

# Re:FAB System

## A PREFABRICATED SOLUTION TO THE AFFORDABLE HOUSING SHORTAGE OF LONDON, UNITED KINGDOM

### *Proposal for the London Affordable Housing Challenge*

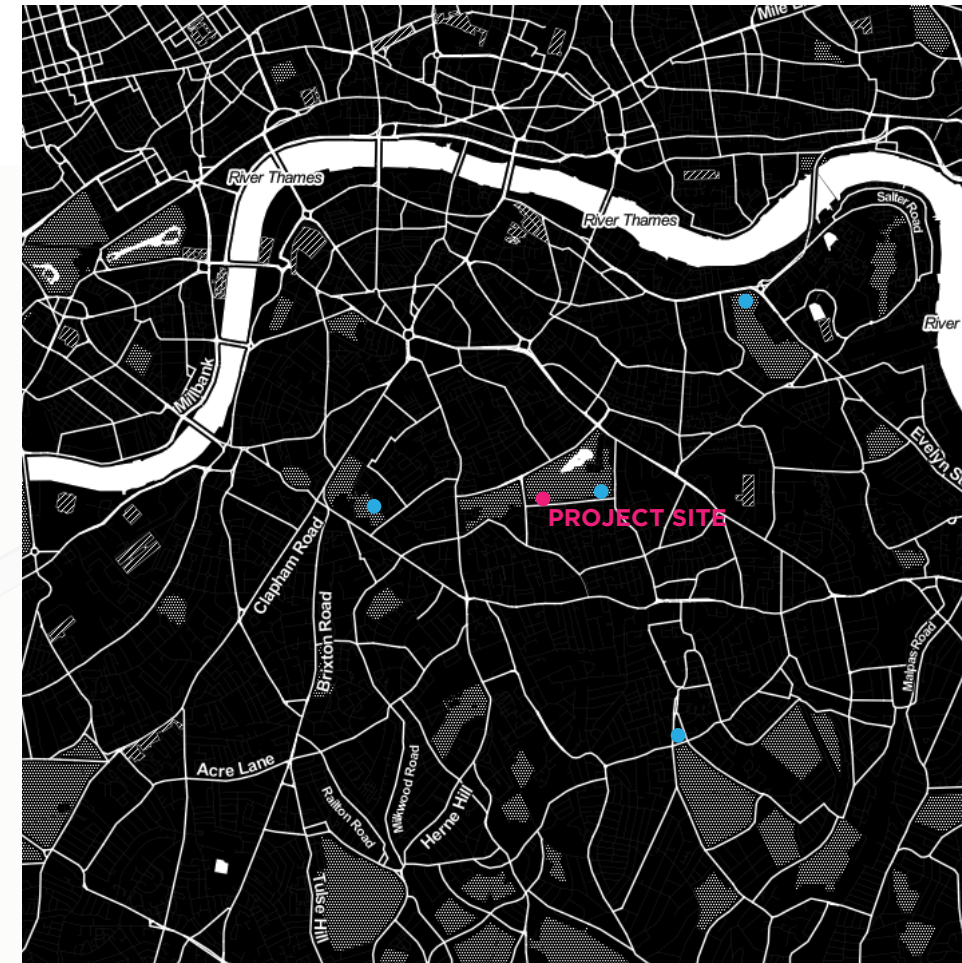
London, UK is one of the top ten most expensive cities in the world to reside. With double-digit increases in housing prices every year, the dream of finding affordable housing in London is pushed further out of reach for many residents. The challenge of obtaining affordable housing in London is compounded with foreign investment and rampant speculation, forcing many to seek accommodations outside of the city. With the tragedy of the Grenfell Tower fire in June 2017, there is even more urgent need for low cost housing in the city of London. Keeping residents in-town close to their jobs minimizes commute times, reduces per-capita carbon output, and keeps the local economy healthy.

Prefabricated housing shows promise in providing rapidly affordable housing for London residents. Factory-built, site-installed housing solutions can reduce waste, minimize construction costs, and speed up construction times. To provide more flexibility in design, Re:FAB seeks to provide prefabricated wall panels for housing construction. Prefab wall panels can be used in not only new construction, but in existing construction as well. Wall panels are easily transported in small trucks capable of navigating tight city streets, compared to large trailers typically used for prefabricated residential units.

With a public private partnership, a private developer and the London city government can invest in factory production of the Re:FAB wall assemblies for any affordable housing project in the city. Wall panels can be easily adapted to any project in the factory with the help of local workers. Interior panels can be adapted for insulating properties and plumbing chase conditions. Exterior panels can accept either factory installed cladding systems or site built wall coverings. Using prefabricated wall assemblies for rapidly deployed housing will achieve comparable savings to prefab housing, with low-impact resource use, and short construction times.

The Re:HAB wall system is shown in this project, the St. Georges Flats in the heart of London. The site chosen, on St. Georges Way, is a long site that is part of Burgess Park in a residential neighborhood. Using the 200-meter by 55-meter spit of parkland will provide the new residents of the St. Georges Flats easy access to city amenities, with minimal impact to the neighborhood. Nearby public transportation, public space, and the quiet neighborhood were part of the consideration of the site. The St. Georges Flats features 100 units: 40 studios, 40 one-bedroom units, and 20 two-bedroom units.

