COLLEGE OF AGRICULTURE AND NATURAL RESOURCES
Department of Plant Science and Landscape Architecture

Re-imagining North East Street

A study by the University of Maryland Landscape Architecture Program, January-March 2015

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Partnership for Action Learning in Sustainability
National Center for Smart Growth and Education

TABLE OF CONTENTS

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EXECUTIVE SUMMARY

"Re-imagining North East Street" was made possible by a collaboration between The City of Frederick, the Partnership for Active Learning in Sustainability (PALS), and the Landscape Architecture Program at the University of Maryland. In January 2015, University of Maryland graduate students initiated a two-part study of Frederick's N. East Street, which is generally defined as the corridor bounded by North Market Street in the north and Carroll Creek Park to the south. To the west is the Frederick Historic District, which expands eastward into the N. East Street corridor in the blocks between Carroll Creek Park and N. 5th Street. East of N. East Street, new residential development was under construction or well into the planning approval process.

The N. East Street corridor is characterized by such diverse uses as light manufacturing, warehousing and distribution, automotive services, commercial retail, and a mix of residential housing. Its proximity to the densely built historic city center makes it a prime candidate for new development that will accommodate a growing population.

In this two-phase study directed by Associate Professor Jack Sullivan, FASLA, students identified cultural and natural resources that exemplify the character of Frederick east of the historic district. They also identified some of the problems posed by existing circumstances and anticipated new development. They assessed strategies for increasing the density of the built environment while improving ecological and transportation connections throughout East Frederick and into the historic city center. In the process, they recognized the scope and character of business opportunities, introduced alternative residential development scenarios, and recommended civic park, open space and street improvements that will encourage walking and bicycling for healthy, active lives. The urban design proposal emphasizes resource management, spatial organization, and urban landscape character.

Phase I took place during the three-week winter term. Graduate students in Landscape Architecture and Public Policy conducted a study of the geographic area associated with the N. East Street corridor and accessed the broader context that included the Monocacy River and Carroll Creek watersheds. Their study resulted in a general planning strategy for future sustainable development. Phase II took place in the first half of the spring semester, resulting in a proposal for responsible urban development and specific recommendations for improvements to N. East Street. Students presented their planning study to representatives of the City of Frederick Planning Department. A review of student work took place at the University of Maryland (January 22, 2015). The feedback they received informed more detailed studies conducted during Phase II, which were reviewed at a subsequent meeting in Frederick (March 12, 2015).

GENERAL RECOMMENDATIONS

A. Preserve, protect, and create open space that will provide recreation, increase forest cover, diversify the ecology, enhance migration routes, reduce storm water runoff, replenish the aquifer, and improve water quality in Carroll Creek and the Monocacy River;
B. Connect existing city streets with new street extensions that will improve pedestrian and vehicle access, disperse automobile traffic and reduce congestion on major streets, and establish a clear orientation between Downtown Frederick and neighborhoods east of N. East Street;
C. Create "Complete Streets" that are safe, comfortable, and environmentally friendly conduits for pedestrians, bicyclists, and drivers, that improve storm water management practices, and that create a rich and vibrant civic life;
D. Encourage future development that will complement adjacent historic neighborhoods, balance live-work-play opportunities, and establish a strong sense of place based on Frederick's historic past and its sustainable future.

INTRODUCTION AND GOALS

The planning and urban landscape design studios challenged students with the task of developing a new sustainable character and identity for N. East Street. Analysis of the N. East Street corridor included two visits to Frederick. Students had the opportunity to walk throughout the study area and meet with the city planning department staff and community leaders. Students documented the current circumstances, researched its history and evolution, and became better acquainted with its issues and opportunities.

Initially, the students considered the most outstanding characteristics of N. East Street to be its diverse and somewhat incongruous land uses, its ill-defined street boundaries, and the lack of safe pedestrian and bicycle environments. Yet they also discovered a valuable "working" neighborhood—an auto-centric, industrious, in-town service and production center. Property values and rents are low, making this an affordable neighborhood for start-up entrepreneurs and independent businesses. As a wider, more open street in the northern half, it offers an easily accessible means of circumventing the narrow, busy streets of the historic downtown.

The landscape and urban character north of Carrol Creek Park has two distinct personalities. One respects the building traditions of the past; the other reflects the contemporary needs of progressive industry and suburban commercial needs. It displays a practical, down-to-earth attitude in its continuous use of vernacular buildings, its embrace of commerce and the energy of the new, and. Its modest housing stock, which ranges from 19th century cottages to mid-20th-century suburban homes, are within walking distance of shopping centers, warehouses, factories, and repair shops.

As the City of Frederick continues to experience a steady growth in population—nearly 27% increase between 2000 and 2013 (city-data.com)—citizens and planning experts have voiced a strong desire to explore and re-imagine this previously underappreciated "urban edge" as a viable and integral part of the downtown core. This is a once-in-a-lifetime opportunity to create a neighborhood that brings economic, social and environmental distinction to Frederick's east side.

As one of the city's Small Area Plans, East Frederick has unlimited potential to meet the needs of a growing population and a robust economy. It is primed to flourish as vibrant urban neighborhoods that will support new jobs and industry, provide a variety of residential options, improve the ecology, increase tourism, and create a strong sense of community. Ultimately, N. East Street will establish a rich mix of uses that will weave seamlessly into the urban fabric of the city.

Student Learning Objectives:

- Establish a firm understanding of methodologies for data collection, synthesis, and interpretation;
- Develop the ability to define and explain key terms and concepts in urban planning and design;
- Establish a large-scale planning vision that protects natural systems while increasing density in the built environment;
- Apply responsible planning and design strategies that increase forest cover, improve water quality encourage economic development, protect and increase jobs, provide a variety of residential living options, create safe streets for pedestrians and bicyclists, and improve traffic flow;

- Transform underused and visually compromised neighborhoods into ecologically sensitive, economically viable, and socially satisfying places of distinction and beauty;
- Develop a vibrant civic environment by encouraging industrial, commercial, retail and residential development along tree-lined streets, bikeways and sidewalks that connect to parks, greenways and recreational activities throughout the city.

SITE ANALYSIS

Regional Influences: Physiography and Development

Frederick is the regional center for central Maryland with a population of about 67,000, which is expected to grow to 97,000 by 2030. It is at the intersection of two major interstates creating a regional relationship to the port city of Baltimore (I-70) and Washington, DC (I-270). With limited employment growth planned in Frederick County, it is anticipated that much of the new employment growth in the region will occur within the City's boundaries (East Frederick Rising, 2010).

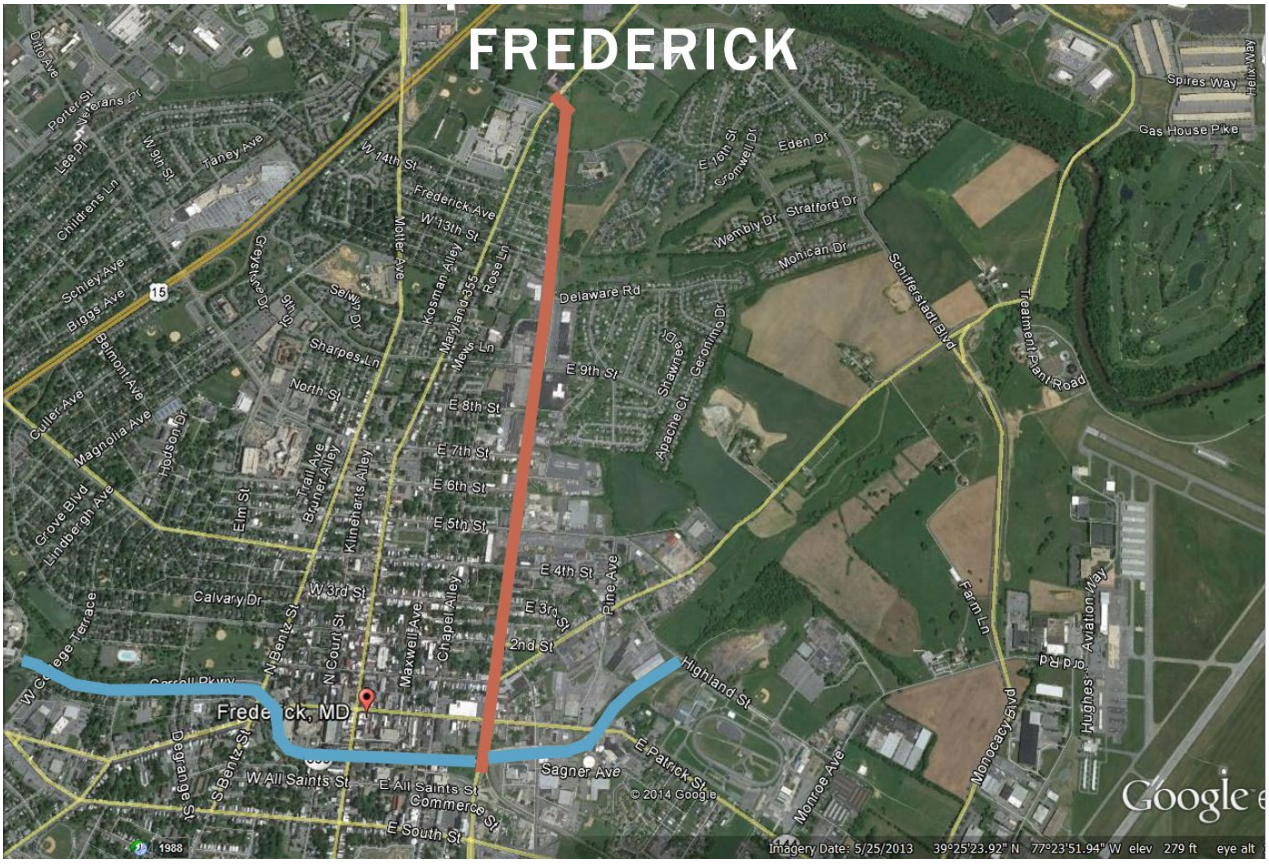
http://www.findyourspot.com/MD/Frederick

Frederick's location in Maryland's Piedmont region, bounded on the west by the Blue Ridge Mountains of the Appalachian Mountain Range, gives it a distinctive physiographic presence and a favorable environmental character. Catoctin Mountain to the north and west of the city is a prominent feature, creating a strong visual backdrop from the broad plateau below.

Out of the mountains flow the streams and rivers that have come to define the City of Frederick—Carroll Creek through the middle of town and the Monocacy River to the east. The annual flooding of Carroll Creek and subsequent property damage and personal injury caused the City to re-think its relationship to the creek. Following the disastrous floods of 1972 and 1978, a flood control project redirected the creek through five rectangular concrete conduits and built a linear city park above the massive engineered structure. Carroll Creek Park, initiated in 1991, is in the final phases of development. The park and underground conduit terminate just beyond the E. Patrick Street Bridge, where the open water flows into a wetland on its way to the Monocacy River. The University of Maryland Landscape Architecture Program recently conducted a study with PALS for the Carroll Creek Wildlife Recreation Area (2014).

Carroll Creek Park has been a catalyst for historic preservation efforts and has inspired new economic development in the downtown. East Street intersects the park three blocks from Market Street, then "Main Street" of Frederick. Located outside the mercantile and residential center, East Street has long been an important location for industry and commerce, thanks in great part to its railroad connections into surrounding counties and Pennsylvania. In the last half of the 20th Century, it has welcomed

manufacturing and services as demanded by the times, much of it related to the sales, service and repair of automobiles. Low land values have allowed this area to continue to attract businesses that might otherwise have moved further away from the city center and the convenient access to the goods and services—and the clientele and employees—that the city has to offer.



The study for re-imagining N. East Street (red) starts at Carrol Creek Park (blue) and continues north to Delaware Road. N. East Street terminates at its intersection with N. Market Street.

