

ABSTRACT

Title of Thesis: MENDING COMMUNITY

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Preservation

The purpose of this thesis is to create a development that will be a catalyst to revitalize Capitol Heights's dilapidated resources. Like many other predominantly African American towns, Capitol Heights lacks the resources that it once had, such as fresh food, community education, and healthcare. Capitol Heights is located on the outer edge of Southeast Washington, D.C. The density of Capitol Heights needs to move from a horizontal scale (detached single-family housing) to a vertical scale (mid-rise buildings).

The poverty rate in the United States averages 10.5%. Having a small population Capitol Heights averaged 10.7%. The crime rate in Capitol Heights is considerably higher than the national average across all communities in America. Which in turn makes it hard for large companies to see the value in investing in real estate and jobs there. Capitol Heights being next to Southeast D.C. allows for a great guide on how to go about development. The development in Southeast D.C. has created jobs as well as brought resources that once were scarce to that area. With an addition to a mix-use development building in Capitol Heights, the attention on the area will increase which may increase the population.

The Capitol Heights Transit station's adjacency to public transportation is a huge driving factor in having people live there. With the station, as well as the new building typology, being the leading factor, this will be a great investment for the town of Capitol Heights. Amenities such as a library, grocery store, and urgent care are crucial to this development. Capitol Heights needs major improvements to the living situation that its residents live in currently. This development will bring higher-paying jobs, increase the population, promote healthier living, and be the blueprint for the future of Capitol Heights.

MENDED COMMUNITY

by

David Pernell Moore II

A thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment
of the requirements for the degree of
Master of Architecture
2022

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Preface

Born and raised in Capitol Heights/Southeast D.C., I have grown to love what my environment has produced me to be today. I have many family members who have lived there for over 40 years. As I have grown and experienced different cities, I have realized that my city is without a lot of resources. The city I call home has so much potential to be a gateway into and out of Washington D.C. This project is about exemplifying these elements that the site has and using them to create a place of entrepreneurship and sustainability for the future.

Dedication

To the world's greatest whom I am blessed to have known.

To my mother & father may you look down on the work your son is accomplishing
and be proud.

Acknowledgments

For their valuable mentorship, discussion, and relationship:

Professor Julie Gabrielli, Chair

Professor Brian Kelly

Maria Day-Marshall, Director of Real Estate Development

Tanya Bansal, Assistant Director of Real Estate Development

Joseph Williams, Assistant Professor

2022 Thesis Cohort

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Chapter 1: African American Neighborhoods

Being Black in America

When coming up with a thesis topic just as many other students before me and after me will, I looked for a source of inspiration. Understanding that a thesis is a culmination of everything I have learned throughout my collegiate career into a year-long project lets the mind wander. As I searched for a source of inspiration I went and visited my family who lives in the same neighborhood for generations. The town is a small municipality located in Prince George's County. Capitol heights have always been a blighted town with little to no resources for the residents that live there. This thesis/capstone will be fulfilling the requirements of both the Master of Architecture and Master of Real Estate Development programs at the University of Maryland. The thesis became clear as looking in the mirror every morning. Society says you are the product of your environment, this thesis will push this analogy and extract as the designs created will be a catalyst for a neighborhood in need of a change.

Capitol Heights has located next to the Washington D.C. border and shares this border with Capitol View on the D.C. side. Both locations have many things in common such as being largely African American communities with the core similarity being the need for resources. The issue of these communities is not that they are mostly African American, but that they have none of the resources that other communities that are not mostly African American have. As Devin Ortiz said in his poem "To be back in America",

It is being reassured they still value you

It is to know but not enough to matter

Being black in America is a lot of things, and I love the country all the same.

But I hope and pray for the day, that we can be treated the same.¹

White Flight

White Flight or White exodus has been defined as the abrupt or steady migration of white people from areas becoming more racially diverse. This movement has been recorded to have begun in the 1950s and 1960s when the phrase became popular. This term has been used all over the world to describe the migration of white people from one area to another for various reasons. However white flight in the United States was very prevalent after *Brown v. Board of Education* in 1954. During the postwar period, African American migrants moved to central cities. Many locations such as Chicago were not very welcoming to African Americans moving to their neighborhood.² Many residents of white descent met the new neighbors with violence, intimidation, or legal tactics.

The DNA behind white flight is predominantly racism and economic in its conceiving. Redlining, mortgage discrimination, and restrictive conventions that are racially applied did nothing but strengthen the effects of white flight. These methods

¹ Devin Ortiz, "To Be Black in America by Devin Ortiz," Hello Poetry, accessed May 10, 2021, <https://hellopoetry.com/poem/1807030/to-be-black-in-america/>.

² Pete Saunders, "Is Chicago's Legacy of Segregation Causing a Reverse Great Migration?," Chicago Reader, January 24, 2019, <https://www.chicagoreader.com/chicago/chicagos-black-exodus/Content?oid=66920657>.

have created cities full of minorities as the majority in the community. These communities are stripped of a lot of amenities due to them being looked at as areas of blight. White flight has been one of the many factors limiting resources for banking and insurance, making African American communities perceived as unable to gain profit for investors and other social services to benefit the community.

Home Devaluation

Homeownership is the American dream a white picket fence with a yard the kids can play in. While this is the dream of most of the United States, the United States Housing system is not as fair to each person's wishes. Many homes in African American neighborhoods are valued as less as an asset than a neighborhood with 1% African Americans. Most African Americans live in urban communities. There is a large population of African Americans that live in the metropolitan areas estimated to be around 90 percent compared to 86 percent of all U.S. residents. African Americans are still segregated even after the Civil Rights movement. African Americans are 12 percent of the U.S. population but a majority live in neighborhoods that are over 20 percent African American. 41 percent of the African American population lives in a majority African American community.³

Many communities with a large amount of African American population may be disregarded as a site for economic development. The communities are full of wealth within the metropolitan areas of America. There are 3.2 million African

³ Andre M. Perry Harshbarger Jonathan Rothwell, and David, "The Devaluation of Assets in Black Neighborhoods," *Brookings* (blog), November 27, 2018, <https://www.brookings.edu/research/devaluation-of-assets-in-black-neighborhoods/>.

American owner-occupied homes are most African American neighborhoods.⁴

Together the collective housing market worth of these houses is estimated to be 609 billion dollars.⁵ With over 3 million business institutions incorporated in the African American communities' 7 percent of all metropolitan businesses. When compared to a neighborhood where the population is half African American their homes are valued at half the amount in a community with no African American residents. This is called devaluation and is a tactic used to underestimate the worth or importance of African American communities.

Devaluation of the African American community has been impacted through the year with several different tactics. Some of the many tactics used to create a sense of lack of importance in the African American community are segregation and Jim Crow. Jim Crow and segregation created barriers such as financial support which led to African American communities from having financial support to better African American neighborhoods. Other systems that were created to stop the improvement of African American communities are deed restriction, redlining, and zoning. The nature of African American neighborhoods differs vastly compared to neighborhoods that have little to no African Americans living there. The African American communities are structured to be more densely built than to have single-family detached housing. This structure makes a lot of African American neighborhoods perfect for a walkable community. Business varies within an African American

⁴ Harshbarger.

⁵ Harshbarger.

community. The strength of the African American community can also be its weakness.

“residents of majority Black neighborhoods confront longer commute times by several minutes compared to those in other neighborhoods, suggesting constrained access to jobs. Yet this interpretation requires caution because residents of majority Black neighborhoods are far more likely to commute via public transportation, which can be slower, especially via bus.”⁶ The lack of similar structures and amenities equates to the loss of value in African American neighborhoods.

History of Black-Majority Cities

Capitol Heights and Capitol View are both Black-majority cities. Capitol Heights was incorporated in 1910 while Capitol View was first documented in the 1930s. During the late nineteenth and early twentieth centuries, African American town organizers formed a minimum of eighty-eight, and two hundred, black towns all over the United States.⁷ Many of the amenities mimic that of the United States government in the Black towns who were, either mostly or completely African American. Many of the African American cities had their governments and commercially oriented economies. The Market in which African American towns created jobs dealt with serving a surrounding area of African American farmers. With African American towns having their government the towns created unambiguously defined economic and political motives. According to Norman L. Crockett “founders of towns such as

⁶ Harshbarger.

⁷ Quintard Taylor, “Black Towns | Encyclopedia.Com,” May 10, 2021, <https://www.encyclopedia.com/history/encyclopedias-almanacs-transcripts-and-maps/black-towns>.

Nicodemus, Kansas; Boley, Oklahoma; and Mound Bayou, Mississippi, like the entrepreneurs who created Chicago, Denver, and thousands of other municipalities across the nation, hoped their enterprises would be profitable and appealed to early settlers with the promise of rising real estate values.”⁸ The lure of these all African American towns advertised: the capability to escape racial persecution, control their financial fortunes, and prove black power for self-government. Bringing a commercial or retail zone back to the Capitol Heights/Capitol View area would be an incentive for Black-owned businesses to want to move to Capitol Heights/Capitol View and support the neighborhoods.

Reverse Suburbanization

Suburbanization is described as the growth of the area in the outer parts of major cities. This movement was inspired during the mid-twentieth when the United States federal government gave incentives to encourage white citizens to help suburban growth. This was later named the “white flight” where the white citizens moved to the suburbs to leave minority communities in the urban environment.

⁹There are usually factors that an entity will use to draw in or push out a certain entity. Typically, this is referred to as the push and pull factor. Many families left the city due to overpopulation, pollution, and the city being dirty. These families did not include minorities in these opportunities to move to the suburbs.

⁸ Taylor.

⁹ “Urban Problems and Policy | Boundless Sociology,” accessed May 10, 2021, <https://courses.lumenlearning.com/boundless-sociology/chapter/urban-problems-and-policy/>.

Legally real estate laws were invented to keep minorities from taking hold of these enticements given by the government. Racist laws such as redlining stopped African Americans from being able to pursue home ownership. This created a perpetual state of renter ship for African Americans and other minorities. The effects of white flight are still prevalent today in many communities.

In some communities, the opposite is happening in urban areas instead of minorities being in the city they are now being pushed out by gentrification. Raising prices on taxes and rent causes many minorities who are working minimum wage jobs to not be able to afford housing in these urban cities. Many minorities such as African Americans are not moving to the suburbs of metropolitan cities, but they are moving to different states in the south for better opportunities. The cost of living is less and there are better opportunities with lower cost of living for many of the lifestyles of African Americans and other minorities. This is different from displacement by gentrification, what is happening in a lot of cities today would be defined as displacement by decline. The frustration of the disparity socially and economically has caused such discontent in many neighborhoods that African Americans and other minorities are leaving the metropolitan area.¹⁰ This is an important factor to understand and use to develop communities of equal opportunity.

¹⁰ Jason Segedy, "City Observatory - The Great Disconnect: The Perverse Rhetoric of Gentrification," City Observatory, September 29, 2020, https://cityobservatory.org/great_disconnect/.

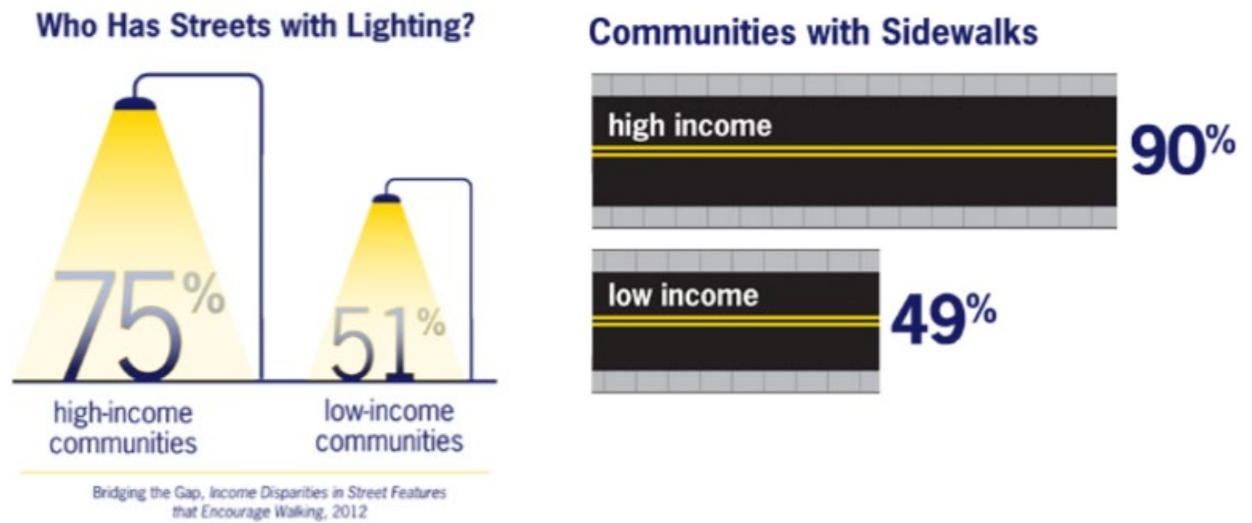


Figure 1: High Income vs. Low-income Street Lighting and Community Side Walks (Source Safe Routes to School National Partnership)

Public Transportation

Capitol Heights and Capitol View are both served by a metro station named Capitol Heights Station. This public transportation station is essential to many people who live in both neighborhoods to get to work and back home. When researching public transportation some studies provide analysis that many stations and public transportation are needed for African Americans and low-income minorities. Bike riding, walking, and public transit are needed in a lot of places but the sites with a dire need for it are low-income or majority African American. “Walking and bicycling are prevalent among low-income people and people of color– but street conditions are even more dangerous than the walking and bicycling conditions experienced by white, middle-class Americans.” according to safe routes

partnerships.¹¹ There is a need to create safe and efficient ways for low-income and African American communities to commute to work, school, get healthy food, health care providers, and other destinations.

Research shows that low-income people that make less than \$10,000 - \$25,000 per year have the highest rates of walking and bicycling to work.¹² African Americans make up 33 percent of public transit riders, riding public transit at twice the amount of the other races in the United States. The street landscape in a high-income neighborhood versus a low-income is varied in several ways from aesthetics to safety. The landscape is designed to be more pedestrian-friendly in a higher-income neighborhood. The streetscape of Capitol Heights as well as Capitol View could use major improvement to create a safer street for public transportation amenities. With safe streets come safe pedestrian walkways which leads to a city that is pedestrian friendly and appealing to citizens who want to live in an urban area.

Public transportation can have a massive effect on neighborhoods economically as well as health-wise. Obesity levels in the United States are threatening the well-being of many Americans at large. This is evident more so in low-income communities especially Latinos and African Americans.¹³ According to a study done by Dr. Cynthia L. Ogyben, more than 38 percent of Latino youths are obese or overweight as well as 36 percent of African American youth. Due to Capitol Heights and Capitol View being predominantly African American and Latino these stats can be directly affecting both neighborhoods. Not only is biking and walking the

¹¹ Segedy.

¹² Jason Segedy, "Displacement By Decline," Notes from the Underground, April 2019, <https://thestyle1972.tumblr.com/post/184270817415/displacement-by-decline>.

¹³ Segedy.

neighborhoods a good way to keep eye on the street but a great way for citizens to stay healthy.

There are a few actions a community can do to ensure the safety of the youth, adults, and elderly can travel their community safely. Organizations that fight for equitable active public transportation for a community need to make sure that transportation is part of the goal as well as the social issues. Safe routes to school National Partnership have listed several movements that can be done to achieve the goal of safe travels for all:

- Prioritizing transportation funding and investments for low-income communities with dangerous street conditions.
- Fighting against racial profiling by police of children, youth, and adults of color who are walking and bicycling.
- Keeping housing stable and affordable for low-income households, while ensuring that communities get the safe walking, bicycling, and street infrastructure they need to overcome the dangers caused by decades of underinvestment.
- Using Safe Routes to School programs to keep children in high-crime neighborhoods safe from crime and violence, while overcoming the hurdles of chronic absenteeism.
- Supporting quality public transportation and ensuring safe walking and bicycling access to transit stops.¹⁴

¹⁴ Segedy.

Chapter 2: Capitol Heights, Maryland

Introduction

The selection of this site for my thesis hits close to home. The site has been an area that looked to be of great wealth for the surrounding area. Capitol Heights is not an area known for high development or high density in multifamily development. Capitol Heights is in Prince George's County Maryland and is one of the many gateways to the Washington D.C area. Capitol Heights is one of the smaller municipalities in Prince George's County. Being in the middle of the D.C., Maryland, and Virginia (D.M.V) region has its benefits for the city of Capitol Heights. Capitol Heights is one of the many cities that is a gateway from Maryland to Washington D.C.

History

Capitol Heights is historically a city of opportunity as well as great adjacency to amenities. Capitol Heights was first founded in the early twentieth century as a residential suburb. A Baltimore businessman by the name of Otway B. Zantzinger acquired the land, which he subdivided into three sections. This large woodland parcel later became Capitol Heights. By subdividing the parcel Otway was able to

create 4,000 lots all with the dimensions of 20 by 100 feet. Otway's advertisement of the city touted the attributes of the landscape. Otway would advertise the land as "High and healthy. Finest spring water, Plenty of shade. Only one car fare to any part of the city. East Street, Capitol Street., Central Avenue., 55th Street., and 61 Street, run through the property." The land was later segregated and advertised for whites only.

Otway, being a businessman and wanting to have a successful neighborhood, paid for an elementary school to be built in Capitol Heights. In the first year of the site being fully built, 100 students attended that school in 1905. While in 1907 there were over 3,500 lots sold with over 1,000 residents living in Capitol Heights at the time. Capitol Heights was not designed around a rail station but was within one mile of the rail station in Seat Pleasant.

The popularity of Capitol Heights led to Otway buying 400 additional acres of land on the southmost area of the already developed Capitol Heights. In the 1910 census, the demographic for Capitol Heights was all white, small families with working-class jobs. During the third quarter of the century, Capitol Heights' historic district lost most of its business due to the construction of the new Central Avenue. The Capitol Heights Metro station was brought to the site in 1980, located near East Capitol Street and Southern Avenue. This provided affordable transportation for Capitol Heights residents into Washington D.C.

Present

Today in Capitol Heights the demographic is 92 percent African American with over 4,100 residents. There is little to no commercial building in Capitol Heights. Capitol Heights is mostly all residential, with single-family housing. Many of the buildings in Capitol Heights as well as Greater Capitol Heights are from 1910 to the 1970s with twentieth-century architectural styles. There are newer housing types of townhouses being brought to the area, at a price range of \$500,000 and up. Brook Road Park has been renovated multiple times throughout the years and is the central point for the local event, Capitol Heights Day, to celebrate the founding of Capitol Heights. Capitol Heights Day is a celebration of the founding of capitol heights that is celebrated historically at Brook Road Park.

