

Today, the United States is facing an obesity crisis. 69% of adults (CDC, 2012) and 43% of elementary school children are overweight. (Active Design 2010) Obesity is second only to tobacco as a cause of premature death. (Active Design, 2010) In addition to diet and other factors, the built environment is a major contributor to the obesity epidemic. (National Center for Bicycling and Walking, 2002) Unfortunately, many built environments support sedentary activity, rather than promoting active lifestyles. This reflects poorly on designers, who are responsible to support the health, safety and welfare of those who inhabit their designed spaces. Studies have shown that people with active lifestyles live longer, healthier, and happier (US Dept. of Health, 2008). Rather than compromising health through designing for sedentary occupation, designers must learn how to support the physical needs of those for whom they design. The goal of this study is to understand what types of design strategies can be integrated into the built environment to support healthy, active lifestyles. In particular, this review will attempt to understand what strategies are appropriate for different age groups. Literature review and precedent studies will contribute to a framework that will inform design that promotes active lifestyles for people of all ages. This framework will then be applied through design of an inter-generational living project in Seattle, Washington. By providing individuals with age-appropriate infrastructure to support active lifestyles, designers will be able to fulfill their professional responsibility to support the health, safety and welfare of those they serve.



adam froelich

Designing for Physical Activity in  
Inter-generational Living





# physical activity

“Healing must come from within, that everyone has the innate capacity to heal themselves, and that this capacity must somehow be mobilized.”

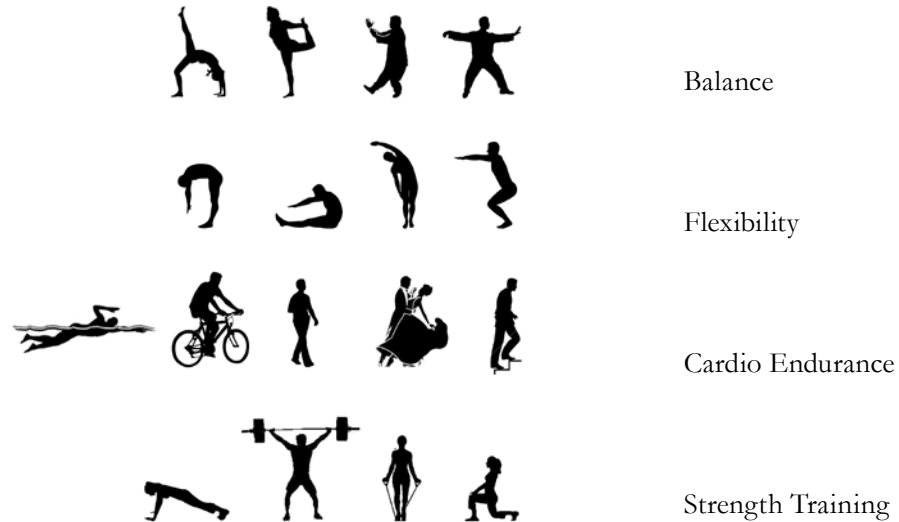
-Wilbert M. Gesler



## Introduction

People have the ability to heal themselves but this idea can only be kindled if it is supported. This paper specifically proposes that physical activity is one solution to overall health and wellbeing. Those who make exercise a part of everyday life have a much higher chance of being healthier, happier, and living longer. (Active Design 2010) However, most individuals avoid everyday utilitarian activity because it is considered a chore but as the US population begins to rapidly age people must become more active to maintain their health. The environments in which we live should create ways for people to heal and to age in a dignified manner.

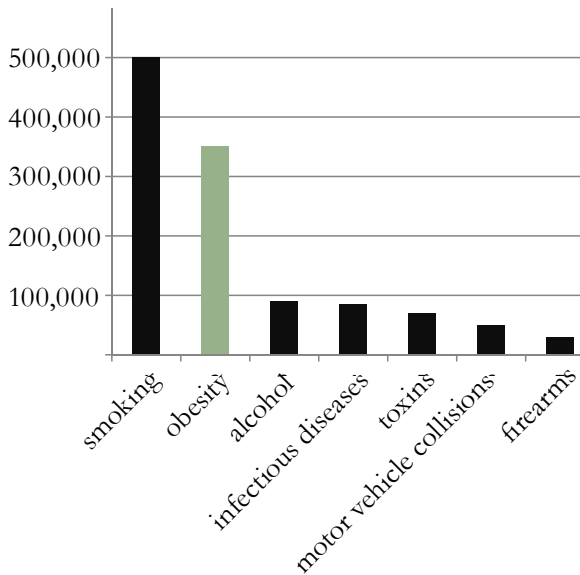
## Types of Physical Activity



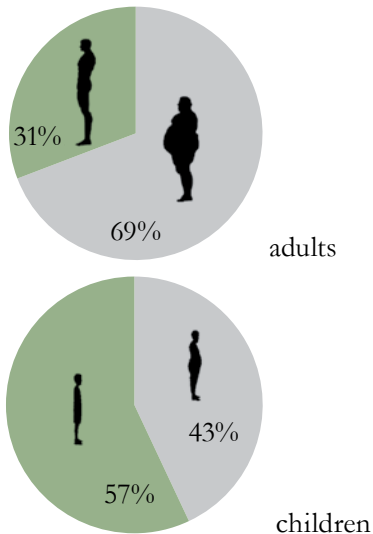
## Research Questions

- According to Wilbert M. Gesler, a healing environment is characterized by natural, built, symbolic, and social aspects. How do these aspects relate to physical activity and inter-generational living?
- How can all of these elements be put together for an inter-generational housing model?

## Premature Deaths Per Year



## Overweight Percentages



## Health Issues

Due to poor diet and lack of exercise 69% of adults and 43% of elementary school children are overweight. Obesity is second only to tobacco as a cause of premature death in the United States. This could be avoided if individuals would become more proactive in their health. However sedentary lifestyles are still chosen despite the dreadful cost. In addition to physical ailments, many individuals with sedentary lifestyles also suffer from depression, and many other physiological and mental disorders. (Active Design, 2010)

Our built world is the biggest contributor to the obesity epidemic and encourages sedentary behavior versus active lifestyles. (Walking for Health and Happiness, 2014) The US is a culture of convenience. If it isn't convenient then people won't see a value or interest in it. An example is how our cities are built. With sprawl being so easily encouraged we are unintentionally ruining people's health because most individuals

still desire their own yards, houses, and cars. Cities with such sprawl are making it easier to drive than to walk. It isn't convenient to walk or ride a bike to work, school, shopping or to entertainment, but it is easier to drive a car instead. Even our fitness centers, buildings designated for physical activity, can only be reached by the sedentary behavior of driving.

The design of buildings that make up our cities also express this desire for convenience in the way in which circulation paths are organized. Elevators are placed at the front door and stairwells are hidden. Their going from one floor to the next in a tall building sedentary behavior instead of cardio endurance. Hallways are often dark and become corridors where no one wishes to be in, particularly double-loaded ones. Shouldn't this be reversed where being active is encouraged and rewarded while inactivity is featured as undesirable?



