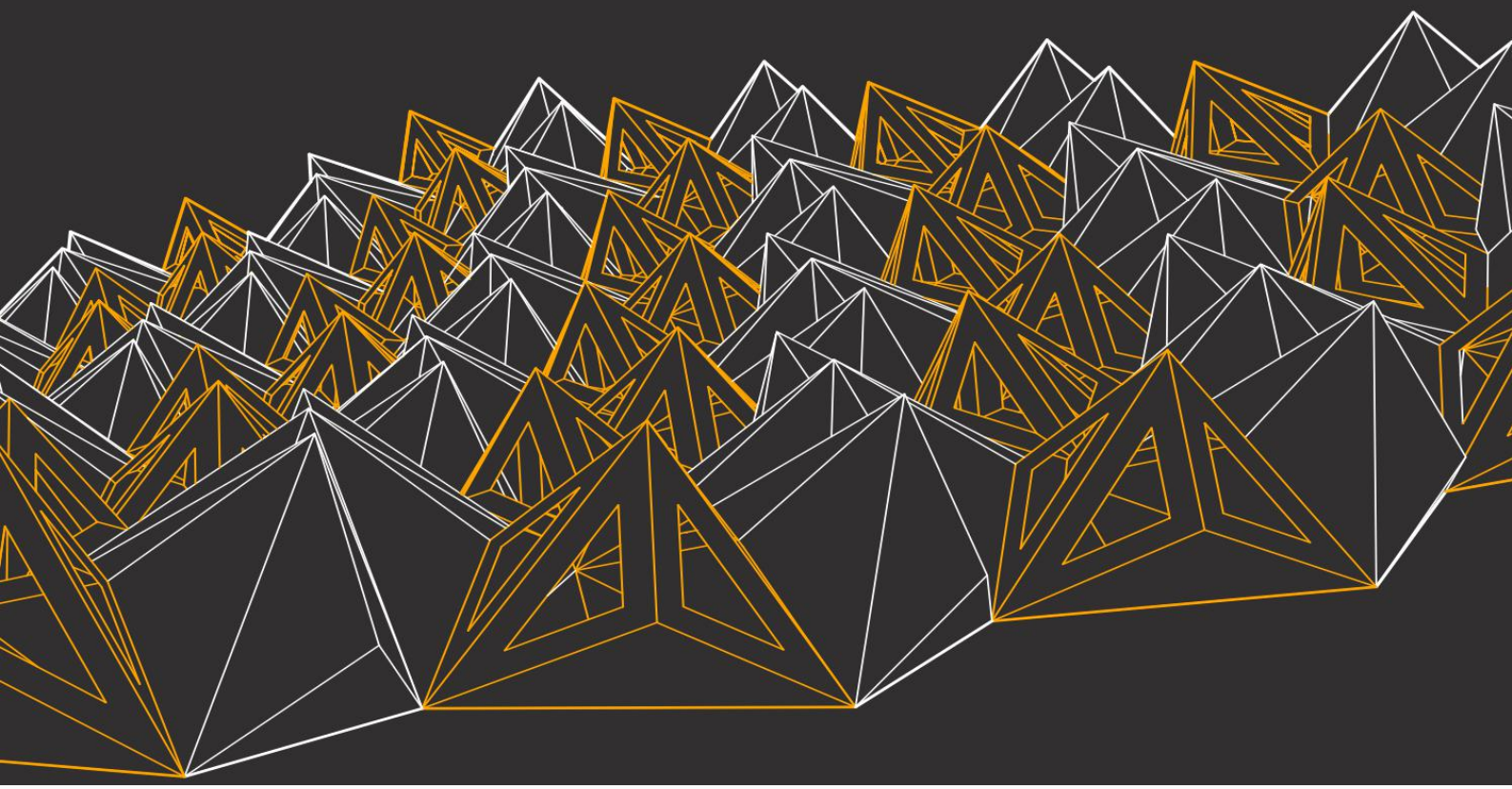
Faheema Ismail

Architectural Portfolio
Selected Works 2017-2021



FAHEEMA ISMAIL

B.ARCH

ABOUT ME

Recent B.Arch Graduate from New York Institute of Technology. I am a high-energy, creative professional looking for hands-on experience to learn more about the profession as I progress in my career. I bring creative problem-solving skills, a positive outlook, and the ability to work efficiently with any team as well as skills in 3d modeling, drafting, and design.

CONTACT

PHONE:
(347) 570 - 2299

EMAIL:
FAMEISM127@GMAIL.COM

FOR MORE INFO

LINKEDIN QR CODE

WORK EXPERIENCE

Aisha and Sisters Inc. - Queens, NY

2018 - Current — Office Assistant
- Assembled work schedules while communicating with other employees
- Oversaw and managed employee performance
- Recorded finances through log keeping and accounting
- Resolved customer complaints and inquiries
- Managed social media and public appearance
- Designed logos and menus

TJX Companies, TJMaxx - Whitestone, NY

2017- 2018 — Seasonal Floor Associate

EDUCATION

New York Institute of Technology

2015 - 2021 — Degree: Bachelor of Architecture (B.Arch)
Field Of Study: Architectural and Building Sciences/Technology
Cumulative GPA: 3.3 | GPA in Major: 3.8

Queens College/ Queens School of Inquiry

2013 - 2015 — Early Core College Courses
Advanced Regents Diploma

SKILLS

3D Modeling
Hand Drafting
Model Making
Design Ideation
Painting
Communication
Environmental Solutions
Team Building
Coordination

Software (Years in Experience) — Beginner — Good — Proefficient

- **AutoCAD** (4 years)
- **Revit** (2 years)
- **Rhinoceros** (4 years)
- **Sketchup** (1 year)
- **Indesign** (4 years)
- **Photoshop** (6 years)
- **Illustrator** (3 years)
- **Office Suite** (4 years)
- **BIM** (1 year)
- **Grasshopper** (2 years)

CONTENTS

PORTFOLIO

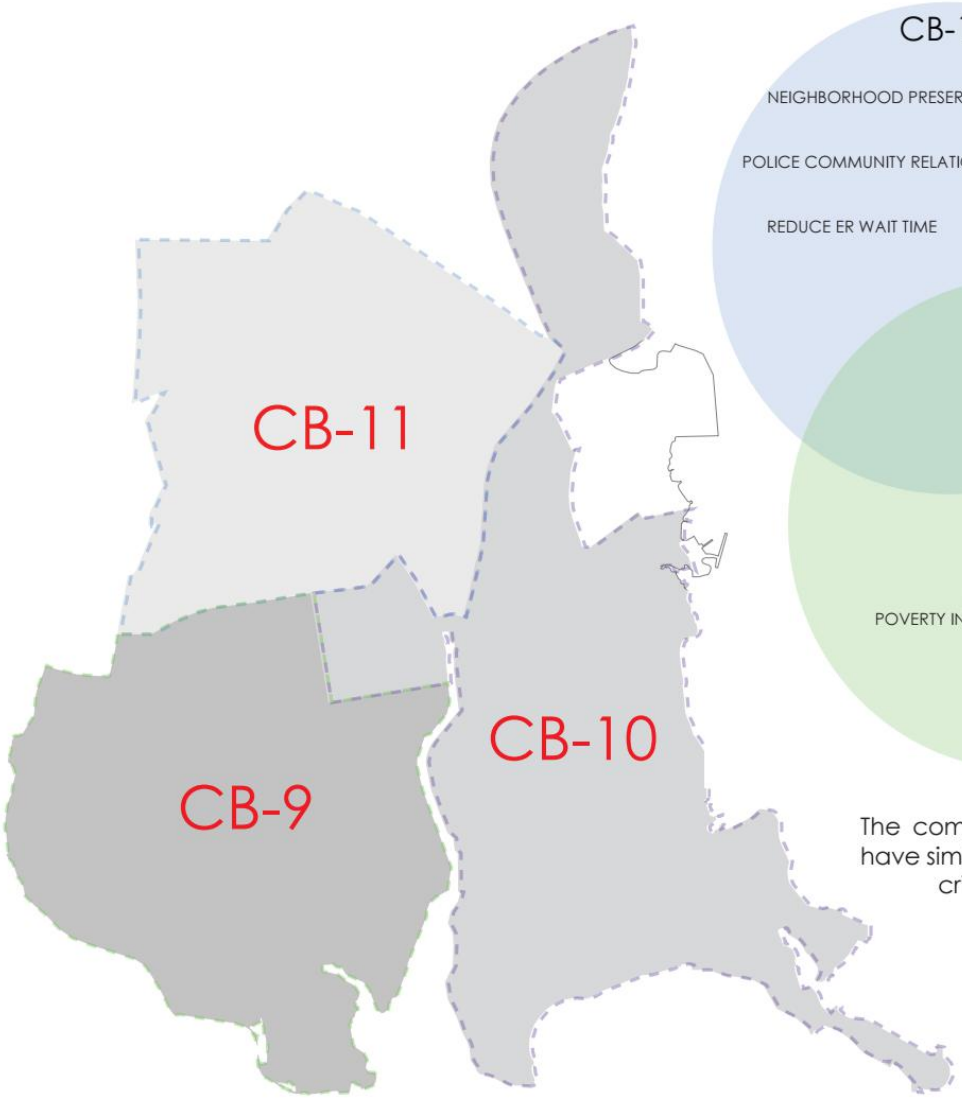
01
COMPETION WORK

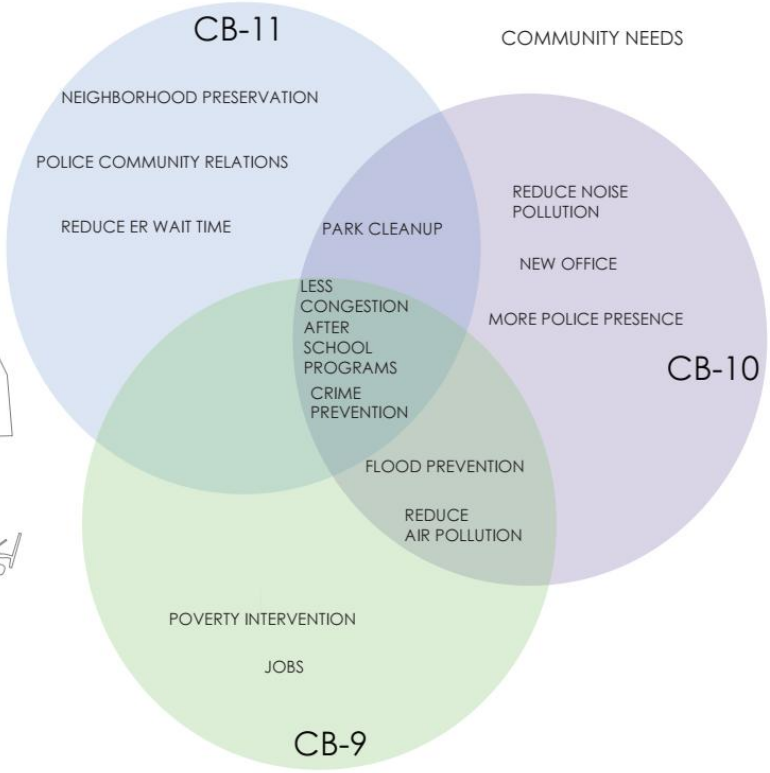
Media Used:
Revit, Photoshop, Illustratior, Indesign, Rhino, Vray

Introduction

This project entails the design of a intervention at an urban or suburban scale. The Challenge was to explore and assess issues of existing development, infrastructure, topography, environmental and community resources and needs within the area around Westchester Creek, Bronx.

BRONX COMMUNITY DISTRICTS 9, 10, AND 11





The communities surrounding the Westchester creek have similar needs such as reducing traffic congestion, crime prevention, increasing after school programs and flood protection

Bronx Ecological Corridor

Restore Renew Revitalize

Transportation Proposal:
Alternative Methods to Alleviate Traffic Conditions Throughout the Commuity Boards

Bridge Proposals:
Connections Along Westchester Creek to Provide Access to and from Each Side

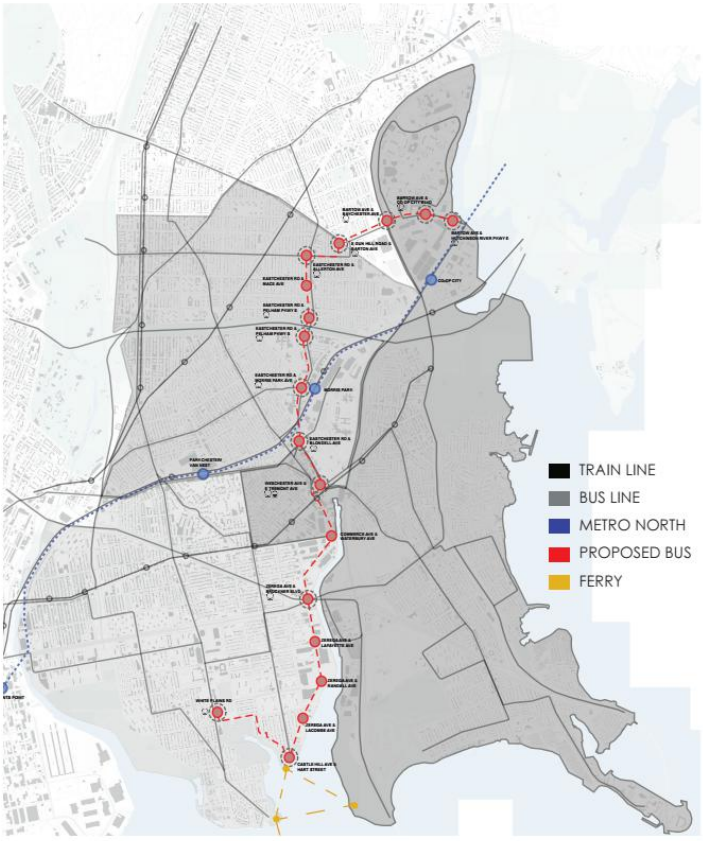
Pollution Proposals:
Natural Filters for Air and Water Contamination

Flooding Proposal:
Provide Flood Prevention Through Passive Systems

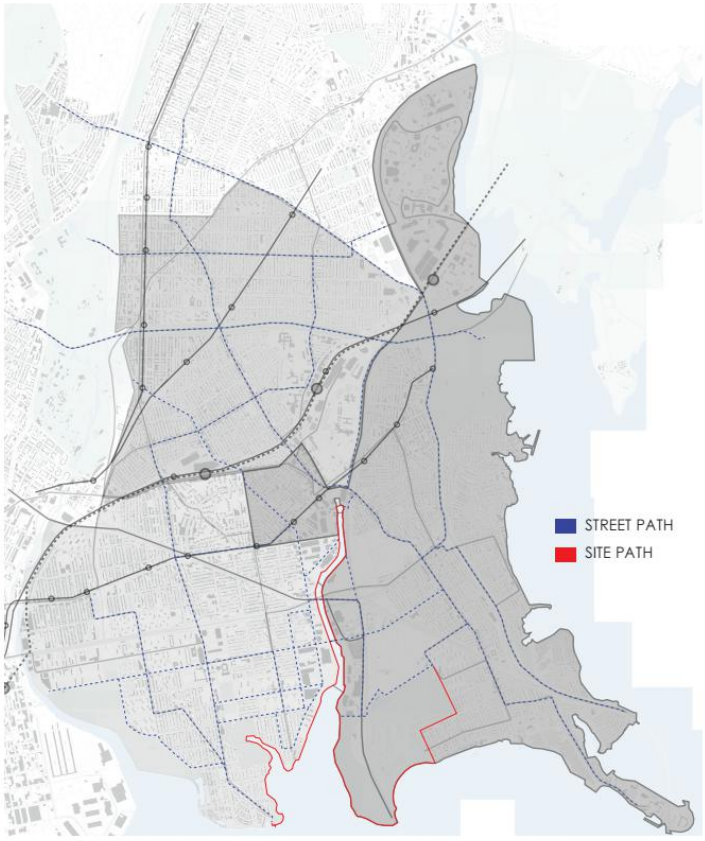
Community Centers #9, 10, & 11
Promote Economic Development, Health and Wellness, and Conservation and Resiliency

ALTERNATIVE COMMUTER ROUTES

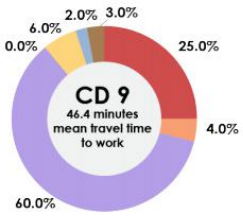
TRANSPORTATION

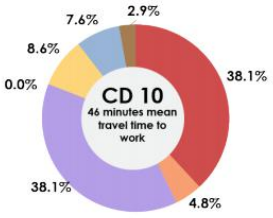


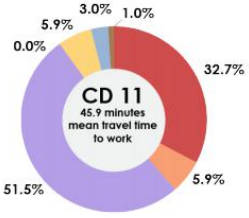
BIKE ROUTES



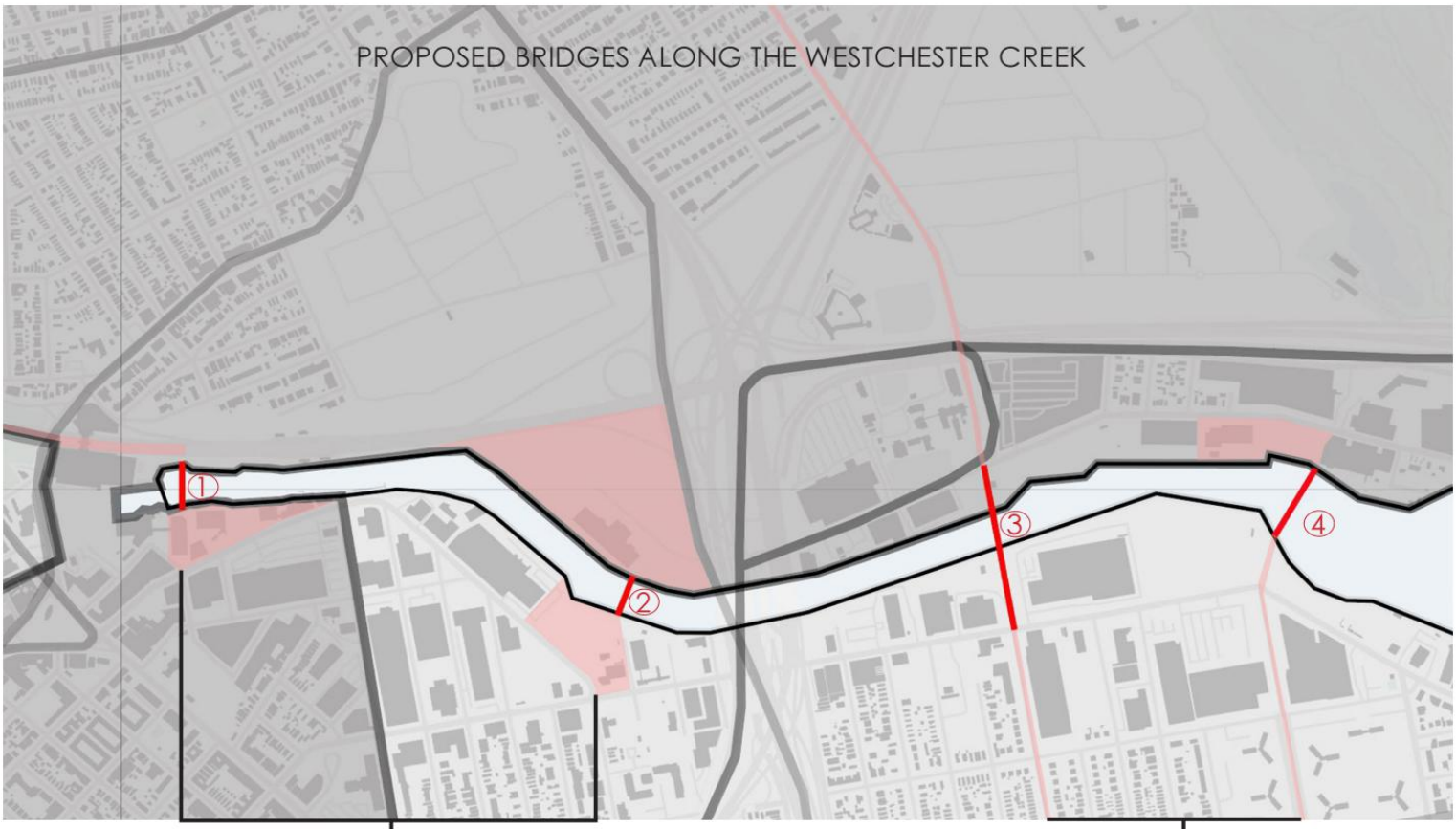
DROVE | CARPOOL | OTHER
WORK AT HOME | PUBLIC TRANSIT
BICYCLE | WALKED





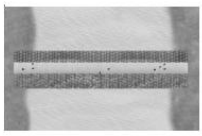


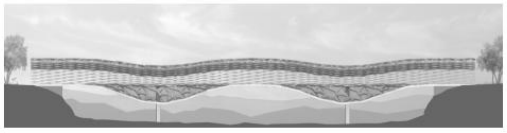
PROPOSED BRIDGES ALONG THE WESTCHESTER CREEK



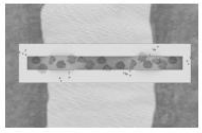
By bridging the two sides of the creek in primarily busy locations, we create direct access to and from the highlighted areas

Alleviate congestion from surrounding streets, and provides alternate routes for commuters from each community board, allowing access to both sides of the creek

