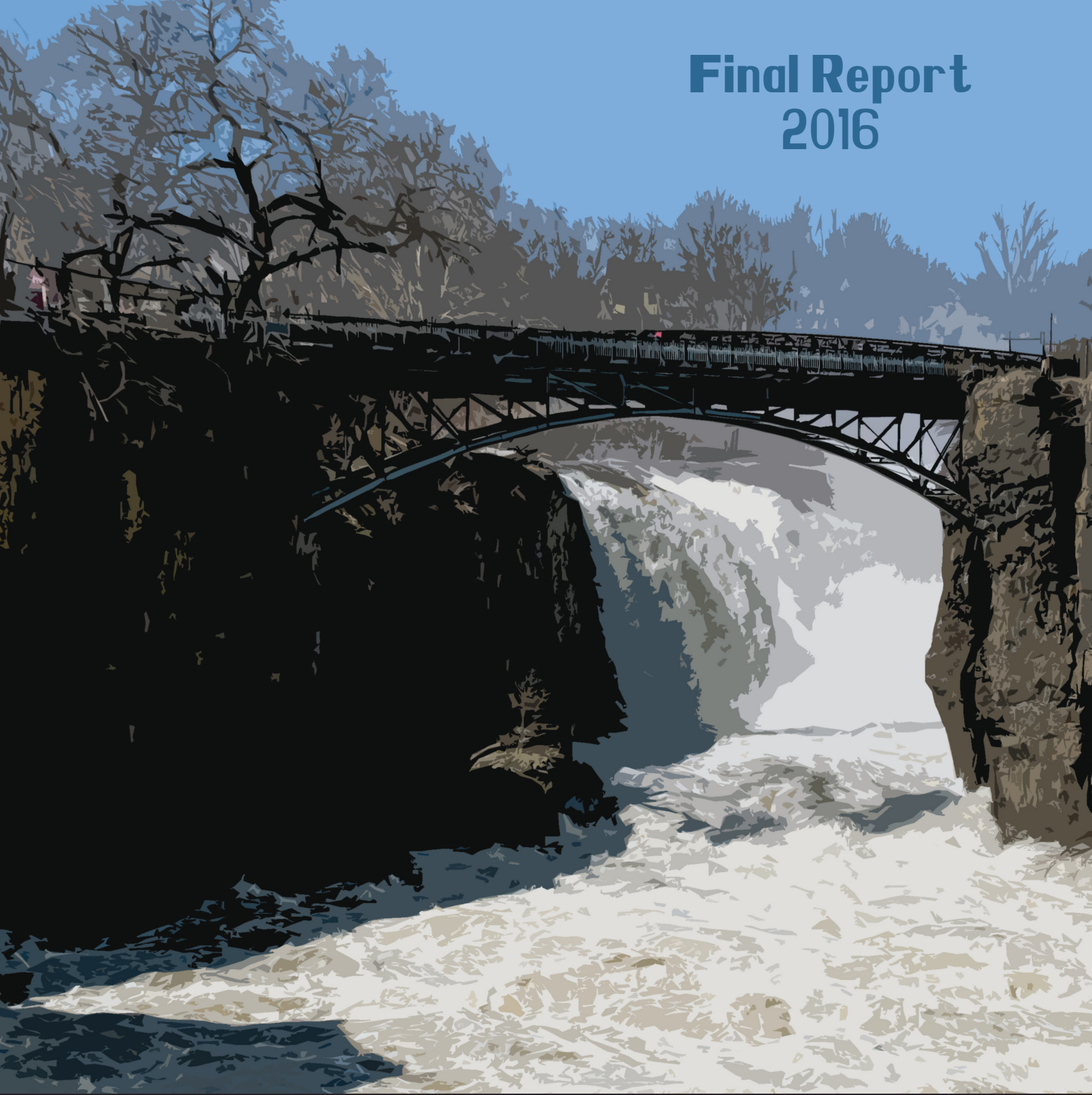


**Final Report
2016**



Great Falls Circulation Study Passaic County, New Jersey



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Disclaimer

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2016

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Photo Credit: Terence McKenna



Executive Summary

City of Contrasts

Paterson's history and natural resources serve as a platform of great potential and opportunity, yet its demographic makeup, economic decline, and the long-standing adverse impact of traffic, congestion, and highway construction present great challenges to advancement. The Circulation Study reveals a diverse but poor community, with limited English proficiency and scant access to auto ownership.

The Great Falls represent one of New Jersey's most significant untapped natural and cultural resources, and present the opportunity to provide the City with a sustainable base for recreation, tourism, and economic development.

Vision Statement

The City of Paterson will become a more attractive place for education, tourism and business and enhance its position as the regional center. Through the implementation of multimodal Complete Streets, Paterson will mitigate long-standing congestion and traffic impacts, improve safety and access, and become a more vibrant and livable community.

Gateway Vision Plan

The Great Falls Circulation Study advances a five-part Gateway Vision Plan of multimodal transportation and placemaking improvements.

Part 1: Multimodal Urban Boulevard

Re-envision the Spruce Street Corridor as a multimodal urban boulevard more consistent with its role as a gateway to the Great Falls NHP and downtown historic district.

Part 2: Two-way Street Conversions

Implement two-way street conversions for Cianci and Mill Streets to begin the process of restoring Paterson's historic street grid and counteract the long-standing impacts of congestion, through traffic, trucks, and speeding.

Part 3: Local Intersections

Implement local intersection improvements that prioritize traffic calming and pedestrian crossings and enhance multimodal mobility across the City.

Part 4: Enhanced Placemaking

Look beyond the transportation and mobility elements to address the chaos, access and mobility limitations, and diminished built environment that residents and visitors encounter on a daily basis.

Part 5: Long-Term Vision Plan

Work with City, State, regional, and NHP partners to explore and advance roadway and transit projects of regional significance and coordinate plans with development of Great Falls NHP facilities and amenities and restoration of Hinchliffe Stadium.

Great Falls Circulation Study Area



LEGEND

-  Parks
-  Study Area
-  Schools

0 0.25 0.5 Miles





Introduction

Paterson's Great Falls represents one of New Jersey's most significant untapped natural and cultural resources, and presents the opportunity to provide the City with a sustainable base for recreation, tourism, and economic development. Through a succession of recent studies and improvements, including its declaration as a National Historical Park (NHP) in 2009 and the restoration of Mary Ellen Kramer Park, the Great Falls now have the potential to spur the city's rebirth by encouraging redevelopment, fostering heritage tourism, and providing Paterson's residents with a much needed base for active recreation and open space.

The Great Falls study area covers about one-quarter of Paterson's 8.36 square miles. The area includes Passaic County government and courts; residential areas; downtown shopping, dining, and nightlife; and more than 20 schools in addition to the Great Falls NHP and Historic District. Direct access is provided to Interstate 80 and New Jersey 19; multimodal mobility is supplemented by both rail and bus transit service.

With few accessible vantage points, the grand vistas of the Great Falls have long been overlooked by residents and tourists alike as "hidden, inaccessible, and underutilized."¹ Addressing this disconnect between the idea of the Falls as a priceless visual and natural asset - and its potential to both revitalize the community and fill the void in active open space - holds the key to successful completion and implementation of the Great Falls Circulation Study.

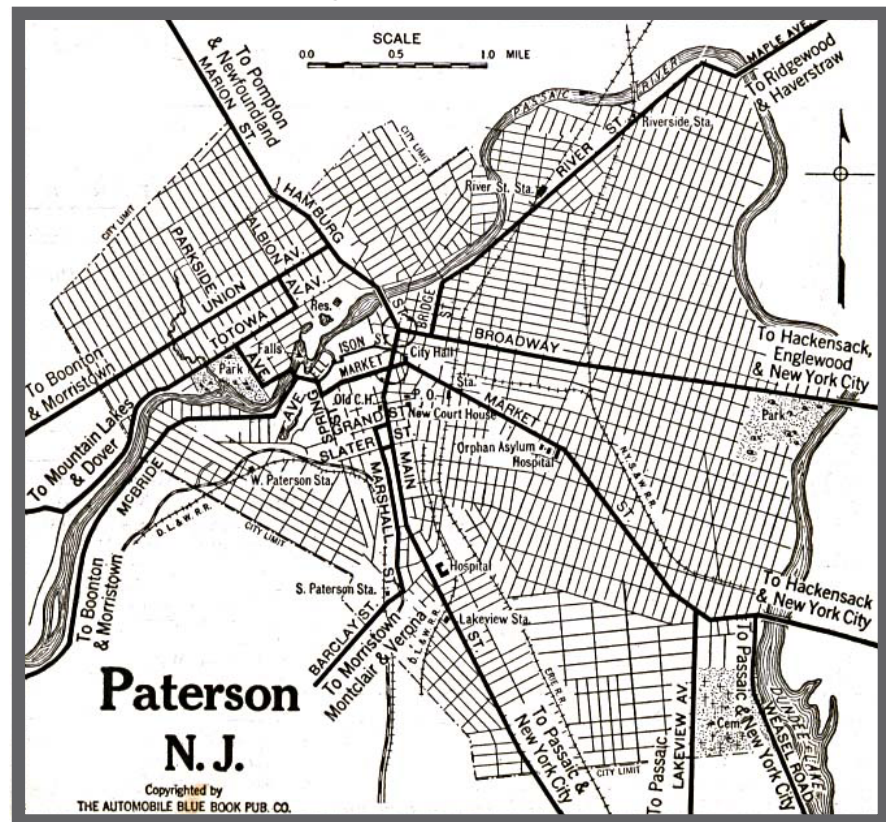
Although initiated by the Passaic County Department of Planning and Economic Development to examine ways to improve access for visitors to the National Historical Park and Downtown Historic District, the Circulation Study recognizes that Paterson is also host to numerous local and regional needs: home of more than 37,200 K-12 students, many of whom walk to and from school; seat of the Passaic County government and courts; transit hub served by NJ TRANSIT rail and bus, private jitney service, and NJ TRANSIT bus depot; gateway community for new immigrants; and conduit to the adjacent I-80/NJ 19 highway corridor providing essential access to and from the surrounding suburban communities. The Circulation Study represents a significant step forward by initiating the process of understanding the City's many and varied needs and mitigating its long-standing deficiencies and constraints.

As the National Park Service evaluates options for the park's future, whether the primary emphasis becomes the natural beauty of the Great Falls and its use for recreation or as an historic site essential to America's industrial ascendance,² the efforts undertaken for the Great Falls Circulation Study have made apparent the urgent and pressing need for multimodal circulation improvements that enhance pedestrian access, safety, and mobility with an emphasis on students and vulnerable users. It has also highlighted the importance of advancing improvements for the Spruce Street Bridge (also known as the War memorial Bridge) and Spruce Street that calm traffic, improve pedestrian safety, and begin the process of overcoming the impacts of traffic and congestion that hamper quality of life every day for Paterson residents.

The Great Falls Circulation Study evaluates opportunities to improve local and regional circulation, enhance pedestrian mobility, and implement gateway access improvements to the benefit of all. The Circulation Study includes:

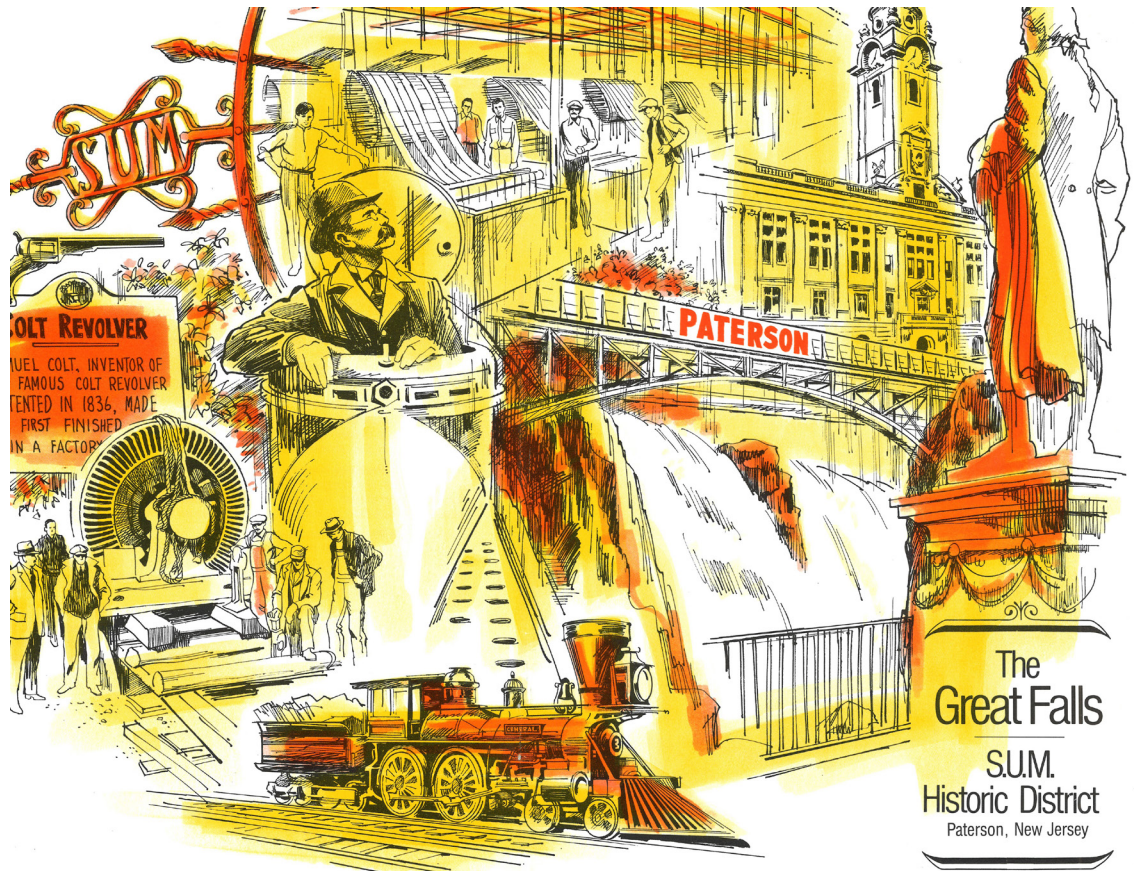
- Community-based planning and outreach
- Comprehensive assessment of multimodal transportation needs and deficiencies
- State-of-the-art travel origin and destination data collection and analysis
- Microsimulation traffic modeling and transportation performance measures
- Select and advance the preferred Gateway Vision Plan

Paterson's robust street grid, circa 1930



The Circulation Study is part of an on-going effort by Passaic County and the City of Paterson to evaluate options and opportunities for the City's future. Previous studies have included a city-wide traffic assessment, heritage tourism potential, bike share options, a vision plan for the Spruce Street neighborhood, and the Passaic County Transportation Master Plan.

Building on the momentum, data resources, and findings from these studies and initiatives, this Final Report documents coordination between the project team, Passaic County, Study Advisory and Technical Committees, public officials and professionals, stakeholders, advocates, and the general public to build consensus on achievable Vision and Goals, and selection of the preferred Gateway Vision Plan.



Paterson, NJ has a rich cultural, natural and industrial heritage

Methodology

The Great Falls Circulation Study was undertaken in three phases:

Phase I: Comprehensive Outreach & Data Collection

- Coordination among stakeholders to develop a comprehensive understanding of local needs, priorities, and concerns
- Assemble data resources, including origin-destination traffic patterns
- Formulate study vision and goals

Phase II: Develop and Test Gateway Scenarios

- Multimodal mobility needs assessment

- Collaborative effort to create Gateway Access alternatives
- Develop and test Quadstone Paramics traffic models and Synchro intersection analysis

Phase III: Select Preferred Gateway Access Alternative

- Evaluate performance measures and metrics
- Select and advance a preferred Gateway Access alternative and supporting initiatives, policies, and strategies



Photo Credit: Terence McKenna



Photo Credit: Terence McKenna

01 Comprehensive Public Outreach and Coordination

A community-based planning process was designed and implemented to support the technical elements of the Circulation Study and build consensus on the preferred Gateway Vision Plan. Coordination of local, county and state plans and projects with local vision and goals is essential to support and advance economic development, job creation, quality-of-life, and sustainability goals.



Great Fall Circulation Study Public Meeting

Public outreach and coordination is a continuous and collaborative process that includes a variety of opportunities for discussion:

- Study advisory committee
- Technical advisory committee
- Focus groups
- General public and stakeholders
- Survey instruments and crowd sourcing

Discussions topics included:

- What are the most pressing needs in creating safe and inviting access to the Great Falls National Historical Park?
- What are the most pressing transportation and mobility needs?
- Describe the daily travel experience for local residents, visitors and businesses.
- Describe the impact of regional through traffic on the Great Falls area.
- What locations and streets have the most pedestrian activity?
- What are some of the major barriers to pedestrian and bicycle mobility?
- What would be the best way to engage local residents and businesses in the planning process?



Market Street, Downtown Paterson

Study Advisory Committee (SAC)

The Study Advisory Committee drives the planning process by working collaboratively with the project team to understand and address local needs, opportunities, and constraints, and articulate study vision and goals. Members of the SAC include representatives from city, county, regional, and statewide agencies, stakeholders, local non-profit, educators, and advocate groups. The SAC provided input and guidance throughout the study.

Three meetings were held to guide the team from needs assessment to visioning and goal

setting, development of gateway access scenarios, and finally selection of the preferred alternative.

Comments and concerns were as diverse as the committee members and the organizations they represent: congested intersections, enforcement of traffic safety regulations, historic preservation, quality of life considerations, ability of visitors to walk between adjacent National Historical Park destinations, and the desire to use mobility enhancements to support and encourage redevelopment options.

Technical Advisory Committee (TAC)

The study's technical elements, including the needs assessment and the development and testing of gateway access concepts, were discussed and reviewed by the Technical Advisory Committee, a group comprised of planning and engineering staff from the City of Paterson and Passaic County, the North Jersey Transportation Planning Authority (NJTPA), NJ TRANSIT, the New Jersey Department of Transportation (NJDOT), the Paterson Parking Authority, New Jersey Community Development Corporation, and EZ-Ride/Meadowlink Transportation Management Association (TMA). Three technical meetings were held. A small

working group consisting primarily of City and County staff was also engaged to pre-screen the needs assessment and candidate mobility improvements.

Discussion at the TAC meetings focused primarily on traffic circulation, pedestrian needs, re-decking of the Spruce Street Bridge, and formulation and evaluation of the Gateway Access alternatives. Of particular concern to committee members were existing bottlenecks, limited crossings of the Passaic River, impacts to on-street parking, future structured parking, and improved access to ramps at I-80 and NJ-19.

Focus Group Meetings

Focus groups were employed to broaden the variety of perspectives, priorities, and concerns that define the overall study; contribute to the vision, goals, and needs assessment; and identify potential mobility improvements. Small groups provide opportunities for personal input and perspective not always apparent to the professionals and decision makers that make up the traditional advisory committees by bringing together people with a direct investment in the community, people who understand and appreciate its assets, and live everyday with its shortcomings.

Two focus group sessions were held with local residents, workers, social service providers, and members of the business community.

Residents spoke primarily of local issues and quality of life concerns related to peak period traffic and heavy movement of traffic along city streets, including school-aged children facing daily traffic congestion as they walk to and from school, the difficulties residents often encounter at crosswalks, and quality of life impacts.

In contrast, business owners identified the need for off-street parking in close proximity to shops and destinations and wayfinding signs to direct visitors from highway off-ramps to parking lots.

Comments and issues raised at the focus groups proved instrumental to identifying the key issues and needs, and formulation and prioritization of candidate mobility improvements.

