

ABSTRACT

Title of Thesis: Physical Health and Architecture: Architecture as a Catalyst for Sustained Health

Name of degree candidate: James Wilson Norwood

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Thesis directed by: Brian Kelly, Associate Professor of Architecture, School of Architecture, Planning and Preservation

Obesity has quickly become the largest contributor to health issues in America. The issue facing society is not only how to combat and address the concerns of preventable chronic disease, but to also find ways to improve health for the individual and the collective. Through architecture, this thesis is intended to design a community health and physical wellness center that has a focus on sustaining improved health. By evaluating the spaces for physiological needs of eating and exercising along with education, this facility is intended to serve as a catalyst for fostering a system of evaluation to reflect an entire lifestyle condition and improve an understanding of health and wellness issues within the community. The program elements of eating, exercising and educating create the spaces that frame the program and the spaces between these functions are where the inadvertent experience with health and wellness takes place. Ultimately, this is a space of recovery and learning; recovering a healthy self-image and physical being through learning ways to sustain and maintain a healthy lifestyle and how to ultimately motivate people into engaging with the facility, whether actively or passively.

**PHYSICAL HEALTH AND ARCHITECTURE:
ARCHITECTURE AS A CATALYST FOR SUSTAINED HEALTH**

by

James Wilson Norwood

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Advisory Committee:

Associate Professor Brian Kelly, AIA, Chair
Assistant Professor Luis Diego Quiros,
Associate Professor Madlen Simon,

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Dedication

Throughout my education and life there have been many people along the way who have promoted my successes and pushed me to expand my knowledge. This thesis is dedicated to those people who have been there for me throughout my journey and have let me know that with hard work and determination there will always be answers to the questions at hand. My friends and family are the supportive structure who have helped my through my transformation from undergraduate through graduate school. Beyond this are the members of the faculty and my thesis committee who were able to see beyond the initial scope of this thesis and push through to the development of a thesis to encompass my goals and aspirations for how we can start to rethink how we inhabit and experience architecture.

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CHAPTER 1: INTRODUCTION

In America, obesity is the number one contributor toward lifestyle and chronic diseases reducing quality of life for millions. Presently, over thirty-four percent of Americans are considered overweight by the standards set forth by the Center for Disease Control. Unfortunately, no one contributing factor is to blame, yet this physical manifestation of a social condition has become out of control. Only recently research has shifted from the consideration of personal issues to the contributions that the built environment can have in impacting obesity.

While people are being constantly inundated with information about the liabilities of being overweight, very little in regards to architecture is being done to address these issues. As of now, the only way that many designs are dealing with the obesity epidemic is accommodating more bariatric sized chairs. Moreover, in the present “Biggest Loser” based sentiment, which derives from the reality television show that features participants being secluded in a fitness boot-camp that facilitates quick and extreme weight loss masks a disconnect between amazing results and a sustained lifestyle change. What this thesis will address is how architecture can be used to foster a sense of community, facilitate multiple modes of physical wellness, and educate people about healthy living beyond the temporality of fad dieting.

It is clear that the most effective path toward combating weight and health issues is through exercise, diet and becoming educated. These three components are major programmatic elements that are driving the architectural foundations on how a designed community center can bring people together with a common goal of on-going health and physical wellness. Exercise is perhaps the most easily understood component of the program that is the most effective way to maintain health; diet and education about health

and nutrition are more critical to the success of a program as these issues are what allow people to transcend weight-loss and contribute to a lifestyle change. The intention of the thesis is to investigate how these different fundamentals of health can be combined together architecturally to make an effective means of communicating and developing interrelationships.

Moreover, if obesity is a social construct that had been perpetuated by our current culture and environment, what can architecture and design do to facilitate change? In the early twentieth century, architects and designers were faced with the challenge of creating spaces to help end the spread of infectious diseases that were becoming a matter of the built environment. As obesity has become a greater concern in the health of society, architecture should respond to this concern by incorporating elements to facilitate healthier living. This thesis seeks to motivate individuals to actively move through buildings by designing compelling architectural components such as ramps, stairs and other circulation spaces.

What this thesis is not attempting to do is resolve all of the issues related to weight in America. The social construct that has resulted in the obesity epidemic transcends what an architectural thesis is capable of addressing. Ultimately if people do not see an issue in themselves or with their lifestyle no adaptations can be made. However, what can be determined, investigated, and tested are the ways that architecture and the built environment can begin to transform a community and create a space that contributes to the implementation and continuation of health and wellness programs ultimately improving quality of life. The intention of this architectural intervention is to establish a program of interrelated, community-minded activities that are housed in a

facility that activates the community and integrates into the existing infrastructure. The ultimate goal is to make a center for remediation to help benefit healthier communities. This thesis is going to explore going beyond what the building can do to delve into how this center for health can become a part of the connective tissue to foster a sense of health and community.

CHAPTER 2: ISSUE WITH OBESITY AND PHYSICAL WELLNESS IN AMERICA

In the past three centuries, the modern world has gone from a state of hunger and mal-nutrition to obesity and poor-nutrition. Prior to the 19th century and industrialization, the issue of weight and obesity were associated as symbols of affluence. In recent years, chronic diseases related to obesity including heart disease and obesity have become a greater problem in poorer populations. ¹ Socioeconomically, this transition becomes a reflection of how people in lower economic positions are now dealing with food and nutrition in different ways than previous generations. In America, physical inactivity and unhealthy eating habits are directly behind tobacco use as the leading causes of premature death. ²

¹ Barry M. Popkin, "The Emerging Obesity Epidemic: An Introduction," in *Geographies of Obesity: Environmental Understandings of the Obesity Epidemic*, ed. Jamie Pearce and Karen Witten, (Ashgate,

² Active Design Guidelines, 6

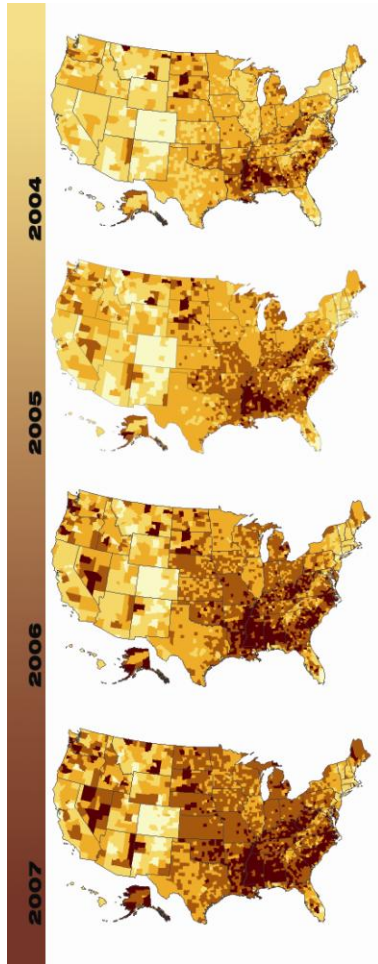


Figure 1: CDC Data on Increase in Obesity in America

What Causes Obesity:

The first main contributor to obesity is the food we consume. In a society with endless supply of fast food and premade meal options the act of cooking and preparing foods has become a somewhat lost notion. Even if individuals do have the intention of eating healthy and nutritious meals, both the time and access to health ingredients becomes an issue. Access to healthy, or perhaps more appropriate less unhealthy, food options is a contributor in the food individuals consume. “More than 23 million Americans, including 6.5 million children, live in low-income urban and rural neighborhoods that are more than a mile from a supermarket. These communities, where

access to affordable, quality, and nutritious foods is limited, are known as food deserts.”³

If people have limited availability of healthy food options or have to overexert themselves to reach products they are much less likely to make an effort.

While people may consider the United States to be the leading nation in percentage of population overweight, Figure 2 demonstrates that a number of different nations throughout the world are dealing with the same issues and percentages of the populations with a higher than average body mass. More importantly, there are several nations included in this listing that are not traditionally considered completely westernized in diet, which may indicate that there are factors that transcend what people may or may not be eating as it contributes to weight. With the perception that fast food and restaurants such as McDonald’s can be a leading cause of poor quality nutrition, Figure 2 illustrates the restaurants per capita of the top 40 nations with the most McDonald’s. Based upon the comparison of these two it is no surprise that the English speaking nations rank highly on both lists, however nations with a pattern of obesity such as Egypt and Samoa, have a very low percentage of McDonalds per capita. Through comparison, while there is some correlation between the access to unhealthy foods as represented by McDonalds, there seems to be additional factors that may be contributing to an increase in obesity in these countries that have more culturally traditional meals.

³ Healthy Communities: *Let’s Move Initiative*, <http://www.letsmove.gov/healthycommunity.php>

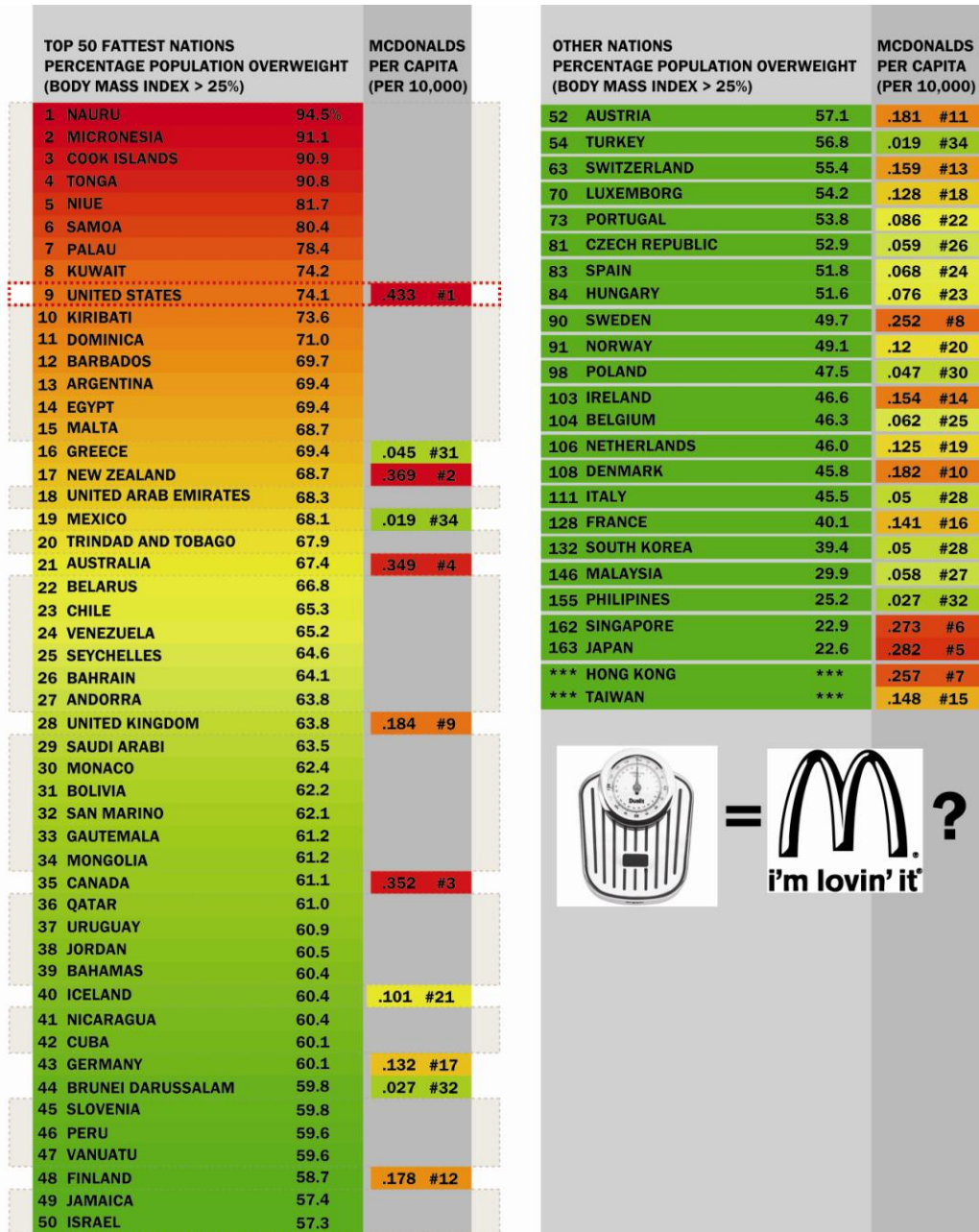


Figure 2: Nation Obesity Rates compared with McDonald's per Capita

One of the main concerns with issues related to food intake is that unlike other vices and addictions, food is a necessity to life. Eating is not the sole cause of obesity; the quantity and quality of food that is consumed mixed with activity levels all contribute to

the present state of weight. “All the energy needed for growth and repair of the body, for muscular activity of all kinds... comes from the metabolism of carbohydrate, fat, protein and alcohol”.⁴ The human intake of food is controlled for the most part through our appetites that are controlled by neurological response. People have a skewed perception of satiation and tend to eat more than they need to maintain and survive. However the amount of calories and energy dense foods needed for sedentary, overweight individuals is actually less than that for a person of average weight as they have more fat to regulate the bodies’ inner temperature.

The second contributor to obesity is lack of exercise. Presently more than sixty (60) percent of adults do not engage in the recommended amount of physical activity.⁵ Moreover, “One-in-four respondents are currently dieting and roughly half (52%) say they have dieted at some point in their lives.”⁶ From this data it is clear that although people may have an intention to improve their physical state through both diet and exercise, they are not necessarily capable of keeping their weight regulated.

Impact of Obesity to Quality of Life

In the United States, people are becoming more and more aware of the dangers and health concerns related to weight and obesity. Of the top ten causes of death in the United States, five (5) of these hold a major contribution from chronic diseases related to weight and obesity.

⁴ Gerald Wiseman, *Nutrition and Health*, (London, Taylor and Francis, 2002), 1.

⁵ “A Report of the Surgeon General: Physical Activity and Health”

⁶ “Americans See Weight Problems Everywhere But in the Mirror,” in *Pew Research Center: A Social Trends Report*, April 2006; 6

MAJOR CAUSE OF DEATH IN THE UNITED STATES (2006 CDC)		
All Deaths	2,425,901	100.00%
Heart Disease	629,191	25.94%
Cancer	560,102	23.09%
Stroke	137,265	5.66%
Chronic Lower Respiratory Disease	124,614	5.14%
Accidents	117,748	4.85%
Alzheimers	72,914	3.01%
Diabetes	72,507	2.99%
Flu and Pneumonia	56,247	2.32%
Nephrotic Syndrome	44,791	1.85%
Septecemia	34,031	1.40%
All other Deaths	576,491	23.76%

Figure 3: Major Causes of Death in the United States

Chronic diseases, or diseases that are a result of issues related to weight and a persons' own actions have a major impact on life expectancy and quality of life in America. The impact that weight has on the individual and society has not gone unnoticed; according to a recent study, people perceive that Americans are getting fatter. In comparing the data of the Pew Study against the statistics from the National Center for Health Statistics, individuals perceive that more people are overweight than actually are. However, while people may perceive that society as a whole is more overweight than it actually is, they are not able to recognize the same issues of weight and obesity within themselves or in the company that they keep; self-awareness of weight is very different from how America as a whole is seen. This data shows that people are less willing to admit and understand that they themselves have issues related to being overweight. The inability or a person to recognize that he or she is overweight is a part of present-culture that needs to be considered in order to reach the number of people who need to be educated about healthy weights.



Figure 4: BMI Weight Statistics

Once a person has crossed a threshold initially, a significant barrier has been crossed. However, with regards to exercise and wellness, this is an important decision, but according to a study by the United States Department of Health and Human Services, nearly half of the people who enroll in an exercise program drop out within the first 6 months. People “who successfully overcome the hurdles to starting an exercise program may later ‘relapse’ back to a sedentary living.”⁷ While ‘relapse’ is common, as a long term study of San Diego residents indicated that 41% of the population surveyed indicate a frequent break from exercise for at least three months, the issue should be addressed to prevent individuals from breaking continuity. The motivation to begin a healthy lifestyle must also translate to the motivation to continue and sustain a commitment.

Some of the importance of having individuals cross the threshold of wellness is to promote activity as an asset to an improved quality of life. Most Americans understand what defines the stereotypical notion of exercise where either on runs, jogs or lifts weights. In recent year’s part of the efforts to improve health and physical activity have

⁷ Mary McElroy, *Resistance to Exercise: A Social Analysis of Inactivity*, Human Kinetics, Champaign; 20.

incorporated other daily routines and unique programs to break the monotony of exercise. Through a study by the American Heart Association, it was found that non-exercise activity thermo genesis (NEAT) is the way that the human body is able to continue burning energy when not exerting excessive physical activity. To emphasize the importance of calorie intake and expenditure the study looked at occupational and leisure time NEAT and found that the average sedentary office worker needs to expend at least 1200kcal per day to improve and maintain their quality of health.⁸ By looking at the traditional and non-traditional ways that an individual can burn excess calories, Figure 5 illustrates how both an average and ideal male or female can burn calories doing both traditional exercises and non-conventional everyday tasks that contribute to bettering health. It can be noted that the heavier a person is, the more benefit comes from physical activity in calories burned.

⁸ James A Levin, "Non-Exercise Activity Thermogenesis: The Crouching Tiger Hidden Dragon of Social Weight Gain," American Heart Association, Dallas, Texas, 2006, 4,5



Figure 5: Physical Activity and Calories Burned

Perhaps the greatest impact of obesity on humans is how being overweight contributes to other diseases and impacts the overall quality of life. With regards to chronic diseases, each of these is somewhat preventable. The increase in obesity rates has contributed to a drastic increase in Type II diabetes rates, and while this disease is somewhat treatable with diet and exercise, without proper access to information and treatment this condition becomes medicine dependant. In a research study from the World Cancer Research Foundation, there was a “significant correlation of obesity and body fatness to breast, colon, endometrial, gall bladder, kidney, esophageal and pancreatic cancers.”⁹ Simply stated, the more overweight a person is, the greater their chance of being diagnosed with additional diseases. As a study conducted on Harvard

⁹ Barry M. Popkin, “The Emerging Obesity Epidemic: An Introduction,” in *Geographies of Obesity: Environmental Understandings of the Obesity Epidemic*, ed. Jamie Pearce and Karen Witten, (Ashgate, Burlington, 2010): 24

Alumni concluded, “even if exercise does little to reduce deaths from causes other than heart disease, it has a wide range of other potential benefits, benefits that have more to do with the quality of life than its duration.”¹⁰ While this study was conducted in the 1980s, the information that was known about chronic disease at the time still supported the fact while exercise may reduce risk of death; the most important point is that quality of life lived is greater.

In addition to the physical health factors related to obesity are the psychological ramifications of weight. One reason that is prevalent for excessive eating is that food provides an immediate source of comfort. In lieu of looking for a more lasting solution to hunger or boredom, individuals seek to use a daily necessity as a crutch. Even the healthiest of food choices can become dangerous when not eaten in moderation. Overeaters Anonymous (OA) is a support group for individuals with weight issues. Operating on the same principles as programs such as alcoholics anonymous, OA is intended to help those with issues to find a support group and people with common interest and issues to themselves. These programs are “not just about weight loss, weight gain or maintenance, obesity or diets, but the OA program offers physical, emotional and spiritual recovery.”¹¹ This small community has grown drastically and includes nearly 6500 chapters in the United States. More importantly, there are seventeen weekly meetings in the Washington, D.C. city limits. For this organization, privacy is of the utmost concern as the entire system runs along the concept that what is said and stated within meetings is something that will remain within the group.

¹⁰ Louise B. Russell, *Is Prevention Better Than Cure?*, The Brookings Institution, Washington, D.C. 1986; 86

¹¹ *Overeaters Anonymous Website*

The Physical State

More importantly, the trend to a more overweight population is causing a shift in the matter of perception and how people experience space. As children, we use the scale of the human body as a way of understanding and creating a basis of sizes.¹² If the typical size and perception of adequate size is increasing, the waist-size of both Americans and people throughout the world is changing ratios and perception of human occupation of space. Figure 6 illustrates the size discrepancy between a person in the 5th percentile and the 95th percentile of height and weight for an average adult as was considered in 1986. Regrettably, these sizes have shifted toward an even larger version of the 95th percentile. As our concept of average weight and size changes, we must either revise the commonly understood versions of what are an adequate scale to the human figure or we must adapt the changing size of the human body to fit within the general framework of spatial configurations and requirements.

¹² Kent C. Bloomer and Charles W. Moore, *Body, Memory and Architecture*, (New Haven, Yale University Press, 1977), 1.

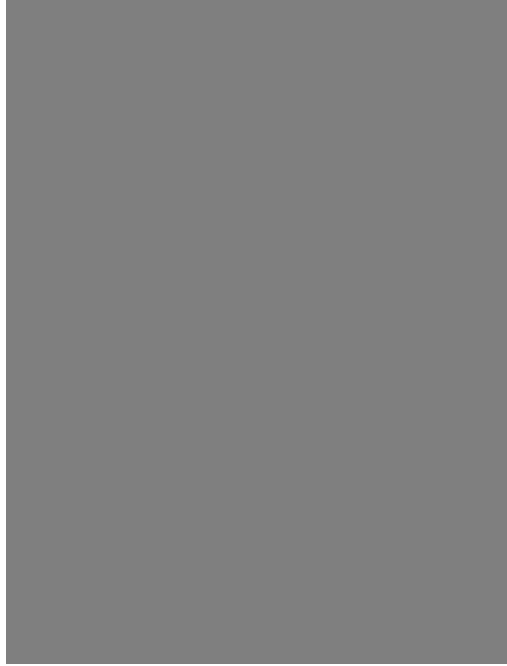


Figure 6: Proportions and relative sizes of the human in 5th and 95th percentile of weight (source *Body Space*)

Going an additional level into the shifting proportion of the human figure comes through the consideration of the ideal form. Leonardo deVinci illustrated the human figure based on the writings of Vitruvius as the main element of what we know about scale and proportion and a relationship to the human. This idealized form complicates an understanding of how this relates to an image of self in modern society. If the average person no longer can be defined by these elements of proportion as previously set forth, a new convention must then be developed or the average size needs to be re-evaluated. The statue of *The David* by Michelangelo is an additional example of the idealized form, but a graphic adaptation to this statue has been created by an unknown artist to illustrate what David would look like had he been born in the twentieth century. By comparing the sizes and proportions of the figures, there is a clear difference from the idealized figure to the overweight sculpture.

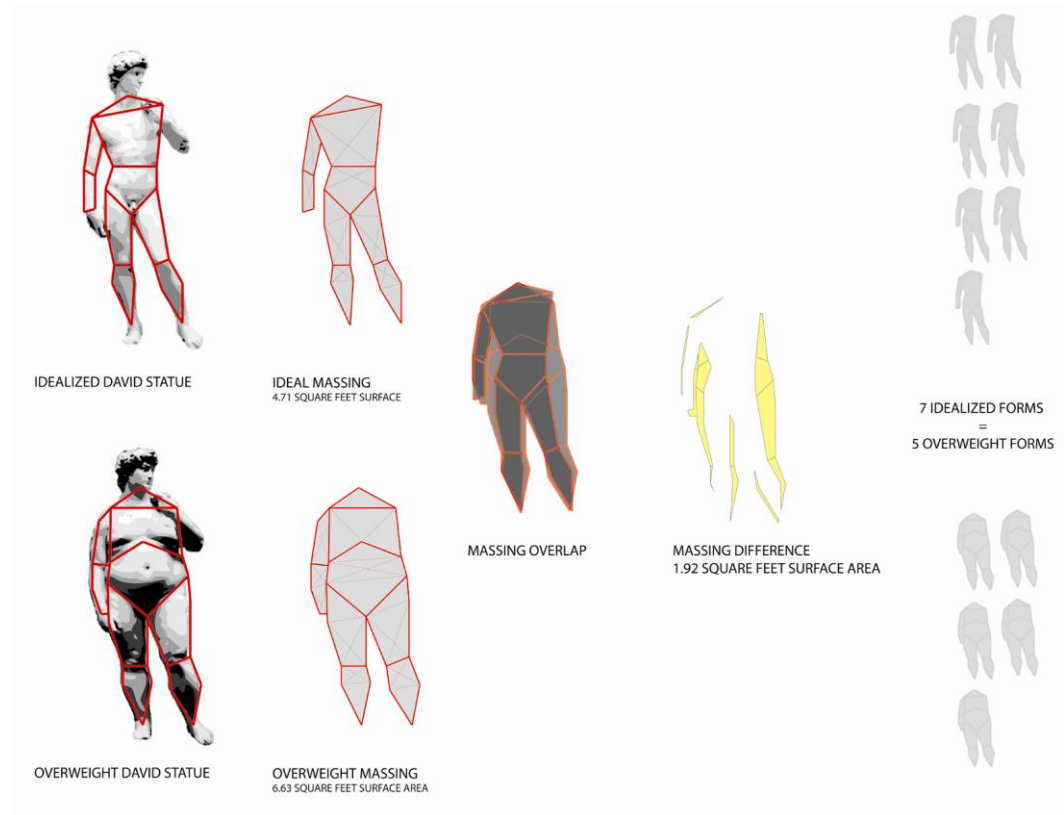


Figure 7: Comparison of David Statue with Overweight David

Furthering the comparison, by investigating the surface area occupied by each of the statues, and the overweight statue occupies almost forty (40) percent more surface area than the idealized statue. If this holds true, if a person is sized to the overweight standard versus the ideal, the typical sizes and proportions of spaces that have been deemed appropriate are no longer sufficient to provide space for a larger sized population. The size of the idealized David versus the overweight David leads to a 7:5 ratio; for the amount of space needed for 7 idealized forms, one can only fit five overweight forms. In consideration of the amount of space needed for the typical assembly hall with standing space of five square feet the example could be posed of the amount of people who can occupy the room. As illustrated in Figure 8, the typical square

footages are no longer sufficient to accommodate the size of an overweight person. Compounding the space discrepancy is that the majority of the population is overweight so this must be addressed, preferably through intervention than adapting the existing building standards.

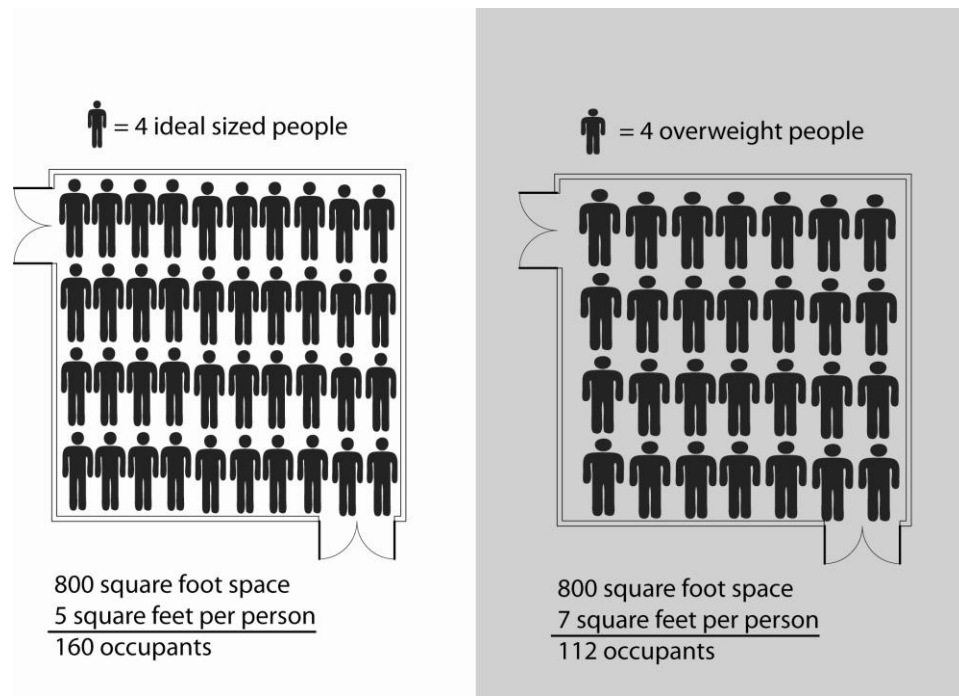


Figure 8: Square Footage Requirements for Ideal versus Overweight

The relationship that the human form has with architecture is important to how we understand adequacy in size and proportional relationships. “In considering the spatial experience and behavior of human beings, two closely related key concepts emerge – ‘territoriality’ and ‘personal space’”.¹³ Territoriality encompasses how people define a space as their own, or more importantly as a space that is acceptable to be occupied. The relationship of territory and community space is in creating architecture that fosters a sense of belonging. While territoriality may encompass how a person feels ownership and

¹³ Stephen T. Pheasant, *Bodyspace; Anthropometry, Ergonomics and Design*, (CRC Press, 1986), 166.

belonging, personal space is about the individual and their understanding of an environment. Personal space pertains to the human and their interface in a space but deals with how each individual relates and interacts with the architecture. If we as humans have a concept of personal space, our intention should be to maintain a proportionally sized space around ourselves; if our size increases unfortunately the correlation to space requirements and adequate space would also increase.

CHAPTER 3: COMBATING OBESITY

The concept of living a balanced life and healthy lifestyles has been seen throughout history. The Greeks were one of the first civilizations to devote a great deal of attention to diet and the overall importance of health in society, and word for diet is a derivative from the Greek word *diaita*, which loosely translates to a ‘way of life.’¹⁴ Hippocrates, although he is better known for his establishment of the human temperaments and the natures of man, developed a set of principles to define a good, healthy person. Hippocrates understood the need for a balanced lifestyle to contribute to a sense of well-being and health, and each of these principles are applicable for a healthy life today. According to Hippocrates “moderation in all things [is] crucial to good health: ‘Every excess is an enemy to nature: In labour, meat, drink, sleep and commerce with sex, a just mediocrity and moderation should be observed.’”¹⁵ For a person to maintain balance, they must carefully not allow any of the separate contributors of health to become more dominant over the others.

¹⁴ David Haslam and Fiona Haslam, *Fat, Gluttony and Sloth: Obesity in Literature, Art and Medicine*, (Liverpool, Liverpool University Press, 2009); 77

¹⁵ David Haslam and Fiona Haslam, *Fat, Gluttony and Sloth: Obesity in Literature, Art and Medicine*, (Liverpool, Liverpool University Press, 2009); 100

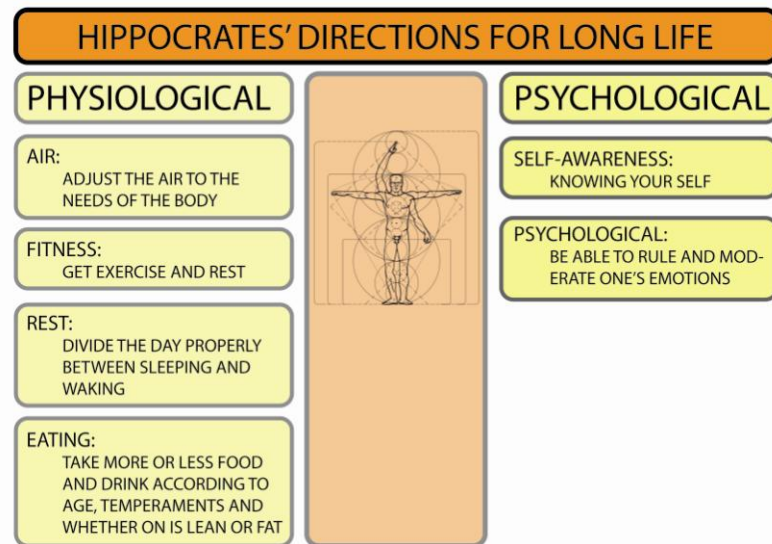


Figure 9: Breakdown of Hippocrates' principles of healthy living

Moving forward from the ancient cultures, the understanding of daily diet moved beyond a source of pure survival and became a way to express elements of culture and society. Unfortunately, along with this increase in eating food due to availability came the acknowledgement that the food that people eat is a significant contributing factor to obesity and issues related to weight.

Education

In an attempt to equip the general population with information about healthy eating and nutrition, government programs were created to devise programs. For Great Britain, the time preceding World War II proved very effective in educating the public in adequate daily food intake. World War II was potentially even more effective in limiting the excess amounts of food that were purchased and consumed as rationing began to take effect. In Britain, food rations began in 1940 and led to evaluation of the available food supplies and the public was educated via multiple modes of entertainment to teach people

how to nutritionally make the most out of their limited selection of foods.¹⁶ The dietary limitations placed during the period of rationing helped to create healthier meals out of a more limited palate of food. However, the limitation placed on food and products led to an increase in research on determining how to make the most of available resources, which regrettably was partly used to help develop processed ingredient substitutes to make more packaged foods as opposed to fresh foods. As the food rationing ended, people quickly took advantage of the wider range of available food and began to compensate for the years of limited resources.

Presently, there is a seemingly endless amount of information on diets available for the public. Furthermore, there is an exhaustive collection of television shows and cookbooks that attempt to teach the public how easy it can be to cook and prepare your own foods. This is provided that a person has the opportunity to travel to the book store, or watch television and then educate themselves through a trial and error approach. This approach of yo-yo dieting does not hold significant benefit to long term weight loss.

