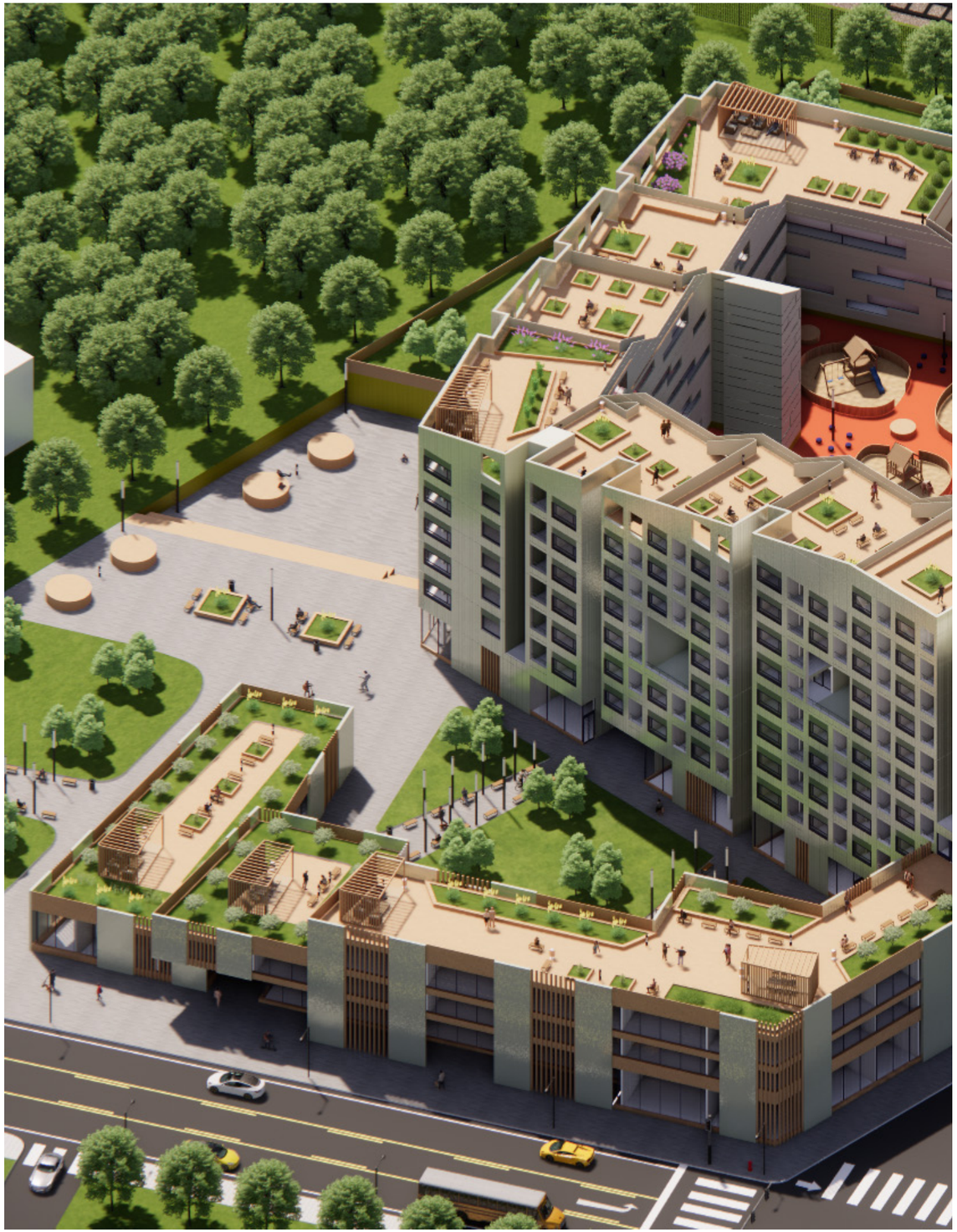


Filling Voids

Project Location:

2000 S Industrial Hwy, Ann Arbor, MI 48104

Project Team Members:

Abigail Postema
Boxian Zhao
Camy Trinh
Seunghun Lee

Systems Studio Section:

Ellie Abrons
Meredith Miller

Taubman College of Architecture and Urban Planning
University of Michigan
Arch 672 Systems Studio Fall 2022

Filling Voids

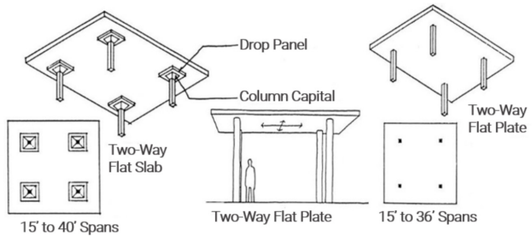
Abigail, Boxian, Camy, Seunghun
Ellie/Meredith

PROJECT NARRATIVE

The high demands for affordable housing in Ann Arbor directly correspond to limited community resources towards personal development in addition to the limited quantity of available affordable dwelling spaces. These issues eat away at our community, metaphorically leaving people stranded in voids, feeling discouraged and disconnected.
Our proposal “Filling Voids” mitigates these issues through the creation of affordable residential units in proximity to community amenities. There is a mix of residential unit types, from singles and doubles to larger family-sized units. The community amenities include: AAHC and property management offices, food pantry, public kitchen, study lounge, and community skill-development workshop spaces. These programs are open to the general public and residents. Amongst these spaces, there are staggered green-roof terraces and courtyards to encourage open yet safe community-connecting opportunities on multiple scales and levels throughout the project. This project is as much about providing the necessary infrastructure to facilitate individual development as it is about connecting the Ann Arbor community.

Site Strategy
The site is adjacent to the railway in the east and the urban expressway in the west, so our apartment building is deliberately kept a certain distance from the two sides. At the same time, the public project is placed between the road and the apartment to play a role of buffer and diversion. , because the goal of our group is to explore the maximization of the number of apartments without losing the quality of life of the residents, so the light is an important factor in the site, through the light analysis, we use the stepped shape as the architectural prototype, and through the single-sided aisle The design forms a central courtyard and is shaped to maximize light within the courtyard. Therefore, in the end, our public space is generally divided into three levels. The first is the public courtyard that needs to pass through when entering the site from the urban interface, the second is the semi-public courtyard enclosed by the apartment and mainly serves residents, and the last is the more private one near the west side of the site. the courtyar

Structural Concept
Considering the limited budget of affordable housing, this project adopts site-cast concrete with two-way slab system. The floor height of the first floor is 15feet, which is convenient for fire trucks to enter and exit. The floor height of other apartments is 10feet, and the exterior wall of the building is made of prefabricated concrete slabs , because the main part of the courtyard of the apartment is too high by 5 feet, so the underground parking lot only needs to be dug down by 5 feet, which reduces the construction budget to a certain extent



Environmental Strategy
This project uses roof platforms at all levels as green public spaces. Some platforms of the podium are open to the public and office workers. At the same time, solar panels are placed to supplement the building’s energy consumption. Apartment platform gardens are open to residents, and rainwater collection devices are used to reduce the use of water pumps. The exterior wall of the building adopts external insulation. Compared with internal insulation, it reduces the repeated use of the insulation layer and can also achieve a good insulation effect. Especially in Michigan, it can effectively save energy in winter and ensure indoor temperature.

Unit Typology and Social Agenda
Another focus of this project is the distribution and design of apartment types. First, the two main apartment types are family units and individual units. There are a total of 120 apartments, of which 20 are family units and the rest are individual units. According to the conversation with AAHC manager, we realize that this project has a certain particularity, because the residents of individual units are more likely to have metal problems, which pose a certain threat to some vulnerable groups, especially families with children, so we The line design diverts the crowds of family units and individual units, thereby reducing the potential safety hazards caused by excessive overlap of streamlines

Facade Concept and Materiality
According to the characteristics of affordable housing, the facade structure of this project is not complicated, and the concrete slab is wrapped with the insulation layer. At the same time, the steel-supported light green aluminum plate is used as the main exterior material. We use 1 foot as the basic division unit to divide the window system And the balcony openings to arrange in a unified order, for example, the balcony handrail is aligned with the lower part of the window, and the upper edge of the balcony is aligned with the edge of the dark green aluminum plate. In addition, the building shape also has a concave-convex design, so that sunlight can enter the room from both sides in the recess, and there will also be rich light and shade changes in the external shape. The rest of the facades are the podium facade and the inner courtyard facade. A similar logic is also adopted to echo the main building façade

Project Statistics

Total gross floor area	686,400 sf
Lot area	30,000 sf
FAR	2.3
Number of floors	9
Building height	100’
Dwelling unit count	120 units
Total area of commercial space	30,000 sf
Total net leasable area	150,000 sf
Efficiency rate in %	70%
Unit Access typology	
Building Typology	
Number of on-site parking spaces	100
Parking spaces per unit	0.80

FILLING VOIDS

Code Review

Team Members:

Abigail Postema
Boxian Zhao
Camy Trinh
Seunghun Lee

Studio Instructors:

Meredith Miller
Ellie Abrons

Project Summary

1. Project Summary:

Overall Building Height (Residential):	110’
Overall Building Height (Public):	40’
Overall Building Gross Square Footage:	686,410 sq.ft.

2. Occupancy Groups Included in this Project:

Residential (R-2)
Business (Administration offices/Flex community space/Soup Kitchen/ Food Pantry/ computer room) (Exercise/Fitness room/study lounge)
Utility (Maintenance)

3. Construction Types:

Type IB:
Site Cast Slab Two Way Concrete
Metal Cladding

4. Overall description of building use and site location:

The building is a terraced 9 story structure. Residential program is dedicated to family and individual units. Business, assembly, and utility are primarily located at the east and west sides of the site spread over the first, second, and third floor.

5. Allowable area for Occupancy types in Construction Type IB:

R-2	UL
Business	UL
Assembly	UL
Utility	106500 sq.ft.

