

DESIGN  
for  
PHYSICAL ACTIVITY  
in  
INTERGENERATIONAL LIVING

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## GENERAL DESCRIPTION

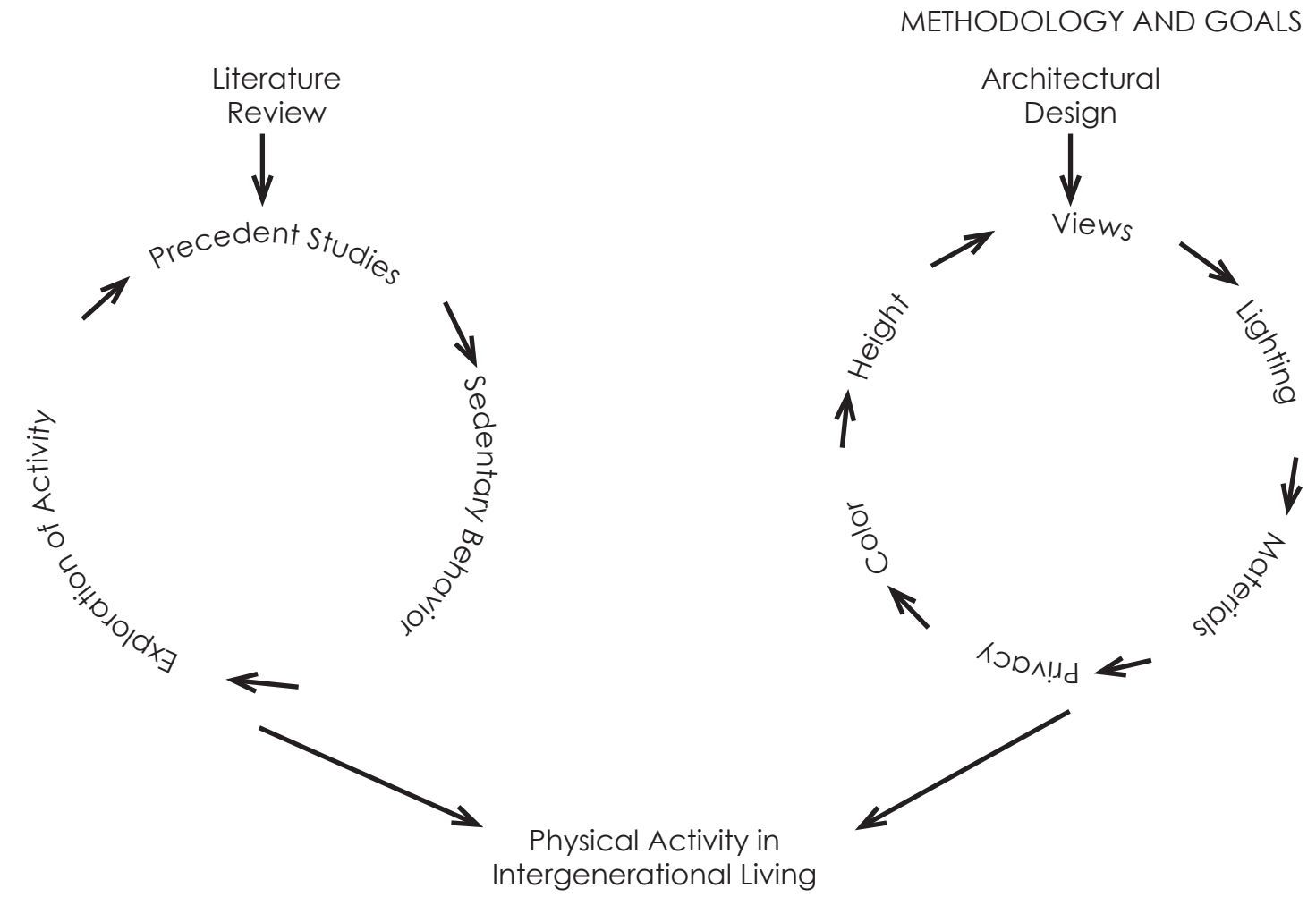
# GENERAL DESCRIPTION

## DEFINITION OF INTERGENERATIONAL LIVING

Intergenerational Living is not considered a building type, but it is also not a new form of housing. Before WWII it wasn't uncommon for parents, children, and grandparents to all live under one roof. After the war employment opportunities were made across the country for individuals and many families began living farther apart from each other. Today individuals, especially "Baby Boomers" are starting to question what is their living options as they grow older. The idea of not being able to continue to live at home and having to use assisted living as an only solution does not sound pleasant. Intergenerational Housing is beginning to become more popular in Europe and a handful of projects are beginning in the US. It is the notion where all ages flourish under one roof where strengths and weaknesses of both the young and old are met and supported by each other. In addition to providing for multiple age groups the building should become a healing sense of place. This current design proposal will be looking at Physical activity and what that means for overall human health of multiple generations. Studies will be implemented to understand what physical activities are appropriate for different age groups and to understand what design strategies can be integrated into the built environment to support healthy, physically active intergenerational lifestyles.

# GENERAL DESCRIPTION

## TARGET AUDIENCE





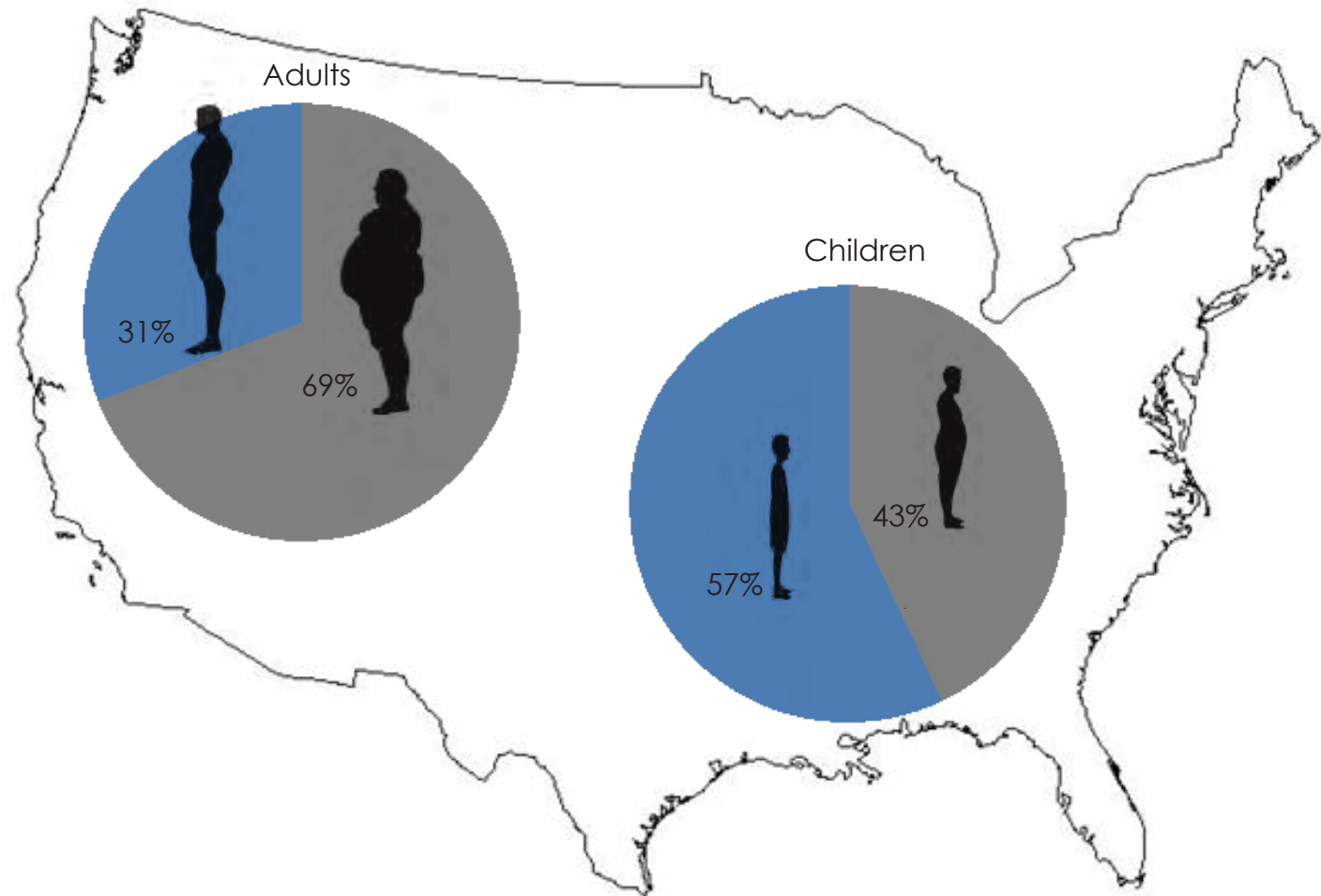
## RESEARCH

# RESEARCH

## REASON FOR PHYSICAL ACTIVITY

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.

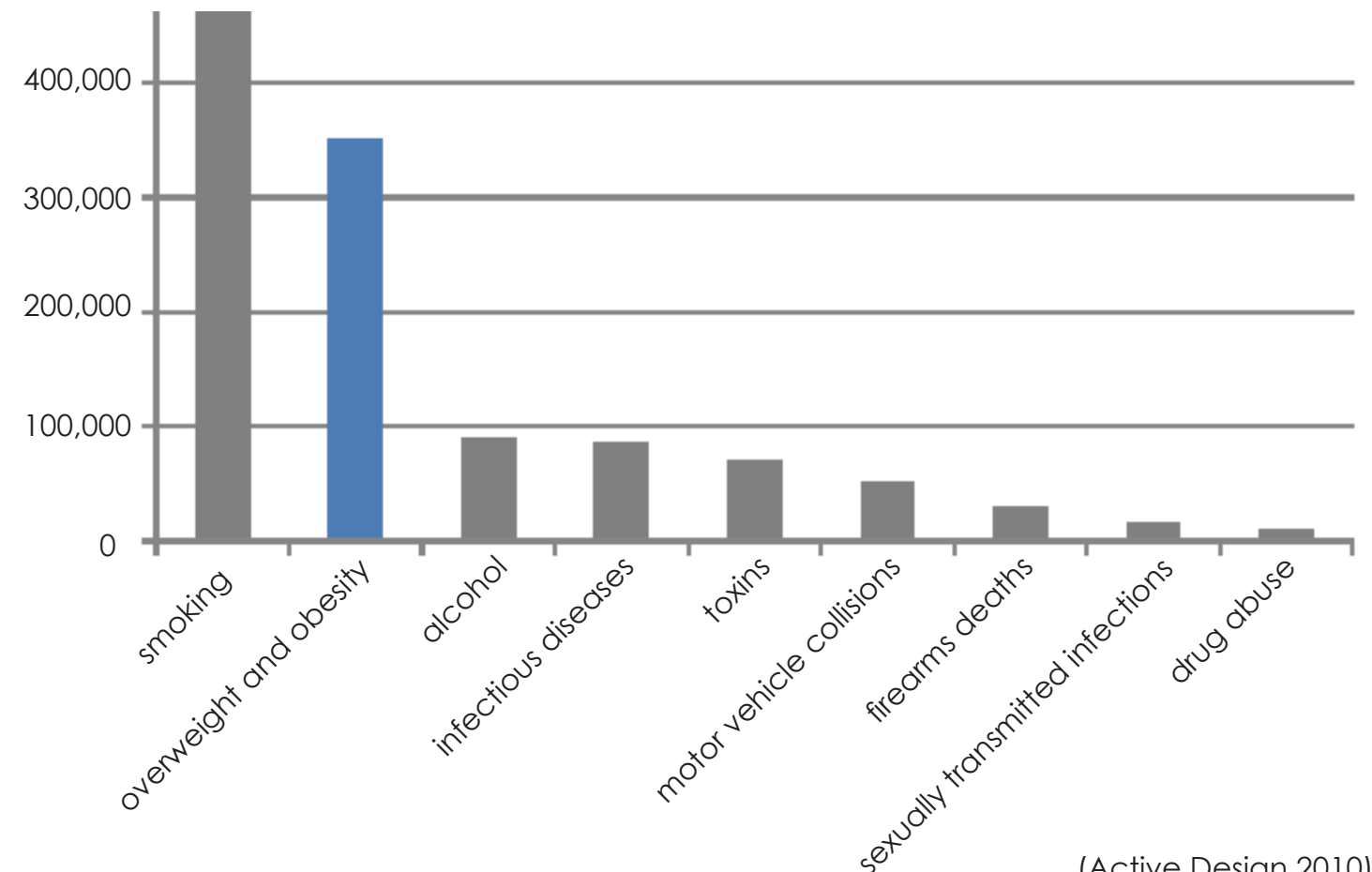
## OVERWEIGHT PERCENTAGE IN USA



(Active Design 2010)

# RESEARCH

## MAJOR CAUSE OF PREMATURE DEATH



(Active Design 2010)