¹⁶ David Haslam and Fiona Haslam, *Fat, Gluttony and Sloth: Obesity in Literature, Art and Medicine*, (Liverpool, Liverpool University Press, 2009); 71-72



Figure 10: Diagram illustrating different “FAD” diets and the recommended food intake (Source: David McCandless)

Active Living Guidelines

Recently, the New York City government spearheaded an effort to publish the Active Design Guidelines. This guide, created in conjunction with the planning, transportation, and public health departments, is a way to educate designers of typical and innovated ways to incorporate active living into architecture and the built environment. Envisioned in the same manner as LEED upon inception, the guidelines are voluntary but have the potential for being adopted into the building codes. The AIA New York believes that “Through the conscientious integration of active design strategies into projects of all scales, design professionals can realize buildings and neighborhoods that seamlessly integrate more healthful and active living with attention to design excellence and sustainability.” The challenge that is being posed to the design community is to incorporate contributors to health as inherent design features.

The guidelines serve as a manual for design of buildings, streets and spaces. Presently, there is a “growing body of research suggests that evidence-based architectural and urban design strategies can increase regular physical activity and healthy eating.”¹⁷ For the focus of this thesis, while the acknowledgement of urban design is important to considering how a health and wellness facility is a part of the urban network of healthy living, the predominant focus considers how a specific building can integrate into the existing urban network as a way to contribute and improve health. For architecture, “the design of buildings provides an excellent opportunity to promote regular and important instances of physical activity. Most people spend as much as 90 percent of their days indoors, often engaged in sedentary occupations.” The Active Design Guidelines divide the healthy living goals into four opportunities that architecture can have in building design to improve physical activity and they are illustrated in Figure 11. As can be seen the dominant sources of activity come from both built elements and their placement as well as programmatic interactions and opportunities in the spaces.

¹⁷ Active Design Guidelines, 6

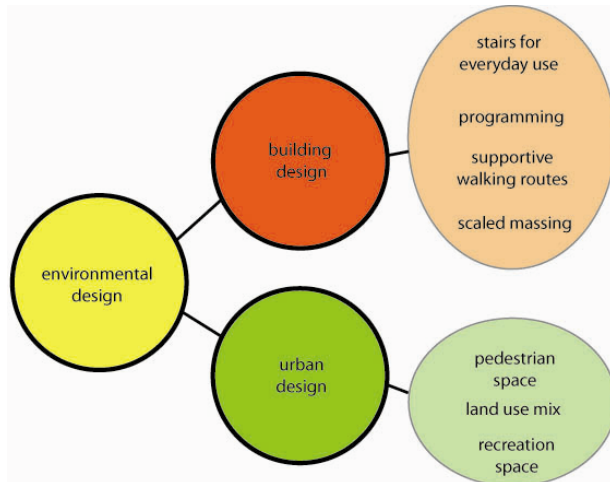


Figure 11: Diagram of Active Design Guidelines Approach to Environment

Moving toward how architecture can improve health, one of the goals of this thesis is to create a set of working principles that help to define how a healthy lifestyle can be facilitated through buildings. The common understanding is that a majority of what improves health is providing an overall environment that supports physical activity. In cities, such as Washington, D.C. and Richmond that are well established in regards to the city's existing green space, transportation systems, and neighborhood characteristics, massive changes to how an area operates and functions would take a great deal of time. While these large scale changes are important and are critical to the sustainability of communities, until the entire infrastructure can be improved there needs to be an interim place for physical wellness and the promotion of health.

CHAPTER 4: MOTIVATION

An important issue that this thesis cannot address is the cognoscente decision of a person to make a lifestyle change. Instead, the intent of this thesis is to investigate and find ways to allow for a passive and active interaction with architecture that promotes and encourages physical activity and then can capture and engage individuals into the programmatic elements. The motivation to participate in physical activity must drive a person to overcome

The Biggest Loser

The Biggest Loser television show is an excellent tool at illustrating success and what weight loss results can occur with proper eating, exercise and education. However, the contestants on this television show are motivated in different ways than an individual at home would be capable of living. Firstly, these participants are isolated from their families and jobs and live in a community of other participants all struggling with the same issues as themselves allowing constant supervision and guidance. Secondly, although each contestant on the show is there to improve their health and physical state, they are ultimately competing for the extrinsic reward for losing the greatest percentage of weight lost and the title of “The Biggest Loser.” The premise behind the show cannot be faulted, as humans tend to need some form of reward to motivate participation. The motivation to participate in a community driven fitness and health program as would be created by this thesis proposal must encourage participate in a manner to provide some additional extrinsic reward.



Figure 12: Biggest Loser First Four Season Winners

Reconciling the reality of day-to-day life with being on a television show like *The Biggest Loser* comes when participants return home from being on the television show. While the show participants are provided with some education of healthy food alternatives and how to properly exercise they must manage to continue their healthy lifestyles after returning from the show. Furthermore, as illustrated in Figure 12, the participants who spend a majority of time at home competing versus on the isolated filming campus are less successful at losing weight. Even more important is evaluating the long term success of participant weight loss; of the show's eight winners four of the

“biggest losers” have gained a considerable amount of weight back after being on the show. For these participants, although there is a great deal of success when being supervised and competing toward a goal once they return to “normal” life there is a greater amount of difficulty at maintaining motivation to complete their lifestyle changes.

Motivation 1.0, 2.0 and 3.0

There is a vast amount of information available in regards to motivation of individuals and groups, but Daniel Pink has begun to decode ways to motivate. According to Pink, there are three major systems of motivation. Motivation 1.0 is the primitive way of stimulus through a desire to survive, and what drives a person is based upon instinct and capability. Presently, the world seems to operate for the most part under the premise of Motivation 2.0, which is the traditional reward-based system for completing tasks. Whether this motivation come from a financial, physical, or even emotional reward, the premise behind this theory is that there must be something of benefit to the individual in order to drive someone to complete the task. To Pink, this suggested, “in the end, human beings aren’t much different from horses – that the way to get [people] moving in the right direction is by dangling a crunchier carrot or wielding a sharper stick.”¹⁸ This system of inspiration worked well for a number of years, but unfortunately society has made the simple “carrot and stick” method of motivation very difficult.

Moving beyond the common understanding of how the world used to motivate lead to the development of Motivation 3.0. Under this manner of motivating people, Pink relies heavily on the notions of what drives people to participate in social media sites and

¹⁸ Daniel Pink, *Drive: The Surprising Truth about what Motivates Us*, Riverhead Books, New York; 20.

user-driven forums, such as Wikipedia and even i-Report for CNN. Through Motivation 2.0 there need to be some form of a reward to encourage people to participate in work, but people willingly donate their time and energy to create a resource with a relative amount of anonymity. The contributors and participants in these organizations do so because they are genuinely interested in the material and are willing to participate out of intrinsic desire. The internal benefit that people receive from doing what they enjoy can actually be undermined by trying to give additional motivation toward completion, which turns an enjoyable task into a chore.

Motivation 3.0 drives people to action through an inherent desire to participate in something that they are interested in, but this does not come without caveats. Pink does believe that there can be instances where using Motivation 2.0 can still be the most effective strategy. For tasks that are mundane, “rewards do not undermine people’s intrinsic motivation...because there is little or no intrinsic motivation to be undermined.”¹⁹ However, he does set the requirement that when a ‘dull’ task is being accomplished one must offer a reason why a task is important, acknowledge that said task is boring, and most importantly allow people to complete the task in their own way.²⁰ For many, exercise is seen as a mundane task that is a necessity to be accomplished, but since there is little immediate motivation to start exercise there must be some way of addressing how to capture attention and drive people to exercise whether actively or passively.

In regards to weight loss and Pink’s philosophy there comes a distinct set of relatable issues. If someone is at an unhealthy weight, the ultimate reward and motivation

¹⁹ Daniel Pink, 62

²⁰ Daniel Pink, 67

should come from the long term benefit of improving health and extending and improving quality of life. From the research gathered, it is evident that the consequences for not living a healthy lifestyle are through obesity, chronic disease and ultimately death. While the knowledge to the general public of the dangers associated with obesity, there is still a lack of motivation or perhaps a lack of confidence in abilities to make a concerted effort to participate in a physical fitness program. Psychologically, there are also tangible and intrinsic rewards that address both Motivation 2.0 and 3.0 in regards to exercise, as a person who improves their health has the potential for extending their life, reducing medical issues and an overall feeling of accomplishment. According to Pink, however, to make an increase in performance “any extrinsic reward should be unexpected and offered only after the task is complete.”²¹ For issues related to individual health and physical wellness, there is a hybridization of intrinsic and extrinsic rewards that relate to feelings of accomplishment as well as an improved self. The integration of weight loss becomes an intentional motivator that ultimately leads to uncertain additional benefits.

Instead of subscribing to one system of motivation over the other, the two must be considered as equally important ways of driving people to improve and sustain their health. The first task is to engage a person and create interest that can then allow for additional interaction and involvement. Through this thesis, the intention is to allow the architecture to foster a sense of engagement and belongingness to the community of health. Exposure of the public to knowledge about obesity is one manner of conveying the immediate reward, but

²¹ Daniel Pink, 66

THRESHOLD RESISTANCE

One of the contributing factors to a lack of physical activity is a fear of crossing the threshold into a place of exercise. However, the ideology behind retail theory can begin to inform how to better adapt a space for attracting and bringing individuals into a space. Alfred Taubman, a real estate developer and entrepreneur with an educational background initiated in architecture, has developed the principles behind “threshold resistance.” Simply stated, this theory mitigates the manner that goods or services must be accessible and visible in order for someone to realize what they may actually need. Taubman believes that one must pass over both a physical and psychological barrier to enter a space.²² For the purpose of retail, this concept applies to getting someone into a building or store in the first place; translating this to a place of exercise and community is about bringing someone into or through a space and providing the an interaction between onlookers and inhabitants.

²² Malcolm Gladwell, “The Terrazzo Jungle,” *The New Yorker*, March 15, 2004, accessed November 8, 2010, <http://www.gladwell.com/archive/pdf/malls.pdf>

CHAPTER 5: STRATEGIES FOR FACILITATING MOVEMENT AND ENGAGEMENT IN BUILDING DESIGN

The goal of this thesis is to provide a space that engages the community and makes people aware of healthy lifestyles. By visualizing and inhabiting a facility that is programmed to promote health and physical wellness, individuals would be able to become participants either actively or passively. The essence of this participation can be found through the investigation of multiple building typologies that use architecture to engage people in the activities of the buildings. While programmatically these buildings investigated may not match the requirements of a health and wellness center, each structure features elements that connects the building to the greater community or utilizes spatial configurations to facilitate intentional interactions. Breaking these architectural precedents down, they can be classified into two groups; circulation dominant or visibility and access dominated.

Walking and Circulation

One of the easiest and most effective strategies for getting people active is through the promotion of walking. The American Heart Association promotes that just walking or participating on only 30 minutes of light physical activity everyday will improve health. While much of the contributions to walking is dependent upon the context and accessible paths, architecture can play a role in creating either an element that engages the path along the way, or more importantly becomes an element that becomes a destination along the pathway. Circulation within buildings as they relate to the ground plane act as a way of connection the outdoor circulation of the context with the localized amenity of what is within the space.

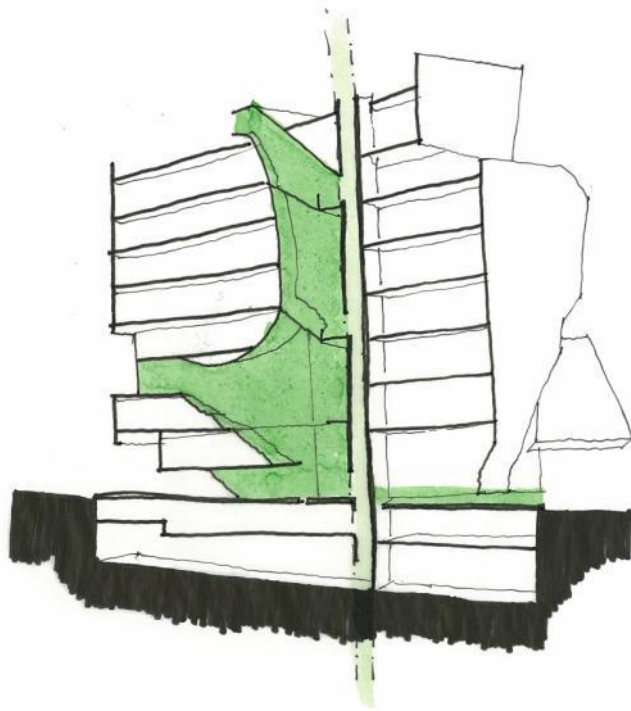
Many different buildings and even outdoor public spaces utilize circulation as the fabric that allows for interaction. Not only are there issues of movement in regards to the horizontal and ground plane but there also become relationships to vertical movement. The amount of energy required to walk up stairs versus a horizontal surface is nearly twice as much. Utilizing movement, then architecture can become a catalyst for an increase in human energy expenditure. Circulation in buildings can be an extremely effective design strategy for connecting multiple spaces around some form of a centralized element. This treatment of circulation is often a key element in museums and other spaces that are intended to be about the experience of the environment. Through design, spaces can be located to encourage movement that would add to the physical interaction with the building. In many buildings, however, the circulation space is minimized to optimize useable floor area and vertical circulation is enclosed in fire stairs. As people spend more time indoors in predominantly sedentary environments, the challenge then becomes a way to use a buildings circulation system as a way to promote and encourage movement and ultimately interactions between occupants.

In addition to building circulation facilitating movement within a building, other elements can contribute to the sense of movement within a space. One of the architectural theories of Robert Yudell follows the notion that as children we are able to use the cracks in sidewalks and even a hopscotch grid to move in a regulated pattern that was easily understood and metered. The human body is capable of understanding these defined elements and a “rhythmic richness”²³ is able to quantify and organize space based on these simple interactions.

²³ Robert J. Yudell, “Body Movement,” in *Body, Memory and Architecture*, ed. Kent C. Bloomer and Charles W. Moore, (New Haven, Yale University Press, 1977), 59-60.

Morphosis Architects

For Morphosis Architects, one of the most important elements of a number of their works has been a centralized circulation component. Functionally this space serves the purpose of creating a core element that is focused on both stairs and elevator circulation that also facilitates sustainability by maximizing on the concept of the chimney effect; not only are people able to move throughout this space but air is also able to circulate out of the perimeter areas into a central space. Moving beyond the functional purpose of the circulation space, this public joint in the building serves as a space for different groups to begin to interact. As can be seen in Figure 13, each floor in some way begins to interact with the centralized space. The Cooper Square project, utilized the relatively rigid structure of the building to define one side of this circulation zone while the other side becomes parasitic and addresses each floor in a unique manner.



**Figure 13: Cross section through public atrium/
circulation space, 41 Cooper Square, Morphosis
Architects**

In the same manner as the Cooper Square building, the San Francisco Federal Building's centralized circulation space was utilized as a major organizing strategy. This structure, which completed construction in 2007, has a more rigid form than the Cooper Square project, as seen by the building section below, but the regular form allows for the integration of the skip-stop elevator and stairs. As is illustrated in Figures 14 and 15, each set of three floors were aggregated with one main elevator stop to serve all three floors. The premise behind this configuration is that it would encourage occupants to use the stairs to move from floor to floor, reducing building energy usage. Transcending the sustainable benefits of reduced energy usage, the placement of these elevators at intervals of three floors would add the amenity of the elevator to very few floors, promoting exercise and movement in the building occupants on the floors between elevators. More

importantly, in a study of the stair usage of the skip-stop format versus a traditional enclosed fire stair, the skip-stop stair was thirty-three (33) times more likely to be used for trips of less than three (3) floors.²⁴ Through the design of these stairs as a centralized space, the building occupants ultimately benefit from the added building feature that contributes toward their own health.

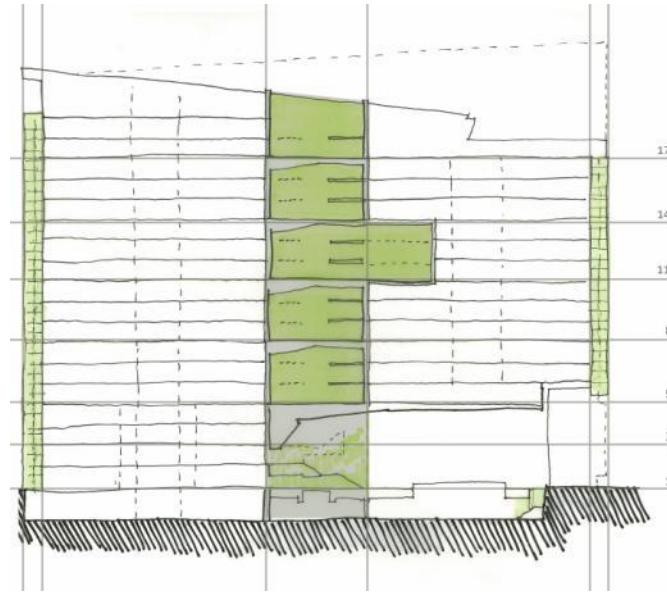


Figure 14: Building Section through the San Francisco Federal Building with circulation space

²⁴ Gail Nicoll and Craig Zimring, “Effect of Innovating Building Design and Physical Activity,” in *Journal of Public Health Policy*, 30 (2009) :S111-S123. Accessed November 1, 2010, doi:10.1057/jphp.2008.55

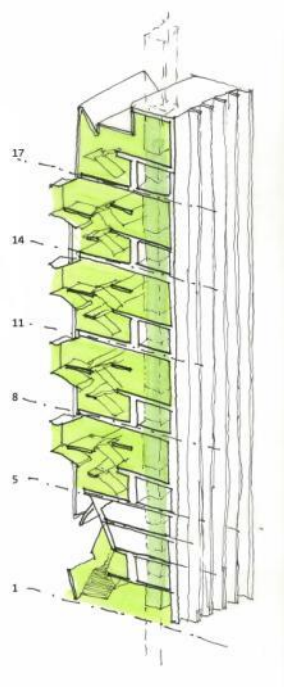


Figure 15: Building Section/Axon through the San Francisco Federal Building with circulation space

Along with the benefits of health, the stairs in these buildings help to foster a sense of community. In a typical building, an occupant using the elevator has minimal exposure to other building occupants beyond their floor or immediate office area; even using the stairs as a way to promote health does not facilitate an increase in time interfacing with other people. In Figure 16, the interaction zones between occupants can be seen as a way to foster a sense of community. Through the architectural design, there is an increase in interface between people who may not normally have any interaction. By providing this common space as a moderator between floors, building occupants have a common space to gather that is able to be seen as building communal space. While additional square footage is lost to these larger inter floor lobby areas allocated to

additional vertical circulation, there is a benefit to the users who are able to occupy the space.

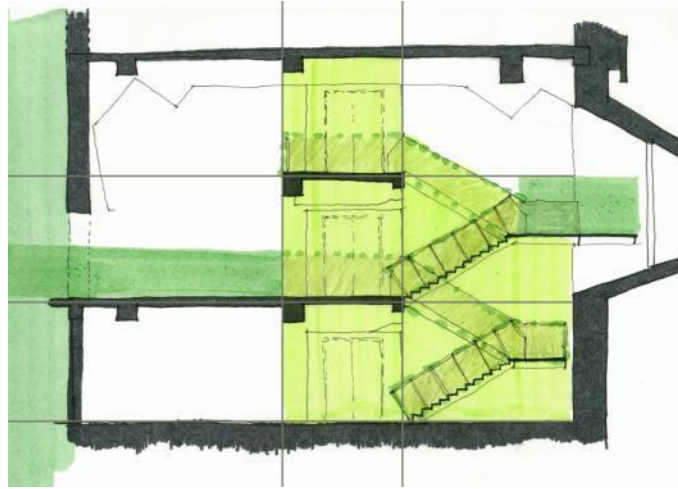


Figure 16: Typical Elevator Lobby, Switch-Stop Stairs, San Francisco Federal Building

Guggenheim Museum

The Guggenheim Museum in New York City, designed by Frank Lloyd Wright, utilizes vertical circulation as the organizing element that controls how visitors experience the space. In a different manner than Morphosis uses, the circulation is completely exposed for the entire building and is visibly continuous. As one enters the space and proceeds into the public atrium, the circulation directs through the elevators to the top level of the public galleries. This atrium space exposes the multiple floors of gallery from both the ground level looking up and from the top of the elevator looking down through the downward ramping ambulatory ramp. This space, as is shown in Figure 17 is a more cohesive and continuous pathway with galleries along the perimeter. While the space is intended to be experienced using the elevator to reach the top, it could be imagined the additional physical benefit that would be attained by walking entire length of the ramp to the top gallery. In the instance of the Guggenheim, the circulation through

the space is integral to the entire experience and is not something that would be accidentally discovered.

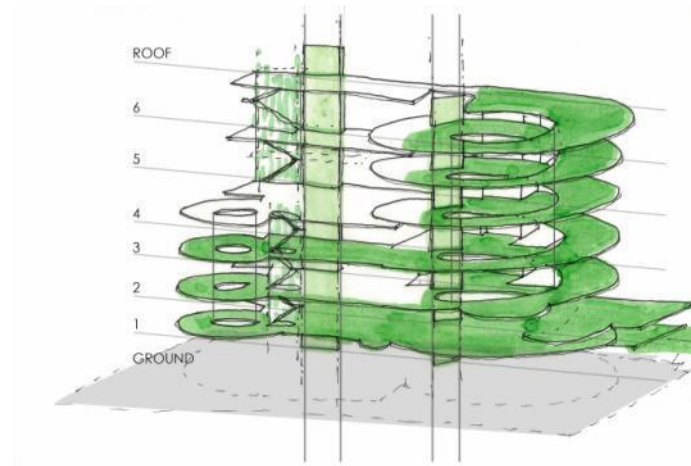


Figure 17: Building circulation for the Guggenheim Museum, New York City

Rem Koolhaas/ OMA

The Kunsthal in Rotterdam by Rem Koolhaas/ OMA uses circulation as a way to mediate grade changes and move through the site while experiencing the interior spaces. Constructed on a challenging site, as shown in Figure 18, the main pathway through the site intersects the building allowing the circulation through the site to maintain a connection to the building. Along this pathway are different nodes that lead to additional spaces through a series of stairs and ramps. A unique feature of this building is that the vertical and horizontal shifts and moves that are experienced along the interior pathways become reflected onto the building façade. This circulation pathway also leads to the roof access, allowing the vertical path of circulation to connect from the ground floor exterior to the exterior at the roof.

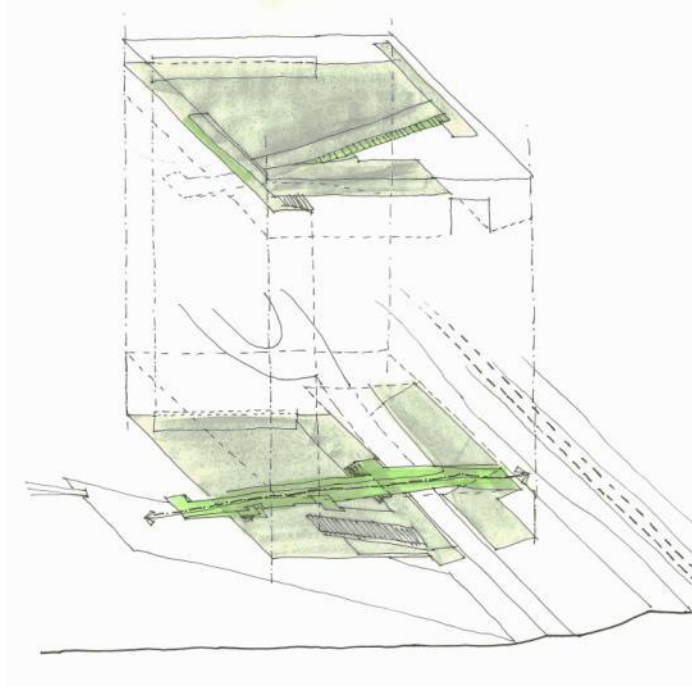


Figure 18: Axonometric, Kunsthal, Rotterdam, Netherlands

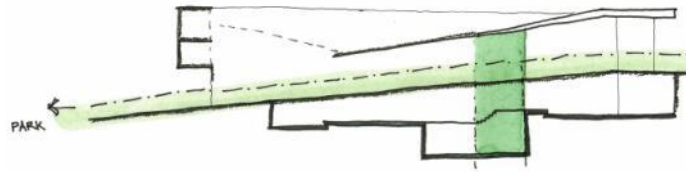


Figure 19: Pathway section for the Kunsthall, Rotterdam, Netherlands

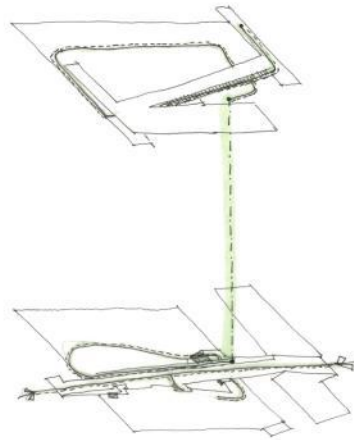


Figure 20: Building circulation for the Kunsthall, Rotterdam, Netherlands

In the same manner as the Kunsthall, the IIT McCormick Tribune Campus Center organizes the movement through the site through the architecture of the building. As an addition to the center of the campus, Rem Koolhaas and OMA analyzed the site to determine all existing modes of movement through the site to determine where people were actually moving from and going toward. As is shown in Figure 21, the surrounding context led to the formation of a number of different paths with overlap existing on the site. The campus center serves as the role of a community developer to add program to a place where pathways already intersected. In translation to this thesis, the circulation through the site is critical as a way to mediate between the passer-by and the intentional building guest.

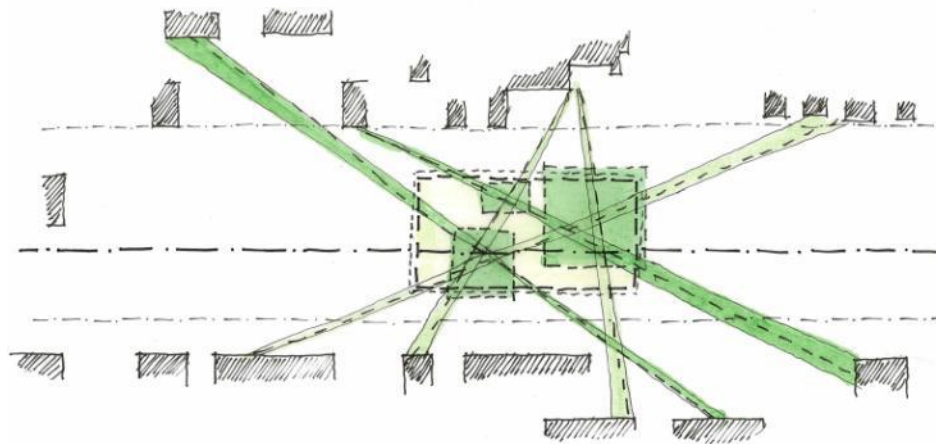


Figure 21: Site Plan, IIT McCormick Tribune Campus Center, Chicago, Illinois

For OMA/ Rem Koolhaas, the *Prada* stores provided an opportunity to explore the connection between architecture and the world of high fashion. The firm began with a thorough analysis of the program and elements of design in all of the existing stores in order to establish a basis of design for a more prototypical “epicenter” store. Each store was to function beyond the purpose of being a place of only retail so that “customers were no longer identified as consumers, but recognized as researchers, students, patients, museum goers”.²⁵ As retail space has become a part of the program of different building typologies, the experience of shopping has become a very mundane task that makes retail spaces non-differentiable. OMA believed that the experience of shopping within the *Prada* store should then counteract this by allowing the spaces within the stores to cross the threshold of retail specific space and instead allow the building occupants to become enriched in the experience of being within the store environment.

²⁵ OMA/AMO and Rem Koolhaas, *Projects for Prada Part 1*,

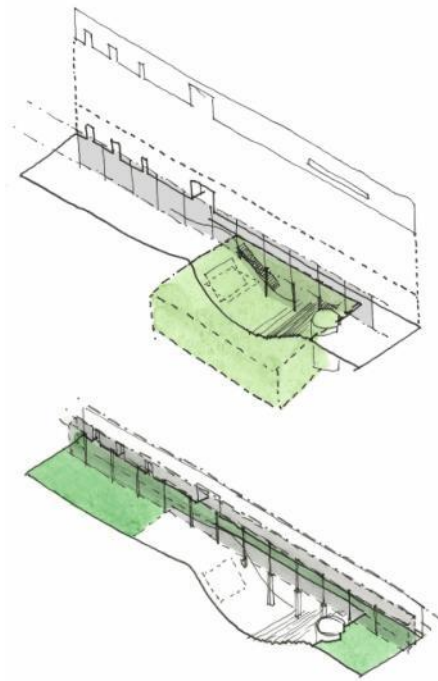


Figure 22: Axon, PRADA store, New York City

At the time the stores were under design evaluation, a number of key words of experience were developed to define what this store would be capable of addressing beyond retail space with the two most relevant to this thesis as the idea of street and stage. These two concepts are embodied in Figures 22, 23 and 24 as a way to take the main public space in the store and turn it into a hybridized space to meet the multiple functional needs of the space. The idea of the street is to create “a public area for ‘other’ activities – where customers can visit Prada without the obligation to buy”.²⁶ Within the store, the space of street and stage coexist as a way to capture individuals and engage them in activity of the space. The activities are then able to take place around the ‘street’ in the ‘stage’ area. The stage is a space that is flexible in design elements to accommodate a number of different activities, but it designed sectionally to permit either

²⁶ OMA/AMO and Rem Koolhaas, *Projects for Prada Part 1*,

complete emersion or polite observance. The concept of the street within a public space as an intermediate public private space is not a novel concept, but in relationship to this thesis, the public space of the building can treat members of the community in the same way to allow for a passive interaction to bring attention to the interior spaces. Through variations, OMA was able to explore how the street and stage can work in tandem to maximize the possibilities for interaction and ultimately lead to the exploration of the products that Prada designs.

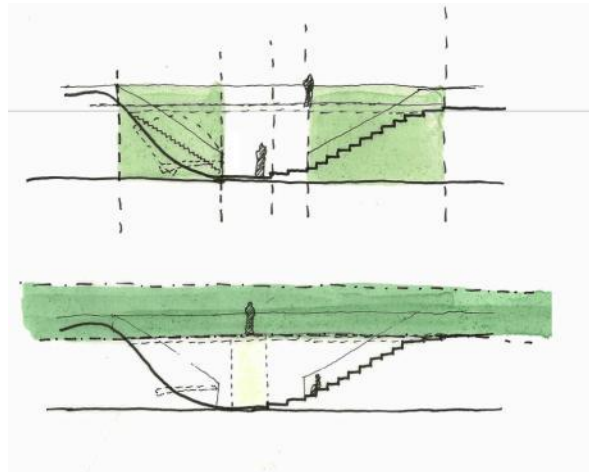


Figure 23: Section, PRADA store, New York City

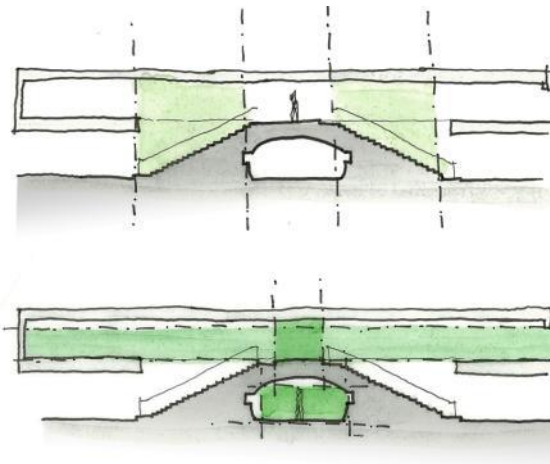


Figure 24: Section, PRADA building

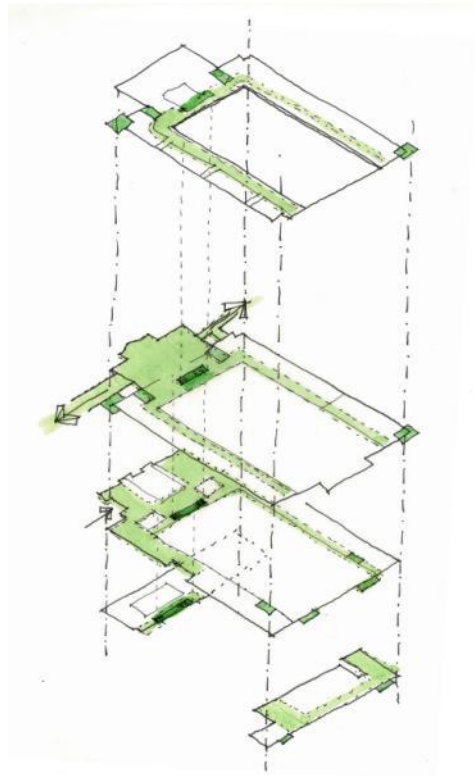


Figure 25: Building circulation in the War Memorial Gymnasium, University of British Columbia

The design of the War Memorial Gymnasium came after World War II as a way to accommodate the influx of students coming through the university after returning from fighting. While the facility was originally designed as a space to honor those who fought and died in the war, the gymnasium quickly became known as a “palace of sweat.” The design focused on looking at this gym as a university community recreation center that could deal with the differing social conditions and perception of the male and female users of the fitness center. According to Vertinsky,

“whilst the War Memorial Gymnasium provided a unique ‘sense of place’ to many people for a number of reasons, particularly compelling to the observer is its architectural design. Architecture functions importantly as a potential stimulus

for movement, real or imagined. Hence the unique architecture and spatial arrangements....became an incitement to action, a particular setting for movement and social interaction”²⁷

Within the War Memorial Gymnasium, the movement through the space also defined how people were able to visualize and experience the activity of the space. The form of the architecture helped to facilitate a intentional interaction between different groups inside the space.

