



# ARCHITECTURE PORTFOLIO

KHOI M. DO

selected works  
carnegie mellon university

KHOI MINH DO



*about / contact*

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## WORK EXPERIENCE

- Jun 2023-Aug 2023 • **ARCHITECTURAL INTERNSHIP**  
*Vo Trong Nghia Architects (VTN), HCMC, Vietnam*
  - Crafted bamboo physical models to experiment with construction details and techniques and explore and assess structural feasibility.
- Jun 2023-Aug 2023 • **ARCHITECTURAL INTERNSHIP**  
*Bensley Studios, Bangkok, Thailand*
  - Helped ideate with founder, Bill Bensley, on innovative project solutions and concepts such as a weight-attached pulley system curtain for an ottoman tent inspired project in Turkey
  - Re-designed a pedestrian bridge concept to be realised for a project in Connecticut
  - Hand-drafted interior layouts for approximately 10 hotel units for a project in Connecticut
  - Rendered 8 floor plans and 5 sections using Photoshop for projects in Dubai, Congo and Turkey
- Aug 2022-current • **FIRST-YEAR RESIDENT ASSISTANT**  
*Residential Education, CMU, Pittsburgh, PA, USA*
  - Foster an inclusive and engaging community where first-year students are supported with the necessary resources and skills to thrive in their college career.
  - Collaborated with fellow RAs to plan and execute events about belonging, well-being, global citizenship, and cultural competency.

## EXPERIENCE / ACTIVITIES

- Nov 2022-Current • **EDITOR**  
*Interpunct (student magazine), CMU, Pittsburgh, PA, USA*
  - Managed a team to publish 4 books
  - Coordinated meetings with members, faculty, and publishers
  - Plan and execute events and workshops and interviews
  - Write, develop, critique and edit student work and interviews
- Mar 2022-Apr 2022 • **FABRICATION**  
*NOMAS Carnival Pavillion, CMU, Pittsburgh, PA, USA*
  - Worked in a team to fabricate a 16' tall modular timber pavilion
  - Utilised construction tools and scissor-lifts

## SCHOLARSHIPS

F21 | Minority Architects of Pittsburgh Scholarship

## EDUCATION

Carnegie Mellon University  
School of Architecture  
Pittsburgh, PA, USA

British International School  
Ho Chi Minh City [K-12]  
HCMC, Vietnam

## LANGUAGES

English  
Vietnamese

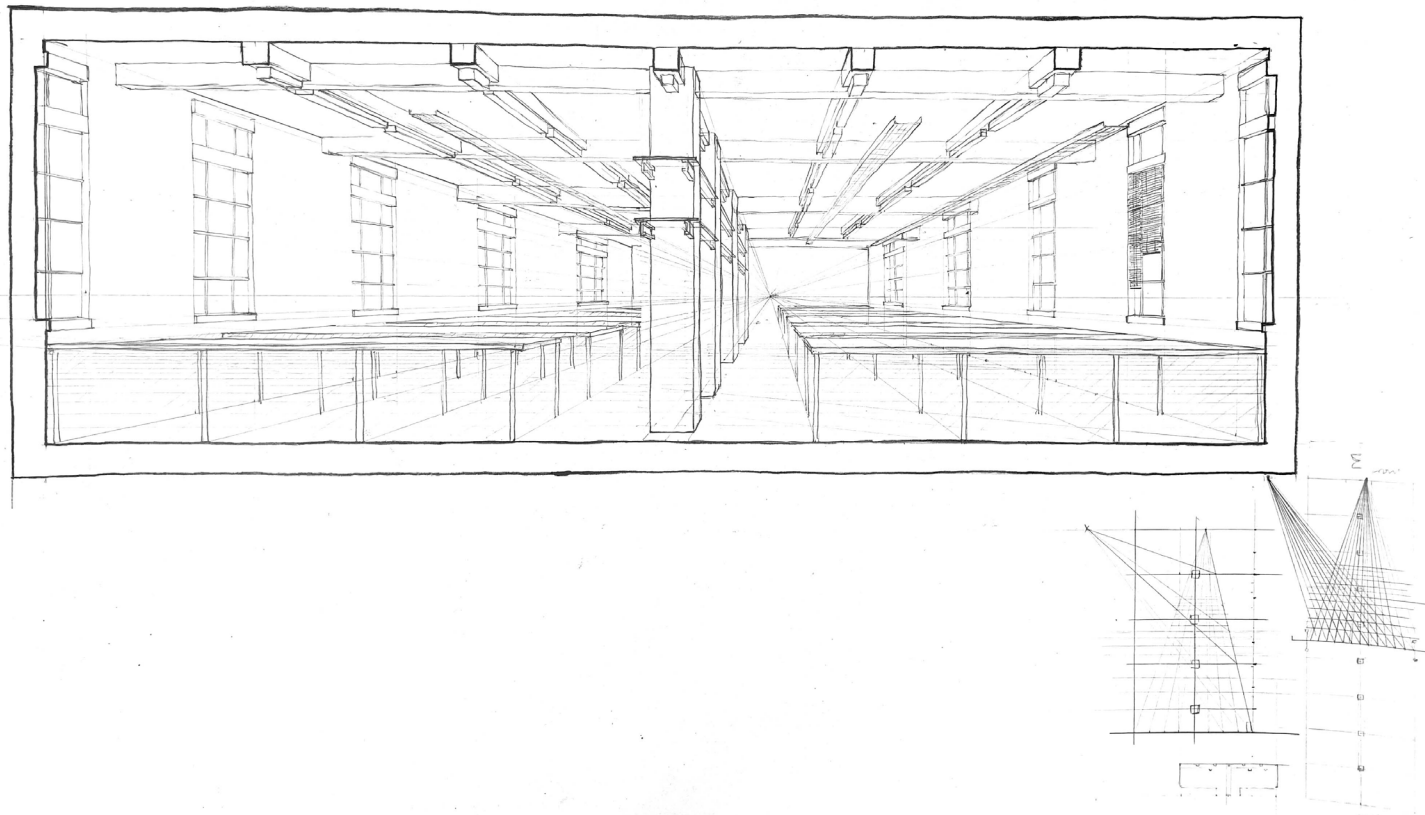
## SOFTWARE

ADOBE SUITE (Ps, Ai, In, Lr)  
RHINOCEROS 3D  
V-RAY  
PROCREATE

## ARTISTIC SKILLS

TECHNICAL HAND DRAFTING  
FREE-HAND DRAWING  
DRY MEDIA  
WATERCOLOUR  
OIL PAINTING  
WOODWORK  
CLAY SCULPTING  
MODEL MAKING  
PHOTOGRAPHY

# content



01



## UPHAM'S CORNER LIBRARY

*Individual | 4 month project*

6

02



## FIRE CO. 3

*4 person collaboration | 4 month project*

12

03



## MOBILE HOME AMERICANA

*Individual | 4 month project*

20

04



## MATERIALS & ASSEMBLY

*Drawing Assignments*

28

05

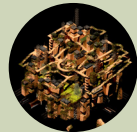


## FREEHAND DRAWINGS

*Individual works*

30

06



## MISCELLANEOUS WORK

*Internship works, previous studio works, side-projects*

32



# UPHAM'S CORNER LIBRARY

*Architecture Studio Praxis II, S24*

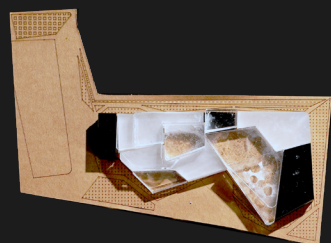
*Professors: Erica Hameen Cochran, Jeremy Ficca*

As Columbia St. is set to become a part of the Boston Emerald Necklace Master Plan, the Upham's Corner Library seeks to bring the idea of the green park to the interior condition, creating a sanctum that fosters community and curiosity. To solidify a sense of place, the massing and facade strategies takes cues from neighbouring brick landmarks and re-interprets them, becoming an evolution of the neighbourhood. Made up of CLT, steel, corten steel facade, and landscaping, the library refers to design metrics to optimise its performance in terms of daylighting, rain water capture, recirculation and infiltration, and solar energy generation.





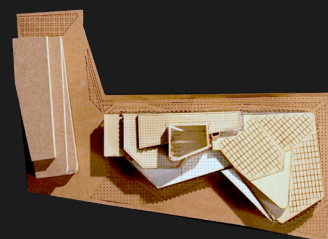




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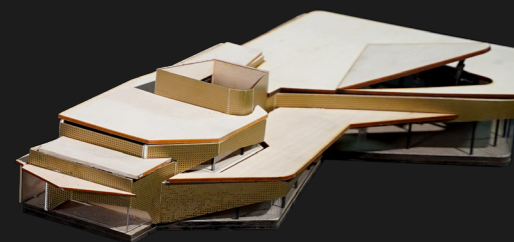
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## process

1. interior concept collage: bringing the emerald necklace to the interior
2. concept model: program
3. concept model: field
4. concept model: enclosure
5. structural & envelope iterations

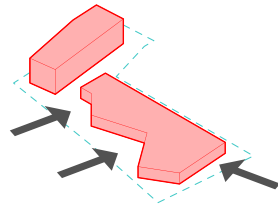
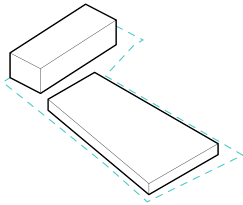


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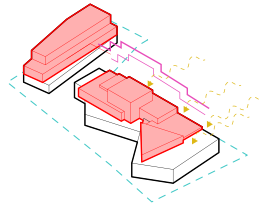


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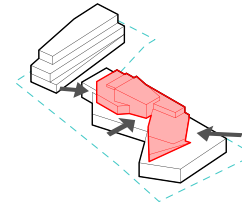




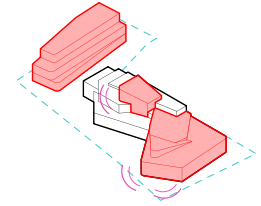
**PULL IN**  
to create plaza spaces, pathways to scoop visitors in from the sidewalk and frame views to the ends of Columbia street and the cemetery



