SELENA ZHEN

PORTFOLIO

I’m currently a student at Carnegie Mellon University pursuing my Bachelor’s Degree in Architecture and Minor in Human Computer Interaction as well as a passion for the beauty of experience and detail. I strongly believe in the process of design and its applications to situations outside of architecture and design, and am looking forward to ways I can improve human experience, expand my skillset, and develop new methods of approach to design.

CONTACT

selenazhen.com

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(+1) 574 265 5187

EDUCATION

CARNEGIE MELLON UNIVERSITY
Bachelors of Architecture
Minor in Human Computer Interaction
Pittsburgh, PA
2020

INDIANA ACADEMY FOR SCIENCE, MATHEMATICS, AND HUMANITIES
Academic Honors Diploma
Muncie, IN
2015

SKILLS

DIGITAL
Rhinoceros 3D
Sketchup
AutoCAD
V-Ray
Grasshopper
Revit

ADOBE SUITE
Photoshop
Illustrator
InDesign
After Effects
Premiere Pro
Dreamweaver

ANALOG/FABRICATION
Drawing
Drafting
Model-Making
Laser Cutter
Woodshop
3D Printing
Photography (Digital)

UI/UX DESIGN
Sketch
InVision
Figma
Prototyping
HTML/CSS
Python

RECOGNITION

INDIANA ARCHITECTURAL FOUNDATION
2018 Scholarship Recipient, for academic excellence as an architectural student.

EXPERIENCE

EXPERIENCE DESIGNER
BLUECREW, SAN FRANCISCO, CA
JUNE 2018 - AUGUST 2018
Redesigned and refocused BlueCrew's app user interfaces by creating mockups, branding guidelines, and prototypes. Aligned with the developer team to iterate on user interfaces and user interactions. Created branding items and design products for overall brand clarity and continuity.

DIGITAL MEDIA TEACHING ASSISTANT
SCHOOL OF ARCHITECTURE, CARNEGIE MELLON UNIVERSITY
JANUARY 2018 - MAY 2018
Provided in-class instruction and recitation instruction to first-year architecture students to advance their knowledge of digitally created architectural concepts.

FASHION DESIGNER
LUNAR GALA, CARNEGIE MELLON UNIVERSITY
AUGUST 2017 - FEBRUARY 2018
Designed and produced a 10-piece fashion line, SURFACE, from start to finish, which comprised of mapping the topographical geography of the ideal human body. In collaboration with Michael Powell.

FRONT-END DEVELOPER & GRAPHIC DESIGNER
ZINC TECHNOLOGIES, SAN FRANCISCO, CA
JUNE 2017 - AUGUST 2017
Redesigned and redeveloped Zinc.io, PriceYak, Subtotal, and Lionfish product websites. Commissioned to redesign website and app UI, reimagine branding, and create logos.

LEADERSHIP

PRESIDENT
AMERICAN INSTITUTE OF ARCHITECTURE STUDENTS (AIAS), CMU CHAPTER
MAY 2018 - PRESENT
Chaired the Executive Board to lead programming, events, culture, community, and educational initiatives for the School of Architecture at Carnegie Mellon University. As president, I serve as a liaison to the national organization, which stands as the sole student voice in the professional architectural field. Assisted in receiving National Chapter Honor Award for both 2016 and 2018.
Previously served as Vice President (2017-18) and Treasurer (2016-17).

ASSOCIATE CHAIR - BEAUX ARTS BALL
BEAUX ARTS BALL COMMITTEE, COLLEGE OF FINE ARTS
AUGUST 2017 - OCTOBER 2018
Directed and oversaw the planning of the Beaux Arts Ball for the College of Fine Arts. Established a groundwork for the committee to plan the 600+ person ball, including working on tracks focused on Security, Volunteers + Staffing, Decorations, Finance, and PR/Marketing.

TECHNOLOGY TRACK CHAIR
AIAS 2016 NORTHEAST QUAD CONFERENCE
AUGUST 2015 - MARCH 2016
Planned and organized a national architecture conference with 500+ attendees.

ARCHITECTURE

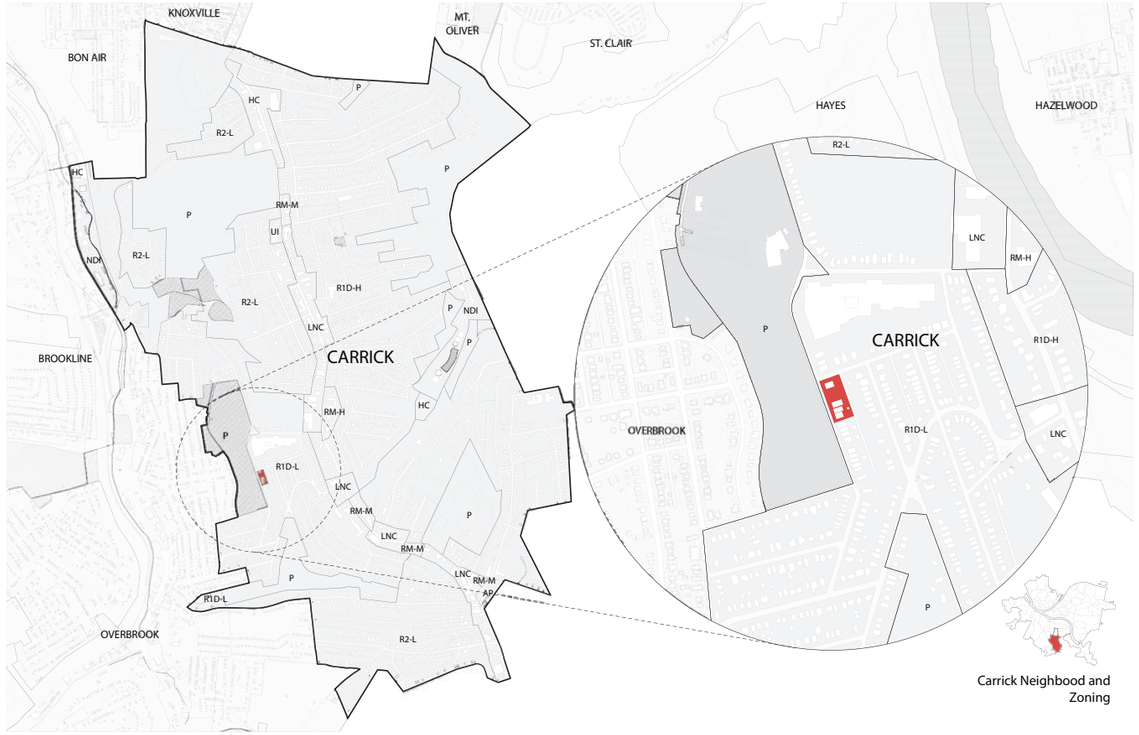
ENVIRONMENTAL CHARTER SCHOOL

3rd Year | Spring 2018
Advanced Construction Studio

GOAL:
The Advanced Construction Studio project focused on working together with the leadership, teachers and students of the Environmental Charter School (ECS) in Pittsburgh to explore concepts for the design of their next generation of middle schools. I was asked to prototype a charter middle school for 6th to 8th graders based on their school values. A fundamental aspect of ECS is to teach ecological literacy. To this end, students and teachers must be provided the opportunity to actively engage in the operation of the building - from passive strategies to active strategies to measuring and verification of performance. The goal of the project was also to use previous knowledge of design methods and extend those skills to understand spatial systems, structural systems, enclosure systems, material systems and construction systems for the building.

FROM THE PA DEPARTMENT OF EDUCATION WEBSITE:
"Charter schools were created to provide opportunities for teachers, parents, students and community members to establish and maintain schools that operate independently from the existing school district structure as a method to accomplish the following: improve student learning; increase learning opportunities for all students; encourage the use of different and innovative teaching methods; create new professional opportunities for teachers; provide parents and students with expanded choices in the types of educational opportunities that are available within the public school system; and be accountable for meeting measurable academic standards."

Exterior Elevation



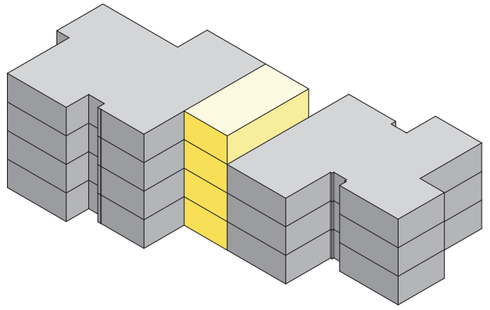
SITE

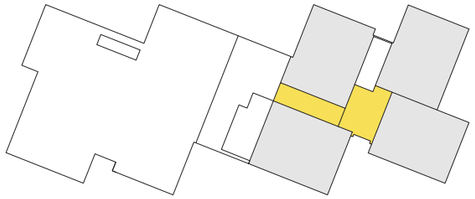
Carrick Neighborhood, near Phillips Park and Carrick High School

- 2237 Spokane Ave
- 2241 Spokane Ave
- 2245 Spokane Ave
- 2249 Spokane Ave
- 2251 Spokane Ave

LOCATION DESIGN

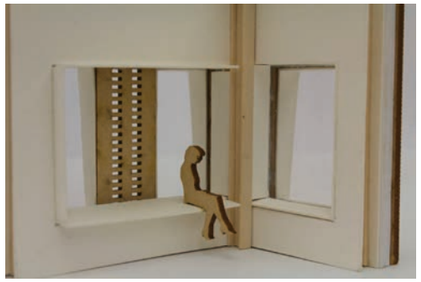
The site for the Environmental Charter School project is down the street from Carrick High School, across the street from Phillips Park. After speaking to residents of the neighborhood, we found that it was an popular commuting area, and many families have to send their students to middle schools in other neighborhoods. This site is ideal for students of the Carrick neighborhood, as this neighborhood does not have a 6-8 school.





CONCEPT

The building is separated into three parts; the North and South wings, connected by circulation and social spaces. Each wing on each floor holds a different purpose, and the program is spread throughout these areas; for example, every grade is located within its own ‘neighborhood’ wing of 4 studios. Also, the building is situated so it faces the direct cardinal directions, allowing the school to have direct views of Phillips Park, and to take advantage of the solar benefits. The 4th Floor South Wing is designed as an Outdoor Learning Space, allowing opportunities for students to learn about the passive and active systems of the building, as well as urban garden systems.



STUDIO DESIGN

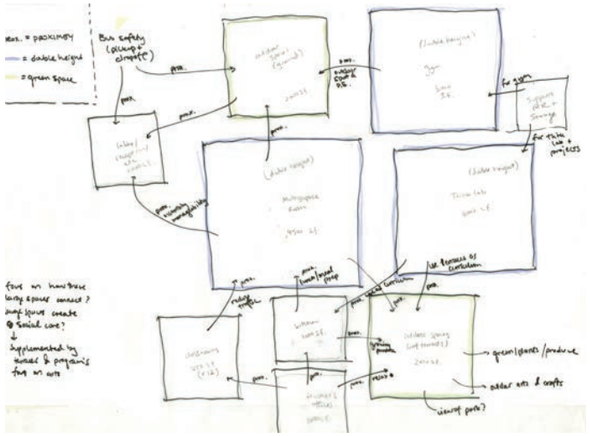
The floor plan of the building is designed so that each studio has is provided with at least 2 directions of natural light and a small outdoor patio for individual outdoor learning opportunities. The studios’ windows are designed to double as a learning space as well as fenestration. The brick rainscreen between two windows works as a screen to allow in various types of light and provide an interior design opportunity for seating or shelving.

STRUCTURE

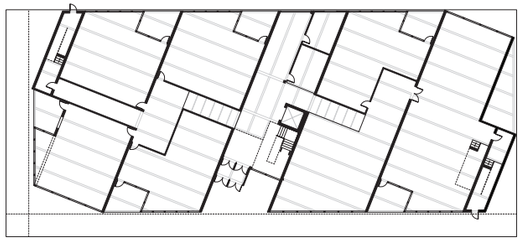
The Environmental Charter School is designed as a steel structure system, with a brick rain facade. Because of the steep slope of the given site, the three parts of the building are connected by ramps, allowing for accessibility access throughout the building.

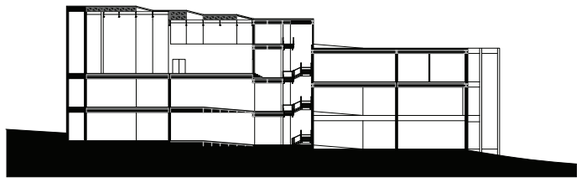
PROCESS

1. Initial Sketch Concepts

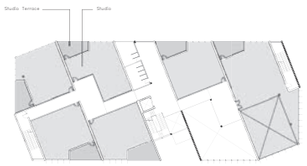


2. Site Orientation

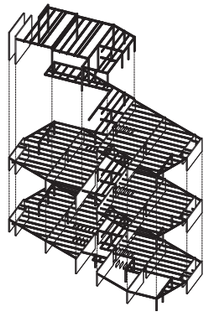




3. Program + Structure (Midreview)

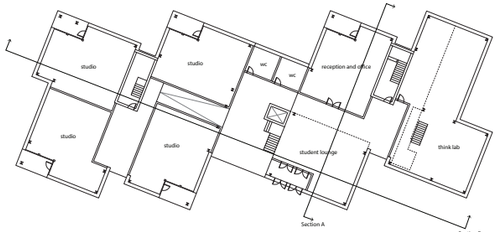


Studio Programming
NTS



Structural Grid
NTS

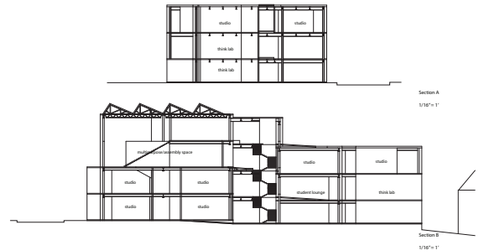
4. Program Refinement



Ground Floor
1/16" = 1'

Section A

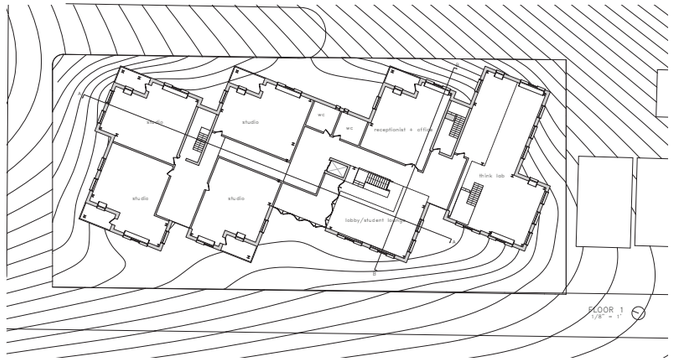
Section B



Section A
1/16" = 1'

Section B
1/16" = 1'

5. Pre-final Scheme



FLOOR 1
1/8" = 1'

WEST ELEVATION
1/16" = 1'

PROGRAM

Multipurpose Assembly/Cafeteria Room: 4,500 sf (minimum double height & maximum triple height space)

Think Lab/Project Resource Center: 3,000 sf (minimum double height space). The Think Lab is a facility to support specialized science, math, art, design,and making activities, and is staffed by two faculty during school hours.

Studios: Twelve (12) @ 1,250 sf each. The studios must support multiple configurations to accommodate learning from lectures to small groups.

