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Tech 5
ARCH 4327
Vazquez Studio
Fall 2019

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5 Building Code / Life Safety / Ordinances Occupancy

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Allowable Number Persons + Exit Width Requirements

Corridors (min 48")

Stairs (min 48")

Exit door swing direction

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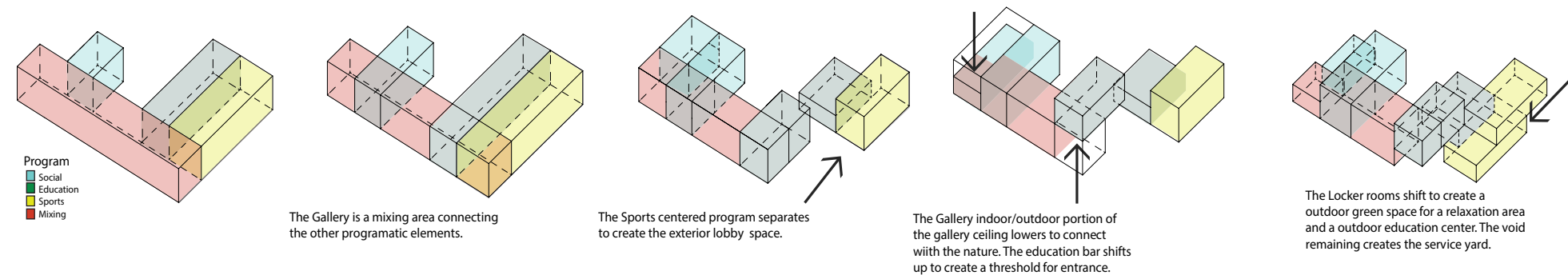
10 Design process work (drawings + study models)

11 Finished presentation drawings and images of models (mid-term + final review)

12 Outline specifications – for extra credit

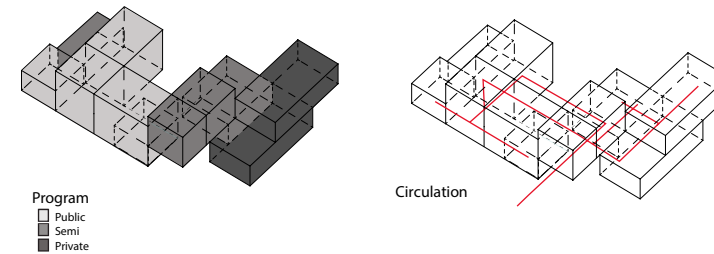
1 Design Concept

The concept of this design is the idea of mixing. The geometry was shifted to create threshold and spacial relationships as a respond to the existing field condition of shifting of green space. The concepts of sequentially mixing integrates, field condition, program, experience and materials. The shifting developed a sequence of mass and void. In materials it developed into the idea of mass and frame. In the field condition it became a sequence of nature and building. Experience is translate to indoor and outdoor. The sequence sets up 2 different components, objects or feelings that are then mixed together. The concept translates to building community by abstractly representing 2 people getting to know each other over time. The people are able to be individual as well as converse and work together.



Program

The Gallery is about mixing the people and the program this is done through different spacial, material, lighting qualities and the relation ship to the outdoor.



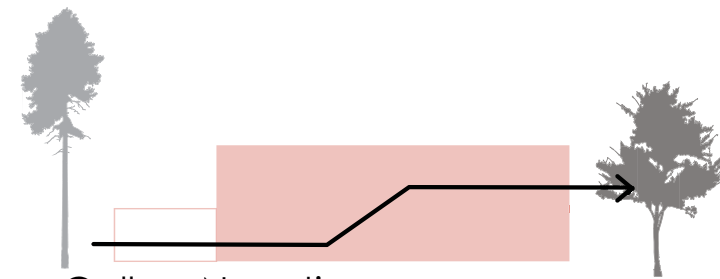
1 Design Concept



Shifting Green Space

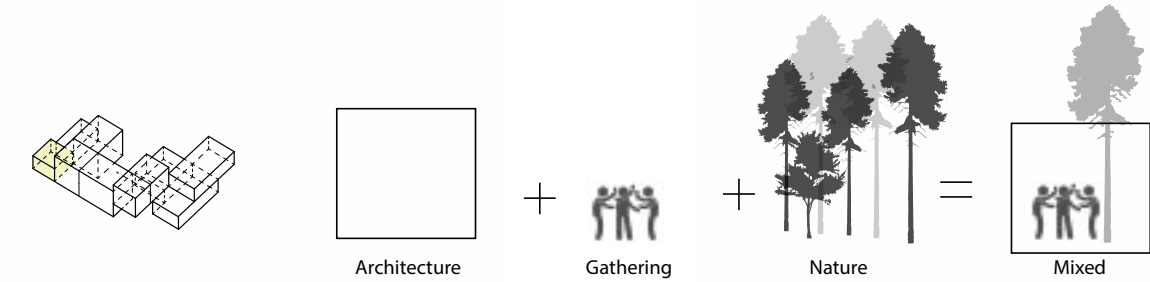


Pattern Field Condition
The pattern of nature and building.



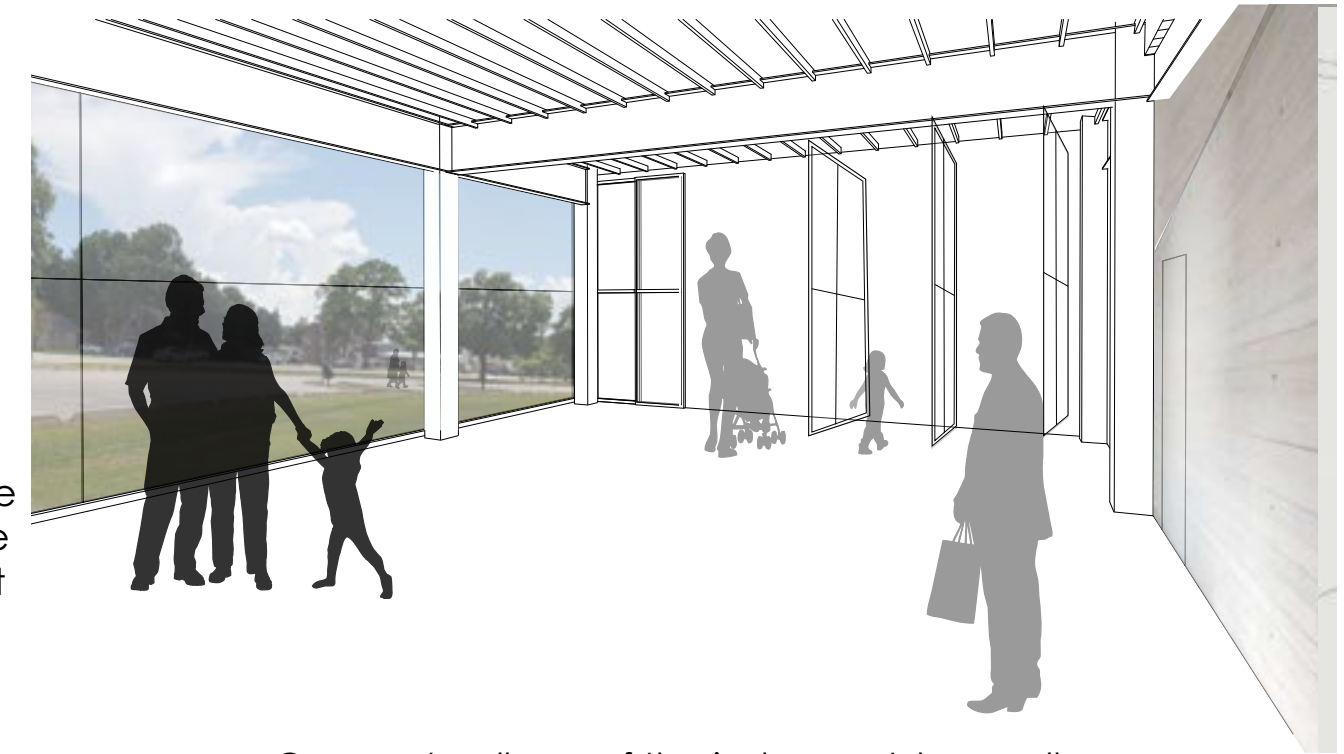
Gallery Narrative
The Gallery mixing area link the public green and the park green. Frame captures people at the one point and then captures the tree at the other gallery links the two. The gallery is organized based upon the inspirational story Zina Garrison beginning to success which translated to the trunk of the tree to the branches of the tree.

1 Design Concept Indoor Outdoor Gallery Space



The collage conveys the ideas of the mixing of architecture, gathering and nature into the space. The collage expresses the connection to the outdoors with the open frame doors and the background of the site and material of the board formed concrete.

The indoor outdoor gallery is the mixing point of the gallery and the administration office. This is a place for the staff could go out and have lunch with a enjoyable view of the pine trees. This space could be a place for a gala that extends out into the park. Or the space could be closed off to become an extention of the indoor gallery.



Concept collage of the indoor outdoor gallery.

1 Design Concept

Education Space



The concept of the classroom is to mix education, the inspirational material of Zinna Garrison and nature. This is to create a safe, creative, inviting learning environment. The idea is to integrate nature with views of the outside and doors to connect the interior classroom space and the exterior garden space.

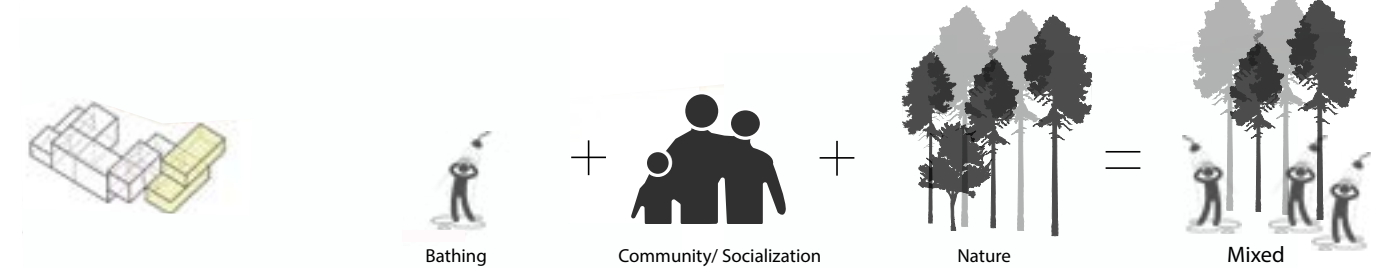


Concept collage of Classroom

1 Design Concept

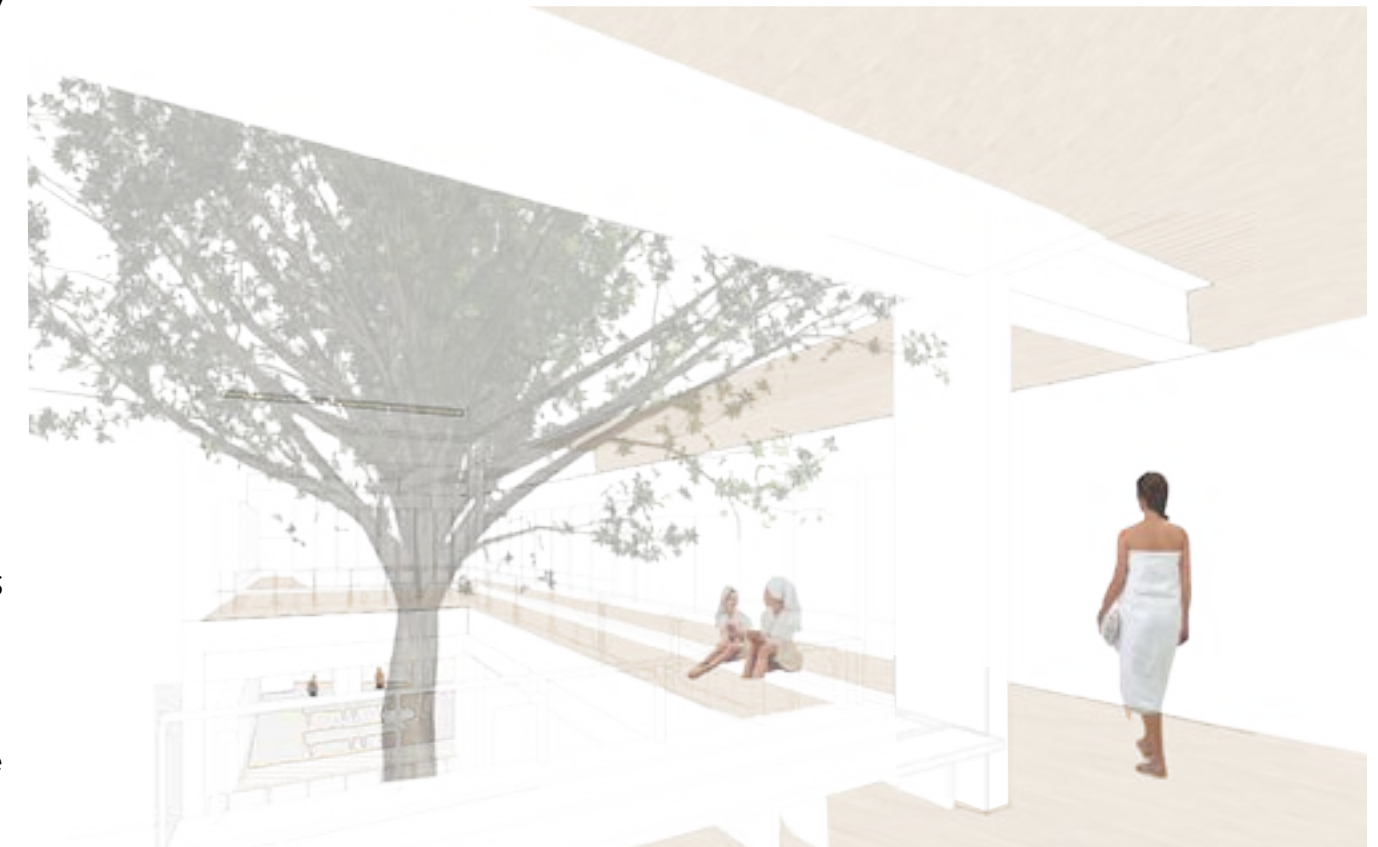
Locker Rooms

The concept is to create the idea locker room are a bright relaxing social space.



The collage conveys the ideas of the bathing, community and nature to create a friendly social environment.

The locker rooms are designed to feel like a refined spa rather than a dark locker room. The concrete walls have the wood impression to soften the concrete appearance. The white oak wood is chosen for the ceiling to add warmth. The flooring is vinyl which looks like white oak wood panels. It keeps with the aesthetic and is easy to maintain if it gets wet. The tree that is surrounded by the locker room is a white oak trees being preserved from the site.



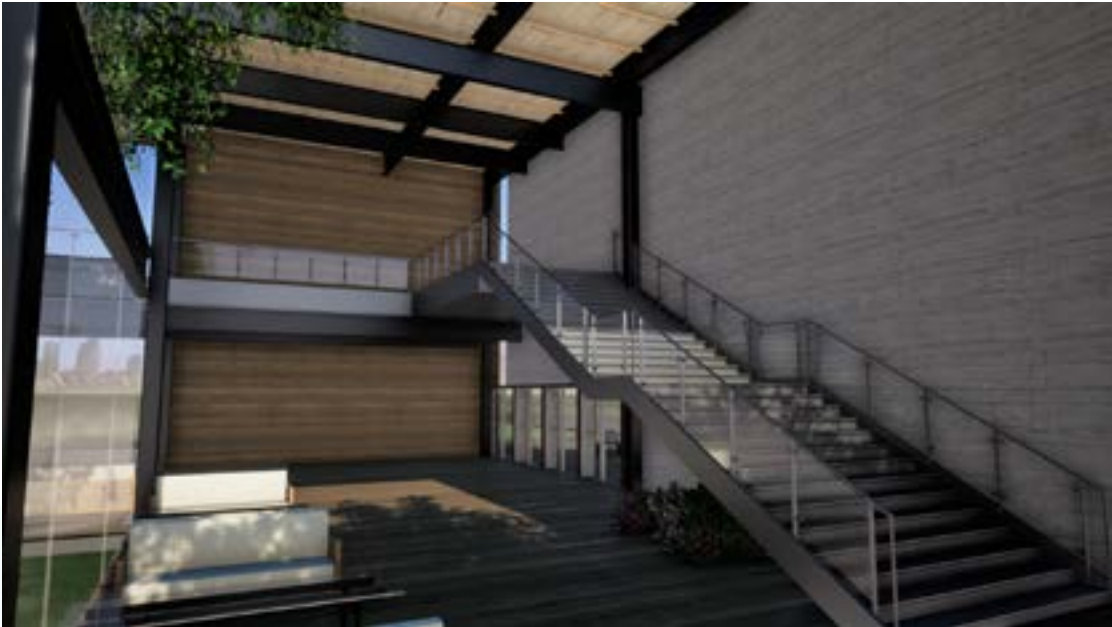
Concept collage of locker rooms around the tree.

1 Design Strategy

Interior Concept Design of Gallery Space

Concept
The Gallery is about mixing the people and the program this is done through different spacial, material, lighting qualities and the relation ship to the outdoor. The intersection of every program creates a different condition in light, volume, people interaction, indoor outdoor relationship.

Rendering of the Lobby space. The render expresses the continuity of the materials. The exposed black steel frame is predominant showing the composition of the building and is it also the staircase. The light sliver is evident separating the concrete and wood materials.



The section shows the spacial quality of the entire gallery

1 Design Strategy

Gallery Space and Lobby space.

The collage conveys the ideas of the mixing of architecture, gathering, nature volume into the space. The collage expresses the connection to the outdoors with high glass windows to show the trees. The movement is expressed through the movement of light and shadow and the grand stair.

The indoor gallery and the lobby space is about the mixing of people and movement. The space is about people moving and bumping into each other and short interactions with the backdrop of the courtyard. People can watch the people walk up and down the stairs and catwalk as they move through the volume of the space.



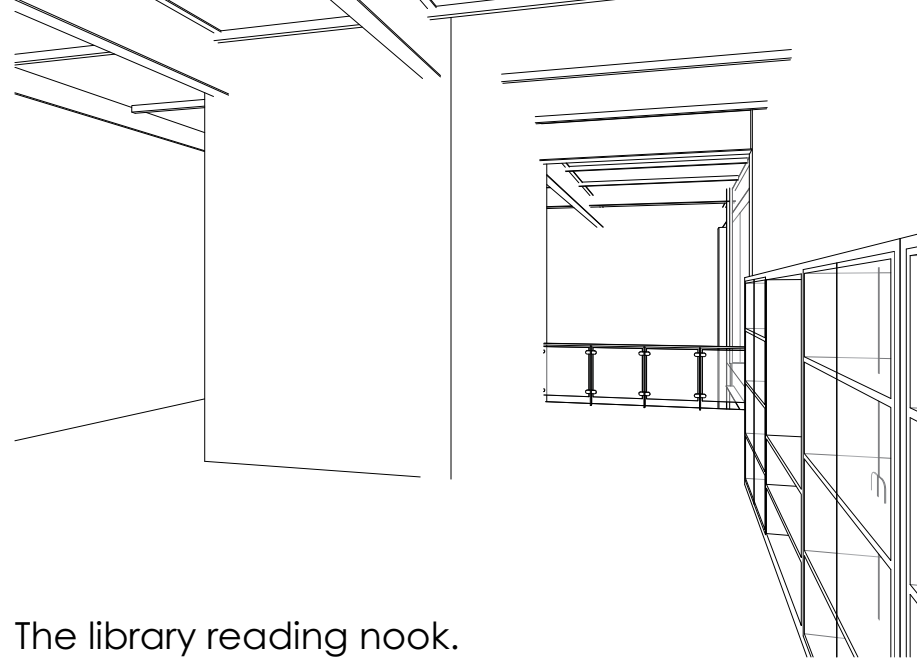
Concept collage of Gallery and Lobby mixing.



1 Design Strategy

Upper Gallery Space

The render is from the Upper Gallery the view is of a tree being captured by the framing element. The right wall with wood cladding in the set back is the donation wall with the names. The upper gallery is the mixing point of the gallery and the classroom. The upper gallery is a small community library with books and resources for the classroom and community. There is a small reading nook behind the elevator with a overlook to the lobby and lower gallery. The reading nook has a lower ceiling to create a cozier feeling. The portion of the gallery has a higher ceiling to create a release to expand upon to view out of the upper gallery window. The gallery has direct access to the classroom to use the inspirational story of Zina Garrisons story as a learning tool.



The library reading nook.

1 Design Strategy

Education Space

The material of the classroom is concrete and glass. The concrete is to represent a solid foundation and the glass is the transparency of the connection with nature. The idea is to create a safe place to view the world. The frame creates the lower ceiling condition for the room. The exterior frame creates a pergola to shade the patio and the garden meditation space. The classroom can expand onto the garden deck and create a exterior classroom.



Render of Classroom

1 Design Strategy

Locker Rooms

The render and section shows the relationship between the locker rooms and the tree. The locker room is divided into the social space and the private space mixed together by the tree.



Day in Life of Typical Occupant

The day in the life of a typical occupant is depending upon the user.

The visitor would leave their car and enter under the threshold of the lifted element and enter into the exterior Lobby courtyard. From the courtyard the visitor can enter into the lobby or the pro shop. In th Lobby there is lounge space for gathering and small talk.

After entering into the double height lobby there is direct access to the administration office or the indoor/outdoor gallery. If the visitor chooses to go up to the second floor they can access it through the elevator around the corner or up the grand staircase. From the staircase a outdoor patio to view the pine trees in the park or they can continue to the left and follow the light to the Upper Gallery. In the there is a framed view out the window of the tree canopy as they travel through catwalk hallway. The upper gallery functions as community library where there is social area in the main part of the upper gallery and a reading nook which overlooks the lobby behind the elevator. The Upper Gallery has a donation wall in the setback of the right and direct connection to the classroom to the left.

If the visitor came to play tennis they would check in with the pro shop and change in the locker room then go out and play. If the visitor came to have lunch, socialize and watch tennis this can be done on the outdoor patio of the pro shop. If they are having tennis lessons need to have a lesson in the classroom. It is directly accessible from the outdoor patio over the pro shop.

Profile of User

There are 2 type of typical user. The person who lives in the nearby neighborhood and comes to play tennis and participates in the community potlucks.

The second type of user is the person who does not know about the community and visits the Gallery. The design allows the 2 separate type of people to mix in the outdoor Lobby courtyard.

The profile of the typical user is a low income colored person from the Third Ward. The age groups are young children and senior citizens.

Resilience

The resilience of the project would be sustainable for the for see able future, As time progresses the concept will integrate more with the building. The nature will mix more with the building. The vines will grow thicker on the pergolas and the concrete will patina over time.

2 Program Precedence

Emancipation Park

Architect: Perkins + Will
Location: Houston, Texas
Year Built: 2017
Emancipation park is a park and a social space for the community. The park functions as a campus centralized around the community center. The nodes of indoor sports and outdoor sport are arranged of the site separated by open field which can be programable.



Campus



Site



Exterior Facade metal pannel and metal shading system
<https://architizer.com/projects/emancipation-park/>



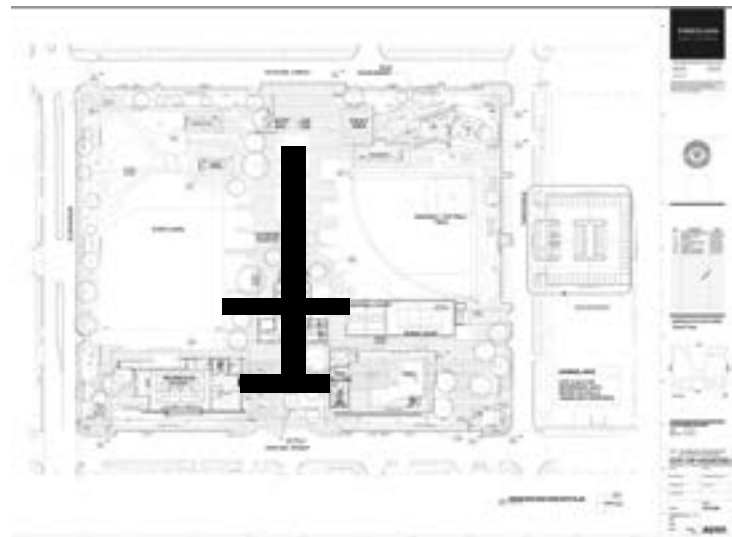
Open interior lobby



Interior basket ball court

2 Program Precedence

Diagrams



Circulation



Indoor/Outdoor Space

- Green Space
- Nodes

2 Program Precedence

Blue Wall Center

Architect: Studio Gang
 Location: Greenville County SC
 Climate:
 Year Designed: 2010
 The main intention is to entrance is a grand stair which has the same feeling of a atrium to blend the natural open enviroments to indoor.
 Pierced by a series of atriums that bring the outdoors deep into the building's interior, the Center frames "living exhibits" of the region's flora, fauna, and geology. Adjacent outdoor spaces are designed to work in the same way, with a series of "garden rooms" designed to focus, magnify, and intensify the site's subtle beauty.



<https://studiogang.com/project/blue-wall-center>



Circulation
 The circulation travels from the path up the stairs and around the atrium space and branches to the main programmatic elements.



<https://www.scapestudio.com/projects/blue-wall-center/>
<https://studiogang.com/project/blue-wall-center>

2 Program Precedence

Diagrams Site



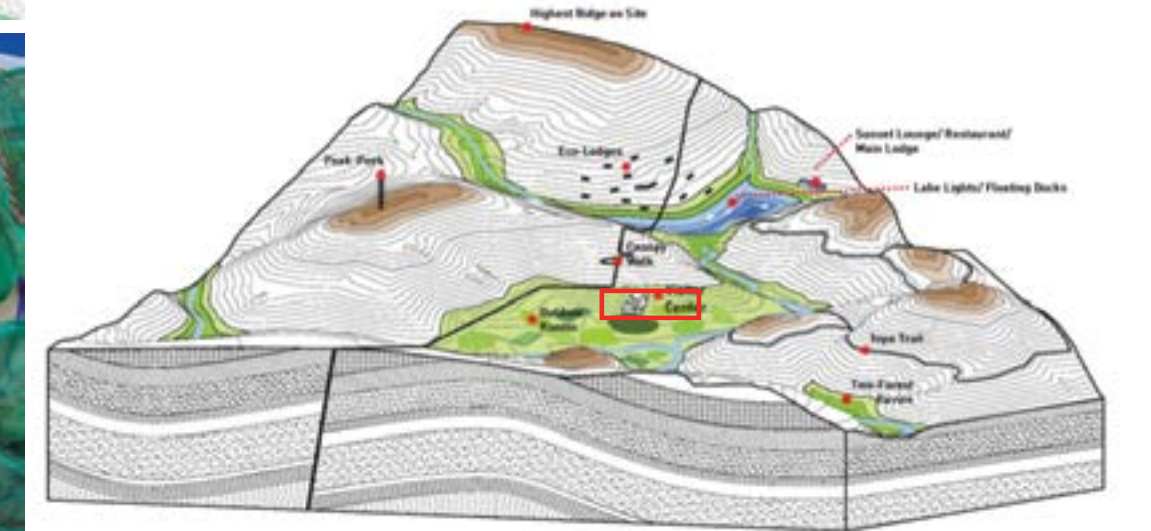
Model showing types of greenery.

Plant type model

<https://studiogang.com/project/blue-wall-center>



Section of landscape highlighting the tree types in the topography.

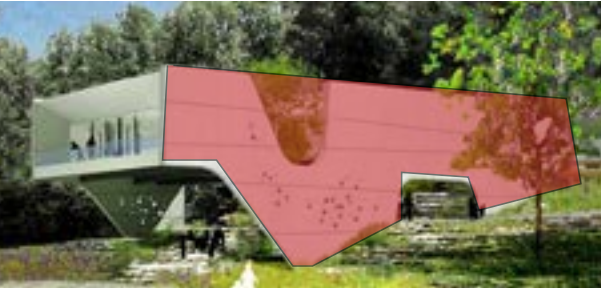


Geography: The Civitan Fault Line

<https://www.archdaily.com/85483/blue-wall-center-studio-gang-architects>

2 Program Precedence

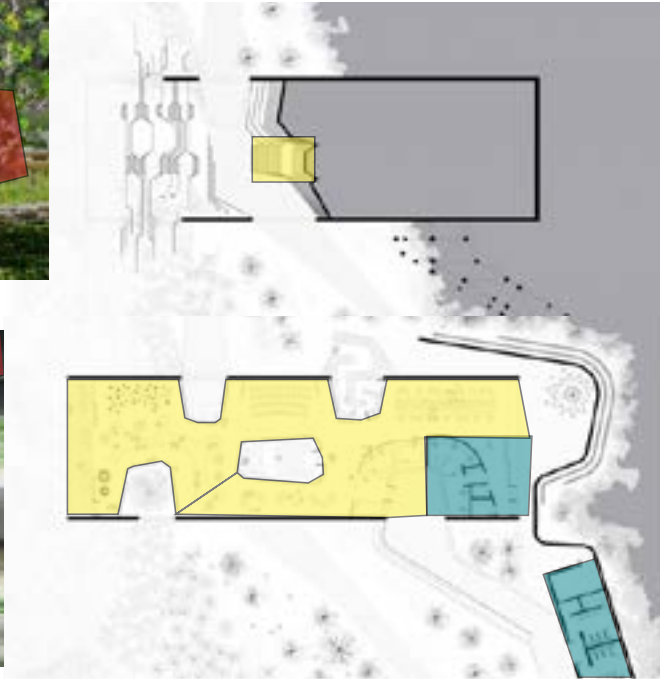
Diagrams



Structure

The staircase functions as an exterior living room. The structure is the exterior wall. The beams are exposed.
Materials
The material is presumable concrete . It is monolithic in quality to be like a abstract stone.

Structure



Program
The staircase functions as an exterior living room. The top floor programs is organized around the pockets of nature.
Public Space
Private



Space
Inlets of space are allotted for existing trees adding to the concept of human connection with nature by nature manipulating the form. The staircase atrium creates seating and an entrance integrated into the landscape.
Green space

2 Program Precedence

Salcedo Social Center

Architect: Santos y Mera Arquitectos S.L.P
Location: 36143 Salcedo, Pontevedra, Spain
Year Built: 2015

The propose of community center is to create a refuge that is , permeable to the nearby environment and especially to the square and the adjacent green area a haven. The program of the center includes Gallery space, classrooms and office space. The materials are steel, glass, colored glass and stucco. The change in materials of the facade signifies the entrance. The exterior shell green color adds a abstract natrual feeling and the interior is a clean simple white.



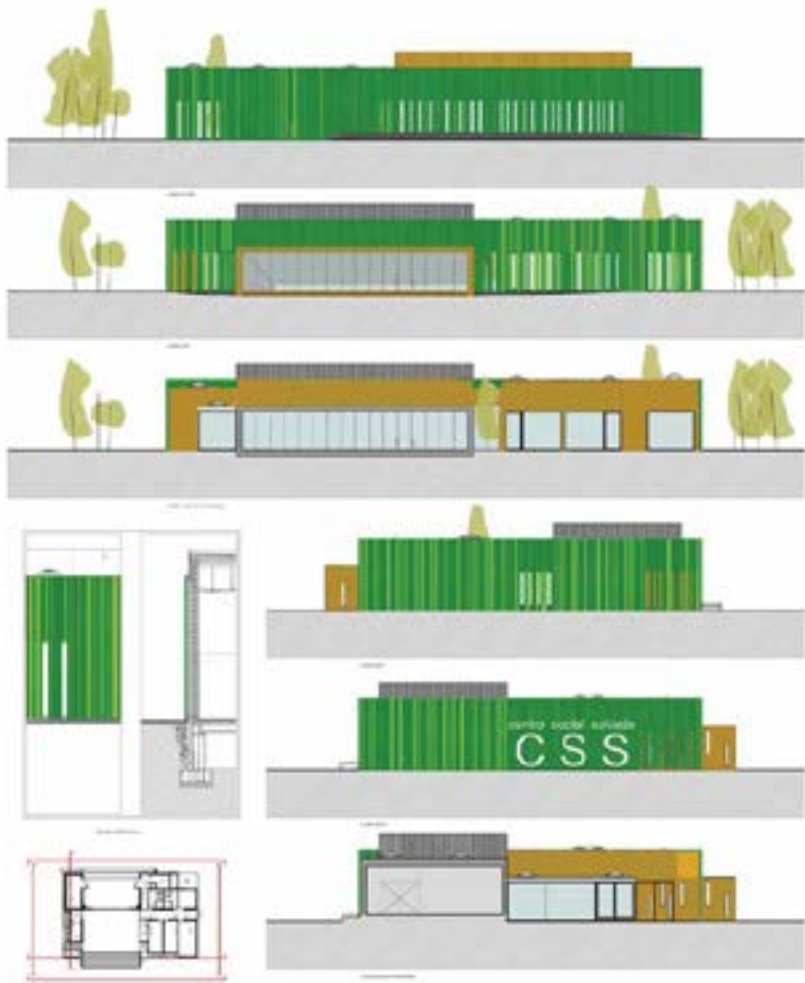
The stucco signifies the entrance.