Sendai Mediatheque

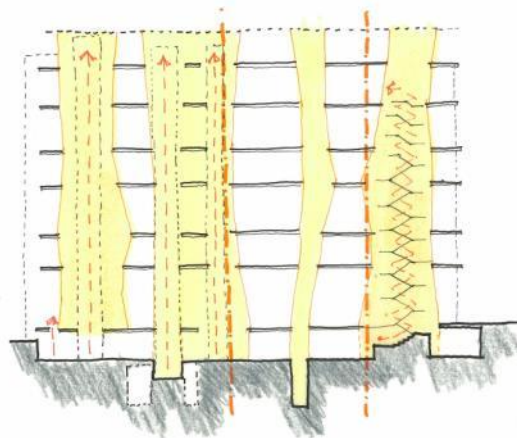


Figure 26: Sendai Mediatheque Building Section

At Sendai Mediatheque, the sectional properties utilize a common language to highlight the vertical shafts. Toyo Ito designed a similar use of the vertical connections to emphasize the physical and visual connections from each level. While the plan of the building may be fairly simple and the sectional qualities of the floor plates are very traditional, the shafts of space serve as constraint reminders of the relationships from

²⁷ Vertinsky, 15

floor to floor. The utilization of these spaces is a balance between movement of light, air and people as a way to open the plan and capture movement.

Genzyme Center

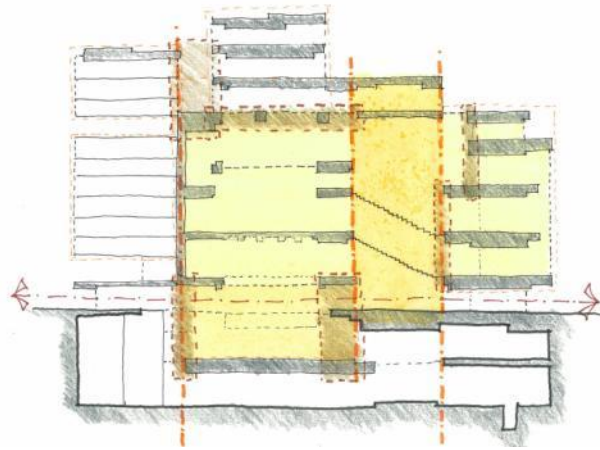


Figure 27: Genzyme Center Atrium Section

At the Genzyme Center, this facility is a modern take on the processional entrance to a spatial atrium. As can be seen by Figure 27, the entrances to the building as well as the street facades meet the edges in a defined manner. The atrium within the space is an element that is partially concealed, pulling a building user into the space rather than exposing the major space immediately upon entrance. Through the utilization of this technique there is a mediation between façade and interior building contents. The interstitial zone between the street and the atrium is further defined as one must ascend into the space, using the circulation and movement to fully realize the space.

Rosenthal Museum

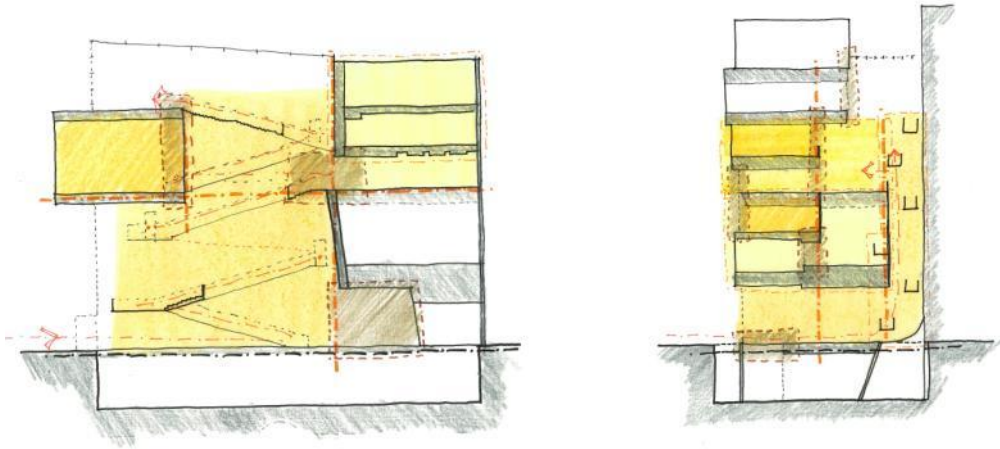


Figure 28: Rosenthal Museum Longitudinal and Cross Section

The Rosenthal Museum by Zaha Hadid utilized the circulation to create a series of nodes within the building program. Unlike the Guggenheim circulation where the main elements are readily visible and accessible, the pathway within this space is more concealed and intertwines within the elements of the program and different gallery spaces. Additionally, the galleries that are nodes along the pathway become a balance of push and pull, bringing an individual from one space to the next and breaking up the ultimate scale of the circulation. Utilizing this principle helps to balance the overall scale of the space and provides opportunities for moments of pause and mediation.

Simmons Hall

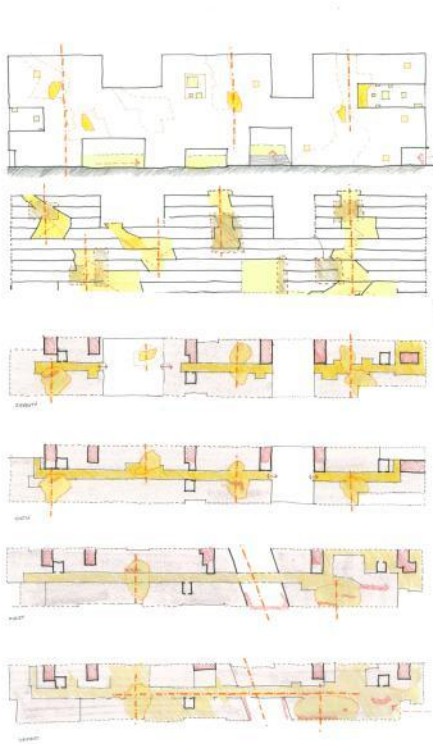


Figure 29: Simmons Hall Building Section, Elevations and Plan Overlay

The distillation of these ideas related to section and circulation can be seen in Simmons Hall. While this building is a fairly traditional dormitory, Steven Holl utilized the uniqueness of the section to create both physical and visual connections within the building. As each sectional connection is defined, it also becomes a differentiation in the plan, breaking away from the overarching monotonous grid. Going beyond connection the plan to the section, moments of the unique conditions are then reflected and revealed on the façade which allows the building to express interior conditions in all three dimensions. The reveals on the façade become an interesting component of this project, as the sectional conditions are rarely completely exposed leaving a level of intrigue to the actual connection of the façade to the plan and section.

Vertical Circulation and Celebration of Movement

In evaluating how people are able to move within space, vertical circulation is an important measure in how an individual or group is able to move. As an emphasis has been placed on verticality in architecture, the necessity for conveyance from one point to another is critical in how people move and experience space. Through a series of investigative studies of vertical movement, three case studies were placed in a site and were evaluated to determine how one is capable of utilizing the architecture to move and what creates the essence of the movement within the space.

Spanish Steps

Rome's Spanish Steps utilize a very gracious series of steps for ascending and descending. While the vertical difference at this site is 74', the riser and tread ratio exaggerates the site conditions and places a greater emphasis on movement. In addition, periodically along the path there are landings that allow for momentary pauses and connections between the users. Each landing also permits for a more gradual descent to break the monotony of the stairs. The landings create turns and shifts within the path to make a greater connection to the back and forth dialogue. Along the pathway, the movement from top to bottom is celebrated.

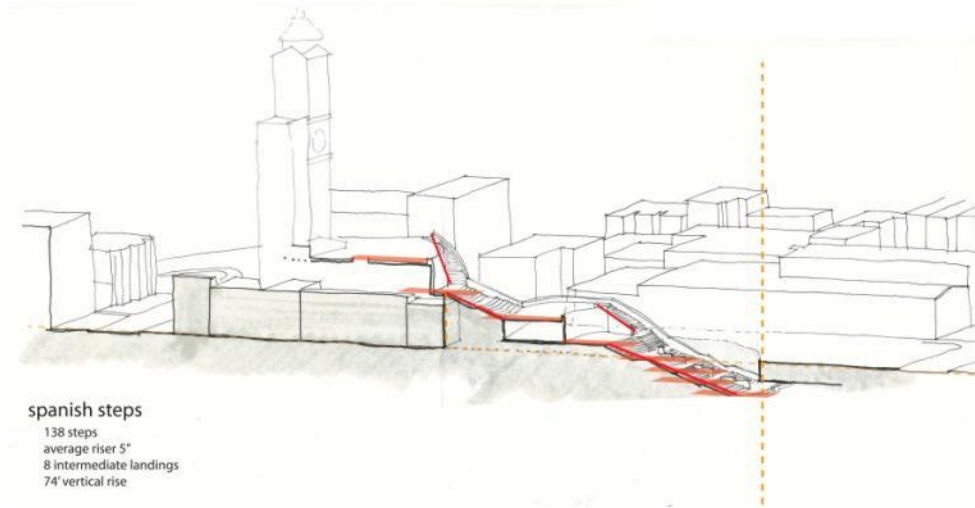


Figure 30: Spanish Step Processional Vertical Circulation

Philadelphia Museum of Art

The steps leading to the entrance of the Philadelphia Museum of Art are a much wider series of steps that focus the attention to the building at the end of the staircase. Perhaps better known as the “Rocky Steps,” these stairs are an important symbol as they have a significant vertical rise and are an intensive physical activity to climb. While there are a number of landings that interrupt the vertical ascent, the landings are parallel with the steps and only act as a temporary break from the seemingly oppressive stairs. The landings do afford an occasional moment to cross paths with other modes of circulation within the entire complex.

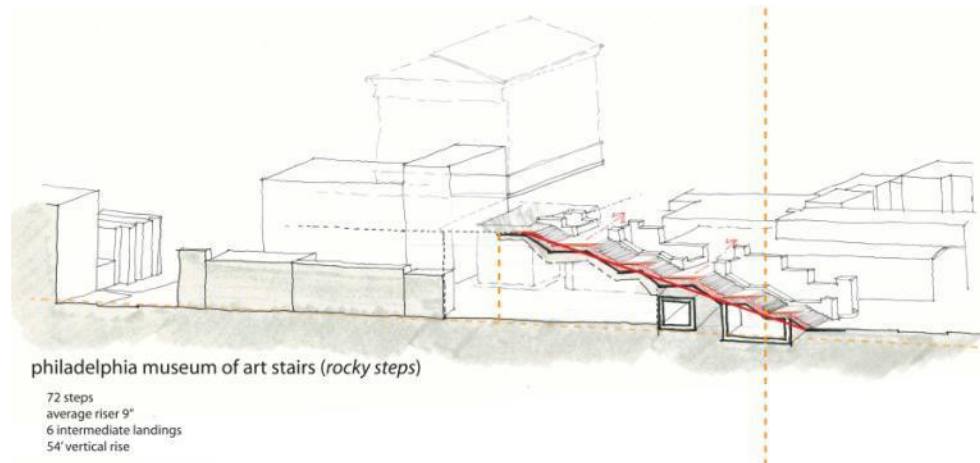
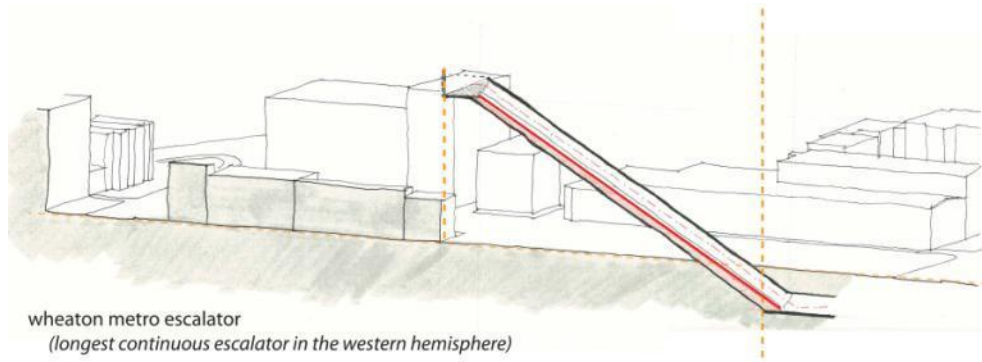


Figure 31: Philadelphia Museum of Art/ “Rocky Steps” Vertical Movement

Wheaton Metro

Perhaps the worst example of vertical movement is the Wheaton Metro which serves as an example of a staircase that is seemingly non-transcend able. This escalator is the longest continuous escalator in the western hemisphere, which equates to an oppressive moving staircase. Unlike the other precedents, this is a continuous stair run with an extremely high rise. The lack of intermediate landings makes it so that instead of a gracious or even moderate movement, there is no moment for pause or reflection. The difficulty that can be found in a staircase of this type is that even with intermediate landings this space would seem daunting due to the scale and proportion of the stairs to the overall direct pathway.



wheaton metro escalator
(longest continuous escalator in the western hemisphere)

168 steps
average riser 10"
0 intermediate landings
140' vertical rise

Figure 32: Wheaton Metro Monotonous Vertical movement

CHAPTER 6: SENSE OF COMMUNITY

The purpose of a community center is to provide a space within the constraints of a specific area, whether physical, social, or demographic, as a place to congregate and interact. Programmatically, this building is a way to provide a space for the components of the program to coexist and overlap. Adding to the collective experience within the context of a health setting are the benefits that an individual has from exercising in a group versus alone. The notion of community applies with respect to the group who would use the spaces in this thesis as a way to maintain and motivate continued health improvement. The U.S. Surgeon General's report on Physical Activity and Health documented that "social support from family and friends has been consistently and positively related to regular physical activity."²⁸ Even more pertinent is that "most people, however, prefer the companionship, guidance, and challenge provided by organized or competitive forms of exercise."²⁹

As was previously noted, communities share characteristics in a number of different facets that transcend physical proximity. Psychologically, "it is easier to be fat in a fat society."³⁰ Within communities, if the status quo places an emphasis on a certain aesthetic, for better or worse people tend to become more drawn to following that overall consensus. In defining how this actually manifests within groups of colleagues and communities, obesity has been coined as a "socially transmitted disease." A New

²⁸ "A Report of the Surgeon General: Physical Activity and Health", 1

²⁹ Louise, B. Russell, *Is Prevention Better Than Cure?*, The Brookings Institution, Washington, D.C., 1986; 90

³⁰ Andrew J. Oswald and Nattavudh Powdthavee, "Obesity, Unhappiness, and the Challenge of Affluence: Theory and Evidence," in *Institute of Study Labor Discussion Paper Series*, March 2007; 5

England Journal of Medicine study found the likeliness of becoming overweight increases 57% if a friend becomes fat and 171% if it is a close friend.³¹

The challenge that this thesis faces within any site is that the overall trend of healthy living must become a common practice and must be able to create an accountable environment to produce long-term and sustainable health practices.

Community in the Digital Age

With respect to the idea of community, as society has become more digitally advanced and connected, we are no longer reliant upon neighbors for relationships and communication. As a result, “our community is now our pocket book” and social isolation is now an issue that enables individuals to never have to leave their homes, ultimately leading to a decreased motivation for physical activity.³² Consequently, a community center will need to go beyond a means of simply being a space for social interaction and provide a very specific set of programs that are adaptable to the constantly changing population demands.

In the digital age what once was considered a critical interaction between individuals and their community has been largely replaced by internet-based interfaces. Even in a consumer based society, people are now capable of ordering food, clothes, and even groceries without having to leave their homes; prior to the advent of the internet even the simple activity of browsing a retail outlet was a form of physical activity. Today “we have traded opportunities to expend energy in day-to-day life for sedentary alternatives...our changing lifestyles have been facilitated by a technological revolution,

³¹ Christakis, Nicholas and James H. Fowler, “The Spread of Obesity in a Large Social Network Over 32 Years, *New England Journal of Medicine*, July 26, 2007; 372

³² Corti, 137

preceded by the twentieth century transport revolution.”³³ In order to mediate this lack of physical interaction, something should be done to create a need for interface between individuals. Not only is this lack of interaction contributing to a lost sense of community, but there is a stronger promotion of a sedentary lifestyle that perpetuates issues of obesity. This digital connection becomes even more critical as people believe that due to access to online resources on health and wellness that they are capable of combating obesity sufficiently alone.

However, it should be noted that each community has a unique set of circumstances that may contribute to a required shifting in program. Due to socio-economics, demographics and even community history, the same set of factors cannot necessarily be a prescriptive measure to remedy a void within a community as it relates to public services. This “neighborhood effect”³⁴ illustrates that there may be a valid set of similarities in programmatic elements that create a framework for interaction. Under the guiding principles of interaction, many of the elements of each project should be considered only partially translatable.

³³ Billie Giles-Corti, Jennifer Roberston-Wilson, Lisa Wood and Ryan Falconer, “The Role of the Changing Built Environment in Shaping Our Shape,” in *Geographies of Obesity: Environmental Understandings of the Obesity Epidemic*, ed. Jamie Pearce and Karen Witten, (Ashgate, Burlington, 2010): 133

³⁴ Tamara Dubowitz, “Examination of the built environment and prevalence of obesity: neighbourhood characteristics, food purchasing venues, green space and distribution of Body Mass Index,” in **Social Inequality and Public Health**, ed. Salvatore J. Babones, (Bristol: The Policy Press, 2009). 33-34

CHAPTER 7: PROGRAM

PROGRAM CASE STUDIES

Programmatically, this thesis investigates the three main elements; eating, exercising and educating. The aggregate of these three elements creates a majority of what is needed to foster and develop a facility based on promoting health and physical wellness. As has been previously mentioned each of these three defining principles of the building program are critical to health but no one component can stand independent of another in a manner to facility sustained physical improvement.

EAT

The nutrition analysis of the foods that we eat is further complicated by the access that people have to healthy foods. Many studies have validated that lower socio-economic groups have worse access to food purchasing venues. One source of healthy and accessible foods being introduced into urban environments as a part of a movement toward local produce has been the implementation of farmer's markets. In Washington, D.C., a sophisticated network of markets located in different neighborhoods throughout the city. The culture that is surrounding these markets started as more temporary places for the selling of local produce, food products and other merchandise and had grown into a regulated weekly happening in multiple locations. Figure 33 illustrates the locations of the current farmer's markets in Washington D.C.

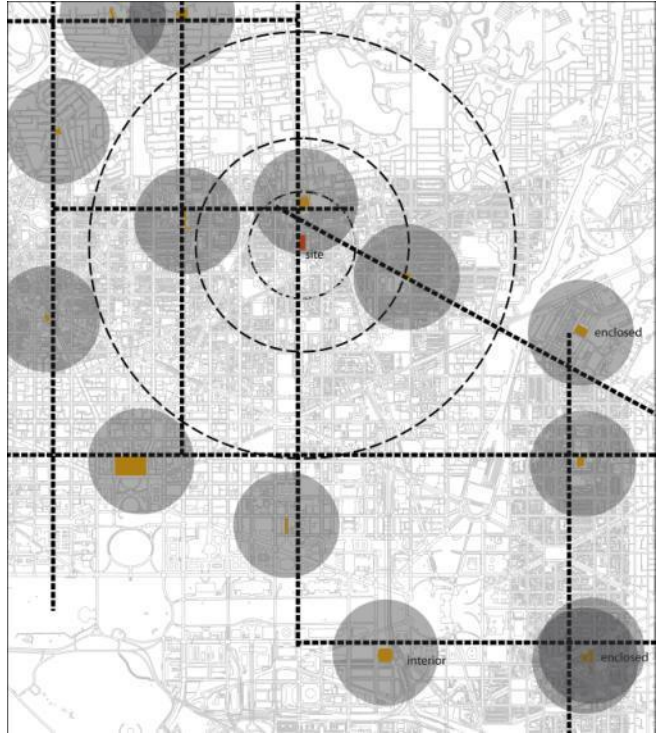


Figure 33: LOCATION OF WASHINGTON, D.C. FARMER'S AND COMMUNITY MARKETS



Figure 34: UDC Market Stall



Figure 35: UDC Market Space at Metro Plaza



Figure 36: 14th Street Farmer's Market

While the outdoor and local farmers markets provide an alternative source of healthy food, weather and local access to year round produce make continuous use of these facilities relatively unfeasible. Instead, residents of the city rely on traditional markets and grocery stores to purchase food. In many urban areas, small scale convenience stores are the dominant source of easily accessed food. While these stores offer the benefit of extended hours and ease of access, they offer very few healthy or nutritional food options. In addition, the foods that are prepared hot in these locations are filled with sodium and other highly processed materials.

Food Market Analysis:

Through the investigation of food market options of different typologies within the city of Washington, D.C., an inventory of products was created to analyze food

options. The three typologies of stores investigated were a convenience store, a corner market and pharmacy, and an organic grocery store. The convenience store and the corner market/ pharmacy represent the typical urban condition of available food choices. Differentiation is made through these two options in the fact that the pharmacy is a place that is medically designated to improve health in regards to medicine. The organic market was investigated to contrast the stores viewed as unhealthy, but also to determine if an organic store that is perceived as a healthy food alternative has unhealthy food options. In evaluating what was unhealthy versus healthy, unhealthy foods were those high in fat content, sodium content and processed foods. Conversely, healthy food options were those as basic elements in the food pyramid or those with a greater nutritional benefit.

As a representative of the convenience store food market, a 7-11 convenience store was analyzed for size and product selection. According to information for the 7-11 corporate website, there are 22 convenience stores within the city limits of Washington D.C. With the current population of Washington D.C., this equates to roughly one (1) store per every 28,000 residents of the city. To place this in perspective, there are presently twenty-one (21) public high schools in the city.

It is of no surprise that the vast majority of food products sold in the store were unhealthy options. 7-11 has taken their food products even farther by creating a store brand of options to compete with Frito-Lay products and soft drinks. The presence of the Slurpee™ and the Big Gulp™ are calorie dominant beverages with little to no nutritional quality. One of the only balances in the store food options stems from the difference between products high in sodium and high in sugars. Additionally, in 7-11 are a number of prepared and hot foods that are designed to serve as quick meal alternatives.

As illustrated in Figure 38, these foods are distributed in the market, but are a majority harmful food choices, high in sodium and processed content.

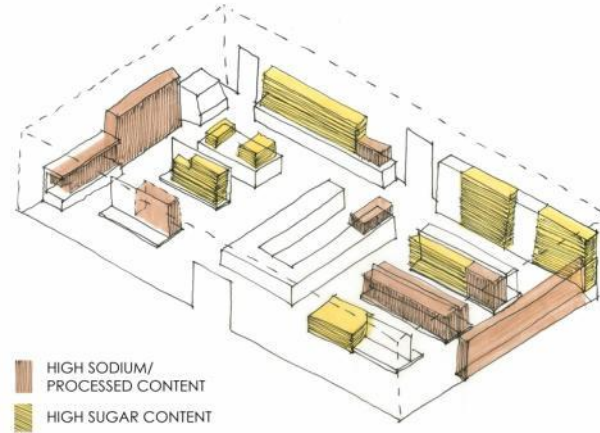


Figure 37: 7-11 Store diagram highlighting unhealthy food options

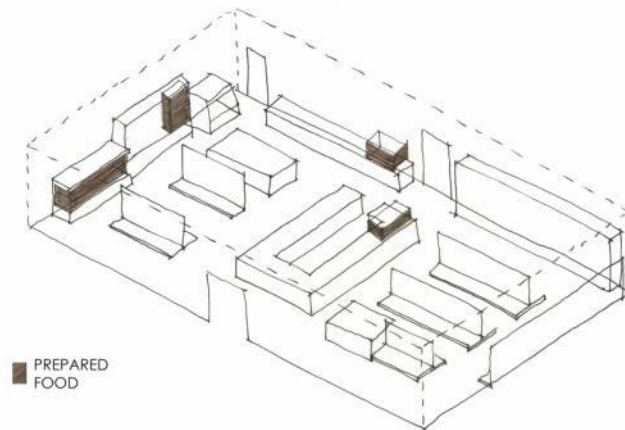


Figure 38: 7-11 Store prepared foods locations

For those seeking healthier food alternatives within the convenience store there are a small amount of options. With the 1,800 square feet of space, about 12 linear feet of product could be considered to be healthy foods, or those that promote health. The majority of the beneficial food options come in the form of milk and water, but also include nutrition supplements. Unfortunately, the refrigeration case allocated to dairy products is interspersed with processed, flavored milk drinks such as chocolate milk; in comparison, the chocolate milk product contains nearly 40% more calories and nearly double the amount of carbohydrates and sugar of traditional 2% milk. There is also a small selection of fresh fruit located in the store which could be seen as a small gesture to provide some semblance of produce to the market space.

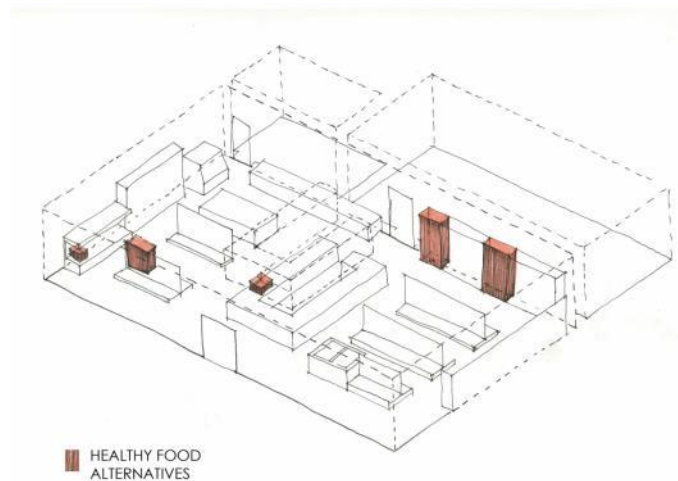


Figure 39: 7-11 Store healthy food options

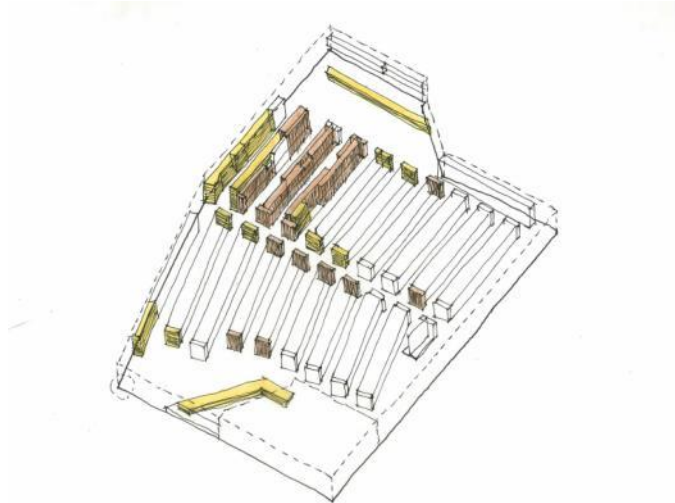


Figure 40: CVS Store diagram highlighting unhealthy food options

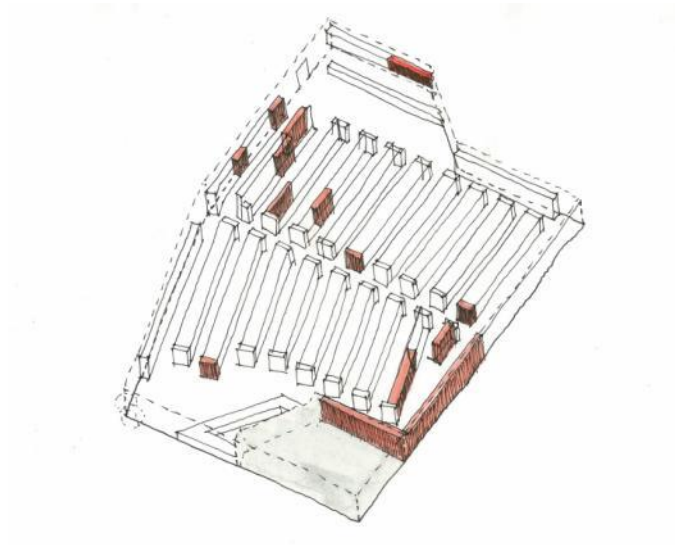


Figure 41: CVS Store healthy food options

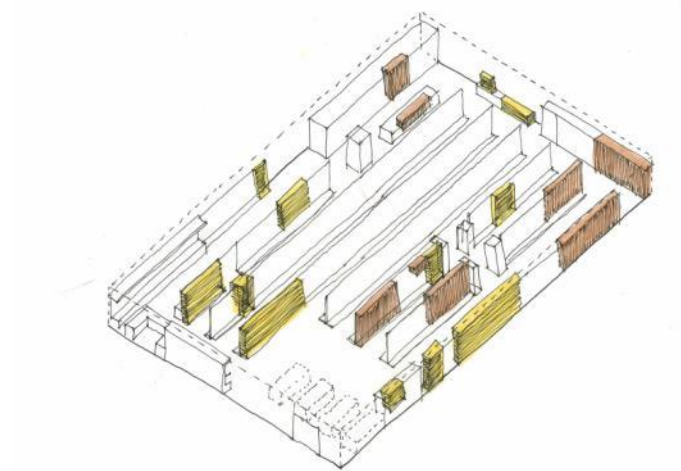


Figure 42: MOM's Organic Market diagram highlighting unhealthy food options

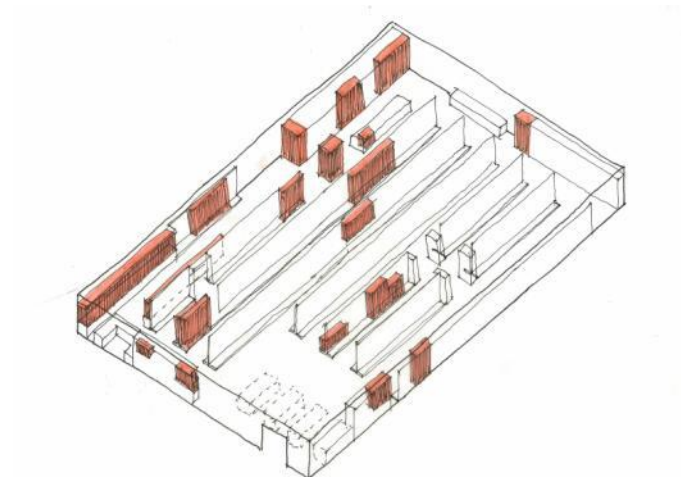


Figure 43: MOM's Organic Market healthy food options

Through analysis of smaller and medium scale markets throughout the Washington, D.C. metropolitan area, even the healthiest market spaces stores offer a fair amount of unhealthy food options. The *eating* component of this thesis must address

providing quality foods for purchase, with access to information about the products being purchased. Current product labeling trends include making claims of all-natural, organic, or high in anti-oxidants but consumers may not realize how this translates to nutritional context.

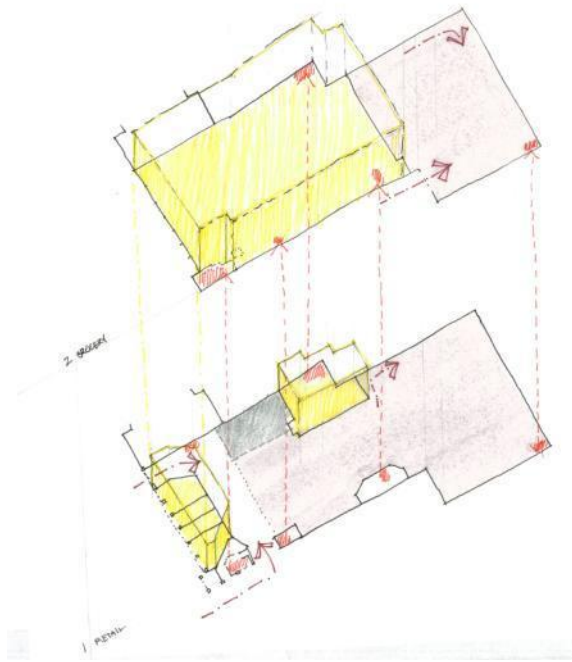


Figure 44: Georgetown DC Safeway Building Axon

Within the classification of market space, the traditional model of grocery stores is to place the retail space on the ground floor. Regrettably, the placement of a market in this location tends to only allow for one open façade with expansive under-utilized exterior wall. In contrast to this is the Georgetown Safeway grocery store located in Washington, D.C. By placing the grocery space on the second level, the ground floor is available to other scaled uses that deal with a more pedestrian scale. As a secondary benefit to opening up the ground floor and moving the grocery market to the second floor is the necessity to move into the building and vertically; by doing so shoppers make a cognoscente choice to move through a grocery store in a less traditional way.

EXERCISE

Programmatic case studies that are related to fitness centers are traditionally focused on creating spaces for the betterment of the human body. Unfortunately, very few architectural examples exist of spaces that are both architecturally effective and focused on completely transforming people. While transformations do tend to take place in sites of physical activity, many of these facilities only focus on bettering an already healthy individual and provide very little interaction between the people who need to improve their health the most.