In 2008 Capitol Heights proposed a Transit District Development Plan. This plan examined the idea of making Capitol Heights into a Transit Oriented Development. The most rigorous development was designed to happen adjacent to the Metro station with less rigorous development spreading out to the edges.

Future

In 2011 the Town of Capitol Heights applied for a Green Streets, Green Jobs, and Green Towns (G3) grant and received it. This grant objective was to prepare a master plan for the street networks to inspire widespread change in sustainability. The roles that roads play in the health of waterways and in enhancing the connection of the community are important factors in this grant. The street that was to be refurbished sustainably is considered one of the commercial streets in Capitol Heights. The street chosen was Chamber Ave/Capitol Heights Blvd for the green

street retrofit design. With a span of 0.3 miles for redeveloping Capitol Heights want to include basic design rudiments such as reduced lane widths, pavement resurfacing, curb bump-outs for traffic calming and shorter/safer pedestrian crossings, bike lanes, sidewalk replacement, lighting, site furnishings, gateway features, and plantings.¹⁵

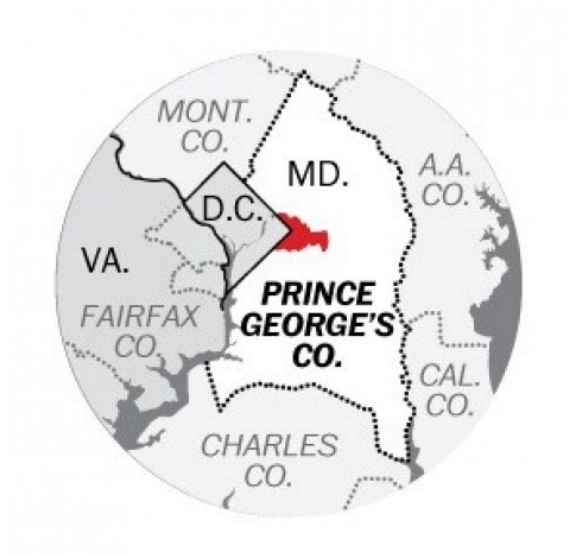


Figure 2: Capitol Heights (Source The Washington Post)

¹⁵ “Curb Extensions,” National Association of City Transportation Officials, July 11, 2013, <https://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/>.

Chapter 3: Capitol View

Introduction

Capitol View is a neighborhood located in southeast Washington, D.C. in the southeastern region. Capitol View is adjacent to Capitol Heights (MD), Marshall Heights (D.C.), and Northeast Boundary (D.C.). With an important road such as East Capitol Street Southeast going through the neighborhood, this is a prime spot for a gateway between Maryland and Washington D.C. While having Central Avenue to the Southwest and south of the Capitol View while Southern Avenue is to the southeast. Capitol View is predominantly African American and is a middle-class neighborhood.

History

Capitol View was an undeveloped forested area that was transformed in the 1930s. During 1938, there were many small apartments and a few one to two-story two-story detached houses being built. Capitol View was developed and built by African Americans for African Americans This area's demographics were exclusively African American. When Capitol View was formed it was originally named DePriest Village. Due to the landscaping of the site and the ability to see the Capitol from the site on its western skyline the neighborhood name was changed to Capitol View.

Capitol View's sense of place changed once the construction of large public housing complexes. In 1952 there was a 394-unit public housing complex built called

East Capitol Dwellings.¹⁶¹⁷ It was one of the first complexes in that area during the 1950s, to desegregate and allow African Americans and whites to live together. This was the largest public housing dwell in D.C. up until the 2000s. Due to poor construction and many issues that maintenance could not fix the 40-acre building was demolished in 2003. The second biggest public housing was named Capitol Plaza which was opened in 1971. The complex was made up of 92 three-story buildings and a 228-unit 12-story high-rise.



Figure 3: Capitol View Apartment building (Source dcmud. Blogspot)

¹⁶ Paul Schwartzman, "The End of the Dwellings," *Washington Post*, July 27, 2003, <https://www.washingtonpost.com/archive/local/2003/07/27/the-end-of-the-dwellings/c1fa50cc-d55a-4942-b4c8-07a85716f73d/>.

¹⁷

HISTORICAL CONTEXT CONTINUED

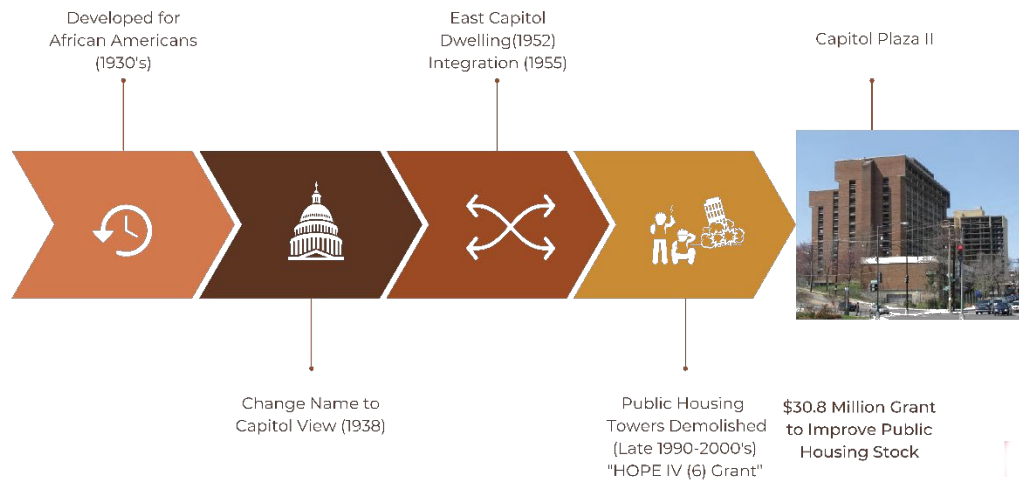


Figure 4 Time Line (Source: Author)

Present

Capitol View underwent a major redevelopment that was named Capitol Gateway Redevelopment. The neighborhood wanted to improve its public housing stock, so in 2000 District of Columbia Housing Authority (DCHA) applied for a \$30.8 million grant known as HOPE VI from the United States Department of Housing and Urban development.¹⁸ The development destroyed east Capitol Dwelling, Capitol View Plaza, Capitol View Plaza II, and the Capitol View Townhomes. Capitol Gateway is a 151-unit low-income senior citizen apartment building and 380 townhouses and single-family homes. Many of the houses are rented to own because of the cost of construction the houses costing around 300,000 dollars per house.

Capitol View had a high crime rate when the large public housing dwellings were erected but once the housing was destroyed the rate dropped. Neighborhood

¹⁸ "Allattachments_dcha.Pdf," accessed August 12, 2021, https://dccouncil.us/wp-content/uploads/2017/05/Allattachments_dcha.pdf.

associations also funded literacy efforts to assist high school dropouts in attaining jobs, and the Marshall Heights Community Development Organization purchased the Capitol View Mall to enhance business and promote job development. As of 2012 Capitol view has been a relatively poor, neighborhood with 96 percent of the residents being African American. Many of the families that are in the area fall below the poverty line. The unemployment in Washington D.C. is around 6.7 percent during 2012 Capitol View had a percentage of 11 percent.¹⁹

Future

In 2014, DCHA agreed with the Henson Companies to build the second phase of the Capitol Gateway project. The second phase was estimated phase 80 million dollars as the developers of the project estimated the project to have included 312 low-income units in a mixed-use development.²⁰ The main catalyst of the second phase was to be a 135,000-square-foot Walmart. Walmart decided to back out of the deal after making hundreds of stores around the country will be closing. This Walmart would have served a multitude of people who were African American living in an area underserved by grocery stores and retail stores. As of now that plot of land is still undeveloped and is a great opportunity for change in a community that needs it.

¹⁹ "Capitol View Demographics and Statistics," Niche, accessed August 12, 2021, <https://www.niche.com/places-to-live/n/capitol-view-washington-dc/residents/>.

²⁰ "D.C.'s next Gateway Project, Featuring Wal-Mart, to Break Ground in 2015," Washington Business Journal, accessed August 12, 2021, https://www.bizjournals.com/washington/breaking_ground/2014/09/d-c-s-next-gateway-project-featuring-wal-mart-to.html.



Figure 5: Site Plan Drawing of Development (dcmud. Blogspot)

Chapter 4: Affordable Housing

Introduction

The world is going through an affordable housing crisis in every country. This disparity is great in justice to a human's natural welfare. Having a shelter or home is something all humans should have the ability to experience as well as love. Housing affordability can be assessed by merely comparing house prices. This is typical without regard to incomes; housing affordability cannot be assessed with any fundamental nature for prospective buyers. Housing affordability's true nature is housing prices relative to income.

United States and The World

Shortages of land, lending, labor, and resources are some of the factors driving the housing crisis around the world. Affordability in 2021 was worse than that before. Studies showed that the market has increased five times more than the market a decade ago. The pandemic did not help this factor of lack of resources by increasing the number of the harshly unaffordable housing market by 60 %. The higher cost of living is a factor in jeopardizing the future of the middle class. Housing is some of the main expenditures for the middle class. The ability to arrive to work is one of the many factors many people investigate when deciding where to buy their housing. The United Nations- Habitat believes that 96,000 affordable homes are needed to be built every day to handle the 3 billion people who need sufficient housing by 2030.

Chapter 5: Transit-Oriented Development (T.O.D)

Introduction

Capitol Heights and Capitol View have an amenity that makes the two sites perfect for Transit-Oriented Development (T.O.D). Capitol Height's Metro station sits as a public transit hub for both Capitol Heights and Capitol View. Capitol Heights Metro helps provides transportation for around 13.9k citizens each day. These citizens use the metro to go to jobs, health care appointments, visit family, and everyday travel. A T.O.D. is comprised of a mix of commercial, residential, office, and entertainment centered around or located near a transit station.²¹ The area that is developed is then turned into a densely populated area that is pedestrian friendly for

²¹ "Transit-Oriented Development | FTA," accessed May 10, 2021, <https://www.transit.dot.gov/TOD>.

its inhabitants and guest.

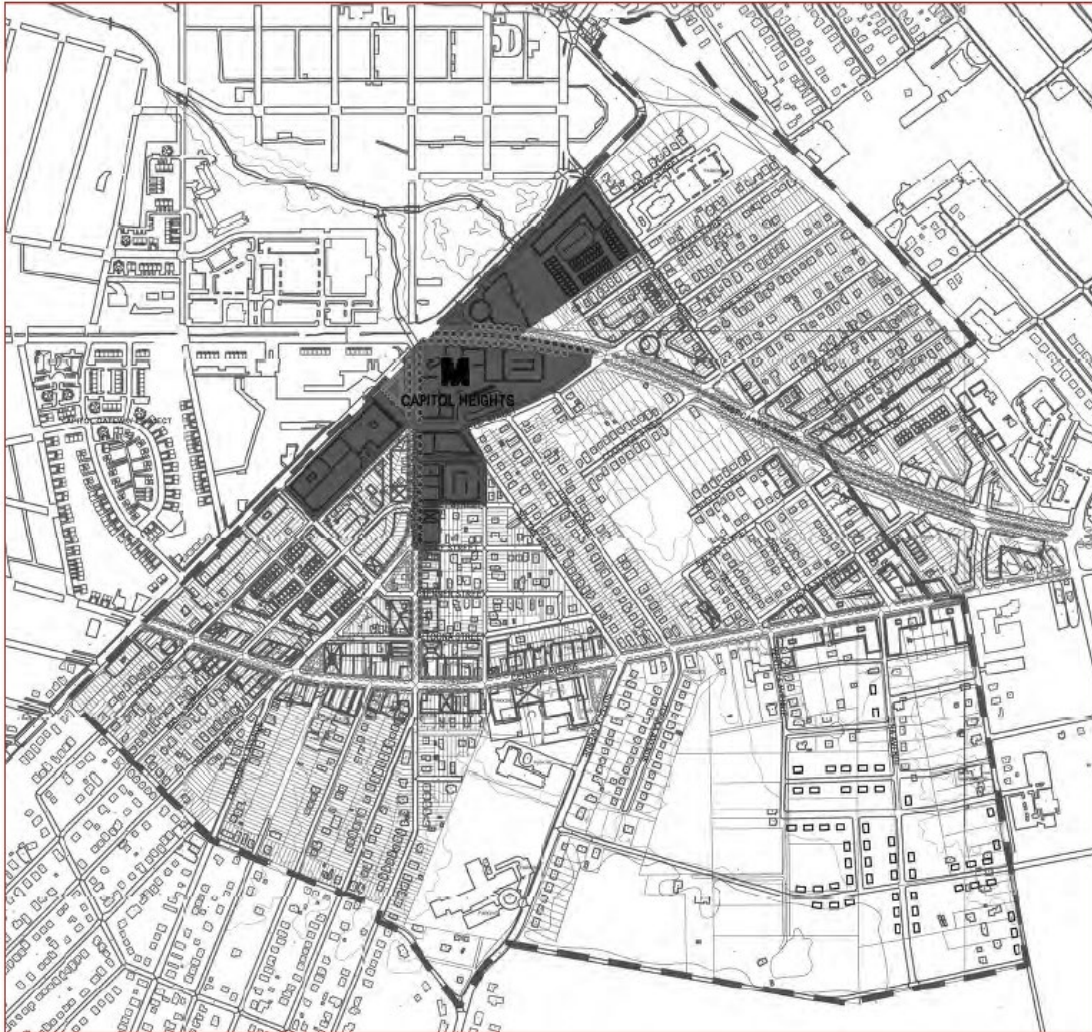


Figure 6: T.O.D Possible Location Capitol Heights (Source Approved Capitol Heights TDDP and TDOZMA)

There will be added mix-use development near the metro stations. This added mix-use will attract people and create foot traffic for the business on the ground level. This can now become a Centre for the community to come together and enjoy their community. T.O.D will allow Capitol Height and Capitol View to be connected and benefit from each other as two communities unite over one central development. The development creates sustainable communities when done correctly which can be a great benefit for Capitol Heights as well as Capitol View.

Benefits of T.O.D

There are several factors in which a T.O.D. can improve a city by developing the city's public transit system. T.O. Ds are a fast-growing trend that helps communities create vibrant, livable, and sustainable communities.²² Creating a mix-use community that is centered around public transportation may bring more of an appeal for people to want to live there. The more people that live in the area the more attractive the business will be to bringing their stores to the site. The more resources the site gains the better for the community and the resident's ability to get to amenities they need.

T.O. Ds are sweeping the nation rapidly creating exciting places for people to travel to that are designed more so for the human experience walking through them. These areas that have been transformed into T.O. Ds have become some of the most desirable places to live, work, and play.²³ The developers are following this trend and meeting the high demand for T.O. Ds to be developed. The need for quality urban places that have access to public transportation is essential in any major city.

Many of these benefits could be used to be a catalyst for the Capitol Heights and Capitol View areas. Increasing the population also increases the opportunities for jobs within the neighborhoods. The ability to give businesses in the area a location to gain capital and give back to the neighborhoods. If done correctly this can be used to create other building typologies are the Capitol Heights and Capitol View Area can replicate. With the growth of the population around the world, this densely created

²² "Transit Oriented Development," accessed May 10, 2021, <http://www.tod.org/>.

²³ "Transit Oriented Development."

habitat can solve many environmental issues. Creating an area where humans are less likely to use cars, creates a decrease in emissions from cars by reducing the need to drive and use fossil fuel (energy consumption). This type of development design can help reduce transportation by cars by up to 85 percent.²⁴

NoMA

In researching precedents that use Transit Oriented Development NoMA is well known in the Washington D.C. area. NoMA is a neighborhood that is adjacent to Capitol Hill, Shaw, and MT. Vernon. NoMA is a newer urban smart center near the nation's capital. NoMA has a slew of amenities that create a great environment for any pedestrian that walks through the area. NoMA has free outdoor Wi-Fi, terrific walkability, a slew of transit options, and a Metropolitan Branch Trail.²⁵ The current population is well over 12,000 with 60,000 employed workers working in the NoMA area. The public transportation score is very high with a walking score of 96, a biking score of 95, and a mobility score of 94.

NoMA stands for North of Massachusetts Avenue but after the redevelopment that happen, there was more of a brand change to the name in the 1990s. NoMA was first populated by refugees of the Irish potato famine in 1850.²⁶ With Union station being built so close to the NoMA area in the 1990s this led to other infrastructures being built making other buildings in the area heights rise. The NoMA Business Improvement District was created by the city council in March

²⁴ "Transit Oriented Development."

²⁵ "NoMa BID," accessed May 10, 2021, <https://www.nomabid.org/>.

²⁶ "NoMa: Evolving from a Brand to a Neighborhood," accessed May 10, 2021, https://dc.urbanturf.com/articles/blog/noma_evolving_from_a_brand_to_a_neighborhood/3709.

2007. NoMA has created a pipeline of rental properties as well as business and office space for businesses to lease. NoMA once was an area with no transportation value and now has a few ways. NoMA has the red line, Union Station, the Greyhound Terminal, several Metrobus lines, Capital Bikeshare stations, and a trail that runs between Silver Spring and Union Station.²⁷ NoMA is a great example of a neighborhood with no resources becoming a symbol of change and sustainability.

Denver, Colorado

Another great example of Transit-Oriented Development is the city of Denver, Colorado. Denver has had a strategic plan since 2006 for implementing T.O.D. in the area. The plan behind Transit Oriented Denver depended on creating a baseline for the several stations for a great transit community. Denver's community wanted to transform the city into walkable places such as shopping businesses, dinners, jobs, parks, and schools. Denver's top principles for the T.O.D involved connecting, innovating, being efficient, placing, mixing, and shifting. The idea behind the station areas is a connection that gives more walkable and bikeable access allowing more people to use it. As the stations stretch further into larger neighborhoods, the region's economy starts to improve.²⁸

Innovation via a T.O.D. has propelled Denver into a role of leading the Rocky Mountain Region on how sustainable and equitable a community can be. Transit communities have demonstrated to be more environmentally, socially, and cheaply

²⁷ "NoMa: Evolving from a Brand to a Neighborhood."

²⁸Brad Buchanan et al., "COMMUNITY PLANNING AND DEVELOPMENT," n.d., 83.

sustainable than areas reliant on one form of transportation.²⁹ Fostering Denver into a community of continuous, responsible growth. Denver believed that creating a transit community will allow residents and future residents to see that Denver is a great place to live, play, and do business. Being strategic in the placement of homes, jobs, civic use, shopping, entertainment and parks close to the transit sites allows for walkable trips for the citizens. This will lead to better use of public service dollars by placing housing and jobs near the stations.