TYPES OF EXERCISES



Flexibility



Balance



Strength Training



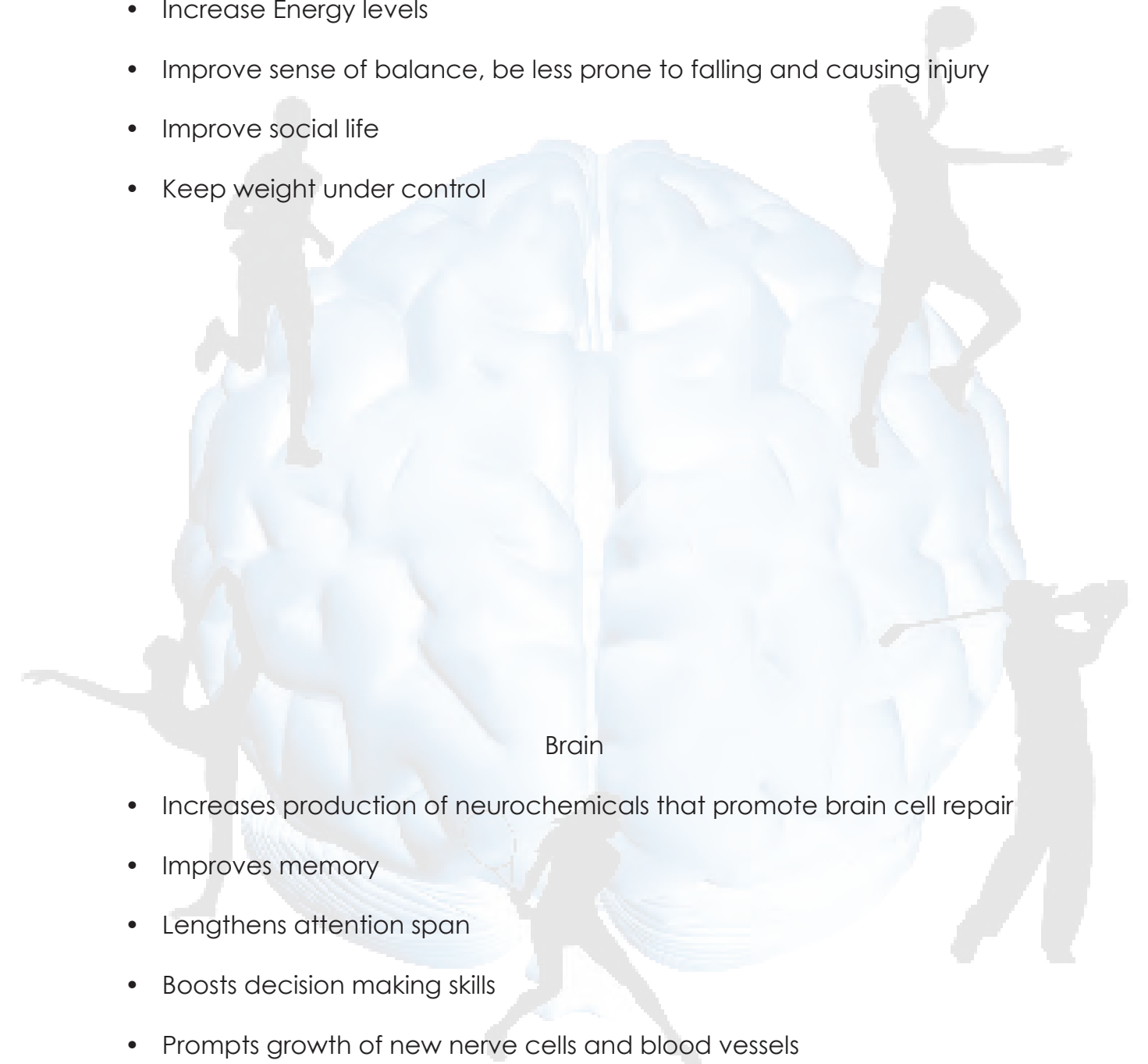
Cardio Endurance

Exercise is more than just lifting weights. Exercises can be divided into one of four categories: flexibility, balance, strength training, and cardio endurance. Each focuses on a different part of the body and each essential for overall well being.

EFFECTS OF EXERCISE ON THE HUMAN BODY

Body

- Help with independence by improving and maintaining physical strength
- Increase Energy levels
- Improve sense of balance, be less prone to falling and causing injury
- Improve social life
- Keep weight under control



Brain

- 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
- Improves multi-task and planning
- Less prone to depression
- Makes you happy

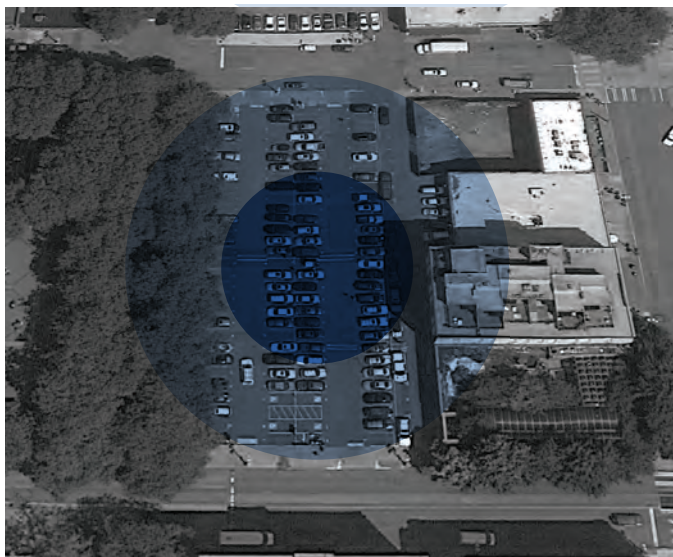
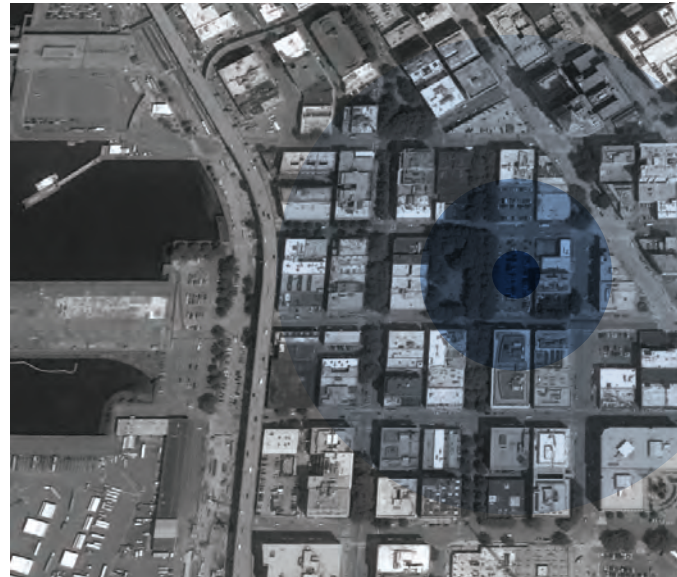
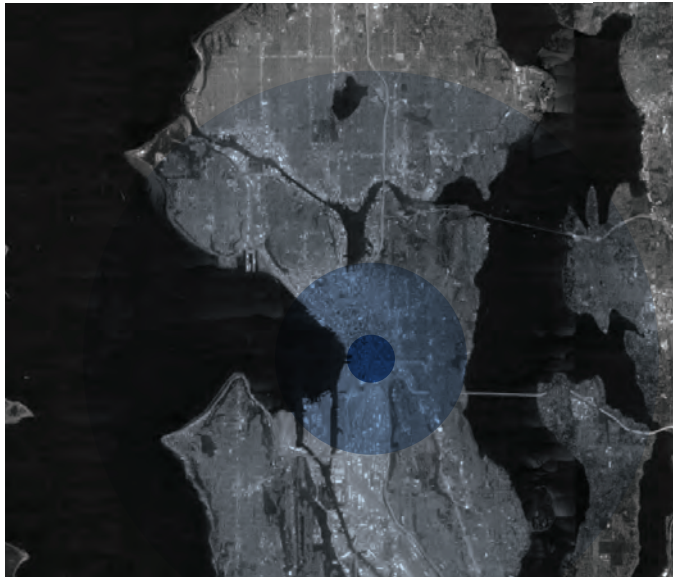
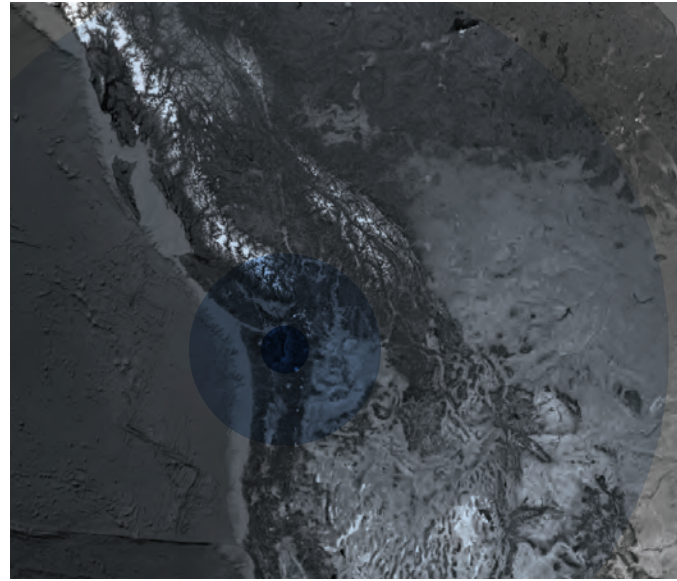
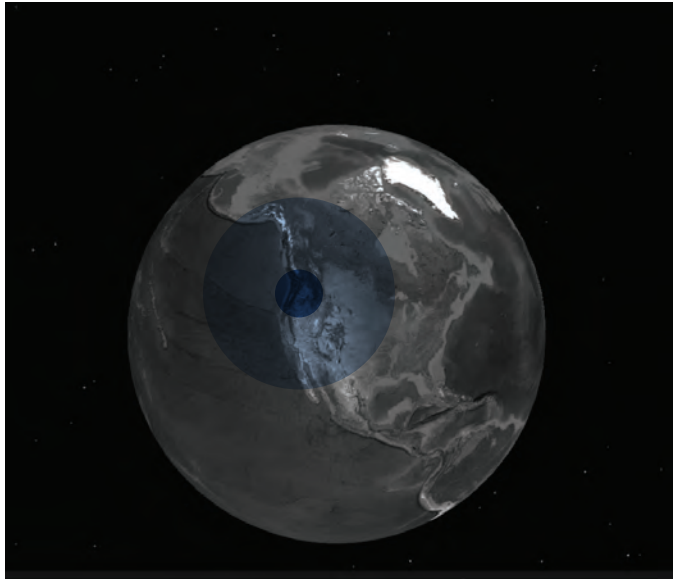


