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
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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>
<thead>
<tr>
<th>Location</th>
<th>Ped Corridor</th>
<th>Regional Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR 510</td>
<td>#15 County (MP 11.60-12.60)</td>
<td>#1 County (MP 11.41-12.41)</td>
</tr>
<tr>
<td></td>
<td>Schuyler Pl to Washington Pl</td>
<td>Phoenix Ave to Ford Ave</td>
</tr>
<tr>
<td>CR 510Z</td>
<td>#76 County (MP 1.07-1.17)</td>
<td>#176 County (MP 0.21-1.21)</td>
</tr>
<tr>
<td></td>
<td>Lackawanna Pl to CR 510</td>
<td>CR 510 to CR 510</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Intersections</th>
<th>Pedestrian Intersections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ridgedale Ave</td>
<td>#17</td>
<td>#55 (510Z)</td>
</tr>
<tr>
<td>Abbett Ave</td>
<td>#49 (RD)</td>
<td>#9 (RD)</td>
</tr>
<tr>
<td>Spring St</td>
<td>#52</td>
<td>#10</td>
</tr>
<tr>
<td>Lafayette Ave</td>
<td>#77</td>
<td>-</td>
</tr>
<tr>
<td>Schuyler Pl</td>
<td>#79</td>
<td>#7</td>
</tr>
<tr>
<td>Elm St</td>
<td>#82</td>
<td>#55</td>
</tr>
<tr>
<td>King St</td>
<td>#89</td>
<td>#51</td>
</tr>
<tr>
<td>Ridgedale Ave</td>
<td>#17</td>
<td>#55 (510Z)</td>
</tr>
<tr>
<td>Abbett Ave</td>
<td>#49 (RD)</td>
<td>#9 (RD)</td>
</tr>
</tbody>
</table>

### 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.

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

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](image_url)

3 [https://www.nj.gov/transportation/refdata/accident/crash_summary_reports.shtm](https://www.nj.gov/transportation/refdata/accident/crash_summary_reports.shtm)
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](image)

**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**

<table>
<thead>
<tr>
<th>Collision Type</th>
<th>Project Area Count</th>
<th>% of Total</th>
<th>2018 County Road System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sideswipe</td>
<td>119</td>
<td>25.7%</td>
<td>13.1%</td>
</tr>
<tr>
<td>Rear End</td>
<td>188</td>
<td>40.6%</td>
<td>31.5%</td>
</tr>
<tr>
<td>Parked Vehicle</td>
<td>10</td>
<td>9.9%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Backing</td>
<td>4</td>
<td>5.2%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>
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 3 – Vehicular Crash Type Breakdown

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)

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 6 – Light Conditions (Vehicular 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.

<table>
<thead>
<tr>
<th>Pedestrian/Bicyclist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Vegetation overgrown onto sidewalk, limiting useable width</td>
</tr>
<tr>
<td><strong>2.</strong> Pedestrian signal head not functioning; is not countdown type</td>
</tr>
<tr>
<td><strong>3.</strong> Uneven sidewalks in poor condition</td>
</tr>
<tr>
<td><strong>4.</strong> Pedestrian in crosswalk may not be visible to oncoming traffic</td>
</tr>
<tr>
<td><strong>5.</strong> Curb ramp missing Detectable Warning Surface (DWS); pedestrian path and driveway not clearly defined</td>
</tr>
<tr>
<td><strong>6.</strong> No defined bicycle facilities</td>
</tr>
<tr>
<td>Operations &amp; Visibility</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>7. Lane use not clearly defined</td>
</tr>
<tr>
<td>9. Signal heads can be upgraded to 12” with backplates for better visibility</td>
</tr>
<tr>
<td>11. Lighting may be reduced due to tree/leaves during certain times of year</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>Low safety benefit potential</td>
<td>May reduce total crashes by 1-25%&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
<tr>
<td>✓✓</td>
<td>Low to moderate safety benefit potential</td>
<td>May reduce total crashes by 26-49%&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>✓✓✓</td>
<td>Moderate safety benefit potential</td>
<td>May reduce total crashes by 50-74%&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>✓✓✓✓</td>
<td>High safety benefit potential</td>
<td>May reduce total crashes by 75+%&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>$</td>
<td>Low cost</td>
<td>Could be accomplished through maintenance</td>
</tr>
<tr>
<td>$$</td>
<td>Medium cost</td>
<td>May require some engineering or design and funding may be readily available</td>
</tr>
<tr>
<td>$$$</td>
<td>High cost</td>
<td>Longer term; may require full engineering, ROW acquisition and new funding</td>
</tr>
<tr>
<td>◐</td>
<td>Short term</td>
<td>Could be accomplished within 1 year</td>
</tr>
<tr>
<td>◇</td>
<td>Medium term</td>
<td>Could be accomplished in 1 to 3 years; may require some engineering</td>
</tr>
<tr>
<td>◆</td>
<td>Long term</td>
<td>Could be accomplished in 3 years or more; may require full engineering</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>Safety Benefit</th>
<th>Cost</th>
<th>Time Frame</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Investigate upgrading all ramps for ADA compliance</td>
<td>✓✓✓</td>
<td>$$$</td>
<td>◇</td>
<td>County</td>
</tr>
<tr>
<td>2</td>
<td>Explore conducting a parking study to investigate on-street parking requirements where business have existing parking lots, for conformance with Title 39, and to highlight public parking lots, such as wayfinding signs</td>
<td>✓&lt;sup&gt;4&lt;/sup&gt;</td>
<td>$</td>
<td>◇</td>
<td>Town</td>
</tr>
<tr>
<td>3</td>
<td>Examine corridor-wide signal upgrades (replace 8” traffic signal heads with 12”, install backplates with retroreflected border, evaluate clearance intervals, update to countdown pedestrian signal heads, replace push buttons in compliance with ADA, etc.)</td>
<td>✓✓</td>
<td>$$$</td>
<td>◇</td>
<td>County</td>
</tr>
</tbody>
</table>

<sup>4</sup> 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.

