



# Open Arms Youth Center

Autumn Hinson | Gauge Bethea



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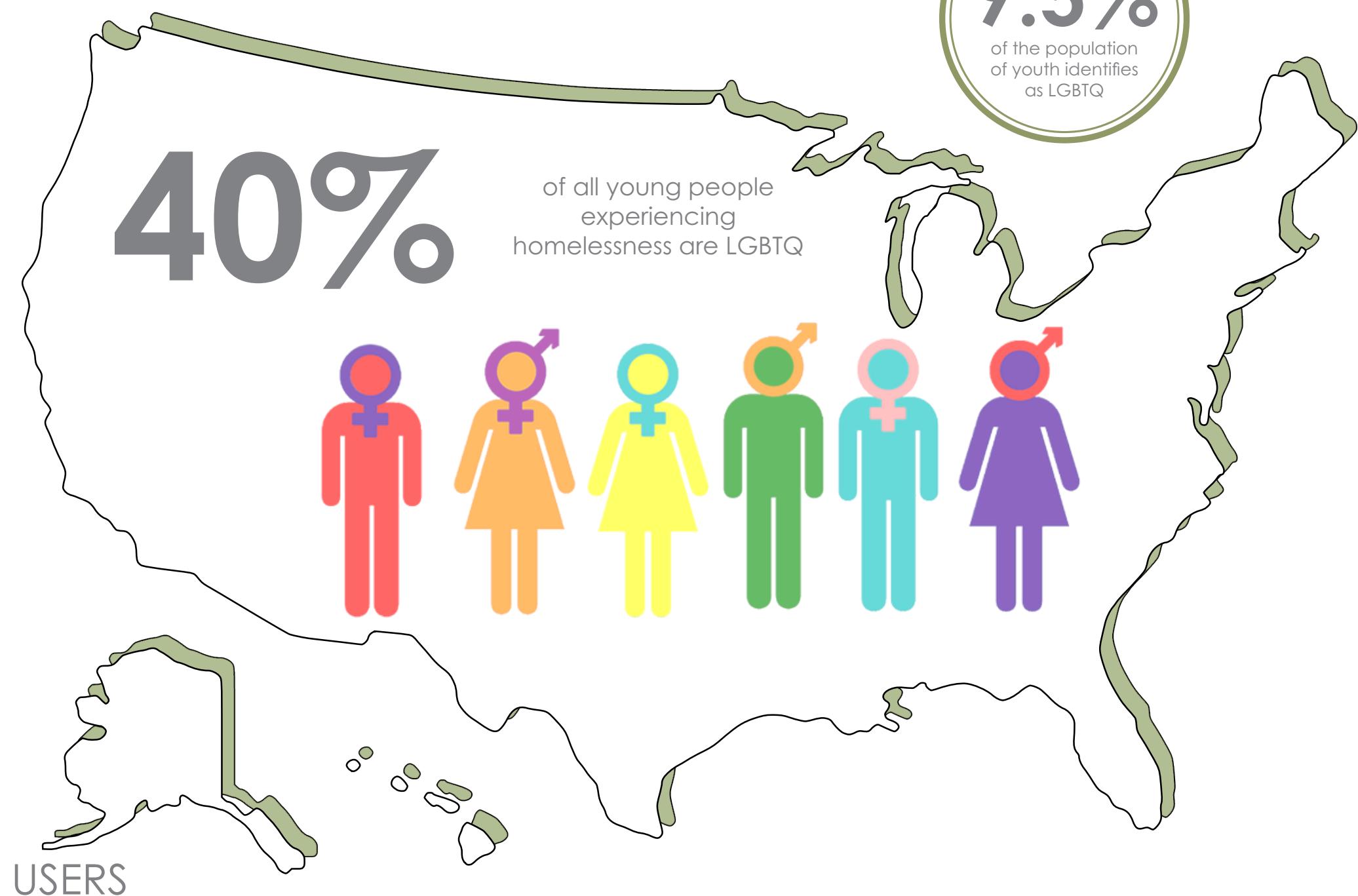
*Completed: M.ARCH II | 2nd Year | Spring 2023*

*Professors: Ulrike Heine, Dustin Albright, Ufuk Ersoy*

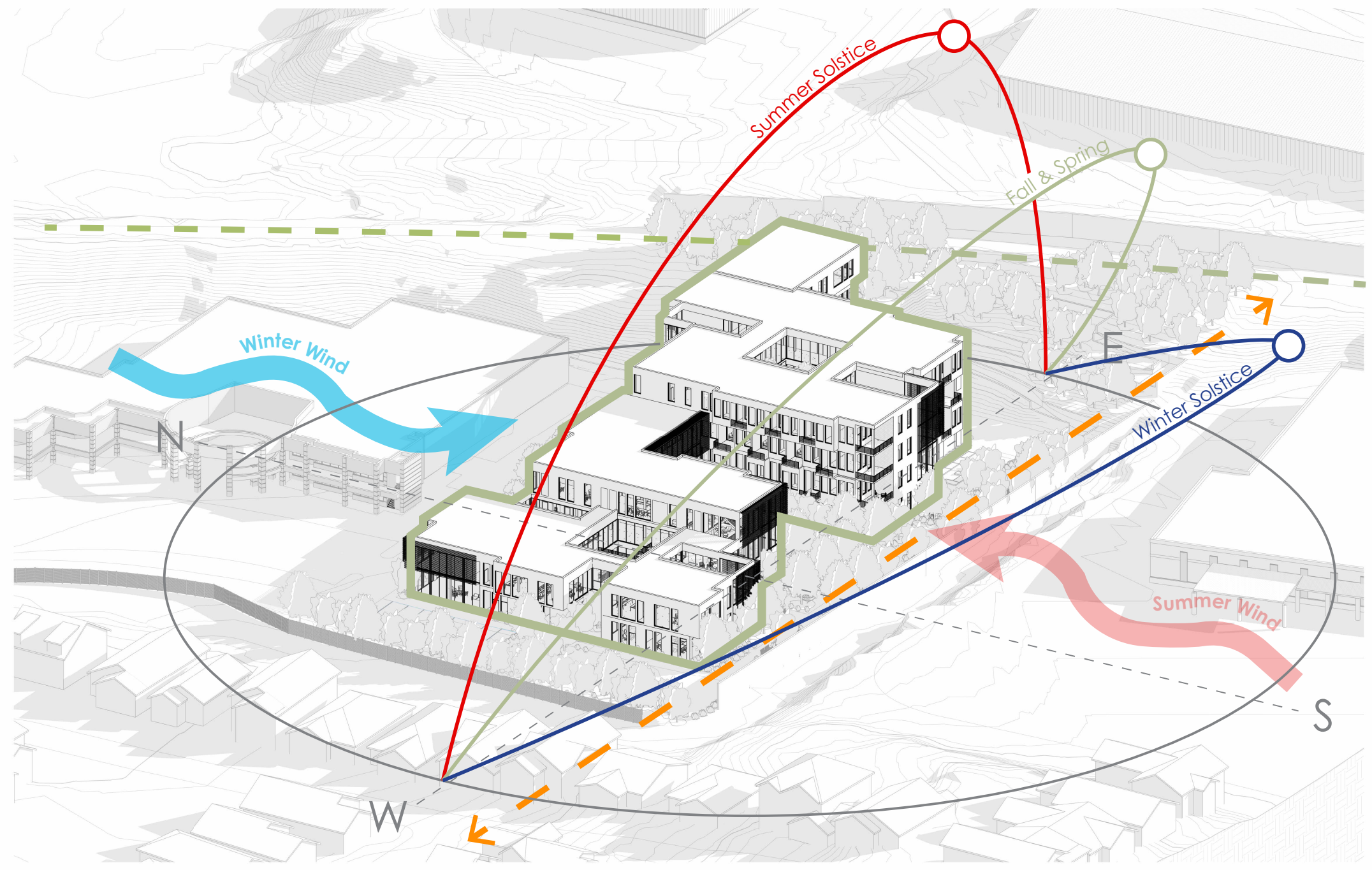
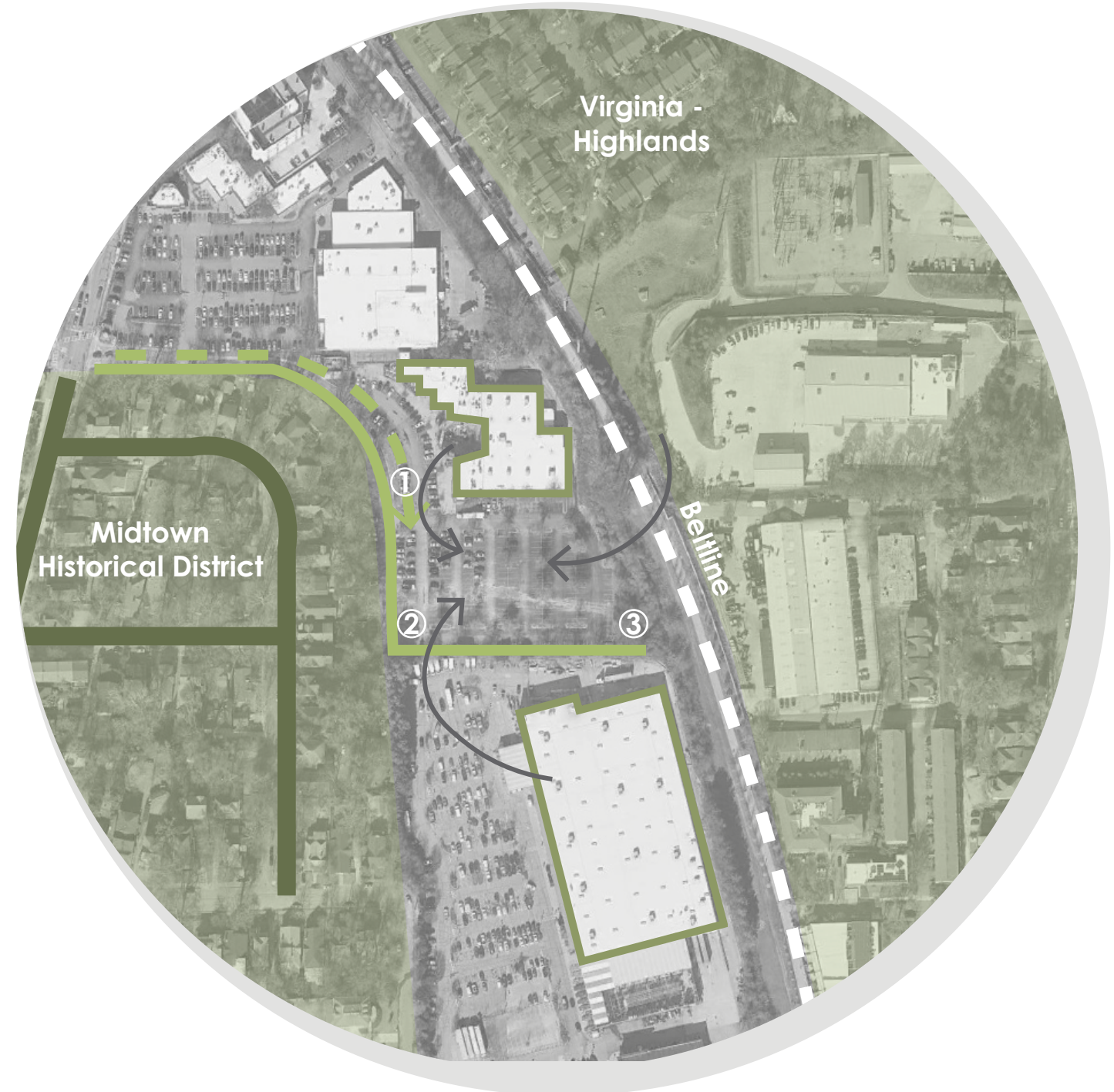
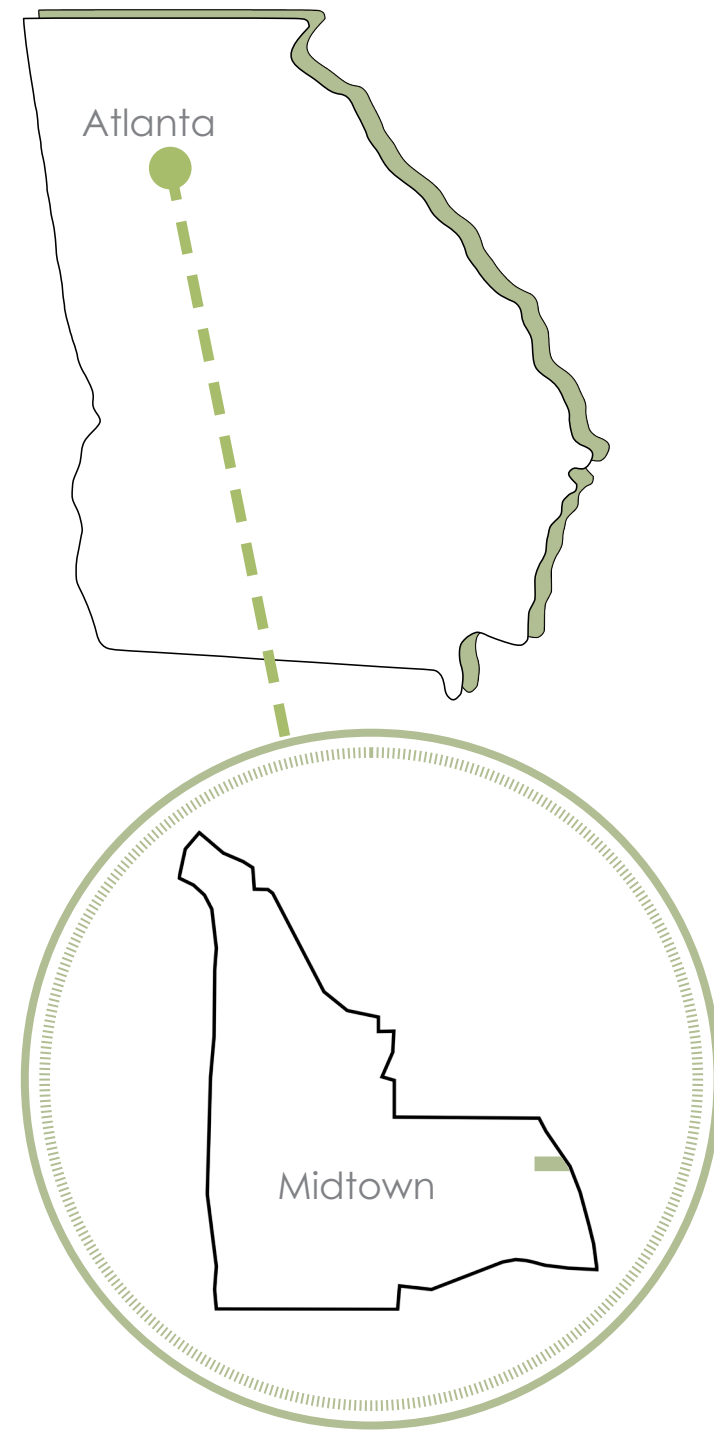
*Autumn Hinson + Gauge Bethea*

Open Arms is an **at-risk youth resource center** and housing complex catered towards the LGBTQ youth in the Midtown area of Atlanta, Georgia. The intent of Open Arms is to provide a safe place for this group who are seeking **shelter, hope, and inspiration** by providing representation and resources. In conjunction with Midtown's EcoDistrict Initiative, Open Arms looks to be a connection point by creating an **immersive environment** along the Beltline in the city of Atlanta. Through the use of internal and external light wells and courtyards, transition spaces are the link between nature and the built form. Open Arms offers **affirmation** resources such as clothing and barber shops for those looking to express themselves as well as educational resources in the form of tutoring spaces, study rooms, art and technology spaces and a library. A medical and dining facility is housed on site for residents and incoming youth looking for shelter. Open Arms' medical and dining facility is the only 24-hour resource in the Midtown area catered towards LGBTQ youth and amenities such as a pantry and thrift shop are there for the community to participate in helping to provide the youth with **hope and inspiration for the future**. Open Arms houses 30 residents ranging in the age of 14-22 with 2 in-house staff units, a communal laundry facility and a gym. Residents have a private entrance entering from the Beltline on the 3rd floor leading them to their units. Single occupancy units with their own bathroom and kitchenettes are provided for each resident to reinforce **independent living and individuality** during their stay at Open Arms. Through the immersion of nature, Open Arms looks to provide at-risk LGBTQ youth in the Midtown area with the resources to feel safe and independent in a space where **representation and advocacy**, not only for them but for the environment, is the core of its mission.