## Physical Activity Promoting Healing Environments

Regular physical activity is essential for healthy aging. The best way to be active is to be active for life. Adults aged 65 years and older gain substantial health benefits from regular physical exercise and these benefits continue to occur throughout their lives. Promoting physical activity for older adults is especially important because this age group is the least physically active of the total US population. (Physical Activity Guidelines, 2008)

The American Physical Therapy Association produced a survey of the fittest cities for baby boomers in America (CDC, 2014) The APTA's survey included several factors in its criteria, including life expectancy, cardiovascular health and stress levels, in addition to access to health care and fitness programs. They found that the fittest cities allow baby boomers the opportunity to keep moving as they age. Parks, gyms and mass transit options in a city offer the opportunity for baby boomers to



Basketball/Volleyball Court

stay in motion, which according to physical therapists will tell you is the best way to stay young and fit. (Top 10, 2014)

The Framingham Heart Study used objective measures of physical activity to compare

the behavior of children to that of their parents. It reported that young children with two active parents were 5.8 times more likely to be active than children with two inactive parents. (Khan, 2009) This empathetic behavior continues into adulthood. People will follow patterns of individuals who are closely related or socially connected to them. Our brains use

important brain cells call “mirror neurons” to aid in learning, self-awareness, and relating. By following the habits of active groups, people can have help with controlling weight, avoid health conditions, less prone to diabetes and other diseases, improves center of balance, boosts energy levels, and many other beneficial and desirable traits. (Physical Activity Evidence, 2014)

Being physically active not only improves the body but the mind. Studies have shown that those who exercise are less prone to depression

and other mental disorders. This is because when individuals exercise not only do that reap the benefits of a healthier body, but the body releases what is called a “happy chemical” to the brain. This improves the balance of chemicals that control people’s moods. This also increases production of neurochemicals that promote brain cell repair, improves memory, lengthens

attention span, boosts decision making skills, prompts growth of new nerve cells and blood vessels and also improves multi-task and planning abilities. (Physical Activity Evidence, 2014)



Overlooking Wall Climbing





Vertical Garden

## Pull Strategy

The Pull Strategy literally uses means to draw someone into a space. An example would be instead of putting staircases into corners why

not put them as center pieces. Design staircases where individuals imagine themselves in another world by providing attractive destinations. If

staircases are already existing one can simply spruce them up with some new paint, new flooring, artwork, possibly motivational signage, even music can increase stair use among the building's users. (Zimring, 2005)





Treetop View of Occidental Park

## Access to Nature

Nature can play a vital role in promoting the use of space. Studies have shown that spaces with a direct visual connection to the outdoors are more appealing and more likely to be utilized for physical activity than interior rooms with no visual access to nature. (CDC, 2013) Even hospitals today are using this technique to help patients recover faster. A study has shown that those with access to nature healed 6% faster than those who didn't. (Hospitals Heal, 2012)

## Push Strategy

The Push Strategy is a design approach where a building makes individuals do more activity without them knowing. An example is separating major elements. This result is a greater distance needing to be traveled thus requiring more activity for a task to be completed. By spreading a building over the site the amount of walking will be increased. Even mild increases in walking result in significant health improvement. (Zimring, 2005)

## Elevator vs Stairs

The elevator is needed for the lifting of heavy objects but it is often used more than staircases for rising and descending in a building. One should place this required piece of machinery in a location so that it isn't visibly accessible. If the elevator is already in a too convenient location it can be programmed so that it is slower than taking the stairs or restricting its use to only those who need it. (Journal of Public Health, 2009)



Vertical Park Circulation

## Adaptability

Single floor units, apartments/houses, should be easily modified so individuals can age in place. In this design all of the units are a single floor for easy access for those with wheelchairs and walkers. To transform the units from an traditional apartment to one that can accommodate a care giver, all one must do is simply as close a door. This works because the original owner still has his privacy and doesn't have to move and the caregiver, whether related or not, is close by but he still has the freedom to come and go as he pleases.



Living Room





## Variety

Apartment complexes should have a variety of apartment options to attract a wide variety of users. Having a range of one to three bedroom apartments is a draw for singles, couples, and young families. The wider range of people the greater amount of interaction between different groups gaining from an inter-generational setting.



Kitchen

## Socialization Interaction

Too often apartment complexes don't have any places for people to socialize. This can be as simple as having a niche in a hallway for passerby's to have moments of conversation and for new relationships and interaction to develop. Architects can contribute to designing apartment dwellings as environments where everyone looks out for one another and the building becomes more of a neighborhood.



