

A More Complete Street
A Street for Everyone to Enjoy
A Design Investigation of Different Street Design Theories

-- North East Street, Frederick, MD

Jun Jiang



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Executive Summary

Introduction and Goals

Roughly 80% of the urban public realm is made up of streets (Street Design: the Secret to Great Cities and Towns, 2013). Streets take up 25%-35% of the developed lands in American cities and impact urban forms, structures, and comfort levels (Smart Growth Manual, 2009). By creating environments that are more pedestrian friendly, energy now used by cars can be reduced. Throughout history, successful urban streets have provided various functions in addition to just transporting people and goods from place to place. There are many other important functions outside of mobility, including economic, social and environmental functions (Dover and Massengale, 2013). Most streets today focus solely on mobility and sacrifice other functions, such as environment, human health,

preservation of local culture, and many other aspects of value to society. Context-Sensitive Solutions, Complete Streets, Place Making, Green Streets are all concept ideas and initiatives that have evolved to address issues related to the planning and design of street environments. Each has their own focus and the definitions for each will be outlined in Chapter 1. This thesis proposes to integrate principles from each of the four concepts. This integrated concept is defined as More Complete Street. The purpose of this thesis is to apply the integration of street related concepts - More Complete Street - to a case study site: North East Street located in City of Frederick, Maryland. The current plans for Northeast Street are

included in the East Street Extension Phase I Report (2010). The East Street Extension Phase I lists the five top issues: Economy Renaissance, Right of Way conflict, Place Making, History and Local Culture Preservation and Storm Water Management. The report suggests that design should provide identification and classification of the street's segment typologies. This thesis provides this typology. The report also suggests that the street should be oriented to people instead of vehicles and that more attention should be focused on streetscape and spaces for pedestrian and bicyclists. The application of the More Complete Street concept provides a guide for improving Northeast Street performance and restoring the complex multifunctional character of urban streets.

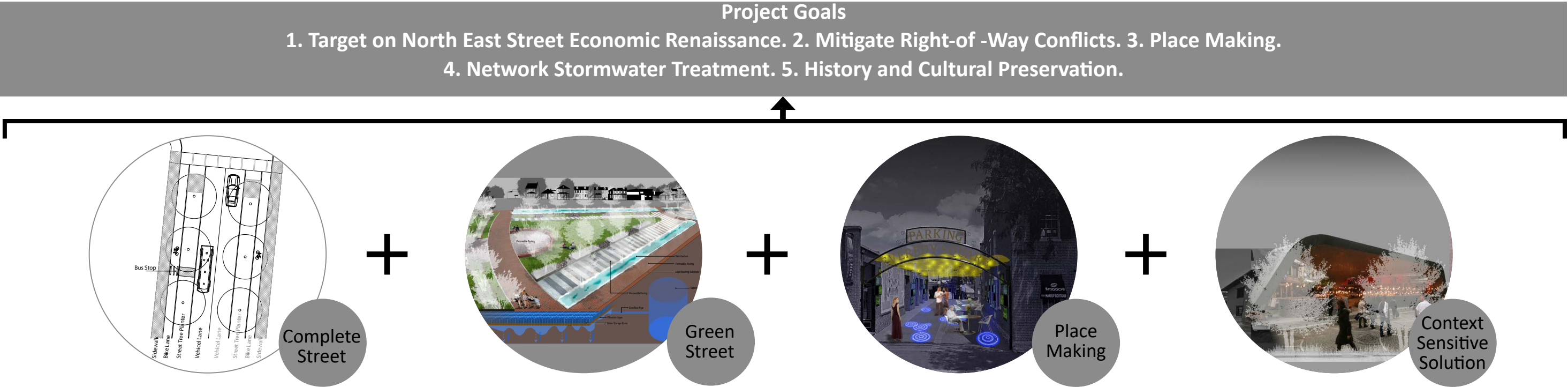


Figure Introduction and Goals.

Methods

The design process was divided into four primary steps. Step one consisted of conducting site inventories of North East Street. This included documenting existing demographics and housing, existing transportation patterns, and existing commercial types. Step two included the analysis of existing street spaces and streetscape and the determination of constraints and opportunities. Step three included an analysis of the street’s facilities, appearance and sustainability, in order to define the parameters of the project. Last step four included the creation of plans and designs that propose North East Street to be a more complete street.

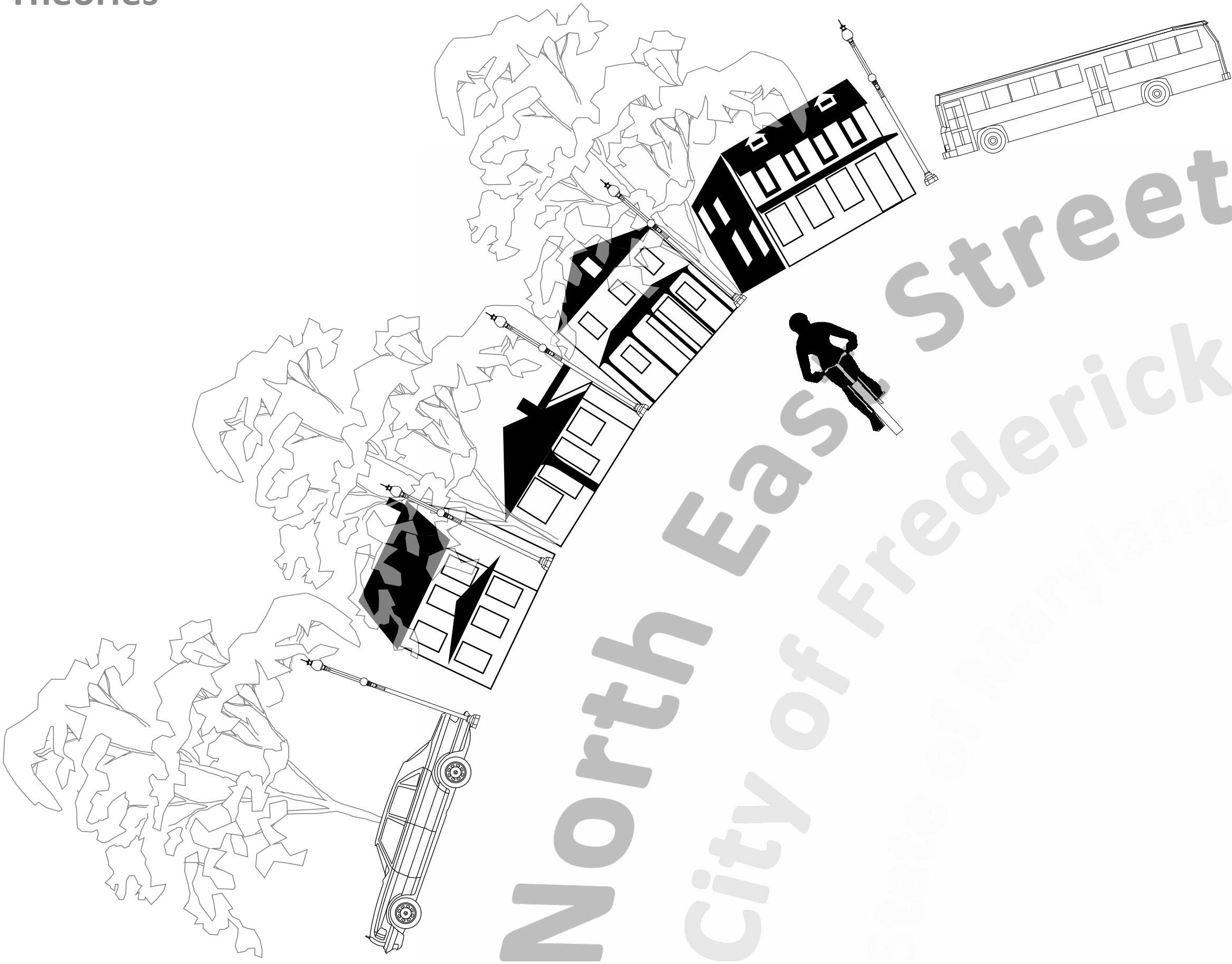
Result

As a result, firstly, the design applies Complete Street theory in order to mitigate right-of-way conflicts. The proposal is to ensure sidewalks are as wide as possible, and both pedestrians and cyclists will be protected by street trees from speeding cars. Secondly, the design applies Green Street theory in order to enhance the street capacity of storm water treatment. The proposal includes introducing street tree and bio swale, also living wall and a rain garden which harvest storm water. Thirdly, the design applies Place Making theory in order to preserve local culture and history. Specially, the proposal suggests to build a farmer’s market and several murals. Last but not the least, the design applies Context Sensitive Solution in order to stimulate site renaissance. The proposal recommends to build mix used blocks and add more low-cost residential options.

Conclusion

This design investigation towards North East Street is the result of a collaboration between the City of Frederick Planning Department and Jun Jiang, who was a graduate student in Landscape Architecture at the University of Maryland. The designer was asked to prepare a detailed site analysis of the North East Street Between North Patrick Street and North 7th Street and to develop a conceptual renaissance plan for it. This renaissance plan will provide significant economic, social and environmental benefits to the street as well as to the City of Frederick at large. At its core, the design seeks to facilitate a local economic renaissance by proposing a more-than-complete street: not merely providing equal access for different traffic methods, but also introducing new mixed-use blocks, adding stormwater treatment options, and strengthening the street’s cultural/historical identity.

Chapter 1: Design Theories



1.1 Complete Street

1.1.1 Definition

Smart Growth America (2015) defines Complete Streets as streets “designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities”.

“Complete Streets are intended to make it easier for people to cross the street, walk to their destinations, or bike to work, and to help buses arrive on time, while ensuring that it is still safe for people to walk from one bus stop to another” (Smart Growth America 2015). Just like what is shown in Figure 1.1, the UNC Highway Safety Research Center (2016) states that complete streets

“are designed to be safe and comfortable for all users, including pedestrians, bicyclists, transit riders, motorists, and individuals of all ages and capabilities. These streets generally includesidewalks,bicyclelanes,transitstops, appropriate street widths and speeds, and are well-integratedwithsurroundinglanduses.CompleteStreet

Complete Streets Are Safe Streets for:

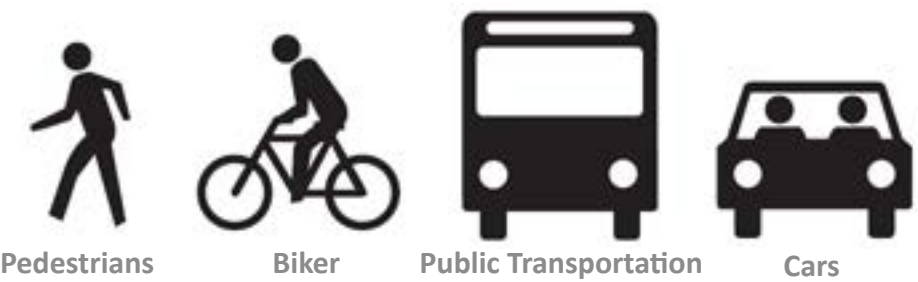


Figure 1.1 Complete Streets Are Safe Street For Everyone.

design elements that emphasize safety, mobility and accessibility for multiple modes may include crosswalks, bus lanes, landscaping, lighting, signaling systems, and adequate separation between sidewalks and streets”.

1.1.2 Design Principles

Although there is no prescriptive design for a Complete Street, each one follows certain basic design rules. All should include sidewalks; bike lanes (or wide paved shoulders); comfortable, accessible and well-designed public-transportation stops; frequent and safe crossing opportunities; easily accessible pedestrian signals; good quality lighting; and narrower travel lanes for motor vehicles than those we usually have (New Jersey Department Of Transportation, 2012).

1.1.3 Advantages and Disadvantages

Public transportation systems are vital to increasing productivity and decreasing congestion (Smart Growth America, 2015). Building a Complete Street benefits the efficiency of the existing road network by moving more people while using the same amount of built space; crucially, this includes the difference between the space taken up by a bus, and the space taken up by the number of people who could fit on a bus all driving their own cars (Figure 1.2). With regard to safety, King et al. (2003) found that installing pedestrian-friendly

features reduced pedestrian risk by 28%. Building Complete Streets could also improve public health (Robbins & Morandi, 2002). Powell (2003) found that 43% of people with safe places to walk within 10 minutes of home attained recommended physical activity levels, while just 27% of those without safe places to walk were active enough. As a disadvantage, the Complete Street concept pays no specific attention to environmental issues, apart from the replacement of car journeys with bus journeys. Nor does it take into consideration any place-making concerns (see section 1.3, below) or aesthetic requirements that users and visitors may have.

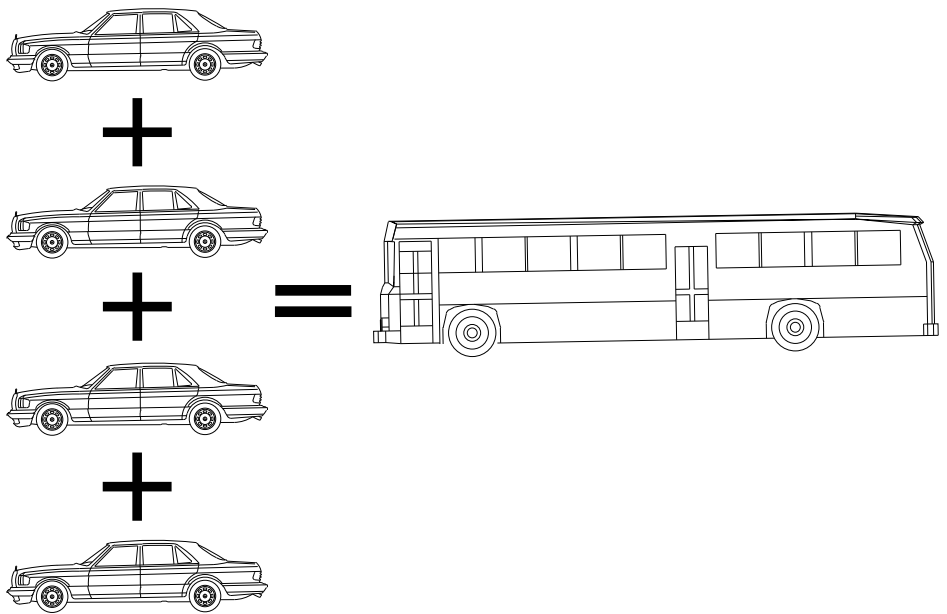


Figure 1.2 Complete Street Are More Efficient.

1.2 Green Street

1.2.1 Definition

Smart Growth America (2015) defines Green Streets as urban or rural projects aimed at transportation-system sustainability enhancement, involving “many policies and practices that minimize environmental impact”. They address the existing hydrological and ecological functions of the site; seek to create localized storm-water systems and habitats; and use renewable building materials, green energy, and low-impact technologies.

1.2.2 Design Principles

Green Streets should be cost-effective, in part due to the requirement that they utilize local materials and plants. They should also protect existing wildlife corridors and avoid fragmentation of wildlife habitat (ASLA, 2015); respect other aspects of local ecology and hydrology; and incorporate storm-water strategies from the early planning stages.

1.2.3 Advantages and Disadvantages

Focused on environmental improvement rather than merely slowing or halting further environmental degradation, Green Streets make use of such innovations

as permeable pavements, vegetated bioswales, and bioretention devices, absorbing and filtering storm water and thus reducing both flooding and water-pollution risks. Street trees are planted with more room for their root systems to expand, helping ensure their long-term health; the use of renewable local materials reduces overall carbon footprint and even benefits

local business; and the amount, type, and placement of vegetation can enrich biodiversity and help to reduce air pollution. While Green Streets do much to enhance sustainability, however, there is little intersection between the Green Street concept and place-making, and little discussion of how such streets may interact with other transportation options.

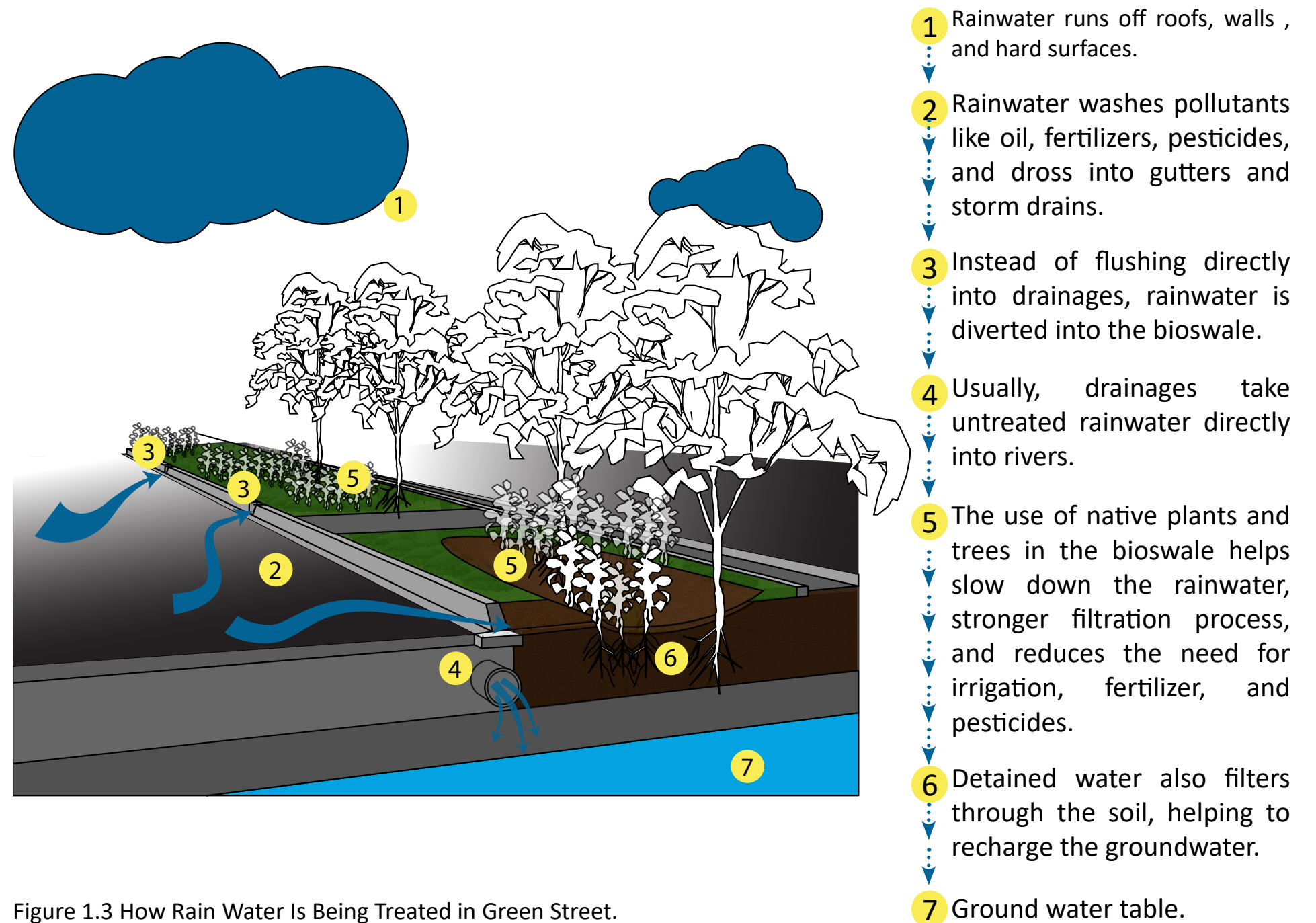


Figure 1.3 How Rain Water Is Being Treated in Green Street.

1.3 Place Making

1.3.1 Definition

Place Making is a multi-faceted approach to the planning, design and management of public spaces, intended to inspire people to collectively reimagine and reinvent public spaces as the heart of every community (Project for Public Spaces, 2015). Place Making intends to create public spaces that promote people’s quality of life, and to better achieve its goals, takes into account each local community’s existing assets, inspirational features, and potential. As such, it can be described as sociable, adaptable, and context-specific.

1.3.2 Design Principles

Place Making is concerned with public spaces that give identity to whole communities: large or small, everywhere has – or has the potential to create – its own equivalent of Broadway in New York. Carnaby Street in London The images of many public spaces, including streetscapes, are closely tied to local history and culture. Place Making also seeks to build public spaces’appeal to a broader variety of people: providing attractions and destinations such as outdoor cafes, fountains, sculpture, or band shells for performances. Nevertheless, the theory does not presuppose that spaces must be big for to Place Making to be a success. To promote people’s quality of life, Place Making might

also need to provide amenities such as benches, drinking fountains, lighting and public art. It is also considered important to provide flexible features that can respond rapidly to daily or seasonal changes: for instance, movable chairs, tables, umbrellas and games. On a slightly larger scale, ice-skating rinks, outdoor cafes, open-air markets, horticultural displays, and so forth can help adapt the use of the same spaces from one season to the next.

1.3.3 Advantages and Disadvantages

Place Making aims at providing more and better

community-centered public space, and widespread adoption of its principles in the public realm could enhance people’s health, happiness and wellbeing. Ideally, it values all of a local community’s current advantages and future potential, and embraces both designers’ vigorous ideas and community members’ grassroots involvement. Therefore, it should minimize problems such as traffic-dominated streets, little-used parks, and isolated or underperforming development projects. However, Place Making’s strong focus on public space’s social functions means that it has had little to say about environmental benefits per se, or about the provision of diverse transportation options.

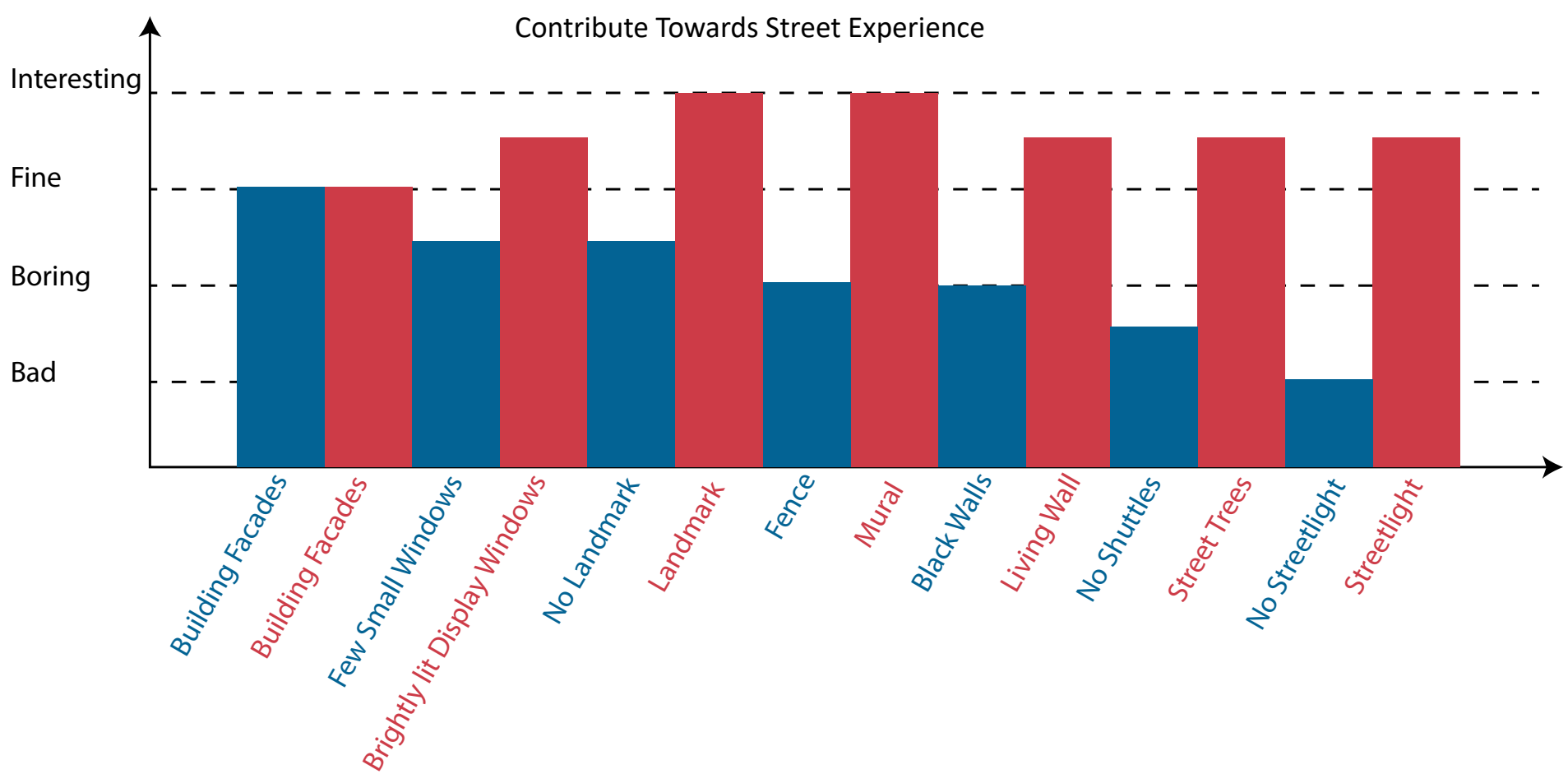


Figure 1.4 Facts Contribute Towards Street Experience.

1.4 Context-Sensitive Solutions

1.4.1 Definition

In 2007, the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA) jointly produced a strategic-planning process report on Context Sensitive Solutions (CSS). They defined CSS as a collaborative, interdisciplinary approach that involves all stakeholders in providing transportation facilities that fit their settings. It is an approach that leads to the preservation and enhancement of scenic, aesthetic, historic, community and environmental resources, while maintaining or improving safety, mobility and infrastructure conditions (AASHTO/FHWA, 2007).

1.4.2 Design Principles

According to the FHWA (2015), CSS is underpinned by four key principles: striving towards a shared stakeholdervision as a basis for decisions; demonstrating a comprehensive understanding of contexts; fostering continuing communication and collaboration to achieve consensus; and exercising flexibility and creativity to shape effective transportation solutions, while preserving and enhancing community and natural environments.

1.4.3 Advantages and Disadvantages

Unlike traditional transportation engineering, which interprets a roadway’s function as simply supporting mobility, a CSS perspective requires planning urban streets in the wider context of city infrastructure and embracing multiple economic, social, and recreational functions. To better identify location-specific transportation issues, CSS values early-stage

consideration of a variety of factors, such as land use, transportation and infrastructure demands, and a wide range of possible outcomes and future changes (These factors are reflected in the present dissertation’s goals and objectives). However, as with Complete Streets design, CSS is clearly transportation-focused and less concerned with environmental protection or with non-transportation-related use of public spaces, which also can be seen as key to successful street design.

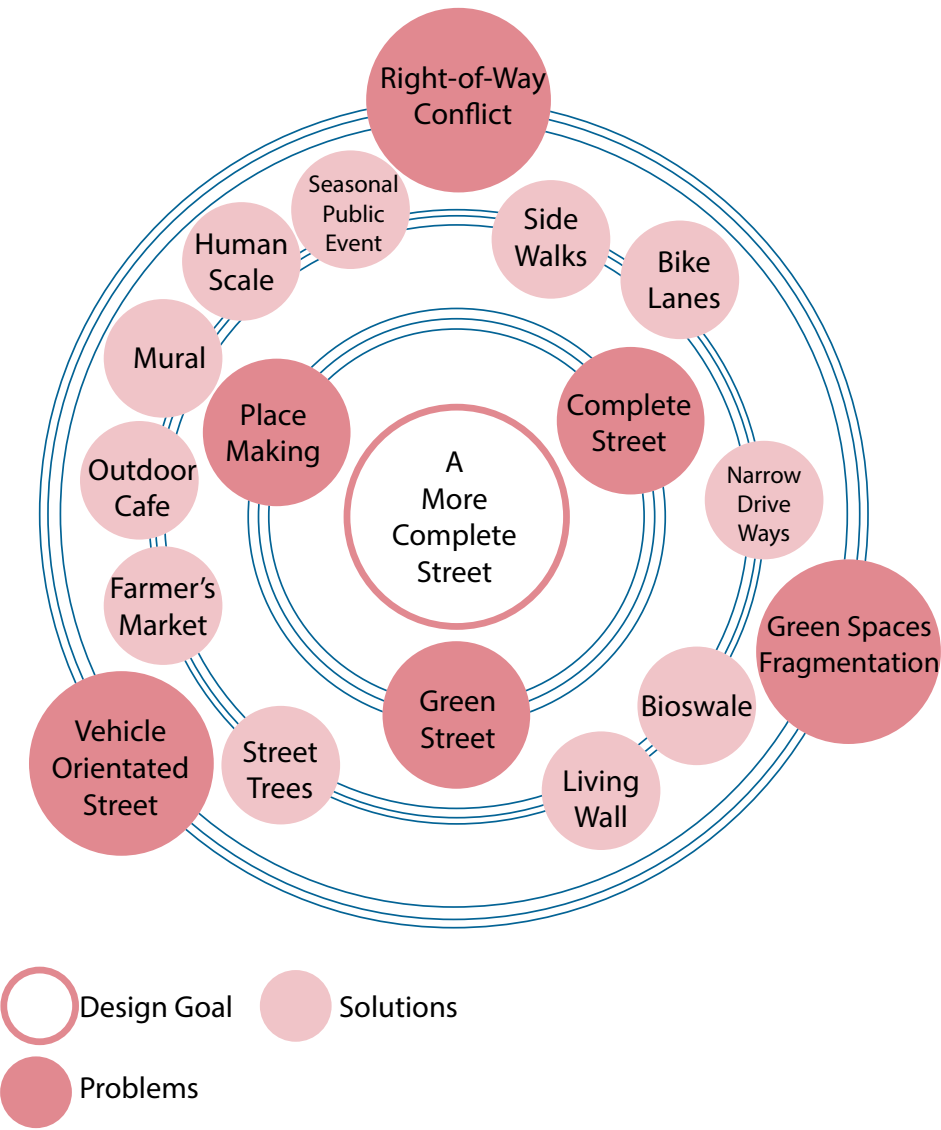


Figure 1.5 Site Main Issues and Solutions

Chapter 2: Frederick, Maryland



2.1 Trail and Railway History of City of Frederick

Frederick is the second largest city in the state of Maryland with a population of 65,239 (City of Frederick, 2016). It has been an important crossroads community since colonial times, when it was located on an important north-south Native American trail and east-west routes to Baltimore and Washington, D.C. By the year of 2014, City of Frederick had 45,911 jobs, 36,256 people in the labor force and 3,400 businesses (City of Frederick 2016). The unemployment percentage in 2013 was 6.3%, compared to county's unemployment percentage of 5.6% (City of Frederick, 2016). One of the goals of City of Frederick officials is to continue to



Figure 2.1 Train and Rail Museum in Frederick



Figure 2.2 Trail and Railway Relics in Frederick

expand economic development. For more than 260 years it has been the regional center for mid-Maryland. Now, it lies at the intersection of two major interstates, creating a regional relationship between Maryland's port city of Baltimore and the nation's capital (East Frederick Rising 2010). This unique position makes the City of Frederick the commercial center of both Frederick County and Western Maryland, as well as an important transportation hub.