# LGBTQ Youth At-Risk



USERS



SITE POTENTIAL

SITE STRATEGIES

“SPUR ACTIONS THAT FURTHER ENHANCE MIDTOWN’S DEVELOPMENT AS ONE OF THE NATION’S MOST LIVABLE, INNOVATIVE, ECONOMICALLY SUCCESSFUL, AND SUSTAINABLE COMMUNITIES.”

- MIDTOWN ALLIANCE



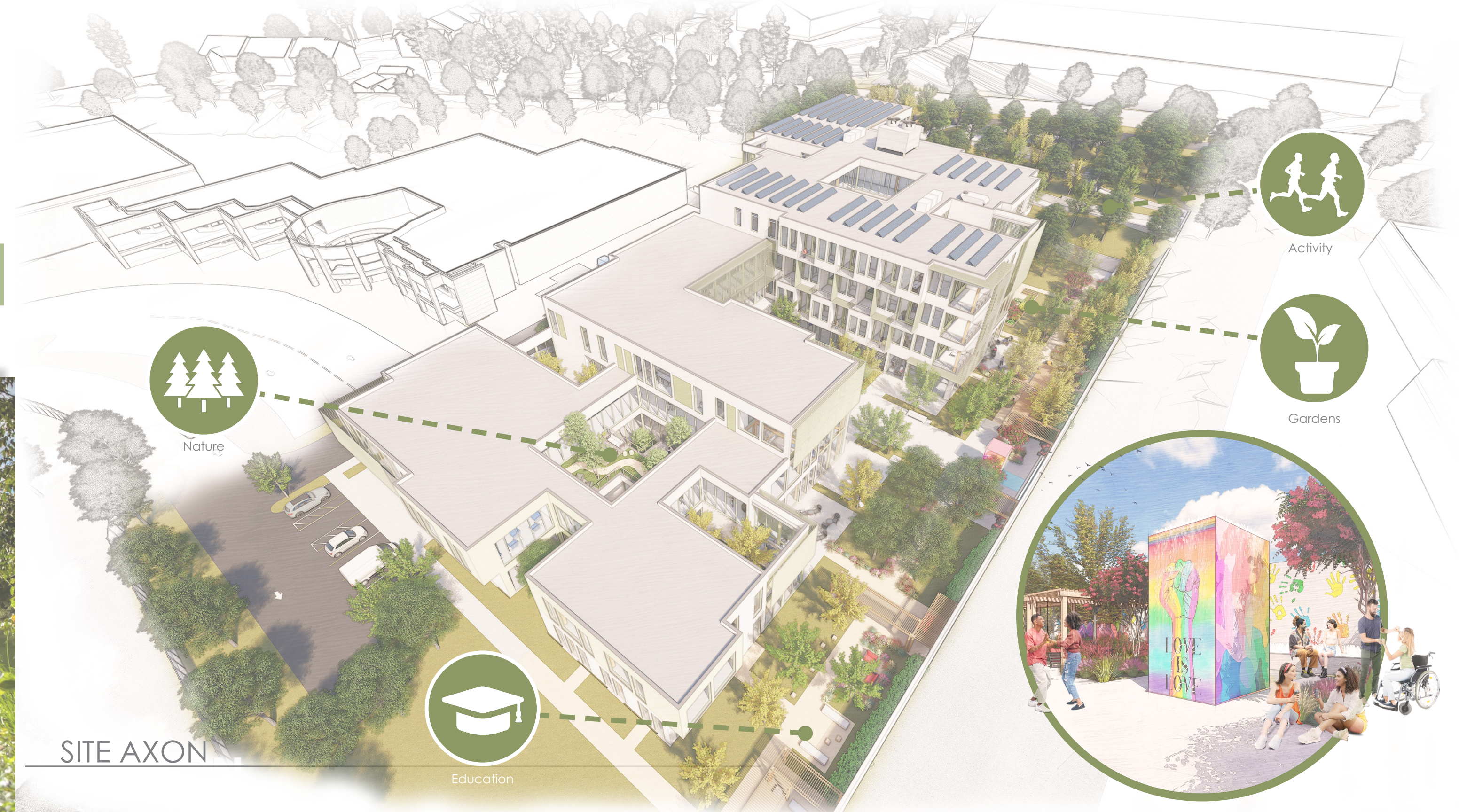
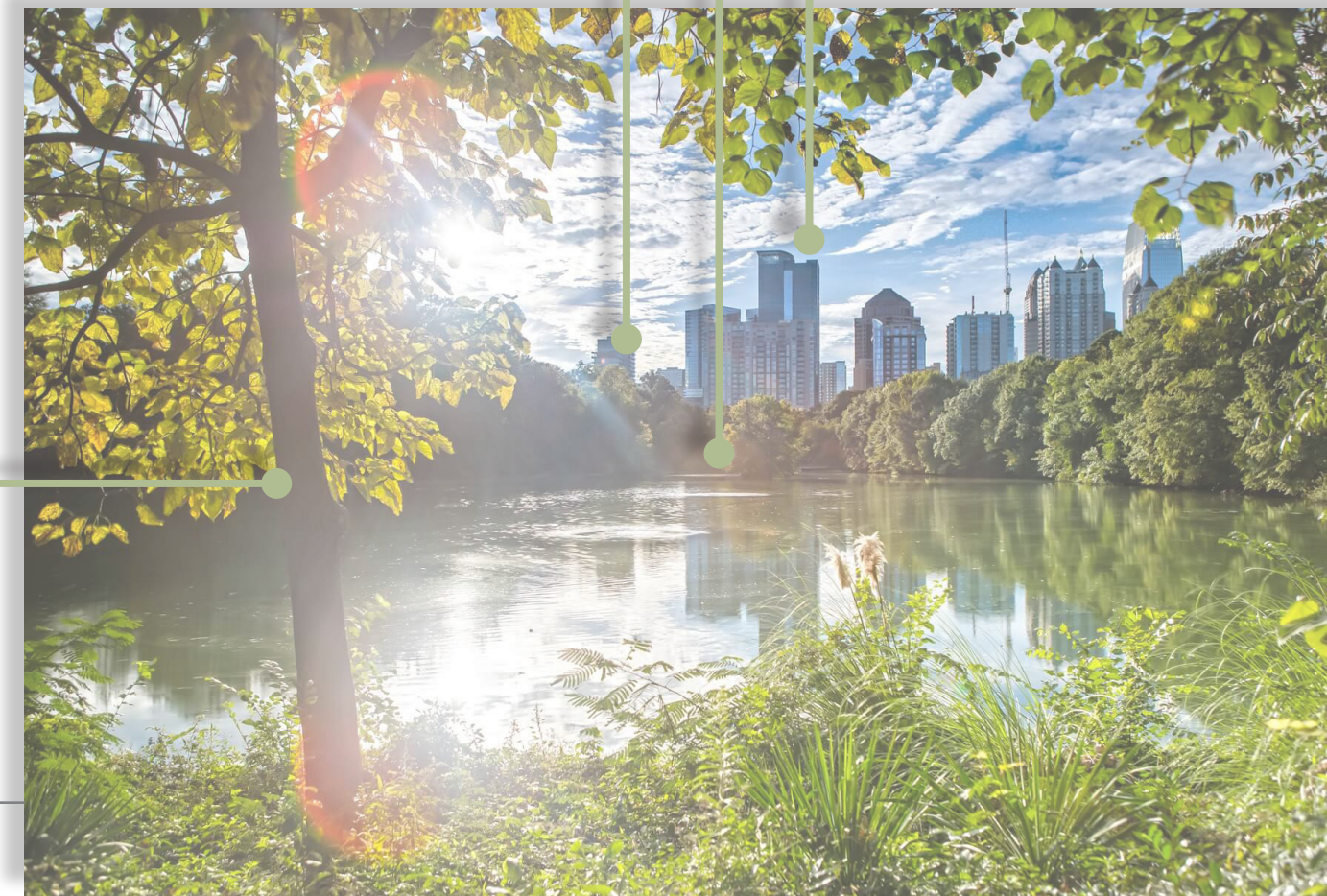
ECO-DISTRICT

