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Walkability of Suburban Retrofits of the Washington DC Area: Immersion into Qualitative Constructs

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Immersion into Qualitative Constructs

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1. INTRODUCTION

1.1. WALKABILITY OF THE AMERICAN SUBURBS

> *Eighty percent of everything ever built in America has been built in the last fifty years, and most of it is depressing, brutal, ugly, unhealthy, and spiritually degrading - the jive-plastic commuter tract home wastelands, the Potemkin village shopping plazas with their vast parking lagoons, the Lego-block hotel complexes, the 'gourmet mansardic" junk-food joints, the Orwellian office "parks" featuring buildings sheathed in the same reflective glass as the sunglasses worn by chain meadow and cornfield, the freeway loops around every big and little city with their clusters of discount merchandise marts, the whole destructive, wasteful, toxic, agoraphobia-inducing spectacle that politicians proudly call growth.* (Kunstler 10, 1994)

The majority of the United States population is living in the suburbs. According to Economist Jed Kolko in a 2015 study, 53 percent of Americans describe the area in which they live suburban. (Kolko 2015) Meanwhile, the suburban built fabric has developed with spatial conditions that have failed to prove their efficacy on environmental, social or economic terms, and nearly all contemporary architectural and urban theorists agree that the suburban condition is inherently problematic. In a 2004 Ted Talk, James Howard Kunstler describes these types of places of suburban sprawl as "the greatest misallocation of resources in the history of the world" (Kunstler 2004). "We cannot overestimate the amount of despair we are generating with places like this." Six years later on the same platform, architect and urban designer Ellen Dunham-Jones discusses the problematic state of the suburban built condition, citing dependence on the vehicle, sparseness of built form, environmental costs, transportation costs, and even increased obesity rates (Dunham-Jones 2010). Because the suburbs comprise the majority of our "urbanized" areas in land-use, population, and economic activity, it is important that designers are able to rectify this American man-made landscape and build public spaces that are worth caring about.

Dunham-Jones indicates that there have been demographic shifts in our culture that are calling for more urban lifestyles in the suburbs. She calls for the re-habitation, re-development, and re-greening of areas in the suburbs that have failed in their pursuits for sustainable human habitation. This capstone will discuss a specific type of re-development: *suburban retrofit*, or the urbanization of a suburban area through the development of walkable built form as a means of generation of activity.

Walkability has been described as critical to the performance of urban places and will be the basis for measurement of performance in the context of this capstone. Constructs of walkability have been synthesized through the writings of urban theorists and designers Ellen Dunham-Jones, James Howard Kunstler, Jane Jacobs, Kevin Lynch, Allan B. Jacobs, and Colin Rowe. These constructs have been diagrammed, demonstrating the concept of walkability leading to activity. Activity and each construct of walkability will be defined in detail later in this capstone.

1.2. WASHINGTON DC AREA & SUBURBAN RETROFITS

The Washington DC area is one of the most active markets for suburban retrofit in the United States (Dunham-Jones 11, 2009). It's mass-transit system and internal urban structure have encouraged the development of high(er)-density nodes of walkable neighborhoods in the ring of suburbs outside the city. DC Natives, urban planner Dan Reed and editor Jonathon Neeley describe the Washington DC area as an innovator and leader in the trend of suburban retrofits, showing great progress even since Dunham-Jones' 2009 publication of *Retrofitting Suburbia* (Neeley 2015). The numerous suburban retrofits in the area offer an opportunity to assess the performance of multiple highly-discussed case studies in a relatively narrow region. In **Figure 1**, Dunham-Jones demonstrates the state and frequency of suburban retrofits in Washington DC. The image has been redrawn to include case studies to be assessed in this capstone: Bethesda Row, Mosaic District Fairfax, and Art District Hyattsville.

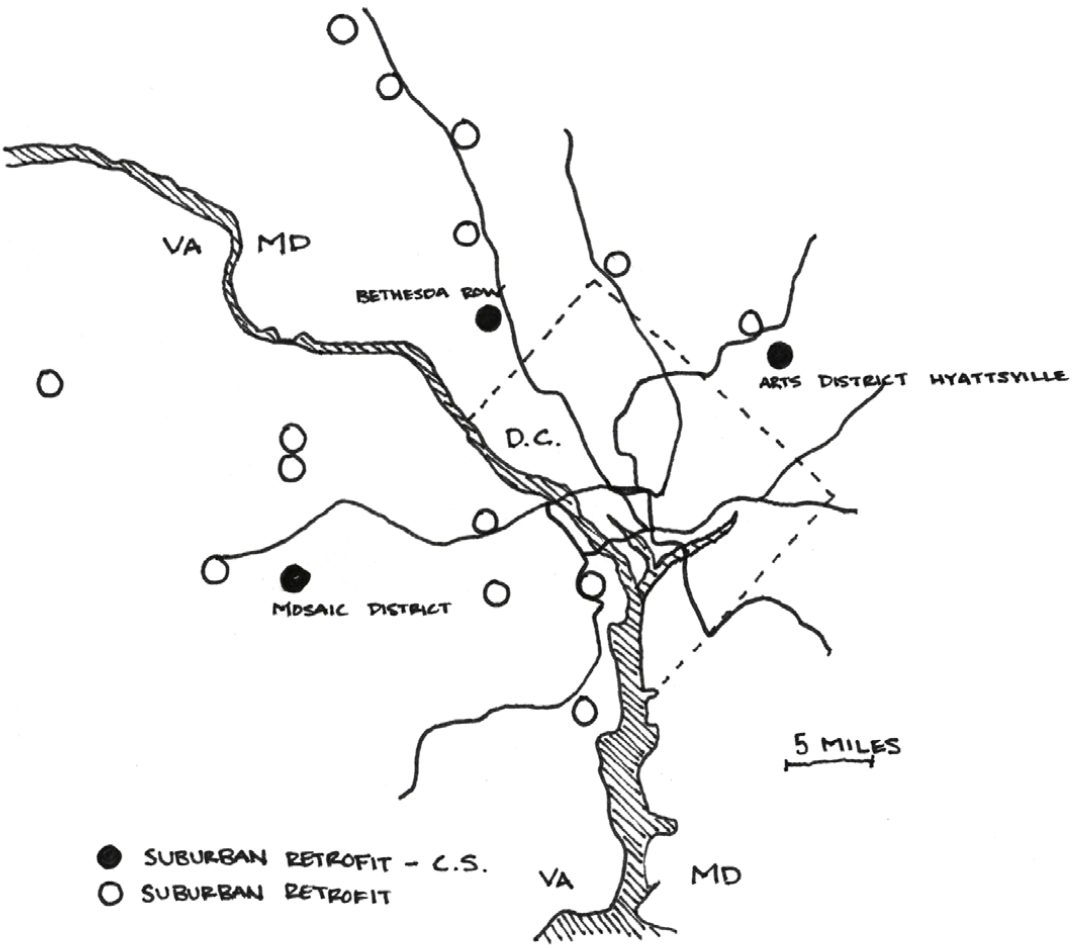


FIGURE 1 - SUBURBAN RETROFITS IN THE WASHINGTON DC AREA
Source: (Dunham-Jones 11, 2009), redrawn by author

1.3. CAPSTONE QUESTION

Walkability is central to this capstone and serves as a generator of activity and performance of public space. This capstone seeks to answer two main questions. First, what are the constructs of walkability based on the writings and works of urban theorists, designers, and experts regarding sub-urban and urban built form? Second, in the suburban retrofits of the Washington DC area, how have these constructs of walkability been executed and what is the experiential quality of their built form? Thus, this capstone offers two main contributions. It establishes a set of urban form constructs to quantitatively analyze and qualitatively assess walkability. Second, it uses some of these constructs of walkability to assess three case studies of suburban retrofits in the Washington DC area—Bethesda Row, Mosaic District Fairfax, and Arts District Hyattsville.

BETHESDA ROW SUBURBAN RETROFIT
Source: drawn by author

2. BACKGROUND / LITERATURE REVIEW

2.1. WALKABILITY OF THE AMERICAN SUBURBS

> *In America, with its superabundance of cheap land, simple property laws, social mobility, mania for profit, zest for practical invention, and Bible-drunk sense of history, the yearning to escape industrialism expressed itself as a renewed search for Eden. America reinvented that paradise, described so briefly and vaguely in the book of Genesis, called it Suburbia, and put it up for sale.* (Kunstler 37, 1994)

The American suburb has developed into a monoculture of housing and isolated commercial buildings that has failed to prove its efficacy on environmental, social or economic terms, in which municipal set-back policies, improper division of land, and lack of walkability (among many other aspects) have attributed to a suburban streetscape that is ill-defined and spatially residual (Dunham-Jones, 2010). According to Dunham-Jones there are viable strategies for retrofitting the suburban built environment into a complete, vibrant and sustainable multi-ply places for the future. This capstone synthesizes a set of constructs to measure and assesses the walkability of suburban retrofits in the Washington DC area.

Walkability has been described as critical to the performance of urban places and will be the basis for measurement of performance in the context of this capstone. In *Retrofitting Suburbia*, Ellen Dunham-Jones quotes and discusses recommendations from the Urban Land Institute for "pedestrian-friendly places that encourage interaction" (Dunham-Jones 173, 2009). Describing walkable places as convenient, safe, and interesting, Dunham-Jones sets up a series of factors that contribute to walkability (Dunham-Jones 175, 2009), building on the urban concepts discussed in urban theorist Jane Jacobs' *The Death and Life of Great American Cities*. Suburban retrofits require bringing these urban concepts (constructs of walkability) into the suburbs and integrating them into the suburban built fabric.

2.2. ACTIVITY

Jane Jacobs describes pedestrian *activity* as a measurement for performance of the urban street and describes it as vital to the public realm of the city (J. Jacobs 37, 1961). In *The Death and Life of Great American Cities*, she establishes qualities of built form that attribute to activity and performance of the urban street. This capstone synthesizes constructs that attribute to walkability. These constructs, as seen in **Figure 2**, are critical aspects of built environments that contribute to activity of public space.

Allan Jacobs describes human activity as key to the making of great public streets. "Void of human activity, streets soon cry out for people, they need people at the same time as they are for them, they are activated by people at the same time as they contribute to making a community for them" (A. Jacobs 303, 1993). Activity acts as a means of safety and creates contact that is essential to the creation of walkable neighborhoods (J. Jacobs 29, 1961). A qualitative sense of habitation is thus created in a walkable neighborhood as these local contacts build relationships and memories that give a site a sense of place (Beauregard 2004).

2.3. SCALES OF ANALYSIS: DISTRICT & STREET

The constructs of walkability as described in this capstone are analyzed or assessed at two scales: the block pattern and the street, as described by Allan Jacobs in *Great Streets* (A. Jacobs 202-204, 1993). The block pattern, referred to as '*district*' in the context of this capstone, refers to the boundary of the suburban retrofit and the immediate surrounding areas. Based on the method of Allan Jacobs, each case study is analyzed in figure-ground as the center of one square mile. The smaller scale of analysis is the '*street*.' Each construct of walkability operates at one of these scales and is defined in the following section.

2.4. CONSTRUCTS OF WALKABILITY

For pedestrian activity to take place, walkability of our streetscapes is necessary. Walkability involves much more than making it possible to walk from place to place. The standard involves a set of urban concepts which are necessary to generate activity. These urban concepts are described as constructs of walkability in the context of this capstone. As set up in **Figure 2**, *density*, *edge condition*, *integration*, and *diversity* are the key principles of walkability. These principles are then broken down into constructs of walkability that can be quantitatively analyzed and/or qualitatively assessed for the purposes of this capstone.

The principle of density involves (A) *density of dwelling units* and (B) *density of built form*. The principle edge condition involves the (C) *definition of public space*, (D) *permeability* of the built edge, and (E) the *transparency* of the built edge. The principle of integration involves the (F) *integration into surrounding context* and (G) *access* and block size. The principle of diversity involves both the (H) *diversity of building age* and the (I) *diversity of program*.