In 1832, Baltimore and Ohio Railroad located their headquarters at Carroll and All Saints Streets. By the early twentieth century, industry and commercial development encouraged and supported railway

development in the City of Frederick. In 1930, walking trails were located along north/south East Street (East Street Extension Phase 1 Area Plan 2002).

The history of trail and railway is a mirror of the the City of Frederick's history. As figure XX and XX show, there are even one railway museum and several railway relics on North East Street today. These relics, however, now is under little protection. Most of them are exposed to the environment, receiving erosions from driving cars, rains, and any other nature forces. Also, no signs or other material are provided, people can hardly learn any thing from them.

2.2 Culture of Frederick

Agriculture remains an important industry in Frederick County. The county’s large agricultural base covers more than 202,000 acres of farmland, making it the largest agricultural county in Maryland, accounting for 10% of the state’s total farmland (Discover Frederick MD 2016). The City of Frederick offers a rare combination of a thriving agricultural industry and a growing professional population. As what is shown by Figure XX, residents still use corn, pumpkins and other agricultural products to decorate their houses according to the season.



Figure 2.3 Agriculture in Frederick



East Frederick

Figure 2.4 East Frederick District

The prospects of the manufacturing sector in the region are less clear-cut, yet East Frederick is one of few remaining areas where industrial businesses are located in the city and county (Frederick News-Post 2016). Due to its’ industrial businesses history, murals could be found in North East Street (FigureXXX). Based on a plan initiated in 2010, The Frederick News-Post (2015) noted that despite recent years plagued by development inactivity, East Frederick (Figure XXX) was now showing signs of growth.



Figure 2.5 Mural in Frederick

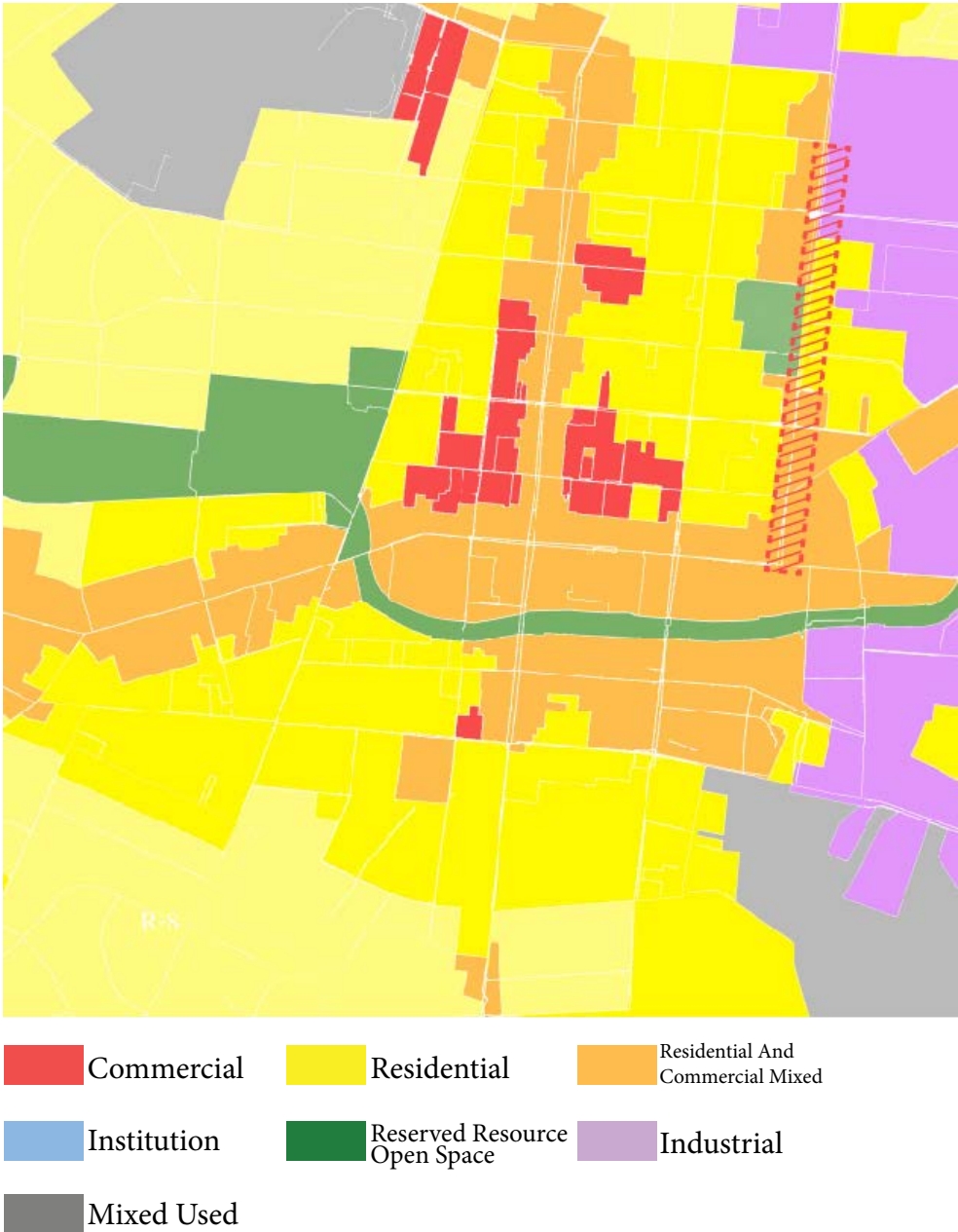


Figure 2.6 East Frederick Land-use Map

In the city council’s 2010 East Frederick Rising plan, context analysis revealed this district as the key to Frederick’s future, representing a “tremendous redevelopment opportunity as the region’s jobs center, technology incubator, transportation hub and next great neighborhood” (East Frederick Rising 2010). East Frederick land use is predominately residential and commercial (Figure 2.3). However, about 125 acres, or 34% of East Frederick is currently zoned for light or heavy industrial use, according to Matt Davis, the city’s division manager for comprehensive plans (Frederick News-Post 2016). This closely reflects the proportion of industrial businesses in East Frederick (33%) (Sage Policy Group Inc. 2014), which is slightly more than double the city-wide average (Sage Policy Group Inc., 2014). Nevertheless, much of this land is currently undeveloped or the existing building are unoccupied. Under the proposed small area plan, much of that land could be rezoned to accommodate other uses, including residential and commercial use (Frederick News-Post 2016). And therefore, this plan would turn out to be a great redevelopment opportunity for North-East Street from residential, economic, cultural and environmental considerations.

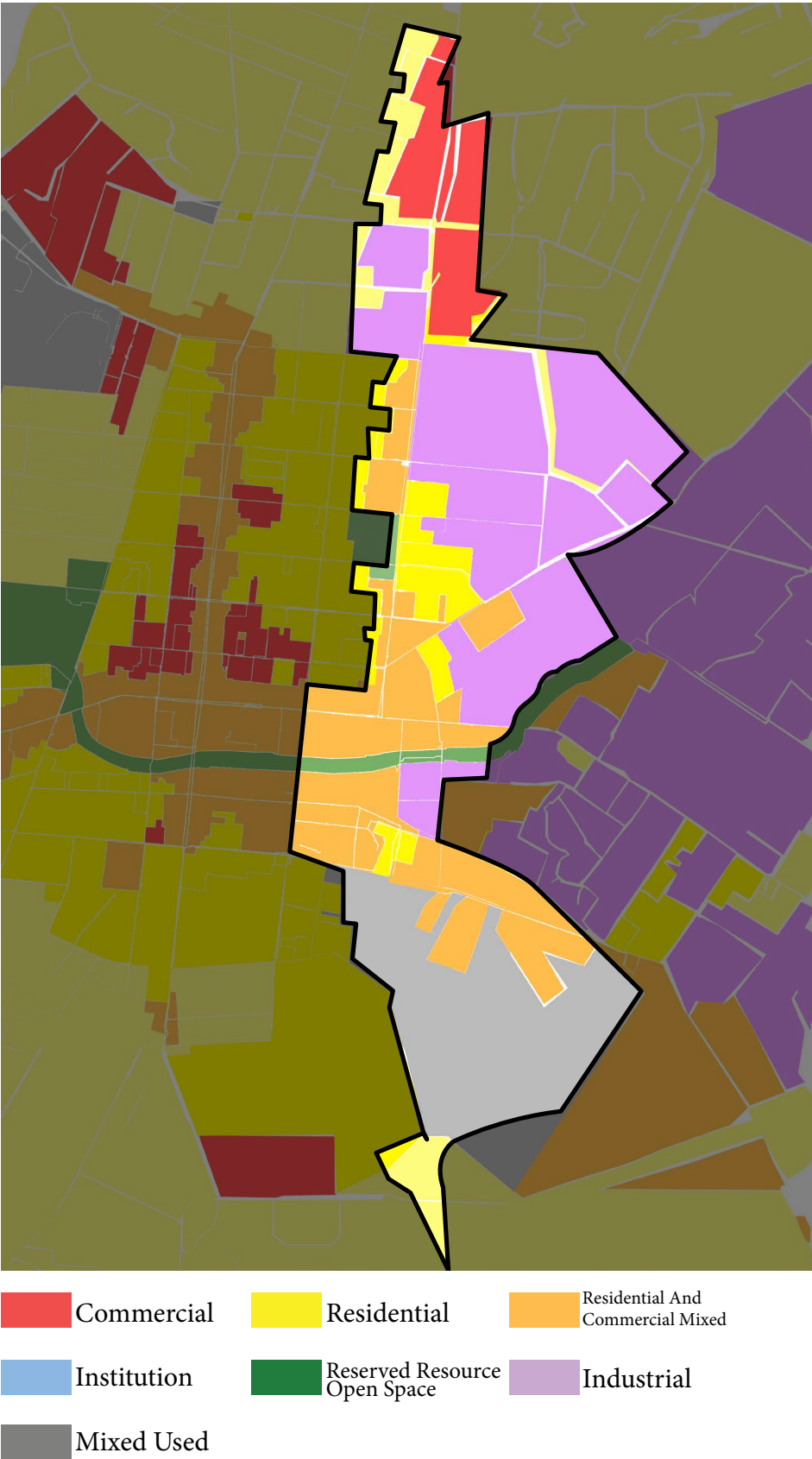
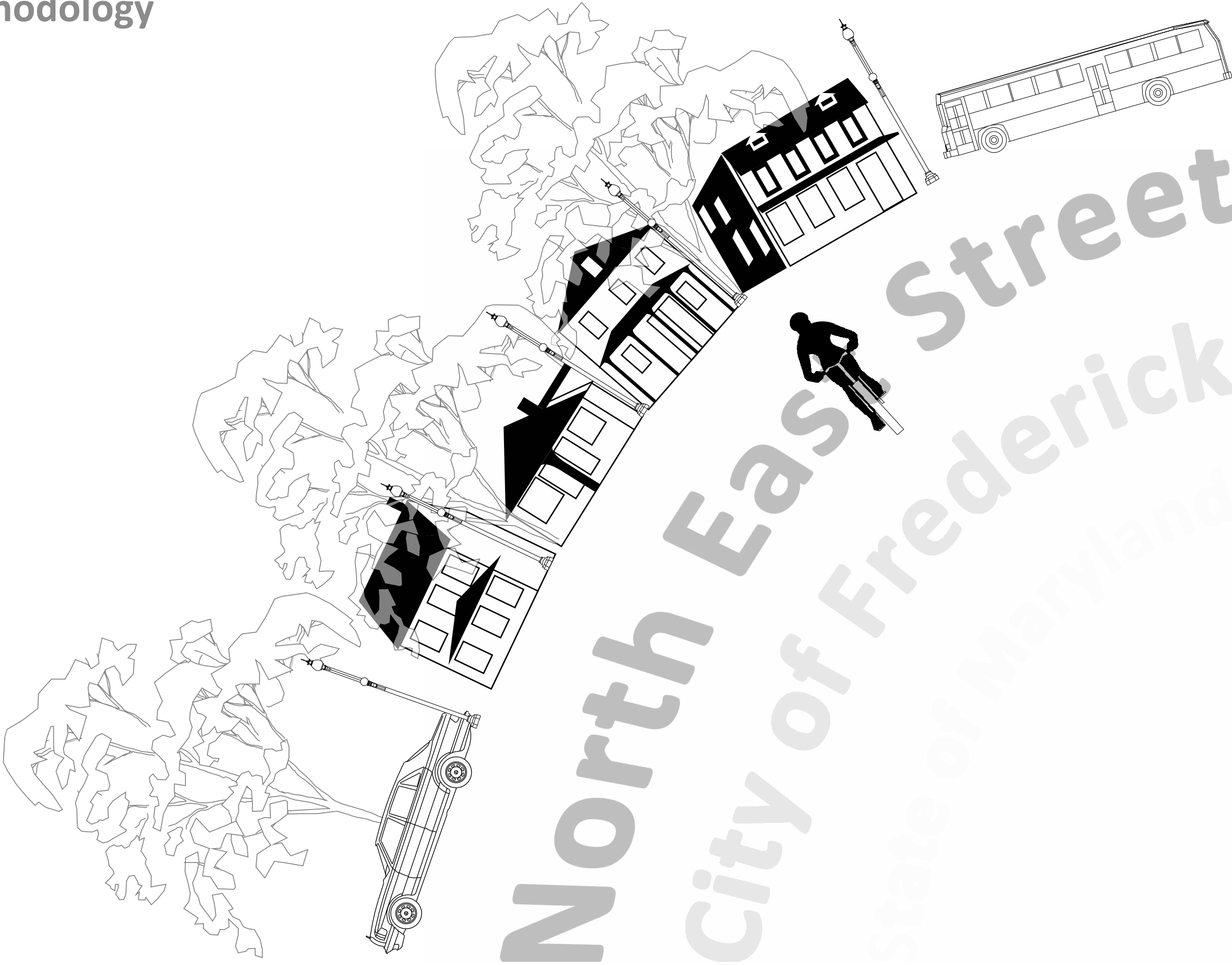


Figure 2.7 East Frederick Land-use Map

Chapter 3: Methodology



3.1 Site



Figure 3.1 Site Within Historic District

The project site, which extends from Patrick Street to 7th Street, is located within the historic district in the City of Frederick and at the edge of the downtown area (Figure 3.1). It strongly expresses the character and history of the city, and functions as a transition area between the downtown and industrial areas.

According to the current land use (Figure 3.2), there are 7 different land-uses on site:

Parking lots domain most of site as 37.67%, however, none of them is environmental friendly and do nothing for storm water;
Residential area occupies 28.35%, and most of them are townhouses, only several single family houses, but all of them are located on secondary street;
Although commercial buildings only take up 8.83%, those buildings spread along North-East Street;
Open spaces are 4.33%, they are only concentrated between 2nd Street and 4th Street. And there is no other connections to any open spaces further;
Surprisingly, inefficient-use spaces take up to 2.10% and streetscape occupies 11.52%.

As a conclusion, the proposed site could continue to develop into a mixed used street corridor, providing comparably additional affordable opportunities for work, commerce and residence.

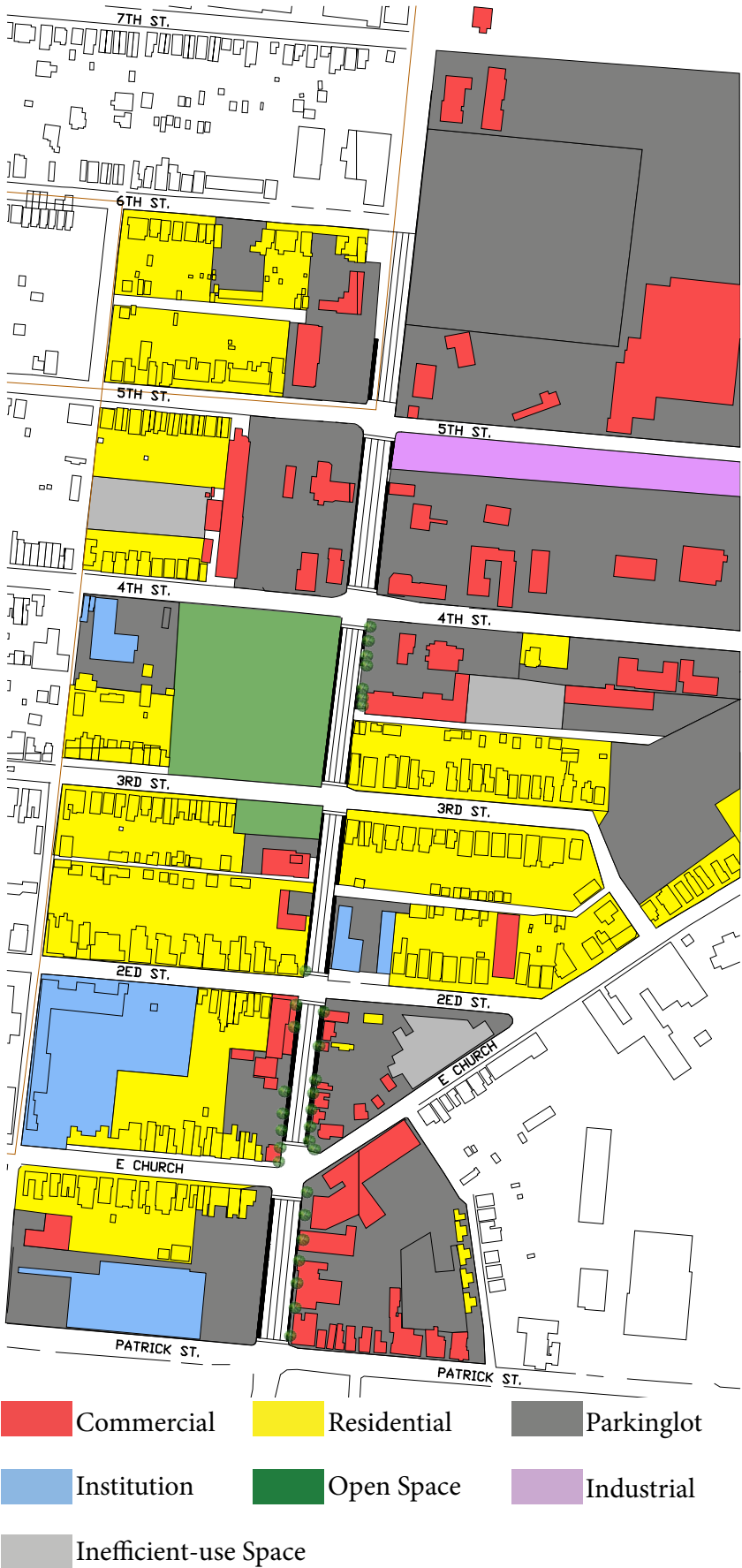


Figure 3.2 North East Street Land-use

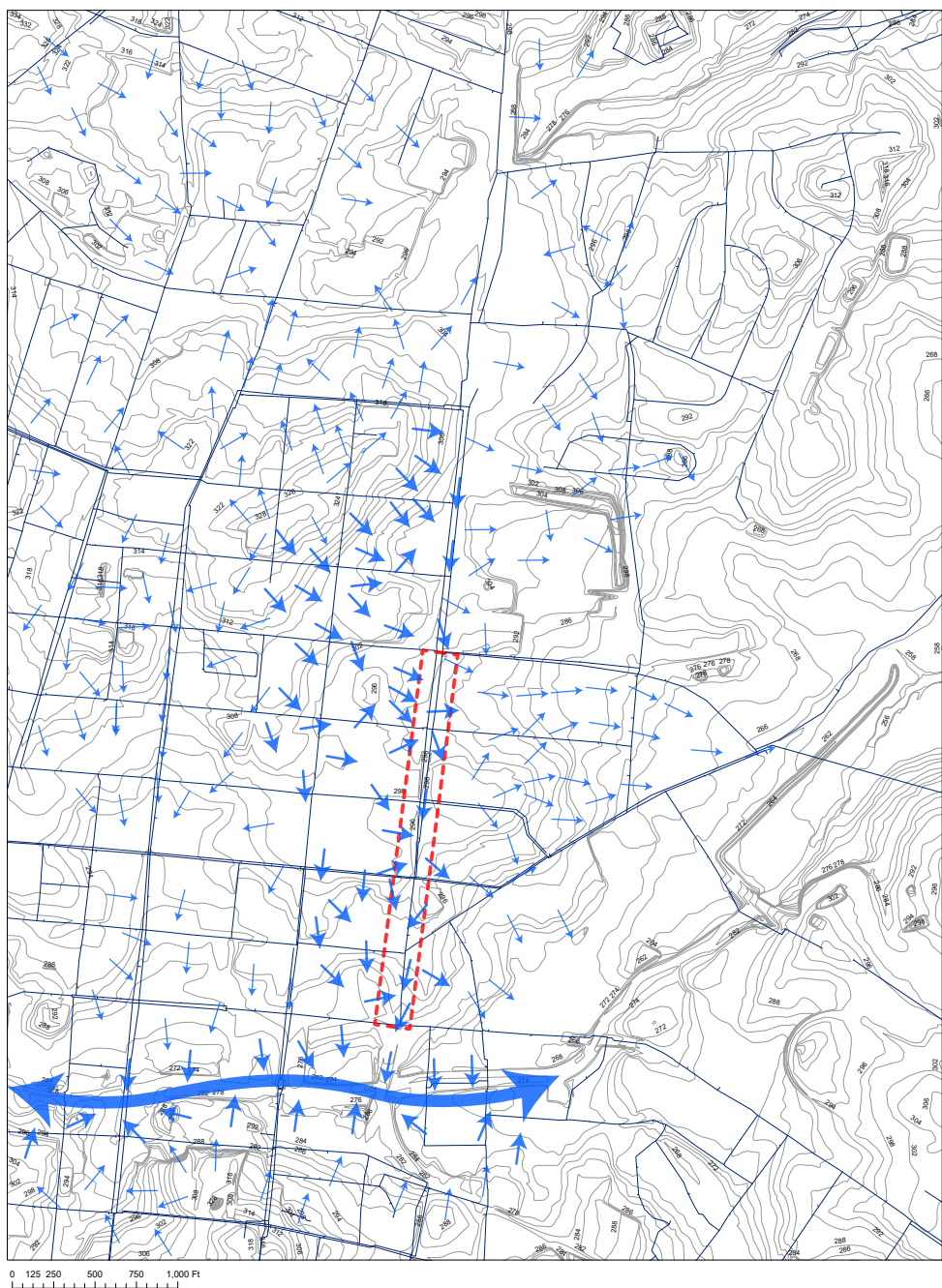


Figure 3.3 Site Hydrologic Map

According to Figure 3.3, sheet flow runs down from direction of north-west to south-east through North East Street, and finally rush into Carroll Creek.

Consider from Figure 3.2, rain water mostly flow across from parking lots and street surface. However, information could be learnt from Figure 3.4, that there is no much green space which could purify sheet flow, absorb rainwater, recharge underground water. The only two open spaces are located between 2nd Street and 4th Street, but they are not systematic nor efficient.

If this site could be transformed into a green street, then it could serve as an ecological corridor that channels storm water, purify while transporting sheet flow, absorb rainwater and recharge underground water at the same time.

Moreover, this ecological corridor may provide pathway for wild life, enrich biodiversity.

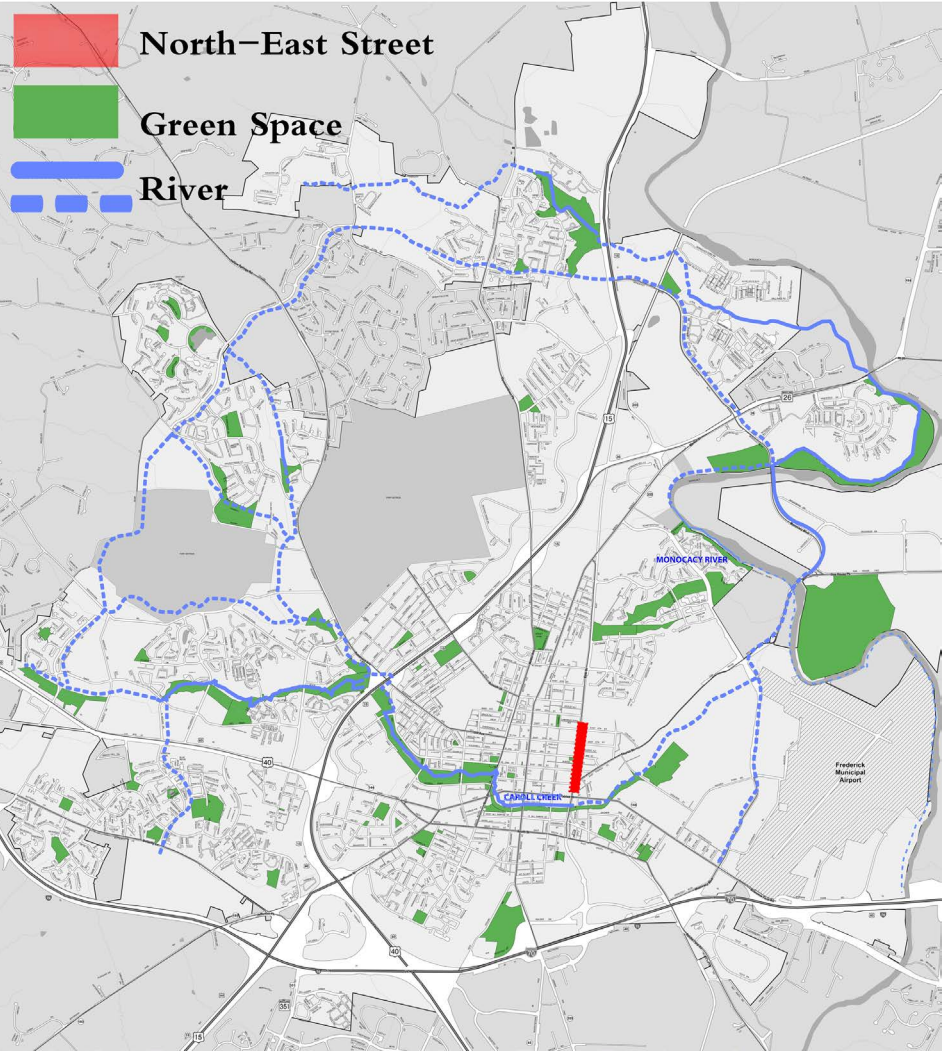


Figure 3.4 Site Location and Green Spaces in Frederick

3.2 Existing Conditions

3.2.1 Demographics and Housing

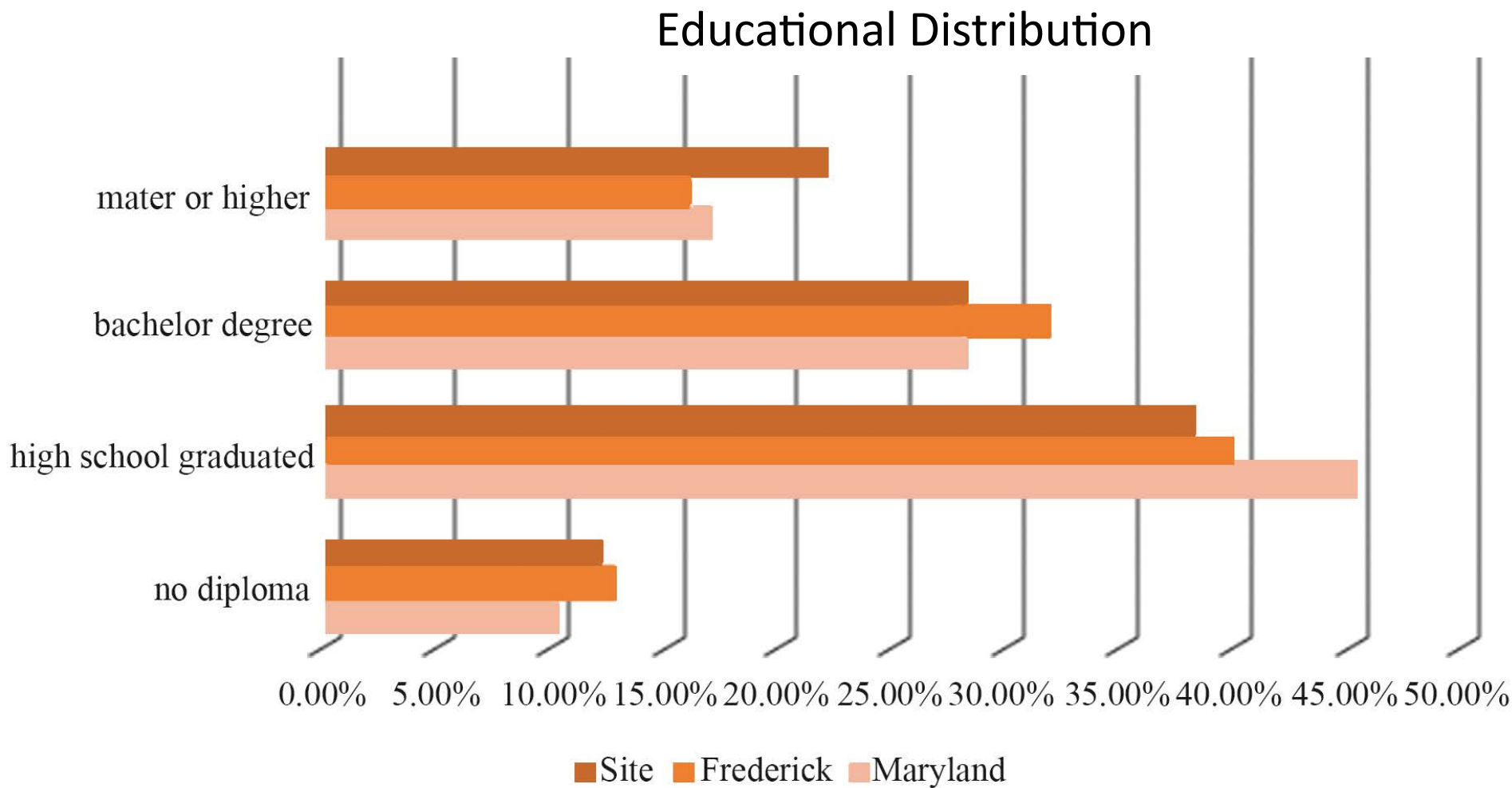


Figure 3.5 Educational Distribution

Nearly half of the current residents have a bachelor’s or higher degree (Figure 3.5). As compared to the City of Frederick or the state of Maryland as a whole, household incomes in North East Street are high (Figure 3.6). Due to plenty of talent, North East Street might be suitable for startup businesses or local small businesses. However, according to The Frederick News-Post (2016),

though people living there are interested in improving their streetscape, they also ask for additional housing. Residents and business owners both expressed a desire for the street to include more condominiums and apartment-style buildings. Local resident Julia Ferguson told the paper that she wished there were more types of homes suitable for the “20 somethings”

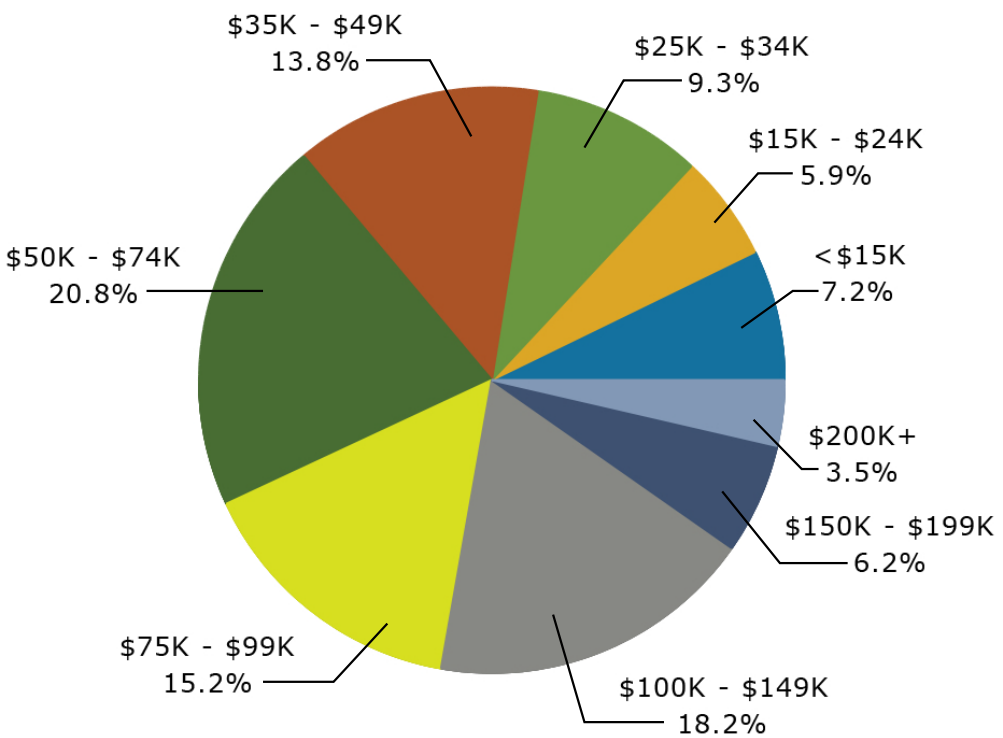


Figure 3.6 Household Income

who might not be able to find or afford similar options in the heart of downtown. Currently, there are no apartments in North East Street, but as shown in Figure 3.10 and Figure 3.11, there are some inefficient used area that might allow some to be built.