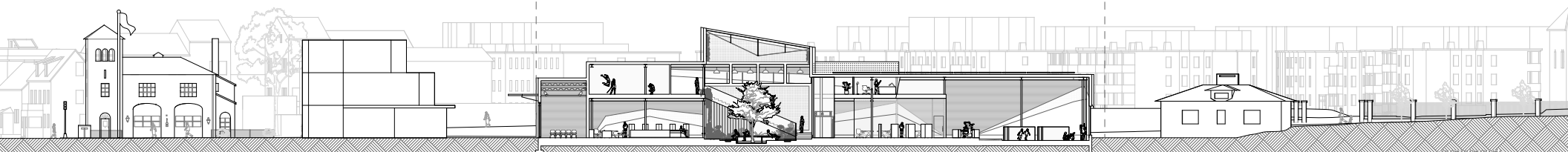
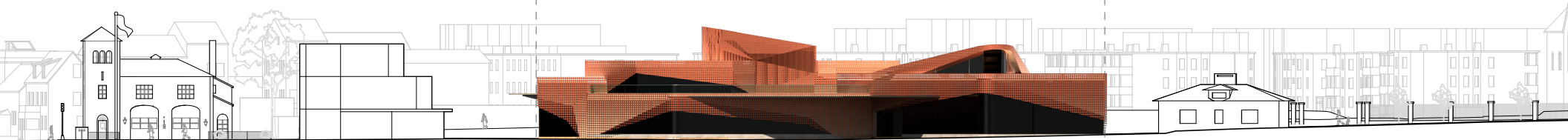
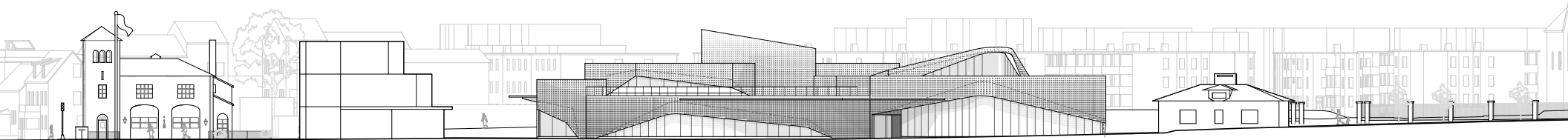
**STACK & STAGGER**  
echo the urban fabric of Columbia St. buildings by creating varying height blocks. creating varying height spaces also allows light direct sunlight to come into the building

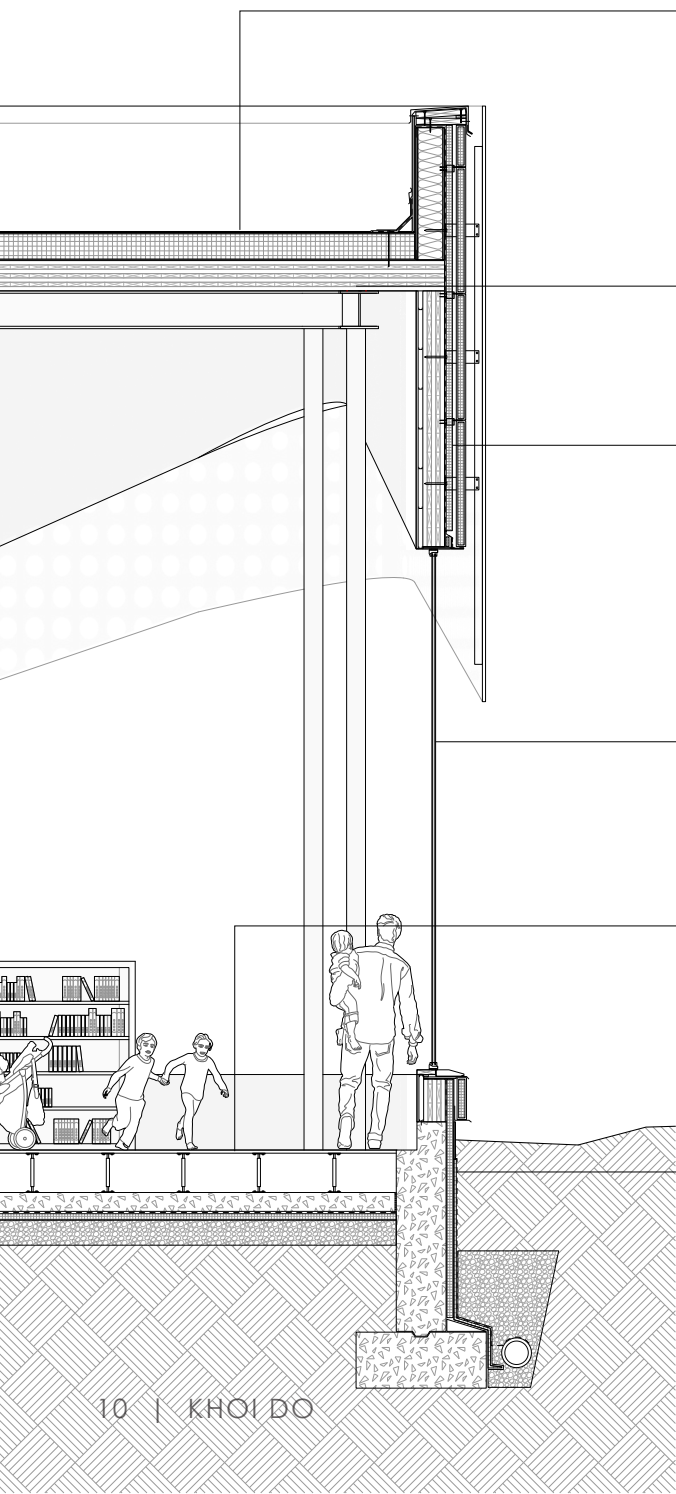


**MELD**  
stacked geometry to the language of the building footprint to create areas of compression and release and to curate engaging spaces



**ROUND CORNERS**  
echo the architectural language of Columbia St. buildings and accentuate important corners and nodes





#### ROOF

- Copper Sheet, 0.6mm
- Separating Layer
- Waterproof Sheet
- Roof Insulation
- Vapour Barrier
- 7-Ply Cross Laminated Timber
- Steel W-Beam

#### LOAD BEARING STRUCTURE

- 5-Ply Cross-Laminated Timber
- Steel circular beam

#### FACADE

- Corten Steel Perforated Sun-Shading Screen
- Steel frame
- Aluminium Insulated Panel
- Wall Insulation
- Air Barrier
- 5-Ply Cross-Laminated Timber
- Steel Stud
- 5/8" Sheet rock

#### EXTERIOR WINDOW

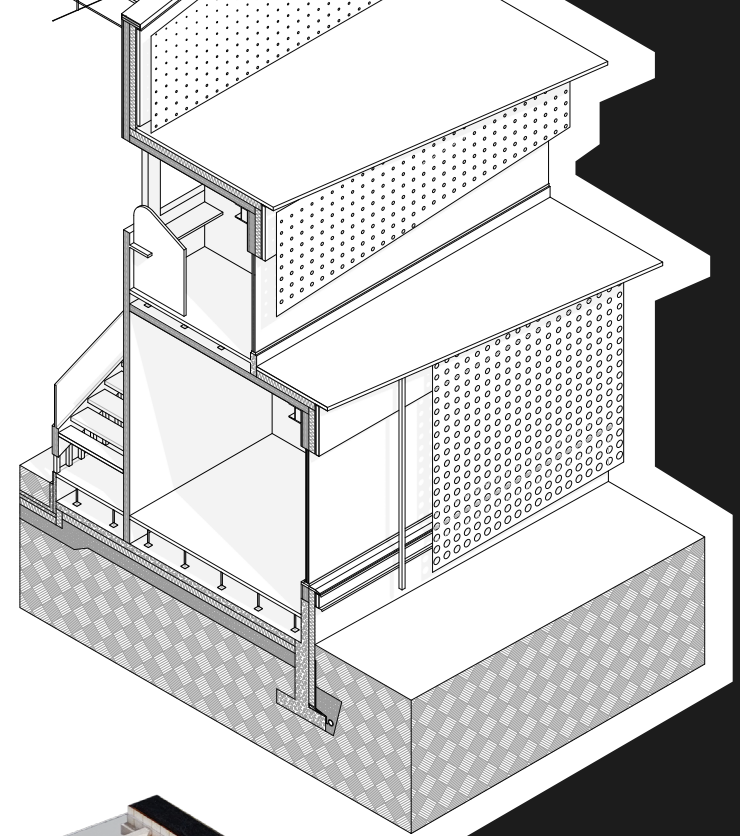
- Laminated Wood
- Transparent Glazing, 60% Tvis, 0.50 SHGC
- Floor to Ceiling Light Control Blinds

