

NEW YORK INSTITUTE OF TECHNOLOGY

School of Architecture
& Design



DESIGN PORTFOLIO

ARCH 401 FALL 2024

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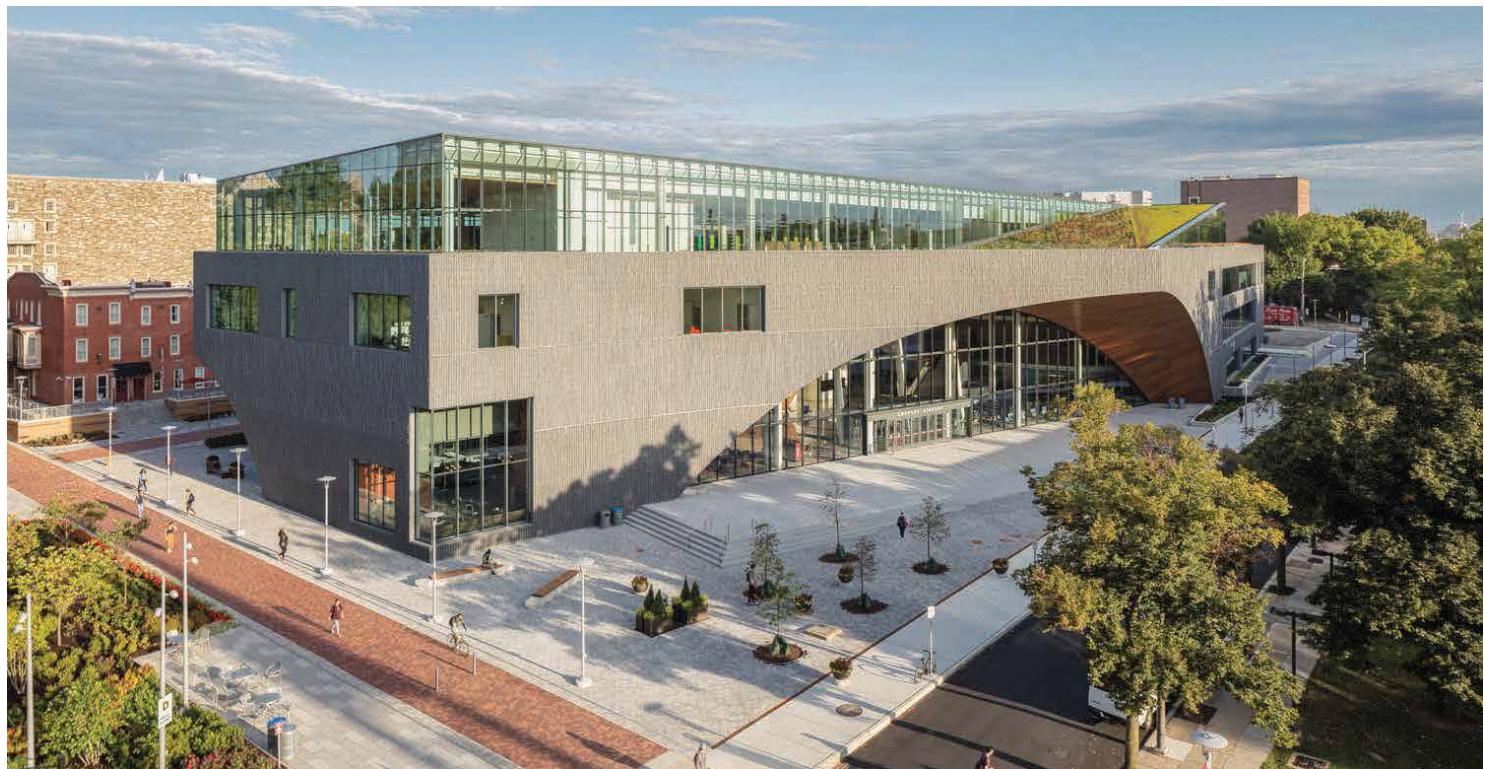
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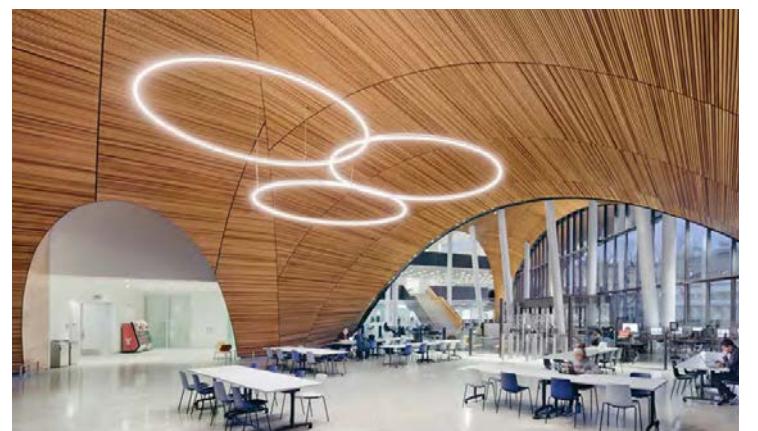
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1. PRECEDENT ANALYSIS

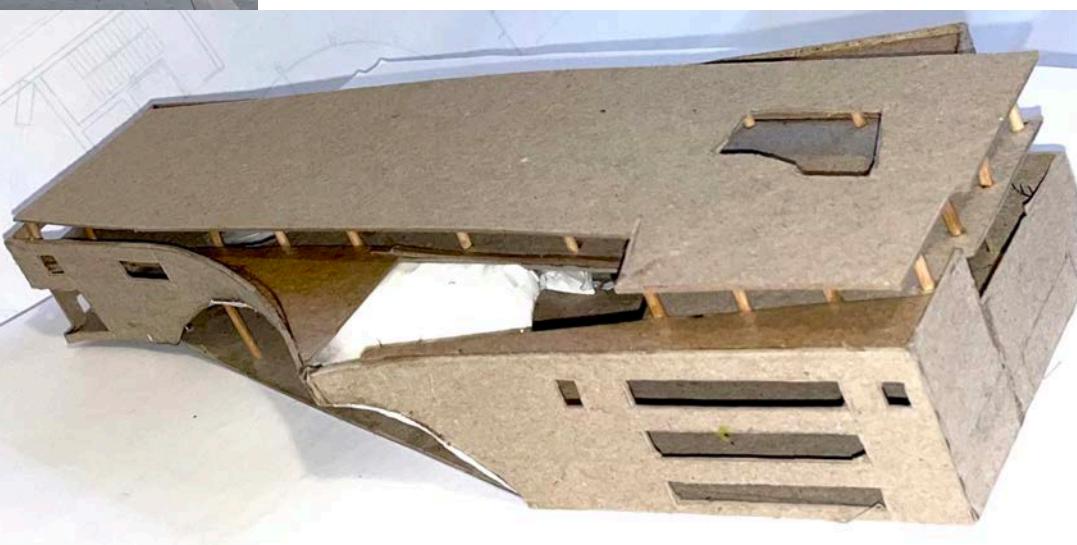
CHARLES LIBRARY AT TEMPLE UNIVERSITY



DESIGNED BY SNOHETTA 2019

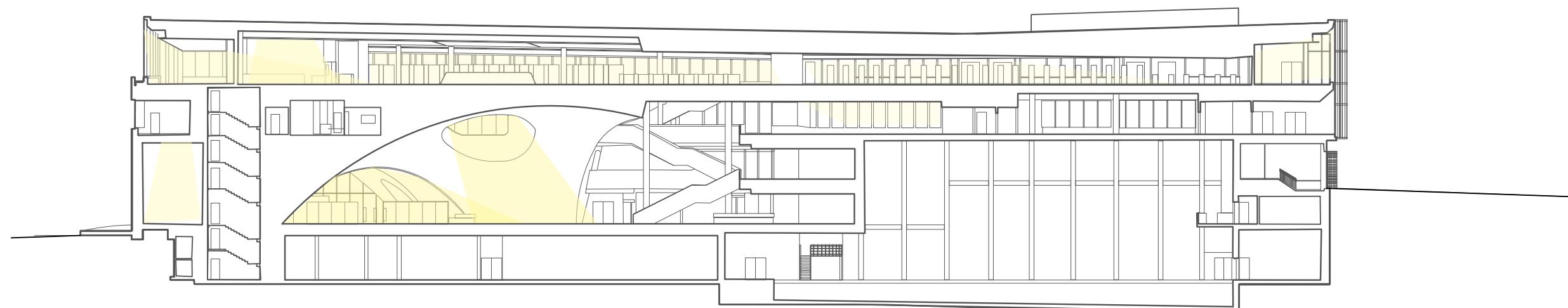
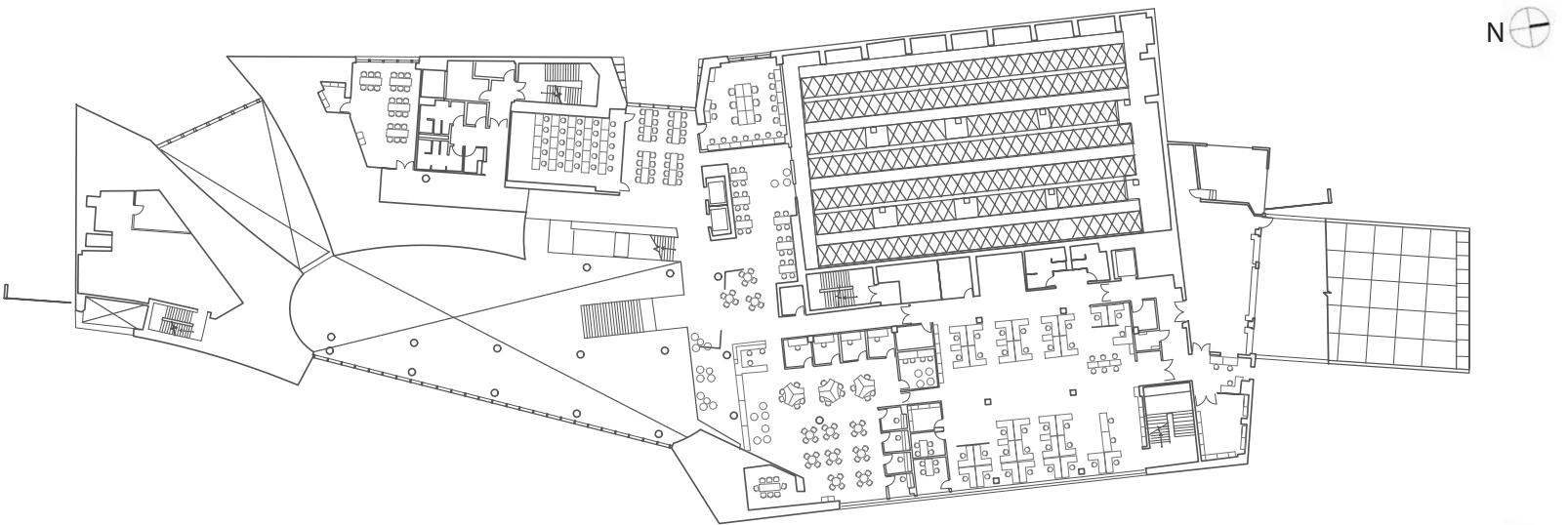
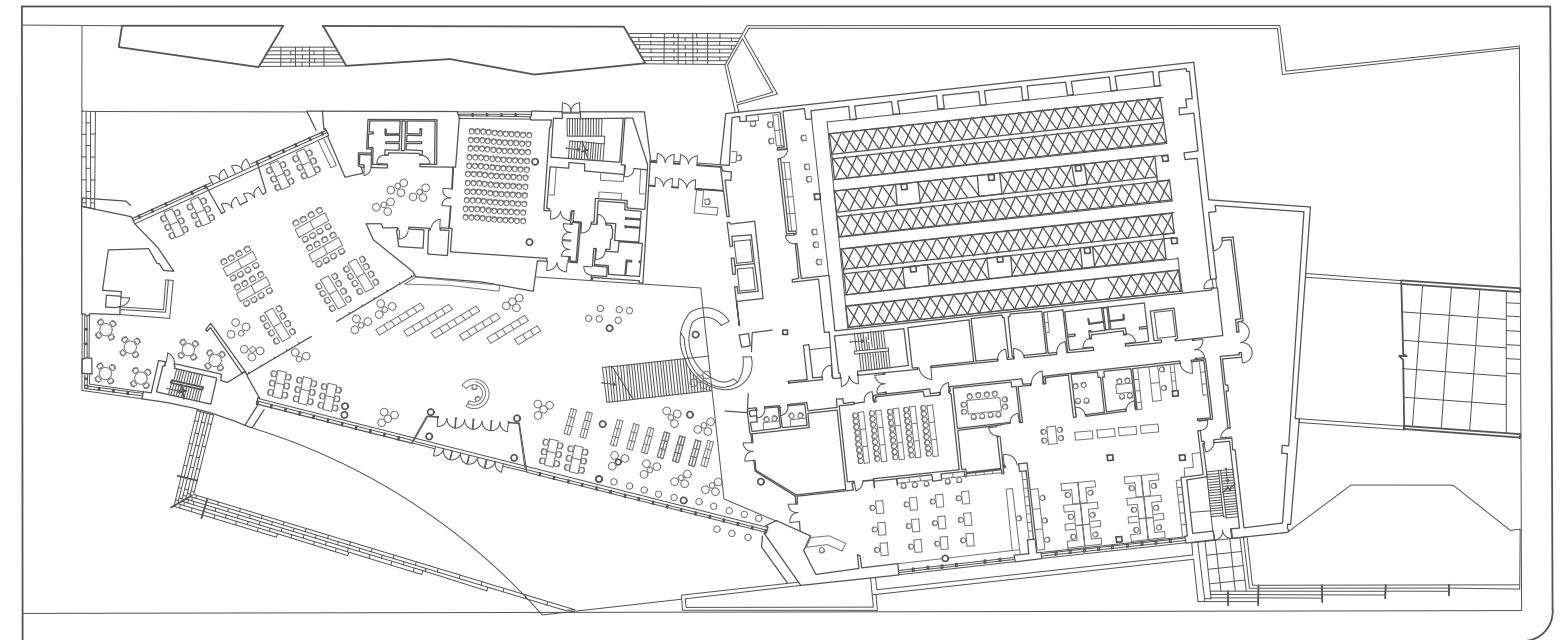
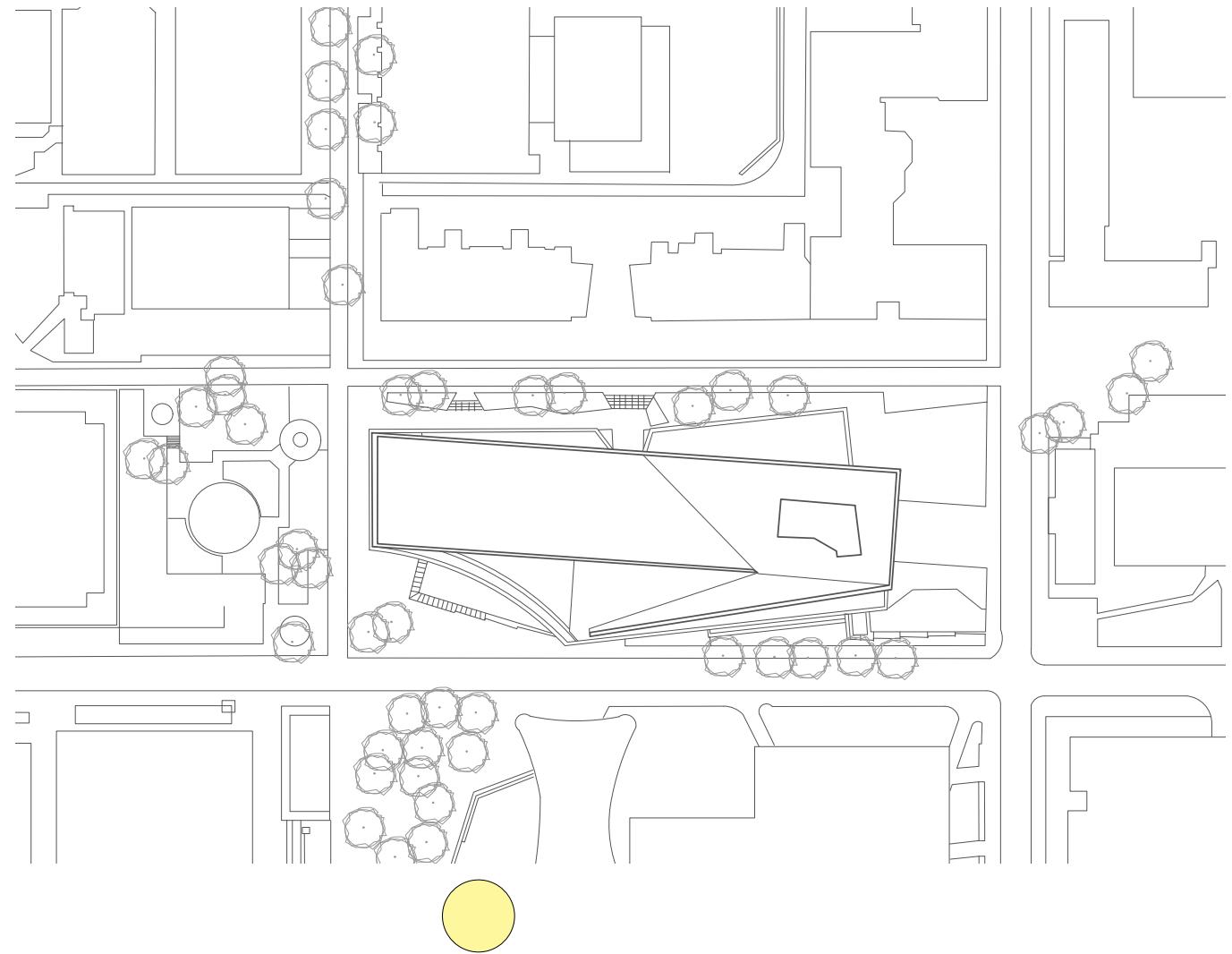