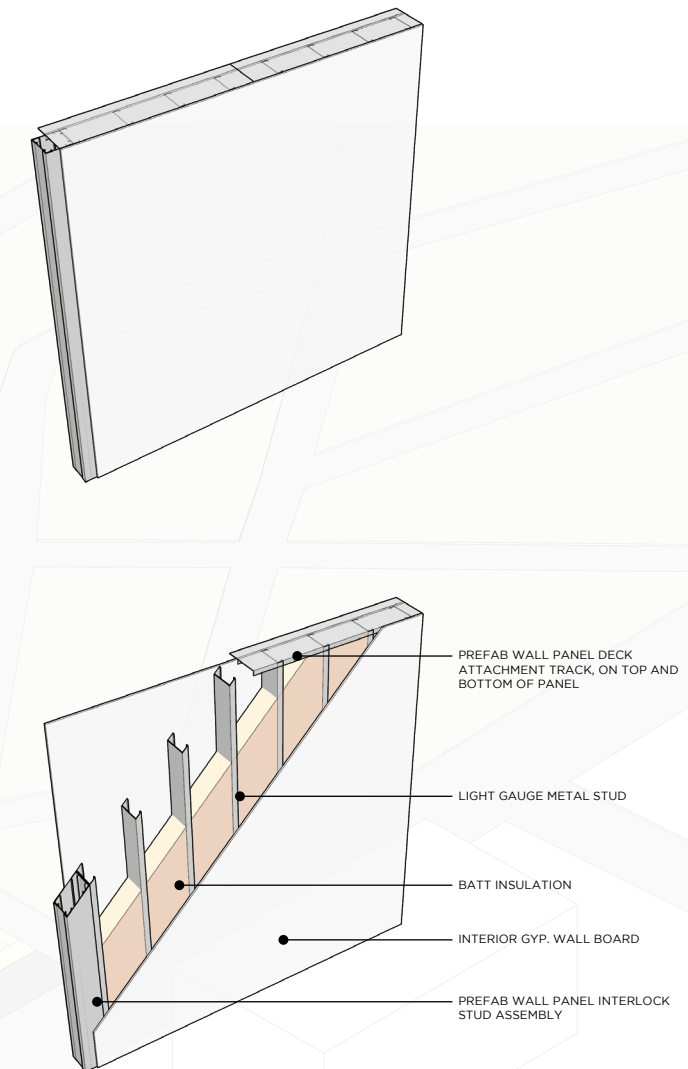
The St. Georges units are assembled with 3m (10 ft) wide by 4m (13 ft) high wall panels to provide high 3m (10 ft) ceilings. Each unit features a prefabricated bathroom pod as well to ease the installation of the plumbing and HVAC systems. The ground level podium will provide both necessary apartment amenities and neighborhood community services including retail shops, community library, and meeting spaces. These services provide the neighborhood with services in exchange for the parkland of the site. The design proposed is a proposal of how London can approach its shortage of affordable housing and lead the world in socially, economically, and environmentally conscious architecture.



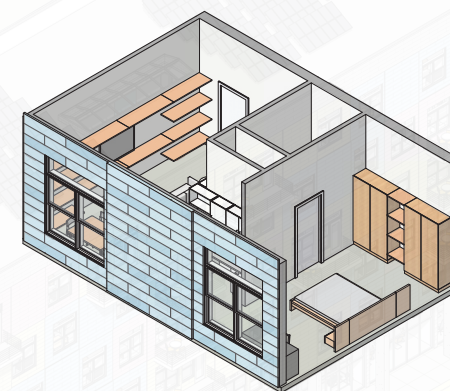
*Project Site Location in London. Additional project site considerations marked in blue.*



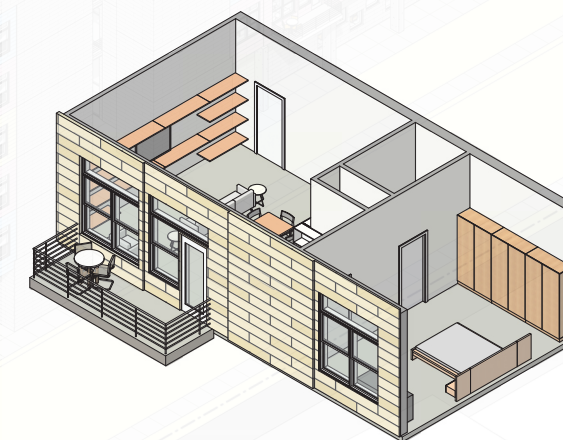
*Project Site Context on St. Georges Way. Public transportation stops indicated.*