Critical mass is essential in any city or neighborhood that wants to have successful businesses and attractions. Denver wanted to create places where people not only traveled to but stopped lingered, conversed, and generally lived life in these spaces.³⁰ These spaces had to draw people in and allow them to feel safe but visually interesting for pedestrians to walk by or join in the space. An Active public space creates a destination and improves the quality of life in the community.

Mixing uses creates a balance of opportunities for the pedestrian to enjoy in the T.O.D. area. A strong mix of uses will keep the streets active no matter the time of day. Denver wanted to lead the innovation in their way of thinking for a transit community. The shift from being a car-dependent city to a multi-modal city is taking place all over the world. A true multi-modal city goes beyond needed transit improvements.³¹ Many of the ideologies can be used in the Capitol heights Capitol View area to make a successful T.O.D. community.

²⁹Buchanan et al.

³⁰ Buchanan et al.

³¹ Buchanan et al.

Clarendon Station

Clarendon Station is a great example of a T.O.D. that has been developing for years to be something great for a community. Arlington County started this movement in the late 1960s. Creating a metro corridor with the Orange Line alongside Wilson Boulevard and Fairfax Drive was one of the major moves that made Clarendon what it is today. In 1972, Rosslyn-Ballston Corridor Alternative Land Use Patterns was created to report on the alternatives for the future of the metro corridor. The county would later establish five Metro stations within one-quarter of a mile from each other. Thus, setting the stage for broad goals of pedestrian accessibility, the quality of building typology, and a mixture of uses for each area.³²

METRO STATION AREAS IN THE ROSSLYN-BALLSTON CORRIDOR
Figure 1.1



Figure 7: Rosslyn-Ballston Corridor (Source Brad Buchanan)

There were several plans such as The General Land Use Plan and the 1984

³² Buchanan et al.

Sector Plan provided general guidance, while the 1990 Sector Plan Addendum and 1994 East Clarendon Special Coordinated Mixed-Use District Plan provided more detailed urban design, streetscape, and preservation recommendations used as a foundation for the 2006 Clarendon Sector plan.³³ The area that was studied to be affected by the Clarendon Sector Plan was estimated to be ¼ of a mile from the Clarendon station. Clarendon's study made sure to include the community in the design process to voice their opinions on issues, visions of the future, and draft development plans of the community.

Arlington County Council has made a guideline in the study of the Clarendon Sector Plan for developers to use when developing in Clarendon. The County then created a vision statement to serve as what the goals are for anything that is developed in Clarendon:

Arlington will be a world-class urban community with secure, attractive residential and commercial neighborhoods where people unite to form a caring, learning, participating, sustainable community in which each person is important. In Clarendon's urban village, people of all income levels, ages, and household make-ups can walk home, work, shop, and play. Clarendon's superior physical environment also attracts tourists, shoppers, and other visitors, who are encouraged to leave their cars or arrive by Metro or bicycle. From the street-level walkability and well-designed buildings to the character and charm of its public art, community events, and well-defined public open space, people see Clarendon as a destination. Clarendon's older buildings provide a sense of continuity and honor the time when

³³ Buchanan et al.

Clarendon was Arlington's first downtown. The integrity of surrounding low-density residential neighborhoods is protected and higher-density development tapers up from neighborhoods toward Clarendon's core. Residents, visitors, and workers can walk in safety and comfort regardless of the time of day.³⁴

CONCEPT SKETCH: CENTRAL CLARENDON (LOOKING WEST TO CENTRAL PARK & THE WEST END)
Figure 2.3



Figure 8: Concept Sketch of Central Clarendon (Source Carrico Illustrations)

With this vision in mind, the future of Clarendon's design was focused on three goals. The three goals were to create a public realm that had a network of walkable streets, accessible public space, and a mix of old and new buildings. Using this mindset to change the environment of Capitol Heights and Capitol View to be a more inviting and livelier public realm for the citizens. Creating a connected infrastructure with mixed uses allows pedestrians to use public transit as a source of transportation to these amenities. The last goal of the plan was to attain critical mass

³⁴ Arlington County, "CLARENDON SECTOR PLAN," Sector Plan (Arlington Virginia, December 2006), <https://projects.arlingtonva.us/plans-studies/clarendon-sector-plan-update/>.

for the mixture of mix-use buildings. This will create a support network for business as well as influence the economy of Clarendon. Creating that attraction and giving a purpose for pedestrians to come to a space is needed for T.O.D or any development to be successful.

Capitol Heights and Capitol View lack the sense of an “urban village”³⁵ and have a residential suburb aesthetic. Clarendon is a great example of an urban village by placing specific uses in strategic locations to create a homogenous urban environment of residential, office, retail, hotels, and recreation/entertainment. Creating a separation of residential uses, only with a corridor of commercial and retail on another block helps the street network become clear to walking pedestrians.

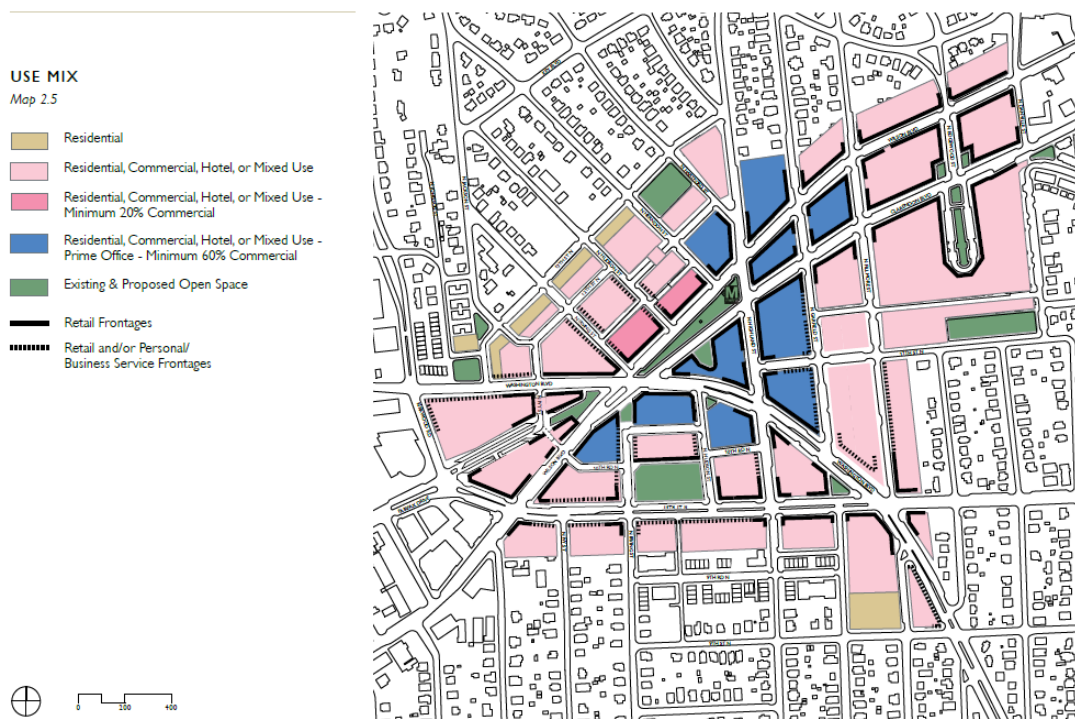


Figure 9: Diagram of Central Clarendon Mix-Uses (Source HOK Planning)

³⁵ County.

Clarendon wanted to create a sustainable T.O.D. that would be able to let developers have variations in building heights for the adaptability of building in the future. Clarendon wanted to have a sensitive transition from low-density buildings to the future medium-density core. This would allow the future building to be able to adapt to the surroundings as well as be flexible for the mix-use typology. This method allows Clarendon's preexisting building to have a fluid flow of height change next to the newly developed building in the center. This rule keeps the community at large safe from being towered over by buildings built at a higher height.



Figure 10:: Rosslyn-Ballston Corridor Aerial View (Source Arlington Economic Development)

Public Spaces/Open Spaces are needed in any community to support community interaction with businesses as well as with other residents. Public Spaces/Open Spaces that are planned and programmed for the community can make a community livelier by giving them a destination to visit and enjoy. Clarendon already

had some preexisting public spaces. The objective was to link the preexisting spaces with the new spaces to create a larger network of spaces throughout the development. This makes Clarendon an attractive place to live, work, and play with the incorporation of high-quality programmed Public Spaces/Open Spaces. According to the report done on Clarendon T.O.D: Quality outdoor public spaces—parks, squares, streetscapes and plazas—play pivotal roles in an urban setting, providing a framework for the built environment; places to walk, relax and play; sites for cultural expression; and places for socializing and celebrating—from casual meetings to large-scale community events.”³⁶

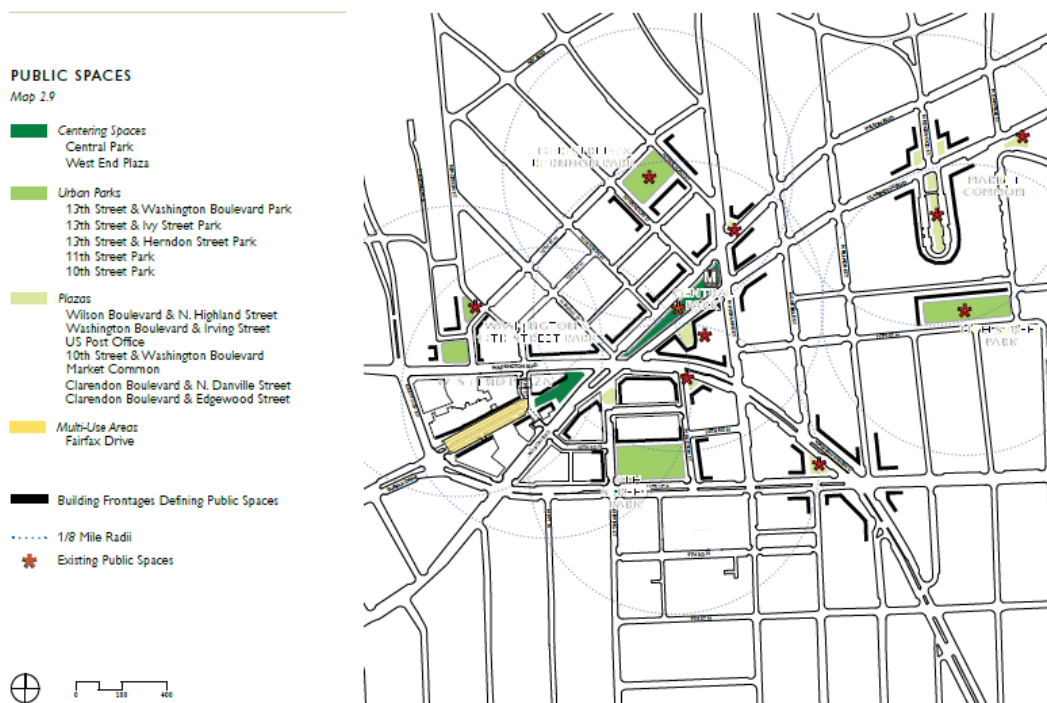


Figure 11: Diagram of Central Clarendon Public Space (Source HOK Planning)

³⁶ County.

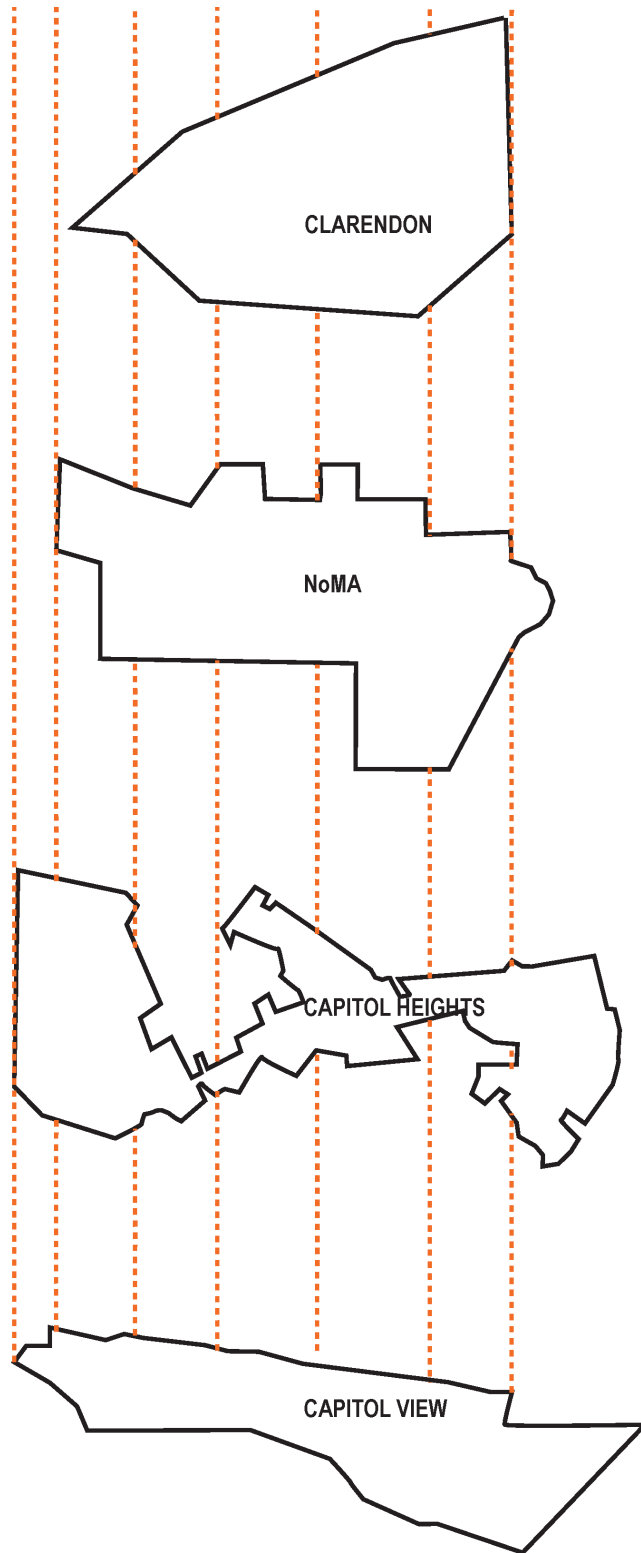


Figure 12 Comparison of Site to Precedent

Chapter 6: Sustainability of the future

Sustainable Rating

There are now multiple ways in which a building can gain recognition for being sustainable. Many communities in America have more options for encouraging the buildings or development being designed for their neighborhoods to be greener. Several organizations have developed rating systems or codes that the industry uses to rate their buildings.

Green Building Standards

American communities have more options than ever for encouraging greener building and development. Many organizations have developed model codes or rating systems that communities can use to develop green building programs or revise building ordinances. Learn about some of the major options, which are listed below. You can view a side-by-side comparison by selecting the checkboxes of options that interest you, then clicking the *Compare* button below the table.

Standard	Standard Type ¹	Mandatory/ Voluntary ²	Building Type(s)	Project Type	Subject Areas	Compare
International Code Council's 2012 International Green Construction Code (IgCC) A model code that contains minimum requirements for increasing the environmental and health performance of buildings, sites and structures. Generally, it applies to the design and construction of all types of buildings except single- and two-family residential structures, multi-family structures with three or fewer stories, and temporary structures. More information about 2012 IgCC	<ul style="list-style-type: none">• Model code	<ul style="list-style-type: none">• Mandatory	<ul style="list-style-type: none">• Commercial: all• Industrial: all but manufacturing systems and equipment• Mixed use: all• Residential: multi-family with more than 3 stories	<ul style="list-style-type: none">• New construction• Additions• Alterations	<ul style="list-style-type: none">• Sustainable sites• Energy efficiency• Water efficiency• Materials and resource use• Indoor environmental quality• Emissions• Operations and maintenance	<input type="checkbox"/> Compare IgCC with other standards

Table 1: Different Sustainable Rating Systems (Source Green Building Standards)

Standard	Standard Type ¹	Mandatory/ Voluntary ²	Building Type(s)	Project Type	Subject Areas	Compare
ANSI/ASHRAE/USGBC/IES Standard 189.1-2011: Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings (ASHRAE 189.1) A model code that contains minimum requirements for increasing the environmental and health performance of buildings, sites and structures. Generally, it applies to the design and construction of all types of buildings except single-family homes, multi-family homes with 3 or fewer stories, and modular and mobile homes. More information about ASHRAE 189.1	<ul style="list-style-type: none"> Model code 	<ul style="list-style-type: none"> Mandatory 	<ul style="list-style-type: none"> Commercial: all Industrial: all Mixed use: all Residential: multi-family with more than 3 stories 	<ul style="list-style-type: none"> New construction Additions 	<ul style="list-style-type: none"> Sustainable sites Energy efficiency Water efficiency Materials and resource use Indoor environmental quality Construction and operations plans 	<input type="checkbox"/> Compare ASH with other standards
ICC 700-2012: 2012 National Green Building Standard (ICC 700) A rating and certification system that aims to encourage increased environmental and health performance in residences and residential portions of buildings. Its criteria apply to the design and construction of homes and subdivisions. More information about ICC 700	<ul style="list-style-type: none"> Rating and certification system 	<ul style="list-style-type: none"> Voluntary 	<ul style="list-style-type: none"> Mixed use: residential space Residential: all except institutional uses 	<ul style="list-style-type: none"> New construction Additions Alterations 	<ul style="list-style-type: none"> Sustainable sites Energy efficiency Water efficiency Materials and resource use Indoor environmental quality Operations and maintenance Building owner education 	<input type="checkbox"/> Compare NGBS with other standards

Table 2: Different Sustainable Rating Systems (Source Green Building Standards)

Standard	Standard Type ¹	Mandatory/ Voluntary ²	Building Type(s)	Project Type	Subject Areas	Compare
Green Globes™ A series of rating and certification systems that encourage improved environmental and health performance for all types of buildings except residential structures. Green Globes™ is administered in the U.S. by the Green Building Initiative. More information about Green Globes	<ul style="list-style-type: none"> Rating and certification system 	<ul style="list-style-type: none"> Voluntary 	<ul style="list-style-type: none"> Commercial: all Mixed use: all Residential: multi-family 	<ul style="list-style-type: none"> New construction Additions Alterations Existing buildings 	<ul style="list-style-type: none"> Sustainable sites Energy efficiency Water efficiency Materials and resource use Indoor environmental quality Emissions Project/environmental management 	<input type="checkbox"/> Compare GBI with other standards
US Green Building Council's Leadership in Energy and Environmental Design (LEED®) A series of rating systems aimed at increasing the environmental and health performance of buildings, sites and structures and of neighborhoods. LEED® covers the design, construction, and operation of all types of buildings. More information about LEED	<ul style="list-style-type: none"> Rating and certification system 	<ul style="list-style-type: none"> Voluntary 	<ul style="list-style-type: none"> Commercial: all Industrial: all Mixed use: all Residential: all 	<ul style="list-style-type: none"> New construction Existing buildings Additions 	<ul style="list-style-type: none"> Sustainable sites Energy efficiency Water efficiency Materials and resource use Indoor environmental quality Emissions Operations and maintenance 	<input type="checkbox"/> Compare LEED with other standards

Table 3: Different Sustainable Rating Systems (Source Green Building Standards)

Standard	Standard Type ¹	Mandatory/ Voluntary ²	Building Type(s)	Project Type	Subject Areas	Compare
The International Living Future Institute's Living Building Challenge™, version 2.1 (May 2012) A certification system that advocates for transformation in the design, construction, and operation of buildings. In addition to encouraging improved environmental and health performance, it supports building structures that are restorative, regenerative, and an integral component of the local ecology and culture. More information about the Living Building Challenge	<ul style="list-style-type: none"> • Certification system 	<ul style="list-style-type: none"> • Voluntary 	<ul style="list-style-type: none"> • Commercial: all • Industrial: all • Mixed use: all • Residential: all 	<ul style="list-style-type: none"> • All 	<ul style="list-style-type: none"> • Sustainable sites • Energy efficiency • Water efficiency • Materials and resource use • Indoor environmental quality • Equity • Aesthetics 	<input type="checkbox"/> Compare ILFI with other standards

Table 4: Different Sustainable Rating Systems (Source Green Building Standards)

LEED is one of the more highly known rating systems in the industry. LEED's rating systems consist of five categories according to which project the organizations are presenting their processes and documentation. The name of five categories is Building Design and Construction, Interior Design and Construction, Building Operations and Maintenance, Homes, and Neighborhood Development.³⁷ LEED began in April 1993, with the actions of Rick Fedrizzi, David Gottfried, and Mike Italiano. After talking to sixty different firms and several nonprofits in the American Institute of Architects (A.I.A) the idea of a green building rating system that would be used across the entire industry was founded. Over the years LEED has made new versions improving on its pass rating systems requirements.

