Road Safety Audit:

Springfield Avenue between Becker Terrace and Ellis Avenue
Irvington Township, Essex County
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Executive Summary

This document is the final report of the Springfield Avenue Road Safety Audit (RSA). It was conducted along Springfield Avenue (CR 603) from Becker Terrace to Ellis Avenue (MP 0.00-1.71) in Irvington Township, Essex County. An RSA is an effective way of identifying crash-causing trends and appropriate countermeasures utilizing a nontraditional approach that promotes transportation safety while maintaining mobility.

This section of Springfield Avenue was identified on NJTPA’s Local Safety Program Network Screening list as a high priority location. According to the NJDOT crash database, 478 crashes occurred during the three-year period between January 1, 2014 and December 31, 2016 along the study area of Springfield Avenue with 132, 160 and 186 crashes occurring in 2014, 2015 and 2016, respectively. Additionally, 84 pedestrian crashes occurred over the five-year period between January 1, 2012 and December 31, 2016.

This one-day RSA was conducted on Thursday, May 24, 2018 from 9:00 am to 3:00 pm. The pre- and post-audit meetings were held in the Irvington Municipal Building, located at 1 Civic Square, Irvington, NJ. Representatives from NJDOT, NJTPA, Essex County and Irvington Township were in attendance with NJDOT serving as the facilitator.

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

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

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

A. Site Selection

This section of Springfield Avenue (CR 603), from Becker Terrace to Ellis Avenue (MP 0.00-1.79), was identified on NJTPA’s Local Safety Program Network Screening list as a high priority location, as shown in the below FY 2017-2018 ranking. Of note, these rankings are based on 2011-2013 vehicular and 2009-2013 pedestrian crash data.

<table>
<thead>
<tr>
<th>Location</th>
<th>Ped Corridor</th>
<th>Regional Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Springfield Avenue</td>
<td>#1 County (MP 0.51-1.51)</td>
<td>#34 NJTPA (2010-2012)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Intersections</th>
<th>Pedestrian Intersections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elmwood Ave (MP 0.60)</td>
<td>#11 County</td>
<td>#27 County</td>
</tr>
<tr>
<td>William S. Bull St (MP 0.82)</td>
<td>#47 County</td>
<td>#8 County</td>
</tr>
<tr>
<td>Smith St (MP 0.90)</td>
<td>#97 County</td>
<td>Not Ranked</td>
</tr>
<tr>
<td>Orange Ave (MP 0.96)</td>
<td>#49 County</td>
<td>#3 County</td>
</tr>
<tr>
<td>Clinton Ave (MP 1.10)</td>
<td>#8 County</td>
<td>#23 County</td>
</tr>
<tr>
<td>N Maple Ave (MP 1.47)</td>
<td>#75 County</td>
<td>#9 County</td>
</tr>
<tr>
<td>Grove St (MP 1.53)</td>
<td>#23 County</td>
<td>#25 County</td>
</tr>
<tr>
<td>Stuyvesant Ave (MP 0.66)</td>
<td>Not Ranked</td>
<td>#123 County</td>
</tr>
<tr>
<td>Park Pl (MP 0.78)</td>
<td>Not Ranked</td>
<td>#115 County</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.

The RSA process, one of FHWA’s proven safety countermeasures, is shown in the figure below.
C. The Springfield Avenue RSA Event
This one-day RSA was conducted on Thursday, May 24, 2018 from 9:00 am to 3:00 pm. The pre- and post-audit meetings were held in the Irvington Municipal Building, located at 1 Civic Square, Irvington, NJ. Representatives from NJDOT, NJTPA, Essex County and Irvington Township were in attendance with NJDOT serving as the facilitator. A list of team members can be found in Appendix A.

II. Corridor Description and Analysis

A. Study Location
The study area consists of approximately 1.7 miles of Springfield Avenue within Irvington Township limits. This stretch of Springfield Avenue is a mix of commercial and retail properties. Commercial sites consist of one- and two-story retail, professional and service establishments; and a grocery store-anchored shopping plaza. The study area encompasses the Springfield Avenue Corridor Special Improvement District (SASID) and the Township is part of NJ Urban Enterprise Zone (UEZ) Program.

B. Roadway and Intersection Characteristics
Springfield Avenue is classified as an urban principal arterial with no posted speed limit. Therefore, a statutory speed limit of 25 mph is assumed based on the urban setting. The corridor study section is primarily 4-lanes, undivided, with no shoulders and parking on both sides. The roadway’s horizontal alignment is generally straight and crosses over the Garden State Parkway towards the eastern limits. There are 16 signalized and 24 unsignalized intersections along this section.

C. Existing Bicycle/Pedestrian Accommodations
Sidewalks are currently available along both sides of Springfield Avenue and are typically more than 6 feet wide. Sidewalk conditions vary from newly installed to needing maintenance. Standard, ladder, and continental style crosswalks are provided throughout the corridor, with some of the latter designed as ergonomic crosswalks. There are no bicycle lanes or other bicycling infrastructure identified along the corridor.

D. Traffic Volumes
Based on available data, the 2016 ADT along Springfield Avenue is approximately 12,000 vehicles per day within the study area. A copy of the available data can be found in Appendix C.

E. Transit Service
NJ Transit bus service is provided along Springfield Avenue via numerous routes. The Irvington Bus Terminal, the second busiest bus facility in NJ, is located along Springfield Avenue at Washington Avenue. GO Bus service, express to NYC, is also provided along Springfield Avenue. The nearest train stations are in Newark and Maplewood.
F. Community Profile

Population and income characteristics from the 2010 Census (U.S. Census Bureau) were used to identify minority populations and low-income populations. Updates to the 2010 Census were performed by the Census Bureau through the American Community Survey (ACS) estimate. The latest ACS for this study area is a five-year estimate from 2012 through 2016, except for LEP, which was from the 2011-2015 ACS. A summary of the demographics is listed below.

Table 3 – Springfield Avenue Area Demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Springfield Ave Area</th>
<th>County Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poverty</td>
<td>25.4%</td>
<td>17.2%</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black or African American</td>
<td>81.8%</td>
<td>38.9%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>13.1%</td>
<td>22.0%</td>
</tr>
<tr>
<td>White</td>
<td>1.9%</td>
<td>31.5%</td>
</tr>
<tr>
<td>Asian</td>
<td>2.1%</td>
<td>5.0%</td>
</tr>
<tr>
<td>American Indian/Alaskan</td>
<td>0.0%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Other¹</td>
<td>1.2%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Limited English Proficiency (LEP)</td>
<td>11.8%</td>
<td>9.5%</td>
</tr>
</tbody>
</table>

In addition, approximately 26% of the population uses public transportation compared to the Essex County average of 21%. Roughly 5% of the area population walk or bike to work, which is similar to the county average.

G. Redevelopment

The Township has been making a concerted effort to take advantage of the upswing in the Newark economy to bolster Irvington’s business climate, attract entrepreneurs, stabilize the real estate market, and build a better quality of life for residents. Towards that end, vacant and dilapidated residential buildings are demolished on a rolling basis. The Township also updated its Master Plan in 2002 (reexamined in 2008) to balance the need for growth and business attraction with housing density and protection of current neighborhoods. Essex County’s 2013 Comprehensive Traffic Plan identified Clinton Avenue and Grove Street as intersections in need of improvement. Excerpts from the County and Township reports can be found in Appendix I and J, respectively.

III. Crash Findings

The analysis used in the RSA was based on reportable crashes that resulted in a fatality, injury and/or property damage as found in the NJDOT crash database. Corridor-wide crash characteristics and overrepresentations were compared to the 2016 statewide average for the county road system as further detailed below. All crashes were plotted onto collision diagrams, which can be found in Appendix D and E. Of note, crashes during 2016 may be skewed due to the reconstruction of the Springfield Avenue bridge over the Garden State Parkway (GSP) and its associated construction staging.

A. Temporal Trends

According to the NJDOT crash database, there were 478 crashes occurred during the three-year period between January 1, 2014, and December 31, 2016, along the study area of Springfield Avenue with

1 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’
132, 160 and 186 crashes occurring in 2014, 2015 and 2016, respectively. Total crashes were highest in December and lowest in June and August compared to the county average. The day with the most of crashes is Saturday and the day with the fewest is Thursday.

![Figure 1 – Total Crashes by Month and Day of Week](image)

Additionally, 84 pedestrian crashes occurred over the five-year period from 2012 to 2016. Most of these crashes included minor to moderate injury. More crashes occurred at non-daylight hours than the county average. Collisions with pedestrians were most common Tuesdays and Fridays and in June. It should be noted that the low number of crashes compared to the county road system may be statistically insignificant since they could not be correlated with an identified event. For example, while the monthly chart indicates 17 pedestrian crashes occurred in June, this equates to 20% of total

![Figure 2 – Pedestrian/Bicyclist Crashes by Month and Day of Week](image)
pedestrian crashes versus the county average of approximately 175 pedestrian crashes (8%) for the same month.

**B. Collision Types**

Overrepresented crash types over the three-year period from 2014 to 2016 included sideswipe, parked vehicle, backing, and pedestrian. Of the 84 pedestrian/cyclist crashes over the five-year period from 2012 to 2016, two were pedalcyclists (scooter, skateboard, or bicycle) traveling alongside traffic, within the roadway.

<table>
<thead>
<tr>
<th>Table 4 – Overrepresented Crash Types (2014-2016)</th>
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</thead>
<tbody>
<tr>
<td>Collision Type</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Same Direction (Side Swipe)</td>
</tr>
<tr>
<td>Parked Vehicle</td>
</tr>
<tr>
<td>Backing</td>
</tr>
<tr>
<td>Pedestrian*</td>
</tr>
<tr>
<td>* fatal crash</td>
</tr>
</tbody>
</table>

**Figure 3 – Crash Type Breakdown**

**C. Severity**

Crashes resulting in property damage only were overrepresented compared to the county road system. This is likely due to the parked vehicle and backing crashes, which tend to damage stationary vehicles with no occupants.
Pedestrian crashes resulting in minor and moderate injury were significantly overrepresented compared to the county road system from 2012 to 2016. One fatal crash involving a pedestrian occurred during the study period.

**Figure 5 – Severity (Pedestrian/Bicycle Crashes)**

D. Roadway Surface & Light Condition

Overrepresented crash types included dry surface and non-daylight hours. Dry surface conditions accounted for approximately 82% of total crashes, suggesting that road surface was not a significant contributing factor in the majority of crashes. While 65% of crashes occurred during daylight, approximately 35% occurred at dawn, dusk, or at night, which is higher than the county road statewide average of 28%.
Wet surface crashes involving pedestrians and bicyclists were overrepresented compared to the County average at 19%, or 16 crashes. In addition, 27% or approximately 32% of pedestrian crashes occurred at night, which is slightly higher than the county road statewide average of 28%. Of note, the low number of crashes compared to the county road system may be statistically insignificant.
E. Location

Crashes at signalized intersections were overrepresented compared to the county road system average. Twenty-four percent (24%) of crashes occurred at signalized intersections compared to 14% on all county roads. More crashes occurred at or near 40th Street, Stuyvesant Avenue, Eastern Parkway and Ellis Avenue. Pedestrian/bicyclist crashes occurred more often at Maple Avenue than at any other study intersection. Crash frequency in 0.1-mile increments, as shown in the following figures, shows the highest concentration of vehicular and pedestrian crashes.
Figure 10 – Total Crash Locations (2014-2016)

Figure 11 – Pedestrian Crash Locations (2012-2016)
IV. Identified Issues & Observations

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

<table>
<thead>
<tr>
<th>Pedestrian/Bicyclist</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pedestrians cross midblock outside crosswalks (long distances between marked crosswalks)</td>
</tr>
<tr>
<td>2. Lack of bicycle facilities along Springfield Avenue</td>
</tr>
<tr>
<td>3. Vehicles do not stop for pedestrians in marked crosswalk</td>
</tr>
<tr>
<td>4. Wide 5-leg intersection with Clinton Ave difficult and confusing for pedestrians to traverse</td>
</tr>
<tr>
<td>5. Damaged sidewalk and stairs pose tripping hazards for pedestrians</td>
</tr>
<tr>
<td>6. Tripping hazards throughout sidewalk</td>
</tr>
</tbody>
</table>
7. Poor sight distance at unsignalized intersections

8. Broken curb filled with asphalt

9. Vehicles travel through intersection from left turn only lane (2 through lanes on each side)

10. Some pedestrian heads not functioning properly

11. Vehicles parked improperly at curb ramps and partially within crosswalks

12. Areas of sidewalk are damaged, crumbling and/or have settled over time

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

- The cross section and lane usage is inconsistent throughout the corridor and can be confusing to motorists and pedestrians (see Figure 12).
- Striping is worn on the structure carrying Springfield Avenue/Irvington bus terminal over the GSP.
- Title 39 parking violations were observed throughout the corridor (i.e. parking within or too close to an intersection, parking within a bus stop, double parking).
- Lincoln Place / Civic Square, New Street and Maple Avenue are major bus stop locations with a high number of pedestrians crossing and waiting for buses; adequate crossing time may not be provided.
- Pedestrian crashes at Maple Avenue may be the result of allowing left turns from the center lane in addition to the exclusive left turn lane (see Figure 13). A total of 12 crashes occurred due to this conflict over the five year period between 2012 and 2016. See Appendix E for crash information.