10,000,000 FT<sup>2</sup> LEED CERTIFIED BUILDINGS

6.1 MILES OF MARKED BICYCLE FACILITIES

35 BUILDINGS COLLECT AND REUSE RAINWATER

800 TREES PLANTED BY MIDTOWN ALLIANCE



SITE AXON



CONNECTIVE SPACE



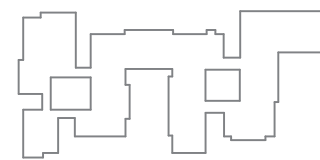
Break-Out Zones



Self Expression

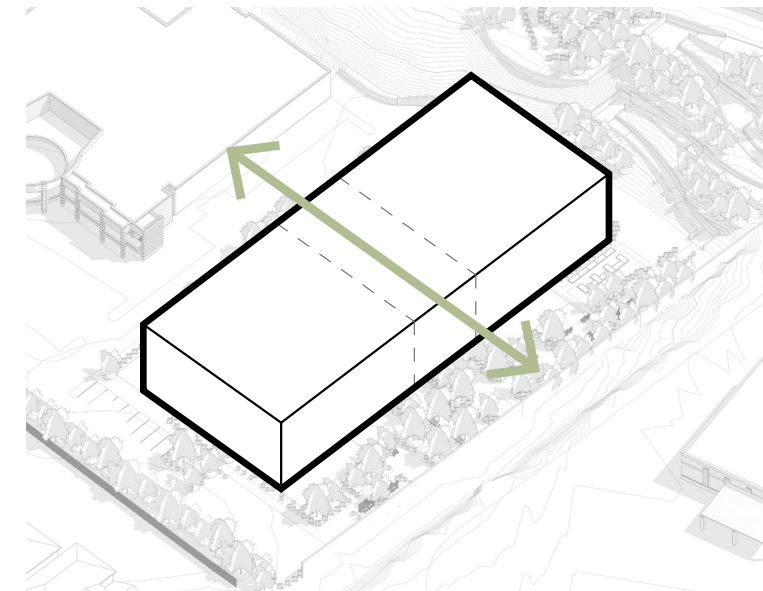


Socialization

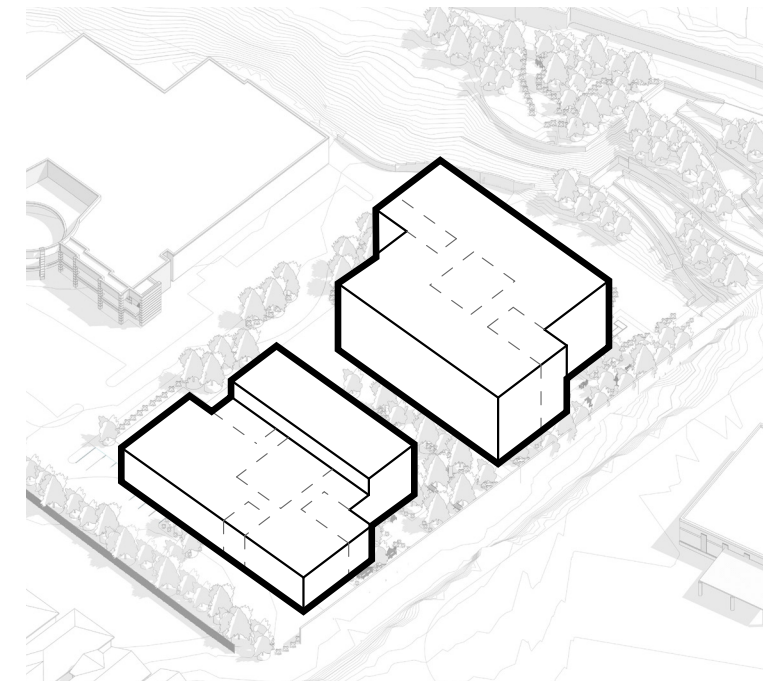


BUILDING STRATEGIES

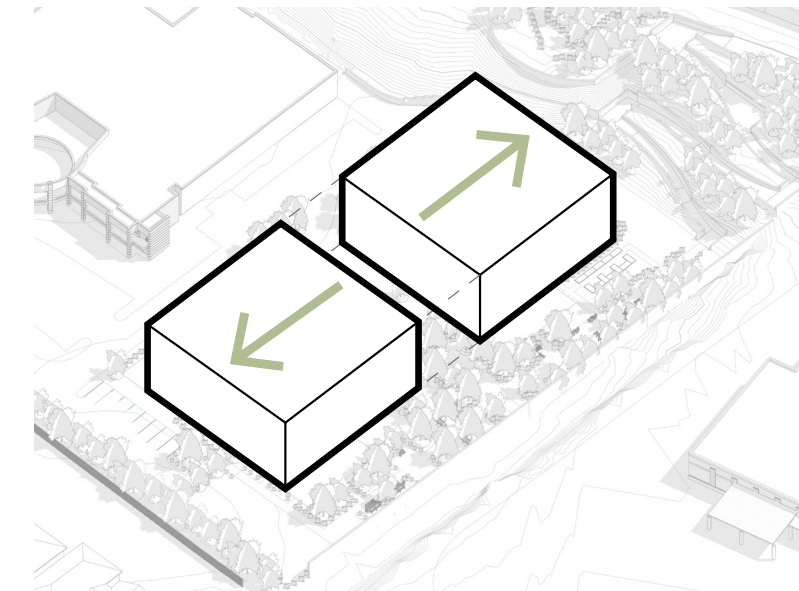
SLICE



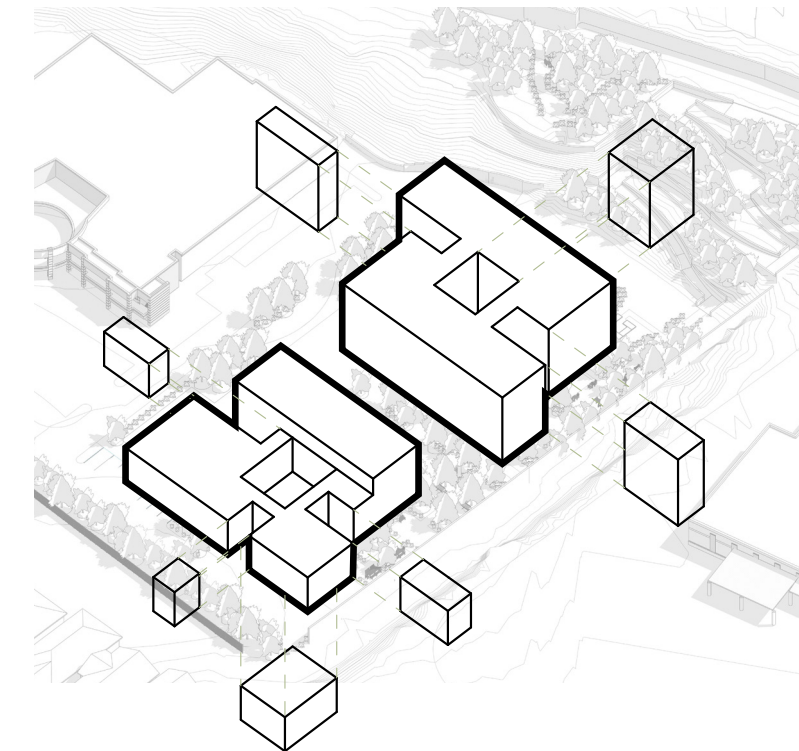
CARVE



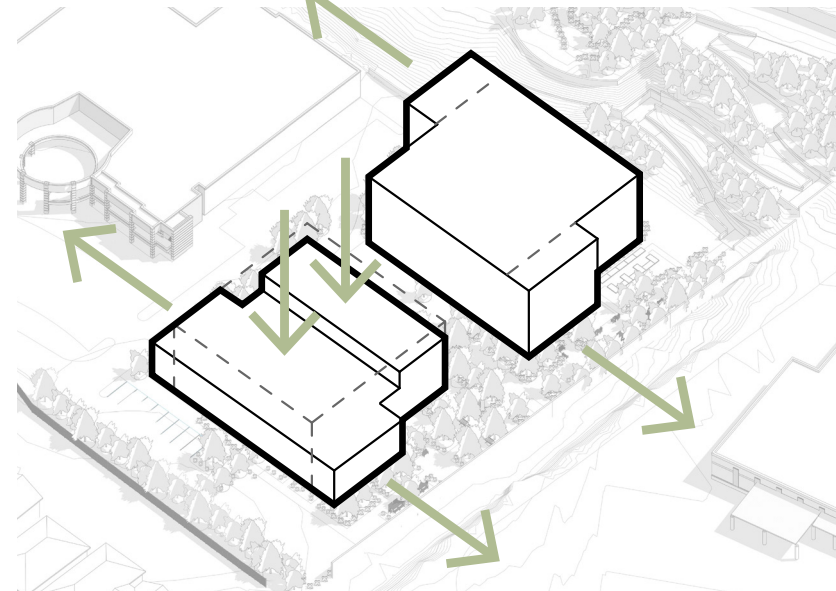
SPLIT



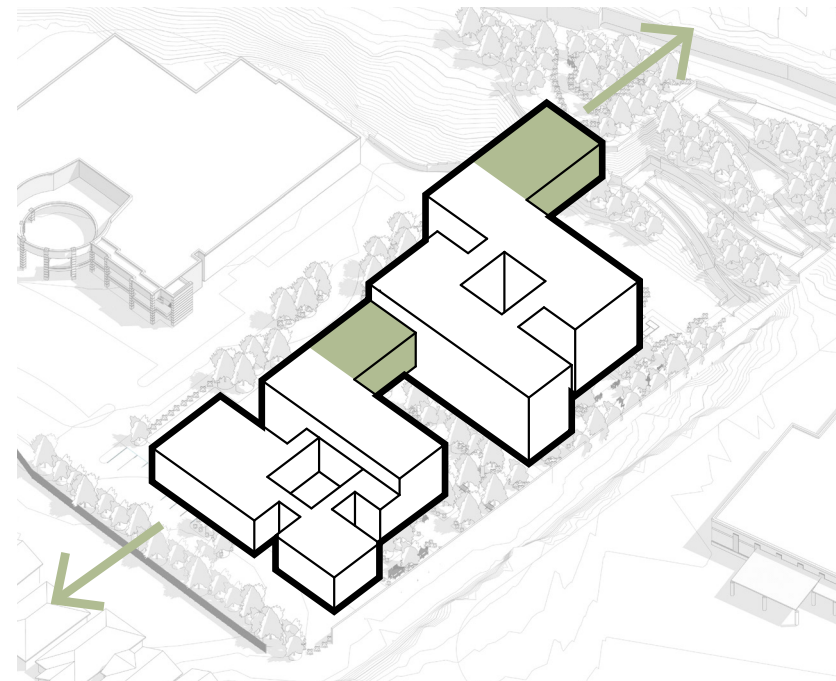
EXTRACT



MANIPULATE



BRIDGE





IMMERSIVE ENVIRONMENT



Tree Regrowth



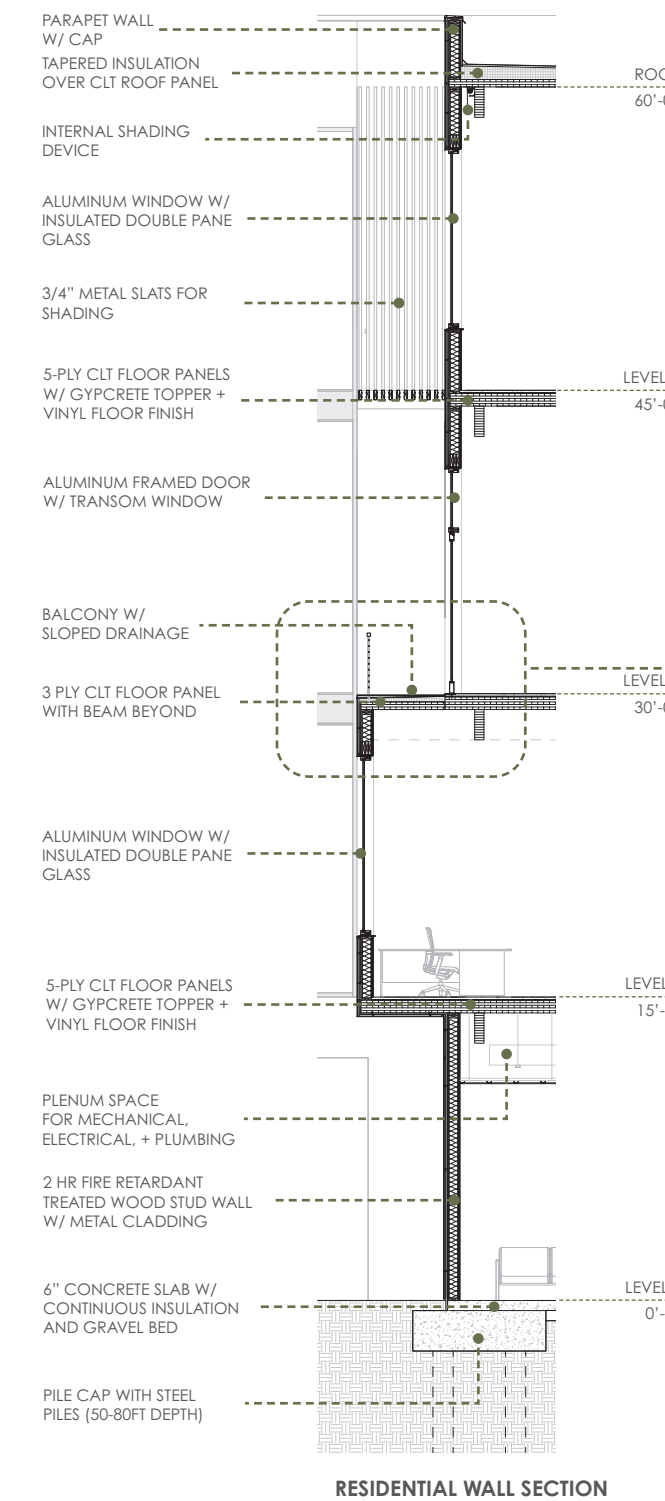
Biodiversity



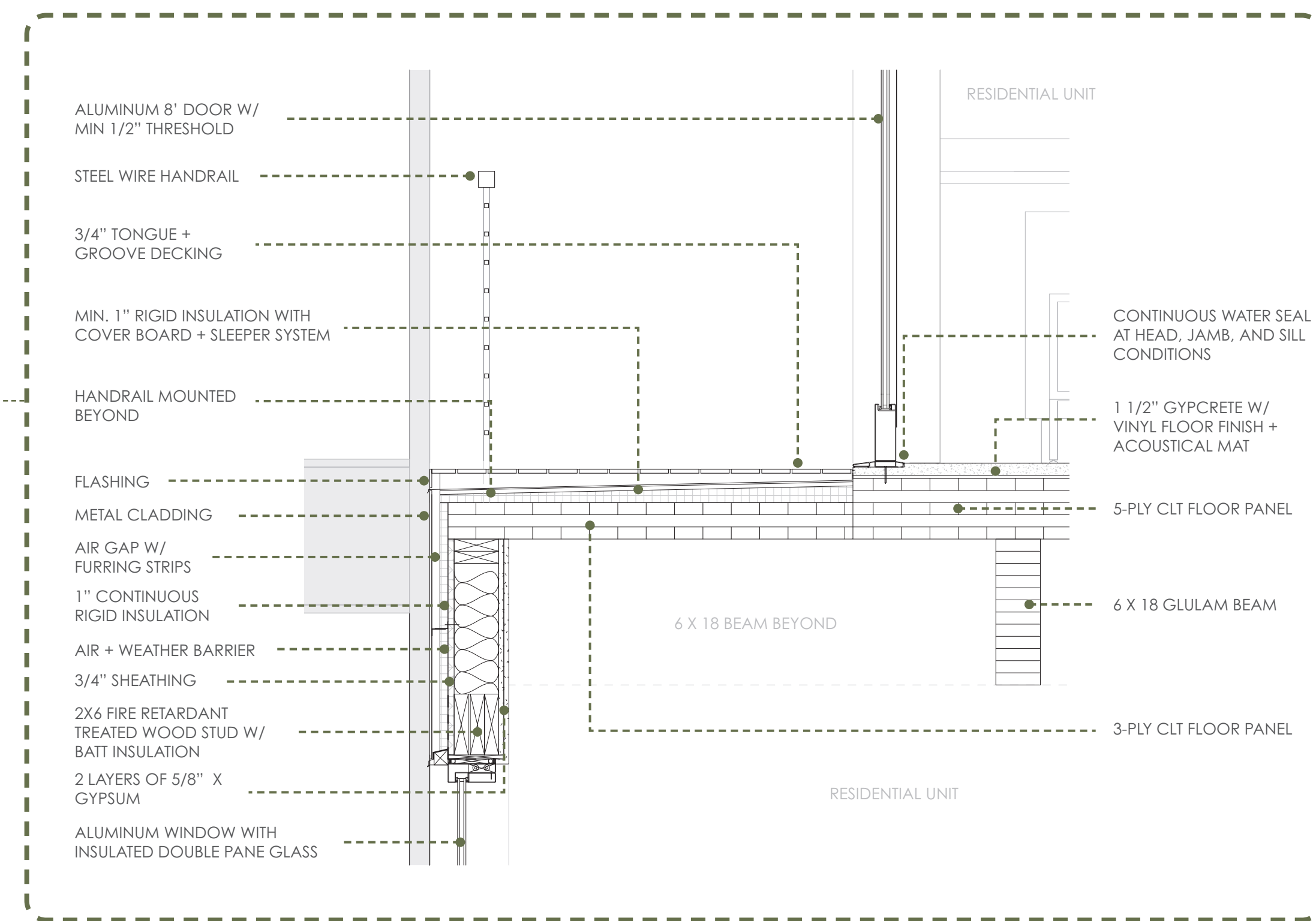
Awareness



BALCONY DETAIL



RESIDENTIAL WALL SECTION



RESIDENTIAL WALL SECTION



QUALITY OF LIFE



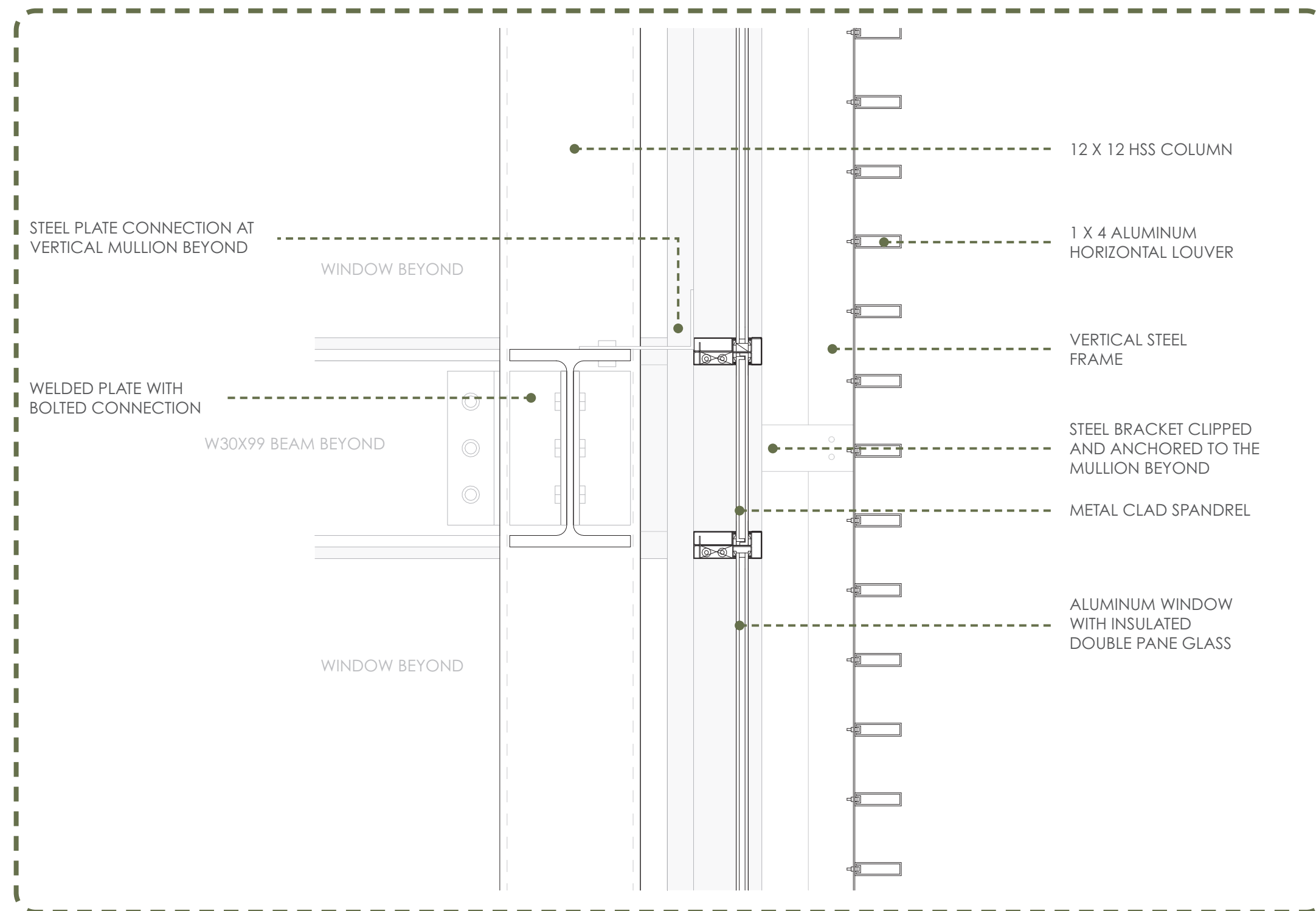
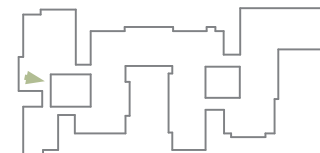
Health + Wellness