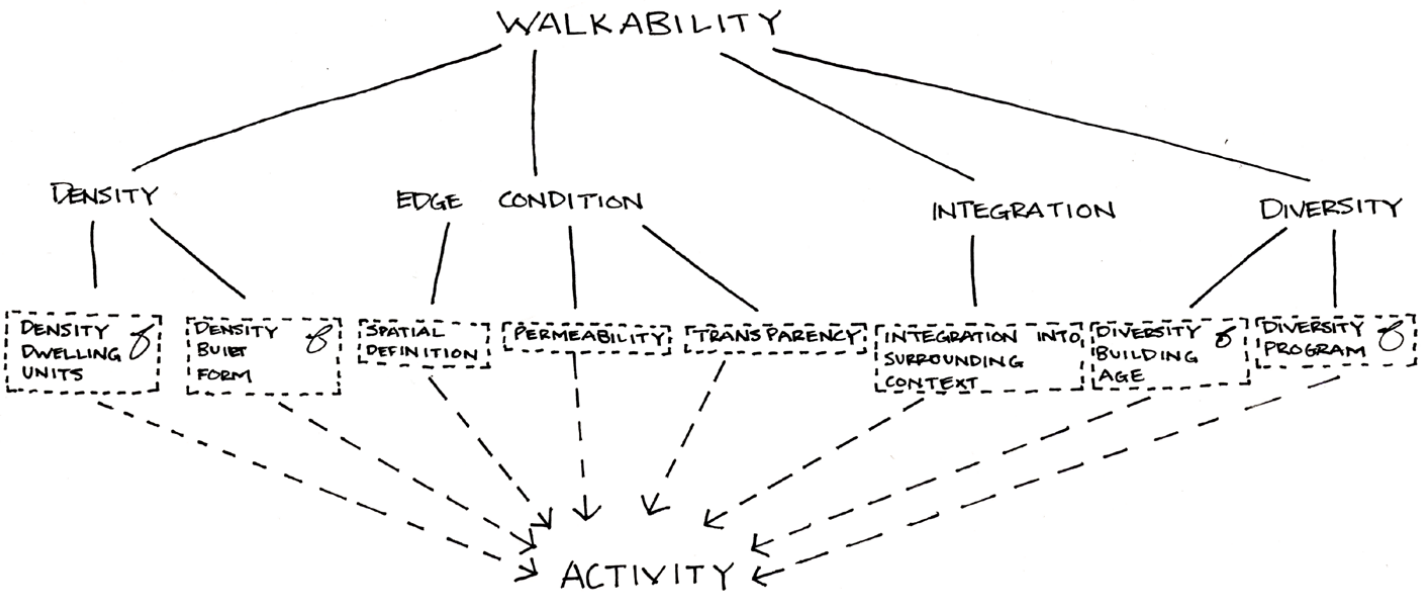


FIGURE 2 - WALKABILITY DIAGRAM
Source: drawn by author

In this section, the constructs of walkability as described within this capstone will be defined. These constructs have been synthesized through writings on urban form as generators of activity. These constructs include the following:

A. Density of Dwelling Units
B. Density of Built Form
C. Built Street Edge – Definition of Public Space
D. Built Street Edge – Permeability
E. Built Street Edge – Transparency
F. Integration into Surrounding Context
G. Access – Block Size
H. Diversity of Building Age
I. Diversity of Program

A. Density of Dwelling Units

:*quantity of dwelling units per unit of land*

Resident density is critical for viable walkability. According to Jane Jacobs, there must be enough people regularly residing in an area to support the presence of activity-driving entities such as standard small shops and restaurants (J. Jacobs 1961). She describes population density as key to the economic viability and security of city streets. Jacobs is certainly not alone in recognizing the necessity of population density for walkable cities. According to Dunham-Jones, when population density reaches 13 people per acre, the number of people who will walk increases and the number of those who will drive decreases. At 8 dwelling units per acre, mass transit becomes viable. Mass transit is an infrastructural element that allows for a greater integration of pocket walkability into the surrounding communities, attracting more activity and habitation (Dunham-Jones 175, 2009).

All case studies in this capstone have access to public mass transit, and the density required to support the investment of mass transit. The quantified resident density is based on density of dwelling unit per acre. This allows for an understanding of the construct as a means of walkability through the lens of built form, minimizing variation due to actual population density by person.

B. Density of Built Form

:*ratio/percentage of built space versus non-built space in a figure-ground study*

In the context of this capstone, density of built form refers to the ratio of built form to non-built space that can be analyzed though figure-ground study. Height of buildings is considered in another construct. Density of built form can be further described as the ratio of building versus the amount of open space left to the public. In *Collage City*, Colin Rowe explores this ratio in the traditional city and the modern city through figure-ground studies. He explains that the modern city creates public spaces that are spatially residual and ill-defined. The building becomes figural rather than the public space. This has created major problems when used in its cheapest form in the American suburb. "The city in the park becomes the city in the parking lot (Rowe 65, 1984)." Built density is vital for other critical constructs of walkability, specifically density of dwelling units and spatial definition of public space.

Transect zones as described by the Congress for the New Urbanism are set up according to density of built form, among other aspect. Transect zones T3 (Suburban Zone), T4 (General Urban Zone), and T5 (Urban Core Zone) are the primary focus within the context of this capstone. The CNU has diagrammed these transect zones as seen in **Figure 3**. Often in the development of a suburban retrofit, the area densifies and often begins to resemble a higher transect zone within this framework.

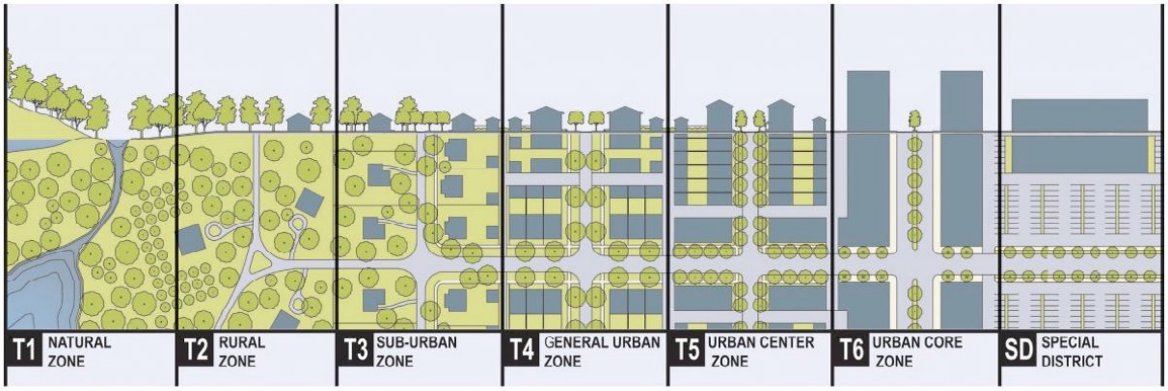


FIGURE 3 - CONGRESS for the NEW URBANISM TRANSECT DIAGRAM
Source: (CNU 2017)

C. Built Street Edge - Definition of Public Space

:*qualitative assessment of spatial definition*

Kunstler states in a 2004 Ted Talk, "A sense of place: your ability to create places that are meaningful and places of quality and character depends entirely on your ability to define space with buildings" (Kunstler 2004). A lack of spatial definition in public realm that has failed to provide an adequate backing to support active public life in the American suburb.

According to Allan Jacobs, great streets are well-defined and have clear boundaries (A. Jacobs 277, 1993). He describes spatial definition of the public realm as a ratio of vertical height of the edges to the width of the space in between. Spatial definition is cognitive and perceptual and deals with the relationship to a recognizable human scale, making this a qualitative construct of walkability. In the context of this capstone, buildings, street trees, and street furniture are the defining elements of public space. These elements can be documented in street sections and supported with experiential photography and sketching. The heights of buildings and trees are important aspects of spatial definition and adequate built form density is required to provide for these defining elements.

D. Built Street Edge - Permeability

:*quantity of thresholds per units of distance of built street edge*
:*qualitative condition of thresholds and activity 'in and out' along built street edge*

Permeability of the built street edge deals with the quality, character, and frequency of thresholds along a street edge and is a critical aspect of walkability. This construct can be analyzed both quantitatively and qualitatively.

Quantitatively, thresholds can be counted along the distance of a built street edge. Jane Jacobs links frequency of threshold to the diversity of program construct as defined within this capstone, stating that thresholds along the street edge must be frequent enough to actively engage the pedestrian with a variety of program (J. Jacobs 152, 1961). In a 2004 Ted Talk, James Howard Kunstler reinforces this concept, explaining the necessity of a permeable street edge in activating public space. Referring to an image similar to **Figure 4**, he states, "This is a good public space. It's well defined. It is emphatically an outdoor public room. It has something that is terribly important -- it has what's called an active and permeable membrane around the edge. That's a fancy way of saying it's got shops, bars, bistros, destinations -- things go in and out of it. It's permeable" (Kunstler 2004). Frequency and quality of threshold can be used to measure this construct of walkability.

E. Built Street Edge - Transparency

: *visual connection between interior activity and exterior activity*

The transparency of the built street edge deals with the visual translation of activity between interior and exterior through glass and/or outdoor spaces, such as balconies or porches. This is inherently linked to the permeability of the built street edge, but specifically deals with the visual aspect, and is primarily a qualitative construct. Does the facade relate interior to exterior so that activity can be translated between the two? Kunstler expresses this point in this 2004 TED Talk with the built edge of Boston City Hall, which demonstrates a stark difference in the transparency of the build street edge from what he describes as a good public space (Kunstler 2004) .(see **Figures 4** and **5**).

According to Jane Jacobs, the translation of activity from interior to exterior gives the street a sense of safety and contact essential to viable neighborhoods (J. Jacobs 55, 1961). She also states that activity simply attracts more activity (J. Jacobs 37, 1961). Translation of this activity to the public realm is transparency of the built street edge.

F. Integration into Surrounding Context

: *connection and relation to surrounding neighborhoods*

Integration into the greater surrounding area is crucial to the redevelopment of suburbia into walkable districts. According to Lynch, any functioning urban area has an underlying structure and identity that contain potential for imagery of a place (Lynch 115, 1960). He describes the rate of suburban development as inherently problematic due to the constant reshaping of the built environment, causing a lack of image preservation that give areas a sense of place and habitation. In a suburban context, this underlying structure is still critical to the walkability of a retrofit. An underlying structure of nodes, paths, and edges exists in any context, and a suburban retrofit offers an opportunity to expand and bring forward these existing urban qualities.

According to Dunham-Jones, integration of suburban retrofits often improves as the development matures. "Large projects increase a municipalities' experience with mixed uses, mixed

FIGURE 4 - PERMEABLE AND TRANSPARENT BUILT EDGE
Source: (Greater Boston Convention and Visitors Bureau 2018)

FIGURE 5 - NON-PERMEABLE and NON-TRANSPARENT EDGE - BOSTON CITY HALL
Source: (author)

incomes, shared parking, form-based codes, context-sensitive street standards, transfers of development rights, and other regulations that encourage urban development patterns. As a result, one successful retrofit tends to breed another" (Dunham-Jones 43, 2009).

In the context of this capstone, integration refers to a qualitative assessment of connection and relation to surrounding context. Designers can use a multitude of varying tactics to integrate suburban retrofits into their surrounding contexts. These may include (but is certainly not limited to) building scale, materials, color, program, street patterns, and even tree species. This qualitative construct must be assessed on-site at the edges of the suburban retrofit.

G. Access – Block Size

:*quantity of intersections per unit of land*

According to Dunham-Jones, block size is the most important factor in determining walkability (Dunham-Jones 175, 2009). Small block sizes make for convenient pedestrian paths through a city, while "larger block – unless they contain pedestrian cut-throughs – significantly inhibit walkability."

Jacobs describes the frequency of threshold as a condition for generating the diversity necessary to promote active neighborhoods, specifically in dealing with block length. "Most blocks must be short; that is, streets and opportunities to turn corners must be frequent (Jacobs 178, 1961)." She states that short blocks offer opportunities to open up and connect neighborhoods that would otherwise be isolated to one another, connected only via massive thoroughfares. She demonstrates this principle in a series of diagrams in The Death and Life of Great American Cities in which she gives an example of long blocks versus short blocks and their effects on connection, paths, and access (see **Figure 6**). This is a matter of economics and convenience according to Jacobs. She states, "[Activity-driving entities such as] small stores can and do flourish in extraordinary numbers and incidence in lively districts of cities because there are enough people to support their presence at short, convenient intervals… (J. Jacobs 147, 1961)." Jacobs calls for short block intervals as a response to this observation and says that when convenience is lost in cities, the small and personal connections that are vital to public activity wither away.