*Typical Interior Wall Panel Assembly*



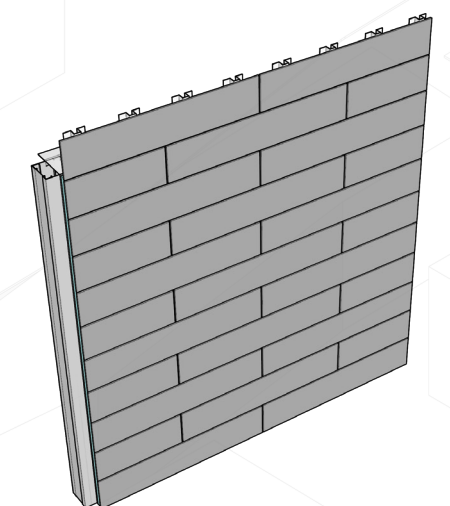
**Studio Unit:**  
20 ft x 30 ft unit  
for individuals, and young couples



**One Bedroom Unit:**  
20 ft x 40 ft unit  
for individuals, couples, and friendly cohabitants



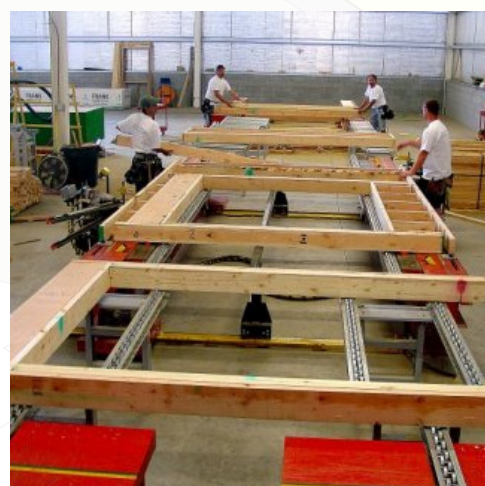
**One Bedroom Unit:**  
20 ft x 50 ft unit  
for roommates, cohabitant, families



*Typical Exterior Wall Panel Assembly*



*Grenfell Tower after the June 2017 fire*



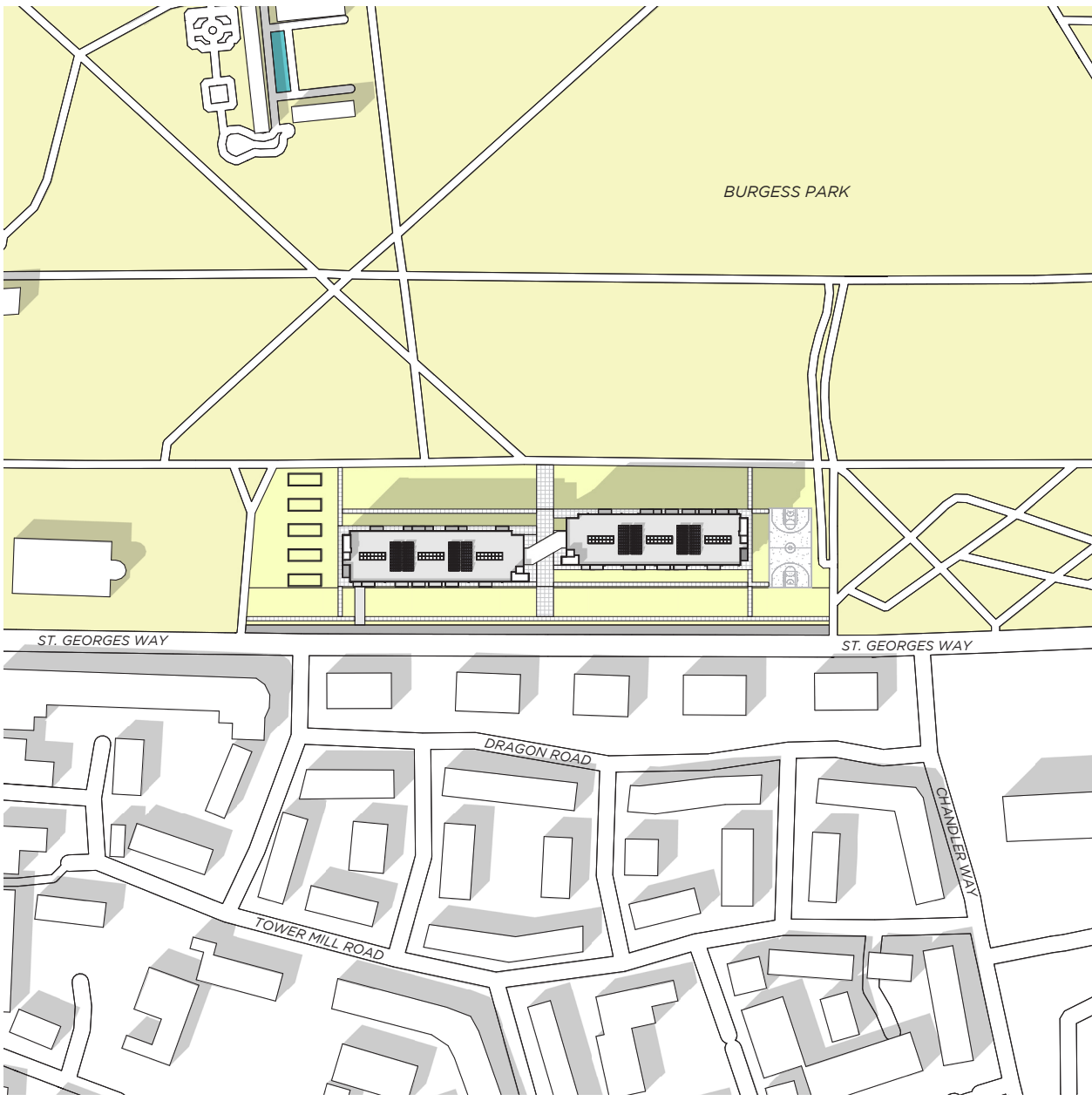
*Prefab wall panels from factory, to transportation, to construction site*