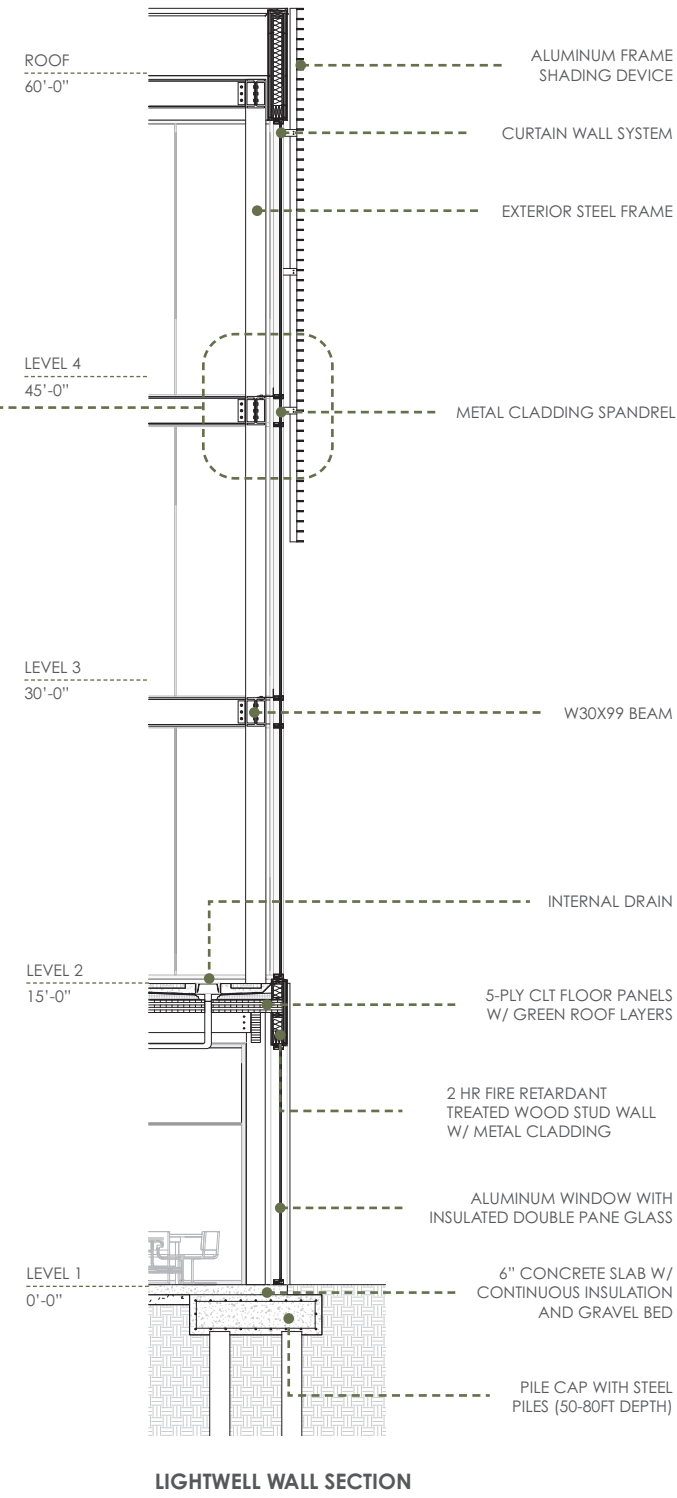
Daylight



Access To Nature



LOUVER DETAIL



LIGHTWELL WALL SECTION





- — — Egress
- — — 2 HR RATED CORES + M | E + FP
- - - 1 HR RATED INTERIOR WALLS

**GROUND FLOOR PLAN** 33,745 SF  
**CONSTRUCTION TYPE:** TYPE III-A  
**HEIGHT LIMITATIONS:** 85' ALLOWED | 64' PROVIDED  
**FIRE RESISTANCE RATING:** PRIMARY STRUCTURAL FRAME: 1HR  
 EXTERIOR WALLS: 2HR  
 INTERIOR WALLS: 1HR  
 FLOORS + ROOF: 1HR

## FIRST FLOOR PLAN



## AFFIRMATION





- Egress
- 2 HR RATED CORES + M|E + FP
- 1 HR RATED INTERIOR WALLS

**SECOND FLOOR PLAN**  
35,803 SF

## SECOND FLOOR PLAN



## EDUCATION





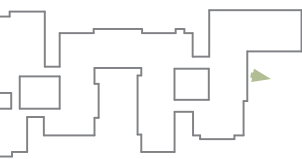
- Egress
- 2 HR RATED CORES + M|E + FP
- 1 HR RATED INTERIOR WALLS

THIRD FLOOR PLAN  
25,390 SF

## THIRD FLOOR PLAN



## CONNECTION





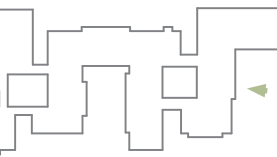
- Egress
- 2 HR RATED CORES + M | E + FP
- 1 HR RATED INTERIOR WALLS

**FOURTH FLOOR PLAN** 19,414 SF  
 TOTAL BUILDING SF 114,452 SF  
 MAX TRAVEL DISTANCE 250' ALLOWED | 146' - 6" PROVIDED

## FOURTH FLOOR PLAN



## INDIVIDUALIZATION





INSULATED WINDOWS



HORIZONTAL METAL LOUVERS



VERTICAL METAL LOUVERS



METAL PANEL WALL PLATES



BUILDING ELEVATION - SOUTH

### APPLICABLE CODES

**BUILDING:** 2021 INTERNATIONAL BUILDING CODE  
**LIFE SAFETY:** NFPA 101 LIFE SAFETY  
**FIRE:** INTERNATIONAL FIRE CODE  
**MECHANICAL:** INTERNATIONAL MECHANICAL CODE  
**PLUMBING:** INTERNATIONAL PLUMBING CODE  
**ELECTRICAL:** NATIONAL ELECTRICAL CODE  
**GAS:** INTERNATIONAL FUEL GAS CODE  
**ENERGY:** INTERNATIONAL ENERGY CONSERVATION CODE  
**ACCESSIBILITY:** 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

### BUILDING AREAS (IBC 2021, TABLE 506.2)

FLOOR NUMBER	USE/OCC.	ACTUAL AREA PROPOSED (SF)	ALLOWABLE FLOOR AREA (SF)
GROUND LEVEL	A-2 / B / M	33,745	42,000
LEVEL 2	B / R-2	35,803	72,000
LEVEL 3	A-3 / B / R-2	25,390	42,000
LEVEL 4	R-2	19,414	72,000
TOTAL AREA GROSS		114,352	228,000

### BUILDING HEIGHTS (IBC 2021, TABLE 504.4)

	PROPOSED	ALLOWABLE
HEIGHT IN FEET	64'	85'
NUMBER OF STORIES ABOVE GRADE	4	6

### REQUIRED PLUMBING COUNT (IBC 2021, TABLE 2902.1)

CLASSIFICATION	WATER CLOSET	LAVATORIES
ASSEMBLY (A-2)	1 PER 75 FEMALE   1 PER 75 MALE	1 PER 200
ASSEMBLY (A-3)	1 PER 125 FEMALE   1 PER 65 MALE	1 PER 200
BUSINESS (B)	1 PER 25 FOR THE FIRST 50	1 PER 40 FOR THE FIRST 80
MERCANTILE (M)	1 PER 500	1 PER 750
RESIDENTIAL (R-2)	1 PER SLEEPING UNIT	1 PER SLEEPING UNIT
CLASSIFICATION	DRINKING FOUNTAIN	OTHER
ASSEMBLY (A-2)	1 PER 500	1 SERVICE SINK
ASSEMBLY (A-3)	1 PER 500	1 SERVICE SINK
BUSINESS (B)	1 PER 100	1 SERVICE SINK
MERCANTILE (M)	1 PER 1,000	1 SERVICE SINK
CLASSIFICATION	BATHTUBS/SHOWERS	
RESIDENTIAL (R-2)	1 PER SLEEPING UNIT	1 SERVICE SINK

### BUILDING DATA

CONSTRUCTION TYPE	TYPE III-A	REMARKS
SPRINKLERS	YES	AUTOMATIC SPRINKLER PROVIDED IN ACCORDANCE W/ NFPA 13
STANDPIPES	YES	
FIRE ALARM	YES	
		<b>404.6:</b> ATRIUM SPACES SHALL BE SEPARATED FROM ADJACENT SPACES BY A 1-HOUR FIRE BARRIER

### OCCUPANCY CLASSIFICATIONS (IBC 2021, CH. 3+10)

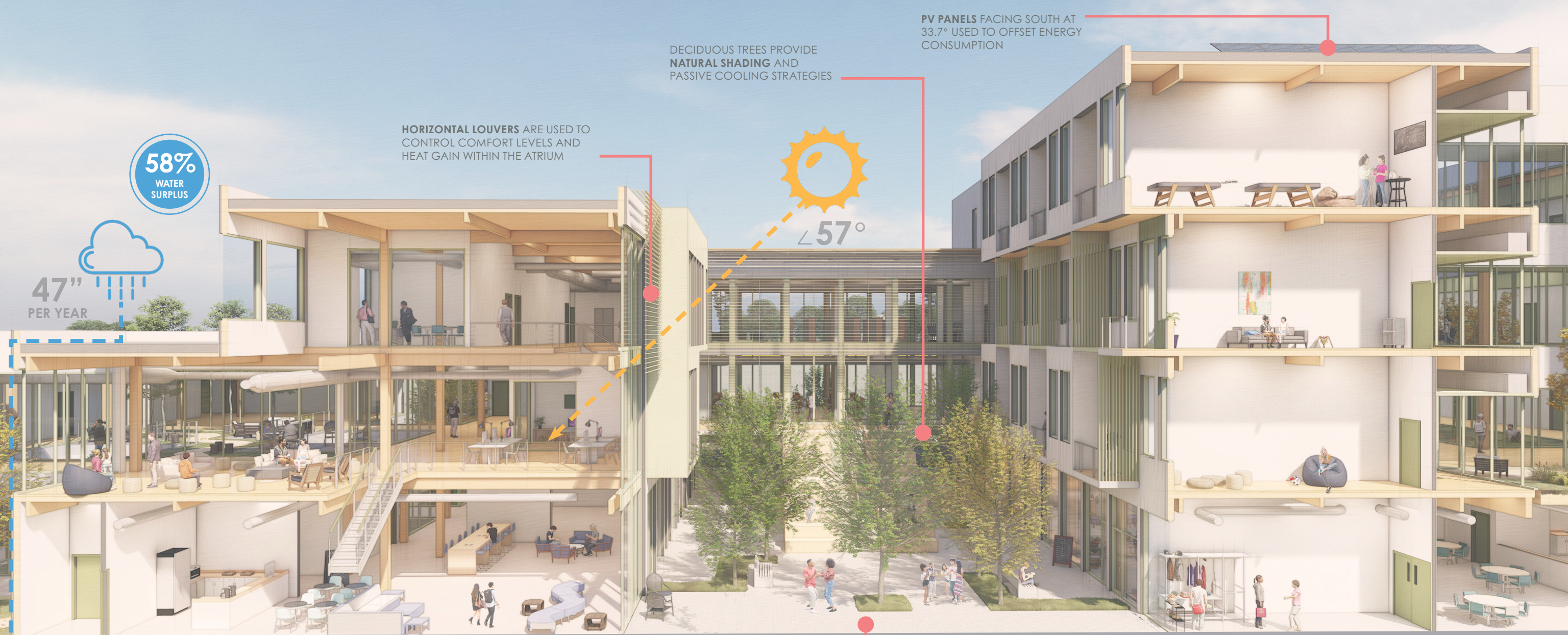
CLASSIFICATION	FUNCTION	OCCUPANT LOAD FACTOR
ASSEMBLY (A-2)	DINING HALL, COMM. KITCHEN, CAFE	15 NET
ASSEMBLY (A-3)	LIBRARY	100 GROSS
BUSINESS (B)	BARBER SHOP, CLINIC, RESOURCE CENTER	150 GROSS
MERCANTILE (M)	MERCANTILE	60 GROSS
RESIDENTIAL (R-2)	RESIDENTIAL	200 GROSS

### FIRE RESISTANCE RATINGS (IBC 2021, TABLE 601)

BUILDING ELEMENT	RATING (HRS)	REQUIRED SEPARATION OF OCCUPANCIES
CONSTRUCTION TYPE: TYPE III-A		
PRIMARY STRUCTURAL FRAME	1 HR	<b>TABLE 508.4:</b> MIXED OCCUPANCIES (A,B,M, + R-2) ONLY REQUIRE 1 HOUR SEPARATIONS IN A SPRINKLED BUILDING. ALL INTERIOR WALLS ARE 1 HOUR FIRE RATED.
BEARING WALLS EXTERIOR	2 HR	
BEARING WALLS INTERIOR	1 HR	
NON BEARING EXTERIOR WALLS	SEE TABLE 705.5	
NON BEARING INTERIOR WALLS	0 HR	
FLOOR CONSTRUCTION	1 HR	
ROOF CONSTRUCTION	1 HR	

### EGRESS - TRAVEL DISTANCE (IBC 2021, CH. 10)

OCCUPANCY	MAX OCC. LOAD	WITHOUT SPRINKLER SYSTEM (FT)	WITH SPRINKLER SYSTEM (FT)
A, M	49	75	75
B	49	100	100
R-2	20	125	125
FLOOR LEVEL	OCC. LOAD PER STORY	MIN. NUMBER OF EXITS PER STORY	PROVIDED NUMBER OF EXITS PER STORY
GROUND LEVEL	327   357	2	4   5
LEVEL 2	155	2	7
LEVEL 3	64	2	6
LEVEL 4	17	2	4



