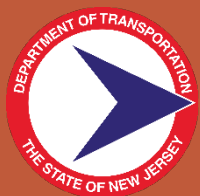




Road Safety Audit:

Market Street between
Spruce Street and Madison Avenue
Paterson City, Passaic County



SEPTEMBER 2018

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Executive Summary

This document is the final report of the Market Street Road Safety Audit (RSA). It was conducted along Market Street (CR 648) from Spruce Street to Madison Avenue (MP 0.00-1.36) in Paterson City, Passaic County. An RSA is an effective way of identifying crash-causing trends and appropriate countermeasures utilizing a nontraditional approach that promotes transportation safety while maintaining mobility.

This section of Market Street was identified on NJTPA's Local Safety Program Network Screening list as a high priority location. According to the NJDOT crash database, 250 crashes occurred during the three-year period between January 1, 2014 and December 31, 2016 along the study area of Market Street with 49, 76 and 125 crashes occurring in 2014, 2015 and 2016, respectively. Additionally, 32 pedestrian crashes occurred over the five-year period between January 1, 2012 and December 31, 2016.

This one-day RSA was conducted on Wednesday, December 20, 2017 from 9:00 am to 3:30 pm. The pre- and post-audit meetings were held in the Passaic County Engineer's Office, located at 401 Grand Street, Paterson, NJ. Representatives from NJDOT, NJTPA, Passaic County, Paterson City and NJ Transit were in attendance with NJDOT serving as the facilitator.

The RSA site and crash history is described in Sections II and III of this report, respectively. Section II also identifies previous and on-going studies conducted by the agency representatives. Corridor-wide and site-specific issues and recommendations, organized by location, are discussed in Section IV. The most common recommendations were to improve pedestrian safety by investigating curb extensions at intersections, repairing sidewalks and ensuring ADA compliance. Additionally, many suggestions were made to upgrade traffic signals, improve and simplify signage, and increase parking enforcement efforts.

The recommendations contained herein were developed collaboratively with the roadway owner and local stakeholders from the RSA Team (members listed in Appendix A). The study partners have expressed interest in implementing many of the recommendations as time and funds allow. Many of the maintenance items, which are typically low cost, can be addressed without additional engineering.

Please note this RSA report does not constitute an engineering report. The agency responsible for design and construction should consult a licensed professional engineer in preparing the design and construction documents, to implement any of the safety countermeasures mentioned in this report.

I. Introduction

A. Site Selection

This section of Market Street (CR 648), from Spruce Street (CR 639) to Madison Avenue (CR 649) (MP 0.00-1.36), was identified on NJTPA's Local Safety Program Network Screening list as a high priority location, as shown in the below FY 2017-2018 ranking. Of note, these rankings are based on 2011-2013 vehicular and 2009-2013 pedestrian crash data.

Table 1 – Market Street NJTPA FY 2017-18 LSP Ranking (Corridor Top 50)

Location	Ped Corridor	Regional Corridor
Market Street	#6 County	#2 County
Main Street	#7 County	#41 County (MP 24.54-25.54)
Memorial Drive		#18 County (MP 0.0-1.1)
Straight Street	#42 County	#13 County (MP 1.72-2.72)
Madison Avenue	#23 County	#5 County (MP 0.66-1.66)

Table 2 – Market Street NJTPA FY 2017-18 LSP Ranking (Intersection)

Location	Intersections	Pedestrian Intersections
Spruce Street (CR 639)	#38 County	#57 County
Cianci Street	#52 County	#102 County
Main Street		#3 County; #2 City
Washington Street / Veteran Place		#49 County
Memorial Drive	#17 County	#38 County
Madison Avenue	#11 County	#43 County
Summer Street	#62 County	
18 th Street	#31 County	
Straight Street	#168 County	#102 County
Madison Street		#11 County
Colt Street		#102 County
Mill, Hamilton, Southard & Jersey Streets		#231 County

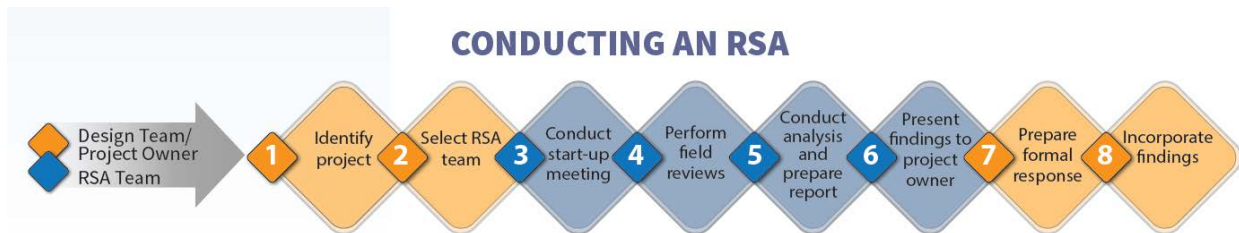
B. What is a Road Safety Audit?

A Road Safety Audit (RSA) is a formal safety performance examination of an existing or future road or intersection by a multi-disciplinary audit team. It qualitatively estimates and reports on existing and potential road safety issues, as well as identifies opportunities for improvements in safety for all road users. RSAs can be used on any size project, from minor maintenance to mega-projects, and can be conducted on facilities with a history of crashes, or during the design phase of a new roadway or planned upgrade. RSAs consider all road users, account for human factors and road user capabilities, are documented in a formal report, and require a formal response from the road owner.

The RSA program is conducted to generate improvement recommendations and countermeasures for roadway segments demonstrating a history of, or potential for, a high frequency of crashes, or an identifiable pattern of crash types. Recommendations range from low-cost, quick-turnaround safety improvements to more complex strategies. Implementation of improvement strategies

identified through this process may be eligible for Local Federal Aid Safety Funds. Because the RSA process is adaptable to local needs and conditions, recommendations can be implemented incrementally as time and resources permit.

The RSA process, one of FHWA's proven safety countermeasures, is shown in the figure below.



C. The Market Street RSA Event

This one-day RSA was conducted on Wednesday, December 20, 2017 from 9:00 am to 3:30 pm. The pre- and post-audit meetings were held in the Passaic County Engineer's Office, located at 401 Grand Street, Paterson, NJ. Representatives from NJDOT, NJTPA, Passaic County, Paterson City and NJ Transit were in attendance with NJDOT serving as the facilitator. A list of team members can be found in Appendix A.

II. Corridor Description and Analysis

A. Study Location

The study area consists of approximately 1.35 miles of Market Street from Spruce Street (CR 639) to Madison Avenue (CR 649). The area lies within Paterson City, Passaic County. This stretch of Market Street consists of multi-story commercial and residential properties. Commercial sites consist of mainly one-story retail with residences above. There are eating establishments, churches, beauty salons, banks, grocery stores/markets, fitness centers, government buildings, and schools. An elementary school, high school, and technical institutes are along the corridor. The Paterson train station provides service on NJ Transit's Main/Bergen and Port Jervis lines. Of note, the segment between Spruce Street and Cianci Street is part of the Great Falls Historic District (GFDH). Additionally, the segment from Cianci Street to the midblock of Clark Street and Memorial Drive is part of the Downtown Commercial Historic District (DCHD). Market Street runs parallel to Ward St/Federal Plaza which provides access to Interstate 80. Market Street provides direct access to Memorial Drive and Cianci Street, which are major thoroughfares for Interstate 80 and the downtown district, City Hall, and the West Broadway Bridge.

B. Roadway and Intersection Characteristics

Market Street is classified as an urban minor arterial. In general, the corridor study section is undivided, varies from 2 to 4 lanes, has a posted speed limit of 25 mph, and on-street parking. Market Street between Straight Street and Madison Avenue is one way eastbound (while the westbound direction is accommodated on Park Avenue to the north). Overall, there are 13 signalized intersections, 14 unsignalized intersections, and multiple driveways within the project limits. Many schools are located in the project vicinity.

C. Existing Bicycle/Pedestrian Accommodations

Sidewalks are provided on both sides of Market Street throughout the study area. Sidewalk conditions vary from newly installed to needing maintenance. Ladder style crosswalks cross Market Street at each intersection and run along Market Street at the intersections of Spruce Street and Main Street. Standard crosswalks are provided along Market Street at all intersections where continental crosswalks are not provided. Spruce Street and Summer Street are signed as school crossings. NJ Transit operates bus service within the project limits with bus stops throughout. A bus shelter was identified near Mill Street, Main Street, and Memorial Drive (see Part E for additional information). In addition, NJ Transit operates a bus garage in the western end of Market Street.

There are street signs indicating Market Street as a bike route in the western end of the project limit, however, there were no bicycle lanes or other bicycling infrastructure identified along the corridor nor its arterial roadways. Therefore, there were few bicyclists, the bicyclists observed were traveling either along the roadway or on the sidewalk.

D. Traffic Volumes

Based on available data, the ADT along Market Street ranges from approximately 8,100 to 11,600 within the study area. A copy of the available data can be found in Appendix C.

E. Transit Service

The Broadway Bus Terminal is located three blocks north of the study area and runs nine routes (eight NJ Transit routes and one Jitney route) in the Paterson area. Many of the NJ Transit buses serve Market Street. Additional bus routes, especially Jitney, are also reported to use Market Street to avoid traffic along their designated routes. NJ Transit bus shelters along Market Street were identified near the intersections of Mill Street, Main Street, and Memorial Drive.

The Paterson Train Station, operated by NJ Transit, services the Main/Bergen-Port Jervis Line which provides transportation to key intermodal hubs, such as Secaucus Junction, Hoboken Terminal, and Penn Station-New York.

F. Community Profile

Population and income characteristics from the 2010 Census (U.S. Census Bureau) were used to identify minority populations and low-income populations. Updates to the 2010 Census were performed by the Census Bureau through the American Community Survey (ACS) estimate. The latest ACS for this study area is a five-year estimate from 2012 through 2016. A summary of the demographics is listed below.

Table 3 – Market Street Area Demographics

Characteristic		Market St Area	County Average
Poverty		27.1%	16.8%
Minority	Black or African American	24.3%	14.6%
	Hispanic/Latino	69.9%	39.9%
Limited English Proficiency (LEP)		23.5%	12.0%

In addition, approximately 15% of the population uses public transportation compared to the Passaic County average of 2%. Roughly 10% of the area population walk or bike to work, which is higher than the county average of 3%.

G. Redevelopment

Market Street is a commercially and culturally significant thoroughfare. It spans from the Great Falls Historic District and Central Business District on the western end of the corridor to the residential and mixed-use districts on the eastern end of the corridor. The Fifth Ward, which spans from Straight Street to Madison Avenue, is a redevelopment district which is anticipated to be redeveloped to include multi-story buildings with retail and residential units.

The city recently conducted a community and traffic study and released their findings in a 2016 report titled *Great Falls Circulation Study*. The study is intended to provide an in-depth analysis of the Great Falls region, which includes Market Street from Spruce Street to Crosby Place. The report provides analyses of the transportation infrastructure for vehicles, cyclists, and pedestrians. The report includes in-depth analyses of key intersections, origin-destination data and analysis, alternative traffic-modeling scenarios, as well as guidelines for a five-part infrastructure improvement plan.

III. Crash Findings

The analysis used in the RSA was based on reportable crashes that resulted in a fatality, injury and/or property damage as found in the NJDOT crash database. Corridor-wide crash characteristics and overrepresentations were compared to the 2016 statewide average for the county road system as further detailed below. All crashes were plotted onto collision diagrams, which can be found in Appendix D and E.

A. Temporal Trends

According to the NJDOT crash database, there were 250 crashes occurred during the three-year period between January 1, 2014, and December 31, 2016, along the study area of Market Street with 49, 76 and 125 crashes occurring in 2014, 2015 and 2016, respectively. Total crashes were highest in November and lowest in February compared to the county average. The day with the most of crashes is Monday and the day with the fewest is Wednesday.

Additionally, 32 pedestrian crashes occurred over the five-year period from 2012 to 2016. Most of these crashes included minor injury. More crashes occurred at dawn or dusk than the county average. Collisions with pedestrians were most common on Saturdays and in the month of May. It should be noted that the low number of crashes compared to the county road system may be statistically insignificant since they could not be correlated with an identified event. For example, while the monthly chart indicates 29% of pedestrian crashes occurred in May, this equates to a total of 9 crashes versus the county average of 99 crashes (13%) for the same month.

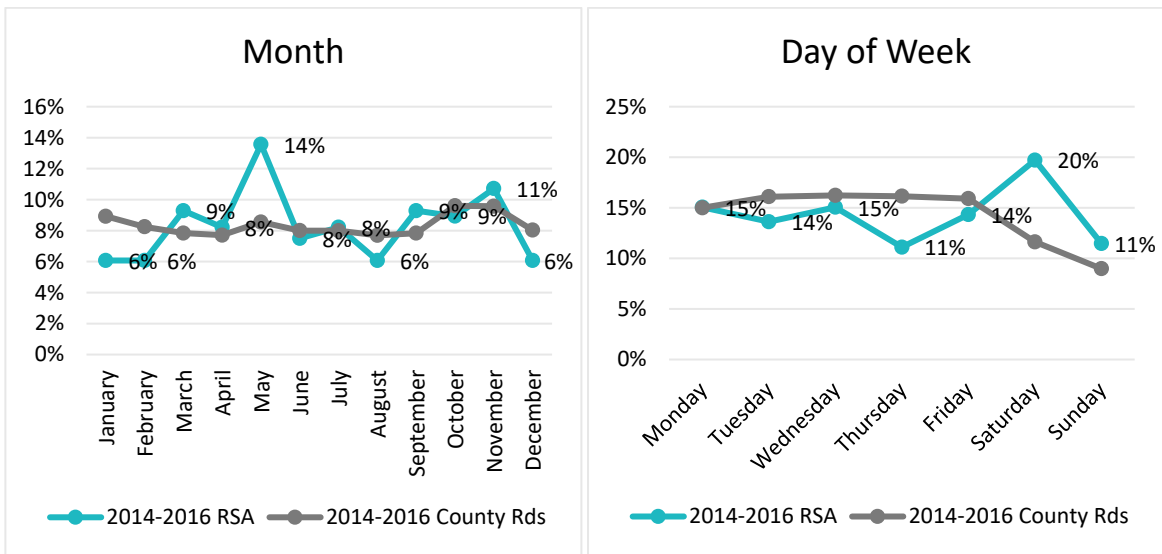


Figure 1 – Total Crashes by Month and Day of Week

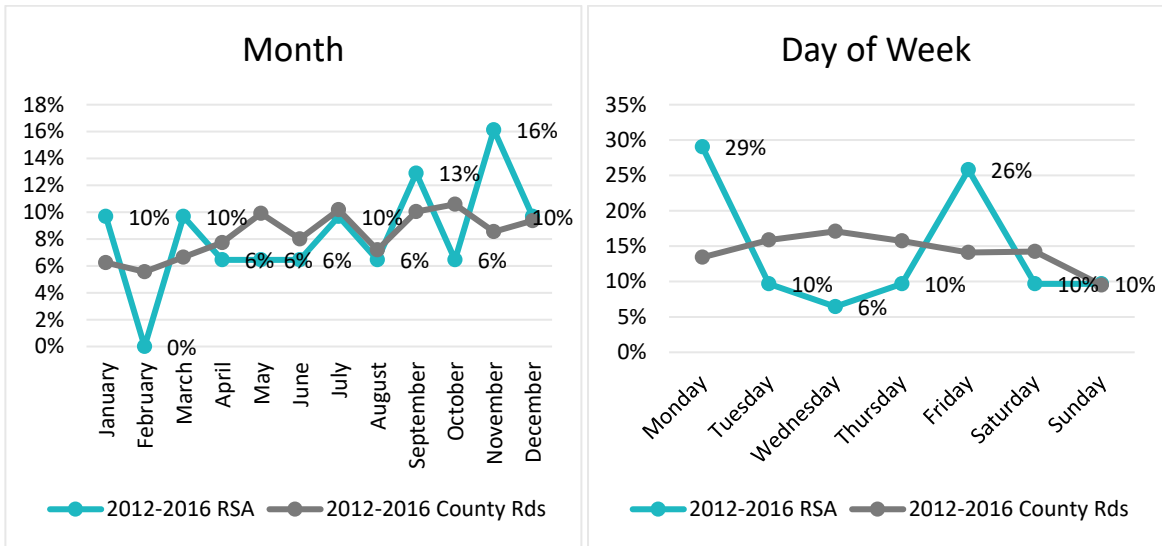


Figure 2 – Pedestrian/Bicyclist Crashes by Month and Day of Week

B. Collision Types

Overrepresented crash types over the three-year period from 2014 to 2016 included sideswipe, parked vehicle, backing, pedestrian/pedalcyclist. The availability of on-street parking contributes to the struck parked vehicle crashes. Of the 32 pedestrian/cyclist crashes over the five-year period from 2012 to 2016, one was a pedalcyclist (scooter, skateboard, or bicycle) traveling alongside traffic, within the roadway. Side swipes and stuck parked vehicles are located throughout the corridor; however, they are especially concentrated within the Centralized Business District (CBD). Additionally, there are a large amount of backing-related collisions. The high concentration of these parking-related collisions within the CBD may be partially attributed to the noticeable amount of illegal parking within the corridor which can lead to abrupt lane changes and poor sight distances.

Table 4 – Overrepresented Crash Types (2014-2016)

Collision Type	Count	% of Total	2016 County Road System Average
Same Direction (Side Swipe)	53	18.93%	12.67%
Struck Parked Vehicle	56	19.64%	5.89%
Backing	24	8.57%	2.28%
Pedestrian/Cyclist*	30	10.71%	2.64%

*An additional two (2) crashes occurred from 2012 to 2013

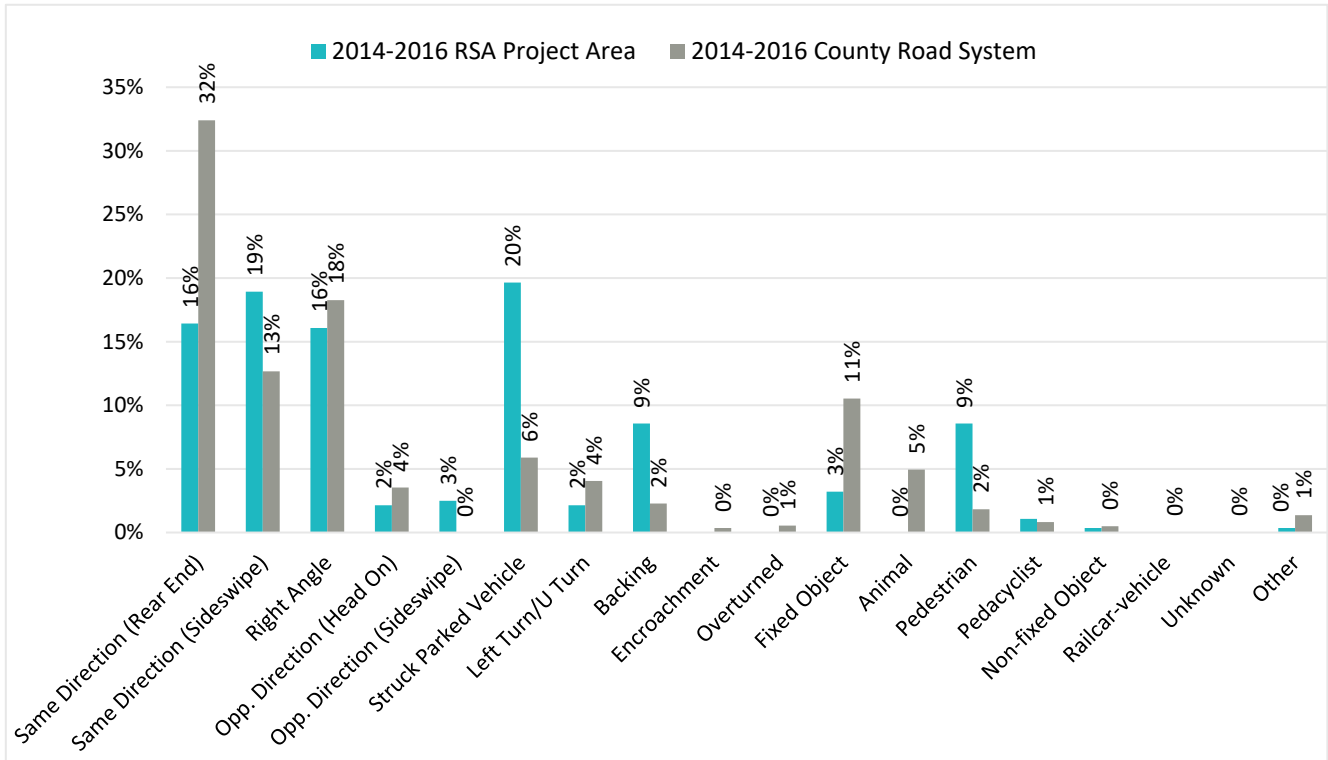


Figure 3 – Crash Type Breakdown

C. Severity

Crashes resulting in minor injury were slightly overrepresented compared to the county road system. This is likely due to the overrepresented pedestrian crashes, which tend to result in injuries. In addition, one crash resulting in a major injury occurred in 2014 as a backing vehicle hit a pedestrian.

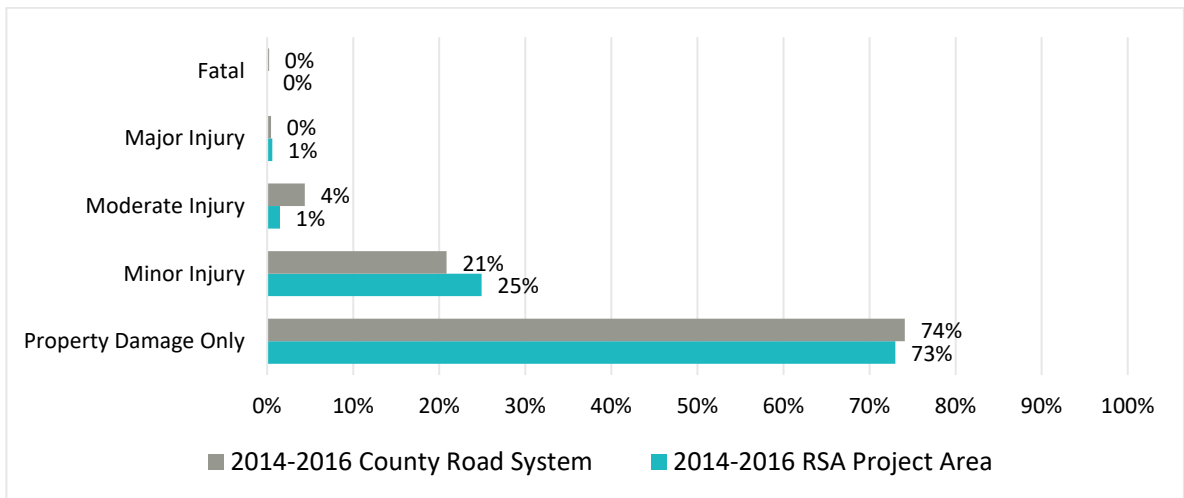


Figure 4 – Severity (All Crashes)

Pedestrian crashes resulting in minor and moderate injury were significantly overrepresented compared to the county road system from 2012 to 2016.

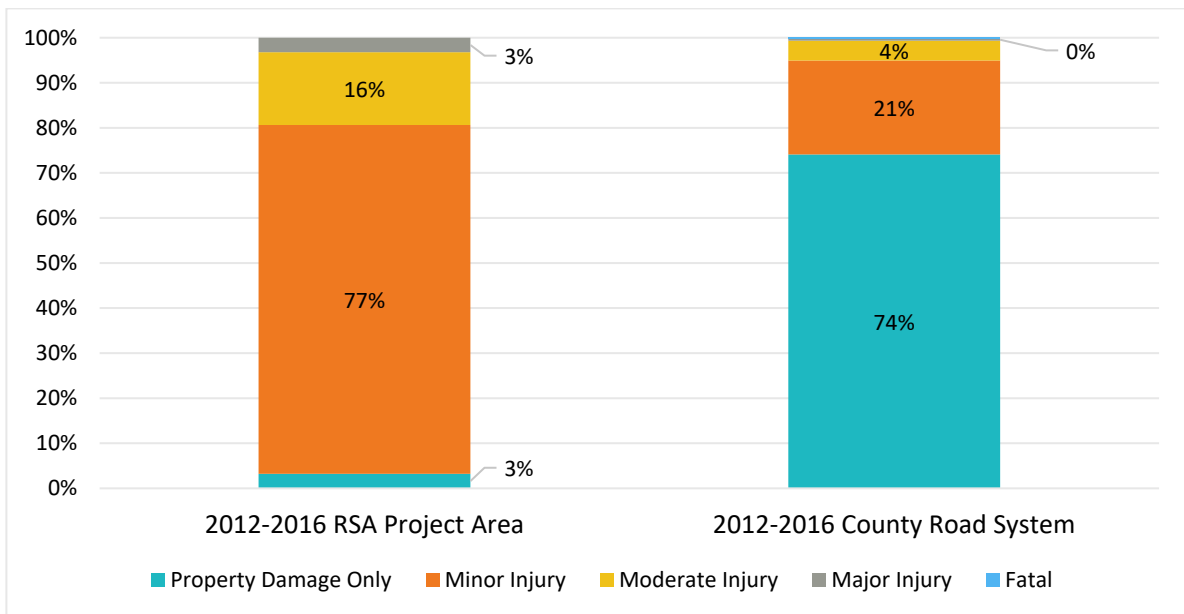


Figure 5 – Severity (Pedestrian/Bicycle Crashes)

D. Roadway Surface & Light Condition

Overrepresented crash types included dry surface and at night. Dry surface conditions accounted for approximately 85% of total crashes, suggesting that road surface was not a significant contributing factor in the majority of crashes. While 65% of crashes occurred during daylight, approximately 32% occurred at night, which is slightly higher than the county road statewide average of 24%.

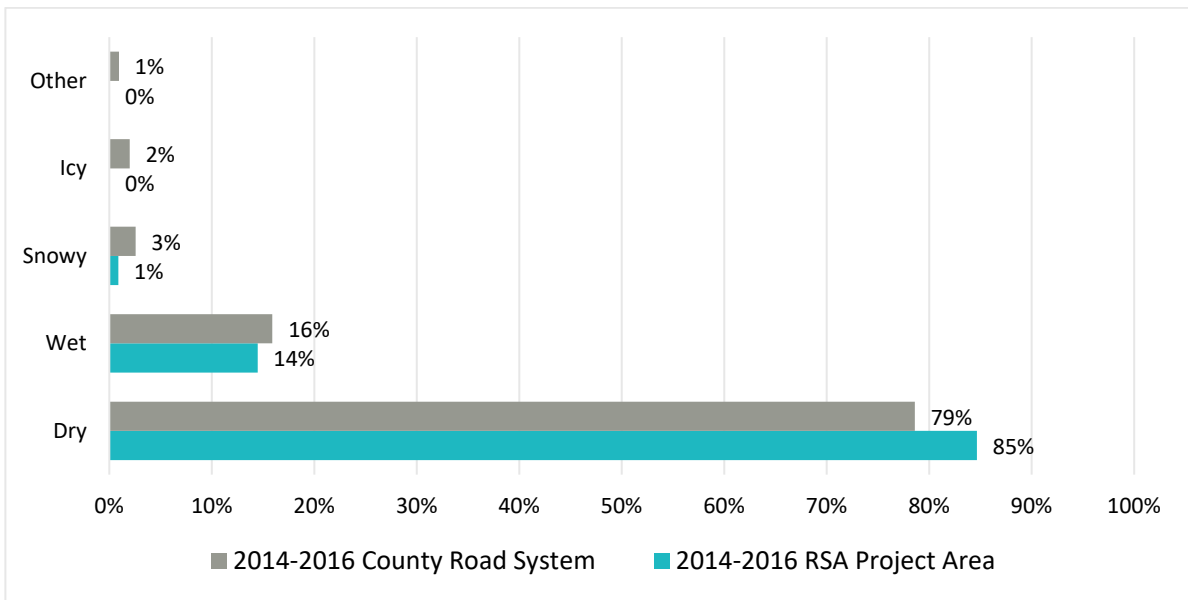


Figure 6 – Surface Conditions (All Crashes)

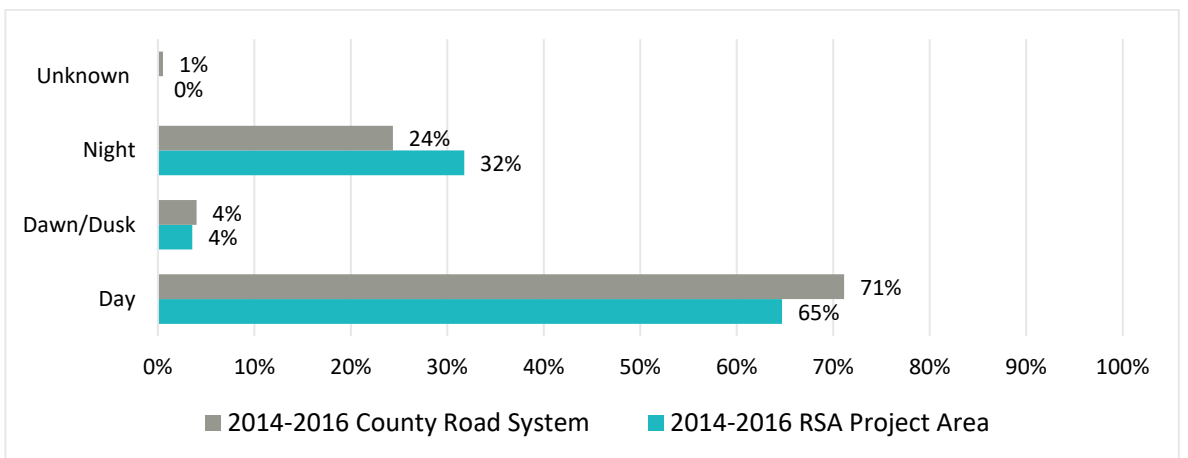


Figure 7 – Light Conditions (All Crashes)

In addition, four (4) or approximately 13% of pedestrian crashes occurred during dawn or dusk, which is more than double the county road statewide average of 40 crashes or 5%. Of note, the low number of crashes compared to the county road system may be statistically insignificant.

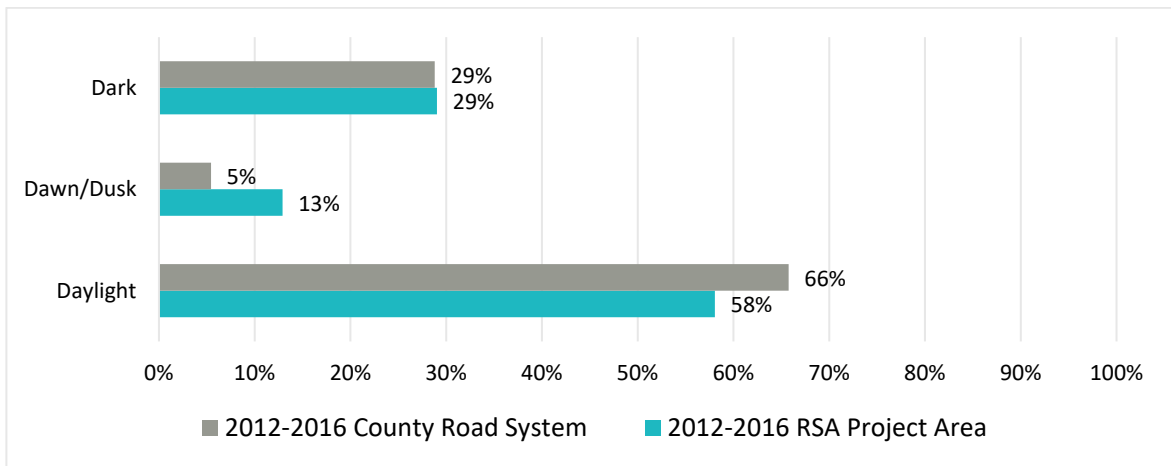


Figure 8 – Light Conditions (Pedestrian/Bicycle Crashes)

E. Location

Crashes at signalized intersections and between intersections were overrepresented compared to the county road system average. Nineteen percent (19%) of crashes occurred at signalized intersections compared to 14% on all county roads. Additionally, 65% of all crashes occurred between intersections compared to 64% of all crashes. More crashes occurred at or near Mill Street, Cianci Street, Memorial Drive and Madison Avenue. Crash frequency in 0.1-mile increments, as shown in the following figures, shows the highest concentration of vehicular and pedestrian crashes.




Figure 9 – Total Crash Locations (2014-2016)



Figure 10 – Pedestrian Crash Locations (2012-2016)

IV. Identified Issues

This section summarizes the site-specific and corridor-wide safety issues identified during the RSA. They are categorized into operations (including visibility), pedestrian, bicyclist, and maintenance. Additional issues and photographs can be found in Appendix F.