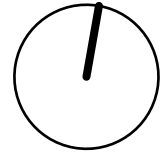
*ModPod prefabricated kitchen and bathroom pod, by Rice Building Workshop*





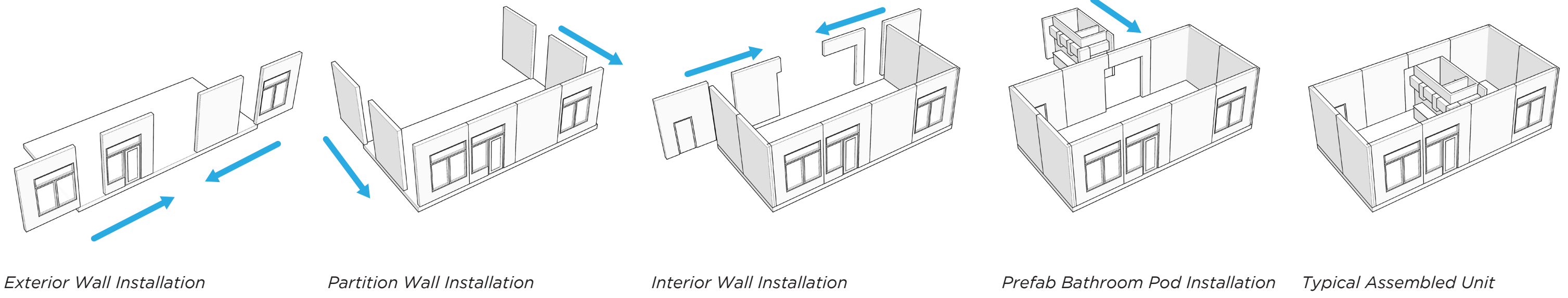


Site Plan

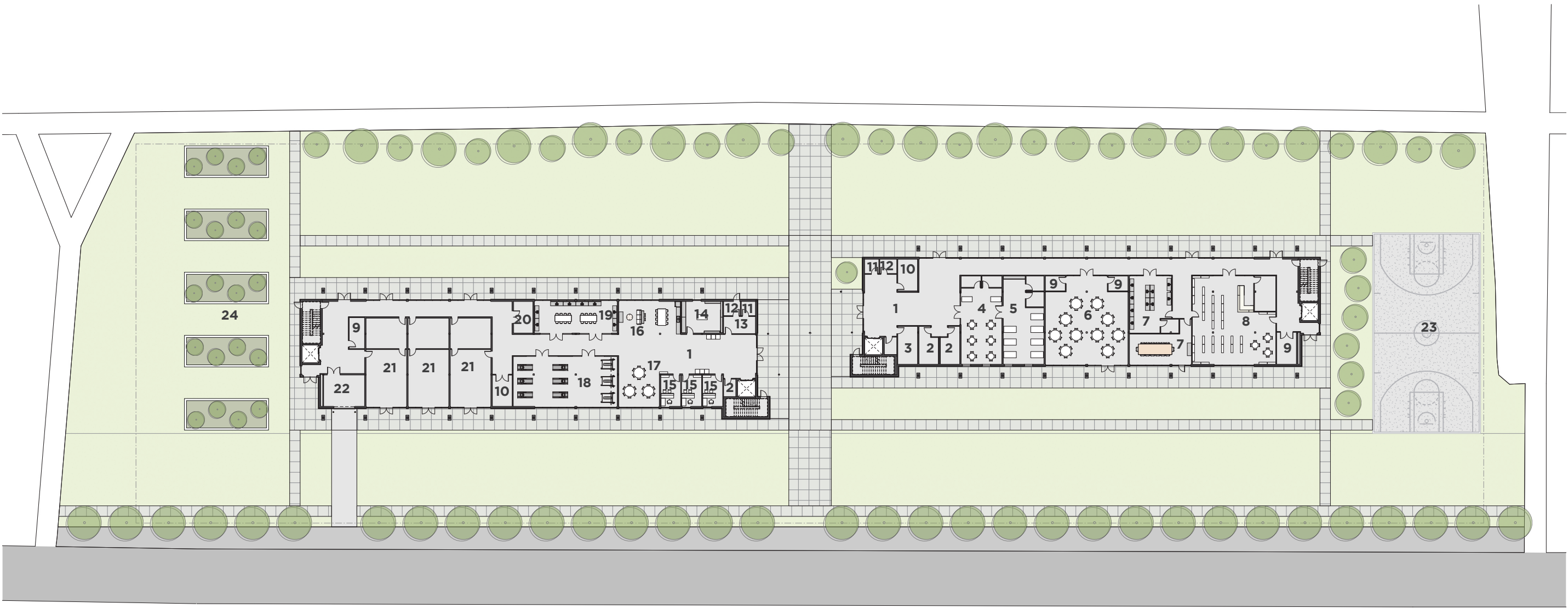
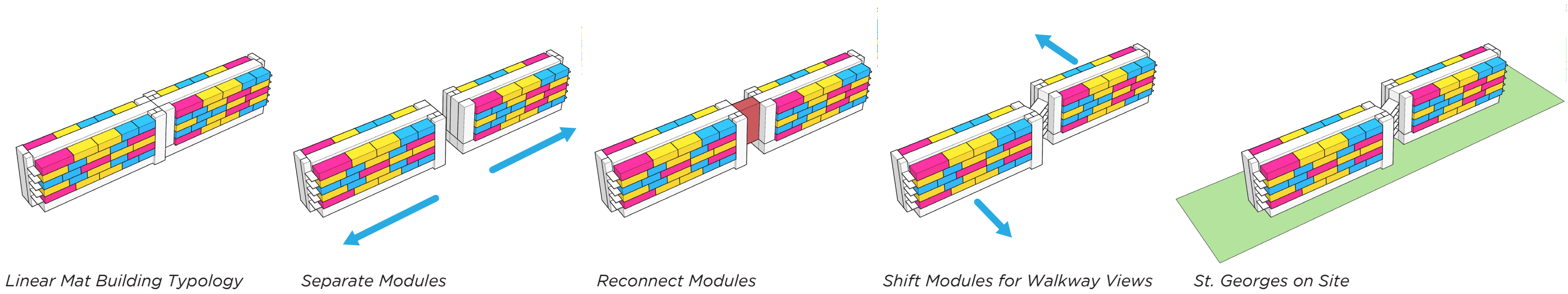


