

FUTURE TENSE DENSE:
AFFORDABLE HIGH-RISE RESIDENTIAL



DUPLEXITY

STUDIO VLOZ

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SITE PHOTOS



UNDERSTANDING SITE CONTEXT



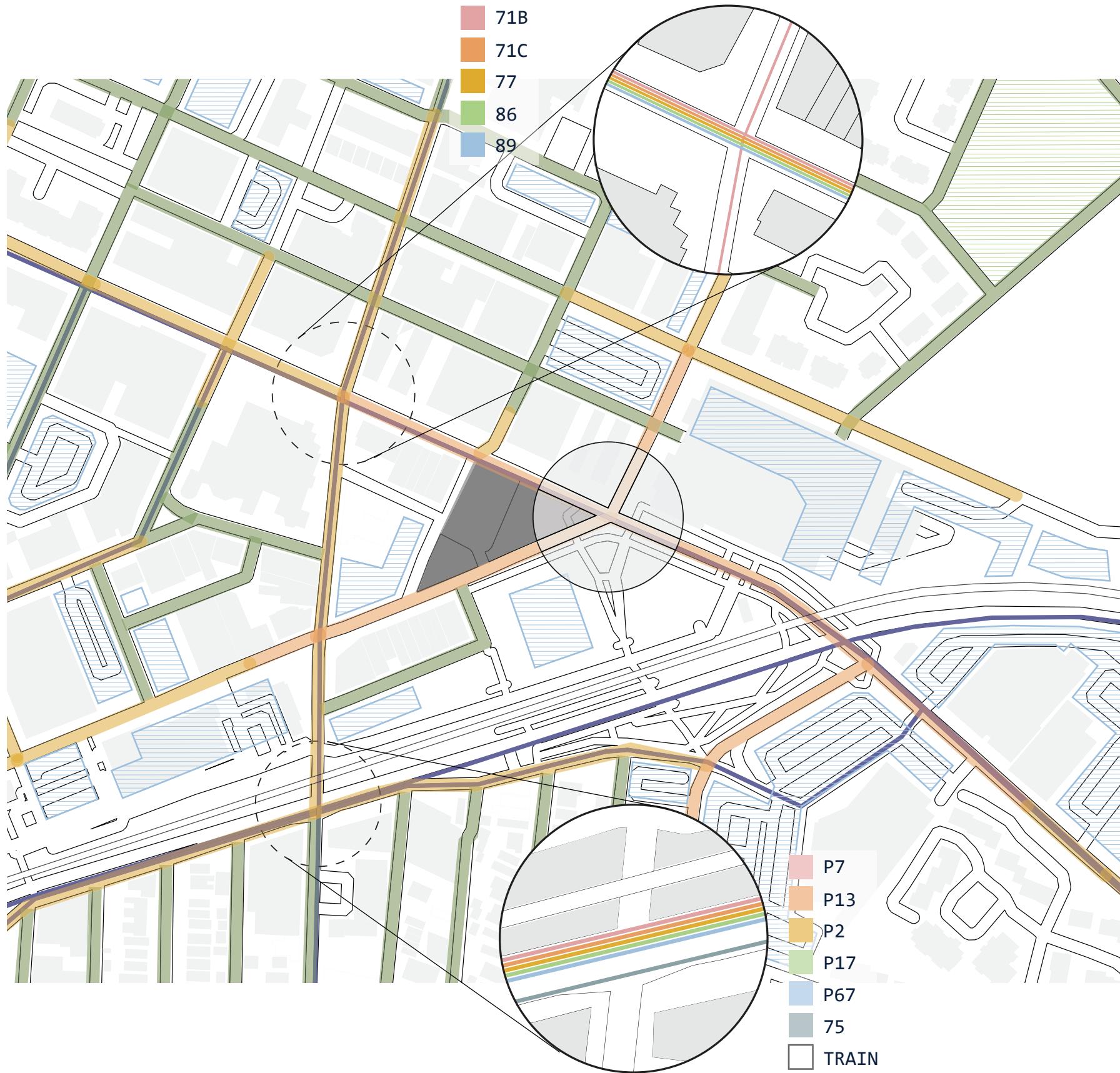
The site is located at the corner of Penn Ave and Center Ave in the East Liberty neighborhood of Pittsburgh. A historically significant area of the city, East Liberty has been developing rapidly in recent years and is currently dominated by low- to mid-rise commercial and civic infrastructure, with some residential buildings.

- Commercial
- Residential
- Civic
- Green Space
- Parking

SITE ANALYSIS

SITE TRAFFIC

SITE TRAFFIC ANALYSIS



Penn Ave, one of the major roadways in the city, runs through East Liberty and forms one edge of the triangular site of this project. Studying traffic patterns was key to developing an understanding of the activity along all edges of the site. Documenting the occurrence of dedicated green space and vehicular traffic patterns also fed into a subjective analysis of the influence of air quality and noise pollution on pedestrian experience on the site.

- Heavy Traffic
- Medium Traffic
- Light Traffic
- Bus Route
- Green Space
- Parking



TRAFFIC PATTERNS & PEDESTRIAN EXPERIENCE

FIRM GOALS

FORMAL GOALS

Multi-level units ("jigsaw")
Include ALL UNIT TYPES on each floor

PROGRAMMATIC GOALS

Semi-outdoor spaces
COMMUNAL GREEN SPACE
Public **access** into podium
Farmers' market

CONCEPTUAL GOALS

Every two or three floors is a small community
Transition of materials from contextual to "modern"
Limited access after fourth floor

ENVIRONMENTAL GOALS

Create BUFFERS for noise and polluted air
Natural daylight and ventilation
Programmed green spaces (learning space vs. garden)

COMMUNITY GOALS

GREEN SPACE for all residents
Combinations of different kinds of units to **mix populations**
Encourage long-term settlement in the area
Revive MULTIGENERATIONAL housing practices
Creating a strong sense of community and neighborhood
Accessibility across age and ability

ENVIRONMENTAL GOALS

Natural light and ventilation through operable windows
Outdoor space (may be elevated)
Pursue **100% green roof** coverage

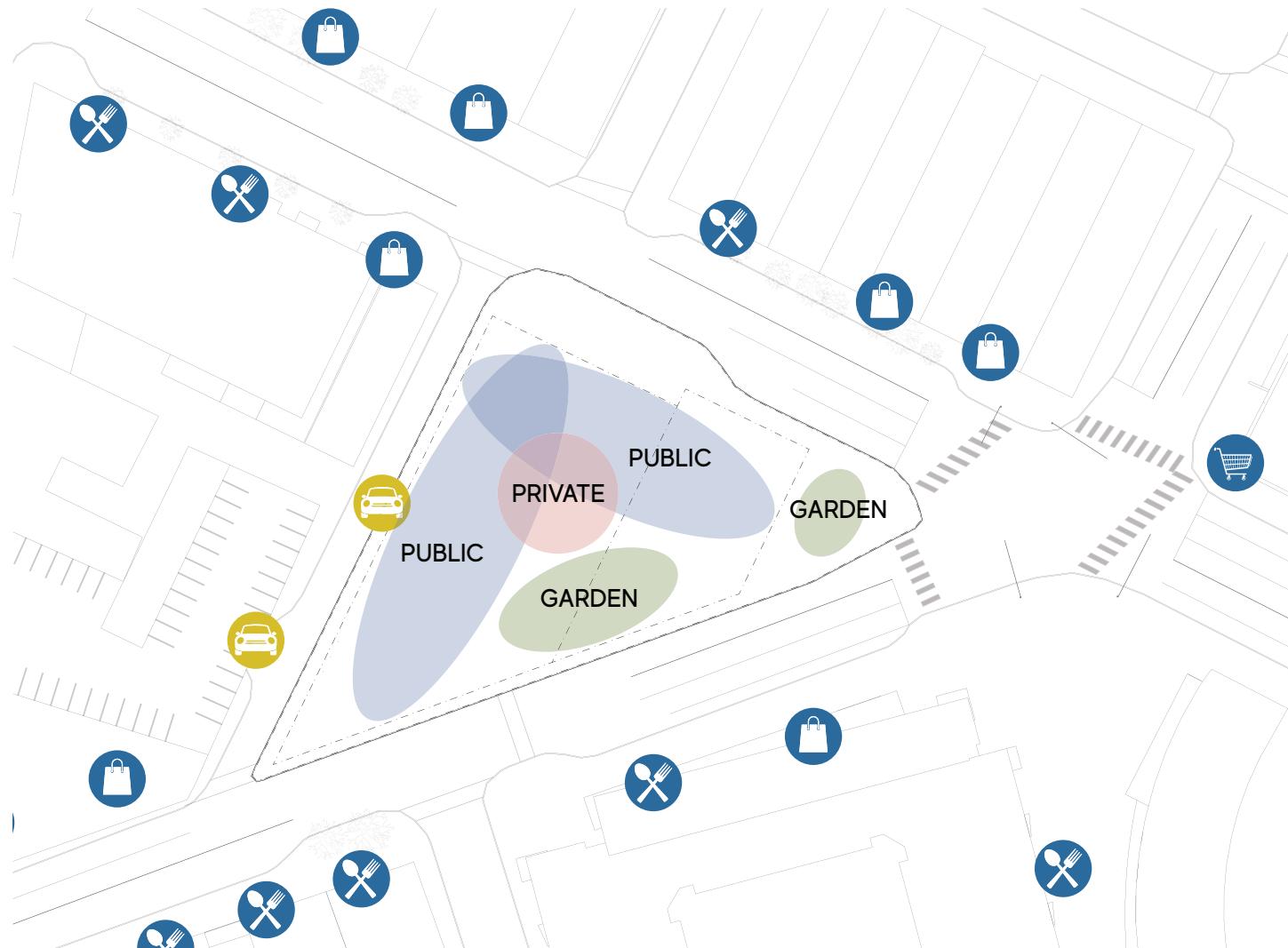
PROGRAMMATIC GOALS

SPACE FOR CHILDREN to learn, play and feel engaged
Multipurpose space for **performances and events**
Restaurant or bakery at the **northeast corner** of the site
Retain CVS and Citizen's Bank
Introduce a fitness center on the second floor

SITE STRATEGY

The complex nature of the site posed a number of challenges and opportunities, both programmatically and formally. The larger planning moves aim to facilitate a range of commercial and dining activities while taking into consideration pragmatic issues such as vehicular and pedestrian traffic.

INITIAL SITE STRATEGY
- ACCESSING SITE NEEDS



INITIAL SITE STRATEGY
- PROGRAMMATIC RESPONSE

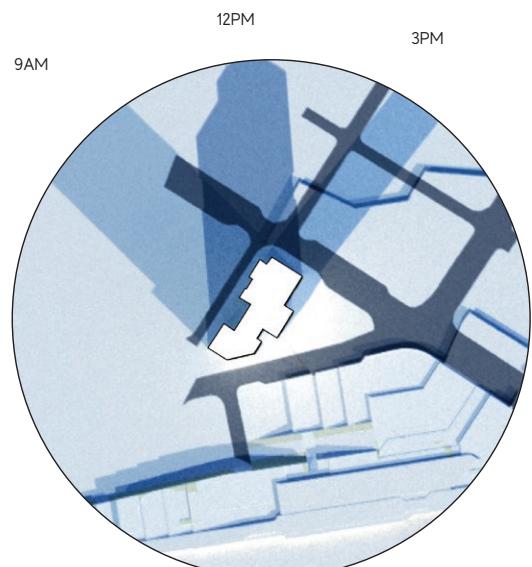


The program of the building podium was developed in response to existing site conditions and programming, as well as according to guidelines determined by client interests. The CVS and Citizen's Bank on the first floor are preserved.