<sup>5</sup> 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>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>Safety Benefit</th>
<th>Cost</th>
<th>Time Frame</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Conduct a lighting analysis – consider upgrading the plastic housing on the fixtures to glass</td>
<td>☑☑☑</td>
<td>$$</td>
<td>◇</td>
<td>Town</td>
</tr>
<tr>
<td>5</td>
<td>Evaluate installing uniform push button types in consultation with The Seeing Eye, a local organization that uses downtown Morristown to train seeing eye dogs</td>
<td>☑</td>
<td>$$$</td>
<td>◇</td>
<td>County</td>
</tr>
</tbody>
</table>

**Bicycle/Pedestrian**

<table>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>Safety Benefit</th>
<th>Cost</th>
<th>Time Frame</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Inspect, repair and construct sidewalks in compliance with ADA as needed, including driveway aprons</td>
<td>☑☑☑</td>
<td>$$</td>
<td>◇</td>
<td>County</td>
</tr>
<tr>
<td>7</td>
<td>Examine inlets and install bicycle-safe grates</td>
<td>☑⁵</td>
<td>$$</td>
<td>◇</td>
<td>County</td>
</tr>
<tr>
<td>8</td>
<td>Study corridor-wide implementation of curb extensions (bump outs) based on the site-specific recommendations to maintain consistency</td>
<td>☑⁵</td>
<td>$$</td>
<td>◇</td>
<td>County</td>
</tr>
<tr>
<td>9</td>
<td>Investigate crosswalks status: change to ladder style, check placement and alignment</td>
<td>☑☑</td>
<td>$</td>
<td>◇</td>
<td>County</td>
</tr>
</tbody>
</table>

**Maintenance**

<table>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>Safety Benefit</th>
<th>Cost</th>
<th>Time Frame</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Examine existing striping for wear and restripe accordingly; add Raised Pavement Markers (RPMs) where appropriate</td>
<td>☑</td>
<td>$</td>
<td>◇</td>
<td>County</td>
</tr>
<tr>
<td>11</td>
<td>Inspect and replace missing, faded, damaged or incorrect/ outdated signage as needed (i.e. signs mounted below 7’, on non-breakaway posts or back-to-back signs that obscure shapes)</td>
<td>☑</td>
<td>$</td>
<td>◇</td>
<td>County</td>
</tr>
<tr>
<td>12</td>
<td>Inspect drainage facilities; ensure they are free of debris</td>
<td>☑⁵</td>
<td>$$</td>
<td>◇</td>
<td>County</td>
</tr>
<tr>
<td>13</td>
<td>Inspect and trim foliage/vegetation to improve sign visibility, lighting and sidewalk paths</td>
<td>☑⁵</td>
<td>$</td>
<td>◇</td>
<td>Town</td>
</tr>
<tr>
<td>14</td>
<td>Explore installing pervious pavement over tree pits to replace the steel grates</td>
<td>N/A</td>
<td>$$</td>
<td>◇</td>
<td>Town</td>
</tr>
</tbody>
</table>

**Education**

<table>
<thead>
<tr>
<th>No.</th>
<th>Recommendation</th>
<th>Safety Benefit</th>
<th>Cost</th>
<th>Time Frame</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Research sidewalk, crosswalk, multimodal education campaign and code enforcement</td>
<td>☑⁵</td>
<td>$</td>
<td>◇</td>
<td>Town/County</td>
</tr>
</tbody>
</table>

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

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

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

---

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

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

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</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>Explore advanced lane use and in-pavement markings (shield and direction) for the I-287 southbound off-ramp approach</td>
<td>✓ ✓</td>
<td>$</td>
<td>•</td>
<td>NJDOT/Town</td>
</tr>
<tr>
<td>86</td>
<td>Examine corridor-wide recommendation 3 regarding signal head upgrades and evaluate current placement</td>
<td>✓ ✓</td>
<td>$$$</td>
<td>•</td>
<td>NJDOT</td>
</tr>
<tr>
<td>87</td>
<td>Evaluate revising the lane use along Ridgedale Ave with defined lane use (currently, there are two approach lanes but only one receiving lane)</td>
<td>✓ ✓ 5</td>
<td>$</td>
<td>•</td>
<td>Town</td>
</tr>
<tr>
<td>88</td>
<td>Explore edge lines on Ridgedale to delineate travel lane versus parking areas</td>
<td>✓ 5</td>
<td>$</td>
<td>•</td>
<td>Town</td>
</tr>
<tr>
<td>89</td>
<td>Investigate mumble strips for the I-287 off ramp</td>
<td>✓ 5</td>
<td>$</td>
<td>•</td>
<td>NJDOT</td>
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<td>Evaluate red signal ahead sign or yellow flashers on new W3-3 signs</td>
<td>✓ 5</td>
<td>$</td>
<td>•</td>
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<td><strong>Lafayette Ave at Lackawanna Pl (Station Lot #2)</strong></td>
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<td>Examine advanced lane use and in-pavement markings (shield and direction)</td>
<td>✓ ✓</td>
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<td>•</td>
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<td>Investigate adding a rectangular rapid flashing beacon (RRFB) at Lackawanna Pl and in advance due to roadway geometry</td>
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<tr>
<td>95</td>
<td>Explore revising the striping to achieve better lane use due to the left lane being underutilized</td>
<td>✓ ✓ 5</td>
<td>$</td>
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**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](image)

*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.