6. Unrated Construction types:

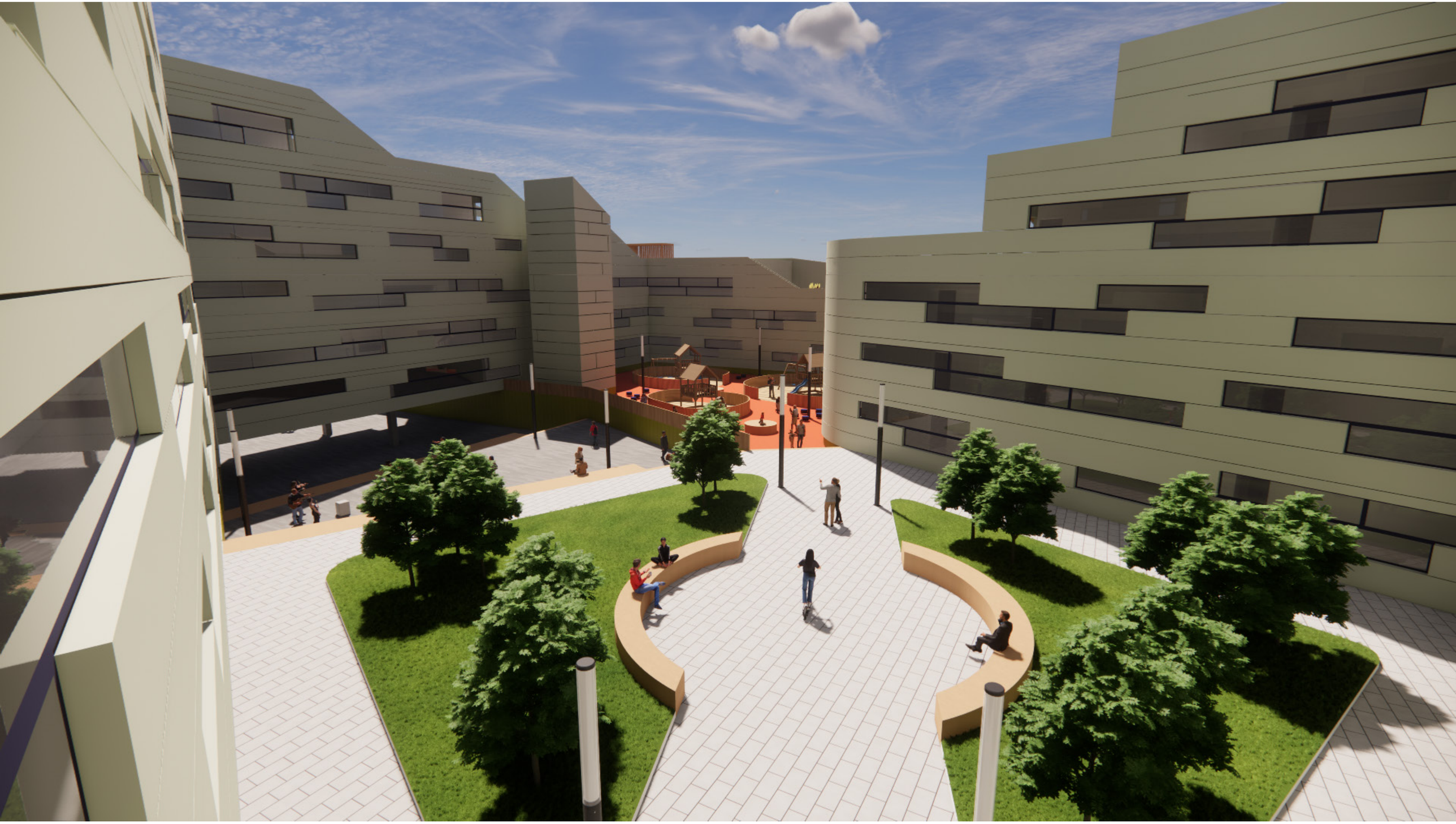
None

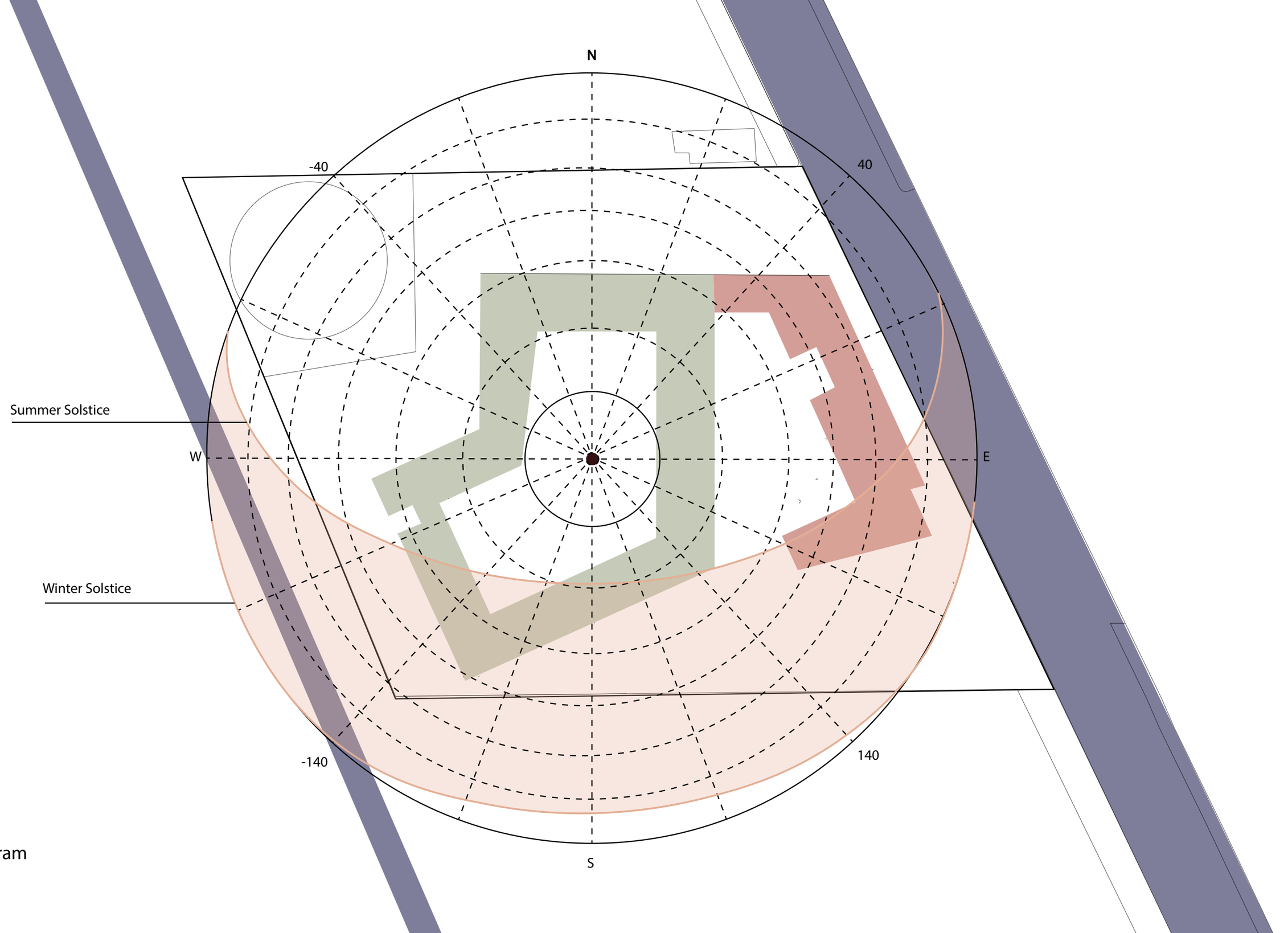
7. Fire Rating Perimeter Walls:

Type IB Construction requires a 2 hr fire rating for exterior walls and interior walls