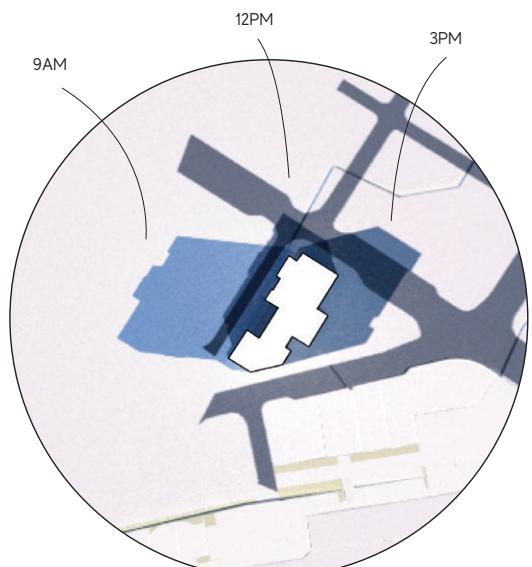
SITE STRATEGY

SUSTAINABILITY

SUN AND SHADOW ANALYSIS

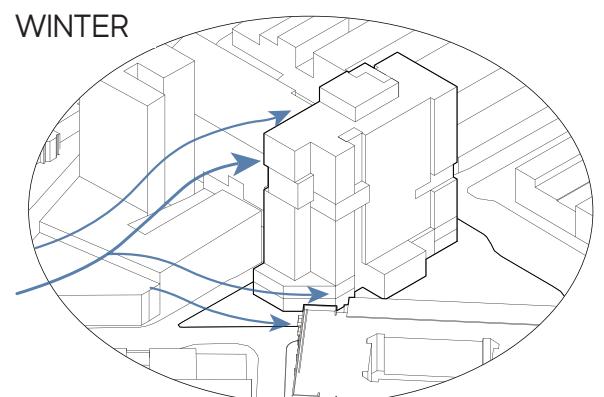


WINTER SOLSTICE

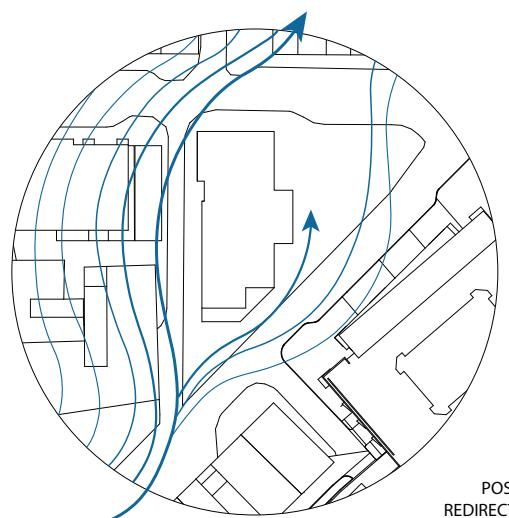


SUMMER SOLSTICE

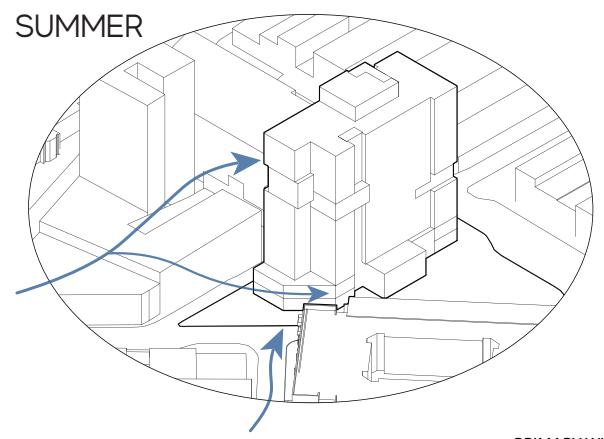
WIND ANALYSIS



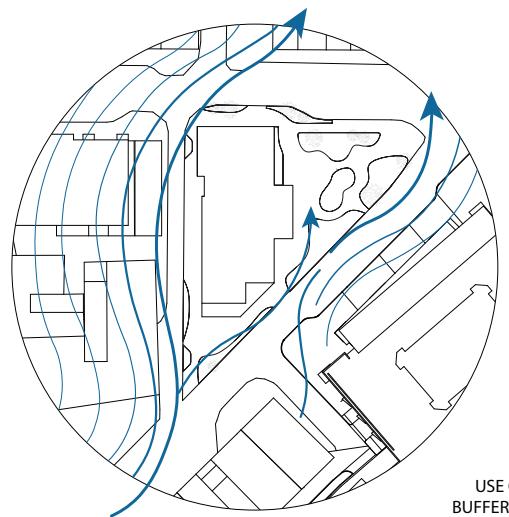
WINTER



PRIMARY WIND DIRECTION
WINTER



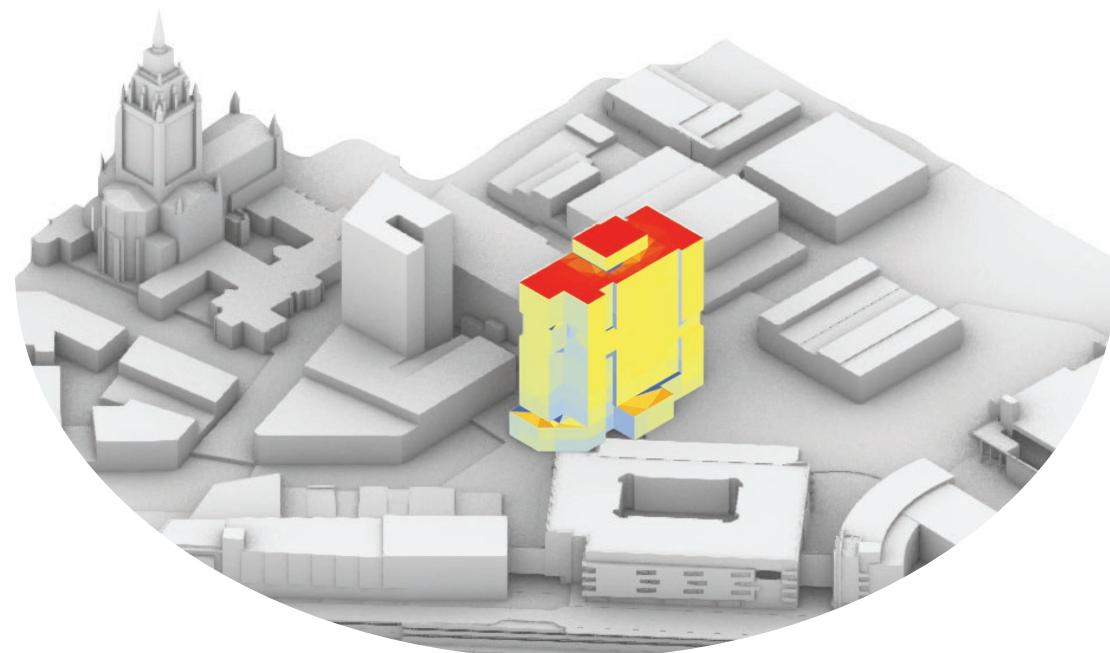
SUMMER



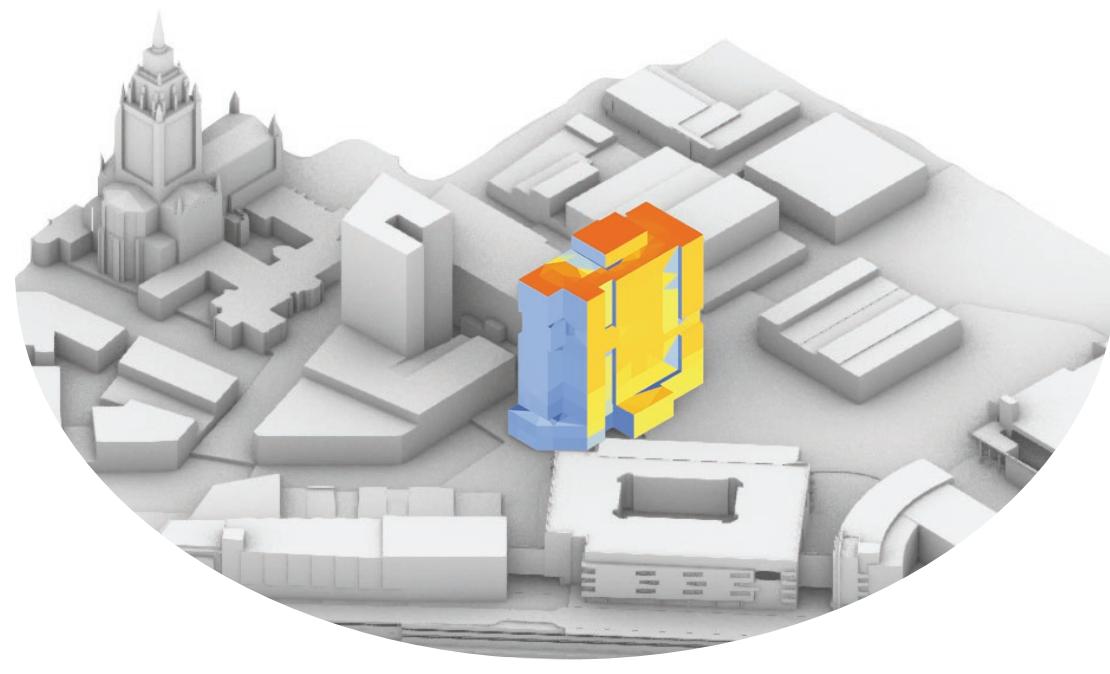
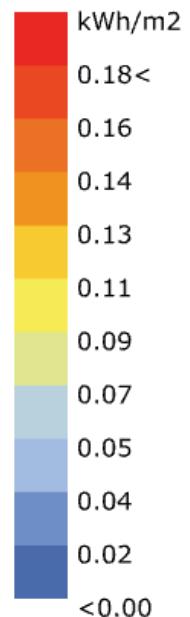
PRIMARY WIND PATTERNS
SUMMER

STUDIO Vi_OZ

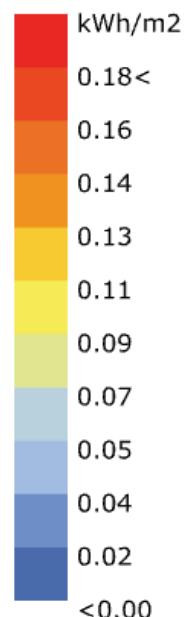
SOLAR RADIATION ANALYSIS



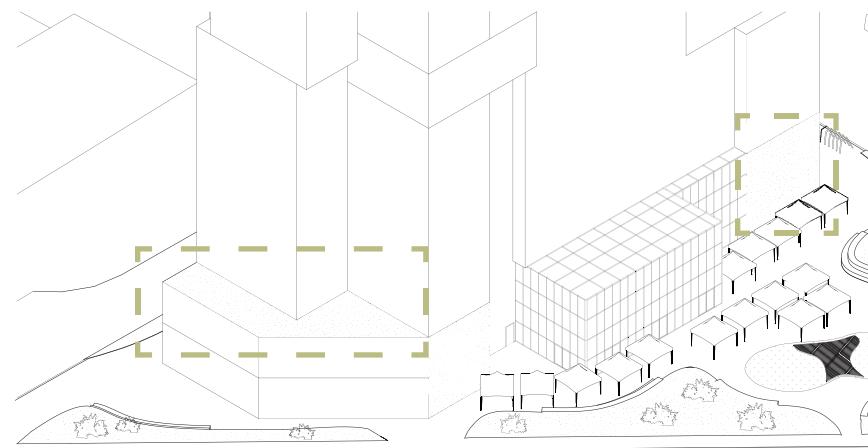
SOLAR RADIATION
MARCH 22 | 11:00-12:00



SOLAR RADIATION
MARCH 22 | 11:00-12:00



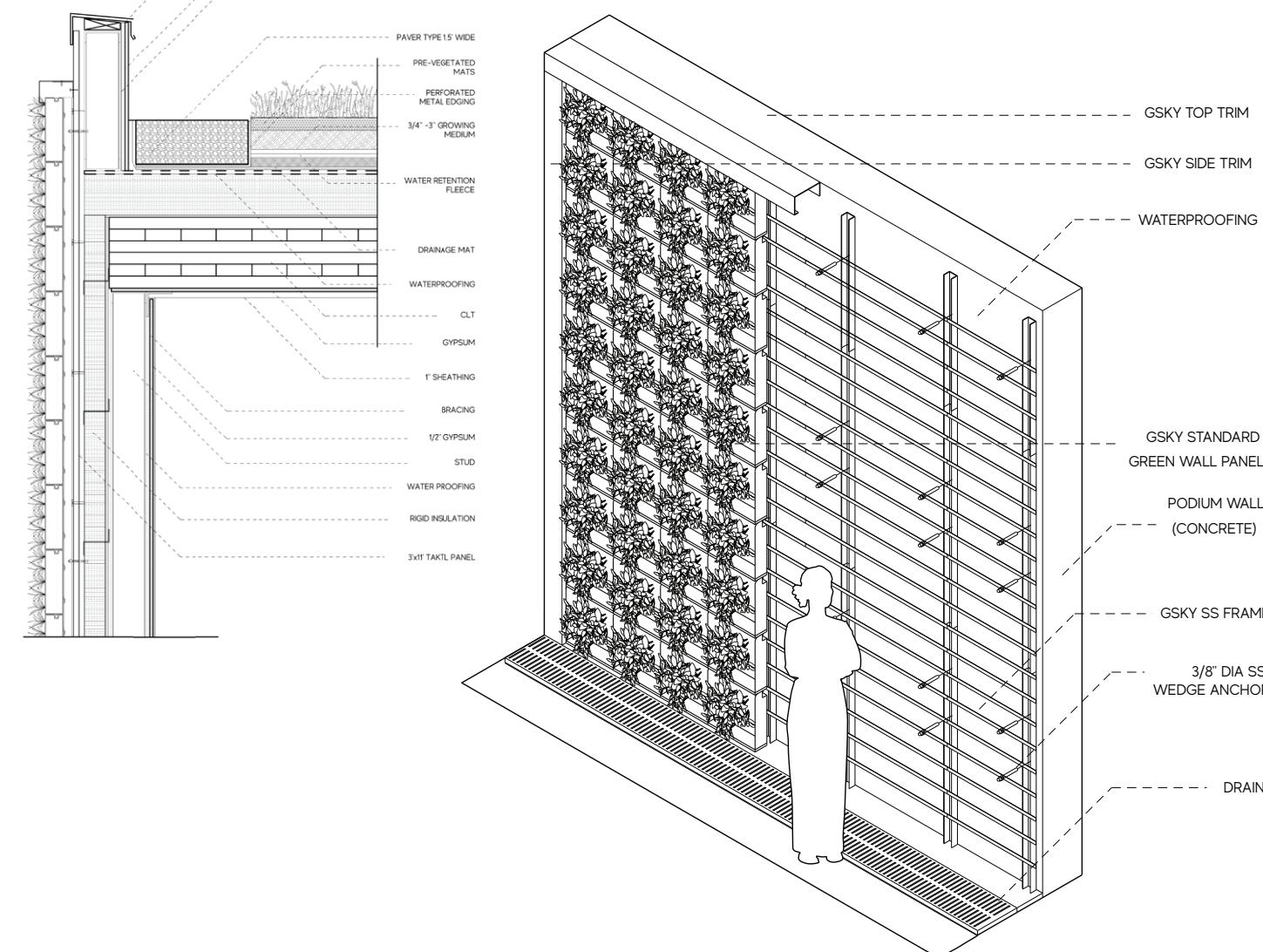
GREEN ROOF & WALL



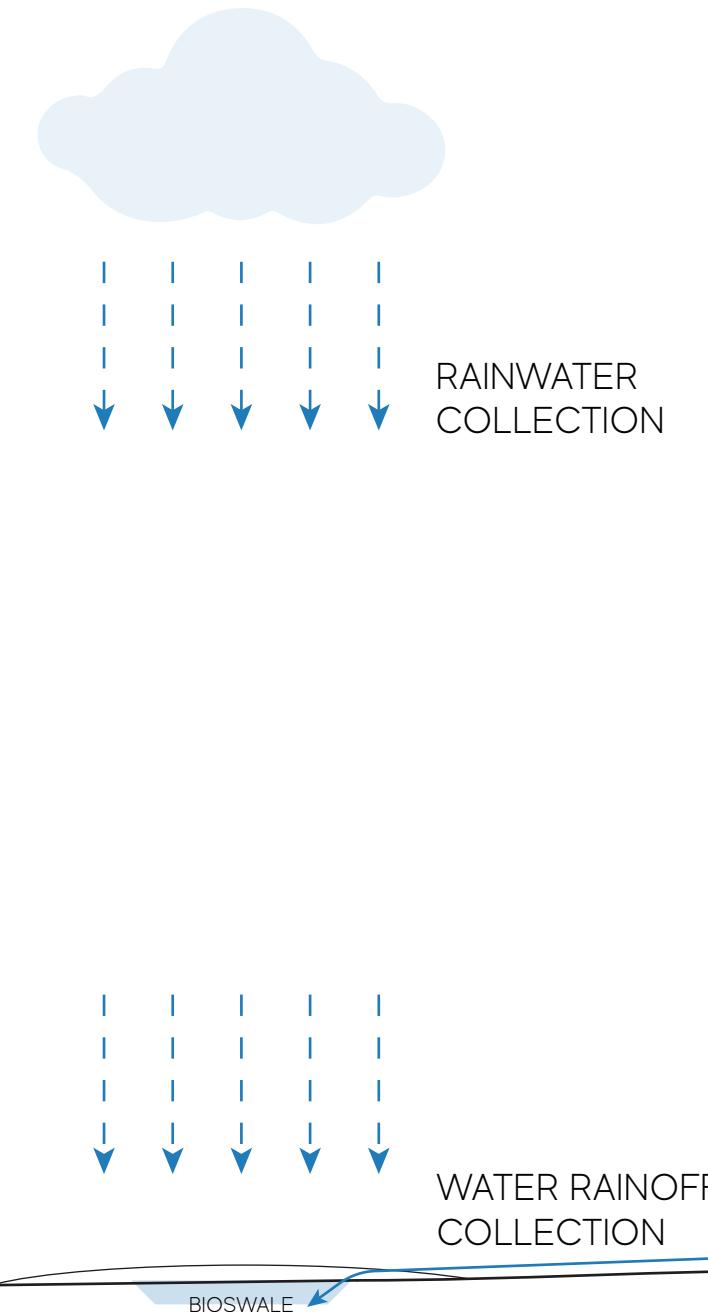
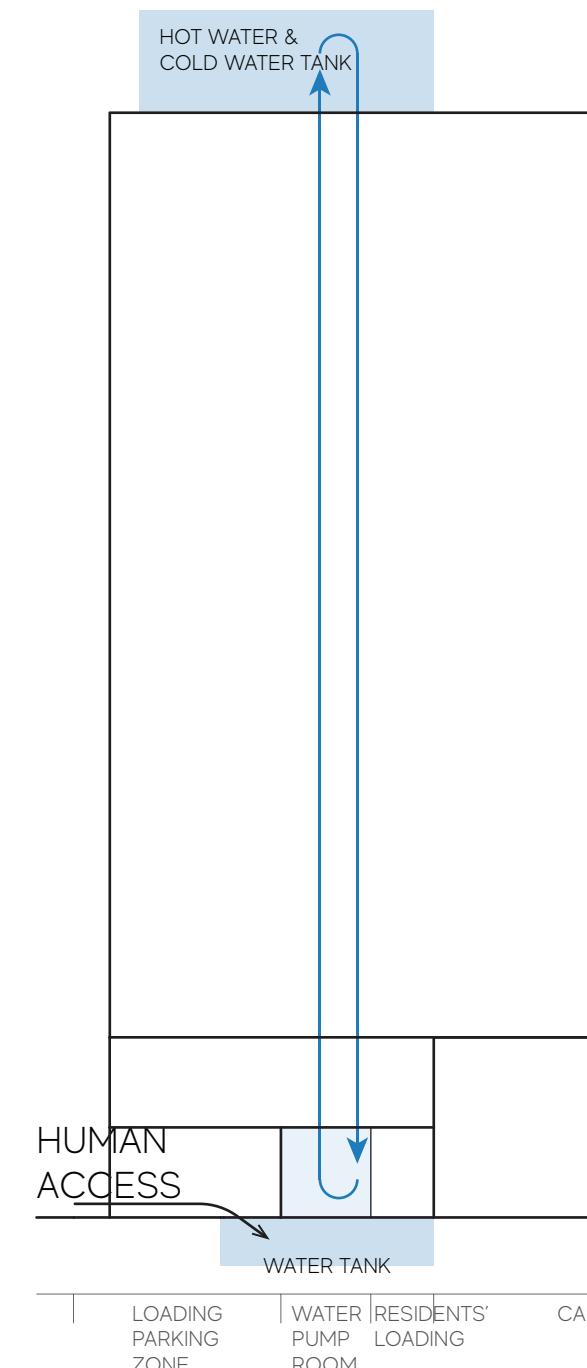
GREEN ROOF