The exterior skin is permiable to allow light into the interior

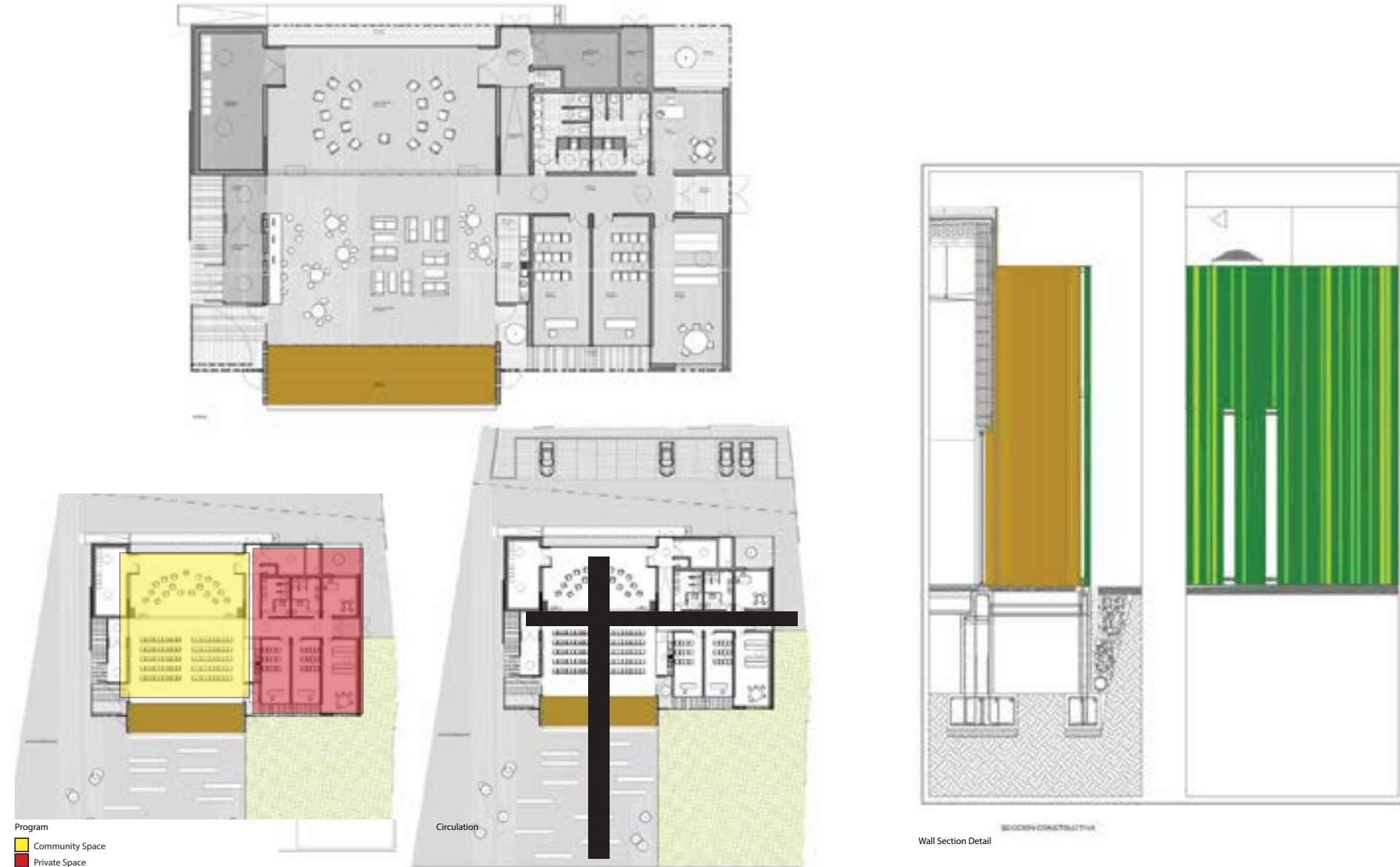


Class room



2 Program Precedence

Diagrams



2 Program Precedence

Vilhelmsro Primary School

Architect: BIG Architects

Location: Asminderød, Denmark

Program category: public space/culture/education

Size: 7000 m2, height 12 m

Year designed : 2010

The oscillating roofline is experienced from both the inside and the outside. outdoor green terraces and courtyard spaces are generated in between buildings. though all one-storey, the alternating peaks and ceiling heights allow natural daylight to stream into every class room. the sod makeup facilitates passive energy measures such as mitigating heat island effect, acting as thermal mass and evaporative cooling qualities. rain water runoff is reduced, collected and stored for non-potable usage. cross-ventilation is also encouraged through operable windows and overlapping openings.



Interior of classroom



Courtyard from veiwing deck



Site



Floor plan

<https://www.designboom.com/architecture/big-architects-vilhelmsro-primary-school/>

2 Program Precedence

Diagrams



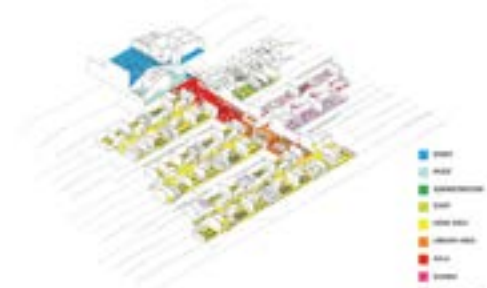
No facade to neighborhood



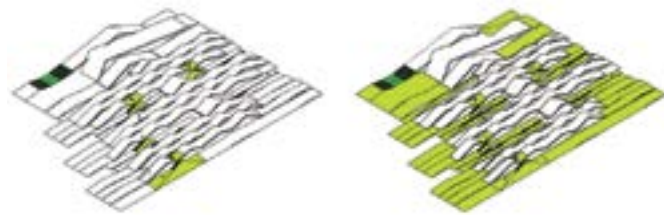
landscape roof



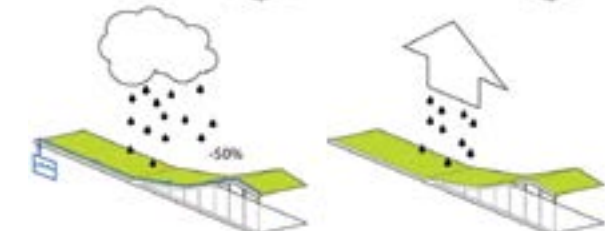
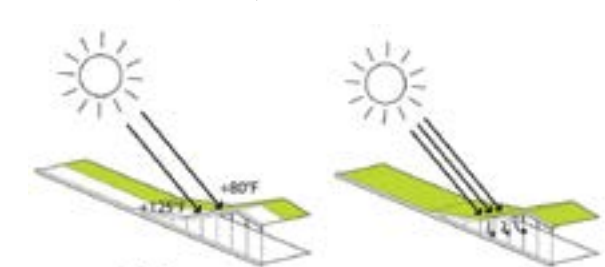
view to landscape



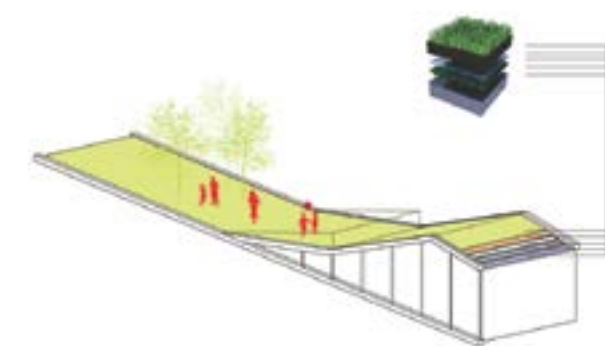
isometric overview and programs



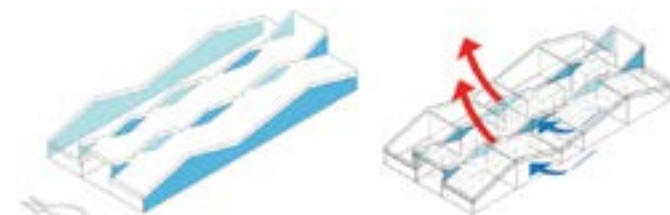
(left) roof terraces (right) courtyards



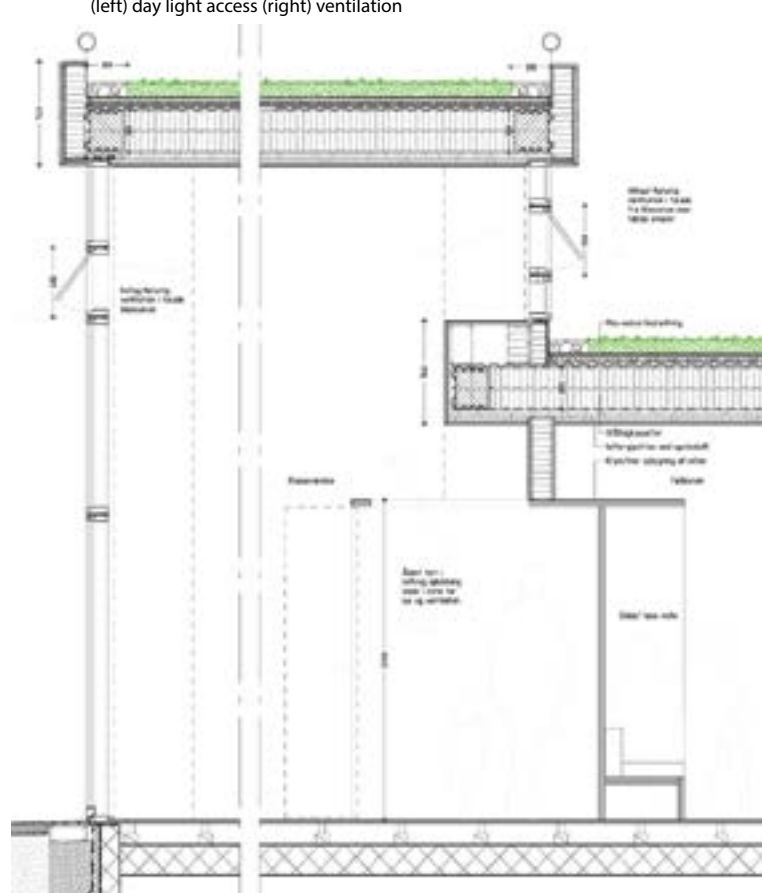
sustainable properties of green roof (clockwise from top left) mitigating heat island effect, thermal mass, evaporative cooling, water runoff reduction & storage



Layers of the green roof



(left) day light access (right) ventilation



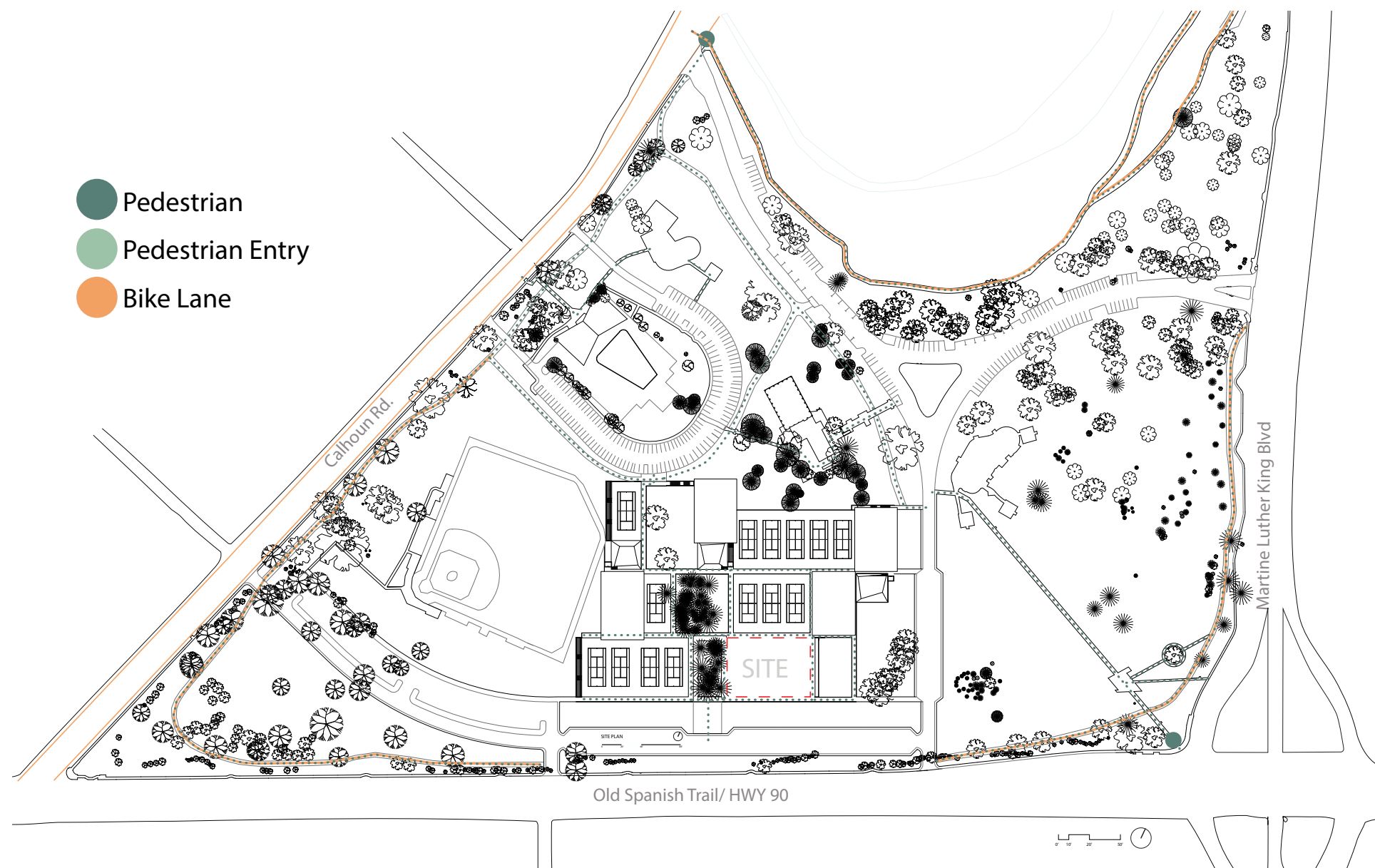
Sectional detail

<https://www.designboom.com/architecture/big-architects-vilhelmsro-primary-school/>

3 Site Analysis Site Circulation

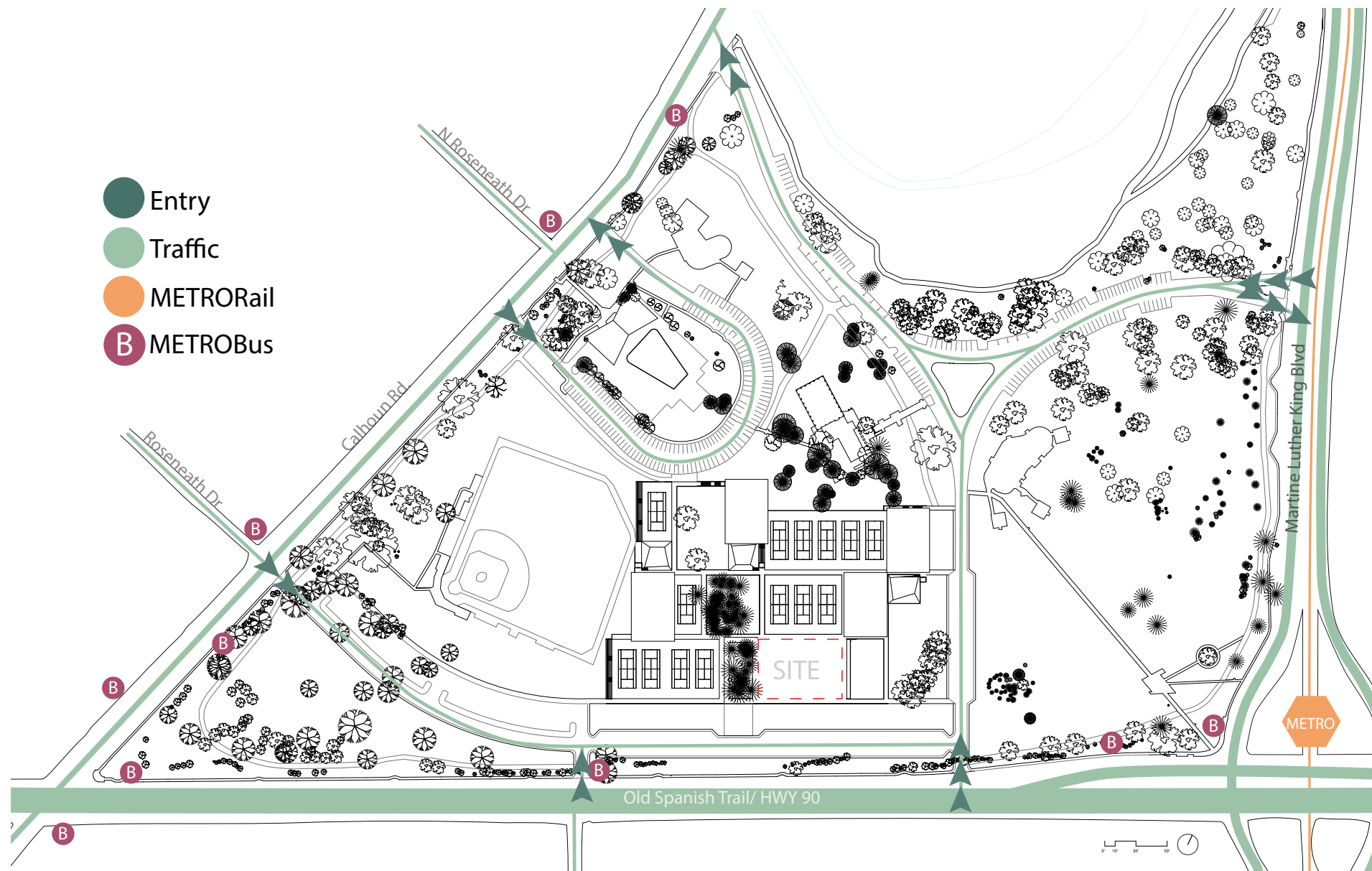
Site Analysis was a group effort done by the entire studio.

- Pedestrian
- Pedestrian Entry
- Bike Lane



3 Site Analysis Site Circulation

Site Analysis was a group effort done by the entire studio.



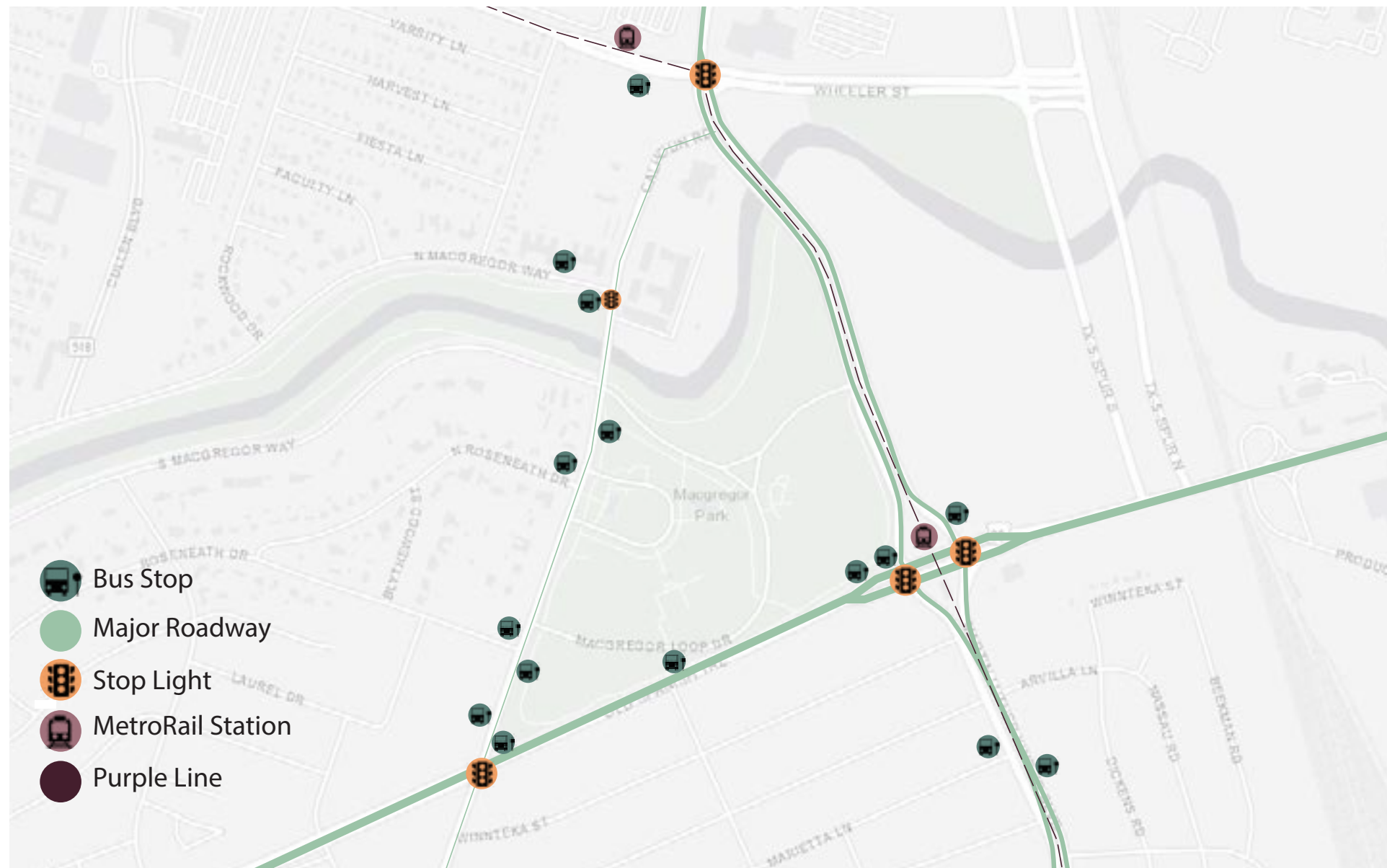
3 Site Analysis Site Circulation

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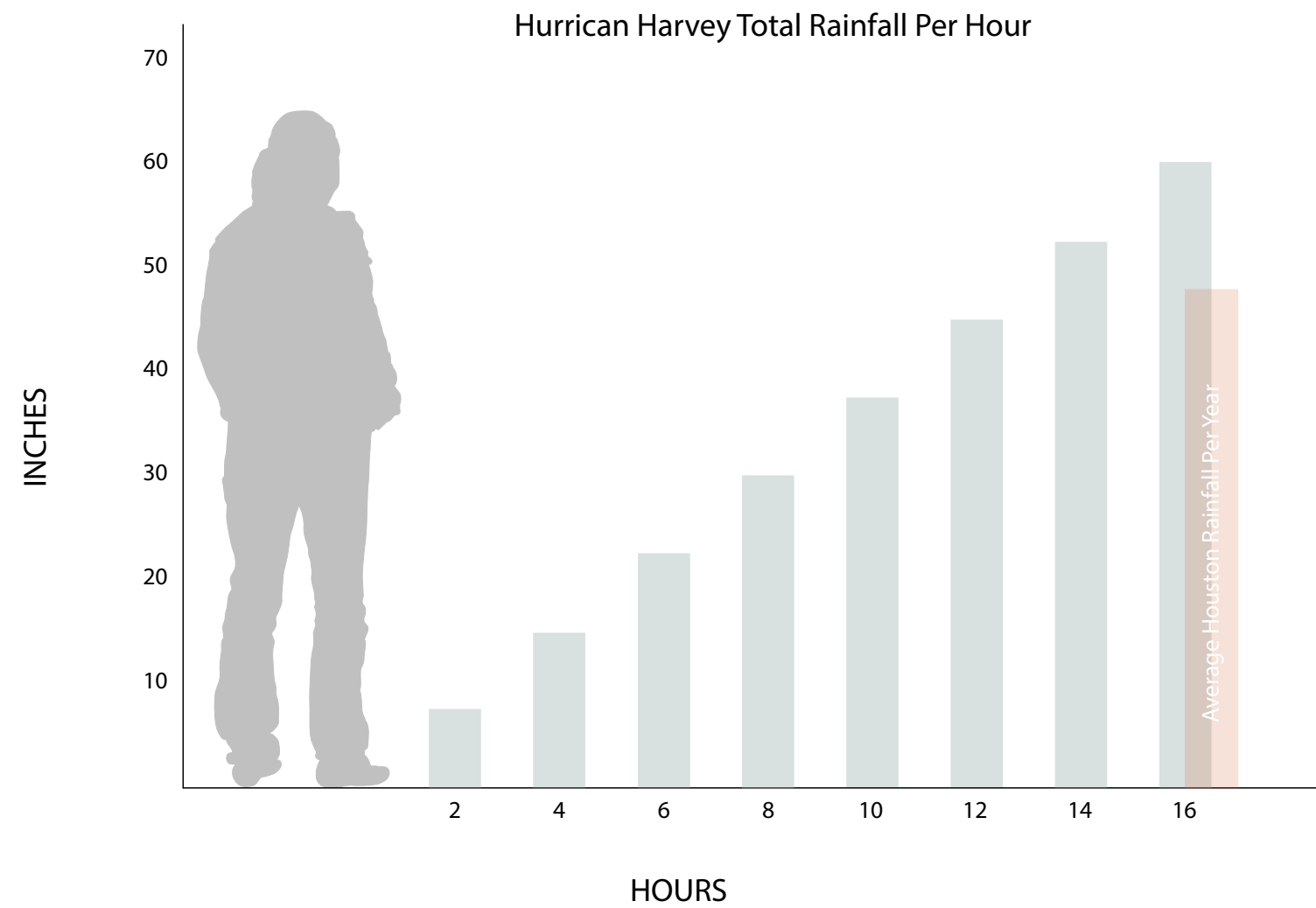
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Site Analysis was a group effort done by the entire studio.



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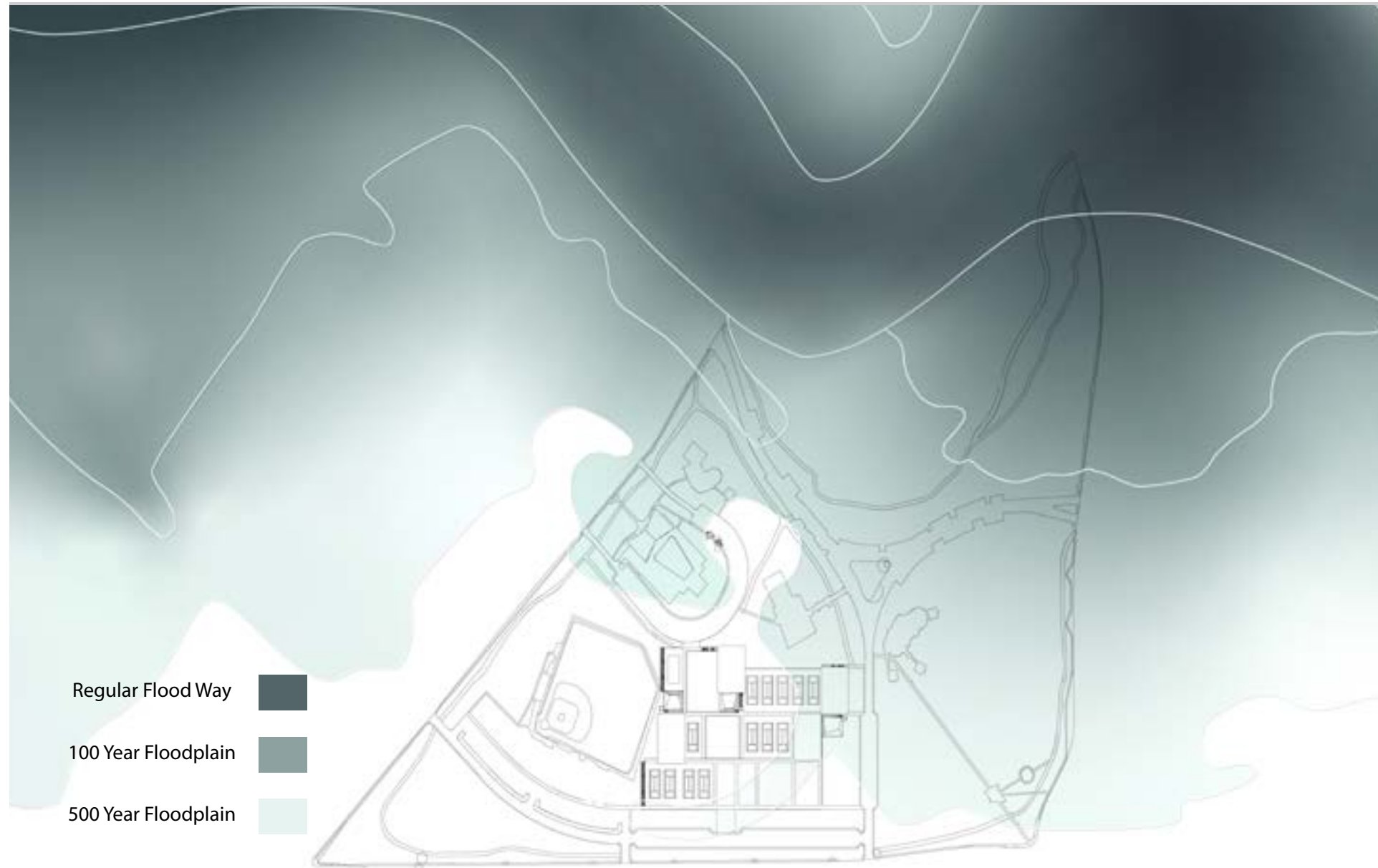
Site Analysis was a group effort done by the entire studio.



3

Site Analysis Flooding

Site Analysis was a group effort done by the entire studio.

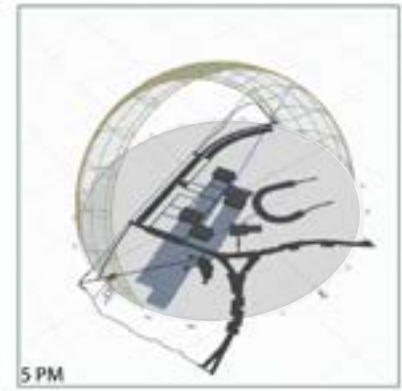
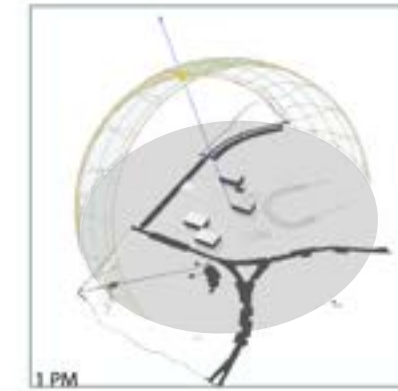
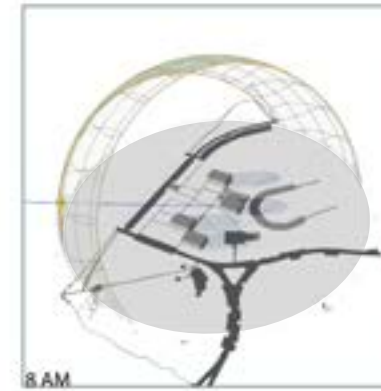


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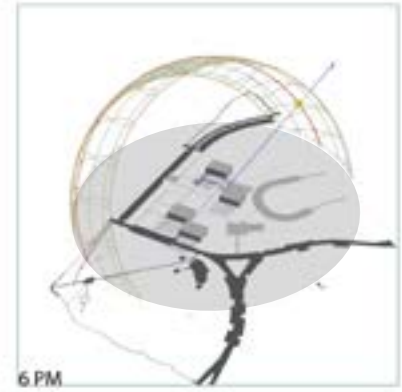
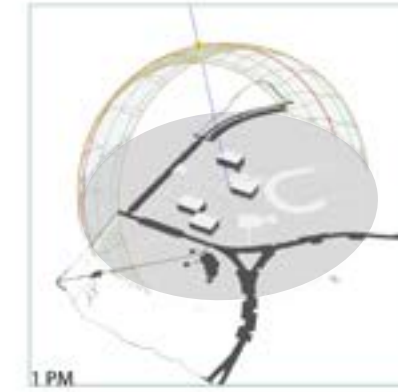
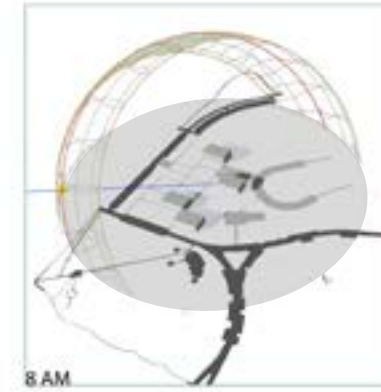
Site Analysis Sun Path

Site Analysis was a group effort done by the entire studio.

