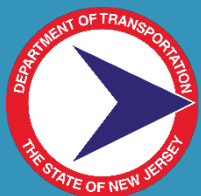




Road Safety Audit:

CR 510 (Washington Street/Morris Street),
CR 510Z (Lafayette Avenue) and Ridgedale Avenue
Morristown Town, Morris County



March 2020
Issued October 2020

TABLE OF CONTENTS

Executive Summary.....	iii
I. Introduction	1
A. Site Selection.....	1
B. What is a Road Safety Audit?.....	1
C. The Morristown RSA Event	2
II. Corridor Description and Analysis.....	2
A. Study Location.....	2
B. Roadway and Intersection Characteristics.....	2
C. Existing Bicycle/Pedestrian Accommodations	2
D. Traffic Volumes	3
E. Transit Service.....	3
F. Community Profile	3
G. Redevelopment.....	3
III. Crash Findings	4
A. Temporal Trends	4
B. Collision Types.....	5
C. Severity	6
D. Roadway Surface & Light Condition.....	7
E. Location.....	8
IV. Identified Issues & Observations	9
V. Findings and Recommendations.....	11
A. Recommendations	11
B. Road Owner Response.....	17
A. Recommendation Visualizations.....	18
VI. Conclusions	25

LIST OF FIGURES

Figure 1 – Vehicular Crashes by Month and Day of Week on All Roadways	4
Figure 2 – Pedestrian/Bicyclist Crashes by Month and Day of Week	5
Figure 3 – Vehicular Crash Type Breakdown	6
Figure 4 – Severity (Pedestrian/Bicycle Crashes).....	6
Figure 5 – Surface Conditions (Vehicular Crashes)	7
Figure 6 – Light Conditions (Vehicular Crashes)	7
Figure 7 – Surface Conditions (Pedestrian/Bicycle Crashes)	8
Figure 8 – Light Conditions (Pedestrian/Bicycle Crashes).....	8
Figure 9 – Pedestrian Facility Examples	18
Figure 10 – Sidewalk and Driveways (Source: CSDG)	19
Figure 11 – Ergonomic Crosswalk Example (Source: GPI).....	19
Figure 12 – Bicycle Facility Examples	20

Figure 13 – Single Lane Roundabout Example (Source: CSDG)	20
Figure 17 – Centerline Hardening in NYC (Source: NYC DOT/Quartz [qz.com])	21
Figure 14 – Example of a Main Street Typology (Source: NACTO-US).....	22
Figure 15 – Example of a Two-Lane Downtown Street Typology (Source: NACTO-US).....	23
Figure 16 – Example of a Green Neighborhood Street Typology (Source: NACTO-GI).....	24
Figure 18 – Bioswale Example (Source: NACTO-US)	25

LIST OF TABLES

Table 1 – NJTPA LSP Ranking (Corridor).....	1
Table 2 – NJTPA LSP Ranking (Intersection).....	1
Table 3 – Morristown Area Demographics	3
Table 4 – Overrepresented Crash Types	5
Table 5 – Corridor-Wide Recommendations	11
Table 6 – Site-Specific Recommendations	13

APPENDICES

- A. RSA Team
- B. Area Map
- C. Traffic Data
- D. Vehicular Crash Diagrams
- E. Pedestrian Crash Diagrams
- F. Photographs
- G. Straight Line Diagrams
- H. Pre-Audit Presentation
- I. Excerpts from Relevant Morristown Plans and Reports
- J. Excerpts from Relevant Morris County Plans and Reports
- K. Road Owners Response

Executive Summary

This document is the final report of the Morristown Road Safety Audit (RSA). It was conducted along CR 510 (Washington Street/Morris Street) from Phoenix Avenue to Bank Street and from US 202 NB (East Park Place/Dumont Place) to Ridgedale Avenue; CR 510Z (Lafayette Avenue) from CR 510 (Morris Street) to Ridgedale Avenue; and Ridgedale Avenue from CR 510 (Morris Street) to Abbett Avenue in Morristown Town, Morris 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.

Portions of the aforementioned roadway sections were identified on NJTPA's Local Safety Program Network Screening list as high priority. According to the NJDOT crash database, 463 crashes occurred during the three-year period between January 1, 2016 and December 31, 2018 (excluding pedestrians/pedalcyclists) along the study area. Additionally, 15 pedestrian/bicycle crashes occurred over the five-year period between January 1, 2014 and December 31, 2018.

This one-day RSA was conducted on Thursday, November 21, 2019 from 9:30 am to 3:30 pm. The pre- and post-audit meetings were held in the Morris County Schuyler Annex Building, located at 30 Schuyler Place, Morristown, NJ. Representatives from NJDOT, NJTPA, NJ Transit, Morris County and Morristown were in attendance with NJDOT serving as the facilitator.

The RSA site and crash history are 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 V. These recommendations addressed 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 improved lighting.

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

Portions of CR 510, CR 510Z and Ridgedale Avenue (RD) were identified on NJTPA's Local Safety Program Network Screening list as a high priority location, as shown in the below rankings. Of note, these rankings are based on 2014-2016 vehicular and 2012-2016 pedestrian crash data.

Table 1 – NJTPA LSP Ranking (Corridor)

Location	Ped Corridor	Regional Corridor
CR 510	#15 County (MP 11.60-12.60) Schuyler Pl to Washington Pl	#1 County (MP 11.41-12.41) Phoenix Ave to Ford Ave
CR 510Z	#76 County (MP 1.07-1.17) Lackawanna Pl to CR 510	#176 County (MP 0.21-1.21) CR 510 to CR 510

Table 2 – NJTPA LSP Ranking (Intersection)¹

Location	Intersections	Pedestrian Intersections
Ridgedale Ave	#17	#55 (510Z)
Abbett Ave	#49 (RD)	#9 (RD)
Spring St	#52	#10
Lafayette Ave	#77	-
Schuyler Pl	#79	#7
Elm St	#82	#55
King St	#89	#51
Ridgedale Ave	#17	#55 (510Z)
Abbett Ave	#49 (RD)	#9 (RD)

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.

¹ Intersection is along CR 510 unless noted otherwise

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



C. The Morristown RSA Event

This one-day RSA was conducted on Thursday, November 21, 2019 from 9:30 am to 3:30 pm. The pre- and post-audit meetings were held in the Morris County Schuyler Annex Building, located at 30 Schuyler Place, Morristown, NJ. Representatives from NJDOT, NJTPA, NJ Transit, Morris County and Morristown 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 0.66 miles of CR 510 (Washington Street and Morris Street), 0.31 miles of CR 510Z (Lafayette Avenue) and 0.27 miles of Ridgedale Avenue (RD). It encompasses downtown Morristown, dominated by commercial retail, professional and service establishments. Residential properties are intermixed or located above the commercial properties as part of mixed-use development. Of note, due to the overlap of State highways under NJDOT jurisdiction, the Morristown Green is not included in this RSA.

B. Roadway and Intersection Characteristics

CR 510 is an urban minor and urban principal arterial west and east of the Green, respectively, and is posted at 25 mph. The Washington Street section is 2 lanes and the Morris Street section is 3 lanes. Lafayette Avenue within the study area is a 2-lane, one-way urban principal arterial posted at 30 mph. Ridgedale Avenue is a 2-lane urban minor arterial posted at 25 mph. All three roads are undivided. Two intersections along Ridgedale Avenue provide access to and from I-287. On-street parking is available along most portions of the CR 510 and Ridgedale Avenue study area. Nine (9) and six (6) intersections are signalized and unsignalized, respectively. Of note, 7 of the 9 signalized intersections are under the jurisdiction of NJDOT.

C. Existing Bicycle/Pedestrian Accommodations

Sidewalks are currently available along both sides and range from 4-6 feet wide. Ladder style crosswalks are provided throughout the corridor. Sidewalk and crosswalk conditions vary from newly installed to needing maintenance. There are no bicycle lanes or other bicycling infrastructure identified along the corridor.

D. Traffic Volumes

Based on available data, CR 510, Lafayette Avenue and Ridgedale Avenue have approximate Annual Daily Traffic (ADT) of 30,500, 13,000 and 17,600, respectively. CR 510 serves as a major commuter corridor in the area. A copy of the available data can be found in Appendix C.

E. Transit Service

NJ Transit rail services is provided on the Morris and Essex Line from the Morristown Train Station along Morris Street. Bus service is provided along CR 510 via routes 871 – 875 and 880, most of which begin and end at the train station. Coach Line 77 provides service to NYC from Headquarter’s Plaza located along Speedwell Avenue.

F. Community Profile

Population and income characteristics from the U.S. Census Bureau were used to identify minority populations and low-income populations. Updates to the 2010 Census were performed through the American Community Survey (ACS) estimate. The latest ACS for this study area is a five-year estimate from 2013 through 2017. The project area consists of four (4) Census Tracts that comprise Morristown. A summary of the demographics is listed below.

Table 3 – Morristown Area Demographics

Characteristic		Project Area	County Average
Poverty		5.3%	2.9%
Race/ Ethnicity	White	50.0%	72.0%
	Hispanic/Latino	32.7%	13.0%
	Asian American	6.1%	10.1%
	Black or African American	8.7%	3.0%
	American Indian/Alaskan	0.0%	0.1%
	Other ²	2.6%	1.8%
Limited English Proficiency (LEP)		41.7%	17.4%

In addition, based on the ACS, approximately 5% of the population uses public transportation – the same as the Morris County average. Roughly 9% of the area population walk to work, which is higher than the county average of 2%.

G. Redevelopment

Several properties in Morristown are under various stages of redevelopment. The most relevant proposed redevelopment in the RSA area is in the northeast corner of Morris Street and Spring Street. The current strip mall will be converted to six-story, mixed-use buildings. A two-lane roundabout is proposed at the signalized intersection of Morris Street and Spring Street. In addition, the Morristown Parking Authority has plans to replace the existing parking lot #10 at Morris Street and Spring Street with a parking deck. Copies of this information, as provided by Morris County, can be found in Appendix J.

² Percentages may not equal 100% due to rounding. Other includes individuals who identified themselves as ‘Native Hawaiian or Pacific Islander’, ‘Some Other Race Alone’ or ‘Two or More Races’

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 2018 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.

NJDOT develops annual Crash Summary Reports that provide crash percentages such as severity, crash type, location, road surface condition and light on a roadway system (i.e. state, county, municipal). The calculated percentages are considered the “statewide average” for the purpose of comparing a specific road to the rest of NJ. Since the most recent year of data for this RSA is 2018, the roads were compared to the 2018 statewide average for the county road system. A link to the source information is provided below³.

A. Temporal Trends

According to the NJDOT crash database, 463 crashes occurred during the three-year period between January 1, 2016 and December 31, 2018 (excluding pedestrians/pedalcyclists) along the study area of CR 510, CR 510Z and Ridgedale Avenue. Crashes within the project limits varied from the average county road in May and December and on Thursday.

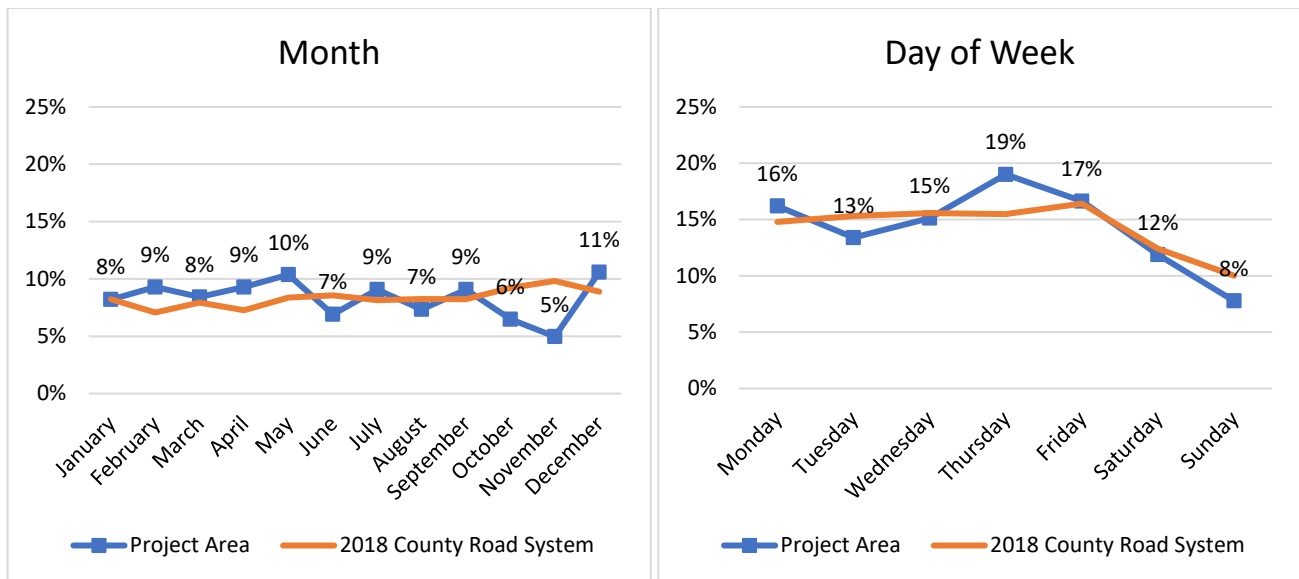


Figure 1 – Vehicular Crashes by Month and Day of Week on All Roadways

³ https://www.nj.gov/transportation/refdata/accident/crash_summary_reports.shtml

Additionally, 15 pedestrian crashes occurred over the 5-year period from 2014 to 2018 and were split 60/40 between pedestrians and bicyclists. Collisions with pedestrians trended similar to the average county road by month and by day except there were no reported crashes in March, November or on Saturday.

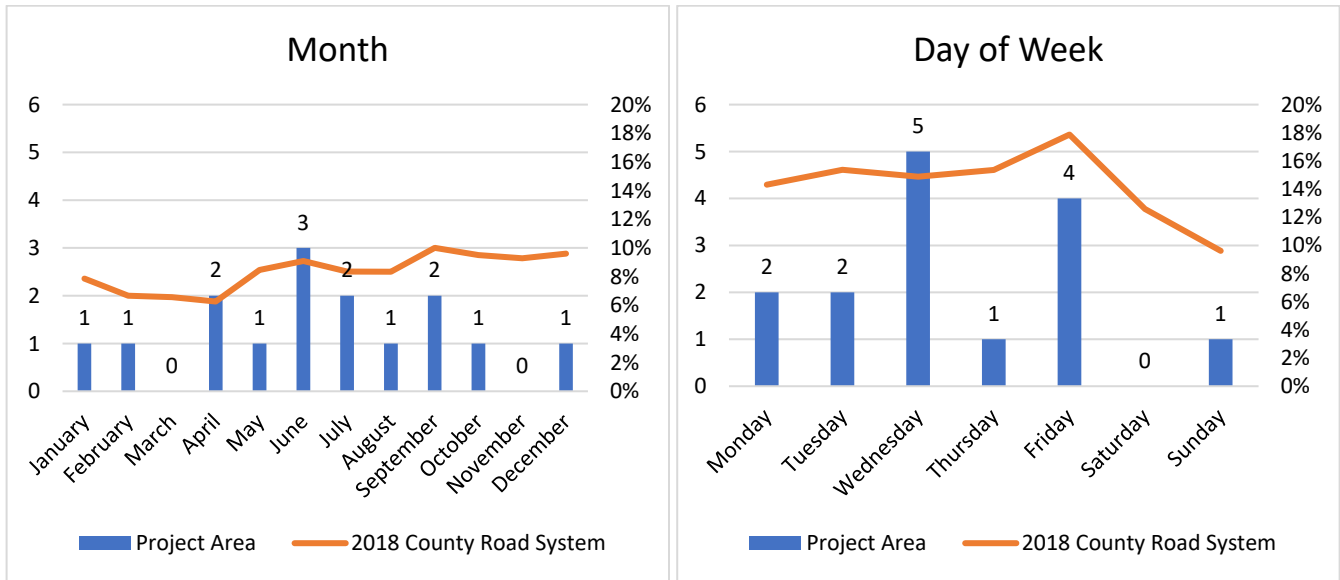


Figure 2 – Pedestrian/Bicyclist Crashes by Month and Day of Week

B. Collision Types

Overrepresented crash types, included in Table 4 and Figure below, over the three-year period from 2016 to 2018 included sideswipe, rear end, parked vehicle, and backing.

Table 4 – Overrepresented Crash Types

Collision Type	Project Area Count	% of Total	2018 County Road System
Sideswipe	119	25.7%	13.1%
Rear End	188	40.6%	31.5%
Parked Vehicle	10	9.9%	4.0%
Backing	4	5.2%	0.4%

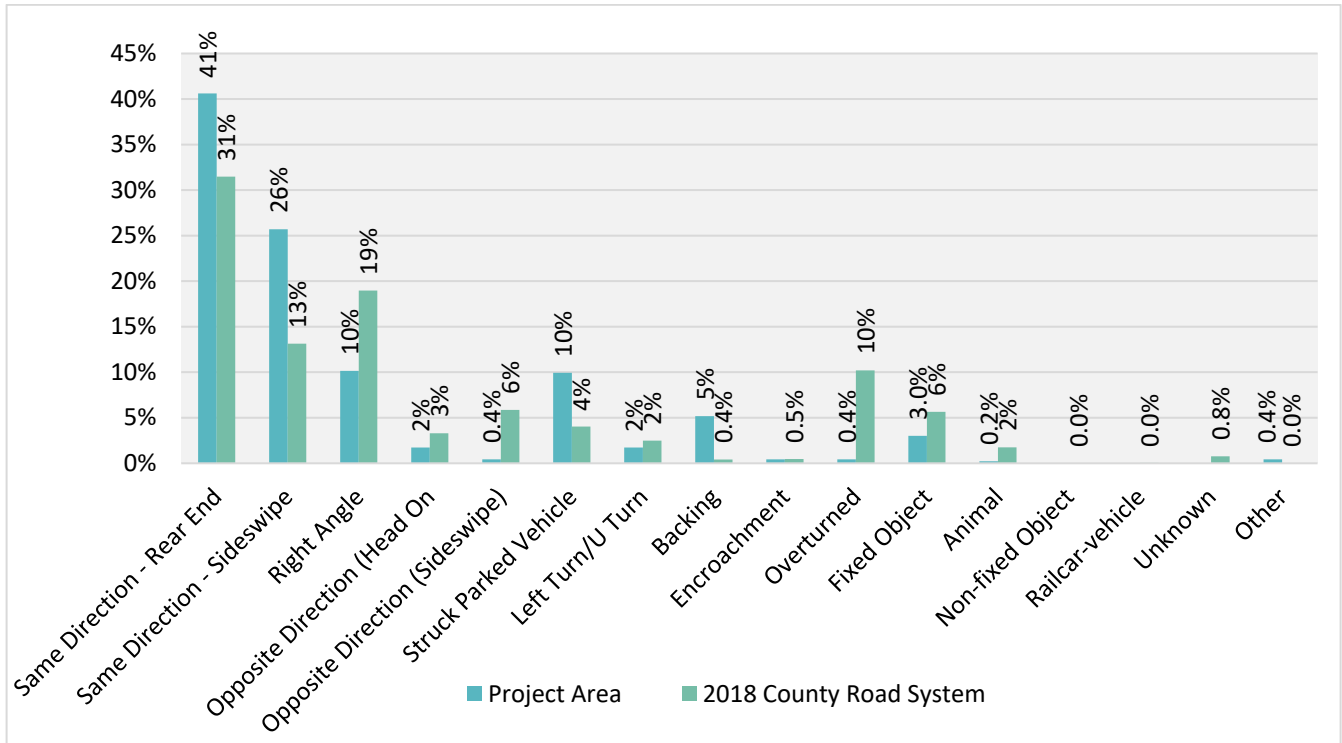


Figure 3 – Vehicular Crash Type Breakdown

C. Severity

Pedestrian crashes resulting in minor and moderate injury were significantly overrepresented compared to the county road system. The majority of these crashes occurred at unsignalized intersections.

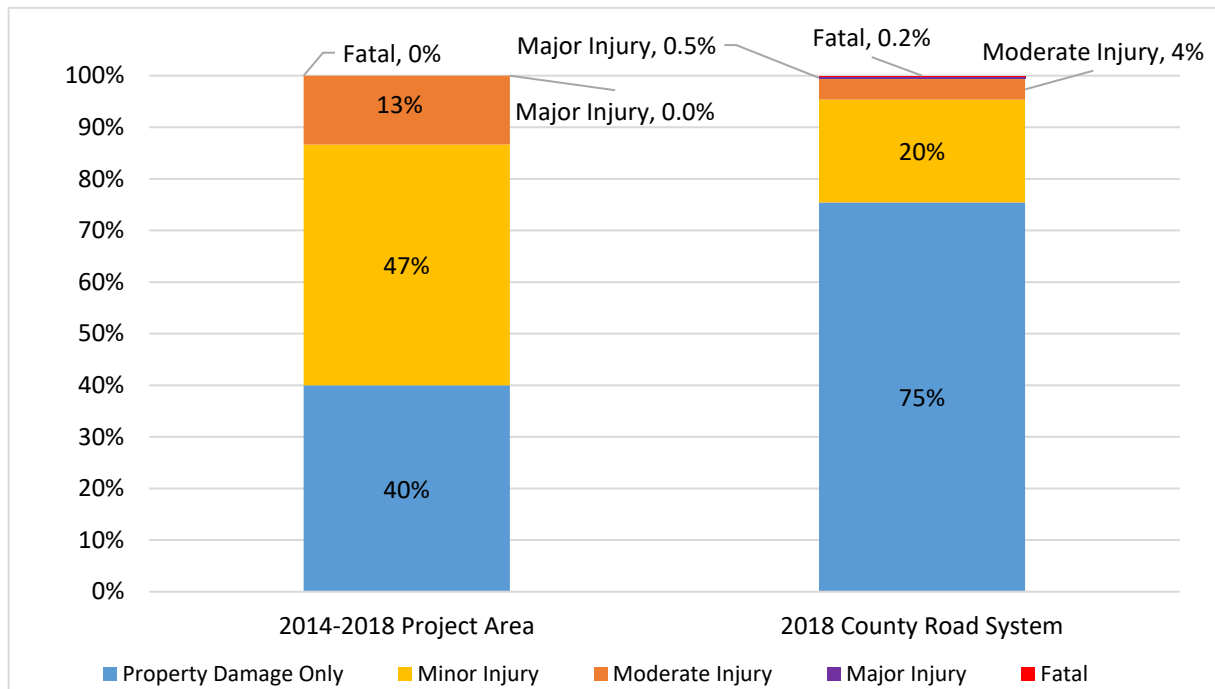


Figure 4 – Severity (Pedestrian/Bicycle Crashes)

D. Roadway Surface & Light Condition

Overrepresented crash types included dry surface and night light conditions. Dry surface conditions accounted for approximately 80% of total crashes. In addition, 77% of crashes occurred during the day.

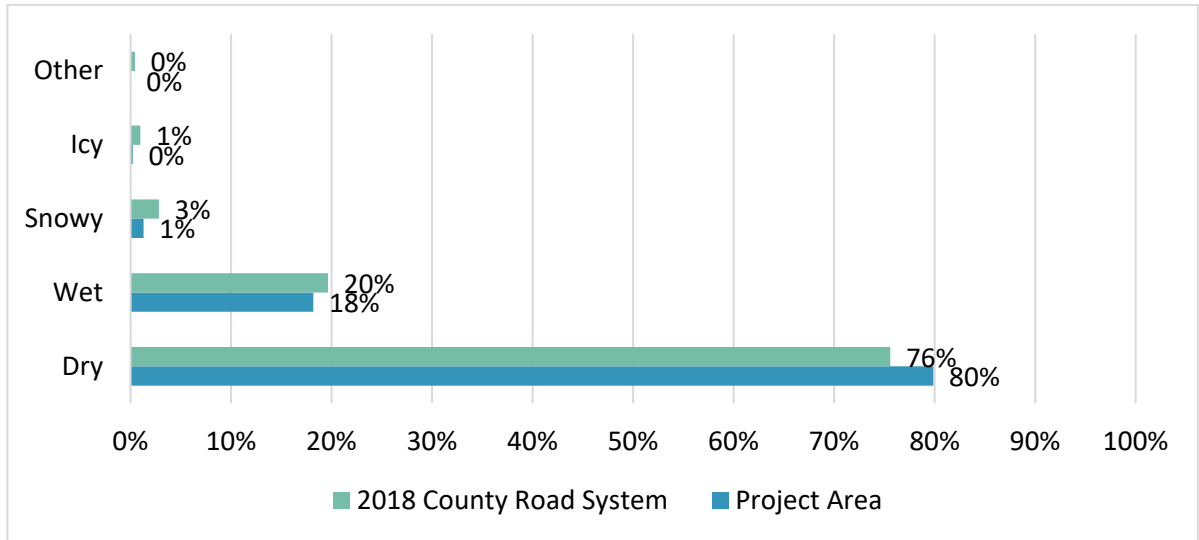


Figure 5 – Surface Conditions (Vehicular Crashes)

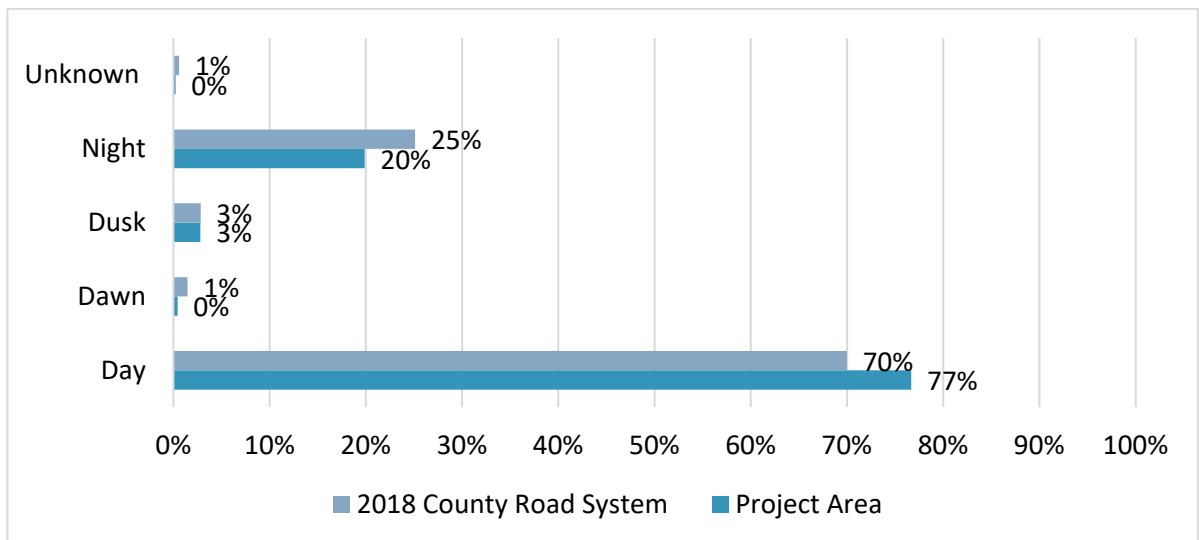


Figure 6 – Light Conditions (Vehicular Crashes)

Dry surface crashes involving pedestrians and bicyclists accounted for most of the crashes. In addition, five or approximately thirty-three percent (33%) of pedestrian and bicyclist involved crashes in the project area occurred at night, which is higher than the county road statewide average of twenty-five percent (25%).

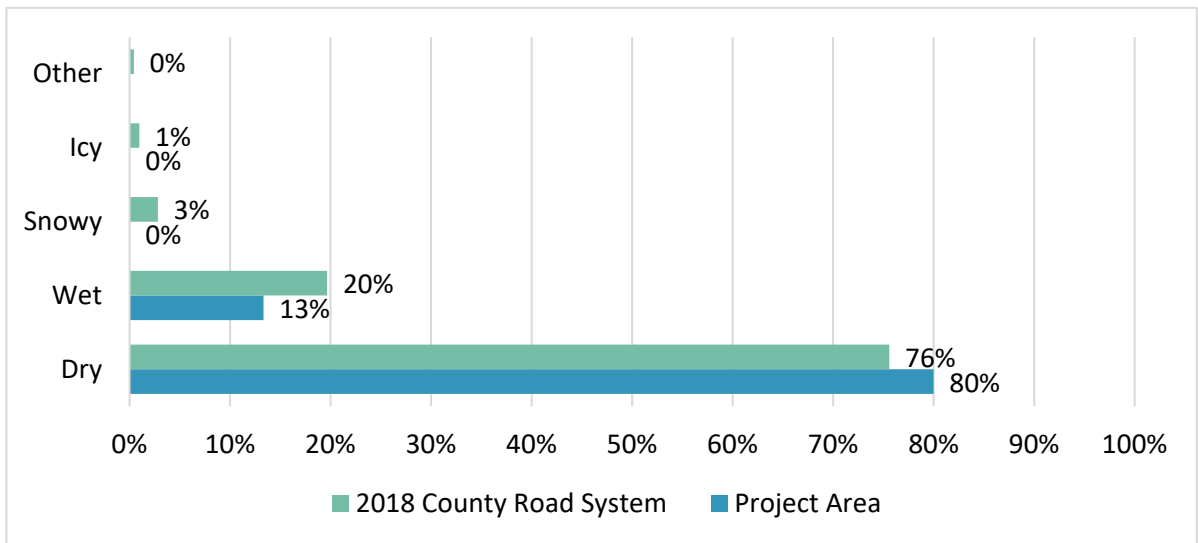


Figure 7 – Surface Conditions (Pedestrian/Bicycle Crashes)

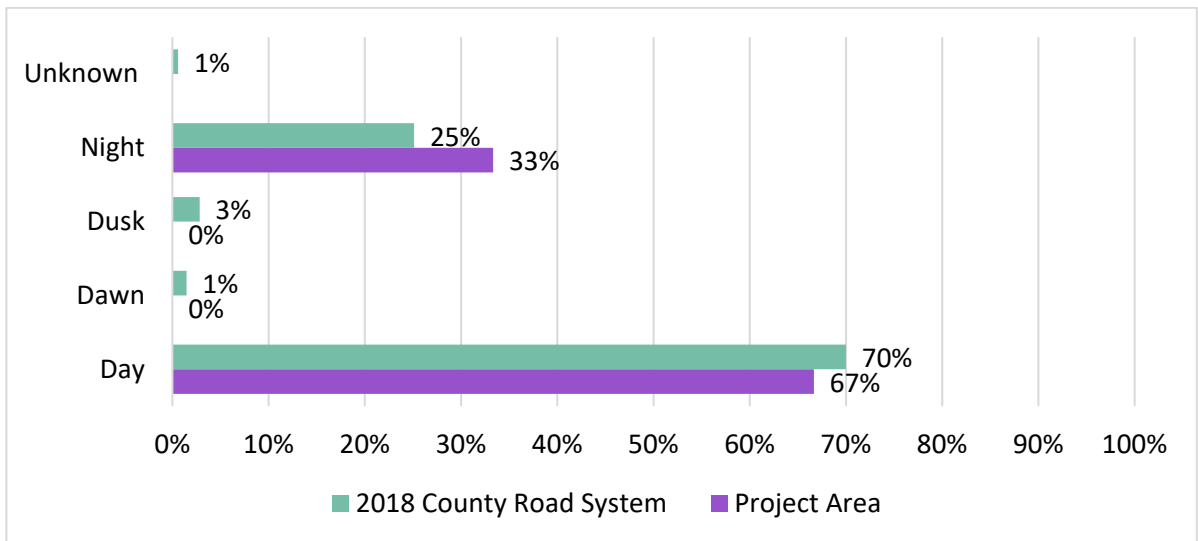



Figure 8 – Light Conditions (Pedestrian/Bicycle Crashes)

E. Location

Crashes at signalized intersections were overrepresented compared to the county road system average. Twenty-eight percent (28%) of crashes occurred at signalized intersections compared to 14% on all county roads. In addition, nine or sixty percent (60%) of pedestrian/bicyclist crashes occurred at signalized intersections. Pedestrian/bicyclist crashes occurred more often at CR 510Z and Ridgedale Avenue and at CR 510 and Schuyler Place than at any other study intersection, with each of the two intersections having three crashes each.

IV. Identified Issues & Observations

This section summarizes the 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>1. Vegetation overgrown onto sidewalk, limiting useable width</p>	<p>2. Pedestrian signal head not functioning; is not countdown type</p>
	
<p>3. Uneven sidewalks in poor condition</p>	<p>4. Pedestrian in crosswalk may not be visible to oncoming traffic</p>
	
<p>5. Curb ramp missing Detectable Warning Surface (DWS); pedestrian path and driveway not clearly defined</p>	<p>6. No defined bicycle facilities</p>

Operations & Visibility



7. Lane use not clearly defined

Maintenance



8. Vegetation needs trimming



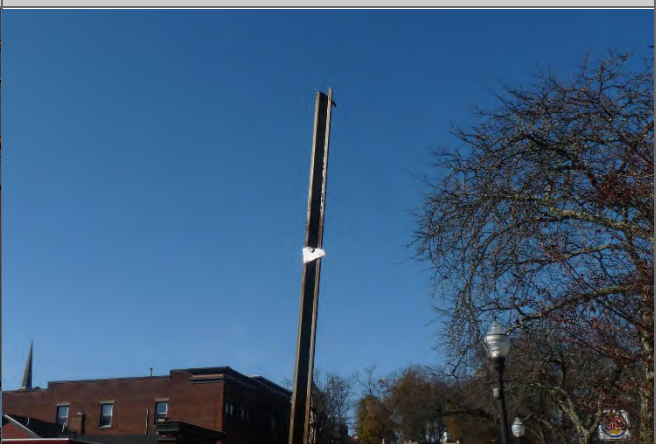
9. Signal heads can be upgraded to 12" with backplates for better visibility



10. Crosswalks need restriping



11. Lighting may be reduced due to tree/leaves during certain times of year



12. Signs are missing

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. N/A indicates safety benefit not determined.

Symbol	Meaning	Definition
✓	Low safety benefit potential	May reduce total crashes by 1-25% ⁴
✓✓	Low to moderate safety benefit potential	May reduce total crashes by 26-49% ³
✓✓✓	Moderate safety benefit potential	May reduce total crashes by 50-74% ³
✓✓✓✓	High safety benefit potential	May reduce total crashes by 75+% ³
\$	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	Investigate upgrading all ramps for ADA compliance	✓✓✓ ⁵	\$\$\$	🕒	County
2	Explore conducting a parking study to investigate on-street parking requirements where business have existing parking lots, for conformance with Title 39, and to highlight public parking lots, such as wayfinding signs	✓ ⁴	\$\$	🕒	Town
3	Examine 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.)	✓✓	\$\$\$	🕒	County

⁴ 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.

⁵ 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	Conduct a lighting analysis – consider upgrading the plastic housing on the fixtures to glass	✓✓✓	\$\$	🕒	Town
5	Evaluate installing uniform push button types in consultation with The Seeing Eye, a local organization that uses downtown Morristown to train seeing eye dogs	✓✓	\$\$\$	🕒	County
Bicycle/Pedestrian					
6	Inspect, repair and construct sidewalks in compliance with ADA as needed, including driveway aprons	✓✓✓	\$\$	🕒	County
7	Examine inlets and install bicycle-safe grates	✓ ⁵	\$\$	🕒	County
8	Study corridor-wide implementation of curb extensions (bump outs) based on the site-specific recommendations to maintain consistency	✓✓ ⁵	\$\$	🕒	County
9	Investigate crosswalks status: change to ladder style, check placement and alignment	✓✓	\$	🕒	County
Maintenance					
10	Examine existing striping for wear and restripe accordingly; add Raised Pavement Markers (RPMs) where appropriate	✓✓	\$	🕒	County
11	Inspect and replace missing, faded, damaged or incorrect/ outdated signage as needed (i.e. signs mounted below 7', on non-breakaway posts or back-to-back signs that obscure shapes	✓	\$	🕒	County
12	Inspect drainage facilities; ensure they are free of debris	✓ ⁵	\$\$	🕒	County
13	Inspect and trim foliage/vegetation to improve sign visibility, lighting and sidewalk paths	✓ ⁵	\$	🕒	Town
14	Explore installing pervious pavement over tree pits to replace the steel grates	N/A	\$\$	🕒	Town
Education					
15	Research sidewalk, crosswalk, multimodal education campaign and code enforcement	✓ ⁵	\$	🕒	Town/ County

The following site-specific recommendations are in addition to the corridor-wide improvements, except where noted otherwise. Of note, NJDOT is in the process of upgrading the signal timing at many of the locations along CR 510.

⁵ 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.

Table 6 – Site-Specific Recommendations

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
Phoenix Ave/Atno Avenue					
16	Investigate adding overhead lane use signals	✓✓	\$	☉	County
17	Explore eliminating parking for the eastbound lane	✓	\$\$	☾	Town
18	Examine corridor-wide recommendation 1, 6 and 9 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ⁵	\$\$\$	☀	County
19	Investigate adding Do Not Block the Box pavement markings	✓✓ ⁵	\$	☉	County
20	Examine corridor-wide recommendation 10 regarding striping	✓✓	\$	☉	County
21	Explore straightening the crosswalk on the western side to reduce crossing time	✓✓	\$	☉	County
22	Investigate corridor-wide recommendation 3 regarding signal upgrades	✓✓	\$\$\$	☀	County
23	Investigate implementing split phasing for the side street operation	✓	\$	☉	NJDOT
Western Ave					
24	Examine upgrading and redirecting optically programmed signal heads to improve visibility	✓✓	\$\$	☾	NJDOT
25	Explore retiming the signal to incorporate an all red clearance time which is currently absent	✓	\$	☉	NJDOT
26	Evaluate adding a leading pedestrian interval (LPI)	✓✓✓	\$	☉	NJDOT
27	Examine corridor-wide recommendation 1, 6 and 9 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ⁵	\$\$\$	☀	County
Cattano Ave/Court St					
28	Examine corridor-wide recommendation 1, 6 and 9 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ⁵	\$\$\$	☀	County
29	Evaluate better crosswalk delineation with countdown heads or no pedestrian crossing signs, directing pedestrians to adjacent intersections	✓✓✓	\$\$	☾	County
30	Explore upgrading and redirecting optically programmed signal heads to improve visibility	✓✓	\$\$	☾	NJDOT
Schuyler Pl					
31	Examine corridor-wide recommendation 9 regarding crosswalks; consider uniform crosswalk style	✓✓	\$	☉	County
32	Explore adding a rectangular rapid flashing beacon (RRFB) or HAWK beacon	✓✓	\$	☾	County/ NJDOT
33	Investigate adding Do Not Block the Box pavement markings	✓✓ ⁵	\$	☉	County

⁵ 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.

⁵ 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
34	Investigate relocating bus stop or updating signage to include second bus stop sign and timetable	N/A	\$\$	🕒	NJ Transit/ County
35	Explore in-pavement markings and lane delineation in advance of the Green	✓✓ ⁵	\$	🕒	County/ NJDOT
Spring St ⁶					
36	Evaluate reducing or redefining the driveway on the northeast corner to separate vehicle and pedestrian areas	✓	\$\$	🕒	County/ Town
37	Examine corridor-wide recommendation 1, 6 and 9 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁵	\$\$\$	🕒	County
38	Explore elongating pedestrian island, creating a smart right turn or eliminating channelized turn altogether	✓✓	\$\$	🕒	County
39	Investigate adding skip lines through the intersection	✓ ⁵	\$	🕒	County
40	Examine corridor-wide recommendation 2 regarding Title 39 violations	✓ ⁵	\$\$	🕒	Town
41	Investigate implementing a lead left phase	✓	\$	🕒	NJDOT
42	Explore lane use striping and additional lane use signage	✓✓	\$	🕒	County
43	Examine modifying the median island nose on Spring St or prohibiting left turns from Morris St	✓✓ ⁵	\$	🕒	County
44	Explore installing a hardened centerline on Spring St	N/A	\$\$	🕒	County
45	Evaluate the yellow and all red clearances	✓	\$	🕒	NJDOT
46	Investigate overhead no U-turn signage	✓	\$	🕒	County
47	Evaluate the surrounding roadway network operations for converting the intersection into a two-lane roundabout	✓✓✓✓	\$\$\$	🕒	County/ NJDOT
48	Explore corridor-wide recommendation 10 regarding worn striping	✓✓	\$	🕒	County
Lafayette Ave (at Morris St)/Pine St					
49	Examine corridor-wide recommendation 1, 6 and 9 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁵	\$\$\$	🕒	County
50	Explore relocating the traffic signal pole on the pedestrian island to improve pedestrian path	✓✓ ⁵	\$\$\$	🕒	NJDOT
51	Investigate ergonomic crosswalks to promote safer crossing	✓✓	\$	🕒	County
52	Examine in-pavement markings and lane delineation in advance of Morris St	✓✓	\$	🕒	County

⁶ A developer is proposing to construct a roundabout at the intersection, which is supported by the municipality, as part of the large redevelopment of the commercial property on the northeast corner of the intersection. Therefore, these recommendations (#36-48) may not be advanced.