3.2.2 Current Transportation Situation

3.2.2.1 Lane Width

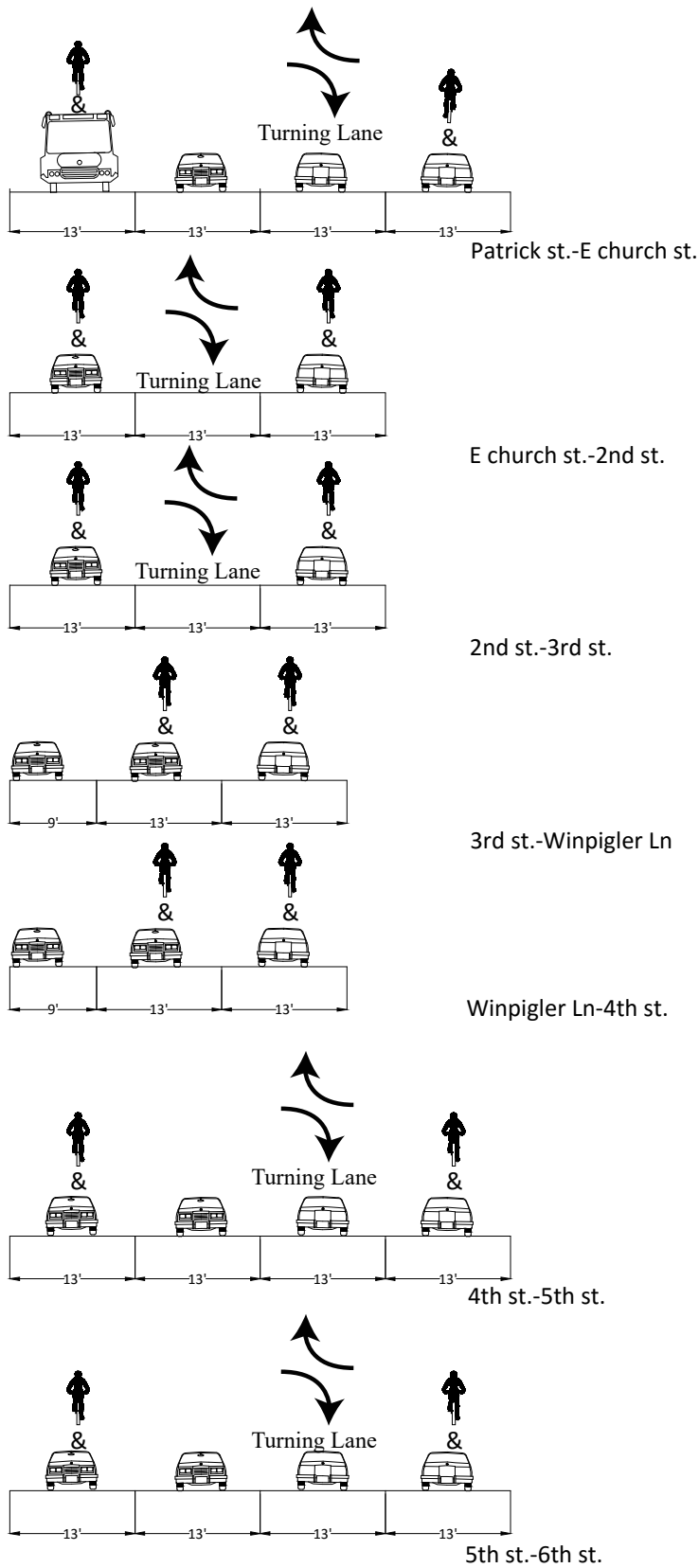


Figure 3.7 Section of Current Lanes

According to Figure 3.7, from Patrick Street to 6th Street,

1. Between E-Patrick Street and E-Church Street, there are four lanes, including one towards north while two toward the opposite, and one turning lane, all lanes are 13' wide. Bicyclists have to share lanes with vehicles.
2. Between E-Church Street and 3rd Street, there are three lanes, including one towards north while one toward the opposite, and one turning lane, all lanes are 13' wide. Bicyclists have to share lanes with vehicles.
3. Between 3rd Street and 4th Street, there are three lanes, including two 13' wide lanes toward opposite directions from each other, and one 9' wide parking lane on west side of the street. Bicyclists have to share lanes with vehicles.
4. Between 4th Street and 6th Street, there are three lanes, including one towards north while one toward the opposite, and one turning lane, all lanes are 13' wide. Bicyclists have to share lanes with vehicles.

Conclusions are:

1. Vehicle lanes (including turning lanes) are 13' wide;
2. There are 9'-wide parking lanes from 3rd Street to 4th Street;
3. Most streets have turning lanes, except sections between 3rd Street and 4th Street.

These dimensions tend to encourage traffic to pass at speeds of over 30 miles per hour.

3.2.2.2 Public Transportation



Figure 3.8 Bus Stops.

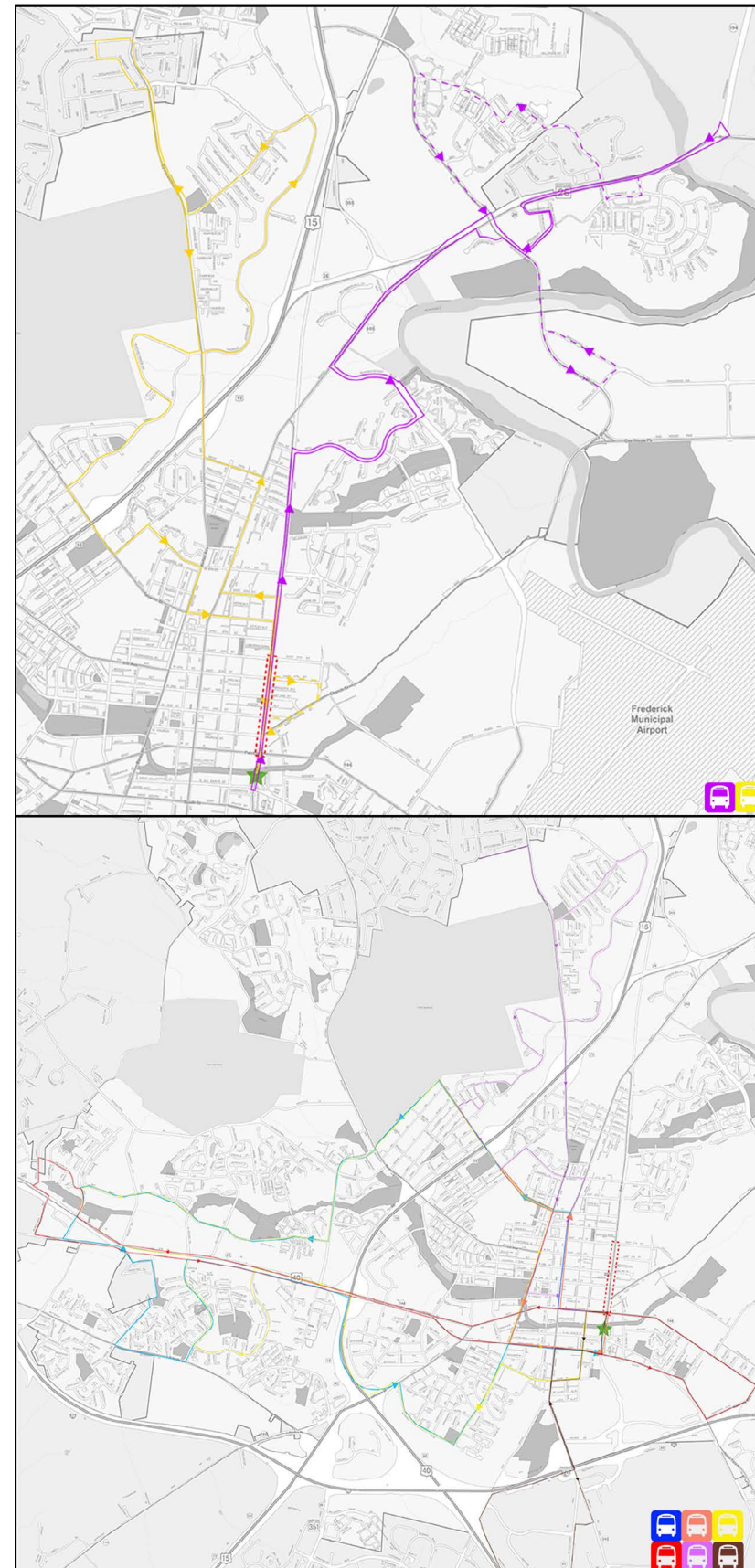


Figure 3.9 Bus Lines.

According to Figure 3.8, North East Street could be very convenient for visitors, as it is served by public bus lines that connect with nearly the whole of the City of Frederick. It could have a close transportation connection with the downtown area (Figure 3.9).

However, these bus lines are not efficient for two reasons. Firstly, not many people take buses but prefer driving their own cars; secondly, these buses arrive every one hour, and they don't operate on Sundays (<https://www.frederickcountymd.gov/199/Connectors>).

3.2.2.3 Parking and Inefficient-use Spaces

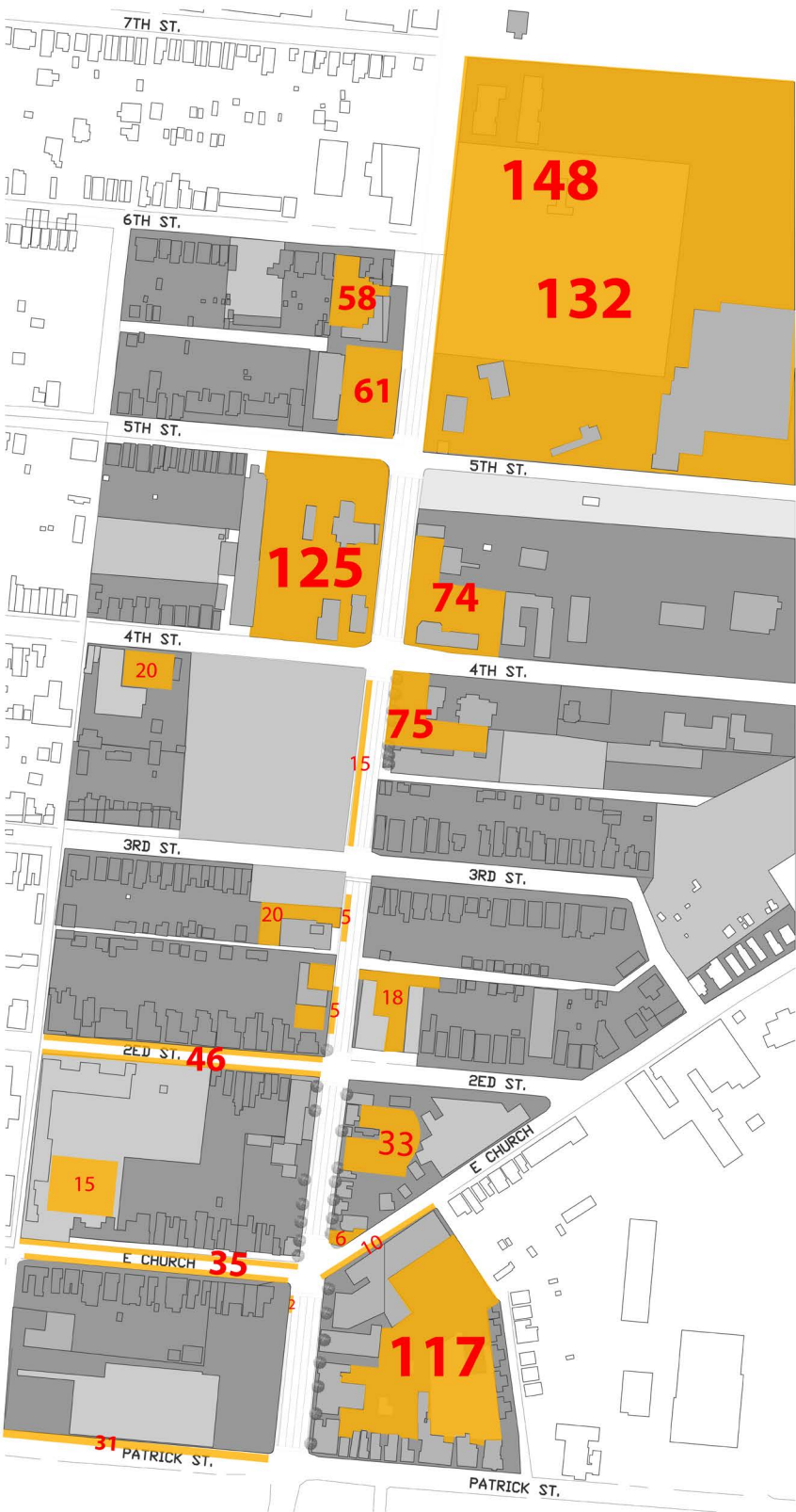


Figure 3.10 Number of Parking Spaces



Figure 3.11 Inefficient-use Spaces



Figure 3.12 Parking on North East Street .

As of the end of 2013, the vacancy rate among Frederick County’s industrial and warehouse spaces was relatively high: 16%, as compared with 9.9% and 9.2% in Montgomery and Prince George’s counties respectively. Although North East Street has no large vacant area, there are a significant number of areas in use as parking lots. Existing parking spaces exceeds the need for the current uses of the residence and business. Combined with street parking, this brings the street’s total parking capacity to 1,049 spaces (Figure 3.10). Most of these spaces consists of surface parking without any eco-friendly treatment, and stormwater sheet flow from these surfaces spreads pollutants over a wide area (Figure 3.11 & 3.12).

3.2.2.4 Cycling



Figure 3.13. Bicycle loop in Frederick.

Frederick County adopted its first Bikeways and Trails Plan in December 1999. Then, in March 2001, the City of Frederick adopted a Shared Used Path Plan. Step by step, Frederick has developed a beautiful History Bicycle Loop, which runs past most of the city’s landmarks as well as in close proximity to North East Street at two points (Figure 3.13).

Even on North East Street, there are signs showing people traveling on bikes. However, as can be seen from Figure 3.14, cyclists have to compete with motor vehicles for road space.

Building North East Street into a bicycle friendly street contributes to biking connections from 5th Street to E South Street.



Figure 3.14. Bicycle lane shared with driving lane.

3.2.2.5 Pedestrian and ADA Accessibility

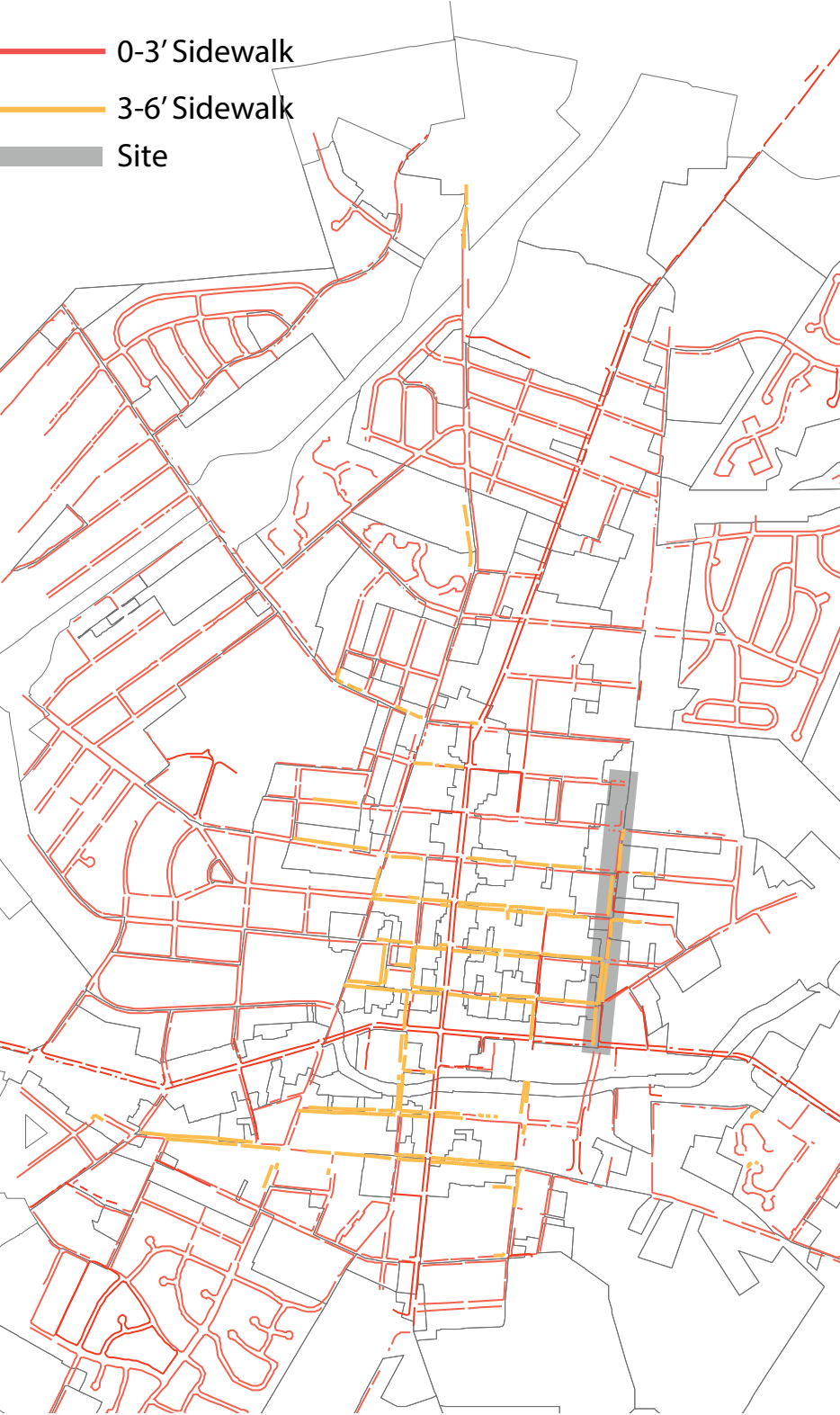


Figure 3.15. Sidewalks

Currently, most of the sidewalks in North East Street are paved with attractive brickwork that provides a unified streetscape. Sidewalks in the street, however, are not uniform or even continuous, with almost half being 0’-3’ wide, and others up to 6’ wide. Due to these discrepancies, people in wheelchairs might not be able to reach all parts of the street, despite all the paved paths having ramps. Moreover, there are no paved sidewalks beyond 5th Street, except for one concrete path in front of a local shopping plaza (Figure 3.15).

In North East Street as currently configured, pedestrians are forced to share space with other types of traffic. The width of sidewalks varies from 2.8’ to 7’, most of them are not enough nor comfortable for walking through. Moreover, there are no sidewalk partly from 5th Street to 6th Street.

What’s more, there has no sufficient buffers to protect people from passing vehicles, as well as a notable lack of shelter from both sunshine and rain (Figure 3.16).

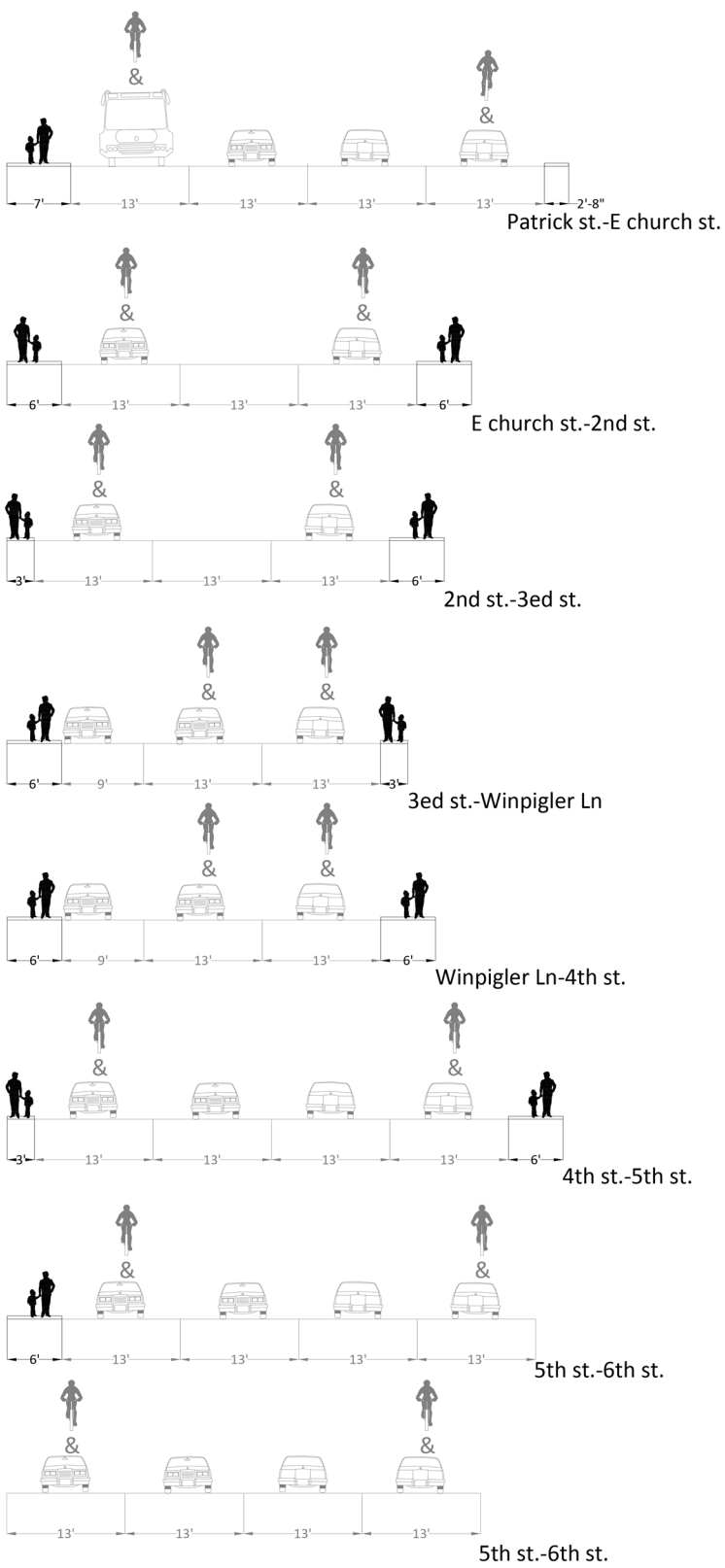


Figure 3.16. Sections of sidewalks and driving lanes.

3.2.3 Current Commercial Types

3.2.3.1 The Hospitality and Catering Industries

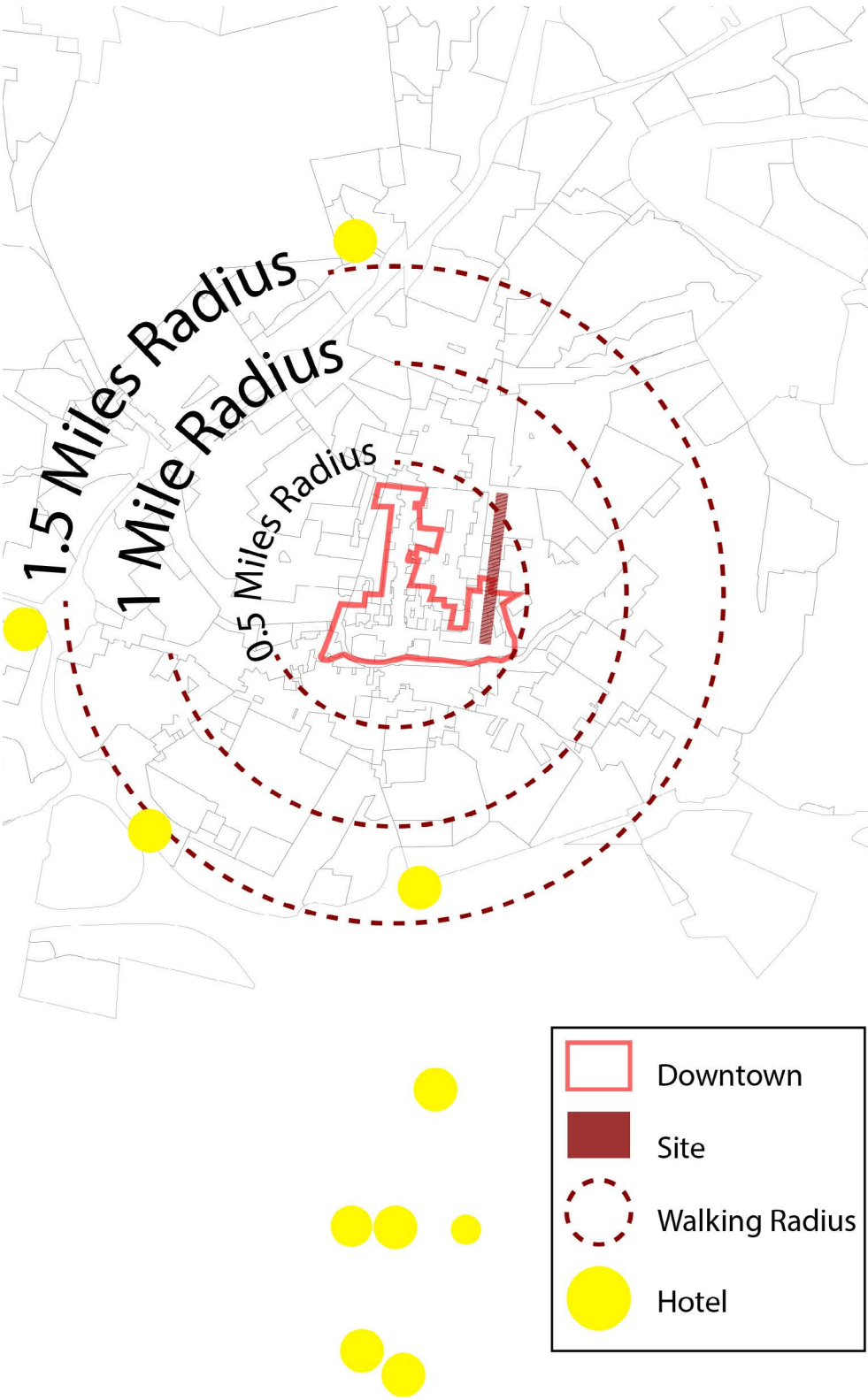


Figure 3.17. Hotels in Frederick.

Starting from the center of downtown City of Frederick, there is no hotel within a 20 minutes walking radius (Figure 3.17). The nearest hotel is the Econo Lodge, which is a 25 minutes’ walk away. However, North East Street is only 5 to 10 minutes’ walk from the center of downtown City of Frederick. If a hotel and conference center complex could be built on North East Street, it would represent a considerable opportunity and potential boost to downtown business and tourism. This would benefit not only the North East Street and the East Frederick district, but also the entire City of Frederick.

Choices are limited for people wishing to have dinner out on North East Street, and existing eateries tend to have prices in the range of \$10-\$20 per head. More restaurants or food stands that provide meals at \$5-\$10 per person might encourage more visitors and promote an economic renaissance (Figure 3.18).



Figure 3.18. Restaurants at the site.

3.2.3.2 Industrial Businesses

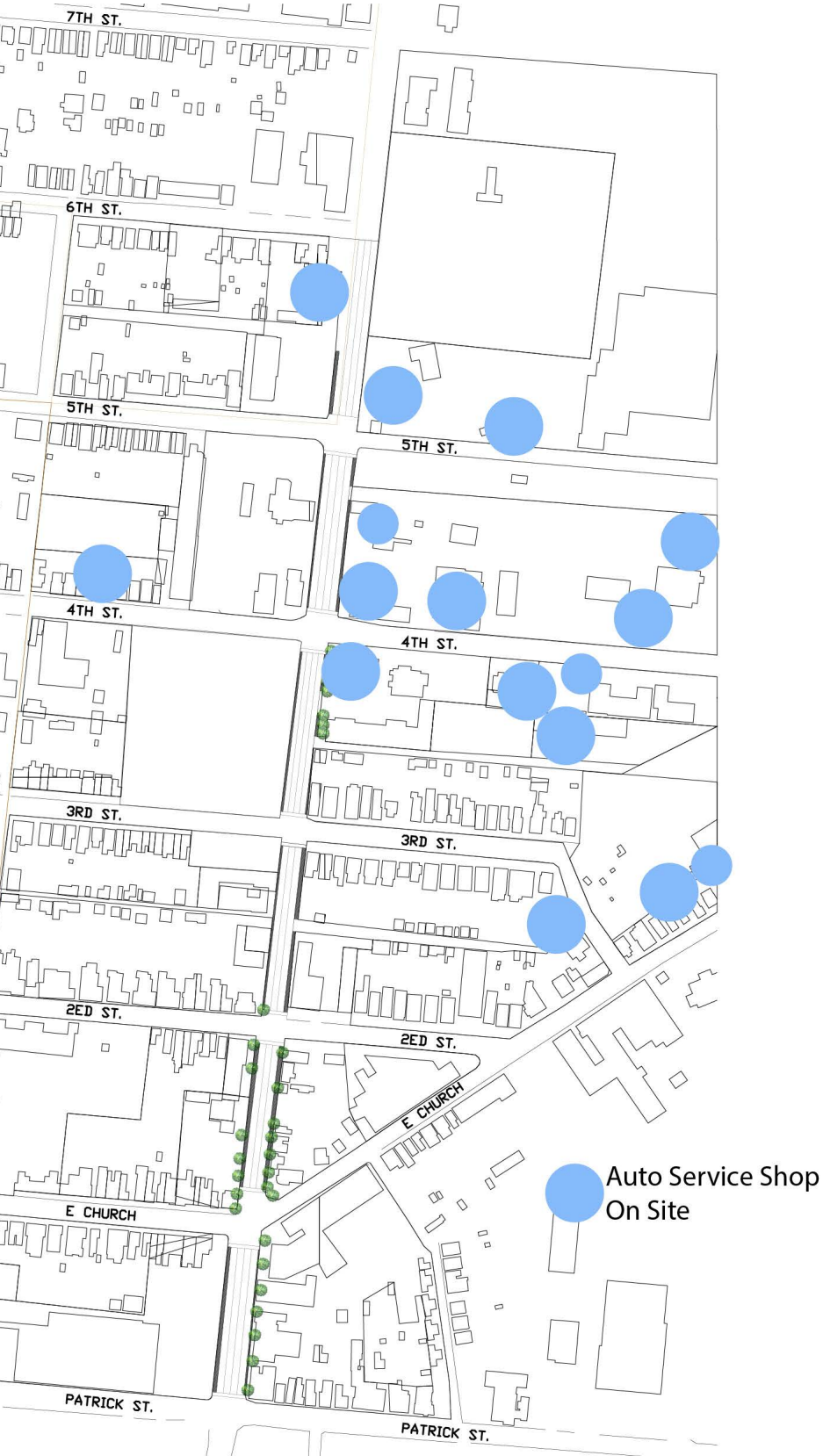


Figure 3.19. Auto service shops at the site.