GREEN WALL



WATER SYSTEM



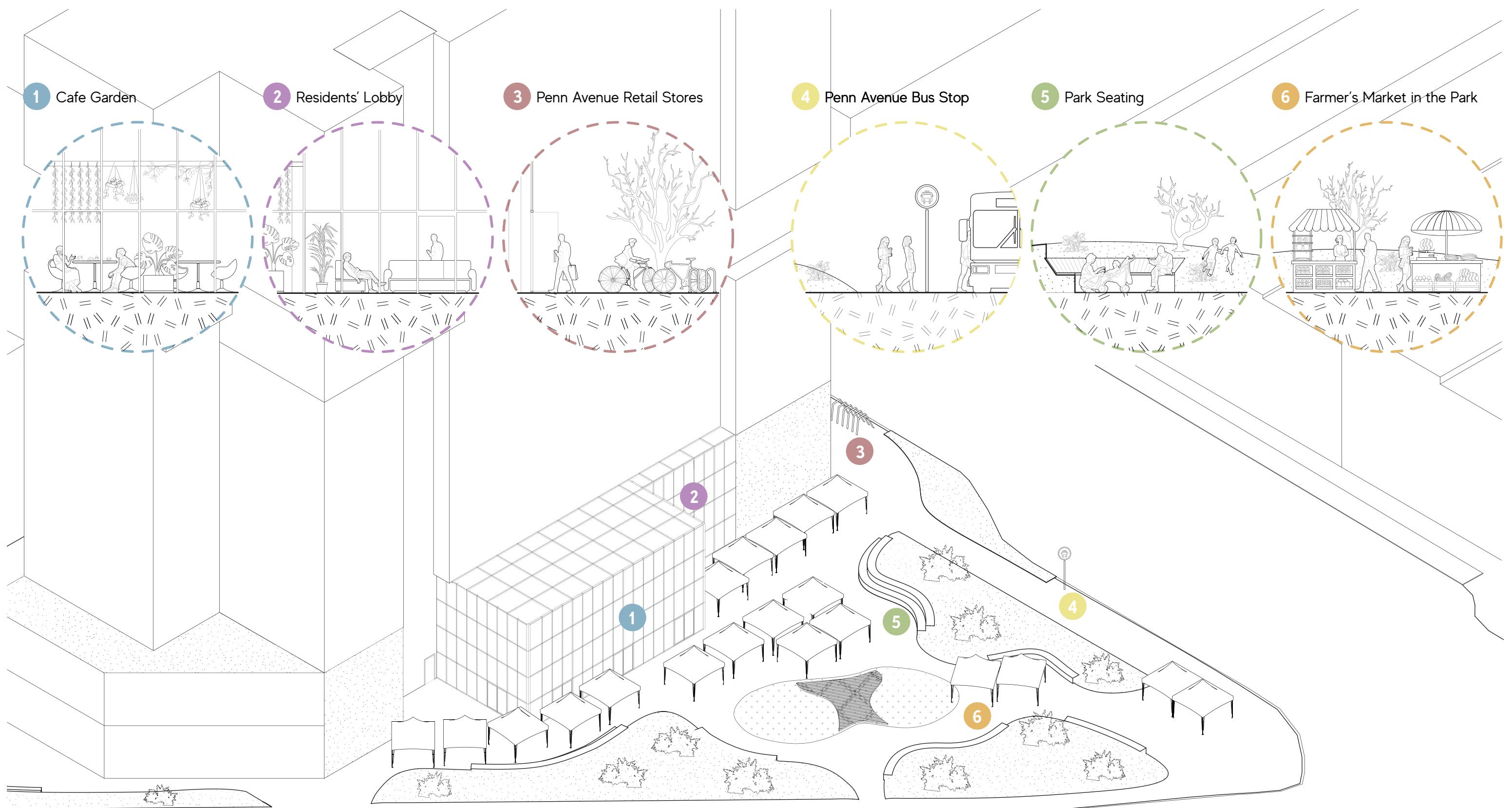
GROUND FLOOR CIRCULATION



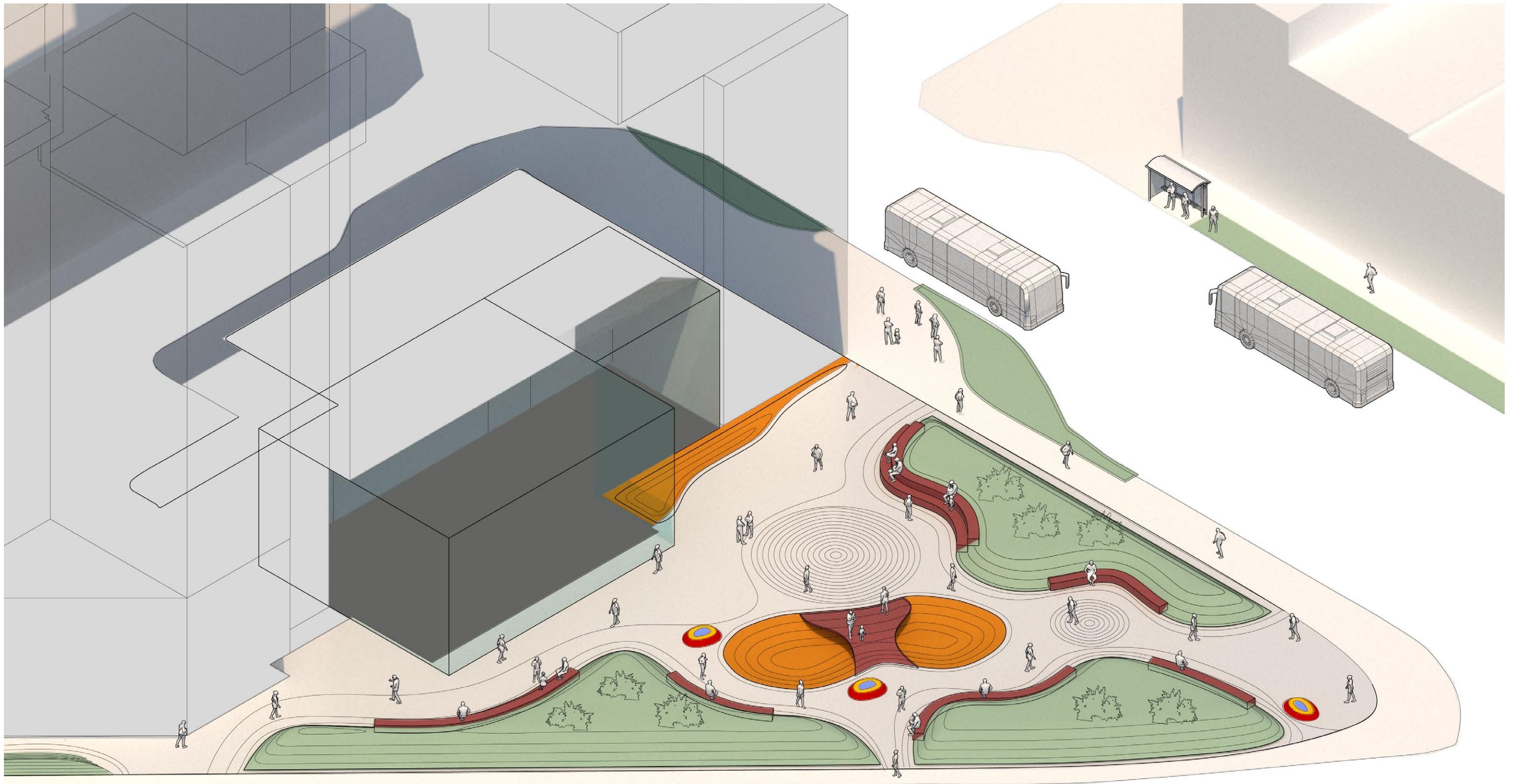
SECOND FLOOR CIRCULATION



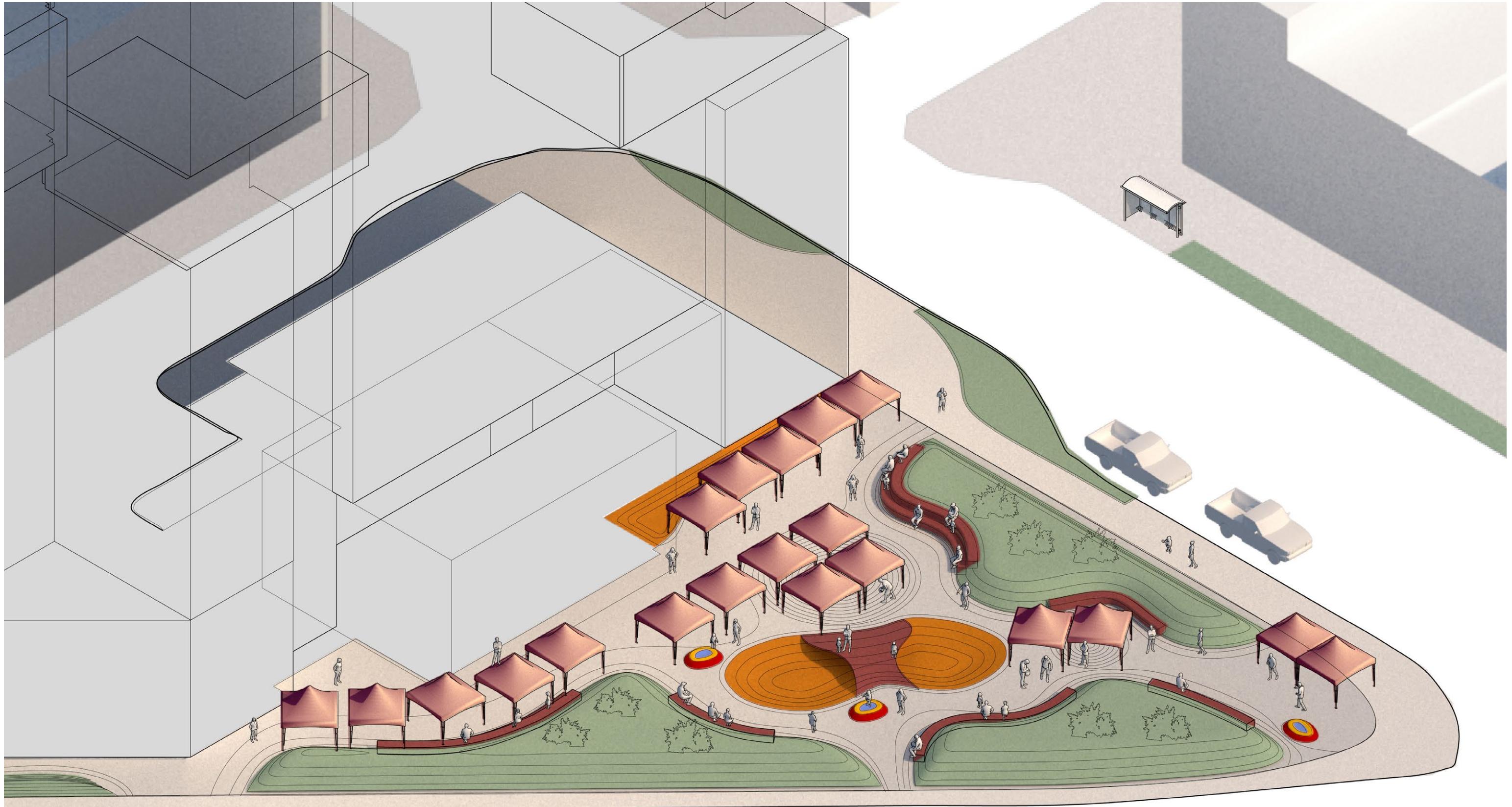
ACTIVITY DIAGRAM



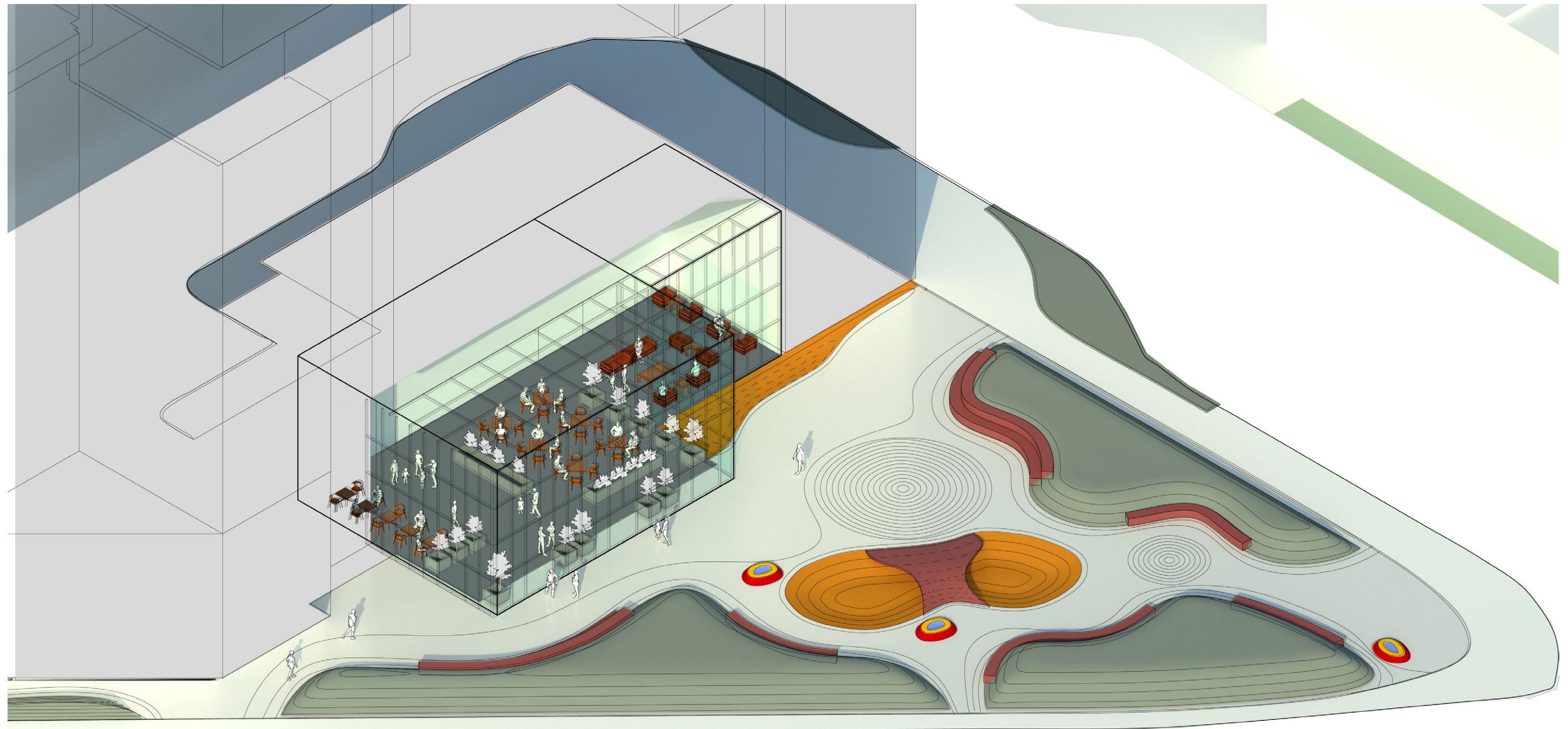
WEEKDAY ACTIVITY DIAGRAM



WEEKEND ACTIVITY DIAGRAM WITH FARMERS MARKET



WINTER ACTIVITY DIAGRAM WITH INTERIOR CAFE

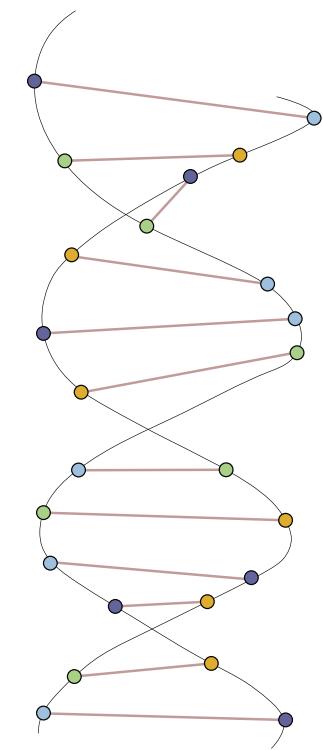
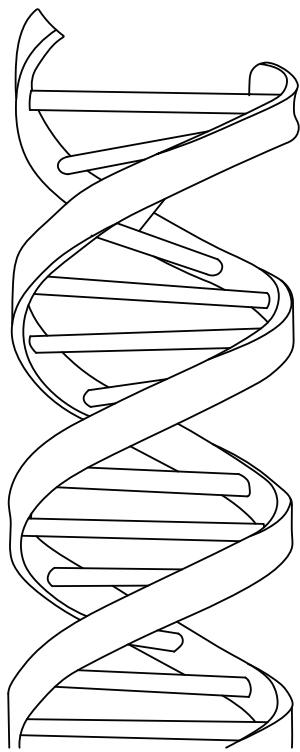


RESIDENTIAL TOWER DESIGN

The design of the tower was motivated in part by an interest in strategies of 'vertical landscapes', as seen in precedent analyses, and partially by the firm's aspirations to explore possibilities surrounding multi-level residential and common spaces.

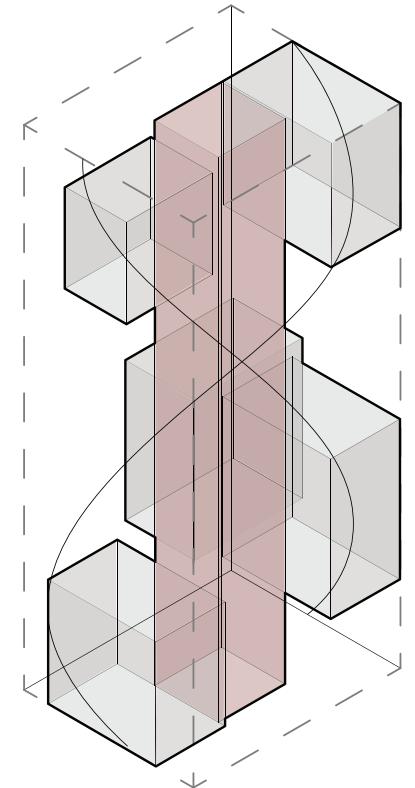
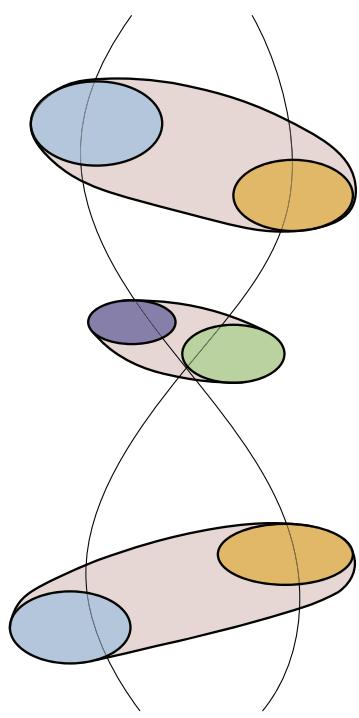
TOWER DESIGN CONCEPT

ABSTRACTION OF DNA HELIX

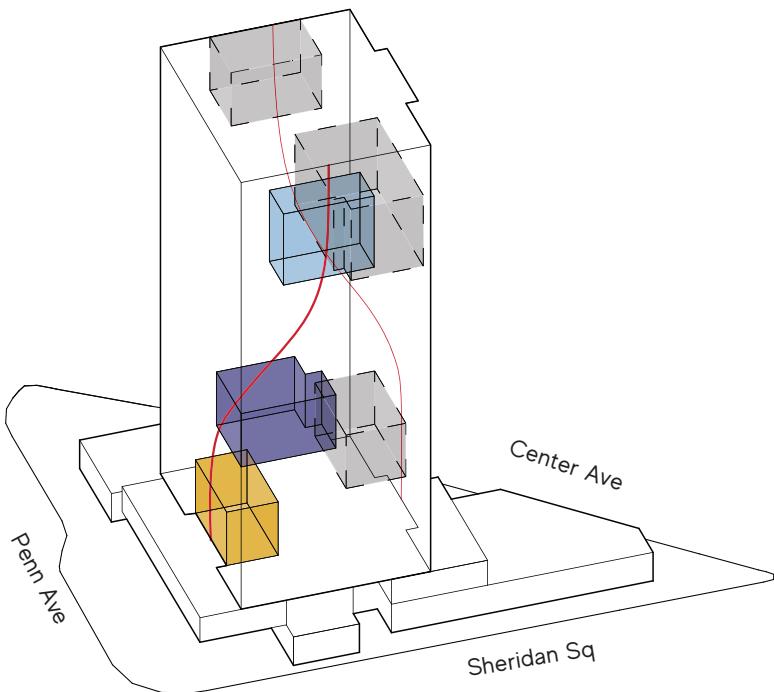