No.	Recommendation	Safety Benefit	Cost	Time Frame	Jurisdiction
53	Explore right turn only signs for the Pine St approach	✓	\$	☉	County
54	Consider reducing or redefining the driveway on the southeast corner to separate vehicle and pedestrian areas if/when a property development application is received	✓	\$\$	🕒	County/ Town
Train Station/King St					
55	Examine corridor-wide recommendation 8 regarding curb extensions along Morris St and at the train station driveway	✓✓ ⁵	\$\$	🕒	County
56	Investigate installing a rectangular rapid flashing beacon (RRFB), enhanced signing and/or median refuge on Morris St	✓✓	\$	🕒	County
57	Examine corridor-wide recommendation 1, 6 and 9 regarding crosswalks, sidewalk and ADA compliance	✓✓✓ ⁵	\$\$\$	🕒	County
58	Explore removing the depressed curb on the northeastern side of the intersection, where it appears a crosswalk to King Street no longer exists	✓ ⁵	\$\$	🕒	County/ Town
Blachley PI					
59	Examine corridor-wide recommendation 8 regarding curb extensions	✓✓ ⁵	\$\$	🕒	County
Lackawanna PI/Elm St					
60	Consider pull through signal heads, backplates and examining the pedestrian signal head visibility	✓✓	\$\$\$	🕒	County
61	Investigate implementing a Lead Pedestrian Interval (LPI)	✓✓✓	\$	☉	County
62	Investigate underdeck lighting	✓✓✓	\$\$	🕒	NJ Transit
63	Explore adding enhanced striping	✓✓ ⁵	\$	☉	County
64	Evaluate split phasing for the side streets due to the obstructions and skew of the intersection	✓	\$	☉	County
65	Examine a left turn lane along Morris St for Elm St	✓✓	\$\$	🕒	County
66	Explore prohibiting right turn on red	✓	\$	☉	County
Olyphant PI					
67	Investigate adding Do Not Block the Box pavement markings	✓✓ ⁵	\$	☉	County
68	Consider closing the gas station driveway along Morris St to provide better pedestrian accommodations/curb ramps if/when a property development application is received	✓	\$\$	🕒	County/ Town

⁵ 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
Ridgedale Ave (at Morris St)					
69	Examine corridor-wide recommendation 1, 6 and 9 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁵	\$\$\$	●	County/ Town
70	Investigate split phasing on Morris St that can include a right turn overlap from Ridgedale Ave	✓	\$	⌚	County
71	Examine relocating the stop bar for the Morris St northbound left turn lane further back to provide turning space for buses from Ridgedale Ave	✓	\$	⌚	County
72	Review the access management; Consider redefining driveways along Morris St if/when property development applications are received	✓	\$\$	●	County/ Town
73	Explore additional/enhanced signing overhead signing and/or in-pavement markings (route shield and direction)	✓✓	\$	⌚	County
74	Evaluate the Yellow and All Red clearances	✓	\$	⌚	County/ Town
Lafayette Ave (at Ridgedale Ave)/ I-287 Access					
75	Investigate red signal ahead sign or yellow flashers on new W3-3 signs	✓ ⁵	\$	⌚	NJDOT
76	Explore advanced lane use and in-pavement markings (shield and direction) for the westbound Lafayette Ave approach	✓✓	\$	⌚	NJDOT/ Town
77	Examine revising the lane use along Ridgedale Ave northbound to left/through/right	✓✓ ⁵	\$\$	●	Town
78	Evaluate corridor-wide recommendation 3 regarding signal head upgrades and evaluate current placement	✓✓	\$\$\$	●	NJDOT
79	Investigate edge lines on Ridgedale to delineate travel lane versus parking areas	✓ ⁵	\$	●	Town
80	Examine revising the radius of the channelized right turn from Lafayette Ave or revising the turn entirely (smart channelized right turn)	✓✓	\$\$	●	NJDOT
81	Explore revising the corner radius of the Lafayette Ave western leg and implement no turn on red for Ridgedale Ave southbound	✓✓	\$\$	●	NJDOT/ Town
82	Evaluate reducing the island between the I-287/Lafayette Ave approach to reduce the size of the intersection	N/A	\$\$\$	●	NJDOT
83	Examine corridor-wide recommendation 1, 6 and 9 regarding sidewalk, crosswalks, and ADA compliance	✓✓✓ ⁵	\$\$\$	●	Town
Abbett Ave/I-287 Ramp					
84	Investigate force off loop on ramp or full actuation operation	N/A	\$	●	NJDOT

⁵ 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
85	Explore advanced lane use and in-pavement markings (shield and direction) for the I-287 southbound off-ramp approach	✓✓	\$	☉	NJDOT/ Town
86	Examine corridor-wide recommendation 3 regarding signal head upgrades and evaluate current placement	✓✓	\$\$\$	⬤	NJDOT
87	Evaluate revising the lane use along Ridgedale Ave with defined lane use (currently, there are two approach lanes but only one receiving lane)	✓✓ ⁵	\$\$	⬤	Town
88	Explore edge lines on Ridgedale to delineate travel lane versus parking areas	✓ ⁵	\$	⬤	Town
89	Investigate mumble strips for the I-287 off ramp	✓ ⁵	\$	☉	NJDOT
90	Examine “turning vehicles must stop for pedestrians” sign for the right turn from I-287	✓	\$	☉	NJDOT
91	Evaluate red signal ahead sign or yellow flashers on new W3-3 signs	✓ ⁵	\$	☉	NJDOT
Lafayette Ave at Lackawanna PI (Station Lot #2)					
92	Examine advanced lane use and in-pavement markings (shield and direction)	✓✓	\$	☉	County
93	Investigate adding a rectangular rapid flashing beacon (RRFB) at Lackawanna PI and in advance due to roadway geometry	✓✓	\$	⬤	County/ Town
94	Evaluate redefining the driveway to reduce pedestrian crossing distance	✓	\$\$	⬤	County/ Town
95	Explore revising the striping to achieve better lane use due to the left lane being underutilized	✓✓ ⁵	\$	⬤	County

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.

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

⁵ 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.

A. Recommendation Visualizations

Examples of some of the site-specific and corridor-wide safety recommendations identified in Tables 5 and 6 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 shoulder or 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.

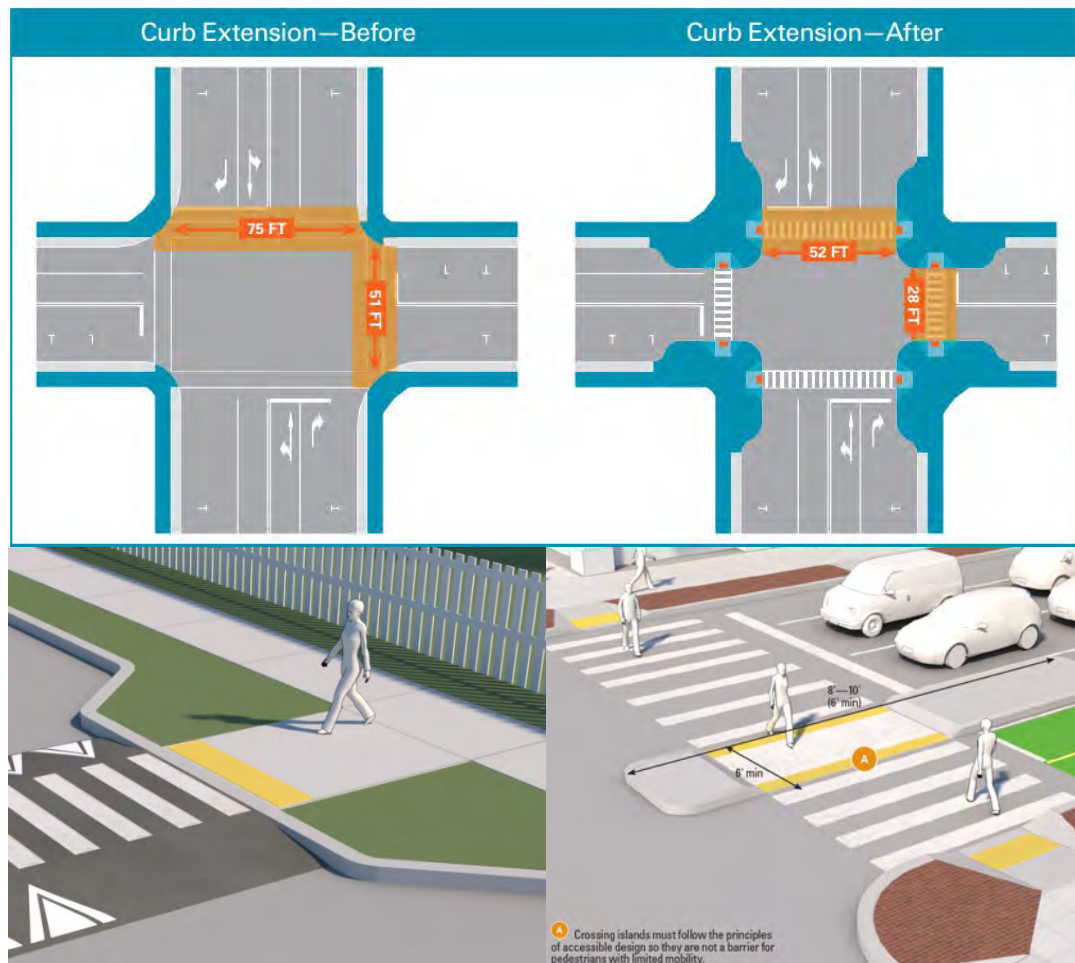


Figure 9 – Pedestrian Facility Examples

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

ADA standards specify a minimum 5-foot clear path width to accommodate two wheelchairs passing each other. In addition to providing a more accessible facility, this minimum width also creates a more comfortable environment for pedestrians to walk side-by-side and pass each other. Sidewalk width should support the surrounding street context, land uses, and current and future pedestrian demand. The design of driveways should provide a continuous and level pedestrian zone across the vehicular path, encouraging drivers to stop for pedestrians on the sidewalk. Driveways should not be designed where the sidewalk is interrupted by the driveway.

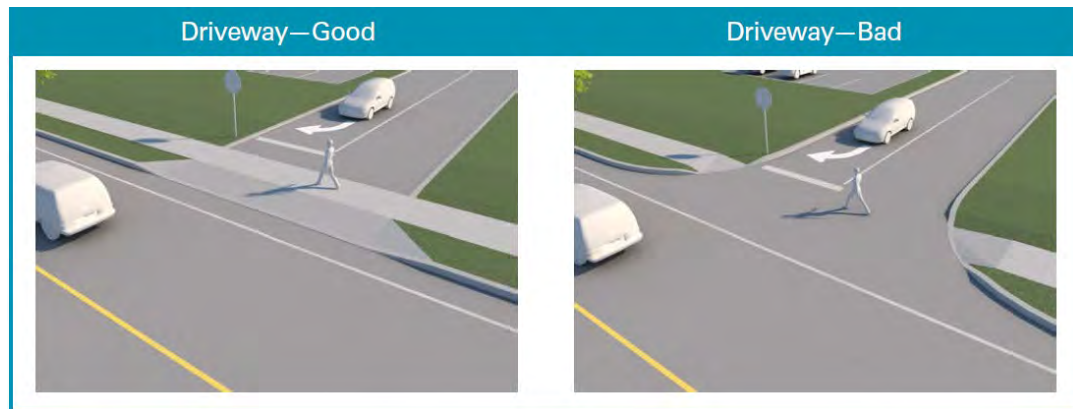


Figure 10 – Sidewalk and Driveways (Source: CSDG)

An ergonomic crosswalk is a design that varies the width of the crosswalk to reflect how (and where) people actually walk (i.e. it follows their behavior). It also informs motorists of where pedestrians are most likely to be crossing.

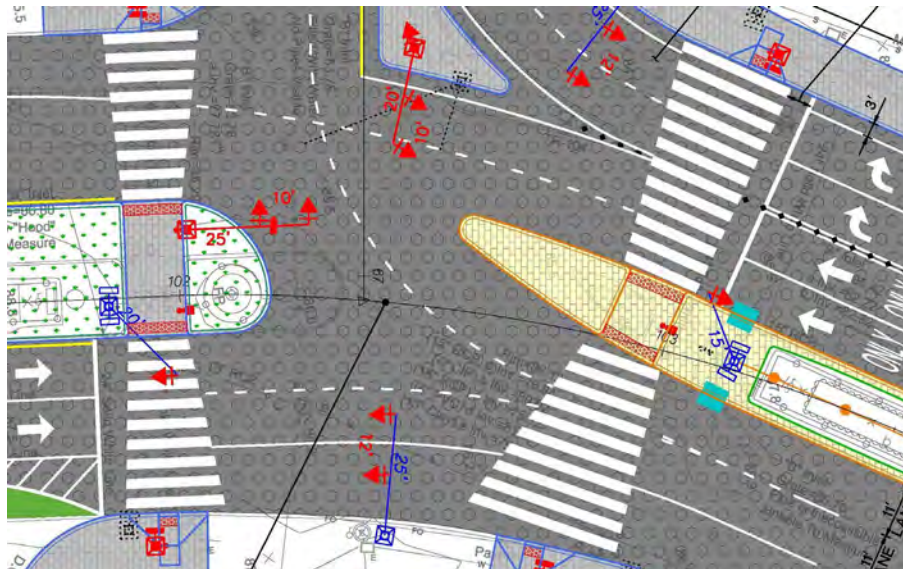


Figure 11 – Ergonomic Crosswalk Example (Source: GPI)

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. 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 12 – Bicycle Facility Examples

Left: Bicycle Lane Adjacent to Parking or Curb (Source: NACTO-UB). Right: Sharrow Markings along Route 71/Main Street in Bradley Beach (Source: Jusel Claro Alvarez, Google Maps Photos)

3. Roundabout

Roundabout design should create conditions that reduce vehicle speed and provide a consistent speed into, through, and out of the roundabout. Lower speeds reduce crash frequency and severity for all roadway users, allow safer and easier merging of traffic, provide more reaction time for drivers, and make the facility more accessible for novice users.



Figure 13 – Single Lane Roundabout Example (Source: CSDG)

4. Centerline Hardening

This traffic calming treatment addresses the problem of left-turning vehicles conflicting with pedestrians in the crosswalk. Often, left-turns are taken at a wider radius, leading to higher speeds and cutting corners, which increases the area in which a pedestrian may be hit while still in the crosswalk. Centerline hardening forces vehicles to turn left at more of a right angle, at a slower speed, and reduces the pedestrian conflict zone. Centerline hardening can be achieved with the use of rubber curb, bollards, rubber speed bumps, or flexible plastic posts, depending on the intersection configuration. New York City installed this treatment at 330 locations since 2016 and observed that pedestrian injuries have decreased by 20%.

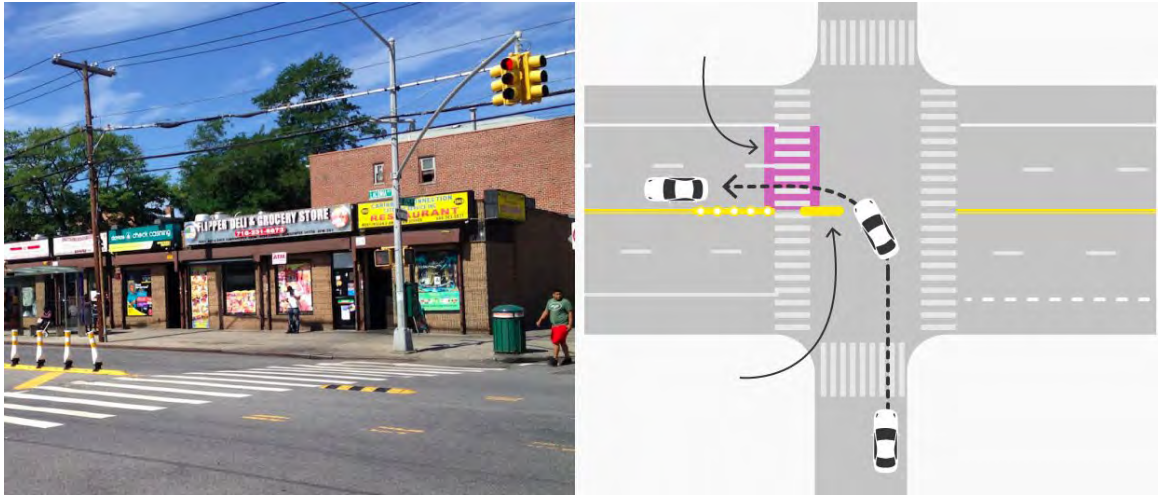


Figure 14 – Centerline Hardening in NYC (Source: NYC DOT/Quartz [qz.com])

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 most common roadway reconfiguration, known as a road diet, involves converting an existing four-lane undivided segment into a three-lane segment with two through lanes and a center two-way left turn lane (TWLTL). Other roadway reconfiguration options are shown on the following pages.

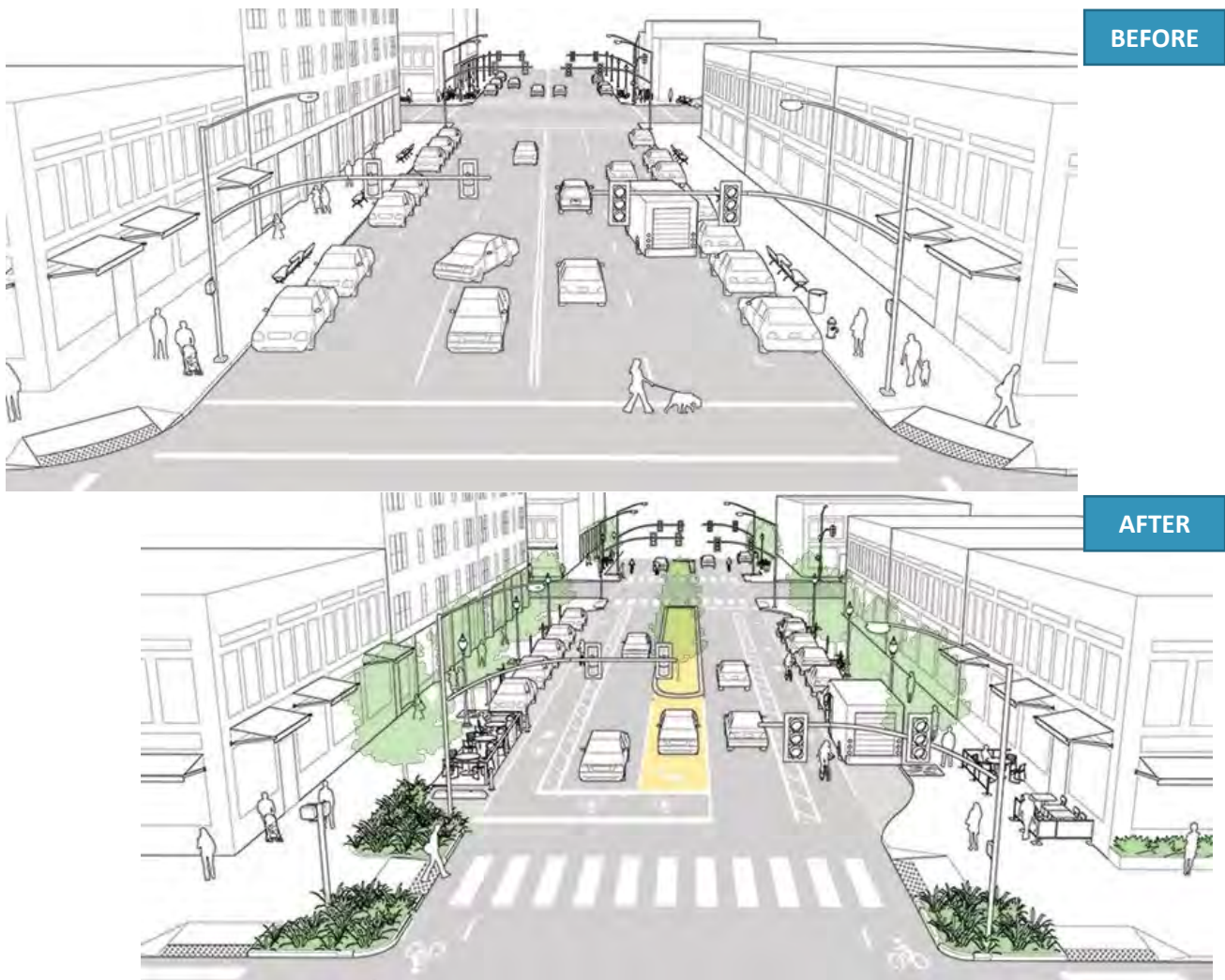


Figure 15 – Example of a Main Street Typology (Source: NACTO-US)

Top: With medium traffic volumes and high pedestrian activity, the street has significant potential for regeneration as a retail district, yet currently underperforms. Frequent destinations have resulted in multiple turning and weaving conflicts along the street.

Bottom: While road diets are not appropriate on all 4-lane cross sections, they can improve traffic flow and reduce conflicts with turning vehicles, enhancing safety. From an economic standpoint, they often rank favorably with business owners and have a positive impact on local business activity. Alternatively, a center 6-foot pedestrian safety island can be implemented in the above configuration by tapering the bike lane buffer near the intersection and shifting the through lanes to the right. Streets also benefit from dedicated loading zones near intersections. Implementation should consider availability of parallel routes, potential for mode shift, and channelization of traffic.



Figure 16 – Example of a Two-Lane Downtown Street Typology (Source: NACTO-US)

Top: The above illustration depicts a 2-way street in a central business district that is congested by buses, bikes, people, and cars. Curbside bus stops may be undermined by double-parked vehicles and heavy rush-hour traffic. Double-parking also creates conflicts and safety hazards for all modes.

Bottom: Bus bulbs serve as dedicated waiting areas for transit users while decreasing pedestrian exposure during crossings and can connect to existing sidewalk or be designed as a bus-boarding island with a bicycle cut-through. Delineation in the roadway can be created using striping, cycle tracks, and narrow travel lanes. Restricting delivery, encouraging off-peak delivery, and/or dedicated loading zones are critical to eliminating double-parking obstructions.

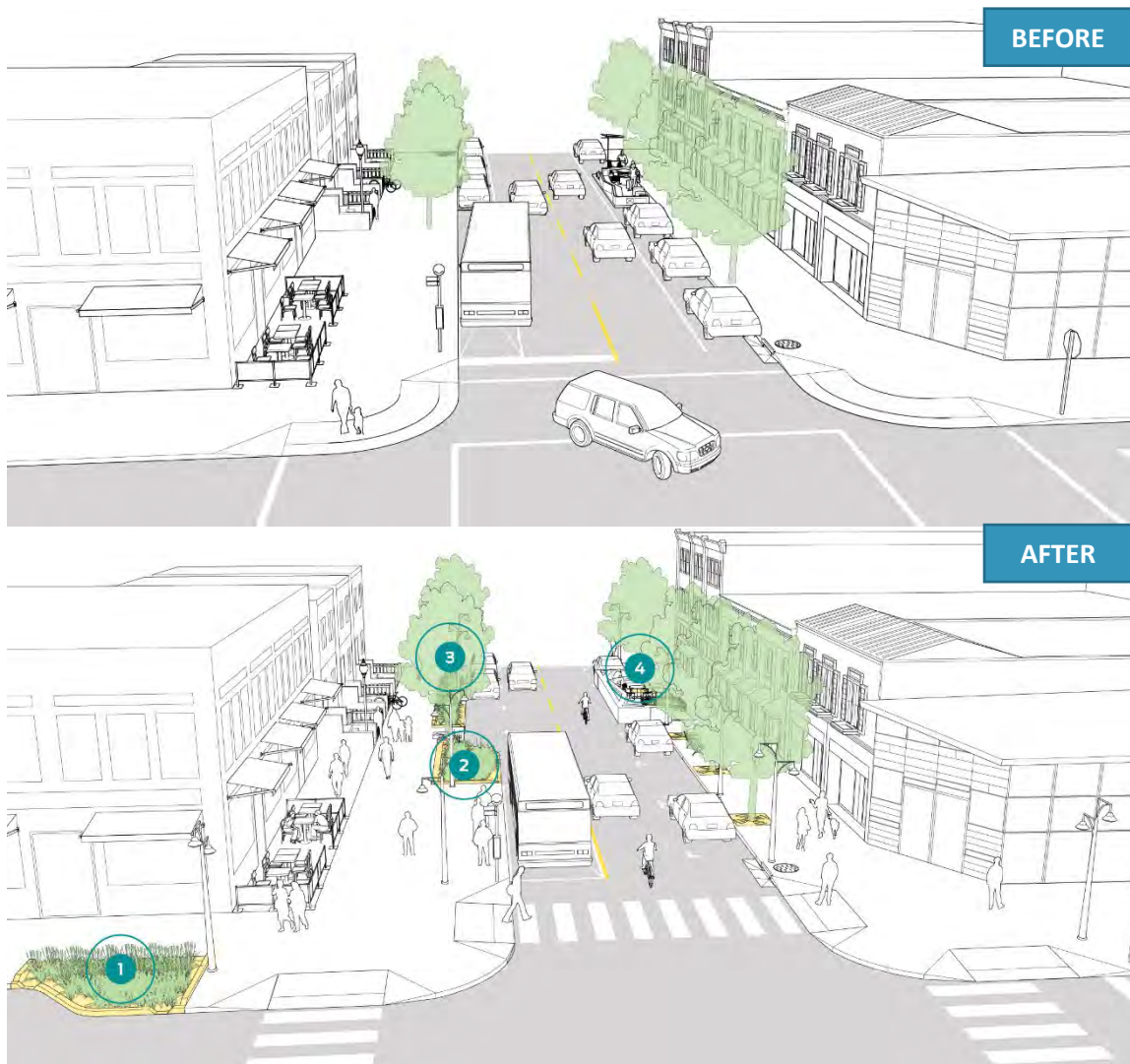


Figure 17 – Example of a Green Neighborhood Street Typology (Source: NACTO-GI)

Top: Less dense than downtowns, neighborhood main streets serve local business activity and civic life, and are characterized by high demand for a quality walking and bicycling environment, frequent parking turnover and freight access, and service by key transit routes.

Bottom: Green infrastructure enhances neighborhood main streets, creating more aesthetically pleasing public spaces even where the street is relatively narrow. (1) Curb extensions with bioretention facilities can be integrated at intersections and mid-block locations to improve pedestrian mobility and safety, shorten crossing distances, and calm vehicle traffic by narrowing the road; (2) transit boarding bulbs are an important opportunity to integrate green infrastructure, since sidewalk space is often not available and curbsides are at a premium; (3) Smaller green infrastructure treatments, such as bioretention planters, stormwater tree wells, or tree trenches, can be used on neighborhood main streets with space constraints and high foot traffic along the sidewalk and between the curb and storefronts; (4) the bioretention facility wall can incorporate seating and placemaking elements in the planting or furnishing zone, especially on main streets with significant foot traffic and active storefronts.

6. 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.

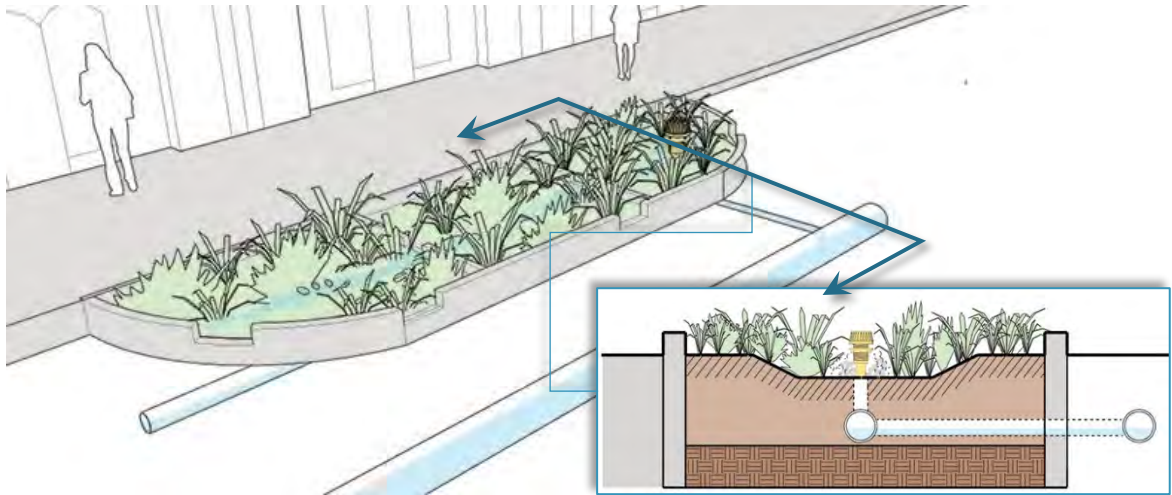


Figure 18 – Bioswale Example (Source: NACTO-US)

VI. Conclusions

The Morristown 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 CR 510, CR 510Z and Ridgedale Avenue. 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
Debbie Dellagiacomma	Morris County Engineering
Dede Murray	Morris County Engineering
John Hayes	Morris County Engineering
Anthony DeVizio	Morristown Engineer
Sgt. Brian LaBarre	Morristown Police Department, Traffic Safety
Dan Callas	TransOptions
Elmira Buongiorno	Nj Transit, Bus Operations
Virgilio Tan	NJDOT – BSBPP
Yuriy Assekritov	NJDOT – BSBPP
Reba Oduro	NJDOT – BSBPP
Abbhiraami Siddarthan	NJDOT – BSBPP
Aimee Jefferson	NJTPA
Bernie Boerchers	Greenman-Pedersen, Inc. (NJDOT Consultant)
Andrew Halloran	Greenman-Pedersen, Inc.
Aidan Sheehan	Greenman-Pedersen, Inc.
Julia Steponanko	Greenman-Pedersen, Inc.



APPENDIX B

AREA MAP







BEGIN WASHINGTON ST
(CR 510)
PROJECT LIMIT

BEGIN MORRIS ST
(CR 510)
PROJECT LIMIT



END WASHINGTON ST
(CR 510)
PROJECT LIMIT

MATCH LINE A
SEE SHEET NO. 2 OF 3

LEGEND

-  SIGNALIZED INTERSECTION (NJDOT)
-  SIGNALIZED INTERSECTION (MORRISTOWN)
-  SIGNALIZED INTERSECTION (OUTSIDE SCOPE)
-  PROJECT CORRIDOR

1
3

<p>NJDOT HSIP - ROAD SAFETY AUDIT CR 510 (WASHINGTON ST/MORRIS ST), CR 510Z (LAFAYETTE AVE) & RIDGEDALE AVE</p> <p>MORRISTOWN TOWN, MORRIS COUNTY</p>	
<p>PROJECT LOCATION</p>	
	 <p>Engineering Design Planning Construction Management</p>
<p>N.T.S.</p>	



LEGEND

- SIGNALIZED INTERSECTION (NJDOT)
- SIGNALIZED INTERSECTION (MORRISTOWN)
- SIGNALIZED INTERSECTION (OUTSIDE SCOPE)
- PROJECT CORRIDOR





2
3

<p>NJDOT HSIP - ROAD SAFETY AUDIT CR 510 (WASHINGTON ST/MORRIS ST), CR 510Z (LAFAYETTE AVE) & RIDGEDALE AVE</p> <p>MORRISTOWN TOWN, MORRIS COUNTY</p>	
<p>PROJECT LOCATION</p>	
	<p style="font-size: 8px;">Engineering Design Planning Construction Management</p>
<p>N.T.S.</p>	



MATCH LINE B
SEE SHEET NO. 2 OF 3



LEGEND

-  SIGNALIZED INTERSECTION (NJDOT)
-  SIGNALIZED INTERSECTION (MORRISTOWN)
-  SIGNALIZED INTERSECTION (OUTSIDE SCOPE)
-  PROJECT CORRIDOR

3
3

<p>NJDOT HSIP - ROAD SAFETY AUDIT CR 510 (WASHINGTON ST/MORRIS ST), CR 510Z (LAFAYETTE AVE) & RIDGEDALE AVE</p> <p>MORRISTOWN TOWN, MORRIS COUNTY</p>	
<p>PROJECT LOCATION</p>	
	 <p>Engineering Design Planning Construction Management</p>
<p>N.T.S.</p>	

APPENDIX C

TRAFFIC DATA

New Jersey Department of Transportation

Daily Volume from 05/23/2016 through 05/25/2016

Site Names: 091415, , Lafayette Avenue-1.02, 00000510Z_, Morristown Town
 County: MORRIS
 Funct. Urban Principal Arterial - Other
 Location: Bet Olyphant Dr and Lackawanna Place

Seasonal Factor Group: RG1_FC14
 Daily Factor Group: RG1_FC14
 Axle Factor Group: RG1_FC14
 Growth Factor Group: RG1_FC14

	Sun 05/22/2016			Mon 05/23/2016			Tue 05/24/2016			Wed 05/25/2016			Thu 05/26/2016			Fri 05/27/2016			Sat 05/28/2016			
	ROAD	E	W	ROAD	E	W	ROAD	E	W	ROAD	E	W	ROAD	E	W	ROAD	E	W	ROAD	E	W	
00:00							66		66	86		86										
01:00							32		32	45		45										
02:00							24		24	24		24										
03:00							10		10	16		16										
04:00							41		41	44		44										
05:00							141		141	163		163										
06:00							465		465	478		478										
07:00							994		994	1,070		1,070										
08:00							1,192		1,192	1,273		1,273										
09:00							1,063		1,063	1,106		1,106										
10:00							845		845	815		815										
11:00							836		836	822		822										
12:00							989		989	988		988										
13:00				868		868	897		897	893		893										
14:00				883		883	886		886	0		0										
15:00				936		936	977		977	0		0										
16:00				1,022		1,022	1,099		1,099													
17:00				1,240		1,240	1,297		1,297													
18:00				1,132		1,132	1,248		1,248													
19:00				878		878	830		830													
20:00				549		549	618		618													
21:00				468		468	475		475													
22:00				277		277	335		335													
23:00				128		128	179		179													
Volume				8,381		8,381	15,539		15,539	7,823		7,823										
AM Peak Vol							1,199		1,199	1,275		1,275										
AM Peak Fct							0.98		0.98	0.95		0.95										
AM Peak Hr							7:45		7:45	8:15		8:15										
PM Peak Vol							1,371		1,371													
PM Peak Fct							0.95		0.95													
PM Peak Hr							17:30		17:30													
Seasonal Fct				0.959		0.959	0.959		0.959	0.959		0.959										
Daily Fct				1.055		1.055	0.938		0.938	0.932		0.932										
Axle Fct				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										

New Jersey Department of Transportation

Daily Volume from 01/05/2016 through 01/08/2016

Site Names: 141403, , Morris Street-11.94, 00000510__, Morristown Town
 County: MORRIS
 Funct. Class:
 Location: bet Spring St and Pine St Rt 510Z Lafayette Ave

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

	Sun 01/03/2016			Mon 01/04/2016			Tue 01/05/2016			Wed 01/06/2016			Thu 01/07/2016			Fri 01/08/2016			Sat 01/09/2016		
	ROAD	NEG	POS	ROAD	NEG	POS	ROAD	NEG	POS	ROAD	NEG	POS	ROAD	NEG	POS	ROAD	NEG	POS	ROAD	NEG	POS
00:00										213	73	140	230	90	140	302	131	171			
01:00										155	64	91	114	53	61	182	71	111			
02:00										88	38	50	87	39	48	153	66	87			
03:00										53	22	31	52	23	29	80	32	48			
04:00										94	38	56	94	31	63	107	37	70			
05:00										344	111	233	344	108	236	342	117	225			
06:00										1,061	326	735	1,013	323	690	1,087	395	692			
07:00										2,108	912	1,196	2,115	904	1,211	1,991	869	1,122			
08:00										2,254	1,115	1,139	2,295	1,129	1,166	2,229	1,095	1,134			
09:00										2,000	943	1,057	1,871	861	1,010	1,872	917	955			
10:00										1,627	714	913	1,618	679	939	1,656	815	841			
11:00										1,647	743	904	1,605	752	853						
12:00										1,783	836	947	1,713	821	892						
13:00										1,739	782	957	1,776	762	1,014						
14:00							1,806	844	962	1,854	853	1,001	1,862	824	1,038						
15:00							1,944	960	984	2,005	986	1,019	1,916	939	977						
16:00							2,103	1,040	1,063	2,102	1,026	1,076	2,162	1,091	1,071						
17:00							2,308	1,243	1,065	2,175	1,122	1,053	2,172	1,129	1,043						
18:00							2,149	1,191	958	2,153	1,111	1,042	2,066	1,038	1,028						
19:00							1,696	912	784	1,682	904	778	1,781	901	880						
20:00							1,304	681	623	1,318	646	672	1,360	688	672						
21:00							940	444	496	973	474	499	1,041	514	527						
22:00							671	326	345	675	318	357	799	374	425						
23:00							379	178	201	399	193	206	468	237	231						
Volume							15,300	7,819	7,481	30,502	14,350	16,152	30,554	14,310	16,244	10,001	4,545	5,456			
AM Peak Vol										2,277	1,140	1,222	2,334	1,154	1,237						
AM Peak Fct										0.95	0.97	0.97	0.96	0.95	0.95						
AM Peak Hr										8:15	8:15	7:30	7:45	8:15	7:30						
PM Peak Vol										2,248	1,151	1,104	2,233	1,172	1,091						
PM Peak Fct										0.94	0.95	0.92	0.98	0.98	0.94						
PM Peak Hr										17:15	17:15	14:30	17:15	17:15	16:30						
Seasonal Fct							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Daily Fct							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000			
Axle Fct							0.500	0.500	0.500	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	2.000	2.000	2.000			

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 08/01/2017 to 08/07/2017

Site names: 1-4-418,Washington Street-11.21,00000510__
 County: MORRIS
 Funct Class: Urban Minor Arterial
 Location: Bet Budd Street and Cobb Place

Seasonal Factor Grp: rg1_4U
 Daily Factor Grp: rg1_4U
 Axle Factor Grp: rg1_4U
 Growth Factor Grp: rg1_4U

	Sun, Jul 30, 2017			Mon, Jul 31, 2017			Tue, Aug 1, 2017			Wed, Aug 2, 2017			Thu, Aug 3, 2017			Fri, Aug 4, 2017			Sat, Aug 5, 2017		
	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W
00:00							63	24	39	105	28	77	70	22	48	85	32	53	121	46	75
01:00							26	10	16	29	9	20	45	22	23	50	19	31	103	46	57
02:00							22	12	10	12	5	7	9	4	5	40	14	26	61	30	31
03:00							18	14	4	15	6	9	20	8	12	18	9	9	34	15	19
04:00							35	28	7	45	35	10	49	34	15	34	27	7	34	24	10
05:00							221	183	38	224	182	42	238	193	45	185	153	32	59	36	23
06:00							626	536	90	662	536	126	559	473	86	541	432	109	182	131	51
07:00							1,315	939	376	1,342	949	393	1,251	920	331	1,030	767	263	313	202	111
08:00							1,650	1,016	634	1,591	972	619	1,724	1,112	612	1,538	981	557	520	352	168
09:00							1,331	776	555	1,385	812	573	1,211	770	441	1,206	756	450	748	434	314
10:00							1,032	554	478	1,051	547	504	956	610	346	980	587	393	828	466	362
11:00							996	532	464	1,038	539	499	990	524	466	990	538	452	889	495	394
12:00							1,137	569	568	1,035	502	533	1,015	539	476	1,011	518	493	954	493	461
13:00							1,118	578	540	1,164	552	612	1,020	541	479	1,011	525	486	894	457	437
14:00							1,091	504	587	998	461	537	991	514	477	1,015	483	532	882	463	419
15:00							1,106	489	617	1,073	480	593	1,032	463	569	1,085	474	611	932	472	460
16:00							1,344	507	837	1,176	422	754	1,212	482	730	1,320	537	783	840	408	432
17:00							1,344	497	847	1,245	444	801	1,308	501	807	1,306	510	796	758	380	378
18:00							1,167	447	720	1,173	429	744	1,226	479	747	1,050	482	568	747	406	341
19:00							997	416	581	811	318	493	1,041	419	622	857	405	452	628	320	308
20:00							695	240	455	645	252	393	717	282	435	642	263	379	540	265	275
21:00							459	158	301	472	176	296	530	183	347	512	198	314	511	246	265
22:00							300	81	219	286	81	205	310	118	192	390	138	252	354	162	192
23:00							155	53	102	159	61	98	172	52	120	245	89	156	231	106	125
Total							18,248	9,163	9,085	17,736	8,798	8,938	17,696	9,265	8,431	17,141	8,937	8,204	12,163	6,455	5,708
AM Peak Vol							1,659	1,047	634	1,666	1,039	627	1,724	1,112	612	1,538	981	557	900	510	394
AM Peak Fct							.974	.942	.911	.932	.973	.861	.929	.903	.89	.903	.94	.844	.9	.898	.857
AM Peak Hr							7: 45	7: 45	8: 00	7: 30	7: 30	7: 30	8: 00	8: 00	8: 00	8: 00	8: 00	8: 00	10: 45	10: 45	11: 00
PM Peak Vol							1,393	648	890	1,263	575	825	1,312	541	807	1,320	537	796	954	493	461
PM Peak Fct							.954	.876	.963	.981	.933	.968	.906	.926	.975	.971	.939	.926	.981	.955	.96
PM Peak Hr							16: 30	12: 30	16: 45	17: 30	12: 45	17: 30	17: 45	13: 00	17: 00	16: 00	16: 00	17: 00	12: 00	12: 00	12: 00
Seasonal Fct							1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041	1.041
Daily Fct							.911	.911	.911	.860	.860	.860	.825	.825	.825	.878	.878	.878	1.417	1.417	1.417
Axle Fct							.490	.490	.490	.490	.490	.490	.490	.490	.490	.490	.490	.490	.490	.490	.490
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	2.000	2.000	2.000