8. Sprinkler system:

Automatic Sprinkler system

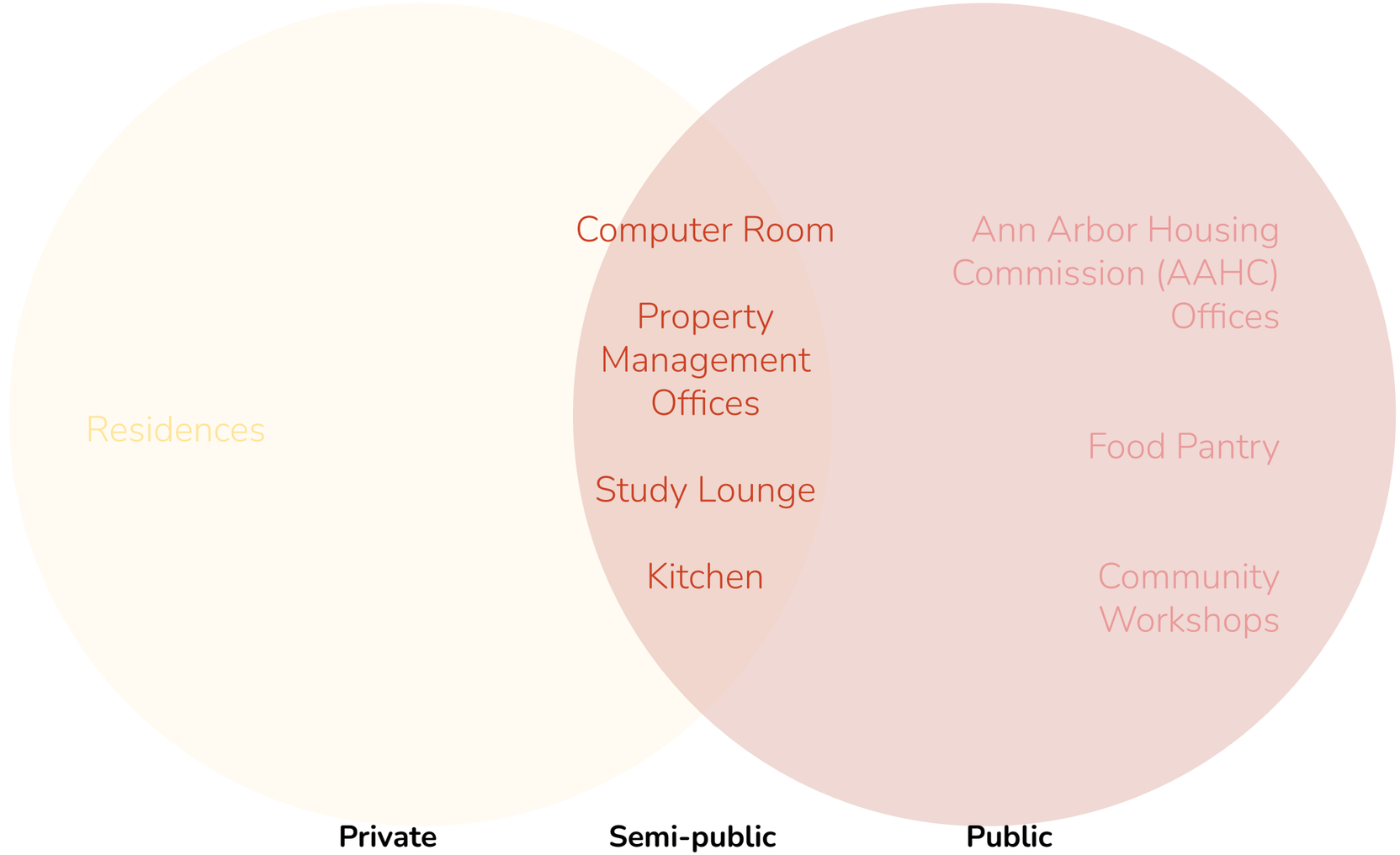


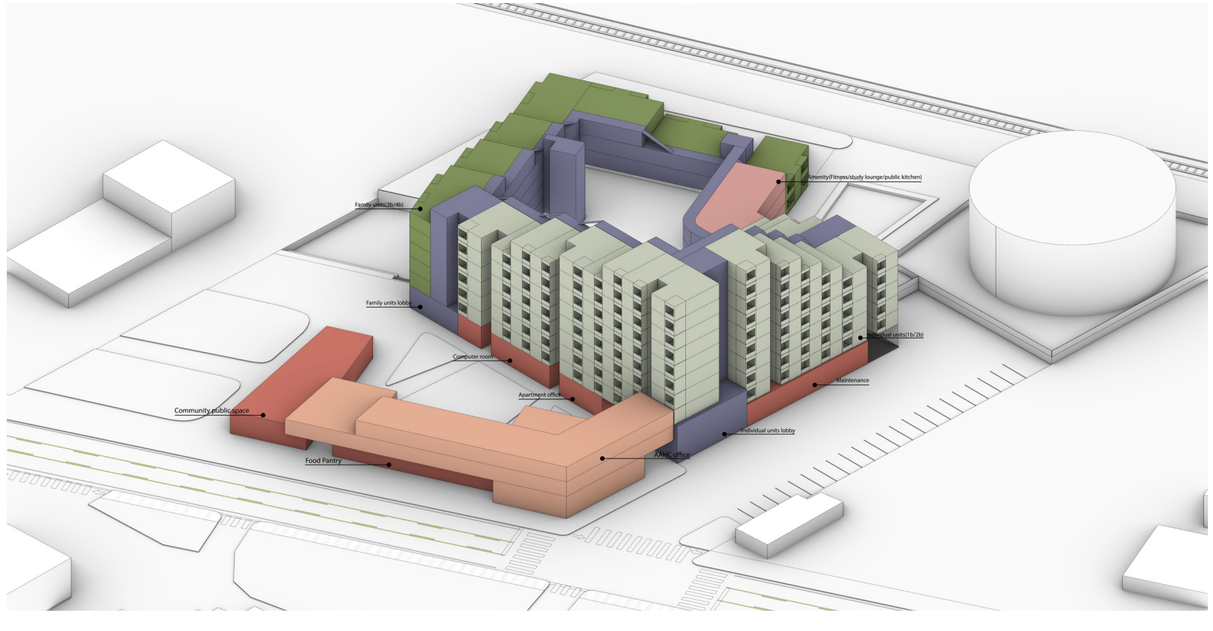


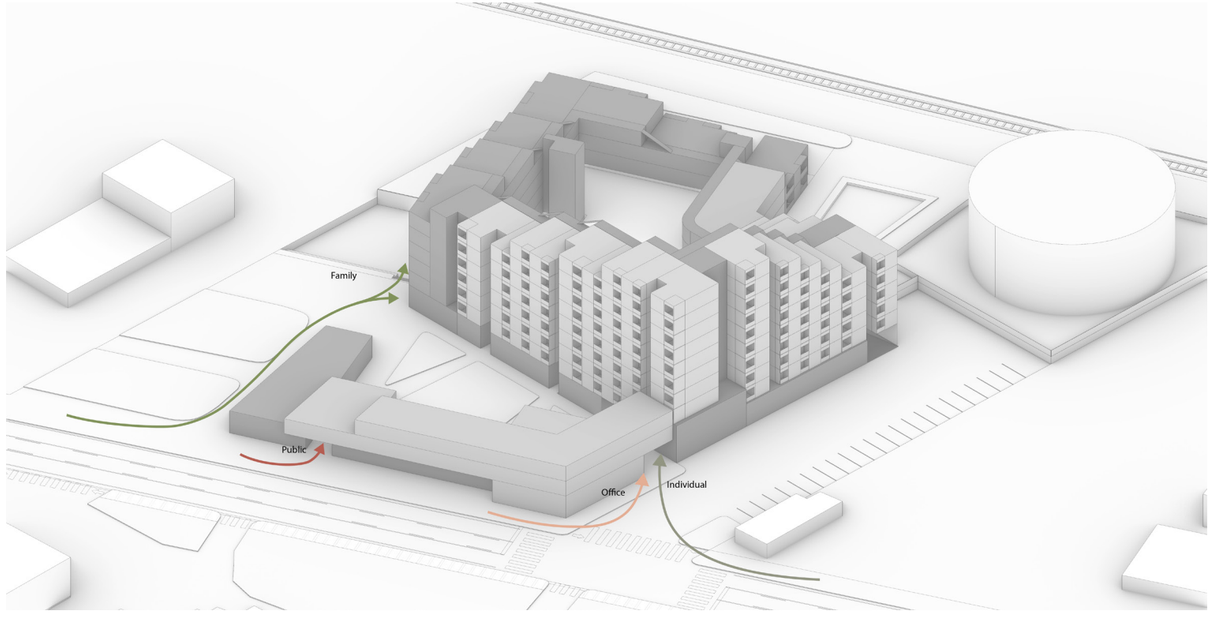
N

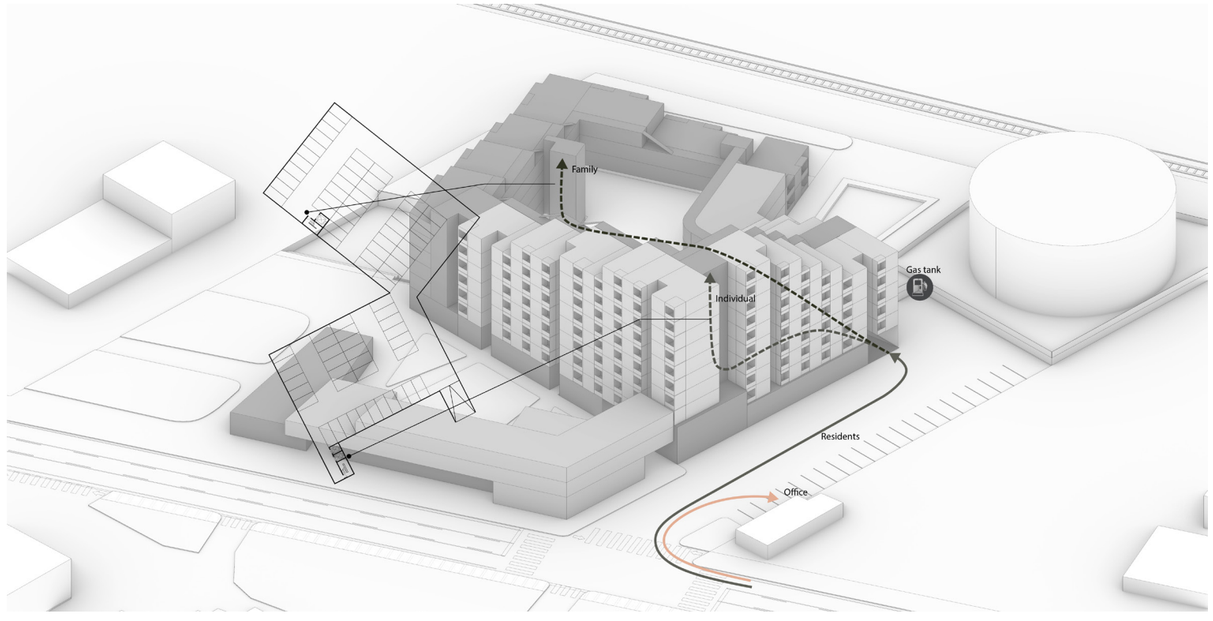
Sun Diagram
1'= 1/64

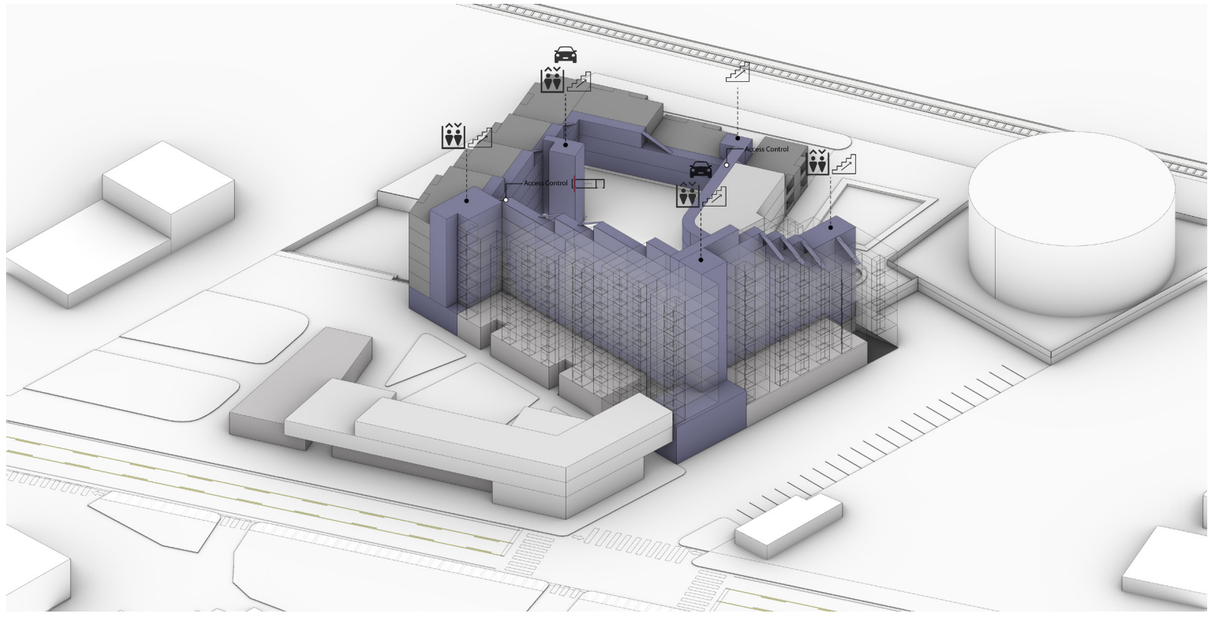
Program Study