#### GROUND FLOOR SLAB

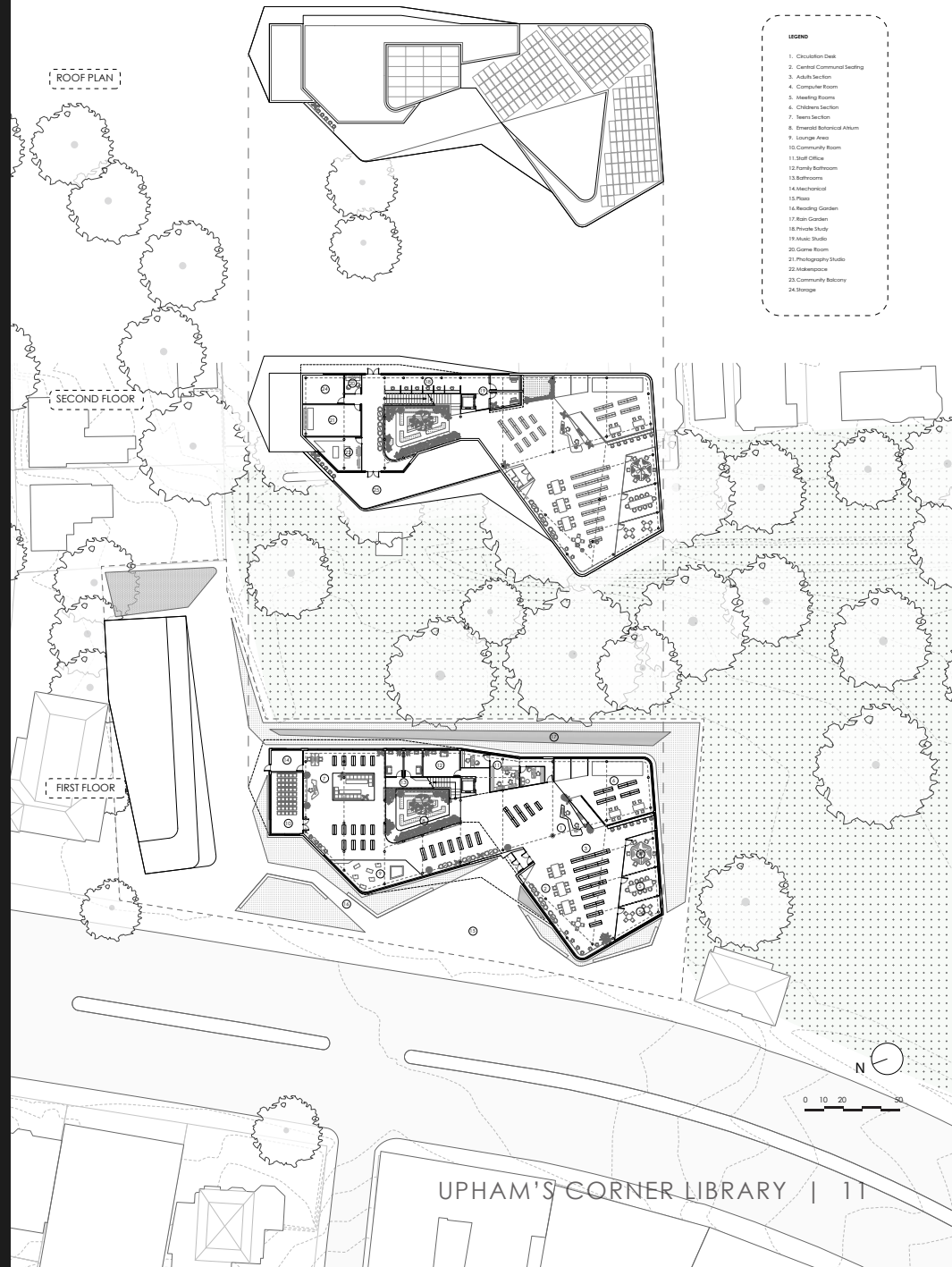
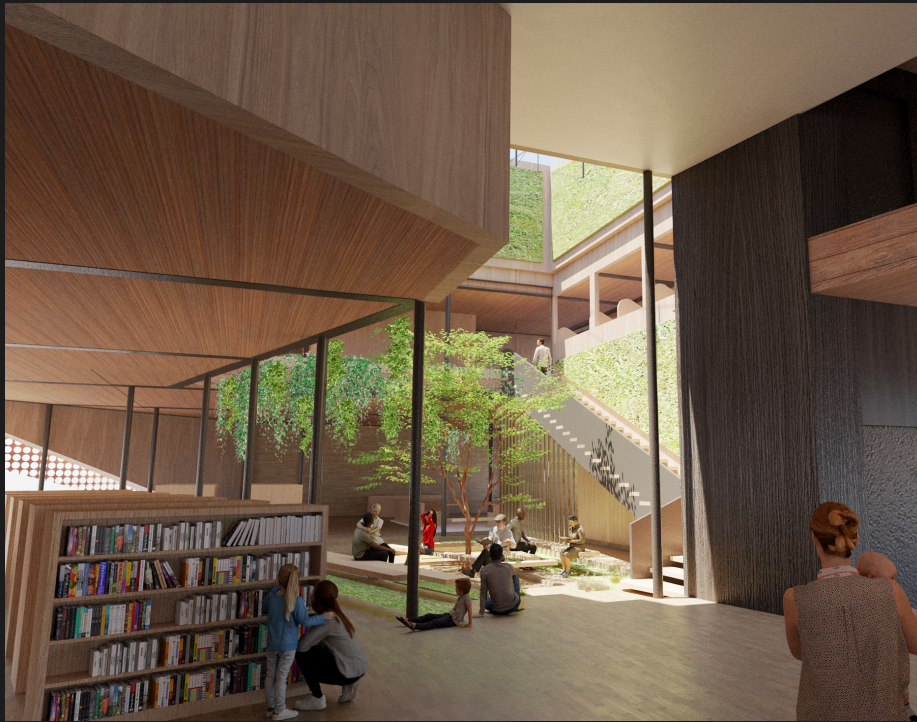
- Raised Floor System
- 6" Concrete Slab
- 2" Rigid Insulation
- 8" Gravel

#### FOUNDATION

- Filter Fabric
- Drainage Mat
- Moisture Barrier
- 2" Rigid Insulation
- Cant Strip
- Drainage Pipe









# FIRE CO. 3

*Architecture Integrated Studio, F24*

*Professors: Niloufar Alenjery, Gerard Damiani*

The Strip District of Pittsburgh, with its roots in transportation and industry, can be likened to a machine where rail lines, steel mills, and produce warehouses intertwine like cogs in a machine, each serving a vital function to fuel and connect neighbourhoods, people and goods. Although being recalibrated and adapted to new eras over time, the Strip District's industrial heartbeat remains integral to its operations.

In this context, architecture operates as a machine that shapes how people interact and inhabit their surroundings, extending further to engage with emotion and time. The new Fire Company 3 becomes part of the Strip's evolving story, bridging the past and present through the use of recycled steel and celebrating not only the structure but also its intricate components that are special about the functions of the fire department. The fire station becomes a new machine integrated into the Strip's system, dedicated no longer to the production of steel, but to the preservation of human life, acting as its immune system to keep this system of the Strip and the wider city in constant motion.





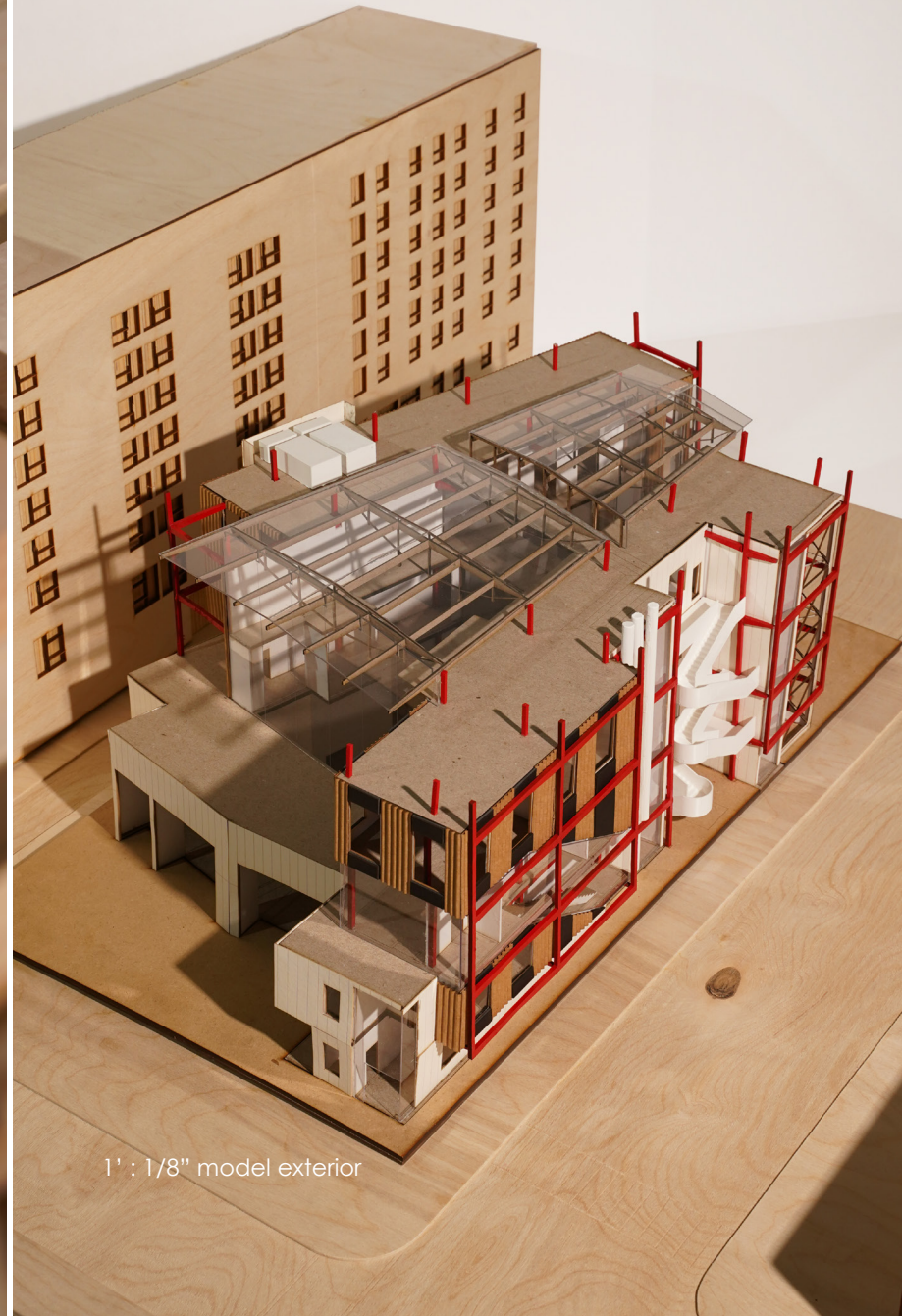


1' : 1/32" site model



The site is located on the corner of Penn Ave and 14th St, near the tip of the strip district before entering downtown. With two engines that serve the Strip District, Lawrenceville and Downtown areas and the only supporting MAC unit to serve the entire city, Fire Co. 3 is a critical station that demands efficient operation and maximised worker wellbeing.

To pay homage to the Strip District's industrial history, the design applies the notion of the machine not only to the celebration of its structure and systems but by also creating a relationship between the circulation of people, trucks and the circulation in the HVAC system.