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 08/01/2017 to 08/07/2017

Site names: 1-4-418,Washington Street-11.21,00000510__
 County: MORRIS
 Funct Class: Urban Minor Arterial
 Location: Bet Budd Street and Cobb Place

Seasonal Factor Grp: rg1_4U
 Daily Factor Grp: rg1_4U
 Axle Factor Grp: rg1_4U
 Growth Factor Grp: rg1_4U

	Sun, Aug 6, 2017			Mon, Aug 7, 2017			Tue, Aug 8, 2017			Wed, Aug 9, 2017			Thu, Aug 10, 2017			Fri, Aug 11, 2017			Sat, Aug 12, 2017		
	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W	Road	E	W
00:00	143	55	88	57	22	35															
01:00	83	41	42	31	12	19															
02:00	69	34	35	19	9	10															
03:00	25	11	14	18	11	7															
04:00	24	14	10	54	37	17															
05:00	47	34	13	221	183	38															
06:00	148	111	37	594	470	124															
07:00	204	141	63	1,107	906	201															
08:00	451	311	140	1,267	1,016	251															
09:00	697	418	279	1,026	707	319															
10:00	785	411	374	803	517	286															
11:00	894	472	422	806	450	356															
12:00	951	485	466	894	483	411															
13:00	927	451	476	889	477	412															
14:00	830	434	396	856	427	429															
15:00	841	452	389	967	474	493															
16:00	850	431	419	1,122	407	715															
17:00	801	419	382	1,154	378	776															
18:00	719	369	350	1,039	371	668															
19:00	607	287	320	761	283	478															
20:00	512	229	283	528	202	326															
21:00	361	172	189	360	133	227															
22:00	221	93	128	219	76	143															
23:00	114	52	62	122	55	67															
Total	11,304	5,927	5,377	14,914	8,106	6,808															
AM Peak Vol	910	474	436	1,269	1,046	356															
AM Peak Fct	.872	.859	.886	.95	.931	.908															
AM Peak Hr	10: 45	10: 45	10: 45	7: 45	7: 45	11: 00															
PM Peak Vol	951	485	485	1,181	483	802															
PM Peak Fct	.978	.912	.919	.956	.958	.973															
PM Peak Hr	12: 00	12: 00	12: 30	17: 15	12: 00	17: 15															
Seasonal Fct	1.041	1.041	1.041	1.041	1.041	1.041															
Daily Fct	1.944	1.944	1.944	.933	.933	.933															
Axle Fct	.490	.490	.490	.490	.490	.490															
Pulse Fct	2.000	2.000	2.000	2.000	2.000	2.000															

New Jersey Department of Transportation

Short-term Hourly Traffic Volume for 10/30/2018 to 11/01/2018

Site names: n18306,Ridgedale Avenue 3.03,14121333__
 County: MORRIS
 Funct Class: Urban Minor Arterial
 Location: Bet Abbett Ave and Rt 510Z Lafayette Ave

Seasonal Factor Grp: rg1_4U
 Daily Factor Grp: rg1_4U
 Axle Factor Grp: rg1_4U
 Growth Factor Grp: rg1_4U

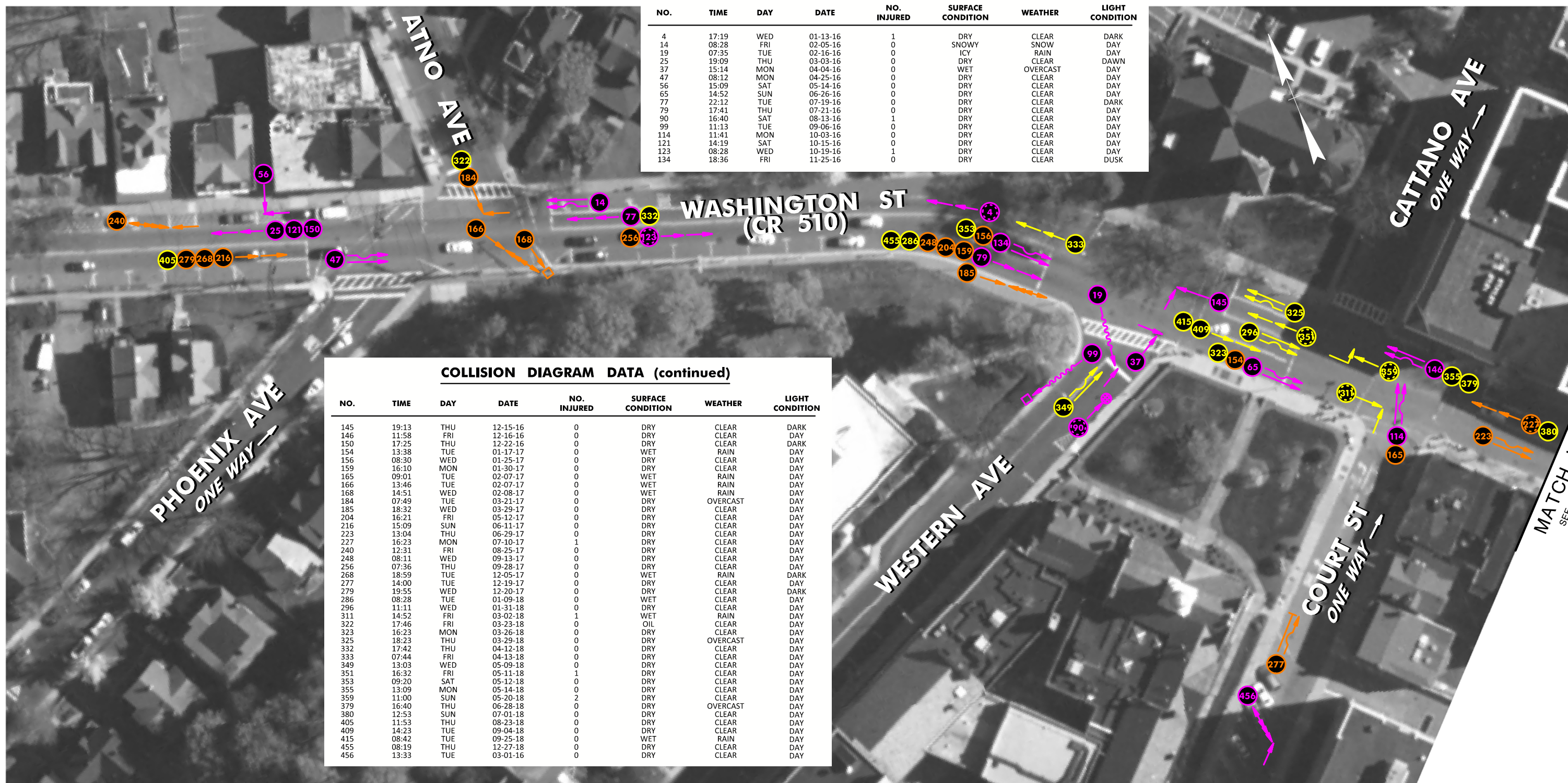
	Sun, Oct 28, 2018			Mon, Oct 29, 2018			Tue, Oct 30, 2018			Wed, Oct 31, 2018			Thu, Nov 1, 2018			Fri, Nov 2, 2018			Sat, Nov 3, 2018		
	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S	Road	N	S
00:00										75	32	43	90	36	54						
01:00										34	19	15	50	20	30						
02:00										32	11	21	34	10	24						
03:00										29	13	16	28	13	15						
04:00										45	17	28	48	24	24						
05:00										158	67	91	144	53	91						
06:00										595	236	359	575	207	368						
07:00										1,372	564	808	1,283	466	817						
08:00										1,584	623	961	1,609	546	1,063						
09:00										1,369	589	780	1,300	567	733						
10:00							1,098	494	604	1,175	560	615									
11:00							1,171	552	619	1,308	594	714									
12:00							1,323	642	681	1,470	665	805									
13:00							1,393	635	758	1,470	654	816									
14:00							1,397	606	791	1,382	595	787									
15:00							1,572	701	871	1,515	695	820									
16:00							1,558	707	851	1,519	709	810									
17:00							1,883	835	1,048	1,495	658	837									
18:00							1,600	722	878	1,116	495	621									
19:00							1,030	483	547	768	312	456									
20:00							732	323	409	533	230	303									
21:00							504	183	321	451	167	284									
22:00							330	148	182	298	142	156									
23:00							203	88	115	144	71	73									
Total							15,794	7,119	8,675	19,937	8,718	11,219	5,161	1,942	3,219						
AM Peak Vol										1,637	655	982									
AM Peak Fct										.939	.885	.967									
AM Peak Hr										7: 45	7: 30	7: 45									
PM Peak Vol							1,883	835	1,048	1,551	709	868									
PM Peak Fct							.949	.966	.936	.967	.923	.919									
PM Peak Hr							17: 00	17: 00	17: 00	16: 15	16: 00	12: 30									
Seasonal Fct							.977	.977	.977	.977	.977	.977	.989	.989	.989						
Daily Fct							.885	.885	.885	.881	.881	.881	.926	.926	.926						
Axle Fct							.496	.496	.496	.496	.496	.496	.492	.492	.492						
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
4	17:19	WED	01-13-16	1	DRY	CLEAR	DARK
14	08:28	FRI	02-05-16	0	SNOWY	SNOW	DAY
19	07:35	TUE	02-16-16	0	ICY	RAIN	DAY
25	19:09	THU	03-03-16	0	DRY	CLEAR	DAWN
37	15:14	MON	04-04-16	0	WET	OVERCAST	DAY
47	08:12	MON	04-25-16	0	DRY	CLEAR	DAY
56	15:09	SAT	05-14-16	0	DRY	CLEAR	DAY
65	14:52	SUN	06-26-16	0	DRY	CLEAR	DAY
77	22:12	TUE	07-19-16	0	DRY	CLEAR	DARK
79	17:41	THU	07-21-16	0	DRY	CLEAR	DAY
90	16:40	SAT	08-13-16	1	DRY	CLEAR	DAY
99	11:13	TUE	09-06-16	0	DRY	CLEAR	DAY
114	11:41	MON	10-03-16	0	DRY	CLEAR	DAY
121	14:19	SAT	10-15-16	0	DRY	CLEAR	DAY
123	08:28	WED	10-19-16	1	DRY	CLEAR	DAY
134	18:36	FRI	11-25-16	0	DRY	CLEAR	DUSK



COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
145	19:13	THU	12-15-16	0	DRY	CLEAR	DARK
146	11:58	FRI	12-16-16	0	DRY	CLEAR	DAY
150	17:25	THU	12-22-16	0	DRY	CLEAR	DARK
154	13:38	TUE	01-17-17	0	WET	RAIN	DAY
156	08:30	WED	01-25-17	0	DRY	CLEAR	DAY
159	16:10	MON	01-30-17	0	DRY	CLEAR	DAY
165	09:01	TUE	02-07-17	0	WET	RAIN	DAY
166	13:46	TUE	02-07-17	0	WET	RAIN	DAY
168	14:51	WED	02-08-17	0	WET	RAIN	DAY
184	07:49	TUE	03-21-17	0	DRY	OVERCAST	DAY
185	18:32	WED	03-29-17	0	DRY	CLEAR	DAY
204	16:21	FRI	05-12-17	0	DRY	CLEAR	DAY
216	15:09	SUN	06-11-17	0	DRY	CLEAR	DAY
223	13:04	THU	06-29-17	0	DRY	CLEAR	DAY
227	16:23	MON	07-10-17	1	DRY	CLEAR	DAY
240	12:31	FRI	08-25-17	0	DRY	CLEAR	DAY
248	08:11	WED	08-13-17	0	DRY	CLEAR	DAY
256	07:36	THU	09-28-17	0	DRY	CLEAR	DAY
268	18:59	TUE	12-05-17	0	WET	RAIN	DARK
277	14:00	TUE	12-19-17	0	DRY	CLEAR	DAY
279	19:55	WED	12-20-17	0	DRY	CLEAR	DARK
286	08:28	TUE	01-09-18	0	WET	CLEAR	DAY
296	11:11	WED	01-31-18	0	DRY	CLEAR	DAY
311	14:52	FRI	03-02-18	1	WET	RAIN	DAY
322	17:46	FRI	03-23-18	0	OIL	CLEAR	DAY
323	16:23	MON	03-26-18	0	DRY	CLEAR	DAY
325	18:23	THU	03-29-18	0	DRY	OVERCAST	DAY
332	17:42	THU	04-12-18	0	DRY	CLEAR	DAY
333	07:44	FRI	04-13-18	0	DRY	CLEAR	DAY
349	13:03	WED	05-09-18	0	DRY	CLEAR	DAY
351	16:32	FRI	05-11-18	1	DRY	CLEAR	DAY
353	09:20	SAT	05-12-18	0	DRY	CLEAR	DAY
355	13:09	MON	05-14-18	0	DRY	CLEAR	DAY
359	11:00	SUN	05-20-18	2	DRY	CLEAR	DAY
379	16:40	THU	06-28-18	0	DRY	OVERCAST	DAY
380	12:53	SUN	07-01-18	0	DRY	CLEAR	DAY
405	11:53	THU	08-23-18	0	DRY	CLEAR	DAY
409	14:23	TUE	09-04-18	0	DRY	CLEAR	DAY
415	08:42	TUE	09-25-18	0	WET	RAIN	DAY
455	08:19	THU	12-27-18	0	DRY	CLEAR	DAY
456	13:33	TUE	03-01-16	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	50
INJURIES	7
FATALITIES*	0
TOTAL NO. OF CRASHES	57

SYMBOLS

→	MOVING VEHICLE
←	BACKING VEHICLE
---	NON-INVOLVED VEHICLE
⊙	PEDESTRIAN
⊙	BICYCLIST
⊙	PROPERTY DAMAGE ONLY CRASH
⊙	INJURY IN CRASH
⊙	FATAL CRASH
□	FIXED OBJECT
⊗	NON-FIXED OBJECT
△	ANIMAL
⊗	POTHOLE

TYPES OF CRASHES

←	REAR END
→	HEAD ON
↔	SIDE SWIPE
~	OUT OF CONTROL
⊖	OVERTURNED
↘	LEFT TURN
↗	RIGHT ANGLE
⊖	STRUCK PARKED VEHICLE

COLORS

⊙	2016 CRASHES
⊙	2017 CRASHES
⊙	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE

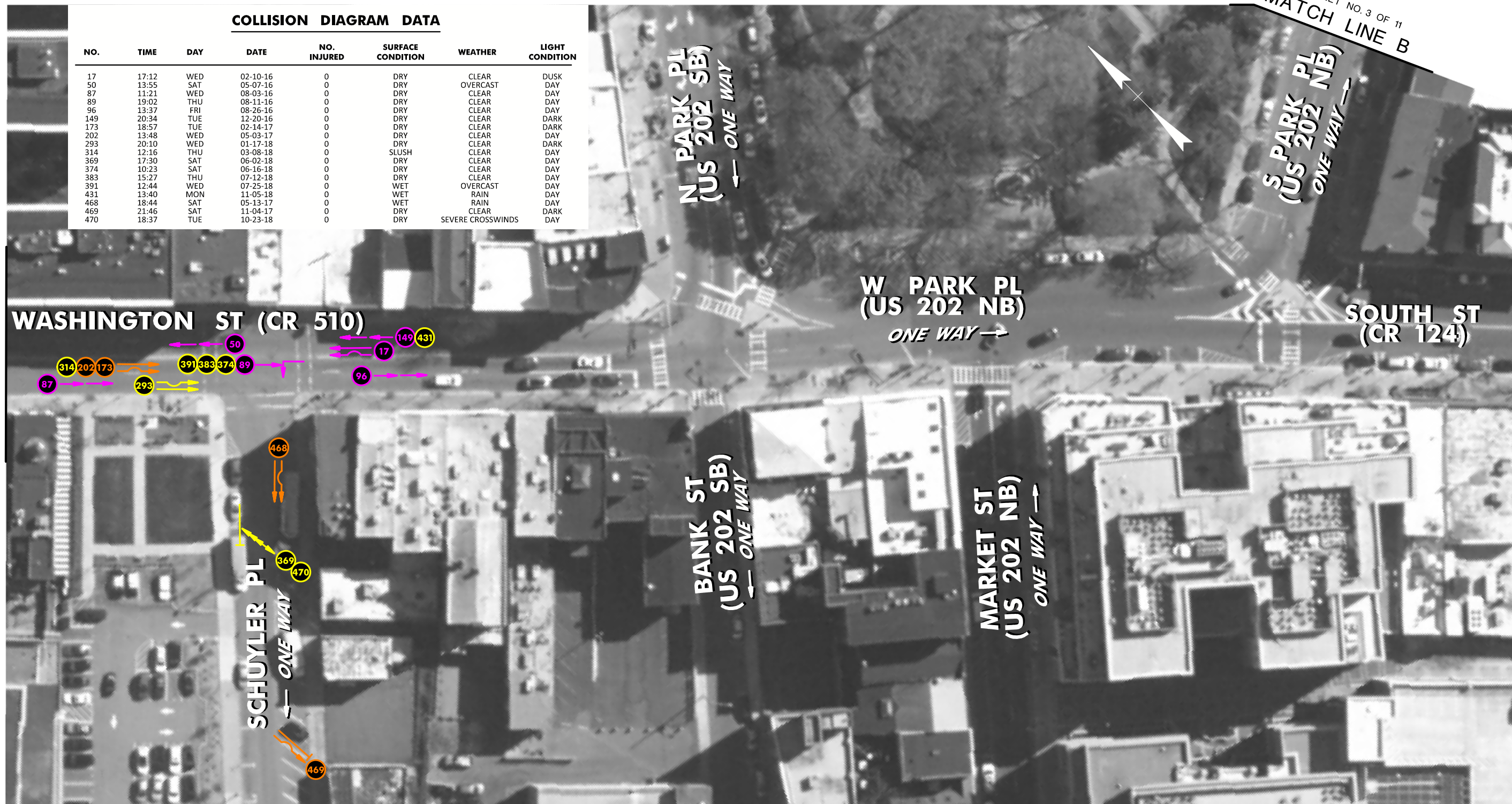
MATCH LINE A
SEE SHEET NO. 2 OF 11

FILE: L:\2017\659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_2_Catchway_03_Morris\Collision_Diagram_Sheets\Vehicle_Sheet_01.dwg
DATE: 11/02/2018
TIME: 12:12:10 PM
GREENMAN-PEDERSEN, INC.

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_2_Catchway_03_Morris\Collision_Diagram_Sheets\Vehicle_Sheet_02.dgn
 TIME: 12:12:45 PM
 DATE: 11/02/2018

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
17	17:12	WED	02-10-16	0	DRY	CLEAR	DUSK
50	13:55	SAT	05-07-16	0	DRY	OVERCAST	DAY
87	11:21	WED	08-03-16	0	DRY	CLEAR	DAY
89	19:02	THU	08-11-16	0	DRY	CLEAR	DAY
96	13:37	FRI	08-26-16	0	DRY	CLEAR	DAY
149	20:34	TUE	12-20-16	0	DRY	CLEAR	DARK
173	18:57	TUE	02-14-17	0	DRY	CLEAR	DARK
202	13:48	WED	05-03-17	0	DRY	CLEAR	DAY
293	20:10	WED	01-17-18	0	DRY	CLEAR	DARK
314	12:16	THU	03-08-18	0	SLUSH	CLEAR	DAY
369	17:30	SAT	06-02-18	0	DRY	CLEAR	DAY
374	10:23	SAT	06-16-18	0	DRY	CLEAR	DAY
383	15:27	THU	07-12-18	0	DRY	CLEAR	DAY
391	12:44	WED	07-25-18	0	WET	OVERCAST	DAY
431	13:40	MON	11-05-18	0	WET	RAIN	DAY
468	18:44	SAT	05-13-17	0	WET	RAIN	DAY
469	21:46	SAT	11-04-17	0	DRY	CLEAR	DARK
470	18:37	TUE	10-23-18	0	DRY	SEVERE CROSSWINDS	DAY



LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	18
INJURIES	0
FATALITIES*	0
TOTAL NO. OF CRASHES	18

SYMBOLS

	MOVING VEHICLE		BICYCLIST
	BACKING VEHICLE		PROPERTY DAMAGE ONLY CRASH
	NON-INVOLVED VEHICLE		INJURY IN CRASH
	PEDESTRIAN		FATAL CRASH
	FIXED OBJECT		ANIMAL
	NON-FIXED OBJECT		POT HOLE

TYPES OF CRASHES

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

COLORS

- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
 CR 510Z (LAFAYETTE AVE) &
 RIDGEDALE AVE
 MORRISTOWN TOWN, MORRIS COUNTY
 2016 - 2018 COLLISION DIAGRAMS

GPI Engineering
 Design
 Planning
 Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
35	16:34	THU	03-24-16	0	DRY	CLEAR	DAY
59	07:42	FRI	05-20-16	0	DRY	CLEAR	DAY
217	11:25	MON	06-12-17	0	DRY	CLEAR	DAY
231	22:53	WED	07-26-17	0	DRY	CLEAR	DARK
307	21:32	FRI	02-16-18	0	DRY	CLEAR	DARK
406	13:55	THU	08-23-18	0	DRY	CLEAR	DAY



MATCH LINE B
SEE SHEET NO. 2 OF 11

MATCH LINE C
SEE SHEET NO. 4 OF 11

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	6
INJURIES	0
FATALITIES*	0
TOTAL NO. OF CRASHES	6

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NDDOT_HSP_Year_2_Catchway03_Morris\Collision_Diagram_Sheets\Vehicle_Sheet_03.dgn
DATE: 11/02/2018
TIME: 12:16:29 PM
GREENMAN-PEDERSEN, INC.

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_Catchway_03_Morris_Collision_Diagram_Sheets\Vehicle_Sheet_04.dgn
 TIME: 12:25:09 PM
 DATE: 11/02/2018
 GREENMAN-PEDERSEN, INC.



LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	84
INJURIES	13
FATALITIES*	0
TOTAL NO. OF CRASHES	97

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	NON-FIXED OBJECT
	ANIMAL
	POTHOLE

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
 CR 510Z (LAFAYETTE AVE) &
 RIDGEDALE AVE
 MORRISTOWN TOWN, MORRIS COUNTY
 2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
7	02:23	SUN	01-17-16	0	WET	CLEAR	DARK
12	15:50	WED	02-03-16	0	WET	RAIN	DAY
18	13:25	MON	02-15-16	1	WET	OVERCAST	DAY
20	13:25	THU	02-18-16	0	DRY	CLEAR	DAY
24	09:29	WED	03-02-16	0	DRY	CLEAR	DAY
32	20:39	MON	03-14-16	0	WET	RAIN	DARK
34	01:24	SUN	03-20-16	0	DRY	CLEAR	DARK
46	11:21	FRI	04-22-16	0	DRY	CLEAR	DAY
52	13:44	WED	05-11-16	0	DRY	CLEAR	DAY
54	13:30	FRI	05-13-16	1	DRY	OVERCAST	DAY
55	19:11	FRI	05-13-16	2	DRY	CLEAR	DAY
64	12:47	SAT	06-18-16	0	DRY	CLEAR	DAY
71	15:47	THU	07-07-16	0	DRY	CLEAR	DAY
74	12:27	WED	07-13-16	0	DRY	CLEAR	DAY
75	17:43	FRI	07-15-16	1	DRY	CLEAR	DAY
85	14:59	FRI	07-29-16	0	DRY	CLEAR	DAY
94	18:03	THU	08-25-16	0	DRY	CLEAR	DAY
95	19:27	THU	08-25-16	0	DRY	CLEAR	DAY
102	17:59	MON	09-12-16	0	DRY	CLEAR	DAY
104	9:17	TUE	09-13-16	0	DRY	CLEAR	DAY
105	15:35	WED	09-14-16	0	DRY	CLEAR	DAY
108	15:50	SAT	09-24-16	0	DRY	CLEAR	DAY
122	16:52	MON	10-17-16	1	DRY	CLEAR	DAY
124	11:29	SAT	10-22-16	0	WET	RAIN	DAY
125	08:05	TUE	11-01-16	1	DRY	CLEAR	DAY
133	21:36	WED	11-23-16	0	DRY	CLEAR	DARK
139	14:15	THU	12-08-16	0	DRY	CLEAR	DAY
143	10:32	MON	12-12-16	0	DRY	CLEAR	DAY
152	16:11	SAT	01-07-17	0	SNOWY	SNOW	DAY
160	14:51	TUE	01-31-17	0	DRY	CLEAR	DAY
161	20:02	TUE	01-31-17	0	WET	CLEAR	DARK
171	16:18	TUE	02-14-17	0	DRY	CLEAR	DAY
172	17:02	TUE	02-14-17	1	DRY	CLEAR	DUSK
179	20:04	SAT	03-11-17	0	DRY	CLEAR	DARK
182	15:00	FRI	03-17-17	0	DRY	CLEAR	DAY
183	11:13	SAT	03-18-17	0	DRY	CLEAR	DAY
186	17:57	FRI	03-31-17	0	WET	RAIN	DAY
195	09:46	TUE	04-25-17	0	WET	RAIN	DAY
200	18:57	FRI	04-28-17	1	DRY	CLEAR	DAY
203	13:51	SUN	05-07-17	0	WET	CLEAR	DAY
205	23:29	FRI	05-12-17	0	OIL	SEVERE CROSSWINDS	DARK
206	18:29	SAT	05-13-17	0	WET	RAIN	DAY
211	18:25	SUN	06-04-17	1	WET	OVERCAST	DAY
236	18:19	THU	08-10-17	0	DRY	CLEAR	DAY
237	11:43	SUN	08-13-17	1	DRY	CLEAR	DAY
238	11:45	TUE	08-22-17	0	DRY	CLEAR	DAY
247	14:46	TUE	09-12-17	0	DRY	CLEAR	DAY
249	19:54	MON	09-18-17	0	DRY	CLEAR	DARK

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
257	10:20	MON	10-02-17	0	DRY	CLEAR	DAY
258	14:57	MON	10-16-17	0	DRY	CLEAR	DAY
265	22:48	FRI	12-01-17	0	DRY	CLEAR	DARK
270	16:07	WED	12-06-17	0	DRY	CLEAR	DAY
273	09:17	SAT	12-13-17	0	WET	RAIN	DAY
275	19:29	FRI	12-15-17	0	WET	OVERCAST	DARK
283	17:41	MON	01-08-18	0	WET	CLEAR	DARK
284	19:35	MON	01-08-18	0	WET	CLEAR	DARK
290	02:05	SUN	01-14-18	0	DRY	CLEAR	DARK
312	21:38	FRI	03-02-18	0	WET	OVERCAST	DARK
316	11:48	SAT	03-10-18	1	DRY	CLEAR	DAY
319	16:18	THU	03-15-18	0	DRY	CLEAR	DAY
321	21:51	THU	03-22-18	0	DRY	CLEAR	DARK
324	18:17	THU	03-29-18	0	DRY	OVERCAST	DAY
326	16:55	MON	04-02-18	0	DRY	CLEAR	DAY
328	18:09	FRI	04-06-18	0	DRY	CLEAR	DAY
331	09:43	THU	04-12-18	0	DRY	CLEAR	DAY
342	15:47	THU	04-26-18	0	DRY	CLEAR	DAY
350	07:42	FRI	05-11-18	0	DRY	CLEAR	DAY
352	00:28	SAT	05-12-18	0	DRY	CLEAR	DARK
362	08:46	THU	05-24-18	0	DRY	CLEAR	DAY
367	14:46	TUE	05-29-18	0	DRY	CLEAR	DAY
371	14:54	THU	06-07-18	0	DRY	CLEAR	DAY
372	12:32	MON	06-11-18	0	DRY	CLEAR	DAY
377	07:12	THU	06-21-18	0	DRY	CLEAR	DAY
378	21:00	SAT	06-23-18	0	DRY	CLEAR	DARK
382	11:15	WED	07-04-18	0	DRY	CLEAR	DAY
384	22:13	THU	07-12-18	1	DRY	CLEAR	DARK
386	08:31	THU	07-19-18	0	DRY	CLEAR	DAY
388	08:23	FRI	07-20-18	0	DRY	CLEAR	DAY
397	16:46	FRI	08-03-18	0	WET	CLEAR	DAY
398	14:25	MON	08-06-18	0	DRY	CLEAR	DAY
404	17:33	WED	08-22-18	0	DRY	CLEAR	DAY
411	20:14	SAT	09-08-18	0	WET	OVERCAST	DARK
417	08:09	WED	09-26-18	0	DRY	CLEAR	DAY
419	15:43	MON	10-01-18	0	DRY	CLEAR	DAY
420	07:01	FRI	10-12-18	0	DRY	CLEAR	DAY
429	17:12	TUE	10-30-18	0	DRY	CLEAR	DAY
430	06:32	SAT	11-03-18	0	WET	RAIN	DAY
433	17:36	THU	11-08-18	0	DRY	CLEAR	DARK
437	17:57	FRI	11-16-18	0	WET	OVERCAST	DARK
439	00:27	SUN	12-02-18	0	DRY	CLEAR	DARK
446	10:34	SUN	12-09-18	0	DRY	CLEAR	DAY
452	17:44	FRI	12-14-18	0	WET	RAIN	DARK
454	11:48	SAT	12-22-18	1	DRY	CLEAR	DAY
458	02:04	SUN	07-10-16	0	DRY	CLEAR	DARK
459	23:47	WED	08-17-16	0	DRY	CLEAR	DARK
465	22:34	SUN	03-19-17	0	DRY	CLEAR	DARK
467	14:56	TUE	03-28-17	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	84
INJURIES	13
FATALITIES*	0
TOTAL NO. OF CRASHES	97

SYMBOLS

	MOVING VEHICLE		NON-INVOLVED VEHICLE
	BACKING VEHICLE		PEDESTRIAN
	BICYCLIST		PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH		FATAL CRASH
	FIXED OBJECT		ANIMAL
	NON-FIXED OBJECT		POTHOLE

TYPES OF CRASHES

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

COLORS

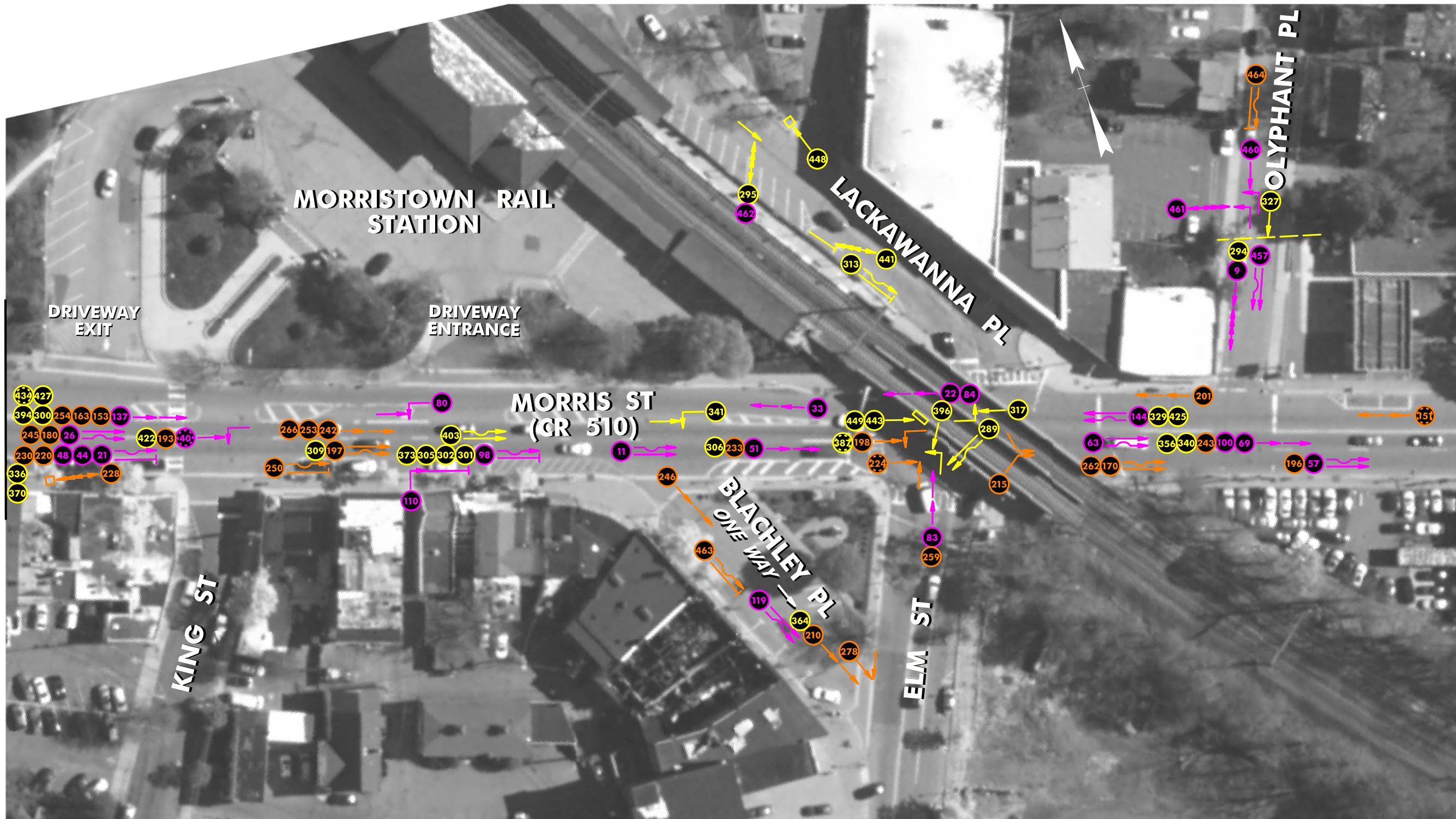
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE



MATCH LINE D
SEE SHEET NO. 4 OF 11

MATCH LINE F
SEE SHEET NO. 8 OF 11

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	83
INJURIES	5
FATALITIES*	0
TOTAL NO. OF CRASHES	88

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
9	11:14	FRI	01-29-16	0	WET	CLEAR	DAY
11	09:41	WED	02-03-16	0	WET	RAIN	DAY
21	13:31	MON	02-22-16	0	DRY	CLEAR	DAY
22	14:25	SAT	02-27-16	0	DRY	CLEAR	DAY
26	11:46	SUN	03-06-16	0	DRY	CLEAR	DAY
33	18:59	WED	03-16-16	0	WET	OVERCAST	DAY
40	14:41	FRI	04-15-16	1	DRY	CLEAR	DAY
44	19:46	WED	04-20-16	0	DRY	CLEAR	DUSK
48	08:17	MON	05-02-16	0	WET	OVERCAST	DAY
51	09:36	WED	05-11-16	0	DRY	CLEAR	DAY
57	10:55	MON	05-16-16	0	DRY	CLEAR	DAY
63	14:39	MON	06-13-16	0	DRY	CLEAR	DAY
69	14:10	WED	07-06-16	0	DRY	CLEAR	DAY
80	11:44	SAT	07-23-16	0	DRY	CLEAR	DAY
83	17:55	THU	07-28-16	0	WET	RAIN	DAY
84	09:10	FRI	07-29-16	0	DRY	CLEAR	DAY
98	02:34	SUN	09-04-16	0	DRY	CLEAR	DARK
100	16:40	WED	09-07-16	0	DRY	CLEAR	DAY
110	16:32	MON	09-26-16	0	DRY	CLEAR	DAY
119	13:57	FRI	10-07-16	0	DRY	CLEAR	DAY
137	12:32	SAT	12-03-16	0	DRY	CLEAR	DAY
144	16:19	THU	12-15-16	0	DRY	CLEAR	DAY
151	17:11	FRI	01-06-17	2	DRY	CLEAR	DARK
153	19:59	TUE	01-10-17	0	WET	OVERCAST	DARK
163	16:48	THU	02-02-17	0	DRY	CLEAR	DAY
170	11:02	MON	02-13-17	0	WET	CLEAR	DAY
180	01:07	SUN	03-12-17	0	DRY	CLEAR	DARK
193	13:37	THU	04-20-17	0	DRY	CLEAR	DAY
196	20:44	TUE	04-25-17	0	DRY	RAIN	DARK
197	08:50	WED	04-26-17	0	WET	RAIN	DAY
198	14:57	THU	04-27-17	0	DRY	CLEAR	DAY
201	09:36	WED	05-03-17	0	DRY	CLEAR	DAY
210	09:25	THU	05-25-17	0	WET	RAIN	DAY
215	12:24	SAT	06-10-17	0	DRY	CLEAR	DAY
220	20:35	SUN	06-25-17	0	DRY	CLEAR	DUSK
224	22:07	THU	06-29-17	1	DRY	CLEAR	DARK
228	15:11	THU	07-13-17	0	DRY	CLEAR	DAY
230	11:30	SAT	07-15-17	0	DRY	CLEAR	DAY
233	15:35	MON	08-07-17	0	OIL	RAIN	DAY
242	16:29	SAT	09-02-17	0	DRY	OVERCAST	DAY
243	15:26	SUN	09-03-17	0	DRY	CLEAR	DAY
245	14:52	SUN	09-10-17	0	DRY	CLEAR	DAY
246	12:14	MON	09-11-17	0	DRY	CLEAR	DAY
250	07:22	WED	09-20-17	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
253	07:35	TUE	09-26-17	0	DRY	CLEAR	DAY
254	08:48	TUE	09-26-17	0	DRY	CLEAR	DAY
259	19:30	THU	10-19-17	0	DRY	CLEAR	DARK
262	18:46	SAT	10-28-17	0	DRY	CLEAR	DARK
266	07:51	MON	12-04-17	0	DRY	CLEAR	DAY
278	17:46	TUE	12-19-17	0	DRY	CLEAR	DARK
289	12:40	SAT	01-13-18	0	DRY	CLEAR	DAY
294	07:48	MON	01-22-18	0	WET	CLEAR	DAY
295	11:49	SAT	01-27-18	0	DRY	CLEAR	DAY
300	15:19	SUN	02-04-18	0	WET	RAIN	DAY
301	17:42	SUN	02-04-18	0	WET	RAIN	DARK
302	12:25	MON	02-05-18	0	DRY	CLEAR	DAY
305	18:36	TUE	02-13-18	0	DRY	SEVERE CROSSWINDS	DARK
306	19:11	WED	02-14-18	0	DRY	CLEAR	DARK
309	07:13	WED	02-21-18	0	DRY	CLEAR	DAY
313	14:04	MON	03-05-18	0	DRY	CLEAR	DAY
317	22:29	SUN	03-11-18	0	WET	CLEAR	DARK
327	13:56	TUE	04-03-18	0	WET	RAIN	DAY
329	15:57	SUN	04-08-18	0	DRY	CLEAR	DAY
336	08:46	SAT	04-14-18	0	DRY	CLEAR	DAY
340	08:06	MON	04-23-18	0	DRY	CLEAR	DAY
341	19:20	MON	04-23-18	0	DRY	CLEAR	DAY
356	11:46	TUE	05-15-18	0	DRY	CLEAR	DAY
364	06:31	FRI	05-25-18	0	DRY	CLEAR	DAY
370	12:07	THU	06-07-18	0	DRY	OVERCAST	DAY
373	13:33	FRI	06-15-18	0	DRY	CLEAR	DAY
387	11:07	THU	07-19-18	2	DRY	CLEAR	DAY
394	17:04	WED	08-01-18	0	DRY	CLEAR	DAY
396	17:26	THU	08-02-18	0	DRY	CLEAR	DAY
403	14:39	WED	08-22-18	0	WET	RAIN	DAY
422	16:51	FRI	10-19-18	0	WET	OVERCAST	DAY
425	16:19	TUE	10-23-18	0	DRY	CLEAR	DAY
427	15:45	SUN	10-28-18	0	DRY	CLEAR	DAY
434	23:03	FRI	11-09-18	1	WET	RAIN	DARK
441	18:01	MON	12-03-18	0	DRY	CLEAR	DARK
443	12:29	WED	12-05-18	0	DRY	CLEAR	DAY
448	19:10	WED	12-12-18	0	DRY	CLEAR	DARK
449	16:03	THU	12-13-18	0	DRY	CLEAR	DAY
457	06:18	SAT	05-28-16	0	DRY	CLEAR	DAY
460	14:34	MON	09-12-16	0	DRY	CLEAR	DAY
461	15:04	TUE	10-25-16	0	DRY	CLEAR	DAY
462	13:55	FRI	12-02-16	0	DRY	CLEAR	DAY
463	19:02	TUE	01-24-17	0	WET	RAIN	DARK
464	12:37	FRI	01-27-17	0	DRY	CLEAR	DAY