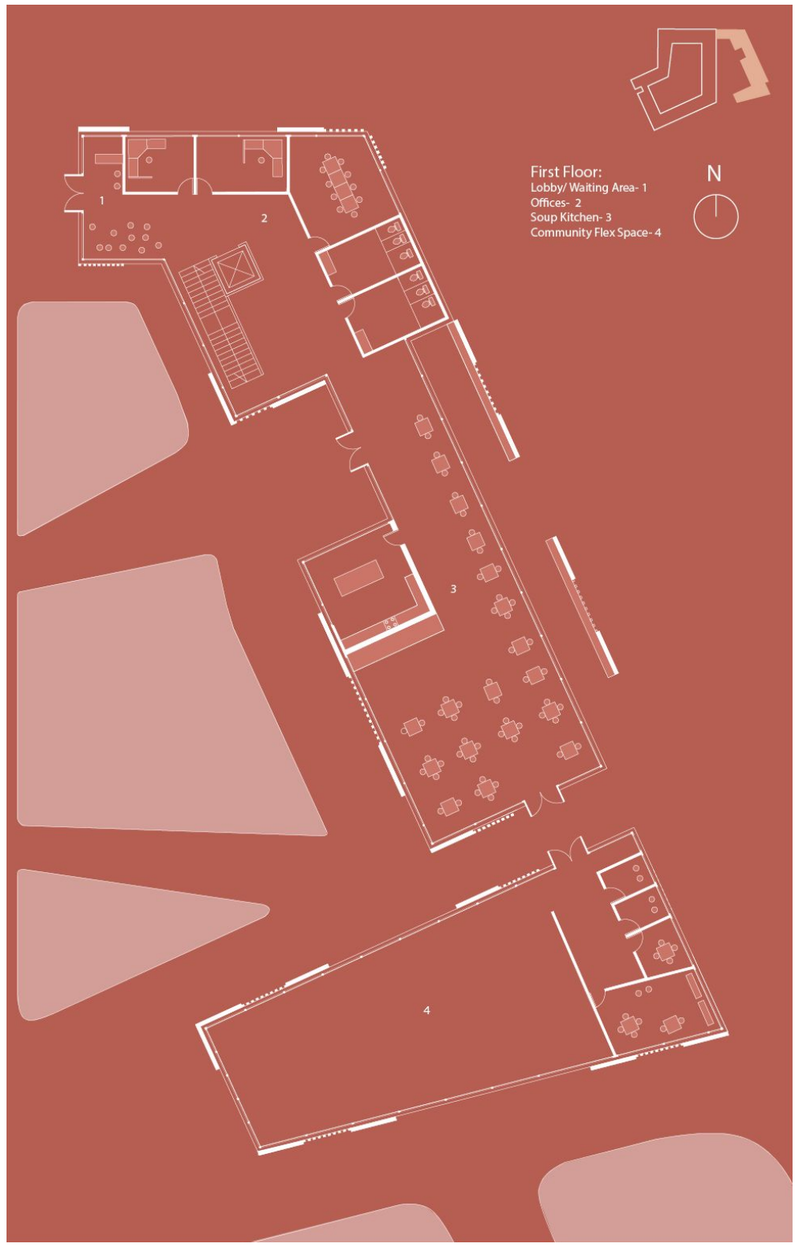


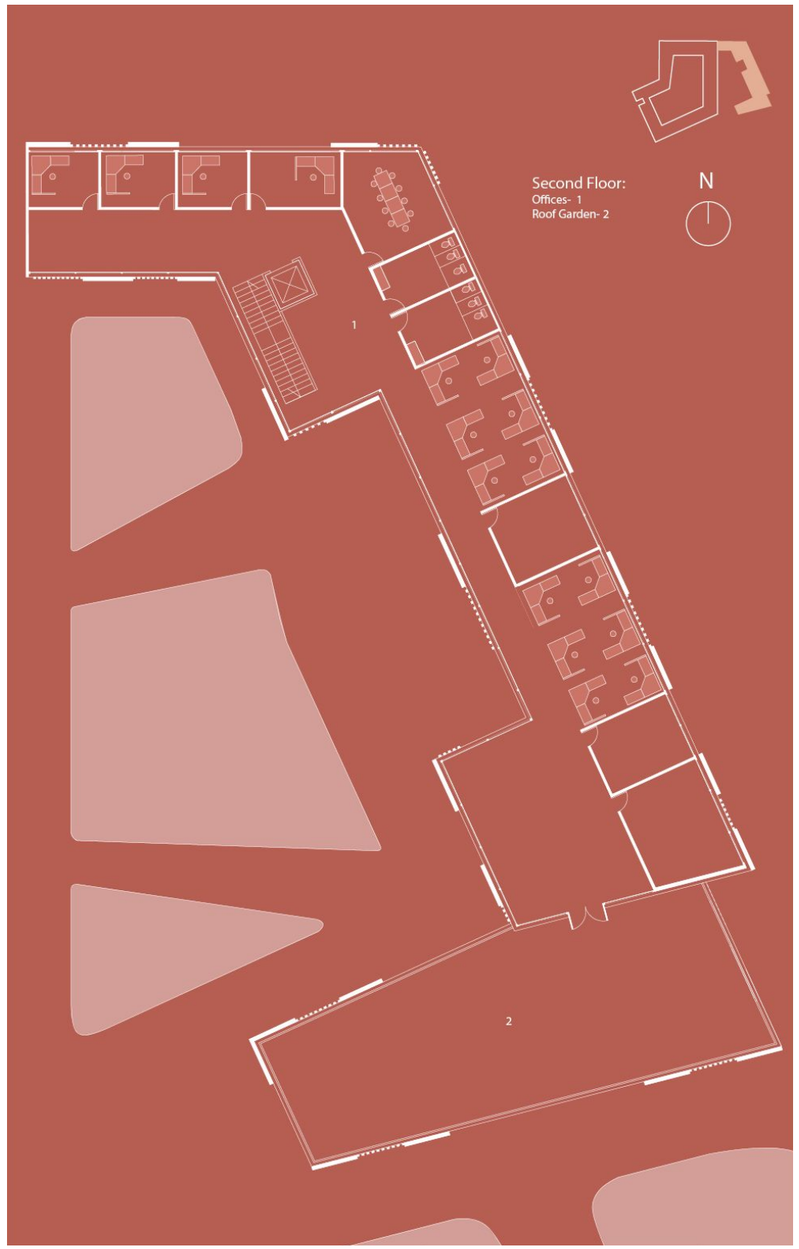

Amenity(Fitness/study lounge/public kitchen)
Family units(2b/4b)
Family units lobby
Individual units(1b/2b)
Computer room
Maintenance
Apartment office
Community public space
Individual units lobby
Food Pantry
Admin office