Unless a person is completely sedentary and immobile, some form of physical activity is a part of daily life. The level of activity and interaction however is for the most part determined by the physical environment as well as the individual. If more effort is required to complete a task, one is more likely to attempt to find an easier or more self-benefiting manner of completing this task. To effectively benefit from physical activity, a person only needs 30 minutes a day for five of the seven days in a week at a moderate intensity. However, only 25% to 30% of the population is actually exceeding or even meeting this recommendation.³⁵ In contemporary society, physical activity should be given greater emphasis as we have become more industrialized and have removed a number of physical tasks related to work from our lifestyle. According to Ilse Crawford, “labor-saving devices and lifestyle changes mean we burn up on average eight hundred fewer calories a day than a generation ago – and we eat more.”³⁶ If this is an indication of what is continuing to change in daily routines, additional physical activity is necessary

³⁵ Kenneth E. Powell, MD, MPD, Linda M. Martin, MS and Pranesh P. Chowdhury, MBBS, MPH, “Places to Walk: Convenience and Regular Physical Activity,” in *American Journal of Public Health*,

³⁶ Ilse Crawford, *home is where the heart is*, (London, Quadrille Publishing Limited, 2009), 193.

to combat issues of weight gain based upon the recommended daily calorie intake remaining constant. However, “daily activity impacts health and wellbeing much more than any dramatic intervention. Crash diets do not shift the status quo...more modest but consistent changes make a difference, not just physically but mentally.”³⁷ What is starting to become apparent is that the short term remedies of crash diets or even intense periods of physical activity is that there is no sustained benefit when individuals return to unhealthy habits when a goal has been obtained.

Within a space for fitness, levels of participation are critical to a separation of levels of physical ability. The program permits a number of social interactions and adjacencies to allow for different groups of individuals to coexist. For each user, there are different levels of comfort and experience with fitness related equipment and exercise. Ultimately, these different user groups can be divided into the categories of beginner, moderate experience, intermediate fitness, and experienced. The aforementioned classifications move from the greatest amount of supervision and skill learning to the most independent. The moderate and intermediate fitness levels become the greatest focus for retention because these individuals have some understanding of healthy lifestyles, but they are also the group that is most likely to easily plateau or quickly reach a goal and resume unhealthy habits.

For support of individuals within the facility, an assessment area needs to be incorporated. In an interesting correlation, the United States Army and Air Combat Command utilize these same principles to ensure members of the respective groups are physically well and able to perform to their greatest capacities. The importance of the evaluation and assessment area is to determine overall health of those wishing to

³⁷ Crawford, *home*, 193.

participate. The ACSM Health and Fitness Facility Standards and Guidelines requires that all participants receive an evaluation prior to participation in fitness activities, but this quick review is a way to ensure no major issues are present. With this thesis, this space would provide one of the first interaction with the fitness space and functionally would allow a much more thorough examination to determine overall health; not only is this evaluation necessary to determine abilities and potential health hazards but also to establish a base-level of health to capture the potential for overall improvement. As part of the system for determining and promoting progress, this space would also foster the conversation between members of the staff and users to build the community of health.

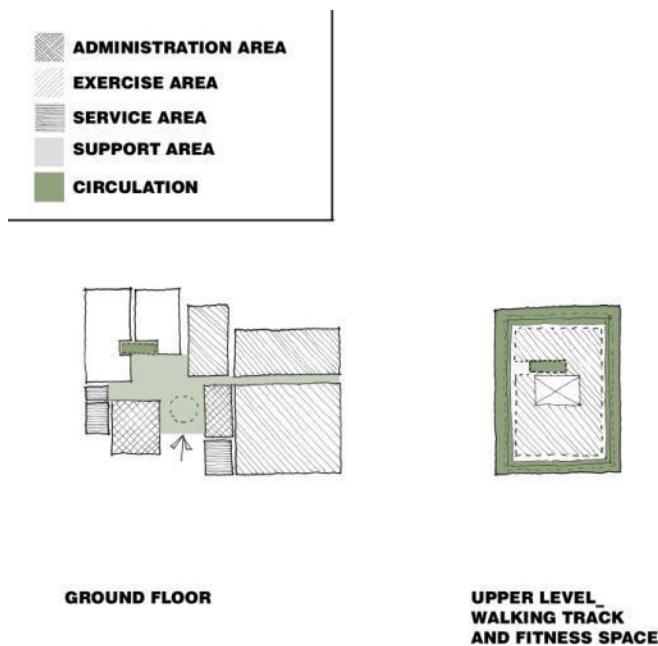


Figure 45: Air Combat Command Typical Fitness and Evaluation Center

EDUCATE

The provision for both access to information about what to eat as well as access to good, healthy, and sufficient quality foods is critical to the extension of healthy living in

all facets of life. Food intake and consumption is the primary cause of weight gain. In the human body if more calories are consumed than are expended that energy translates to fat. Figure 46 illustrates the energy expenditure required to compensate for a variety of foods that are commonplace in the American diet. As people are informed of the amount of exercise or work that would be required to account for what they consume they may reconsider food choices. The architecture of this thesis must provide ways to make someone aware of his or her consumption through the use of media as well as visible connections to the expenditure that must be made to account for certain food choices.



Figure 46: Calorie intake versus calorie expenditure (Source: David McCandless)

Finding the correct information on healthy eating is compounded by the increasing amount of conflicting information on this subject. While people generally know what they should be eating in regards to the Food and Drug Administration published recommendations, there is a great deal of ambiguity to what defines

appropriate serving sizes and how this changes dependent upon levels of physical activity. While an individual may have an understanding of what they should be eating, there is still a constant change in what foods are available and more importantly different ways of preparing those foods. Additionally, there is also the factor of food consumption based upon physical activity and how this relates to concepts of satiation. The issue with food and its contributions to obesity and disease is that everyone has a different understanding of what it is to be full. Unlike other vices that are dangerous to health in terms of over-consumption (i.e. drug use, alcohol, unsafe lifestyles) we must eat to survive. However, diet and exercise are not only important to those with a predisposition or unhealthy habits, as most people have a great difficulty over the age of 50 maintaining their juvenile weight that then increases risk of disease of sudden death.



Figure 47: Previous Food Pyramid

(source FDA.gov)



Figure 48: Revised Food Pyramid

(source FDA.gov)

“People who consider healthy eating important tend actively to search for information about healthy eating as the topic becomes more salient to them. They also more

frequently discuss the topic with family, friends and health professional[s].”³⁸ The issue at hand is the people who would benefit the most from healthy eating are not being exposed and educated about the problems with their food choices, and so this thesis is going to illustrate ways to actively and passively engage the community in the education of eating.

While many know that there are ill-effects associated with an unhealthy lifestyle, the correlation between understanding and prevention is not clearly understood. Education seems to be a very important factor in eating wisely, which is ironic that the more educated our society becomes, the more overall physical health decreases. Education on the nutritional information and daily food intake is further compounded as nutrition labels negotiate a mix between recommended maximums and minimums for living healthy. When a person looks at nutrition information, they tend to only consider the intake of calories, fat and carbohydrates, but all categories of nutrients are important to living healthily.

The importance of continued health and wellness is another component to sustaining a healthy lifestyle that must be explored. An individual can for the most part quickly work toward a defined goal but there must be a consideration of the long term continuation of these habits. Ultimately, health and physical wellness is a cohesive lifestyle choice that is a part of every facet of life. What is needed, however, is a way to allow people to incorporate the elements that contribute to health and wellness into daily routines and life.

³⁸ Laura Bouwman, “Placing Healthy Eating in the Everyday Context; Towards an Action Approach of Gene-Based Personalized Nutrition Advice,” in *Nutrition and Genomics*, ed. David Castle and Nola M. Ries, (Burlington, Elsevier, 2009), 130.

BUILDING PROGRAM:

The program of this thesis can be divided into three different, inter-related functional series of spaces of eating and exercising that can be classified under the headings of PHYSICAL WELLNESS and FITNESS, NUTRITION, and COMMUNITY SPACE. As the primary goal of this building is to promote health and physical wellness, the most significant portion of the program is allocated to fitness and the functions that support improving physical health. The space between the different elements of program is the intentional space to accommodate circulation and movement throughout the facility to foster a dialogue both physically and visually between the different aspects that contribute to health and physical wellness.

By evaluating the main guiding principles of the project of exercise, eating the set of programmatic elements were able to be extracted and formulated into a smaller series of spaces. These different programmed spaces are then able to be evaluated and explored in regards to relationships to determine appropriate proximities and relationships. As is illustrated in Figure 49, the eight (8) main components to the overall community center that relate back to the three core elements.

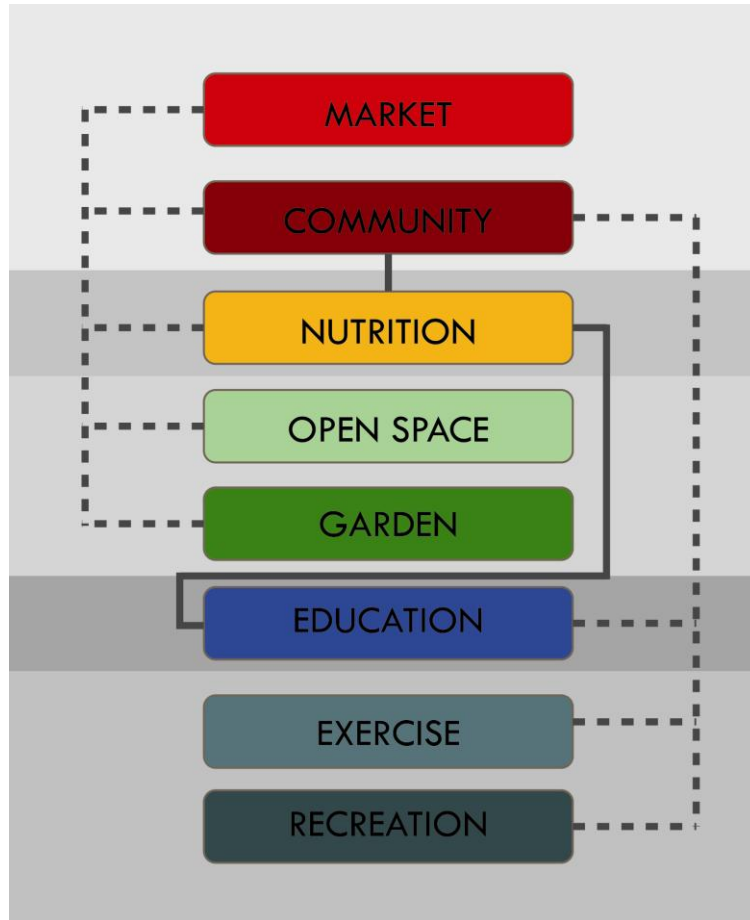


Figure 49: Program Overlaps



Figure 50: Program Overlay

Through the division of the program into separate components, based upon the guiding principles, different overlaps and adjacencies can be determined. The figure

above divides the program into eight separate categories including market space, community space, nutrition, open space, garden, education, exercise and recreation space. Spatially, the elements of community, nutrition and education need the greatest amount of connectivity to the other elements; translating this to spaces, each of these programmatic elements may become an aggregated resultant as opposed to a set and defined series of space.

By evaluating the programmatic components through adjacencies and spatial connections, the series of interrelated spaces are further defined and determined. The main element that acts as a centralized figure to each of these diagrams is the community space, which mediates the functions of exercise, nutrition and education. One element that should be considered in regards to these adjacencies is that this does not factor in the programmatic overlap that can occur.

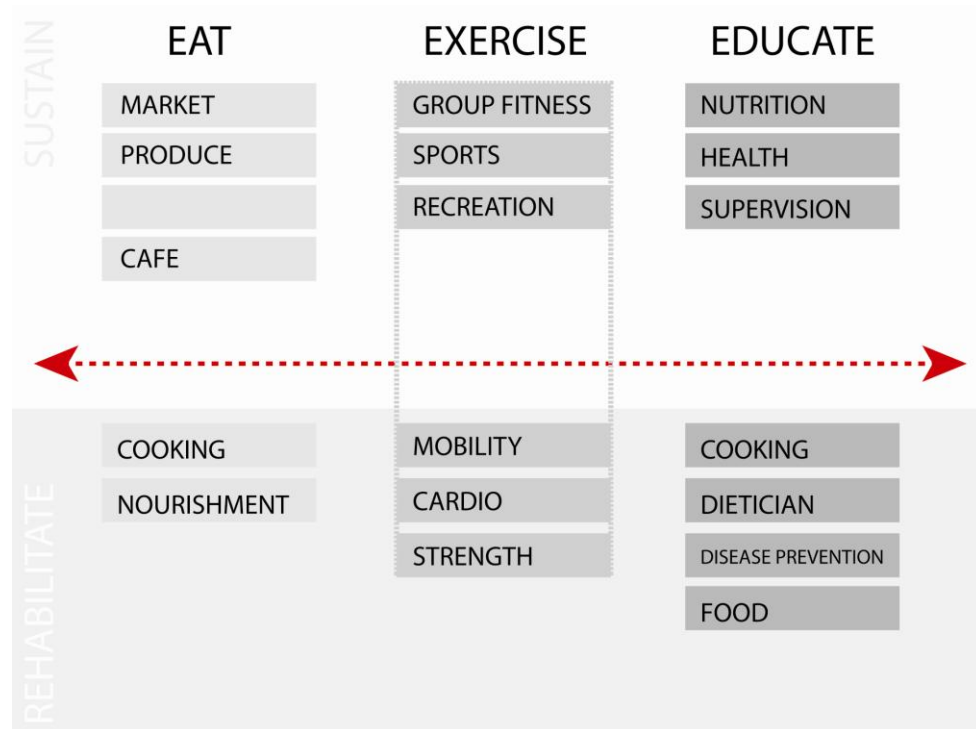


Figure 51: Programmatic Components

PROGRAM SUMMARY

EXERCISE

FITNESS CENTER			
LOBBY/ REGISTRATION			
Entry Lobby	1	100	100
Security/ Greeter	1	125	125
Equipment Issue	2	175	350
Waiting Area	1	80	80
Retail/ Fitness Apparel	1	250	250
Sign-In/ Queue	2	50	100
			1,005
BEGINNER EXERCISE SPACE			
PARTITIONABLE ROOM	1	2,200	2,200
Stretching	1	100	100
Cardiovascular Equipment	1	1,250	1,250
Machine Weights	1	700	700
Select Free weights	1	1,250	1,250
Fitness Managers Office	1	125	125
Nutritionist Office	1	125	125

Physical Trainer Office	1	125	125
Physical Exam Room	1	125	125
			6,000

INTERMEDIATE EXERCISE SPACE

Stretching	1	100	100
Cardiovascular Equipment	1	1,250	1,250
Machine Weights	1	700	700
Select Free weights	1	1,250	1,250
Fitness Managers Office	1	125	125
Nutritionist Office	1	125	125
Physical Trainer Office	1	125	125
			3,675

RECREATION SPACE

Basketball/ Volleyball Court	1	8,900	8,900
Racquetball Court	2	800	1,600
Indoor Track	1	1,700	1,700
			12,200

EXPERIENCED EXERCISE SPACE

Stretching	1	100	100
Cardiovascular Equipment	1	1,250	1,250
Machine Weights	1	700	700
Select Free weights	1	1,250	1,250
Fitness Managers Office	1	125	125
Nutritionist Office	1	125	125
Physical Trainer Office	1	125	125
			3,675

GROUP EXERCISE

PARTITIONABLE ROOM	1	4,500	4,500
Storage	1	455	455
Structured Activity Space	1	2,200	2,200
Storage	1	220	220
Group Cardio	1	1,500	1,500
			8,875

ADMINISTRATION

Director's Office	1	120	120
Program Manager	1	100	100
Program Conference	1	200	200
Support Staff Workstations	2	80	160
Copy/ File	1	100	100
Break Room/ Staff	1	100	100
Classroom	1	420	420
Storage	1	100	100
			1,300

LOCKER ROOMS		Distributed	
MALE LOCKER ROOM	1	1,250	1,250
LOCKERS/ CHANGING SHOWERS TOILETS			
FEMALE LOCKER ROOM	1	1,500	1,500
LOCKERS/ CHANGING SHOWERS TOILETS			
FAMILY CHANGING AREA	2	100	200
			3,190
FITNESS SUPPORT			
FITNESS SUPPORT			
LAUNDRY	1	180	180
EQUIPMENT REPAIR	1	400	400
STORAGE	1	300	300
			880
NET FITNESS COMPONENT S.F.			40,800

One of the important elements of a majority of the exercise and group spaces in this facility are that they be adaptable and capable of accommodating a number of different program elements. Through spatial configurations and programmatic overlap, the exercise spaces should be able to transform uses easily, if nothing else to adapt to changing modes of exercise.

WELLNESS			
FITNESS ASSESMENT SPACE			
Waiting/ Reception	1	120	120
AEROBIC CAPACITY TESTING	1	100	100
STRENGTH AND ENDURANCE	1	100	100
FLEXIBILITY	1	80	80

MEASUREMENT	2	100	200
CONSULTATION ROOMS	3	100	300
Medical			
EXAM ROOMS	3	120	360
DR./ Nutrition OFC	3	100	300
Lab/ Diagnostic Testing	1	250	250
Bathroom	2	65	130
CLASSROOM/ Health Library	1	400	400
PHYSICAL THERAPY WILL NOT BE A SERVICE			
NET WELLNESS COMPONENT S.F.			2,340

The wellness component of the facility is designated as space to promote medical support for both physical and psychological wellness. The physical assessment area is the space to initially determine health and then progressively monitor success and continue to facilitate dialogue with the benefits to the human body. Space is provided for the assessment of health and wellness, to facilitate evaluation of physical health and provide education about disease prevention as it relates to obesity and other chronic diseases.

EAT

RETAIL			
JUICE BAR/	1	400	400
SEATING	15	50	750
FITNESS APPAREL	1	100	100
			1,250
COOKING			
DEMONSTRATION			
KITCHEN	1	2,000	2,000
PREP AREA	2	100	200
			2,200
RESTAURANT			
DINING ROOM	2	1,800	3,600
PRIVATE DINING	2	400	800
KITCHEN	1	800	800
			5,200

GROCERY MARKET			
Market Space	1	12,500	12,500
LOADING/ RECEIVING	1	850	850
FOOD PREPARATION	1	1,000	1,000
TOTAL			14,350
NET NUTRITIONAL COMPONENT S.F.			23,000

This portion of the program covers the immediate needs for food on site. For pre/post-work out supplements a juice bar should be accommodated to provide a cool down area. The cooking component covers the educational value of learning how to effectively cook and eat healthy foods. The kitchen is an interactive space that is necessary to have the public able to learn about cooking, while at the same time potentially benefitting from the food being prepared that could be served in the on-site restaurant. The two separate dining rooms are designated as spaces to address the different groups of people potentially coexisting on the site and well as the ability to reserve specific spaces for community events.

The grocery market space serves as a connected market that would serve as a community grocery store. The small scale of this market is in consideration of this space as a corner market that would merchandise healthier food alternatives in a manner similar to a Whole Foods Market™. One of the intentions of this thesis is to address the need for quality food alternatives in urban settings, and the scale of this market is justified by the model of the typical Trader Joe's™.

COMMUNITY

COMMUNITY CENTER			
Childcare	1	1,200	1,200
Classroom	2	400	800
Community Meeting/ Library	1	1,000	1,000

Large Meeting/ Banquet Hall	1	2,800	2,800
50'x56 auditorium/ double height space			
RESTROOM			
MEN	1	120	120
WOMEN	1	120	120
FAMILY	2	65	130
NET COMMUNITY CENTER S.F.			6,170

In the same manner as the flexibility of the group exercise spaces and specialized meal spaces in the other functional categories, the community center is a space for multiple modes of interaction. The classroom and meeting spaces serve not only the needs of specific organizations that would utilize the facility, such as Overeaters Anonymous, but also to accommodate unrealized potential in the community for different organizations.

SUPPORT SPACE

SUPPORT			
PARK	6	450	2,700
LOADING/ RECEIVING	1	150	150
SERVICE/ TRASH	1	750	750
BICYCLE STORAGE	30	15	450
NET SUPPORT S.F.			4,050
TOTAL NET SQUARE FEET			88,860
CIRCULATION	20%		17,772
SERVICE SPACE (MEP)	18%		15,995

TOTAL SQUARE FOOTAGE

TOTAL SQUARE FEET	104,855
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In evaluating the program, it also becomes an interesting conversation in how this facility could serve to address multiple elements of a lifestyle. As is shown in Figure 52,

the program of the building can accommodate a large range of the actions and programmatic needs of the average person. The comparison of these elements begins to look at ways one can prioritize time within life as well as the overall impact a facility of this nature could have in establishing a center for living. In looking at how this relates, a correlation can be found between the increase in physical activity and exercise and overall life expectancy; while the amount of longevity is fairly consistent with the amount of time spent participating in physical activities the quality of life is improved.

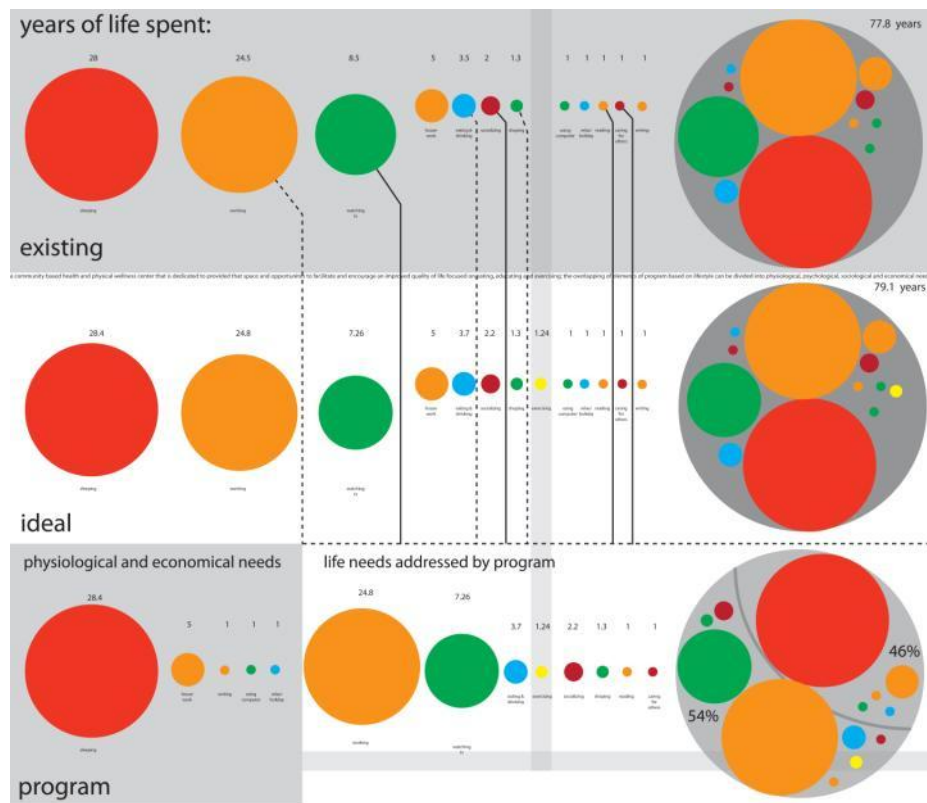


Figure 52: Hours of Life Spent in Comparison of Facility Program

CHAPTER 8: SITE SELECTION

DESIRED SITE ATTRIBUTES:

The first issue to be addressed in determining an appropriate site for a community based health and wellness center is what factors actually lead to likelihood of obesity. Demographic information about race and social economic factors are seen to be the main predictors of an increase in obesity, but the statistics reveal a relative amount of obesity in areas with varying demographic and socio-economic sub-groups. The recent trend in weight investigation has been looking at the overall factors that contribute to weight gain and loss in the built environment. These factors, such as neighborhood walkability, safety, community infrastructure, and even the collective trend toward obesity within a neighborhood all in some ways do contribute toward issues within a community, but these factors do not stand alone.

There needs to be a duality to the site. On the one hand this should be in an area that already has some form of infrastructure or planned infrastructure for allowing people to move within the community with ease; on the other hand there should be a lack of options for exercise and recreation within the surrounding context to increase the importance of the amenities and program in the facility. The site should be open and accessible to the community but also connected to the individual and residential fabric of the adjacent properties. The site should be able to be easily integrated into existing outdoor recreation spaces but should also be in located where people are not utilizing these sites to their potentials. A community should have an understood boundary that creates an identifiable community, but should also be easily connected to the broader context of the city.

The site selected should facilitate a desired change in the community, where the occupants are less transient and willing to continue with a program to a point of continued success. The desired change can be from within the community, but can also extend to the perception of health and community from an outside perspective. When considering potential sites, a complete analysis of surrounding context is necessary to go beyond the surface of demographics and programmatic adjacencies. The phrase “spatial mismatch”³⁹ is utilized to describe the condition within urban environments that can be determinants of residents not utilizing their landscape and community spaces. The utilization of community spaces is further complicated by the understanding and definition of what is the actual community. In the condition of the internet dominated society with constant access to media and distance connections, neighborhood edges and boundaries are very fluid and can even change over a matter of time, place or even issues where the sense of a community is no longer an isolated sense of the term.⁴⁰ In the context of the American community, this flexibility does allow for some inter-relationships in establishing connections of programmatic elements throughout a city.

While many tend to blame suburban sprawl on factors related to an increase in obesity, statistically an individual is more likely to be overweight and inactive in the inner-city. In an urban area with a high level of well-defined street grids, connectivity and a higher concentration of density it is reasonable to postulate that inner-city residents would have a higher success rate at maintaining a level of physical fitness. However, there is a higher prevalence of obesity in inner-city urban areas suggesting that residents are not necessarily as able to utilize their surroundings to the same benefit as their

³⁹ Lopez, 2

⁴⁰ Lopez, 10

counterparts in the outlying suburbs. In cities, issues of property maintenance, lack of infrastructure, environmental and social issues are contributing to a decrease in likelihood that someone will participate in any form of additional exercise.⁴¹ Although often times many of these factors are a resultant of the others it is also imperative to consider each category as an independent variable that affects the site.

By evaluating the research data and factors that may contribute toward obesity prevalence, a set of categories of criteria were established by the author to determine site appropriateness. Through the establishment of six (6) classifications of data, the localities were able to be subdivided into more manageable groups of information. The six classifications include walkability, infrastructure, community, architecture, people and health that then lead to an overall assessment evaluating the strengths and weaknesses as well as potential liabilities for each site. These factors led to the establishment of the site criteria to formulate the most desirable and adaptable community that would be the ideal location for a facility for health and physical wellness that could then be applied to different sites for evaluation of potential.

⁴¹ Lopez, 3

POTENTIAL SITES:

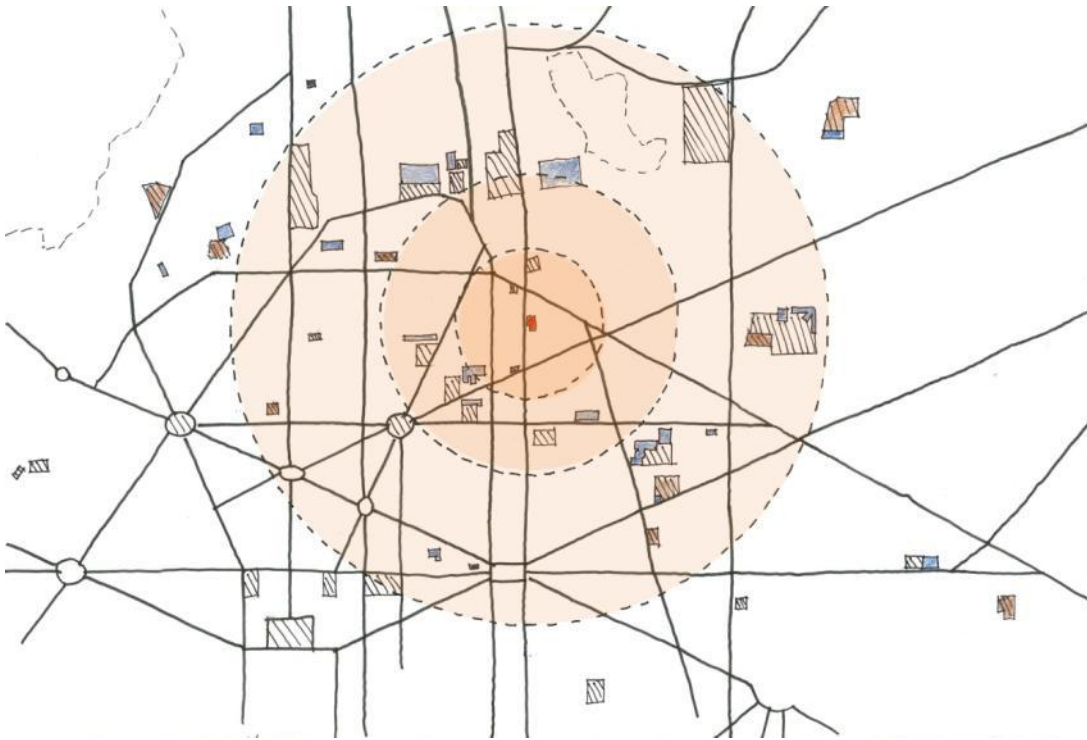


Figure 53: ¼, ½ AND 1 MILE RADIUS OF WASHINGTON D.C. SURROUNDING SHAW SITE. MARKED NODES INDICATE RECREATION AND COMMUNITY





Figure 54: ¼, ½ AND 1 MILE RADIUS OF RICHMOND, VIRGINIA SURROUNDING CHURCH HILL SITE. MARKED NODES INDICATE RECREATION AND COMMUNITY SPACES IN THE CONTEXT

Looking at the areas of Shaw/ Howard Metro in Washington, D.C. and the Chimborazo/ Church Hill Community in Richmond, VA through the strict comparison of demographics, there is little differentiation between the two communities. Similarities between different sites along the determining criteria are necessary to make a comparable analysis between two different localities. The comparative attributes of each of these areas illustrate a community that is somewhat sufficient with comparison to the city as a whole and comparable to the surrounding context. As illustrated in the chart below, the site related issues that were pertinent to issues of health and activity within the community were tabulated as an evaluation tool and from this comparative data an ultimate site was able to be selected.

Both sites in the investigation are located on corners, within a neighborhood context and are located within a one (1) block range of a major inner-city thoroughfare. The location of a corner lot is important in the programming of a community building as the increase of street façade and exposure makes the building a visible landmark. An additional similarity between these two sites is that they are both located within 2 miles of the respective Capitol for the state and nation. The illustrations also show the constraints of the typical one-quarter (1/4) mile walking radius that defines the extent of a fifteen (15) minute walk. The size of the Richmond grid accommodates a greater amount of individual blocks, but also contributes to the lack of street hierarchy as compared to Washington D.C.

Historically, within the framework of the nation and the cities these sites are also major contributors toward American culture. In the context of Washington D.C. and located along the 7th street corridor, the Shaw site has a connection to the expansion and development of Washington D.C. and the increasing of jazz culture. Directly adjacent to the

POTENTIAL SITE COMPARISON	N. 24 TH STREET AND E. BROAD STREET CHURCH HILL, RICHMOND, VA	7 TH STREET, NW AND S STREET, N.W. SHAW, WASHINGTON, D.C.
WALKABILITY		
WALK SCORE	Score of 78, with low traffic volume	Score of 92, but vehicular danger on Rhode Island and Florida
SIDEWALKS	The brick-lay sidewalk creates uneven sidewalks with tree root issues and overgrown vegetation conceals the paths	Sidewalks and crosswalks form a cohesive network with signalized intersections
TOPOGRAPHY	The context has extreme topo change, ranging from 160' above sea level to the river at approximately 18' elev.	Flat site with a minor elevation change toward the North
INFRASTRUCTURE		
RECREATION	Chimborazo Elementary School, Chimborazo Playground, Libby Hill Terrace, Les Boulefrog League	Kennedy Recreation Center, Shaw Jr. High School
PARKS	Libby Hill Park, Chimborazo Park, Libby Terrace, Jefferson Park	Logan Circle, Daniel Webster Park
GROCERY	1 major grocery and 2 smaller markets	1 major grocery and 3 smaller markets
RELIGIOUS	6 active congregations within the community and 2 historic churches	3 active congregations within the community and outlying community
SCHOOLS	Chimborazo Elementary School, Bellevue Elementary School	Garrison E.S., Cleveland E.S., Cardozo H.S., Shaw Jr. H.S.
COLLABORATION	Richmond Rock- Department of Health Exercise Program	DC is a Healthy Living Community
TRANSPORTATION	Bus routes 1, 2, 6, and 7	Bus, WMATA Metro- Green and Yellow Lines
COMMUNITY		
ASSOCIATIONS	Chimborazo Park Association, Church Hill Association, Association for Church Hill Preservation	Shaw Mainstreets, Shaw Eastern Central Community Association
LOCAL VS. CHAIN	Very little national representation and local shops/cafes dominate the commercial activity	Majority of local shops and restaurants with occasional national brands along Florida Ave. to the North
HOME OWNERS	69% rentals	62% rentals
SENSE OF PLACE	Neighborhood feels cohesive toward the river and becomes fragmented with a sense of history toward the North	Seems very fractured without good sense of boundary except for major roads
ARCHITECTURE		
CONNECTIVITY	The majority of buildings, with exception of large public infrastructure are all row houses with corner lots occupied by ground floor retail	Blocks are generally split into quarter blocks with divided uses but conditions of row houses against large scale buildings
TYPOLOGY	2-3 level row homes with a North/South orientation and random single family homes	Large and small scale with an occasional free-standing retail
SCALE	Rarely exceeds 25' height, with the exception of major community buildings and steeples	Bounding the site are upwards of 65' tall but a majority in immediate context are 45', withstanding the row houses
HISTORY	Site of Patrick Henry's "GIVE ME LIBERTY OR GIVE ME DEATH SPEECH" and anchor of the retail corridor	Shaw Heritage Trail, DC Jazz District, 1968 Race Riots
PEOPLE		
RACIAL	Predominantly African-American with 30-48% white in surrounding tracts and minimal diversity from other racial groups	80% African American with a recent increase to 12% Hispanic
PUBLIC ASSISTANCE	21% Food Stamp (SNAP) eligible	13% Food Stamp (SNAP) eligible
INCOME	HH Income: \$20,789, 21.4% below the poverty line	HH Income: \$25,095, 30% below the poverty line
SAFETY	1.8 times more likely to be a victim of crime	1.6 times the average amount of violence and property crimes that other D.C. Census tracts.
DISTANCE TO WORK	28.3 minute median commute	25.2 minute median commute
AGE	Male: 36.5, Female: 40.5	Male: 29.5, Female: 30.5
EMPLOYMENT	66.5% Employment	52% Employment
RESIDENT STATUS	53% lived in the same home 5 years ago	52% lived in the same home 5 years ago
EDUCATION	68.9% High School Graduates	52% lived in the same home 5 years ago
SINGLE MOTHER	17.1%	13.1%
HEALTH		
EXCELLENT HEALTH	13.325%	12.75%
DIABETES	7.45%	7.95%
EXERCISE	20.175%	21.05%
FLU SHOTS	26.65%	37.325%
BINGE DRINKING	19.125%	16.65%
OBESITY RATE	27.25%	21.775%
OVERALL ASSESSMENT		
STRENGTH	The connection to the surrounding park infrastructure allows for the programming of the facility to overlap and extend beyond the constraints of the building to the neighborhood.	The site is located in Washington DC, with exposure to the national attention on health and fitness and is able to be accessed easily by public transportation
WEAKNESS	The site only is served by 1 means of public transportation on only 3 bus lines that limit connectivity and would necessitate using automobiles to arrive on site	The neighborhood fabric in the surrounding context that would be most accessible is higher-cost renovations that would not necessarily be active participants in a community center
OPPORTUNITY	Community lacks and real sense of network and fabric and from the outside it seems that these typological and geographic area are prime for change and there is a strong potential for connection to the city	Howard University could become a partner in health regulation for the area and the potential for restoration along Florida makes the entire plan feasible.
THREAT	The site is very car dominated and is in a very historic context which raises issues of the vernacular and context	There is a clear rift in the different groups within the neighborhood and a perception of safety along with a general lack of outdoor recreation potential
OVERALL ASSESSMENT		

selected site is the former site of one of Washington D.C.'s most prominent Music Stores and the connection to Howard University further defines the connection to the African American community in the city. Church Hill is an incredibly rich historical site, notably across the street is St. John's Episcopal Church, which was site to the famous revolutionary-era "Give me Liberty or Give me Death" speech of Patrick Henry. Both neighborhoods were greatly affected by desegregation and the ramifications of urban policy on the introduction of public housing into the neighborhoods, until most recently both areas have experienced interest in redeveloping the existing historic row houses. Symbolically, both of the sites also afford the opportunity to help to define a way that the American population can redefine itself and become a healthy nation.