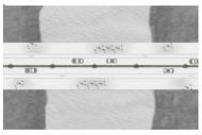




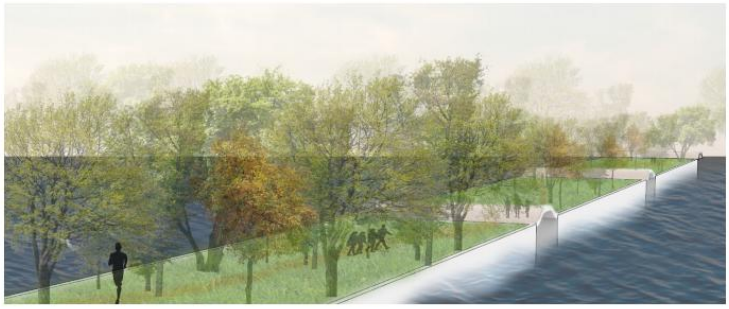
BRIDGE 1: GREENSCAPE
-The first bridge connects the recreational center to the ecological summit
-The bridge includes a green canopy which absorbs and filters sunlight
-The bridge is supported by a T structure repeated along the curved portions of the bridge

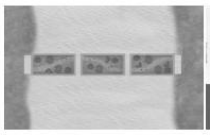


BRIDGE 2: COMMUNITY CONNECTION
-The second bridge connects the proposed communal center to a large open green clearing
-The flat deck of the bridge allows for a smooth transition over the water
-The curved center of the bridge allows for proper structural support and extend the green space



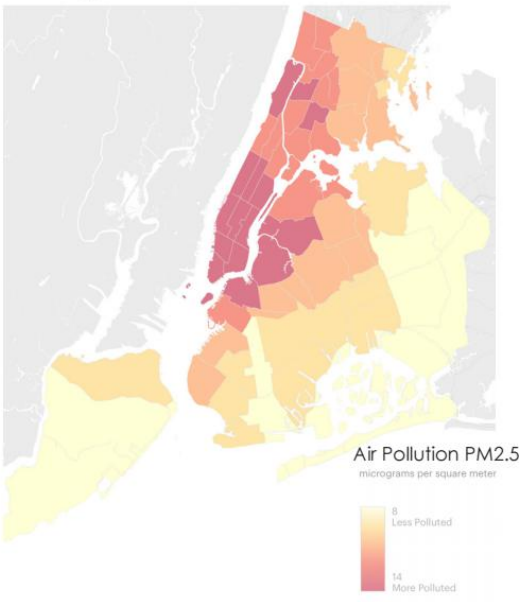
BRIDGE 3: LAFFAYETTE AVE EXTENSION
-The Laffayette Ave extension will continue the street over the water
-This bridge will allow vehicles to cross reducing the conjestion on the expressways
-The bridge has a waved outer edge greenspace for the people of the community to enjoy





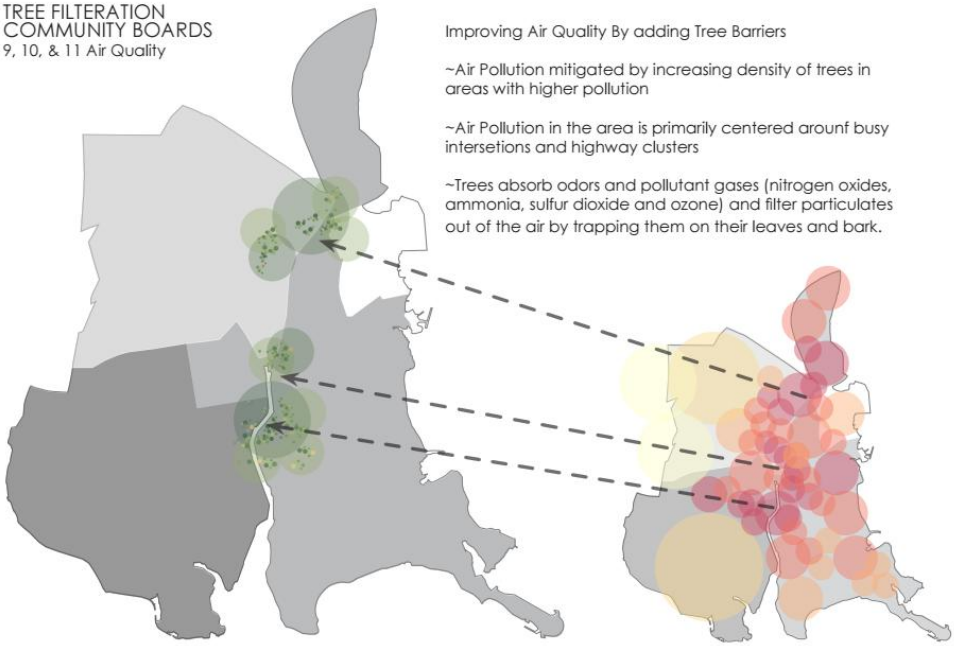
BRIDGE 4: BARGE BRIDGE
-The fourth bridge connects the park space along the community board nine to ferry point park
-The bridge allows people from the housing development nearby to have access to ferry point park
-The bridge is made from connecting barges which have been repurposed to alllow for gardening

NY AIR QUALITY



TREE FILTERATION COMMUNITY BOARDS

9, 10, & 11 Air Quality



Improving Air Quality By adding Tree Barriers

~Air Pollution mitigated by increasing density of trees in areas with higher pollution

~Air Pollution in the area is primarily centered arounf busy intersetions and highway clusters

~Trees absorb odors and pollutant gases (nitrogen oxides, ammonia, sulfur dioxide and ozone) and filter particulates out of the air by trapping them on their leaves and bark.

New York Air Quality Standards

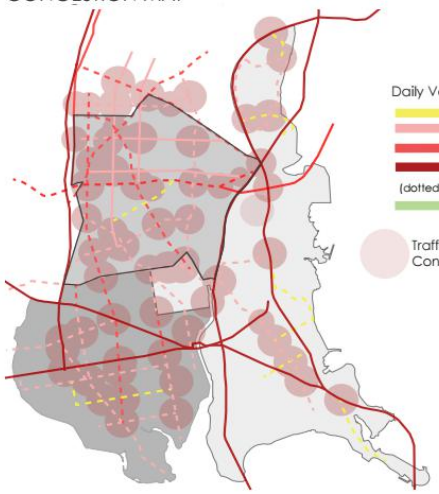
~"Good" air quality, as defined by the United States + Environmental Protection Agency is 12 micrograms per cubic meter over 24 hours

~The Pollution in the Bronx on the worst air quality day this past year reached 40 µg/m3 during the highest hour, a level that would be considered "UNHEALTHY FOR SENSITIVE GROUPS."

~ San Francisco saw the worst pollution in the US but this is primarily due to the yearly wild fires that the area suffers from.

~In comparison, Beijing, known for its poor air quality, has decreased its status from "Hazardous" to "Unhealthy" and "Moderate", primarily due to efforts from their government

CONGESTION MAP



CONGESTION MAP REVISED

Clean Air Initiative

Pelham Parkway **2164** trees currently
Size 109.46 acres
Proposed 25% ground coverage (27 acres)
1080 new trees

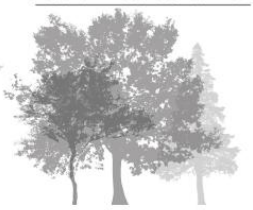
Ferry Point Park **0** trees currently
Size 413.8 acres
Proposed 37.5% ground coverage (157 acres)
4239 new trees

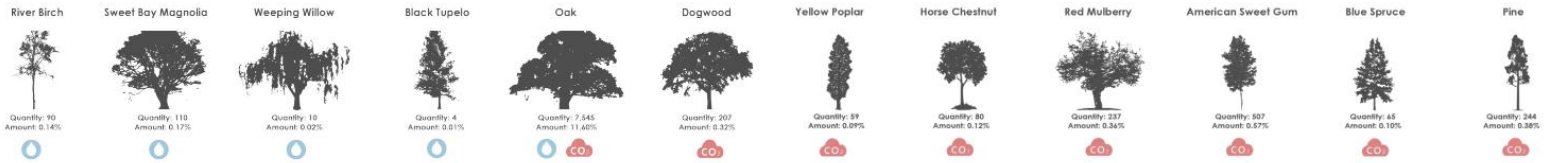
Carbon dioxide reduced each year **11,659** tons per tree
Stormwater intercepted each year **5,492** gallons per tree

Bur Oak Tree 80'
Swamp White Oak 80'
Pin Oak 80'

American Basswood 60'
Littleleaf Linden 50-60'
Norway Maple 50'

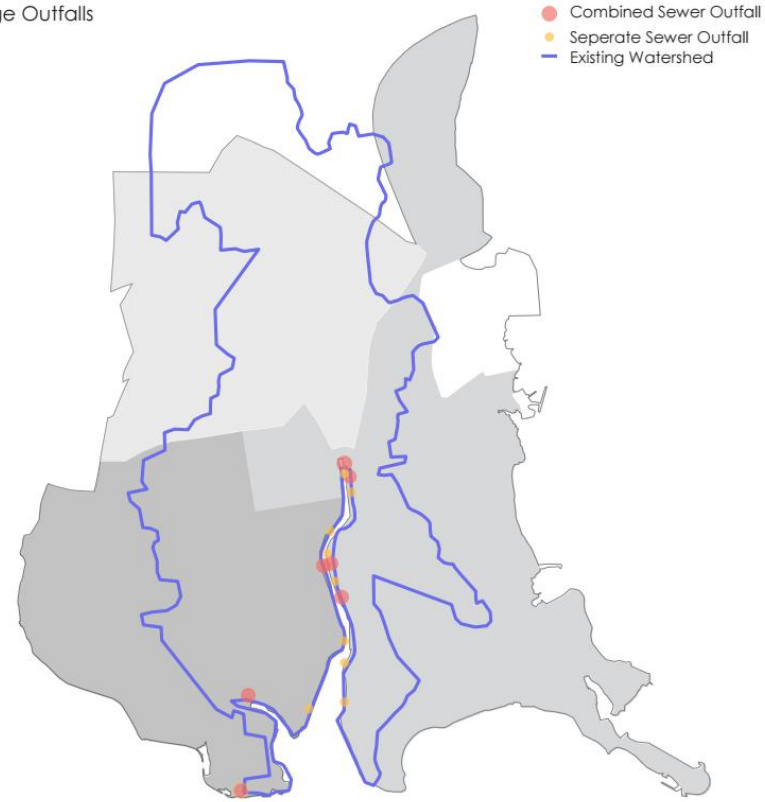
Red Mulberry 35–50'
Blue Spruce 30-50'
Eastern Red Cedar 40'

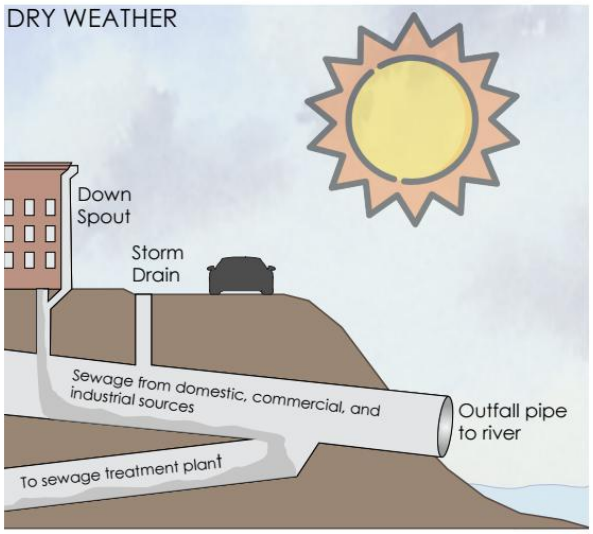


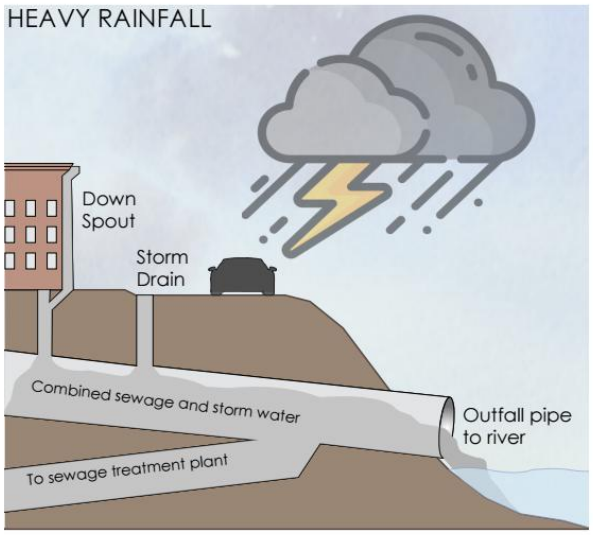


WESTCHESTER CREEK POLLUTION

Sewage Outfalls







~When it rains hard, the pipes are overwhelmed and raw sewage is kicked into the city's rivers, canals, creeks, and bays

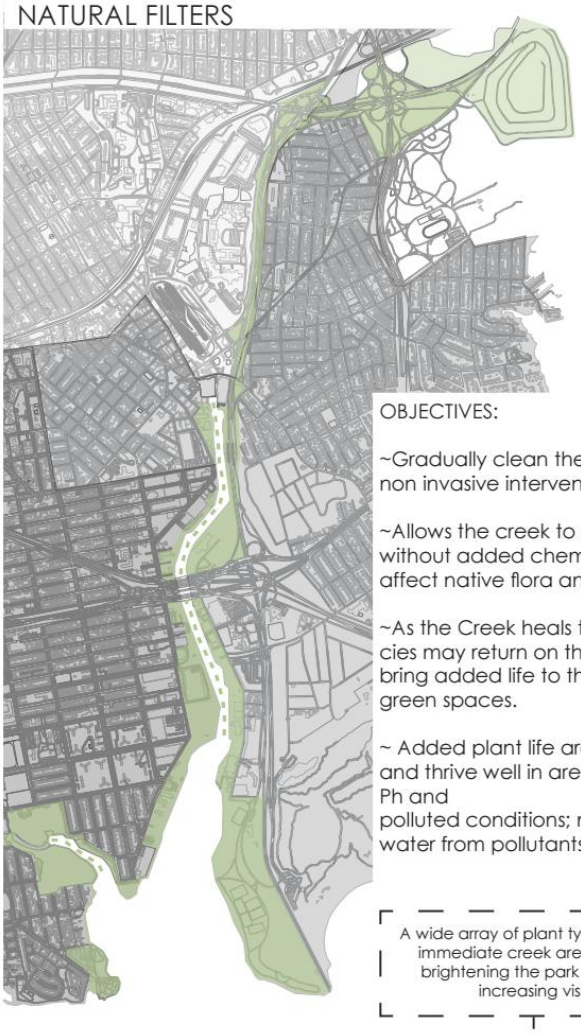
~Every year 30 billion gallons of raw sewage gets discharged in city waterways.

~ According to New York State standards, in a clean body of water the number of Fecal Coliform colonies in a 100 milliliter sample should not exceed 200 colonies

~ Fecal Coliform is found in human and animal feces, and is not necessarily harmful itself but indicates the presence of sewage and potentially disease-causing bacteria (pathogens) in the water.

~ As of 2019 the reading for Westchester creek averages to about 400cfu/100ml

NATURAL FILTERS



OBJECTIVES:

~Gradually clean the creek through non invasive interventions

~Allows the creek to self cleanse without added chemicals that may affect native flora and fauna

~As the Creek heals the native species may return on their own and bring added life to the revitalized green spaces.

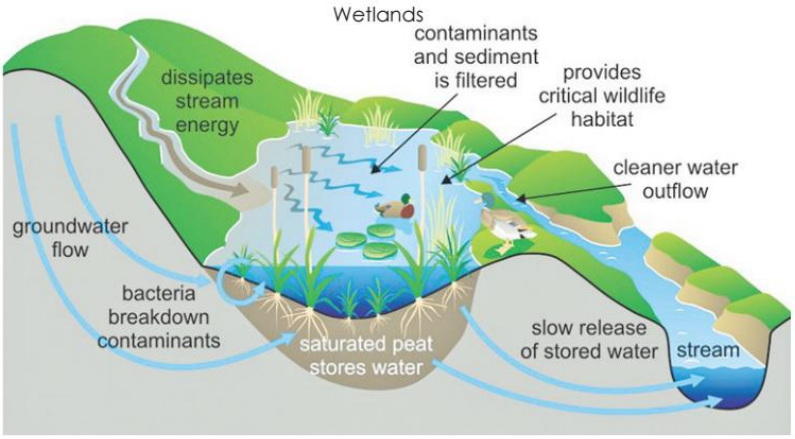
~ Added plant life are flood resiliant and thrive well in areas with lower Ph and
polluted conditions; naturally filter water from pollutants

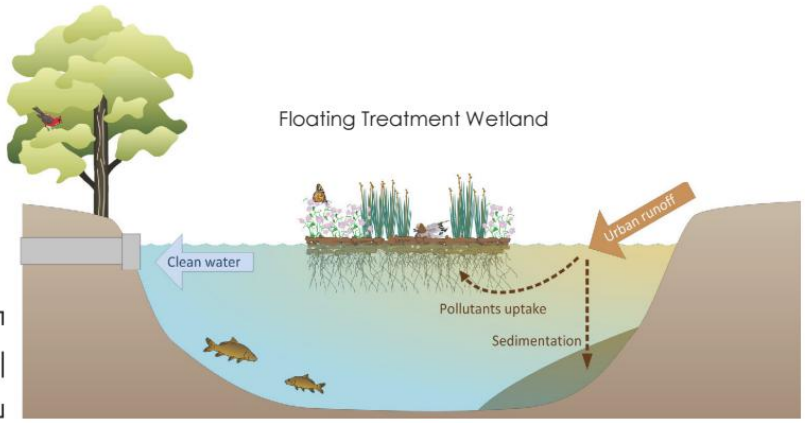
A wide array of plant types help filter the immediate creek area while visually brightening the park for attendees, increasing visitations

POINTS OF SOFTSCAPE INTERVENTION

~Wetland Filteration absorbs and clears pollutants from water and runoff

~Floating Treatment Wetland provides direct access for plant roots to polluted water





POINTS OF STRUCTURAL INTERVENTION

UV Light For Microbes and Germination

-Chemical Free: UV purification does not use any chemicals like chlorine or leave any harmful by products.

-Taste & Odor Free: UV does not add any chemical taste or odor to the water.

-Extremely Effective: One of the most effective ways to kill disease-causing microbes by destroying 99.99%.

-Requires very little energy: Uses about the same energy as it would to run a 60 watt light bulb.

-Low Maintenance: Set and forget type of system, just change UV bulb annually.

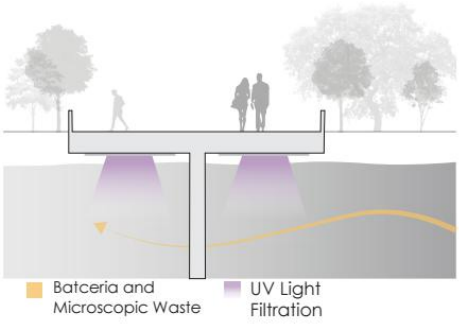
Membrane Filtration for Larger Particles and Sediment

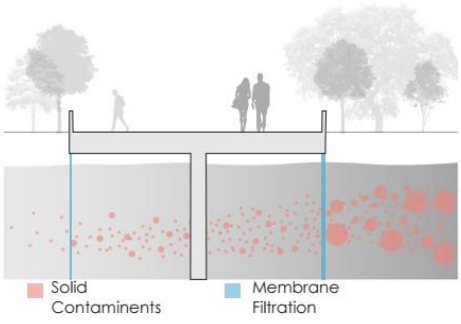
-Allows the natural flow of the creek (average 3mph) to channel the filtration.

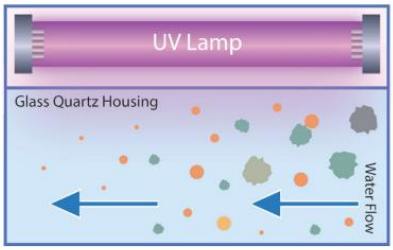
-This method takes care of the large particles and sediment that UV filtration normally wouldnt filter.