Public Meetings

Public meetings are a critical venue for reaching those who live, work, and do business in the study area to ensure that they are kept informed, engaged throughout the study, and afforded ample opportunity to participate. A mix of Paterson residents, planning professionals, and municipal and agency representatives attended the two open public meetings, which were held on December 10, 2015 and April 27, 2016, at the Paterson Museum.

Flexible public meeting formats encouraged open discussion on a wide range of topics that helped frame the Great Falls Circulation Study. A diversity of comments and concerns were expressed including:

- Chaotic peak hour traffic conditions are an unwelcome daily event
- Pass through traffic and the impact to local mobility and safety
- Impact of heavy trucks on the integrity of historic structures in Great Falls district
- Many school-age children walk to school alongside heavy traffic
- Jitney/NJ TRANSIT conflicts common
- Congestion and double parking are typical near schools
- Many parents are not comfortable with biking conditions for children
- It is often difficult for pedestrians to cross the street, especially during peak hours
- Many pedestrians cross mid-block to avoid busy intersections
- It can be faster to walk than drive during peak traffic periods
- Poor observance and enforcement of traffic safety are common
- Adequate off-street parking is essential to social services, events, and attractions
- It is easy to get to Paterson, but difficult to find attractions and destinations
- Quality of life considerations
- Limited directional signs and wayfinding

02 Vision Statement and Goals

The first outcome of the outreach process is formulation of the study vision and goals. The Vision Statement articulates the purpose and intent of the study in a brief and concise manner, while the Goals are a series of statements used to prioritize and evaluate the various recommendations and concepts that come out of the technical evaluation, needs assessment, and traffic modeling tasks.

The Vision Statement and Goals must come from the stakeholders and represent local values, desires, and concerns. Working with the focus groups and advisory committees, the team identified a host of needs, issues, and concerns relating to a variety of topics, including pedestrian safety and mobility, access and travel safety for school-age children, parking, wayfinding, quality of life issues, the impact of through traffic and congestion, and enforcement of traffic regulations. The team reviewed the public discourse, written comments, and correspondence from stakeholders in formulation and refinement of the vision and goals.

Vision Statement

The City of Paterson will become a more attractive place for education, tourism and business and enhance its position as the regional center and the county seat of government and social services. Through the implementation of multimodal Complete Streets, Paterson will mitigate long-standing congestion and traffic impacts, improve safety and access, and become a more vibrant and livable community.

Study Goals and Objective

- Prioritize **pedestrian safety** City-wide with emphasis on students and vulnerable users
- Enhance **residential quality of life** and the Great Falls NHP **visitor experience**
- Improve **access and mobility** to the Great Falls NHP and downtown historic district
- Counteract **long-standing disproportionate impacts** of traffic and congestion due to highway construction and through traffic
- Advance Spruce Street Bridge corridor concepts to **improve pedestrian safety, school access, and Great Falls NHP heritage tourism**

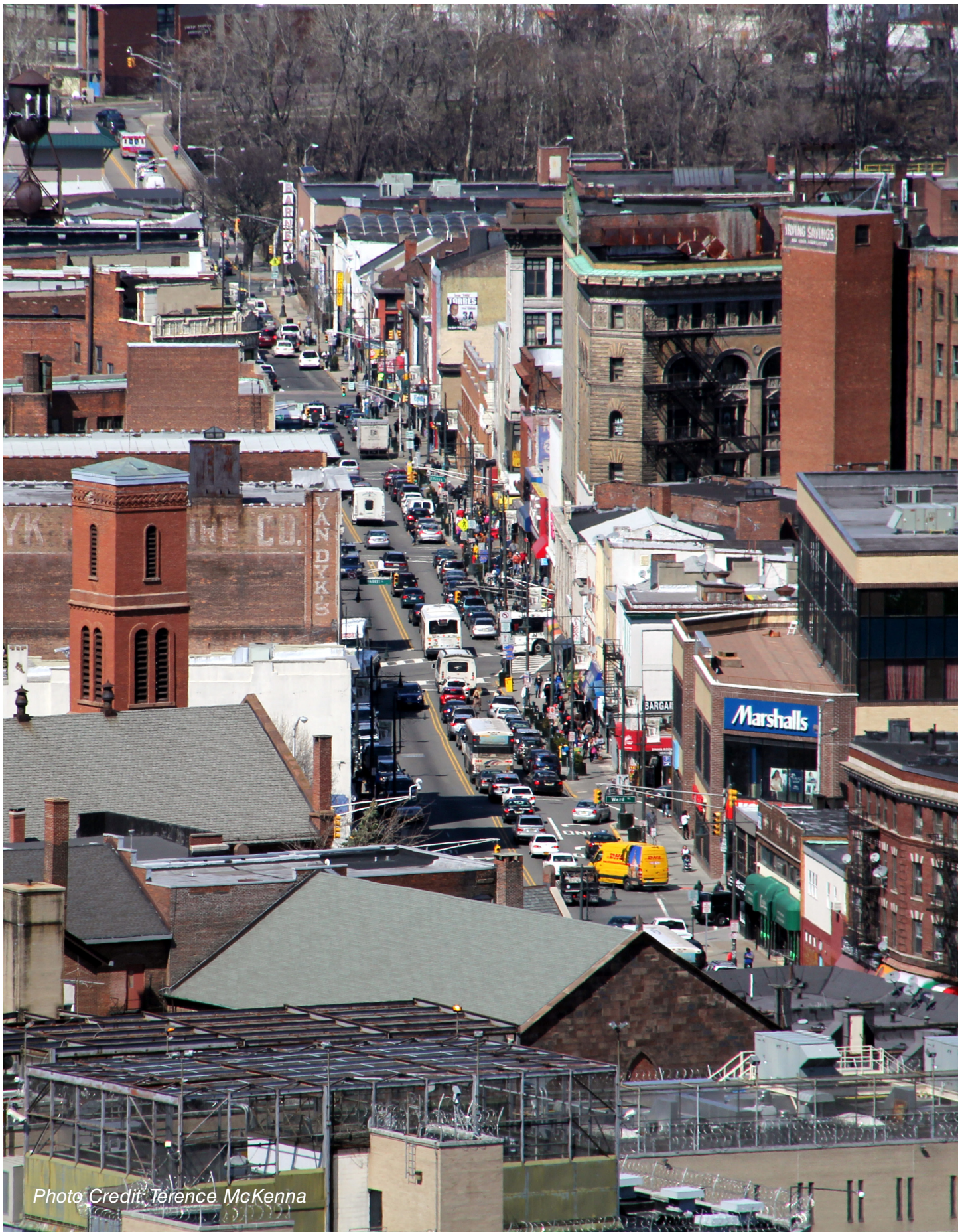


Photo Credit: Terence McKenna

03 Community Profile

Paterson is a place of great contrasts; its history and natural resources serve as a platform of great potential and opportunity, yet its demographic makeup, economic decline, and the long-standing adverse impact of traffic and congestion present equally great challenges to advancement. The community profile of the Great Falls Circulation Study Area reveals a diverse but relatively poor community, with limited English proficiency and scant access to auto ownership.



Decorative Tile at Hinchliffe Stadium

Demographic data for the Great Falls study area was compared to the City of Paterson, Passaic County, and the state of New Jersey as a whole. Each of the key indicators portray a community vastly different from its neighbors and fellow New Jersey residents, and in each case the study area is an outlier that presents significant disadvantages and barriers to advancement:

- The Great Falls study area has the lowest median household income among the four comparison geographies: its median of \$22,519 is about 59% of the City of Paterson median, 34% of the Passaic County median, and less than 29% of the statewide median household income. The percentage of households below the poverty level indicate a similar pattern of economic distress; 11.8% of study area households fall below the poverty line – more than twice the County rate and nearly 4 times the statewide figure of just 3%. The City of Paterson has the 11th lowest median household income in New Jersey at \$32,707.
- Zero-car households predominate the Great Falls study at 55% of study area households, almost twice that of Paterson as whole, more than three times that of Passaic County, and about four times the statewide rate. The City of Paterson has the 3rd highest rate of zero car households in New Jersey, and the 12th highest in the U.S.



Pedestrians crossing Spruce Street at Market Street

- In terms of vulnerable populations, including school-aged children and senior citizens, the study area contains a higher percentage of children between the ages of 5 and 19 (almost 24 percent) than Paterson, Passaic County, and New Jersey. Senior citizens (aged 65+) make up 11 percent of the study area population.

- The area also has 25% of households with Limited English Proficiency (LEP), a higher percentage of households than comparison surrounding geographies; this is almost twice that of Passaic County and more than three times the statewide percentage. Spanish is the predominant language spoken among Great Falls LEP households.

“Zero-car households predominate the Great Falls study at 55% of study area households, almost twice that of Paterson as a whole”

- Based on ethnicity data, the majority of the population in both the study area (64%) and the City of Paterson (58%) is of Hispanic or Latino descent, compared to just 18.1% statewide.

The community profile assessment reinforces the need for multimodal transportation improvements including better sidewalks near schools, better pedestrian connections to Downtown

Paterson and the Paterson Great Falls NHP, and improved access to public transportation options in order to provide safer and more convenient access to education, community resources, and employment opportunities.

04 Multimodal Mobility Needs Assessment

The Multimodal Mobility Needs Assessment evaluated access, safety, and mobility issues for pedestrians, bicyclists, and motor vehicles, including crash history, bicycle access, pedestrian circulation, and transit. Work completed in previous studies was also reviewed in order to incorporate information from existing data, findings, and recommendations.



Pedestrians wait for the walk phase at this wide and exposed crossing of Memorial Drive

4.1 Previous Studies

Key recommendations and findings from recent and previous studies are summarized below.

4.1.1 Passaic County Heritage Tourism Plan

Prepared in 2013, the Heritage Tourism Plan promotes a unified heritage tourism program, provides strategies and recommendations to support preservation and enhancement of historic resources, and provides guidance for implementation. The Plan highlights the need for streamlining visitor access from the Paterson train station to the Great Falls Historic District in order to maintain a sustainable tourism program. The Heritage Tourism Plan also specifically identified the Great Falls NHP gateway as one of the key areas for improvements to bicycle and pedestrian safety conditions. Recommendations included:

- Reconfigure the Spruce Street Bridge to serve as a gateway to the area
- Examine closing McBride Avenue to vehicular traffic in the NHP area
- Repair sidewalk and pedestrian facilities and implement streetscape improvements
- Implement comprehensive intersection improvements for pedestrians
- Examine opportunities to create an alternate Passaic River crossing

4.1.2 City of Paterson City-Wide Transportation Assessment

The City of Paterson City-Wide Transportation Assessment, prepared in March 2010, sought to develop a multi-modal improvement program for Paterson's transportation network. Findings and recommendations included:

- Upgrade outdated signal systems, greater use of semi-actuated signals, and prohibiting the use of right-turn-on-red at select locations
- Evaluate the geometric configurations of high-crash intersections
- Create a one-way pair by converting Cianci Street to one-way northbound and Mill Street to one-way southbound, improving downtown circulation
- Develop a comprehensive signing plan between major attractions in the City
- Improve coordination between jitney operations and NJ TRANSIT
- Improve striping of parking spaces and enforcement of parking regulations
- Install sidewalks along roadway segments with missing, deteriorated, or substandard sidewalks
- Enhance pedestrian crossings at high pedestrian activity intersections
- Restripe key roadways to be bicycle compatible where existing geometry allows, including Broadway Avenue, Market Street and Main Street

4.1.3 Greater Spruce Street Neighborhood Plan

The Greater Spruce Street Neighborhood Plan, sponsored by New Jersey Community Development Corporation, was prepared in January 2009. The plan developed a vision and implementation plan for the neighborhood that builds upon its existing natural, historic, and cultural assets and seeks to improve the desirability of the neighborhood for residents, businesses, and visitors. The mobility recommendations provided in the plan focused on the creation of "balanced streets."

Findings and recommendations included:

- Improve walkability throughout the Spruce Street neighborhood area
- Implement traffic calming, streetscaping, intersections improvements, and raised crosswalks
- Downsize Ward Street with gateway treatments and public realm improvements
- Improve management of through-traffic bound to area highways
- Make Paterson more bike friendly and provide connections to the Great Falls path system
- Create open space linkages and trails between Great Falls, neighborhoods and regional trails and parks
- Strengthen the enforcement of traffic laws

4.1.4 Moving Passaic: Transportation Element of the Passaic Co. Master Plan

The Transportation Element of the Passaic County Master Plan, completed in 2012, serves as the blueprint for the county's multimodal transportation system. The Plan identifies policies and investments to ensure adequate mobility for county residents, support economic vitality, and maintain a high quality of life. The Transportation Element recommends development of "Complete Streets" that better serve pedestrians and transit users, including senior citizens and persons with disabilities. This includes improving the relationship between county roads and their surroundings, with new perspectives on roadway design that emphasize walkability and improved aesthetics. The Transportation Element provides several transit recommendations directly beneficial to Paterson and to promoting tourism around the Great Falls NHP area.

Findings and recommendations include:

- Activation of a Passaic-Bergen Rail Line
- Further study of several potential BRT services, such a Paterson-Nutley route, a Main Street (Paterson-Clifton-Passaic) route, and a Paterson-Hamburg Turnpike route
- Reactivation of the South Paterson NJ TRANSIT rail station, served by the Bergen County Main Line
- Additional evening and weekend services
- A feasibility study to evaluate relocating the

existing NJ TRANSIT bus garage on Market Street in Paterson

- ITS and coordinated corridor signal systems in downtown Paterson to mitigate congestion issues
- Implement recommendations of the Morris Canal Greenway Feasibility Study
- Develop a wayfinding system for all users that will improve safety as well as the visibility of attractions
- Prioritize connections with existing bicycle and pedestrian facilities such as the Morris Canal Greenway
- Implement recommendations of the NJTPA Bus Stop Safety Toolbox
- Develop a Heritage Tourism Element of the Passaic County Master Plan that can identify critical transportation nodes and potential center of activity for tourism opportunities
- Implement Complete Streets improvements in accordance with Plan guidelines through all capital expenditures, including the annual resurfacing program

Other recommendations include reclaiming the waterways to provide more recreational opportunities along the natural byways, especially the Great Falls NHP. The plan also provides recommendations for improvements of pedestrian and bicycle infrastructure in Paterson, due in part to development of the Great Falls NHP as a major pedestrian and bicycle activity generator.

4.1.5 Paterson Bike Share Planning Workshop

The Environmental Protection Agency's (EPA) Office of Sustainable Communities (OSC) provided a technical assistance grant to Passaic County to evaluate the feasibility of a bike share program in Paterson. A site tour was conducted to allow EPA representatives and local partners to view areas of the National Park and its environs, as well as the downtown core, Garret Mountain, and the Morris Canal Greenway. The tour provided participants the opportunity to develop initial thoughts about how bike share could be deployed in Paterson and serve as a pilot for other area municipalities.

Goals of the study included:

- Promote the area's history, and market it to visitors who may arrive by train and use bike share to get around town and tour local sites all in one day
- Ensure that on-street bicycle route investments continue, including a link between the National Park and the downtown area/NJ TRANSIT station
- Link downtown to the NHP, Historic District, and Garret Mountain preserve via wayfinding and itineraries for visitors
- Overcome the city "fear factor" and largely unfounded perceptions that the area is unsafe

- Develop outreach and educational programs for Paterson motorists and bicyclists about bicycle safety, such as riding skills and sharing the road with drivers (and vice versa)
- Address equity issues such as credit card access and multi-lingual materials
- Identify potential bike share locations and the types of system that could be used in Passaic County
- Support bike share through complementary efforts that help promote bicycling in the area

Next steps and a time frame for implementation were identified:

- Promote the EPA report and integrate bike share themes into the Great Falls Circulation Study
- Pursue initial funding and partnership opportunities
- Invest in additional on-street and off-street bicycle route improvements
- Implement supportive wayfinding and information
- Develop Bicycling Education Program

4.2 Crash History

Vehicular and pedestrian crash data can provide insight into potential safety issues, such as crash hot spots, crash type over-representations, or common contributing factors. The project team reviewed the New Jersey Department of Transportation's crash data within the Great Falls Study Area from 2010 to 2014, the most recent five-year period for which complete data was available.

4.2.1 Crash Hotspots

The distribution of all crashes in the study area is shown in the heat map in Figure 1. The heat map illustrates crash "hot spots," areas where there was a greater frequency of crashes. The largest concentration of crashes occurred along many study area corridors, in particular along Memorial Drive between Broadway and College Boulevard. Other notable hotspots can be seen in the downtown area along Market Street and Main Street, and along Wayne Avenue, Ward Street, Grand Street, and in the vicinity of the NJ TRANSIT train station on Market Street.

Bicycle and pedestrian crash hot spots within the study area are shown in Figure 2. The largest concentration of bicycle and pedestrian crashes occurred in the downtown area along and adjacent to Main Street and Market Street. Other bicycle and pedestrian crash hot-spots are located along Memorial Drive, West Broadway, and Spruce Street.

4.2.2 Crash Assessment – All Crashes

A total of 1,642 crashes occurred in the Paterson Great Falls study area between 2010 and 2014. Most characteristics and contributing factors were similar to statewide trends, with the significant exception of crash location. Approximately 62% of crashes in the Great

Falls study area occurred at intersections, and 38% occurred between intersections, which is opposite of statewide averages where most crashes occur away from, rather than at, intersections. This finding could be related to Paterson's significant and recurring peak hour congestion, limited availability of gaps to accommodate turning movements, and lack of dedicated turn lanes and signal timing phases.

The most common type of crash within the study area was same direction-rear end, accounting for 22.6% of the crashes. Although few other crash characteristics and factors differed significantly from statewide average, one notable exception was that NJ 19 has a disproportionate number of crashes during non-daylight hours.

4.2.3 Crash Assessment – Bicycle and Pedestrian Crashes

Bicycle and pedestrian crash data was analyzed separately. A total of 130 pedestrian crashes and 17 bicyclist crashes occurred within the study area between 2010 and 2014.

Similar to the larger trend seen in all crash data, a higher proportion of pedestrian crashes occurred at intersections relative to the statewide average, indicating a potential need for enhanced pedestrian crossing improvements.

A large proportion of pedestrian crashes involved a crossing action. Eighteen percent of pedestrian crashes occurred while crossing a marked crosswalk at an intersection, while 15% occurred at unmarked intersection crossings. Additionally, 7% occurred crossing an unmarked mid-block location (jaywalking) and 3% occurred crossing at a marked mid-block location. Among bicycle crashes, there were no significant groups of pre-crash actions, as no action had more than three crashes over the five-year analysis period.