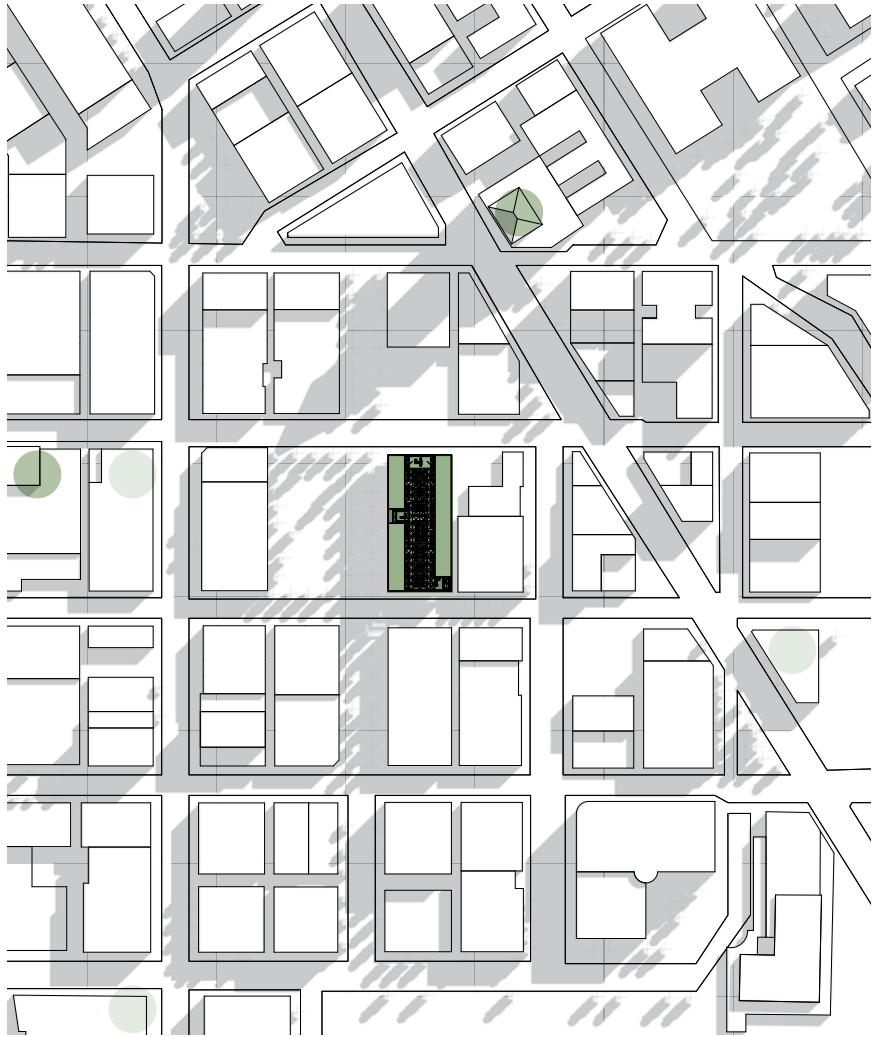
Seattle Skyline View

## Conclusion

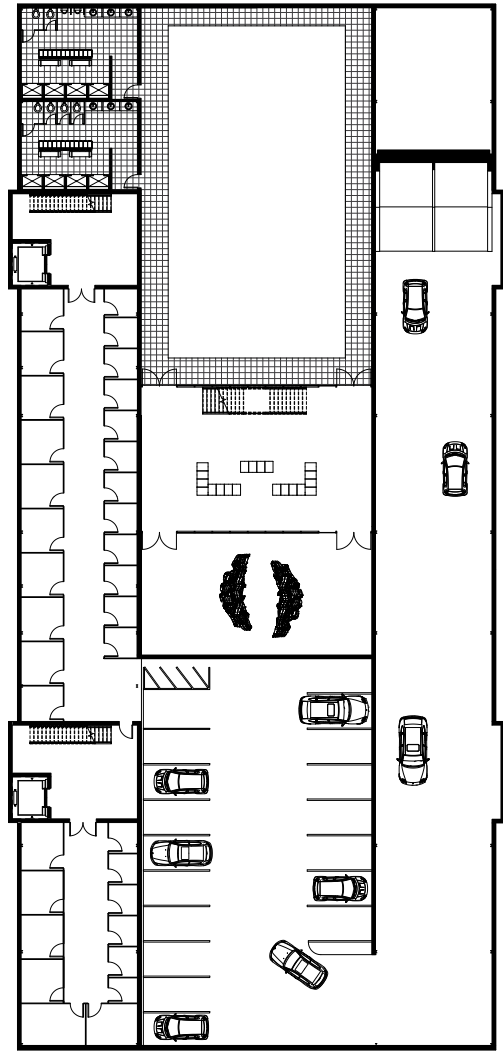
It is the desire of this proposal to support a growing older population by providing strategies and ideas to formulate a new housing type. The strategies proposed in the paper are universally applicable and could be integrated into new or existing facilities. It is believed that these changes in design would have a profound impact on the way humans behave and provide a healthier attitude on how we view physical activity and the notion of aging. "Healing must come from within, that everyone has the innate capacity to heal themselves, and that this capacity must somehow be mobilized." -Gensler. A model of housing that encourages inter-generational living and provides a healing environment through physical activity is proposed as the type of environment that could mobilize people for a healthier, happier, lifestyle.