PHYSICAL STUDY MODEL



PRECEDENT ANALYSIS PROVIDED LARGESCALE DRAFTING PRACTICE AS WELL AS PROVIDED AN EXAMPLE OF THE STUDIO PROJECT. THIS LIBRARY IS SIGNIFICANT FOR ITS IMPACT ON THE COMMUNITY- ITS PART OF A COLLEGE CAMPUS, BUT OPEN TO THE PUBLIC AND LOBBY SPACE IS OPEN 24 HOURS CREATING MUCH NEEDED ACCESIBILITY. ITS ARCHITECTURAL DECISIONS DISPLAY EXTRAVAGANT/WELCOMING ENTRANCES WITH AN ATRIUM AFFECT LETTING LOTS OF LIGHT IN AND DISPLAYING LOCAL MATERIALS FOR CLADDING. IT ALSO PORVIDED A GOOD EXAMPLE OF A CREATIVE LONG SPAN/ DOUBLE HEIGHT SPACE.

DRAFTING ANALYSIS OF CHARLES LIBRARY BY SNOHETTA



2. RESEARCH AND SITE ANALYSIS

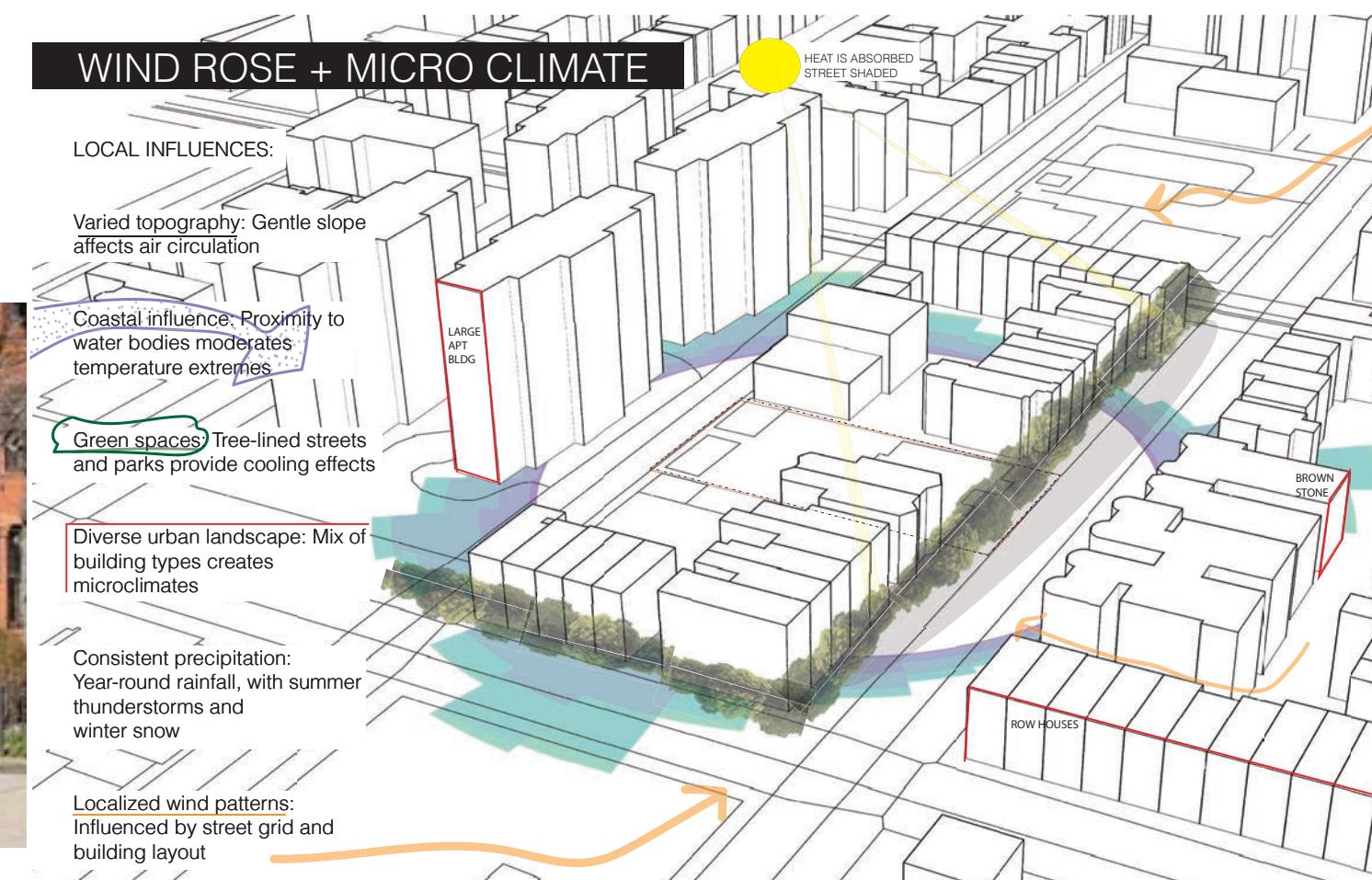
THE SITE ANALYSIS REVEALED THE HISTORIC IMPORTANCE OF THE NEIGHBORHOOD AS WELL AS THE MICROCLIMATE EXPERIENCES IN THIS AREA. IT ALSO PROVIDED INSITE INTO THE NEEDS OF THE NEIGHBORHOOD AND PROGRAMS BEING FACILITATED AT THIS LIBRARY FOR THE PUBLIC. MANY HISTORIC FAÇADES HAVE BEEN PRESERVED , AND STREETS ARE HEAVILY TREE LINEDS WITH SOME GAPS BETWEEN DIFFERENT TYPES OF APARTMENT BUILDINGS.