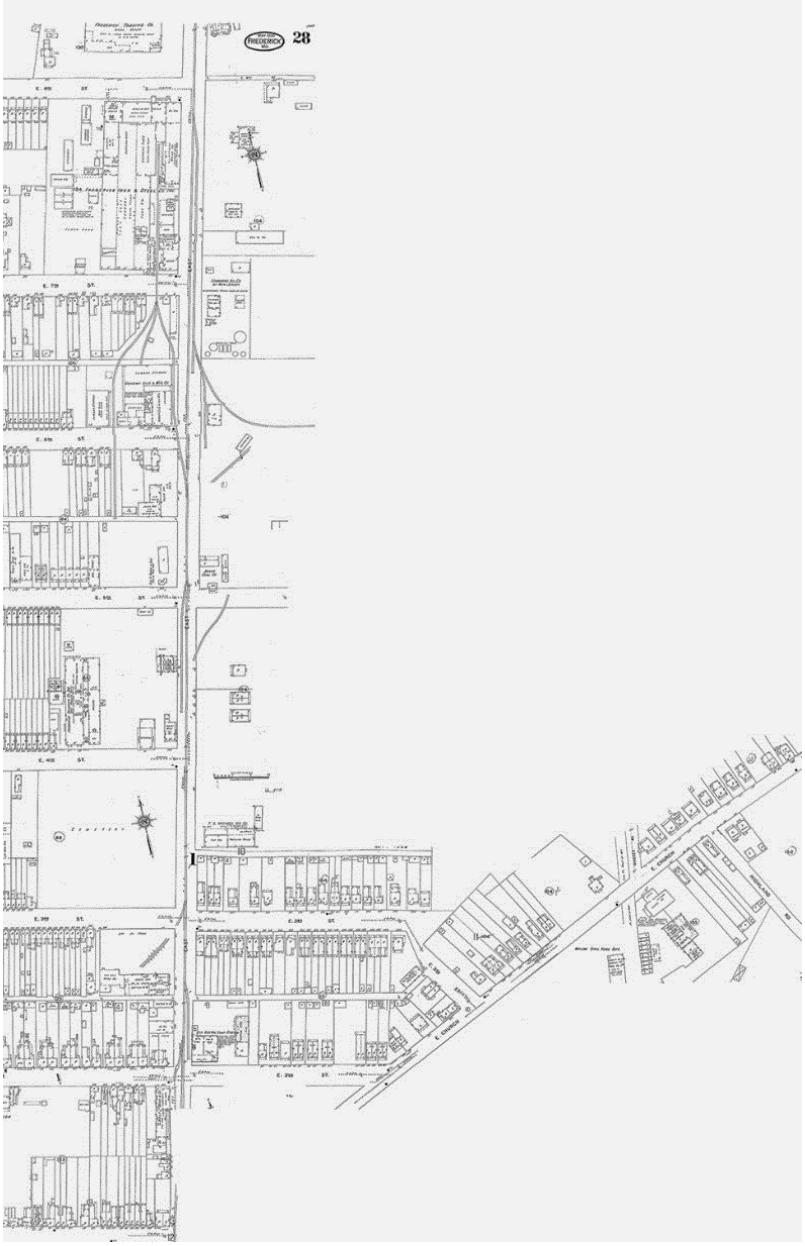
Historic Background: Transportation, Industry and Culture

An exploration into the history of Frederick reveals that the city experienced, much as the rest of the nation did, a post-Civil war trend of people moving into urban centers during the rise of industrial development and production. As a gateway to the Appalachian Mountains, Frederick became a major player in the expansion to the west. The east side of town, downstream and downwind of the residential neighborhoods and the mercantile district, was a prime location for receiving raw materials from the surrounding region and manufacturing products that were in high demand. The distribution of goods by way of the National Road and the new railroad lines into Pennsylvania extended Frederick's reach into a large geographic area during the late 19th Century and early 20th Century as Frederick's economy flourished.

Glass Factory Business Condominiums
Image: LoopNet at http://www.loopnet.com/

Through the second half of the 20th century following the wars, the few remaining manufacturing facilities gradually began to shut their doors as competition increased with the rapidly expanding international economy. With low property values and ample room to spread out, light industrial businesses began to make the east side of town their home. The area developed a distinct working class presence and affordable homes sprang up in nearby subdivisions like Monocacy Village and Monocacy Meadows. Convenient auto-based services and shopping centers soon followed and many utilitarian buildings were constructed to meet the demands of this new economy.

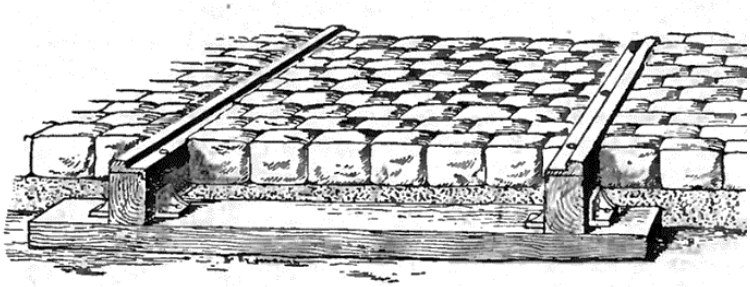
Left, Monocacy Village Shopping Center (Image: http://www.fbpleasing.com/retail.htm); Center, East Street Plaza, 501 N. East Street (Image: LoopNet at http://www.loopnet.com/); Right, 307 E. 9th Street (Image:, http://www.fbpleasing.com/retail.htm)



Mapping History: The Sanborn maps
Source: Library of Congress

Between 1904 and 1944, the Sanborn Fire Insurance Company mapped the changing landscape of the city. East Street, in particular, is documented in a series of maps that identify the influence of the Frederick and Pennsylvania Railroad, later the Pennsylvania Railroad, as commerce took advantage of fast and efficient transportation of goods. Storage yards, transfer depots and factories grew up along the length of the rails and trains were coaxed to successful enterprises on spurs from the main line.

By the end of World War II, the trains were replaced with trucks and the railroad right-of-way was overlaid with a road surface that would accommodate them. Today the rails are visible in the road bed and the open tracks, together with many extant buildings of the same period, tell the story of Frederick's past industrial landscape. These fragments of the past are worth preserving for future generations to visibly access the complete story of Frederick. They might also be reused for a light rail or trolley system in the future.



Train and streetcar rails throughout the city were imbedded in the pavement, making them negotiable for wagons, horses and eventually for cars, bicycles, and pedestrians.

On East Street at East Patrick Street, looking north, railroad tracks are still in evidence (above left). In cities where trolley tracks are still (or again) in use, imbedded rails are beautifully integrated into the urban streetscape in Jersey City, New Jersey (Image by Will Sherman, http://cityphile.com/photo/man-walking-across-light-rail-tracks-at-essex-street-station/.

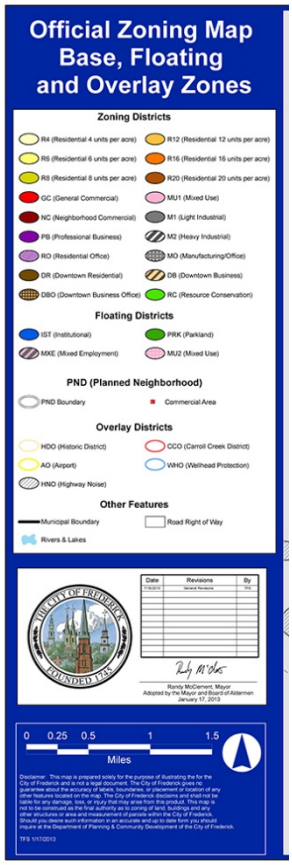
The East Street Rails with Trails, a 2013 study by Toole Design Group for the City of Frederick, highlights the imbedded rails and honors the historic influence of the Pennsylvania Railroad in its proposal to preserve the rails in a bikeway system that references its name in trail identity logos, markers, signage, bike racks, information kiosks, and furniture.

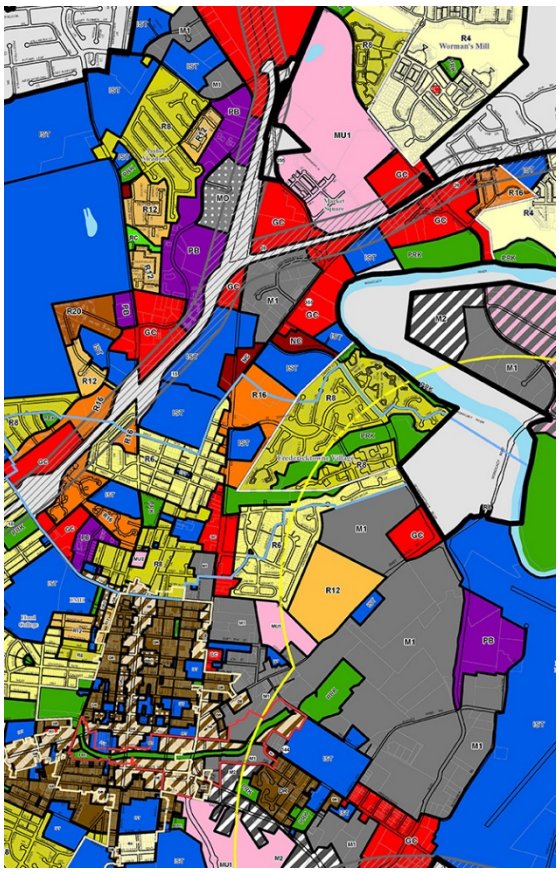
Existing Building Character: Reflections on a Century of Adaptation

Many buildings that served as depots, warehouses, and manufacturing centers still exist, many of which have been in constant use, modified only slightly to accommodate contemporary needs. The Roads and Rails Museum (left) is a good example of how such a building has been put to a new use. Elite Feet Dance Studio was once the Moxie Machine Company.

Zoning and Current Developments

Cities have traditionally used Euclidean Zoning to segregate land uses and prevent potential conflicts between disparate uses in the city. This method has proven to have its limitations, especially when a more flexible mix of land uses can bring into a neighborhood more activity throughout the day and into the weekend. Daytime office and light industry activity can be paired to great advantage with the evening and weekend activities of residential, retail and entertainment uses, all of which energize the civic life on the street. For a new generation of urban dwellers, this mix of uses creates a highly desirable environment, one that is more walkable, using fewer resources with less energy output. Overlay Zones allow for exceptions to more restrictive zoning and have been used to establish appropriate plans for the creation of diverse urban neighborhoods. The use of an Overlay Zone along N. East Street will allow Frederick to anticipate future growth and accommodate changing perceptions of the city.





By also introducing form-based codes into the process, clearly defined spatial outcomes, well-articulated building features, and ecologically sensitive landscape standards can be applied to set the stage for a vibrant civic realm. Form-based codes can translate into compact, efficient and lively urban development, instead of sprawling further into the outer suburbs and adjacent farmland. With the use of Overlay Zones and form-based codes, a responsible Small Area Plan will aspire to create pleasant and affordable urban conditions for a new generation of Frederick citizens. Recent studies, such as *East Frederick Rising* and the *South East Street Master Plan* (by Design Collective) are excellent precedents for how future urban development can look beyond zoning traditions and create memorable places that are based on an thoughtful and articulate vision of social, economic, and environmental sustainability.

Recent development trends in East Frederick

The Nicodemus project (left) and East of Market (right).

Frederick has become a desirable destination for affordable home buyers, many of whom work outside of Frederick in Washington, DC, or Montgomery County. Builders have responded by constructing new homes throughout Frederick County and, most notably, on the east side of the City of Frederick. By the end of the year in 2015, two new residential developments will have added almost 600 homes to East Frederick—and more are in the planning stages. The Nicodemus project will have 444 homes, ranging from four-story townhouses to single-family houses. East of Market, an apartment living development on N. East Street above Delaware Road, will have 160 units.

Although neither development has incorporated significant retail within its borders, both are within one mile of Market Street, making them close enough for a bike ride or a brisk walk into the downtown. Unfortunately, the streets that connect them to the downtown are not safe for pedestrians and bicyclists. Fortunately, N. East Street is conveniently closer to these new neighborhoods and could offer walkable, bike-friendly access to shopping, recreation and work environments, reducing the number of daily car trips, clogged streets, and polluted air. This proposal offers a plan that will bring the downtown further east and add valuable live, work and play environments that are healthy and sustainable in the long term.

DEVELOPMENT AND SUSTAINABLE GROWTH: THE BIG PICTURE

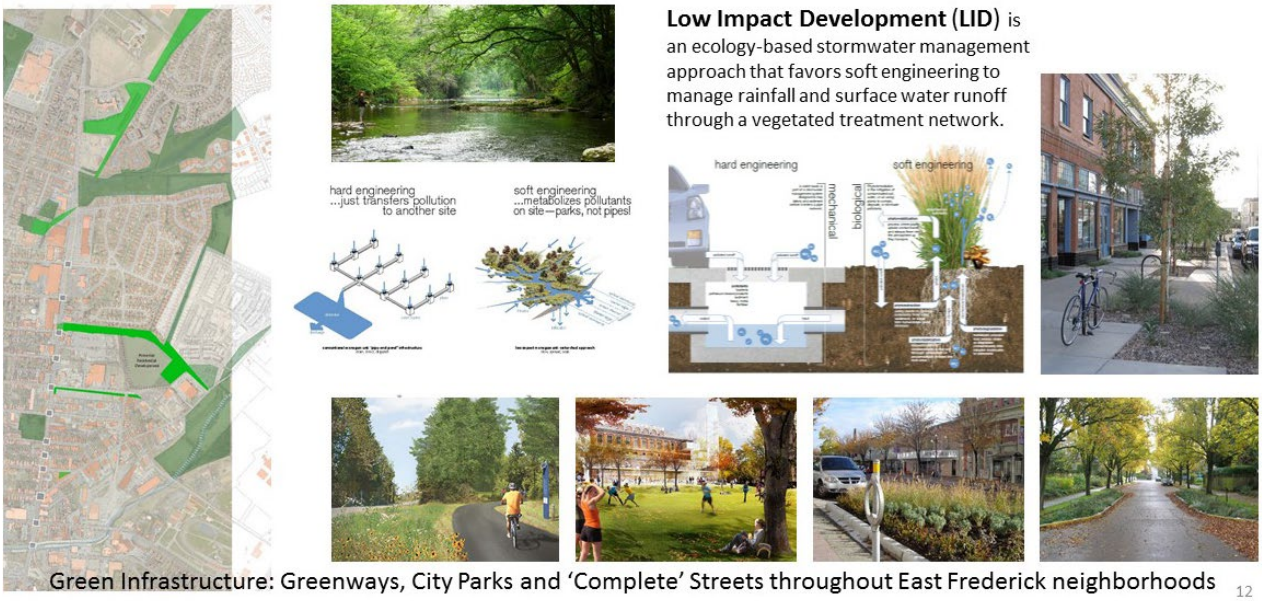
Improve CONNECTIVITY with Green Infrastructure, Integrated Bikeways, and Street Grid Connections

As the population of Frederick continues to climb and demand for housing, businesses and services grows, there will be increased pressure to build on the green fields beyond the city limits. The City of Frederick and Frederick County agree that growth and development would best take place within the city, where development can be more compact and efficient. Frederick has the engineering infrastructure—streets, water, sewers, and power—to absorb future commercial, residential and industrial development close to the center of the city. In recent years, the focus on potential growth has been in East Frederick, where underused and undervalued properties await a major change in direction and support. The city appreciates the need to plan for greater building density, more integrated land uses, better transportation choices, and higher quality, walkable living environments for a large segment of the populace. Central to this is the making of a home-based economy that increases local jobs and develops a strong tax base, which will secure the financial resources to afford the best municipal services, schools and educational programs within a civic culture that fosters the arts and healthful living.