View of Mt. Rainier

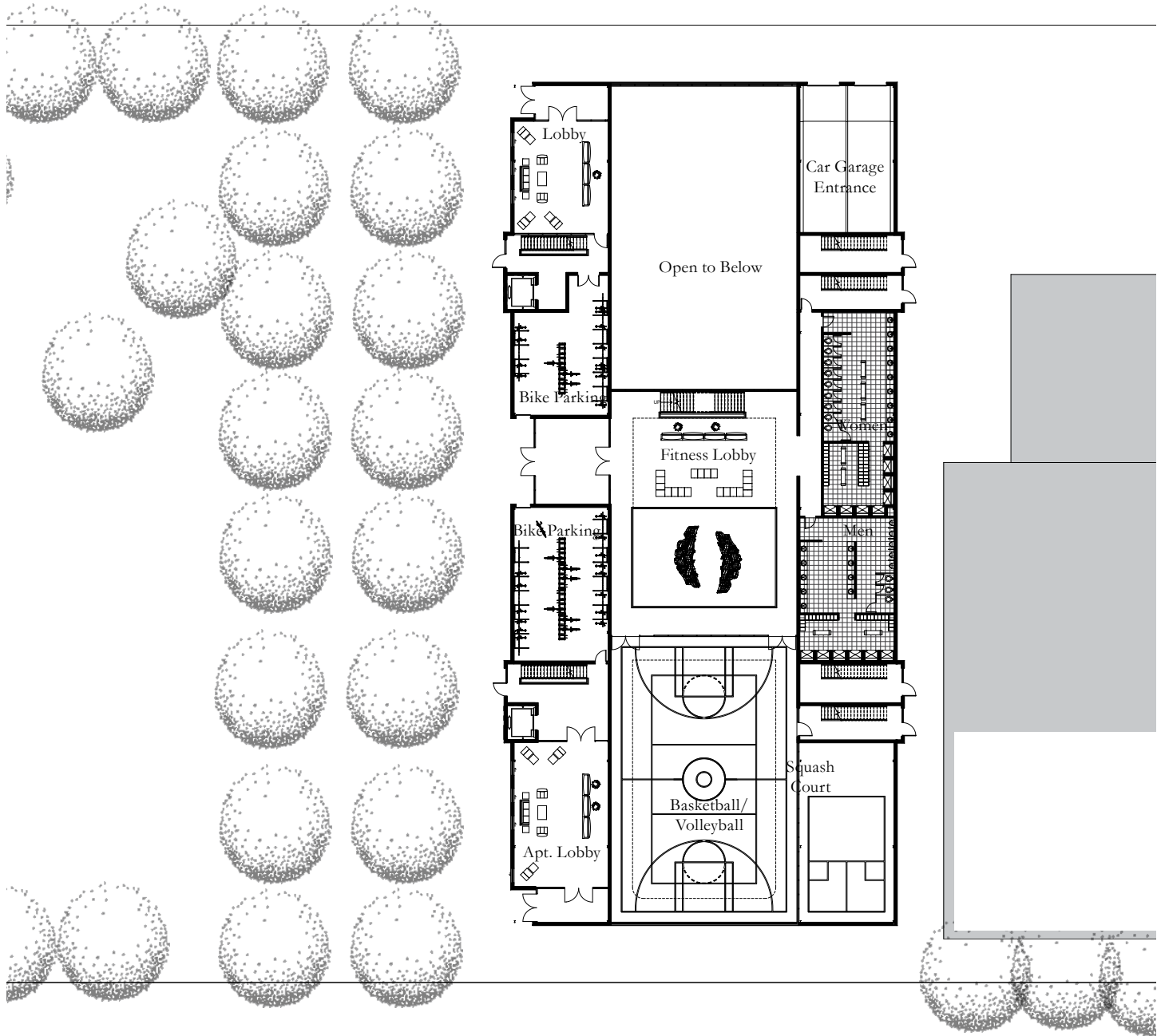


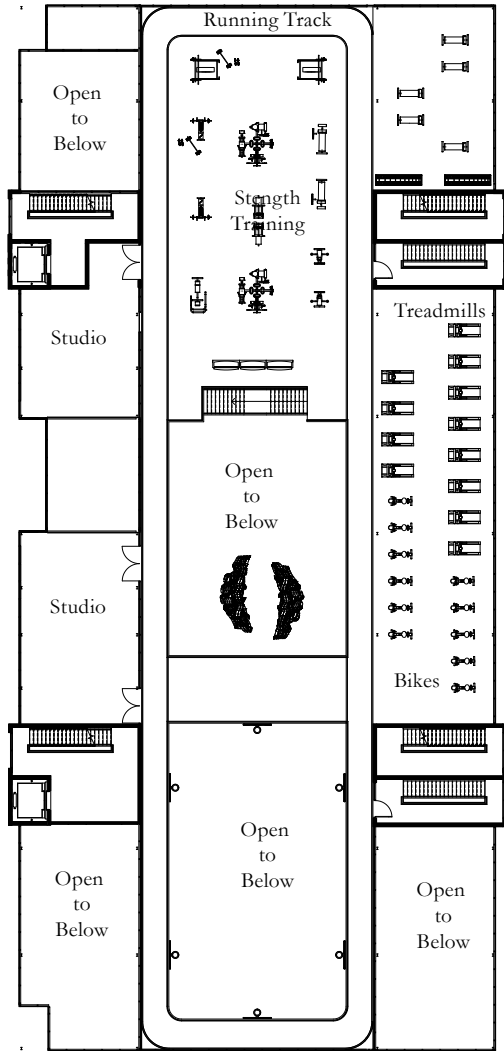
Site Plan



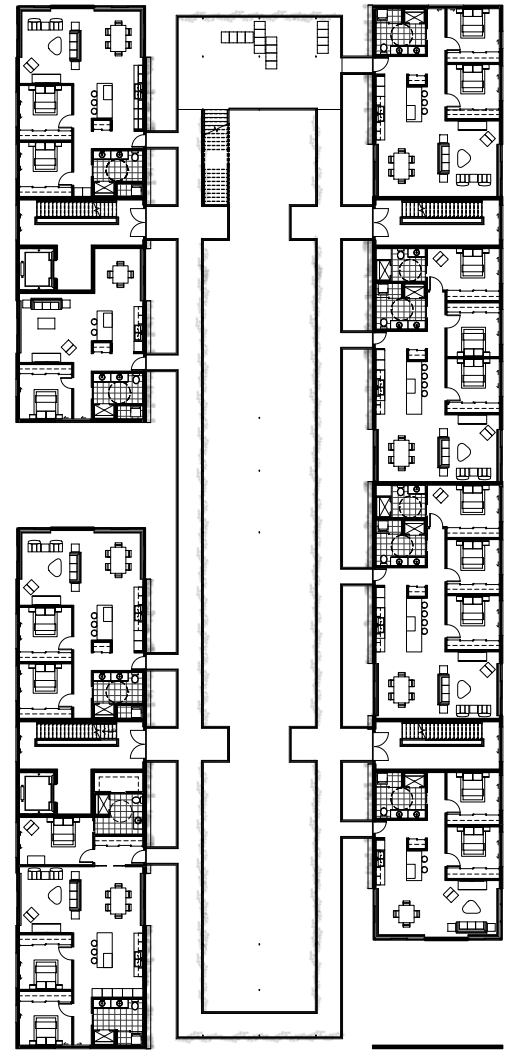
Basement



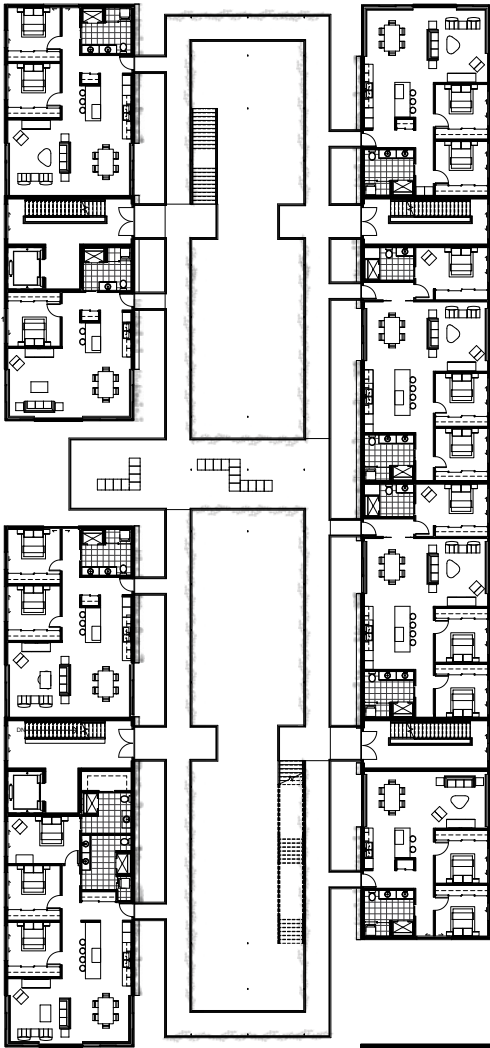




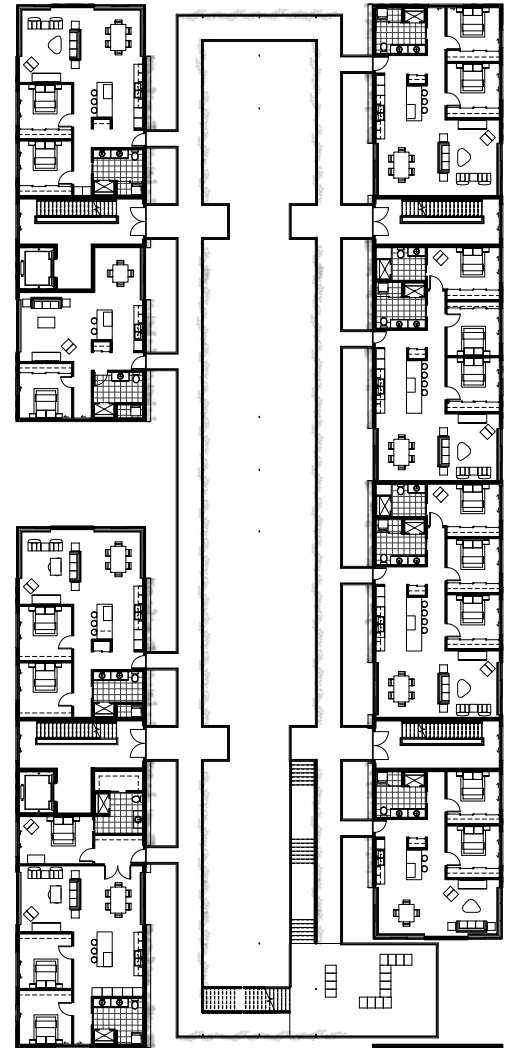
Level 2



Level 3

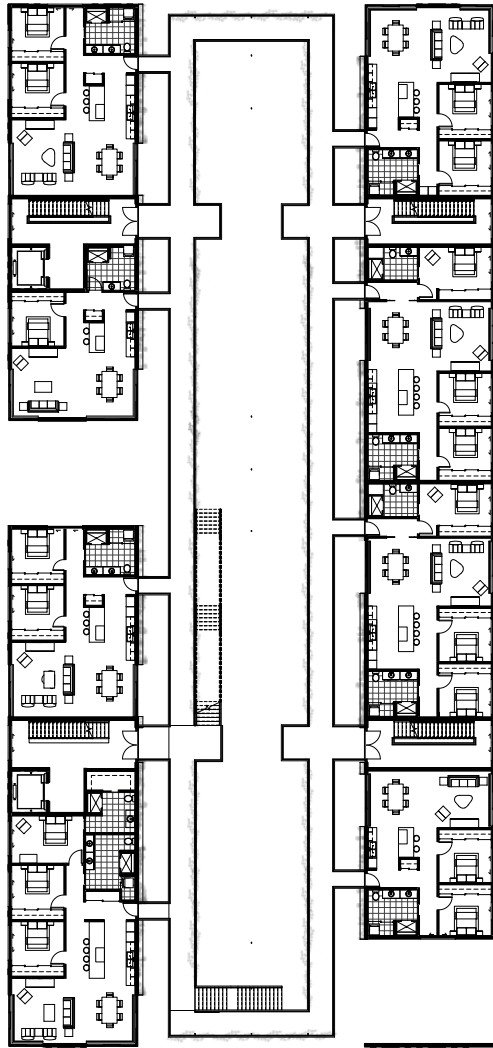


Level 4