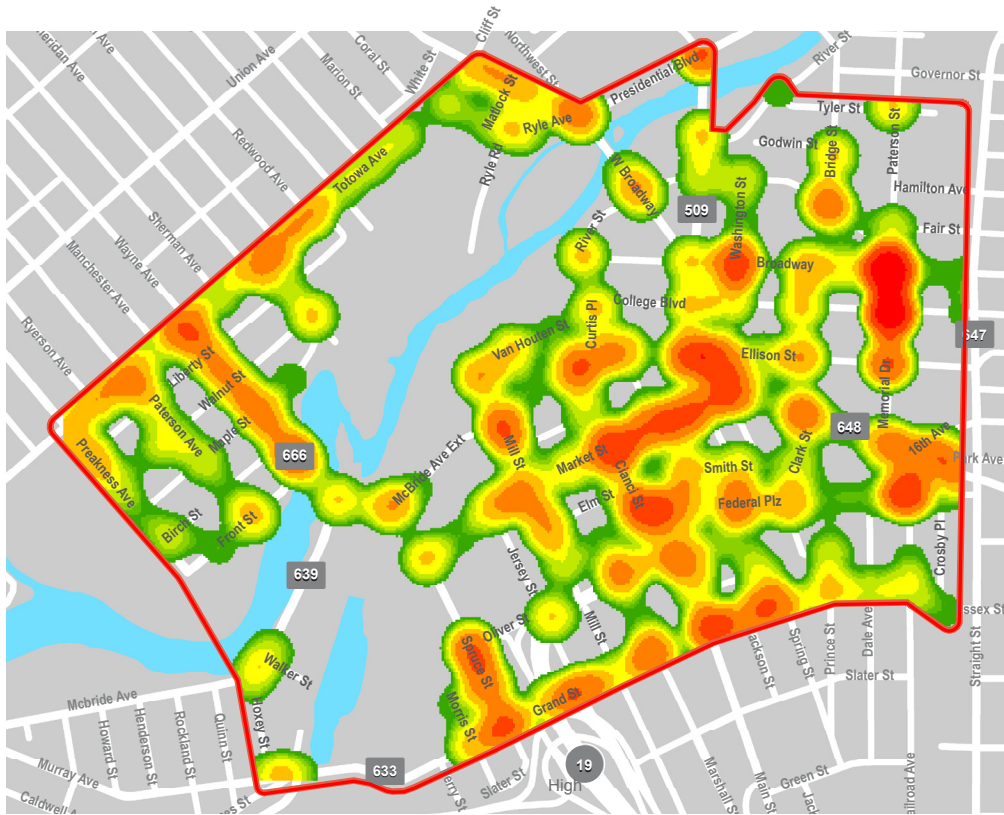
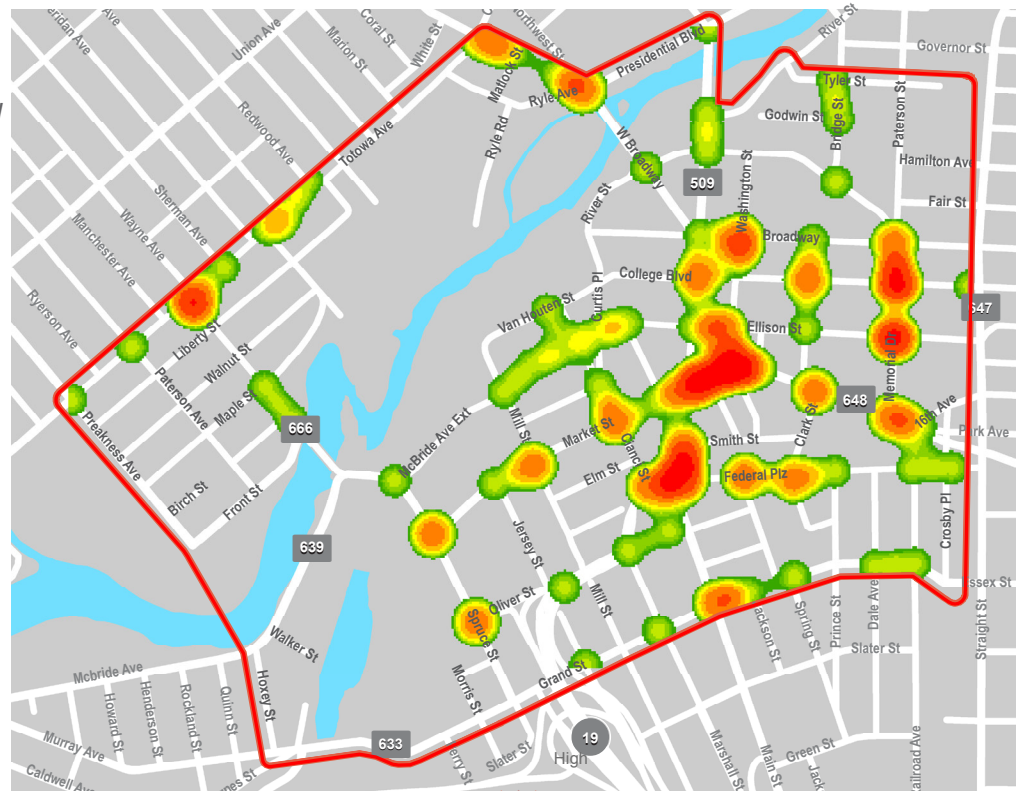


Figure 1:
Heat map for all crashes
(2010-2014)



Figure 2:
Heat map for bicycle and
pedestrian crashes
(2010-2014)





Bicyclist crossing Mill Street at McBride Avenue

4.3 Bicycle Access

4.3.1 Bicycle Level of Traffic Stress

Bicycle access within the Great Falls study area was analyzed using the Bicycle Level of Traffic Stress (LTS) method that measures a cyclist's potential comfort level given the current conditions of the roadway. Different cyclists have different tolerances for stress created by the volume, speed, and proximity of automobile traffic. The LTS metric is based on the Dutch concept of low-stress bicycle facilities. In general, lower stress facilities have increased separation between cyclists and vehicular traffic and/or have lower speeds and lower traffic volumes. These roadways are more accessible for less experienced and risk-averse cyclists, including the typical adult cyclist, families, and children. Higher stress environments generally involve cyclists riding in close proximity to traffic, multi-lane roadways, and higher speeds or traffic volumes. This reflects the Complete Streets goals of making streets accessible to all users, all ages, and all abilities.

The LTS analysis was conducted across the entire roadway network within the study area. Typical mid-block roadway characteristics were used for the analysis, based on data from GIS, field observations, NJDOT's straight line diagrams, and aerial photography. The analysis provides a general understanding of existing conditions for cyclists at a block level, and does not include the potential influence of different intersection designs or traffic conditions. The results are illustrated on the map in Figure 3.

The vast majority of the roadway network are local urban streets, which are typically low speed (25 mph speed limit) and one- or two-lane roadways, which are generally conducive to cycling.

However, while there are a few low-stress links that are accessible to cyclists of all ages and abilities (e.g. families and children), these links are disconnected and do not provide direct access to the Great Falls NHP on the south side of the Passaic River.



Market Street, Paterson, NJ

High stress roadways within the study area include:

- NJ Route 19: The section of NJ 19 entering Paterson is an LTS 4 due to its four-lane cross section and high vehicular speeds
- Memorial Drive and Ward Street are LTS 3 due to their four-lane cross section, creating a higher stress ring within the study area.
- Van Houten Street and portions of Ellison Street are an LTS 3.
- The Spruce Street Bridge is a major gateway to the Great Falls NHP from the northwest. However, it is a stressful crossing for the average cyclist (LTS 3) due to the four-lane cross section and high traffic volumes. McBride Avenue Extension and Spruce Street are both LTS 2.

4.3.2 Bicycle Infrastructure

There is little existing bicycle infrastructure in the study area. Additionally, pavement conditions on some roadways in the study area are in poor condition, creating a difficult surface for bicycling. However, Paterson's urban street network is typically low speed, dense, and interconnected, with few multi-lane roadways. This creates a dense, well-connected street network that provides a good foundation for a bicycle friendly environment.

At the time of the study completion, "Green Back Sharrows" and other bicycle improvements were installed by Passaic County on Grand Street near the study area as part of the Morris Canal Greenway to provide an improved shared lane condition for cyclists.

Bicycle Level of Traffic Stress Analysis



Bicycle Level of Traffic Stress

- Level of Stress 1
- Level of Stress 2
- Level of Stress 3
- Level of Stress 4

0 0.25 0.5 Miles



4.4 Pedestrian Accommodations at Major Intersections

Pedestrian accommodations were evaluated and combined with crash data findings to support development of pedestrian intersection improvements. The project team undertook analysis of the following intersections:

- Main Street & NJ-19/Ward Street
- Market Street & Cianci Street
- NJ-19 & Cianci Street
- Mill Street & Market Street
- Mill Street & McBride Avenue/Ellison St
- Market Street & Spruce Street

- Spruce Street & McBride Avenue
- McBride Avenue & Wayne Avenue
- Market Street & Main Street
- Memorial Drive & Market Street
- Market Street & Veterans Place/Washington Street

The following paragraphs summarize the findings for the key intersections in the Great Falls Study area related to the development of the Gateway Access alternatives. Detailed analysis is included in the Multimodal Mobility Needs Assessment Technical Memorandum.



Potentially challenging sidewalks for wheelchairs and walkers alike

4.4.1 Mill Street & Market Street

This intersection is located just west of downtown Paterson and just east of Paterson Great Falls NHP. The intersection is adjacent to Paterson's Public School Number Two. The north-south approach along Mill Street connects major streets further north to neighborhoods to the south. The east-west approach along Market Street connects Paterson Great Falls NHP and the Paterson Museum with downtown Paterson. During the field visit, a significant number of school children were seen using this intersection.

Existing Conditions Inventory

Crosswalk Striping

- Ladder crosswalks crossing Market Street
- Standard crosswalks crossing Mill Street

Curb Ramps

- All four corners have perpendicular curb ramps

Pedestrian Signals and Push Buttons

- All four corners have pedestrian signals
- No countdowns at pedestrian signals
- No pedestrian signal push buttons
- Market Street crossing pedestrian signal provides seven seconds of walk time in addition to eight more seconds of flashing red time; entire pedestrian light cycle is forty seconds long
- Mill Street crossing pedestrian signal



provides twenty-two seconds of walk time in addition to ten more seconds of flashing red time; entire pedestrian light cycle is thirty-five seconds long

Sidewalk Network

- Sidewalks adjacent to intersection are wide and in good condition

Lighting

- No pedestrian scaled lighting at intersection

Key Issues and Concerns

- No pedestrian scaled lighting at intersection
- No pedestrian signal push buttons
- Offset intersection and geometrics create throughput limitations.

4.4.2 Market Street & Cianci Street

This intersection is located just west of downtown Paterson, adjacent to numerous shopping centers and an elementary school. The northern approach along Cianci Street connects Market Street to the south with shopping and Memorial Drive to the north. The east-west approach along Market Street serves as a second main street and connects Main Street and commercial activity to the east with Paterson's Elementary School Number Two and the Paterson Museum to the west. T

Existing Conditions Inventory

Crosswalk Striping

- Standard crosswalk striping on Cianci Street crossings
- Ladder crosswalk striping on Market Street crossings
- Curb Ramps
- Curb ramps at intersection are all perpendicular and in good working order
- Pedestrian Signals and Push Buttons
- No pedestrian push buttons at intersection
- None of the pedestrian signals have countdowns
- Cianci Street crossing pedestrian signal provides twenty-four seconds of walk time in addition to six more seconds of flashing red time; entire pedestrian light cycle is thirty-seven seconds long
- Market Street crossing pedestrian signal provides seven seconds of walk time in



addition to nine more seconds of flashing red time; entire pedestrian light cycle is forty seconds long

Sidewalk Network

- All four corners have wide, good quality sidewalks

Lighting

- Northwest and northeast corners lack pedestrian scaled lighting

Key Issues and Concerns

- Northwest and northeast corners lack pedestrian scaled lighting
- None of the pedestrian signals have countdowns
- Illegal parking is common along the left side curb just north of the intersection

4.4.3 NJ-19 & Cianci Street

This intersection is located just west of downtown Paterson, one block from Center City Mall and the John P. Holland Charter School. The intersection offers an alternative to Main Street for travel to the north. The north-south approach along Cianci Street connects the John P. Holland Charter School to the south with neighborhoods to the north. The east-west approach along NJ-19 connects Main Street and commercial activity to the east with local freeways to the west.

Existing Conditions Inventory

Crosswalk Striping

- All four crosswalks have standard crosswalk striping

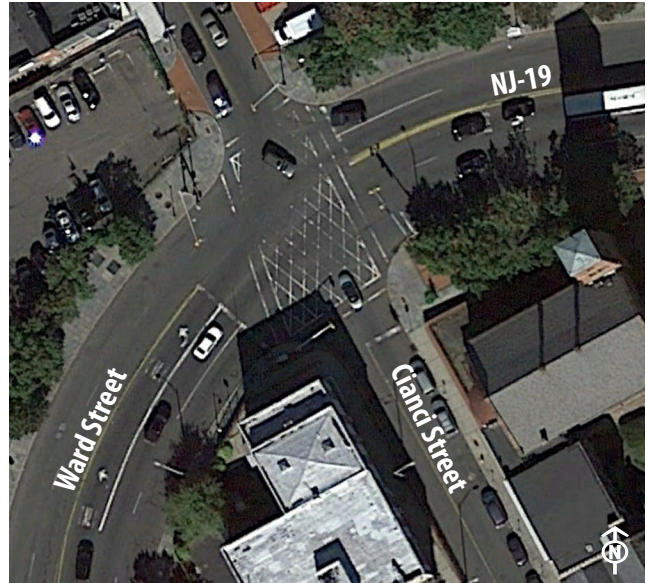
Curb Ramps

- All four corners lack curb pads

Pedestrian Signals and Push Buttons

- No pedestrian push buttons at intersection
- None of pedestrian signals have countdowns
- No signal head on northeast corner
- While “walk” phase does work, “flashing don’t walk” and “don’t walk” phases are not visible at northwest pedestrian signal head
- Southeast corner pedestrian signal head is obscured by tree
- Cianci Street crossing pedestrian signal provides thirty-one seconds of walk time in addition to twelve more seconds of flashing red time; entire pedestrian light cycle is forty seconds long
- NJ-19 crossing pedestrian signal provides twenty-one seconds of walk time in addition to twelve more seconds of flashing red time; entire pedestrian light cycle is thirty-five seconds long

Sidewalk Network



- All four corners have wide, good quality sidewalks
- Sidewalks are primarily composed of slate material, much of it in poor condition

Lighting

- Southwest and northeast corners lack pedestrian scaled lighting

Key Issues and Concerns

- Southwest and northeast corners lack pedestrian scaled lighting
- None of the pedestrian signals have countdowns
- Signal head at northwest corner is not functioning properly
- No signal head on northeast corner
- Southeast corner pedestrian signal head is obscured by tree
- All four corners lack curb pads
- Crossing width and refuge

4.4.4 Market Street & Spruce Street

This intersection is located just west of downtown Paterson and just south of Paterson Great Falls NHP. The intersection is adjacent to the Paterson Museum. The north-south approach along Spruce Street connects Paterson Great Falls Historic Park to the north with neighborhoods to the south. Market Street to the east connects to downtown Paterson. The westbound intersection approach along Market Street provides access to the Burger King restaurant just west of the intersection.

Existing Conditions Inventory

Crosswalk Striping

- Ladder crosswalks crossing Market Street along Spruce Street (southbound approach) and at eastern approach crossing Spruce Street

Curb Ramps

- Curb ramps are in good working order
- Pedestrian Signals and Push Buttons
- Pedestrian Signals installed on northeast, southeast, and southwest corners of intersection
- No countdowns at pedestrian signals
- Market Street crossing pedestrian signal provides twenty-three seconds of walk time in addition to ten more seconds of flashing red time; entire pedestrian light cycle is thirty-seven seconds long
- Spruce Street crossing pedestrian signal provides seven seconds of walk time in addition to seven more seconds of flashing red time; entire pedestrian light cycle is thirty-five seconds long



Sidewalk Network

- Intersection is served by sidewalks on both streets
- Significant obstructions along Spruce Street Sidewalk adjacent to Burger King; signal box and a utility pole are positioned very close to crosswalk.

Lighting

- No significant lighting at intersection

Key Issues and Concerns

- No pedestrian scaled lighting at intersection
- No pedestrian signal push buttons, no signal head present at driveway exit
- Commercial driveway at intersection is not standard design
- Obstructions to pedestrians along sidewalk at intersection
- Deficient wayfinding
- Long pedestrian crossing exposed to left turn movement

4.4.5 Spruce Street & McBride Avenue

This intersection is located west of downtown Paterson and adjacent to Paterson Great Falls National Historic Park. The intersection provides critical access to the Spruce Street Bridge, which connects neighborhoods on both sides of the Passaic River. The southern approach along Spruce Street connects residents and park visitors from the south to Paterson Great Falls NHP and Wayne Avenue to the north. The east-west approach along McBride Avenue connects downtown Paterson with Paterson Great Falls NHP and Wayne Avenue.

Existing Conditions Inventory

Crosswalk Striping

- Ladder crosswalks at all three crossings

Curb Ramps

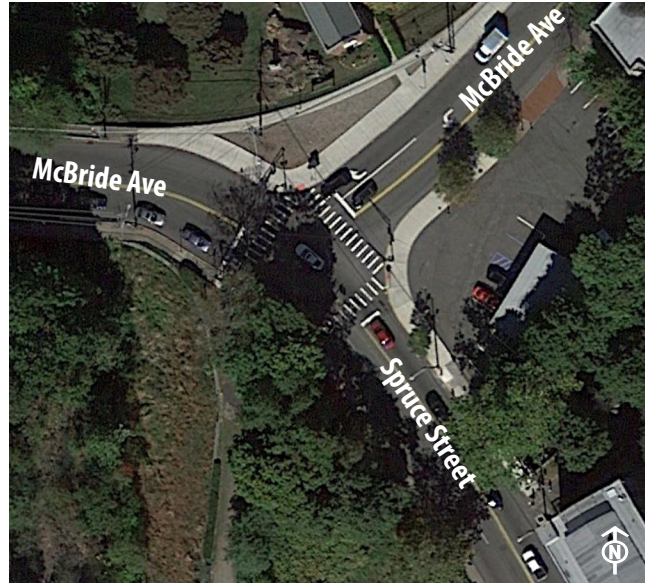
- Curb ramps are in good working order

Pedestrian Signals and Push Buttons

- Pedestrian Signals are installed at all corners of intersection
- McBride Avenue crossing pedestrian signal provides eight seconds of walk time in addition to fourteen more seconds of flashing red time; entire pedestrian light cycle is thirty seconds long
- Spruce Street crossing pedestrian signal twenty-seven seconds of walk time in addition to sixteen more seconds of flashing red time; entire pedestrian light cycle forty-eight seconds long

Sidewalk Network

- Sidewalks adjacent to intersection are wide and functioning well



Lighting

- No pedestrian scaled lighting at the intersection.

Key Issues and Concerns

- No pedestrian scaled lighting at this intersection
- Spruce Street crosswalk on the southern end of the intersection showing signs of wear.
- Very wide crossing
- Topography presents challenges
- Wide curb radii encourage high travel speeds
- Long wait times for pedestrians at crossings
- No separation between sidewalk and NHP Visitor Center parking lot.
- Curvature and geometrics at intersection promote high vehicle speeds when turning

4.4.6 McBride Avenue & Wayne Avenue

This intersection is located just south of the Passaic River crossing and adjacent to Paterson Great Falls NHP. The intersection provides critical access to Wayne Avenue, which connects neighborhoods on both sides of the Passaic River. The southern approach along McBride Avenue connects residents and park visitors from the south and west to Paterson Great Falls NHP and Wayne Avenue to the north. The east-west approach along McBride Avenue and Wayne Avenue connects downtown Paterson with Paterson Great Falls NHP and neighborhoods north of the Passaic River.

Existing Conditions Inventory

Crosswalk Striping

- Standard crosswalk striping at all crossings at this intersection

Curb Ramps

- Curb ramps are in good working order

Pedestrian Signals and Push Buttons

- Pedestrian Signals are installed at all corners of intersection
- No pedestrian push buttons at this intersection
- McBride/Wayne Avenue crossing pedestrian signal provides five seconds of walk time in addition to nine more seconds of flashing red time; entire pedestrian light cycle is twenty seconds long
- McBride Avenue crossing along the eastern side of the intersection has a walk time of twenty seconds in addition to thirteen more seconds of flashing red time; entire pedestrian light cycle thirty-eight seconds long



Sidewalk Network

- Obstructions on southwest corner of intersection

Lighting

- No pedestrian scaled lighting at intersection

Key Issues and Concerns

- No pedestrian scaled lighting at this intersection
- Utility and pedestrian signal poles create obstruction on southwest corner of intersection
- Curvature and geometrics at intersection promote high vehicle speeds when turning
- Difficult access isolates and diminishes importance of World War Memorial at southwest corner of McBride Avenue and Wayne Avenue

4.5 Trails

There are two historic trails around the Great Falls NHP, namely the Morris Canal Greenway and the Garrett Mountain Reservation bike and walk trail. The Morris Canal was an inland water transportation route connecting the Delaware River to the Passaic River in Newark. It was completed in 1831 and is a historic landmark. Passaic County has been actively working towards completing the greenway; some sections are completed and open to the public

already. Garrett Mountain Reservation is a 568-acre park located in southern Passaic County and is one of the National Natural Landmarks in New Jersey. A 2.1-mile long bike and walk trail runs around the reservation and can be accessed through Mountain Avenue. Both trails are in close proximity to the Great Falls NHP and provide an opportunity to develop links between them to create a scenic trail connecting the three historic landmarks.