![Driveway—Good vs Driveway—Bad](image)

**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.

![Ergonomic Crosswalk Example](image)

**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])](image)

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)](image)

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.
## Audit Team

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<tr>
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<tbody>
<tr>
<td>Debbie Dellagiacoma</td>
<td>Morris County Engineering</td>
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<tr>
<td>Dede Murray</td>
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<tr>
<td>John Hayes</td>
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<tr>
<td>Anthony DeVizio</td>
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<tr>
<td>Sgt. Brian LaBarre</td>
<td>Morristown Police Department, Traffic Safety</td>
</tr>
<tr>
<td>Dan Callas</td>
<td>TransOptions</td>
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<tr>
<td>Elmira Buongiorno</td>
<td>Nj Transit, Bus Operations</td>
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<tr>
<td>Virgilio Tan</td>
<td>NJDOT – BSBPP</td>
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<td>Yuriy Assekritov</td>
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<td>Aimee Jefferson</td>
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<tr>
<td>Bernie Boerchers</td>
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<td>Andrew Halloran</td>
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<tr>
<td>Aidan Sheehan</td>
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<tr>
<td>Julia Steponanko</td>
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# New Jersey Department of Transportation

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

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| County: | MORRIS | Daily Factor Group: | RG1_FC14 |
| Funct. | Urban Principal Arterial - Other | Axle Factor Group: | RG1_FC14 |
| Location: | Bet Ollyphant Dr and Lackawanna Place | Growth Factor Group: | RG1_FC14 |

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## 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 | Seasonal Factor Group: |  
| County: MORRIS | Daily Factor Group: |  
| Funct. Class: bet Spring St and Pine St Rt 510Z Lafayette Ave | Axle Factor Group: |  
| Location: bet Spring St and Pine St Rt 510Z Lafayette Ave | Growth Factor Group: |  

### Location:
- bet Spring St and Pine St Rt 510Z Lafayette Ave

### Volume
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- **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
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- **1,222**
- **2,334**
- **1,154**
- **1,237**

### AM Peak Fct
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- **0.97**
- **0.96**
- **0.95**
- **0.95**

### AM Peak Hr
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- **8:15**
- **7:30**
- **7:45**
- **8:15**
- **7:30**

### PM Peak Vol
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- **2,233**
- **1,172**
- **1,091**

### PM Peak Fct
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- **0.95**
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### Pulse Fct
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### Note:
- The table contains daily volume data from 01/05/2016 to 01/08/2016, collected by NJDOT.
- The data includes time-specific volume counts and factor groups (Seasonal, Daily, Axle, Pulse) for each day.
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Short-term Hourly Traffic Volume for 08/01/2017 to 08/07/2017

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AM Peak Vol | 910 | 474 | 436 | 1,209 | 1,046 | 356 |
AM Peak Fct | .872 | .853 | .886 | .93 | .931 | .908 |
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PM Peak Vol | 951 | 485 | 485 | 1,181 | 483 | 802 |
PM Peak Fct | .976 | .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 | 1.944 | 1.944 | 1.944 |
Axle Fct | 490 | 490 | 490 | 490 | 490 | 490 |
Pulse Fct | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
## 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 Abbott Ave and Rt 510Z Lafayette Ave  

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**AM Peak Hr:** 7:45  
**PM Peak Vol:** 1,883  
**PM Peak Fct:** .967  
**PM Peak Hr:** 17:00

**Seasonal Fct:** .977  
**Daily Fct:** .885  
**Axle Fct:** .492  
**Pulse Fct:** 2.000
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**LEGEND**

- **Symbols**
  - Moving Vehcile
  - Backing Vehicle
  - Non-Involved Vehicle
  - Pedestrian
  - Bicyclist
  - Property Damage Only Crash
  - Injury
  - Fatal Crash
  - Fixed Object
  - Animal
  - Non-Fixed Object
  - Pot Hole

- **Types of Crashes**
  - Rear End
  - Head On
  - Side Swipe
  - Out of Control
  - Overturned
  - Struck Object

- **Colors**
  - Red - 2016 Crashes
  - Blue - 2017 Crashes
  - Green - 2018 Crashes

**Number of Crashes with:**

- Property Damage Only: 6
- Injuries: 0
- Fatalities*: 0

**Total No. of Crashes:** 6
NEW JERSEY DEPARTMENT OF TRANSPORTATION

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

LEGEND

NUMBER OF CRASHES WITH

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

SYMBOLS

MOVING VEHICLE  
BACKING VEHICLE  
NON-INVOLED VEHICLE  
PEDESTRIAN  
BIKE/CYCIST  
PROPERTY DAMAGE ONLY CRASH  
INJURY IN CRASH  
FATAL CRASH  
FIXED OBJECT  
NON-FIXED OBJECT  
POTHOLE

TYPES OF CRASHES

REAR END  
HEAD ON  
SIDE SWIPE  
LEFT TURN  
RIGHT ANGLE  
OUT OF CONTROL  
OVERUPENDED  
STRUCK OBJECT/VEHICLE

COLORS

2016 CRASHES  
2017 CRASHES  
2018 CRASHES

* FATALITIES
### COLLISION DIAGRAM DATA

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#### LEGEND

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

**SYMBOLS**
- MOVING VEHICLE
- BACKING VEHICLE
- NON-MOVING VEHICLE
- PEDESTRIAN
- PROPERTY DAMAGE ONLY CRASH
- INJURY CRASH
- INJURY/N CRASH
- FIXED OBJECT
- ANIMAL
- NON-MOVING OBJECT
- PROPERTY DAMAGE ONLY CRASH