58%  
WATER SURPLUS

HORIZONTAL LOUVERS ARE USED TO CONTROL COMFORT LEVELS AND HEAT GAIN WITHIN THE ATRIUM

DECIDUOUS TREES PROVIDE NATURAL SHADING AND PASSIVE COOLING STRATEGIES

PV PANELS FACING SOUTH AT 33.7° USED TO OFFSET ENERGY CONSUMPTION



47" PER YEAR



WATER CAPTURED FROM ROOF AND BIOSWALE STORED IN UNDERGROUND CISTERNS ALLOWS FOR 906K GAL/YR STORED

PERMEABLE PAVERS USED TO DIVERT AND COLLECT WATER

**V** VOLUME OF WOOD PRODUCTS USED  
39,240 FT<sup>3</sup>

**C** US + CANADIAN FORESTS GROW THIS IN:  
3 MINUTES

**C** CARBON STORED IN THE WOOD  
880 METRIC TONS OF CO<sub>2</sub>

**co2** AVOIDED GREENHOUSE GAS EMISSIONS  
1,860 METRIC TONS OF CO<sub>2</sub>

**✓** TOTAL POTENTIAL CARBON BENEFIT  
2,740 METRIC TONS OF CO<sub>2</sub>

**🚗** CARS OFF THE ROAD FOR A YEAR  
524 CARS

**🏠** ENERGY USE OF THIS MANY HOMES  
233 HOMES

## SUSTAINABLE STRATEGIES

## MECHANICAL

- DUCTLESS VRF HEAT RECOVERY SYSTEM USED IN RESIDENTIAL UNITS ON FLOORS 2-4
- OPERABLE WINDOWS ALLOW FOR FRESH AIR WITHIN THE UNITS AND A DOA SYSTEM FORCES FRESH AIR INTO THE COMMUNAL SPACES ON FLOORS 2-4
- A VAV SYSTEM IS TO BE USED IN THE RESOURCE CENTER, MEDICAL SUITE + DINING HALL WITH AIR TO AIR ENERGY RECOVERY SYSTEM

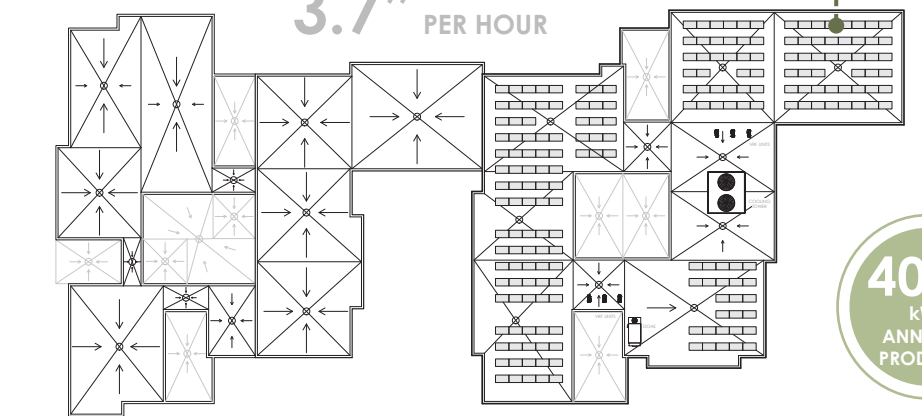
## PHOTOVOLTAICS

- ROOFTOP MOUNTED PV PANELS WILL ACT AS A SUPPLEMENTAL ENERGY SOURCE
- THE SYSTEM WILL SIT AS A FIXED ARRAY MODULE, WITH THE TILT OF THE PANELS EQUAL TO THE LATITUDE OF ATLANTA, WHICH IS 33.7°
- PER THE DOE, OUR BUILDING'S ESTIMATED LOAD WILL BE AROUND 1,700,000 BASED ON SIMILAR CONSTRUCTION TYPE AND CLIMATE
- PROPOSED IS 239 250-WATT PV PANELS WHICH WILL ACCOMMODATE A 3' WALKING PATH BETWEEN ROWS AND 6' TRAVEL PATH AROUND THE PERIMETER. THE SYSTEM'S SPECS WILL RESULT IN AN AVERAGE OF 5.9 HOURS OF SUN PER DAY WHICH WILL GENERATE 1,107 kWh/DAY PER PANEL. THIS WILL OFFSET THE ENERGY LOAD BY NEARLY 403,800 kWh/YEAR, WHICH IS 24% OF OUR ESTIMATED REQUIREMENTS.

24%  
ENERGY OFFSET

1,700,000 kWh/yr NEEDED

3.7" PER HOUR



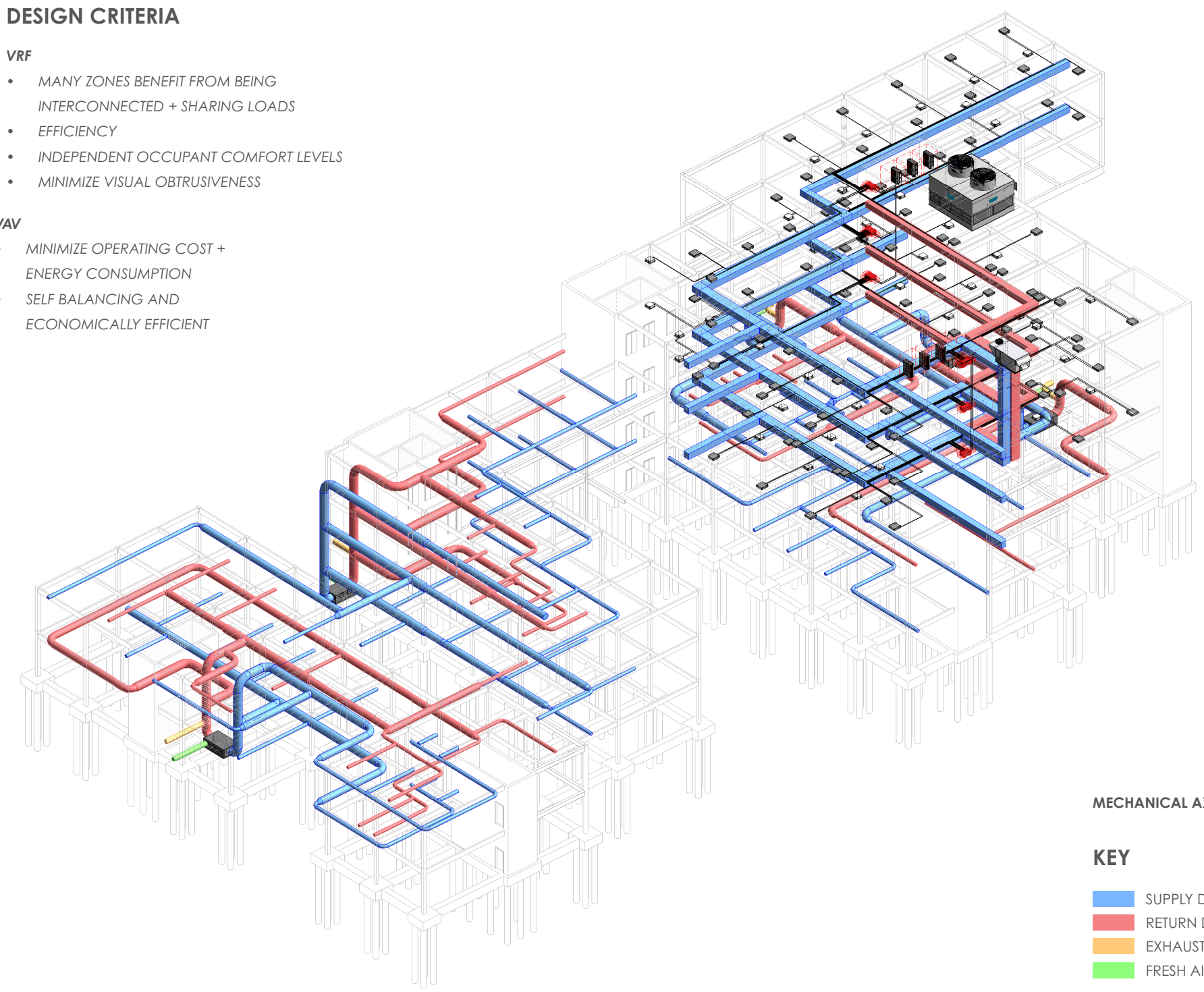
403K  
kWh ANNUALLY PRODUCED

ROOF MECH + DRAINAGE PLAN

## MECHANICAL

## DESIGN CRITERIA

- VRF**
- MANY ZONES BENEFIT FROM BEING INTERCONNECTED + SHARING LOADS
  - EFFICIENCY
  - INDEPENDENT OCCUPANT COMFORT LEVELS
  - MINIMIZE VISUAL OBTRUSIVENESS
- VAV**
- MINIMIZE OPERATING COST + ENERGY CONSUMPTION
  - SELF BALANCING AND ECONOMICALLY EFFICIENT



MECHANICAL AXON

### KEY

- SUPPLY DUCTS
- RETURN DUCTS
- EXHAUST DUCTS
- FRESH AIR DUCTS

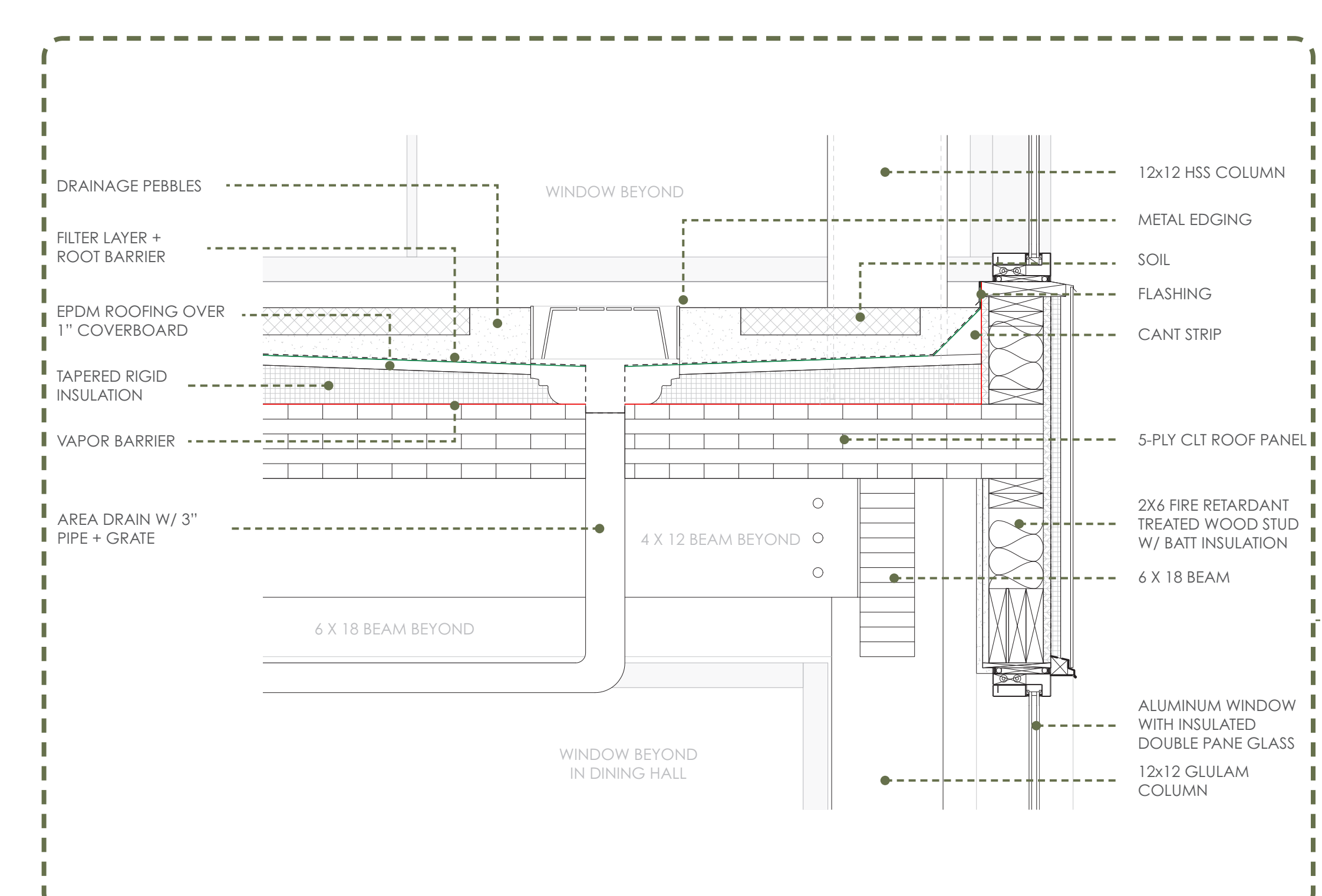
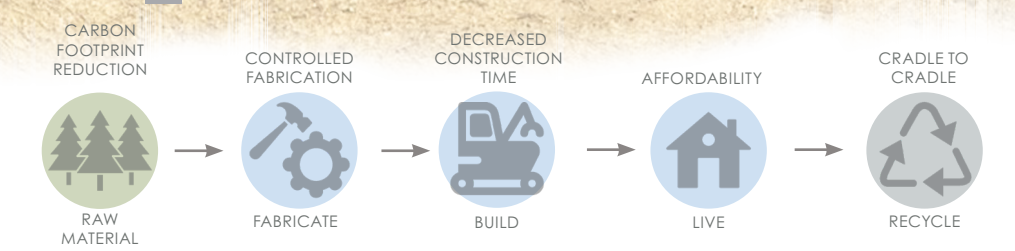