EXISTING BROOKLYN PUBLIC LIBRARY TO BE REPLACED IN CLINTON HILL

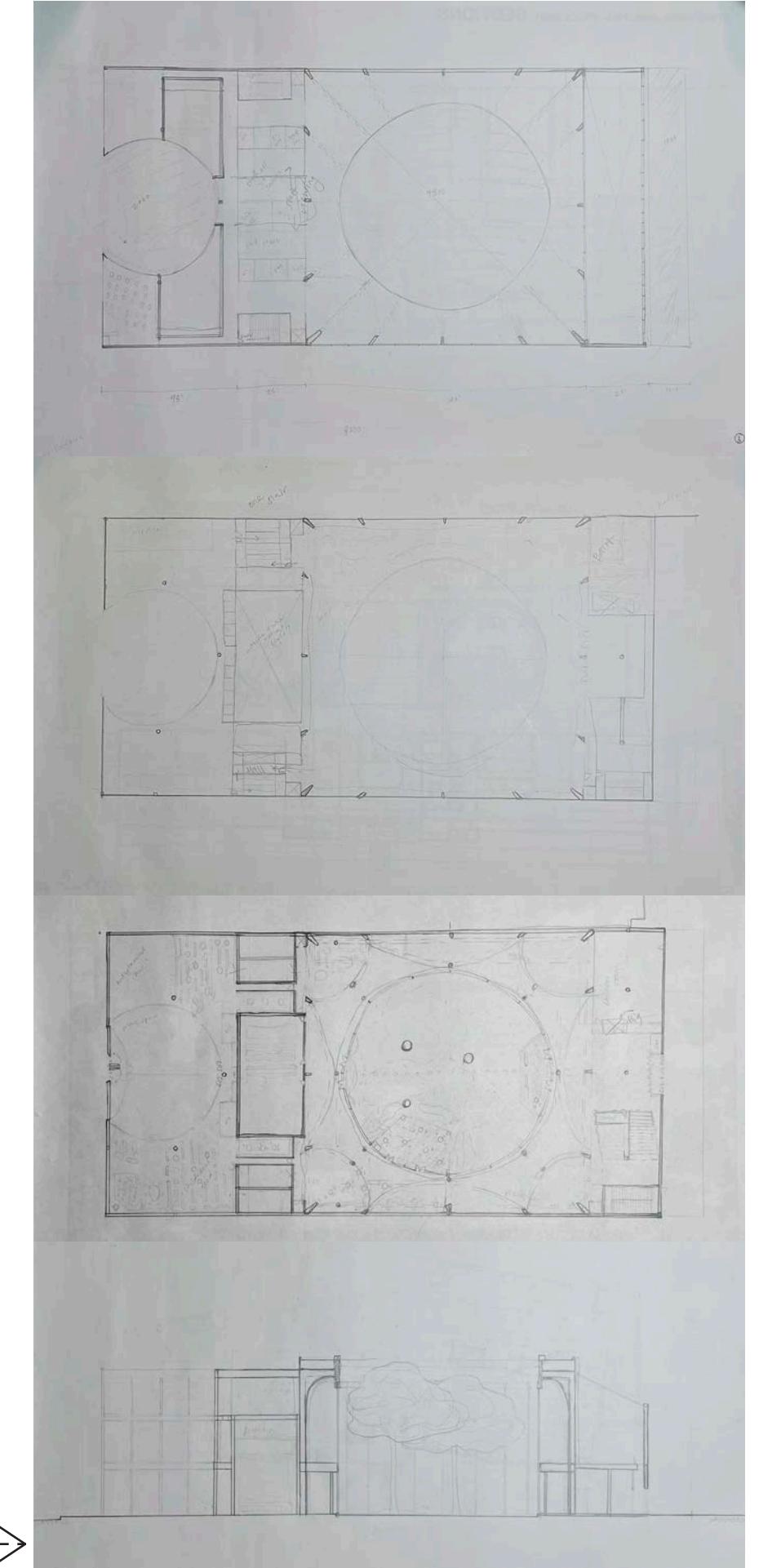
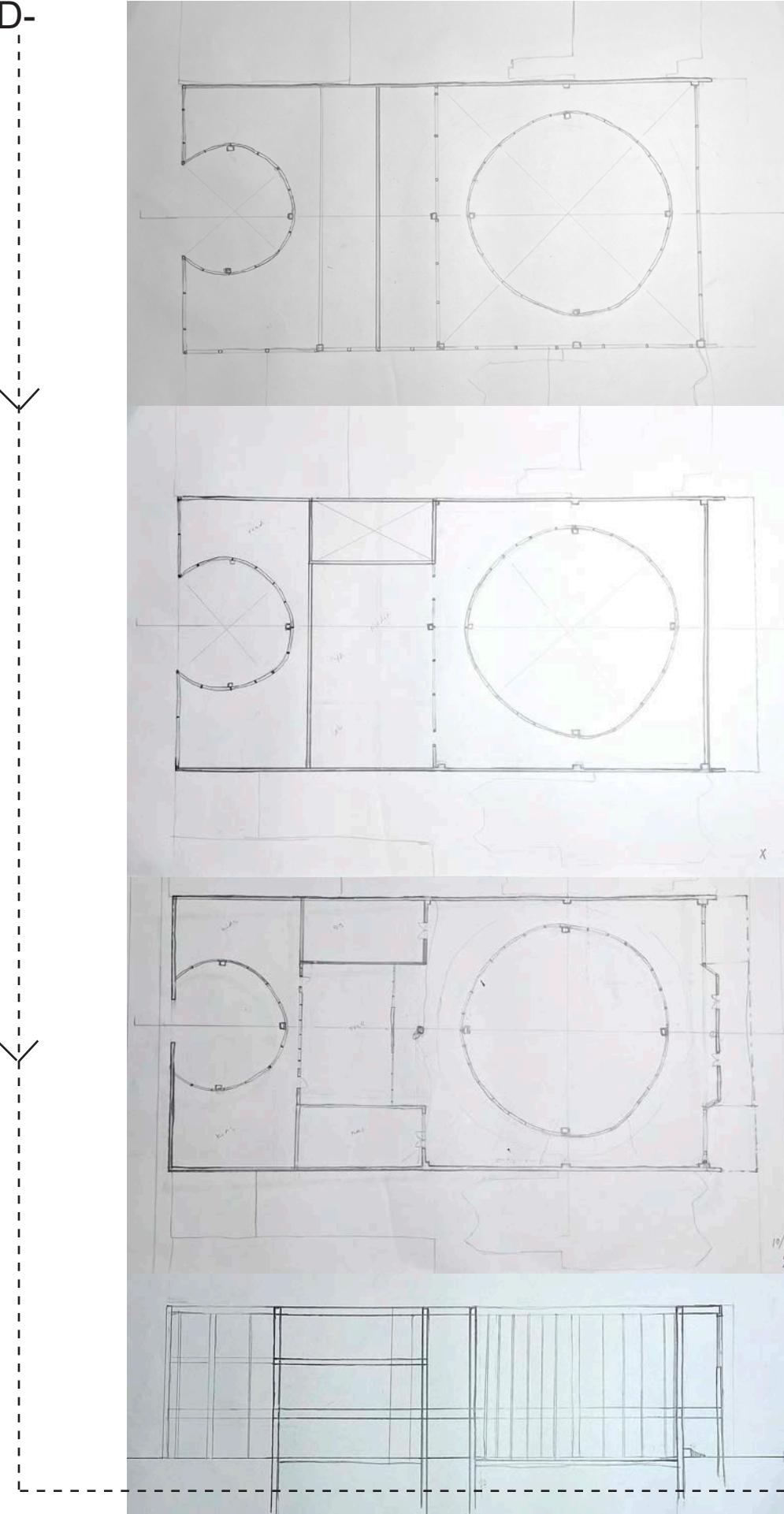


INTERESTING FAÇADES



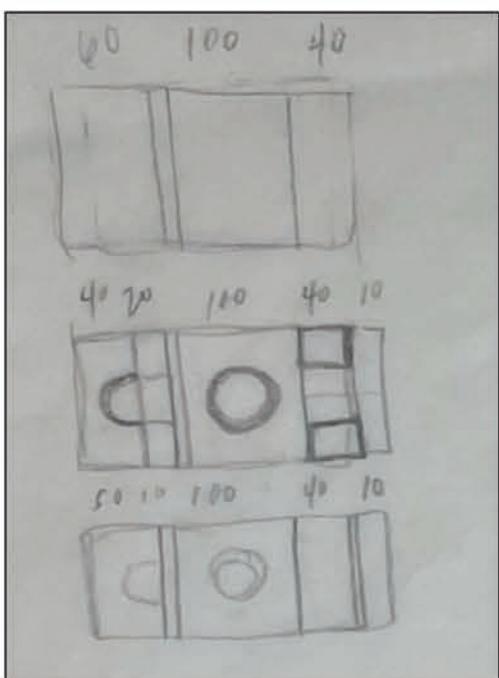
HISTORIC CONTEXT

3. SCHEMATIC DESIGN- MASSING MODEL & HAND-DRAWING PROCESS

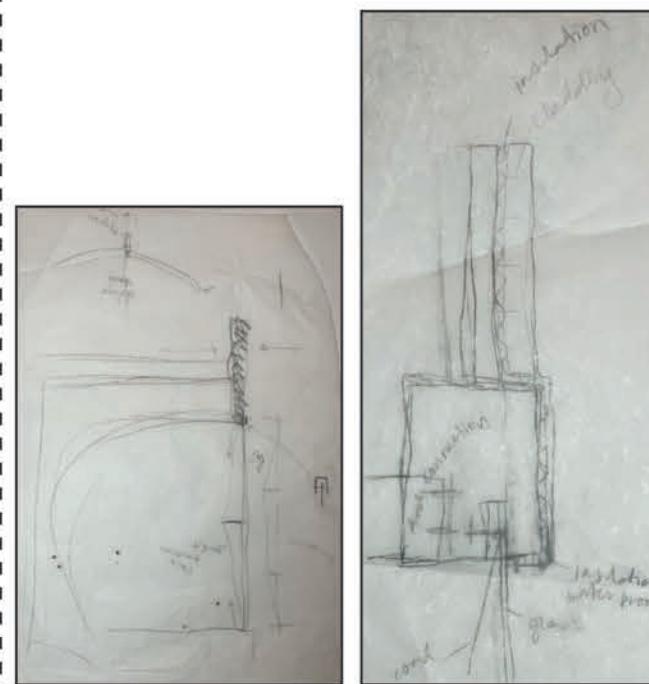


5. DETAIL DEVELOPMENT

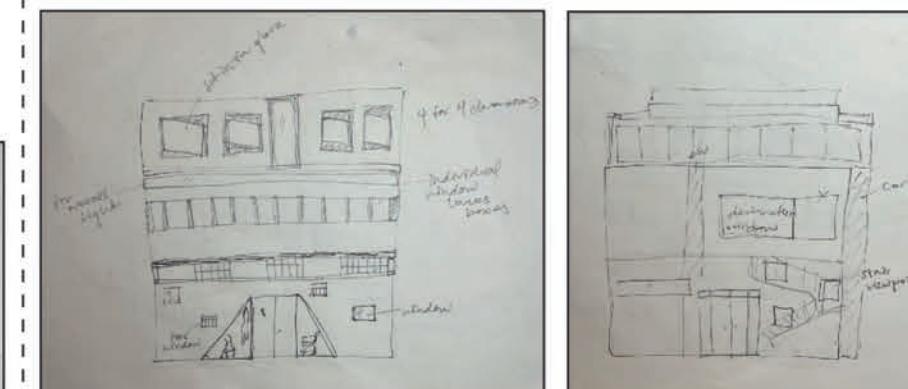
PARTI DEVELOPMENT



STRUCTURE DETAILING



SPACIAL DEVELOPMENT

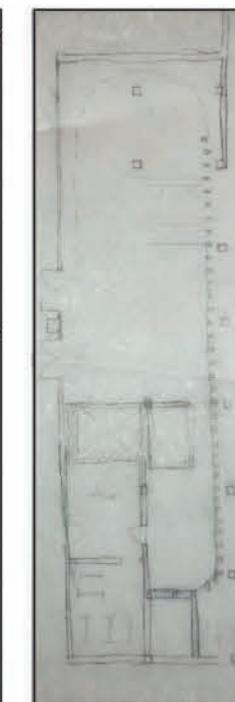
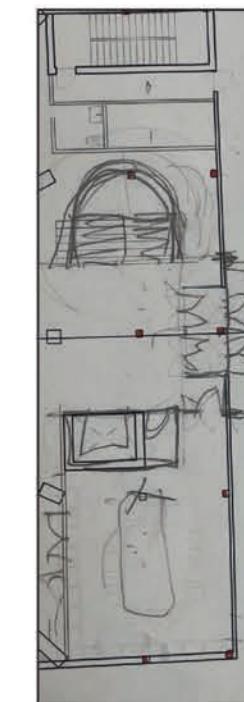
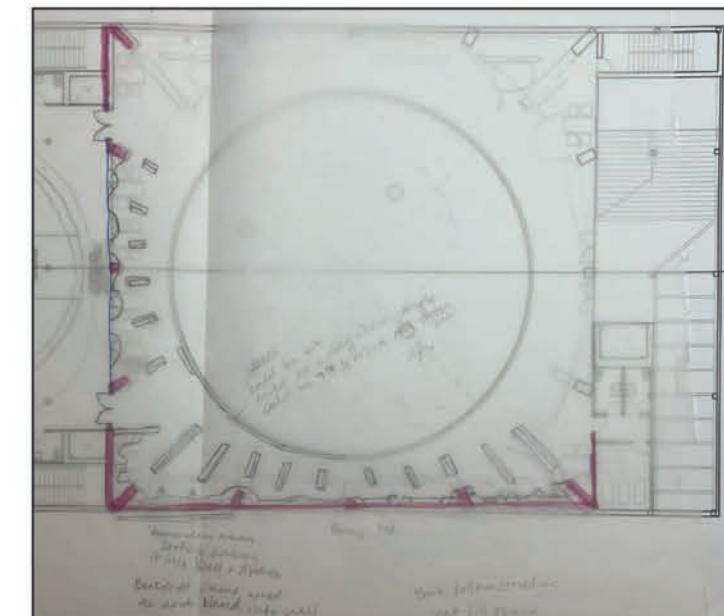


PERSPECTIVE PROCESS SKETCHES

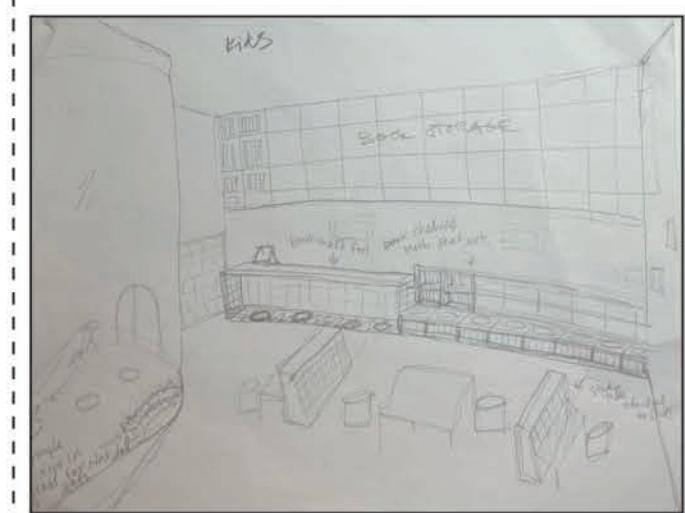


The image contains several hand-drawn architectural sketches:

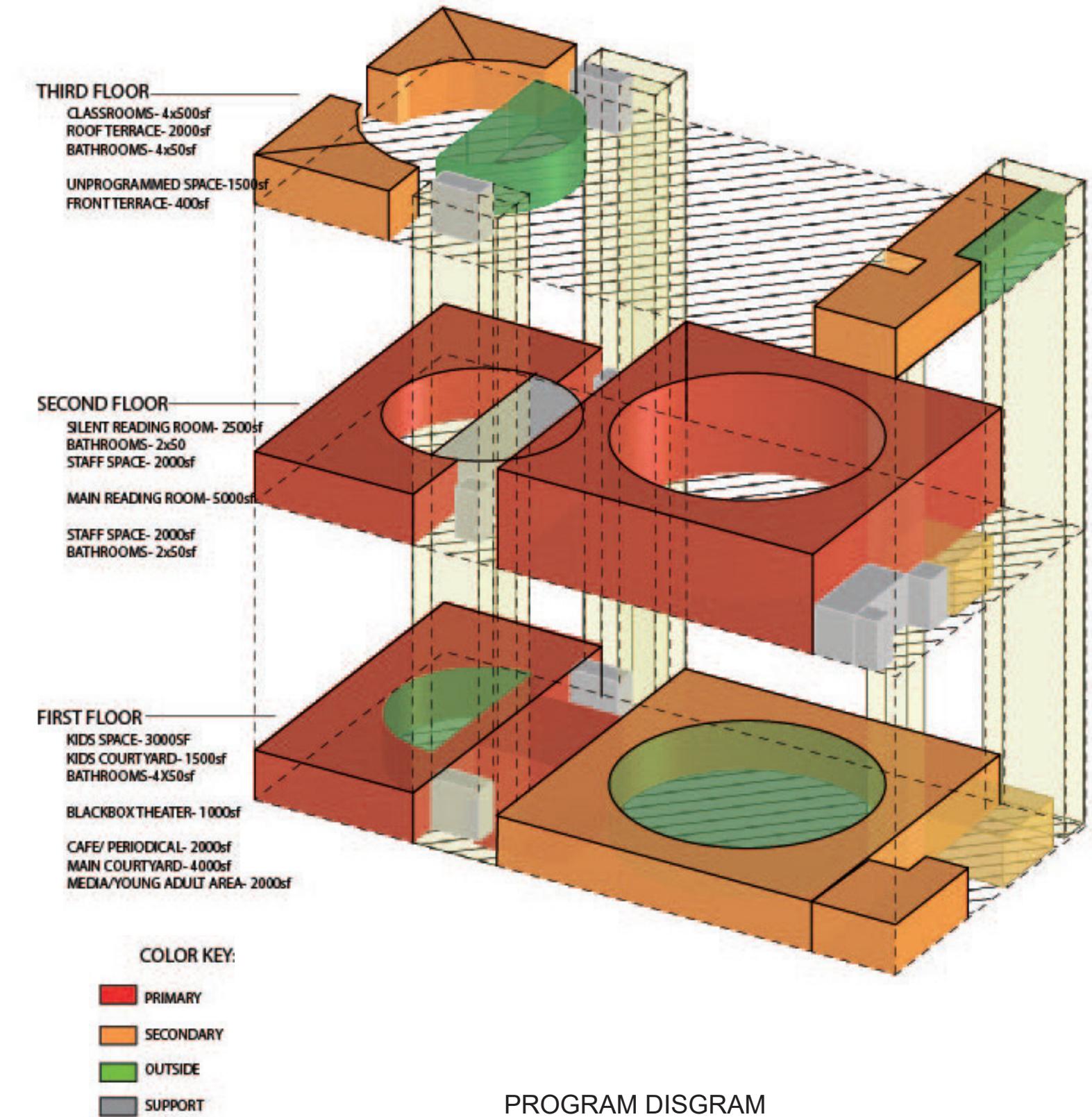
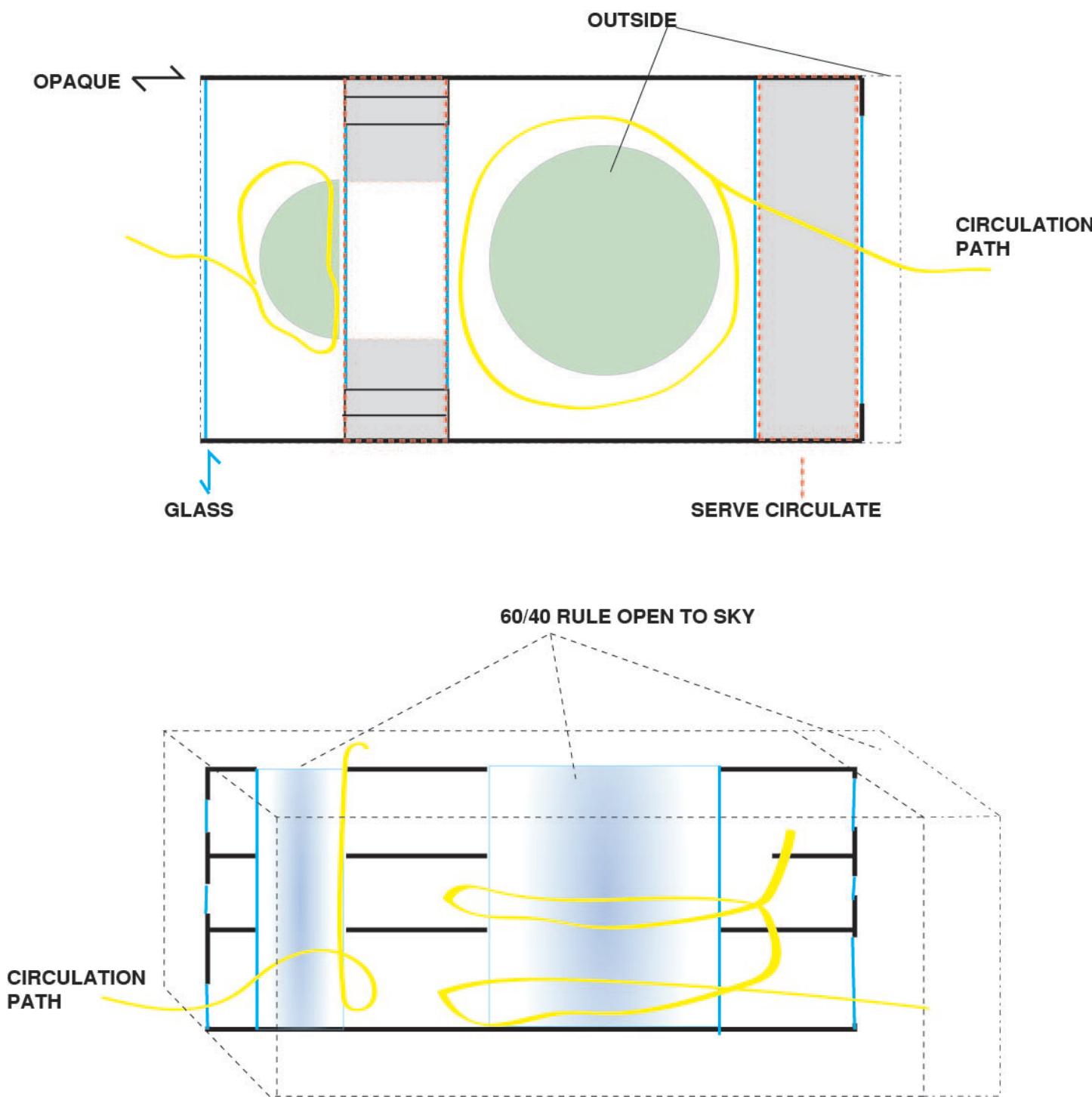
- Top Left:** A sketch labeled "60/40" and "10/90" showing two circular patterns with cross-hatching inside a rectangular frame. Below it is a horizontal dimension line with labels: 24', 9', 10', 15' 11".
- Top Right:** A sketch labeled "UTILITY" showing a central vertical stack with various utility access points. A yellow arrow indicates a flow path. To the right is a vertical dimension line with labels: 1', 3', 3'.
- Middle Left:** A sketch labeled "SPACE USE" showing a multi-story building section with various rooms and levels. A yellow arrow indicates a flow path. Labels include "STAIR", "LIVING", "BED", "BATH", "KITCHEN", "DINING", "GARAGE", "CLO", and "BASEMENT". A label "GROUNDFLOOR" is also present.
- Middle Right:** A sketch labeled "VERTICLE MOVEMENT" showing a multi-story building section with stairs and a central vertical stack. A yellow arrow indicates a flow path.
- Bottom Center:** A large sketch labeled "PART I DIAGRAM" containing a rectangular frame with internal components and a yellow arrow indicating a flow path.



The sketch illustrates a building's exterior and a surrounding area. On the left, a vertical cross-section shows a central staircase with a purple railing. Above it, a window is labeled "front facade". To the right of the staircase, a red-shaded section is labeled "glazed atrium core". A blue arrow points from the atrium core towards the right. The label "atrium" is written vertically near the top of the building's facade. On the far right, the word "courtyard" is written above a drawing of a circular area. This courtyard drawing includes two tall, thin trees with green canopy outlines, a small building at the bottom right, and a winding path or stream bed in the center.