FIGURE 55: SHAW Existing Recreation Spaces



Figure 56: Church Hill Existing Recreation Spaces

A network of recreation spaces is necessary to facilitate other physical activity. While in suburban sites with unlimited space, recreation space and outdoor spaces can be easily constructed on the site; in an urban setting the existing infrastructure must be evaluated for proximity and multi-purposing as integral to the facility program. Both the Shaw and Richmond sites are within the network of recreation spaces, but the Richmond site has a greater concentration of open park space with a broader range of different types of space in the immediate context.

One major contributor to public health as it relates to obesity is the positive relationship between adequate green space and weight. As is visible in Figures 57 and 58, the proportion of green space is one of the determinants of health. Within the urban sites, there is a twofold issue in regards to how this could be treated. In an urban area with sufficient green space in the vicinity of a site the role of a community center would be to provide information about how to effectively utilize these spaces and existing infrastructure. More importantly, in urban areas that lack proper green space very little can be done within the existing context and density to add additional open space, so this

facility would need to provide the space and appropriate measures to create an equitable resource.



FIGURE 57: SHAW Residential Units



FIGURE 58: CHURCH HILL RESIDENTIAL

The residential density of the sites contributes to the amount of people who are likely to use this facility and consider themselves a part of the urban community. The adjacent concentration of housing within proximity to both sites is beneficial to adding to the amount of residents within close proximity; however the high concentration of

residential zoning indicates a lower daytime occupancy of the neighborhood. More importantly, the greater amount of population around the site, the greater chance that someone will have an additional companion to facilitate exercise within the community; most people prefer the source of camaraderie and friendship that can be fostered through organized recreation (Russell, 90). Both of these sites present an opportunity to connect well with the residents and rely on the residential fabric to further define the community.



FIGURE 59: SHAW Historic Overlay Zones and Surrounding Zoning

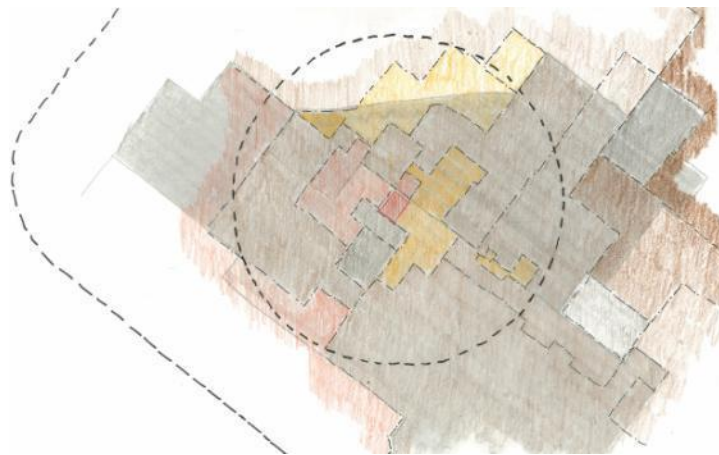


Figure 60: Church Hill Historic Overlay Zones and Surrounding Zoning

While the residential units and housing typologies of these sites are critical to creating a community, the surrounding zonings also help to establish what the respective cities have intended for the city. Through a mix of uses on the site, a variety of different user groups would be engaged in the community. Both sites are predominantly residential in nature with a mixing of different densities radiating out from the site. The Shaw site is encompassed in a special overlay district that connects to the U Street corridor through a programmatic mixing of arts and commercial spaces. In Richmond, the current revisions to the master plan have created an overlay mixed-use zone that established commercial and residential spaces along the major connective roads in the neighborhood. More importantly to the character of the neighborhood are the historic overlay districts that encompass both sites. Although the Shaw site is outside of the Greater U Street Historic District, the adjacent properties are included in the survey and should be considered. In Church Hill, the combination of the Church Hill Historic District, Shockoe Bottom Historic District and the St. John's Church Historic District signify the importance of the connection to the historic fabric of the city.



FIGURE 61: SHAW Food Network: Restaurants, Fast Food Establishments, Markets and Convenience Stores

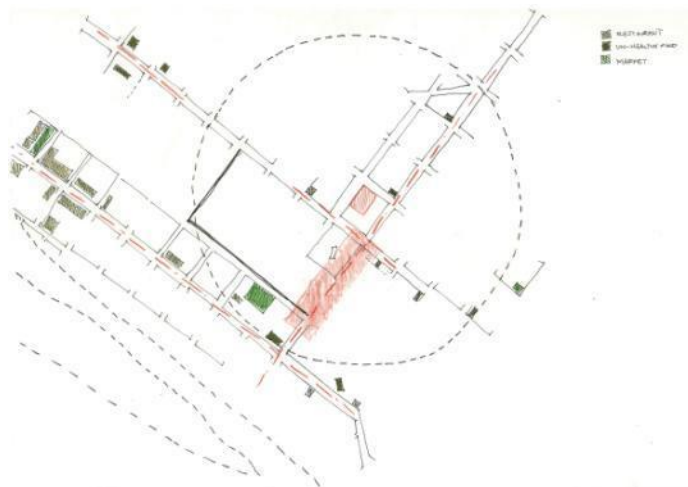


Figure 62: Church Hill Food Network: Restaurants, Fast Food Establishments, Markets and Convenience Stores

One of the major problems that studies have concluded lead to obesity in urban areas is a lack of access to health food sources. As is visible by the diagrams, both sites have a lack of food options within the walkable neighborhood; the options within the confines of the neighborhood are limited to poorer-quality dining establishments that serve unhealthy food. In many urban settings, food insecurity is an issue as residents without access to

transportation must rely on convenience stores for meal substitutes. This growing problem is resulting in people who are considered under-fed; while body-mass may suggest that these individuals are over-weight, a bag of high-energy dense foods such as a bag of chips does not substitute for a meal.⁴² Building upon this issue, although people are visibly no longer mal-nourished, the sustenance that is achieved through healthy eating is lost and temporary fullness is the only benefit.



FIGURE 63: SHAW Food Community Network: Public Services, Community Centers, Churches and Schools

⁴² *Let's Move Initiative*

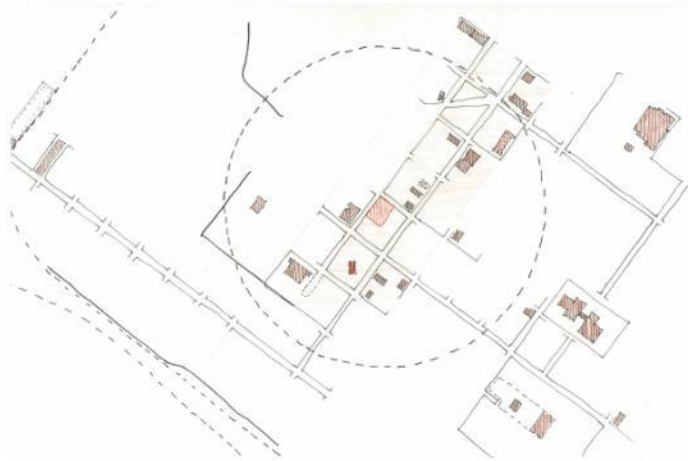


Figure 64: Church Hill Community Network: Public Services, Community Centers, Churches and Schools

The connectivity of the neighborhood to other community amenities is necessary to ensuring public use. Through the scope of public buildings as churches, community centers, public services and schools, the sites were analyzed to determine the relationships and connections within the defined area. The Shaw/ Howard site contains only a few structures used as churches and public buildings scattered around the site, whereas the Richmond site contains a relatively high amount of, albeit underutilized, community buildings organized along the areas central axis adjacent to the site. In the capacity of community and existing infrastructure of the site, Richmond has a much better network of facilities.

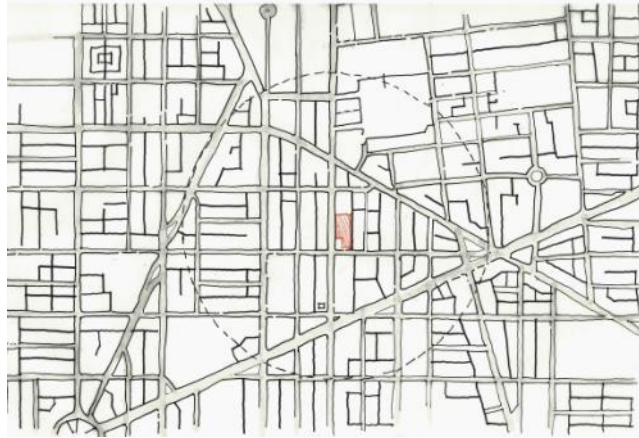


FIGURE 65: SHAW Street, Sidewalk and Alley structure



Figure 66: Church Hill Street, Sidewalk and Alley structure showing inter-block connections

Beyond the network of transportation and connectivity of the street grid is the focus on the pedestrian. The network of connectivity throughout both sites is completed through the system of streets, alleyways and sidewalks. Combined, these three modes of transportation connect and help people move within the fabric of the neighborhood.

While both cities are a relatively well regulated grid, but the alley structure begins to

break down each of the blocks into sections with a very different means of movement. In Shaw, the alley structure begins to divide the block into multiple different sections that allows for multiple connections within the urban structure; Richmond alleys tend to run in one a single direction, with a number of blocks without any inner block connection. The network of sidewalks in Shaw, with only a few exceptions is a very well integrated system of sidewalks and cross walks that integrate with signalized intersections. In Richmond, the sidewalks are extremely fragmented the father from the major axial roads and the lack of maintenance of the brick sidewalk has resulted in overgrown vegetation and broken access.

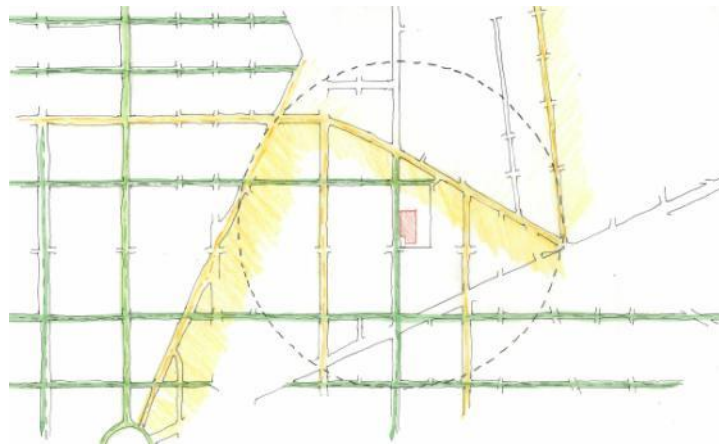


FIGURE 67: SHAW bicycle pathways and preferred routes including roads with dedicated bike lanes



Figure 68: Church Hill bicycle pathways and suggested pedestrian pathways

The pedestrian network is also defined by an ability to successfully ride a bicycle as a means of transportation. A recent rise in bicycle ridership as a sustainable means of commute and transportation has increased demand on cities to incorporate the bicycle into the typical street section. More importantly, bicycle usage for recreational purposes is an effective way to exercise. In Shaw, there are dedicated bike lanes in a number of the East-West roads; the North-South roads accommodate bicycle travel but do not have appropriated spaces for bike travel. However, according to the Washington D.C. Department of Transportation 2010 Bike Pathways Map, the major paths of vehicular travel have a poor level of pedestrian service and are unsafe for bike travel. In Richmond, there are minimal bicycle specific spaces. As is visible from the pedestrian transportation diagram above, there are only two major East-West pathways within the city that are in close proximity to the site with an intended focus on bicycle travel.



FIGURE 69: SHAW Vacant Properties and Parking Lots



Figure 70: Church Hill Vacant Properties and Parking Lots

One element that has been attributed to a lack of inter-community walking is that the outdoor recreation spaces lack aesthetic appeal. As both of these sites are within the contexts of a slightly decaying urban fabric, the amount of vacant land and open space is important to the overall consistency of the neighborhood. Further adding to the breakdown of a cohesive street is the presence of parking lots, both large and small, encourage vehicular usage and decrease resident safety. In Shaw, vacant lots dominate the street edge and are scattered throughout the community; there is a limited amount of

park lots. Within the Church Hill community, both vacant lots and parking lots equally cover the landscape without a clear hierarchy of location. The amount of parking spaces in Richmond is significantly higher, but as is visible in the transportation diagrams, necessary as the site presently lacks a multi-mode public transportation system. It should be further noted that the vacant sites and parking lots are being considered in further project development for the design of a community master plan to improve the overall network of the neighborhood built environment.

SITE SUMMARY:

Perhaps the most important factors that transcend the existing environment are the health variables within the community. Through the Behavioral Risk Factor Surveillance System (BRFSS) evaluation, common data is compiled on different measures of health. The potential site comparison table highlights the differences between the two communities as a measure of health. Obesity and weight have been attributed as major contributing factors in diseases such as coronary disease, diabetes, cancer and stroke.⁴³ These diet-related diseases have major implications on the overall health and wellness of the nation. As is shown in Figure 71, these previously mentioned diseases account for nearly 58% of deaths in the United States and while it cannot be localized what contribution that obesity has in these numbers there is a correlation between the two.

⁴³ Lindberg, 13

Statistical Comparison of Washington, D.C. and Richmond, Virginia					
	2009	2008	2007	2006	AVG
WASHINGTON DC					
Health Status	10.9	13.8	13.5	12.9	12.775
Exercise	19.6	21.2	21.3	22.1	21.05
Diabetes	7.5	8	8.1	8.1	7.925
Flu Vaccination	32.9	37.8	39.8	38.8	37.325
Smoking	15.3	16.2	17.2	17.9	16.65
Binge Drinking	20.1	17.9	16.1	15.9	17.5
Obesity	20.1	22.3	22.2	22.5	21.775
RICHMOND					
Health Status	14	10.8	15	13.5	13.325
Exercise	21	20.7	20.1	18.9	20.175
Diabetes	6.7	6.8	8.8	7.5	7.45
Flu Vaccination	29.8	22.5	19.5	34.8	26.65
Smoking	19.2	15.3	20.8	21.2	19.125
Binge Drinking	11.5	14.1	16.9	14.9	14.35
Obesity	28.9	27.9	26.8	25.4	27.25

Figure 71: BRFSS 2009 City Data and comparison of factors of health

Historically, these sites had a cohesive sense of community that was defined by a semi-self sustaining district. During the urban plight and massive suburbanization of the city, these sites were left partially abandoned and without a population to serve. While many steps have been taken to improve the urban conditions, as the diagrams illustrate, there are a number of voids that provide the resources to make for a healthy community in the sense of a balance of amenities and access to the features that promote physical well-being. By using the chart of site conditions, theoretically any site within a community could be evaluated to determine if an intervention would be of benefit. Through the process of determining the site requirements, a proto-typical format has been formulated to review future options for additional community center.

In Shaw, the opportunity presents itself to incorporate a facility into the city network as a national prototype in combining program elements in one centralized community facility to improve health; for Richmond, the scope is localized to realizing the potential for this type of structure on a typical American city faced with issues of lack of

transportation and a decentralization of the city population. However, both sites analyzed contained their own individual merits and potential hazards.

For Richmond the site comparison results in favorable factors related to the adjacent network of dining, recreation spaces and even outlying community services. The greatest problem within this site and surrounding context is that there is a lack of pedestrian movement and favorable alternatives to the automobile. Additionally, the site zoning is deficient of variety of types and the community does not have a daytime workforce community coming into or staying within the neighborhood.

Ultimately the final determinants about site transcend simply looking at numbers and other factors and determining which of these sites would be the most appropriate as an establishment for the testing of program and building typologies. As the thesis has progress, it was determined that having a site that served as a stratified sample of the community and surrounding context would be the most beneficial way to test this facility as a center of the community. For Richmond the site comparison results in favorable factors related to the adjacent network of dining, recreation spaces and even outlying community services. The greatest problem within this site and surrounding context is that there is a lack of pedestrian movement and favorable alternatives to the automobile. Additionally, the site zoning is deficient of variety of types and the community does not have a daytime workforce community coming into or staying within the neighborhood. While the site in Richmond held the potential to connect to the frame the project in the context of the existing infrastructure, the liabilities of the site, including the disconnected nature of the community and lack of public infrastructure, proved to necessitate exploring the Washington D.C. site.

CHAPTER 9: SITE ANALYSIS

Shaw Introduction

As part of the greater Washington network of communities, the Shaw neighborhood has a unique series of conditions that afford opportunities. At the turn of the 20th century, Shaw and the 7th and 9th street corridors were a major hub in the African American community.⁴⁴ The area was left devastated by the riots following the assassination of Martin Luther King, Jr. The introduction of metro access to the neighborhood has served as a catalyst for development with the opening of the station along the Green and Yellow line beginning in 1991. According to Metro data, since 1991 the average daily ridership and boarding's have risen 290 percent to a count of 4,256 riders per day in 2009.

Much like the majority of other communities in the United States, residents of Washington D.C. are becoming more overweight. As is shown in Figure 72, the population around Shaw is not only losing a percentage of people at a healthy body mass, but is actually growing in the percentage of population that is classified as obese. In looking at the community, the individuals in the surrounding neighborhood are ideal candidates to an intervention that would focus on a healthier lifestyle. As a reflection of the city of Washington, D.C., the communities surrounding Howard University and the site are also within some of the least healthy communities in the city.

⁴⁴ DC Office of Planning, 10

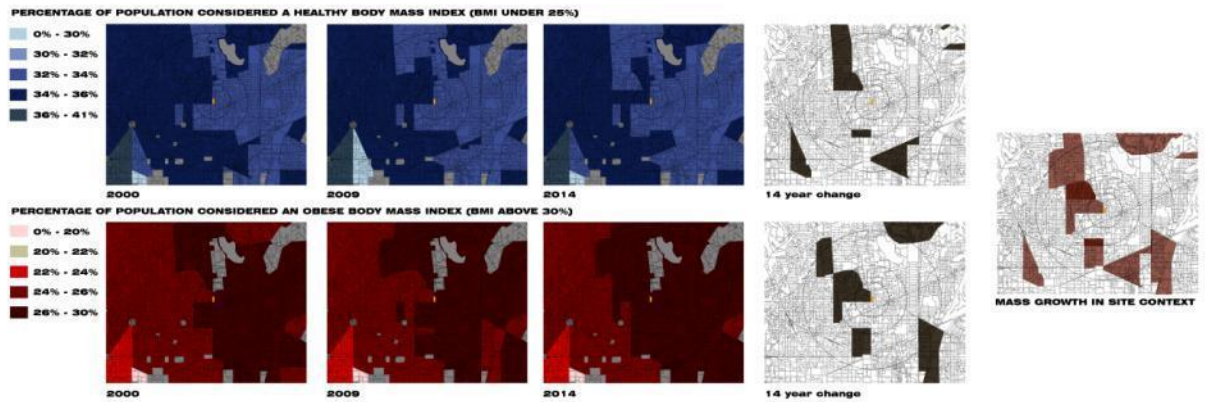


Figure 72: Population Obesity Rates in Washington D.C Surrounding Shaw

Surrounding Context

Utilizing a walking radius of ¼ mile or an average fifteen minute walk, the boundaries of the site as it connects to the metro entrance define the extent of the immediate context. While the neighborhood is zoned to house a variety of different uses, it is presently located within both the DUKE Development Framework Plan as well as on the periphery of both the U Street Historic District and the LeDroit Park Historic District.

⁴⁵ Culturally, this area is designated to become an addition to the cultural center within Washington, D.C. Within the framework of the DUKE Plan, this neighborhood and site are critical to fostering a connection to the greater metropolitan area and rebuilding the cultural center of Shaw.

⁴⁵ DUKE Draft Development Framework For a Cultural Destination District Within Washington, D.C.’s Greater Shaw/U Street, 14.



Figure 73: Shaw/ Howard Neighborhood Walking Radius



Figure 74: Howard Theater. Revitalization effort to bring cultural events back to the neighborhood.



Figure 75: Surrounding Street Context

METRO

The presence of METRO access to this site is a great asset. Within Washington D.C. the Washington Metropolitan Area Transit Authority underground subway system is a portion of the public transit system that serves as a connective tissue between different neighborhoods of the city. Within the constraints of this thesis, each metro station serves as a node that connects and allows for a movement within a particular area. At each metro station there is an additional benefit of orienting the individual to the uniqueness within a community and then serving as a center for the area. Existing as one of 21 metro stations along the Green line with additional service from the Yellow Line, as shown in Figure 76 this site is directly connected through the subterranean tunnels to a large portion of Washington D.C. Each metro station is then connected by a 15 minute walking radius to a much larger context.

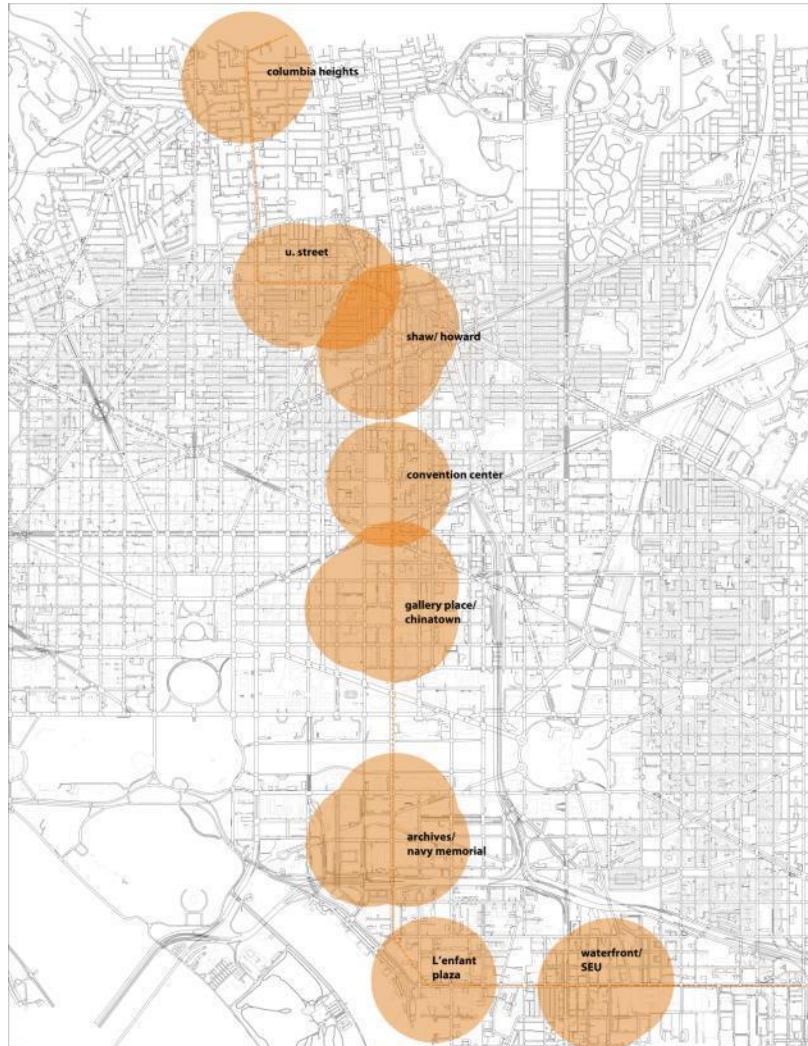


Figure 76: Green Line Surrounding Metro Stations



Figure 77: Perceived Metro Walking Radii

Beyond the connection to the entire city of Washington D.C., the adjacency of the Shaw/Howard Metro station to the U/Street Metro station provides an overlap in connections. The distance between the two metro stations closest entrances is less than ¼ mile which provides a discrepancy for which metro station is better serving portions of the neighborhood. The perceived walking areas illustrate that the U Street/ African American Civil War Memorial/ Cardoza has a favored preference among metro users, with a greater amount of street activity. In 2009, the average daily ridership was almost 1.6 times higher for U Street than Shaw/Howard. This discrepancy in ridership as well as walkability within the adjacent neighborhoods can be benefitted by adding additional destinations and increasing the amount of activity surrounding the Shaw/Howard Metro.

One factor at the existing Shaw/ Howard metro station that faces a number of other stations on the system is a lack of identity. As one emerges from the metro platform to the ticketing mezzanine there is no differentiating factor to give a sense of significance

of the Shaw/ Howard fabric. From both the below-grade level and the street level, the entrance to the metro tunnel is unassuming and generic. While each portion of the metro does maintain a consistent typology, the lack of connection to community and uniqueness of site makes it difficult to connect and differentiate each metro station. In addition, the similarities between different entrances produce confusion in way finding within metro mezzanines.



Figure 78: Existing Shaw Metro Canopy and Escalator Entrance

One potential for the Washington D.C. Metro system and the entrance to the metro tunnel is the optimization of the space below grade. In a city where vertical height is limited and space is a premium, it makes logical sense for a building to utilize this space. Through an investigative study, there are several metro entrances in the WMATA system that connect to programmatic elements of either retail or additional functions. As is seen through Figure 79, these three metro stations connect to a private entity in a different manner than the traditional metro entrance. This combination of public space and private building ownership presents the opportunity for envisioning how the space below grade within the metro connections can begin to foster a sense of space that utilizes the existing metro infrastructure.

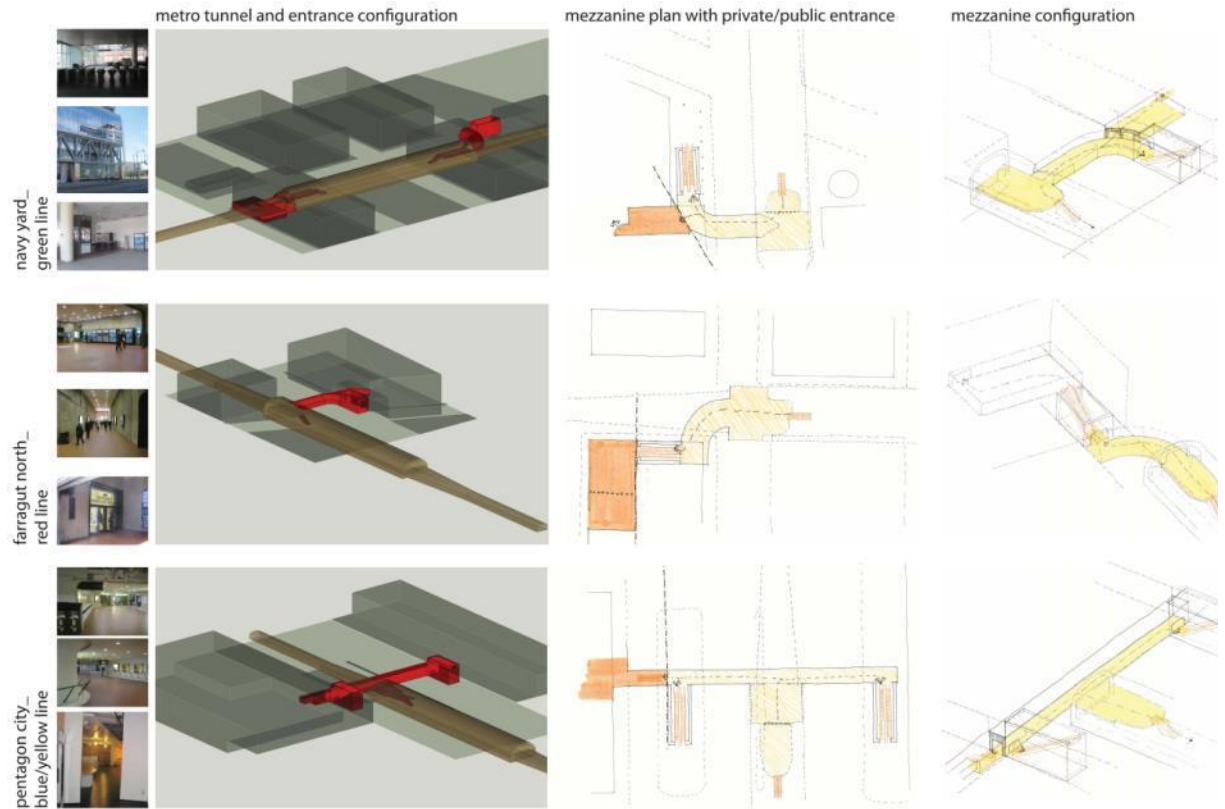


Figure 79: Washington, D.C. Metro Station Analysis

Site Location

Presently, the site selected for the thesis intervention is a vacated lot situated at the along 7th Street N.W. between T Street N.W. and S Street N. W. The opportunity to place an intervention comes through the use of the lot that is currently slated for a Washington D.C. PUD as well as a plot of land that is a Washington Metropolitan Area Transit Authority right of way that is the present entrance to the WMATA Metro northern entrance to the Shaw/Howard University station. Shown in Figure 80, the site plan after aggregating multiple lots would accommodate up to 45,000 square feet of ground floor use.



Figure 80: Site Plan with Maximum Ground Floor Square Footage



Figure 81: Looking South from 7th and Florida Ave.



Figure 82: Looking South from 7th and T. Street

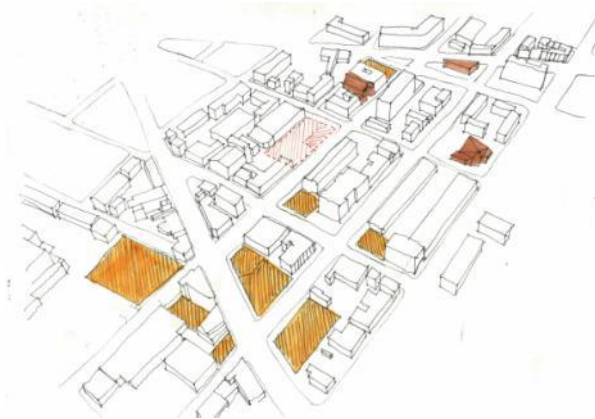


Figure 83: Context Axonometric



Figure 84: Site Analysis Collage

One of the issues facing the context is a discrepancy in the building stock and planned developments. Shown in Figure 85, the surrounding context is heavily residential, with townhouses creating the majority of housing fabric. The surrounding street context is a mixture of residential townhouses, low-rise garden style apartments, and high-rise residential buildings. However the images also dictate the difference between the townhomes and the higher density apartment buildings. Further creating issues in the adjacent parcels to the metro station are the urban renewal housing projects built to optimize housing on the sites. These public housing projects have brought a large number of occupants into the area but like many urban projects do not bring a diversified neighborhood.



Figure 85: Adjacent Parcels. Conflicting Mix of Scale and Street Use

Howard University

One facet of the site that provides a connection to health is the Howard University Hospital. Located only 3 blocks to the north from the site is the Howard University Hospital. One program and department at the hospital is the Center for Wellness and Weight Loss Surgery. While this center does promote a healthier lifestyle, it does so through a variety of medial weight loss interventions that involve surgical procedures.