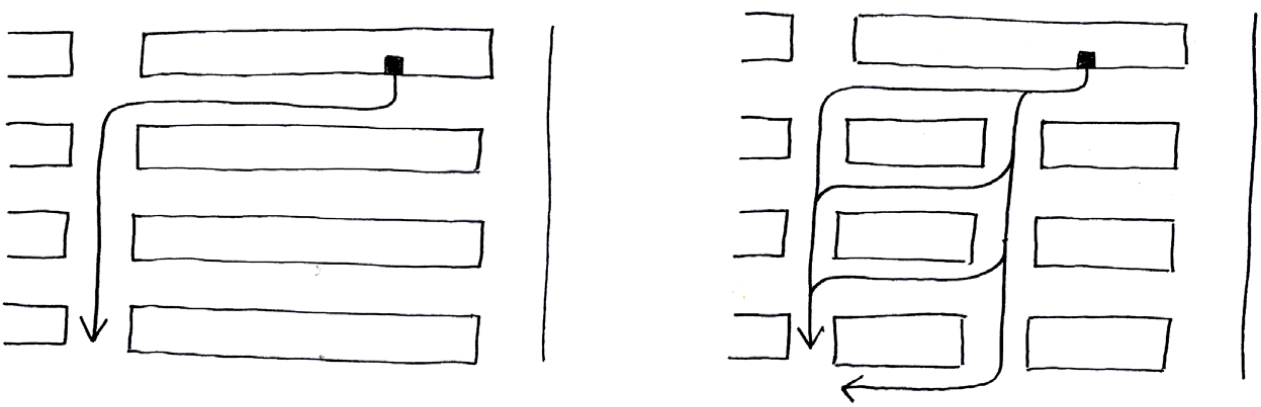


FIGURE 6 - CONGRESS for the NEW URBANISM TRANSECT DIAGRAM
Source: (J. Jacobs 179-181, 1961), redrawn by author

Frequency of thresholds can be measured by quantifying the number of intersections within a district. The greater the number of intersections, the smaller the average block size. For example, comparing the number of intersections of Venice, Italy (one of the most walkable cities in the world) with the number of intersections in a standard suburban commercial district, the distinction of quantity of intersections would be clear (A. Jacobs 262, 1993).

H. Diversity of Building Age

: *building mean age and range of age within a certain area*

The diversity of building age and repair are essential to the generation of active streets according to Jane Jacobs (J. Jacobs 188, 1961). This is a matter of economics and program. High costs of new construction lead to higher rents and thus well-established businesses and highly subsidized enterprises are the only potential occupants. Meanwhile, generators for activity, such as "neighborhood bars and good bookstores," are left to occupy older buildings. Without affordable places to do business, these programs are pushed out of an area, decreasing the activity of the street. This construct of walkability promotes an incremental approach to suburban retrofits in which existing buildings are integrated into new development, rather than a clearing and clean slate approach.

I. Diversity of Program

: *mix of building uses within retrofit and immediate context*

Jane Jacobs says that building uses must have enough variety to sufficiently sustain public activity. In other words, residences must have all necessary goods and services as well as entertainment opportunities within a walkable (or transitable) distance to promote public contact essential to the life of the city. In *The Death and Life of Great American Cities*, she states, "Commercial diversity is, in itself, immensely important for cities, socially as well as economically. …A city district with an exuberant variety and plenty in its commerce… [often] contains a good many other kinds of diversity also, including variety of cultural opportunities, variety of scenes, and a great variety in its population and other users" (Jacobs 148, 1961).

According to Allan Jacobs, program diversity can be directly translated to building diversity along a street (Jacobs 297, 1993). The more buildings along a street, the more opportunities for building variety that caters to a mix of uses. This diversity of uses attracts mixes of people that build communities. A higher number of building owners leads to differences in building maintenance, color, and landscape that often gives a neighborhood a more diverse and rich culture.

TABLE 1 – CONSTRUCTS OF WALKABILITY

The constructs of walkability as described in the context of this capstone have been organized into Table 1, in which each construct has been defined, operationalized, and given a scale of analysis. The presented order has been determined by grouping constructs according to the overarching principles of walkability: *density*, *edge condition*, *integration*, and *diversity*.

CONSTRUCT	DEFINITION	OPERATIONALIZATION	SCALE OF ANALYSIS
A. **Density of Dwelling Units**	*quantity of dwelling units per unit of land*	quantifying the total number of dwelling units using public data and dividing by total acreage	district
B. **Density of Built Form**	*ratio/percentage of built space versus non-built space in a figure-ground study*	quantifying square footage of building footprints using public GIS data and dividing by total square footage of study area	district
C. **Spatial Definition**	*qualitative assessment of spatial definition*	assessed through on-site sketching, street sections, and photography, demonstrating building heights and development of outdoor rooms	street
D. **Permeability**	*quantity of thresholds per units of distance of built street edge* *qualitative condition of thresholds and activity 'in and out' along built street edge*	quantified using Google Street View and diving by length of street assessed through on-site sketching and photography demonstrating threshold conditions along the street edge	street
E. **Transparency**	*visual connection between interior activity and exterior activity*	assessed through on-site sketching, photography, and descriptive writing	street
F. **Integration**	qualitative assessment of connection and relation to surrounding neighborhoods	assessed through on-site sketching, photography, and descriptive writing	district
G. **Access**	quantity of intersections per units of land	quantified within study area and divided by unit of land	district

H. **Diversity of Building Age**	*building mean age and range of age within a certain area*	quantified within study area, data collected using GIS, Google Earth, and other public data	district
I. **Diversity of Program**	*mix of building uses within study area and immediate context*	quantified using square footages of program types from public record data and ratios of program types determined	district

Source: author

3. CASE STUDY ANALYSIS: WASHINGTON DC AREA

> *This implies that we shall have to give up mass automobile use. By this, I do not mean an end to all cars but rather, that every individual adult need not make a car trip for every function of living: to go to work, to buy clothes, to have a drink; that every adult need not to compelled to bear the absurd expense of car ownership and maintenance as a requisite of citizenship.* (Kunstler 248, 1994)

3.1. Methods / Research Travel

This capstone establishes a set of urban form constructs to quantitatively analyze and qualitatively assess walkability. In this section, it uses some of these constructs of walkability to assess three case studies of suburban retrofits in the Washington DC area—Bethesda Row, Mosaic District Fairfax, and Arts District Hyattsville. The following constructs of walkability have been quantitatively analyzed: A. *Density of Dwelling Unit*s, B. *Density of Built Form*, and I. *Diversity of Program*. Limited time on-site constrained the qualitative assessment, allowing only some of the constructs to be assessed. The theoretical background of the constructs of walkability were taken into consideration and critical in the on-site assessment process, which includes sketching, diagramming, photography, and descriptive writing. These methods also deliver insight into the qualitative character and performance of each case study. The following constructs of walkability have been qualitatively assessed: C. *Definition of Public Space*, D. *Permeability of the Built Street Edge*, E. *Transparency of the Built Street Edge*, and F. *Integration*.

Travel to the Washington DC area made a qualitative assessment of the case studies possible and allowed for a perceptual understanding of the condition of the built form. The travel period lasted two full days (Saturday and Sunday) in the Washington DC area, allowing for multiple visits to the studied areas. Most sketches as seen throughout the capstone are accompanied by a note of day and time the sketch was originally produced. Bethesda Row was visited Saturday morning and Sunday afternoon, the Mosaic District was visited Saturday early afternoon, and the Arts District was visited Saturday afternoon and Sunday morning. The following were produced on-site for each case study as a means of documentation and analysis: street sections, experiential perspective drawings, site plan diagrams, descriptive writing, and photography. Street sections are primarily used to describe the construct of spatial definition. Experiential drawings and photography are used to describe permeability and transparency of the built street edge and integration into the surrounding context.

Prior to arriving on-site, the success of the case studies according to critics of urban form was not known. This allowed for as little bias in the analysis as possible. Research concerning the critical acclaim and success of the suburban retrofits was completed upon return from the travel period and compared with the findings of the on-site analysis. For each case study, a figure-ground map derived from 2018 GIS data and a current Google map image with labels were printed and on-hand for navigation through the suburban retrofit.

The weather was comfortable on both days and did not interfere with the findings. Further research could be accomplished with more time on-site, especially with an analysis during Monday-Friday.

3.2. BETHESDA ROW - BETHESDA, MD

Originally an industrial district, Bethesda Row was designed in 1994 by David Kitchens and Layton Golding of Cooper Carry. Final construction completed by 2006, the design consists of five buildings on six blocks that integrate the area into the existing urban character of Bethesda, MD. Comparatively to the other two case studies, Bethesda has a stronger existing urban character that has been in place. The scale and character of the existing buildings and their relationship to the street could be considered Transect 5 (Urban Center Zone). This is due to the relative short distance from metropolitan Washington DC and ease of public transportation to the area. The site has been retrofitted into a mixed-use walkable district. The project is highly regarded by the public and has won numerous awards. Considered a "great example of suburban retrofit" (Benfield 2010), Bethesda Row offers an opportunity to study its successes (and potential failures) through this analysis.

3.2.1. Quantitative Constructs of Walkability in Bethesda Row

A. Density of Dwelling Units

There are 21 dwelling units per acre after the retrofit of Bethesda Row. This figure is more than enough to support mass transit and local activity-driving entities. Although data was not available prior to construction, it could be assumed that there were no residences in the area prior to the re-development.

Table 2 - Density of Dwelling Units - Bethesda Row (Source: (Cooper Carry Arch.), drawn by author)

	Total Retrofit Area	Dwelling Units	Dwelling Units per Acre
1998	14 acres	N/A	N/A
2018	14 acres	300	21 d.u./acre

B. Density of Built Form

From 1998 to 2018, the built density of Bethesda Row increased by over 100,000 ft^2 and increased from 32% to 48% of the total site.

Table 3 - Density of Built Form - Bethesda Row (Source: (Montgomery Planning) drawn by author)

	Total Retrofit Area	Built Area	Percentage Built Area
1998	611,607 ft^2	193,231 ft^2	31.59%
2018	611,607 ft^2	296,438 ft^2	48.47%

FIGURE 7 - BETHESDA ROW FIGURE-GROUND 1998 - 1 mile
Source: (Montgomery Planning), drawn by author

FIGURE 8 - BETHESDA ROW FIGURE-GROUND 2018 - 1 mile
Source: (Montgomery Planning), drawn by author

I. Diversity of Program

Bethesda Row contains commercial, retail, restaurants, office space, residential units, and entertainment to support an active district. Limited data availability and time constrained the quantifying of this construct.

Table 4 - Diversity of Program - Bethesda Row (Source: (Cooper Carry Architects) drawn by author)

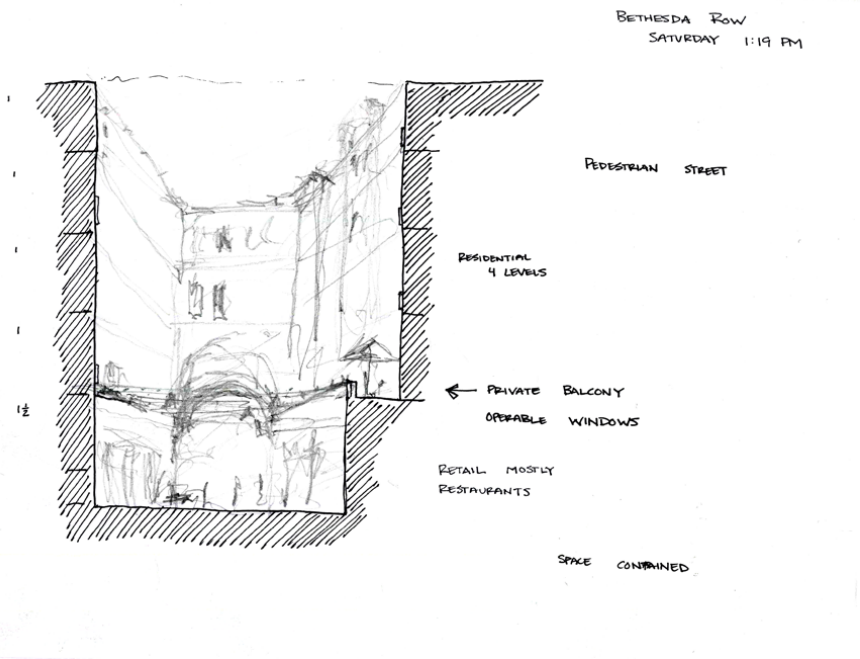
Program	Commercial	Office	Residential	Entertainment
Area	93,000 ft^2	106,000 ft^2	N/A	140,000ft^2
Percentage	N/A	N/A	N/A	N/A