4.6 Transit Assessment

4.6.1 Existing Transit Services

The Great Falls study area is well served by NJ TRANSIT bus routes and a number of private transit (“jitney”) services. Downtown Paterson is a hub for local and regional bus services at, and near, the Broadway Bus Terminal on Broadway one block west of Main Street. The primary transit corridors in the downtown/study area are Broadway, Main Street, and Market Street.

The Broadway Bus Terminal serves NJ TRANSIT routes that provide a variety of travel options including local, regional, and interstate connections.

Jitney services are operated primarily by Spanish Transportation (doing business as Express Service), which maintains a base on the north side of Broadway across from the bus terminal. Jitney services typically use NJ TRANSIT-marked bus stops throughout northern New Jersey and tend to follow similar routes. Express Service operates between Paterson, various points in Bergen and Hudson Counties, and New York City (with separate services to the Port Authority Bus Terminal and George Washington Bridge Bus Terminal).

Jitneys provide a valuable service in the study area, although operations are not always ideal. Routes are at times inconsistent and the service may compete for space and riders at NJ TRANSIT-marked bus stops. This interaction has been known to exacerbate traffic congestion along key corridors in the study area.

4.6.2 Bus Stop Utilization

The Broadway Bus Terminal is a significant hub for local and regional bus services. The terminal hosts the second highest combined boardings and alightings in the study area, after Market Street at City Hall. Other nearby stops in downtown Paterson are similarly busy. Overall, the cluster of bus stops centered around Main and Market Streets exhibit the highest weekday activity, with another busy bus stop at Main Street and College Boulevard. The busiest stops in the study area show weekday boardings or alightings exceeding 1,000 passengers, a comparatively significant level of bus usage given the confluence of local and regional services.

Transit shelters are limited and could be incorporated as part of streetscape and street furniture improvement schemes, similar to improvements already made to the Market Street corridor.

4.6.3 Transit Accessibility

The stops closest to the Paterson Great Falls NHP are located on Wayne Avenue at Maple Street and along Market Street between Mill and Spruce Streets. No bus routes currently pass directly along McBride Avenue and the Overlook Park area. Sidewalks and pedestrian connections between these nearest stops and the Overlook Park are adequate and continuous, if not in ideal physical condition throughout. A signalized intersection at McBride Avenue and Spruce Street offers safe pedestrian crossings; however, the westbound right turn from McBride Avenue to the merge with Spruce Street requires pedestrians to cross one unsignalized lane (motorists are to yield as they make the right turn).

Throughout downtown Paterson, transit accessibility is comprehensive as most major arteries have service on at least one bus/jitney route (some with several routes). Walking distances between stops and notable activity centers are short.

The recommendations from the Heritage Tourism Plan relative to linkages between the NHP and the NJ TRANSIT rail station should be advanced; this corridor is in need of upgrade and should be incorporated into streetscaping plans.

4.6.4 Circulation

The primary transit corridors in the downtown/study area are Broadway, Main Street, and Market Street. Stops along these three corridors have the greatest number of boardings and alightings – at times exceeding 1,000 daily passengers per stop. However, these primary transit stops are located approximately a half mile from Overlook Park. Enhancing connections between key transit stops and Overlook Park should be a priority when considering mobility improvements in the study area.

05 Gateway Access Alternatives

The technical elements of the study included street network analysis, origin destination data, development of the Gateway alternatives, and traffic modeling to evaluate the performance and efficacy of each alternative. Traffic simulations afford the opportunity to devise and test a variety of “what if” alternatives to evaluate their potential effectiveness and determine if there is merit in advancing to feasibility assessment.



Great Falls NHP Welcome Center

5.1 Street Network Analysis

Historical maps of Paterson from the turn of the century reveal a robust and well-connected street network as well as the presence of rail and the Morris Canal, indicating a long history of multimodal accessibility in the City. The Passaic River is a severe limiting factor that creates a natural boundary on two sides – north and east – while also bisecting the western half of the city. The River has always hampered both local and regional mobility in Paterson and effectively channels through trips to a limited number of crossings to the north and west – essentially the same six crossings that exist today. Topography is also a substantial factor as the elevation rises significantly in the vicinity of the Great Falls.

During the highway-building era of the mid-twentieth century, much of Paterson’s street network south of Grand Street and west of Main Street was removed and Interstate 80 and New Jersey Route 19 now occupy areas that once hosted numerous city streets. Large sections of the Morris Canal were also removed. NJ 19 as constructed connects the Garden State Parkway to I-80 and downtown Paterson, and was originally proposed as the Paterson spur of the Garden State Parkway that was to run all the way north to Wayne Township. Public opposition cancelled plans for the full alignment and NJ 19 now dumps its traffic to Grand and Oliver Streets, where traffic then finds its way to destinations often north and west of the City.



In place of its once robust street grid, Paterson now includes a mix of one- and two-way streets that sometimes change direction from block to block. Left turns are limited by the one-way street pattern, and many intersections experience long queues during the peak hours.

Along with the removal of large sections of the street grid south of Grand Street and west of Main Street, a number of local streets were also removed or bisected. Jersey and Pine Streets once ran parallel to Market and Mill Streets; only short segments still exist. All four once connected Market and Ellison Streets through to South Paterson, providing numerous and redundant travel options for both local and regional through trips. Oliver, Ward, Hamilton and Slater Streets have also been severely cut back from their former alignments. In their place some additions were made, including the diagonal spur of Tony Lalama Boulevard and the reconfiguration of Paterson Street as the four-lane suburban style arterial that is Memorial Drive today.

A series of factors therefore come together to both create and exacerbate Paterson's daily traffic woes:

- The Passaic River hampers both local and regional mobility and effectively channels many through trips to a limited number of bridge crossings
- The removal of much of Paterson's street network south of Grand Street and west of Main Street has severely degraded the city's street grid
- The alignment of Interstate 80 and New Jersey Route 19 and their attendant ramps dump significant volumes of highway traffic directly onto city streets and through local neighborhoods and Historic District
- The arrangement of these city streets into a confusing web of one- and two-way streets that sometimes change direction from block to block
- The resulting congestion and long queues at intersections impact Paterson residents, students, and visitors on a daily basis

5.2 Origin Destination Data

Traffic data was collected during the fall of 2015 to support design and testing of the Gateway scenarios, and evaluate the relative pros and cons of each alternative.

The project team used state-of-the-art aerial photography to support collection of traffic data, including intersection counts, mid-block volumes, and point-to-point travel patterns. These aerial photography methodologies enable the collection of origin and destination data, meaning the ability to identify where and when an individual vehicle enters the study area, the route taken, and the final destination point.

Each vehicle and trip can be seen and evaluated for what it is: a short local trip, a locally-generated trip leaving the city to access the highway, a vehicle coming from I-80 and passing fully through the Great Falls area, or a highway traveler destined to a local Paterson destination.

These techniques provide a depth of data quality, coverage, and analysis not available using traditional traffic data collection methodologies, and support an accurate depiction and simulation of traffic flow, patterns, and conditions using the Quadstone Paramics micro-simulation platform. Additional detailed modeling of the Spruce Street Bridge was undertaken using Synchro to provide data and analysis to support the bridge design effort.

Of particular interest to the project team was the magnitude of pass through traffic and the principal travel patterns during the peak periods. The data extraction and analysis effort was designed to isolate these principal movements, in particular the interchange of traffic between I-80/NJ 19 and the City of Paterson and the major bridge crossings of the Passaic River at Spruce Street, West Broadway and Main Street.

These data confirm that the through trips and the cordon points at the I-80 and NJ 19 ramps,

and the Spruce Street and northern crossings of the Passaic River experience the largest traffic flows during the AM peak period. The following diagrams use bandwidth plot techniques to indicate both the magnitude and pattern of the principal moves, including:

- 1,695 southbound trips counted at Wayne Avenue, 63% (1068 trips) destined directly to the I-80/NJ 19 ramps
- 1,990 southbound trips counted at northern crossings of the Passaic River, 47% (935 trips) destined to the I-80/NJ 19 ramps
- 2,730 northbound trips counted at the I-80/NJ 19 ramps, 39% (776 trips) destined to Wayne Avenue and 34% (677 trips) destined to the northern crossings of the Passaic River
- 2,330 northbound trips originated locally within the Great Falls study area, 43% (729 trips) destined to the I-80/NJ 19 ramps and 14% (237 trips) destined to the northern crossings of the Passaic River

Screenline analysis demonstrates that the desire lines of these trips goes directly through Paterson with no feasible adjacent alternative. Paterson must find ways to tame these trips and the negative impact they impart to the City and its residents.

These volumes and movements are significant and recur on a daily basis, channeling thousands of regional rush hour trips through Paterson's neighborhoods, past its schools and through the Great Falls NHP and Historic District, diminishing quality of life, safety, and mobility, each and every day.

Great Falls Circulation Study

Southbound Traffic Flows - AM Peak Period



Great Falls Circulation Study

Northbound Traffic Flows from I-80/NJ19 - AM Peak Period

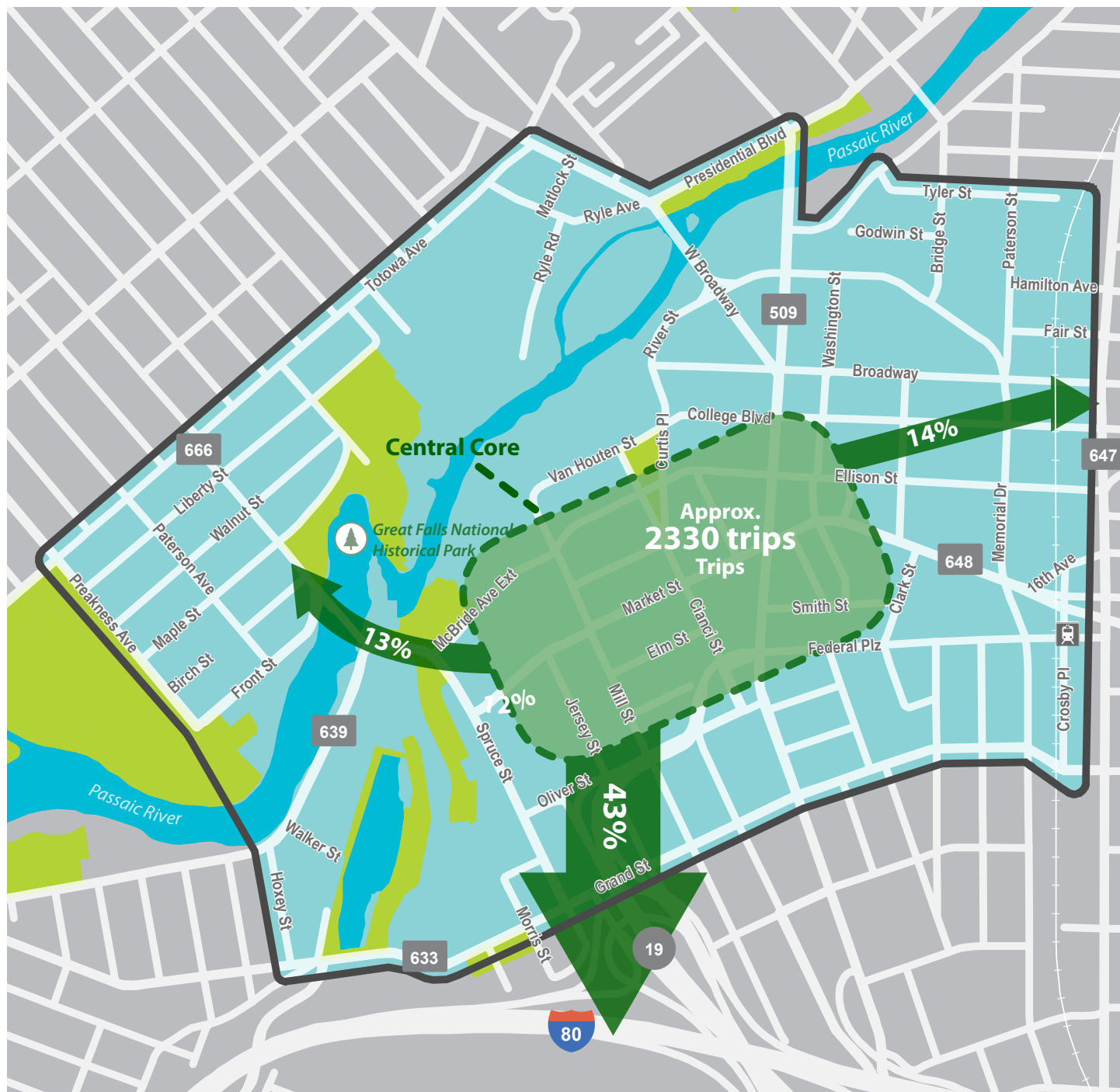


0 0.25 0.5 Miles



Great Falls Circulation Study

Internally Generated Traffic Flows - AM Peak Period



0

0.25

0.5

Miles



5.3 Gateway Access Alternatives

Observations and findings from the community profile, outreach, and coordination activities were combined with the technical elements of the study to develop candidate Gateway Access alternatives. Each alternative presents a different strategy to achieve the vision and goals of the Circulation Study.

5.3.1 One-Way Street Pair Scenario

Networks of two-lane, one-way streets have the ability to move large volumes of traffic due to expanded directional capacity, reduction in crossing volumes, and simplified intersection design and operations. The first scenario stresses traffic-engineering and seeks to maximize traffic flow by enhancing two parallel streets that afford north-south mobility through the center of the Historic District: Cianci Street and Mill Street, as depicted in Figure 4 on page 49. Both currently mix one- and two-way segments and provide direct but limited connections to the NJ-19 on-ramps at Oliver Street.

The City of Paterson City-Wide Transportation Assessment recommended creating a one-way pair through the downtown by converting Cianci Street to one-way northbound and Mill Street to one-way southbound.

Despite the potential benefit in throughput, one-way street systems can lead to increased travel speeds and reduced pedestrian mobility in urban environments. Left turn opportunities also become more limited and some trips become longer resulting in more miles traveled overall. The additional capacity afforded during the peak hours is also unneeded during the vast majority of the day, leaving wide streets that are conducive to high speed travel but are counterproductive to pedestrian mobility and safety and difficult to cross, especially for vulnerable users including children and seniors.

5.3.2 Two-Way Street Pair Scenario

Networks of two-way streets have the ability to improve travel conditions by creating more route choice options and shorter and more direct trips between origins and destinations. Left turn opportunities become more frequent – at each intersection instead of every second or third intersection – and queues may be also reduced. Research and recent success stories of one- to two-way conversions demonstrate improved pedestrian conditions and speeds that are more compatible with the walkable downtown model.

The two-way scenario was implemented by converting the parallel Cianci and Mill Streets to two-way operations along the full alignment between Ellison and Oliver Streets and reconnecting Mill Street to Grand Street by installing a new traffic signal at Oliver Street, as depicted in Figure 5 on page 52. This configuration expands route choice and options through the downtown Historic District, creates direct access to and from I-80 and NJ-19, and provides relief to the parallel two-way Main and Spruce Street corridors.

One-way to two-way conversions can improve mobility and travel options, reduce travel speeds, and enhance walkability. The Greater Spruce Street Neighborhood Plan recommended improved walkability throughout the Spruce Street neighborhood area.

The two-way scenario also affords the option for a multi-phase implementation, starting with the Cianci/Mill pair and then expansion in the future with a two-way pairing of College and Ellison Streets between Memorial Drive and Mill Street.

5.3.3 Reduced-Impact Two-Way Street Scenario

Full implementation of the two-way Cianci/Mill scenario has the potential for significant impact to the alignment and geometrics at the Mill/Oliver Street intersection and costly removal of a portion of the existing dividing barrier. This new signal would periodically stop traffic exiting the NJ-19 off-ramp, whose two lanes reach 2,100 vehicles during the AM peak hour.

A reduced impact version of this scenario would limit the Cianci/Mill two-way pair conversion to the segment connecting Ellison and Oliver Streets at a much reduced cost and impact. See Figure 6 on page 55. This alternative still provides much of the benefit of the two-way conversion: expanded travel routes and options, left turn queue mitigation, speed reduction and pedestrian crossing enhancements, improved walkable downtown street environment, but without the greater impact to the highway off-ramps and traffic volumes.

A series of additional improvements was also tested with this scenario:

- New traffic signal at Spruce/Oliver Street intersection – Comments, observations, and crash data indicate the benefit of installing a signal at this currently stop-controlled intersection, with a protected left-turn lane and phasing.
- Direct connect of Spruce Street south of Grand Street to the I-80 westbound ramp – Vehicles destined to I-80 westbound currently turn left at the traffic signal and then turn right to access the I-80 on-ramp. This direct connection from Spruce Street to the I-80 ramp would simplify signal operations and mitigate left turn demand, but would impact the adjacent residential neighborhood and could have a high price tag for implementation

- Spruce Street Bridge three-lane “Boulevard” alignment – Traffic data and O-D patterns indicate that the current four-lane bridge cross section could be reduced to three lanes, significantly enhancing pedestrian mobility and safety, as well creating an enhanced streetscape and NHP visitor experience. Large numbers of students cross this bridge each morning and afternoon. Eastbound traffic queues impede the ability to make left turns to and from Front Street, and the current “Don’t Block the Box” striping has little benefit. This proposed three-lane bridge alignment removes the left turns from the intersection configuration and distributes these trips among the adjacent intersections, providing significant benefit to queue mitigation and addressing the issues that impede pedestrian mobility. The three-lane concept is also consistent with recommendations of the Passaic County Heritage Tourism Plan, which calls for reconfiguration of the Spruce Street Bridge to serve as a gateway feature.
- “Boulevard” alignment with McBride Ave Extension One-way at Spruce Street – Based on future Great Falls NHP expansion plans, it may be beneficial to close the eastbound segment of the McBride Avenue Extension at the Spruce Street intersection, keeping just the westbound segment open and fully operational, and providing the opportunity to significantly reduce the pedestrian crossing area and create an expanded streetscape plaza environment. This partial closure of the McBride Avenue Extension at the Spruce Street intersection is consistent with recommendations of the Passaic County Heritage Tourism Plan, which recommended examination of closing the McBride Avenue Extension entirely to vehicular traffic in the NHP area to enhance the gateway and NHP visitor experience.

5.4 Traffic Modeling

The three Gateway Access alternatives were tested using the Quadstone Paramics micro-simulation traffic model and their relative performance was evaluated based on traditional performance measures. Performance Measures included the following:

- **Vehicle Miles Traveled (VMT)** – total miles driven by each vehicle from origin/starting point to destination/ending point. A reduction would indicate that vehicles are able to find shorter routes either through reduced congestion in the network, through new and shorter travel options created by changes to the network, or some combination of both. Increased VMT would indicate that changes led to fewer travel options and/or more congestion.
- **Vehicle Hours Traveled (VHT)** – total time required to make each O-D trip through the network. A reduction in VHT indicates reduced congestion and the ability to complete the desired trips in less time overall. An increase in VHT indicates more time required to complete the desired trips, owing to either more congestion or fewer and/or longer trip options, such as the creation of one-way pairs.
- **Average Speed** – average speed of each trip (VHT/VMT).
- **Average Trip Travel Time** – the average time required for each vehicle to make its trip from origin to destination
- **Total Vehicles** – the total number of vehicle trips. Any reduction in trips taken indicates worsening congestion compared to the existing baseline condition.