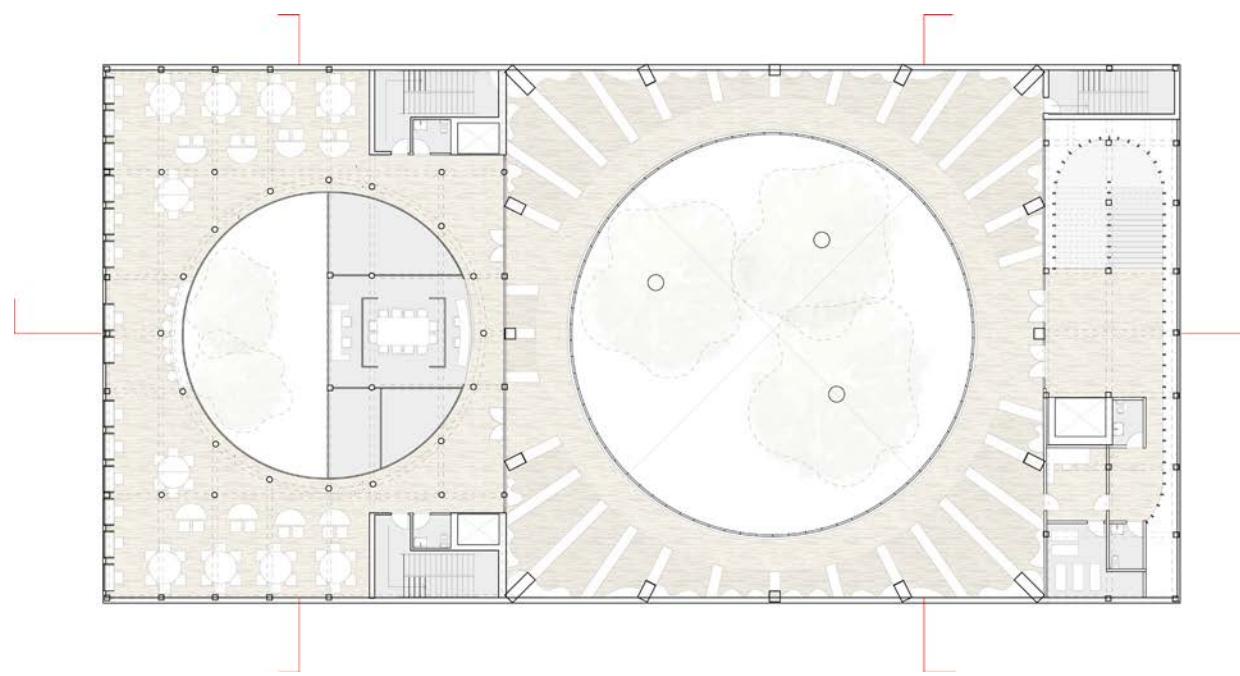
6. FINAL DESIGN



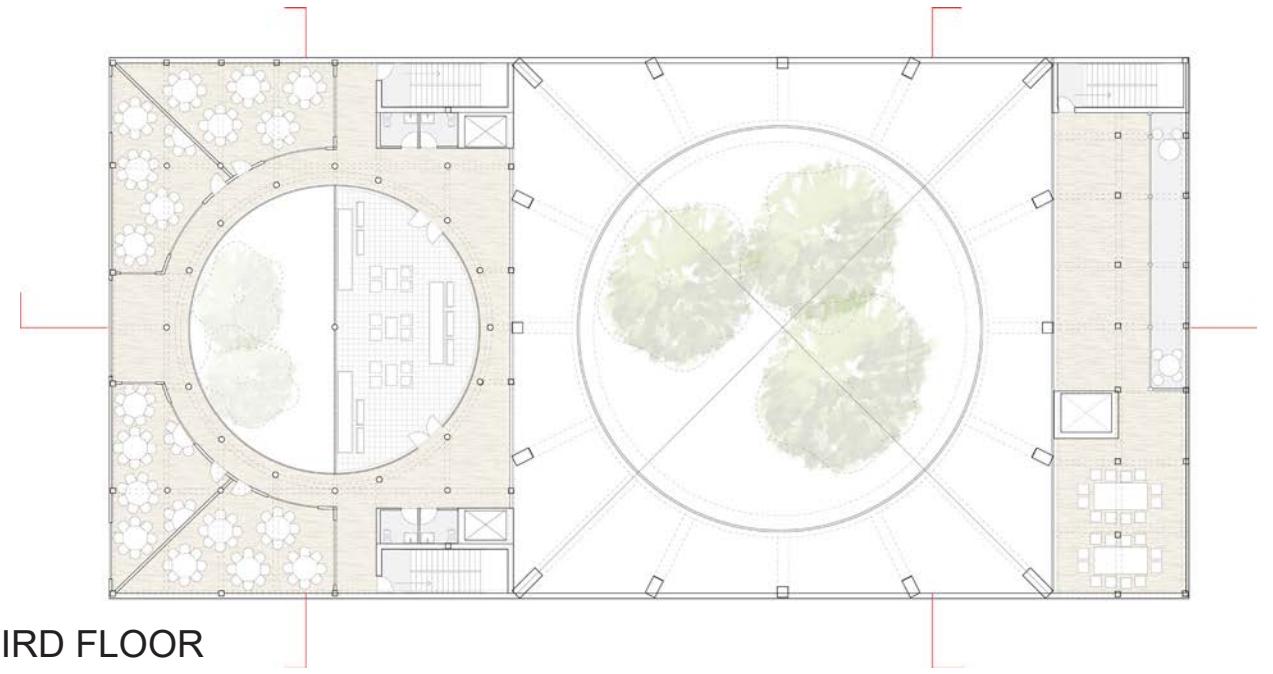
PLANS



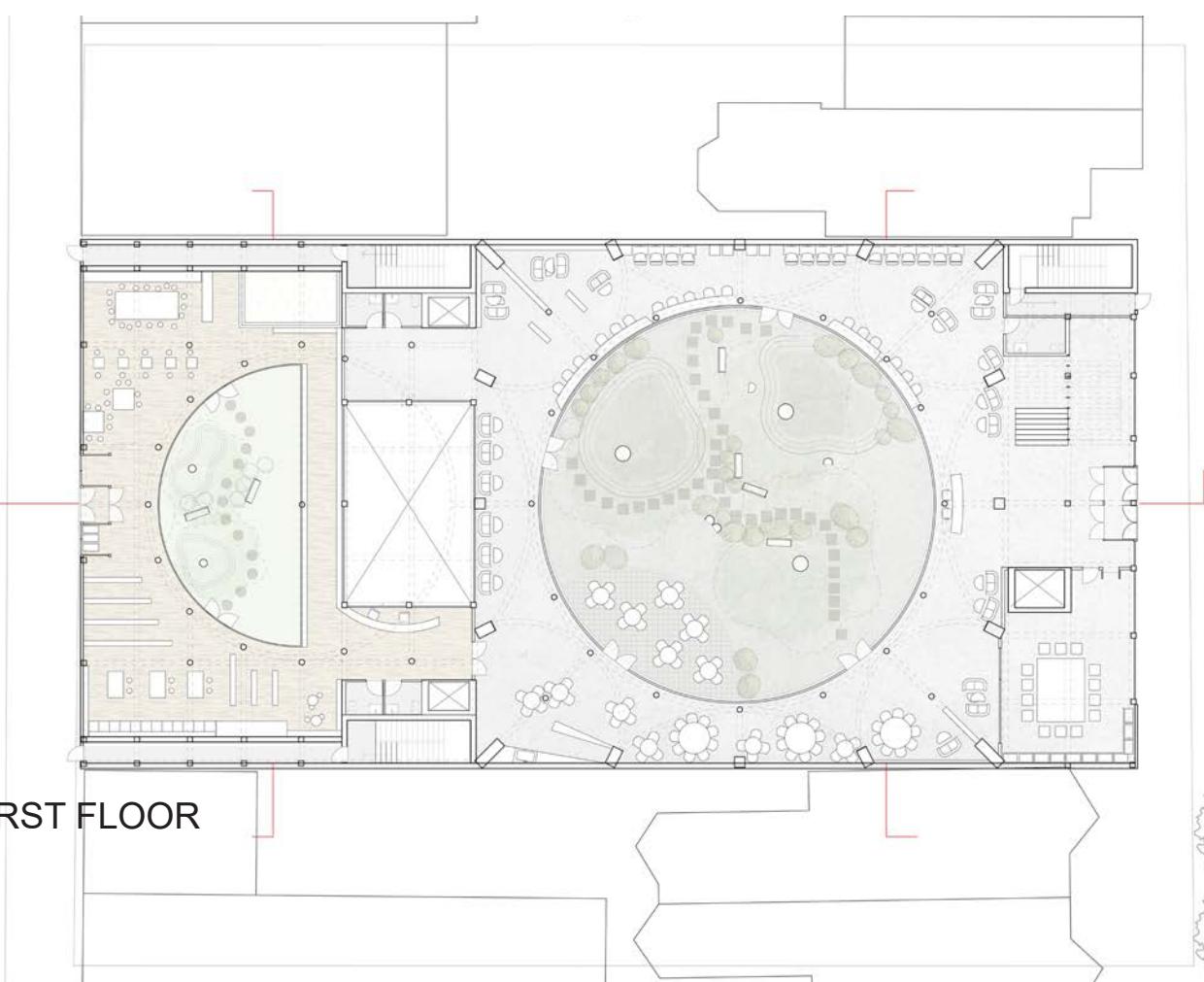
SITE PLAN



SECOND FLOOR

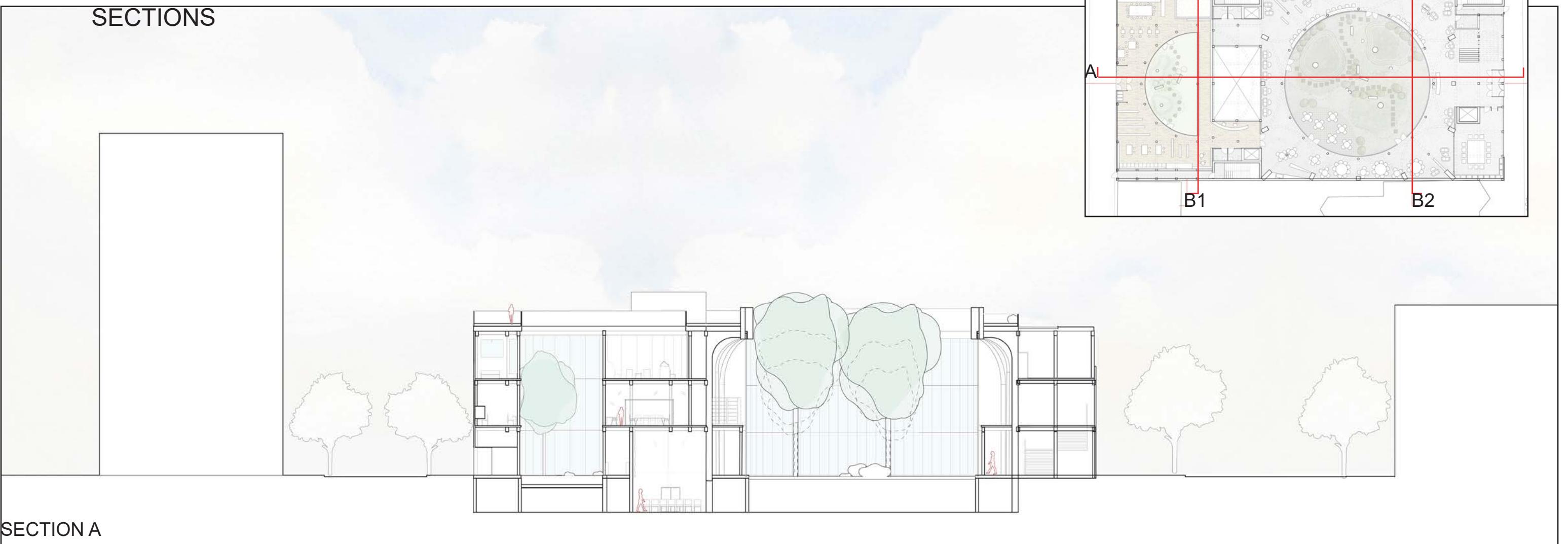


THIRD FLOOR

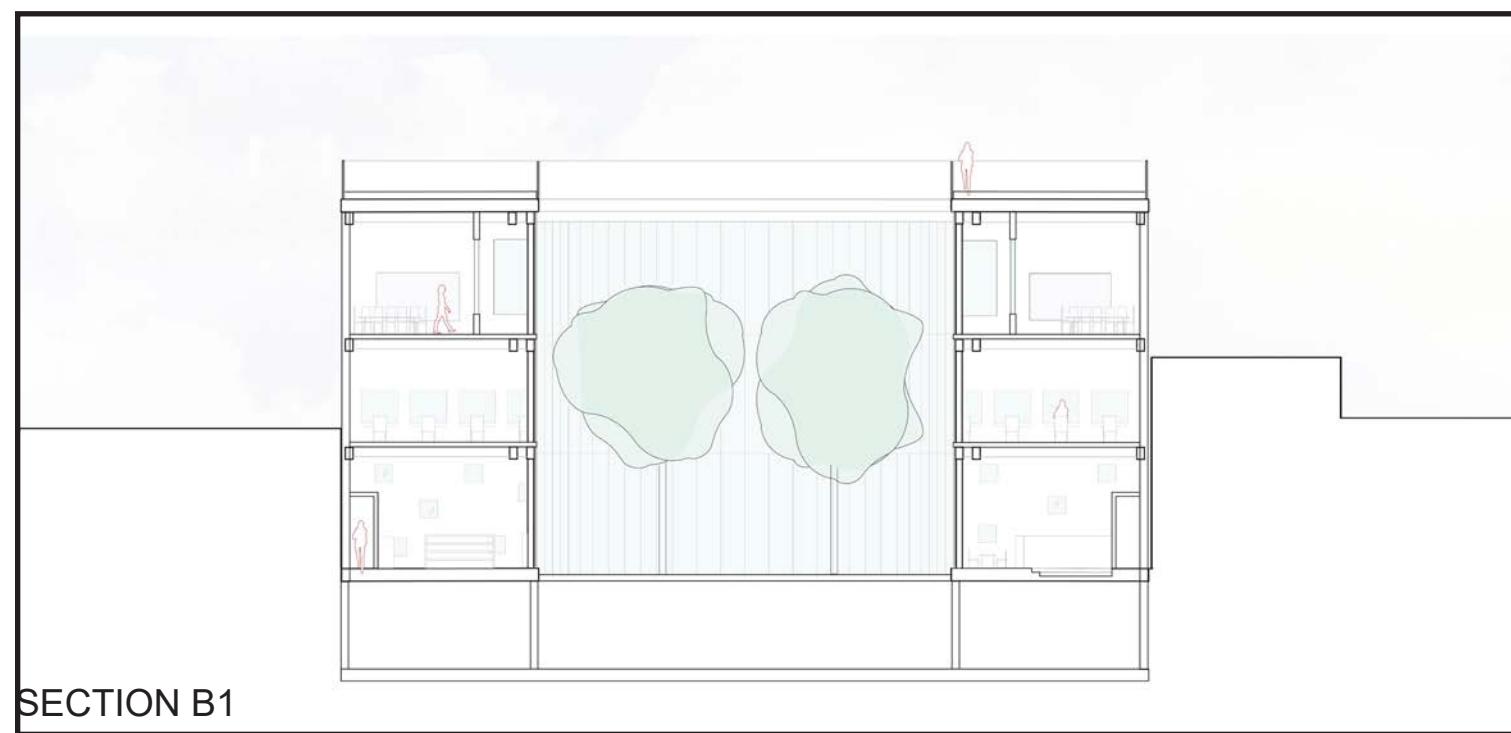


FIRST FLOOR

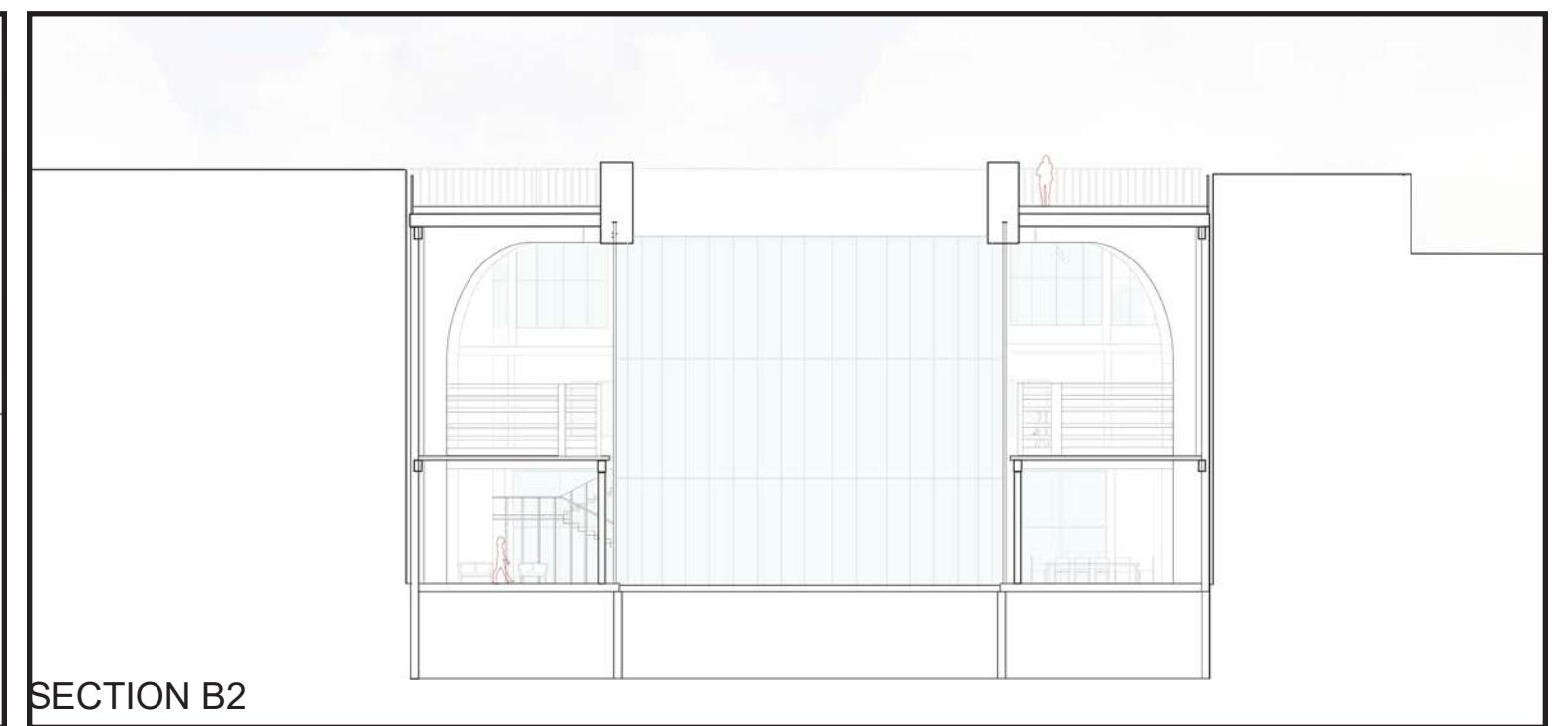
SECTIONS



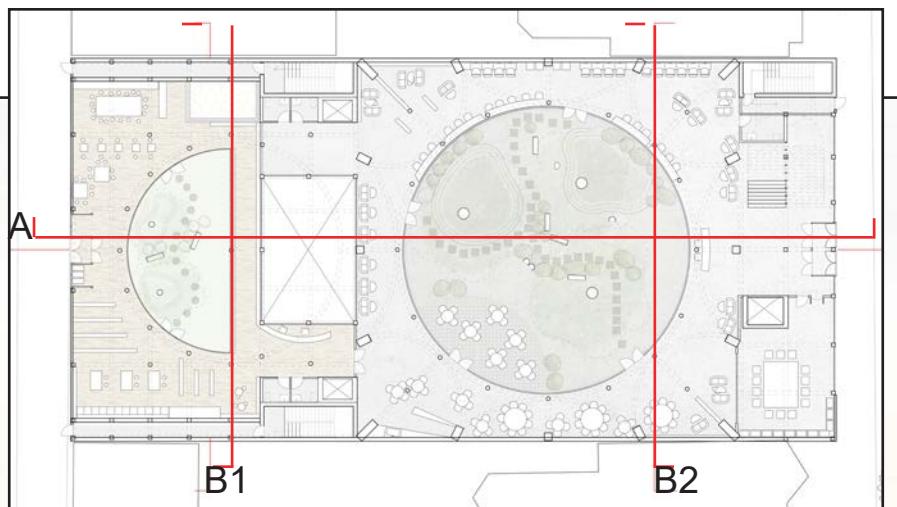
SECTION A



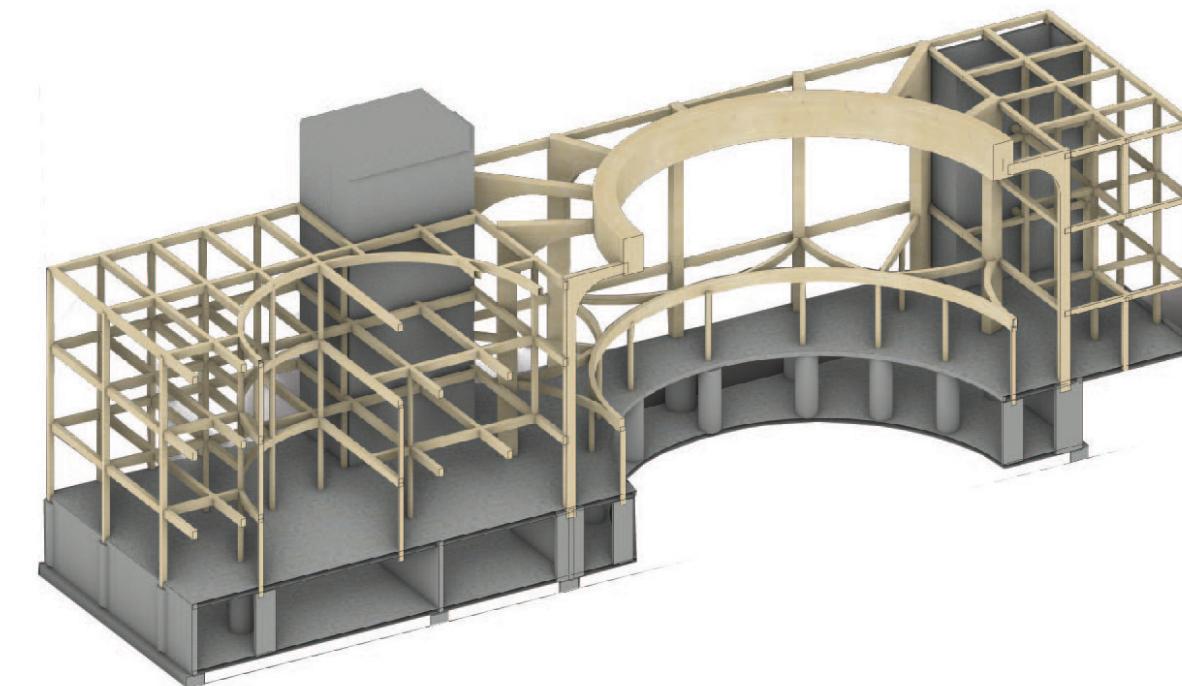
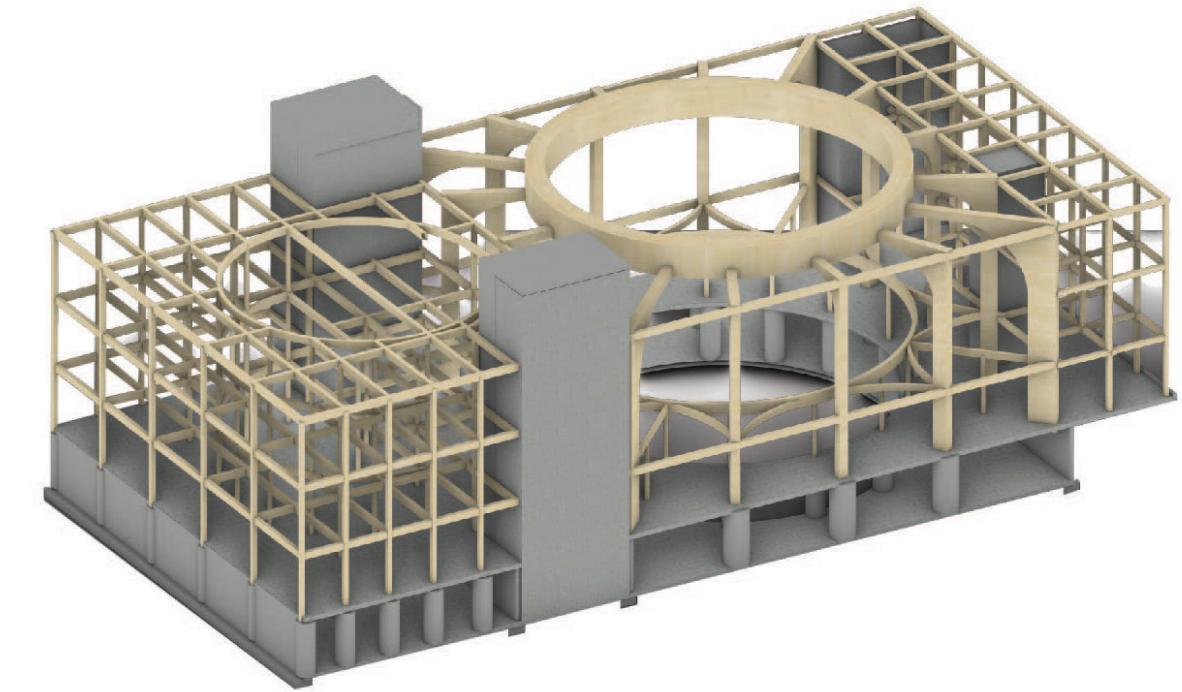
SECTION A



SECTION B2



STRUCTURAL DOCUMENTATION



PHYSICAL MODEL

DIGITAL MODEL

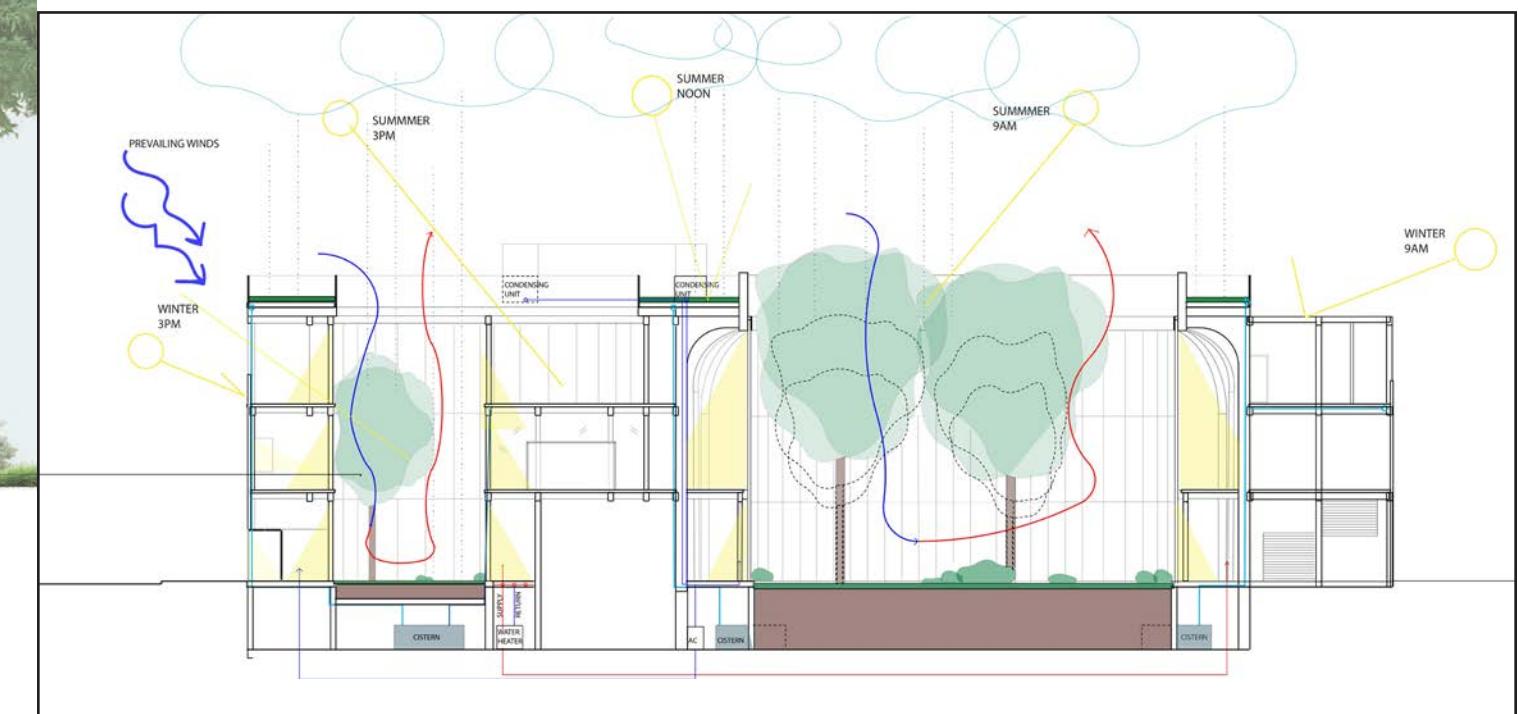
COMPOSITION DETAILS



DETAIL WALL SECTION

LONGSPAN STRUCTURE CONCEPT

I DREW SOME CONCEPTUAL INSPIRATION FROM THE MAGGIE LEEDS CENTRE BY HETHERWICK IN SATISFYING THE LONGSPAN STRUCTURE 5,000SQFT READING ROOM. A SERIES OF PROPORTIONALLY SIZED ARCHES CREATE A SQUARE ENCLOSING A PERFECT GLASS CYLINDER THAT ACTS AS A LARGE INTERIOR COURTYARD MAKING UP A SIGNIFICANT AMOUNT OF THE REQUIRED 'OPEN TO SKY' SPACE. A CLT COMPRESSION RING SUSPENDS THE GLASS INSIDE WHILE THE ARCHES COMPRESS THE OUTSIDE OF THE RING. THE CLT ARCHES ARE PLACED 25' ON CENTER CREATING A 100'X100'SQFT BOX. THE ONLY GLASS IS THE CENTER COURTYARD LEAVING THE EXTERIOR WALLS OPAQUE ALLOWING A NATURAL ORIENTATION TWOARD THE CENTER, ARCHES HELPING TO ENCLOSE THE USER WITHIN THE WORLD IVE CREATED. STACKS WITHIN THE LONGSPAN SPACE FOLLOW