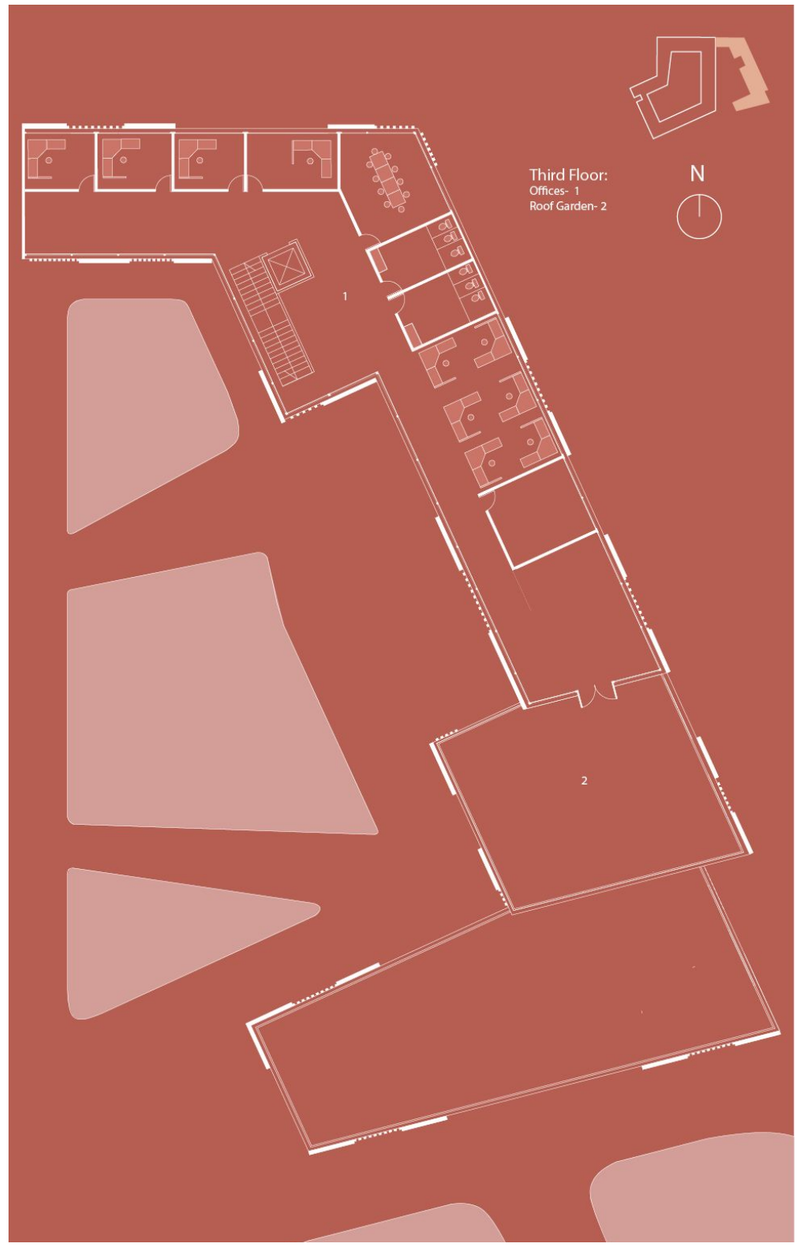

Family
Public
Office
Individual

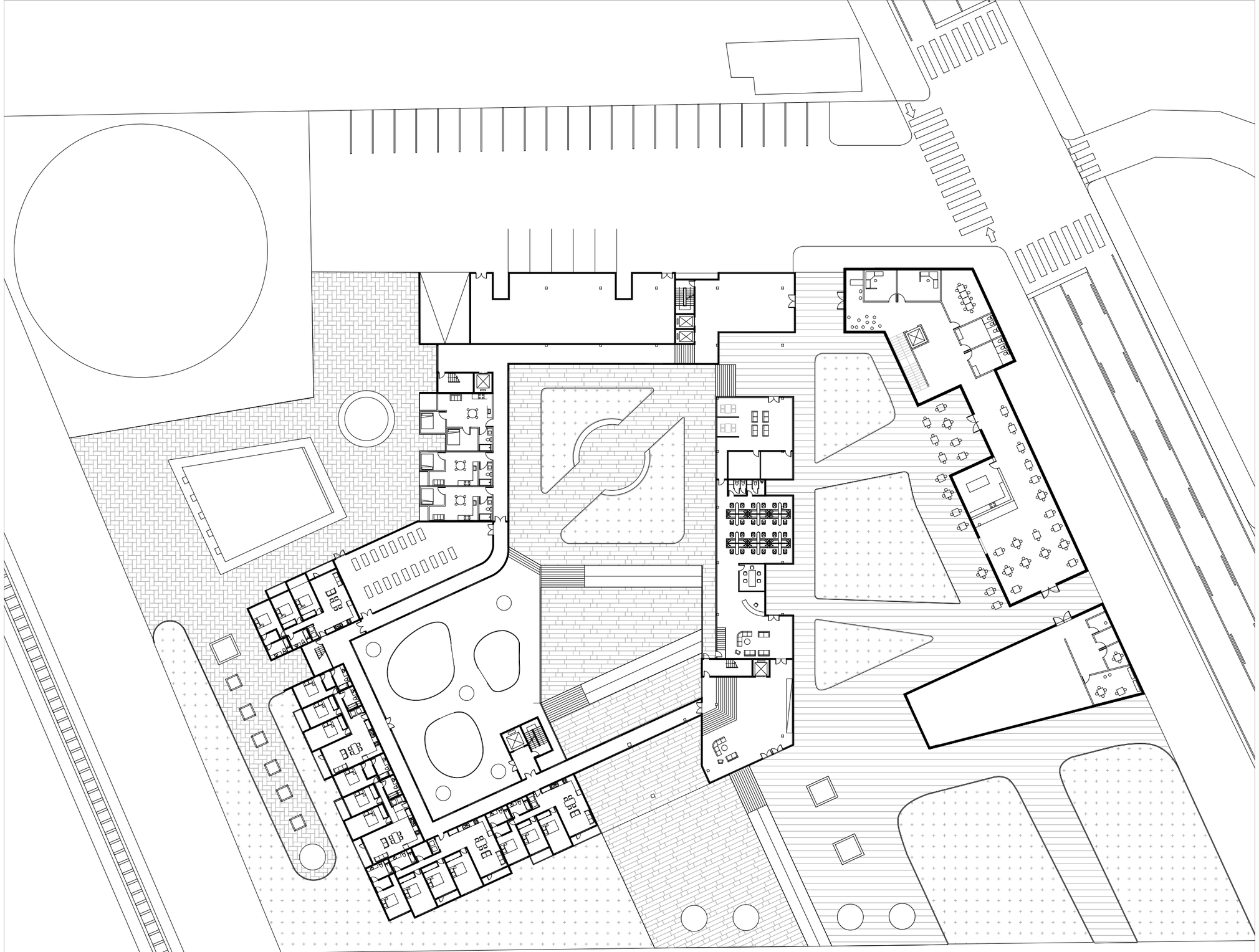

Family
Individual
Gas tank
Residents
Office


Access Control
Access Control


First Floor:
Lobby/ Waiting Area- 1
Offices- 2
Soup Kitchen- 3
Community Flex Space- 4
N
1
2
3
4


Second Floor:
Offices- 1
Roof Garden- 2
N
1
2


Third Floor:
Offices- 1
Roof Garden- 2
N
1
2



Second Floor Building Plan
1'=1/16"

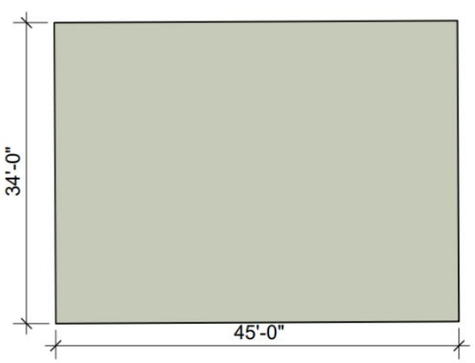
N

Unit Logic (160)

1BR units take the majority in our project. According to Data Census, 71% of people below poverty level are living alone.

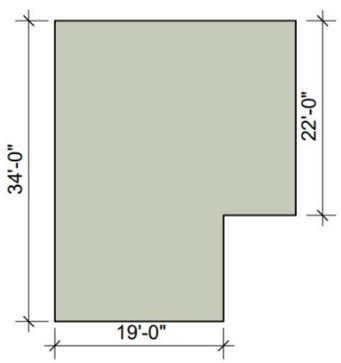
We put 2BR units near the terraces and voids of the building, allowing more daylight to enter into rooms from the outdoor balcony.

3BR units target at families with children, that’s why they have separate circulation with more relatively private outdoor space inside their area



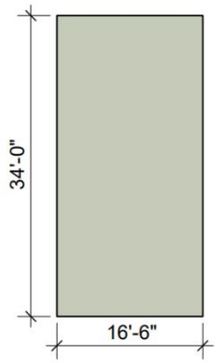
Family Unit:

1550 sq. ft.
23 units



Individual 2 Bedroom Unit:

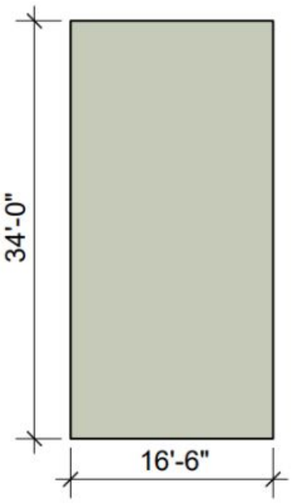
828 sq. ft.
37 units



Individual 1 Bedroom Unit:

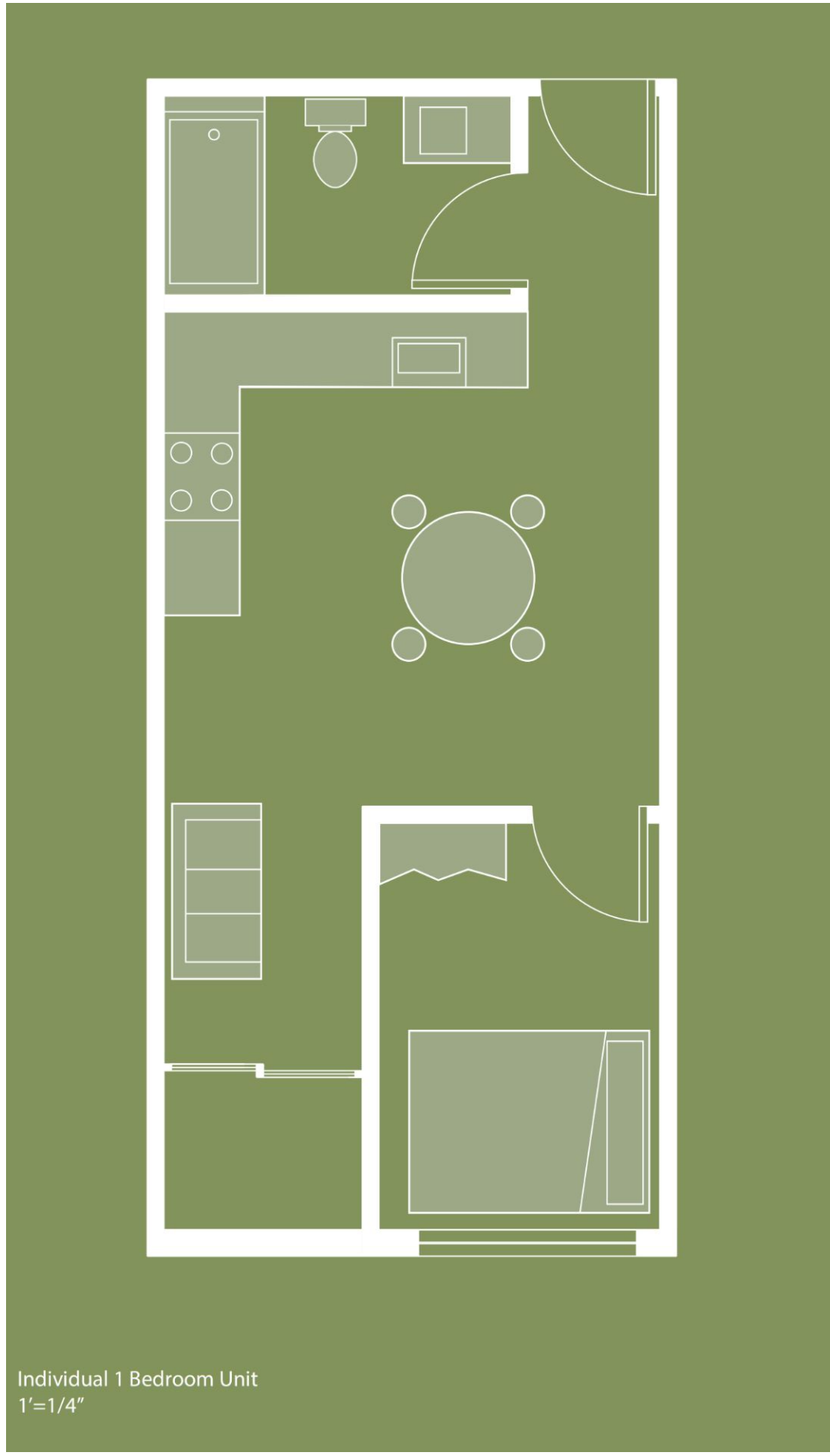
561 sq. ft.
100 units

Unit plans



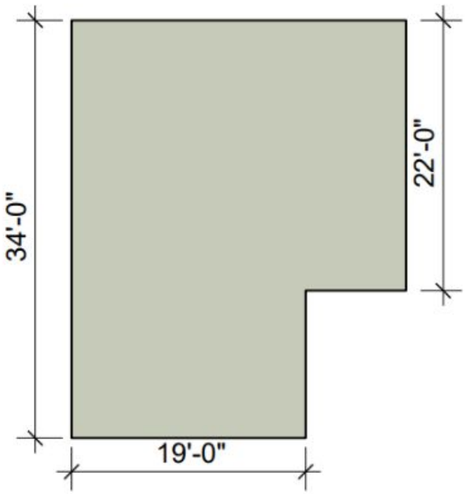
Individual 1 Bedroom Unit:

561 sq. ft.
100 units



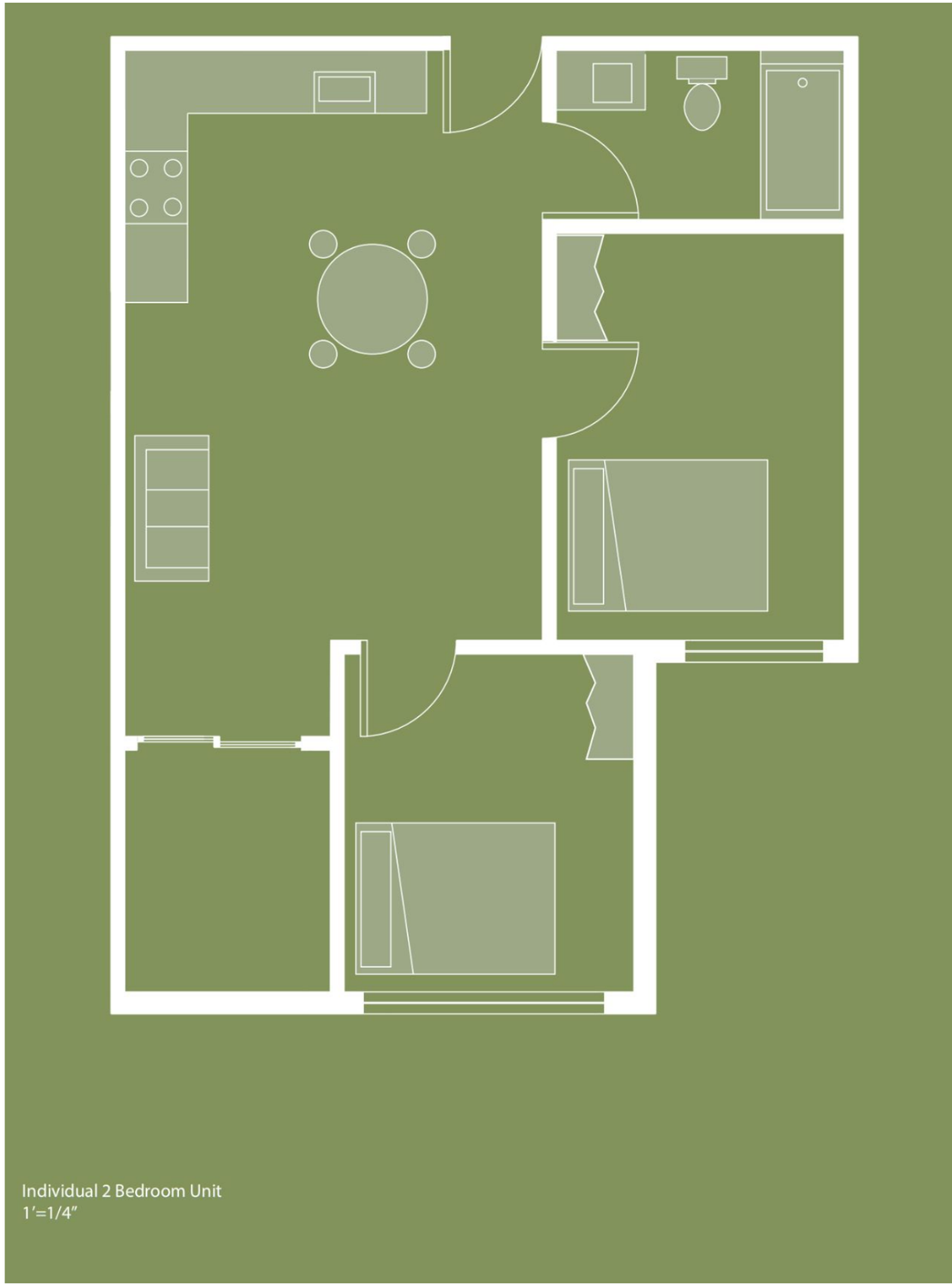
Individual 1 Bedroom Unit
1'=1/4"

Unit plans

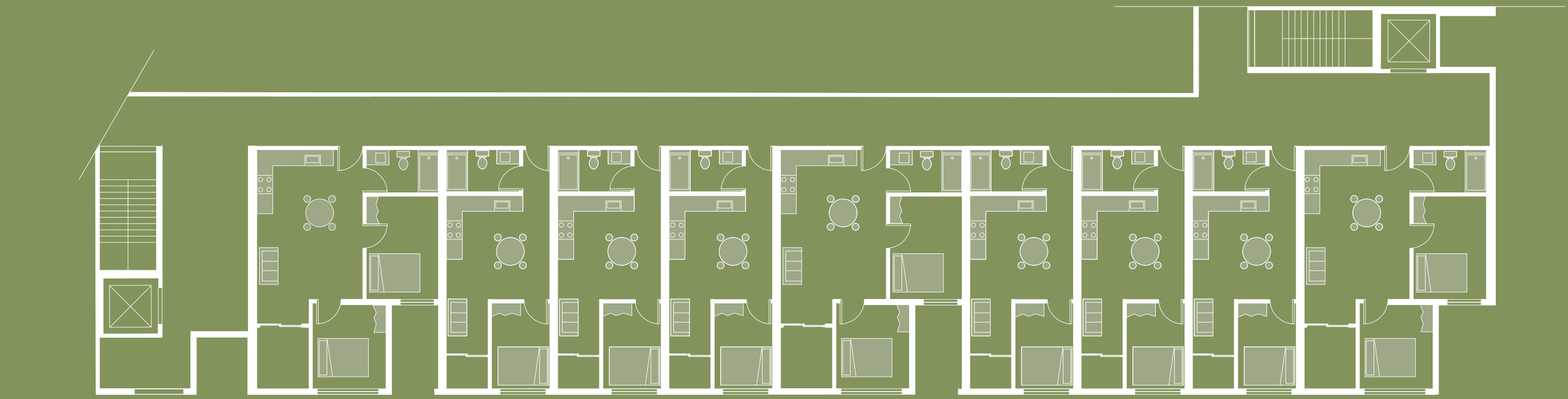


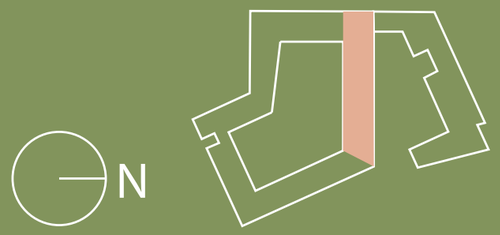
Individual 2 Bedroom Unit:

828 sq. ft.
37 units

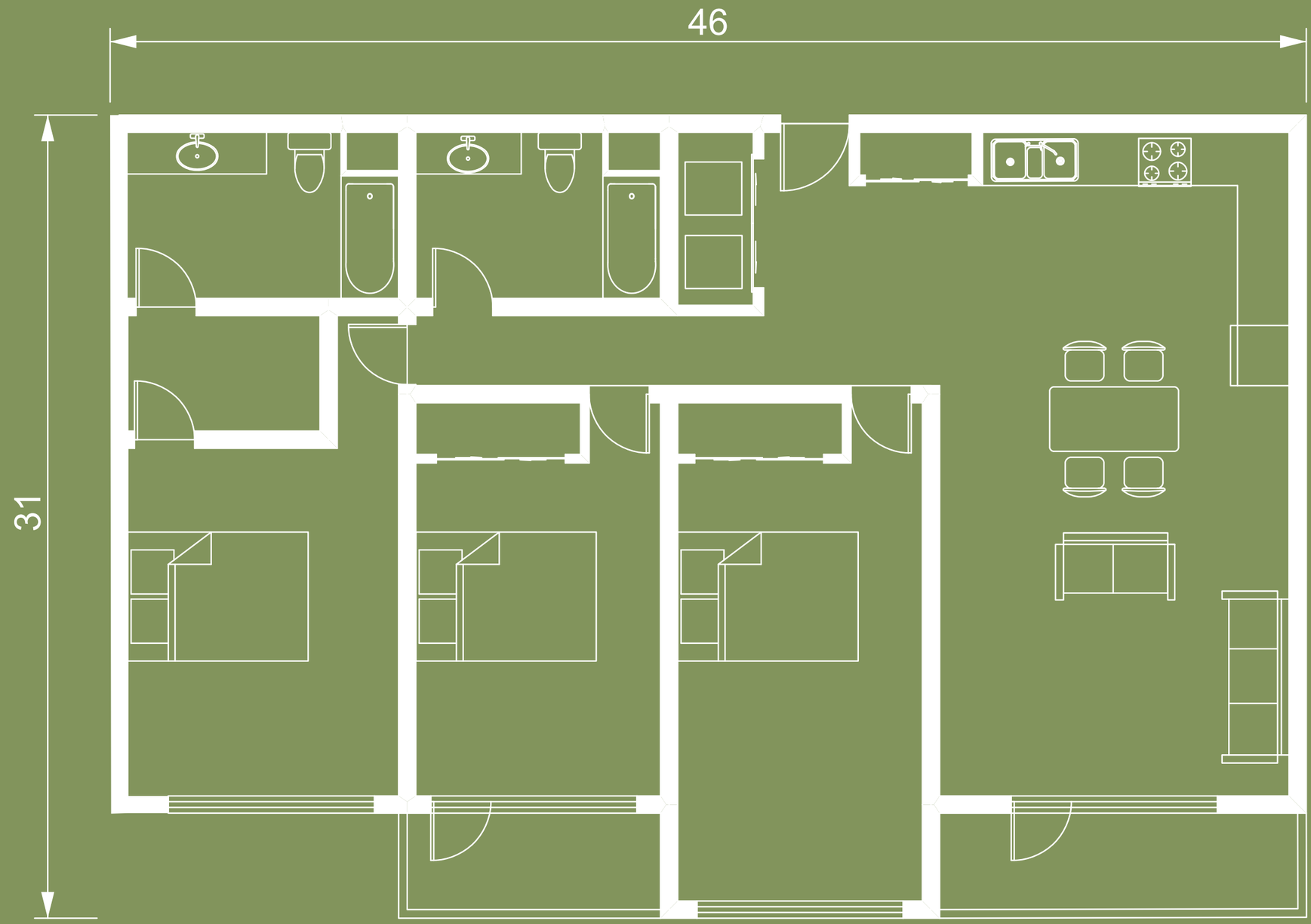


Individual 2 Bedroom Unit
1’=1/4”