Green Infrastructure

Anticipating that the N. East Street corridor will, over time, develop into an area of increased residential and commercial building density, the city will want to establish integrated methods and set aside large areas of increased green infrastructure to offset the anticipated increase in impervious surface. The proposed areas are highlighted in lime green, while existing vegetation is indicated by dark green. The objective is to build on existing vegetation to create continuous flows of green space to improve storm water management. The increase in open space also provides a more pedestrian-friendly environment, further promoting walkability.

Green infrastructure connections include: YMCA to Monocacy Village Park; East of Market to Monocacy River, behind the Northhampton Manor Health Center, and adjacent to Canterbury Station to the Monocacy River; 7th Street Extension to open space north of 5th Street, connecting to the conservation areas of the Nicodemus property; 5th Street green space along to Pine Avenue; Church Street Triangle green space between East Second Street and East Church Street.



Benefits of Green Infrastructure
Types of Green Infrastructure Approaches / Projects
Low Impact Development (LID) is an ecologically based storm water management approach favoring soft engineering to manage rainfall on-site through a vegetated treatment network.

Hard Engineering vs. Soft Engineering; Riparian Buffer Ecotones and Constructed Wetlands; Retention/Detention Pond; Streetscape Bio Retention; and Eco Boulevards.

Figure 5-33: *A standard curb with wings allows stormwater runoff to enter a stormwater facility. The wings help retain the side slope grade on each side of the curb cut opening.*

from page 133; right photo is from page 147.

These examples of storm water bio-retention cells are from the *San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook, First edition*, January 2009. The book was prepared primarily by Kevin Robert Perry of Nevue Ngan Associates in Portland, OR, with assistance from Robert Dusenbury of Sherwood Design Engineers in San Francisco, for the San Mateo Countywide Water Pollution Prevention Program. Left photo is

FUTURE DEVELOPMENT AND SUSTAINABLE GROWTH: THE BIG PICTURE

Street Connections

FUTURE DEVELOPMENT AND SUSTAINABLE GROWTH:

BLOCK-BY-BLOCK

Following their analysis of the area, students chose areas in the N. East Street corridor to explore in more detail. The plan below is a compilation of those independent studies and a block-by-block illustrated narrative describes their specific recommendations for the redevelopment of N. East Street. The proposal descriptions start in the neighborhoods in the south and continue northward.

A. Carroll Creek Park, East of N. East Street

B. Carroll Creek Park to East Patrick Street

C. East Patrick Street to 4th Street

D. 4th Street to 6th Street

E. 6th Street to 7th Street

F. 7th Street to 9th Street

G. 9th Street to Delaware Road

East of N. East Street (Carroll Creek Park to Church Street)

Located between Carroll Creek Park and Church Street, from N. East Street to Highland Street. Also included in my study area was a triangular piece of property at the corner of E. 2nd Street and Church. This area is currently dominated by asphalt, large industrial warehouses, electrical utilities, and some historical factories. Nearly half of the area still falls within the Carroll Creek floodplain and was the driving force behind some of the design considerations for the area.

The plan for this area identifies the land north of Carroll Creek to be set aside for open space as a large city park, similar in scale and character to Baker Park on the near-west side of town. This is an excellent opportunity to slow surface water runoff, capture rain water for future irrigation needs, and filter storm water that naturally wants to flow toward what used to be the natural bed of Carroll Creek. The park location is ideal for the anticipated population growth in East Frederick and the more immediate growth from the Nicodemus development. Programmable open space in this park, considered a "Baker Park East", will create a continuous spline of city parks that will provide endless outdoor activities—for residents and visitors alike—from Baker Park to the Monocacy River.

The eastern end of this area, which currently has several large warehouses such as Mid-Atlantic Mailbox Inc. and the Alleghany Electric Power Company, is within the 10-year flood plain. This could be developed into an urban agricultural farm and community garden. "*Urban farming has been proven in many studies to involve city dwellers in healthy, active work and recreation"* (Bellows et al 2003). Urban farms will supply a substantial source of healthy food to a new urban area such as East Frederick, while providing addition benefits of green infrastructure in the urban context. This area could host garden workshops, weekend markets, and could even provide room for greenhouses for year-round production. As a former hub of agricultural production in Maryland, Frederick could once again support an innovative approach to providing a sustainable solution to food sourcing.

There is great opportunity to showcase this future park with a pleasant parkway drive that would sinuously curve along the north edge of the park. By extending Pine Avenue south of Church Street, the

new park boulevard would connect with Patrick Street west of the current Potomac Edison Building. Because this building would now sit within the park context, it could be redeveloped as an indoor recreation center. The building has approximately 36,000 SF of covered floor space and could host many of the sports and athletic needs of the growing urban area. Adjacent to it would be various outdoor courts such as basketball courts or even hockey rinks that could also be flooded in the winter for skating. Off-street parking would have up to 60 spaces. Parking lots would be designed using the latest technology in permeable paving and bio-swales to treat all surface run off.

The Pine Parkway—an extension of the existing Pine Avenue—will be a beautiful boulevard, providing a pleasant shady drive and promenade that will also act to intercept storm water. With a total right-of-way width of 94' (including sidewalks to building setbacks), it would consist of two 11'-wide driving lanes, a 14'-wide planted median (with periodic breaks for turn lanes), two 5'-wide bike lanes, 9'-wide parallel parking lanes on each side, and 15'-wide tree-lined sidewalks. Curb extensions at intersections will frame the parking lanes and give pedestrian-safe crossings. The planted median would serve as a bio-swale and the sidewalks would have large street trees in large sunken planting beds that will serve as rain gardens for storm water capture and treatment. Permeable pavement in the parking lanes will help to reduce the amount of surface water flow into the sunken tree planters. Pedestrians will safely and comfortably walk along tree-lined sidewalks on both sides of the boulevard. Along the edge of the park an additional bio-swale will serve to collect excess storm water during heavy storms, significantly decreasing the need for traditional storm sewers.

Visitors who drive to the park could park their cars along the road under the shade of the large canopy trees. Bicyclists would have a safe and pleasant route that would make connections between downtown and neighborhoods throughout East Frederick. With minimal disruption through existing neighborhoods, this parkway could be extended all the way to 7th Street via an extended Pine Avenue and connect new development in the north to Patrick Street in the south.

Church Street/3rd Street Triangle and a new "Pine Parkway" 31

Along the north-northwest side of the boulevard, stately new townhomes and apartment buildings will parallel the graciously curving tree-lined roadway and generous sidewalks. These homes will have commanding views of the park, which will make this new neighborhood a highly desirable downtown address. Three-and-four-story buildings will retain the scale and character of historic Frederick and well-placed ground-floor retail in a designated neighborhood commercial area will offer sidewalk cafes,

bakeries, sandwich shops, bike rentals, and refreshments to take to the park. Off-street parking would be located behind the buildings in order to maintain a consistent building line along the boulevard facing into the park.

The historic Ox Fibre Brush Company building, located at 400 E. Church Street, is currently occupied by Goodwill Industries of the Monocacy Valley. Ox Fibre, which manufactured a wide array of brushes during a factory boom period in the late 19th and early 20th Centuries, sold the building to Goodwill in 1969 for $50,000. In the Early 1970's the building suffered a major fire destroying nearly 100,000 SF. A renovation in 2002 restored one of the main buildings for office space, conference rooms, vocational and computer training, work skills classroom and various other employee related activities. The building is a beautiful example of Frederick's industrial-era architecture. The south side of the complex will face the proposed Pine Parkway, making it a prominent historic resource for the city and a valuable visual asset. Through innovative adaptive re-use, the structure could be transformed into additional apartments, retail and office space.

The 300-500 block of E. Church Street (Widener Street to Pine Avenue/Pine Parkway) has a narrow right-of-way (28' to 34', curb-to-curb) that presents a challenge for development of a complete street. It presently has one lane of moving traffic in each direction, no parking on the south side of the street, and parallel parking on the north side of the street. The sidewalk along the Goodwill building is generally about 8' wide, curb to building, but it narrows to five feet at the eastern end, as the street width narrows to 28'.

On the opposite side of the street are bump-outs, which function as both storm water treatment and traffic-calming devices. Street parking on this side would be incorporated with permeable pavers that will add a historic detail and signal its association with historic downtown. There would be one driving lane in each direction, about 14' wide, will allow room for shared bike access. With the removal of 2 residential properties, a slight re-alignment of East 3rd Street could provide improved connectivity to the new townhomes, the Goodwill building and the proposed Pine Parkway. The adaptive re-use of the Goodwill building will bring a new life to a valuable historic resource and contribute another sustainable practice to the redevelopment of East Frederick. By reducing the need for new construction, adaptive re-use costs 15-20% less than new construction and businesses could be drawn to the unique character of the historic factory.

The triangle-shaped block created by N. East Street, E. Church Street and E. 2nd Street includes several popular Frederick landmarks, including Frederick Coffee Company and Café, the shops in the Shab Row complex, and the Stone Hearth Bakery at 2nd Street and N. East Street. It also includes an undeveloped parcel at the eastern tip of the triangle. This parcel of land, which is owned by the Frederick entrepreneur who transformed Shab Row into the vibrant shopping district that it is today, has the potential to become a memorable landmark on the city landscape. New development here could announce the Renaissance of East Frederick. It is a prime focal point for residents and visitors traveling toward the city from the east. As an extension of Shab Row, this area could have additional shopping, restaurants, offices and residences. With a limited area for surface parking, below-grade parking could take advantage of the natural topography of the area. As proposed, each floor of the four-story structure is approximately 20,000 square feet for a total of 60,000 square feet of commercial, office, and residential development.

At the intersection of Church and 2nd Street, the eastern "tip" of the triangle would be a prime location for a small park, welcoming westbound Church Street travelers to the downtown. Brick sidewalks remind people that they are entering the historic downtown, leading walkers into a courtyard between the two buildings toward Shab Row. This space could be host to many different activities ranging from,

outdoor dining, entertainment, beer gardens and much more. Trees line the plaza and provide ample shade for casual outdoor activities.

The combination of the new park space, the redeveloped Goodwill building and additional construction to Shab Row would work harmoniously to extend the downtown district into East Frederick. A vibrant business area, pleasant residential buildings and an easily accessible park all work together to support the sustainable idea of live, work, and play in the City of Frederick.

Pine Parkway Development Recommendations

- Street Right-of-Way: 94’
- Two Driving Lanes: 11” wide
- Center median (and turn lane): 14’
- Bicycle lanes: 5’ wide, with distinctive painted lane markings
- Parking Lanes: 9’ wide, with permeable pavement
- Sidewalks: 15’ wide, typical
- Street tree planting: In generous (min. 6’ X 12’) bio-retention cells along the sidewalk. Larger cells could hold multiple trees with shared root zones.
- Storm water treatment: Bio-retention cells parallel to the curb and in a bio-swale between the sidewalk and the park.

Carroll Creek Park to East Patrick Street

Patrick Street is the official division between the north and south sides of the City of Frederick but Carroll Creek Park is fast becoming the symbolic central spine of the city. This linear park begins at Baker Park and runs east to Highland Street before it re-emerges from the underground culverts into the open air on its way to the Monocacy River. Carroll Creek Park has the potential to become the gateway into the downtown at several locations, most prominently at East Street. The East Street connections to I-70 and to I-270 further south make the north-bound crossing at Carroll Creek Park a unique and memorable threshold into the city.

This distinctive passage into the downtown presents many outstanding opportunities to turn N. East Street into a welcoming and exciting arrival to a new urban village. Located at the current eastern limits of the historic district, N. East Street has the potential to develop a sense of place that preserves the integrity of its historic building stock and landscape features while, at the same time, makes a strong statement about Frederick growing into a sustainable future.

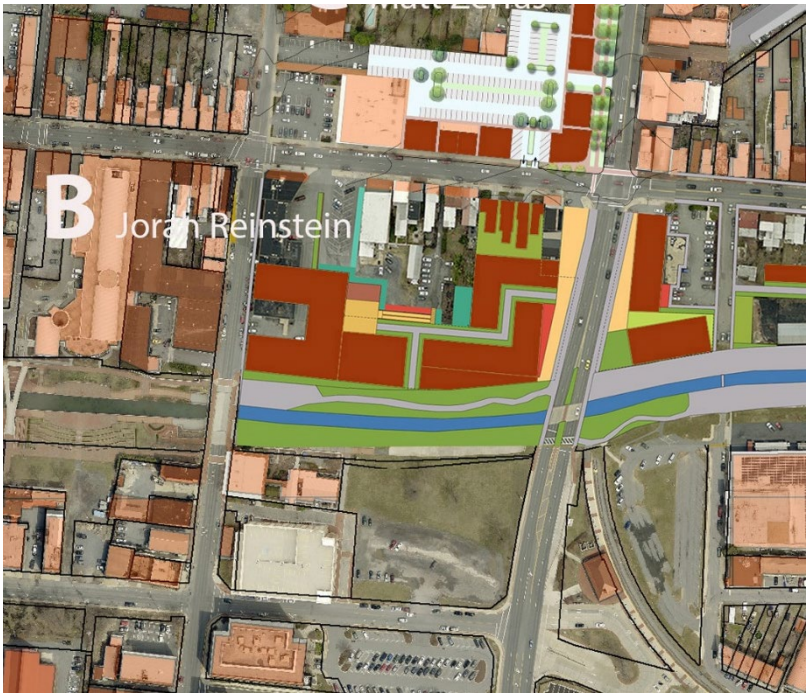
Carroll Creek Park was created above the five-channel flood control structure that carries the waters of Carroll Creek through the city. The ground elevation of the park is approximately ten feet above the original streambed, which gives even the casual observer an incongruous feel to the topography of the civic space and the illusion of a “creek” is hard to sustain. The blocks adjoining the creek offer tremendous opportunities for creating vibrant civic spaces but street life along the creek and on the first block north on East Street is topographically disconnected from activity within the blocks. In addition, the true hydrology of the area is disguised and the apparent hydrology disconcerting, as the creek appears to flow at a high point in the landscape rather than in a valley as it would in a natural system.