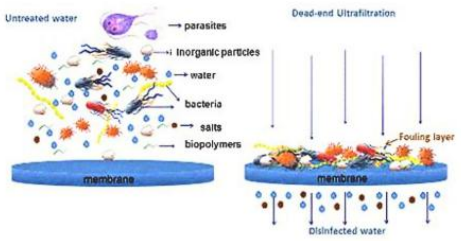
-Sediment that is caught in these filters can be used agriculturally

-There is a growing emphasis on limiting the concentrations and number of chemicals that are applied during water treatment. By physically removing the pathogens, membrane filtration can significantly reduce chemical addition, such as chlorination. `



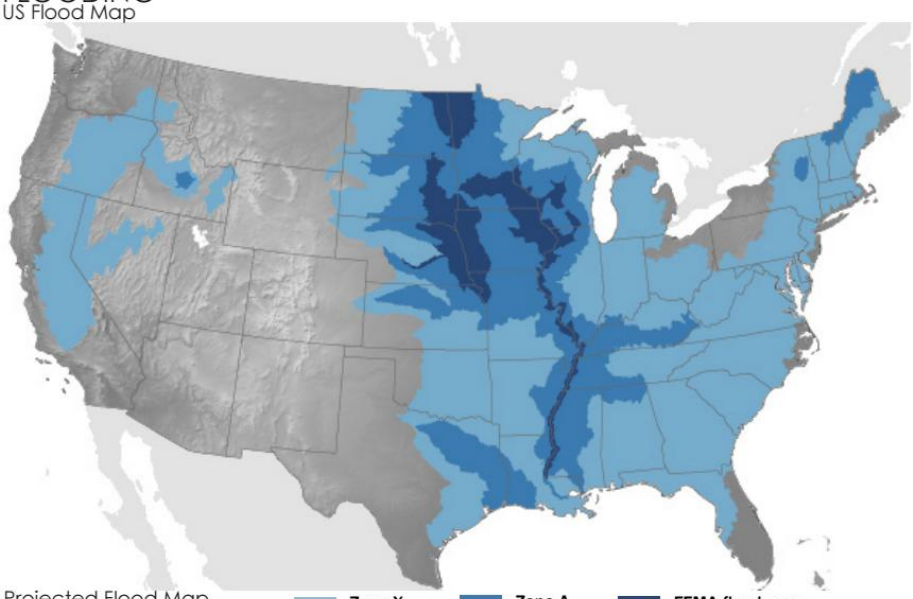






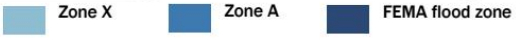
FLOODING

US Flood Map

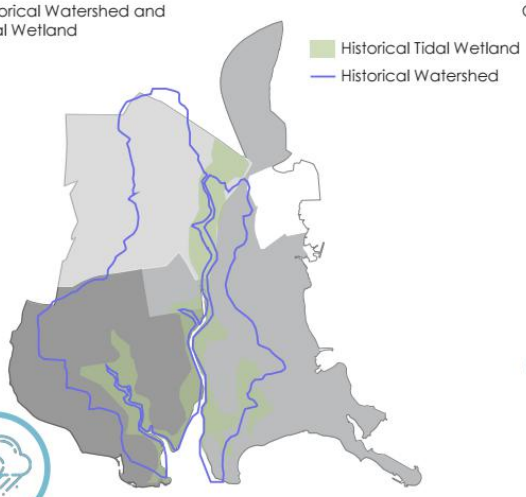


NY Flood Map

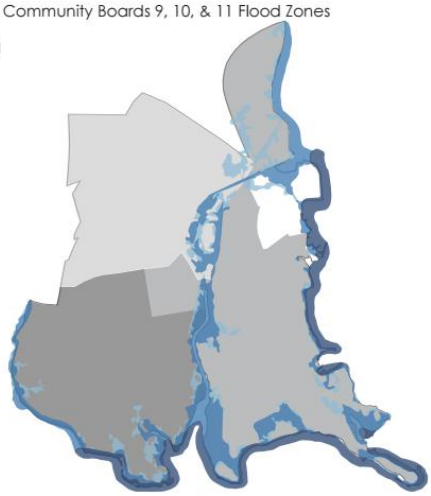
Projected Flood Map
100 year flood



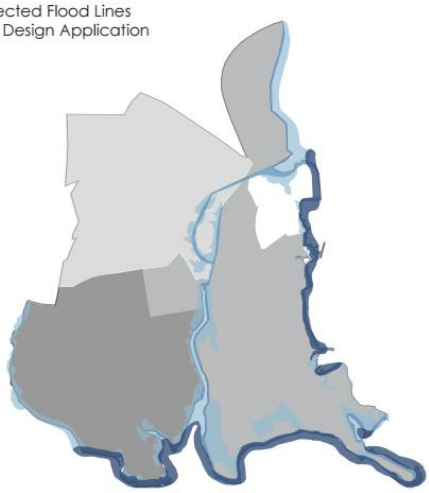
Historical Watershed and
Tidal Wetland



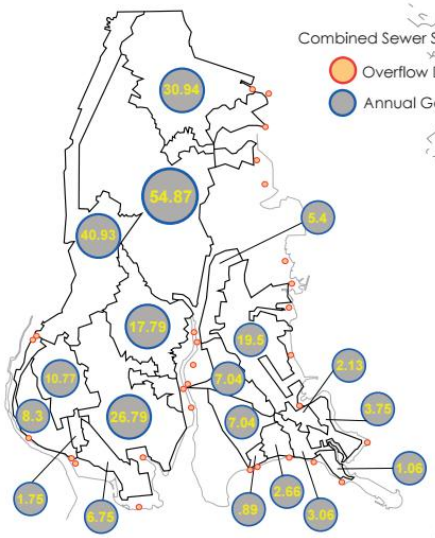
Community Boards 9, 10, & 11 Flood Zones



Projected Flood Lines
Post Design Application



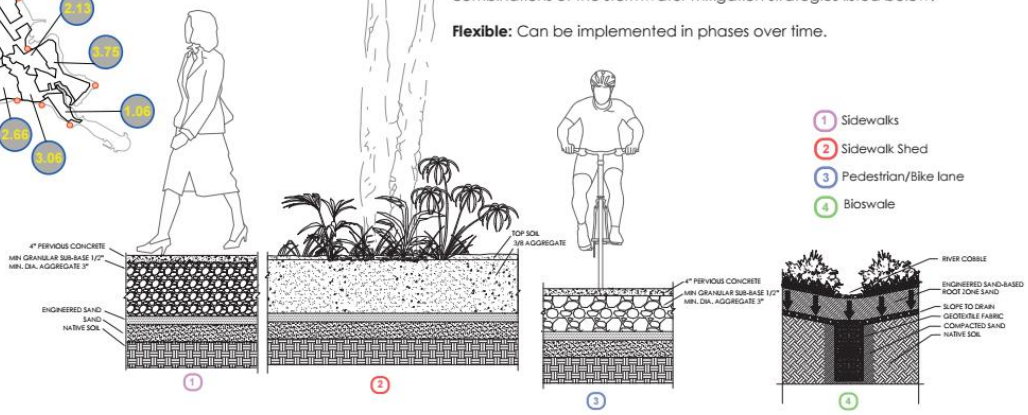
GROUND WATER RECHARGE

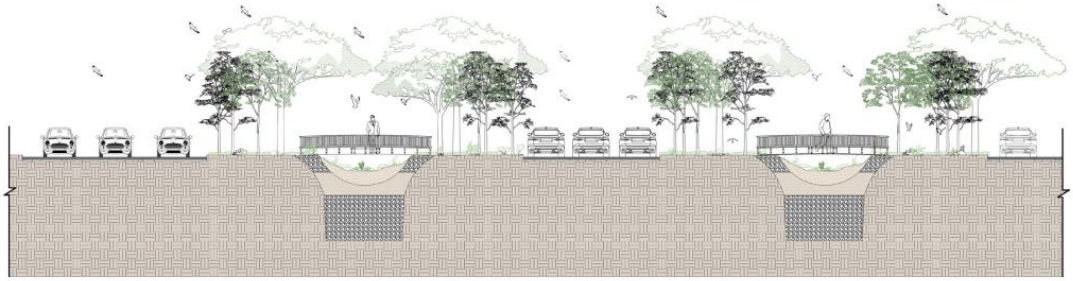


Scalable Street Design and Rainwater Management

Configurable: Can suit the needs and size of most urban city streets, in combinations of the stormwater mitigation strategies listed below.

Flexible: Can be implemented in phases over time.



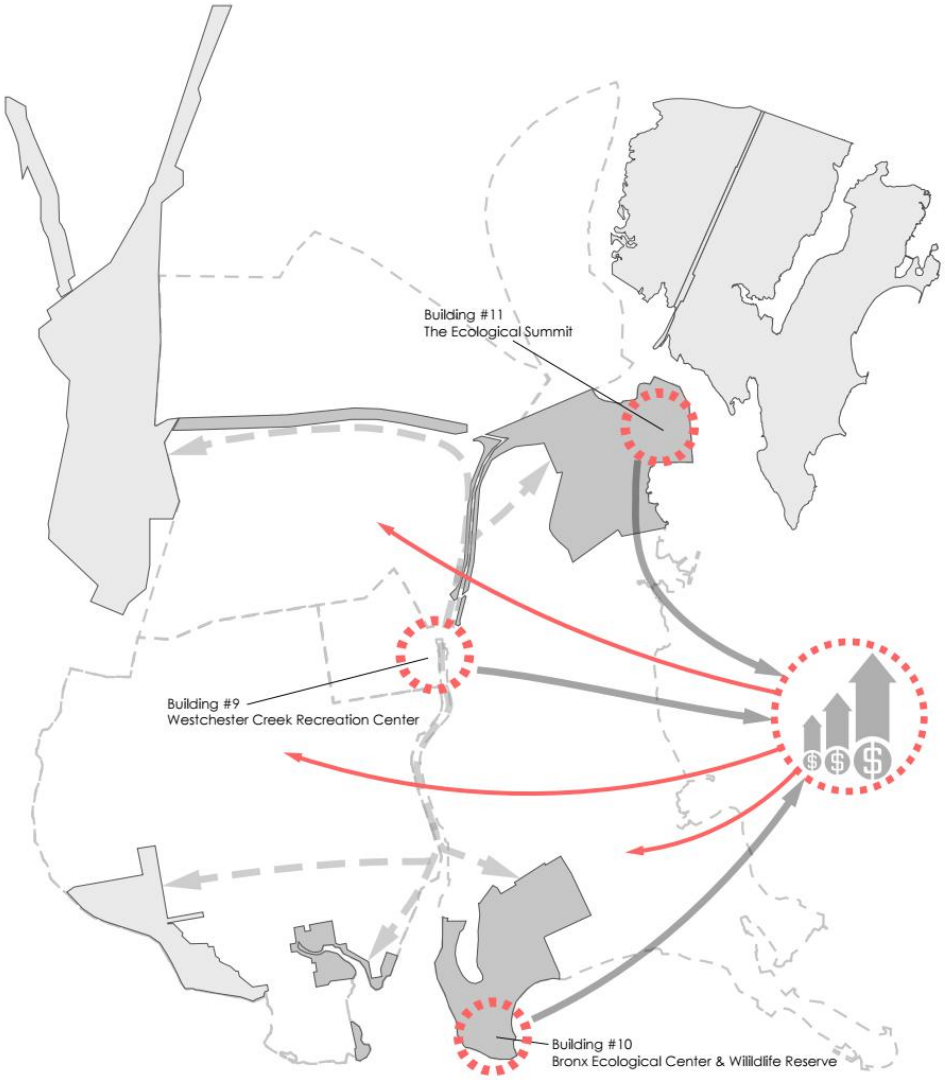


Bioswale stormwater runoff capacity: **22,894,056** gallons

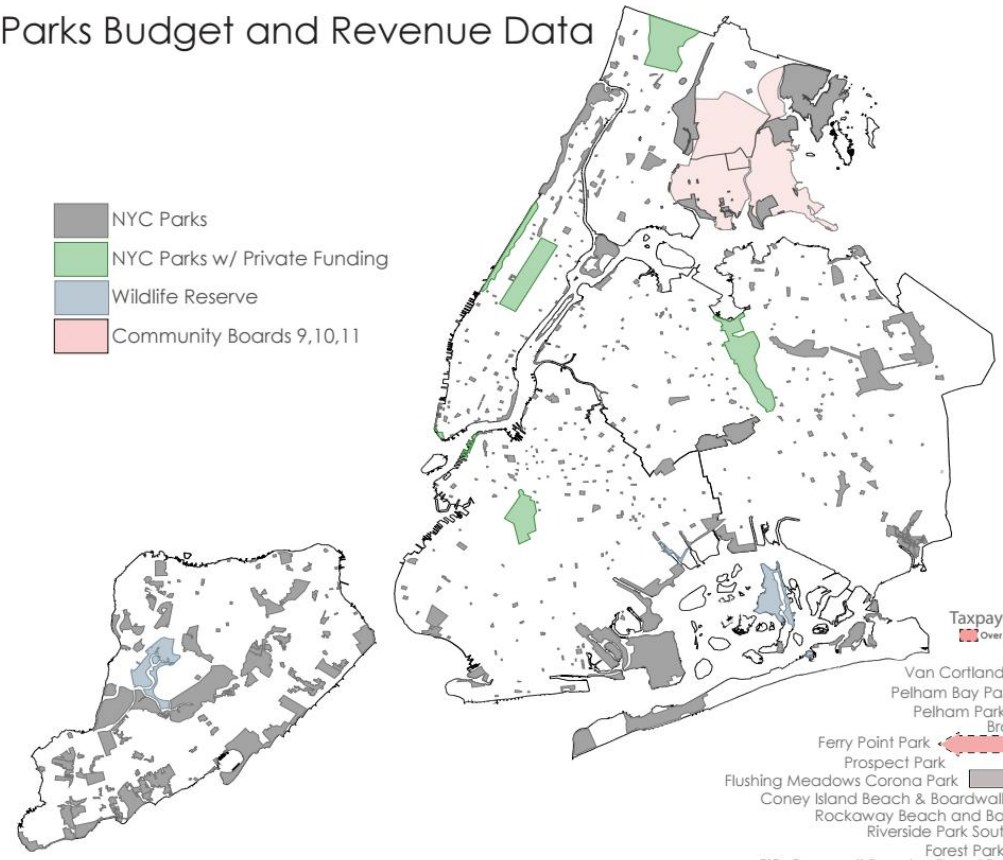
Regenerative Cycle

Organize
Create streams of revenue
Redistritube
Repeat Cycle

The reproducible commonality found in successful New York City parks.



Parks Budget and Revenue Data

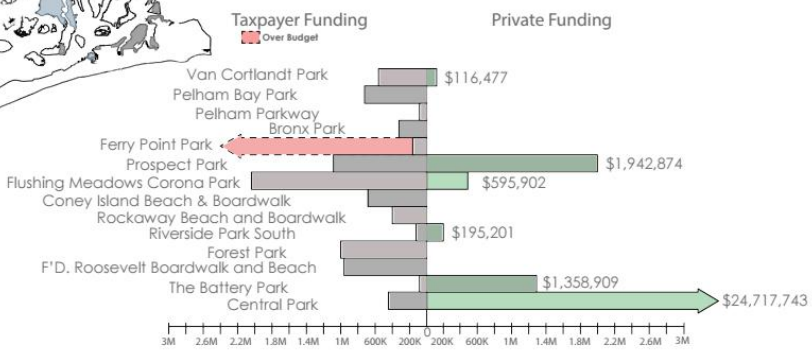


Ferry Point Park

Privately Operated $8,000,000

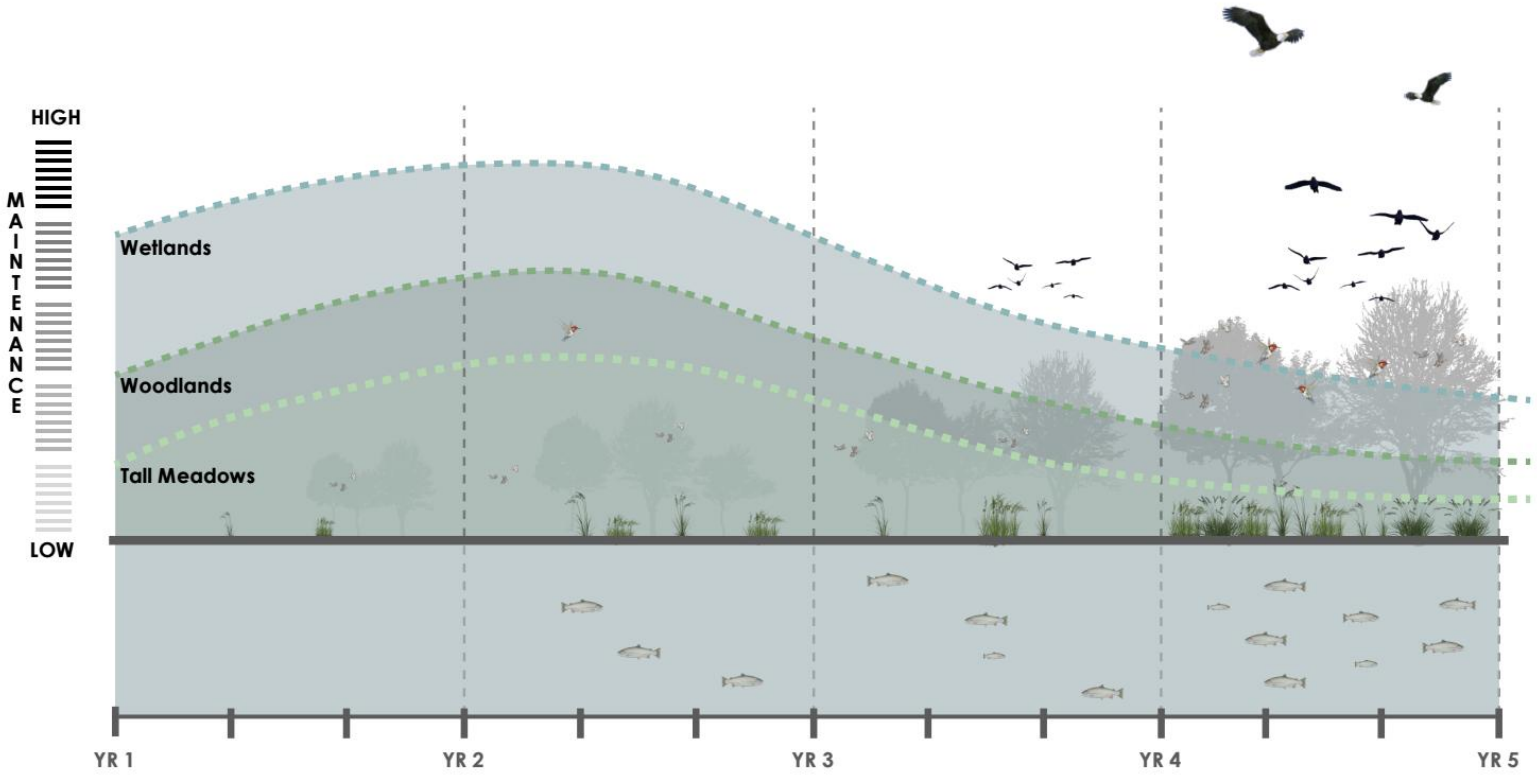
Taxpayer Funded -$2,000,000+

Maintainence
Combined Sewer System
Irrigation



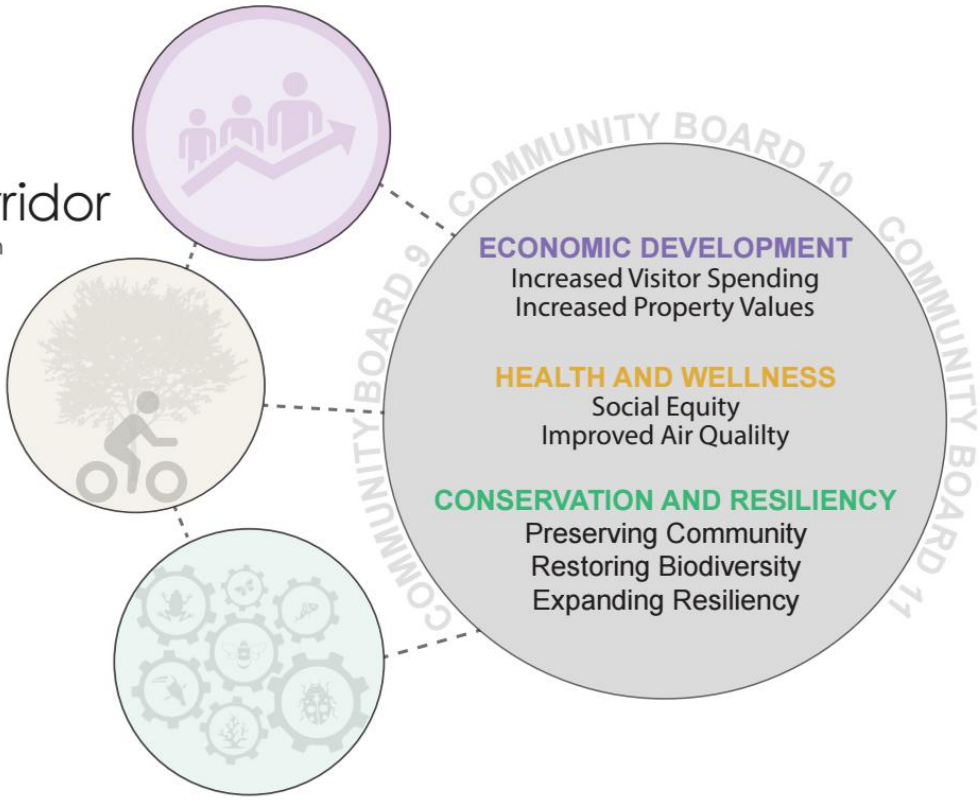
WESTCHESTER CREEK RECREATION CENTER

Ecological Diversification Over Time



Bronx Ecological Corridor

Holistic Sustainable Regenerative Design



PORTFOLIO

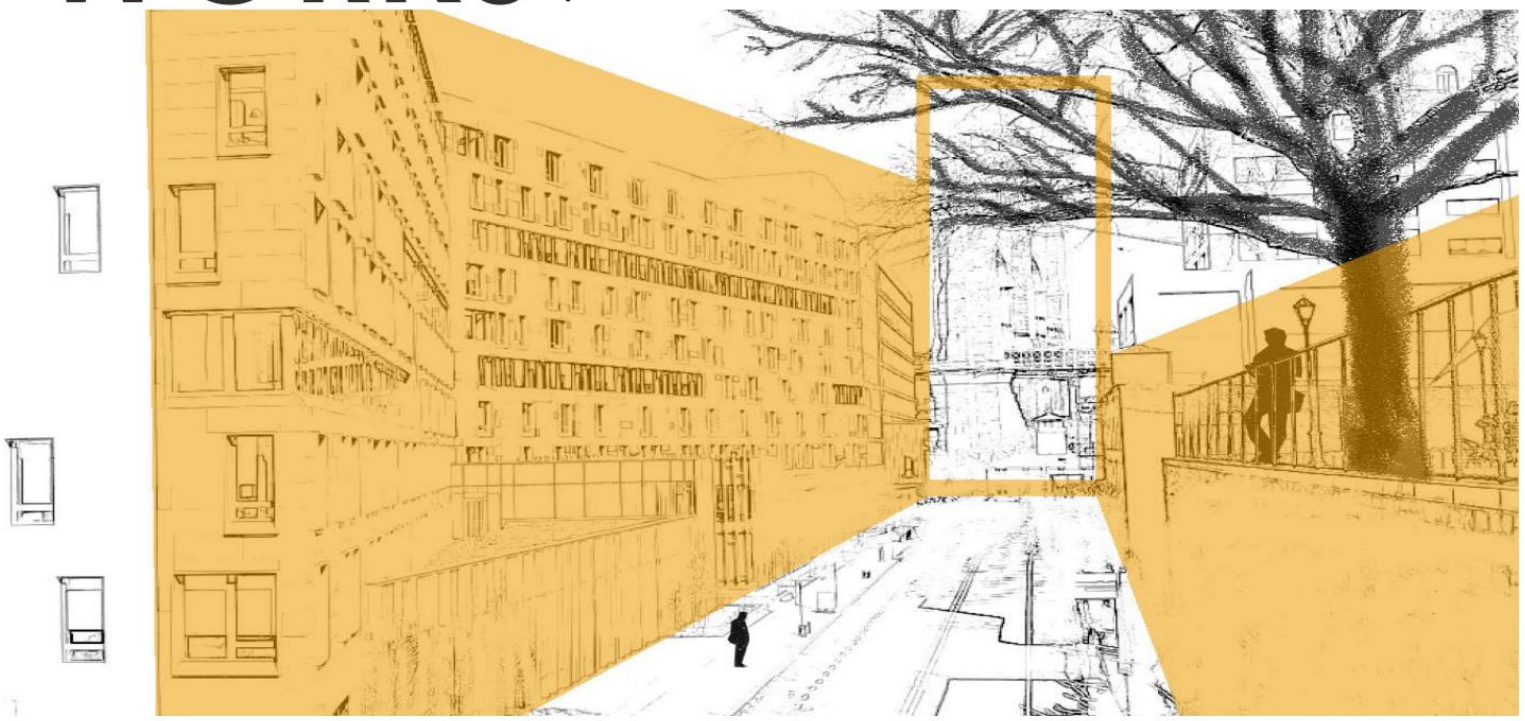
02
STUDIO WORKS

Introduction

In this section is a collection of studio works which show a range of my architectural experience and skill. These projects are tailored to showcase the diverese approach to architectural design, urban and site analysis, sustainability, and inovative design.