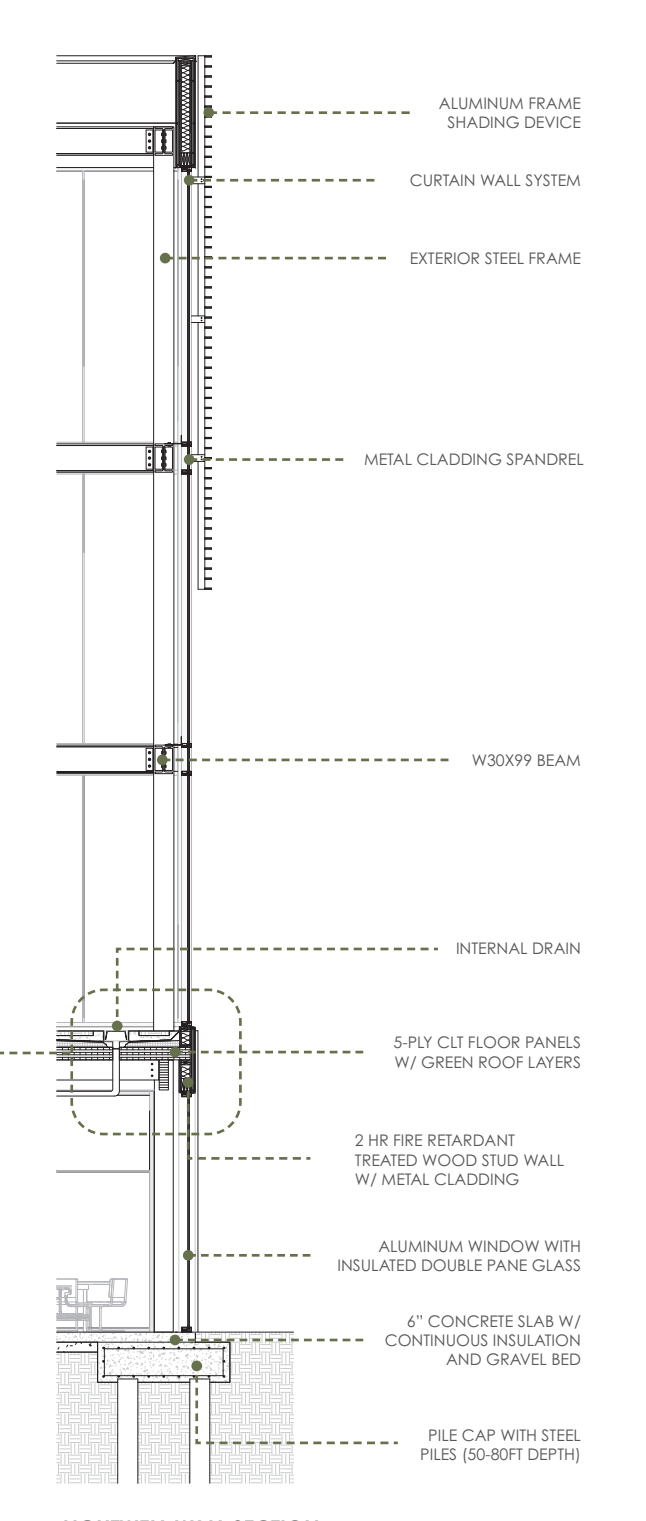
RESIDENTIAL WALL SECTION

LIGHTWELL WALL SECTION

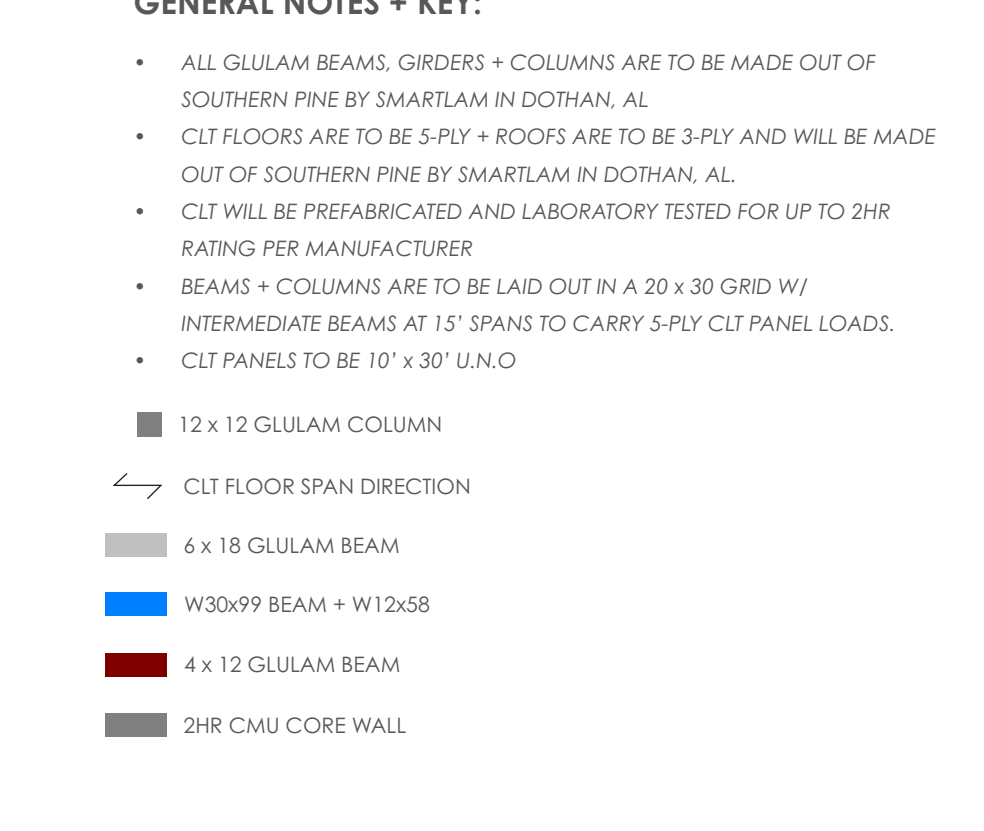
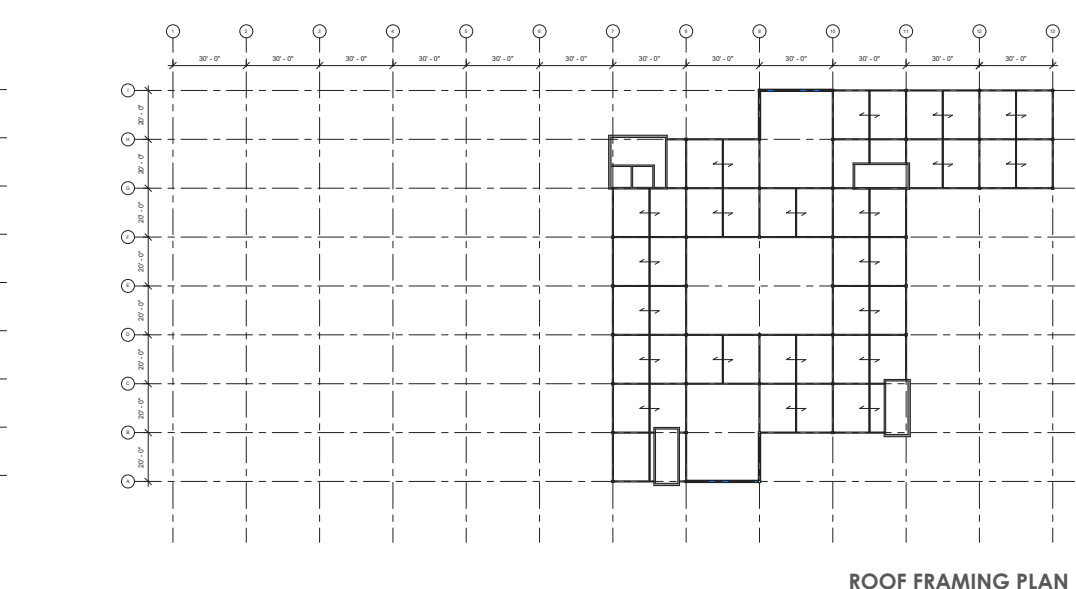
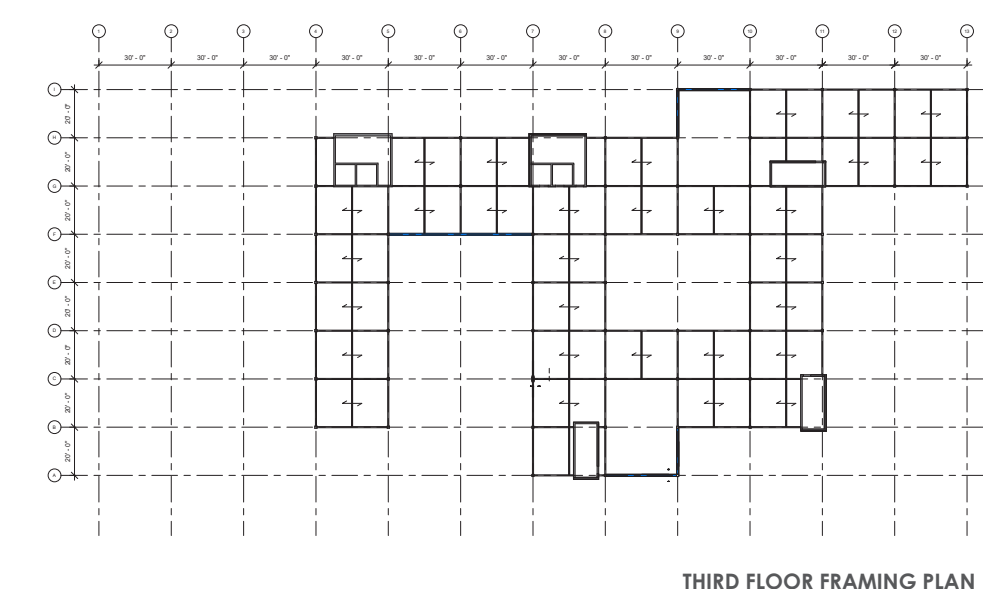
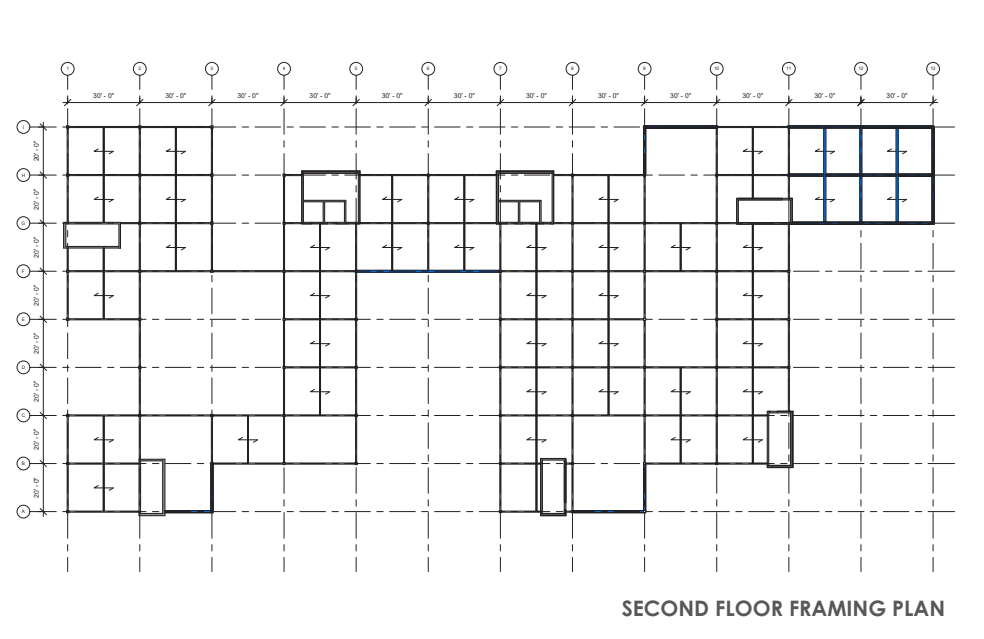
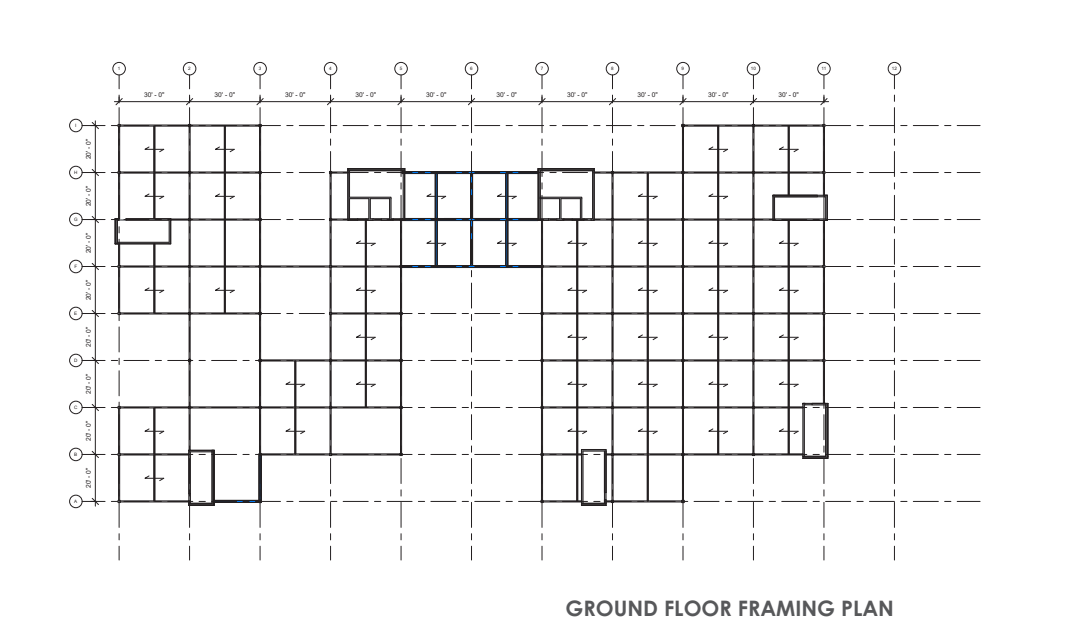