0' 100' 200' 400' 600'

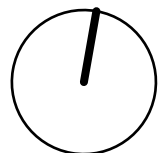
# Unit Assembly Process



# St. Georges Flats Building Logic

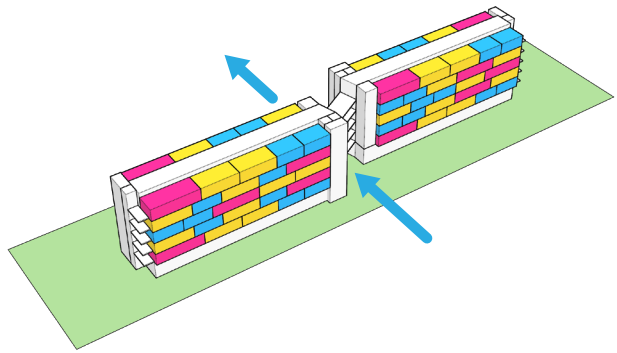


Ground Level Plan

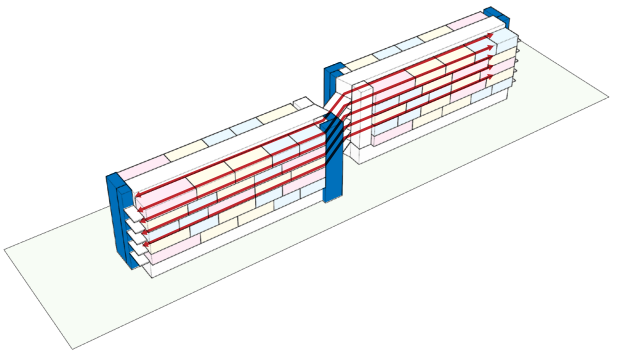


0' 25' 50' 100' 150'

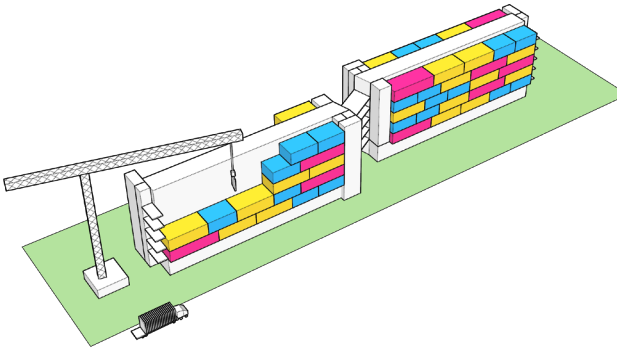
- |                      |                |                      |
|----------------------|----------------|----------------------|
| 1. Lobby             | 9. Storage     | 17. Consultation     |
| 2. Restroom          | 10. Electrical | 18. Gymnasium        |
| 3. Utility           | 11. Mechanical | 19. Computer Lab     |
| 4. Daycare           | 12. Trash      | 20. Data Room        |
| 5. Nap Room          | 13. Custodial  | 21. Retail           |
| 6. Multipurpose Room | 14. Mail Room  | 22. Loading          |
| 7. Meeting Room      | 15. Offices    | 23. Basketball Court |
| 8. Library           | 16. Club Room  | 24. Community Garden |