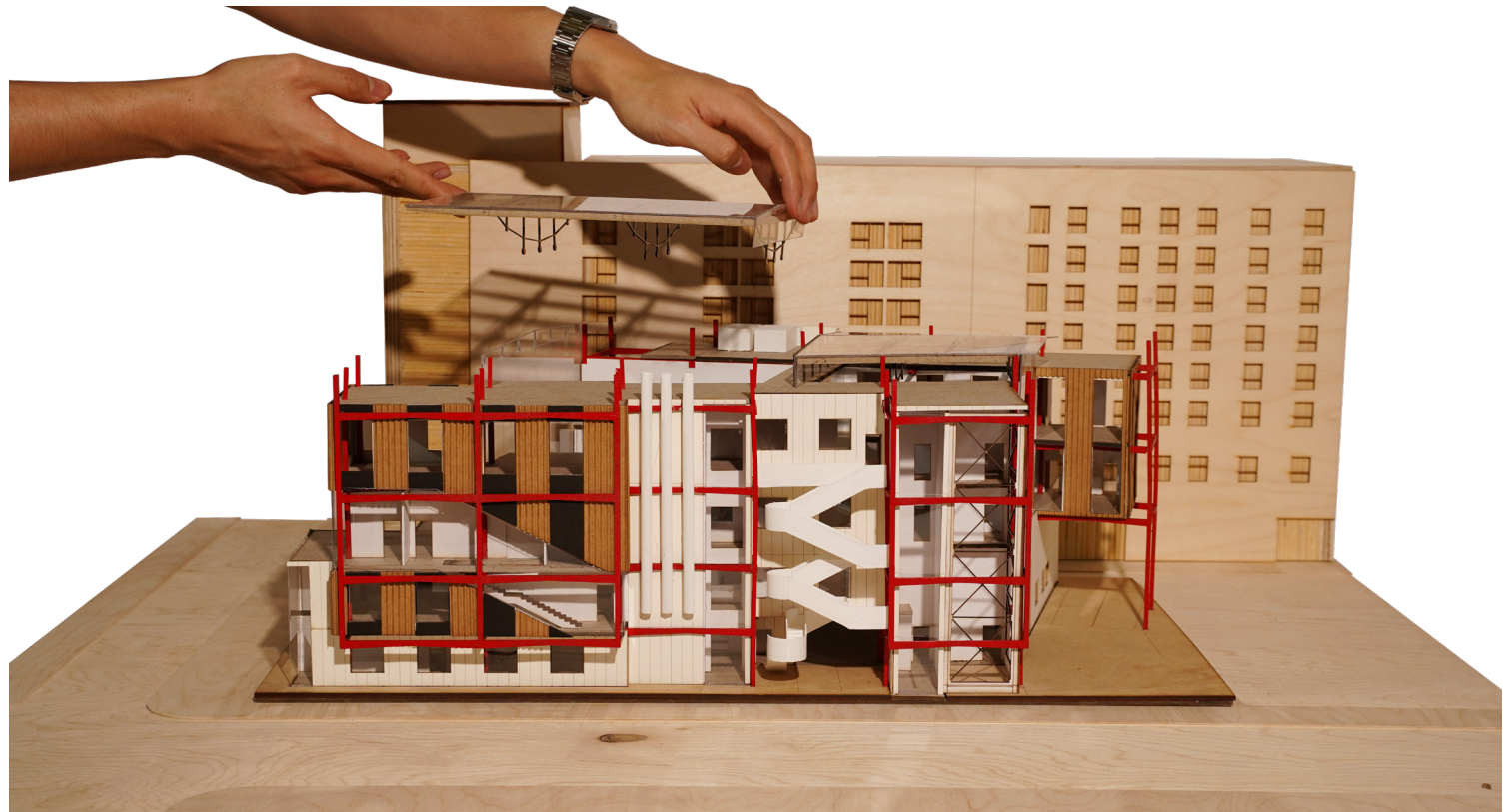
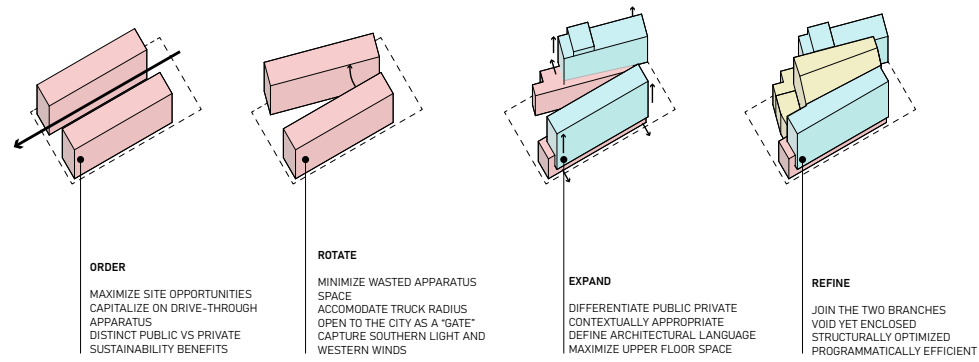
1' : 1/8" model exterior

The celebrated structure is made from recycled steel from demolished industrial sites within the Pittsburgh area. Its contoured shape reduces the use of steel whilst retaining strength.



1' : 1/8" model interior

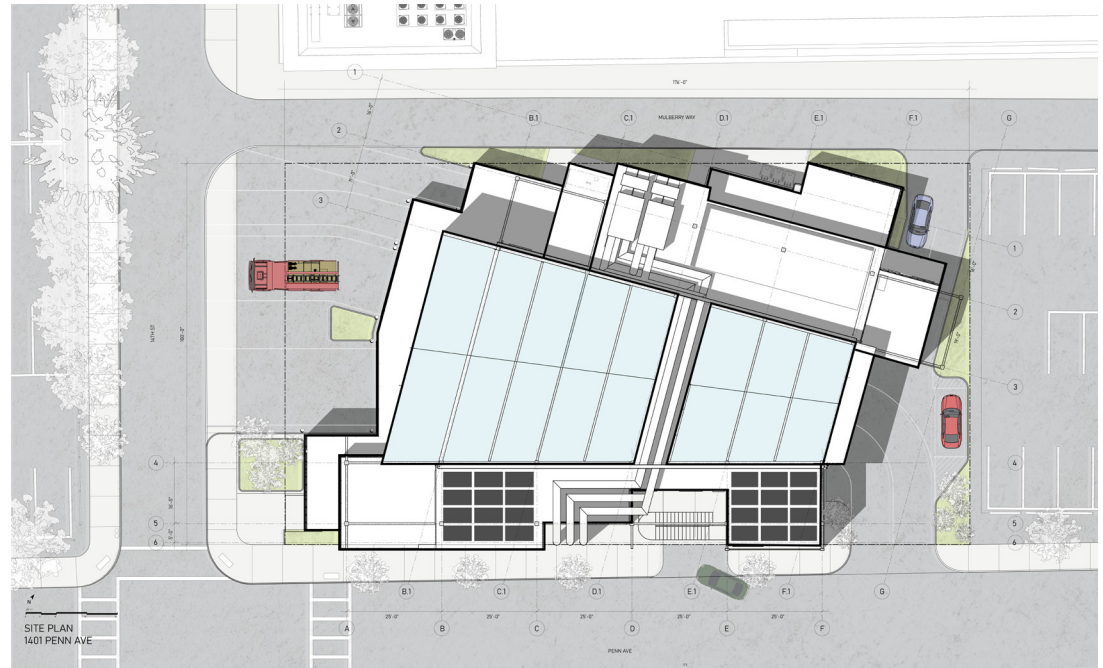




### Site & Roof Plan

As the building is oriented predominantly east-west, solar heat gain is maximised on our southern, more transparent facades in the Winter. In the Summer, numerous operable shading devices would shield the building from the sun, passive cross-ventilation and the stack effect with the drive-through apparatus bay atrium.

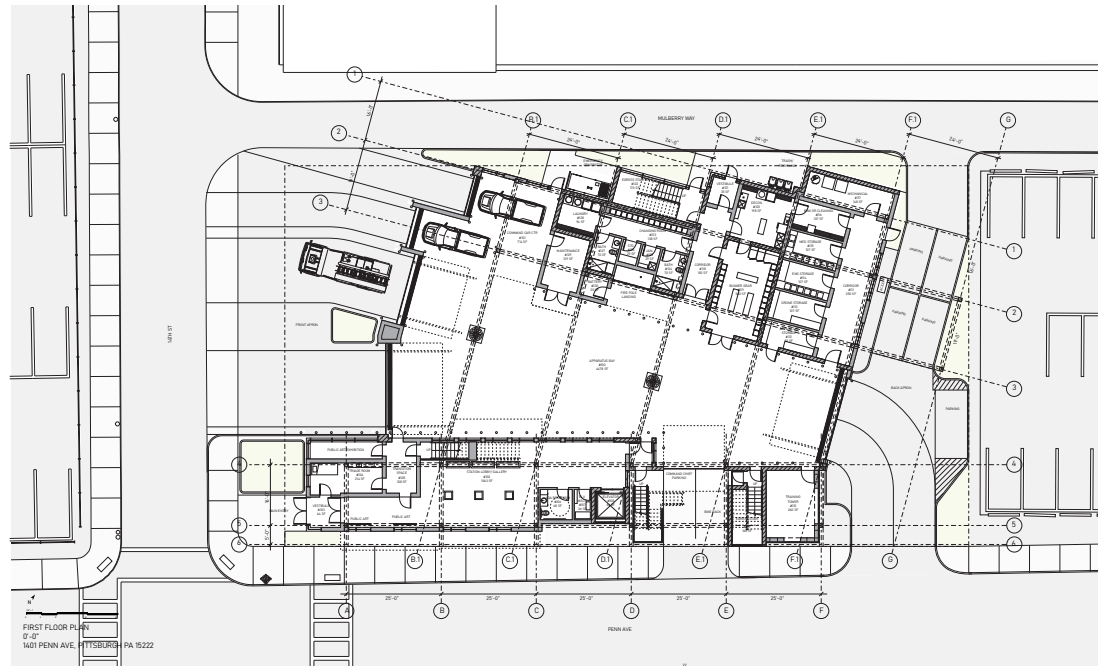
A number of green and blue roofs are featured to slow water runoff, reduce heat island effects and harvest greywater. Rain gardens are used where possible for water infiltration and groundwater recharging. Permeable paving is utilised to capture rainwater in reservoirs underground to recirculate and be reused as well as release it slowly into the city system.



### First Floor Plan

To take advantage of the one-way road of Penn Ave, the fire station features a drive-through apparatus bay atrium core to optimise efficiency and safety.

