

## ABSTRACT

Title of Thesis: SUB+URBAN RETROFITTING:  
SUSTAINABLE GROWTH FOR THE  
POLYCENTRIC METROPOLIS

Joseph Robert Ijjas  
Master of Architecture, 2011

Thesis directed by: Professor Matthew J. Bell, AIA  
School of Architecture, Planning, & Preservation

This thesis intends to examine the creation of community centered around the suburban nodes that are created through Smart Growth and transit oriented development. The Washington Metropolitan Area Transit Authority provides an integral service in the form of public transportation to a large and overburdened auto-oriented transportation region. By using the existing metro stops within the system, development can leverage infrastructure in the creation of urban and suburban regional activity centers. The areas examined, exist across many zones of the Urban Transect, but the focus will remain on those areas prime for suburban retrofitting or greyfield redevelopment, specifically located in Montgomery County, MD. The project is a demonstration of growth in Wheaton, Maryland that could be achieved by combining the benefits of both suburban and urban ideals to attract a creative working class that lives, works, and plays in the multiple urban nodes of the polycentric metropolis.

SUB+URBAN RETROFITTING:  
SUSTAINABLE GROWTH FOR THE  
POLYCENTRIC METROPOLIS

by

Joseph Robert Ijjas

Thesis submitted to the Faculty of the Graduate School of the  
University of Maryland, College Park in partial fulfilment  
of the requirements for the degree of  
Master of Architecture  
2011

Advisory Committee:  
Professor Matthew Bell, AIA, Chair  
Professor Steven Hurtt  
Associate Professor Brian Kelly, AIA



## **Acknowledgments**

Thank You:

Matt Bell

Steve Hurtt

Brian Kelly

## Table of Contents

Acknowledgments .....	ii
List of Figures .....	iv
Chapter 1 .....	1
Growth and Retrofitting Suburbia	
Chapter 2.....	6
Understanding the Past	
Chapter 3.....	13
Moving Forward	
Chapter 4.....	23
Site Selection and Analysis	
Chapter 5.....	56
Case Studies	
Chapter 6.....	60
Design Principles, Process and Product	
Chapter 7.....	94
Review and Conclusions	
Bibliography.....	98

## List of Figures

Figure 1. Time spent in Automobiles .....	18
Figure 2. Suburban vs. Urban Form.....	19
Figure 3. Suburban vs. Urban Characteristics .....	20
Figure 4. Polycentric Cartoon .....	22
Figure 5. Average Travel Time to Work.....	26
Figure 6. Mode of Travel to Work.....	27
Figure 7. Mode of Travel to Work Total .....	27
Figure 8. Washington Area Metro Map.....	28
Figure 9. Average Weekday Passenger Boardings by Year.....	30
Figure 10. Station Growth Since Opening. ....	31
Figure 11. Annual Station Growth from 2002-2007. ....	31
Figure 12. Regional Site Locations.....	32
Figure 13. Rockville Figure Ground. ....	33
Figure 14. Rockville Potential Development Site. ....	33
Figure 15. Rockville Transportation Networks .....	34
Figure 16. Rockville Surface Parking .....	34
Figure 17. Rockville Ammenities .....	35
Figure 18. Rockville Natural Ecosystem. ....	35
Figure 19. Shady Grove Figure Ground. ....	36
Figure 20. Shady Grove Potential Development Site. ....	36
Figure 21. Shady Grove Tansportation Network. ....	37
Figure 22. Shady Grove Surface Parking.....	37
Figure 23. Shady Grove Ammenities. ....	38
Figure 24. Shady Grove Natural Ecosystem. ....	38
Figure 25. Wheaton Figure Ground. ....	39
Figure 26. Wheaton Potential Development Site.....	39
Figure 27. Wheaton Transportation Network. ....	40
Figure 28. Wheaton Surface Parking. ....	40
Figure 29. Wheaton Amenities. ....	41
Figure 30. Wheaton Natural Ecosystems. ....	41
Figure 31. Glenmont Figure Ground. ....	42
Figure 32. Glenmont Potential Development Site. ....	42
Figure 33. Glenmont Transportation Network. ....	43
Figure 34. Glenmont Surface Parking. ....	43

<b>Figure 35.</b> Glenmont Amenities. ....	44
<b>Figure 36.</b> Glenmont Natural Ecosystems. ....	44
<b>Figure 37.</b> Site Matrix .....	46
<b>Figure 38.</b> Site Matrix .....	47
<b>Figure 39.</b> Demographic Charts. ....	48
<b>Figure 40.</b> Education and Income Distribution.....	49
<b>Figure 41.</b> Wheaton Satellite Image .....	50
<b>Figure 42.</b> View Locations .....	51
<b>Figure 43a.</b> Bus Depot and Metro Entrance .....	51
<b>Figure 44.</b> Aerial view of Westfield Wheaton Mall .....	54
<b>Figure 45.</b> Plan of Westfield Property.....	54
<b>Figure 46.</b> Existing Topography .....	55
<b>Figure 47.</b> Plan of Westfield Property.....	56
<b>Figure 48.</b> Existing Sattelite Image.....	58
<b>Figure 50.</b> Proposed Master Plan.....	58
<b>Figure 49.</b> Diagram.....	58
<b>Figure 51.</b> Existing Sattelite Image.....	59
<b>Figure 53.</b> Plan .....	59
<b>Figure 52.</b> Diagram.....	59
<b>Figure 54.</b> Existing Sattelite Image.....	60
<b>Figure 56.</b> Plan .....	60
<b>Figure 55.</b> Diagram.....	60
<b>Figure 57.</b> Scheme 1 .....	65
<b>Figure 58.</b> Scheme 2 .....	65
<b>Figure 59.</b> Scheme 3 .....	65
<b>Figure 60.</b> Scheme 4 .....	66
<b>Figure 61.</b> Scheme 5 .....	66
<b>Figure 62.</b> Scheme 6 .....	66
<b>Figure 63.:</b> Scheme 1 .....	67
<b>Figure 64.</b> Scheme 2 .....	68
<b>Figure 65.</b> Scheme 3 .....	68
<b>Figure 66.</b> Scheme 4 .....	69
<b>Figure 67.</b> Scheme 5 .....	69
<b>Figure 68.</b> Figure Ground and Open Space Parti.....	71
<b>Figure 69.</b> Parti Diagram .....	71
<b>Figure 70.</b> Residential District. ....	72

<b>Figure 71. Core.....</b>	<b>73</b>
<b>Figure 72. WMATA Bus Property .....</b>	<b>74</b>
<b>Figure 73. Northeast Corner of Westfield Mall Property .....</b>	<b>75</b>
<b>Figure 74. Southeast Corner of Westfield Mall Property .....</b>	<b>76</b>
<b>Figure 75. Westfield Mall .....</b>	<b>77</b>
<b>Figure 76. Westfield Mall South.....</b>	<b>78</b>
<b>Figure 77. Master Plan .....</b>	<b>79</b>
<b>Figure 78. Open Space Diagram and Building Frontages .....</b>	<b>79</b>
<b>Figure 79. Master Plan .....</b>	<b>80</b>
<b>Figure 80. Maintained Structures .....</b>	<b>81</b>
<b>Figure 81. Public Space Network .....</b>	<b>81</b>
<b>Figure 82. Residential Massing .....</b>	<b>82</b>
<b>Figure 83. Retail massing.....</b>	<b>82</b>
<b>Figure 85. Other Massing.....</b>	<b>83</b>
<b>Figure 84. Office Massing.....</b>	<b>83</b>
<b>Figure 86. Proposed Building Heights .....</b>	<b>84</b>
<b>Figure 87. Aerial Perspective.....</b>	<b>84</b>
<b>Figure 88. Phase 0_Existing.....</b>	<b>85</b>
<b>Figure 89. Phase 1_Core .....</b>	<b>86</b>
<b>Figure 90. Phase 2_Housing .....</b>	<b>87</b>
<b>Figure 91. Phase 3_North Mall.....</b>	<b>88</b>
<b>Figure 92. Phase 4_South Mall .....</b>	<b>89</b>
<b>Figure 93. Phase 5_Mall.....</b>	<b>90</b>
<b>Figure 94. Veterans Memorial Plaza Perspective.....</b>	<b>91</b>
<b>Figure 95. Urban Amphitheater Perspective.....</b>	<b>91</b>
<b>Figure 96. Residential Gardens Perspective .....</b>	<b>92</b>
<b>Figure 97. Greenway Perspective .....</b>	<b>92</b>
<b>Figure 98. Viers Mill Road Section .....</b>	<b>93</b>
<b>Figure 99. Georgia Avenue and Urban Amphitheater Section.....</b>	<b>94</b>

*“The cities will be part of the country; I shall live 30 miles from my office in one direction, under a pine tree; my secretary will live 30 miles away from it too, in the other direction, under another pine tree. We shall both have our own car. We shall use up tires, wear out road surfaces and gears, consume oil and gasoline All of which will necessitate a great deal of work...enough for all.”<sup>1</sup>*

Le Corbusier

---

1 Duany, Plater-Zyberk, Speck, *Suburban Nation*, 1.

**Chapter 1**  
*Growth and Retrofitting Suburbia*

The Washington Metropolitan region is growing. By the year 2040 regional employment and households are expected to increase by almost 41% each. Over the next 40 years the region is expected to add nearly two million more people to the population.<sup>1</sup> The majority of this growth is expected to occur in new and existing Regional Activity Centers. While the District of Columbia will continue to host the greatest number of jobs, many of the emerging activity centers are located in the inner and outer ring suburbs. This growth will bring a challenge to an already large population that ranks in the top ten in the United States. Housing, office space, and entertainment venues along with roads, transportation networks, municipal and government buildings will need to be constructed in order to meet this demand. Our current development patterns do not present a feasible or responsible way of accommodating this growth physically, environmentally, sustainably, or financially.

Flight to the suburbs is an issue that has been written about and dissected from many different perspectives. What is now becoming clear is that a once perceived higher standard of living in the suburbs has not translated into the healthier and more vibrant communities originally envisioned for ourselves. Crises surrounding climate change, dependence on oil (foreign and domestic), public health, decaying infrastructure, and the recently dominant, mortgage backed financial instability, are forcing us to reexamine our way of life.

Our sprawling suburban communities, providing artificial connections to each other, have created a vast network of unhealthy occupants and ecosystems

---

<sup>1</sup> Metropolitan Washington COG, *Region Forward 2050*, 19.



that are unsustainable. The challenges that will face us in the built environment over the next hundred years will be a direct result of our previous commitment to promoting these sprawling communities. They are neighborhoods with large and repetitive nondescript single-family houses, set back on curving streets that lead to nowhere. Multiple cars are usually present in every driveway, a natural requirement, with the majority of your daily destinations beyond five miles. This is not the manner in which to develop positive community interaction.

As stated in *The Smart Growth Manual*, “It is now clear that many current social, economic, environmental, and psychological ills are a direct outcome of the way we have built our communities since World War II.”<sup>2</sup> Sprawling suburbs have created a general lack of identity among communities and our dependence on the automobile to move us from place to place creates a huge burden on our time, energy, and finances. James Howard Kunstler calls our development patterns “the greatest misallocation of resources in the world” and determines that we are only creating “places not worth caring about.”<sup>3</sup>

The direct relationship between the physical character of places and the identity of the community must be reexamined and rethought. Our communities lack the physical framework that promotes the public activities and discourse central to the creation of an identity of place. Our civic and communal foundations continue to struggle in these suburban landscapes. The ingrained patterns of sprawling communities championed by previous developers,

---

2 Duany and Speck, *Smart Growth Manual*, 2.

3 Kunstler, *TED TALKS*

planners, and architects are not the way of the future. Smart Growth principles that use established urban areas to strengthen older communities and avoid greenfield development in conjunction with transit oriented principles that make efficient use of infrastructure are models that need to be followed.

Sustainability has become a household catchphrase in recent years. The research and debate continues to bring good results and public awareness to the topics of most concern. It must do more though. Sustainability must not just measure how well a building meets certain codes, or whether a company is using processes to create products that don't harm the environment. Living in a house topped by solar panels, a house that uses best building practices to reduce construction waste, and makes room for a electric car in the driveway is a good way to make a one person ore one family impact on our environmental problems. But it is a singular solution. It is only a small portion of the reduction of consumption required and not every individual is fully willing or capable to instigate the same changes in their lifestyle. We must look at sustainability comprehensively. It should be viewed in the sense of integrating ecological, economic and social benefits that allow the current users of the resources to meet their needs while not jeopardizing the needs of future generations to be able to meet theirs. It should also not be just about taking less or being more efficient. It should be giving back to produce quantifiable gains while still producing the end products intended. These are the types of sustainable ideas that need to be considered in the design of our future communities.

In order to create the large-scale changes necessary, we must change and

retrofit suburban sprawl patterns to convert areas that now foster the largest per capita carbon footprint in the world into more sustainable, less auto-dependent places. By urbanizing larger suburban properties with a denser, walkable, synergistic mix of uses and housing types, more significant reductions in carbon emissions, gains in social capital, and changes to systemic growth patterns can be achieved.<sup>4</sup> At the same time, proper design and place making will help develop the healthy communities we strive for.

---

4 Dunham-Jones, *Retrofitting Suburbia*. 3

**Chapter 2**  
*Understanding the Past*

## **What is Sprawl?**

Sprawl is a pattern of low-density development that is characterized by dependence on the automobile, large lot residential development, and strip commercial development extending out from the city center. There is typically a separation of uses, disconnected street networks, oversized lots and roads, excessive parking, and auto-oriented frontages.

## **The 5 Components of Sprawl**

The five components of sprawl as outlined in *Suburban Nation*,<sup>5</sup> make up today's sprawling communities. While occasionally they may be found in proximity to one another, they are typically segregated by their uses.

- Housing Subdivisions
- Shopping Centers
- Office parks and Business Parks
- Civic Institutions
- Roadways

Typical examples of each include single-family residences, strip centers, shopping malls, and big box retailers, places only for work, town halls, churches, schools, and other places where people gather for communication and culture. Roadways, the final and most necessary component, connect the other disassociated components.

---

5 Duany, Plater-Zybeck, Speck, *Suburban Nation*. 5.

## **Bad Sprawl**

Suburban development patterns no longer promote the ideals and benefits that we once envisioned. Increasing health issues, rising energy costs, and declining natural resources have forced us to question our choice, or lack of choice, of lifestyle and development patterns. Sprawl developed due to a number of different influences, each one playing a pivotal role. One factor is the consumption of consumer goods. While comprising less than 5% of the world's population, U.S. residents consume about 20% of the globe's goods and services, a staggering ratio. Suburban lifestyles help promote the consumerism that has characterized Americans since World War II. Sprawling communities create a greater demand for automobiles and roads. Likewise the building of spacious homes increases the demand for consumer durables such as appliances and furniture. Lastly, large amounts of energy are required to heat and cool the interior environments of these homes. What corrective actions have we taken to address these problems so far? Typically our response has been founded in the development of green industry. One that creates innovative and environmentally friendly products yet still sustains our inherent consumerism. This is like treating the symptoms but not the cause.

## **One Mans Sprawl Another Mans Profit: A Brief History of Sprawl**

Most individuals consider the proliferation of urban sprawl to have begun in the post World War II era. In fact, it had its inception much earlier. The techniques that began creating the horizontal expansion of urban sprawl had been developing in one form or another since the late nineteenth century with the introduction of the trolley. “The trolley proved to be a technically and economically viable means to bring utility to land that was beyond walking distance of employment, goods, and services.”<sup>6</sup> In other words, developers could purchase large tracts of land for fairly inexpensive amounts and create inflated value with the addition of transportation linked to the central business districts. In many important instances the trolley in the United States was utilized more as a means to derive wealth from landholdings on the urban periphery than as a means to provide efficient and cost effective transportation in urban centers.<sup>7</sup> The main mode of transportation still required people to walk. This meant developments normally did not expand beyond the half-mile distances from the trolley stops. This left the people who lived in these newly formed areas heavily reliant on the trolley systems. It was not until the introduction of the automobile that the techniques and results of urban sprawl would become fully manifested.

As before, land developers and real estate interests recognized the inherent value that the automobile could bring to their exterior landholdings. “By the 1920’s large-scale land developers began to shape their planned

---

6 Gonzales, *Urban Sprawl, Global Warming, and the Empire of Capitalism*, 10.

7 Gonzales, *Urban Sprawl, Global Warming, and the Empire of Capitalism*, 44.

communities on the urban periphery around the automobile.”<sup>8</sup> The increased reliability of the automobile and its availability to middle income home purchasers meant that planning could extend beyond the typical half-mile distance communities were limited to with the trolley. This necessitated planning principles that accommodated the automobile with an emphasis on horizontal expansion. Once housing began to be located further out, the automobile became a necessity rather than a luxury. With the U.S. as the leading producer of oil in the world during this period, low gas prices allowed the distances between communities to continue to grow. Maintaining low gas prices was essential to continuing development, and production of urban sprawl can be seen in U.S. foreign policies even today. By the 1920’s automobile producers were also the leading consumers of steel, glass, and rubber in an economy that was predicated on manufacturing. This magnified the effect of urban sprawl on the economy and validated the desire for pro auto oriented communities and thus pro urban sprawl policies. “The critical energy drain in a typical American suburb is not the Hummer in the driveway; its everything the Hummer makes possible – the oversized houses, the irrigated yards, the network of new feeder roads and residential streets, the costly and inefficient outward expansion of the power grid, the duplicated stores and schools, the two hour solo commutes. The energy inefficiency of individual automobiles, in other words, is far less important environmental issue than the energy inefficiency of the asphalt latticed way of life that we have built to oblige them – the sprawling American landscape of



subdivisions, parking lots, strip malls, and interstate bypasses. Automobiles have enabled us to create a way of life that cannot be sustained without automobiles.”<sup>9</sup>

Federal policy in the 1930’s further promoted sprawl. Federal policies for loan programs, through the newly created Federal Housing Authority, guaranteed home loans for newly constructed housing on the urban periphery. This further necessitated the need for automobiles. “Urban sprawl aids on the consumption of industrial output, because it increases demand for automobiles. Also, because housing developments on the urban periphery tend to produce relatively large single-family homes, such housing generally requires more appliances, furniture, and other consumer goods than smaller abodes.”<sup>10</sup> Therefore by promoting policies that encouraged sprawl, the government was helping stoke the economic engine that would help the country out of the depression. It was a means to absorb excess capital and savings in U.S. financial institutions and increase demand for the U.S. industrial base and consumer durables as a promotion of post Great Depression stimulus conditions. These policies would solidify the government’s role in promoting urban sprawl during the interwar period and provide a base for the next explosion of urban sprawl.

In the post World War II era, interstate highway programs combined with local subsidies for road improvements increased the viability of sprawl. Highway trust funds that build and maintain highway and road systems are financed through gasoline taxes and other automotive fees. If these revenues

---

9 Owen, *Green Metropolis*, 104.

10 Gonzales, *Urban Sprawl, Global Warming, and the Empire of Capitalism*, 1.

are used for other purposes than states typically receive less federal funding due to onerous legislation. This was coupled with a general neglect of mass transit and the continued relative affordability of automotive commuting for the average citizen predicated on the U.S. foreign and domestic oil policy. In this era sprawl was drawn to the exterior due to cheaper land prices, lower taxes, fewer legal restrictions, and the myth of living in contact with rural bucolic settings. The shops remained in the city after the flight to the suburbs, but only for so long. Federal policies did not set aside means or land for commercial retail in the suburbs. Shopping then required its own financing and locations separate from the residential expansion, often along high-speed collector roads. These sites required large parking lots and large signs to provide convenience for their shoppers. Suburbia also presented lower tax burden for companies. With the desire to work closer to home, companies began moving their offices into suburban areas, and the office park was born. Today over 40 percent of U.S. office space is in the suburbs. Zoning policies, emanating from early-industrialized cities, that made the separation of uses law, further exacerbated sprawl.

“In the contemporary period, the U.S. state plays the central role in spurring urban sprawl. It does so through foreign policy that seeks to guarantee the flow of Middle East oil, through cheap credit policies, land use policies that dictate the building of single family homes, and an aggressive road and highway building program. These policies and the urban sprawl they foster can help explain why the United States is the largest consumer in the world, and also has

a very low savings rate. American families spend money on multiple automobiles to get to and fro, on furniture and appliances to fill relatively large homes, and on energy expenses to power their vehicles, appliances, and to heat and cool their relatively spacious abodes.”<sup>11</sup> All of these factors have played a role in developing what we today view as one of the greatest threats to our way of life, urban sprawl.

---

11      Gonzales, *Urban Sprawl, Global Warming, and the Empire of Capitalism*, 18.

**Chapter 3**  
*Moving Forward*

## Smart Growth

Smart Growth addresses the environmental, economic, architectural, financial and community aspects of growth. Smart growth principles generally include:

- Mixed land uses*
- Compact building design*
- Range of housing opportunities and choices*
- Variety of transportation choices*
- Walkable neighborhoods*
- Communities with a sense of place*
- Preservation of open space, farmland, and critical environmental areas*
- Strengthens and directs development towards existing communities*
- Encourages community and stakeholder collaboration*

With Smart Growth the first step is to build where it makes sense to build while not duplicating or undermining previous infrastructure and amenities. Paying for new infrastructure and amenities for development on the fringes of a community while neglecting buildings and infrastructure in which the community has already invested is not fiscally prudent. This undermines the efforts to revitalize downtowns and improve and leverage existing infrastructure. Compared to sprawl compact development makes tax dollars go farther because it reduces the cost of providing services and infrastructure.

The key to efficient transportation is to have multiple routes and types of transportation. The number of lanes does not mean the same thing as the number of roads. While streets are often designed for the movement of automobiles, they should also focus on the pedestrian, cyclist, and other transit users. Such designs mean appropriate speeds, widths, and sidewalks as well

as buildings, trees, and even benches to activate the space. Places that are designed with people in mind show careful attention to the experience each person will have with the street, the sidewalk, the buildings, and the surrounding environment.

Communities should strive to provide decent homes in safe neighborhoods for people of all incomes. Amenities should be distributed fairly. Healthy environments will result from proper design of our communities. Physical design that allows users to choose modes of transportation, housing, entertainment, and civic involvement will encourage community interaction. Parks, natural areas, and scenic landscapes also have economic value. Furthermore land with farms and ranches that support local economies, strengthen the tax base and provide food should be protected.

### **Are We There Yet? T.O.D.**

In the U.S. the building sector emits about 48% of greenhouse gases while transportation accounts for 25%. The interesting part of this equation is that 30% more energy is expended by office workers commuting to and from the building than is consumed by the building itself for heating, cooling, lighting, and other energy uses. Compared to a modern efficient building, commuting is more than double the energy usage of the building.<sup>12</sup> Since each piece of suburbia typically serves only one type of activity, and since daily life involves a wide variety of activity, the residents of suburbia spend an unprecedented amount of time and

---

12 Dunham-Jones, *Retrofitting Suburbia*. Endnote #3

money on personal transportation at a great cost to the environment. Transit Oriented Design is one approach to this problem that leverages the opportunities of high quality transportation infrastructure. TOD's contribute to dense mixed use communities by linking transportation networks with both residents and visitors. "The most significant factor in determining the viability of any transit system – far more significant than fare levels or demographics or will power or anything else – is population density. The basic point is that you need density to support public transportation. Once you get above a certain density two things happen. First you get more people walking or biking, and second you get a decrease in trips by auto and an increase in the trips by transit."<sup>13</sup> And it works both ways. Density makes transportation networks more viable. Transportation infrastructure, or the potential of it, is one of the single greatest spurs to development. They are mutually beneficial. TOD is a modern model based on old principles that provides solutions for building and strengthening our communities, addressing climate change, reducing our dependence on oil and providing more equitable access to economic opportunity.

### **Are We There Yet? VMT**

Inherent in the ideas of a TOD and compact walkable urban design is the reduction of Vehicle Miles Traveled (VMT). VMT is a measure of motor vehicle use and trip length. It is a standard that can be applied across all regions to provide a basis of comparison from one region to the next. By reducing VMT

---

13 Owen, *Green Metropolis*, 119



there is an opportunity to reduce household cost, increase time for social engagement and exercise, and improve air and water quality. The true cost of an individual's house today is no longer determined solely by the cost of the mortgage. Transportation costs have gained a large share in the overall cost. If a commuter is required to drive long distances, filling up at the pump and time spent in congestion should be factored into the cost of the suburban home. "Washington area residents spend about \$36,000 a year, or nearly 47 percent of the median household income, on housing and transportation."<sup>14</sup> While it may continue to be cheaper than living in a dense mixed-use community, "drive until you qualify" suburban home ownership is not a sustainable practice. Dense compact mixed use projects can reduce VMT and increase quality of life.

**Figure 1.** *Time spent in Automobiles*



## Suburban vs. Urban

“A dense urban area’s greenest features – its low per-capita energy use, its high acceptance of public transit and walking, its small carbon footprint per resident – are not inexplicable anomalies. They are direct consequences of very urban characteristics...”<sup>15</sup>

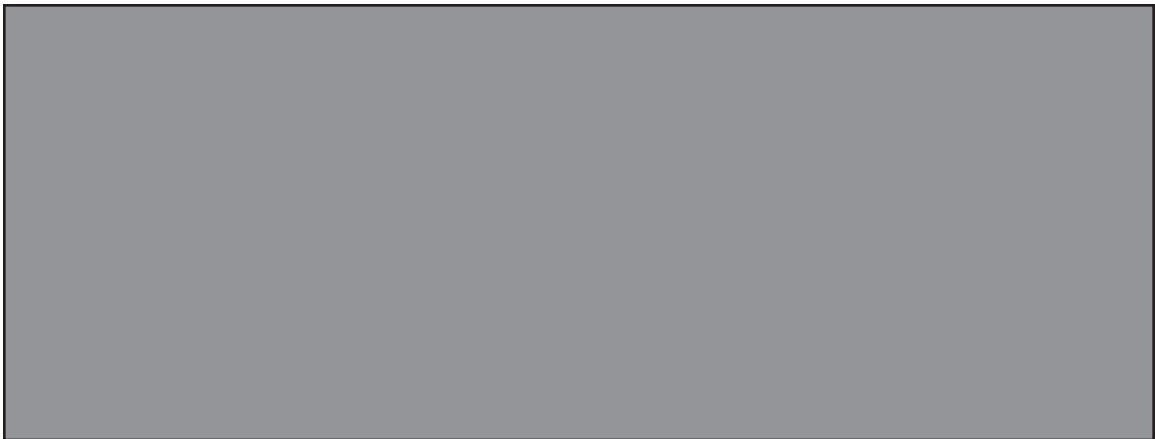
Most people simplify the differences of urban versus suburban form down to a matter of density. Yet, even urban form densities can still be considered relatively low and it is not the only thing separating the two forms.

