and sky.

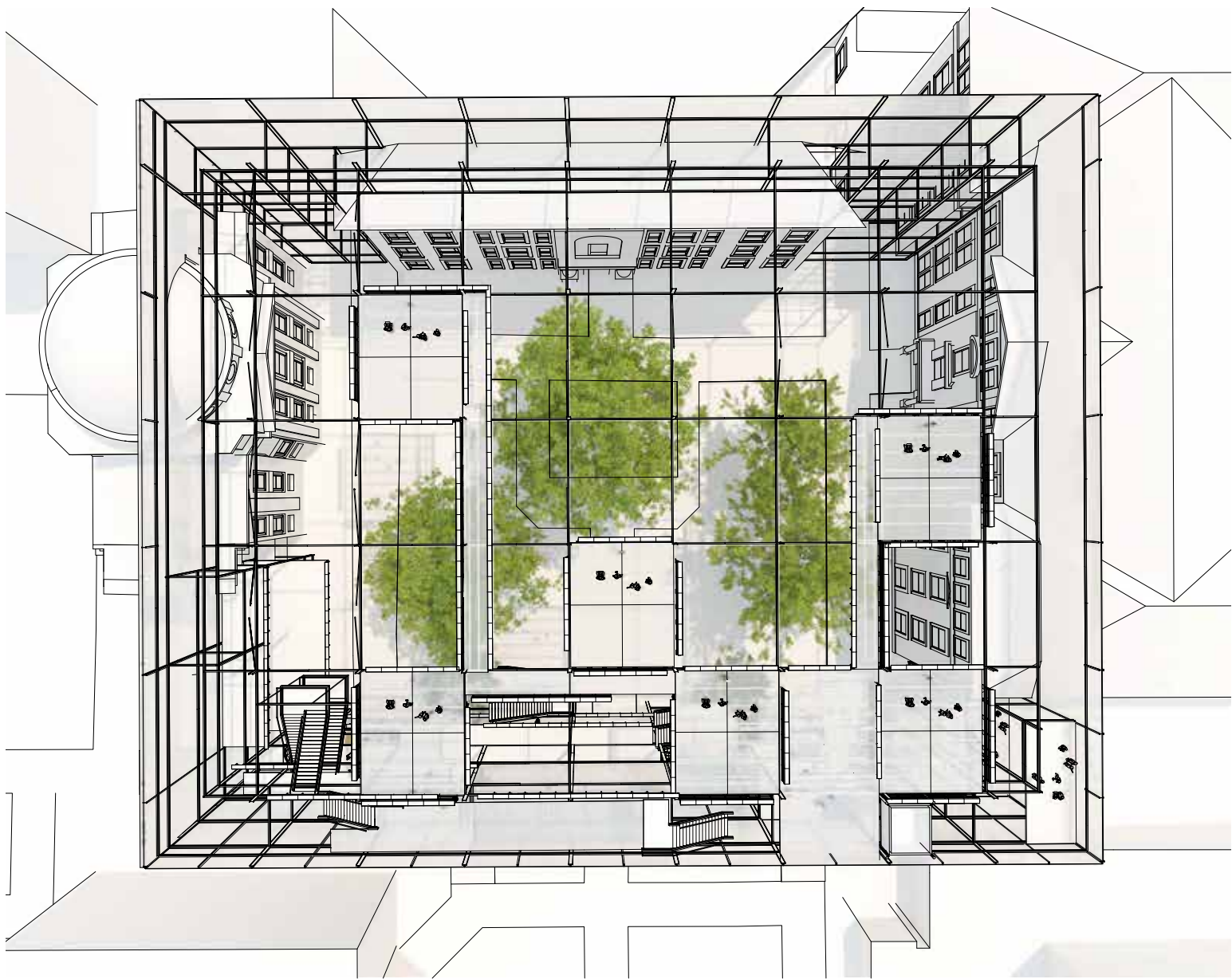
► What if a school is also a greenhouse?

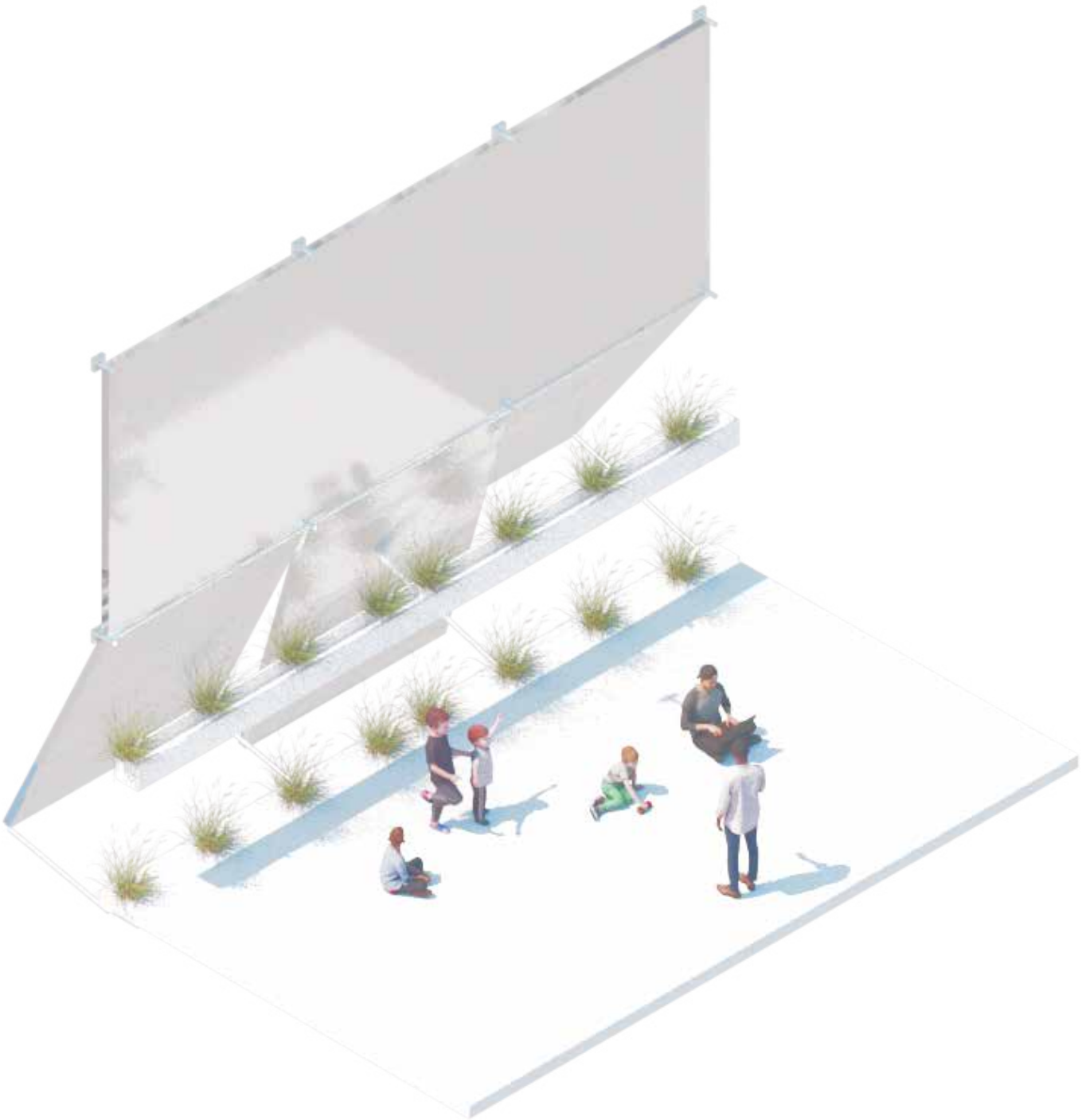


early ground floor plan concept sketch











IRONBOUND AIR GARDEN

Individual / Community Air Filter / Critic : Maria Linares Trelles

The strucutral intervention intervenes the on going damage of pollution and hiding that is burdening the Ironbound air by actively archiving modern pollutants through its facade while serving the community as a gathering place.

- How can you make a building breathe through passive environmental design?



PAVILION AXON PROPOSAL

COVANTA ESSEX WASTE TO ENERGY PLANT IN OCT 2020 ILLEGAL PESTICIDES BURNED CAUSING PURPLE PLUMES

INCINERATION - SECURITY THROUGH BURNING CONVENTION

1939 REDLINE ZONE

HIGHEST MINORITY RATE
LOWEST LITERACY RATE
HIGHEST POVERTY RATE

260'
200'
100'
0'

INTERSTATE 95

VISIBILITY LAYER

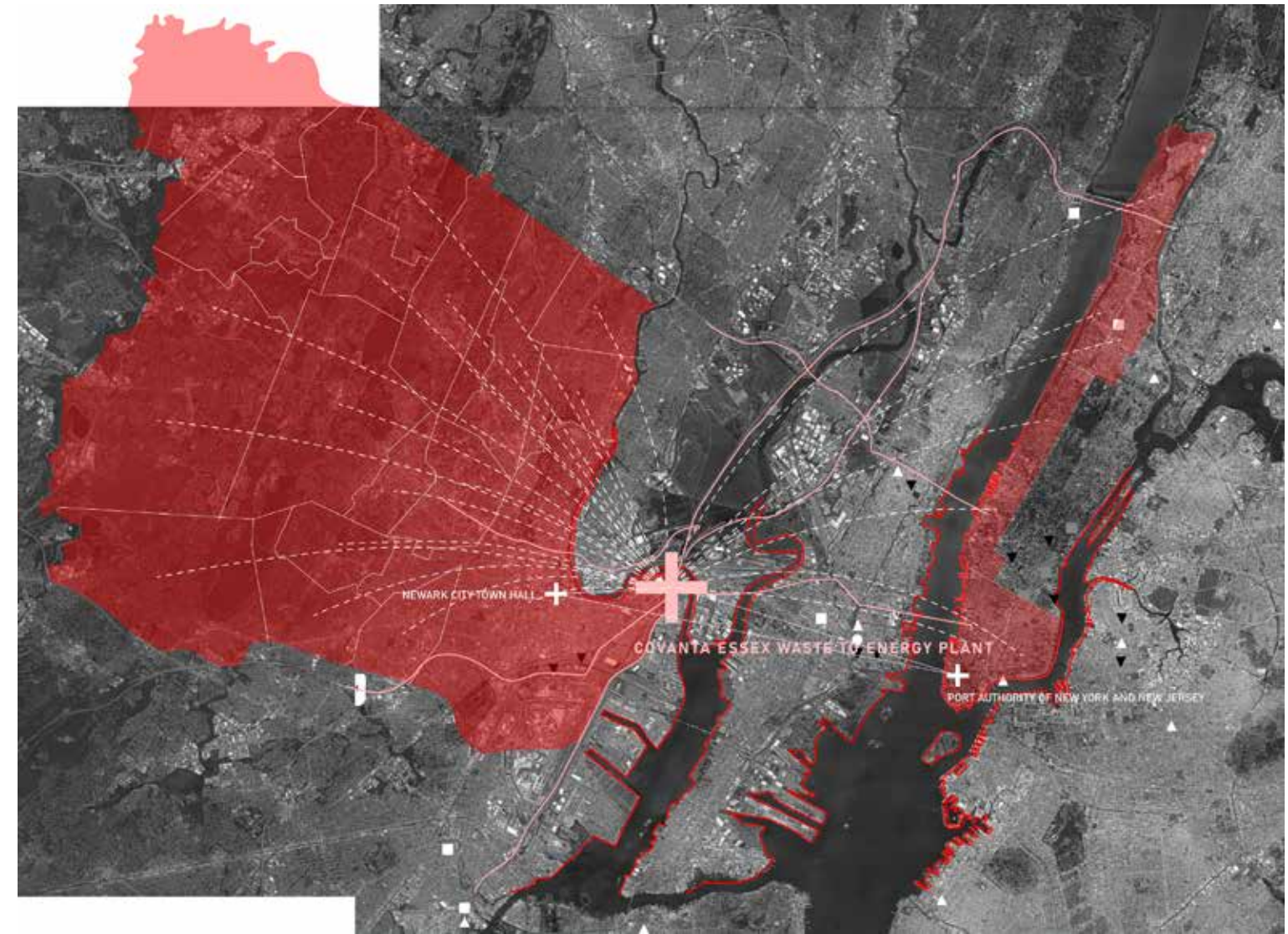
OVER 2000 TRUCKS STOP THROUGH PLANT
- BLACK CARBON
- PARTICLE POLLUTION

HIGHER RATES OF LUNG CANCER AND HEART DISEASE FOR ENERGY TO WASTE WORKERS

73 EPA INFRACTIONS, \$3,000,000 IN FINES

1985 2024

SITE AND DAMAGE DIAGRAM



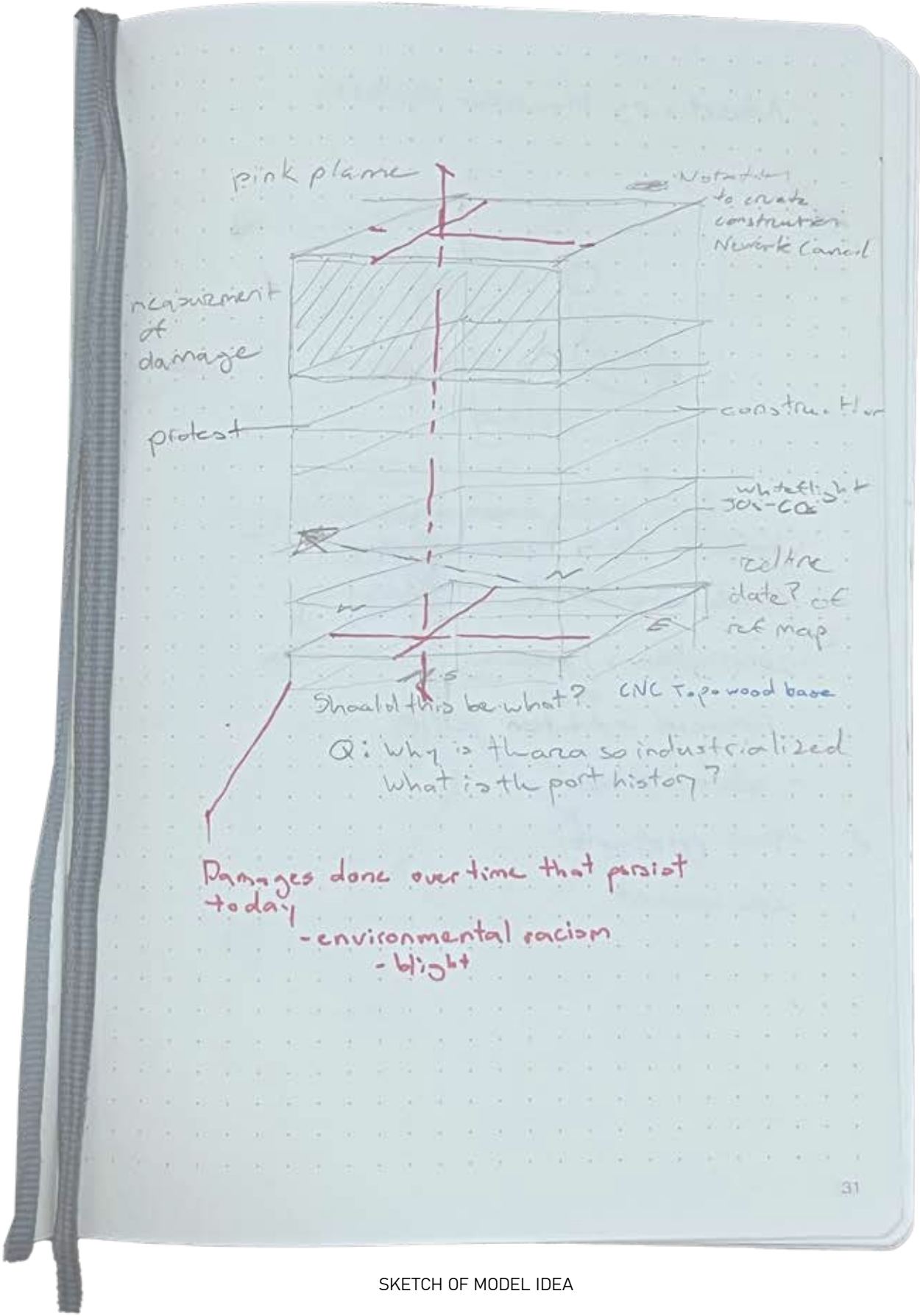
The map intends to display the amount of waste the incinerator must deal with and prompt readers to think of the biological toll it has on the community living near the incinerator.

The map also represents the location of key decision makers that permitted the construction of the incinerator. This is to point out how the community that it was placed in were not represented.