North East Street is home to a variety of businesses including industrial and semi-industrial ones such as auto service shops, warehouses and manufacturers. Dairy Maid Dairy is located nearby, on North East 7th Street. In total, there are no less than 16 auto shops on site (Figure 3.19). Some of the auto shops are well run and well maintained, contributing positively to the streetscape (Figure 3.20), but many need improvement in this



Figure 3.20. Auto shop on site.

respect. Most also include parking lots that are not environmentally friendly, and erosions occurred considerably (Figure 3.21). As discussed briefly in Chapter 2, industry makes up a shrinking proportion of Frederick’s business sector; it was also among the most rapidly declining employment sectors in East Frederick between 2002 and 2011 (The Frederick News-Post, 2016). However, there are currently seventeen auto service shops on North East Street.



Figure 3.21. Auto shop on site.

3.2.3.3 Retail, Health Care, and Professional Services

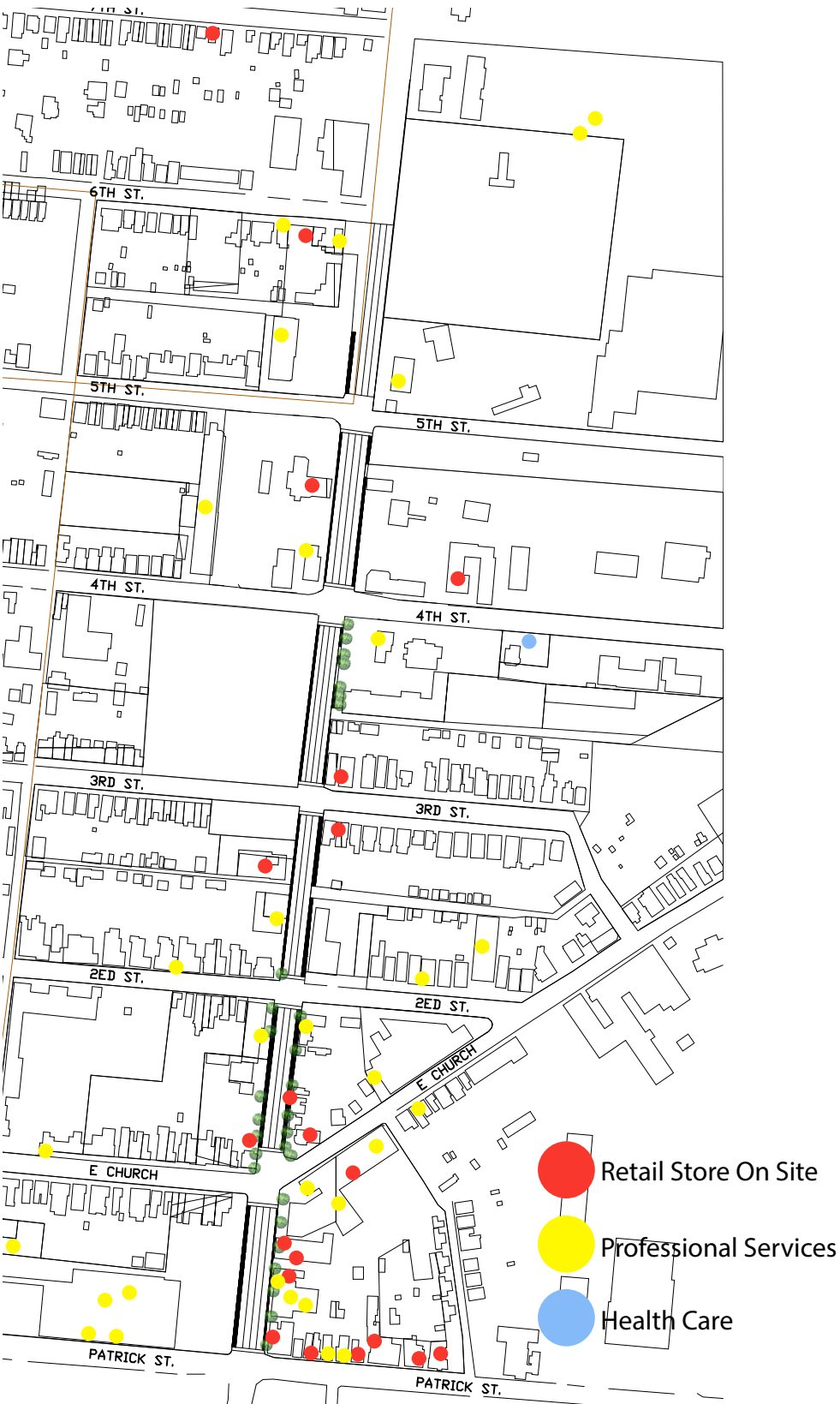


Figure 3.22. Different types of shops on North East Street.

Health care, professional services and retail trade, in sharp contrast to warehousing and other industrial- and semi-industrial businesses, were the three fastest-growing sectors in East Frederick from 2001 to 2011.

North East Street has dense mixed-used blocks from Patrick Street to 2nd Street, but few beyond this point (Figure 3.22). Also, most are retail stores and professional services, like post office, but only one health care service. Moreover, most retail stores don't focus on daily supplies, there is no Whole Foods Market, Giant, nor any other grocery store nearby.

Population growth rate in Frederick is 26.30% from 2010 to 2014, much higher than State of Maryland, and United States (Figure 3.23). Residents and

business owners both noted the need for more places to live in East Frederick, in light of the area's growing population, existing businesses and new ones that are planned (The Frederick News-Post, 2016).

“As of 2010-2014, the total population of Frederick is 66,646, which is 26.30% more than it was in 2000. The population growth rate is much higher than the state average rate of 11.16% and is much higher than the national average rate of 11.61%. The Frederick population density is 3,002.60 people per square mile, which is much higher than the state average density of 474.59 people per square mile and is much higher than the national average density of 82.73 people per square mile.”

--<http://www.usa.com/frederick-md-opulation-and-races.htm>

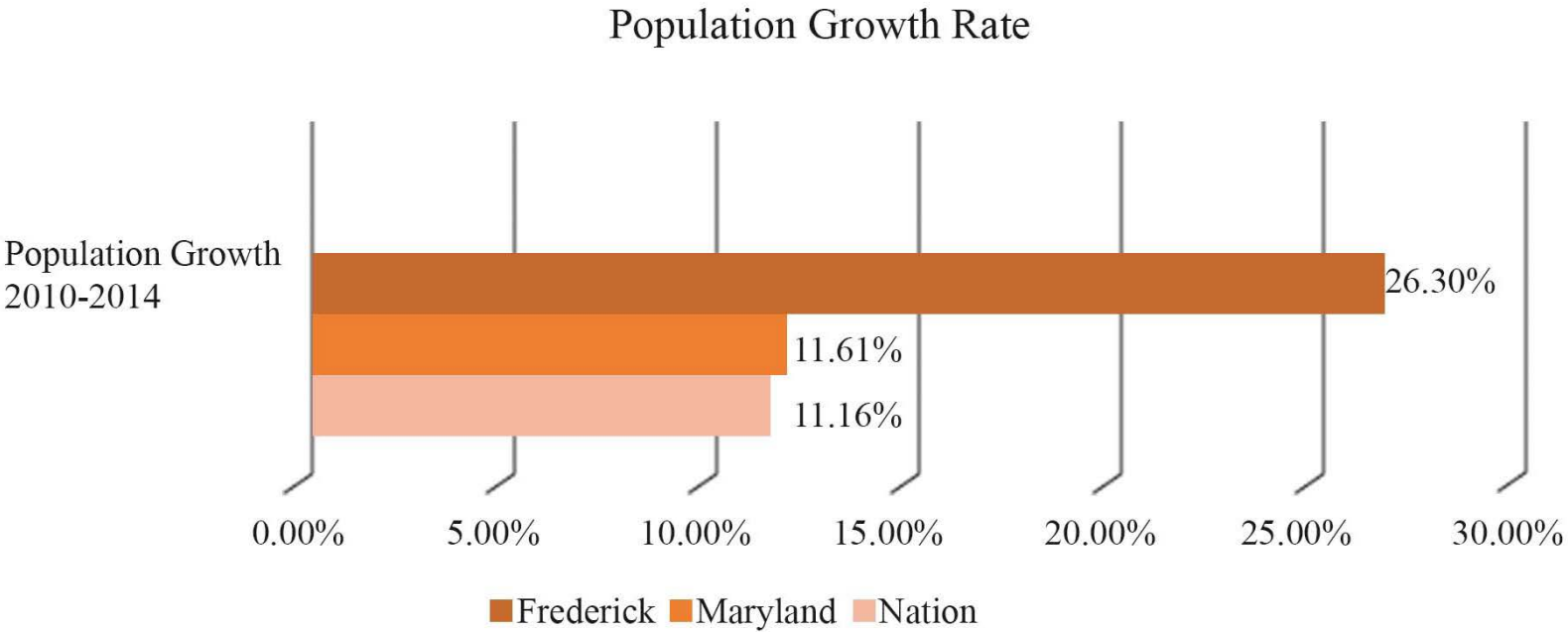
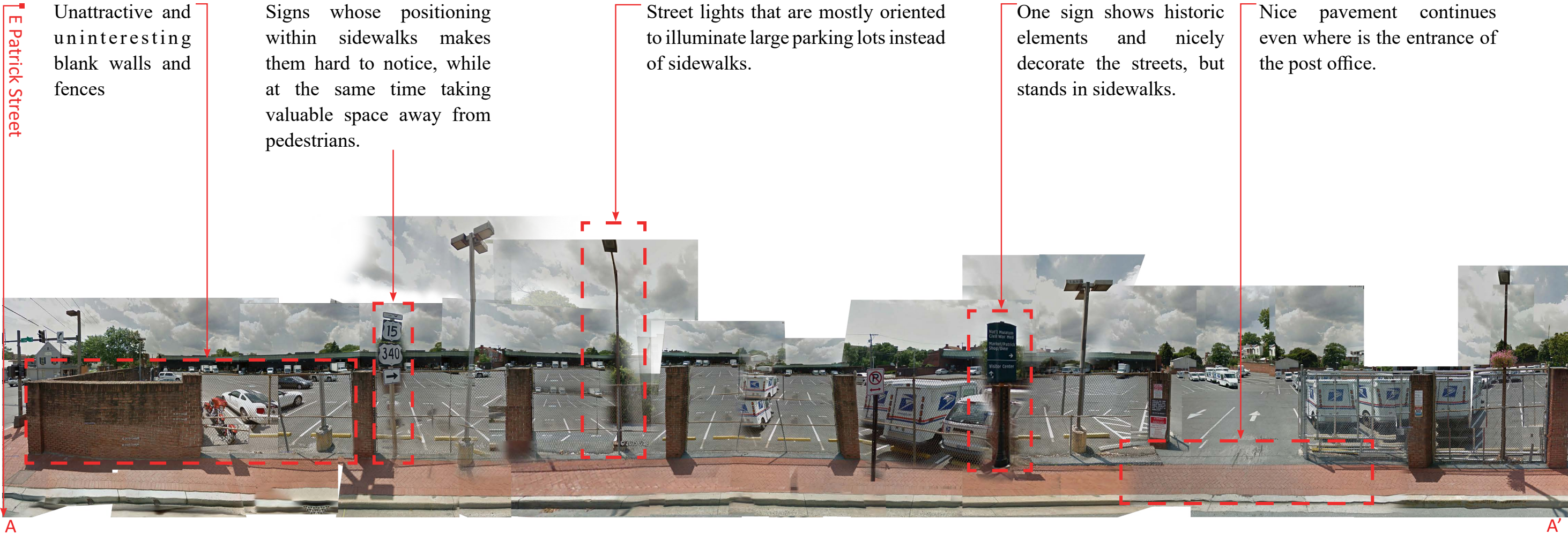


Figure 3.23. Population Growth Rate.

3.2.4 Current Street Space and Building Facades



Figures 3.24. Façades on the west side of North East Street from East Patrick Street to East Church Street.



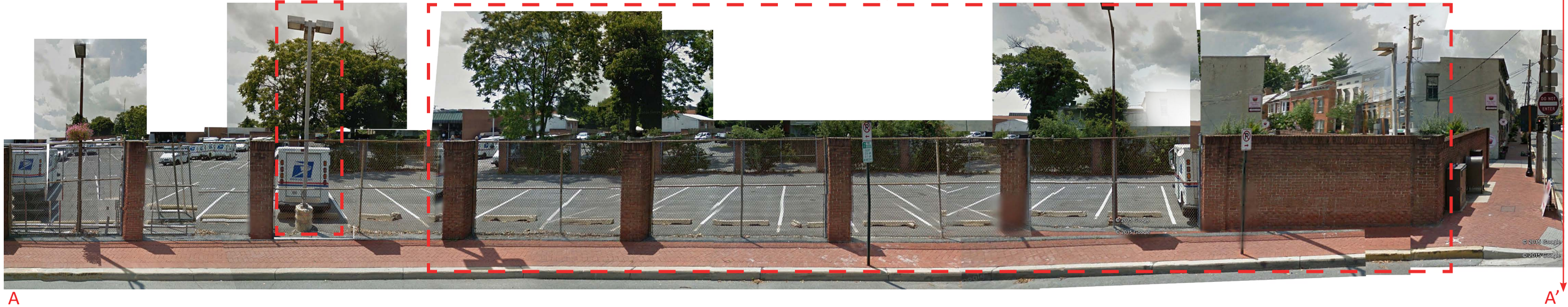
On North East Street between East Patrick Street and East Church Street, a post office has been under construction for years. This area has several issues, including 1) unattractive and uninteresting blank walls and fences; 2) street lights that are mostly oriented to illuminate large parking lots instead of sidewalks; 3) signs whose positioning within sidewalks makes them hard to notice, while at the same time taking valuable

space away from pedestrians; and 4) an absence of street trees or any other amenities that might provide shade or shelter from the wind.

Street lights that are mostly oriented to illuminate large parking lots instead of sidewalks.

An absence of street trees or any other amenities that might provide shade or wind shelter.

E Church Street



Figures 3.25. Façades on the west side of North East Street from East Patrick Street to East Church Street.

North East Street, Frederick, MD



E Church Street

Existing seating on the sidewalk; the planting beds soften the corners of buildings and liven up the streetscape considerably.

Street trees as there are have been over-pruned due to interference from overhead power lines; the planters they are in limit the trees' growth, but at the same time take valuable space away from pedestrians.

An interesting old mural that is hidden in ally.

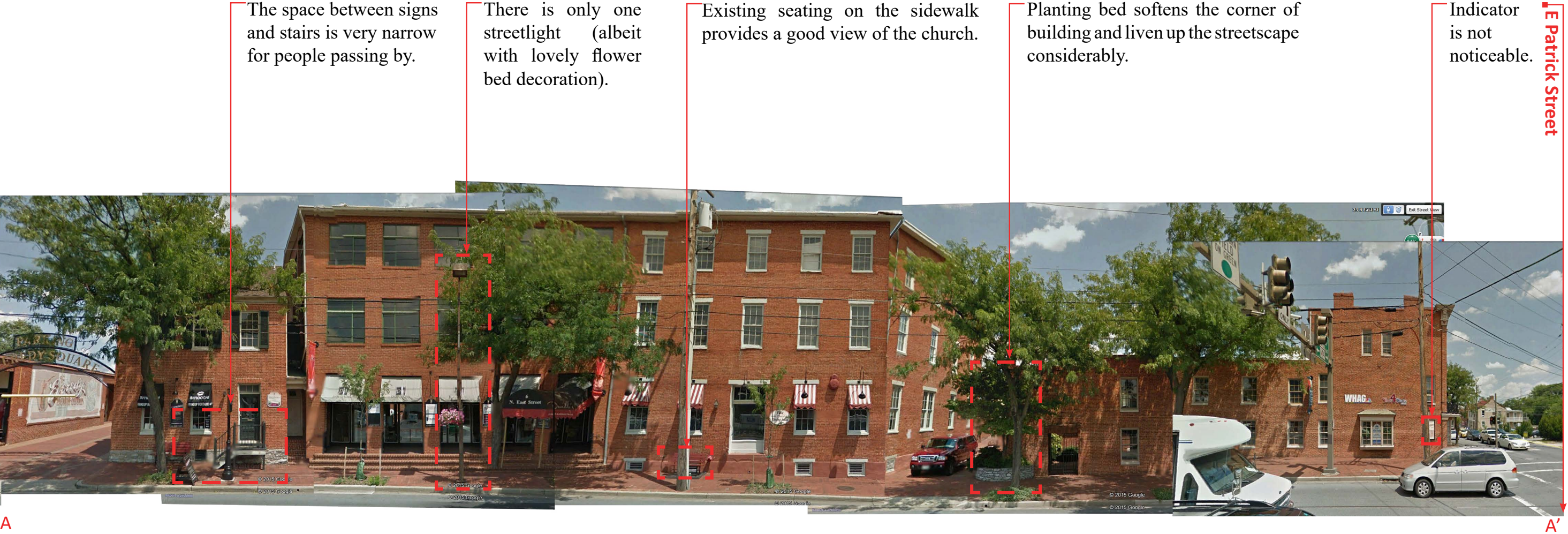


Figures 3.26. Facades on the east side of North East Street from East Patrick Street to East Church Street.

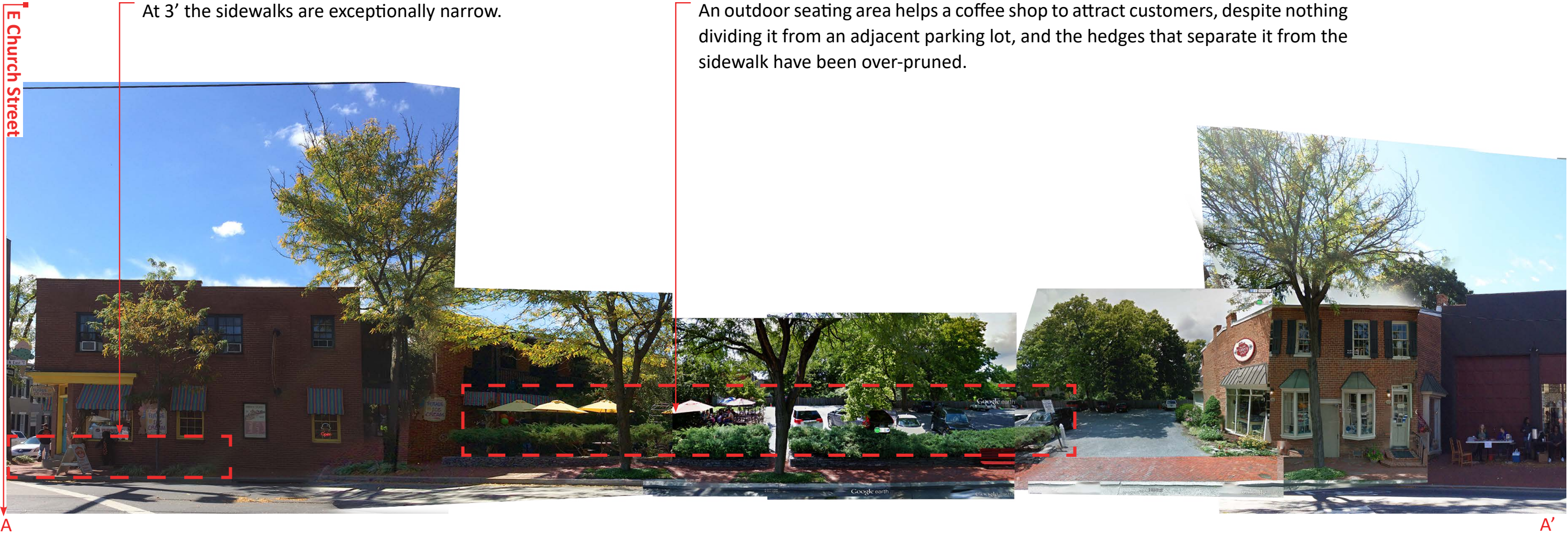


On the east side of this block, existing street trees have been over-pruned due to interference from overhead power lines. In addition the existing planters do not meet more appropriate soil volume requirements for healthy trees growth, and the grating systems are not integrated with sidewalks for pedestrian flow. Other negative considerations involving Everedy Square include: 1) vehicles driving through the

square that interrupt sidewalk connections; 2) an old mural that is hidden in an ally; 3) the space between signs and stairs is very narrow for people passing by; and, 4) there is only one streetlight (albeit with lovely flower bed decoration). On the positive side, existing seating on the sidewalk provides a good view of the church, and the planting beds soften the corners of buildings and liven up the streetscape considerably.



Figures 3.27. Facades on the east side of North East Street from East Patrick Street to East Church Street.

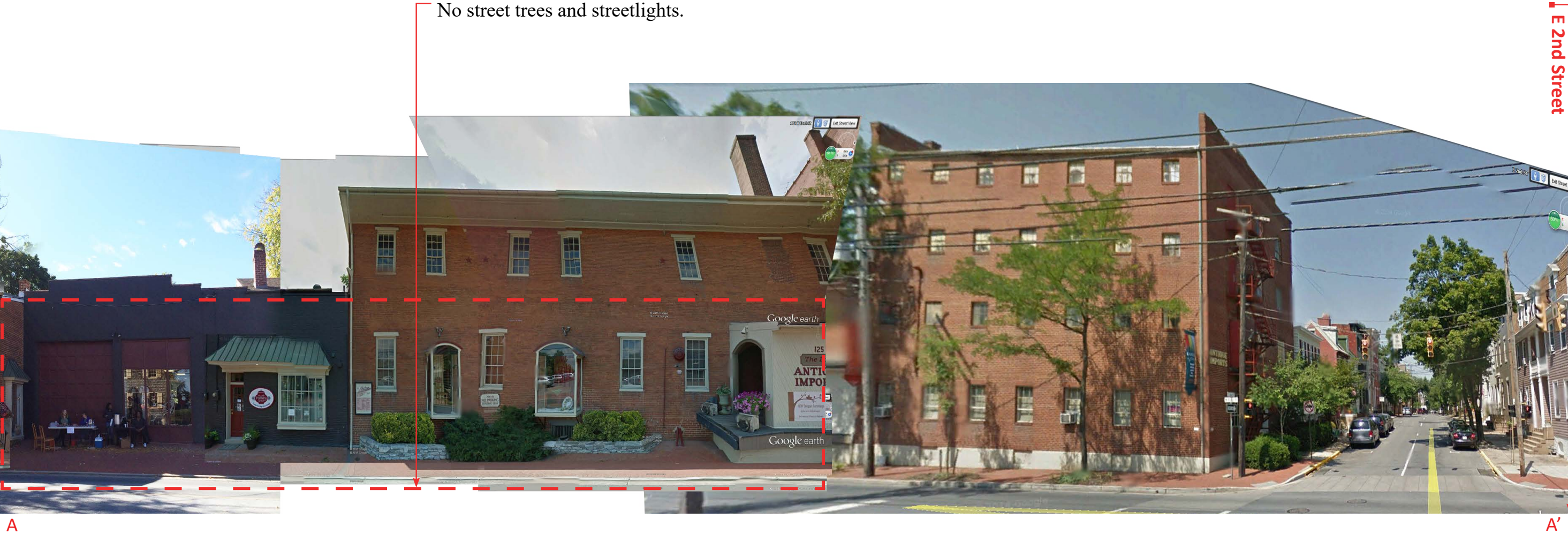


Figures 3.28. Facades on the west side of North East Street from East Church Street to East 2nd Street.



There are only seven street trees and no streetlights on the west side of North East Street from East Church Street to East 2nd Street. However, all of the street trees are pruned for power lines. The three foot wide sidewalks are exceptionally narrow. Also, there is no blind track, this might make it difficult for sight-impaired person. An outdoor seating area successfully helps a coffee shop to attract customers, despite

nothing dividing the outdoor seating from an adjacent parking lot. The hedges that separate outdoor seating area from the sidewalk have been over-pruned.



Figures 3.29. Facades on the west side of North East Street from East Church Street to East 2nd Street.

North East Street, Frederick, MD



E 2nd Street

There is a total absence of streetlights.

Plantings alone with facades work well in softening and delighting building surfaces. However space between planters and stairs is too narrow to allow people to pass by easily.

Overgrown hedges are intended to be attractive and match to a nicer view beyond it.

Parking lots are paved with impermeable paving, and plantings are ineffective in reducing heat and absorbing water.



Figures 3.30. Facades on the west side of North East Street from East Church Street to East 2nd Street.



There are no street trees or streetlights on the west side of North East Street from East Church Street to East 2nd Street. The three foot wide sidewalks are exceptionally narrow. An outdoor seating area helps a coffee shop to attract customers, despite nothing dividing the outdoor seating from an adjacent parking lot. The hedges that separate outdoor seating area from the sidewalk have been over-pruned.

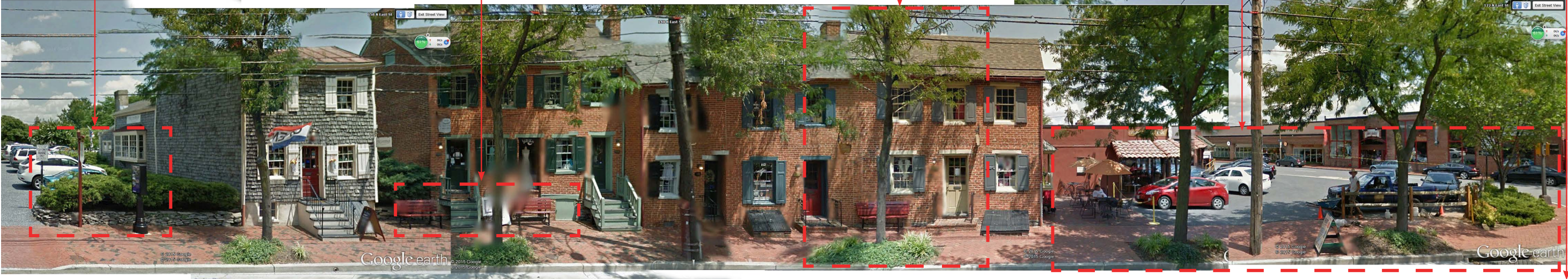
The signs have no uniformity of style.

Space between seating and stairs is too narrow to allow pedestrians to pass by easily.

There is a total absence of streetlights, and the street trees are over-pruned due to overhead power lines.

Nice space for gathering but has only a few seatings, most space is occupied by parking vehicles. Excessive pavement does not benefit both eco environment nor visual quality.

E Church Street



Figures 3.31. Facades on the west side of North East Street from East Church Street to East 2nd Street.



E 2nd Street

Building facades that are disconnected due to vacant parking lots, which are unpaved and directly exposed to the street. Rainwater remains overnight after storms.

No street trees and streetlights.

Building facades that are disconnected due to vacant parking lots, which are unpaved and directly exposed to the street. Rainwater remains overnight after storms.

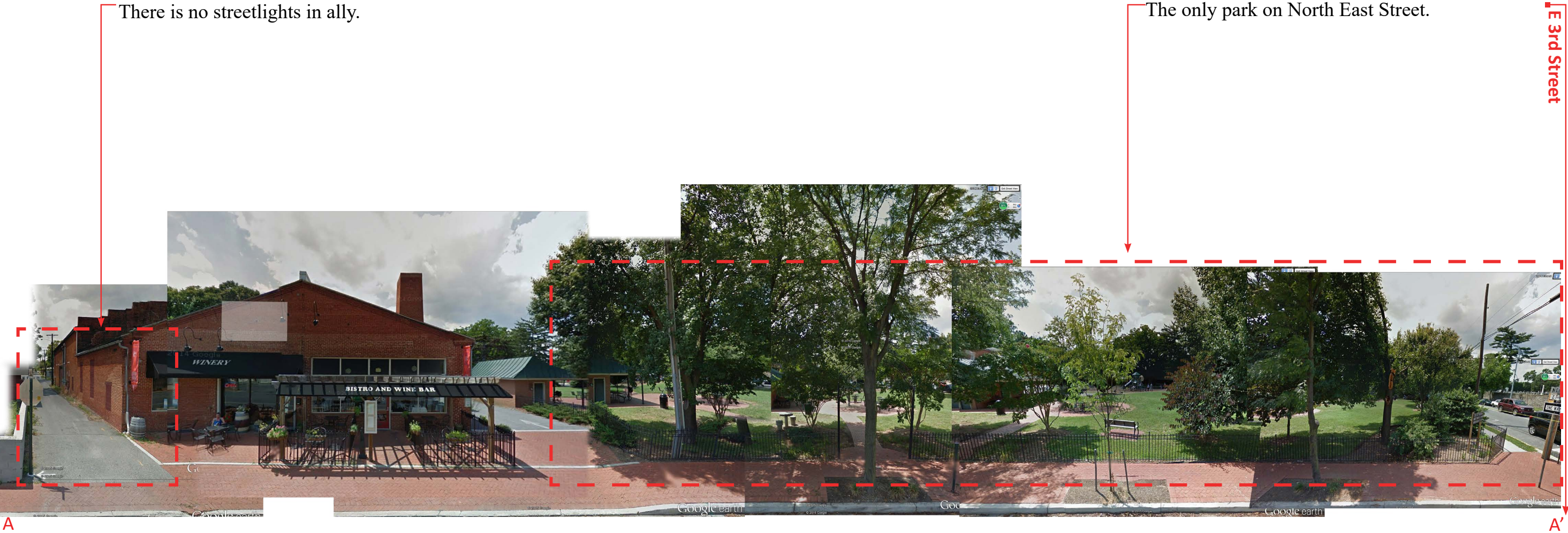
Blank wall is not interesting.