The organizational logic driving the architecture of the vertical community space is derived from the organization of genes along strands of DNA. As shown in this series of diagrams, the structure of DNA is abstracted to an idea of connected pairs of entities.

Spatially, this translates into a strategy of designing two "strands" of vertically and horizontally offset spaces, which are connected in pairs through a central space.

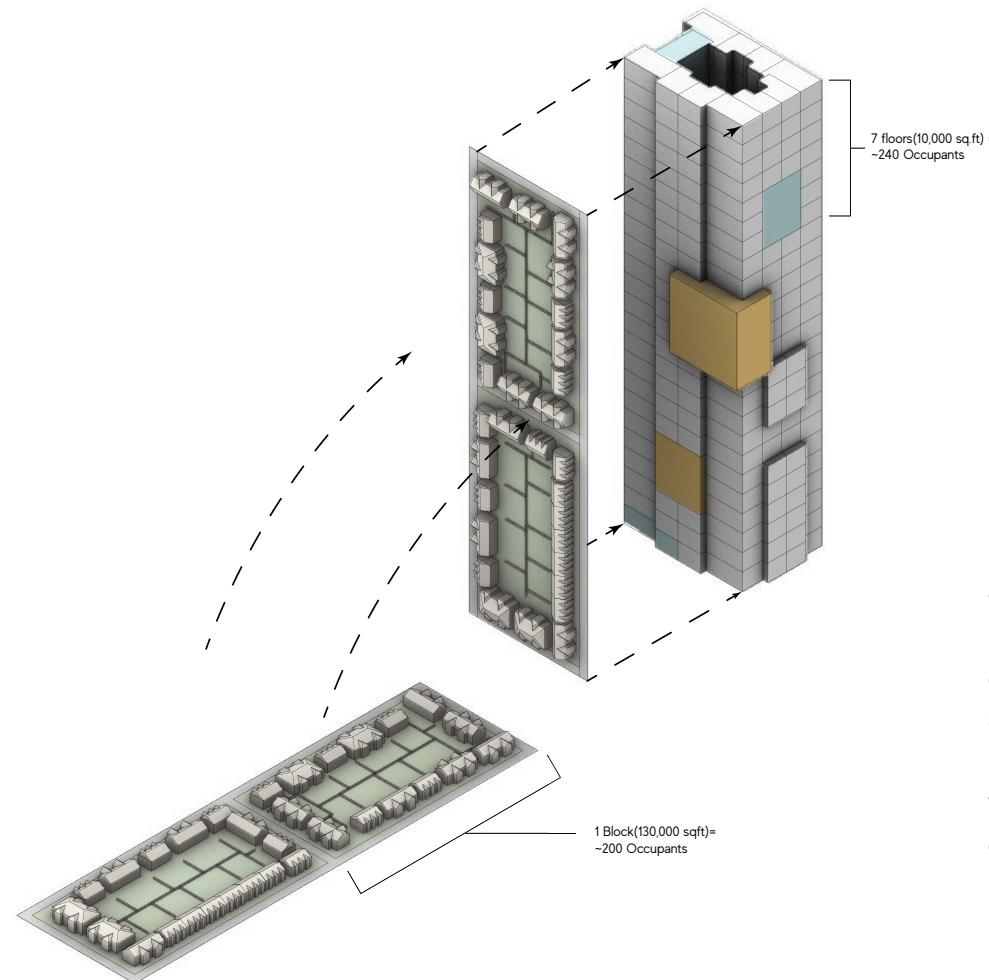


HELICAL ORGANIZATION OF COMMUNITY SPACES



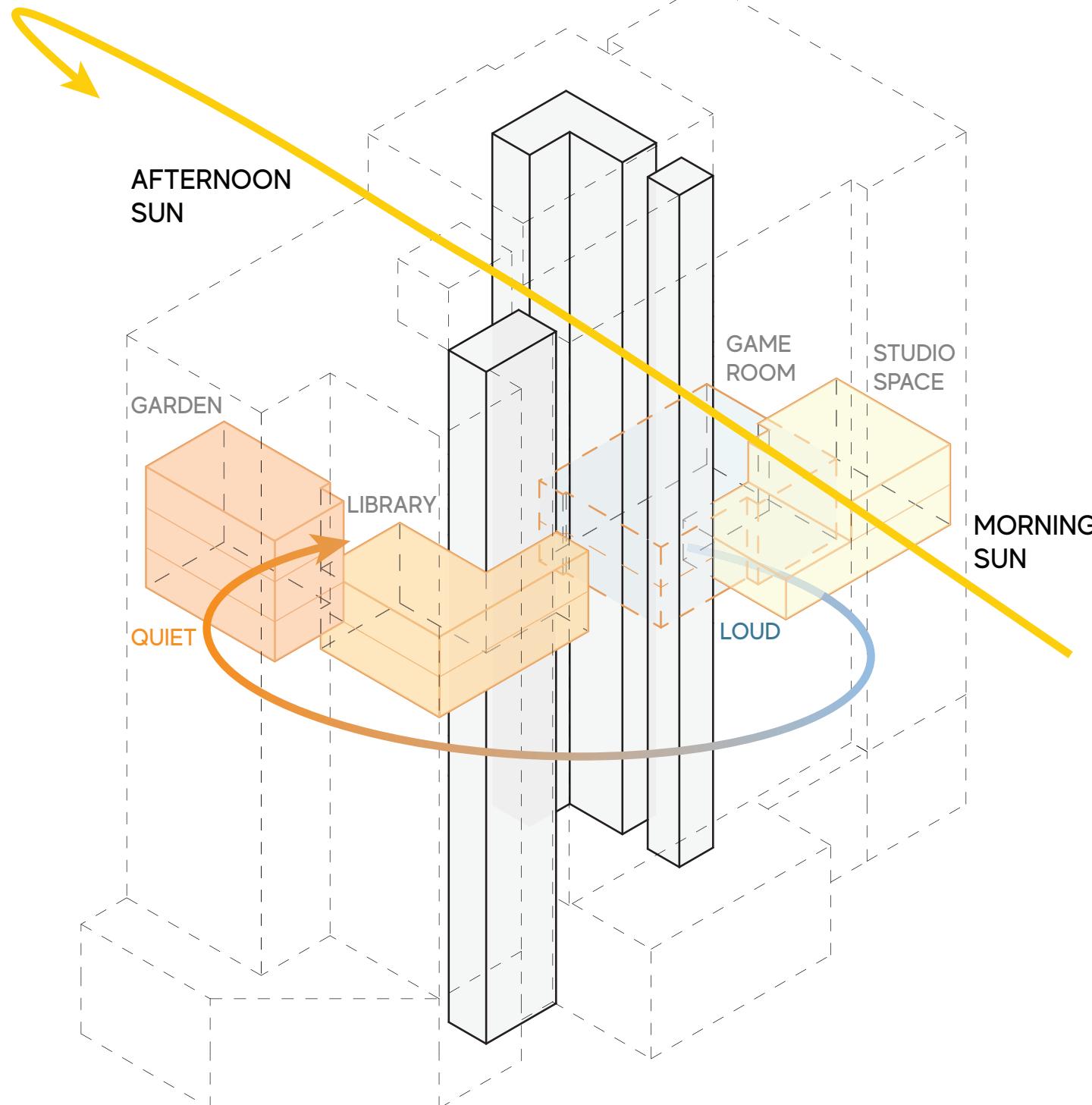
In an effort to contain the overall mass of the residential tower, the helix was constrained to the southeast and northwest corners. This helped in devising a more regular organizational logic, while facilitating an easily legible manifestation of the diagrammatic helix.

The concept presented here proposes the placement of three multi-level programmed community spaces each, along the southeast and northwest corners of the building.