## SITE ANALYTICAL DIAGRAMS



SITE ANALYTICAL DIAGRAMS

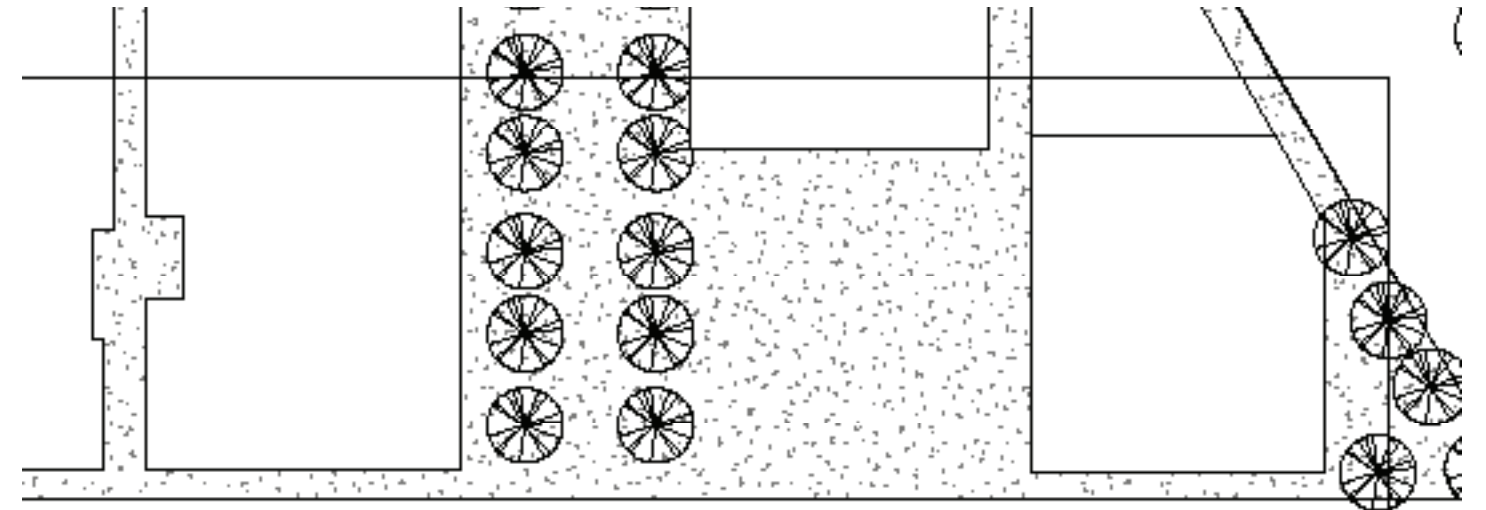
SITE



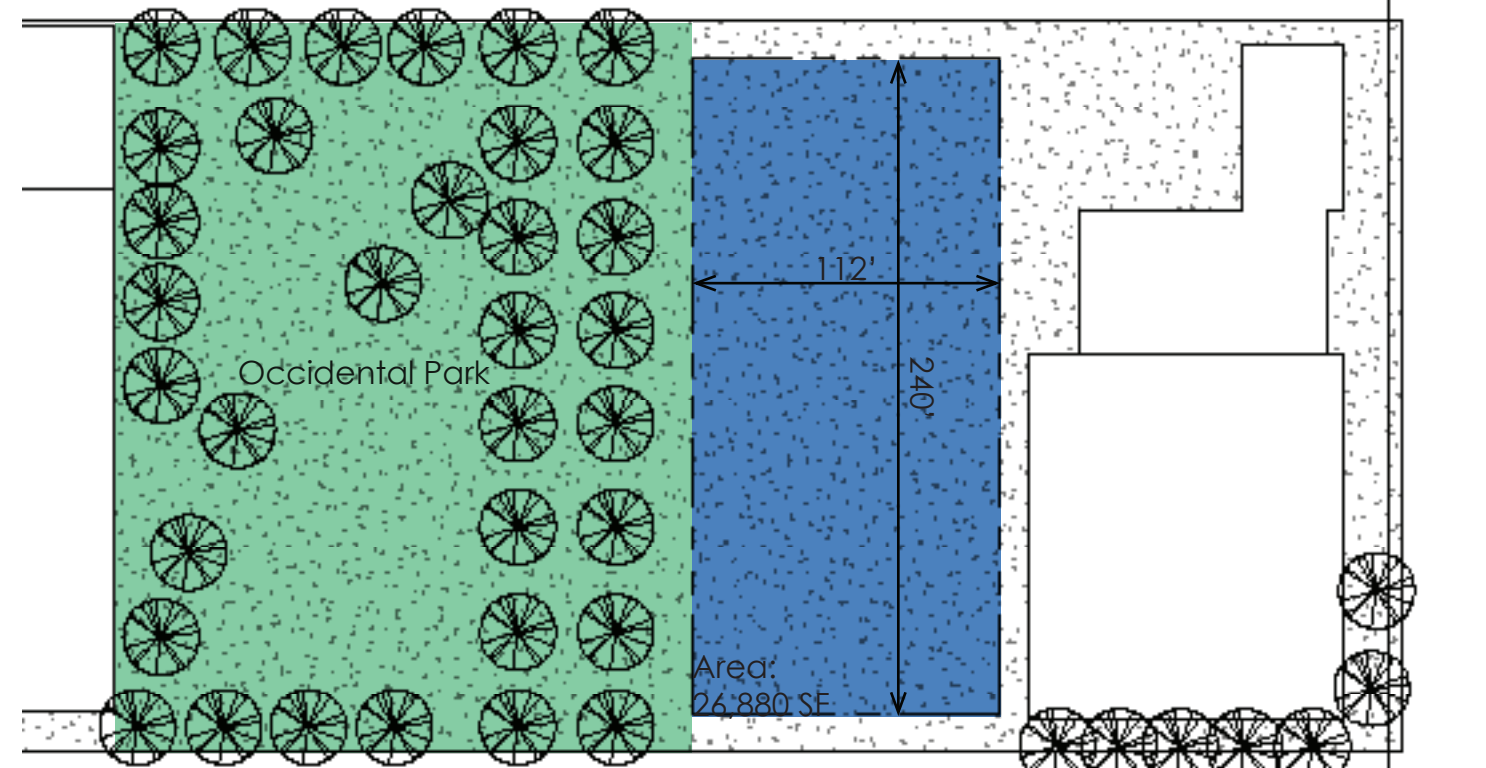
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Seattle, WA  
USA

SITE ANALYTICAL DIAGRAMS

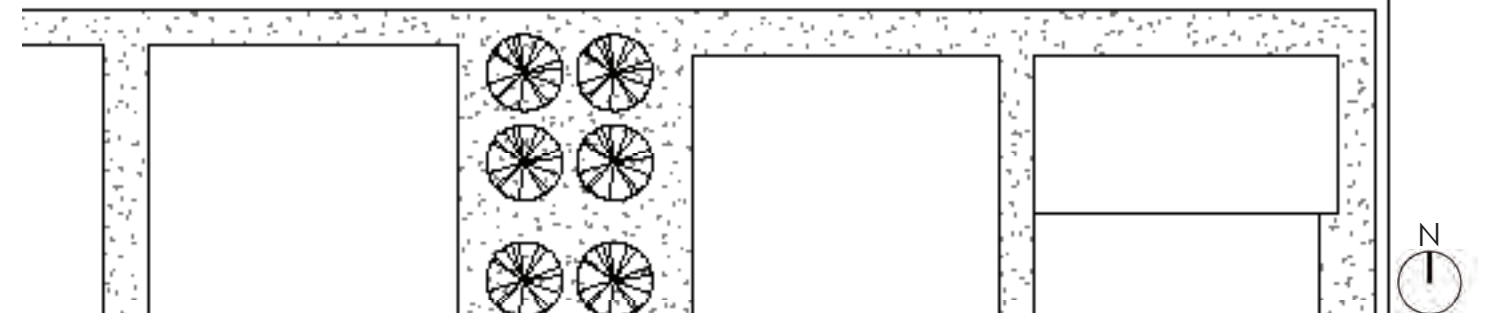
SITE



S. Washington St.

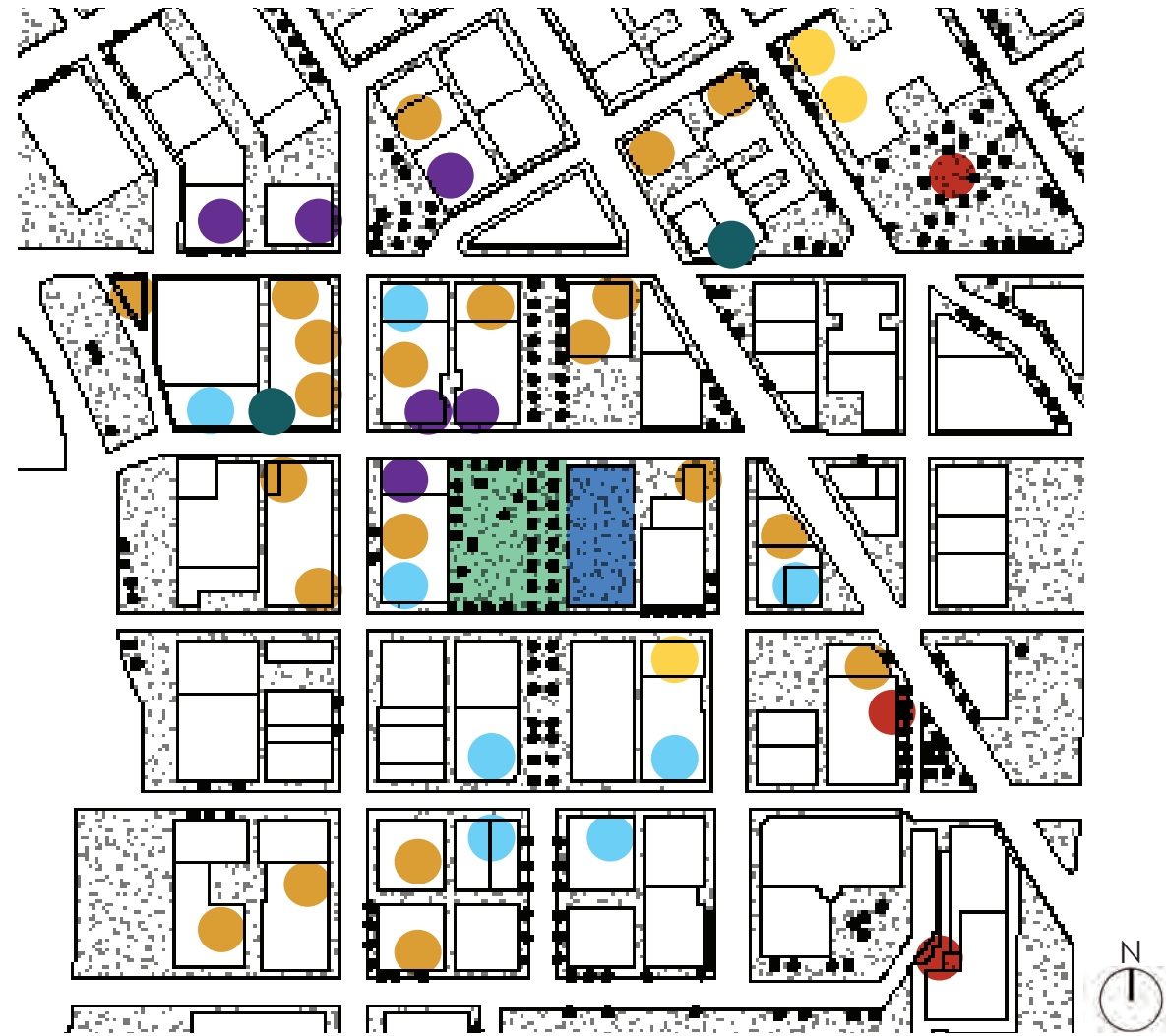


S. Main St.



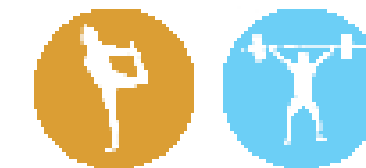
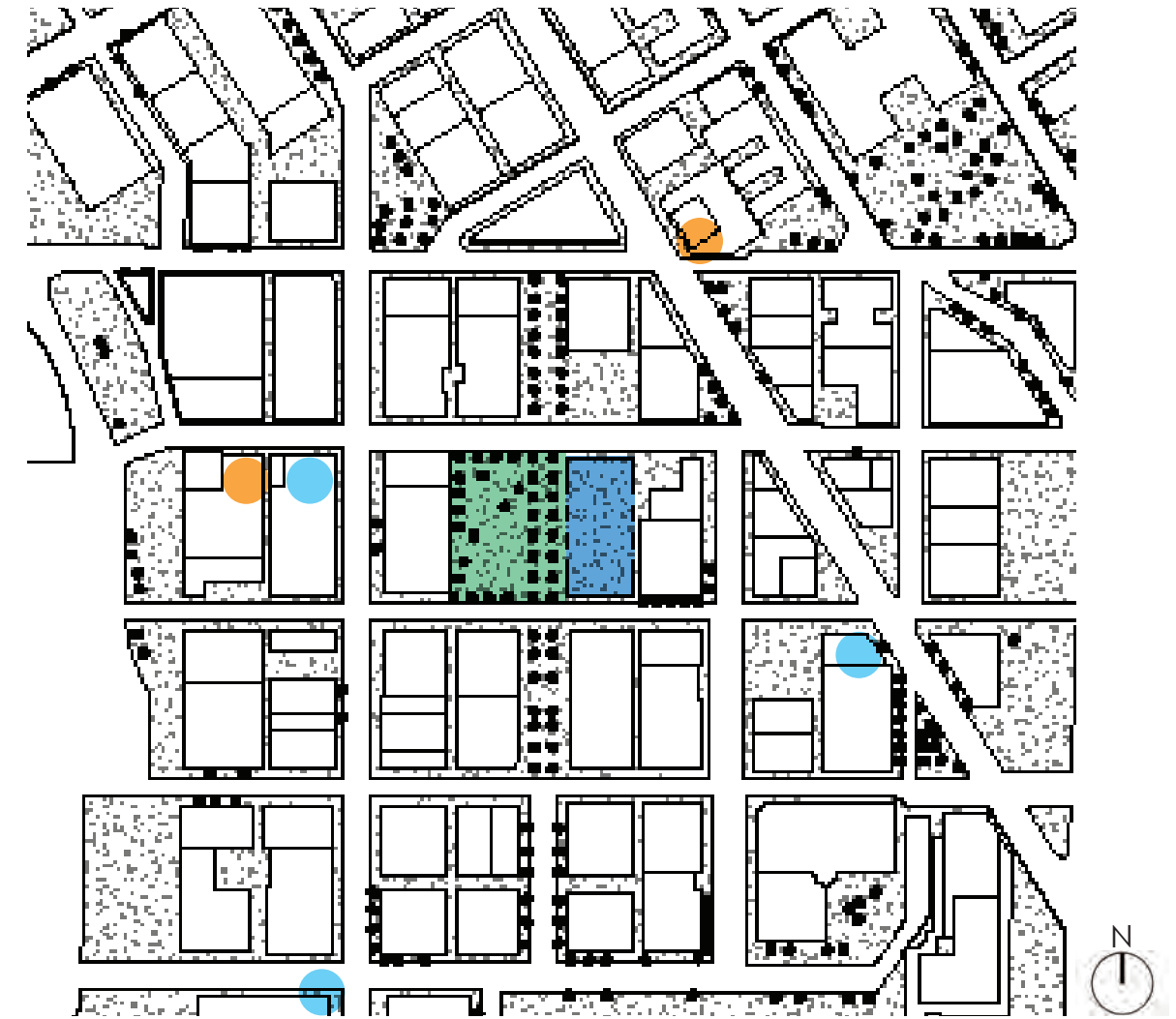
# SITE ANALYTICAL DIAGRAMS