3.2.2. Qualitative Constructs of Walkability in Bethesda Row

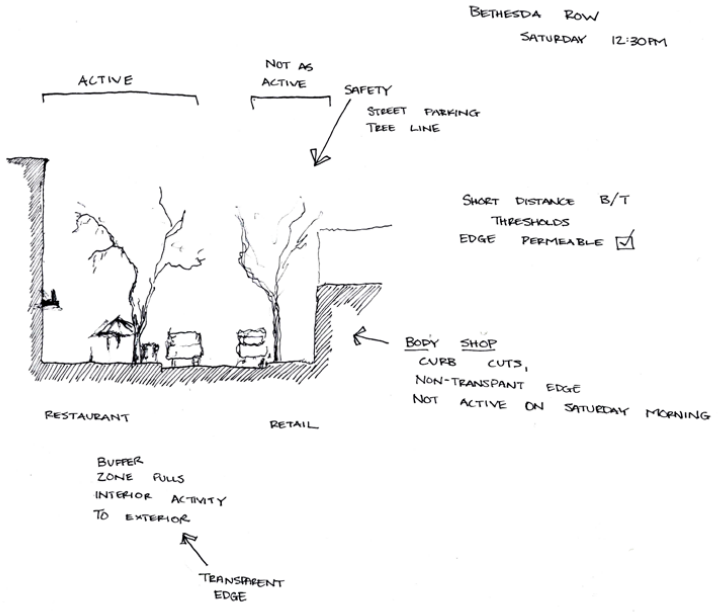
C. Definition of Public Space

The public spaces and streetscapes of Bethesda Row are strongly defined with buildings reaching 5 levels tall. Built structure makes up more than 48% of the total ground area, allowing for this definition (see **Table 2**). Multiple street sections were drawn on-site that demonstrate this spatial definition. At the heart of Bethesda Row, a pedestrian-only street is carved out of the block in-fill building (see **Figure 9**). The space is able to be tightly defined because it does not cater to vehicular traffic. At each end of the pedestrian street, 4 levels of residential units bridge the entrance, further defining the public space. String lights create a transparent edge above.

At the edges of the suburban retrofit, the public space is defined by built edge, street furniture, parked vehicles, and street trees (see **Figure 10**). This well-defined sidewalk encourages constant contact and gives the street a strong urban character.



1 FIGURE 9 - BETHESDA ROW PEDESTRIAN STREET SECTION
Source: author



2 FIGURE 10 - BETHESDA ROW VEHICULAR STREET SECTION
Source: author

D. Permeability of the Built Street Edge

The built street edge at ground level consists of mostly retail and restaurant spaces. Each retail unit is relatively small and this creates a frequency of threshold that constantly engages the pedestrian with opportunities to permeate the built edge. This frequency of threshold can be seen in **Figure 11**, an on-site sketch of the built edge. It is also noted in the street section of the same space in **Figure 10**.

E. Transparency of the Built Street Edge

Along most of the streets at Bethesda Row, restaurants and frontage spill out onto the sidewalks and create a direct link between inside and outside. At each unit along the street, an attempt is made to attract the pedestrian into the interior space. Restaurants have outdoor seating along the sidewalk, protected from the vehicular traffic by street trees and parked vehicles. The transparency of the built street edge can be seen in **Figures 12** and **13**, photographs of these conditions.

1 FIGURE 11 - BETHESDA ROW PERMEABILITY AND TRANSPARENCY EXPERIENTIAL SKETCH
Source: author

2 FIGURE 12 - BETHESDA ROW CONNECTION FROM INTERIOR TO EXTERIOR
Source: author

3 FIGURE 13 - BETHESDA ROW TRANSPARENT BUILT STREET EDGES
Source: author

F. Integration

Bethesda Row exists between two starkly different zones with a more urban downtown built fabric to the east and a suburban single-family residential zone to the west. The scale and character of the buildings matches the more urban character of the downtown, but meets the street in a pedestrian favoring street edge with parking mostly limited to a garage centered in the block. **Figures 15** and **16** demonstrate the integration of Bethesda Row into the more urban fabric. At the edge facing the residential zone, a park acts as an attraction and a buffer zone. This condition can be seen in **Figure 14**, an on-site sketch. This integrates Bethesda Row into both the suburban downtown and the residential fabric. As the suburban retrofit has matured, the surrounding areas have developed with walkable characteristics, such as permeable and transparent built edges, as a result of the pedestrian activity. This is further integrating Bethesda Row into its surrounding context.

3.2.3. Summary - Bethesda Row

Bethesda Row is highly successful and exemplifies the constructs of walkability as defined in this capstone, both quantitatively and qualitatively. This is reflected in the several awards the project has received. The streets were active with pedestrians and the restaurants and shops seemed to thrive economically due to this activity. The retrofit is highly integrated into its surrounding context, both the suburban downtown and the single-family residential area. This case study demonstrates both the quantitative and qualitative constructs of walkability as defined in this capstone.

1 FIGURE 14 - BETHESDA ROW INTEGRATION INTO SINGLE-FAMILY RESIDENTIAL
Source: author

2 FIGURE 15 - BETHESDA ROW INTEGRATION INTO DOWNTOWN FABRIC
Source: author

3 FIGURE 16 - BETHESDA ROW INTEGRATION INTO DOWNTOWN FABRIC
Source: author

3.3. MOSAIC DISTRICT - MERRIFIELD, VA

Originally described as a "suburban wasteland (Rice, 2012)," this site in Merrifield, Virginia consisted of an aging multi-screen cinema, a regional post office, and fast-food restaurants, all of which was surrounded by massive surface parking lots. Groundbreaking in 2010, it has been intended for the site to be retrofitted into a mixed-used walkable district. The project could be described as a "clean slate" approach to suburban retrofit, meaning nearly all of the construction within the district was completed within a short period of time, erasing the existing character of the area prior to construction. The Mosaic District (50 acres) is operating at a larger scale than the other two case studies. At the time of this capstone, minor construction was still underway in parts of the project. Walkability has been noted as an issue for the new development as it is still most often reached by vehicle even though it is located less than a mile from a Metro Stop (Rice, 2012). This offers a juxtaposition to the perceived walkability success of Bethesda Row. Prior to the on-site assessment, this lack of achieved walkability of the suburban retrofit was not known. This allowed the assessment of the constructs of walkability to have as little bias as possible.

3.3.1. Quantitative Constructs of Walkability in the Mosaic District

A. Density of Dwelling Units

There are nearly 18 dwelling units per acre after the retrofit of the Mosaic District. This figure is more than enough to support mass transit and local activity-driving entities.

Table 5 - Density of Dwelling Units - Mosaic District (Source: (Millard), drawn by author)

	Total Retrofit Area	Dwelling Units	Dwelling Units per Acre
1997	50 acres	0	0
2018	50 acres	894	17.88 d.u./acre

B. Density of Built Form

From 1997 to 2018, the built density of Bethesda Row increased by over 800,000 ft^2 and increased from 9% to 47% of the total site.

Table 6 - Density of Built Form - Mosaic District (Source: (Fairfax County Virginia), drawn by author)

	Total Retrofit Area	Built Area	Percentage Built Area
1997	2,150,000 ft^2	200,000 ft^2	9.30%
2018	2,150,000 ft^2	1,014,000 ft^2	47.17%

I. Diversity of Program

The Mosaic District contains commercial, retail, restaurants, office space, residential units, and entertainment to support an active district.

Table 7 - Diversity of Program - Mosaic District (Source: (Millard), drawn by author)

Program	Retail/Restaurant	Office	Residential	Hotel	Parks	Entertainment
Area	171,000 ft^2	520,000 ft^2	1,061,000 ft^2	100,000 ft^2	65,340 ft^2	42,000 ft^2
Percentage	8.74%	26.57%	54.21%	5.11%	3.34%	2.15%

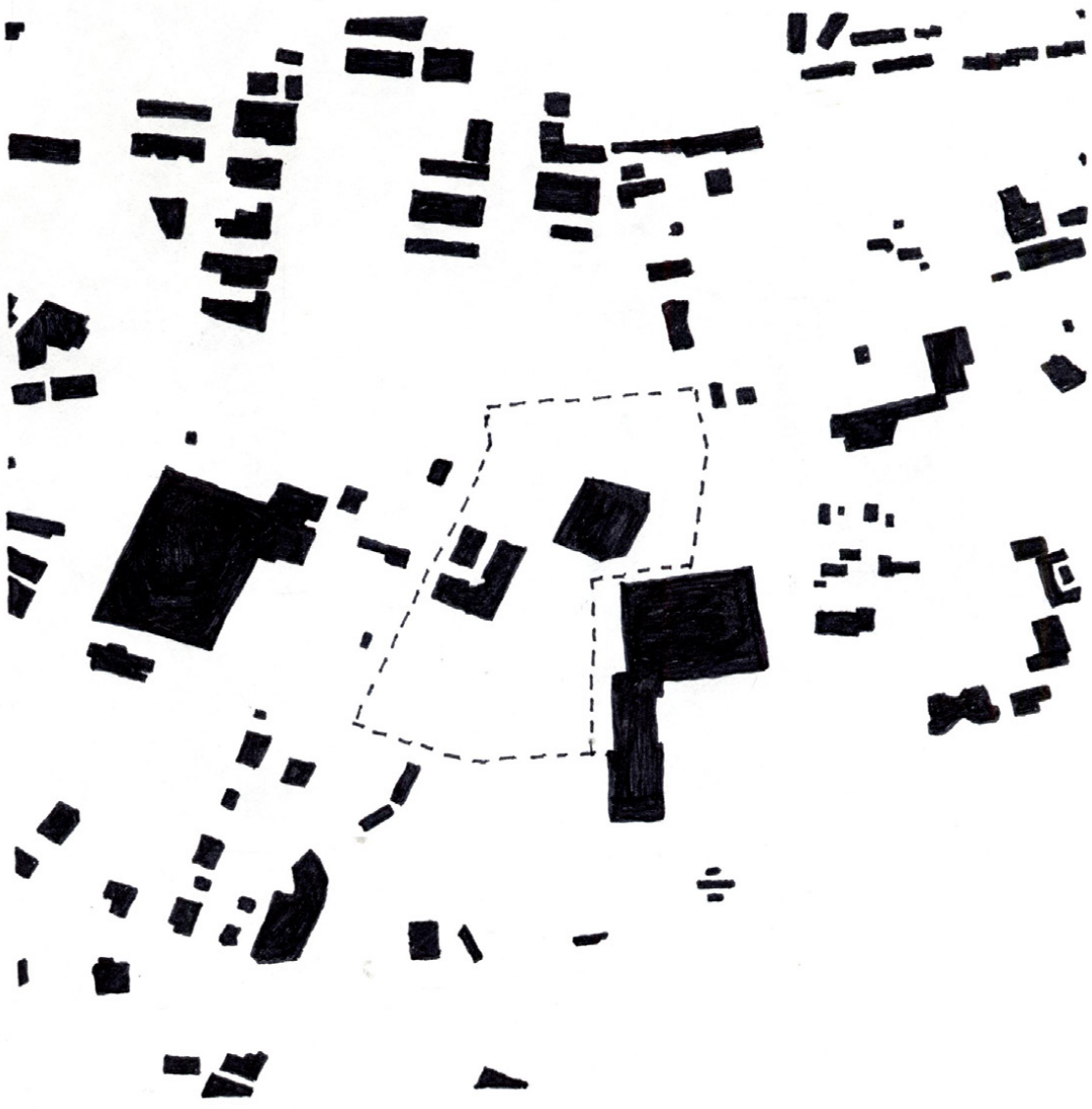


FIGURE 17 - MOSAIC DISTRICT FIGURE-GROUND 1997 - 1 mile
Source: (Fairfax County Virginia), drawn by author

FIGURE 18 - MOSAIC DISTRICT FIGURE-GROUND 2018 - 1 mile
Source: (Fairfax County Virginia), drawn by author

C. Definition of Public Space

The public spaces and streetscapes of the Mosaic District are strongly defined with buildings reaching 7 levels tall. Built structure makes up more than 47% of the total ground area, allowing for this definition (see **Table 5**). A street section (see **Figure 19**) was drawn on-site that demonstrates this spatial definition. Perceptually, this street space seems wider than Bethesda Row, and this can be seen in a comparison of the street sections. Wider streets require taller buildings for spatial definition. On average, the buildings of the Mosaic District are larger than the buildings of the other two case studies.