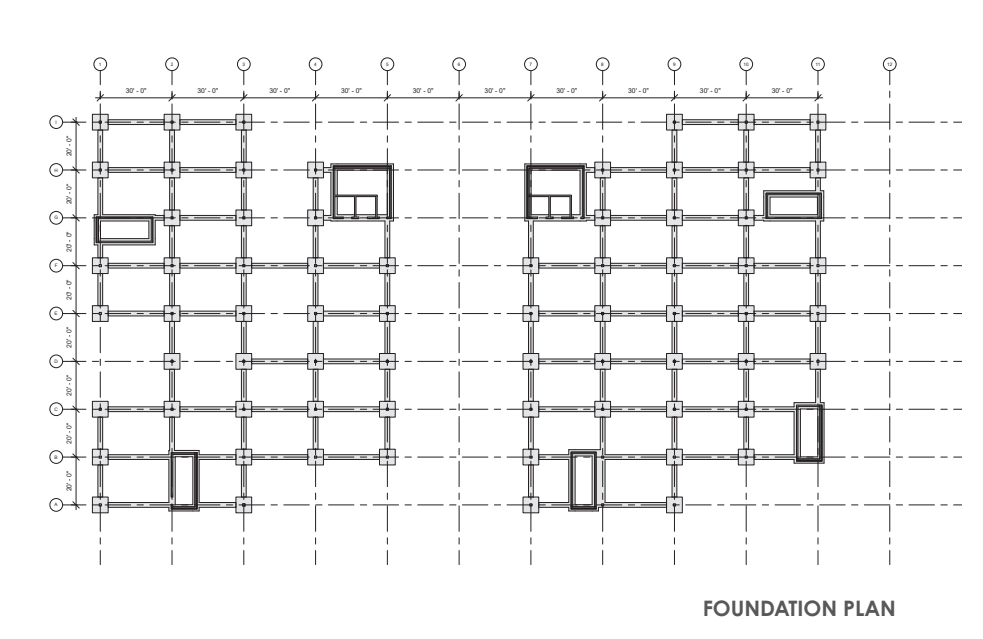
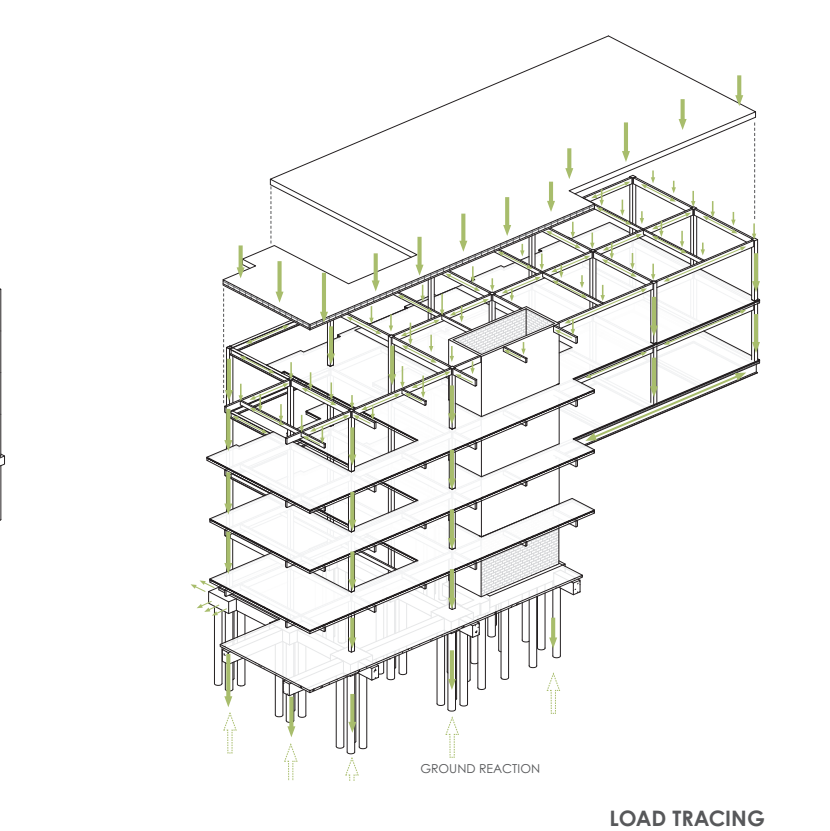
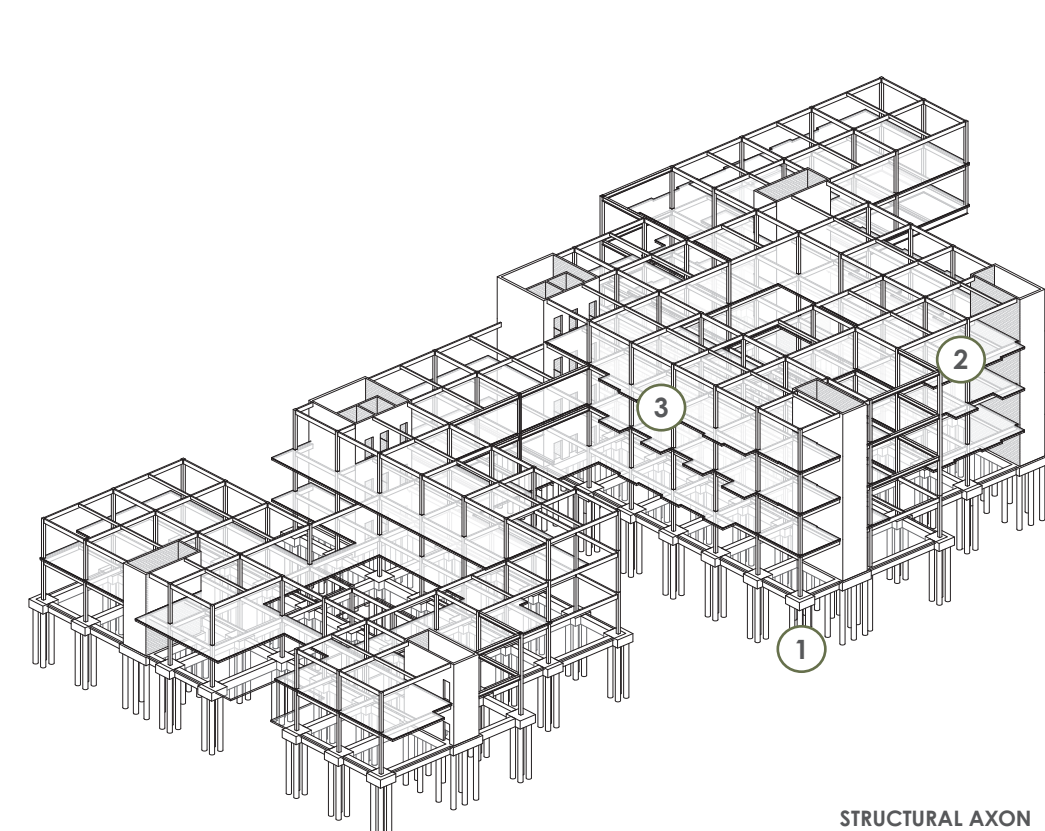
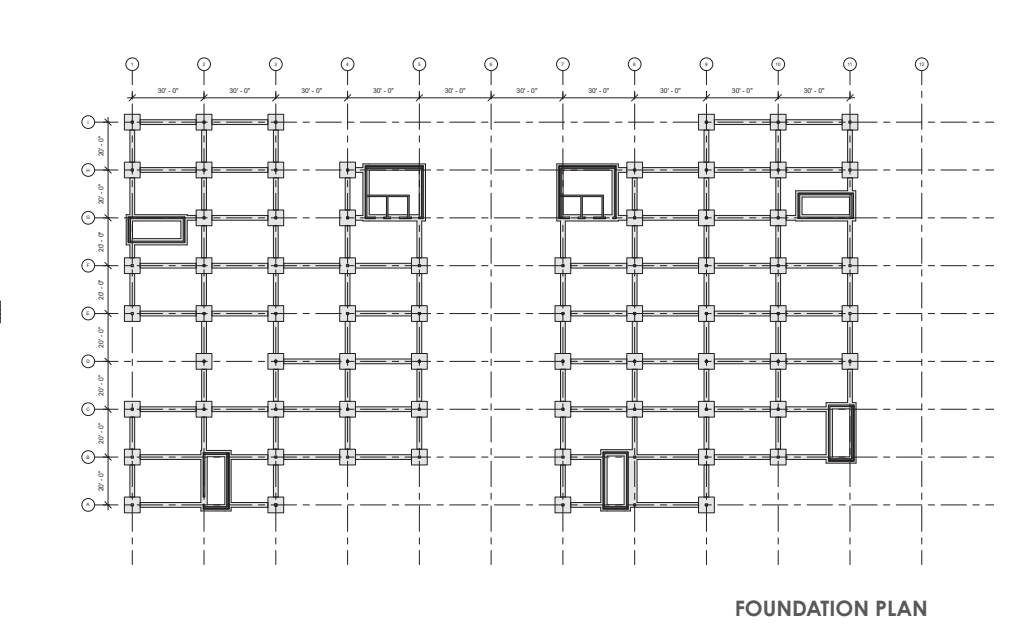
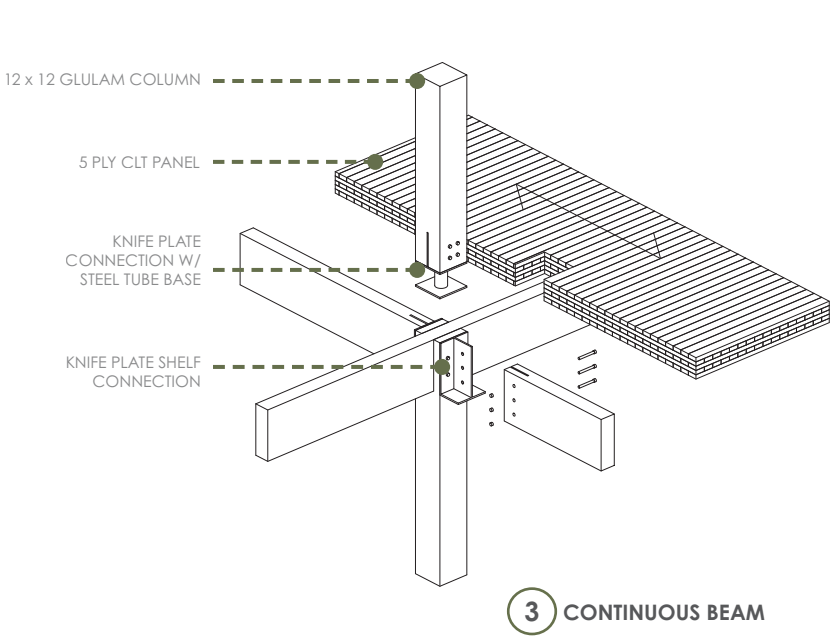
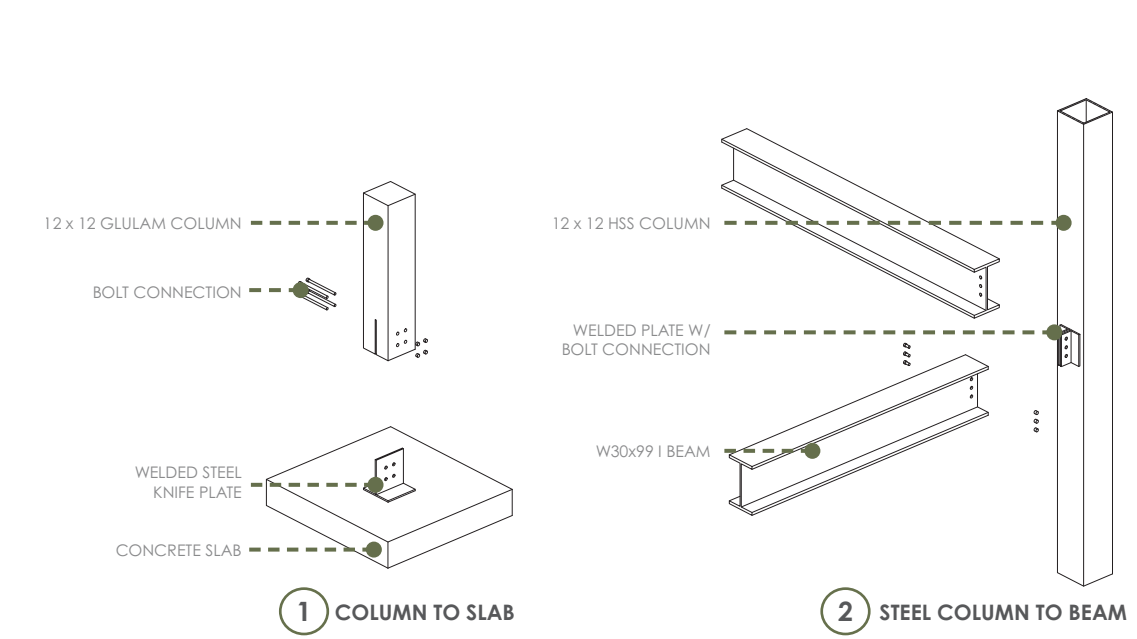
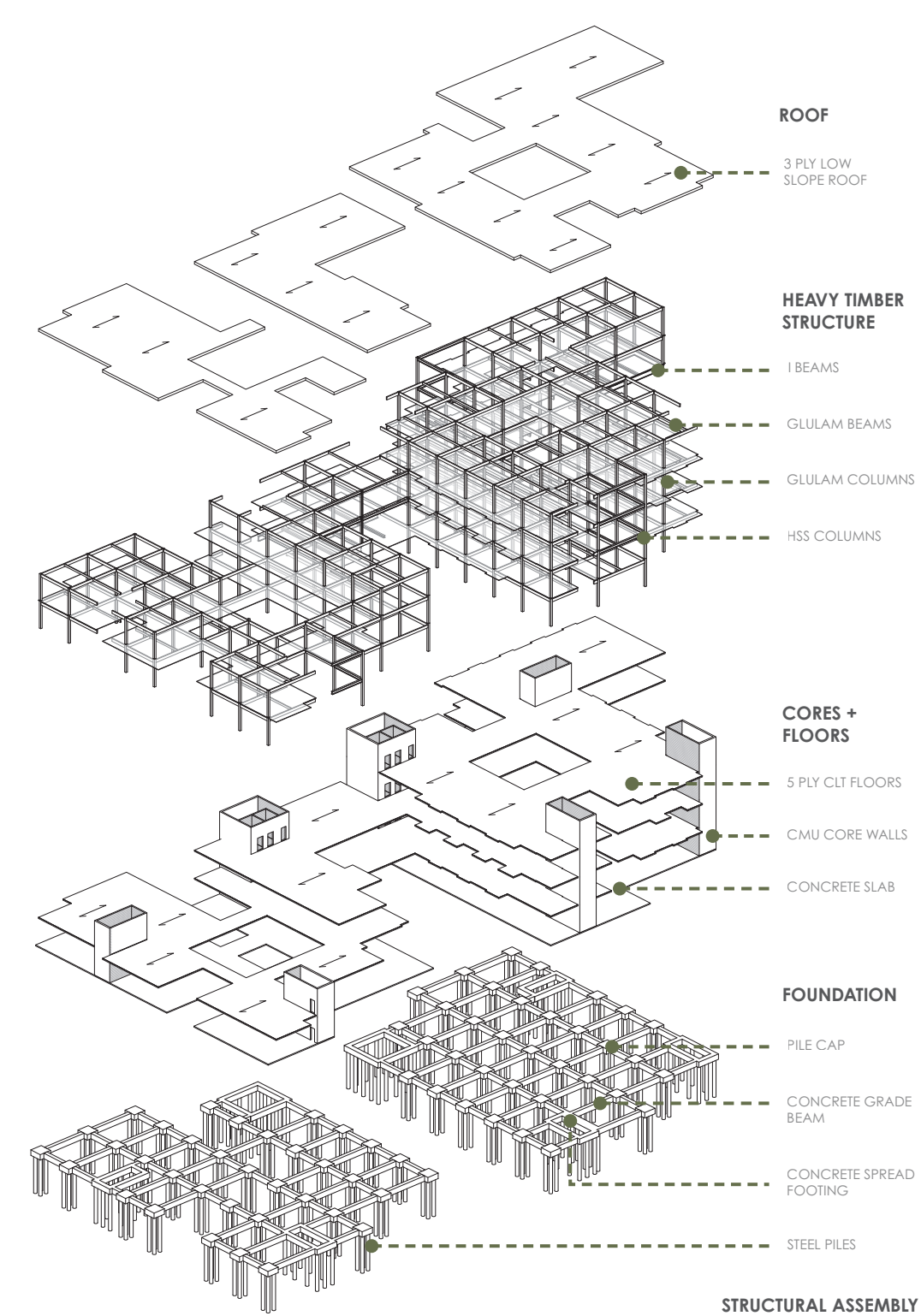
STRUCTURE