Unfortunately, what this center does is promote a method of weight loss that has a concentration in the short-term, immediate fix as opposed to using diet and exercise alone to effectively lose weight and regain health overtime. The benefit to these procedures, such as Laparoscopic Adjustable Gastric Banding and Laparoscopic Gastric Bypass, is that they produce fairly quick results as helping those who are morbidly obese begin a health remediation in ways that they may not necessarily be able to do without a surgical procedure. In the long term, these procedures however become a mandatory lifestyle change instead of an internal decision to make a continued effort for personal wellness. By selecting a site within close adjacency to this center, it is the intention that additional follow up as well as sustained exercise and support groups could build upon the work at the center to provide a much more cost effective and safe alternative to major surgical procedures.

CHAPTER 10: DESIGN PROCESS

Initial response to the site began as a way to consider what the element of centralization and vertical communication could become. In urban environments, there tends to be a large network of infrastructure that promotes movement and outdoor exercise, but the site at Shaw unfortunately does not have a visibly connective network that promotes activity and utilization of the street. While sufficient planning initiatives and neighborhood efforts may benefit the streetscape and outdoor exercise culture in the long term, the immediate concerns of health and wellness need to be addressed by providing a comfortable and safe environment for exercise and additional community events.

Site Strategy

In approaching the site, the existing conditions and contexts dictated a vast majority of the original schemes for establishing connections and placing the program. Through a series of diagrammatic models, the northern end of the site became more feasible to house the space relative to health and wellness, in part because of the closer proximity to Howard University and because of the need to open the subterranean space at the metro station. In evaluating the needs for both open and discreet space, the diagram as shown in Figure 86 created a set of guidelines to establish the space that was available and accessible for exposing and concealing activities. Beyond the scope of the ground plane, the establishment of an appropriate building mass was necessary to determine how much program could fit on site and more importantly how much architecture the site could accommodate.

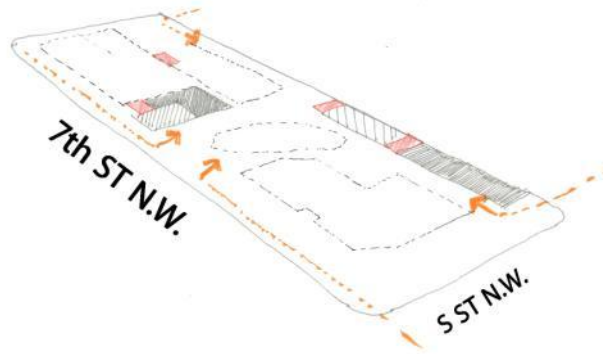


Figure 86: Discreet and Exposed Ground Level

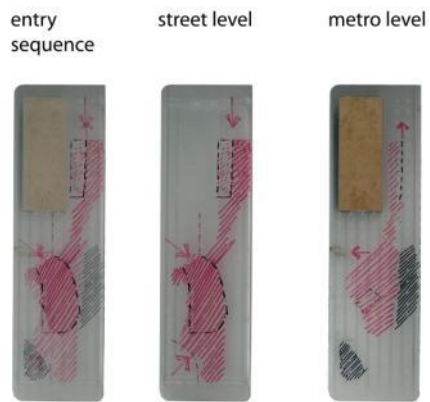


Figure 87: Approach and Entry

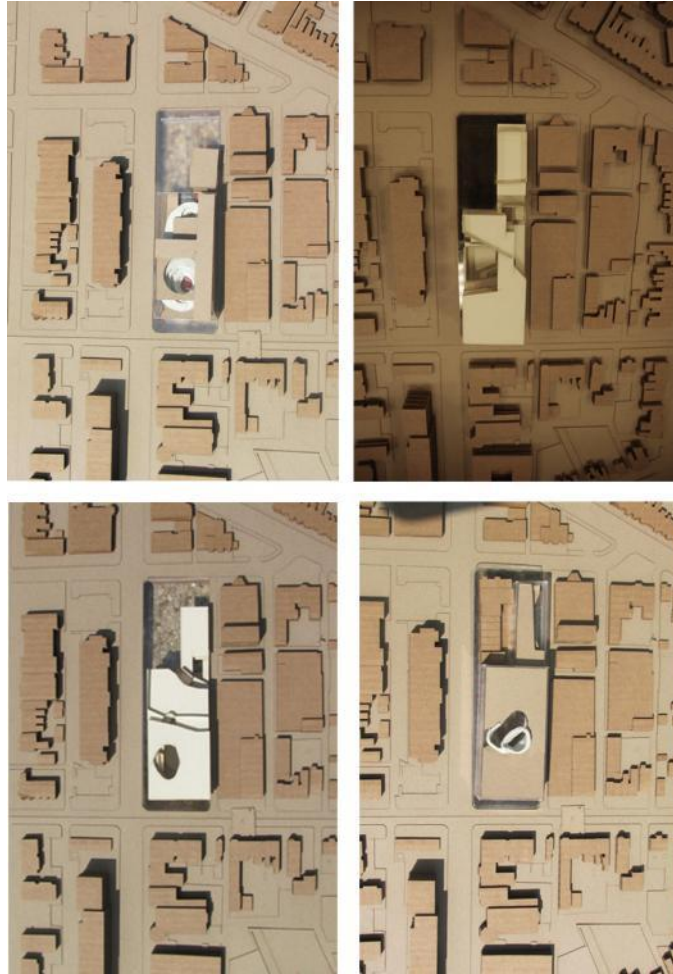


Figure 88: Site Massing and Interior Space Initial Concepts

Programmatic Massing

After the establishment of the program elements of eating and exercising, it was necessary to develop the relationships between these spaces and determine how the facility could function. Initially the element of vertical circulation was not known and this allowed for a more in-depth analysis into how the program could integrate and function. The series of investigations led to an evaluation of adjacencies and how the façade and

building skin could become an element to further reflect the activity within the building and increase exposure between the user and non-user.

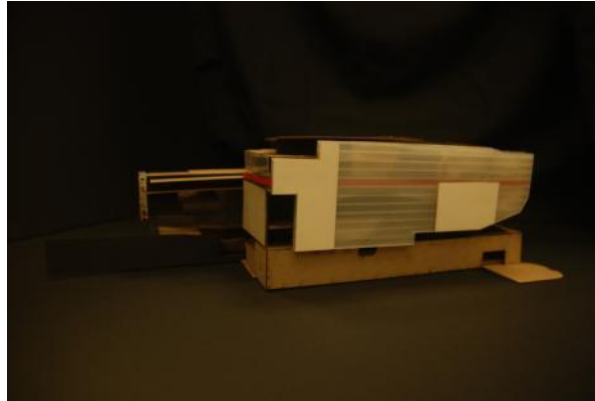


Figure 89: 1:32 Scale Model of Programmatic Massing

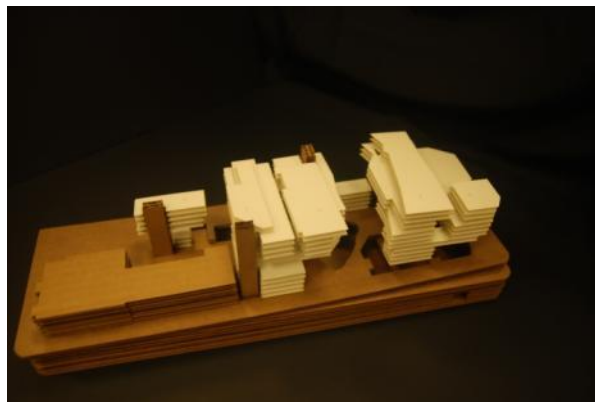


Figure 90: 1:32 Scale Program Massing of Individual versus Collective Space

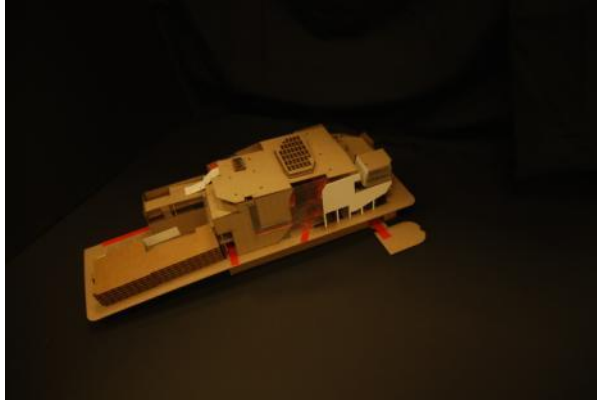


Figure 91: 1:32 Scale Model looking at two separate volumes registering different elevations

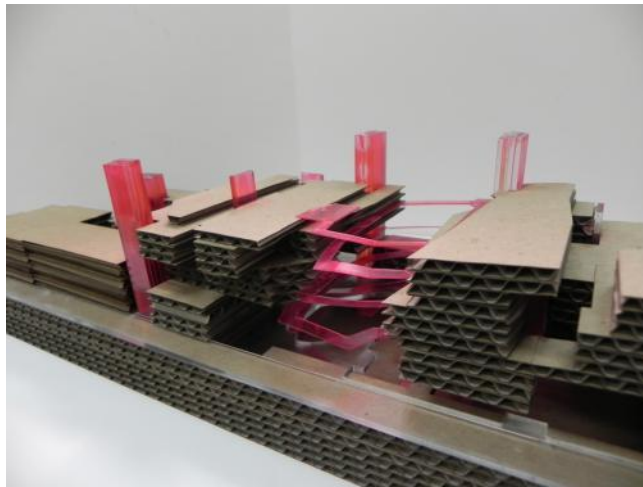


Figure 92: 1:32 Scale Program Massing of Programmed Components with Circulation

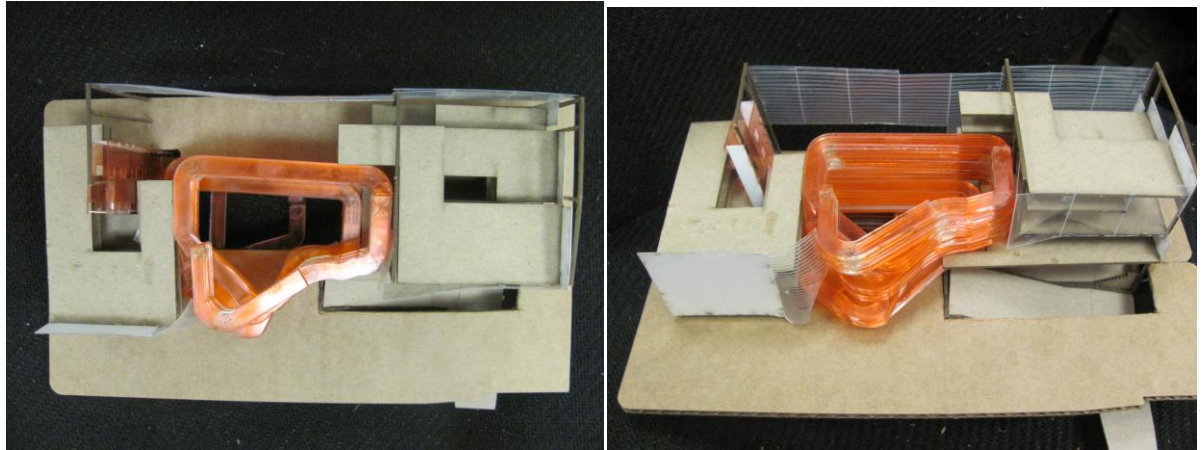


Figure 93: 1:32 Scale Program Massing of Programmed Components with Circulation

SECTIONAL STUDIES

In considering the ways that people move and experience a space, the section of the building became critical to finding ways to connect program and movement to facilitate a relationship between the multiple areas within the building. The most important task in promoting health is getting people moving.

Manifestation of the Two Halves

The centralization of circulation in the building became an exploration in looking at the condition of either an atrium or a courtyard. Through the evaluation of how the vertical circulation could convey through the building, it was necessary to also determine how this expression could happen within the façade. Looking at the spaces and how they separated into functional components, the central element of connection between the two served as a way to unite from an interior and exterior vantage point.

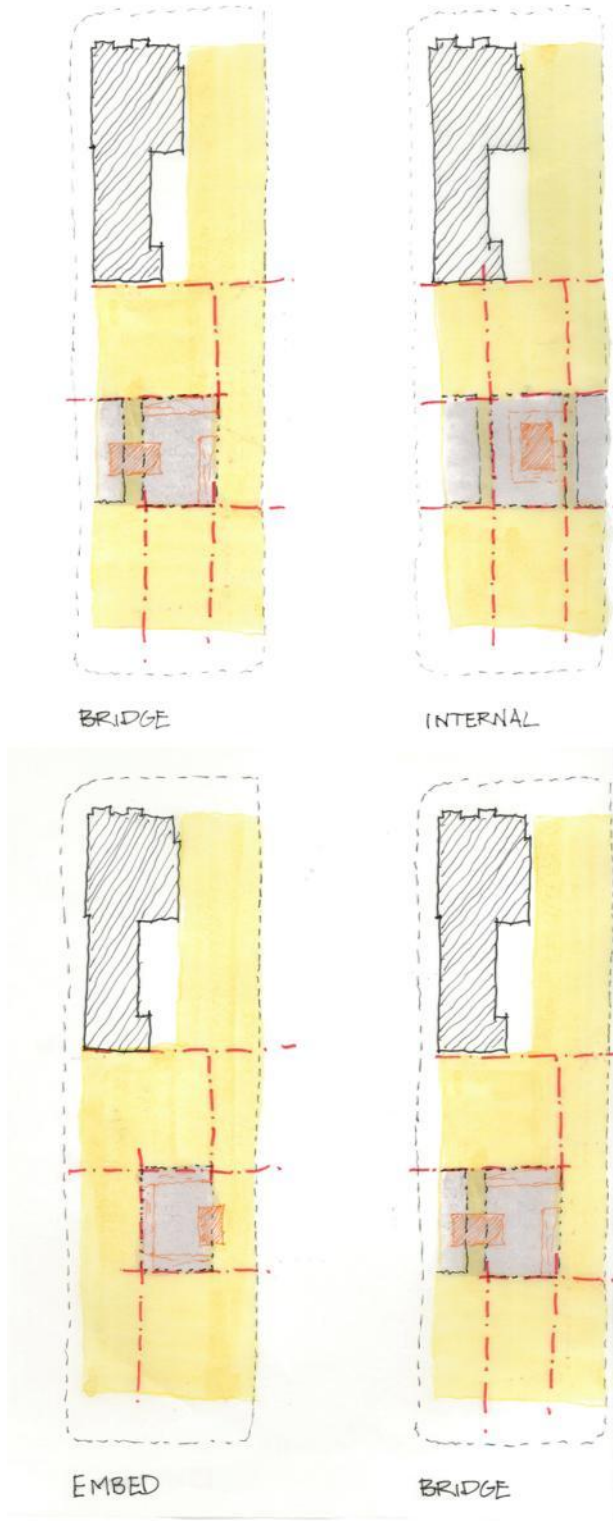


Figure 94: Atrium/ Courtyard Studies

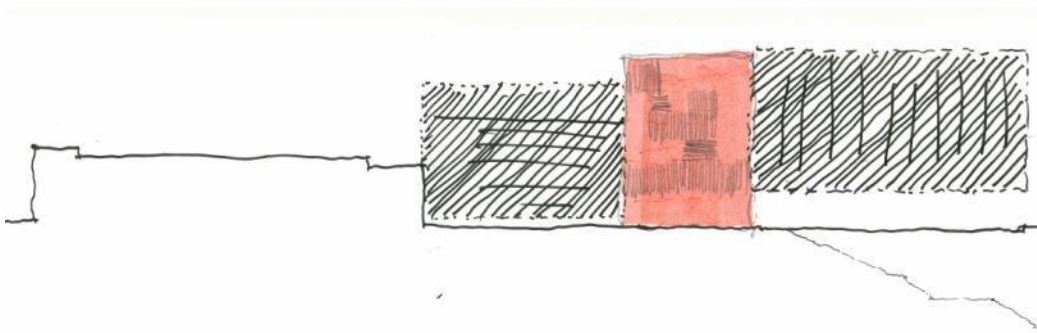


Figure 95: Sectional Diagram with centralized circulation

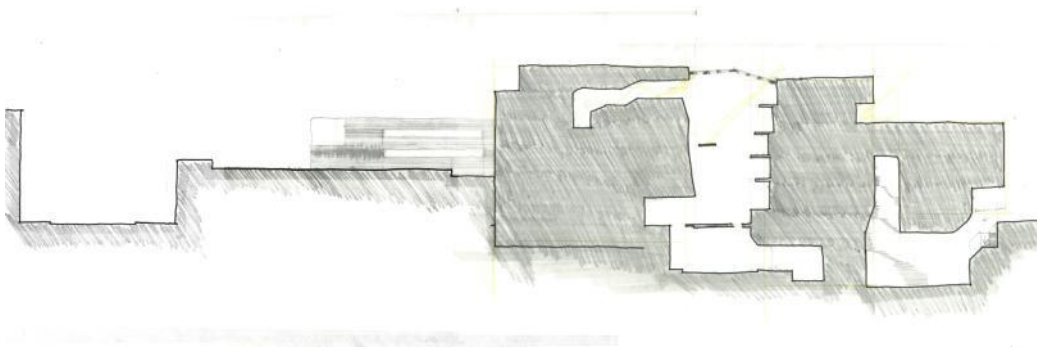


Figure 96: Longitudinal section with atrium connection to the metro mezzanine level

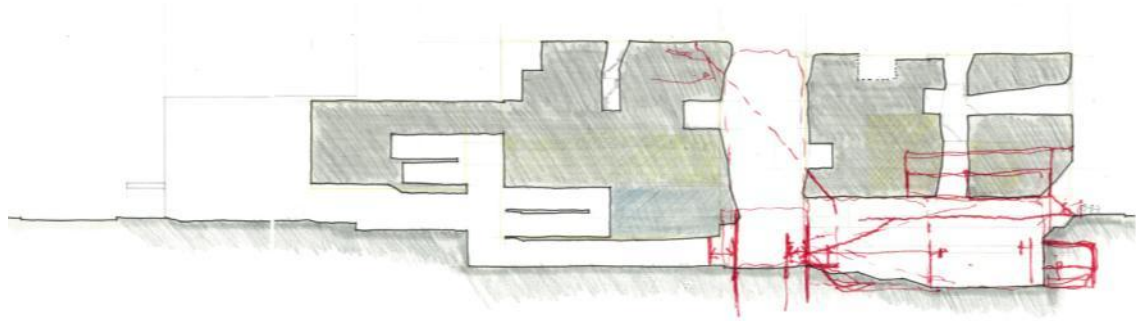


Figure 97: Longitudinal section through entrance at North and sunken plaza

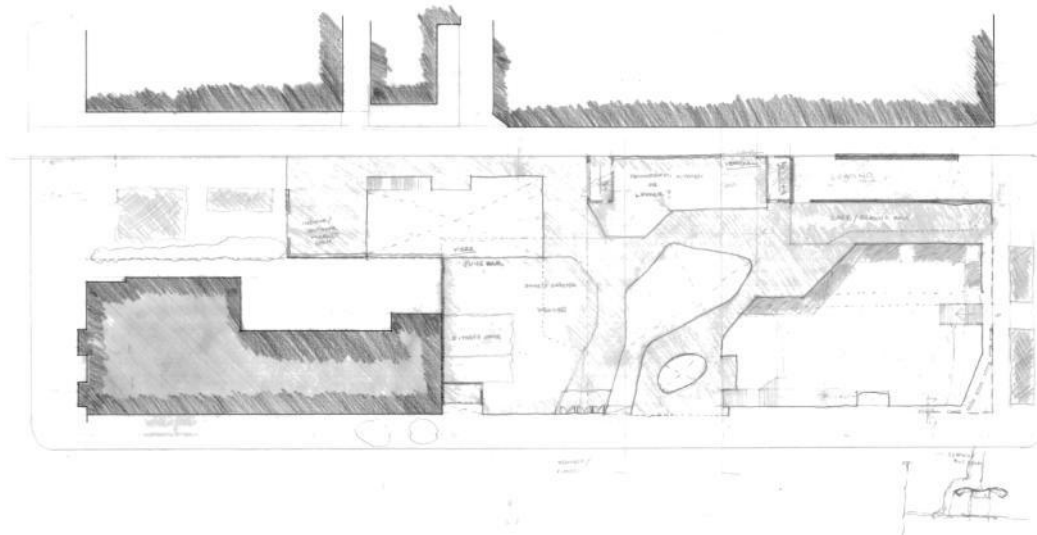


Figure 98: Ground Floor Plan with openings in ground plane

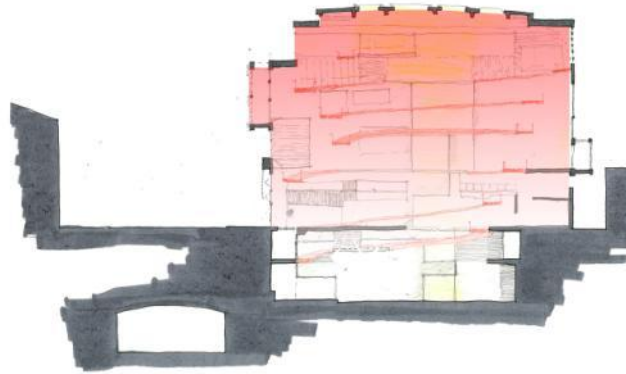


Figure 99: Section through the Wellness Atrium with street front to alley visual connection

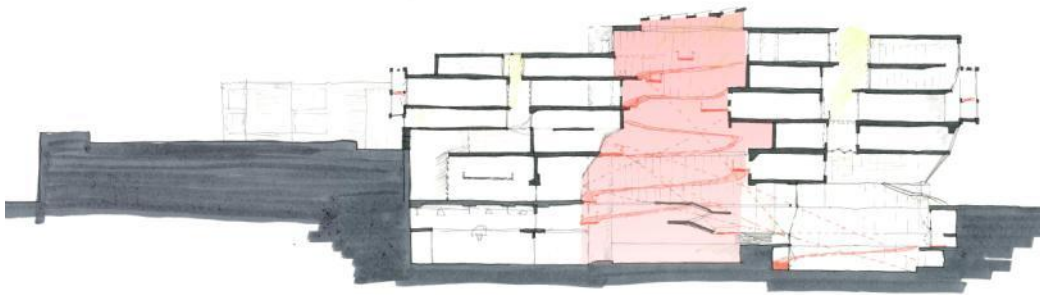


Figure 100: Longitudinal section through ramping at metro. Three sectional shafts connect the interdependent areas of the building.

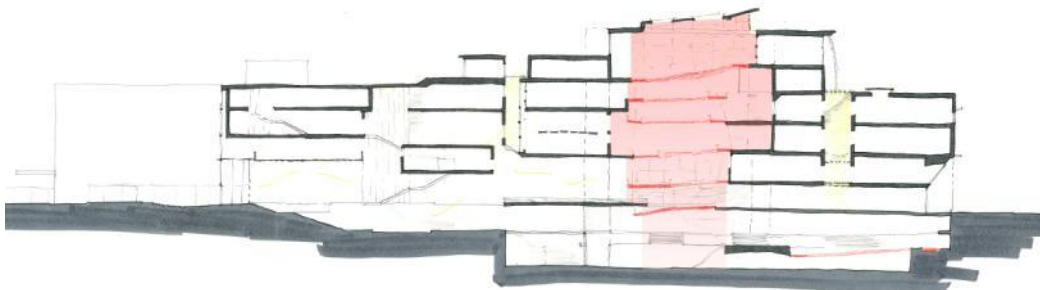


Figure 101: Longitudinal section through entrance from the North

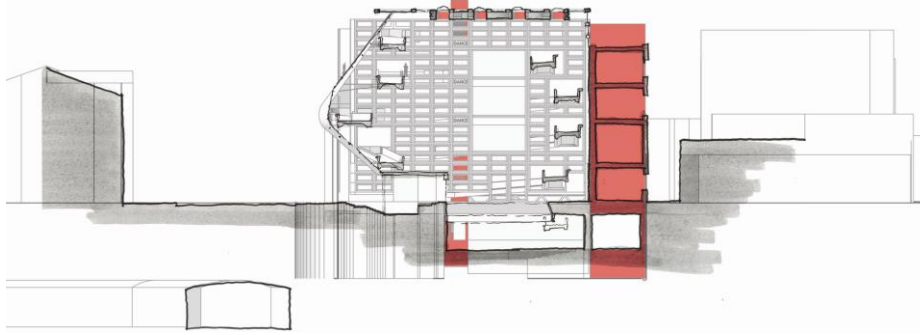


Figure 102: Cross Section through Iteration of the Wellness Atrium



Figure 103: Longitudinal section through entrance from the North through Wellness Court

Working within the building section is the vertical movement that connected the programmatic elements. The circulation in this facility creates the potential to allow program connections and adjacencies to function as well as moments of intersection between food, fitness and an engaged environment. Inside of this space, between the fitness and nutritional components, the interior circulation and public space are where the cross “cultural” learning and community education can take place. By seeing activity happen and tangible results people are more likely able to visualize their own results and goals.

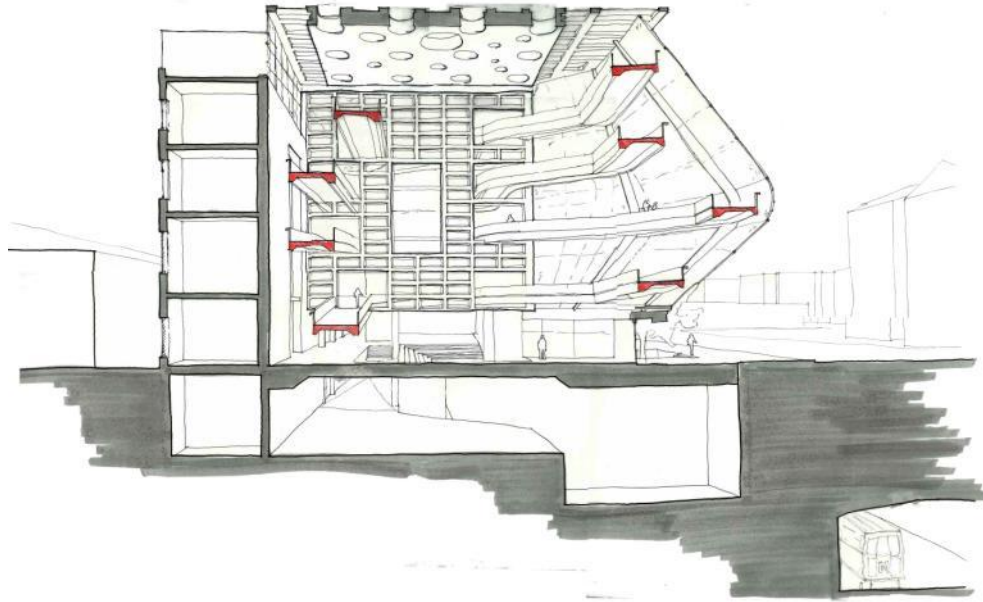


Figure 104: Spatial Study of Open Wellness Atrium Toward Nutritional Space

Sectional Connection to the Metro

As was discussed in Chapter 9, the uniqueness of this site afforded the opportunity to begin carving into the ground plane to connect to the metro tunnel. Through the design iterations, the corner became a space for peeling the building away from the street edges and designating this space as the public realm.

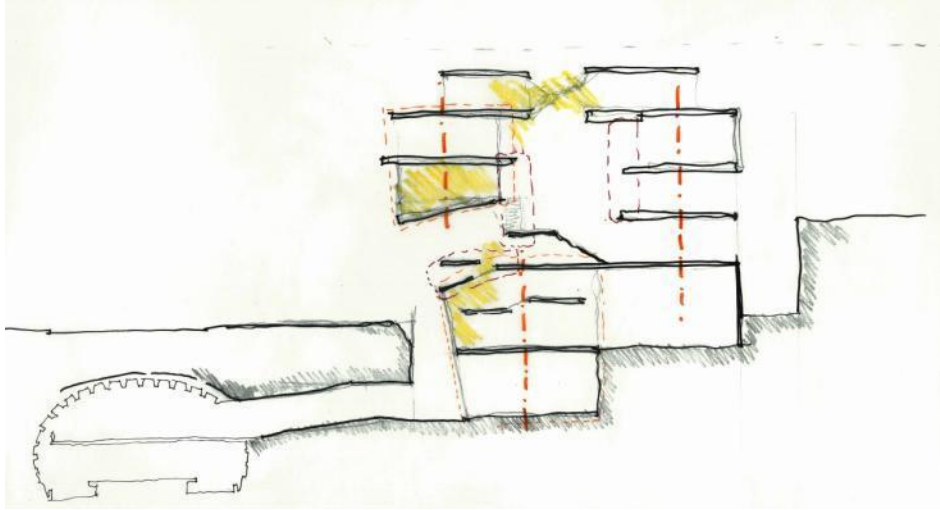


Figure 105: Section at Metro exposing tunnel to the street

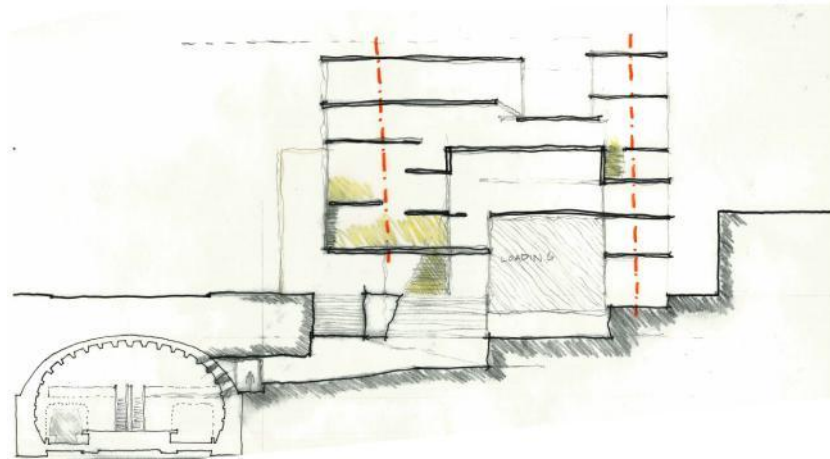


Figure 106: Section at Metro exposing tunnel to the street with a stair configuration

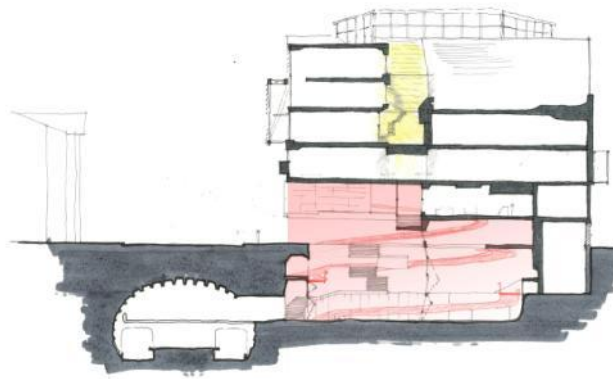


Figure 107: Section at the Metro. The vertical ramping extends into the corner of the building, opening the understory of the building to create a metro mezzanine level plaza.



Figure 108: Cross Section at Metro and “Shaw Steps”

Moving beyond the stereotypical escalator, the vertical circulation from the metro tunnel becomes a critical measure in highlighting and praising circulation and movement. One important attribute of this circulation was finding a stair surface and ratio that was effective at moving large quantities of people while at the same time maintaining a graceful and more generous means of movement. As is illustrated by Figure 109, the variety of different code driven tread and riser ratios began to inform the design of a space for both walking and pausing. The design of the “Shaw Steps”

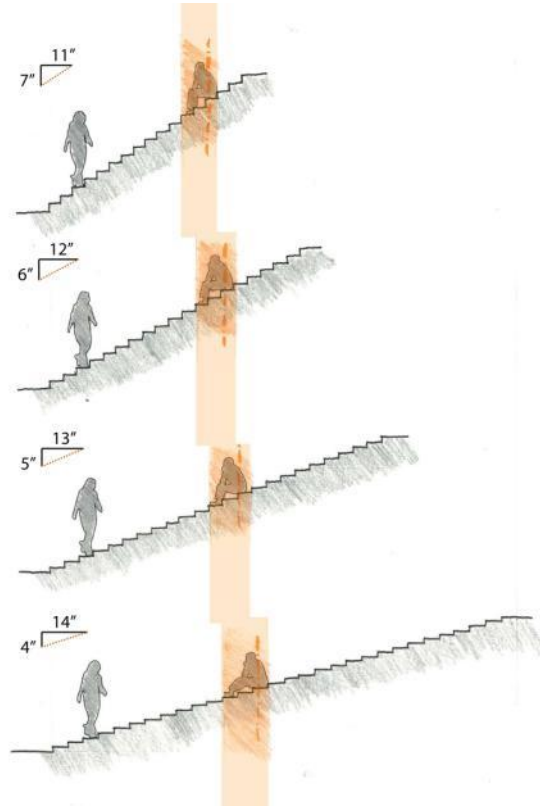


Figure 109: Stair Tread and Riser Ratios

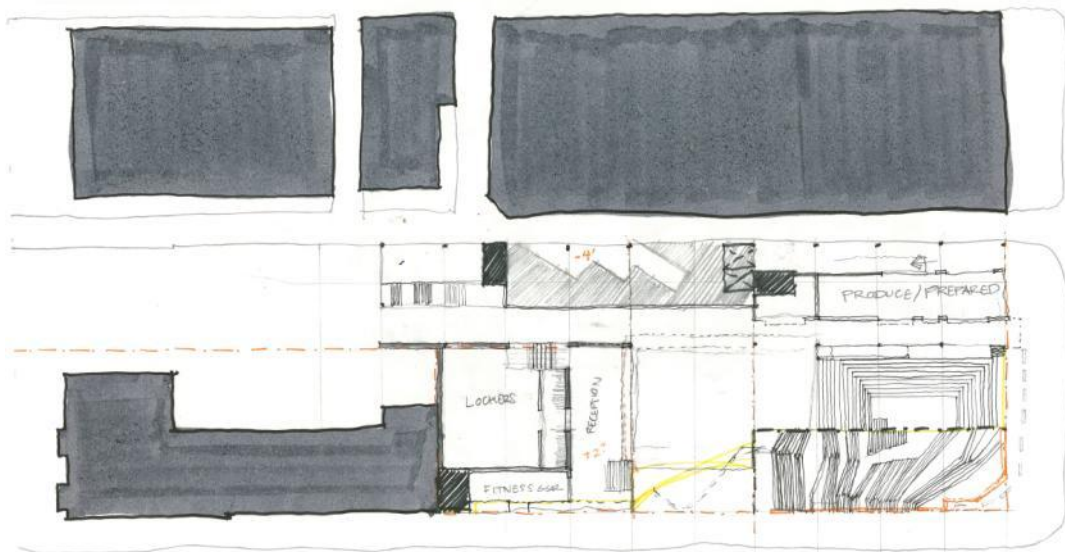


Figure 110: Ground Floor Plan with initial investigation of steps and amphitheater

Section Through Fitness Space

Initially, the fitness space was intended to be a collective series of interconnected floors that were relatively enclosed and a progressive series of spaces. The intent behind the initial spatial configuration was to provide the opportunity to allow an individual to enter the fitness and wellness space and move immediately be evaluated and then proceed to the different levels of the fitness space. Inherently, this program functioned as most traditional fitness centers operate, with a controlled point of access that then limited exposure and access. The issue that this tangential condition created was that the vertical ramping became fully engaged in the community component and then only slightly involved the wellness component.