DECISION MAKER ANALYSIS



TIME MODEL MAPPING INFRASTRUCUTAL DAMAGE



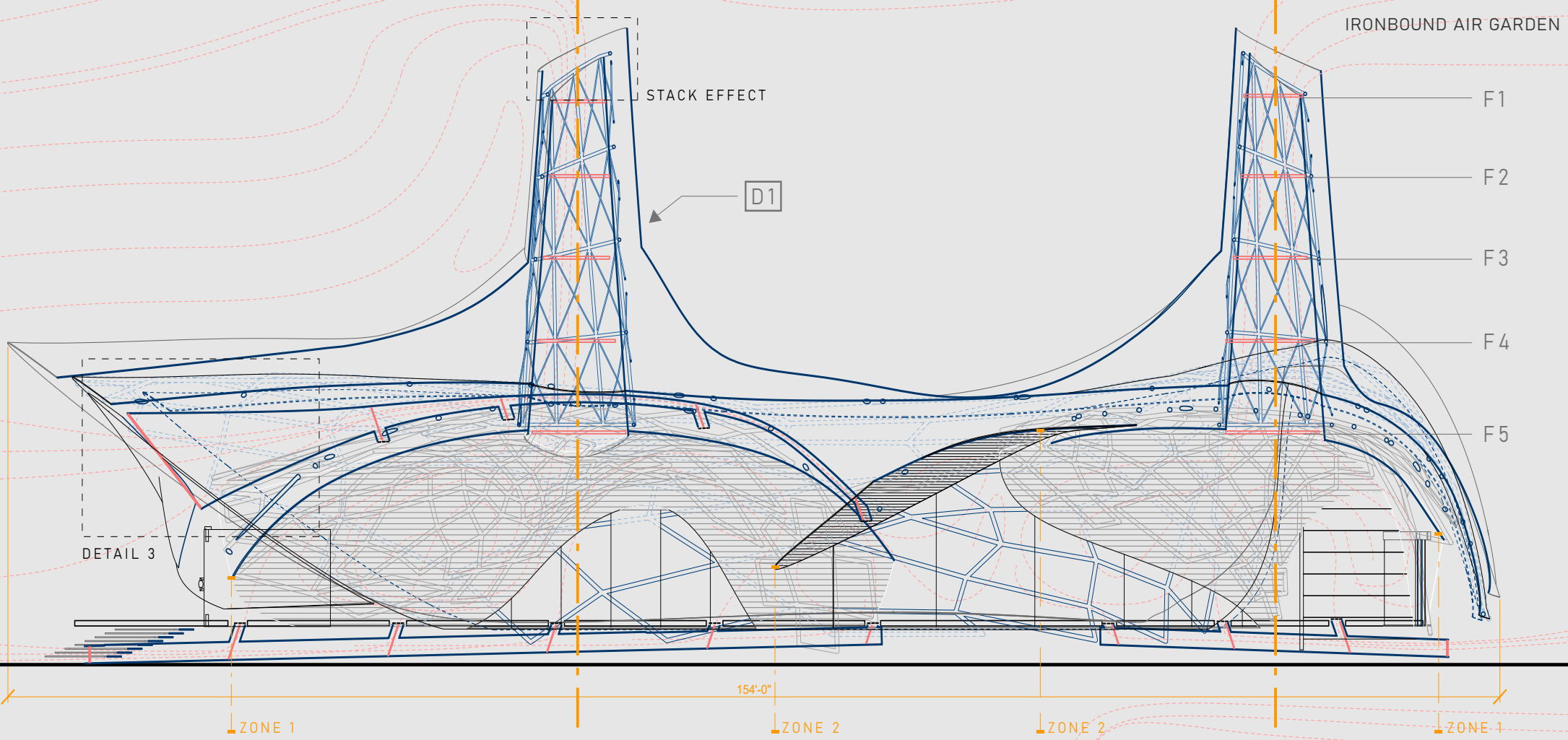
SKETCH OF MODEL IDEA

IRONBOUND AIR GARDEN

AIR PURIFICATION COMMUNITY CENTER

AIR SENSOR | AIR PURIFIER

NEWARK NJ

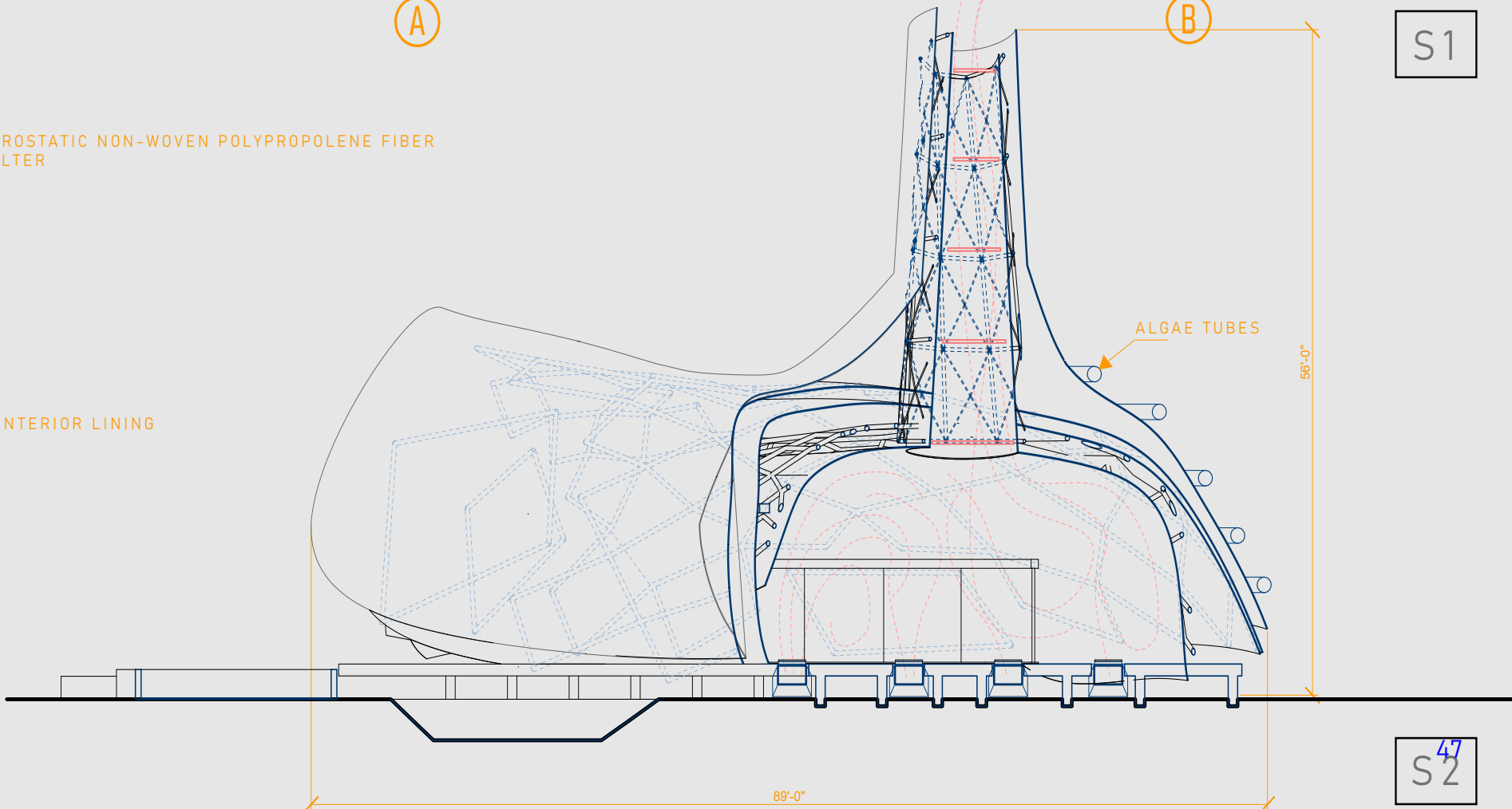
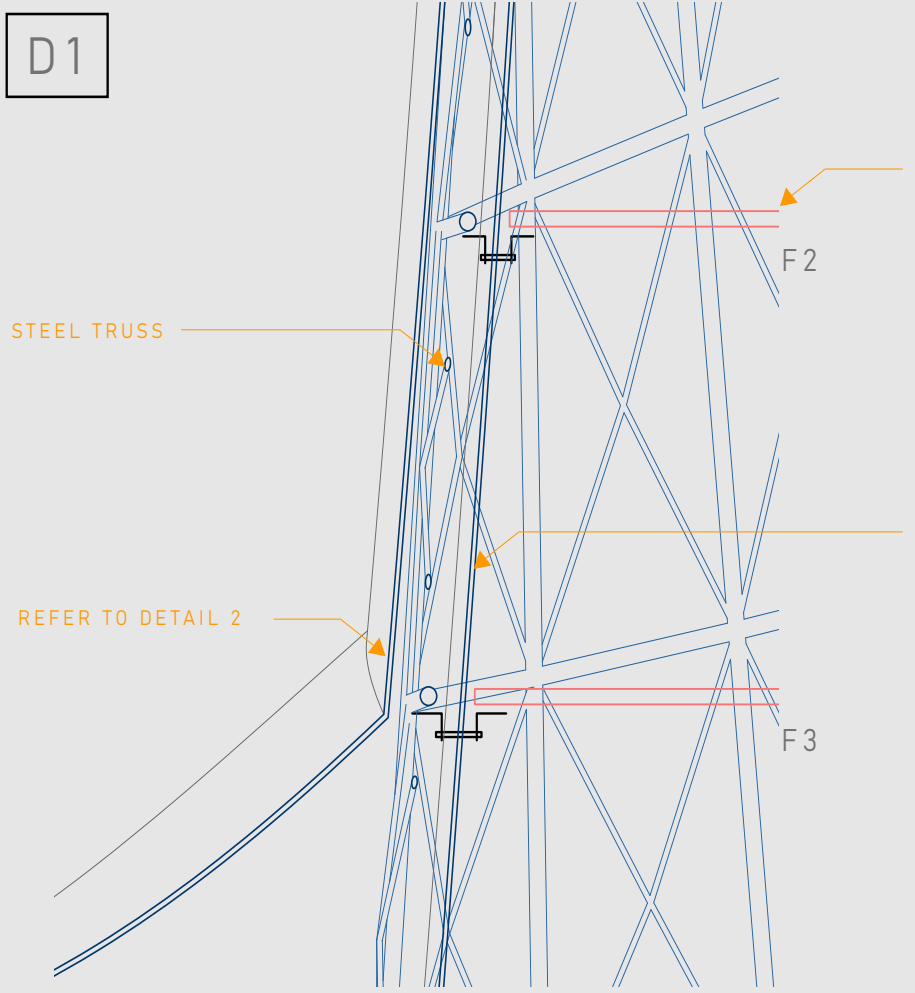


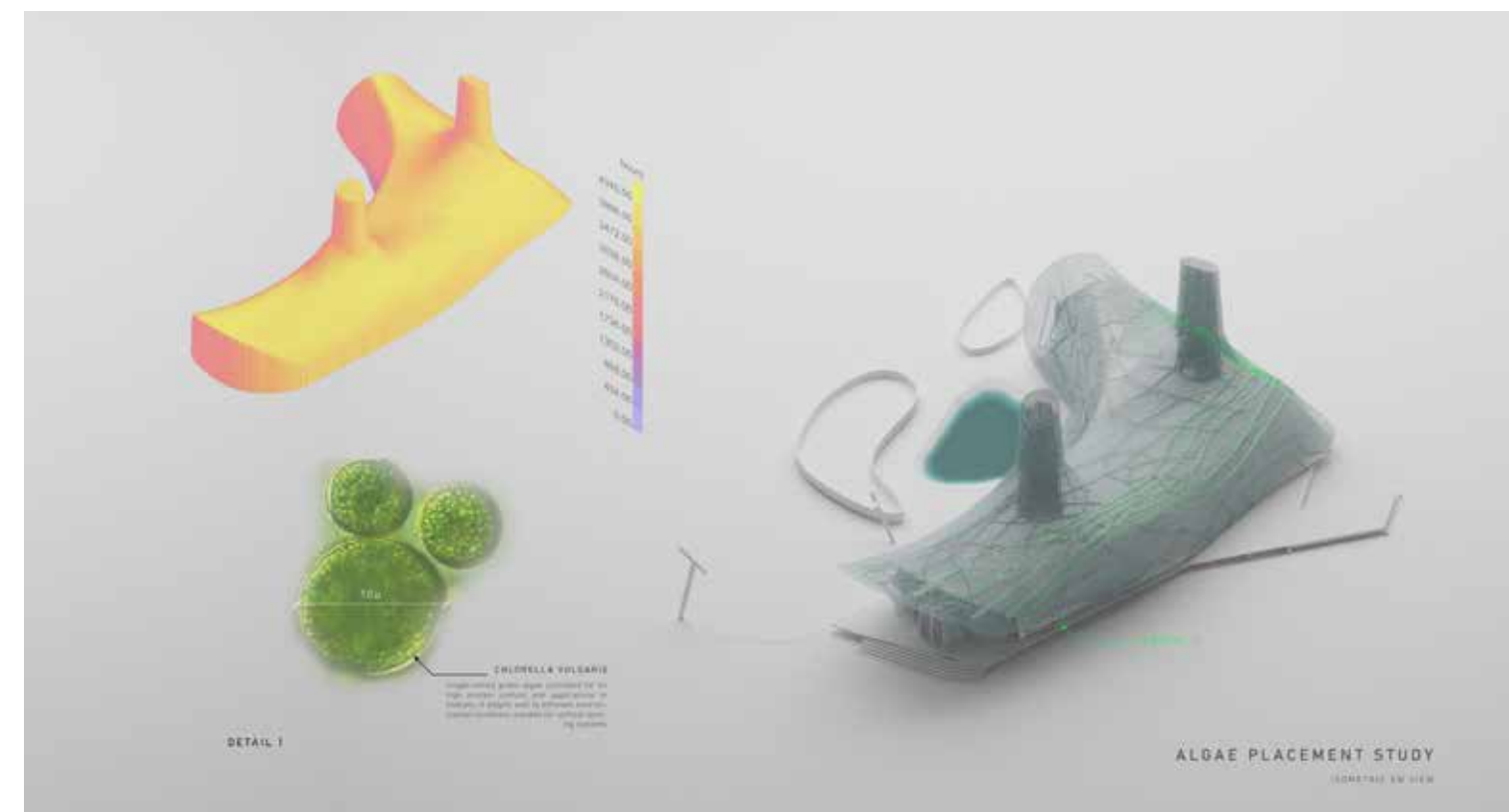
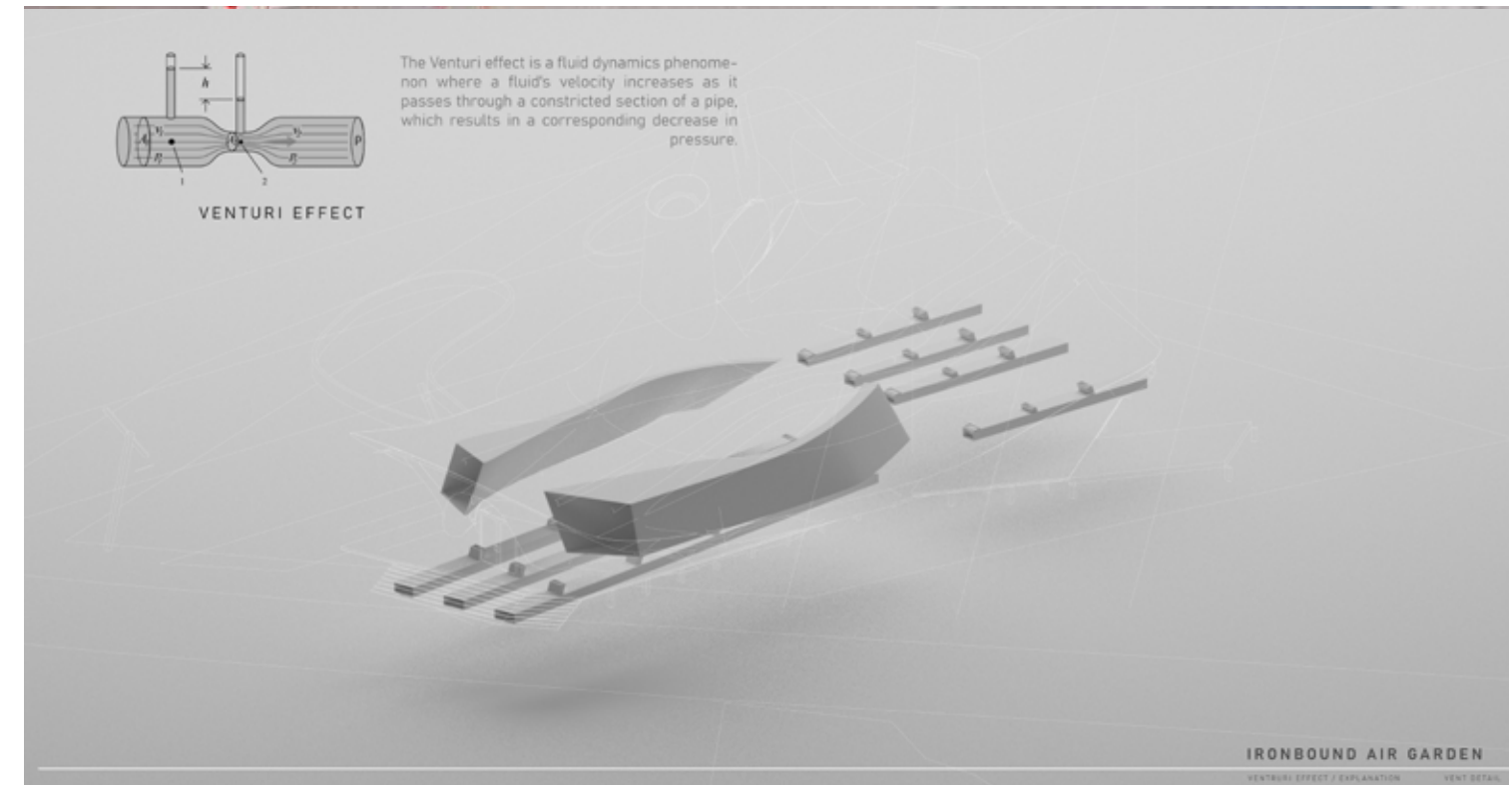
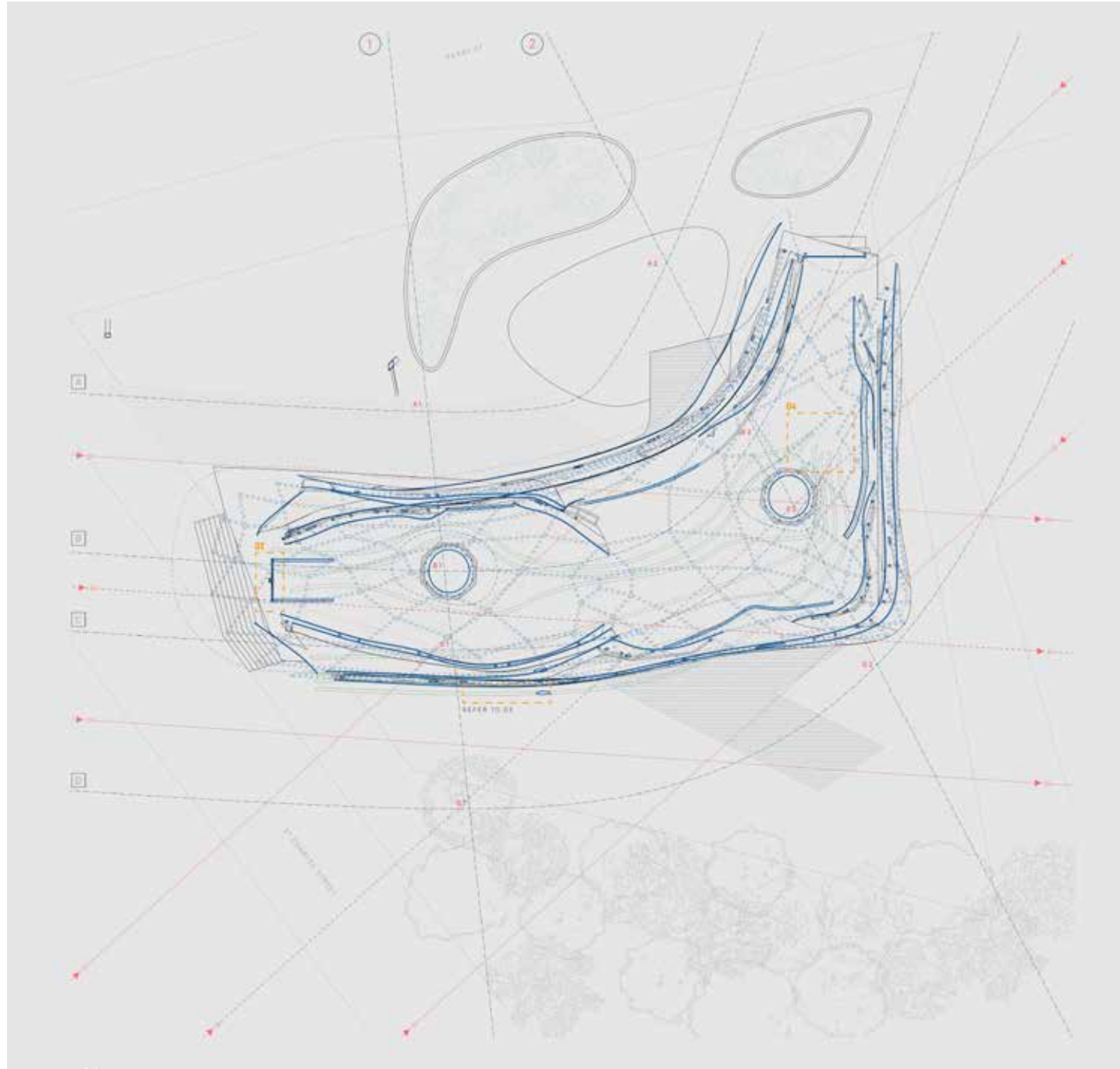
D1