The bay is flanked on both sides by supporting program, with the more public, celebrated and daylit programs on the Penn Ave facade and the more private programs around back.





community event space



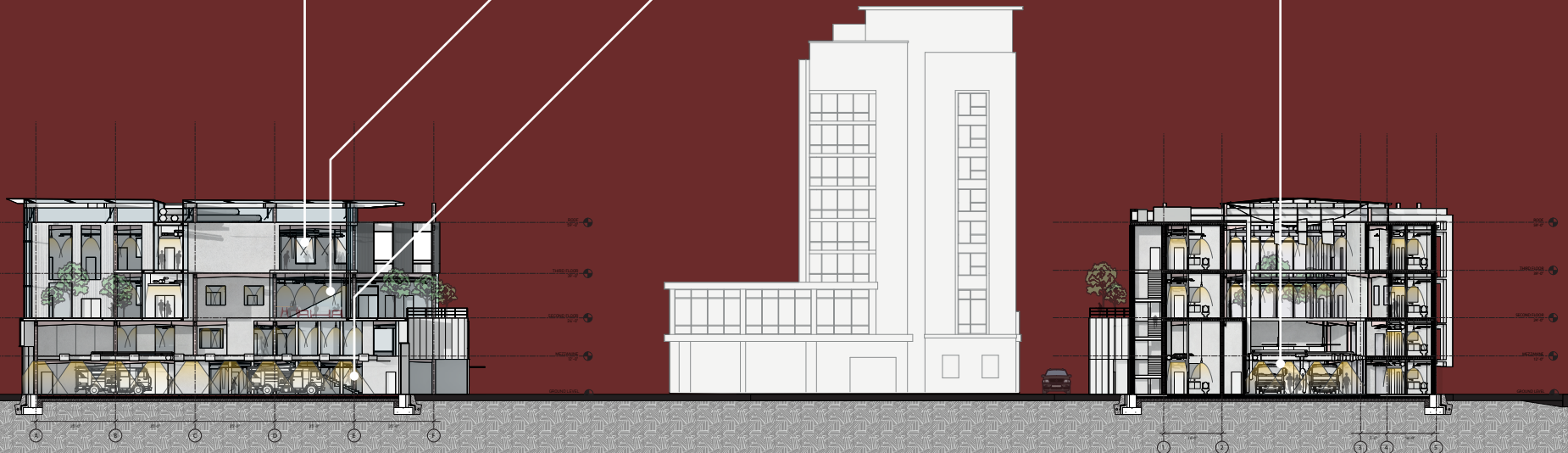
lobby



beanery



apparatus bay



# STRUCTURAL & MECHANICAL EXPLODED ISOMETRIC

## 3RD FLOOR & ROOF

INTAKE DUCT  
ENERGY RECOVERY VENTILATOR  
PACKAGED ROOFTOP RTU

EXHAUST VENT  
EXHAUST DUCT  
RETURN DUCT  
RETURN VENT  
VAV BOX  
SUPPLY VENT  
SUPPLY DUCT

## 2ND FLOOR

VAV BOX  
SUPPLY DUCT  
SUPPLY VENT

EXHAUST DUCT  
EXHAUST VENT

RETURN VENT  
RETURN DUCT  
HOT WATER (SUPPLY & RETURN)

## MEZZANINE

HOT WATER (SUPPLY & RETURN)

FANS  
RETURN VENT  
RETURN DUCT

VAV BOX  
SUPPLY VENT  
SUPPLY DUCT  
EXHAUST DUCT

## 1ST FLOOR

APPARATUS BAY  
VEHICLE EXHAUST SYSTEM  
APPARATUS BAY EXHAUST DUCT  
VEHICLE EXHAUST HOSE  
VEHICLE EXHAUST RAIL

APPARATUS BAY  
HEATING SYSTEM

GAS-POWERED HOT WATER PIPE  
INFRARED HEATER

EXHAUST DUCT  
EXHAUST VENT

RETURN DUCT  
RETURN VENT

ELECTRICAL WIRING  
APPARATUS BAY LIGHTS  
HOT WATER (SUPPLY & RETURN)

SUPPLY DUCT  
VAV BOX  
SUPPLY VENT

APPARATUS BAY  
HEATING SYSTEM

HYDRONIC RADIANT FLOOR HEATING

systems



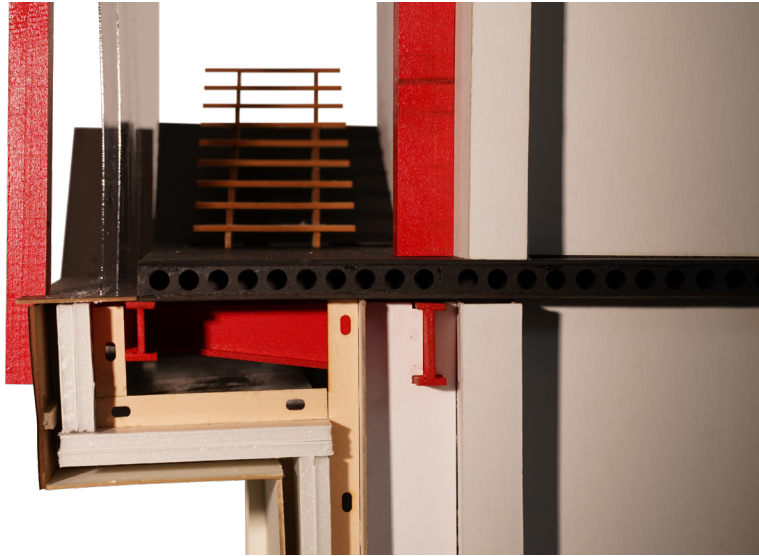
exterior corner view



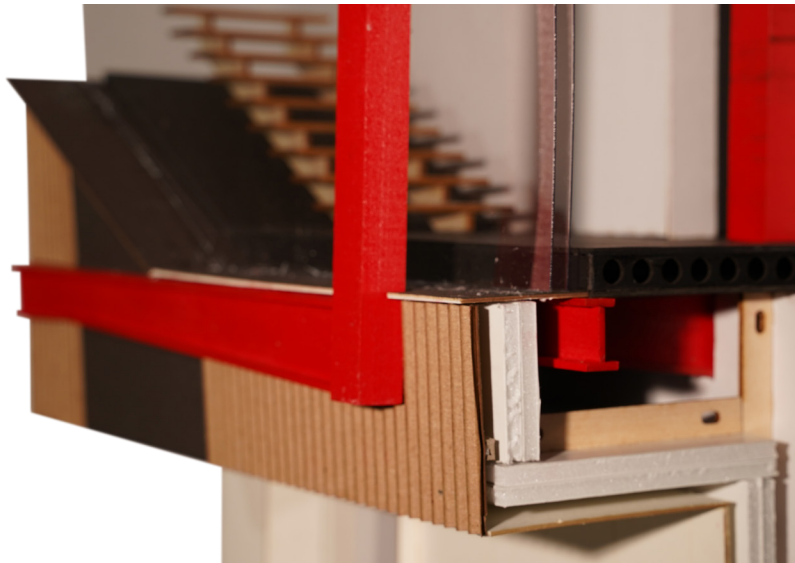
showing HVAC, public stair, egress and training tower  
Penn Ave Facade



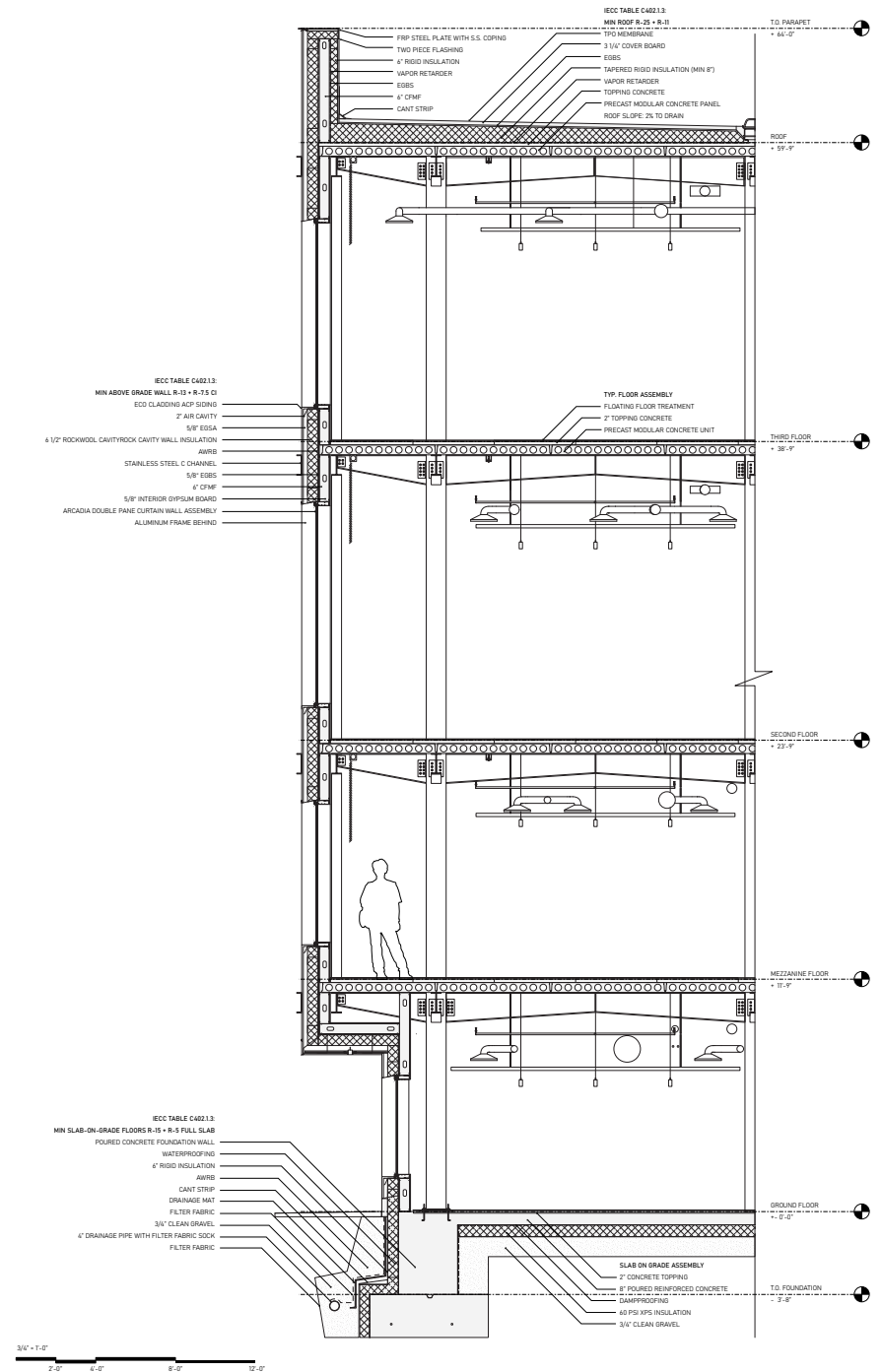
# details



chunk model wall detail



chunk model facade detail





# REPUBLIC:

## mobile home americana

*Architecture Options Studio, S23*

*Professor: Jared Abraham*

The Mobile Home Americana Options Studio explored the history and stigma around the American mobile home and aimed at reinventing it.

Precedents were studied and were used in a hybrid mashup and each student chose a different site to reimagine their own version of a mobile home for characters generated with the aid of AI.