## GENERAL SITE CONTEXT



# SITE ANALYTICAL DIAGRAMS

## LOCAL FITNESS





# SITE ANALYTICAL DIAGRAMS

## VEHICULAR TRAFFIC AND PARKING



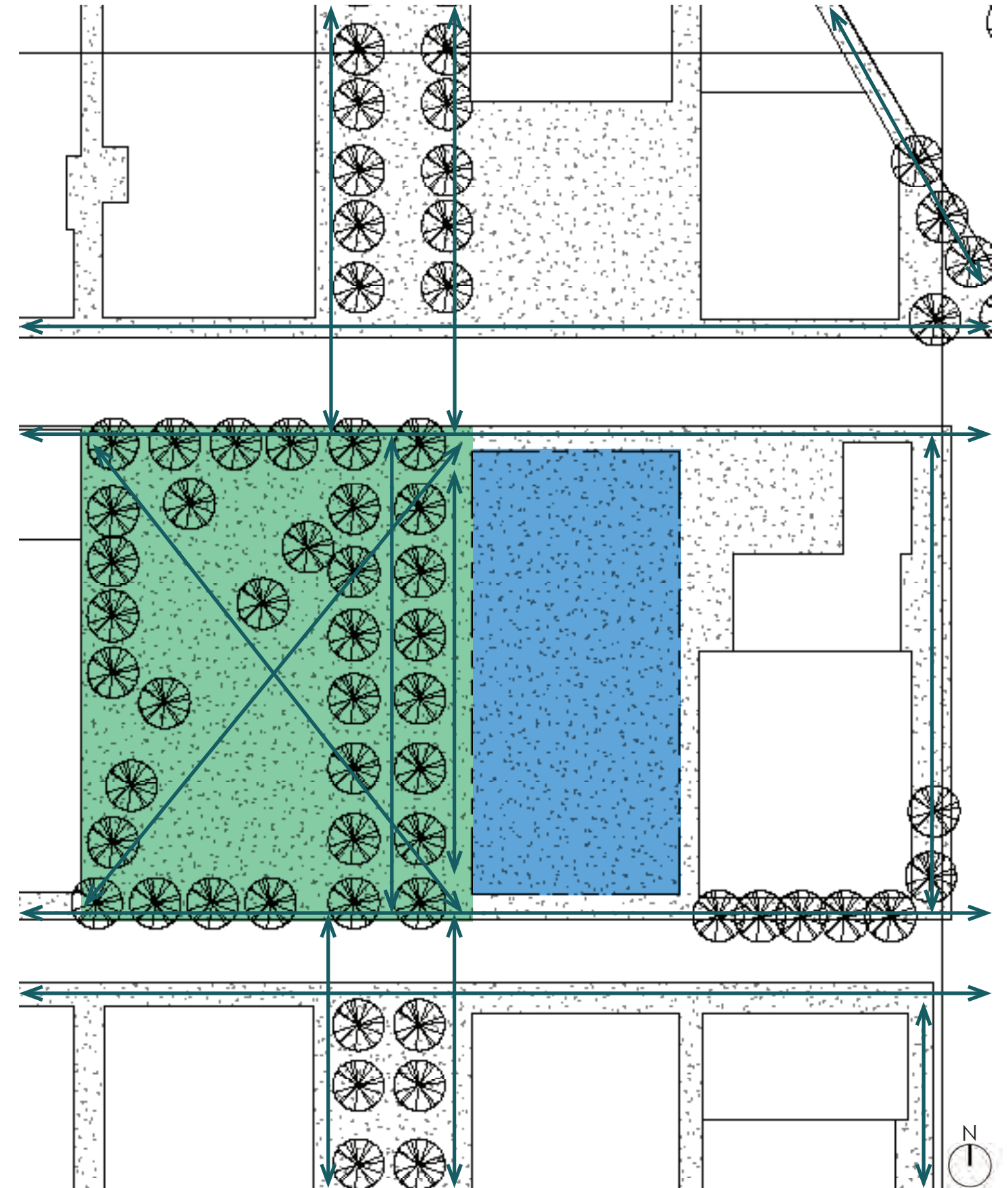
Parking Lot/Garage  
Street Parking



Secondary Traffic  
Major Traffic

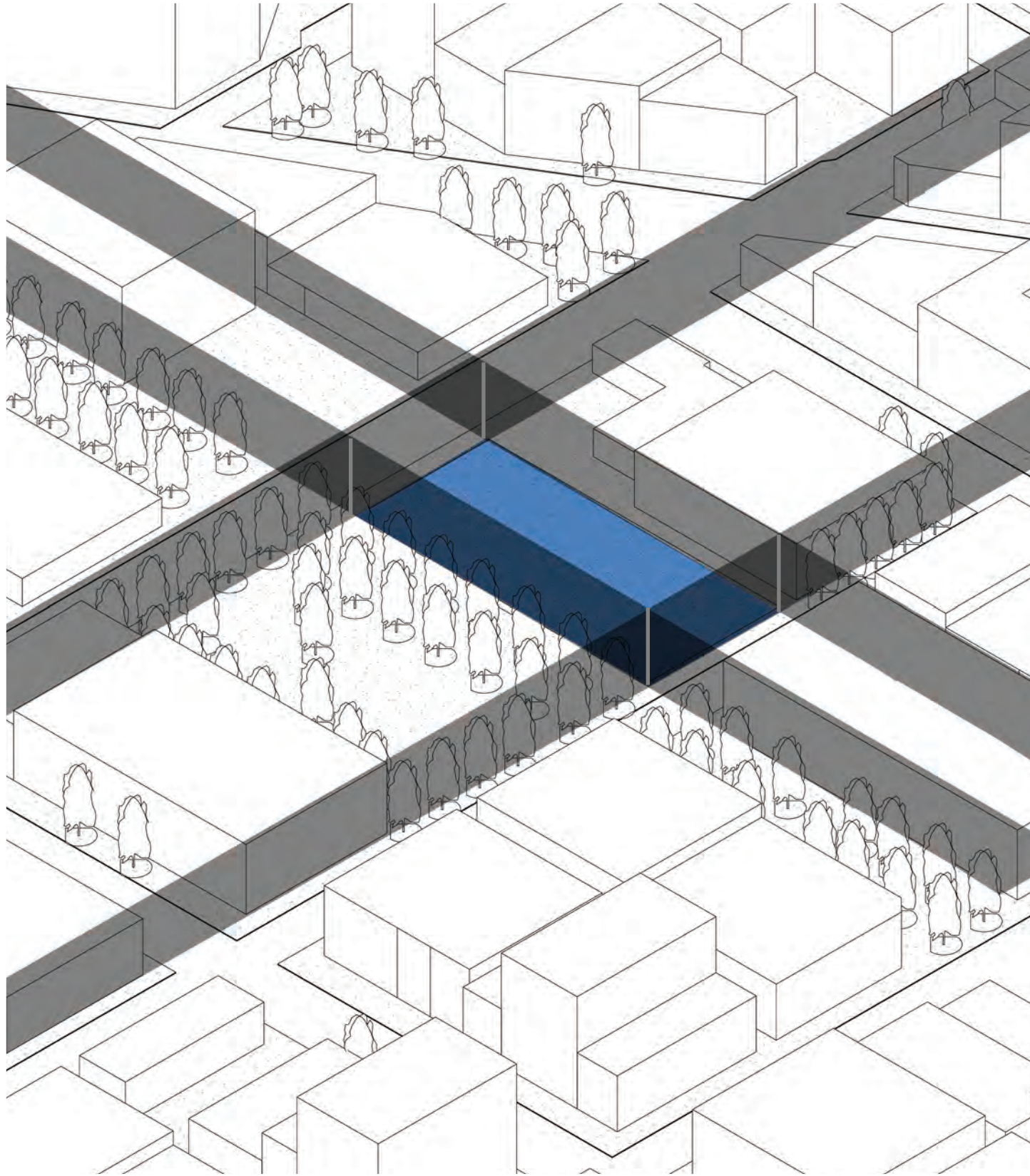
# SITE ANALYTICAL DIAGRAMS

## PEDESTRIAN TRAFFIC



# SITE ANALYTICAL DIAGRAMS

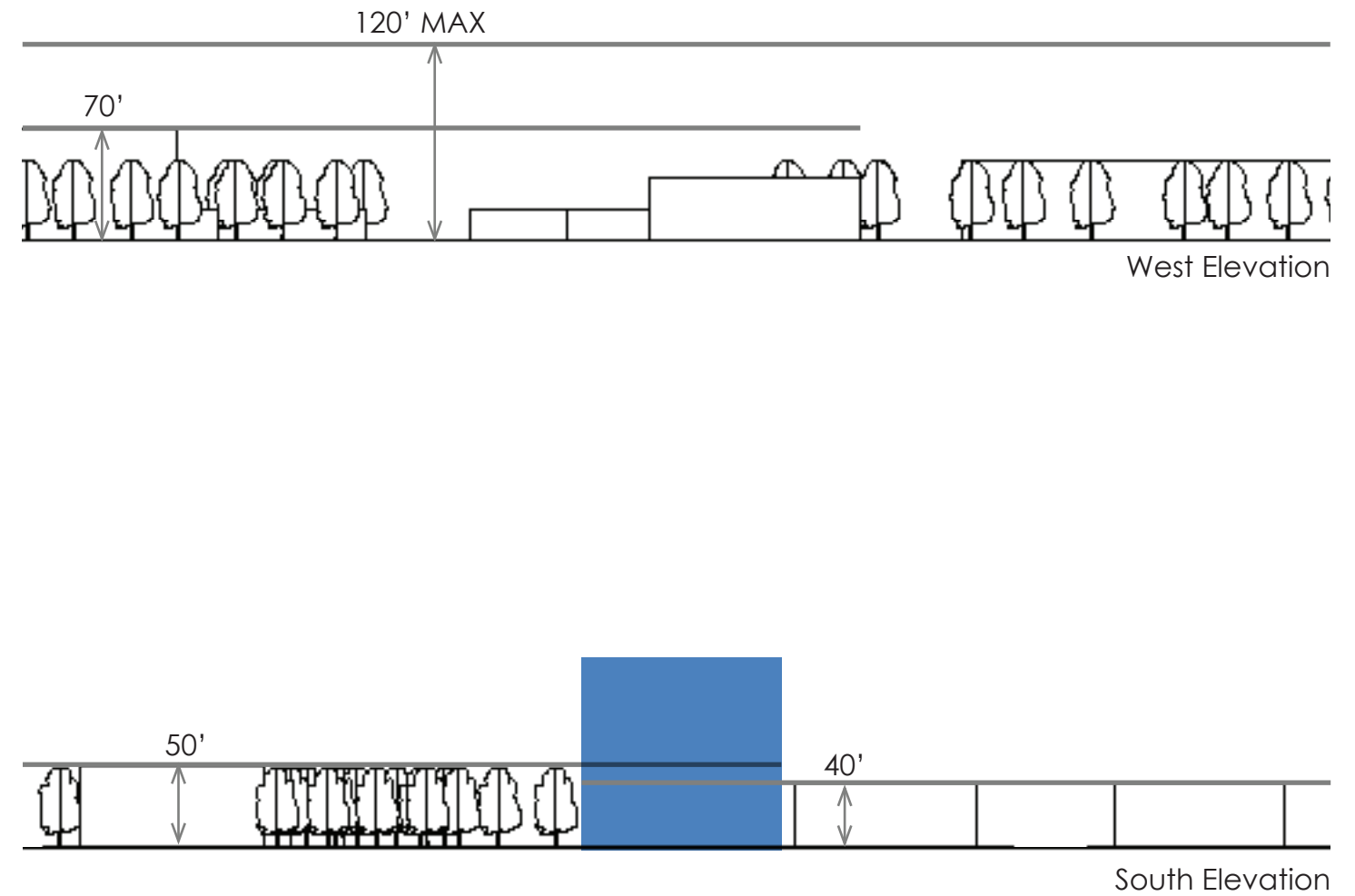
CODES/ZONING  
STREET FRONT



It is requested that all new development keep the current street edges. This will help make the street more lively and make the neighborhood more complete as a whole.