A

B

S1







INTERIOR RENDER OF PAVILION



MARKET MUSEUM

Individual / Role : Designer / Critic : Amale Andraos

Little Syria was a culturally rich and diverse enclave residing in the Lower East side of Manhattan. The lively populaltion was displaced due to major infra-structural construction destroying the community. The brief is to design an Arab Museum that celebrates the culture of Little Syria. The design of the building questions what a typical museum should be by combining a market with historical artifacts as a distributor for engaging in what the Arabness of a museum should be.

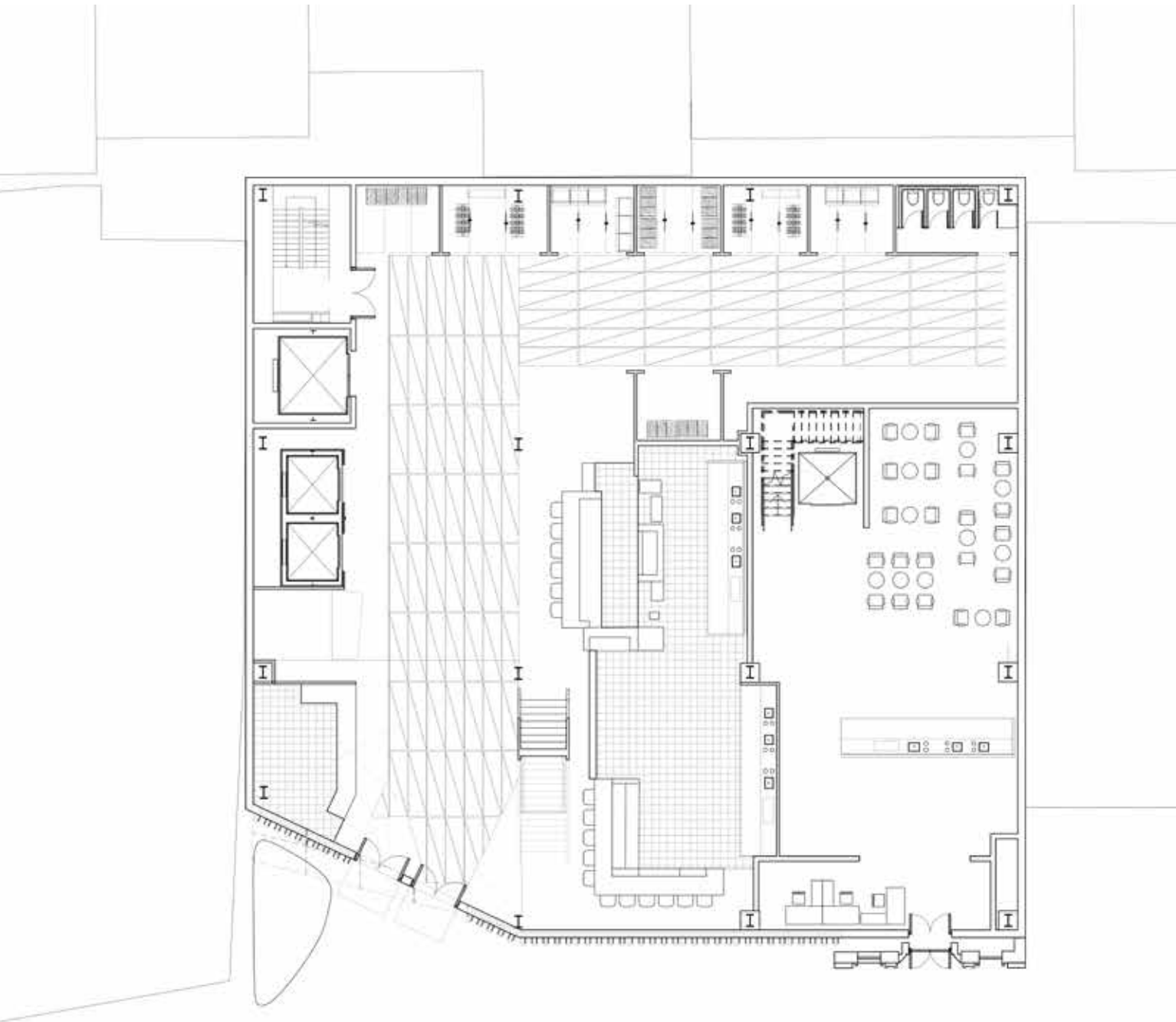
► [How can you redefine conventional museums?](#)



Peddler in Little Syria | NYC



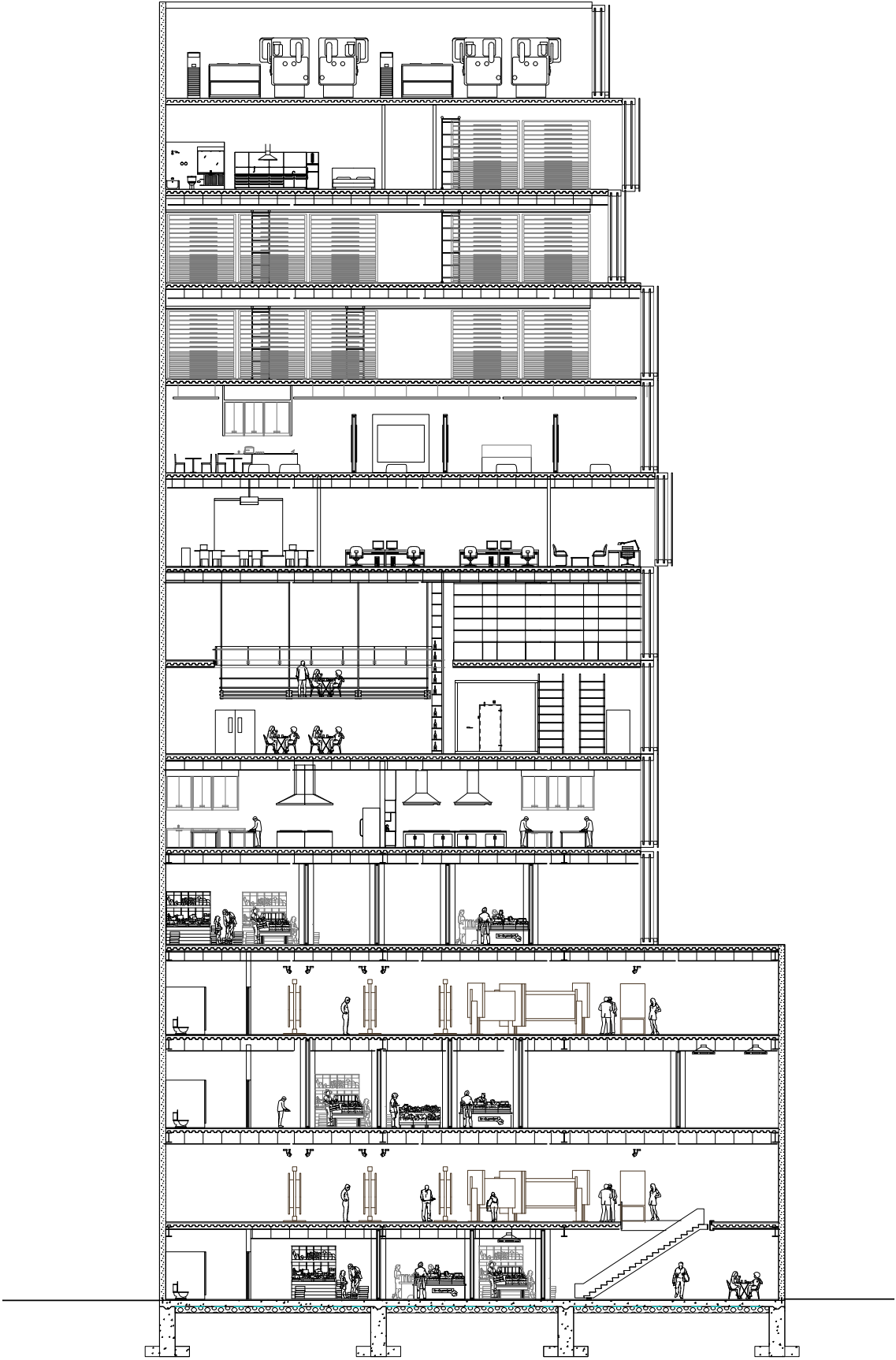
1/16" MODEL



ENTRANCE RENDER

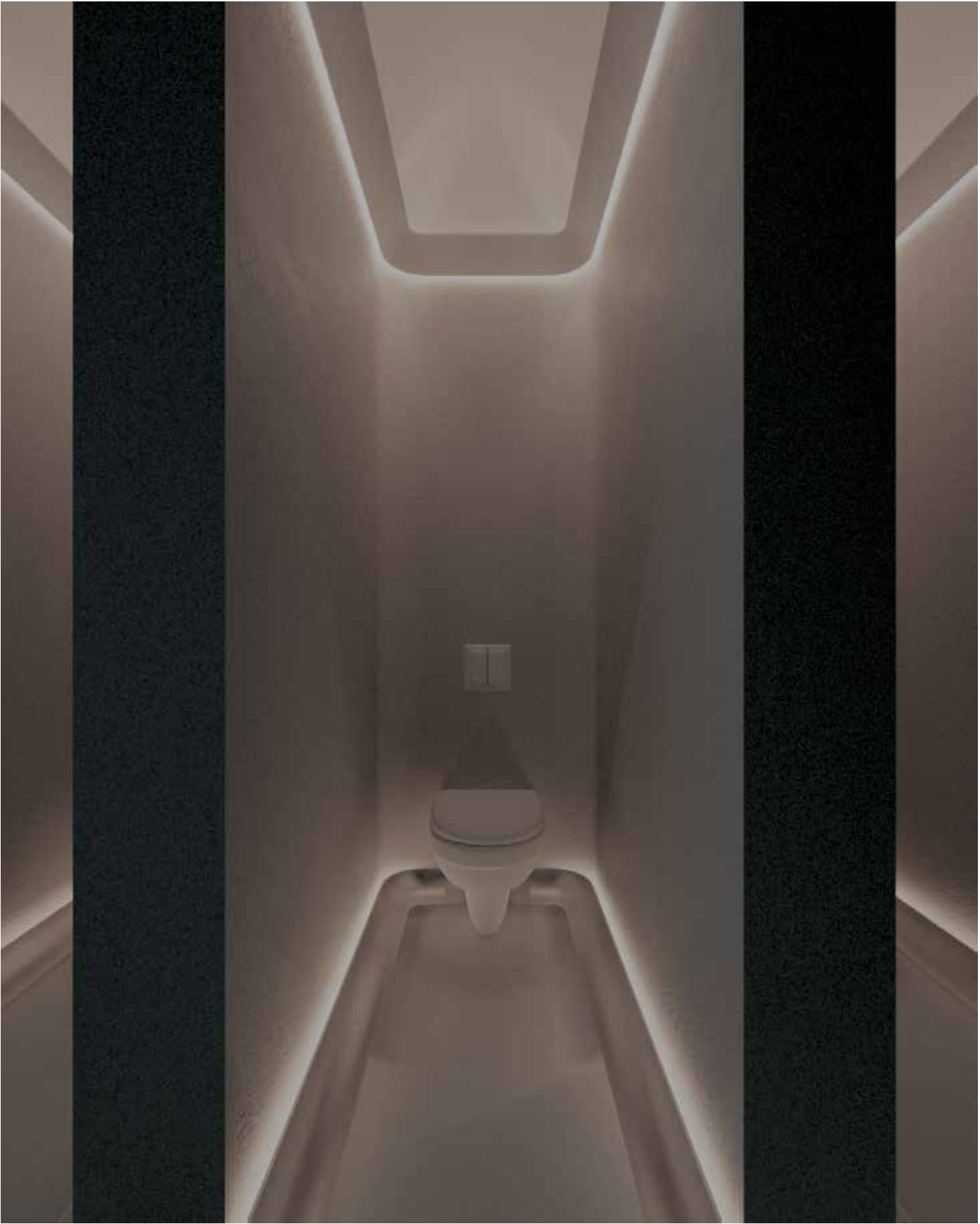


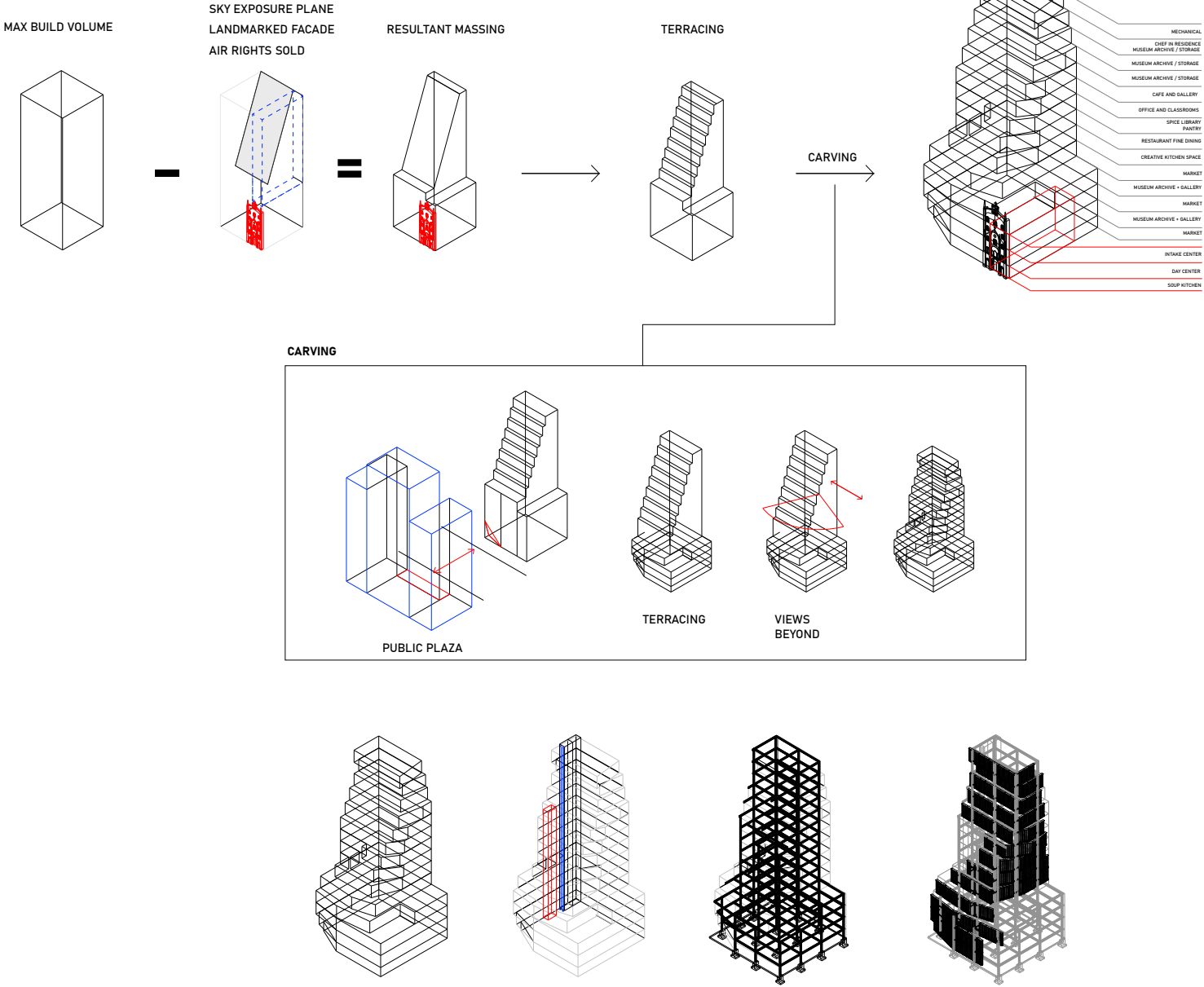
RESTAURANT RENDER



LONGITUDINAL SECTION







TURTLE ISLAND

Individual / Role : Designer / Critic : Carlos Medellin

This project reimagines architecture as an apology to Manhattan's erased landscape. Inspired by the Lenape Turtle Island story, a moving "turtle" travels from Christopher Street Pier through sites of protest, memory, and consumption, revealing the island's lost forests, wetlands, and shoreline while asking what Manhattan's future should become.