5.4.1 One-Way Street Pair Scenario

The one-way street pair scenario is a traffic engineering concept that creates a network of one-way, two-lane streets designed to maximize traffic flow.

- **Design Elements**
 - › Cianci Street: Ward Street to College Boulevard
 - › Mill Street: Ellison Street to Mill Street
 - › Reverse flow of Elm Street; keep as one-way
 - › New Traffic Signals: Mill at Oliver Street, Spruce at Oliver Street
 - › Upgrade traffic signals: Ward at Cianci Street
- **Leverages Cianci and Mill Street pairing opportunity**
- **Recommended in City-Wide Transportation Assessment (2010)**
- **No loss of existing on-street parking**
 - › Cianci Street parking between Market and Passaic Street currently prohibited
 - › Mill Street parking on right side south of Ward Street currently prohibited

The one-way street pair scenario Paramics micro-simulation provides the following results:

- **Very small changes to overall performance**
- **No detriment to number of vehicles completing trips**
- **VMT increases slightly, typical finding for one-way street systems, but not significantly**

■ Pros

- › No loss of on-street parking
- › Provides relief to through trips for northbound and southbound traffic
- › Simplifies pedestrian crossing of Passaic Street at Cianci Street

■ Cons

- › Some proposed street changes, in particular at Mill and Oliver Street, may result in significant community impact and cost
- › Favors through traffic over local mobility and pedestrian access
- › One-way, two-lane configuration has excess capacity outside of peak hours and demand
- › One-way street configuration may result in higher speeds and a decrease in pedestrian mobility

Figure 4: One-Way Street Pair Scenario

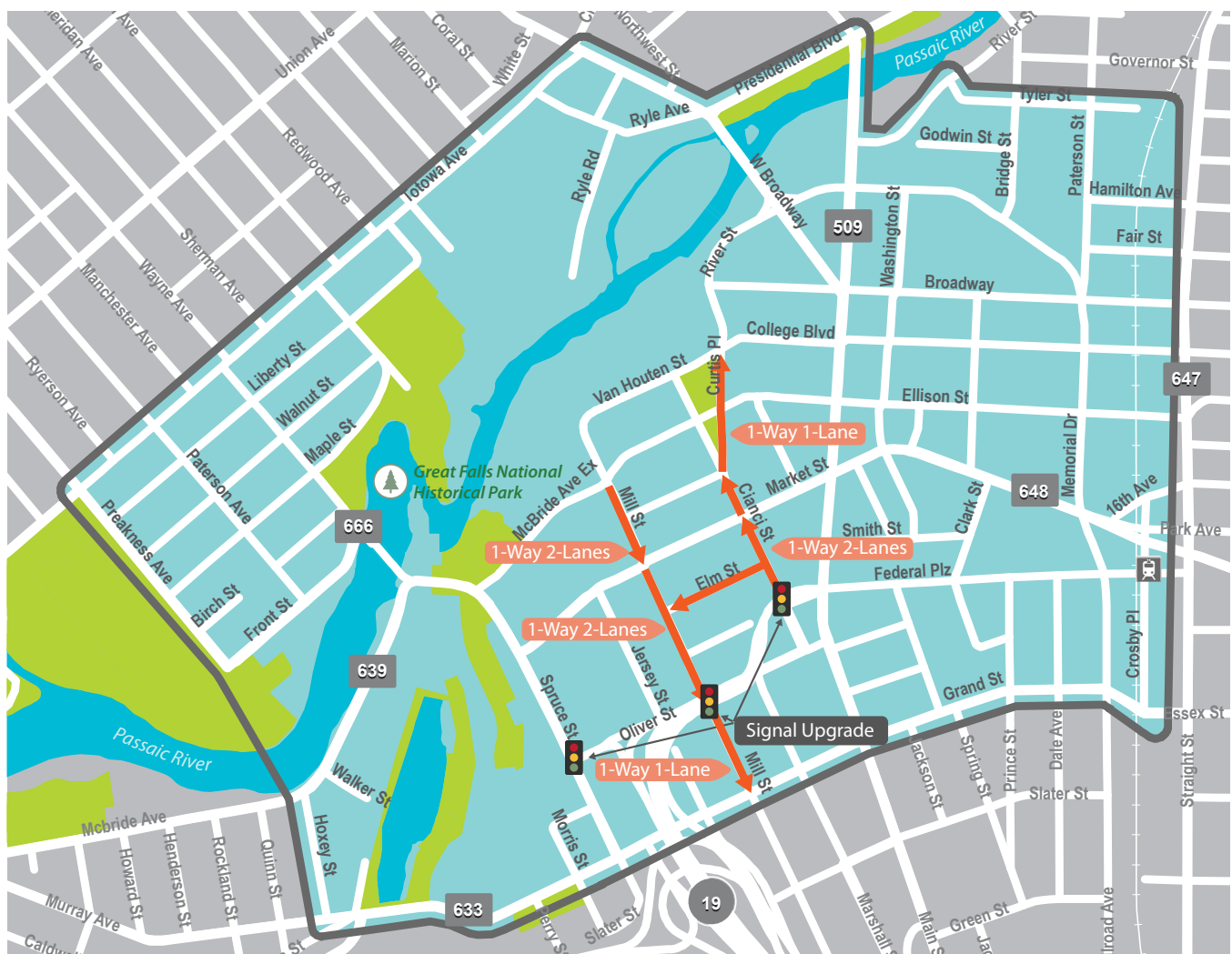


Table 1: One-Way Street Pair Scenario Statistics

Scenario	VMT	VHT	Mean Speed (mph)	Avg TT (min)	Veh
Base					
Existing	8,909	604	14.80	2.84	12,757
One Way					
Sc1.1 - Cianci - One-Way					
Two-Way 1 Lane from Ward to Elm, One-Way 2 Lanes from Elm to Market and One-Way 1 Lane from Market to College	8,923	600	14.90	2.82	12,756
	0.16%	-0.61%	0.68%	-0.59%	-0.01%
Sc1.3 - Mill - One-Way					
(Sc1.1 + One-Way 2 Lanes from College to Ellison, One-Way 1 Lane from Ellison to Ward. & Reverse direction Elm St (EB -> WB) & One-Way 2 Lanes from Ward to Market)	8,921	601	14.80	2.83	12,757
	0.14%	-0.40%	0.00%	-0.41%	0.00%
Sc1.7 - Mill One-Way 2 Lanes & New Traffic Signal at Ward					
Sc1.3 + One-Way 2 Lanes from College to Ward & 2Phase Signal @ Ward	8,927	604	14.80	2.84	12,757
	0.21%	0.08%	0.00%	0.12%	0.00%
Sc1.8 - Connect Spruce to I-80 Ramp					
Sc1.7 + Connection to I-80 via Spruce St Ramp	8,917	604	14.80	2.84	12,756
	0.10%	0.10%	0.00%	0.12%	-0.01%
Sc1.9 - Signal Improvements Ward @ Main					
Sc1.8 + Signal Improvement at Ward @ Main. Additional green time to lead left phase	8,920	602	14.80	2.83	12,756
	0.12%	-0.32%	0.00%	-0.29%	-0.01%

5.4.2 Two-Way Street Pair Scenario

The two-way street pair alternative is a balanced, multi-modal scenario designed to prioritize travel options and enhance pedestrian mobility rather than simply juStreet moving more traffic.

- The two-way pair scenario begins restoration of the historic Paterson street grid
- Counteracts impacts of congestion, thr traffic, trucks, speeding
- Design Elements
 - › Cianci Street: Ward Street to College Boulevard; two-way conversion
 - › Mill Street: Ward Street to Ellison Street ; two-way conversion
 - › Ellison Street: Mill Street to Memorial Drive; two-way conversion
 - › College Boulevard/Van Houten Street: Mill Street to Memorial Drive ; two-way conversion
 - › New Traffic Signal: Spruce at Oliver Street
 - › Upgrade traffic signal: Ward at Cianci Street
- Leverages Cianci and Mill Street pairing opportunity with College/Ellison pair to create expansive two-way network
- No loss of existing on-street parking on Cianci and Mill Streets
 - › Cianci St parking between Market and Passaic St currently prohibited
 - › Mill St parking on right side south of Ward Street currently prohibited
- Minor loss of existing on-street parking on College/Ellison/Van Houten
 - › Removes up to 24 of 50 existing spaces

on Ellison/Van Houten Streets

- › Removes 0 of 33 existing spaces on College Boulevard

The two-way street pair scenario Paramics micro-simulation provides the following results:

- Overall very small decrease in mean speed and trip time
- No detriment to number of vehicles completing trips
- VMT decreases about 1%, typical finding for two-way street systems
- No significant impact to overall performance measures
- Pros
 - › No loss of on-street parking on Cianci and Mill Streets
 - › Calms traffic, enhances travel options and left turn opportunities
 - › Favors local mobility and pedestrian access over through traffic
 - › Provides relief to through trips for northbound and southbound traffic
 - › No significant cost or construction impacts
 - › Two-way, one-lane configuration has appropriate capacity outside of peak hours and demand
 - › No loss of parking on College Avenue
- Cons
 - › Impacts to existing on-street parking on limited to Ellison Street: estimated loss of 24 of existing 50 parking spaces
 - › Parking impact could be significant; should studied further in coordination with the City of Paterson and Paterson Parking Authority

Figure 5: Two-Way Street Pair Scenario

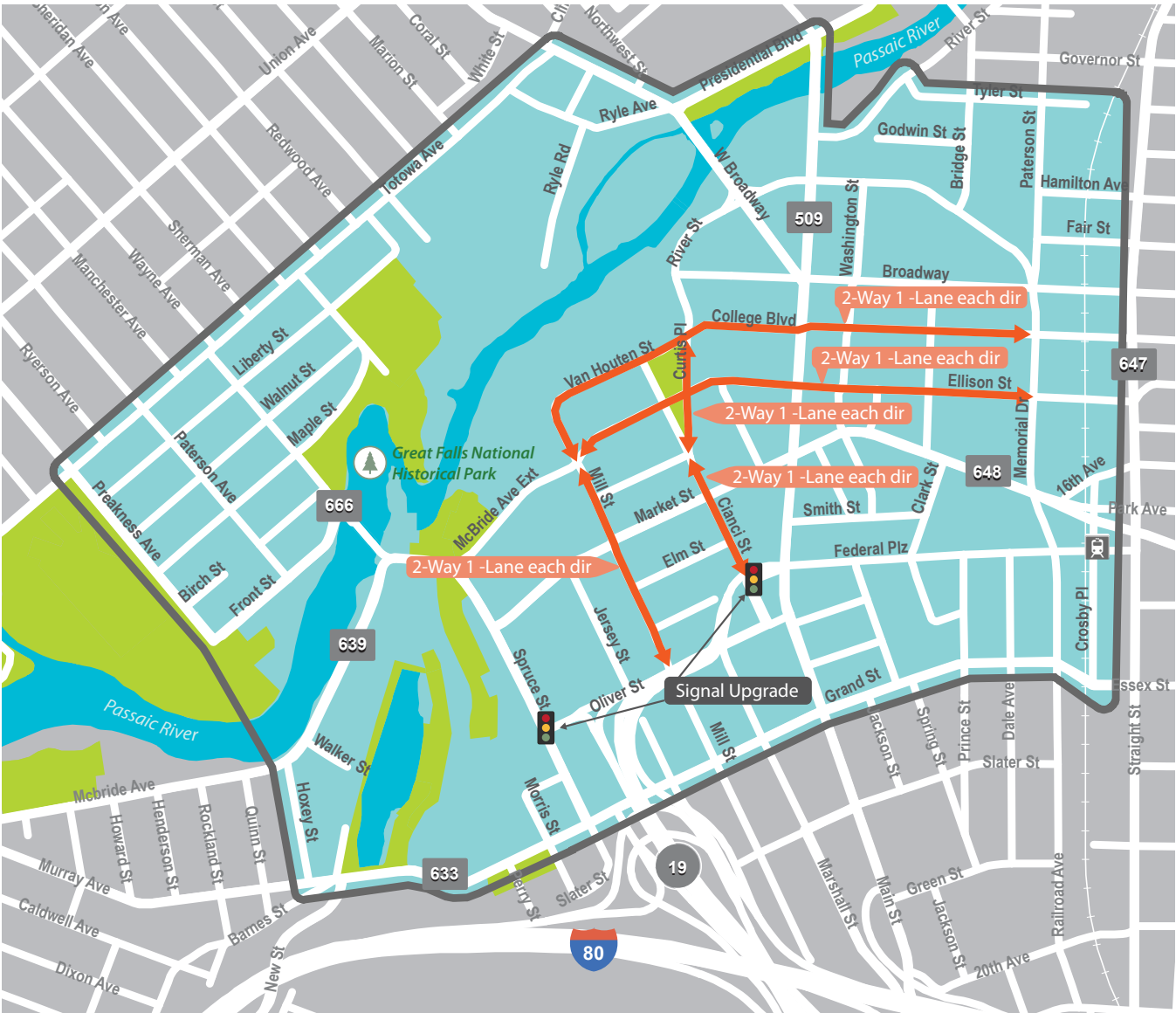


Table 2: Two-Way Street Pair Scenario Statistics

Scenario	VMT	VHT	Mean Speed (mph)	Avg TT (min)	Veh
Base					
Existing	8,909	604	14.80	2.84	12,757
Two Way					
Sc2.1 - Cianci - Two-Way Two-Way 1 Lane from Ward to College (Note: Segment between Ellison and College is 2 Lanes SB) & 3Phase signal improvement at Market. Assumes speed along this two-way will be reduced (<20mph). Signal Improvement at Main @ Ward	8,901	605	14.70	2.85	12,757
	-0.08%	0.28%	-0.68%	0.29%	0.00%
Sc2.2 - Mill - Two-Way Sc2.1 + Two-Way 1 Lane from Ward to College & Connect to Ward with 2Phase Signal (Mill SB Two Lane Approach at Ward, SBR Channelized & SBT & Assumes speeds along these two-ways will be reduced (<20mph)	8,871	615	14.40	2.89	12,757
	-0.42%	1.92%	-2.70%	1.94%	0.00%
Sc2.3 - Ellison - Two-Way Sc2.2 + Two-Way 1 Lane from Mill to Memorial	8,833	609	14.50	2.87	12,756
	-0.85%	0.92%	-2.03%	0.94%	-0.01%
Sc2.4 - College - Two-Way Sc2.3 + Two-Way 1 Lane from Cianci to Memorial	8,816	609	14.50	2.86	12,755
	-1.04%	0.85%	-2.03%	0.88%	-0.02%
Sc2.5 - Connect Spruce to I-80 Ramp Sc2.4 + Connection to I-80 via Spruce St Ramp	8,809	610	14.50	2.87	12,754
	-1.12%	1.03%	-2.03%	1.06%	-0.02%

5.4.3 Reduced-Impact Two-Way Street Scenario

The reduced-impact two-way street scenario combines the concept of beginning to restore the street grid with the Spruce Street Bridge 3-lane design concept. Both advance a balanced approach designed to prioritize travel options and enhance pedestrian mobility.

- Pairs two-way conversion with Spruce Street 3-lane bridge concept
- Begin restoration of historic Paterson street grid
- Counteract impacts of congestion, through traffic, trucks, speeding
- Significant traffic calming and pedestrian mobility benefits
- Design Elements
 - › Cianci Street: Ward Street to College Boulevard; Two-way conversion
 - › Mill Street: Ward St to Ellison Street; Two-way conversion
 - › New Traffic Signal: Spruce Street at Oliver Street
 - › Direct connection Spruce Street to I-80 westbound on-ramp
 - › Spruce Street three-lane “Boulevard” alignment
 - › McBride Extension (Eastbound Lane) closure at Spruce Street intersection
- Leverages Cianci and Mill Street pairing opportunity
- No loss of existing on-street parking on Cianci and Mill Streets
 - › Cianci St parking between Market and Passaic St currently prohibited
 - › Mill St parking on right side south of Ward Street currently prohibited

The reduced-impact two-way street scenario Paramics micro-simulation provides the following results:

- No significant impact to overall performance measures without McBride Extension eastbound closure
- No detriment to number of vehicles completing trips
- Minor performance measure degrading with McBride Extension closure
- Pros
 - › No loss of on-street parking on Cianci and Mill Streets
 - › Calms traffic, enhances travel options and left turn opportunities
 - › Favors local mobility and pedestrian access over through traffic
 - › Provides relief to through trips for northbound and southbound traffic
 - › Spruce Street 3-lane concept enhances Safe Routes to Schools and provides Significant traffic calming and pedestrian mobility benefits
 - › Two-way, one-lane configuration has appropriate capacity outside of peak hours and demand
- Cons
 - › Spruce Street direct connection to I-80 ramp is anticipated to have a high cost and indicates minimal performance measure benefit
 - › Avoids impact to on-street parking on Ellison Street

Figure 6: Reduced-Impact Two-Way Street Scenario

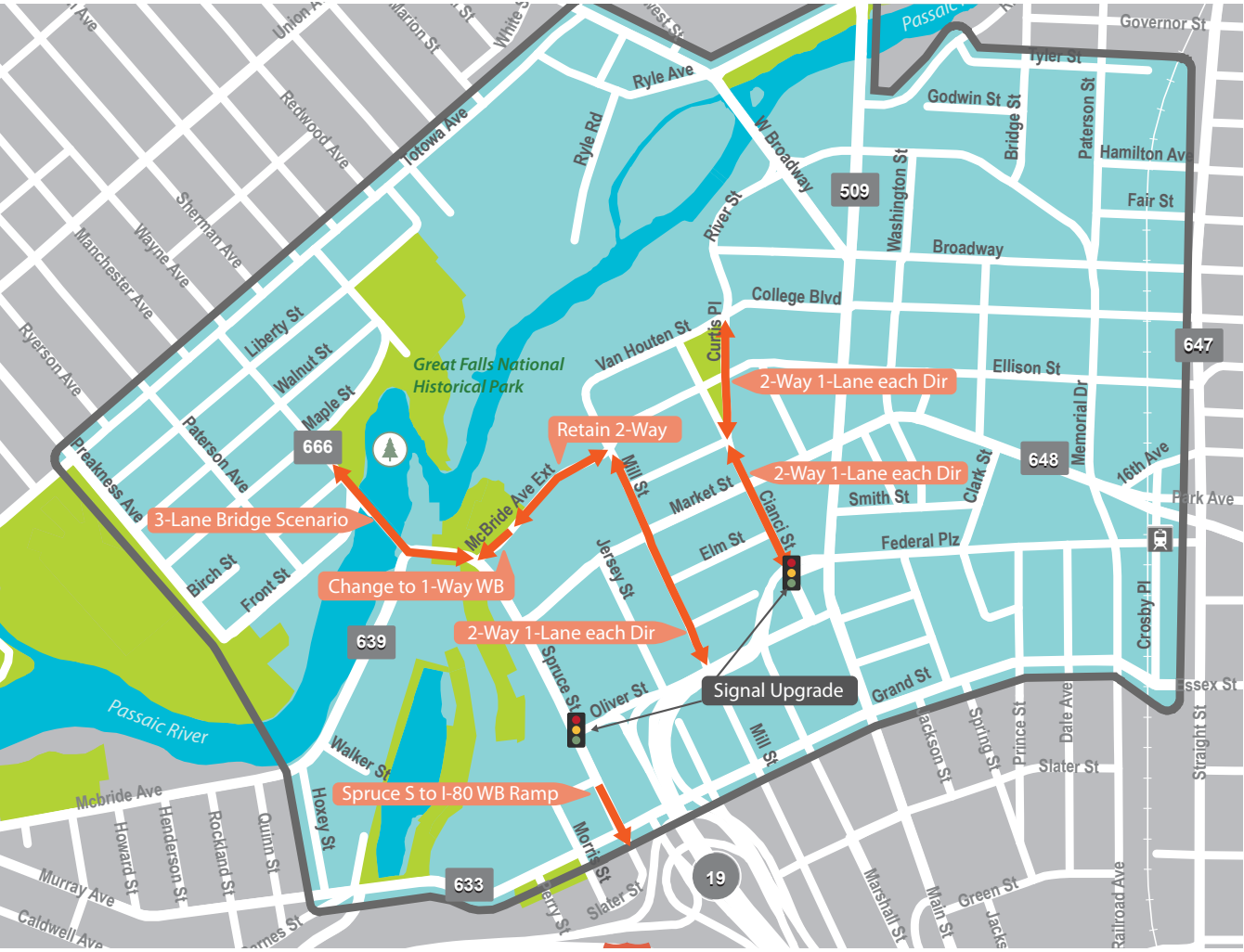


Table 3: Reduced-Impact Two-Way Street Scenario

Scenario	VMT	VHT	Mean Speed (mph)	Avg TT (min)	Veh
Base					
Existing	8,909	604	14.80	2.84	12,757
Two Way					
Sc4.1 - Cianci Two-Way + Spruce @ Oliver Signal Sc2.1 + Signal	8,904	605	14.70	2.85	12,757
	-0.05%	0.25%	-0.68%	0.23%	0.00%
Sc4.2 - Connection to I-80 Ramp Sc4.1 + Connection to I-80 via Spruce St Ramp	8,893	606	14.70	2.85	12,756
	-0.18%	0.34%	-0.68%	0.35%	-0.01%
Sc4.3 - Spruce Street Bridge-Spruce Street three-lane "Boulevard" alignment Sc4.2 + Spruce Street Bridge Design Concept (Ban Wayne Avenue NB LT & Front NB LT)	8,915	606	14.70	2.85	12,756
	0.08%	0.41%	-0.68%	0.41%	-0.01%
Sc4.4 - Closure McBride Extension (Eastbound) Sc4.3 + McBride Extension (Eastbound Lane) closure & Reconfigured Lane Designation along Spruce SB	8,944	615	14.60	2.89	12,756
	0.40%	1.83%	-1.35%	1.82%	-0.01%

06 Gateway Vision Plan

The Great Falls Gateway Vision Plan is driven by examination of study area demographics, deficiencies in infrastructure and pedestrian facilities, and the long standing impacts of traffic and congestion that hamper quality of life every day. Together these factors drive the need to develop a network of multimodal Complete Streets to better serve the needs of Paterson residents, visitors, and business.