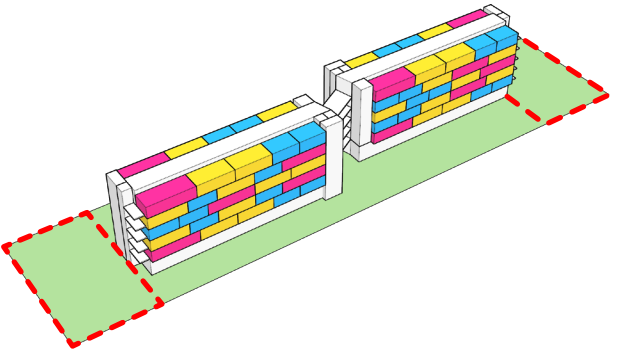
Access to Burgess Park Maintained



Vertical and Horizontal Circulation

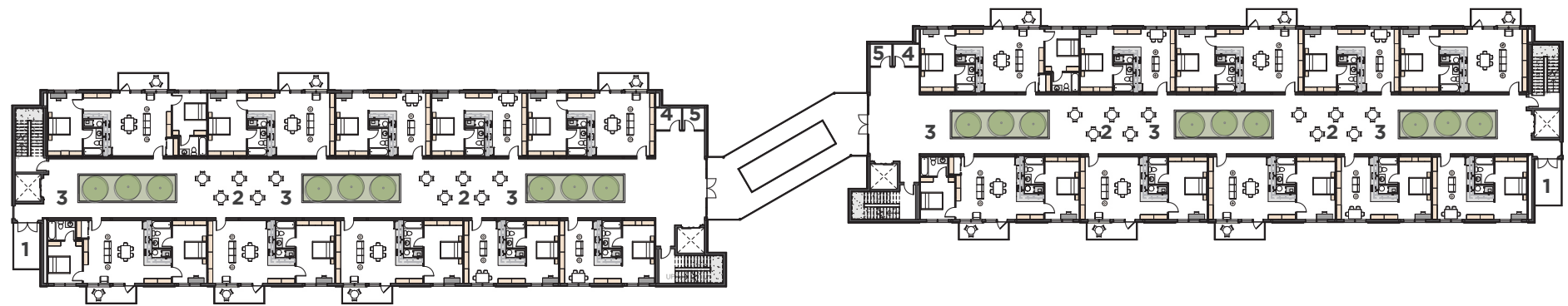


Building Construction Method



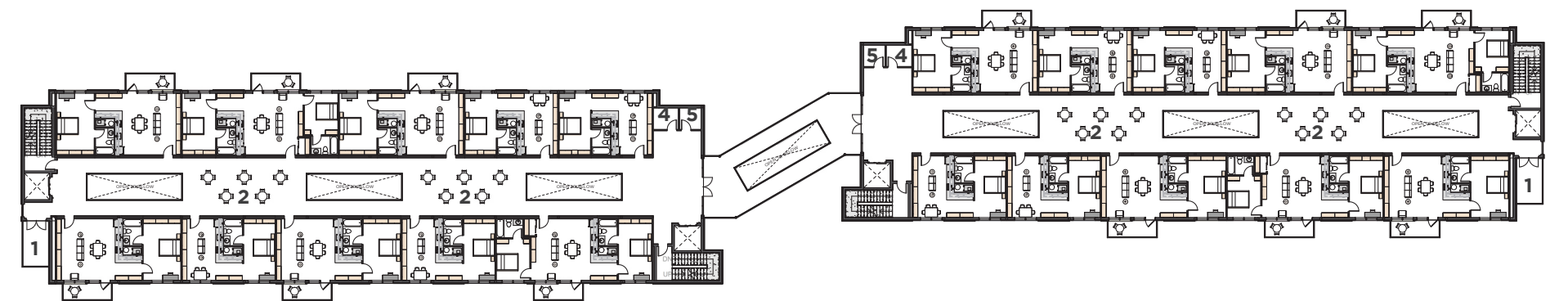
Outdoor Amenities: Front Yard Garden and Backyard Court



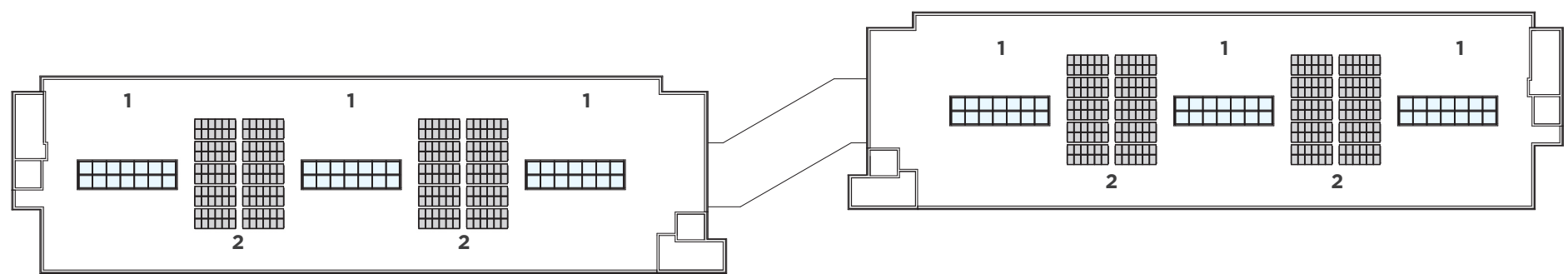
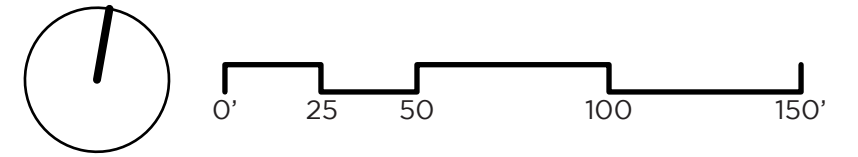