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	83
INJURIES	5
FATALITIES*	0
TOTAL NO. OF CRASHES	88

SYMBOLS

	MOVING VEHICLE		NON-INVOLVED VEHICLE
	BACKING VEHICLE		PEDESTRIAN
	BICYCLIST		PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH		FATAL CRASH
	FIXED OBJECT		ANIMAL
	NON-FIXED OBJECT		POTHOLE

TYPES OF CRASHES

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

COLORS

	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
 CR 510Z (LAFAYETTE AVE) &
 RIDGEDALE AVE
 MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering
 Design
 Planning
 Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
1	15:00	MON	01-04-16	0	DRY	CLEAR	DAY
2	23:18	SAT	01-09-16	0	WET	RAIN	DARK
6	23:22	SAT	01-16-16	0	DRY	CLEAR	DARK
27	10:53	TUE	03-08-16	0	DRY	CLEAR	DAY
38	07:34	FRI	04-08-16	0	DRY	CLEAR	DAY
49	12:55	SAT	05-07-16	0	WET	OVERCAST	DAY
62	07:30	FRI	06-03-16	0	WET	RAIN	DAY
67	17:29	THU	06-30-16	1	DRY	CLEAR	DAY
72	13:43	FRI	07-08-16	0	DRY	CLEAR	DAY
73	11:13	SUN	07-10-16	0	DRY	CLEAR	DAY
81	17:24	MON	07-25-16	2	WET	RAIN	DAY
97	20:15	FRI	08-26-16	0	DRY	CLEAR	DARK
103	20:20	MON	09-12-16	0	DRY	CLEAR	DAY
109	14:13	MON	09-26-16	0	DRY	CLEAR	DAY
111	07:37	FRI	09-30-16	2	DRY	CLEAR	DAY
112	19:59	FRI	09-30-16	1	WET	RAIN	DARK
120	13:59	TUE	10-11-16	0	DRY	CLEAR	DAY
135	21:52	WED	11-30-16	0	WET	RAIN	DARK
142	9:57	MON	12-12-16	0	WET	RAIN	DAY
147	09:18	SAT	12-17-16	0	SNOWY	SNOW	DAY
155	09:38	TUE	01-24-17	0	WET	RAIN	DAY
157	09:00	FRI	01-27-17	0	DRY	CLEAR	DAY
164	23:10	FRI	02-03-17	0	DRY	CLEAR	DARK
167	09:53	WED	02-08-17	0	WET	CLEAR	DAY
187	13:05	MON	04-03-17	2	DRY	CLEAR	DAY
190	14:52	WED	04-05-17	0	DRY	CLEAR	DAY
194	19:24	MON	04-24-17	0	DRY	CLEAR	DUSK
213	12:16	MON	06-06-17	0	DRY	CLEAR	DAY
239	08:01	THU	08-24-17	0	DRY	CLEAR	DAY
241	15:17	FRI	09-01-17	0	DRY	CLEAR	DAY
260	15:19	SAT	10-21-17	0	DRY	CLEAR	DAY
263	10:55	SAT	11-04-17	0	DRY	CLEAR	DAY
264	07:03	THU	11-16-17	0	WET	OVERCAST	DAY
267	13:37	MON	12-04-17	1	DRY	CLEAR	DAY
271	23:19	FRI	12-08-17	0	DRY	CLEAR	DARK
285	08:02	TUE	01-09-18	0	DRY	CLEAR	DAY
287	00:38	FRI	01-12-18	0	WET	OVERCAST	DARK
288	17:15	FRI	01-12-18	0	WET	RAIN	DARK
292	13:21	TUE	01-16-18	0	DRY	CLEAR	DAY
303	12:00	THU	02-08-18	0	DRY	CLEAR	DAY
310	10:14	TUE	02-27-18	1	DRY	CLEAR	DAY
335	18:28	FRI	04-13-18	0	DRY	CLEAR	DAY
338	10:27	THU	04-19-18	0	WET	RAIN	DAY
346	15:03	SUN	05-06-18	0	DRY	CLEAR	DAY
347	14:42	MON	05-07-18	0	DRY	CLEAR	DAY
348	11:40	WED	05-09-18	0	DRY	CLEAR	DAY
358	13:26	THU	05-17-18	0	DRY	CLEAR	DAY
363	17:07	THU	05-24-18	0	DRY	CLEAR	DAY
375	13:26	MON	06-18-18	0	DRY	CLEAR	DAY
389	12:43	SUN	07-22-18	0	DRY	CLEAR	DAY
392	14:24	FRI	07-27-18	0	WET	RAIN	DAY
399	18:12	FRI	08-10-18	0	DRY	CLEAR	DAY
401	13:58	TUE	08-21-18	0	DRY	CLEAR	DAY
402	19:23	TUE	08-21-18	1	DRY	CLEAR	DUSK
416	16:09	TUE	09-25-18	0	WET	RAIN	DAY
432	17:32	WED	11-07-18	0	DRY	CLEAR	DARK
440	15:24	SUN	12-02-18	0	WET	OVERCAST	DAY
442	09:18	WED	12-05-18	0	DRY	CLEAR	DAY
444	13:16	THU	12-06-18	1	DRY	CLEAR	DAY
447	23:44	MON	12-10-18	0	DRY	CLEAR	DARK
453	12:06	MON	12-17-18	0	DRY	CLEAR	DAY



MATCH LINE F
SEE SHEET NO. 6 OF 11

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	52
INJURIES	9
FATALITIES*	0
TOTAL NO. OF CRASHES	61

SYMBOLS	
→	MOVING VEHICLE
←	BACKING VEHICLE
- - -	NON-INVOLVED VEHICLE
x - - -	PEDESTRIAN
- - -	BICYCLIST
○	PROPERTY DAMAGE ONLY CRASH
⊙	INJURY IN CRASH
⊕	FATAL CRASH
□	FIXED OBJECT
△	ANIMAL
⊗	POTHOLE
⊘	NON-FIXED OBJECT

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

COLORS	
⊙ (Purple)	2016 CRASHES
⊙ (Orange)	2017 CRASHES
⊙ (Yellow)	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

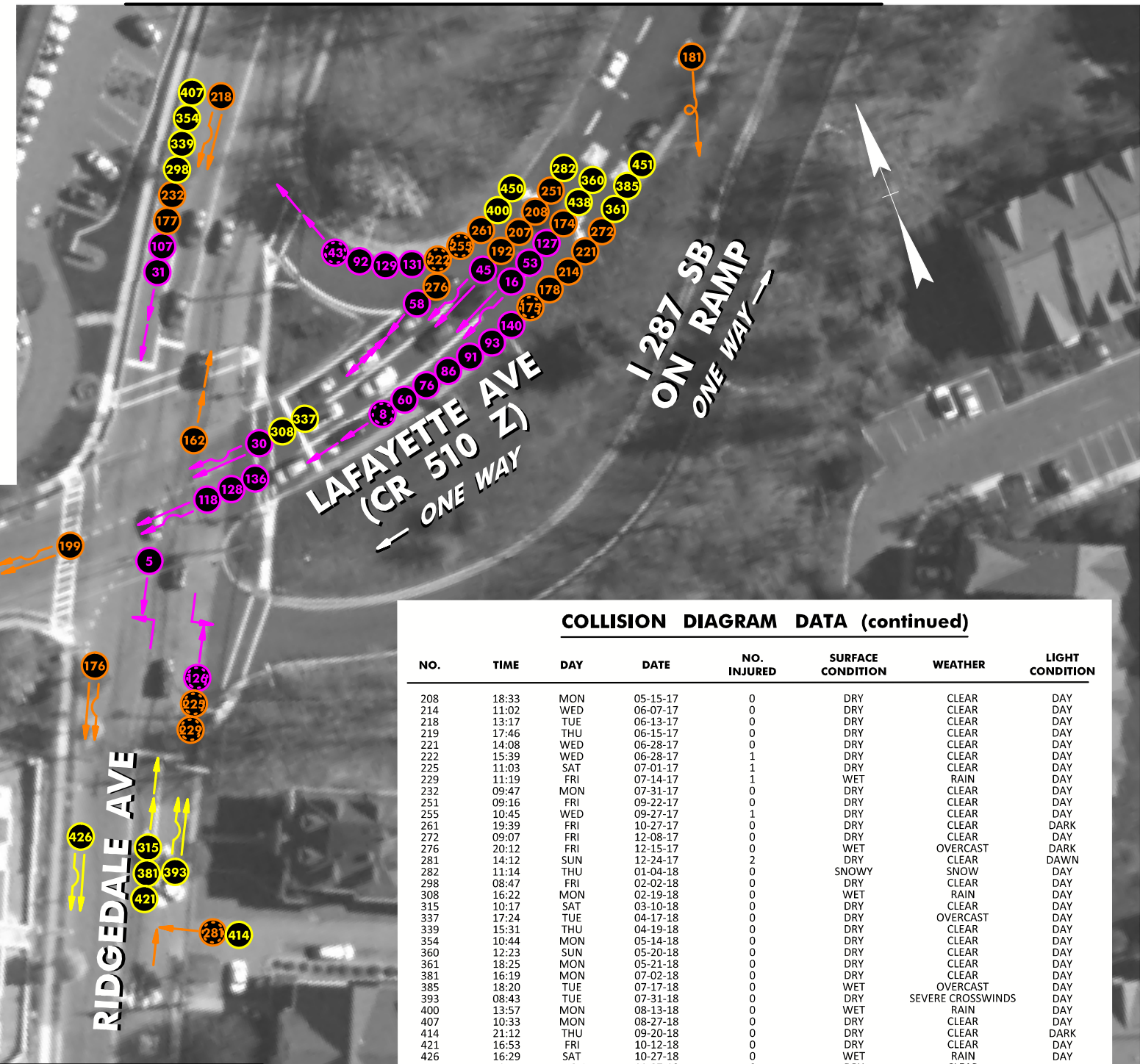
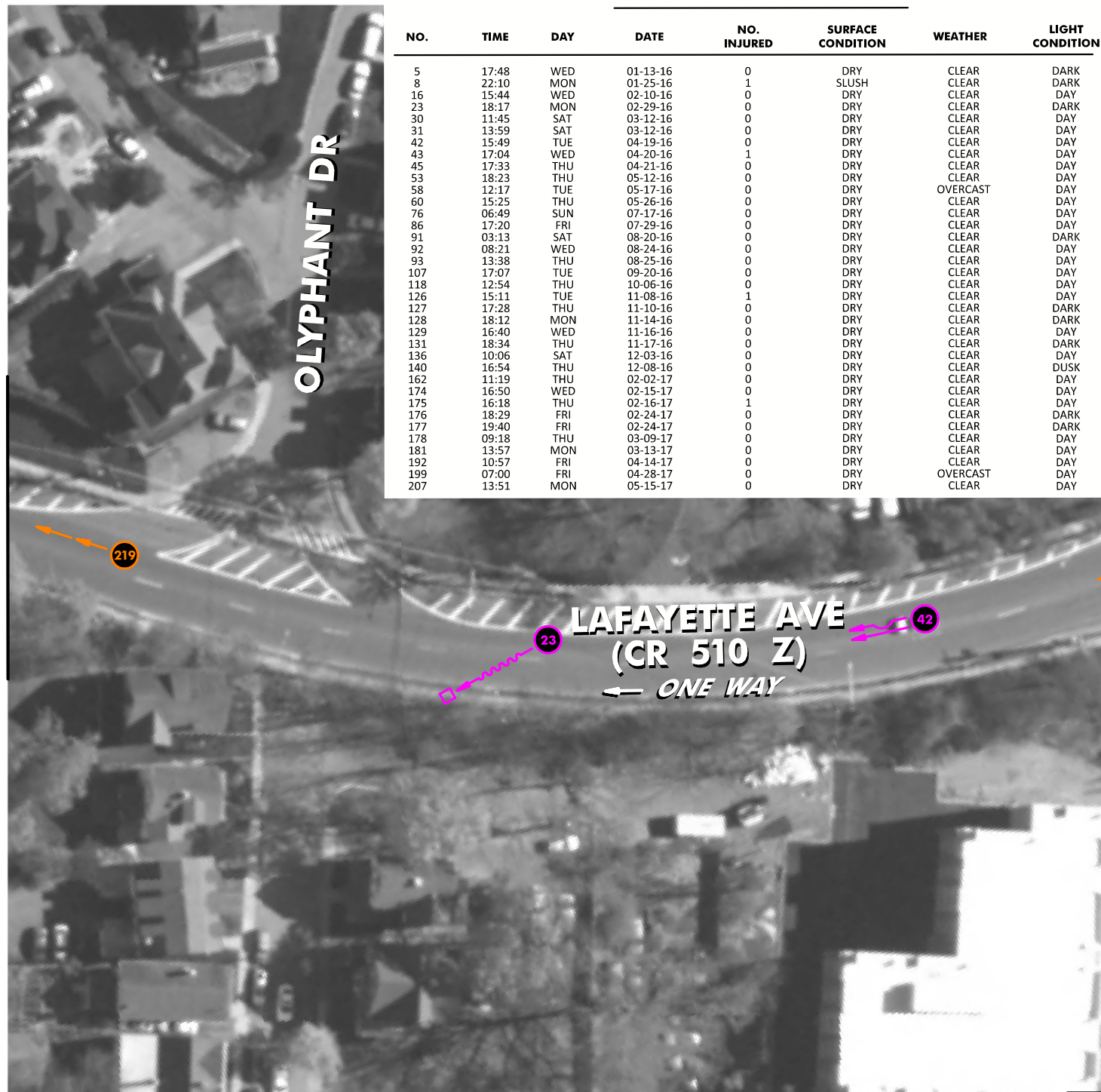
GPI Engineering Design Planning Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_Catchway\03_Morris_Collision_Diagram_Sheets\Vehicle_Sheet_08.dgn
DATE: 11/02/2018
TIME: 12:16:40 PM
GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
5	17:48	WED	01-13-16	0	DRY	CLEAR	DARK
8	22:10	MON	01-25-16	1	SLUSH	CLEAR	DARK
16	15:44	WED	02-10-16	0	DRY	CLEAR	DAY
23	18:17	MON	02-29-16	0	DRY	CLEAR	DARK
30	11:45	SAT	03-12-16	0	DRY	CLEAR	DAY
31	13:59	SAT	03-12-16	0	DRY	CLEAR	DAY
42	15:49	TUE	04-19-16	0	DRY	CLEAR	DAY
43	17:04	WED	04-20-16	1	DRY	CLEAR	DAY
45	17:33	THU	04-21-16	0	DRY	CLEAR	DAY
53	18:23	THU	05-12-16	0	DRY	CLEAR	DAY
58	12:17	TUE	05-17-16	0	DRY	OVERCAST	DAY
60	15:25	THU	05-26-16	0	DRY	CLEAR	DAY
76	06:49	SUN	07-17-16	0	DRY	CLEAR	DAY
86	17:20	FRI	07-29-16	0	DRY	CLEAR	DAY
91	03:13	SAT	08-20-16	0	DRY	CLEAR	DARK
92	08:21	WED	08-24-16	0	DRY	CLEAR	DAY
93	13:38	THU	08-25-16	0	DRY	CLEAR	DAY
107	17:07	TUE	09-20-16	0	DRY	CLEAR	DAY
118	12:54	THU	10-06-16	0	DRY	CLEAR	DAY
126	15:11	TUE	11-08-16	1	DRY	CLEAR	DAY
127	17:28	THU	11-10-16	0	DRY	CLEAR	DARK
128	18:12	MON	11-14-16	0	DRY	CLEAR	DARK
129	16:40	WED	11-16-16	0	DRY	CLEAR	DAY
131	18:34	THU	11-17-16	0	DRY	CLEAR	DARK
136	10:06	SAT	12-03-16	0	DRY	CLEAR	DAY
140	16:54	THU	12-08-16	0	DRY	CLEAR	DUSK
162	11:19	THU	02-02-17	0	DRY	CLEAR	DAY
174	16:50	WED	02-15-17	0	DRY	CLEAR	DAY
175	16:18	THU	02-16-17	1	DRY	CLEAR	DAY
176	18:29	FRI	02-24-17	0	DRY	CLEAR	DARK
177	19:40	FRI	02-24-17	0	DRY	CLEAR	DARK
178	09:18	THU	03-09-17	0	DRY	CLEAR	DAY
181	13:57	MON	03-13-17	0	DRY	CLEAR	DAY
192	10:57	FRI	04-14-17	0	DRY	CLEAR	DAY
199	07:00	FRI	04-28-17	0	DRY	OVERCAST	DAY
207	13:51	MON	05-15-17	0	DRY	CLEAR	DAY



COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
208	18:33	MON	05-15-17	0	DRY	CLEAR	DAY
214	11:02	WED	06-07-17	0	DRY	CLEAR	DAY
218	13:17	TUE	06-13-17	0	DRY	CLEAR	DAY
219	17:46	THU	06-15-17	0	DRY	CLEAR	DAY
221	14:08	WED	06-28-17	0	DRY	CLEAR	DAY
222	15:39	WED	06-28-17	1	DRY	CLEAR	DAY
225	11:03	SAT	07-01-17	1	DRY	CLEAR	DAY
229	11:19	FRI	07-14-17	1	WET	RAIN	DAY
232	09:47	MON	07-31-17	0	DRY	CLEAR	DAY
251	09:16	FRI	09-22-17	0	DRY	CLEAR	DAY
255	10:45	WED	09-27-17	1	DRY	CLEAR	DAY
261	19:39	FRI	10-27-17	0	DRY	CLEAR	DARK
272	09:07	FRI	12-08-17	0	DRY	CLEAR	DAY
276	20:12	FRI	12-15-17	0	WET	OVERCAST	DARK
281	14:12	SUN	12-24-17	2	DRY	CLEAR	DAWN
282	11:14	THU	01-04-18	0	SNOWY	SNOW	DAY
298	08:47	FRI	02-02-18	0	DRY	CLEAR	DAY
308	16:22	MON	02-19-18	0	WET	RAIN	DAY
315	10:17	SAT	03-10-18	0	DRY	CLEAR	DAY
337	17:24	TUE	04-17-18	0	DRY	OVERCAST	DAY
339	15:31	THU	04-19-18	0	DRY	CLEAR	DAY
354	10:44	MON	05-14-18	0	DRY	CLEAR	DAY
360	12:23	SUN	05-20-18	0	DRY	CLEAR	DAY
361	18:25	MON	05-21-18	0	DRY	CLEAR	DAY
381	16:19	MON	07-02-18	0	DRY	CLEAR	DAY
385	18:20	TUE	07-17-18	0	WET	OVERCAST	DAY
393	08:43	TUE	07-31-18	0	DRY	SEVERE CROSSWINDS	DAY
400	13:57	MON	08-13-18	0	WET	RAIN	DAY
407	10:33	MON	08-27-18	0	DRY	CLEAR	DAY
414	21:12	THU	09-20-18	0	DRY	CLEAR	DARK
421	16:53	FRI	10-12-18	0	DRY	CLEAR	DAY
426	16:29	SAT	10-27-18	0	WET	RAIN	DAY
438	12:17	MON	11-27-18	0	DRY	CLEAR	DAY
450	18:05	THU	12-13-18	0	DRY	CLEAR	DARK
451	14:48	FRI	12-14-18	0	DRY	OVERCAST	DAY

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	62
INJURIES	9
FATALITIES*	0
TOTAL NO. OF CRASHES	71

SYMBOLS

←	MOVING VEHICLE	⊙	PROPERTY DAMAGE ONLY CRASH
←→	BACKING VEHICLE	⊙	FATAL CRASH
---	NON-INVOLVED VEHICLE	△	ANIMAL
⊙	PEDESTRIAN	⊗	POTHOLE
⊙	BICYCLIST		
⊙	INJURY IN CRASH		
□	FIXED OBJECT		
□	NON-FIXED OBJECT		

TYPES OF CRASHES

←	REAR END	↘	LEFT TURN
→	HEAD ON	↗	RIGHT ANGLE
↔	SIDE SWIPE	↕	STRUCK PARKED VEHICLE
~	OUT OF CONTROL		
⊙	OVERTURNED		

COLORS

- ⊙ 2016 CRASHES
- ⊙ 2017 CRASHES
- ⊙ 2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS



NOT TO SCALE

FILE: L:\2017\659_HSP_Program_and_Project_Development\Support\NDDOT_HSP_Year_2\Cad\Cad\HWY03_Morris\Collision_Diagram_Sheets\Vehicle_Sheet_09.dgn
 DATE: 11/02/2018
 TIME: 12:17:20 PM
 GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
3	16:17	WED	01-13-16	0	DRY	CLEAR	DUSK
13	13:06	THU	02-04-16	0	DRY	CLEAR	DAY
29	18:27	THU	03-10-16	0	DRY	CLEAR	DARK
36	14:46	SUN	03-27-16	0	DRY	CLEAR	DAY
39	15:29	MON	04-11-16	0	DRY	CLEAR	DAY
41	11:55	SUN	04-17-16	0	DRY	CLEAR	DAY
61	15:39	WED	06-01-16	0	DRY	CLEAR	DAY
66	17:03	WED	06-29-16	0	DRY	CLEAR	DAY
68	12:08	SUN	07-03-16	0	DRY	OVERCAST	DAY
70	08:53	THU	07-07-16	0	DRY	CLEAR	DAY
78	18:59	THU	07-21-16	0	DRY	CLEAR	DAY
82	15:12	THU	07-28-16	0	DRY	CLEAR	DAY
88	15:40	THU	08-11-16	0	DRY	CLEAR	DAY
101	07:36	THU	09-08-16	0	DRY	CLEAR	DAY
106	07:10	THU	09-15-16	0	OIL	SEVERE CROSSWINDS	DARK
113	16:35	SAT	10-01-16	3	DRY	OVERCAST	DAY
115	20:18	MON	10-03-16	0	DRY	CLEAR	DARK
116	20:34	MON	10-03-16	0	DRY	CLEAR	DARK
117	16:18	WED	10-05-16	0	DRY	CLEAR	DAY
132	18:17	FRI	11-18-16	0	DRY	CLEAR	DUSK
138	12:08	MON	12-05-16	0	DRY	CLEAR	DAY
148	16:48	SAT	12-17-16	0	WET	CLEAR	DUSK
158	17:26	SAT	01-28-17	0	DRY	CLEAR	DARK
169	17:48	FRI	02-10-17	0	WET	CLEAR	DARK
188	20:35	MON	04-03-17	0	DRY	OVERCAST	DARK
189	08:55	WED	04-05-17	0	DRY	CLEAR	DAY

COLLISION DIAGRAM DATA (continued)

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
209	16:01	MON	05-22-17	0	WET	RAIN	DAY
212	10:20	TUE	06-05-17	2	WET	RAIN	DAY
226	23:49	FRI	07-07-17	0	DRY	CLEAR	DARK
234	13:20	TUE	08-08-17	0	DRY	CLEAR	DAY
235	13:24	WED	08-09-17	0	DRY	CLEAR	DAY
252	18:52	MON	09-25-17	0	DRY	CLEAR	DUSK
269	08:22	TUE	12-05-17	0	WET	RAIN	DAY
274	18:05	WED	12-13-17	0	DRY	CLEAR	DAY
280	10:37	THU	12-21-17	0	DRY	CLEAR	DAY
299	09:59	SAT	02-03-18	0	DRY	CLEAR	DAY
304	18:51	MON	02-12-18	0	DRY	CLEAR	DARK
318	13:21	MON	03-12-18	0	DRY	CLEAR	DAY
320	14:43	WED	03-21-18	0	SNOWY	SNOW	DAY
334	17:22	FRI	04-13-18	0	DRY	CLEAR	DAY
343	13:25	FRI	04-27-18	0	WET	OVERCAST	DAY
344	12:02	THU	05-03-18	0	DRY	CLEAR	DAY
345	08:40	SAT	05-05-18	0	DRY	CLEAR	DAY
365	16:25	FRI	05-25-18	0	DRY	CLEAR	DAY
376	12:48	WED	06-20-18	0	DRY	CLEAR	DAY
390	10:52	TUE	07-24-18	0	OIL	RAIN	DAY
410	17:58	THU	09-06-18	0	DRY	OVERCAST	DAY
412	18:04	THU	09-13-18	0	DRY	CLEAR	DAY
423	12:08	SAT	10-20-18	1	DRY	CLEAR	DAY
424	15:16	TUE	10-23-18	0	DRY	CLEAR	DAY
435	18:42	THU	11-15-18	0	SNOWY	SNOW	DARK
436	17:18	FRI	11-16-18	0	DRY	CLEAR	DARK
445	17:31	THU	12-06-18	0	DRY	CLEAR	DARK



RIDGEDALE AVE

RIDGEDALE AVE

**LAFAYETTE AVE
(CR 510 Z)**
← ONE WAY

I 287 SB OFF RAMP
← ONE WAY

I 287 SB ON-RAMP
ONE WAY →

MATCH LINE H
SEE SHEET NO. 9 OF 11

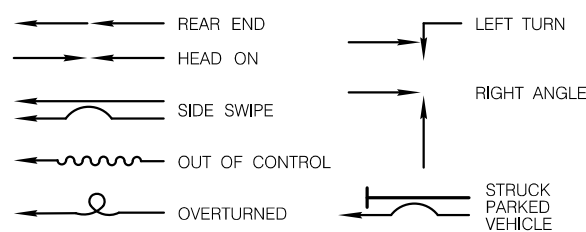
LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	<u>50</u>
INJURIES	<u>3</u>
FATALITIES*	<u>0</u>
TOTAL NO. OF CRASHES	<u>53</u>

SYMBOLS	
→	MOVING VEHICLE
←	BACKING VEHICLE
---	NON-INVOLVED VEHICLE
x - - -	PEDESTRIAN
- - -	BICYCLIST
○	PROPERTY DAMAGE ONLY CRASH
⊙	INJURY IN CRASH
⊕	FATAL CRASH
□	FIXED OBJECT
△	ANIMAL
⊗	NON-FIXED OBJECT
⊘	POTHOLE

TYPES OF CRASHES



COLORS

- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
10	12:45	SAT	01-30-16	0	WET	CLEAR	DAY
15	08:04	WED	02-10-16	0	DRY	CLEAR	DAY
130	08:13	THU	11-17-16	0	DRY	CLEAR	DAY
191	14:54	SAT	04-08-17	0	DRY	CLEAR	DAY
244	17:53	WED	09-06-17	0	WET	RAIN	DAY
291	10:35	TUE	01-16-18	0	DRY	CLEAR	DAY
297	19:07	THU	02-01-18	0	WET	RAIN	DARK
330	17:55	SUN	04-08-18	0	DRY	CLEAR	DAY
357	10:19	WED	05-16-18	0	DRY	OVERCAST	DAY
395	10:35	THU	08-02-18	0	DRY	CLEAR	DAY
413	18:54	THU	09-13-18	0	DRY	CLEAR	DAY
418	18:05	WED	09-26-18	0	DRY	CLEAR	DUSK



LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	12
INJURIES	0
FATALITIES*	0
TOTAL NO. OF CRASHES	12

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

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

COLORS	
	2016 CRASHES
	2017 CRASHES
	2018 CRASHES

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NDDOT_HSP_Year_2_Catchway_03_Morris\Collision_Diagram_Sheets\Vehicle_Sheet_11.dgn
DATE: 11/02/2018
TIME: 12:16:29 PM
GREENMAN-PEDERSEN, INC.

APPENDIX E

PEDESTRIAN CRASH DIAGRAMS

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
2	18:19	MON	04-14-14	1	DRY	CLEAR	DAY
8	06:59	WED	08-05-15	0	DRY	CLEAR	DAY
14	19:03	TUE	01-24-17	1	WET	RAIN	DARK



MATCH LINE A
SEE SHEET NO. 2 OF 9

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>1</u>
INJURIES	<u>2</u>
FATALITIES	<u>0</u>
TOTAL NO. OF CRASHES	<u>3</u>

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	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

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

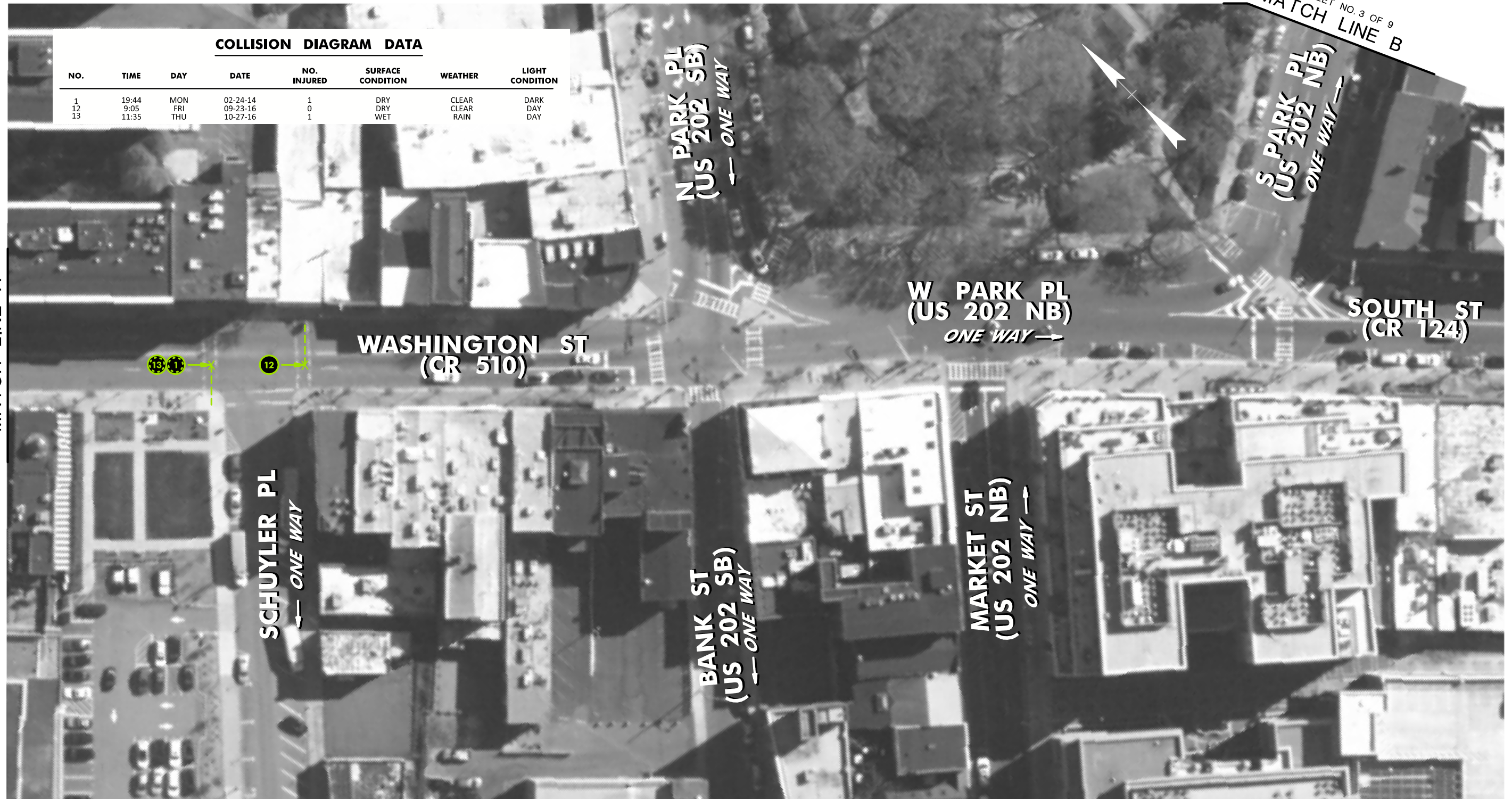
NOT TO SCALE

DATE: 11/02/2018 TIME: 12:05:31 PM FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_Catchway_03_Morris\Collision_Diagram_Sheets\Pedestrian\Sheet 01 - post.dgn

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NDCOT_HSP_Year_2_Catchway_03_Morris\Collision_Diagram_Sheets\Pedestrian\Sheet 02 - ped.dgn
 DATE: 11/02/2018
 TIME: 12:06:28 PM

SEE SHEET NO. 1 OF 9
 MATCH LINE A

SEE SHEET NO. 3 OF 9
 MATCH LINE B



COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
1	19:44	MON	02-24-14	1	DRY	CLEAR	DARK
12	9:05	FRI	09-23-16	0	DRY	CLEAR	DAY
13	11:35	THU	10-27-16	1	WET	RAIN	DAY

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>1</u>
INJURIES	<u>2</u>
FATALITIES	<u>0</u>
TOTAL NO. OF CRASHES	<u>3</u>

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	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

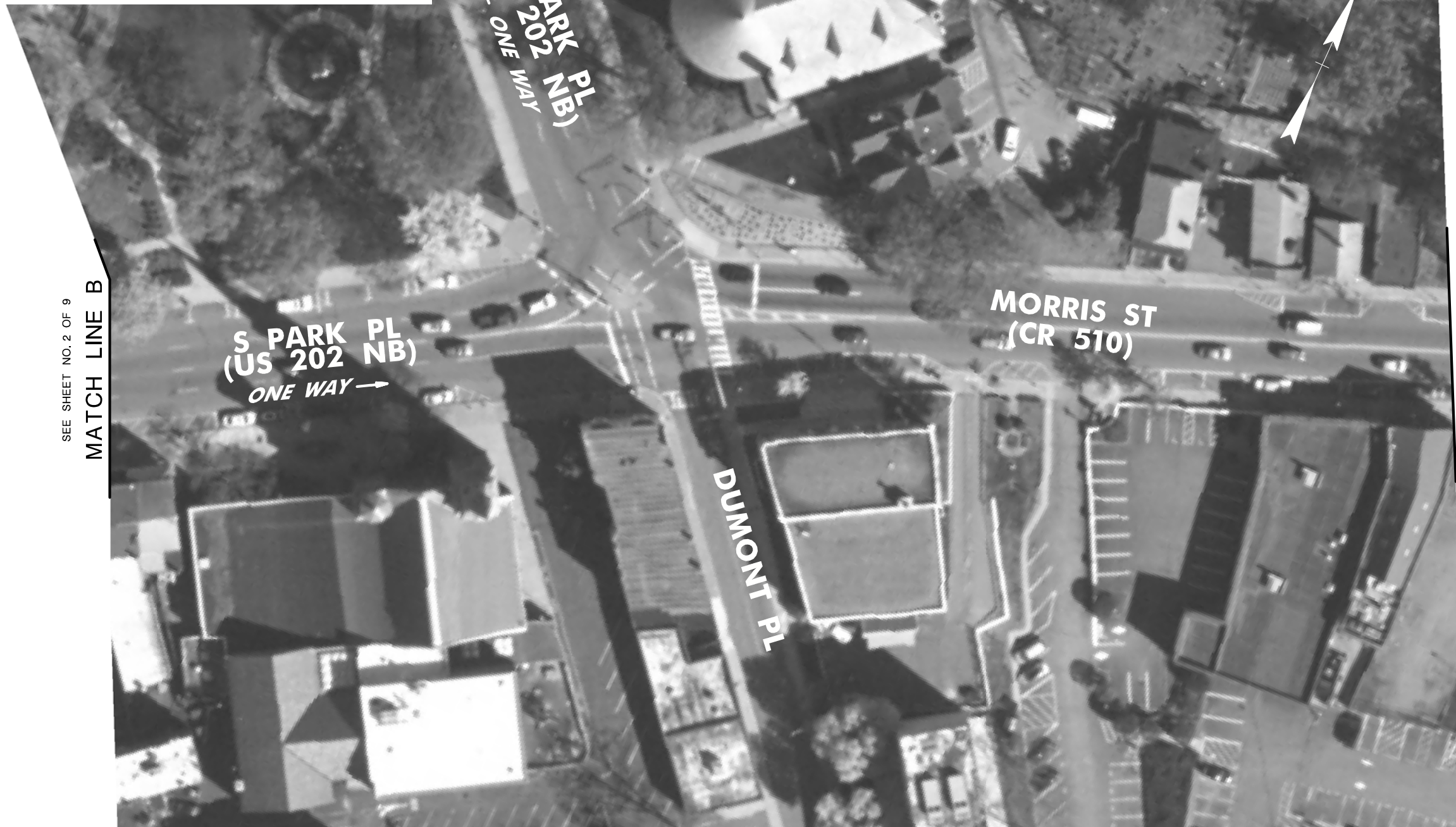
CR 510 (WASHINGTON ST/MORRIS ST),
 CR 510Z (LAFAYETTE AVE) &
 RIDGEDALE AVE
 MORRISTOWN TOWN, MORRIS COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

Engineering Design Planning Construction Management	NOT TO SCALE
--	--------------

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION



SEE SHEET NO. 2 OF 9
MATCH LINE B

MATCH LINE C
SEE SHEET NO. 4 OF 9

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	0
INJURIES	0
FATALITIES	0
TOTAL NO. OF CRASHES	0

SYMBOLS

	MOVING VEHICLE		BICYCLIST
	BACKING VEHICLE		PROPERTY DAMAGE ONLY CRASH
	NON-INVOLVED VEHICLE		INJURY IN CRASH
	PEDESTRIAN		FATAL CRASH
	FIXED OBJECT		ANIMAL
	NON-FIXED OBJECT		POTHOLE

TYPES OF CRASHES

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

COLORS

PEDESTRIAN CRASH

3
9

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NDCOT_HSP_Year_2_Catchway\03_Morris\Collision_Diagram_Sheets\Pedestrian\Sheet 03 - ped.dgn
DATE: 11/02/2018
TIME: 12:07:14 PM
GREENMAN-PEDERSEN, INC.

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NDOT_HSP_Year_2_Catchway_03_Morris\Collision_Diagram_Sheets\Pedestrian\Sheet 04 - ped.dgn
 DATE: 11/02/2018
 TIME: 12:07:56 PM
 GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
15	00:23	FRI	07-07-17	1	DRY	CLEAR	DARK



LEGEND

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

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES	
	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

CR 510 (WASHINGTON ST/MORRIS ST),
 CR 510Z (LAFAYETTE AVE) &
 RIDGEDALE AVE
 MORRISTOWN TOWN, MORRIS COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design
 Planning Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
5	23:05	FRI	06-06-14	0	DRY	CLEAR	DARK
6	14:35	SUN	04-26-15	1	DRY	CLEAR	DARK
11	18:24	WED	07-27-16	1	DRY	CLEAR	DAY



MATCH LINE D
SEE SHEET NO. 4 OF 9

MATCH LINE F
SEE SHEET NO. 6 OF 9

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	1
INJURIES	2
FATALITIES	0
TOTAL NO. OF CRASHES	3

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POTHOLE

TYPES OF CRASHES

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

COLORS	
	PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NDDOT_HSP_Year_2_Catchway\03_Morris\Collision_Diagram_Sheets\Pedestrian\Sheet 05 - ped.dgn
DATE: 11/02/2018
TIME: 12:19:54 PM
GREENMAN-PEDERSEN, INC.



MATCH LINE F
SEE SHEET NO. 5 OF 9

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	0
INJURIES	0
FATALITIES	0
TOTAL NO. OF CRASHES	0

SYMBOLS

	MOVING VEHICLE		BICYCLIST
	BACKING VEHICLE		PROPERTY DAMAGE ONLY CRASH
	NON-INVOLVED VEHICLE		INJURY IN CRASH
	FATAL CRASH		ANIMAL
	FIXED OBJECT		POTHOLE
	NON-FIXED OBJECT		

TYPES OF CRASHES

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

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE

COLLISION DIAGRAM DATA							
NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
7	09:23	WED	06-10-15	0	DRY	CLEAR	DAY
9	16:29	WED	09-02-15	1	DRY	CLEAR	DAY
10	17:42	TUE	12-29-15	0	WET	OVERCAST	DARK



SEE SHEET NO. 9 OF 9
MATCH LINE I

MATCH LINE G
SEE SHEET NO. 6 OF 9

LEGEND

NUMBER OF CRASHES WITH	
PROPERTY DAMAGE ONLY	<u>2</u>
INJURIES	<u>1</u>
FATALITIES	<u>0</u>
TOTAL NO. OF CRASHES	<u>3</u>

SYMBOLS	
	MOVING VEHICLE
	BACKING VEHICLE
	NON-INVOLVED VEHICLE
	PEDESTRIAN
	BICYCLIST
	PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH
	FATAL CRASH
	FIXED OBJECT
	ANIMAL
	NON-FIXED OBJECT
	POT HOLE

TYPES OF CRASHES	
	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

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering Design Planning Construction Management

NOT TO SCALE

FILE: L:\2017659_HSP_Program_and_Project_Development_Support\NJDOT_HSP_Year_2_Catchway_03_Morris\Collision_Diagram_Sheets\Pedestrian_Sheet_07 - ped.dgn
DATE: 11/02/2018
TIME: 12:02:12 PM
GREENMAN-PEDERSEN, INC.