COMPREHENSIVE SECTION

ELEVATIONS

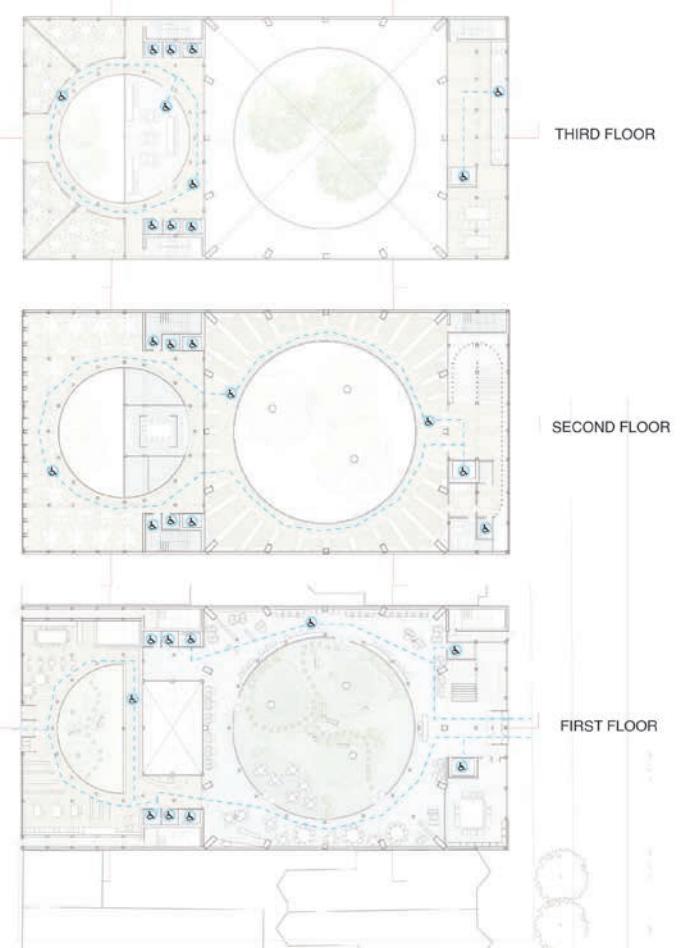


WAVERLY AVE. ELEVATION



WASHINGTON AVE. ELEVATION

ADA



RENDERS



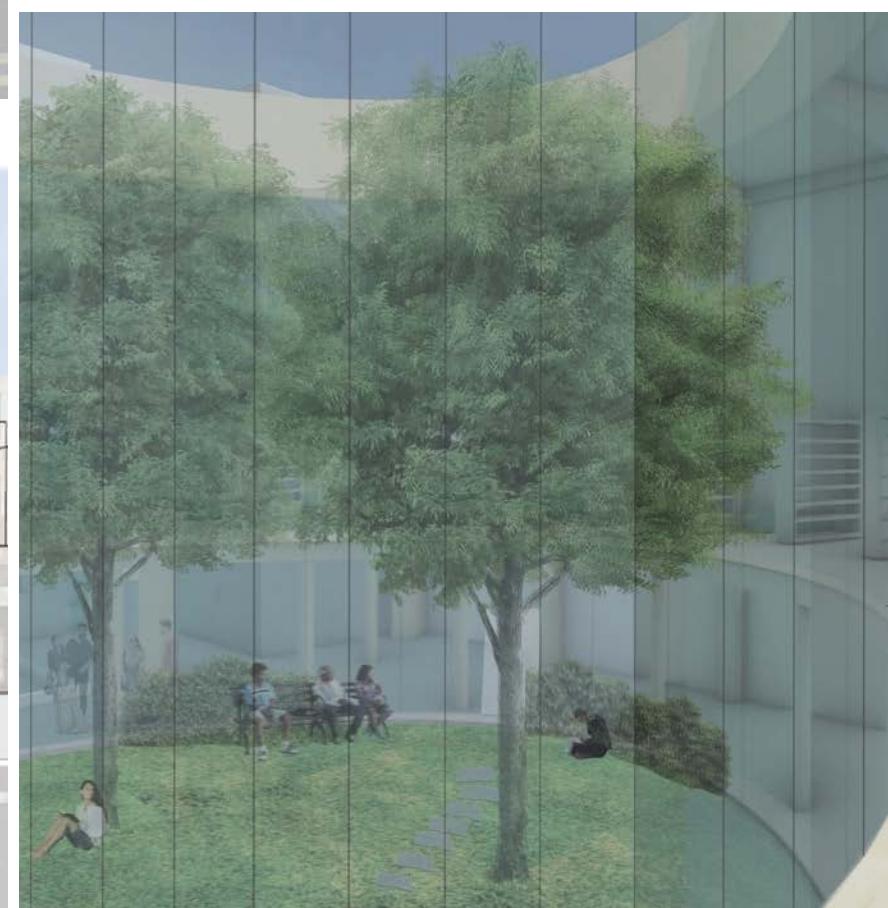
WASHINGTON AVE. PERSPECTIVE



GENERAL LOBBY PERSPECTIVE

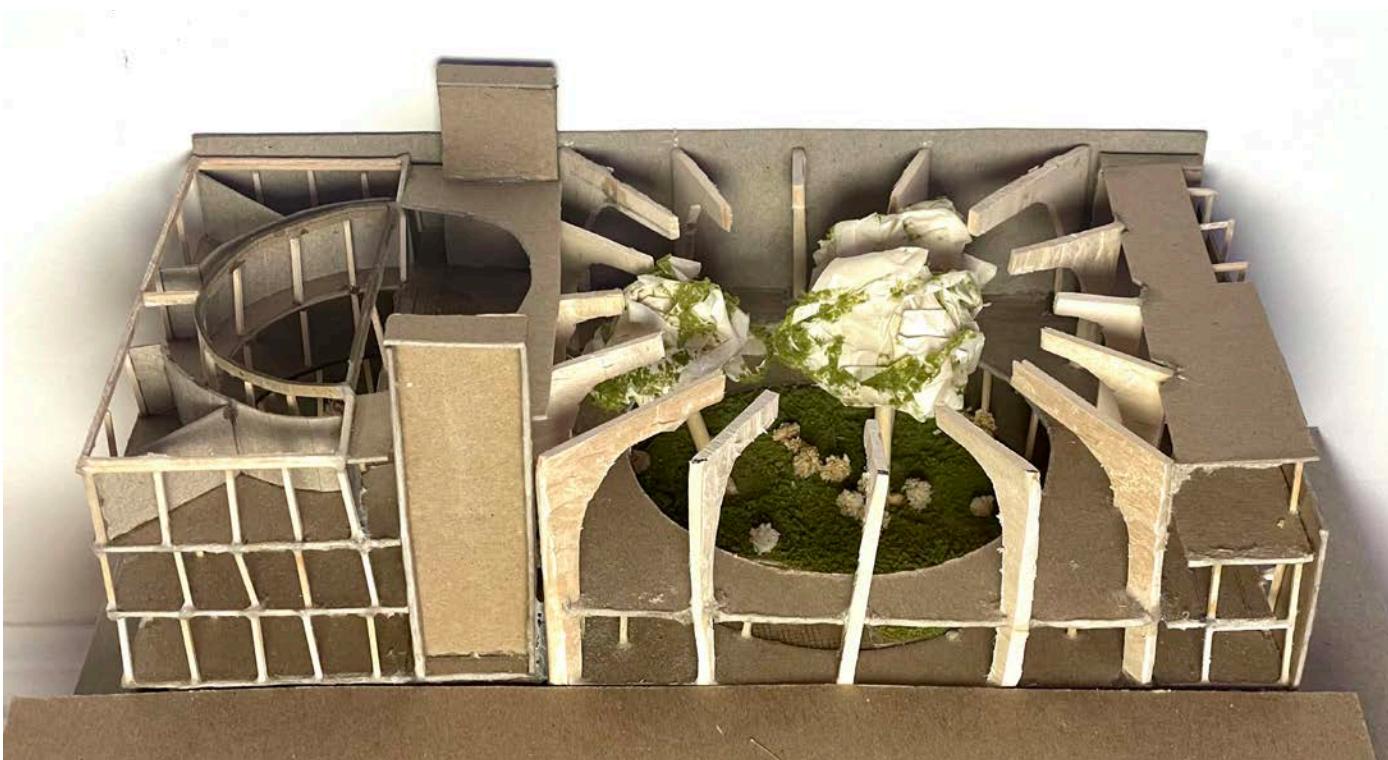


WAVERLY AVE. PERSPECTIVE



READING ROOM/COURTYARD PERSPECTIVE

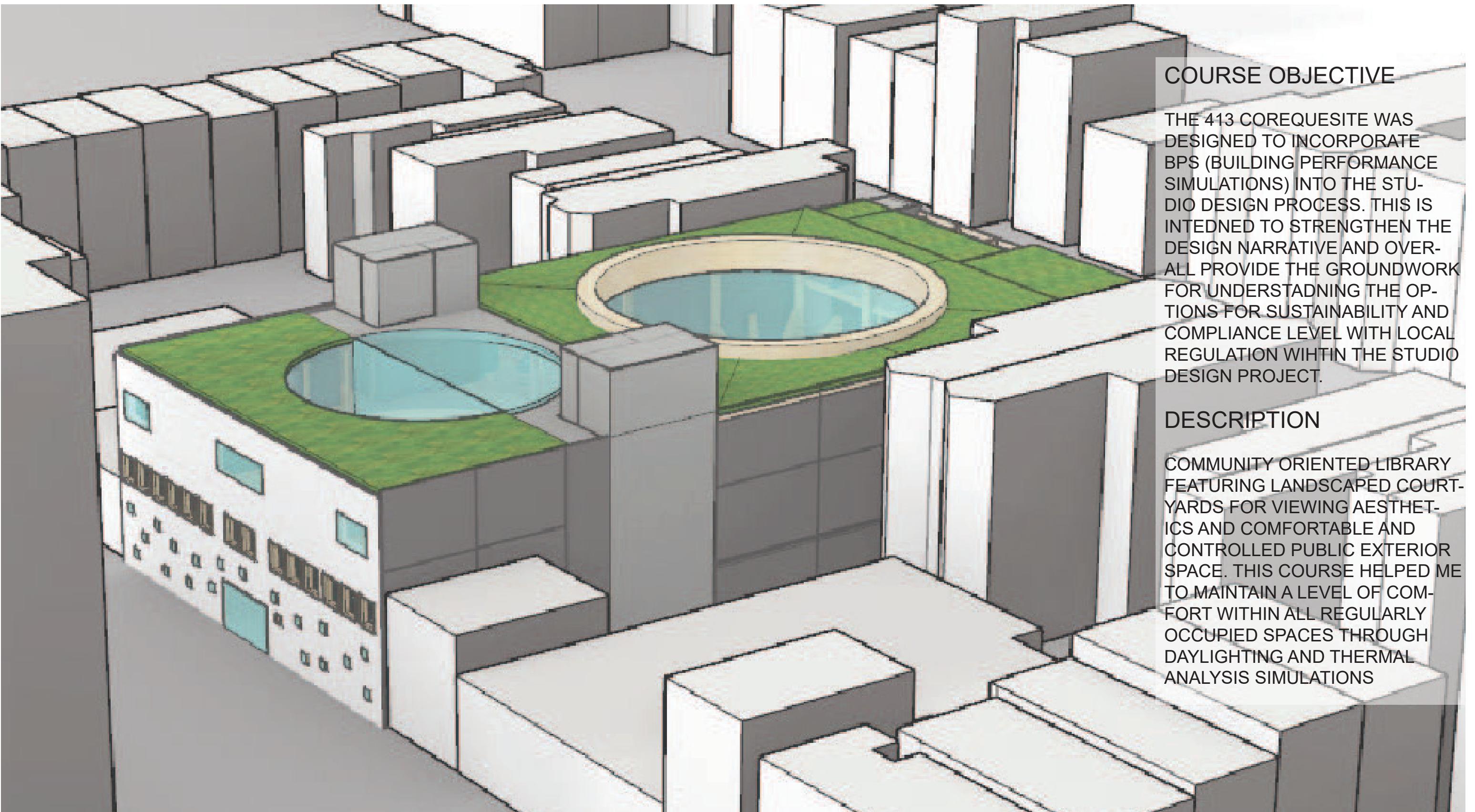
PROJECT PHYSICAL MODEL



DESIGN NARRATIVE

LIGHT FROM THE LARGE INTERIOR COURTYARD BRINGS YOU INSIDE THE MAIN LOBBY AND ORDERS YOU UP AND AROUND THE TREES WITHIN THE CENTER COURTYARD TO COLLECT A STORY AND NESTLE INTO THE ARCHES AND EXTERIOR WALLS. BOOKCASES FOLLOWING THE ABOVE STRUCTURE TO FRAME BEAUTIFUL EXTERIOR VIEWS CONCEPTUALLY DRIVEN BY THE DESIGN STIPULATION OF 40% OF THE THROUGH LOT BE 'OPEN TO THE SKY'. THE INTERIOR CIRCULATION IS MAINLY DEFINED BY LOOPS AND CIRCULATION ZONES LEAVING THE EXTERIOR LANDSCAPE TO BE FREE OF SYMMETRY OR REPEATING PATHS ALLOWING THERE TO BE MORE DISCOVERY AND PRIVACY. THE KIDS ENTRANCE ON THE OTHER SIDE FOLLOWS THE SAME RULE SET AT HALF THE SCALE WITH A FAÇADE OF WINDOWS THAT HINT AT THE PROGRAM BEHIND THEM. THE PROJECT UTILIZES OPEN CONCEPT PROGRAMS MESHING WHATS NORMALLY DIVIDED INTO ROOMS IS FREE FLOWING ON THE FIRST FLOOR ALLOWING YOU TO MOVE AROUND THE COURTYARD EITHER THROUGH THE PERIODICAL AND CAFE OR THE MEDIA AND YOUNG ADULT AREA ALL SPACES PROMOTE CONNECTIVENESS WITHIN THE COMMUNITY.