Media Used:

AutoCAD, Revit, Rhino Photoshop, Indesign, Aftereffects, Lightroom



Project 1: DUMBO Fire Station

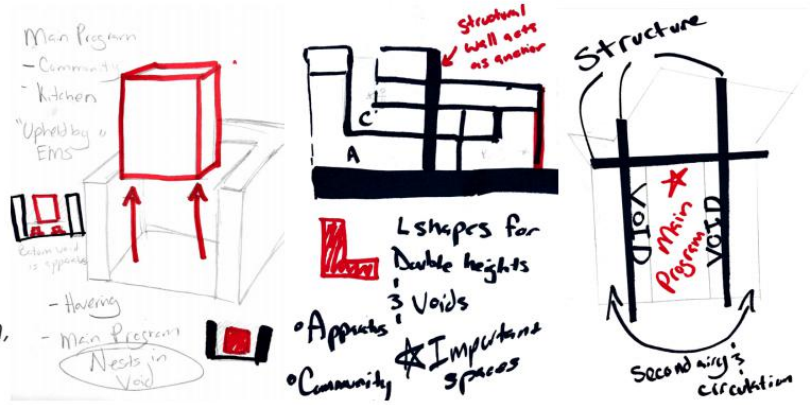
Bring in the community and care to the EMS Workers

CONCEPT :

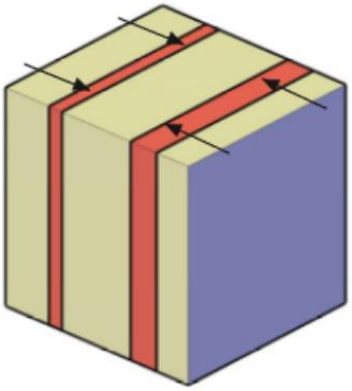
The community lacks community spaces and in my project I envision a flexible space open for community use and in the heart of the space itself

STRATEGY :

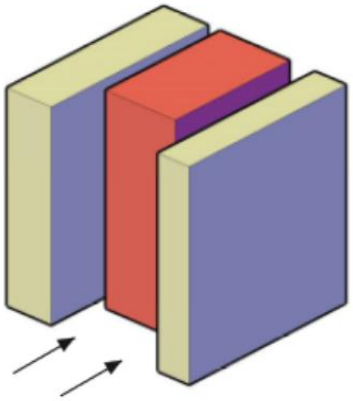
1) Through the use of vertical voids and circulation to push the community together
2) By traveling around the main program, essentially wrapping it
3) Light travels through the site that combines program, by the use of voids and outdoor spaces



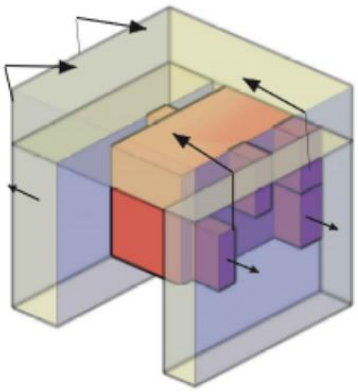
CONCEPT DIAGRAMS



BRING COMMUNITY TOGETHER



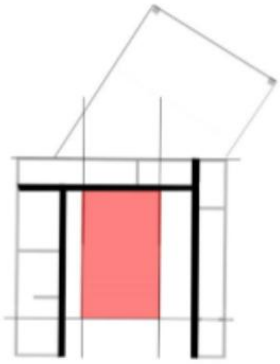
BRING STREET IN

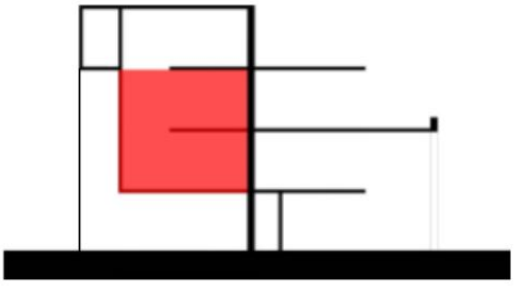


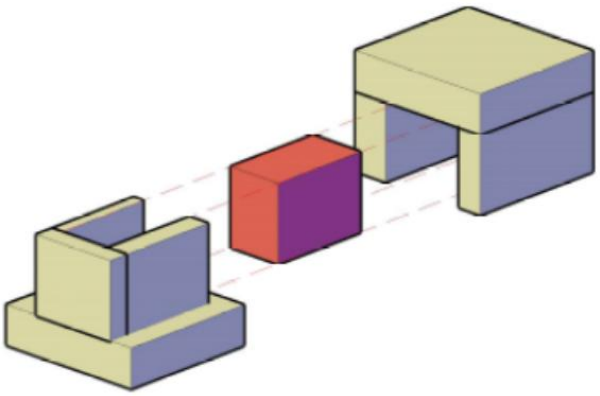
BRIDGING THE GAPS

CONCEPT COLLAGES

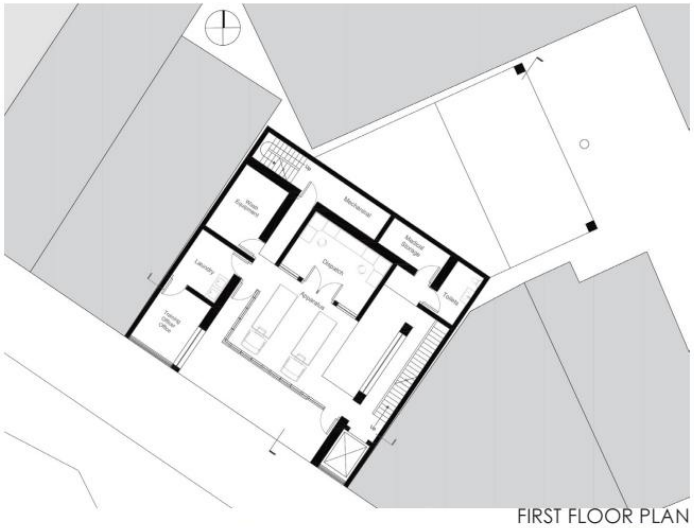
PARTI DIAGRAMS



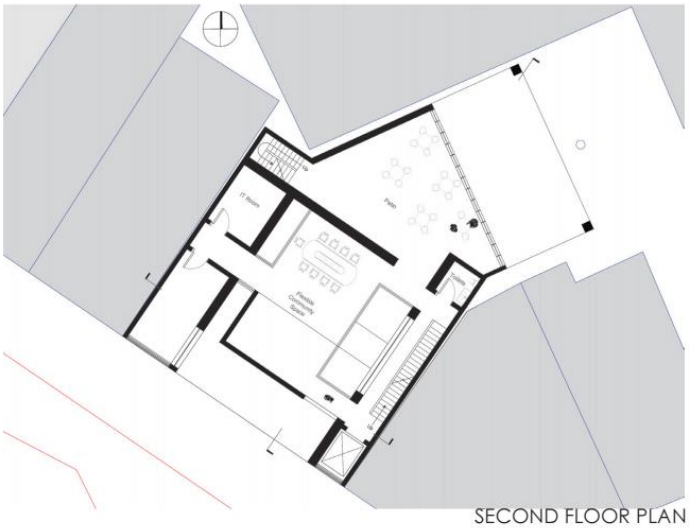




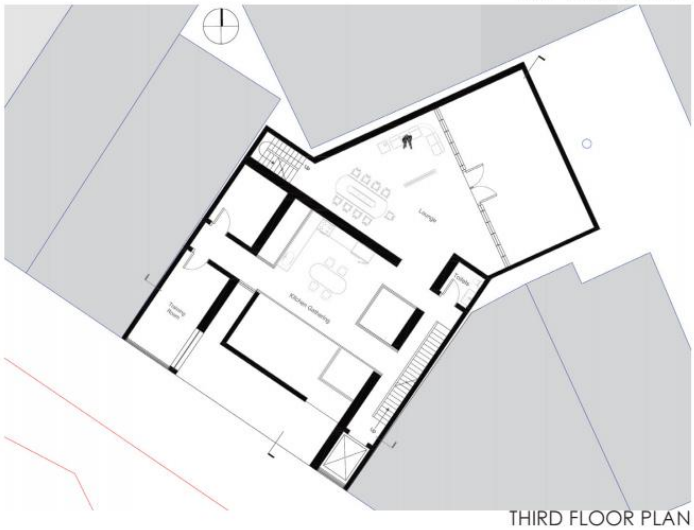
DOCUMENTATION



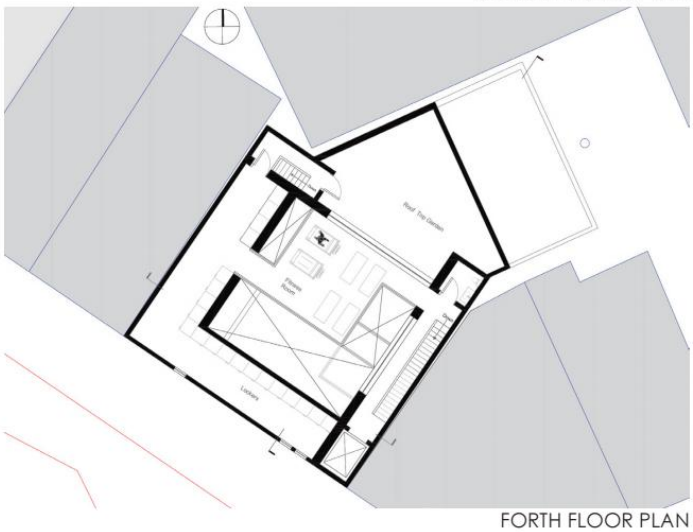
FIRST FLOOR PLAN



SECOND FLOOR PLAN



THIRD FLOOR PLAN

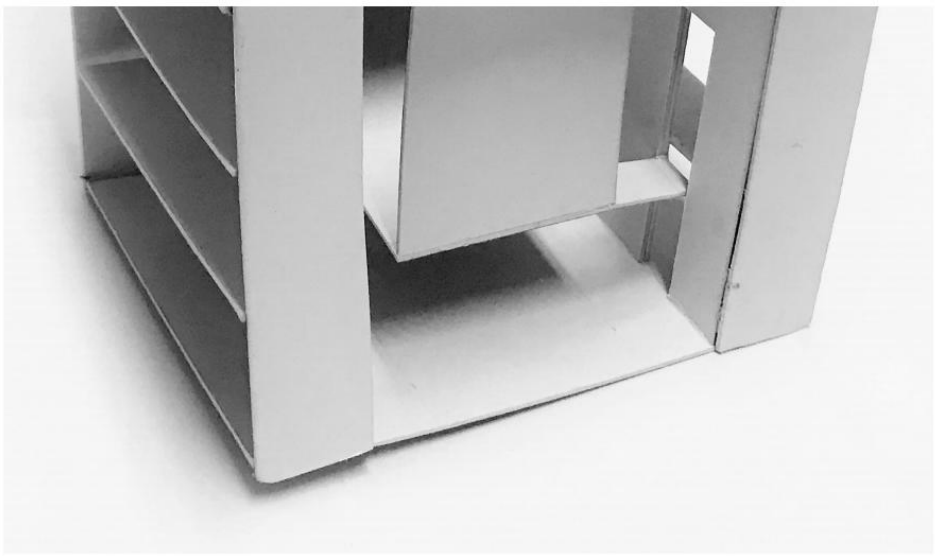


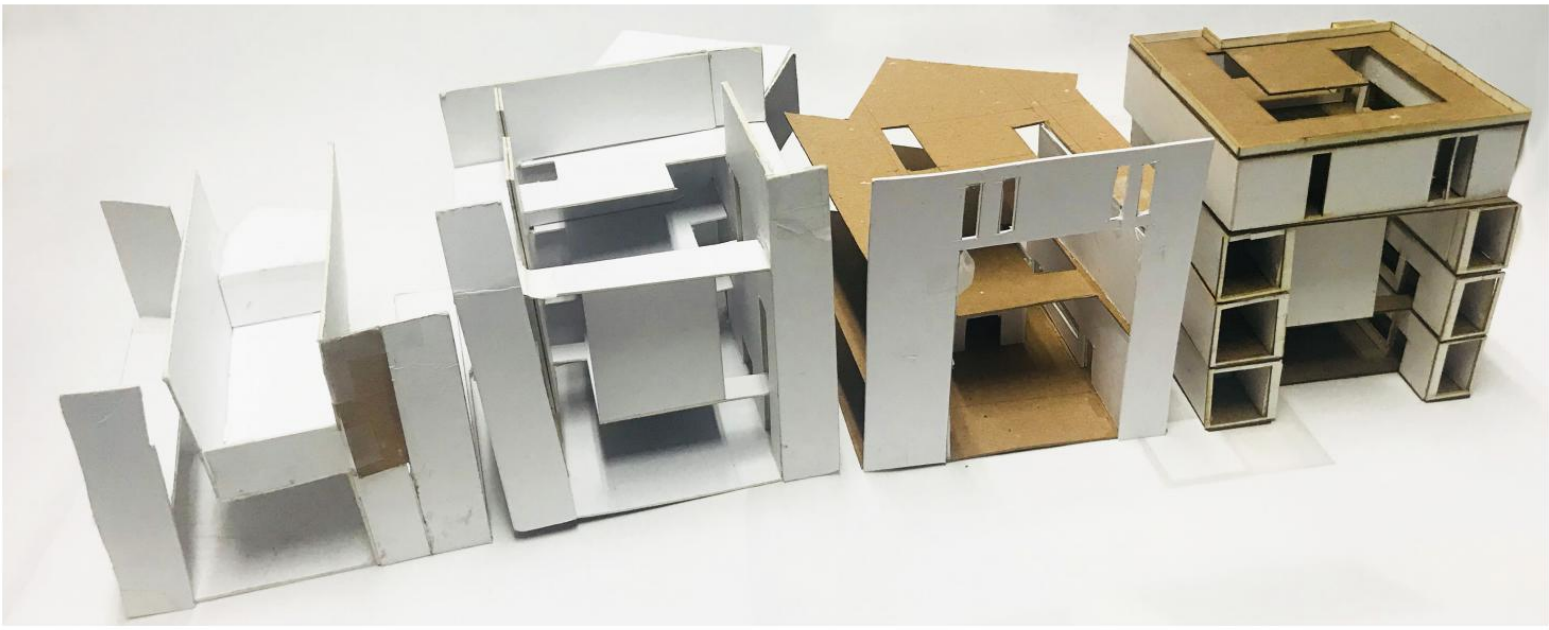
FORTH FLOOR PLAN

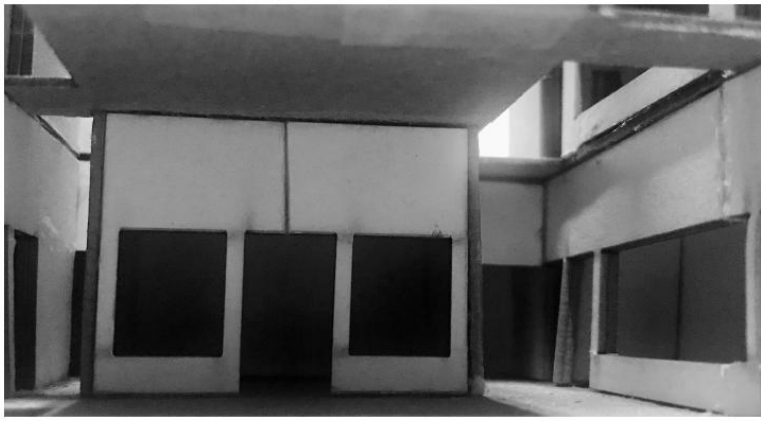
RENDERED SECTION A

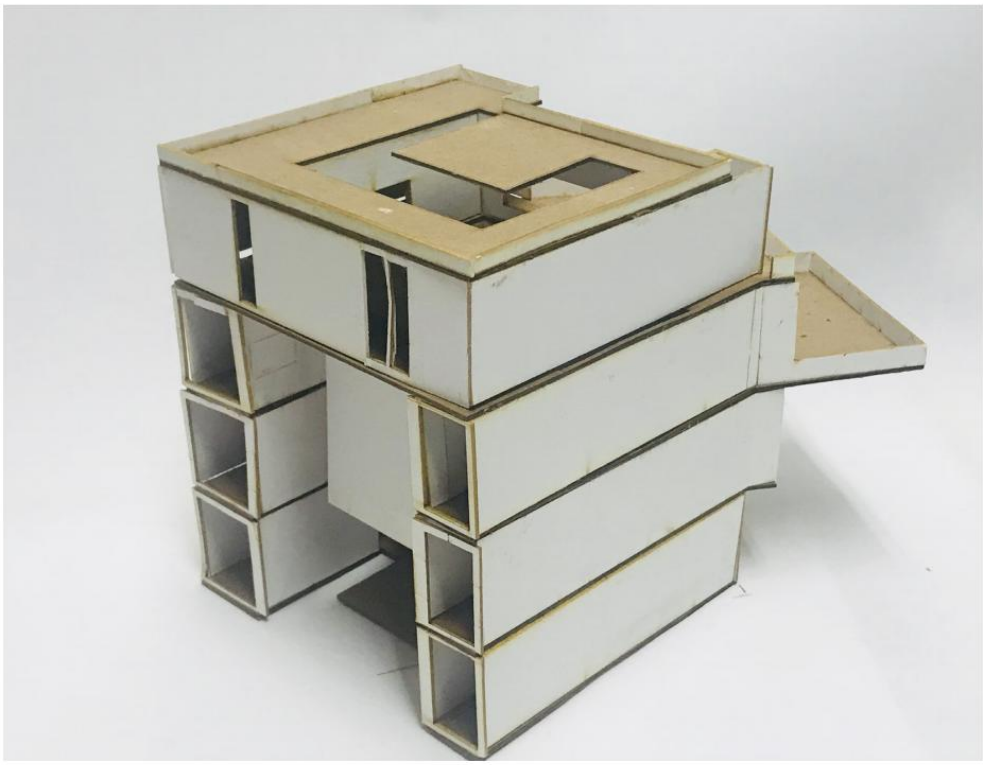
RENDERED ELEVATION

RENDERED SECTION B









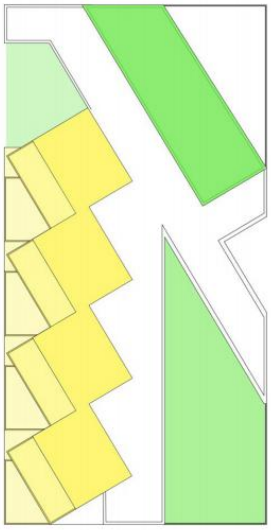
Project 2: Chelsea Schools

Design a school in the Chelsea district in Manhattan

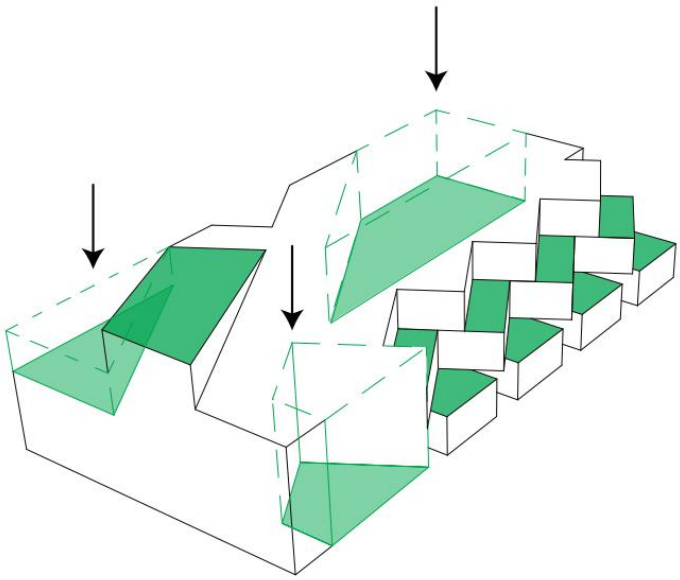
CONCEPT :

This project aims to allow children to learn in an open setting that allows all classrooms to have open access to natural light, air, and green spaces. Flexibility in the spaces allow for accomidations to be made based on time of year, time of day, and weather status.