Lobby/Reception/Medical/Principal/ Conference Suite: 1,000 sf

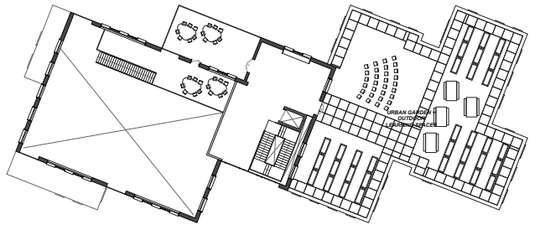
Shared Teacher Office: 1,000sf

Kitchen: 1,000sf

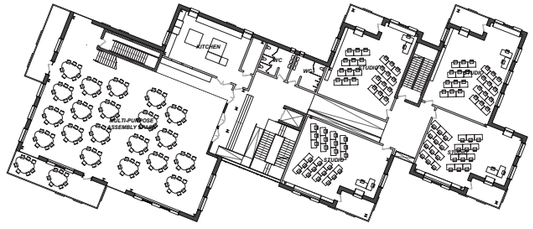
Support Spaces: 2,750 sf (custodial, storage, MEP, toilets)

Outdoor Learning Spaces: 4,000 sf (can be located on the ground or on the roof(s))

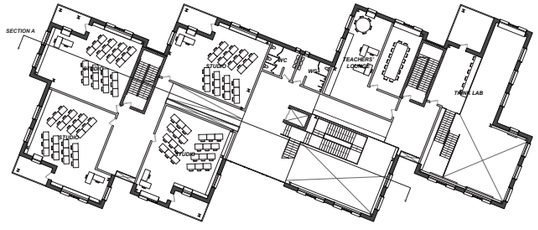
Outdoor Service Area: 500 sf



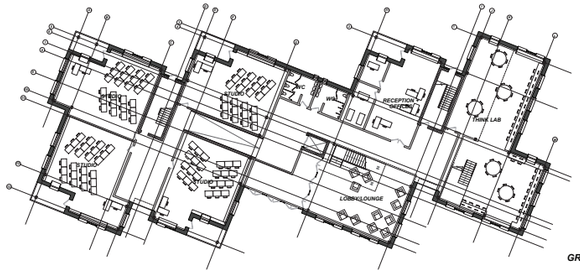
FLOOR FOUR



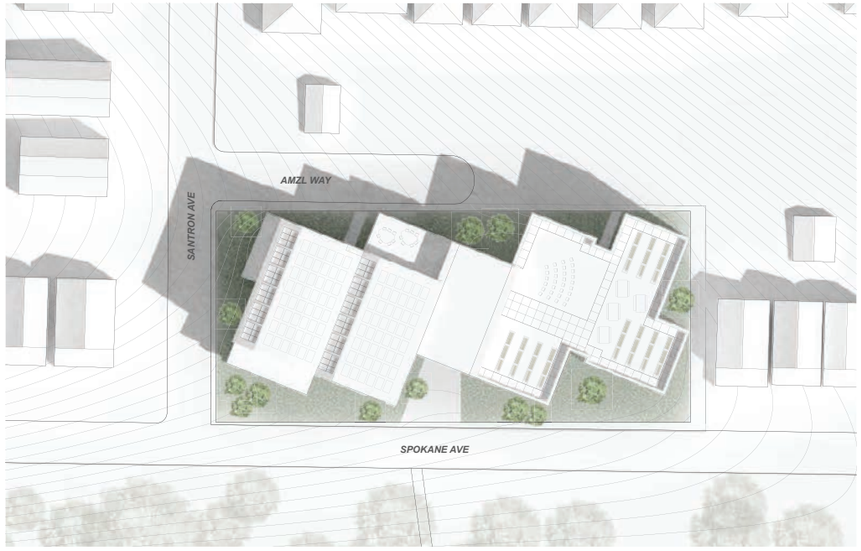
FLOOR THREE



FLOOR TWO



GROUND FLOOR



NORTH ELEVATION

EAST ELEVATION

WEST ELEVATION

SOUTH ELEVATION

SECTIONAL PERSPECTIVE

parapet flashing
angled wood cap
engineered soil
filter fabric
drainage + moisture retention layer
rigid insulation
waterproof membrane
roof decking
interior finishing
steel channel/batting insulation
DenGlass sheathing
waterproof/vapor barrier
rigid insulation
brick anchor tie back (16”O.C.)
2.5” gap
brick veneer
casement window

ENVIRONMENT, FORM, + FEEDBACK

Third Year | Fall 2017

GOAL: An environmentally conscious design process that dares to engage the occupant in a sensorial way. Utilizing the power of wind not only as a tool to harvest energy and passively cool the housing complexes, but also as a means to alter the occupier's perspective of wind through the sculpting of the site along a series of wrapping pathways.

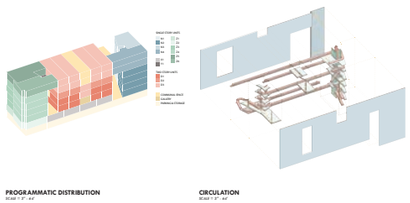
In collaboration with Michael Powell.

Exterior Render

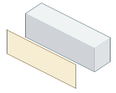
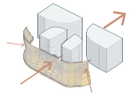
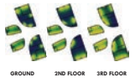
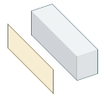
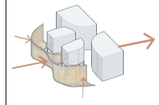
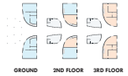
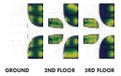
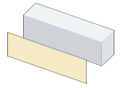
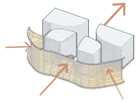
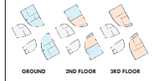
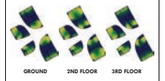
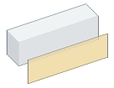
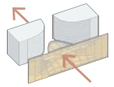
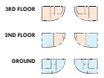
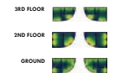
Movement Through Atrium

PROCESS

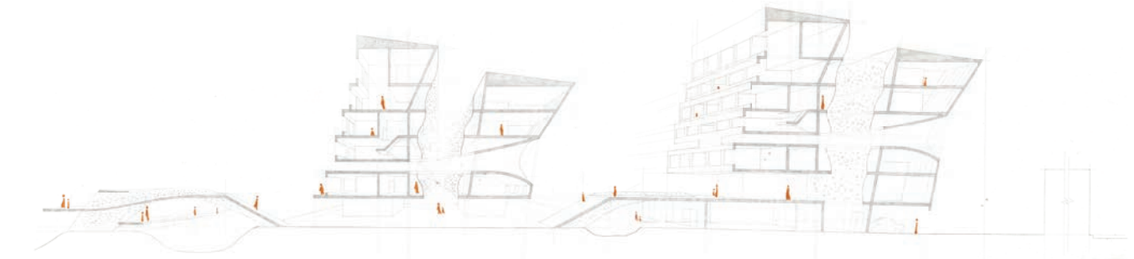
1. Precedent Study - Kavel 25

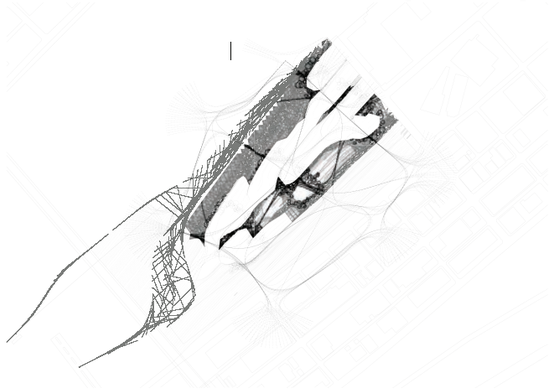


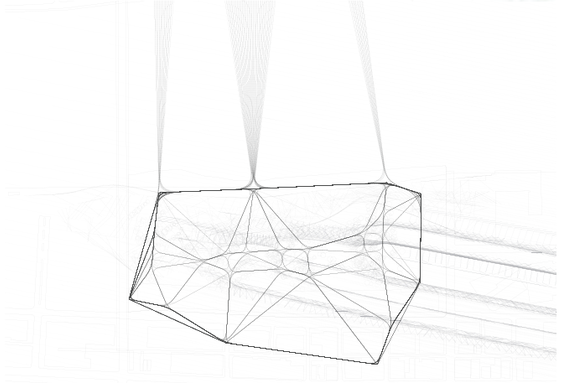
2. Morphology

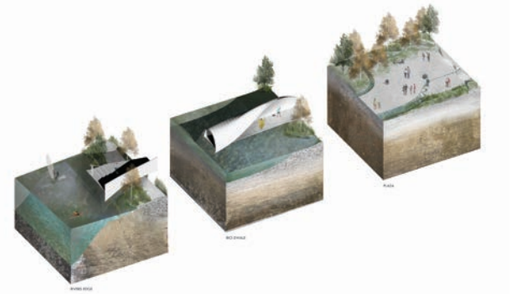
	ORIENT	WIND MORPHOLOGY	PLAN	DAYLIGHT
MARCH				
JUNE				
SEPTEMBER				
DECEMBER				

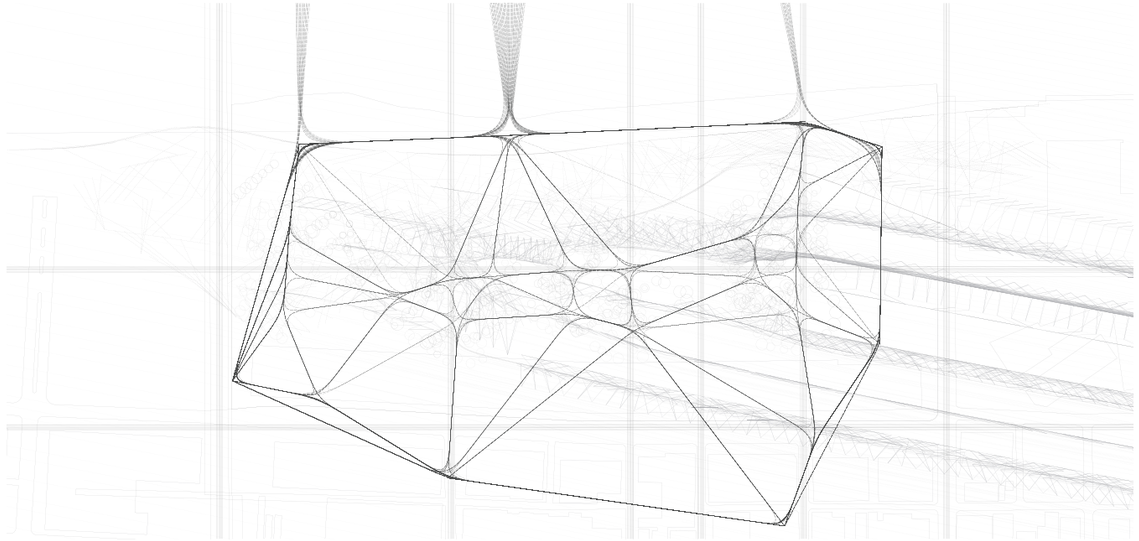
3. Site Planning + Iterating



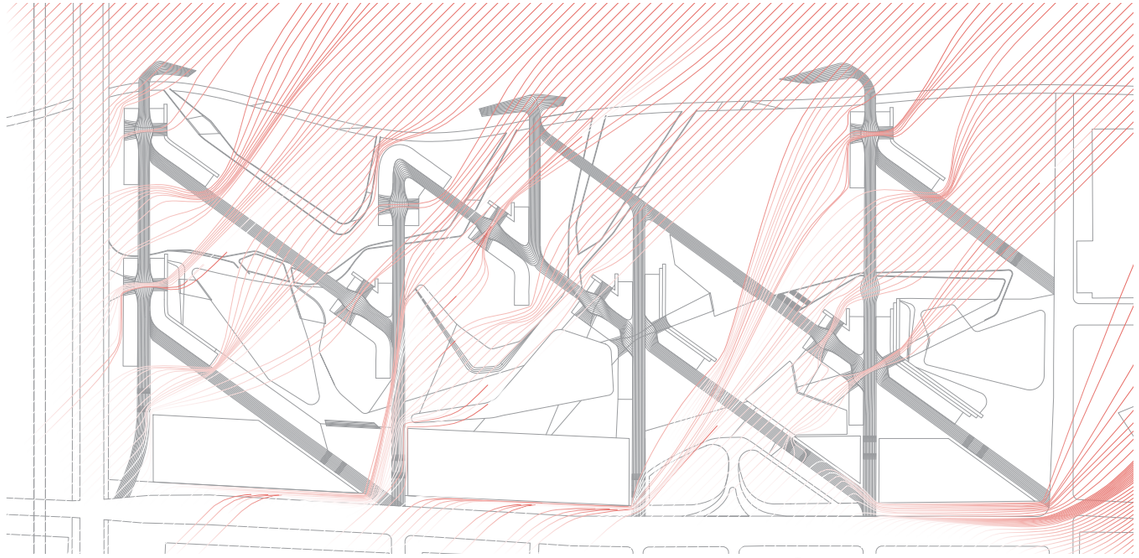




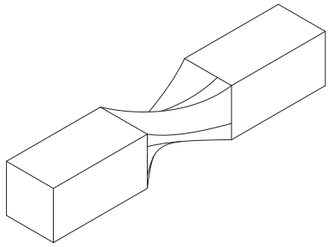




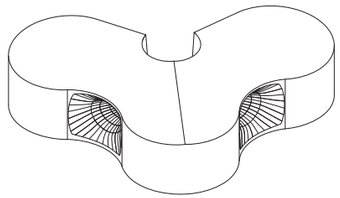
Abstract Site Drawing
(NTS)



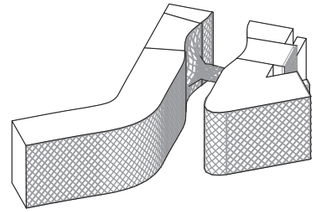
Prevailing Winter Winds - South
(NTS)