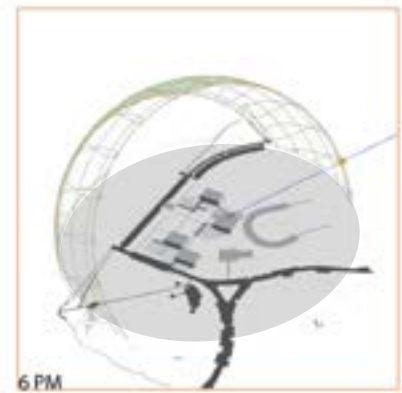
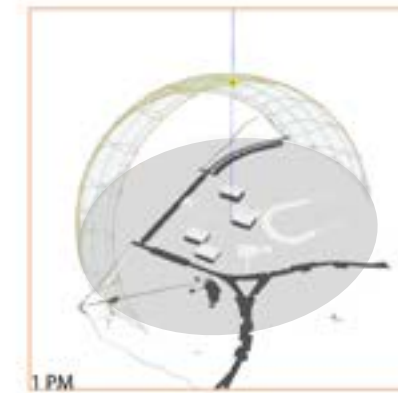
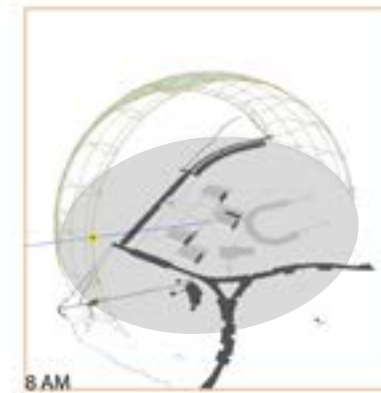
Winter
Solstice



Fall/ Spring
Equinox

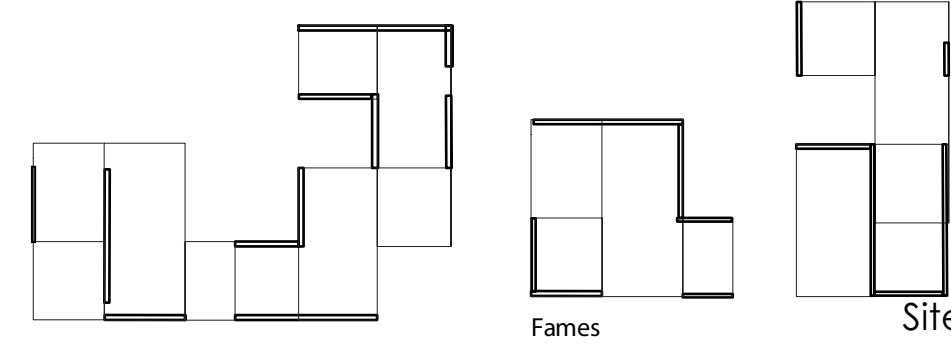


Summer
Solstice



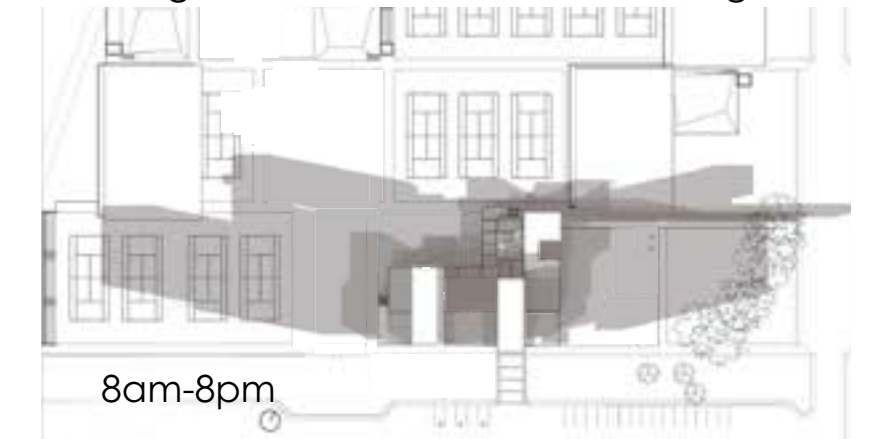
Site Analysis

Solar orientations

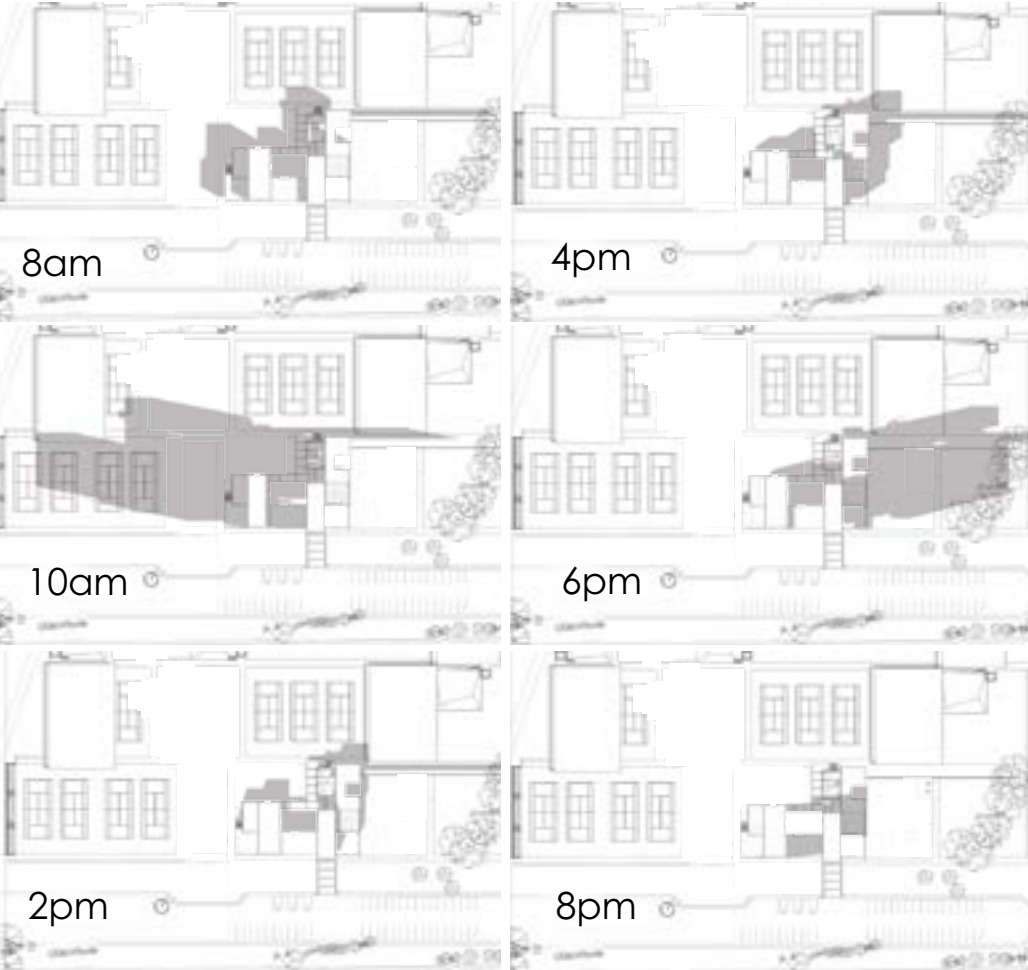


The material strategy was designed based upon the solar path to allow natural light indoors and shade in the outdoor spaces to make it optimal to use prime times of the day.

The courtyard is shaded throughout the whole day. The patio is shaded during the morning for those who prefer morning meditation. The outdoor garden is shaded in the evening.



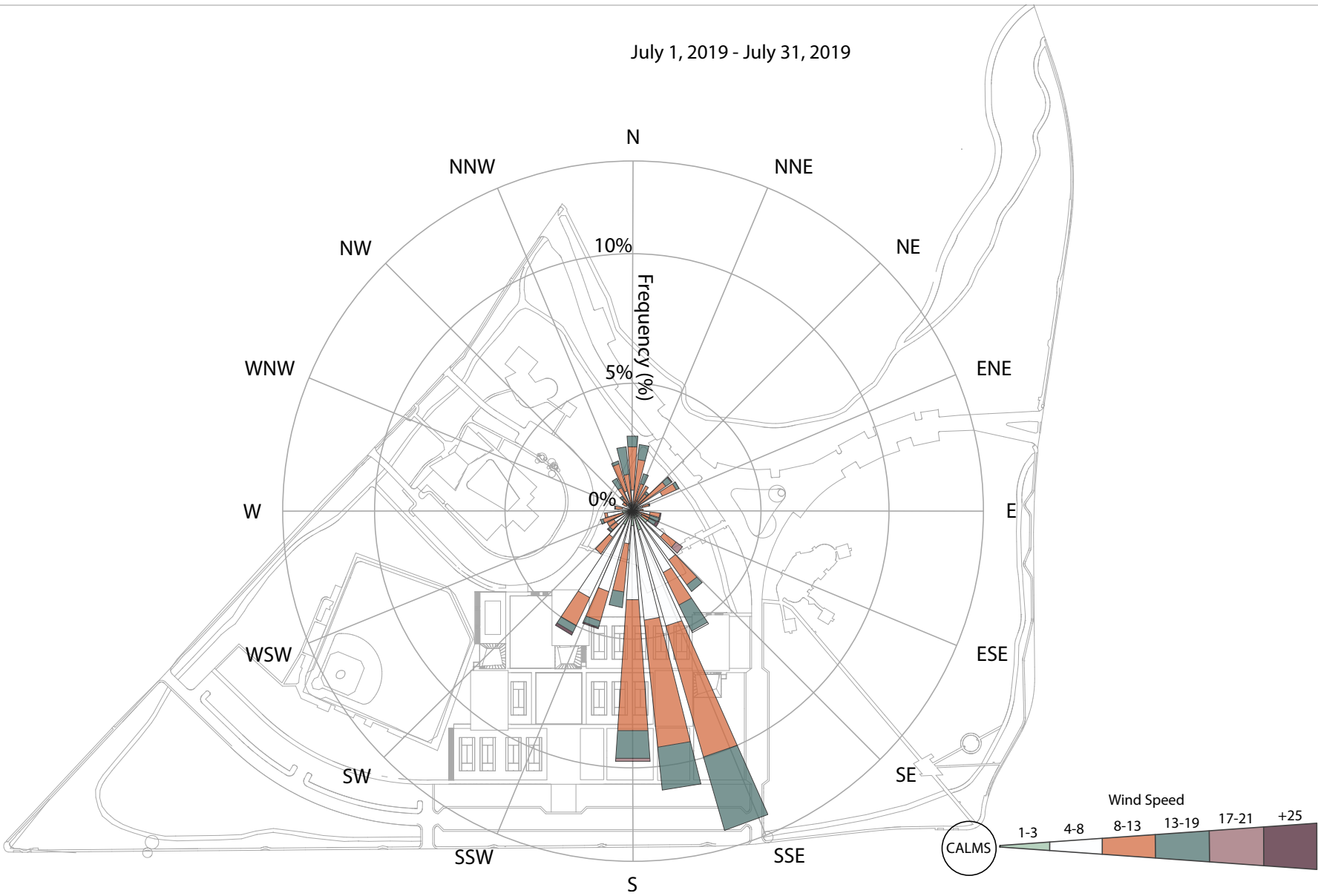
Site shadows of the building over time of day in August



3 Site Analysis

Wind Rose

Site Analysis was a group effort done by the entire studio.



3 Site Analysis Tree Types

Site Analysis was a group effort done by the entire studio.

Western Soapberry

aprox. height at site 30'
max 50'

Southern Live Oak

aprox. 30'
max 50'

Loblolly Pine

aprox. 60'
max 125'

Crape Myrtle

aprox. 15'
max 20'

Southern Catalpa

aprox. 20'
max 50'

Overcup Oak

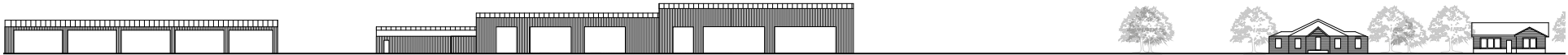
aprox. 40'
max 90'



3 Site Analysis Facades of Old Spanish Trail

View across the street from the site.

Site Analysis was a group effort done by the entire studio.

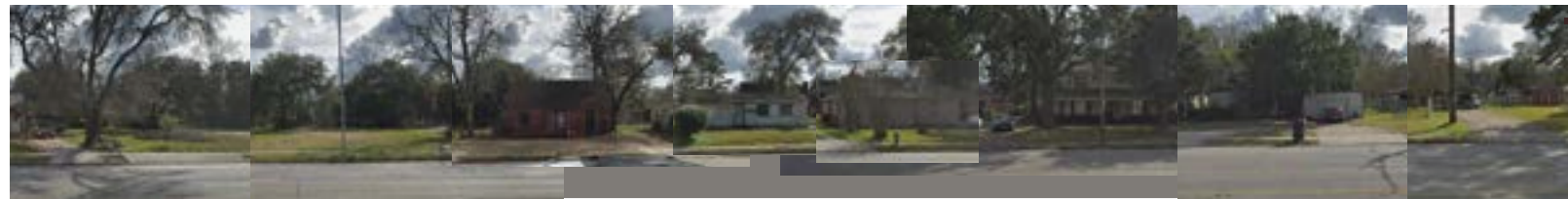


3 Site Analysis

Site Analysis was a group effort done by the entire studio.

Facades of Old Spanish Trail

View across the street from the site.



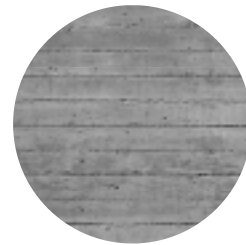
3 Site Analysis

Site Analysis was a group effort done by the entire studio.

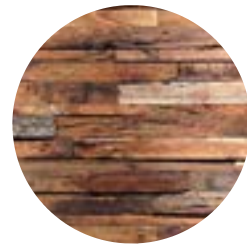
Materials of Site



Core Ten Steel



Form Board Concrete



Reclaimed Wood



Brick



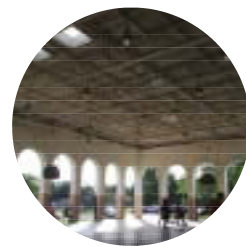
Wood Siding



Plaster



Ceramic Tiles



Steel Truss



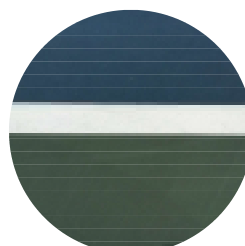
Galvanized Steel



Blue Tile



Glass Block



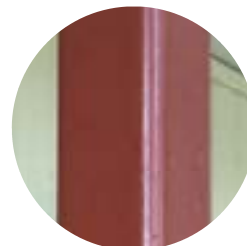
Ruberized Court



Net



Steel



Chain Linked Fence



Grass

3

Site Analysis Client Values

Site Analysis was a group effort done by the entire studio.

Mission:

Strengthen young people and families “through tennis, education and wellness programs that contribute to a healthy community.”

Vision:

To develop the community by providing resources, skills and a support system for the young people in the community to become healthy and achieve their goals.

Core Purpose

To develop healthy contributing members of the community.

Core Values:

Respect

Service

Commitment

Accountability



<https://www.zinagarrison.org/our-history/>

Young Zina Garrison



<https://www.zinagarrison.org/our-history/>

Zinna Garrison 1992 winning

3

Site Analysis Client History

Site Analysis was a group effort done by the entire studio.

A tennis program at MacGregor Park was started by John Wilkerson in 1974.

Zina Garrison started playing in the tennis program when she was 10 years old.

The Zina Garrison Academy was founded in 1993 by professional tennis player Zina Garrison and her coach, John Wilkerson.

Zina Garrison used her winnings from the 1992 Family Circle Cup to start a Academy for at-risk youth in Houston.

The Academy provides 45 weeks of free programming each year which include:

free tennis lessons, college preparatory classes, wellness and nutrition lessons, interactive garden instruction, ACE training.



<https://www.zinagarrison.org/our-history/>

Picture of the 1974 children's tennis group.

4 Project Program Requirements

The project is a community center for the Zina Garrison Tennis Academy. The purpose of the project is to create a safe environment to teach children a healthy lifestyle by instilling moral values, healthy diet and exercise using tennis and the inspirational story of Zina Garrison. The end goal is to help mold and children into healthy productive members of the community.

The client request:

- A private garden space connected to the classroom for gardening classes.
- The locker rooms to be open air to minimize the cost of conditioning the facility.
- Multi use gathering spaces.
- Site must be able to be closed off at night for security.
- Integrate exterior green space.



Graph showing percentage of each category in relation to whole program.

	Group	Load Factor	Area	Number of persons
Lobby	A-3	15 Net	1,000 sqft	67
Gallery	A-3	30 Net	3,000 sqft	100
Education/Meeting Space	E	20 Net	1,000 sqft	50
Administration	B	100 gross	600 sqft	6
Private Restroom	-	-	150 sqft	-
Public Restroom	-	-	400 sqft	-
Pro Shop	A-2	15 Net	800 sqft	54
Men and Women' Changing Area with Lockers	-	50 gross	2,000 sqft	40
Men and Women Shower and Toilet Area	-	50 gross	2,000 sqft	40
Janitor's Closet	-	1	100 sqft	1

5 Project Program Space Requirements

TOTAL REQUIRED AREA	2 600	GALLERY
OCCUPANCY		
Type	A3	
Sq. Ft. per Person	15 NET	
Total Occupancy	127	
FUNCTION		New gallery space that is "technologically" smart with electronic and audio visual components allowing for new media arts
FURNITURE, FIXTURES, EQUIPMENT		Typical museum gallery for displaying of diverse artwork of varied scale and type. Potential for removable seating according to artwork's needs. Should have some permanent seating allowing for people to pause.
CRITICAL FACTORS		
Lighting		Minimal to no natural light. Any natural light should be filtered so as to not damage art but filtration should have the ability to be darkened when necessary. Low level artificial lighting.
Mechanical/Electrical/Plumbing		Ventilation must keep strict climate control and dust collection to preserve art.
Volume		Ceiling height should be no less than 20' to allow for variable-sized art and drop ceiling.
Relationship		Adjacent to lobby. Near "The Core" to allow for continuity. Storage should be easily accessible to the gallery. Should be within a line of sight from the artist housing so that artists can see how people interact with their works.
Material		Interior plaster walls for hanging/mounting art. Wood floors for erecting temporary walls.

5 Project Program Space Requirements

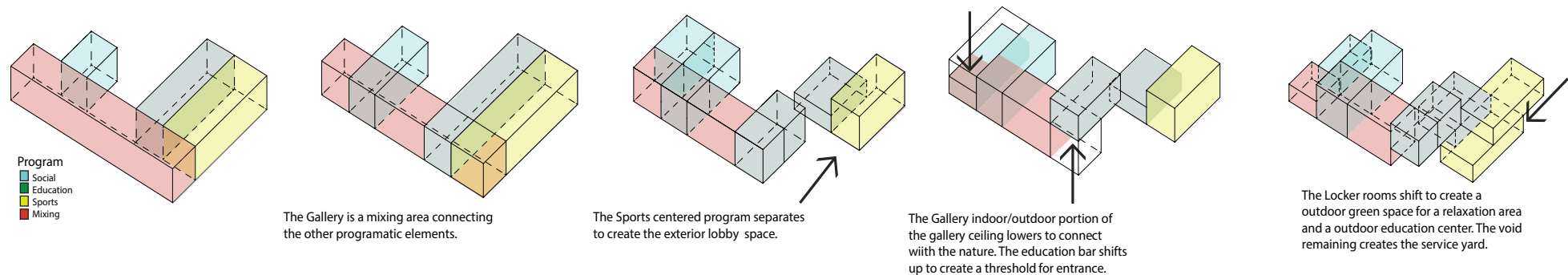
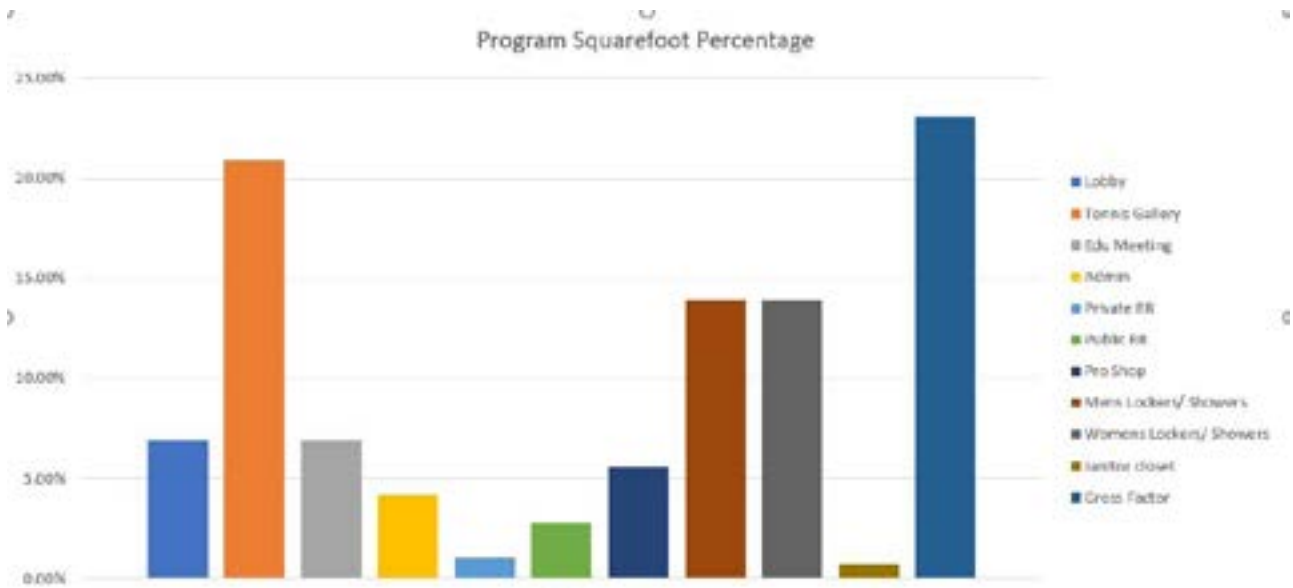
EDUCATIONAL SPACE	
TOTAL REQUIRED AREA	2 000
OCCUPANCY	E
T ype	20 NET
S q. Ft. per Person	35
T otal Occupancy	
FUNCTION	Classroom space for gatherings of small groups for lectures, group activities, and other educational needs.
FURNITURE, FIXTURES, EQUIPMENT	Moveable tables and chairs for small groups, Storage for general supplies, sink for relative activities Digital Projection equipment with screen, Data/Wifi/Telephone.
CRITICAL FACTORS	
L ighting	Lighting: Natural Daylighting with artificial backup.
M echanical/Electrical/Plumbing	Typical HVAC grilles and registers, Electrical services for computers/projector/ other small activities. Plumbing for sink.
V olume	Volume: Ceiling Height no less than 10ft.
R elationship	To be located adjacent to Library as well as Gallery space for efficient access to education-al materials and event specific information.
M aterial	Concrete floor with appropriate finishes, sus-pended acoustic ceiling system
RELATIONSHIP DIAGRAM	

5 Project Program Space Requirements

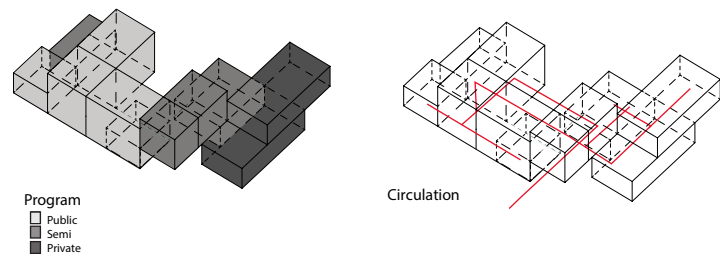
ADMINISTRATIVE AREA	
TOTAL REQUIRED AREA	1 600
OCCUPANCY	B
Type	100 GROSS
Sq. Ft. per Person	16
Total Occupancy	
FUNCTION	Administrative department of the CAMH Me-diatheque, includes private offices, general offices, conference room, administrative lobby, storage + printing shop, restrooms, and a breakroom.
FURNITURE, FIXTURES, EQUIPMENT	General Office Furniture: Desks, Chairs, Cubi-cles, Conference Room Table, Storage Files, Storage Shelves, Printers, Copiers, Scanners, Administrative Desk, Sink, Fridge, Coffee Pot, Break Room Furniture (Couches, Tables, Kitch-en Cabinets), Restroom Fixtures (Toilets, Sinks, Stalls, Paper Towel Dispensers), Telephone/ Data/Wifi Connection.
CRITICAL FACTORS	
Lighting	Natural Lighting with artificial task lighting.
Mechanical/Electrical/Plumbing	Raised Floor for HVAC Return. Supply from Drop Ceiling. Data and electrical run through floor for Computers. Plumbing for break room sink/refrigerator, restroom sinks/toilets.
Volume	Ceiling height no less than 10'.
Relationship	Offices arranged for efficient workflow, near natural lighting. Conference room is a large, open space, located in the front of the admin-istrative area, by administrative lobby adjacent to natural lighting. Breakroom, Restrooms and Storage + Print Shop located in the back of the administrative area. Entire Administrative Area adjacent to the Public Lobby.
Material	Heavy Wall insulation to facilitate an appro-priate work environment. Suspended acoustic ceiling for acoustic isolation from bordering public spaces. Raised floor assembly with appropriate finish, stain and wear finish in breakroom.

5 Program Analysis

The program rooms were combined into the following categories: Social, Education, Sports and Mixing space.



Program
The Gallery is about mixing the people and the program this is done through different spacial, material, lighting qualities and the relation ship to the outdoor.



6 Building Code / Life Safety / Ordinances Occupancy Codes

2016 International Building Code with City of Houston Amendments

2018 National Electric Code with City of Houston Amendments

2018 Uniform Mechanical Code with City of Houston Amendments

2018 Uniform Plumbing Code with City of Houston Amendments

2016 International Energy Conservation Code

2018 Commercial Energy Conservation Code based on ASHRAE 90.1-2010

2018 International Fire Code

2012 Texas Accessibility Standards (Chapters 1-10)

1997 Americans with Disabilities Act

City of Houston Ordinances

Chapter 26 Off Street Parking and Loading

Chapter 21 Design for Parking Lots, Sidewalks, and Driveways

Chapter 22 Planning and Development - Article V. Trees, Shrubs, and Screening

Appendix L Life Safety Ordinance

ADDITIONAL REQUIREMENTS

Basic Wind Speed	145 MPH (3-second Gust)
Seismic Design Category	A
Weathering Probability	Negligible
Roof Design Load	IBC (20 lbs/sq ft A)
Soil Class	Expansive IBC (Lr = 200162)
Wind Exposure Category	B
Ground Snow Load	0 PSF
Frost Line Depth	4'
Maximum Rainfall Rate	8" per hour
Maximum Degree Days	1699
Climate Zone (Energy)	2-A Humid Subtropical
Minimum Plumbing Fixtures	Table 2012 (Houston Amended Building Code)

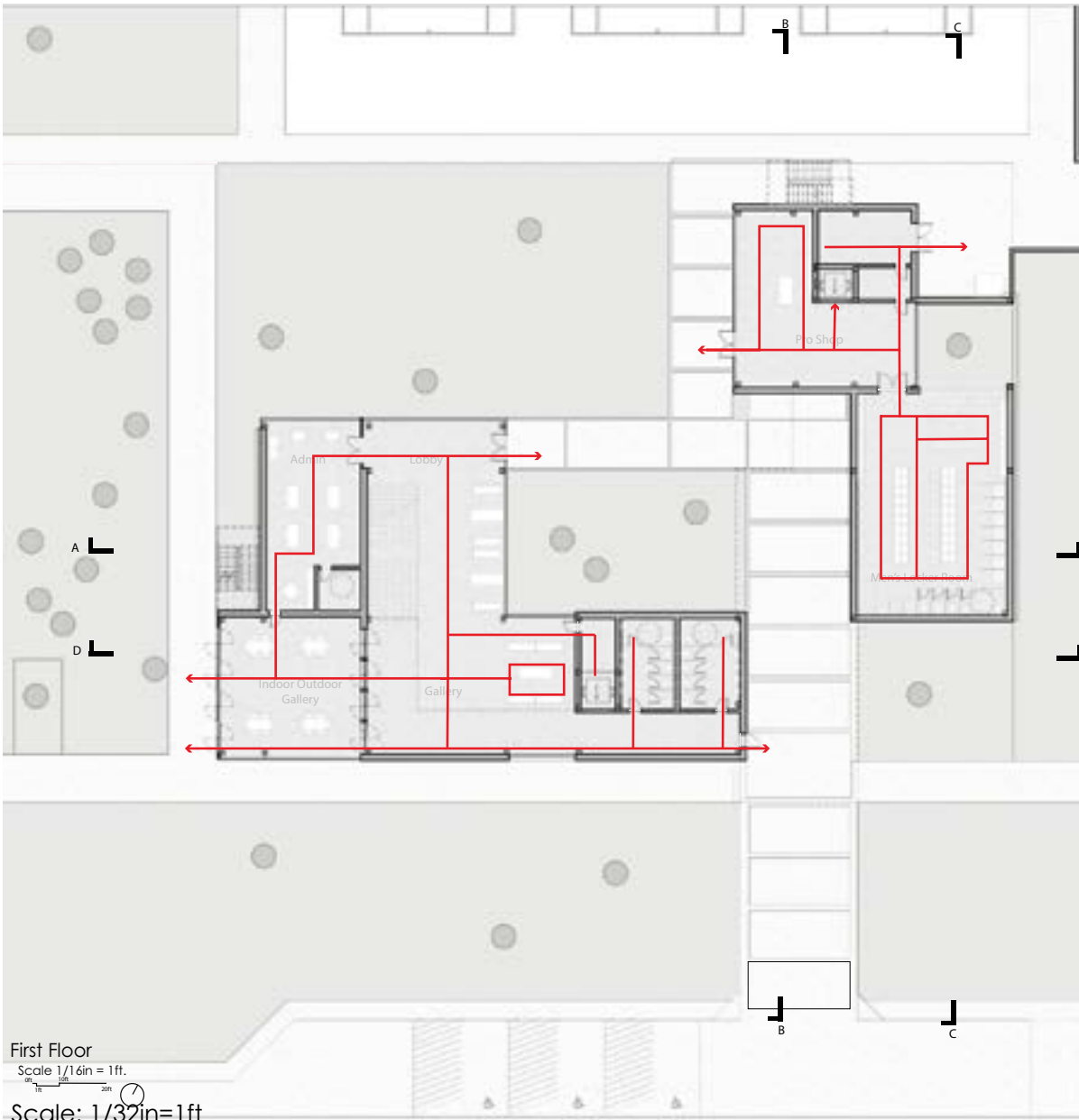
Interior Organization

Entry Sequence of the room and Nature of the Door

The red line represents the movement through the space including around the furniture layout. The nature of the door is the idea of frame. The doors act as rotating frame walls connecting rooms and interior to nature.