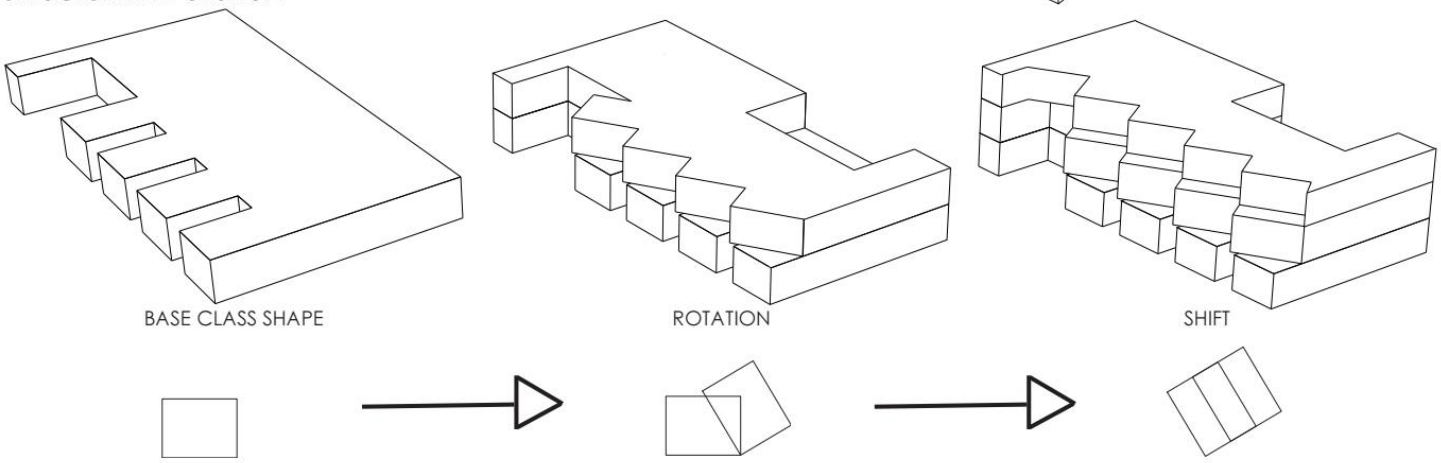
PARTI



GREEN SPACES



STRUCTURAL EVOLUTION



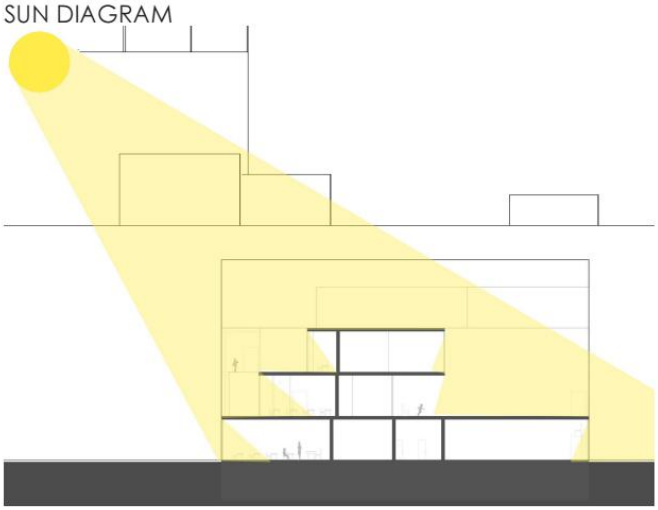
STRATEGY :

Fresh air and ample sunlight greatly improve the quality of education that children receive .
This is achieved by:

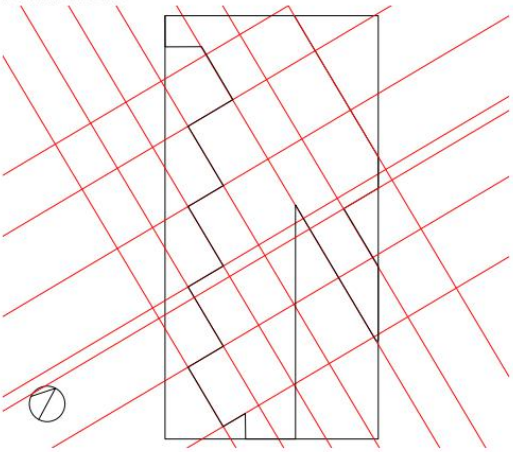
-Creating outdoor classroom spaces
-Opening green spaces on each level
-Opening up the program to increase airflow

PROGRAM DIAGRAM

SUN DIAGRAM



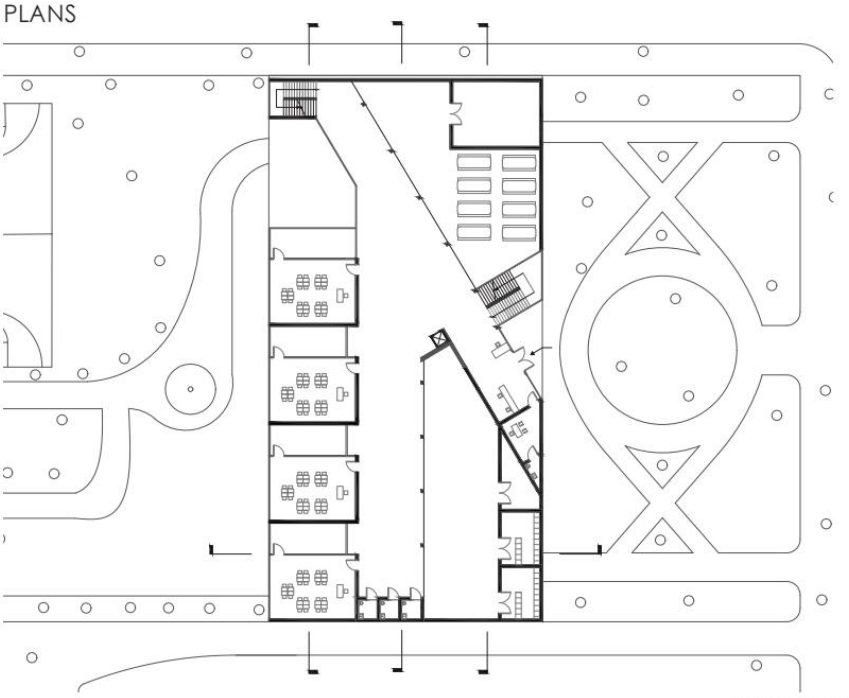
ARMATURE



DOCUMENTATION

MATERIALITY

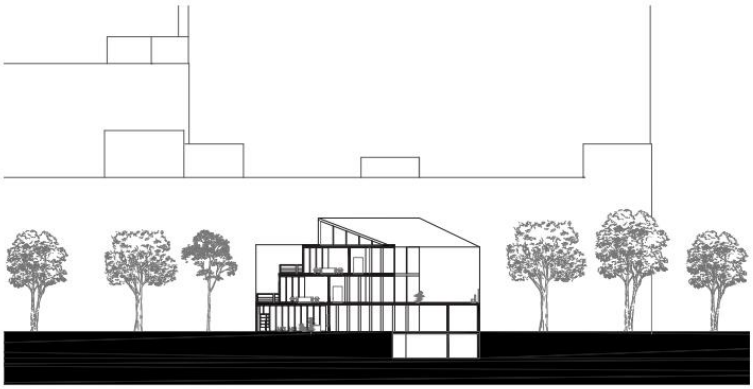
PLANS



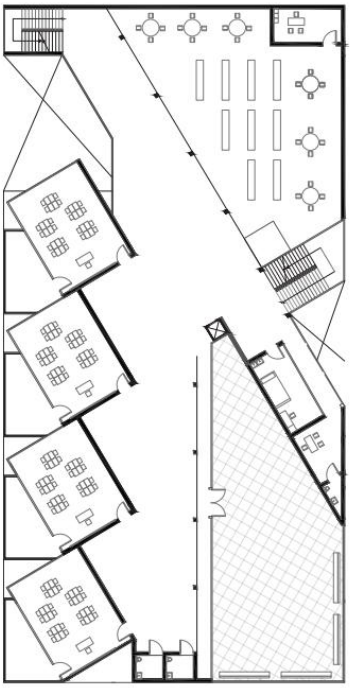
FIRST FLOOR

SECTIONS

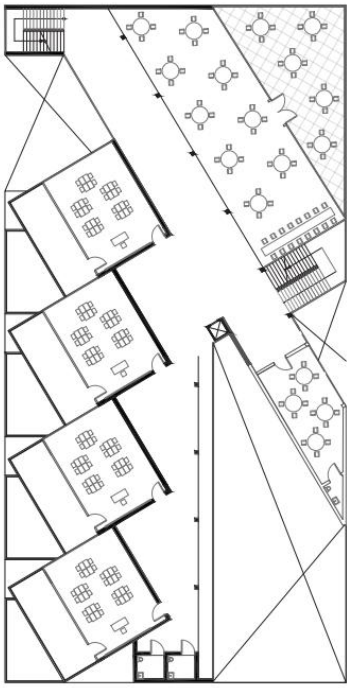
SECTION A



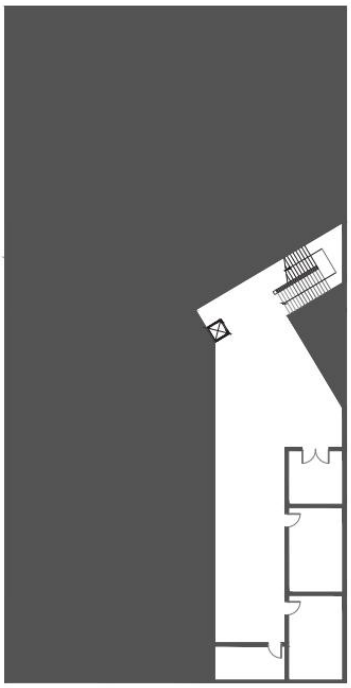
SECTION C



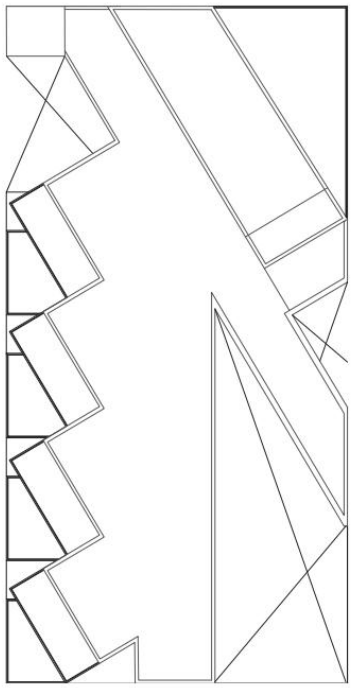
SECOND FLOOR



THIRD FLOOR



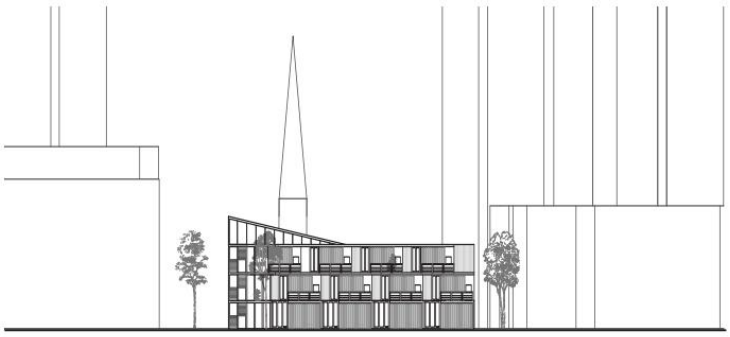
BASEMENT



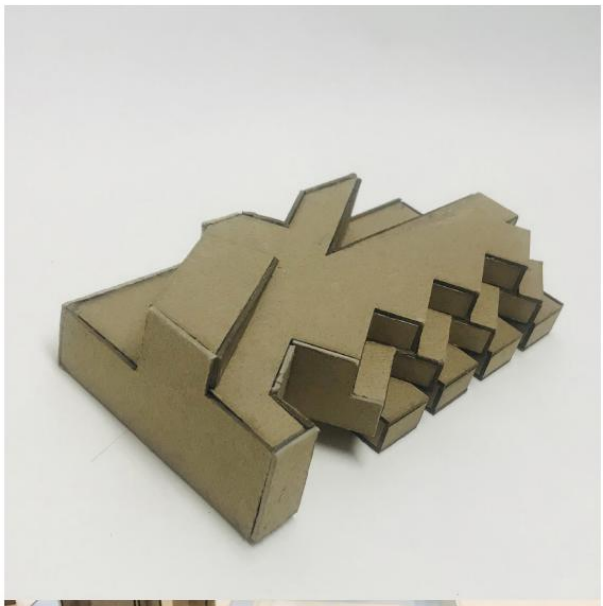
ROOF

ELEVATIONS

NORTH ELEVATION 1/16TH



EAST ELEVATION



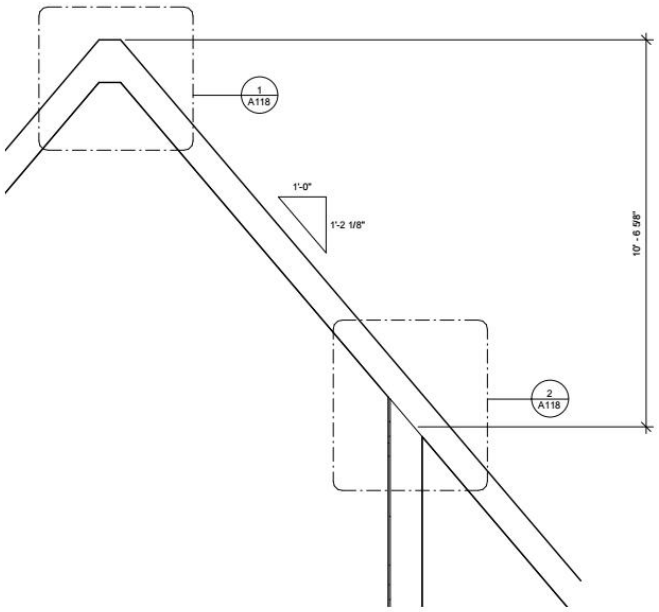
PORTFOLIO

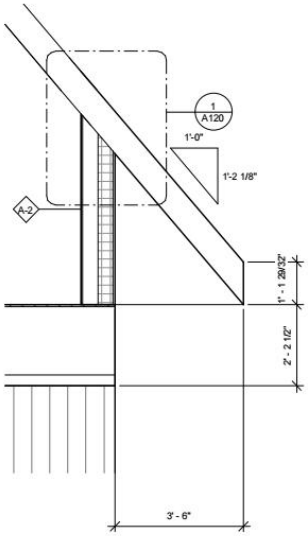
03
DRAFTING

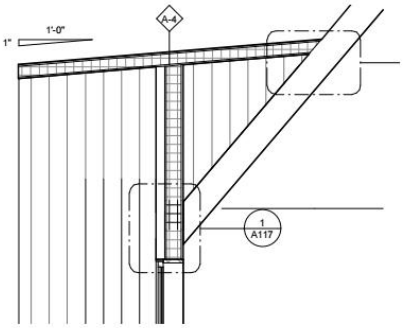
Media Used:
Revit, Photoshop

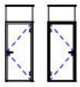
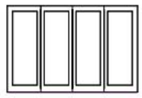
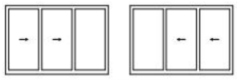
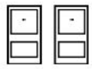
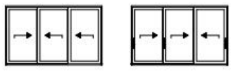
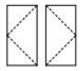
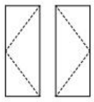
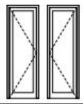
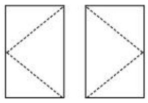
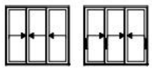
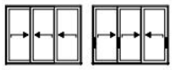
Introduction

A showcase of my ability to produce quality architectural shop drawings on Revit, as well as an understanding of structures, engineering and planning.







TYPE	PLAN	ELEVATION	TYPE	PLAN	ELEVATION
GLASS DOOR			FOLDING GLASS DOORS		
3 PANEL GLASS SLIDE DOOR			BARN DOOR		
KITCHEN 3 PANEL GLASS SLIDE DOOR			BATHROOM DOOR		
FRONT DOOR			SECOND FLOOR DOORS		
GLASS PANEL SLIDING DOOR					
BEDROOM 3 SLIDING DOOR					
BEDROOM 3 SLIDING DOOR #2					

DOOR
1/4" = 1'-0"

Ismail

Legend and Schedule

Date	11/6
Drawn By	Author
Checked By	Checker

A101

Scale	1/4" = 1'-0"

3/7/2020 1:58:31 PM

Window Schedule

Type Mark	Type	Count	Rough Height	Rough Width	Level
21	FIRST FLOOR SMALL	8	5' - 0"	2' - 0"	1ST Floor
30	FLOOR TO CEILING FIRST FLOOR	4	10' - 7 1/2"	4' - 5 13/16"	
31	FLOOR TO CEILING FIRST FLOOR 2	2	10' - 7 1/2"	4' - 5 13/16"	
32	FIREPLACE WINDOW	2	10' - 7 1/2"	4' - 5 13/16"	
34	skylight	2	5' - 1 9/16"	3' - 0 1/2"	

Wall Schedule

Type Mark	Count	Type	Width
A-1	3	Exterior 14"	1' - 4"
A-2	13	EXTERIOR 11"	0' - 11"
A-3	8	EXTERIOR 10"	0' - 10"
A-4	5	EXTERIOR 9"	0' - 9"
B-1	2	INT 14"	1' - 2"
B-2	11	INTERIOR 11" 2nd floor	0' - 11"
B-3	11	INTERIOR 10"	0' - 10"
B-4	12		0' - 9"
C	2	enterior 5.75"	0' - 5 3/4"

Lighting Fixture Schedule

Type Mark	Count	Type	Apparent Load	Wattage	Voltage	Level
A	10	60W - 120V	60 VA	60 W		1ST Floor
B	1	SOP 9000 lm 91W 840 900 mm FO	0 VA	61 W		1ST Floor
C	1	Refer to Catalog	26 VA	9 W	120 V	1ST Floor
D	6	Miniforms Track Heads	50 VA	27 W	12 V	2ND Floor

Door Schedule

Type Mark	Type	Count	Rough Height	Rough Width	Level
9	12080	1	7' - 11 1/2"	11' - 11 1/2"	1ST Floor
12	46" x 80" Pocket door	1	7' - 0 1/2"	7' - 9"	1ST Floor
14	48" x 127.5" Exterior	1			1ST Floor
31	44"x84" barn door	1	7' - 0"	3' - 8"	1ST Floor
34	42"X7'	2			1ST Floor
39	3 SLIDING DOOR140"	2			
40	3 SLIDING DOOR8'10"	1			1ST Floor
41	3 SLIDING DOOR 7'5.5'	1			1ST Floor
43	0915 x 2134mm	2	7' - 0 1/32"	4' - 4"	2ND Floor
63	38 x 10_7' FROSTED 2	2	10' - 8"	3' - 4"	2ND Floor
65	Glass Front Door	2	8' - 10 5/16"	3' - 2 3/16"	
74	38"x10'	2	8' - 9"	3' - 2"	
79	Type Catalog	1		14' - 10 5/8"	1ST Floor
80	Int_Door_Barausse_Fila-Sliding_700 x2100 2	1	10' - 6 1/4"	6' - 6"	1ST Floor

TYPE	PLAN	SECTION
Small Fixed Window		
Fixed Floor to Ceiling		
Stairwell Fixed Floor to Ceiling		
Stairwell Fixed Floor to Ceiling Wide		
Skylight		

WINDOWS
1/4" = 1'-0"

TYPE	PLAN	SECTION
EXTERIOR 9"		
EXTERIOR 10"		
EXTERIOR 11"		
EXTERIOR 14"		
INTERIOR 5 3/4"		
INTERIOR 9"		
INTERIOR 10"		
INTERIOR 11"		
INTERIOR 14"		

PARTITIONS
1/4" = 1'-0"

TYPE	PLAN	SECTION
RECESSED CEILING LIGHTS		
HANGING CEILING LIGHT		
TRACK HEAD LIGHTS		
WALL SCONCE		

LIGHTS
1/4" = 1'-0"