Pedestrian	Bicyclist
	
<p>Underutilized public spaces within the corridor, especially between Clark St and Straight St</p>	<p>Congested roadways and busy intersections are unsafe for pedestrians and bicyclists</p>
	
<p>Truncated domes are worn away</p>	<p>Lack of on-street bicycle facilities, despite signage</p>
	
<p>Long crossing distances for pedestrians</p>	<p>Double parking causes sudden lane changes that are major hazards for bicyclists</p>

Pedestrian



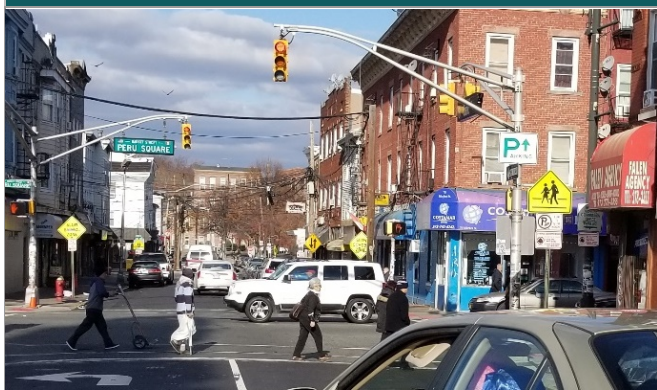
Pedestrians were observed crossing at midblocks

Bicyclist



Wide roadway connecting downtown with the train station; master plan suggests sharrows or bike lanes

Operations & Visibility



There is a cluster of roadway signs, coupled with business signs creates informational clutter

Maintenance



Multiple "Do Not Enter" signs are missing



Queuing NB on Main St blocks Market St intersection and crosswalk



Many crosswalks need restriping

Operations & Visibility



Double parking appeared to be a major issue; corridor also lacks pedestrian scale lighting

Maintenance



Signal heads at Clark St are not operational; conflicting traffic control may cause confusion



The Crosby Pl, Park Ave, and Market St is extremely wide and lacks traffic control devices



Underground vaults exist under sidewalks; cellar doors are rusted, and sidewalks have cracks

Additional issues, observations and details identified during the RSA include the following, listed from west to east:

- Many parking meters are located at parking locations that are in violation of Title 39
- Taxis, including Uber and Lyft drivers, were observed using NJ Transit designated bus stops; other vehicles parked in bus stop areas, forcing busses to drop off passengers in live lanes
- Significant queuing was observed along Main Street that extended through the Market Street intersection; there are reports of Jitney buses causing major stoppages
- ITS along Grand Street to provide traffic signal connectivity to better monitor and manage traffic was implemented as a pilot project.
- The 18th Avenue leg of the Market Street and Madison Avenue intersection was dead-ended and removed from the signal operation.

V. Findings and Recommendations

This section summarizes the site-specific and corridor-wide safety issues, potential strategies, and recommendations to improve the same, safety benefit, time frame, cost, and jurisdiction. Ratings used in the recommendation tables are described as follows:

Symbol	Meaning	Definition
✓	Low safety benefit potential	May reduce total crashes by 1-25% ¹
✓✓	Low to moderate safety benefit potential	May reduce total crashes by 26-49% ¹
✓✓✓	Moderate safety benefit potential	May reduce total crashes by 50-74% ¹
✓✓✓✓	High safety benefit potential	May reduce total crashes by 75+% ¹
\$	Low cost	Could be accomplished through maintenance
\$\$	Medium cost	May require some engineering or design and funding may be readily available
\$\$\$	High cost	Longer term; may require full engineering, ROW acquisition and new funding
🕒	Short term	Could be accomplished within 1 year
🕒	Medium term	Could be accomplished in 1 to 3 years; may require some engineering
🕒	Long term	Could be accomplished in 3 years or more; may require full engineering

A. Recommendations

The following represents the specific findings and recommendations made by the RSA team.

All recommendations and designs should be thoroughly evaluated with due diligence and designed as appropriate by the roadway owner and/or a professional engineer for conformance to all applicable codes, standards, and best practices.

Table 5 – Corridor-Wide Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Operations					
1	Consider development of an access management plan within the project limits (for vehicles and pedestrians)	✓	\$\$	🕒	County
2	Investigate on-street parking requirements where business have existing parking lots (parking study) and for conformance with Title 39 (meters too close to or within intersections).	✓ ²	\$\$	🕒	City
3	Consider upgrading all ramps for ADA compliance	✓✓✓ ²	\$\$\$	🕒	City

¹ Based on existing Crash Modification Factors (CMFs), the Highway Safety Manual (HSM), FHWA Proven Safety Countermeasures and current research, where applicable. All safety benefits are approximate.

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
4	Consider corridor-wide signal upgrades (replace 8" traffic signal heads with 12", install backplates with retroreflected border, evaluate clearance intervals, update to countdown pedestrian signal heads, replace push buttons in compliance with ADA, etc.)	✓✓	\$\$\$	●	City
5	Study roadway and pedestrian scale lighting and investigate implementing or retrofitting lighting with LED fixtures	✓✓✓	\$\$\$	●	County
6	Investigate converting to a 3-lane section (2 travel lanes, TWLTL and bike lanes; i.e. road diet) or other reallocation of roadway space	✓✓	\$\$	●	County
7	Examine installation of edge lines to enhance lane delineation, help bicyclists and slow vehicular speeds; consider enhanced lane delineation	✓ ²	\$\$	●	County
8	Investigate the location of boxes, poles, and posts to minimize their interference on sight distances	✓✓	\$\$	●	City/ County
9	Investigate timing directives; coordinate signals if they are not currently coordinated and evaluate investment in smart technology such as cameras to dynamically coordinate signals and mitigate congestion and air quality	✓ ²	\$\$	●	City/ County
10	Investigate parking layout and consider angled parking	✓ ²	\$\$	●	City
11	Explore options to simplify intersections for assistance groups/programs (i.e. elderly, disabled)	✓ ²	\$\$	●	City/ County
12	Consider green infrastructure solutions for combined sewer overflows, aesthetic purposes and to discourage unsafe and undesired behavior	✓ ²	\$\$	●	City/ County
13	Examine existing cross slope for proper drainage	✓ ²	\$\$	●	County
Bicycle/Pedestrian					
14	Inspect, repair and construct sidewalks in compliance with ADA as needed.	✓✓✓	\$\$	●	City
15	Examine inlets and install bicycle-safe grates	✓ ²	\$\$	●	County
16	Investigate whether the removal or revitalization of tree pits and roadside planters would improve pedestrian access management	✓ ²	\$\$	●	City/ County
17	Consider development of a corridor-wide street-scape plan including trees, green infrastructure, and street furniture while noting underground vaults	N/A	\$\$	●	City/ County

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
18	Study corridor-wide implementation of curb extensions (bump outs) based on the site-specific recommendations to maintain consistency	✓✓ ²	\$\$	●	County
19	Investigate widening sidewalk to 10-12' for a shared use path per NJ Complete Streets Design Guide	✓✓✓	\$\$\$	●	County
20	Examine crosswalks status: change to continental style, check placement and alignment	✓✓ ²	\$	●	City
21	Consider desire lines for pedestrians and modify crosswalks accordingly (ergonomic crosswalks)	✓✓ ²	\$	●	City
22	Consider leading pedestrian intervals (LPI) at intersections with high pedestrian activity	✓✓✓	\$	●	City
23	Consider pedestrian scramble phases at intersections with high pedestrian activity	✓	\$	●	City
24	Consider installing a bicycle lane and/or sharrow striping per NJ Complete Streets Design Guide	✓ ²	\$	●	County
25	Consider accommodations for bicyclists stopped at and traversing signalized intersections (bike box)	None ³	\$	●	County
26	Consider installation of bicycle racks/corals	✓	\$	●	City/ County
27	Consider adding a bus shelter at some stops	N/A	\$	●	City
28	Investigate bus bulb outs at bus stops to deter parking/improper use in the same	✓✓ ²	\$\$	●	County
Maintenance					
29	Inspect existing striping for wear and restripe accordingly	✓✓	\$	●	City
30	Inspect and replace faded, damaged or incorrect/outdated signage as needed (i.e. signs mounted below 7' or back-to-back signs that obscure shapes [e.g. Do Not Enter behind Stop sign])	✓	\$	●	City
31	Consider appropriate design, size and location for new garbage containers so that planters are not used for garbage	✓	\$	●	City
32	Inspect drainage facilities; ensure they are free of debris	✓ ²	\$\$	●	County
Education/Enforcement					
33	Consider sidewalk, crosswalk, multimodal education campaign and code enforcement	✓ ²	\$	●	City/ County
34	Consider obtaining observations from residents	N/A	\$	●	City/ County

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

³ HSM Table 14A-1 indicates that bicycle lanes at signalized intersections appear to have no crash effect. Clearinghouse CMFs range from 0.8 to 2.03.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
35	Enforce Title 39 parking	✓ ²	\$	🕒	City
Other					
36	Consider the findings and suggestions of the <i>Great Falls Circulation Study</i>	N/A	-	-	-
37	Consider installation of wayfinding signs	N/A	\$\$	🕒	County

The following site-specific recommendations are in addition to the corridor-wide improvements, except where noted otherwise. Of note, the improvements listed below were proposed by the County, City, and/or private developer at the time of the RSA.

- The County recently conducted a community and traffic study and released their findings in a 2016 report titled *Great Falls Circulation Study*, which includes Market Street from Spruce Street to Crosby Place.
- In October 2017, the City passed an ordinance prohibiting right turns on red at 16 locations in the downtown area, six (6) of which are along Market Street.

Table 6 – Site-Specific Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Spruce Street					
38	Observe the on-going redesign and construction of the intersection (as part of the Gateway Project)	-	-	-	-
Mill Street					
39	Consider corridor-wide recommendation 4 regarding signal improvements	✓✓✓	\$\$\$	🕒	City
40	Consider corridor-wide recommendation 5 regarding highway and pedestrian lighting	✓✓✓	\$\$\$	🕒	County
41	Consider corridor-wide recommendations 7 and 29 regarding edge lines, striping (i.e. skip lines), and restriping of faded markings and lines	✓✓ ²	\$\$	🕒	County
42	Consider corridor-wide recommendation 24 regarding the installation of a bicycle lane and/or sharrow striping	✓	\$	🕒	County
43	Explore installing “Do Not Block the Box” warning signs	✓	\$	🕒	City
44	Consider re-curb-ing the southbound approach (along the parking lot)	✓ ²	\$\$\$	🕒	City
Cianci Street (Albert Lembo Way)					
45	Consider corridor-wide recommendation 2 regarding parking requirements and enforcement	✓ ²	\$\$	🕒	City

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
46	Consider corridor-wide recommendation 4 regarding signal upgrades.	✓✓	\$\$\$	●	City
47	Examine operations with the intersection immediately to the north. (major route to I-80, City Hall, Downtown, etc.)	✓ ²	\$	●	City
48	Consider corridor-wide recommendation 18 regarding curb extensions	✓✓ ²	\$\$	●	County
49	Explore installing “Do Not Block the Box” warning signs	✓	\$	●	County
50	Inspect intersection geometry	✓✓ ²	\$\$\$	●	County/ City
51	Investigate switching to a two-way roadway (scenario statistics for similar analyses can be found in the <i>Great Falls Circulation Study</i>)	✓ ²	\$	●	City/ County
Prospect Street (Peru Square)					
52	Consider corridor-wide recommendation 17 regarding green infrastructure	✓ ²	\$\$	●	City/ County
53	Consider corridor-wide recommendation 14 regarding sidewalk repairs and inspections	✓✓✓	\$\$	●	City
54	Consider corridor-wide recommendation 24 regarding the installation of a bicycle lane and/or sharrow striping	✓	\$	●	County
55	Consider corridor-wide recommendation 30 regarding poor signage	✓	\$	●	City
56	Investigate the curbing and drainage issues at the intersection and along the roadway	✓ ²	\$\$\$	●	County
Main Street (Peru Square)					
57	Consider corridor-wide recommendation 4 regarding signal upgrades (ped head missing in NW corner)	✓✓	\$\$\$	●	County
58	Consider corridor-wide recommendation 5 regarding highway and pedestrian scale lighting	✓✓✓	\$\$\$	●	County
59	Consider corridor-wide recommendations 14 regarding sidewalk repairs and inspections (specifically at the SW corner of the intersection)	✓✓✓	\$\$	●	City
60	Consider corridor-wide recommendations 18 and 21 regarding curb extensions and crosswalk realignment to minimize crossing distances	✓✓ ²	\$\$	●	City/ County
61	Consider corridor-wide recommendations 22 and 23 regarding pedestrian lead intervals or all ped scramble phases	✓✓✓	\$	●	City
62	Examine impact of newly-passed “No Right Turn On Red” ordinance (previously permitted)	✓	\$\$	●	City

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
63	Explore installing “Do Not Block the Box” warning signs	✓ ²	\$	🕒	County
64	Investigate the cause of traffic stoppages from Main Street to W Broadway Bridge	✓	\$\$	🕒	City/ County
Washington Street/Veterans Place					
65	Consider corridor-wide recommendation 3 regarding ADA compliance (including Hamilton St)	✓✓✓ ²	\$\$\$	🕒	County
66	Consider corridor-wide recommendation 4 regarding signal upgrades, especially for pedestrian signals	✓✓	\$\$\$	🕒	City
67	Consider corridor-wide recommendation 14 regarding sidewalk inspection and repair	✓✓✓	\$\$	🕒	County
68	Consider corridor-wide recommendation 18 regarding curb extensions	✓✓ ²	\$\$	🕒	County
69	Consider corridor-wide recommendations 20, 21, and 29 regarding crosswalk upgrades and maintenance	✓✓	\$	🕒	City
70	Consider corridor-wide recommendation 30 regarding signage inspection and maintenance	✓	\$	🕒	City
71	Explore additional uses for northern-most lane (currently used as bus stop) or enhancing bus stop	✓ ²	\$	🕒	City/ County
72	Consider performing intersection analyses, including: checking geometry, vehicle tracking, intersection table, pedestrian scramble phase, realigning crosswalks for shorter crossings and/or implementing a bike lane/sharrow markings	✓✓ ²	\$\$	🕒	City/ County
Colt Street					
73	Consider corridor-wide recommendation 3 regarding ADA compliance	✓✓✓ ²	\$\$\$	🕒	County
74	Consider corridor-wide recommendation 2 regarding parking needs and enforcement	✓ ²	\$\$	🕒	City
75	Consider corridor-wide recommendation 4 regarding signal upgrades, especially for pedestrian signals	✓✓	\$\$\$	🕒	City
76	Consider corridor-wide recommendation 18 regarding curb extensions	✓✓ ²	\$\$	🕒	County
77	Consider corridor-wide recommendation 30 regarding sign maintenance	✓	\$	🕒	City
78	Explore limiting the hours and locations for loading/unloading	✓ ²	\$	🕒	City/ County
79	Consider prohibiting left turns onto Colt Street	✓✓✓	\$	🕒	County/ City

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Church Street (Gerald Shepperson Lane)/Clark Street					
80	Consider performing a MUTCD signal warrant analysis at Clark St incorporated with Church St – if not warranted, investigate removal. In the interim, consider bagging of non-functioning signal	✓✓	\$\$	●	City
81	Explore corridor-wide recommendation 2 regarding parking needs and enforcement	✓ ²	\$\$	●	City
82	Investigate a one-way operation along Clark Street	✓✓	\$	●	City/ County
83	Consider corridor-wide recommendation 12 regarding green infrastructure	✓ ²	\$\$	●	City/ County
84	Study corridor-wide recommendations 18 and 21 regarding placement of mid-block bump-outs and crosswalks (e.g. west sides of Church and Clark)	✓✓ ²	\$\$	●	City/ County
85	Consider corridor-wide recommendations 7 and 29 regarding edge lines, striping, and restriping	✓✓ ²	\$\$	●	City/ County
86	Consider corridor-wide recommendation 28 regarding sign maintenance	✓	\$	●	County
87	Explore adding a curb median/pedestrian refuge between Clark St and Church St	✓✓✓	\$\$	●	City/County
88	Explore options to improve alignment of Church St	✓ ²	\$\$	●	County/ City
89	Consider corridor-wide recommendation 6 regarding the utilization of the center lane as a TWLTL, additional travel lane, or a bicycle lane	✓✓	\$\$	●	City/ County
90	Explore installing skip lines through the intersection	✓✓ ²	\$	●	County
Memorial Drive/16th Ave					
91	Consider corridor-wide recommendation 2 regarding a parking study and enforcement	✓ ²	\$\$	●	City
92	Consider corridor-wide recommendation 3 regarding ADA compliance	✓✓✓ ²	\$\$\$	●	City
93	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	City
94	Consider corridor-wide recommendation 5 regarding pedestrian and highway lighting	✓✓✓	\$\$\$	●	County
95	Consider corridor-wide recommendation 13 regarding green infrastructure	✓ ²	\$\$	●	City/ County
96	Consider corridor-wide recommendation 14 regarding sidewalk inspection and repair	✓✓✓	\$\$	●	City
97	Consider corridor-wide recommendation 18 regarding curb extensions	✓✓ ²	\$\$	●	County

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
98	Explore ways to improve sight distance (particularly under the railroad overpass)	✓✓ ²	\$	☉	City/ County
99	Consider removing the channelized NB island since it is not ADA compliant and appears too small for pedestrian refuge	✓ ²	\$\$	☉	City/ County
100	Investigate exclusive, dedicated lanes for all travel modes (especially for eastbound traffic as the roadway widens)	✓✓	\$\$	☉	County
101	Consider prohibiting left turns onto 16 th Ave	✓✓✓	\$\$	☐	City
102	Investigate pedestrian paths to the bus shelter and train station; provide safe paths/crosswalks for high-conflict paths (i.e. at 16th Ave)	✓✓✓	\$\$	☉	City/ County
103	Explore ways to enhance the <i>Priority Green Bike Lane</i> from City Hall to Straight Street (bike route continues past Straight Street onto One-Way, Market Street)	✓	\$	☉	City/ County
104	Explore NACTO-approved options for a bike lane/bus route crossover near the train station	✓	\$	☉	City/ County
105	Inspect intersection geometry (namely, minimizing curb radii)	✓ ²	\$\$\$	☐	City/ County
106	Explore ways to deter vehicles from speeding along Memorial Drive	✓	\$	☉	City/ County
Crosby Place/Federal Plaza					
107	Explore ways to improve sight distance (particularly under the railroad overpass)	✓✓ ²	\$	☉	City/ County
108	Explore place-making techniques for the area encompassed by Memorial Drive, Park Avenue, Straight Street, and Federal Plaza	N/A	\$\$\$	☐	City/ County
109	Consider implementing a refuge island for pedestrians crossing Market St near the train station	✓✓✓	\$\$	☉	City/ County
110	Consider corridor-wide recommendation 5 regarding lighting	✓✓✓	\$\$\$	☐	County
111	Consider closing Crosby Place, south of Market St, to limit conflict points and possibly extend the limits of Juan Pablo Duarte Plaza	✓✓✓ ²	\$\$\$	☐	City/ County
112	Consider limiting Crosby Place and Federal Plaza to local traffic and/or creating a one-way thoroughfare; consider corridor-wide recommendation 10 regarding angled parking	✓✓	\$\$	☐	City/ County
113	Investigate installation of Rectangular Rapid Flashing Beacon (RRFB)	✓✓	\$\$	☉	County

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
114	Explore extending the island to the overpass pier to eliminate left turns from Park Ave and Crosby Pl through movements	✓✓✓	\$\$\$	●	City/ County
Straight Street (The Reverend Angel Silva, Sr Way) [Beginning of Roberto Clemente Way]					
115	Consider corridor-wide recommendation 2 regarding a parking study and enforcement	✓ ²	\$\$	●	City
116	Consider corridor-wide recommendation 7 regarding edge lines and lane delineation	✓ ²	\$\$	●	County
117	Consider corridor-wide recommendation 18 regarding curb extensions	✓✓ ²	\$\$	●	County
118	Consider corridor-wide recommendation 24 regarding bike lanes and/or sharrows markings	✓	\$\$	●	County
119	Investigate narrowing Park Avenue and Market Street between Crosby Place and Straight St; delineate lanes and/or add parking	✓ ²	\$\$	●	City/ County
120	Consider re-curbings the SW corner of the Straight Street/Federal Plaza/Market Street intersection to align it with Market Street and Straight Street and shorten the crossing distance.	✓ ²	\$\$\$	●	City/ County
121	Explore options to move Checkers' driveway further from the intersection	✓ ²	\$\$\$	●	City/ County
Madison Street to E 19th Street					
122	Consider corridor-wide recommendation 2 regarding parking needs and enforcement (parking meters are located at illegal parking locations)	✓ ²	\$\$	●	City
123	Consider corridor-wide recommendation 4 regarding signal upgrades	✓✓	\$\$\$	●	City
124	Consider corridor-wide recommendation 5 regarding lighting	✓✓✓	\$\$\$	●	County
125	Investigate roadway reconfiguration along this section of Market Street to reallocate space to pedestrians via wider sidewalk and bicyclists via a buffered or protected bike lane	✓✓	\$\$\$	●	County
126	Consider corridor-wide recommendations 14 regarding sidewalk repairs and inspections (specifically at the NE corner of Summer St)	✓✓✓	\$\$	●	City
127	Consider corridor-wide recommendation 26 regarding the installation of bike corals	✓	\$\$	●	City/ County
128	Consider corridor-wide recommendation 30 regarding sign inspection (lack of "One-Way" and "Do Not Enter" signs)	✓	\$	●	City
129	Inspect intersection geometry at Summer Street (namely, minimizing curb radii)	✓ ²	\$\$\$	●	County/ City

² CMF/quantitative data not available for this type of roadway or treatment. Therefore, perceived safety benefit of the same was estimated relative to other similar treatments.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Madison Avenue					
130	Consider corridor-wide recommendation 4 regarding signal upgrades (notably the WB signals should be left and right turn arrows; not standard ball indications)	✓✓	\$\$\$	●	City
131	Consider corridor-wide recommendations 5 regarding highway and pedestrian lighting	✓✓✓	\$\$\$	●	County
132	Consider corridor-wide recommendation 7 and 29 regarding edge lines and crosswalk striping and restriping	✓✓ ²	\$\$	●	County
133	Consider corridor-wide recommendation 18 regarding curb extensions (especially on the SW and NE corners)	✓✓ ²	\$\$	●	County
134	Consider corridor-wide recommendation 26 regarding the installation of bike corals	✓	\$\$	●	City/ County
135	Consider corridor-wide recommendation 30 regarding sign inspection	✓	\$	●	City

B. Road Owner Response

An important part of the RSA process is the road owner’s response: an acknowledgment of the audit’s findings and recommendations, and their planned follow-up. In responding to the RSA’s findings, the road owner must bear in mind all the competing objectives involved when implementing the recommendations, and foremost among them is available resources. Because the audit process generated a long and wide-ranging list of improvements, the road owner is expected to implement these recommended improvements as time and funds allow in coordination with other projects and priorities.

Passaic County delivered their response following the finalization of the findings and recommendations table, a copy of which can be found in Appendix K.

A. Recommendation Visualizations

Examples of some of the site-specific and corridor-wide safety recommendations identified in Tables 4 and 5 are shown below and are based on current practices and standards. Descriptions and images of each treatment are from the *2017 NJ Complete Street Design Guide* (CSDG) and NACTO’s *Urban Street Design Guide* (NACTO-US) and *Urban Bikeway Design Guide* (NACTO-UB), including sources contained therein.

1. Pedestrian Facilities

Curb extensions visually and physically narrow the roadway at intersections and midblock locations, creating safer and shorter pedestrian crossings, while increasing the available space for streetscape. They increase the overall visibility of pedestrians by aligning them with the parking lane and help prohibit vehicles from parking in violation of Title 39. Crossing islands, or pedestrian refuge islands, reduce the exposure time of pedestrians to vehicular traffic. They enable pedestrians to make a crossing in two stages — crossing one direction of vehicular travel lanes, pausing at the island, and then completing the crossing. They are recommended where a

pedestrian must cross three lanes of traffic in one or both directions but may be implemented on smaller cross sections where space permits.

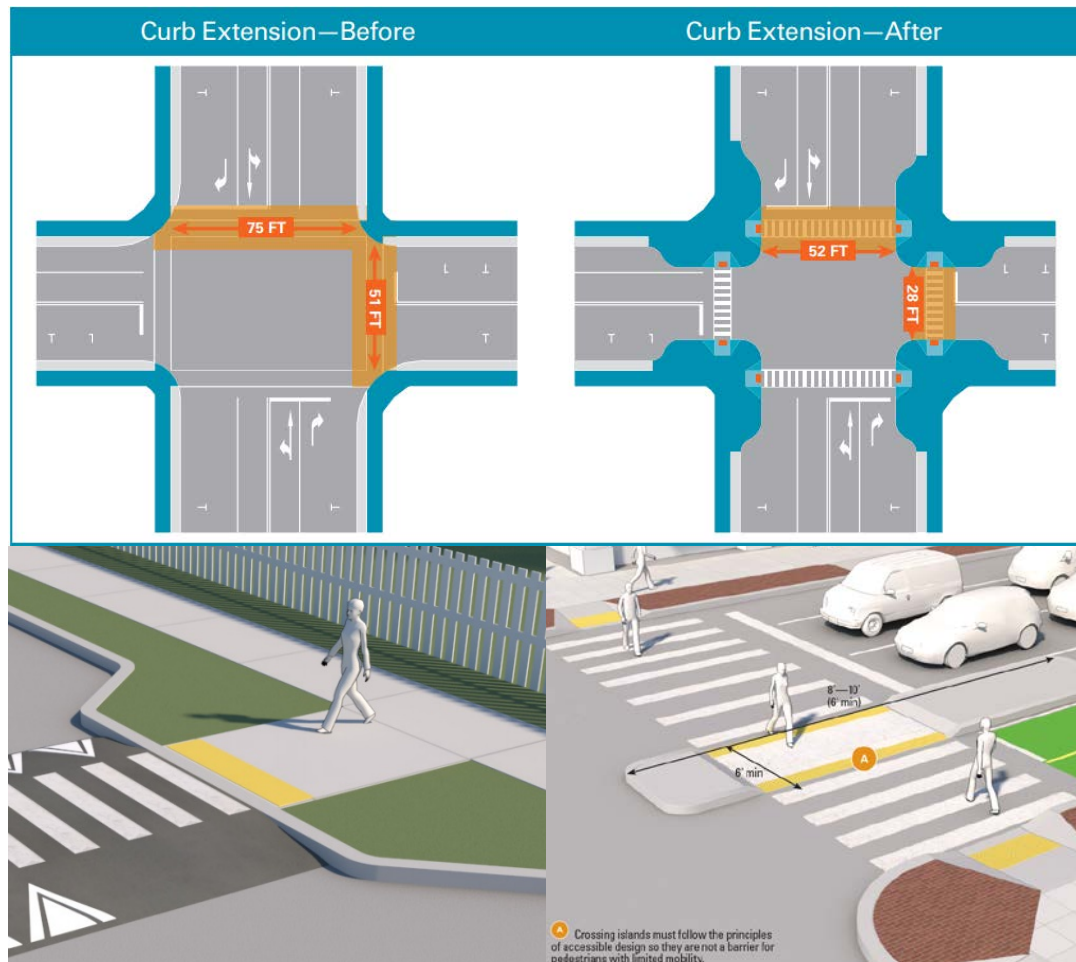


Figure 11 – Pedestrian Facility Examples

Top: Curb Extension. Left: Midblock Curb Extension. Right: Crossing Island (Source: CSDG)

Parklets are typically applied where narrow or congested sidewalks prevent the installation of traditional sidewalk cafes, or where local property owners or residents see a need to expand the seating capacity and public space on a given street. Parklets can be implemented on an interim basis. Heavy planters, granite blocks, moveable seating, and other elements may be incorporated into the interim design.

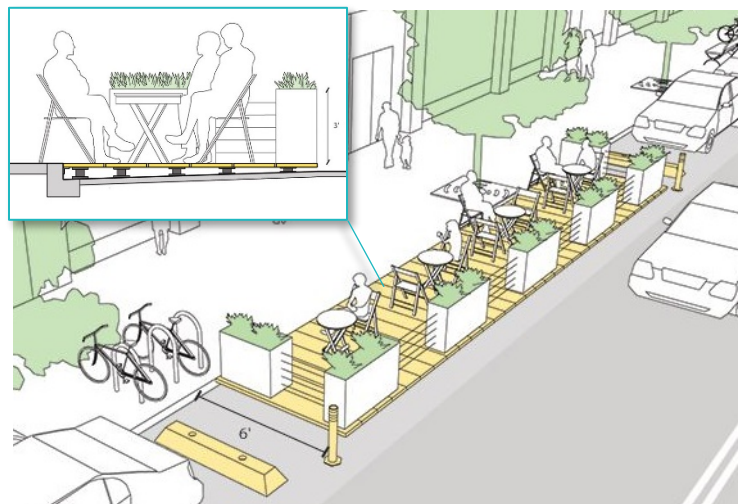


Figure 12 – Parklet Example (Source: NACTO)

2. Bicycle Facilities

Bicycle lanes provide an exclusive space for bicyclists using pavement markings and signage. Intended for one-way travel, they are typically located on both sides of a two-way street. Bicycle lanes enable bicyclists to ride at their preferred speed, free from interference from motorists. Where it is not feasible or appropriate to provide dedicated bicycle facilities, shared-lane markings (e.g. “sharrows”) may be used to indicate a shared environment for bicycles and vehicles, such as the ones currently implemented along Hamilton Street in New Brunswick.

Bicycle lanes and shared-lane markings should be extended through intersections and major driveways to enhance continuity, guide bicyclists through the intersection, and improve driver awareness of bicycle activity and movement.

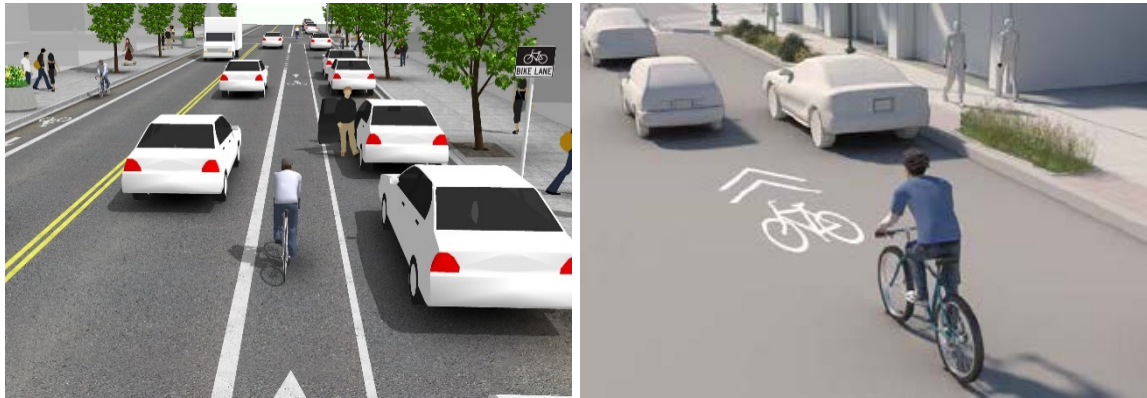


Figure 13 – Bicycle Facility Examples

Left: Bicycle Lane Adjacent to Parking or Curb (Source: NACTO-UB). Right: Sharrow Markings (Source: CSDG)

3. Transit Facilities

While stop location determines to a large extent how transit vehicles approach stops and interact with traffic, the physical configuration of stops and stations impact how riders interact with the transit system. Transit stops play a significant role in the urban street puzzle and can be used not only to provide comfortable and accessible transit access, but also to organize traffic interactions and manage curbside activity.

Curbside pull-out stops (or bus bays) are areas separated from the travel lanes and off the normal section of a roadway that provides for the pickup and discharge of passengers. This design allows through traffic to flow freely without the obstruction of stopped buses and works well for bus stops on streets with curbside parking.

Boarding bulb stops use curb extensions that align the transit stop with the parking lane, creating an in-lane stop. They can become a focal point for improved public space along the street, creating space for waiting passengers, furnishings, bike parking, and other pedestrian amenities and community facilities without encroaching on the pedestrian through zone.

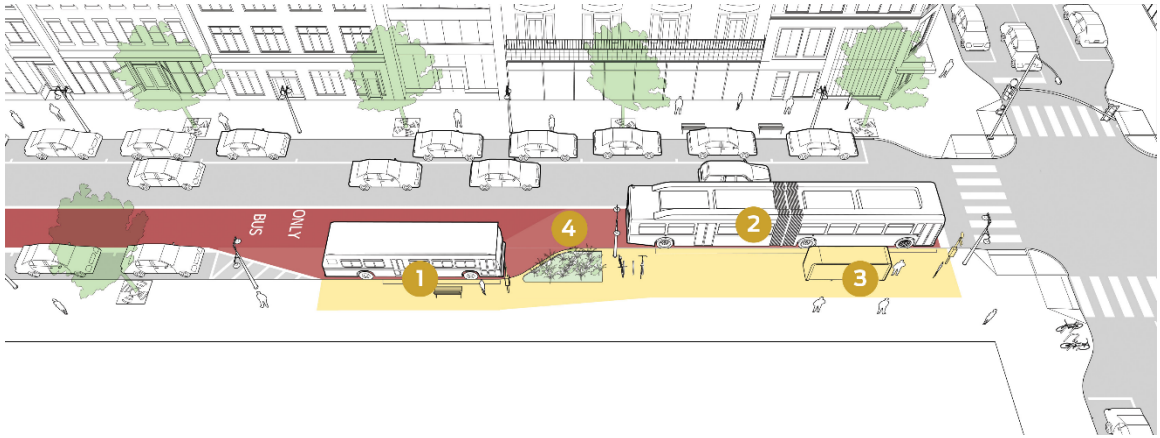


Figure 14 – Example of Bus Pull-Out Stop (1) & Bulb Stop (2), Combined into Tiered Stop

4. Green Infrastructure

Bioswales are vegetated, shallow, landscaped depressions designed to capture, treat, and infiltrate stormwater runoff as it moves downstream. They are the most effective type of green infrastructure facility in slowing runoff velocity and cleansing water while recharging the underlying groundwater table. They have flexible siting requirements, allowing them to be integrated with medians, curb extensions, and other public space or traffic calming strategies.