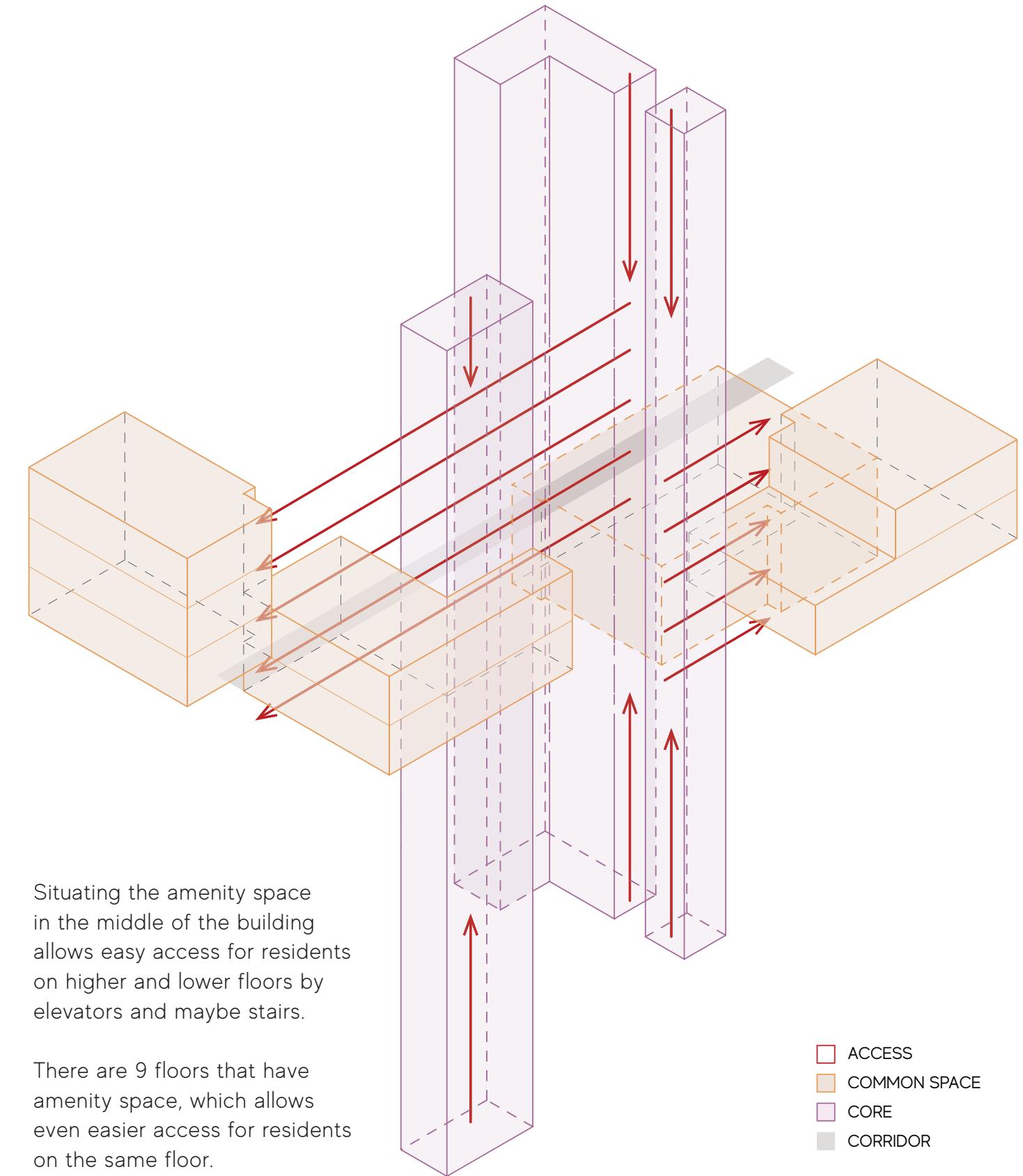


In response to the client's priorities, the creation of a "vertical neighborhood" became a primary focus. This also proved to be a useful strategy to reduce sprawl and increase density by opting for a vertically extending community corridor over a more traditional horizontal layout.