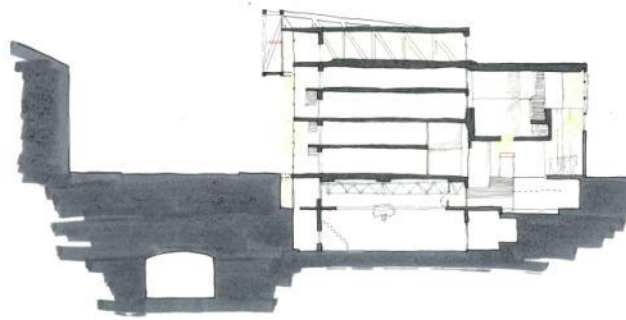


Figure 111: Section through Fitness. The section is divided between the fitness space and the wellness component.



Figure 112: Ramp as Integrated and Tangential

Façade Treatment

In establishing a new programmatic institution on the civic scale, there is a balance that must exist between creating an architecture of permanence that is cohesive with the context yet supportive of the thesis.

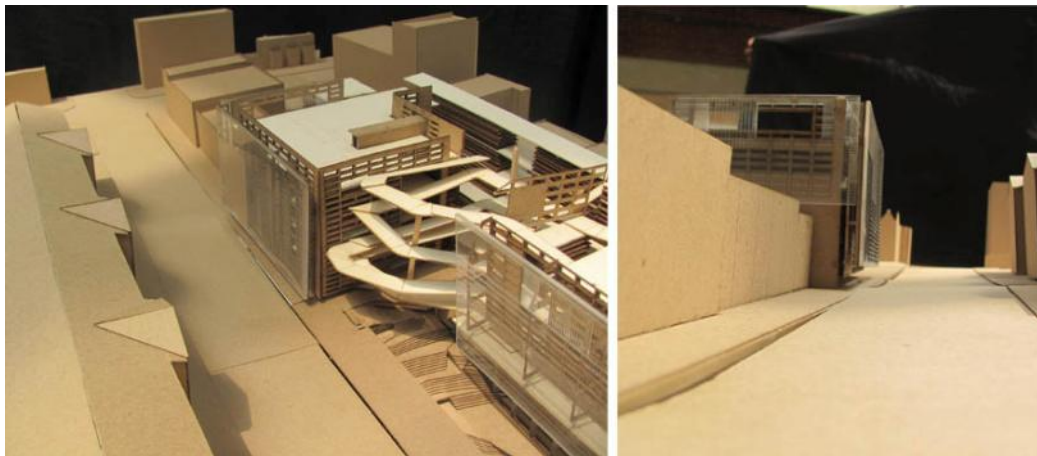


Figure 2: Study in Layering



Figure 114: Corner Perspective with Projection of Wellness Atrium Space



Figure 115: Façade Study_Solidification of the Exterior Wall



Figure 116: Façade Study_Layering of Materials

Design Principles and Guidelines

Throughout the entire design process, the negotiation of the multitude of opportunities and scope of work required a refinement and establishment of defined design principles. By evaluating the critical needs of the community and individual as they related to health and wellness the primary focus of design and implementation could be refined. Within the constraints of this thesis, the most important attributes of the investigation became ways to utilize architecture to:

Establish a **hybrid** by embracing community and commercial occupants.

Encourage walking by orchestrating **programmatic adjacencies**.

Create space to foster and celebrate **movement** and **activity**.

Recognize needs of the **individual** and the **community**.

CHAPTER 11: ARCHITECTURAL RESPONSE

Individual Versus Community

Through the consideration of the two interdependent pieces of the program, two separate components of the architecture began to emerge. The first component of the thesis responded to the needs of the individual. The opposite, but equally important component, is addressing the needs of the community and the collective whole. By separating the program in plan, the facility begins to promote the back and forth dialogue between the individual and the community to foster this relationship of programmatic elements.

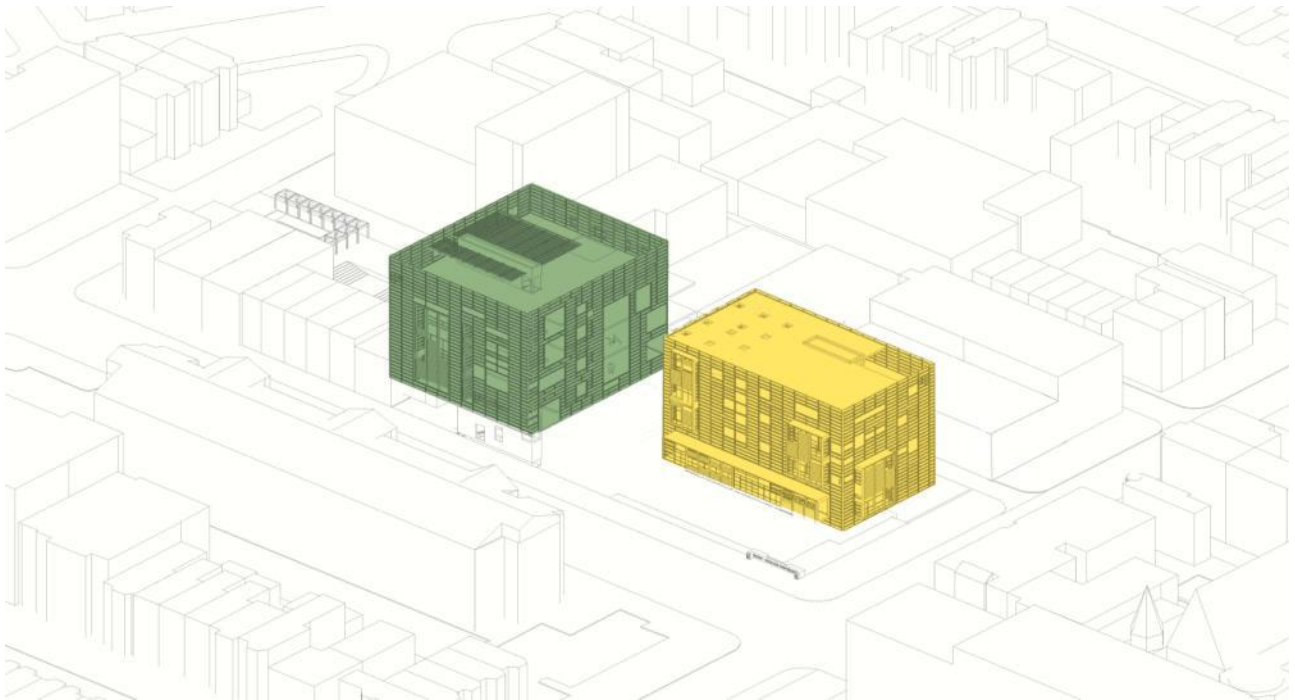


Figure 117: Individual and Collective _ Programmed Space

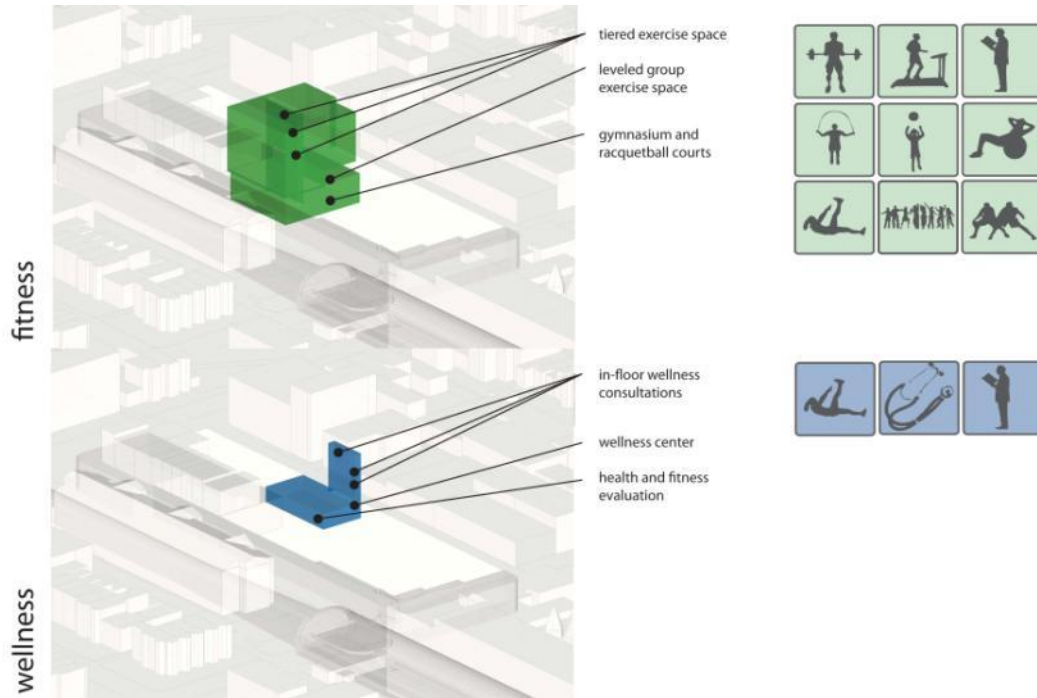


Figure 118: Individual_Fitness and Wellness Program

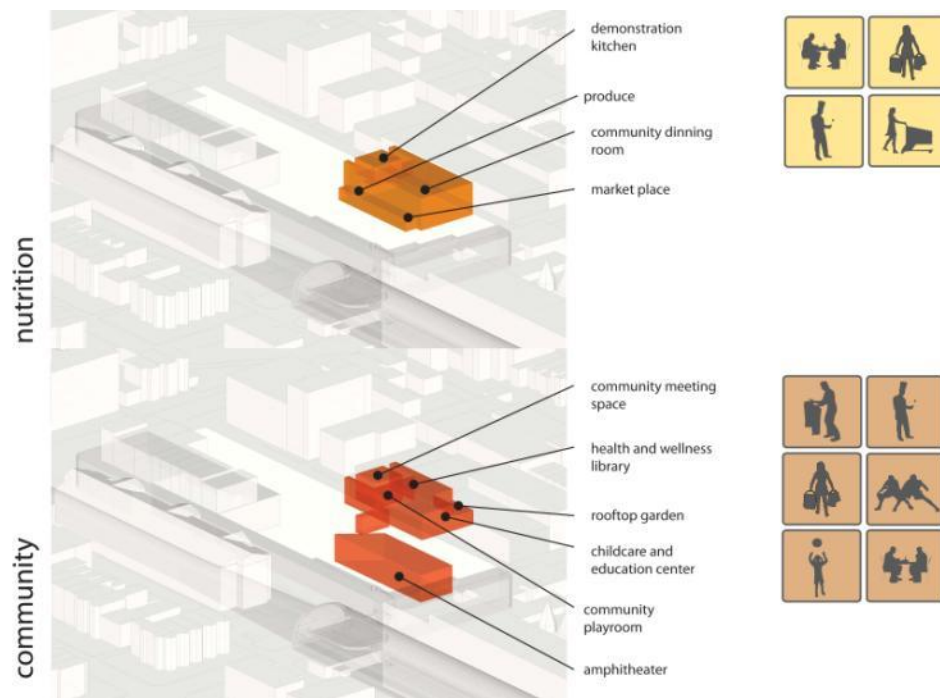


Figure 119: Collective_Nutritional and Community Components



Figure 120: Layering and Connection of Two Components

Vertical Circulation



Figure 121: Circulation Space

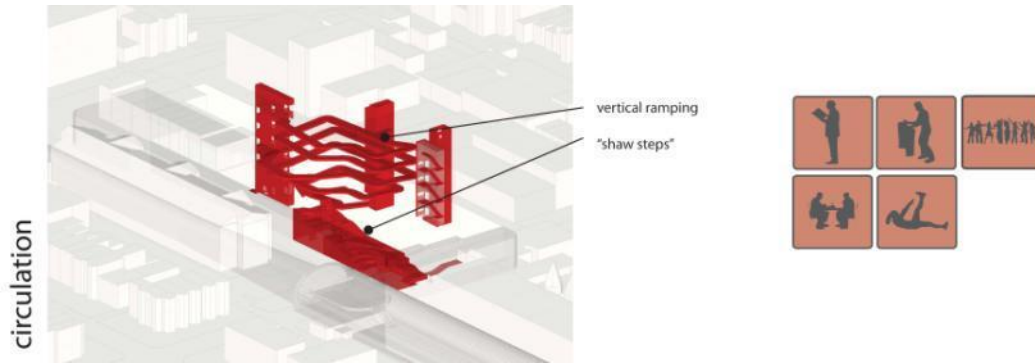
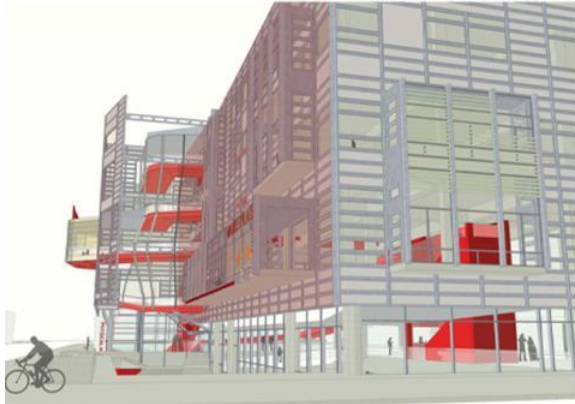
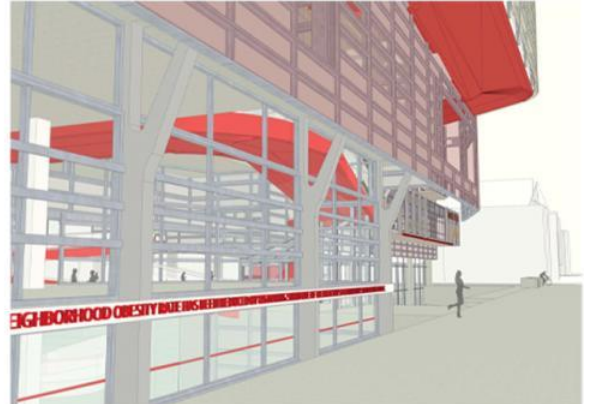


Figure 122: Combined Circulation Program

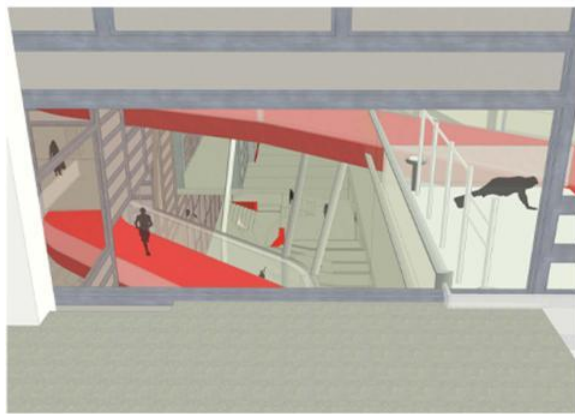
Circulating through the building utilized the two forms of major circulation as a catalyst for promoting movement. From both the inside and outside of the facility, there is a constant awareness of the ramps and circulation that serve as both a functional device as well as a significant way finding measure, Figure 122. Due to the importance of the vertical ramping and the responses to movement, the ramp also is a metering device to track movement throughout the building; moving from the ground plane to the top of the ramp, the horizontal distance travelled is a quarter (1/4) mile. By circulating within the interior conditioned space along the vertical circulation four times a person can successfully walk one mile. Allocating this space to the interior circulation provides the opportunity to promote walking on this interior street with nodes of program along the way.



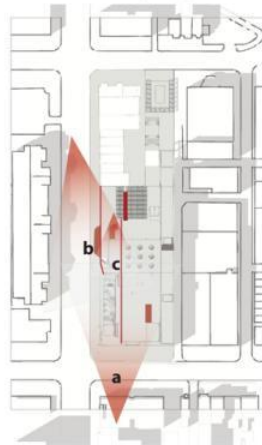
view a_corner of s street nw and 7th street nw




view b_entry approach along fitness component



view c_interstitial space from fitness component



 visual and physical ramping connections

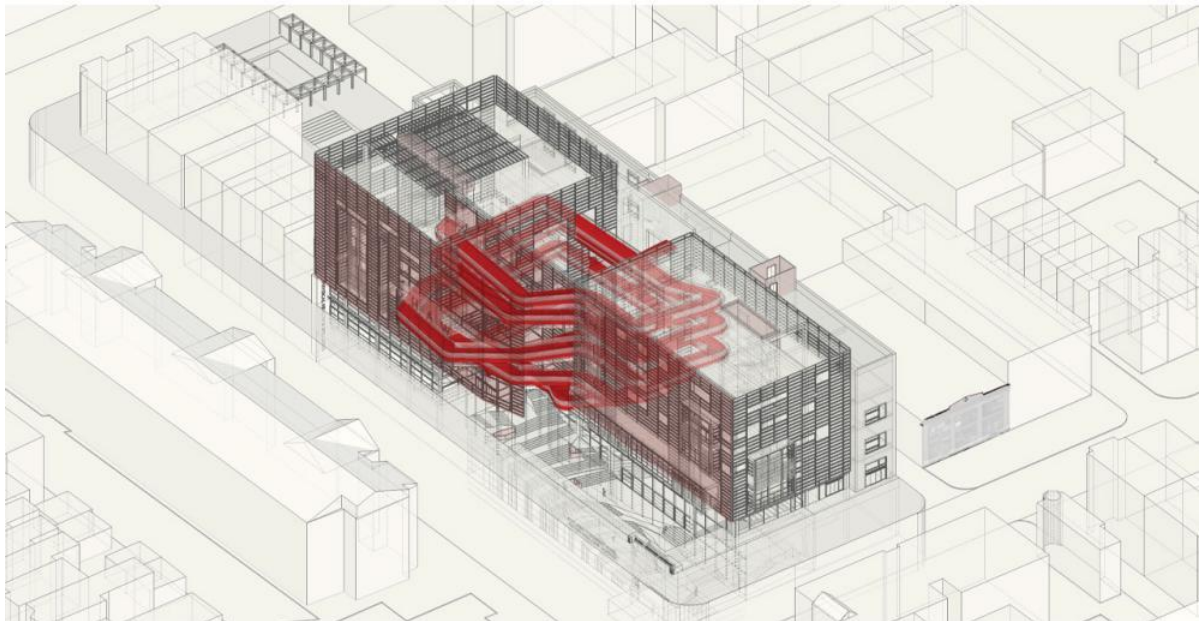


Figure 123: Circulation and Connections through the vertical ramping

Building on the connection between the two components of the building, the ramping is a joint between the two halves designed to push and pull from surface to surface. Through the exaggeration and extension of the façade in each component, the penetration of the ramp becomes pronounced into an interstitial zone above the main entrance along Seventh Street. This zone of ramping emergence is where the visualization of movement is highlighted from both the North and the South.

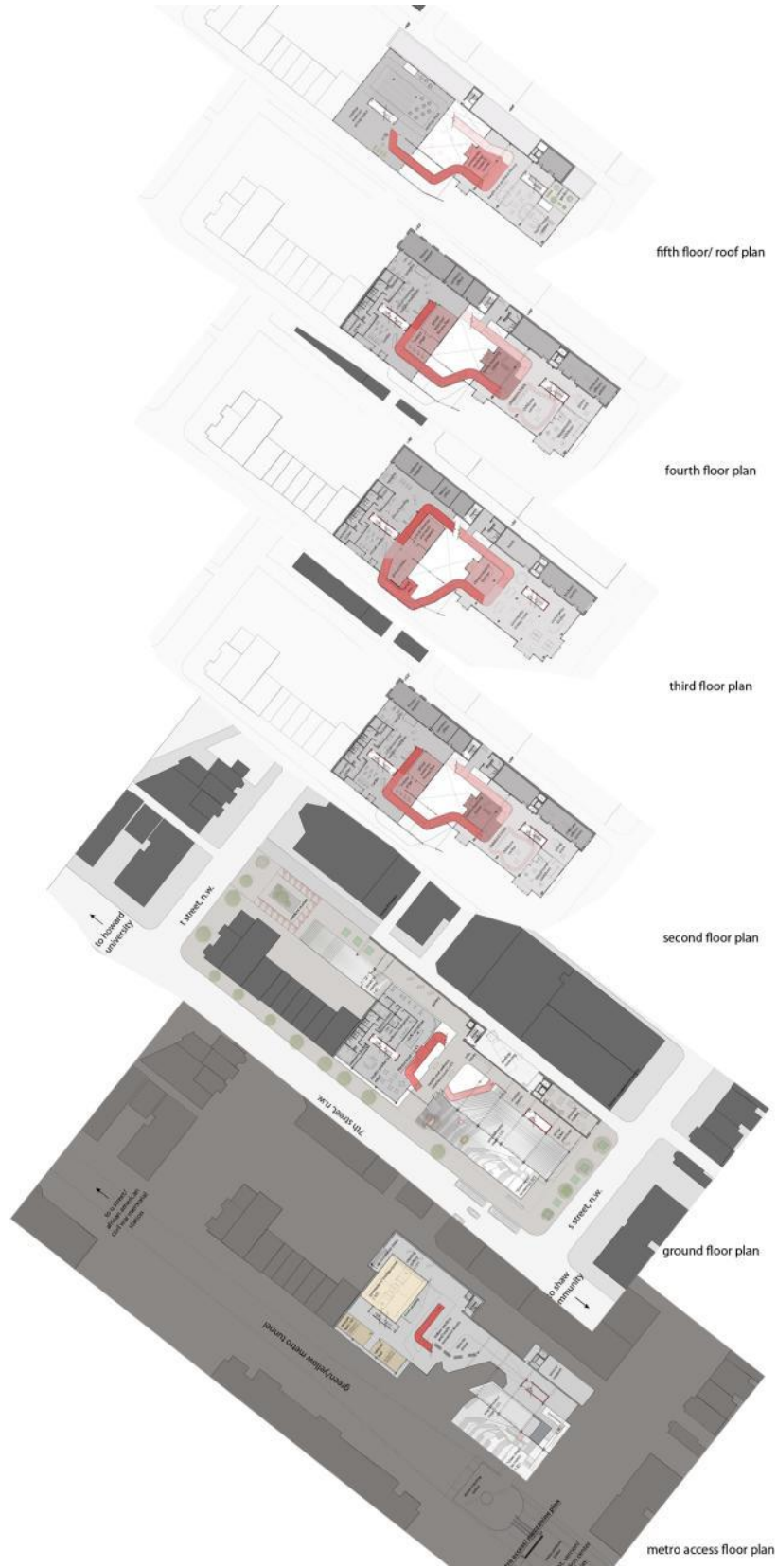


Figure 124: Facility Plans

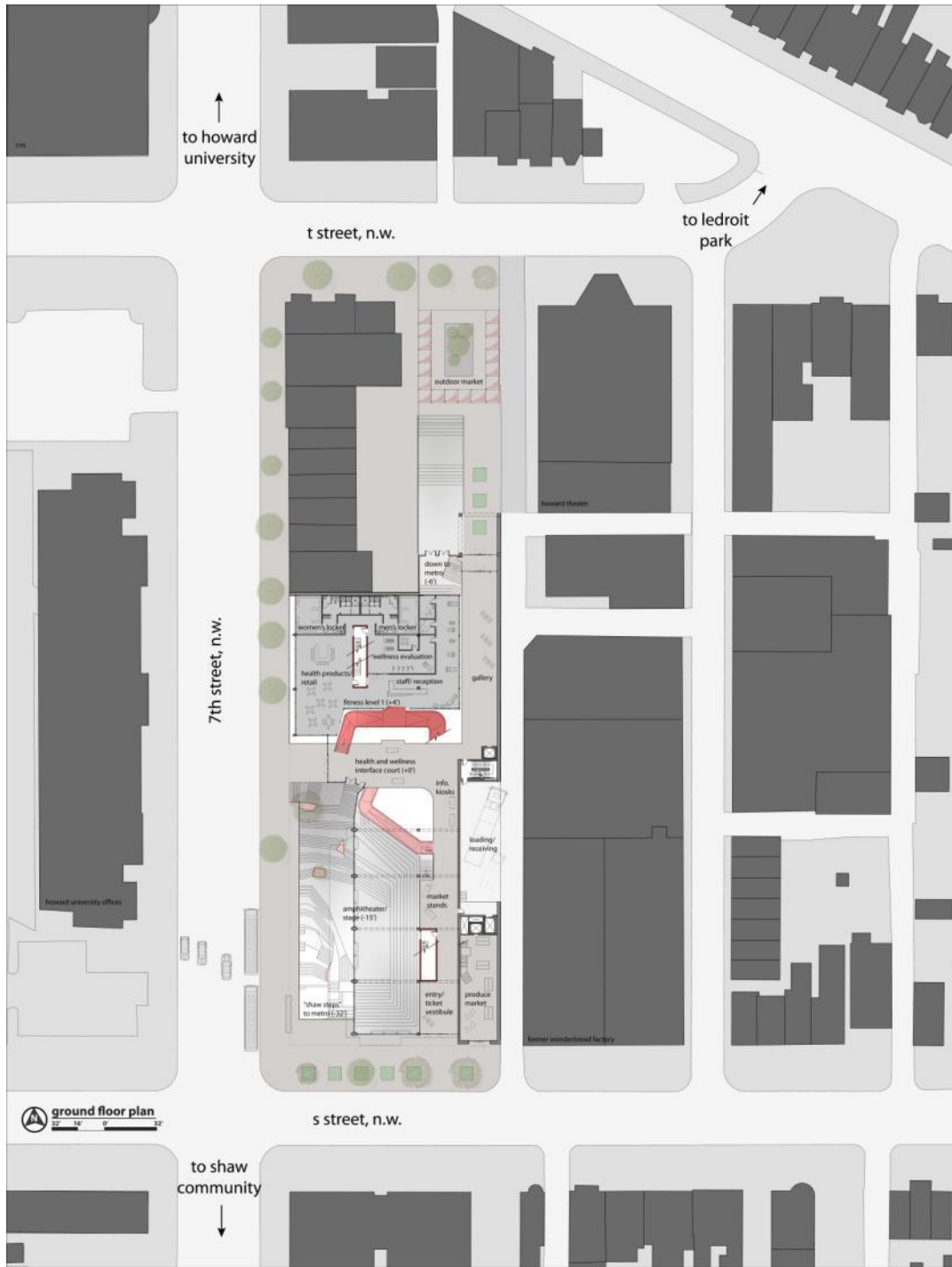


Figure 125: Ground Floor and Site Plan

SECTIONS

The building section is where a majority of the activity and visualization of movement take place. The manifestations of the different building levels as they are connected by the vertical circulation begin to produce the space to foster a negotiation between the two factions of the program. By staggering the different floors of the building and maximizing the floor-to-floor ratios based upon the program, the different elevations of each level provided an opportunity to create intermediate landings and reduce the vertical difference between the different elements of program.

Individual and Fitness/ Wellness Space

The first component of the facility is the programmatic elements that deal with the individual concerns of health and wellness. The fitness component is designed to promote physical activity and participation in the different programs. Through the use of traditional cardiovascular training equipment and free weights mixed with space for circuit training the individual fitness space is integrated with tiered exercise space based upon personal expertise and comfort. As one moves throughout the different fitness levels, wellness space is provided to foster and promote the supervision and evaluation of individuals. By immediately pulling a building user into the fitness space, the first encounter with the program along the ramping serves as a constant reminder that the facility is about promoting a healthy lifestyle.

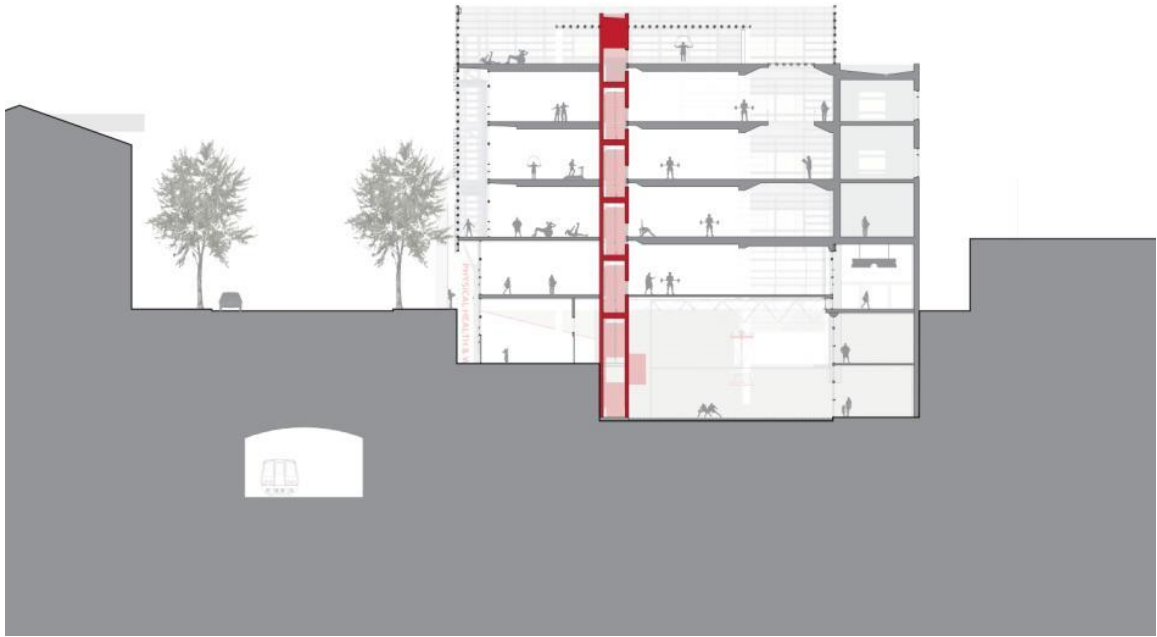


Figure 126: Section through Individual/ Fitness Component

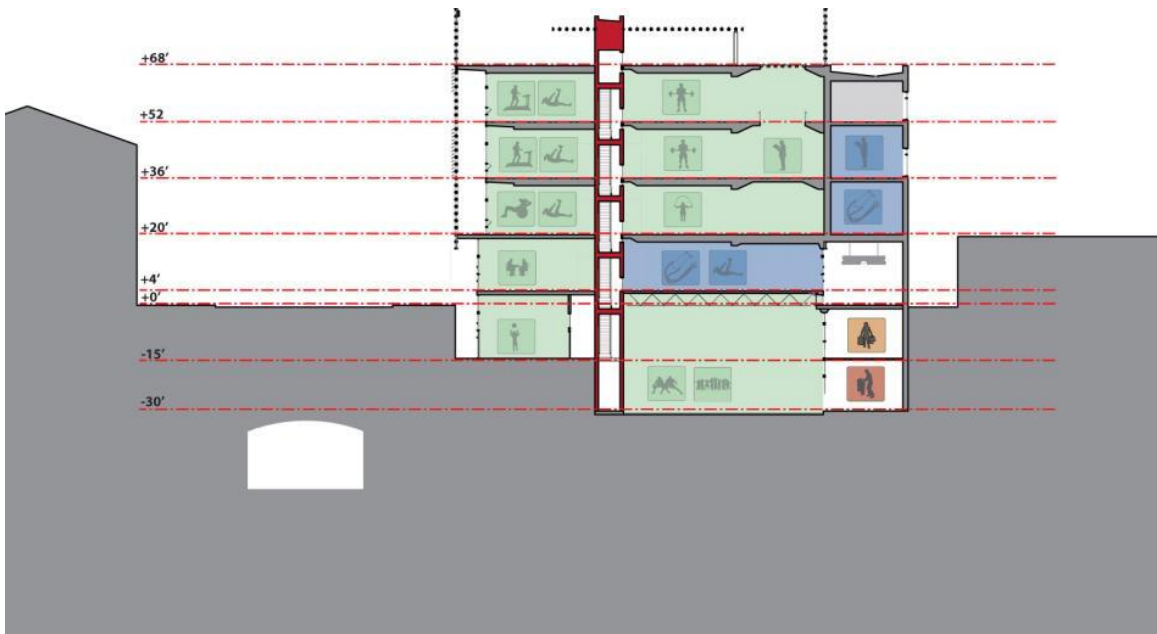


Figure 127: Sectional Program Diagram Through Fitness Component

Wellness Interface Court

In between the individual and collective space is the component of the building that contains the majority of the ramping and visualization from one space to the next. Through the interior facades of each component, the views are created both introspectively and outwardly to capture and highlight how individuals and groups use the spaces. Initially this space was considered to be an atrium that opened and exposed the elements of the program to the façade and through the entire space, but in doing so too much of the architecture and intrigue of the space was being revealed. By pushing and extending the elements of the façade, a court space was defined by the boundaries of the street front façade interstitial circulation space. Within the wellness interface court, the different users are able to interact and utilize the interior “street” created by the vertical circulation.