**Figure 12 – Non-uniform Cross Section on Springfield Avenue**

**Figure 13 – Conflict between Pedestrians and Left Turn Vehicles at N Maple Avenue**
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:

<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;2&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;2&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;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>✓✓✓✓</td>
<td>High safety benefit potential</td>
<td>May reduce total crashes by 75+%&lt;sup&gt;2&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>Consider upgrading all ramps for ADA compliance</td>
<td>✓✓✓&lt;sup&gt;3&lt;/sup&gt;</td>
<td>$$$</td>
<td>◥</td>
<td>County</td>
</tr>
<tr>
<td>2</td>
<td>Investigate converting to a 3-lane section (2 travel lanes, TWLTL and shoulders; i.e. road diet)</td>
<td>✓✓</td>
<td>$$</td>
<td>◥</td>
<td>County</td>
</tr>
<tr>
<td>3</td>
<td>Explore a uniform cross section through the corridor to reduce driver confusion with striping to delineate on-street parking areas</td>
<td>✓&lt;sup&gt;3&lt;/sup&gt;</td>
<td>$$</td>
<td>◥</td>
<td>County</td>
</tr>
<tr>
<td>4</td>
<td>Investigate on-street parking requirements where business have existing parking lots (parking study) and for conformance with Title 39.</td>
<td>✓&lt;sup&gt;3&lt;/sup&gt;</td>
<td>$$</td>
<td>◥</td>
<td>Township</td>
</tr>
</tbody>
</table>

<sup>2</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>3</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>5</td>
<td>Consider development of an access management plan within the project limits (for vehicles and pedestrians)</td>
<td>☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>6</td>
<td>Consider corridor-wide signal upgrades (replace 8” traffic signal heads with 12”, install backplates with retroreflected border, evaluate clearance intervals, update to countdown pedestrian signal heads, replace push buttons in compliance with ADA, etc.)</td>
<td>☑️ ☑️ $$$</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>7</td>
<td>Study roadway and pedestrian scale lighting</td>
<td>☑️ ☑️ $$$</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>8</td>
<td>Consider striping shoulders and edgelines</td>
<td>☑️ ² $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>9</td>
<td>Inspect, repair and construct sidewalks in compliance with ADA as needed.</td>
<td>☑️ ☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>10</td>
<td>Examine inlets and install bicycle-safe grates</td>
<td>☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>11</td>
<td>Study corridor-wide implementation of curb extensions (bump outs) based on the site-specific recommendations to maintain consistency – especially ‘T’ and offset intersections</td>
<td>☑️ ☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>12</td>
<td>Examine crosswalks status: change to continental style, check placement and alignment; ergonomic</td>
<td>☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>13</td>
<td>Explore enhancements to bus stop areas through pavement markings</td>
<td>☑️ ☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>14</td>
<td>Consider leading pedestrian intervals (LPI) or all pedestrian phase at signalized intersections with high pedestrian activity</td>
<td>☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>15</td>
<td>Consider installing a bicycle lane and/or sharrow striping per NJ Complete Streets Design Guide</td>
<td>☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>16</td>
<td>Inspect existing striping for wear and restripe accordingly</td>
<td>☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>17</td>
<td>Inspect and replace 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 [e.g. Do Not Enter behind Stop sign])</td>
<td>☑️ $</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>18</td>
<td>Inspect drainage facilities; ensure they are free of debris</td>
<td>☑️ ☑️ $$$</td>
<td>☥️</td>
<td></td>
<td>County</td>
</tr>
<tr>
<td>19</td>
<td>Consider sidewalk, crosswalk, multimodal education campaign and code enforcement</td>
<td>☑️ ☑️ ☑️ $</td>
<td>☥️</td>
<td></td>
<td>Town/County</td>
</tr>
</tbody>
</table>

³ 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.
The following site-specific recommendations are in addition to the corridor-wide improvements, except where noted otherwise. Essex County currently has plans to signalize Smith Street and Orange Avenue (one-way pair) and perform improvements at the intersection of Avon Avenue.

*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>20</td>
<td>Explore ways to deter vehicles from speeding along Springfield Avenue</td>
<td>✓</td>
<td>$</td>
<td>☐</td>
<td>Town/County</td>
</tr>
</tbody>
</table>

3 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.

4 Interim Approval 21 – Rectangular Rapid-Flashing Beacons at Crosswalks
<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>34</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️³</td>
<td>$$$</td>
<td>◆</td>
<td>County</td>
</tr>
<tr>
<td>35</td>
<td>Investigate a pedestrian median island and marked crosswalks</td>
<td>✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>◆</td>
<td>County</td>
</tr>
<tr>
<td>36</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️³</td>
<td>$$$</td>
<td>◆</td>
<td>County</td>
</tr>
<tr>
<td>38th Street and Elmwood Terrace</td>
<td>37</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage</td>
<td>✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>◆</td>
</tr>
<tr>
<td>38</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️³</td>
<td>$$$</td>
<td>◆</td>
<td>County</td>
</tr>
<tr>
<td>Sanford Avenue</td>
<td>39</td>
<td>Investigate a pedestrian median island and marked crosswalks</td>
<td>✔️ ✔️ ✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>◆</td>
</tr>
<tr>
<td>40</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️³</td>
<td>$$$</td>
<td>◆</td>
<td>County</td>
</tr>
<tr>
<td>41</td>
<td>Consider corridor-wide recommendation 15 regarding missing, damaged, and/or faded signage</td>
<td>✔️ $</td>
<td>◆</td>
<td>County</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Consider replacing the existing No Left Turn sign with a Right Turn Only Symbol sign to prevent motorists from crossing Springfield Avenue to access Chapman Place.</td>
<td>✔️ $</td>
<td>◆</td>
<td>County</td>
<td></td>
</tr>
<tr>
<td>Durand Place and Chapman Place</td>
<td>43</td>
<td>Study implementation of a roundabout</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>◆</td>
</tr>
<tr>
<td>44</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage</td>
<td>✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>◆</td>
<td>County</td>
</tr>
<tr>
<td>45</td>
<td>Study corridor-wide recommendation 10 for curb extensions</td>
<td>✔️ ✔️ ✔️³ $</td>
<td>◆</td>
<td>County</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Examine curb radii and consider revising as needed</td>
<td>✔️ $</td>
<td>◆</td>
<td>County</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️³</td>
<td>$$$</td>
<td>◆</td>
<td>County</td>
</tr>
<tr>
<td>48</td>
<td>Study implementing a right turn only lane along Springfield Avenue eastbound</td>
<td>✔️ $</td>
<td>◆</td>
<td>County</td>
<td></td>
</tr>
<tr>
<td>Lyons Avenue</td>
<td>49</td>
<td>Study corridor-wide recommendation 10 for curb extensions and/or elimination of channelizing island</td>
<td>✔️ ✔️ ✔️ $</td>
<td>◆</td>
<td>County</td>
</tr>
<tr>
<td>50</td>
<td>Examine curb radii and consider revising as needed</td>
<td>✔️ $</td>
<td>◆</td>
<td>County</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️³</td>
<td>$$$</td>
<td>◆</td>
<td>County</td>
</tr>
</tbody>
</table>

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<th>Cost</th>
<th>Time Frame</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>Consider corridor-wide recommendation 15 regarding signage upgrades</td>
<td>✓ ✓</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>53</td>
<td>Study corridor-wide recommendation 10 for curb extensions</td>
<td>✓ ✓ ³</td>
<td>$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>54</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage</td>
<td>✓ ✓</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>55</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✓ ✓ ✓ ³</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>56</td>
<td>Consider corridor-wide recommendation 3 regarding on-street parking along westbound side</td>
<td>✓ ³</td>
<td>$</td>
<td>⬤</td>
<td>Town/County</td>
</tr>
<tr>
<td>57</td>
<td>Investigate installing track marks along Stuyvesant through the intersection due to the skew</td>
<td>✓ ³</td>
<td>$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>58</td>
<td>Investigate closing all or part of the Nesbit intersection with Springfield Avenue and extending the existing park-like area</td>
<td>✓ ✓ ✓ ³</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>59</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✓ ✓ ✓ ³</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>60</td>
<td>Investigate a pedestrian median island and marked crosswalks</td>
<td>✓ ✓</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>61</td>
<td>Consider corridor-wide recommendation 15 regarding signage (motorists treat 2-way intersection as one-way out)</td>
<td>✓</td>
<td>$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>62</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage</td>
<td>✓ ✓</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>63</td>
<td>Examine additional pedestrian accommodations at this location (LPI, exclusive ped phase or ped recall)</td>
<td>✓ ✓ ✓</td>
<td>$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>64</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✓ ✓ ✓ ³</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>65</td>
<td>Consider performing a MUTCD signal warrant analysis</td>
<td>✓ ✓</td>
<td>$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>66</td>
<td>Explore installation of a RRFB or HAWK if #61 signal not warranted</td>
<td>✓ ✓</td>
<td>$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>67</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✓ ✓ ✓ ³</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
<tr>
<td>68</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage</td>
<td>✓ ✓</td>
<td>$$$</td>
<td>⬤</td>
<td>County</td>
</tr>
</tbody>
</table>

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<table>
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<th>Time Frame</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
<td>Examine additional pedestrian accommodations at this location (LPI, exclusive ped phase or ped recall)</td>
<td>✔️ ✔️ ✔️</td>
<td>$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>70</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td></td>
<td><strong>Clinton Avenue and Myrtle Avenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>Study implementation of a roundabout</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>72</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage, specifically illuminated no turn signs, yellow clearance and split phasing</td>
<td>✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>73</td>
<td>Examine geometric improvements to relocate the crosswalk on the Clinton Ave NB approach so it aligns more with the east/west sidewalk flow</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>74</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>75</td>
<td>Explore installing through lane-use arrows pavement markings and line striping on Springfield Ave EB, before and after the stop line, to prevent motorists from turning right onto Clinton Ave SB</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>76</td>
<td>Consider replacing the existing overhead signage with two Through Only signs, one over each eastbound lane</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td></td>
<td><strong>Washington Avenue</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>77</td>
<td>Investigate shifting the lanes to allow 2 through lanes along the eastbound direction by eliminating the shoulder striping.</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>78</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>79</td>
<td>Explore a color or material change for white pavement markings on concrete or use black for contrast (MUTCD 3A.05)</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$</td>
<td>🌒</td>
<td>County</td>
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<tr>
<td>80</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td></td>
<td><strong>Eastern Parkway/Sharon Avenue</strong></td>
<td></td>
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<tr>
<td>81</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage (LPI)</td>
<td>✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>82</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>83</td>
<td>Explore improving the curb radii and consider revising as needed for the WB right turn lane</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$</td>
<td>🌒</td>
<td>County</td>
</tr>
<tr>
<td>84</td>
<td>Consider corridor-wide recommendation 3 regarding on-street parking along westbound side</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>$$</td>
<td>🌒</td>
<td>Town/County</td>
</tr>
</tbody>
</table>

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<th>Time Frame</th>
<th>Jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>Investigate a pedestrian median island and marked crosswalks</td>
<td>✓ ✓ ✓</td>
<td>$$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td>86</td>
<td>Explore installing a RRFB</td>
<td>✓ ✓</td>
<td>$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td>87</td>
<td>Study corridor-wide recommendation 10 for curb extensions to improve sight distance</td>
<td>✓ ✓ ✓ ³</td>
<td>$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td>88</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✓ ✓ ✓ ³</td>
<td>$$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td></td>
<td><strong>Maple Avenue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89</td>
<td>Examine additional pedestrian accommodations at this location (LPI, exclusive ped phase or ped recall)</td>
<td>✓ ✓ ✓</td>
<td>$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td>90</td>
<td>Investigate a pedestrian median island</td>
<td>✓ ✓ ✓</td>
<td>$$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td>91</td>
<td>Study corridor-wide recommendation 10 for curb extensions in addition to or in lieu of #82</td>
<td>✓ ✓ ✓ ³</td>
<td>$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td>92</td>
<td>Consider corridor-wide recommendations 5 and 15 regarding signal upgrades and signage</td>
<td>✓ ✓</td>
<td>$$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td>93</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✓ ✓ ✓ ³</td>
<td>$$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td>94</td>
<td>Explore revising the lane use on the SB approach to permit left turns from the one lane only due to the high number of similar pedestrian crashes</td>
<td>✓ ✓ ✓ ³</td>
<td>$$</td>
<td>⚫</td>
<td>County</td>
</tr>
<tr>
<td></td>
<td><strong>Grove Street</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>95</td>
<td>Investigate eliminating the channelized right turn and revise curb radii as needed</td>
<td>✓ ³</td>
<td>$$</td>
<td>⚫</td>
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<td>$$</td>
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<td>✓ ✓</td>
<td>$$$</td>
<td>⚫</td>
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<td>98</td>
<td>Consider corridor-wide recommendation 1, 8 and 11 regarding sidewalk, crosswalks, and ADA compliance</td>
<td>✓ ✓ ✓ ³</td>
<td>$$$</td>
<td>⚫</td>
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<td></td>
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<td>99</td>
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³ 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.
### 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.

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

### A. Recommendation Visualizations

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

---

3 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.
Parklets are typically applied where narrow or congested sidewalks prevent the installation of traditional sidewalk cafes, or where local property owners or residents see a need to expand the seating capacity and public space on a given street. Parklets can be implemented on an interim basis. Heavy planters, granite blocks, moveable seating, and other elements may be incorporated into the interim design.

A parklet could be considered near the Senior Community Center at Smith Street, as well as across ‘T’ intersections to prohibit parking.
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 16 – Bicycle Facility Examples](Image)

**Figure 16 – 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. 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 17 – 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 18 – 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.
Top: Left turns are a frequent source of conflict between motorists and pedestrians and the crossing distance for pedestrians is substantial. Buses experience frequent delay due to the encroachment of parked cars, loading freight vehicles, and through traffic. Bicyclists lack any accommodation on the street, forcing many to utilize the sidewalk.

Bottom: Assess left-turn volumes and evaluate the overall traffic network to determine whether left turns can be restricted or removed at a particular intersection. A parking-buffered 1-way bike lane can be applied on each side of the street. This lane can be combined with an offset bus-boarding island and other amenities. Alternatively, a center 6-foot pedestrian safety island can be implemented at the intersection by tapering the bike lane buffer and shifting the through lanes to the right. Land use changes and access management should be coordinated with the overall vision and redesign of the street.

Figure 19 – Example of a Downtown Thoroughfare Typology (Source: NACTO-US)
4. **Transit Facilities**

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

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

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

![Figure 20 – Example of Bus Pull-Out Stop & Bulb Stop (alternative use of curbside)](image)

5. **Roundabout**

Roundabout design, which was recommended at the intersections of Springfield Avenue with Lyons Avenue, 43rd Street/Prospect Street and Clinton Avenue, 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.
VI. Conclusions

The Springfield Avenue 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 Springfield Avenue. Some of the strategies identified can be implemented through routine maintenance; all will be constrained by available time and budgetary priorities. The audit process and the resulting final document highlight the safety issues and present the needed improvements by location organized for systematic implementation by the roadway owner.