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
3	07:16	FRI	05-09-14	1	DRY	CLEAR	DAY
4	19:34	WED	06-04-14	1	DRY	CLEAR	DAY



LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	0
INJURIES	2
FATALITIES	0
TOTAL NO. OF CRASHES	2

SYMBOLS

	MOVING VEHICLE		BICYCLIST
	BACKING VEHICLE		BICYCLIST
	NON-INVOLVED VEHICLE		PROPERTY DAMAGE ONLY CRASH
	PEDESTRIAN		INJURY IN CRASH
	PROPERTY DAMAGE ONLY CRASH		FATAL CRASH
	FIXED OBJECT		ANIMAL
	NON-FIXED OBJECT		POTHOLE

TYPES OF CRASHES

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

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

NOT TO SCALE

DATE: 11/02/2018 TIME: 12:05:4 PM FILE: L:\2017659_HSP_Program_and_Project_Development\Support\NJDOT_HSP_Year_2_Catchway_03_Morris\Collision_Diagram_Sheets\Pedestrian\Sheet_08 - ped.dgn

MATCH LINE H
SEE SHEET NO. 7 OF 6

COLLISION DIAGRAM DATA

NO.	TIME	DAY	DATE	NO. INJURED	SURFACE CONDITION	WEATHER	LIGHT CONDITION
-	-	-	-	-	-	-	-



MATCH LINE E
SEE SHEET NO. 4 OF 9

MATCH LINE I
SEE SHEET NO. 7 OF 9

MORRISTOWN RAIL STATION

LEGEND

NUMBER OF CRASHES WITH

PROPERTY DAMAGE ONLY	0
INJURIES	0
FATALITIES	0
TOTAL NO. OF CRASHES	0

SYMBOLS

	MOVING VEHICLE		NON-INVOLVED VEHICLE
	BACKING VEHICLE		BICYCLIST
	PEDESTRIAN		PROPERTY DAMAGE ONLY CRASH
	INJURY IN CRASH		FATAL CRASH
	FIXED OBJECT		ANIMAL
	NON-FIXED OBJECT		POTHOLE

TYPES OF CRASHES

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

COLORS

PEDESTRIAN CRASH

NEW JERSEY DEPARTMENT OF TRANSPORTATION

CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2014-2018 PEDESTRIAN COLLISION DIAGRAMS

GPI Engineering
Design
Planning
Construction Management

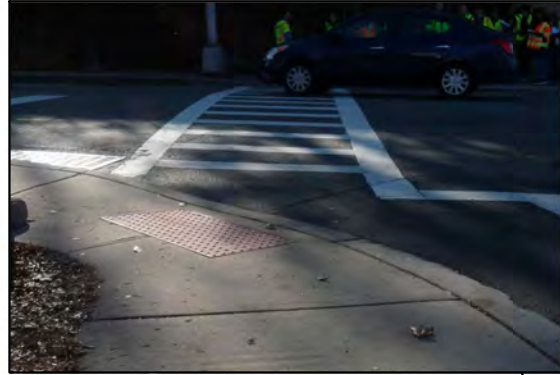
NOT TO SCALE

9
9

APPENDIX F

SITE PHOTOGRAPHS

Large pavement area increases pedestrian crossing time and vehicle turning speeds



Vegetation overgrown onto sidewalk limits usable width



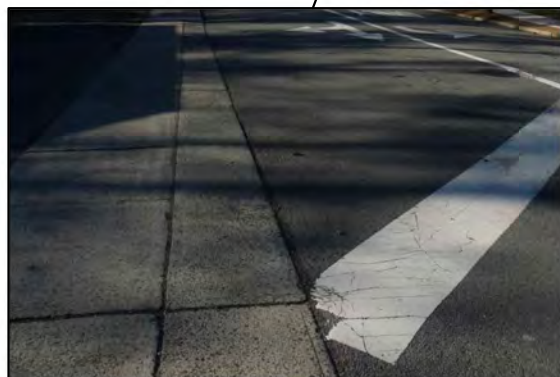
Signal heads are difficult to see and all red clearance time not provided (side street to mainline phase change)



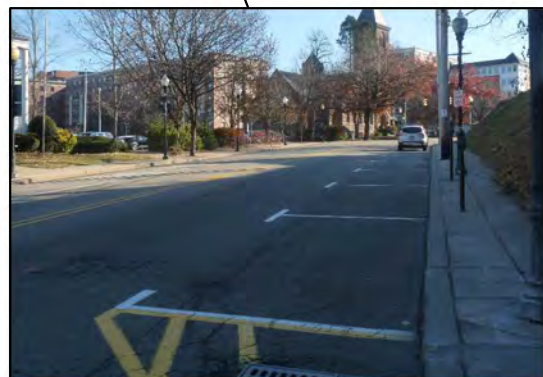
Vertical geometry may limit sight distance of and for pedestrians and of queued vehicles



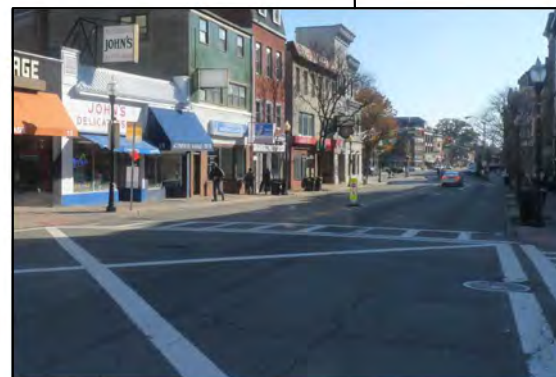
Queued vehicles blocking intersection and can limit visibility of crosswalks



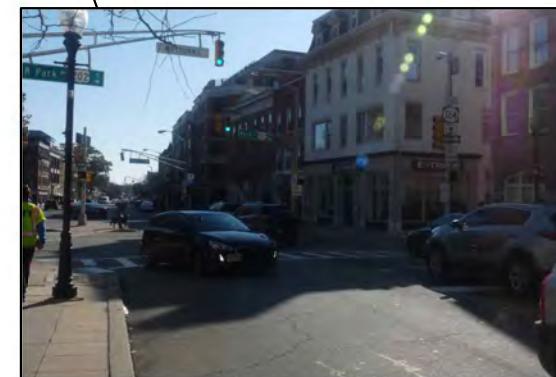
Large/wide driveway extending into pedestrian area is not well defined



Parking spaces used as through lane until 9:30 AM may cause motorist confusion



Do Not Block Box striping may reduce prominence of crosswalks



While excluded from RSA, Morristown Green operations affect the adjacent RSA roads

LEGEND

- PROJECT CORRIDOR
- SIGNALIZED INTERSECTIONS**
- NJDOT
- MORRISTOWN
- OUTSIDE SCOPE

1
3

**NJDOT HSIP – ROAD SAFETY AUDIT
CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE**
MORRISTOWN TOWN, MORRIS COUNTY

SITE PHOTOGRAPHS



GPI Engineering
Design
Planning
Construction Management

N.T.S.

Lane use approaching next intersection not clear; curb ramp lacks detectable warning surface



Narrow sidewalk width in high-use pedestrian area



Roadway alignment limits visibility of and for pedestrians; wide pavement may promote speeding



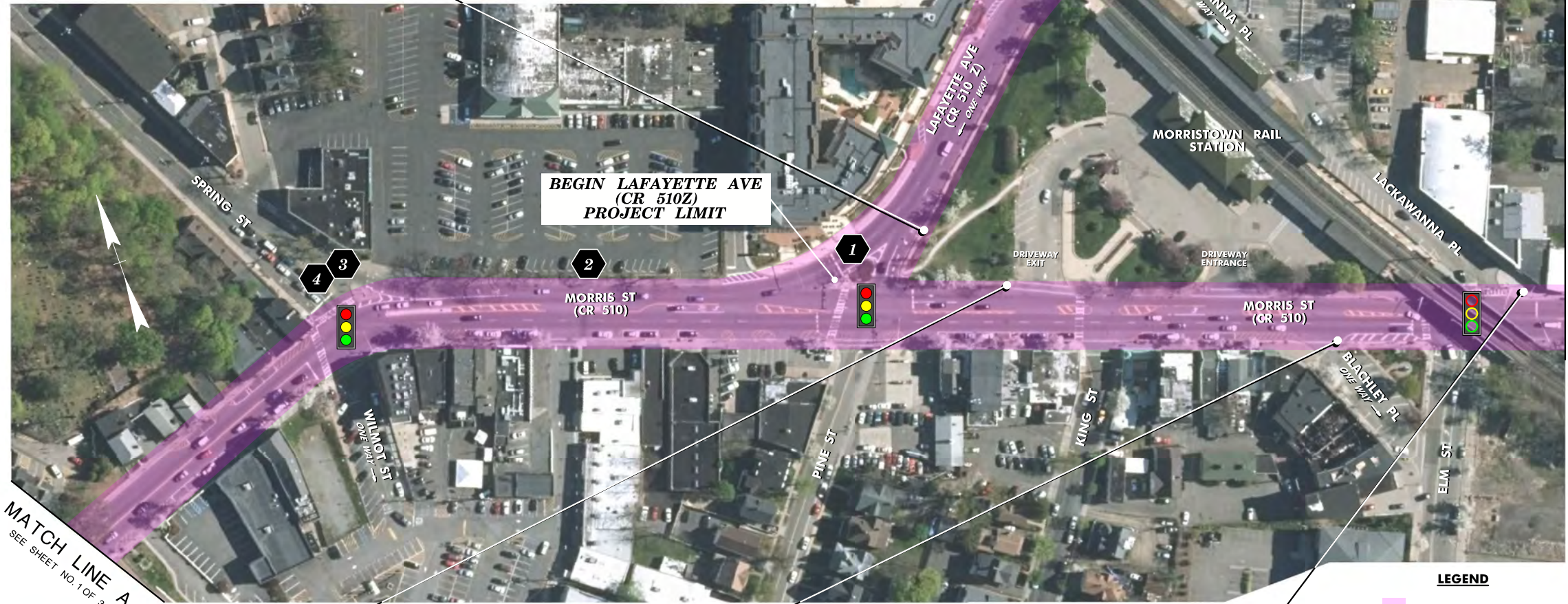
Worn pavement markings do not alert drivers to exclusive lane use



Vehicles exiting driveway cross gore area to left/through lane

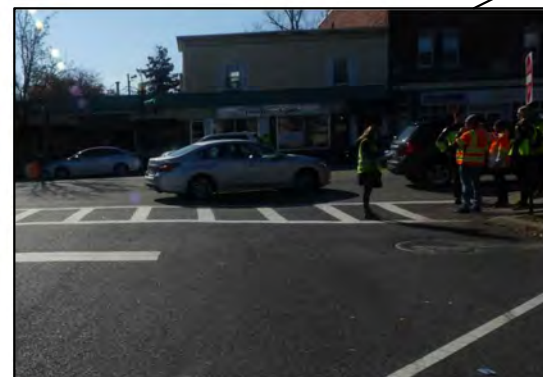


Median and channelized island shapes create narrow turning area

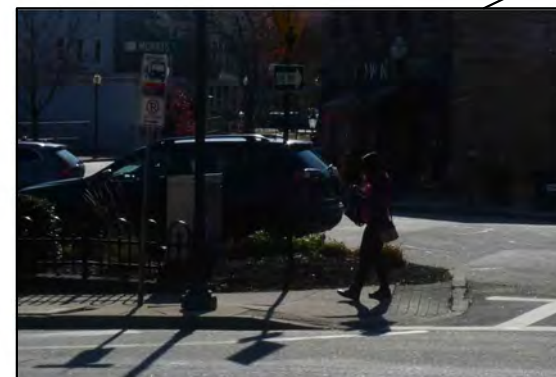


MATCH LINE A
SEE SHEET NO. 1 OF 3

MATCH LINE B
SEE SHEET NO. 3 OF 3



Wide driveway opening increases pedestrian crossing and may cause side-by-side vehicles blocking view



Curb ramp not ADA compliant



Train bridge obstructs intersection visibility

LEGEND

- PROJECT CORRIDOR
- SIGNALIZED INTERSECTIONS**
- NJDOT
- MORRISTOWN
- OUTSIDE SCOPE

<p>NJDOT HSIP – ROAD SAFETY AUDIT CR 510 (WASHINGTON ST/MORRIS ST), CR 510Z (LAFAYETTE AVE) & RIDGEDALE AVE</p> <p>MORRISTOWN TOWN, MORRIS COUNTY</p>	
<p>SITE PHOTOGRAPHS</p>	
	<p style="font-size: 8px;">Engineering Design Planning Construction Management</p>
<p>N.T.S.</p>	

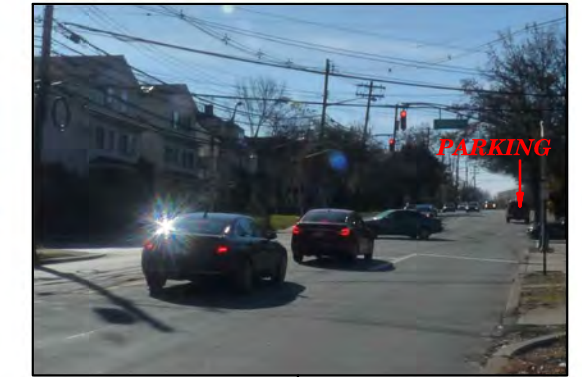
Driveway in close proximity to intersection; queues from signal may block side street; curb ramps not ADA compliant



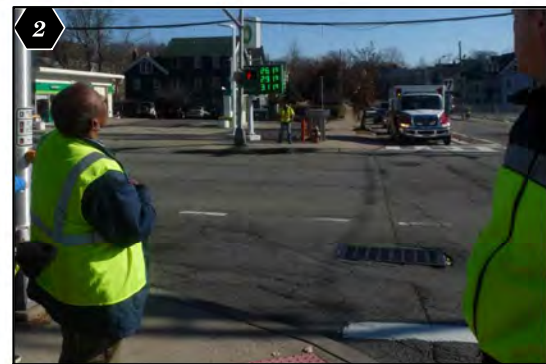
Roadway alignment limits visibility of and for pedestrians; wide pavement may promote speeding



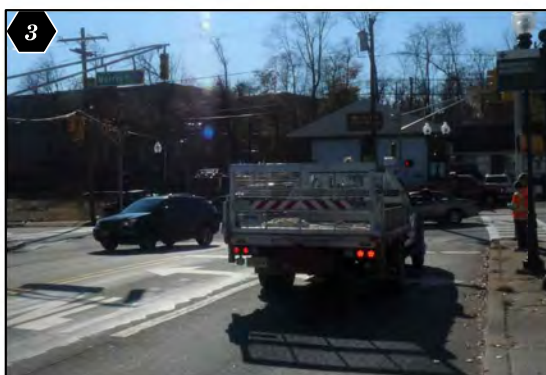
Two approach lanes with no lane use and one receiving lane



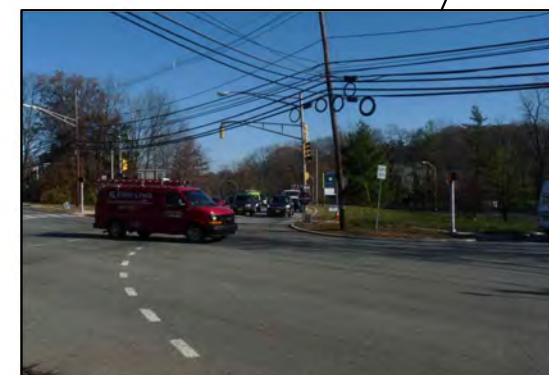
Only one trailblazer assembly is provided to direct motorists to I-287



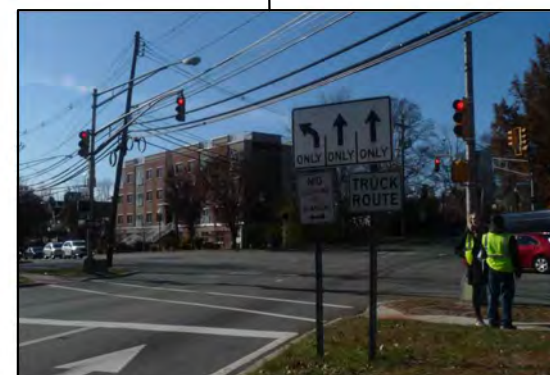
Curb ramps and marked crosswalk not provided along Ridgedale approach despite existing pedestrian signal head



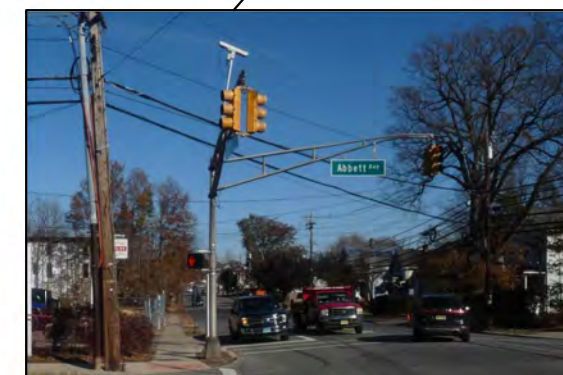
Large pavement area increases pedestrian crossing time and vehicle turning speeds



Wide intersection due to ramp separation; turning vehicles may use opposing lane space



Traffic signal equipment outdated; signal head per lane not provided; track lines may be confusing



Traffic signal equipment outdated; signal head per lane not provided

LEGEND

PROJECT CORRIDOR

SIGNALIZED INTERSECTIONS

NJDOT MORRISTOWN OUTSIDE SCOPE

3	3
---	---

NJDOT HSIP – ROAD SAFETY AUDIT
CR 510 (WASHINGTON ST/MORRIS ST),
CR 510Z (LAFAYETTE AVE) &
RIDGEDALE AVE
 MORRISTOWN TOWN, MORRIS COUNTY

SITE PHOTOGRAPHS

Engineering Design Planning Construction Management

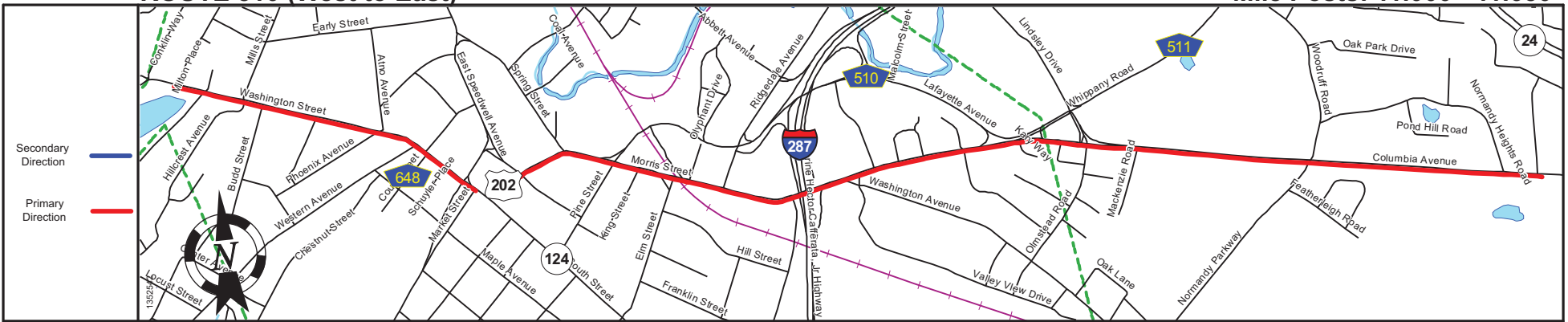
N.T.S.

APPENDIX G

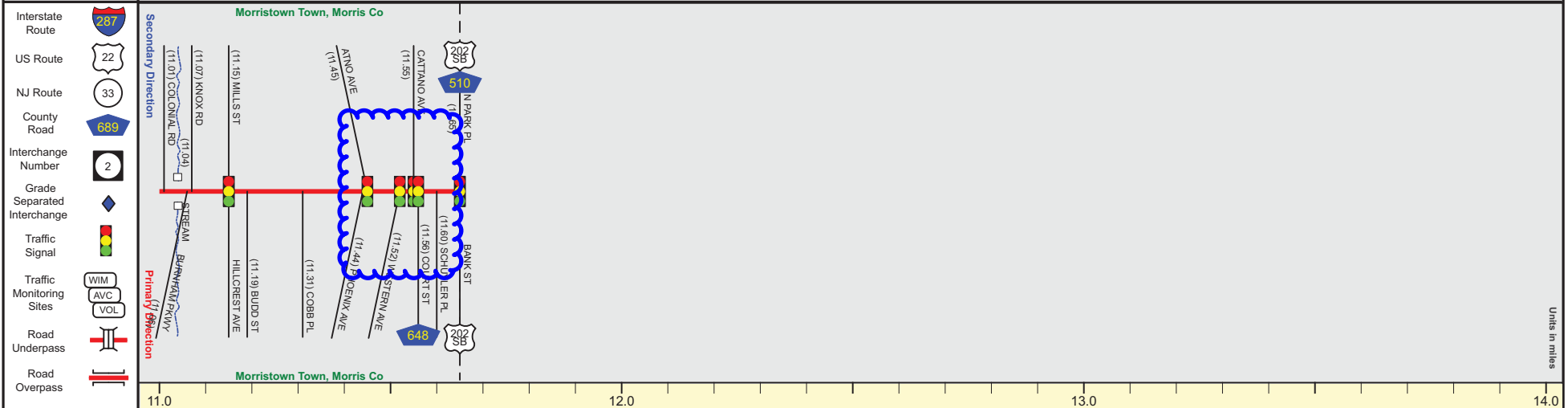
STRAIGHT LINE DIAGRAMS

ROUTE 510 (West to East)

Mile Posts: 11.000 - 11.650



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name	Washington Street	
Jurisdiction	County	
Functional Class	Urban Minor Arterial	
Federal Aid - NHS Sy	STP	
Control Section		
Speed Limit	25	
Number of Lanes	2	3
Med. Type	None	
Med. Width	0	
Pavement	40	
Shoulder	0	
Traffic Volume	16,702 (2017)	
Traffic Sta. ID	1-4-418	
Structure No.		
Enlarged Views	See Enlarged View #10	

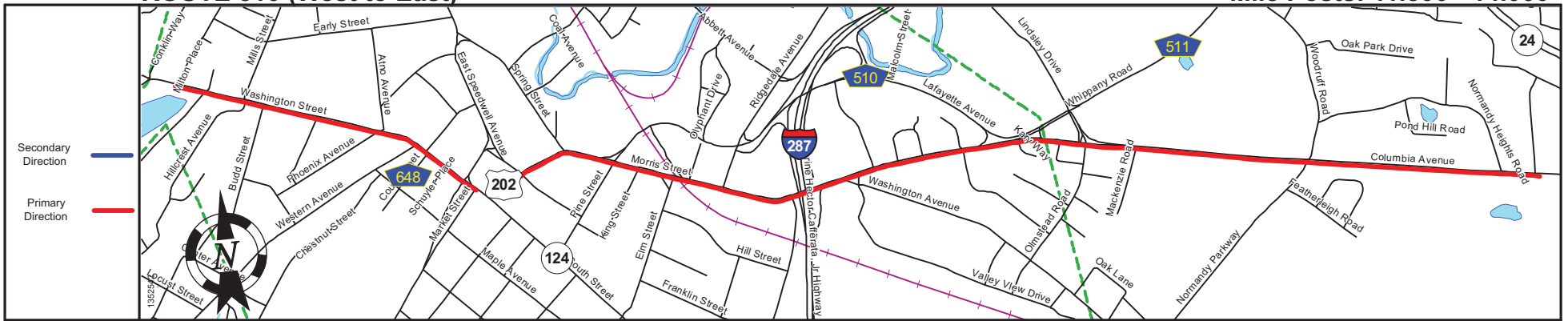
MP 11.65-11.80 See Rea. 202 MP 4.40-4.60
Begin Cont. with R. 202 MP 4.450

SRI = 0000510__

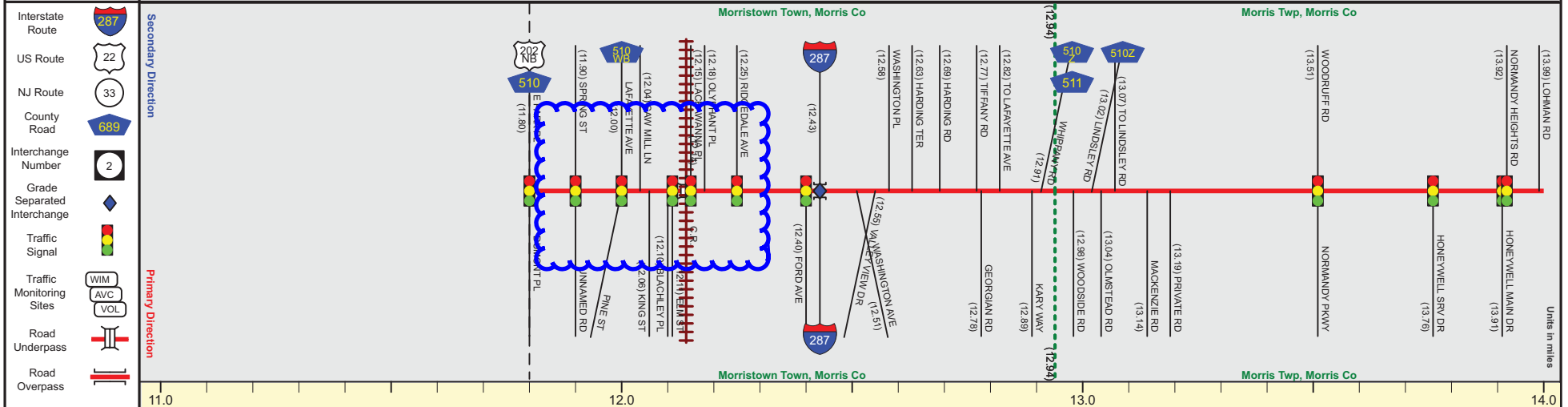
Date last inventoried: July 2012

ROUTE 510 (West to East)

Mile Posts: 11.800 - 14.000



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



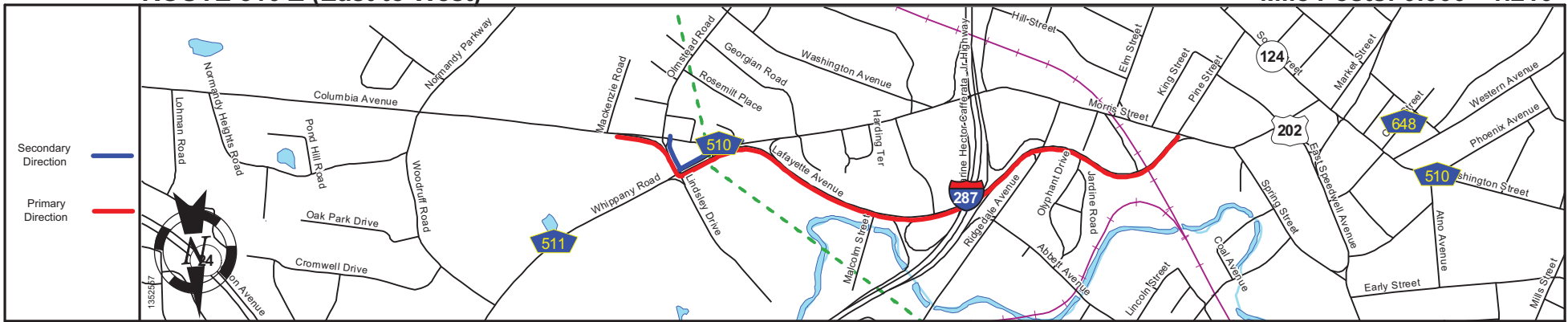
Street Name		Morris Street		Columbia Avenue	
Jurisdiction			County		
Functional Class			Urban Principal Arterial		
Federal Aid - NHS Sy			NHS		
Control Section					
Speed Limit			25		40
Number of Lanes		2	3	2	4
Med. Type				None	
Med. Width				0	
Pavement		49	54	40	34
Shoulder					0
Traffic Volume		30,496 (2016)			
Traffic Sta. ID		141403			
Structure No.			1419178		
Enlarged Views			See Enlarged View #10		

SRI = 0000510_

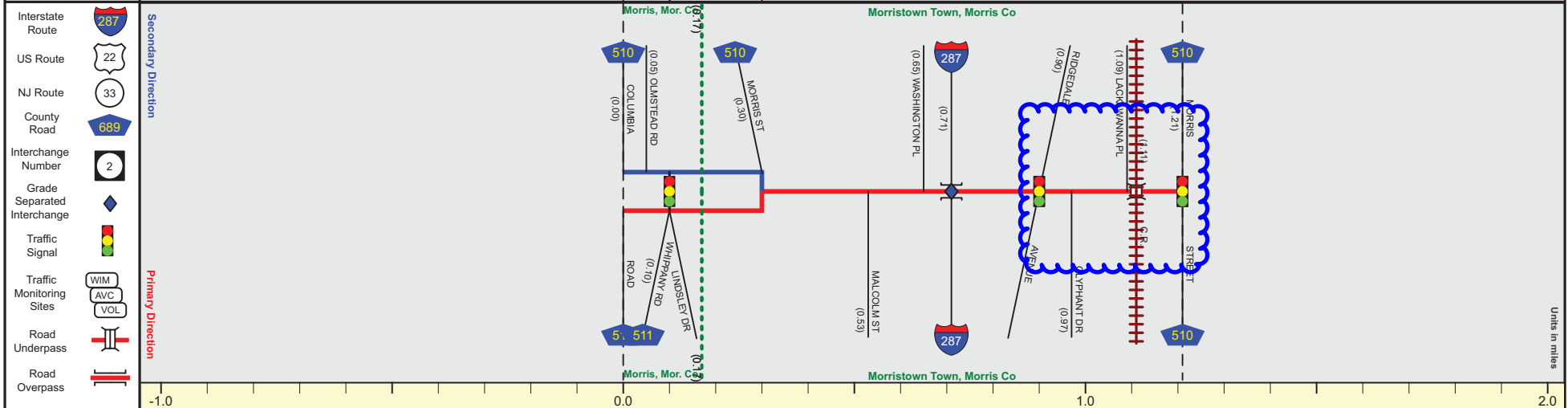
Date last inventoried: July 2012

ROUTE 510 Z (East to West)

Mile Posts: 0.000 - 1.210



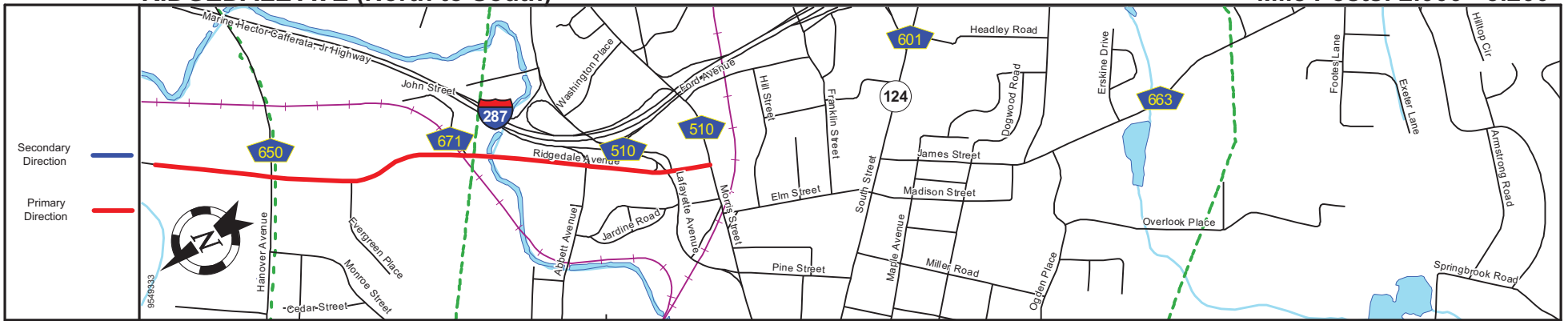
Pavement	26
Shoulder	0
Number of Lanes	1
Speed Limit	25
Street Name	Columbia Turnpike - Whippany Road



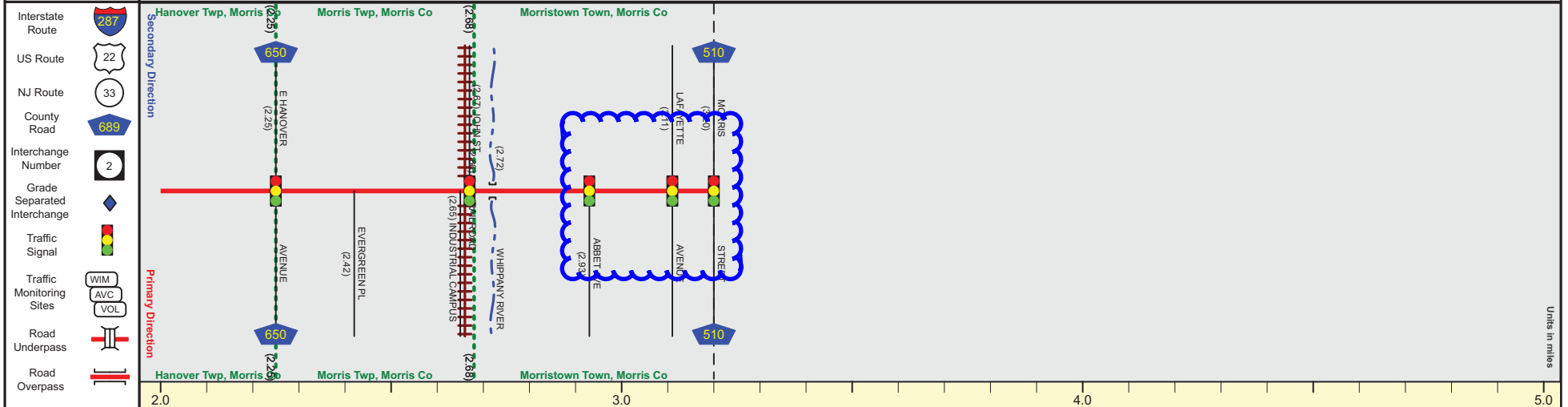
Street Name	Columbia Turnpike - Whippany Road	Lafayette Avenue	
Jurisdiction		County	
Functional Class		Urban Principal Arterial	
Federal Aid - NHS Sy		NHS	
Control Section	Bgin Rt. 510 Westbound MP=0.00	End Rt. 510 Westbound MP=1.21	
Speed Limit	25	40	30
Number of Lanes	1	2	3
Med. Type	Curbed		None
Med. Width	VAR		0
Pavement	26	36	38
Shoulder		0	
Traffic Volume			
Traffic Sta. ID			
Structure No.		1419179	
Enlarged Views			

SRI = 0000510Z_

Date last inventoried: July 2012



Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	



Street Name	Ridgedale Avenue			
Jurisdiction	Municipal			
Functional Class	Urban Minor Arterial			
Federal Aid - NHS Sy	STP			
Control Section				End Ridgedale Ave MP=3.20
Speed Limit	40	35	25	
Number of Lanes	4	3	2	
Med. Type	None			
Med. Width	0			
Pavement	60	48		
Shoulder	0			
Traffic Volume	17,596 (2018)			
Traffic Sta. ID	n18306			
Structure No.	1400121			
Enlarged Views				

APPENDIX H

PRE-AUDIT PRESENTATION

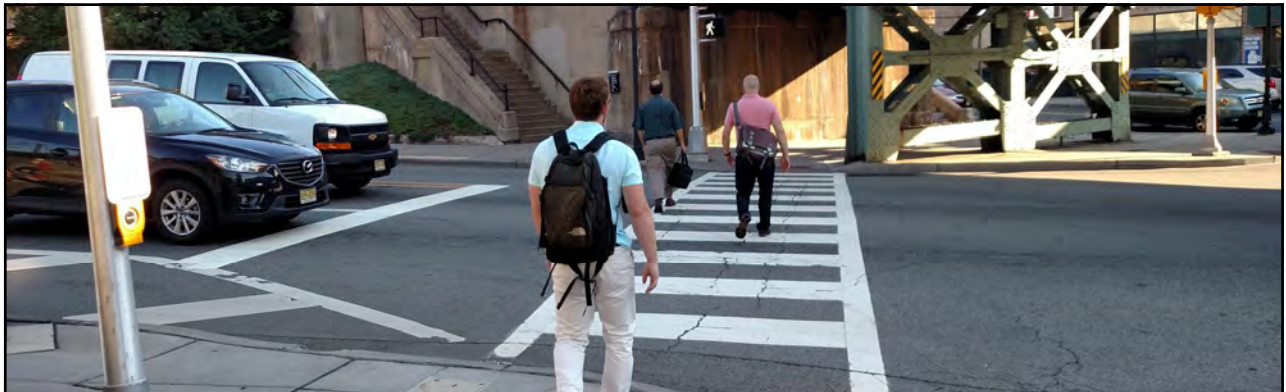


ROAD SAFETY AUDIT

- **CR 510 (WASHINGTON ST/MORRIS ST)**, PHOENIX AVE TO BANK ST & US 202 NB (EAST PARK PL/DUMONT PL) TO RIDGEDALE AVE;
- **CR 510Z (LAFAYETTE AVE)**, CR 510 (MORRIS ST) TO RIDGEDALE AVE; AND
- **RIDGEDALE AVE**, CR 510 (MORRIS ST) TO ABBETT AVE.