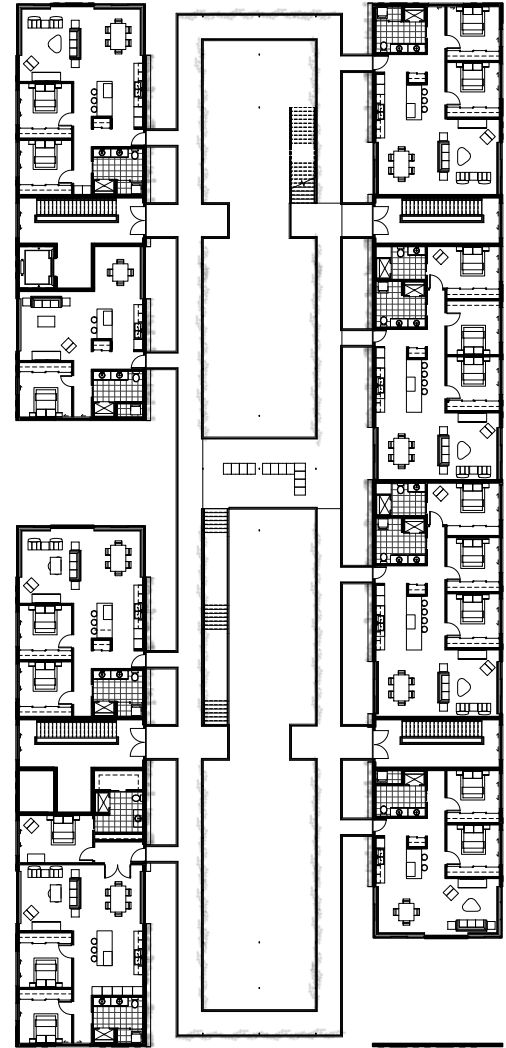


Level 5

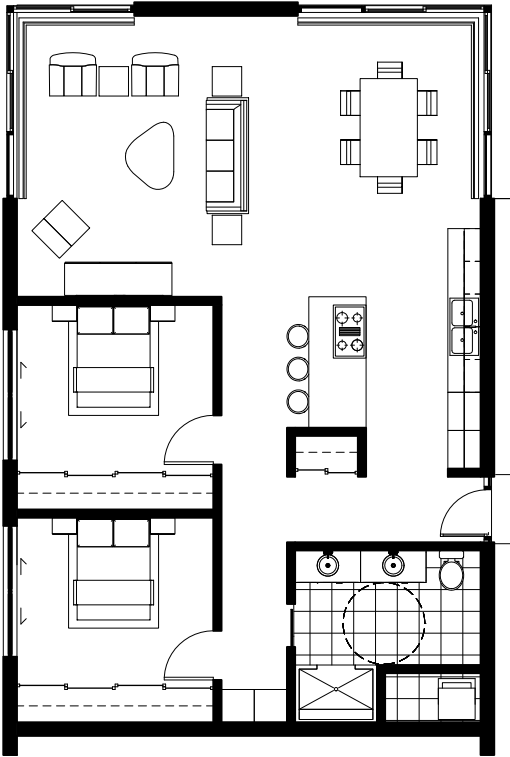




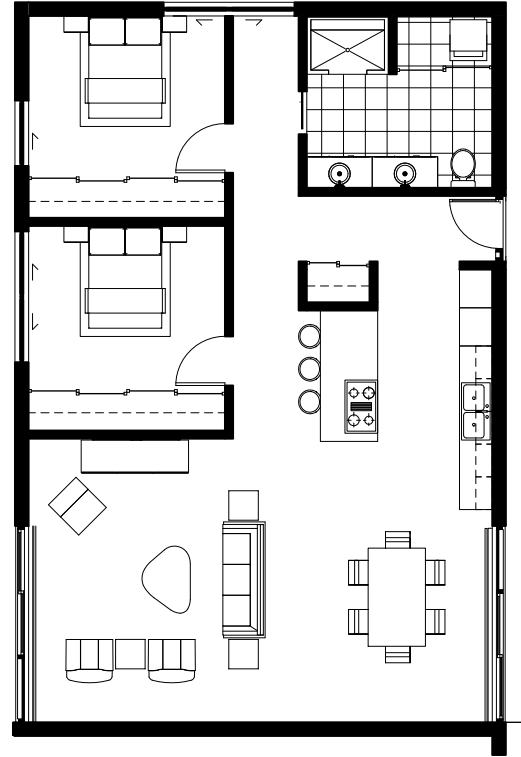
Level 6



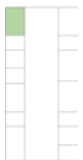
Level 7



2 Bedroom A



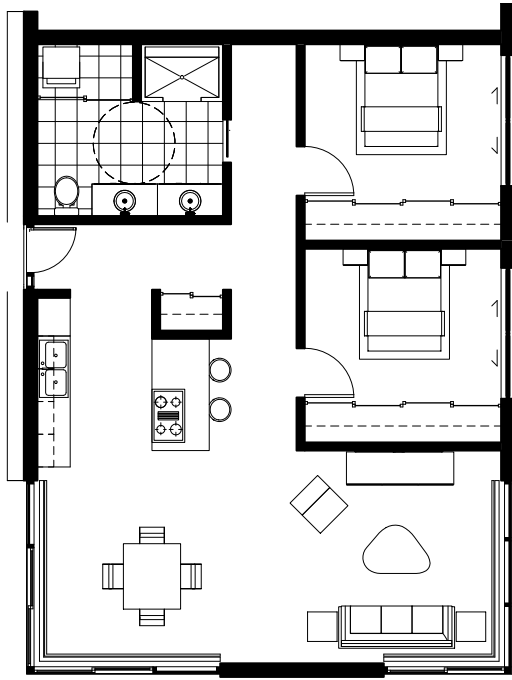
2 Bedroom B



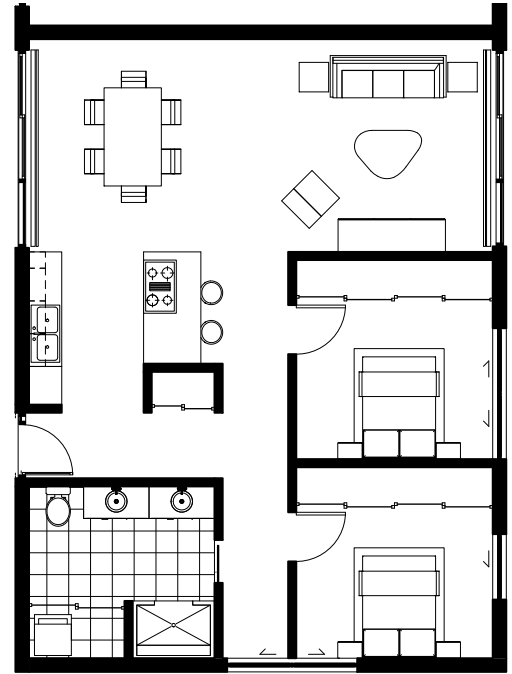
Potential Tenants