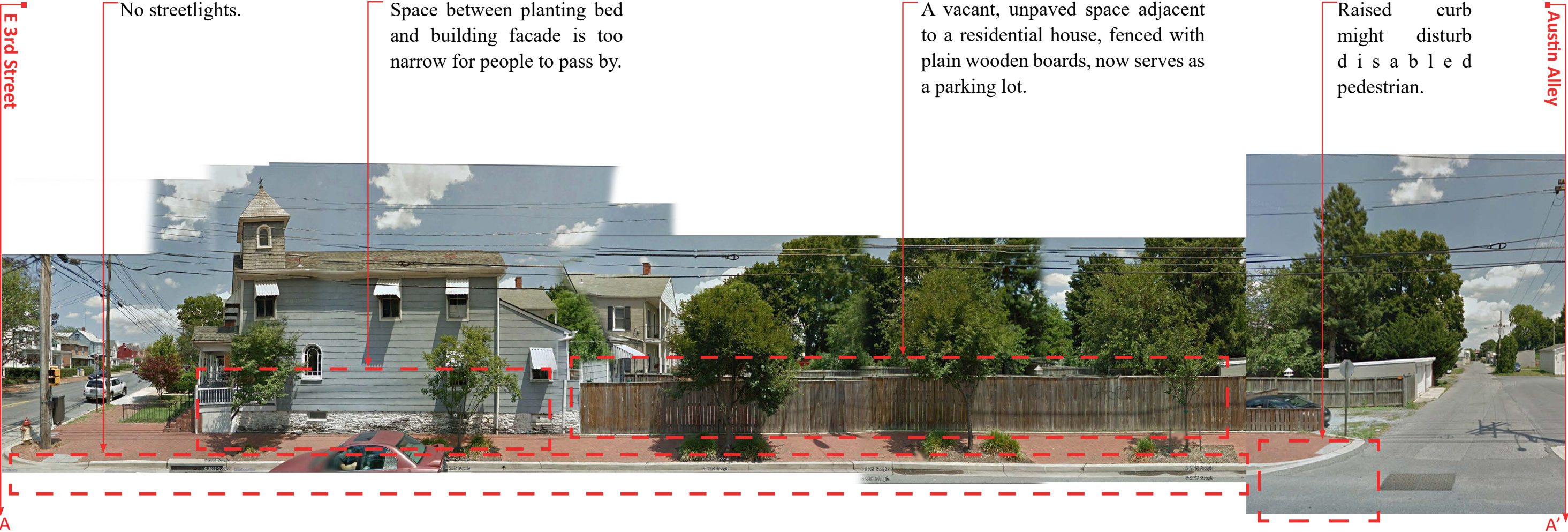
Figures 3.32. The west side of North East Street from East 2nd Street to East 3rd Street.



On west side of North East Street from East 2nd Street to East 3rd Street, the familiar problems of lack of street lighting (including one alley with none at all) and inadequate street trees are compounded by building façades that are disconnected due to vacant parking lots. The parking lots are unpaved and directly exposed to the street. Rainwater remains in the parking lots due to poor drainage after rain storms. The only open space park on North East Street is located within this block, and could be considerably more interesting.

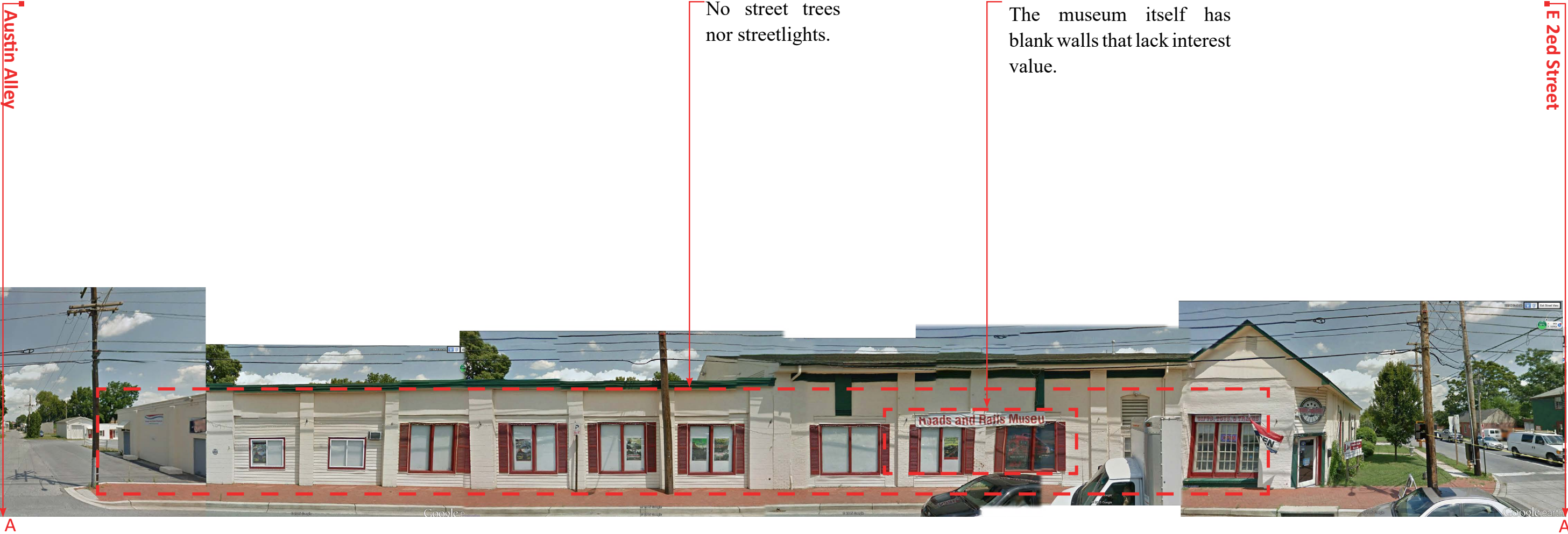


Figures 3.33. The west side of North East Street from East 2nd Street to East 3rd Street.



Figures 3.34. The east side of North East Street from East 2nd Street to East 3rd Street.

In the area around the Train and Rail Museum, the usual problems of narrow sidewalks, lack of lighting and inadequate tree cover exists. The museum itself has blank walls that lack interest. A vacant, unpaved space adjacent to a residential house, fenced with plain wooden boards, now serves as a parking lot.



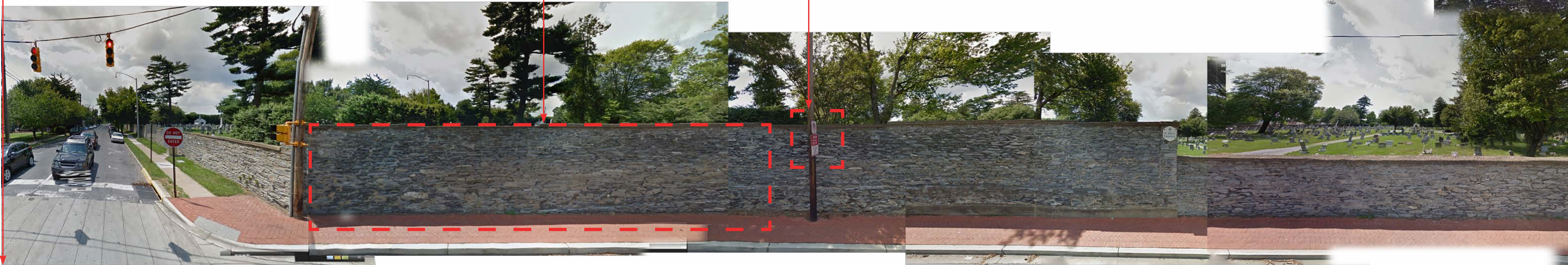
Figures 3.35. The east side of North East Street from East 2nd Street to East 3rd Street.



E 3rd Street

Stone wall is rather interesting.

Sign is not noticeable.



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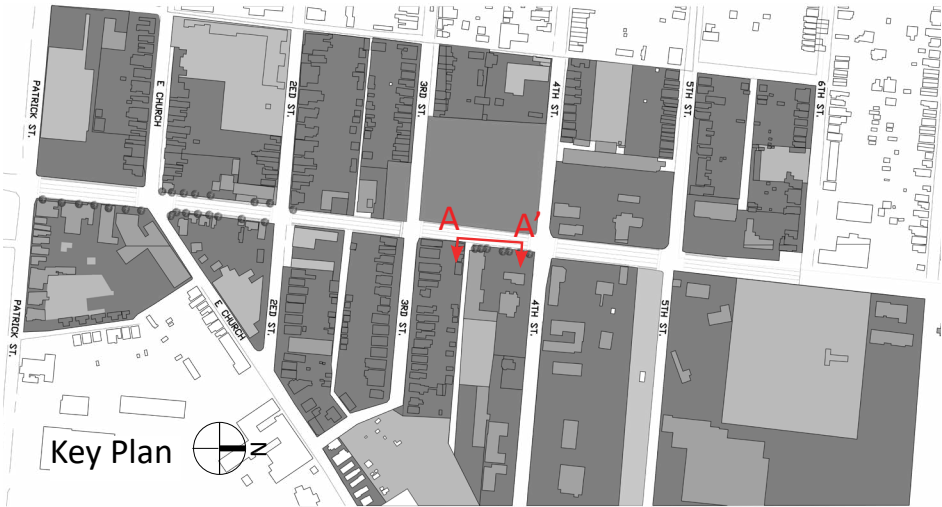
Figures 3.36. The west side of North East Street from East 3rd Street to East 4th Street.

This area is dominated by the cemetery. While this might sound negative, its stone wall is rather interesting. The same above-mentioned problems with lighting, trees and obstructed sidewalks are also present here.



Figures 3.37. The west side of North East Street from East 3rd Street to East 4th Street.

North East Street, Frederick, MD

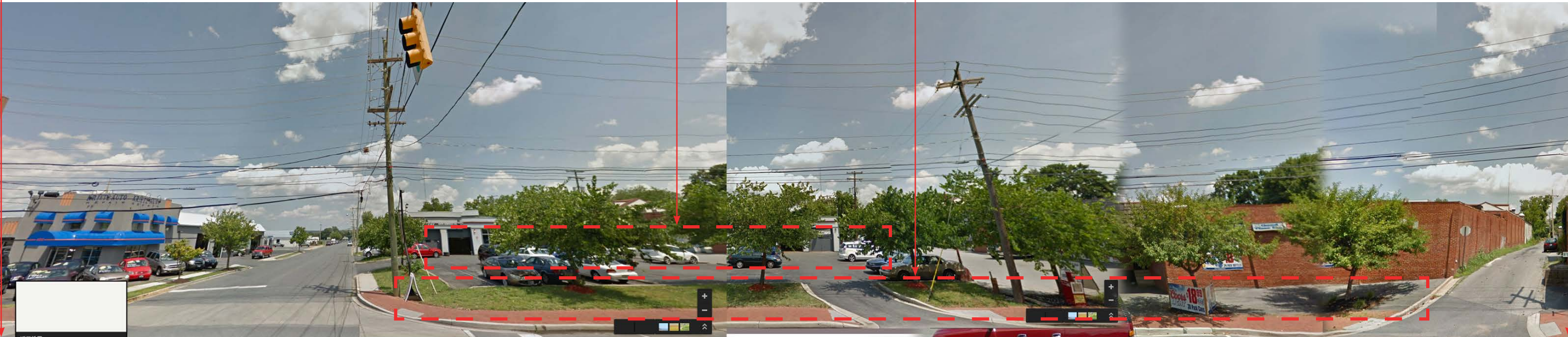


E 4th Street

Winpighlers Ln

Large parking lots that create problems with rainwater.

No street trees nor streetlights.



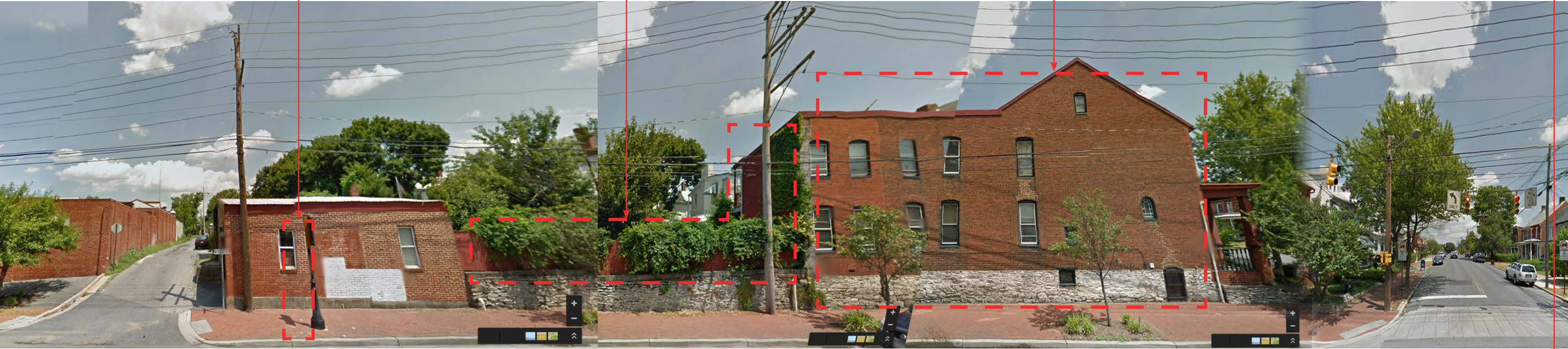
Figures 3.38. The east side of North East Street from East 3rd Street to East 4th Street.

In this part of the street, plants growing on walls add visual interest and benefit the environment. The signs here are also interesting and well positioned. However, there are no street trees or streetlights and large parking lots that are poorly drained.



Wimpiglers Ln

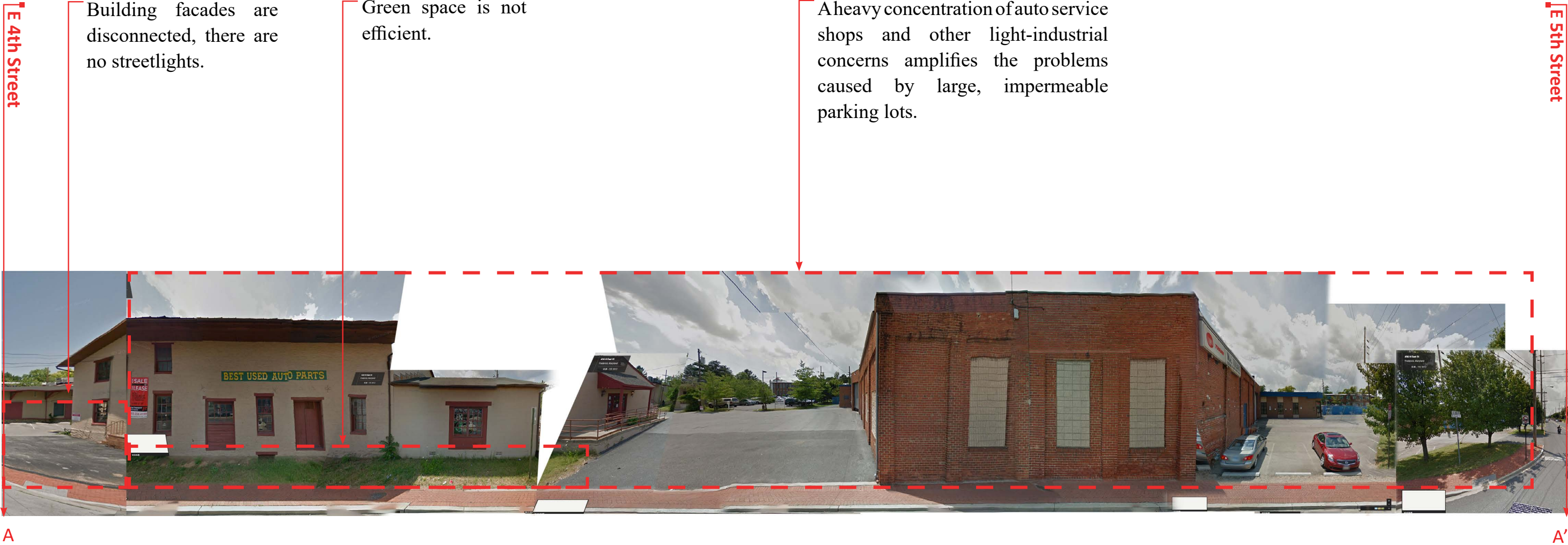
E 3rd Street



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Figures 3.39. The east side of North East Street from East 3rd Street to East 4th Street.



Figures 3.40. The west side of North East Street from East 4th Street to East 5th Street.



In this part of the street, a heavy concentration of auto service shops and other light-industrial concerns amplifies the problems caused by large, impermeable parking lots. Green spaces are too narrow to make any difference. Building facades and sidewalks are disconnected and there are no streetlights and few street trees. More over, adjacent to the 5th Street, a lots of power lines concentrate in this area, suggesting do not enter idlers.

E 5th Street

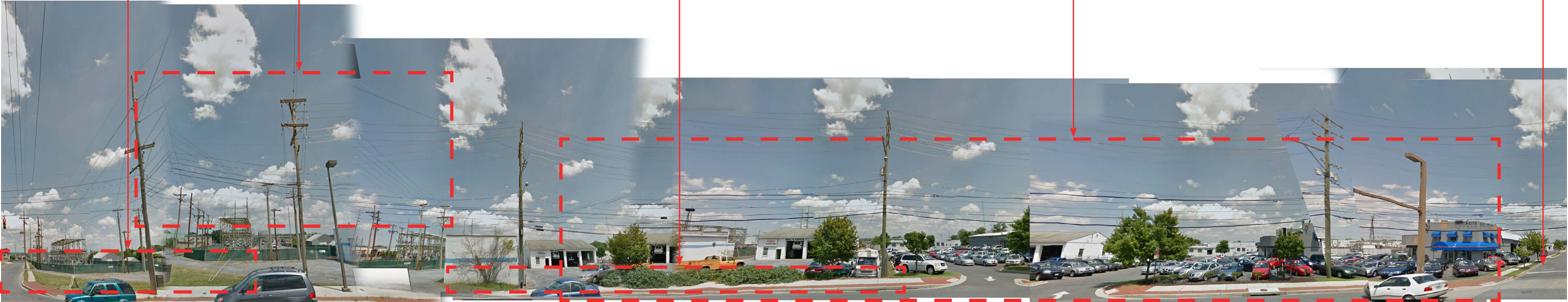
Green space is not efficient for separating industrious area.

A lots of power lines concentrate in this area, suggesting do not enter idlers.

Paving is different from the rest.

No streetlights.
Large, impermeable parking lots.
No streetlights and street trees are sparse.

E 4th Street



A
Figures 3.41. The East side of North East Street from East 4th Street to East 5th Street.

A'

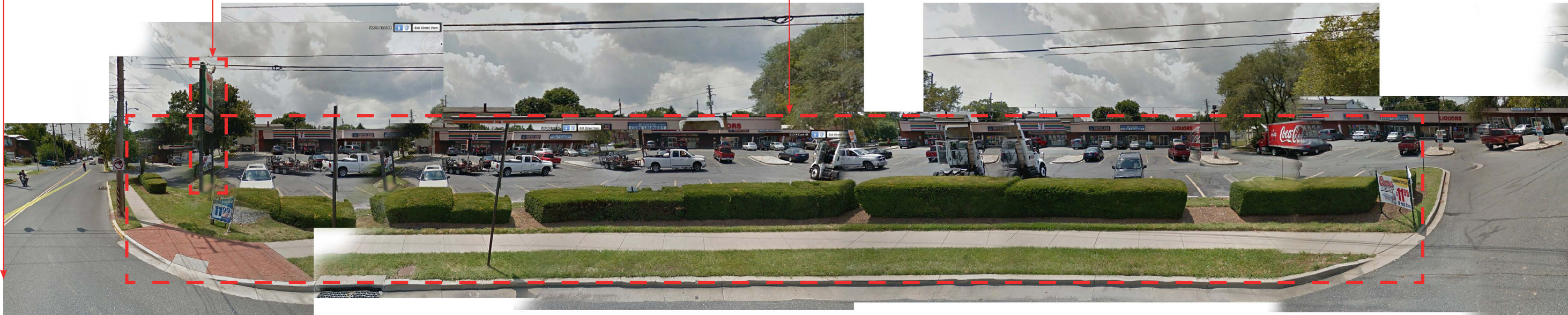
North East Street, Frederick, MD



E 5th Street

Sign of plaza is not distinctive enough.

Inefficient plantings.
No street trees.
No streetlights.
Sidewalk paving is different from previous blocks'.
Massive space occupied by parking cars can't treat rainwater but might cause further pollution.
Lack of spaces for customer to rest or wait.



Figures 3.42. The west side of North East Street from East 5th Street to East 6th Street.

In this part of the street, which again features no streetlights and no trees, the sidewalk paving differs from other areas. A lightbox is broken, and advertising signage is hidden behind overgrown plantings. The signage of the plaza is not distinctive enough.



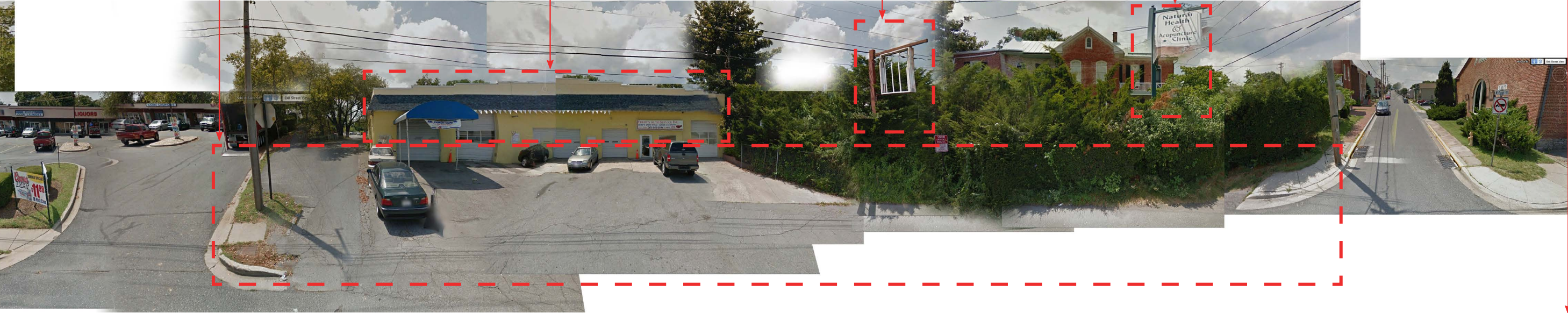
No street trees.
No streetlights.
Sidewalk discontinued and occupied by parking cars.
Space occupied by parking cars can't treat rainwater but might cause further pollution.

Auto shop disconnects from other buildings and is contributing not much to local business.

Lightbox is no longer in service.

Advertising signage is hidden behind overgrown plantings.

E 6th Street



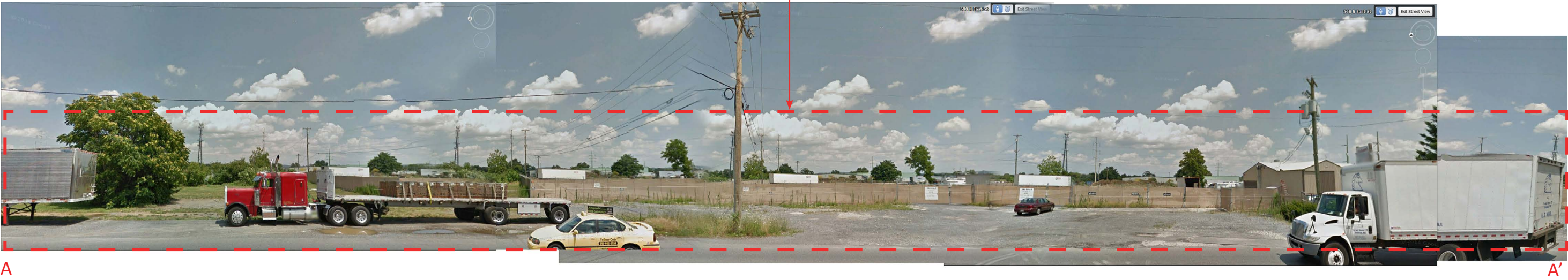
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Figures 3.43. The west side of North East Street from East 5th Street to East 6th Street.

A'

North East Street, Frederick, MD



No street trees.
No streetlights.
No sidewalks.
Massive space occupied by parking
cars can't treat rainwater but might
cause further pollution.



Figures 3.44. The east side of North East Street from East 5th Street to East 6th Street.

This part of the street is characterized by massive open spaces occupied by parked cars, causing the usual problems with rainwater. There are no sidewalks, street trees or streetlights at all.

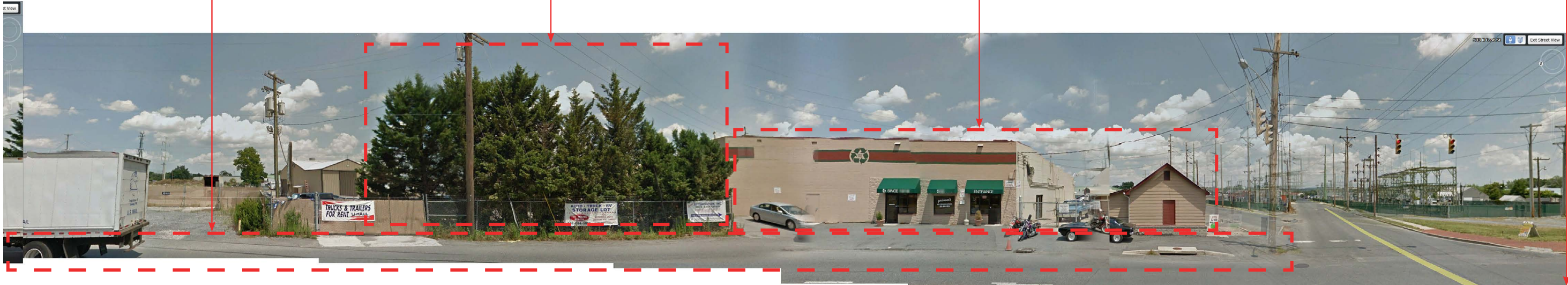


No street trees.
No streetlights.
No sidewalks.

Massive shrubs and trees
block public watch.

Auto shop is disconnected
from other buildings and is
contributing not much to local
business.

E 5th Street

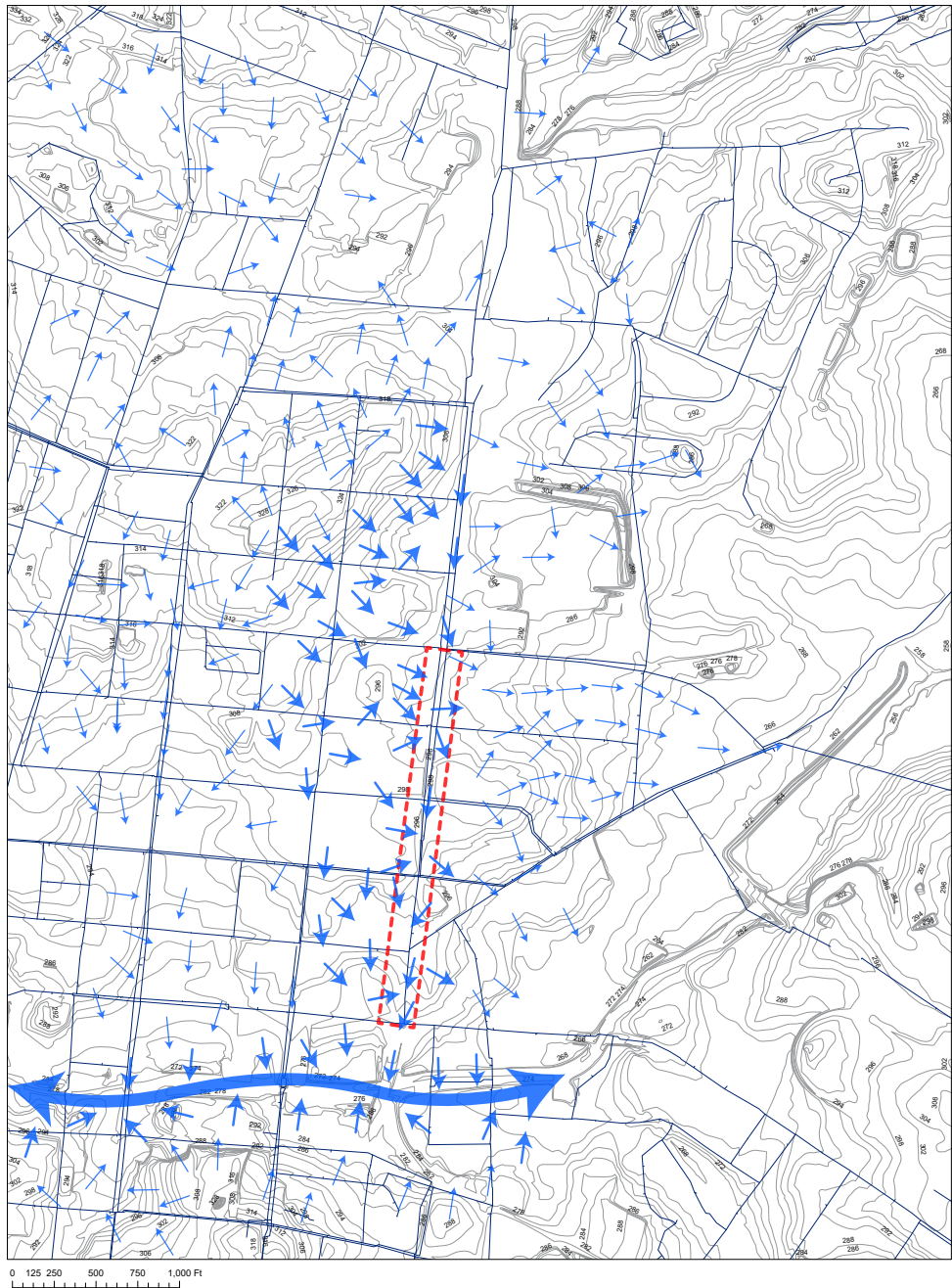


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Figures 3.45. The east side of North East Street from East 5th Street to East 6th Street.

3.2.5 Soil and Hydrology



Figures 3.46. Hydrological plan.

Soil and contour are two major keys for storm water management. According to data from Natural Resources Conservation Service (2016), the soil in North East Street is mostly class D urban soil, which means the soil in site is poorly draining. In this case, using permeable paving might not be useful for storm water treatment.

Water flows from north and west into North East Street, and then continues to flow towards south-east or wash through street towards south, and finally reaches Carrol Creek. Sheet flow from North East Street is channeled south to Carrol Creek (Figure 3.46).

3.3 Analysis Summary

North East Street has a rich history and has contributed a great deal to East Frederick. North East Street has also contributed to the City of Frederick both economically and culturally. However, the significant issues herein documented can be addressed through designs and plans.

North East Street is now crying out for changes, specifically, to become a better, more complete street, more lively, prosperous, sustainable, aesthetically pleasing and interesting, while retaining or enhancing its role as a strong partner to Frederick’s downtown.