At present, the blocks that border Carroll Creek Park between Carroll Street and Wisner Street are occupied by a number of historic buildings, including the soon-to-be-redeveloped knitting mill. These buildings warrant attention and appreciation as gems of Frederick, but are at present situated in a matrix of asphalt parking lots. The intent of the design solution proposed here is to bring out the special quality of these buildings and to reconnect the content of the blocks to the activity of the street.

These are the problems/opportunities this design attempts to address. The intent of the design is to connect the creek and east street topographically to the homes and businesses on the blocks, to create engaging civic space, to highlight and protect the hydrologic processes at work.

Design Concept

Because Carroll Creek Park is higher than the historic stream valley, historic structures that were built above the creek south of Patrick Street, are now at an elevation below the park surface. New building construction that will take advantage of the opportunity to front Carroll Creek Park at the same elevation as the park should also establish an at-grade relationship with East Street.



A proposed Marriott Hotel, to be built at the corner of Carroll Creek Park and Carroll Street, will establish a park-level retail presence along the park promenade, accommodating the grade difference with a lower-level garage. A similar opportunity could be taken advantage of along the entire stretch of the culvert, as well as along either side of East Street, in order to bring all of the block boundaries to street grade. Underground structures built along this differential could function both as underground parking and as the foundation for new residential and commercial buildings that could complement the vision of use that the new hotel and creek path imply. Thus, with no loss of parking, the street-level lots could be converted into housing and retail amenities which could give this area definition as an engaging southern entrance to a revitalized East Street district.

In making up the grade through fill as well as structure, opportunities would also exist to extend the park setting of Carroll Creek Path and create deep urban planting space for large trees. In addition, the interior block spaces created by this new structure could provide a more enclosed alternative to the bustling street life on the exterior.

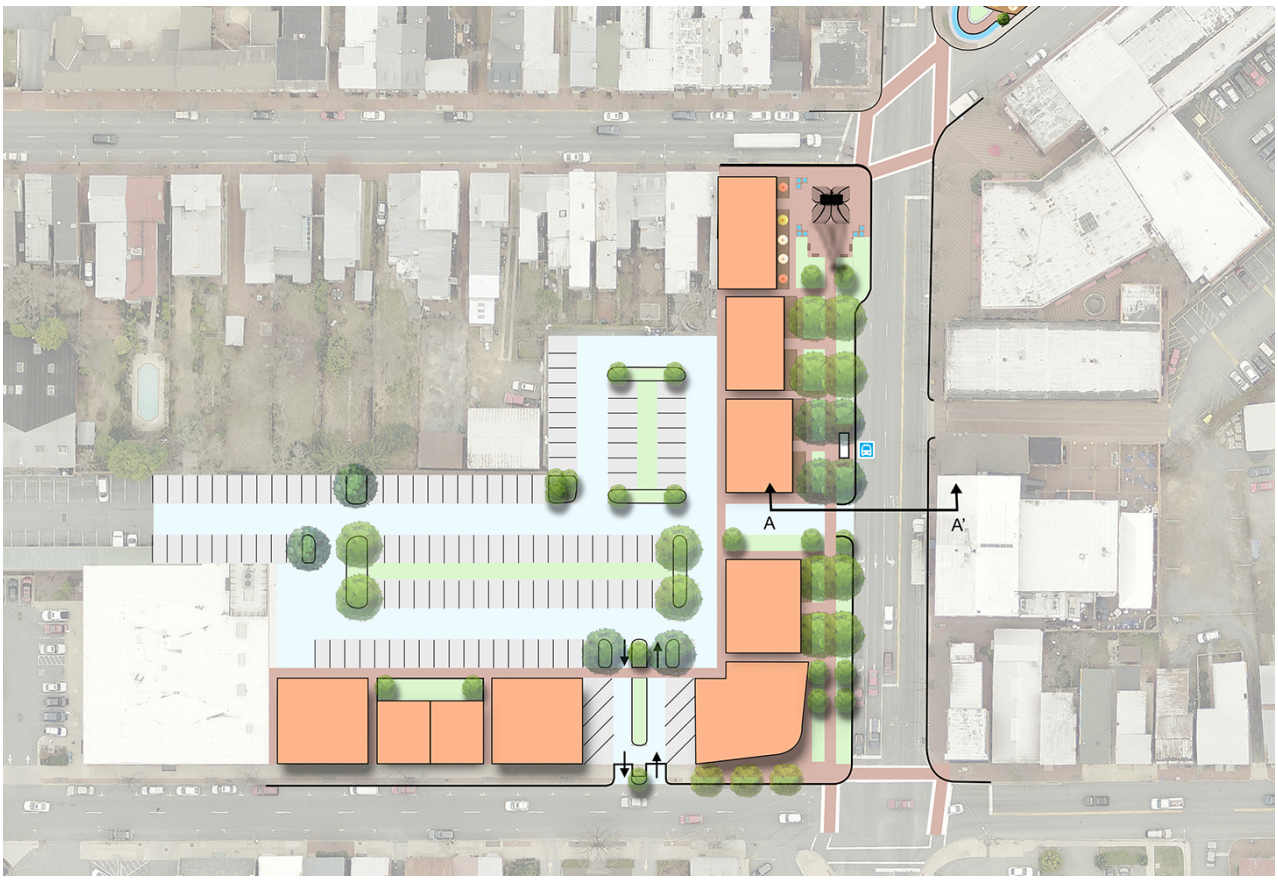
Within these interior spaces would exist opportunities to create more intimate urban paths and courtyards. The bowl-like topography of these spaces would create an opportunity to use storm water to facilitate plant growth without the need for external-source irrigation. While providing a lush courtyard atmosphere, these spaces could be simultaneously contributing to storm water filtration and improving the water quality of Carroll Creek.

RECOMMENDATIONS

Street width: Four 11’ drive lanes, two 5’ bike lanes,
Sidewalks: 12’-25’ on the west side, 15’ on the east side;
Street trees: Double row on the west side, single row on the east side.

E. Patrick Street to E. Church Street

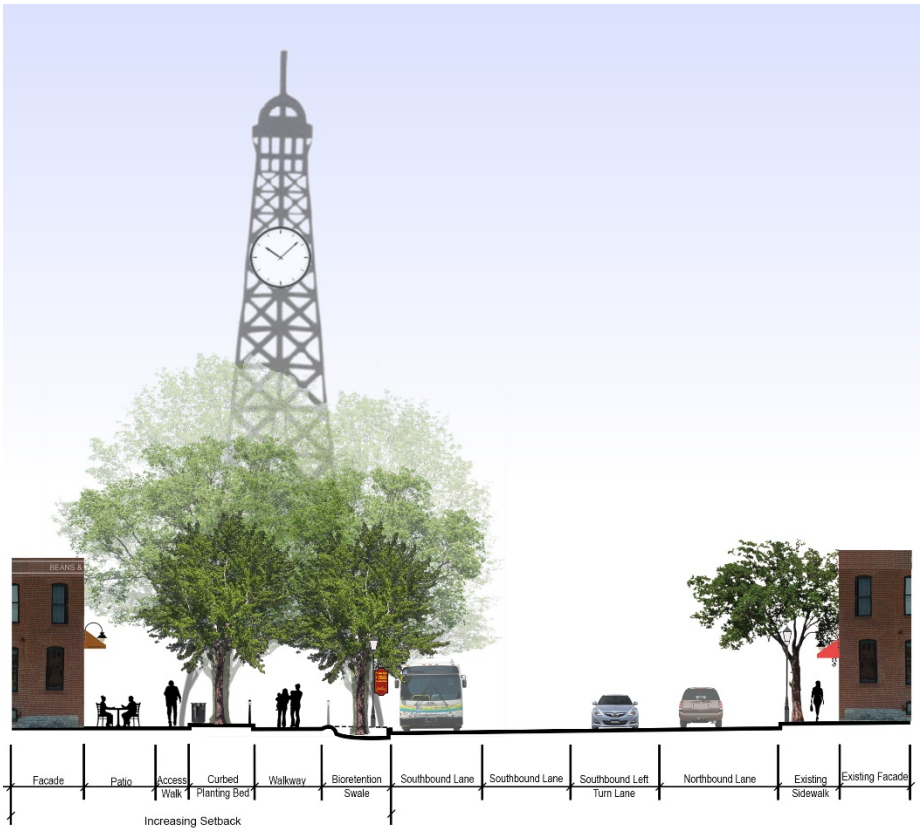
The area consists of the large US Post Service Regional office which occupies approximately 1.7 acres of the northwest corner of the East and Patrick Intersection. This corner is primarily a brick walled and fenced off parking and shipping area. On the east side of the street is predominately 1 to 3 story, attractive brick colonial style buildings; which are used largely for retail and mixed use.



This plan proposes relocating the U. S. Postal Service distribution facilities, using the 1.7-acre warehouse and parking lot for new residential and retail development along the north side of Patrick Street and the west side of N. East Street. Buildings on N. East Street would be set back from the curb to continue the wide plaza-like, tree-lined sidewalk that is proposed for the previous block between Carroll Creek Park and Patrick Street. Buildings would be taller in the south along Patrick Street, transitioning northward to two- or three-story buildings to respond to the existing building character along Church Street.

Buildings with smaller footprints will be more in keeping with the character of the Historic District. Parking will be located within the block and access to parking will be from the alleyway between N. East Street and N. Carroll Street, with another entrance on East Patrick Street. A U. S. Postal Service retail center with off-street parking will remain at the northeast corner of E. Patrick Street and N. Carroll Street.

Green infrastructure improvements on the west side of N. East Street will include a wide sidewalk with permeable pavers, an allée of shade trees, and bio-retention cells along the street curb. The wide sidewalk promenade will include ample space for outdoor dining, information kiosks, bicycle parking, a bus shelter and benches. There will be no street parking on this block and the wide planting beds along the street will act as buffers between pedestrians and moving vehicles. At the southwest corner of Church Street and N. East Street the sidewalk will "bump out" to establish a more pedestrian-focused safe crossing of both streets. A clock tower with a viewing platform will punctuate intersection and become a new landmark for the City of Spires.



The plan for bicycle access will be consistent with the recommendations in the *East Street Trails with Rails* plan (2013), which indicates on-street shared bicycle lanes in both directions.

Throughout this block, traffic calming devices such as bump-outs and raised crosswalks.

N. East Street Improvement Recommendations

- Street width (curb-to-curb): 61'
- Three Driving Lanes: 11" wide; northbound, southbound and left-turn lanes.
- Bicycle lanes: 5' wide, with distinctive painted lane markings
- Parking Lanes: 9' wide, with pervious pavement
- Sidewalks:
- Street tree planting: In generous (min. 6' X 12') bio-retention cells along the sidewalk. Larger cells could hold multiple trees with shared root zones.
- Storm water treatment: Bio-retention cells parallel to the curb

E. Church Street to E. 4th Street

The Frederick Coffee Company and Café and Shab Row dominate the east side of the street between Church Street and 2nd Street is the area of Shab Row which consists primarily of quaint single story historical colonial buildings on the east. The west side consists of the same character with larger residential. 2-4 story residential Buildings on the north side of the street.

Between 2nd Street and 3rd Street, N East Street. Are several uses on the South East corner is the Roads and Rails Museum which spans half the block and is a single story painted-brick building. The rest of the east side of the block consists of attractive early 20th century housing viewed primarily on profile. The west side consists of several uses a 2 story attractive 20th century house, A roofing business a winery and bistro with a small outdoor patio and on the north a ½ acre park with playground.

E. 4th Street to E. 6th Street

N. East Street - Existing Conditions

When you're travelling north on East Street, there is little recognition that you're leaving the historic downtown of Frederick. The block of East Patrick and East Church Streets is home to the city's post office, a low brick building fronted by a large parking lot, a chain link fence, and a narrow sidewalk. On the other side of the post office, the tree lined streets, small mom and pop shops and restaurants fronting the street, and wide sidewalks coupled with a three lane road are very reminiscent of the character of the historic downtown. This street character continues for a couple of blocks, and is punctuated by Third Street Park. At Fourth Street the character takes a sudden shift. The street suddenly widens from three lanes to four lanes**,** the sidewalk narrows and then drops off entirely after 5th Street.

East Street was the industrial side of town for many years, which shows in the present- day commercial development in this corridor. After the shift in character at E. 4th Street, the area is dominated by low buildings fronted by a sea of parking lots. On the northern side of our study area, the commercial development is capped with two strip malls. In between these boundaries, auto related businesses dominate the commercial corridor. However, several businesses stand out from the sea of car repair places and junkyards, the Family Meal, a restaurant housed within an old Nissan dealership, the Dairy Maid milk distributor located within the Frederick Iron and Steel plant, and the Glass Factory. The "single story" character of this side of East Street makes the power lines, and Allegheny Power substation even more apparent.