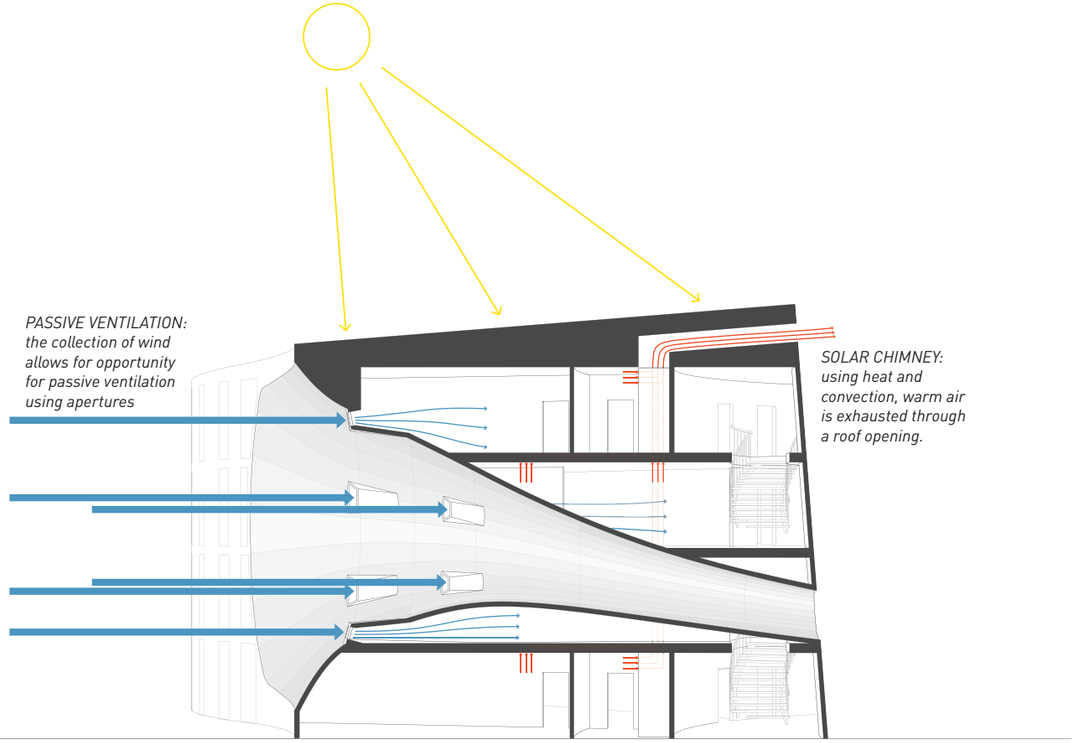
CONCEPT



ITERATION



TRANSLATION



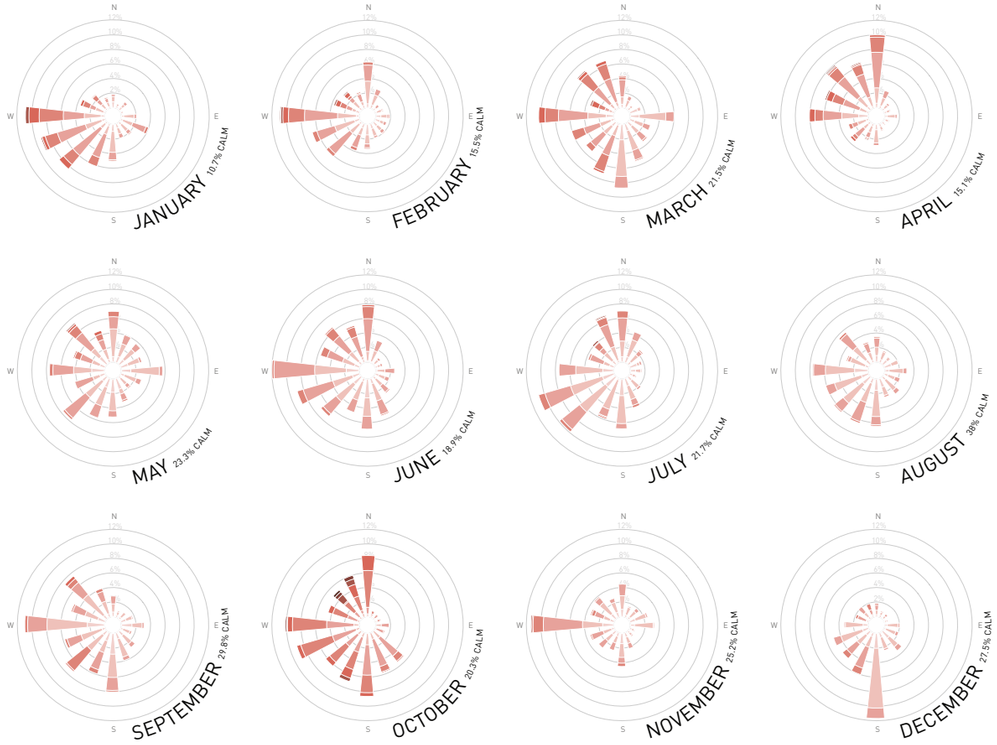
Passive Ventilation & Solar Chimney

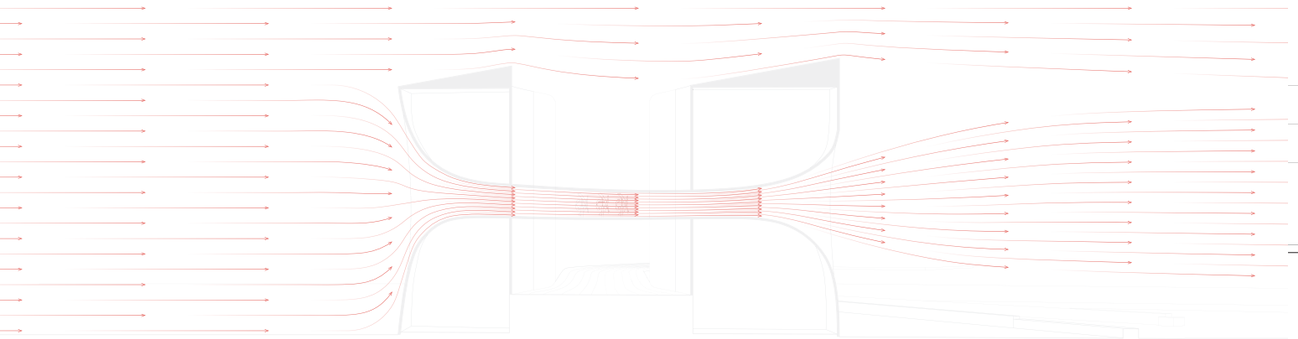
Pittsburgh Wind Roses

LATITUDE - 40° 30' 05" N
LONGITUDE - 80° 13' 52" W
ELEMENT - MEAN WIND SPEED
DATA COLLECTED FROM 2012
SOURCE - WESTERN REGIONAL CLIMATE CENTER
https://wrcc.dri.edu/cgi-bin/wea_windrose.pl?iaKPIT

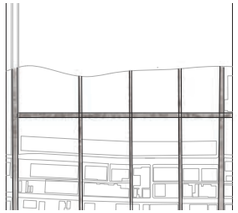
MPH

- 1.3 - 4
- 4 - 8
- 8 - 13
- 13 - 19
- 19 - 25
- 25 - 32
- 32 - 39
- 39 - 47
- 47+

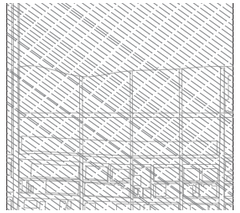




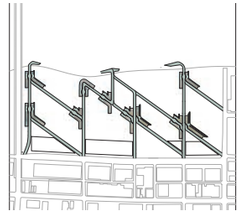
Wind Dam Flow Diagram



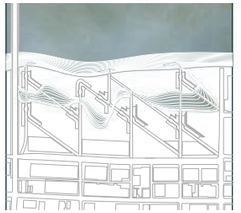
Extending roadways



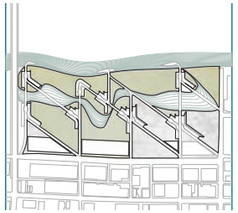
Prevailing winds



Building and path definition

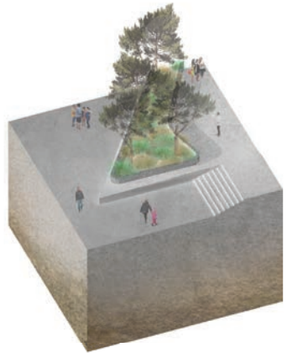


Integrating water



Zoning

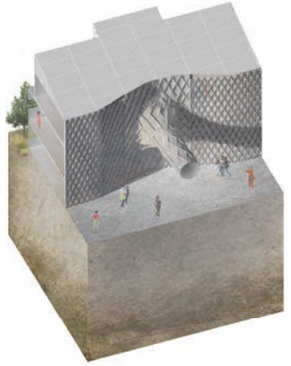
Formative Logic



1. Site Entry

Moderate wind; low moisture; high solar exposure

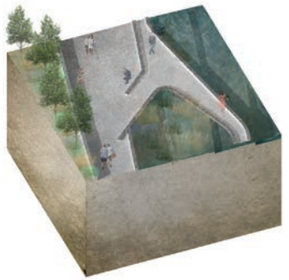
Plant life:
Meadow favorite
Mugwort
Elephants ear
Feathery fountain grass
Bailey's acacia



2. Atrium

High wind; moderate moisture; low solar exposure

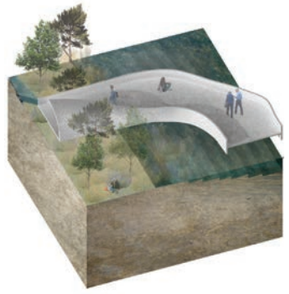
Plant life:
Quaking aspen
Eupatorium
Miscanthus
Vernonia



3. Swale

Moderate wind; high moisture; moderate solar exposure

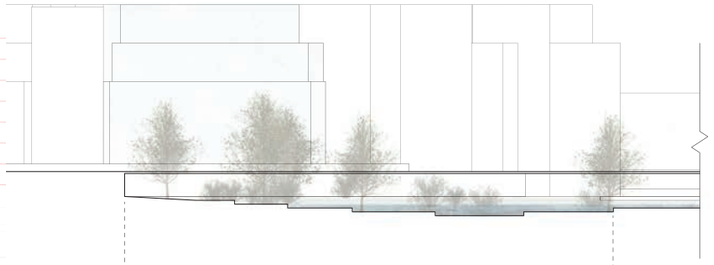
Plant life:
Water birch
Sea holly
Horsetail
Iris versicolor
Button bush



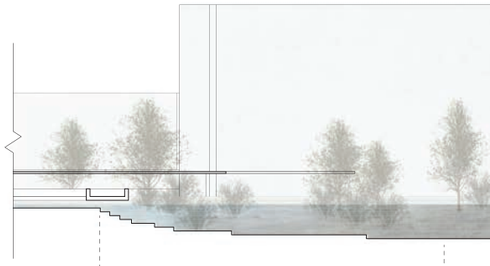
4. River's Edge

High wind; high moisture; moderate solar exposure

Plant life:
Bald cypress
Water birch
Iris versicolor
Buttonbush
Water iris

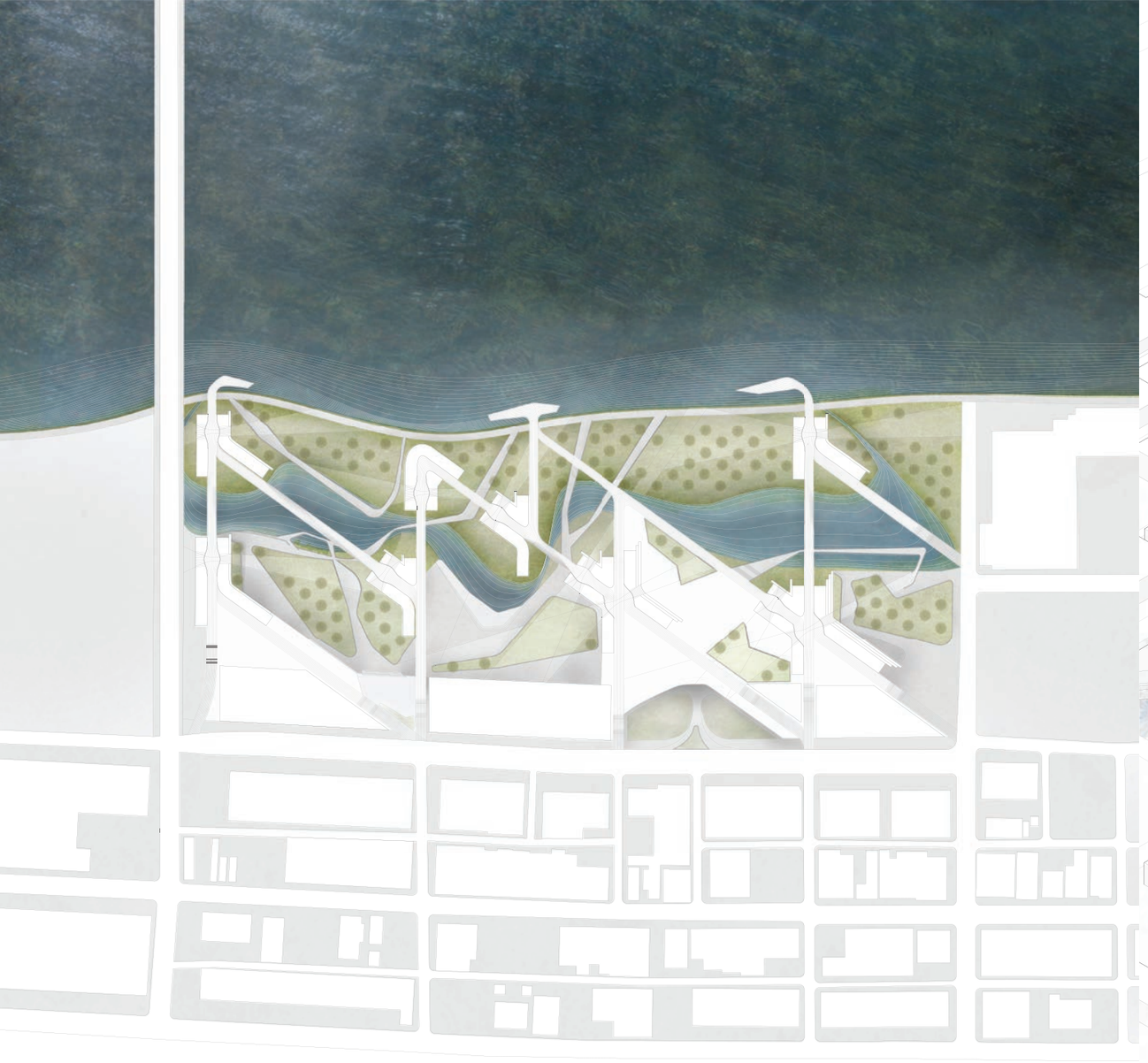


Bioswale

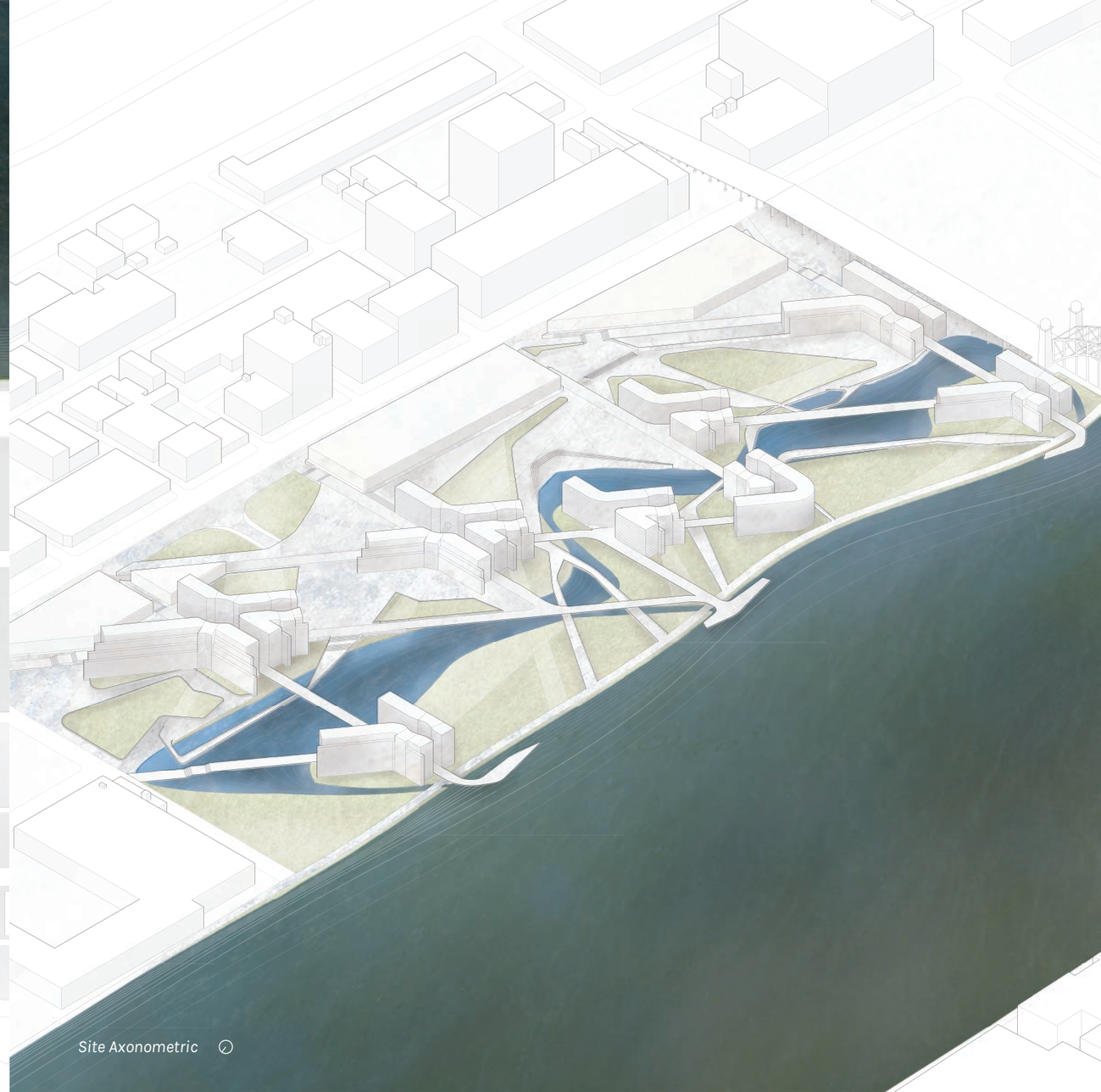


Overflow Tributary

River Edge



Site Plan



Site Axonometric

CITRA - HOOP HOUSE

Second Year | Fall 2016

GOAL
To design and build a portable greenhouse to extend the growing season of a raised planting bed in an urban garden.