International Code Council (ICC) is a source used globally for model codes, standards, and building safety solutions. The solutions that are made are sorted into several categories such as product evaluation, accreditation, certification, training, and codification. The International Code Council is in fifty-five different countries with well over 500 staff members to help create healthier buildings around the world.

³⁷ "LEED Rating System | U.S. Green Building Council," accessed May 10, 2021, <https://www.usgbc.org/leed>.

The technical expertise of the International Code Council covers fire safety, plumbing, mechanical, energy conservation, accessibility, resiliency, and building safety. International Codes or I-Codes are building safety rules that the International Code Council has created that are used around the world today. International Code Council impacts over two billion people with what the code council does with building safety. This level of testing and standards help not only the development last for years to come but helps communities like Capitol View and Capitol Heights have improved the standard of building standards.

Green Globes is a science-based building rating system that supports several new constructions as well as existing building projects. For a project to be certified by Green Globe, it must meet thirty-five percent of the one thousand points that the Green Globe regards acceptable on the project. This helps the clients' building produce the greatest sustainable product based on their building type. How a building can update information about its construction, or an existing building can add benchmarks for infrastructure that changes to be more sustainable is transparent and streamline the process for Green Globes. Green Globe has cloud-based programs that allow project teams to upload their information at any time cutting down the time it takes to get certified by other rating systems.

Green globes just like LEED and many other rating systems were established by BREEAM (Building Research Establishment Environmental Assessment Method). BREEAM is the world's longest-established method of testing, evaluating, and

certifying the sustainability of buildings. Green Globes was developed in 2000 by ECD Energy and Environmental Canada by 2004 the USA adopted the system as well.³⁸

What it Means to be Sustainable

According to Merriam-Webster sustainability is “of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.”³⁹ Several issues have caused many problematic challenges in sustainability around the world. Some of the problems stem from climate change mitigation and adaptation, pollution problems and their effect on health, protecting the oceans, energy transition, and renewables, sustainable food model, protecting biodiversity, sustainable urban development, etc. Global warming has increased fifty percent since 1990 according to the United Nation records.

A building’s sustainability is not just about the environment in which it is built but it must take precedence in the pillars of sustainability. There are three pillars of sustainability follows planet, people, and profit. The overall ability of a building and its design to deliver a comfortable, healthy, and productive environment over a long time without adversely affecting the environment makes a healthy community. Areas such as Capitol View and Capitol Heights could be a catalyst or model of how

³⁸ “Green Globes - About Green Globes,” accessed August 10, 2021, <https://www.greenglobes.com/about.asp>.

³⁹ “Definition of SUSTAINABILITY,” accessed August 10, 2021, <https://www.merriam-webster.com/dictionary/sustainability>.

cities that have the same attributes as Capitol View and Capitol Heights must be more sustainable. United States Land Port of Entry, Columbus, New Mexico is a great example of a design that makes the human environment healthy and dignified. The design was meticulous, robust building prepared to last. According to AIA “The designs integrated and expressed response to this breadth of sustainability opportunities is the mechanism for creating and conveying this message. The rhythm and silhouette of photovoltaic, clerestoried roof monitors echo distant mountains. Colored brick strata and weathered steel extend the patterns of earth and grasses that reach the horizon. Terraced native landscaping and sculpted ground plane tell visitors the story of the scarcity, power, and harvest of water in the desert. Shaded exteriors and daylit interiors shelter and harness the desert sun.”⁴⁰

The growth of cities will need to accommodate around five billion people by 2030. This alone will be a large hurdle for creating a sustainable world. This change must start with how we design cities. Creating a more dense, secure, all-encompassing, environmentally and energy-efficient way of developing more green spaces will allow for a better society in the future.

⁴⁰ “U.S. Land Port of Entry, Columbus, New Mexico - AIA,” accessed August 10, 2021, <https://www.aia.org/showcases/6280250-us-land-port-of-entry-columbus-new-mexico>.



Figure 13 What will Society be Like in 2030? (Source World Economic Forum.)

Sustainability in Urban Climates

Cities are the urban environment in which many humans have established a lifestyle to live. The urban community is one of the first things on a long list of criteria that needs to be rectified for the world. The quality of life for the citizens can be greatly improved based on the design solutions of cities. Calculations suggest that by 2050, two-thirds of the world's 9.8 billion people will live in urban areas.⁴¹ Around the world urban land cover is expected to increase more than any expansion before the year 2000 added together. With an urban city being built at a high commodity some issues come with this as well as opportunities. There have been

⁴¹ "Addis0Ababa00E0ing0urban0resilience.Pdf," accessed August 11, 2021, <https://openknowledge.worldbank.org/bitstream/handle/10986/23245/Addis0Ababa00E0ing0urban0resilience.pdf?sequence=1&isAllowed=y>.

studies done by Economic Cooperation and Development (OECD), that seventy-one trillion dollars will need to be spent to provide satisfactory overall global infrastructure for electricity, road and rail transport, telecommunications, and water. This will be an extreme hardship for smaller cities because they have to deal with bigger cities' budgets. Sustainable development in an urban climate will start and finish in cities win or lose.

The Urban Sustainability Framework has been created by the GPSC to

- “Help build a common understanding of sustainability within an urban context;
- Provide practical guidance to cities on how to pursue urban sustainability through integrated approaches;
- Serve as a policy tool to support cities in collecting and integrating data, and using those data sets to define a vision, set targets, monitor progress, and forecast trends all while being able to compare themselves with peer cities;
- Establish a common framework to measure urban sustainability so that cities can diagnose and benchmark their current performance, monitor the impacts of their policy and planning interventions, and share data and knowledge with other cities in the GPSC network and beyond.”⁴²

Urban environments must answer certain questions when designed to be sustainable. One of the first questions involves asking how bad the situation is currently, figuring out the main issues with the city allows for better planning and

⁴² “123149-Urban-Sustainability-Framework.Pdf,” accessed August 11, 2021, <https://documents1.worldbank.org/curated/en/339851517836894370/pdf/123149-Urban-Sustainability-Framework.pdf>.

policy making. Question number two is to ask the city what we want to be and how are we going to accomplish this. The cities then will have the opportunity to plan goals and think of budgets for helping make this aspiration come to fruition. The third question involves how are we going to pay for the urban investment for the goals we want to accomplish. This should be done simultaneously as the planning for the future is being thought of. These questions go hand and hand to accomplish a more sustainable urban climate. Lastly, the city should always monitor the initiatives that they have put forward to make sure that it works well in the city and helps them improve on the path to sustainability.

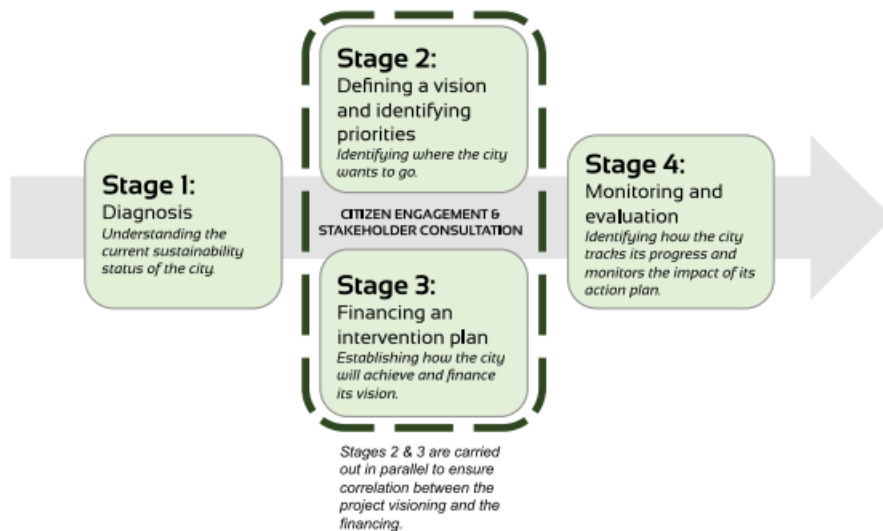


Figure 14 Four Stages of the USF Process (Source USF)

Net-Zero

North America has been researched to consume almost forty percent of the total fossil fuel energy. This is an astonishing amount of consumption from one continent out of the other six. North America is a major contributor to greenhouse gas emissions due to using forty percent of fossil fuels. The solution to this issue is to cut down on the use of fossil fuels. Net zero energy buildings reduce the dependence on

fossil fuels thus decreasing carbon emissions. It is worldwide logical agreement that, to forestall the most exceedingly awful environmental harms, worldwide net human-caused discharges of carbon dioxide (CO₂) need to fall by around forty-five percent from 2010 levels by 2030, arriving at net zero around 2050.

Global warming is a result of all the CO₂ emissions from years of human negligence of what they were releasing into the air. If the earth has more than zero emissions the longer the planet will have to be heated up. With global warming still occurring the climate damage will only continue and may even get worst. According to Becca Foerder “Greenhouse gases are gases in our atmosphere that soak up the sun and trap heat like a greenhouse. They have always been involved in changes in the Earth’s climate. When greenhouse gas levels increased in the past, temperatures consistently got warmer. With CO₂ emissions higher now than ever, temperatures have increased substantially. NASA found that the global temperature rose a staggering 1.5 degrees Fahrenheit from 1880 to 2018”⁴³

⁴³ “The Truth About Climate Change,” *Ball Bearings Magazine* (blog), January 12, 2020, <https://ballbearingsmag.com/2020/01/12/the-truth-about-climate-change/>.

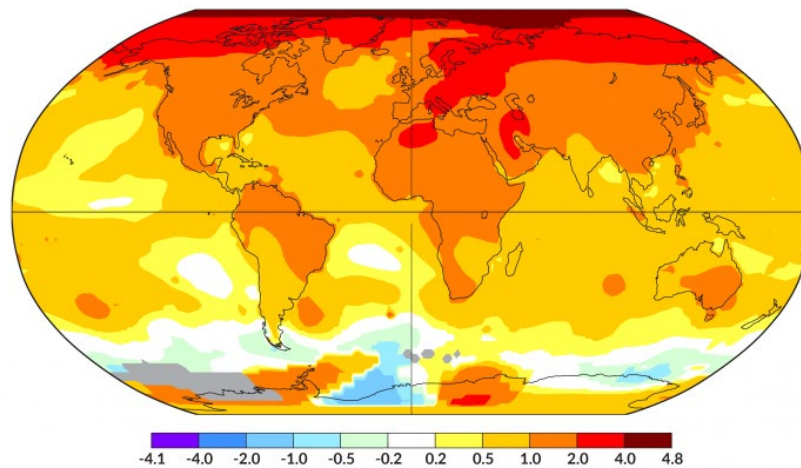


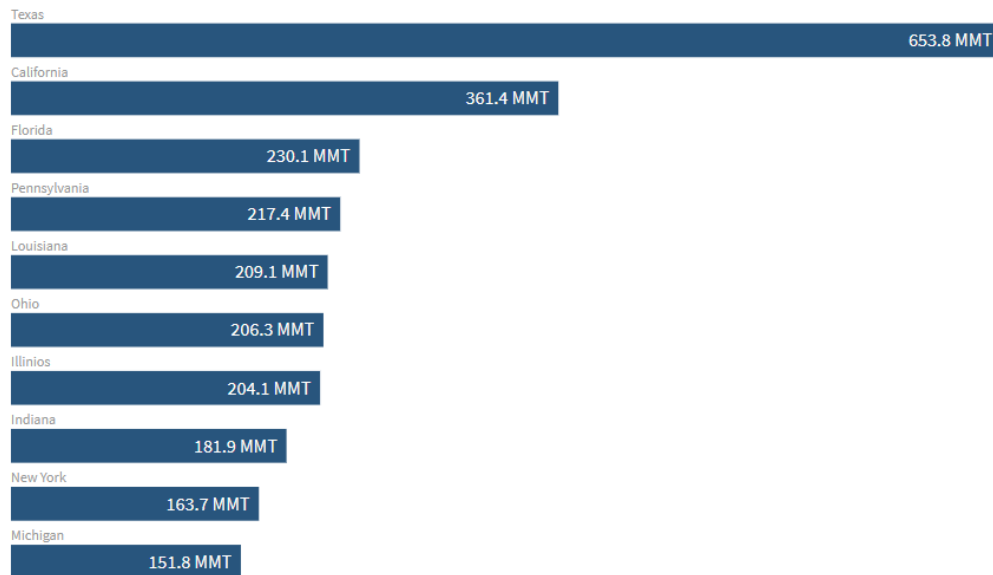
Figure 15 Photos/Illustrations by Emily Wright Global Surface change over 50 years (Source EIA)

Net zero seeks to stop emitting more CO₂ and leave the atmosphere with a more balanced number of gases. Climate change has negative effects on many different aspects of the environment including sea level rise, ocean acidification, underwater animal and plant species, and oceanic dead zones which have proven how destructive climate change is.

Requiring states to lower their CO₂, was in acting in the Paris Agreement making the need for net zero even more imperative to be used.

States with the highest CO₂ emissions in 2016

In Millions of Metric Tons (MMT)



Source: EIA • Emily Wright, Ball Bearings

Figure 16 States the highest CO₂ emissions (Source EIA)

Net Zero Energy Building is a technique of design and construction that seeks to attain an energy-efficient, grid-connected building, enabled to produce energy from renewable resources to pay off for its energy requirement. Creating buildings that set this precedent in a neighborhood that is lacking resourceful development can lead to an immensely impactful future for the area such as Capitol View and Capitol Heights. Zero energy buildings are enhanced to use passive solar heat gain and shading, mixed with thermal mass, to stabilize temperature differences throughout the day. They incorporate a wide assortment of energy effectiveness gauges some exceptionally mind-boggling and others very straightforward, for example, high productivity warming and cooling gear, machines, windows, and

entryways, just as added protection, regular ventilation, air fixing, and further developed sustainable power arrangements, for example, sun-based photovoltaics and geothermal energy frameworks.

Net zero energy building is mostly related or used with commercial structures, yet it is feasible for any construction to be net zero, including private homes, as the idea is material and adaptable to for all intents and purposes any estimated structure, regardless of whether a structure is an extensive multi-use office or a minimalistic house. The idea is even adaptable to whole net-zero grounds and networks. With many Americans realize that the life that we once lived must change Capitol View and Capitol Heights is a great opportunities to bring this type of design to the site.