<https://www.pinterest.com/pin/787144841107078638/>



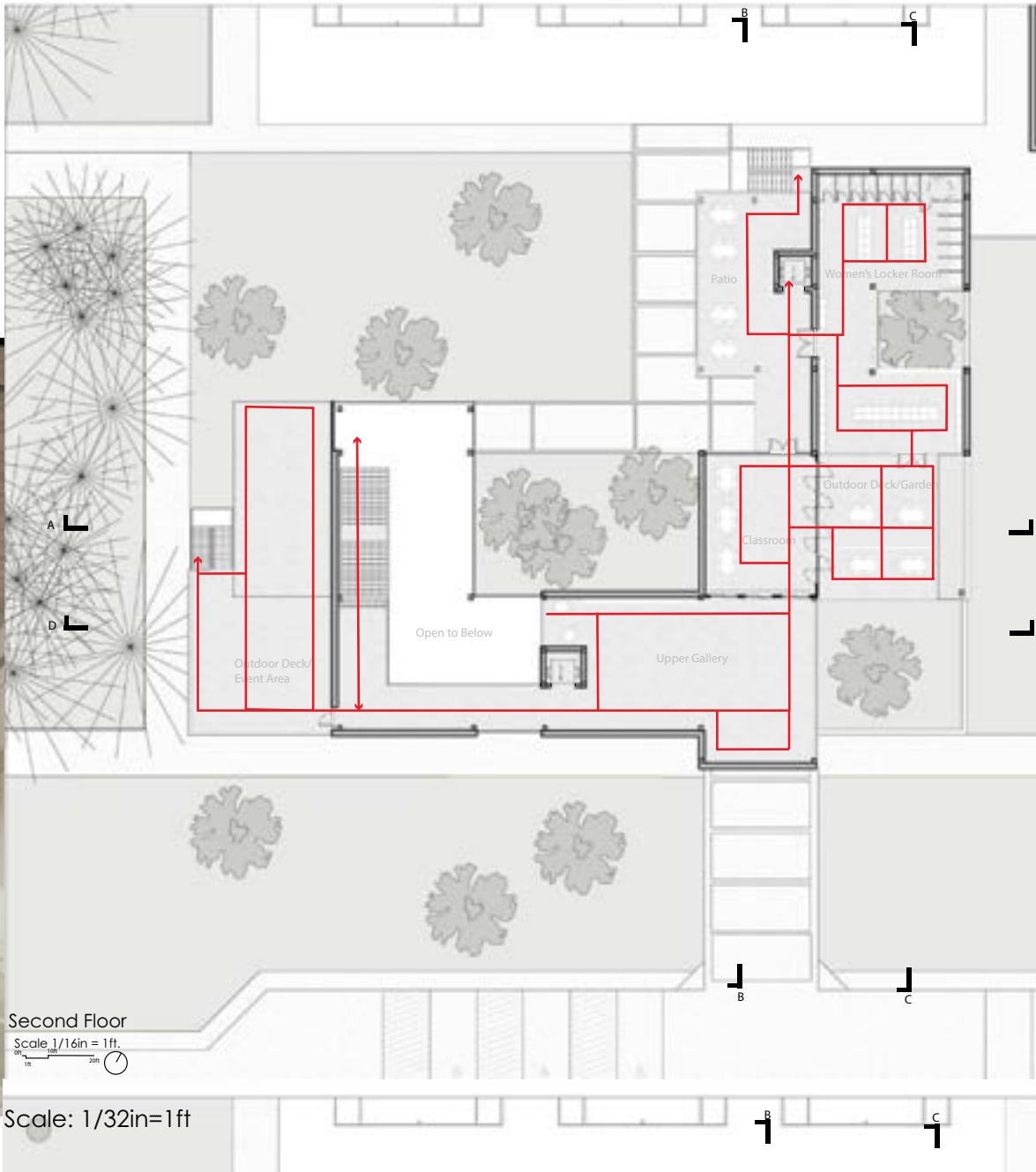
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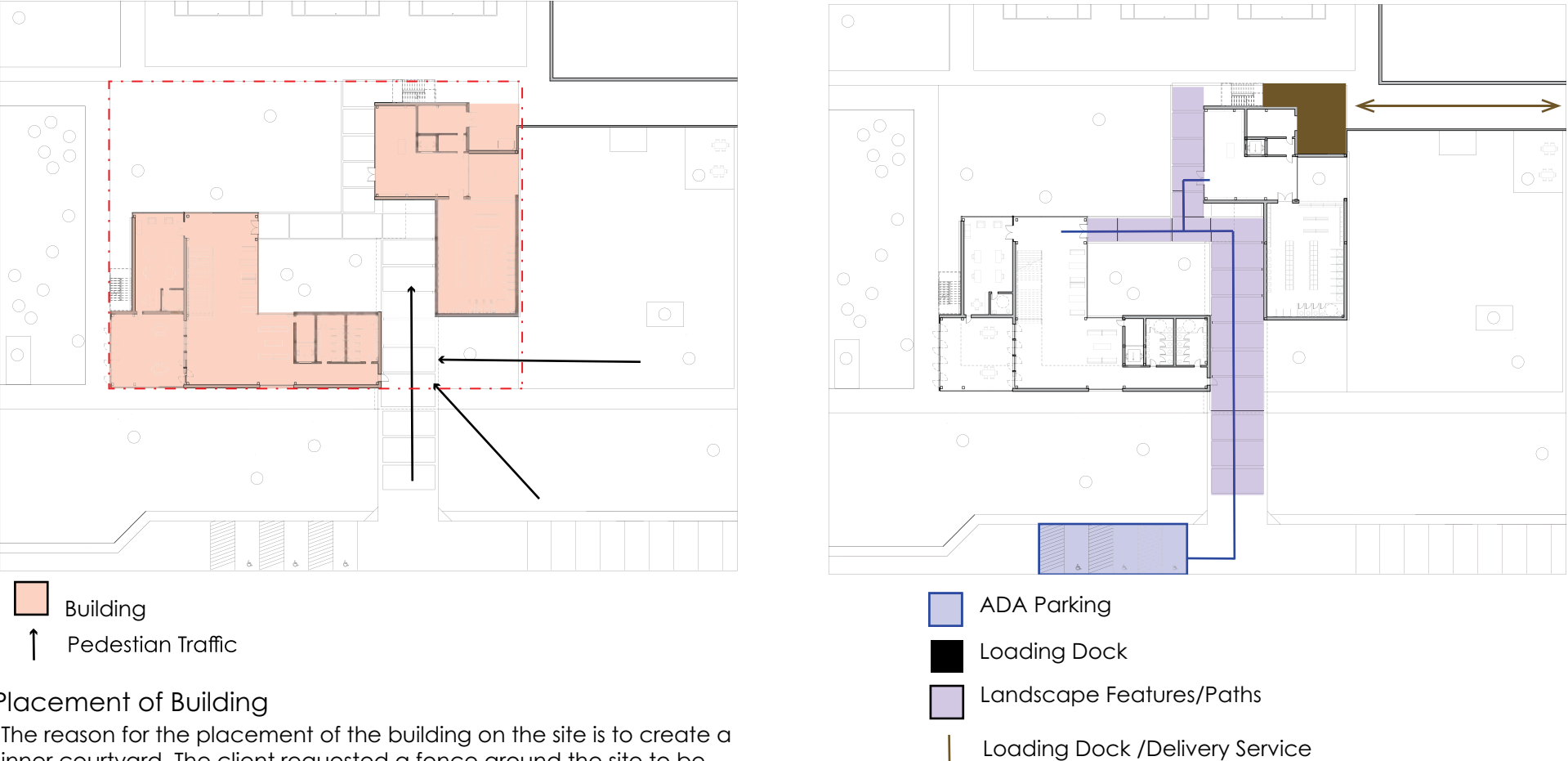
<https://www.pinterest.com/pin/787144841107078637/>



6 Building Code / Life Safety / Ordinances Occupancy

EGRESS		OCCUPANCY	
LOBBY		LOBBY	
Occupants	129	Area	2 500
Egress Width per Occupant	0.15 IN	Occupancy Type	A-3
Total Occupancy Exit Width	19 IN 36 IN	Sq. Ft. per Person	15 NET
Number of Exits	2	Code Occupancy	129
Total Exit Width	72 IN		
Corridor and Stair Width per Occupant	0.2 IN		
Total Corridor and Stair Width	24 IN 48 IN		
Pro shop		GALLERY	
occupants	54	Area	2 400
Egress width per Occupant	0.15IN	Occupancy Type	A-3
Total Occupancy Exit Width	7IN 36IN	Sq. Ft. per Person	15 NET
Corridor and Stair Width per Occupant	72IN	Code Occupancy	127
Total Corridor and Stair Width	0.2IN		
	48IN		
GALLERY		ADMINISTRATIVE AREA	
Occupants	127	Area	1 400
Egress Width per Occupant	0.15 IN	Occupancy Type	R
Total Occupancy Exit Width	20 IN 36 IN	Sq. Ft. per Person	180 GROSS
Number of Exits	2	Code Occupancy	16
Total Exit Width	72 IN		
Corridor and Stair Width per Occupant	0.2 IN		
Total Corridor and Stair Width	24 IN 48 IN		
Locker Rooms		EDUCATIONAL SPACE	
occupants	40	Area	700
Egress width per Occupant	0.15IN	Occupancy Type	E
Total Occupancy Exit Width	48	Sq. Ft. per Person	29 NET
Corridor and Stair Width per Occupant	72/in	Code Occupancy	25
Total Corridor and Stair Width	0.2		
	48IN		
ADMINISTRATION AREA			
Occupants	2 @ 9		
Egress Width per Occupant	16		
Total Occupancy Exit Width	0.15 IN		
Number of Exits	3 IN 36 IN		
Total Exit Width	1		
Corridor and Stair Width per Occupant	72 IN		
Total Corridor and Stair Width	0.2 IN		
	4 IN 48 IN		
EDUCATIONAL SPACE			
Occupants	2 @ 17		
Egress Width per Occupant	28		
Total Occupancy Exit Width	0.15 IN		
Number of Exits	6 IN 36 IN		
Total Exit Width	2		
Corridor and Stair Width per Occupant	72 IN		
Total Corridor and Stair Width	0.2 IN		
	7 IN 48 IN		

6 Building Code / Life Safety / Ordinances Occupancy Building Placement and ADA



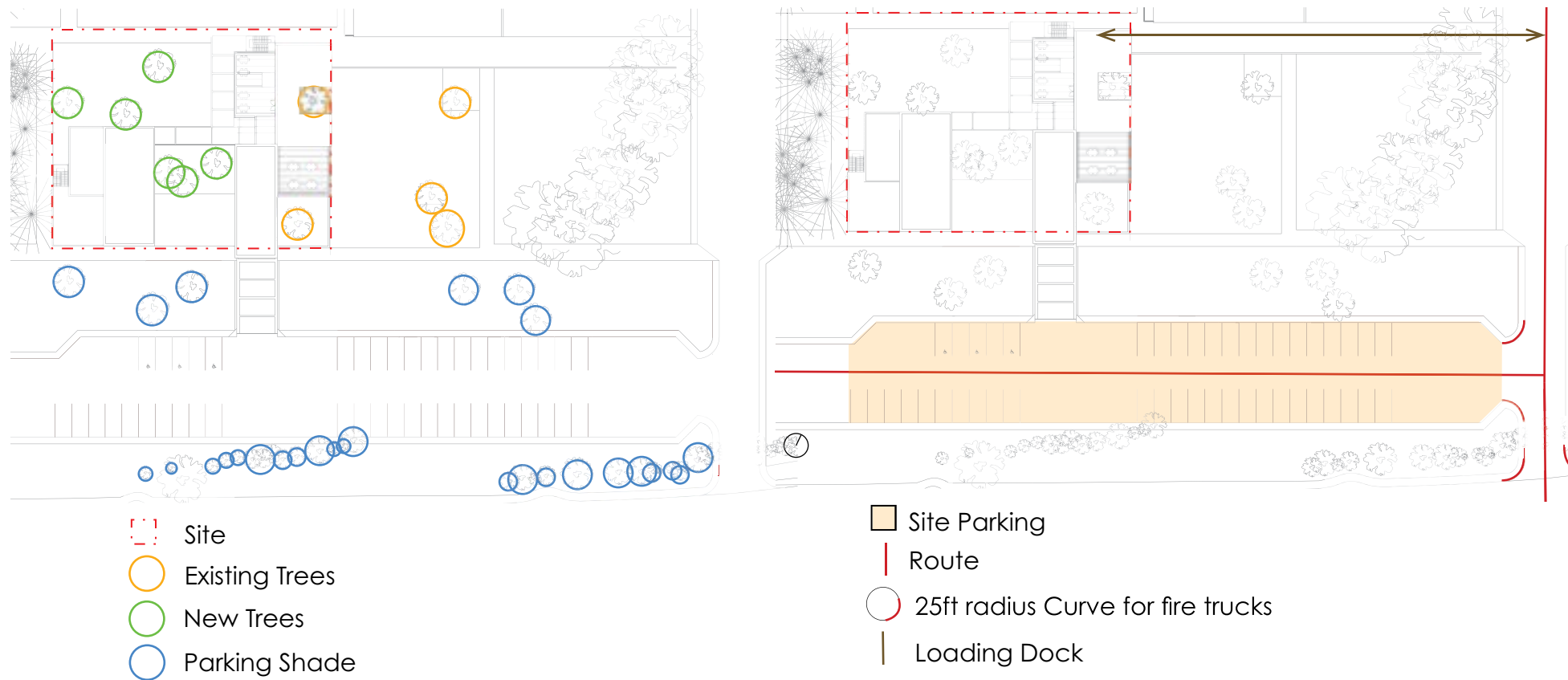
Placement of Building

The reason for the placement of the building on the site is to create a inner courtyard. The client requested a fence around the site to be able to enclose at night for safety reasons. The building is placed to function as a barrier instead of a fence. The building is placed to allow particular point of access.

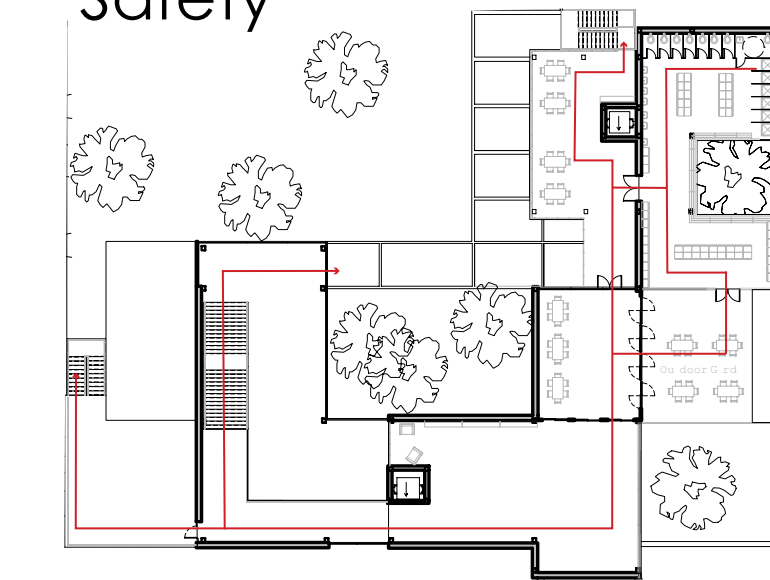
The parking is sized based upon the city of Houston parking code.

3.0 spaces for every one thousand square feet of GFA of exhibit area or gallery space
https://www.houstontx.gov/planning/DevelopRegs/docs_pdfs/parking_req.pdf

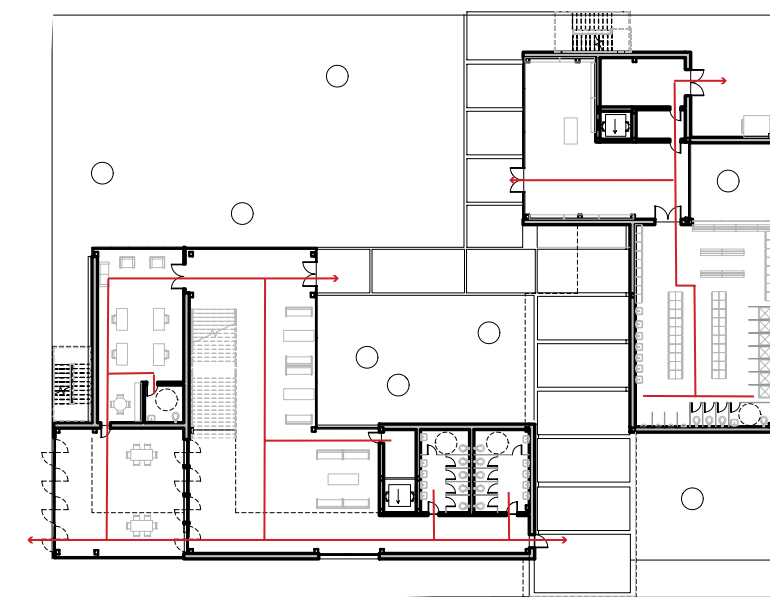
6 Building Code / Life Safety / Ordinances Occupancy Trees and Loading/Parking/Route



6 Building Code / Life Safety / Ordinances Occupancy Safety

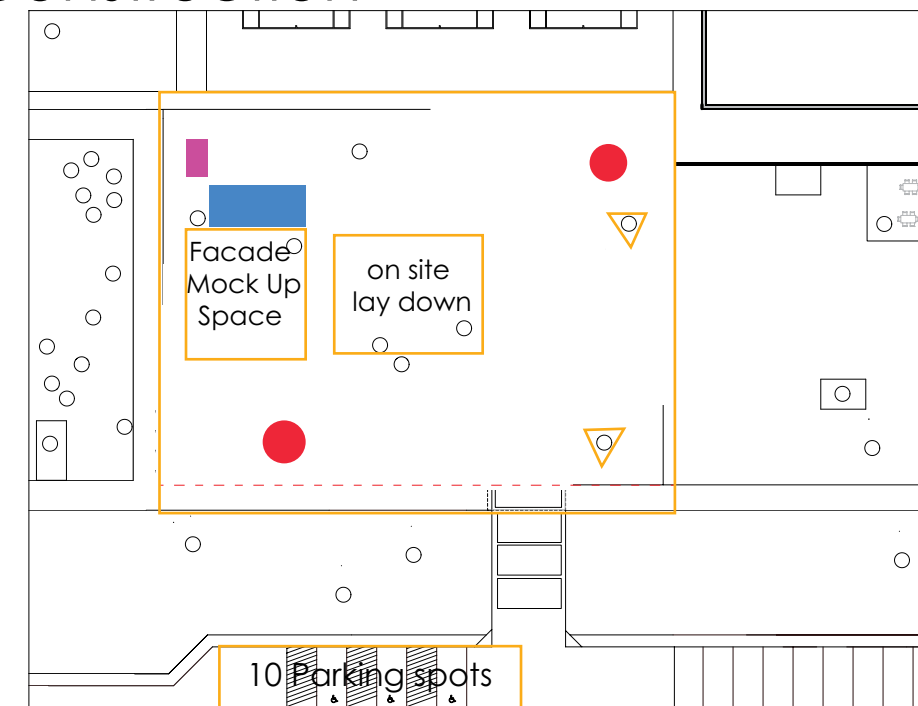


2nd Floor Egress
Fire Safety



1st Floor Egress
Fire Safety

Construction



During Construction

- Site protection fence
- Existing Tree protection fence
- Soil Sample Area
- Temporary Site Services
- Construction Trailer

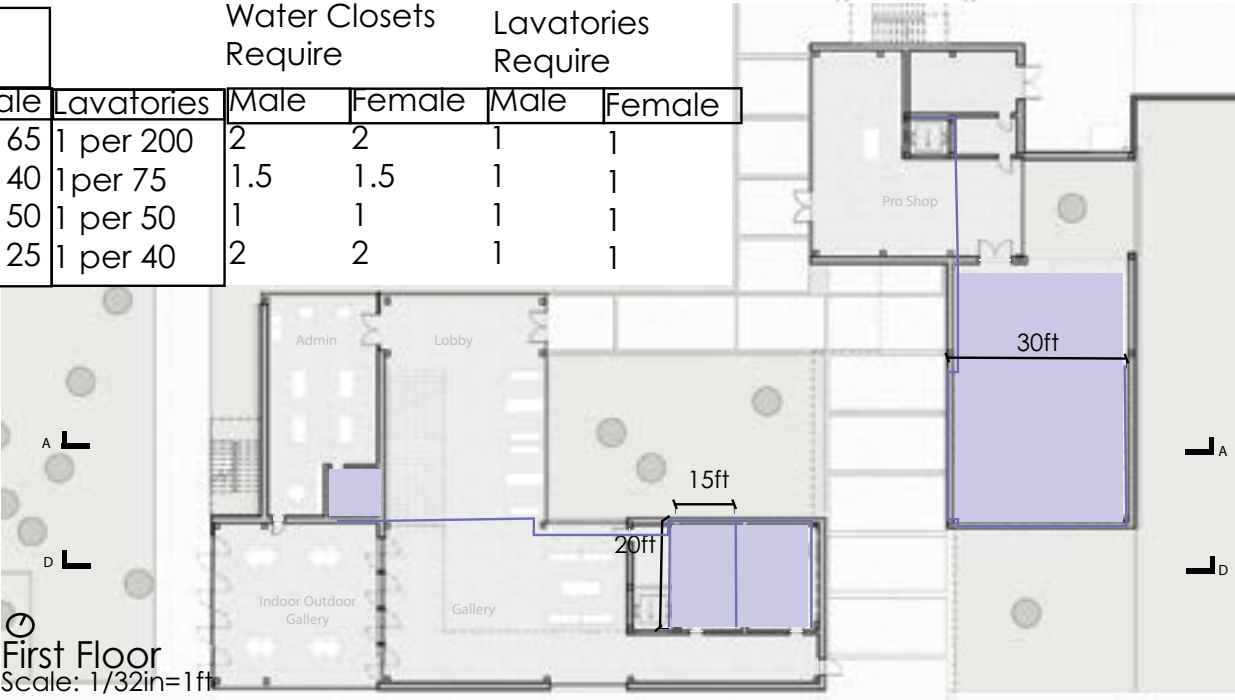
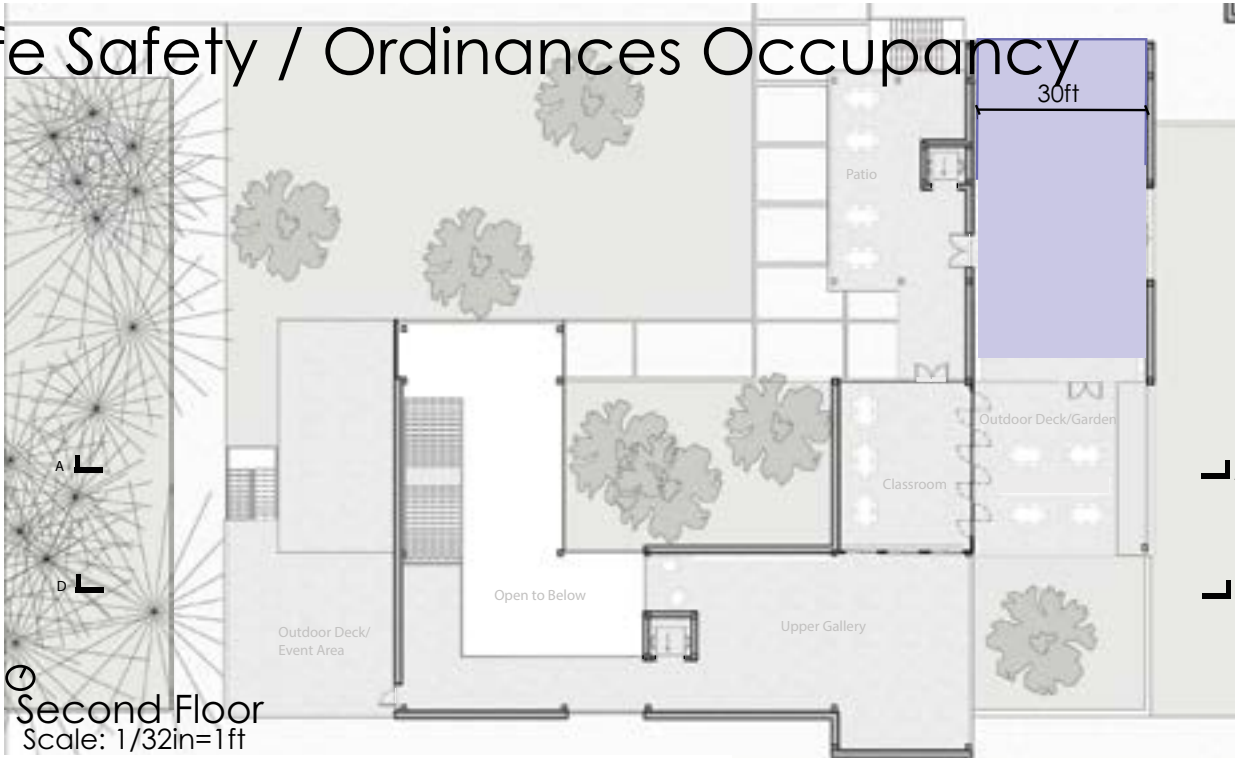
- No retaining walls or basement excavation access is needed for the construction of this design.
- The rain water will drain towards the park and to the side greenspace.
- Clay places under the foundation to help with erosion control.

6

Building Code / Life Safety / Ordinances Occupancy Plumbing

Total Number of Fixtures in the design:
22 Toilets
4 Urinals
13 Showers
26 Sinks

Classification	Description	Water closet Requirements		Lavatories	Water Closets Require		Lavatories Require	
		Male	Female		Male	Female	Male	Female
A-3	Lobby/Gallery	1 per 125	1 per 65	1 per 200	2	2	1	1
A-2	Pro Shop	1 per 40	1 per 40	1 per 75	1.5	1.5	1	1
E	Education	1 per 50	1 per 50	1 per 50	1	1	1	1
B	Admin	1 per 25	1 per 25	1 per 40	2	2	1	1

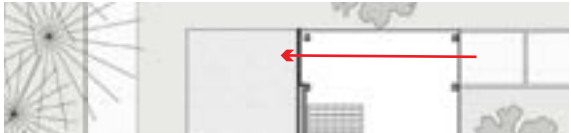


6

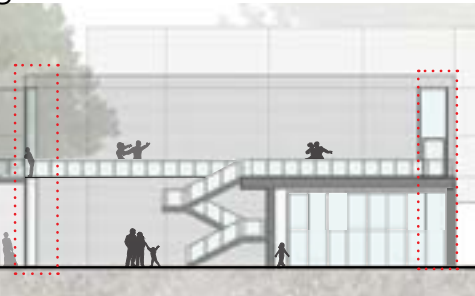
Building Code / Life Safety / Ordinances Occupancy

Delineated Doors and Windows

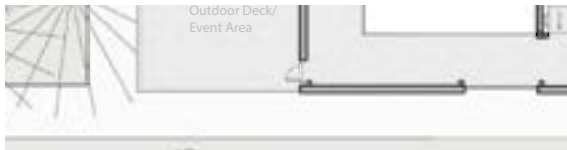
The glass allows in natural light and signifies entry. Doors are placed in slots of transparency. The glass wraps corners to highlight the frame structure and create a clear visual to mix the perception of the park and the building.



Continual Visual and wrap of structure by glass

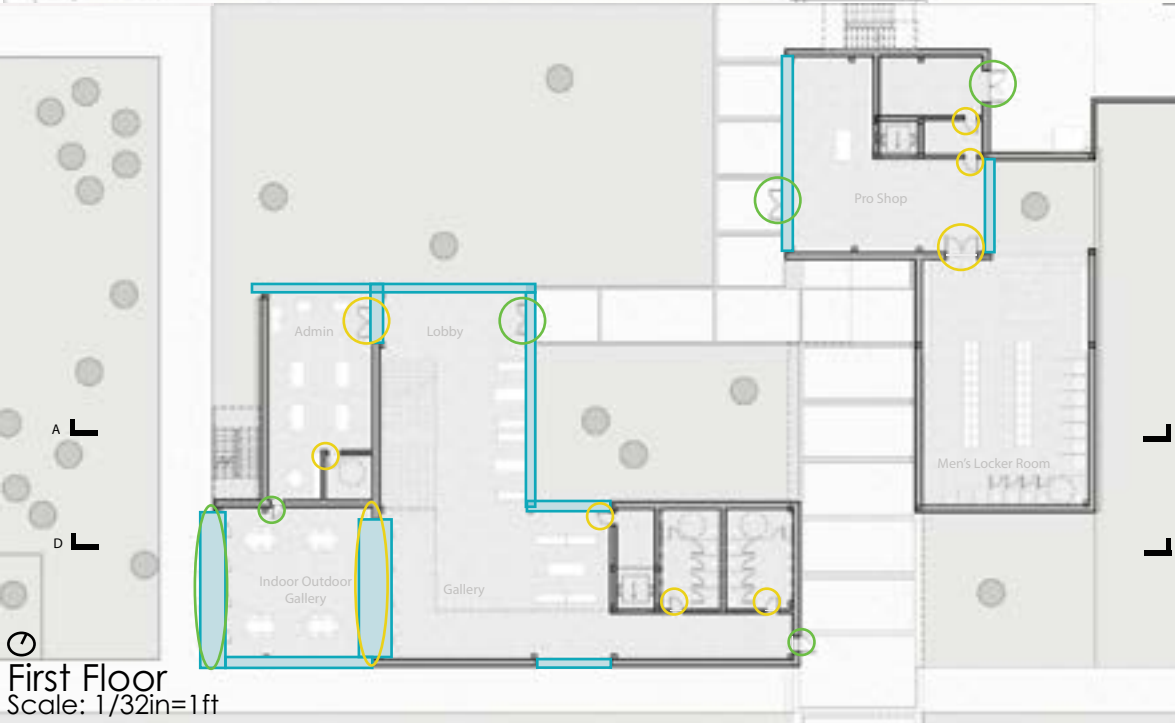
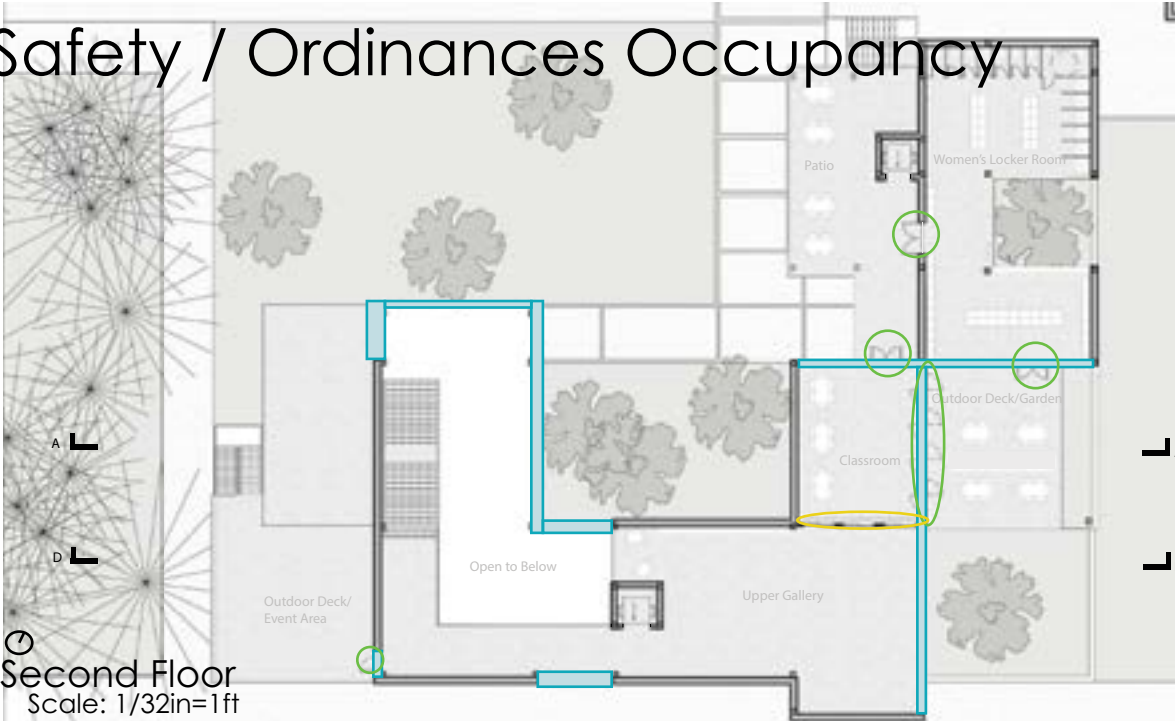


West elevation showing slots.