The housing styles and neighborhood character also takes a sudden shift after 4th Street. Prior to this transition, the houses are the multi-story historic row houses or detached bungalows on small lots. The entryways face the main street, while narrow alleys contain detached garages. After the fourth street transition, there is little housing opportunities on East Street until you get to the neighborhood of Monocacy Village. These single story brick ranch homes set back from the cul-de-sac streets are a suburban departure from the urban development prior to the transition at Fourth Street.

East Street is a street divided. The only constant thing uniting the hodgepodge of street characters, housing types, are the old CSX rail lines running through the street. Even these rail lines are inconsistent, with some rails running through the middle of the street, others on where a sidewalk would be if the sidewalk hadn't ended on Fourth Street.

East Street Redesigned - 4thStreet to 6th Street

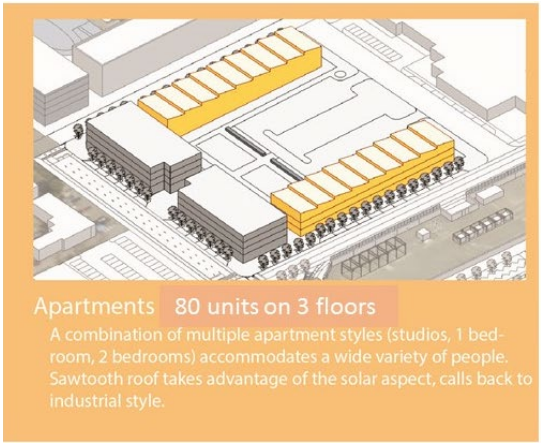
East Street between 4th Street and 6th Street is a mix of historic character, industry, and utilities. The historic character is reflected in the embedded rails that run through East Street, the "railroad style" buildings on the corner of East and Fourth Street, and the Glass Works building. Prominent industries include the Food Pro, a local restaurant supplier on Sixth Street, while Fourth Street is lined with smaller auto related businesses, the most prominent being Best Used Auto Parts and Krietz Auto Repair and Sales. The Allegheny Power substation on the corner of East and Fifth Street supplies power to the surrounding neighborhood. Balancing the needs of the industrial, commercial, and utility establishments with mixed-used and residential development is the biggest challenge of this area.

A major influence on the design for this corridor came from recognizing that this area contains a blend of industries that are unable to relocate in the near future (e.g. Allegheny Power), have been a part of the neighborhood for many years (e.g. Food Pro and Dairy Maid). These industries play an

important and vital role in the City of Frederick. In addition to employing City residents, they also represent a link to the industrial history of East Street. Finding a way to for industry to coexist with a re-envisioned East Street because the focus for this design. First the “core industries” were identified (Allegheny Power and Food Pro). Due to their ties to the surrounding community, it is likely that these establishments will remain for the foreseeable future. These two “core industries” remained relatively untouched - a screening wall surrounds the substation, providing a much-needed buffer. The Food Pro distribution center retains its footprint, but its truck storage is consolidated with the Dairy Maid trucks.

Increasing connectivity on and along East Street was also a priority. Fifth and Sixth Streets were extended to Church Street, this reinforces the existing street network and relieves some of East Street’s vehicular traffic. With a reduced traffic load on East Street, it is possible to reduce the drivable surface to two drive lanes (one in each direction), and a shared turn lane.

Extending Fifth, Sixth and Seventh Streets eastward to Church Street provided the framework for siting new buildings. Along the length of East Street mixed-use buildings with ground-floor retail will provide a formidable presence, grounding the block and allowing different building typologies and uses along the numbered cross streets. This pattern of a consistent “frame” at N. East Street encourages the development of diverse ‘neighborhoods” that fit well together. The Fifth-to-Sixth Street block will have four story buildings along East Street, transitioning to three-story apartment buildings along Fifth and Sixth Streets to a new north-south cross street.



Alleghany Electric Power Company will continue to occupy half of the block between E. 4th Street and E. 5th Street. Food Pro will be encouraged to maintain its operations on the block between E. 5th Street and the new E. 6th Street.

The plan for the south half of the block between E. 4th Street and E. 5th Street includes facilities for an arts community that reuse some existing buildings and bridge the gap between residential living and light industry. The existing Krietz automobile service garage could be transformed into an artist gallery and workshop, which will be flanked by artist live-work housing on either side. The previously discussed flexible space is behind this "Artist's Block", the people living in this area can utilize this area as studio space, workshops, or classroom areas. Creating a diversity of neighborhoods not only gives definition to East Street, it also encourages the development of a range of housing styles, and the people living in these neighborhoods. Although both neighborhoods vary in their building types and uses, they are tied together by forms and materials that reference this area's industrial heritage and the existing character of the City of Frederick.

Artist Live-Work-Exhibit Cooperative

After identifying the "core industries", it was necessary to provide a space to consolidate the remaining auto-related businesses. An area currently occupied by Best Used Auto Parts was determined to be the best location for this space. Its large area allows it to accommodate multiple businesses, and its proximity to the power substation makes it undesirable for residential development. Flexible structures that front 4th Street provide a street presence, while the "junkyard jumble" is regulated behind these structures. The inherent flexibility of the area makes it suitable to transition to a wide variety of new future uses. Examples of the possibilities include a community recycling/materials exchange space, a makerspace, or a co- working space.

Separate defined bike lanes on East Street and 5th Street make this corridor safe and convenient for bike travel. On-street parking provides areas for people to park. Wide, tree-lined sidewalks and clearly defined crosswalks increase pedestrian safety and comfort along the corridor.

N. East Street Improvement Recommendations

- Street width (curb-to-curb): 61'
- Three Driving Lanes: 11" wide; northbound, southbound and left-turn lanes.
- Bicycle lanes: 5' wide, with distinctive painted lane markings
- Parking Lanes: 9' wide, with pervious pavement
- Street tree planting: In generous (min. 6' X 12') bio-retention cells along the sidewalk. Larger cells could hold multiple trees with shared root zones.

E. 6th Street to E. 7th Street

The goal of this proposal is to make more efficient use and more broadly beneficial use of land that is so close and so accessible to the adjacent downtown and eastern subdivision neighborhoods. In anticipation of Frederick's expected growth over the next 10-to-20 years, it recommends an increase in residential density with a variety of building types. The addition of office and retail space will establish convenient, walkable services, and well planned streets that will encourage safe driving and bicycling, foster pedestrian-friendly sidewalk comfort, and improve the environmental health of the east side of town. The proposal also suggests that there could be a compatible co-existence with industrial uses, creating a neighborhood where the workplace is intertwined with residential living, much as Frederick experienced at earlier times in history. This new neighborhood could begin to establish a return to a more integrated lifestyle, where light industry is viewed as positive force in urban life.

Highlights of the proposal include the following:

- **Create a better connected street network** by extending E 6th Street and E 7th Street from N. East Street to Church Street;
- **Take advantage of existing topography** by using level ground for buildings and the mound for a new park and shared-use path;
- **Integrate rain gardens** that will beautify the neighborhood, provide habitat for wildlife, collect surface water runoff, and allow storm water to infiltrate into the aquifer;
- **Accommodate future population growth** by adding 280 new housing units, office space, and retail shops and restaurants;
- **Develop "Complete Streets"** that are bicycle and pedestrian-friendly and incorporate the latest storm water management practices;
- **Introduce new recreation and civic gathering places** that make this area an ideal place to live, work and play.

Creating a Better Connected Street Network

By extending E 6th Street and E 7th Street beyond their current eastern termini to Church Street, new development on the east side of Frederick will be directly connected to the historic downtown. The improved street network and green infrastructure linkages will reach into the new residential developments at the Nicodemus property and the proposed mixed use project on the Renn property. This new street network will reduce congestion on Church Street and make walking and bicycling more agreeable experiences throughout the area.

Taking Advantage of Existing Topography

The east side of N. East Street between the proposed extensions of E 6th and E 7th streets is currently being used as a truck parking lot. It has few trees and a large area of impervious paving and impervious roof surface on underused industrial warehouses. Standing on N. East Street and looking to the east, the perspective of this land offers a sense of bareness and exposure. A 12'-high linear earthen mound extends parallel to the proposed extension of E. 7th Street, then turns southward to the intersection of E. 5th Street at County Road. The mound was constructed by the city to serve as visual and sound screen to shield homes to the north of the truck parking and noise associated with various industrial operations.

If the parking for Dairy Maid Dairy could be more efficiently consolidated on property to the south (near the Food Pro parking) or within the Dairy Maid block west of N. East Street, the relatively level land would be an ideal location for a future residential neighborhood with a variety of building types. The ground floor of new buildings on N. East Street could house neighborhood convenience and dining

services, boutique coffee shops, day-care facilities, tele-commuting workspace, or other uses most desirable to local residents. There are several older buildings that are in good condition and should remain. Their presence and adaptation for contemporary uses add to the historic character, a feeling of continuity, and a distinctive sense of place.

The mound is a tremendous opportunity to create a unique green corridor and a shared-use path that will provide a cool and shady place for residents to walk, exercise, and relax, and an ecologically sound greenway connection to the proposed Carroll Creek Wildlife Recreation Area. "Mound Park" will provide grand views across the neighborhood and increase the urban forest in a part of the city that has lost so much tree canopy over the last two centuries.

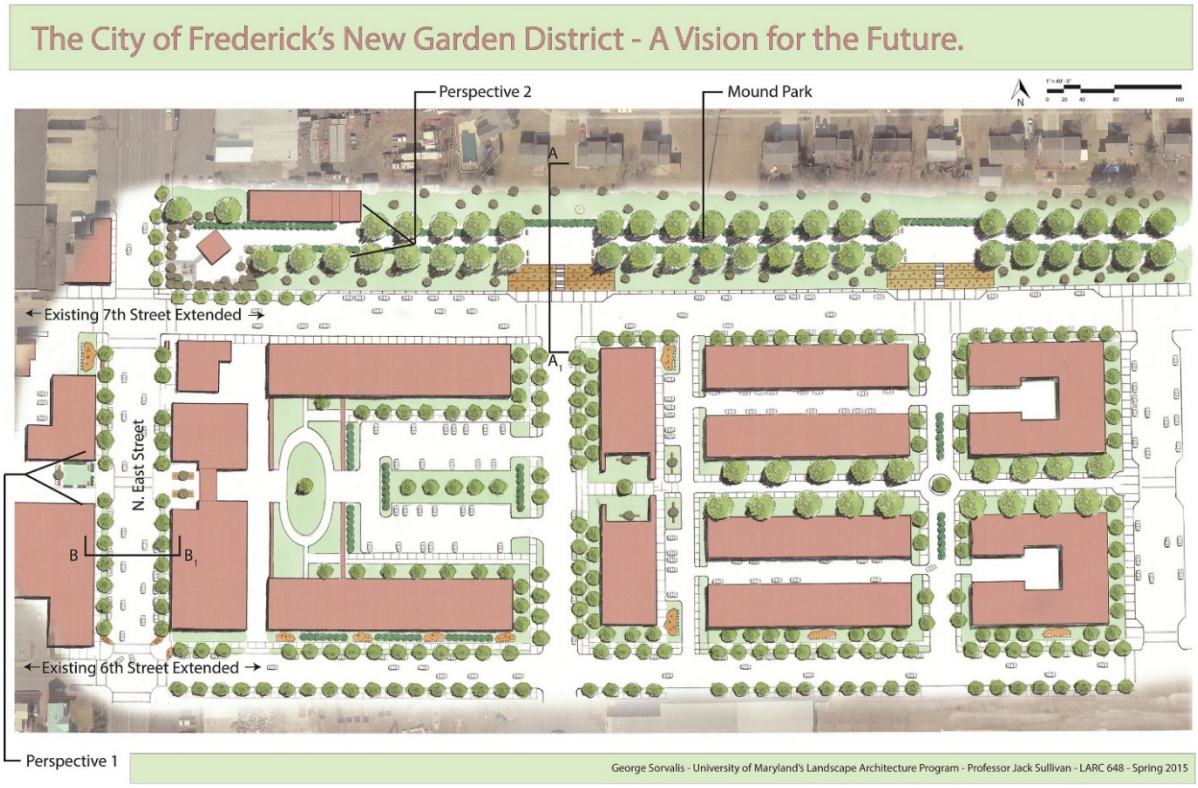
New Recreational and Gathering Opportunities

Mound Park will be a "spine" of green infrastructure that will create a healthy recreation opportunity for residents, reduce the heat-island effect, sequester carbon dioxide pollution, retain and infiltrate rainwater, and provide habitat for wildlife. The design makes use of the topography to elevate the participant above street level. The proposed linear park will provide stairways at key points along E. 7th Street and use retaining walls for bio-retention purposes. Mound Park will connect with greenways in the Monocacy Village subdivision and the greenway between Monocacy village and the Nicodemus development. A city park will anchor the greenway at the corner of E. 7th Street and N. East Street and it will include seating areas, a covered pavilion, and a picnic area. An existing long narrow shed/garage structure at the base of the mound could become a bicycle shop and rental, a café/sandwich shop, and public restrooms. Although this structure is in poor condition, renovating it will bring some of old neighborhood's "personality" into the park. Mound Park will give local residents, workers, and visitors a place to lunch during the week and spend time with the family throughout the weekend.

View from Mound Park looking westward and downhill toward N. East Street.