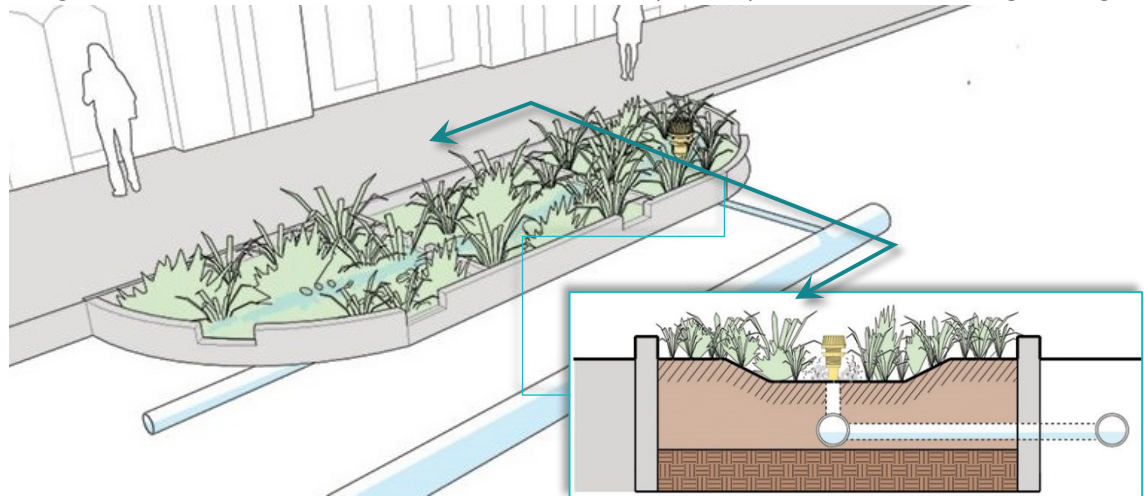


Figure 15 – Example of Bioswale

5. Roadway Reconfiguration

This treatment allows reallocation of existing street space (i.e. roadway cross section) to accommodate multi-modal users. Lane configuration and width for travel, turning movements, parking, and bicycle lanes can be adjusted to optimize use for vehicles, pedestrians, bicyclists, and transit. The below illustrations depict a typical two-way street in a central business district and a typical one-way street in a neighborhood setting. Both can be reconfigured for multi-modal use. Of note, Passaic County classifies Market Street within the RSA limits as a Downtown street in their 2012 Complete Streets Guidelines.

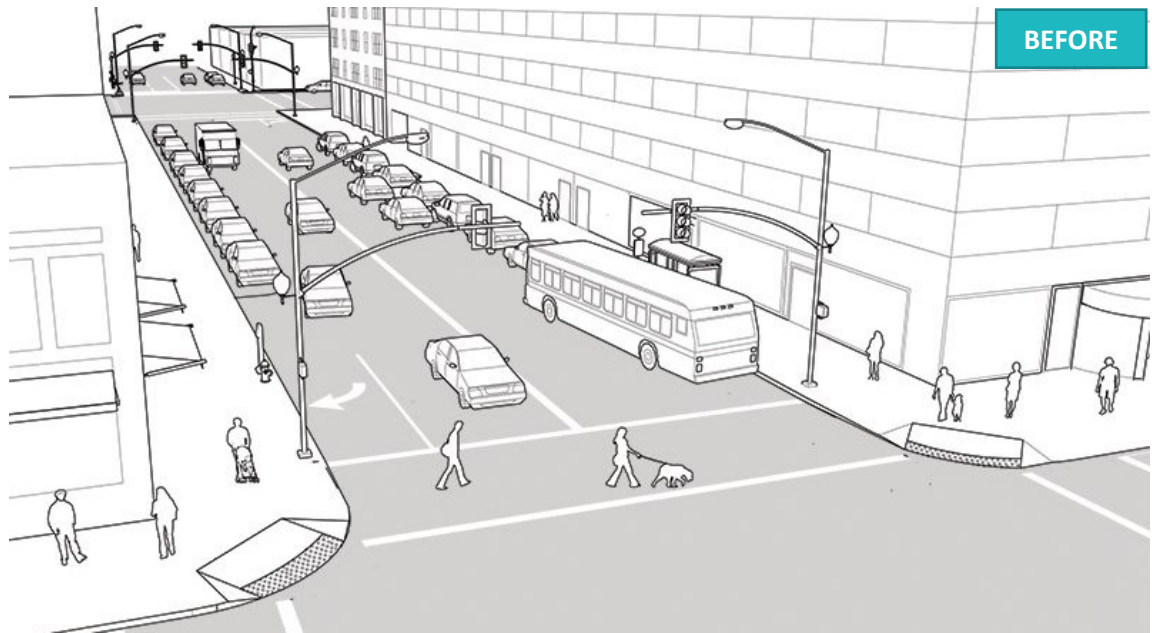


Figure 16 – Typical Two-Lane Downtown Street Typology (Source: NACTO-US)



Figure 17 – Retrofit Example on a Two-Lane Downtown Street Typology (Source: NACTO-US)



Figure 18 – Retrofit Example of a One-Way Neighborhood Street (Source: NACTO-US)

As an example, the wide pavement area near the Paterson train station, which is confusing to road users, can be restructured to provide additional sidewalk, green space, and a more defined bus stop using the elements described above. A visualization of the same is shown below – one of many potential options and configurations – such as the Ward Street TOD Plan.

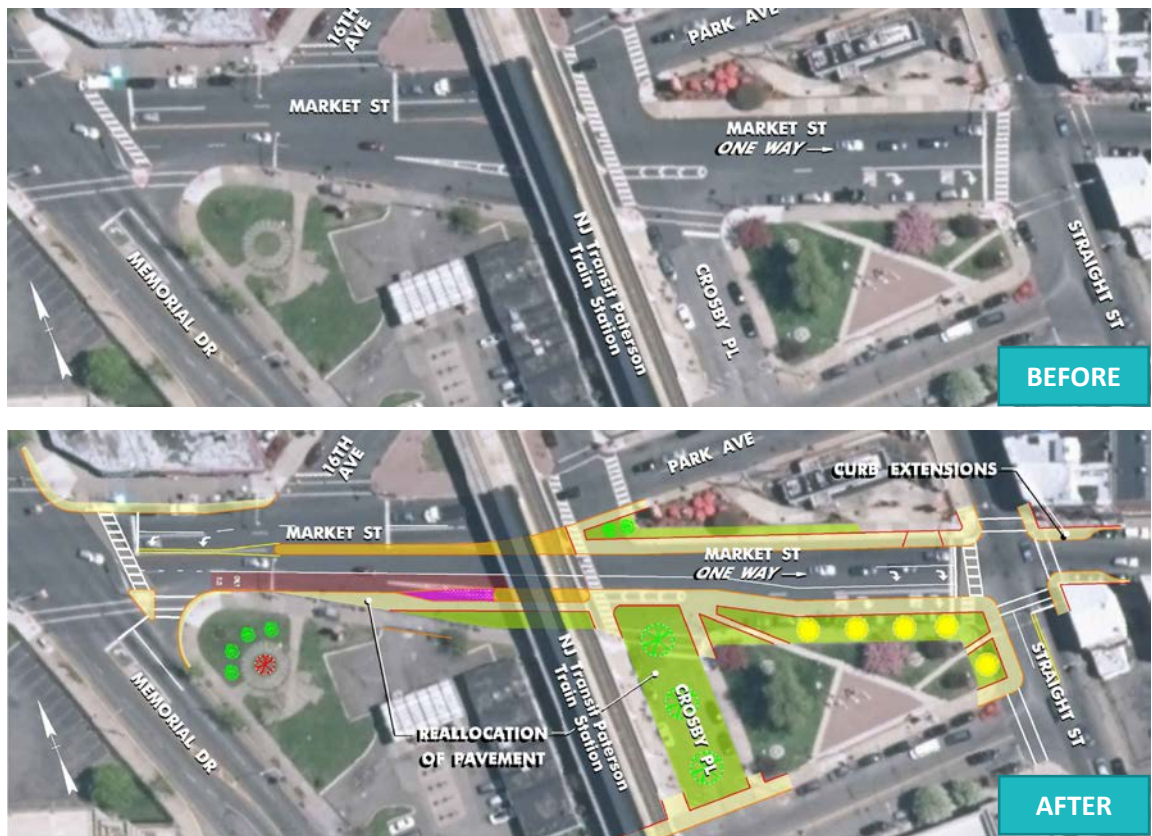


Figure 19 – Example of Reconfiguration near Paterson Train Station (N.T.S.)

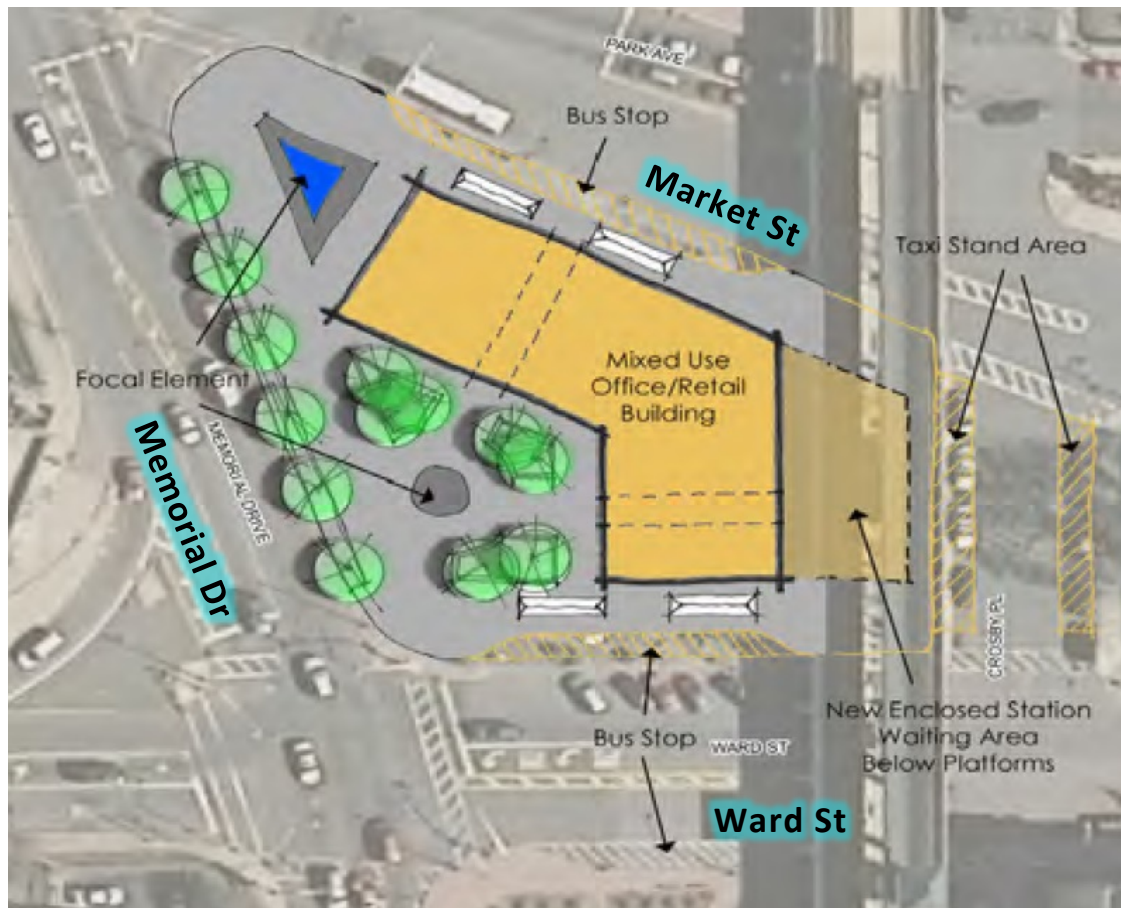


Figure 20 – Ward Street TOD Plan from the Paterson City Master Plan

VI. Conclusions

The Market Street RSA was conducted to identify safety issues and corresponding countermeasures that compromise multimodal use of the roadway. The team identified a long list of issues from the field visit, as well as many practical short-, mid-, and long-term improvements during the post-audit.

The recommendations documented in this report are designed to improve safety for all users of Market Street. Some of the strategies identified can be implemented through routine maintenance; all will be constrained by available time and budgetary priorities. The audit process and the resulting final document highlight the safety issues and present the needed improvements by location organized for systematic implementation by the roadway owner.

It is important to note that when it comes to improving safety, engineering strategies alone only go so far, especially in areas undergoing redevelopment. Education, with support from a targeted enforcement campaign, is an effective approach for addressing driver and pedestrian behaviors that lead to crashes. Employing a multipronged approach is an effective course of action to advance the goal of improved safety on the corridor.

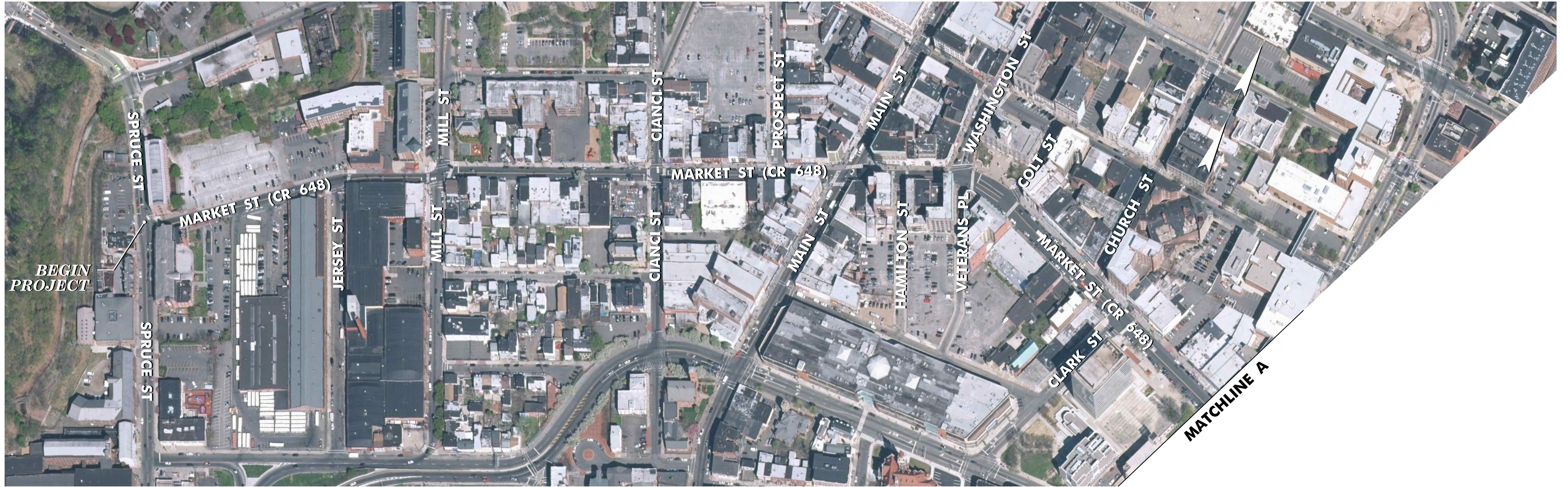
Appendix A - RSA Team

Audit Team

Name	Agency
Chuck Silverstein	Passaic County Engineering
Tim Mettlen	Passaic County
Michael Lysicatos	Passaic County Planning
Hong-Chau Yu	Paterson City Engineering
Bob Jurasin	Paterson Parking Authority
Lisa Lee	EZ Ride
Mateusz Pitrus	EZ Ride
Elmira Buongiorno	NJ Transit
Angela Quevedo	NJDOT - Bureau of Transportation Data and Safety
Marhaba Omer	NJDOT - Bureau of Transportation Data and Safety
Pavan Sheth	NJDOT - Bureau of Transportation Data and Safety
Amon Boucher	NJDOT - Bureau of Transportation Data and Safety
Christine Mittman	NJTPA
Aimee Jefferson	NJTPA
Will Yarzab	NJTPA
Bernie Boerchers	Greenman-Pedersen, Inc. (NJDOT Consultant)
Andrew Halloran	Greenman-Pedersen, Inc.
Julia Steponanko	Greenman-Pedersen, Inc.
Alicia Ulmes	Greenman-Pedersen, Inc.



Appendix B - Area Map



**NJDOT HSIP
ROAD SAFETY AUDIT
CR 648 (MARKET ST)**

CITY OF PATERSON
PASSAIC COUNTY

PROJECT LOCATION



GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

N.T.S.

Appendix C - Traffic Data

New Jersey Department of Transportation

Daily Volume from 03/31/2015 through 04/02/2015

Site Names: 2-4-686, , MEMORIAL DRIVE-.49, 16081455__, Paterson City
 County: PASSAIC
 Funct. Class: Urban Minor Arterial
 Location: Bet Ellison St and College Blvd

Seasonal Factor Group: RG1_FC16
 Daily Factor Group: RG1_FC16
 Axle Factor Group: RG1_FC16
 Growth Factor Group: RG1_FC16

	Sun 03/29/2015			Mon 03/30/2015			Tue 03/31/2015			Wed 04/01/2015			Thu 04/02/2015			Fri 04/03/2015			Sat 04/04/2015		
	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N
00:00										152	70	82	137	60	77						
01:00										74	33	41	73	37	36						
02:00										50	24	26	55	24	31						
03:00										47	17	30	47	21	26						
04:00										98	57	41	103	57	46						
05:00										165	83	82	178	92	86						
06:00										526	275	251	513	250	263						
07:00										1,431	800	631	1,389	755	634						
08:00										1,944	978	966	1,956	1,002	954						
09:00										1,325	622	703	1,315	623	692						
10:00										1,322	652	670	1,317	665	652						
11:00										1,340	649	691	1,338	647	691						
12:00										1,518	720	798	1,524	726	798						
13:00										1,537	777	760	1,521	761	760						
14:00							1,697	800	897	1,809	928	881									
15:00							2,090	1,011	1,079	2,133	1,080	1,053									
16:00							1,963	944	1,019	1,990	947	1,043									
17:00							1,780	749	1,031	1,931	832	1,099									
18:00							1,450	625	825	1,489	648	841									
19:00							1,072	494	578	1,214	559	655									
20:00							714	382	332	889	502	387									
21:00							645	379	266	717	384	333									
22:00							330	164	166	427	216	211									
23:00							222	101	121	253	119	134									
Volume							11,963	5,649	6,314	24,381	11,972	12,409	11,466	5,720	5,746						
AM Peak Vol										2,031	1,075	966	2,024	1,086	954						
AM Peak Fct										0.95	0.91	0.93	0.94	0.92	0.95						
AM Peak Hr										7:45	7:45	8:00	7:45	7:30	8:00						
PM Peak Vol										2,133	1,093	1,142									
PM Peak Fct										0.94	0.96	0.93									
PM Peak Hr										15:00	14:45	16:45									
Seasonal Fct							1.041	1.041	1.041	1.031	1.031	1.031	1.031	1.031	1.031						
Daily Fct							0.906	0.906	0.906	0.892	0.892	0.892	0.910	0.910	0.910						
Axle Fct							0.499	0.499	0.499	0.498	0.498	0.498	0.498	0.498	0.498						
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000						

New Jersey Department of Transportation

Daily Volume from 04/09/2012 through 04/11/2012

Site Names: 091609, , Rt 509 Main Street-.55, 16081512__, Paterson City
 County: PASSAIC
 Funct. Class: Urban Minor Arterial
 Location: Between Market St and Ellison St

Seasonal Factor Group: 2 Urban Other Roadways
 Daily Factor Group: 2 Urban Other Roadways
 Axle Factor Group:
 Growth Factor Group:

	Sun 04/08/2012			Mon 04/09/2012			Tue 04/10/2012			Wed 04/11/2012			Thu 04/12/2012			Fri 04/13/2012			Sat 04/14/2012		
	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N
00:00							126	72	54	118	82	36									
01:00							76	54	22	79	45	34									
02:00							61	48	13	52	36	16									
03:00							48	32	16	45	23	22									
04:00							68	47	21	66	50	16									
05:00							154	97	57	170	93	77									
06:00							422	163	259	375	157	218									
07:00							647	292	355	593	296	297									
08:00							656	339	317	684	354	330									
09:00							720	315	405	711	317	394									
10:00							832	354	478	643	387	256									
11:00				643	375	268	722	390	332												
12:00				852	401	451	720	382	338												
13:00				912	390	522	562	337	225												
14:00				957	382	575	827	401	426												
15:00				761	393	368	790	415	375												
16:00				786	390	396	666	384	282												
17:00				718	425	293	692	419	273												
18:00				645	395	250	627	363	264												
19:00				691	353	338	673	351	322												
20:00				502	298	204	493	280	213												
21:00				362	234	128	374	233	141												
22:00				273	166	107	286	171	115												
23:00				164	124	40	142	118	24												
Volume				8,266	4,326	3,940	11,384	6,057	5,327	2,893	1,453	1,440									
AM Peak Vol							853	399	487												
AM Peak Fct							0.92	0.96	0.92												
AM Peak Hr							10:15	10:45	9:45												
PM Peak Vol				959	425	575	871	430	450												
PM Peak Fct				0.94	0.94	0.84	0.89	0.95	0.81												
PM Peak Hr				12:45	17:00	14:00	14:30	14:30	14:15												
Seasonal Fct				0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988									
Daily Fct				0.995	0.995	0.995	0.958	0.958	0.958	0.954	0.954	0.954									
Axle Fct				0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500									
Pulse Fct				2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000									

New Jersey Department of Transportation

Daily Volume from 04/18/2012 through 04/20/2012

Site Names: 111664, , CO 647 Getty Ave-2.03, 16000647__, Paterson City
 County: PASSAIC
 Funct. Class: Urban Minor Arterial
 Location: Bet Park Ave and News Plaza

Seasonal Factor Group: REGION 2
 Daily Factor Group: REGION 2
 Axle Factor Group: REGION 2
 Growth Factor Group:

	Sun 04/15/2012			Mon 04/16/2012			Tue 04/17/2012			Wed 04/18/2012			Thu 04/19/2012			Fri 04/20/2012			Sat 04/21/2012		
	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N
00:00													127	62	65	179	73	106			
01:00													98	44	54	133	48	85			
02:00													80	38	42	101	43	58			
03:00													57	19	38	86	33	53			
04:00													70	26	44	71	29	42			
05:00													154	68	86	162	71	91			
06:00													333	149	184	334	177	157			
07:00													532	231	301	523	258	265			
08:00													619	226	393	644	264	380			
09:00													474	214	260	486	260	226			
10:00													464	262	202	556	291	265			
11:00													571	338	233	555	353	202			
12:00													590	345	245	626	341	285			
13:00									546	285	261		587	352	235						
14:00									605	337	268		620	381	239						
15:00									704	312	392		708	370	338						
16:00									598	328	270		686	331	355						
17:00									673	331	342		668	346	322						
18:00									465	265	200		609	321	288						
19:00									445	240	205		564	261	303						
20:00									407	211	196		508	249	259						
21:00									362	177	185		418	198	220						
22:00									284	123	161		321	150	171						
23:00									220	96	124		234	105	129						
Volume									5,309	2,705	2,604		10,092	5,086	5,006	3,830	1,900	1,930			
AM Peak Vol													666	338	418	683	353	393			
AM Peak Fct													0.91	0.85	0.90	0.85	0.88	0.73			
AM Peak Hr													7:45	11:00	7:45	7:30	11:00	7:30			
PM Peak Vol													743	381	370						
PM Peak Fct													0.96	0.96	0.86						
PM Peak Hr													15:15	14:00	15:15						
Seasonal Fct									0.988	0.988	0.988		0.988	0.988	0.988	0.988	0.988	0.988			
Daily Fct									0.918	0.918	0.918		0.893	0.893	0.893	0.907	0.907	0.907			
Axle Fct									0.474	0.474	0.474		0.474	0.474	0.474	0.474	0.474	0.474			
Pulse Fct									2.000	2.000	2.000		2.000	2.000	2.000	2.000	2.000	2.000			

New Jersey Department of Transportation

Daily Volume from 04/17/2012 through 04/20/2012

Site Names: 111666, , CO 648 Market St-1.59, 16000648__, Paterson City
 County: PASSAIC
 Funct. Class: Urban Minor Arterial
 Location: Bet E 23rd St and E 24th St

Seasonal Factor Group: REGION 2
 Daily Factor Group: REGION 2
 Axle Factor Group: REGION 2
 Growth Factor Group:

	Sun 04/15/2012			Mon 04/16/2012			Tue 04/17/2012			Wed 04/18/2012			Thu 04/19/2012			Fri 04/20/2012			Sat 04/21/2012		
	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E
00:00										249	117	132	239	127	112	306	164	142			
01:00										209	115	94	167	86	81	189	100	89			
02:00										137	71	66	96	46	50	141	63	78			
03:00										86	48	38	81	47	34	142	72	70			
04:00										98	56	42	100	55	45	143	79	64			
05:00										228	144	84	211	122	89	219	141	78			
06:00										421	269	152	409	251	158	422	272	150			
07:00										631	332	299	624	338	286	645	347	298			
08:00										816	422	394	791	455	336						
09:00										584	314	270	565	317	248						
10:00										629	335	294	545	302	243						
11:00							677	374	303	644	356	288	637	370	267						
12:00							769	414	355	754	403	351	741	384	357						
13:00							772	393	379	731	387	344	812	430	382						
14:00							800	401	399	794	425	369	803	424	379						
15:00							910	485	425	927	497	430	964	529	435						
16:00							830	401	429	896	428	468	910	455	455						
17:00							914	467	447	875	430	445	923	454	469						
18:00							920	448	472	780	410	370	917	481	436						
19:00							791	399	392	736	396	340	863	460	403						
20:00							678	367	311	659	364	295	724	402	322						
21:00							679	345	334	537	291	246	664	347	317						
22:00							514	254	260	533	296	237	525	250	275						
23:00							401	191	210	359	191	168	369	180	189						
Volume							9,655	4,939	4,716	13,313	7,097	6,216	13,680	7,312	6,368	1,562	891	671			
AM Peak Vol										857	447	412	858	488	370						
AM Peak Fct										0.78	0.85	0.72	0.90	0.75	0.87						
AM Peak Hr										7:45	7:45	7:30	7:45	7:45	7:45						
PM Peak Vol							933	492	472	937	505	485	964	529	478						
PM Peak Fct							0.94	0.90	0.91	0.94	0.92	0.93	0.91	0.87	0.96						
PM Peak Hr							17:30	14:45	16:45	15:15	14:45	16:15	15:00	15:00	17:30						
Seasonal Fct							0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988			
Daily Fct							0.939	0.939	0.939	0.918	0.918	0.918	0.893	0.893	0.893	0.907	0.907	0.907			
Axle Fct							0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474			
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000			

New Jersey Department of Transportation

Daily Volume from 04/18/2012 through 04/20/2012

Site Names: 111665, , Market Street-.09, 16000648__, Paterson City
 County: PASSAIC
 Funct. Urban Minor Arterial
 Location: Bet Spruce St and Jersey St

Seasonal Factor Group: RG1_FC16
 Daily Factor Group: RG1_FC16
 Axle Factor Group: RG1_FC16
 Growth Factor Group: RG1_FC16

	Sun 04/15/2012			Mon 04/16/2012			Tue 04/17/2012			Wed 04/18/2012			Thu 04/19/2012			Fri 04/20/2012			Sat 04/21/2012		
	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E	ROAD	W	E
00:00													97	45	52	111	54	57			
01:00													72	30	42	76	27	49			
02:00													61	32	29	51	24	27			
03:00													30	20	10	43	17	26			
04:00													74	33	41	86	34	52			
05:00													175	85	90	195	100	95			
06:00													328	159	169	328	142	186			
07:00													520	227	293	542	248	294			
08:00													845	493	352	879	470	409			
09:00													454	234	220	494	241	253			
10:00									399	198	201	472	231	241							
11:00									434	218	216	472	229	243							
12:00									517	262	255	546	261	285							
13:00									578	261	317	590	282	308							
14:00									618	315	303	572	331	241							
15:00									681	347	334	679	384	295							
16:00									695	391	304	672	378	294							
17:00									663	369	294	706	377	329							
18:00									517	235	282	593	276	317							
19:00									494	223	271	506	212	294							
20:00									409	171	238	439	182	257							
21:00									297	109	188	309	120	189							
22:00									255	112	143	252	94	158							
23:00									133	48	85	166	77	89							
Volume									6,690	3,259	3,431	9,630	4,792	4,838	2,311	1,116	1,195				
AM Peak Vol												845	493	375							
AM Peak Fct												0.88	0.82	0.88							
AM Peak Hr												8:00	8:00	7:45							
PM Peak Vol									726	415	341	747	441	329							
PM Peak Fct									0.81	0.76	0.96	0.86	0.81	0.92							
PM Peak Hr									16:15	16:15	14:45	16:15	16:15	17:00							
Seasonal Fct									0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988	0.988			
Daily Fct									0.918	0.918	0.918	0.893	0.893	0.893	0.907	0.907	0.907				
Axle Fct									0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474	0.474				
Pulse Fct									2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000				

Appendix D - Vehicular Crash Diagrams

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
32	19:09	FRI	10-24-14	0	DRY	CLEAR	DARK
71	08:45	FRI	04-17-15	1	DRY	CLEAR	DAY
87	12:45	TUE	06-16-15	0	DRY	CLEAR	DAY
95	03:07	SAT	07-18-15	0	DRY	CLEAR	DARK
102	14:20	WED	09-09-15	1	DRY	CLEAR	DAY
176	06:54	MON	05-16-16	1	DRY	CLEAR	DAY
251	17:50	MON	12-12-16	3	DRY	CLEAR	DUSK



MATCH LINE A
SEE SHEET NO. 2 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	3
INJURIES	4
FATALITIES	0
TOTAL NO. OF COLLISIONS	7

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2014-2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017\1698_HSPR_Program_and_Project_Development\Support\WDOT_HSPR_Year1_Cadwork\04_Passals\CADD\Sheets - Vehicles\Sheet-01.dgn
DATE: 10/26/2017
TIME: 11:53:37 AM
GREENMAN-PEDERSEN, INC.