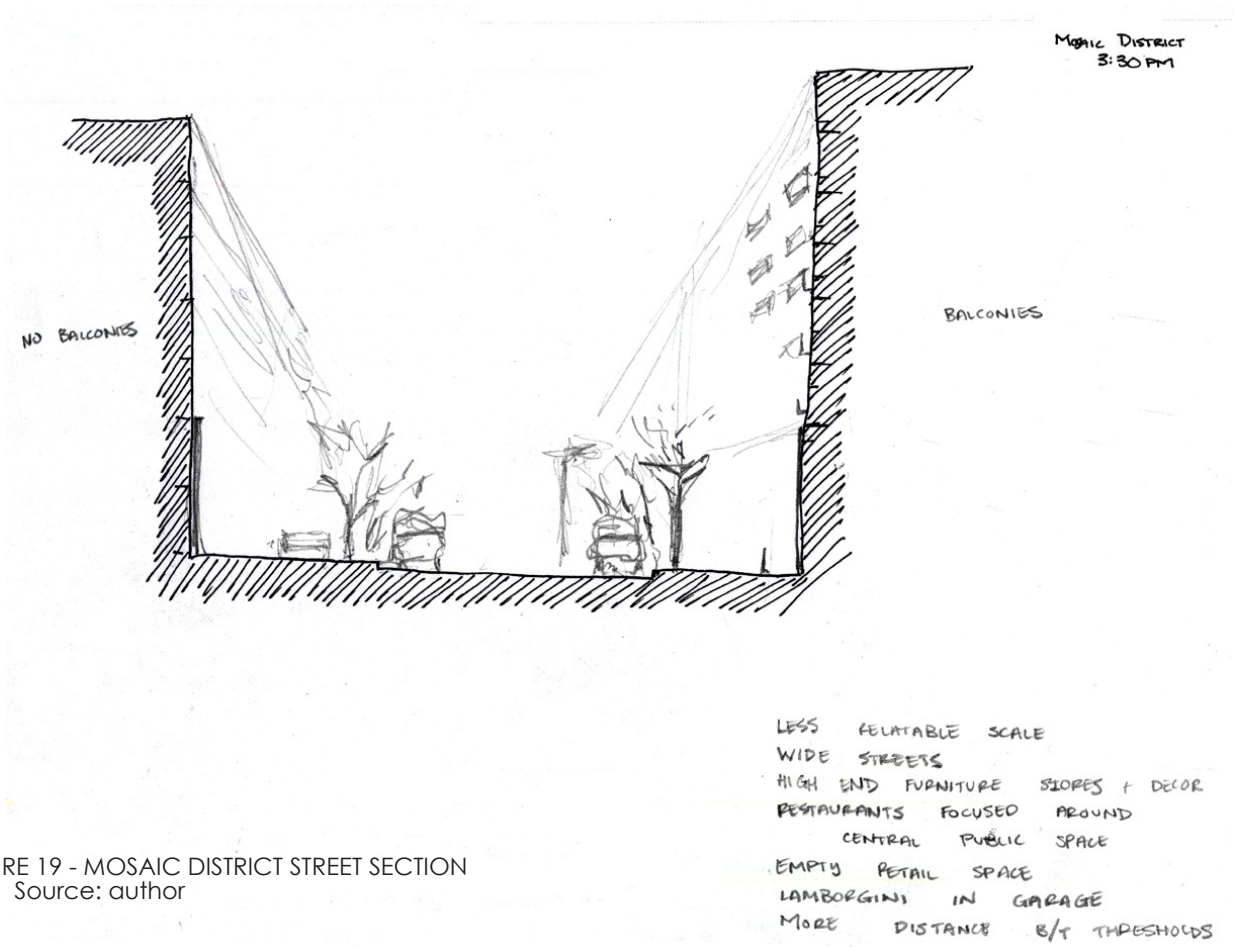


FIGURE 19 - MOSAIC DISTRICT STREET SECTION
Source: author

D. Permeability of the Built Street Edge

The built street edge at ground level consists of mostly retail. Each retail unit having a large space and maximizing frontage means the thresholds do not frequently permeate the built edge. This lack of thresholds can be seen in **Figure 20**, an on-site experiential sketch. Continuing construction and empty retail spaces attributed to this reading of the permeability of the built street edge.

E. Transparency of the Built Street Edge

At some points along the main street of the Mosaic District, restaurants spill out onto the sidewalk and create a direct link between inside and outside (see **Figure 21**). Due to the lack of threshold frequency and a centralization of most restaurants at the main public space, the streets are mostly met with display storefront. While most of the is glass, there is no transparency of activity in a display storefront (see **Figure 22**). The most common program, high-end furniture and décor retail, also plays into this reading.

1 FIGURE 20 - MOSAIC DISTRICT LOW FREQUENCY OF THRESHOLD
Source: author

2 FIGURE 21 - MOSAIC DISTRICT RESTAURANT - TRANSPARENT EDGE
Source: author

1 FIGURE 22 - MOSAIC DISTRICT HIGH-END DECOR RETAIL - TRANSPARENT EDGE
Source: author

F. Integration

The Mosaic District is primarily inwardly focused. On two edges (north and east) large highways separate the suburban retrofit from its surrounding context. The architecture of the mosaic district meets these highways with concrete walls (see **Figures 24** and **25**) A construction site to the west promises an expansion of the current state of the Mosaic District, driven by the suburban retrofit development. The strongest point of integration (and activity) occurs just outside the boundaries of the Mosaic District at a restaurant and bar named Caboose Commons, a renovated garage and office building (see **Figure 23**). The bar offers a single point in the area where the architecture is older than 15 years. This may offer validity to the building age diversity construct. The restaurant and bar was heavily active compared to the rest of the Mosaic District.

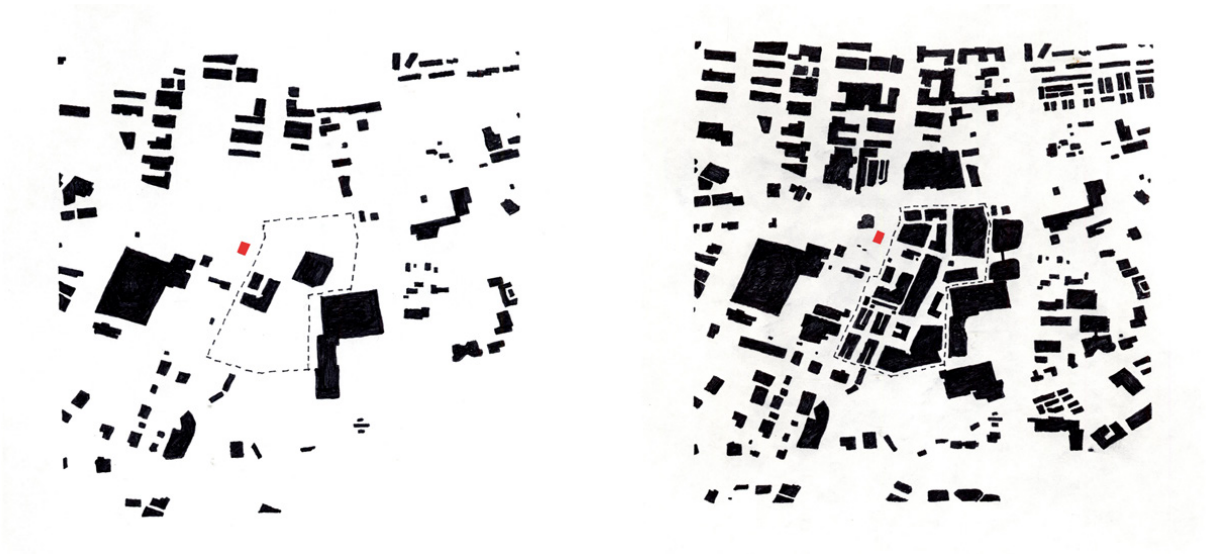


FIGURE 23 - MOSAIC DISTRICT CABOOSE COMMONS INTEGRATION POINT
Source: author

3.3.3. Summary - Mosaic District

Although the Mosaic District appears to meet all of the quantitative constructs of walkability as defined in this capstone, the project is lacking in some of the more qualitative constructs. This lack of walkability has been noted by multiple critics. The qualitative constructs as defined in this capstone are perceptual. A distinction between perception and reality can be seen in the difference between **Figure 20** and **Figure 22**. Perceptually, there is only one point of permeability and transparency in the image, despite the reality of store front glass that attempts to engage the pedestrian of the sidewalk. Further research is required to understand the cause of this distinction.

The lack of integration into the surrounding context is a disadvantage of the Mosaic District. As the project ages, it is possible that it will spur similar developments around its perimeter that attempt to integrate themselves into the suburban retrofit. The lack of walkability of the Mosaic District offers a rich comparison to Bethesda Row in understanding the qualitative constructs of walkability due to the nearly identical metrics in the quantitative constructs. This case study demonstrates the importance of the qualitative constructs of walkability as established in this capstone. In a case study where all the quantitative measures of walkability are met, the area lacks walkability.

1 FIGURE 24 - MOSAIC DISTRICT LACK OF INTEGRATION INTO SURROUNDING CONTEXT
Source: author

2 FIGURE 25 - MOSAIC DISTRICT LACK OF INTEGRATION INTO SURROUNDING CONTEXT
Source: author

3.4. ARTS DISTRICT - HYATTSVILLE, MD

Originally a car sales lot and showroom in Hyattsville, MD, the area offered a large plot of underutilized land in the form of parking lots. Multiple developers, including Woodfield Development and EYA, came together to create a walkable mixed-use district in close proximity to the historic downtown of Hyattsville, just south along Baltimore Avenue. While larger in area than Bethesda Row, the Arts District operates at a much smaller scale, meaning the buildings tend to be smaller. This is likely due to the scale of the surrounding context, mostly single family residential fabric. The district is centered at a commercial node at the intersection of Baltimore Avenue and Jefferson Street (see **Figure 29**). Unlike the other two case studies, the residential program and commercial program are placed in adjacent zones, rather than being integrated into the same buildings. The Eastern edge of the suburban retrofit is bounded by a railroad and dense vegetation.

3.4.1. Quantitative Constructs of Walkability in the Mosaic District

A. Density of Dwelling Units

Data was not publicly available. The density of dwelling unit seems similar to that of Mosaic District. There were no residences on the area prior to the retrofit.

Table 8 - Density of Dwelling Units - Arts District (Source: n/a)

	Total Retrofit Area	Dwelling Units	Dwelling Units per Acre
2000	24 acres	0	0 d.u./acre
2018	24 acres	N/A	N/A

B. Density of Built Form

From 2000 to 2018, the built density of the Arts District increased by over 180,000 ft^2 and increased from 9% to 29% of the total site.

Table 9 - Density of Built Form - Arts District (Source: (Planning Department, PGC), drawn by author)

	Total Retrofit Area	Built Area	Percentage Built Area
2000	1,034,346 ft^2	120,198 ft^2	9.22%
2018	1,034,346 ft^2	300,480 ft^2	29.05%

I. Diversity of Program

Data was not publicly available. The site contains retail, restaurant, and residential program. Limited data availability and time constrained the quantifying of this construct.

Table 10 - Diversity of Program - Arts District (Source: N/A)

Program	Commercial	Office	Residential
Area	N/A	N/A	N/A
Percentage	N/A	N/A	N/A

FIGURE 26 - ARTS DISTRICT FIGURE-GROUND 2000 - 1 mile
Source: (Planning Department of PRince George County), drawn by author

FIGURE 27 - ARTS DISTRICT FIGURE-GROUND 2018 - 1 mile
Source: (Planning Department of Prince George County), drawn by author

C. Definition of Public Space

The public spaces and streetscapes of the Mosaic District are defined with buildings with a variety of heights. The main street of the suburban retrofit (Jefferson Street) is defined by buildings only one level tall, but the street trees work to define the public space (see **Figure 28**). Built structure makes up only 29% of the total ground area because much of the retrofit is made of relatively thin bars of residential townhouses that do not have a large building footprint compared to the mixed use buildings of Bethesda Row and the Mosaic District.