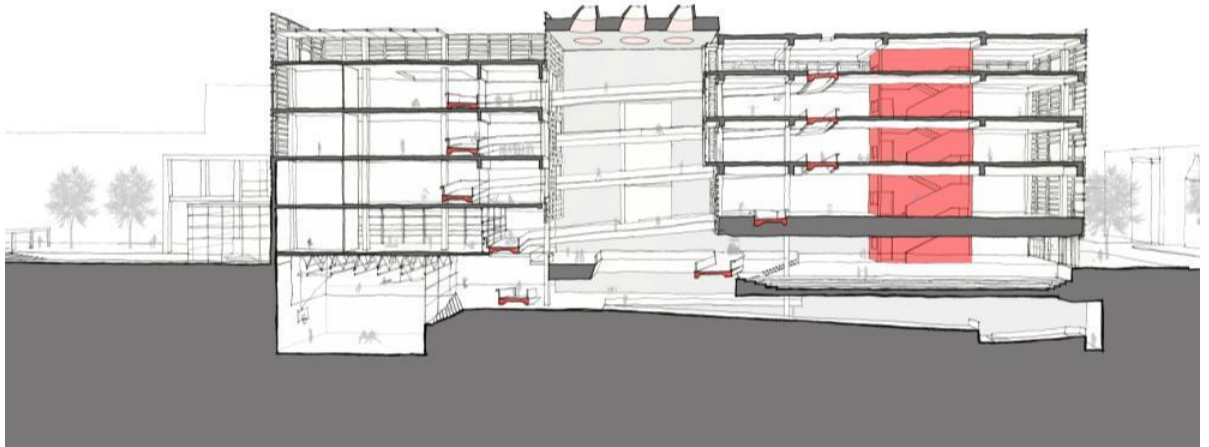


Figure 128: Sectional Perspective through the individual fitness component and collective nutritional component. The vertical circulation acts as the connective tissue to provide opportunities for programmatic overlap

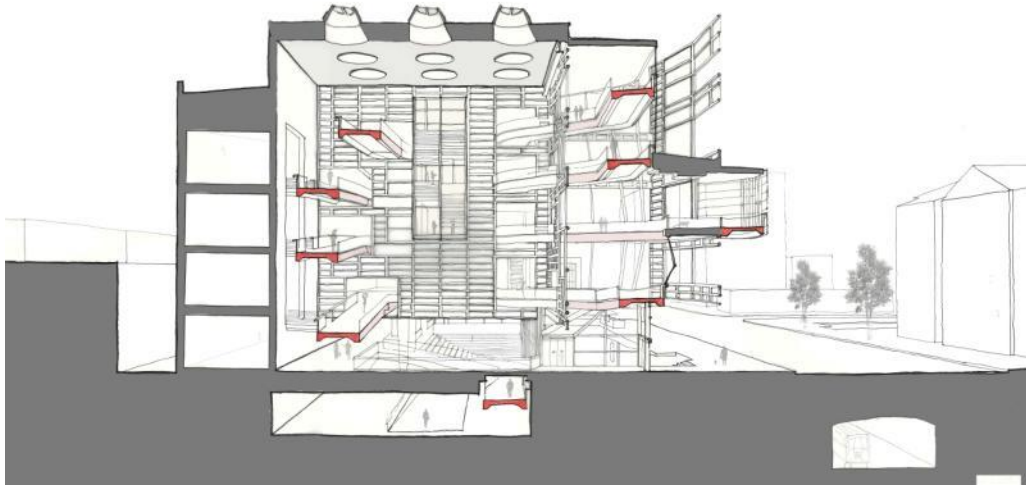


Figure 129: Sectional Perspective through the Wellness Interface Court looking toward the community component

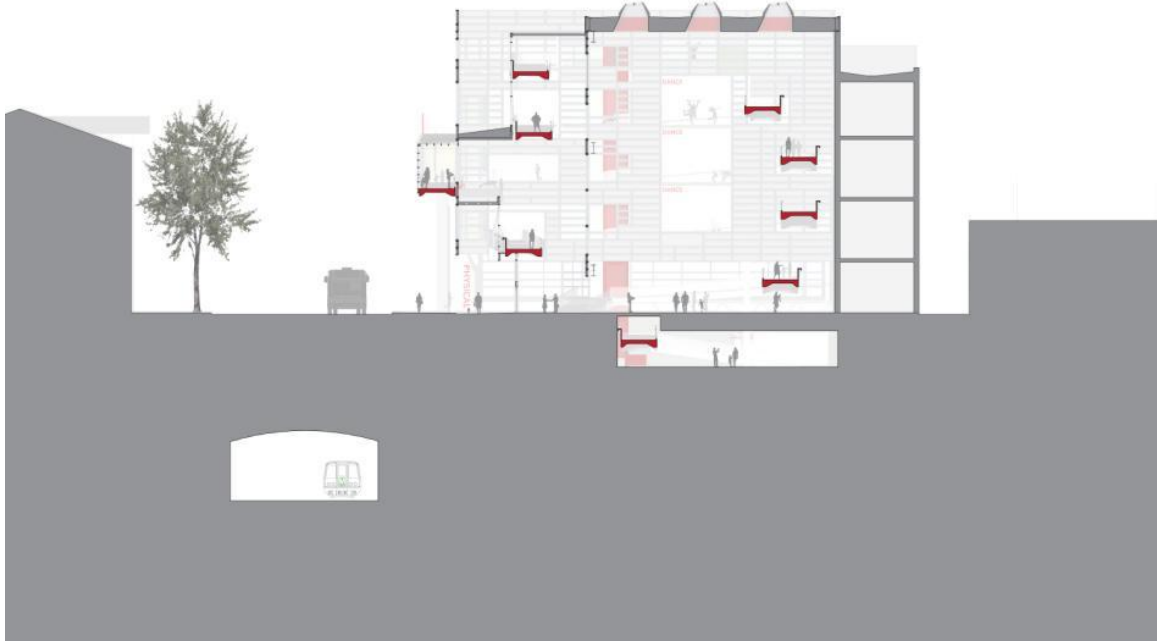


Figure 130: Section through Wellness Interface Court at Entrance



Figure 131: Sectional Program Diagram Through Wellness Courtyard

Shaw Steps and Connection to Metro

The metro poses a great asset to this community center as it serves as a major connector to how people move within the community. For a majority of the WMATA Metro entrances the escalator is the predominant feature to bring individuals to the surface of the street level. Within the section, the connection to the metro serves as a primary entrance to the building, with a transformation of typical escalator bank to the “Shaw Steps.” The space created by the steps (Figure 132,133) is to promote walking and creating a more processional movement system, utilizing landings as spaces for momentary pauses along the vertical climb that coincides with the performance amphitheater. This public realm of the building opens the corner to expose the activity and intention within the building to the street and the overall community.

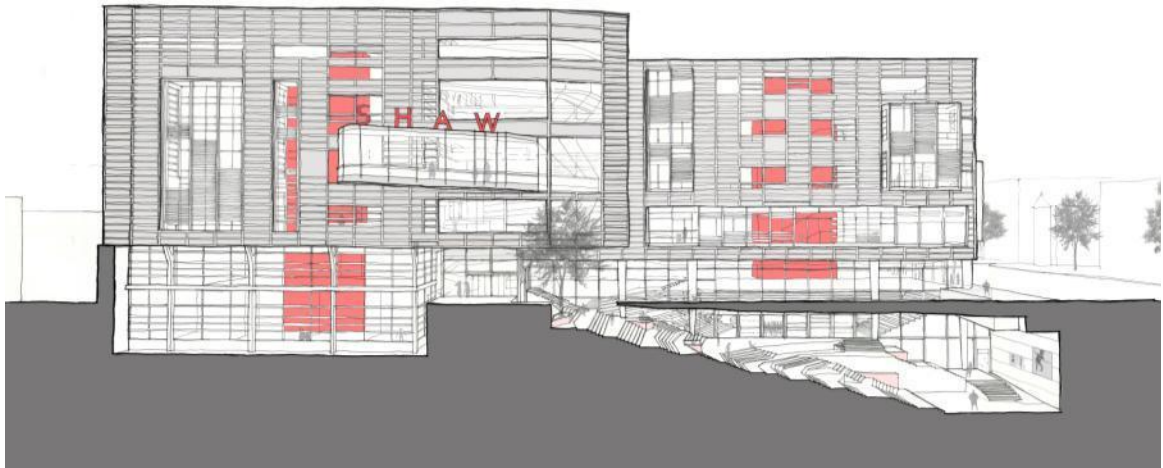


Figure 132: Sectional Perspective through the “Shaw Steps.” The steps and processional space revisit how the current metro entrance can be treated as a way to celebrate and praise movement as well as introduce space for interaction.

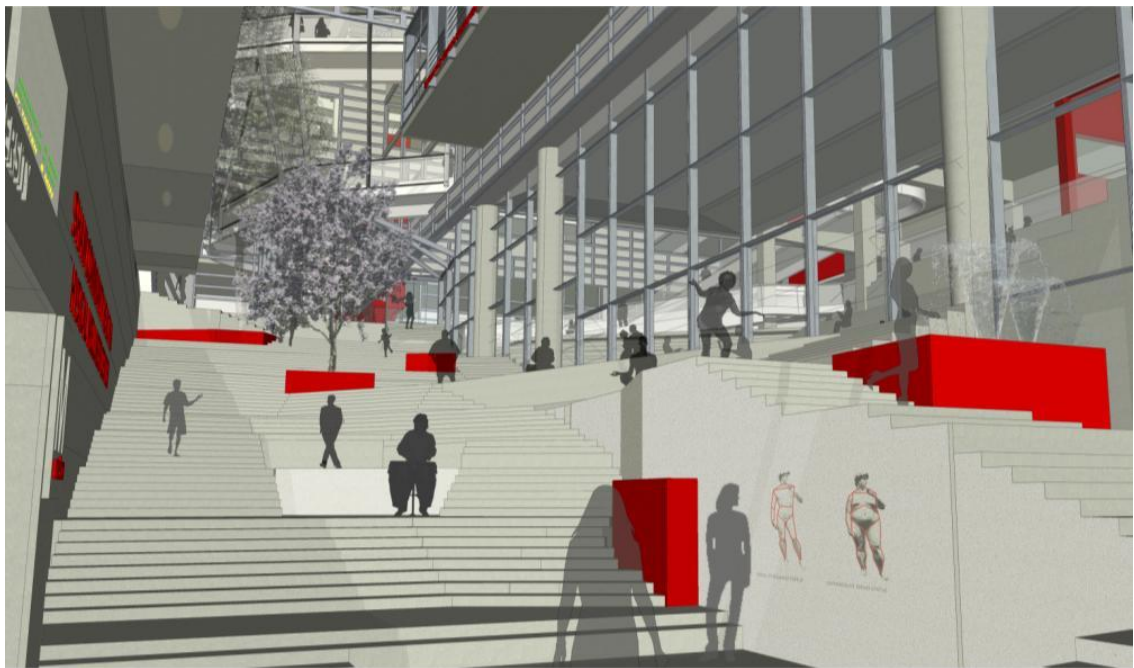


Figure 133: View from Metro Entrance toward the “Shaw Steps” and Amphitheater



Figure 134: Section at Metro through Collective Nutritional Component



Figure 135: Sectional Program Diagram Through Community Component

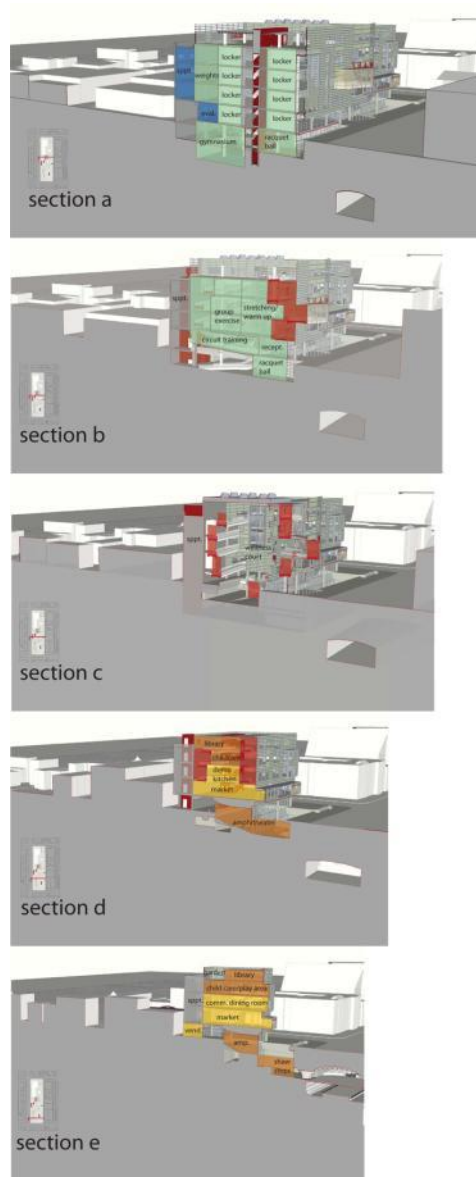


Figure 136: Axonometric Sectional Progression

Street Approach

From the street level, Seventh Street is an important North/South connection between the Shaw Community and the Howard University Campus. By asserting the façade and element of exposure, the two components of the building reflect the differentiation of the expressive community space and the more introverted fitness and

wellness space. In addition, the space for entry and interaction between the resident, building occupant and passer-by are uncovered to promote additional visual and physical interaction and increase the negotiation of the celebration of movement.



Figure 137: View along Seventh Street N.W. heading North



Figure 138: View along Seventh Street N.W. heading South

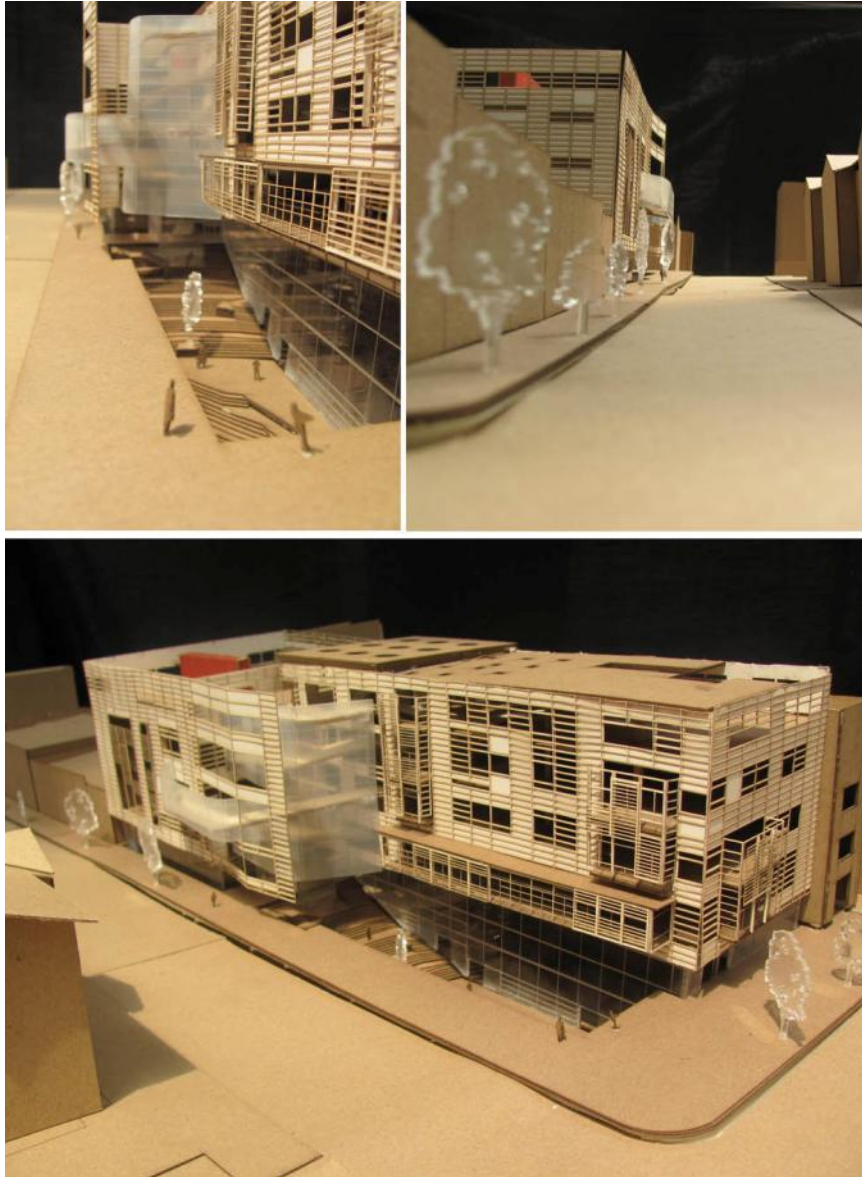


Figure 139: Physical Model

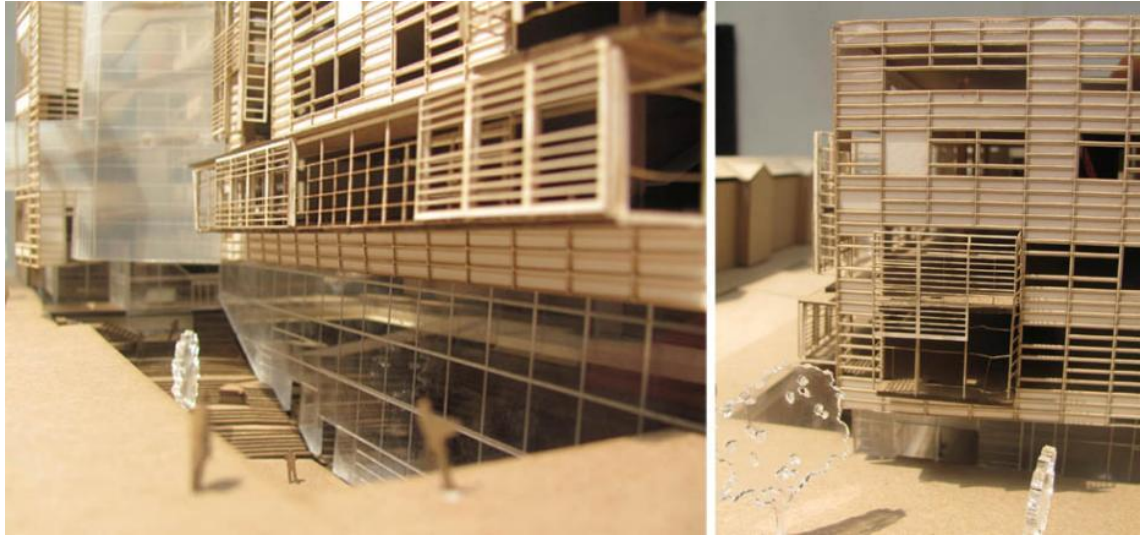


Figure 140: Physical Model Façade Treatment

Experiential Progression

In a facility that is designed to promote movement through the push and pull of the program, the experience of moving along the vertical circulation becomes critical to understanding the multiple physical and visual relationships. Through the progression of perspectives, the metering of the vertical ramping can be seen as each view establishes the horizontal distance traveled along the ramp.

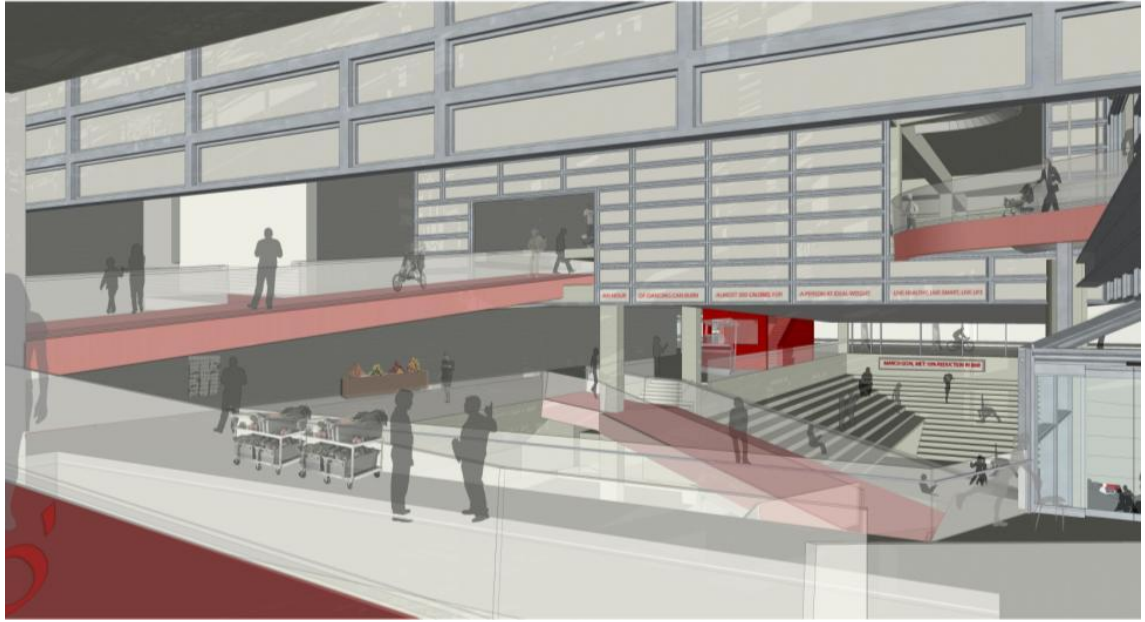


Figure 141: Entrance of Fitness Component (+50')

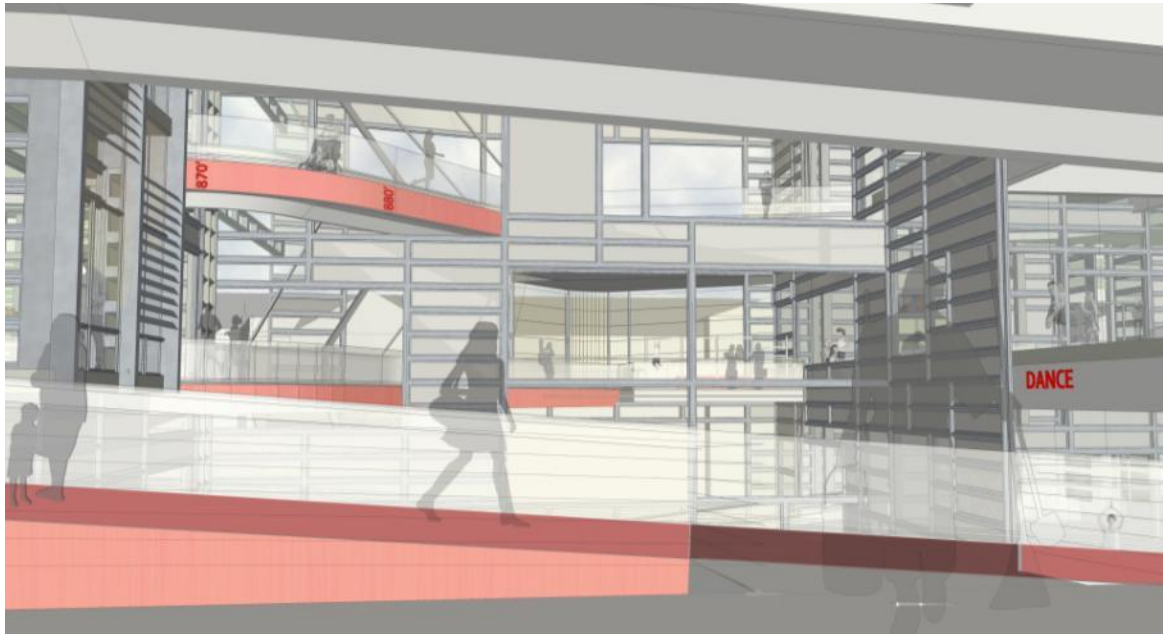


Figure 142: Ramp Rest toward Main Entrance (+450')

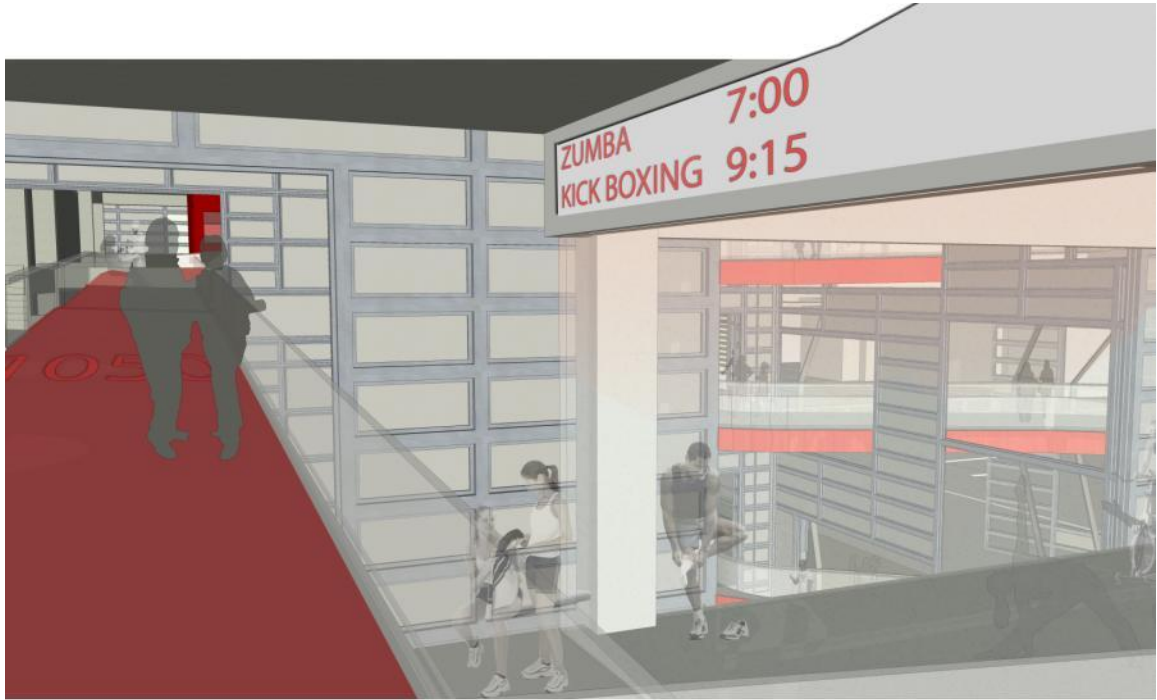


Figure 143: Toward the Community Kitchen (+1000')



Figure 144: Toward Fitness Component (+1250')

CHAPTER 12: CONCLUSIONS

Additional Opportunities

Upon reflection of the public defense commentary, several valid points were made to be addressed. In consideration of the site, it appeared that the connection to the context and surrounding community was a bit lost with the final design. While the criticism in creating a facility to fit within the neighborhood to promote some autonomy is valid, it also begins to reflect on issues mentioned in Chapter 9. When a site is located at a major transportation center, the tendency is to increase density to maximize exposure to the movement system. An increase in density at a metro station should always be of benefit over a duration of time but in the interim there becomes a disconnect between existing context and intervention. The context surrounding the Shaw and Howard communities is one that has been in a cycle of change and stagnation since the racial riots, particularly along 7th street. Further adding to a lack of continuity to the overall Washington, D.C. metro system is the lack of completed development spurred by the opening of the metro station.

A criticism that was received in regards to this thesis exploration was that the final design produced a heavy looking architecture; simply stated, the building looked fat. After multiple iterations and design propositions of elevation studies, it was a process that has no simple answer. Within the constraints of developing a urban-minded civic building to serve as a community center in Washington D.C. it becomes challenging to balance the building elevation, the programmatic requirements and the contextual relationships. Creating a even greater issue for urban projects becomes the balance between the desire to create an visibly open accessible ground floor plane and the

relationship to the overall building mass. As can be seen through the multiple figures representing the façade treatment, the architecture still produced a relentless horizontal metering. Figure 145 shows a revised façade study at looking at the extension of the vertical members and a reduction in the highlighting of the horizontal grid. Through the adaptation of the final presented façade, the façade was able to become more vertical, downplaying the prominence and number of the horizontal façade members. FIGURE 146 looks at the same corner perspective with additional emphasis on the vertical surface but reduces the overall height of the building parapet at the rooftop exercise space.



Figure 145: Façade Verticality Revisions. To Emphasis the vertical nature of the movement as well as break the building to the scale of the neighborhood and surrounding context, the horizontal members were reduced and scaled and the verticals were highlighted.



Figure 146: Building Massing Revisions. To fit better within the context of the neighborhood, the building fitness component was reduced in height.

In regards to the relationship between the visibility of movement, there is additional study that can be given to the relationship of the ramp to the occupant. The commentary revolved around the haptic senses and how the ramp could begin to accommodate multiple different types of movement. For the design of the ramp, both slower and fast paced circulation were considered in response to treating this surface as an interior vertical sidewalk, but the additional aspect of the sensory could be further explored. Within the confines of the community, there are different demographics to be served and in particular the elderly are ones to pay additional detail to. While the ramps are designed at a less than 1:20 ratio, reducing the need for landings, perhaps additional landings can be of benefit to provide additional places along the path within the Wellness Court to integrate moments of respite and interactions. By allowing these changes in the ramp width and shape, it could add to the movement experience and facilitate a greater sense of movement.

The circulation again became a point of divergence when evaluating how the architecture created the conditions to push and pull individuals from one space to the next. A response to the discussion was in asking what would seduce “Fat David” to move in the building in the first place. For the first two floors of the facility the program serves as a catalyst to push users to the next destination. To a lesser degree the elements of the program on the upper floors promotes a back and forth dialogue but the architecture needs to push and develop a way to make it so that it seems more or an effortless progression.

Programmatically the conversation became very focused on whether or not the facility would require all of these elements of the program to be successful. While the notion that the architecture and elements of circulation, in particular the “Shaw Steps” and the ramps, would be sufficient to begin highlighting and celebrating movement to the interior and exterior observer, ultimately there needs to be a destination that an individual would be going toward. The elements of the fitness and wellness center are important to this these because they move beyond utilizing the circulation as a means of movement and facilitate additional methods of exercise and healthy living. In the same manner, the nutritional components create an essential element to the community that provides a destination for food. Certainly the other elements of the building could be reconsidered and developed, but the circulatory movement between the nodes of diet and exercise are equally important at this facility as a way to begin teaching and providing opportunity. As time progresses it would be more than ideal to think that the attributes of this facility could become ingrained into urban design of both infrastructure and buildings and the

circulation could then be about using architecture to promote movement but at the current site and conditions the knowledge base of essential healthy living must first be provided.

Future Expansions

Moving forward from the thesis investigation at this particular site and programmatic facility is the consideration of how architects and designers can begin to revisit how the traditional building core and circulation systems are treated. For the Shaw Community Health and Physical Wellness Center the program was critical to the establishment of the elements to facilitate a public centered community center, a number of the different elements could be evaluated for different building types. In the present culture, a majority of an individuals' time is spent inside of private buildings, whether for living or working. By engaging the circulation in all building types as a way to activate the user and celebrate how people occupy their environments, the traditional building core could be pushed beyond the constraints of a minimized BOMA calculation. Presently, the buildings with intensive circulation and movement systems are museums and airports, with little additional emphasis placed on the everyday experience in the vernacular. This adaptation in mentality would require a greater commitment on the part of the architect and developer, but ultimately providing a better interior infrastructure could produce a great outcome to society in both urban and suburban environments.

Final Reflections

Throughout this thesis investigation it was asked how architecture can really help to promote obesity reduction and prevention. Based upon the final design implementation

and architectural response as well as through the precedent analysis, it is fairly evident that the built environment has been a factor in producing more obese humans and should then be a contributor to improved health. While devices that were incorporated into this thesis were not necessarily new mechanism in an architects' palate, program requirements such as the ramp and vertical circulation are too often forgotten in design and are designed as a percentage of the overall building square footage instead of investigating how the spaces between the program can engage and develop a greater importance.

The ways that interrelated spaces relate sectionally reflects the movement of goals and how they react in space. Ultimately, the community health and physical wellness center is about making architecture pull people into a space to engage and activate the program. The in-between spaces of circulation are where a majority of the learning and experiencing from the outside and inside can take place. While the concerns related to obesity in America and throughout the world cannot be completely treated or eliminated by architecture, the design and implementation of devices and spaces to promote health and movement can become a step toward developing a more health conscientious society.

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