Decorative tile at Hinchliffe Stadium

The community profile of the Great Falls Circulation Study Area reveals a diverse but poor community.

- Paterson has the 11th lowest median household income in New Jersey
- 55% of households lack access to an automobile, four times the state average
- Many of Paterson's 37,200 students walk to school and are exposed to heavy peak hour traffic and deficient pedestrian conditions

Paterson has a long history of disproportionate impacts caused by traffic and the chaos of peak hour congestion. Exposure to heavy traffic and trucks, creates pedestrian risks, and negative quality of life impacts for residents and visitors of all ages on a daily basis.

The Spruce Street Bridge and Spruce Street Corridor is the gateway to the Great Falls NHP and downtown historic district. The corridor is essential to both school access and as a principal route for through traffic, connecting I-80 and NJ 19 to the areas to the north and west of the Great Falls area. However, the current bridge and roadway design are incompatible with a safe, accessible pedestrian environment and ill-suited to the Gateway function. Origin-destination data indicate heavy flows of peak hour through traffic and few alternatives are available to remove this traffic from Paterson's streets.



Photo Credit: Terence McKenna



Photo Credit: Terence McKenna

Five-Part Gateway Vision Plan

The Great Falls Circulation Study advances a five-part Gateway Vision Plan to implement the study vision and goals. The Vision Plan is a program of multimodal transportation improvements that make Paterson a more welcoming and attractive place for education, tourism, and business and enhances its role as the regional center.

Traffic modeling and capacity analysis demonstrate the effectiveness of the proposed improvements.

Part 1: Re-make Spruce Street Corridor as an Urban Boulevard

- Corridor provides a direct connection between I-80 and NJ 19 highway ramps and areas to the north and west
- Target improvements that enhance pedestrian safety and mobility and access to schools, tourism, business
- Address congested river crossings and the impact of through-traffic
- Use traffic calming to deter speeding and aggressive driving

Part 2: Prioritize Two-way Street Conversions to Mitigate Traffic Impacts

- Begin to restore the historic street grid with prototype two-way street conversions
- Leverage Cianci and Mill Street pairing opportunity to mitigate roadway congestion in ways that are compatible with pedestrian mobility and vibrant street life
- Proposed two-way streets conversions are low cost and low impact to the community
- Promote street design that counteracts the impact of congestion, thru traffic, trucks, speeding

Part 3: Advance Local Intersection Improvements to Enhance Multimodal Mobility City-Wide

- Institute traffic calming as a staple of Paterson traffic engineering practice
- Implement pedestrian crossings improvements at key intersections as prototypes to be replicated across the city
- Shift the balance of roadway design to favor pedestrians instead of through traffic

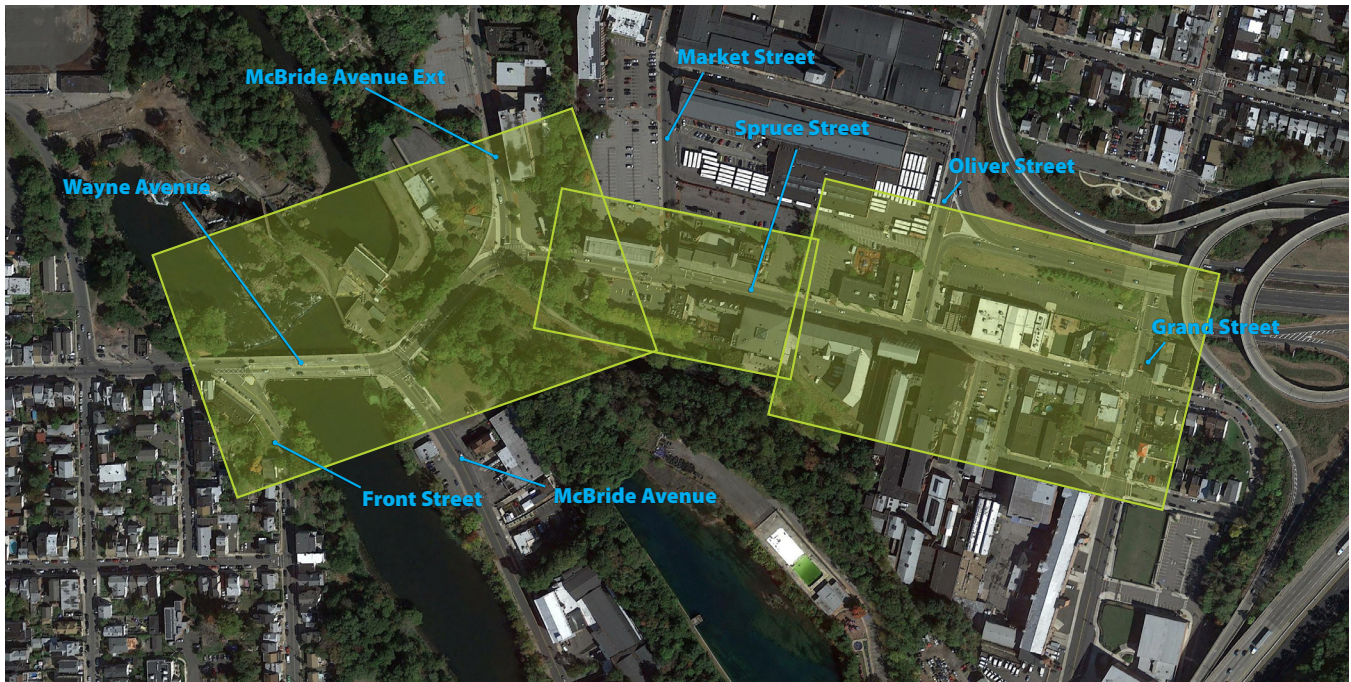
Part 4: Introduce Streetscaping, Wayfinding, and Placemaking Elements

- Rename streets to create a more consistent and uniform navigational experience
- Preserve downtown and historic district streets as truck-free zones
- Advance City-Wide Safe-Routes-to-Schools travel plan initiative
- Streetscaping, lighting, tree plantings, and other features that meet standards set for the Great Falls NHP and Historic District
- Provide bus shelters that enhance transit access and the build environment
- Develop consistent and intuitive wayfinding
- Improvements should be consistent with Great Falls Historic District design standards

Part 5: Long-Term Vision Plan

- Work with City, State, regional, and NHP partners to explore and advance roadway and transit projects of regional significance, and coordinate plans with development of Great Falls NHP facilities and amenities and restoration of Hinchliffe Stadium

Part 1 - Aerial Markup Locations



Part 1: Spruce Street Urban Boulevard

The first step re-envision the Spruce Street Corridor as an urban boulevard with a reduced cross section and enhanced pedestrian improvements more consistent with its role as a gateway to the Great Falls NHP and downtown historic district. Passaic County is currently advancing the design phase of the Spruce Street Bridge bridge deck replacement, presenting the opportunity to incorporate a Complete Streets framework into the design project. Traffic microsimulation and capacity analysis indicate no significant detriment to traffic flow and intersection performance under the proposed concept.

Proposed improvements include:

Spruce Street Bridge Recommendations - Front Street to McBride Avenue Extension

- Reconfigure Spruce Street Bridge as a three-lane, traffic calmed Street
- Remove left turn between Wayne Avenue and Front Street to maintain three-lane cross section
- Reinforce bridge crossing as a Safe Route to School
- Widen sidewalks to 8 ft. for pedestrians and scenic overlook
- Implement innovative Green Street stormwater management elements
- Use curb extensions to shorten pedestrian crossings and manage traffic speeds

- Install high visibility crosswalk striping, ADA-compliant curbs at all intersections

Spruce Street at Market Street

- Widen sidewalk adjacent to Dawn Treader School to provide adequate pedestrian way
- Install high visibility crosswalk striping, ADA-compliant curb ramps
- Install diverter and pedestrian refuge at northbound intersection approach
- Narrow existing business driveway and add traffic signal head
- Relocate utilities, signal control box, and sidewalk obstructions adjacent to intersection

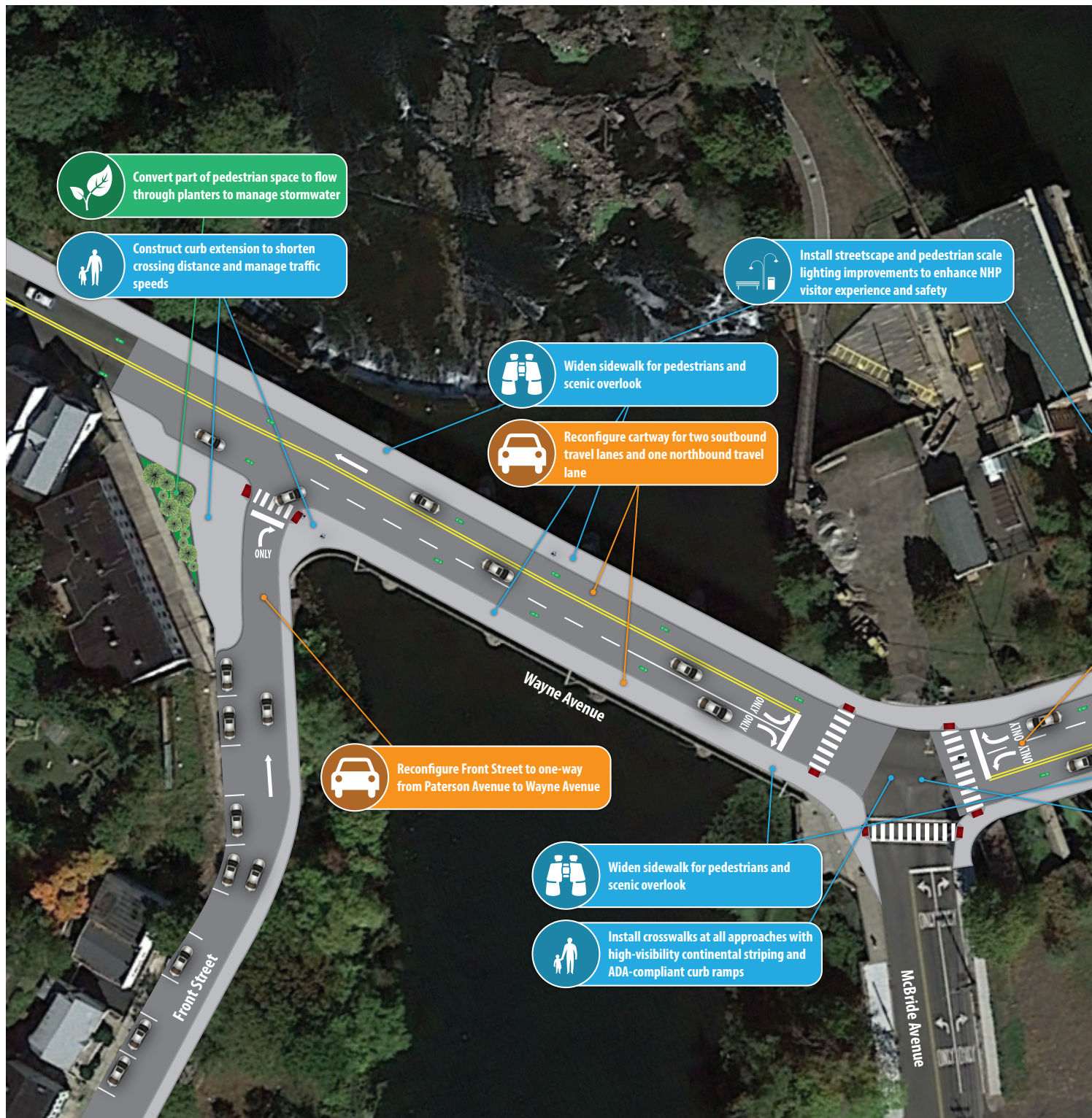
Spruce Street at Oliver Street

- Install new traffic signal with exclusive left turn lane and phasing along southbound approach
- Provide separate left- and right-turn lanes at Oliver Street approach to new traffic signal
- Install high visibility crosswalk striping, ADA-compliant curb ramps
- Install diverter and pedestrian refuge at northbound intersection approach to narrow roadway

Spruce Street "Boulevard"

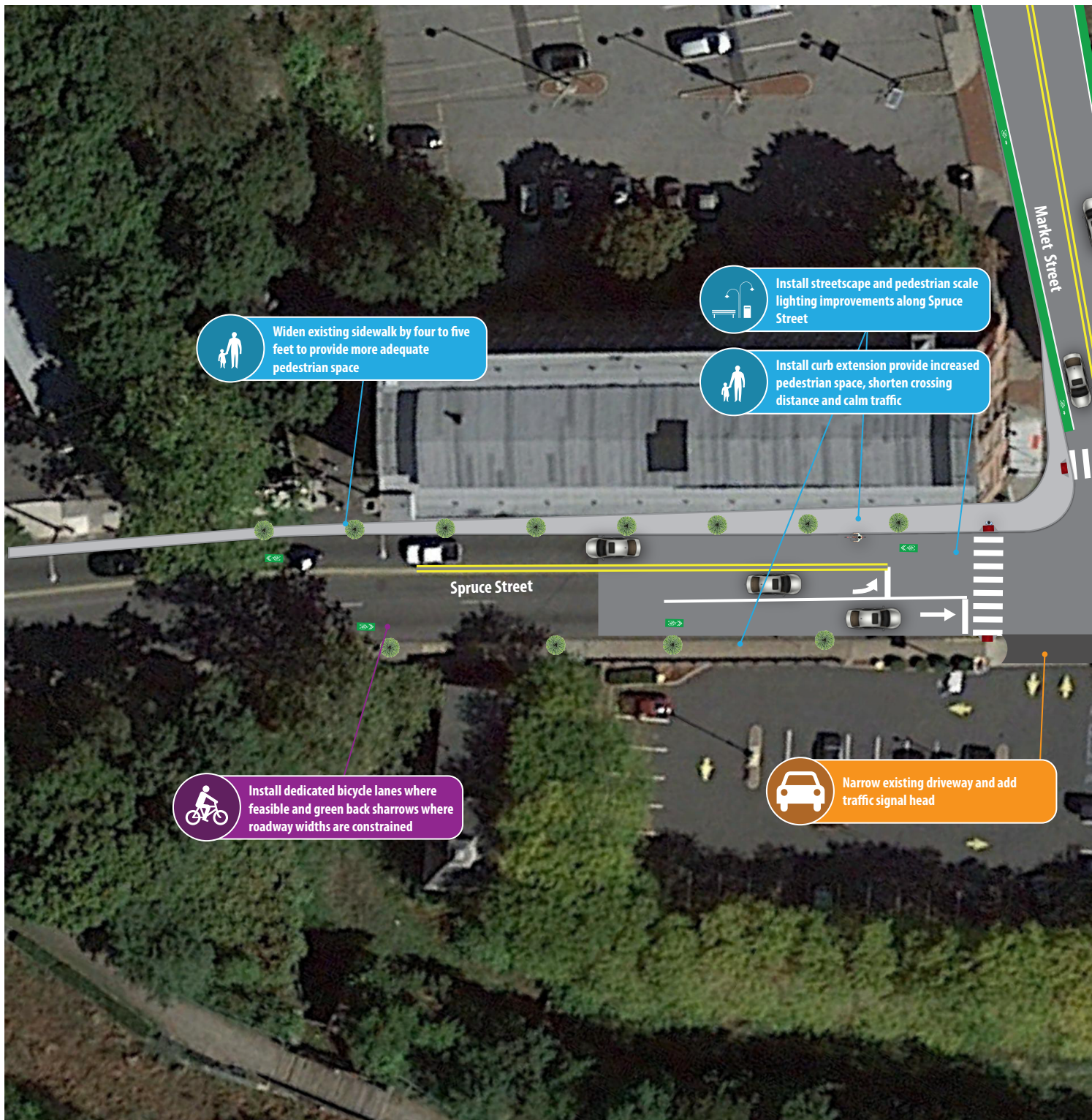
- Narrow through-traffic to 1 lane in each direction to calm traffic consistent with context
- Install high visibility crosswalk striping, ADA-compliant curbs at all intersections
- Provide 5 new parking spaces along southbound approach to Oliver Street
- Provide 6 new flexible parking spaces reserved for peak period school bus access along northbound approach to Oliver Street at Community Charter School
- Use curb extension bulb outs to better define parking areas and narrow street cross sections
- Install high visibility crosswalk striping, ADA-compliant curb ramps at intersections
- Install mid-block crossing between Oliver and Grand Streets to enhance Charter School access
- Upgrade traffic signal at Grand Street with exclusive left turn lane and phasing along southbound approach