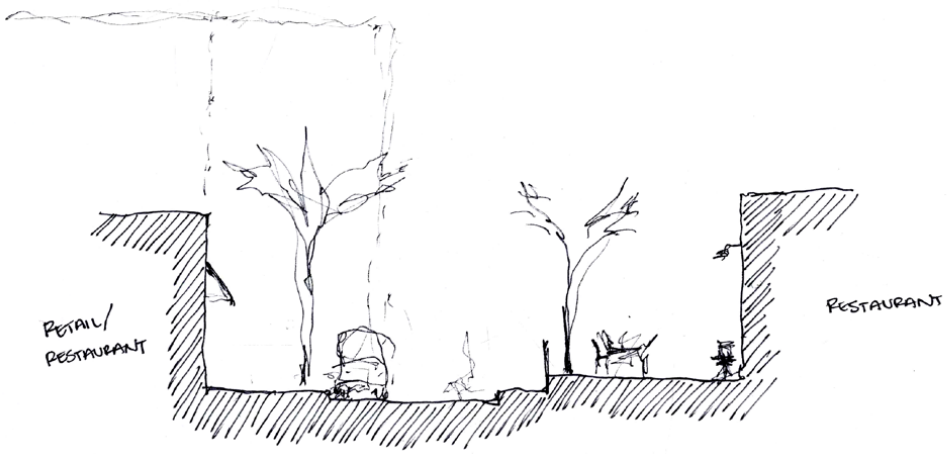


FIGURE 28 - ARTS DISTRICT STREET SECTION
Source: author

D. Permeability of the Built Street Edge

The built street edge at ground level consists of retail along Baltimore Avenue and Jefferson Street and private residential units elsewhere. This is unlike Bethesda Row in that distinct zones seem to exist within the retrofit residential and commercial. These two conditions are documented in **Figure 30** and **31** in a series of experiential sketches. Restaurants and services tend to activate the edge and produce a flow in and out of the buildings at Baltimore and Jefferson. A church and old government building anchor this important intersection but offer little in the form of permeability of the street edge. The government building seems ready for renovation into a more active program. The project tends to focus its permeable edges along Baltimore Ave, the major thoroughfare of the district and create a node at Jefferson and Baltimore (see **Figure 29**). This encourages further active development along Baltimore.

E. Transparency of the Built Street Edge

At the main intersection of the Arts District, a restaurants spill out onto the sidewalk and create a direct link between inside and outside. This acts as the heart of the district and sets the tone for an active street edge throughout the relatively small commercial zone of the retrofit (see **Figures 30, 32 and 33**) The retrofit tends to operate at a smaller scale than the other two case studies, and the design moves that are made tend to have a greater impact on the overall district.

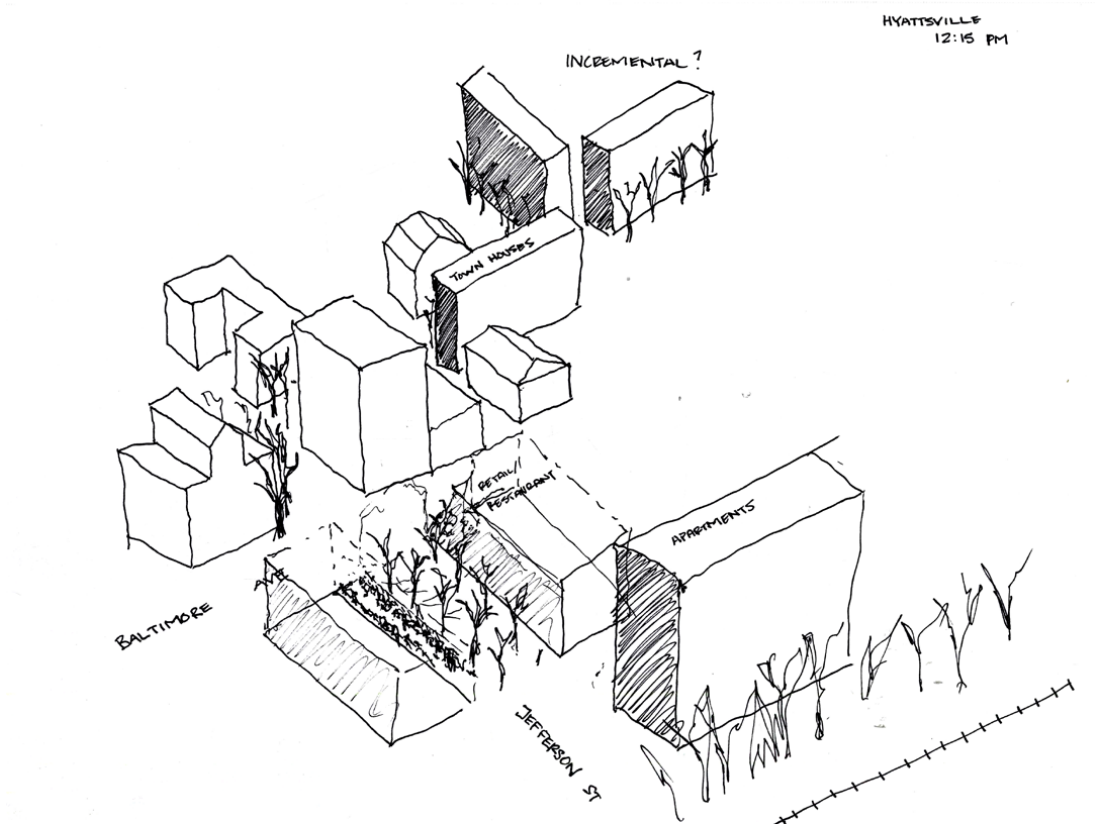
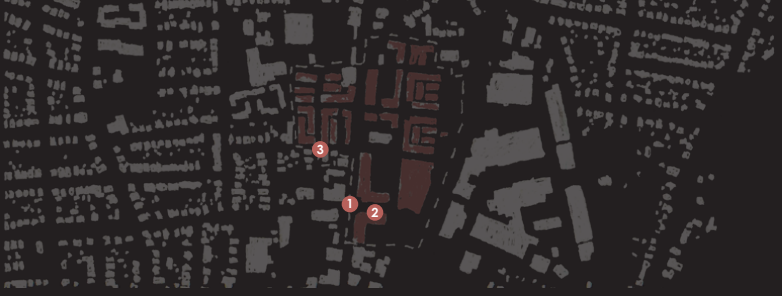


FIGURE 29 - ARTS DISTRICT AXON DIAGRAM
Source: author

1 FIGURE 30 - ARTS DISTRICT JEFFERSON STREET TRANSPARENT EDGE
Source: author

2 FIGURE 31 - ARTS DISTRICT TOWNHOUSES
Source: author



1 FIGURE 32 - ARTS DISTRICT BALTIMORE AVE BUILT EDGE
Source: author

2 FIGURE 33 - ARTS DISTRICT JEFFERSON STREET BUILT EDGE
Source: author

F. Integration

The Arts District seems to seamlessly integrate into its surrounding context using materials, color, building scale, and incremental growth. The district acts as a series of zones that work together in a gradient from east to west, where higher density residential shifts to commercial to lower density townhouses and finally into the existing single-family residences to the west (see **Figure 29**). The district is visually separated from the rail line on the east with vegetation, which allows the larger apartment buildings and townhouses to sit against that edge without concern of a stark difference in surrounding context. The commercial strip in integrated into the historic downtown to the south, picking up in the syntaxes, rhythms, and scale of the existing older buildings. At the eastern edge, the architecture of the townhouses use the materials and colors of the existing single-family houses to integrate themselves into the surrounding context (**Figure 34**). The Arts district seems to have been developed incrementally and over time because of this detailed level of integration into its context.

3 FIGURE 34 - ARTS DISTRICT INTEGRATION INTO SUBURBAN CONTEXT - COLOR, MATERIAL, SCALE
Source: author

3.4.3. Summary - Arts District

The Arts District is highly successful and exemplifies some of the constructs of walkability as defined in this capstone. While lacking in some of the quantitative constructs, the project exemplifies the more qualitative constructs. The incremental nature and smaller scale of the suburban retrofit are factors that may have led to this perceptual reading, integrating the project into the surrounding context. Even on the relatively noisy and high traffic thoroughfare, the sidewalks were active with pedestrians and the restaurants and shops seemed to thrive economically due to this activity. This case study clearly demonstrates the importance of the qualitative constructs established within this capstone.

4. SYNTHESIS AND CONCLUSION

This capstone sets out to make two main contributions: First, a set of constructs of walkability are synthesized from the writings of urban theorists, designers, and experts of suburban built form. Second, a critical assessment of three case studies of suburban retrofits in the Washington DC area offers a quantitative and qualitative understanding of some of the established constructs.

Walkability can be subdivided into four main principles: density, edge condition, integration, and diversity. These principles are then sub-divided into nine constructs of walkability. Density deals with the density of built form and density of dwelling units within a particular area. Edge condition refers to the definition of public space and the permeability and transparency of the built street edge. Integration consists of integration into the surrounding context and access. Finally, diversity deals with the diversity of building age and diversity of program within a particular area. These constructs have been defined in an earlier chapter. In **Table 1**, these constructs have been dissected, operationalized, and given a scale of analysis. This could be an effective tool for further research and analysis of other case studies for walkability.

The case study analysis offers an immersion into three suburban retrofits and aims to answer the following questions: What is the experiential quality of the constructs of walkability as established in this capstone? How are suburban retrofits living up the walkability promised in their development? The importance of the qualitative constructs emerged as a takeaway of this capstone, especially integration into the surrounding context. Both Bethesda Row and the Arts District successfully integrate themselves into their respective contexts, while the Mosaic District does not. The permeability and transparency of the built street edge are also vital qualitative constructs of walkability. These involve engaging the pedestrian. Bethesda Row engages the pedestrian at nearly every built street edge and close intervals, while the Mosaic District engages the pedestrian at much further intervals. At the Arts District the permeable and transparent edges are centralized along the main thoroughfare, but kept at short intervals, operating at a much smaller scale than the other two case studies. These constructs suggest that Bethesda Row and the Arts District are more walkable than the Mosaic District.

Bethesda Row demonstrates both the quantitative and qualitative constructs of walkability. The Mosaic District demonstrates the quantitative constructs, but tends to lack some of the perceptual qualitative constructs. The Arts District lacks some of the quantitative constructs compared to the other two case studies, but still demonstrates the qualitative constructs as defined in this capstone. The juxtaposition of these case studies offers a rich comparison of the constructs of walkability.

An unexpected finding of this capstone is the importance, value, and validity of on-site qualitative analysis in a study of urban form. Using the skill set of a designer of urban form and an understanding of the constructs established within this capstone, the experiential quality of the studied areas can be fully comprehended through sketching, photography, and descriptive writing. This capstone is intended to contribute more than the establishment of a simple checklist for walkable design that can be quantified and replicated. The qualitative results of the case studies reinforce the importance of the perceptual character of the qualitative constructs and the validity of on-site analysis. For example, high density, while making walkability more likely, must also be accompanied with the qualitative constructs to be walkable. These qualitative constructs can only be understood in a deep immersion with the site. There is no checklist that can be established to be successful on

any site. Varying context requires varying solutions with a deep understanding of the nuances of site particulars.

During the on-site analysis, a distinction between perception and reality began to develop. Reality deals with the quantifiable aspects of the qualitative constructs. For example, the square footage of store front glass on a built edge is a quantifiable aspect of the qualitative construct of transparency. This distinction between qualitative perception and physical reality can be seen in the discrepancy between **Figures 20** and **22**, in which a sketch and photo reveal a stark difference in transparency of the built edge. While the edge is almost entirely physically transparent, the perception of the edge is opaque. Further research into the development of the Mosaic district and cognitive spatial perception may reveal the high-end decor program or the lack of variation in the facade, for example, lends to this reading. This capstone thus raises the following question: What qualities of the built form are causing the distinction in reality and perception of the qualitative constructs of walkability as described in this capstone?