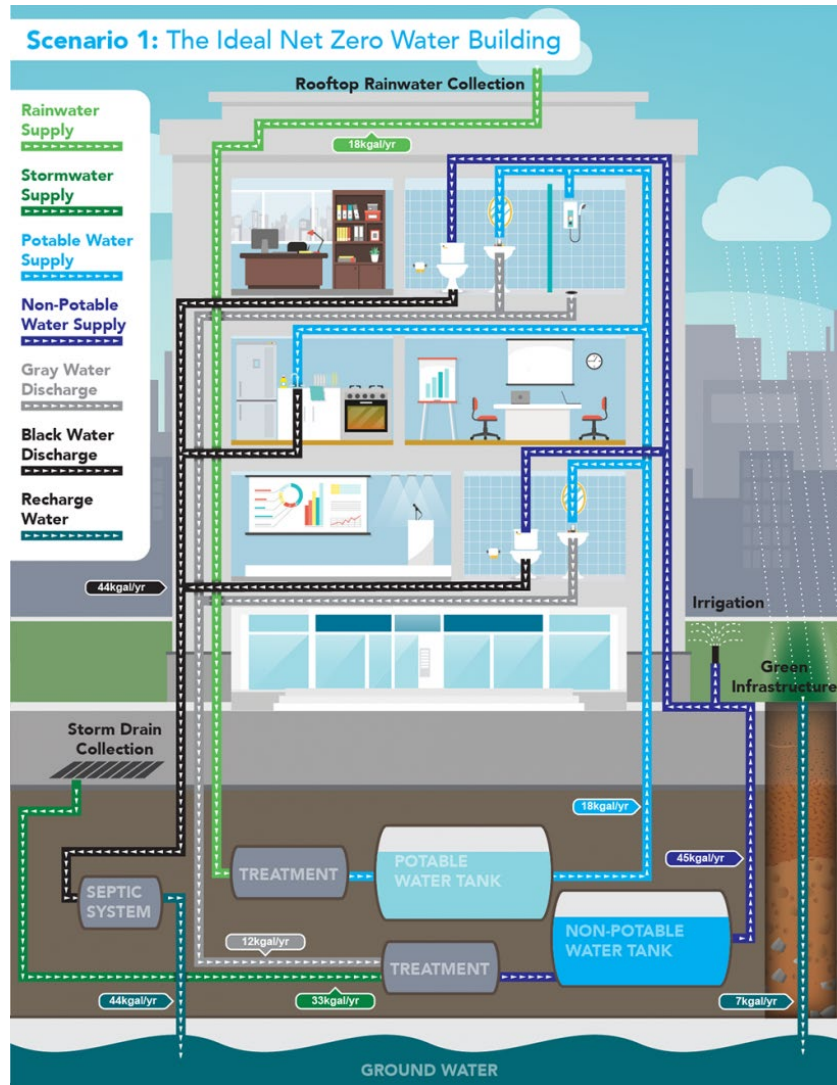
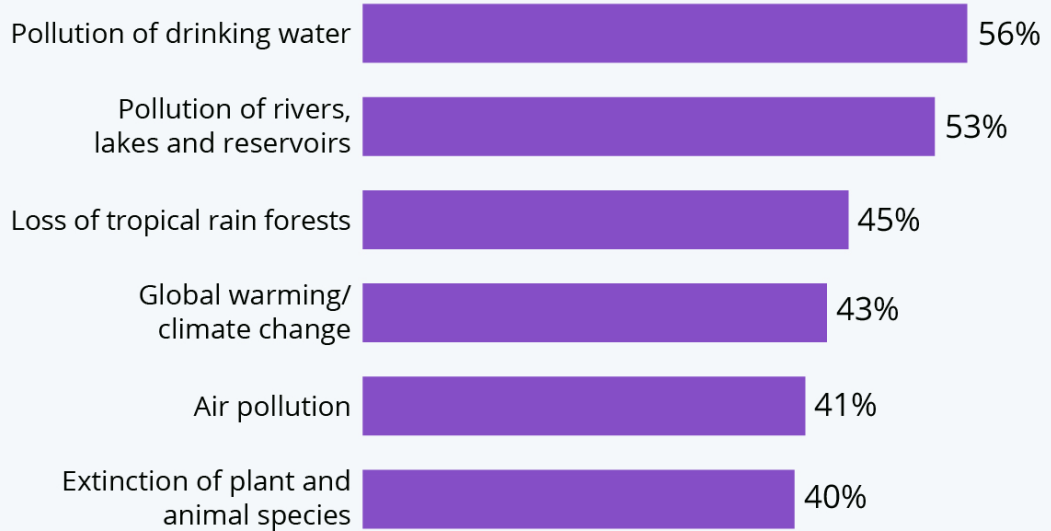


Figure 17 Examples of Net-Zero Systems on a Building (Source Energy.gov)

Americans' Biggest Environmental Concerns

Share of Americans who personally worry a great deal about the following



n=1,010 U.S. adults (March 01-15, 2021)

Source: Gallup



statista

Figure 18 American's Biggest Fear Environmental (Source Gallup)

Chapter 7: SWOT Analysis

Strength of the Site

The site location in Capitol View is a developer/architect's dream come true based on its proximity to main streets and public transportation. The site is less than two hundred feet from Capitol Heights Metro Station which supports both Capitol View and Capitol Heights, residents. The site is also surrounded by major street connectors such as Central Ave, East Capitol Street, and Southern Ave. Each street connects to either Maryland or Washington D.C.

The site can bring an innovative design that can bring life to a desolate area. The site has the best ability to retain and use solar energy to help reduce its consumption of energy.

Weakness of the Site

Capitol View and Capitol Heights have no resources to funnel more people to live in either area. The site is across from underdeveloped land and infrastructure in the area. There is a history of failed commercial buildings in and around this site. The site does have a high rate of crime in both Capitol View and Capitol Heights. The site was once known for having a horrible run-down multifamily tower that held a large percentage of the criminal activity within that area.

Opportunities of the Site

The context around the area has had attention brought to it to be developed for mixed-use which allows for precedents that mix-use can work in this area. The lack of resources makes it a grand location for businesses to flourish in an unsaturated

area. The area as well as the community are starving for some source of catalyst to bring income and resources to the community.

Threats to the Site

There is newer development being developed in Largo Maryland five miles away from the site. Carillon is a mixed-use development that dates to begin in 2017. It will consist of 350 apartments, more than 220,000 square feet of commercial space, and a park set aside for outdoor, temporary recreation.⁴⁴ With the site being five miles from the site this would be a big competitor in trying to gain the population (273,012) of consumers within those five miles.

⁴⁴ “Properties,” RPAI, accessed August 12, 2021, <https://www.rpai.com/properties/>.



Figure 19 Aerial View of Carillon Location (Source RPAI)



Figure 20 Carillon 880 G Shoppers Way | Largo, MD 20774 (Source RPAI)

Chapter 8: Site Analysis

Introduction

The site is in Capitol View Washington D.C. which is adjacent to Capitol Heights Maryland. The site has several major roads used as a thoroughfare for people who want to work or live in Washington D.C. as well as people who work or live-in southern Maryland. When going to Washington D.C. East Capitol St, Central Ave SE, and Southern Ave are some of the major streets used around the site. Vice versa if a person is traveling to southern Maryland route 214, Addison Rd, and Route 704 are many roads to take.

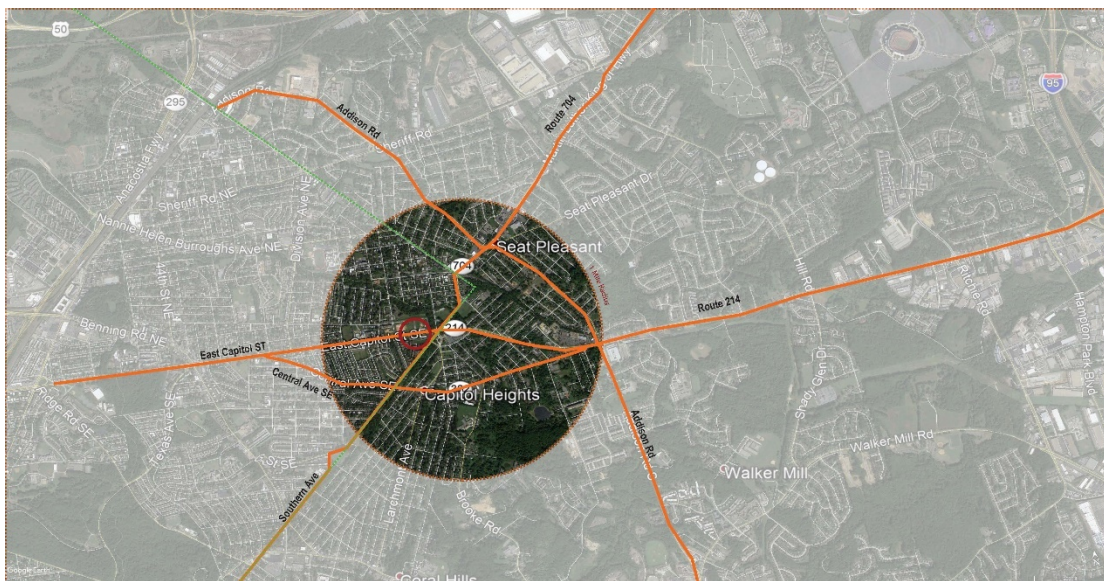


Figure 21 Major Connecting Street Network (Source Author)

The site is less than one hundred feet away from Capitol Heights Metro making it a prime real estate for transit-oriented development. Many of the residents that live in Capitol View and Capitol Heights use this transportation to get to and from work.

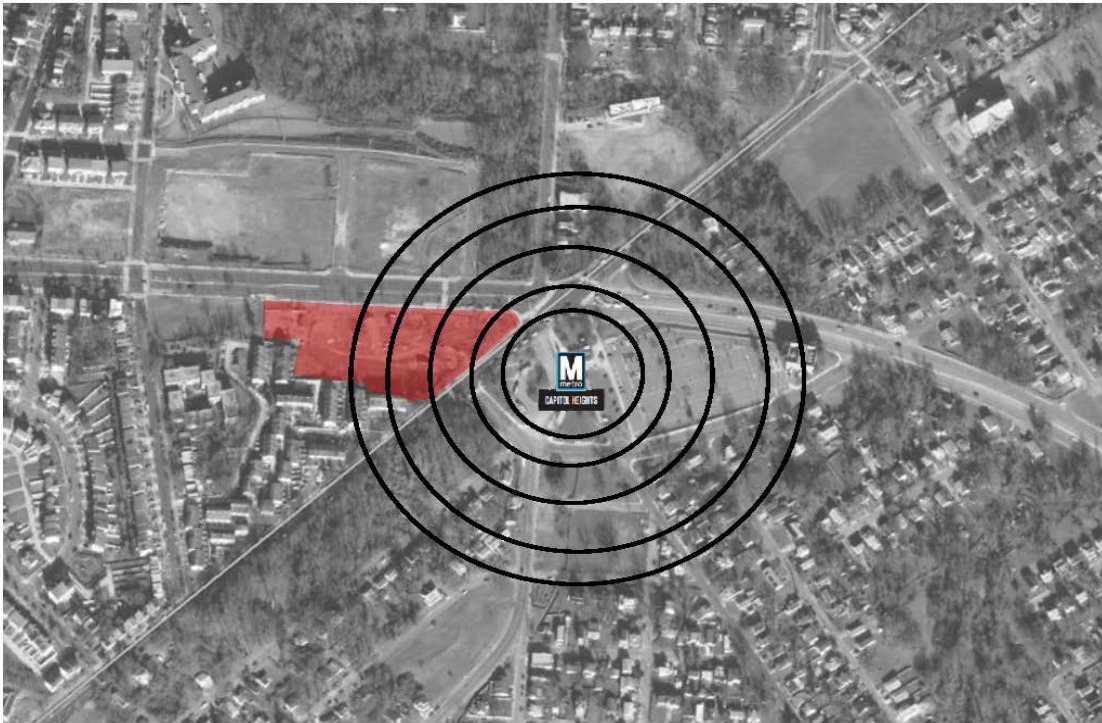


Figure 22 Site Proximity to Public Transportation (Source Author)

Route 214 connects Capitol Heights metro and Addison Road metro which are less than two miles apart from each other. Both public transportation being near one another strengthens the design possibility of making a transit-oriented development. This can create phasing that can lead to a more pedestrian-friendly corridor that leads to the gateway to the site.

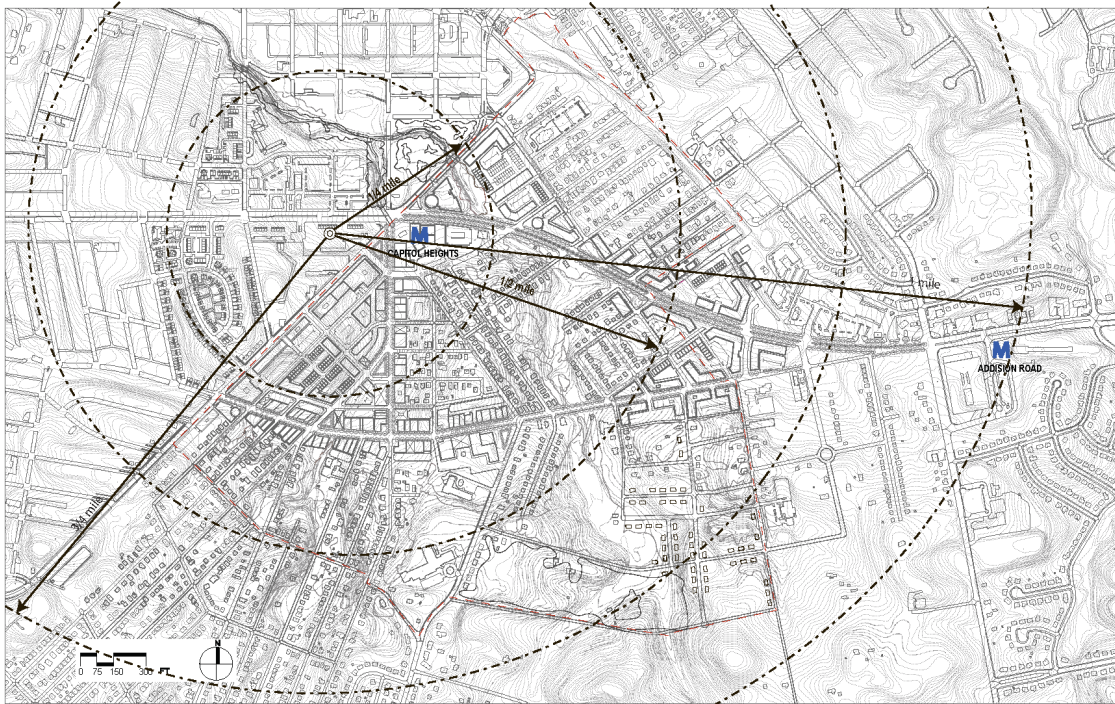


Figure 23 Walking Radius from Site to Public Transportation (Source Author)

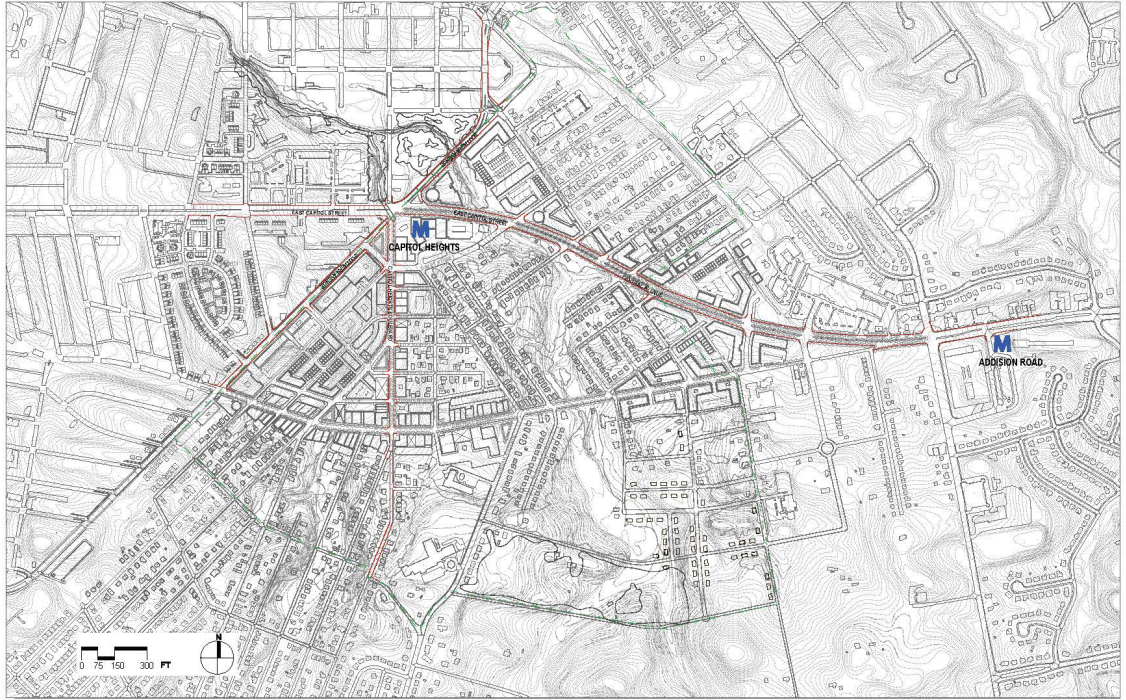


Figure 24 Main Corridors to the Site and Other Resources (Source Author)

Topography

The site has a downward slope when traveling from East Capitol St to Central Ave (Route 214). This can create an illusion from different angles when viewing a

building from the street on the site. The building can seem to snuggle in with the context on approach and when arriving become a gateway or beacon into a new area.



Figure 25 Aerial View of Topography (Source DC Atlas)

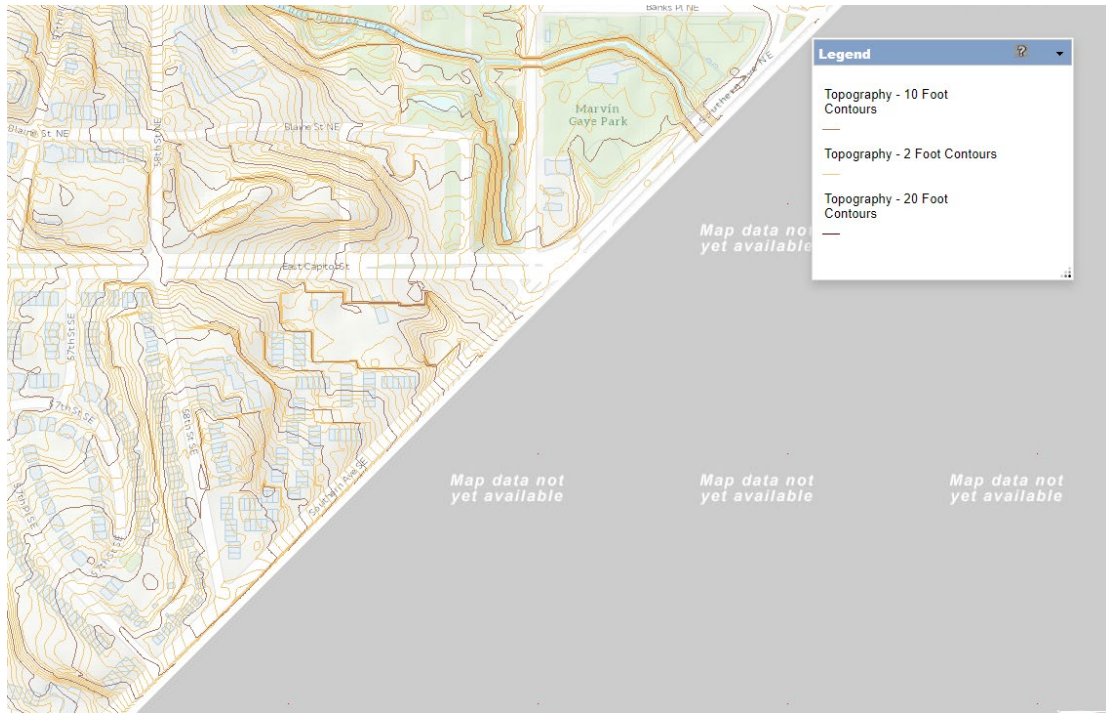


Figure 26 2', 10', 20' Contour Diagram (Source DC Atlas)