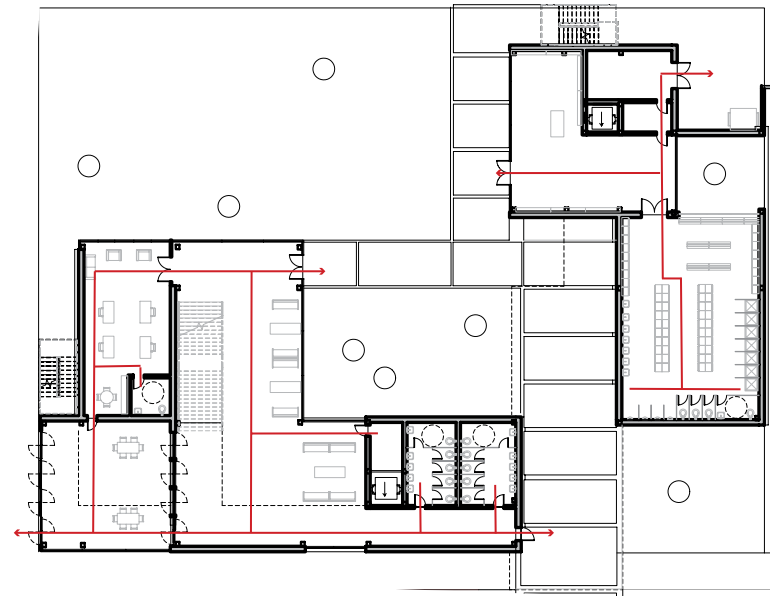


Door in the sliver of light.

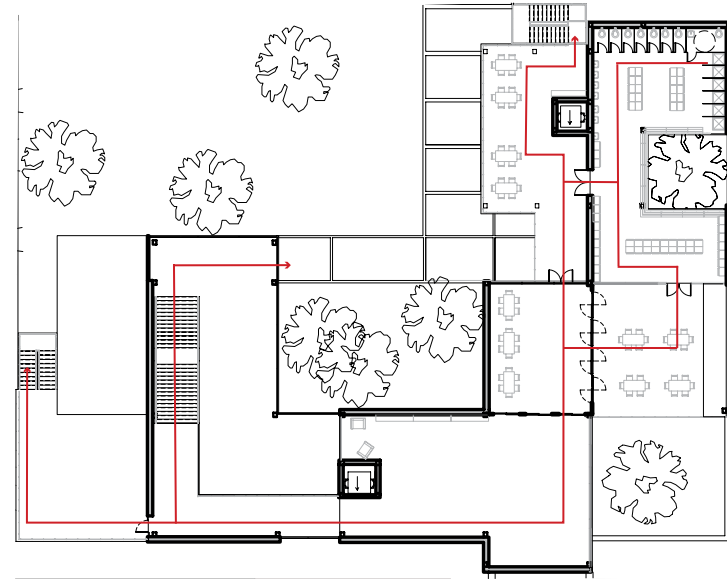
- Windows
- Interior Doors
- Exterior Doors



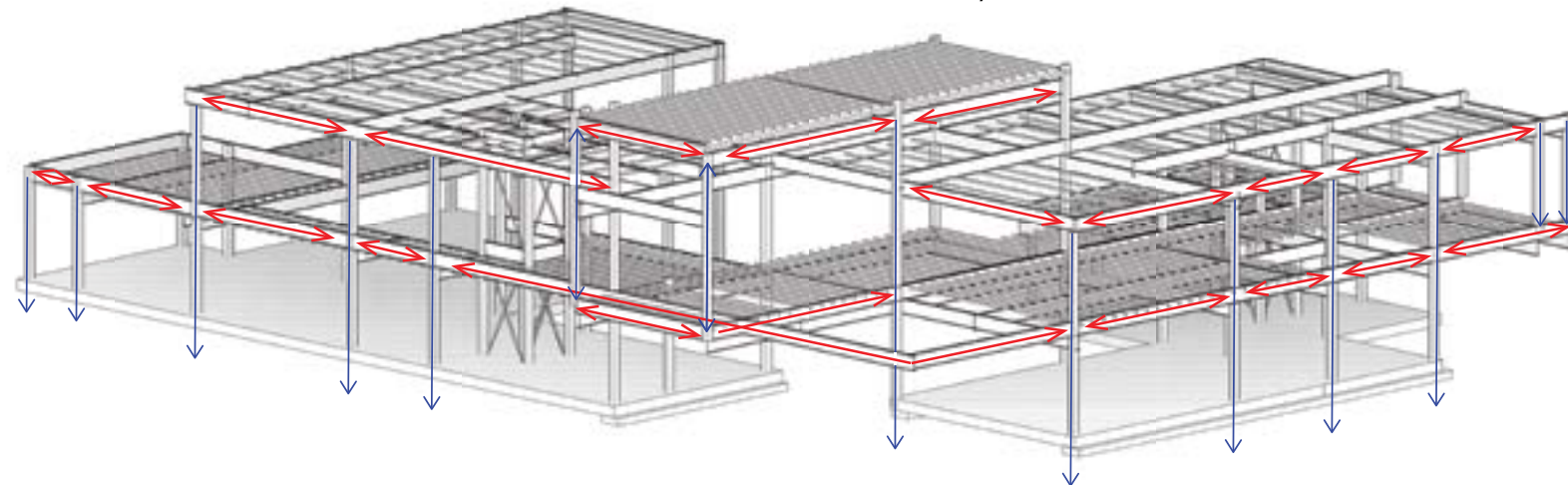
7 Structure



1st Floor Egress
Fire Safety



2nd Floor Egress
Fire Safety

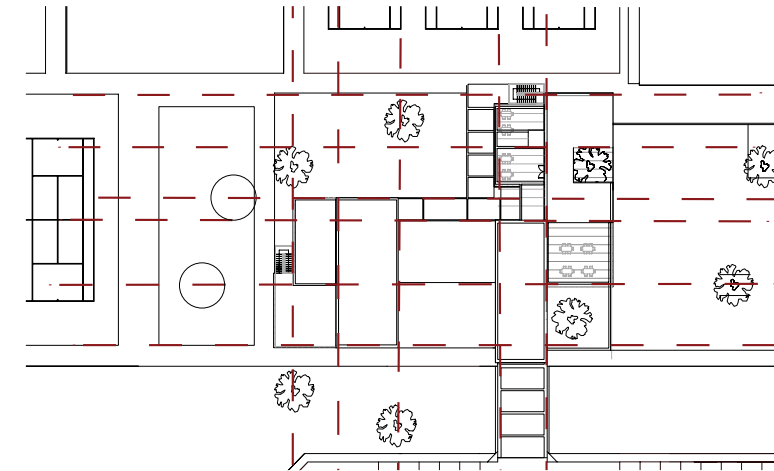


Tributary Loads

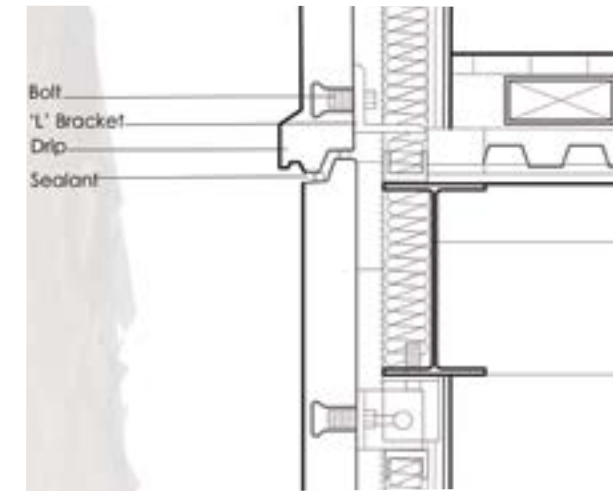
■ Beams
■ Column

7 Structure

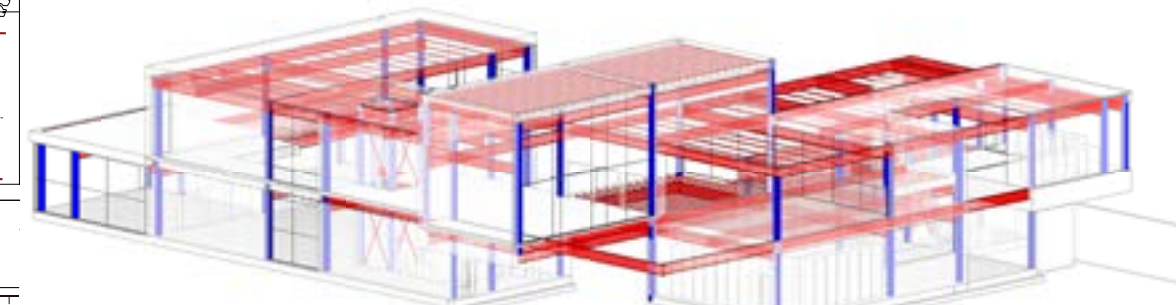
The structure is a steel frame. The structural bays are based off of the tennis sports system 15ft, 30ft, 45ft. The structured is exposed in the spaces. The structure is integrated in to the concept by becoming the frame elements.



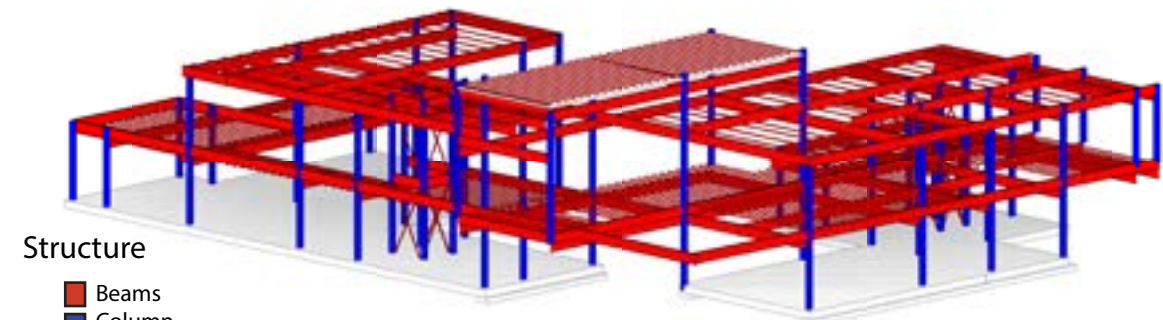
The grid is reference points of the site such as existing trees and tennis courts. The bays are 30ftx30ft.



Connection of facade to structure.



The structure applied within the building.

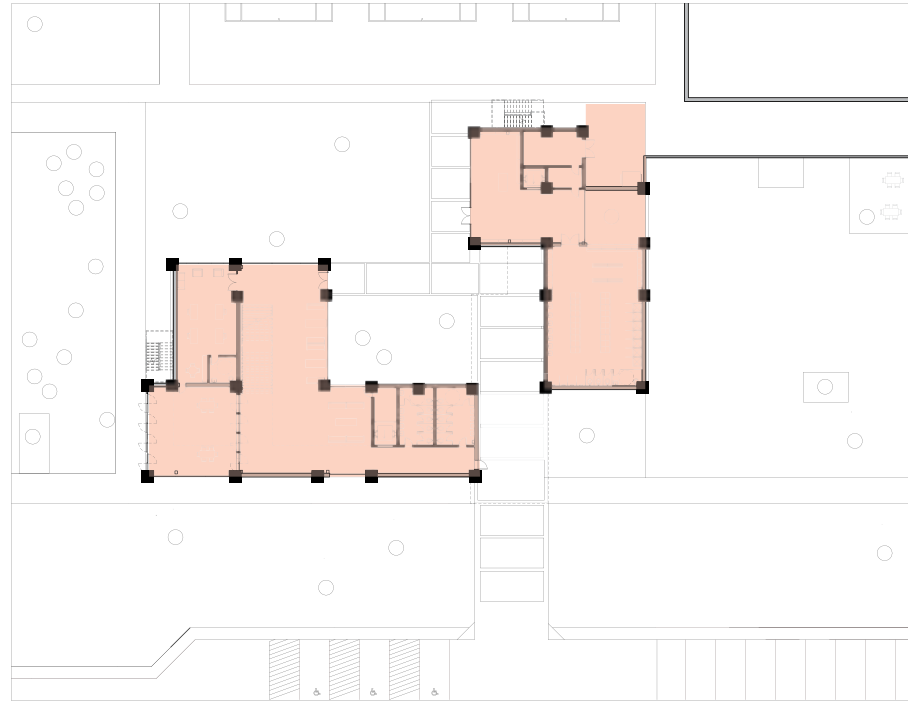


Structure

■ Beams
■ Column

The beams are represented in red and the columns in blue. The beams are 24 inches deep. The depth was sized

7 Structure Foundation

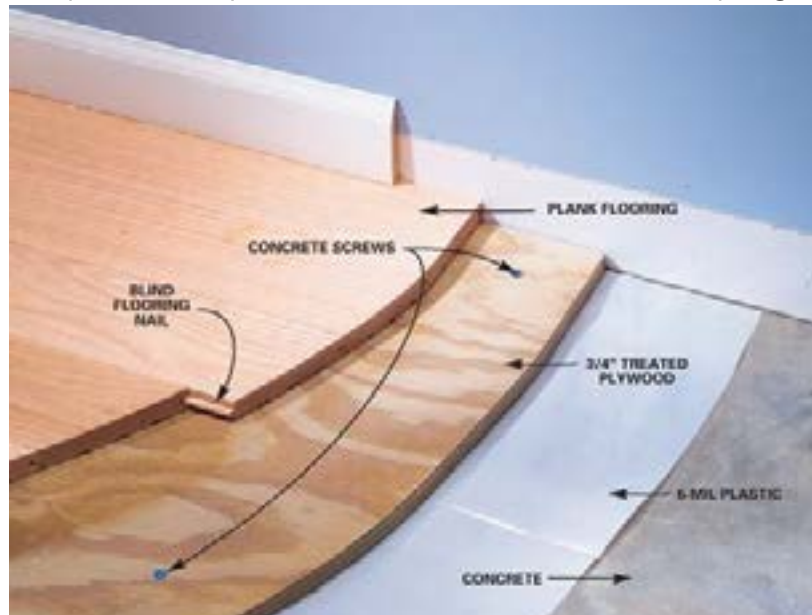


- Peirs
- Slab

the foundation is a 6 inch post tension concrete slab on a peir system
the finish flooring is white oak wood plank flooring.



<https://www.concretenetwork.com/post-tension/basics.html>
Post Tension Slab
<https://www.youtube.com/watch?v=EFBSV5y-fEg>



<https://www.familyhandyman.com>
White Oak Wood Flooring.

7 Structure/Building Envelope Elevated Pedestal System

The elevated pedestal system is used to lift a decking system so people are not walking directly on top of the roof membrane to prevent damage.



<https://www.hanoverpavers.com/images/PDFs/1000-ElevatorFlyer.pdf>

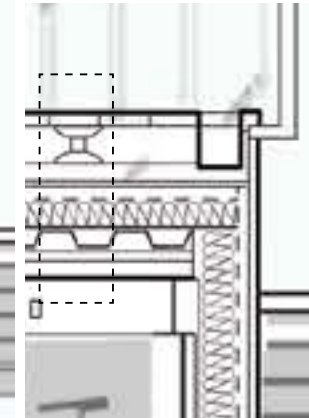
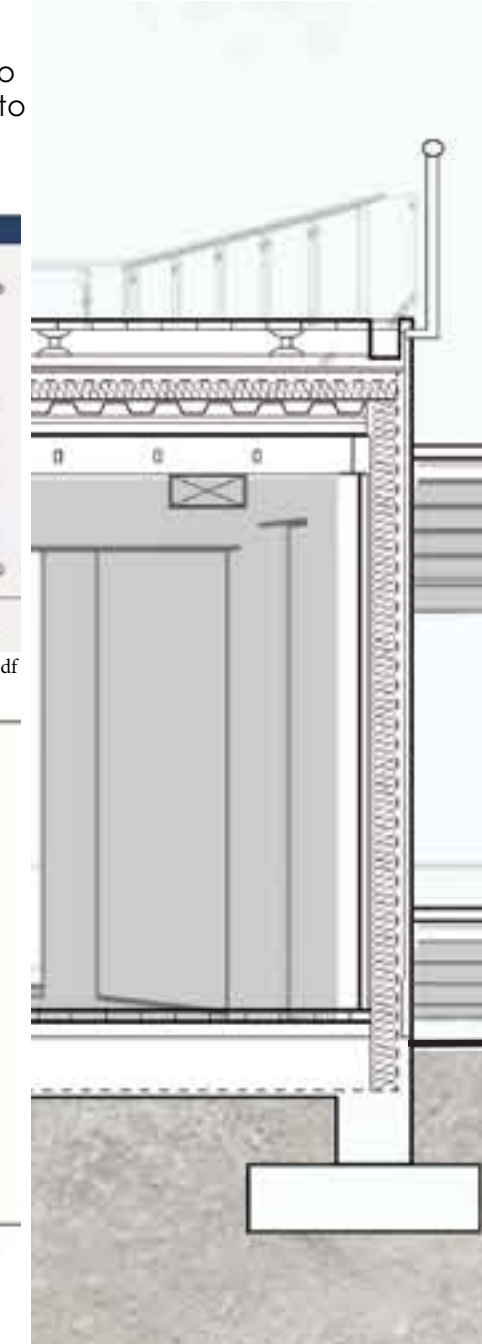


<https://www.hanoverpavers.com/images/PDFs/1000-ElevatorFlyer.pdf>

Components and assembly of the pedestal system.



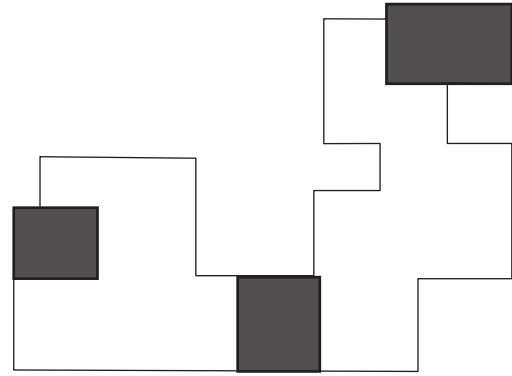
Elevator® Cross Bracing with StayBor®



- Decking
- Pedestal
- Roof Membrane
- Ply wood
- Vapor Barrier
- Insulation
- Concrete
- Metal decking
- Interior finish
- Structure

8 Mechanical

The mechanical systems are integrated into the pattern as service node, a smaller field condition.



Service Nodes

There are 2 mechanical rooms. The main service room is 12ft6inx20ft near the service yard. The smaller mechanical room's purpose is to provide electrical and HVAC to the administration, lobby, gallery and classroom if the community center is having a gala or fund raiser in the evening. It will save the center money because the pro shop and locker rooms are not used in the evenings.

- 1. Service Yard
- 2. Mechanical Room for Gallery
- 3. Admin Restroom



First Floor
Scale: 1/32in=1ft

8 Plumbing



Delta Dryden Widespread Bathroom Faucet with Metal Drain Assembly



NSL1915-A Nipomo Stone Rectangular Undermount Bathroom Sink

Height: 36in



American Standard 2856.016.020 Afwall Millenium EverClean Wall-Mount Elongated Toilet with Manual Flush Valve 1.6 GPF

Height: 19in

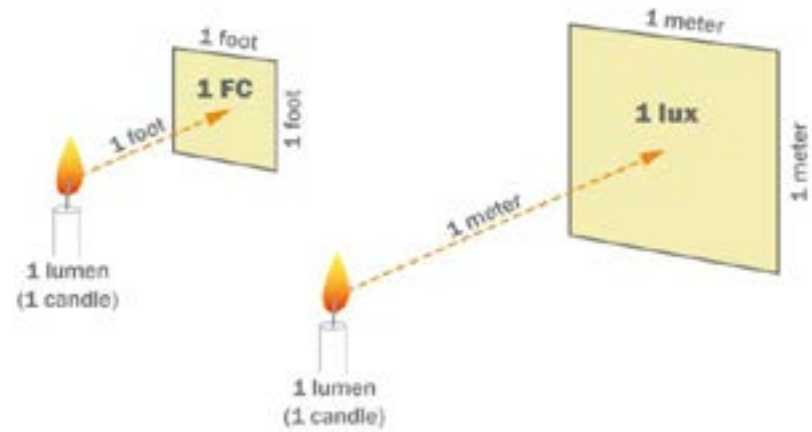


Scale: 1/32in=1ft

Section C
Scale: 1/32in=1ft
0ft 10ft 20ft

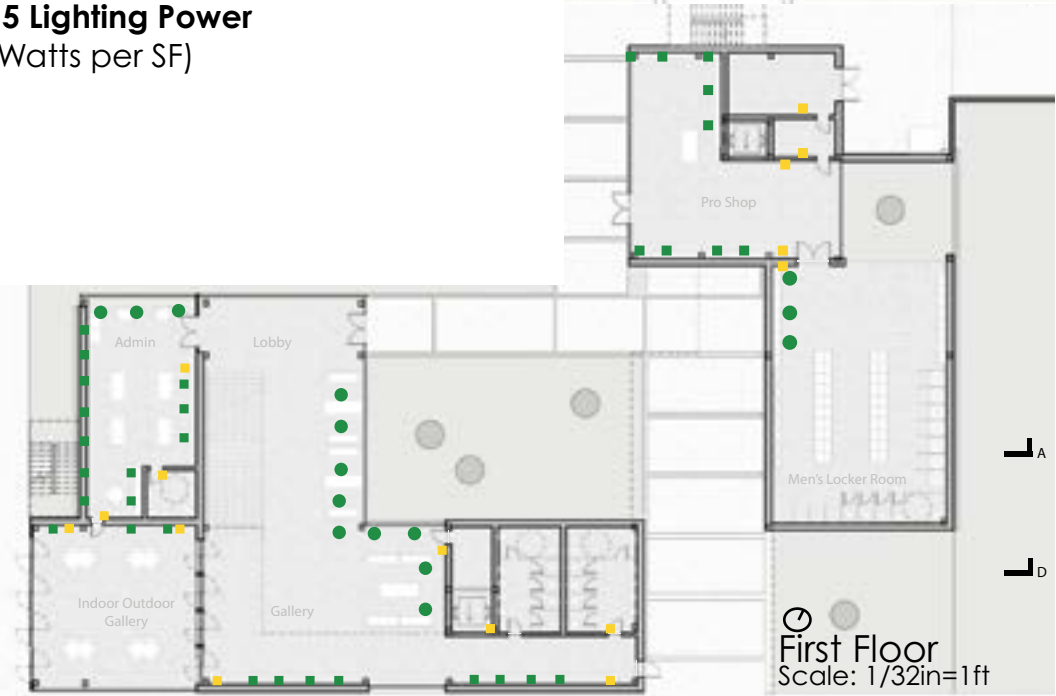
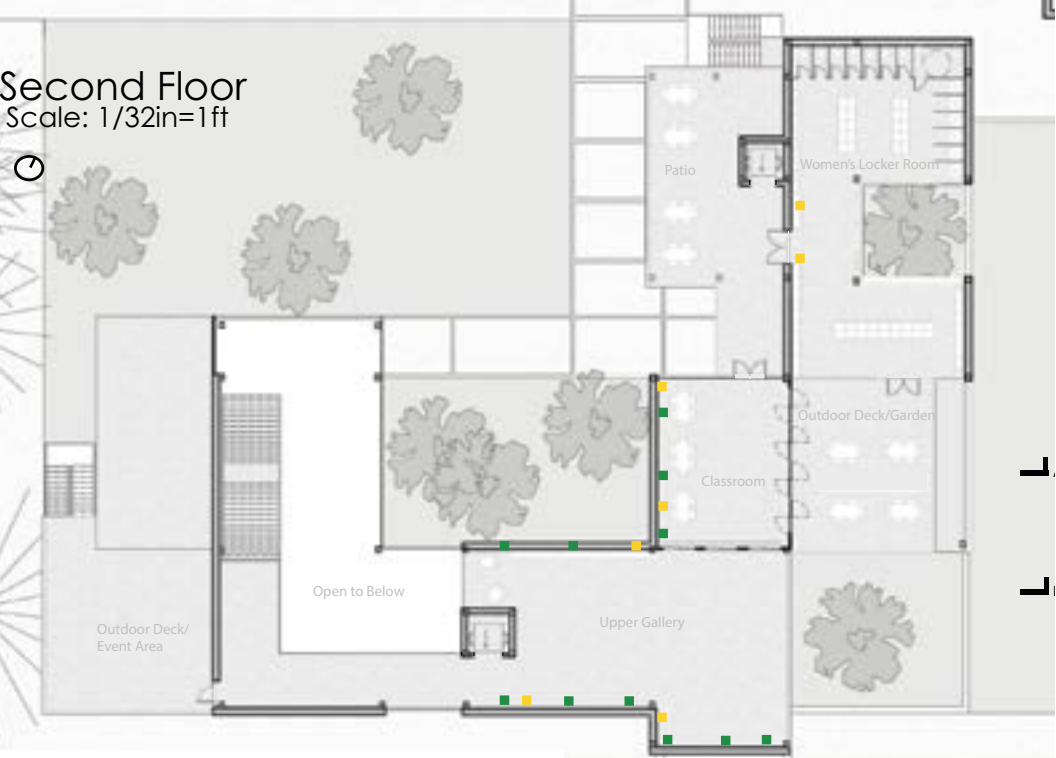
8 Electrical

Types of lighting:
Natural lighting during the day
Artificial LED lighting during the night



Room Type:	Light Level (Lux)	Light Level (Foot Candles)	IECC 2015 Lighting Power Density (Watts per SF)
Lobby	200-300 lux	20-30 FC	0.90
Gallery	300-500 lux	30-50 FC	1.45
Education	300-500 lux	30-50 FC	1.24
Administration	300-500 lux	30-50 FC	0.98
Private Restroom	100-300 lux	10-30 FC	0.98
Public Restroom	100-300 lux	10-30 FC	0.98
Pro Shop	200-500 lux	20-50 FC	1.59
Lockers	100-300 lux	10-30 FC	0.75
Janitor's Closet	50-200 lux	5-20 FC	0.63

- Light Switch
- Wall Plug
- Floor Plug



<https://www.archtoolbox.com/materials-systems/electrical/recommended-lighting-levels-in-buildings.html>

8 Electrical

Types of fixtures

Top of the light switch at height of 48inches



Decora Digital 15 Amp 120-Volt Rocker Light Switch and Timer

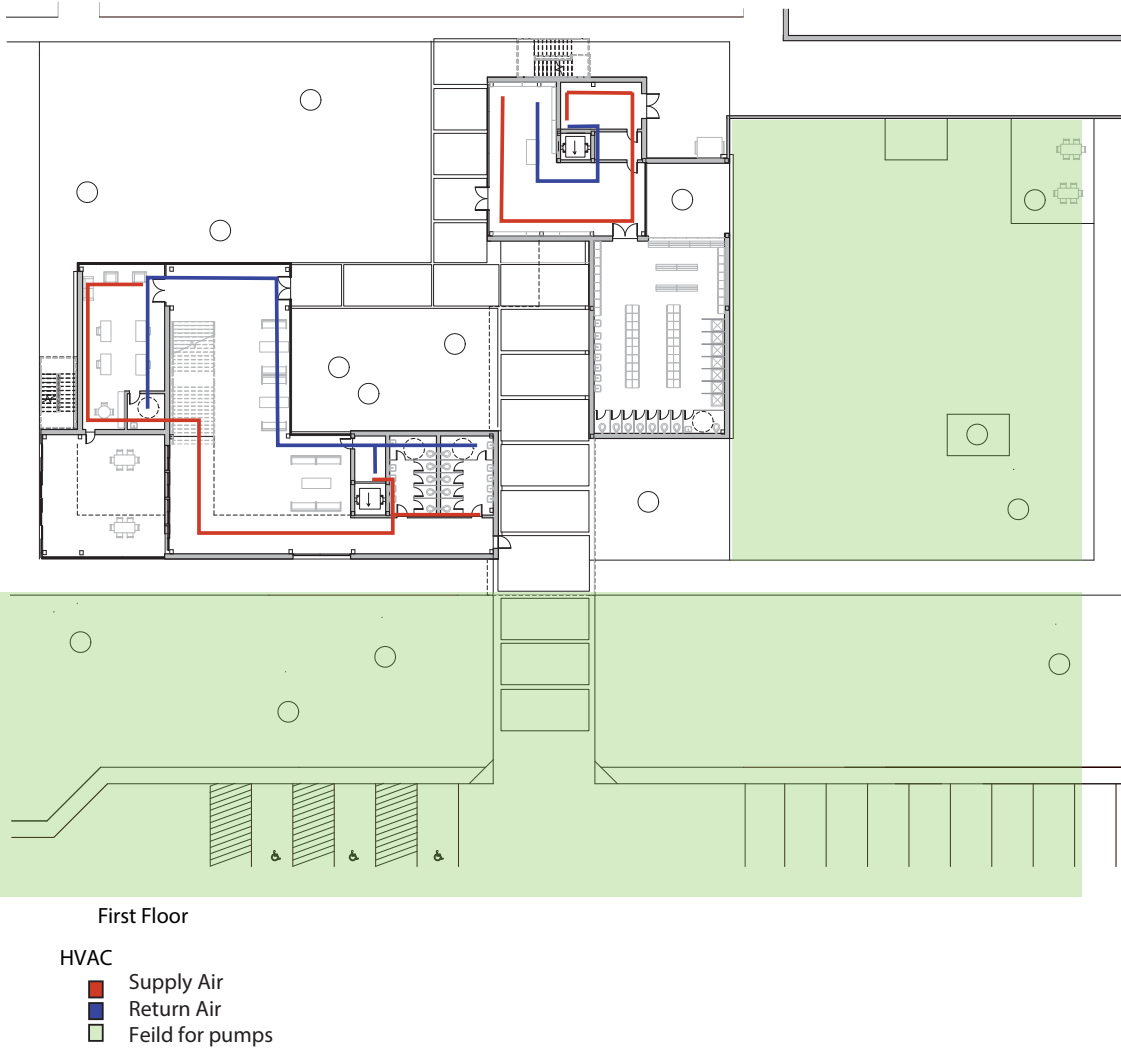
Bottom of the plug box is a minimum of 15inches above the ground. Minimum of 6ft apart.



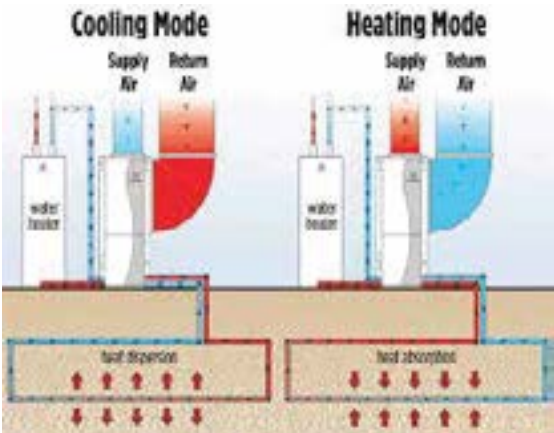
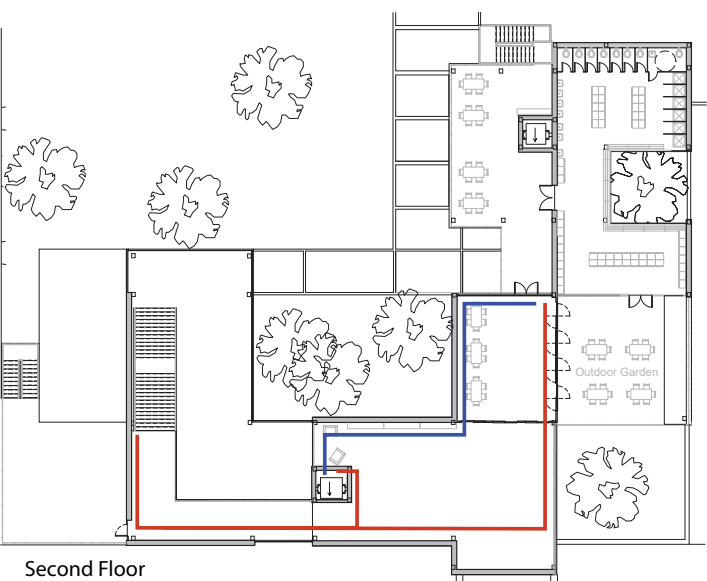
The section shows the spacial quality of the entire gallery

9 Energy Conservation

HVAC



The HVAC system is geothermal. The pumps are installed under the parking lot and in the side green space. The HVAC uses nature to help the function of the building it relates to the concept of the integrating the building with nature. The locker rooms are open air.