Typical suburban form is characterized by low density, segregated by use and auto dependent, with a discontinuous, dendritic street network and poorly defined public space. Typical urban form is characterized by higher density, mixed-use, walkable blocks of buildings supported by a continuous street network with well defined public space.<sup>16</sup>

---

15 Owen, *Green Metropolis*, 13

16 Dunham-Jones, *Retrofitting Suburbia*, vii



**Figure 2.** *Suburban vs. Urban Form*

Source: *Retrofitting Suburbia*

<b>Suburban</b>	<b>Urban</b>
<ul style="list-style-type: none"> <li>– Characterized by buildings designed “in the round” to be viewed as objects set back in a landscape they dominate.</li> </ul>	<ul style="list-style-type: none"> <li>– Clear focus is on the fronts of buildings and how they line up to meet the sidewalk and shape the public space of the street.</li> </ul>
<ul style="list-style-type: none"> <li>– Dominant spatial figures are private buildings</li> </ul>	<ul style="list-style-type: none"> <li>– Public buildings, roadways, schools, and parks are treated as spatial figures or outdoor public rooms</li> </ul>
<ul style="list-style-type: none"> <li>– Typically dedicated to single use: residential, retail, office, or industrial</li> </ul>	<ul style="list-style-type: none"> <li>– Buildings are more often mixed use or transition in use over their life span</li> </ul>
<ul style="list-style-type: none"> <li>– Auto dependent</li> </ul>	<ul style="list-style-type: none"> <li>– Not dependent on cars</li> </ul>
<ul style="list-style-type: none"> <li>– Dendrite street patterns with dead ends and cul-de-sacs</li> </ul>	<ul style="list-style-type: none"> <li>– Streets are organized into interconnected networks.</li> </ul>
<ul style="list-style-type: none"> <li>– Limited range of street types and standards</li> </ul>	<ul style="list-style-type: none"> <li>– Wider range of street types and widths</li> </ul>
<ul style="list-style-type: none"> <li>– Lower density and evenly distributed</li> </ul>	<ul style="list-style-type: none"> <li>– Higher net density as well as localized densities: population and building area</li> </ul>
<ul style="list-style-type: none"> <li>– Funded by short-term investors interested in volume</li> </ul>	<ul style="list-style-type: none"> <li>– Funded by a combination of short and long-term investment vehicles and a variety of public private partnerships.</li> </ul>

Table adapted from *Retrofitting Suburbia*

**Figure 3.** *Suburban vs. Urban Characteristics*

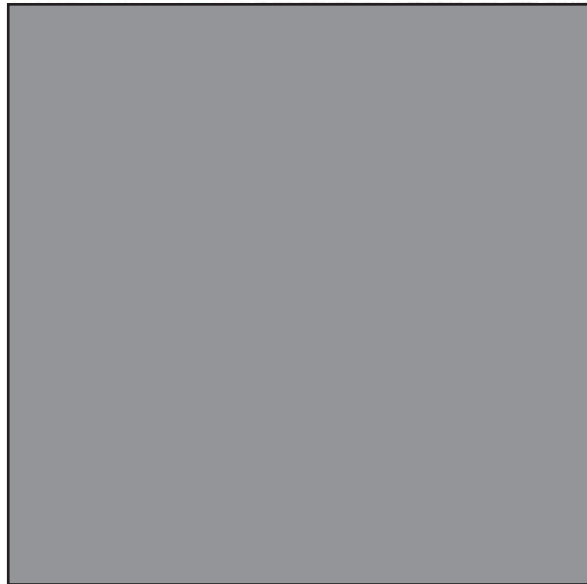
Cities and urban areas are often criminalized as large polluters and users of vast resources in comparison to suburban areas. But a close examination of a range of factors tells the opposite story. If energy use is measured only on a per acre basis the suburbs appear more efficient. When energy use is compared on a per capita base, suburban developments have higher energy uses. Why? Because there are inherent efficiencies built into the size, density, and mixing of uses in urban places. Walking and public transportation is more prevalent. Distance between destinations are shorter. Energy efficiencies are maximized in compact buildings. Urban form provides an economy of scale that allows the daily workings to proceed more efficiently. Lack of abundant space also requires creative solutions and encourages people to live with smaller footprints. Proximity breeds both efficiency and convenience. While cities are still not the most sustainable or energy efficient machines, they are far more efficient than sprawl.

## Sub+Urban and the Polycentric Metropolis

*“Your ability to create places that are meaningful and places of quality and character depends entirely on your ability to define space with buildings, and to employ the vocabularies, grammars, syntaxes, rhythms, and patterns of architecture in order to inform us who we are.”*

*- James H. Kunstler<sup>17</sup>*

New Urbanists and proponents for Smart Growth and Transit Oriented Development have been championing the creation of ecologically sustainable neighborhoods that provide a sense of place and community in response to suburban sprawl. Recombining urban and suburban patterns promotes the creation of community, urban efficiencies, and sustainability. With an estimated 2.8 million acres of greyfields to becoming available in the next 15 years and 75% of U.S. construction occurring in the suburbs<sup>18</sup>, rethinking suburban development is an extremely powerful way to achieve these goals.



**Figure 4.** *Polycentric Cartoon*

---

17 Kunstler, *Ted Talks*

18 Dunham-Jones, *Retrofitting Suburbia, Introduction*

Incremental urbanism is often viewed as the best form of urbanism. It has been proven successful over and over again all across the globe because the factor of time allows for the optimal configurations of spaces. Large-scale suburban and urban retrofits are often shunned for their 'instant cities' moniker and the 'not in my back yard' attitude against developers of many areas. As stated in Retrofitting Suburbia though "By urbanizing larger suburban properties with a denser, walkable, synergistic mix of uses and housing types, more significant reductions in carbon emissions, gains in social capital, and changes to systemic growth patterns can be achieved." And this is precisely the point. We can create more sustainable communities through this approach.

The creation of mixed-use town centers and retrofitted suburban places are the forefront of this hybrid revitalization and provide great opportunities for the creation of urban nodes connected to the central urban core. Transit oriented developments around Metrorail stations are already prevalent in the Washington metropolitan area and have proven to be a successful model to follow. Directing growth to these nodes within the polycentric metropolis will allow regional activity centers to reduce the spread of urban sprawl and protect the remaining environmental amenities. The creation of jobs, housing, and investment in transportation infrastructure will lend to the vibrant communities we are seeking while helping to conserve energy, reduce congestion, increase transit, promote economic development and grow smartly.

**Chapter 4**  
*Site Selection and Analysis*

Researching and developing the underlying principles that support this thesis determined the next logical step was to identify appropriate sites that could be used as a study for the principles outlined. The process is outlined below.

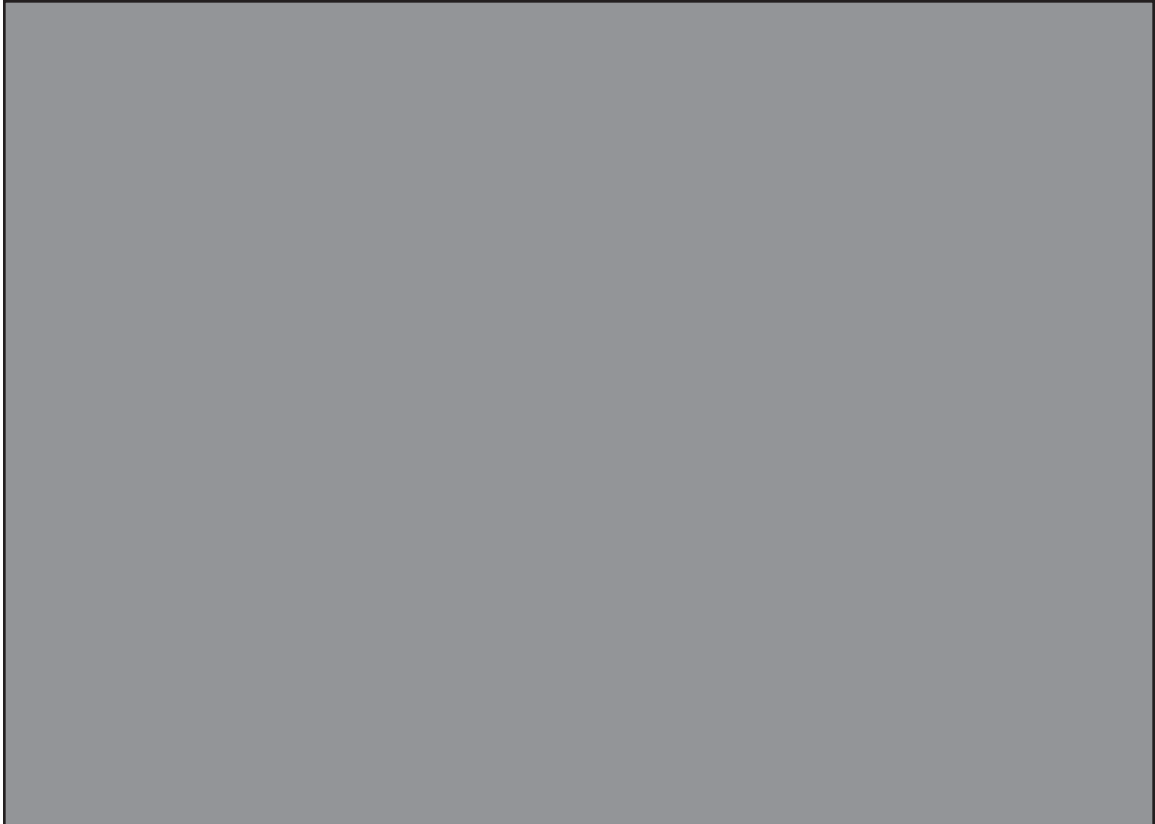
## **Regional Transportation Network**

Transportation has been a top long-term concern for area residents of the Washington metropolitan region. According to the Transportation Planning Board, the current total VMT per capita has increased over time and is currently nearly 23 miles a day.<sup>19</sup> Roads dominate the current regional transportation network. In addition to this in the past 40 years, the region has more than doubled capacity of the Beltway, rebuilt the Wilson Bridge, and expanded the road system to foster economic growth. Roads are an essential component of the network but other forms of transportation should be emphasized as well to create a cohesive regional transportation network.

The Washington Metropolitan Area Transit Authority operates the second largest rail transit system and the sixth largest bus network in the United States. With an overburdened auto oriented region that ranks second in the nation in yearly delay per auto commuter and total travel time,<sup>20</sup> this is a vital resource to the region.

---

19 Metropolitan Washington COG, *Region Forward 2050*, 21  
20 TTI's 2010 Urban Mobility Report



**Figure 5.** *Average Travel Time to Work*

Average travel times to work throughout the region exceed the United States average, and the majority of jurisdictions have average travel times of 30 minutes or more

Source: Our changing Region American Community Survey 5 Year Data, volume 1, number 3. [COG Publication Number20118402, Winter 2011.](#)





**Figure 6.** *Mode of Travel to Work*



**Figure 7.** *Mode of Travel to Work Total*

Approximately 65 percent of workers in all COG jurisdictions drive alone to work, which is about 10 percent lower than the national rate. Transit and carpooling are the next most common modes, comprising approximately 15 and 11 percent, respectively. There is wide variation in mode split across the jurisdictions. The District of Columbia has the lowest percentage of workers driving alone (37 percent) and has a roughly equal percentage of workers using transit. In jurisdictions with suburban and exurban development patterns, travel mode splits are similar to those at the national level.

Source: Our changing Region American Community Survey 5 Year Data, volume 1, number 3. [COG Publication Number20118402, Winter 2011.](#)

The region has also initiated the WAMTA, MARC, and VRE commuter rails during the same 40-year span. Today there are 86 Metro stations in service within a 106.3-mile network.



Figure 8. Washington Area Metro Map

Until recently stations in the core had accounted for the largest portion of Metrorail system boarding. In 2006 for the first time collective boarding at stations inside the beltway surpassed boarding in the core. The pace of rider ship growth inside the beltway has been the strongest of the three areas. Outside the beltway boarding at stations also grew steadily.<sup>21</sup>

With this data in hand it became important to identify new or emerging activity centers that could provide a basis for the study in retrofitting suburban development. A brief examination of interior and exterior beltway stations provided a substantial list of potential sites. It was important though to pair this with an area that typified suburban development patterns and high rates of growth.

Montgomery County, Maryland is a natural fit for this criteria. With a total population of close to 1 million, Montgomery County is Maryland's most populous county and ranks second in the metropolitan Washington, D.C. region to Fairfax County, whose population stands at 1,081,726. Over the last decade gains in the minority population fueled Montgomery County's growth of 98,436 people or 11.3 percent since 2000. This also pushed Montgomery County into the category of a minority majority. Furthermore almost 97% of the land in the county is single family homes in addition to the 8,000 acres of parking lots. It is the quintessential suburban development pattern of the last 50 years.

---

21 Final Transit Ridership and Market trends report 2009, p 6.

Montgomery County has thirteen metro stations located on the red line. Certain stations were excluded due to intensive ongoing development, construction, or were already established and defined as activity centers. Others simply did not have the right mix to impart the thesis onto. Four of the thirteen stations were selected for further analysis. The stations provided a relative cross section of development in different stages around metro stations and a variance in the potential scope of the project.

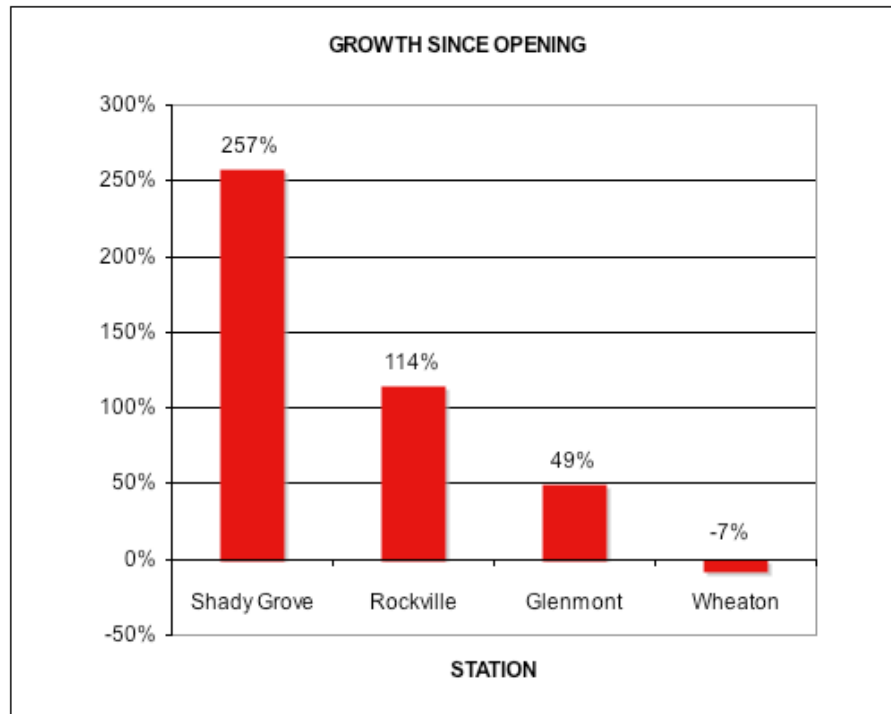
Most Developed - - - - - Least Developed

Rockville - Shady Grove - Wheaton - Glenmont

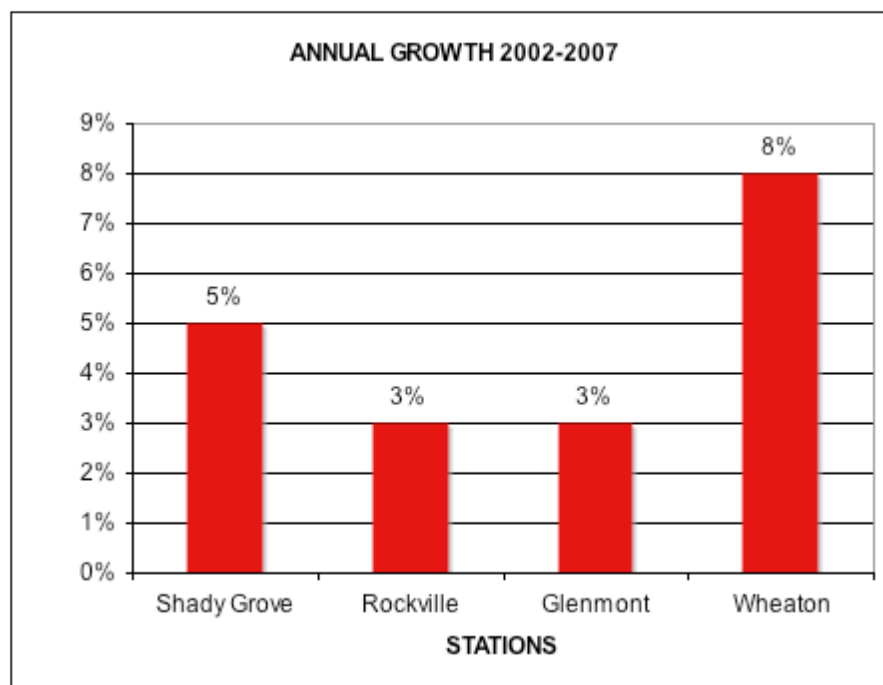
<b>Average Weekday Passenger Boardings</b>				
	Shady Grove	Rockville	Wheaton	Glenmont
1995	9,014	3,443	5,508	0
1996	9,023	3,386	5,337	0
1997	8,876	3,338	5,291	0
1998	9,065	3,545	5,574	0
1999	9,111	3,543	3,384	4,096
2000	9,767	3,884	4,001	4,619
2001	10,635	3,915	4,388	4,980
2002	11,050	3,994	4,576	5,254
2003	12,290	4,106	4,746	5,481
2004	13,100	4,163	4,498	5,578
2005	13,360	4,237	4,468	5,664
2006	13,894	4,365	4,887	5,944
2007	14,439	4,572	4,874	6,096
2008	14,390	4,736	4,754	6,117
2009	14,107	4,880	4,653	5,966

**Figure 9.** *Average Weekday Passenger Boardings by Year*

Shady Grove and Rockville stations opened in 1984. The Wheaton station opened in September 1990 and the Glenmont Station opened in July 1998.



**Figure 10. Station Growth Since Opening.** Shady Grove has a staggering 257% growth since opening while Wheaton has a negative growth rate. As the numbers in figure 9 suggest the opening of the Glenmont station simply relocated a number of riders from Wheaton to Glenmont.



**Figure 11. Annual Station Growth from 2002-2007.** Wheaton possesses the highest annual growth out of the four stations and one of the highest in the metro system.



**Figure 12. Regional Site Locations**

The four stations are located at the two ends of the Metro's Red Line. Glenmont and Shady Grove are the two terminal stations, both possessing storage and maintenance facilities that must be accounted for. Wheaton and Glenmont are underground stations, while Shady Grove and Rockville are above ground stations. Their easy access to I-270 corridor and I-495 Beltway add appeal to their locations within the regional transportation networks. The following diagrams will delve further into the individual characteristics of each site.



# ROCKVILLE

**Figure 13. Rockville Figure Ground.**

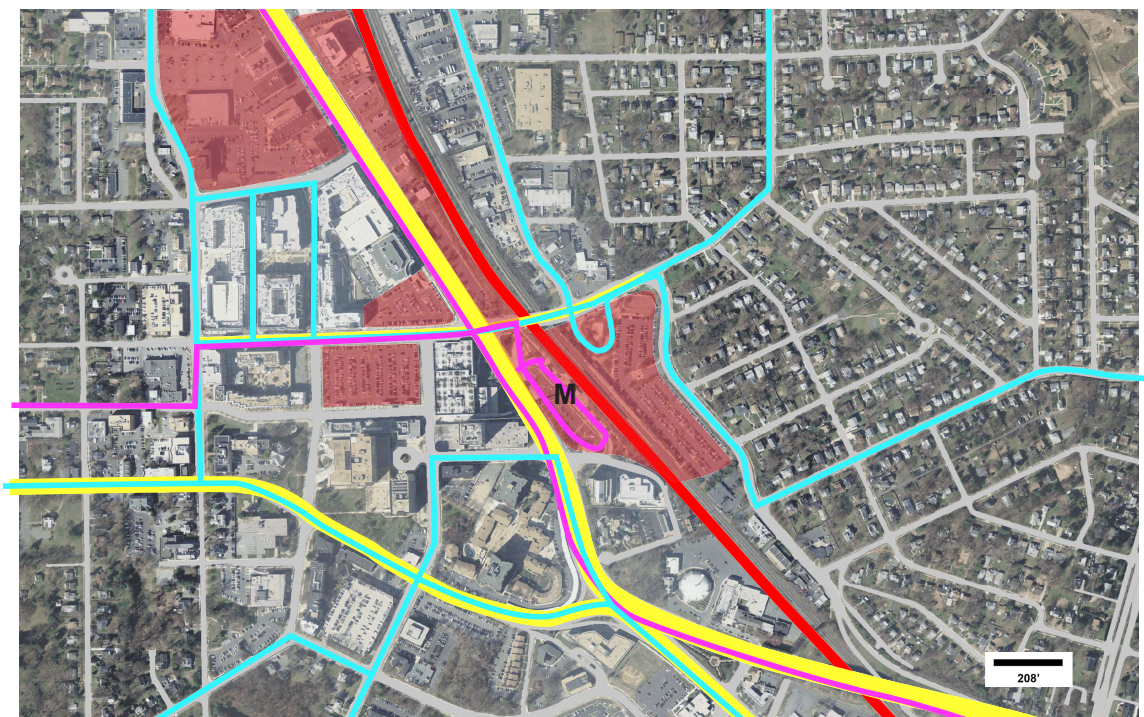
The core has undergone recent development to implement urban block structure that supports major arterials, secondary roads and urban building forms. Single family residential dominates the exteriors, while the core consists of government offices and mixed-use building types.



**Figure 14. Rockville Potential Development Site.**

There are surface parking lots prime for redevelopment and incorporation into the urban fabric as well as Metro property that could be used as a bridge between the core and the residential districts. The scope of development in Rockville would primarily entail infill development.





**Figure 15. Rockville Transportation Networks**

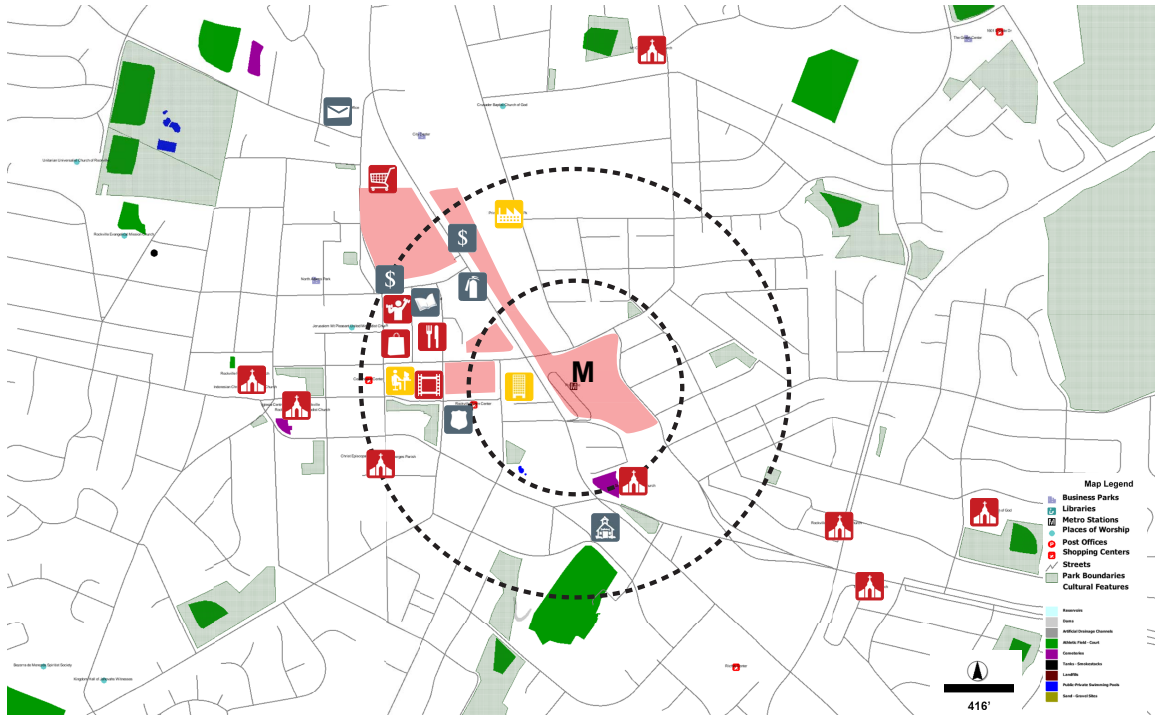
Rockville is served by an above ground metro station in conjunction with numerous bus routes. The North South corridor of SR-355 is a trip generator but also a divider between development and the Metro station.



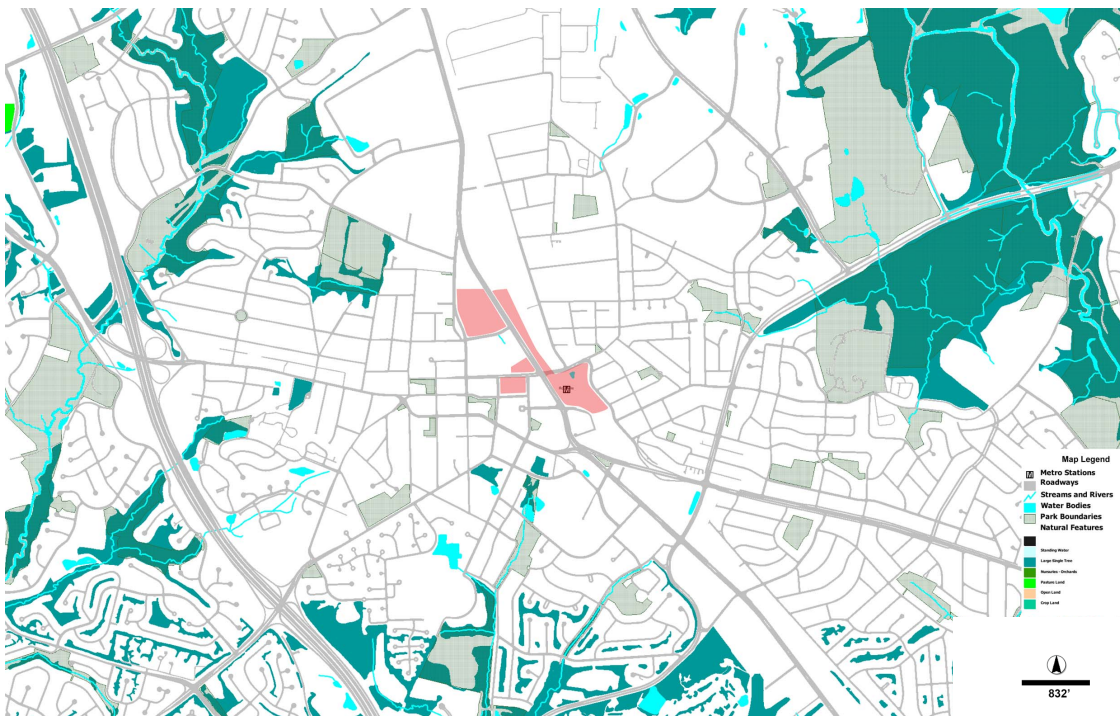
**Figure 16. Rockville Surface Parking**

A high concentration of parking surrounding the core area and along corridors is consistent with typical suburban retail and commercial patterns. The parking structure in Rockville highlights the importance of the corridor along SR-355.