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

RSA TEAM
Audit Team

<table>
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<tr>
<th>Name</th>
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<tbody>
<tr>
<td>Asif Mahmood</td>
<td>Essex County Engineering (pre-audit)</td>
</tr>
<tr>
<td>Rick Valderrama</td>
<td>Essex County Engineering</td>
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<tr>
<td>John Wiggins</td>
<td>Irvington Township Engineer (pre-audit)</td>
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<td>Capt. Harold Wallace</td>
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<td>Stephan Antoine</td>
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<td>Pavan Sheth</td>
<td>NJDOT - Bureau of Transportation Data and Safety</td>
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<td>Angela Quevedo</td>
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<td>Zilkumari Patel</td>
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<td>Reba Oduro</td>
<td>NJDOT – Office of Bicycle and Pedestrian Programs</td>
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<td>Christine Mittman</td>
<td>NJTPA (pre-audit and field)</td>
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<td>Aimee Jefferson</td>
<td>NJTPA (post-audit)</td>
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<td>Bernie Boorchers</td>
<td>Greenman-Pedersen, Inc. (NJDOT Consultant)</td>
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<tr>
<td>Andrew Halloran</td>
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</tr>
<tr>
<td>Julia Steponanko</td>
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</tr>
<tr>
<td>Alicia Ulmes</td>
<td>Greenman-Pedersen, Inc.</td>
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*Special thanks to Officer Rodriguez for his time at Clinton Avenue and Irvington PD for transportation!*
# Traffic Count Data - Classified Turning Movement Count Summary

**Street Name:** Springfield Avenue (CR 603)  
**County:** Essex  
**Municipality:** Irvington  
**Site Code:** Various  
**Count Start Date:** 10/27/2017

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** NJDOT 2016 Correction Factors, Region 1  
(Functional Class 14: Urban Principal) - November  
Axle correction not applied since counts were classified by # axles

Data provided by Essex County/NV5
### Springfield Ave & Orange Ave - TMC

**Thu Oct 27, 2016**

Full Length (6AM-7PM)

All Classes (Motorcycles, Cars, Light Goods Vehicles, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)

All Movements

ID: 358977, Location: 40.726062, -74.231314

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### Additional Data

- **% Approach**
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- **% Total**
  - 5.6% 5.3% 0%
- **Motorcycles**
  - 0% 0% 0%
- **Cars**
  - 6.9% 92.3% 0%
- **Light Goods Vehicles**
  - 7.8% 5.6% 0%
- **Single-Unit Trucks**
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- **Articulated Trucks**
  - 0% 0% 0%
- **Buses**
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- **Bicycles on Road**
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### Notes

- *Pedestrians and Bicycles on Crosswalk, L: Left, R: Right, T: Thru, U: U-Turn*
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*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn*
## Traffic Count

- **Springfield Ave (CR603) & Maple Ave - TMC**
- **Parsippany, NJ, 07054, US**
- **Provided by:** NV5 Inc.
- **Date:** Thu Nov 2, 2017
- **Full Length:** 6AM-10AM, 2PM-7PM
- **All Classes (Motorcycles, Cars, Light Goods Vehicles, Single-Unit Trucks, Articulated Trucks, Buses, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)**
- **ID:** 467155, **Location:** 40.727899, -74.221862
- **Time:** 8:00AM

### Traffic Counts

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<th>Westbound</th>
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<tr>
<td></td>
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<tr>
<td></td>
<td>North</td>
<td>South</td>
<td>East</td>
<td>West</td>
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</table>

### Percentage Breakdown

- **Motorcycles**
- **Cars**
- **Light Goods Trucks**
- **Single-Unit Trucks**
- **Articulated Trucks**
- **Buses**
- **Bicycles on Road**
- **Bicycles on Crosswalk**
- **Pedestrians**

### Traffic Volume Summary

- **Total Traffic:** 599, 1105, 3186, 4890
- **% Approach Traffic:** 12.2%, 22.6%, 65.2%, 0%
- **% Total Traffic:** 3.8%, 7.1%, 20.4%, 31.4%
- **% Motorcycles:** 0.2%, 0.2%, 0.1%, 0.1%
- **% Cars:** 95.7%, 4.3%, 0%, 0%
- **% Light Goods Trucks:** 0.0%, 0.0%, 0.0%, 0.0%
- **% Single-Unit Trucks:** 0.0%, 0.0%, 0.0%, 0.0%
- **% Articulated Trucks:** 0.0%, 0.0%, 0.0%, 0.0%
- **% Buses:** 0.0%, 0.0%, 0.0%, 0.0%
- **% Bicycles on Road:** 0.0%, 0.0%, 0.0%, 0.0%
- **% Bicycles on Crosswalk:** 0.0%, 0.0%, 0.0%, 0.0%
- **% Pedestrians:** 0.0%, 0.0%, 0.0%, 0.0%

### Data Table

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<tr>
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<th>Eastbound</th>
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<td>L</td>
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### Additional Notes

- **Pedestrians and Bicycles on Crosswalk**
- **Articulated Trucks**
- **Single-Unit Trucks**
- **Buses**

*Pedestrians and Bicycles on Crosswalk: L: Left, R: Right, T: Thru, U: U-Turn*
**Collision Diagram Data**

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</table>

**Types of Crashes**

- Rear End
- Head On
- Side Swipe
- Out of Control
- Overturned
- Struck Pedestrian Vehicle
- Right Angle
- Left Turn

**Colors**

- Green
- Red
- Yellow
- Black

**Symbols**

- Moving Vehicle
- Backing Vehicle
- Non-Involved Vehicle
- Pedestrian
- Bicycle
- Property Damage Only Crash
- Injury in Crash
- Fatal Crash
- Fixed Object
- Non-Fixed Object
- Pothole

**Legend**

- Number of Crashes with:
  - Property Damage Only: 6
  - Injuries: 1
  - Fatalities: 0
  - Total No. of Crashes: 7

**Match Line A**

- Happy Valley Township
- Irvington Township

**New Jersey Department of Transportation**

Springfield Avenue (CR 603)
between Becker Terrace and Avon Avenue
Irvington Township, Essex County

2014 - 2016 Collision Diagrams
**LEGEND**

<table>
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<th>Number of Crashes with</th>
<th>Symbols</th>
<th>Types of Crashes</th>
<th>Colors</th>
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<td>Injuries</td>
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**NUMBER OF CRASHES WITH**

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<td>Total No. of Crashes</td>
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**SYMBOLS**

- Moving Vehicle
- Non-Injured Vehicle
- Pedestrian
- Property Damage Only Crash
- Injury in Crash
- Fixed Object
- Animal
- Non-Fixed Object
- Pedestrian

**TYPES OF CRASHES**

- Rear End
- Head On
- Side Swipe
- Out of Control
- Overturned
- Struck Vehicle
- Right Angle
- Left Turn

**COLORS**

- Red: 2016 Crashes
- Orange: 2015 Crashes
- Yellow: 2014 Crashes

**MATCH LINE H**

**NOTE:** See Sheet 9 for Detail Tables

**NEW JERSEY DEPARTMENT OF TRANSPORTATION**

Springfield Avenue (CR 603)
between Becker Terrace and Avon Avenue
Irvington Township, Essex County

2014 - 2016 COLLISION DIAGRAMS

GPI
Greenman-Pedersen, Inc.
Engineering and Construction Services

NOT TO SCALE
NEW JERSEY DEPARTMENT OF TRANSPORTATION
Springfield Avenue (CR 603)
between Becker Terrace and Avon Avenue
Irvington Township, Essex County
2014 - 2016 COLLISION DIAGRAMS

LEGEND

NUMBER OF CRASHES WITH
PROPERTY DAMAGE ONLY 9
INJURIES 4
FATALITIES 0
TOTAL NO. OF CRASHES 13

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

TYPES OF CRASHES
- REAR END
- HEAD ON
- SIDE SWIPE
- OUT OF CONTROL
- OVERTURNED
- STRUCK BY VEHICLE

COLORS
- RED CRASHES
- RED CRASHES
- RED CRASHES
### COLLISION DIAGRAM DATA

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#### LEGEND

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### MAP DESCRIPTION

- **Springfield Avenue (CR 603)**
- Between Becker Terrace and Avon Avenue
- Irvington Township, Essex County

**2012-2016 PEDESTRIAN COLLISION DIAGRAMS**

- Legend includes symbols for moving and backing vehicles, non-involved vehicles, property damage only crash, injury in crash, fatalities, and total number of crashes.
**Collision Diagram Data**

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**Legend**

- **Symbols**
  - Moving Vehicle
  - Backing Vehicle
  - Non-Involved Vehicle
  - Pedestrian
  - School Bus
  - Property Damage Only Crash
- **Types of Crashes**
  - Rear End
  - Head On
  - Side Swipe
  - Right Angle
  - Out of Control
  - Overturned
- **Colors**
  - Pedestrian Crash

---

**New Jersey Department of Transportation**

Springfield Avenue (CR 603)
between Becker Terrace and Avon Avenue
Irvington Township, Essex County

2012-2016 Pedestrian Collision Diagrams

Greenman-Pedersen, Inc.
Engineering and Construction Services
**COLLISION DIAGRAM DATA**

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</tbody>
</table>

**LEGEND**

**SYMBOLS**
- Moving Vehicle
- Backing Vehicle
- Non-involved Vehicle
- Pedestrian
- Bicyclist
- Property Damage Only Crash
- Injury in Crash
- Fatal Crash
- Fixed Object
- Animal
- Non-fixed Object
- Pothole

**TYPES OF CRASHES**
- Rear End
- Head On
- Side Strike
- Out of Control
- Overtun

**COLORS**
- Left Turn
- Right Angle

NEW JERSEY DEPARTMENT OF TRANSPORTATION

Springfield Avenue (CR 603)

between Becker Terrace and Avon Avenue
Irvington Township, Essex County

2012-2016 PEDESTRIAN COLLISION DIAGRAMS

GPI
Greenman-Pedersen, Inc.

Engineering and Construction Services

NOT TO SCALE
### Pedestrian Crash

**69 Fatal Crash**

**Date:** 4/19

**Time:** 21:30

**DRUMMOND TERRACE**

**OFFICE: 7 MON-TUE**

**TRUCK: 14 MON-TUE**

**PARKING LOT**

**DOWNSIZED:**

**MELROSE AVENUE**

**HICKORY STREET**

**COLLISION DIAGRAM DATA**

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<td>1</td>
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</tr>
<tr>
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**COLLISION DIAGRAM DATA (CONT.)**

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**LEGEND**

**NUMBER OF CRASHES WITH**
- Property Damage Only: 0
- Injuries: 32
- Fatalities: 1
- Total No. of Crashes: 33

**SYMBOLS**
- Moving Vehicle
- Backing Vehicle
- Non-Parked Vehicle
- Pedestrian
- Bicycle
- Property Damage Only Crash
- Injury in Crash
- Fatal Crash
- Fixed Object
- Non-Parked Object
- Animal
- Pothole

**TYPES OF CRASHES**
- Head On
- Rear End
- Side Swipe
- Out of Control
- Overturned
- Struck Vehicle
- Left Turn
- Right Angle

**COLORS**
- Solid Line
- Match Line

**New Jersey Department of Transportation**

Springfield Avenue (CR 603) between Becker Terrace and Avon Avenue
Irvington Township, Essex County

2012-2016 Pedestrian Collision Diagrams
APPENDIX F

SITE PHOTOGRAPHS
- Vehicles park within intersection in no parking zone (also observed parked within designated bus stop).
- Sidewalk in poor condition in many areas; slope may be substandard.
- Some pedestrian signal heads not functioning properly.
- Traffic signal transformer bases have broken/missing covers and trash.
- Motorists use wrong side of road for left turns on 2-way street.
- Lack of marked bicycle facilities on Springfield Ave.
- Skewed approaches and buildings make turns difficult.
- Push button stickers worn/peeled away.
- Pedestrians cross midblock along the corridor.
- Vehicle and pedestrian conflicts at Lyons Ave western crosswalk.
- Wide pavement area not conducive to pedestrian crossing.
- Proximity of lighting to pole may impact illumination.
Unsignalized pedestrian crossing where vehicles do not stop

Wide 5-leg intersection with Clinton Ave difficult and confusing for pedestrians and vehicles to traverse

Location of southern crosswalk does not follow pedestrian path

Lane use change between closely spaced intersections confusing to motorists

Long pedestrian crossings at skewed intersection

Shared curb ramps not preferred design (2 per corner)

Unsignalized pedestrian crossing where vehicles do not stop

Wide 5-leg intersection with Clinton Ave difficult and confusing for pedestrians and vehicles to traverse

Location of southern crosswalk does not follow pedestrian path

Lane use change between closely spaced intersections confusing to motorists

Long pedestrian crossings at skewed intersection

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Location of southern crosswalk does not follow pedestrian path

Lane use change between closely spaced intersections confusing to motorists

Long pedestrian crossings at skewed intersection

Shared curb ramps not preferred design (2 per corner)
Road Safety Audit:
Springfield Avenue (CR 603) between Becker Terrace and Avon Avenue

Irvington Township, Essex County
May 24, 2018

Audit Team Introductions

- Funded by Federal Highway Administration and NJDOT
- NJDOT, Bureau of Transportation Data & Safety
  - Bicycle & Pedestrian Programs
  - Local Aid
- NJTPA
- Essex County
- Irvington Township
- NJ Transit
- Greenman-Pedersen, Inc., NJDOT Consultant
Today’s Schedule

9:00a
- Welcome and Introductions
- Project Overview Presentation

10:30a
- Field Visit and Observations

12:30p
- Lunch and Regroup at Presentation Location

2:00p
- Discuss Observations
- Make Recommendations

3:30p
- Adjourn

Springfield Ave EB at Eastern Pkwy

Highway Safety Improvement Program/Local Safety Program

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

ROADWAY JURISDICTION

- NJDOT (2,800 mi)
- County (6,800 mi)
- Municipal (29,000 mi)
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 ~$57M

Local Safety Program (LSP)

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

Short Term Goals

2.5% Avg. Annual Reduction Trend

Long Term Vision of Zero

Federal Transportation Funding

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

Local Safety and High Risk Rural Roads Programs
Over $98 million in funding since 2005 on County and Local Roadways
Relatively quick-fix safety improvements

Highway Safety Improvement Program (HSIP) funds
Emphasizes a data-driven, strategic approach to improving highway safety

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

Community Outreach
Provides the public, local stakeholders and officials with opportunities to provide comments and ask questions

Defining the Vision. Shaping the Future.
RSA Purpose

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

Goals:

What elements of the road may present a safety concern?: to what extent, to which road users, and under what circumstances?

What opportunities exist to eliminate or mitigate identified safety concerns?