DESCRIPTION
The word "CITRA", of Latin origin, translates to "without," which drove the creation of a collaborative hoop house project that emphasizes the importance of accessibility, removing unnecessary structure that could obstruct a user's reach. CITRA uses a unique cantilever system to leave an entire side completely open at the user's discretion. This design choice is complemented by a spooled system, which can unroll and clip together per the user's purposes. The form mimics its contextual situation on the roof of the David L. Lawrence Convention Center in the Cultural District of Pittsburgh, PA, meeting the lower slope of the roof line and drawing forth the steep angle of the building. These systems work in tandem to create a hoop house that achieves ideal ventilation and enclosure, provides the most accessibility possible, and interacts positively with the geometric patterns found in its context.

In collaboration with Kornrat Euchukanonchai, Kevin Jiang, David Kim, and Hamza Qureshi.

Citra: Final Structure and Installation

Citra
K. Eschukanonchai
K. Jiang
D. Kim
H. Qureshi
S. Zhen

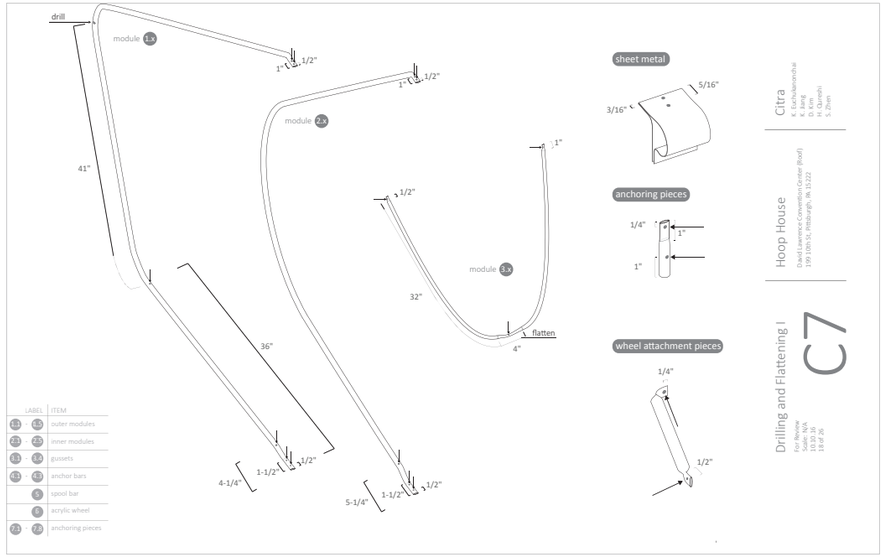
Hoop House
David Lawrence Convention Center (Roof)
130 10th St, Pittsburgh, PA 15222

Axonometric - Open/Closed

B7

For Review
Scale: 1" = 1'
10.10.16
10.17.16

Construction Drawing: Axonometric



LABEL	ITEM
1.1 - 1.5	outer modules
2.1 - 2.5	inner modules
3.1 - 3.4	gussets
4.1 - 4.3	anchor bars
5	spool bar
6	acrylic wheel
7.1 - 7.4	anchoring pieces

Citra
K. Eschukanonchai
K. Jiang
D. Kim
H. Qureshi
S. Zhen

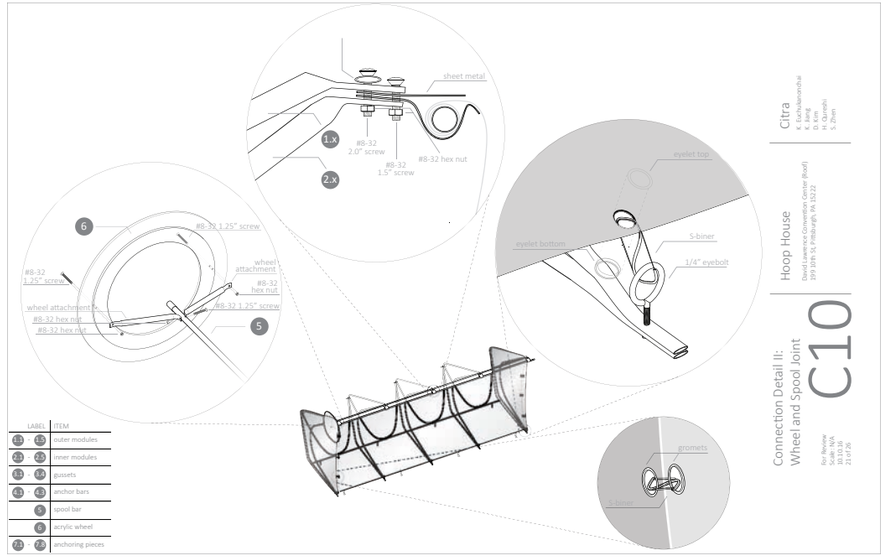
Hoop House
David Lawrence Convention Center (Roof)
130 10th St, Pittsburgh, PA 15222

Drilling and Flattening I

C7

For Review
Scale: N/A
10.10.16
10.17.16

Construction Drawing: Drilling and Flattening I



LABEL	ITEM
1.1 - 1.5	outer modules
2.1 - 2.5	inner modules
3.1 - 3.4	gussets
4.1 - 4.3	anchor bars
5	spool bar
6	acrylic wheel
7.1 - 7.4	anchoring pieces

Construction Drawing: Connection Detail II: Wheel and Spool Joint

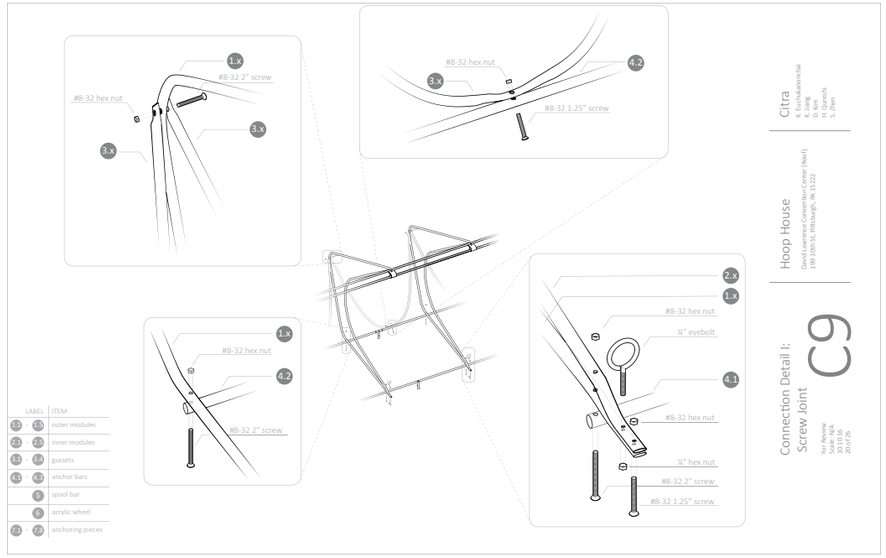
Citra
K. Eschukanonchai
K. Jiang
D. Kim
H. Qureshi
S. Zhen

Hoop House
David Lawrence Convention Center (Roof)
130 10th St, Pittsburgh, PA 15222

Connection Detail II: Wheel and Spool Joint

C10

For Review
Scale: N/A
10.10.16
10.17.16



LABEL	ITEM
1.1 - 1.5	outer modules
2.1 - 2.5	inner modules
3.1 - 3.4	gussets
4.1 - 4.3	anchor bars
5	spool bar
6	acrylic wheel
7.1 - 7.4	anchoring pieces

Construction Drawing: Connection Detail I: Screw Joint

Citra
K. Eschukanonchai
K. Jiang
D. Kim
H. Qureshi
S. Zhen

Hoop House
David Lawrence Convention Center (Roof)
130 10th St, Pittsburgh, PA 15222

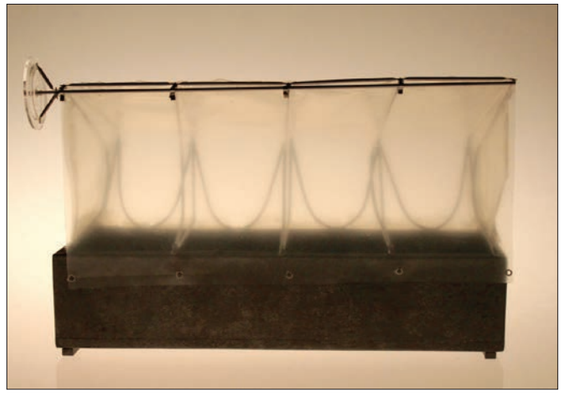
Connection Detail I: Screw Joint

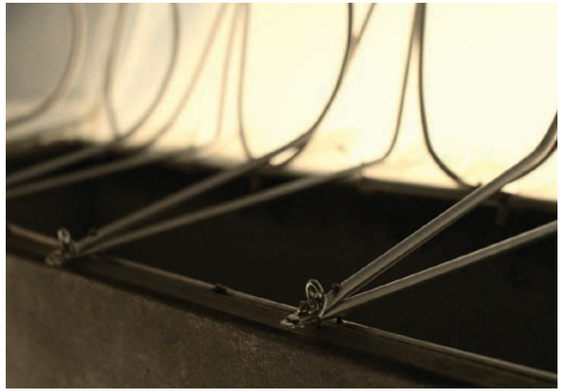
C9

For Review
Scale: N/A
10.10.16
10.17.16

SCALE MODEL (2"=1')

Aluminum Tubing, Greenhouse Plastic, Galvanized Wire,
Basswood





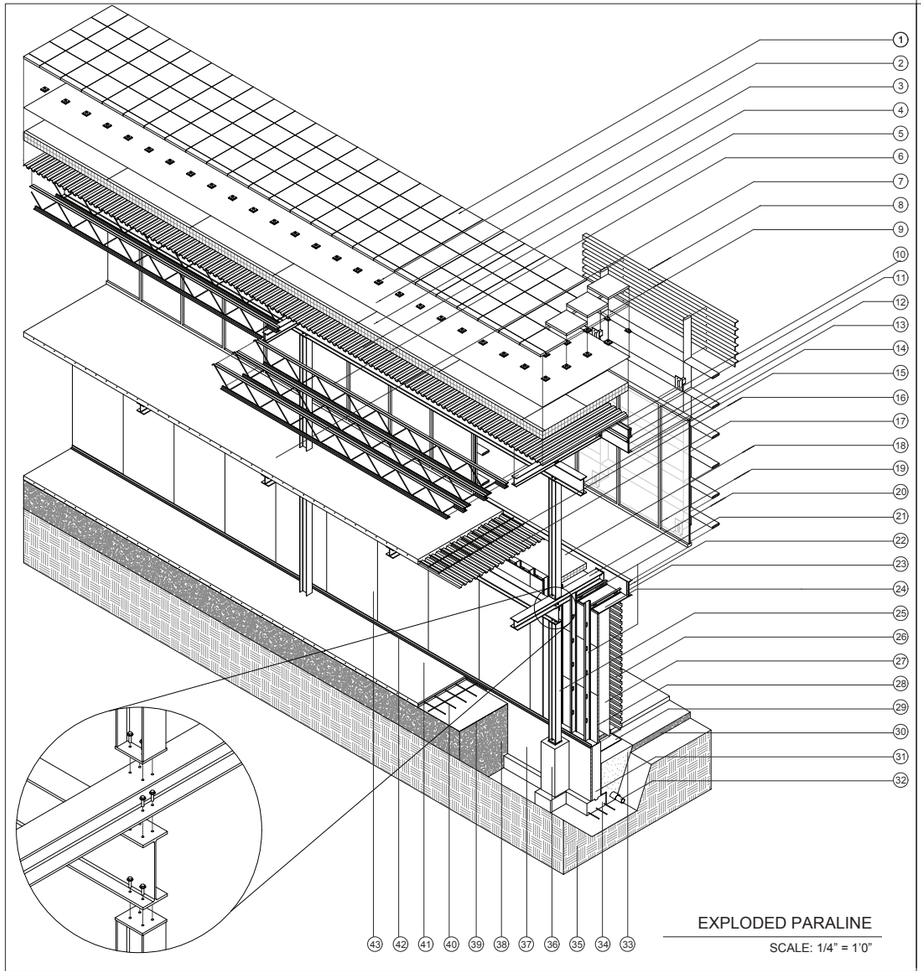
FINAL CONSTRUCTION AND INSTALLATION

Greenhouse Plastic, 1/2" Conduit

Final Construction Video
https://youtu.be/mjdTv_zwFyA

(A) Construction of Frame
(B) Heat Shrinking Greenhouse Plastic
(C) Loading
(D) On-Site Installation
(E) Connection Detail

MATERIALS + ASSEMBLY



EXPLODED PARALINE

SCALE: 1/4" = 1'0"

CONSTRUCTION MATERIAL KEY:

1 2'-0" X 2'-0" X 2'-0" CONCRETE PAVER
2 PAVE EL PEDESTAL WITH PROTECTION PAD
3 EPDM ROOFING
4 RIGID INSULATION
5 STEEL DECKING
6 STEEL BAR JOIST
7 POLISHED CONCRETE SLAB
8 4" X 4" X .375" STEEL ANGLE BOLTED
9 STEEL TUBE 8" X 2" X .375" @8 8'0" O.C. VERTICALLY AND @ 2'6" HORIZONTALLY, .375" THICK STEEL PLATE WELDED TO TUBE & BOLTED TO CHANNEL
10 STEEL SECONDARY BEAM W8X21 @ 24'-0" CENTERS
11 STAINLESS FLASHING
12 TREATED WOOD BLOCKING
13 THERMAL BREAK
14 STEEL CHANNEL C15X50
15 STEEL PRIMARY BEAM W16X45
16 WELDED WIRE MESH
17 STEEL DECKING
18 RIGID INSULATION
19 KAWNEER WINDOW 451T SPACED 4'-0" O.C.
20 STEEL SECONDARY BEAM W8X40 @12'0" O.C.
21 COLD ROLLED METAL FRAMING @16" O.C. SPACING
22 STEEL CHANNEL C15X50
22 THERMAL BREAK
24 5/8"1/2" TK. FIBER CEMENT PANEL
25 STEEL COLUMN W8X24 @ 24'-0" O.C. WITH 1/2" DIA. ANCHOR BOLTS WITH NON SHRINK GROUT BED
26 CORRUGATED METAL SIDING
27 VAPOR BARRIER
28 RIGID INSULATION
29 WATERPROOFING
30 COMPACTED GRAVEL FILL
31 10" TK. CAST IN PLACE CONCRETE
32 FOUNDATION DRAIN W/ GEO TEXTILE FABRIC
33 GRAVEL BACKFILL
34 REINFORCED CONCRETE FOOTING
35 EARTH/GROUND
36 18" WIDE CONCRETE PIER
37 RIGID INSULATION
38 COMPACTED GRAVEL FILL
39 VAPOR BARRIER
40 CONCRETE SLAB
41 WELDED WIRE MESH
42 SILL SEAL
43 TYPE X GYPSUM BOARD

ASSEMBLY SEQUENCE

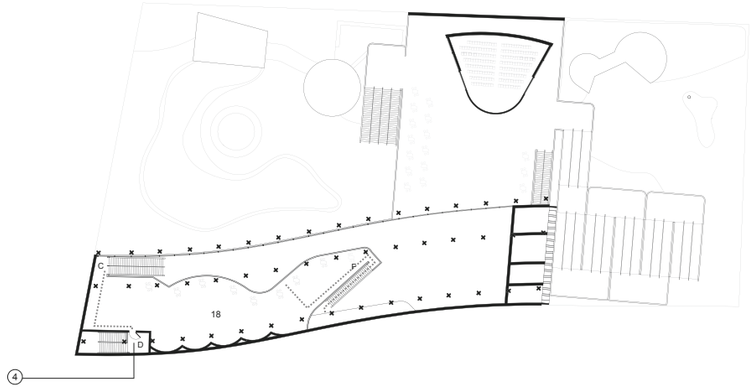
PAGE 2 OF 2

ASSIGNMENT 1

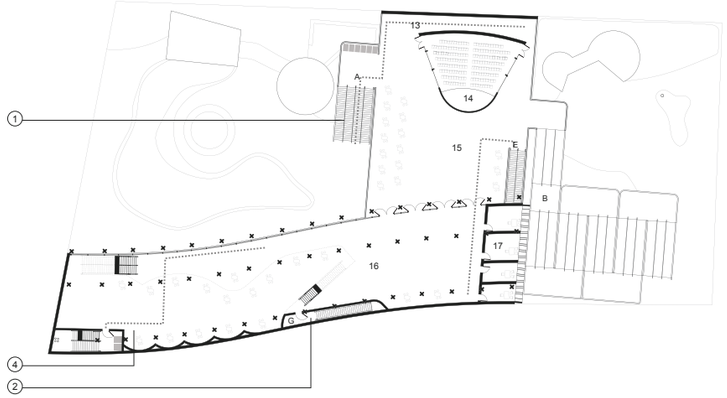
48-215 MATERIALS & ASSEMBLY
SPRING 2017
INSTRUCTOR: DAMIANI

SELENA ZHEN

PROJECT 2: MEANS OF EGRESS AND CODE REVIEW (THE BRAZILIAN PAVILION)



THIRD FLOOR PLAN
SCALE 1/32" = 1'



SECOND FLOOR PLAN
SCALE 1/32" = 1'

CODE REVIEW

IBC 503: The Brazilian Pavilion by Oscar Niemeyer is a Type 1B construction building. According to IBC Table 503, the floor area for a Type 1B occupancy building is unlimited, and the maximum stories allowed is 11. This building is 52,216 sf, and 3 stories, and is therefore compliant with Table 503.