MORRISTOWN TOWN,
MORRIS COUNTY

NOVEMBER 21, 2019



AUDIT TEAM



NJDOT



NJTPA
NJTPA



Morris County



Morristown Town



FUNDED BY FEDERAL HIGHWAY ADMINISTRATION AND NJDOT

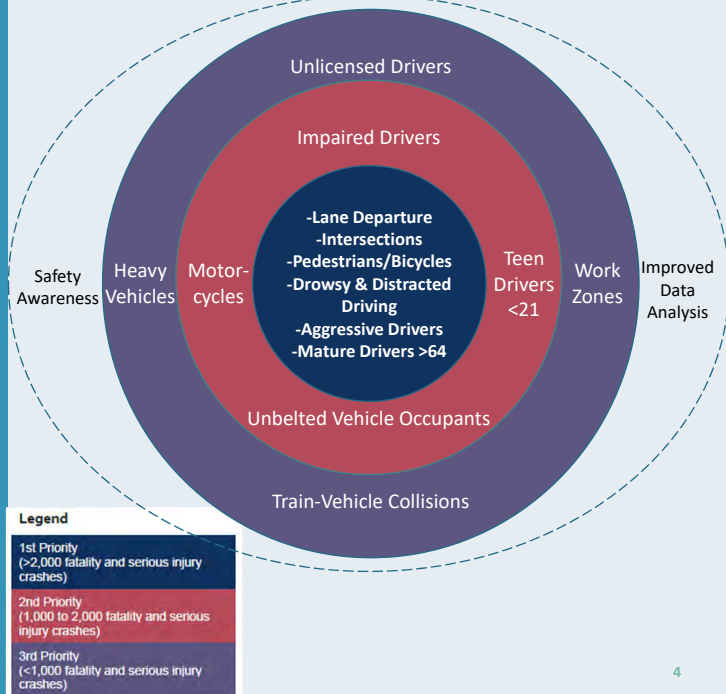
PRESENTED BY GREENMAN-PEDERSEN, INC., NJDOT CONSULTANT

Today's Schedule

- 9:30a
 - 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 (HSIP)

- 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 about \$57M



HSIP/LOCAL SAFETY PROGRAM

MAIN GOAL: Reduce serious injury and fatality (K+A) crashes on all of NJ's public roads

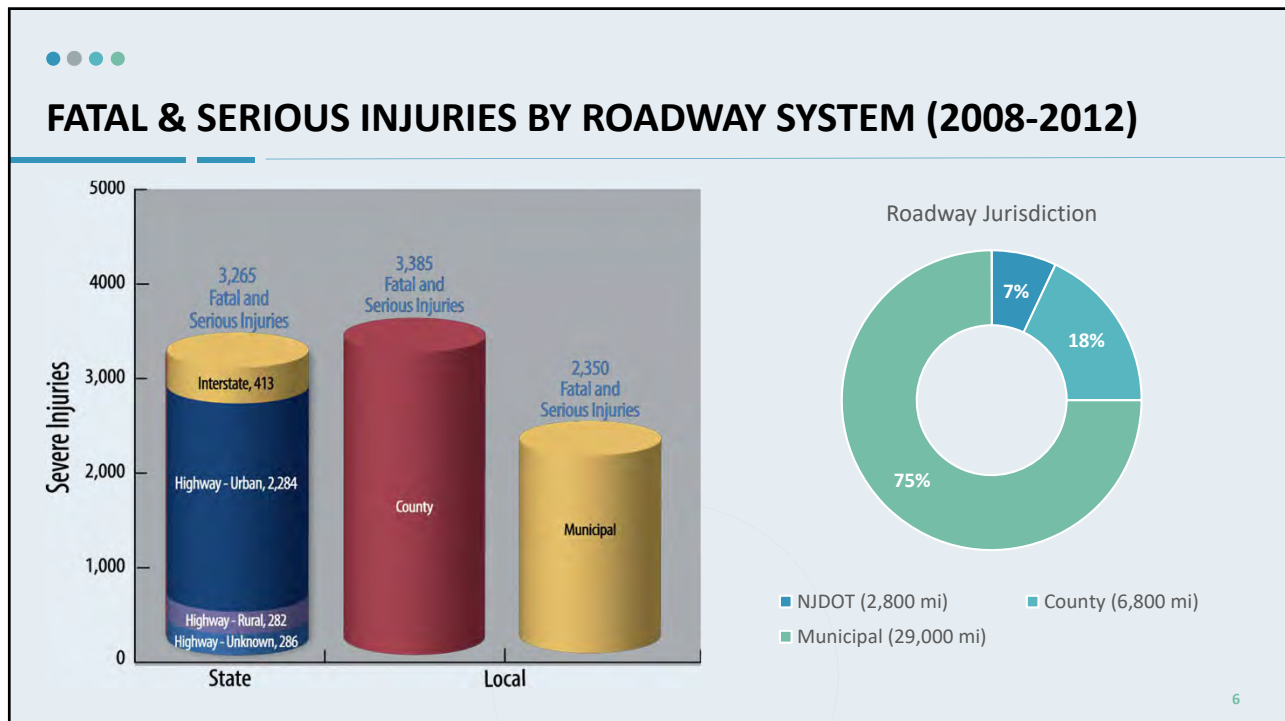
Program Goals

- Toward zero deaths on all public roads
- Performance-based goals consistent with SHSP
- Data-driven, strategic approach to improving highway safety

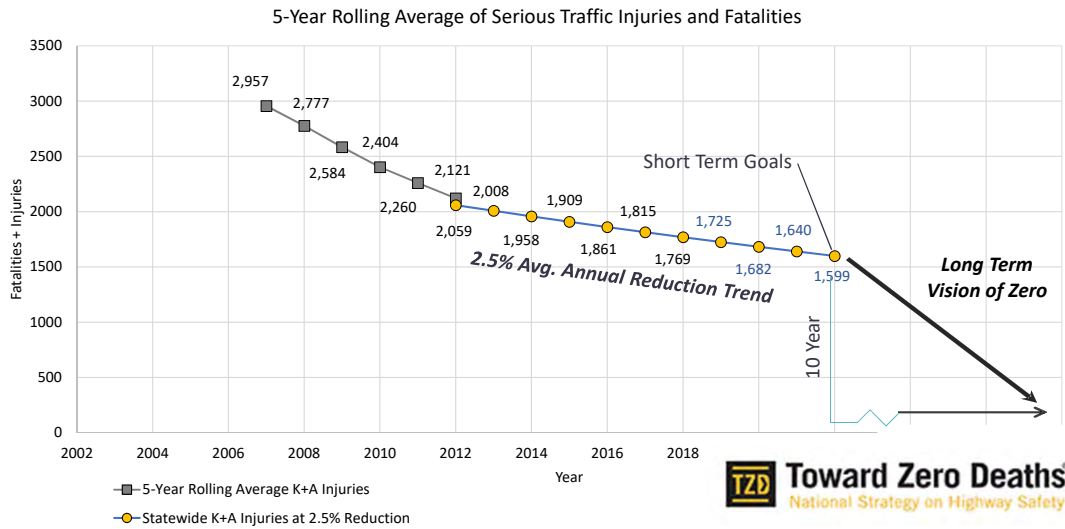
Local Safety Program (LSP)

- NJDOT support
 - Dedication of HSIP funds
 - Technical assistance
 - Screening lists for MPOs
 - **Road Safety Audits**
- MPOs support
 - Local Road Safety
 - High Risk Rural Roads
 - CD/PE/FD Assistance Program

5



NATIONAL STRATEGY – TOWARD ZERO DEATHS



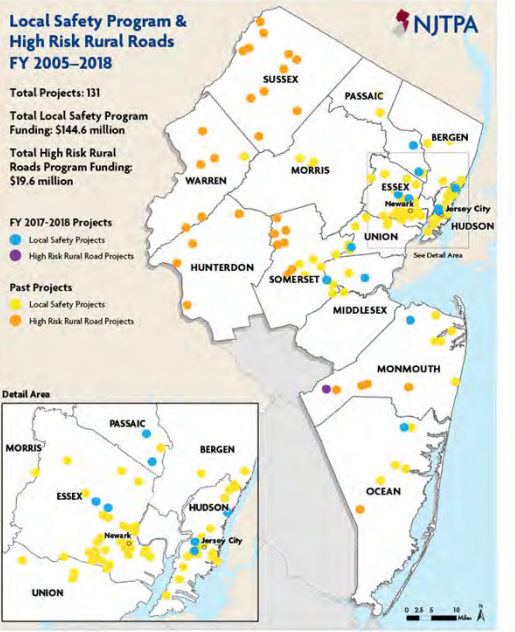
7

Local Safety Program & High Risk Rural Roads FY 2005–2018

Total Projects: 131
 Total Local Safety Program Funding: \$144.6 million
 Total High Risk Rural Roads Program Funding: \$19.6 million

FY 2017-2018 Projects
 ● Local Safety Projects
 ● High Risk Rural Road Projects

Past Projects
 ● Local Safety Projects
 ● High Risk Rural Road Projects




FEDERAL TRANSPORTATION FUNDING

- Local Safety and High Risk Rural Roads Programs
 - \$145+ million in funding 2005-18 on County / Local Roadways
 - Relatively quick-fix safety improvements
- HSIP funds – emphasizes 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 officials and stakeholders with opportunities to comment and ask questions

8


RSA PURPOSE

Formal safety performance examination by an independent, multidisciplinary audit team that identifies safety improvement opportunities for all road users.



Benefits


- Pro-actively address safety; reduce crashes
- Identify low-cost/high-value improvements
- 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 meant to replace

- Design quality control
- Standard compliance
- Traffic or safety impact studies
- Safety conscious planning
- Road safety inventory programs
- Traffic safety modeling efforts

9



The flowchart illustrates the RSA process through eight sequential steps, each with a corresponding icon: 1. Identify Project (map icon), 2. Select RSA Team (network icon), 3. Conduct Startup Meeting (meeting icon), 4. Perform Field Reviews (camera icon), 5. Analyze/Report Findings (bar chart icon), 6. Present Findings (presentation icon), 7. Prepare Formal Response (person at desk icon), and 8. Incorporate Findings (laptop icon).

RSA PROCESS

Responsibilities:

Steps 1-2 & 7-8: Design Team/Road Owner

Steps 3-6: RSA Team

10

FHWA PROVEN SAFETY COUNTERMEASURES

20 countermeasures

Descriptions provided in handouts



FHWA PROVEN SAFETY COUNTERMEASURES

- Clockwise from top:
 - Roundabout, Chesterfield Township, Burlington County
 - Backplates with Retroreflective Borders, Statewide
 - Road diet, Maplewood Township, Essex County
 - Pedestrian Hybrid Beacon (HAWK), Ocean City, Cape May County





ADDITIONAL CONSIDERATIONS

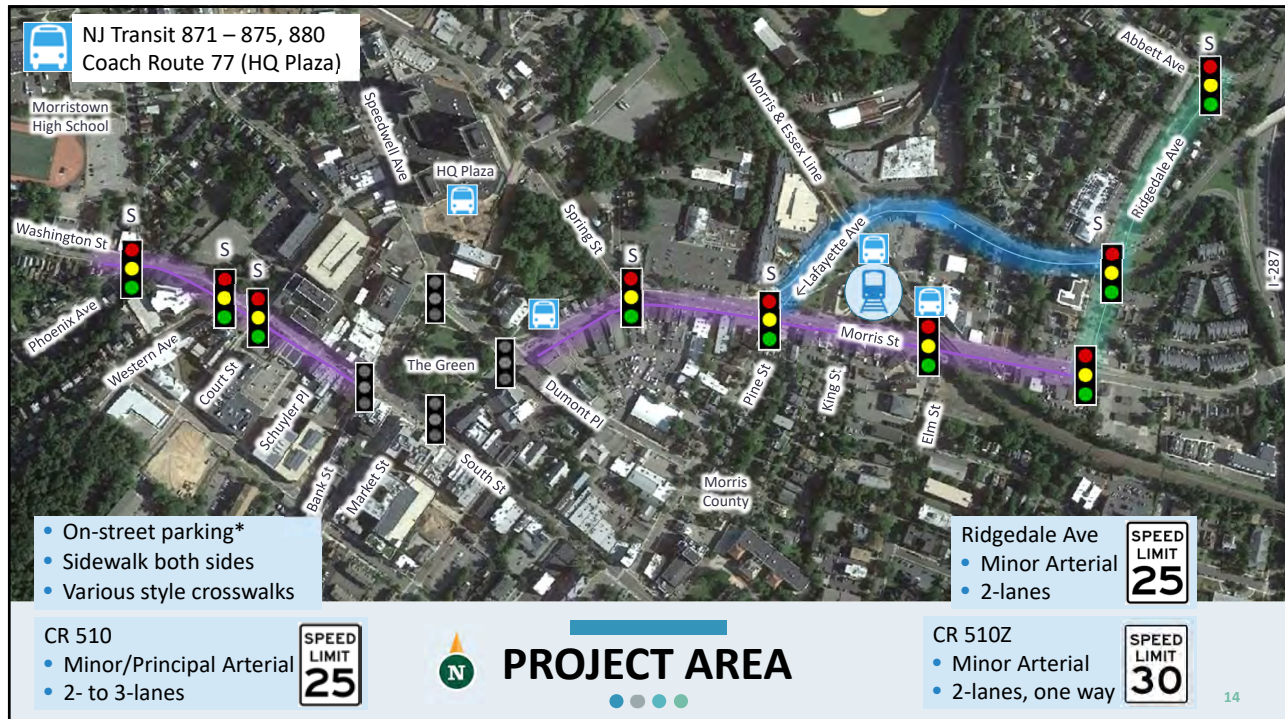
Curb Extensions
Hoboken City, Hudson County



Enhanced signing / pedestrian crossings
Bellevue City, WA



13



14



PROJECT AREA

- Clockwise from top:
 - Ongoing mixed-use redevelopment and pedestrian generators
 - Recent and ongoing studies on mobility and operations
 - NJ Transit Train Station, Morris & Essex Line and bus routes
 - Master Plan, bicycle and mobility plans, Complete Streets policy

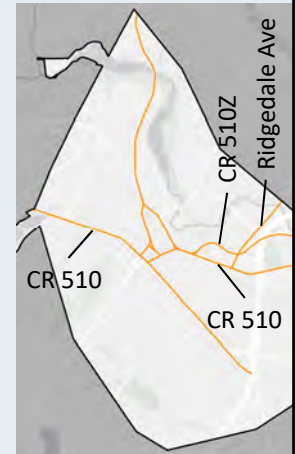


Photo Credit: John O'Boyle for The New York Times

15



NETWORK SCREENING

NJTPA County Ranking – 2012-2016 Data



Top 100 Corridors


Route	Regional	Pedestrian/Bicycle
CR 510	#1: MP 11.41-12.41	#15: MP 11.61-12.61
CR 510Z	#176: 0.21-1.21	#76: MP 1.07-1.17



Top 100 Intersections
(CR 510 unless noted otherwise)

Location	All Crashes	Pedestrian	Bike/Ped
Ridgedale Ave	#17	#55 (510Z)	#92 (510Z)
Abbett Ave	#49 (RD)	#9 (RD)	#18 (RD)
Spring St	#52	#10	#20
Lafayette Ave	#77	-	-
Schuyler Pl	#79	#7	#13
Elm St	#82	#55	#92
King St	#89	#51	#92

16



● ● ● ●

CRASH DATA

2014-2018 Pedestrian/Bicyclist

- 15 crashes (9 Ped/6 Bike)
- Minor to Moderate Injuries

2016-2018 Vehicular

- 463 crashes
- Primarily property damage only

Overrepresentations

Vehicular

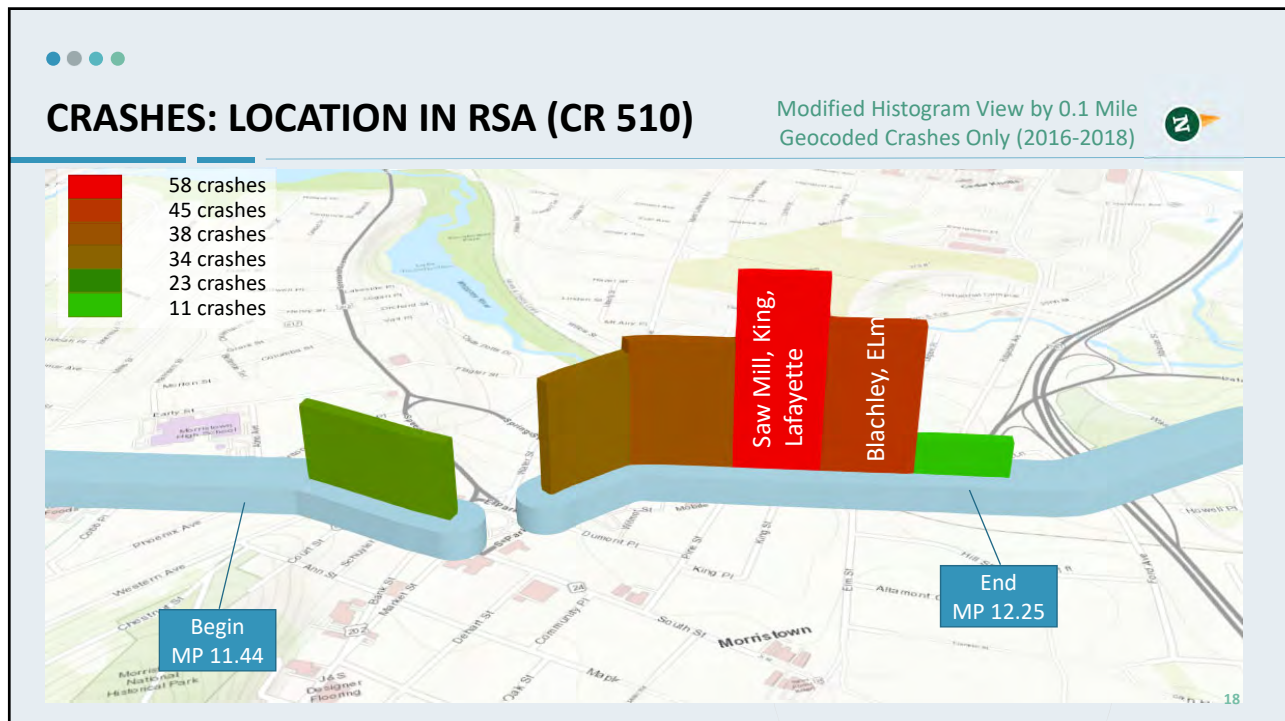
- Rear End
- Sideswipe
- Parked Vehicle
- Backing
- At Signalized Intersection
- Between Intersections
- Dry Surface
- Day
- Night

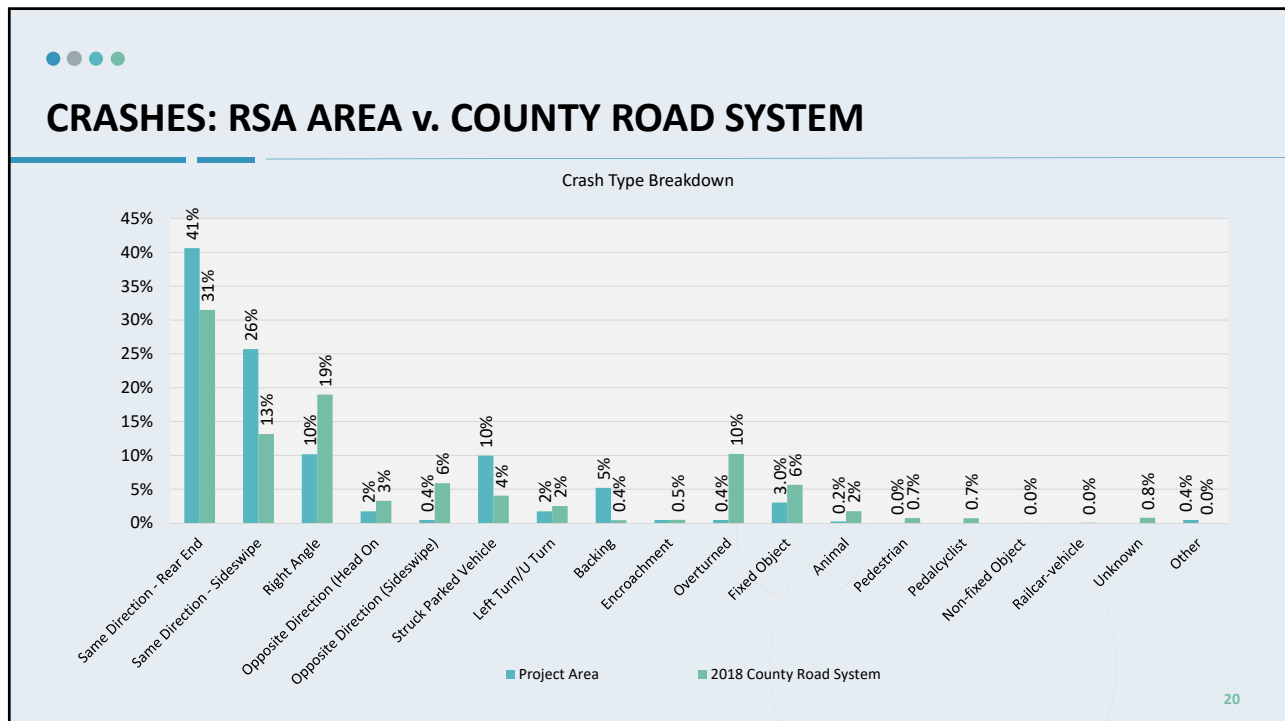
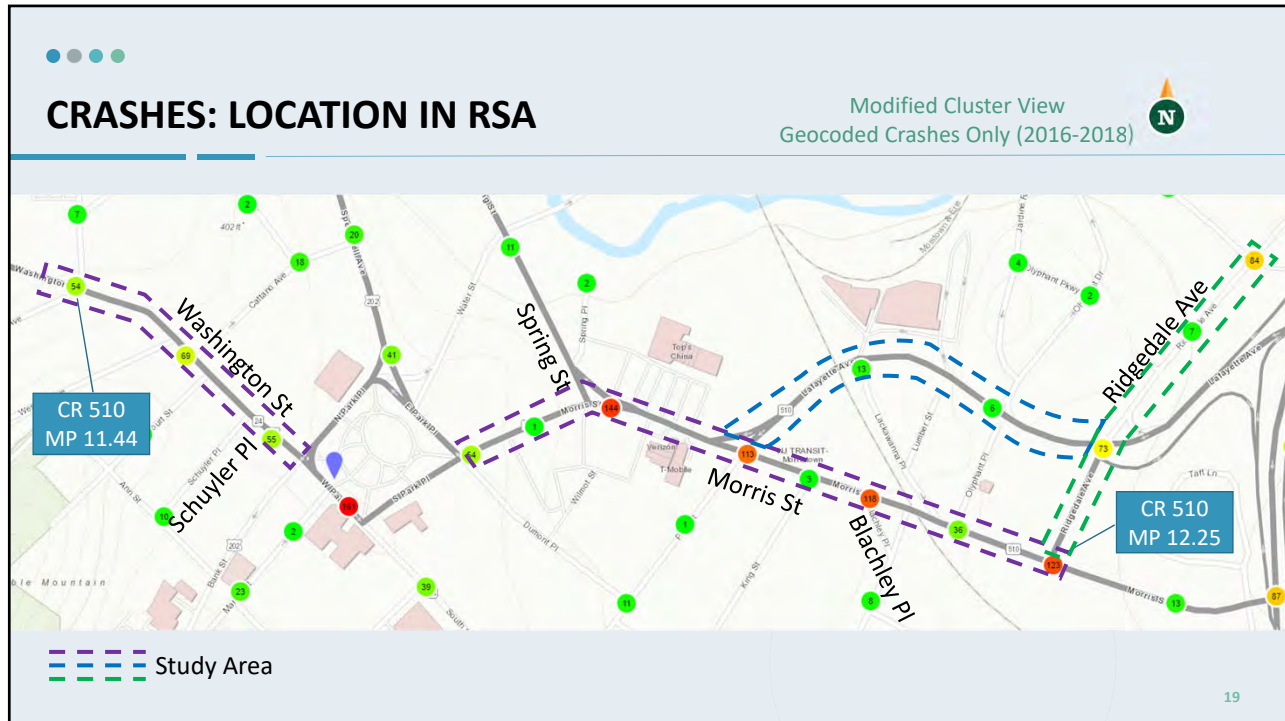
Ped/Bike

- Injury
- At Signalized Intersection
- Dry Surface
- Night

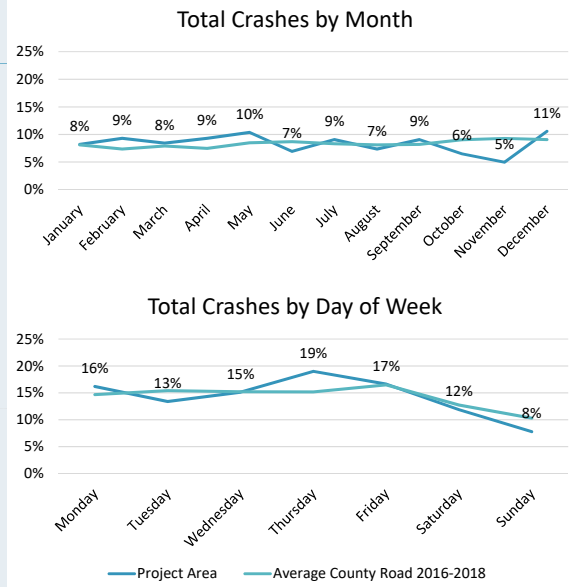
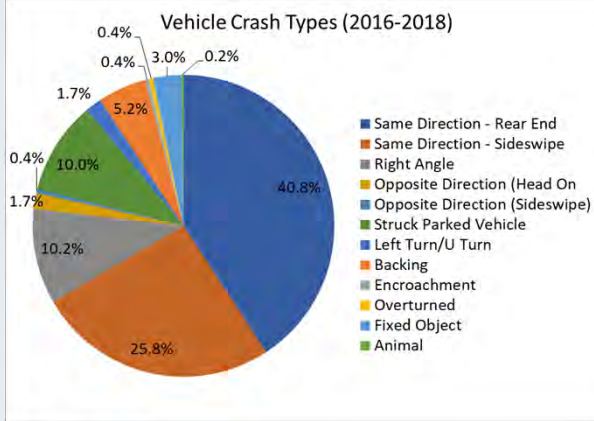
● ● ● ●

17



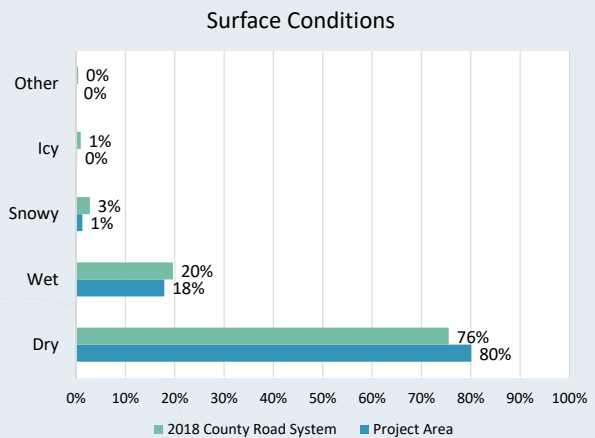
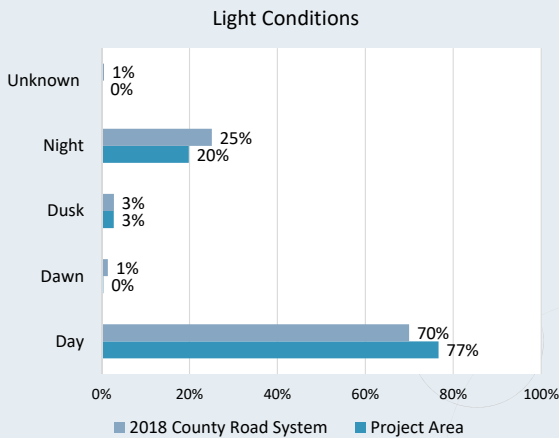


CRASHES: TYPE & TIMES

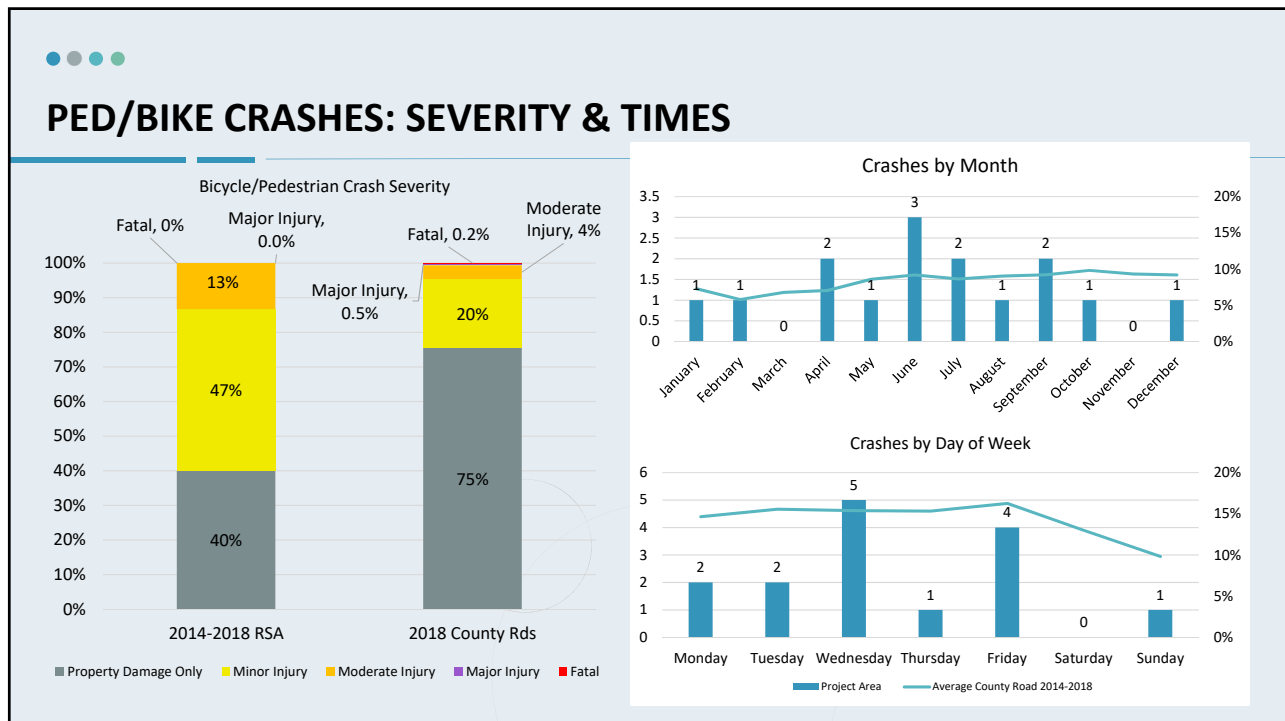
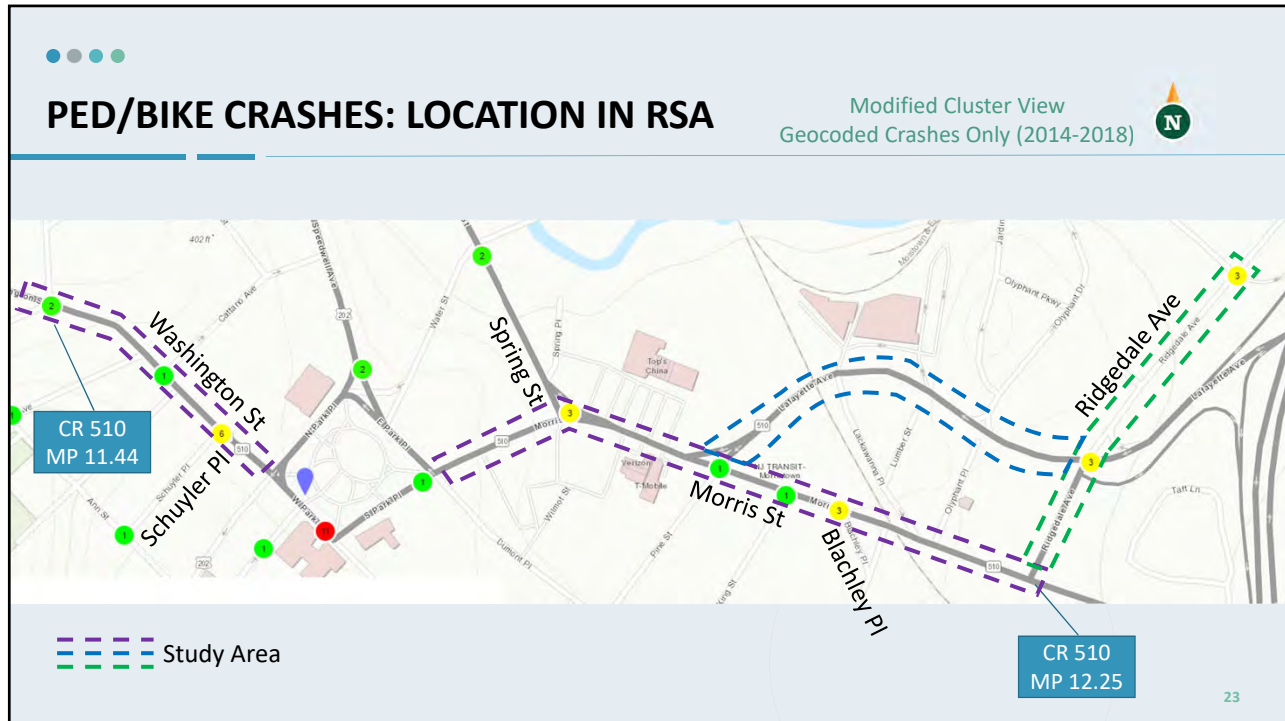


21

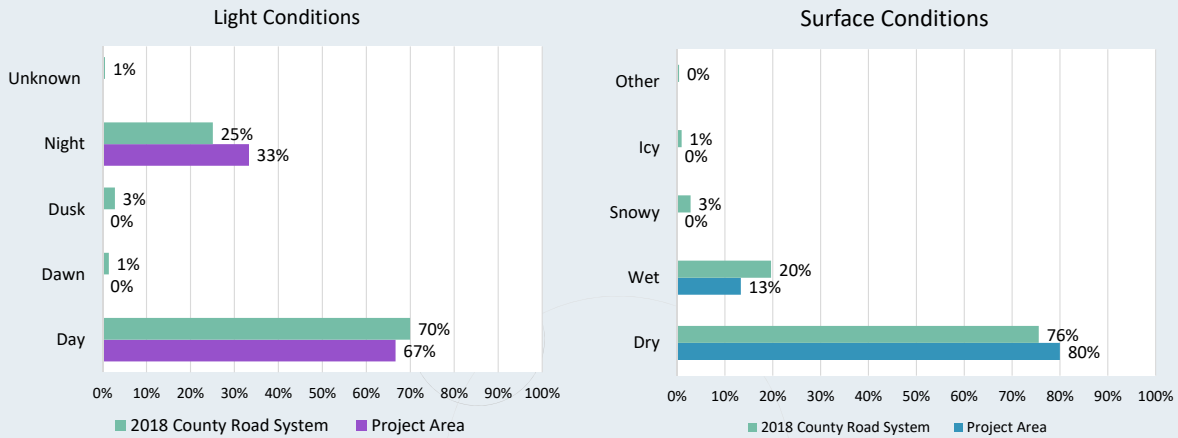
CRASHES: LIGHT & SURFACE CONDITIONS



22



PED/BIKE CRASHES: LIGHT & SURFACE CONDITIONS



25

Today's Schedule

- 9:30a
 - 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
- ✓ Safety First!



26



FIELD VISIT | POST AUDIT

● ● ● ●
Pause | Resume
Presentation

Photo Credit: Town of Morristown NJ Official Facebook Page

27



Today's Schedule

9:30a

- 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

✓ Welcome back!

28



POST AUDIT

Discussion of Field Visit



Observations

- What elements of the road may present a safety concern?
- To what extent, to which road users, and under what circumstances?
- What corridor safety issues did you observe?
- What localized safety issues did you observe?



Recommendations

- What opportunities exist to eliminate or mitigate identified safety concerns?
- What improvements would you make?
- Are any of the FHWA countermeasures beneficial?

29

NEXT STEPS

- Preparation of RSA Report
- Review/comments from RSA Team
- Preparation of Preliminary Final Report
- Road Owner Response
- Preparation of Final Report
- Approximate timeframe: 12 weeks



Photo Credit: John O'Boyle for The New York Times



THANK YOU



<http://www.gpiprojects.com/HSIP/Morris>

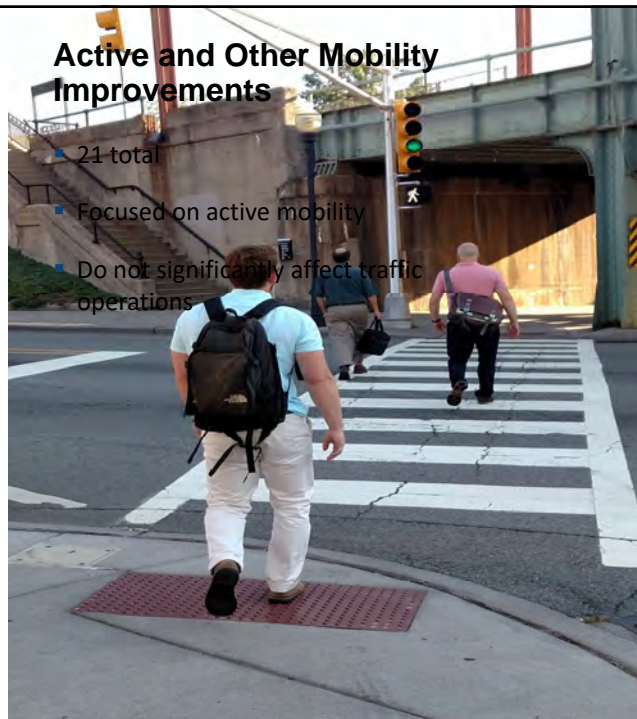
Photo Credit: Mayo Performing Arts Center Website



Vehicular Mobility Improvements

- Signal improvements
- 12 design interventions
 - Within focus areas
 - Mitigate traffic

32



Active and Other Mobility Improvements

- 21 total
- Focused on active mobility
- Do not significantly affect traffic operations

APPENDIX I

EXCERPTS FROM RELEVANT MUNICIPAL PLANS/REPORTS

Morristown

Moving Forward

A Mobility &
Community
Form Plan

Adopted

March 31, 2014

GOAL 01

Complete, pedestrian- and bike-friendly streets

OBJECTIVE 01.1

Safely and conveniently connect residents, workers, and visitors to the various employment, residential, shopping, and recreational opportunities in town

Morristown residents expressed a desire to make walking and biking easier and safer, and they have asked that pedestrian and bike networks function more in coordination with motor vehicles, not in conflict with them. Residents reported many concerns, such as pedestrians crossing streets against traffic signals and in front of moving vehicles; cyclists riding on the sidewalk because they feel unsafe on the street; or drivers feeling the need to take their car only a few blocks because walking is “uncomfortable.” These concerns all support the Town’s pursuit of “complete streets” that accommodate and connect all travelers—pedestrians, cyclists, transit riders, and drivers—to important destinations safely and conveniently.

Complete streets balance the transportation network for all modes but can also promote public health objectives by supporting active communities. By creating environments that are safe and comfortable places to bike and walk, Morristown can help its residents become more active and, therefore, more healthy.

Establishing a robust transportation network for all users requires more than just adding a bike lane or a better sidewalk. Instead, we must ask ourselves questions that move beyond the realm of traffic engineering, such as:

- Is the network free from gaps and barriers?
- Do neighborhoods have the same access to bike facilities, trails, and places to walk and exercise?
- Can the pedestrian safely cross the street?
- Is the environment attractive and comfortable?
- Is there good lighting to increase the perception of security and visibility?
- Does the network address universal design? Is it accessible to people of all abilities and ages?
- Are adjacent land uses and building designs pedestrian-friendly?

Morristown has adopted a Bicycle Plan, Complete Streets Policy, and Traffic Calming Ordinance, which are important steps in improving the mobility systems within town. The following strategies are intended to supplement the recommendations contained in those documents—to further the balance of pedestrians and cyclists and support development through appropriate street design that promotes walkability.



Morristown has adopted a Bicycle Plan, Complete Streets Policy, and Traffic Calming Ordinance.

STRATEGIES

1. Use the new Streets Plan (see below) to govern the design of streets, sidewalks, and streetscapes
2. Create a Street Design Manual to define and catalog the roadway and pedestrian realm design elements and materials that are part of the Streets Plan
3. Continue to implement Morristown's Complete Streets Policy and Priority Action Plan, as well as utilize the Complete Streets Checklist to ensure new and reconstructed roadways incorporate the needs of all users
4. Implement the recommendations of the recently adopted Bicycle Plan, with a focus on routes connecting neighborhoods to parks and destinations within town
5. Continue to develop safe walking routes to transit, schools, community facilities, and employment centers, as well as for seniors, by building partnerships with NJDOT, NJ TRANSIT, Morris School District, and others
6. Improve pedestrian and bike connections between neighborhoods and to local parks and public places
7. Formalize and reinforce connections to Patriots' Path, the Traction Line Recreation Trail, and other pedestrian/bike trails linking Morristown to destinations within the region
8. Install wayfinding and kiosks directing pedestrians and cyclists to bike routes and major destinations and points of interests
9. Incorporate design guidelines for guardian- and pet-friendly streets, particularly for seeing eye dogs in street and infrastructure improvements
10. Ensure streets and buildings are accessible for all users, including the disabled and elderly; strategies include longer street-crossing times, pedestrian count-down signals, pedestrian ramps, hand rails, and legible signage
11. Install municipal trash compactors in high traffic areas as part of a sustainability and complete streets strategy
12. Identify opportunities to create pedestrian- and bike-only streets, or "slow streets" (see Chapter 4 for more detail)
13. Require the inclusion of bike rooms or racks in new developments, and ensure sidewalk widths and the placement of street furniture, including bike racks, comply with the Streets Plan
14. Provide ample and secure bicycle parking through the creation of a Town-administered bike rack program that makes the installation of bike racks more affordable
15. Work with public and private partners to explore the feasibility of a bike share program that connects train station commuters to places of employment or other destinations
16. Consider employing off-duty or auxiliary police officers at key intersections during peak hours to facilitate traffic flow
17. Improve pedestrian and bike connections and safety at the I-287 overpasses; consider widened sidewalks and bike lanes buffered from traffic, as well as

San Francisco's Pavement to Parks Program

In San Francisco, streets make up 25% of the city's land area, or more space than all of its parks combined. Many streets are excessively wide and contain large amounts of underutilized space, especially at intersections. The Planning Department's Pavement to Parks program seeks to temporarily reclaim these unused swathes of land and quickly and inexpensively turn them into new public spaces. The program was inspired by the success of similar projects in New York City, where plazas and seating areas have been created in excess roadway simply by painting the asphalt, placing protective barriers along the periphery, and installing moveable tables and chairs.

The Planning Department works with local businesses, community groups, schools, and other organizations to identify suitable locations for parklets and devise innovative, sustainable designs. In 2013, Morristown was awarded a grant by Together North Jersey to create a parklet program design manual.



- additional crosswalks, lighting, and other elements
18. Educate drivers, pedestrians, and cyclists about traffic safety rules and how to share the road via public forums and well-designed marketing campaigns
 19. Incorporate Universal Design strategies in streets and public areas to allow a broad range of people with varying abilities to easily and safely use the built environment

OBJECTIVE 01.2

Create attractive, lively streetscapes that support socializing, walking, biking, and accessibility

Streets connect us but are also important public gathering and community spaces. These days, towns and cities across the nation are re-imagining what the public realm is and how it should function. In New York City, the Department of Transportation has turned some of Manhattan's most congested thoroughfares (e.g., Times Square) into public plazas with tables, chairs, benches, and protected routes for bicycles. San Francisco has a formal process by which business owners or local community groups can convert underused sections of the street or sidewalk into publicly accessible open spaces, called "parklets."

Parklets and well-designed plazas and sidewalk areas offer aesthetic enhancements to the streetscape, provide an economical solution to the need for increased public open space in compact urban areas, and can support

local businesses with increased foot traffic and activity. Often, they incorporate amenities like seating, plantings, bike parking, and public art. They can become venues for eating lunch or meeting up with friends, as well as for street fairs, farmers markets, or other outdoor events. Typically, parklets are permitted only in commercial areas—not on residential streets.

But parklets are only one exciting new strategy to transform streets into valuable public amenities. Walkability is an important element of an attractive public space. Streets should be designed to make the pedestrian experience pleasant, encourage interaction with people and the environment, and promote walking and active living as an attractive alternative to driving.