FIGURE 20 - MOSAIC DISTRICT LOW FREQUENCY OF THRESHOLD
Source: author

FIGURE 22 - MOSAIC DISTRICT HIGH-END DECOR RETAIL - TRANSPARENT EDGE
Source: author

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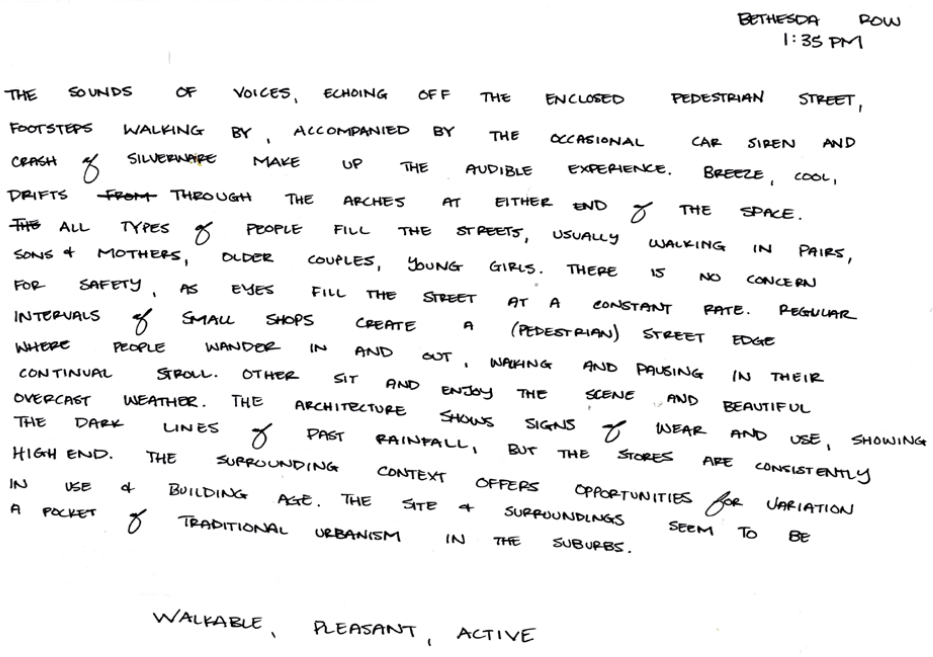
6. APPENDIX - FURTHER SITE ANALYSIS

The following appendix is a series of on-site sketches and descriptive writing meant to give a further understanding of the suburban retrofit case studies. These figures were not included in the above text, but were integral to the analysis. They are presented in the order in which they were drawn/written.


BETHESDA ROW
1:35 PM

THE SOUNDS OF VOICES, ECHOING OFF THE ENCLOSED PEDESTRIAN STREET, FOOTSTEPS WALKING BY, ACCOMPANIED BY THE OCCASIONAL CAR SIREN AND CRASH & SILVERWARE MAKE UP THE AUDIBLE EXPERIENCE. BREEZE, COOL, DRIFTS ~~FROM~~ THROUGH THE ARCHES AT EITHER END & THE SPACE. ~~THE~~ ALL TYPES & PEOPLE FILL THE STREETS, USUALLY WALKING IN PAIRS, SONS & MOTHERS, OLDER COUPLES, YOUNG GIRLS. THERE IS NO CONCERN FOR SAFETY, AS EYES FILL THE STREET AT A CONSTANT RATE. REGULAR INTERVALS & SMALL SHOPS CREATE A (PEDESTRIAN) STREET EDGE WHERE PEOPLE WANDER IN AND OUT, WALKING AND PAUSING IN THEIR CONTINUAL STROLL. OTHER SIT AND ENJOY THE SCENE AND BEAUTIFUL OVERCAST WEATHER. THE ARCHITECTURE SHOWS SIGNS & WEAR AND USE, SHOWING THE DARK LINES & PAST RAINFALL, BUT THE STORES ARE CONSISTENTLY HIGH END. THE SURROUNDING CONTEXT OFFERS OPPORTUNITIES FOR VARIATION IN USE & BUILDING AGE. THE SITE & SURROUNDINGS SEEM TO BE A POCKET & TRADITIONAL URBANISM IN THE SUBURBS.

WALKABLE, PLEASANT, ACTIVE

FIGURE 35 - APPENDIX 1 - BETHESDA ROW DESCRIPTIVE WRITING
Source: author

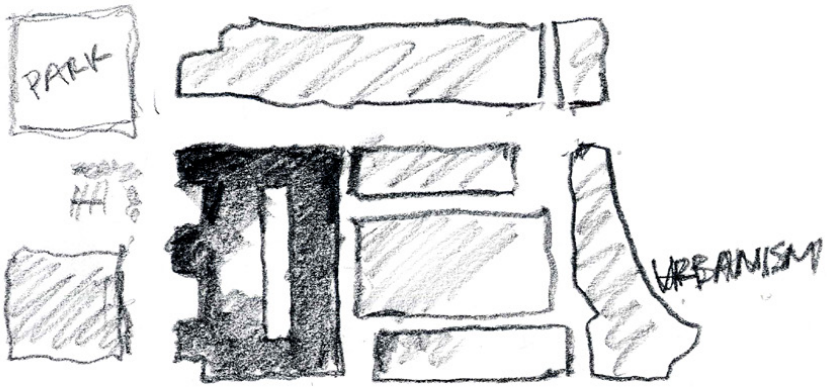


FIGURE 36 - APPENDIX 1 - BETHESDA ROW SITE PLAN DIAGRAM
Source: author

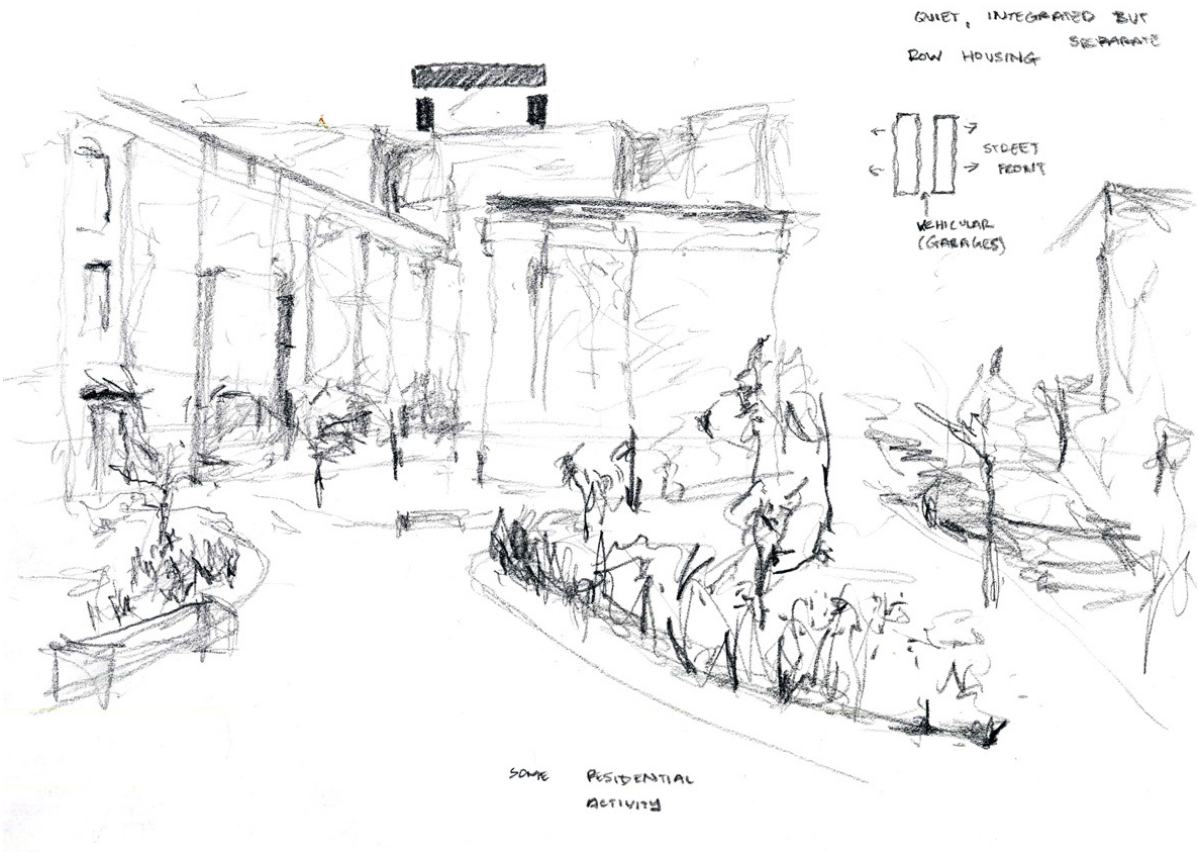


FIGURE 37 - APPENDIX 1 - MOSAIC DISTRICT TOWNHOUSES EXPERIENTIAL SKETCH
Source: author

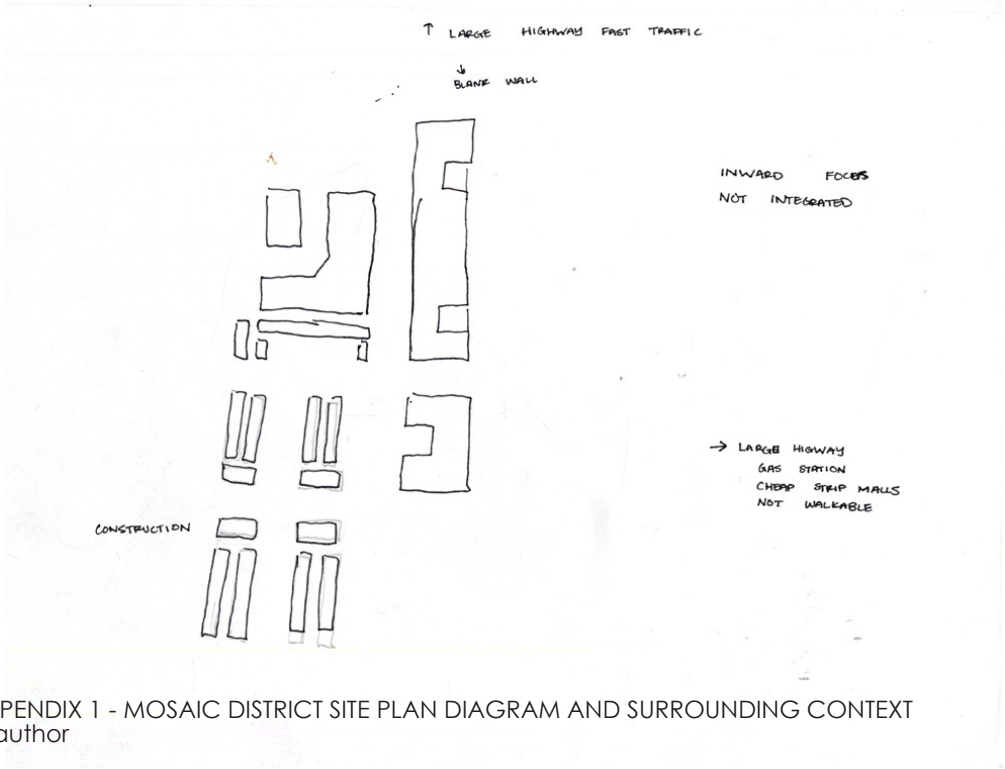


FIGURE 38 - APPENDIX 1 - MOSAIC DISTRICT SITE PLAN DIAGRAM AND SURROUNDING CONTEXT
Source: author

MOSAIC
3:50 PM

IT'S QUIET, THE SLOW HUM OF THE CARS SLOWING TO A STOP AND CONTINUING. FEW CONVERSATIONS, ONE ACTUALLY MENTIONING DISDAIN FOR THE DOG URINE ON THE SIDEWALK, NOT STIMULATED BY A CONSTANT CHANGE OF ACTIVITY & FREQUENCY & THRESHOLD. THE SITE SEEMS TO FOCUS AROUND AN ACTIVATED PLAZA. CHILDREN RUN AROUND THE ASTROTURF FEILD, BOUNDED BY AN ELEVATED BAR & RESTAURANTS + A LARGE URBAN TARGET. THE RESIDENTIAL ZONE & ROW TOWNHOUSES INTEGRATES INTO THE

FIGURE 39 - APPENDIX 1 - MOSAIC DISTRICT DESCRIPTIVE WRITING
Source: author

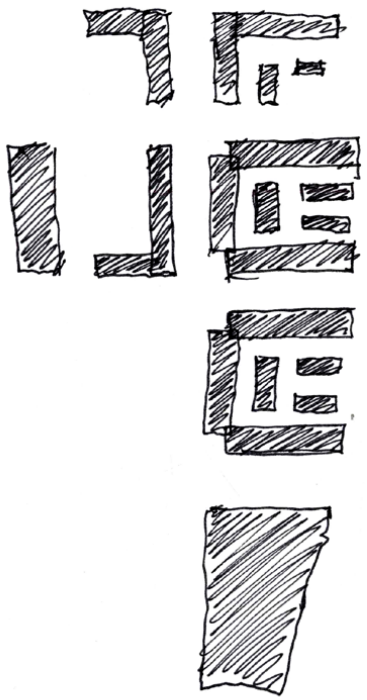
HYATTSVILLE
6:10 PM

STANDARD SUBURBAN RESIDENTIAL

TOWNHOUSES
ROW HOUSES

RETAIL

HIGH DENSITY APARTMENTS



GRADIENT MIX

FIGURE 40 - APPENDIX 1 - MOSAIC DISTRICT SITE PLAN DIAGRAM AND GRADIENT OF BUILDING SIZE
Source: author

HYATTEVILLE
6:20 PM

SOUNDS of FAST MOVING TRAFFIC + CAR HORNS, MANY CONVERSATIONS AT THE OUTDOOR RESTAURANT DOMINATE THE SCENE. ON AN OVERCASTED BEAUTIFUL DAY, THE ARTS DISTRICT IS LIVELY. A MIX of PROGRAM, DENSITY, + BUILDING AGE GIVE THE DISTRICT A GENUINE FEELING. PEOPLE of ALL AGES WALK THE SIDEWALKS, A TRAIN HORN SOUNDS, AND THE LIGHTS TURN ON AS THE SKY BEGINS TO CHANGE TO DUSK. OLD STATELY BUILDINGS MARK THE OTHER SIDE of THE HIGHWAY, BACKED BY HOMES THAT APPEAR TO BE A SIMILAR AGE. THIS IS A PLACE. STORIES EXIST HERE. MEMORIES EXIST HERE. THE TOWNHOUSE BLEND SEEMLESSLY INTO THE SINGLE FAMILY HOME NEIGHBORHOOD. THE WALKABLE RYTHM of THRESHOLD PLAY off THE "MAIN STREET" JUST SOUTH ALONG BALTIMORE.