Republic is a fictional story based on real life events in what is now the Florida Keys. It imagines the Keys 100 years into the future where sea levels have captured most of the habitable land and those who can afford to flee have already done so. But those who could not, including migrants, as the Keys has been a critical point of migration from the Caribbeans for a long time, has to stay and adapt to a new way of living: one completely on water, on the Republic houseboats. They have also had to declare independence and become a self-sustaining community. This is the story of how these complex and diverse people thrive.





Two precedents, the Houseboat by Crossboundaries, a mobile home typology, and the Zip-Up House by Richard Rogers, an unconventional home typology were studied and hybridised.

Set in a ozone collapsed reality, where the population has dwindled to a fight for survival, mutations raging and technology being advanced to near magic, the mashup is a transcontinental mobile home that can traverse harsh landscapes and to some extent, deep bodies of water. With cities crumbling worldwide, all are desperate to obtain one as a means of survival. Many resort to salvaging parts from ones that have crashed to upgrade their own means.

This hybrid mashup has propelled the project forward formally, artistically and narratively. The project is set 100 years into the future, with the site and characters having detailed and complex backstories based on the historical context of the site.

# hybrid mashup

3D Rendering + Digital Painting

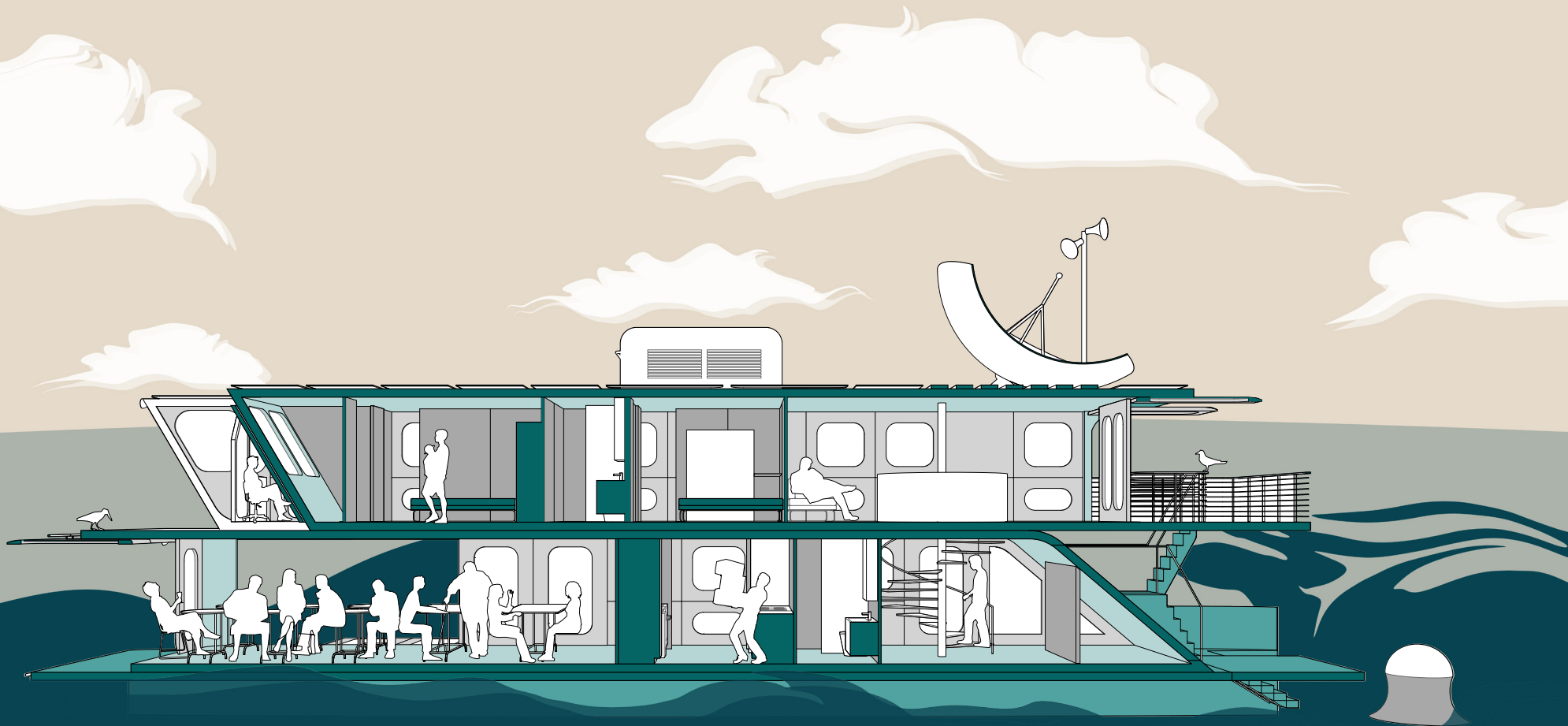




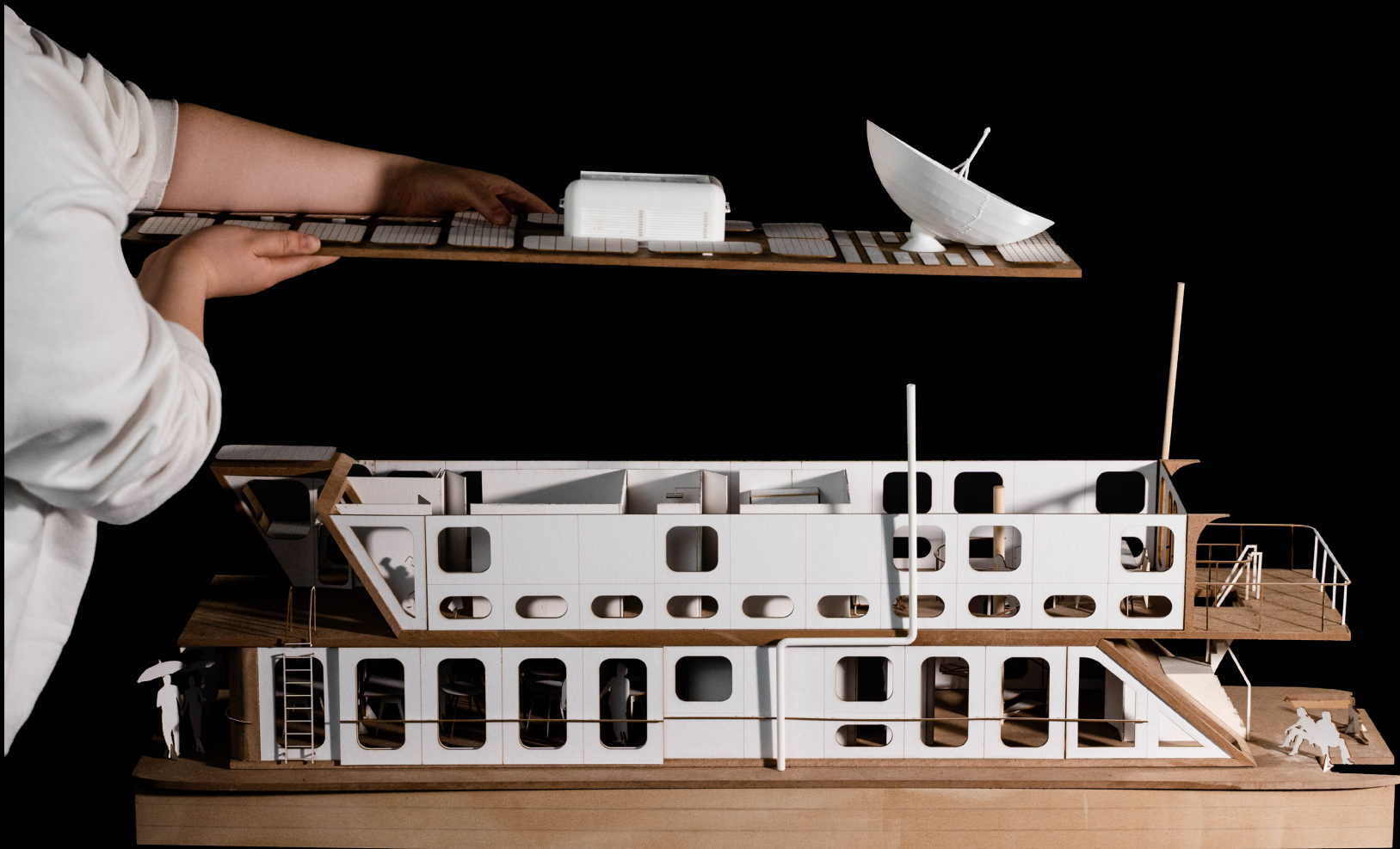


Site Redux: Dry Tortuga,  
The New Conch  
Republic (formerly the  
Florida Keys)

The proposal is the Republic, a customisable houseboat typology that acts as a self-sufficient shophouse on water. The lower level can act as a storefront that belongs to the family and the residence lies upstairs. The boat shown is one of a family restaurant that belongs to Mana's family from the character study. The boat is equipped with solar panels on the top, a backup generator, a satellite dish, sirens and desalination pods for potable water. The exterior walls are modular and can act as doors that are hinged on the bottom, expanding out to create an open floor plan and more floor space or hinged on top to shade and shelter from sun and rain. There are areas with nested doors to allow for both simultaneously.