**TYPES OF CRASHES**
- REAR END CRASH
- HEAD ON CRASH
- SIDE SWERVE CRASH
- OUT OF CONTROL CRASH
- OVERTURNED CRASH
- STRUCK OBJECT
- RIGHT ANGLE CRASH

**COLORS**
- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

---

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

GPI
Engineering
Safety
Construction
Management

NOT TO SCALE
NEW JERSEY DEPARTMENT OF TRANSPORTATION
CR 510 (WASHINGTON ST/MORRIS ST), CR 510Z (LAFAYETTE AVE) & RIDGDALE AVE
MORRISTOWN TOWN, MORRIS COUNTY
2016 - 2018 COLLISION DIAGRAMS

LEGEND

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

SYMBOLS
MOVING VEHICLE
BACKING VEHICLE
NON-MOVING 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
LEFT TURN
RIGHT ANGLE
OUT OF CONTROL
OVERTURNED
STRIKE INFLICTED VEHICLE

COLORS
2016 CRASHES
2017 CRASHES
2018 CRASHES

NOT TO SCALE
**collision diagram data**

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**legend**

- **number of crashes with property damage only**: 52
- **injuries**: 9
- **fatalities**: 0
- **total no. of crashes**: 61

**symbols**

- Moving vehicle
- Non-moving 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
- Struck moving vehicle
- Left turn
- Right turn
- Angle

**colors**

- Red crashes
- Blue crashes
- Yellow crashes
- Green 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 services**

- civil engineers
- civil engineering services

**not to scale**
COLLISION DIAGRAM DATA

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LEGEND

SYMBOLS
- MOVING VEHICLE
- BACKING VEHICLE
- NON-MOTORIZED VEHICLE
- PEDESTRIAN
- CYCLIST
- PROPERTY DAMAGE ONLY CRASH
- INJURY TO PEDESTRIAN
- INJURY TO CYCLIST
- INJURY TO ANIMAL
- NON-MOTORIZED VEHICLE

TYPES OF CRASHES
- REAR END
- HEAD ON
- LEFT TURN
- RIGHT TURN
- SIDE SWIPE
- OUT OF CONTROL
- STRUCK FIXED OBJECT
- OVERTURNED

COLORS
- 2016 CRASHES
- 2017 CRASHES
- 2018 CRASHES

Number of Crashes with:
- Property Damage Only: 50
- Injuries: 3
- Fatalities*: 0

Total No. of Crashes: 53

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

GPI
Engineering Services
Construction Management

NOT TO SCALE
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## Legend

- **Number of Crashes with:**
  - Property Damage Only
  - Injuries
  - Fatalities
  - Total No. of Crashes

- **Symbols:**
  - Pedestrian
  - Bicycle
  - Property Damage Only Crash
  - Injury in Crash
  - Fixed Object
  - Non-Fixed Object

- **Types of Crashes:**
  - Rear End
  - Head On
  - Side Swipe
  - Out of Control
  - Overturned
  - Struck Property Vehicle

- **Colors:**
  - 2015 Crashes
  - 2016 Crashes
  - 2017 Crashes
  - 2018 Crashes
### Collision Diagram Data

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**Legend**

- **Symbols**
  - Moving Vehicle
  - Parking Vehicle
  - Non-Injured Vehicle
  - Pedestrian
  - Bicycle
  - Property Damage Only Crash
  - Injury in Crash
  - Fixed Object
  - Non-Fixed Object
  - Animal

- **Types of Crashes**
  - Rear End
  - Head On
  - Side Swipe
  - Out of Control
  - Overturned
  - Struck Another Vehicle

- **Colors**
  - Pedestrian Crash

---

**NEW JERSEY DEPARTMENT OF TRANSPORTATION**

**CR 510 (WASHINGTON ST/MORRIS ST), CR 510Z (LAFAYETTE AVE) & RIDGE AVE**

**MORRISTOWN TOWN, MORRIS COUNTY**

**2014-2018 PEDESTRIAN COLLISION DIAGRAMS**

**GPI**
### Collision Diagram Data

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**Legend**

#### Symbols
- **Moving Vehcile**
- **Backing Vehicle**
- **Non-Injured Vehicle**
- **Pedestrian**
- **Bicyclist**
- **Property Damage Only Crash**
- **Injury Crash**
- **Fatal Crash**
- **Fixed Object**
- **Non-Fixed Object**
- **Pothole**

#### Types of Crashes
- Rear End
- Head On
- Side Slide
- Out of Control
- Overturned
- Struck Vehicle
- Left Turn
- Right Angle

#### Colors
- **Pedestrian Crash**

---

**New Jersey Department of Transportation**

CR 510 (Washington St/Morris St), CR 502Z (Lafayette Ave) & Ridgedale Ave

MORRISTOWN TOWN, MORRIS COUNTY

2014-2018 Pedestrian Collision Diagrams

GPI Engineering

Crash Data Management

Not to Scale
NEW JERSEY DEPARTMENT OF TRANSPORTATION

2014-2018 PEDESTRIAN COLLISION DIAGRAMS

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

LEGEND

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

SYMBOLS
- MOVING VEHICLE
- NON-INVOLVED VEHICLE
- PEDESTRIAN
- BICYCLIST
- OVERTURNED
- PROPERTY DAMAGE ONLY CRASH
- INJURY IN CRASH
- FIXED OBJECT
- NON-FIXED OBJECT
- ANIMAL
- PARKED VEHICLE
- STRUCK PARAPET/ VEHICLE