FILE: L:\2017\1691 RSP Program and Project Development Support\VDOT RSP Year 1\Cadd\1691\1691_VehColls_Sheet-2.dgn
 TIME: 11:45:29 AM
 DATE: 02/02/17

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
7	19:35	MON	04-07-14	0	WET	RAIN	DARK
8	18:59	SAT	05-03-14	0	DRY	CLEAR	DAY
16	18:20	TUE	05-27-14	1	DRY	CLEAR	DAY
19	19:36	MON	06-09-14	1	DRY	CLEAR	DAY
19	11:57	SAT	06-21-14	1	DRY	CLEAR	DAY
20	20:11	THU	08-07-14	0	DRY	CLEAR	DAY
21	10:28	THU	08-14-14	0	DRY	CLEAR	DAY
29	21:15	WED	10-01-14	0	DRY	CLEAR	DARK
41	17:41	THU	11-27-14	0	WET	CLEAR	DARK
45	13:27	FRI	12-12-14	0	DRY	CLEAR	DAY
61	15:45	WED	03-25-15	0	WET	RAIN	DAY
63	14:55	SUN	03-29-15	0	DRY	CLEAR	DAY
68	12:57	FRI	04-10-15	0	WET	OVERCAST	DAY
72	10:16	FRI	04-24-15	0	DRY	CLEAR	DAY
83	03:54	SUN	05-24-15	1	DRY	CLEAR	DARK
85	16:30	MON	06-01-15	0	DRY	CLEAR	DAY
86	05:39	THU	06-11-15	0	DRY	CLEAR	DAY
93	-	SAT	07-11-15	0	DRY	CLEAR	DAY
98	-	FRI	08-21-15	0	DRY	CLEAR	DAY
99	13:10	WED	08-26-15	0	DRY	CLEAR	DAY
100	11:30	SAT	08-29-15	1	DRY	CLEAR	DAY
101	17:55	SAT	09-05-15	0	DRY	CLEAR	DAY
114	15:51	MON	11-02-15	0	DRY	CLEAR	DAY
118	23:52	SAT	11-14-15	3	DRY	CLEAR	DARK
120	15:36	MON	11-23-15	0	DRY	CLEAR	DAY
123	10:29	MON	11-30-15	0	DRY	CLEAR	DAY
124	12:41	SUN	12-13-15	0	DRY	CLEAR	DAY
129	13:45	SAT	01-09-16	0	DRY	CLEAR	DAY
131	14:55	MON	01-11-16	0	DRY	CLEAR	DAY
132	09:10	SUN	01-17-16	0	DRY	CLEAR	DAY
135	11:40	WED	01-27-16	0	WET	CLEAR	DAY
139	08:37	WED	02-03-16	0	DRY	RAIN	DAY
142	02:27	FRI	02-19-16	0	DRY	CLEAR	DARK
143	00:18	SUN	02-21-16	0	DRY	CLEAR	DARK
155	06:56	WED	03-16-16	1	DRY	CLEAR	DAY
161	10:26	SAT	03-26-16	0	DRY	CLEAR	DAY
197	16:10	TUE	06-28-16	0	DRY	CLEAR	DAY
201	12:07	THU	07-14-16	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
207	19:12	SAT	07-23-16	0	DRY	CLEAR	DAY
210	10:47	TUE	07-26-16	0	DRY	CLEAR	DAY
227	18:54	SAT	09-17-16	0	DRY	CLEAR	DUSK
230	07:00	TUE	09-20-16	1	DRY	CLEAR	DAY
233	17:40	SAT	10-01-16	0	DRY	OVERCAST	DAY
235	08:13	THU	10-13-16	0	DRY	CLEAR	DAY
238	06:32	THU	10-27-16	2	DRY	CLEAR	DAY
239	04:20	SAT	10-29-16	0	DRY	CLEAR	DUSK

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	38
INJURIES	8
FATALITIES	0
TOTAL NO. OF COLLISIONS	46

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
 BETWEEN SPRUCE STREET
 AND MADISON AVENUE

2014-2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

2
9

MATCH LINE A
 SEE SHEET NO. 1 OF 9

MATCH LINE B
 SEE SHEET NO. 3 OF 9

FILE: L:\2017\1698 I-95 Program and Project Development Support\VDOT_HSP_year_1\Cadd\dwg\04_Planet\COOD\Sheet - Vehicle\Sheet-03.dwg
 DATE: 12/18/2017
 TIME: 11:46:24 AM

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
1	15:40	TUE	01-21-14	0	SNOWY	BLOWING SNOW	DAY
3	13:20	SAT	02-15-14	0	SNOWY	SNOW	DAY
42	18:11	THU	12-04-14	0	DRY	CLEAR	DARK
60	14:15	THU	03-19-15	0	DRY	CLEAR	DAY
77	12:10	FRI	05-08-15	0	DRY	CLEAR	DAY
81	14:33	TUE	05-19-15	0	DRY	CLEAR	DAY
91	15:11	SAT	07-04-15	0	DRY	CLEAR	DAY
96	00:20	SAT	07-25-15	1	DRY	CLEAR	DARK
103	19:40	THU	09-10-15	0	WET	RAIN	DUSK
104	16:30	SAT	09-12-15	1	DRY	CLEAR	DAY
105	15:01	SUN	09-26-15	0	DRY	CLEAR	DAY
106	03:41	SAT	10-03-15	0	WET	RAIN	DARK
112	11:44	SUN	10-18-15	0	DRY	CLEAR	DAY
113	10:19	SUN	10-25-15	2	DRY	CLEAR	DAY
122	01:30	SAT	11-29-15	0	DRY	CLEAR	DARK
130	15:05	SAT	01-09-16	1	DRY	CLEAR	DAY
141	15:10	SAT	02-06-16	0	DRY	CLEAR	DAY
150	12:30	FRI	03-04-16	0	DRY	CLEAR	DAY
152	11:14	THU	03-10-16	0	DRY	CLEAR	DAY
153	20:20	SAT	03-12-16	0	DRY	CLEAR	DARK
156	10:09	FRI	03-18-16	0	DRY	CLEAR	DAY
157	16:08	MON	03-21-16	0	DRY	CLEAR	DAY
158	16:04	TUE	03-22-16	0	DRY	CLEAR	DAY
159	17:53	THU	03-24-16	0	DRY	CLEAR	DAY
160	13:25	SAT	03-26-16	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
177	15:30	TUE	05-19-16	0	DRY	CLEAR	DAY
180		THU	05-19-16	0	DRY	CLEAR	DARK
182	14:07	FRI	05-20-16	0	DRY	CLEAR	DAY
186	03:21	SAT	05-28-16	0	DRY	CLEAR	DARK
189	15:04	SAT	06-04-16	0	DRY	CLEAR	DAY
192	03:46	MON	06-06-16	0	DRY	CLEAR	DARK
202	15:32	THU	07-14-16	1	DRY	CLEAR	DAY
211	15:39	TUE	07-26-16	0	DRY	CLEAR	DAY
214	16:00	WED	08-03-16	0	DRY	CLEAR	DAY
218	03:40	THU	08-18-16	0	DRY	CLEAR	DARK
222	20:20	FRI	09-02-16	0	DRY	CLEAR	DARK
224	16:00	SAT	09-03-16	0	DRY	CLEAR	DAY
226	16:01	MON	09-12-16	0	DRY	CLEAR	DAY
240	20:34	SAT	10-29-16	0	DRY	CLEAR	DARK
242	08:35	WED	11-02-16	1	DRY	CLEAR	DAY
243	15:01	WED	11-02-16	0	DRY	CLEAR	DAY
247	07:46	MON	11-14-16	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	36
INJURIES	6
FATALITIES	0
TOTAL NO. OF COLLISIONS	42

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
 BETWEEN SPRUCE STREET
 AND MADISON AVENUE

2014-2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

MATCH LINE B
 SEE SHEET NO. 2 OF 9

MATCH LINE C
 SEE SHEET NO. 4 OF 9

FILE: L:\201709 ISIP Program and Project Development Support\NJDOT ISIP Year 1\Calendar\04_Planet\CAD\Sheet - Market Street 04.dwg DATE: 09/20/17 TIME: 11:42:22 AM

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
6	06:52	WED	03-26-14	0	DRY	CLEAR	DAY
31	16:50	MON	10-13-14	2	DRY	CLEAR	DAY
36	12:55	SAT	11-01-14	0	DRY	CLEAR	DAY
38	19:10	THU	11-06-14	0	WET	CLEAR	DARK
43	14:40	MON	12-08-14	0	DRY	CLEAR	DAY
58	14:42	WED	03-04-15	0	WET	OVERCAST	DAY
59	16:00	SUN	03-08-15	0	DRY	CLEAR	DAY
65	14:00	FRI	04-03-15	0	DRY	OVERCAST	DAY
70	00:45	FRI	04-17-15	0	DRY	CLEAR	DARK
73	00:19	SAT	04-25-15	0	DRY	CLEAR	DARK
76	13:08	THU	05-07-15	0	DRY	CLEAR	DAY
79	-	FRI	05-15-15	0	DRY	CLEAR	DAY
88	12:38	WED	06-17-15	0	DRY	CLEAR	DAY
94	13:45	THU	07-16-15	0	DRY	CLEAR	DAY
111	17:55	TUE	10-13-15	0	DRY	CLEAR	DUSK
127	09:21	MON	01-04-16	0	DRY	CLEAR	DAY
128	18:00	THU	01-07-16	0	DRY	CLEAR	DARK
148	15:00	THU	03-03-16	0	DRY	CLEAR	DAY
162	16:35	WED	03-30-16	0	DRY	CLEAR	DAY
166	17:13	SUN	04-10-16	0	DRY	CLEAR	DAY
175	08:52	WED	05-11-16	0	DRY	CLEAR	DAY
179	22:20	WED	05-18-16	0	DRY	CLEAR	DARK
184	14:11	TUE	05-24-16	0	DRY	CLEAR	DAY
190	17:44	SAT	06-04-16	1	DRY	CLEAR	DAY
194	14:07	WED	06-22-16	0	DRY	CLEAR	DAY
204	12:44	SAT	07-16-16	1	DRY	CLEAR	DAY
205	14:03	TUE	07-19-16	0	DRY	CLEAR	DAY
208	08:55	TUE	07-26-16	0	DRY	CLEAR	DAY
212	21:00	SUN	07-31-16	0	WET	RAIN	DARK
221	02:10	SUN	08-28-16	0	DRY	CLEAR	DAY
225	18:50	SUN	09-04-16	0	DRY	CLEAR	DARK
232	19:35	MON	09-26-16	0	DRY	CLEAR	DARK
248	14:17	TUE	11-22-16	0	DRY	CLEAR	DAY
249	18:23	FRI	12-09-16	0	DRY	CLEAR	DARK

MATCH LINE C
SEE SHEET NO. 3 OF 9

MATCH LINE D
SEE SHEET NO. 5 OF 9



LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	32
INJURIES	3
FATALITIES	0
TOTAL NO. OF COLLISIONS	35

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2014-2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

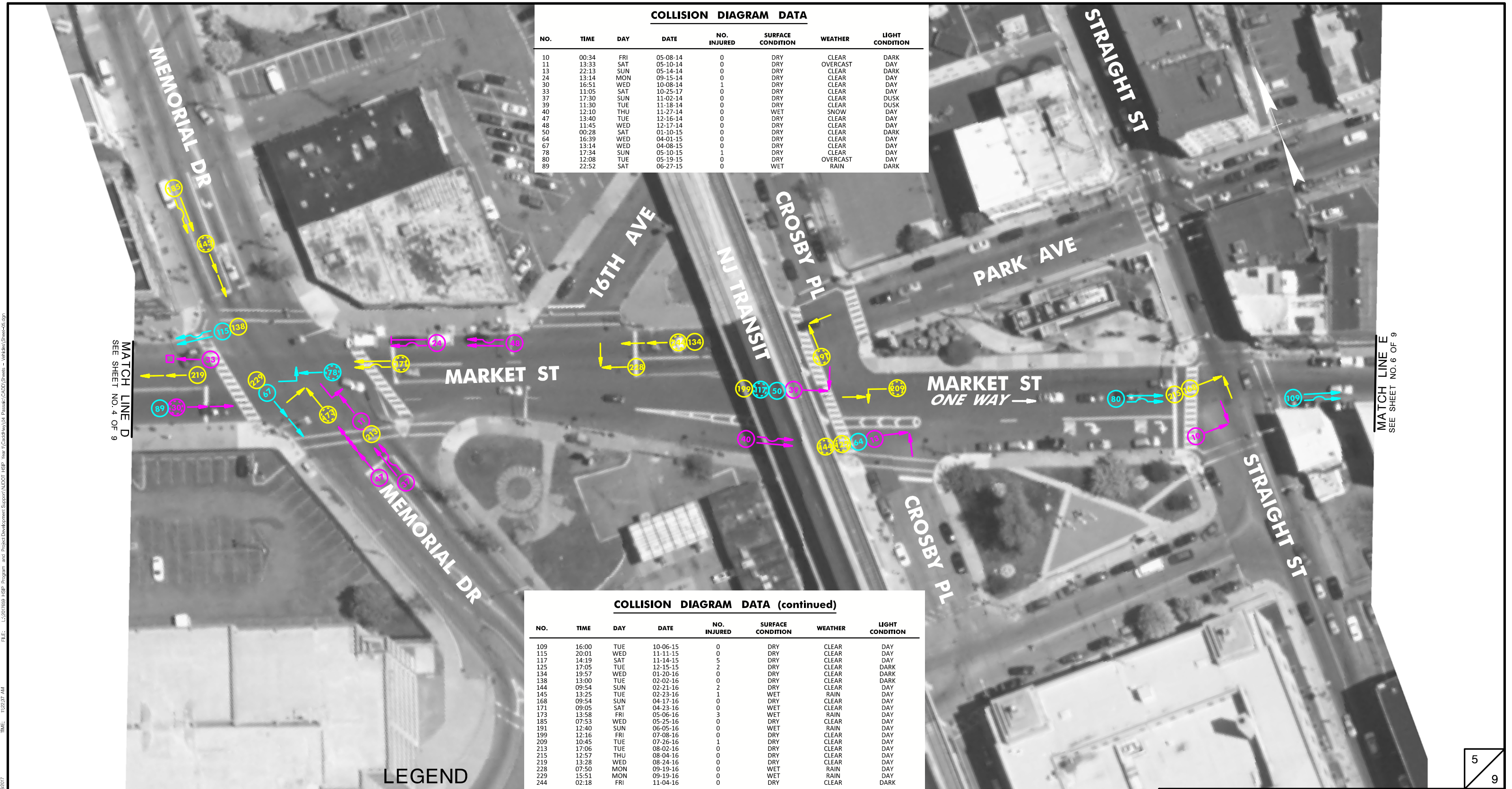
NOT TO SCALE

4
9

FILE: L:\2017\169_HSP_Program_and_Project_Development\Support\VDOT_HSP_year_1\Cadd\169_04_Planet\169001_Sheets - Vehicles\Sheet-5.dgn
 TIME: 11/22/17 AM
 DATE: 10/26/17
 GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
10	00:34	FRI	05-08-14	0	DRY	CLEAR	DARK
11	13:33	SAT	05-10-14	0	DRY	OVERCAST	DAY
13	22:13	SUN	05-14-14	0	DRY	CLEAR	DARK
24	13:14	MON	09-15-14	0	DRY	CLEAR	DAY
30	16:51	WED	10-08-14	1	DRY	CLEAR	DAY
33	11:05	SAT	10-25-17	0	DRY	CLEAR	DAY
37	17:30	SUN	11-02-14	0	DRY	CLEAR	DUSK
39	11:30	TUE	11-18-14	0	DRY	CLEAR	DUSK
40	12:10	THU	11-27-14	0	WET	SNOW	DAY
47	13:40	TUE	12-16-14	0	DRY	CLEAR	DAY
48	11:45	WED	12-17-14	0	DRY	CLEAR	DAY
50	00:28	SAT	01-10-15	0	DRY	CLEAR	DARK
54	16:39	WED	04-01-15	0	DRY	CLEAR	DAY
67	13:14	WED	04-08-15	0	DRY	CLEAR	DAY
78	17:34	SUN	05-10-15	1	DRY	CLEAR	DAY
80	12:08	TUE	05-19-15	0	DRY	OVERCAST	DAY
89	22:52	SAT	06-27-15	0	WET	RAIN	DARK

COLLISION DIAGRAM DATA (continued)							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
109	16:00	TUE	10-06-15	0	DRY	CLEAR	DAY
115	20:01	WED	11-11-15	0	DRY	CLEAR	DAY
117	14:19	SAT	11-14-15	5	DRY	CLEAR	DAY
125	17:05	TUE	12-15-15	2	DRY	CLEAR	DARK
134	19:57	WED	01-20-16	0	DRY	CLEAR	DARK
138	13:00	TUE	02-02-16	0	DRY	CLEAR	DARK
144	09:54	SUN	02-21-16	2	DRY	CLEAR	DAY
145	13:25	TUE	02-23-16	1	WET	RAIN	DAY
168	09:54	SUN	04-17-16	0	DRY	CLEAR	DAY
171	09:05	SAT	04-23-16	0	WET	CLEAR	DAY
173	13:58	FRI	05-06-16	3	WET	RAIN	DAY
185	07:53	WED	05-25-16	0	DRY	CLEAR	DAY
191	12:40	SUN	06-05-16	0	WET	RAIN	DAY
199	12:16	FRI	07-08-16	0	DRY	CLEAR	DAY
209	10:45	TUE	07-26-16	1	DRY	CLEAR	DAY
213	17:06	TUE	08-02-16	0	DRY	CLEAR	DAY
215	12:57	THU	08-04-16	0	DRY	CLEAR	DAY
219	13:28	WED	08-24-16	0	DRY	CLEAR	DAY
228	07:50	MON	09-19-16	0	WET	RAIN	DAY
229	15:51	MON	09-19-16	0	WET	RAIN	DAY
244	02:18	FRI	11-04-16	0	DRY	CLEAR	DARK



LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	30
INJURIES	8
FATALITIES	0
TOTAL NO. OF COLLISIONS	38

SYMBOLS	
→	MOVING VEHICLE
←	BACKING VEHICLE
---	NON-INVOLVED VEHICLE
⊕	INJURY IN ACCIDENT
⊙	FATAL ACCIDENT
x---	PEDESTRIAN
□	FIXED OBJECT
⊠	NON-FIXED OBJECT
△	ANIMAL
⊗	POTHOLE

TYPES OF COLLISIONS	
←←	REAR END
→→	HEAD ON
←→	SIDE SWIPE
~	OUT OF CONTROL
⊖	OVERTURNED
↙	LEFT TURN
↘	RIGHT ANGLE
⊥	STRUCK PARKED VEHICLE

COLORS	
⊕ (pink)	2014 CRASHES
⊕ (cyan)	2015 CRASHES
⊕ (yellow)	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
 BETWEEN SPRUCE STREET
 AND MADISON AVENUE

2014-2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

DATE: 12/08/2017
 TIME: 12:02:34 PM
 FILE: L:\2017\250 HSP Program and Project Development Support\NJDOT HSP Year 1\Carroll\04_Passaic\CADD\Draws - 1\171116\Sheet_06.dwg
 GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
5	13:42	MON	03-24-14	0	DRY	CLEAR	DAY
52	10:41	THU	01-22-15	0	DRY	CLEAR	DAY
57	16:18	SAT	02-21-15	0	SNOWY	SNOW	DAY
66	05:54	SAT	04-04-15	1	WET	RAIN	DARK
74	14:54	MON	04-27-15	0	DRY	CLEAR	DAY
107	08:00	SAT	10-03-15	0	WET	OVERCAST	DAY
154	20:24	SUN	03-13-16	0	DRY	CLEAR	DARK
170	07:37	TUE	04-19-16	1	DRY	CLEAR	DAY
172	16:26	TUE	05-03-16	1	WET	OVERCAST	DAY
206	23:30	WED	07-20-16	0	DRY	CLEAR	DARK
217	21:34	THU	08-08-16	0	DRY	CLEAR	DARK
237	15:55	MON	10-17-16	0	DRY	CLEAR	DAY



MATCH LINE E
 SEE SHEET NO. 4 OF 9

MATCH LINE F
 SEE SHEET NO. 7 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	9
INJURIES	3
FATALITIES	0
TOTAL NO. OF COLLISIONS	12

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

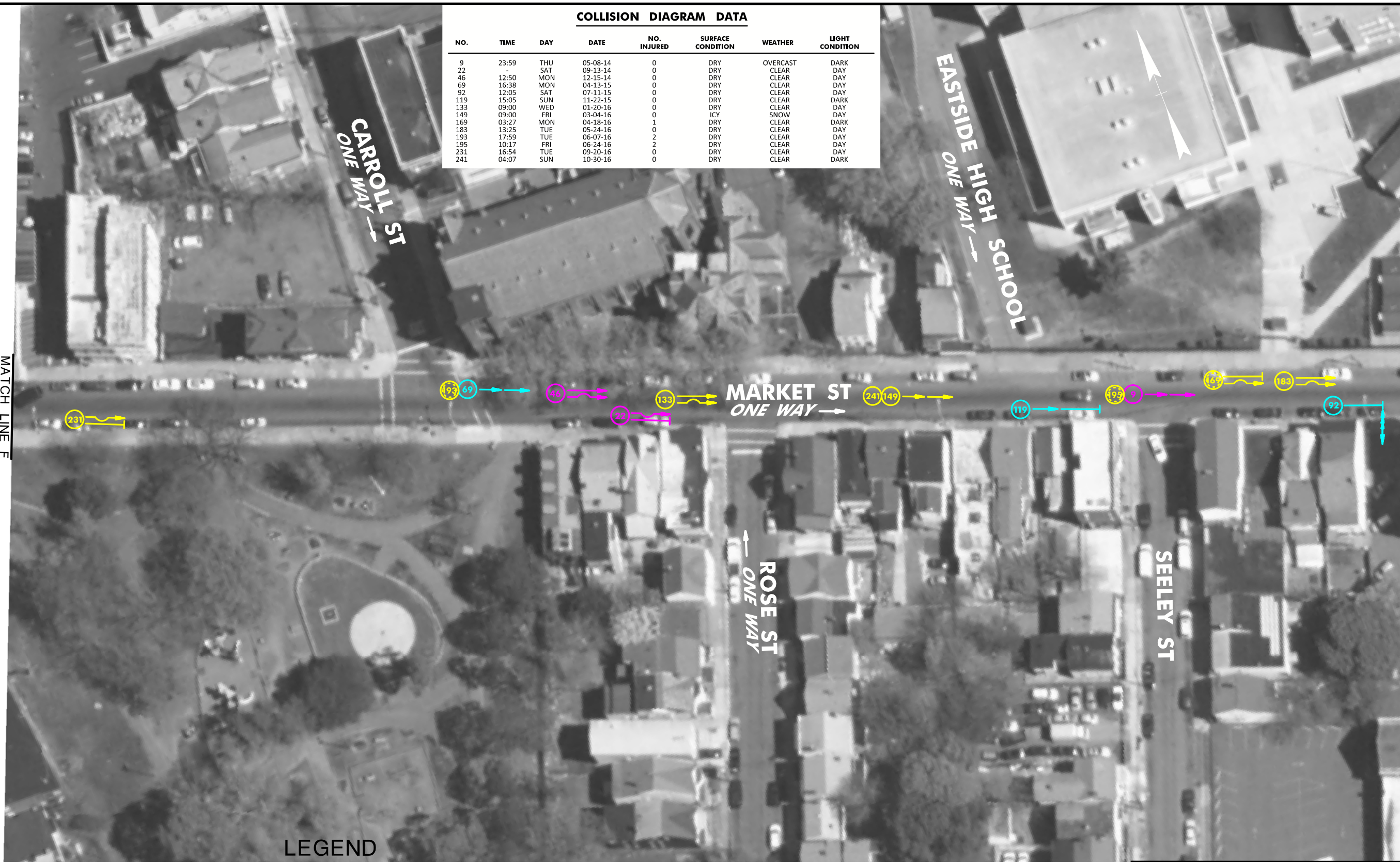
MARKET STREET
 BETWEEN SPRUCE STREET
 AND MADISON AVENUE

2014-2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
 Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017\1818 HSP Program and Project Development\Support\AADOT_HSP_Year 1\Cad\mwy04_Passat\CADD\Sheets - Vehicles\Sheet-07.dgn
 TIME: 11:48:50 AM
 DATE: 10/26/17
 GREENMAN-PEDERSEN, INC.



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
9	23:59	THU	05-08-14	0	DRY	OVERCAST	DARK
22	-	SAT	09-13-14	0	DRY	CLEAR	DAY
46	12:50	MON	12-15-14	0	DRY	CLEAR	DAY
69	16:38	MON	04-13-15	0	DRY	CLEAR	DAY
92	12:05	SAT	07-11-15	0	DRY	CLEAR	DAY
119	15:05	SUN	11-22-15	0	DRY	DARK	DARK
133	09:00	WED	01-20-16	0	DRY	CLEAR	DAY
149	09:00	FRI	03-04-16	0	ICY	SNOW	DAY
169	03:27	MON	04-18-16	1	DRY	CLEAR	DARK
183	13:25	TUE	05-24-16	0	DRY	CLEAR	DAY
193	17:59	TUE	06-07-16	2	DRY	CLEAR	DAY
195	10:17	FRI	06-24-16	2	DRY	CLEAR	DAY
231	16:54	TUE	09-20-16	0	DRY	CLEAR	DAY
241	04:07	SUN	10-30-16	0	DRY	CLEAR	DARK

MATCH LINE F
SEE SHEET NO. 7 OF 9

MATCH LINE G
SEE SHEET NO. 8 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	11
INJURIES	3
FATALITIES	0
TOTAL NO. OF COLLISIONS	14

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE
2014-2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

FILE: L:\2017059 HSP Program and Project Development Support\VDOT_HSP Year 1\Cadbury\04_Planet\CAOD\Sheets - Venetika\Sheet-8.dgn
 DATE: 12/16/2017
 TIME: 12:03:40 PM
 GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
2	21:14	WED	02-05-14	0	SNOWY	CLEAR	DARK
12	15:00	WED	05-14-14	0	DRY	CLEAR	DAY
18	18:42	WED	06-18-14	1	DRY	CLEAR	DAY
26	15:35	TUE	09-16-14	0	DRY	CLEAR	DAY
34	20:05	FRI	10-31-14	0	DRY	CLEAR	DARK
35	15:11	SUN	02-15-15	0	SNOWY	CLEAR	DAY
62	05:40	FRI	03-27-15	0	WET	RAIN	DARK
84	00:30	TUE	05-26-15	0	DRY	CLEAR	DARK
90	15:00	MON	06-29-15	0	DRY	OVERCAST	DAY
97	06:20	MON	08-03-15	0	DRY	CLEAR	DAY
108	14:35	MON	10-05-15	2	DRY	CLEAR	DAY
110	05:10	SUN	10-11-15	0	DRY	CLEAR	DARK
164	02:40	SAT	04-09-16	2	DRY	CLEAR	DAY
165	10:34	SAT	04-09-16	0	DRY	CLEAR	DAY
174	19:21	MON	05-09-16	1	DRY	CLEAR	DUSK
196	06:25	TUE	06-28-16	0	OIL	OVERCAST	DAWN
198	11:44	FRI	07-02-16	1	DRY	CLEAR	DAY
200	12:40	FRI	07-08-16	0	DRY	CLEAR	DAY
220	18:30	SAT	08-27-16	0	DRY	CLEAR	DAY
234	12:05	WED	10-12-16	0	DRY	CLEAR	DAY
246	16:00	WED	11-09-16	0	DRY	CLEAR	DUSK
252	09:35	WED	12-21-16	0	DRY	CLEAR	DAY

MATCH LINE G
SEE SHEET NO. 7 OF 9



MATCH LINE H
SEE SHEET NO. 9 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	17
INJURIES	5
FATALITIES	0
TOTAL NO. OF COLLISIONS	22

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

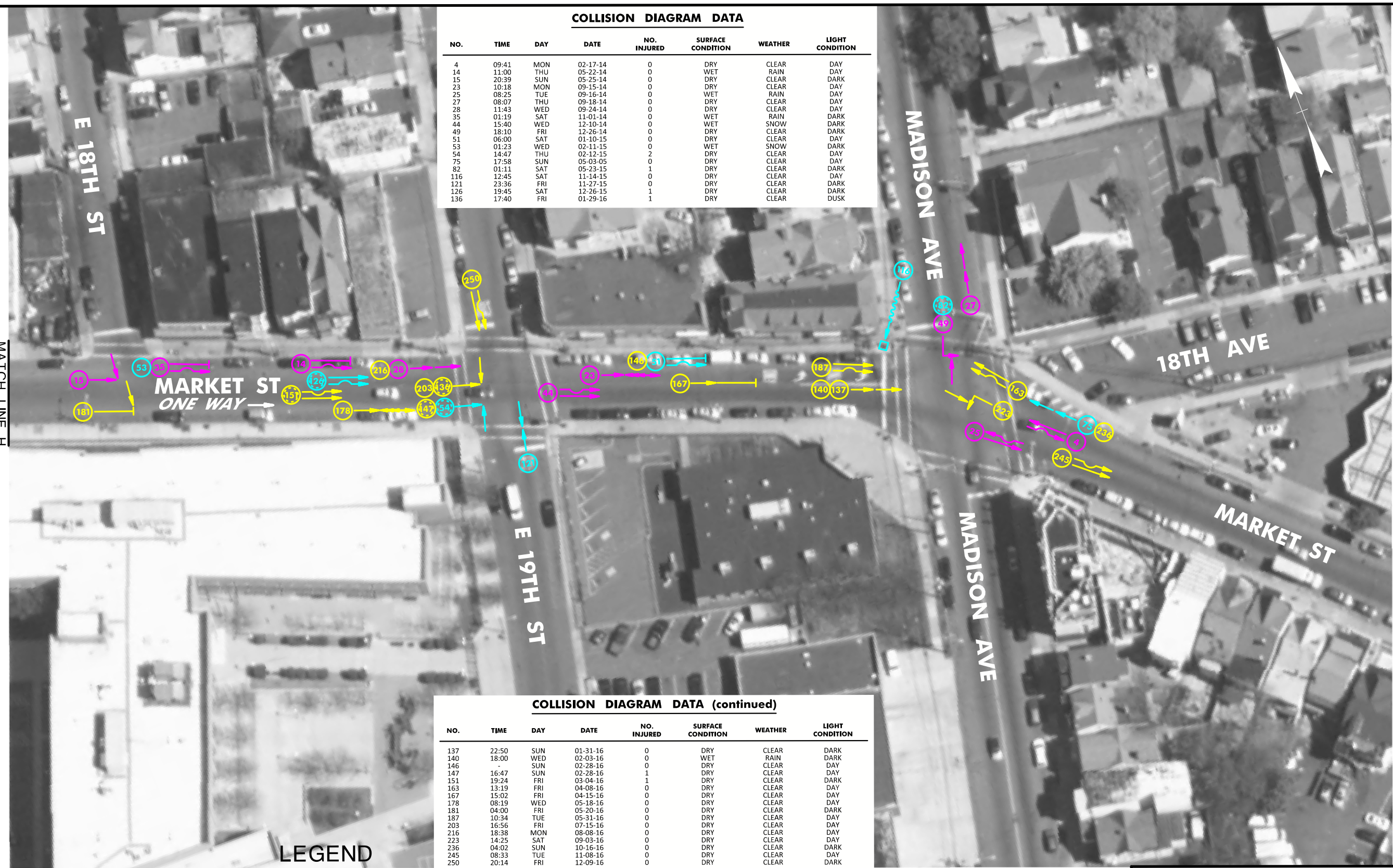
NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE
2014-2016 COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc. Engineering and Construction Services	NOT TO SCALE
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DATE: 12/19/2017 TIME: 11:50:50 AM FILE: L:\2017659 HSP Program and Project Development\Support\NCDOT_HSP_Year 1\CadDraw\04_Planals\CADD\Sheets - Verticals\Sheet-09.dgn

MATCH LINE H
SEE SHEET NO. 8 OF 9



COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
4	09:41	MON	02-17-14	0	DRY	CLEAR	DAY
14	11:00	THU	05-22-14	0	WET	RAIN	DAY
15	20:39	SUN	05-25-14	0	DRY	CLEAR	DARK
23	10:18	MON	09-15-14	0	DRY	CLEAR	DAY
25	08:25	TUE	09-16-14	0	WET	RAIN	DAY
27	08:07	THU	09-18-14	0	DRY	CLEAR	DAY
28	11:43	WED	09-24-14	0	DRY	CLEAR	DAY
35	01:19	SAT	11-01-14	0	WET	RAIN	DARK
44	15:40	WED	12-10-14	0	WET	SNOW	DARK
49	18:10	FRI	12-26-14	0	DRY	CLEAR	DARK
51	06:00	SAT	01-10-15	0	DRY	CLEAR	DAY
53	01:23	WED	02-11-15	0	WET	SNOW	DARK
54	14:47	THU	02-12-15	2	DRY	CLEAR	DAY
75	17:58	SUN	05-03-05	0	DRY	CLEAR	DAY
82	01:11	SAT	05-23-15	1	DRY	CLEAR	DARK
116	12:45	SAT	11-14-15	0	DRY	CLEAR	DAY
121	23:36	FRI	11-27-15	0	DRY	CLEAR	DARK
126	19:45	SAT	12-26-15	1	DRY	CLEAR	DARK
136	17:40	FRI	01-29-16	1	DRY	CLEAR	DUSK

COLLISION DIAGRAM DATA (continued)							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
137	22:50	SUN	01-31-16	0	DRY	CLEAR	DARK
140	18:00	WED	02-03-16	0	WET	RAIN	DARK
146	-	SUN	02-28-16	0	DRY	CLEAR	DAY
147	16:47	SUN	02-28-16	1	DRY	CLEAR	DAY
151	19:24	FRI	03-04-16	1	DRY	CLEAR	DARK
163	13:19	FRI	04-08-16	0	DRY	CLEAR	DAY
167	15:02	FRI	04-15-16	0	DRY	CLEAR	DAY
178	08:19	WED	05-18-16	0	DRY	CLEAR	DAY
181	04:00	FRI	05-20-16	0	DRY	CLEAR	DARK
187	10:34	TUE	05-31-16	0	DRY	CLEAR	DAY
203	16:56	FRI	07-15-16	0	DRY	CLEAR	DAY
216	18:38	MON	08-08-16	0	DRY	CLEAR	DAY
223	14:25	SAT	09-03-16	0	DRY	CLEAR	DAY
236	04:02	SUN	10-16-16	0	DRY	CLEAR	DARK
245	08:33	TUE	11-08-16	0	DRY	CLEAR	DAY
250	20:14	FRI	12-09-16	0	DRY	CLEAR	DARK

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	29
INJURIES	6
FATALITIES	0
TOTAL NO. OF COLLISIONS	35

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	2014 CRASHES
	2015 CRASHES
	2016 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2014-2016 COLLISION DIAGRAMS