RSA Benefits

• Pro-actively address safety
• Audited designs should produce fewer, less severe crashes
• Identify low-cost/high-value improvements
• Enhance consistency in how safety is considered; promote “safety culture”
• Provide continuous advancement of safety skills and knowledge
• Contribute feedback on safety issues for future projects
• Support optimized savings of lives, money and time

Not a replacement for:

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

1. Identify Project
2. Select RSA Team
3. Conduct Start-up Meeting
4. Perform Field Reviews
5. Analyze/Report Findings
6. Present Findings to Owner
7. Prepare Formal Response
8. Incorporate Findings

Responsibilities:
- RSA Team
- Design Team/Project Owner

FHWA Proven Safety Countermeasures

Descriptions provided in your handouts
FHWA Proven Safety Countermeasures

Road Diet
Maplewood Township, Essex County

Roundabout
Chesterfield Township, Burlington County

FHWA Proven Safety Countermeasures

Backplates with Retroreflective Borders

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

Curb Extensions
Hoboken City, Hudson County

Enhanced signing / pedestrian crossings

Project Area

- Urban Principal Collector, undivided 4-lanes
- Parking both sides
- 25 mph statutory (not posted)
- NJT Bus Service
- Sidewalk on both sides
- Various crosswalk markings
- Ergonomic crossings
Project Area

- Traffic Data (2016)
  - ADT: around 12,000 vpd
- Land Use
  - Commercial/retail
  - High density
  - Irvington Bus Terminal/GSP access
- Demographics (near Springfield Ave)
  - 82% Black/African American
  - 13% Hispanic/Latino
  - 25% below poverty level
  - 26% use public transportation
  - 5% walk or bike to work
NJTPA’s FY 2017-2018 LSP Network Screening List

<table>
<thead>
<tr>
<th>Location</th>
<th>Ped Corridor</th>
<th>Regional Corridor</th>
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</thead>
<tbody>
<tr>
<td>Springfield Ave</td>
<td>#1 County (MP 0.51-1.51)</td>
<td>#34 NJTPA (MP 1.46-2.46)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location</th>
<th>Intersection (Top 200)</th>
<th>Ped Intersection (Top 200)</th>
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<tbody>
<tr>
<td>Elmwood Ave (MP 0.60)</td>
<td>#11 County</td>
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<td>Park Pl (MP 0.78)</td>
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<tr>
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<td>#47 County</td>
<td>#8 County</td>
</tr>
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<td>Smith St (MP 0.90)</td>
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<tr>
<td>Orange Ave (MP 0.96)</td>
<td>#49 County</td>
<td>#3 County</td>
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<tr>
<td>Clinton Ave (MP 1.10)</td>
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<td>#23 County</td>
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<td>N Maple Ave (MP 1.47)</td>
<td>#23 County</td>
<td>#9 County</td>
</tr>
<tr>
<td>Grove St (MP 1.53)</td>
<td>#75 County</td>
<td>#25 County</td>
</tr>
</tbody>
</table>

*Lists use 2009-2013 crash data*

Crash Data

478 Crashes (2014-2016)

- Overrepresentations:
  - Sideswipe, Parked Vehicle
  - Pedestrian (46)
  - At Intersection
  - Snowy & At Night
  - Hit & Run common

84 Pedestrian Crashes (2012-2016)

- Overrepresentations:
  - Min./Mod. Injury
  - At Intersection
  - At Night
Crash Data (2014-2016)

Histogram View by 0.1 Mile

Crashes by Month

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

Crashes by Day of Week

Monday 21% 21% 11% 12%
Tuesday 11% 11% 11% 11%
Wednesday 11% 11% 11% 11%
Thursday 11% 11% 11% 11%
Friday 11% 11% 11% 11%
Saturday 11% 11% 11% 11%
Sunday 11% 11% 11% 11%

Crashes: RSA Project Area v. County Road System

Crash Type Breakdown

<table>
<thead>
<tr>
<th>Crash Type</th>
<th>2014-2016 RSA Project Area</th>
<th>2014-2016 County Road System</th>
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<tr>
<td>Single Lane (Front End)</td>
<td>32%</td>
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<td>Single Lane (Rear End)</td>
<td>7%</td>
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<tr>
<td>Single Lane (Front/Rear)</td>
<td>5%</td>
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<td>Single Lane (Left Turn)</td>
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<td>Single Lane (Right Turn)</td>
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<td>Multi Lane (Left Turn)</td>
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<tr>
<td>Multi Lane (U-Turn)</td>
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<td>1%</td>
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Crashes: Severity

Severity (All Crashes)

Severity of Overrepresented Crash Types & Conditions

Crashes: Light & Surface Conditions

Surface Conditions (All Crashes)

Light Conditions (All Crashes)
Pedestrian Crash Data (2012-2016)

- 22 crashes
- 10 crashes
- 6-8 crashes
- 4-5 crashes
- 1-3 crashes

Edited from original view

Histogram View by 0.1 Mile

- Crashes by Month
- Crashes by Day of Week

Pedestrian Crashes

- Bicycle/Pedestrian Crash Severity
  - 2012-2016 RSA Project Area
  - 2012-2016 County Road System

- Light Conditions
  - Day
  - Dawn/Dusk
  - Night

- Surface Conditions
  - Dry
  - Wet
  - Snowy
  - Icy
  - Other/Unknown
Crash Diagrams (Red Histogram Bar Location)

Vehicle (2014-2016)  

Pedestrian (2012-2016)

Field Visit Itinerary

9:00a  
• Welcome and Introductions  
• Project Overview Presentation

10:30a  
• Field Visit and Observations

12:30p  
• Lunch and Regroup at Presentation Location

2:00p  
• Discuss Observations  
• Make Recommendations

3:30p  
• Adjourn

✓ Verify Identified Issues  
✓ Observe Operations  
✓ Note Other Safety Concerns

✓ Document Findings
  • Photographs  
  • Checklist

✓ Safety First!
  • Use proper safety equipment  
  • Stay alert to your surroundings
Field Visit & Observations
(pause presentation)

Post Audit Analysis
(resume presentation)
RSA Schedule

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<td>Field Visit and Observations</td>
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<tr>
<td>12:30p</td>
<td>Lunch and Regroup at Presentation Location</td>
</tr>
<tr>
<td>2:00p</td>
<td>Discuss Observations, Make Recommendations</td>
</tr>
<tr>
<td>3:30p</td>
<td>Adjourn</td>
</tr>
</tbody>
</table>

Ergonomic crosswalks at Clinton Ave

Post Audit Analysis

Observations

- What elements of the road may present a safety concern? To what extent, to which road users, and under what circumstances?
- What opportunities exist to eliminate or mitigate identified safety concerns?

Recommendations

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

- Preparation of RSA Report
- Review/comments from RSA Team
- Preparation of Preliminary Final Report
- NJDOT review
- Preparation of Final Report
- Approximate timeframe: 12 weeks

Thank you!
Questions/Comments
ESSEX COUNTY
COMPREHENSIVE TRANSPORTATION PLAN

FINAL PLAN
Chapters 1-6
June 2013

Prepared by:
Dewberry
In association with:
Maser Consulting, P.A.
Stump/Hausman Partnership
Chapter 1: Executive Summary

The Plan
The Essex County Comprehensive Transportation Plan (hereinafter referred to as Plan) was developed to meet mobility and transportation safety needs across Essex County, New Jersey through the year 2035. The Plan is consistent with and supports the many goals and objectives of the North Jersey Transportation Planning Authority's (NJTPA) Plan 2035. It outlines a vision for a more comprehensive County-wide transportation system that maximizes investments, promotes efficiency and safety and promotes the use of travel mode alternatives to driving alone. Recommendations that were developed for this Plan reflect the priorities of local, state, and regional stakeholders to support economic development, environmental sustainability and mobility throughout the County.

This Plan takes into account the County’s existing transportation network and services and land use characteristics. It then evaluates the adequacy of the transportation system to meet travel needs through 2035. The role and potential contribution to meet future needs by every mode of travel including pedestrians, bicyclists, motor vehicles, public transportation, and air travel access and freight movement were established.

Background
The current Essex County Transportation Plan has not been updated since 1984. Transportation planning changes have occurred at all levels of government and most assumptions of the 1984 plan have since become outdated.

Essex County is located in the northeast portion of New Jersey, bordered by Passaic County to the north; Bergen and Hudson County to the east, Union County to the south and Morris County to the west (see Figure 1). It is part of the New York metropolitan area and is the second densest county, behind Hudson County, in New Jersey. The City of Newark is the largest municipality within the state, in population. The Borough of Caldwell is the smallest municipality in terms of land area and Essex Fells has the lowest population in the County. Generally, the eastern portion of the county would generally be considered a mature urban area while the western portion is more suburban and rural. Newark Liberty International Airport is located in the southeast portion of the county and is one of the three New York metropolitan airports, LaGuardia and JFK International Airport, operated by the Port Authority of New York & New Jersey (the Port Authority). Additionally, the Port Authority operates the Port Newark-Elizabeth Marine Terminal in the county, the largest port facility on the East Coast and third largest nationally. The Port Newark-Elizabeth Marine Terminal is located on the Newark Bay and serves as the principal container ship facility for goods entering and leaving the New York-New Jersey metropolitan area.

The County-owned radial roads, including Bloomfield Avenue, Springfield Avenue, Clinton Avenue, and South Orange Avenue, serve both local and regional travel, including travel to and from NYC. It therefore is no surprise that intersections and segments on these road experience recurring congestion that will only worsen as the area grows over the years. Common points of congestion within many parts of the County often occur in areas of high pedestrian activity, with resulting effects on pedestrian mobility and safety and hazardous conditions for bicycle mobility. Part of the challenge to developing this Plan update is that limited opportunities exist to do any widening within County road rights-of-way (ROW) for additions of turn lanes to improve efficiencies for vehicle and bus travel or even bicycle lanes and sidewalk, in some cases. Invariably, these ROWs have long-established properties abutting them as well as a tangle of utilities that require special accommodations. The keys to a successful Plan therefore involve recognizing and managing the constraints that exist along the County ROWs and designing improvements that complement the particular travel characteristics of land uses in the area. Such improvement projects could include not only targeted physical changes to the roadway but also transit and non-motorized programs such as Bike Sharing as well as changes to Site Development regulations to promote site designs that call for less (or more efficient) motorized travel or more travel via other modes.

The Public Planning Process
The planning process for this Plan combined a comprehensive analysis of the transportation
network with an extensive public outreach program to promote dialogue on transportation needs and priorities. Technical findings, stakeholder and public input were integrated to produce a series of maps devoted to each mode of transportation. These maps evolved over the course of the planning process as new information was generated, forming a record of existing conditions and an inventory of the needs assessment. Other factors of technical work included review of the North Jersey Regional Transportation Model - Enhanced (NJRTM-E) travel demand model, municipal master plans and scenario analysis to gauge the impact of demographic shifts on the transportation system through 2035.

The Plan Vision and Goals
The plans vision statement was developed through discussions and meetings with members of the Steering Advisory Committee (SAC), as follows:

Develop a safe coordinated and integrated multimodal transportation system that provides accessibility for all users while promoting connectivity, economic vitality and productivity, our communities’ livability, and our ecosystem’s viability.

Five broad goals were developed to achieve the Plan vision, as follows:

1. Maintain a Safe & Efficient Roadway System
2. Increase the Use of Mass Transit
3. Increase and/or provide opportunities for walking & bicycling
4. Connectivity for all modes of Transportation
5. Foster and Support Development & Industrial Growth

The goals are based on analysis of the existing transportation system, modeling of future conditions, discussions with the Steering Advisory Committee (SAC) and Community Stakeholders members.

Key Elements
The framework of this plan was developed based on the following key elements:

1. Complete Streets Policy
2. Multi-modal Existing Inventory
3. Multi-modal Needs Assessment
4. Multi-modal Evaluation and Assessment

These elements were used to compile the existing inventory and needs assessment, as well as, organize the findings and recommendations presented in this plan.

The first key element, Complete Streets Policy, underscores the other elements of the Plan to ensure that all travel modes are sufficiently accounted for and incorporated into a new corridor classification system, according to a Transect Zone. Transect refers to a type of urban form or physical characteristics of an area, generally described as ranging from rural to an urban core. As applied in the ECCTP, a Transect Zone refers to the character of land uses through which a County road traverses. The corridor classification system will be developed as part of an update to the Essex County Land Development Standards, which this Plan supports.

As part of the remaining three key elements of this plan, the project team collected a multi-modal inventory of existing transportation facilities. This information was gathered from available data and through our public outreach program. In a similar fashion, we collected the multi-modal transportation needs. Through an evaluation and assessment criteria established as part of this Plan, the top nine intersections in the greatest need of improvement were analyzed for multimodal enhancements. Recommendations for the nine intersections have been provided as part of this Plan for immediate implementation by the County. Recommendations for all other projects and strategies have been divided into modes of travel and suggested timeframes of implementation.

Conclusion
The Essex County Comprehensive Transportation Plan provides a set of priorities and recommendations to build a comprehensive transportation network for the future of Essex County, which includes roadway, transit, bicycle pedestrian, freight and aviation projects as well as supportive policy recommendations. The key concepts focus potential investments in areas where they can positively impact the environment, economic development, efficiency
of the existing transportation system, and quality of life for all Essex County residents. The Complete Streets Policy sits at the center of all concepts and sets the precedent for safely accommodating opportunities for all users and reinforces the connection between land use and transportation.
## Table 8: Summary of Transit Services

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<td>Bloomfield</td>
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<td>Caldwell</td>
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<td>City of Orange</td>
<td>30,134</td>
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<td>53,990</td>
<td>64,184</td>
<td>15</td>
<td>3⁵</td>
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<td>4,940</td>
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<td><strong>122,678</strong></td>
<td><strong>157,826</strong></td>
<td><strong>17</strong></td>
<td><strong>20</strong></td>
<td><strong>28</strong></td>
<td><strong>16</strong></td>
</tr>
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</table>

Chapter 3: Public Outreach

The ECCTP planning process included an extensive series of efforts in public involvement and outreach. As part of this effort, the project team held Steering Advisory Committee (SAC) and Community Involvement Stakeholders (CIS) meetings. This allowed stakeholders on a regional and local level to participate as well as share ideas that could be incorporated into the development of various transportation projects. This chapter of the ECCTP chronicles the public involvement efforts and identifies the links between community input and development of the candidate project list. Meeting agendas, minutes, attendance sheets and presentation materials for all meetings have been included in Appendix C.

3.1 Early Coordination Efforts

The first major actions of the ECCTP process involved the formation of the guiding committees that were intended to help the project team. This effort began immediately after the project kick-off meeting held in May 2012. The Public Outreach Plan for the ECCTP was anchored by a set of two committees, the SAC and CIS which engaged local and regional government staff who are more directly involved in day-to-day operations to assess transportation issues and decisions.

3.2 Steering Advisory Committee Meetings

The project team built upon an existing list of the stakeholders provided by the Essex County Department of Public Works and identified others that have the desire or need to be involved in this process. The SAC member list was a living document that was updated periodically with approval from Essex County and the NJTPA. The SAC members were tasked with the following:

- Assist the County and the project team in developing the ECCTP's vision statement;
- Identify stakeholders, community groups and partners associated for public participation activities;
- Develop, guide and participate in community involvement activities;
- Guide the development of sections in the ECCTP;
- Review and provide feedback to the Core Team on draft and final ECCTP;
- Review the final report's short, medium and long term transportation projects and strategies, and;
- Ensure that the final report clearly identifies the implementation priorities along with agencies responsible for each project hand-off.