First Level Plan

1. Public Balcony
2. Communal Space
3. Indoor Garden
4. Trash
5. Mechanical



Typical Floor Plan

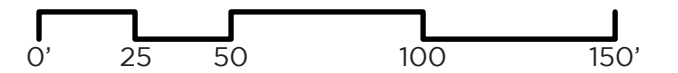


Roof Plan

1. Space for Mechanical
2. Solar Panels



South Elevation



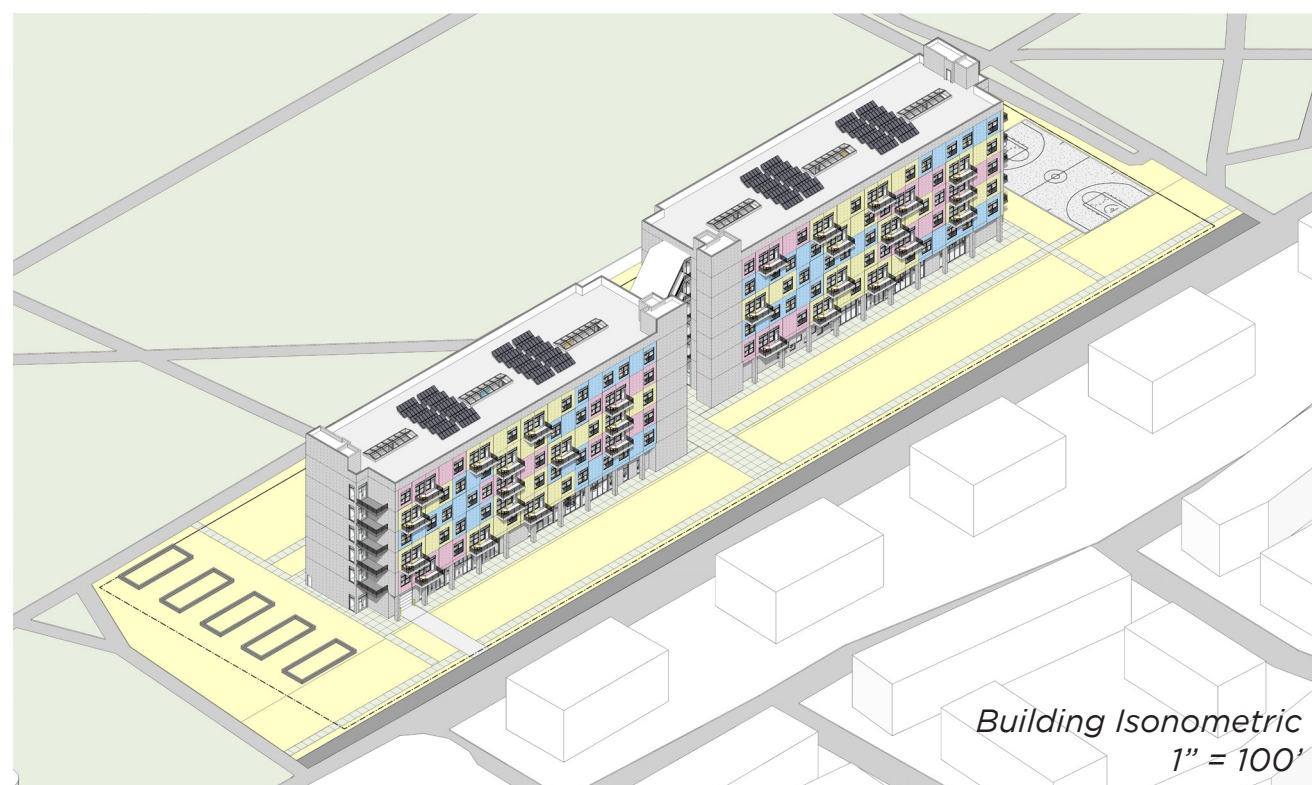
West Elevation



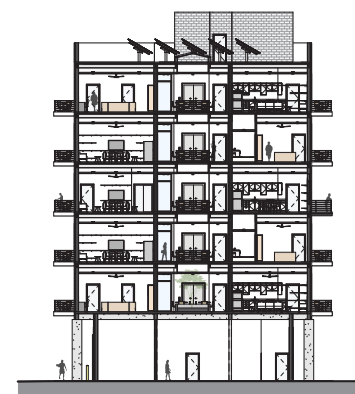
East Elevation



North Elevation



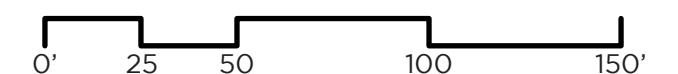
Building Isonometric  
1" = 100'