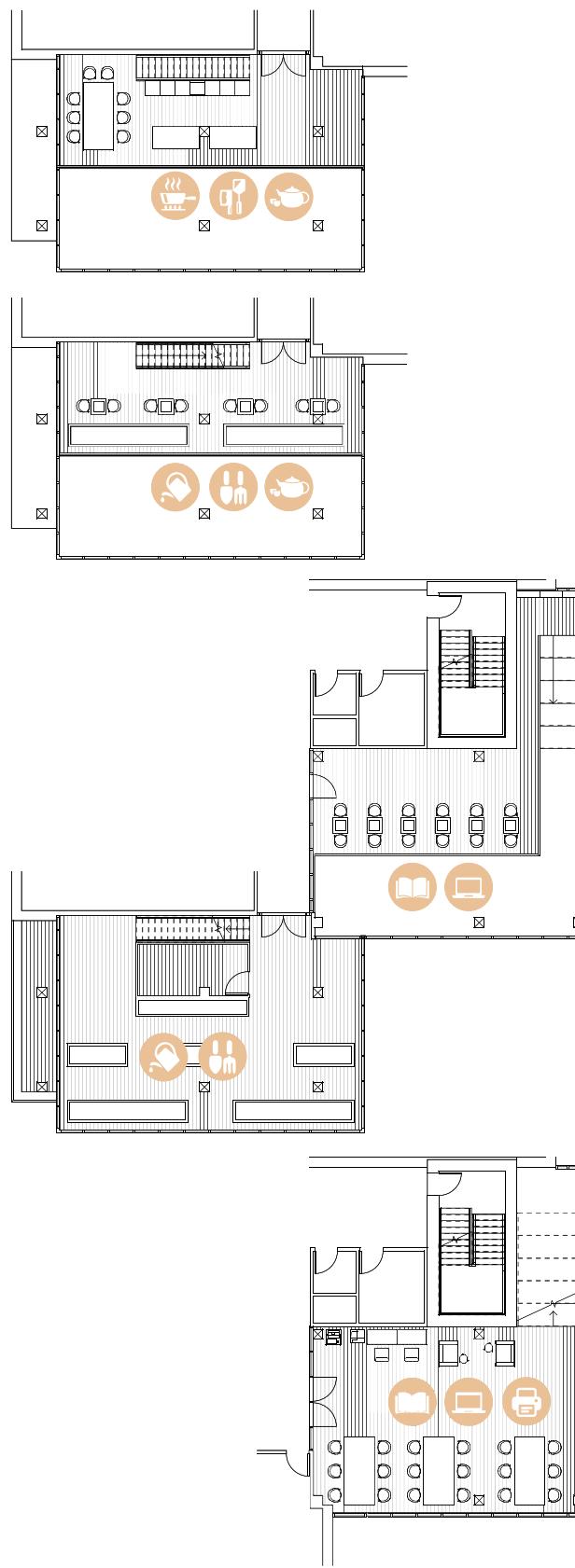
AMENITY SPACE PROGRAM



AMENITY SPACE ACCESS



AMENITY SPACE PROGRAMS

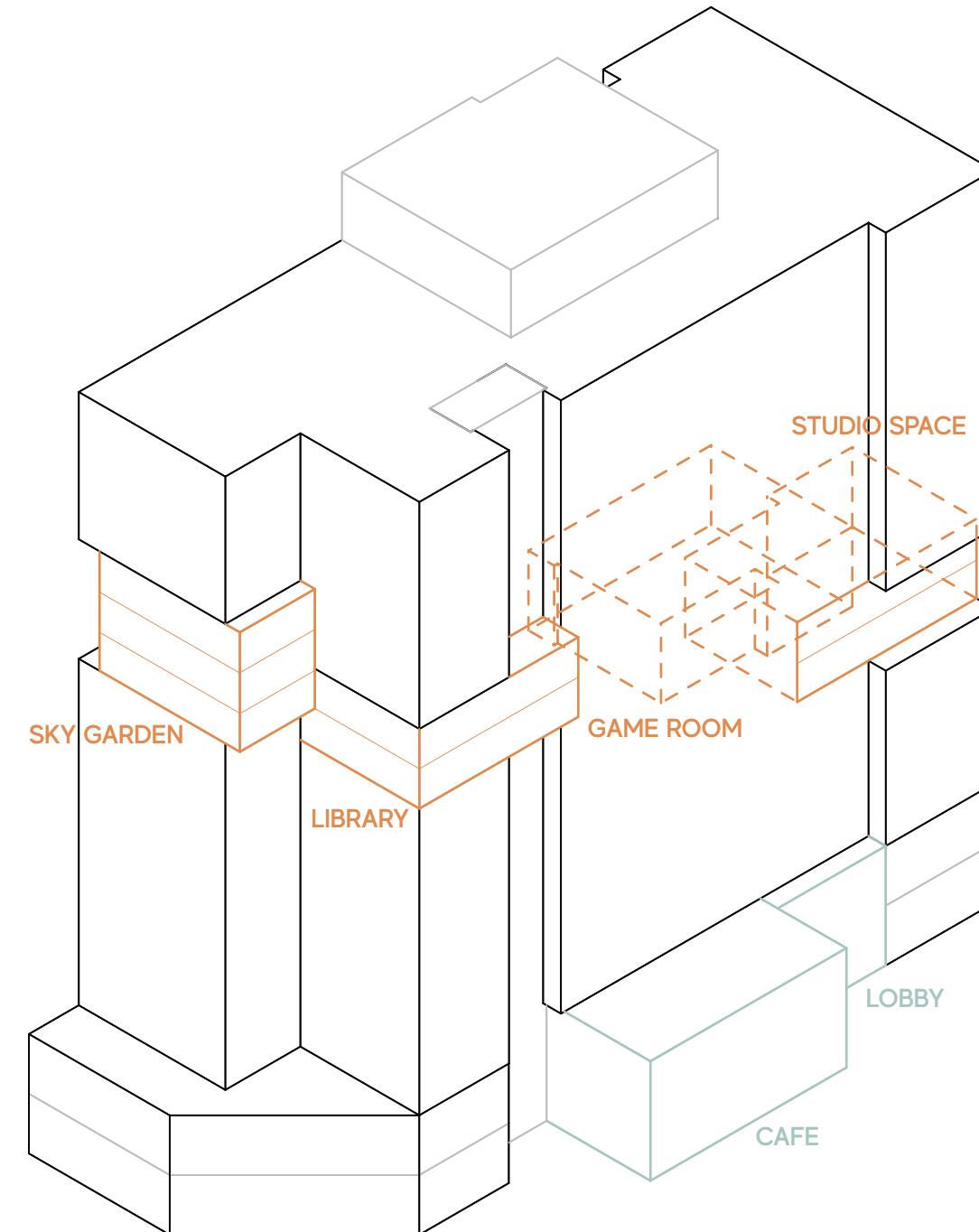


FLOOR 13
SKY GARDEN

FLOOR 12
SKY GARDEN

FLOOR 11
LIBRARY
SKY GARDEN

FLOOR 10
LIBRARY

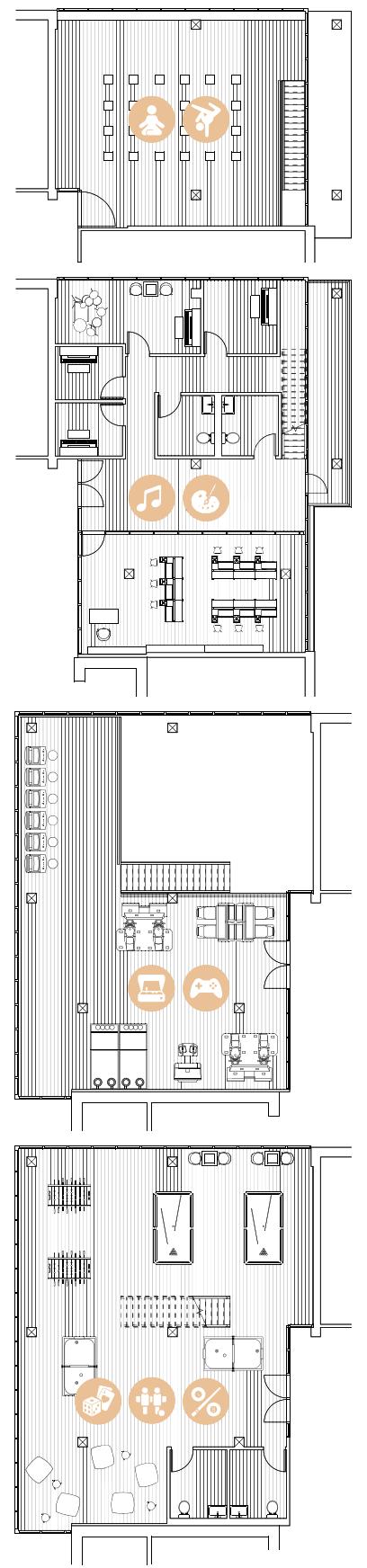


FLOOR 8
STUDIO SPACE

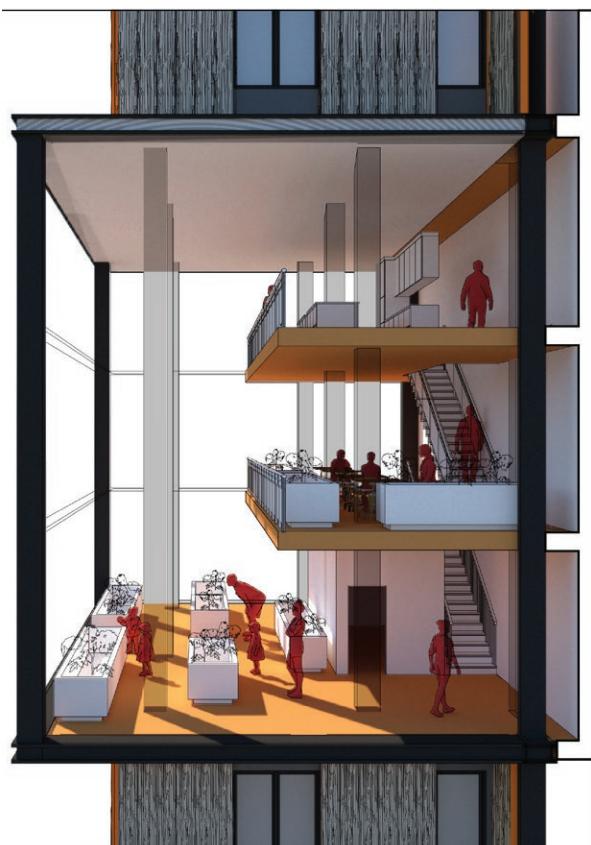
FLOOR 7
STUDIO SPACE

FLOOR 6
GAME ROOM

FLOOR 5
GAME ROOM



SKY GARDEN LIGHTING ANALYSIS

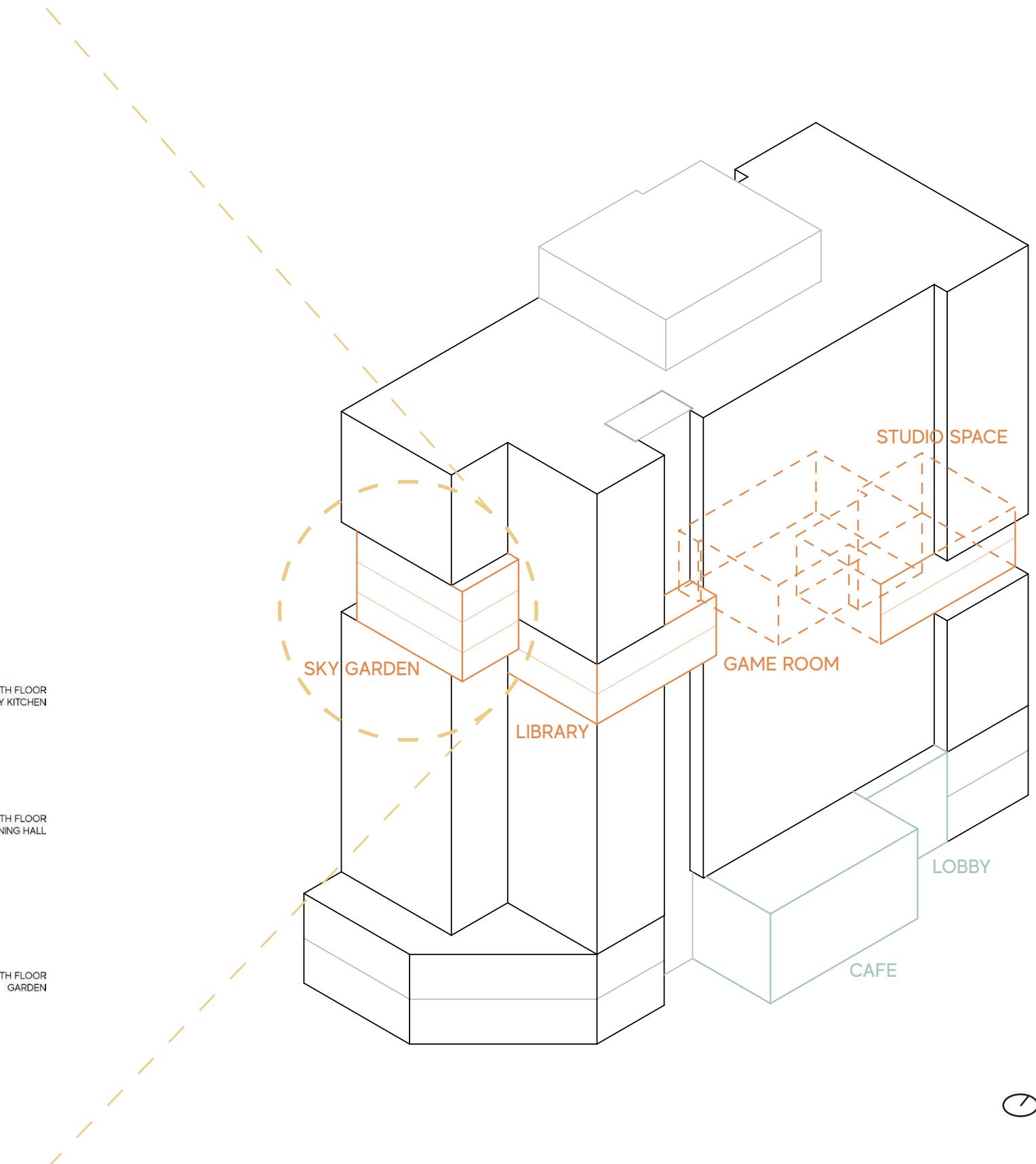


SUMMER 4PM
SKY GARDEN

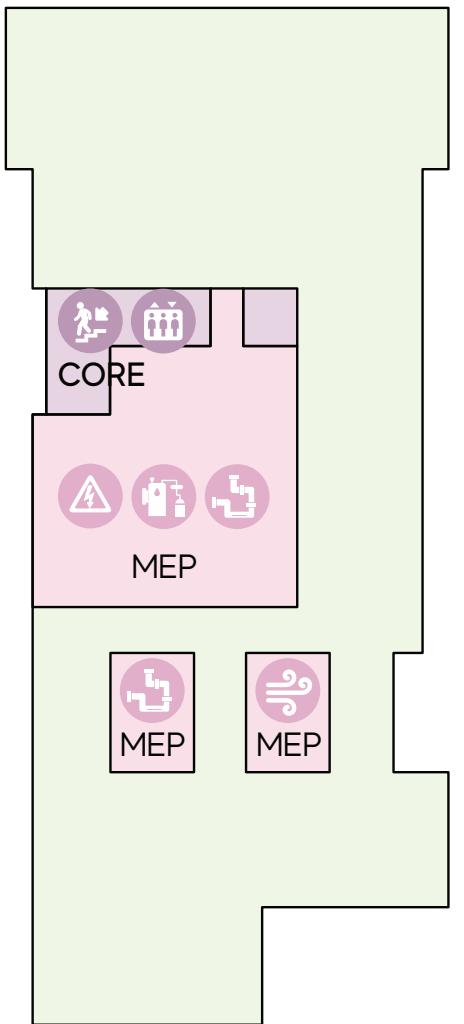
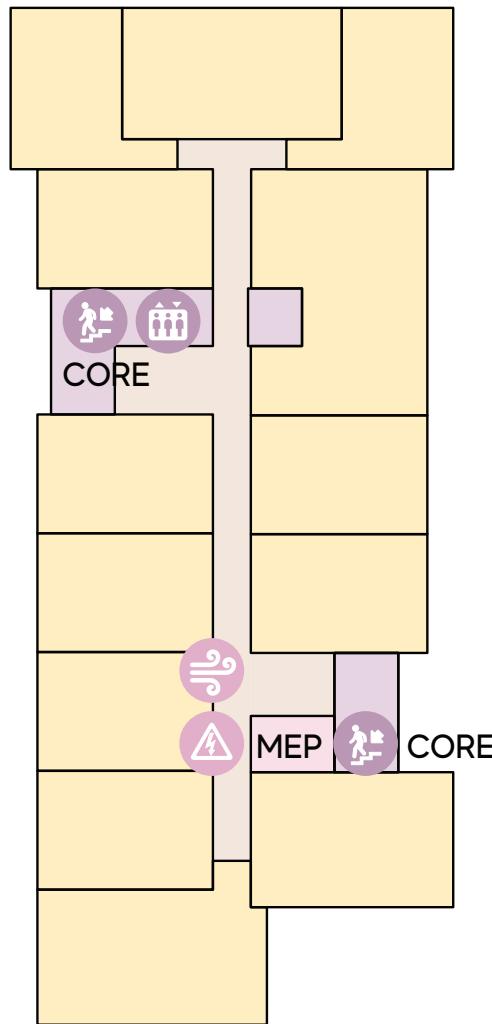