Accommodating Future Population Growth

Several existing buildings in these blocks warrant careful assessment of their historic merit as valuable community resources. The proposal encourages property owners to retain and rehabilitate the existing buildings that face onto N. East Street and add new buildings will create a dynamic street environment with ground-level storefronts along N. East Street. High density (4- to 5 stories tall) residential and office building will bring a larger population and a vibrant street life day and night. Higher density living units will give way to townhomes and lower-density housing as the development moves eastward, providing an appropriate transition into the existing and recently developed neighborhoods of family homes.



Plan for proposed development between E. 6th Street and E. 7th Street, from N. East Street to Pine Avenue.

The building at E. 6th and N. East Street that is currently occupied by Great Stuff by Paul will remain. To the north, across Stitley Alley, a new mixed use retail/residential building will fill the block to E. 7th Street. A small pocket park at Stitley Alley will balance green space with the new buildings and provide a neighborhood amenity. There will be parking for retail access along N East Street. Resident parking will be located between Stitley Alley and E. 7th Street, west of the residences.

The brick building on the southeast corner of N. East Street and 7th Street will remain. This brick building dates to early 20th Century railroad activities. Its adaptive reuse will preserve a distinctive "East Frederick" character and bridge Frederick's industrial past and its sustainable future. South of this brick building, a new mixed use building will complement the historic structures but at a scale that will accommodate increased density with retail, office, and residential uses. Further south on the same block and across a pedestrian plaza, a similar new building will complete the block and complement the distinctive "street wall" created by bringing the building facades close to the back of the wide sidewalk. The mid-block pedestrian plaza will align with Stitley Alley and an opening to the east into the courtyard gardens of the development. The courtyard gardens mark the western terminus of linear green space

that will extend east and south toward the Nicodemus property and Carroll Creek. To assure low-impact development and greenway continuity n the future, this space should remain unimpeded by any future buildings. The continuous green space, which will be privately maintained, will establish the strong visual experience that will characterize the desirable “Garden District”.

View from a new Pocket Park at Stitley Alley, looking east across N. East Street into the courtyard gardens of the proposed mixed-use development between E. 6th Street and E. 7th Street.

Starting at N. East Street and heading eastward, new residential buildings will occupy the former truck parking lot and the open field on the east side of the berm. The berm will be removed to open the view eastward and allow a positive flow of storm water through the gardens within the new residential neighborhood.

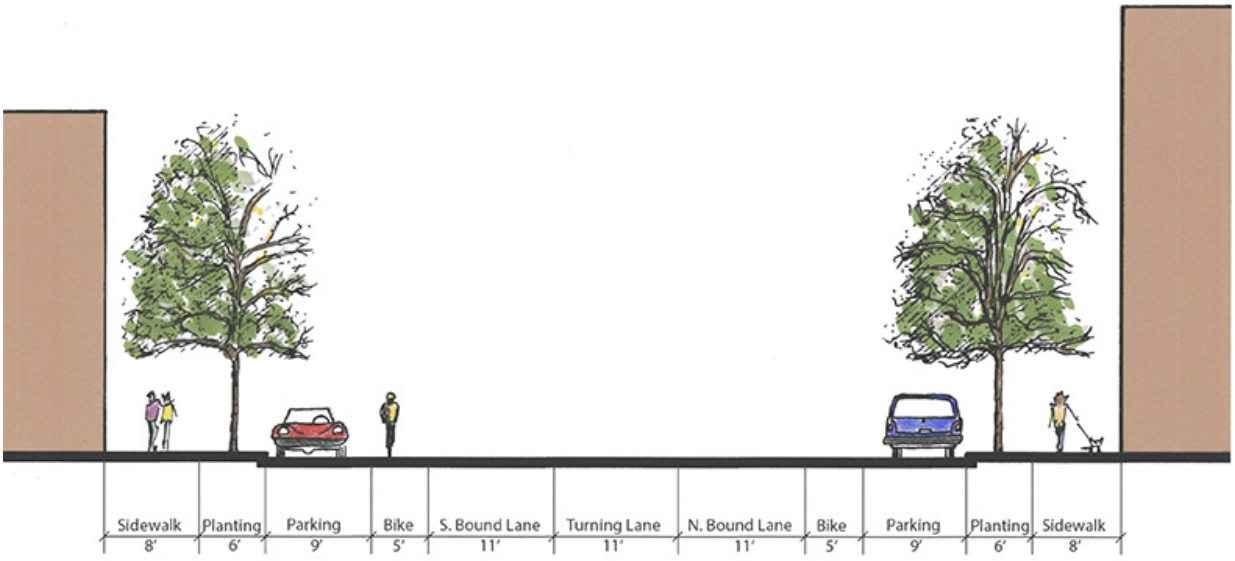
From west to east, beginning across a small north-south running vehicular alley to the west of the aforementioned retail/office/residential buildings are, are:

- Two 4-story apartment buildings, one on either side of a 210’ wide parking area and courtyard garden (approximately 60 housing units).
- East of that is a new north-south street that gives access to parking. Two 4-story apartment buildings flank the axis on the east side of the new street, with an 85’ green space between them (approximately 30 housing units). Parking is provided on the east side of this small block for these buildings.
- Across a narrower 15’ wide north-south running vehicle alley, 3-story townhouses (with garages) straddle the central axis (approximately 140 housing units).
- East of the extended Pine Avenue, clustered single-family homes and a common greenway continue the bio-retention garden theme along the west-to-east axis. Pine Avenue continues south and connects to the proposed Pine Parkway. Bio-swales and ample tree plantings along Pine Avenue will give a distinctive identify to the Garden District.

Complete Streets

East Street has been modified to be more clearly articulated and more “complete”. The new roadway will be visually defined by street tree plantings and new 4-story building façades on both sides of the street. The typical street section will have a northbound lane, a southbound lane, a turning lane, and designated bike lanes on both sides of the street. There will be on-street parking on both sides defined at either end with pedestrian crossing “bump outs” that will calm traffic and provide safe pedestrian crossings. Trees will be generously placed along the street, using large planting areas in wide sidewalks.

The planting beds, the top of which will be below street and sidewalk level, will serve to retain and filter storm water runoff. Frequent bus stops have been strategically placed for convenient access within comfortable walking distances.



Cross-section of N. East Street between E. 6th Street and E. 7th Street.

Bio-retention Cells and Rain Gardens

Green infrastructure will include the many street tree plantings that will be integrated with curb cuts, to direct storm water from the street into the tree well. An overflow drain will intercept excess rainwater that the planter cannot absorb or infiltrate. Mound Park will absorb storm water from the shared use path along the ridge into grassy swales and gabion retaining walls. Rain gardens on private property and in civic gardens, located strategically throughout the Garden District, will support a biological, or soft, storm water engineering practice while beautifying the neighborhood.

Growing Smart

As Frederick's population is growing, concerns about water quality and climate change are also growing. Enhancing green space and storm water management through green infrastructure should be a priority for all future development in Frederick. Sound planning strategies that balance human and ecosystem needs will create sustainable and desirable places to live, work and play in Frederick.

N. East Street Improvement Recommendations

- Street width (curb-to-curb): 61'
- Three Driving Lanes: 11" wide; northbound, southbound and left-turn lanes.
- Bicycle lanes: 5' wide, with distinctive painted lane markings
- Parking Lanes: 9' wide, with pervious pavement
- Street tree planting: In generous (min. 6' X 12') bio-retention cells along the sidewalk. Larger cells could hold multiple trees with shared root zones.
- Storm water treatment: Bio-retention cells parallel to the curb

E. 7th Street to E. 9th Street

Arts & Industry in the Garden District

The Garden District will also be a home for the "makers"—those creative, industrious, self-starters who enjoy working independently. This part of the Garden District combines several seemingly incompatible uses—not unlike the current configuration of N. East Street's "urban edge" landscape. This proposal intensifies the diversity of land uses, yet makes sense of the interplay amongst the people who will take advantage of this rich diversity.

N. East Street between 7th Street and 9th Street has a certain "edginess" to it. Residential neighborhoods and convenience shopping abut industrial uses, large and small. Dairy Maid Dairy and the Business Factory of Frederick (a co-work space) dominate the west side of the street with older buildings that clearly reflect Frederick's former fabricating and warehousing operations. Smaller auto-focused services, the railroad tracks, and large expanses of asphalt parking add a no-nonsense, work-a-day grittiness to the landscape. New businesses, including Family Meal and Quartermaster Cigars, have reused mid-century buildings in ingenious ways. Like many edge landscapes, this juxtaposition of different uses provides a richness to the landscape which can be augmented with the addition of green infrastructure, public spaces, and new buildings which will provide a vibrant place for the industrious citizens of Frederick to live, work, and shop.

Existing Conditions: Pedestrian and Vehicular Infrastructure

This district is only partially connected to the street grid of Frederick. From the west, E. 9th Street connects to the Monocacy Village and Monocacy Meadows subdivisions but E. 7th Street and E. 8th Street currently end at N. East Street. South of E. 9th Street, the subdivision streets either dead-end or end in a cul-de-sac. North of E. 9th Street, neighborhood streets connect to Delaware Road, which is also a cul-de-sac at its eastern end.

North East Street currently provides effective service for vehicular traffic, yet the lack of curbs and sidewalks makes the street environment ill-defined, disorienting, and unsafe for pedestrians and bicyclists. At the E. 8th Street intersection the road starts to bend slightly toward the west, then turns eastward before the E. 9th Street intersection. Railroad tracks, imbedded in the asphalt paving, do not follow the road alignment, lending visual confusion to the after the Eighth Street intersection in order to avoid the railroad tracks, which come out of the road at this point and follow the east side of the street as the road heads north. There have been reports of inattentive drivers failing to follow the slight curve and ending up on the railroad tracks.

Throughout this area the street is made up of four 11' drive lanes (two northbound and two southbound) plus an undefined road shoulder of variable width along Dairy Maid and the auto shops across the street. Although all of the cross streets have sidewalks on both sides of the street, there are few sidewalks on N. East Street. Only a 200' segment between 7th and 8th Streets in front of the auto shop and residential house on the east side of East Street.

There are no crosswalks across East Street at Seventh and Eighth streets, as those roads currently dead-end. At E. 9th Street there is one crosswalk painted on the north side of the intersection, but it is worn from car traffic, ends abruptly at the railroad track without continuing across a service road, and crosses four lanes of traffic without a signal. Crossing the street here feels very unsafe.

There are currently sharrows painted on Seventh Street but no other bicycle-specific facilities exist.

Building Stock

There are several noteworthy buildings in the Arts & Industry section of the Garden District.

- **The Business Factory of Frederick** occupies the entire 520' of street frontage on the west side of N. East Street between 8th Street and 9th Street. The one-story, dark-gray concrete block building has a 4' high loading dock running most of the length of the building façade, which includes small windows, garage doors, and windowless entry doors. The building sits at an angle to the street, allowing a variable distance 20' to 70' between the building and the N. East Street right-of-way. This orientation is a reflection of the railroad spur that once deflected from the main Frederick and Pennsylvania Railway. The distance from the road at the southern end allowed for trucks to back up to the building without undue disruption to street traffic flow.
- **Dairy Maid Dairy** occupies the former Frederick Iron Works building on the west side and makes up the entire road frontage between 7th and 8th streets. It is a one-story brick industrial building, parts of which date to the late 19th Century. It is approximately 22' tall with regularly spaced windows facing East Street and a large loading area behind the street façade. Truck activity can be disruptive to traffic on N. East Street, since some trucks must stop and back into the loading area.
- **Quartermaster Cigars** and Family Meal are both located east of N. East Street, close to the intersection at E. 9th Street. Both are surrounded by large parking lots. Quartermaster Cigars is a one- and two-story building complex, which used to serve as a multiple-bay auto repair garage. It is set approximately 260' back from the road.
- **Family Meal** is an affordable contemporary cuisine restaurant. It opened in 2012 in a repurposed Nissan auto dealership that was built in the 1960's. It has become a very popular mealtime destination. It is one story tall, set approximately 90' back from N. East Street and 50' from E. 9th Street.

Other existing buildings include three small one-story cinder block structures in the southeast quadrant of the block between Seventh and Eighth Streets: a body shop, a garage, and an IT services company. These are all set back about 50' from the road. Cars are parked in the front of these businesses and on the shoulder of N. East Street. A two-story early 20th Century residential house and barn sit back from the road 140' on the east side of East Street, directly across from T-intersection of E. 8th Street.

Vegetation and Green Infrastructure

This stretch of N. East Street currently contains no street trees with the exception of three large evergreens and three smaller deciduous trees in the front yard of the only residential structure. There are no street trees on any of the cross streets until the residential areas half a block east and west of the project area. There are then scattered trees in front yards of residences.

A vast majority of the land—about 87%--is covered in impervious materials, mostly asphalt parking lots or building roofs. Currently the only large non-paved areas are in the back yards of residences to the west of the Business Center and Dairy Maid, in the front yard of the house on the east side, and in the strip of land parallel to N. East Street that contains the railroad track, which is across from the Business Center. The two-block area gently slopes from higher ground in the west down toward the southeast and Carroll Creek.

Opportunities and Constraints

Opportunities for future development are in the large parking lot south of Family Meal and west of Quartermaster Cigars. N. East Street is unconstrained by existing buildings on the east side, which allows flexibility in making changes to the street alignment and character.

On the west side, constraints include current industrial operations, particularly the number of milk trucks and semitrailers on the road. Dairy Maid's loading facilities on N. East Street creates a significant gap along the street wall and poses safety concerns for bicyclist and pedestrians.

Proposed Landscape: Pedestrian and Vehicular Infrastructure

The street grid will be reconnected and the system, including mid-block service roads, will provide a finer-grained network that will foster walking and bicycling.