This design thesis proposes the following improvement:

- 1. North East Street Economic Renaissance (Mixed-use blocks, apartments, and etc.);
- 2. Right-of-Way Conflicts;
- 3. Place Making (Street trees, streetlights, amenities and etc.);
- 4. Network Stormwater Treatment; and
- 5. History and Cultural Preservation.

Chapter 4: A More Complete Street



4.1 North East Street Economic Renaissance

4.1.1 Objectives

The foregoing analysis of the East Frederick District of the City of Frederick suggests that there are considerable opportunities for, and local interest in, the further economic development of North East Street. If such an economic renaissance is to occur, however, a number of specific improvements will need to be made. These include:

- 1. Building new mixed-used blocks;
- 2. Provision of an expanded range of living choices, especially new apartments;
- 3. Greater encouragement of local retail, healthcare, and professional services businesses.



4.1.2 Improvement Direct Towards to North East Street Economic Renaissance

4.1.2.1 A Better Street for Businesses

As discussed in Chapter 3, the author and local residents both identified a demand for more mixed-used blocks in North East Street, which would increase convenience for residents and visitors alike. In place of the street’s numerous parking lots and low-rise auto shops, the proposed design calls for the introduction of office buildings, apartment, and mix use buildings, along with spaces that will attract more retail, healthcare, and professional-services businesses (Figure 4.1 & 4.2).



Figure 4.1 & 4.2 Proposed mixed-use blocks on North East Street. VS. Existing blocks on North East on North East Street.



As what is shown below, on the east side from 4th Street to 5th Street, the design suggests to keep the existing auto shop, proposes a mix-use building. Also, to separate power lines, this proposal introduce a 20' buffer around it, prevent idlers from entering (Figure 4.3 & 4.4).

For this mix-use building, several small shops form the ground level, while offices, studios, and other business units are in upper levels. These shops, offices and

studios would be modeled on The Little Pottery Shop: an already- popular store on North East Street that offers a variety of items created by artists local to Frederick. Some of the proposed spaces could house start-ups for graduates from Hood College or Frederick Community College, which if successful could help transform North East Street into an engine of the city's economy and improve the links among businesses, local people, and Frederick's educational institutions.



Figure 4.3 & 4.4 Proposed office buildings on North East Street VS. Existing streetscape.



In consideration of the needs of visitors, North East Street would also benefit from the presence of a hotel and conference center complex, which also form part of this design proposal.

Additionally, inspired by Frederick’s rich agricultural history and traditions, the proposed design also incorporates a farmer’s market between East 4th Street and East 5th Street. In addition to allowing residents to buy fresh, local sourced food more easily, the presence of such a market would tend to enhance community cohesion (Smart Growth Manual, 2010).

Stores on ground level have brightly lit display windows, these windows not only attract customers, but also improve street safety after work hours.

According to Figure 4.7, start from 4th Street to 5th Street, there are farmer’s market, two mix-use buildings, and a hotel and conference center complex.

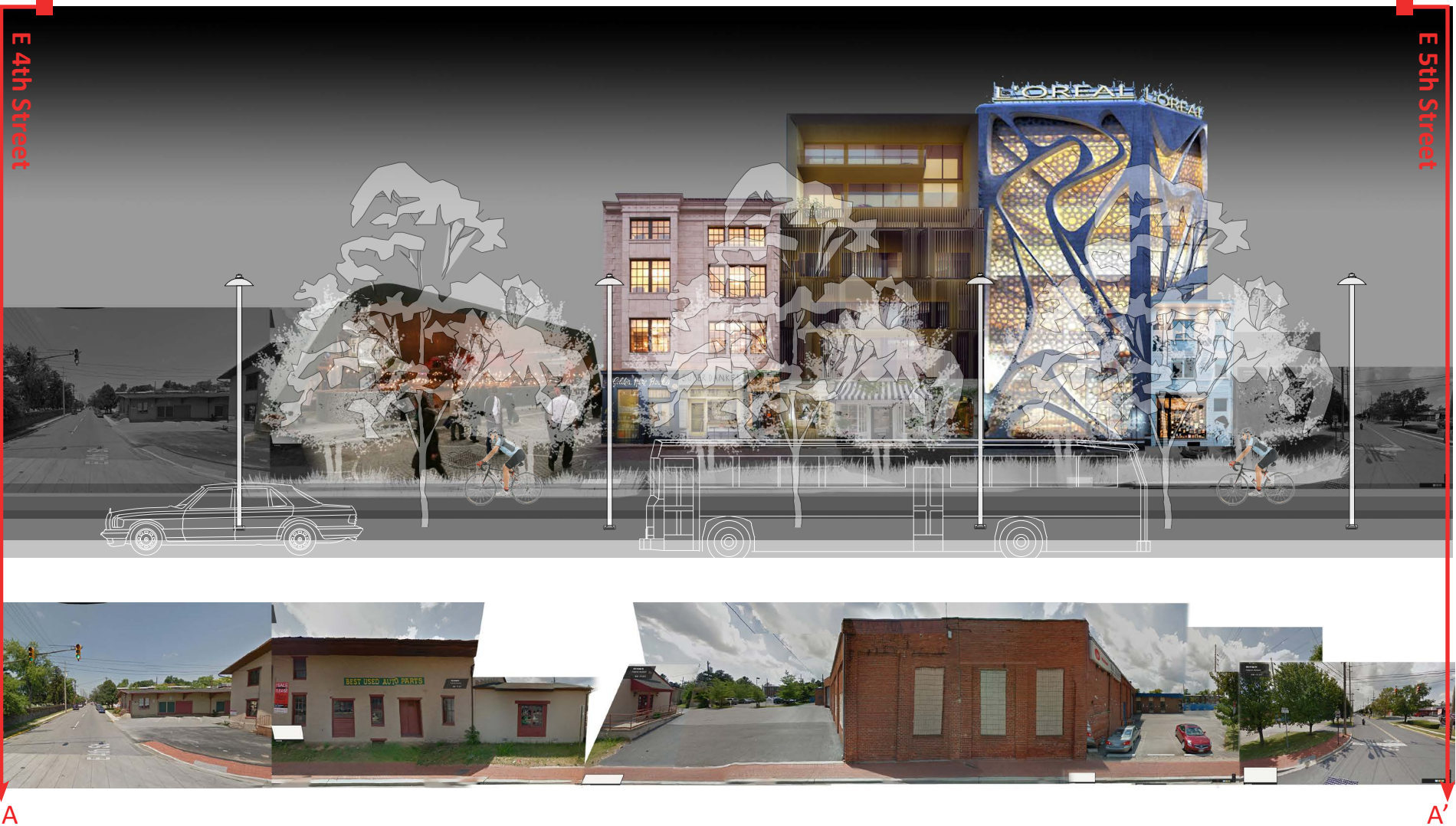


Figure 4.5 & 4.6 Proposed mix-use Block on North East Street VS. Existing streetscape.



The more services North East Street provides, the more convenient it will become. Greater convenience should result in improved ratings, which in turn would tend to drive more customers to the area.

From 3rd Street to 4th Street, figure 4.9 suggests three more mix-use buildings could be built on east side of street, housing more services for both residents and visitors.

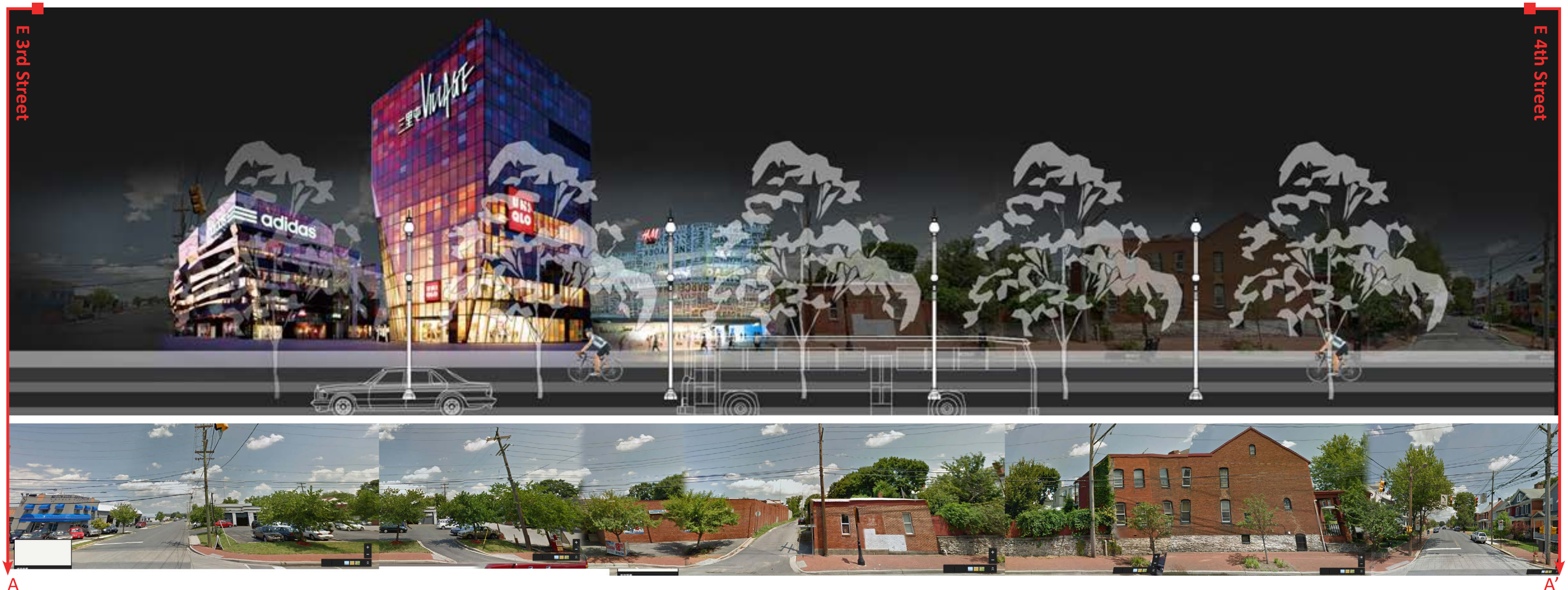


Figure 4.7 & 4.8. Proposed mix use buildings VS. Existing streetscape.

4.1.2.2 A Better Street for Living



As discussed in Chapter 3, Frederick’s younger residents have expressed a need for a wider range of low-cost residential options, particularly near the downtown area. The proposed new apartments in North East Street would help address this demand.

According to figure 4.9, from 5th Street to 6th Street, on the east side of street, there proposed one apartment, one gym building and a parking garage.

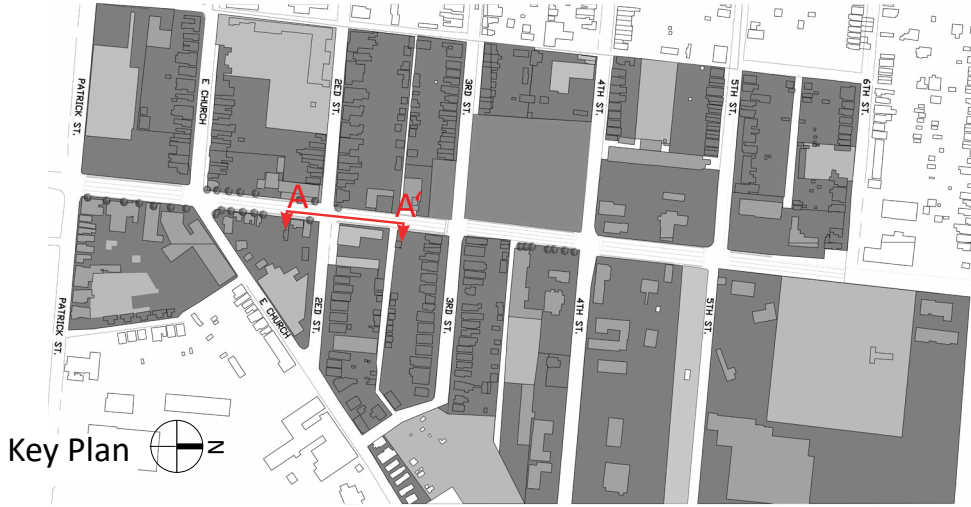
Shops on ground level in apartment building, gym and parking garage could serve residents daily.

What’s more, introducing parking garage and remove parking lane encourage people park their cars, and walk down to street on foot. Less vehicle might increase public watch and improve street safety. This is the reason why parking garage is proposed at the end of the site



A

Figure 4.9 & 4.10 Proposed buildings on North East Street VS. Existing streetscape. VS. Existing Streetscape.



Just like what have been shown in Figures 4.11 and figure 4.12, different sizes of apartments buildings or condos are proposed on both sides of street, from 2nd Street to 3rd Street.

These apartments or condos, large or small, low-rise or high-rise, traditional or stylish, can allow different families to fit in. No matter parents with one or two kids, or a start family without kid, or just one person,

they can always buy or rent a cost-effective home in North East Street. This is the major goal of the design.

These proposed apartments could occupy an entire new building, or the upper stories of a building with retail stores on the ground level. Again, stores on ground level have brightly lit display windows, these windows not only attract customers, but also improve street safety after work hours.

E 2nd Street

E 3rd Street



Figure 4.11 & 4.12 Proposed Apartments on North East Street VS. Existing Streetscape.



Figure 4.13 & 4.14. Proposed Apartments or Condos on North East Street VS. Existing Streetscape.

4.2 North East Street a Complete Street

4.2.1 Objectives

According to the analysis set forth in section 3.3.2, above, there is an urgent need to improve North East Street’s facilities that support various modes of transportation and contribute to a safer street environment. The key proposed measures include mitigation of right-of-way conflicts; improvement of people’s walking and biking experiences and overall safety levels; and the creation of a “complete street”, as defined in Chapter 1.

The key proposed measures include:

- 1. Mitigation of right-of-way conflicts;
- 2. Improvement of people’s walking and biking experiences;
- 3. Overall safety levels.



A Better Street for Walking and Biking;
A Better Street for Public Transportation;

4.2.2 Alternatives

4.2.2.1 Alternative 1

In this plan (Figure 4.15), sidewalks and bike lanes are separated from driving lanes by street trees. Street trees not only cast shade for pedestrians and cyclists, but also work as buffers against the noise and dust from speeding cars and possible collisions. The design further proposes that bike racks and bus stops be sited between the trees, creating an even more continuous buffer zone against encroachment by road vehicles. Though people approaching bus stops will still need to pay attention to bikes, the majority of the existing conflicts among transportation methods of differing speeds will be a thing of the past.

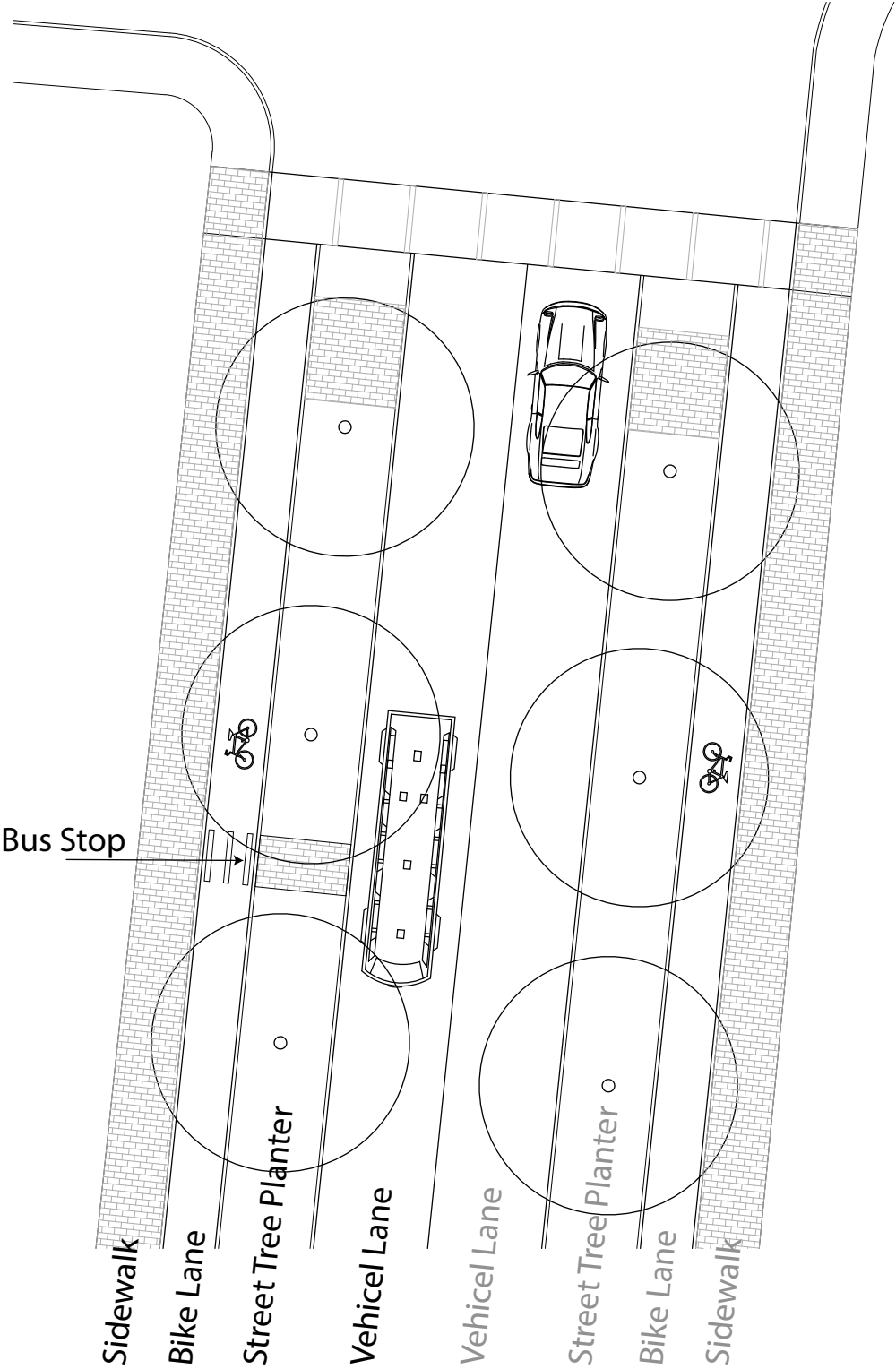


Figure 4.15. Alternative 1.

4.2.2.2 Alternative 2

In this plan (Figure 4.16), pedestrians are separated from all other types of traffic by street trees. Bus stops are again placed between street trees. Bike lanes require buffers from speeding cars; this might lead to bus/bicycle conflicts, and/or make limited street space even narrower. Sidewalks might also be narrower than in Alternative 1. But there won't be right-of-way conflicts.

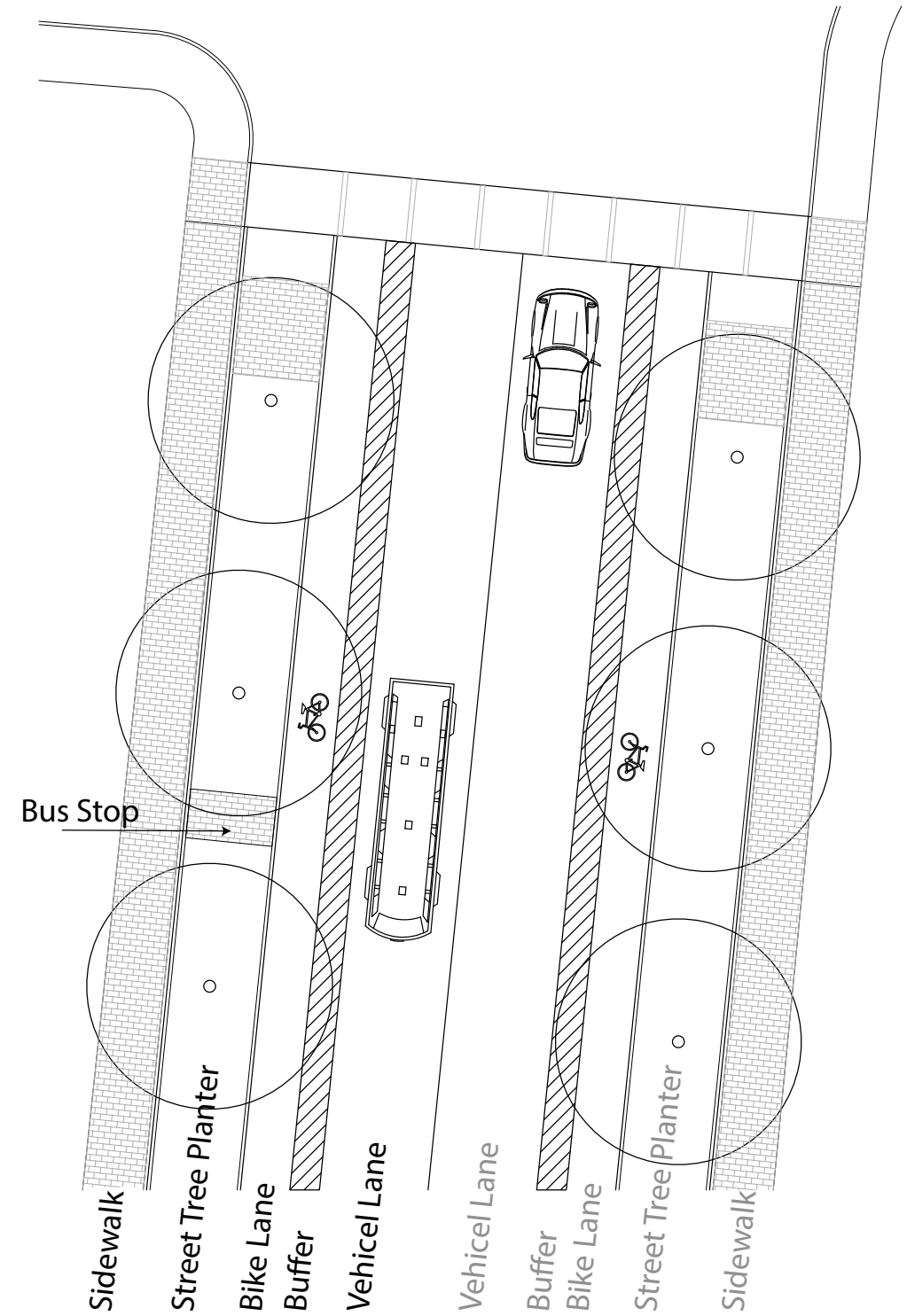


Figure 4.16. Alternative 2.

4.2.2.3 Alternative 3

In this plan (Figure 4.17), sidewalks are separated from all other traffic types by street trees. Bike lanes run down the center of the street, and are separated from motor vehicle traffic by buffers. These buffers would take up valuable street space. Also, bicyclists have to wait for traffic light if they park their bikes and need to go across the street to join pedestrian. But conflicts among traffic of different speeds would be eliminated.

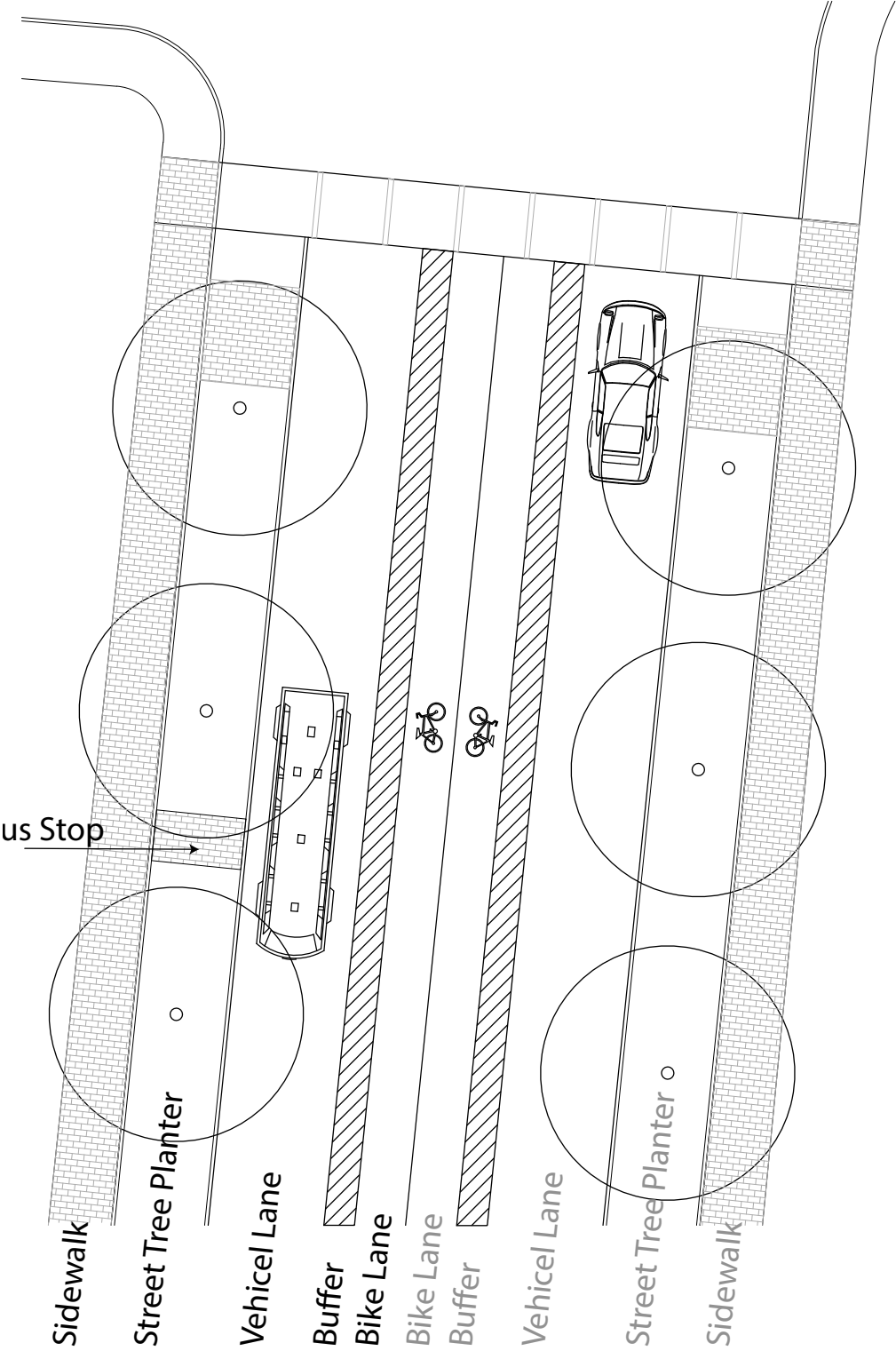


Figure 4.17. Alternative 3.

4.2.3 Improvement Directed towards North East Street Becoming a Complete Street

4.2.3.1 A Better Street for Walking and Biking

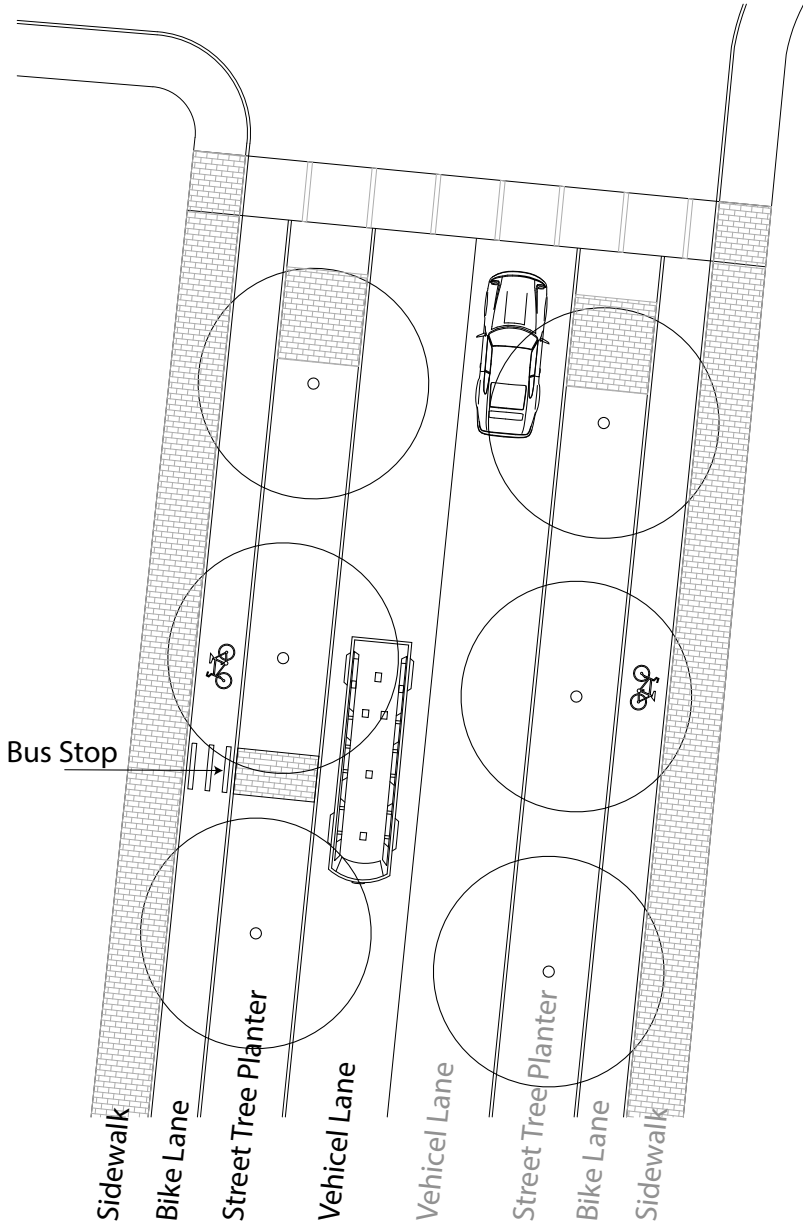


Figure 4.18. Proposed Street Plan Enlargement.

- In this design, the priority is to ensure that:
1. Sidewalks are as wide as possible, therefore, sidewalks could not only be a passing space, but also serve as public living room;
 2. Pedestrians and cyclists will be separated and protected by street trees from speeding cars;
 3. Narrower driving lanes help reduce car speed.
 4. Improvements of the walking and biking experience .

Given the challenges of mitigating right-of-way conflicts in this relatively narrow street space, the first alternative plan was deemed the most appropriate of the three (figure 4.18).

In this plan, parking lanes are removed, driving lanes are narrower. And no space is wasted, sidewalks are promised to be as wide as possible. Pedestrian and bikers are separated from driving vehicles by street trees.

Moreover, besides street tree system, this plan include the proposed streetlight system, which in times of lightness will be equally beneficial to pedestrians, cyclists, and motor vehicles. Streetlights also improve safety (figure 4.19 & 4.20).