**Figure 17. Rockville Amenities**  
 Rockville hosts a number of amenities and a mix of housing types near the metro station.



**Figure 18. Rockville Natural Ecosystem.**

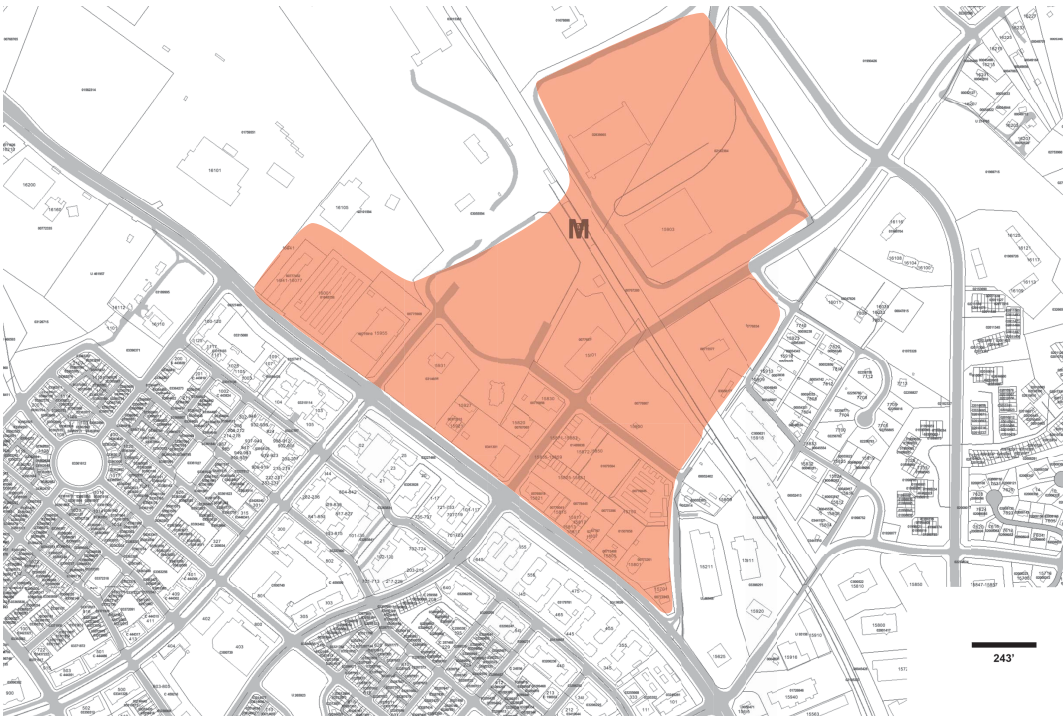
Rockville has a large amount of parkland and natural waterways within its watershed. While the interior core of Rockville is sparse in this regard, there is a layout of existing parks that can be strengthened through further design and pedestrian connections at the urban scale.



# SHADY GROVE

**Figure 19.** *Shady Grove Figure Ground.*

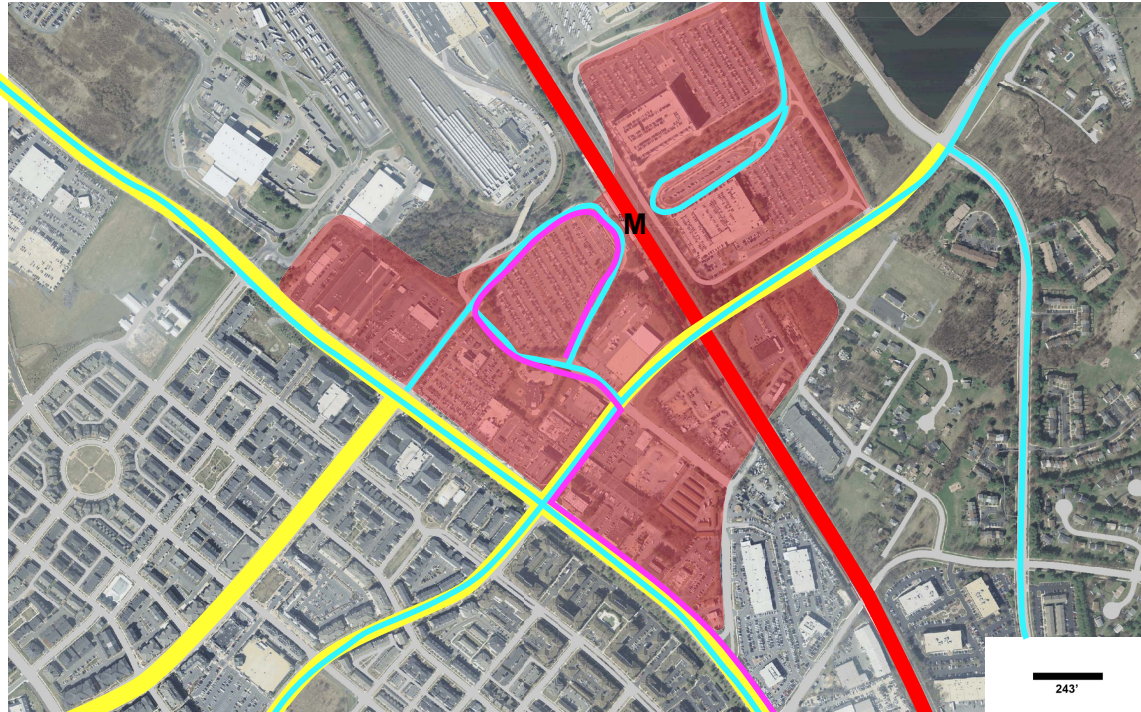
King Farm has variety of mixes and residential typologies but it is currently disconnected with the surrounding larger parcel blocks. There are also a number of larger parcels containing office parks that are closer to the I-270 corridor.



**Figure 20.** *Shady Grove Potential Development Site.*

Development in Shady Grove is based on connecting the existing community of King Farm to the Metro station. King Farm provides a good base for the beginnings of the Urban Transect which can be centered with the urban core around the station. The inclusion of retail and office space would benefit the existing residential densities.





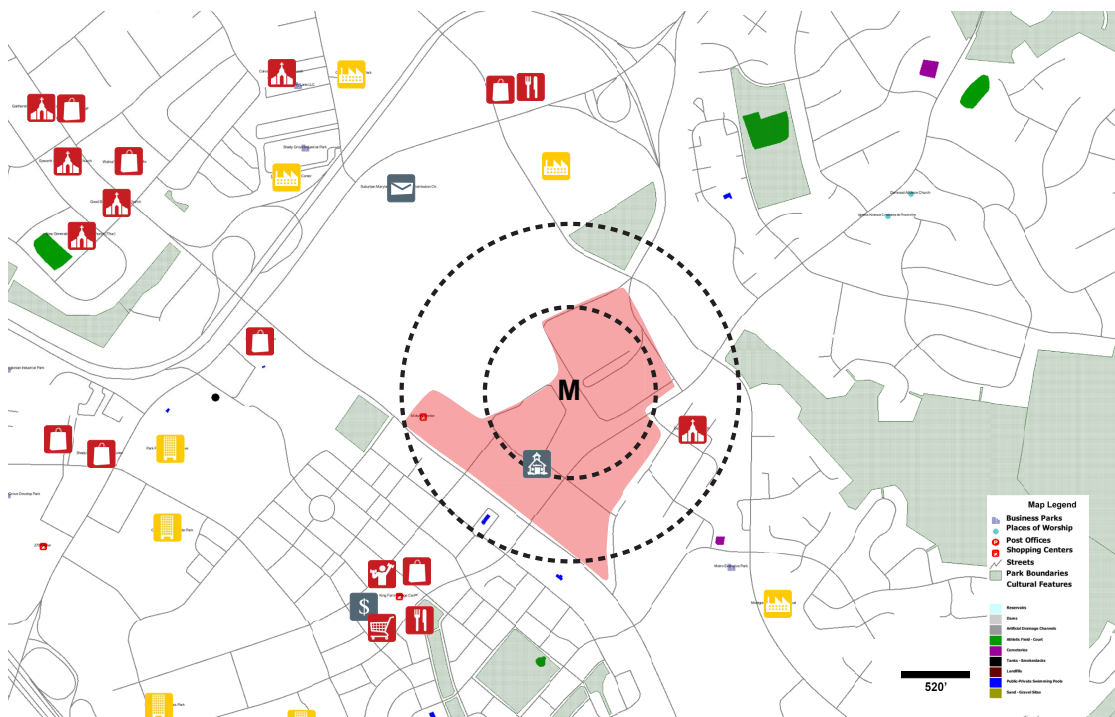
**Figure 21.** *Shady Grove Transportation Network.*

Shady Grove is served by an above ground Metro Station running parallel to SR-355. Transportation is mainly auto oriented with only minimal bus routes. King Farm does provide a circulator bus for access to the Metro station.

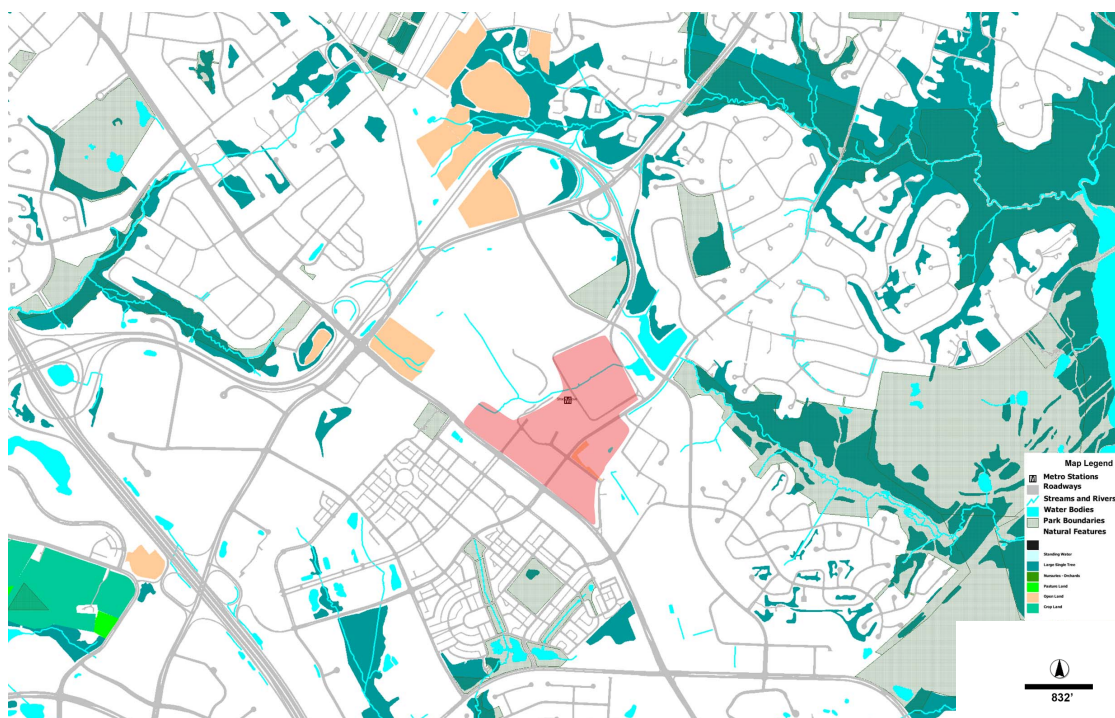


**Figure 22.** *Shady Grove Surface Parking.*

Shady Grove is a terminal station on the Red Line. This requires more parking than typical at a Metro station to accommodate vehicle commuters coming from farther distances in the region and using the stop as a plug-in to the Metro system. Like Rockville, the importance of the SR-355 corridor is evident through the development along it.



**Figure 23. Shady Grove Ammenities.**  
Amenities in Shady Grove are manly centered in the King Farm community center.



**Figure 24. Shady Grove Natural Ecosystem.**  
Shady Grove contains a large park and water system to the east of the proposed development area and there are strong natural corridors that can be reinforced. The King's Farm development has integrated some of the waterways to the south along with creating a series of open public spaces for recreational and leisure use.

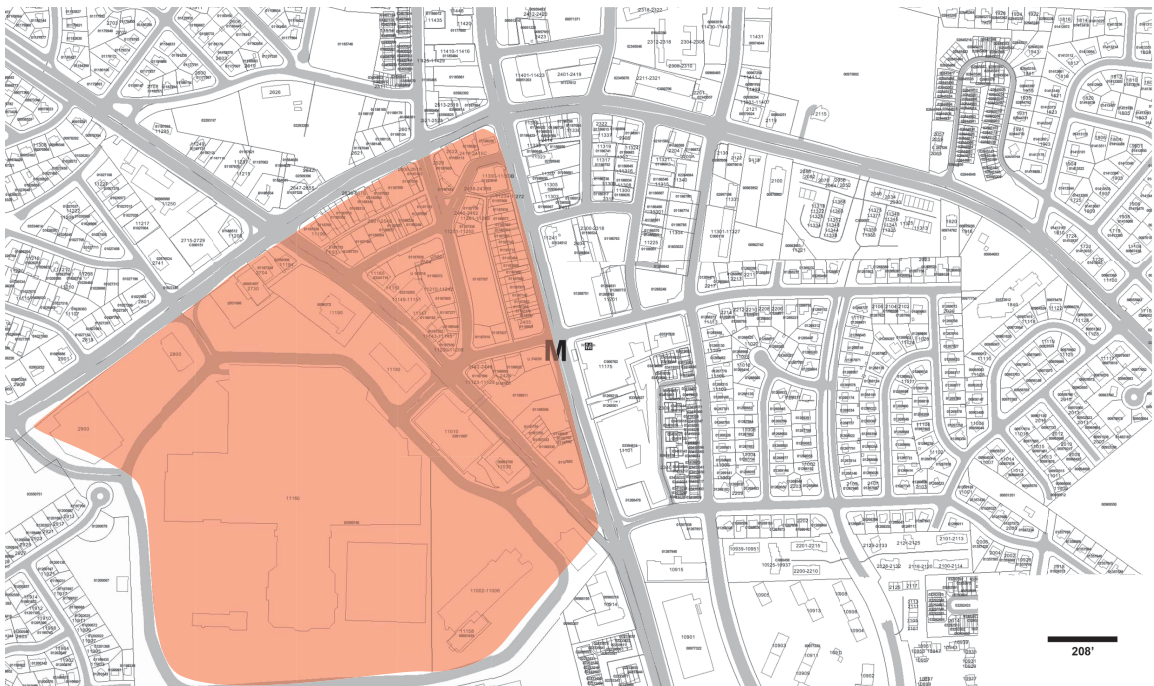




# WHEATON

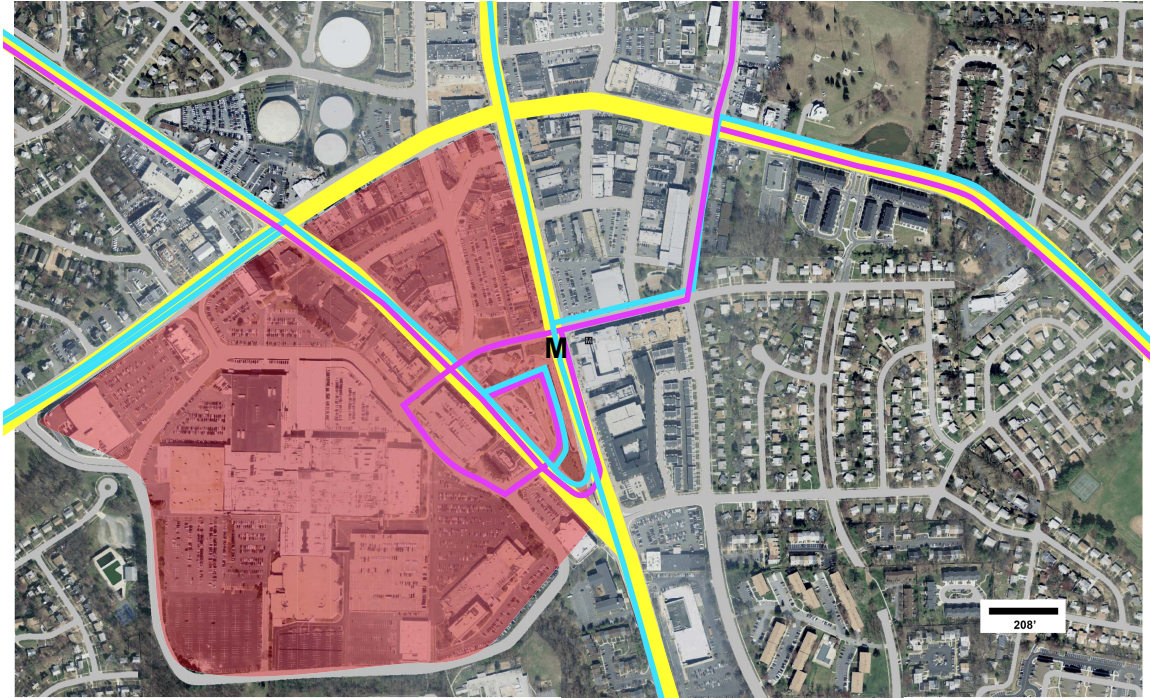
**Figure 25. Wheaton Figure Ground.**

The building pattern within Wheaton consists of single-family parcels conglomerated in subdivisions. Towards the core, the pattern is more diversified, with strip commercial parcels and large commercial parcels. The core is accompanied by the presence of the regional Westfield shopping center creating a disruption in the urban fabric.



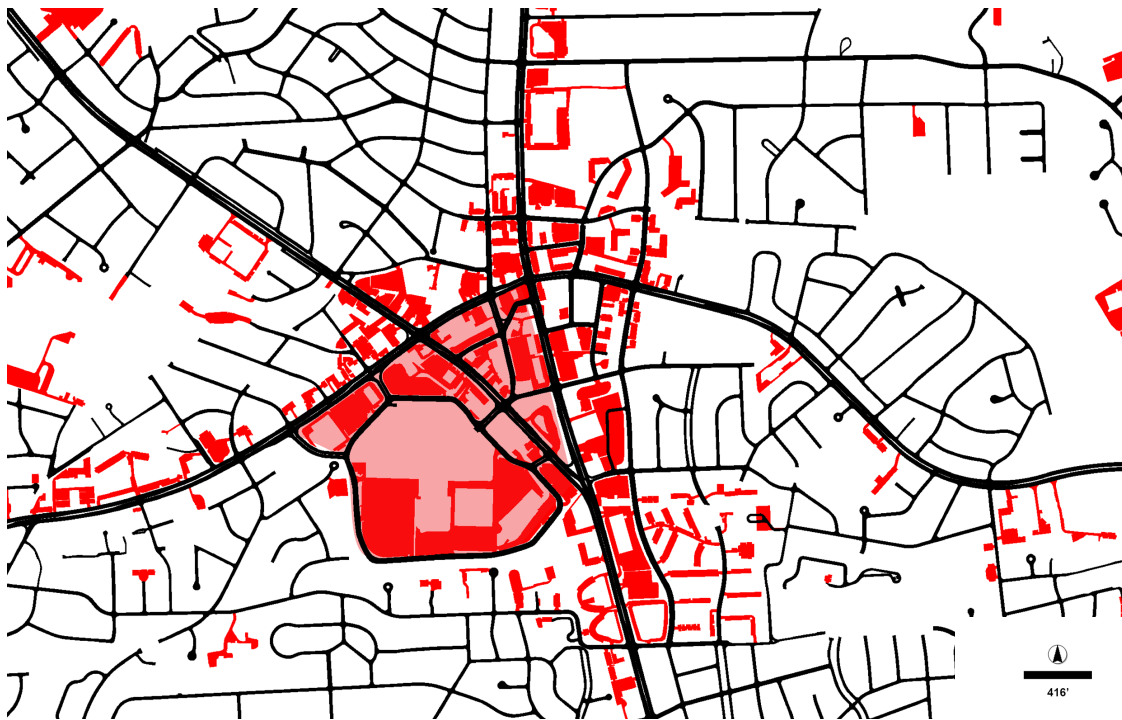
**Figure 26. Wheaton Potential Development Site.**

The core area in Wheaton is prime for redevelopment to create an urban town center. The Westfield regional mall should be incorporated into an extended study for its future incorporation into the urban fabric. It will play a large role in the connection of the residential areas to the urban core.



**Figure 27.** *Wheaton Transportation Network.*

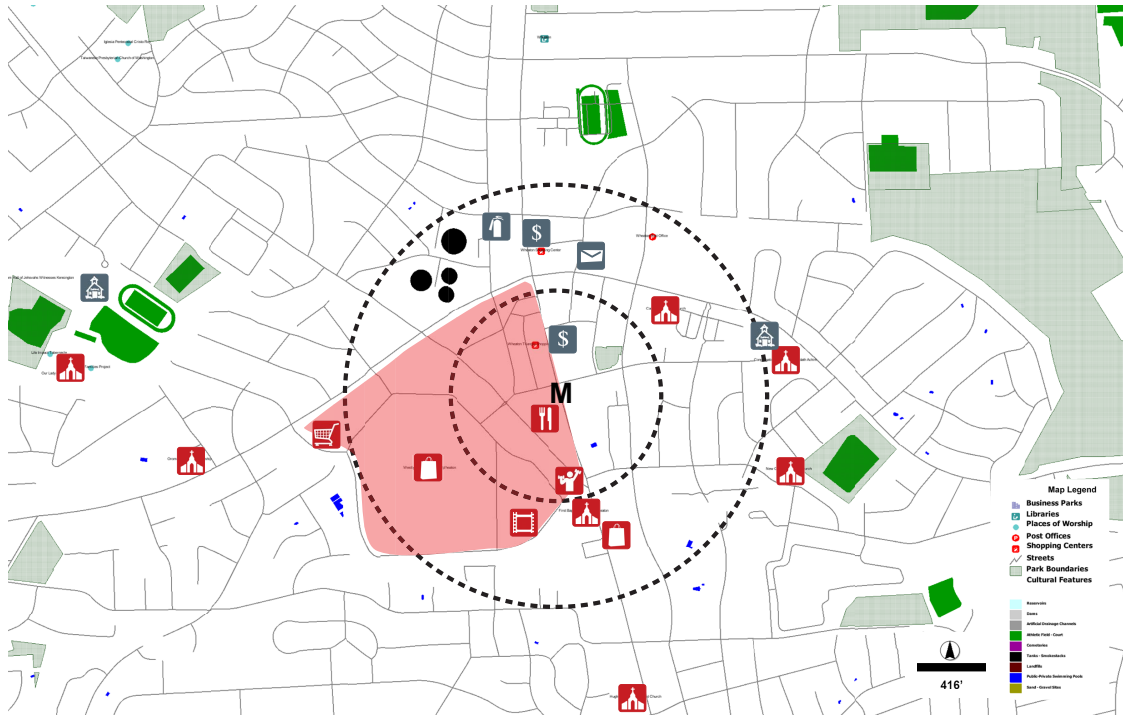
Wheaton is served by an underground Metro station. The core also hosts a bus depot serving a high number of routes. Three major thoroughfares intersect, University Boulevard, Viers Mill Road and Georgia Avenue, complimented by a modified grid, to complete the transportation network.



**Figure 28.** *Wheaton Surface Parking.*

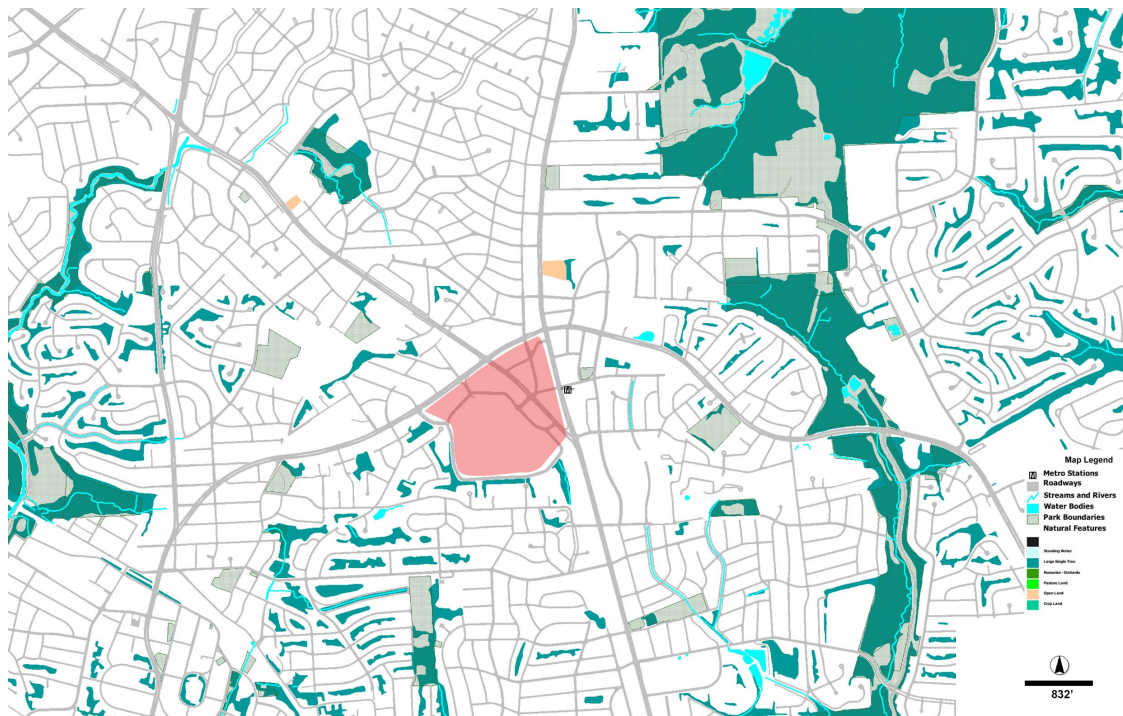
Parking in Wheaton is highly dominated by the Westfield Mall. Other publicly owned lots add to the excessive amount of impervious surface on the site.





**Figure 29. Wheaton Amenities.**

The Westfield Mall provides a regional retail destination in conjunction with a diverse mix of ethnic restaurants and small business owners.