3.2.1 Defining a Vision, Goals & Objectives

The first SAC meeting was held on August 22, 2012 and included representatives from NJTPA, NJDOT, NJ TRANSIT, Essex County Transportation Advisory Board, Essex County Division of Senior Services, Essex County Planning Board, Essex County Environmental Commission, Newark Regional Business Partnership, Maplewood Township Engineer, Cedar Grove Deputy Mayor, and the South Orange/ Lackawanna Coalition. The project team used this meeting to introduce the project process of the ECCTP and gather input. Based on the first SAC meeting, the project team reviewed the minutes of meeting and compiled draft Vision, Goals and Objectives for discussion and consensus at the next SAC meeting. The Vision, Goals and Objectives developed are as follows:

Develop a safe coordinated and integrated multimodal transportation system that provides accessibility for all users while promoting connectivity, economic vitality and productivity, our communities’ livability, and our ecosystem’s viability.

Goal 1: Maintain a Safe & Efficient Roadway System

- Provide better inter- and intra-county mobility;
- Enhance connections between roadways and other transportation modes;
- Provide safe access and mobility for all roadway users;
- Reduce the negative impacts of vehicle use, and;
- Provide accommodations for freight mobility.
Goal 2: Increase the Use of Mass Transit
- Enhance bus stops and rail/light rail stations with infrastructure and amenities that will meet the needs of all users;
- Improve safe multimodal access to and from stops/stations;
- Market the benefits of transit use;
- Better integrate transit and land use through county subdivision and site plan regulations;
- Provide options for non-drivers, and;
- Reuse of existing abandoned rail lines.

Goal 3: Increase &/or provide opportunities for walking & bicycling
- Designate bicycle routes and/or bike lanes;
- Encourage bike and pedestrian friendly development through revisions to the county subdivision and site plan regulations;
- Promote the adopted complete streets policy;
- Promote the benefits of safe bicycling and walking through advocacy and education, and;
- Ensure a thought-out pedestrian (sidewalk) network.

Goal 4: Connectivity for all modes of Transportation
- Sidewalk connectivity at transit facilities;
- Inter-municipality and Inter-County connectivity of bicycling facilities, and;
- Coordination between bus and rail transit.

Goal 5: Foster and Support Development & Industrial Growth
- Provide for planning policy for development that will support multi-modal connectivity;
- Allow for the safe transport of goods within the County, and;
- Provide for efficient use of land within the County’s industrial zone;

A second SAC meeting was held on October 11, 2012 to discuss the Vision, Goals and Objectives derived by the project team from discussions by the SAC at the first meeting, and review of the technical analysis. The SAC members identified intersections within the County that pose operational or safety problem that need to be reviewed as part of the ECCTP, they are as follows:

1. Mount Prospect Avenue and Bloomfield Avenue (Newark)
2. Pedestrian Safety along Bloomfield Avenue (Montclair)
3. Millburn Avenue and Main Street (Millburn)
4. South Orange Avenue between Prospect Street and Springfield Avenue (South Orange)
5. Bloomfield Avenue and Grove Street (Montclair)
6. Springfield Avenue between New Street and Grove Street (Irvington)
7. South Orange Avenue and Prospect Street three blocks towards Newark (South Orange)
8. East Bradford Avenue and Crestmont Road and Woodstone Drive (Cedar Grove)

Information gathered from the SAC meeting has been incorporated into Figure 9 – Needs Assessment – Public Outreach.

3.3 Community Involvement Stakeholder Meetings

The engineers, planners and mayors of each of the 22 municipalities were invited to participate as Community Involvement Stakeholders (CIS). A questionnaire was distributed via email to the attendees for completion prior to the meetings in order to help spur discussion on the transportation needs within their community.

Two meetings were held on December 5, 2012 with the western municipalities attending a morning session and the eastern municipalities attending the afternoon session. A meeting with the City of Newark and Port Authority of NY/NJ was held on December 17, 2012 and a meeting with Verona Township officials on January 11, 2013.

We received completed questionnaires from 10 of the 22 municipalities as follows: Bloomfield, Essex Fells, West Caldwell, Glen Ridge, Livingston, Maplewood, Newark, North
### Table 20: Essex County Plan\textsuperscript{4} Safety Crash Data

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Intersection</th>
<th>No. of Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irvington</td>
<td>Springfield Avenue &amp; Grove Street</td>
<td>38</td>
</tr>
<tr>
<td>Verona</td>
<td>Pompton Avenue &amp; Bloomfield Avenue</td>
<td>38</td>
</tr>
<tr>
<td>Newark</td>
<td>McCarter Highway &amp; Clay Street</td>
<td>34</td>
</tr>
<tr>
<td>Belleville</td>
<td>Franklin Avenue &amp; Mill Street</td>
<td>34</td>
</tr>
<tr>
<td>Newark</td>
<td>Springfield Avenue &amp; Bergen Street</td>
<td>33</td>
</tr>
<tr>
<td>Newark</td>
<td>Market Street &amp; 1st Street</td>
<td>32</td>
</tr>
<tr>
<td>Bloomfield</td>
<td>Bloomfield Avenue &amp; Grove Street</td>
<td>32</td>
</tr>
<tr>
<td>Belleville</td>
<td>Rutgers Avenue &amp; Cortland Street</td>
<td>32</td>
</tr>
<tr>
<td>East Orange</td>
<td>Central Avenue &amp; Steuben Street</td>
<td>32</td>
</tr>
<tr>
<td>East Orange</td>
<td>Springfield Avenue &amp; Elmwood Avenue</td>
<td>31</td>
</tr>
</tbody>
</table>

*Source: Essex County Plan\textsuperscript{4} Safety Crash Records*

### 4.1.3 SAC Candidate Projects

As part of the Essex County Comprehensive Plan, a Steering Advisory Committee (SAC) was established to assist in the development of the ECCTP goals and objectives. During the second SAC Meeting, held on October 11, 2012, the committee members were asked to identify potential candidate projects within the County to be investigated as part of the ECCTP. The locations identified by the SAC at this meeting are listed in Table 21 and shown on Figure 9.

### Table 21: Deficient Intersections identified by SAC

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount Pleasant Avenue in proximity to Bloomfield Avenue</td>
<td>Newark</td>
</tr>
<tr>
<td>Pedestrian Safety along Bloomfield Avenue</td>
<td>Montclair</td>
</tr>
<tr>
<td>Millburn Avenue and Main Street</td>
<td>Millburn</td>
</tr>
<tr>
<td>South Orange Avenue between Prospect Street and Springfield Avenue</td>
<td>South Orange</td>
</tr>
<tr>
<td>Bloomfield Avenue and Grove Street</td>
<td>Montclair</td>
</tr>
<tr>
<td><strong>Springfield Avenue from New Street and Grove Street</strong></td>
<td>Irvington</td>
</tr>
<tr>
<td>South Orange Avenue and Prospect Street three blocks towards Newark</td>
<td>South Orange</td>
</tr>
<tr>
<td>Bradford Avenue and Tremont Street</td>
<td>Cedar Grove</td>
</tr>
</tbody>
</table>

*Source: SAC Meeting October 11, 2013*

### 4.1.4 Public Outreach Candidate Projects

To determine potential projects within the 22 municipalities in Essex County, a series of Community Involvement Stakeholders (CIS) meetings were held by the ECCTP team. The goal of these meetings was to present the ECCTP to the community representatives, discuss the goals and objectives of the plan and identify projects and implementation strategies that would address and enhance multi-modal connectivity within Essex County for incorporation into the ECCTP. These meetings developed multiple projects, goals and initiatives to be investigated as part of the ECCTP. In addition, questions were distributed to all the municipalities to determine local transportation needs. The questionnaires received, included in Appendix C, were reviewed for potential projects which have been included in this plan.

### 4.1.5 Regional Travel Demand Model-Derived Candidate Projects

The North Jersey Regional Transportation Model – Enhanced (NJRTM-E) was used to identify locations, or County road segments, that have or are expected to have operational and/or capacity issues based on an assessment of volume/capacity ratios ($V/C$). The NJRTM-E is the regional transportation model for Northern
<table>
<thead>
<tr>
<th>Region</th>
<th>Location No.</th>
<th>Candidate Project Location</th>
<th>No. of Intersections</th>
<th>Traffic Signal Control</th>
<th>Essex County Public Outreach</th>
<th>Project Identification&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Operational Analysis&lt;sup&gt;2&lt;/sup&gt;</th>
<th>PlantSafety&lt;sup&gt;3&lt;/sup&gt;</th>
<th>Mass Transit&lt;sup&gt;4&lt;/sup&gt;</th>
<th>Total Identified Assessment Categories&lt;sup&gt;5&lt;/sup&gt;</th>
<th>Priority&lt;sup&gt;6&lt;/sup&gt;</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>v/c &gt; 0.80</td>
<td>Max v/c Ratio</td>
<td>Crashes &gt;15</td>
<td>4 of Crashes</td>
<td>Top 10</td>
<td>&lt; 1/4 Mile</td>
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<td>●</td>
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<td>●</td>
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<td>Bus Stop</td>
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<td>16</td>
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<td>●</td>
<td>0.91</td>
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<td>●</td>
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<td>32</td>
<td>●</td>
<td>Bus Stop</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Livingston Township</td>
<td>South Orange Avenue (CR 510)</td>
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<td>●</td>
<td>●</td>
<td>0.91</td>
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<td>●</td>
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<td>●</td>
<td>●</td>
<td>0.91</td>
<td>26</td>
<td>32</td>
<td>●</td>
<td>Bus Stop</td>
</tr>
</tbody>
</table>
This information will be combined with the operational data analysis to develop future improvements and recommendations at each location. The following sections detail the assessment of the existing conditions.

A. Existing Deficiencies

The project team reviewed the existing conditions at the nine intersections to determine deficiencies related to safety, operations and capacity. Members of the team visited each of the intersections and evaluated site conditions, existing plans, traffic signal timing directives, capacity analysis and crash records to identify the issues at each location.

Bloomfield Avenue (CR 506) and Grove Street (CR 509) in Bloomfield Township
- Missing advance lane assignment signs on the westbound approach to Grove Street;
- Faded and worn pavement markings on Grove Street approaches, missing double yellow center roadway striping;
- An insufficient number of three (3) pedestrian push buttons provided for Bloomfield Avenue crossing;
- Driveway overlapping along with bus stop locations on Grove Street westbound approach causing congestion, and;
- 8-inch traffic signal indications on some approaches which is a MUTCD Violation.

Springfield Avenue (CR 603) and Grove Street (CR 509) in Irvington Township
- MUTCD sign violations for sizes and types;
- Faded and worn pavement markings throughout intersection, including crosswalks;
- Broken mast arm street name sign, Grove Street;
- No pedestrian push buttons, and;
- NJ TRANSIT bus stop on southwest corner causing congestion.

Springfield Avenue (CR 603) and Clinton Road (CR 665) in Irvington Township
- Faded and worn pavement markings throughout intersection including crosswalks;
- No pedestrian push buttons;
- High pedestrian traffic, jaywalking prevalent throughout this intersection;
- Traffic signal transformer base is not the correct breakaway type;
- Double parking prevalent throughout intersection;
- Signal phasing causes conflict between Clinton Road eastbound and Nye Avenue eastbound approaches;
- Congestion due to bus terminal;
- Vehicles making prohibited turning movement, and;
- Bus stops at corners causing congestion.

Springfield Avenue (CR 603) and Grove Street (CR 509) in Irvington Township
- MUTCD sign violations for sizes and types;
- Faded and worn pavement markings throughout intersection, including crosswalks;
- Broken mast arm street name sign, Grove Street;
- No pedestrian push buttons, and;
- NJ TRANSIT bus stop on southwest corner causing congestion.

Springfield Avenue (CR 603) and Clinton Road (CR 665) in Irvington Township
- Faded and worn pavement markings throughout intersection including crosswalks;
- No pedestrian push buttons;
- High pedestrian traffic;
- Police presence at intersection to help with school traffic, causes congestion;
- No vehicle detection, and;
- Pedestrian indication far from crosswalk on northwest corner of intersection.

Main Street (CR 527) and Millburn Avenue (CR 577) in Millburn Township
- Faded and worn pavement markings throughout intersection, including crosswalks;
- No pedestrian push buttons;
- High pedestrian traffic;
- Police presence at intersection to help with school traffic, causes congestion;
- No vehicle detection, and;
- Pedestrian indication far from crosswalk on northwest corner of intersection.

Main Street (CR 527) and Essex Street, in Millburn Township
- Faded and worn pavement markings throughout intersection, including crosswalks;
- No pedestrian push buttons;
Location No. 11: Springfield Avenue (CR 603) and Grove Street (CR 509)
Municipality: Irvington Township
County: Essex

[CRASH.CRASH_YEAR in (2009, 2010, 2011) AND (CRASH.SRI = 079009013 AND CRASH.MILEPOST between 1.52 AND 1.54) OR (CRASH.SRI = 000008509 AND CRASH.MILEPOST between 10.32 AND 10.34)]

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<tr>
<td>Same Direction - Rear End</td>
<td>14</td>
<td>14</td>
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<td>Same Direction - SideSwipe</td>
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<td>1.67</td>
<td>51.67</td>
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<tr>
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<td>5</td>
<td>56.67</td>
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<td>Struck Parked Vehicle</td>
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<td>5</td>
<td>61.67</td>
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<td>Left Turn / U Turn</td>
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<td>49</td>
<td>20</td>
<td>81.67</td>
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<tr>
<td>Backing</td>
<td>2</td>
<td>51</td>
<td>5.55</td>
<td>85</td>
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<td>Fixed Object</td>
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<td>8</td>
<td>60</td>
<td>13.33</td>
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</table>

**Springfield Avenue (CR 603) and Grove Street (CR 509) - Crash Type**

- Same Direction - Rear End
- Same Direction - SideSwipe
- Right Angle
- Opposite Direction - Head On/Angular
- Opposite Direction - SideSwipe
- Struck Parked Vehicle
- Left Turn / U Turn
- Backing
- Fixed Object
- Pedestrian

- Same Direction - Rear End: 23%
- Opposite Direction - Side Swipe: 18%
- Right Angle: 9%
- Struck Parked Vehicle: 5%
- Pedestrian: 15%
- Backing: 3%
- Fixed Object: 2%
- Left Turn / U Turn: 20%
Location No. 11: Springfield Avenue (CR 603) and Clinton Avenue
Municipality: Irvington Township
County: Essex

Table 36 – Technical Projects Multi-Modal Assessment

<table>
<thead>
<tr>
<th>Region</th>
<th>Location No.</th>
<th>Municipality</th>
<th>Major Street</th>
<th>No. of Bus Lines</th>
<th>Rail Walking Distance</th>
<th>Bus-to-Rail Connection</th>
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</thead>
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<td>Eastern</td>
<td>3</td>
<td>Bloomfield Twp.</td>
<td>CR 506</td>
<td>7</td>
<td>0.1 (Light)</td>
<td>Yes (90)*</td>
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<td></td>
<td>11</td>
<td>Irvington Twp.</td>
<td>CR 603</td>
<td>3</td>
<td>3.7 (Rail)</td>
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<td>Western</td>
<td>20</td>
<td>Millburn Twp.</td>
<td>CR 527</td>
<td>4</td>
<td>0.2 (Rail)</td>
<td>Yes (25)*</td>
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<td>24</td>
<td>Verona Twp.</td>
<td>CR 506</td>
<td>1</td>
<td>0.3 (Rail)</td>
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<td>28</td>
<td>West Orange Twp.</td>
<td>CR 508</td>
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*NJ Transit Bus Number.