IBC 601: According to Table 601, the fire resistance rating for a Type 1B building must be 2 hours.

IBC 1004.1.1: Table 1004.1.1 determines the maximum floor area allowances per occupant based on function of space. According to this, the total maximum occupancy of the occupiable spaces are 4,600 persons. [Individual spaces are listed in Occupancy Loads below]

IBC 1004.6 The occupant load of a mezzanine level with egress into a room or area below shall be added to that room or area's occupant load, and the capacity of the exits shall be designed for the total occupant load thus established.

IBC 1005.1: Using the factors given in Table 1005.1 Egress Width per Occupant Served, the stairway egress width (inches per occupant) is 0.3 and other egress components' width (inches per occupant) is 0.2.

The first floor's required occupancy based on spaces is 239 persons, which requires 3.97' means of egress. There is now 48' of egress to serve 2,880 persons, which is more than required and complies with Table 1005.1.

The second floor's required occupancy based on area is 1,671 persons, which requires 41.75' means of egress. There is now 51.57' of egress to serve 2,063 persons, which is more than required and complies with Table 1005.1.

The third floor's [mezzanine] required occupancy based on area is 305 persons, which requires 7.61' means of egress. There is now 9.57' of egress to serve 383 persons, which is more than required and complies with Table 1005.1.

Code Review continues on Page 2.

CODE ANNOTATION KEY:

1. 1012.8: Intermediate handrails are required in areas so that all portions of the stairway width required for egress capacity are within 30 inches of a handrail [Required for Egress A, B, C, E.]
2. 1020.1.7 & 1020.1.7.1: According to this section, 50% of interior means of egress stairways are required to be enclosed because of the occupancy number for the floors it serves. The smokeproof enclosure stairway shall exit into a public way.

MEANS OF EGRESS WIDTHS

A. 19' E. 8'
B. 15' F. 4'
C. 8'10" G: 4'
D. 5.'6"

OCCUPANCY LOADS [OCCUPIABLE AREAS ONLY]

13. CLOAKROOM: S1, ACCESSORY STORAGE
AREA: 593 sf OCCUPANCY: 2
14. LECTURE HALL: A3, ASSEMBLY FIXED SEATS
AREA: 1172 sf OCCUPANCY: 192
15. ESPLANADE: A5, ASSEMBLY UNCONCENTRATED
AREA: 6017 sf OCCUPANCY: 402
16. EXHIBITION HALL: A3, ASSEMBLY UNCONCENTRATED
AREA: 11426 sf OCCUPANCY: 762
17. OFFICES: B, BUSINESS AREAS
AREA: 880 sf OCCUPANCY: 9
18. EXHIBITION MEZZANINE: A3, ASSEMBLY UNCONCENTRATED
AREA: 4566 sf OCCUPANCY: 54

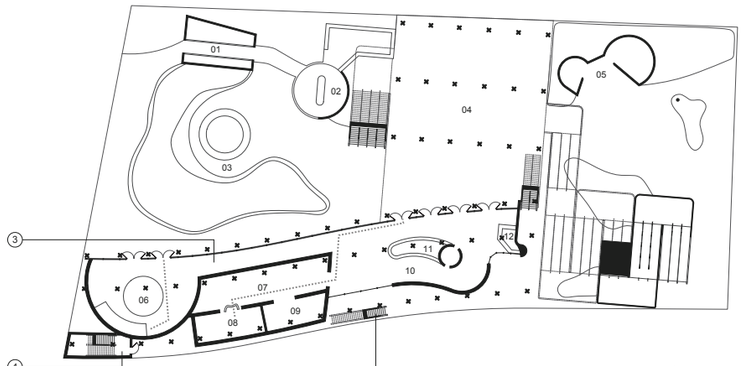
MEANS OF EGRESS
(STAIRS & RAMPS)

ASSIGNMENT 2
PAGE: 1 of 5

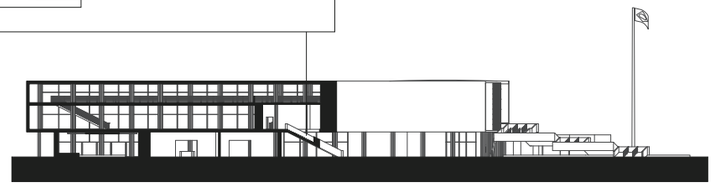
48-215 MATERIALS & ASSEMBLY
SPRING 2017

INSTRUCTOR: DAMIANI

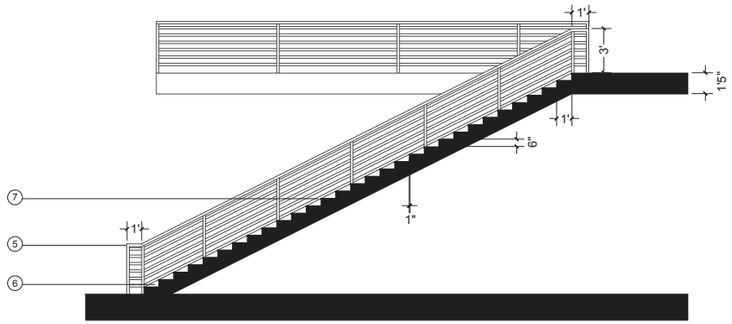
SELENA ZHEN



GROUND FLOOR PLAN
SCALE 1/32" = 1'



CROSS SECTION
SCALE 1/32" = 1'



STAIR SECTION DETAIL
MEANS OF EGRESS E
SCALE 1/4" = 1'

CODE REVIEW

IBC 1015.1 & IBC 1019.1: According to Table 1015.1 Spaces With One Means Of Egress and the occupancy load of the floors of the building, each floor needed additional means of egress. According to Table 1019.1 Minimum Number of Exits for Occupant Load, the minimum number of exits per story is as follows; Floor 1=2 exits, Floor 2 = 4 exits, Floor 3 = 3 exits. The new means of egress exits for the entire building now complies with Table 1015.1 and Table 1019.1.

IBC 1016.1: Exits are so located on each story such that the length of travel does not exceed distances according to Table 1016.1 Exit Access Travel Distance [200 ft for occupancies A, F1, S1, B: 300 ft for S2].

IBC 1017.1: According to Table 1017.1, the corridor on the first floor has a required fire-resistance rating of at least 1 hour [see code annotation 3].

CODE ANNOTATION KEY:

3. Corridor serves an occupant load greater than 30, which requires a 1 hour minimum fire-resistance rating. Corridor also results in a dead end and a length of 73' (1017.3), requiring a means of egress arranged adjacent to the dance floor.
4. 1020.1.7 & 1020.1.7.1: According to this section, 50% of interior means of egress stairways are required to be enclosed because of the occupancy number for the floors it serves. The smokeproof enclosure stairway shall exit into a public way.
5. 1012: According to this section, handrails must be changed to comply:
-Height must be between 34"-38": is now 36".
-Perimeter dimension of at least 4"-6.25" with a max cross section of 2.23": is now 6"x2".
-Handrail must extend horizontally at least 12" beyond the slope.
6. 1013: According to this section, handrails must be changed to comply:
-Opening limitations: open guards shall have balusters such that an 8" diameter sphere cannot pass through any opening.
- A sphere of 6" cannot pass through the opening of triangular openings formed by the riser, treat and bottom rail of a stairway.
7. 1009: Nosings are required on stairways and shall not project more than 1.25"

OCCUPANCY LOADS [OCCUPIABLE AREAS ONLY]

01. ORCHID HOUSE: U, ASSEMBLY STANDING
AREA: 268 sf OCCUPANCY: 54
02. AQUARIUM: A3, ASSEMBLY STANDING
AREA: 693 sf OCCUPANCY: 139
03. SNAKES/POND: A3, ASSEMBLY UNCONCENTRATED
AREA: 8268 sf OCCUPANCY: 552
04. OUTDOOR EXHIBITION: A3, ASSEMBLY STANDING
AREA: 9010 sf OCCUPANCY: 1802
05. BIRD HOUSE: U, ASSEMBLY STANDING
AREA: 729 sf OCCUPANCY: 146
06. DANCE FLOOR: A2, STAGES AND PLATFORMS
AREA: 367 sf OCCUPANCY: 25
07. RESTAURANT: A2, ASSEMBLY UNCONCENTRATED
AREA: 1077 sf OCCUPANCY: 72
08. KITCHEN: F1, KITCHENS, COMMERCIAL
AREA: 532 sf OCCUPANCY: 3
09. STORAGE: S2, MERCANTILE
AREA: 469 sf OCCUPANCY: 2
10. COFFEE EXHIBIT: A3, ASSEMBLY STANDING
AREA: 677 sf OCCUPANCY: 136
11. COFFEE BAR: A2, KITCHENS, COMMERCIAL
AREA: 191 sf OCCUPANCY: 1
12. INFO DESK: A3, EDUCATIONAL [SHOPS AND OTHER]
AREA: 75 sf OCCUPANCY: 2

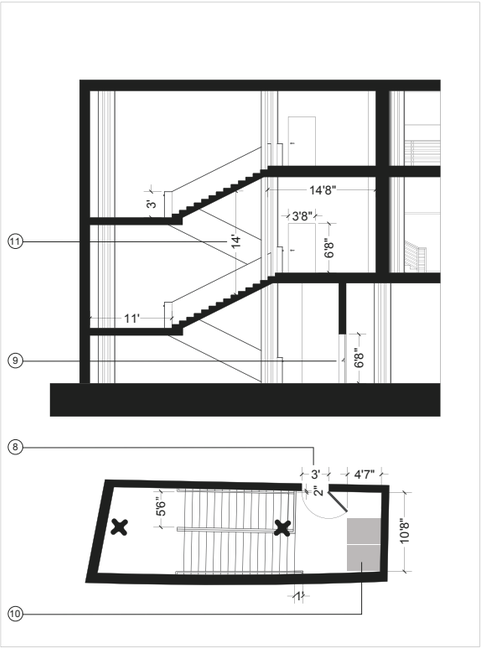
MEANS OF EGRESS
(STAIRS & RAMPS)

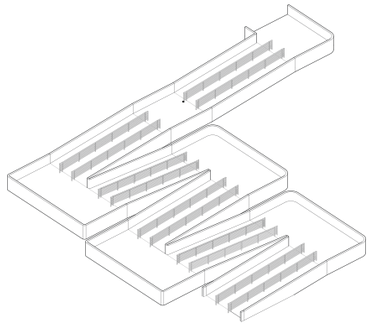
ASSIGNMENT 2
PAGE: 2 OF 5

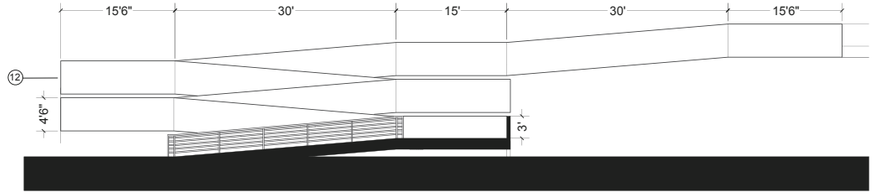
48-215 MATERIALS & ASSEMBLY
SPRING 2017

INSTRUCTOR: DAMIANI

SELENA ZHEN







CODE ANNOTATION KEY:

(8) 1008: According to this section, means of egress doors should be a minimum width of 32", a minimum height of 6'8", and should be side-hinged and swing in the direction of egress travel.

(9) 1008.1.8. Door handles and hardware should be readily openable. Because this building serves mainly Group A Occupancies, panic hardware is required for means of egress.

(10) 1007: According to this section and 1007.6, 9 areas of refuge are required and should comply:
-One wheelchair space of 30"x48" for each 200 occupants served.
-Each area of refuge should be separated from the building by a smoke barrier as well as have direct access to an enclosed stairway.

(11) 1009.2 Headroom: Stairways shall have a minimum headorom clearance of 80": it is now 14'.

(12) 1010: According to this section, the ramp must be changed to comply:
-Slope of a means of egress ramp should be no steeper than 1:12 (8% slope).
-Width shall be 36" minimum: is now 15'.
-Landings should occur at the top and bottom of each ramp, points of turning, and shall be 60" minimum in length.
-Compliance with 1012's section on handrails.
-Vertical rise for any ramp run should be 30" maximum.

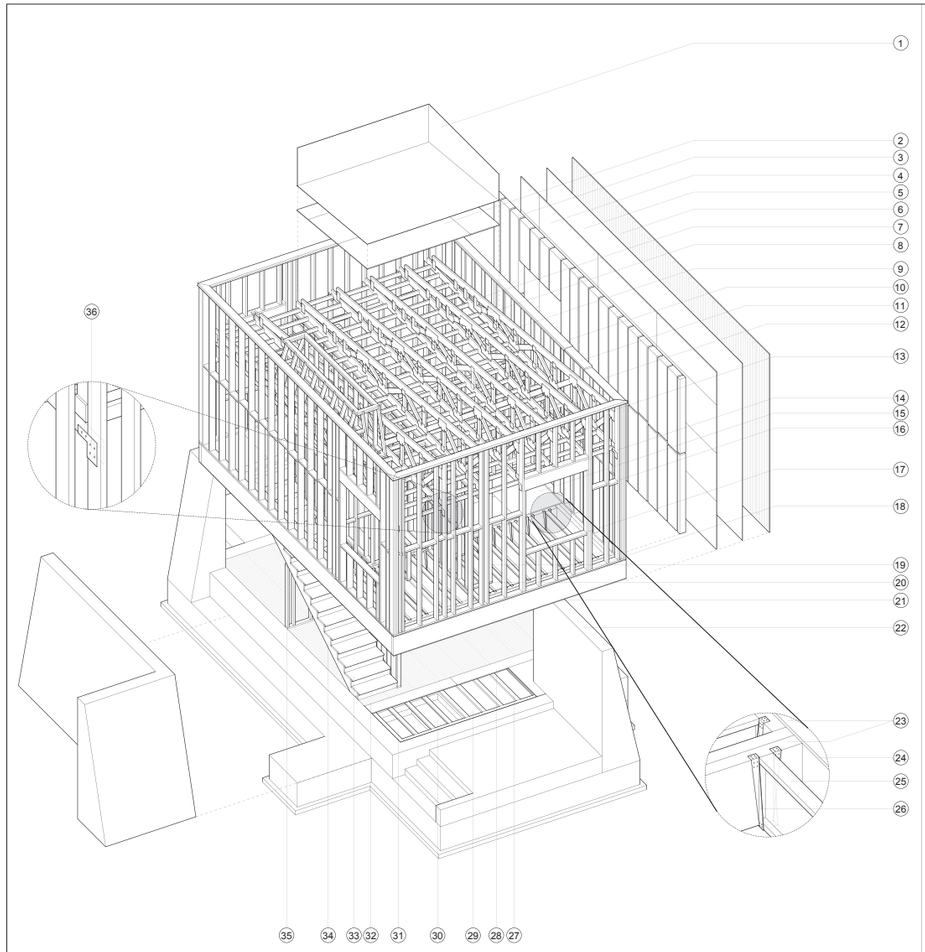
MEANS OF EGRESS
(STAIRS & RAMPS)