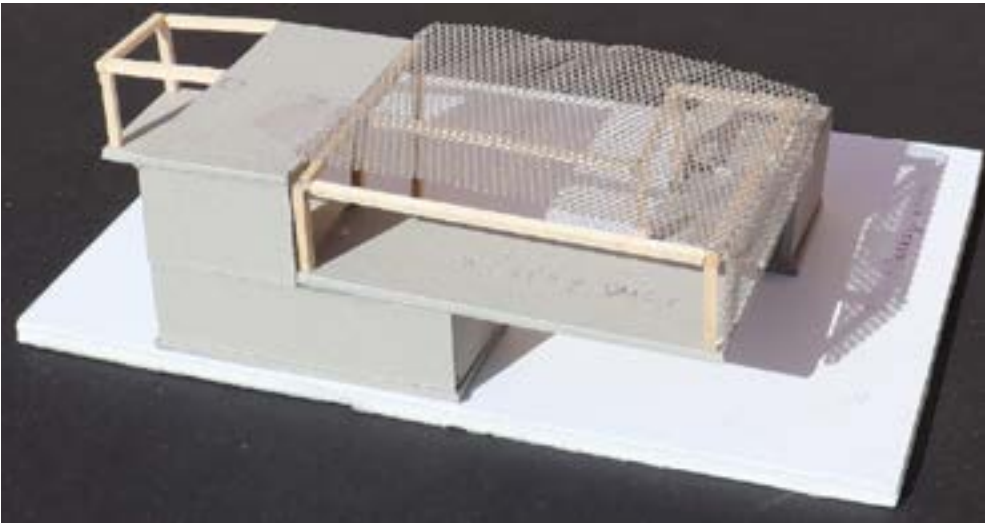


<https://actionairfla.com/heating-and-cooling/waterfurnace-geothermal-heating-and-cooling/>

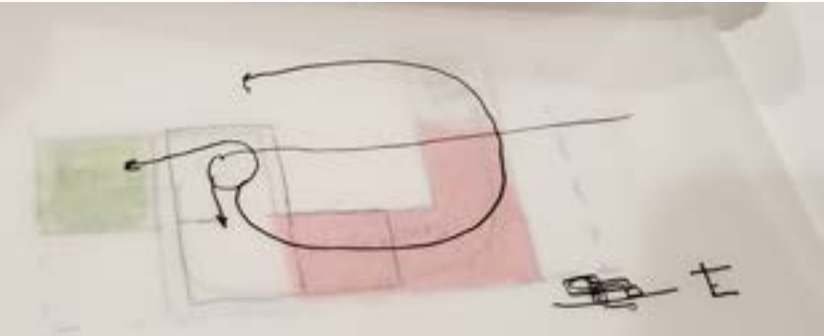
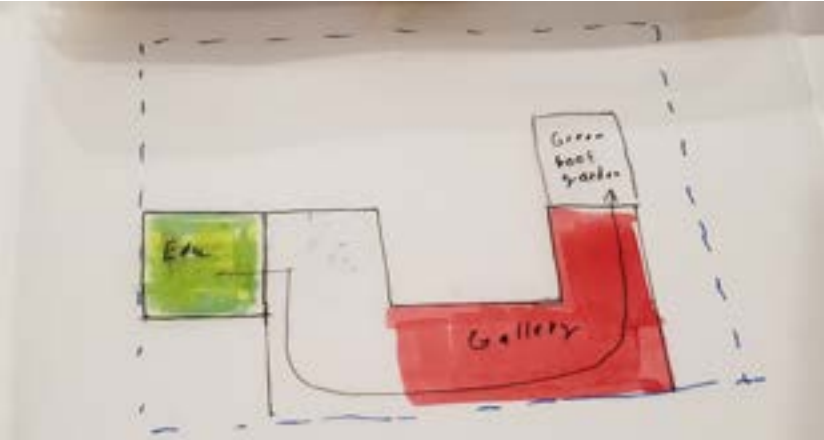
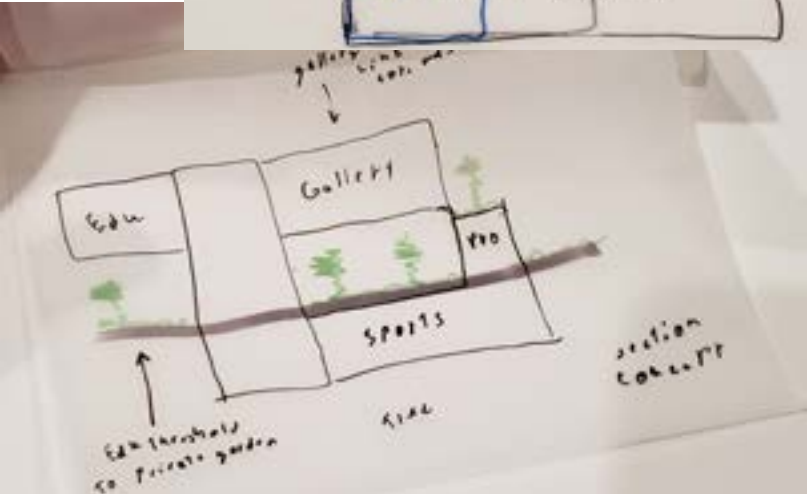
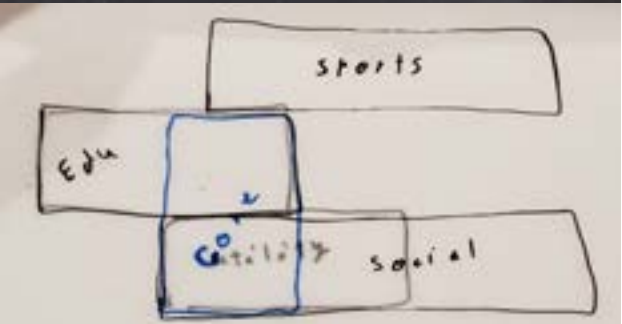
A diagram of the how the geothermal water furnace system's water is heated and cooled from the unit into the ground.

10 Study Drawings and Models

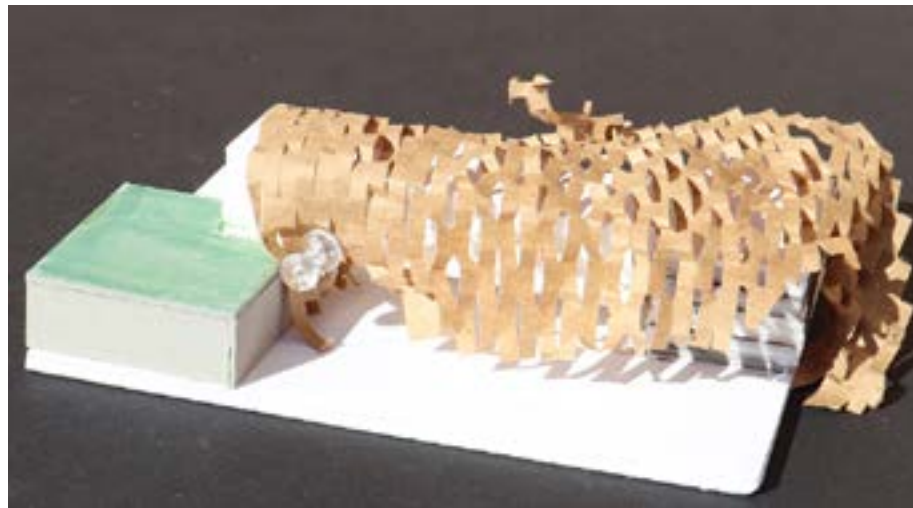
Scheme A



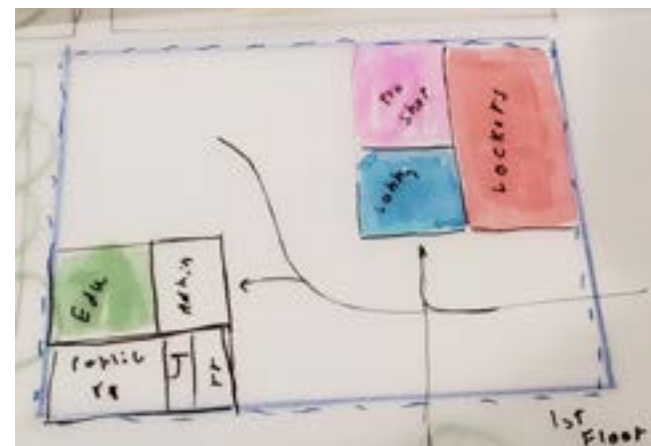
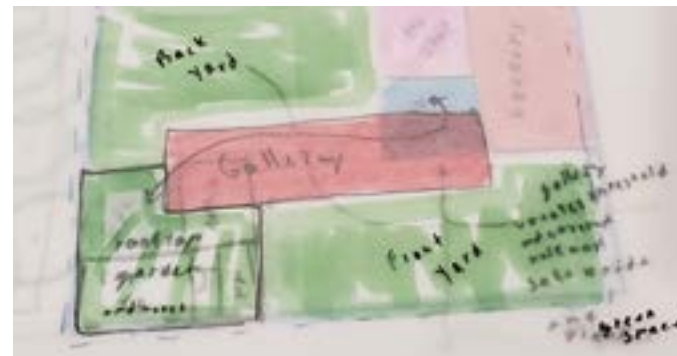
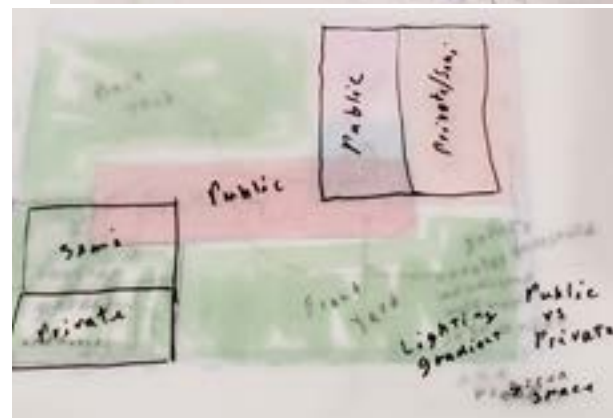
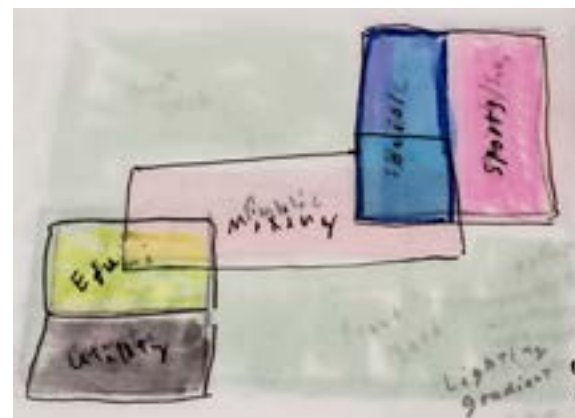
The geometry shifts and overlaps to create volumetric space. The gallery acts as a gateway, threshold and bridge.



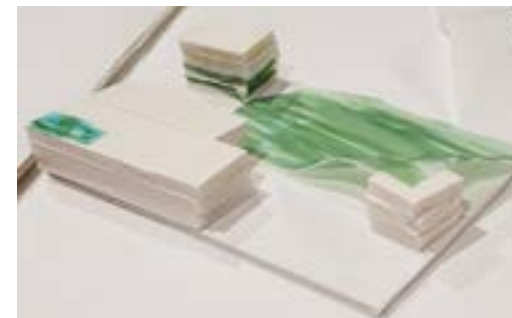
10 Study Drawings and Models Scheme B



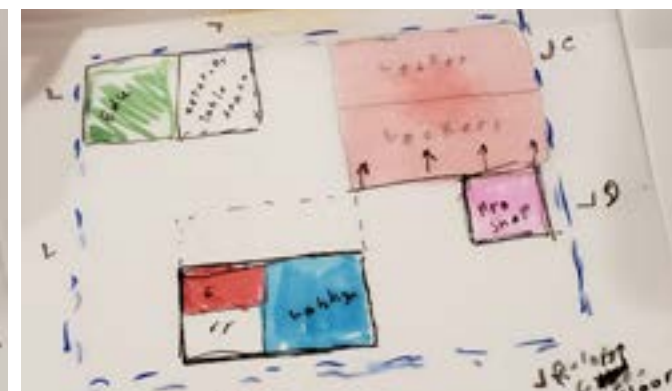
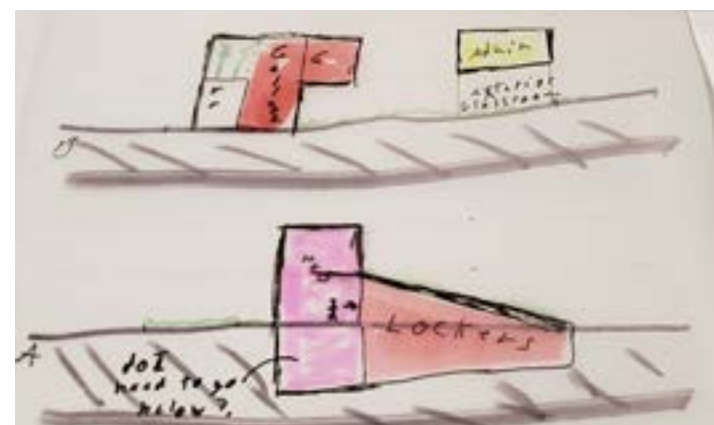
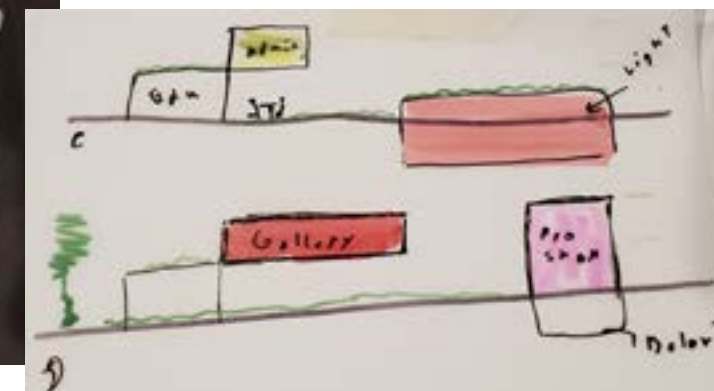
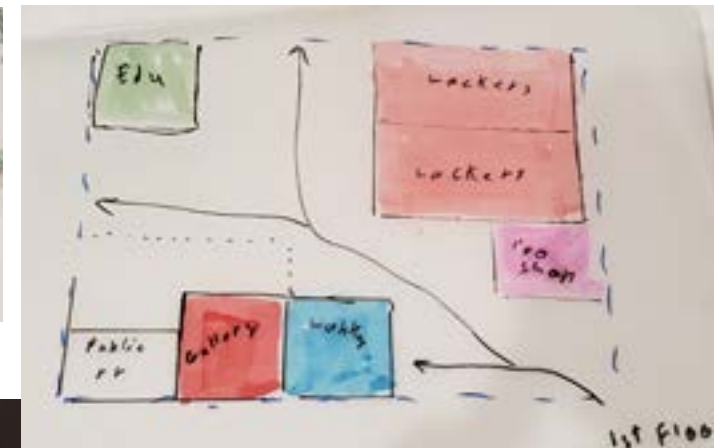
The galley becomes the mixing area between education and sports.



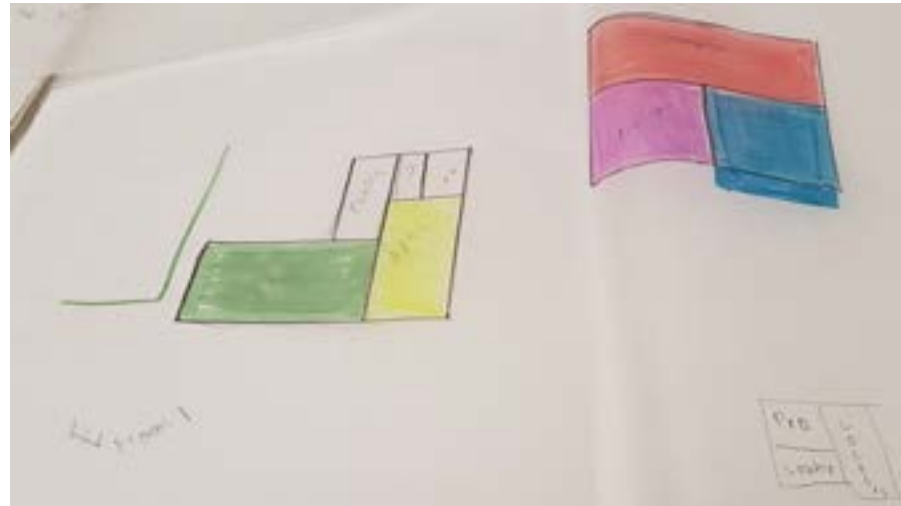
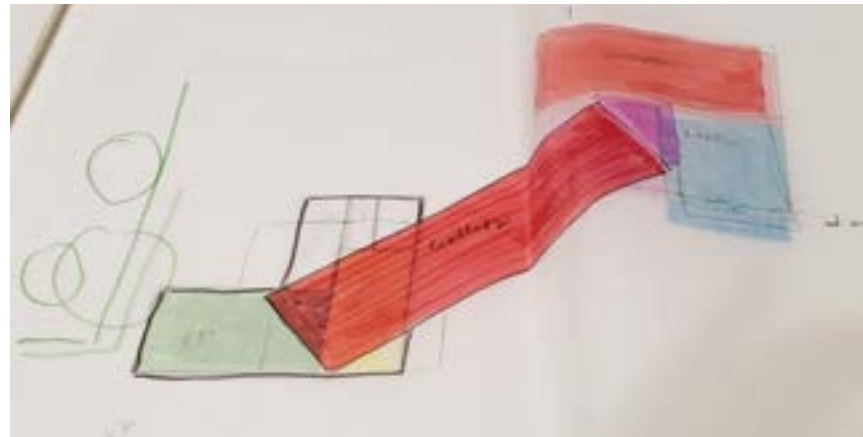
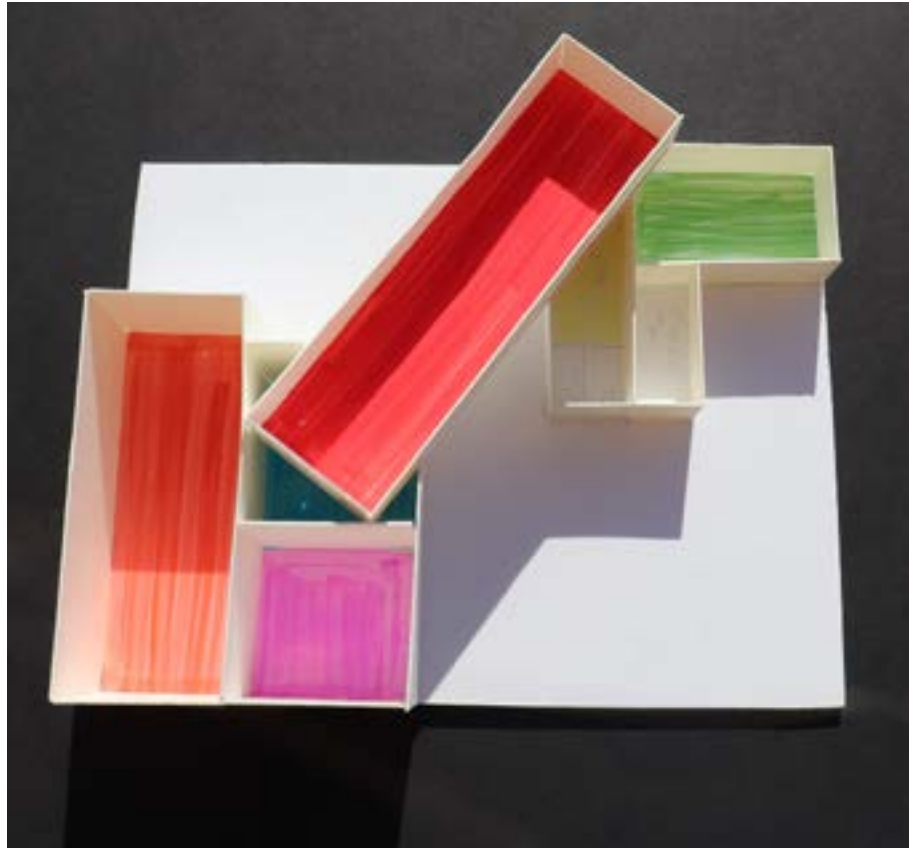
10 Study Drawings and Models Scheme C



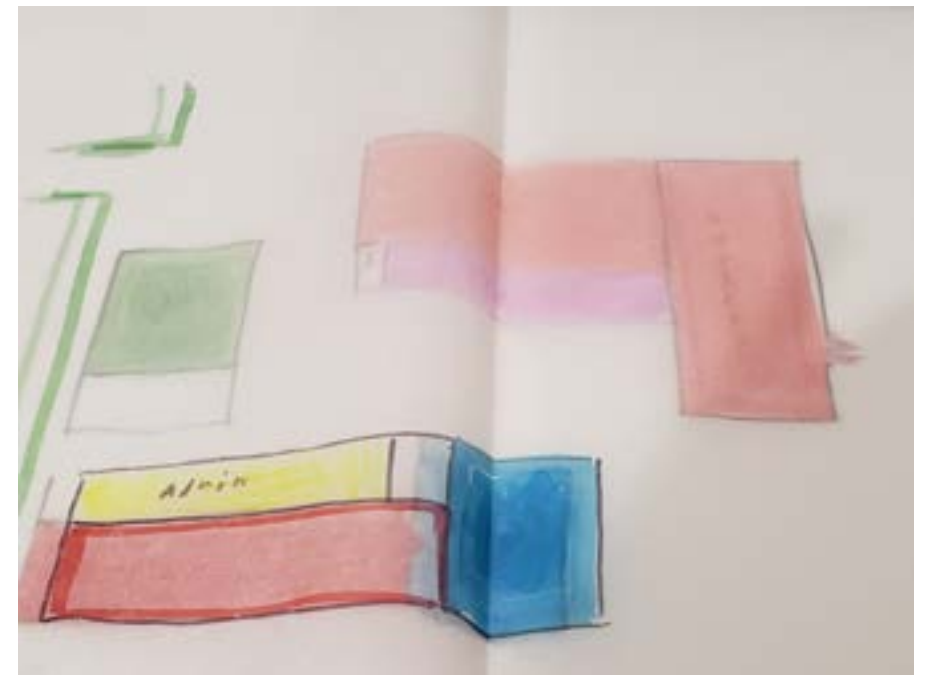
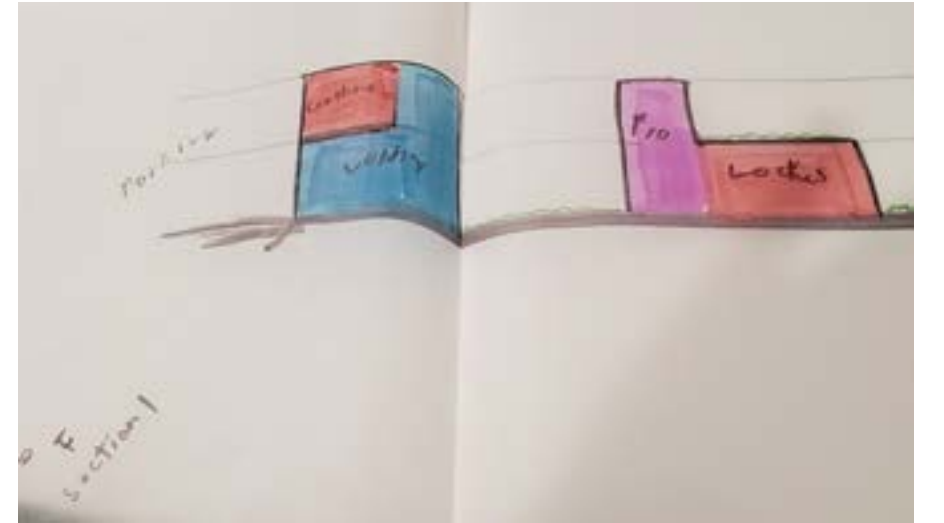
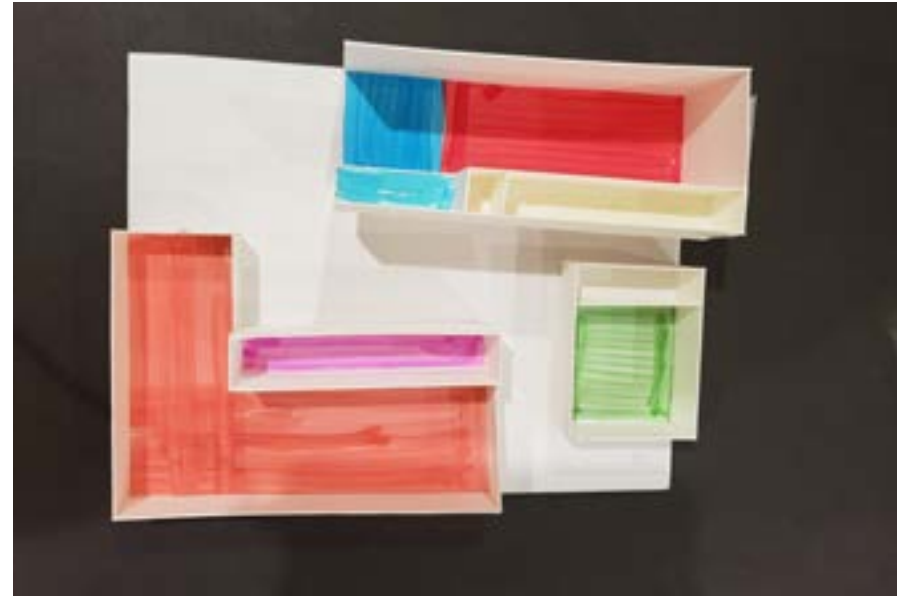
The lockers become a hill to sit and watch tennis. The idea of nature and the building mixing.



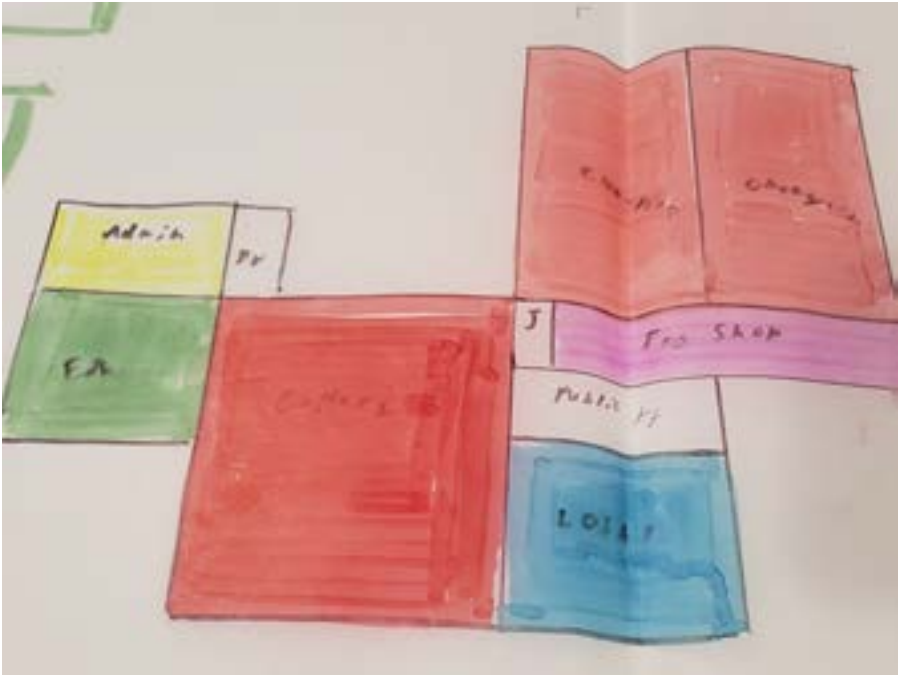
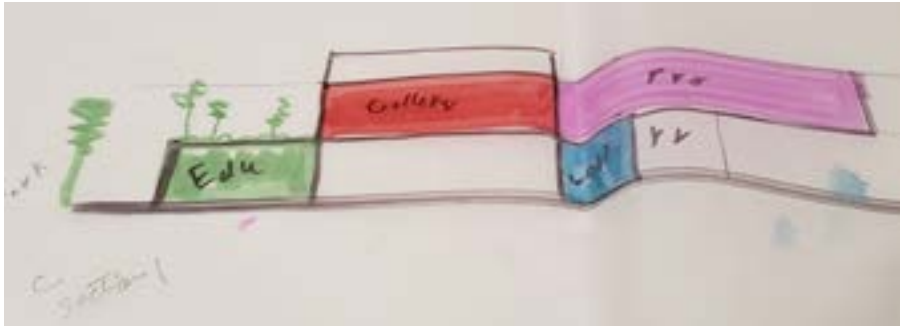
10 Study Drawings and Models