7. ENVIRONMENTAL SIMULATION ANALYSIS- 413



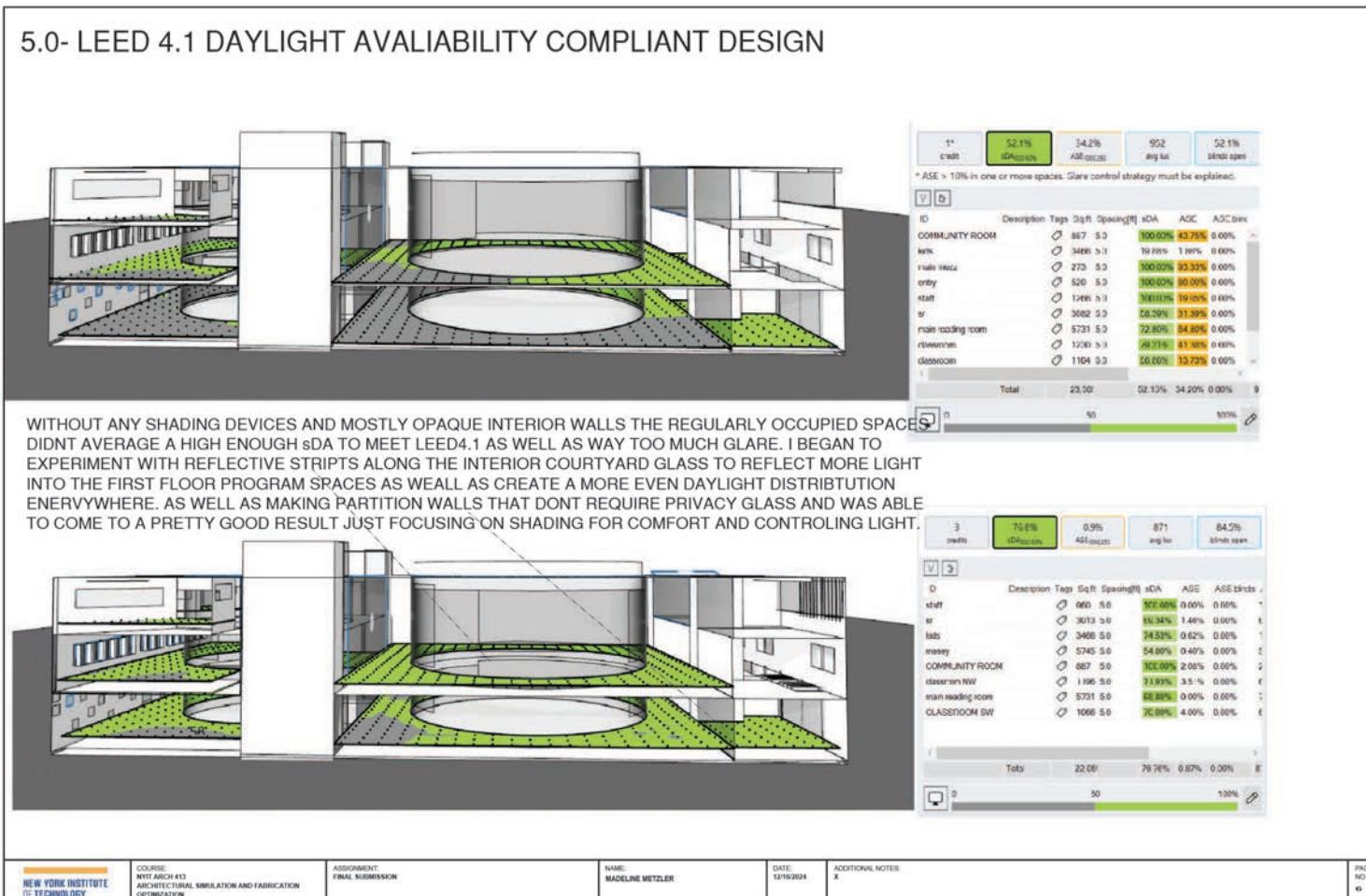
COURSE OBJECTIVE

THE 413 COREQUESITE WAS DESIGNED TO INCORPORATE BPS (BUILDING PERFORMANCE SIMULATIONS) INTO THE STUDIO DESIGN PROCESS. THIS IS INTENDED TO STRENGTHEN THE DESIGN NARRATIVE AND OVERALL PROVIDE THE GROUNDWORK FOR UNDERSTANDING THE OPTIONS FOR SUSTAINABILITY AND COMPLIANCE LEVEL WITH LOCAL REGULATION WIHTIN THE STUDIO DESIGN PROJECT.

DESCRIPTION

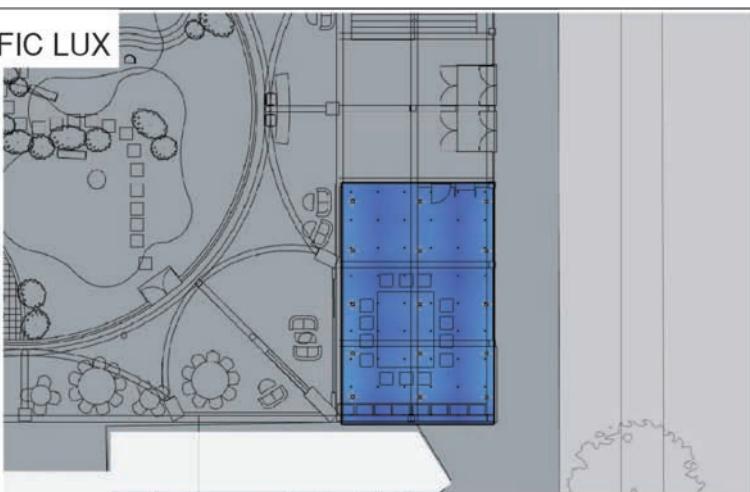
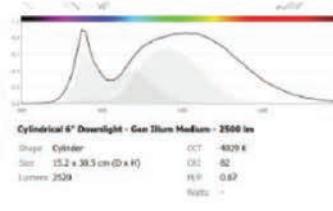
COMMUNITY ORIENTED LIBRARY FEATURING LANDSCAPED COURTYARDS FOR VIEWING AESTHETICS AND COMFORTABLE AND CONTROLLED PUBLIC EXTERIOR SPACE. THIS COURSE HELPED ME TO MAINTAIN A LEVEL OF COMFORT WITHIN ALL REGULARLY OCCUPIED SPACES THROUGH DAYLIGHTING AND THERMAL ANALYSIS SIMULATIONS

5.0- LEED 4.1 DAYLIGHT AVAILABILITY COMPLIANT DESIGN



7.0- ELECTRIC LIGHTING DESIGN- TASK SPECIFIC LUX

I CHOSE THE COMMUNITY ROOM SPACE TO MEET THE TASK SPECIFIC ELECTRIC LIGHTING SIMULATION BECAUSE IT FELT PROBABLE TO BE USED AFTER DARK AS WELL AS ITS PROXIMITY TO THE STREET THAT THEN, WITH THE WINDOWS, CAN BE USED TO LIGHT UP THE SIDEWALK AT NIGHT IF ITS BEING USED.



TARGET LUX GENERAL ASSMEBLY- 30FC



A 3x5 ARRAY OF THE CYLINDRICAL 6" DOWNLIGHT FROM CLIMATE STUDIO YEILED A SUFFICIENT LIGHTING SETUP THAT CAN ALLOW FOR LESS OR MORE LIGHT WAS NECESSARY TO THE TIME OF DAY AND PROGRAM AT THE TIME.

8.0- OPTIMIZED LOW ENERGY DESIGN

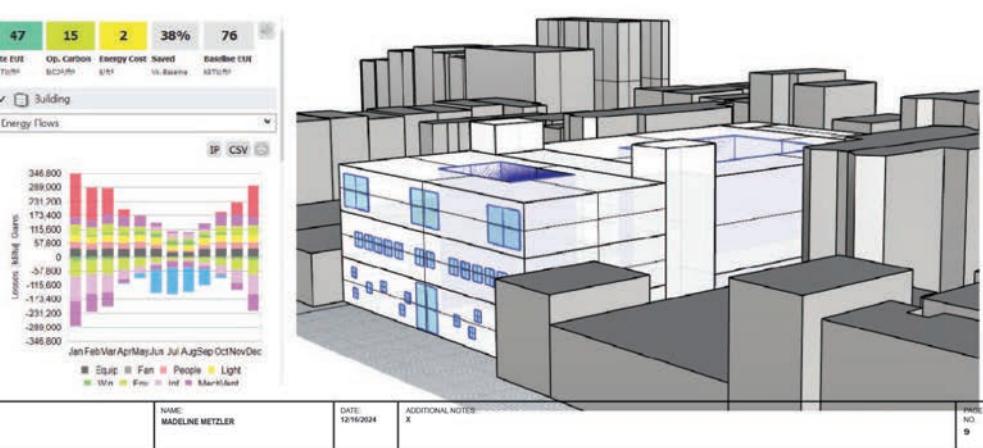
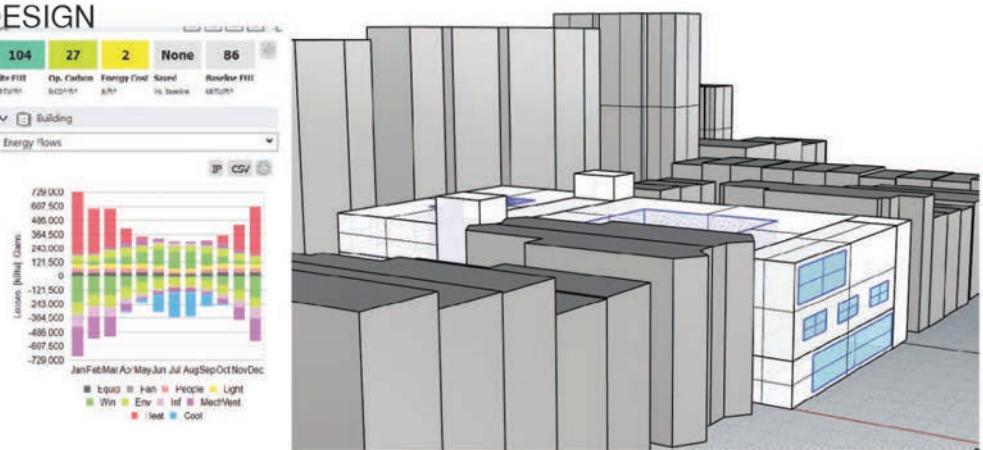
TO COMPLETE THE THERMAL ANALYSIS FOR MY DESIGN IN CLIMATE STUDIO I HAD TO SIMPLIFY THE GEOMETRY INTO STRAIGHT SURFACES WITH THE SAME SQUARE FOOTAGE, BUT I WAS STILL ABLE TO ACHIEVE A COMPARABLE RESULT.

I STARTED THE PROCESS WITH THE TEMPLATE 1.0 LIBRARY USE TYPE. I BEGAN THE OPTIMIZATION PROCESS BY SEPERATING THE ZONES INTO SENSIBLE OCCUPANCY NUMBERS/ INFILTRATION NUMBERS.

THEN UTILIZED THE PROJECT SPECIFIC FACADE ENVELOPE ASSEMBLY AS WELL AS CUSTOM WINDOWS FOR SPECIFIC FACADES/AREAS OF THE PROJECT. AS WELL AS ADDING ACCURATE FRAMES/SHADE FOR THE WINDOWS PER THE sDA/GLARE STUDY.

FINALLY I CREATED SPECIFIC LIGHT AND ENERGY SCHEDULES FOR THE DIFFERENT ZONES AS WELL AS SCHEDULES SPECIFIC TO THE ELECTRIC NEEDS OF THAT SPACE WHICH FOR MANY WAS VERY LITTLE/CHANGES SEASONALLY.

ALSO MESSED AROUND WITH DIFFERENCE BETWEEN BOILER AND ELECTRIC HEATING SYSTEMS AND INFILTRATION/VENTILATION NEEDS, YIELED SIMILAR RESULTS.



9.0- NYC LL 97 COMPLIANCE DOCUMENTATION

FINALLY WE USED GRASSHOPPER TO CREATE SIMULATION SCHEDULES FOR THE UTILIZATION OF NATURAL VENTILATION REFERENCED WITH THE LOCAL CLIMATE FILE FOR A SPECIFIC RANGE OF TEMPERATURES WHEN THIS IS USABLE. THIS ON TOP OF THE OPTIMIZED ENVELOPE/OPERATION SYSTEM HAD A SIGNIFICANT AFFECT ON THE SITE EUI. A SCRIPT WAS ALSO USED TO SIMULATE THE AMOUNT OF SOLAR ENERGY THAT COULD BE PRODUCED BY A CANOPY COVERING THE GREEN ROOF. THESE NUMBERS REFERENCED WITH THE SIMULATION ITERATION FROM THE PREVIOUS PAGE ILLUSTRATE THE LEVEL OF COMPLIANCE PER THE LL97 STANDARDS FOR THE DECADES TO COME. MY DESIGN WITH MAX AMOUNT OF SOLAR REAL ESTATE USED AND FULLY (.9) OPERABLE WINDOWS FOR VENTILATION PRODUCED A MODEL THATS COMPLIANT THROUGH 2050.

Sim #	Allowed Operation Carbon (lbCO ₂ /sf)				Run Description	Build area (sf)	Design			Loads			CO ₂			Compliance			
	Occup	2024	2029	2035			SiteEUI (kBtu/sf)	PV (kBtu/sf)	Total	Co ₂ (lb/sf)	Coeff	Total CO ₂ (lb/sf)	2024	2029	2035	2050			
1	A	23.68	9.26	TBD	3.09	450,000	YES	132	40	92	33	0.25	23.00	YES	NO	TBD	NO		
2	A	23.68	9.26	TBD	3.09	450,000	YES	93	40	53	25	0.27	14.25	YES	NO	TBD	NO		
3	A	23.68	9.26	TBD	3.09	450,000	YES	77	40	37	21	0.27	10.09	YES	NO	TBD	NO		
4	A	23.68	9.26	TBD	3.09	450,000	YES	49	40	9	15	0.31	2.76	YES	YES	TBD	YES		
5	A	23.68	9.26	TBD	3.09	450,000	YES	31	40	-9	11	0.35	-3.19	YES	YES	TBD	YES		