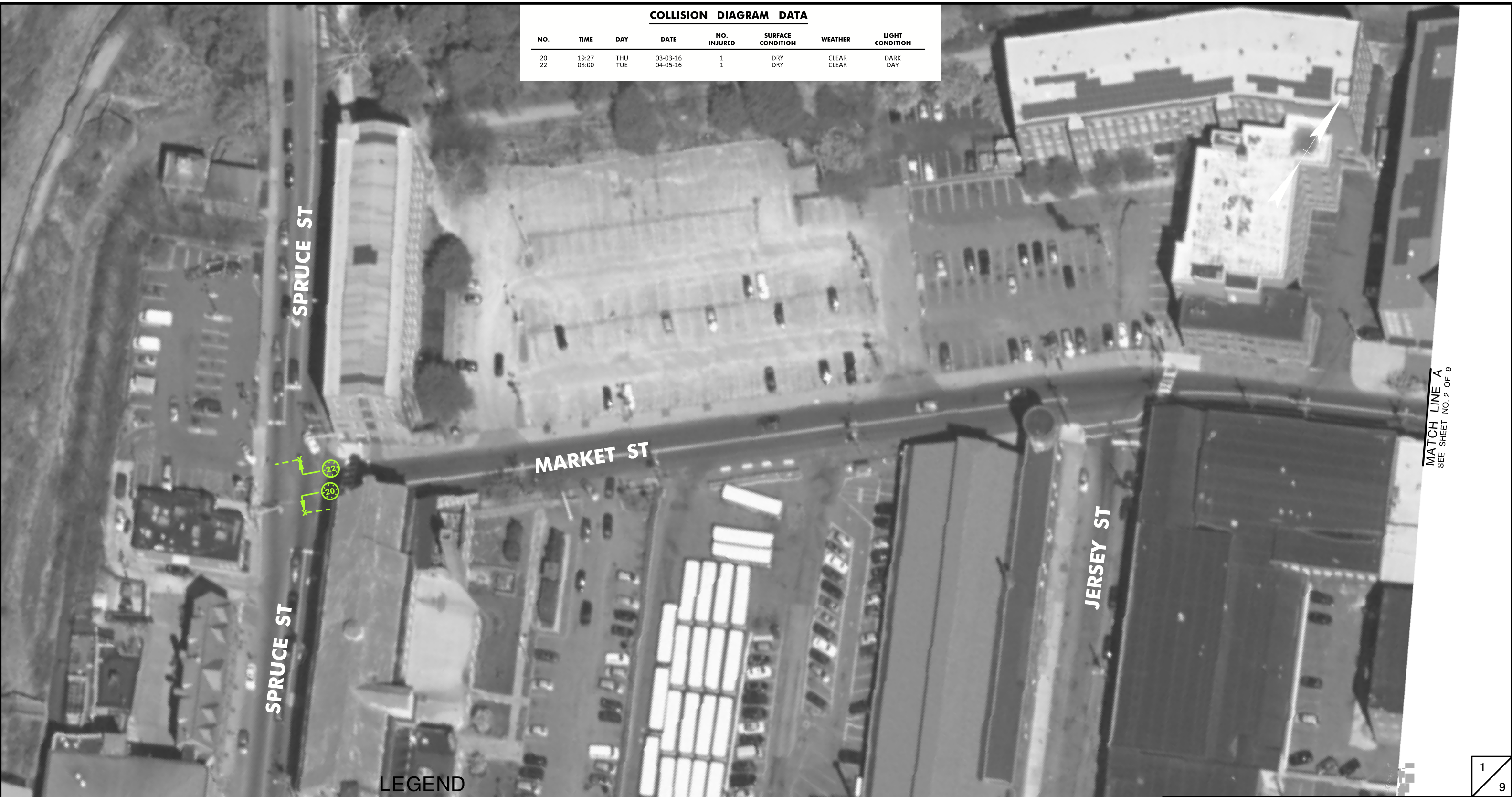
GPI Greenman-Pedersen, Inc. Engineering and Construction Services	NOT TO SCALE
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Appendix E - Pedestrian Crash Diagrams

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
20	19:27	THU	03-03-16	1	DRY	CLEAR	DARK
22	08:00	TUE	04-05-16	1	DRY	CLEAR	DAY

DATE: 10/21/14 AM TIME: 10:21:44 AM FILE: L:\2017\1694 ISRP Program and Project Development Support\VDOT ISRP Year 1\Cadd\1694_Pasack\CDD\1694_Sheets - Pedst\Sheet-1.dgn



MATCH LINE A
SEE SHEET NO. 2 OF 9

1
9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	2
FATALITIES	0
TOTAL NO. OF COLLISIONS	2

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
7	05:43	FRI	11-14-14	1	DRY	CLEAR	DARK
10	10:20	FRI	05-29-15	1	DRY	CLEAR	DAY
16	07:41	MON	11-23-15	1	DRY	CLEAR	DAY
23	15:30	SUN	04-17-16	2	DRY	CLEAR	DAY
32	15:30	THU	06-02-16	1	DRY	CLEAR	DAY



MATCH LINE A
SEE SHEET NO. 1 OF 9

MATCH LINE B
SEE SHEET NO. 3 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	5
FATALITIES	0
TOTAL NO. OF COLLISIONS	5

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

2
9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

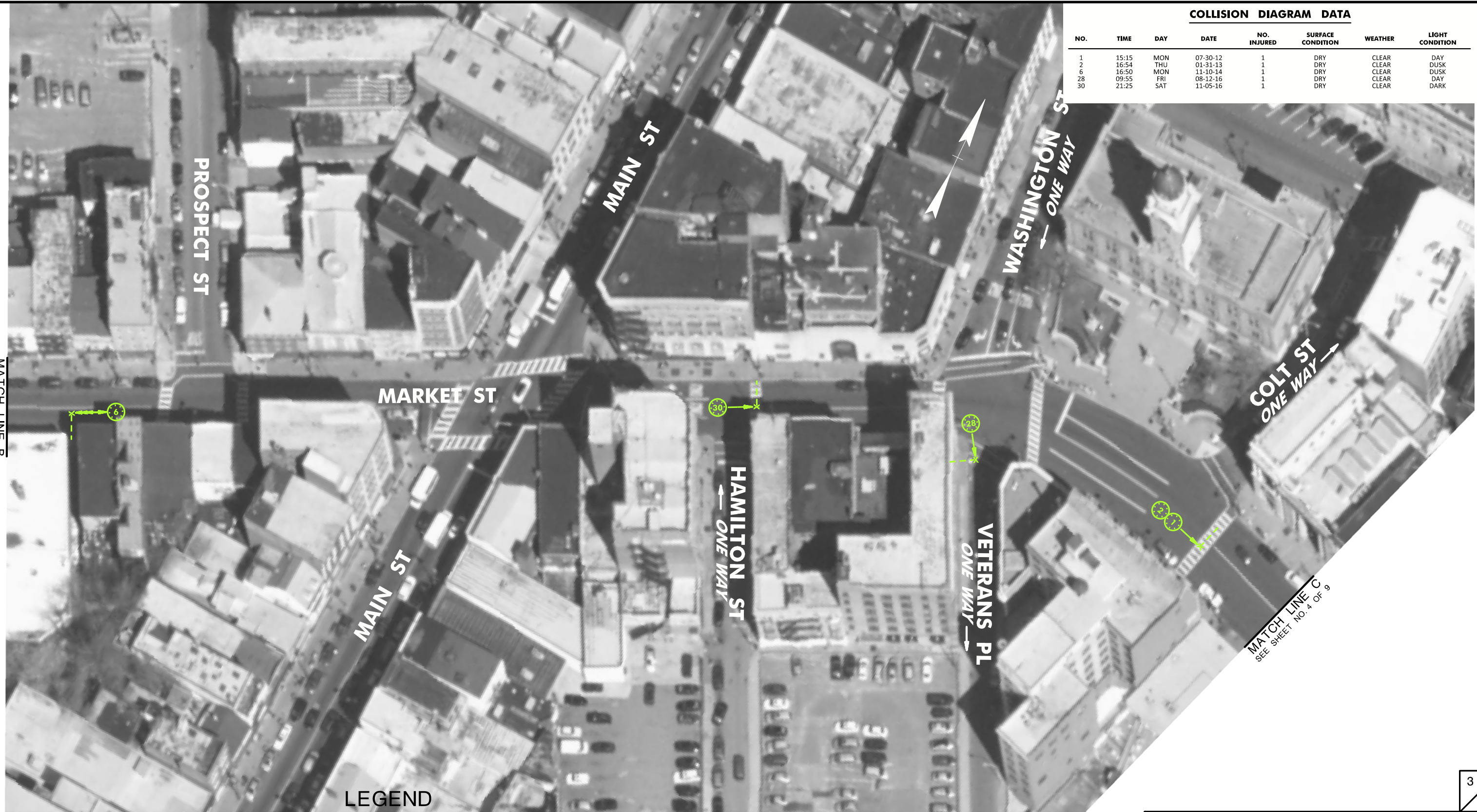
GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

DATE: 02/20/17 TIME: 10:20:20 AM FILE: L:\2017\1698 RSP Program and Project Development Support\VDOT RSP Year 1\Cadd\1704_Planet\1704001\Sheet - Ped\Sheet-02.dgn

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
1	15:15	MON	07-30-12	1	DRY	CLEAR	DAY
2	16:54	THU	01-31-13	1	DRY	CLEAR	DUSK
6	16:50	MON	11-10-14	1	DRY	CLEAR	DUSK
28	09:55	FRI	08-12-16	1	DRY	CLEAR	DAY
30	21:25	SAT	11-05-16	1	DRY	CLEAR	DARK



MATCH LINE B
SEE SHEET NO. 2 OF 9

MATCH LINE C
SEE SHEET NO. 4 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	<u>0</u>
INJURIES	<u>5</u>
FATALITIES	<u>0</u>
TOTAL NO. OF COLLISIONS	<u>5</u>

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

DATE: 09/20/17 TIME: 10:24:47 AM FILE: L:\2017\169_HSRP_Program_and_Project_Development\Support\VDOT_HSRP_year_1\Cadd\dwg\04_Planet\CODD\Sheet - Pedestrian-03.dwg

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
3	15:18	WED	05-07-14	2	DRY	CLEAR	DAY
5	20:11	FRI	09-26-14	1	DRY	CLEAR	DARK
12	09:48	FRI	09-04-15	1	DRY	CLEAR	DAY
17	21:30	MON	12-07-15	1	DRY	CLEAR	DARK
27	19:50	FRI	07-15-16	1	DRY	CLEAR	DAY



MATCH LINE C
SEE SHEET NO. 3 OF 9

MATCH LINE D
SEE SHEET NO. 5 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	<u>0</u>
INJURIES	<u>5</u>
FATALITIES	<u>0</u>
TOTAL NO. OF COLLISIONS	<u>5</u>

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

4
9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

DATE: 02/20/17
TIME: 10:52:29 AM
FILE: L:\2017\169_HSP_Program_and_Project_Development\Support\VDOT_HSP_year_1\Cadd\dwg\04_Planet\0001_Sheets - Pedst\Sheet-4.dwg

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
8	11:10	THU	01-15-15	1	DRY	CLEAR	DAY
15	17:13	MON	11-23-15	1	DRY	CLEAR	DUSK
21	06:20	WED	03-16-16	1	DRY	CLEAR	DARK
25	18:16	SAT	06-04-16	1	DRY	CLEAR	DAY



MATCH LINE D
SEE SHEET NO. 4 OF 9

MATCH LINE E
SEE SHEET NO. 6 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	4
FATALITIES	0
TOTAL NO. OF COLLISIONS	4

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

DATE: 02/20/17
 TIME: 10:42:55 AM
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DATE: 10/26/2017 TIME: 10:50:00 AM FILE: L:\2017\1698_HSP_Program_and_Project_Development\Support\WADOI_HSP_year_1\Cadd\wyo\04_Planet\03\0001\Sheet - Pedst\Sheet-06.dgn

MATCH LINE E
SEE SHEET NO. 5 OF 9

MATCH LINE F
SEE SHEET NO. 7 OF 9

COLLISION DIAGRAM DATA								
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION	
14	16:30	FRI	10-23-15	1	DRY	CLEAR	DUSK	
18	16:56	TUE	12-08-15	1	DRY	CLEAR	DARK	
31	11:20	SAT	11-05-16	1	DRY	CLEAR	DAY	



LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	3
FATALITIES	0
TOTAL NO. OF COLLISIONS	3

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
9	18:15	MON	03-16-15	1	DRY	CLEAR	DAY



MATCH LINE F
SEE SHEET NO. 6 OF 9

MATCH LINE G
SEE SHEET NO. 8 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	1
FATALITIES	0
TOTAL NO. OF COLLISIONS	1

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS	
	PEDESTRIAN CRASH

7
9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE

DATE: 02/20/17
TIME: 11:57:00 AM
FILE: L:\2017\169_HSP_Program_and_Project_Development\Support\VDOT_HSP_year\1\Cadd\dwg\04_Planet\GOOD\Sheets - Plans\Sheet-07.dwg

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
11	22:49	FRI	07-26-15	1	DRY	CLEAR	DARK
24	11:32	FRI	05-27-16	1	DRY	CLEAR	DAY



MATCH LINE G
SEE SHEET NO. 7 OF 9

MATCH LINE H
SEE SHEET NO. 9 OF 9

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	0
INJURIES	2
FATALITIES	0
TOTAL NO. OF COLLISIONS	2

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

8
9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc. <small>Engineering and Construction Services</small>	NOT TO SCALE
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DATE: 02/20/17
TIME: 12:00:04 PM
FILE: L:\2017\1698_HSP_Program_and_Project_Development\Support\WDOT_HSP_year_1\Cadd\dwg\04_Planet_CADD(Sheet) - Peds(Sheet-06.dwg)

FILE: L:\2017\1698_HSP_Program_and_Project_Development\Support\VDOT_HSP_year_1\Cadd\dwg\04_Planet_CADD_Sheets - Pedestrian-09.dwg

TIME: 11:41:55 AM

DATE: 02/28/2017

GREENMAN-PEDERSEN, INC.



MATCH LINE H
SEE SHEET NO. 8 OF 9

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
4	12:50	MON	08-18-14	1	DRY	CLEAR	DAY
13	12:39	MON	10-19-15	1	DRY	CLEAR	DAY
19	17:25	SUN	01-17-16	1	WET	RAIN	DARK
26	19:40	WED	06-22-16	1	DRY	CLEAR	DAY
29	04:50	TUE	09-06-16	0	DRY	CLEAR	DARK

LEGEND

NUMBER OF COLLISIONS WITH	
PROPERTY DAMAGE ONLY	1
INJURIES	4
FATALITIES	0
TOTAL NO. OF COLLISIONS	5

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	INJURY IN ACCIDENT
	FATAL ACCIDENT
	PEDESTRIAN
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

TYPES OF COLLISIONS	
	REAR END
	HEAD ON
	SIDE SWIPE
	OUT OF CONTROL
	OVERTURNED
	LEFT TURN
	RIGHT ANGLE
	STRUCK PARKED VEHICLE

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

MARKET STREET
BETWEEN SPRUCE STREET
AND MADISON AVENUE

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

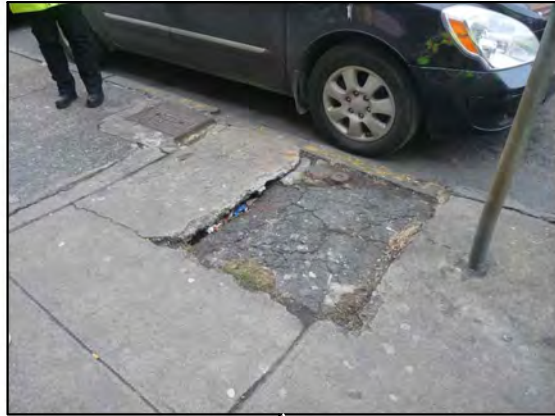
NOT TO SCALE

Appendix F - Photographs

The corridor is signed as a bike route despite a lack of bike-friendly infrastructure throughout the corridor.



Sidewalks were in disrepair throughout the corridor.



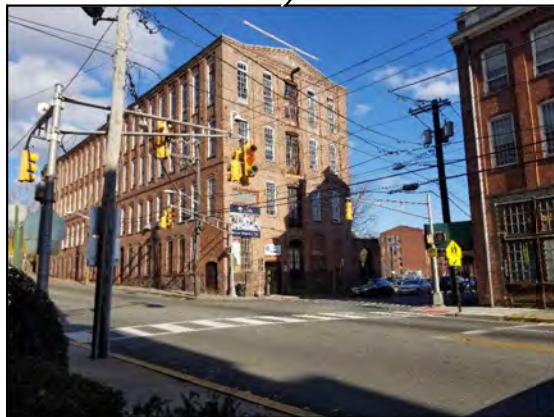
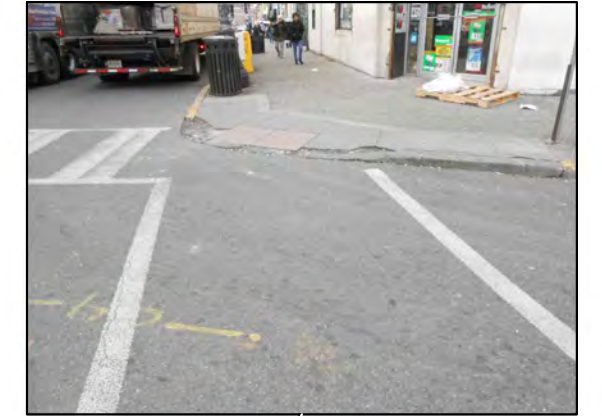
Illegal parking at intersection corners limits sight distance and visibility.



Poor vehicle and pedestrian practices caused many avoidable conflicts.



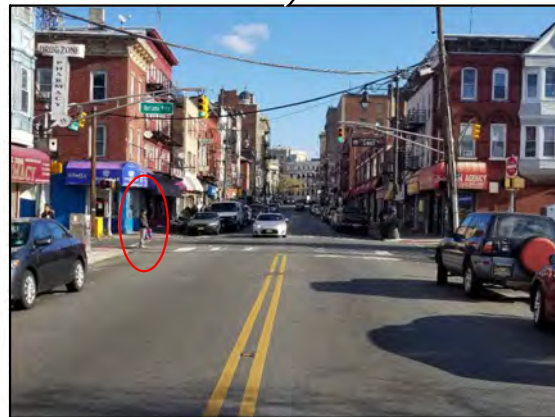
Many curb ramps were not ADA compliant and crosswalks marked differently.



Spruce St intersection is being redesigned as part of the Paterson Gateway Project.



Buses were loading and unloading in the middle of the intersection.



Limited visibility of pedestrians at wide, busy intersection.

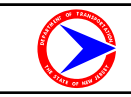


Consider implementing a pedestrian scramble phase at heavily-trafficked intersections.

1
3

**NJDOT HSIP
ROAD SAFETY AUDIT
MARKET STREET BETWEEN
SPRUCE STREET AND MADISON AVENUE**
THE CITY OF PATERSON
PASSAIC COUNTY

SITE PHOTOGRAPHS



GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

N.T.S.

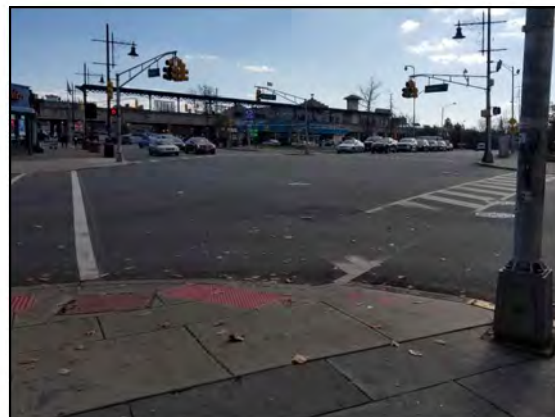
Wide outside lane with no delineation for the adjacent bus stop. Faded yellow no parking curb.



The signal poles and heads are installed, but are not operational.



Wide curb radii results in longer crosswalks brighter and higher turning speeds.



The wide roadway and lane configuration creates many conflict points for pedestrians and vehicles.



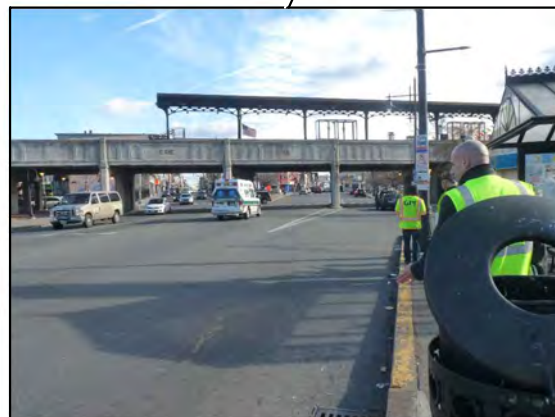
The pavement is in poor condition and the lanes are poorly delineated.



Bus loading and unloading zones are often blocked by unauthorized vehicles.



Parking meters within or too close to the intersections.



Wide pavement area with lack of striping is confusing to motorists.

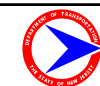


Many signs in the area are faded, poorly placed, or outdated.

2
3

**NJDOT HSIP
ROAD SAFETY AUDIT
MARKET STREET BETWEEN
SPRUCE STREET AND MADISON AVENUE**
JERSEY CITY
HUDSON COUNTY

SITE PHOTOGRAPHS



GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

N.T.S.

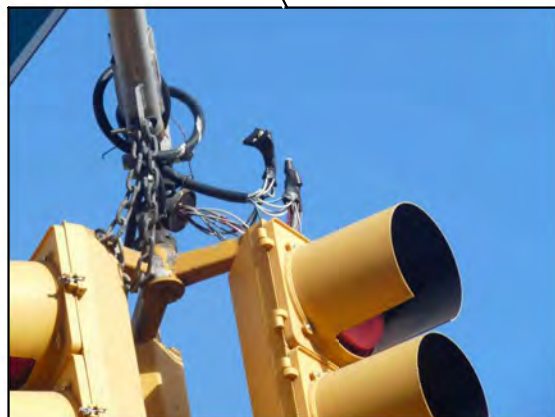
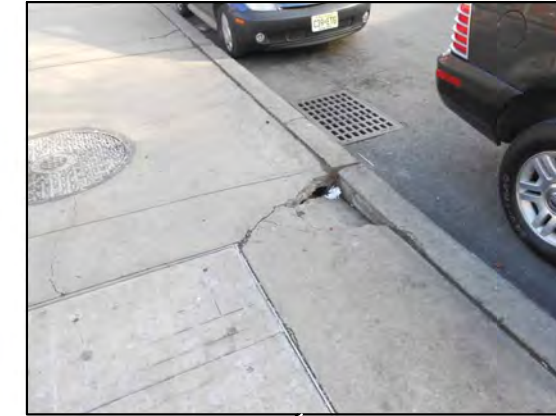
Curb ramp repaired with asphalt and lacks detectable warning surface. No pedestrian signals in the two quadrants.



Re-examine roadway geometry to minimize curb radii.



Sidewalks are in poor condition and can be a tripping hazard.



Signal heads are improperly wired and outdated.



Illegal double parking persists throughout the corridor.

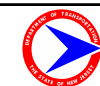


Tripping hazard within sidewalk.

3
3

**NJDOT HSIP
ROAD SAFETY AUDIT
MARKET STREET BETWEEN
SPRUCE STREET AND MADISON AVENUE**
JERSEY CITY
HUDSON COUNTY

SITE PHOTOGRAPHS



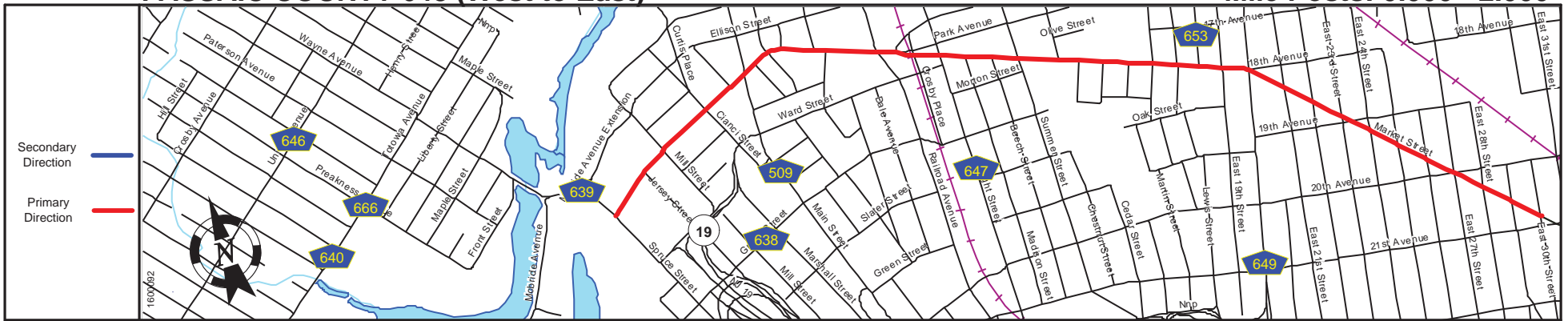
GPI Greenman-Pedersen, Inc.
Engineering and Construction Services

N.T.S.

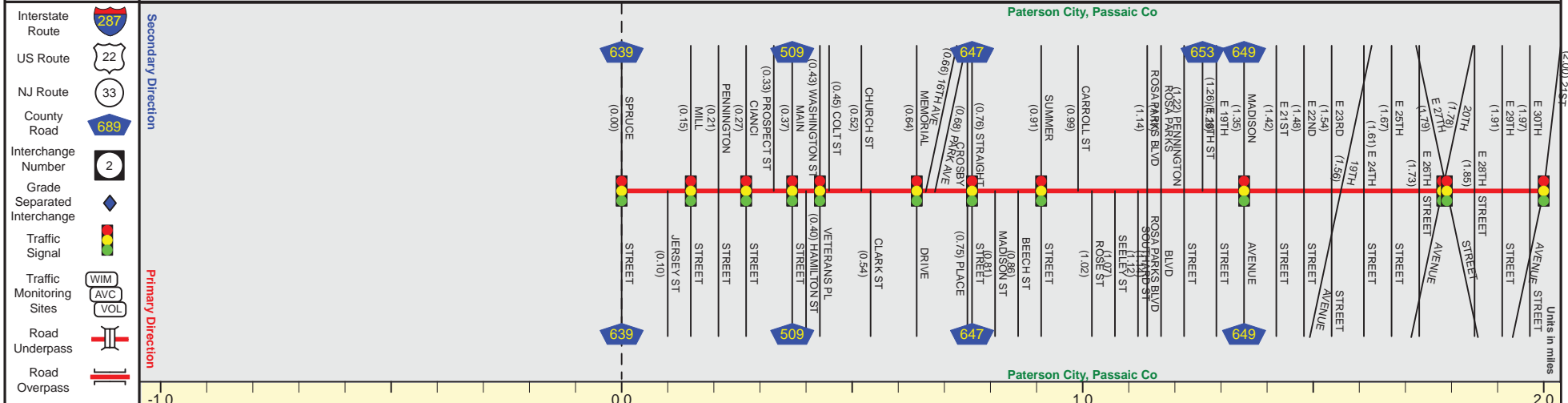
Appendix G - Straight Line Diagrams

PASSAIC COUNTY 648 (West to East)

Mile Posts: 0.000 - 2.000



Pavement
Shoulder
Number of Lanes
Speed Limit
Street Name



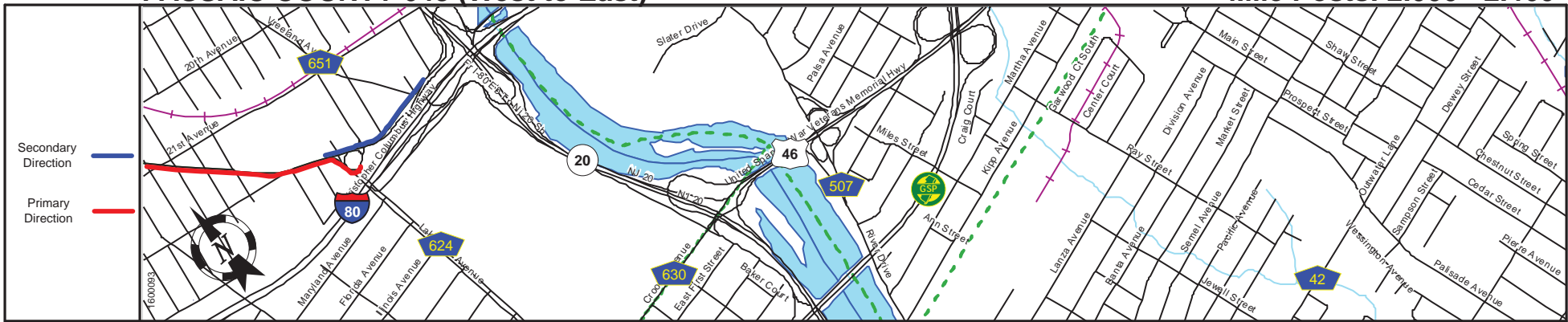
Street Name	Market Street	
Jurisdiction	County	
Functional Class	Urban Minor Arterial	
Federal Aid - NHS Sy	STP	
Control Section	Begin Passaic County 648 MP=0.00	
Speed Limit	NOT POSTED	
Number of Lanes	2	2
Med. Type	None	
Med. Width	0	
Pavement	28	32
Shoulder	0	
Traffic Volume	8,095 (2012)	11,640 (2012)
Traffic Sta. ID	111665	111666
Structure No.		
Enlarged Views		

SRI = 16000648

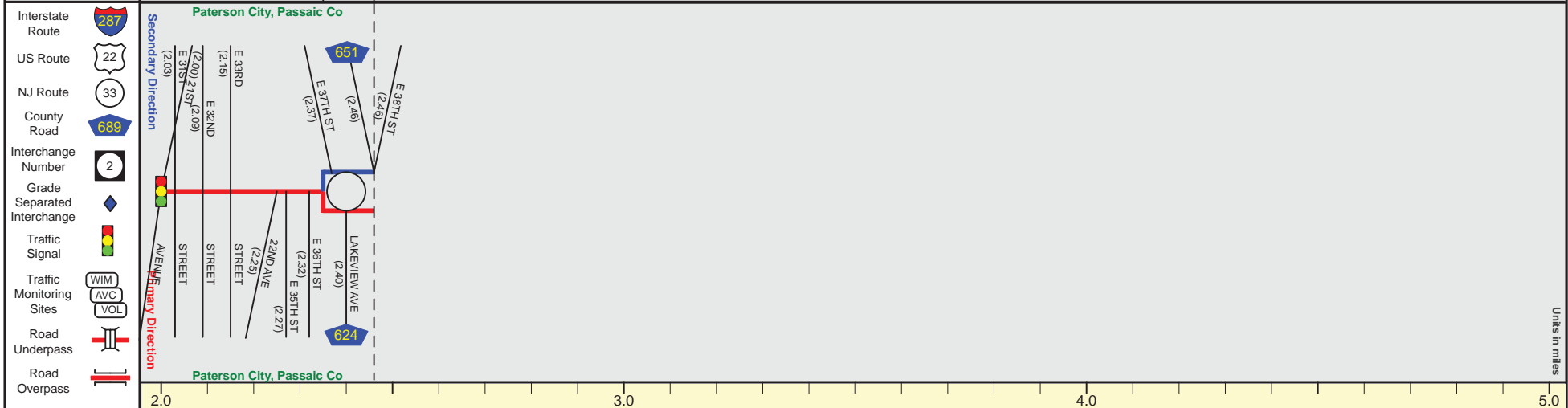
Date last inventoried: October 2011

PASSAIC COUNTY 648 (West to East)

Mile Posts: 2.000 - 2.460



Pavement	32
Shoulder	0
Number of Lanes	1
Speed Limit	25
Street Name	Market Street

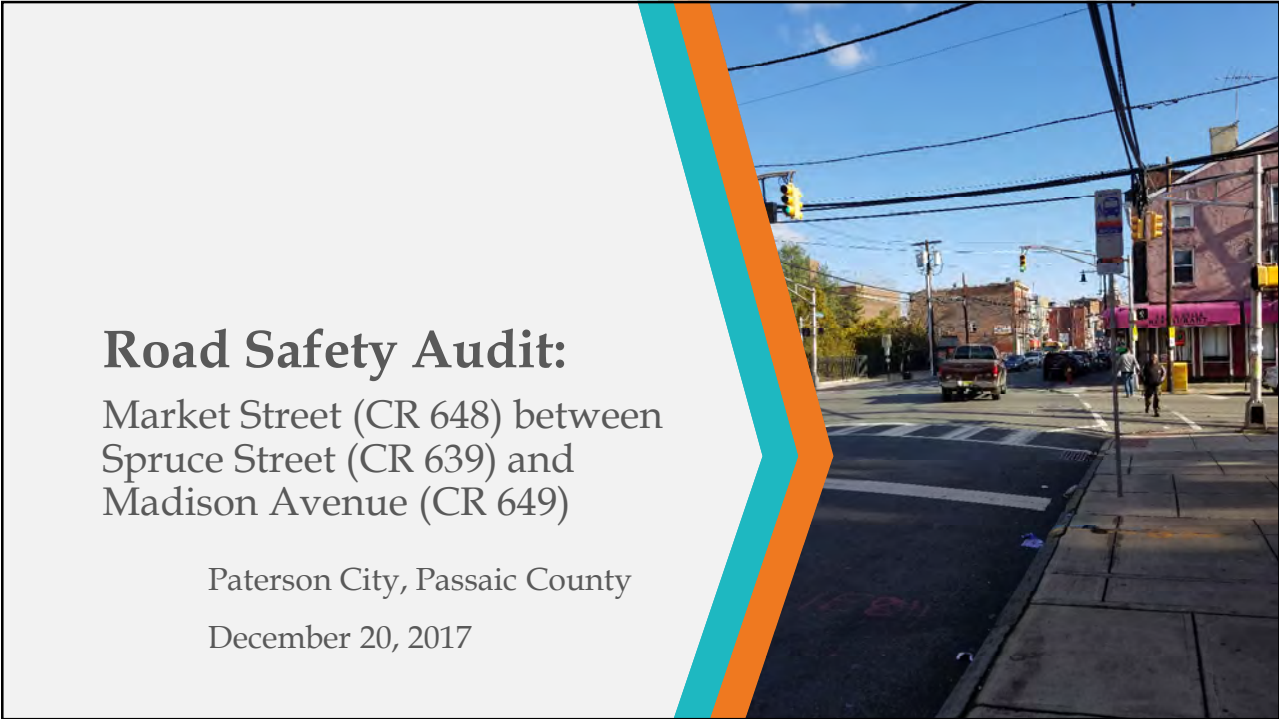


Street Name	Market Street
Jurisdiction	County
Functional Class	Urban Minor Arterial
Federal Aid - NHS Sy	STP
Control Section	
Speed Limit	25
Number of Lanes	2 + 1
Med. Type	None + Curbed
Med. Width	0 + VAR
Pavement	32
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

SRI = 16000648

Date last inventoried: October 2011

Appendix H - Pre-Audit Presentation



Road Safety Audit:

Market Street (CR 648) between
Spruce Street (CR 639) and
Madison Avenue (CR 649)

Paterson City, Passaic County
December 20, 2017

Audit Team Introductions

- *Funded by Federal Highway Administration and NJDOT*
- NJDOT, Bureau of Transportation Data & Safety
 - Bicycle & Pedestrian Programs
- NJTPA
- Passaic County
- Paterson City
- NJ Transit
- Schools & Neighborhood Assoc.
- Greenman-Pedersen, Inc., NJDOT Consultant



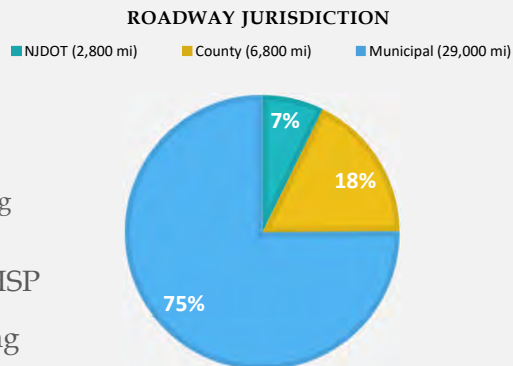
Today's Schedule

- 9:00a
 - Welcome and Introductions
 - Project Overview Presentation
- 10:30a
 - Field Visit and Observations
- 12:30p
 - Lunch and Regroup at Presentation Location
- 2:00p
 - Discuss Observations
 - Make Recommendations
- 3:30p
 - Adjourn



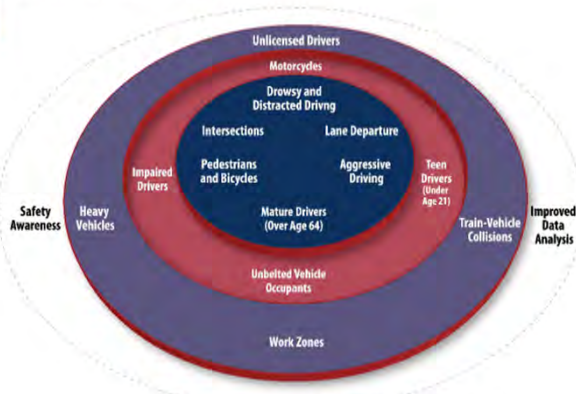
Highway Safety Improvement Program/ Local Safety Program

- GOAL: Reduce serious injury and fatality (K+A) crashes on all of NJ's public roads
 - 40,000 centerline miles of public roads
 - 33% K+A crashes occur on state highways
 - 57% K+A crashes occur on local roads
- Achieve zero deaths on all public roads
 - Established 2.5%/year reduction in 5-year rolling average
- Performance-based goals consistent with SHSP
- Data-driven, strategic approach to improving highway safety



Highway Safety Improvement Program (HSIP)

New Jersey Prioritization of Safety Emphasis Areas



Legend

- 1st Priority (>2,000 fatality and serious injury crashes)
- 2nd Priority (1,000 to 2,000 fatality and serious injury crashes)
- 3rd Priority (<1,000 fatality and serious injury crashes)

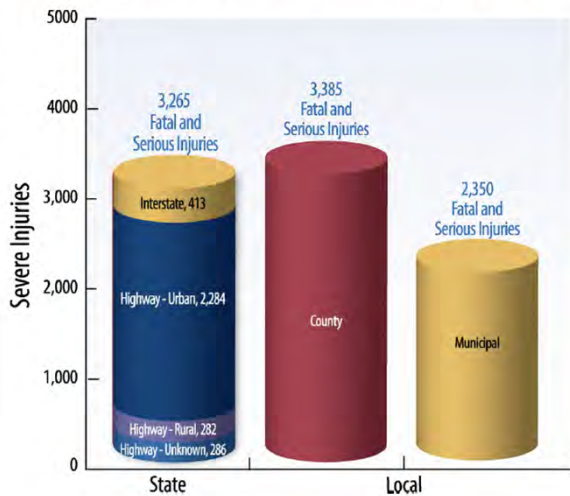
Note: Fatality and serious injury crashes are those crashes that result in one or more fatalities or serious injuries, or both. The exception to this categorization is for Mature Drivers, which are considered a first priority emphasis area due to the increasingly older population in New Jersey.