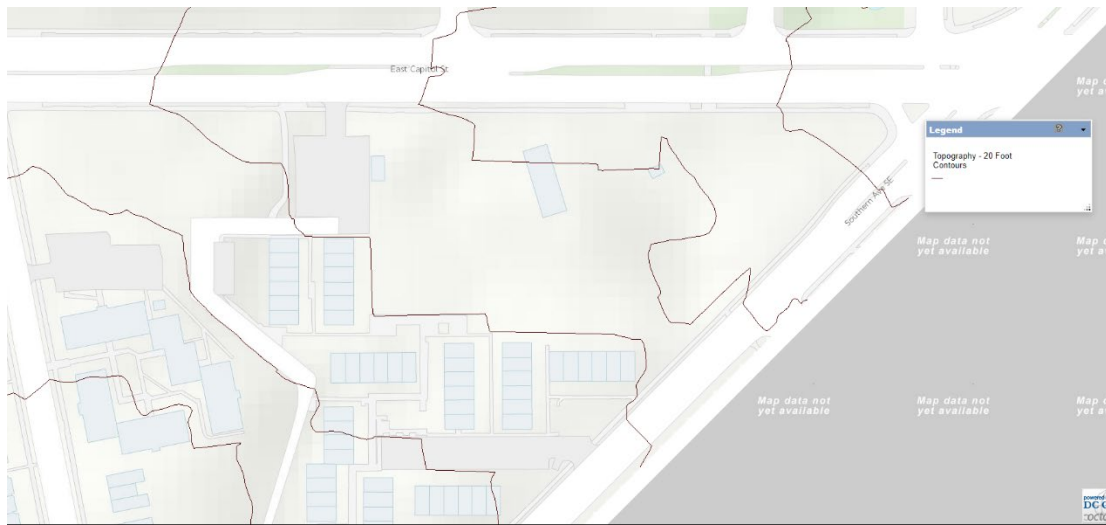


Figure 27 20' Contour Diagram (Source DC Atlas)

The site is currently zoned as a medium-density residential according to the DC Atlas website. The site allows for flexibility of designs by permitting all types of urban residential development. This flexibility is only granted if the building meets the height, density, and area requirements of this district. The name of the zone

according to the District of Columbia Zoning handbook is Residential Apartment (RA). RA-2 zones provide areas that are being developed into a predominantly moderate-density residential areas. RA-2 area must have a floor area ratio max of one point eight and a max height of fifty feet. The penthouse may be used for mechanical space. The green area ratio has a minimum of 0.40 and many of the zoning regulations are subjugated to Subtitle F chapter 3 for reference

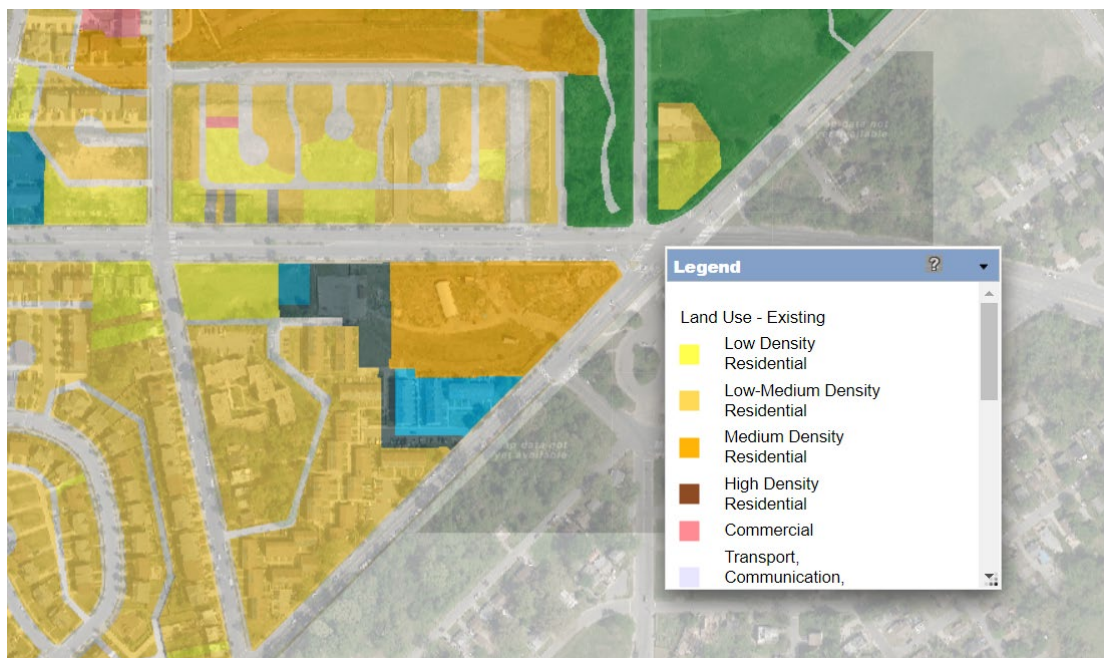


Figure 28 Land Use Diagram (Source DC Atlas)



Figure 29 Current Building Footprint (Source DC Atlas)

Site Elevation



Figure 30 Site Context Elevation 58th St SE



Figure 31 Site Context Elevation Southern Ave

The site context is surrounded by a small mixture of different building typologies. There are small multifamily units on 58th St SE while the other side of the street has attached duplex housing. On Southern Ave one side of the street has several row houses on the property behind the site. While across the street from that there is an undeveloped plot of land in Capitol Heights Maryland.

Site Section

Existing Site Section

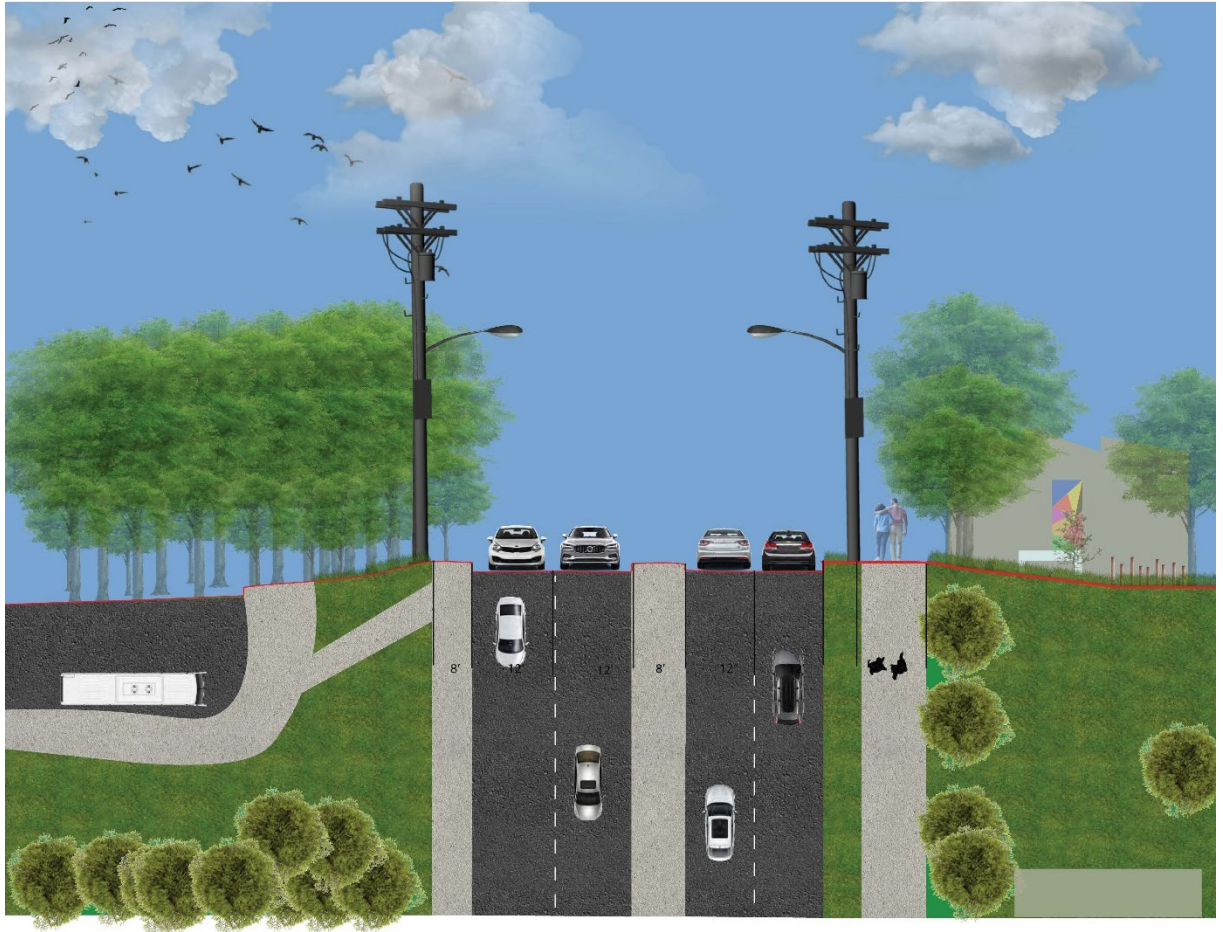


Figure 32 Site Section of Southern Ave (Source Author)



Figure 33 Site Section of East Capitol St (Source Author)

Site Plan



Figure 34 Site Plan 3/8"= 1' (Source Author)

Building Program

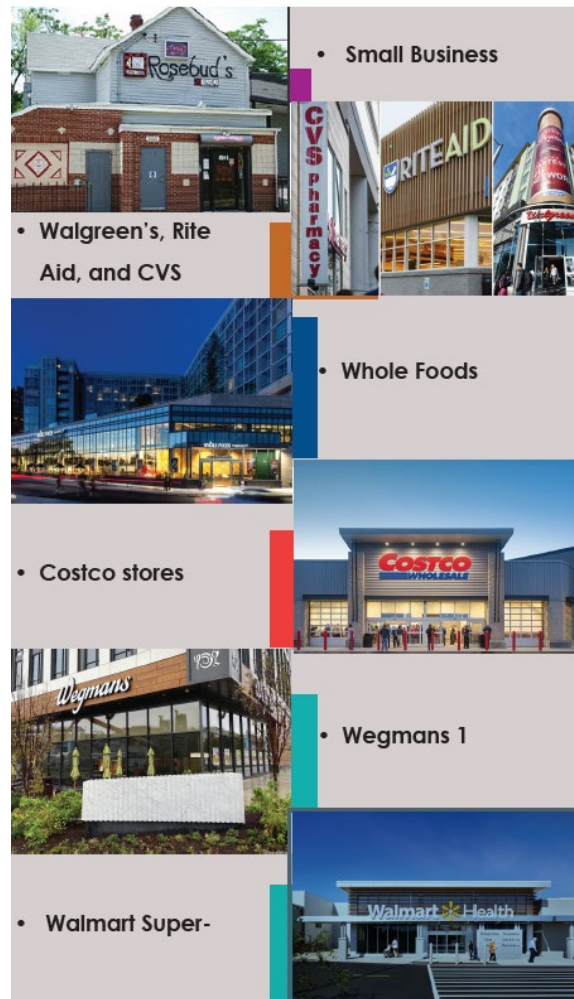
- Small Business-2,000 square feet
- Walgreen's, Rite Aid, and CVS are generally 11,000-15,000
- Whole Foods 25,000-50,000 Square Feet
- Costco stores range in size from 73,000 to 205,000 square feet with the average size of 143,000 square feet
- Wegmans, stores typically run between 75,000-140,000
- Walmart Super-center is around 180,000 square feet

The site will have two buildings with programs that will help establish healing in Capitol View and Capitol Heights. The site will be a great resource for food being as though Capitol View and Capitol Heights have an issue of being a food desert.

This additional commercial use of the building will be a great anchor to draw more business as more foot traffic is caused by the addition of a grocery store. The issue is not only having a grocery store to help the neighborhoods have fresh food, but affordable food is another issue. These being some of the issues in choosing what type of grocery store to place on the site has led to Traders Joe being perfect for the site. Traders Joe's fits the site needs

by one having the perfect square footage for the area. The typical size of a Trader Joe's store is just about 15,000 sq ft, approximately a third of the size of your typical grocery store.⁴⁵ Trader Joe's was made smaller for the young, highly educated middle class who want great quality food, and exotic food at affordable prices. Taking out the origin of Traders Joe's being made for the middle class this is a great fit for the community. According to

frugal reality, "All Trader Joe's locations accept EBT cards and cash benefits from the Temporary Assistance for Needy Families (TANF) program. You can use your EBT



⁴⁵ Srikant Chari, "Designing the Grocery Shopping Experience — a Look at Trader Joe's," Medium, August 7, 2018, <https://uxdesign.cc/designing-the-grocery-shopping-experience-a-look-at-trader-joes-f7208f82effe>.

card at all Trader Joe's stores to purchase SNAP-eligible products, including discount meat, dairy products, fruits and vegetables, cereal, seafood, and more.⁴⁶ Walmart is a great resource provided by the development across the street. This will allow local and affordable commercials to come to the site in the shape of an open market.

Food is one of the many resources both Capitol View and Capitol Heights is lacking. Another major resource is medical care. There are several hospitals within a ten-to-twenty-mile range of the site. This is great if you have a car or if the roadway is open with no traffic to get you to the hospital. This is not the case for many people and the price of a hospital is the reason urgent care is placed in neighborhoods. Urgent care is cheaper than the hospital while giving you faster care with the same quality as a hospital.

⁴⁶ “Does Trader Joe’s Accept EBT, WIC, or SNAP Food Stamps? - Frugal Living, Coupons, and Free Stuff!,” accessed August 14, 2021, <https://frugalreality.com/does-trader-joes-take-ebt-wic/>.

Urgent Care
On average, responders arrived 7.9 minutes after the call for help was placed.

The average waiting time was 7 minutes in urban setting, 7.7 minutes in suburban areas, and 14.5 minutes in rural areas.

A. United Medical Center
Washington DC



C. Holy Cross Hospital
Silver Spring, MD



D. Prince George's Hospital
Cheverly, MD



B. Bridge Point Hospital
Washington DC



E. Luminis Health Doctors
Community Medical
Center Lanham, MD



© 2021 Mapbox © OpenStreetMap

Data Source: 2019 AHA Annual Survey Database

Figure 35 Hospitals in the Area (Source Author)

Bringing food and wellness to Capitol View and Capitol Heights will do justice to areas that are blighted from a lack of resources. With more foot traffic due to the grocery store this will allow local businesses to see the opportunity and plant their store next to the open market. The smaller businesses can thrive and help bring

wealth into the community from local community residents.

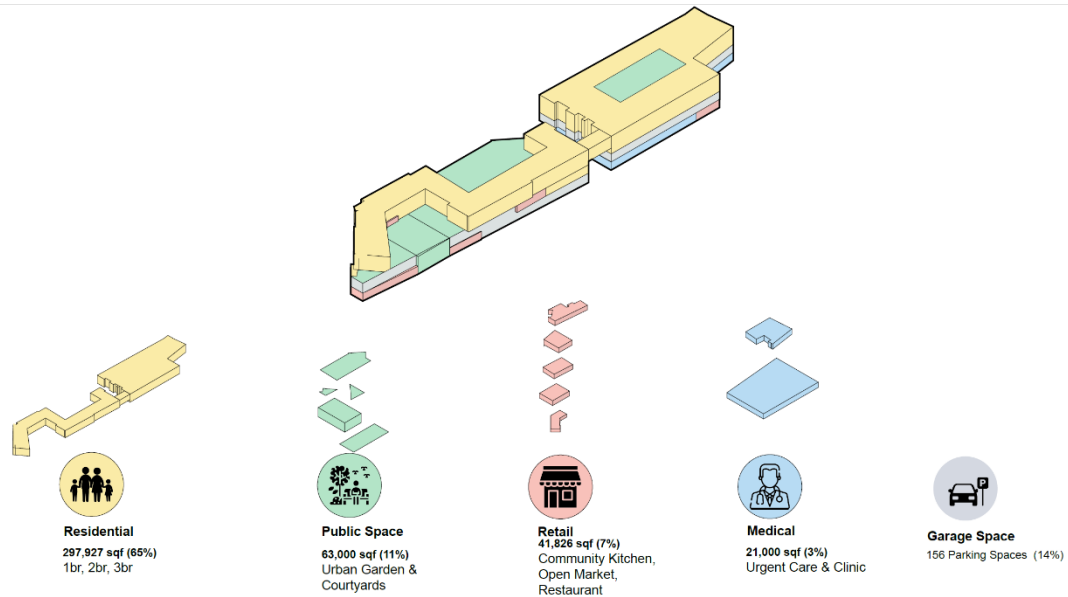


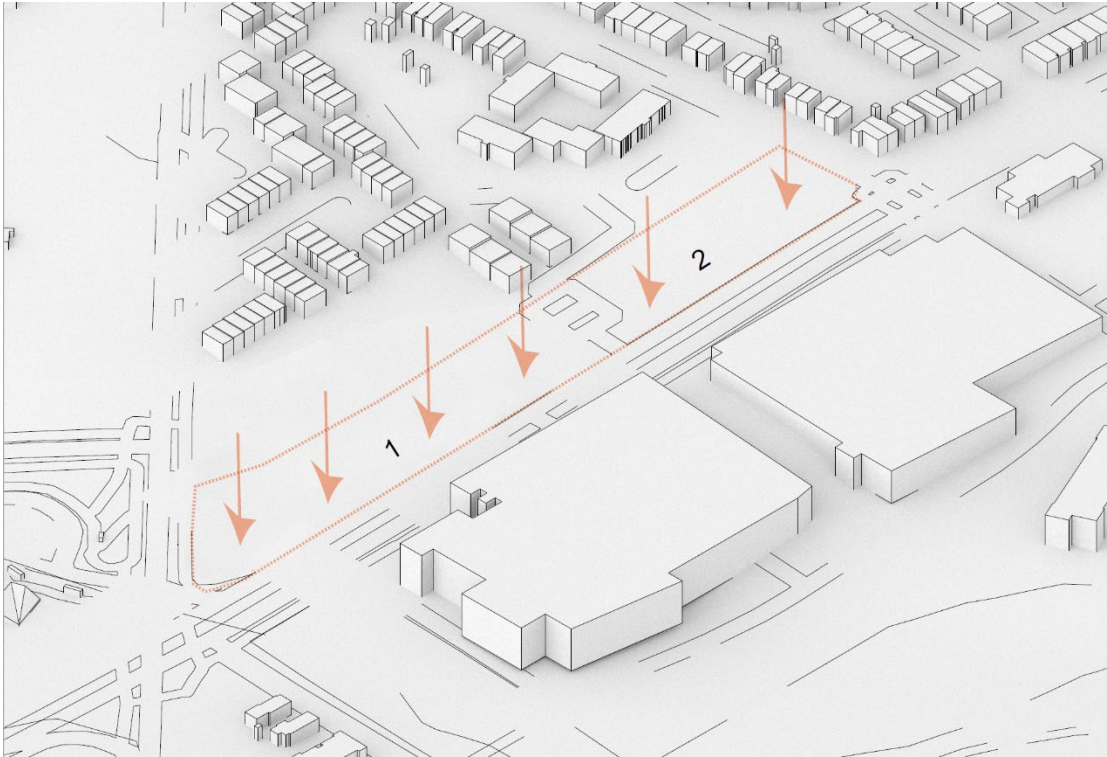
Figure 36 Program Diagram (Source Author)