- ▶ What used to be here before NYC?



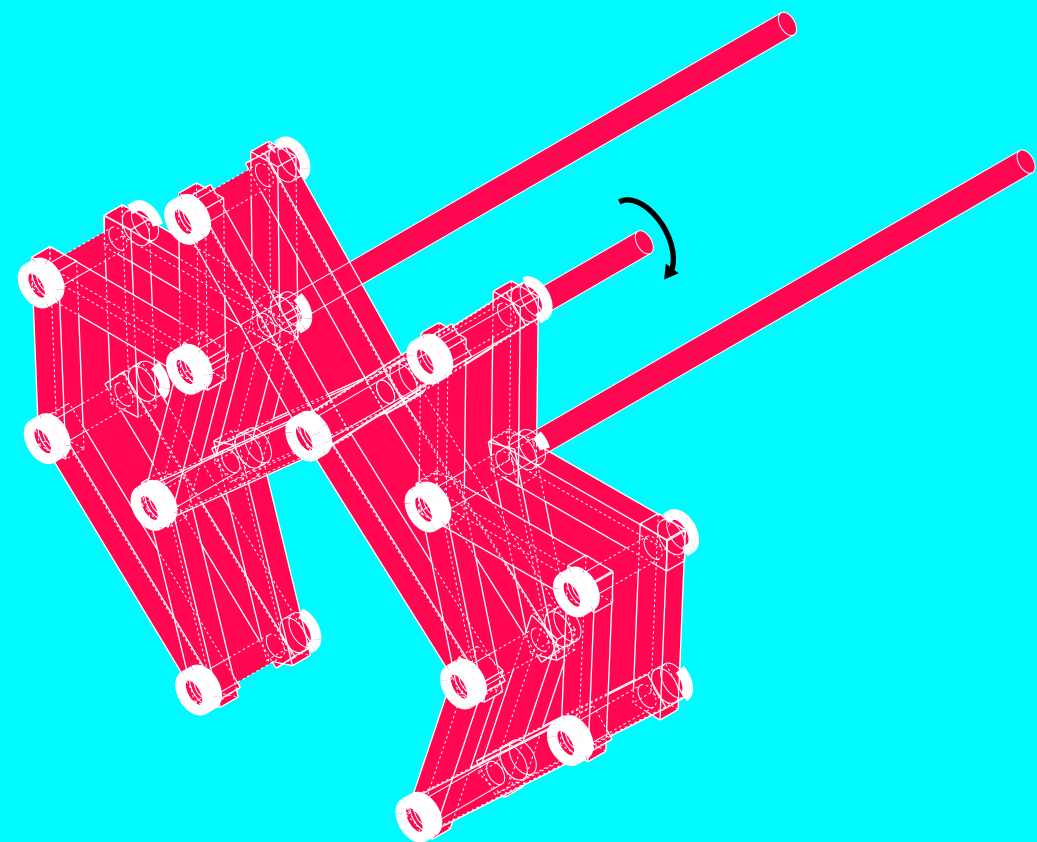
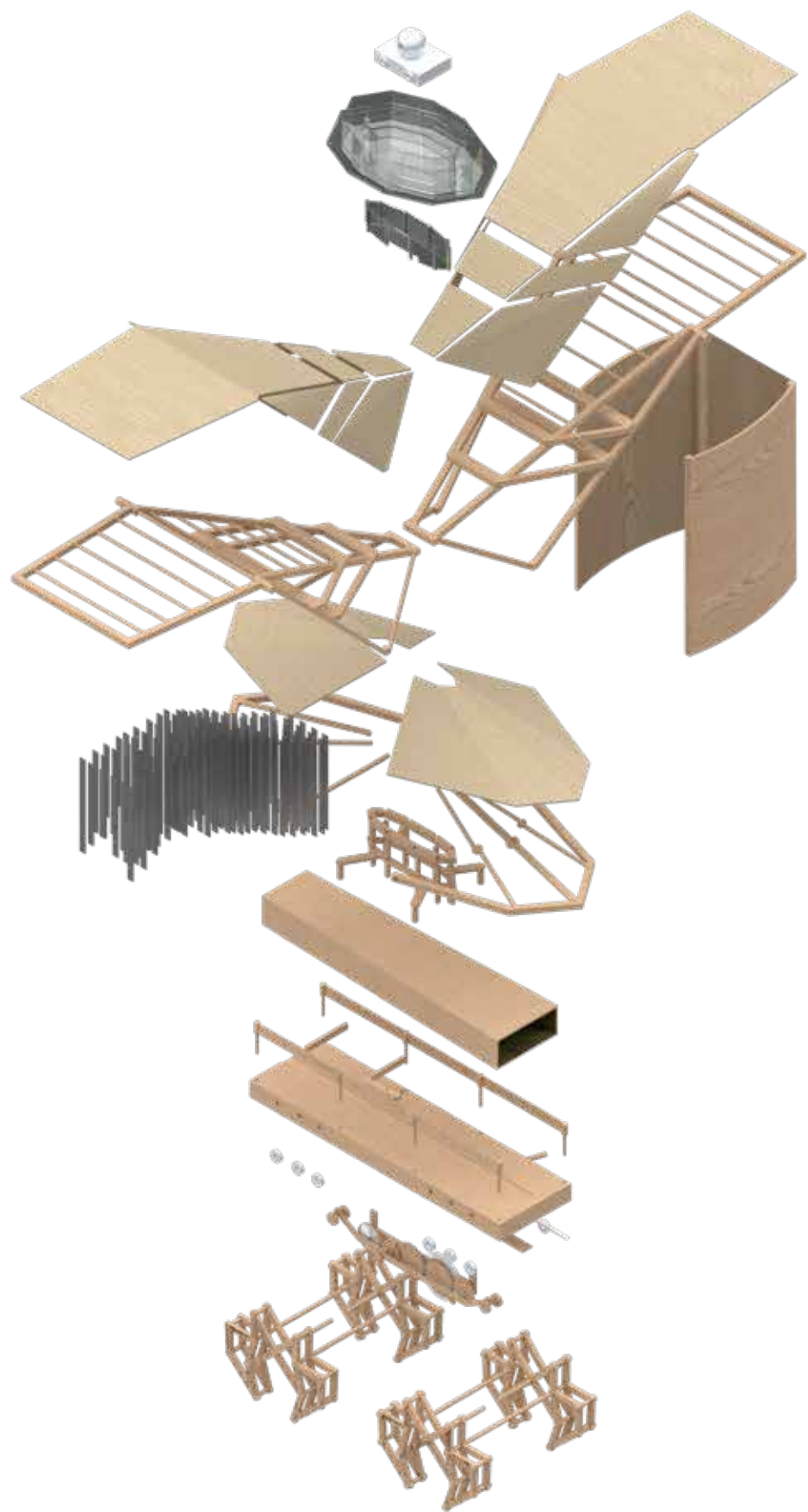
Manhattan Island 16th century





After the turtle is constructed, the turtle begins to move towards Washington square park. At this park, the beast will have its second performance, which is a projection of the forest and wetlands that used to exist onto the iconic washington square arch. This occurs because of Washington square park's historical context where protests occur. The turtle solidifies its stance as an act of protest and apology by acknowledging the present context of the site and overlaying it with the past landscape.

The turtle then makes its way down to Greenwich village and SoHo. The area's significance was being the last Lenape village and a heavy emphasis on consuming perpetuated by capitalism. This capitalism is framed and contrasted through the cone of mirrors designed to engulf the viewer to be able to immerse themselves (render) in what the area used to be like. The intention of the design here is to make viewers question the peculiarity of buying, displaying and selling merchandise when everything that was needed was sourced from the land by the lenape indians.



JANSEN LINKAGE

It is efficient mainly because it gets a leg-like walking motion from a single rotary input and only one degree of freedom, so control is simple and the motion can be smooth. That is one reason it is attractive for walkers, kinetic sculptures, and some legged robot studie

PORT NEWARK HOTEL

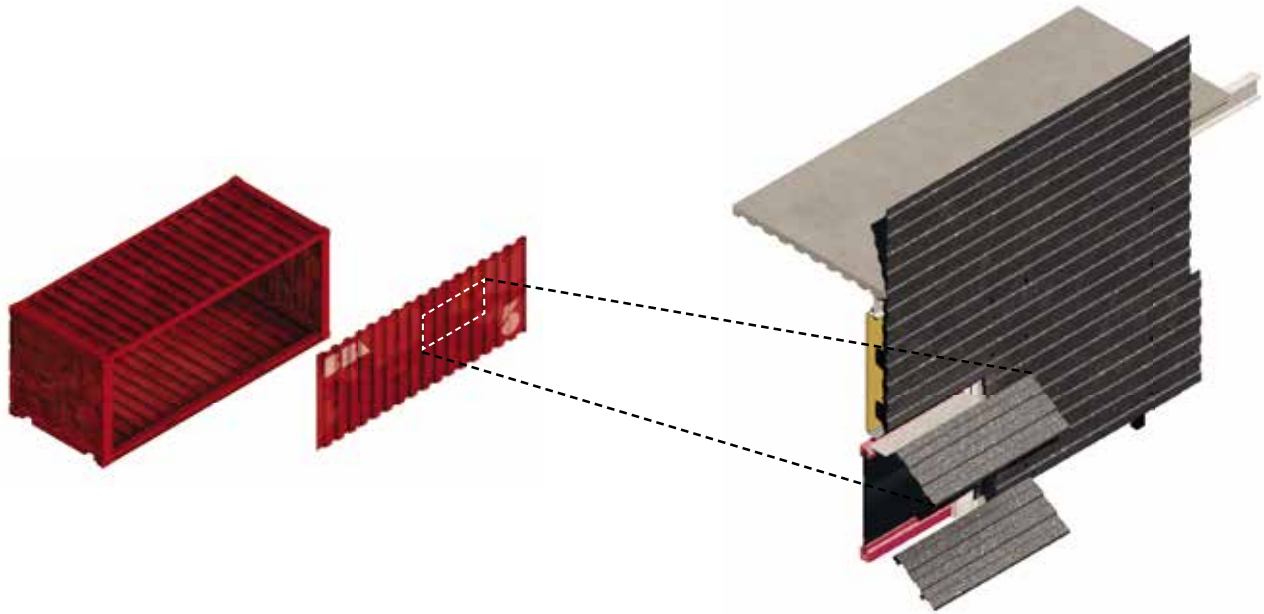
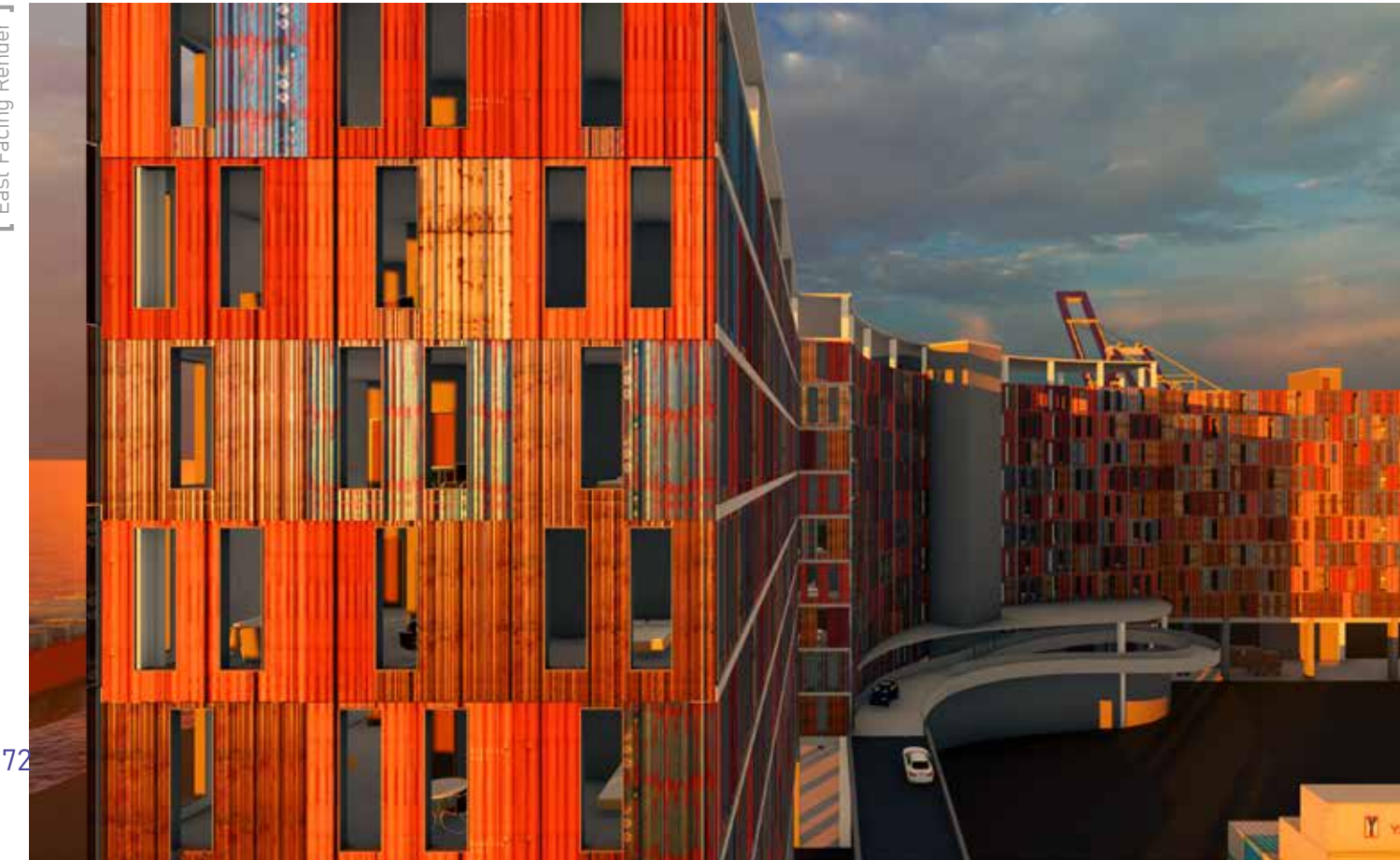
Group work / Role : Facade + Detail Development / Critic : Berardo Matalucci

Collaboration with 'Eiwa Colburn, Lorennah Granfors, Jonah Johnson, Jagger Ugy

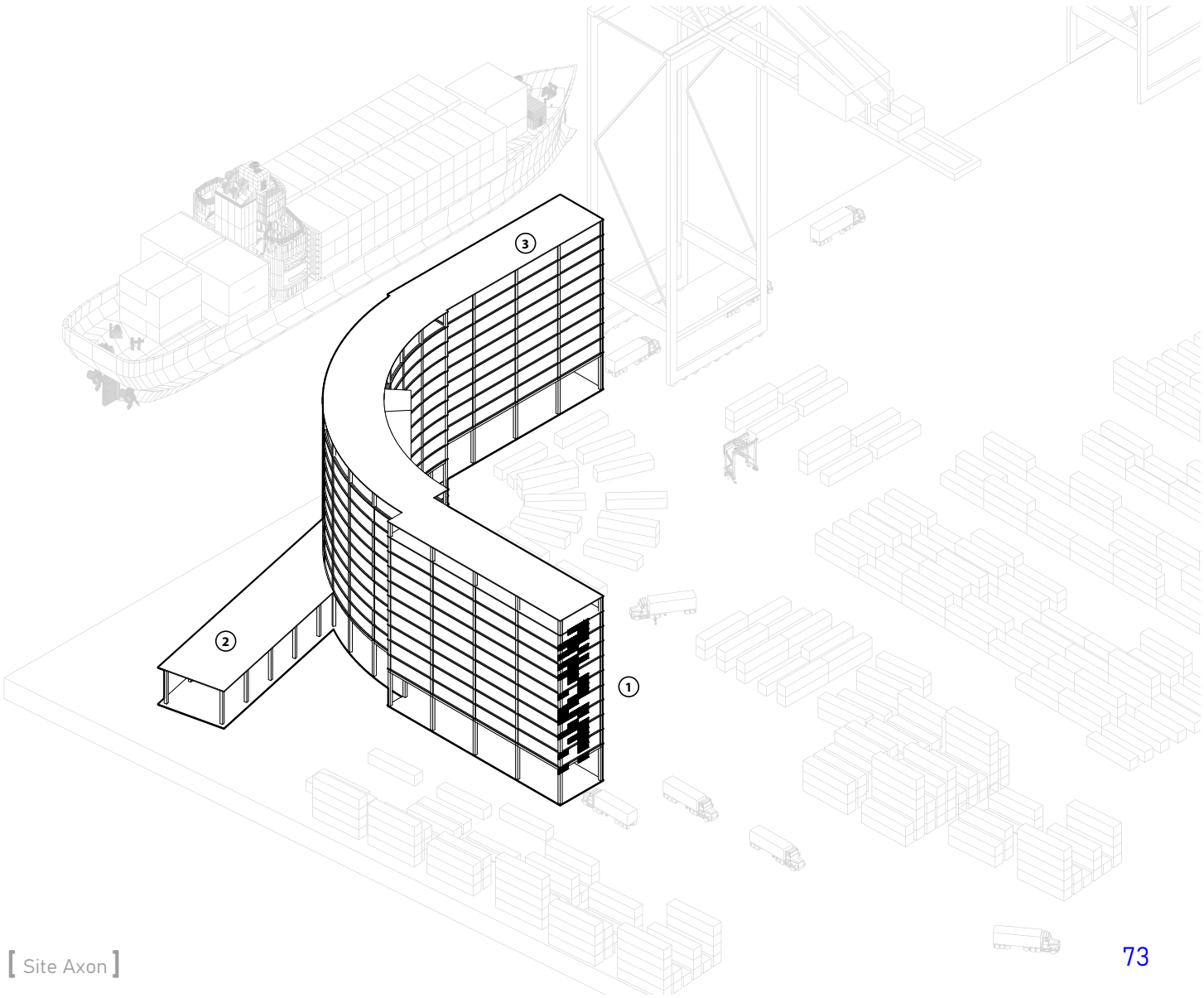
The class **focused** on the **SD** and **DD** part of the **design process**. The building was inherited from another student's studio project as part of the assignment, with the focus on how **technical design** can **enhance** the **concept** of the project.