- 14 Emphasis Areas
- Pedestrian Safety and Intersection Focus State
- Top priority: lane departure, intersections, and pedestrians
- 7 sub-programs including Local Safety Program
- Core Federal Aid Program, NJ receives ~\$57M

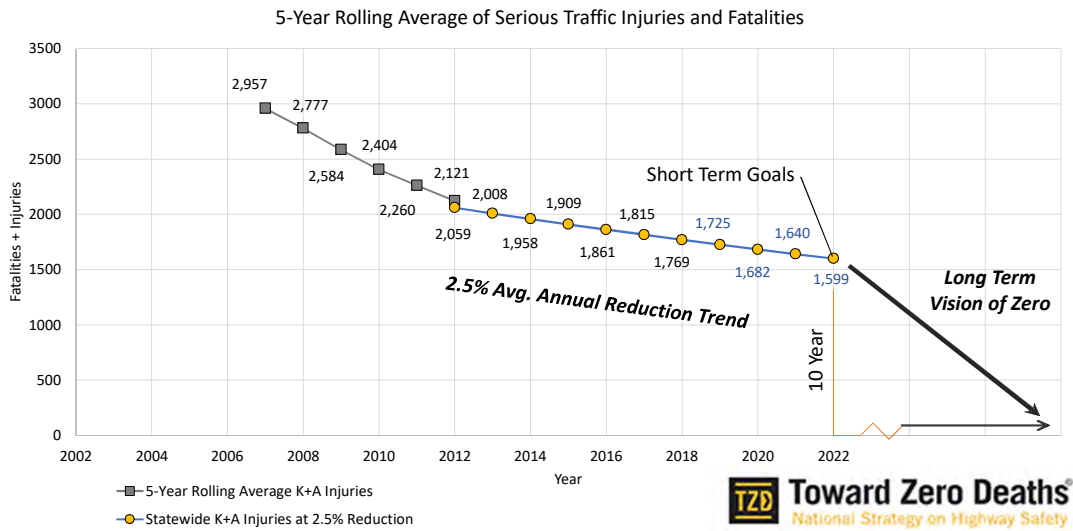
Local Safety Program (LSP)

- NJDOT supports LSP:
 - Dedication of HSIP funds
 - Technical assistance
 - Screening lists for MPOs
 - **Road Safety Audits**
- MPOs support LSP:
 - Local Road Safety/High Risk Rural Roads
 - PE/FD Assistance Program
- Focus annual HSIP funding:
 - 40% on state highways
 - 60% percent on county and municipal network

Fatal and Serious Injuries by Roadway System by Roadway System, 2008 to 2012

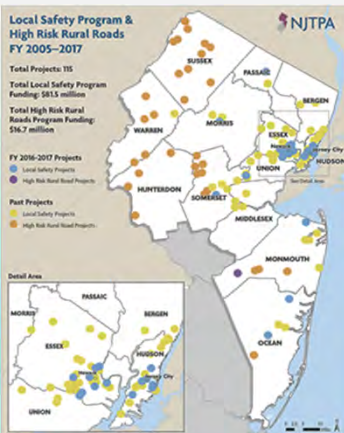


National Strategy – Toward Zero Deaths



Federal Transportation Funding

through the
North Jersey Transportation Planning Authority
 The Metropolitan Planning Organization for Northern New Jersey



Local Safety and High Risk Rural Roads Programs

Over \$98 million in funding since 2005 on County and Local Roadways
 Relatively quick-fix safety improvements

Highway Safety Improvement Program (HSIP) funds

Emphasizes a data-driven, strategic approach to improving highway safety

Network Screening

Identifies locations experiencing:
 High crash frequencies
 Severe crash injuries
 Specific crash types such as right-angle or roadway departures

Community Outreach

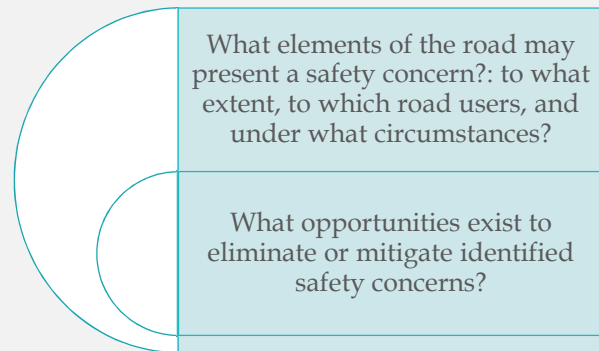
Provides the public, local stakeholders and officials with an opportunities for provide comments and ask questions



RSA Purpose

- Formal safety performance examination
- Qualitatively estimates and reports on potential road safety issues
- Identifies safety improvement opportunities for all road users.
- Independent, multidisciplinary audit team

- Goals:





RSA Benefits

- Pro-actively address safety
 - Audited designs should produce fewer, less severe crashes
 - Identify low-cost/high-value improvements
 - Enhance consistency in how safety is considered; promote "safety culture"
 - Provide continuous advancement of safety skills and knowledge
 - Contribute feedback on safety issues for future projects
 - Support optimized savings of lives, money and time
- Not a replacement for:
 - Design quality control
 - Standard compliance
 - Traffic or safety impact studies
 - Safety conscious planning
 - Road safety inventory programs
 - Traffic safety modeling efforts





















RSA Process



Responsibilities:

-  RSA Team
-  Design Team/Project Owner

FHWA Proven Safety Countermeasures

 Roadside Design Improvement at Curves	 Reduced Left-Turn Conflict Intersections	 Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections	 Leading Pedestrian Interval	 Local Road Safety Plan
 USLIMITS2	 Enhanced Delineation and Friction for Horizontal Curves	 Longitudinal Rumble Strips and Stripes on Two-Lane Roads	 Median Barrier	 Safety Edges _{SM}
 Backplates with Retroreflective Borders	 Corridor Access Management	 Dedicated Left- and Right-Turn Lanes at Intersections	 Roundabouts	 Yellow Change Intervals
 Medians and Pedestrian Crossing Islands in Urban and Suburban Areas	 Pedestrian Hybrid Beacon	 Road Diet	 Walkways	 Road Safety Audit

Descriptions provided in your handouts

FHWA Proven Safety Countermeasures



Road Diet
Maplewood Township, Essex County



Roundabout
Chesterfield Township, Burlington County

FHWA Proven Safety Countermeasures



Backplates with Retroreflective Borders



Pedestrian Hybrid Beacon (HAWK)
Ocean City, Cape May County

Additional Considerations



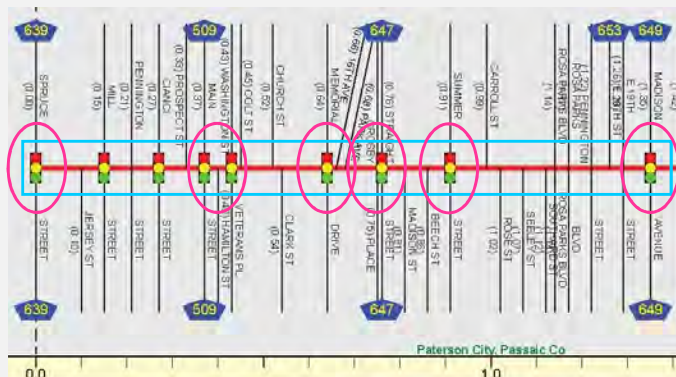
Curb Extensions
Hoboken City, Hudson County



Enhanced signing / pedestrian crossings

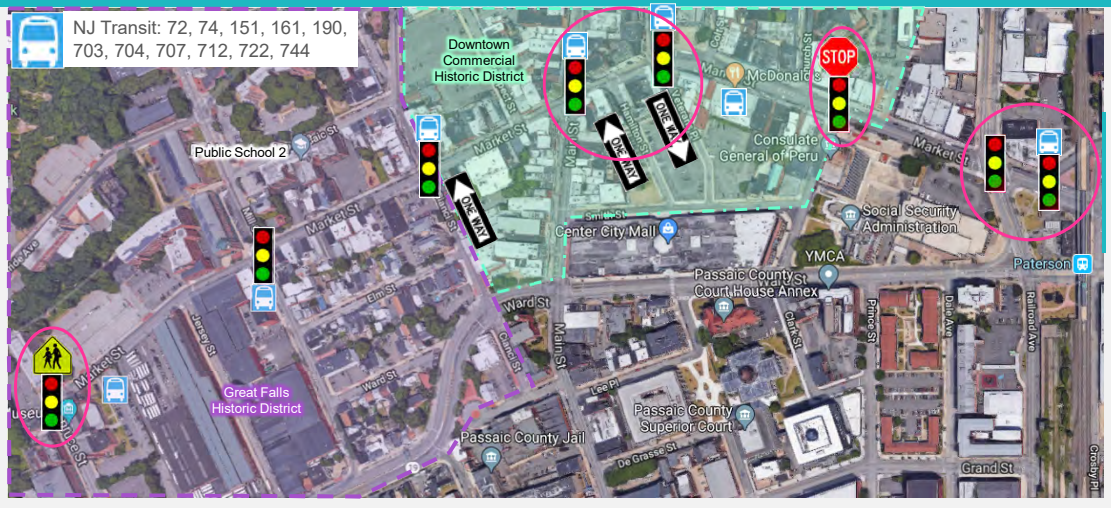
Project Area – Market Street

- Urban Minor Arterial, undivided 2- to 4-lanes
- One-way EB: Straight St and Madison Ave
- 25 mph east of Seeley St (not posted west)
- On street parking permitted
- Sidewalk on both sides
- Standard and ladder style crosswalks

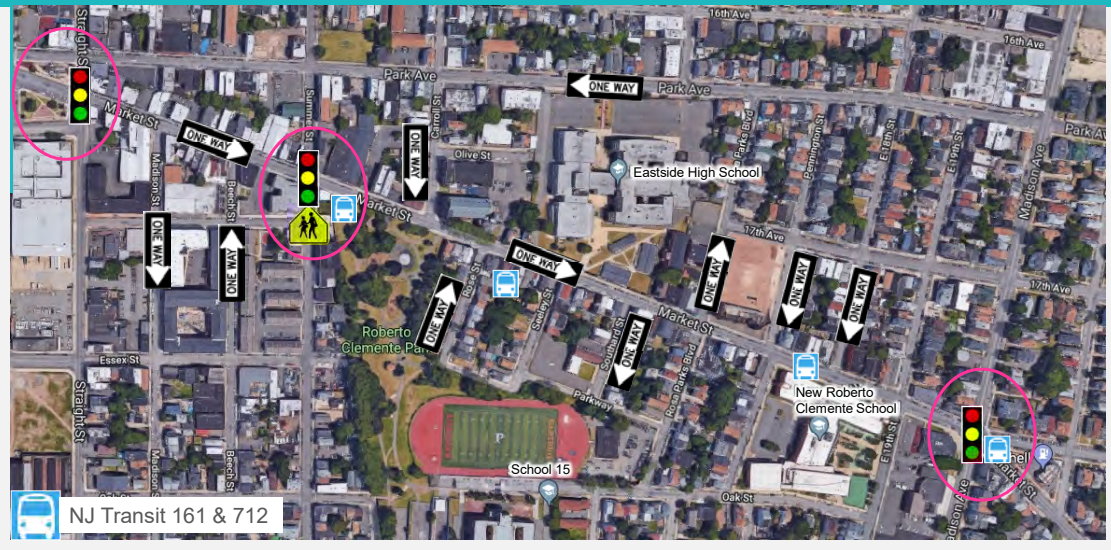


Field Focus Locations

Area Map



Area Map



Project Area

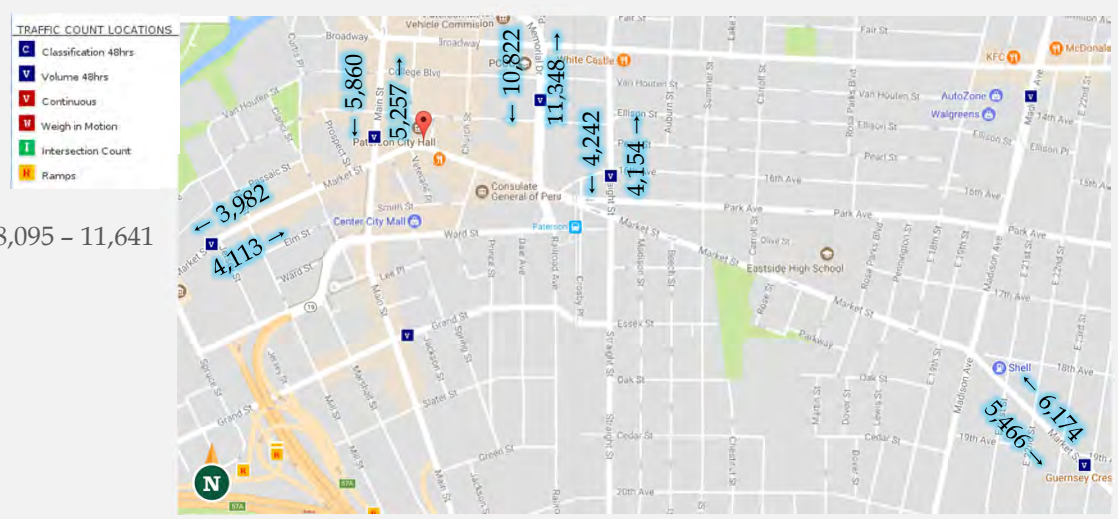


Market St at Main St

- Land Use
 - Commercial/residential
 - High density
 - Great Falls & Downtown Commercial Historic Districts
- Surrounding Demographics
 - 72% Hispanic/Latino
 - Dominican, Puerto Rican, Mexican & Peruvian
 - 24% African American
 - 27% below poverty level
 - 15% use public transportation
 - 10% walk/bike

Traffic Data (2012-2015)

ADT: 8,095 - 11,641



Crash Data

All Crashes 2014-2016

- Total=337 (incl. ped crashes)
- Overrepresentations:
 - Sideswipe
 - Parked Vehicle
 - Backing
 - Pedestrian/Pedalcyclist
 - At Signalized Intersections
 - Between Intersections
 - Dry/Day

Pedestrian Crashes 2012-2016

- Total=31
- Overrepresentations:
 - Minor Injury
 - Dawn/Dusk
- 90% pedestrians
- 10% pedalcyclists

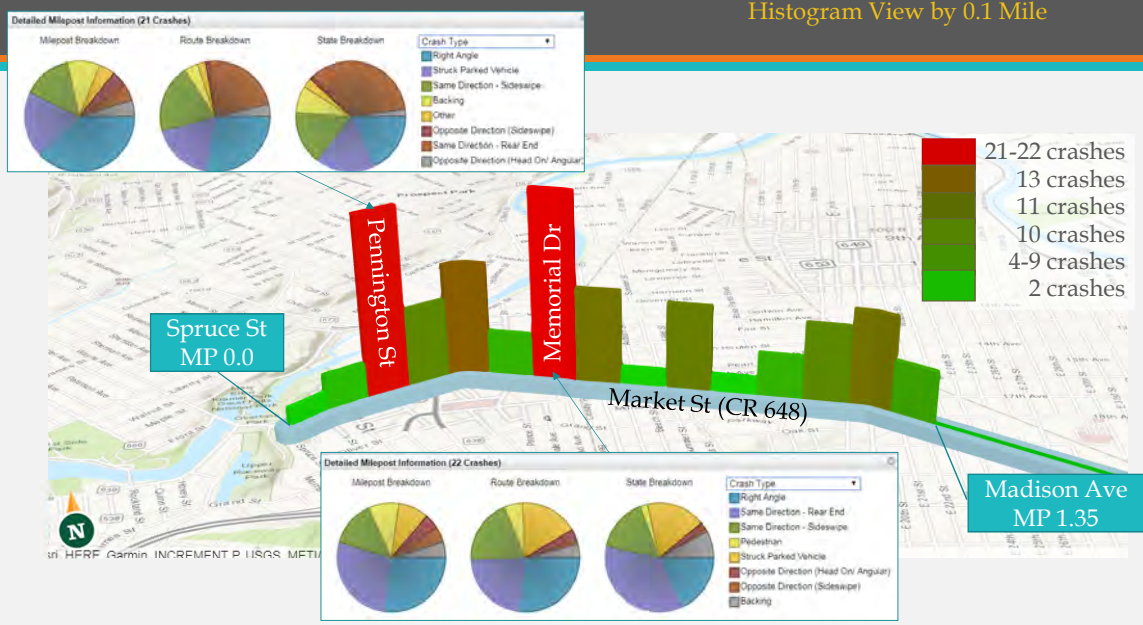
NJTPA's FY 2017-2018 Local Safety Program Network Screening List

Location	Ped Corridor	Regional Corridor
Market Street	#6 County	#2 County
Memorial Dr		#18 County
Straight St	#42 County	#13 County
Madison Ave	#23 County	

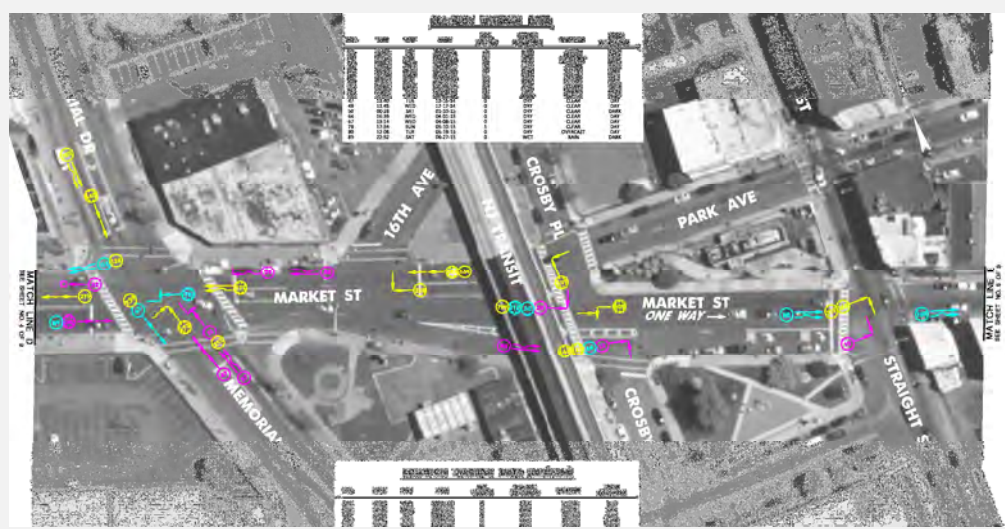
Location	Intersection	Ped Intersection
Spruce/639	#38 County	#57 County
Cianci	#52 County	
Main		#3 County, 2 City
Washington/Veteran		#49 County
Memorial	#17 County	#38 County
Madison	#11 County	#43 County
Summer	#62 County	
18th	#31 County	

Crash Data (2014-2016)

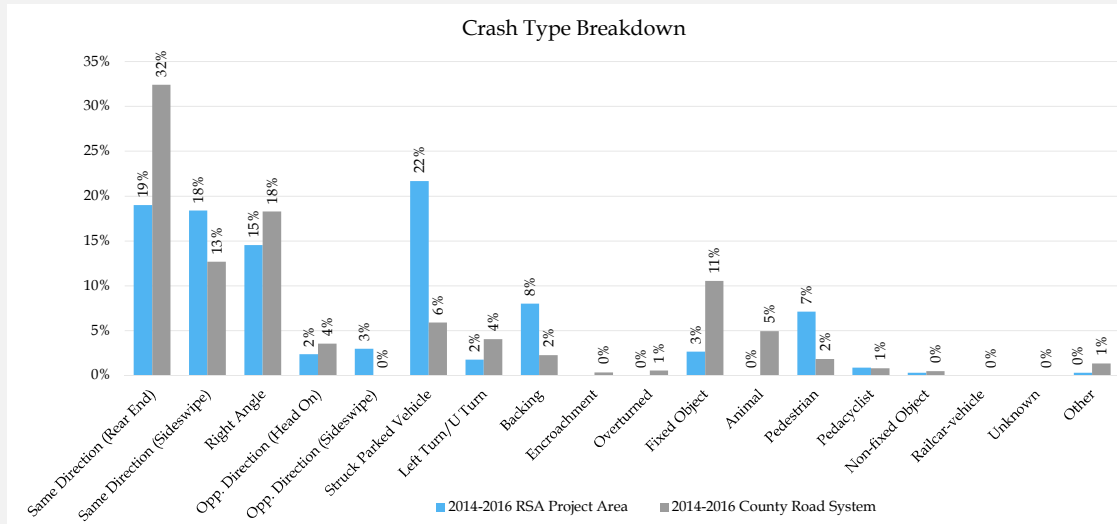
Histogram View by 0.1 Mile



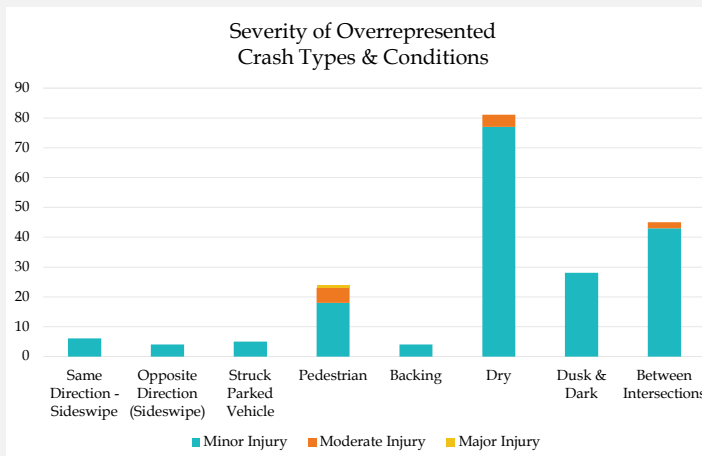
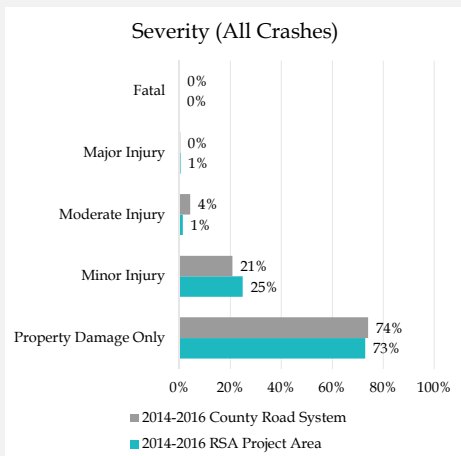
Crash Diagrams (2014-2016)



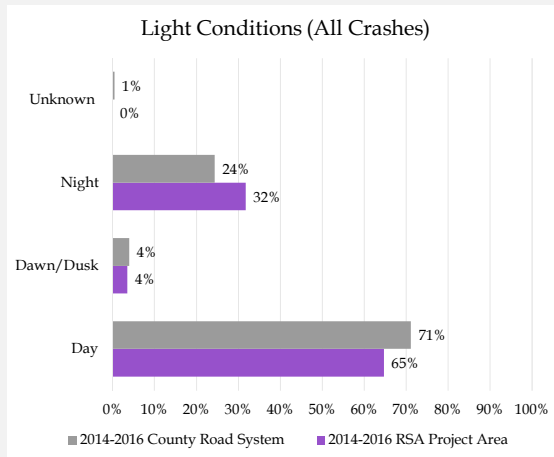
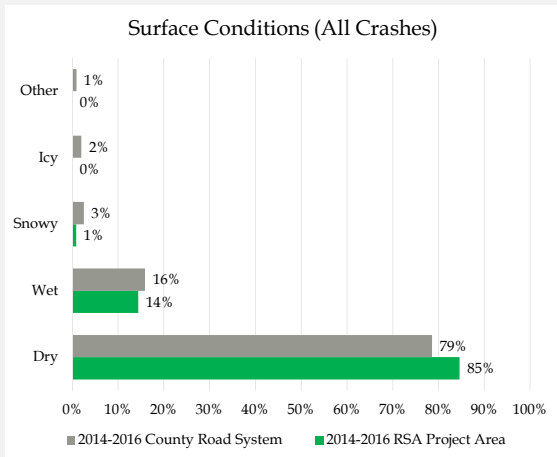
Crashes: RSA Project Area v. County Road System



Crashes: Severity

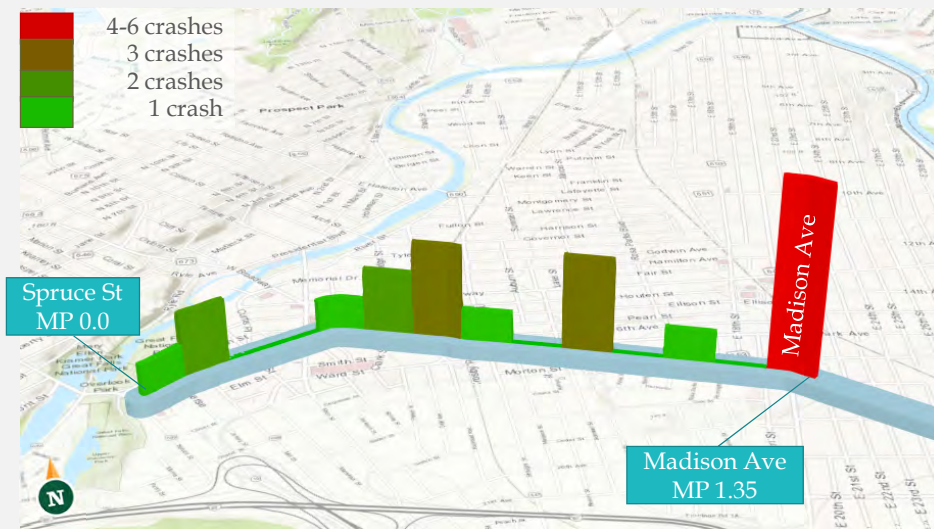


Crashes: Light & Surface Conditions



Pedestrian Crash Data (2012-2016)

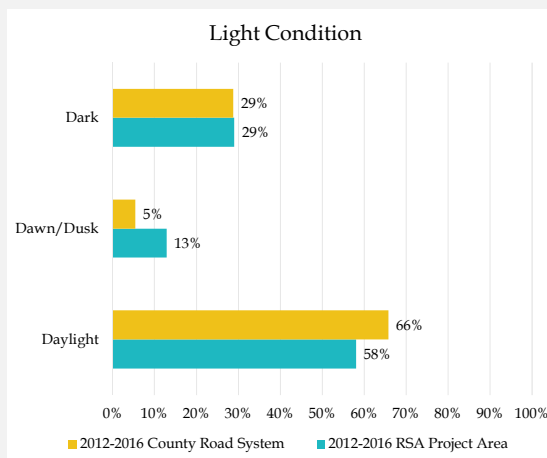
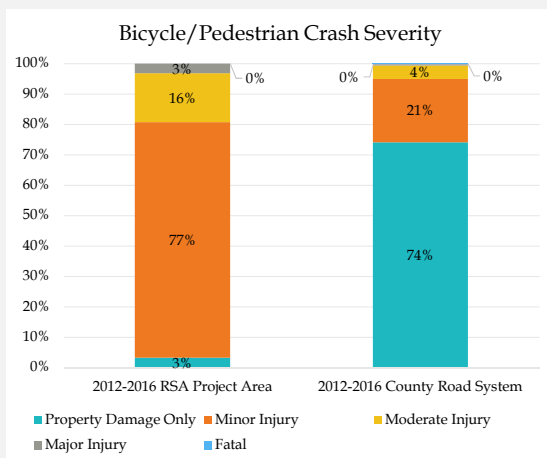
Histogram View by 0.1 Mile



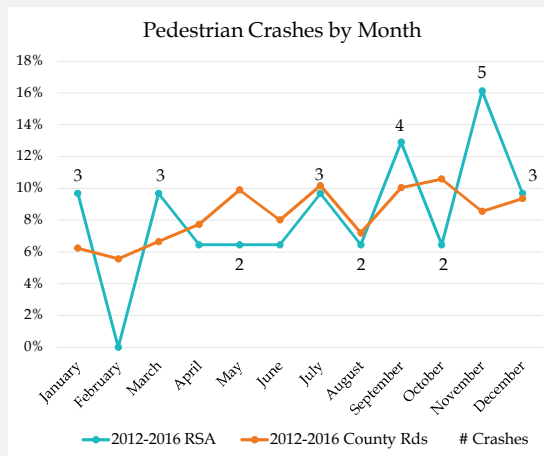
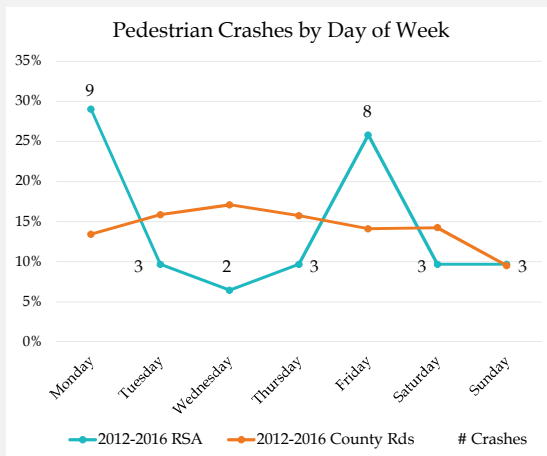
Pedestrian Crash Diagrams (2012-2016)