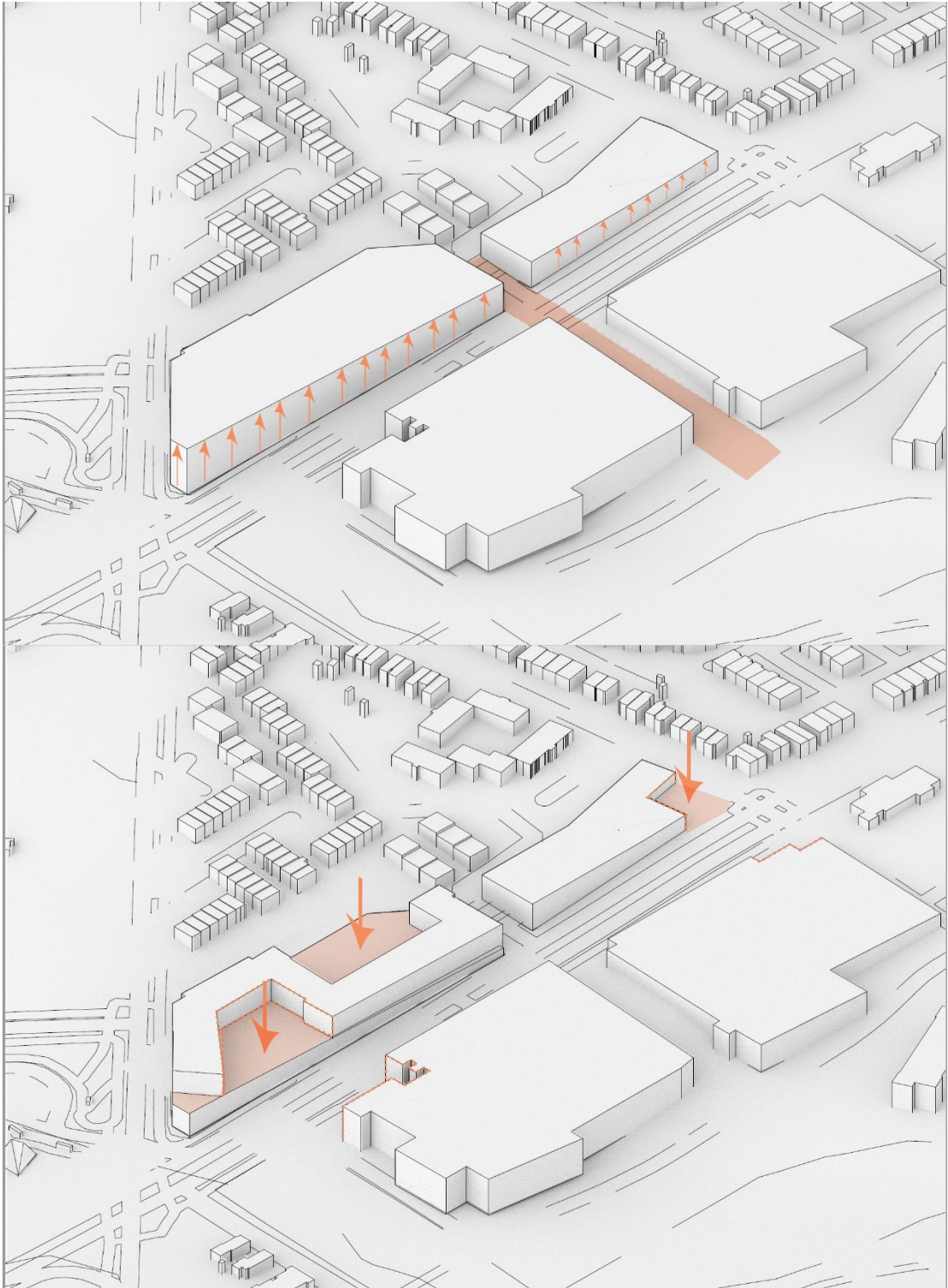
The building will have a garage for parking above both the open market as well as the urgent care. The urgent care will have Medical office space where citizens can come and see their doctor. While the office over the grocery store will be used for any business that needs office space. This urgent care and retail will be a great commodity with it being adjacent to public transportation and how close the site is to downtown Washington D.C.

The last program to be added to the site will be housing. Creating more multi-family housing in an area that once had three towers of housing will show the DCHA how a detailed and maintained housing project can be run. Allowing for low-income housing in the building allows for residents in the area and other parts to be able to attain housing next to a metro station.

Chapter 9: Design Idea

Transformation Diagrams





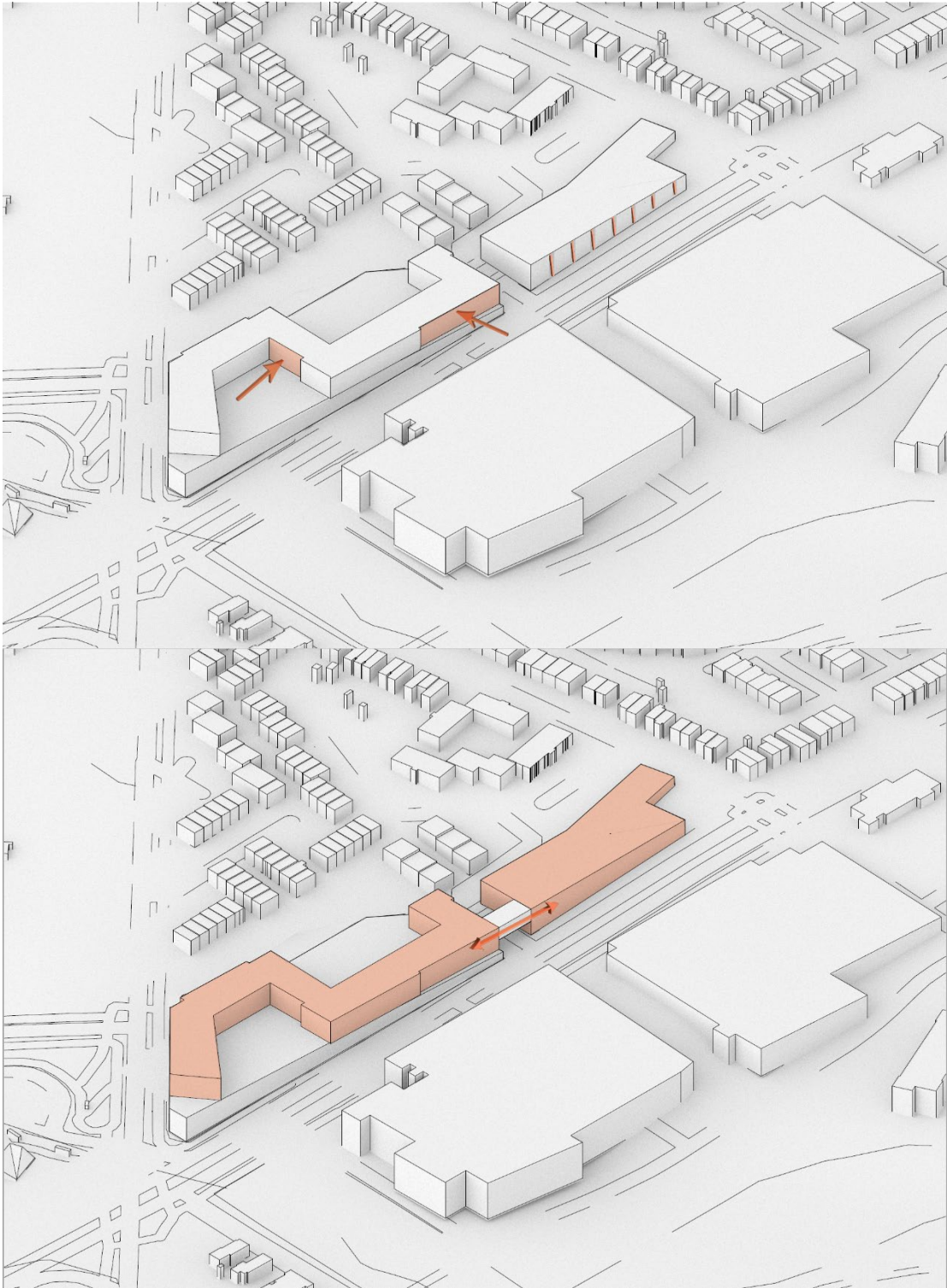


Figure 37 Transformation Diagrams (Source: Author)

The buildings' design is based on several principles shown in the sequence of transformation diagrams above. The building seeks to use as much of the square

footage as possible while allowing voids to give back green and public space to the community at large. The voids created in the upper portion of the building help create a sense of a gateway coming into Washington D.C. from Central Ave onto Capitol Street as well as going the opposite way. There are several grandiose elements created by pushing and pulling the façades as well as extruding materials to stick out from the façade. Lastly, the bridge was created to allow the buildings on the site to be connected in more than just materials but to let the users of the building explore both sides of the building freely.

Site Diagrams

Understanding how the site context can be incorporated into the building design helps create the experience for the user. The building needs to be designed in a way that helps make that catalyst at the end of East Capitol Street. The site diagrams show how the building formed its shape and its connection with its context to create a gateway.

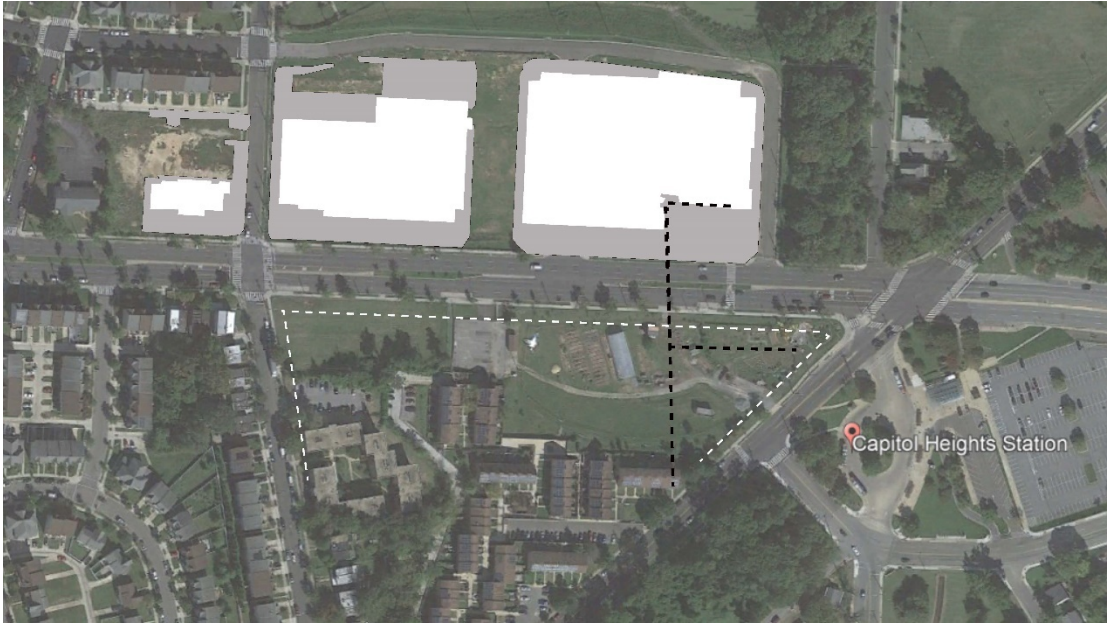


Figure 38 Creating a gateway by doing the same void in site (Source: Author)

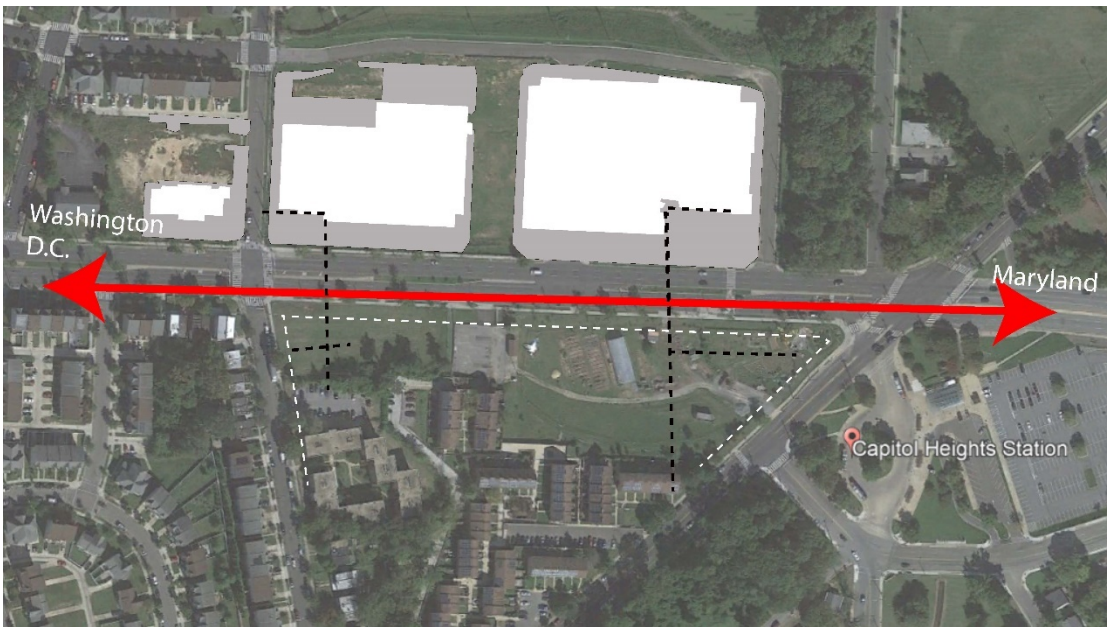


Figure 39 Both sides of the site can be considered gateways (Source: Author)



Figure 40 Maxing out building footprint with voids (Source: Author)



Figure 41 Creating axis for the residents as well as the customers who walk along the street (Source: Author)



Figure 42 Linking the context visual as well as axis-wise to the site (Source: Author)

Floorplans

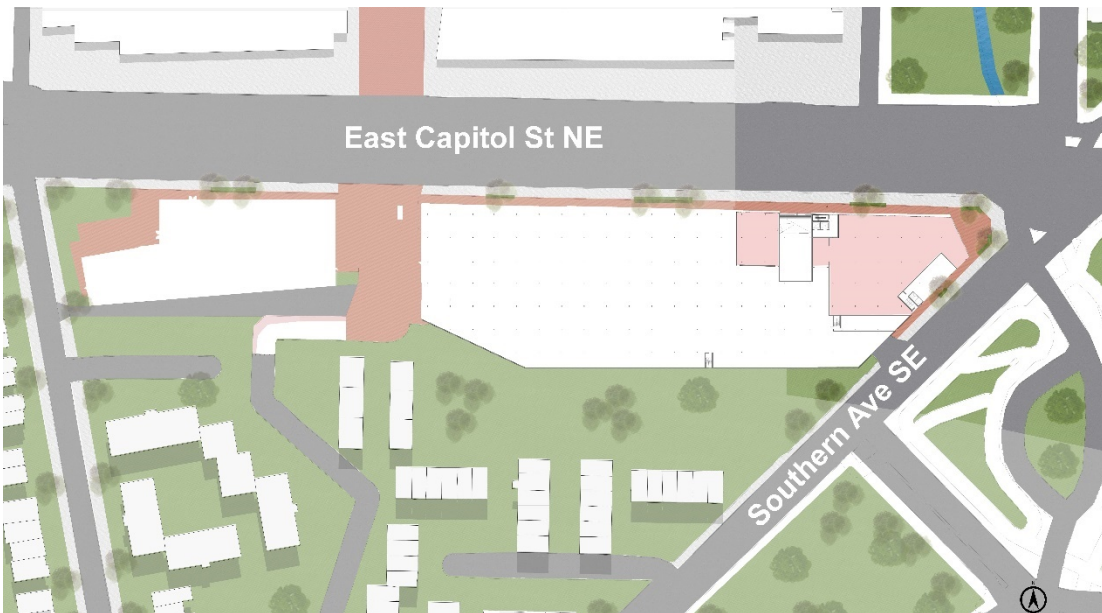


Figure 43 Ground floor with retail, garage entrance, and lobby space

As you move east to west of the site leaving from capitol heights metro a person will walk past the first entrance into the garage. Along Southern Avenue, there is an entrance into the residential lobby space. As they turn the corner to go west on East Capitol Street, they will walk past the DePriest Gates open market, where there are local vendors to shop from. As you walk past the open market space you then see the beginning steps to the elevated urban garden. Next to the entrance is the community center where junior achievement is located and helps the youth prepare for the future.



Figure 44 Ground floor continued as well as the urban garden floor

The urban garden is now elevated and accessible to all in the community. It will be used to invite the community to the building as well as teach them how to eat healthily. On the same level as the urban garden, there is a community kitchen where residents or community members can come and learn how to cook dishes or get a nice warm meal. This is another access point for the garage as well on this level. Going

back west up East Capitol Street you will walk past a retail space set up for multiple local mom-and-pop stores to bring their business to the site. Next to this retail is the main lobby space of the site as well as another entrance to the garage. Across the brick-paved multipurpose area of the site drive-through area is the ground floor of the most western portion of the building. On this floor, there is the medical clinic coffee shop, urgent care, and lobby space for this side of the building.

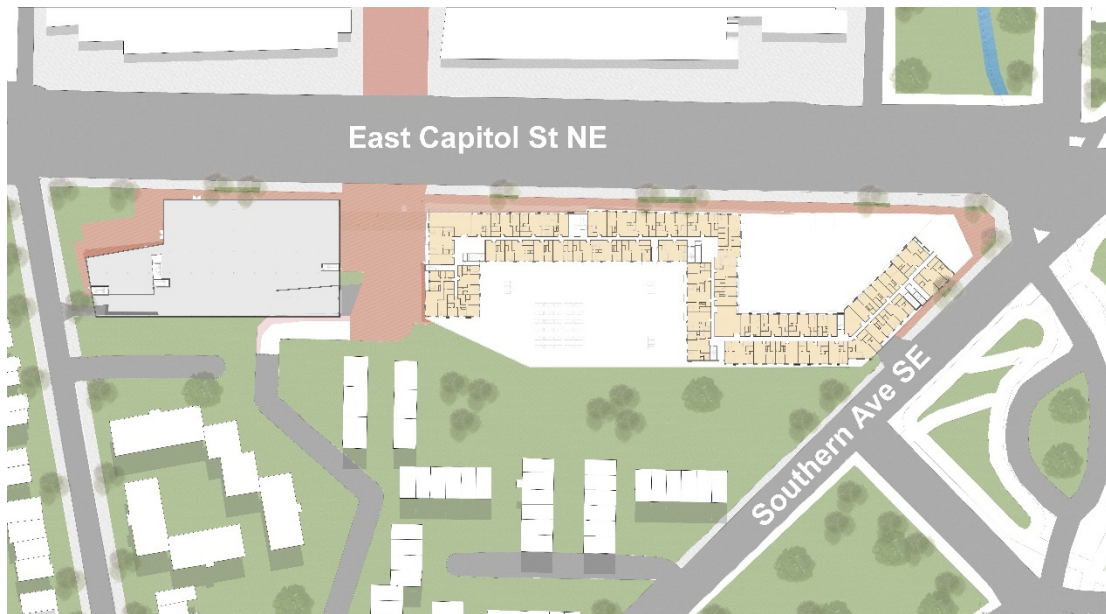


Figure 45 First-floor Garage / Residential floor

The first floor on the western portion of the building is a garage that has access to the first floor as well as the residential units above. This is also the level where the residents have their urban grand courtyard that only the residents can gain access to. The section of the building to the east is the first of the residential floors. The residential component is made up of a mixture of 344 100% affordable one-bedroom, two-bedroom, and three bedrooms units. Each floor program has a

multipurpose room the community can rent out as well as a gym, and computer lab for the residents to use.