It should be noted that for the weighing of mass transit, LEED uses ¼ mile walking distance to a bus stop served by two or more bus lines or two bus stops served by at least one bus line; ¼ mile walk to light rail; and ½ mile walking distance to rail, BRT or ferry. This criterion is an important aspect of the existing assessment and future improvements.

5.4.5 Summary and Recommendations

The following section summarizes the Technical Evaluation of the Candidate Project List with respect to existing deficiencies, crash data and operational analysis.

A. Location No. 3: Bloomfield Township

Existing Deficiencies
- Substandard signing, striping and signal equipment present on multiple approaches.

Crash Occurrence
- The most prevalent crash types reported were same direction – rear end (15), and same direction – sideswipe (10), which accounted for 60% of crashes.

- The left-turn/U-turn (7) and right angle (5) crash types accounted for an additional 29%.

Traffic Operations
- There is an existing failing condition (LOS “F”) on the Northbound and Southbound approaches of Grove Street (CR 509).

Multi-Modal/Mass Transit Assessment
Qualifies for LEED Credit (located within ¼ mile walking distance of light rail and ¼ mile walking distance of bus stops serving two lines).

B. Location No. 11: Irvington Township

Existing Deficiencies
- A high volume of illegal/jaywalking pedestrian movements reported during field investigation.
- Bus stop locations, double-parked vehicles and terminal location results in congestion.
- Signal Phasing Conflicts between Clinton Road and Nye Avenue.
- Sign types and sizes are non-compliant with MUTCD at Grove Street.
Comprehensive Transportation Plan

Crash Occurrence

- The most prevalent crash types reported at Springfield Avenue and Grove Street was in the same direction – rear end (14), left-turn/U-turn (12) and same direction – sideswipe (10), which accounted for 62% of crashes.
- Eight pedestrian crashes were recorded at the intersection of Springfield Avenue and Grove Street, accounting for 13.33% of crashes.
- Same direction – rear end (14) crashes were the most prevalent crash type reported at Springfield Avenue and Clinton Road (41.18% of crashes).
- Right-Angle Crashes (7, or 20.59%) were the second-most occurring crash type.

Traffic Operations

- The existing traffic operations of Springfield Avenue and Grove Street are acceptable, with the highest delay (LOS “D”/37.2 sec/veh) experienced on the eastbound approach of Springfield Avenue (603) during the PM Peak Hour.
- The Eastbound approach of Springfield Avenue at Clinton Road experiences the highest delay (LOS “D”) during both the AM and PM Peak Hour.

Multi-Modal/Mass Transit Assessment

Qualifies for LEED credit (located within ¼ mile walking distance to a bus stop served by two or more bus lines or two bus stops served by at least one bus line).

D. Location No. 24: Verona Township

Existing Deficiencies

- MUTCD sign and signal non-compliance.

Crash Occurrence

- Same direction – rear end (29) and same direction – sideswipe (29) crashes accounted for 70% of crash types.
- Seven right-angle and six left-turn/U-turn crashes were reported at this intersection.

Traffic Operations

- The Northbound approach of Pompton Avenue operates with the highest delay and lowest LOS, LOS “E” during the AM Peak Hour and with failing conditions (LOS “F”) during the PM Peak Hour.

Multi-Modal/Mass Transit Assessment

Qualifies for LEED credit (located within ½ mile walking distance of rail).
Appendix D: Essex County Complete Streets Policy

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COUNTY OF ESSEX, NEW JERSEY
BOARD OF CHOSEN FREEHOLDERS

State of New Jersey,
County of Essex }  ss

I Deborah Davis Ford, Clerk of the Board of Chosen Freeholders of the County of Essex in the State of New Jersey,

Do hereby certify, the foregoing to be a true copy of a resolution adopted at a meeting of said Board on Wednesday, the 25th day of April 2012, together with the certification, signatures and endorsements thereon.

RESOLUTION NO: R-2012-00392

IN Testimony WHEREOF, I have hereunto set my hand and affixed the official seal of said County at Newark this 17th day of December, 2012.

[Signature]
Clerk

PLEASE NOTE: Resolution Nos. R-12-0392, become R-2012-00392, as per Ordinance No. O-2011-00010, adopted August 17, 2011.
WHEREAS, a Complete Street is defined as a means to provide safe access for all users by designing and operating a comprehensive, integrated, connected multi-modal network of transportation options; and

WHEREAS, the benefits of Complete Streets include improving safety for pedestrians, bicyclists, children, older citizens, non-drivers and the mobility challenged as well as those that cannot afford a car or choose to live car free; providing connections to bicycling and walking trip generators such as employment, education, residential, recreation, retail centers, and public facilities; promoting healthy lifestyles; creating more livable communities; reducing traffic congestion and reliance on carbon fuels thereby reducing greenhouse gas emissions; and saving money by incorporating sidewalks, bike lanes, safe crossings and transit amenities into the initial design of a project, thus sparing the expense of retrofits later; and

WHEREAS, the Essex County Board of Chosen Freeholders wishes to establish a Complete Streets policy though the planning, design, construction, maintenance and operation of new and retrofit transportation facilities, enabling safe access and mobility; and

WHEREAS, it is the intent of the Board of Chosen Freeholders that to the extent practicable, the Essex County Complete Streets policy shall include all road, bridge, and building projects.

NOW, THEREFORE, be it resolved that the Essex County Board of Chosen Freeholders establish the following Complete Streets Policy with the following goals and objectives:

1. Provide safe and accessible accommodations for existing and future pedestrian, bicycle, and transit facilities.
2. Establish a checklist of pedestrian, bicycle, and transit accommodations such as accessible sidewalks, curb ramps, crosswalks, countdown pedestrian signals, signs, curb extensions, pedestrian scale lighting, bike lanes, and shoulders for consideration in each project where county jurisdiction applies.
3. Additionally, in rural areas, paved shoulders or a multi-use path shall be in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders provide safety and operational advantages for all road users. Exemptions shall be considered for County and State designated routes such as Scenic Roads, and Historic or Cultural Byways. If there is evidence of heavy pedestrian usage then sidewalks shall be considered in the project.
4. Establishment of a procedure to evaluate resurfacing projects for Complete Streets inclusion according to length of project, local support, environmental constraints, right-of-way limitations, funding resources, and bicycle and/or pedestrian compatibility.
5. Transportation facilities constructed for long-term use shall anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements.
6. Designs shall address the need for bicyclists and pedestrians to cross corridors, as well as travel along them, in a safe, accessible, and convenient manner.
8. Provisions shall be made for pedestrians and bicyclists when closing roads, bridges or sidewalks for construction projects as outlined in NJDOT Policy #705 - Accommodating Pedestrian and Bicycle Traffic During Construction.

9. Improvements shall also consider connections for Safe Routes to Schools, Safe Routes to Transit, Transit Villages, trail crossings and areas or population groups with limited transportation options.

10. Improvements shall comply with Title VII Environmental Justice, Americans with Disabilities Act (ADA) and complement the context of the surrounding community.

11. Exemptions to the Complete Streets policy shall be presented for final decision to the County Engineer in writing and documented with supporting data that indicates the reason for the decision and are limited to the following:

a) Non-motorized users are prohibited on the roadway.

b) Scarcity of population, travel and attractors, both existing and future, indicate an absence of need for such accommodations.

c) Detrimental environmental or social impacts outweigh the need for these accommodations.
d) Cost of accommodations is excessively disproportionate to cost of project.
e) The safety or timing of a project is compromised by the inclusion of Complete Streets.
f) An exemption other than those listed above must be documented with supporting data and must be approved by the County Engineer.

**BE IT FURTHER RESOLVED**, that a certified copy of this Resolution shall be sent to the Office of the County Administrator, Office of County Counsel and Department of Public Works.
Approved as to form and legality

RECORD OF VOTE (X=Vote  N.V.=Absention  ABS=Absent)

Moved by Freeholder
Second by Freeholder

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It is hereby certified that the foregoing Resolution was ☑ adopted ( ) defeated ( ) tabled by roll call vote at a Regular meeting of the Board of Chosen Freeholders of the County of Essex, New Jersey held on August 25, 2012.

Is Publication Required ( ) Yes ( ) No

Date Published

Blonnie R. Watson, President
Adopted
Township of Irvington Master Plan

PREPARED BY
THE IRVINGTON PLANNING BOARD
~ in consultation with ~
The Irvington Master Plan Task Force
The Irvington Master Plan Advisory Committee
Abeles Phillips Preiss & Shapiro, Inc.
Planning & Real Estate Consultants
434 Sixth Avenue, Fifth Floor
New York, NY 10011
(212) 475-3030

APRIL 2002

Reprinted December 2002
1 Introduction

In the year 2001, the Township of Irvington is poised for a rebound, after nearly thirty years of hardship. Since the completion of the 1979 Master Plan, Irvington suffered from the effects of crime, poverty, abandonment, and disinvestment, not only within its own borders, but in the surrounding area. The City of Newark, adjacent to Irvington, experienced a long period of decline between the 1960's and the late 1990's, partly as a result of the shrinking of the manufacturing sector.

Then, with the economic boom of the late 1990's, the Newark region was attracting renewed interest from developers for the first time in many years. The construction of the NJ Performing Arts Center and the minor league ballpark, the clearing and reconstruction of dilapidated public housing, and new office renovations in downtown all contributed to the “Newark renaissance”. Newark, when compared to Irvington, qualifies for many more state and federal dollars — particularly economic development and housing funds.

The Township has been making a concerted effort to take advantage of the upswing in the Newark economy to bolster Irvington’s business climate, attract entrepreneurs, stabilize the real estate market, and build a better quality of life for residents. To this end, the actions of the Urban Enterprise Zone (UEZ) have been invaluable. The UEZ established the Springfield Avenue Corridor and Camptown Street Special Improvement Districts (SACSID and CBID) and has been working to attract new investment in the Coit Street and Olympic Park Industrial Areas. The UEZ has also provided business and property owners with technical assistance. In addition, the UEZ secured the grant funding that was used to prepare this comprehensive update of the Master Plan, and the recommendations in this Plan were closely coordinated with the revitalization efforts of the UEZ.

The completion of the new Master Plan will help the Township secure additional funding from State, federal, and foundation sources. It will also provide the Township with an up-to-date policy document that reflects needs and trends as of 2000, responds to the current concerns of residents, and provides a coordinated vision and direction for Township administration. Most significantly, this plan includes a new zone map for the Township that is intended to strengthen residential neighborhoods and business districts, while providing a framework for the revitalization of ailing areas of town.

The Township prepared the Master Plan update in 1999-2001, through the oversight of a Master Plan Task Force comprised of Township department directors and an Advisory Committee comprised of elected officials, appointed officials, and community members, and with the assistance of the consulting firm of Abeles Phillips Preiss & Shapiro. In preparing the Master Plan, the consultants collected demographic and other background information, and conducted two public meetings in summer 2000. The background information and the public comments from the meetings were used to identify problems, issues, and other areas of concern and to begin to identify potential future solutions. The resulting Master Plan is comprised of a series of goals and objectives, followed by eight elements:
The Land Use Plan element lays out the future zoning framework for the Township and explains the major changes from the 1979 Master Plan.

The Housing element summarizes the current condition of the housing stock and instructs the Township to develop a “fair share” plan for affordable housing that meets State requirements.

The Economic Plan element discusses the major economic development initiatives being pursued by the UEZ.

The Utilities, Circulation, Community Facilities, and Parks elements discuss the major needs for maintenance and new investment in water, sewer, roads, schools, police facilities, firefighting facilities, and parks.

The Historic Preservation element identifies strategies for protecting the historic buildings and neighborhoods in the Township.
2 Goals

The goals of the Irvington Master Plan are as follows:

- Change land use patterns to promote economic and population growth and improve the overall quality of life.
- Encourage the creation of new zoning designations to maintain a better balance of land uses and densities.
- Protect residential areas from inappropriate densities and from industrial and commercial land use encroachment.
- Increase employment opportunities and the tax base by diversifying and strengthening the Township’s commercial and industrial zones.
- Provide adequate affordable housing opportunities to retain existing residents and attract new residents.
- Encourage homeownership through new construction, rehabilitation, and homeowner assistance programs.
- Encourage the redevelopment of vacant land, abandoned property, buildings in poor condition, and brownfield sites.
- Establish new resources, such as a planning office with a geographic information system, to better manage planning, growth, and development.
- Ensure that the various types of infrastructure meet the needs of residents and businesses.
- Improve transportation access and circulation patterns.
- Ensure community and public facilities, such as schools, parks, fire and police services, meet the needs of the population.
- Improve the overall appearance of the Township.
- Improve and increase the amount and quality of parks and open space, especially near schools and higher density residential areas.
- Strengthen schools as neighborhood centers that serve the educational, recreational, social, and cultural needs of each community.
- Identify and increase cultural and historic resources.
FOREIGN TRADE ZONE

The business community within the Coit Street Industrial Area and members of the CBID started to discuss the feasibility of having the industrial area designated a Foreign Trade Zone, which are zones designated by the U.S. Department of Commerce and operated under the supervision of the U.S. Customs Service. Foreign Trade Zones are treated as though they are located outside U.S. Customs Territory. Import duties on merchandise, while in these zones, can be deferred, reduced, or in some cases eliminated. Therefore, there is substantial savings to be realized through zone usage. Irvington’s proximity to Newark International Airport, the Ports of Newark Elizabeth, and I-78 makes the Coit Street Industrial Area an excellent location for a Foreign Trade Zone.