Pedestrian Crashes

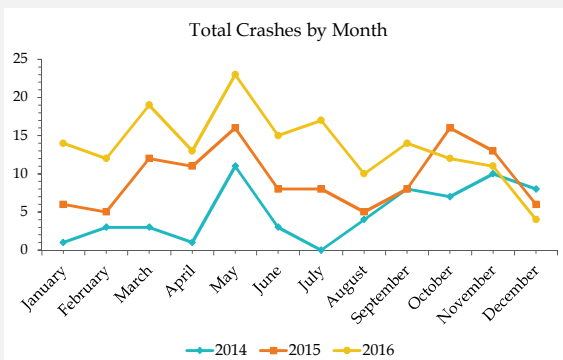


Pedestrian Crashes: Temporal Data

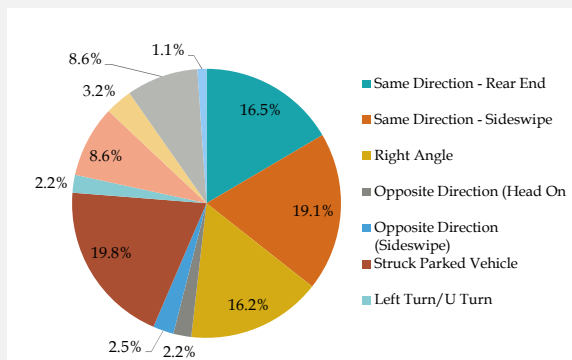


Crash Statistics

3-Year Temporal



Crash Types (2014-2016)



Field Visit Itinerary

9:00a

- Welcome and Introductions
- Project Overview Presentation

10:30a

- **Field Visit and Observations**

12:30p

- Lunch and Regroup at Presentation Location

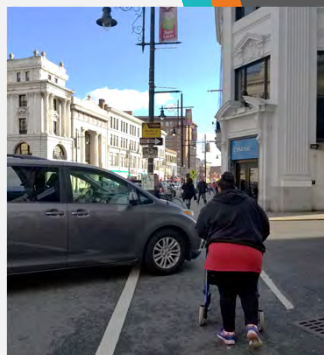
2:00p

- Discuss Observations
- Make Recommendations

3:30p

- Adjourn

- ✓ Verify Identified Issues
- ✓ Observe Operations
- ✓ Note Other Safety Concerns
- ✓ Document Findings
 - Photographs
 - Checklist
- ✓ Safety First!
 - Use proper safety equipment
 - Stay alert to your surroundings



Field Visit & Observations

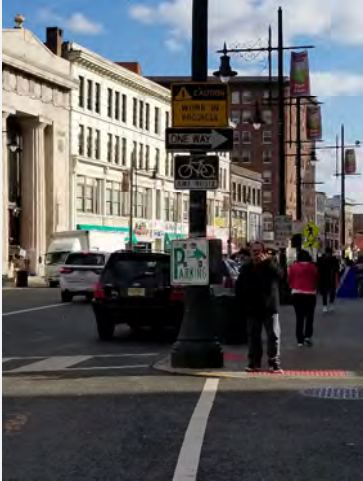
(pause presentation)

Post Audit Analysis
(resume presentation)



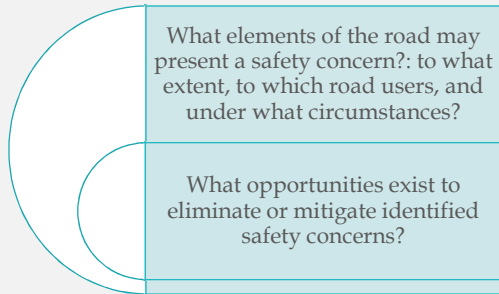
RSA Schedule

- 9:00a
 - Welcome and Introductions
 - Project Overview Presentation
- 10:30a
 - Field Visit and Observations
- 12:30p
 - Lunch and Regroup at Presentation Location
- 2:00p
 - **Discuss Observations**
 - **Make Recommendations**
- 3:30p
 - Adjourn



Post Audit Analysis

Observations

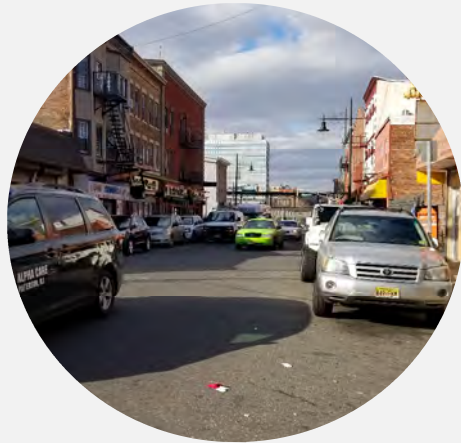


Recommendations

- What corridor safety issues did you observe?
- What localized safety issues did you observe?
- What improvements would you make?
- Are any of the FHWA countermeasures beneficial?

Next Steps

- Preparation of RSA Report
- Review/ comments from RSA Team
- Preparation of Preliminary Final Report
- NJDOT review
- Preparation of Final Report
- Approximate timeframe: 10 weeks



Thank you!
Questions/Comments



Appendix I - Excerpts from the *Great Falls Circulation Study*

Excerpts from

Final Report
2016



Great Falls Circulation Study Passaic County, New Jersey



PARSONS
BRINCKERHOFF



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



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 Extension

- Market Street & Spruce Street
- Spruce Street & McBride Avenue Extension
- 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.

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
- 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

4.4.4 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 (better served if the crossing was on the northerly side of the intersection)

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
- Eroded curbing on easterly side of



Spruce Street provides no protection for pedestrians

- 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 and needs to be integrated into the signal
- Obstructions to pedestrians along sidewalk at intersection
- Deficient wayfinding
- Long pedestrian crossing exposed to left turn movement
- Deficient curbing and sidewalk from the northerly approach

4.5 Trails

There are several historic trails around the Great Falls NHP, namely the Morris Canal Greenway, the Garrett Mountain Reservation bike and walk trail, as well as the paths along the historic raceways. 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. Although required to follow NJ TRANSIT routes, jitney 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. Integrating “smart” features that provide real-time updates on schedules and

precise arrival times for buses would enhance the user experience and aid in changing the perception of the Great Falls NHP and the City. Providing shelters also opens an avenue for wayfinding maps, advertising for local attractions and a place for riders to stay dry during inclement weather.

4.6.3 Transit Accessibility

The bus 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 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. Providing safe access to and from major destination points is vital to promoting mass transit use and overall safety in the study area. Lighting and sidewalk conditions should be consistent to provide this access with the possible use of smart lighting technology to detect pedestrian activity that can be transmitted to adaptive signal control systems that prioritize pedestrian crossings and possibly provide instructions to individuals with physical or cognitive disabilities as mention in section 4.1.6.

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. Implementation of ITS, green infrastructure, and "smart" features should be included as a part of all implementation measures.

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

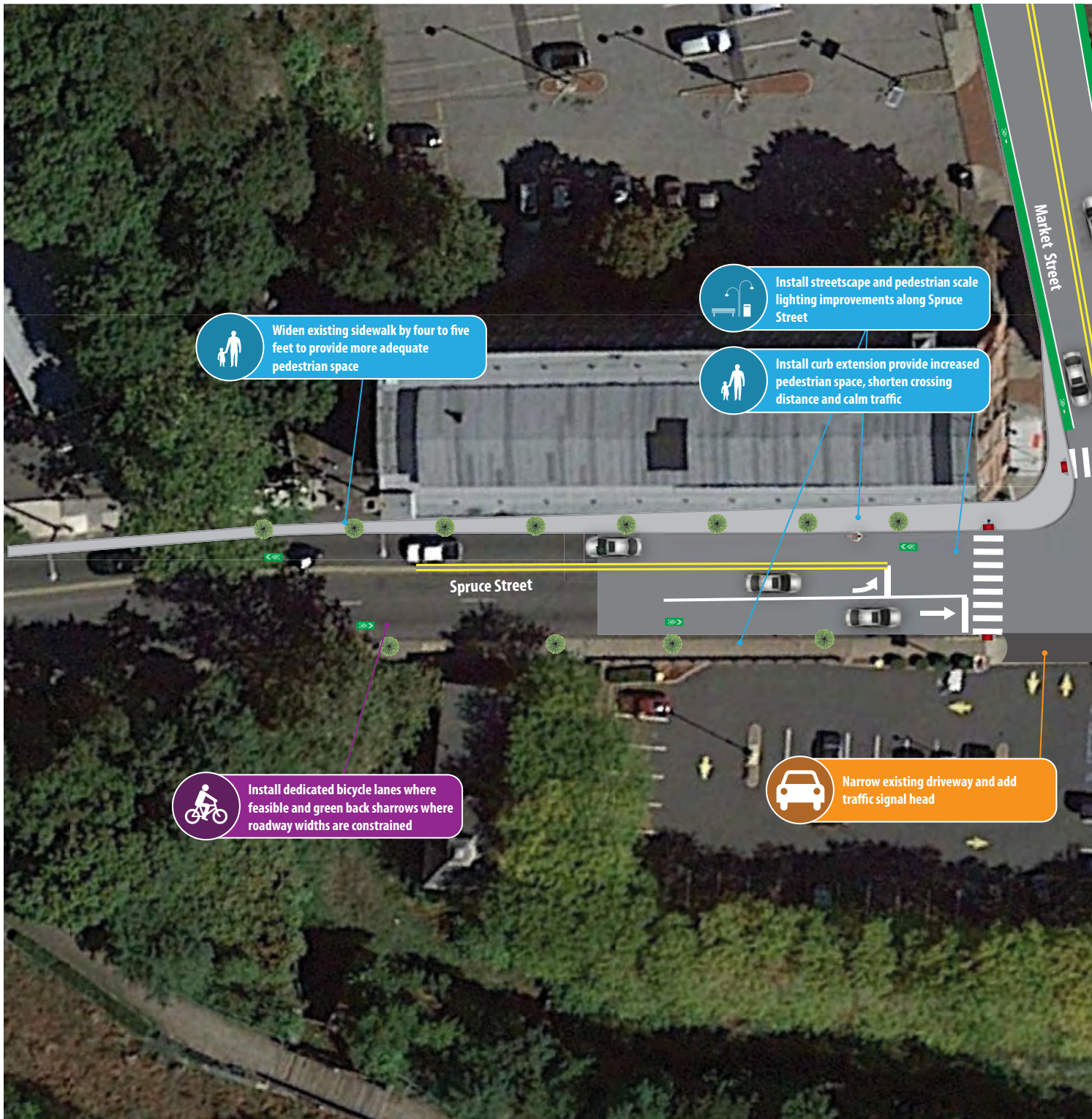
Part 4: Introduce Streetscaping, Wayfinding, and Placemaking Elements

- 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 advance roadway and transit projects of regional significance, and coordinate plans with the development of the Great Falls NHP and Hinchliffe Stadium

Spruce Street at Market Street Recommendations





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. These needs must also be addressed

through proper coordination by technology and hardware upgrades. Adaptive signal control systems, active detection through pedestrian and traffic sensors, smart lighting, and enhanced communication through WiFi networks will provide an avenue to more efficiently utilize the network of intersections and roadway capacity based on the demands of the users in the area at any given time.

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.

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 Spruce Street
 - › The McBride Avenue name will be continuous from Crosby Avenue to the Spruce/McBride Extension intersection; ending at Wayne/ McBride intersection
- Rename McBride Avenue to remove the potential confusion and redundancy with McBride Avenue
 - › 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 Oliver Street or Ward Street
 - › The Oliver Street/Ward Street 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 Mill Street and Spruce Street with consideration for a ban on 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 and integrate "smart" solutions for providing information and coordination

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.

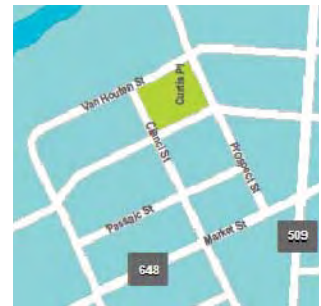
- Evaluate alternatives and feasibility of a new Passaic River bridge crossing to expand travel options and pull regional traffic from the Great Falls Historic District and Downtown Paterson
- Advance a City-wide interchange modification study of NJ 19 and I-80 ramps, including Interchange 57C to Main 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. This could include the possibility of restoring the original alignment of Prospect Street through to Curtis Place/Memorial Drive. This could only be possible if the existing parking garage at the corner of Van Houten Street and Curtis Place is replaced with a new parking solution/structure in the area and the land is repurposed to accommodate the restoration of the street grid. The new grid potentially allows for land consolidation that would allow for a more formal square at what is now Lou Costello park, elimination of the conflict points at the intersection of Passaic Street and Curtis Place, and re-utilization of the surface parking areas to create a new block.

Existing Street Grid



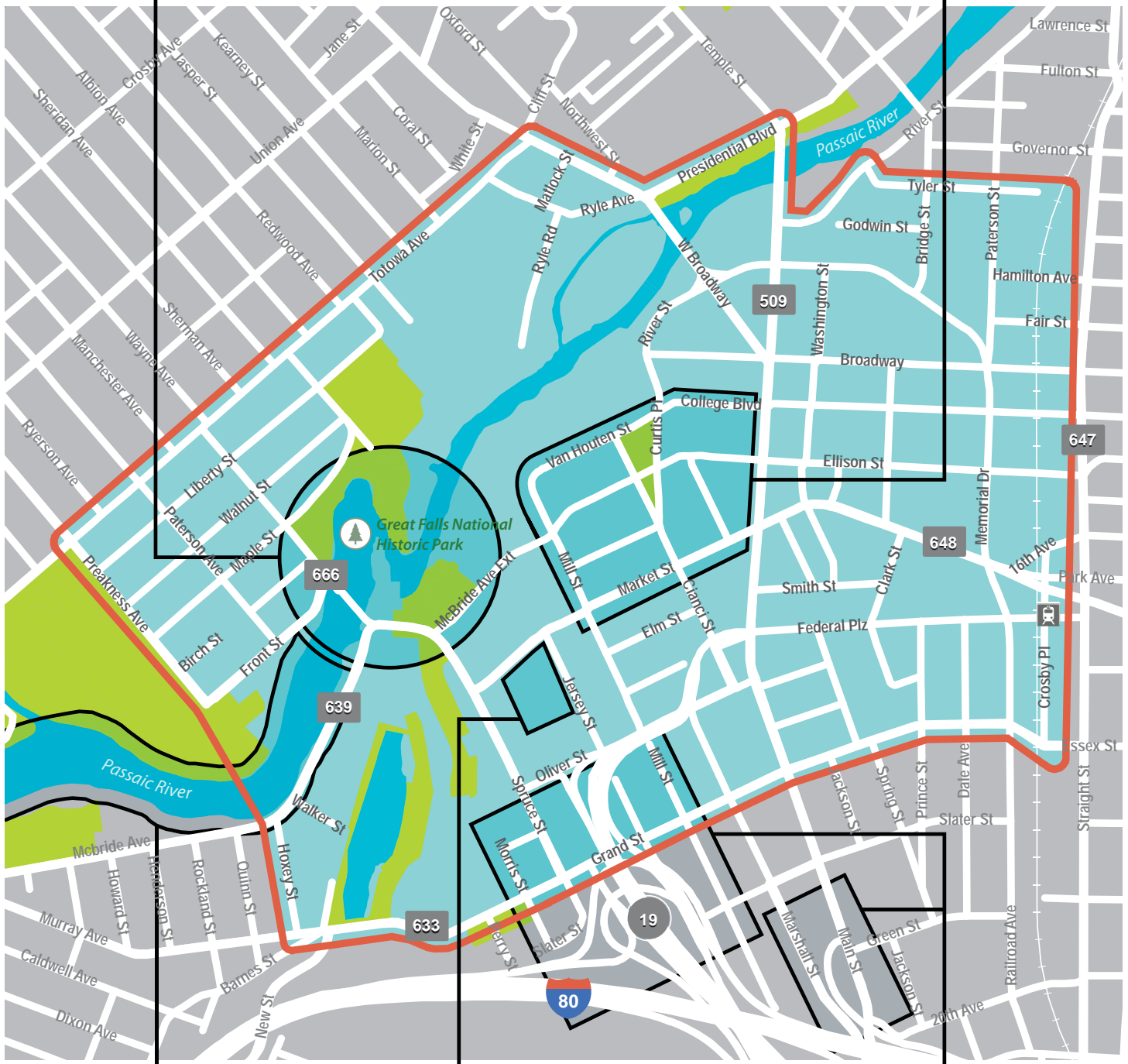
Conceptual Street Grid



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



Appendix J - Excerpts from the *Paterson City Master Plan*

CITY OF *PATERSON*

NEW JERSEY

LOOKING FORWARD

MASTER PLAN
MARCH 2014

PREPARED BY: HEYER, GRUEL & ASSOCIATES

CITY OF PATERSON

Master Plan

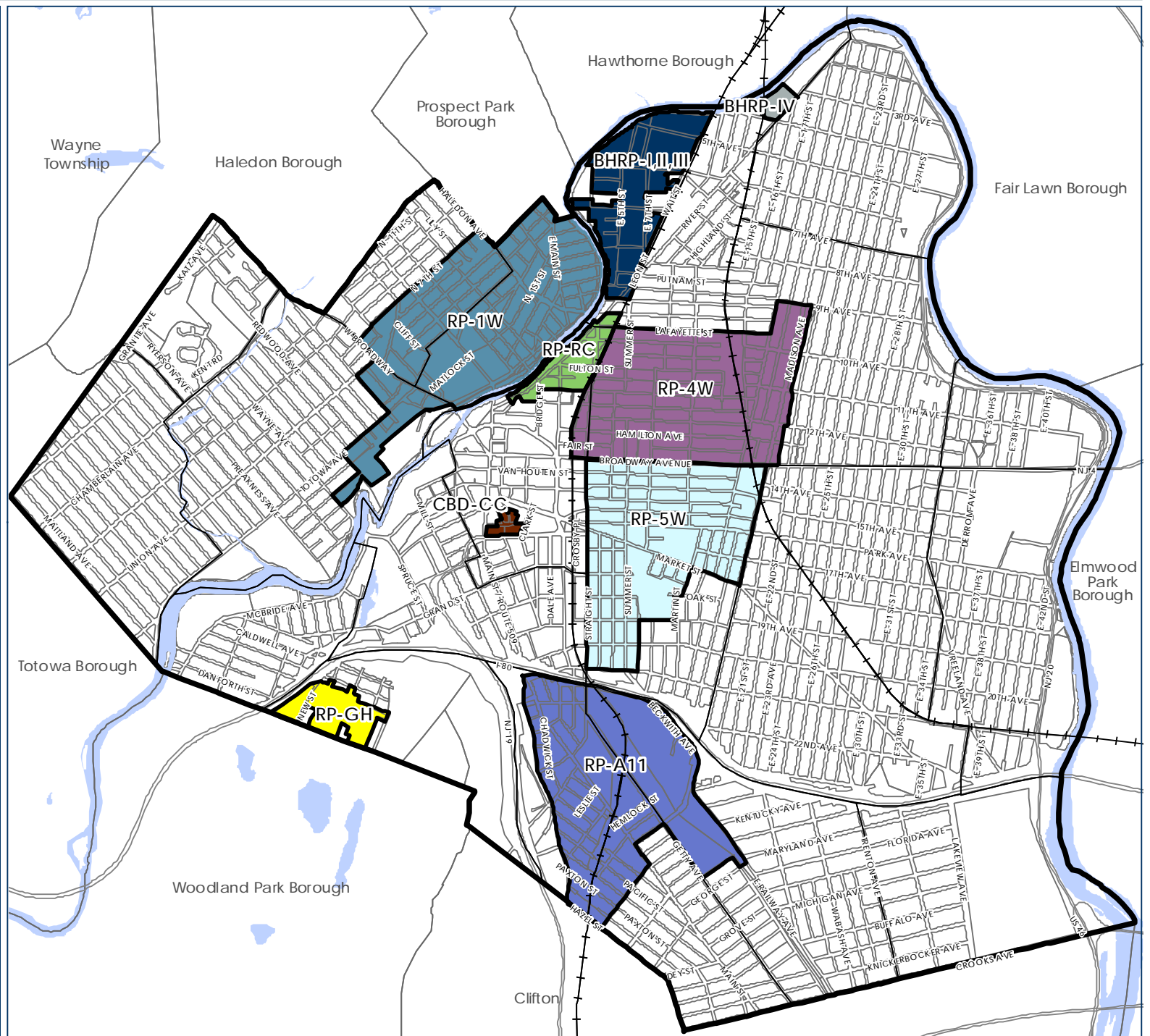
Redevelopment & Rehabilitation Districts

Urban Renewal/Redevelopment Districts

-  BHRP- I, II, III-- Bunker Hill Phase I, II, III
-  BHRP-IV-- Bunker Hill Phase IV
-  CBD-CC-- Central Business District - Center City
-  RP-1W-- First Ward
-  RP-4W-- Fourth Ward
-  RP-5W-- Fifth Ward
-  RP-A11-- Area 11
-  RP-GH-- Garret Heights
-  RP-RC-- River Corridor



Source: NJGIN, NJDOT, NJDEP, NJ Transit





The Armory



Vistas site



Hinchliffe Stadium



Hyatt Hotel



Alfano Island

Current Development Proposals:

1. The Armory – Proposed by the Parking Authority for an adaptive reuse of the Armory building on Market Street is a large multi-use sports complex that would include a swimming pool and a bowling alley on the ground level. Basketball and volleyball courts are proposed for the third level along with an indoor soccer field, while a running track over a new superstructure for the roof will be the top level of the facility. The proposed new structure would span over the existing streets of 17th Avenue and Rosa Parks Boulevard, making it significantly larger than the existing Armory building.
2. Hinchliffe Stadium – Hinchliffe Stadium is also proposed to be revitalized as a sports facility to be used for football and soccer games, as well as housing a running track. Although the site is owned by the Board of Education, the Parking Authority has plans for the stadium.
3. Alfano Island – Another large sports complex has been planned by the Parking Authority for this site. These plans call for a glass enclosed dome facility to house athletic fields and a running track.
4. Vistas site – A “cocoon” shaped hotel and convention center is proposed for the former Vistas site, which lies next to Hinchliffe Stadium overlooking the Great Falls park area. The hotel would function as a resort and convention center.
5. Hyatt Hotel – A hotel is currently proposed to be located next to St. Joseph’s Regional Medical Center, which would house hotel rooms, retail space, a restaurant, and conference spaces. This hotel project was recently approved for \$105 million in tax credits by the State Economic Development Authority to assist with financing.
6. Outlet Mall – The Continental Can factory on Getty Avenue, and several of the historic mill buildings identified in the Historic Mill survey of 2012, are being considered for adaptive reuse as an outlet mall.

Land Use Recommendations

PATERSON GREAT FALLS NATIONAL HISTORICAL PARK

1. ***Synchronize with the Paterson Great Falls National Historical Park Plan*** – With the Great Falls being designated as a National Park, there is a great opportunity for the City to transform the Great Falls district around the National Park.
 - a. Coordinate Land Uses Surrounding the National Park
 - Encourage the development of shops and restaurants on streets around the primary Park entrances, such as Spruce Street, Mill Street, Market Street, Van Houten Street, and McBride Avenue
 - Encourage the development of a small boutique hotel within the Great Falls Historic District. A small hotel could potentially be located within a few blocks of the Great Falls on McBride Avenue on one of the existing surface parking lots.
 - Revise the zoning code (see below) to permit the uses proposed in the neighborhood plans for the Great Falls District. (Greater Spruce Street Neighborhood Plan, Great Falls Arts+Revitalization Plan)
 - Revitalize and reuse Hinchliffe Stadium, which would provide an excellent complement to the Great Falls National Park as an additional historic landmark and attraction for the City.
 - Consider Alfano Island, which lies in the Passaic River just northwest of the downtown and just outside the Great Falls Historical Park boundaries, for additional open space or recreation facilities, as well as potential tourist attractions.
 - The current site next to Hinchliffe Stadium,

the remains of the “Vistas” condominium complex, presents a great opportunity for uses to complement the National Park. Such uses could include a hotel/conference center, as well as parking for the Park and Hinchliffe Stadium. This site could also be additional open space and recreation opportunities around the Park.

- Adaptively reuse the Colt Gun Mill/ATP Site as an interpretive ground for the arts. The site will have to be stabilized, but incorporating the arts with history can help to tell the story of the City as a part of the experience of visiting the Park. This interpretive ground to display local arts can also be used as a passive recreation opportunity, integrating the arts with recreation. Another possibility for the site is that the buildings and ruins on the property be restored, and then reused as a cultural facility for the arts.
 - Restore and maintain the historic raceways to a functional condition to illustrate how the power from the Great Falls was originally used to power the industrialization of the City. These can also become part of the scenic trails of the Park, adding to the historic and scenic experience.
 - Utilize the upper floors of the Rogers Locomotive Building, which currently houses the Paterson Museum, as offices for the National Park Service, or for other administrative functions related to the Park.
- b. Facilitate Connections to the Park – Improvements may need to be made to streets to upgrade the pedestrian and bicycle infrastructure to provide for stronger connections between the Paterson Great Falls National Historical Park, and other areas in the City. Streets leading to entrances of the Park should be complete/green streets. (See Circulation Element) Connections



McBride Avenue



Colt Gun Mill/ATP Site



Main Street



Parking

through signage or pedestrian/bicycle infrastructure enhancements between the Great Falls and these areas will be important:

- Westside Park
 - Pennington Park
 - Paterson Museum
 - Main Street
 - Market Street/City Hall
 - Ward Street Train Station
 - Garrett Mountain
- c. Provide Direct Connections – In addition to the physical connections via bicycle/pedestrian infrastructure mentioned above, these sites as well as other cultural destinations in the City should be directly connected by a shuttle or trolley that operates regularly. Shuttle service that transports visitors between the National Park and other destinations in the City will help connect the City, while also reducing the need for providing parking at each particular location.
- d. Provide Adequate Parking – Although it is hoped that many visitors to the Park will arrive by transit, it is likely that a large percentage of visitors will drive to the City from areas that are not directly linked to the City by public transportation. This will require that adequate provisions for parking be provided. This parking should be provided in a way that is unobtrusive, and does not distract from the historic character of the Park and the neighborhood. It also should be designed specifically to encourage visitors to the Park to see other areas of the City. This would entail strategically locating the parking near the Park entrances, but not directly adjacent to them, so that visitors do not simply park their cars,

view the Falls, and then leave the City entirely. Parking should be sited in between the Park and the downtown areas to encourage visitors to see the City, and patronize local businesses. Suggested sites for parking:

- The Paterson Parking Authority has plans to develop a 1,000 space parking structure where the lower Market Street lot currently exists. This should function as the primary visitor parking site for the Park. However, if demand for parking in the area becomes greater than supply, other sites should be considered for additional parking.
- The existing Parking Authority garage adjacent to Lou Costello Park on Ellison Street could be marketed as parking for the Great Falls District and Park. Its location between the Great Falls District and the downtown would be ideal for visitors to see both the Park and the City.
- Portions of the NJ Transit Trolley Barn site could become structured parking that could be used either for visitors or for residential parking once the area sees significant increases in the residential population.

GENERAL RECOMMENDATIONS

2. **Strengthen Code Enforcement** – Many of the issues facing the City regarding land use were not so much problems with the particular type of use on a specific parcel, but more to do with property maintenance of the land and improvements on the land. The most simple step that the City can take to help upgrade and revitalize the City is to enforce existing zoning, building, and property maintenance code standards on problem properties throughout the City. The City already

10. **Sites identified in the Ward Street TOD Plan** – The Ward Street Transit Oriented Development Plan (TOD) identified several key properties around the Ward Street Station that should be targeted for more intense development to support the revitalization of the downtown as well as increase ridership on the NJ Transit commuter rail line that stops in the City. The Plan recommends that the following properties, among others, be considered for strategic development:

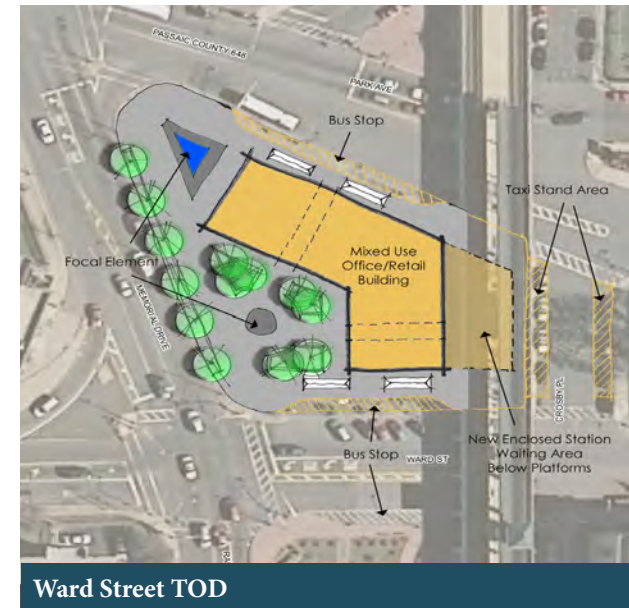
- a. The 1 acre property adjacent to the Train Station on the corner of Ward Street, Market Street, and Memorial Drive, which is currently used only as a gas station, is a priority site. The property should be developed with a mixed use complex that includes a multi-modal transit center to make transfers between the train and local buses seamless.
- b. The property just southwest of the Train Station along Railroad Avenue is another priority site. The plan calls for this long and narrow strip of property to be developed as workforce housing with retail spaces on the street level closer to the Train Station.
- c. The plan also calls for more intense development on the parcel which contains the Station parking garage. This property is currently developed with a parking garage, and a surface parking lot. The areas on the north end of the property where the parking lot is located should be developed with a mix of uses, including a strip of restaurants on the ground level.
- d. The two parcels just north of the station along Market Street, which currently house several retail businesses in single story structures, should be developed as a mixed use structure, with residences or office space above the ground level retail.
- e. The site of the former Royle Mill, just a few

blocks south of the Train Station, which was demolished in 2011, would potentially be a good location for a small urban grocery store or other commercial use such as a pharmacy/convenience store.

- f. The parcels just north of Center City Mall, which are currently used as surface parking lots, should be developed with structured parking to help meet the demand for parking in the downtown.
- g. The plan recommends that many of the existing 2-4 story buildings along Main Street and throughout the downtown that have vacant space in their upper floors should be encouraged to be used as either residences or office space in these vacant floors.