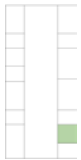
Potential Tenants



2 Bedroom C



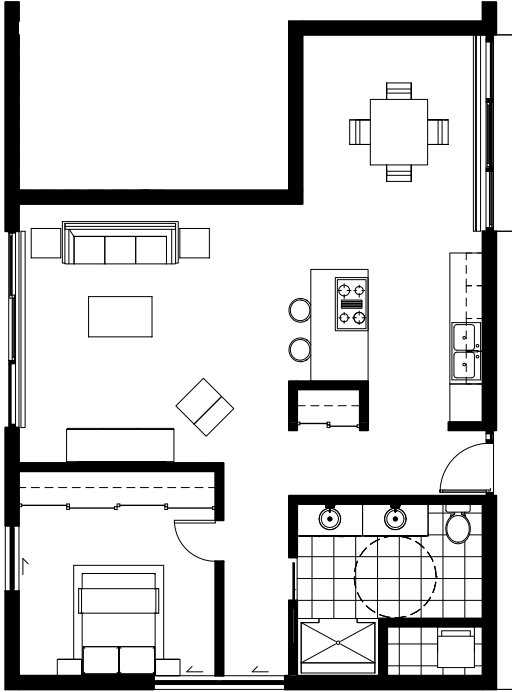
2 Bedroom D



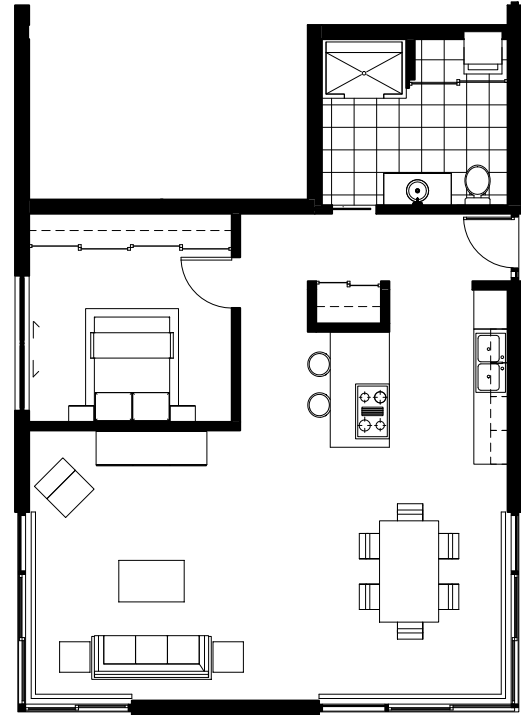
Potential Tenants



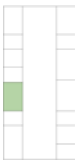
Potential Tenants



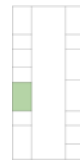
1 Bedroom A



1 Bedroom B

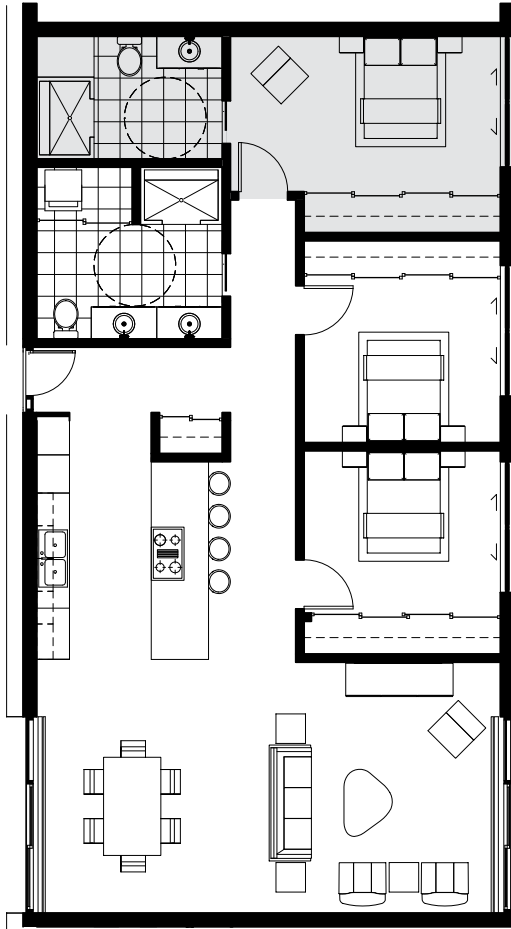