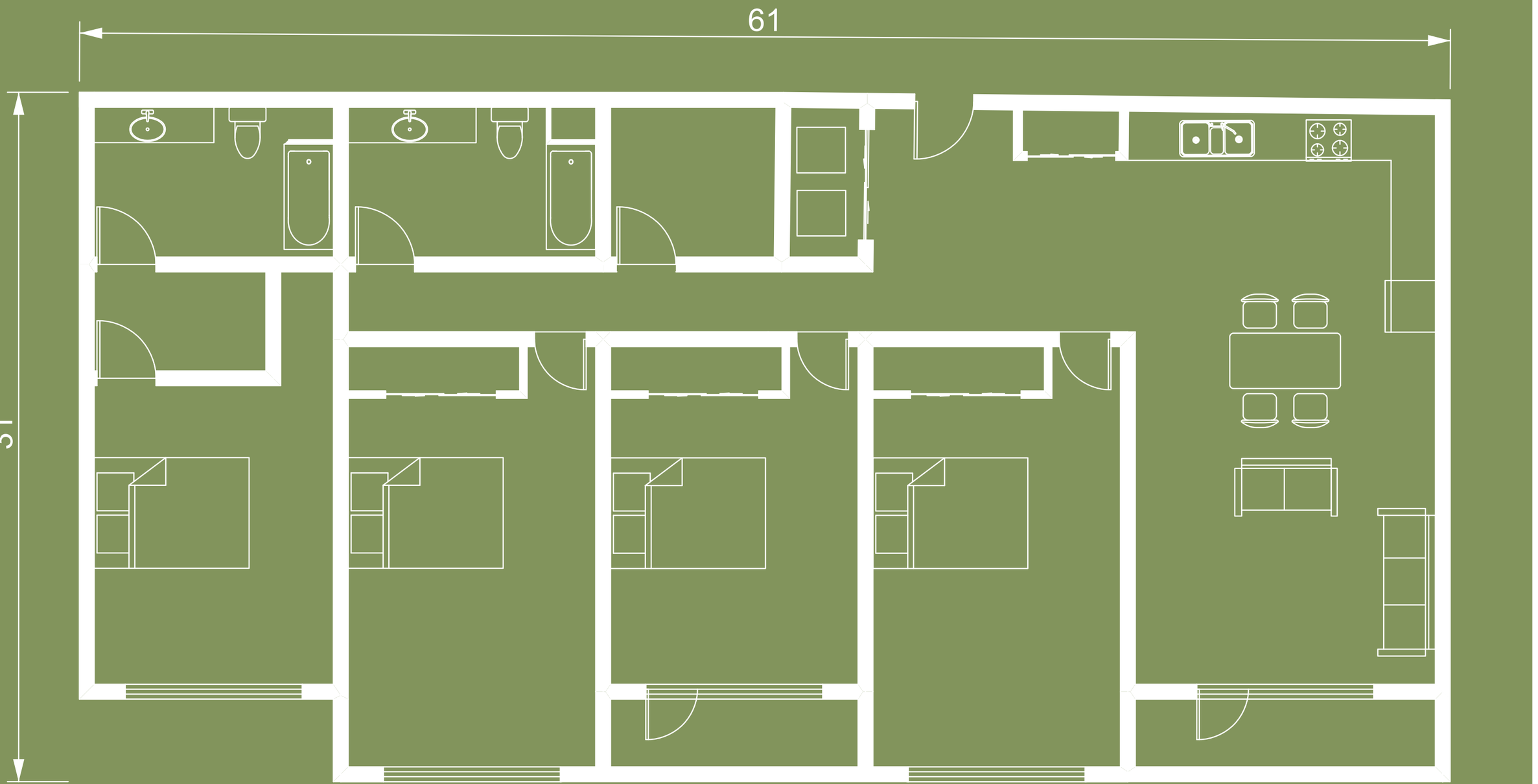




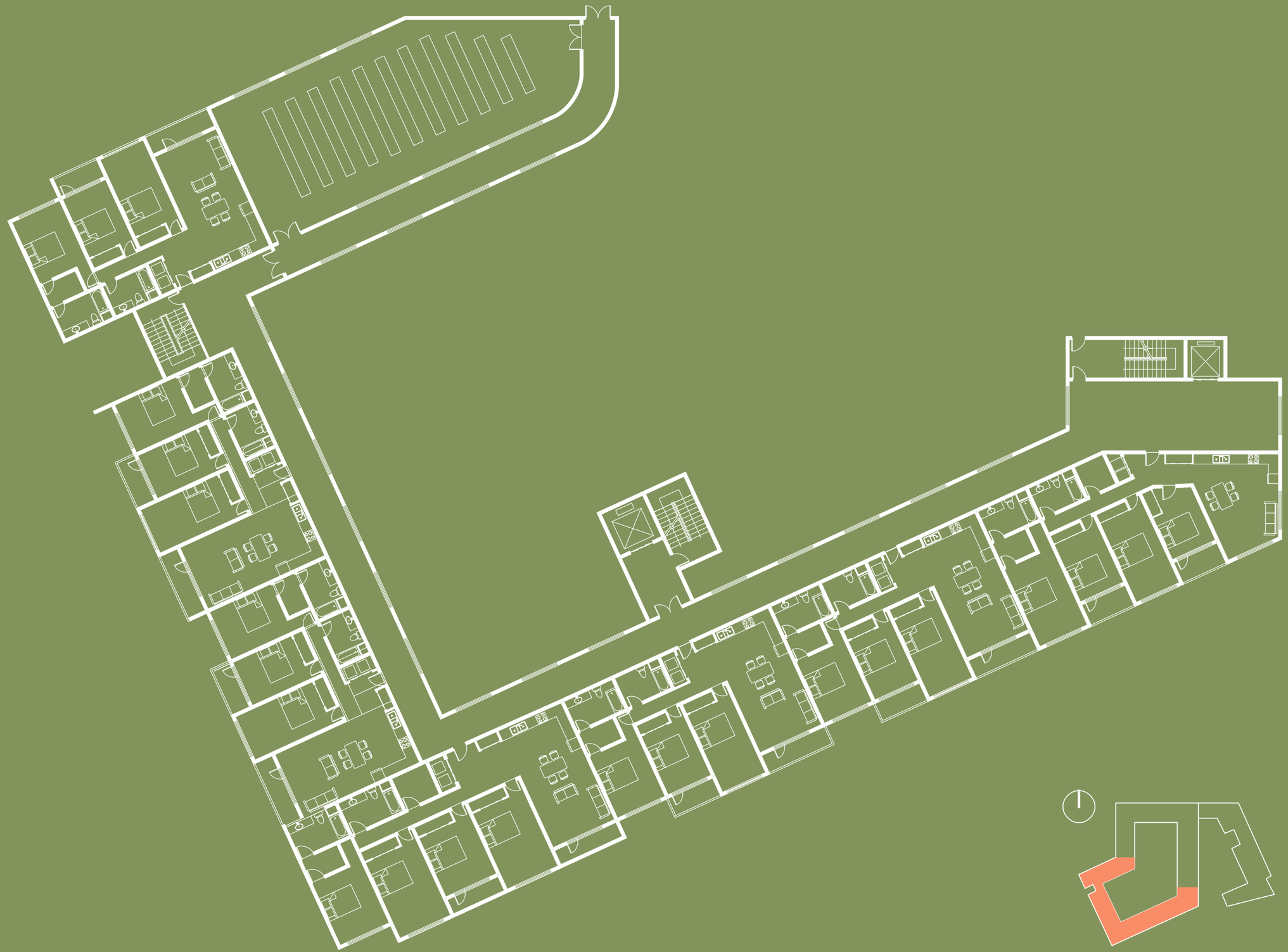
Individual units East Facing Wing Partial Plan
1′=1/16″