**Figure 30. Wheaton Natural Ecosystems.**

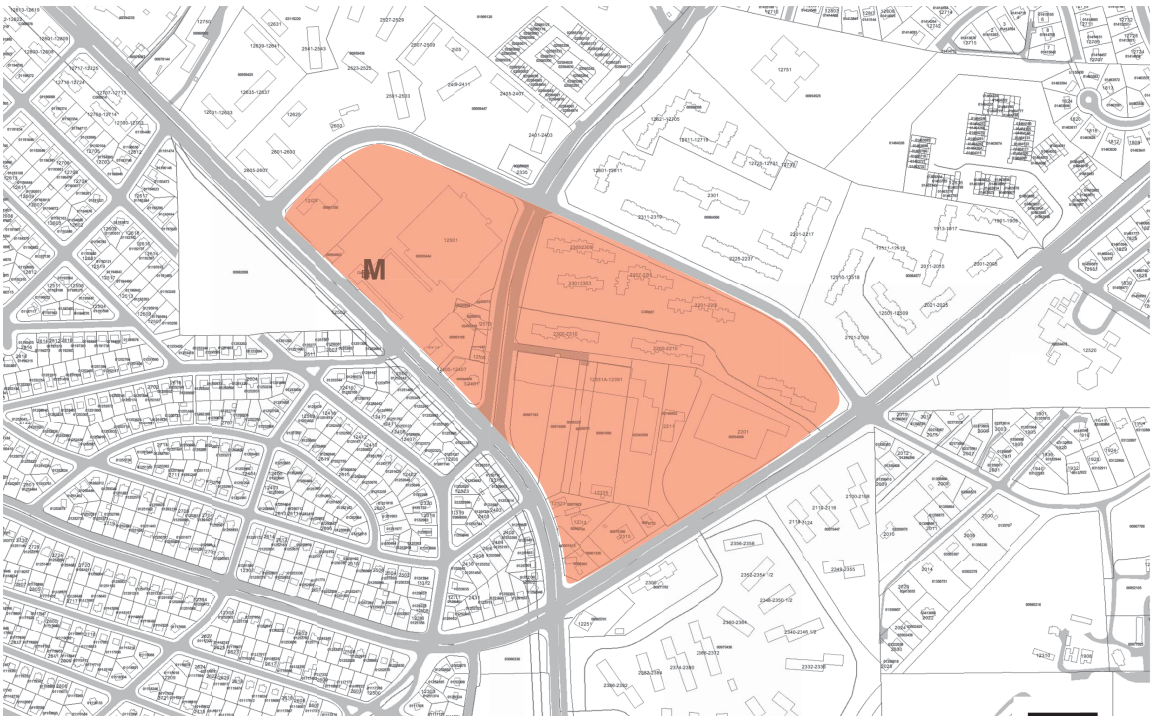
Wheaton contains a network of waterways and parkland to the Northeast, the Wheaton Regional Park and Sligo Creek Park. The interior on the other hand lacks any definition of public park systems and creates a greater necessity for open space in the core. Wheaton's relatively high elevation within the county must be considered as well.



# GLENMONT

**Figure 31.** *Glenmont Figure Ground.*

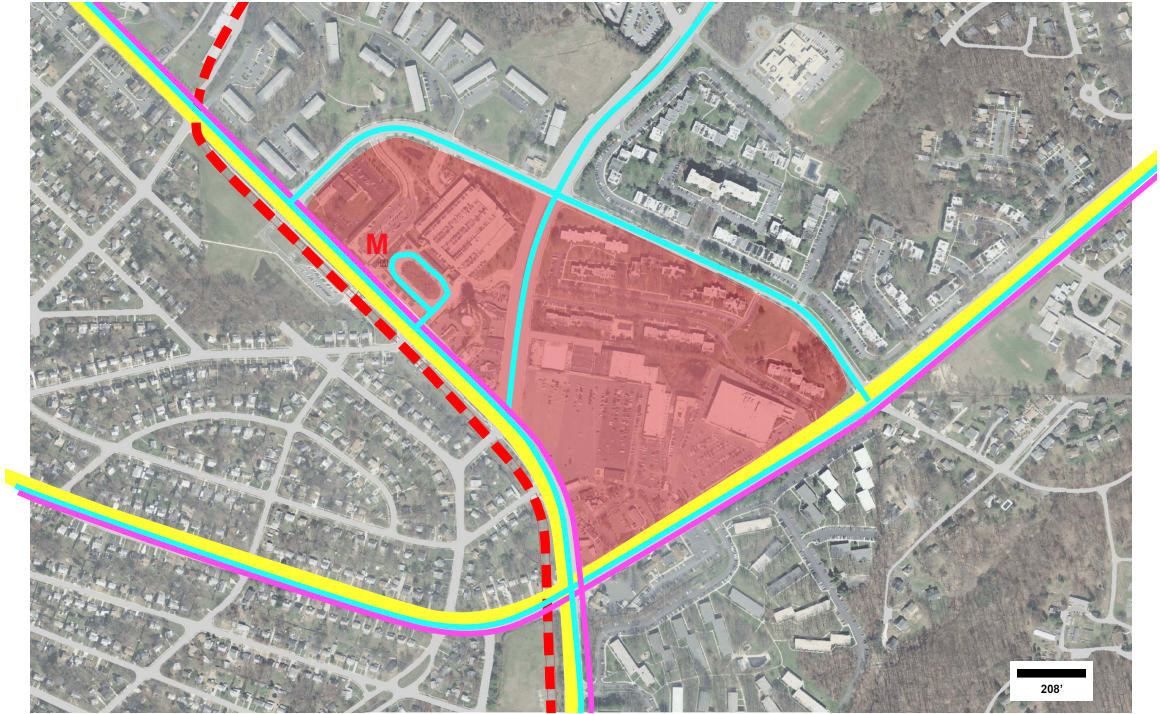
Glenmont is predominantly residential. It is typically single family to the west and multifamily to the East of the metro line. The area directly to the Southeast of the metro is the only area with retail, albeit very weak retail.



**Figure 32.** *Glenmont Potential Development Site.*

Redevelopment would encompass the current Metro site, the surrounding multifamily garden style apartments and the strip commercial retail center.





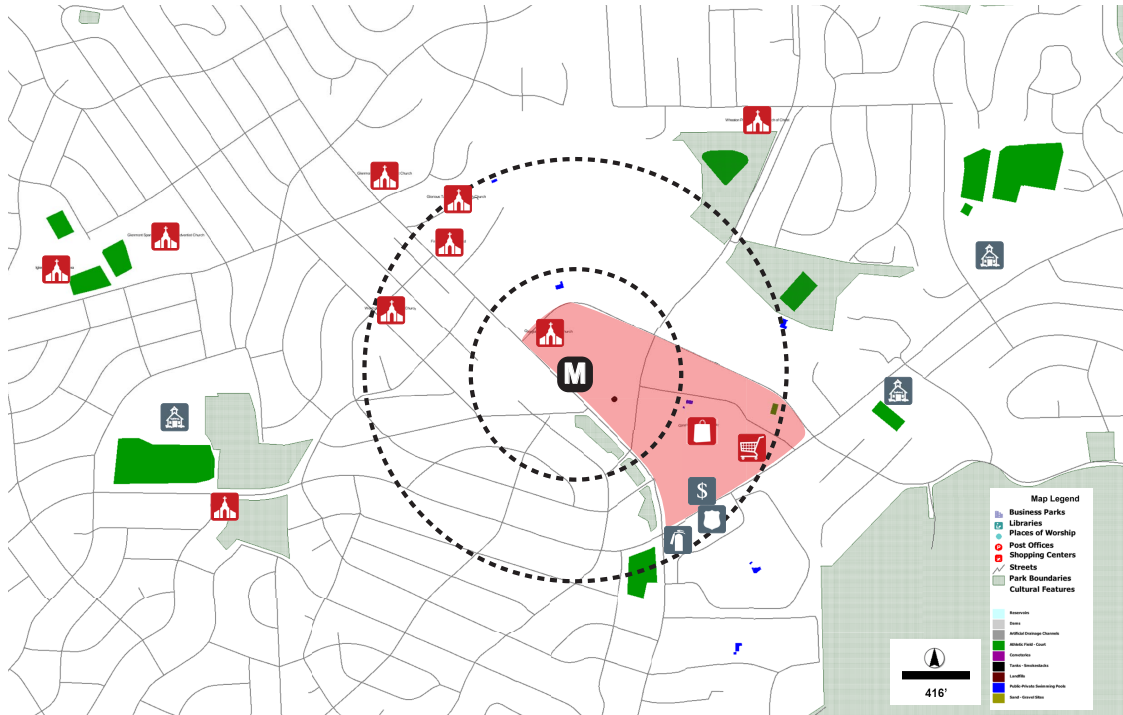
**Figure 33.** *Glenmont Transportation Network.*

Glenmont is served by an underground Metro station. Georgia Avenue runs in the North South direction and Randolph road traverses the East West direction. There are minimal bus routes integrating the Metro station and it is primarily auto oriented.



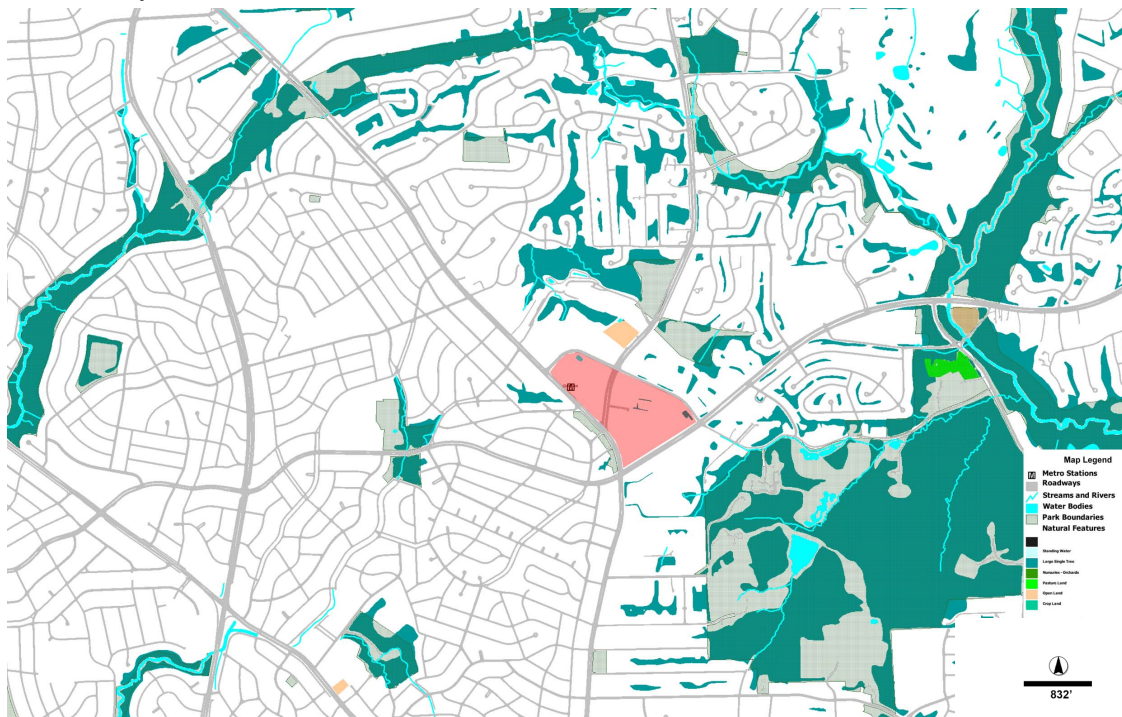
**Figure 34.** *Glenmont Surface Parking.*

Glenmont present a low percentage of surface parking due to the fact that it is primarily residential development. The exception to this it at the one commercial retail center just Southeast of the Metro station. It does contain a large Metro Paring deck and another proposed parking deck.



**Figure 35. Glenmont Amenities.**

The area directly to the southeast of the metro is the only area with retail, albeit very weak retail. There are a high number of places of worship in the area and three schools are within the immediate vicinity



**Figure 36. Glenmont Natural Ecosystems.**

In Glenmont there is a very large plot of land consisting of substantial park space to the southeast of the metro site and a prominent waterway that traverses the eastern half of the diagram. There is a strong natural corridor that should be maintained and strengthened surrounding Glenmont to the North

## Site Selection

After a reviewing all of the sites individually, a comparative site matrix (Fig.37 & 38) was developed to define the strenghts and weaknesses of each site. Each site presented a number of challenges and oportunities for development. After the an in depth review of the merits of each of the four sites, Wheaton was selected as the site that would best portray the principles of the thesis. In summary Wheaton possessed a few major points that contributed to its selection:

- Three major arterials
- Underground Metro station
- Bus hub
- Workable block structure
- Existing local and regional retail
- Publicly owned land open for redevelopment
- Recent development
- Culturally diverse population
- Mix of housing types
- Public and civic ammenities
























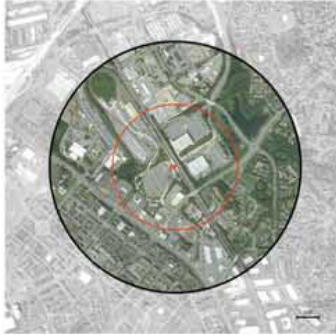
	Rockville	Shady Grove
Ammenities	     	 
Civic	     	   
Housing	 	 
Work	  	 
Strengths	 <ul style="list-style-type: none"> <li>-Urban district plan that is already in affect</li> <li>-Government buildings provide a consistent workforce.</li> <li>-Mix of retail, residential and commercial office space.</li> <li>-Urban street network.</li> </ul>	 <ul style="list-style-type: none"> <li>-Metro stop present.</li> <li>-King Farm development provides a mix of residential dwellings of all types.</li> <li>-Parking structures already in place.</li> </ul>
Weakneses	<ul style="list-style-type: none"> <li>-Light industrial and the Metro line block easy access to the urban center by single family dwellings.</li> <li>-Metro connection to town center is uninspiring.</li> </ul>	<ul style="list-style-type: none"> <li>-Commercial office space is beyond the neighborhood dimension, but there is a large amount of it.</li> <li>-Light to medium industrial processes and storage is present.</li> <li>-Metro storage depot occupies prime large plots.</li> </ul>
Oppurtunities	<ul style="list-style-type: none"> <li>-Spaces surrounding town cener provide an opportunity to connectand infill developed areas.</li> </ul>	<ul style="list-style-type: none"> <li>-Large amounts of underperforming asphalt.</li> <li>-Connectons to King Farm would provide good transitions to a variety of housing.</li> </ul>
Threats	<ul style="list-style-type: none"> <li>-Metro Line is above ground</li> <li>-Rockville Pike is a high speed divider through the site.</li> </ul>	<ul style="list-style-type: none"> <li>-Metro line is above ground</li> <li>-Metro line and Frederick Rd. are dividers on the site.</li> <li>-Metro stop is the last on the line, meaning no matter the development created parking to satisfy surrounding area commuters will always be required.</li> </ul>

Figure 37. Site Matrix


























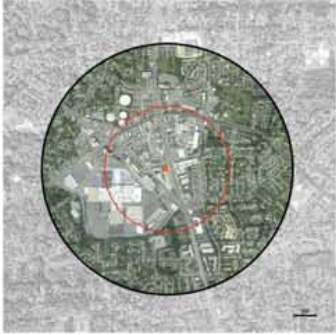

	Wheaton	Glenmont
Ammenities	     	   
Civic	     	   
Housing	 	 
Work	 	
Strengths	 <ul style="list-style-type: none"> <li>-Metro stop present</li> <li>-Integration of bus transit node.</li> <li>-Urban District plan is in place already.</li> <li>-Recent development towards TOD and mixed-use development.</li> <li>-Commercial retail is present in the area.</li> </ul>	 <ul style="list-style-type: none"> <li>-Metro stop present</li> <li>-High amount of single family residential.</li> <li>-Several schools on the exterior of the neighborhood radius.</li> <li>-Underperforming asphalt.</li> </ul>
Weakneses	<ul style="list-style-type: none"> <li>-Numerous small scale business owners.</li> <li>-There is a high volume of strip center retail.</li> <li>-Large immigrant population present that seems well served by low rent space and affordable housing.</li> </ul>	<ul style="list-style-type: none"> <li>-There is no commercial office space in the immediate area.</li> <li>-Large quantity of graden apartments surrounding the metro.</li> <li>-Water tower is present on site.</li> <li>-Lacking ammenities in the vicinity.</li> </ul>
Oppurtunities	<ul style="list-style-type: none"> <li>-Metro line is underground.</li> <li>-Westfield mall can provide temporary draw to site until it is ready to be integrated into the urban plan.</li> <li>-Strong core and a good potential for a useful street grid.</li> <li>-Enterprise zone and Arts and Entertainment district zoning.</li> </ul>	<ul style="list-style-type: none"> <li>-Metro Line is below ground</li> <li>-Garden apartments can easily be rezoned and provide higher densities.</li> </ul>
Threats	<ul style="list-style-type: none"> <li>-Viers Mill Rd., Georgia Ave., and University Blvd. are high speed dividers through the site.</li> <li>-Land parcels are more likely to be owned by individual investors.</li> <li>-Large topography changes throughout the site.</li> </ul>	<ul style="list-style-type: none"> <li>-Georgia Ave., Randolph Rd., and Layhill Rd. are high speed dividers through the site.</li> <li>-Metro stop is the last on the line, meaning no matter the development created parking to satisfy surrounding area commuters will always be required.</li> <li>-High amount of single family residential.</li> <li>-Topography changes on site.</li> </ul>

Figure 38. Site Matrix

## Wheaton: Demographics

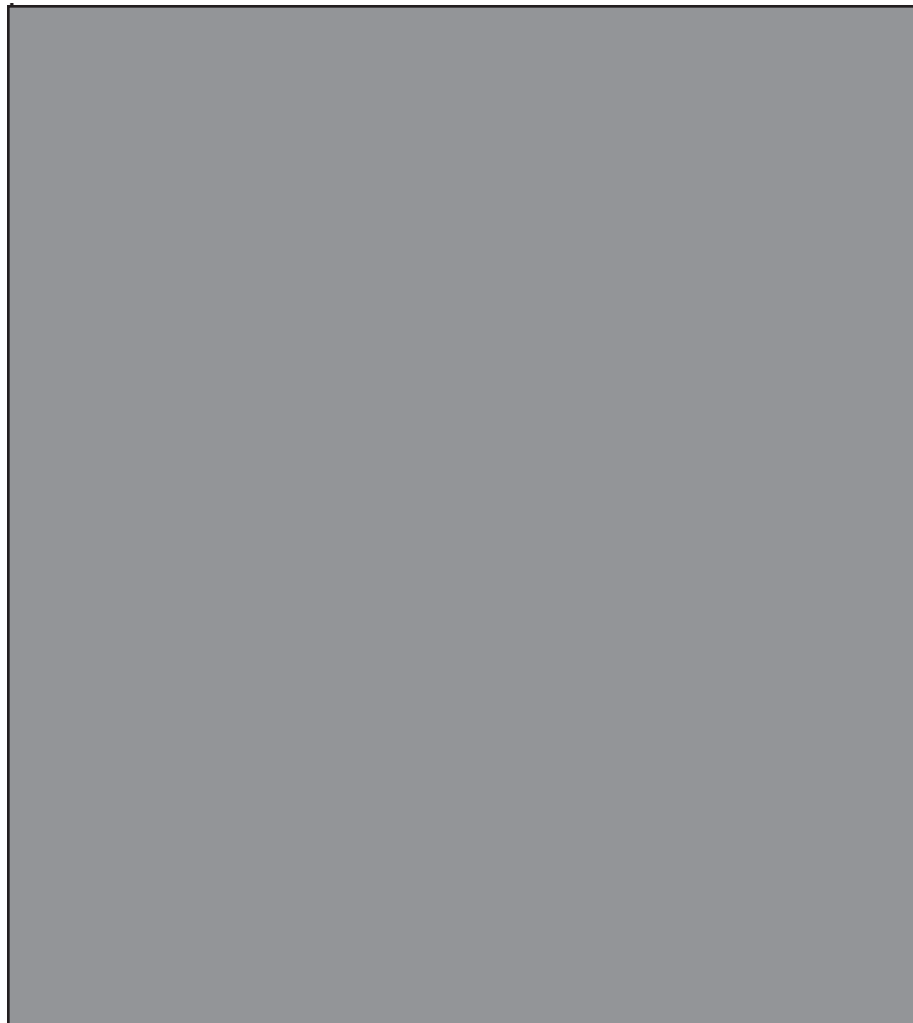
Wheaton exceeds the standard of diversity in Montgomery County. Over one third of Wheaton's population is foreign born. African american account for twenty five percent, hispanics for fourteen percent, and asians for twelve percent.



**Figure 39.** *Demographic Charts.*

Source: Wheaton CBD and Vicinity  
Sector Plan, Planning Board Draft.

Many residents of Wheaton’s multifamily buildings are young and educated. Almost 70 percent of the population has at least a bachelor’s degree, which is a higher concentration than found countywide. A substantial block (45 percent) of adults aged 18-44, who are typically single or young families without children, live in Wheaton. At the same time, the area’s senior population is declining. Wheaton has a higher proportion of low-income residents than the county as a whole, and a much higher proportion that use transit rather than driving<sup>1</sup>



**Figure 40. Education and Income Distribution** Source: Wheaton CBD and Vicinity Sector Plan, Planning Board Draft.

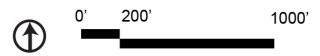
<sup>1</sup> Montgomery County Planning Department, *Wheaton CBD and Vicinity Plan*,