- E. 8th Street could connect to Pontiac Avenue. Subdivision residents may prefer that this connection be limited to traffic that would flow one-way out of the residential community.
- E. 7th Street will extend east and southward, parallel to E. 6th Street and E. 5th Street, to East Church Street. Variances to current zoning regulations could allow Dairy Maid to park many of its trucks behind (west of) its building, rather than park in the 6th-to-7th Street block. Efficient truck parking could be negotiated near Food Pro, near the extended E. 5th Street, E. 6th Street, and Pine Avenue.

N. East Street should be realigned to eliminate the existing westward curve, straightening out the street between E. 8th Street and E. 9th Street. This realignment will create more pedestrian space between the curb and the Business Center on the west side. This would be enough room for a new urban plaza in front of the Business Center. With the realignment the rails could be visibly incorporated into the street paving—and into the street character.

The number of travel lanes on East Street has been reduced from four to three, one in each direction with a center turn lane. Parallel parking is proposed for the east side of N. East Street in both blocks and on the west side in front of the Business Center only. There is not enough room available along the front of the Dairy Maid building.

All locations on East Street will have at least an 11' wide sidewalk with permeable pavers and a 5' tree planter strip or 5' by 5' tree planter. These will connect with sidewalks on intersecting streets. Crosswalks across all streets and service alleys will be provided.

While the proposed bike trail alignment is a great idea for the current site conditions or more rural conditions, we felt that having two-way bicycle traffic on a shared-use path adjacent to and at the same level as the sidewalk was a recipe for pedestrian-bicycle crashes and we decided to separate the bicycle facilities. Also of concern were the large number of semitrailers and trucks on the road and potential conflicts with buses as service increases. In this section of East Street, two 6' wide one-way protected bike lanes are provided, one on each side of the street. Each lane is buffered from parked cars by a 3' raised curb. The bike lanes run behind bus stops to keep bicyclists and buses separate.

Two bus stops will be located north of E. 8th Street, and buses pull into the parking lane to load and unload passengers.

Proposed Public Plaza

With the East Street realignment, there is enough space for a wedge-shaped urban plaza in front of the Business Incubator building. The plaza is about 65’ wide at its widest point in the southern portion of the block and narrows at the northern end to 24’. The existing loading dock along the building is retained as a promenade and widened to ten feet in all locations. At the southern portion of the block, this promenade meets street grade through a series of steps with tree planters.

Examples of industrial loading docks transformed into civic “porches” in the Meatpacking District of New York City (left) and the Pearl District of Portland, Oregon (right).

In the summertime, the leaves of trees dance in the wind and cast shade on the plaza, where people sit on the steps and chat with friends. Others rest at circular tables, eating lunch or meeting friends for coffee. The smell of food carts lures workers from the business incubator and co-working space out into the sunshine and they take a much-needed break from their work. On the weekends, neighbors meet at the steps or quietly read at the café tables. Arts and crafts vendors set up for weekend sales.

Note: The image above shows a bike path that is located between the curb and the parked cars. This alternative was later rejected because it created an inconsistent system, which be confusing to bicyclists, drivers, and pedestrians alike.

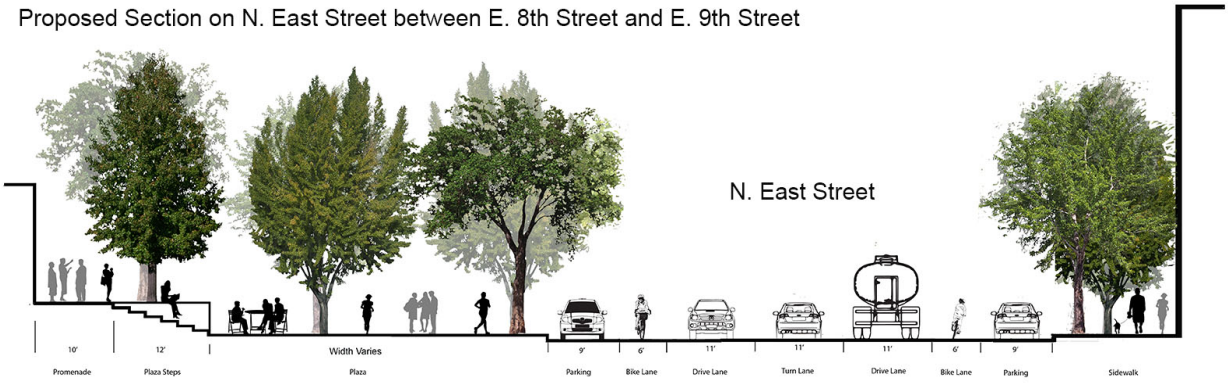
Proposed Buildings, South to North

- Across from Dairy Maid's loading docks, just north of the proposed "Mound Park" greenway and bike shop, a two-story **15,000 SF building** could be used for retail and IT businesses (coffee shop and upper-level "maker" space).
- In the northern half of the same block, a one-story, **25,000-30,000 SF building**, designed as a flexible, open interior space, could serve a variety of functions, both permanent and temporary. This building could serve as a year-round market (with vendor stalls) or a venue for community-focused events.
- To the east of this building, a two-story **senior living residence** would bridge the vibrant community life on N. East Street with the single-family residences in Monacacy Village. Pontiac Avenue could be opened for pedestrian/bicycle access or for one-way traffic toward N. East Street, creating a better connected street network.
- On the west side of N. East Street, the approximately 158,000 SF one-story **Business Center of Frederick** houses light manufacturing and art-based small businesses including breweries, pickle-makers, sculptors, and jewelers. The façade would be improved by creating storefronts along the current loading docks and cutting new openings for windows and doors. The loading dock will connect to a new plaza on the street and act as an elevated promenade along the building. Within the business center there will be such "maker" services as a technical facilities in a do-it-yourself fabrication and design shop, where members will have access to 3-D printers, industrial sewing machines, laser cutters, a wood shop, and other fabrication tools.
- Two new four-story buildings across from the Business Center will help to enclose the streetscape. Together, they contain 27,000 SF of retail space on the first floor, which could include a theater venue or small music hall on the first floor, a coffee shop, or other stores. There will be a total of 51,000 SF of residential space on the second, third, and fourth floors.
- Just south of Family Meal, a three-story **co-working space** with 8,500 SF per floor could have a façade made from reused shipping containers to continue the industrial look and feel of the site. The building is set back to line up with the Family Meal and filled with two rows of shade trees, allowing for a comfortable sitting area out front where people can work outside, take lunch breaks, or take business calls in nice weather. The building is subdivided into open work areas, conference and meeting rooms, presentation rooms, and spaces that can be rented out by small offices.

Proposed Green Infrastructure

- The number of **trees** in this area has increased to approximately 200, approximately 125 of which will directly line the street. Street trees provide many environmental, economic, and social benefits including cooling air, defining the spatial envelope of the street, slowing traffic, reducing air pollution, absorbing storm water, encouraging greater consumer spending, increasing property values, reducing stress, and many more.
- The Business Center of Frederick has a large flat 158,000 SF roof, which could be turned into a **green roof** depending on the existing building structure. Rooftop greenhouses or a startup hydroponics business could become part of the Center's initiatives.

Proposed Section on N. East Street between E. 8th Street and E. 9th Street



N. East Street Improvement Recommendations

- Street width (curb-to-curb): 61’
- Three Driving Lanes: 11” wide; northbound, southbound and left-turn lanes.
- Bicycle lanes: 5’ wide, with distinctive painted lane markings
- Parking Lanes: 9’ wide, with pervious pavement
- Street tree planting: In generous (min. 6’ X 12’) bio-retention cells along the sidewalk. Larger cells could hold multiple trees with shared root zones.
- Storm water treatment: Bio-retention cells parallel to the curb
- Plaza dimensions: approximately 50’ at the south end and 15’ at the north end.

E. 9th Street to Delaware Road: Gateway to the Garden District

The proposed Garden District, so-called because of the significant increase in trees, parks, and gardens, serves as a distinctive neighborhood bridging the urban–suburban transect to the north of Frederick's historic downtown. This northernmost neighborhood of the Garden District acts as a critical transition to and from areas that are developing in more traditionally suburban ways. Bounded by E. 9th Street to the south and Delaware Road to the North, the proposed design interventions for this neighborhood offer greatly increased tree canopy, improved storm water management, and reduced impervious surface. Separated vehicle, bicycle and pedestrian zones within the N. East Street right-of-way initiate a consistent street character from Delaware Road to E. 5th Street. Greenway connections link the Garden District to a broader green infrastructure network throughout the adjacent neighborhoods.

Existing conditions

The gateway neighborhood along North East Street, bounded by 9th Street and Delaware Road is not a part of the City of Frederick historic district, and is characterized by later, suburban single-story strip retail development. The buildings are set back from the street, with parking in front. An impression of an exceptionally wide and forbidding right of way is exacerbated by a disused frontage road that runs parallel along the eastern side of North East Street. A grassed median between North East Street and the frontage road contains train rails no longer in use.

The length of this exceptionally long block is taken up on the east side by the Monocacy Village Shopping Center. This low-rise strip shopping center is fronted by parking, yet currently offers access from 9th Street and Delaware Avenue. The parking area is 100% impervious asphalt with no landscaping and traditional storm drains. The western side of North East Street is broken up into multiple shopping centers. From south to north, these include a tire business; a strip center with a Salvation Army, a vacant former hobby store, and a few small businesses; and a bank. All of these businesses are set back from North East Street, and offer no canopy cover or engagement with the streetscape.

Despite these challenges, this neighborhood offers many opportunities, chief among them its excellent location. This neighborhood has the distinction of being close to both the amenities of the historic downtown and the conveniences of more suburban shopping, such as the Wegmans approximately 1 mile to the north. New residential construction is currently taking place to the immediate north of the neighborhood, bringing in new residents. Thus, the retail is well-situated in relation to existing and new residential, and is therefore a good candidate for updating. The YMCA of Frederick County and Monocacy Village Park offer recreational opportunities immediately adjacent to the neighborhood.

The Design

The design intention is to create a "green gateway" neighborhood that integrates with the larger green infrastructure system of the Garden District as a whole, while addressing the particularities of the segment of N. East Avenue from E. 9th Street to Delaware Road. Goals for the neighborhood design are to improve the streetscape experience for all users (vehicle, bicycle, pedestrian); reduce impervious cover and employ low-impact development techniques to address storm water; increase tree canopy to combat urban heat island effect as well as soften the urban fabric; and create new residential and retail opportunities.

The alignment of North East Street is proposed to remain largely as it currently exists, with only a slight realignment to the east at the southern end of the block. The large available right of way is seen as an opportunity to create a complete street with separate, protected zone for vehicular traffic, bicycles and pedestrians. There is a single vehicle travel lane along North East Street, as well as separate protected

bike lanes in each direction, with a generous median planted with native forbs and trees. The median gives way to turn lanes to offer easy flow of vehicle traffic into shopping areas; it also serves as a protected pedestrian zone for mid-block crossings. One significant change to the streetscape along the block is the creation of two entrances to the Monocacy Village Shopping center, where currently there are none. This serves to offer improved access to the shopping center, and it also breaks up the current monotony of the streetscape.

The redesigned block of North East Street culminates at a new traffic circle at Delaware Road. This traffic circle is the "gateway" that gives the neighborhood its name, and it serves as the transition point between the Garden District and the more traditionally suburban development to the north. The circle is an opportunity for a landmark public artwork announcing the Garden District. Further the circle also marks the transition point where the separated bike lanes and pedestrian paths join together to become the shared use trails-with-rails path. The traffic circle, while accommodating large delivery trucks, calms the speed of traffic and helps pedestrians and bicyclists to feel safe and comfortable in this area, encouraging more walking and bicycling. The traffic circle also acts as a greenway link between Monocacy Village Park and the YMCA of Frederick County. The removal of a small freestanding retail store (currently Benjamin Moore), allows for the creation of a park that would link directly to the traffic circle and create an extension of the shared use path to the YMCA.

Traffic circle "gateway" at Delaware Road and North East Street

Along the east side of N. East Street, the Monocacy Village Shopping Center, constructed in 1963, is a well-built structure with flexible interior space that will accommodate an ever-changing retail market. The shopping center represents a key mid-20th Century period in Frederick's evolution and this history is worth preserving in its architecture. The sustainable option of reusing the existing structure offers the possibility for renovation and expansion to a second story to increase office space in the neighborhood. The second floor will give the building additional visual prominence when seen from N. East Street. New signage at two proposed entrances will also make the shopping center more visually accessible and better connected to the street. These new N. East Street entrances will include pedestrian street crossings and improved pedestrian and bicycle access to the shopping center from the west.

Rather than completely redeveloping the site, the wide expanse of asphalt that fronts the building could be transformed into a valuable civic space. The "parking grove" would employ permeable surfaces, bio-retention storm water treatment, and an extensive tree canopy for shade and aesthetic improvement. Pedestrian comfort is also a key feature of the redesign, with walkways for pedestrian safety in the parking area and a covered promenade along the front of the shopping center for shelter from adverse weather. The expansive roof area of the shopping center offers opportunities to explore green technologies such as solar and/or and extensive green roof.

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"Reforestation" at the Monocacy Village Shopping Center parking lot. A "parking grove" can become a valuable civic space.

In addition to the revitalized shopping center, the southern portion of the parking area is designed to be a flexible, programmable zone. Long-term but temporary structures such as cargo containers, kiosks, vendor stalls, and stage pavilions would line up along N. East Street and expand into the parking lot for bigger events. "Boot" sales, swap meets, and antique fairs could take place here. At the corner of N. East Street and E. 9th Street, across from Family Meal, a permanent structure could anchor the corner and serve as a café or food stand, with public restrooms that would accommodate event participants, as well as bicyclists, walkers and lunchtime brown baggers.