DRAINAGE DETAIL

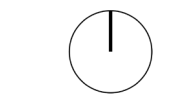


LIGHTWELL WALL SECTION

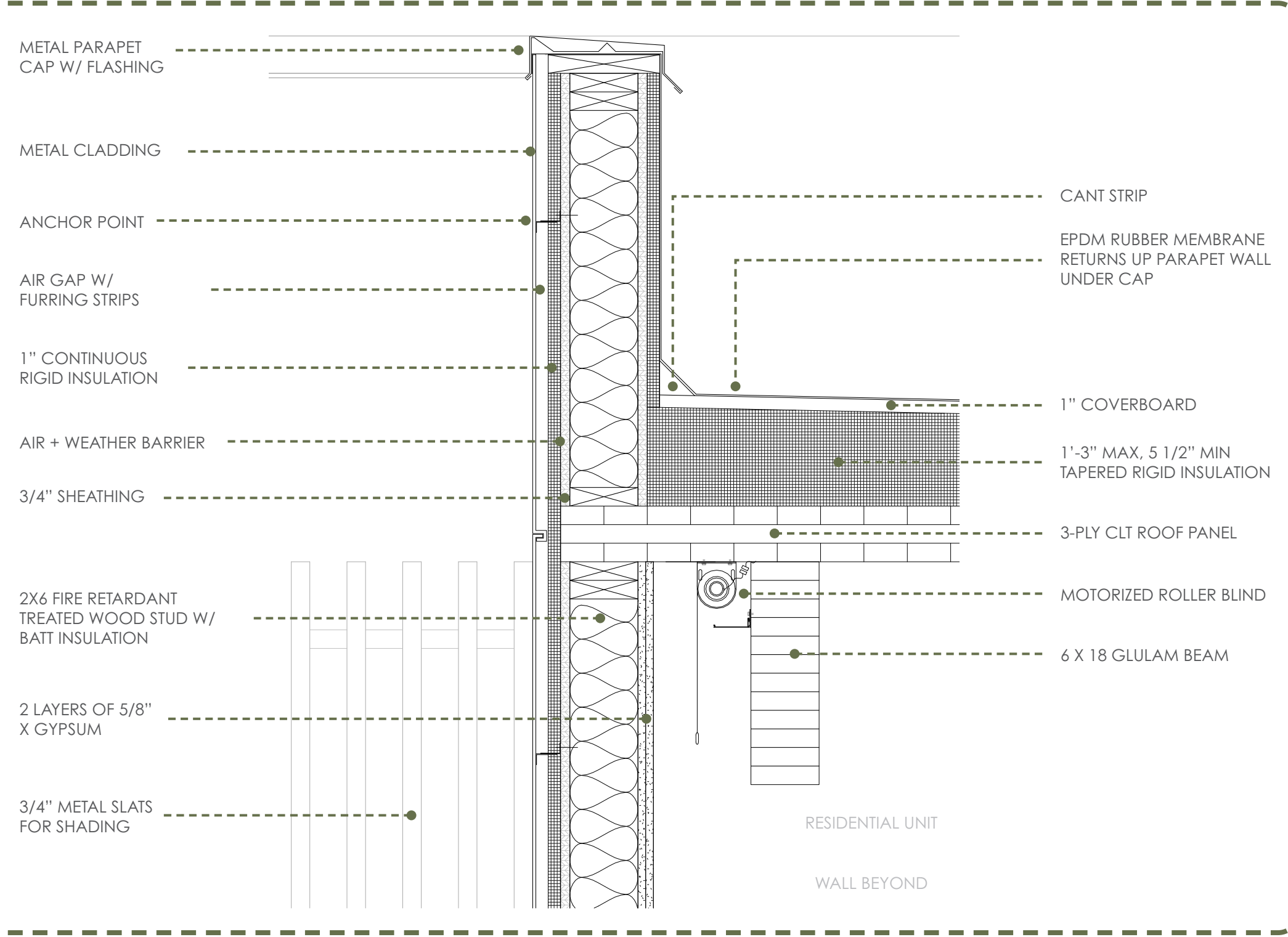
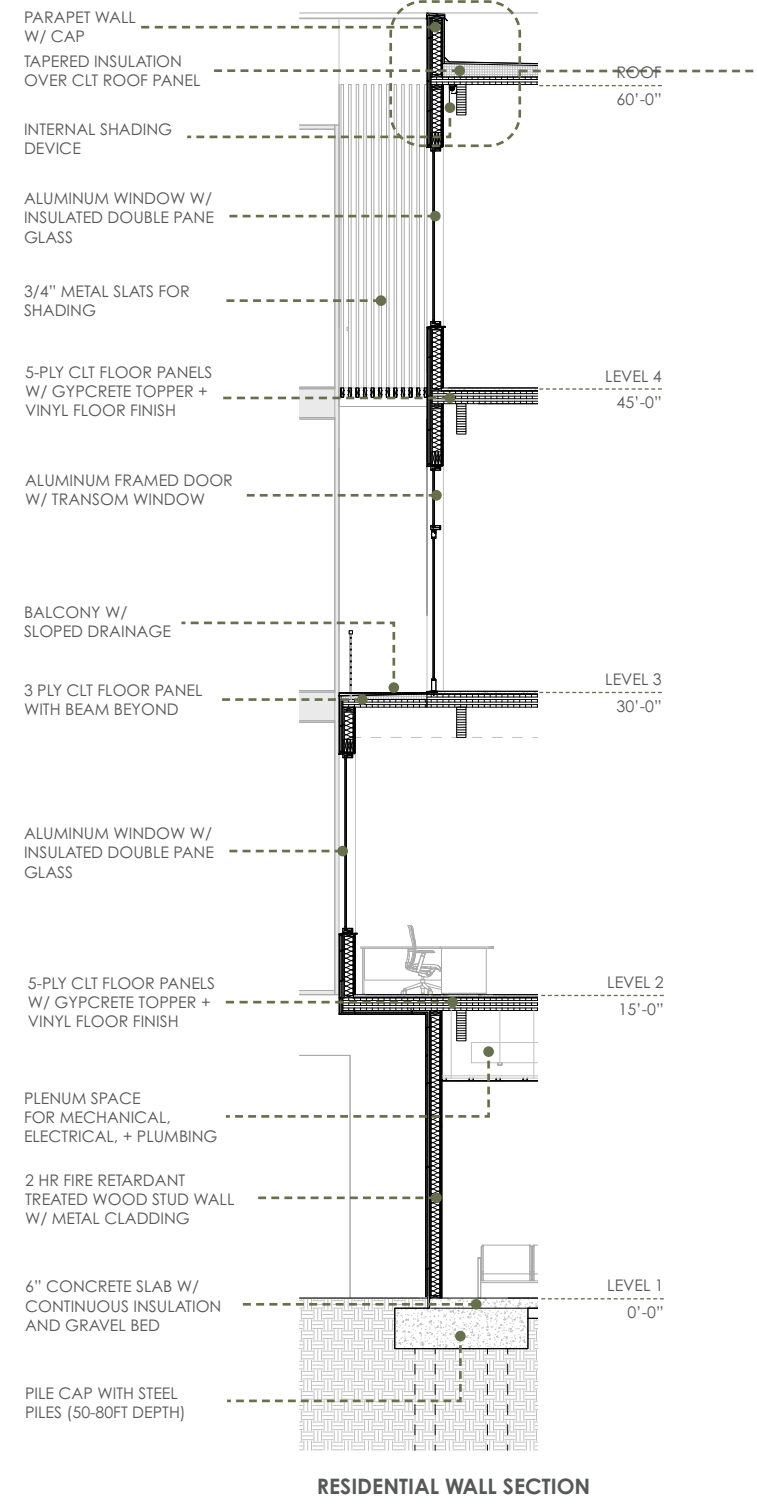


STRUCTURE

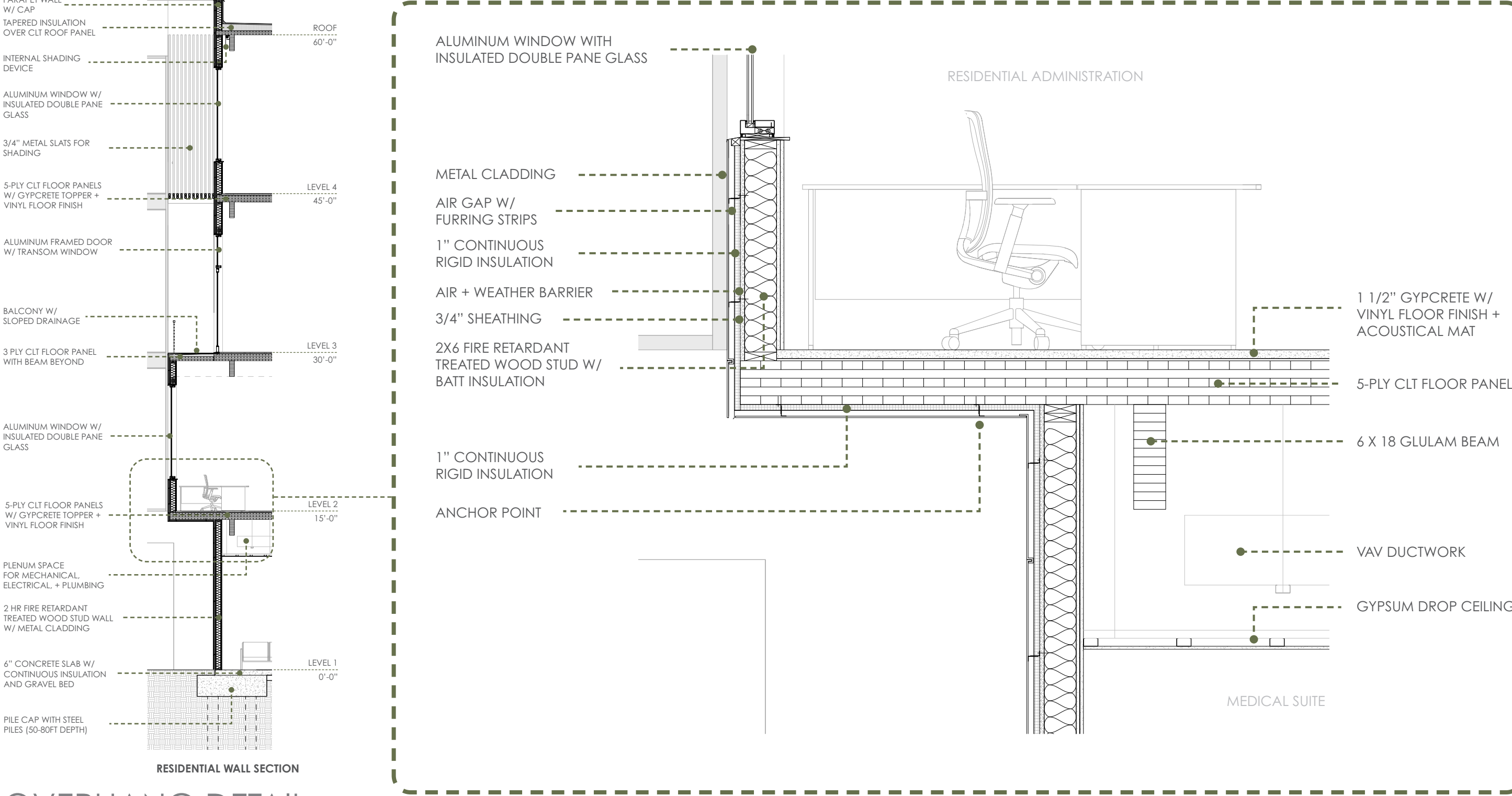
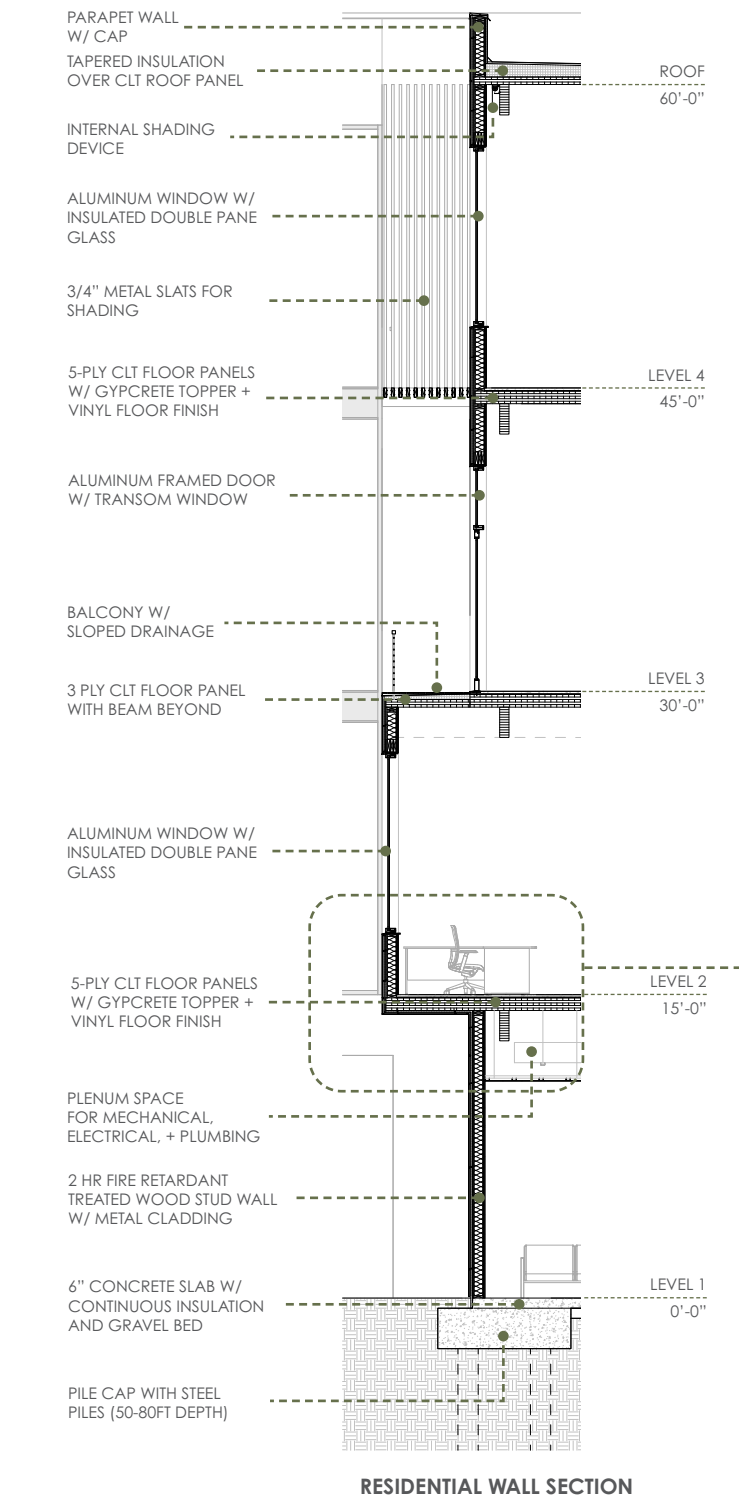
STRUCTURE







PARAPET DETAIL



OVERHANG DETAIL



MODEL PICTURES

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MODEL PICTURES

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MODEL PICTURES

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