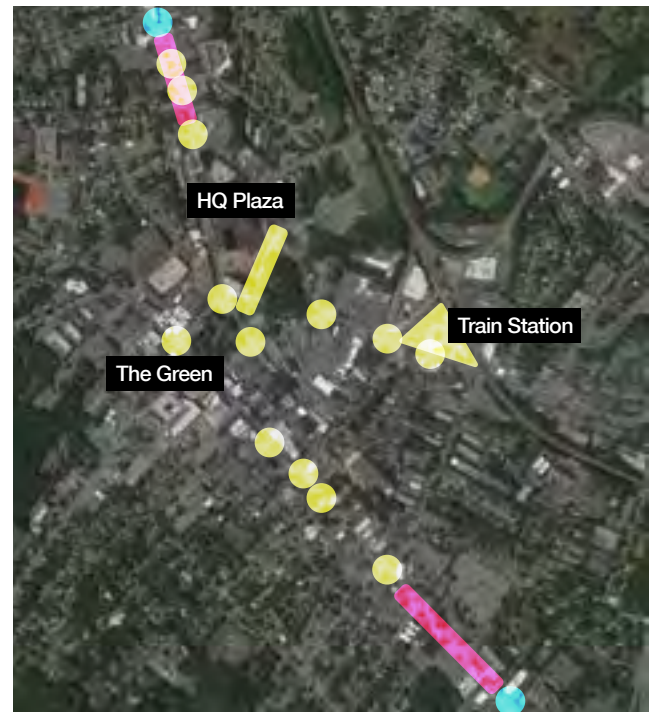
STRATEGIES

1. Maintain the historic rhythm and scale of urban blocks (e.g., no cul-de-sacs or gated communities, no garden-style complexes)
2. Ensure sidewalk dimensions and amenities are consistent with the Streets Plan (see below)
3. Incorporate public art, cultural signage, human-scale lighting, benches, trash receptacles, and other design strategies and amenities that promote walkability and interaction
4. Establish standards for pedestrian lighting along corridors and at intersections and crosswalks

Downtown Lighting Survey








Based on concerns expressed by Morristown residents, a survey of pedestrian lighting was conducted near the Green, along Morris and South Streets, and on Speedwell Avenue. Pedestrian-scale lighting promotes walkability in neighborhoods and commercial and mixed-use districts. It enhances community safety and business exposure, and encourages people to walk or bike at night, rather than drive. The survey revealed areas where pedestrian lighting is ideal, such as West Park Place near South Street, and where it can be improved. Water Street, which is proposed to become a bike/walk-only street (see Chapter 4), has no lighting, and lighting at crosswalks around the Green needs general improvement. Along South and Morris Streets and Speedwell Avenue, additional lighting at crosswalks would improve pedestrian visibility and safety. On each of these streets, decorative lighting is present along some segments but not others. Extending this lighting further, and incorporating gateway treatments, would enhance a sense of place along these key roadways.

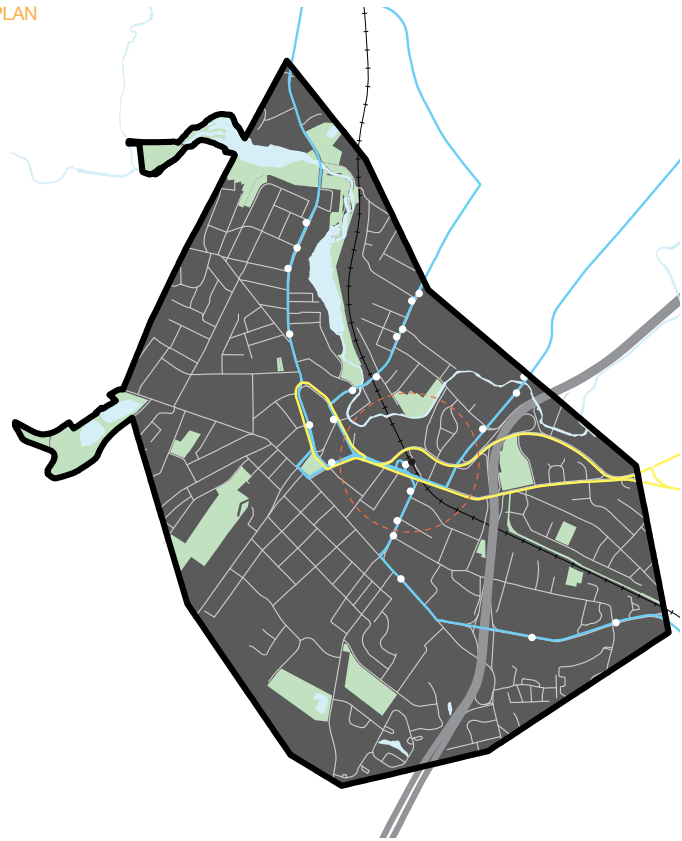
- Lighting enhancement needed
- Gateway lighting
- Extend decorative lighting



5. Minimize new curb cuts on major streets, and locate surface parking lots in the rear of buildings; all parking lots should be appropriately screened, landscaped, and maintained
6. Promote the extensive use of green infrastructure
 - Maximize planted areas, greenways, and swales to retain and filter stormwater
 - Provide a healthy tree canopy in the right-of-way and parking areas to provide shade and reduce urban heat islands
7. Enhance the programming and design of downtown public spaces
 - Provide more places for people to linger, drink a cup of coffee, read a book, or socialize with friends
 - Host more large-scale public markets and special events, particularly at the Green and Pioneer Plaza
 - Remove regulatory obstacles to the street-side preparation and sale of food and other goods during the working week
 - Create a formal Parklet Program
8. Improve health through a wellness campaign to encourage walking, biking, and less auto use
9. Consider public health and active design in the planning of new development, streets, and pedestrian and cycling facilities

Transit Facilities

-  Coach USA
-  NJ Transit Bus
-  NJ Transit Rail
-  Bus Stop
-  Train Stop
-  1/4 Mile Radius
-  Roadway



GOAL 02

Accessible and Convenient
Public Transit

OBJECTIVE 02.1

Improve transit service operations, access, and convenience to promote increased ridership

Public transit services—shuttles, buses, taxis, and trains—are important parts of a comprehensive transportation system because they provide an alternative for the full third of Morristown residents who do not have access to a car, as well as for those who cannot or do not want to drive. For many others, the NJ TRANSIT train station is a critical link between Morristown and employment centers in the region, and it serves as a major catalyst for local growth and development. In addition, NJ TRANSIT operates regional and local bus service; Coach USA operates commuter bus service to New York City; and the Town operates the Colonial Coach, a local circulating shuttle bus. The Morristown Medical Center and other corporations manage shuttles for employees, as well.

Morristown residents are interested in public transportation. During conversations about transit, it was clear that few understand the Colonial Coach is available to all residents (not just senior citizens). Residents are particularly interested in a shuttle system that would circulate throughout the downtown during morning, lunch, and/or evening hours, enabling them to leave

their cars parked. Several Town officials and residents suggested the idea of a shuttle system being combined with the hospital shuttle or other corporate shuttles currently in operation. However, the coordination of services among providers—hospitals, companies, the Town—is logistically difficult, as is funding the capital, operating, and maintenance costs that cannot typically be covered by fares. Yet the general interest is promising, and the Town is committed to exploring the opportunity further.

One successful example of a local shuttle bus system is the Hoboken Hop in Hoboken, NJ. Funding remains the greatest challenge for the Hop, but the ridership success of the Hop make it a model for other locations. The Hop operates three different routes during weekdays for a fare of \$1. The specific intent of the circulator is to encourage residents to leave their car at home when traveling within the community. Technology now allows Hop riders to see the location of buses on their smart phones, which reduces wait times and uncertainty.

Transit, just like biking and walking, works best when supported by appropriate street and community design and by higher densities of residential and commercial development that generate enough people to support increased services. Morristown is supporting transit services through land use and community form decisions that create transit-oriented living, working, and shopping destinations. Transit-oriented development, or TOD, results in buildings and land uses that are intentionally

TransOptions is the Transportation Management Association (TMA) of northwestern New Jersey. As a non-profit organization, TransOptions provides assistance with alternative commute options, such as car/vanpooling, mass transit, biking, and walking. It offers a variety of programs for employers, employees, students, and young people, as well as advocates for important transportation initiatives throughout the region. During Charrette Week, the planning team met with TransOptions to discuss the possibility of using its expertise and role as the TMA to bring potential shuttle operators to the table for a discussion and study of future transit opportunities. This initial conversation will continue as the Town seeks to create additional transit opportunities for residents and the local workforce.



Morristown's train station is a critical link between the town and employment centers in the region; it also serves as a major catalyst for growth and development.

focused on coordination with transit services. In addition, access to transit can be improved through pedestrian amenities, improved connections, and the creation of a walkable, pleasant, and safe streetscape.

STRATEGIES

1. With TransOptions and NJ TRANSIT, study a revitalized shuttle bus circulator system to establish goals, understand demand, and develop operating and capital budgets, and to study the potential of merging shuttle services with Morristown Medical Center and other private employers
2. Work with NJ TRANSIT to improve local bus and rail service through physical improvements to the train station area, the development of transit-oriented development projects, and the regular evaluation of transit rider needs and services
3. Create bus stops that provide shelter from the elements and are informative, visible, and an attractive part of the streetscape
4. Improve the visibility of and access to the NJ TRANSIT train station (see Chapter 4) and bus stops throughout town with enhanced signage, bus shelters, and amenities like benches and lighting
5. Improve pedestrian and bicycle access to bus stops and train stations through lighting, intersection and crosswalk improvements, bike parking, and street trees
6. Educate residents, visitors, and workers about the transit services available to and within Morristown
7. Encourage transit-oriented development and districts with densities of development that are designed to be transit-supported, particularly along regional corridors (see Chapter 4 for more detail)
8. Support an employee incentive program for using transit, carpooling, or cycling to work
9. Incorporate public art into transportation infrastructure, including streets and sidewalks, transit/bus stops, tree grates, parklets, train trestles, and overpasses

The Route 24 Extension

Morristown residents frequently mention the once-planned extension of Route 24 from its existing terminus at I-287 to as far as Sussex Turnpike. The extension would have included additional access points, including a full interchange at I-287, Ridgedale Avenue, Hanover Avenue, Route 202/Speedwell Avenue, Lake Road, and Sussex Turnpike where it crosses the Whippany River. The original intention of this new road was to reduce local traffic flow to and from communities west and north of Morristown, most of which are bound for I-287 and Route 24. In the 1980s, NJDOT shelved plans for the extension, and although talks were revived in the early 1990s, opposition from officials in Morris and Mendham Townships resulted in the final cancellation of the project in 1993. Even if this project were implemented, it

would not likely reduce regional traffic through Morristown over the long run. Recent research suggests that while new road expansions may reduce congestion in the short term, over the long term they attract additional traffic until previous levels of congestion are reached, limiting further growth. This “if you build it, they will come” mentality means that if the Route 24 extension were constructed, some traffic would initially divert from Morristown; however, eventually the new roadway itself would become congested, causing traffic to once again divert through Morristown and negating the initial benefit of building the expanded route in the first place. Rather than focusing on the revival of this project, Morristown should focus internally to improve roadways and balance the mobility needs of motorists, pedestrians, and cyclists.

GOAL 03

Minimized Negative Impacts of Traffic on Local and Regional Roadways

OBJECTIVE 03.1

Balance regional traffic access and placemaking

Morristown is situated at the nexus of important regional and interstate roadways. This has served the town well, making it a desirable location to live, work, and visit. However, it has also led to high levels of congestion during peak hours, as thousands of commuters converge around the historic Green on their way to and from I-287, as well as to local employers. This contributes to congestion, air quality issues, safety concerns, and other quality of life issues. Rerouting this traffic before it reaches Morristown is not possible or even desirable. Instead, this plan focuses on strategies to move traffic through and around town more efficiently and safely, while simultaneously fostering a sense of place, creating a positive business environment, increasing the economic benefit of Morristown as a regional center, and balancing the needs of all modes, including pedestrians and cyclists. Surprisingly, and contrary to popular belief, efforts to achieve these goals can be mutually reinforcing in most cases.

Finally, it is worth noting that no matter how many cars are on the road during the peak rush hours, when that congestion subsides, Morristown residents and visitors find circulation and navigation to be relatively easy and safe.

STRATEGIES

1. Conduct a comprehensive traffic, pedestrian, and bicycle study focusing on the Green and approaching roadways to evaluate options for mobility and accessibility improvements (see Chapter 4 for more detail)
2. Increase the capacity of regional roadways not through roadway widening and expansions but through other techniques, such as traffic signal improvements, lane striping, and wayfinding enhancements (see the Streets Plan, below, for more detail)
 - Work with the Morristown Partnership and the Morris County Tourism Bureau to develop and install wayfinding signage in the downtown
3. Employ traffic calming techniques appropriate to the Streets Plan, including high-visibility crosswalks, curb sidewalk extensions (bulb-outs), and pedestrian signals
4. Create treatments at the “gateways” to town so drivers know they are entering a neighborhood environment; enhanced lighting, overhead signage, landscaping, crosswalk treatments, and textured pavements can help alert drivers to the fact that they are entering a place where slower speeds and great care are required
5. Actively engage regional, state, and federal agencies, local governments, and transit providers to ensure that regional projects and programs affecting the town are consistent with town plans, policies, and priorities

I would like to see a safer crossing spot for the train station. Too many cars speed down Lafayette, and I've seen too many close calls when it comes to train commuters crossing vs. car traffic.

—
Joy S.

6. Seek funding at county, regional, state, and federal levels to implement priority street improvement projects identified in this plan

OBJECTIVE 03.2

In neighborhoods, ensure local traffic operations are safe and accommodating for pedestrians and cyclists

Although the impact of regional traffic is a substantial focus in Morristown, the safe and efficient operation of local roads is an important part of how residents experience the town on a daily basis. Solving individual issues with traffic signals, difficult turns, or speeding are important, as well as the regular evaluation of roadways for safety and changes in volume of usage. The following recommendations are applied in more detail in Appendix B.

STRATEGIES

1. Preserve residential streets as slow zones and shared spaces for people of all ages and abilities to drive, bike, walk, and play
2. Create an ongoing safety program to address traffic and transportation safety issues at local intersections, such as turning problems, traffic signal issues, limited sightlines, and other safety concerns
3. Employ traffic calming techniques appropriate to particular Streets Plan classifications to reduce cut-through traffic, reduce speeding, and facilitate safe pedestrian, bike, and vehicular circulation on neighborhood streets (particular candidates include Macculloch, Maple, Cutler, James, Ogden, Turtle, Walker, Abbett Avenue, Ridgedale Avenue)
4. Work with NJDOT to implement the recommendations contained in the May 2011 Pedestrian Investigation
5. Create new roadway linkages to improve overall circulation; opportunities include expanding Cory Road under the train trestle and connecting Early Street to Clinton Street
6. Ensure regular maintenance of local roadways, sidewalks, and streetscapes to enhance mobility for all modes
7. Address issues of traffic signal coordination along Speedwell Avenue and signal timing at the intersections of Ann Street with Mt. Kemble Avenue and Bank Street, among others
8. Evaluate all pedestrian crossing areas and ensure safe and accessible designs are in place, and propose improvements where necessary (particular attention should be paid to Madison Avenue)
9. Address idling and traffic concerns at community facilities during transitional times of day and week (particular areas of concern include Atno Avenue, Phoenix Avenue, and Washington Street).
10. Identify and address turning and back-up movements that hinder the flow of traffic and create safety concerns on major streets (e.g., turning movement on Western Avenue; turning movement and back-up on Market Street; and left turning movement onto Lafayette Avenue at Ridgedale Avenue)

A pedestrian waits to cross North Park Place at the Green.



GOAL 04

Parking that Supports Walkability, Transit Ridership, and Sustainable Development

OBJECTIVE 04.1

Make full use of existing parking facilities by improving efficiency and convenience for pedestrians and drivers








Parking is a complicated transportation issue within any municipality. It is part of every long- or short-term car trip, and the availability and cost of parking can play a role in deciding not only how to travel somewhere but also about where to live and work. Despite the fact that Morristown has an excess amount of parking spaces available in the downtown—even during the busiest times of day, as described above—residents frequently reported a lack of parking opportunities available to them. Specifically, they described difficulty finding on-street parking for quick trips (such as to run into a pharmacy or coffee shop), which forces them to park illegally; this can snowball into increased traffic congestion during peak hours. These inefficiencies also lead to excessive on-street parking in historic residential neighborhoods, rather than shared facilities in higher density redevelopment areas.

The immediate challenge thus becomes not only to educate drivers about the location of available parking spaces but also to understand how the existing facilities—both on- and off-street—can be operated in a manner that encourages quick turnovers on-street and facilitates

convenient accessibility to final destinations. The long term challenge is to continue providing enough parking to meet the basic needs of residents and businesses, while not undermining the desire to promote walking, biking, and transit use by providing (or requiring) too much parking.

STRATEGIES

1. Undertake a study of downtown on- and off-street parking to understand existing and future demand, as well as to consider intervening policies to encourage the use of parking structures, minimize searching for on-street parking, and maximize available parking on a regular basis
2. Develop a Parking Management Plan that encourages walking, biking, and transit use and reduces reliance on driving
3. Continue to enforce parking regulations through meter reading and ticketing to increase the efficient turnover of on-street spaces, the reduction of double parking, and compliance with loading zone regulations
4. Increase the supply of on-street parking by removing meters and space striping and installing multi-space meters (e.g., payment kiosks)
 - Work with the MPA to undertake a pilot program for credit card parking meters at the Green and South Street; future phases may include Morris and Spring Streets
5. Install priority parking for car share and alternative fuel vehicles
6. Encourage the use of existing public parking garages and lots through wayfinding, advertising technology, and pricing policies

- Parking Facilities**
-  Metered parking
 -  2 Hr parking, 8AM-4PM, M-F
 -  Resident sticker all times
 -  2 Hr restricted, sticker other times
 -  2 Hr parking at all times
 -  Un-regulated street
 -  Public garage



- Re-evaluate fees for on-street parking in relation to fees for structured parking facilities; on-street parking facilities are “spaces of first choice” and therefore should be priced at a premium
 - Improve pedestrian connections between parking lots and commercial streets
 - Develop a downtown worker parking program to encourage employees to park off-street
7. Explore time and place restrictions for on-street parking, which would allow parking spaces to be utilized as travel lanes during peak traffic hours
 8. Consider development of a residential parking benefit district program, where non-resident pay parking is available on-street and parking funds benefit the neighborhood (e.g., with street cleaning, planters, etc.)
 9. Work with NJDOT and Morris County to identify additional opportunities for on-street parking; leverage the Town’s Special Improvement District status to seek flexibility from certain rules and regulations that inhibit additional parking from being created in the downtown
 10. Work with the MPA to undertake a park rate study for parking lots and meters, with the objective of maximizing the use and efficiency of parking lots

OBJECTIVE 04.2

Optimize the use of existing parking facilities

The Land Use and Community Form Plan (Chapter 3) discusses opportunities to adjust parking requirements under zoning in a manner that promotes walkable,

human-scale design (e.g., lower requirements for projects near transit, design standards for the configuration of lots, etc.). In addition to promoting the efficient use of existing facilities, reducing overall demand can improve the Town’s ability to foster development that is more in keeping with the historic character of the built environment. It can also save the MPA and development community from having to invest in constructing more costly public parking garages and surface lots, which can erode neighborhood quality and prevent the efficient utilization of scarce land. Finally, note that the Parking Management Plan described above is also expected to include strategies to help reduce demand for parking.

STRATEGIES

1. Promote shared parking for multiple sites and uses
2. Adjust off-street parking requirements to reflect the proximity of transit and incorporate shared parking strategies
3. Consider requiring public access to private parking facilities in developments over a certain size to encourage shared parking
4. Investigate the use of fees in lieu of parking requirements for new development where ample off-site and shared parking already exists
5. Encourage car rental and car share services to locate additional vehicles in town

Streets Plan



A. Primary Activity Corridor

B. Secondary Activity Street

The Streets Plan is based on and informed by the technical research, public input, and goals and objectives described above. Its purpose is to describe, clearly and simply, how Morristown residents would like streets and sidewalks to look, feel, and operate. Because these qualities have much to do with adjacent land uses and the form of the built environment, the Streets Plan is intended to be used in conjunction with the Land Use and Community Form Plan (see Chapter 3). In this way, it can serve as the basis for future revisions to the Town’s zoning ordinance, as well as a manual for Town officials as they develop plans for roadway and other infrastructure improvements.

The below and accompanying table designate each street in Morristown as a “type” that is specifically related to the land uses located along that street and the kind of traffic operations desired there. Each is considered to be a “complete street,” incorporating the needs of not only vehicles but also pedestrians, cyclists, and transit riders. The level of sidewalk amenities is also specified. Thus, the integration of land use and building type with the design and use of the sidewalk and street is fully coordinated and regulated. A brief overview of each of the five street types follows:

STREET TYPE A

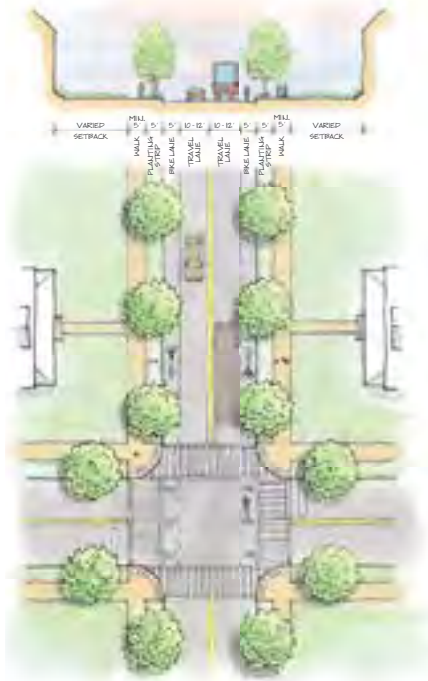
Primary Activity Corridor (PAC)

The PACs serve the dense, mixed-use downtown core. They are between two to four lanes wide and accommodate heavy pedestrian traffic on wide sidewalks with amenities such as street trees, benches, and café seating. Transit activity is expected on PACs, with bus shelters considered the norm at all bus stops. Bicycle facilities are incorporated where appropriate in bike lanes or a separated path. On-street metered parking is typically present.

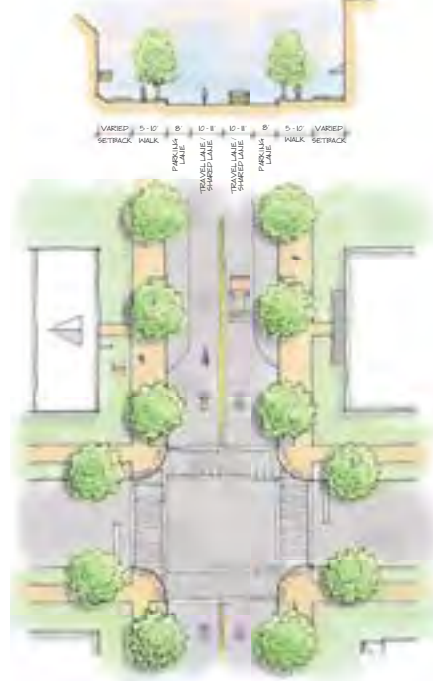
STREET TYPE B

Secondary Activity Street (SAS)

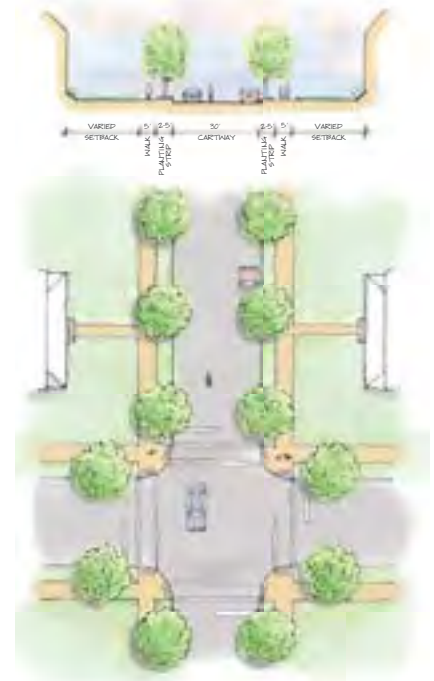
SASs support a slightly less intense level of mixed-use activity than PACs, and serve as a transition from the PACs to lower level street types. The design and function of SASs are very similar to PACs, with the exception of allowing for a slightly lower intensity of street design in the realm of sidewalk width, bus stop design, and bicycle facilities. On-street metered parking is typically present.



C. Town Thoroughfare



D. Neighborhood Thoroughfare



E. Residential Street

STREET TYPE C

Town Thoroughfare (TT)

TTs are typically the extension of the SASs along regional roadways as they exit the town. They are two to four lanes wide, and although they have continuous sidewalks, there is less pedestrian activity expected on TTs than along the PACs and SASs. TTs may have different treatments depending on whether they are located in more urban environments, such as Morris Street, or more suburban environments, like Madison Avenue. Along TTs, on-street metered parking may be appropriate in mixed-use or more urban areas, while other areas may have unmetered parking. Bicycle lanes can take precedence over on-street parking along these roadways.

STREET TYPE D

Neighborhood Thoroughfare (NT)

NTs are the spines through residential neighborhoods that collect vehicles, cyclists, and pedestrians from local residential streets and connect TTs to each other. One travel lane per direction, planting zones along sidewalks, shared bike lanes, and well-marked bus stops are characteristics of this street type. On-street parking is allowed, but bicycle facilities may take precedence.

STREET TYPE E

Residential (R)

R streets provide access to local residences in Morristown's neighborhoods. Essentially, these streets function as shared spaces for vehicles, cyclists, and pedestrians. Sidewalks may or may not be present, and speeds should be no higher than 15 miles per hour. Crosswalks at intersections near destinations such as schools should be provided, but bicycle markings are typically not necessary. On-street parking is allowed.

Streets Plan

-  A. Primary Activity Corridor
-  B. Secondary Activity Street
-  C. Town Thoroughfare
-  D. Neighborhood Thoroughfare
-  E. Residential Street



STREET TYPE	ADJACENT COMMUNITY FORMS	PEDESTRIAN REALM FEATURES			ROADWAY FEATURES			
		PEDESTRIAN REALM FEATURES SIDEWALKS Furnishing Zone	SIDEWALKS Pedestrian Zone	CROSSINGS	PARKING	TRAVEL LANES	TRANSIT	BICYCLE
<p>A. Primary Activity Corridor (PAC)</p> <p>Serves the dense, mixed-use, downtown core of the town. Accommodates heavy pedestrian and transit activity.</p>	<ul style="list-style-type: none"> Town Core Town Core Support 	<ul style="list-style-type: none"> Street trees/ landscaping Bicycle parking Benches Refuse containers at every corner Pedestrian-scale lighting Outdoor café seating See "Transit" features 	<ul style="list-style-type: none"> Continuous sidewalks on both sides of street No curb cuts 10-15' wide sidewalks Curb extensions at wide roadways or high-conflict locations Corner pedestrian ramps with warning strips 	<ul style="list-style-type: none"> At every intersection and midblock on blocks longer than 500' High visibility crosswalks and signage Countdown and Audible pedestrian signals 	<ul style="list-style-type: none"> Metered on-street parking 	<ul style="list-style-type: none"> 2 to 4 lanes 10'-11' wide lanes (12' for a bus lane or designated truck route) 20-30 mph desired Road diet may be appropriate depending on traffic conditions 	<ul style="list-style-type: none"> Bus shelters and other amenities, especially at transfer locations Consider Bus Only lanes, signal prioritization, where needed. 	<ul style="list-style-type: none"> Facilities should be considered where appropriate Striped bike lane (5' min wide) or separated bike path If not appropriate, bicycle facilities should be located on surrounding SASS
<p>B. Secondary Activity Street (SAS)</p> <p>Supports a slightly less intense level of mixed-use activity than PACs. Provides access for all modes into PAC zones.</p>	<ul style="list-style-type: none"> Town Core Town Core Support Nbd. Residential (High Density) Nbd. Center 	Same as PAC	<p>Same as PAC except:</p> <ul style="list-style-type: none"> Limited curb cuts permitted Sidewalks at least 8' wide, ideally 10' wide 	Same as PAC	Same as PAC	<p>Same as PAC except:</p> <ul style="list-style-type: none"> 2 to 3 lanes 	<ul style="list-style-type: none"> Bus shelters or well-marked signage, amenities, especially at transfer locations Consider Bus Only lanes, signal prioritization, where needed 	<ul style="list-style-type: none"> Bicycle facilities should be provided, especially if not otherwise served by connecting PACs Striped bike lane (5' min wide) or shared lanes depending on traffic volume/speed
<p>C. Town Thoroughfare (TT)</p> <p>Regional connector carrying inter- and intra-town, multi-modal traffic—autos, trucks, transit, cyclists, and pedestrians (inter-town, primarily). Serves a variety of densities and land uses.</p>	<ul style="list-style-type: none"> Corridor Residential (all) Corridor Mixed-Use (all) Nbd. Residential (High and Medium Density) 	<p>Urban Environments:</p> <ul style="list-style-type: none"> Bicycle parking Street trees and/or landscaping Pedestrian lighting <p>Suburban Environments:</p> <ul style="list-style-type: none"> Bicycle parking at major destinations (parks, library, etc.) See "Transit" features 	<ul style="list-style-type: none"> Continuous sidewalks on both sides of street At least 5' wide (6' wide if no planting strip between sidewalk and curb) Crosswalks at all intersections Corner pedestrian ramps with warning strips 	<ul style="list-style-type: none"> At every intersection High visibility crosswalks and signage near schools Countdown pedestrian signals for long crossing distances 	<ul style="list-style-type: none"> On-street parking allowed but bicycle facilities should take precedence Metered parking may be appropriate in mixed-use or urban environments 	<ul style="list-style-type: none"> 2 to 4 lanes 11'-12' wide lanes 25-35 mph desired Road diet may be appropriate depending on traffic conditions 	<ul style="list-style-type: none"> Well-marked bus stops Shelters at busier stops 	<ul style="list-style-type: none"> Striped bike lane (min 5' wide) ideal if space permits Wide striped shoulder (8' wide) can be considered in suburban areas without on-street parking Shared lane with markings may be appropriate depending on traffic conditions
<p>D. Neighborhood Thoroughfare (NT)</p> <p>Spine through residential neighborhoods that collects vehicles, cyclists, and pedestrians from local streets.</p>	<ul style="list-style-type: none"> Nbd. Residential (all) 	<ul style="list-style-type: none"> Planting strip and/or street trees where appropriate See "Transit" features 	Same as TT	Same as TT	<ul style="list-style-type: none"> On-street parking allowed but bicycle facilities should take precedence 	<ul style="list-style-type: none"> One lane per direction 15-20 mph desired 	<ul style="list-style-type: none"> Well-marked bus stops 	<ul style="list-style-type: none"> Shared lane facilities are appropriate
<p>E. Residential (R)</p> <p>Provides access to local residences. Streets function as shared spaces for vehicles, cyclists, and pedestrians.</p>	<ul style="list-style-type: none"> Nbd. Residential (all) 	Same as NT	Sidewalks are desirable but not generally required	Crosswalks should be provided adjacent to schools and parks, and at intersections with all other street types	<ul style="list-style-type: none"> On-street parking allowed 	<ul style="list-style-type: none"> One lane per direction 15 mph or less desired 	None	<ul style="list-style-type: none"> No markings necessary Signage should be provided if along or intersecting a designated bicycle route

Town of Morristown Bicycle Plan



Morristown, Morris County, NJ

**Developed by
Morristown Environmental Commission, February 2009**

**Addendum Prepared by Michael Baker Jr., Inc. for New Jersey
Department of Transportation, August 2010**

Final Report by Morristown Planning Division, February 2013

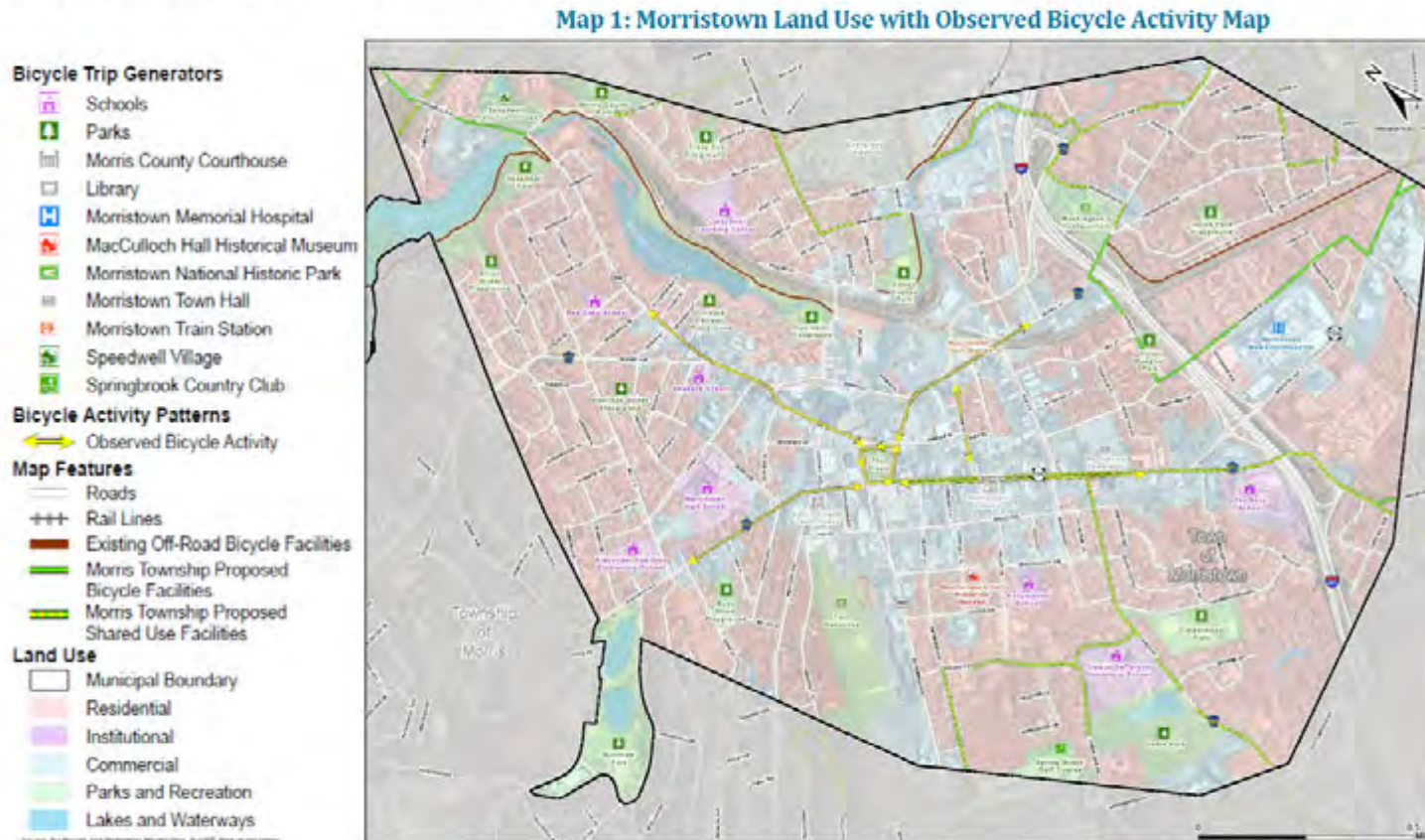


Morristown Bicycle Plan

Map 1: Morristown Land Use with Observed Bicycle Activity Map

2. STUDY AREA

The Study Area was limited to key corridors and roadways within the Morristown which would provide bicycle connections to major trip generators, attractors, and destinations, including schools, commercial/retail centers, and parks. Highlighted on **Map 1** below are land uses, trip generators, and observed bicycle activity found in Morristown.



4.0 VISION STATEMENT, GOALS & OBJECTIVES

4.1 Vision Statement

As Morristown grows into an ever more vibrant and sustainable town, it will have a balanced and efficient transportation system that will enhance mobility and quality of life for people and goods, connecting them to the area's diverse resources.

4.2 Goals and Objectives

Goal 1: Integrate the consideration of bicycle facilities and amenities into Town planning activities and capital improvement projects.

- Encourage Planning Board to adopt Bicycle Plan and include Bicycle Plan in the Transportation Element of the Morristown Master Plan.
- Revise development codes to include requirements for bicycle facilities and amenities for all appropriate projects, with special considerations for transit oriented development projects (within half mile of Morristown train station)
- Ensure that bicycle facility planning, design and maintenance is an integral part of Town engineering and public works activities.
- Count bicycles as part of traffic count programs

Goal 2: Develop a safe, convenient, and continuous network of bikeways that serves the needs of all types of bicyclists, and provides bicycle-parking facilities to promote cycling.

- Reduce traffic speeds, through enforcement and traffic calming throughout the bike network.
- Develop a town wide system of designated bikeways that serves both experienced and casual bicyclists, and provides connections to neighboring bicycle facilities. The network should serve all bicyclists' needs, especially for travel to employment centers, schools, the commercial district, the train station, and recreational destinations.
- Design the street system to provide a safe network for bicyclists and pedestrians, that reduces the need to drive and in turn, reduces congestion.

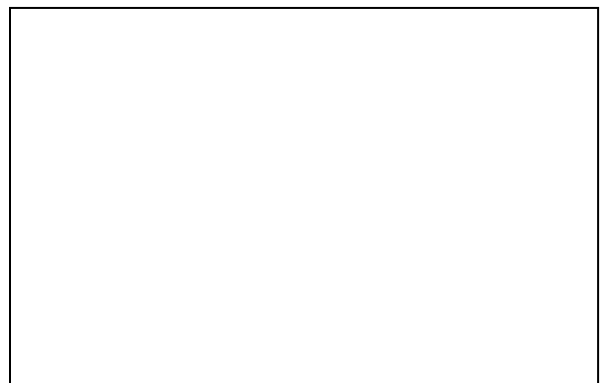
- Develop a bicycle parking program that places a variety of bicycle parking facilities on sidewalks throughout the commercial district, in parking garages and lots, at the train station, and at Morristown's recreational and tourism sites.
- Maintain all streets in good condition, roadways, and designated bike routes to be free of bicycling deterrents (such as pot holes, debris, and overgrown landscaping) to the greatest extent possible.
- Encourage the development of Bikes-On-Transit programs with Morris County, State, and private transit services.
- Conduct bicycle safety programs

Goal 3: Improve the safety of bicyclists through education and enforcement.

- Develop a safety education program for adult bicyclists, child bicyclists, and motorists, which increases knowledge of cyclist rights and responsibilities, awareness of other transportation users, and encourages individual behavior change.
- Reward good behavior for using helmets, lights, etc.
- Educate police as to bicycle laws.
- Enforce motorist and bicyclist violations that are most likely to cause injury such as running red lights, speeding, wrong-way riding, night-riding without lights and riding on sidewalks, where illegal.

Goal 4: Increase bicycle mode share by increasing public awareness of the benefits of bicycling and of the available bike facilities and programs.

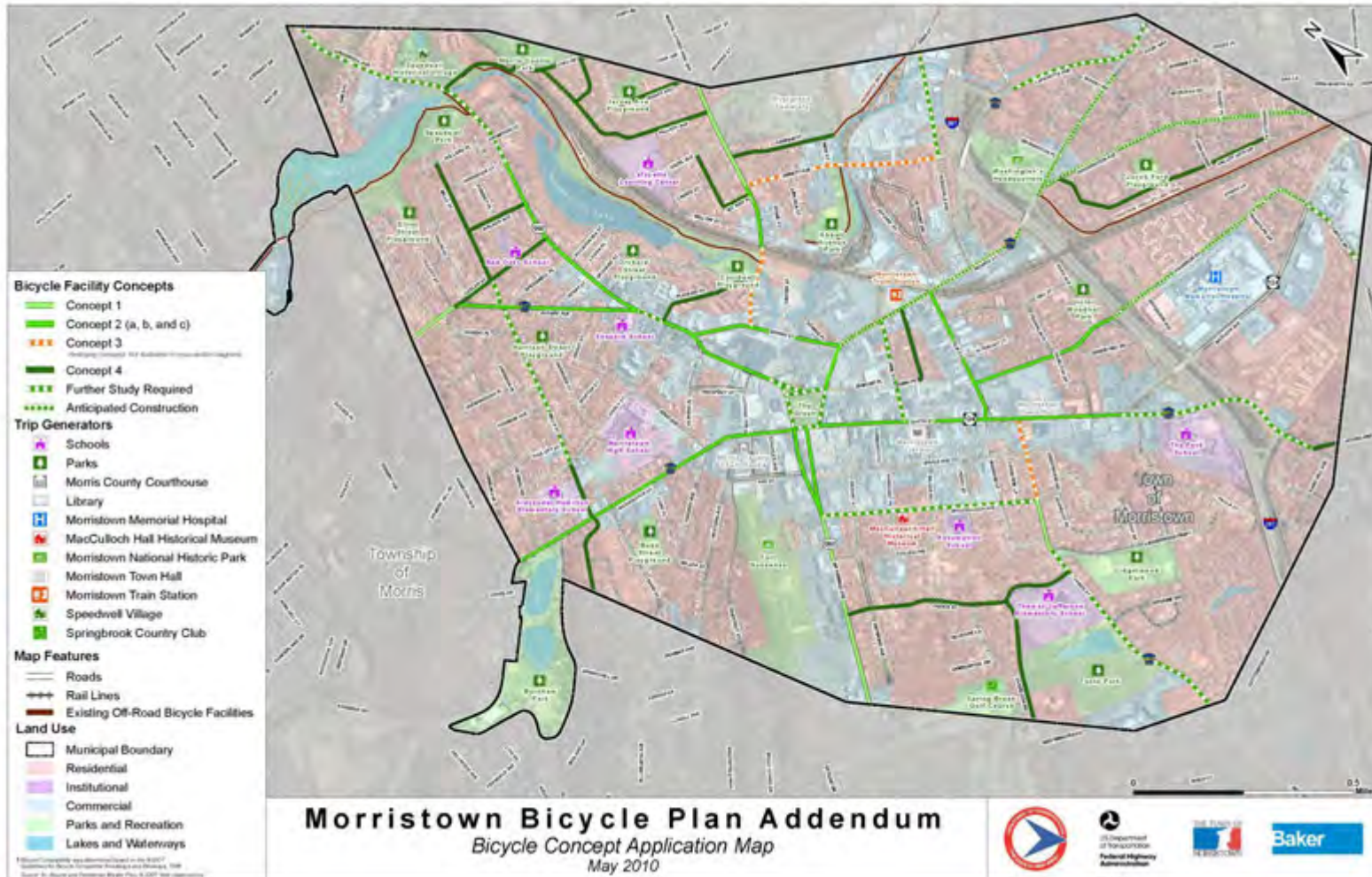
- Provide a Bicycle User Guide with current and easily accessible information about the bicycle network, bicycle laws, and the location of bicycle parking.
- Encourage the Town of Morristown and other major employers to develop Bike to work programs for their employees, consistent with TransOptions programs.
- Encourage the development of Bike to School programs within the Morris School District, reviewing the existing policies, safety of



common bike routes to school, and the availability of bicycle parking at schools.