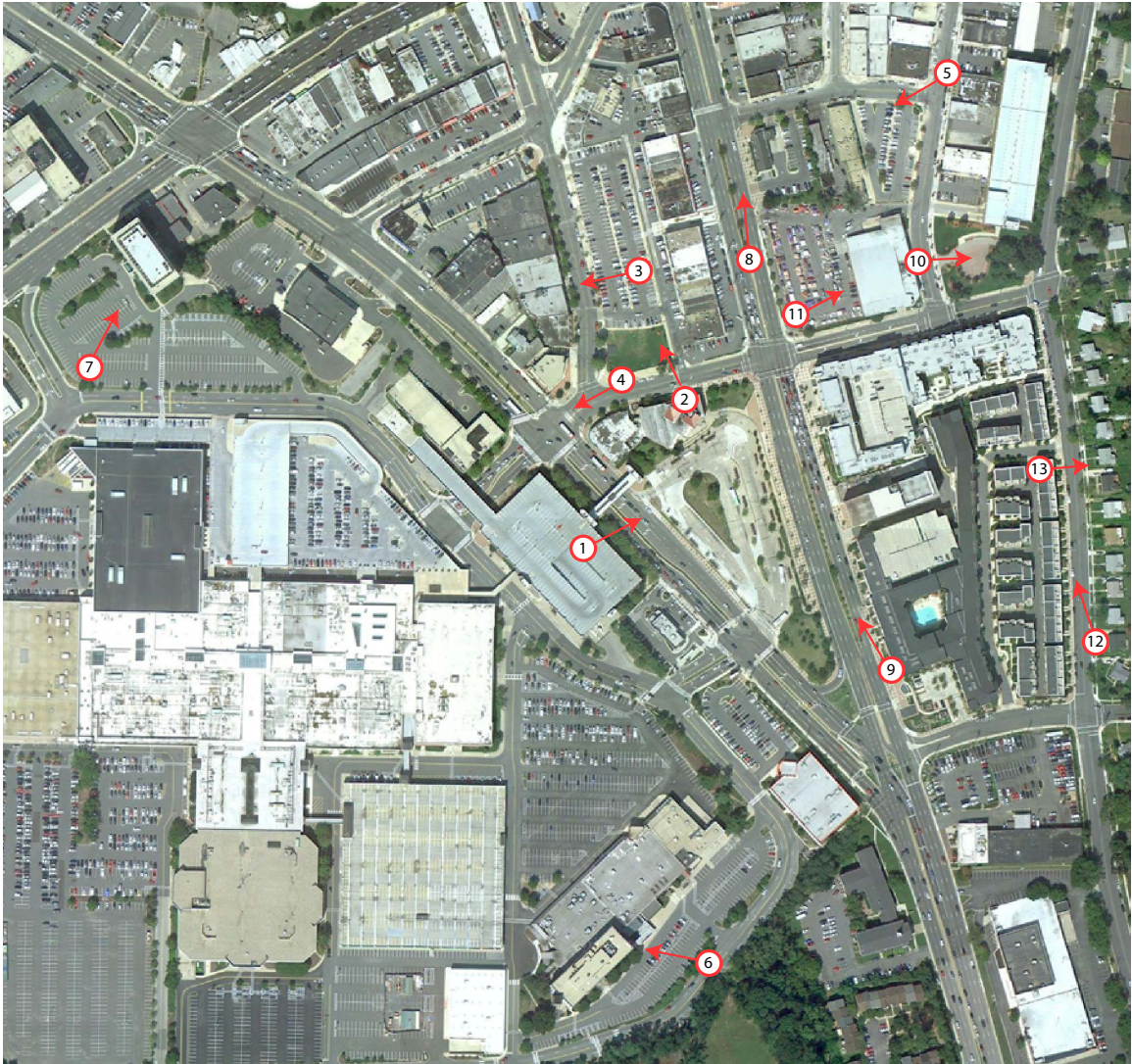
## Wheaton: Existing Conditions



Figure 41. Wheaton Satellite Image







**Figure 42.** *View Locations*



**Figure 43a.** *Bus Depot and Metro Entrance*





b. Interior Core



c. Interior Core Elevation



d. Westfield Mall Entrance



e. Public Parking





f. Westfield South Tower



g. Westfield North Tower



h. Georgia Avenue



i. Georgia Avenue



j. Veterans Memorial Plaza



k. Future Mixed Use Development



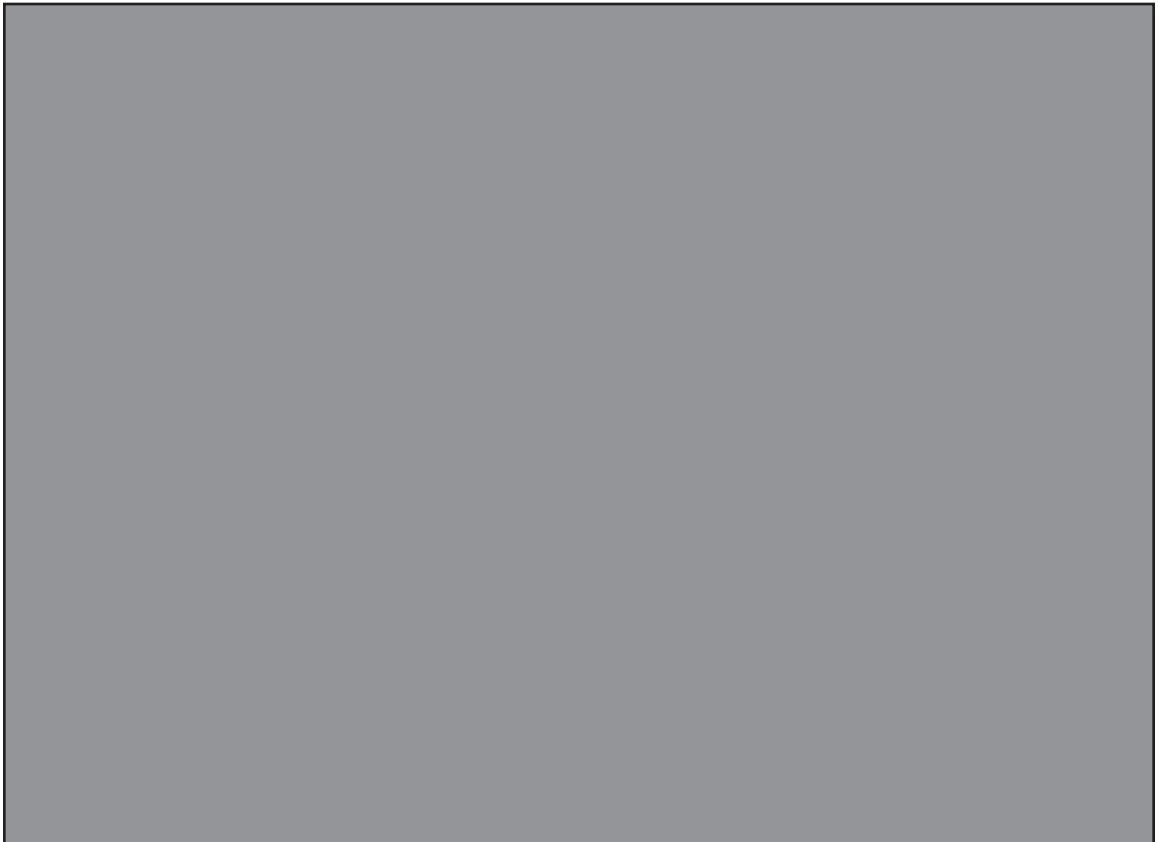
l. Recent Townhouses



m. Typical Wheaton Suburban House

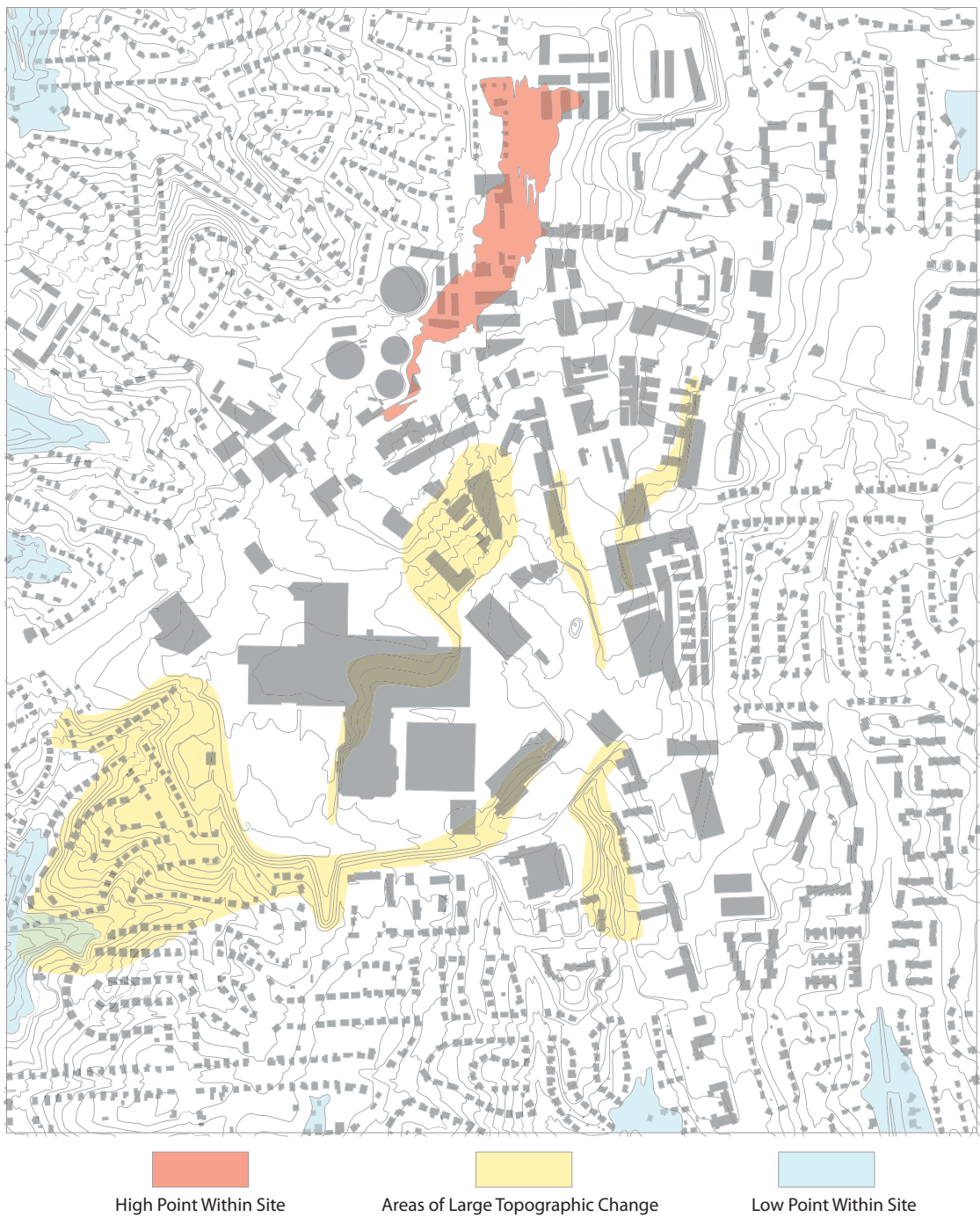


**Figure 44.** *Aerial view of Westfield Wheaton Mall*




**Figure 45.** *Plan of Westfield Property*

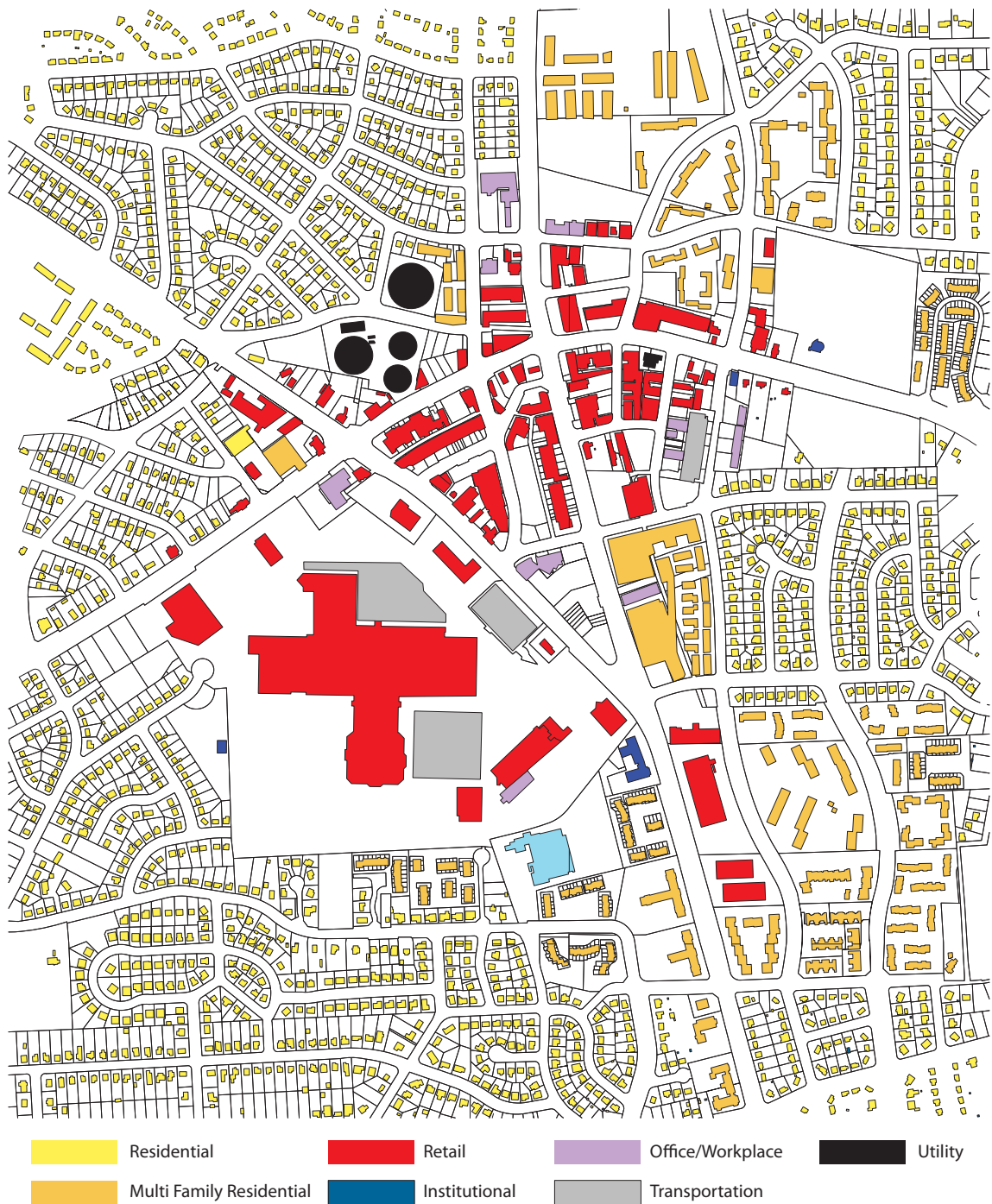




**Figure 46.** *Existing Topography*

# Wheaton\_Land Use\_Existing

Scale 1"= 300' 



**Figure 47.** *Plan of Westfield Property*

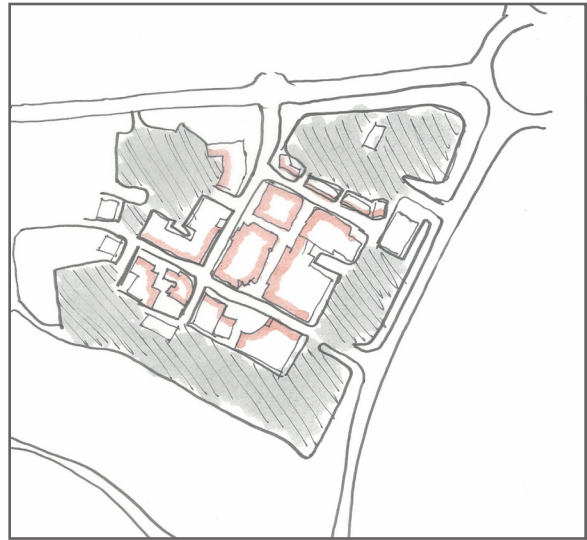
**Chapter 5**  
*Case Studies*

## Case Study 1

### Mashpee Commons Cape Cod, Massachusetts

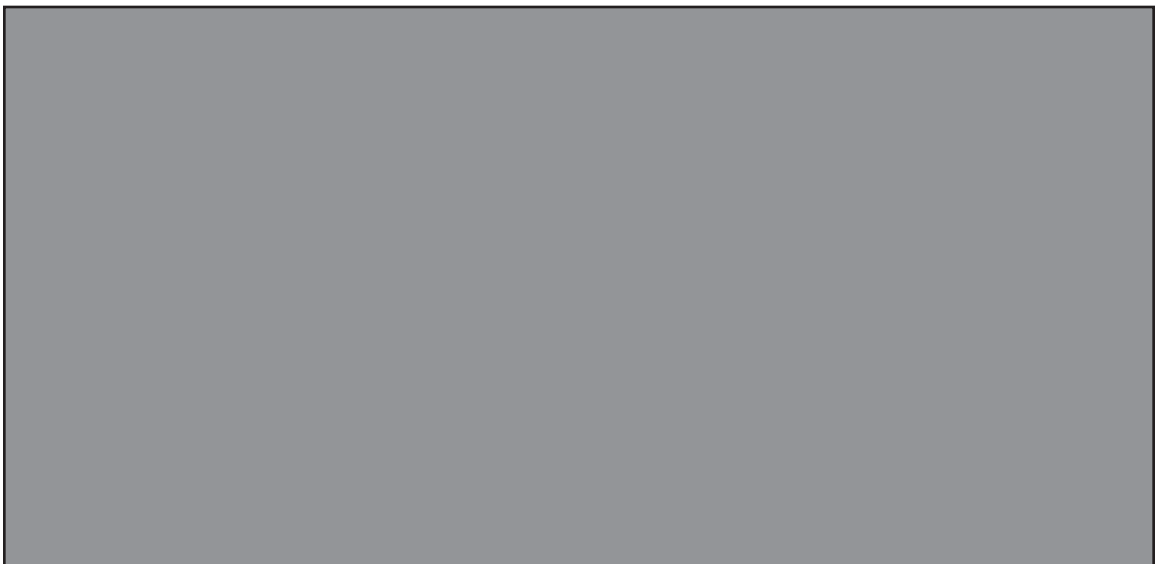


**Figure 48.** Existing Sattelite Image



**Figure 49.** Diagram

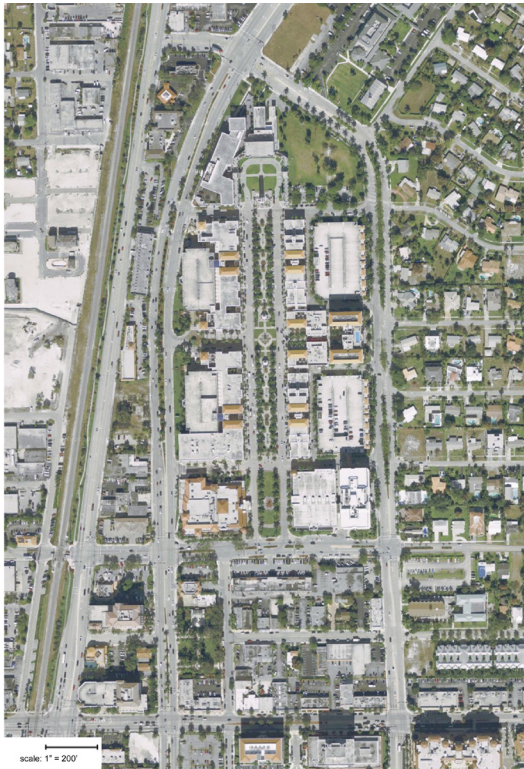
- Retail and office oriented town center.
- Plan was aproved in 1986
- Site now includes a library, church, and a fire station
- 460,000 square feet of commercial ans 482 residential units permitted as of 2007
- Contextual respect for Cape Cod style.



**Figure 50.** Proposed Master Plan



## Case Study 2



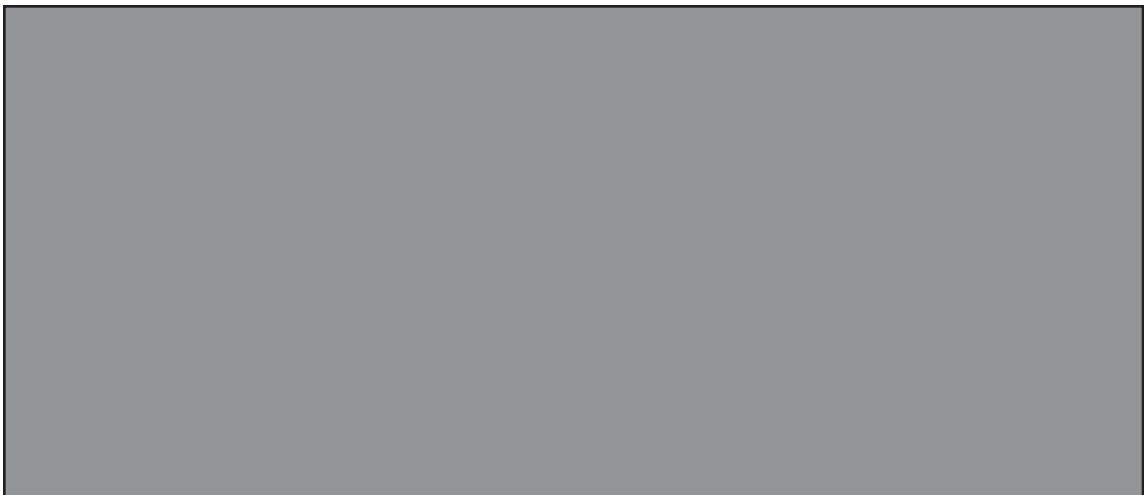
**Figure 51.** *Existing Sattelite Image*

## Mizner Park Boca Raton, Florida



**Figure 52.** *Diagram*

- Center for the arts at Mizner Park
- Multipurpose cultural center
- 40,000 square foot Museum of Art
- Outdoor amphitheater and concert green seating for 5,000
- 1,800 seat concert hall with administrative and educational facilities
- 840,900 sq ft. public/private complex
- 272 up scale rental apartments and townhomes
- Professional and corporate office space



**Figure 53.** *Plan*

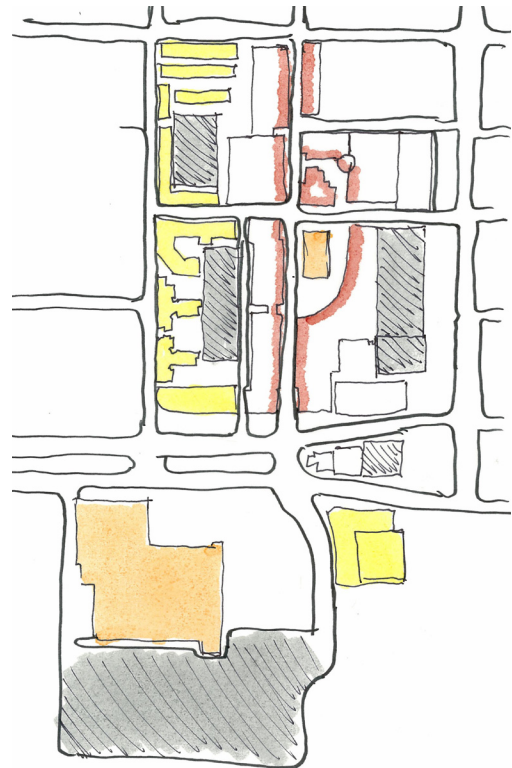
### Case Study 3

### City Place West Palm Beach, Florida

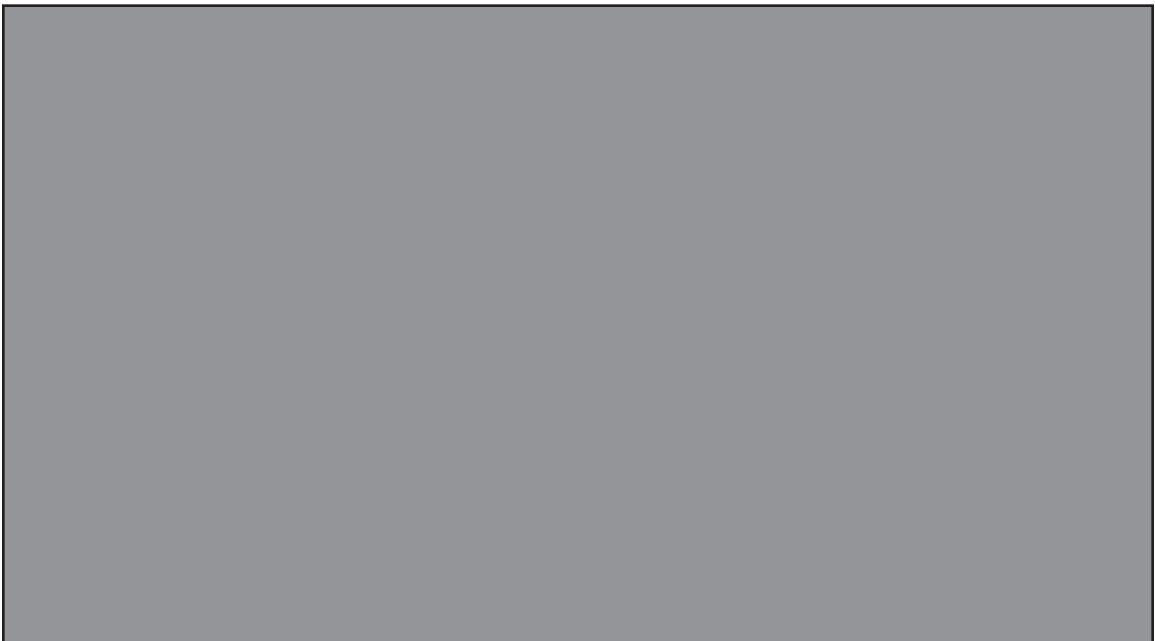


**Figure 54. Existing Sattelite Image**

- 750,000 sq. ft. of office space
- 600,000 sq. ft. of retail sace
- 900 residential, rental and condo units
- 3,300 parking space



**Figure 55. Diagram**



**Figure 56. Plan**

**Chapter 6**  
*Design Principles, Process and Product*

## Design Principles

In a broad sense, directing growth to the appropriate regional activity centers has been the focus of the thesis up until this point. It reduces urban sprawl and protects the environment, while creating vibrant mixed-use communities. In the next 30 years, the number of households in Wheaton is forecasted to increase by 69 percent, which is 2.5 times the anticipated change for the county (27%).<sup>22</sup> Population is expected to increase greatly as well.

Previous investment in transportation infrastructure has helped to create regional activity centers. Now that infrastructure must be leveraged. Directing new housing to regional activity centers will reduce traffic congestion, increase transit ridership, promote economic development, and provide housing choice, while serving to reduce greenhouse gas emissions.<sup>23</sup> In coordination with this, new jobs need to be created to maintain an adequate jobs-housing ratio. The additional jobs and housing will allow more people to choose to walk, bike or use transit to get around their neighborhood.

Metro stations have been successfully proven to create economic engines where development has occurred in the right form. These investments create an increase in rents for commercial and residential tenants. Occasionally, this has the effect of displacing low and moderate income residents further from transit. Currently Wheaton is home for these residents and businesses and it serves them well. The inclusion of affordable housing is necessary to maintain the

---

22 Wheaton CBD and Vicinity Sector Plan Appendix 1 p 3

23 Region Forward p 19? or 26

diverse mix of incomes and cultures in the area.

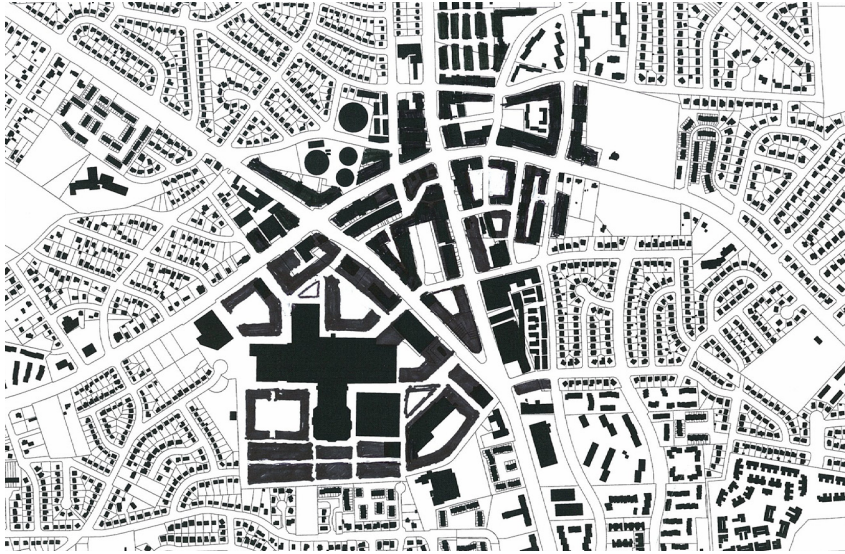
In summation, a list of principles for development following an analysis of the site:

- *Create mixed-use development that contains office, retail, residential, and civic space*
- *Improve the public realm by creating a network of urban spaces and pocket parks*
- *Create better pedestrian connectivity throughout the site*
- *Integrate Westfield Wheaton into the urban fabric*
- *Use the transect to provide a transition into surrounding neighborhoods*
- *Implement a broad range of housing including a adequate number of affordable units*
- *Retain and expand local business owners*
- *Employ smart growth principles and construct sustainable buildings*
- *Increase connectivity of the street network*
- *Provide a variety of street types relevant to their uses*
- *Appropriately address topography of the site*
- *Create a sustainable economic and environmental atmosphere*

## **Process**

Design was an iterative process that occurred through a number of variations that constantly pushed and pulled the scope of the project. Conceptual design strategies were examined to determine the most likely areas for proper development. It was evident very early on that the Wheaton Westfield Mall and the site's topography would be important challenges to confront. With this in mind the approach was to methodically dissect the mall to determine which pieces had the potential to be maintained and which might be better served to be removed. Schemes examined potential boundaries and configurations of block patterns in a figure ground format. In each successive attempt pieces of the mall were removed to see the effects on the plan and variations on block patterns and street networks.