WINTER 1PM LIGHTING ANALYSIS

SUMMER 4PM LIGHTING ANALYSIS

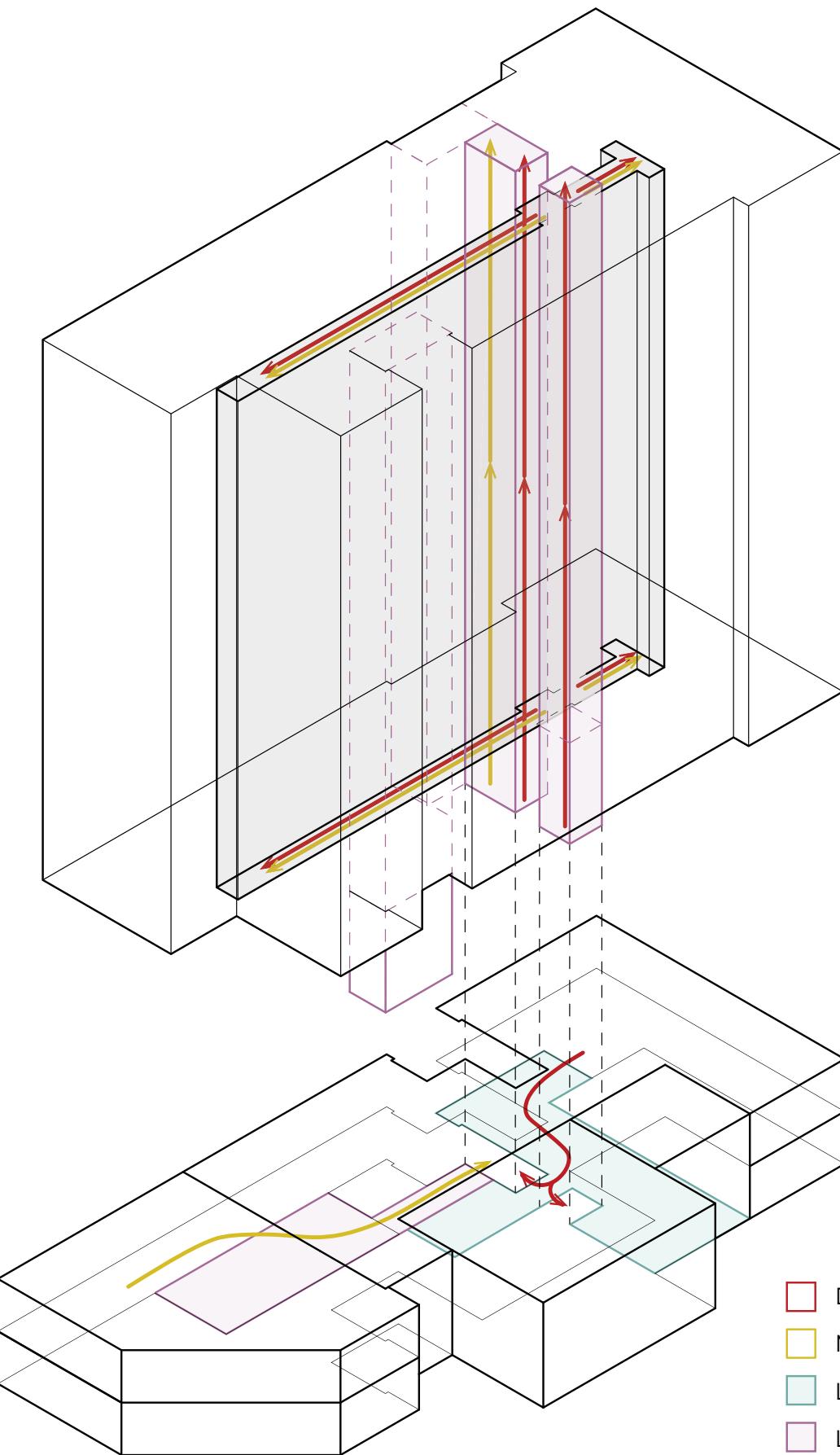


THIRD FLOOR AND ROOF PROGRAMS



- RESIDENTS' UNITS
- RESIDENTS' COMMON AREA
- CORE/ ELEVATORS & STAIRS
- MEP
- GREEN SPACE

UNIT ACCESS

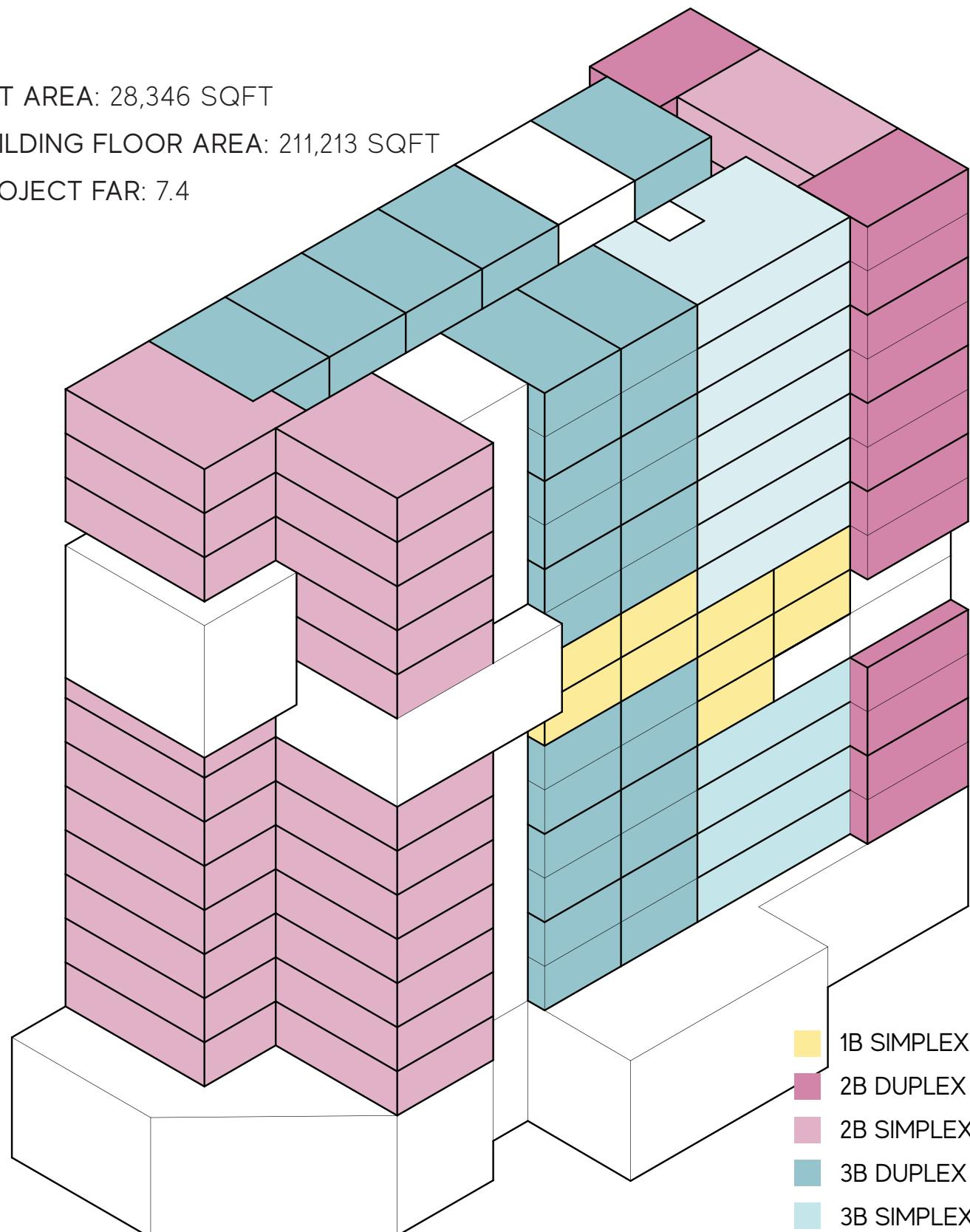


UNIT TYPES

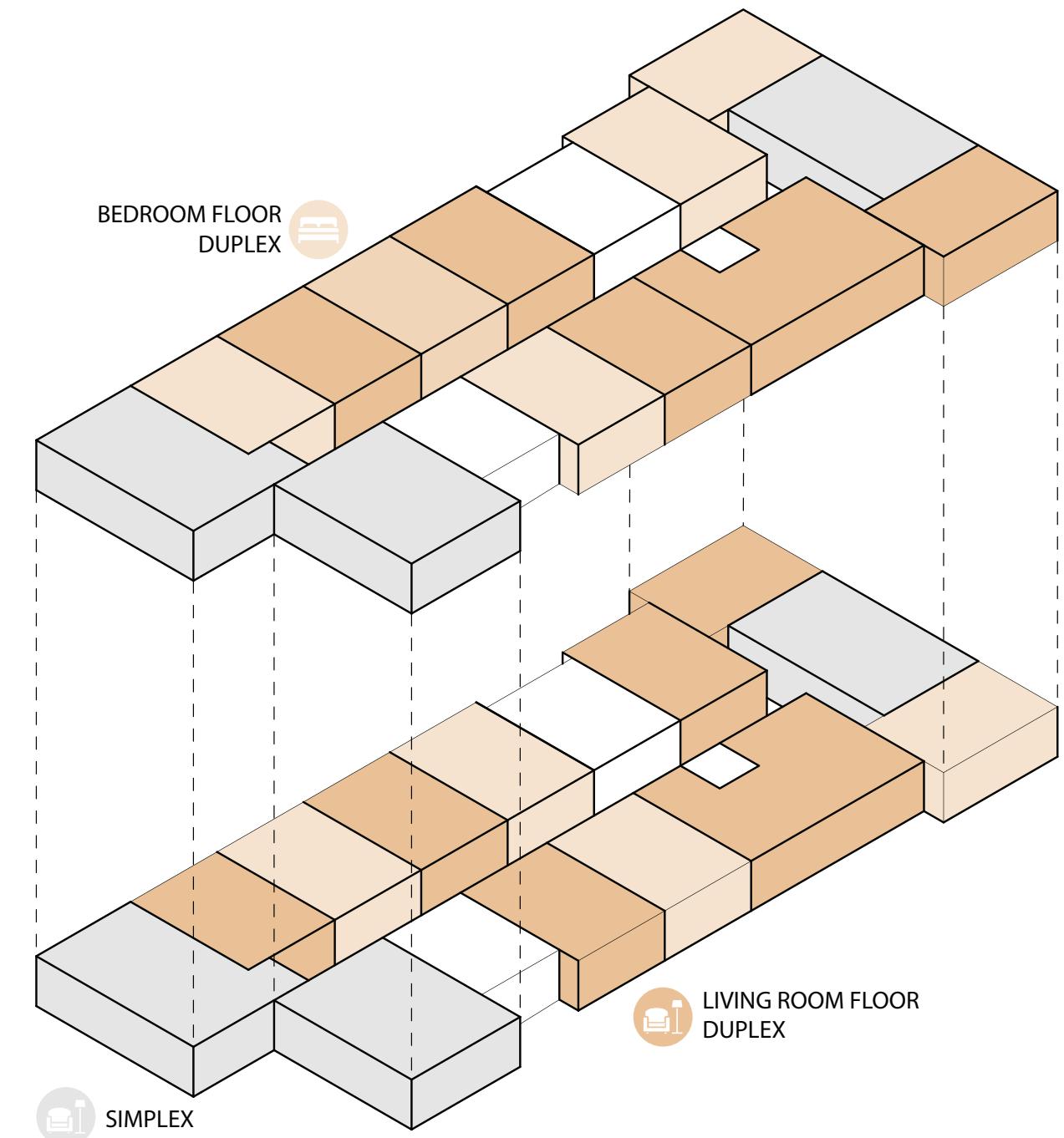
LOT AREA: 28,346 SQFT

BUILDING FLOOR AREA: 211,213 SQFT

PROJECT FAR: 7.4



ORGANIZATION OF PRIMARY ACCESS FLOOR

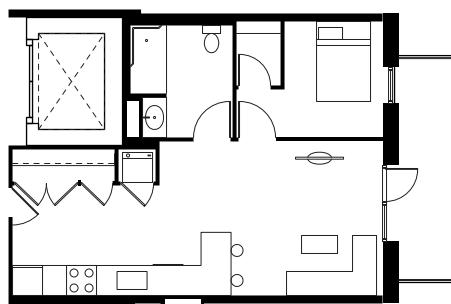
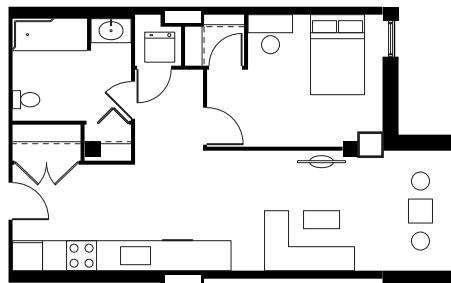


There are 116 units in total, which there are 8 unit layouts in total- 2 unit types of 1B, 4 unit types of 2B, 2 unit types of 3B.

	# of units	% of total
1B	9	8%
2B	49	42%
: simplex	10	
: duplex	39	
3B	58	50%
: simplex	11	
: duplex	47	
Total # of units	116	100%

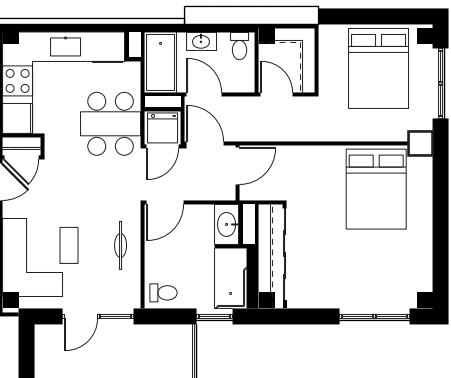
1B SIMPLEX

FLOOR AREA: 708 sqft



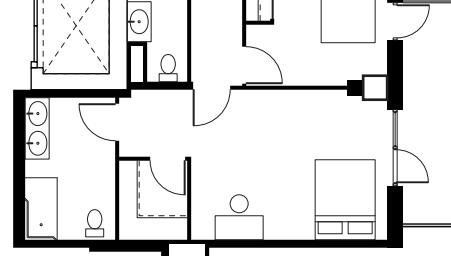
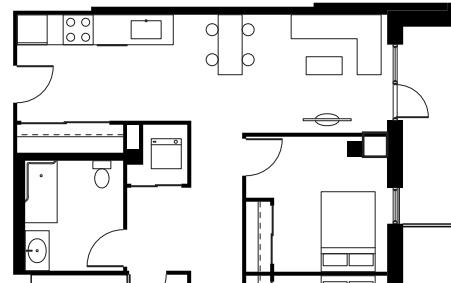
2B SIMPLEX

FLOOR AREA: 832 sqft

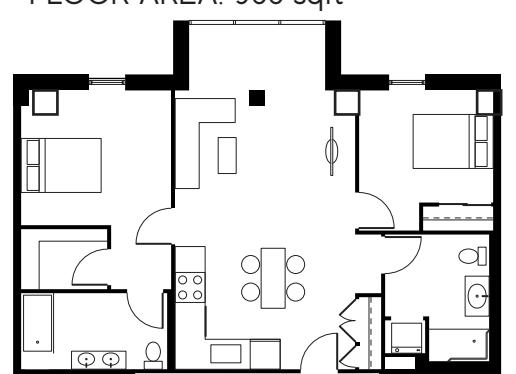
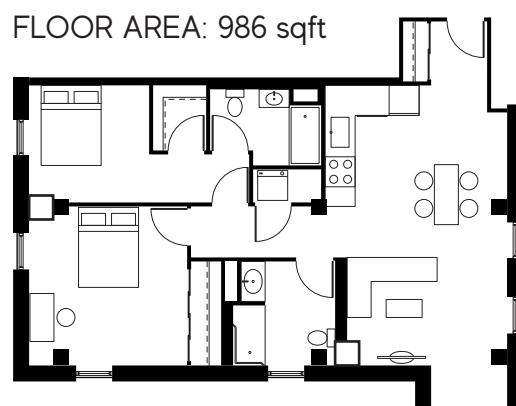


3B SIMPLEX

FLOOR AREA: 1260 sqft

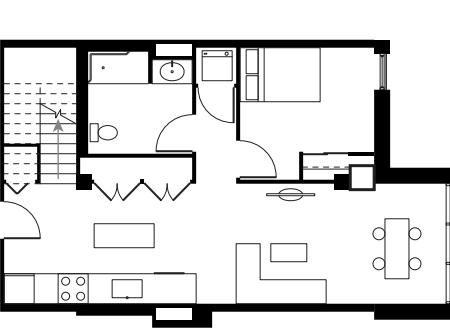
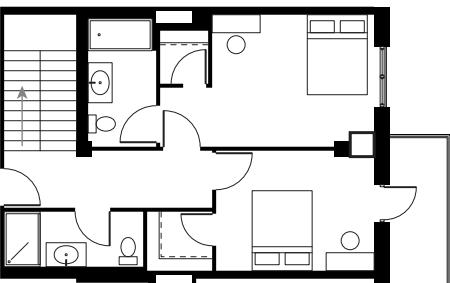


FLOOR AREA: 986 sqft



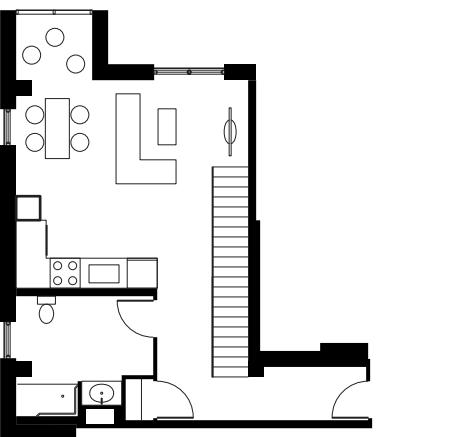
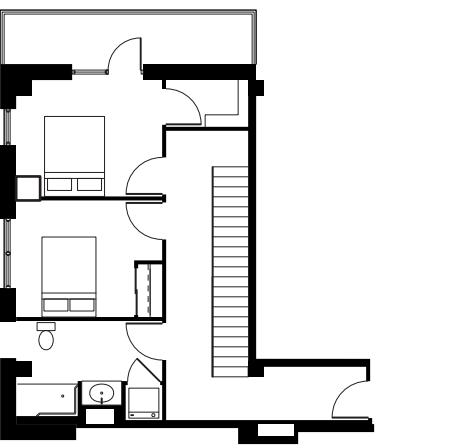
3B DUPLEX

FLOOR AREA: 1366 sqft

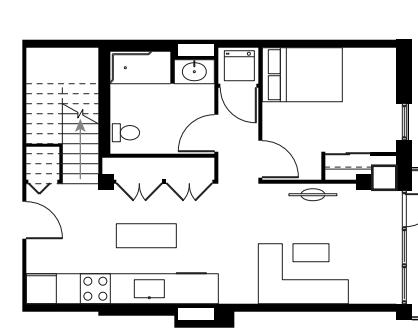
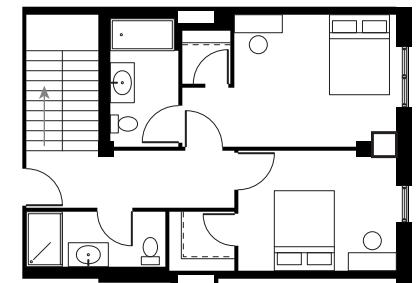


2B DUPLEX

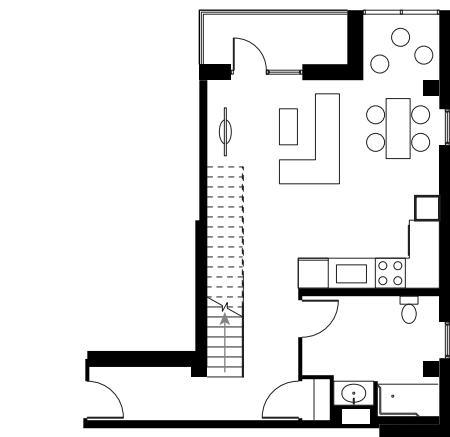
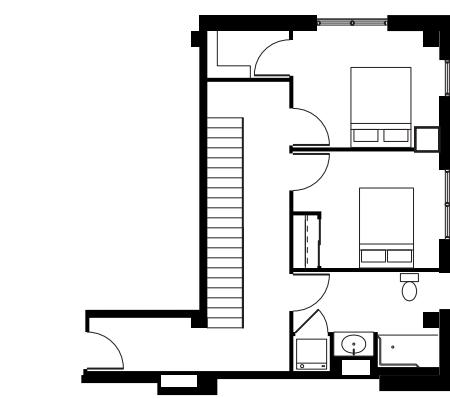
FLOOR AREA: 1216 sqft