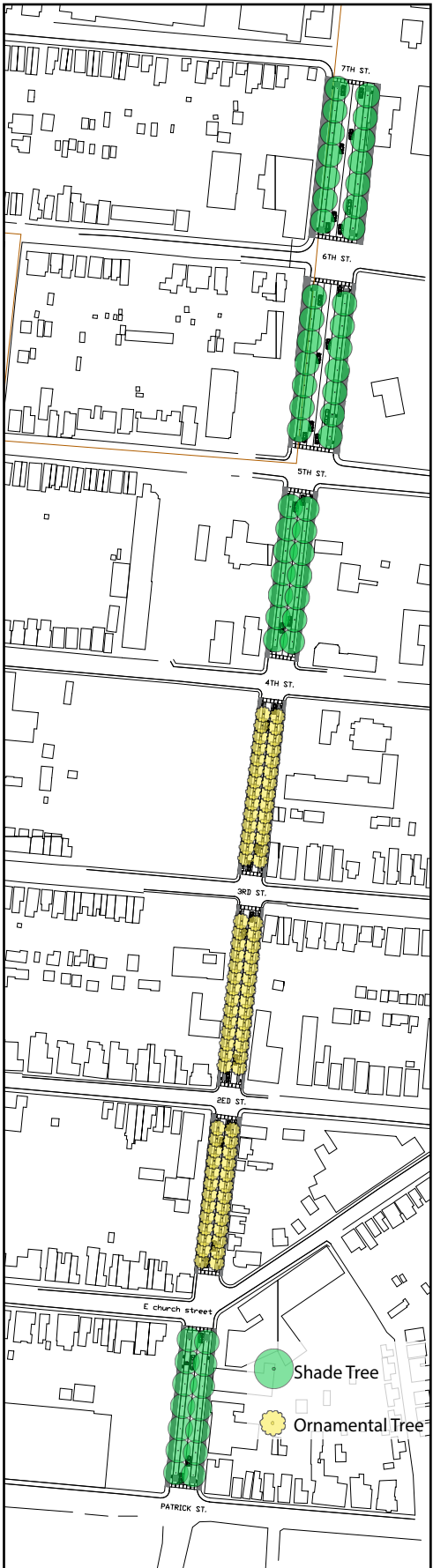


Figure 4.19. Proposed Street Trees Plan.



Figure 4.20. Proposed Streetlight Plan.

In the first block, located between East Patrick Street and East Church Street, the proposed design requires the removal of two driving lanes; In the second and third blocks, the proposed design requires the removal of one turning lane; In the fourth and fifth blocks, the proposed design requires the removal of one parking lane; And their replacement by bike lanes, street-tree planters and sidewalks.

Because street space widens from 4th Street northward, driving lanes from that point could be as wide as 12 feet, while still leaving sufficient room for sidewalk cafes (Figure 4.21 & Figure 4.22).

The existing style of sidewalk paving should be made continuous, i.e., extended to additional areas of the street, including even the entrances to parking lots and shops.

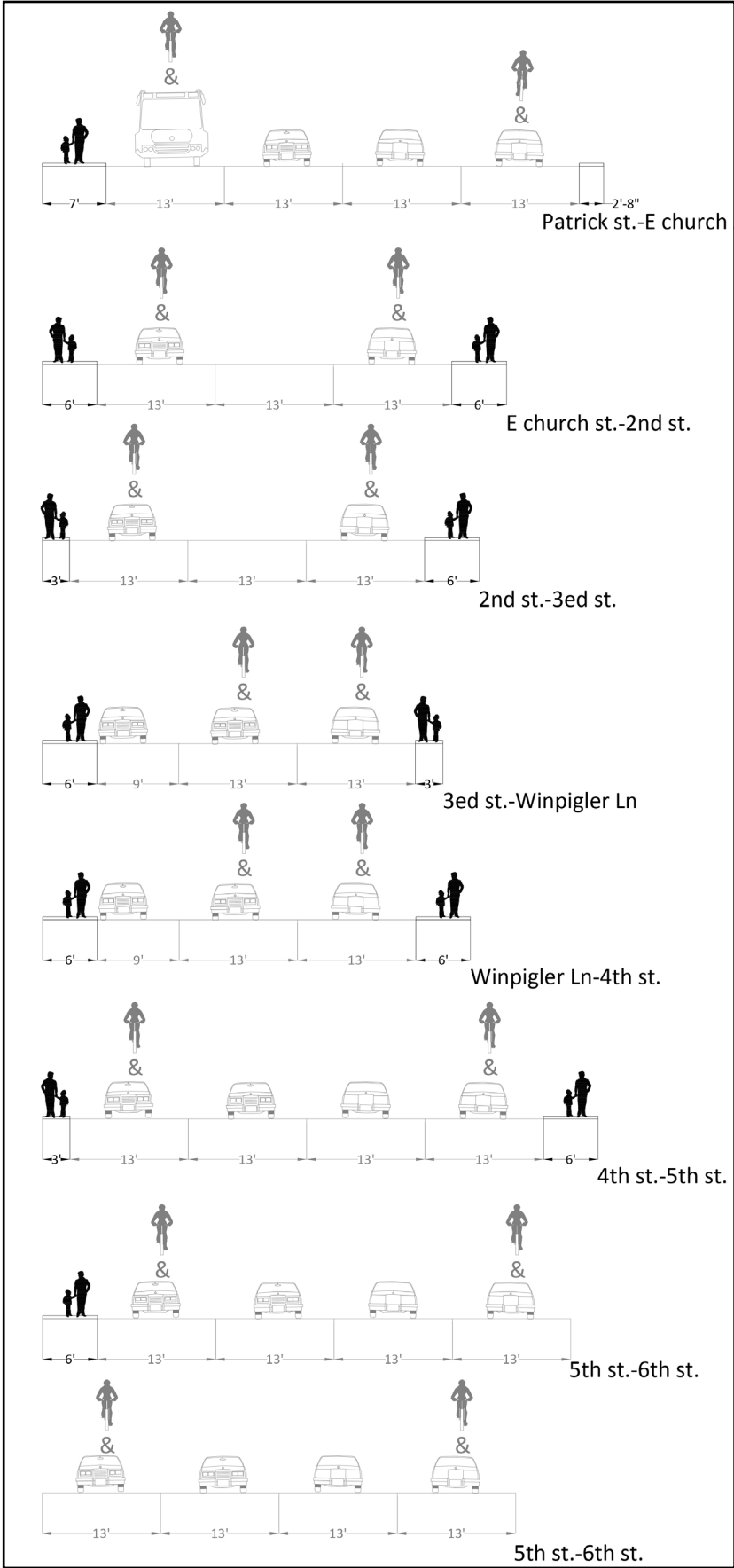


Figure 4.21. Section of Current Site Lanes.

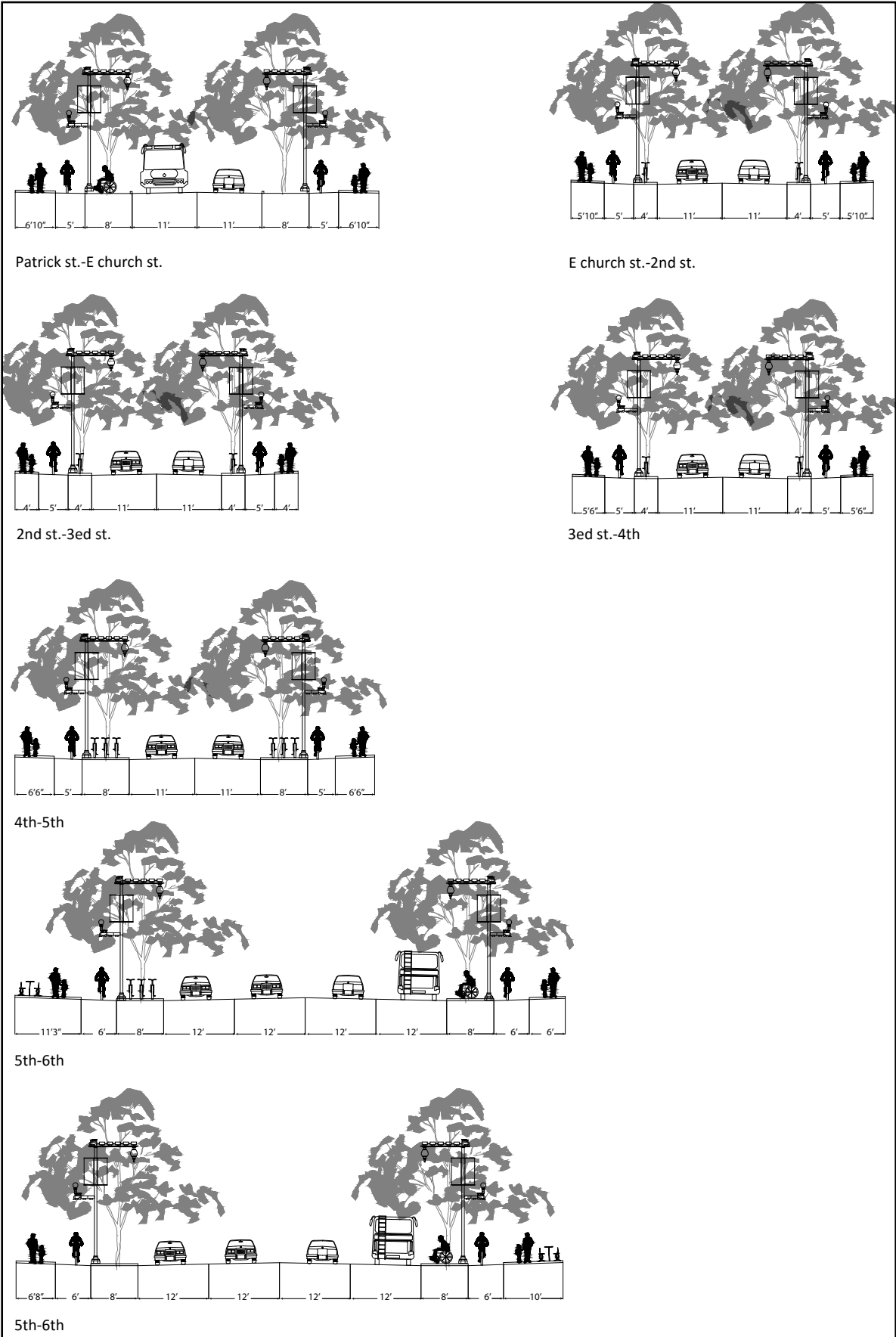


Figure 4.22. Proposed Street Sections.

4.2.3.2A Better Street for Public Transportation

The plan calls for one bus stop to be moved, from the third block, where is between East 2nd Street and East 3rd Street, to the first block, where is between East Patrick Street and East Church Street (figure 4.23). As compared to the third block, the first block has more space, and therefore the first block is more appropriate for an ADA bus stop than the current location (figure 4.24).

It is further proposed that another bus stop to be moved from the fifth block, where is between East 4th Street and East 5th Street, to the sixth block, where is between East 5th Street and East 6th Street.

Four driving lanes should be remained, but this plan suggest to narrow them from 13’ to 12’. The spared space contribute to bioswales, bike lanes and sidewalks. Therefore, there should be enough space for pedestrians to walk along and enjoy sitting in the street comfortably.

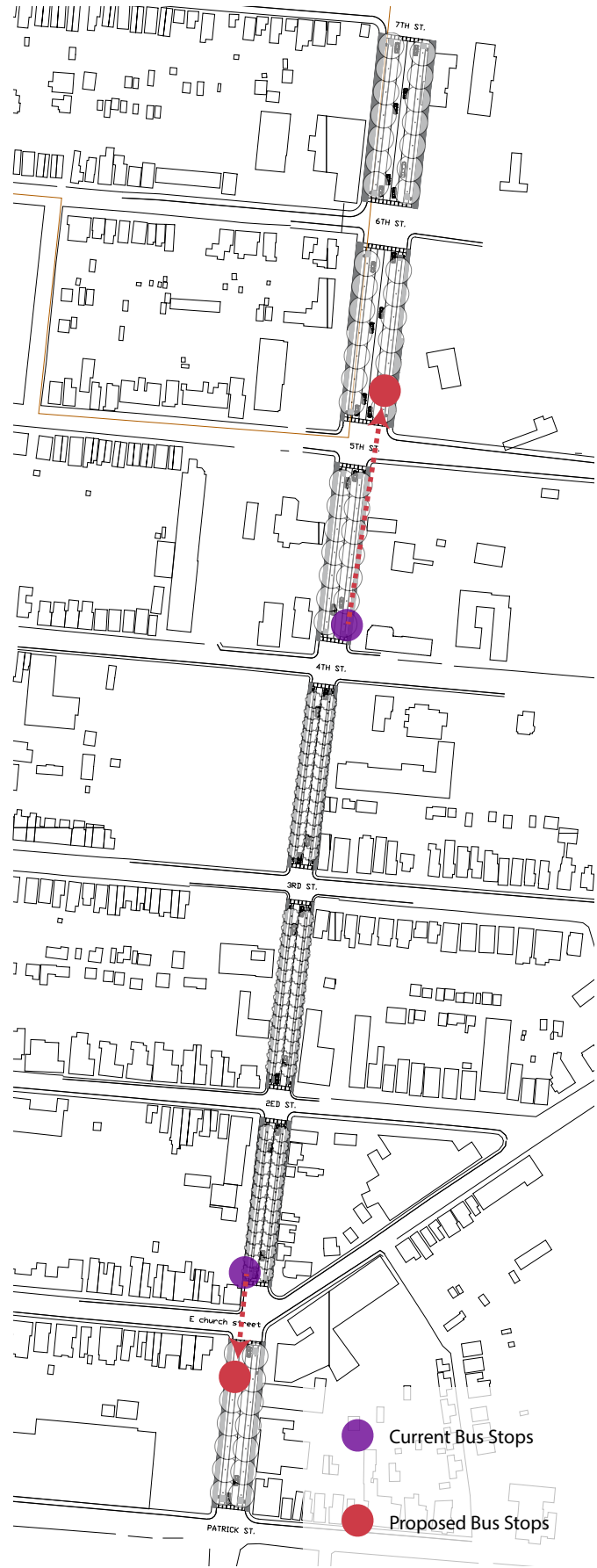


Figure 4.23. Proposed Bus-stop Location.

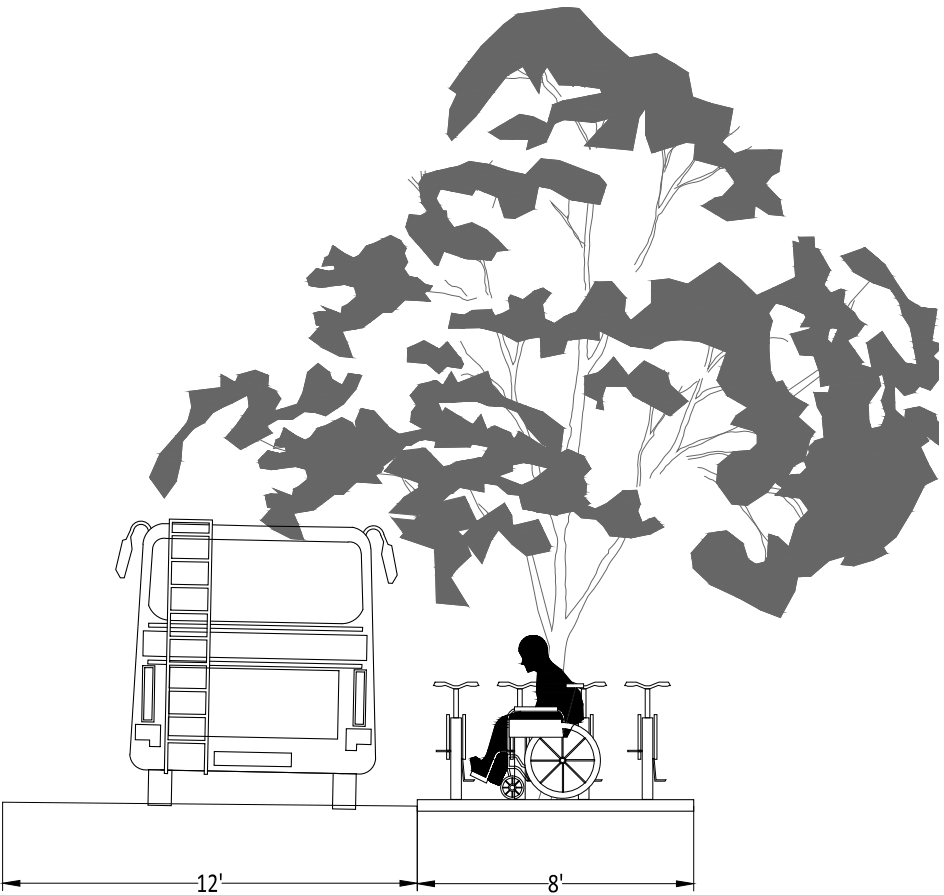


Figure 4.24. Proposed ADA Bus-stop Elevation.

4.3 North East Street a Green Street

4.3.1 Objectives

As discussed in Chapter 3, North East Street could be transformed into a green street. Potentially, it could serve as an outdoor learning space, or an ecological corridor that channels storm water and provides wildlife habitat. The relevant objectives are as follows:

- 1. Improve street sustainability;
- 2. Connect Monocacy Village Park and Carroll Creek; and
- 3. Provide educational opportunities for both residents and visitors.



A Better Street for Street Trees;
A Better Street for Storm Water;

4.3.2 Improvement Directed towards North East Street Becoming a Green Street

4.3.2.1 A Better Street for Street Trees



Figure 4.25. Existing Over-pruned Street Tree on Site.

The proposed design recommends the relocation of street-tree planters on North East Street. Many of the existing trees are located under power lines, and to ensure safety, they must be pruned, cut and shaped (Figure 4.25). This is not only bad for the trees’ health, but also costly in both time and money.

By relocating the planters, the two problems mentioned before could be solved altogether (Figure 4.26).

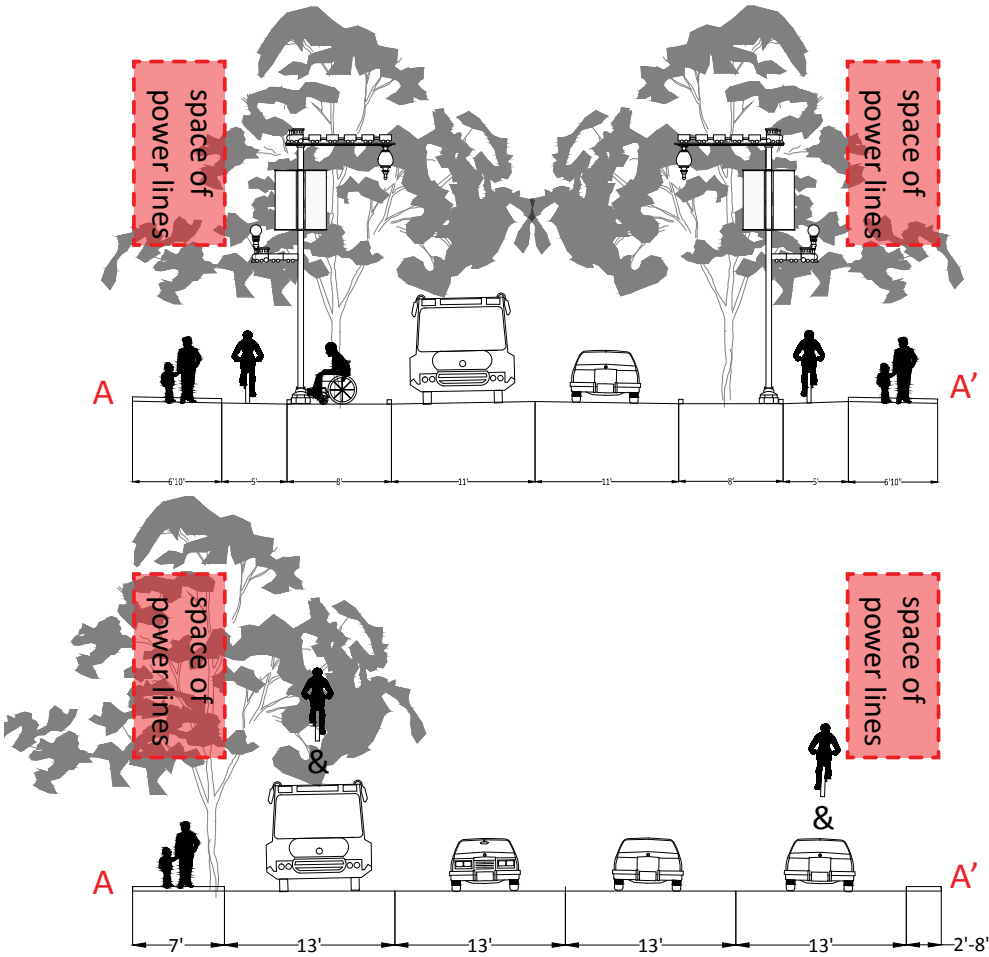
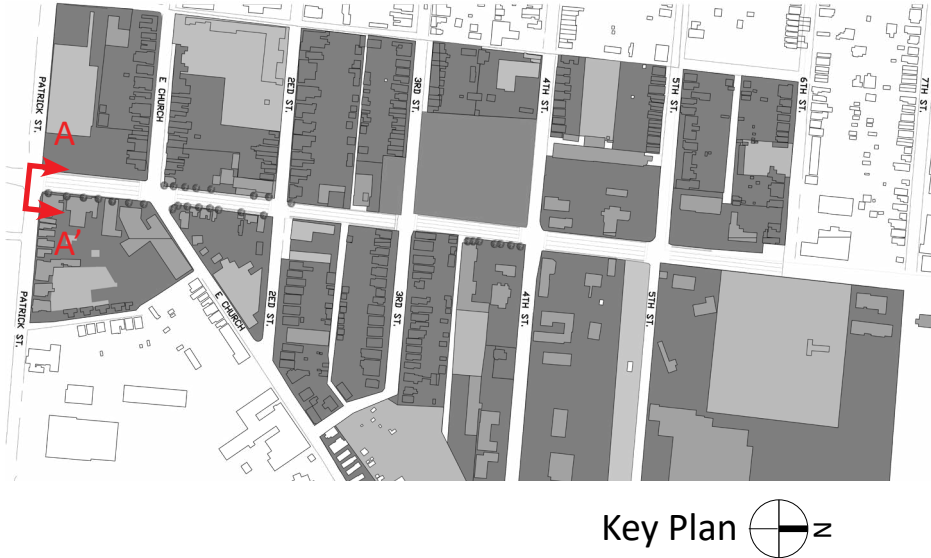


Figure 4.26. Proposed Street Section VS. Existing Street Section.

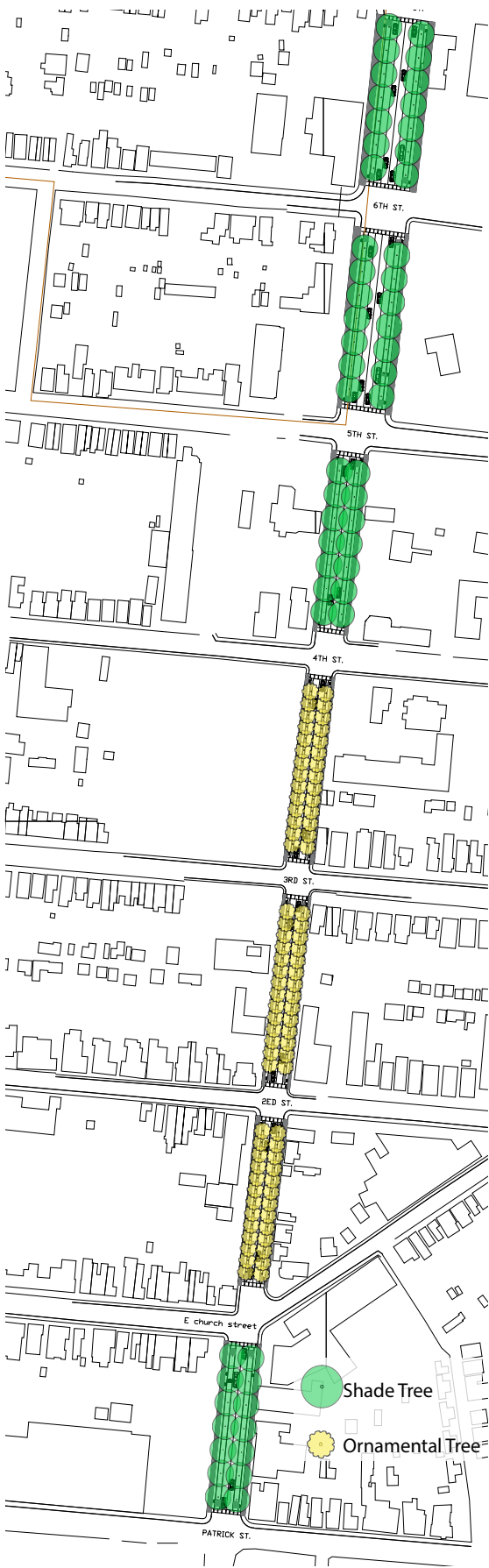


Figure 4.27. Proposed Street Tree Plan.



Figure 4.28. Proposed Planter Plan.

Moreover, this plan proposes that, instead of planting only one or two kinds of trees all along the entire street, more different types of street trees should be selected and planted (figure 4.27). One reason is reduce incidence of street tree disease invasion. Also, the seasonal changes of plants contribute to street’s scenery interest.

As what is shown in figure 4.25, existing planters are disconnected squares, and not more than 3’ wide. Too small the planter are, makes it difficult for street trees to grow healthily, especially for their roots and trunks.

Differently, proposal suggests to built two different size of continuous planters. One is 8’, and the other is 4’, both of them should run through streets (figure 4.28). Smaller ornamental street trees could be planted in smaller planters, such as *Lagerstroemia indica*. And larger shade trees in larger planters on more open streets, such as *Platanus acerifolia*.

Continuous planters not only has enough space for roots and trunks, also allow nutritions self-adjust, maintain balance.

4.3.2.2 A Better Street for Storm Water

Storm water flows through North East Street from the north on its way to Carroll Creek. On site, the streetspace is 3.8 acre; during a one- year storm it catches 35,201 ft³ rainwater, while in a ten-year storm

it is 70,402 ft³. Treatment of storm water is necessary not only to North East Street and the city of Frederick, but also to Chesapeake Bay. Treatments should be multiple-layered, including building



Key Plan 

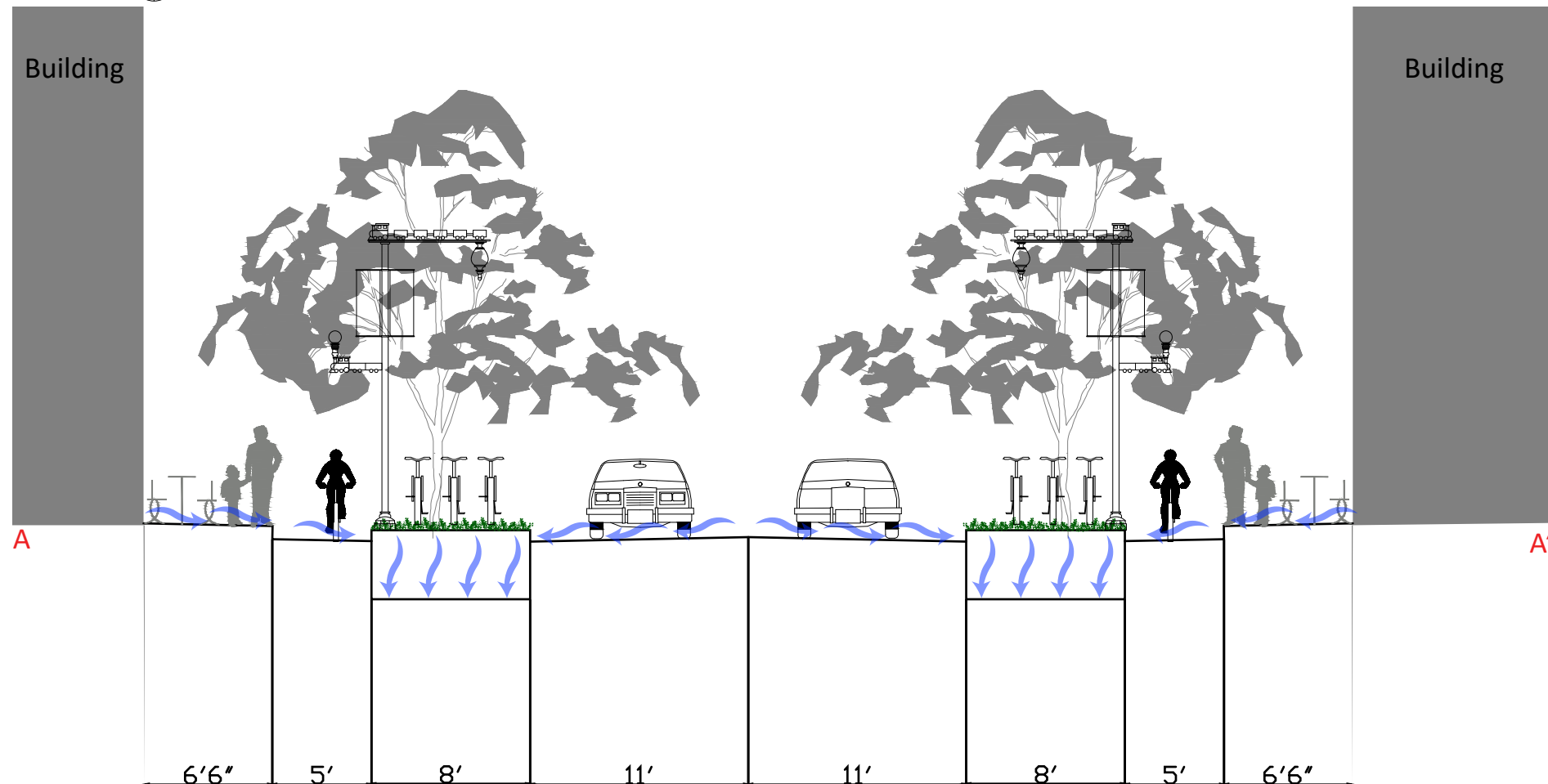


Figure 3.29. Proposed Street section.

street tree planters into bioswale, rain-garden, and living wall. In this design, bioswales treat rainwater followed by steps below:

1. The surfaces of the proposed sidewalks, bike lanes and driving lanes are all tilted towards tree planters.
2. Curb cuts allow sheet flow flush into planters;
3. Pebbles slow down flowing speed, intercept trash;
4. Ground-cover purify water, absorb gross, such as heavy metal elements, nitrogen, phosphorus and potassium;
5. Allow rainwater recharge underground water.

Although smaller planters can't work as efficient as larger ones, diversity of planting materials can also contribute to improve environment quality (figure 4.29 & 4.30). Consider to the existing soil type, this design thesis proposes using silva cells. Soil volume should be specified in further develop plan



Figure 3.30. Proposed Street Tree Planters.

In North East Street, all green spaces should also provide stormwater-treatment functions. Specifically, the triangular park located between East Church Street and East 2nd Street has been redesigned as a rain garden (figure 4.31).

Existing soil type in this park is urban D, i.e., water is not able to filtrate through. To facilitate the cleaning and recycling of stormwater, the proposed design plan recommends installation of filtration layers under

surface soil. Water goes through these layers, then will be stored in cisterns before pumped up to irrigate planting materials. At ground level, there are bioswales surrounding the park and capturing rainwater runoff.