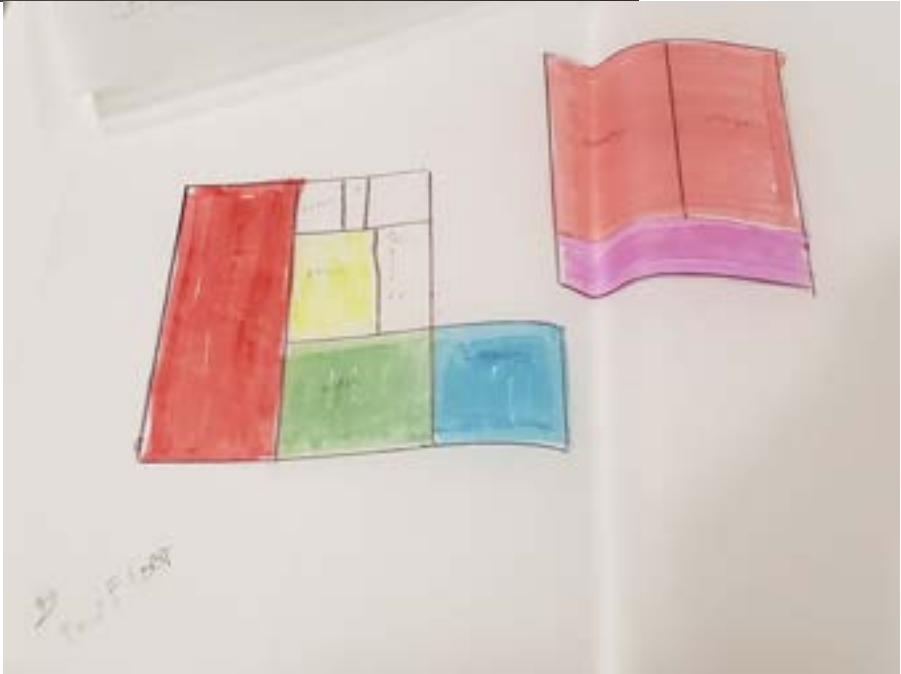
10 Study Drawings and Models



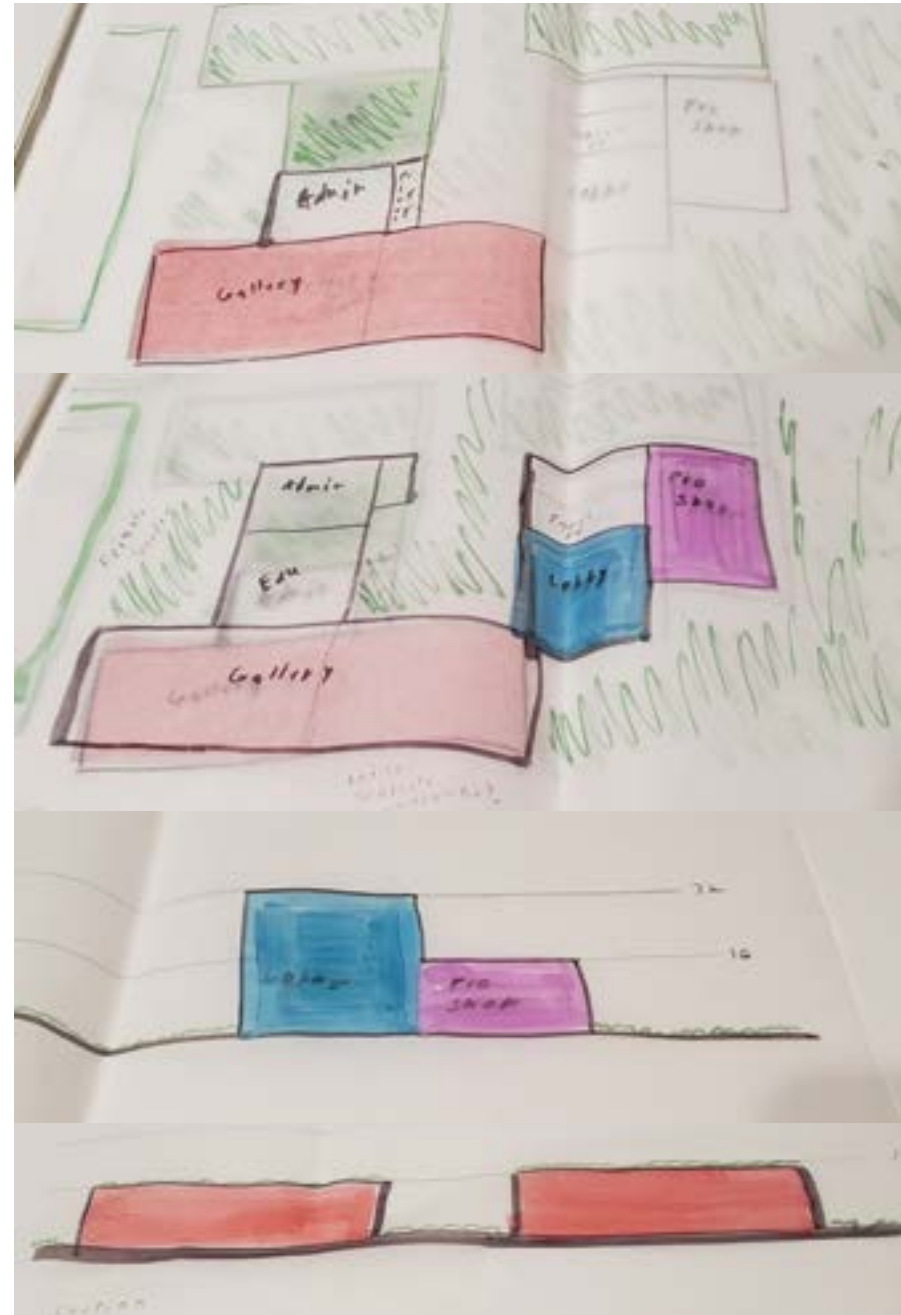
10 Study Drawings and Models



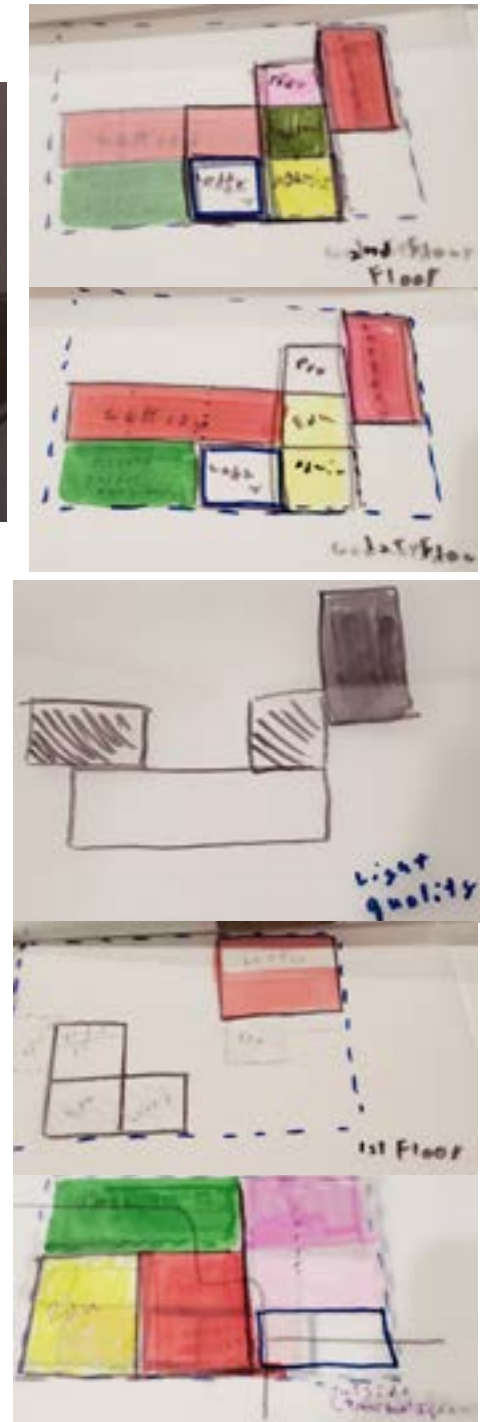
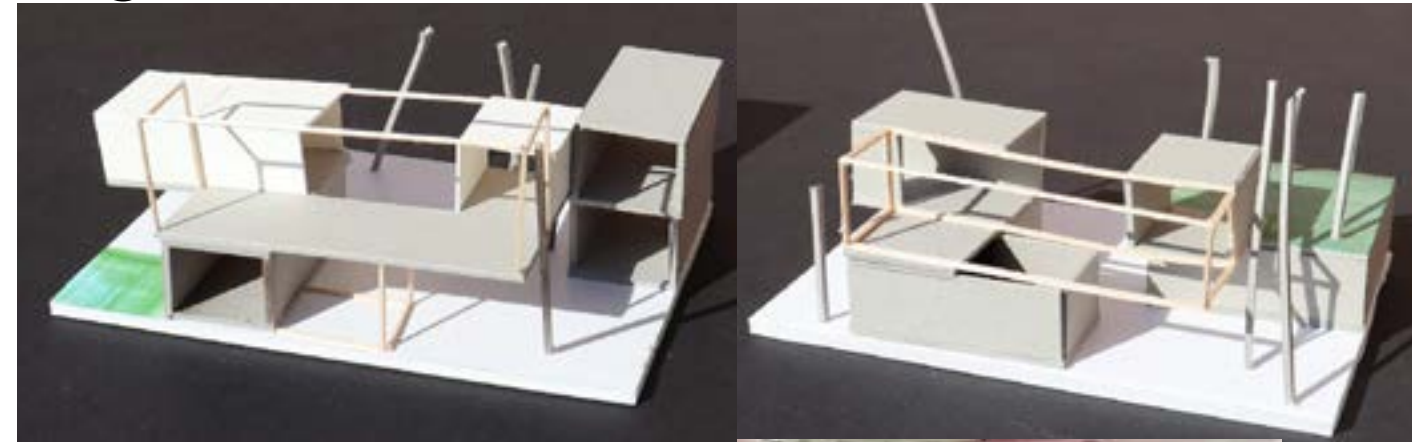
10 Study Drawings and Models

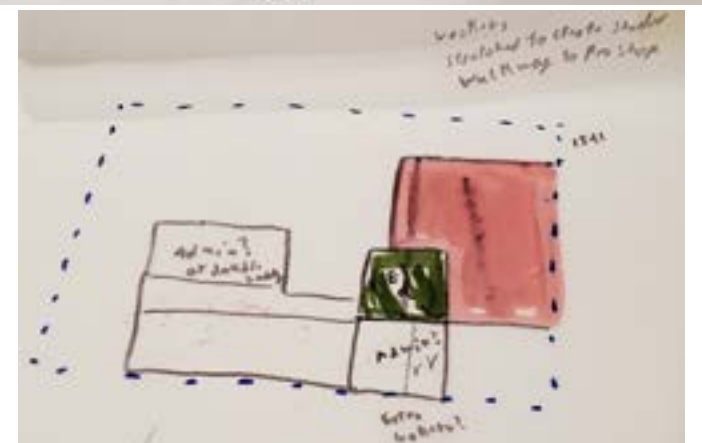
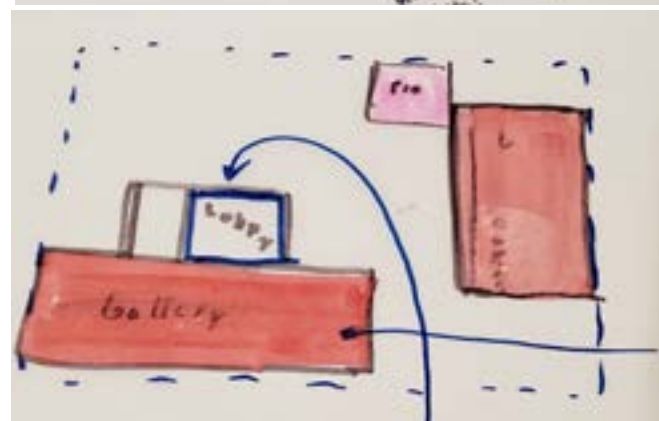
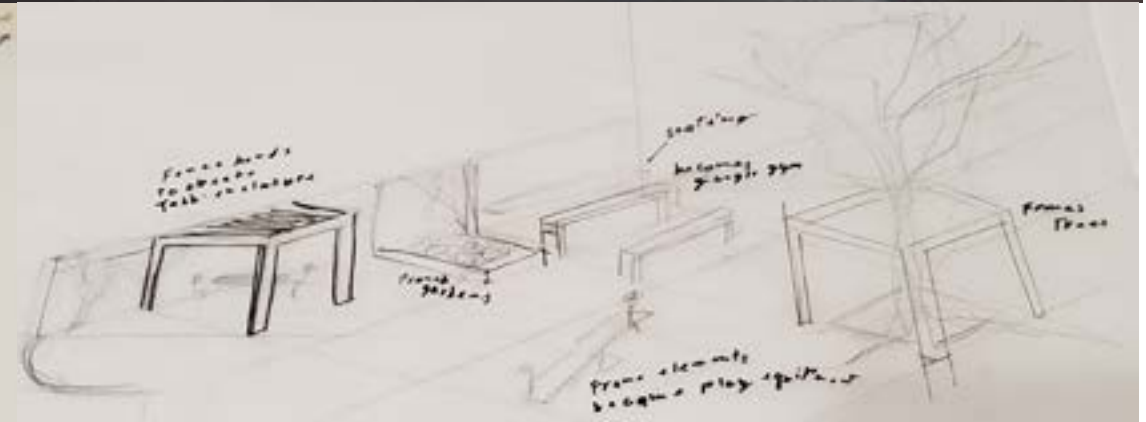
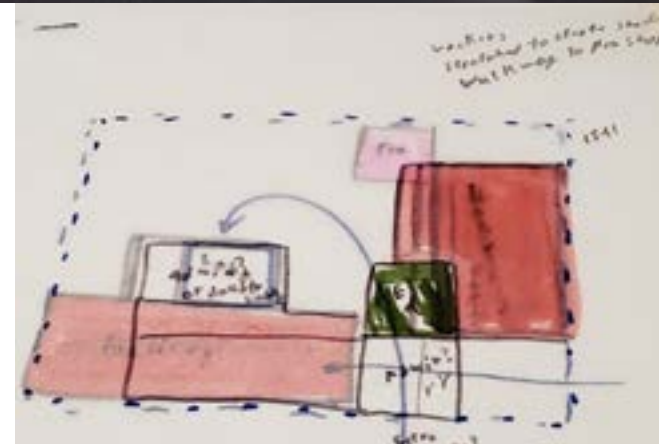
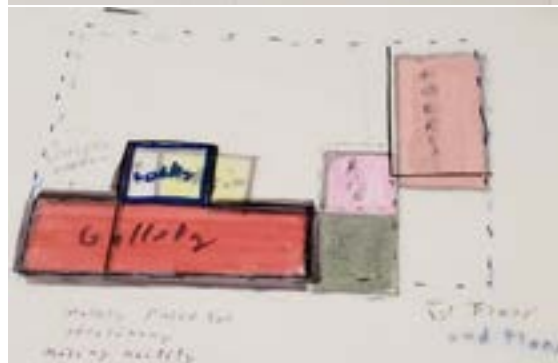
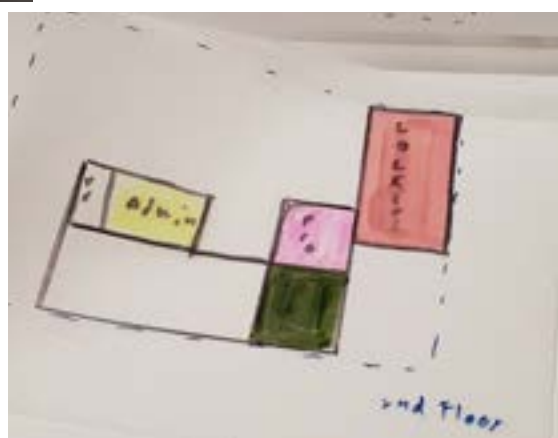
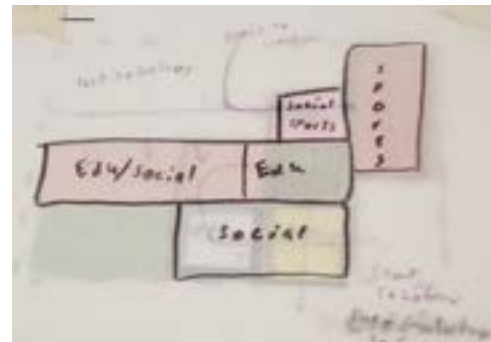


10 Study Drawings and Models



10 Study Drawings and Models





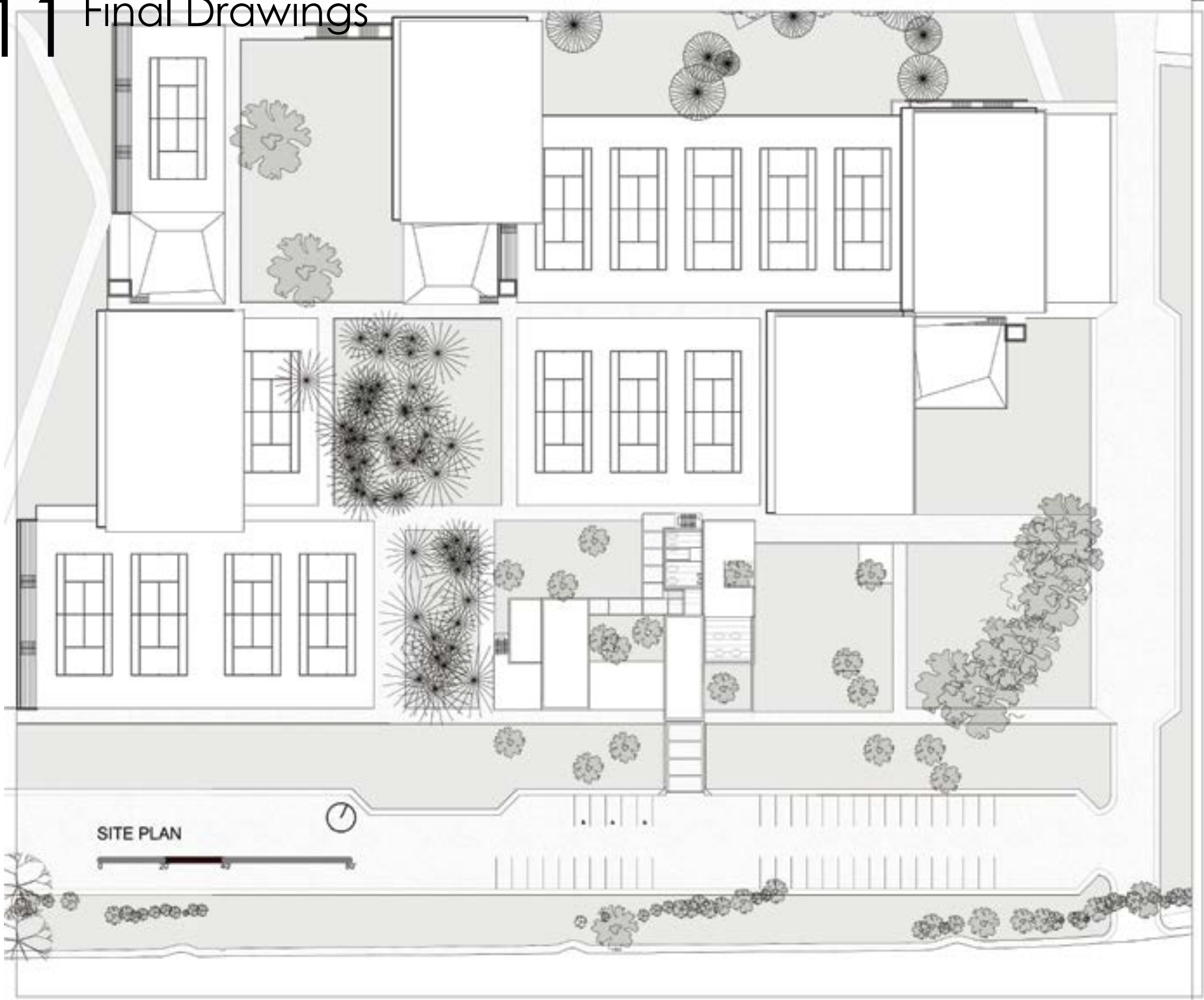
10 Study Drawings and Models Midterm



10 Study Drawings and Models Test Print



1 1 Final Drawings



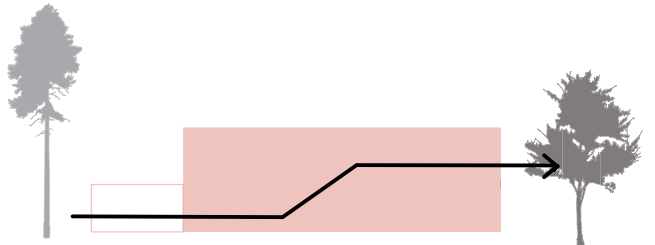
1 1 Final Drawings



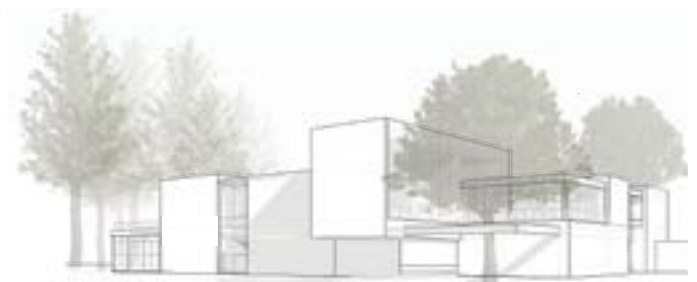
Shifting Green Space



Pattern Field Condition
The pattern of nature and building.



Gallery Narrative

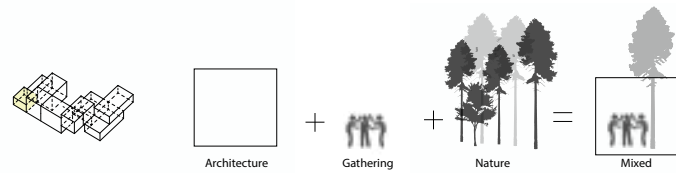
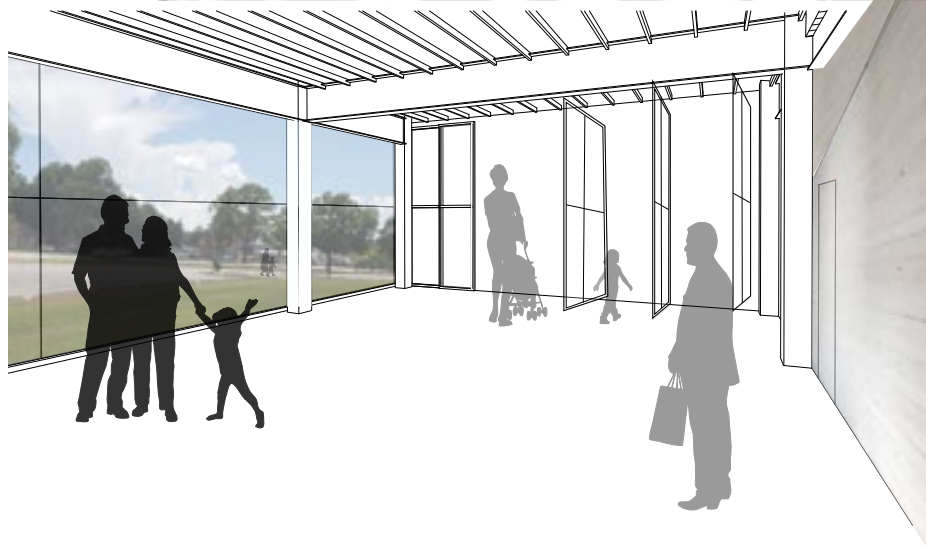
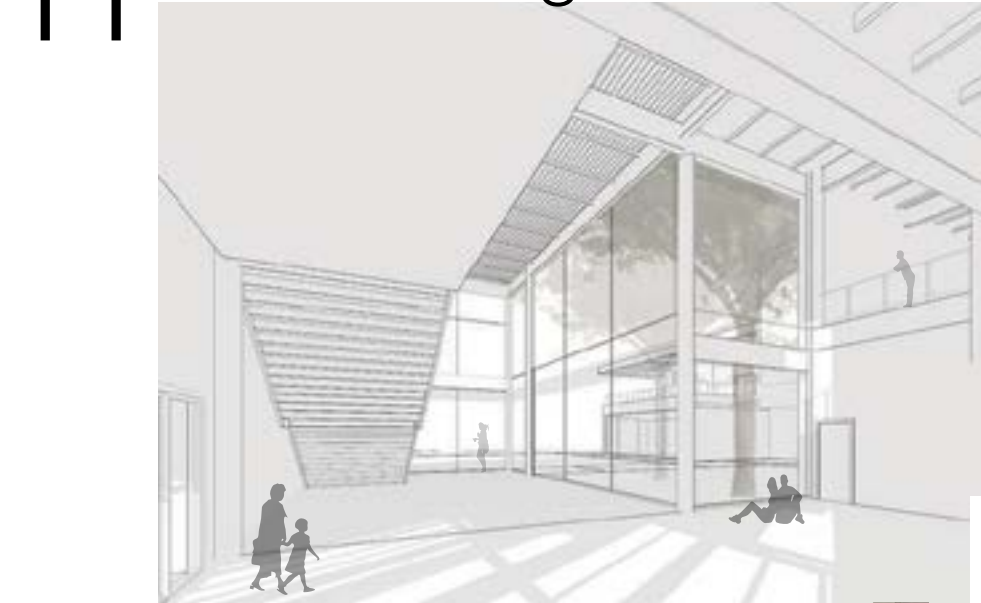