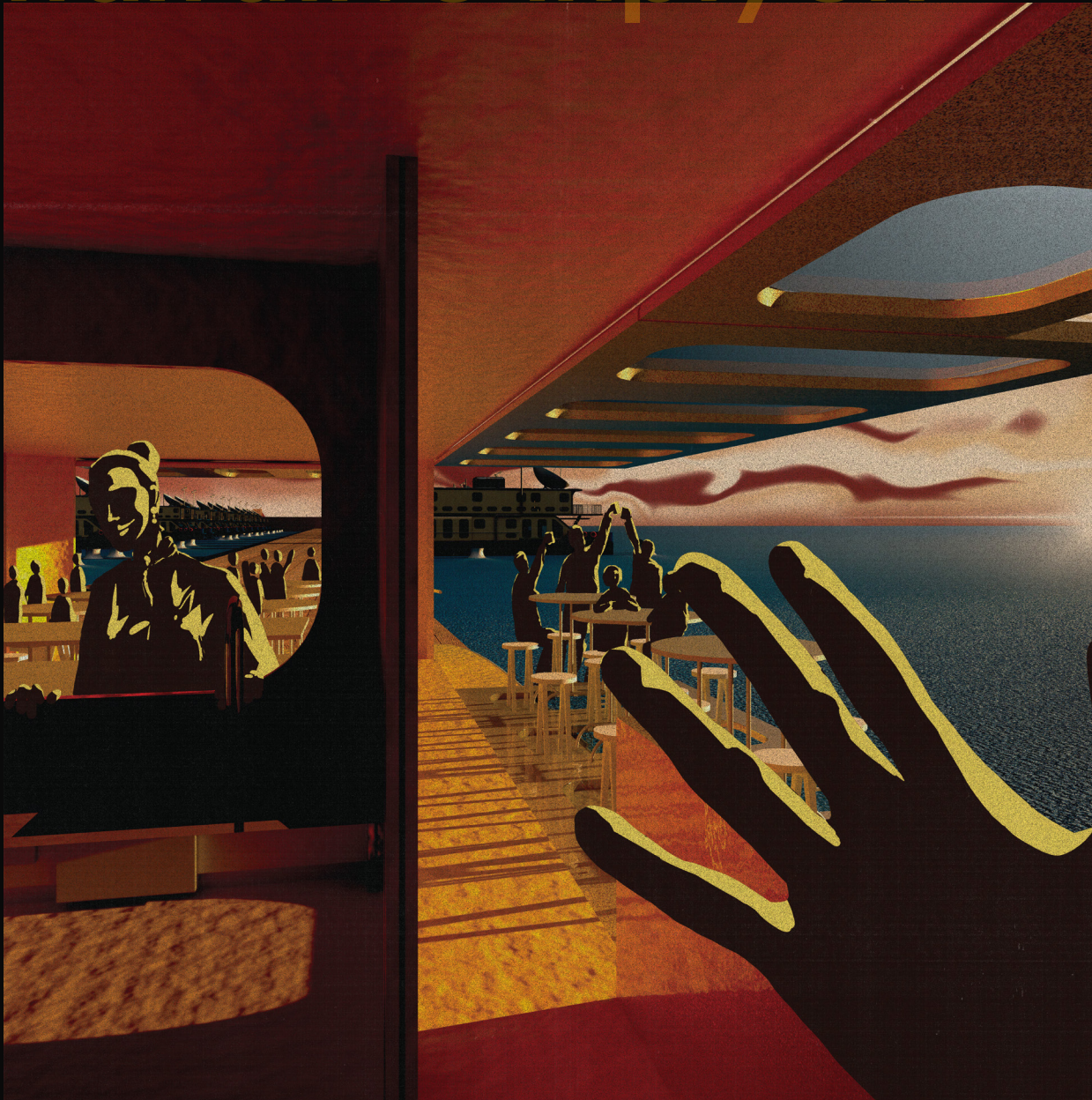




1/2" = 1'0" Physical Model



# narrative triptych



Suburban Node: Happy Hour Beers



Central Fort: Morning Groceries

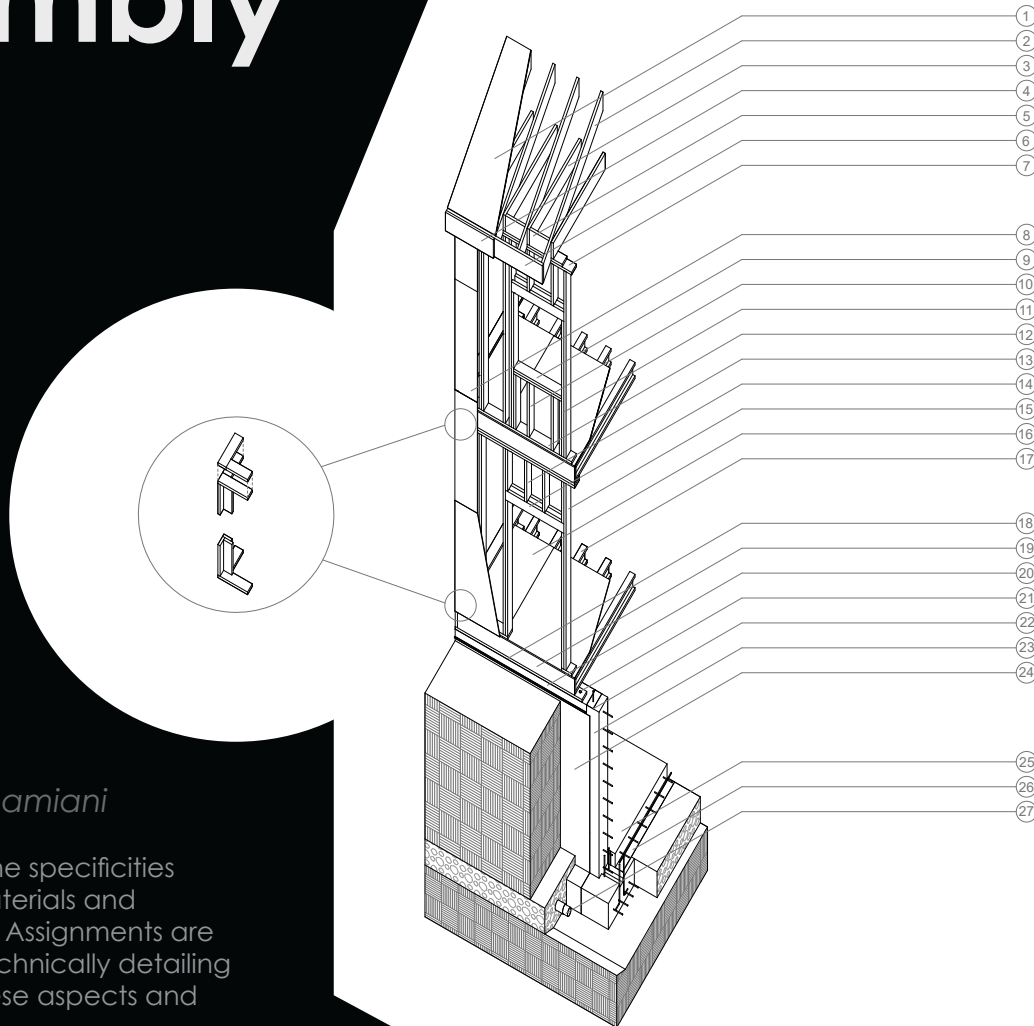




Out At Sea: Hurricane, Mass Migration



# materials & assembly



## DRAWING KEY:

- 01 3/4" PLYWOOD ROOF SHEATHING
- 02 2 x 10 WOOD RAFTER 16" O.C.
- 03 2 x 10 WOOD JOISTS 16" O.C.
- 04 FASCIA
- 05 BLOCKING
- 06 HEADER
- 07 2 x 6 DOUBLE TOP PLATE
- 08 4' x 8' 3/8" PLYWOOD SHEATH
- 09 2 x 6 ROUGH SILL
- 10 2 x 6 TRIMMED STUD
- 11 2 x 6 CRIPPLE STUD
- 12 2 x 6 SOLE PLATE
- 13 2 x 6 BLOCKING
- 14 2 x 6 HEADER STUD
- 15 2 x 6 FULL WALL STUD 16" O.C.
- 16 4' x 8' 3/4" PLYWOOD SUBFLOOR
- 17 10" I-JOISTS 16" O.C.
- 18 2 x 6 PRESSURE TREATED SILL PLATE
- 19 2 x 10 END JOISTS
- 20 TERMITE BARRIER
- 21 ANCHOR BOLT
- 22 SILL SEAL
- 23 FOUNDATION
- 24 DAMP PROOFING
- 25 8" CONCRETE SLAB
- 26 VAPOUR BARRIER
- 27 FOUNDATION DRAIN

SCALE: 1/4" = 1'

## WOOD FRAMING

### ASSIGNMENT 4

48-215 MATERIALS & ASSEMBLY  
FALL 2022

INSTRUCTOR: GERARD DAMIANI

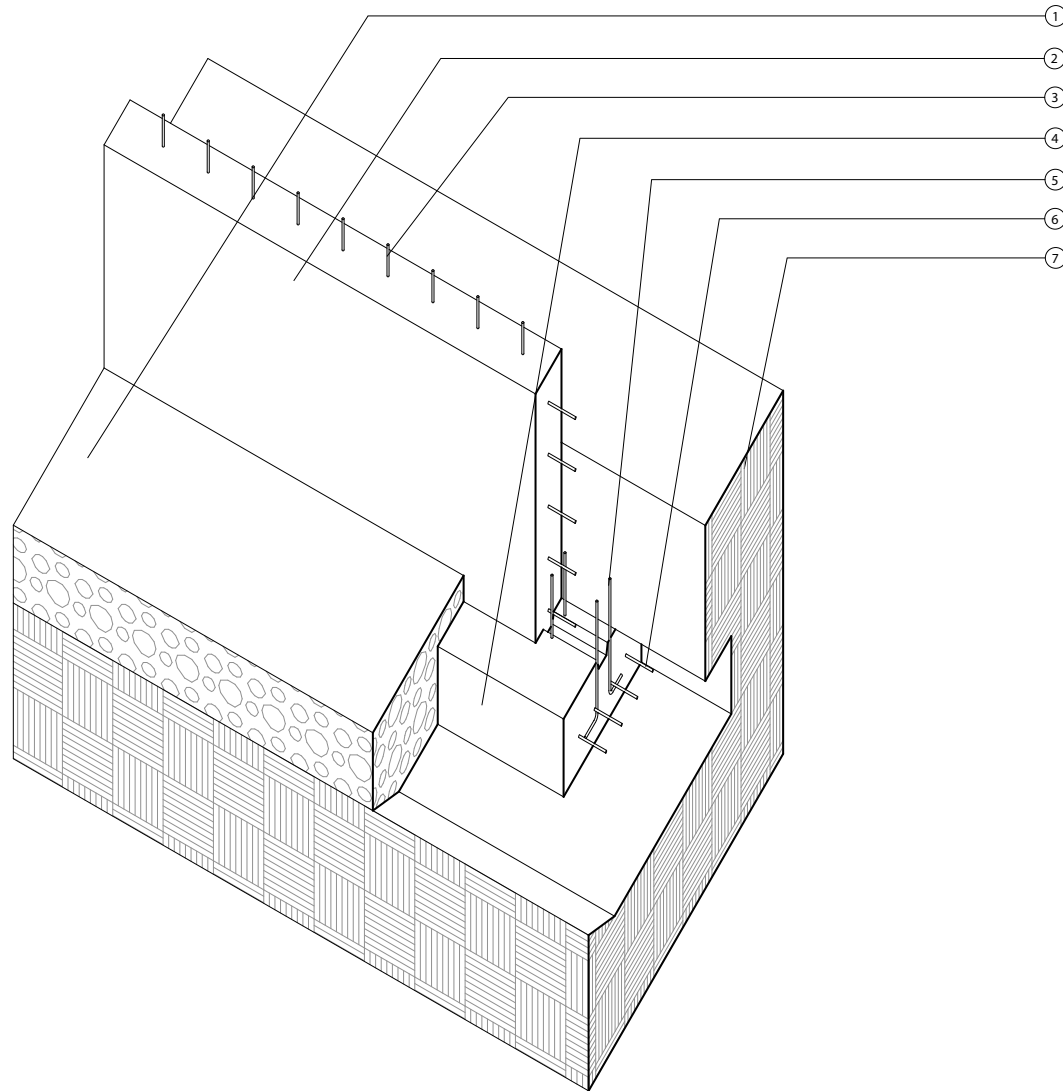
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*Professor: Gerard Damiani*

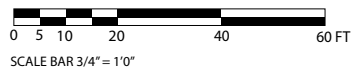
This course examines the specificities and multiplicities of materials and construction assembly. Assignments are created to practice technically detailing and understanding these aspects and components.