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

COLORS
- PEDESTRIAN CRASH
### Collision Diagram Data

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<tr>
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<th>TIME</th>
<th>DATE</th>
<th>INJURED</th>
<th>SURFACE</th>
<th>WEATHER</th>
<th>LIGHT</th>
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</tbody>
</table>

### Legend

#### Symbols
- **Property Damage Only Vehicle**
- **Backing Vehicle**
- **Non-Involved Vehicle**
- **Pedestrian**
- **Bicyclist**
- **Property Damage Only Crash**
- **Injury in Crash**
- **Fixed Object**
- **Non-Fixed Object**
- **Blind Spot**

#### Types of Crashes
- **Rear End**
- **Head On**
- **Side Swipe**
- **Left Turn**
- **Right Angle**
- **Out of Control**
- **Overturned**

#### Colors
- **Yellow**
- **Red**
- **Green**
- **Purple**
- **Orange**

### New Jersey Department of Transportation

2014-2018 Pedestrian Collision Diagrams

CR 510 (Washington St/Morris St), CR 510Z (Lafayette Ave) & Ridgedale Ave

Morristown, Morris County
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

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

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.

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

Two approach lanes with no lane use and one receiving lane.

Curb ramps not ADA compliant.

Signal head per lane not provided; traffic signal equipment outdated; driveway in close proximity to intersection; queues from signal may block side street.
<table>
<thead>
<tr>
<th>Street Name</th>
<th>Jurisdiction</th>
<th>Functional Class</th>
<th>Federal Aid - NHS Sy</th>
<th>Control Section</th>
<th>Speed Limit</th>
<th>Number of Lanes</th>
<th>Med. Type</th>
<th>Med. Width</th>
<th>Pavement</th>
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**ROUTE 510 Z (East to West)**

**Mile Posts: 0.000 - 1.210**

**Date last inventoried: July 2012**

**SRI = 00000510Z_**
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<td>Urban Minor Arterial</td>
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<table>
<thead>
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<th>Control Section</th>
<th>Speed Limit</th>
<th>Number of Lanes</th>
<th>Med. Type</th>
<th>Med. Width</th>
<th>Pavement</th>
<th>Shoulder</th>
<th>Traffic Volumes</th>
<th>Traffic Sta. ID</th>
<th>Structure No</th>
<th>Enlarged Views</th>
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<td>4</td>
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<td>0</td>
<td>17,598 (2018)</td>
<td>n18306</td>
<td>1400121</td>
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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  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

FATAL & SERIOUS INJURIES BY ROADWAY SYSTEM (2008-2012)

- 3,265 Fatal and Serious Injuries
- 3,385 Fatal and Serious Injuries
- 2,350 Fatal and Serious Injuries

Roadway Jurisdiction
- NJDOT (2,800 mi)
- County (6,800 mi)
- Municipal (29,000 mi)
NATIONAL STRATEGY – TOWARD ZERO DEATHS

5-Year Rolling Average of Serious Traffic Injuries and Fatalities

- 5-Year Rolling Average K+A Injuries
- Statewide K+A Injuries at 2.5% Reduction

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
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

RSA PROCESS

Responsibilities:
Steps 1-2 & 7-8: Design Team/Road Owner
Steps 3-6: RSA Team
FHWA PROVEN SAFETY COUNTERMEASURES

20 countermeasures
Descriptions provided in handouts

• 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

- On-street parking*
- Sidewalk both sides
- Various style crosswalks

CR 510
- Minor/Principal Arterial
- 2- to 3-lanes

CR 510Z
- Minor Arterial
- 2-lanes, one way
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

NETWORK SCREENING

NJTPA County Ranking – 2012-2016 Data

<table>
<thead>
<tr>
<th>Route</th>
<th>Regional</th>
<th>Pedestrian/Bicycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR 510</td>
<td>#1: MP 11.41-12.41</td>
<td>#15: MP 11.61-12.61</td>
</tr>
<tr>
<td>CR 510Z</td>
<td>#176: 0.21-1.21</td>
<td>#76: MP 1.07-1.17</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>All Crashes</th>
<th>Pedestrian</th>
<th>Bike/Ped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ridgedale Ave</td>
<td>#17</td>
<td>#55 (510Z)</td>
<td>#92 (510Z)</td>
</tr>
<tr>
<td>Abbott Ave</td>
<td>#49 (RD)</td>
<td>#9 (RD)</td>
<td>#18 (RD)</td>
</tr>
<tr>
<td>Spring St</td>
<td>#52</td>
<td>#10</td>
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<tr>
<td>Lafayette Ave</td>
<td>#77</td>
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<td>Schuyler Pl</td>
<td>#79</td>
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<td>Elm St</td>
<td>#82</td>
<td>#55</td>
<td>#92</td>
</tr>
<tr>
<td>King St</td>
<td>#89</td>
<td>#51</td>
<td>#92</td>
</tr>
</tbody>
</table>
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

CRASHES: LOCATION IN RSA (CR 510)

Modified Histogram View by 0.1 Mile
Geocoded Crashes Only (2016-2018)

Begin MP 11.44
End MP 12.25

58 crashes
45 crashes
38 crashes
34 crashes
23 crashes
11 crashes

Saw Mill, King, Lafayette, Blachley, Elm
CRASHES: LOCATION IN RSA

Modified Cluster View
Geocoded Crashes Only (2016-2018)