Spring Season Diagram



Fall Season Diagram

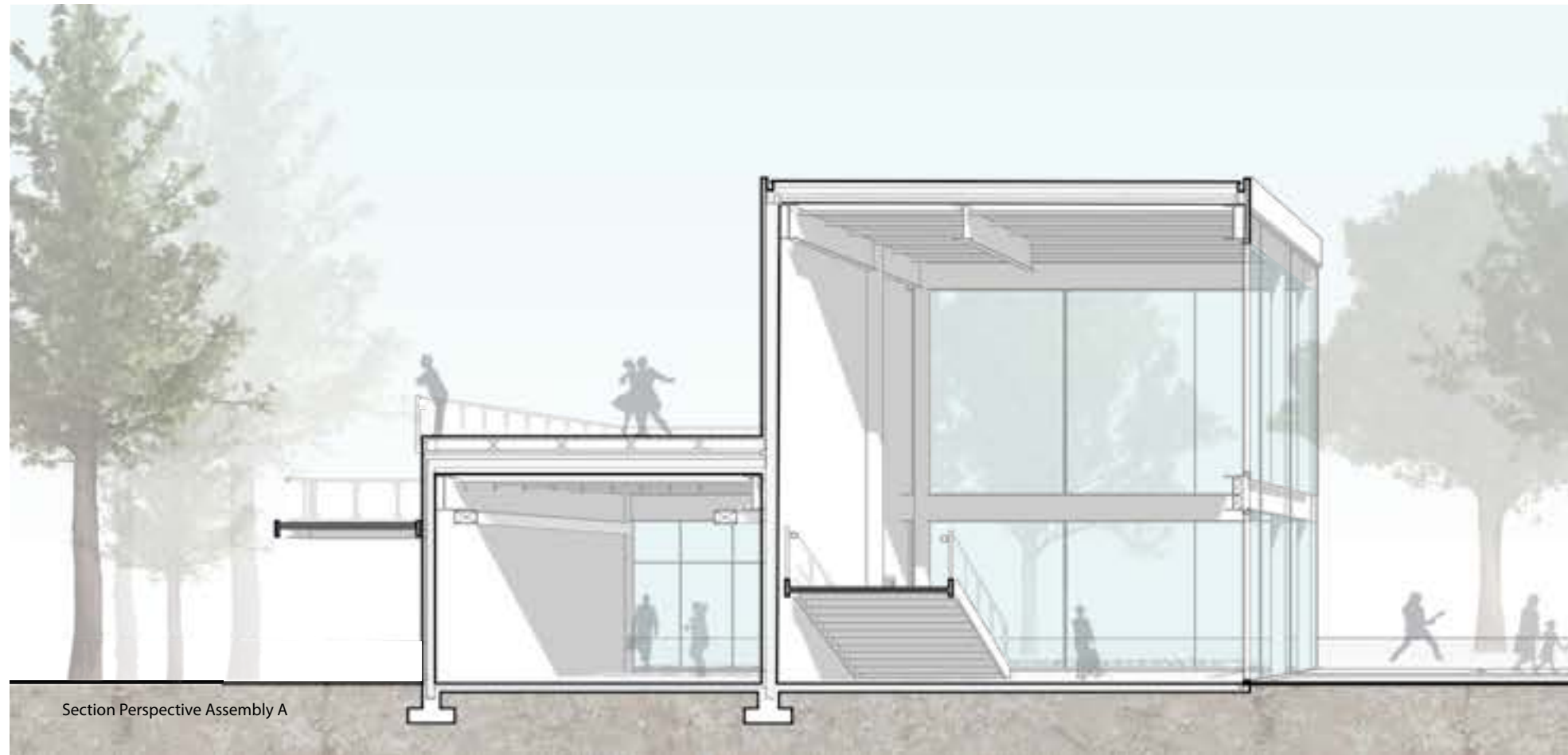
11 Final Drawings



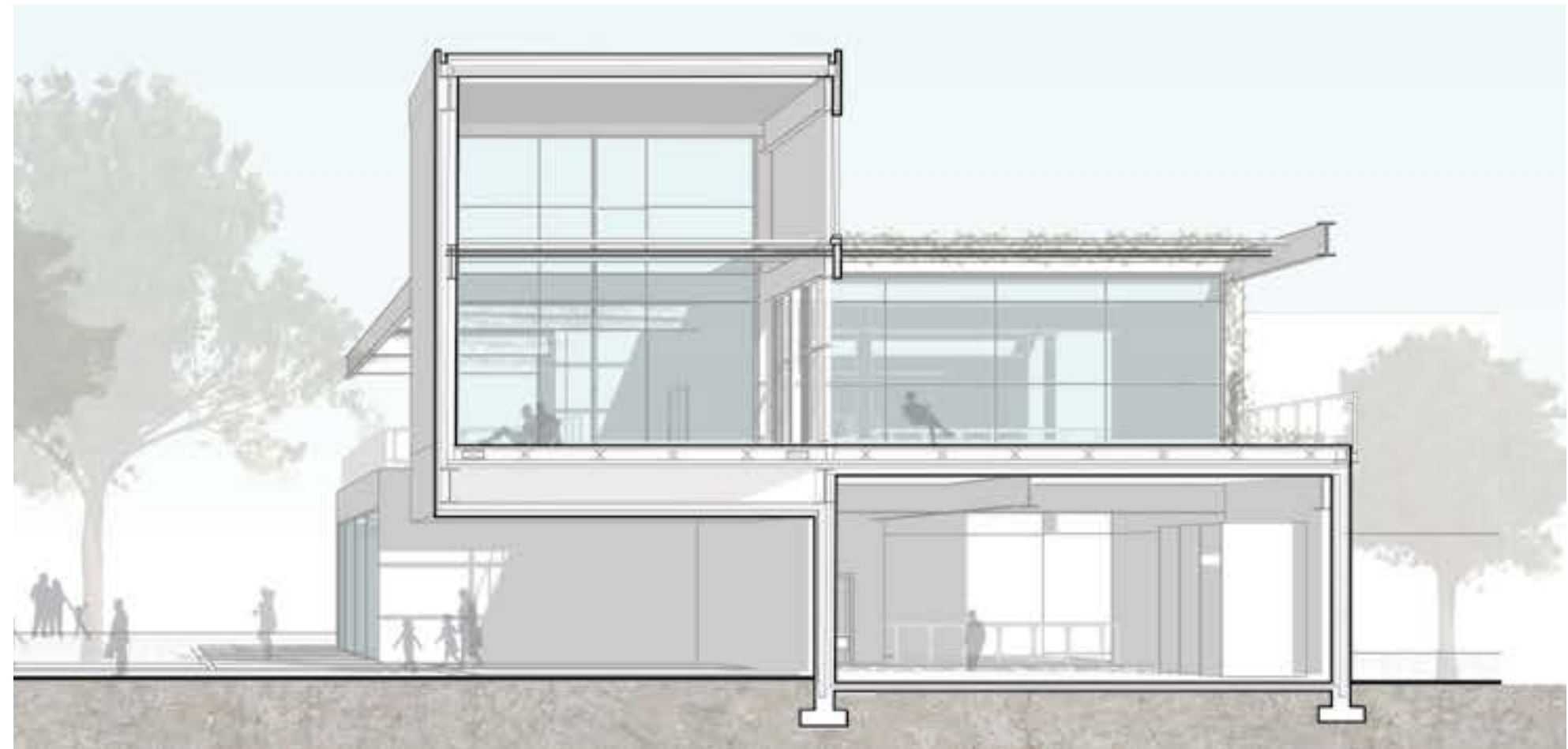
11 Final Drawings



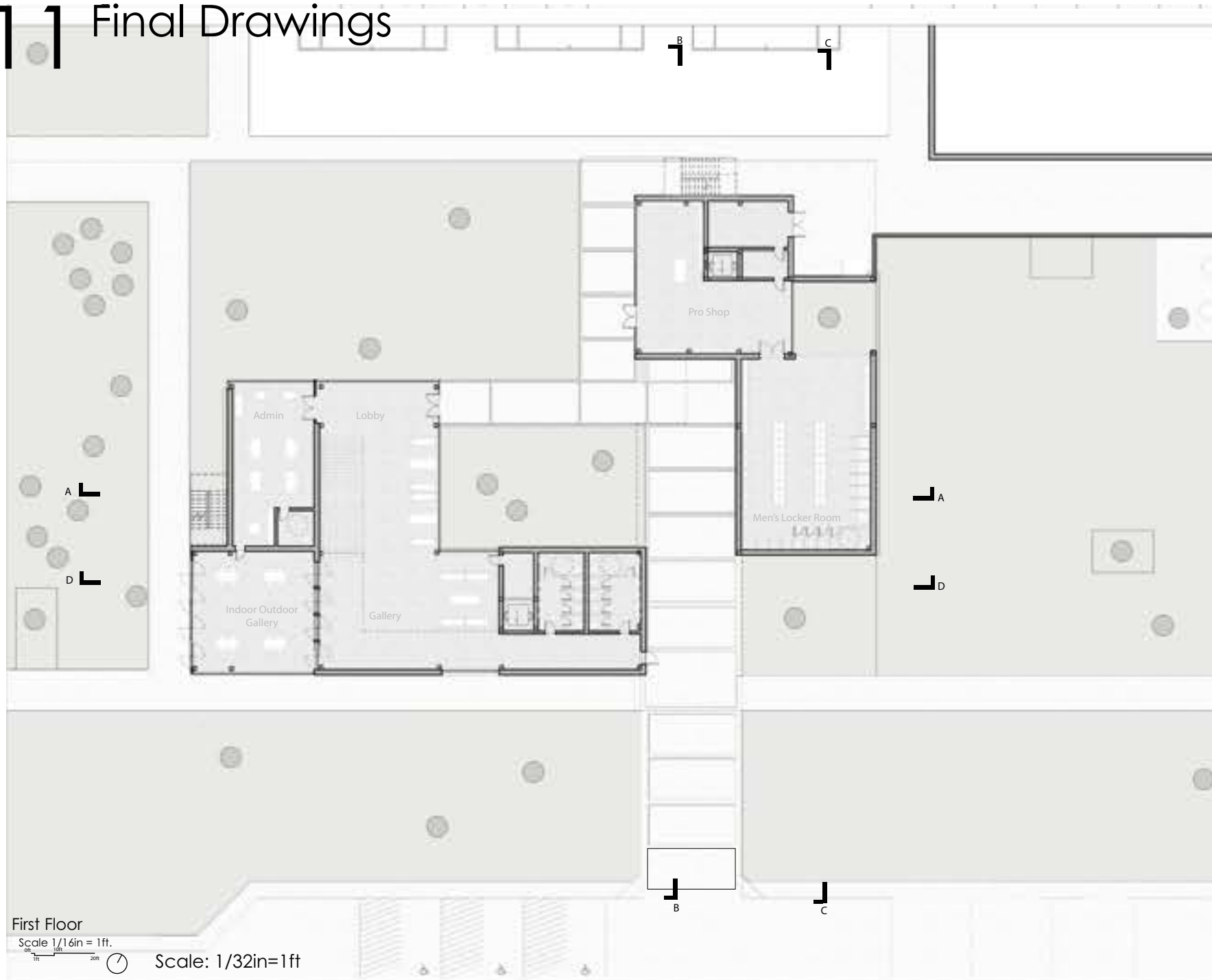
1 1 Final Drawings



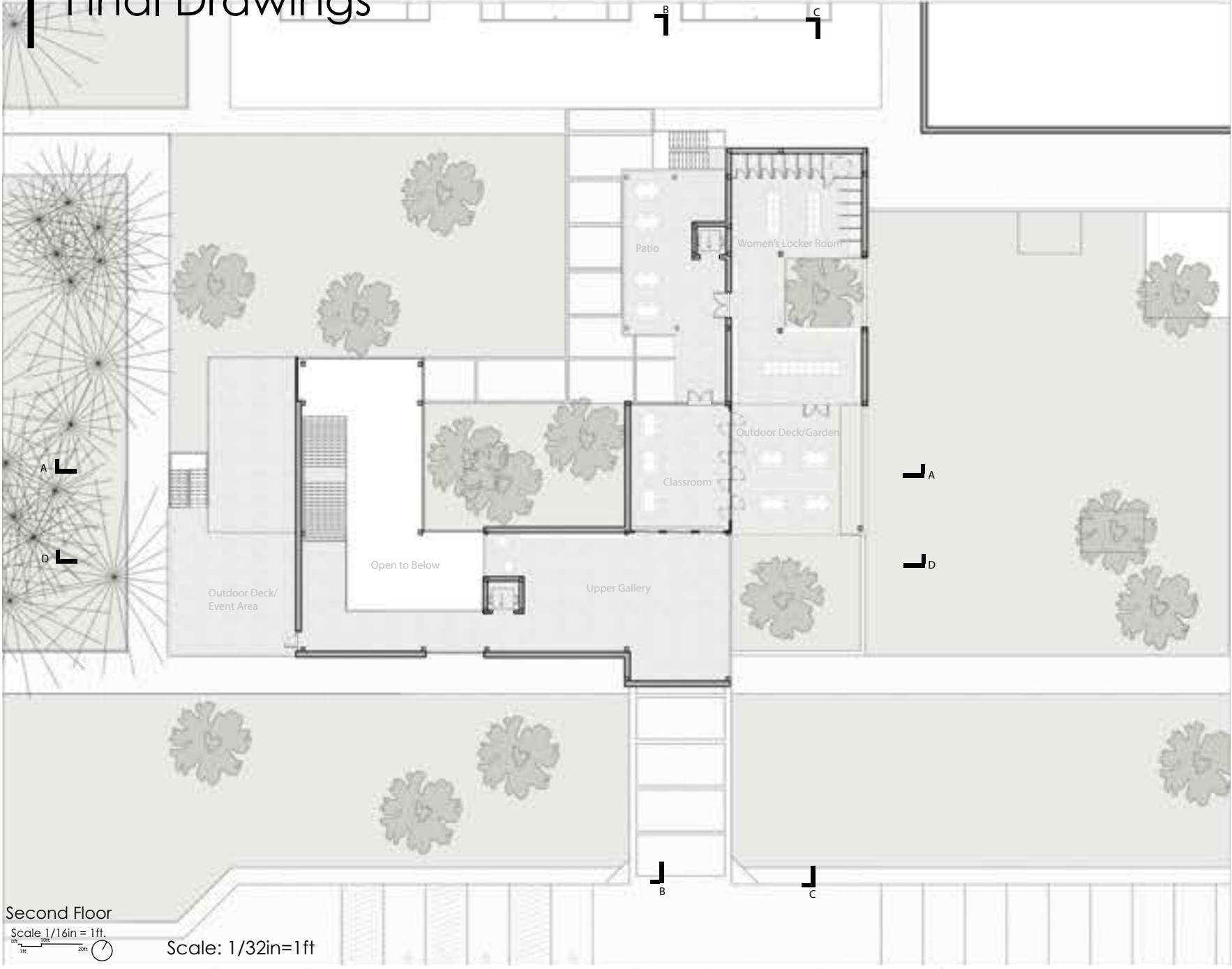
1 1 Final Drawings



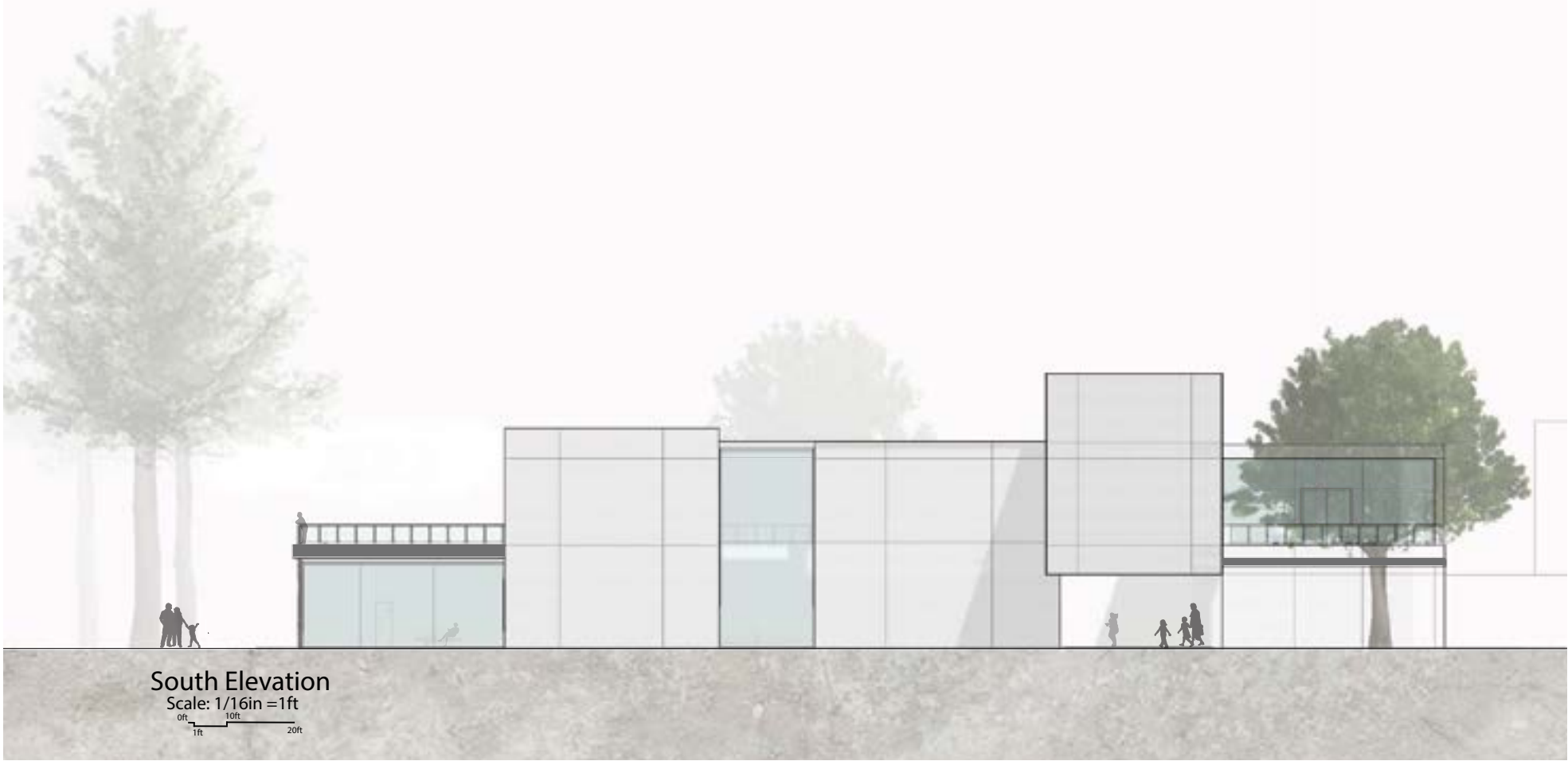
1.1 Final Drawings



1 1 Final Drawings



1 1 Final Drawings



11 Final Drawings



1 1 Final Drawings



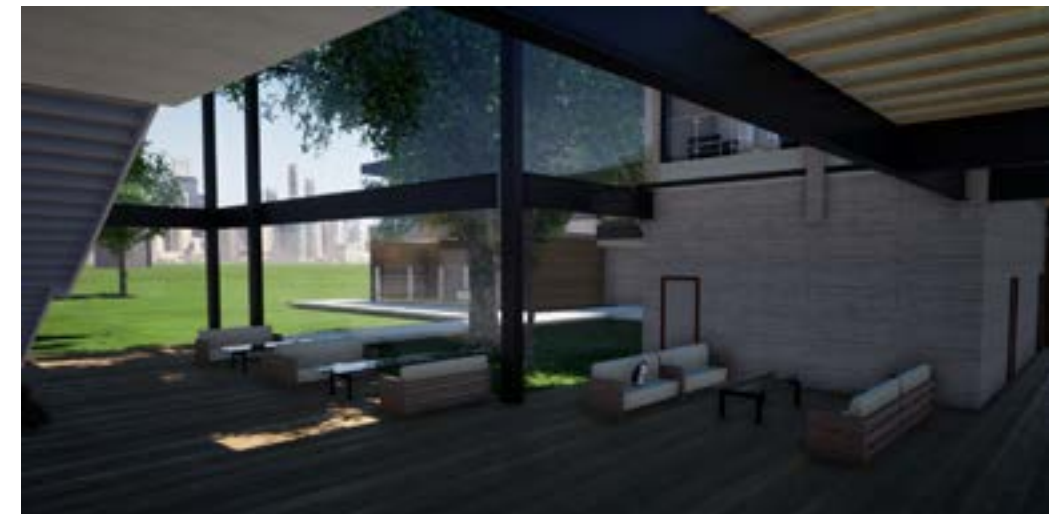
1 1 Final Drawings



1 1 Final Drawings

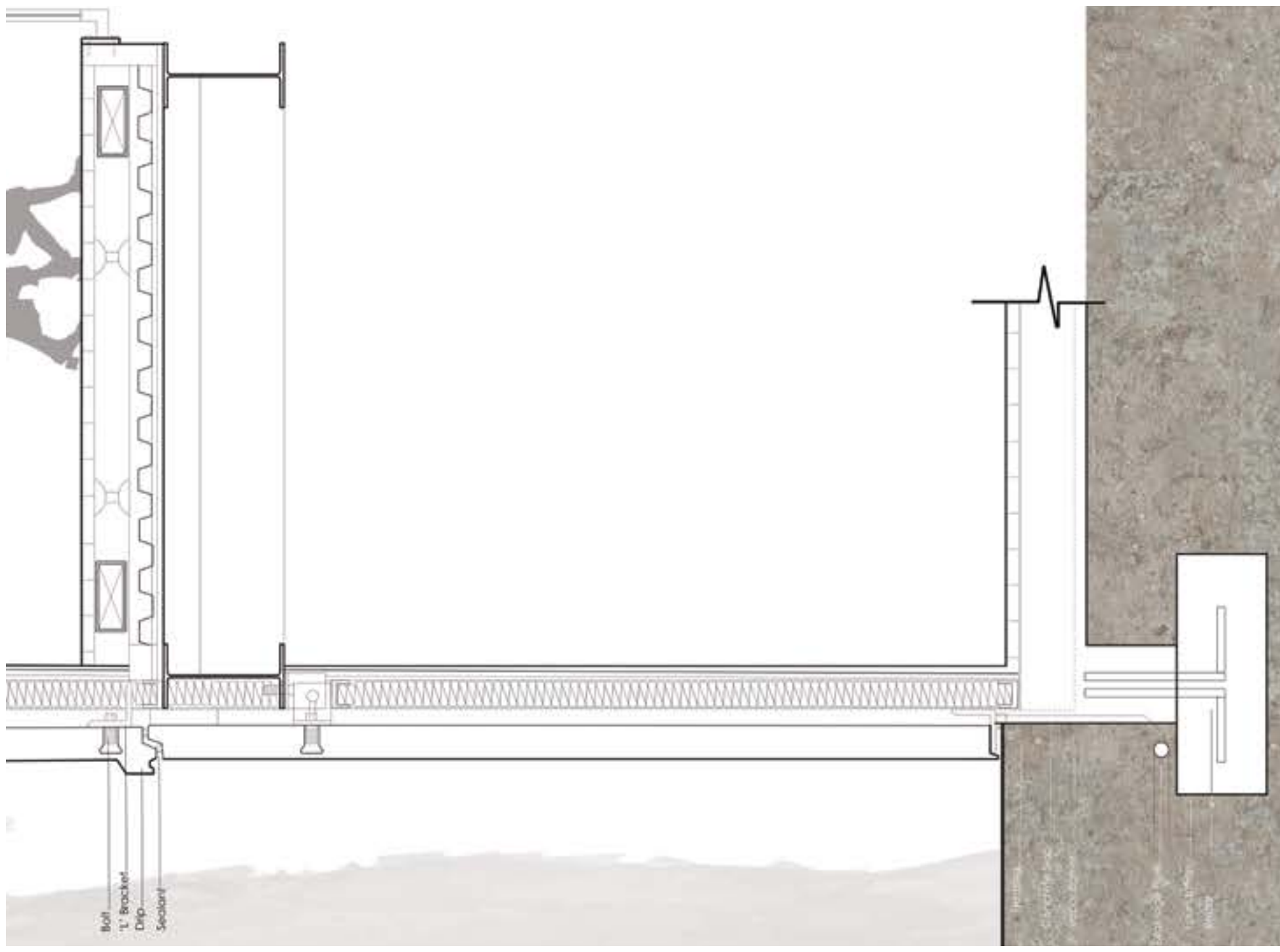
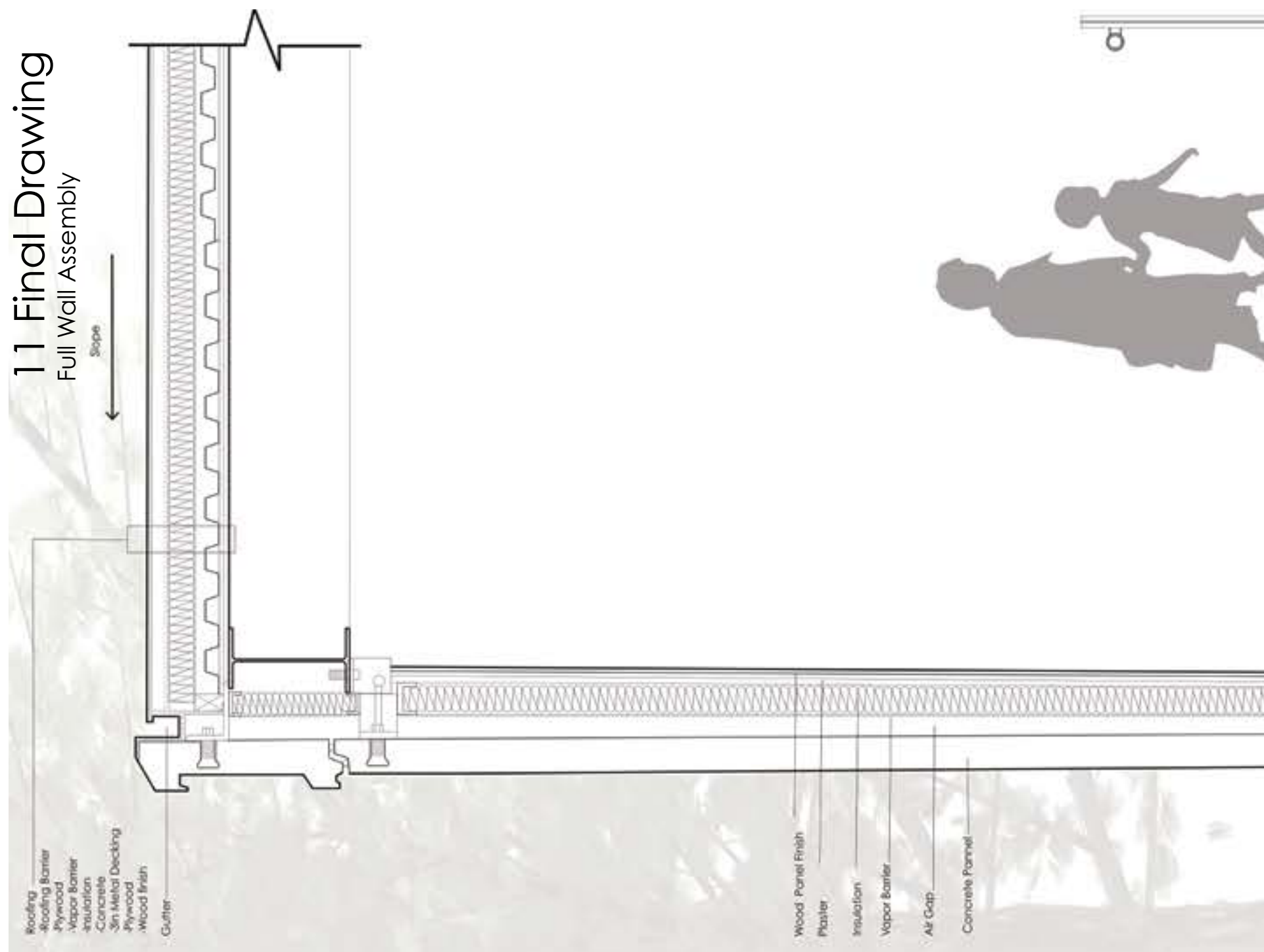


1 1 Final Drawings



11 Final Drawing

Full Wall Assembly



1 1 Final Model



12 Building Envelope Full Wall Assembly

Overall thermal performances of the wall and roof assemblies

The finish materials of the exterior facade are:
Concrete panels
Butt joint glass

The finish materials of the interior are:
Concrete panel
Butt joint glass
Engineered white oak wood panels

Exterior concrete panel to wood interior finish Total R for Assembly is 22.36

Name of material:	Thickness of Material	R value per inch	Total R Value
Concrete Panel	3 inches	0.7	2.1
Air gap	1 inch	1.00	1
Vapor Barrier	-	0	0
Batt Insulation	6 inches	3.14	18.84
Gypsum Board (Dry Wall)	0.5 inch	0.45	0.225
Wood finish	0.26 inch	0.75	0.195

Exterior concrete panel to concrete interior finish Total R for Assembly is 22.43

Name of material:	Thickness of Material	R value per inch	Total R Value
Concrete Panel	3 inches	0.7	2.1
Air gap	1 inch	1.00	1
Vapor Barrier	-	0	0
Batt Insulation	6 inches	3.14	18.84
Gypsum Board (Dry Wall)	0.5 inch	0.45	0.225
Concrete panel	0.375	0.7	0.2625

Butt Joint Glass Total R for Assembly is 3.0

Name of material:	Thickness of Material	R value	Total R Value
Butt Joint insulated glass (Double paned)	3/4in	3.0	3.0

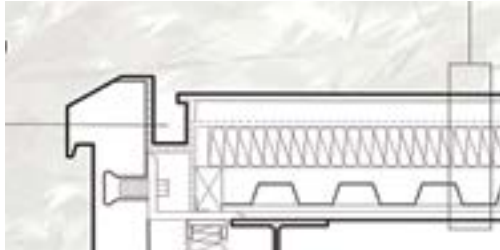
https://www.ahfc.us/iceimages/manuals/building_manual_ap_1.pdf
<https://precast.org/2015/01/keeping-comfortable-precast-concrete/>
<https://www.walltheory.com/collections/board-formed-concrete#sizes>
<https://homeguides.sfgate.com/comparing-doublepaned-windows-triplepane-windows-60539.html>

12Building Envelope

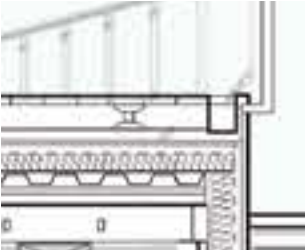
Board Formed Concrete Panel Non Walkable Roof

Name of material:	Thickness of Material	R value per inch	Total R Value
Roofing Barrier	-	0	-
Ply wood	0.5	0.63	0.315
Vapor Barrier	-	0	-
Batt Insulation	8 inches	3.14	25.12
Concrete	3 inches	0.7	2.1
Metal Decking	3 inches	-	-
Ply wood	0.5 inch	0.63	0.315
Wood finish	0.26 inch	0.75	0.195

Total R for Assembly is 28.045



Non-Walkable Roof Detail



Walkable Roof Detail

Walkable Roof

Name of material:	Thickness of Material	R value per inch	Total R Value
Decking	0.5	0.63	0.315
Air (pedestal)	1	8.0	8.0
Roofing Barrier	-	0	-
Ply wood	0.5	0.63	0.315
Vapor Barrier	-	0	-
Batt Insulation	8 inches	3.14	25.12
Concrete	3 inches	0.7	2.1
Metal Decking	3 inches	-	-
Ply wood	0.5 inch	0.63	0.315
Wood finish	0.26 inch	0.75	0.195

Total R for Assembly is 36.36

12Building Envelope

Wall section of Exterior concrete panel to wood interior finish with a non walkable roof



Wall section of how the
butt joint glass attaches
to the non walkable
roof.

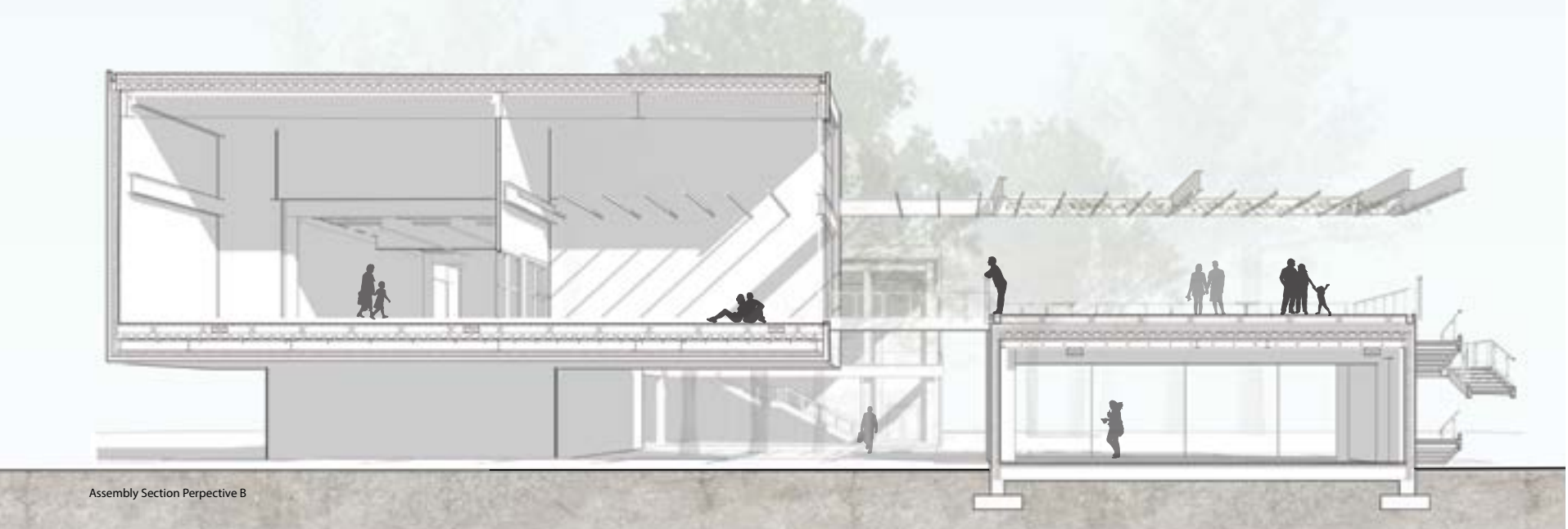


Wall section of Exterior
concrete panel to
wood interior finish
with a walkable roof.



Wall section of Exterior
concrete panel to
wood interior finish
with a walkable roof.

The section perspective shows the different types of wall and roof in the spaces. It illustrates the frame mixes between interior and exterior. It becomes a lower ceiling condition in the classroom space and a pergola covered in vines to shade the patio.



Assembly Section Perspective B

12 Building Envelope

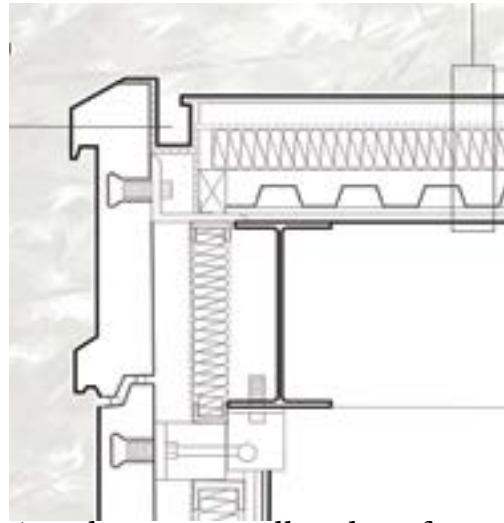
Prefabricated Concrete Cladding Panel with board impression

Material:
water
cement
coarse aggregates,
fine aggregates (sand)
air

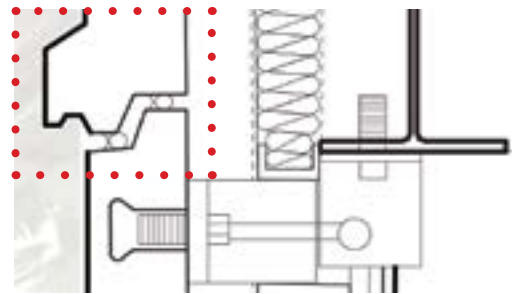
R= Value Total R Value = 2.1

Per inch: 0.7

The typical thermal issues are thermal bridging through the connection of the panel to the structure and possible water leakage if the sealant between panels fails.



Attachment to wall and roof.
The panel is raised to hide the gutter.



The sealant between panels have a drip ledge to keep water away from the joint between panels.

<https://openlab.citytech.cuny.edu/buildingtech4posts/files/2013/10/PRECAST-CONCRETE-PANEL-final.pdf>



Square pattern board texture imprinted on the panel a detail to conceptually relate to the impression people leave on each other and relate to the wood on the interior.

<https://www.youtube.com/watch?v=ChJjU0G9NDQ>

12 Building Envelope

Butt Joint Glass

R value is 3.0

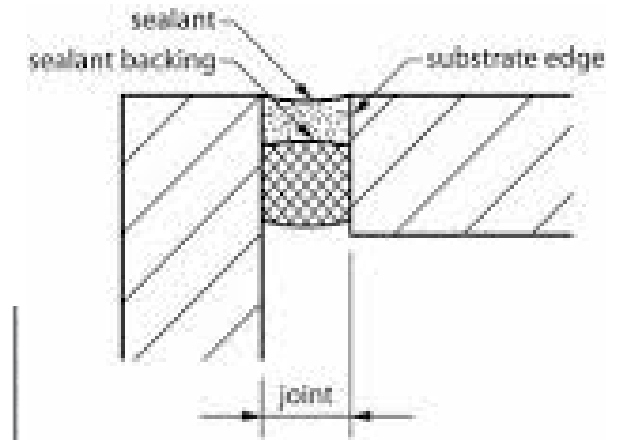
Butt joint glass with structural sealant

The thermal issues with the butt joint glass is the amount of heat is transferred into the space because the material is transparent.

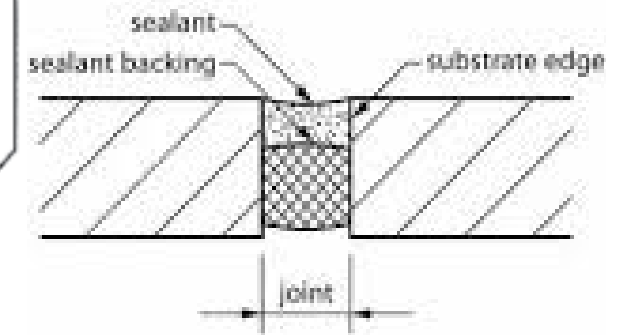
Materials: silicon dioxide, or SiO₂)

limestone (calcium carbonate, or CaCO₃)

sodium carbonate (Na₂CO₃).



a. face to edge



b. edge to edge

<https://bellwetherdesigntech.com/structural-glass-wall-process-design-engineering-options/>

https://www.forster-profile.ch/fileadmin/media/forster-profile/documents/flyers/938396_fy_glass-to-glass_joint_butt-joint_glazing.pdf

<http://www.valtec.ca/uploads/product/en/115pdfA.pdf>

<https://www.guardianglass.com/us/en/tools-and-resources/library/glass-glossary/silicone-structural-glazing>

<https://www.wbdg.org/guides-specifications/building-envelope-design-guide/fenestration-systems/glazing>

12 Building Envelope

White Oak Engineered Panels

R value: 0.195 R value per inch 0.7

THICKNESS 6.6mm—9.9mm

WIDTH 13.5" (34.3 cm)

LENGTH 53.5" (136 cm)

The thermal issues with the thermal bridging through the connection of the panel in to the stud.

Material :

The panels are composed of two layers. The backboard plywood, made from glued together plies of wood and a reclaimed Natural White Oak siding. Depending on request the Oak can be treated or painted.



Engineered White Oak comes in pre-prepared panels, that fit in one another and are glued in a horizontal sequence onto the gypsum board.



Apply polyurethane glue on the plywood backboard of the panels, and nails on the perimeter of the panel.

<https://www.woodco.com/products/indus-3d-wallboard/>



When working with basic panels, metal furring is needed for assembly (spaced at 4' O.C. and perpendicular to the white oak panels)



12

Future Flexibility

The future of flexibility is in the concept by the creation of the field condition by shifting. The ability to expand upon the system can be done with mass or frame. Frame elements can extend out into the park and more building can be added into the shifting pattern.

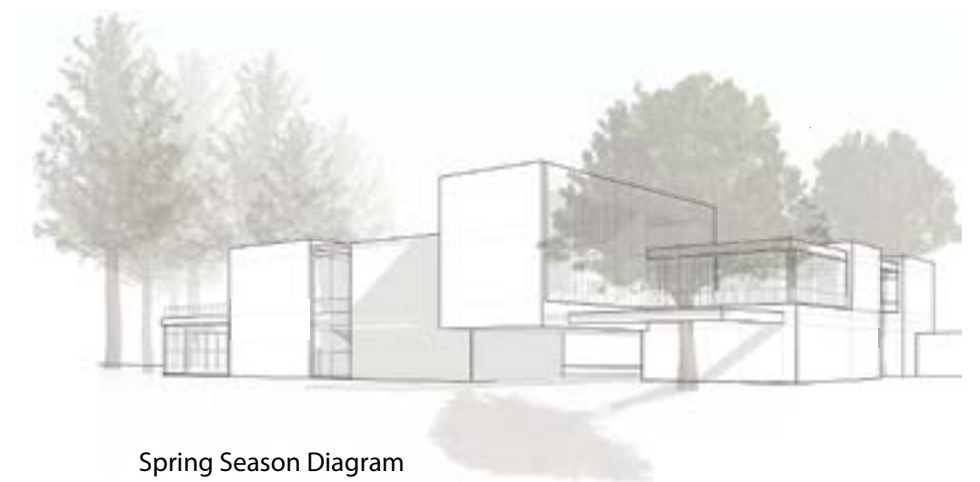
The construction is a basic steel frame with concrete paneling and some wood paneling on the interior. The material choice is pretty common and can be allow the without the feeling and concept of the building to change.

The arrangement of the program of the building is pretty flexible with the amount of open space in the rooms and the ability for the main rooms to open into each other and the indoor outdoor qualities of certain rooms allows for flexibility.

What happens if the trees in the locker room courtyard and the framed tree at the front entrance die and need to be removed?

They could be replaces the tree with a new tree or sculpture, art piece or lights could simply be strung in its place.

If nothing replaces the trees the framing element still captures space and creates a lower ceiling condition and the locker rooms still have a private open framed courtyard.



Spring Season Diagram



Fall Season Diagram