5.3 IRVINGTON CENTER AND SPRINGFIELD AVENUE

In addition to designating Irvington Center and Springfield Avenue as UEZ areas, the Township and the UEZ have put forth numerous proposals for improving the business climate in Irvington Center and along Springfield Avenue. The improvements are intended to improve the accessibility and attractiveness of the center and corridor as shopping destinations. Recommendations include improving facades and landscaping and systematizing circulation patterns, access, and parking.

SPRINGFIELD AVENUE CORRIDOR BUSINESS IMPROVEMENT DISTRICT

The Springfield Avenue Corridor Business Improvement District (SACBID) was established in 1997 and includes businesses fronting on Springfield Avenue, Clinton Ave, Nye Ave, and nearby side streets in the downtown area. Properties included in the SACBID are shown on Figure 5-3. The SACBID was established in order to bring business owners together to join forces with the Township in improvements to the Springfield Avenue corridor.

The SACBID is playing a critical role in the physical redevelopment of downtown. It has the authority to fund the rehabilitation of commercial properties in the SACBID and to accept, purchase, rehabilitate, sell, lease, or manage property in the SACBID. The SACBID can also undertake physical improvements to landscaping, parking, and recreational facilities. The SACBID is able to manage the downtown area as if it were a shopping mall, developing the business climate, marketing the stores and their products, and providing a safe, convenient, and attractive shopping experience for customers. More specifically, the SACBID can provide supplemental security, sanitation, and other services; coordinate publicity; recruit new businesses; and organize special events.
DESIGNATED AREAS IN NEED OF REDEVELOPMENT

As of October 2001, two areas were designated "Areas in Need of Redevelopment" under State law, as shown in Figure 5-4. The first one is in the Coit Street Industrial Area (Blocks 183-186 and 195-197), which was designated in February 2001. The second one is in the East Ward (Blocks 142-143; the east and west sides of 21st Street) and was designated in August 2001. The Township intends to expand both areas subject to the outcome of current studies. The Township Council has authorized three additional areas to be investigated to determine if they are in need of redevelopment: Mill Road, portions of the East Ward, and the entire Coit Street Industrial Area.

- In March 2001, the Township authorized the Planning Board to undertake a redevelopment investigation of the area along Springfield Avenue, between the Garden State Parkway and the Newark City Line.
- In March 2001, the Planning Board was authorized to investigate the commercial sites near the Mill Road/Stuyvesant Avenue intersection, including the Getty Gas Station, Village Diner and C-Town Market (Block 38, Lots 24, 25 and 26).
- In June 2001, the Township authorized the Planning Board to undertake an investigation of the entire area between Springfield Avenue and 18th Avenue and between South Grove Street and the Newark City Line (Blocks 135-141, Blocks 144-145).
- In July 2001, the Township authorized the Planning Board to undertake a redevelopment investigation of the Coit Street Industrial Area (Blocks 187-190, 172-177, 178-182, 222-223, and 199-203), which served as an expansion to the “Area in Need of Redevelopment” that was approved by the Council in February 2001.

The results of the investigation for expanded East Ward and the Coit Industrial area investigation are scheduled to be brought before the Planning Board in early 2002 and before the Township Council in mid 2002.

Aside from the Pabst Brewery site, which is described in more detail below, other redevelopment sites that should be studied further include 18th Avenue between Myrtle Avenue and Vermont Avenue and Chancellor Avenue between Rutgers and Temple Place.
BUSINESS DISTRICTS

Businesses along the Township's commercial corridors (Springfield Avenue, Clinton Avenue, Lyons Avenue, Chancellor Avenue, and 18th Avenue) are dependent on pass-by traffic for patronage. Whereas downtown has a compact, clustered form of development that is conducive to pedestrian activity, the commercial corridors are long and linear in nature, favoring automobile access. Because they are already oriented towards cars, the proposed zoning is a mix of B-3 and B-4, which allows auto-oriented commercial development. Off-street parking is critical to maintaining the commercial vitality of these zones.

However, in the case of B-1 Neighborhood Business districts, the residents from the surrounding neighborhood are envisioned as the primary market, and walking is envisioned as the primary mode of access. These small districts have been mapped in areas with traditional corner stores or rows of pedestrian-oriented shops, which are the remnants of streetcar-oriented retail nodes from the early 20th century. In these locations, off-street parking would not be required, and on-street parking would be adequate, because very little business would be expected to come from pass-by traffic.

7.3 TRANSIT

RAIL SERVICE

Irvington is not currently served by passenger rail service. A spur of the Lehigh Valley/Conrail railroad line runs through the Coit Street Industrial Area, but it is used for freight traffic only. Although passenger service was briefly provided in 1915 along the line, it was quickly discontinued due to low patronage. Because of the branch line's circuitous route and short spur configuration, passenger service to Irvington would not offer a significant time savings for most commuters and would not provide a direct or convenient connection to most places of employment. Therefore, ridership and revenue expectations would be low, while the cost of service would be relatively high. It is no surprise that Conrail has expressed no interest in implementing commuter service along the line.

Because of these factors, it is not likely that passenger rail service will come to Irvington in the near future. Bus service is less expensive to provide and is more convenient for most people, because buses can reach many different destinations on local streets and because the downtown Bus Terminal is centrally located. It does not make sense to pursue passenger rail service at the current time.

BUS SERVICE

Several NJ Transit bus routes serve Irvington. Routes run all throughout the Township, but Irvington Center and Springfield Avenue have the most concentrated and frequent bus service. Bus routes that serve Irvington are listed in Table 7-3. Nine bus routes serve the Bus Terminal,
with about 900 bus arrivals and departures and approximately 13,500 passengers each weekday. In addition, two routes serve Springfield Avenue, with about 600 arrivals and departures daily.\textsuperscript{13}

The number of bus trips and riders at the Terminal and along Springfield Avenue are extremely high relative to the Township's population of 60,000 residents, and they suggest that buses serve as a critical mode of transportation for residents. Buses provide connections to downtown Newark (including Newark Penn Station), midtown Manhattan (Port Authority Bus Terminal), Newark Airport, Irvington General Hospital, and other local and regional destinations.

Irvington is served by one of the most heavily traveled bus routes in the NJ Transit system — the #13. It provides a direct connection into downtown Newark via Clinton Avenue and Broad Street. For Irvington residents who work in downtown Newark, the #13 is direct and convenient. The connection to the Port Authority Bus Terminal in Manhattan is also a heavily traveled bus route. For Irvington residents, the #107 is the most direct connection into Manhattan. In addition, some residents of the adjacent towns make use of the #107. Although residents of Maplewood, South Orange, and Newark typically prefer the train (NJ Transit or PATH), the #107 is a good alternative for many people. Between 6:30 and 10:00 a.m., Exclusive Bus Lanes are provided through the Lincoln Tunnel, shaving some time off of the bus trip into Manhattan during the morning commute. The bus is also a less expensive option, as compared to the train.

By connecting people to job centers, major institutions, shopping centers, and major transportation hubs, the bus system plays a critical role in the economic and social life of the community. In addition, because many of Irvington's low-income residents do not own cars, the bus system provides the only means of transportation for some people. Seniors, teenagers, and young adults consistently patronize the bus system as well, again because many people in those groups have no car.

**Planned Improvements**

According to NJ Transit, there were no plans for re-routing or service changes in Irvington as of May 2001. The only recent service change in Irvington was that the #94 service was provided to the south side of the Township on weekends, where there was previously a lack of weekend service. In general, NJ Transit recognizes that Irvington has a heavily-utilized bus network, so it is not a target for service cuts (unless the State requires uniform service cuts statewide).\textsuperscript{14}

\textbf{Table 7-3: Major NJ Transit Bus Routes Serving Irvington}

\begin{tabular}{|l|l|l|}
\hline
Routes Serving Bus Terminal & Major Destinations & Median Weekday Riders along Entire Route, April 2001 \\
\hline
\end{tabular}

\textsuperscript{13} Irvington UEZ, \textit{Irvington Center Transit Gateway Project}, March 23, 1999.

\textsuperscript{14} Telephone conversation with Steve Lax, NJ Transit, May 16, 2001.
hours. Because of these two factors, the Township may eventually have to provide longer bus stops, potentially eliminating metered on-street parking spaces in Irvington Center.\textsuperscript{16}

Some, but not all, of the bus stops have shelters. In general, shelters should be provided at heavily-used bus stops, and the Township should monitor bus stops to determine shelter needs. NJ Transit owns the bus shelters, but the Township is responsible for maintenance. Some bus stops are in poor condition, covered with graffiti, scratch-"iti", and adhesive stickers, or they are otherwise damaged. Severely damaged shelters should be either replaced or repaired. In particular, new bus shelters should be considered in the downtown area, as part of the downtown revitalization effort.

7.4 PEDESTRIAN CIRCULATION

DOWNTOWN

Downtown Irvington is the most pedestrian-intensive part of the Township. The compact building pattern, the mix of land uses, the pedestrian-oriented shops, the sidewalk amenities, and the transit activity are the components that make downtown a strong pedestrian realm. Downtown businesses rely on pedestrian activity. Most downtown buildings were erected between 1880 and 1930, and most of them were built without any on-site private parking lots. Thus, for the customer base, businesses rely on people who walk over from the adjacent neighborhoods, park in one of the public lots, or walk to or from a bus stop.

For the continued health of downtown business, it is critical that downtown remain a safe, comfortable, and convenient environment for pedestrians. Infill development should be encouraged on empty lots, "filling in" the gaps in the compact building pattern. Pedestrians tend to feel less safe in areas with vacant lots and buildings, so infill development helps promote walking. Moreover, new development needs to fit in with the traditional building pattern and design. These measures would increase the size and extent of the pedestrian realm, creating additional business opportunities.

In the late 1990s, the State Department of Transportation determined that the Springfield-Clinton intersection was one of the worst locations for pedestrian-related accidents in the State. The Springfield-Grove intersection was also identified as being prone to pedestrian accidents. In early 2000, the Township received a grant from the New Jersey Department of Transportation to develop and implement improvement plans for the two intersections. Of the total grant money, $300,000 was earmarked for the Springfield-Clinton intersection, and $100,000 was set aside for the Springfield-Grove intersection.\textsuperscript{17} Sidewalk and crosswalk improvements may also be undertaken as part of the Transit Gateway project around the Bus Terminal.

\textsuperscript{16} Telephone conversation with Steve Lax, NJTransit, May 16, 2001.

\textsuperscript{17} Letter from Commissioner James Weinstein, New Jersey Department of Transportation, to Mayor Sara Bost, Township of Irvington, January 31, 2000.
BUSINESS DISTRICTS

As discussed in Section 7.2 above, most business districts outside downtown have a primary orientation to the automobile, with the exception of the B-1 Neighborhood Business districts. The B-1 districts, like downtown, have a compact building form, mixed use, and other design features that are conducive to pedestrian activity. Future development and roadway and sidewalk improvements should maintain and enhance the pedestrian-orientation.

PARKS AND COMMUNITY FACILITIES

Having good pedestrian access to parks is critical, since most people reach their local parks on foot. Parks without large-scale recreational facilities do not attract much car traffic, and on-street parking is generally adequate for those few people who may drive.

Many of Irvington's parks and community facilities have good pedestrian access already. Irvington Park, for example, has a pedestrian entrance opposite each street that dead-ends into the park, allowing the residents in the adjacent neighborhoods to walk into and through the park easily. Such pedestrian-oriented features can increase the use and enjoyment of local parks.

Parks with large-scale recreational facilities — particularly those where large numbers of spectators are anticipated — need to have good auto access and parking in addition to good pedestrian circulation for large crowds. During high school games, many people drive to the high school playing fields, creating a sudden and sharp demand for parking in that location. For such events, drivers make use of the high school parking lot and the adjacent on-street parking area in Civic Square.

7.5 BICYCLE CIRCULATION

Irvington does not currently have a system of bicycle paths or lanes. To the extent that residents (particularly children) use bicycles to travel around town, they have to share local streets with cars and are required to follow traffic rules. Many local residential streets have low levels of traffic, and bikes can easily share the right-of-way. However, on arterial and collector roads, heavier levels of traffic, higher speeds, trucks, and buses may create safety hazards for bicyclists. Bicycle lanes and designated bike routes can improve safety. By providing dedicated space for bicyclists in the right-of-way, bike lanes separate cars and bicycle traffic and prevent bicyclists from being squeezed into the parked cars alongside the road.

Creating a bicycle lane on an existing street in Irvington would require a change in the roadway configuration. A bicycle lane is typically four to six feet wide. To accommodate a bike lane, therefore, either one of the existing traffic lanes or some of the on-street parking would have to be eliminated. Such a change may be difficult to implement from a practical perspective, and it may be unpopular with residents or business owners. The location and design of any new bicycle lanes should create the least possible disruption to traffic and parking patterns and business activity. Because many children ride bikes, and because children have special safety needs, bike lanes should be concentrated in areas where children tend to ride their bikes — around elementary schools and public parks.
7.6 RECOMMENDATIONS

7-1: Develop a Capital Improvement Program for roads and sidewalks, which identifies needed improvements, repairs, and maintenance activities and itemizes the costs of those needs.

7-2: Implement sidewalk, crosswalk, and streetscape improvements (decorative paving, decorative lighting, trees and landscaping, undergrounding of overhead wires, installation of benches and new bus shelters, etc.) in Irvington Center, in order to enhance pedestrian circulation and attract more customers.

7-3: Increase nighttime surveillance of metered parking lots, metered streets in Irvington Center, and the Nye Avenue Parking Garage, through increased police patrols, SACBID-sponsored security, and/or neighborhood watch programs.

7-4: Continue efforts to establish a direct pedestrian linkage between the Nye Avenue Parking Garage and the Bus Terminal.

7-5: Improve pedestrian entrances into the Nye Avenue Parking Garage, as well as pedestrian circulation and visibility within the garage.

7-6: Explore the feasibility of establishing a vehicular entrance to the Nye Avenue Garage from Clinton Avenue.

7-7: Install parking meters for on-street parking spaces in B-1 Business Districts.

7-8: Encourage NJ Transit to increase bus service, as needed, to keep up with demand.

7-9: Continue working with NJ Transit and the New Jersey Highway Authority to revitalize the Irvington Bus Terminal and to improve pedestrian linkages between the terminal, the Nye Avenue Parking Garage, and the commercial areas along Springfield Avenue and Clinton Avenue.

7-10: Work with NJ Transit to repair or replace damaged bus shelters and to install new bus shelters in locations where they are needed.

7-11: Encourage "infill" development of vacant and underutilized lots in Irvington Center and in B-1 Business Districts. Through the provisions of the zoning code, require "infill" development to be sidewalk-oriented, like traditional buildings in those areas.