# SITE ANALYTICAL DIAGRAMS

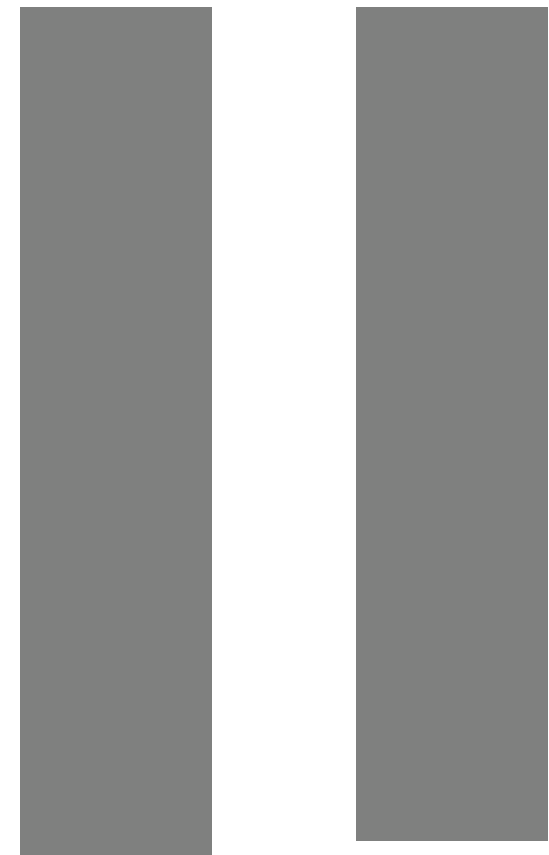
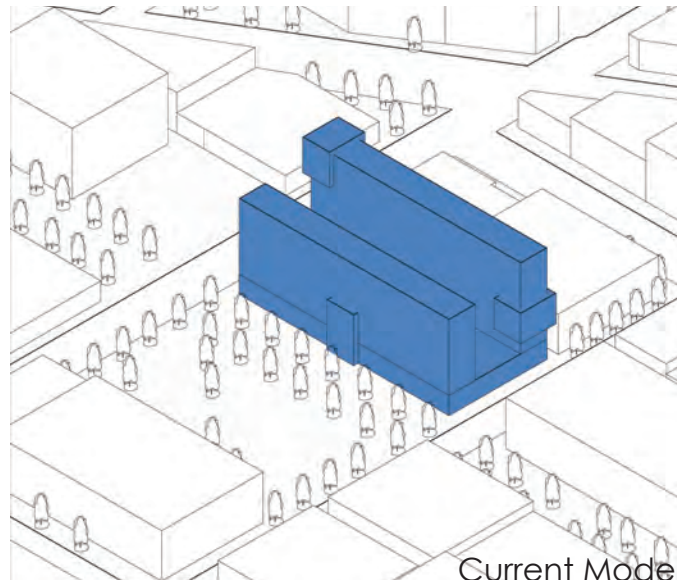
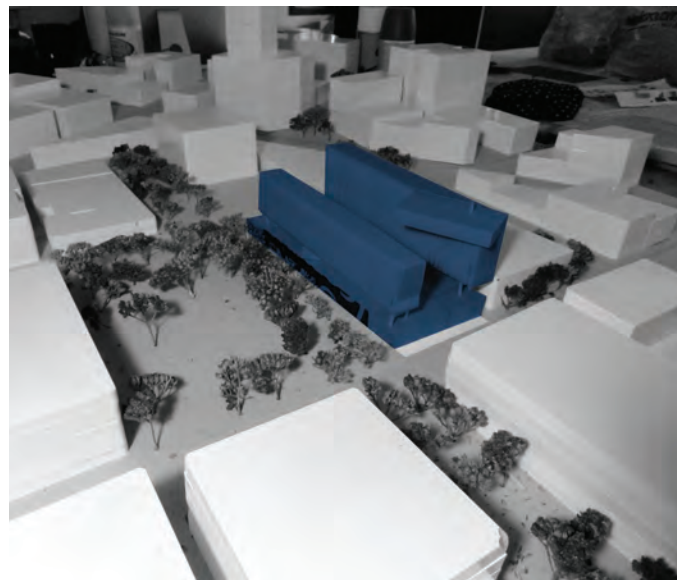
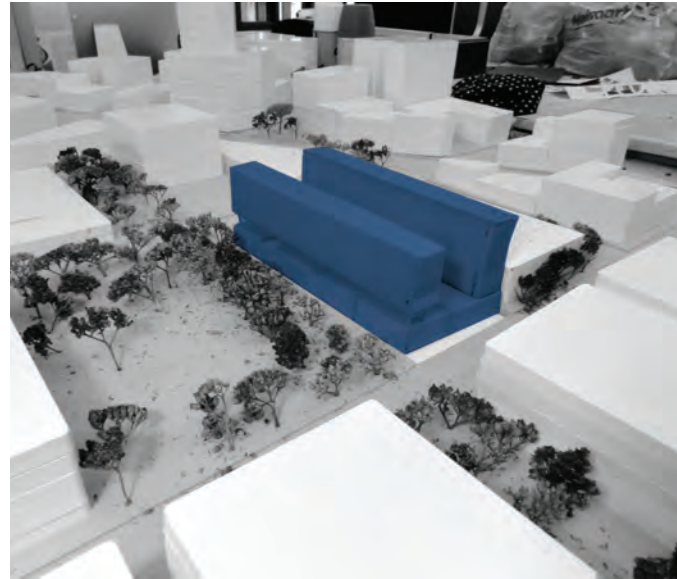
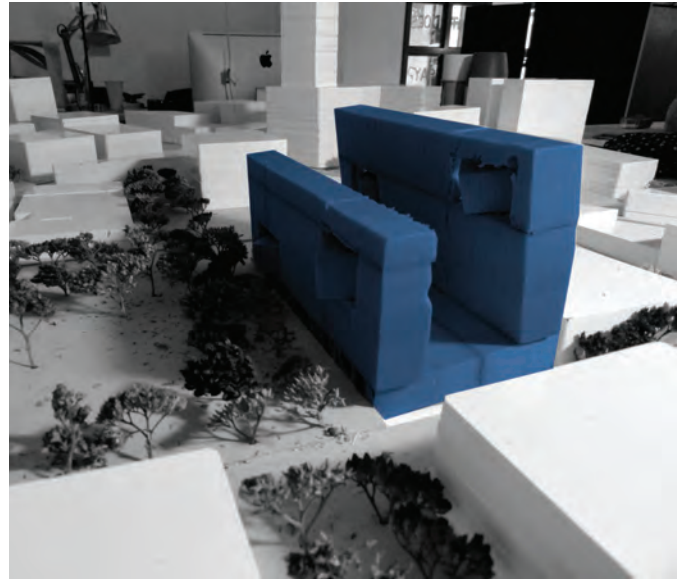
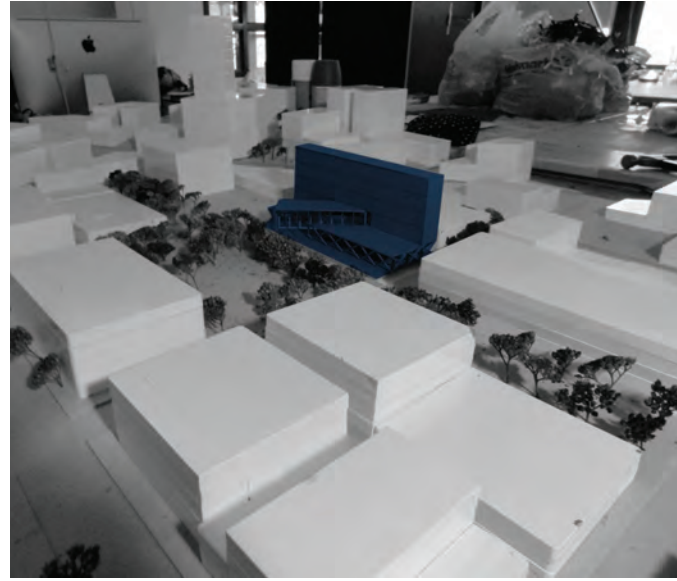
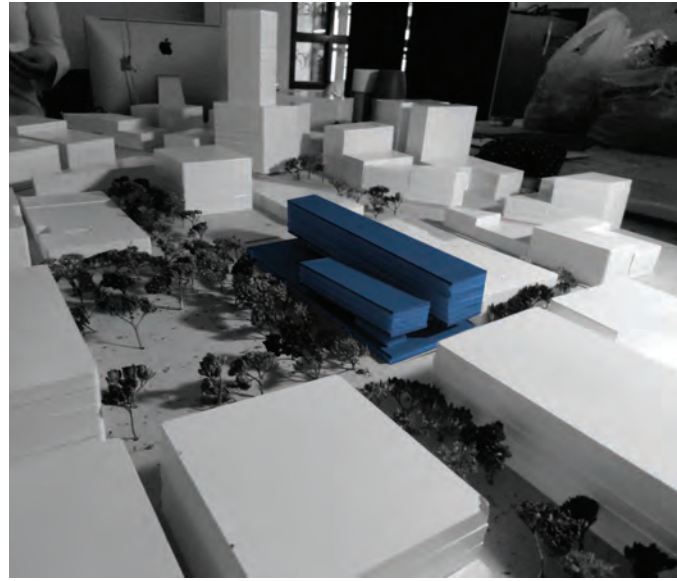
CODES/ZONING  
BUILDING HEIGHT





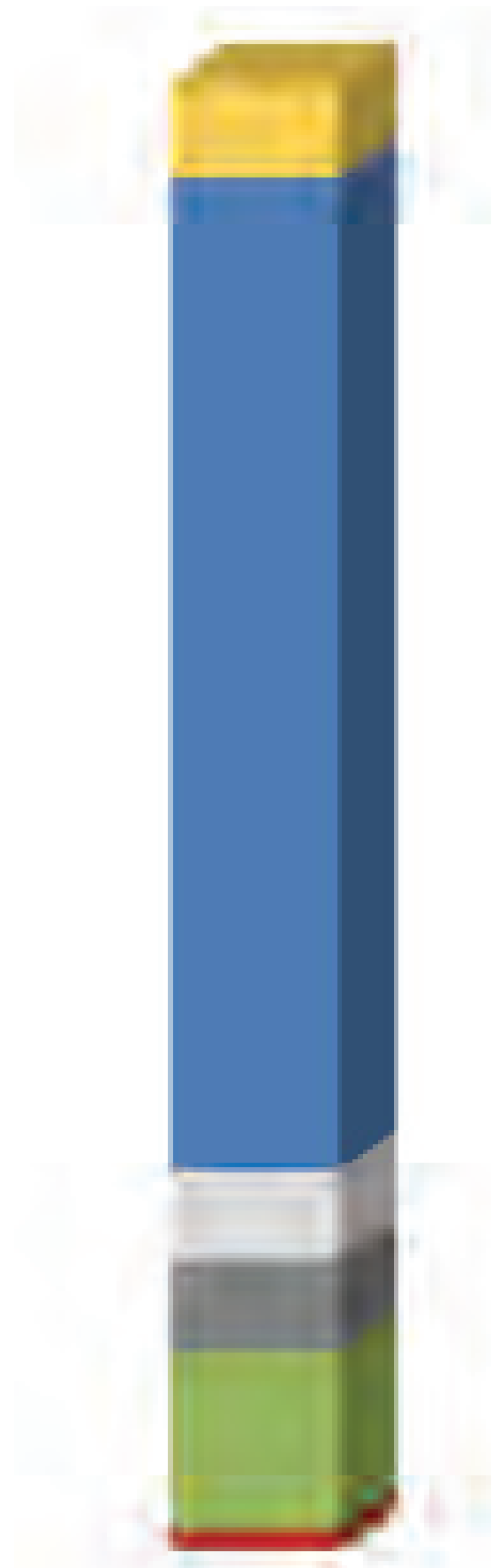
## BUILDING ANALYTICAL DIAGRAMS





# BUILDING DIAGRAMS

PROGRAM



<b>Circulation</b>	
10% Total Area	4400
<b>Apartments(47088 SF)</b>	
<b>2 Bedroom Apartment</b>	1368 SF
Bedroom	150 SF
Bath	50 SF
Kitchen	150 SF
Dining	75 SF
Living Rooms	260 SF
<b>3 Bedroom Apartment</b>	1800 SF
Bedroom	150 SF
Bath	50 SF
Kitchen	150 SF
Dining	75 SF
Living Rooms	260 SF
Entrance	
Lobby	500 SF
Manager's Office	120 SF
Office	120 SF
Storage	450 SF
<b>Fitness</b>	
Locker Rooms {men and women}	60SF Each
Pool	1200 SF
3 Studios	1200 SF Each
Storage	450 SF
<b>Bike Shop (4250)</b>	
General Sales Area	2000 SF
Check Out Area	
Main Entry	
Main Office	120 SF
Storage	450 SF
Hot Shop	600 SF
Cold Shop	400 SF
Men and Women's Bathroom	40 SF Each
Main Office	150 SF

# BUILDING DIAGRAMS

PROGRAM

<b>Sporting Goods Store (4250)</b>	
General Sales Area	2000 SF
Check Out Area	
Main Entry	
Main Office	120 SF
Storage	450 SF
Hot Shop	400 SF
Cold Shop	400 SF
Men and Women's Bathroom	40 SF Each
Main Office	150 SF
<b>Urban Market(10,000SF)</b>	
General Sales Area	3300 SF
Upright coolers 2/ rear access	20 linear feet
Upright coolers , open access	15 linear feet
upright freezers w/ rear access	30 linear feet
Check Out Area	
Main Entry	
Produce Area	1200 SF
Deli	900 SF
Baked Goods	600 SF
<b>Support Program (500 SF)</b>	
Staff Room	140 SF
Bathrooms	240 SF
Stock Room	
Stock Area	1600 SF
Loading Area and Loading Dock	400 SF
<b>Parking</b>	
Apartments	38
Bike Shop	9
Sporting Goods Store	9
Market	20
<b>Total</b>	<b>76</b>



# BUILDING ANALYTICAL DIAGRAMS

## EXPLANATION OF SPACES



- Parking**  
 Because of its size, according to city code the building would be required to house 76 parking stalls. However because it is focused on physical activity instead of a parking lot for cars a garage for bicycles will be provided instead. There are housing models in Europe that use this same technique, and with a good public transportation section there is no need to own a car for every day life. Instead bicycling is a healthy activity for the individual and for the environment.