#### CONSTRUCTION KEY:

- 01 STONE BACKFILL
- 02 CONCRETE POURED-IN-PLACE FOUNDATION WALL
- 03 WALL REINFORING AND SPACING
- 04 CONCRETE POURED-IN-PLACE SPREAD FOOTING
- 05 DOWEL REINFORCING
- 06 HORIZONTAL FOOTING REINFORCED STEEL
- 07 UNDISTURBED SOIL



#### FOUNDATION SYSTEMS

#### ASSIGNMENT 1

48-215 MATERIALS & ASSEMBLY  
FALL 2022

INSTRUCTOR: GERARD DAMIANI

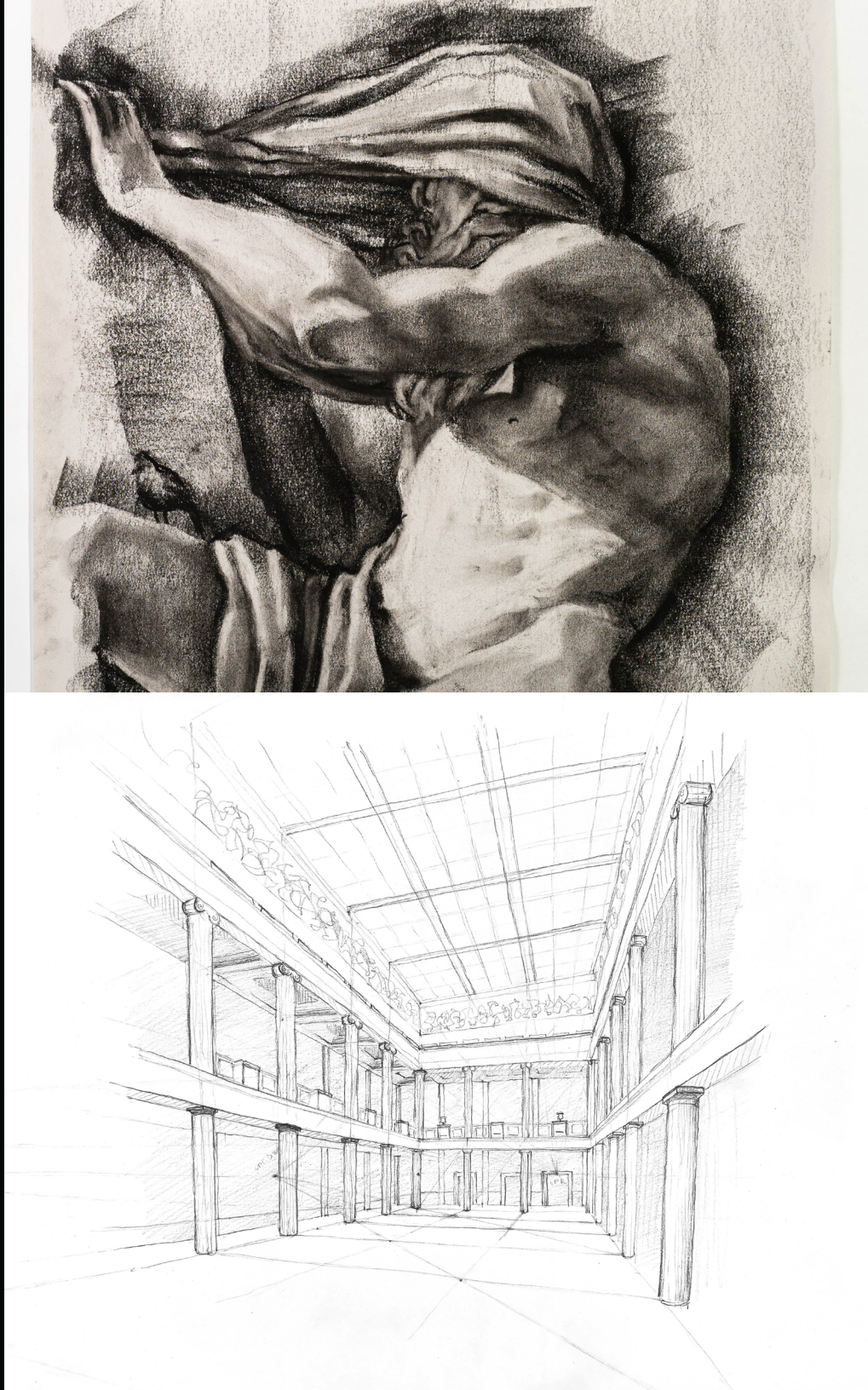
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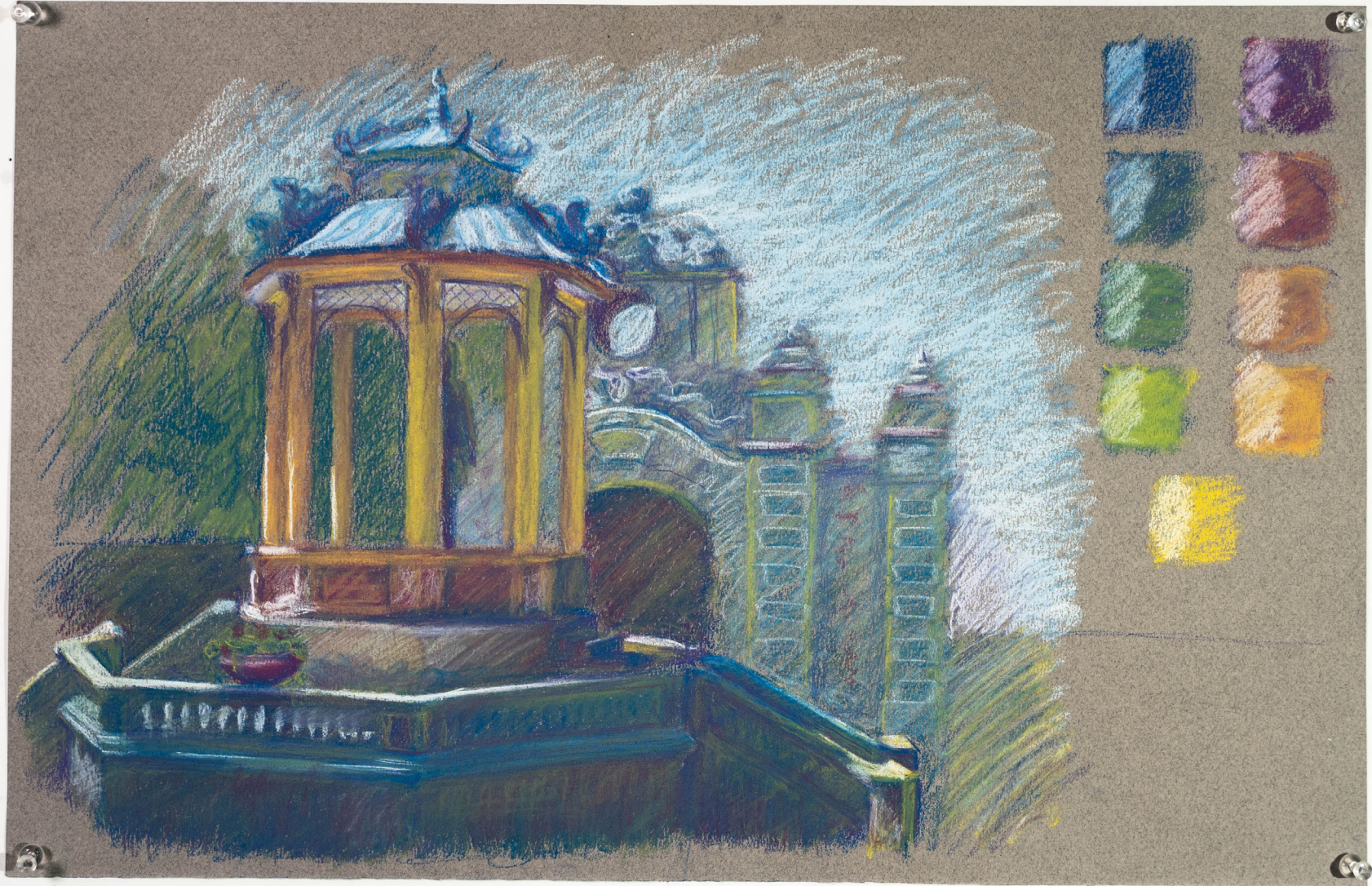
# freehand drawings

*Drawing I & Drawing II, Professor:  
Douglas Cooper*

Throughout these courses, different drawing media were used to practice various drawing techniques. Graphite was used to practice free-hand perspectives and obliques. Charcoal was used to explore shape and form through tone and the same was explored through stroke qualities and stroke weights with conte crayon. Colour and stroke, through pastel, is used to emphasise formal qualities in the image.









# miscellaneous work

This collection of work comprises of digital work and model-making work completed during international internship programs, collaborative projects with museums, as well as work from previous studios not displayed. Below are the descriptions of each piece:

1. structural concept model, F22 poesis III studio, culinary institute
2. hotel A floor plan, Saugatuck Connecticut, Bensley Studios 2022 internship
3. hybrid mashup, F23 praxis II studio, hydrologic necklace
4. bamboo dragon bridge model, Vo Trong Nghia Architects 2023 internship
5. doll house single arch-column, collaboration with artist Dennis Maher, exhibited at the Mattress Factory Fine Arts Museum
6. hotel bar bungalow, Mbongo Congo, Bensley Studios 2022 internship
7. hotel spa reception tent (design & render), Turkey, Bensley Studios 2022 internship



2



1



3