**Figure 57. Scheme 1**

Mall remains intact  
Infill development



**Figure 58. Scheme 2**

Removal of S anchor  
Interior plaza



**Figure 59. Scheme 3**

Removal of S anchor





**Figure 60. Scheme 4**

Linear mall  
Removal of N & S anchors



**Figure 61. Scheme 5**

Interior plaza

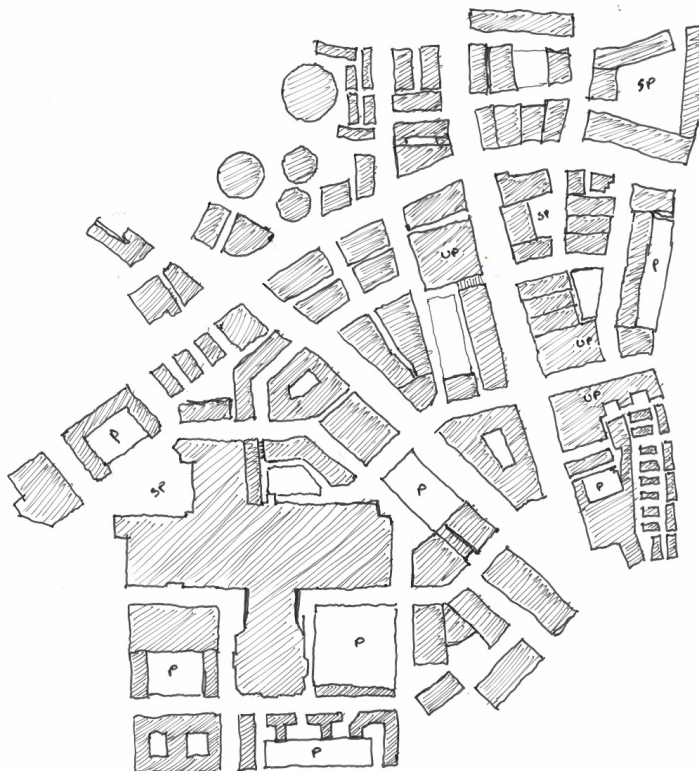


**Figure 62. Scheme 6**

Maintain anchors only

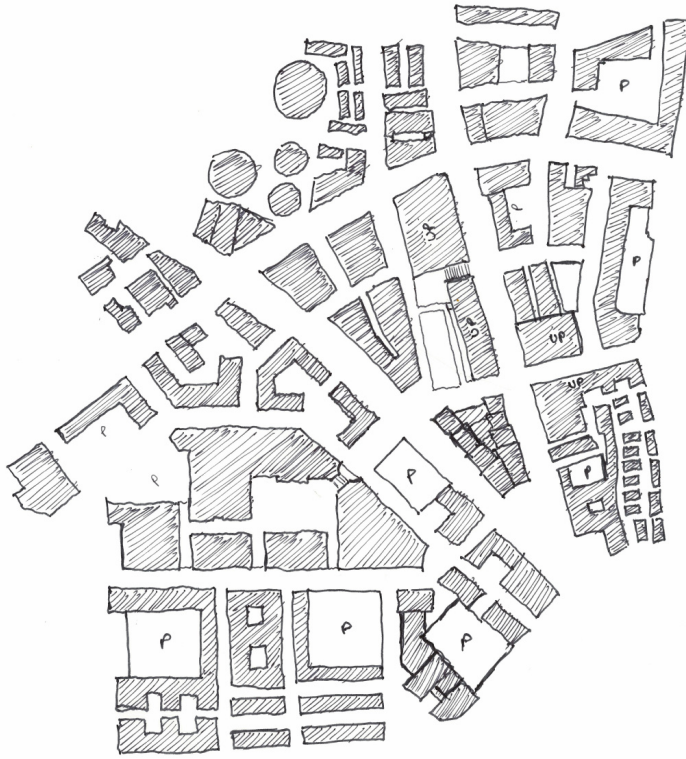


The next set of iterations continued the process of methodically changing the shape of the mall to develop a scheme. These drawings began to examine some concepts related to building typology and the scale and scope of growth begin to emerge along with a consistent parti.



**Figure 63.:** *Scheme 1*

Mall remains intact



**Figure 64. Scheme 2**

Removal of vacant south anchor and additional mall structure to create a defined interior courtyard.

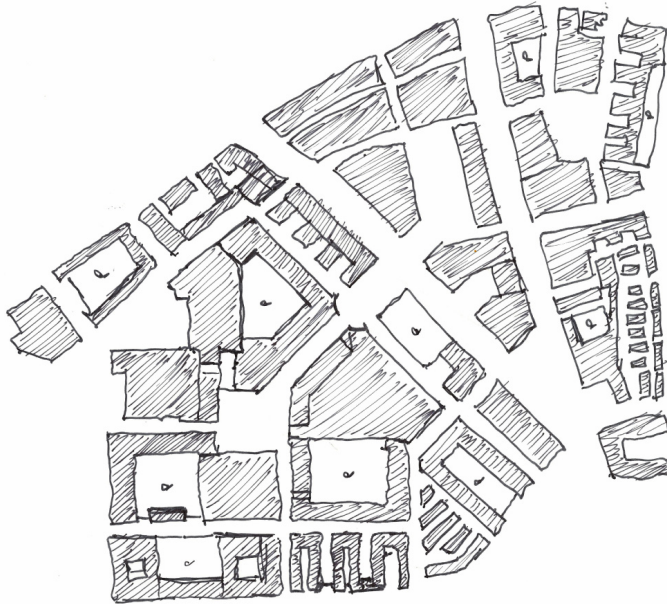


**Figure 65. Scheme 3**

Removal of the south and west anchors are replaced with an open pedestrian oriented mall structure.

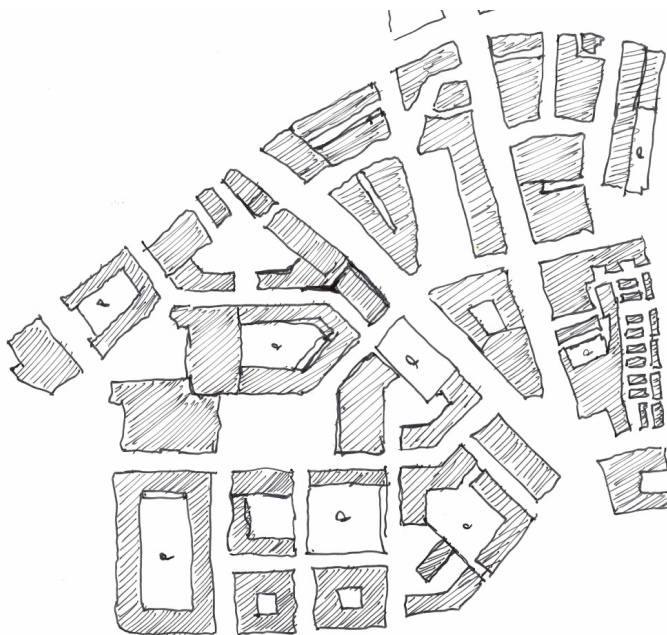
**Figure 66. Scheme 4**

Interior retail lined plaza replaces the original mall interior



**Figure 67. Scheme 5**

Removal of the south anchor and a large public plaza replaces the interior of the mall



What became clear was that in almost all cases the removal of the vacant south anchor of the mall was necessary to creating a cohesive street network. In addition to this the continuation of Reddie drive into the Westfield property needed a significant termination that could connect the Westfield property to the core area. The most likely termination was a visual connection of public spaces. Relocation of the Veterans Memorial Plaza was also well suited for a more central part of Northeast sector. Lastly a greenway along the southern edge of the Westfield property would help to buffer existing residential neighborhoods from the development and provide an environmental amenity to residents of both sides of the greenway





Figure 68. *Figure Ground and Open Space Parti*

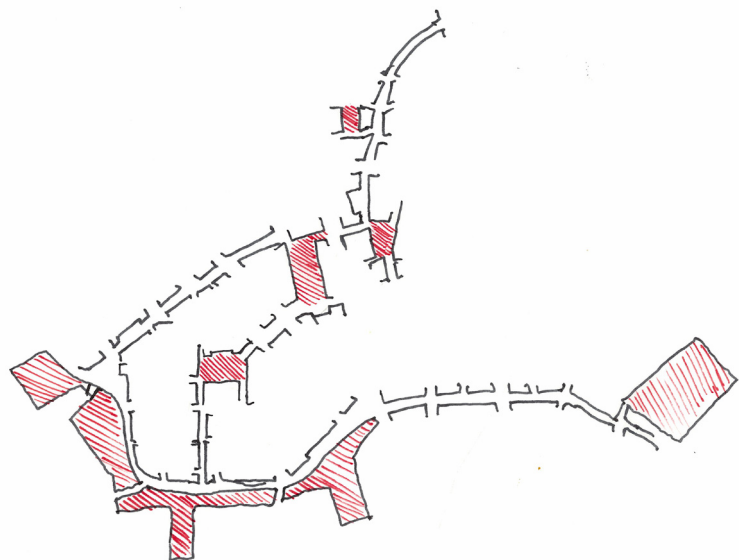
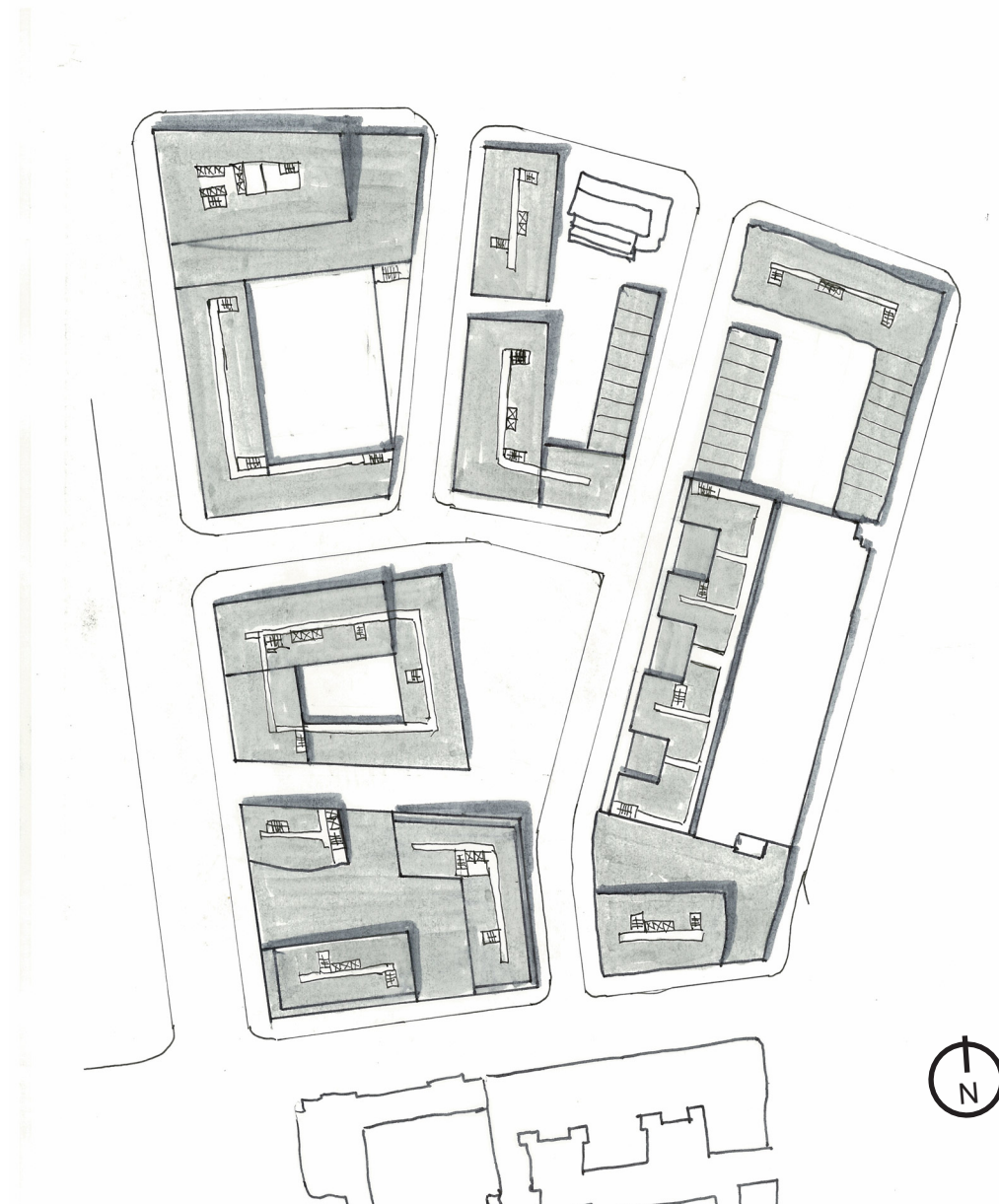


Figure 69. *Parti Diagram*



## Building Placement and Circulation

The following drawings were used to examine the placement of buildings within specific lots and their circulation patterns. A sector by sector approach was taken to focus on one area at a time.



**Figure 70.** *Residential District.*

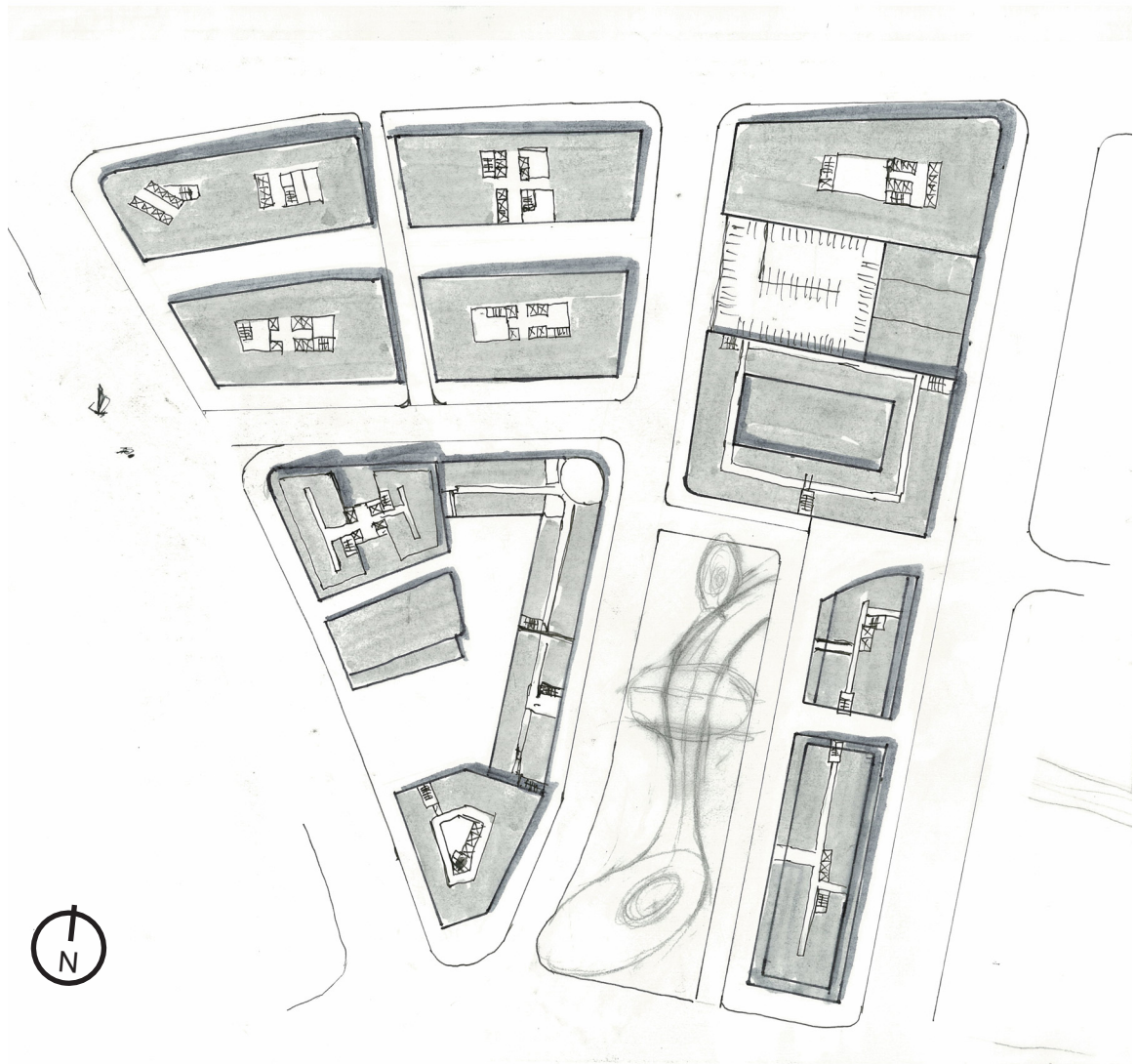
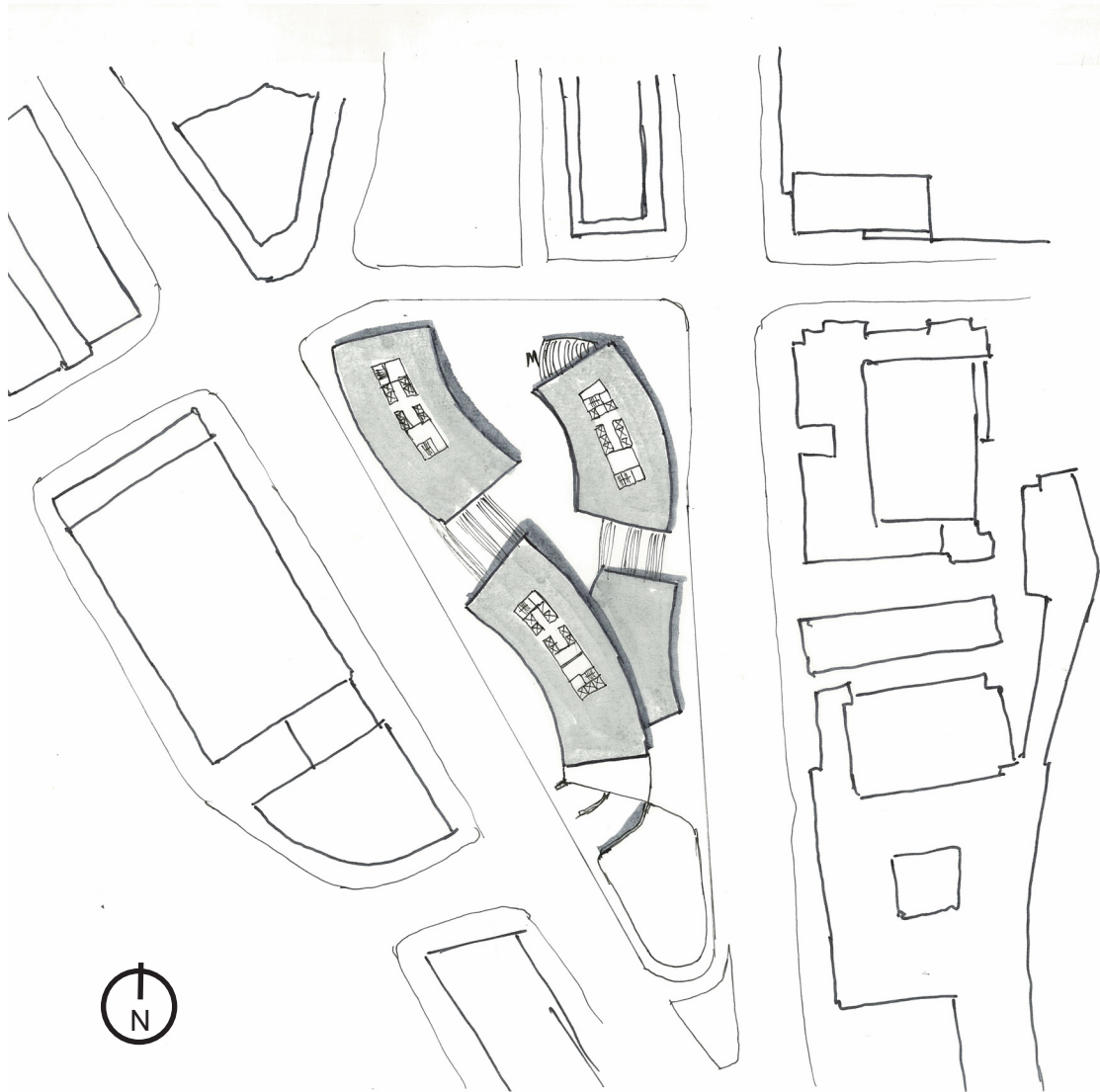