Crossing to the northwest corner of the intersection of N. East Street and E. 9th Street, a mixed use development would bring additional retail and restaurant space, co-worker offices, and apartments on the 3rd and 4th floors. The buildings would be designed to complement other nearby buildings—Family Meal,. This space is envisioned especially as geared toward businesses that support the tenants in the business incubator and the nearby artists and craftsman spaces. For example, art supplies, FedEx Office,

etc. A new vegetated zone is added to the west of these businesses to serve as a buffer for the homes immediately adjacent on 9th Street.

At the mid-block on the west side of N. East Street is a complete redevelopment of the existing single-story strip retail. This becomes the site of a four-story mixed use building with retail at the street level and residential above. The wide sidewalk allows for café seating and outdoor retail displays, creating as a highly active streetscape. A direct pedestrian crossing to the Monocacy Village Shopping Center allows for greatly increased access between the two sites. The 1- and 2-bedroom residential units of the upper floor offer urban-style living with direct access to the amenities of the YMCA, bicycle and pedestrian infrastructure and numerous retail, office and restaurant offerings in the immediate vicinity. Parking is both behind and beneath the building.

The proposed design interventions offer the following suggestions for improvement:

- Increase residential, retail, and office space;
- Improve pedestrian and cycling connectivity within the neighborhood and to the larger networks in the Garden District and beyond;
- Improve on-site storm water management using Best Management Practices (BMPs);
- Increase aquifer recharge through bio-retention and pervious surfaces;
- Remove 180,000 sq. ft. of impervious surface;
- Increase pervious pavement areas by 90,000 SF;
- Increase pervious vegetated areas by 90,000 SF; and

N. East Street Improvement Recommendations

- Street width (curb-to-curb): 61’
- Three Driving Lanes: 11” wide; northbound, southbound and left-turn lanes.
- Bicycle lanes: 5’ wide, with distinctive painted lane markings
- Parking Lanes: 9’ wide, with pervious pavement
- Street tree planting: In generous (min. 6’ X 12’) bio-retention cells along the sidewalk. Larger cells could hold multiple trees with shared root zones.
- Storm water treatment: Bio-retention cells parallel to the curb
- Plaza dimensions: approximately 50’ at the south end and 15’ at the north end.
- Traffic Circle at Delaware Road: 20’ min. inner circle radius; 35’ min. outside radius

RESOURCES

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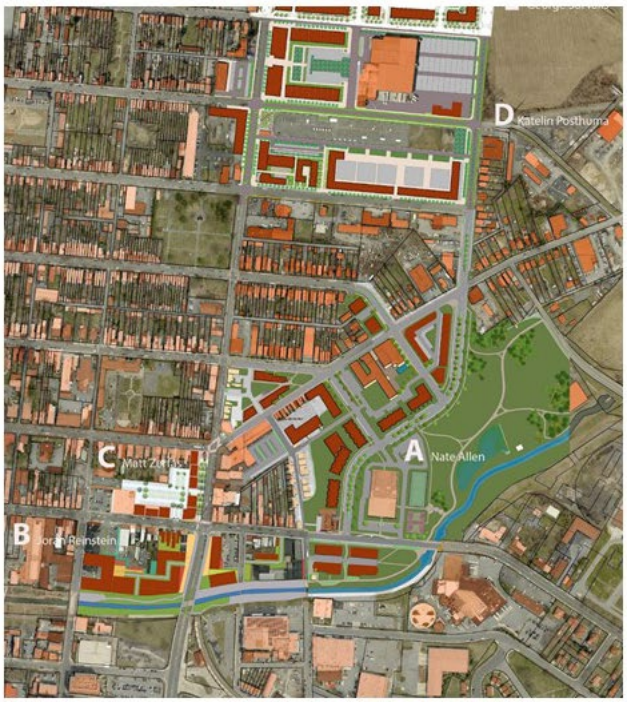
APPENDIX A: LAND USE CALCULATION

E. 6th Street to Delaware Road

Land Use calculations	Retail	Residential	Office
Between 8th Street and Delaware Rd. (Kathleen)			
East Street west side/north			
Ground floor retail	25,000 SF		
Apartments (floors 2-4)		100	
East Street west side/south			
Ground floor retail	15,000 SF		
Apartments (floors 2-4)		80	
Between 7th Street and 9th Street (Renee)			
Regional Food Market	25,000 SF		
Apartments (3 stories)		45 units	
Senior Living (2 and 3 stories)		60 units	
Office (co-work space, 2 stories)			9600 SF
Between 6th Street and 7th Street (George)			
East Street west side			
Ground floor retail	9,000 SF		
Apartments (floors 2-4)		40 units	
East Street east side			
Ground floor office/retail	15,000 SF		8,000 SF
Apartments (floors 2-4)		58 units	
Courtyard apartments (3 floors)		115 units	
Townhouses w/garages)		92 units	
Single-family detached			
SUBTOTAL	89000 SF	590 units	17600 SF

Carroll Creek Park to E. 6th Street



Land Use calculations	Retail	Residential	Office
Between 5th Street and 6th Street			
Ground floor office/retail	15,000 SF		15,000
Apartments (floors 2-4)		65 units	
Courtyard apartments (3 floors)		84 units	
Between 4th Street and 5th Street (Katelin)			
Artist Live-Work lofts (2 stories)		40 units	
Artist co-housing (3 stories)		40 units	
Flexible modular work space			24,000 SF
Between Patrick Street and Church Street			
Ground floor office/retail	12,000 SF		8,400 SF
Apartments (floors 2-5)		80 units	
Church Street and 2nd Street Triangle			
Ground floor office/retail	10,000 SF		6,000 SF
Apartments (floors 2-4)		45 units	
Pine Street Parkway			
Townhouses (3 floors w/garages)		110 units	
East Street at Carroll Creek Park			
Ground floor retail	24,000 SF		
Apartments (floors 2-5)		90 units	
SUBTOTAL	61000 SF	554 units	53400 SF
PROJECT TOTAL	150000 SF	1144 units	71000 SF

APPENDIX B: PLANT LIST

STREET TREES

	Scientific Name	Common Name	Height	Spread	Salt tolerant?	Appropriate for Bioretention?
Trees over 50' ht.						
	Acer rubrum	Red Maple	40-60'	40-60'	N	Y
	Celtis occidentalis	Hackberry	40-60'	40-60'	Y	Y
	Liquidambar styraciflua	American Sweetgum	60-75'	60-75'	?	Y
	Quercus alba	White Oak	50-80'	50-80'	Y	Y
	Quercus bicolor	Swamp White Oak	50-60'	50-60'	N	Y
	Quercus coccinea	Scarlet Oak	60-80'	40-50'	N	N
	Quercus palustris	Pin Oak	65-70'	25-40'	N	Y
	Quercus phellos	Willow Oak	40-60'	30-40'	Y	Y
	Tilia americana	American Linden	60-80'	30-55'	Y	N
Trees 35-50' ht.						
	Nyssa sylvatica	Black Tupelo	30-50'	20-30'	Y	Y
	Quercus muehlenbergii	Chinkapin Oak	40-50'	50-60'	N	N
	Robinia pseudoacacia	Black Locust	30-50'	10-15'	Y	Y
Trees under 35' ht.						
	Carpinus carolinia	American Hornbeam	20-30'	20-30'	N	N
	Cercis canadensis	Eastern Redbud	25-30'	25-35'	N	N

PLANTS FOR BIO-RETENTION

	Scientific Name	Common Name	Height	Habit	Salt tolerance?	
Perennials						
	Agrostis perennans	Autumn Bentgrass	1-3'	bunchgrass	Y/medium	Y
	Andropogon gerardii	Big Bluestem	2-6.5'	warm season bunchgrass	Y/medium	Y
	Andropogon virginicus	Broomsedge	1-3'	warm season bunchgrass	Y/low	Y
	Dichanthelium clandestinum	Deer-tongue	2-5'	warm season bunchgrass	Y/low	Y
	Elymus riparius	Riverbank Wild-rye	2-4'	warm season grass	Y/low	Y
	Eupatorium fistulosum	Joe-Pye Weed	1.5-10'	spreading, flowering	Y/low	Y
	Panicum virgatum	Switchgrass	3-6'	clumping, reduces erosion	Y/low	Y
	Phlox carolina	Thick-leaved Plox	1-2.5'	clumping	N	Y
	Pteridium sp.	Bracken Fern	1.5-6'	spreading	N	Y
	Scuttellaria integrifolia	Rough Skullcap	1-2.5'	forms small patches	N	Y
	Silphium perfoliatum	Cup Plant	3-8'	clumping	Y/low	Y
Shrubs						Y
	Hypericum densiflorum	Dense St. John's Wort	1.5-6'	dense, spreading shrub	Y/low	Y
	Kalmia latifolia	Mountain Laurel	2-3'	airy evergreen shrub	N	Y
	Photinia melanocarpa	Black Chokeberry	3-6'		N	Y
	Photinia pyrifolia	Red Chokeberry	1.5-13'		Y/low	Y
	Rhododendron periclymoides	Pink Azalea	3-10'		N	Y
	Salix humilis	Prarie Willow	6-12'	spreading shrub	Y/low	Y

Sambucus nigra var. canadensis	American Elder	6-12'		N	Y
Vaccinium corymbosum	Highbush Blueberry	6-12'		Y/medium	Y
Viburnum dentatum	Southern Arrowwood	10-15'	straight stems	N	Y
Viburnum prunifolium	Black Haw	12-24'		N	Y

PLANTS FOR PARKS AND GREENWAYS (Native to Piedmont region; no irrigation required once established)

	Scientific Name	Common Name	Height	Spread	Salt tolerant?	Appropriate for Bioretention?
Trees over 50' ht.						
	Carya ovata	Shagbark Hickory	60-80'	35-50'	Y	Y
	Celtis occidentalis	Hackberry	40-60'	40-60'	Y	Y
	Diospyros virginiana	Common Persimmon	35-60'	25-35'		Y
	Fagus grandifolia	American Beech	50-70'	50-70'	N	N
	Liquidambar styraciflua	American Sweetgum	60-75'	60-75'		Y
	Pinus strobus	Eastern White Pine	50-80'	20-40'	N	N
	Quercus alba	White Oak	50-80'	50-80'	Y	Y
	Quercus coccinea	Scarlet Oak	60-80'	40-50'	N	N
	Quercus palustris	Pin Oak	65-70'	25-40'	N	Y
	Quercus phellos	Willow Oak	40-60'	30-40'	Y	Y
	Tilia americana	American Linden	60-80'	30-55'	Y	N
Trees 35'-50' ht.						Y
	Ilex opaca	American Holly	40-50'	20-40'		Y
	Juniperus virginiana	Eastern Red Cedar	40-50'	10-20'	Y	N
	Nyssa sylvatica	Black Tupelo	30-50'	20-30'	Y	
	Quercus muehlenbergii	Chinkapin Oak	40-50'	50-60'	N	N
Trees under 35' ht.						N
	Carpinus carolinia	American Hornbeam	20-30'	20-30'		N
	Cercis canadensis	Eastern Redbud	25-30'	25-35'	N	N
	Chionanthus virginicus	White Fringetree	25-30'	25-30'	Y	N
	Cornus florida	Flowering Dogwood	20-30'	20-30'	Y	N
	Crataegus crus-galli	Cockspur Hawthorne	20-35'	20-35'	N	
	Viburnum prunifolium	Blackhaw Viburnum	10-15'	10-15'	N	N
Shrubs for open areas (sun)						
	Ceanothus americanus	New Jersey Tea	3'			N
	Comptonia peregrina	Sweetfern	3'			N
	Corylus americana	American Hazelnut	10-15'			Y
	Hypericum densiflorum	Dense St. John's Wort	1.5-6'			Y
	Photinia melanocarpa	Black Chokeberry	3-6'		N	Y
	Photinia pyrifolia	Red Chokeberry	1.5-13'		Y	N
	Rhus aromatica	Fragrant Sumac	6'			N
	Rhus copallina	Winged Sumac	20-35'			N
	Rhus glabra	Smooth Sumac	2-20'			N

	Rhus hirta	Staghorn Sumac	35-50'			N
	Rosa carolina	Pasture Rose	.5-3'			N
	Rubus allegheniensis	Allegheny blackberry	3-9'			Y
	Salix humilis	Prarie Willow	6-12'			Y
	Sambucus nigra ssp. canadensis	American Elder	6-12'		N	N
	Vaccinium angustifolium	Lowbush Blueberry	1-2'			N
	Vaccinium stamineum	Deerberry	6-12'			
Understory shrubs (shade)						
	Cornus racemosa	Red-panicled Dogwood	6-12'			N
	Gaylussacia baccata	Black Huckleberry	1.5-3'			N
	Hamamelis virginiana	Common Witch Hazel	20-30'			Y
	Kalmia latifolia	Mountain Laurel	12-20'			Y
	Rhododendron periclymenoides	Pink Azalea	3-10'		N	Y
	Ribes rotundifolium	Eastern Gooseberry	3-6'			N
	Vaccinium corymbosum	Highbush Blueberry	6-12'		Y	Y
	Vaccinium pallidum	Early Lowbush Blueberry	1.5-2'			N
	Viburnum acerifolium	Maple-leaved Arrowwood	3-6'			N
	Viburnum dentatum	Southern Arrowwood	10-15'			Y
	Viburnum nudum var. cassinoides	Witherod	6-12'			N
	Viburnum prunifolium	Black Haw	12-24'		N	Y