CRASHES: RSA AREA v. COUNTY ROAD SYSTEM

Crash Type Breakdown

- Project Area
- 2018 County Road System
CRASHES: TYPE & TIMES

Vehicle Crash Types (2016-2018)

- Same Direction - Rear End: 1.7%
- Same Direction - Sideswipe: 0.4%
- Right Angle: 0.4%
- Opposite Direction (Head On): 1.7%
- Opposite Direction (Sideswipe): 10.0%
- Struck Parked Vehicle: 10.2%
- Left Turn/U Turn: 5.2%
- Biking: 0.2%
- Encroachment: 43.8%
- Overturned: 0%
- Fixed Object: 0%
- Animal: 0%

Total Crashes by Month

- January: 8%
- February: 9%
- March: 9%
- April: 10%
- May: 7%
- June: 9%
- July: 9%
- August: 6%
- September: 5%
- October: 11%
- November: 0%
- December: 5%

Total Crashes by Day of Week

- Monday: 16%
- Tuesday: 13%
- Wednesday: 15%
- Thursday: 19%
- Friday: 17%
- Saturday: 12%
- Sunday: 8%

CRASHES: LIGHT & SURFACE CONDITIONS

Light Conditions

- Unknown: 1%
- Night: 25%
- Dusk: 3%
- Dawn: 1%
- Day: 70%

Surface Conditions

- Other: 0%
- Icy: 1%
- Snowy: 3%
- Wet: 20%
- Dry: 18%

- 2018 County Road System: 76%
- Project Area: 80%
PED/BIKE CRASHES: LOCATION IN RSA

Modified Cluster View
Geocoded Crashes Only (2014-2018)

PED/BIKE CRASHES: SEVERITY & TIMES

Bicycle/Pedestrian Crash Severity

<table>
<thead>
<tr>
<th>Severity</th>
<th>2014-2018 RSA</th>
<th>2018 County Rds</th>
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<tbody>
<tr>
<td>Fatal, 0%</td>
<td>13%</td>
<td>20%</td>
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<tr>
<td>Major Injury, 0.0%</td>
<td>47%</td>
<td>75%</td>
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<tr>
<td>Fatal, 0.2%</td>
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<td></td>
</tr>
<tr>
<td>Moderate Injury, 4%</td>
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Crashes by Month

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Crashes by Day of Week

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<th>2014</th>
<th>2018</th>
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<td>Monday</td>
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<td>0</td>
</tr>
<tr>
<td>Sunday</td>
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</table>

Property Damage Only
Minor Injury
Moderate Injury
Major Injury
Fatal

Project Area
Average County Road 2014-2018
PED/BIKE CRASHES: LIGHT & SURFACE CONDITIONS

**Light Conditions**

- **Unknown**: 1%
- **Night**: 25%
- **Dusk**: 3%
- **Dawn**: 1%
- **Day**: 70%

**Surface Conditions**

- **Dry**: 80%
- **Wet**: 13%
- **Snowy**: 3%
- **Icy**: 0%
- **Other**: 0%

2018 County Road System compared to Project Area

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!
FIELD VISIT | POST AUDIT

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!
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?

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

Vehicular Mobility Improvements
- Signal improvements
- 12 design interventions
  - Within focus areas
  - Mitigate traffic

Active and Other Mobility Improvements
- 21 total
- Focused on active mobility
- Do not significantly affect traffic operations
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.
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
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
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

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**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.
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 designed for transit use.
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.

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.
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 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.

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, Abbott 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)
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
- 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
- Explore time and place restrictions for on-street parking, which would allow parking spaces to be utilized as travel lanes during peak traffic hours
- 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.)
- 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
- 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
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.
**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.
<table>
<thead>
<tr>
<th>STREET TYPE</th>
<th>ADJACENT COMMUNITY FORMS</th>
<th>PEDESTRIAN REALM FEATURES</th>
<th>ROADSIDE FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Primary Activity Corridor (PAC)</td>
<td>• Town Core • Town Core Support</td>
<td>• Street trees/ landscaping • Bicycle parking • Benches • Refuse containers at every corner • Pedestrian-scale lighting • Outdoor café seating • See &quot;Transit&quot; features</td>
<td>• Metered on-street parking • 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</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 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</td>
<td>• Bus shelters and other amenities, especially at transfer locations • Consider Bus Only lanes, signal prioritization, where needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Facilities should be considered where appropriate</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Striped bike lane (5’ min wide) or separated bike path</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• If not appropriate, bicycle facilities should be located on surrounding SASs</td>
</tr>
<tr>
<td>B. Secondary Activity Street (SAS)</td>
<td>• Town Core • Town Core Support • Nbd. Residential (High Density) • Nbd. Center</td>
<td>Same as PAC except; • Limited curb cuts permitted • Sidewalks at least 8’ wide, ideally 10’ wide</td>
<td>Same as PAC except; • 2 to 3 lanes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Bus shelters or well-marked signage, amenities, especially at transfer locations • Consider Bus Only lanes, signal prioritization, where needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 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</td>
</tr>
<tr>
<td>C. Town Thoroughfare (TT)</td>
<td>• Corridor Residential (all) • Corridor Mixed-Use (all) • Nbd. Residential (High and Medium Density)</td>
<td>Urban Environments: • Bicycle parking • Street trees and/or landscaping • Pedestrian lighting • Suburban Environments: • Bicycle parking at major destinations (parks, library, etc.) • See &quot;Transit&quot; features</td>
<td>On-street parking allowed but bicycle facilities should take precedence • Metered parking may be appropriate depending on traffic conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 2 to 4 lanes 11’-12’ wide lanes • 25-35 mph desired • Road diet may be appropriate depending on traffic conditions</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Well-marked bus stops • Shelters at busier stops</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• 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</td>
</tr>
<tr>
<td>D. Neighborhood Thoroughfare (NT)</td>
<td>• Nbd. Residential (all)</td>
<td>Planting strip and/or street trees where appropriate • See &quot;Transit&quot; features</td>
<td>On-street parking allowed but bicycle facilities should take precedence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• One lane per direction 15-20 mph desired</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Well-marked bus stops • Shared lane facilities are appropriate</td>
</tr>
<tr>
<td>E. Residential (R)</td>
<td>• Nbd. Residential (all)</td>
<td>Sidewalks are desirable but not generally required</td>
<td>On-street parking allowed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• One lane per direction 15 mph or less desired</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No markings necessary • Signage should be provided if along or intersecting a designated bicycle route</td>
</tr>
</tbody>
</table>
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
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
Morristown Area - as of July 2019