Figure 71. Core



**Figure 72.** *WMATA Bus Property*

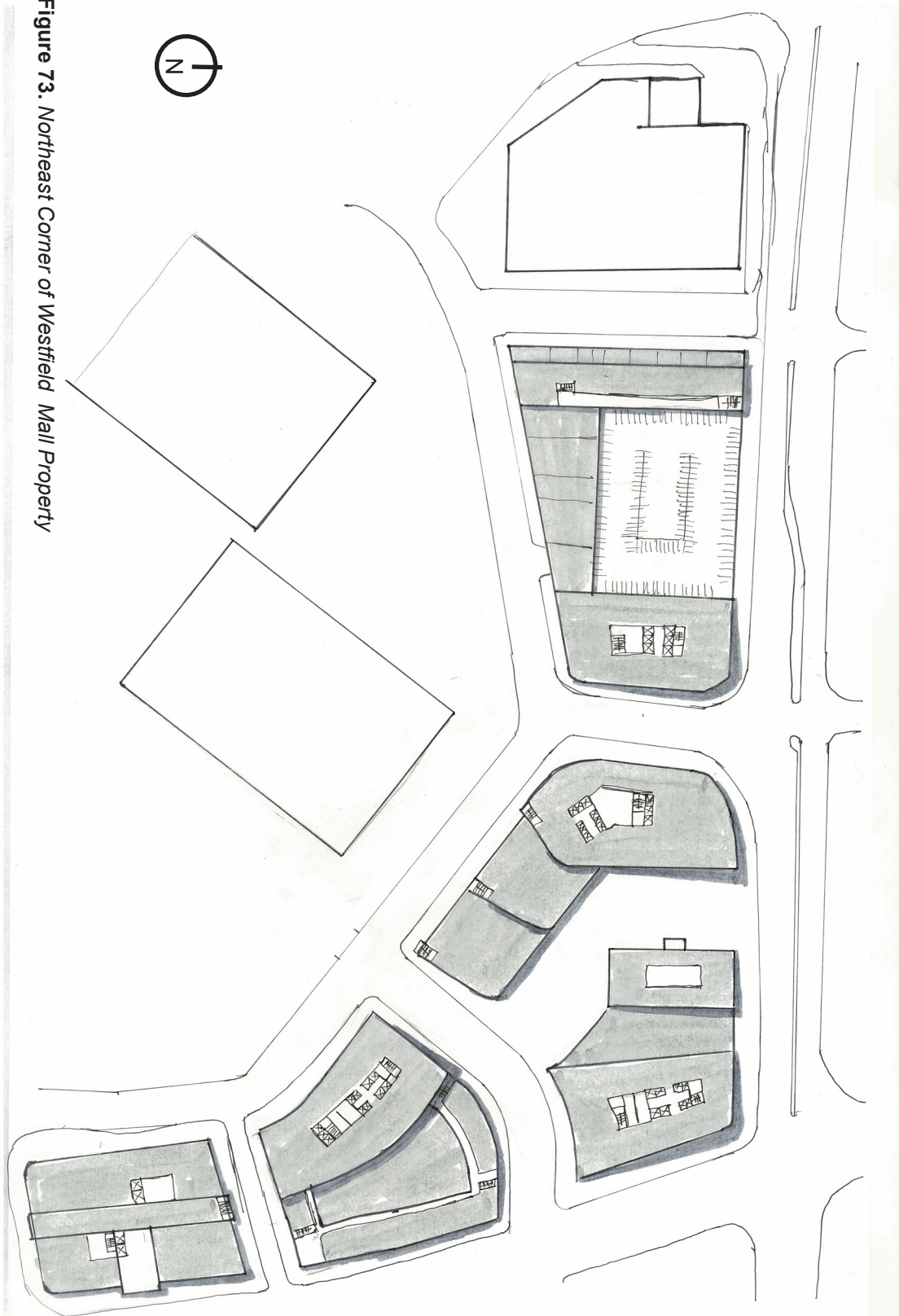


Figure 73. Northeast Corner of Westfield Mall Property





**Figure 74.** *Southeast Corner of Westfield Mall Property*



Figure 75. Westfield Mall

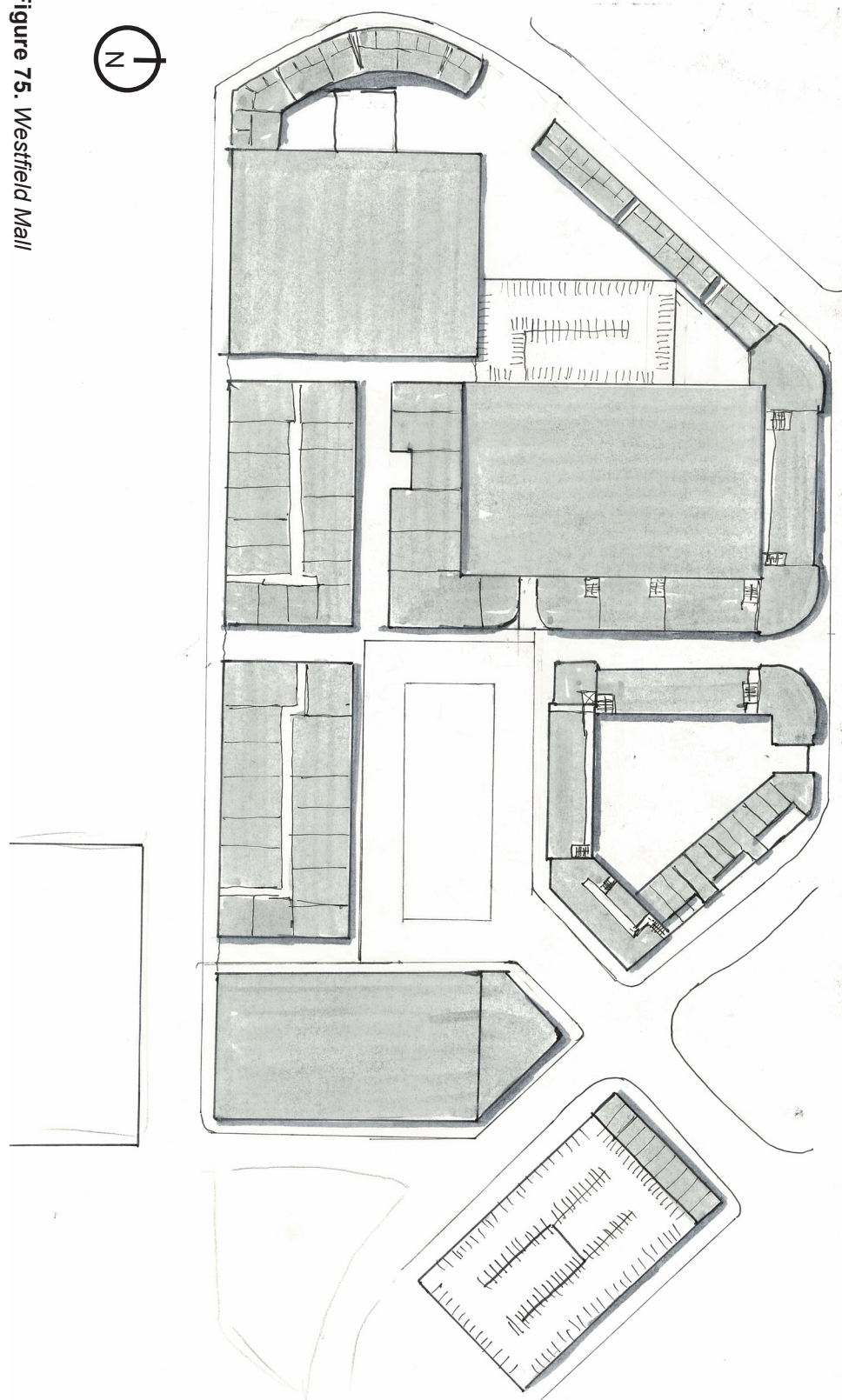
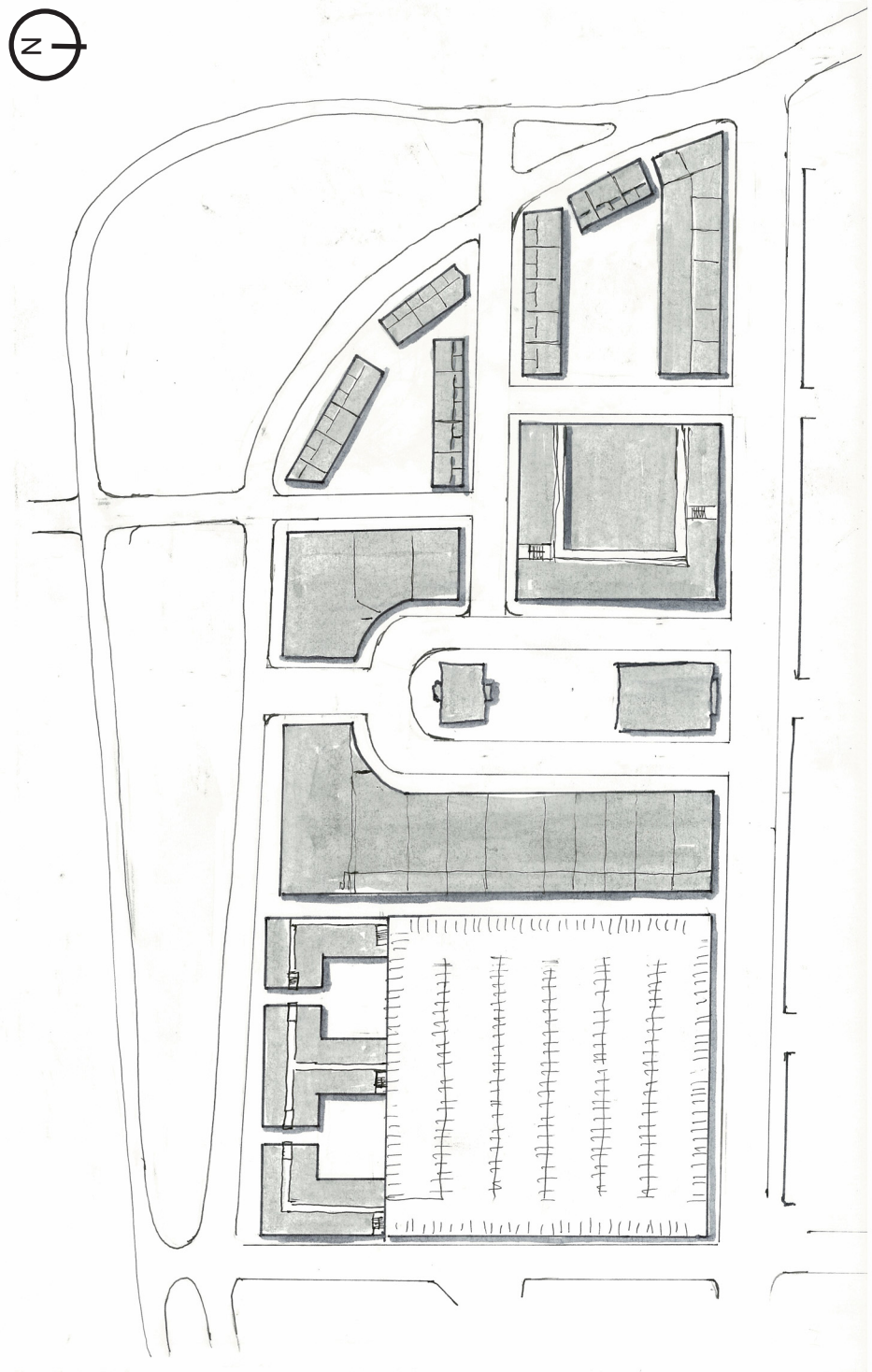
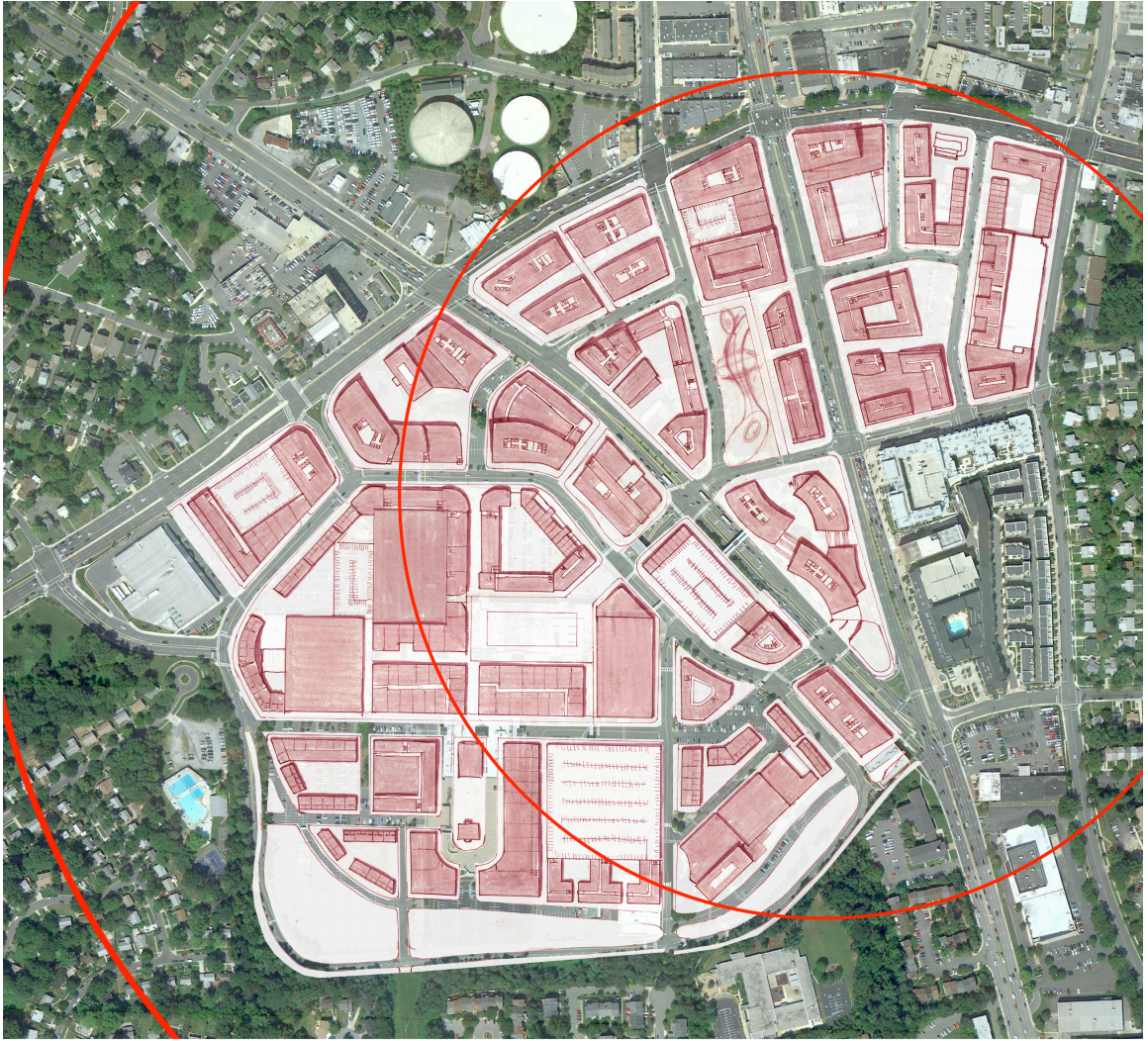