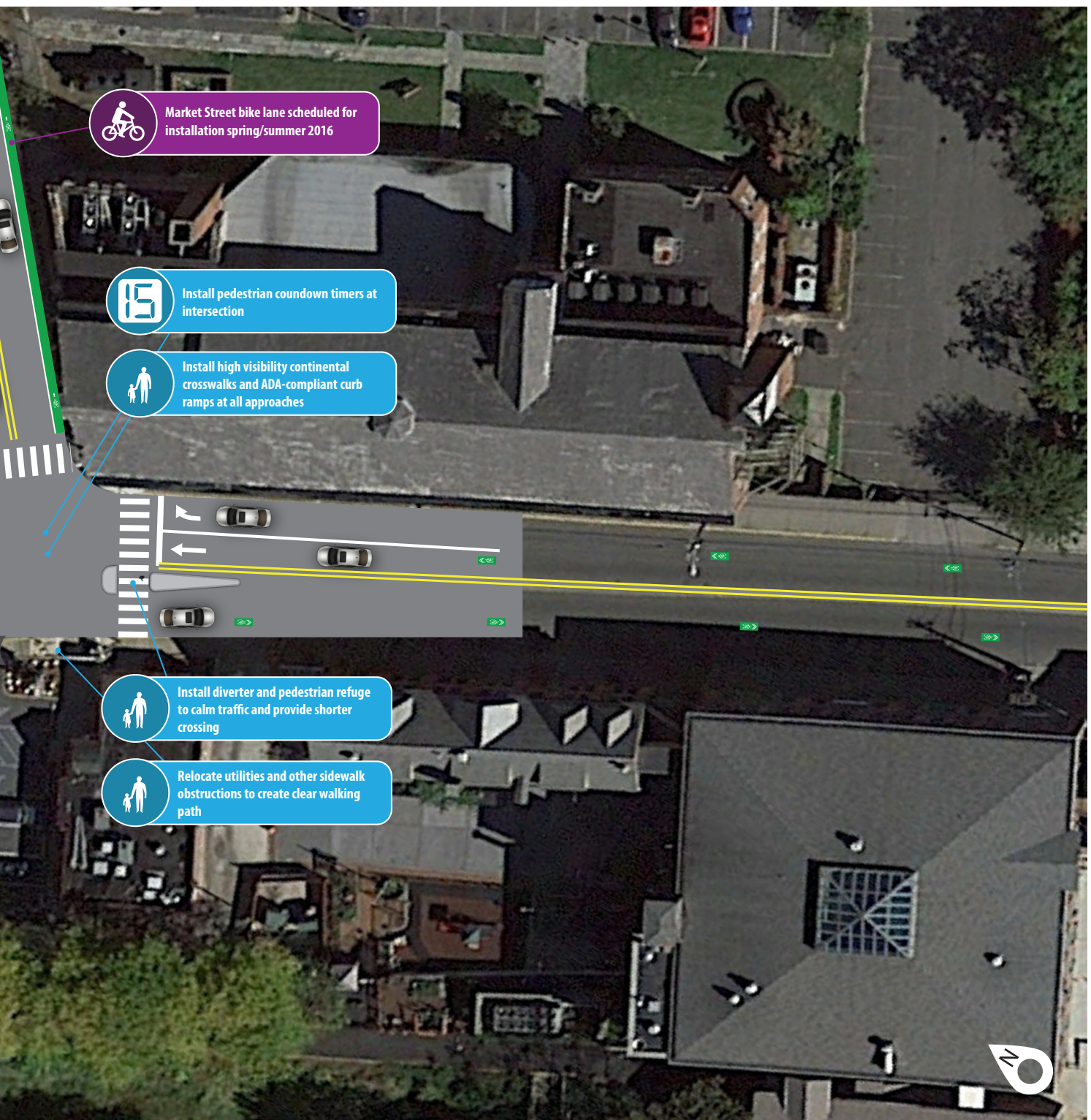
Spruce Street Bridge Recommendations - Front Street to McBride Avenue Extension



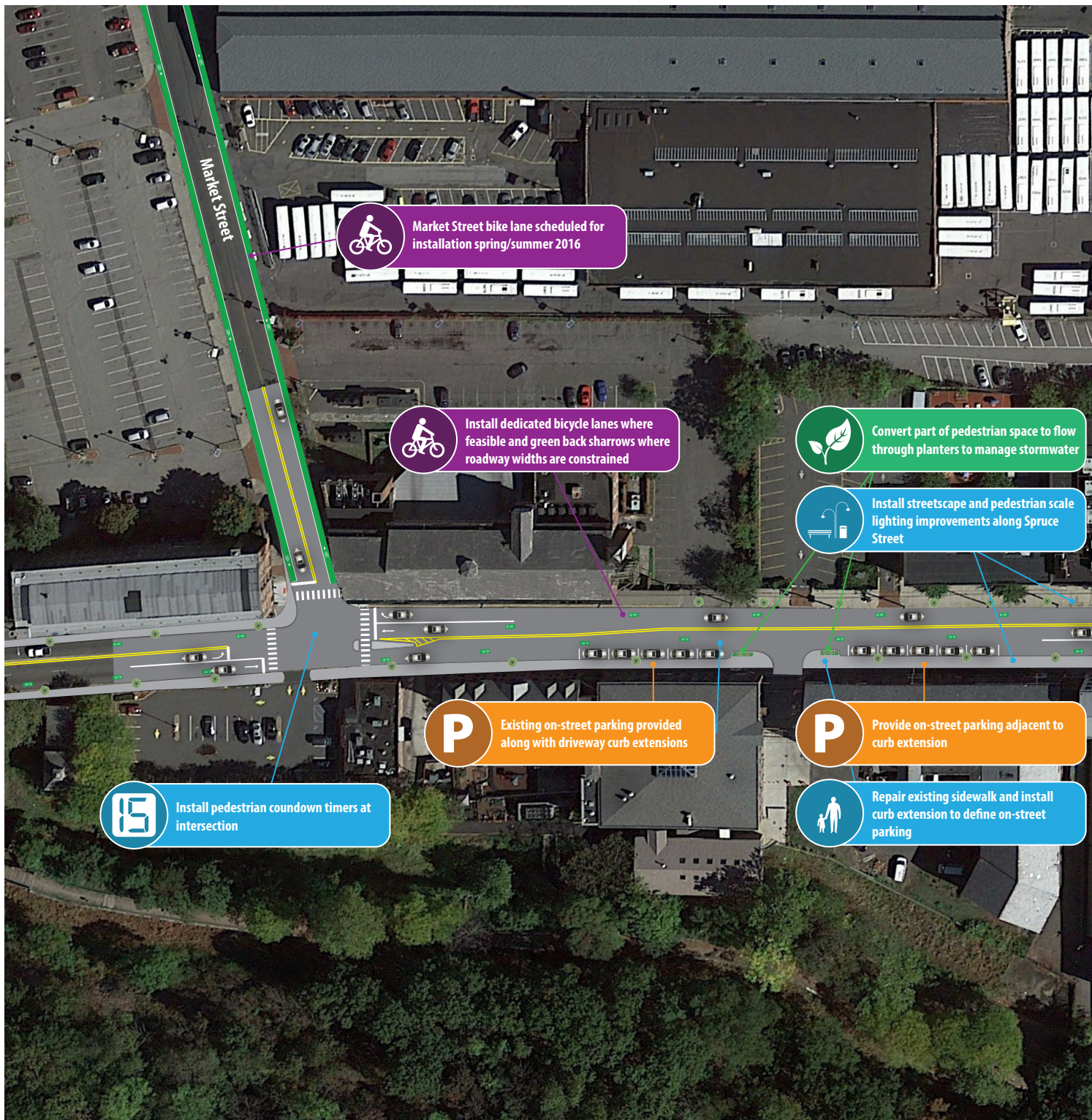


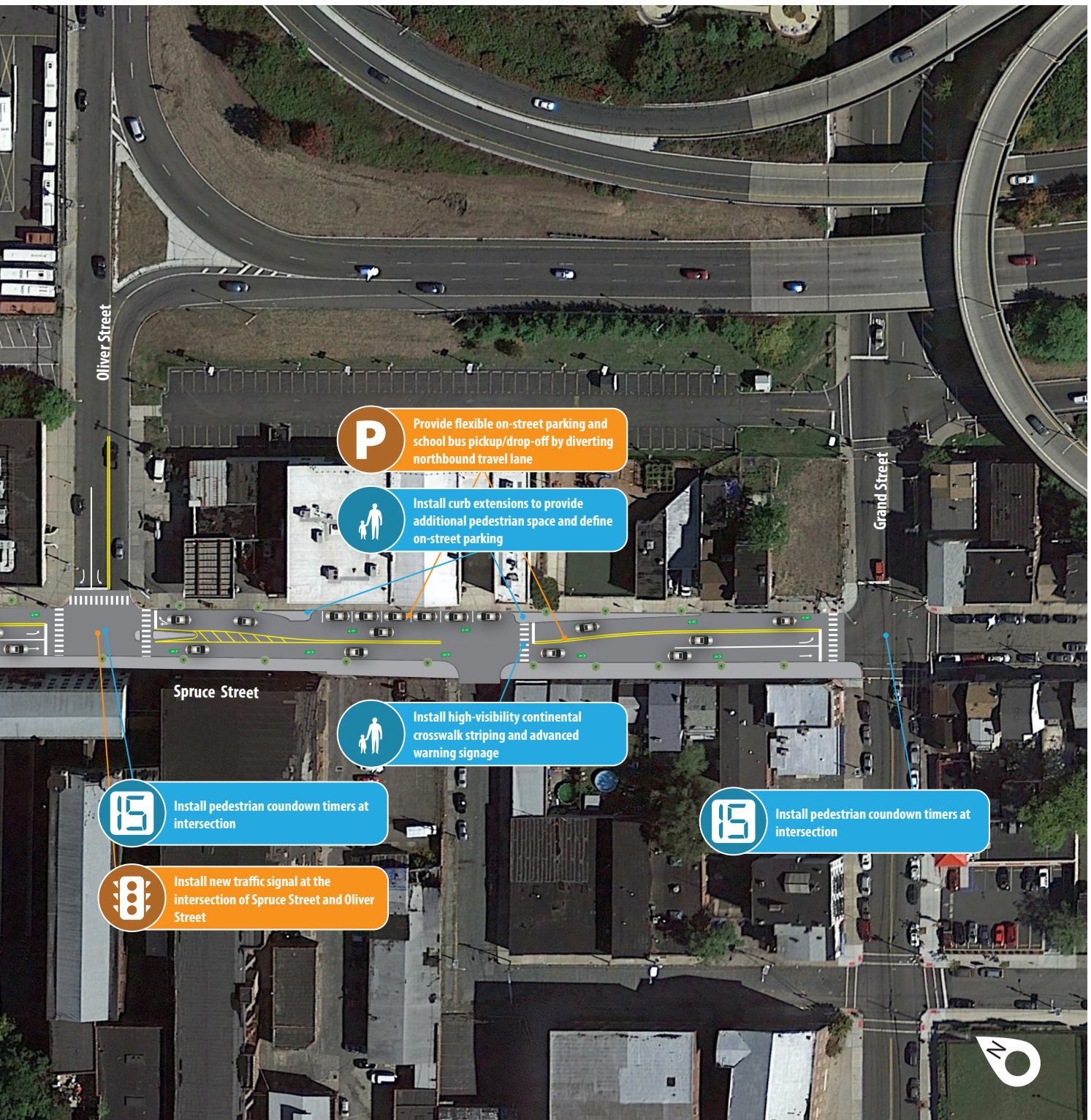
Spruce Street at Market Street Recommendations



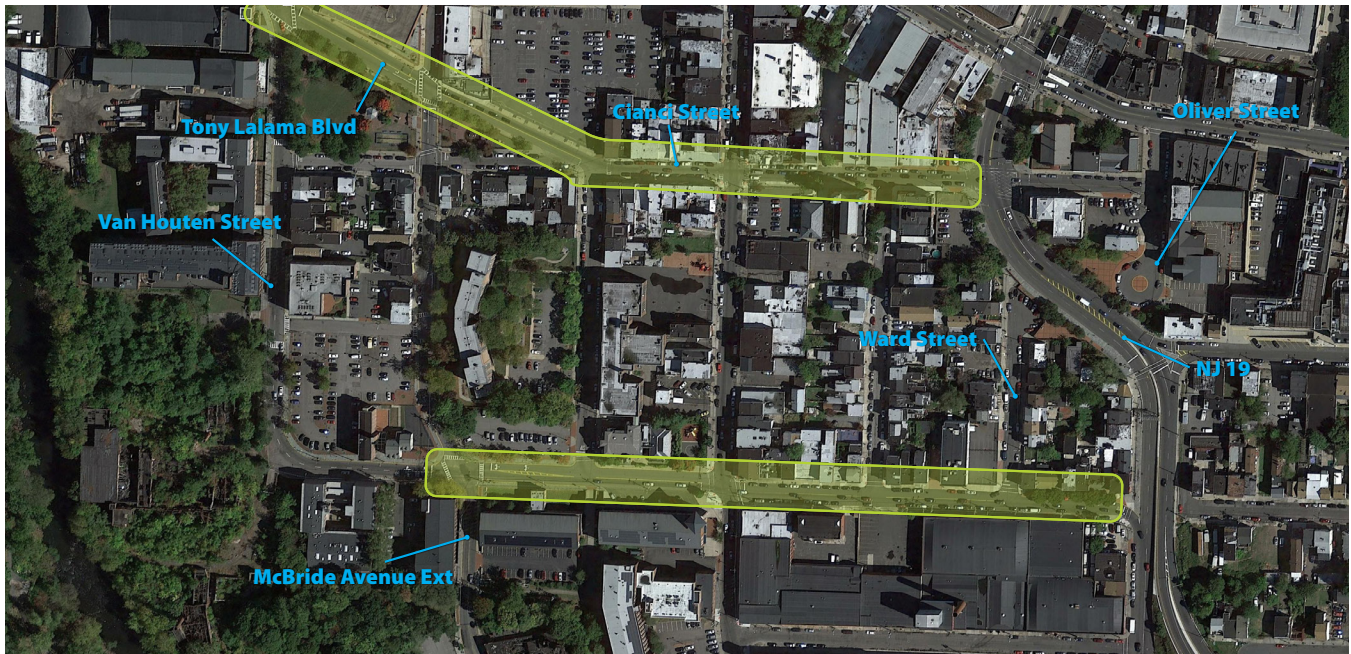


Spruce Street "Boulevard" Recommendations





Part 2 - Aerial Markup Locations



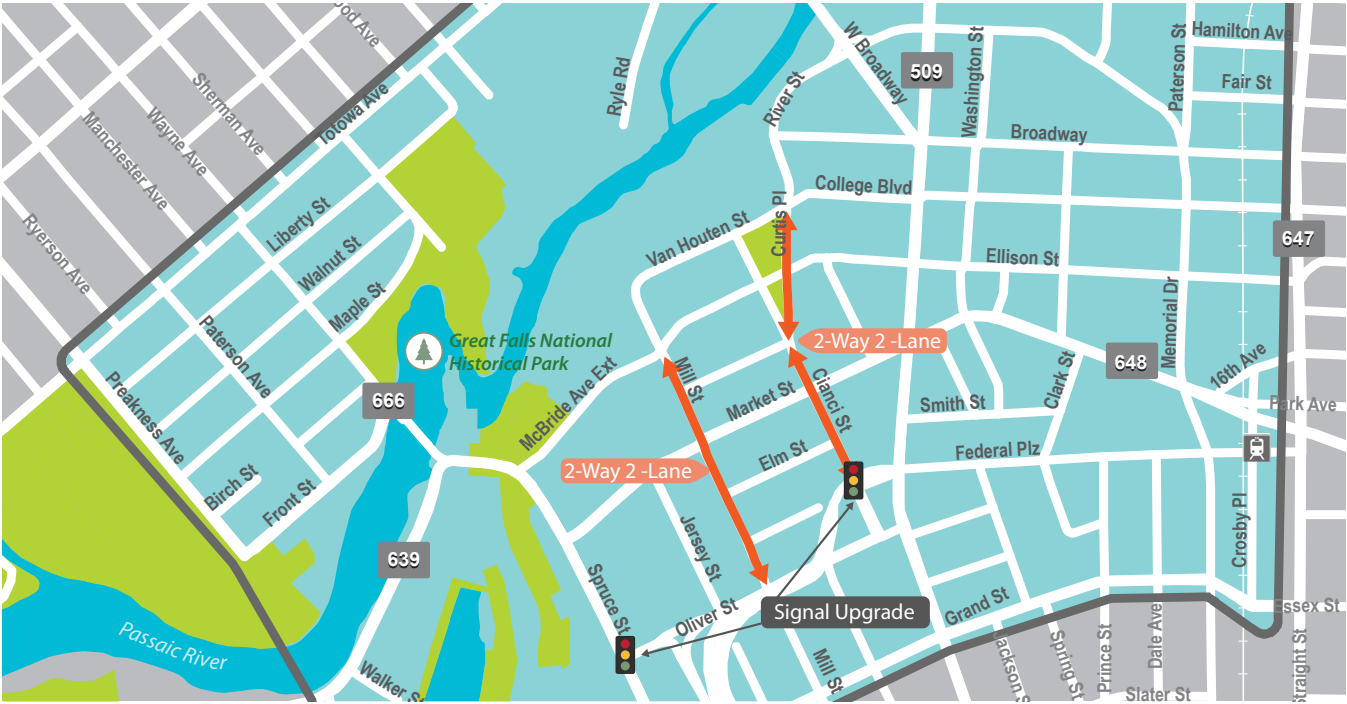
Part 2: Two-way Street Conversions

The second step is to implement selected two-way street conversions for Cianci and Mill Streets. These changes begin the process of restoring Paterson's historic street grid and counteract the long-standing impacts of congestion, through traffic, trucks, and speeding. These examples can serve as prototypes that can be repeated and replicated across the city. Research indicates that two-way streets can provide significant benefits compared to their one-way counterparts, including improved livability, safety, and easier access to destinations; traffic speeds and pedestrian crossings are also more compatible with a walkable downtown environment. Traffic microsimulation indicates no significant detriment to traffic flow and intersection performance under the proposed concept. There is no loss of existing on-street parking on Cianci and Mill Streets.