FLOOR AREA: 1316 sqft



FLOOR AREA: 1216 sqft

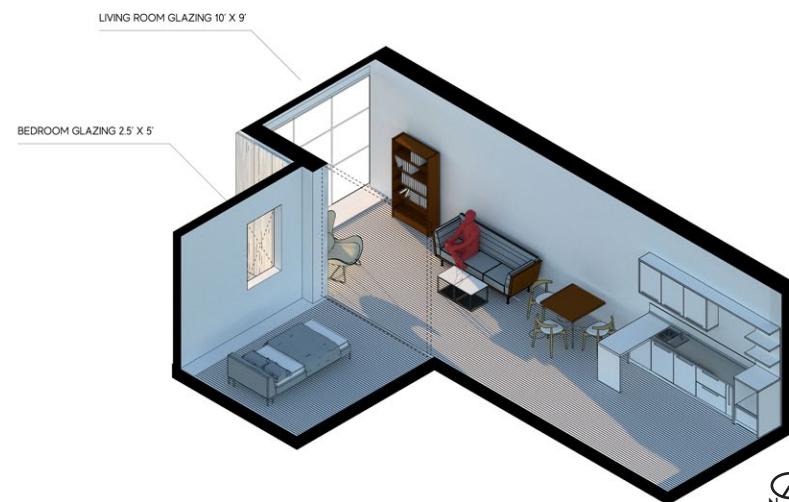


SUMMER 9AM LIGHTING ANALYSIS

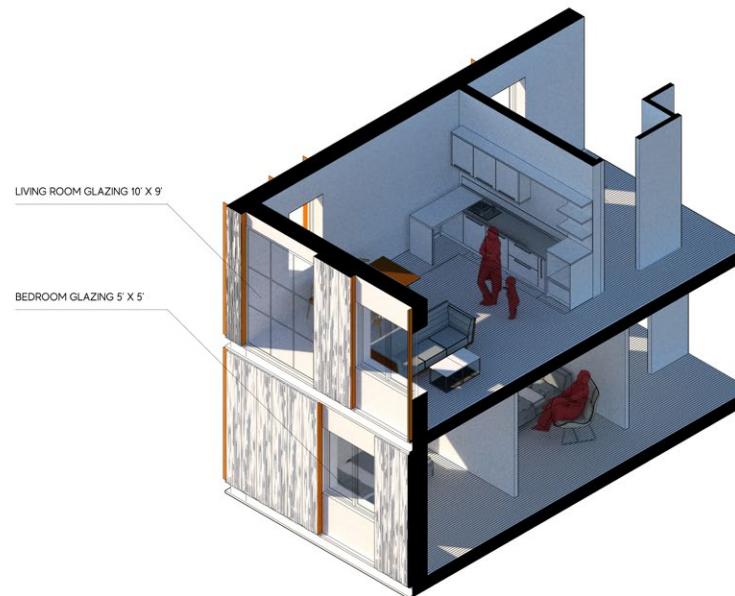


↪ 1B SIMLEX

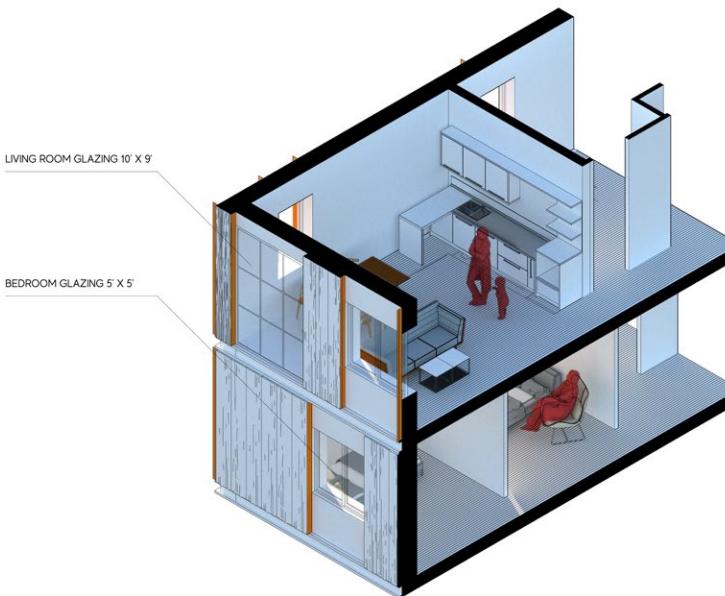
WINTER 9AM LIGHTING ANALYSIS



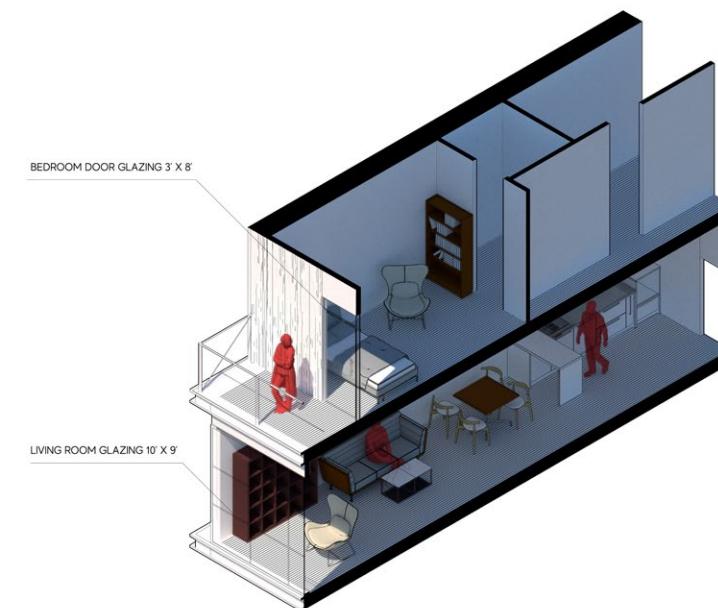
↪ 1B SIMLEX



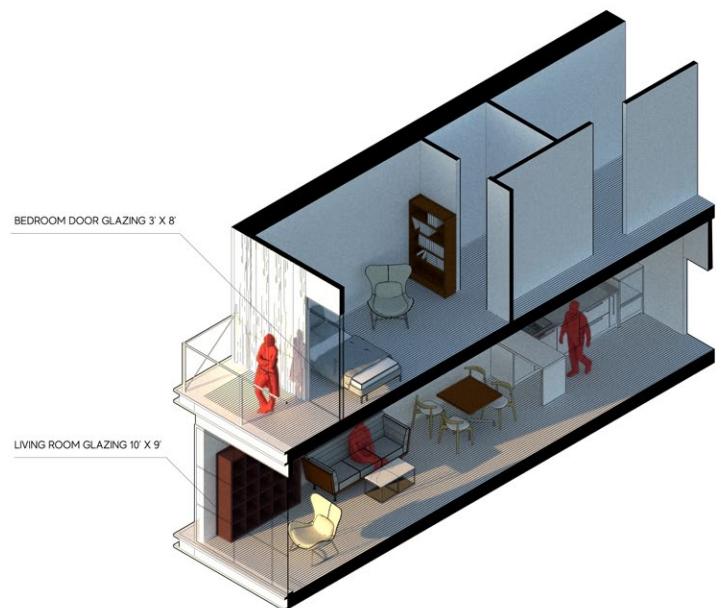
↪ 2B DUPLEX



↪ 2B DUPLEX

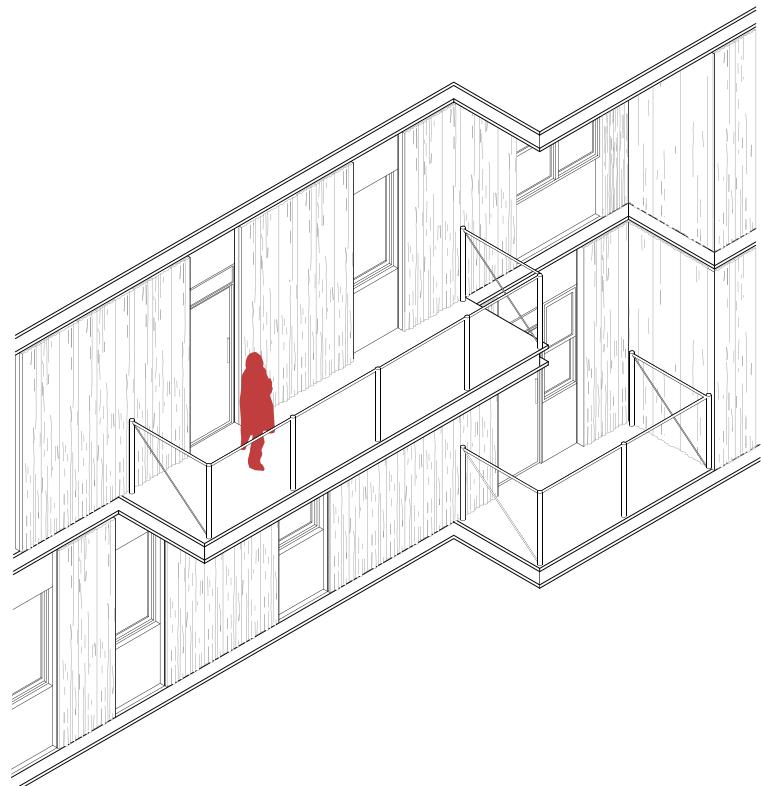
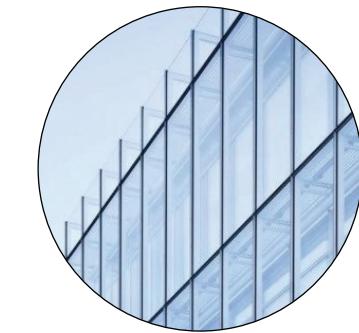
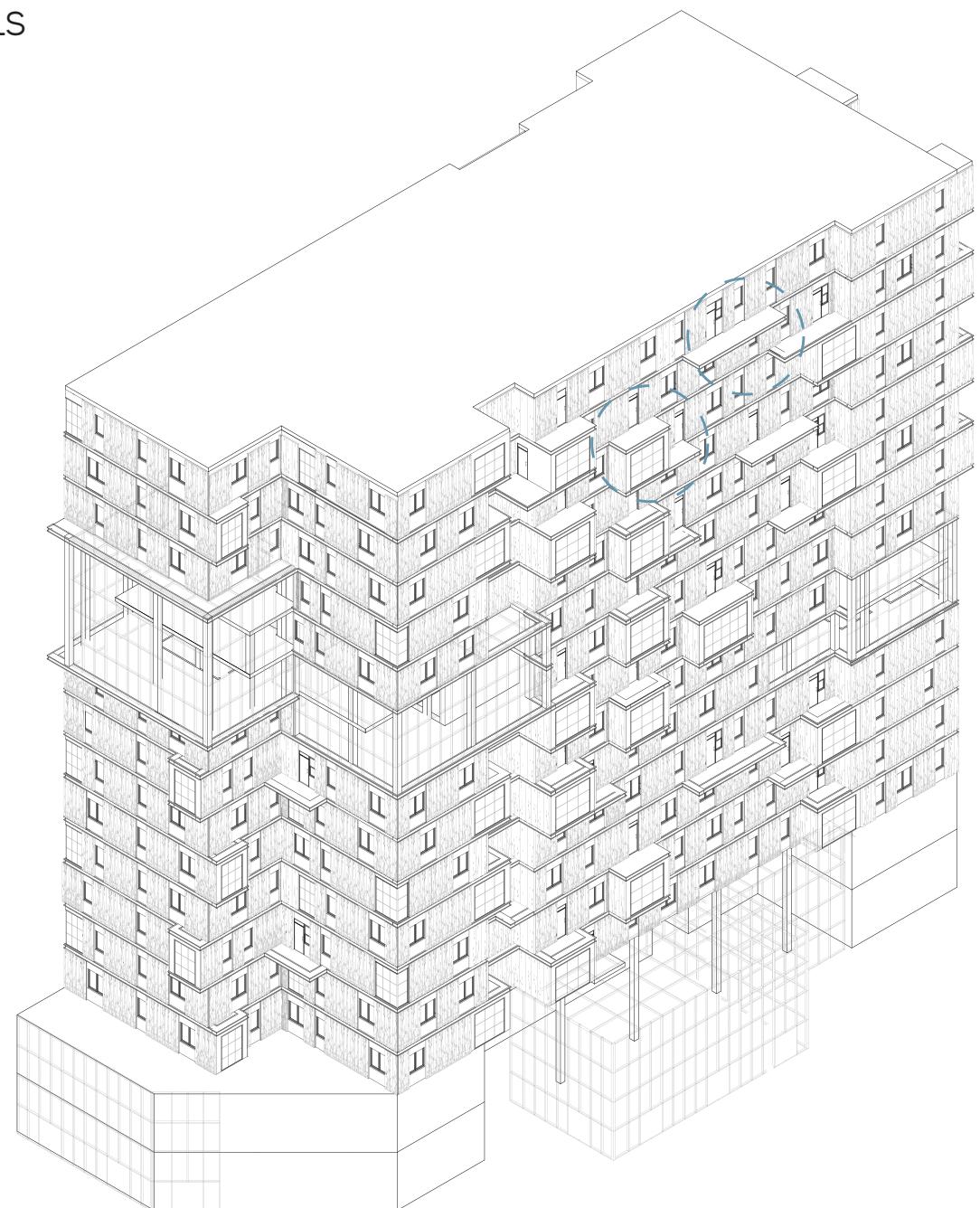


↪ 3B DUPLEX

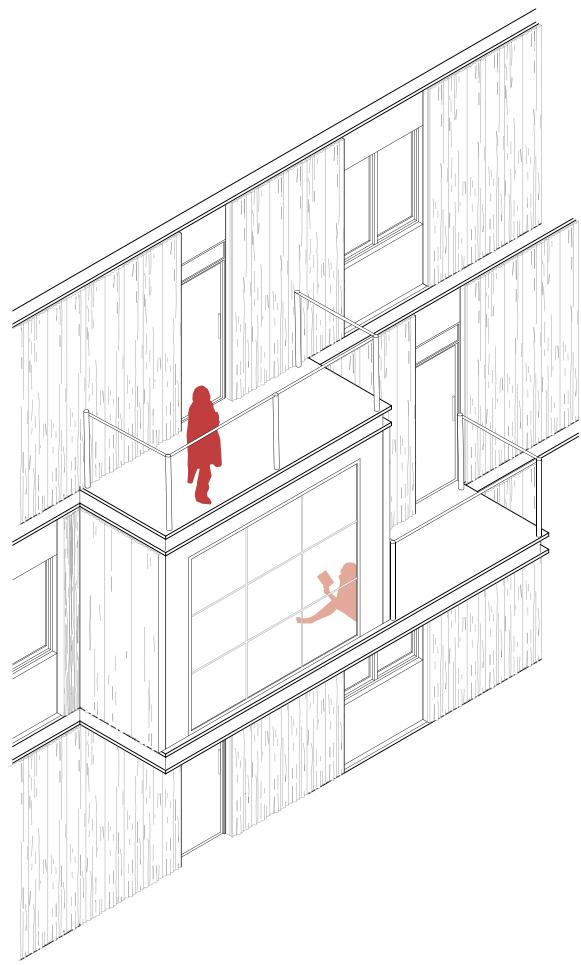


↪ 3B DUPLEX

FAÇADE DETAILS

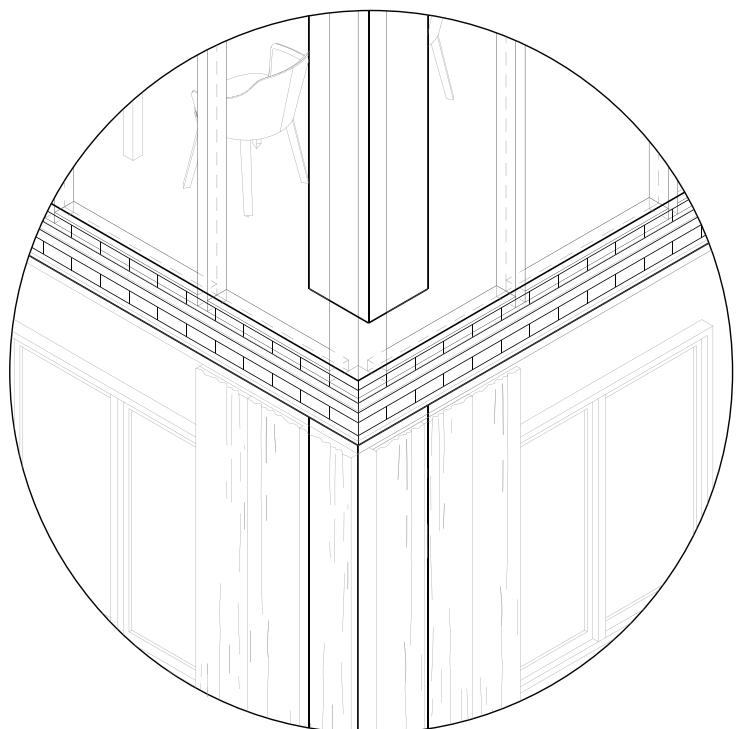
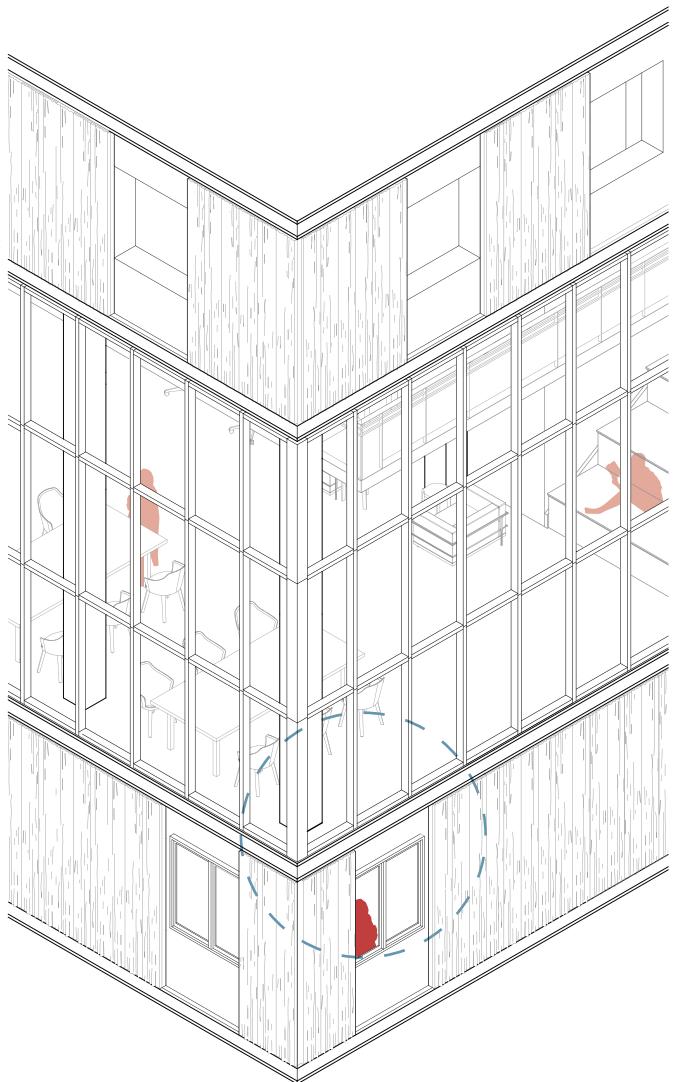


The enclosed type is essentially an extension of the living room of select units. It also entails extending the CLT floor, followed by opaque paneling on two sides and glazing on the third. Moreover, it offers an opportunity for an "open" type balcony on top of the enclosed box.



STRUCTURE

Cross-Laminated Timber (CLT) was chosen as the primary material for the structural system not only due to its insulating and fire-retardant qualities but also because it offered a sustainable alternative to more conventional materials.



This system is primarily composed of layers of solid-sawn lumber glued together, with each successive layer oriented perpendicular to the first. This project uses 16" thick square column and 12" thick floor plates, as shown on the left.