ASSIGNMENT 2
PAGE: 4 OF 5

48-215 MATERIALS & ASSEMBLY
SPRING 2017

INSTRUCTOR: DAMIANI

SELENA ZHEN



CONSTRUCTION MATERIAL KEY
1. RUBBER WATERPROOFING MEMBRANE
2. 0.75" EXTERIOR GRADE PLYWOOD
3. 5.5" CLOSED CELL INSULATION
4. 0.75" EXTERIOR GRADE PLYWOOD
5. WATERPROOF MEMBRANE
6. 1.5"x0.75" LARCH SLAT
7. 7.25"x1.5" TRUSS CHORDS AND WEB
8. 0.5" OSB GUSSET
9. 3.5"x1.5" CEILING FRAME
10. PARAPET FLASHING
11. WOOD CAP
12. 5.5"x1.5" TOP PLATE
13. 5.5"x1.5" STUD (16" O.C.)
14. 11.25"x1.5" HEADER
15. 0.75" EXTERIOR GRADE PLYWOOD
16. 5.5"x1.5" BRIDGING
17. 5.5"x1.5" SILL PLATE
18. 5.5"x1.5" SOLE PLATE
19. 3.5"x1.5" STUD (16" O.C.)
20. 3.5"x1.5" SOLE PLATE
21. 0.5" THK. CAPILLARY PAD
22. 1'1" ~ 2'8.5" BOARD FORMED CONCRETE PIER
23. 18"x3.5" PSL
24. 0.75" PLYWOOD
25. I-JOIST: PLYWOOD AND LVL
26. JOIST HANGAR
27. 3.5"x1.5" SLEEPER STUD AND VENTILATION GAP
28. 0.75" PLYWOOD FLOOR
29. 6" POURED CONCRETE FLOOR SLAB
30. 6" COMPACTED GRAVEL
31. EARTH/GROUND
32. 0.75" HARDWOOD FLOOR
33. 1.5" THK STAIR TREAD
34. 5.5"x1.5" TIMBER STRINGER
35. 3.5"x1.5"X STUD (16" O.C)
36. TRUSS HANGAR

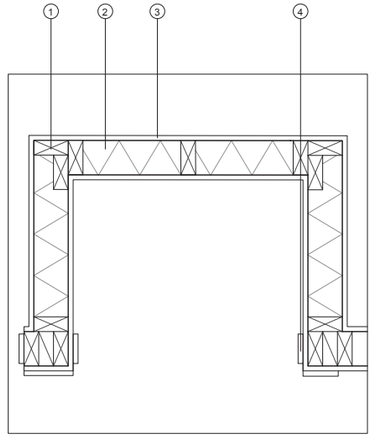
WOOD FRAMING

ASSIGNMENT 3
PAGE: 2 OF 3

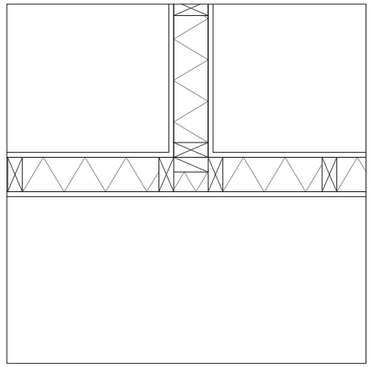
48-215 MATERIALS & ASSEMBLY
SPRING 2017

INSTRUCTOR: DAMIANI

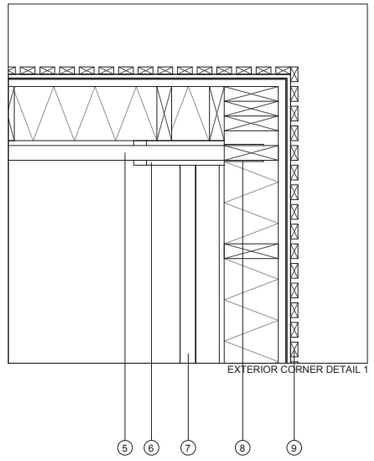
SELENA ZHEN



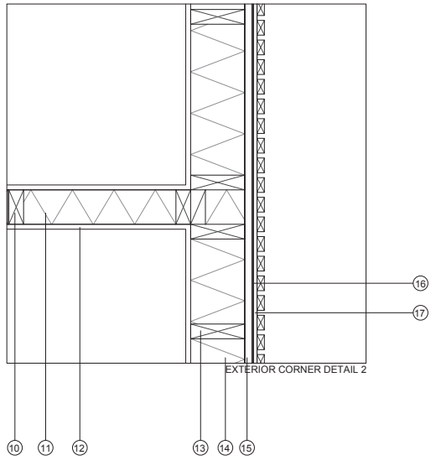
INTERIOR CORNER DETAIL 1



INTERIOR CORNER DETAIL 2



EXTERIOR CORNER DETAIL 1



EXTERIOR CORNER DETAIL 2

CONSTRUCTION MATERIAL KEY
1. 3.5"x1.5" STUD (16" O.C.)
2. 3.5" CLOSED CELL INSULATION
3. 0.5" DRYWALL
4. DOOR FRAME
5. 7.25"x1.5" TRUSS CHORDS AND WEB
6. 0.5" OSB GUSSET
7. 3.5"x1.5" CEILING FRAME
8. TRUSS HANGAR
9. 1.5"x0.75" LARCH SLAT
10. 3.5"x1.5" STUD (16" O.C.)
11. 3.5" CLOSED CELL INSULATION
12. 0.5" DRYWALL
13. 5.5"x1.5" STUD (16" O.C.)
14. 5.5" CLOSED CELL INSULATION
15. 0.75" EXTERIOR GRADE PLYWOOD
16. WATERPROOF MEMBRANE
17. LARCH SLAT RAIN SCREEN CLIP

WOOD FRAMING

ASSIGNMENT 3
PAGE: 3 OF 3

48-215 MATERIALS & ASSEMBLY
SPRING 2017

INSTRUCTOR: DAMIANI

SELENA ZHEN

Casa El Vigilante Model

HIGH RISE ‘UNTITLED’

4th Year | Fall 2019
Advanced Synthesis Option Studio 48-500
High_Rise ‘Untitled’ 2018, New York, NY

PROJECT INTRODUCTION
The introduction to the studio was initially written by Professor Gerard Damiani, and is paraphrased here.

"This studio will look at the role of the architectural promenade and how it can be adapted to the typology of the high-rise. The promenade architecturale first described by Le Corbusier as a sequence of spaces and direction of movement in the Acropolis in Athens is a way of constructing views, vistas and experiences. The high-rise, an American typology, acknowledges maximizing building area but does not address the role of the architectural sequence. This studio will investigate the high-rise typology through the hybridization of the typology with the architectural promenade.

This studio will focus on the writings and artistic output of Donald Judd as the intellectual underpinning of the studio, which will inform the spatial and detailing agenda of the studio project. Often considered an artist of obdurate space, Judd’s works are highly refined being conscious of their context (what he called fundamental realities), space, material, color and detail. An inspiration to architects such as Steven Holl and Herzog & de Meuron, the works of minimalist artist Donald Judd (1928-1994) spanned both art and architecture through a search for autonomy and clarity for the objects and the spaces they occupy."

PROGRAM

The program will focus on a urban high-rise structure located in SoHo in New York City directly across from the Judd Foundation. The building is to be a high-rise construction (75 feet or higher) consisting of vertical galleries, a museum store, studio workspaces for visiting artists, and apartments.

MUSEUM ANNEX

This mixed-use tower is to provide additional exhibition space for artists curated by Flavin and Rainer Judd. The spatial container provided must allow for artwork to be presented in a number of formats.

1 Gallery: Interaction with daylight
1 Gallery: Integration within a neutral spatial container (white box)
1 Gallery: Integrated within the architectural context you provide
Museum Store
Ticketing Desk
Public Restrooms

Staff Offices
Director & Assistant Office Suite
Special Programs Director Office
Docent Lounge
Administration Assistant Office
Conference Room & Research Library
Conservation Room
Staff Unisex Restroom

Public Entry for Museum

Building Service Entry
Central Mechanical Floor Servicing both Galleries and Residential Units

RESIDENTIAL TOWER

The residential tower is to accomodate any number of residences while creating an understanding of Donald Judd's residential spaces.

Unit types must contain:

Entry & Entry Closet
Kitchen
Dining
Living
1/2 Bath
Full Bath (tub and shower)
Master Bedroom with Walk-In Closet
One to Two Bedrooms with Closets
Shared Bath
Or

Entry & Entry Closet
Kitchen
Dining
Living
Full Bath (tub and shower)
One Bedroom with Closet

CONCEPT

...These ideas were precedents for some small pieces and then for the 100 mill aluminum pieces in the Chinati Foundation. The renovation of the building and the permanent purpose of the building are precedents for the larger spaces in my place in Texas, La Mansana de Chinati, for the Chinati Foundation, and will be for Ayala de Chinati.

- Donald Judd, "101 Spring Street, 1989

This section from Judd's writings looks at his renovation of 101 Spring St. as inspiration and precedent for many of his later works and for the Chinati Foundation. I found this statement insightful on his ideas as an artist and an architectural designer, particularly when understanding how he drew from his previous ideas as precedent for all of his later work, and that all of his pieces are inherently precedents of each other.

In the same way that Donald Judd used 101 Spring St. as precedent for many of his later work in Marfa, TX, I wanted to use his projects in Marfa, TX as precedent for the new Museum Annex and Residential Tower adjacent to 101 Spring St. in New York City.

MOMENTS

When visiting Marfa, I was struck by the incredible scale of each work in the 15 Untitled Works In Concrete. Each concrete piece that was cast and assembled on the site is of the same dimensions, making the layout of these pieces the varying factor in the designs. The potential habitable scale of these works left an impression on my experience at the Chinati Foundation, which I used as inspiration for creating habitable moments within my building.

For the residential tower, the 15 Untitled Works In Concrete served as inspiration for indoor/outdoor flexible living spaces, and for the museum annex, the pieces served as inspiration for key gallery moments.

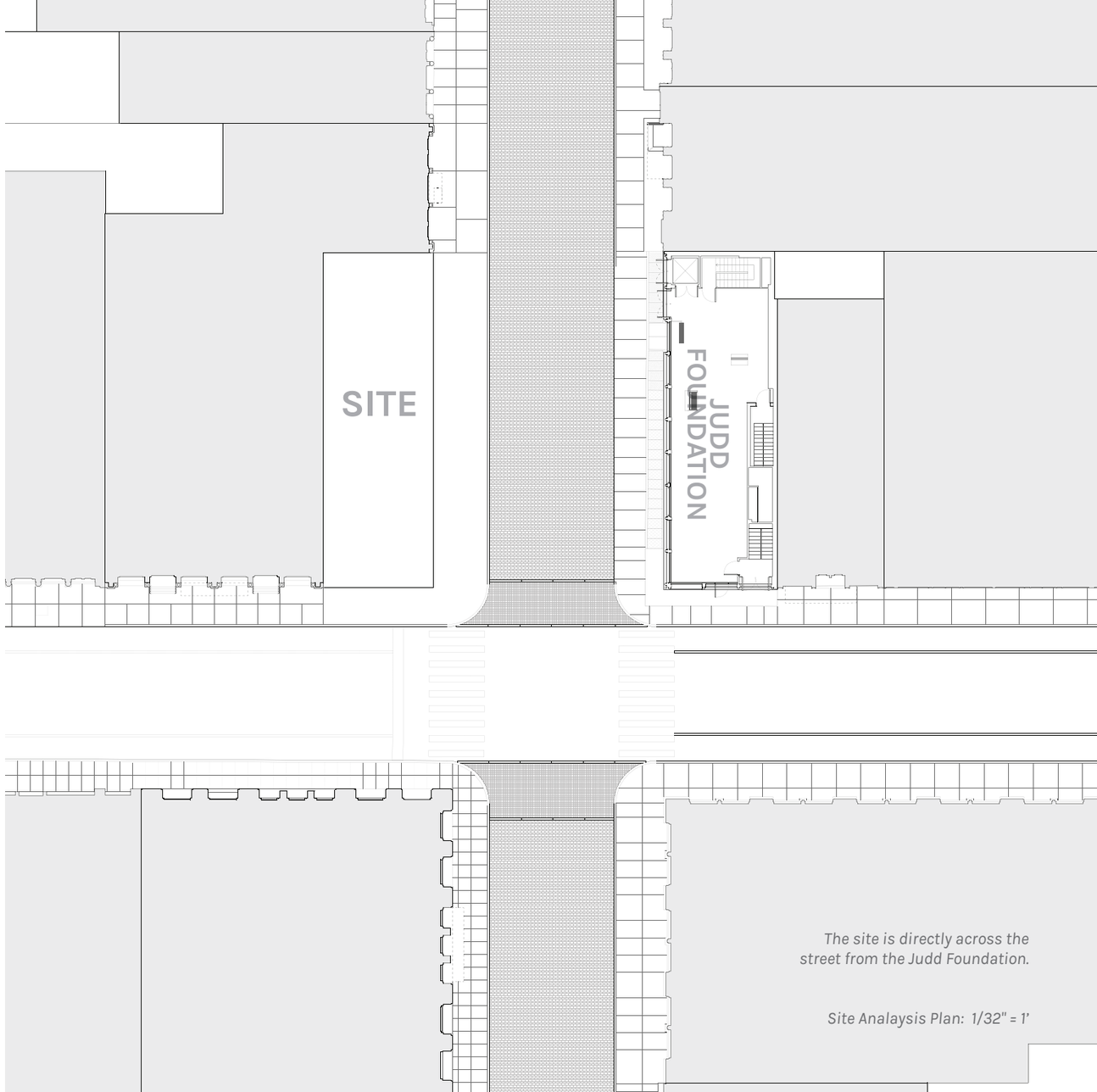
15 Untitled Works In Concrete - The Chinati Foundation

FACADE

For the exterior facade of the building, I chose to use a 10 x 3 bay system, as a reference to the same bay system as the adjacent 101 Spring St. This allowed the building to fit in with the rest of the Soho context, as well as draw a visual connection to the neighboring Judd Foundation. When considering the more detailed aspect of the exterior facade, I looked to another of Donald Judd's pieces, a small extruded colored aluminum piece that looked as though it could be an adaptation of a mullion. I saw this extrusion piece as a representation of what Judd would perhaps consider a 'detailed' piece in his design studies, and used it as inspiration for a Miesian, modernized, neo-classical facade system.

A larger collection of these works were later manufactured and displayed at the Judd Foundation (101 Spring St.) as an installation titled '15 x 105 x 15 Installation of 12 Extruded Aluminum Pieces.'

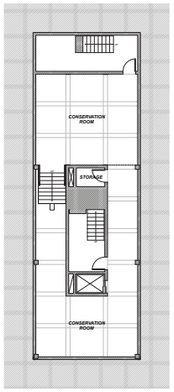
15 x 105 x 15 Installation of 12 Extruded Aluminum Pieces.



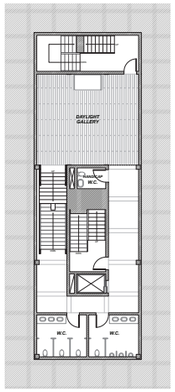
The site is directly across the street from the Judd Foundation.