The project is a commentary on the destructive scale of infrastructure required to sustain NYC consumption habits by placing a hotel in the heart of the Newark Port to showcase the shipping system as a spectacle for the guests.

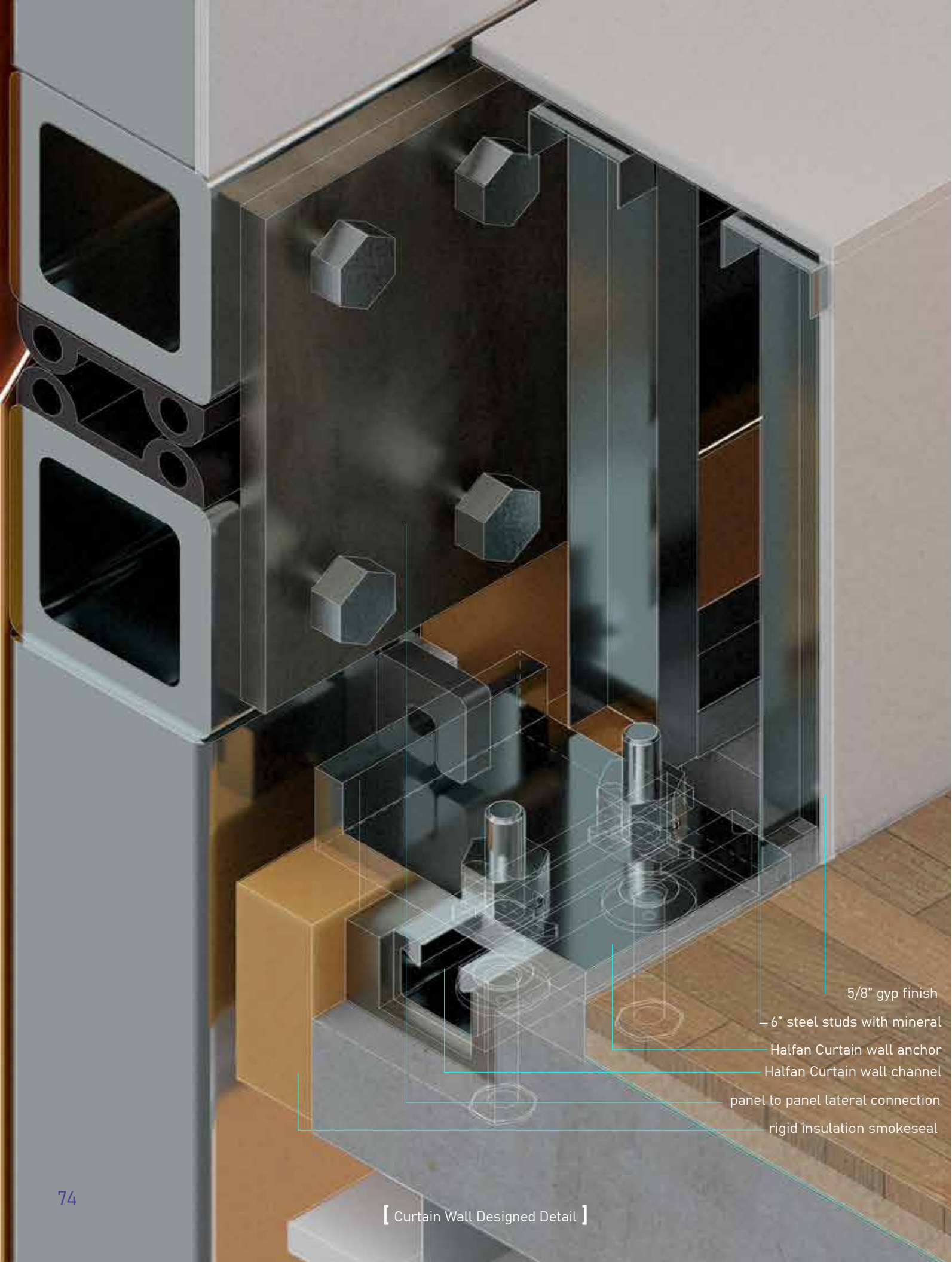
► How can you enhance a concept through technical assmebly?



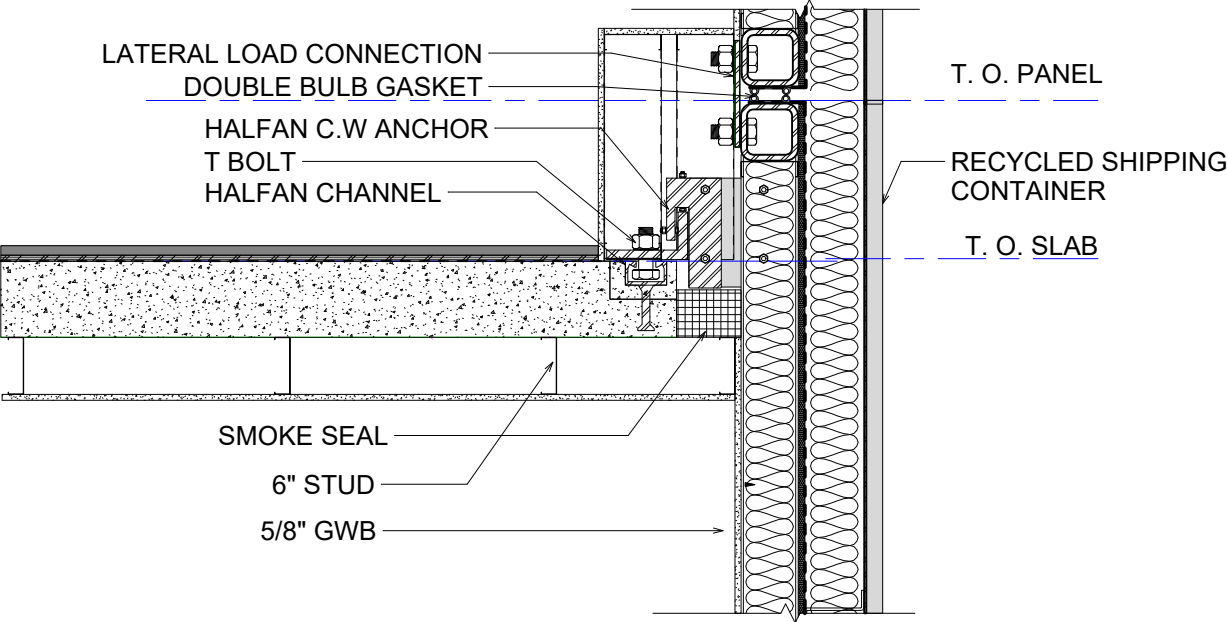
[Facade Concept Diagram]



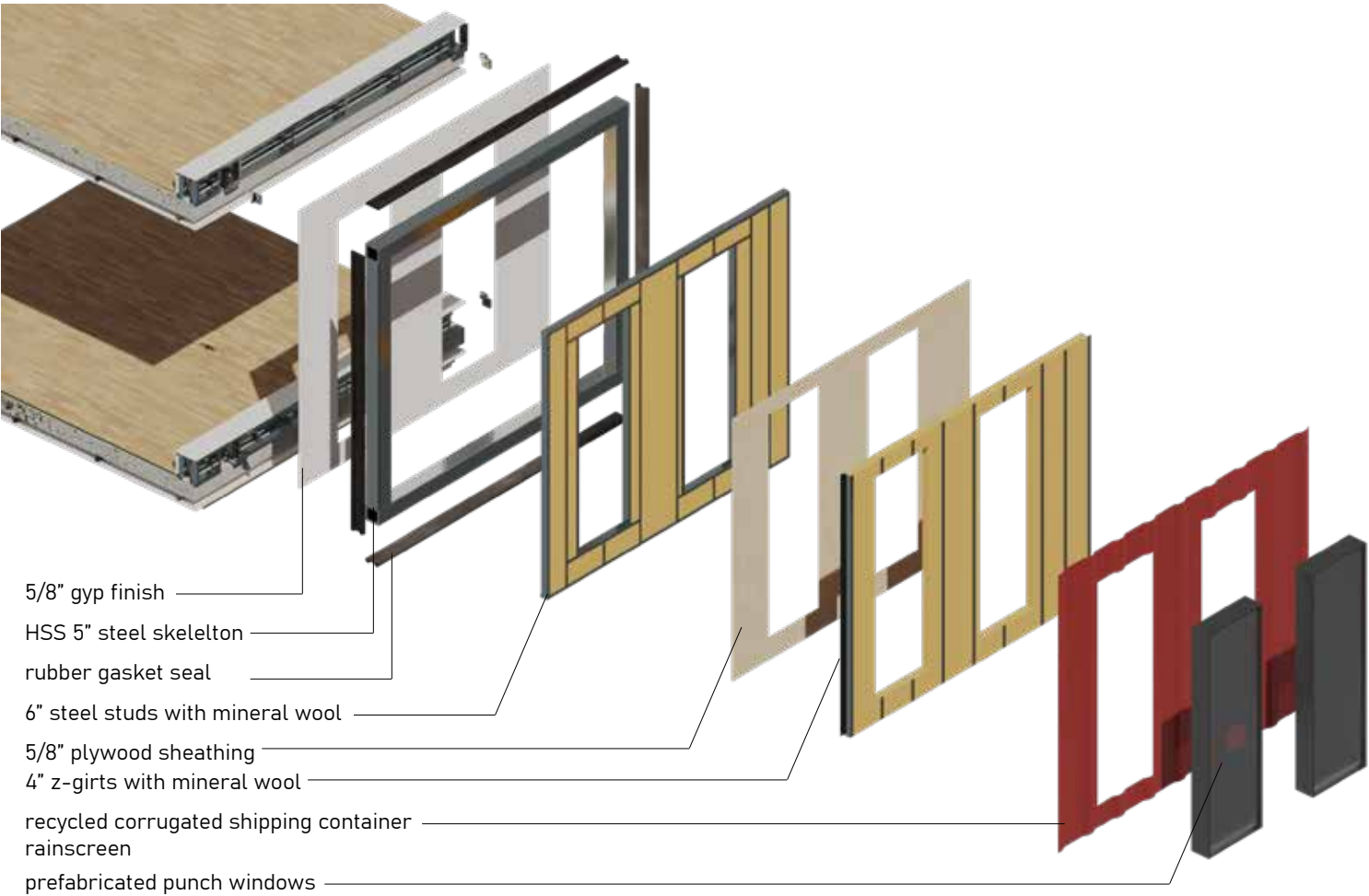
[Site Axon]



[Curtain Wall Designed Detail]

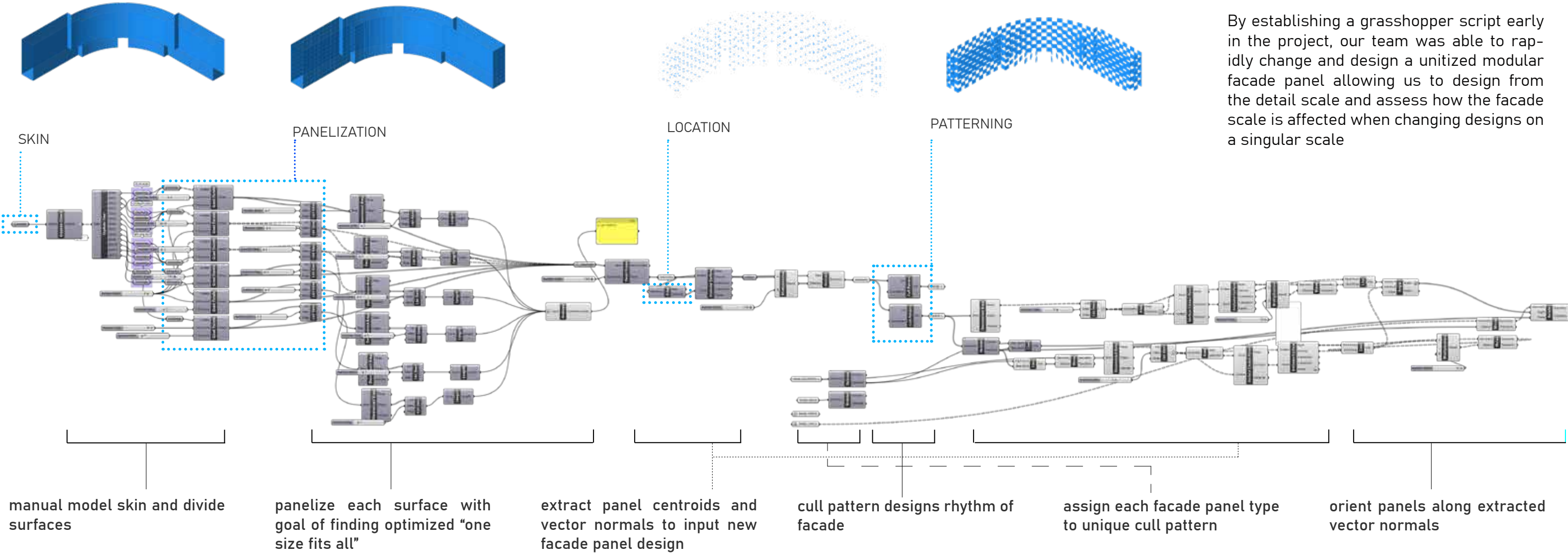
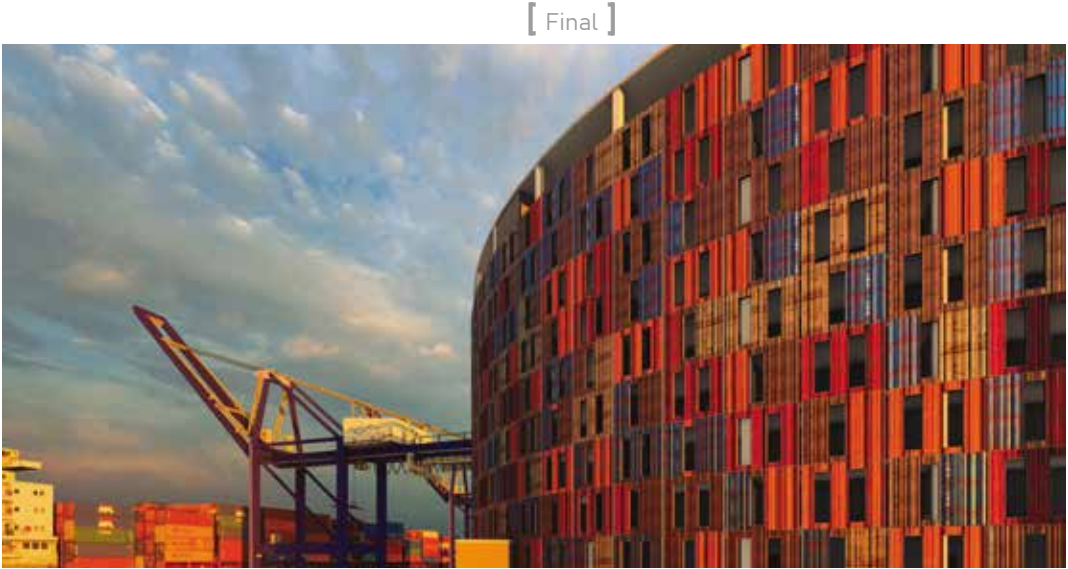
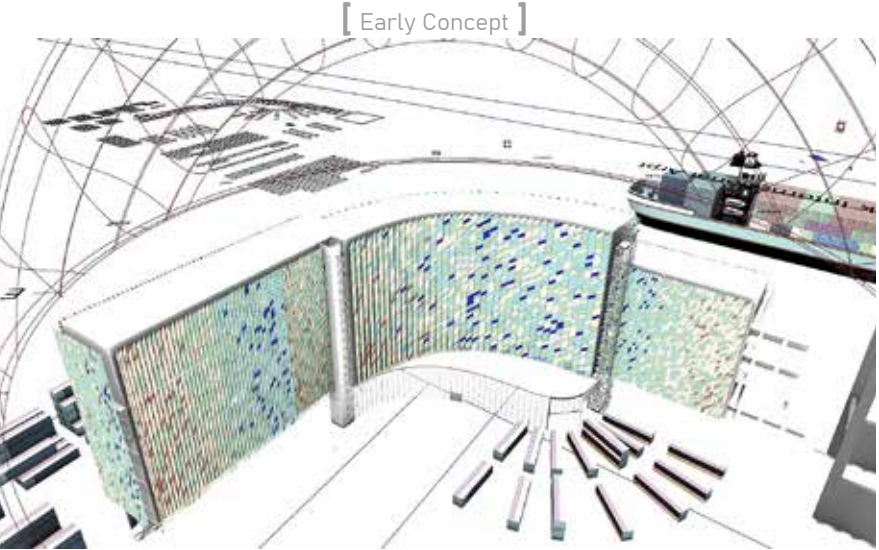


[Panel to Slab detail]



[Exploded Axon Single Panel]

computational workflow



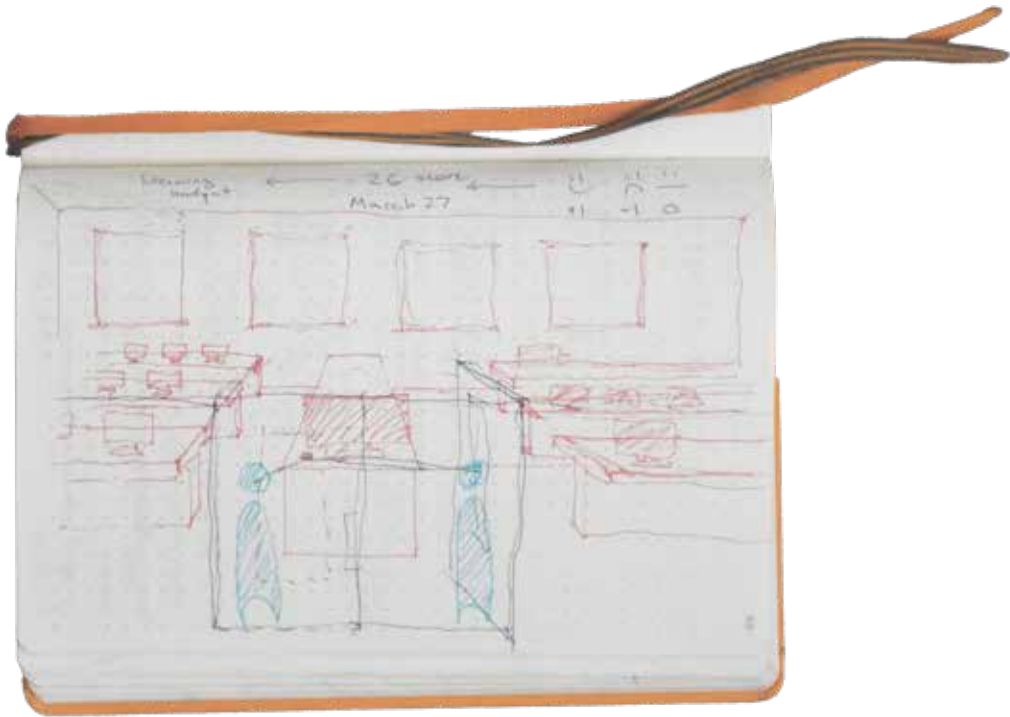
READING SPACES

Individual / Spatial Design + Computer Vision / Critic : Zachary White

When people walk into a room, people can **sense** the “**social atmosphere**” or “vibes” of a place.