FIGURE 41 - APPENDIX 1 - ARTS DISTRICT DESCRIPTIVE WRITING
Source: author

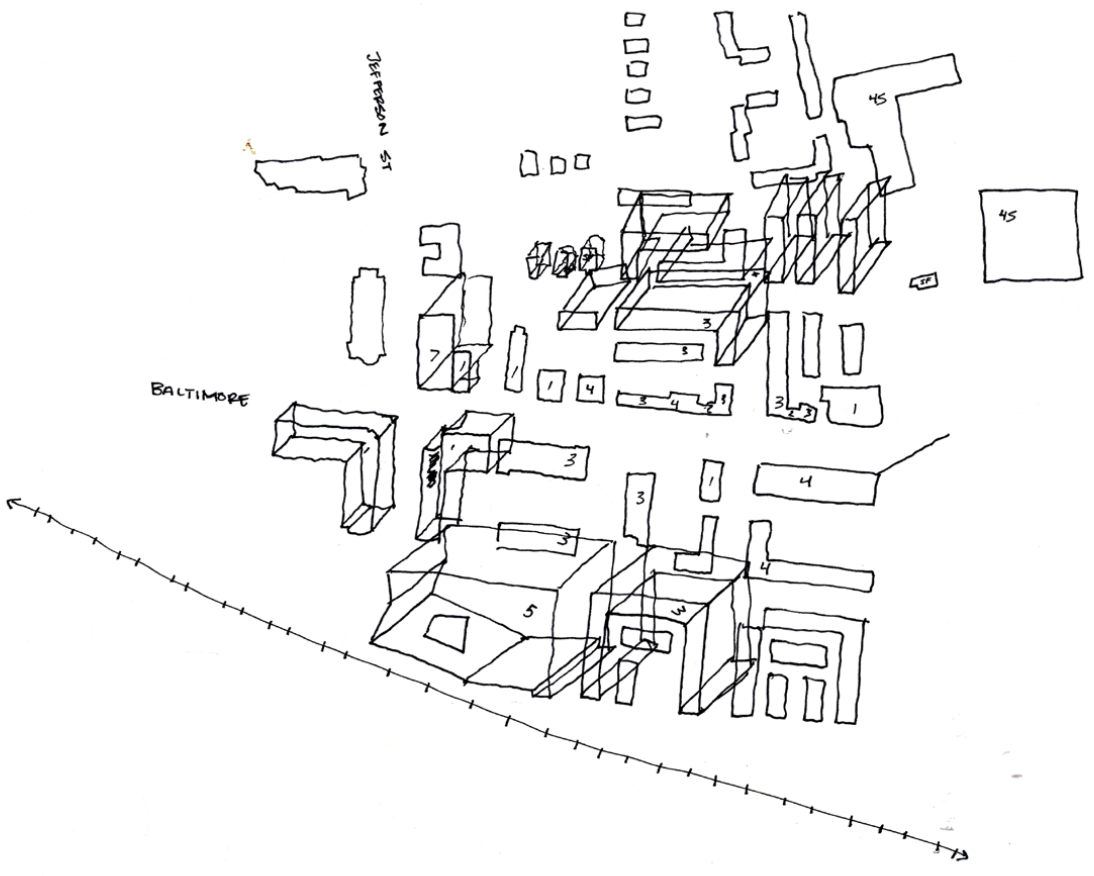


FIGURE 42 - APPENDIX 1 - ARTS DISTRICT PLAN AND BUILDING HEIGHT DIAGRAM
Source: author

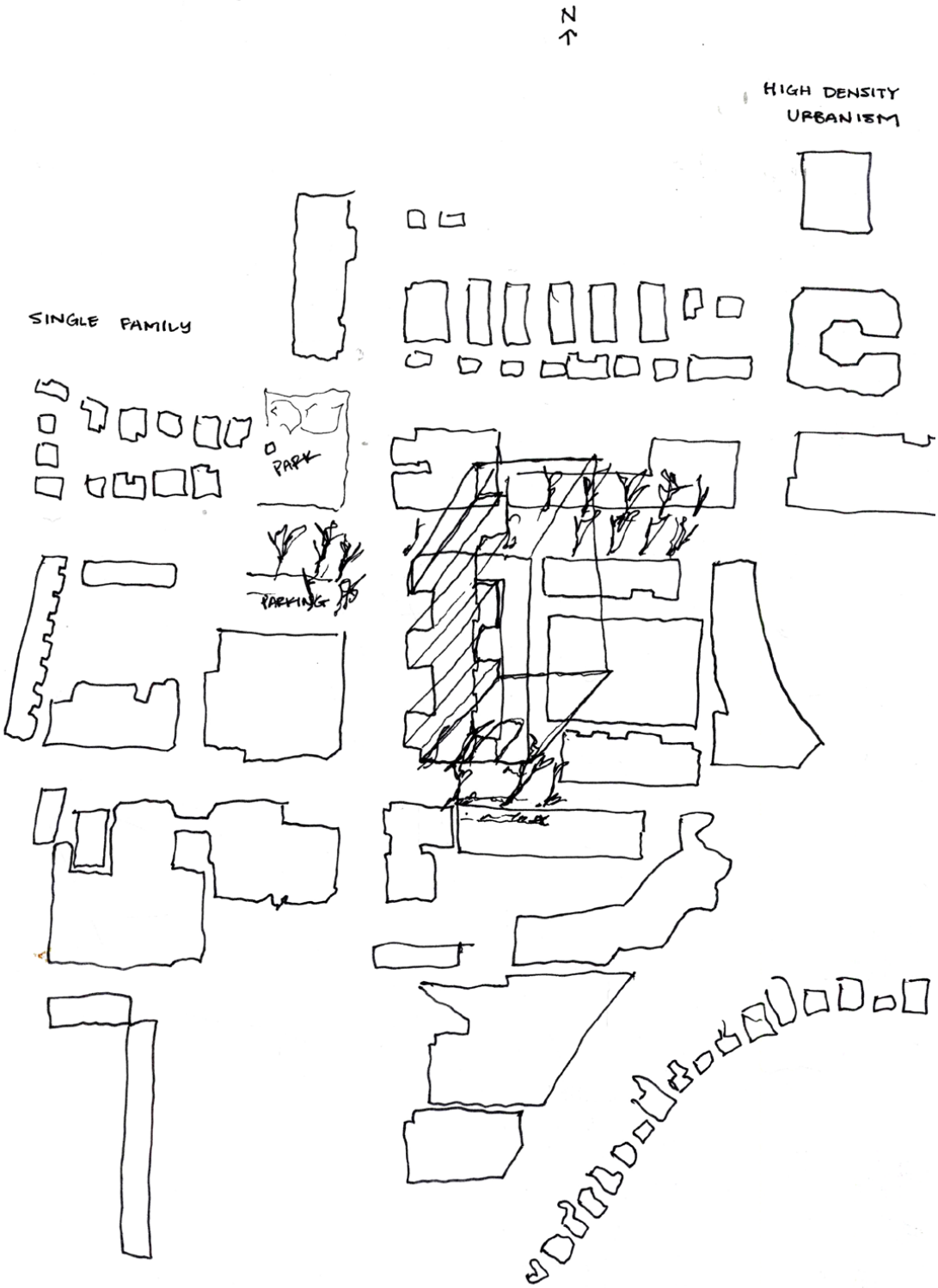


FIGURE 43 - APPENDIX 1 - BETHESDA ROW PLAN DIAGRAM
Source: author

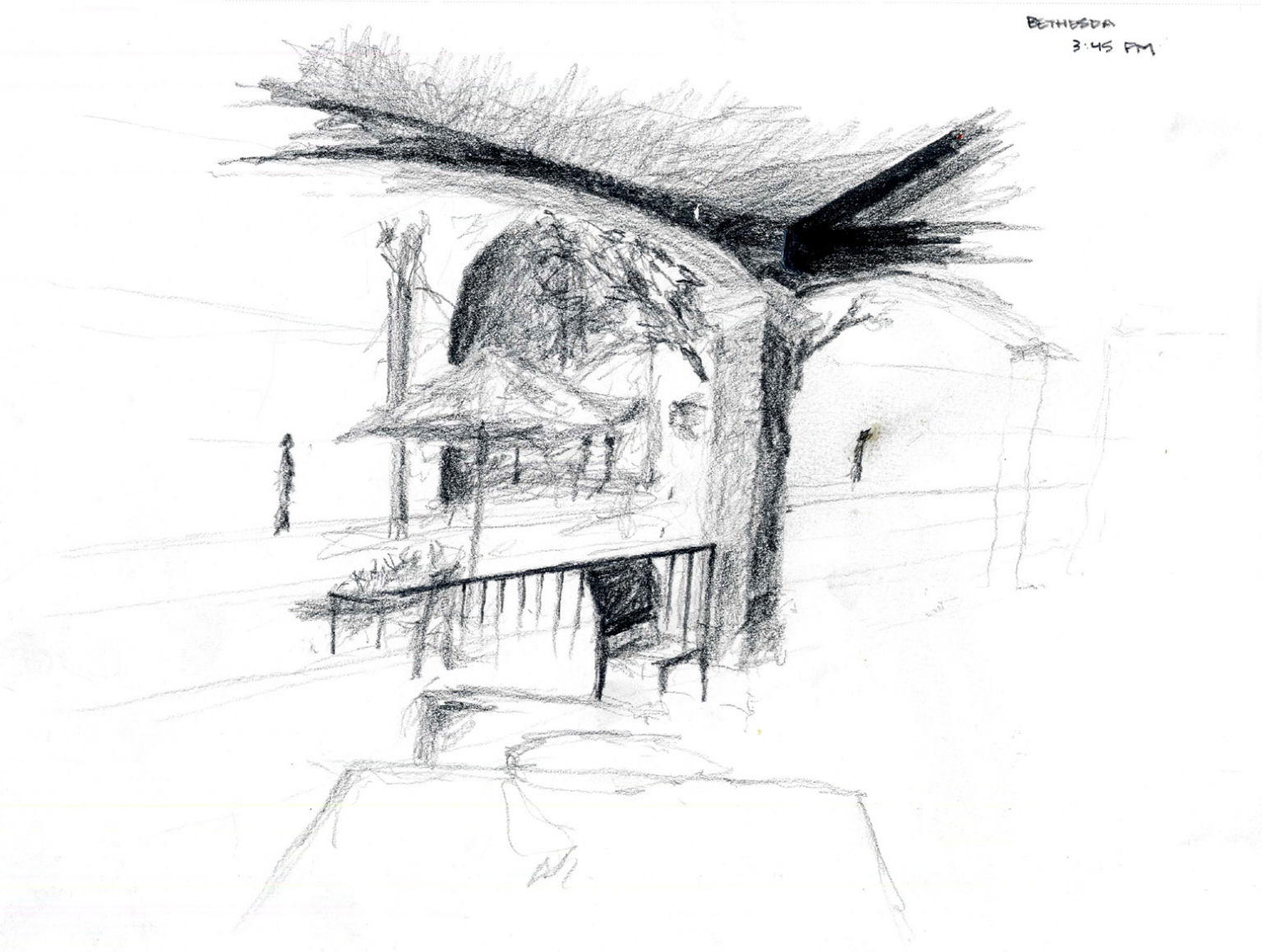


FIGURE 44 - APPENDIX 1 - BETHESDA ROW EXPERIENTIAL SKETCH
Source: author