Proposed improvements include:

- Reconfigure Cianci Street from Ward Street to College Blvd for two-way traffic operations
- Reconfigure Mill Street from Ward Street to Ellison Street for two-way traffic operations
- Upgrade traffic signal at the Ward Street at Cianci Street intersection

Part 2 - Locations of Two-Way Conversions



Part 3 - Aerial Markup Locations



Part 3: Local intersection Improvements

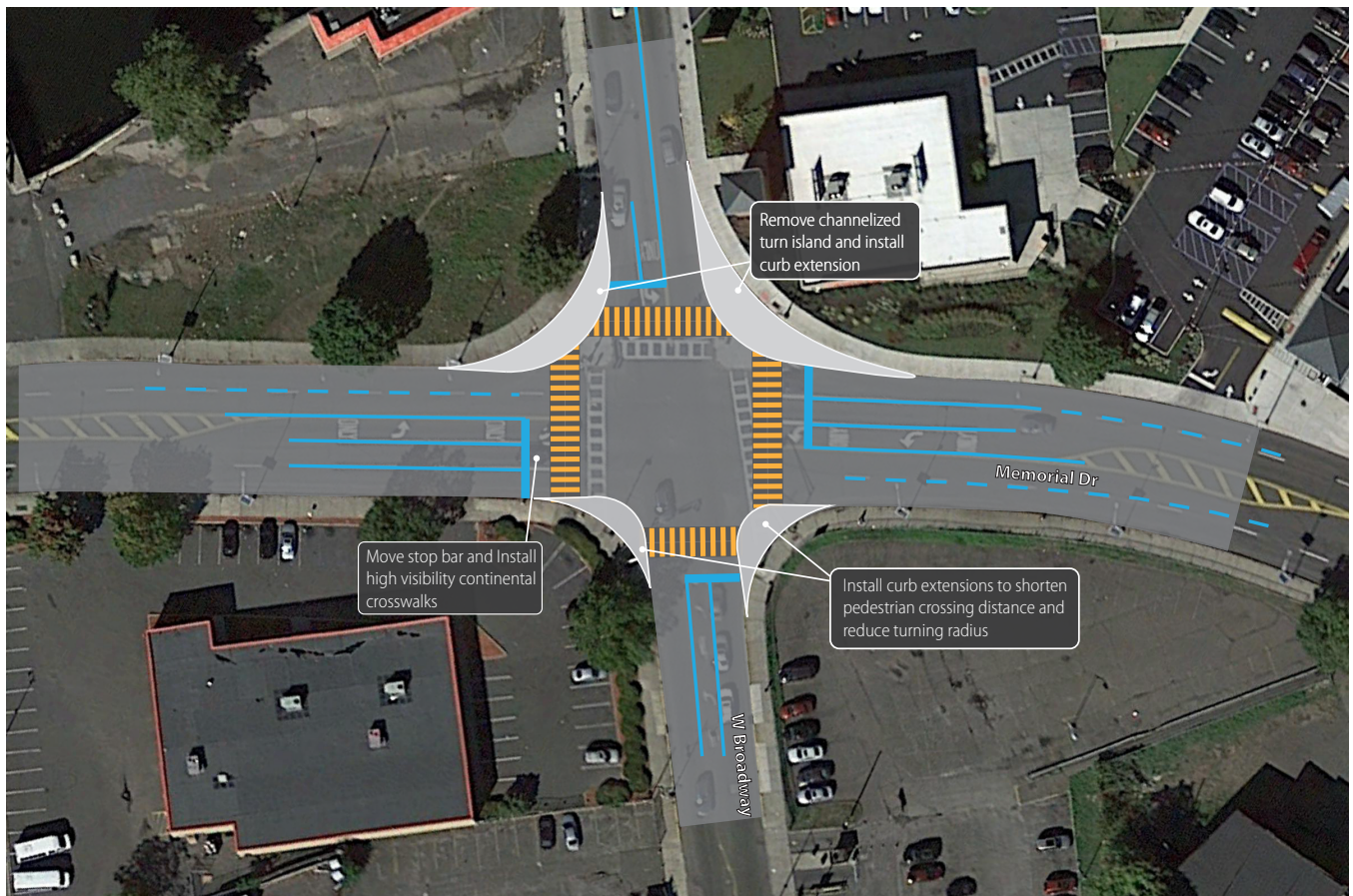
The final step is to implement local intersection improvements to prioritize traffic calming and pedestrian crossings and enhance multimodal mobility across the City of Paterson. Many of Paterson's downtown and NHP streets and intersection carry the burden of I-80 and NJ-19 off-ramps that empty heavy traffic volumes directly onto city streets. With no viable alternative routes, it is necessary to calm through traffic and restore conditions to a more sustainable balance among vehicular throughput vs. local access and mobility. Paterson's Streets should function like city streets and provide appropriate levels of mobility and access to city residents and visitors, not just serve as a conduit for moving heavy volumes of peak hour traffic in ways that hamper livability and safety. Three intersections are targeted to demonstrate the benefits of local mobility and safety improvements and serve as pilot projects to be repeated at locations throughout Paterson.

Proposed improvements include:

Memorial Dr. at West Broadway

- Near grocery and shopping destinations
- Cited by residents at focus groups
- Issues and deficiencies
 - › Traffic volumes and turning movements
 - › Channelized turns conflict with heavy pedestrian demand
 - › Arterial highway design
- Proposed improvements
 - › Remove channelized turn islands and replace with curb extensions
 - › Use curb extensions to shorten pedestrian crossing distance and reduce turning radii
 - › Install high visibility crosswalk striping, ADA-compliant curb ramps

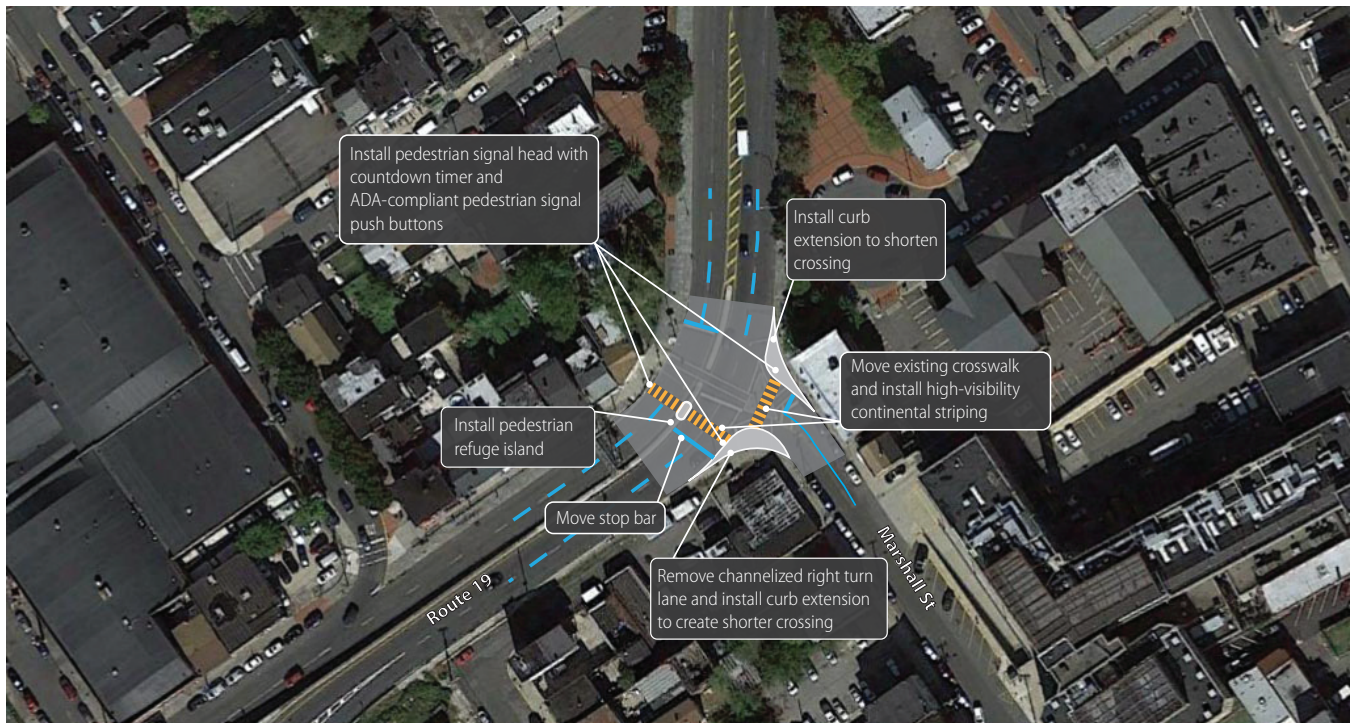
Concept for Memorial Drive at West Broadway



NJ 19/Ward St. at Marshall St.

- School Crossing
- Cited by residents at focus groups
- Issues and deficiencies
 - › Four-lane cross section
 - › Direct access from highway ramp
 - › Peak hour congestion
 - › Turning movement conflicts
 - › Channelized right turn from Marshall St
 - › No refuge provided
- Proposed improvements
 - › Remove channelized turn islands and replace with curb extensions
 - › Use curb extensions to shorten pedestrian crossing distance and reduce turning radii
 - › Install pedestrian signal head with countdown timer and ADA-compliant pedestrian signal push buttons
 - › Install pedestrian refuge island at NJ 19 crossing
 - › Install high visibility crosswalk striping, ADA-compliant curb ramps

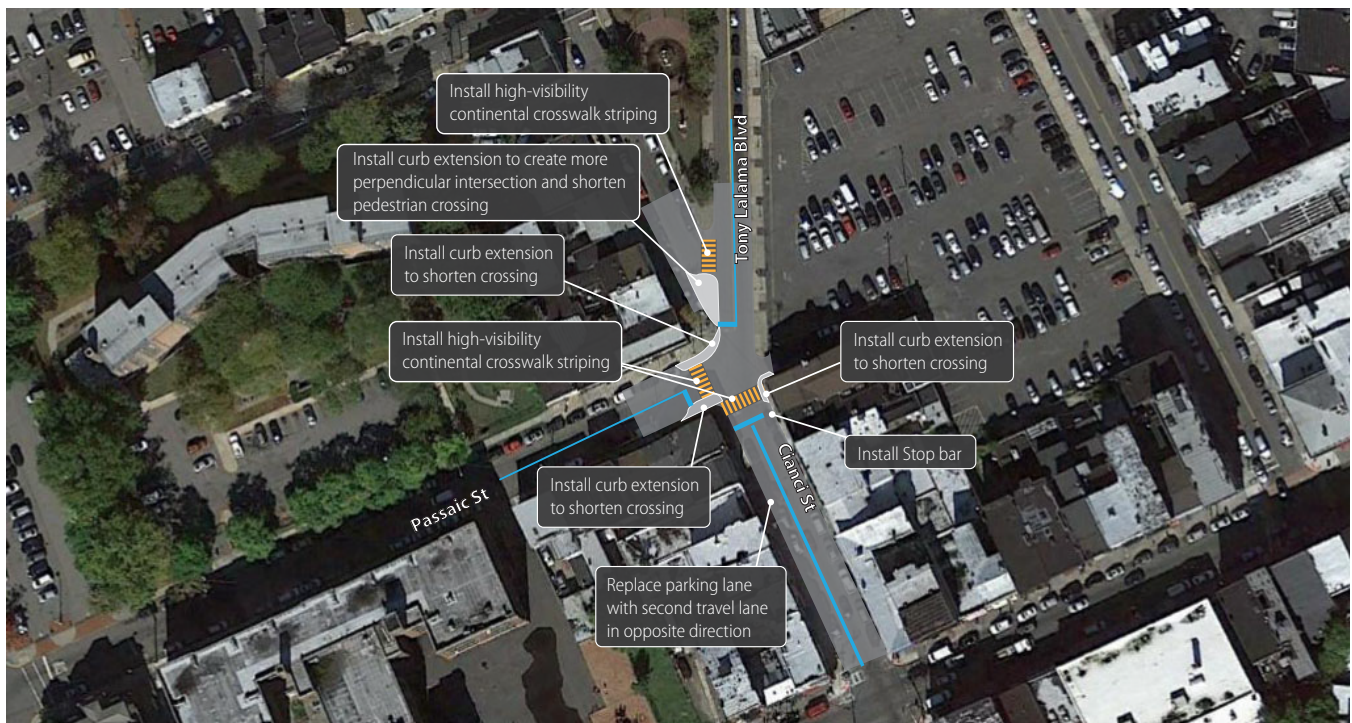
Concept for NJ19/Ward at Marshall Drive



Cianci St. at Passaic St.

- High pedestrian demand
- Cited by residents at focus groups
- School and Housing on Passaic St
- Issues and deficiencies
 - › Peak hour congestion
 - › Sight distance limitations/obstructed view
 - › Turning movement conflicts
 - › 1-way to 2-way transition point
 - › Current parking on west side of Cianci is not permitted; no impact to legal parking on east side
- Proposed improvements
 - › Use curb extensions to shorten pedestrian crossing distance and reduce turning radii
 - › Install pedestrian signal head with countdown timer and ADA-compliant pedestrian signal push buttons
 - › Install pedestrian refuge island at NJ 19 crossing
 - › Install high visibility crosswalk striping, ADA-compliant curb ramps
 - › Install stop bar
 - › Install curb extension to reduce entrance width of Cianci Street north of Passaic Street
 - › Paired with two-way conversion of Cianci Street
 - › Streetscaping, lighting, tree plantings, and other features that meet standards set for the Great Falls NHP and Historic District

Concept for Cianci Street at Passaic Street



Part 4: Streetscaping, Wayfinding, and Placemaking

Paterson can take additional steps to address the chaos, access and mobility limitations, and diminished built environment that residents and visitors encounter on a daily basis. Improvements should be consistent with Great Falls Historic District design standards.

Renaming of Streets

In addition to Paterson's street grid limitations and mix of one-way and two-way streets, individual street names can change from block to block, adding to the confusion cited by many stakeholders. Renaming key streets to create a more consistent and uniform driving and navigational experience is recommended. The following changes are proposed:

- Rename McBride Avenue between the Wayne/McBride and Spruce/McBride Extension intersections as Wayne Avenue
 - › The McBride Avenue name will be continuous from Crosby Avenue to the Spruce/McBride Extension intersection; ending at Wayne/ McBride intersection
- Rename McBride Avenue Extension as Ellison Street
 - › The Ellison Street name will be continuous from the Spruce Street intersection to East 22nd Street
- Rename the combined Oliver/Ward/ Federal Plaza route as Federal Plaza
 - › The Federal Plaza name will be continuous from the Spruce Street intersection to Straight Street/County Route 647
 - › The isolated stub segments of Ward Street and Oliver Street will remain unchanged; these function as cul-de-sacs and are the remnant of numerous

changes to the previous Oliver and Ward Street east-west street alignments

- Rename Tony Lalama Boulevard as Cianci Street between Passaic Street and College Boulevard
 - › Rename the short segment of Cianci Street Between Passaic and Van Houten Streets as Tony Lalama Street; Cianci Street name will end at the intersection with College Boulevard
- Rename Curtis Place as Memorial Drive
 - › The Memorial Drive name will be continuous from Railroad Avenue, past West Broadway, to the intersection with College Boulevard

Preserve Truck-Free Zones in the Historic District

- Prohibit large trucks from Van Houten Street and Ellison Street

Provide bus shelters that enhance transit access and the build environment

- Streetscaping, lighting, tree plantings, and other features that meet standards set for the Great Falls NHP and Historic District

Develop consistent and intuitive wayfinding

Advance City-Wide Safe-Routes-to-Schools travel plan initiative

- Work with Paterson School District, NJDOT, and EZ-Ride/Meadowlink to develop city-wide school travel plans



Part 5: Long-Term Vision Plan

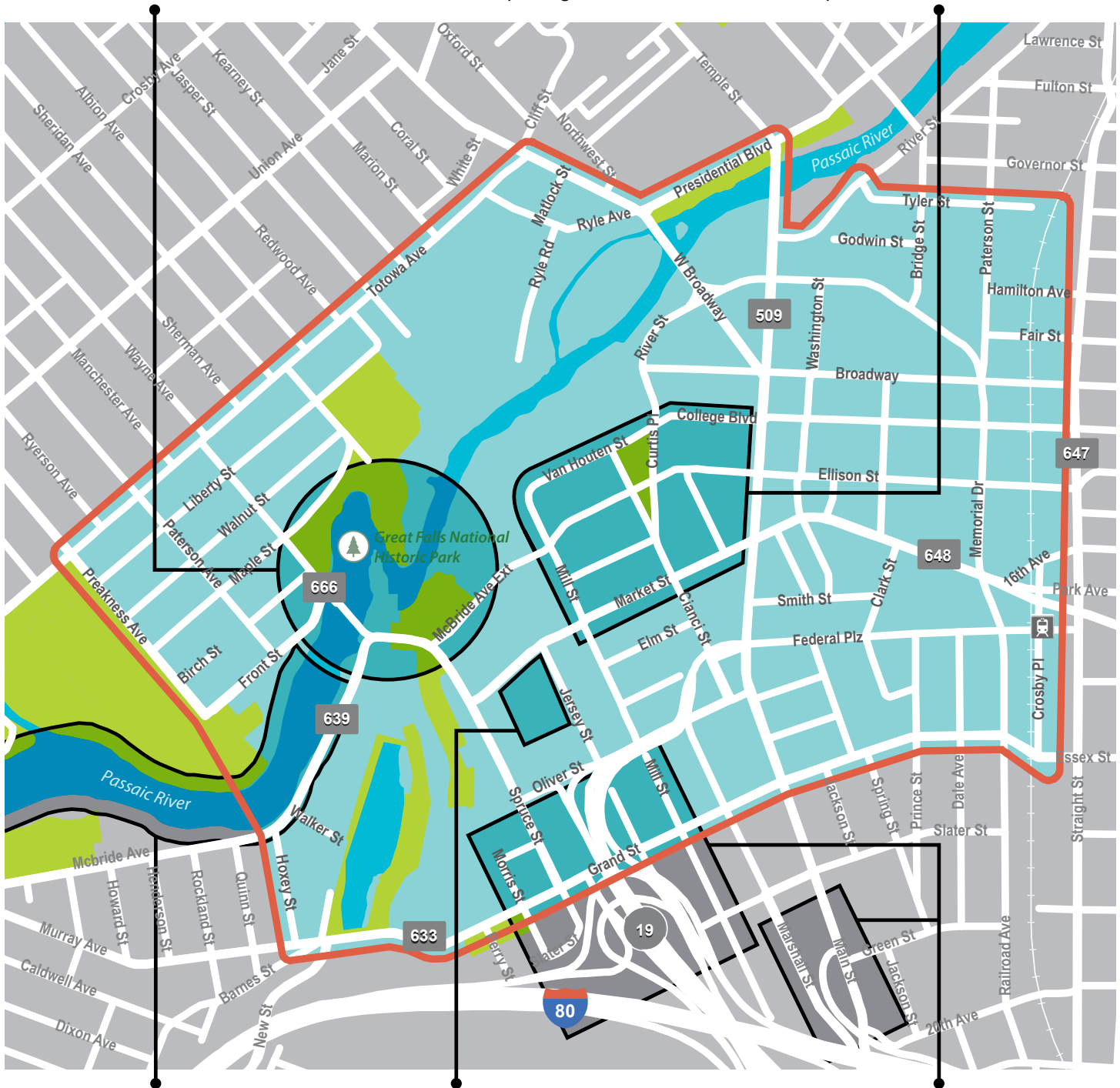
Looking to the future, the Vision Plan advocates working with City, State, regional, and Great Falls NHP partners to explore and advance roadway and transit projects of regional significance and impact, and identify improvements that build upon the locally-oriented, multimodal elements of the Vision Plan.

- Evaluate alternatives and feasibility of a new Passaic River bridge crossing to expand travel options and pull regional traffic from the Great Falls Historic District and Downtown Paterson
- Advance a City-wide interchange modification study of NJ 19 and I-80 ramps, including Interchange 57C to Main Street and realignment of existing ramp connections to Oliver Street and Mill Street that would advance the goal of reconnecting the roadway grid and create a more controlled entrance to the historic district from the highways
- Collaborate with NJ TRANSIT and the City of Paterson to relocate the existing bus-depot at Market Street and make this location available for redevelopment
- Coordinate future improvements to local circulation, parking, and wayfinding with long-term plans for Great Falls NHP facilities and amenities and restoration of Hinchliffe Stadium
- Undertake an area-wide parking study to better coordinate the location and capacity of parking facilities with demand, as well as to coordinate access to parking that will not exacerbate conditions for pedestrians or vehicles
- Build upon the Vision Plan's urban boulevard, two-way street conversions, and local intersection improvements by evaluating options to further restore Paterson's historic street grid

Coordinate future improvements with Great Falls National Historic Park Master Plan

Undertake area-wide parking study to better coordinate location and capacity of on-street and structured parking facilities

Build upon Vision Plan's urban boulevard, two-way street conversions and local intersection improvements



Conduct feasibility study of new Passaic River bridge crossing to expand travel options

Relocate the existing bus-depot at Market Street to make this location available for redevelopment

Advance a City-wide interchange modification study of NJ 19 and I-80 ramps

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Miles



Acknowledgments

References

1. Greater Spruce Street Neighborhood Plan, 2009
2. *National Park in Paterson, NJ, Ponders 2 Paths: Natural Wonder or Historical Site?* New York Times, April 22, 2016

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