The project seeks to **visualize the ebbs and flows of social space** within architecture studio room.
The project focused on the **entrance to the studio** as the main threshold for **quantifying** of the mindset one holds toward one-self. I explored how to measure the emotional being of a collective class through a python script that can be visualized into a drawing taking into account who enters the space contributing to the collective vibes of the studio space.

- How can I visualize the collective emotion of a class?



[initial sketch proposal]

```
import cv2
import numpy as np
import tensorflow as tf
from datetime import datetime
from tensorflow.keras.models import Model
from tensorflow.keras.layers import Dense, GlobalAveragePooling2D
from tensorflow.keras.applications.densenet import DenseNet201, preprocess_input
import os

# Ensure the directory exists
log_dir = r"C:\Users\12483\Downloads\ADR EMOTION DETECTION TEXT FILES\TEXT"
os.makedirs(log_dir, exist_ok=True)

# Path to save the log file
log_file_path = os.path.join(log_dir, "emotion_log.txt")

# Load DenseNet201 pre-trained on ImageNet without the top layer
base_model = DenseNet201(weights='imagenet', include_top=False, input_shape=(224, 224, 3))
x = base_model.output
x = GlobalAveragePooling2D()(x)
x = Dense(1024, activation='relu')(x)
predictions = Dense(7, activation='softmax')(x)
model = Model(inputs=base_model.input, outputs=predictions)

# Load Haar Cascade for face detection
face_cascade = cv2.CascadeClassifier(cv2.data.haarcascades + 'haarcascade_frontalface_default.xml')

# Camera settings
FRAME_RATE = 1
DISPLAY_TIME = 2

# Open a text file to log emotions
with open(log_file_path, "a") as emotion_log_file:

def process_webcam_feed():
    cap = cv2.VideoCapture(0)
    prev_frame_time = 0
    emotion_display_time = 0
    last_emotion = None

    while True:
        ret, frame = cap.read()
        if ret:

            new_frame_time = cv2.getTickCount()
            gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
            faces = face_cascade.detectMultiScale(gray, scaleFactor=1.1, minNeighbors=5, minSize=(30, 30))

            for (x, y, w, h) in faces:
                cv2.rectangle(frame, (x, y), (x+w, y+h), (255, 0, 0), 2)
                face_color = frame[y:y+h, x:x+w]
                resized_face = cv2.resize(face_color, (224, 224))
                current_emotion = detect_emotion(resized_face)

                if current_emotion != last_emotion and (new_frame_time - emotion_display_time) / cv2.getTickFrequency() > DISPLAY_TIME:
                    last_emotion = current_emotion
                    emotion_display_time = new_frame_time
                    emotion_log_file.write(f"{datetime.now()}: {last_emotion}\n")
                    emotion_log_file.flush()

            cv2.putText(frame, f'Emotion: {last_emotion}', (10, 50), cv2.FONT_HERSHEY_SIMPLEX, 1, (255, 255, 255), 2, cv2.LINE_AA)
            cv2.imshow('Video', frame)

            if cv2.waitKey(1) & 0xFF == ord('q'):
                break
            else:
                break
        cap.release()
        cv2.destroyAllWindows()

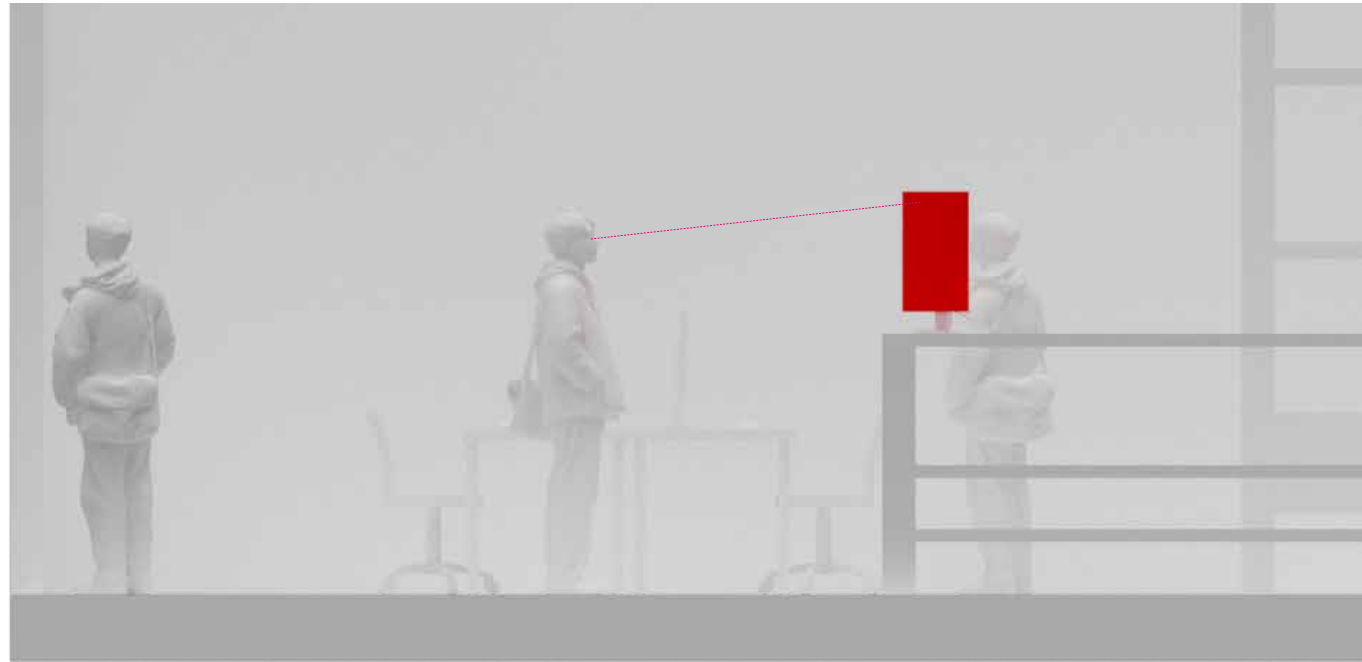
def prepare_image(img_array):
    img_tensor = np.expand_dims(img_array, axis=0)
    img_tensor = preprocess_input(img_tensor)
    return img_tensor

def detect_emotion(img_array):
    img_tensor = prepare_image(img_array)
    preds = model.predict(img_tensor)
    emotions = ['angry', 'disgust', 'fear', 'happy', 'sad', 'surprise', 'neutral']
    return emotions[np.argmax(preds)]

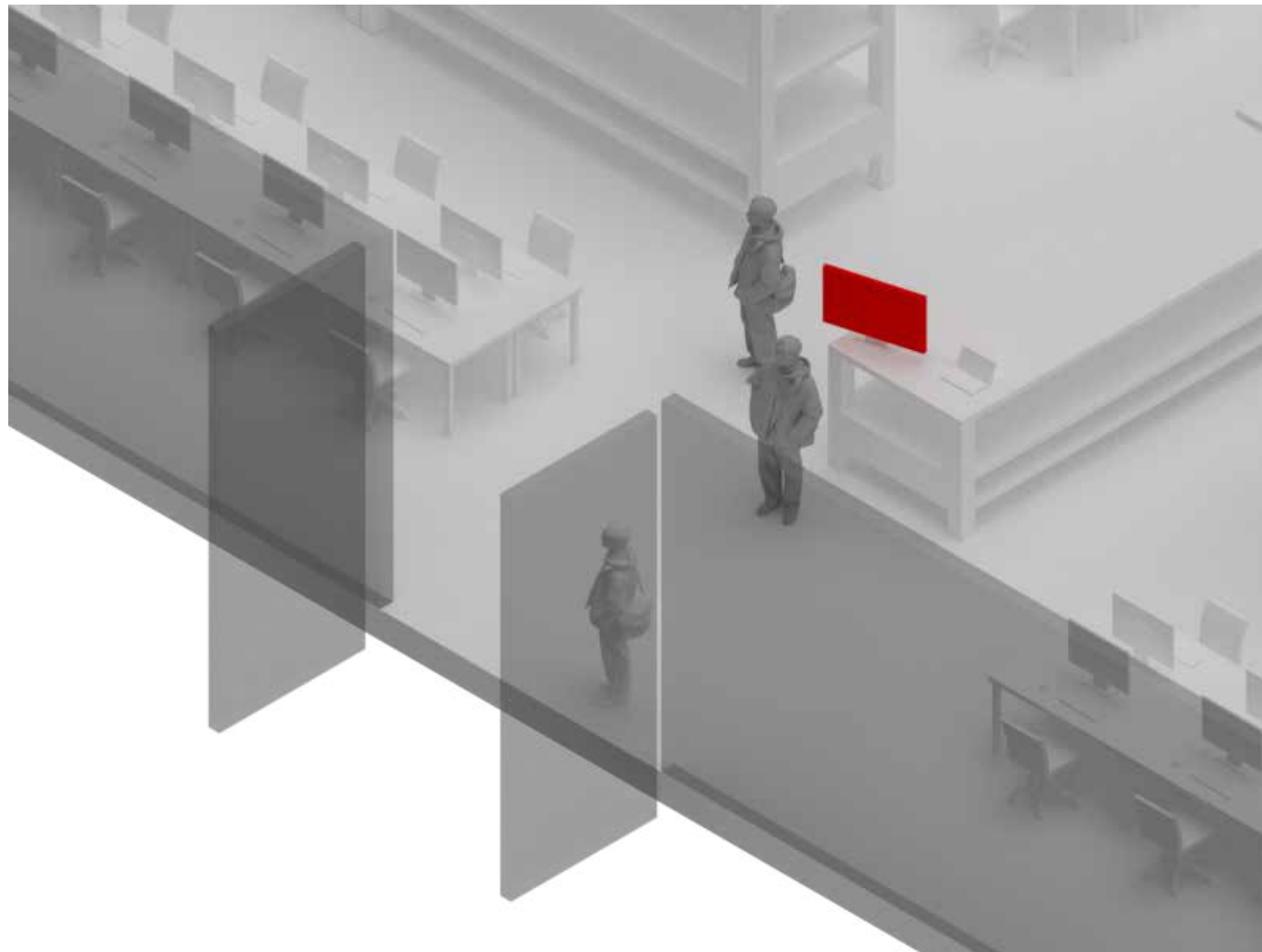
def main():
    process_webcam_feed()

if __name__ == '__main__':
    main()
```

[Final Main Script]



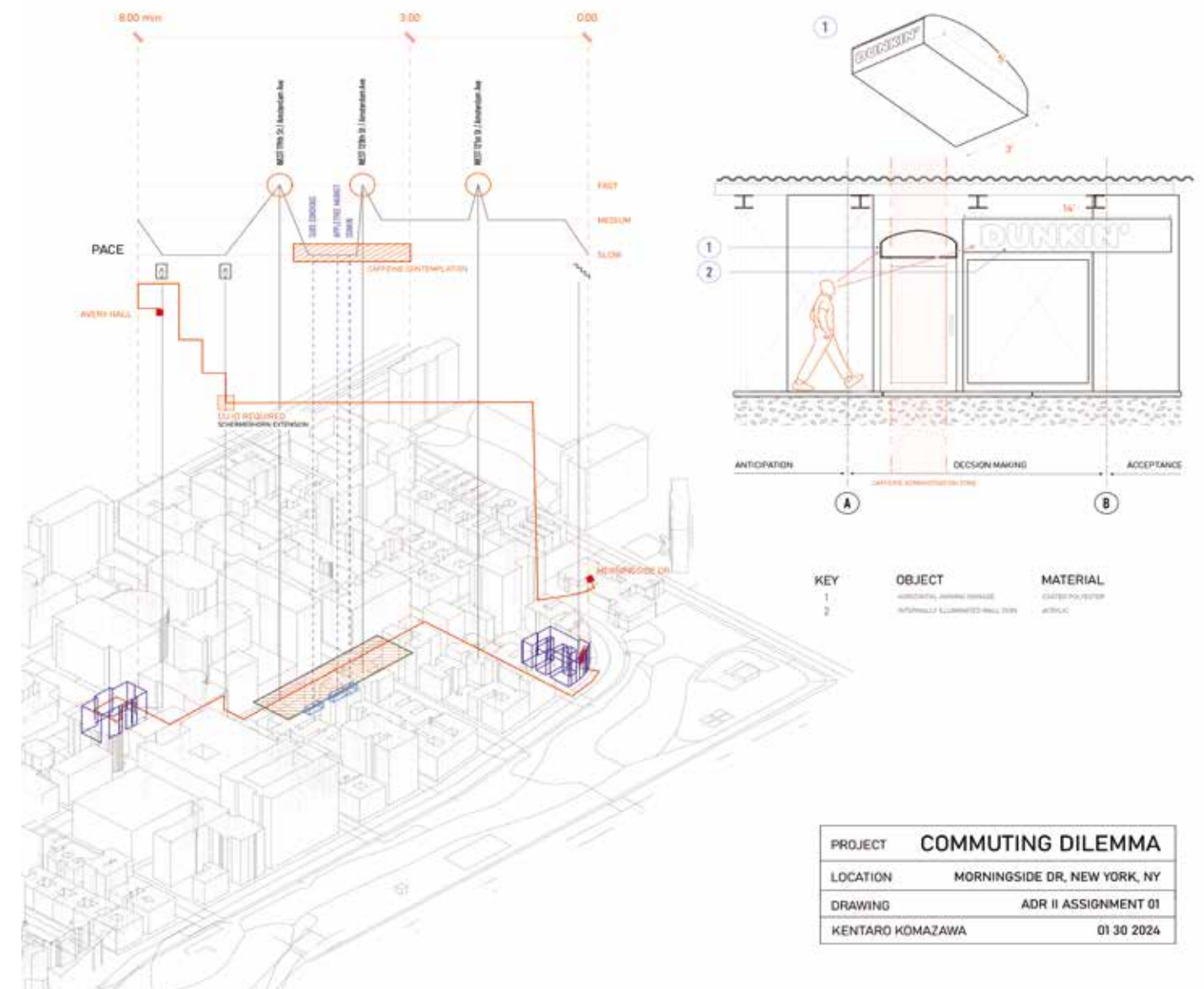
[Proposal Section]



[Proposal Axon]

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【 Precedent Study 】

computational workflow

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import os
```

- 1. python script
- 2. 1080P@60FPS external camera
- 3. write text file from face recognition
- 4. import text file into grasshopper
- 5. visualization in rhino space