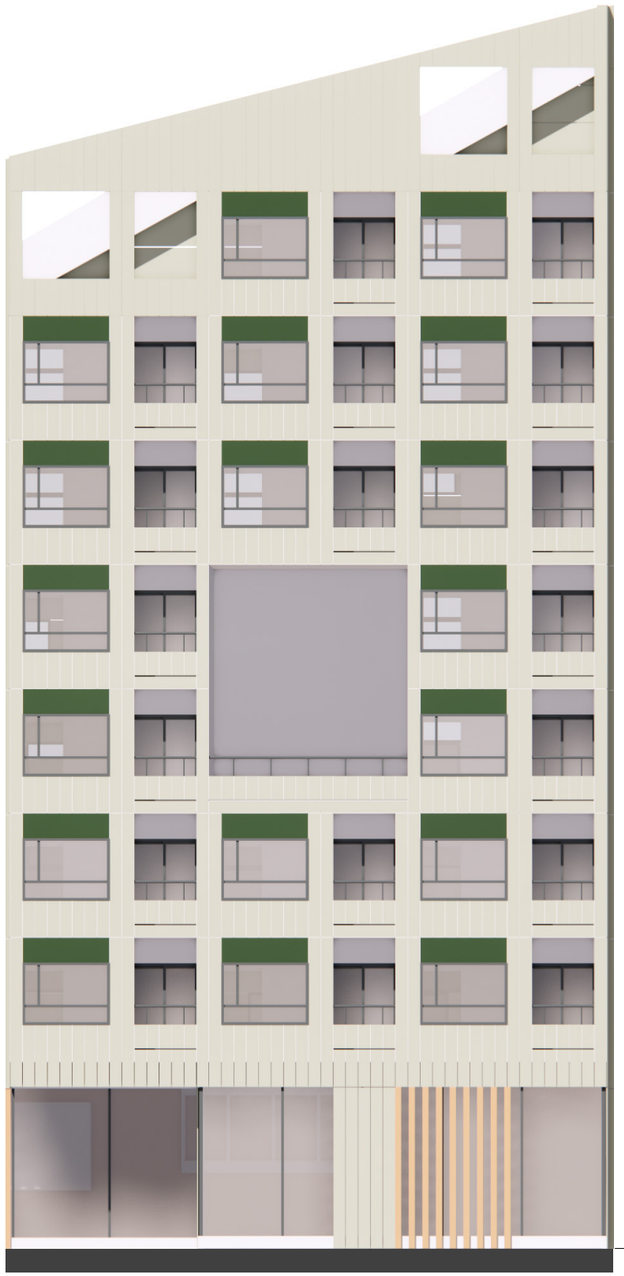


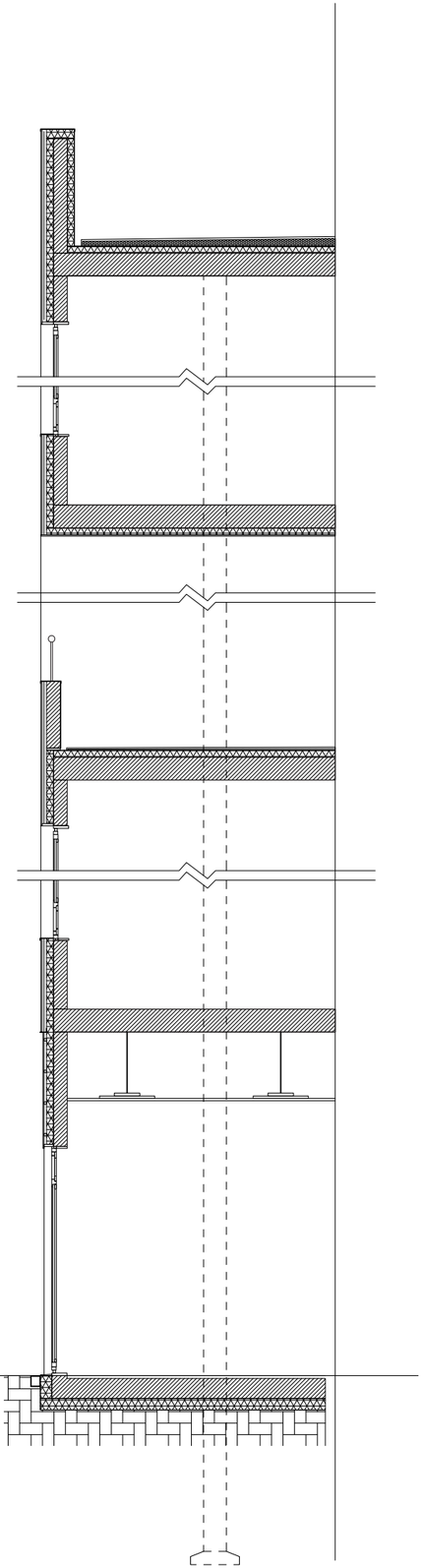
Units plan: 1/4”

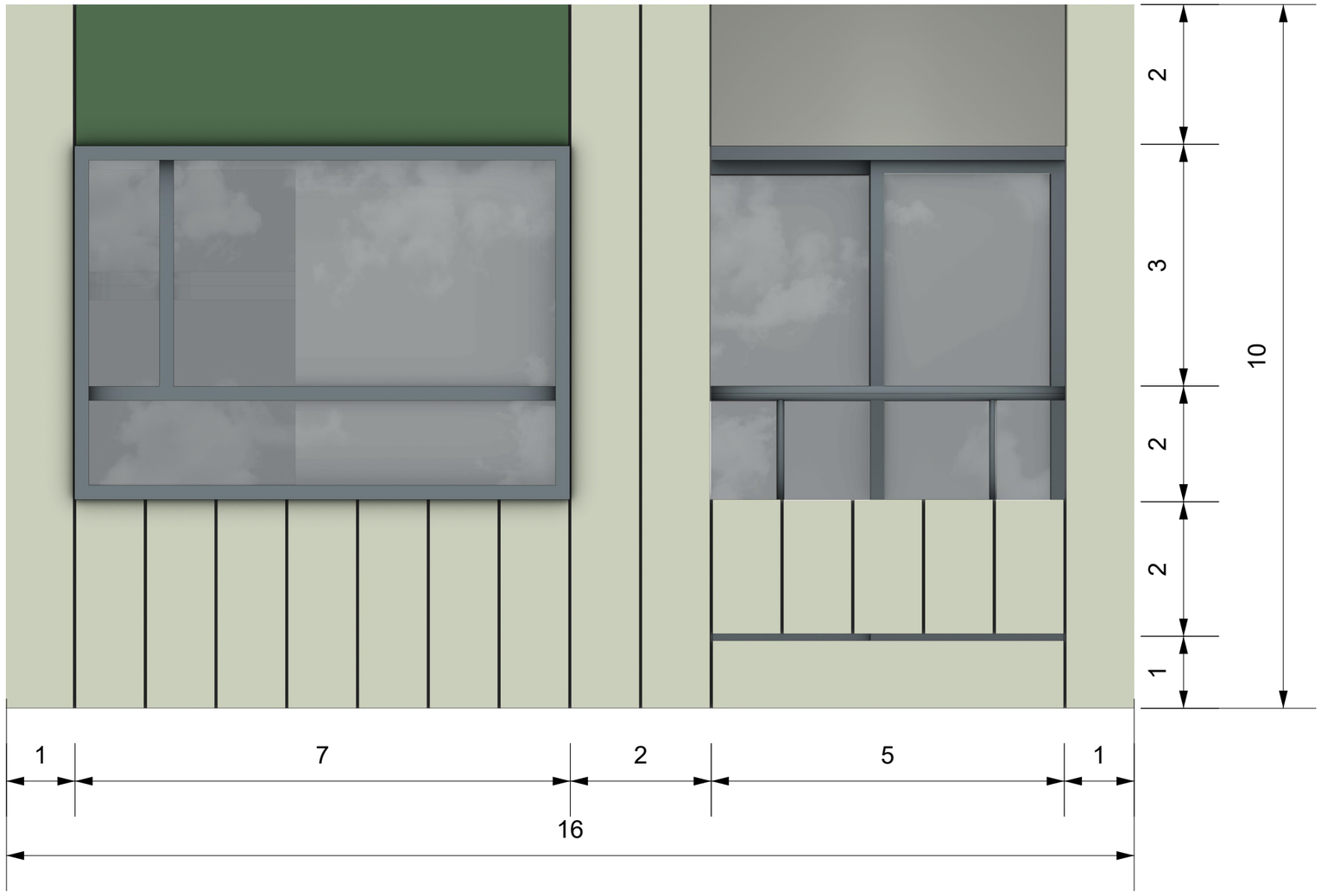


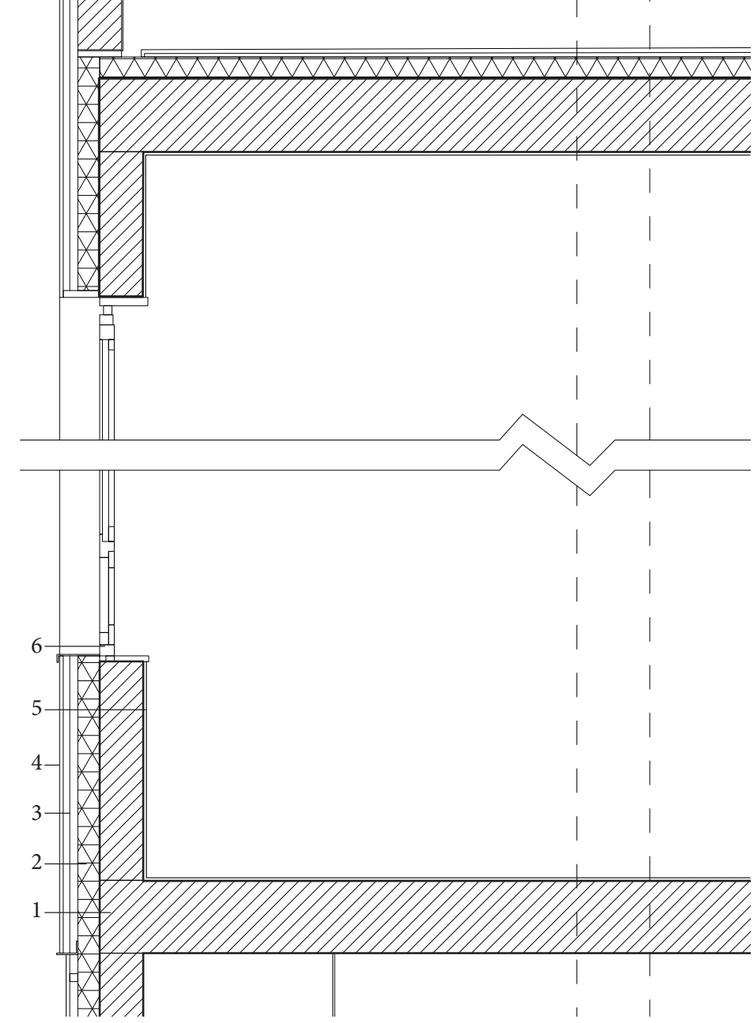
Units plan: 1/4”

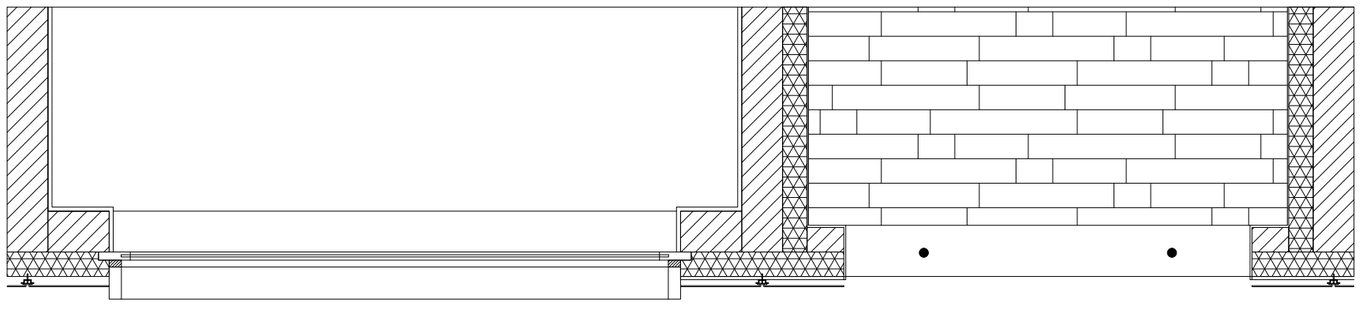


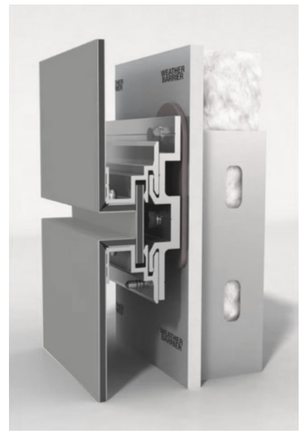












1. Concrete slab
2. Insulation
3. steel support
4. metal cladding
5. stucco
6. window section