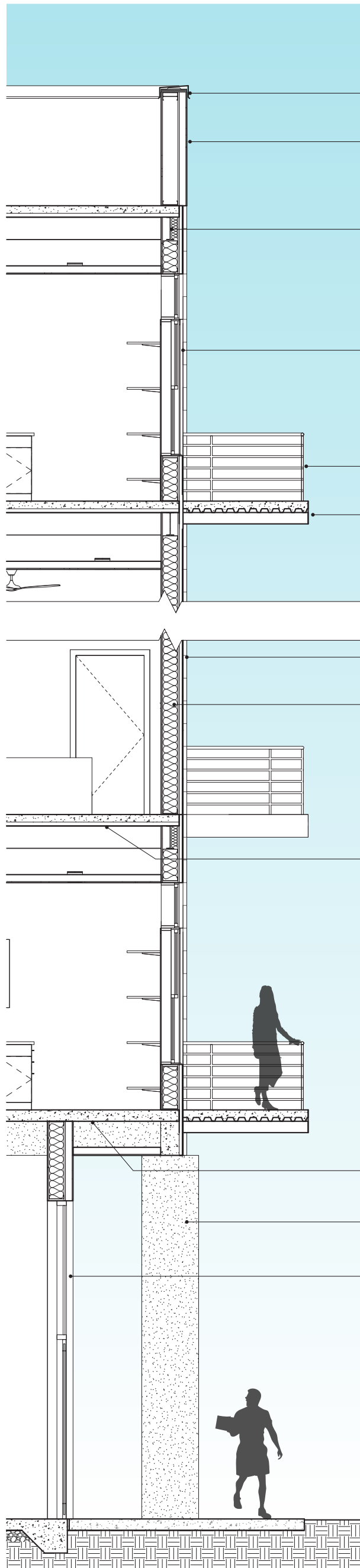
Transverse Section



Longitudinal Section

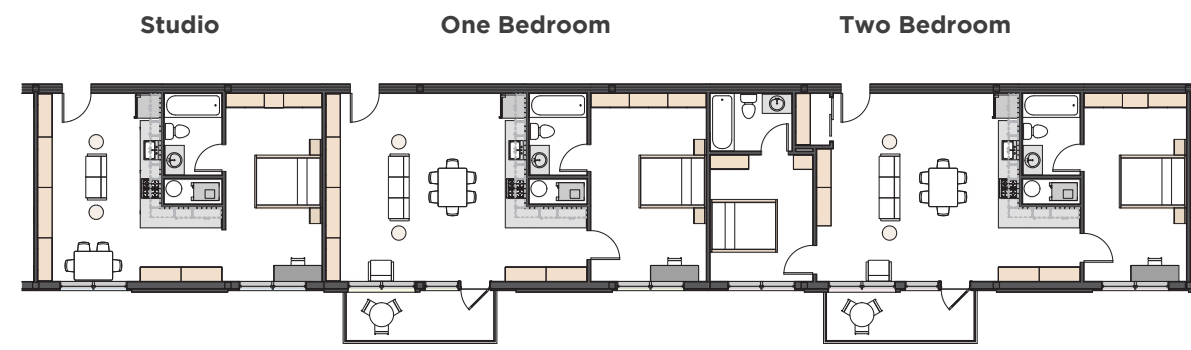




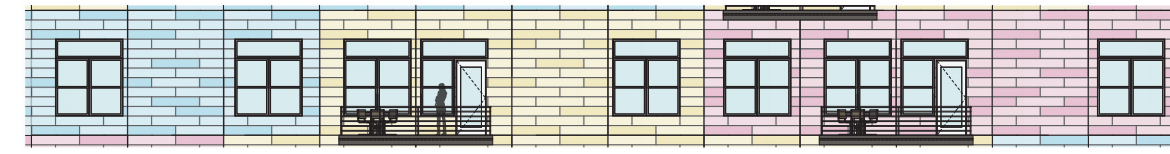


Building Wall Section

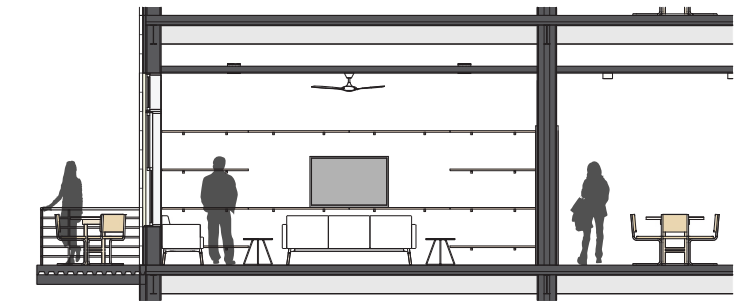
0' 5 10 20 30'



Enlarged Unit Plan



Enlarged Unit Elevation



Enlarged Unit Section

0' 10 20 40 60'

0' 5 10 20 30'



Exterior Approach on St. Georges Way



Rear Approach on St. Georges Way



Hallway View



Typical Unit View

## Alternate Building Typologies for Rapid Deployment