```
# Ensure the directory exists
log_dir = r"C:\Users\12483\Downloads\ADT\ADT FILES"
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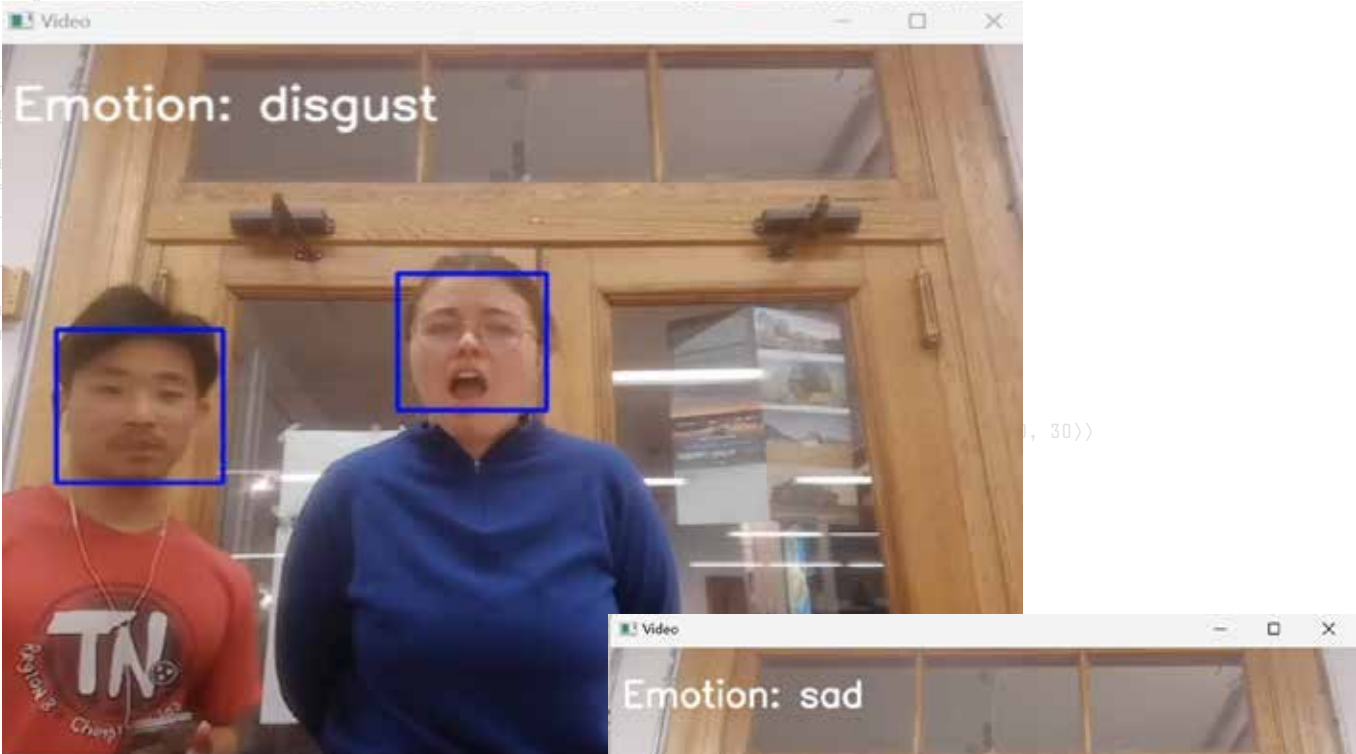
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log_file_path = os.path.join(log_dir, "emotions.txt")

# Load DenseNet201 pre-trained on ImageNet without the top layer
base_model = DenseNet201(weights='imagenet', include_top=False)
x = base_model.output
x = GlobalAveragePooling2D()(x)
Dense(1024, activation='relu')(x)
predictions = Dense(7, activation='softmax')(x)
model = Model(inputs=base_model.input, outputs=predictions)

# Load Haar Cascade for face detection
face_cascade = cv2.CascadeClassifier(cv2.data.haarcascades + 'haarcascade_frontalface_default.xml')

# Camera settings
FRAME_RATE = 30
DISPLAY_TIME = 10

# Open a text file to write emotions
with open(log_file_path, 'a') as f:
    def process_frame(frame):
        cap = cv2.VideoCapture(0)
        prev_emotion = None
        while True:
            ret, frame = cap.read()
            if not ret:
                break
            # Detect faces
            faces = face_cascade.detectMultiScale(frame, 1.1, 5)
            for (x, y, w, h) in faces:
                # Crop face
                face = frame[y:y+h, x:x+w]
                # Preprocess face
                face = preprocess_input(face)
                # Predict emotion
                preds = model.predict(face)
                emotion = emotions[np.argmax(preds)]
                # Write emotion to file
                f.write(f"{datetime.now().isoformat()} {emotion}\n")
            # Display emotion on frame
            cv2.putText(frame, f'Emotion: {emotion}', (10, 30), cv2.FONT_HERSHEY_SIMPLEX, 1, (255, 255, 255), 2)
            cv2.imshow('Emotion Recognition', frame)
            if cv2.waitKey(1) & 0xFF == ord('q'):
                break
        cap.release()
        cv2.destroyAllWindows()
```



[emotion recognition python script video feed]

Can I design using non traditional tools?

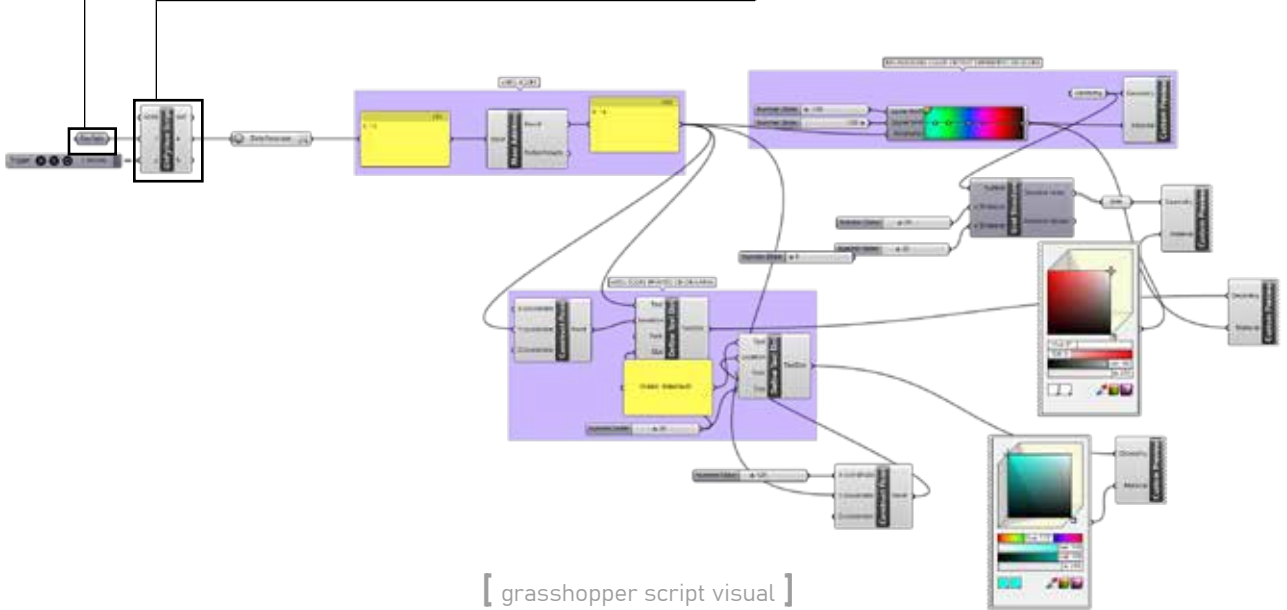
text file

```
2024-04-22 22:16:54.965158: sad
2024-04-23 02:42:04.611959: sad
2024-04-23 02:42:34.004268: fear
2024-04-23 02:42:36.137816: sad
2024-05-09 10:54:45.513953: surprise
2024-05-09 10:54:46.243151: disgust
2024-05-09 10:54:48.126227: surprise
2024-05-09 10:54:54.075061: disgust
2024-05-09 10:54:56.098458: surprise
2024-05-09 10:54:58.906304: fear
2024-05-09 10:55:01.105750: disgust
2024-05-09 10:55:21.430485: fear
```

reads every new emotion registered on video feed

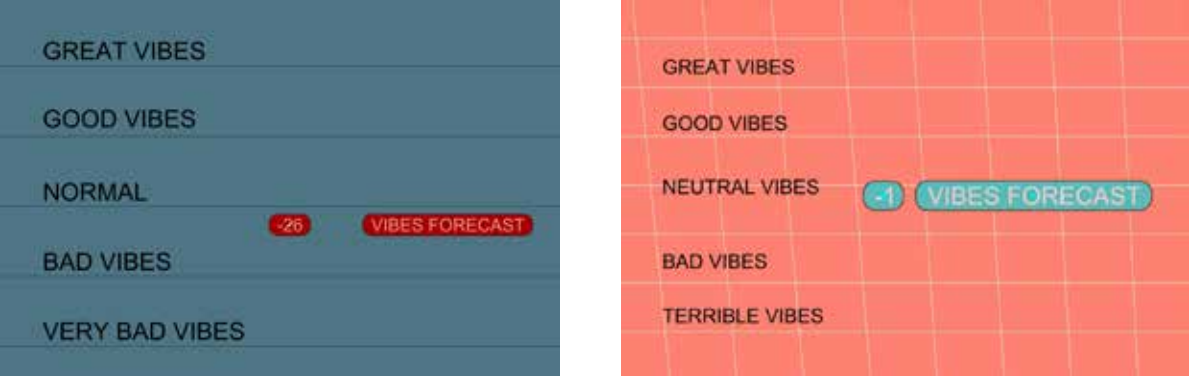
python script within grasshopper script