11. **Sites Identified in the Madison Avenue Commuter Rail Study** - The Madison Avenue Commuter Rail Corridor Study of 2009 also identifies several properties around the proposed light rail station that should be developed according to transit oriented development (TOD) principles. The plan calls for new development of most of the blocks between Broadway, East 18th Street, East 21st Street, and Park Avenue, which are the blocks surrounding the proposed station. The plan recommends targeting municipally owned parcels, and properties with single use, single story commercial structures, for development with 3-5 story mixed use buildings. A new plaza surrounding the proposed light rail train station would be a focal point for the neighborhood and a hub for a new urban village. In all, the plan identifies over 30 potential sites for new development, several of which have recently been acquired by the Paterson Parking Authority. The following are the key sites identified in that plan as potential opportunity sites:

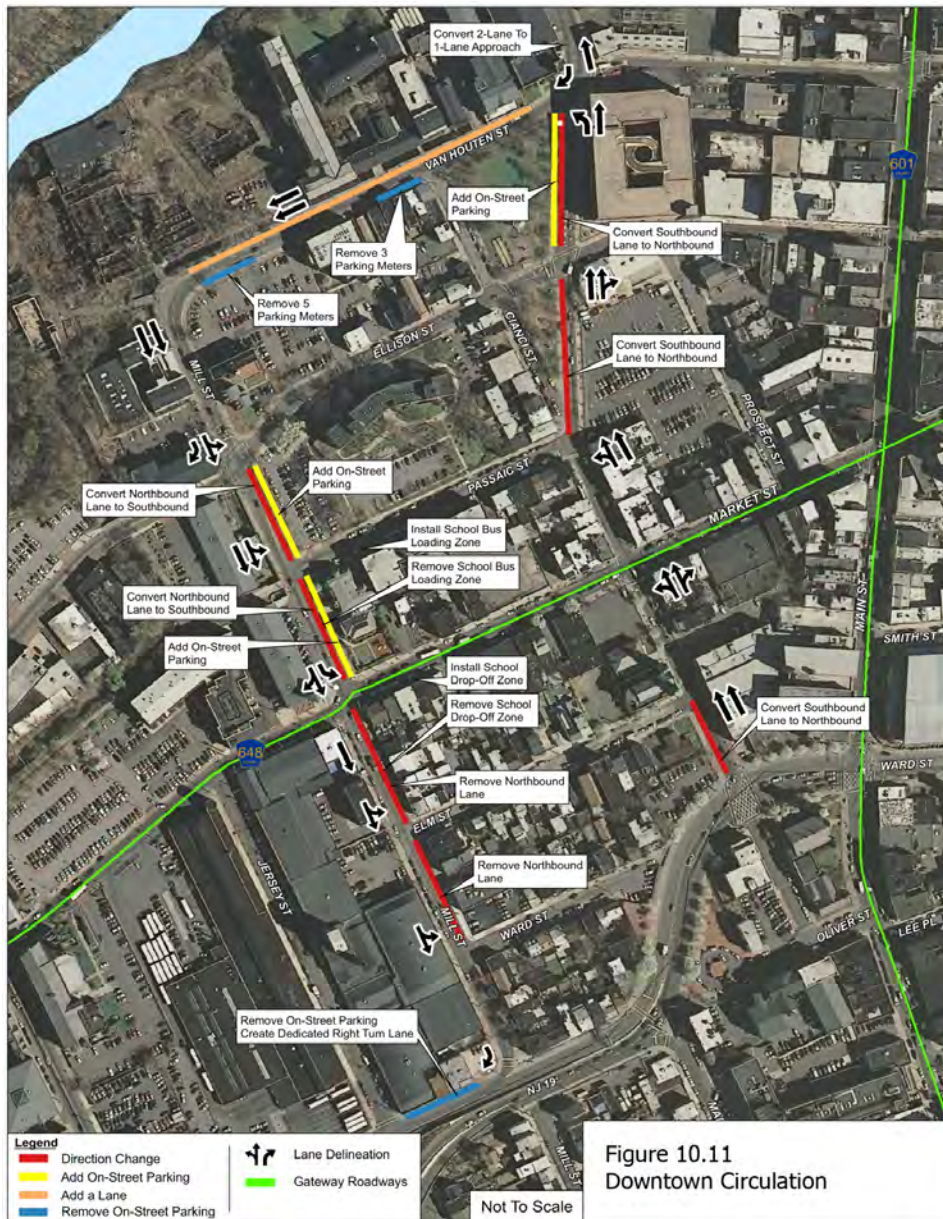
- a. The four corners of the intersection of Madison Avenue and Ellison Street should form a plaza space around the proposed light rail stop, and be



Ward Street TOD



Image from the Madison Avenue Commuter Rail Study



Graphic from 2010 City-Wide Transportation Needs Assessment




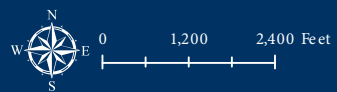
Graphic from 2010 City-Wide Transportation Needs Assessment

CITY OF PATERSON
Master Plan

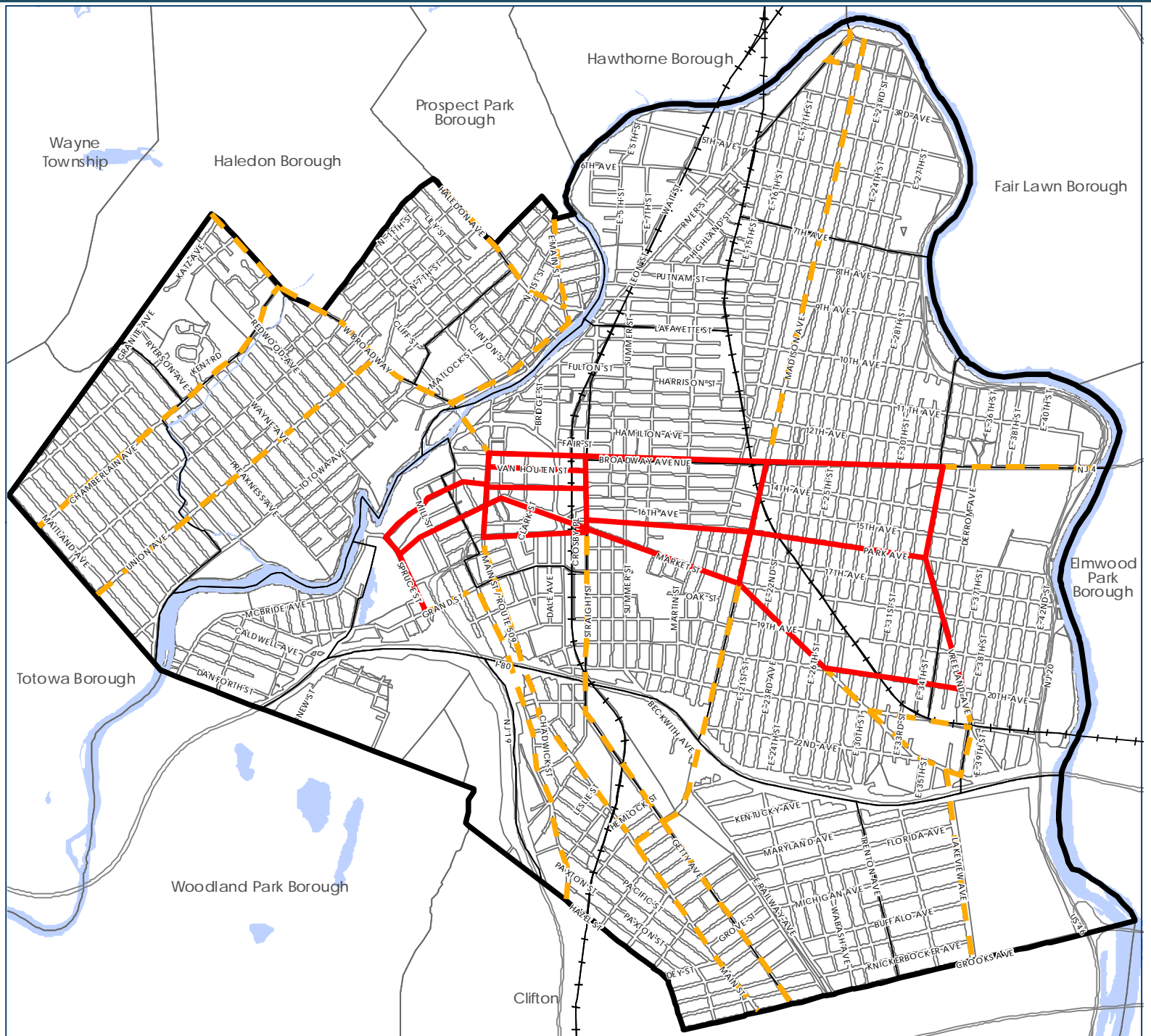
Passaic County
Proposed Bicycle
Improvements

Proposed Bicycle
Improvements

-  County Bike Loops
-  Bike/Pedestrian Priority Corridors



Source: NJGIN, NJDO T, NJDEP, NJ Transit



Circulation Recommendations

1. **Adopt a “Complete Streets” policy** - The City should formally adopt a Complete Streets policy that requires that any construction or repaving activity on City Streets is viewed through the complete streets framework, that all potential users are given due consideration in the design and construction of any transportation project. The National Complete Streets Coalition recommends that a complete streets policy contain at least the following elements:
 - A vision for how to use the complete streets.
 - Specify that “all users” includes pedestrians, cyclists, and transit passengers of all ages and abilities, as well as automobiles.
 - Encourage street connectivity and aim to create a comprehensive street network.
 - Ensure that the policy is adoptable by all relevant government agencies.
 - Applies both to new streets and retrofit projects.
 - Set a clear procedure for exceptions to the policy.
 - Direct the use of the best design standards while recognizing the need for flexibility.
 - Directs that complete streets will complement the context of the community.
 - Establishes performance standards.
 - Includes specific steps to implement the policy.

The City should coordinate the implementation of Complete Streets with the County, as most County owned roads in the City are proposed for Complete Streets treatment already. Where City roads intersect with County roads, synchronization will be necessary.
2. **Implement Recommendations from the 2010 City-Wide Transportation Needs Assessment** – These three specific roadway improvements recommended by this study should be a high priority for the City

to enhance traffic circulation and access to and from the City. These recommendations involve changes to the striping, traffic signals, and direction of roads that fall under several jurisdictions, so coordination with County and State Transportation departments will be necessary to implement these upgrades to the City’s transportation network.

- **I-80/Route 19 Access** - First, access to and from I-80/I-19 and Downtown needs to be improved. Access to I-80 from Downtown is poor due to improper signing and significant traffic delay. There are two routes to the I-80/Route 19 entrance ramps on Grand Street. Wayfinding signs should be installed along both routes to inform motorists of the entrance. The traffic signals along both routes need to be retimed to reduce delay. Figure 10.9 shows these concepts diagramed on a map.

In addition, a new traffic signal is warranted at the intersection of Oliver Street and Spruce Street. The installation of a signal at that location would allow traffic exiting Downtown along westbound Oliver Street greater mobility in accessing Route 19.

A significant number of visitors to the Paterson Great Falls National Historical Park will be coming to Paterson from Interstate 80 or the Garden State Parkway via Route 19, and improving access would greatly facilitate traffic to and from the Great Falls.

- **Downtown Circulation** - Second, the circulation around Downtown needs improvement. As proposed in the Citywide Transportation Needs Assessment, a defined Downtown loop could be established by changing Cianci Street, Mill Street and Van Houten Street to one-way streets. Portions of these streets are already one-way. Changing those entire streets to one-way would not significantly alter traffic patterns. Figure

10.10 illustrates these concepts. Currently, the I-80 / Route 19 exit ramps to Downtown direct vehicles to the intersection of Ward Street and Cianci Street. Delays at this intersection would be considerably reduced by this plan. Specific improvement alternatives to the intersection would have to be investigated.

This circulation plan would provide two lanes in each direction and allow for easier improvements to the intersection along these roadways. This plan will benefit motorists by allowing reducing the delay in traversing to or through Downtown to their ultimate destination.

- **Getty Avenue/Railroad Avenue Connection** - Lastly, the connecting roadways between Downtown and South Paterson and the St. Joseph’s Medical Center need improvement. The two current routes are Main Street and Straight Street. Both pose problems to travel. Main Street is highly congested, while Straight Street has a low-clearance railroad overpass which does not permit trucks to use this route. Also, Straight Street does not connect directly to Downtown. A solution may be to connect Getty Avenue to Railroad Avenue by using the right of way along Plum Street and several industrial properties, as shown in figure 10.8. Railroad Avenue is a lightly traveled roadway that ultimately becomes Memorial Drive, which is a main route to access Downtown. With this connection in place, an alternate route between Downtown and South Paterson and St. Joseph’s Medical Center could be provided.
3. **Improve Public Streets** - There are several enhancements to the roadway network that should be considered for short term traffic improvements:
 - a. **Left turn lanes** - Citywide, all key intersections should be evaluated for the installation of left turn lanes through re-striping. Left turn



Wayfinding Signage



Curb Extension, Mashpee Commons, MA

movements can cause significant delays at intersections because of the lack of opportunities to make a left turn against high opposing traffic volumes. Left turn movements can also block vehicles traveling straight in the same direction if queuing is too long. In conjunction with the restriping of left turn lanes, intersection operations can be improved with the addition of a protected left turn phase at high volume left turning locations. Many of the heavily trafficked intersections in the City fall on roads in Passaic County's jurisdiction. Coordination with the County will be needed.

- b. Wayfinding - A comprehensive wayfinding and signage program that directs drivers to the nearest off-street parking locations, or major destinations would help visiting traffic to get to their destinations without any hassle or confusion about which direction to travel.
 - c. Proper striping and curb markings - Proper striping of all pavement markings delineating exclusive left turn or right turn lanes, parking spaces, stop-bars, and crosswalks would be beneficial. Pavement markings delineating traffic and parking rules provide visual cues to drivers to obey the laws.
 - d. Bridge Crossings - Passaic County continues to focus on improving their 12 bridge crossings within the City. Six of those are functionally obsolete and one is structurally deficient. When these bridge structures are replaced, the opportunity to potentially widen the span should be a part of the bridge redesign. The City should work with the County to advocate for improvements to the bridges as well as regular maintenance.
4. ***Implement Bicycle and Pedestrian Improvements***
- There are several short term strategies the City can utilize to improve the bicycle and pedestrian infrastructure in the City.
 - a. County Bicycle Improvements - The majority of the major thoroughfares and transportation routes through the City are under the jurisdiction of Passaic County. The County already has plans, as described above, to implement new bicycle infrastructure through the downtown and on several other major roads. The City should assist the County in their efforts to implement these improvements.
 - b. Sidewalk Repair Program - Develop an annual sidewalk repair program whereby residents can participate and get their sidewalks repaired/replaced by a professional contractor. The City should construct new sidewalks in gap areas or additional directions should be provided where sidewalk cannot be provided. This program should address areas of deterioration. In addition, all narrow sidewalks should be widened to a minimum of 4 feet, 5 feet preferably, where feasible.
 - c. Crosswalks - Provide crosswalk markings and ADA curb ramps at each intersection. Another area of pedestrian concern is crossings at schools and at intersections. Most intersections do not have crosswalks or have faded markings and do not have pedestrian signal heads. It is recommended to install highly visible longitudinal crosswalks, ADA curb ramps, warning signage, countdown pedestrian signal heads, and pedestrian push buttons (at signalized intersections). The first priority should be high pedestrian activity areas such as Downtown, main corridors, and areas adjacent to schools. High pedestrian crash locations should be a priority as well. These high crash intersections are:

- Broadway/Main Street
 - Main Street/Slater Street
 - Main Street/Ellison Drive
 - Main Street/Grand Street
 - Madison Avenue/Market Street
 - Madison Avenue/21st Avenue
 - Madison Avenue/Broadway
 - Market Street/Mill Street
- d. Curb Extensions - The City should consider installing curb bumpouts at intersections, especially those with high pedestrian traffic. Curb bumpouts allow for safer pedestrian crossings at intersections by reducing the length of the curb to curb crossing between sidewalks. Curb bumpouts also enhance vehicular safety, as it removes the possibility for vehicles to illegally park next to an intersection, which increases visibility.

Safety Bollards - As an alternative to curb extensions, bollards can be placed at crosswalks to prevent vehicles from illegally parking too close to intersections, and to add increased safety and visibility to pedestrian crossings.

- e. Bike Map - Create a new Citywide Bike Map in coordination with Passaic County for designated routes within the City. Currently, there are three main issues regarding bicycle travel in Paterson; (a) there is only one marked bike path in the City. It is located in the Great Falls National Historic District; (b) there is no established bicycle compatibility along the existing roadway network; and (c) there are few bicycle parking facilities.

The City should look to augment the trail at the Great Falls and add additional bike paths

along the Passaic River. These additional paths should be focused around the existing riverside parks and possibly connect these areas using the Passaic River as a natural attraction.

- f. Complete Streets - Using Complete Streets policies, the roadway network should improve its bicycle compatibility. This should be done by utilizing the existing roadway width along high traffic corridors. Many of these corridors are County Roads which are already proposed to be complete streets, and may include designated bicycle lanes or shared lane markings. While most of the streets identified in the City-Wide Transportation Needs Assessment and the County Plan as being recommended for bicycle lane markings are County roads, other roads within the City's jurisdiction can be considered for similar treatment.
- g. Shared Lane Markings - Restriping and signage should be used to mark shared travel lanes, where both bicycles and vehicles share the same travel lane along roadways where there is insufficient width to have separated travel lanes. Most of the City's roadways lack the width necessary for implementing designated bicycle lanes, however shared lane markings and signage can be installed on any street no matter the width. This should be accomplished as part of both the City's and the County's capital programs for these roadways.
- h. Bicycle Parking - Storage should be provided for cyclists at popular destinations. Destinations include the Great Falls, the Ward Street train station, future stations and bus stops, parking garages and lots, all historic landmarks, and Downtown or other commercial corridor. Bicycle facilities consist of either bicycle lockers or racks. Bike Racks would be more complimentary to on-street corridors and



Bicycle Parking Shelter, Philadelphia



Shared Lane Signage



Marked Crosswalk in Philadelphia



Downtown Parking

possibly garages, while lockers can be installed at train stations and parking lots/garages.

5. **Participate in Safe Routes to School** – Safe Routes to School is a NJ Department of Transportation (NJDOT) program that provides funding and other resources to municipalities to improve access for children to get safely to their school. Particular focus is placed on building a safe environment for children to bike and walk to school, and removing barriers that make walking or biking an unfeasible option for many children.
6. **Develop a Comprehensive Downtown Parking Management Plan** – The City and the Paterson Parking Authority should develop a comprehensive strategy to deal with parking in the entire downtown business district. Part of what makes a downtown commercial environment successful is an atmosphere and environment where people feel comfortable walking around and window shopping. An environment such as this is difficult if not impossible if each business is surrounded by its own parking lot. Yet, convenient parking is needed somewhere otherwise many customers of local businesses simply will not come. As discussed in the Land Use Element of this Plan, parking in the downtown commercial district must be viewed and treated on a district level scale, and not on a parcel by parcel or business by business level the way it is typically done. Parking for the entire downtown to the extent feasible should be viewed as a shared parking situation in which all businesses and uses in the downtown share the same pool of parking resources.

A Comprehensive Parking Management Plan would include:

- A district wide analysis of current parking resources and utilization. Further study is needed to determine where people are currently parking when they come to

downtown Paterson, and what their destination is when they get downtown. This study would also include an analysis of the optimal level of parking to be provided in the downtown area. Sufficient parking will need to be provided to meet demand, but without detracting from the historic character and pedestrian friendly nature of the City.

- A determination of the demands for parking at different times of the day.
- A study regarding the optimal pricing of parking. Providing parking, especially in a downtown environment, can be very expensive. At least some costs of providing parking should be pushed onto the people who will use the parking spaces, and parking can be a substantial source of revenue for the City. However, if parking is too expensive, visitors may simply choose not to come at all. Parking, whether on-street at a metered space, or off-street in a structured garage, should be optimally priced to recoup some of the costs of providing parking, while not discouraging visitors by being too expensive.
- Identify suitable locations for off-street parking. Ideally, parking would be provided in structured garages or in the rear of properties behind buildings. Parking should be as minimally intrusive to the pedestrian realm as possible.
- Recommendations for parking facility design and improvements to accommodate and complement the pedestrian realm.
- Recommendations to address the needs of short term commercial use parking for retail customers, workday parking needs of office workers and others, as well as long term parking for permanent residents if there is to be an increase in residential uses downtown.

7. **Provide a Tourism Shuttle** – The historic and cultural destinations in the City, such as the Paterson Great Falls National Historical Park, City Hall, Hinchliffe Stadium, Downtown, and other spaces which may attract visitors, should be directly connected through a shuttle bus or trolley service. Connecting major destination points with existing mass transit centers such as the Ward Street Station or the Broadway Bus Terminal could help to facilitate heritage tourism in the City, as well as reduce needs for parking at major destinations.

8. **Improve Bus Stop Locations** - All near side bus stops should be replaced to the far side of the intersection. This would be safer for pedestrians. It also allows buses to clear the intersection before stopping. In addition, in order to ease congestion, traffic signal priority measures can be incorporated into any of the traffic signal upgrade options to allow buses to pass through intersections.

Additional bus shelters should also be considered for areas where many different bus routes may stop.

9. **Regulate Jitney Shuttle buses** - Regulations overseeing the private jitney services in the City should be adopted and enforced. This would help to ensure safe and organized operation of the jitney buses. The City should also encourage the jitanies to form a professional association. Hudson County and Atlantic City are good existing models to emulate. Due to recent high profile accidents involving jitney operations, this has become an issue that the State is reviewing and considering legislation to provide statewide oversight of these operations. Some suggested regulations include:

- Require drivers of jitney buses to have valid commercial driver's licenses.
- Permitting jitanies or shuttle buses to stop only in designated locations, such as existing bus stop areas, or only at the far side of intersections.

- Require all jitney buses and operators to register with the City, and receive yearly permits to operate a jitney or shuttle bus service in the City.
- Restricting access to certain roads by jitanies during certain hours.

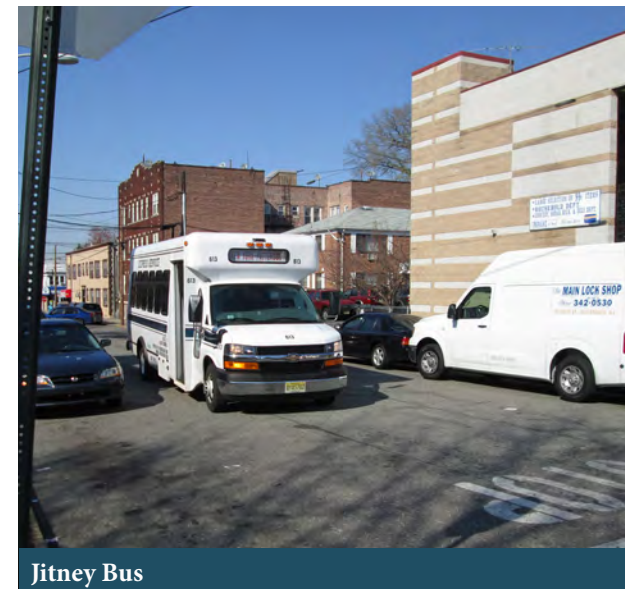
10. **Improve Commuter Rail as a Transit Option** - There are several potentially significant improvements to the rail system and access to commuter rail that would benefit Paterson:

- Direct Access to Manhattan - Currently, passengers travelling on the Main/Bergen NJ Transit commuter rail line must change trains in either Hoboken or Secaucus Junction in order to reach Manhattan. While a single transfer may not seem particularly burdensome to riders, it does make commuting less convenient, and convenience is a key factor in determining mode of transportation. Anything that can make commuting via trains more simple and convenient for passengers is likely to increase ridership, and reduce the need for using automobiles for commuting. Although the City does not control what happens on NJ Transit railroad tracks beyond its borders, it can lobby the State and NJ Transit to improve access to and from New York Penn Station.

- Passaic-Bergen Light Rail Phase I - This proposed new passenger rail line will run from the neighboring municipality of Hawthorne to Hackensack. The line will have five stops within the City, mostly in the north and east sides. The project is currently awaiting implementation funding. The City should work with NJ Transit to help obtain the necessary funding for this project. When constructed, this will provide residents an additional public transit option and another way to lessen the dependence upon automobiles to travel. Figure 10.14 shows the route and stops on this proposed passenger rail corridor.



Direct Access to New York City



Jitney Bus



Proposed Location, South Paterson Train Station



Wayne Avenue Bridge

- c. South Paterson Train Station – A second Main Line train station in South Paterson would provide additional access to this area of the City. The biggest employer in the City, St. Joseph’s Medical Center is adjacent to the railroad line, and would be a main destination point should a stop be located nearby. The City should work NJ Transit to study the feasibility of providing an additional stop in South Paterson.
- d. Extend the hours of the Parking Garage at the NJ TRANSIT station – This station closes by 7:00 pm. This makes it unattractive to use for Park and Ride customers to New York, and points in-between. There is no data available regarding distribution of passenger boardings throughout the day, however, with the last peak hour train from New York/Hoboken stopping in Paterson at 7:28p, opening the Garage to at least 8:00pm would increase the convenience of the park and ride utility of the Paterson station. In addition, the extended hours would need to be advertised at both the City and NJ Transit level to increase utilization of park and ride facilities, and train ridership.
- e. Provide additional security at the Ward Street Train Station during nighttime hours – This was stated as a major concern from stakeholder interviews.
- f. Provide competitive monthly rates to commuters – The Paterson Parking Authority should determine a competitive rate based on rates charged at Park and Ride facilities at the neighboring stations.
- g. Implement Transit Oriented Development Proposals – The Ward Street Station TOD plan, as well as the potential of the Passaic Bergen Passenger Rail Restoration Project and the Madison Avenue TOD study, both

present opportunities for the City to capitalize on existing and proposed transportation infrastructure assets. Increasing the residential and commercial density around the transit stops has the potential to greatly increase ridership on those transit services.

11. ***Extend North Bridge Street*** – North Bridge Street in the Riverview neighborhood should be extended north all the way to Short Street to create an edge for the proposed open space along the Passaic River in this flood-prone area. The streets that currently dead-end at the River should be vacated beyond North Bridge Street.
12. ***Consider Widening Railroad Avenue between 21st Avenue and Grand Street*** – Railroad Avenue in this stretch is a two-lane road that sees heavy truck traffic due to its many industrial uses. Due to the narrow roadway and high volume of trucks turning in and out of industrial properties, this can cause traffic delays during peak hours, as this is also one of the major thoroughfares leading to Downtown. Just east of Railroad Avenue is the railroad, and property owned by NJ Transit. The NJ Transit rail line is located on the easterly edge of the properties, potentially leaving room for Railroad Avenue to be widened to the east to create additional lane capacity.
13. ***Conduct a Feasibility Study to Reconfigure the Streets and Public Access on Block 801, Between Hinchliffe Stadium and Ryle Avenue*** - Currently this large block next to the Paterson Great Falls National Historical Park contains only a few roads that do not connect to one another, making both pedestrian and vehicular access difficult. With the National Park, Hinchliffe Stadium, the Valley of the Rocks, and any new potential development along the former “Vistas” condominium site, transportation access will need to be enhanced. Due to the steep topography near the Passaic River, further study will need to be conducted

regarding the potential to realign and connect Ryle Road, Liberty Street, Jasper Street, Kearny Street, and Marion Streets.

14. **Consider Connecting East Railway Avenue and West Railway Avenue** – East Railway and West Railway Avenues are separated by the railroad, and there are only connections between the two at Crooks Avenue and Gould Avenue. An additional crossing in between these two could better connect the two sides of the railroad, and provide enhanced access to the Farmers Market on East Railway Avenue. The City should consider constructing an additional at grade crossing in the area of Buffalo Avenue or Pennsylvania Avenue near the Farmers Market.
15. **Consider widening McBride Avenue** – McBride Avenue in between Wayne Avenue and Spruce Street experiences significant congestion during peak hours. Adding a second traffic lane at the crossing of the Passaic River may help alleviate some of this congestion.
16. **Consider a New Bridge Crossing the Passaic River** – As a potential alternative to widening McBride Avenue near the Wayne Avenue Bridge, a second crossing could potentially divert much of the traffic congestion on McBride. Another crossing at either Preakness Avenue to McBride Avenue/Hoxey Street south of the Great Falls could be a potential location to consider.
17. **Advocate for the widening of Interstate 80** – Interstate 80 within Paterson experiences higher traffic delays than other sections of the highway. This is due in part to the bottlenecking that occurs when the highway is reduced from 4 travel lanes in each direction to 3 travel lanes between exit 58 and exit 60. While the Interstate is a Federal highway and is not controlled by the City, the City can lobby the State DOT and Federal Highway Administration to widen I-80 through the City to help alleviate traffic bottlenecking.

18. **Prepare an Interim Parking Plan for the Paterson Great Falls National Historical Park** - While the City Parking Authority has plans to construct a 1,000 space parking garage on Market Street near the Great Falls, it is likely that construction of this garage will not be complete for several years. This garage may meet the long term parking demands for the Park, but a near term parking solution will still be needed before the garage opens. The existing parking lot at Overlook Park currently has a capacity of approximately 50 vehicles, which may not be sufficient on many days. Overflow parking for the Great Falls should be directed to the parking garage on Ellison Street, just four blocks from the Paterson Great Falls National Historical Park. Wayfinding signage directing traffic between the two locations will be necessary. Shuttle service between the Park and the parking structure may be required as well.

19. **Prepare a City-Wide Circulation Infrastructure Improvement Plan (IIP) that is Coordinated with Passaic County, and Categorized via -**

- Pavement Improvement (50 year timeline)
- Signage and Striping (10 year timeline)
- Traffic and Pedestrian Signals (20 year timeline)
- Parking Improvement (10 year timeline)
- Bicycling and Pedestrian Facilities (10 year timeline)

The plan should do the following:

- Prioritize improvements in each category;
- Provide annual budget goal for each category;
- identify funding sources and expected annual amounts that can be anticipated from each funding source. Examples of funding sources include NJDOT Safe streets to Transit (Pedestrian signage, new crosswalks, ADA curb ramp improvements, sidewalk improvements);

Bicycle facilities (Bike routes and signage); and NJDOT Local Aid (Roadways)

20. **Prepare Current Infrastructure Maps for Each of the Following Categories of Infrastructure -**

- Roadways. Right-of-Way widths and cartway widths should be shown. Dates paved (if known) should also be indicated;
- Traffic Signals;
- Signage. This includes wayfinding signage;
- Bicycle Routes and Facilities Map;
- Mass Transit facilities map such as bus stops.
- Parking. Location, parking type, on-street and off-street capacity, parking regulations for each location/zone. This should be coordinated with the Paterson Parking Authority.
- These maps should be maintained after improvements as part of the standard workflow.

21. **Implement Traffic Signal Improvements** - Roadway widening and major intersection improvements are not feasible in most cases in a relatively built-out city such as Paterson to alleviate congestion. However, upgrading the signal timing and coordinating the individual traffic signals can optimize the existing roadway capacity available and reduce delays overall. Coordinated signals also improve safety by reducing rear end crashes by allowing vehicles to progress more smoothly along each corridor, reducing the amount of times a vehicle must stop. Figure 10.15 taken from the 2010 Transportation Needs Assessment diagrams this concept.

There are a few alternatives that should be evaluated to help alleviate problems stemming from the traffic signal system. The centralized system can either be updated or be removed. If removed, it is recommended that separate coordinated signal systems along the main corridors be developed

as well as any other highly congested streets, such as in the Downtown or near the existing highway interchanges.

An updated centralized system will be more expensive than the separate corridors. However, significant progress has been made in the last decade in developing low-maintenance systems that can be installed. These systems need information technology (IT) maintenance and operations support to update/revise the signal timing plans. The most advanced systems now use adaptive traffic signal technology. These systems are demand responsive and constantly update the traffic signal timing based on current traffic flow. An adaptive signal system requires traffic sensors to use that information to gauge traffic flow. This type of system eliminates the need for the traditional method of gathering traffic data followed by capacity analysis to produce or update a fixed time of day timing plan.

Either alternative will require communications by one of the following options:

- Overhead wires (cable or telephone)
- Underground interconnections
- Wireless
- All three options have maintenance issues and differ in cost. Also, the installation of vehicle actuation via traffic cameras at each intersection is recommended for either alternative. This would allow each traffic signal to operate optimally as wasted time would be reduced during each signal cycle. It is recommended to perform a study to evaluate the future traffic signal system from a cost/benefit perspective.

22. ***Transfer City Ownership of Traffic Signals on County Roads*** - As previously mentioned, all of the traffic signals within the City are maintained by the City, with only few exceptions. The City should attempt to transfer maintenance responsibility of signals to the County or State where the signal is located on a County or State owned road. This divestiture would facilitate the reallocation of City resources to infrastructure on City streets. Also, a basic maintenance plan should be implemented to routinely inspect the traffic signals. It is recommended that these inspections be done by an outside contractor, while the day-to-day maintenance is performed by the City's staff.

23. ***Consider additional traffic signals at congested intersections*** - In addition to coordinating and maintaining existing traffic signals, some intersections in the City may warrant signalization in order to better alleviate traffic congestion and organize traffic flows. Further investigation is needed to determine the feasibility and potential benefits of traffic signalization. A few areas that warrant further study include:

- a. Route 20 at 19th Avenue (Lowe's shopping plaza)
- b. Interstate 80 at Glover Street (exit 56)

24. ***Coordinate Freight Transportation*** - Coordinate with Passaic County and NJDOT, on improving freight and rail access to industrial areas of the City. The Passaic County Transportation Element specifically identifies Lakeview Avenue as a potential freight corridor. While Lakeview Avenue is a County road that provides access to Interstate 80, and is the only four lane road in the area, it is also located in a residential area. Lakeview Avenue was specifically mentioned during public hearings by residents who feel that trucks using this road make it unsafe for their children. The City should work with the County to find an alternative route to direct truck and freight traffic. East Railway Avenue, while it does not have the same width as Lakeview, does offer access

to Interstate 80 and is a primarily industrial and commercial area rather than residential.

If truck traffic cannot be diverted from Lakeview Avenue, then the road should be considered for other improvements to increase pedestrian safety such as curb extensions and safety bollards at crossings.

Appendix K - Road Owner Response



County of Passaic

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MICHAEL LA PLACE AICP, PP
Director

September 18, 2018

Julia Steponanko, PE, Project Manager
Greenman-Pederson Inc (GPI)
100 Corporate Drive
Lebanon, NJ 08833

RE: Road Owner Response to Road Safety Audit Recommendations
Market Street (CR 648) between Spruce Street and Madison Avenue
City of Paterson, Passaic County, New Jersey

Dear Ms. Steponanko,

The County of Passaic is committed to improving safety and to the creation of Complete Streets that better serve all users. The County generally agrees with the recommendations of the Market Street Road Safety Audit (RSA). However, the County cannot commit to implementation of specific improvements at this time without further analysis.

The following points should be noted:

- Passaic County controls access through Planning Board review, and with the Engineering Department's Right-of-Way Access Permit review process for projects which are exempt from County Planning Board review.
- Upgrading ramps for ADA compliance is City jurisdiction. Passaic County makes upgrades to ramps when the County reconstructs or resurfaces a roadway. Recommendations 43, 44, 80 and 101 are also City responsibility. Recommendation 87 is listed as County responsibility but would be joint County/City responsibility.
- The County agrees with recommendation 19 to investigate widening the sidewalk to 10-12' but disagrees with the recommendation for a shared use path. Bicycling on sidewalks is not appropriate in a downtown environment and could cause conflicts with pedestrians.
- Some recommendations may not be warranted or feasible due to engineering or fiscal constraints. Additional analysis is necessary.

The County thanks the Road Safety Audit Team for their participation and effort to improve traffic safety along Market Street. Should you have any questions concerning the above, please contact me at 973.569.4047 or mlyscatos@passaiccountynj.org.

Sincerely,



Michael Lysicatos, P.P., AICP
Assistant Director, Department of Planning and Economic Development