Potential Tenants



Potential Tenants

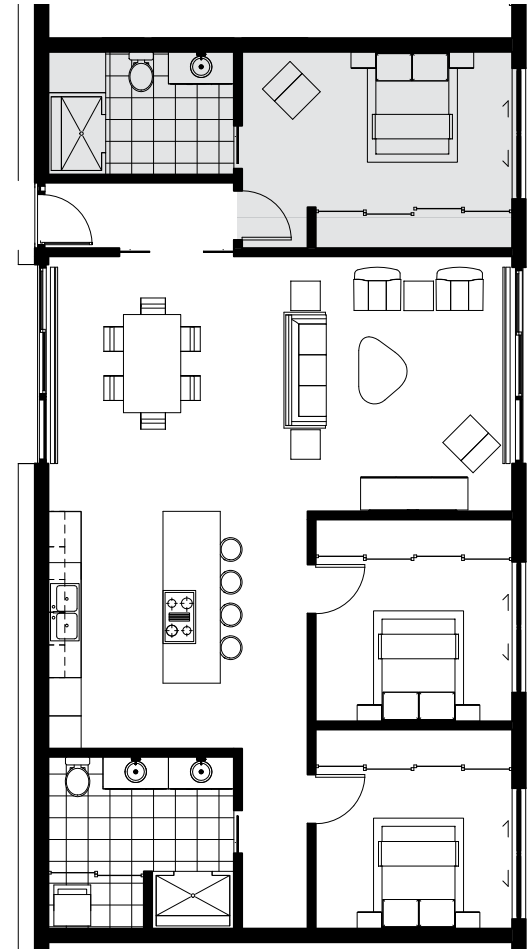




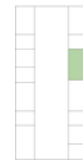
Inter-generational Unit A



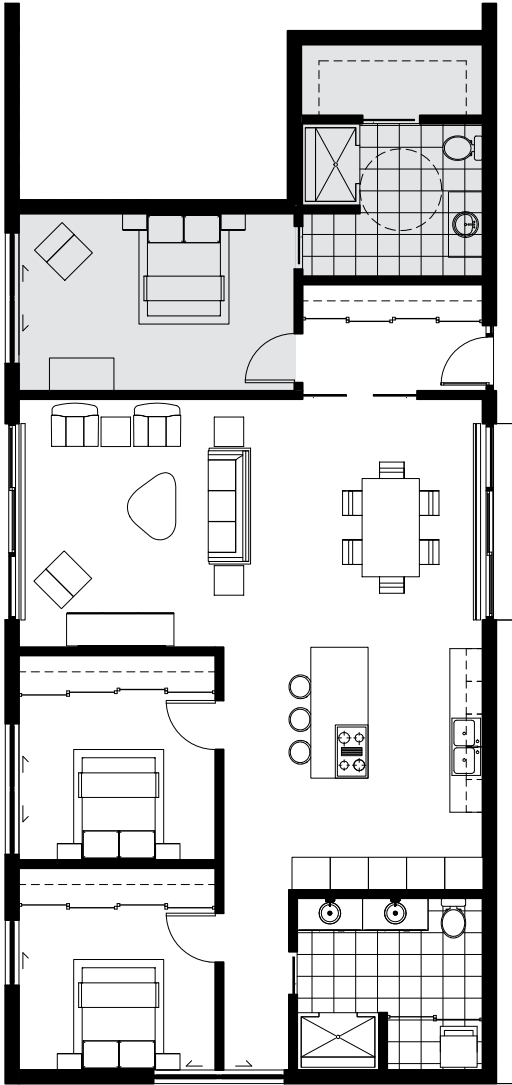
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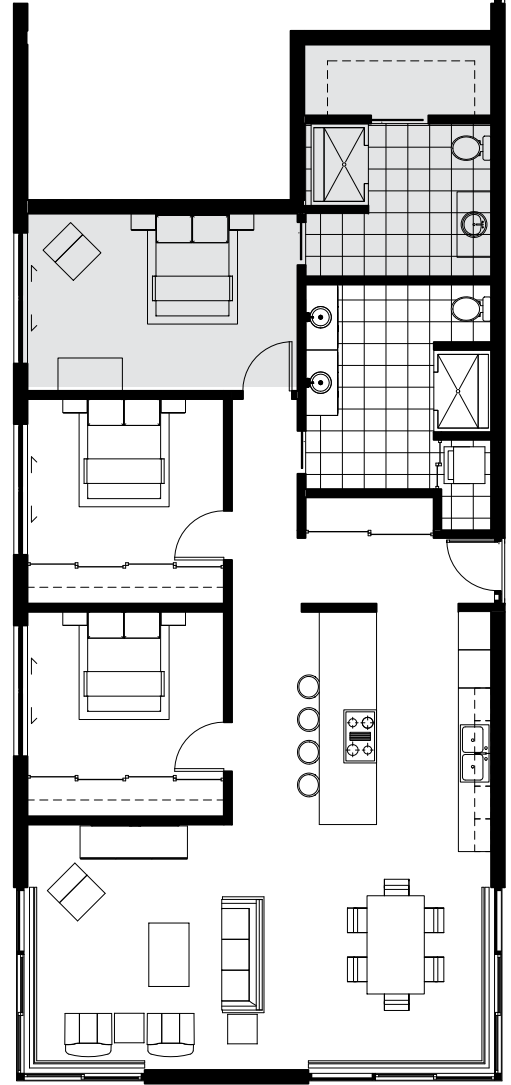
Inter-generational Unit B