Figure 76. Westfield Mall South







**Figure 77. Master Plan**



**Figure 78. Open Space Diagram and Building Frontages**



## Design Product



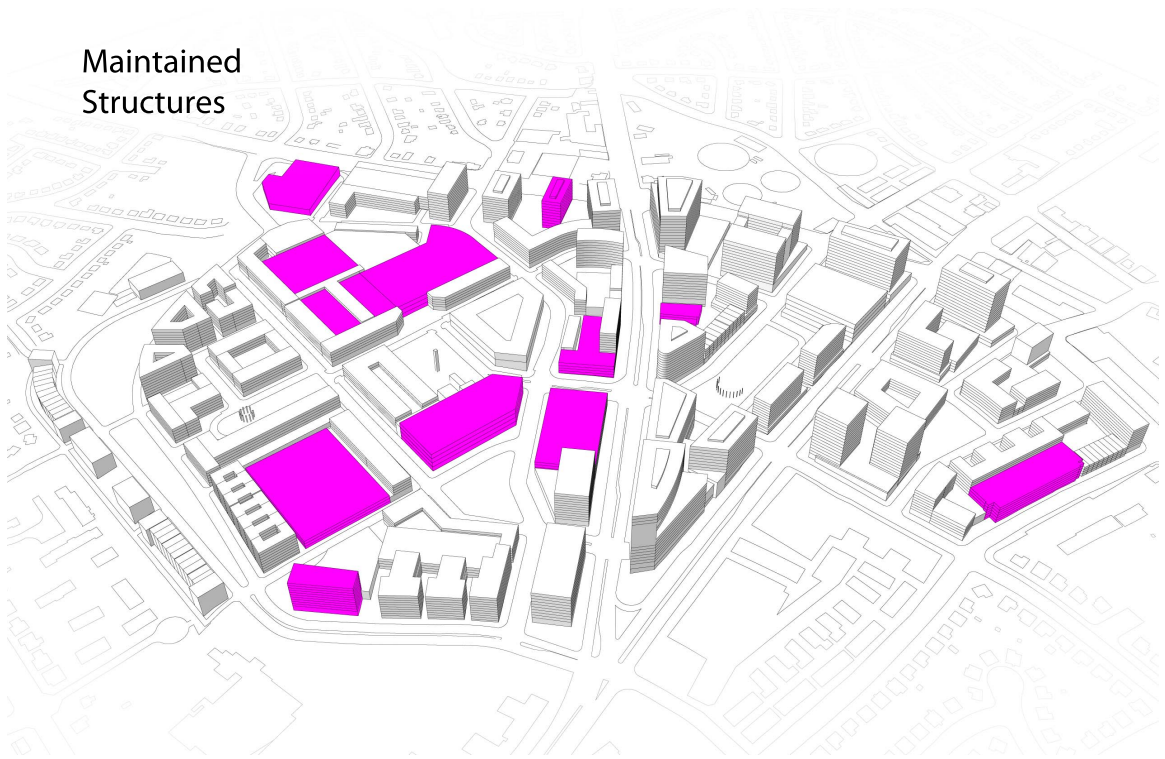
Wheaton\_Master Plan



Figure 79. Master Plan

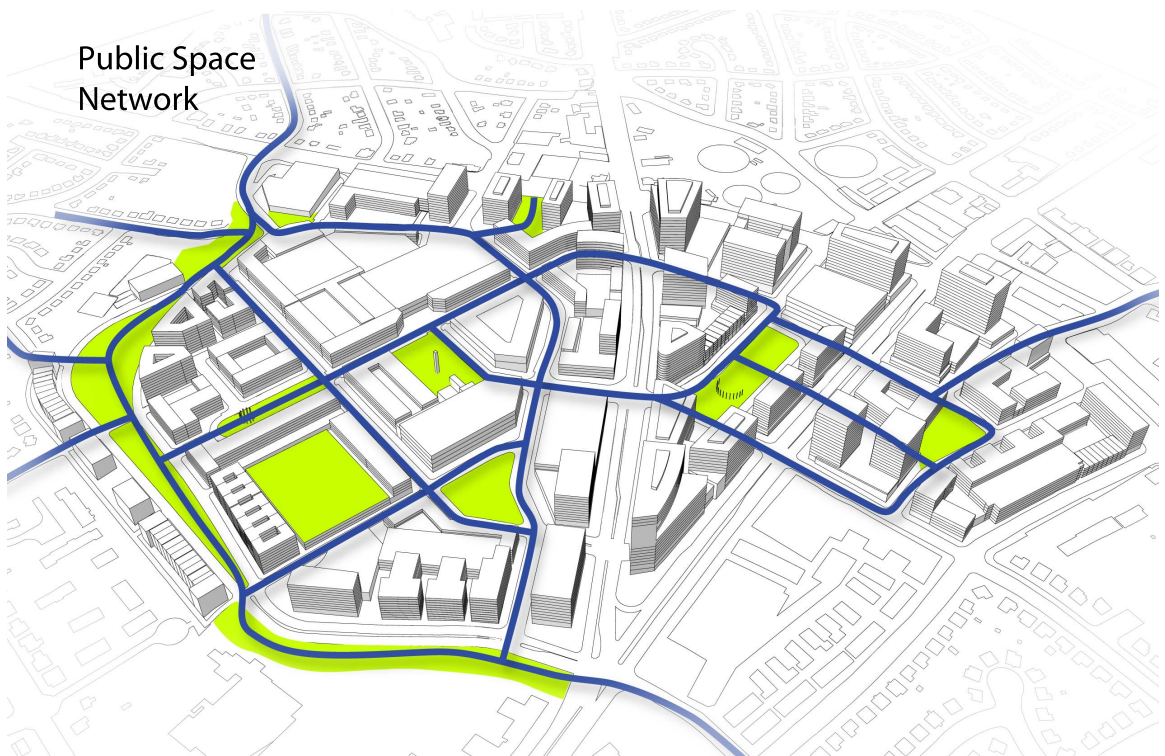


Maintained  
Structures



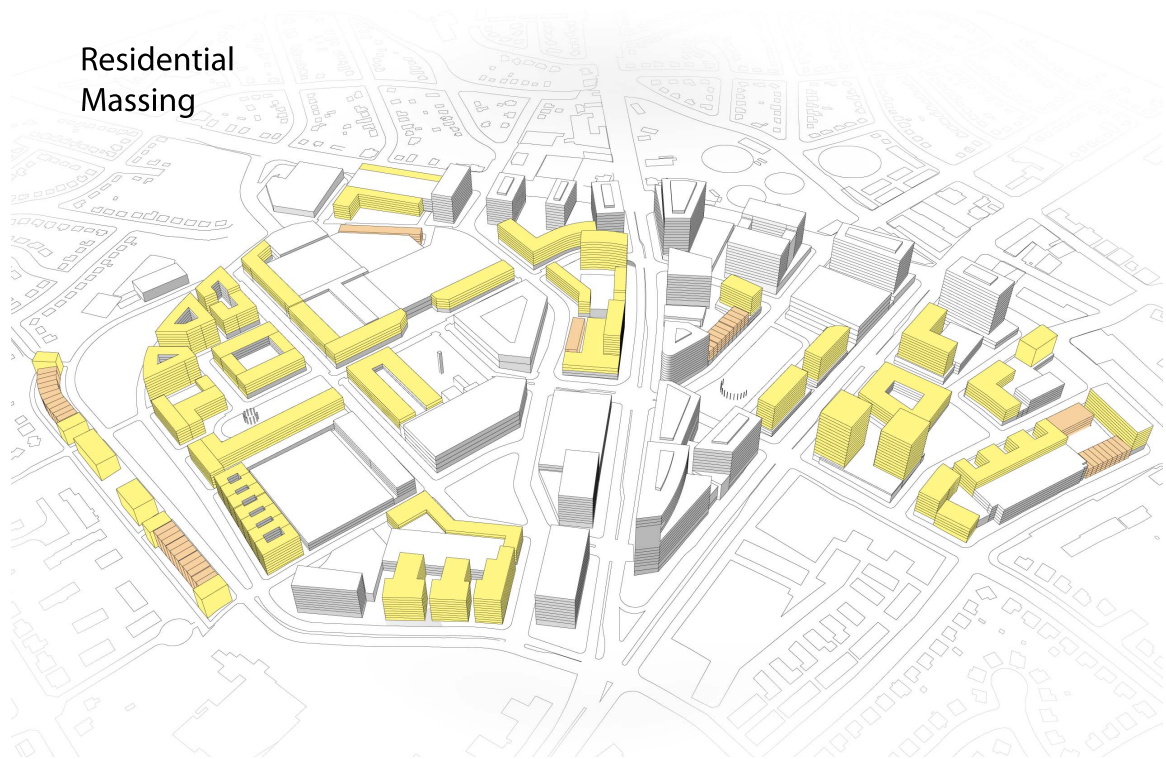
**Figure 80.** *Maintained Structures*

Public Space  
Network

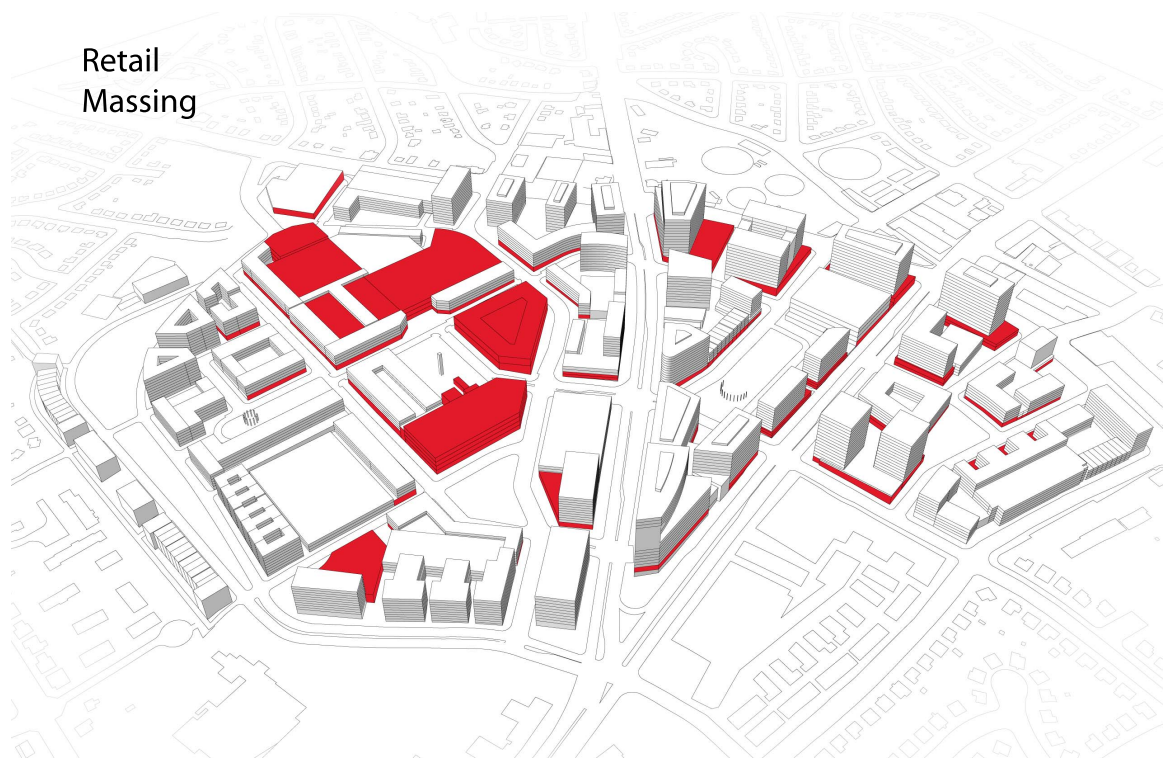


**Figure 81.** *Public Space Network*

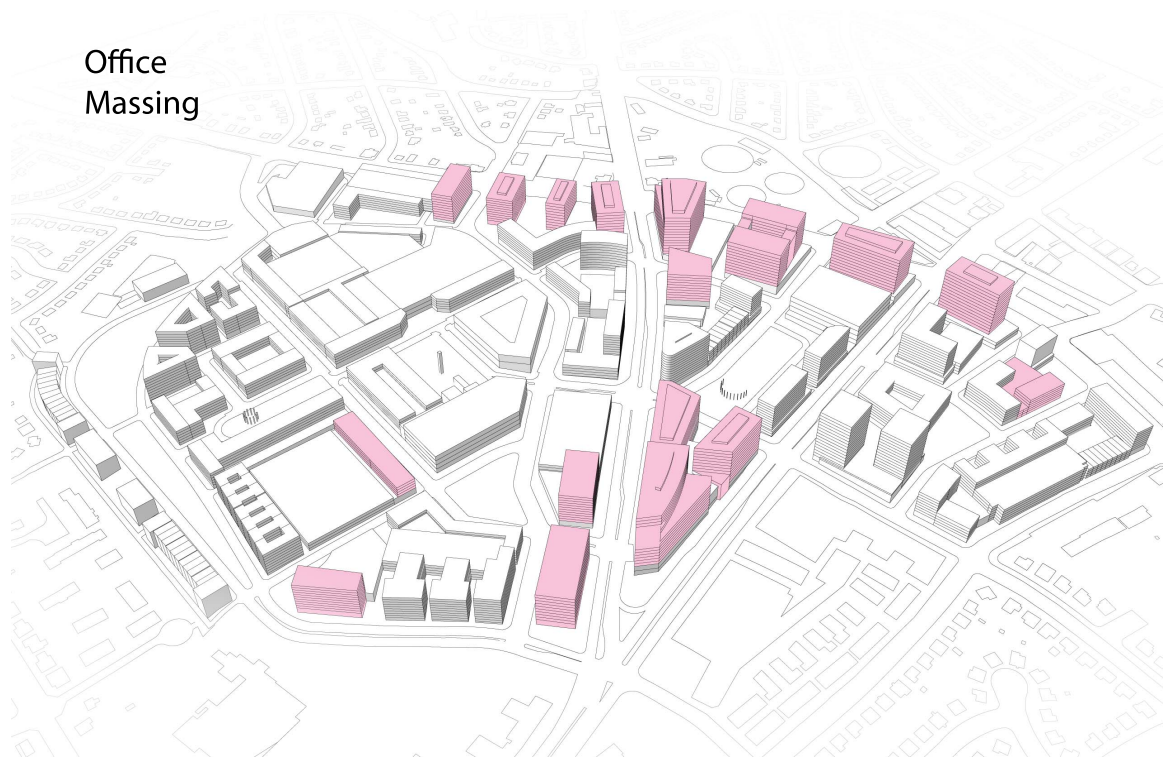




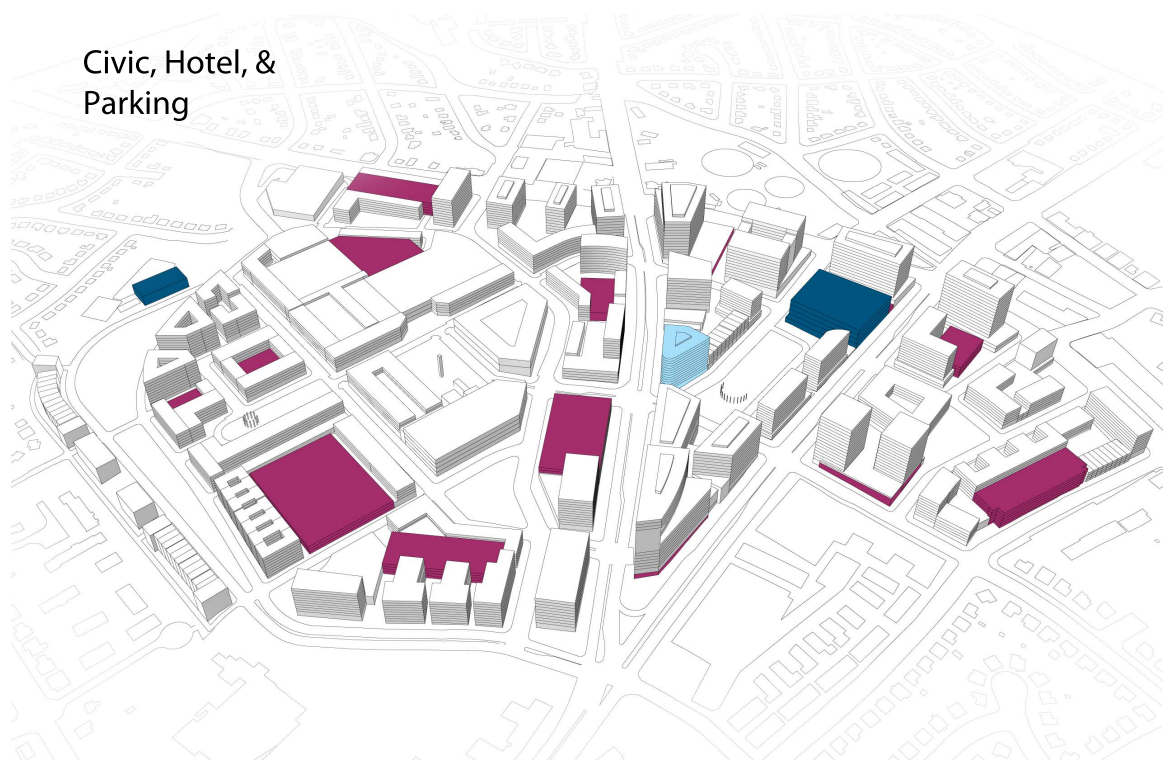
**Figure 82.** *Residential Massing*



**Figure 83.** *Retail massing*



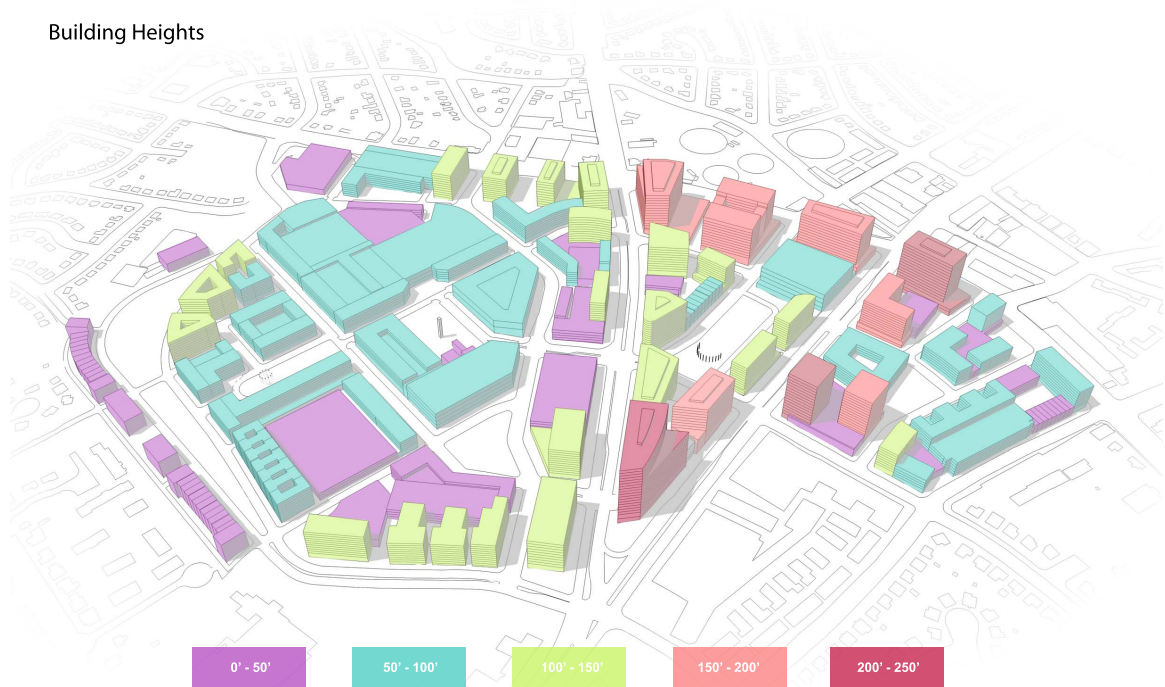
**Figure 84. Office Massing**



**Figure 85. Other Massing**



## Building Heights

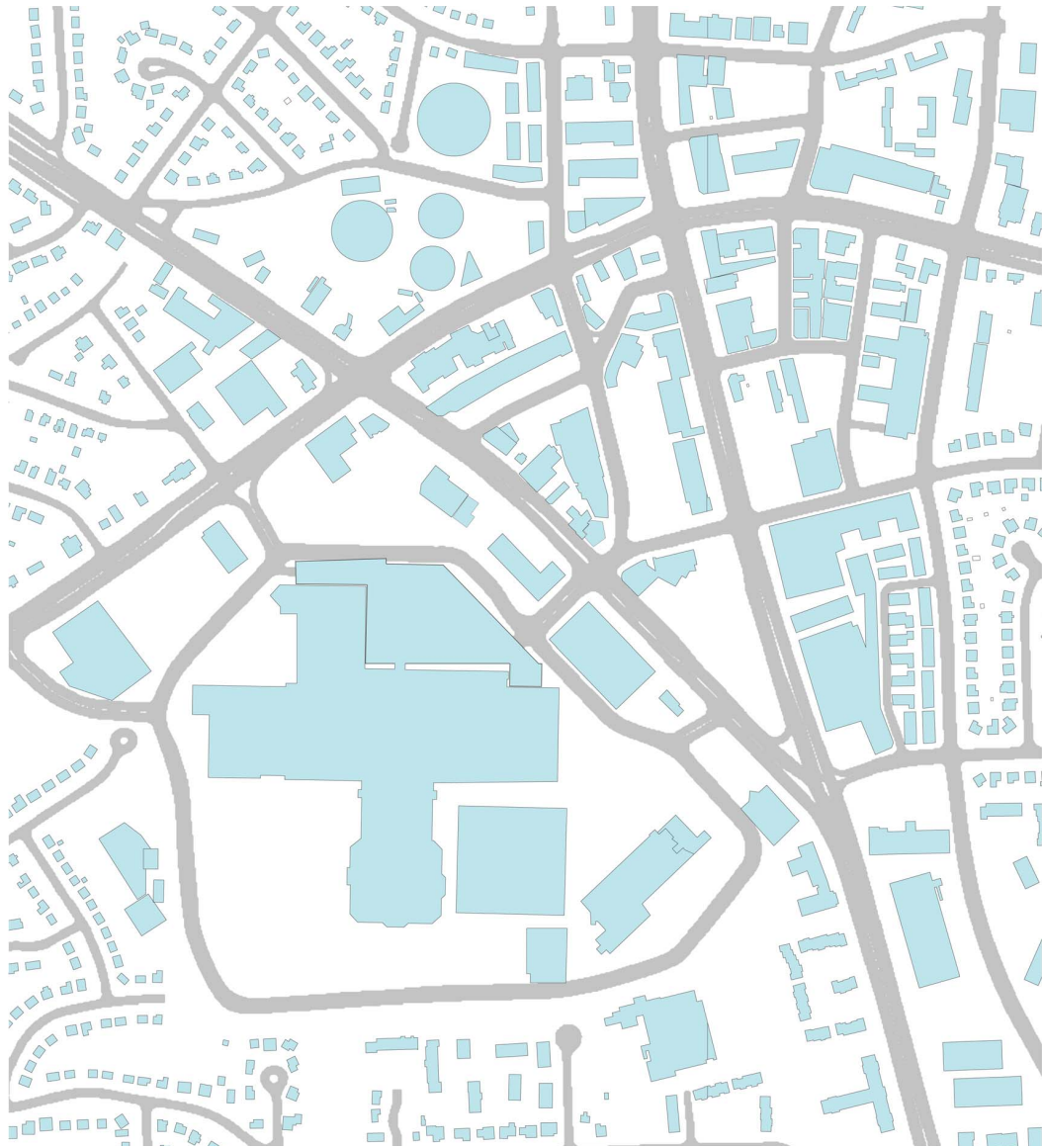


**Figure 86. Proposed Building Heights**



**Figure 87. Aerial Perspective**

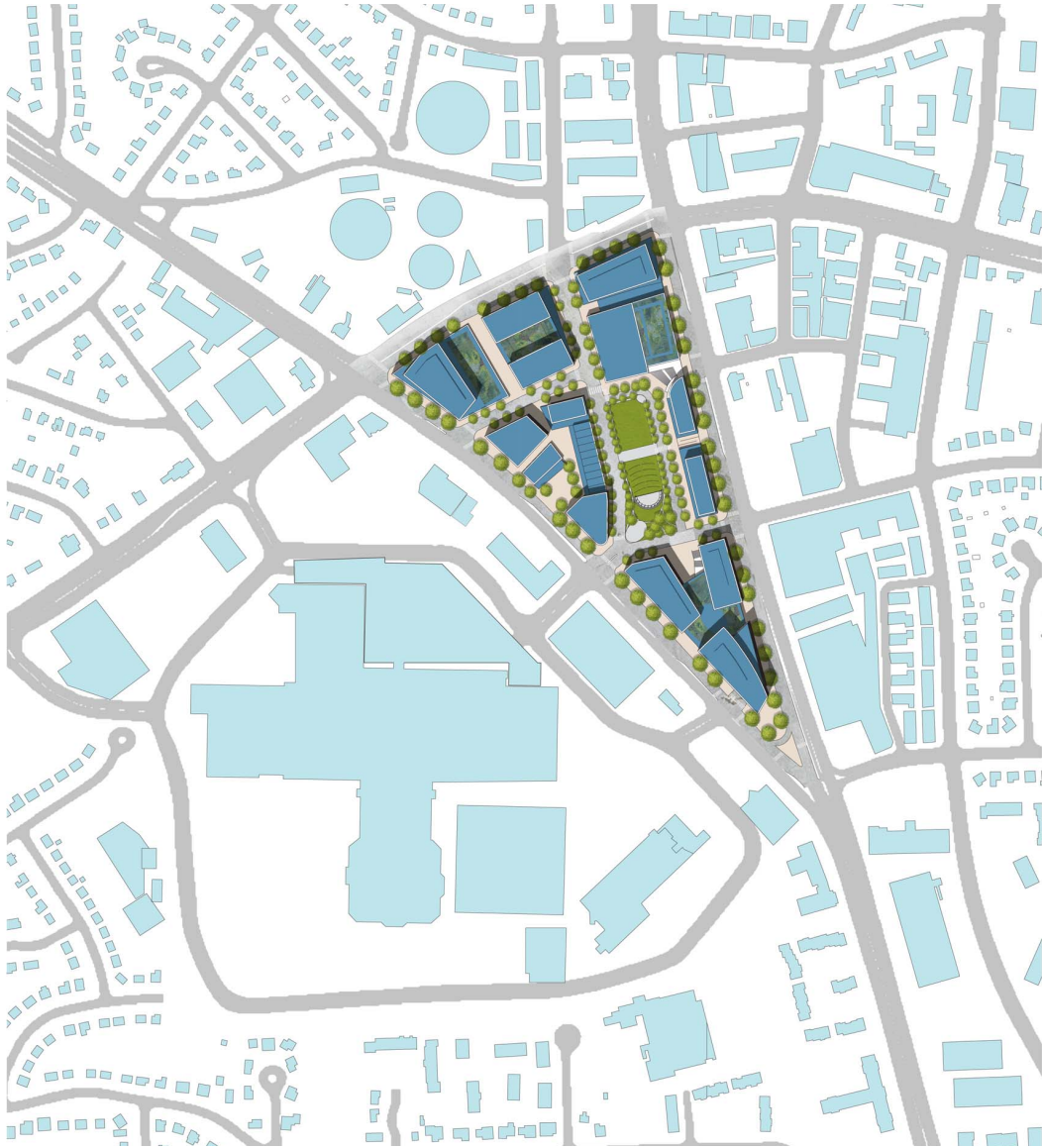
**Figure 88.** *Phase 0\_Existing*



Approximate Site = 120 acres



**Figure 89. Phase 1\_Core**



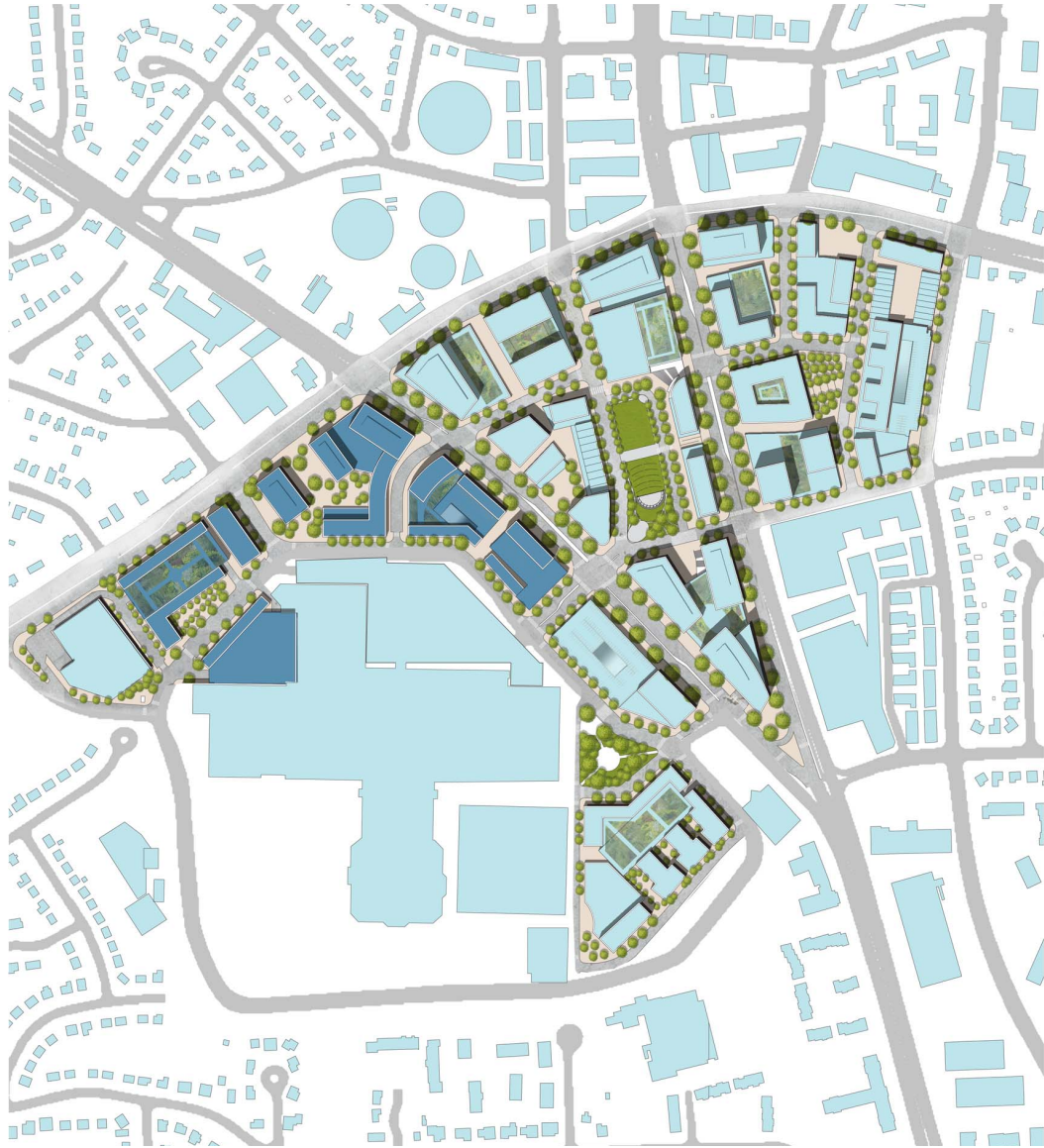
**Features and Principles:** Leverage existing infrastructure in the core and use publicly owned land to create a vibrant public realm containing an urban park with an amphitheater space. The relocation of the regional services center to the North of the park provides an upgraded Civic Center for the community. The implementation of a signature office building at the convergence of Viers Mill Road and Georgia Avenue anchors the projects along the Georgia avenue corridor. Due to the topography on the site this building allows the existing bus depot to remain underneath the building and above the underground parking. A renovated Metro entrance completes the multimodal hub that serves the new core of Wheaton. Ground level retail permeates the phase with a small amount of mid rise residential buildings.

**Figure 90. Phase 2\_Housing**



**Features and Principles:** Housing dominates phase two of development. The relocation of Veterans Memorial Plaza centers the Northeast sector around a new public plaza. Housing types include townhomes, multifamily apartments, mid rise and high rise apartments typically placed on top of ground level retail that defines the street edge. In the Southeastern corner of the Westfield mall a similar mix of housing choices are created near the renovated Westfield South office tower. An additional public park centers this area of development as well.

**Figure 91.** *Phase 3\_North Mall*



Features and Principles: The connection between the Core and Wesfield Mall are strengthened with the addition of housing and another cluster of office towers along University Boulevard.



**Figure 92.** *Phase 4\_South Mall*



**Features and Principles:** Separation of the South anchor from the core of the mall is achieved to facilitate the creation of a better street grid on the southern portion of the Westfield property. The creation of the Greenway provides an amenity to the residents of the area while also creating an environmental buffer for the existing neighborhoods to the South. The greenway also creates an intersection at the convergence of Georgia Avenue, Viers Mill Road and Pritchard Road with the addition of another office tower. A north south garden creates a termination point in anticipation for future connection through the mall and the current parking garage is renovated for expanded capacity, liner buildings and an elevated programmed recreation space.



**Figure 93. Phase 5\_Mall**



**Features and Principles:** In the final phase the mall has no choice but to adapt to the evolving conditions surrounding it. The recent renovations will have run their life of financial use and the mall will adapt to the new conditions as it has in the past. Renovated anchor tenants will include new boutique liner retail and housing choices above. A central plaza programed with pavillions, a setup for farmers markets and interactive water features or an ice rink in the winter will create the final connection to the Core and the completion of the urban design scheme.





**Figure 94.** *Veterans Memorial Plaza Perspective*



**Figure 95.** *Urban Amphitheater Perspective*





**Figure 96.** *Residential Gardens Perspective*



**Figure 97.** *Greenway Perspective*

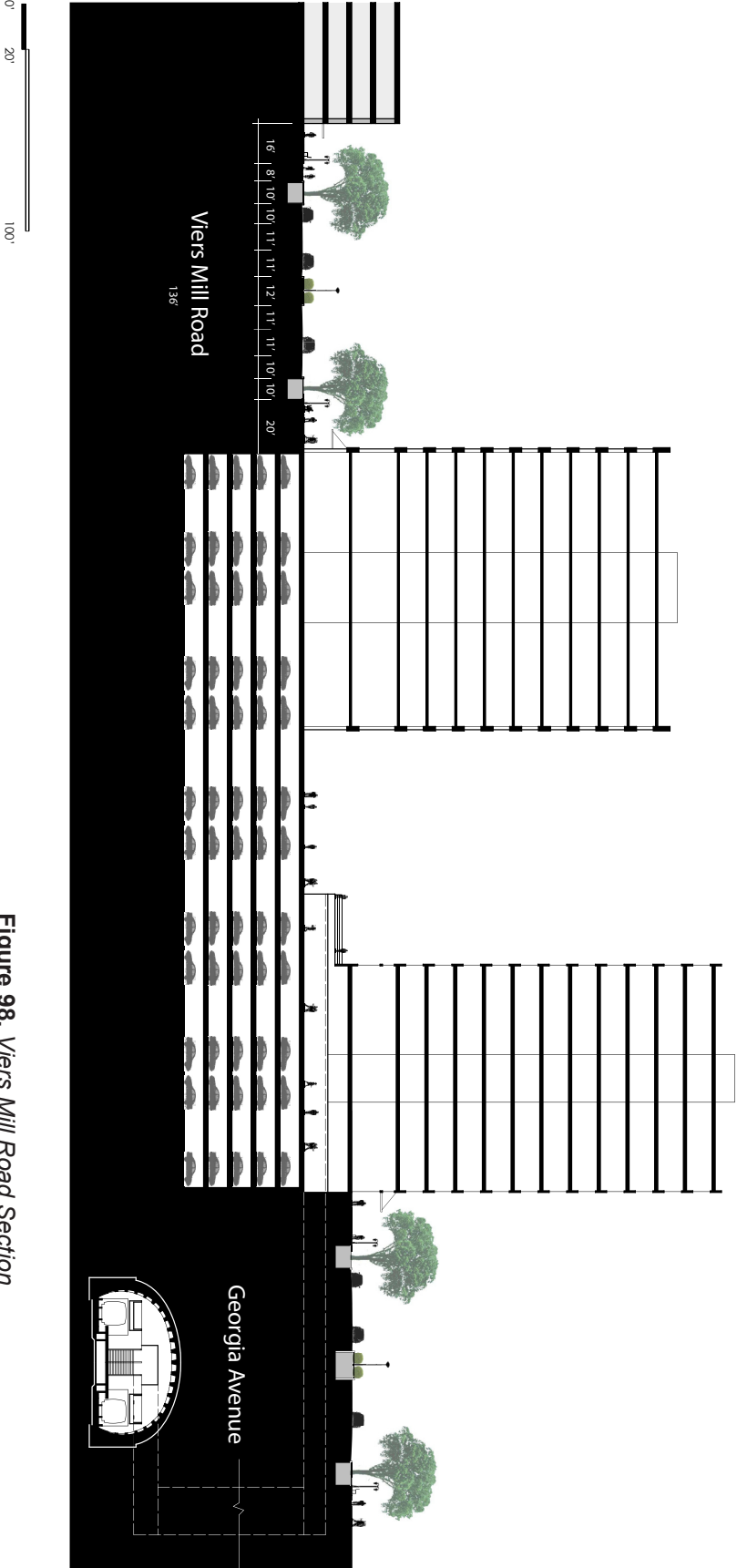


Figure 98. Viers Mill Road Section



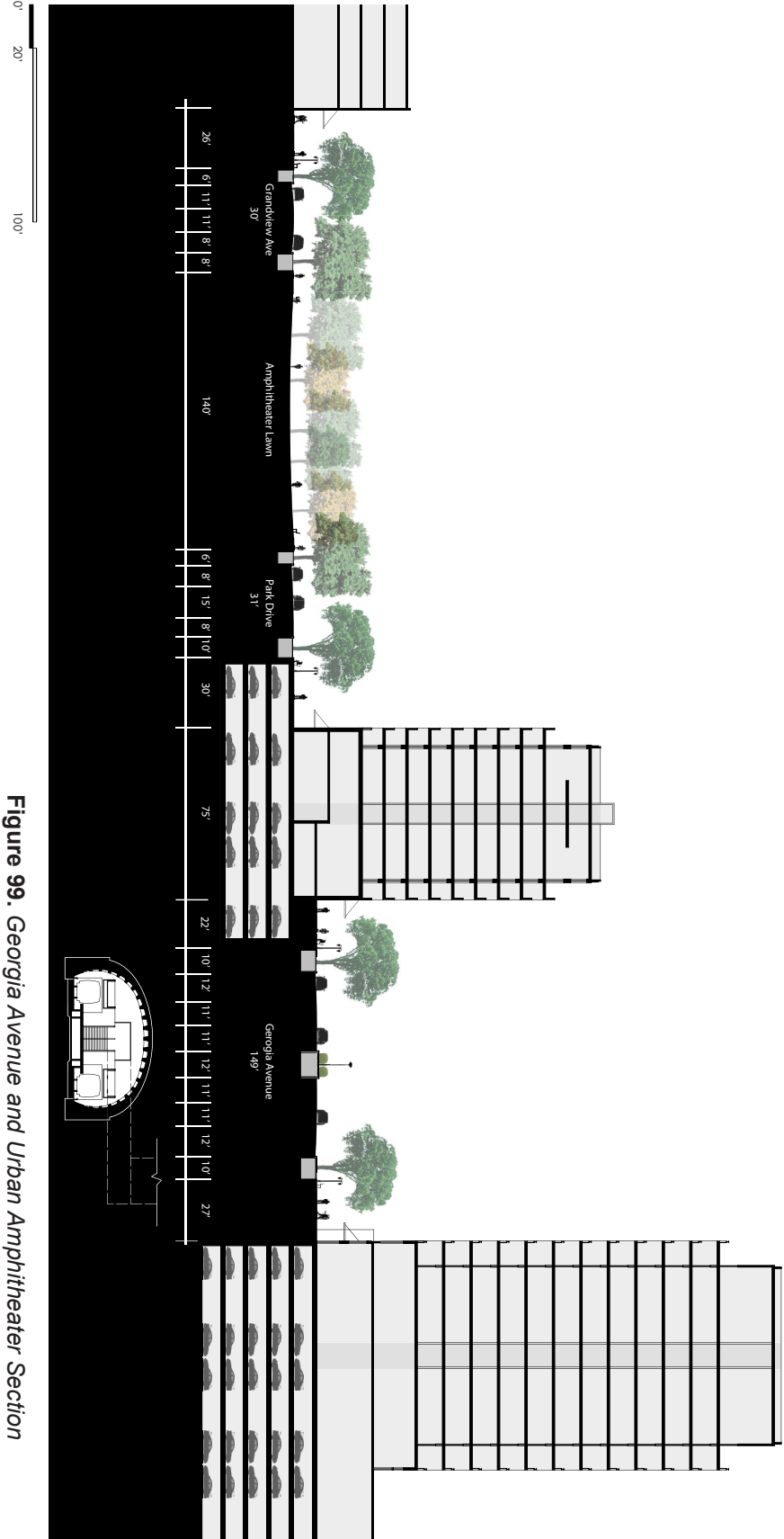


Figure 99. Georgia Avenue and Urban Amphitheater Section

## **Chapter 7**

### *Review and Conclusions*

## Reviews

Throughout the design process of this thesis there was a constant push and pull between the idealization of an urban design scheme and the realities of a project of this scale within its location. The end product is a mix of both of these propositions. While at times certain realities may have been sidelined to maintain an adequate scope for development, the thesis in general embraced as many of the realities as possible.

Site analysis and selection was extremely important in order to find a site that fully presented all the challenges in our built environment today. Without these challenges the site would have merely been a blank slate that did not recognize the constraints of our past suburban development patterns and thus the difficulties of retrofitting suburbia. The extended site analysis displays this importance and recognizes the challenges that Wheaton presented.

The final design work was presented to a public jury of design professionals on April 26, 2011. From that critique some general observations of thought followed:

- There was a call for the development of the next level of details.

Suggestions included creating a set of design guideline that would contain the information amassed throughout the design process and begin detailing the character of building form that would define the public realm.

-The scale of redevelopment is large. While incremental urbanism is often the best form of development, this thesis tackled the concept that you can make much greater improvements to our communities through large scale changes of

this nature, and more so, that they are required.

- The mall and topography present great challenges within the site and the mall will resist change as much as possible because it is successful. While this is most likely correct, the mall would benefit in many ways from the surrounding areas improvements. Redevelopment of the mall was also pushed to the last possible moment within the phasing for that reason, but eventually the pressures will force change within the mall. When this occurs there needs to be a plan to reintegrate the mall into the surrounding fabric.

## **Conclusion**

This thesis puts forth an idea, that we can combine suburban and urban ideals to retrofit past suburban errors and create vibrant communities that serve the environment, the economy, and people through Transit Oriented Design and Smart Growth Principles. The thesis has indeed showed that a feasible urban design scheme can occur in Wheaton despite the many challenges it presents. Furthermore there is a demand for this type of development and these communities. It is a model that has already been proven successful in the Washington Metropolitan Area.

Some of the negative effects that might rise in a proposition of this sort are:

- Redevelopment of this scale is most likely to displace some of the small specialty business that give Wheaton much of its character.
- These small businesses also present a challenge in acquiring land parcels as many of them are individually owned.



- Lack of an existing office market and competing regional centers will make it difficult to achieve some of the densities required.

- Reluctance of the Westfield Mall to participate will hinder the growth of the area.

While there are some negative factors to contend with, the results are overwhelmingly positive. Properly directed growth reduces vehicle miles traveled, preserves natural ecosystems, creates positive community interactions, increases economic value, and leverages and expands existing transporting infrastructure. It retrofits the unsustainable suburban development patterns of the past.

## Bibliography

Booth, Geoffrey, et. al. *Ten Principles for Reinventing Suburban Business Districts*. Washington, D.C.:ULI-the Urban Land Institute, 2002.

Dunham-Jones, Ellen and June Williamson. *Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs*. New Jersey: John Wiley & Sons, 2009.

Duany, Andres, Elizabeth Plater-Zyberk, and Jeff Speck. *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. New York: North Point Press, 2000.

Duany, Andres and Jeff Speck. *The Smart Growth Manual*. New York: McGraw-Hill, 2010.

Gonzales, George A. *Urban Sprawl, Global Warming, and the Empire of Capitalism*. State University of New York: SUNY Press, 2009.

Gupta, Prema Katari, et al. *Creating Great Town Centers and Urban Villages*. Washington D.C.: ULI-the Urban Land Institute, 2008.

Haughey, Richar M. *Higher Density Development: Myth and Fact*. Washington, D.C.: ULI-the Urban Land Institute, 2005.

Kunstler, James H. *James Howard Kunstler Dissects Suburbia*. Ted Talks. [http://www.ted.com/talks/james\\_howard\\_kunstler\\_dissects\\_suburbia.html](http://www.ted.com/talks/james_howard_kunstler_dissects_suburbia.html)

Owen, David. *Green Metropolis*. New York: Riverhead Books, 2009.

*Region Forward, 2050*. Prepared by The Greater Washington 2050 Coalition. Metropolitan Washington Council of Governments. January 31, 2010.

Schmitz, Adrienne, Jason Scully. *Creating Walkable Places: Compact Mixed-Use Solutions*. Washington, D.C.: ULI- the Urban Land Institute, 2006.

Sobel, Lee S., Ellen Greenberg and Steven Bodzin. *Greyfields into Goldfields*. Pittsburgh, PA: Geyer Printing Company, 2002.

*Transit Ridership Trends and Markets*. Washington Metropolitan Area Transit Authority, March 2009.

Montgomery County Planning Department, *Wheaton CBD and Vicinity Sector Plan, Planning Board Draft*, April 2011.  
[MontgomeryPlanning.org/community/wheaton](http://MontgomeryPlanning.org/community/wheaton)

Montgomery County Planning Departmen, *Wheaton CBD and Vicinity Sector Plan, Public Hearing Draft*, June 2010.  
[montgomeryplanning.org/community/wheaton](http://montgomeryplanning.org/community/wheaton)