- Bike Shop**  
 Because the buildings will be hosting a parking garage for bikes, it is naturally fitting for it have a bike shop. Encouraging individuals throughout the city to use physical means of transportation vs automobiles. Also by having a bike shop available tenants who have issues with their current bicycle can have it repaired at the same store.



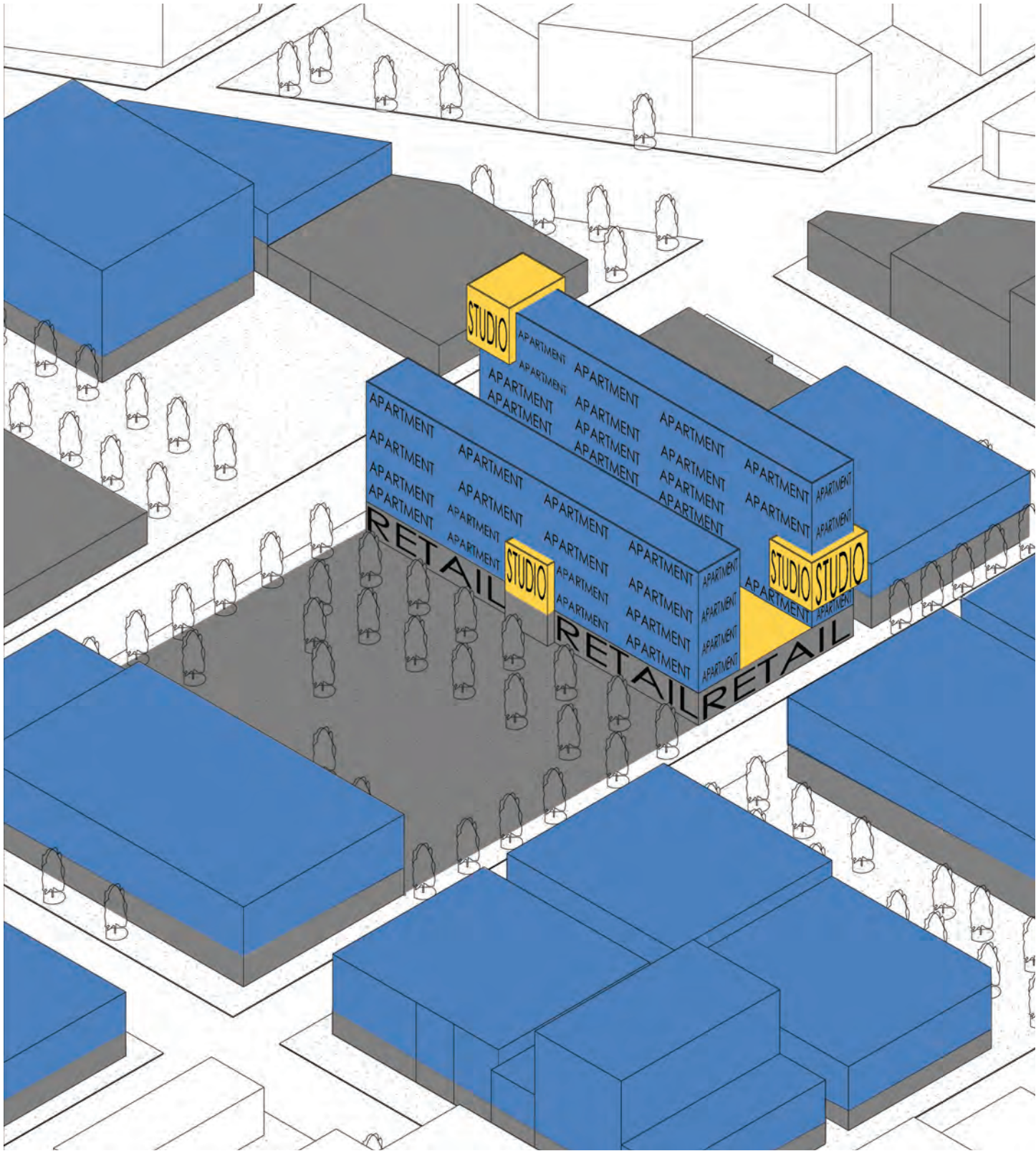
- Sporting Goods Store**  
 A sporting goods store would provide clothing and equipment for more athletic individuals. This would also help act as visual queue for others seeing how other individuals are being active and make a start for themselves to be healthier.



- Market**  
 The market is going to be the drawing factor for all individuals. Some people do not exercise, especially baby boomers who are less likely to exercise than others. This is an amenity that everyone uses. By having this in proximity to physical activity this can send a visual signal to others to be active by seeing the bicycle shop, the sporting goods, and the fitness studios thus encouraging the entire neighborhood to be more active.

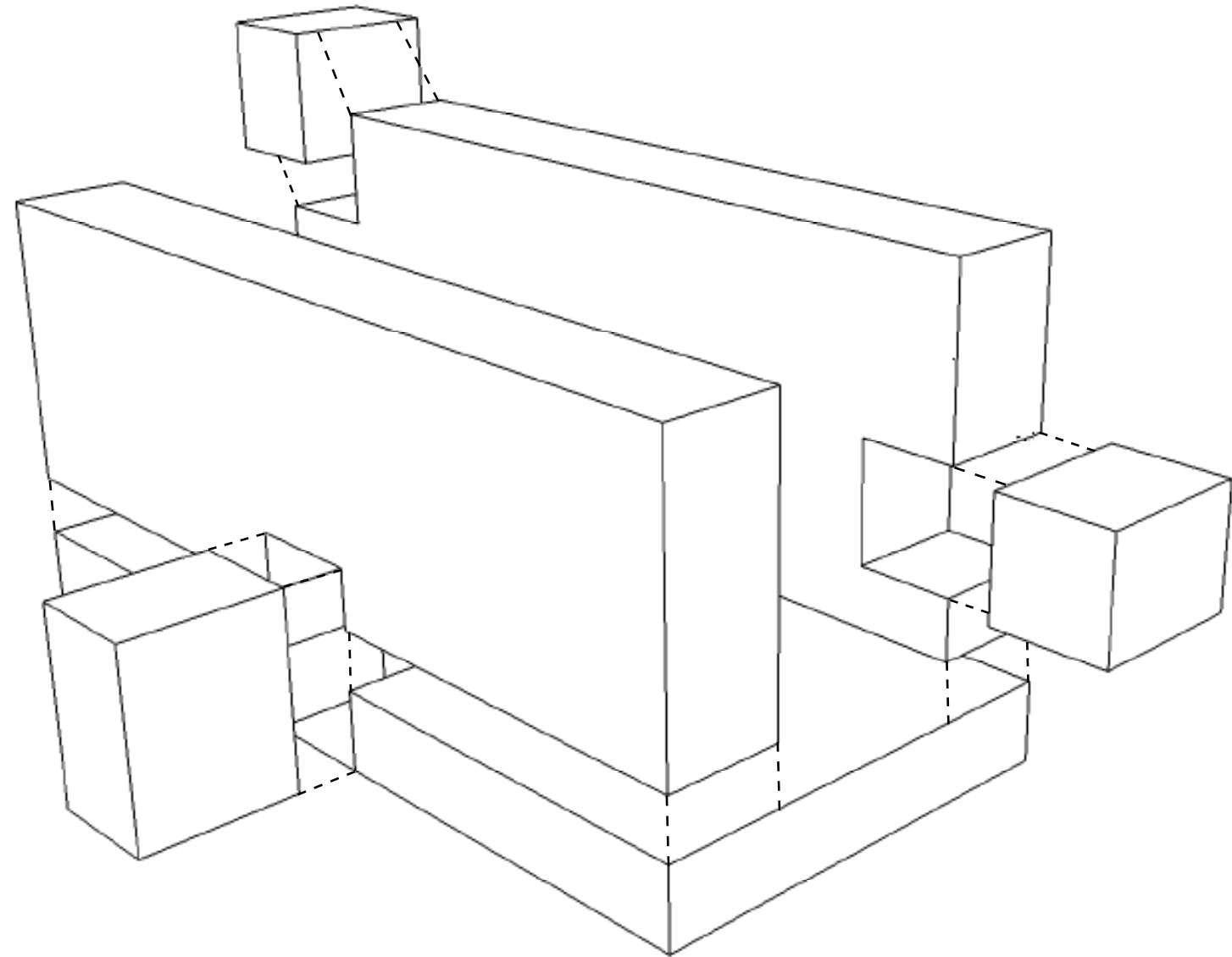
# BUILDING ANALYTICAL DIAGRAMS

## BUILDING ORGANIZATION

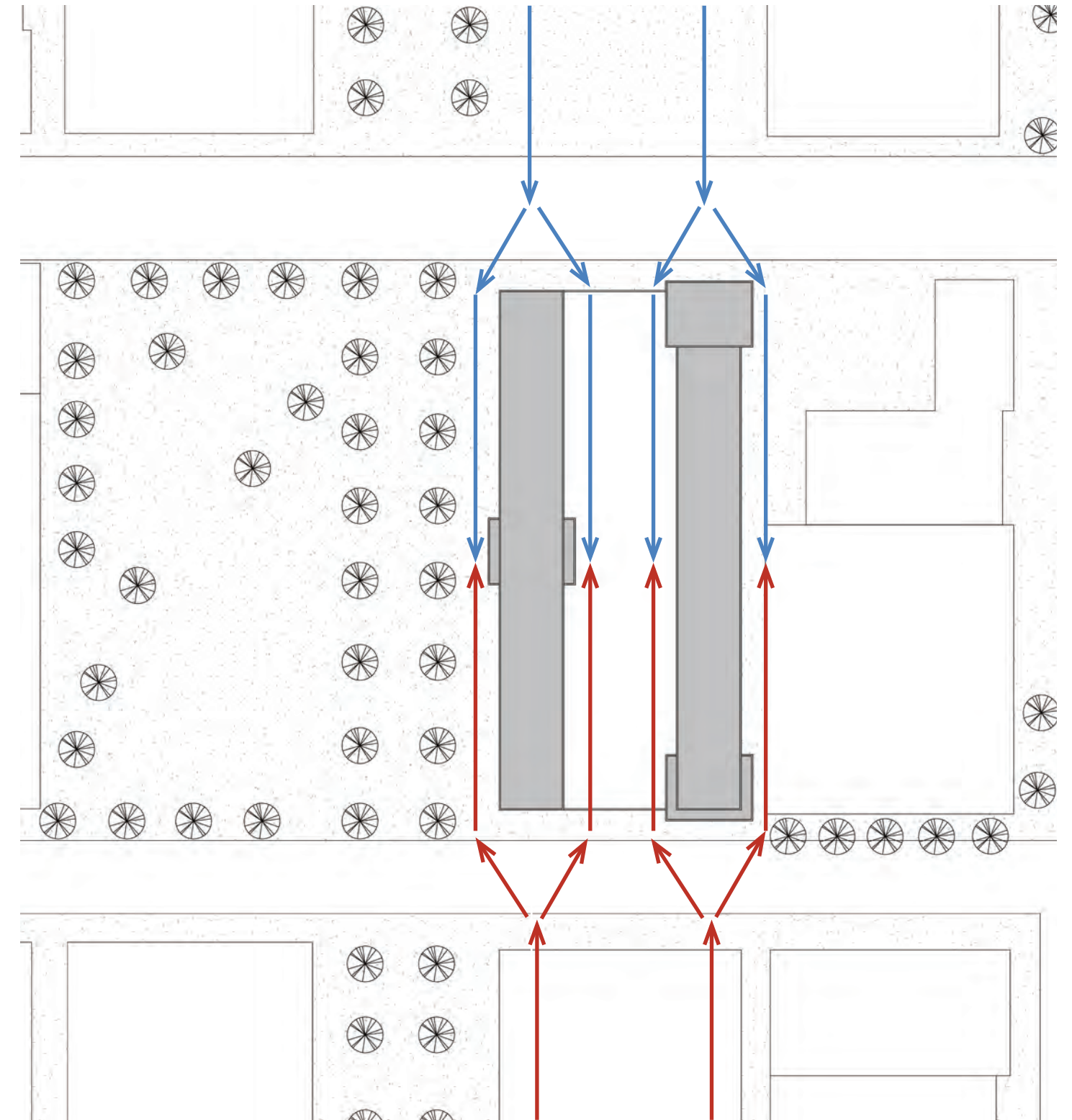


- Public
- Semi-Public
- Private





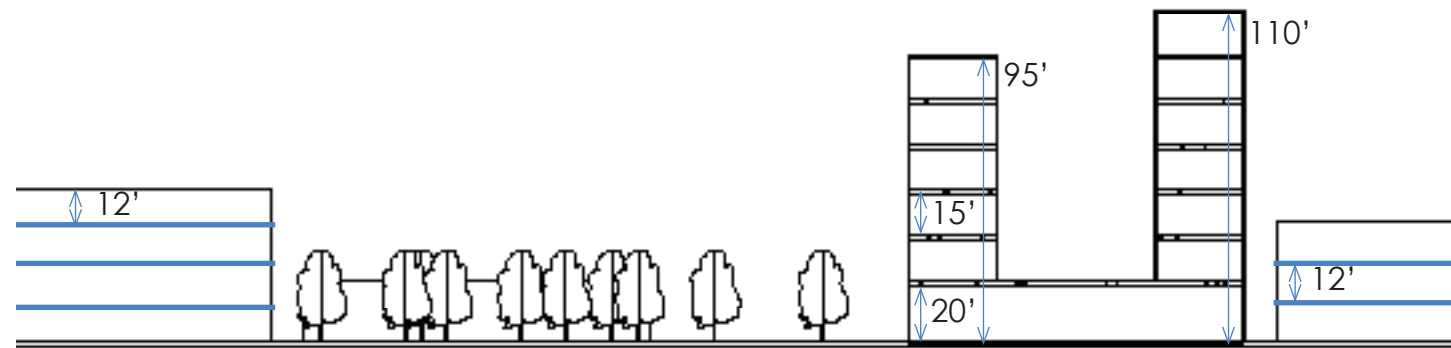
Separating the building elements results in greater distances needing to be traveled. By spreading a building over the site the amount of walking will be increased. Even mild increases in walking result in significant health improvement. (Zimring, 2005)



Warm winds tend to come from the south while cooler winds come from the north. By breaking the building into two parts this will allow all of the apartments to be naturally ventilated and help keep comfort temperatures more stable.