Status of Development
- **Approved**
- **Potential / Proposed**

Potential Projects:
- 30 Residential Units Under Construction
- 35 Residential Units Planned
- 50 Residential Units Under Construction
- 20 Residential Units Planned
- 5,000 sf Office & 30,000 sf Retail Under Construction
- 7,000 sf Office & 2 Residential Units Under Construction
- 100 Room Hotel Planned
- 55 Apartments & 15,000 sf Retail Under Construction
- 5,000 sf bar/restaurant Under Construction
- 89 Residential Units Concept
- 55 Apartments & 15,000 sf Retail
- 25 Residential Units Under Construction
- 35 Residential Units Planned
- 85 Apartments & 2,700 sf Retail Site Plan Submitted
- 30 Residential Units Under Construction
- 20,000 sf Office Addition Planned
- 5,000 sf bar/restaurant Under Construction
- 5,000 sf Retail & 35 Residential Units Under Construction
- 354,000 sf Office & 30,000 sf Retail Concept

Note: The map shows the locations of the development projects with symbols indicating approved and potential projects.
**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 units\(^ {11}\) 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**

<table>
<thead>
<tr>
<th>Year</th>
<th>% Change</th>
<th>Total Units</th>
<th>Housing Type</th>
<th>Rank in NJ</th>
<th>Statewide Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 &amp; 2 family</td>
<td>Multi-family</td>
<td>Mixed use</td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td>1,364</td>
<td>725</td>
<td>624</td>
<td>15</td>
</tr>
<tr>
<td>2007</td>
<td>-32.5%</td>
<td>921</td>
<td>518</td>
<td>396</td>
<td>7</td>
</tr>
<tr>
<td>2008</td>
<td>-57.5%</td>
<td>391</td>
<td>254</td>
<td>136</td>
<td>1</td>
</tr>
<tr>
<td>2009</td>
<td>18.9%</td>
<td>465</td>
<td>216</td>
<td>248</td>
<td>1</td>
</tr>
<tr>
<td>2010</td>
<td>-14.0%</td>
<td>400</td>
<td>260</td>
<td>140</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>5.3%</td>
<td>421</td>
<td>283</td>
<td>137</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>43.7%</td>
<td>605</td>
<td>391</td>
<td>208</td>
<td>6</td>
</tr>
<tr>
<td>2013</td>
<td>48.6%</td>
<td>899</td>
<td>420</td>
<td>478</td>
<td>1</td>
</tr>
<tr>
<td>2014</td>
<td>-23.1%</td>
<td>691</td>
<td>459</td>
<td>161</td>
<td>71</td>
</tr>
</tbody>
</table>

*Source: New Jersey Department of Community Affairs*

\(^{10}\) [http://www.state.nj.us/dca/divisions/codes/reporter/building_permits.html](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. 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 Morris-town (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:

- 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

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.

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Footnote:

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 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

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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. 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. 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

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

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>
<thead>
<tr>
<th>Destinations</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>Schools attract a large amount of bicycle and pedestrian use because they are typically located near residential areas.</td>
</tr>
<tr>
<td>Libraries</td>
<td>Libraries are frequented by a broad spectrum of people including children and the elderly who may not drive.</td>
</tr>
<tr>
<td>Hospitals</td>
<td>Typically located in urbanized areas automobile parking may be limited.</td>
</tr>
<tr>
<td>Commercial Areas</td>
<td>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.</td>
</tr>
<tr>
<td>Downtown Areas</td>
<td>Historically these areas are pedestrian oriented. Providing secure bicycle storage will attract bicyclists to downtown areas.</td>
</tr>
<tr>
<td>Railroad Stations and Bus Terminals</td>
<td>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.</td>
</tr>
<tr>
<td>Recreation Areas</td>
<td>These facilities are natural magnets for bicyclists and pedestrians. It is important to provide safe and convenient access to facilities from adjacent areas.</td>
</tr>
<tr>
<td>Scenic, Historic, and Cultural Sites</td>
<td>These sites should accommodate bicyclists and pedestrians.</td>
</tr>
<tr>
<td>Employment Centers</td>
<td>Employers should provide incentives to encourage employees to bicycle and walk. Access to employment areas on highways and busy roads should be safe.</td>
</tr>
<tr>
<td>Residential Areas</td>
<td>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.</td>
</tr>
</tbody>
</table>