Site Analaysis Plan: 1/32" = 1'

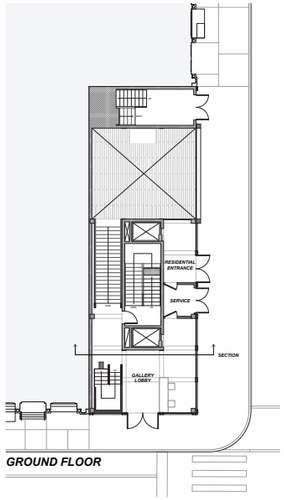
MUSEUM ANNEX



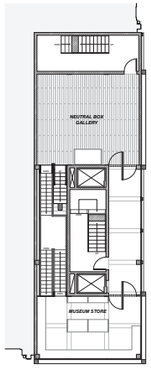
FLOOR 2B



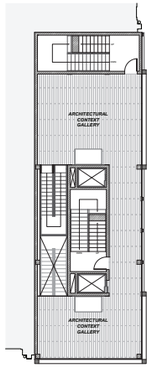
FLOOR 1B



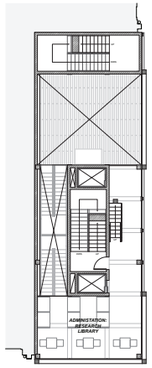
GROUND FLOOR



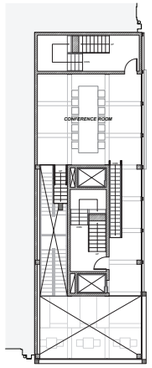
FLOOR 2



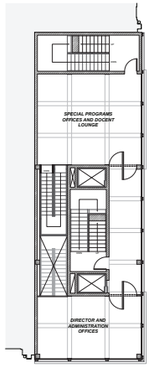
FLOOR 3



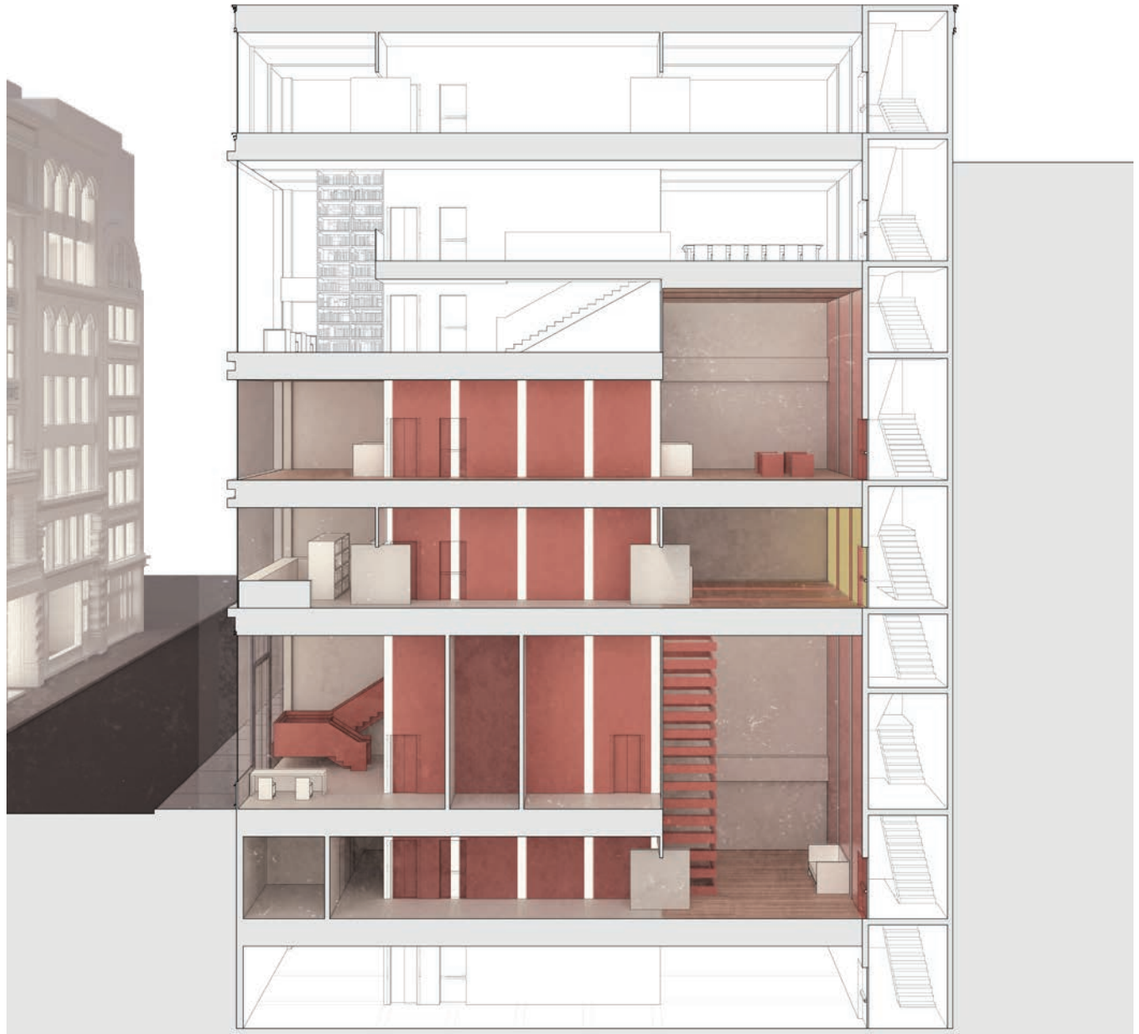
FLOOR 4



FLOOR 5



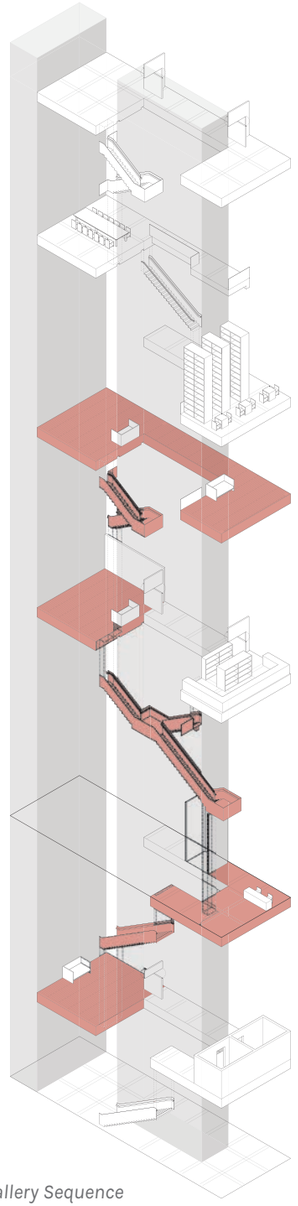
FLOOR 6



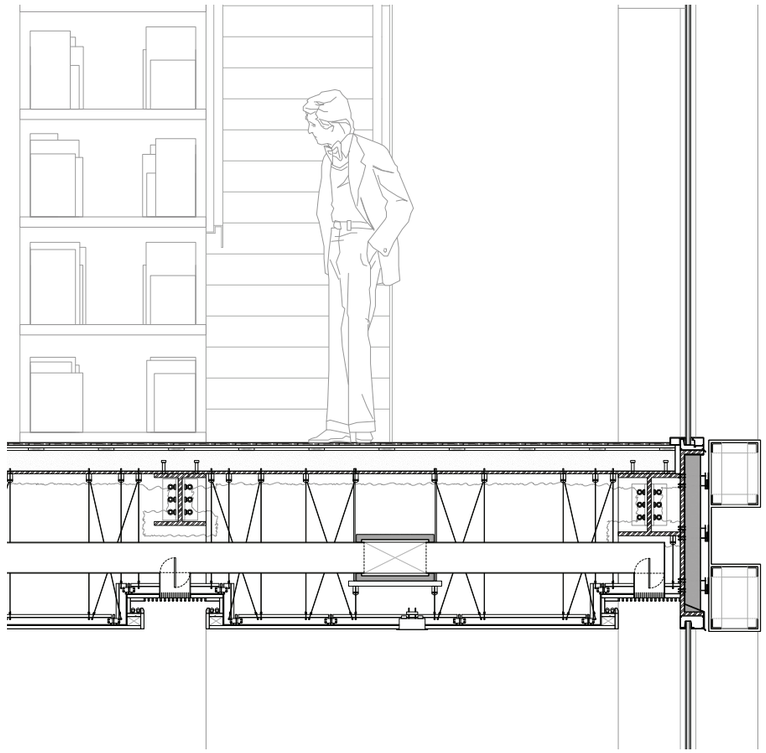
SECTION PERSPECTIVE

Architectural Context Gallery

Neutral Room Gallery - Dan Flavin Inspiration

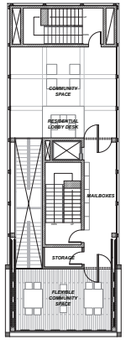


Gallery Sequence



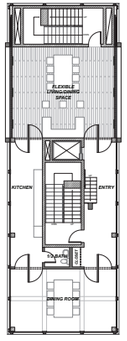
Section Detail

RESIDENTIAL TOWER



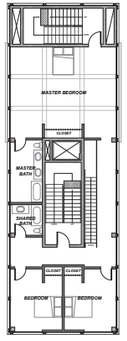
RESIDENTIAL COMMUNITY FLOOR

FLOOR 8



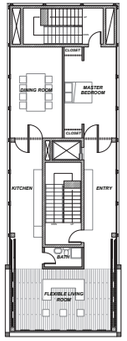
RESIDENTIAL 2 STORY APT, FLOOR 1

FLOORS 9, 12, 15



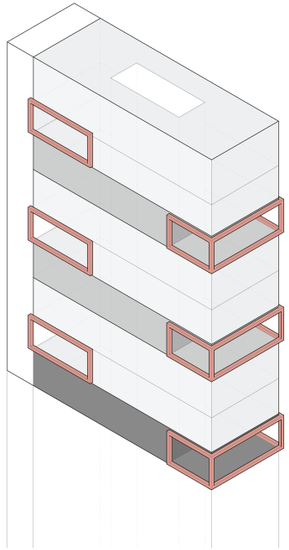
RESIDENTIAL 2 STORY APT, FLOOR 2

FLOORS 10, 13, 16

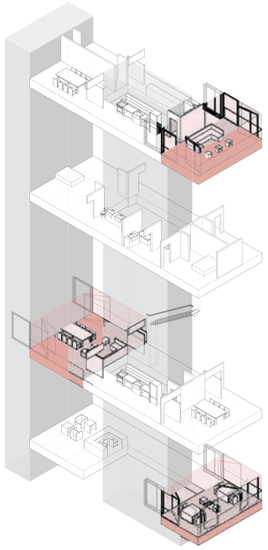


RESIDENTIAL 1 STORY APARTMENT

FLOORS 11, 14



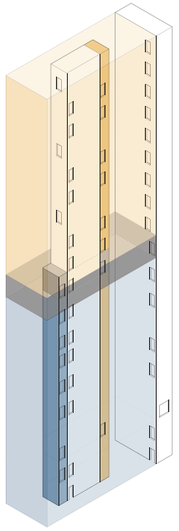
Residential Moments Diagram



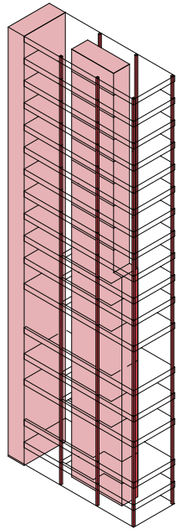
Residential Sequence

1 Story Apartment Living

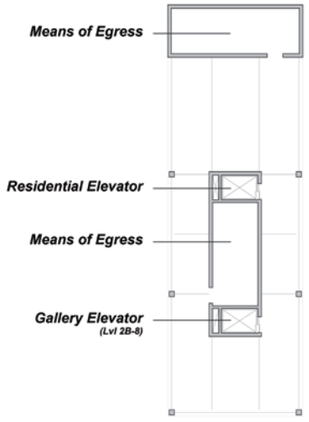
2 Story Apartment Dining



Core Diagram



Structural Diagram



Egress Diagram

Spring St. Elevation

Mercer St. Elevation

LUNAR GALA - SURFACE

Fall 2017 - Spring 2018

SURFACE explores the issue of the distortion and trivialization of the human body into objects of desire. The veneer of mesh, overlayed with cut contours, is a constructed external appearance that illustrates areas of the socially ideal body, exposing those who wear it to appreciation and admiration, but also leaving them vulnerable to objectification. As the line progresses, the body becomes more clearly exposed than upon first impression. It is meant to represent an exaggerated set of physical attributes that emphasize the scrutiny of our bodies – conscious and subconscious, external and internal.

About Lunar Gala:
Originally created in 1997 to ring in the Chinese New Year, Lunar Gala has transformed into a highly anticipated event that hundreds hope to be part of and thousands hope to come see. While staying true to its original intent, it has developed into a much larger production and has become a more impactful organization to the CMU and Pittsburgh community. Every year, the theme of the show is centered around the Zodiac animal of the lunar calendar.

Now, Lunar Gala is arguably one of the largest fashion events in Pittsburgh, having sold out over 1200 seats each year with 140+ students involved in producing, designing, modeling, and dancing in the show. Students across all majors and cultures create original and creative lines, infusing technology and complex materials with wearable fashion.

In collaboration with Michael Powell.

ATLANTIS TRANSPORTATION HUB

4th Year | Spring 2019
Course: 05-392 Interaction Design Overview
Duration: 2 week project

INTRODUCTION PROMPT (PROVIDED)
You will need to design an interactive, data-driven display that structures and presents the data in an engaging, appealing manner and meets the needs of your stakeholder and users.

We will provide you with:

A set of data about a fictional transport hub called the "Atlantis Transportation Hub" for the San Juan Islands (a real set of islands), which are located off of the coast of Washington State. The data includes information about planes, trains, and ferries.

Personas of one stakeholder and two users, with accompanying use cases.

DETAILS

1. The hub is located in the San Juan Islands on the main island of San Juan.
2. The display is only for this hub.
3. The display is a data-driven interactive touchscreen, i.e., you cannot use a smartphone to interact with the screen.
4. Apply asic tenets of type, color, composition, grid, information hierarchy, interactions, etc., to apply to your design.
5. The display will require the use of simple animations for interactive elements and to signal data changes.
6. Consider adding additional information and visual elements to enhance the experience.

Programs Used:
Sketch
Invision/Invision Studio/Freehand
Illustrator

ELIZABETH DUARTE
Transportation Director fo the Municipality of San Juan Islands

Elizabeth Duarte is the Transportation Director of the Municipality of the Greater San Juan Islands, a division of the local government that operates Atlantis Hub. Her department is responsible for displaying transportation data on large environmental displays in the Hub for Atlantis customers. In addition to offering highly readable displays of changing transportation data, Elizabeth aims to educate the public about the ease with which travelers can make itineraries by combining plane, train, and ferry trips through her new program, the PTF Pass, which allows customers a great value and a lot of flexibility.

GEORGE SHIMKO
Property owner and retired resident of San Juan Islands

A long-time resident of the San Juan Islands, George Shimko is an avid outdoorsman who owns modest fishing cabins on nearby Orcas Island and Stuart Island. He regularly invites his children and grandchildren to his house on San Juan Island and intends to give them PTF passes so that they can travel throughout the San Juan Islands and to his cabins on Orcas Island and Stuart Island. He wants to be able to use his home on San Juan Island as a base so his guests can plan fun tourist itineraries.

PATRICK MULVANEY
EnCo Environmental Engineer

Patrick Mulvaney, is an environmental engineer for EnCo, a large energy company in the region. As an engineer for EnCo who is stationed in Seattle, Patrick spends an average of three days per week visiting drilling and wind power sites throughout the San Juan Islands. Because weather often influences his travel between the islands, Patrick welcomes the new PTF Pass program that allows him to plan multiple trips via planes, trains, and/or ferries so that he can optimize his travel on-the-fly despite changing weather conditions.

CONCEPT SKETCHES

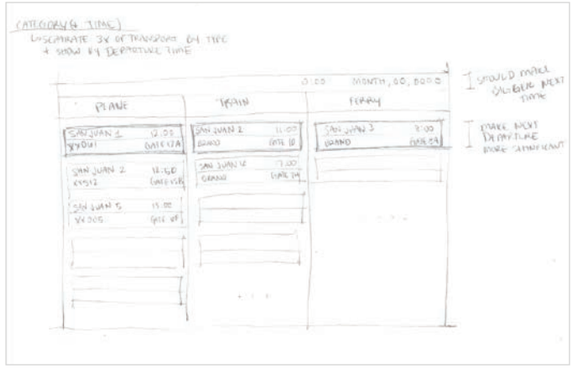
For my first concept sketches, I investigated different approaches to how to display the complex information provided in the data.