# BUILDING ANALYTICAL DIAGRAMS

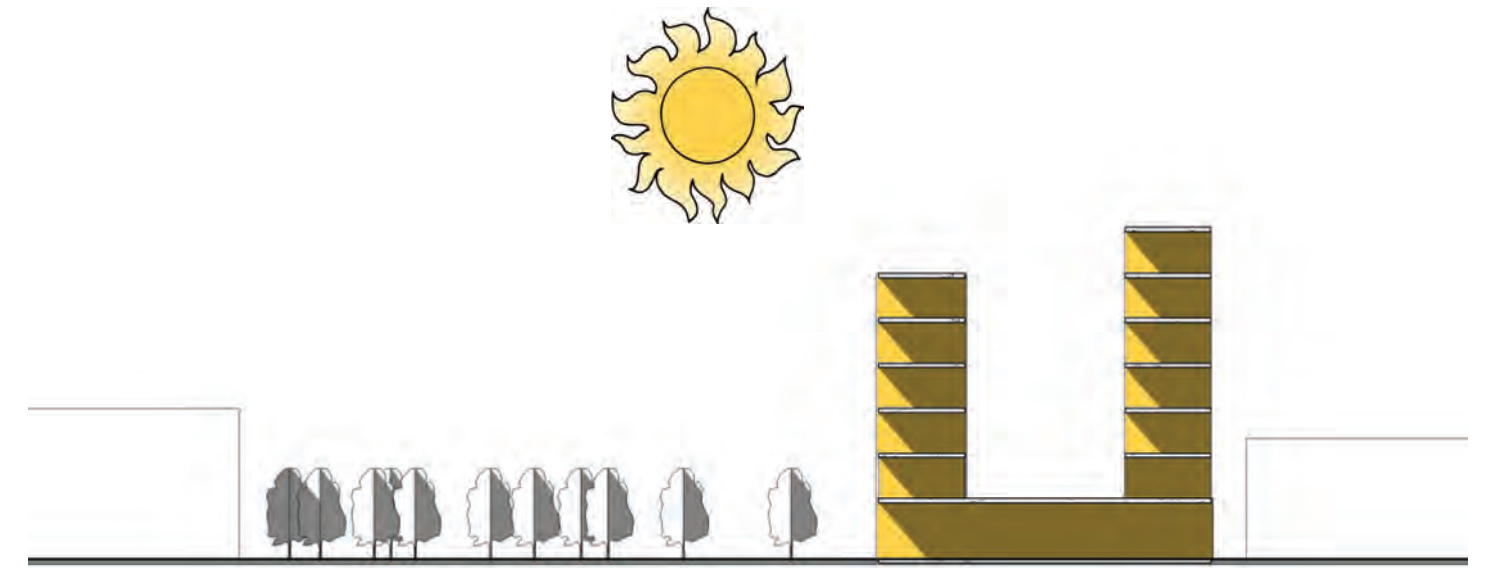
## BUILDING HEIGHT



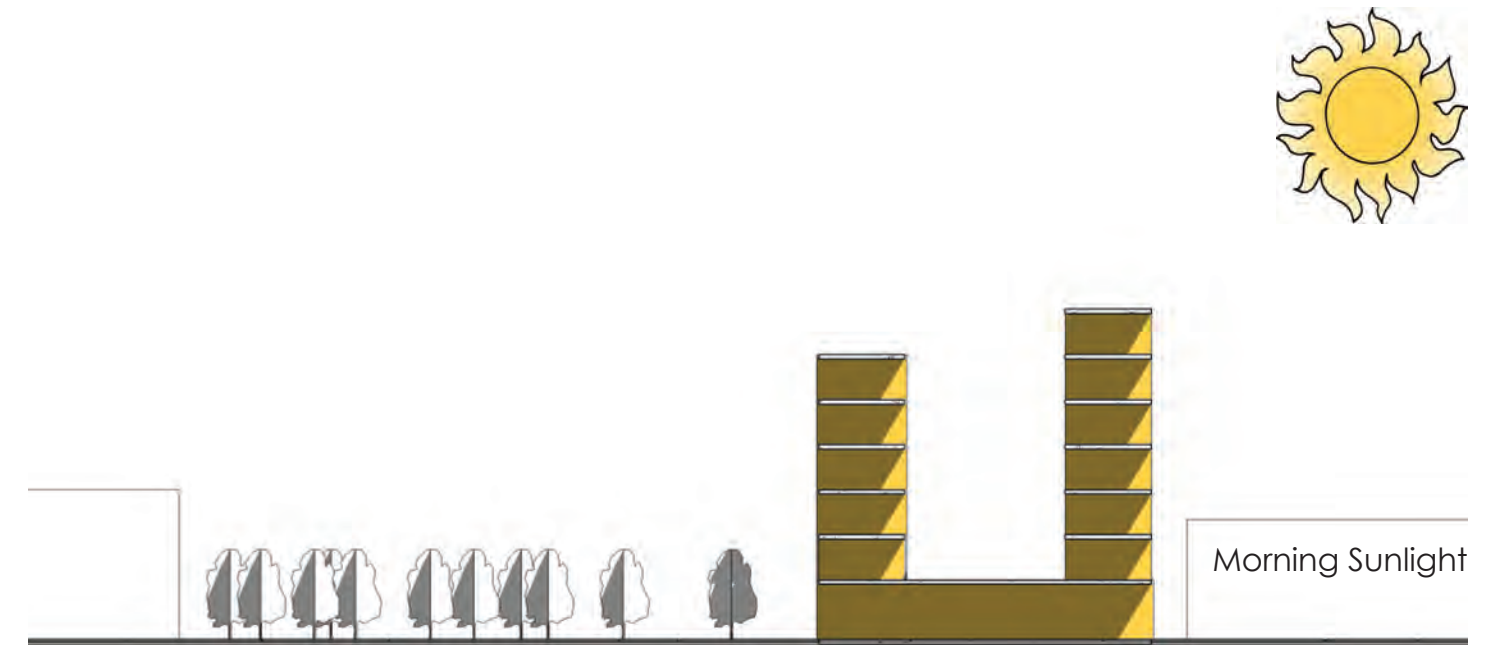
Looking at an intergenerational project in the Netherlands, Palladiumflat (image top) is a tall housing project in a sea of smaller buildings. This project will follow a similar pattern by having ceiling heights similar to the surrounding area but stack the units taller for ideal views and sunshine.

# BUILDING ANALYTICAL DIAGRAMS

## SUNLIGHT



Afternoon Sunlight



Morning Sunlight



Using Palladiumflat as inspiration, (image left) the current project will have two tall narrow towers. By being narrow more sunlight can enter throughout the day. Seattle gets about 58 full days of sunshine a year therefore this will make the units feel lighter and be more uplifting in a cloudy environment.



# BUILDING ANALYTICAL DIAGRAMS

## VIEWS



Spaces with a direct visual connection to the outdoors are more appealing and more likely to be utilized for physical activity than an interior room with no visual access to nature. By making the building taller, more ideal views will become available for each of the individual units and fitness studios. The studios each have a unique vista that is available for all the tenants to use.

# BUILDING ANALYTICAL DIAGRAMS

## GREEN SPACE

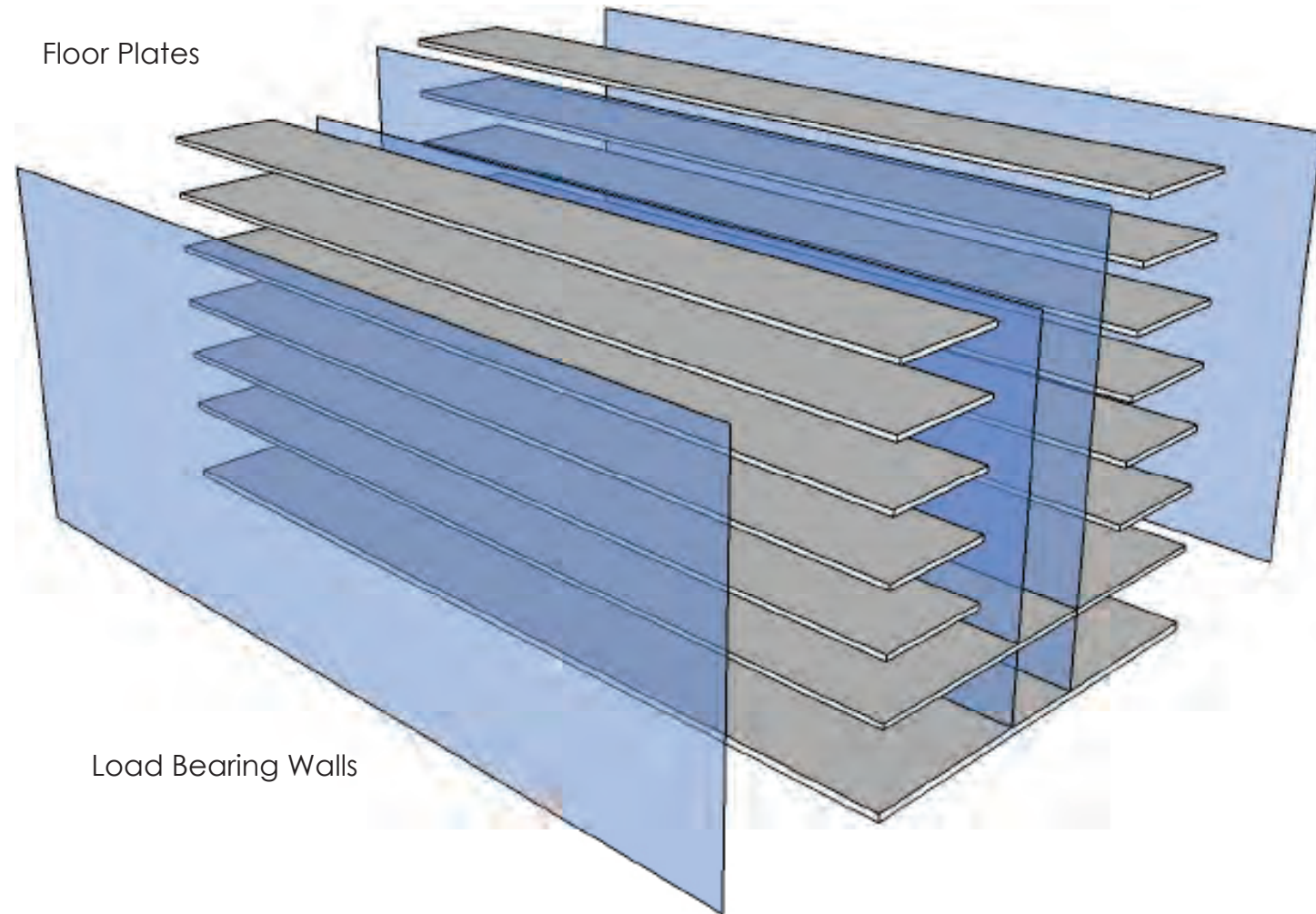


The images above show activities such as Tai Chi take place in a nature settings. While Seattle gets about 37 inches of rain a year it falls very slowly. Many Seattleites don't use umbrellas and find any opportunity they can to be outdoors. Occidental park will be a great amenity to the building for outdoor activities but the building will have a contrasting softscape green space in between the two apartment towers and on the roof that will be exclusive for the residences to do outdoor exercises in a more private setting.