Ismail

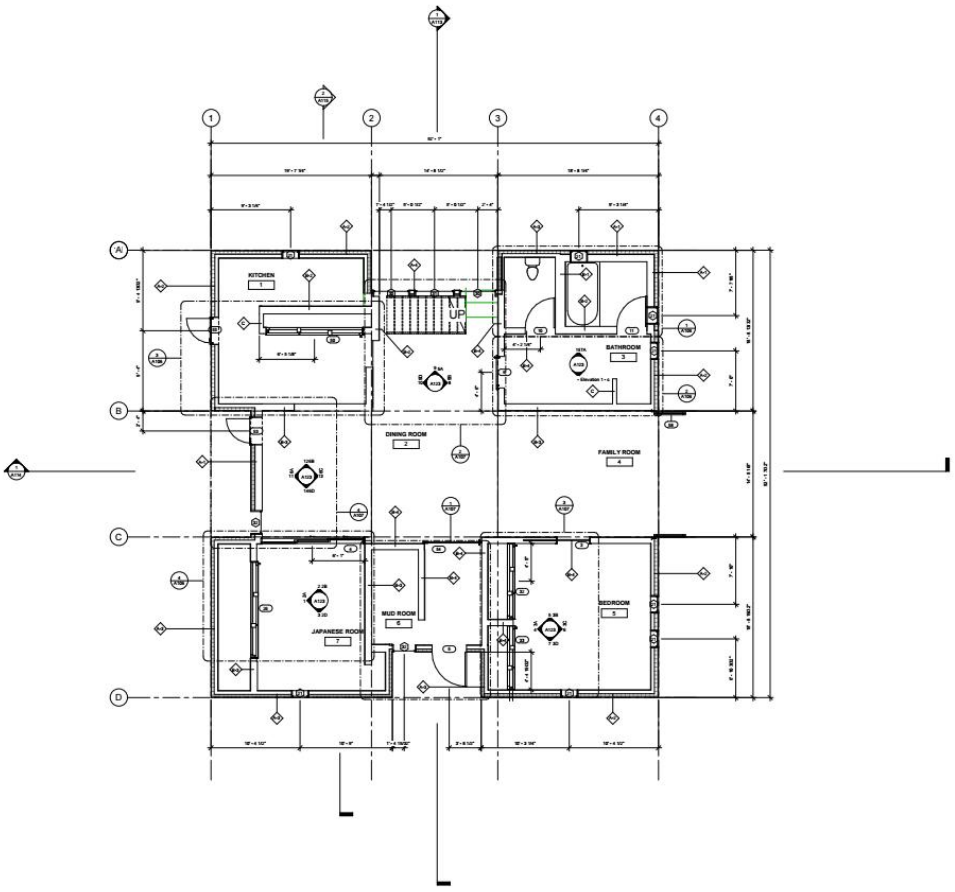
Legend and Schedule

Date	11/6
Drawn By	Author
Checked By	Checker

A102

Scale 1/4" = 1'-0"

24" x 36" 609.6 x 914.4 mm



1 1ST Floor
1/4" = 1'-0"

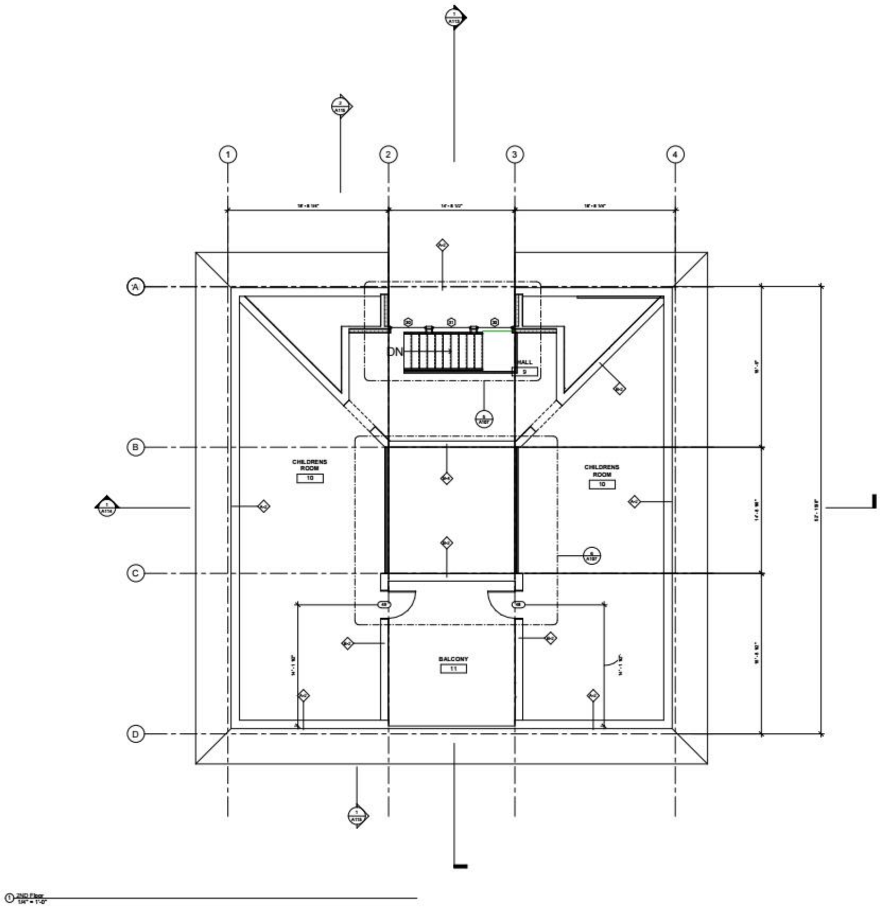
Ismail

FIRST FLOOR PLAN

Date	11/6
Drawn By	Author
Checked By	Checker

A103

Scale 1/4" = 1'-0"



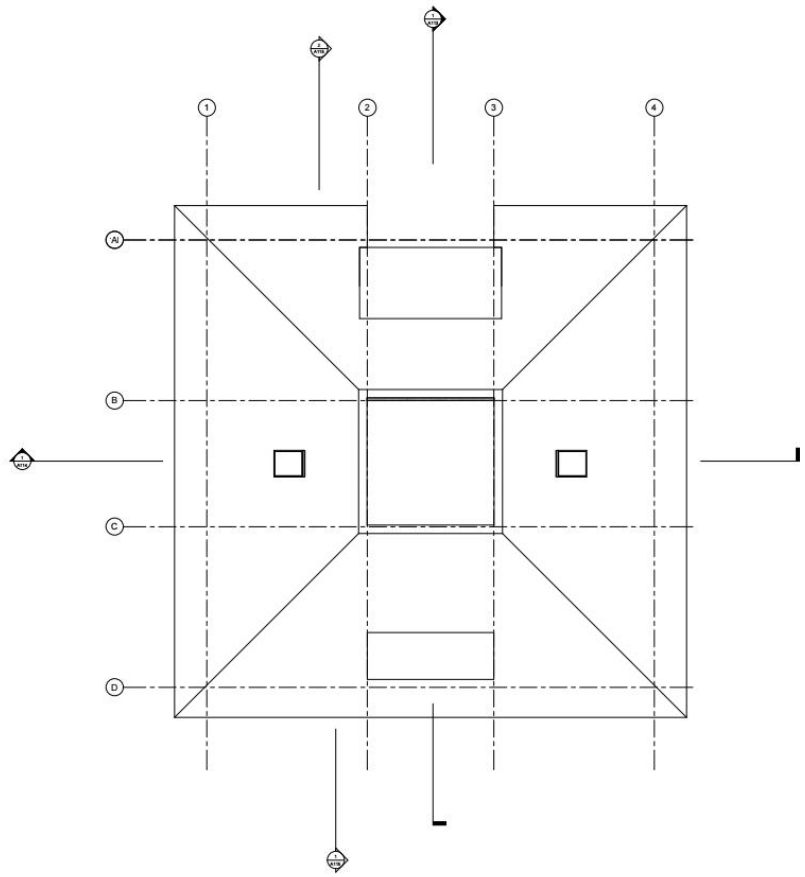
Ismail

SECOND FLOOR PLAN

Date	11/6
Drawn By	Author
Checked By	Checker

A104

Scale	1/4" = 1'-0"



Ismail

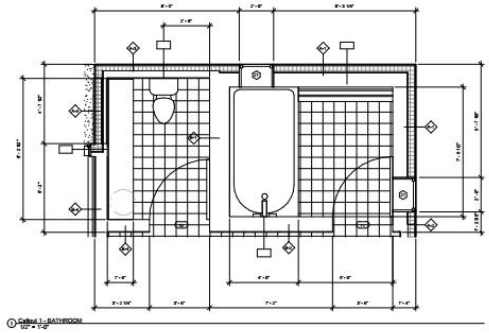
ROOF PLAN

Date	11/6
Drawn By	Author
Checked By	Checker

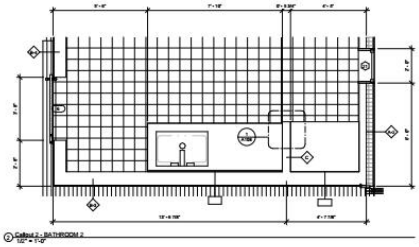
A105

Scale 1/4" = 1'-0"

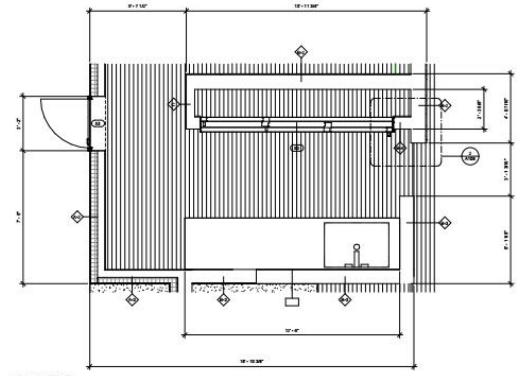
3/16/2020 1:08:41 PM



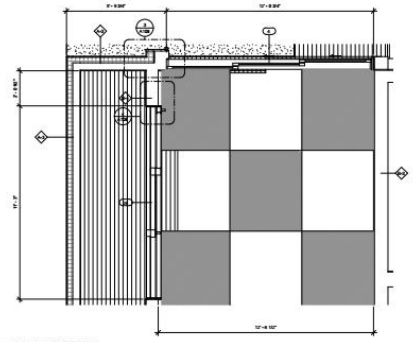
1 Callout 1 - BATHROOM
1/2" = 1'-0"



2 Callout 2 - BATHROOM 2
1/2" = 1'-0"



3 Callout 3 - KITCHEN
1/2" = 1'-0"



4 Callout 4 - JAPANESE ROOM
1/2" = 1'-0"

Ismail

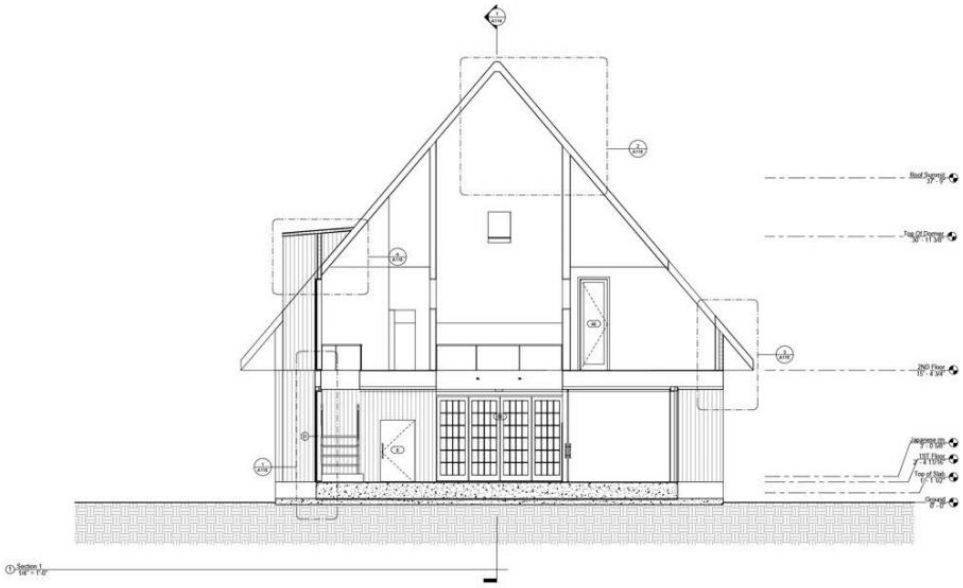
PLAN CALLOUTS

Date	11/6
Drawn By	Author
Checked By	Checker

A106

Scale 1/2" = 1'-0"

3/7/2020 1:08:44 PM



Ismail

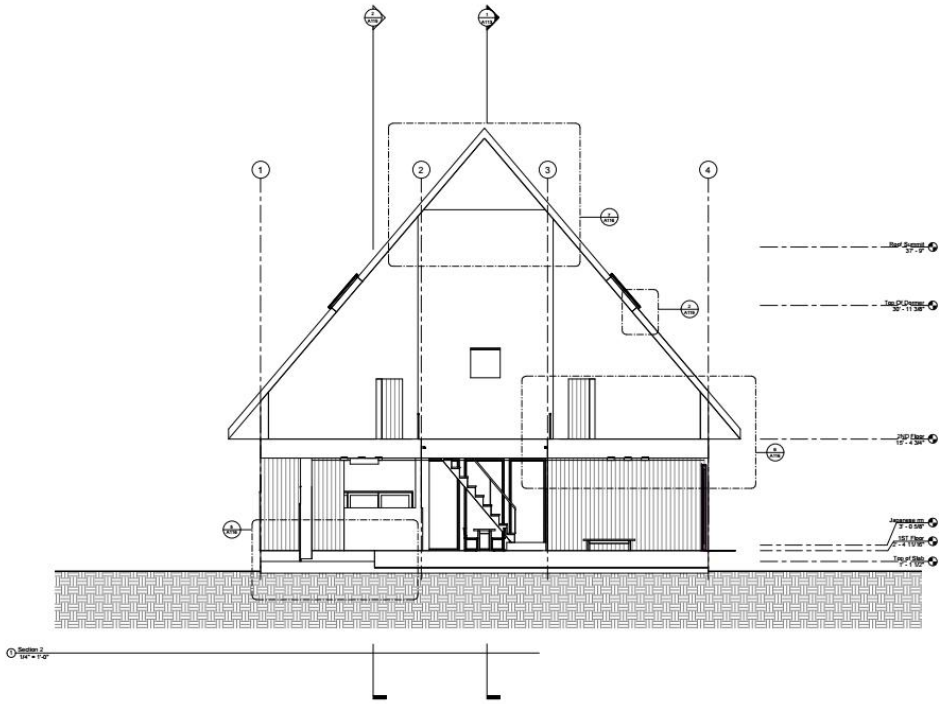
SECTION 1

Date	11/6
Drawn By	Author
Checked By	Checker

A113

Scale 1/4" = 1'-0"

2/7/2020 1:55:09 PM



Ismail

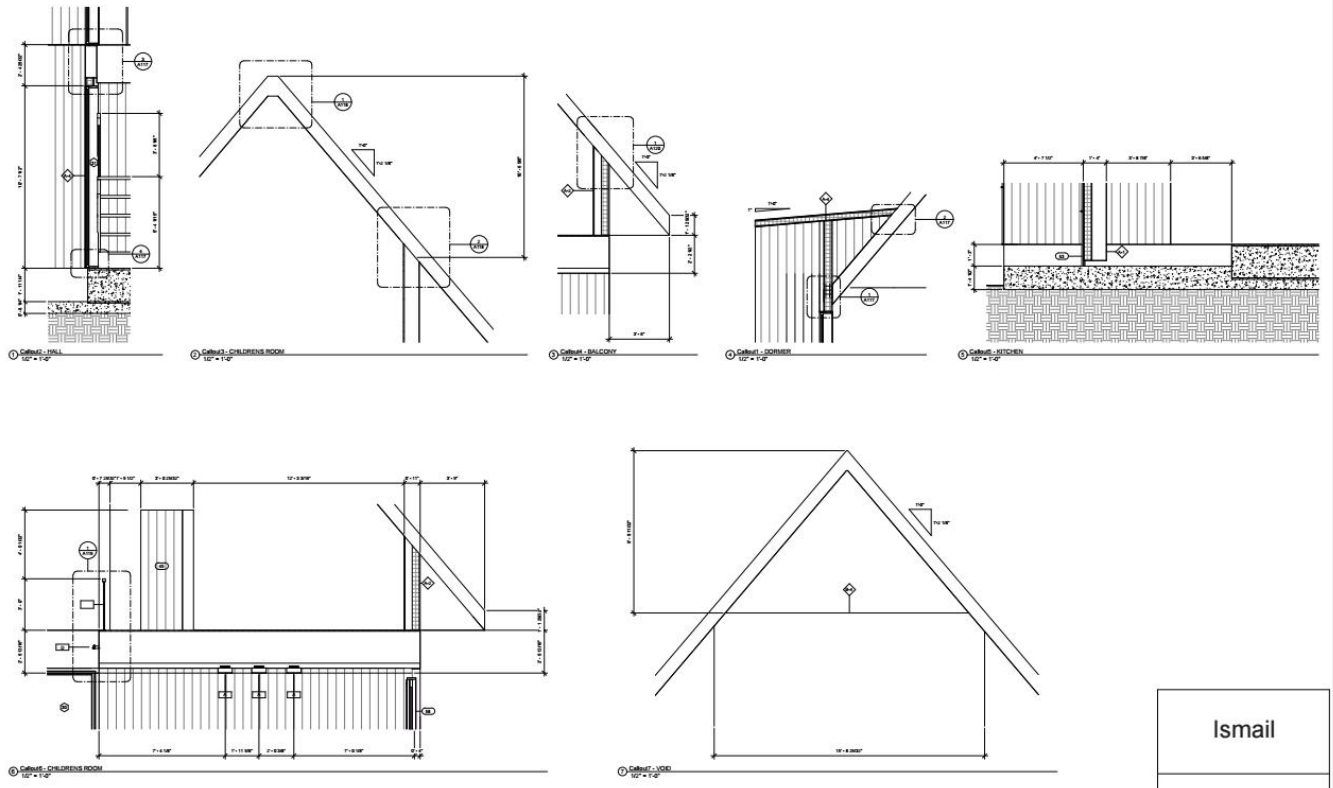
SECTION 2

Date	11/6
Drawn By	Author
Checked By	Checker

A114

Scale 1/4" = 1'-0"

2/15/2023 11:55:11 PM



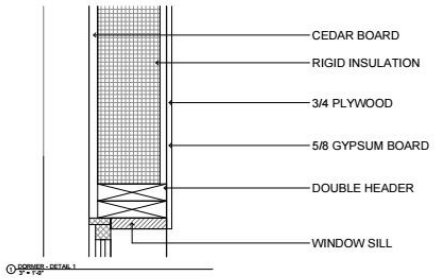
Ismail

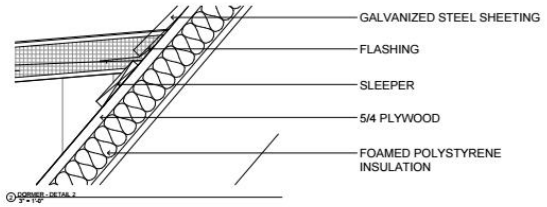
SECTION CALLOUTS

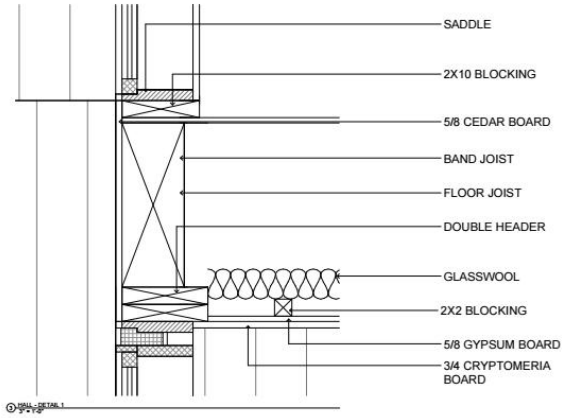
Date	11/6
Drawn By	Author
Checked By	Checker

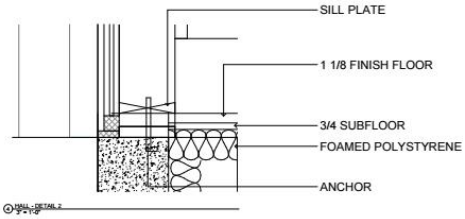
A116

Scale 1/2" = 1'-0"









Ismail

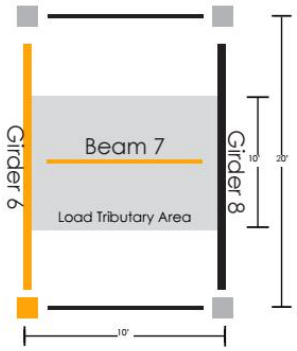
SECTION DETAILS

Date	11/6
Drawn By	Author
Checked By	Checker

A117

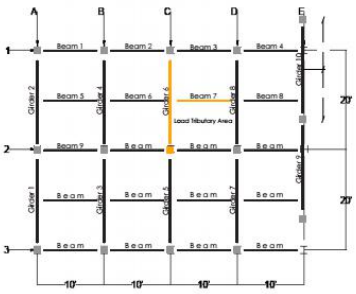
Scale 3" = 1'-0"

First Floor Structural Plan



Detail of Beam 7 Load Tributary

Tributary Area = L x W
Tributary Area = 10ft x



Structural Floor

FIRST FLOOR SERVICE LOADS	
DEAD LOAD Self-weight of beam, floor, and finishes Mechanical (pipes, ducts, etc.)	225 psf
LIVE LOAD	225 psf
TOTAL LOAD Dead Load + Live Load	45 psf

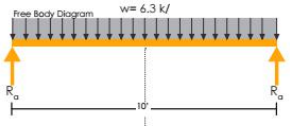
Beam Load, Shear and Moment Diagrams

Total Dead Load (w_{DL})
w_{DL} = 225 psf
w_{DL} = 225 psf x 10 ft
w_{DL} = 2,250 lb/ft
w_{DL} = 2.25 k/ft

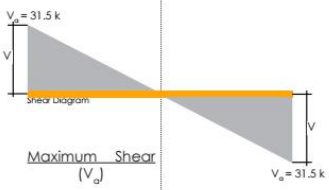
Total Live Load (w_{LL})
w_{LL} = 225 psf
w_{LL} = 225 psf x 10ft
w_{LL} = 2,250 lb/ft

Total Live Load (w_{R})
$w_{R} = w_{DL} + w_{LL}$
w_{R} = 2.25 k/ft + 2.25 k/ft
w_{R} = 4.50 k/ft