Source: Middlesex County Bicycle-Pedestrian Plan, March 1995
A 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>
<thead>
<tr>
<th>Table 5.2</th>
<th>Pedestrian Accident Types (Urban Areas)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Cause</td>
</tr>
</tbody>
</table>
| Dart-Out - First Half of Intersection (24%) | - 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%) | - Same as above except pedestrian gets out halfway or more before being struck |
| Midblock Dash (8%) | - Midblock (not at intersection)  
- Pedestrian running but NOT sudden appearance or short time exposure as above |
| Intersection Dash (13%) | - Intersection  
- Same as dart out except happens at intersection |
| Vehicle Turn-Merge with Attention Conflict (4%) | - Vehicle turning or merging into traffic  
- Driver is attending to traffic in one direction and hits pedestrian from another direction |
| Turning Vehicle (5%) | - Vehicle turning or merging into traffic  
- Driver attention NOT documented  
- Pedestrian NOT running |
| Other (23%) | - 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

<table>
<thead>
<tr>
<th>Countermeasures</th>
<th>Accident Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrier: Median</td>
<td>Intersection Dart-Out (First Half)</td>
</tr>
<tr>
<td>Barrier: Roadway/Sidewalk</td>
<td>Intersection Dart-Out (Second Half)</td>
</tr>
<tr>
<td>Barrier: Street Closure</td>
<td>Midblock Dash</td>
</tr>
<tr>
<td>Bus Stop: Relocation</td>
<td>Intersection Dash</td>
</tr>
<tr>
<td>Crosswalk: Intersection</td>
<td>Turning Vehicle</td>
</tr>
<tr>
<td>Crosswalk: Midblock</td>
<td>Multiple Threat</td>
</tr>
<tr>
<td>Diagonal Parking–1 Way Street</td>
<td>Bus Stop Related</td>
</tr>
<tr>
<td>Grade Separation</td>
<td>School Bus Stop Related</td>
</tr>
<tr>
<td>Facilities for Handicapped</td>
<td>Ice Cream Vendor</td>
</tr>
<tr>
<td>Lighting: Crosswalk</td>
<td>Trapped</td>
</tr>
<tr>
<td>Lighting: Street</td>
<td>Backup</td>
</tr>
<tr>
<td>One-Way Streets</td>
<td>Walking on Roadway</td>
</tr>
<tr>
<td>Reflective Materials</td>
<td>Result Vehicle-Vehicle Crash</td>
</tr>
<tr>
<td>Safety Islands</td>
<td>Hitchhiking</td>
</tr>
<tr>
<td>Sidewalk/Pathway</td>
<td>Working in Roadway</td>
</tr>
<tr>
<td>Signal: Pedestrian (Shared)</td>
<td>Disabled Vehicle Related</td>
</tr>
<tr>
<td>Signal: Pedestrian (Delayed)</td>
<td>Nighttime Situation</td>
</tr>
<tr>
<td>Signal: Pedestrian (Separated)</td>
<td>Handicapped Pedestrians</td>
</tr>
</tbody>
</table>
| Signal: Traffic                          | Source: NJDOT Pedestrian Compatible Planning and Design Guidelines

Source: NJDOT Pedestrian Compatible Planning and Design Guidelines
<table>
<thead>
<tr>
<th>Countermeasures</th>
<th>Accident Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-School</td>
<td>Intersection Dart-Out (First Half)</td>
</tr>
<tr>
<td>Parental Guidance</td>
<td>•</td>
</tr>
<tr>
<td>Traffic Safety Clubs</td>
<td>•</td>
</tr>
<tr>
<td>Television Programs</td>
<td>•</td>
</tr>
<tr>
<td>Walking In Traffic Safely</td>
<td>•</td>
</tr>
<tr>
<td>Watchful Willie</td>
<td>•</td>
</tr>
<tr>
<td>Elementary School</td>
<td>Officer Friendly</td>
</tr>
<tr>
<td>Demonstrations by Patrols</td>
<td>•</td>
</tr>
<tr>
<td>Education Within the Curriculum</td>
<td>•</td>
</tr>
<tr>
<td>Green Pennant Program</td>
<td>•</td>
</tr>
<tr>
<td>“Big Wheel” Spot</td>
<td>•</td>
</tr>
<tr>
<td>Willie Whistle Program</td>
<td>•</td>
</tr>
<tr>
<td>Child Intersection Dash Spot</td>
<td>•</td>
</tr>
<tr>
<td>“And Keep on Looking”</td>
<td>•</td>
</tr>
<tr>
<td>High School</td>
<td>Assemblies</td>
</tr>
<tr>
<td>Drivers Education</td>
<td>•</td>
</tr>
<tr>
<td>Your Traffic Court</td>
<td>•</td>
</tr>
<tr>
<td>General Public</td>
<td>Talks to Groups</td>
</tr>
<tr>
<td>Community Action Program</td>
<td>•</td>
</tr>
<tr>
<td>Use of Mass Media</td>
<td>•</td>
</tr>
<tr>
<td>Multiple Threat Spot</td>
<td>•</td>
</tr>
<tr>
<td>Vehicle T/M Spot</td>
<td>•</td>
</tr>
<tr>
<td>Adult Intersection Dash Spot</td>
<td>•</td>
</tr>
<tr>
<td>Elderly</td>
<td>Safety Courses</td>
</tr>
<tr>
<td>Talks to Groups</td>
<td>•</td>
</tr>
<tr>
<td>Community Contact Programs</td>
<td>•</td>
</tr>
</tbody>
</table>

Source: NJDOT Pedestrian Compatible Planning and Design Guidelines
Region 4: Existing and Proposed Routes

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

Proposed Facilities
- Bike Lane
- Multi-use Path
- Multi-use Trail
- Sidewalk
- Walking Trail
- Bike Lane and Sidewalk

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

Source: Morris County Division of Transportation Management, December 1998

Map 5: Region 4
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
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

Offices located in 30 Schuyler Place, Morristown, New Jersey