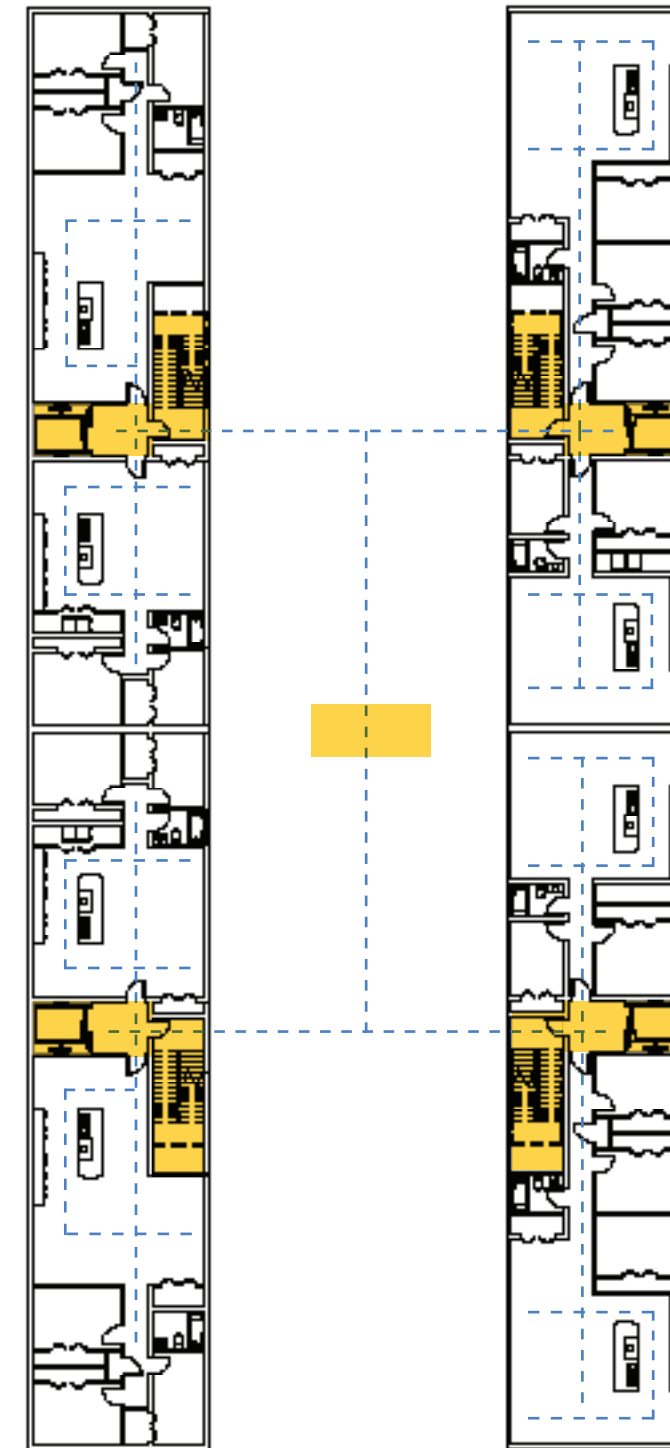
# BUILDING ANALYTICAL DIAGRAMS

## STRUCTURE

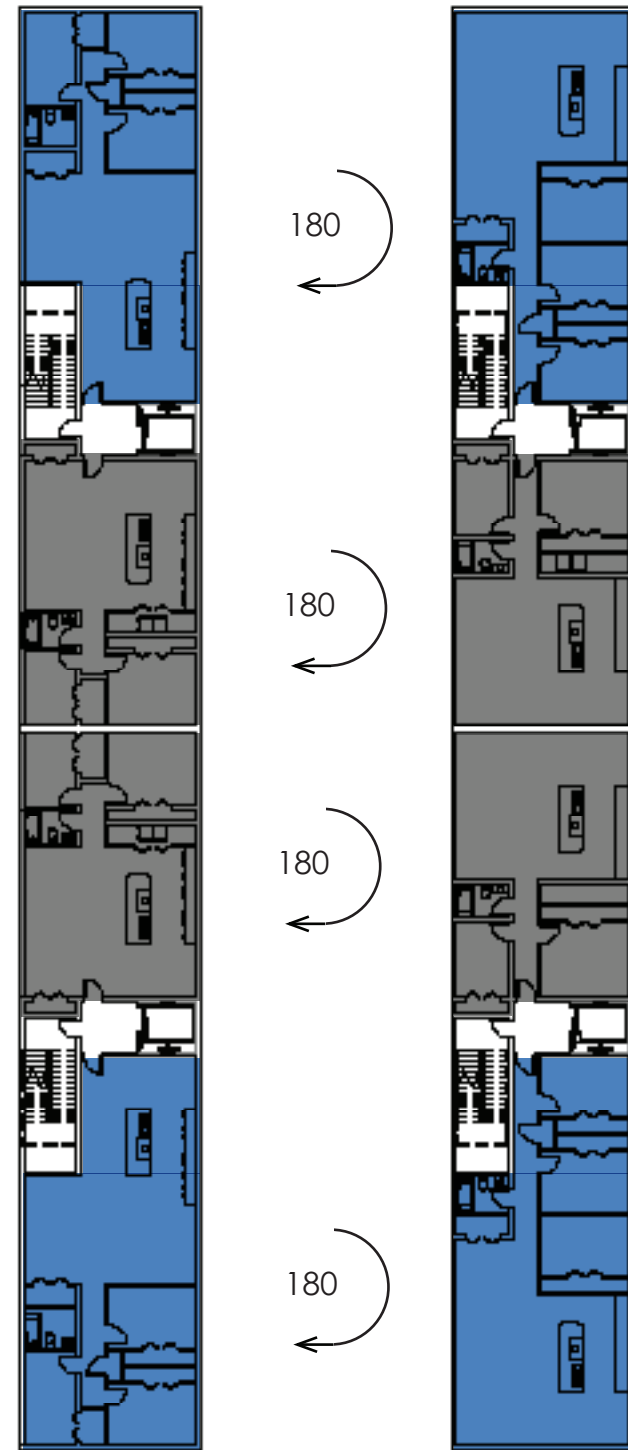


# BUILDING ANALYTICAL DIAGRAMS

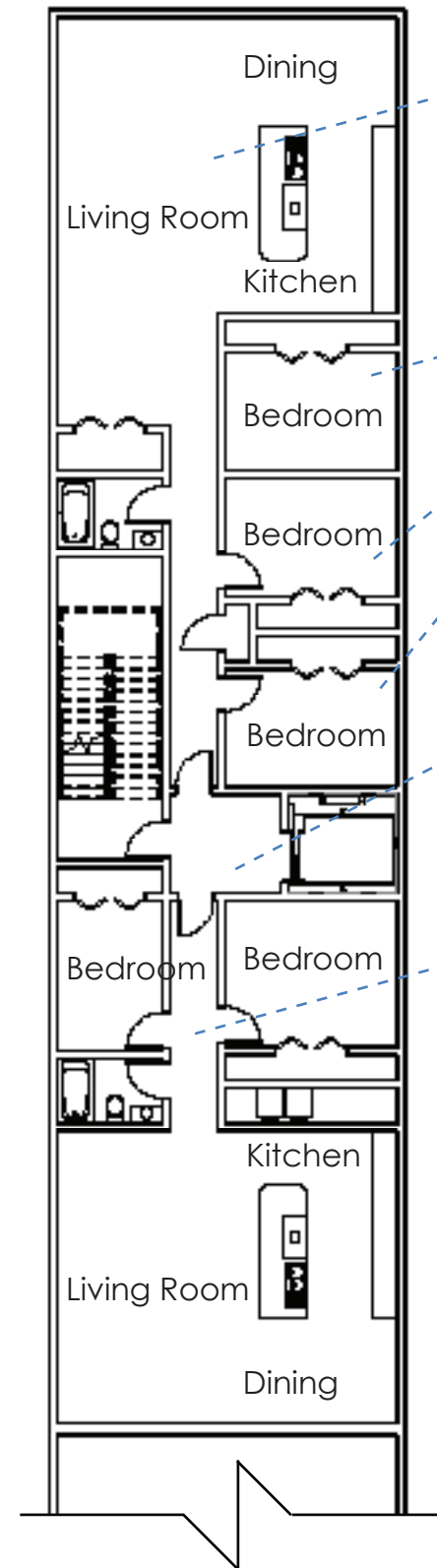
## APARTMENT CIRCULATION



Two apartments on each floor will share 1 stair corridor and will be linked to the other building for encouraged interaction among neighbors and a second means of egress. The horizontal circulation in the apartments is designed for a circular path within the home. This way the home acts as a track and provides more cardio endurance exercise.



Each floor in the apartment towers will be composed of four apartments. Two 2 bedroom units and two 3 bedroom units. Each floor will switch between the two plans shown above. The apartments on each floor will rotate 180 degrees on each floor. This will give the facade more character and provide more privacy between neighbors in the towers.



- **Unobstructed Design**  
The narrow design allows no columns in the space allowing more room for movement and allowing those who may have a wheel chair to move more freely. This also provides more space for home activities.
- **2 and 3 Bedroom Units**  
The two and three bedroom units are well fit for a variety of users. A single individual who wishes to have an extra bedroom for guests, a married couple who wants a bedroom or an office space. These spaces could even be transformed into another bedroom for a growing family.
- **Single Floor**  
Making each of the apartments 1 floor is an attractive quality for families with small children, handicapped persons, and individuals with limited mobility. Thus drawing a wider audience to the complex.
- **Wide Corridors**  
The wide corridors allow freedom of movement for moving furniture, allowing young toddlers to walk with their wide walkers or even the elderly if they too have a walker or a wheelchair.



## SYNTHESIS

# SYNTHESIS

## SUMMARY

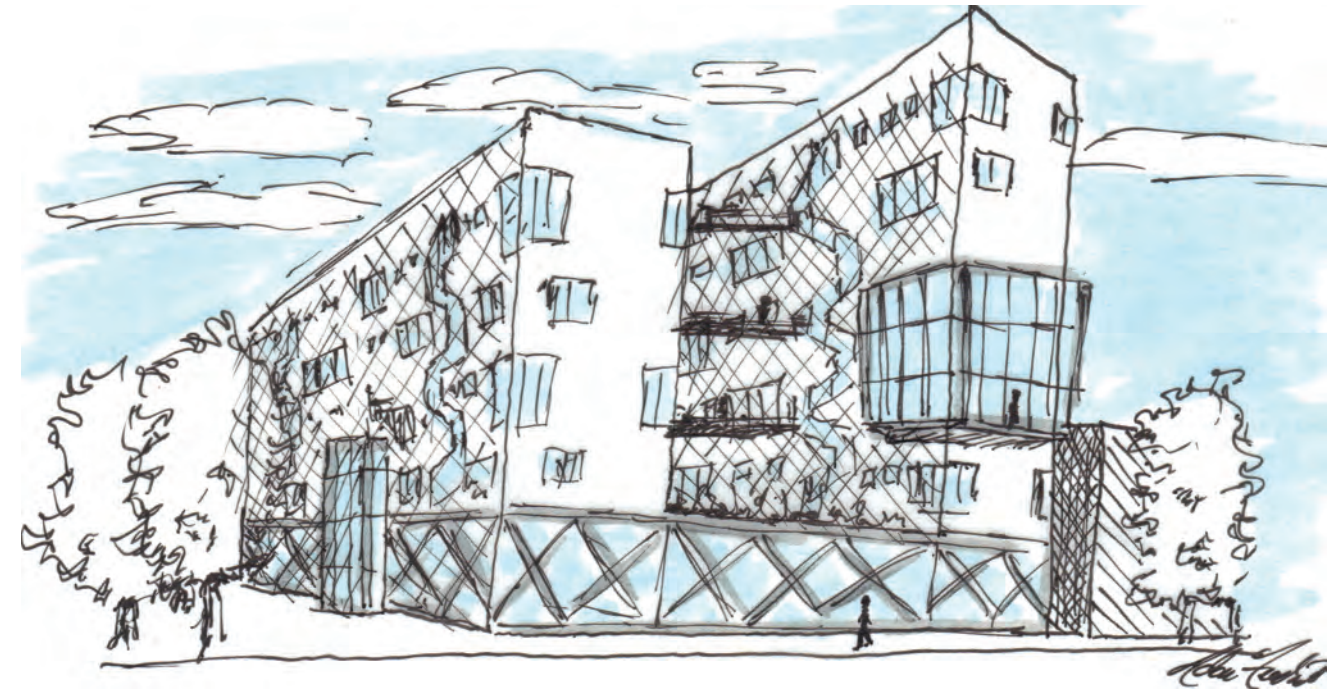
Individuals become less prone to physical and mental diseases when they become more physically active. There are plenty of gyms and fitness programs out there but obviously that isn't enough because so many are suffering from sedentary lifestyles. The goal of this study is to understand what types of 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. 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.

### HEALTH AND ILLNESS CONTINUUM



# SYNTHESIS

## VISION FOR PROPOSED DESIGN



Zimring, Craig, Anjali Joseph, Gayle L. Nicoll, Sharon Tsepas. Influences of Building Design and Site Design on Physical Activity. *American Journal of Preventive Medicine*. 2005. 186-192

"Panoramio - Photo Explorer." Panoramio - Photo Explorer. N.p., n.d. Web. 15 Sept. 2013.

"MISS-LIVING." MISS-LIVING. N.p., n.d. Web. 15 Sept. 2013.

Ed Peter Ebner. In *Detail: Housing for People of All Ages : Flexible, Unrestricted, Senior-friendly*. München: Edition DETAIL, Institut Für Internationale Architektur-Dokumentation GmbH, 2007. 26-31. Print.

(1) Hacker, Sony. "Modern Home Gym Design 2 Image." *Modern-home-gym-design 2 : Afandar*. Afandar.com, 23 June 2013. Web. 08 Nov. 2013.

Schittich, Christian, and Peter Ebner. In *Detail: Housing for People of All Ages : Flexible, Unrestricted, Senior-friendly*. München: Edition DETAIL, Institut Für Internationale Architektur-Dokumentation GmbH, 2007. 26-31. Print.

"Active Design - Department of Design and Construction." *Active Design - Department of Design and Construction*. City of New York, 2010. Web. 18 Dec. 2013.