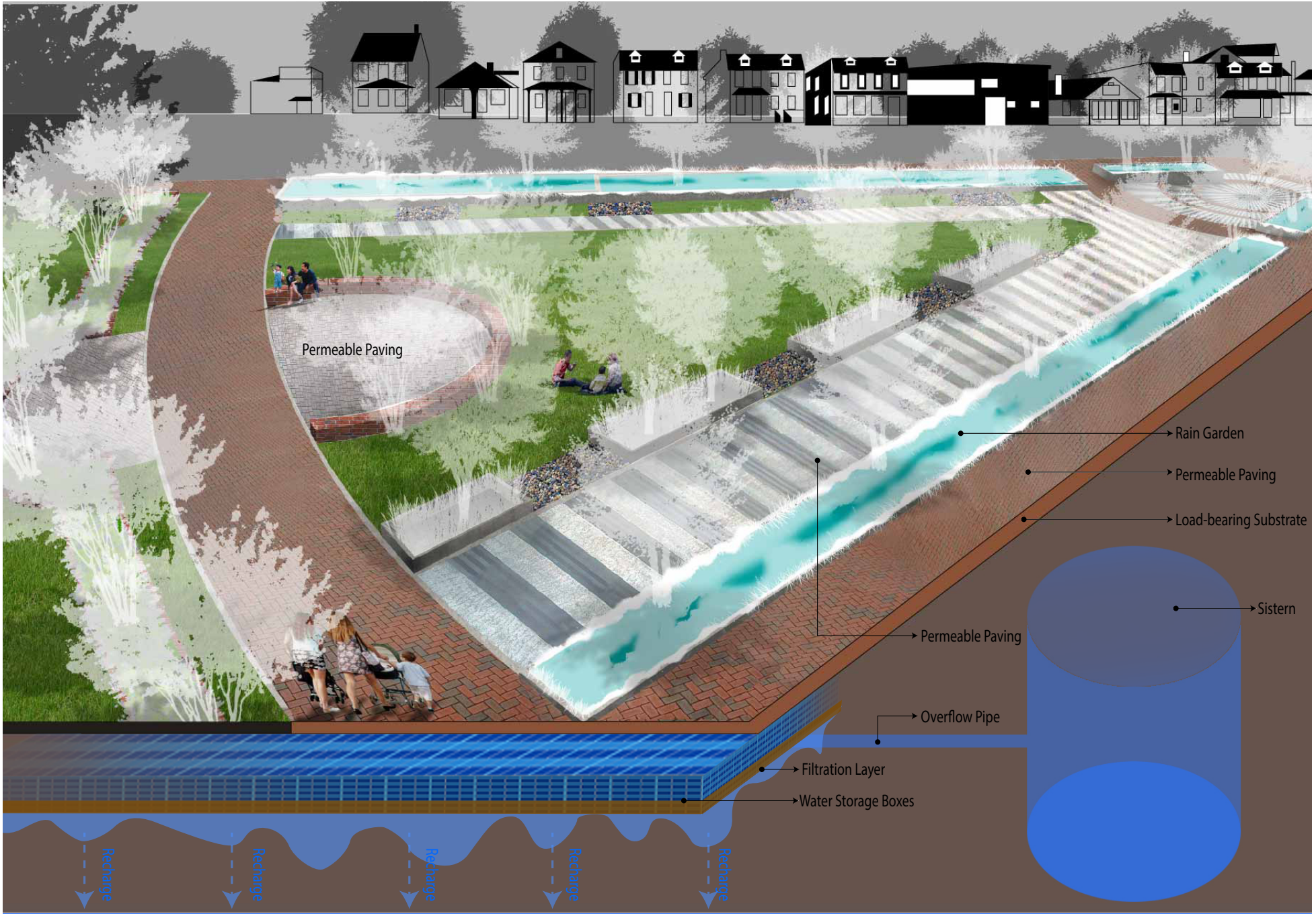


Figure 4.31. Proposed Triangle Park.

For Everedy Square, this proposed design recommends installation of “living walls”, which is capable of treating water from roofs. When water run down from roof, rough surfaces formed by planting materials

slow down flow speed, absorb water and nutritions. Therefore, living-walls contribute to reducing erosion and absorbing pollutants including CO2, CO and NOX, while emitting O2. In this design, among planting materials, In this design, among planting materials,

there are several blackboards, encouraging visitors to write or draw, enhancing site interesting and attractive, leading people come and meet each other (figure 4.32). Bioswale, rain garden and living wall together make this site into a multi-layered green street (figure 4.33).



Figure 4.32. Proposed Living Wall in Everedy Square.

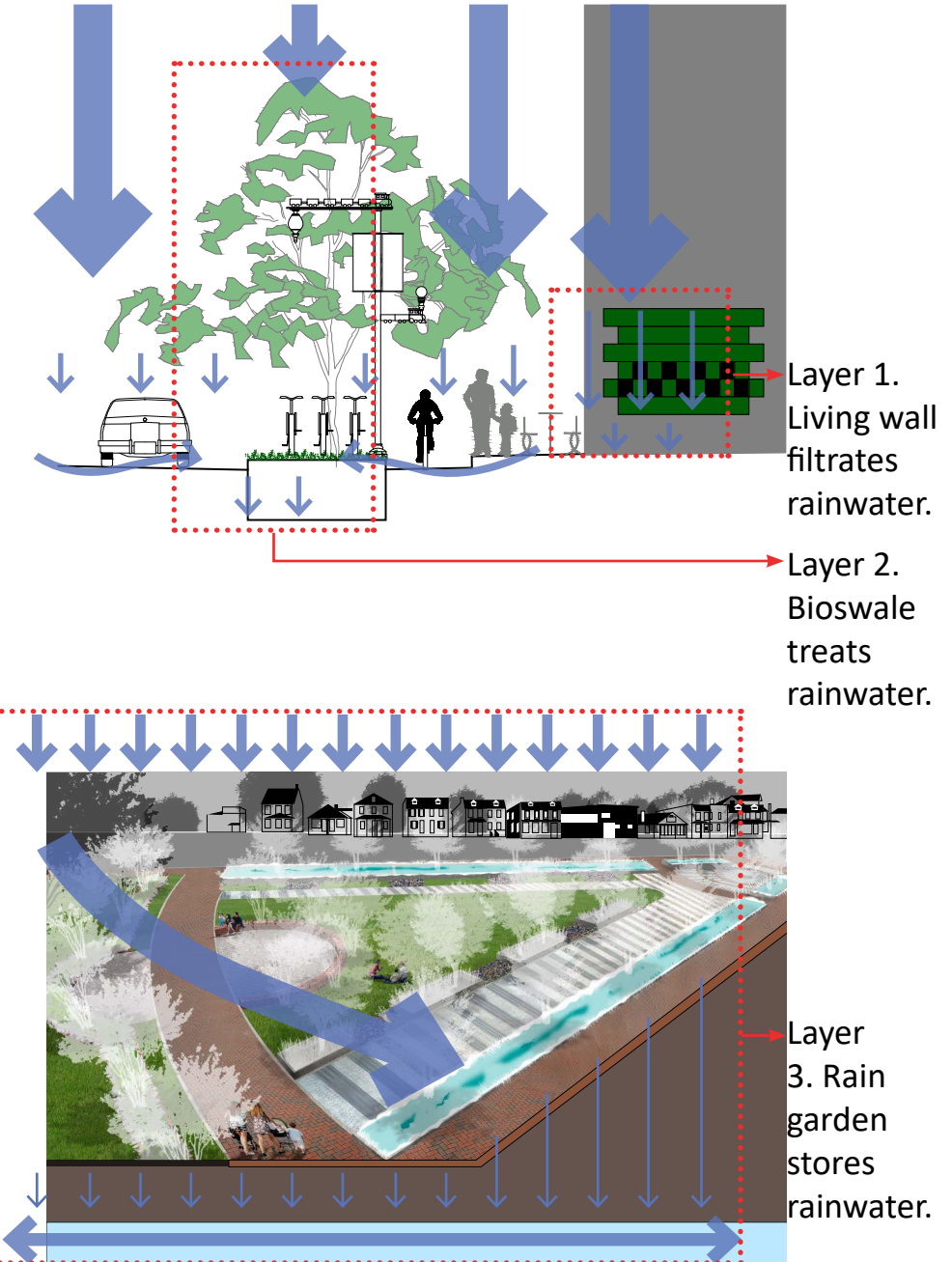


Figure 4.33. Multy-layered Green Street.

4.4 North East Street’s Cultural Identity

4.4.1 Objectives

North East Street embodies a history of Frederick, and in terms of culture it contributes enormously to East Frederick and the city as a whole. However, when speaking of the street’s own identity, it is difficult to pinpoint any particular feature. With regard to cultural and historical preservation, therefore, the following improvements are recommended:

- 1. Installation of an agricultural landmarks;
- 2. Preservation of historical landmarks; and
- 3. Strengthening of the connections between and among the street’s residents and its public spaces – where necessary, by increasing the number of such spaces.



A Better Street for Cultural Preservation;
A Better Street for Historical Preservation;

4.4.2 Improvement Directed towards North East Street Place-Making

4.4.2.1 A Better Street for Cultural Preservation

East Frederick has a long history of involvement with agriculture, which has played a significant part in the local economy and culture down to the present day. The current design proposals strongly recommend the introduction of a farmers’ market (Figure 4.34). More than merely satisfying demand for the products it sells, or easing residents’ consumption routines, the farmers’ market would stand as a landmark: a physical, daily reminder of the importance of agriculture in everyone’s daily life, and to North East Street, East Frederick and Frederick in particular.

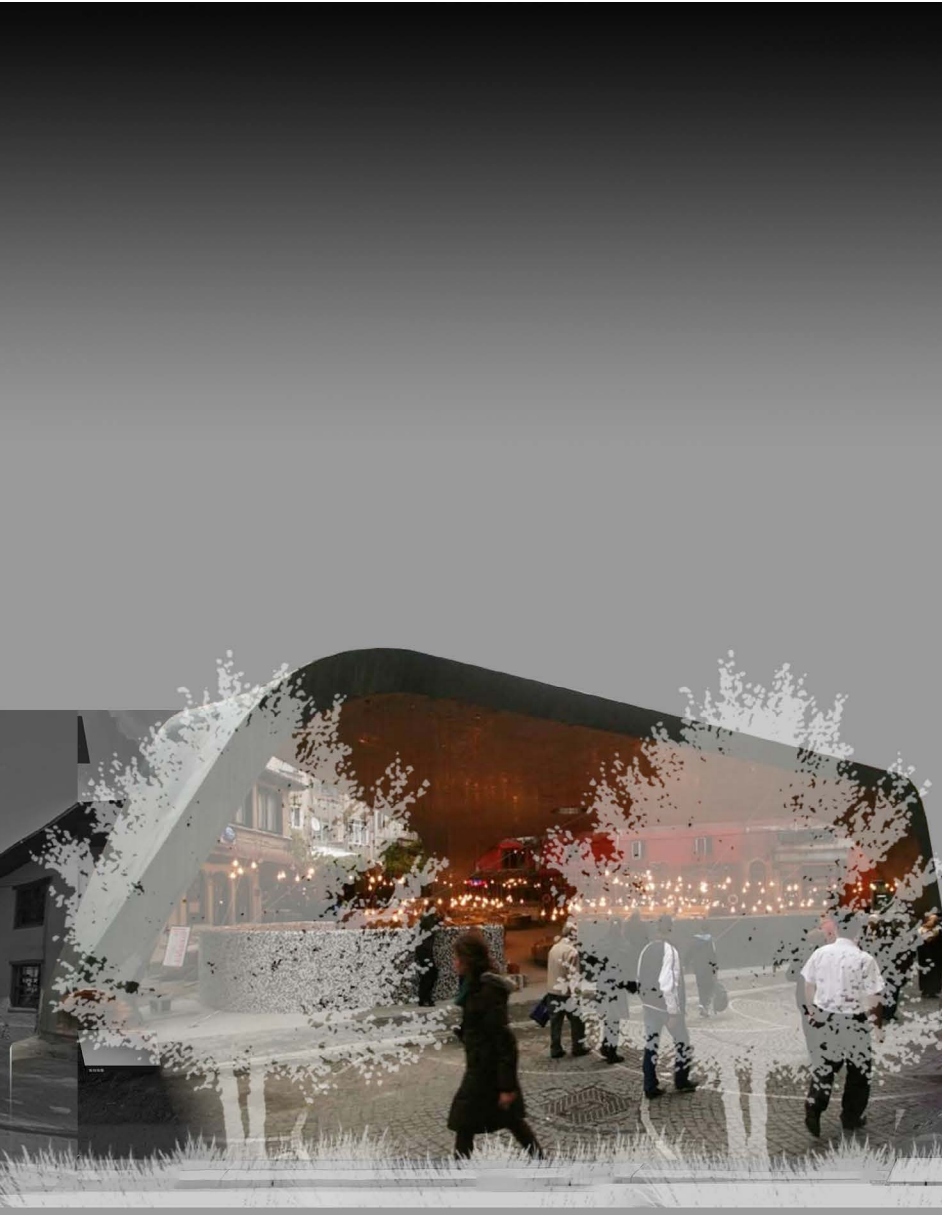


Figure 4.34. Proposed Farmers’ Market.

4.4.2.2 A Better Street For Historical Preservation



It is recommended that murals be commissioned to express North East Street's history, in a style echoing the street's original decorative elements (Figure 2.5), and be applied to the street's most significant historic buildings, i.e., the post office and Train and Rail Museum (Figure 4.35 & 4. 36).



Figure 4.35. Proposed Murals.



Figure 4.36. Proposed Murals.

4.4.2.3 A Better Street For Fun

The key to making North East Street lively again is to re-imagine parks, squares, and even sidewalks as places of entertainment for both residents and visitors.

4.4.2.3.1 Everedy Square

Currently, Everedy Square is in effect a driveway, allowing vehicles from North East Street to reach the Everedy Parking Lot. When we consider that there is only one community park on North East Street (in the third block), it becomes clear that Everedy Square could be re-designed as a second public space for the street's visitors and residents.

In the daytime, umbrellas should be provided to cast shadows for people enjoying their outdoor coffee. Food stands could provide cheaper and more convenient food. People who arrive here on foot, rather than by driving, are also likely to pay closer attention to the building facades and the murals (Figure 4.37).



Figure 4.37. Proposed Daytime Perspective VS. Existing View in Everedy Square.



Figure 4.38. Proposed Nighttime Perspective in Everedy Square.

Everedy Square could continue to be used in the evenings. Specifically, this design recommends that the square be used as an outdoor bar, attracting people to enjoy street life even after sunset.

Lights hidden in the umbrellas would illuminate the square, creating ripple-like lighting effects on the ground. In addition to their functions relating to lighting and protection from the weather, the umbrellas serve as symbols: reminding people of the importance of rainwater (Figure 4.38 & 4.39).

The installation of black board and living walls in the square is also proposed. As shown in Figure 4.32, right, variations in texture between brick and living walls could provide interesting aesthetic experience. Additionally, boards would be provided on which people could draw, write down their wishes, and so forth, thus increasing the interaction between humans and the environment.



Figure 4.39. Proposed Rainy Perspective in Everedy Square.

4.4.2.3.2 Triangle Park



This park is designed as a communal “front yard” for the street’s residents. Its open lawn area is ideal for lying down and enjoying the sunshine, while benches all around the park welcome people to sit and encourage interaction (Figure 4.40).

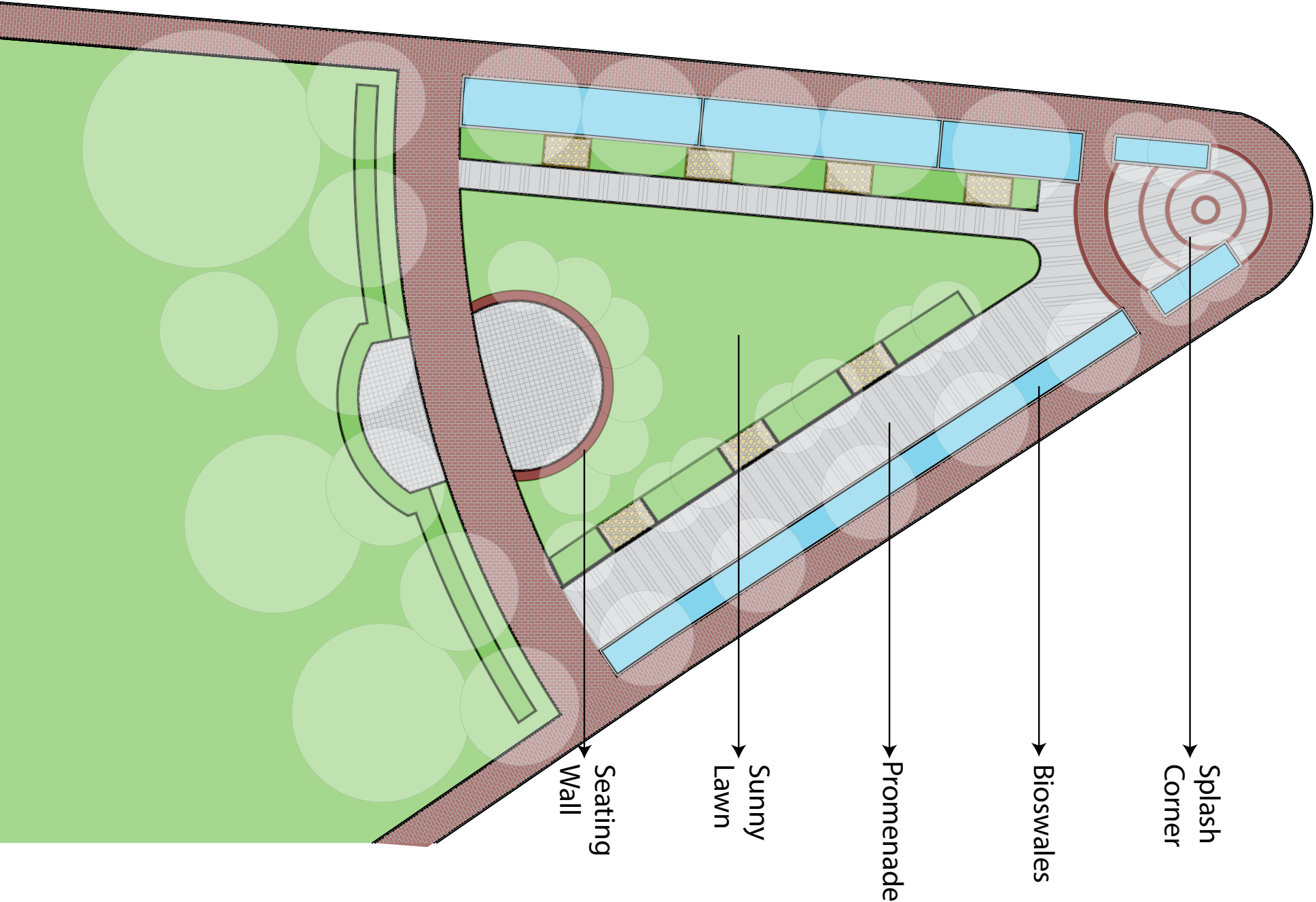


Figure 4.40. Triangle Park Plan

4.4.2.3.3 Sidewalks

Imagine: crowds are in the street, listening to live music, talking to each other, and window shopping; people are having lunch outside of their offices, their ideas sparkling as they sip coffee and have a little talk to each other on sidewalk. How lively the street is! This plan enables all of these possibilities for North East Street, by providing sidewalks that are as wide as possible, benches, movable tables and chairs, blackboards, and sufficient shade trees, among other features. For example, in front of the proposed Farmers’ Market, the sidewalk has been designed to be wide enough for food stands to park, and people could enjoy their food sitting on benches while observing bioswale (Figure 4.40).

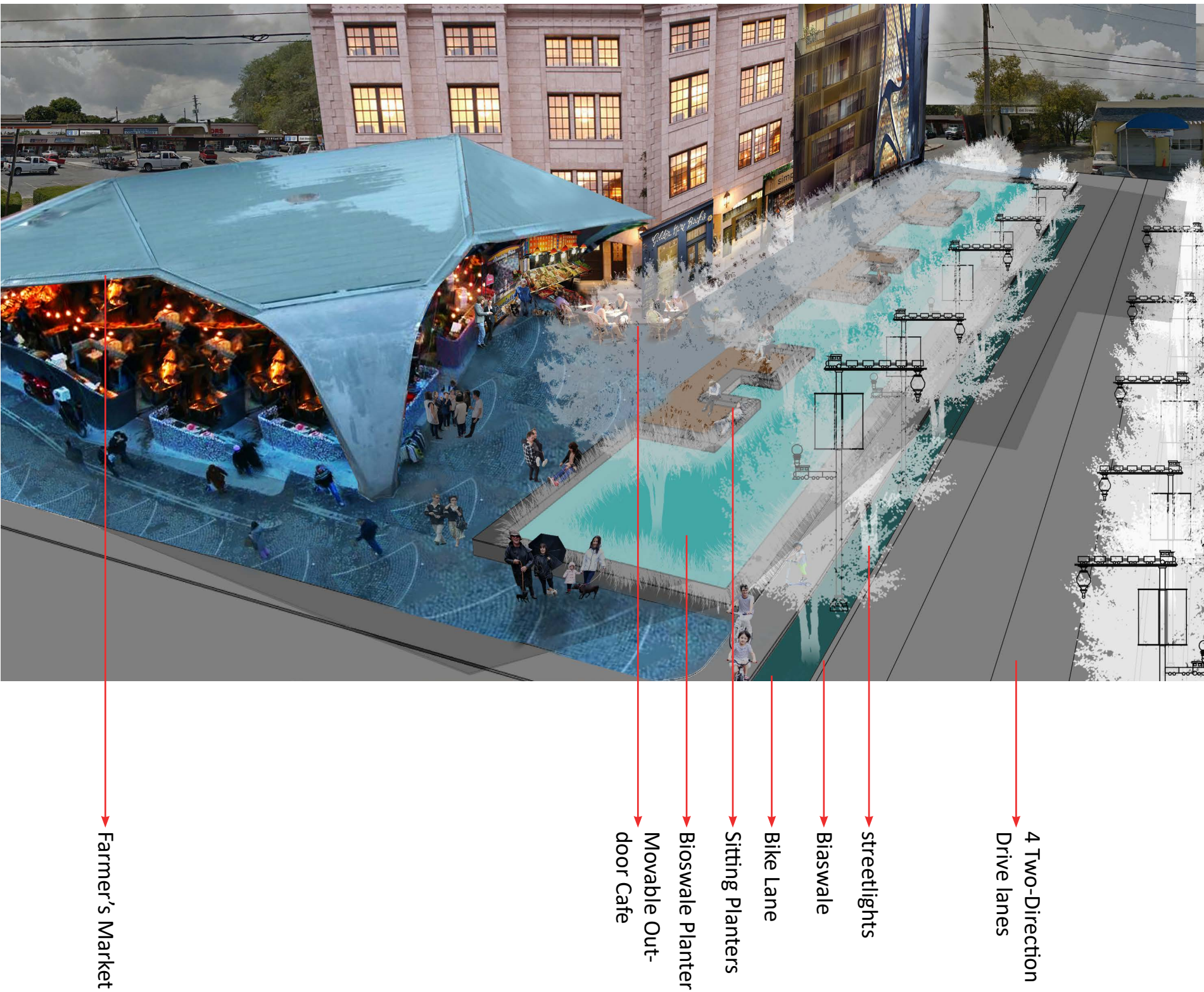


Figure 4.40. Proposed Farmer’s Market & Sidewalks.

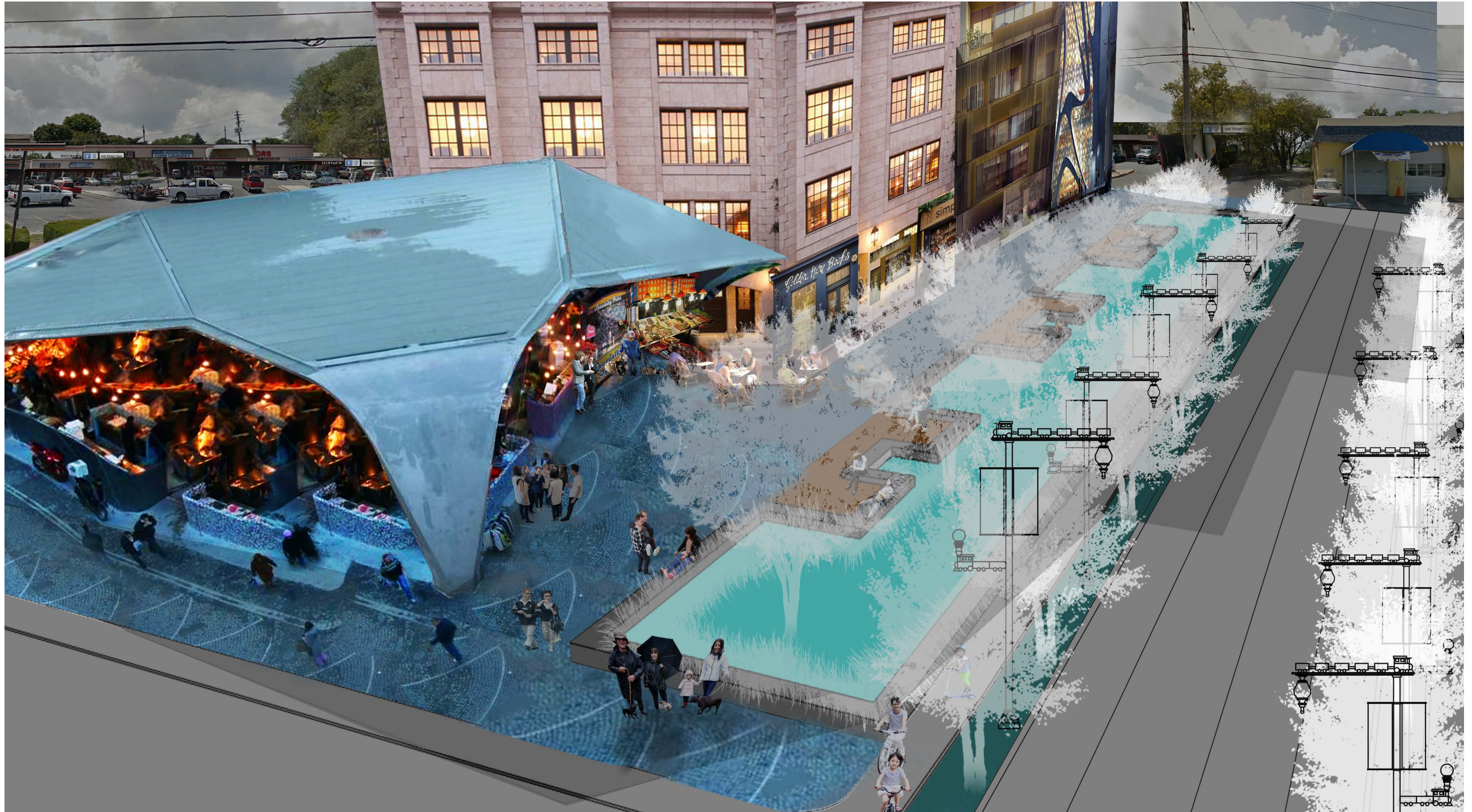


Figure 4.41. Proposed Farmer's Market & Sidewalks.

Conclusion



Figure Conclusion 1. Proposed Plan.

FOLLOWING A TWO-YEAR ITERATIVE PROCESS OF RESEARCH, DESIGN AND REVIEW, THE DESIGN INVESTIGATION RECOMMENDS THE FOLLOWING RE-DEVELOPING PHASES:

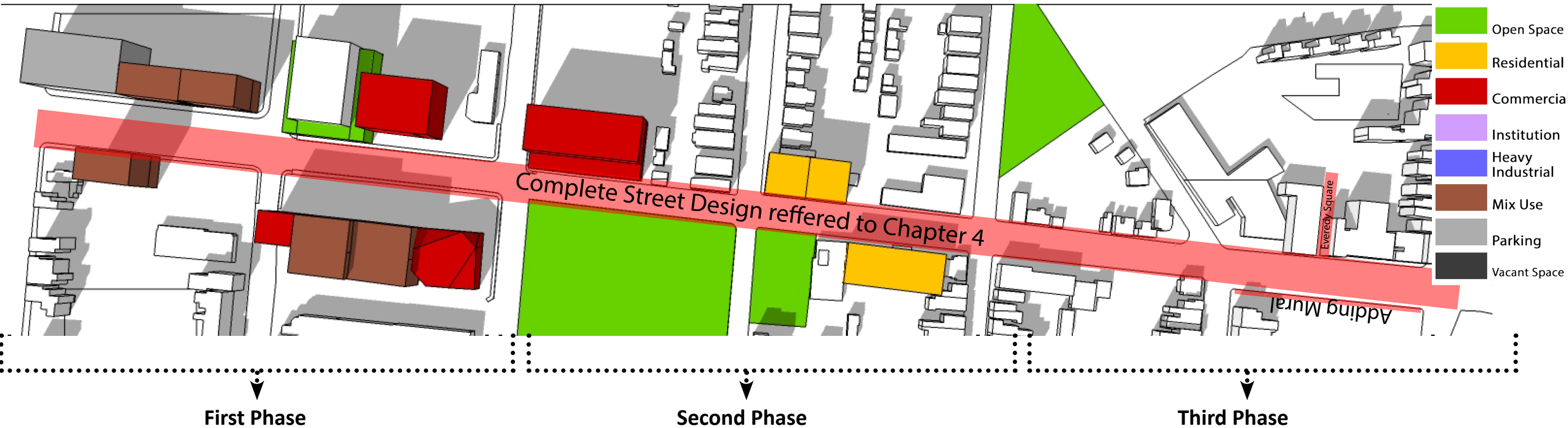


Figure Conclusion 2. Proposed Plan Phase.

1. The first phase mostly focuses on the fifth and sixth blocks of North East Street between East 4th Street and East 6th Street. The goals in this phase include building new mixed-use blocks and introducing complete streets. In particular, in order to replace the surface parking that is currently spread all over North East Street, the building of a parking garage should be achieved in this first phase. Also, to attract more talented people to live and, potentially, work in North East Street, new apartments should be provided together with such support services as would make them convenient, e.g., food supply, pharmacy or coffee shops.

2. The second phrase mostly focuses on the third and fourth blocks located between East 2nd Street and East 4th Street. The goals for this phase include adding new apartment buildings and mixed-use buildings, strengthening cultural identity, and introducing complete streets. Two key actions in this phase are the design and implementation of historical and cultural murals on the Train and Rail Museum's currently blank walls, and the opening of a farmer's market honoring the local culture of agriculture as well as fulfilling basic shopping needs.

3. The third phase mostly focuses on North East Street's first and second blocks, starting from East Patrick Street and ending at East 2nd Street. Here, the goals include providing more public spaces, strengthening cultural identity, and introducing complete streets. In this phase, the design proposes to reform Everedy Square from a glorified driveway into the city's living room, and the Triangle from a vacant lot into a public front yard, providing people with considerably more opportunities to interact with each other. It is also hoped that these spaces will educate visitors regarding the importance and techniques of rainwater treatment.

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