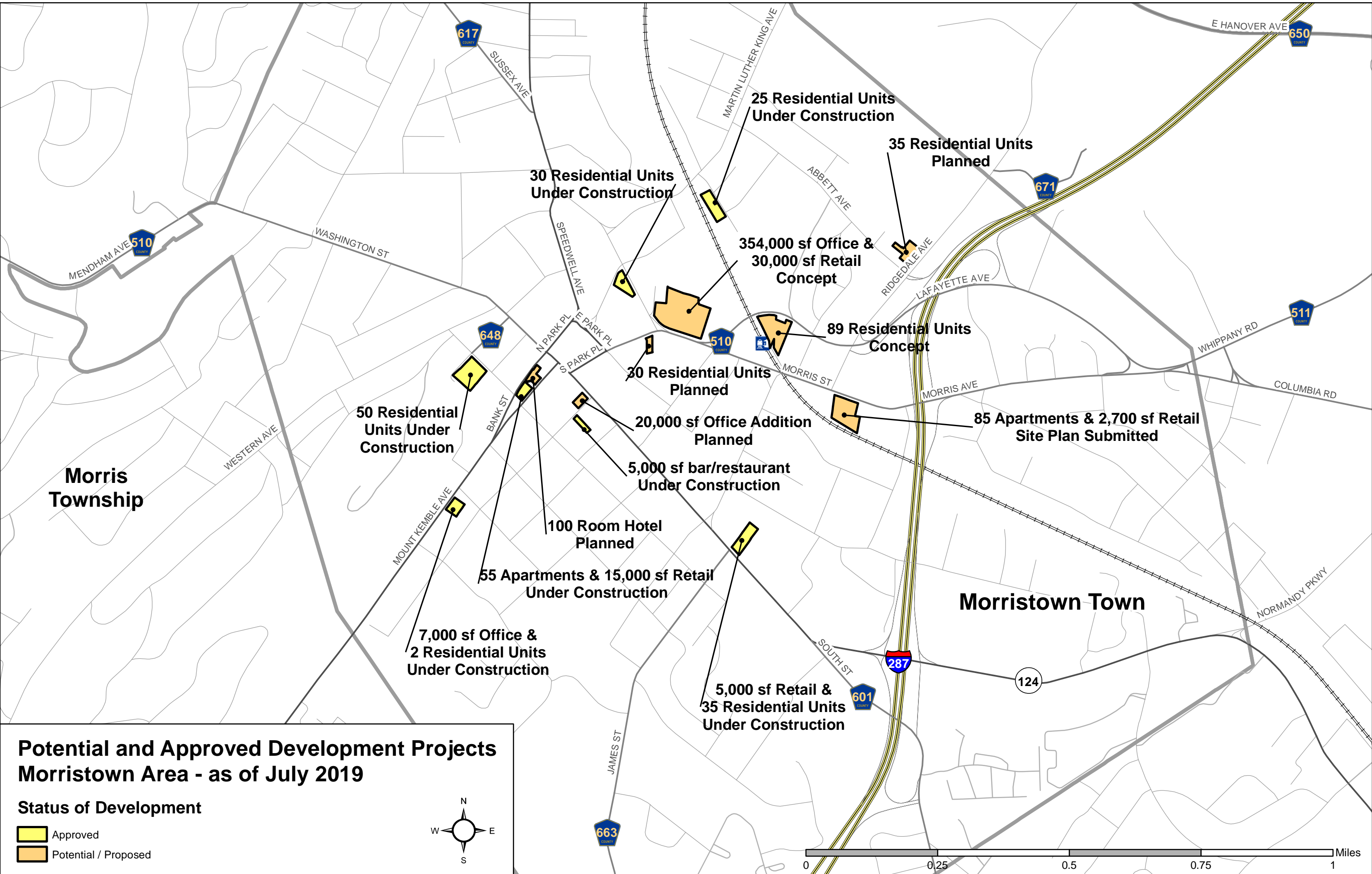
Goal 5: Improve air quality conditions and the public health of Morristown's citizens.

- Improve roadway congestion by increasing the use of bicycles as an alternative to the automobile for short, in town trips.
- Increase the number of bicycle commuters originating from Morristown.
- Develop summer camp and school-based bicycle education programs that teach children how to ride bicycles and encourages increased riding in their communities.



APPENDIX J

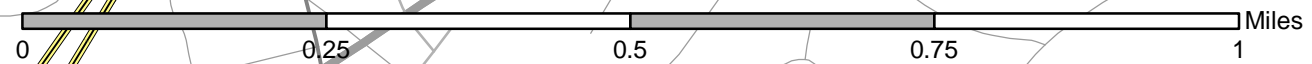
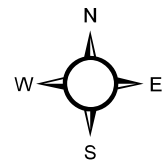
EXCERPTS FROM RELEVANT COUNTY PLANS/REPORTS



**Potential and Approved Development Projects
Morrystown Area - as of July 2019**

Status of Development

- Approved
- Potential / Proposed



Morris Township

Morrystown Town

50 Residential Units Under Construction

30 Residential Units Under Construction

25 Residential Units Under Construction

35 Residential Units Planned

354,000 sf Office & 30,000 sf Retail Concept

89 Residential Units Concept

30 Residential Units Planned

20,000 sf Office Addition Planned

5,000 sf bar/restaurant Under Construction

85 Apartments & 2,700 sf Retail Site Plan Submitted

100 Room Hotel Planned

55 Apartments & 15,000 sf Retail Under Construction

7,000 sf Office & 2 Residential Units Under Construction

5,000 sf Retail & 35 Residential Units Under Construction

510

617

650

671

511

648

510

287

124

601

663

Morris County Master Plan Circulation Element



Building Permits

Home construction within the County and New Jersey is recovering from the 2008 recession. According to the New Jersey Department of Community Affairs,¹⁰ there were 691 new units authorized by building permits in 2014, an increase of 72% from 2010. In 2012 and 2013, increases in housing permit authorization outpaced the statewide percentage growth, as shown in **Table 3-7**. The growth was aided by the authorization of multi-family housing; more than half (478) of the permits issued in 2013 were for units in multi-family structures. These were concentrated in Morristown (291) and Hanover (151). In 2014, the number of permits for multi-family units dropped to 161. However, authorizations for one-and two-family units¹¹ continued to increase reaching 459, the highest since 2007. In 2014, 79 one-and two-family unit permits were issued in Mount Olive, followed by Morris Township (57) and Denville (39).



Table 3-7: Housing Units Authorized by Buildings Permits in Morris County

Year	% Change	Total Units	Housing Type			Rank in NJ	Statewide Comparison	
			1 & 2 family	Multi-family	Mixed use		% Change	Total Units
2006		1,364	725	624	15	11		32,050
2007	-32.5%	921	518	396	7	11	-19.0%	25,948
2008	-57.5%	391	254	136	1	17	-37.0%	16,338
2009	18.9%	465	216	248	1	10	-31.8%	11,145
2010	-14.0%	400	260	140	0	14	6.6%	11,885
2011	5.3%	421	283	137	1	13	0.0%	11,882
2012	43.7%	605	391	208	6	9	28.5%	15,270
2013	48.6%	899	420	478	1	8	23.1%	18,795
2014	-23.1%	691	459	161	71	10	21.8%	22,896

Source: New Jersey Department of Community Affairs

¹⁰ http://www.state.nj.us/dca/divisions/codes/reporter/building_permits.html

¹¹ Category includes single family detached homes, townhomes, and duplexes

Employment Forecasts

The projected change in employment for Morris County's municipalities from 2010 to 2040 is shown in **Table 3-9**. Overall, the number of jobs in Morris County is estimated to increase by 32% (86,100) by 2040. The County's anticipated annual employment growth rate is 0.9%, which is comparable to the anticipated growth rate for the NJTPA region.¹³ The highest annualized growth rates are generally

in municipalities with few jobs as of 2010, such as Boonton Township, Chatham Township, and Harding, which have annualized projected employment growth rates of 1.9%. In terms of the number of jobs, Parsippany-Troy Hills (14,840 jobs) and Morristown (7,010 jobs) are anticipated to see the largest increase by 2040. In addition, several municipalities in eastern Morris County, including East Hanover, Florham Park, Hanover, and Morris Township, are each expected to gain more than new 4,000 jobs.



¹³ Plan 2040: NJTPA Regional Transportation Plan for Northern New Jersey, Appendix A: 2040 Demographic Projections

Traffic Congestion

Traffic congestion is an ongoing issue for Morris County and the region resulting in longer commutes, increased greenhouse gas emissions, lost worker productivity, and higher risk of crashes. While Interstate, Federal, and State highways in Morris County have the high levels of congestion, County Routes also experience significant recurring traffic delay. The most congested roads under the County's jurisdiction are:⁹

- Columbia Turnpike (CR 510), Florham Park
- Littleton Road (US 202/CR 630), Parsippany-Troy Hills
- Main Street (CR 513), Chester Borough
- Morris Street (CR 510), Morristown
- Park Avenue (CR 623), Florham Park/Hanover/Morris Township
- Parsippany Boulevard (CR 511), Parsippany-Troy Hills
- Parsippany Road (CR 511), Parsippany-Troy Hills
- Paterson-Hamburg Turnpike (CR 694), Riverdale
- West Blackwell Street (CR 513), Dover
- West Main Street (CR 510), Mendham Borough



⁹ Congestion measures for County roads were documented using INRIX® vehicle probe data provided through the I-95 Corridor Coalition's Vehicle Probe Project (VPP) Suite. Congestion is measured based on observed speed during peak weekday travel periods compared to "free-flow" speeds. A roadway segment where the average travel speed during peak periods is 20 miles per hour and the free-flow speed during off-peak hours is 50 miles per hour has a congestion index of 0.40, for example. INRIX® compiles sample vehicle data through phone applications such as Google Maps, and Waze® that collect information about a user's location, direction of travel, and speed to calculate congestion and travel time for vehicle navigation and reporting purposes.

Traffic Forecasts

Traffic volume is expected to grow throughout the County between 2014 and 2040, based on forecasts provided by the NJTPA's North Jersey Regional Transportation Model – Enhanced (NJTRM-E). Volume growth at several sections of Interstate, Federal, State, and major County roads is shown in **Table 4-2**.

The most growth by percentage is projected to be on arterial roads in the eastern part of the County. Major roadways including NJ 124, Park Avenue (CR 623), Morris Street (CR 510), Watchung Avenue (CR 646), and Columbia Turnpike (CR 510) are all projected to see daily traffic volume growth of 12% or more by 2040. On NJ 124 and Park Avenue, areas that have ongoing office and mixed-use development projects, growth is projected to exceed 20%. Outside this southeastern part of the County, Paterson-Hamburg Turnpike (CR 511A) and US 206 are projected to see the highest percentage growth, but in absolute numbers it will not be substantial. NJ 15, which serves a part of the County that lies entirely in the Highlands Preservation Area, is projected to see only a 6% increase in traffic volumes by 2040. This is the lowest percent increase among any major roadway in Morris County.



Table 4-2: Traffic Volume Forecasts 2014 to 2040

Roadway	NJRTM-E 2014 Volume	NJRTM-E 2040 Volume	NJRTM-E Change	NJRTM-E % Change
I-80	125,910	137,847	11,937	9.48%
I-280	49,036	53,760	4,724	9.63%
I-287	104,879	114,614	9,735	9.28%
US 46	30,984	33,705	2,721	8.78%
US 202	25,564	28,057	2,493	9.75%
US 206	13,365	15,228	1,863	13.94%
NJ 10	51,872	57,788	5,916	11.40%
NJ 15	33,288	35,289	2,001	6.01%
NJ 23	34,468	37,298	2,830	8.21%
NJ 24	52,310	56,680	4,370	8.35%
NJ 124	21,075	25,368	4,293	20.37%
Columbia Turnpike (CR 510)	24,453	27,388	2,935	12.00%
Morris Street (CR 510)	19,906	22,931	3,025	15.20%
Hanover Avenue (CR 650)	12,846	13,634	788	6.13%
Watchung Avenue (CR 646)	10,293	11,606	1,313	12.76%
Park Avenue (CR 623)	6,297	7,576	1,279	20.31%
Landing Road (CR 631)	15,845	17,407	1,562	9.86%
Paterson-Hamburg Turnpike (CR 511A)	11,926	13,644	1,718	14.41%
South Salem Street (CR 665)	13,285	13,850	565	4.25%
Ridgedale Avenue (CR 632)	7,660	8,269	609	7.95%

Source: North Jersey Regional Transportation Model – Enhanced, NJTPA

Note: Sections of each road may have higher or lower volume depending on location.

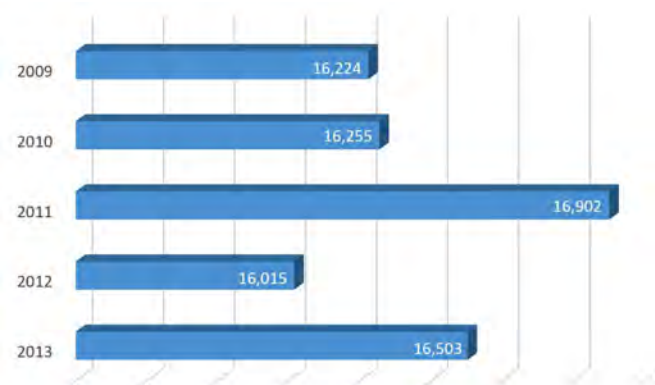
Traffic volumes on the major highways are expected to see growth through 2040, although at somewhat lower percentage change than many of the arterial roadways. These increases range from about 8.3% for NJ 24 to around 9.6% for I-280. However, some are expected to see larger growth numerically. I-80 is projected to see approximately 12,000 more vehicles per day, and I-287 is expected to have nearly 10,000 additional automobiles per day, equal to the existing daily traffic on many County Routes.

Crashes

There were 81,899 crashes recorded in Morris County from 2009 to 2013; almost 20% occurred on County Roads.¹⁰ Of the various types of crashes, same-direction rear-end collisions was the dominant crash type in Morris County during this period, representing 30% of the total crashes reported. Other types of crashes that occurred frequently in Morris County over this period include crashes with fixed

objects (13.7%), right-angle collisions (11.4%), and same-direction side-swipe crashes (11.2%). **Figure 4-6** shows the total annual crashes in Morris County from 2009 through 2013.

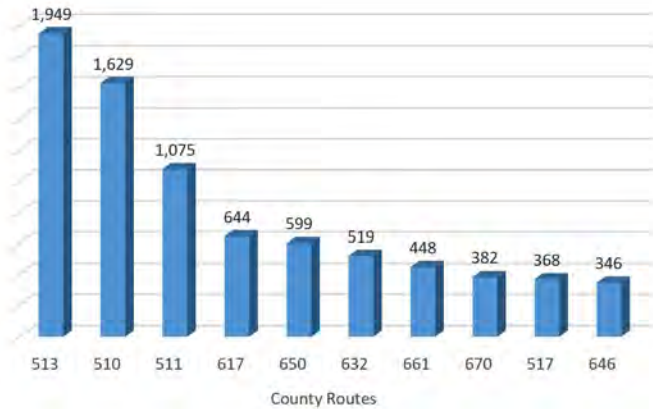
Figure 4-6: Morris County Crashes, 2009-2013



¹⁰ Crash data obtained from Rutgers University Center for Advanced Infrastructure and Transportation (CAIT) Plan4Safety® decision support tool and database.

I-80 had the most crashes (8,128) in Morris County during the five years. This was followed by US 46 (5,890), I-287 (4,954), NJ 10 (4,539), US 202 (2,507), CR 513 (1,949). The County Routes with the most recorded crashes from 2009 through 2013 are shown in **Figure 4-7**.

Figure 4-7: Most Crashes by County Route, 2009-2013



Source: Plan4Safety, Rutgers CAIT, 2014

There were 1,173 crashes in Morris County from 2009 to 2013 involving a bicyclist, a pedestrian, or both.¹¹ The heaviest concentrations of bicycle and pedestrian crashes were in Morristown and Dover, the largest and most dense town centers in the County. Additional concentrations occurred in the smaller town centers of Boonton Town, Butler, Chester Borough, Denville, Netcong, and Pequannock. There were 294 bicycle and/or pedestrian crashes recorded on County Routes, representing 25% of the total bicycle/pedestrian crashes in that period. The County Routes with the most recorded crashes were:

- CR 513 – 64 crashes (40 in Dover)
- CR 510 – 37 crashes (22 in Morristown)
- CR 511 – 16 crashes (7 in Boonton Town)
- CR 504 – 12 crashes (11 in Pequannock)
- CR 512 – 12 crashes (all in Long Hill)
- CR 634 – 9 crashes (all in Wharton)

¹¹ Rutgers CAIT Plan4Safety® decision support tool and database.

Fatal Crashes

There were 122 fatal crashes in Morris County from 2009 through 2013, representing less than 0.15% of total crashes.¹² The highest number of fatal crashes during this period were on:

- I-80 – 22 crashes
- US 46 – 16 crashes
- I-287 – 11 crashes
- NJ 10, NJ 15, and CR 513 – 5 each
- US 206 – 4 crashes

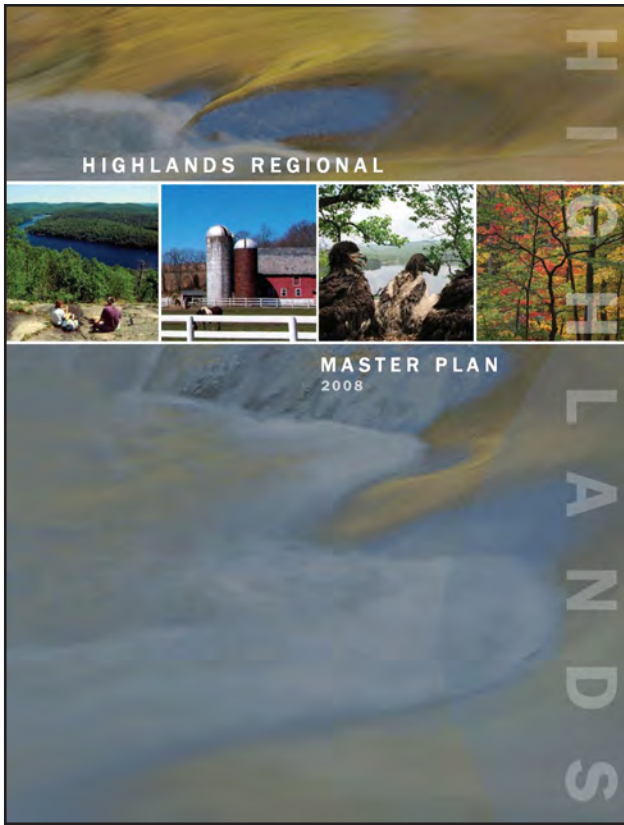
Table 4-3 shows the breakdown of the 122 fatal crashes by crash type in Morris County. Fatal crashes involving fixed-objects were the most common crash type from 2009 through 2013. Although not shown in this table, alcohol was a reported factor in ten of the 122 fatal crashes. A combined total of 25 fatal crashes, or 20%, involved a pedestrian or bicyclist. As a result of these 122 fatal crashes, there were 129 fatalities, of which 25 were pedestrians and two were bicyclists.

Table 4-3: Fatal Crashes by Crash Type, 2009-2013

Crash Type	Count	Percentage
Fixed Object	47	38.5%
Pedestrian	24	19.7%
Other	10	8.2%
Right Angle	9	7.4%
Same Direction - Side Swipe	7	5.7%
Opposite Direction - Head On/Angular	7	5.7%
Same Direction - Rear End	6	4.9%
Overtuned	4	3.3%
Struck Parked Vehicle	4	3.3%
Animal	1	0.8%
Left Turn/U-turn	1	0.8%
Opposite Direction - Side Swipe	1	0.8%
Pedalcyclist	1	0.8%
Total	122	

Source: Plan4Safety, Rutgers CAIT, 2014

¹² Rutgers CAIT Plan4Safety® decision support tool and database.



The Act imposes additional limitations on development in the Preservation Area through restrictions on the extension of sewer and public water service, septic density requirements, water withdrawal limits, new environmental standards and, as related to transportation, limits on roadway expansion. Under the Highlands Act, development of new through-lane roadway capacity in the Preservation Area is prohibited; the act permits only maintenance, rehabilitation, reconstruction, or repair of existing infrastructure.

Transit-Oriented Development

Transit-Oriented Development (TOD) involves the construction of a mix of residential, commercial, or mixed-use buildings in close proximity to public transportation, such as at a train station or a regional bus hub. The proximity of residential and commercial development to a transit hub reduces the need to drive for commuting, recreation, and shopping. Providing a mix of different land uses in close proximity also promotes pedestrian activity, fosters local economic development, and enhances real estate values while minimizing the expenditure of public resources for streets and utilities.



The nineteen NJ TRANSIT train stations in Morris County provide a number of municipalities with the potential for TOD. Municipalities that meet certain criteria are eligible for designation as a Transit Village by NJDOT's Transit Village Task Force. This designation qualifies a municipality for priority funding and technical assistance from certain State agencies, as well as grants from the New Jersey Department of Transportation. Morris County currently has two designated Transit Villages; Morristown, which was among the original designees in 1999, and Netcong, which was designated in 2005. More recently, the Town of Boonton conducted a feasibility assessment for Transit Village designation and received an NJTPA Emerging Centers grant to assist in master planning and zoning efforts to support this initiative.





Morris County Master Plan

Bicycle and Pedestrian Element

Adopted: December 3, 1998

Most bicyclists and pedestrians can only endure short trips. In Morris County, approximately 72 percent of bicycling and walking trips are less than 15 minutes in duration. Twenty seven percent of trips are one mile or less and 40 percent are two miles or less on a national basis. Land use planning should reflect connectivity between major destinations for bicycle and pedestrian trips, since long distances may be a deterrent. Land uses that generate bicycle and pedestrian trips are summarized in Table 3.1.

3.1 Types of Trips

3.1.1 Non-recreational Trips

Examples of non-recreational trips include those taken to work, local shopping centers, and schools. The National Bicycling and Walking Study (NBWS) uses the term "utilitarian" to describe non-recreational trips. If someone rides their bicycle to work on a trail, then they have

completed a non-recreational bicycle trip. Work trips are more constrained in terms of distance, attire, urgency, and time of day.

Many non-recreational trips are short in length. Children undertake the majority of non-recreational trips because of their dependence on bicycling and walking. One third of all pedestrian trips in the United States are made by children traveling to school. In Morris County information on children's travel to school is not collected by local school districts.

3.1.2 Recreational Trips

A recreational trip is defined as travel without a predetermined destination. These types of trips are the most frequent. People who bicycle and walk for enjoyment and exercise often take recreational trips.

**Table 3.1
Major Destinations of Bicycle and Pedestrian Trips**

Destinations	Comments
Schools	Schools attract a large amount of bicycle and pedestrian use because they are typically located near residential areas.
Libraries	Libraries are frequented by a broad spectrum of people including children and the elderly who may not drive.
Hospitals	Typically located in urbanized areas automobile parking may be limited.
Commercial Areas	Typically, such areas are designed to encourage easy access by automobile. This does not eliminate bicycle and pedestrian access, however, precautions must be taken to ensure the safety of bicyclists and pedestrians.
Downtown Areas	Historically these areas are pedestrian oriented. Providing secure bicycle storage will attract bicyclists to downtown areas.
Railroad Stations and Bus Terminals	Parking is usually limited for automobiles and waiting lists are common. Safe routes and bicycle storage are essential to encouraging bicycle and pedestrian travel to railroad stations.
Recreation Areas	These facilities are natural magnets for bicyclists and pedestrians. It is important to provide safe and convenient access to facilities from adjacent areas.
Scenic, Historic, and Cultural Sites	These sites should accommodate bicyclists and pedestrians.
Employment Centers	Employers should provide incentives to encourage employees to bicycle and walk. Access to employment areas on highways and busy roads should be safe.
Residential Areas	Linking these areas with all of the above destinations is the key to a successful plan. If clear, direct bicycle and pedestrian routes are designed, people will use them. Many residential streets can provide links to major destinations since traffic is usually lighter.

Source: Middlesex County Bicycle-Pedestrian Plan, March 1995

vehicle collision is known as a “dart-out”, occurring when the pedestrian suddenly appears from the side of the road and does not allow adequate driver response time.

Table 5.2 shows the most common types of pedestrian accidents for urban areas, and how they occur. The table only lists accidents types which accounted for four percent or more of pedestrian accidents.

**Table 5.2
Pedestrian Accident Types
(Urban Areas)**

Type	Cause
Dart-Out - First Half of Intersection (24%)	<ul style="list-style-type: none"> • Midblock (not at intersection) • Sudden appearance and short time exposure (driver doesn't have time to react) • Pedestrian crossed less than halfway
Dart-Out - Second Half of Intersection (10%)	<ul style="list-style-type: none"> • Same as above except pedestrian gets out halfway or more before being struck
Midblock Dash (8%)	<ul style="list-style-type: none"> • Midblock (not at intersection) • Pedestrian running but NOT sudden appearance or short time exposure as above
Intersection Dash (13%)	<ul style="list-style-type: none"> • Intersection • Same as dart out except happens at intersection
Vehicle Turn-Merge with Attention Conflict (4%)	<ul style="list-style-type: none"> • Vehicle turning or merging into traffic • Driver is attending to traffic in one direction and hits pedestrian from another direction
Turning Vehicle (5%)	<ul style="list-style-type: none"> • Vehicle turning or merging into traffic • Driver attention NOT documented • Pedestrian NOT running
Other (23%)	<ul style="list-style-type: none"> • Unusual circumstances • NOT countermeasure corrective

Source: Florida Pedestrian Safety Plan, FDOT, 1992

Table 5.3 shows Pedestrian Injury Accidents in Morris County by frequency for 1994. Municipalities not shown in this table did not report any accidents in 1994. According to these accident statistics, Dover had the highest number of accidents, 18 out of 99 accidents or 18 percent, with Morristown having 17 percent. This reinforces the fact that more pedestrian accidents occur in urban areas. The larger concentrations of

pedestrians in these areas increases the overall likelihood of accidents.

The conditions of a specific facility site, as well as safety factors should both be utilized when selecting pedestrian road improvements.

**Table 5.4
Pedestrian Accident Types and Potential Engineering Countermeasures**

Countermeasures	Accident Type																		
	Intersection Dart-Out (First Half)	Intersection Dart-Out (Second Half)	Midblock Dash	Intersection Dash	Turn-Merge Conflict	Turning Vehicle	Multiple Threat	Bus Stop Related	School Bus Stop Related	Ice Cream Vendor	Trapped	Backup	Walking on Roadway	Result Vehicle-Vehicle Crash	Hitchhiking	Working in Roadway	Disabled Vehicle Related	Nighttime Situation	Handicapped Pedestrians
Barrier: Median	●	●	●																
Barrier: Roadway/Sidewalk	●	●	●										●						
Barrier: Street Closure																			
Bus Stop: Relocation								●	●										
Crosswalk: Intersection				●							●								
Crosswalk: Midblock	●	●	●																
Diagonal Parking-1 Way Street	●	●																	
Grade Separation				●	●	●	●				●								
Facilities for Handicapped																			●
Lighting: Crosswalk				●			●											●	●
Lighting: Street				●			●						●		●			●	●
One-Way Streets		●																	
Reflective Materials													●		●			●	
Safety Islands		●	●	●							●								
Sidewalk/Pathway													●						
Signal: Pedestrian (Shared)							●				●								
Signal: Pedestrian (Delayed)				●	●	●	●				●								
Signal: Pedestrian (Separated)				●	●	●	●				●								
Signal: Traffic							●												
Signs and Markings				●						●			●	●		●	●		
Urban Pedestrian Environment	●	●	●				●	●											
Vehicular Traffic Division	●	●	●																

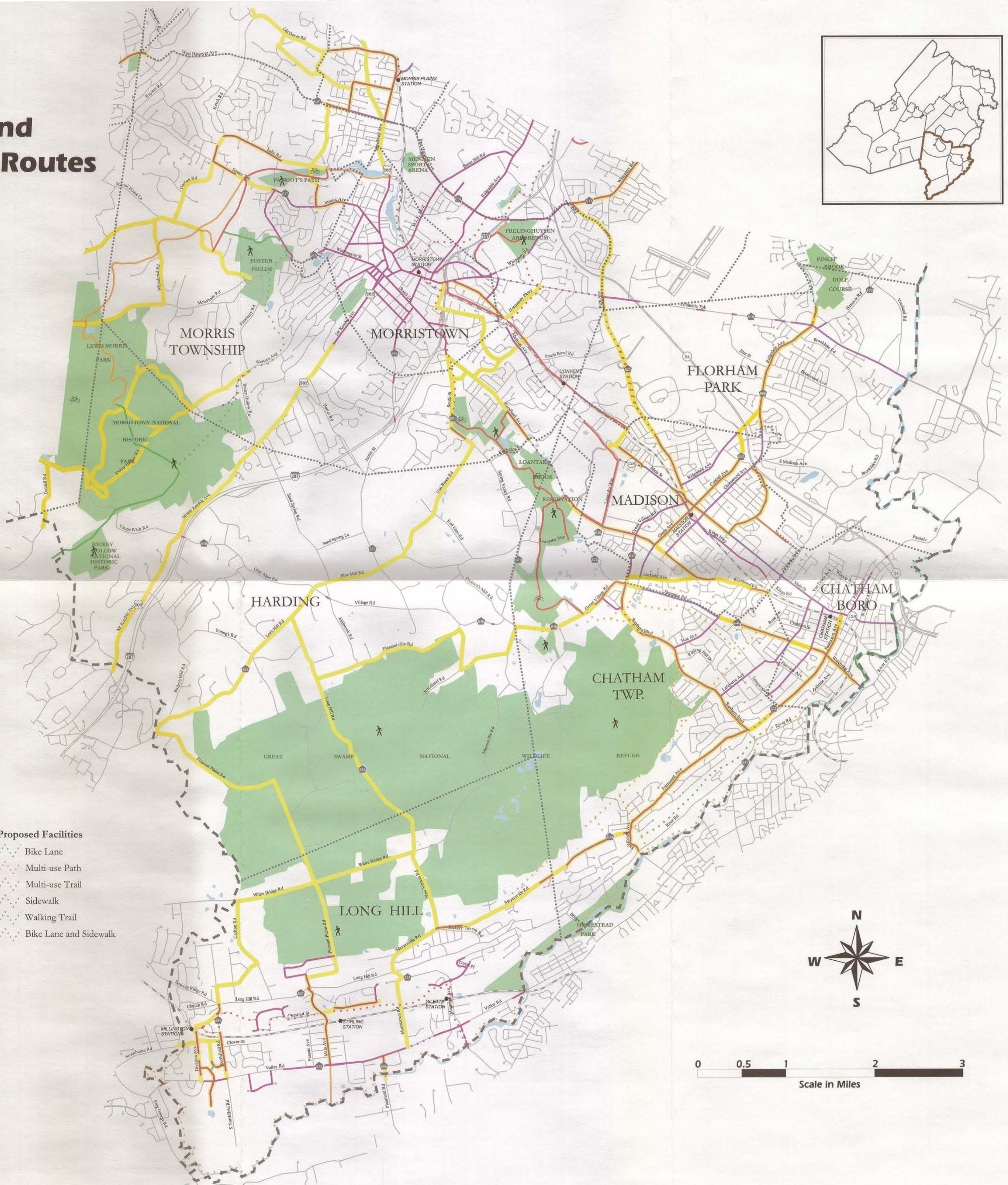
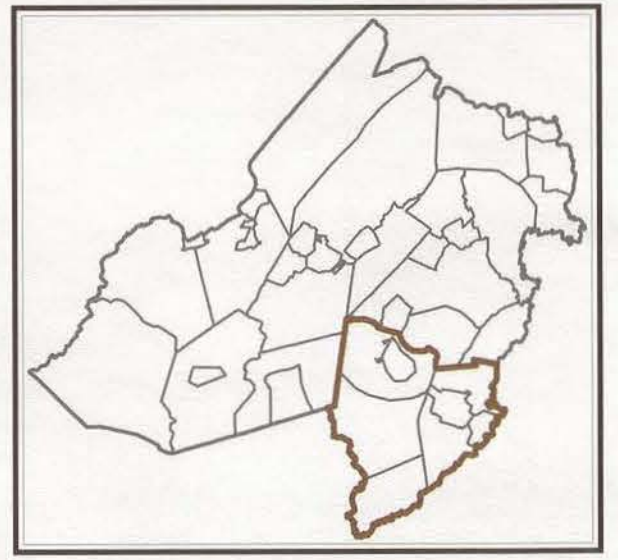
Source: NJDOT Pedestrian Compatible Planning and Design Guidelines

**Table 5.5
Pedestrian Accident Types and Potential Educational Countermeasures**

		Accident Types											
		Intersection Dart-Out (First Half)	Intersection Dart-Out (Second Half)	Intersection Dash	Turn-Merge Conflict	Turning Vehicle	Multiple Threat	Bus Stop Related	School Bus Stop Related	Backup	Pedestrian Safety in General		
Countermeasures	Pre-School	Parental Guidance										•	•
		Traffic Safety Clubs											•
		Television Programs											•
		Walking In Traffic Safety											•
		Watchful Willie	•	•									•
	Elementary School	Officer Friendly							•	•			•
		Demonstrations by Patrols											•
		Education Within the Curriculum											•
		Green Pennant Program											•
		“Big Wheel” Spot											•
		Willie Whistle Program	•	•									
		Child Intersection Dash Spot			•								
	“And Keep on Looking”			•	•	•	•						
	High School	Assemblies											•
		Drivers Education											•
		Your Traffic Court											•
	General Public	Talks to Groups											•
		Community Action Program											•
		Use of Mass Media											•
		Multiple Threat Spot							•				
		Vehicle T/M Spot				•							
	Adult Intersection Dash Spot			•									
	Elderly	Safety Courses											•
		Talks to Groups											•
		Community Contact Programs											•

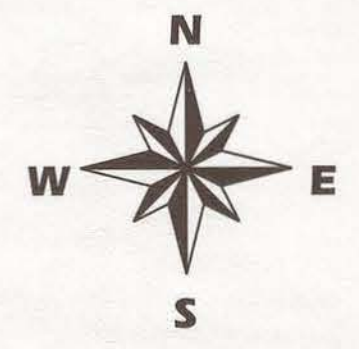
Source: NJDOT Pedestrian Compatible Planning and Design Guidelines

Region 4: Existing and Proposed Routes

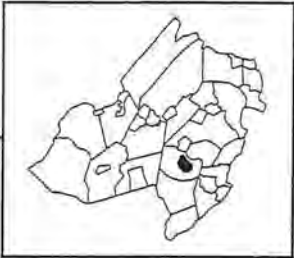


- | Existing Facilities | Proposed Facilities |
|---------------------|------------------------|
| Bike Lane | Bike Lane |
| Multi-use Path | Multi-use Path |
| Multi-use Trail | Multi-use Trail |
| Sidewalk | Sidewalk |
| Walking Trail | Walking Trail |
| Shared Roadway | Bike Lane and Sidewalk |

- Parks and Open Space**
- Bicycling Trails
 - Hiking Trails
 - Railroad Stations
 - Railroads
 - Water



Town of Morristown



• **MUNICIPAL SUMMARY**

As the county seat, this Town has attracted a mixture of high density residential and commercial development, with business activity centering around the Green and the South Street/ Madison Avenue (NJ 124) area. A railroad station is located within walking distance from the Green. Morristown recently revitalized some of their extensive sidewalk system. Portions of Patriots' Path exist, with additional sections proposed, and the Traction Line Recreational Trail begins in Morristown. There are five shared roadways within the Town.

• **LAND AREA***

2.94 square miles

• **POPULATION***

16,189

• **POPULATION AGES 5-14***

1,393

• **INTERMODAL LOCATIONS**

Morristown Station..... Rail Station

• **MODE TO WORK***

Number of bicycle commuters 17
 Number of pedestrian commuters 687
 Number of total commuters..... 9,161

• **PARKS AND OPEN SPACE**

Federal

Morristown National Historical Park

County

Patriots' Path/West Morris Greenway
 Traction Line Recreation Trail

Municipal

Abbett Ave Park
 Budd Street Park
 Burnham Park
 Cauldwell Park
 Elliot Street Park
 Footes Pond Park
 Ford Avenue Park
 Harrison Street Park
 Jacob Ford Park
 Jersey Avenue Park
 King Street Playground
 Lidgerwood Park
 Speedwell Park

Other

Morristown Green

*=1990 Census

EXISTING FACILITIES

- **Sidewalks**

Ann Street
Bank Street
Catano Avenue
Early Street
East Park Place
Elm Street
James Street
Lafayette Avenue
Macculloch Avenue
Madison Avenue
Maple Avenue
Martin Luther King Boulevard
Mills Street
Morris Avenue
Morris Street
Mount Kemble Avenue
Olmstead Road
Schuyler Place
South Park Place
South Street
Speedwell Avenue
Spring Street
Sussex Avenue
Washington Avenue
Washington Street
Western Avenue

- **Multi-Use Paths**

Patriots' Path
Traction Line Recreational Trail

- **Multi-Use Trails**

Patriots' Path

- **Shared Roadways**

Ford Avenue
Franklin Street
South Street
Speedwell Avenue
Turtle Road
Washington Avenue
Woodland Avenue

RECOMMENDATIONS

- **Sidewalks**

Morris Street

- **Multi-Use Paths**

Patriots' Path
Traction Line-Rail Station connection
Traction Line-Loantaka connection

APPENDIX K

ROAD OWNERS RESPONSE

COUNTY OF MORRIS
DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING & TRANSPORTATION

P.O. Box 900
Morristown, New Jersey 07963-0900



Board of Chosen Freeholders

Director
Deborah Smith

Deputy Director
Stephen H. Shaw

Douglas R. Cabana
Kathryn A. DeFillippo
John Kirckus
Thomas J. Mastrangelo
Tayfun Selen

County Administrator
John Bonanni

*Director of Public Works &
County Engineer*
Christopher J. Vitz, P.E.
973-285-6750
Fax: 973-539-3141
cvitz@co.morris.nj.us

Assistant County Engineer
Roslyn C. Khurdan, P.E.

October 22, 2020

Julia Steponanko, P.E.
Greenman-Pedersen, Inc
100 Corporate Drive, Suite 301
Lebanon, NJ 08833

RE: CR 510 and Ridgedale Avenue Road Safety Audit, Morristown

Ms. Steponanko:

Morris County thanks the Road Safety Audit team for conducting this important evaluation of traffic safety along County Route 510 and Ridgedale Avenue in Morristown. The team identified many recommendations for improving safety and better accommodating travel along these critical corridors. While we cannot commit to specific improvements presented in the report, the recommendations will be useful in future analyses as we seek to improve travel and safety.

After the Road Safety Audit, the Division of Engineering & Transportation applied to NJTPA's FY 2020 Local Safety Program for design and construction funding to improve the intersection of Morris Avenue (510) and Ridgedale Avenue in Morristown, one of the intersections studied in this Audit. The report's findings will be considered in the design of this intersection.

Again, we thank you for your efforts in preparing this report.

Sincerely,

Christopher J. Vitz, P.E., C.P.W.M.
Director of Public Works & County Engineer