```
# Dictionary mapping emotions to integers
emotion_to_int = {
    'angry': -2,
    'disgust': -1,
    'fear': -1,
    'happy': 2,
    'sad': -1,
    'surprise': 1,
    'neutral': 0
}
```

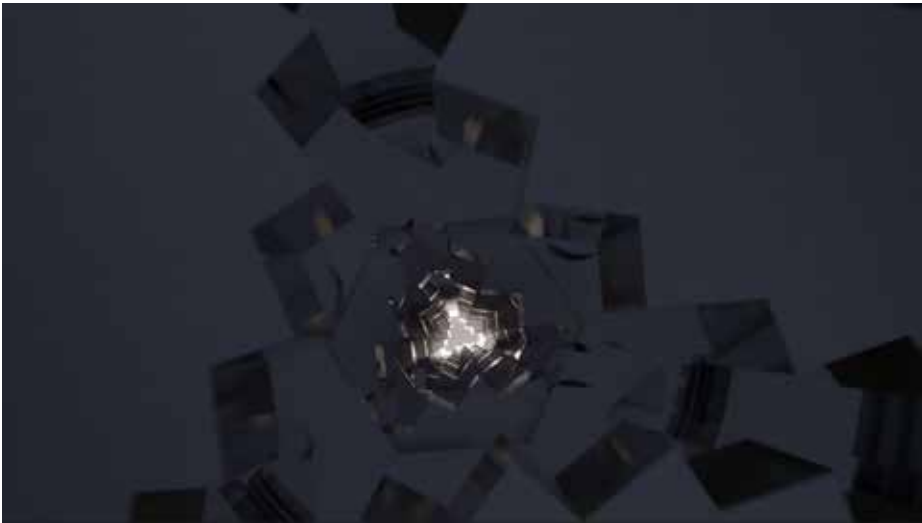
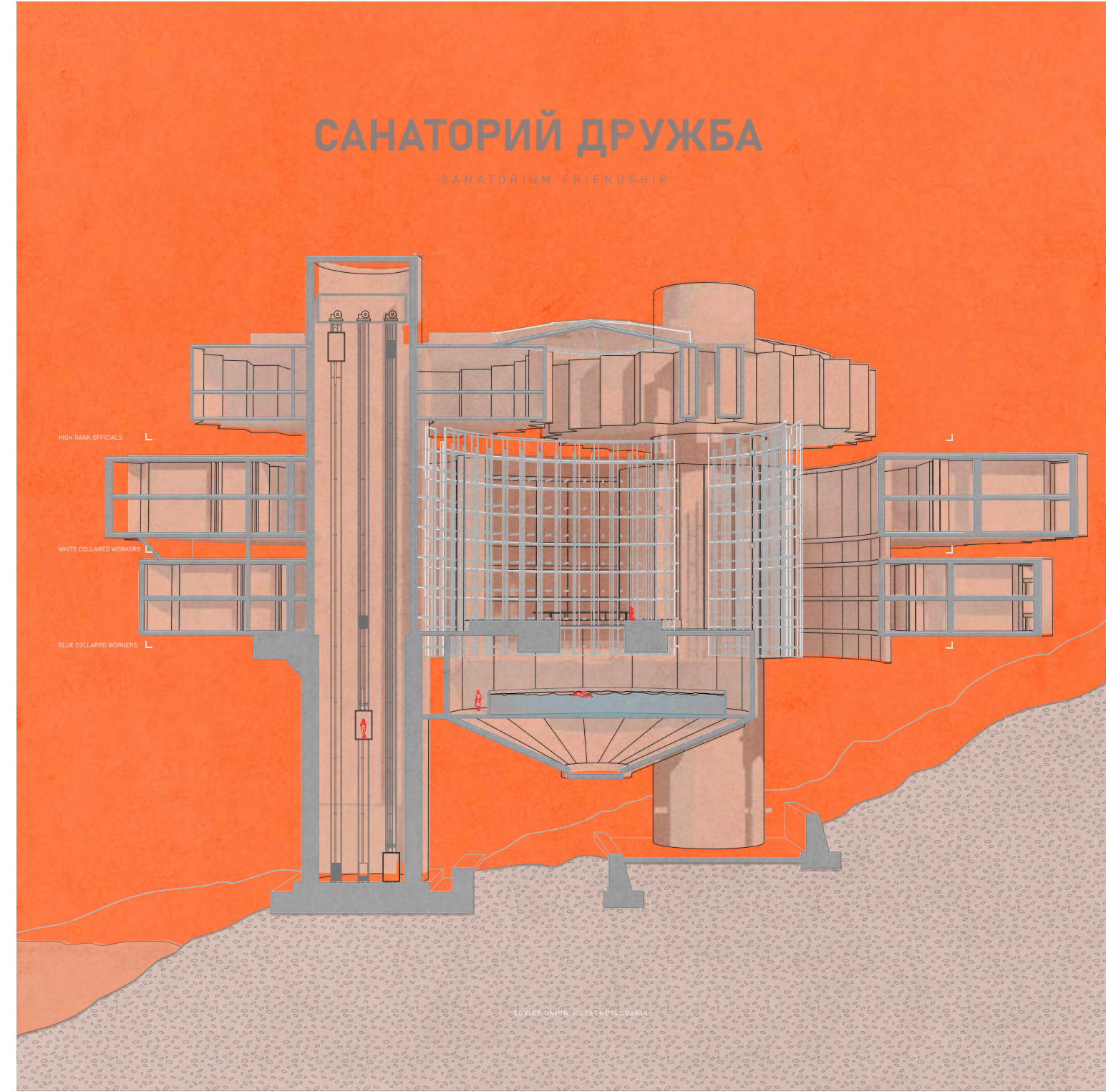


[grasshopper script visual]

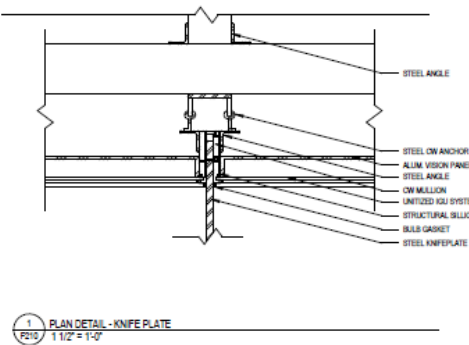
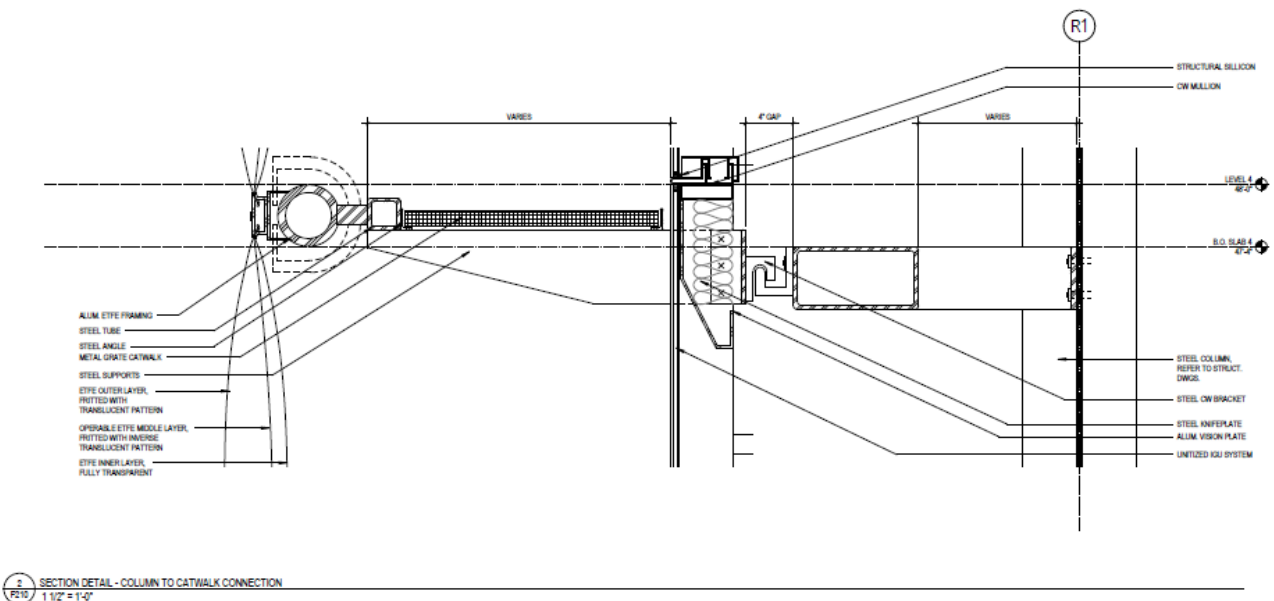
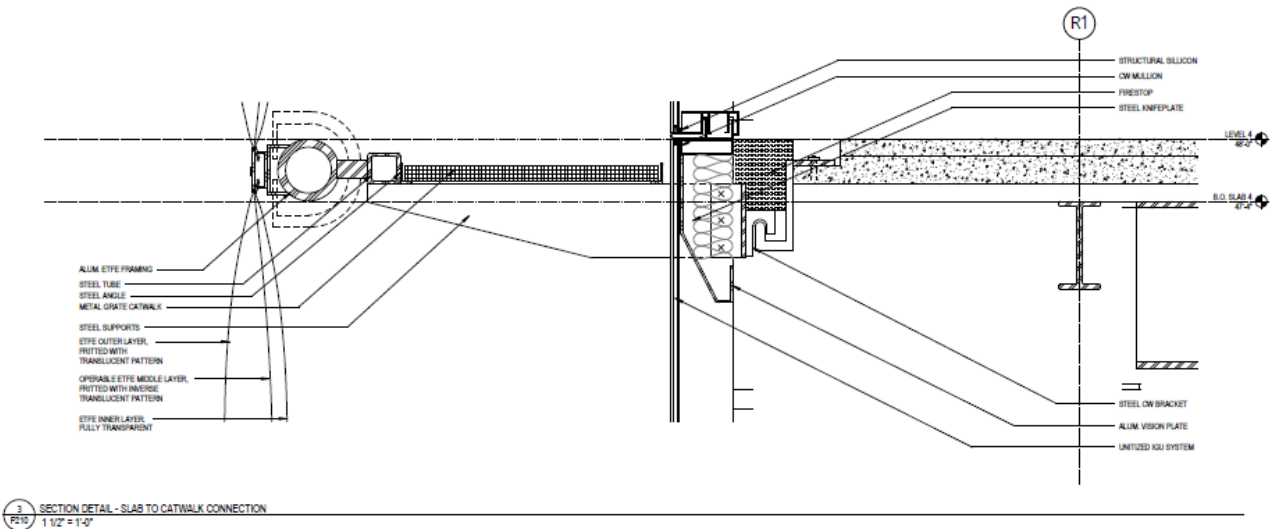
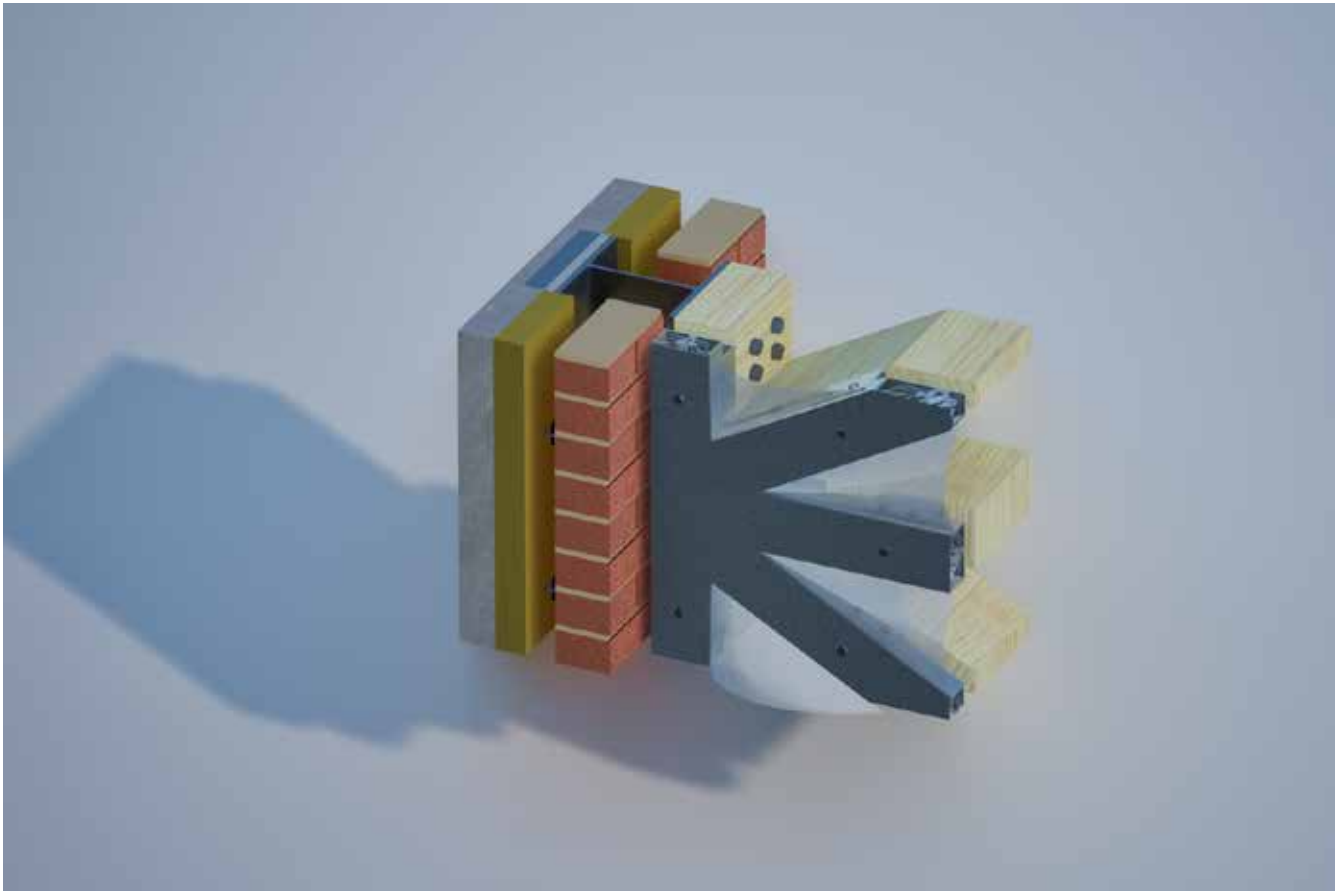
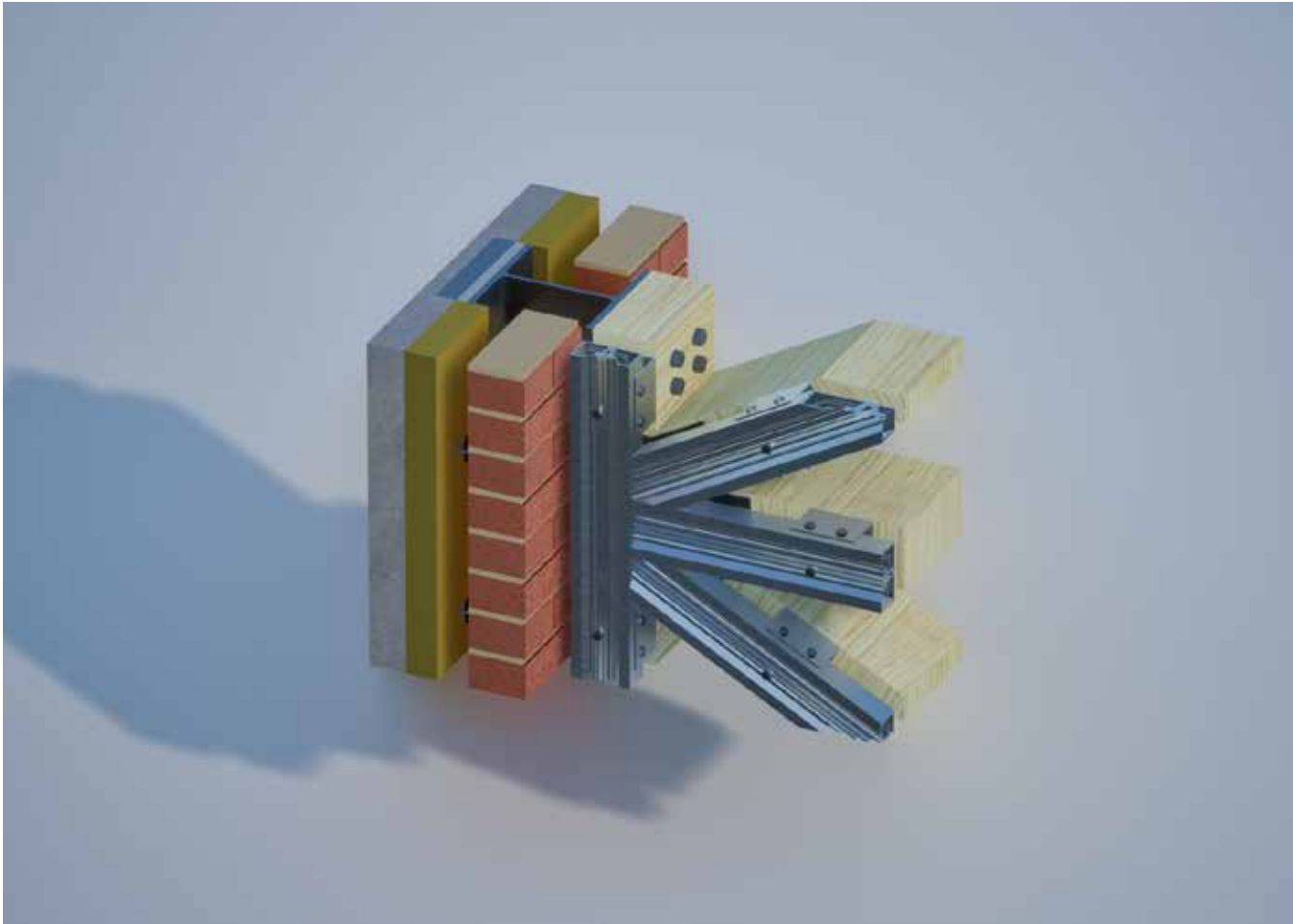
visualization changes real time with color scale and y location



[Reading a Room output visual in rhino]

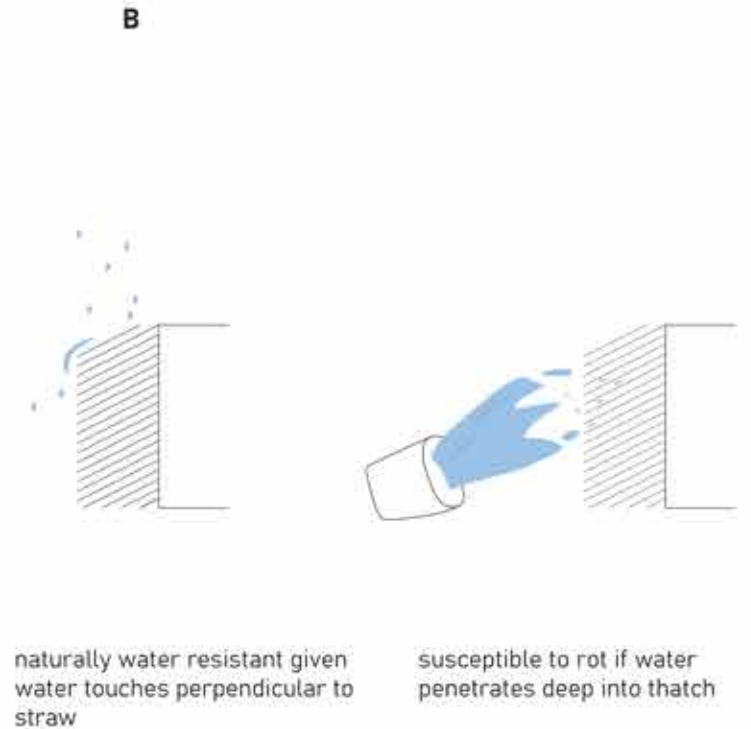
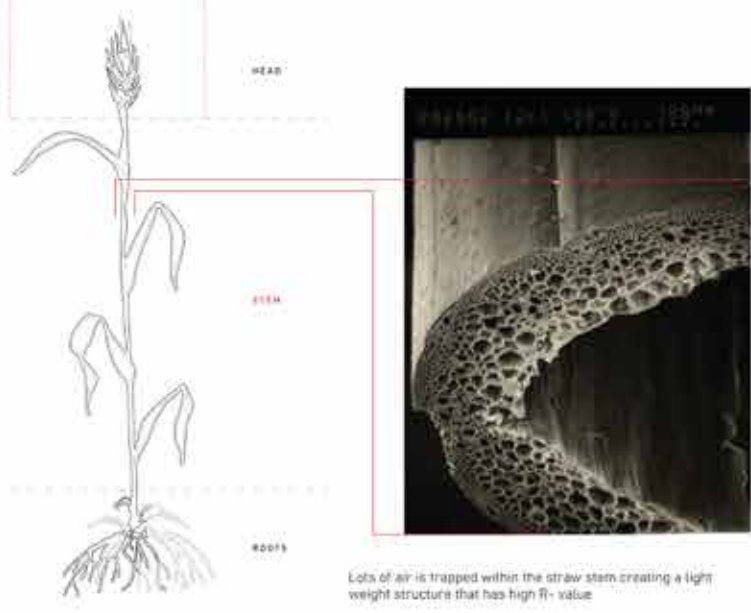
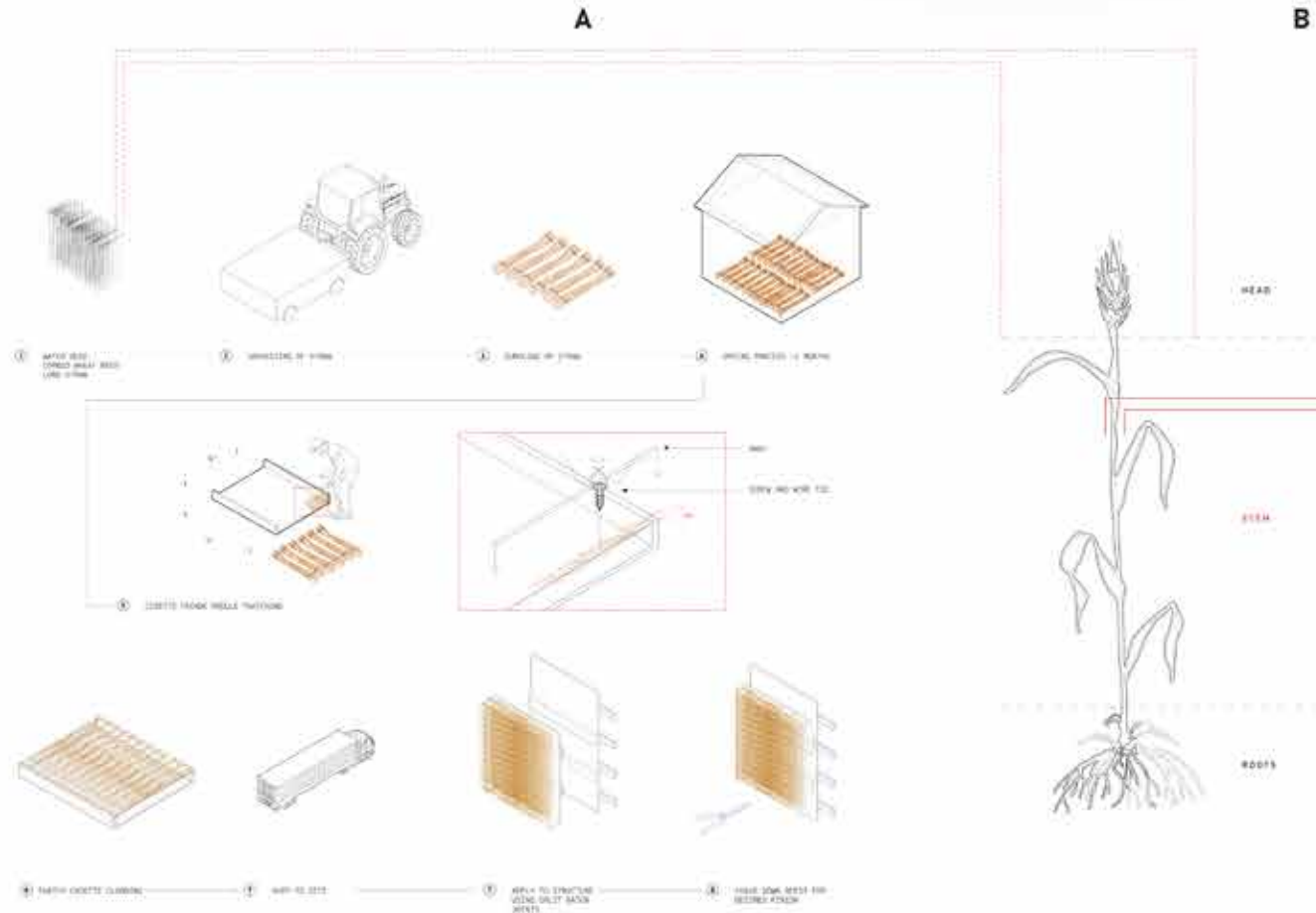
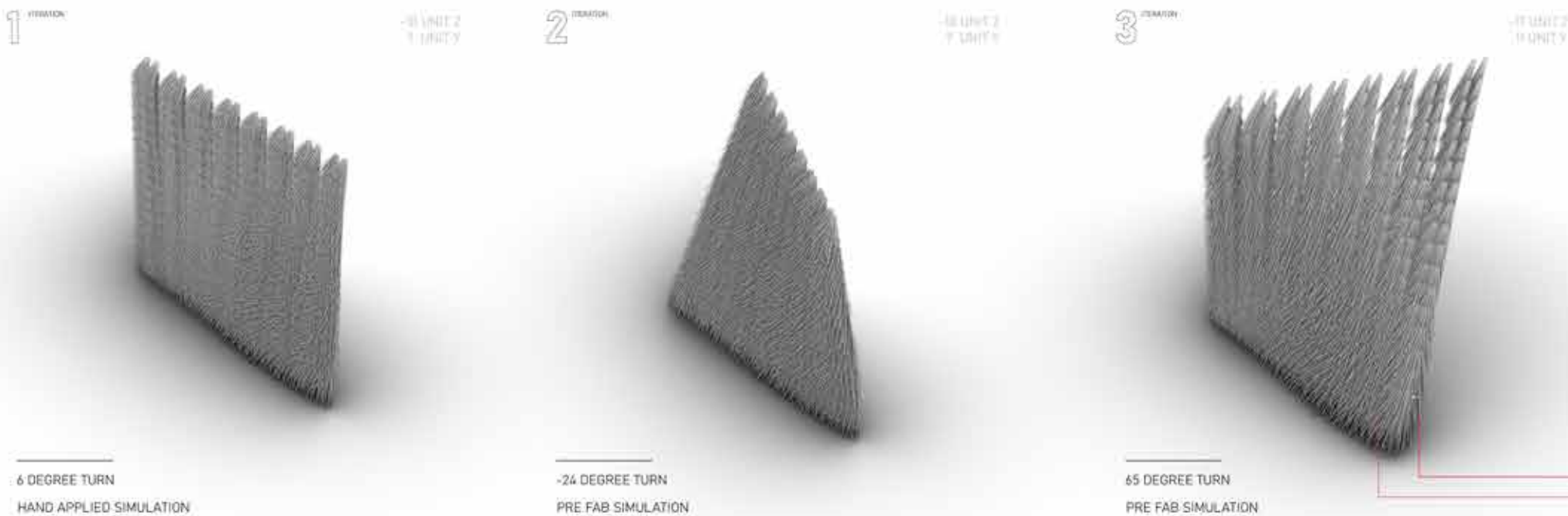






HAIRY BUILDINGS

COLLECTIVE ASSEMBLIES : STRAW



THANK YOU FOR YOUR TIME