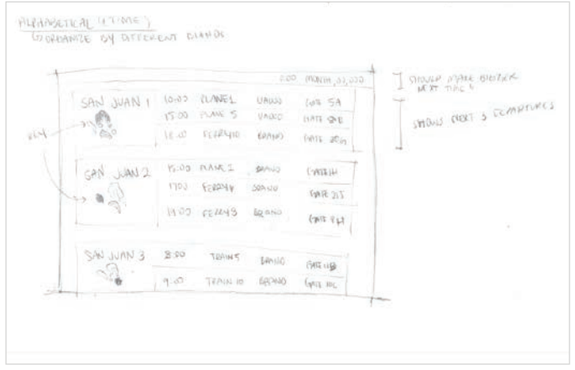
Each approach organizes the information by 1-2 methods from Richard Saul Wurman's "Five Hat Racks."

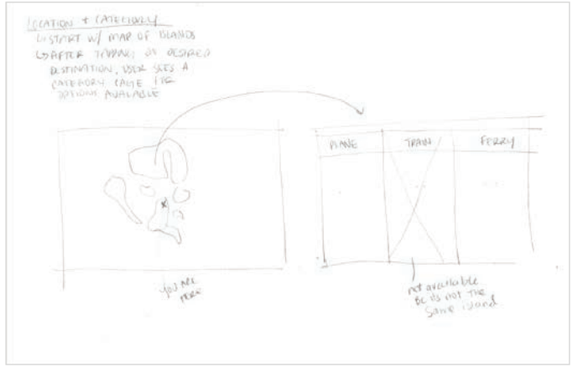
1. Location
2. Alphabetical
3. Time
4. Category
5. Hierarchy

Though each of the three concepts was able to organize the current data information, they did not address the PTF pass and did not allow a user to create an itinerary to travel through the islands.

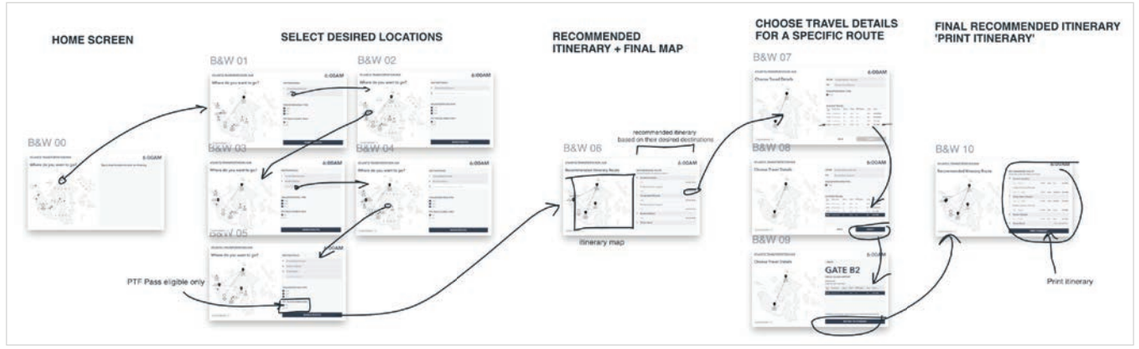
The third option, which includes a larger map design, has the most potential to become a more complex interface, which would have to include information about the PTF pass and an itinerary scheduler.





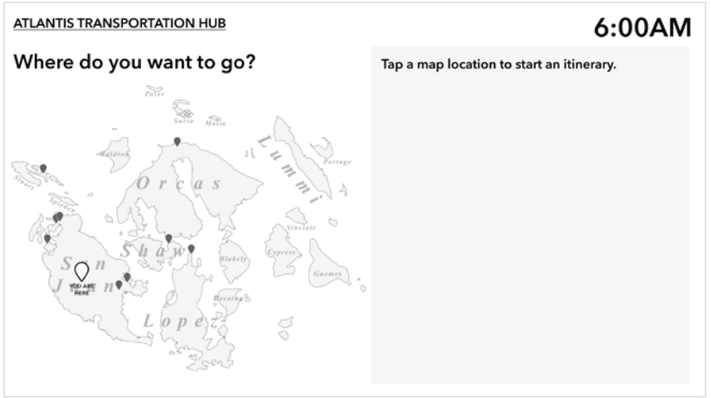


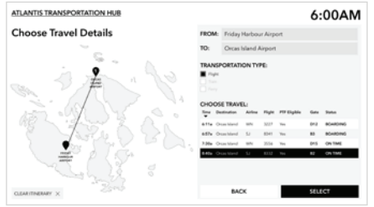
USER FLOWS (INVISION FREEHAND)

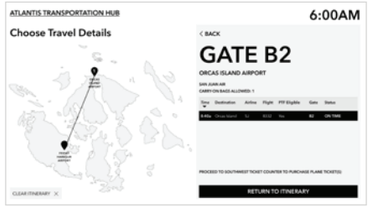


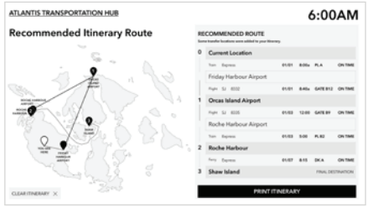
BLACK & WHITE MOCKUP

- a map with marked locations as a way for the user to navigate the transportation hubs around the islands
- a recommended route calculator (based on the desired destinations) with automatic transfer locations
- options for travel types and details
- detailed information about each travel option
- 'print your itinerary'









Sample Screens from Black & White Mockup

COLOR MOCKUP 1

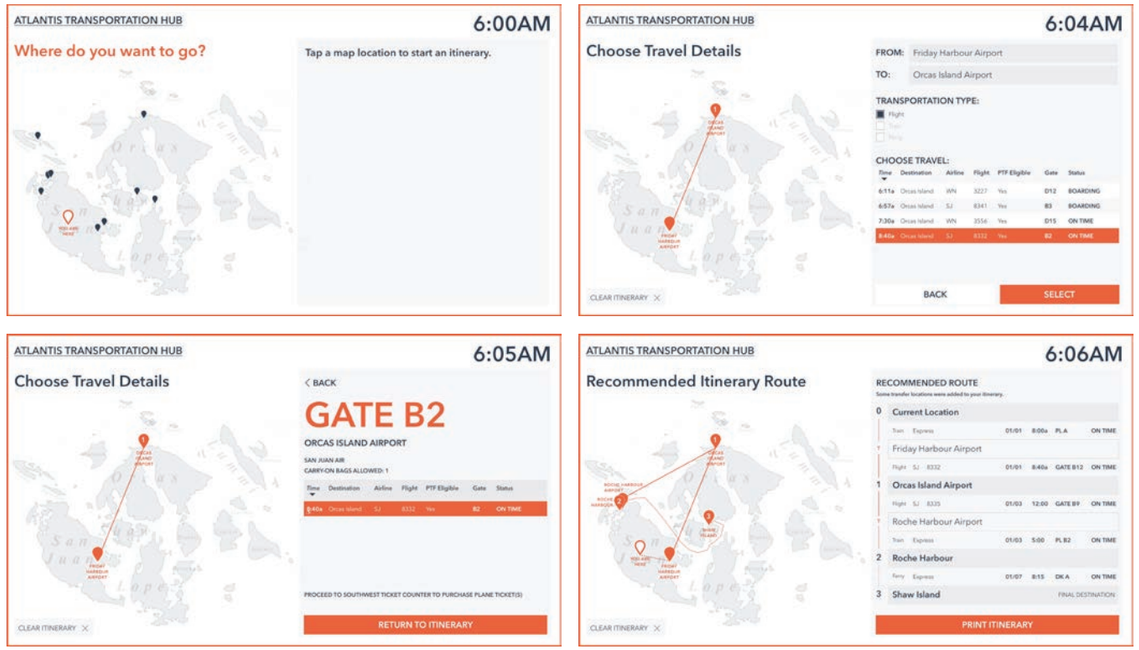
#E9633E

#34424F

#F5F5F7

Introducing color into the mockup allowed for a greater variety of hierarchy, in addition to type hierarchy and opacity. I chose a Burnt Orange as the accent color, paired with a deep navy blue and a light blue-grey wash.

The Burnt Orange accent color was used because it invokes high energy or excitement, foreshadowing the exciting trip ahead of them. The accent color highlights the current task at hand, such as "Where do you want to go?" as well as the main call to action buttons or links on the page.



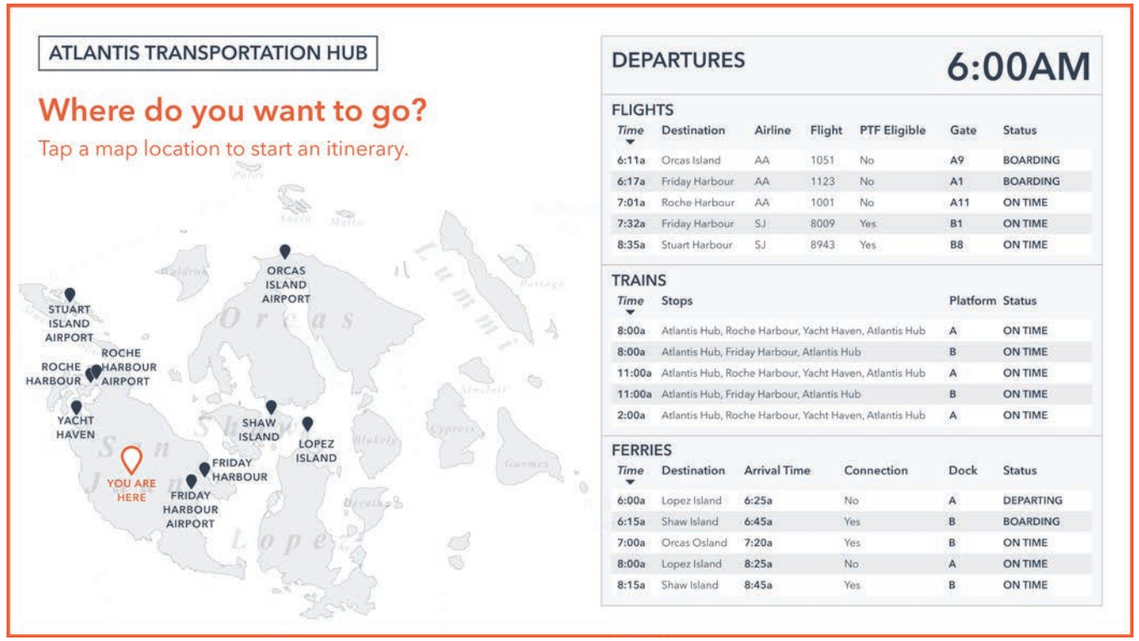
Sample Screens from Color Mockup 1

COLOR MOCKUP 1

The second color mockup integrated the terminal data information provided in the prompt into the current design, by moving the itinerary scheduler to the left half of the screen, and placing the current information about flights on the right. This allowed multiple users to interact with the display; they could view the current transportation information at a glance while another user could user the itinerary scheduler.

Because the itinerary scheduler was now given less screen real estate, a lot of thought was given to only displaying important information in the "Recommended Route" page, which gives users a step-by-step travel itinerary, along with transfer stops. The map decreased in size in order to allow sufficient space for "Choose Travel Options," and to read instructions.

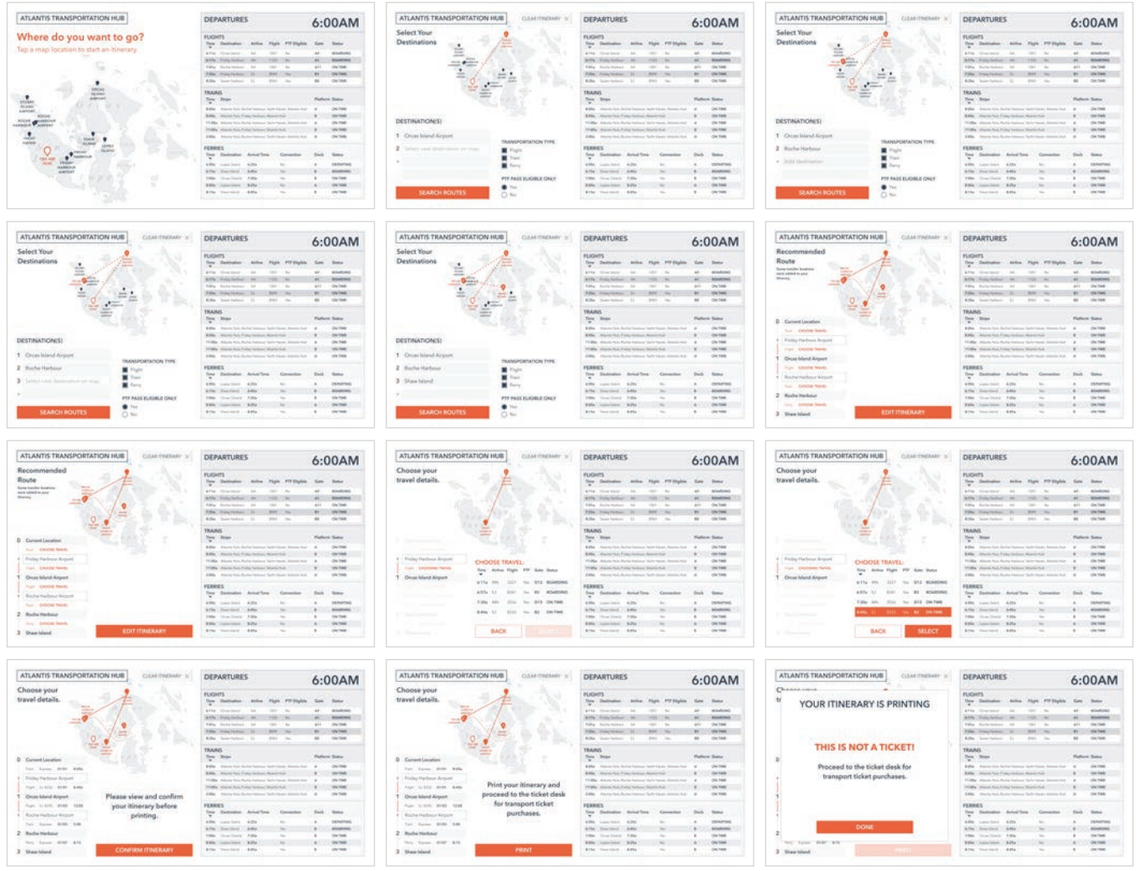
This mockup also provides more of an experience to printing ones' itinerary, by instructing them to attend to the ticket desk for actual purchase of the transportation tickets, as the itinerary printout is not a ticket itself.



Home Screen from Color Mockup 2

FINAL MOCKUP & ANIMATION

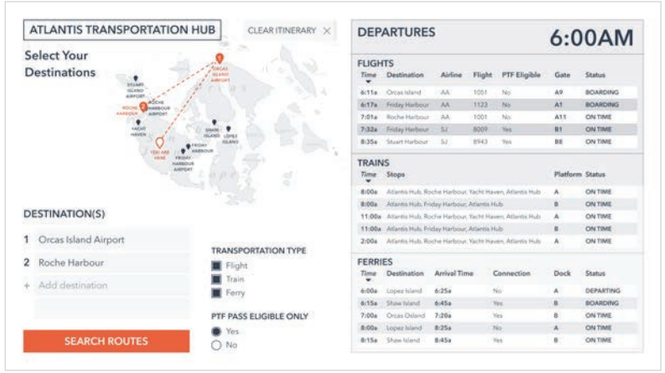
For the final mockup, I chose to remove the Burnt Orange border around the screen to remove potential distractions and emphasize the white space around the page elements.



Final Screens

ANIMATION 1

When designing the animation between interactions, I chose to create a fade-in/appearing location marker for the destination that the user selects; when they touch the destination's marker, they are able to immediately see the state change in which that location's marker changes to an orange and increases scale. This results in a fluid and dynamic transition between pages.



ANIMATION 2

This animation serves as a fluid transition between the "Recommended Route" page and the "Choose Travel" page by visually linking which travel you are searching for.