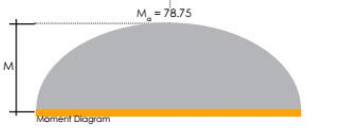
Total LRFD Design Load (w_u)
Dead Load x 1.2
Live Load x 1.6
w_u = (1.2 x 2.25 k/ft) + (1.6 x 2.25 k/ft)
w_u = 2.7 k/ft + 3.6 k/ft
w_u = 6.3 k/ft



Reactions (R_a)
$R_a = w_u L / 2$
R_a = (6.3 k/ft x 10 ft) / 2
R_a = 31.5 k

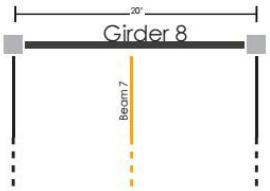


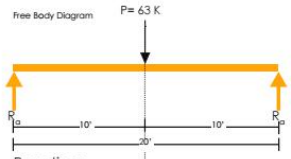
Maximum Shear (V_u)



MaximumMoment (M_u)
$M_u = wL^2 / 8$
M_u = 6.3 k/ft x (10 ft)^2 / 8
M_u = 630/ 8
M_u = 78.75 kft

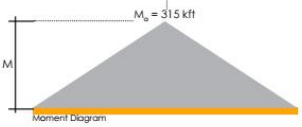
Girder Load, Shear and Moment Digrams





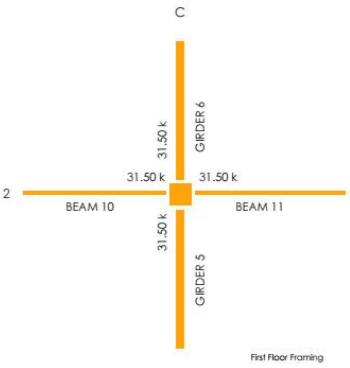
Reactions (R_a)
$R_a = P / 2$
R_a = 63 k /2

Maximum Shear (V_u)



Maximum Moment (M_u)
$M_u = PL / 4$
M_u = (63 k x 20 ft) / 4

Column Loads



Floor Member	Floor Load on Column
Beam 10	31.50 k
Beam 11	31.50 k
Girder 6	31.50 k
Girder 5	31.50 k

Total Floor Load on Column	126 k
Total Roof Load on Column	63 k
ASD Total Load on Column Required Compressive Strength (Pa)	189 k

Beam 7 Design

STEP 1: DESIGNING TO RESIST MOMENT

$Z_x = (M_a \times \Omega_b) / F_y$

$Z_x = (78.78 \text{ k/ft} \times 12) \times (0.9) / 50 \text{ psi}$

$Z_x = 21 \text{ in}^3$

$M_a \leq M_{px} / \Omega_b$

$56.25 \text{ k-ft} \leq 61.6 \text{ k-ft}$

Where:
- Z_x = required section modulus (in3)
- M_a = maximum moment = 78.78 k-ft
- Ω_b = safety factor = 0.9
- F_y = yield stress = 50 k/in²
- M_a = required flexural strength (maximum moment - from moment diagram)
- M_{px} / Ω_b = available flexural strength

Selected

Shape	Available Section Modulus (Z_x)	Required Section Modulus (Z_x)	Available Flexural Strength (M_{px}/Ω_b)	Required Flexural Strength (M_a)
W 12 x 19	24.7 in³	21 in³	61.6 k-ft	78.78 k-ft

STEP 2: CHECKING FOR SHEAR

$V_a \leq V_{nv} / \Omega_v$

$31.5 \text{ k} \leq 86.0 \text{ k}$

Where:
- V_a = required shear strength (maximum shear - from shear diagram)
- V_{nv} / Ω_v = available shear strength

Selected

Shape	Available Shear Strength (V_{nv}/Ω_v)	Required Shear Strength (V_a)
W 12 x 19	86.0 k	31.5 k

STEP 3: CHECKING FOR DEFLECTION

(LIVE LOAD)

$\delta_{LL} = 5(w_{LL} \times L^3) / 384 \text{ EI}$

$\delta_{LL} = 5 \times (2.25 \times 10) \times (10 \times 12^3) / 384 \times 29{,}000 \times 130$

$\delta_{LL} = 0.13 \text{ in}$

Where:
- δ_{LL} = live load maximum deflection (in)
- w_{LL} = uniform live load = 2.25 k/ft
- L = length = 10 ft
- E = modulus of elasticity = 29,000 k/in²
- I = moment of inertia = 130 in⁴
- Δ_{LL} = live load allowable deflection (in)

$\Delta_{LL} = L/360$

$\Delta_{LL} = (10\text{ft} \times 12) / 360$

$\Delta_{LL} = 0.33 \text{ in}$

Shape	Live Load Maximum Deflection (δ_{LL})	Live Load Allowable Deflection (Δ_{LL})
W 12 x 19	0.13 in	0.33 in

(TOTAL LOAD)

$\delta_{TL} = 5(w_{TL} \times L^3) / 384 \text{ EI}$

$\delta_{TL} = 5 \times (4.5 \times 10) \times (10 \times 12^3) / 384 \times 29{,}000 \times 130$

$\delta_{TL} = 0.27 \text{ in}$

Where:
- δ_{TL} = Total load maximum deflection (in)
- w_{TL} = uniform live load = 4.5 k/ft
- L = length = 10 ft
- E = modulus of elasticity = 29,000 k/in²
- I = moment of inertia = 130 in⁴
- Δ_{TL} = live load allowable deflection (in)

$\Delta_{TL} = L/240$

$\Delta_{TL} = (10\text{ft} \times 12) / 240$

$\Delta_{TL} = 0.5 \text{ in}$

Selected

Shape	Total Load Maximum Deflection (δ_{TL})	Total Load Allowable Deflection (Δ_{TL})
W 12 x 19	0.27 in	0.50 in

Girder 6 Design

STEP 1: DESIGNING TO RESIST MOMENT

$Z_x = (M_a \times \Omega_b) / F_y$

$Z_x = (315 \text{ k/ft} \times 12) \times (0.9) / 50 \text{ psi}$

$Z_x = 84 \text{ in}^3$

$M_a \leq M_{px} / \Omega_b$

$315 \text{ k-ft} \leq 118 \text{ k-ft}$

Where:
- Z_x = required section modulus (in3)
- M_a = maximum moment = 315 k-ft
- Ω_b = safety factor = 0.9
- F_y = yield stress = 50 k/in²
- M_a = required flexural strength (maximum moment - from moment diagram)
- M_{px} / Ω_b = available flexural strength

Selected

Shape	Available Section Modulus (Z_x)	Required Section Modulus (Z_x)	Available Flexural Strength (M_{px}/Ω_b)	Required Flexural Strength (M_a)
W 21 x 44	47.30 in³	45.09 in³	118 k-ft	315 k-ft

STEP 2: CHECKING FOR SHEAR

$V_a \leq V_{nv} / \Omega_v$

$31.5 \text{ k} \leq 217 \text{ k}$

Where:
- V_a = required shear strength (maximum shear - from shear diagram)
- V_{nv} / Ω_v = available shear strength

Selected

Shape	Available Shear Strength (V_{nv}/Ω_v)	Required Shear Strength (V_a)
W 21 x 44	217 k	31.5 k

STEP 3: CHECKING FOR DEFLECTION

(LIVE LOAD)

$\delta_{LL} = P_{LL} L^3 / 48\text{EI}$

(W 21 x 44)

$\delta_{LL} = ((31.5) \times (20 \times 12)^3) / (48 \times 29{,}000 \times 301)$

$\delta_{LL} = 0.37 \text{ in}$

Where:
- δ_{LL} = live load maximum deflection (in)
- P_{LL} = point live load = 31.5 k
- L = length = 20 ft
- E = modulus of elasticity = 29,000 k/in²
- I = moment of inertia = 301 in⁴
- Δ_{LL} = live load allowable deflection (in)

$\Delta_{LL} = L/360$

$\Delta_{LL} = (20\text{ft} \times 12) / 360$

$\Delta_{LL} = 0.66 \text{ in}$

Shape	Live Load Maximum Deflection (δ_{LL})	Live Load Allowable Deflection (Δ_{LL})
W 16 x 31	0.37 in	0.66 in

(TOTAL LOAD)

$\delta_{TL} = P_{TL} L^3) / 48\text{EI}$

(W 21 x 44)

$\delta_{TL} = (63 \times (20 \times 12)^3) / (48 \times 29{,}000 \times 301)$

$\delta_{TL} = 0.74 \text{ in}$

Where:
- δ_{TL} = Total load maximum deflection (in)
- P_{TL} = point live load = 63 k
- L = length = 20 ft
- E = modulus of elasticity = 29,000 k/in²
- I = moment of inertia = 301 in⁴
- Δ_{TL} = total load maximum deflection (in)
- P_{TL} = point total load = 63 k

$\Delta_{TL} = L/240$

$\Delta_{TL} = (20\text{ft} \times 12) / 240$

$\Delta_{TL} = 1 \text{ in}$

Selected

Shape	Total Load Maximum Deflection (δ_{TL})	Total Load Allowable Deflection (Δ_{TL})
W 18 x 35	0.74 in	1 in

Column C2 Design

STEP 1: DETERMINING LOADS

Total Floor Load on Column	126 k
Total Roof Load on Column	63 k
ASD Total Load on Column Required Compressive Strength (Pa)	189 k

STEP 2: SELECTING W SHAPE

$P_a \leq P_n / \Omega_c$

Where:
- Pa = required flexural strength (i.e., loads)
- Pn /Ωc = available flexural strength

Shape	Weight	Available Compressive Strength (P_n/Ω_c)	Required Compressive Strength (P_a)
W 8 x 31	31 lb/ft	283 k	189 k

STEP 3: SELECTING SQUARE HSS SHAPE

$P_a \leq P_n / \Omega_c$

Where:
- Pa = required flexural strength (i.e., loads)
- Pn /Ωc = available flexural strength

Shape	Weight	Available Compressive Strength (P_n/Ω_c)	Required Compressive Strength (P_a)
HSS 5 1/2 x 5 1/2 x 3/8	24.9 lb/ft	206 k	189 k
HSS 6 x 6 x 5/16	23.3 lb/ft	205 k	189 k
HSS 6 x 6 x 3/8	27.5 lb/ft	240 k	189 k

SUMMARY OF SELECTED MEMBER SHAPES

Member	Shape	Weight
Beam 7	W 12 x 19	19 lb/ft
Girder 6	W 21 x 44	35 lb/ft
Column C2	HSS 6 x 6 x 5/16	23.3 lb/ft

PORTFOLIO

04
3D
RENDERING

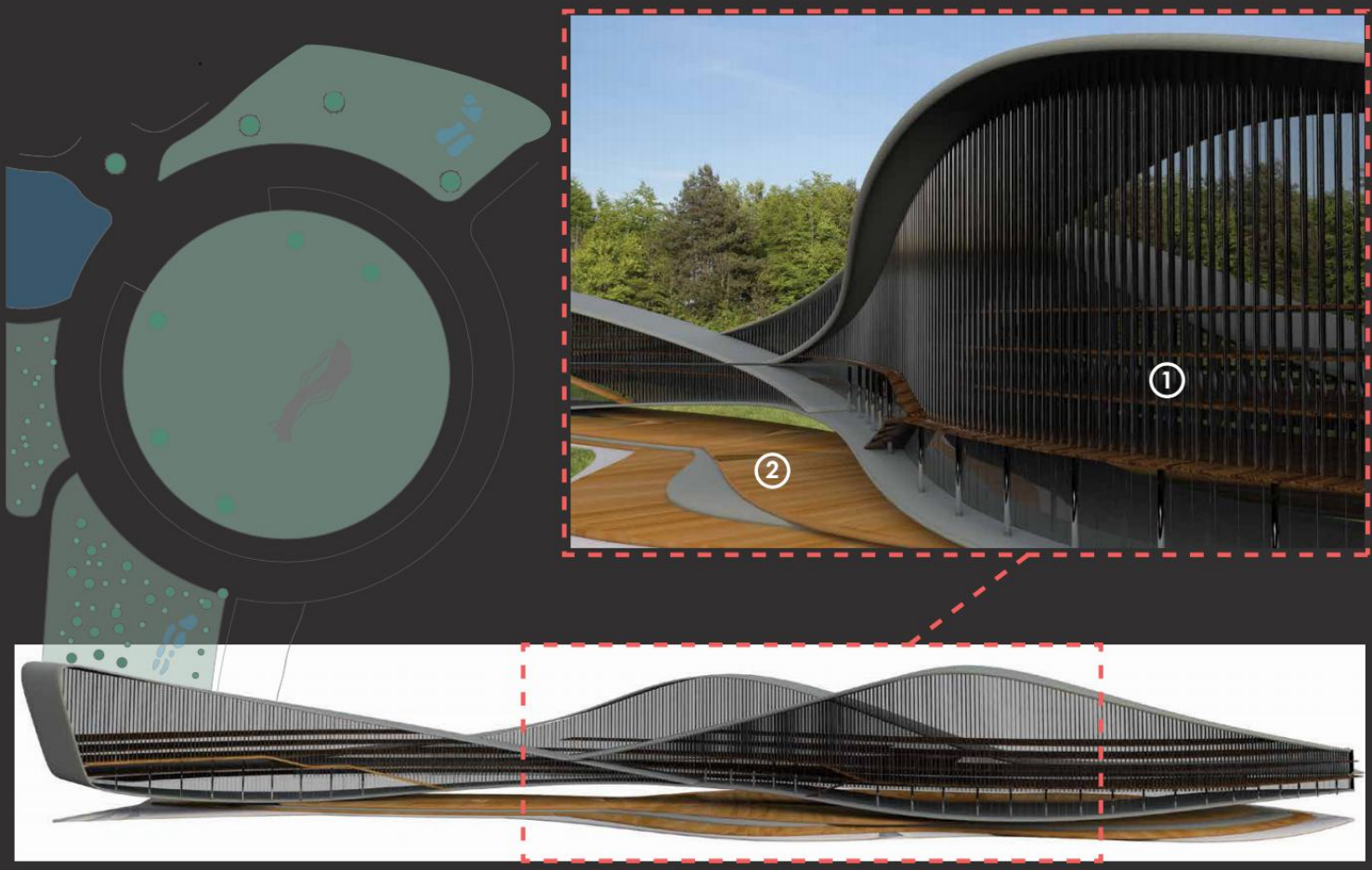
Introduction:

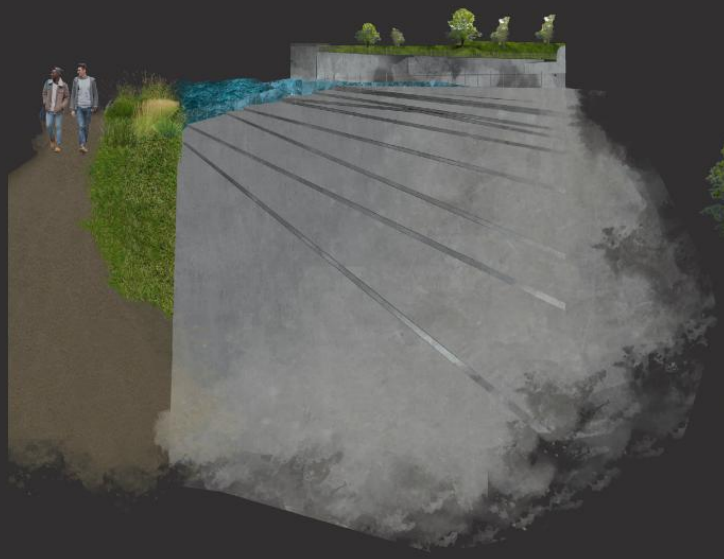
A coursoury glance at my ability to apply rendering techniques into building designs and bring them into a psuedo reality

The obective is to enable the viewer to imagine the space more accuratly, with textures, lighting and visuales as to how the space may be used.

Media Used:

Rhino, Sketchup, Photoshop, Indesign, Aftereffects


①
②



PORTFOLIO

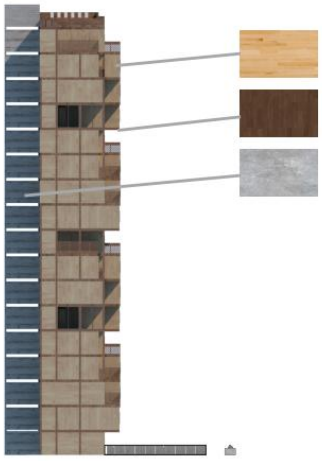
05
MODEL MAKING

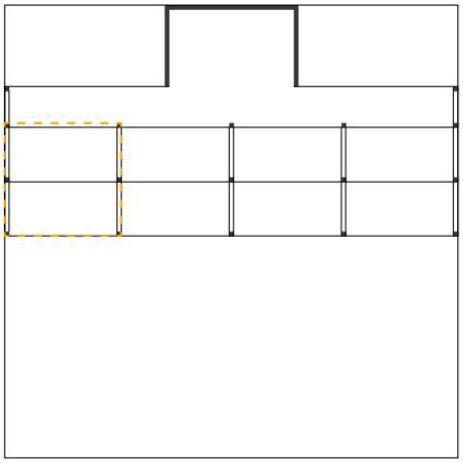
Introduction:

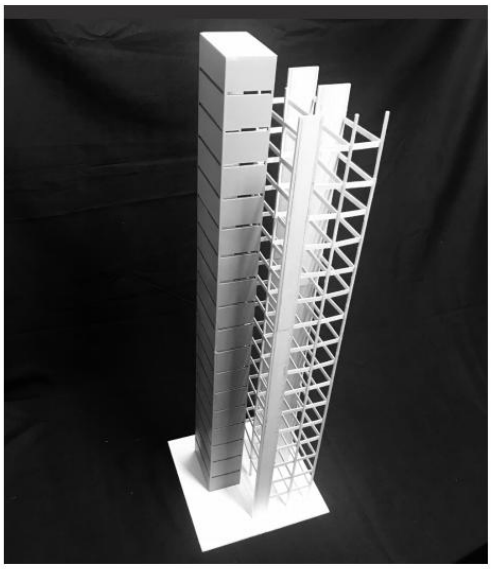
Systematic process of designing three-dimensional (3D) objects including color theory, surface, and volume investigation for architectural design. Elements include visualization, perception, presentation, expression, and site analysis of physical, contextual, and cultural aspects of design and the urban environment.

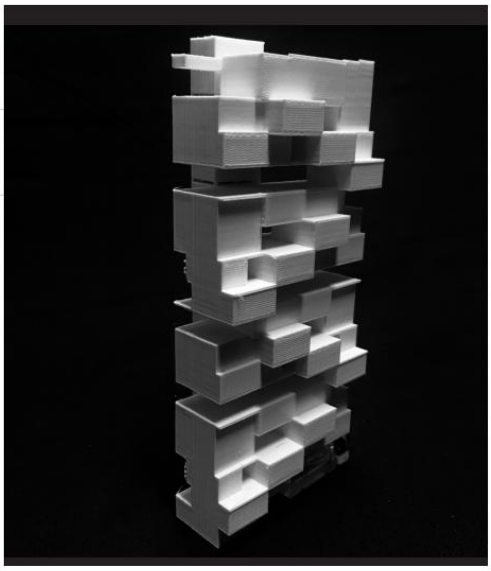
Media Used:

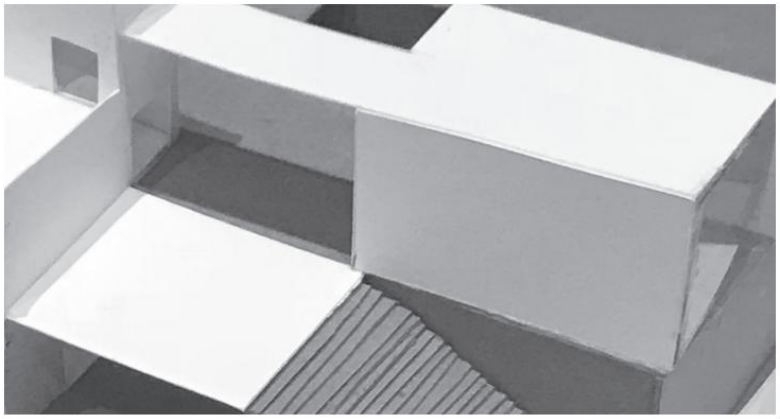
Photoshop, Aftereffects, Lightroom

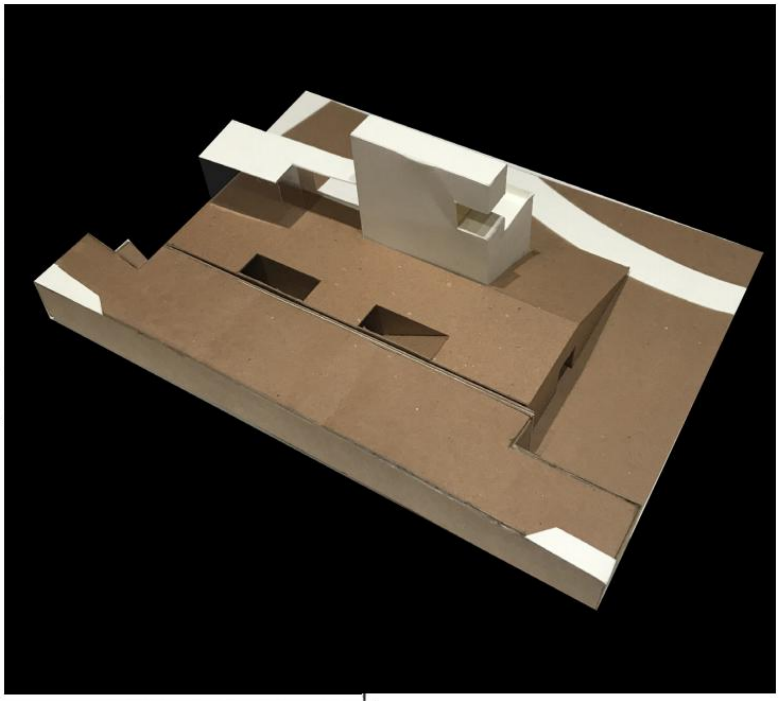


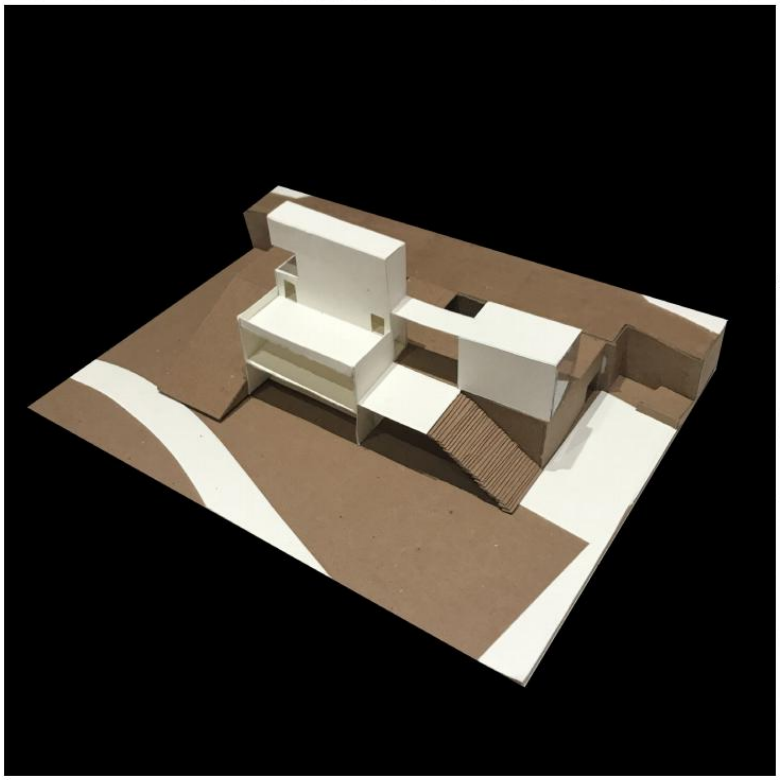


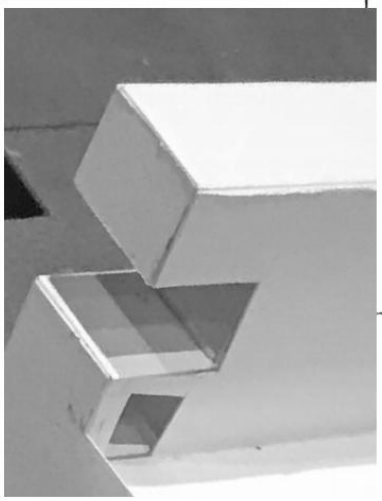


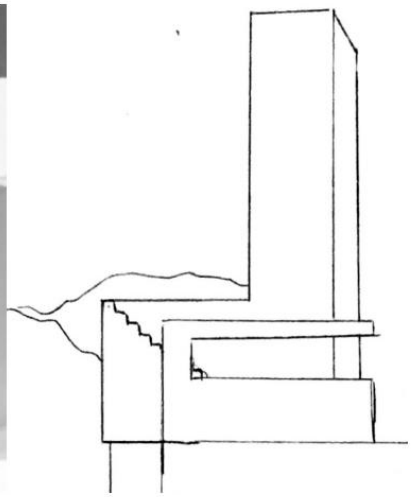


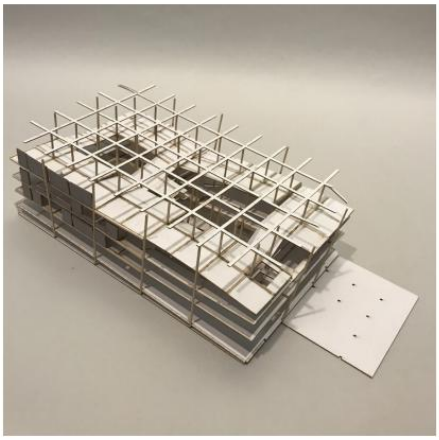


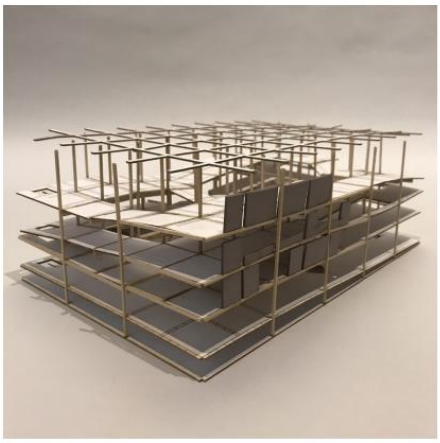


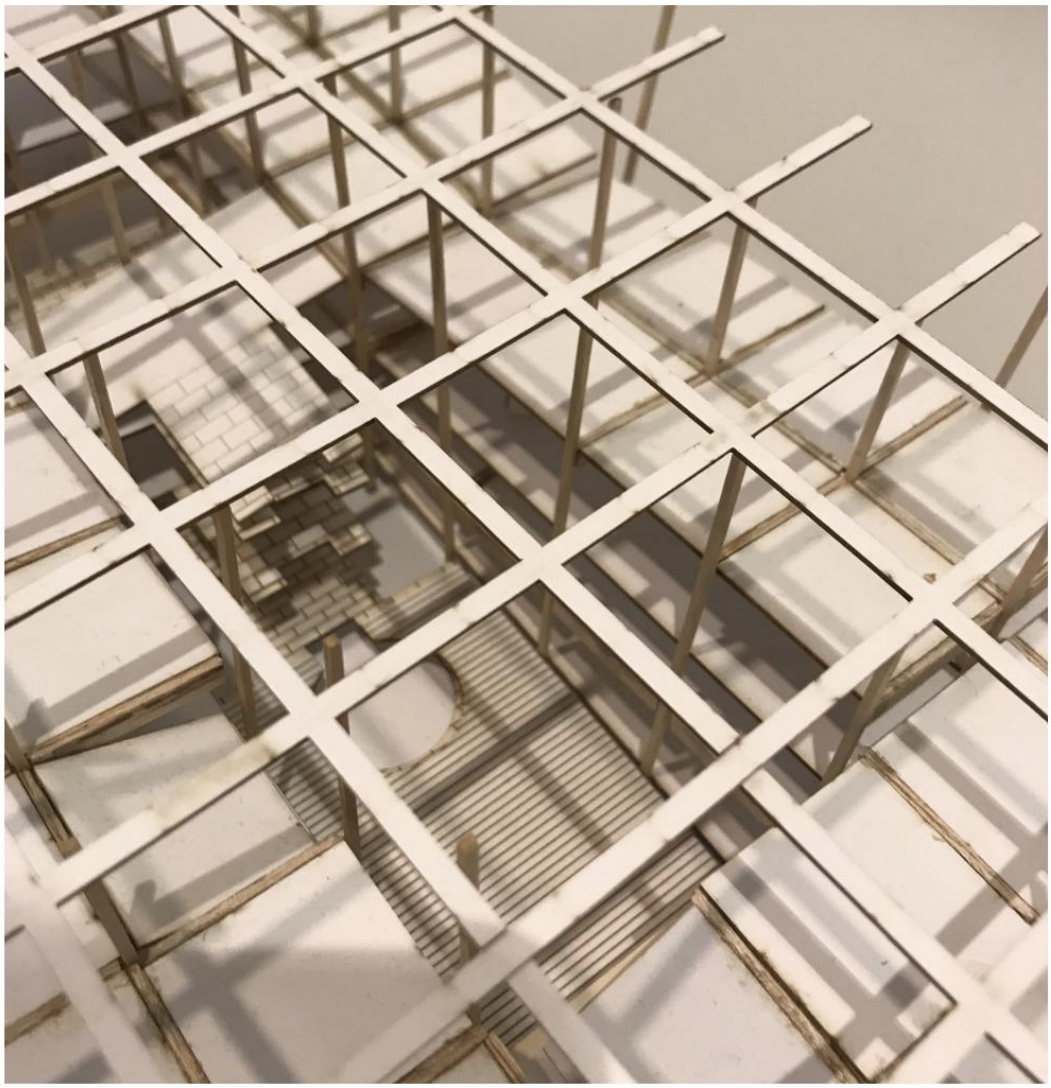


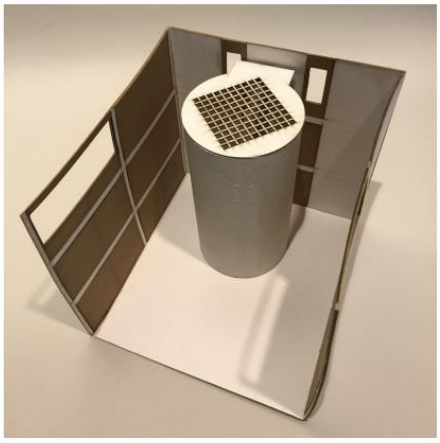


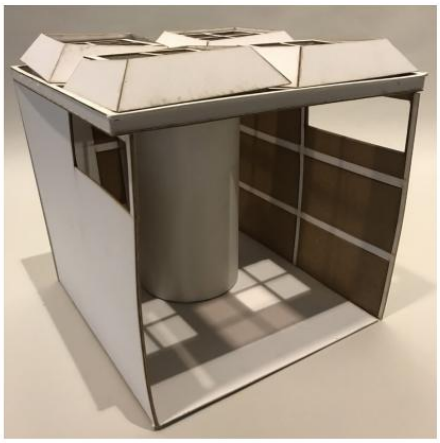


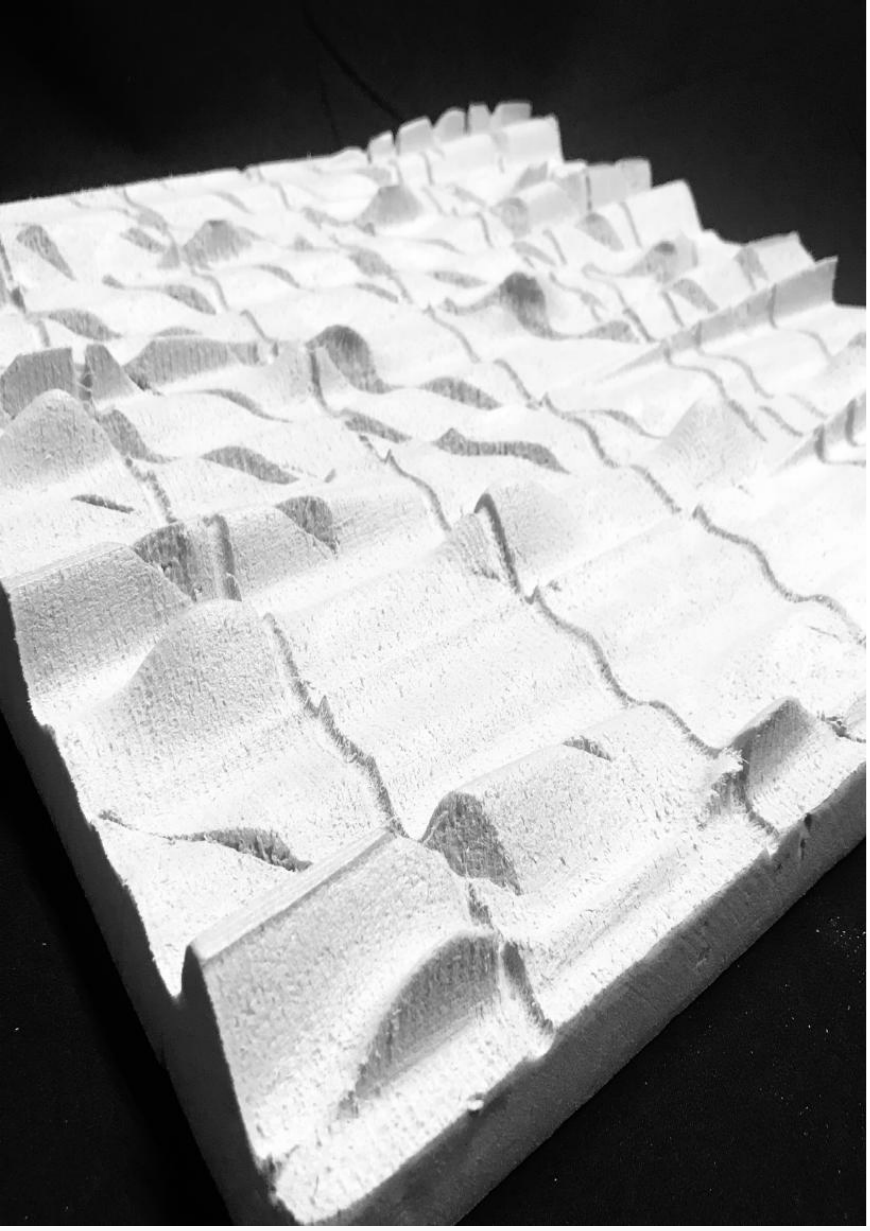


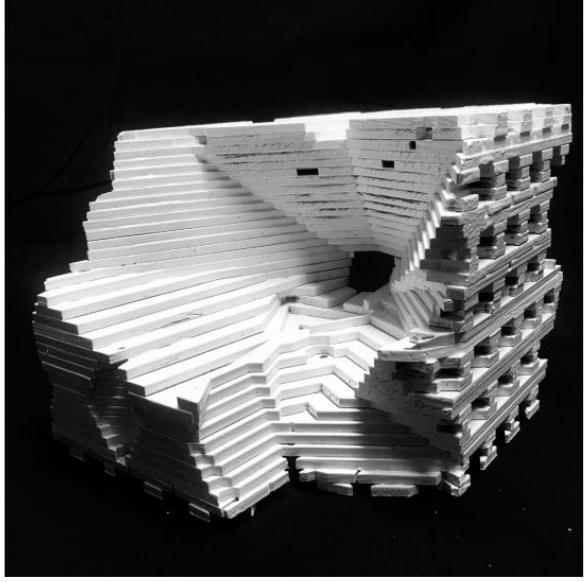


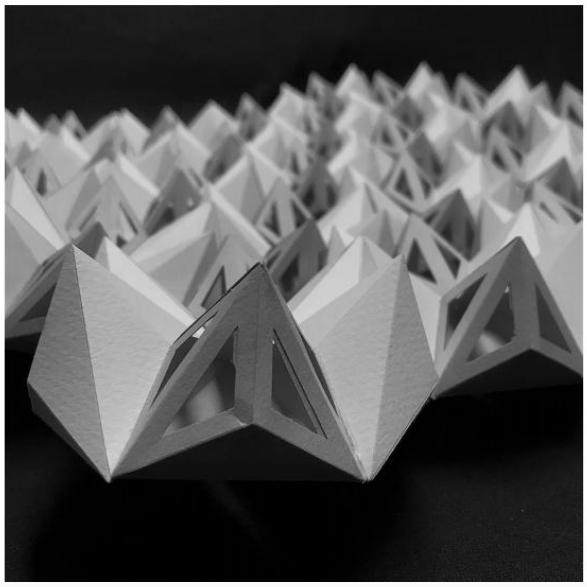


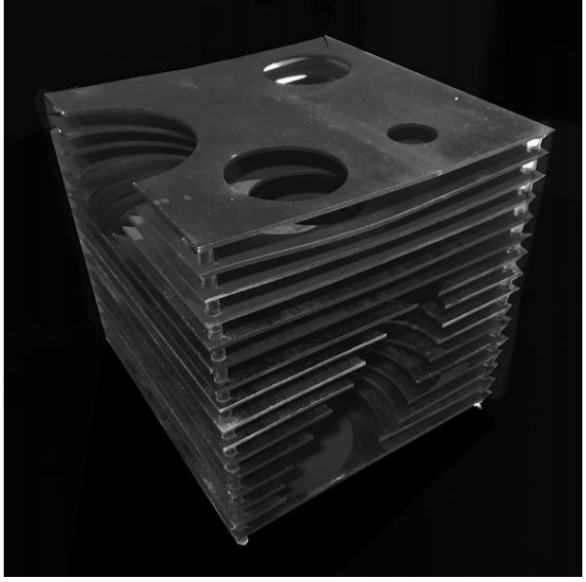


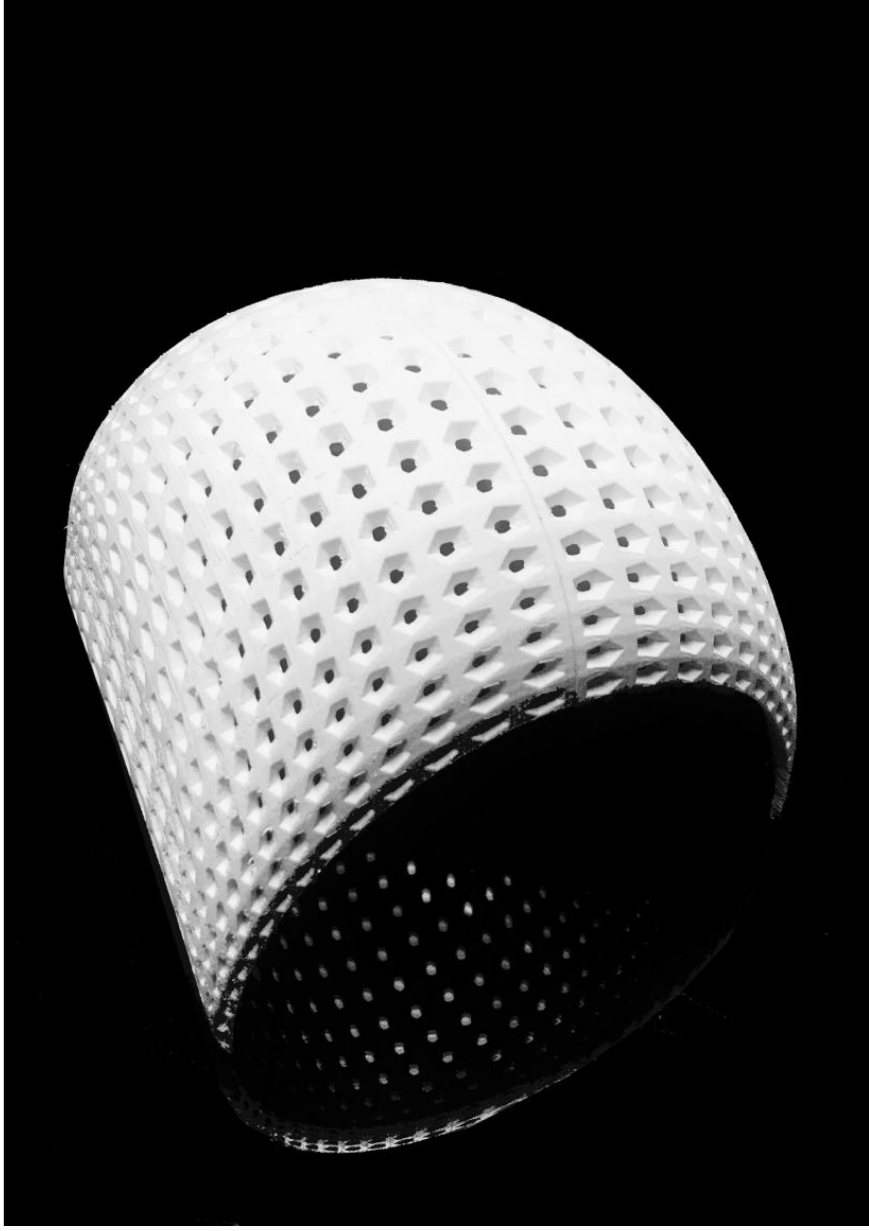




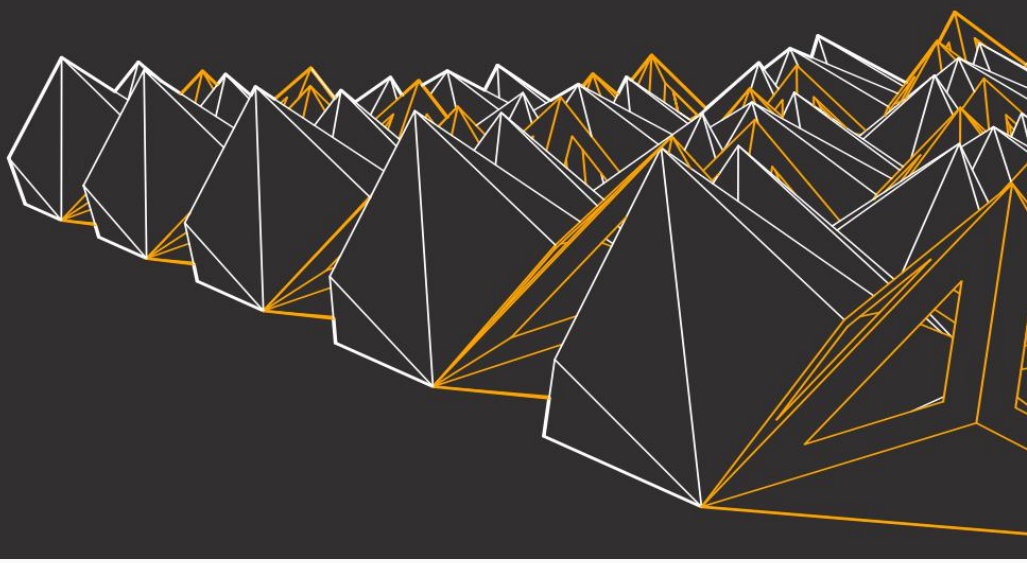








Thank You.



Faheema Ismail
347-570-2299
Fameism127@gmail.com