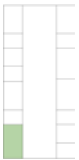
Potential Tenants



Inter-generational Unit C



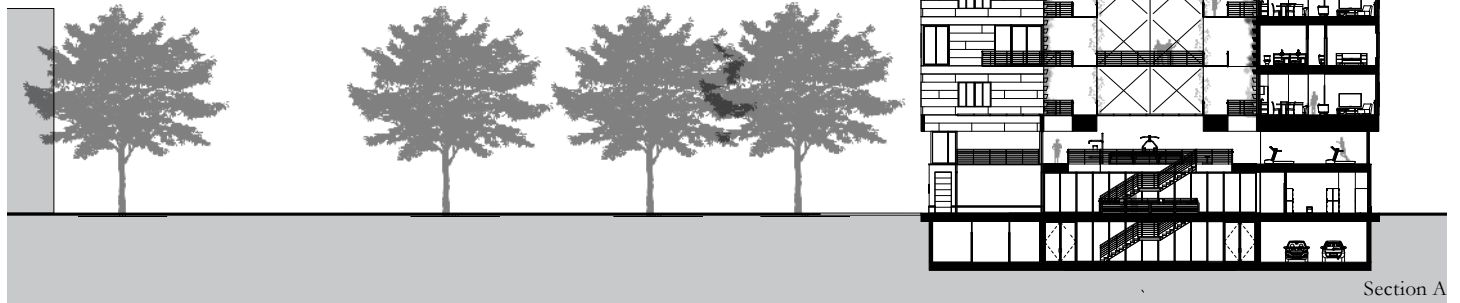
Inter-generational Unit D



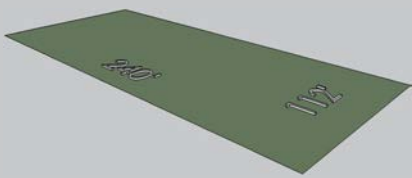
Potential Tenants



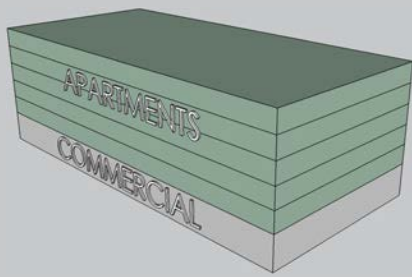
Potential Tenants



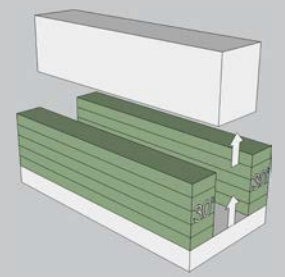
Section A



Site Dimensions



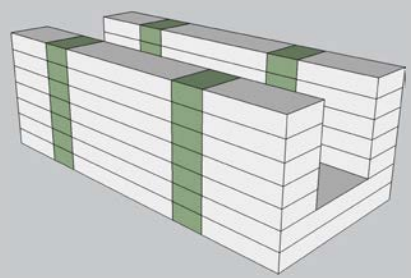
Building Program



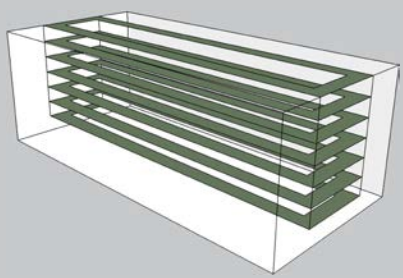
Removal of Center



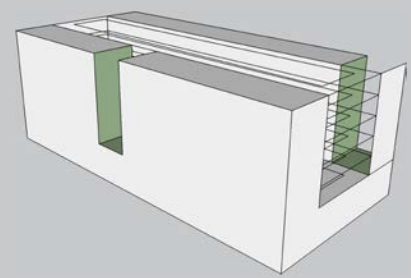
North Elevation



Vertical Circulation

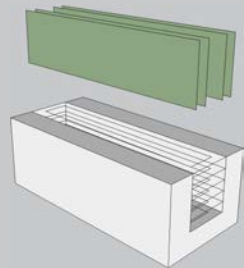


Circular Track Horizontal Circulation

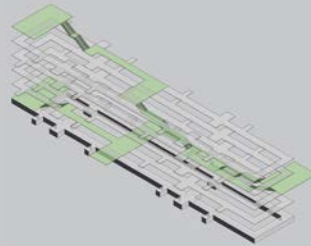


Removal of Massing to Provide Additional Views

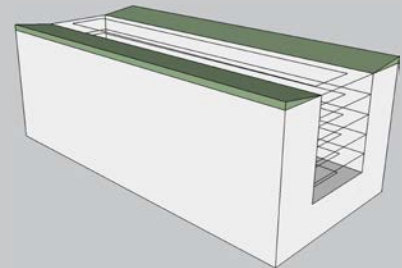




Vertical Garden Walls



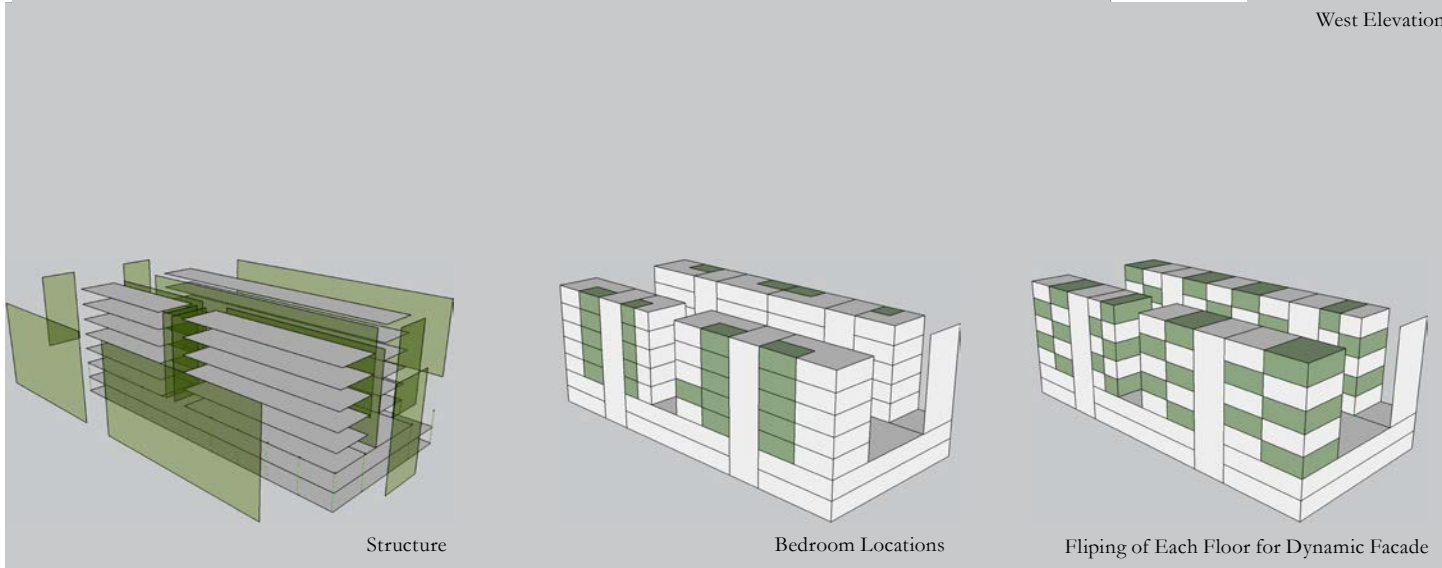
Experiential Circulation



Removal of Center



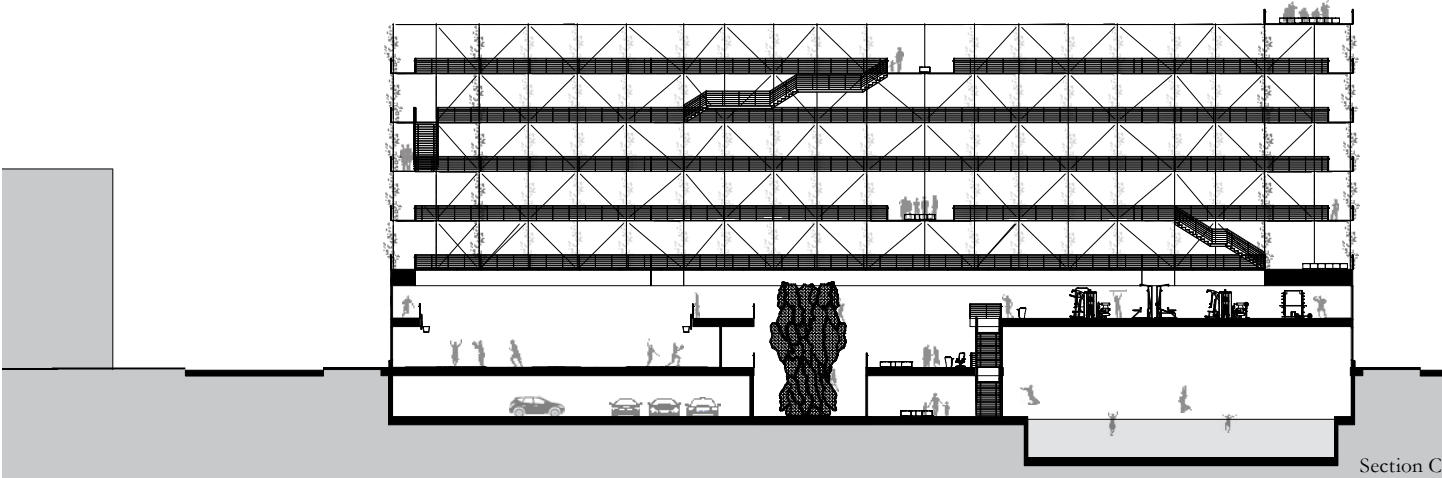
West Elevation



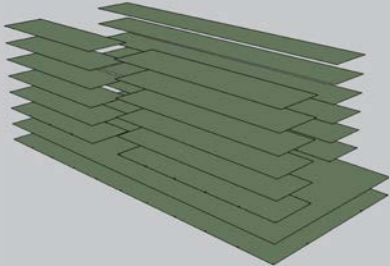
Structure

Bedroom Locations

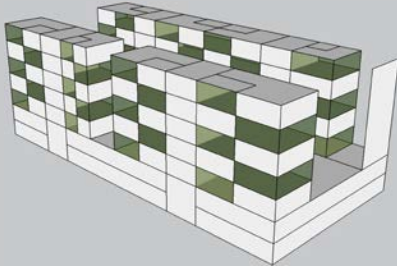
Flipping of Each Floor for Dynamic Facade



Section C



Thermal Flooring



Large Operable Windows  
for Cross Circulation

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