Figure 46 2-3 floor typical floor plan

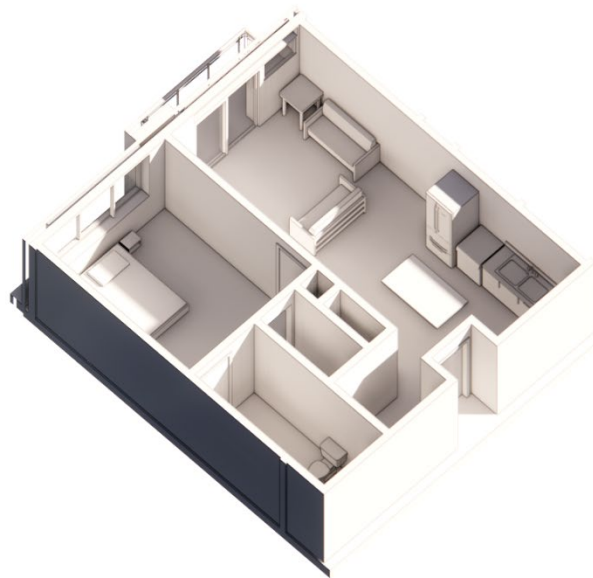


Figure 47 1 Bedroom

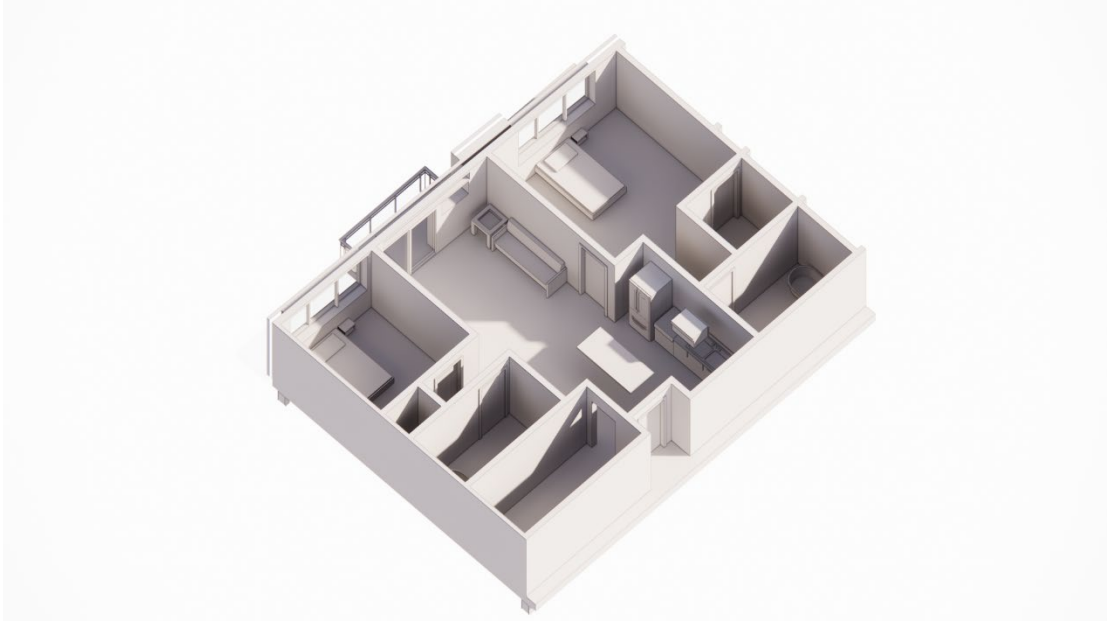


Figure 48 2 Bedroom

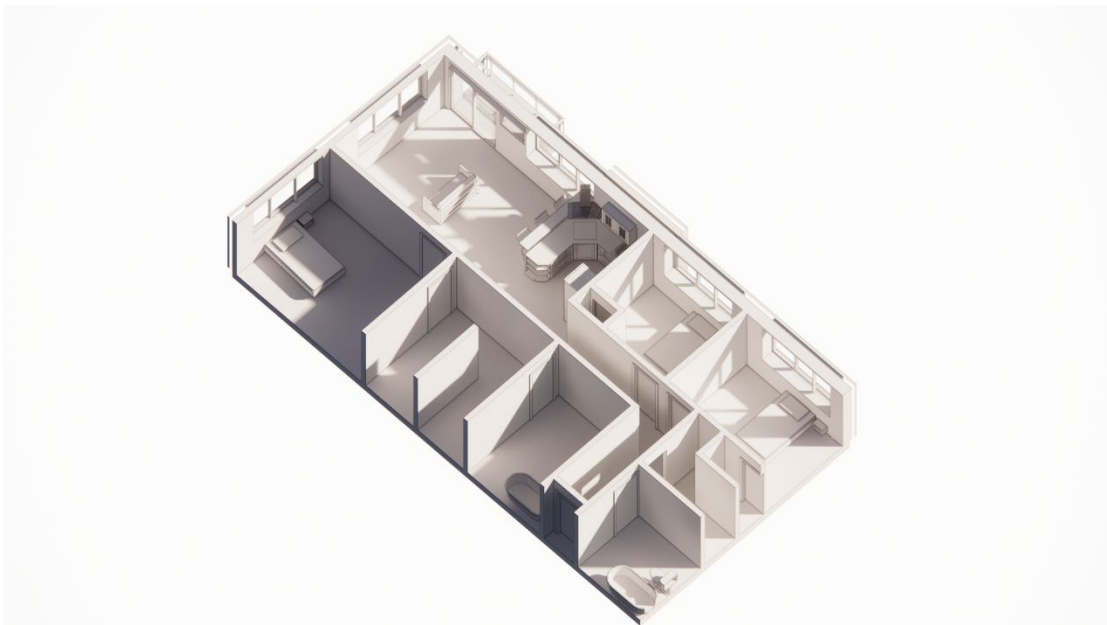


Figure 49 3 Bedroom

The upper residential floors are connected by a bridge that is enclosed as well as the roof of the bridge is walkable by the 4th level of the building. The western portion of the building has a courtyard in the center of the building.



① 1ST FLOOR resi full floor/ medic grage
1/8" = 1'-0"



① 1ST FLOOR resi full floor/ medic grage
1/8" = 1'-0"



① 1ST FLOOR resi full floor/ medic grage
1/8" = 1'-0"

Figure 50 Floor plans one bedroom, two-bedroom, three-bedroom (source: Author)



Figure 51 Final Site plan (Source: author)

Sections

Creating separation of programs but still allowing access to the public truly makes this building community oriented. The materials allow for similarity to the context as well as keeping the cost of the building relatively low.



Figure 52 Building Section (Source: Author)



Figure 53 Building Section (Source: Author)

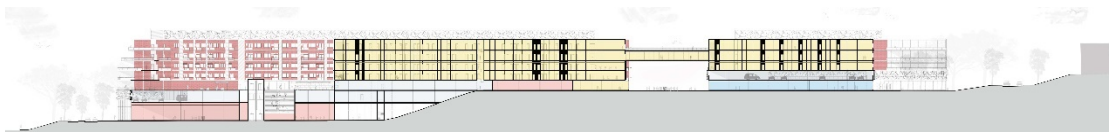


Figure 54 Building Section (Source: Author)

Chapter 10: Experience

Personas



Figure 55 Persona Pictures (Source: Author)

Using Four personas that are likely candidates that would use this building to reach certain goals and aspirations:

- Pernell-Public Transportation, Modern Residential Living, and Community Orientation
- Dyillyn & Tearia -Needs A Place Where Her Child Can Grow Up Safe

- Charnea- Spacious, Public Transportation, and Proximity to Medical Institution
- Torian & Deanard - Public Transportation, Family Sized Units, and Fresh Produce

Perspective of Site

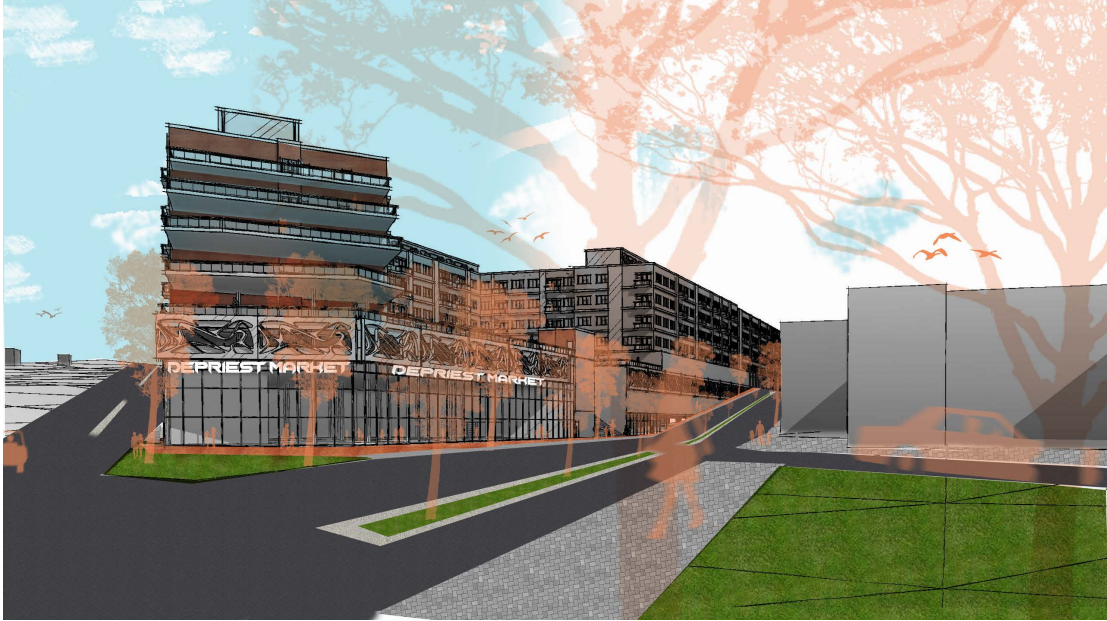


Figure 56 View Up East Capitol Street



Figure 57 View into Urban Garden Staircase



Figure 58 Inside Urban Garden

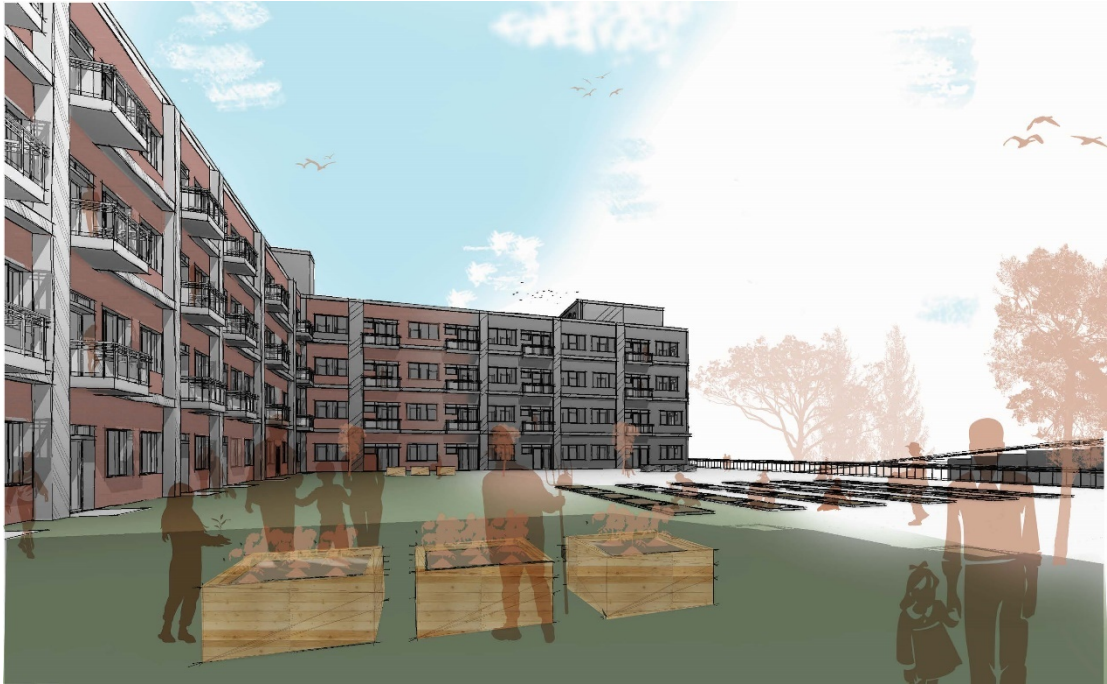


Figure 59 Inside Residential Urban Graden Courtyard



Figure 60 Look into the Hearth of Site

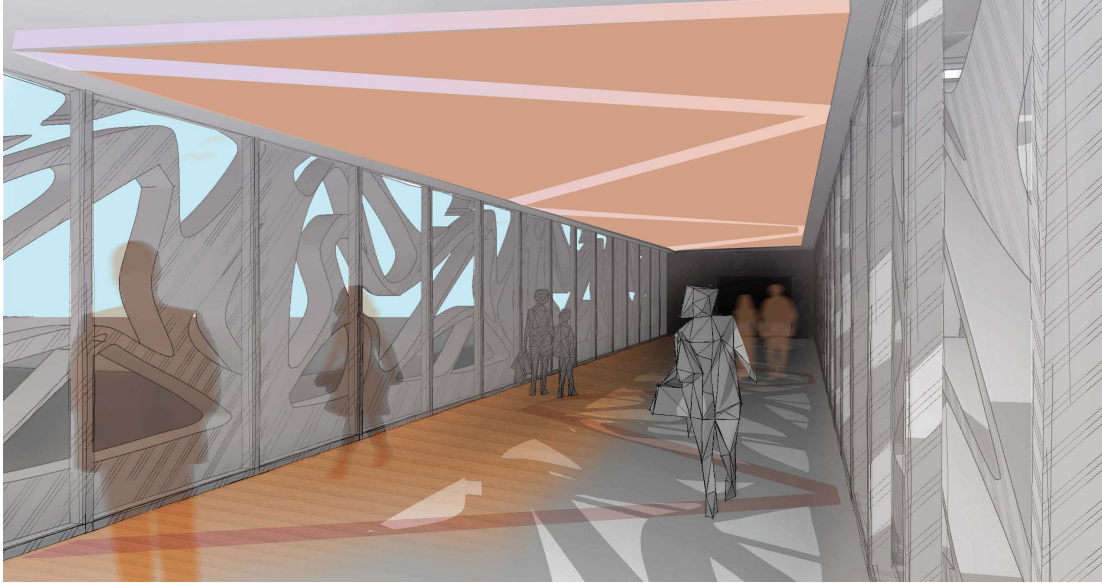


Figure 61 Bridge Connection



Figure 62 Inside Courtyard



Figure 63 View at the Urgent care and Clinic

Conclusion

The main objective of this thesis can be compartmentalized into 4 main objectives:

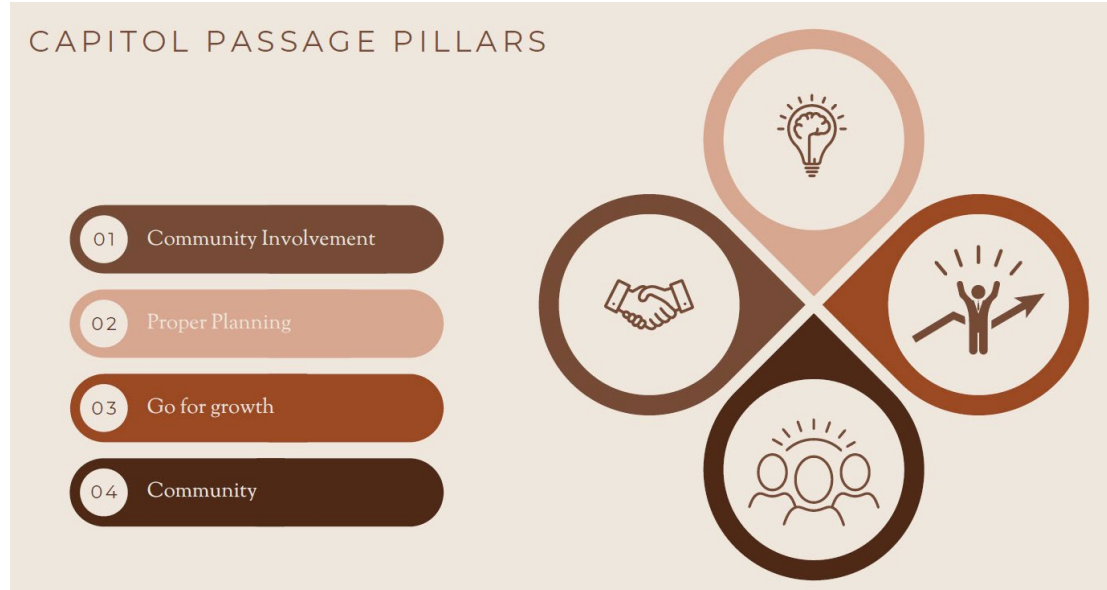


Figure 64 Objectives (Source: Author)

- Create community involvement in the building and around the building
- Help the residents, as well as the community, have opportunities to properly plan their life and goals out. Using resources as a stepping stone.
- Create a network of growth for all ages and all different people who live in the building or walk along the site. The resources on the site should create the ability for a multitude of people starting from a person with a business to a child starting school.
- Lastly creating a building that the community would be proud to say they own as well as a building that is truly community oriented.

Appendices

If needed.

Glossary

If needed.

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