7-12: In conjunction with planning for new parks and the upgrading of existing parks, establish convenient and well-designed pedestrian linkages and signage from adjacent streets into the parks.

7-13: Develop a bicycle circulation plan that identifies potential locations for bicycle paths (off-road) and bicycle lanes (on-road).

7-14: As part of the zoning code, include requirements for installation of permanent bicycle racks in conjunction with normal parking requirements for commercial uses.

7-15: Work with NJ Transit to provide bicycle racks and lockers at the Bus Terminal.
7-16: Provide and/or improve bicycle racks at Township facilities, including Township Hall, the Library, and the Gatling Recreation Center.

7-17: Work with the School District to provide and/or improve bicycle racks at the public schools in the Township.
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entrance. Irvington is well served by transit busses, taxi-cabs and is a very walkable center. This makes the Irvington center (the cross roads of Springfield and Clinton avenues) well-used by pedestrians.

The Plan reported that this use by pedestrians in an automobile oriented creates conflicts that have to be avoided. The Plan said:

“For the continued health of downtown business, it is critical that downtown remain a safe, comfortable, and convenient environment for pedestrians. Infill development should be encouraged on empty lots, "filling in" the gaps in the compact building pattern. Pedestrians tend to feel less safe in areas with vacant lots and buildings, so infill development helps promote walking. Moreover, new development needs to fit in with the traditional building pattern and design. These measures would increase the size and extent of the pedestrian realm, creating additional business opportunities.

In the late 1990s, the State Department of Transportation determined that the Springfield-Clinton intersection was one of the worst locations for pedestrian-related accidents in the State. The Springfield-Grove intersection was also identified as being prone to pedestrian accidents. In early 2000, the Township received a grant from the New Jersey Department of Transportation to develop and implement improvement plans for the two intersections. Of the total grant money, $300,000 was earmarked for the Springfield-Clinton intersection, and $100,000 was set aside for the Springfield-Grove intersection.”

Specific circulation goals in the 2002 Master Plan addressing land development included:

- Develop a Capital Improvement Program for roads and sidewalks, which identifies needed improvements, repairs, and maintenance activities and itemizes the costs of those needs.

- Implement sidewalk, crosswalk, and streetscape improvements (decorative paving, decorative lighting, trees and landscaping, undergrounding of overhead wires, installation of benches and new bus shelters, etc.) in Irvington Center, in order to enhance pedestrian circulation and attract more customers.

- Continue efforts to establish a direct pedestrian linkage between the Nye Avenue Parking Garage and the Bus Terminal.

- Improve pedestrian entrances into the Nye Avenue Parking Garage, as well as pedestrian circulation and visibility within the garage.

- Explore the feasibility of establishing a vehicular entrance to the Nye Avenue Garage from Clinton Avenue.

- Encourage NJ Transit to increase bus service, as needed, to keep up with demand.
Continue working with NJ Transit and the New Jersey Highway Authority to revitalize the Irvington Bus Terminal and to improve pedestrian linkages between the terminal, the Nye Avenue Parking Garage, and the commercial areas along Springfield Avenue and Clinton Avenue.

Encourage "infill" development of vacant and underutilized lots in Irvington Center and in Business Districts. Through the provisions of the zoning code, require "infill" development to be sidewalk-oriented, like traditional buildings in those areas.

In conjunction with planning for new parks and the upgrading of existing parks, establish convenient and well-designed pedestrian linkages and signage from adjacent streets into the parks.

Develop a bicycle circulation plan that identifies potential locations for bicycle paths (offroad) and bicycle lanes (on-road).

As part of the zoning code, include requirements for installation of permanent bicycle racks in conjunction with normal parking requirements for commercial uses.

Work with NJ Transit to provide bicycle racks and lockers at the Bus Terminal.

Provide and/or improve bicycle racks at Township facilities, including Township Hall, the Library, and the Gatling Recreation Center.

Recreation and Open Space - The protection and acquisition of open spaces was a major goal in the 2002 Master Plan. Techniques to preserve open space were discussed in the open space/recreation and parks elements of the Master Plan. Providing a stable source of funding for open space acquisitions was a major objective.

The Master Plan open space/recreation and parks land development goals include:

Work with residents, merchants, property owners, the Board of Education, the Police Department, and the Township Recreation Department to develop a security and maintenance plan for each park site. Consider creating a conservancy to help maintain parks.

The plan should be a multi-faceted strategy, addressing police surveillance, capital improvements, maintenance, funding, lighting, fencing, and landscaping design in a coordinated fashion.

Continue to seek out grants and low-interest loans that the Township can use to make improvements and expansions to recreational facilities.

Identify at least three half- or quarter-acre sites in each ward that can be potentially used as the location of future pocket parks. Seek community groups or faith-based institutions to serve as caretakers of the pocket parks.

Identify at least one five- to ten-acre site or a series of sites that total five to ten acres in each ward that can be potentially used as the location of future active recreational facilities, such as a soccer field.
Housing and Neighborhood Revitalization
Irvington has made significant strides in rebuilding its housing stock and improving neighborhoods particularly in the East Ward. Increasing its stock of affordable housing and preserving the diversity of housing in Irvington remains an important objective, and both communities have undertaken major efforts to preserve and expand their affordable housing stock.

A total of 172 new and rehabilitated housing units (52 were affordable) were planned or constructed in the Township since the 2002 Master Plan adoption through this report. In the East Ward alone about 30 new homeowners and tenants are now Township residents. The Township is seeking to secure 11 parcels in the East Ward from the New Jersey Education Development Administration, taken by eminent domain in 2005 for the construction of a new Middle School in the East Ward. The shift downward of middle school aged children has prompted the Board of Education to not advocate for building a new Middle School. The Township would like to see this land sold to qualified developers to build needed affordable and market rate housing in the East Ward.

Protecting existing neighborhoods from incompatible development continues to be a concern. Pressure on the scale and integrity of residential neighborhoods has increased in recent years. Irvington has received proposals for residential density increases as developers plan to subdivide regulation lots are planned into substandard lots with consequent yard and parking issues. These development plans are brought to the Board of Adjustment because the Planning Board does not review density cases and tend to get approved on a case-by-case basis. The challenge for staff is to address such issues as Master Plan concerns and help Board of Adjustment members see the broader context within which developers are attempting to divide lots when they can build on existing lots within zoning requirements. Such development applications for in-fill development have increased, and to establish new development that is harmonious with existing neighborhoods remains a Master Plan objective.

Traffic Circulation
Due to Irvington’s location, the community continues to benefit by great local and regional access. A cooperative effort between Irvington, neighboring communities, the county, state, and regional authorities is essential to take appropriate advantage of the concentration of transit and automobile systems.

With respect to local traffic, volumes are congested in some areas of the Township: Lyons Avenue from Lincoln Place to Newark and to a lesser extent, portions of Union Avenue, Chancellor Avenue, and Springfield Avenue as they direct traffic into Irvington Center. Expansion of transit opportunities are a solution to expected growth in traffic volumes as development proceeds in the Township over the next half-decade². NJ Transit has funded a free bus shuttle serving Irvington

² Large projects on the horizon: 179 square foot mixed use Township Center plan; development of mixed uses at the 6-acre Irvington General Hospital; 2.5 acre commercial development at Mill Road and Stuyvesant Avenue; 80,000 square foot Pabst site commercial development
Center and a new express GO Bus service is operating along Springfield Avenue, which with growth to threshold patronage could support an upgrade to light rail transit service.

Irvington is taking steps to channel automobile traffic away from Irvington Center by strategically enhancing peripheral parking supply, such as the Nye Avenue Municipal Parking Garage and fostering pedestrian and transit-only use where appropriate to create auto-free zones. The Township is also working with Essex County to implement a number of traffic calming strategies to slow vehicle speed on Springfield Avenue and its approach roads. The feasibility of peripheral parking for central business district employees is an as yet, unmet objective of the Master Plan and must be investigated.

Developing alternative means of transportation remains an achievable objective. A comprehensive bikeway study is required, and a committee consisting of local officials and the business community will be formed to discuss enhancing non-motorized access to Irvington Center. NJ Transit has provided a free journey to work bus that in the off peak hours will operate as a free jitney bus service between residential neighborhoods and the shopping districts in Irvington.

The Township, working with NJDOT funds and Essex County support is continuing an examination of key Township Center intersections and examine ways to reduce traffic bottlenecks and ease traffic congestion.

A few remaining Master Plan objectives to be met in transportation are:
- Complete a study on the design and financial feasibility of improving access to and expanding Township owned surface parking lots.
- Develop a business attraction plan to encourage uses to locate near the bus terminal that complement the transportation node.
- The Township should explore links to parking facilities (i.e., the Nye Avenue Municipal Parking Garage or another location that could serve as a park and ride for commuters.

**Economic Development**
The Township has a central business district and retail corridors along major roads that reach into residential neighborhoods. The Township's central business district remains economically healthy. These areas have seen recent renovations to existing stores and infrastructure. Efforts to facilitate the provision of adequate parking in the Township's business district remain a high priority. The Township has recently taken steps to study the strategic use or peripheral parking surrounding the Township Center, looking for ways to intercept automobiles and create a safe pedestrian-transit oriented CBD.

Since the Plan's adoption in 2002, widespread Township-sponsored redevelopment and private land development activity has occurred within the Township's residential neighborhoods, as well as the commercial and industrial districts.
SECTION 4
The specific changes recommended for the master plan or development regulations, if any, including underlying objectives, policies and standards, or whether a new plan or regulations should be prepared.

Throughout this re-examination report we have discussed changes that have occurred in the Irvington Township. Some of these changes are readily apparent, others less apparent, and some are just beginning to be felt. While there have been changes, many issues continue to be in the forefront of our planning. The community continues to wrestle with the following issues:

- A shortage of sizable tracts of vacant developable land to meet the growth needs in the Township.
- Maintaining a balance of market and affordable housing.
- Meeting the housing needs of a growing senior population.
- Maintaining a range of housing opportunities to ensure a diverse population at all age and economic levels.
- Providing adequate recreation and open space.
- Ensuring an economically healthy downtown and shopping districts.
- Balancing institutional needs with neighborhood protection.
- Limiting traffic impacts in the Irvington Center.

This re-examination report recommends that the Irvington Township Master Plan be updated to address the above issues, and incorporate the following items, along with any other issues that come to light upon detailed review and public comment.

A. Land Use
1. The zoning for the Irvington Center should be reviewed, with an eye towards developing it as a mixed-use zone. This zone could permit age restricted and affordable housing, and market rate housing, as well as additional nonresidential development.

2. A study/survey of existing land uses throughout the Township especially along the main corridors: Springfield Avenue, Clinton Avenue, Chancellor Avenue, Lyons Avenue, Stuyvesant Avenue and Sanford Avenue. This review should include capacity analysis, density measurement, development of design standards, and traffic circulation.

3. Service zones as an emerging commercial activity should be explored along the same roads listed in bullet #2 above.

4. The areas around existing mixed-use zones and nonresidential zones in Irvington Center and along commercial corridors that course through residential neighborhoods should be examined to determine if these areas need additional protection, have changed and require rezoning, or should be considered for mixed-use development. In the Township the Office-Residence zone along Sanford and Stuyvesant avenues should be reviewed first.
5. The strategic designation of parking in Irvington Center will have an impact on land uses in this area. It will also support the planned 180 million dollar Irvington Center Mixed Use Project at the NJ Transit Bus Terminal and help influence upscale business development of Clinton Avenue between Ball Street and the Newark border. The Planning Board should review its objectives, policies and zoning for the CBD zone to determine if any changes are warranted based upon the anticipated impacts from enhancing parking at the Nye Avenue Municipal Parking Garage.

B. Housing  
1. The housing element should be revised to include innovative ways to meet the needs of a growing senior population.  
2. Maintaining housing that is affordable to all income levels continues to warrant further study and action.  
3. Maintaining the existing character of Township neighborhoods should be ensured through the development of additional zoning controls on the height, setback, and bulk of homes. Building 2 and 3 family homes on small lots designed to accommodate single family houses that are out of scale with their neighborhood should be discouraged.

C. Circulation  
1. A revision to the existing pedestrian and bicycle section of the circulation element is necessary. Upon completion of this plan it should be adopted as part of the Irvington Township Master Plan.  
2. Regional express transit opportunities continues to be a primary goal for Irvington Township. The Township should continue to monitor NJ Transit’s study of regional bus service and seek to upgrade express service as the Irvington Center grows transit-supporting threshold employment levels over the next half decade. The circulation element should be amended when more is known about the Greater Newark Bus Study.  
3. Develop a vision for discouraging automobile use of Irvington Center through local solutions to local traffic issues.
SECTION 5
The recommendations of the planning board concerning the incorporation of redevelopment plans adopted pursuant to the "local redevelopment and housing law," P.L. 1992, C. 79 (C.40A:12a-1 et al.) into the land use plan element of the municipal master plan, and recommend changes, if any, in the local development regulations necessary to effectuate the redevelopment plans of the municipality.

Since 2002 the Township has declared the following five areas of redevelopment in the Township:
- East Ward Redevelopment Area
- Mill Road Redevelopment Area
- Urban Enterprise Zone (UEZ) Rehabilitation Area
- Scattered Sites Redevelopment Areas (77 properties)
- Coit Street Redevelopment Area

With the adoption of this Re-examination report the Planning Board is incorporating these redevelopment plans into the Irvington Master Plan Land Use Element.

Some key development concepts and actual development that are occurring in established redevelopment areas since 2002 are listed below:

1. 53 units of new housing in the East Ward
2. $140 million Center City mixed use concept in the UEZ Rehabilitation Area
3. $20 commercial development in the Mill Road Redevelopment Area
4. Opening of the International House of Pancakes in UEZ Rehabilitation Area
5. New Advanced Auto building on Lyons Avenue
6. 19-Unit fully rehabilitation apartment building on Lyons Avenue
7. Opening of Plaza Suites a fully rehabilitated commercial building on Springfield Avenue in the UEZ Rehabilitation Area
8. Rehabilitation of the former Board of Education into a health clinic, and Cerebral Palsy service in the UEZ Rehabilitation Area
9. 20 acres of planned and actual development in the Coit Street Redevelopment Area
10. A new car wash/detailing center, the Spotless Car Wash on Lyons Avenue
11. New building constructed as an Autozone in the Coit Street Redevelopment Area
12. Several residential properties rehabilitated and newly constructed as an implementation of the Scattered Sites Redevelopment areas.
August 30, 2018

Julia Steponanko, P.E., Project Manager
Greenman-Pedersen, Inc.
Engineering and Construction Services
100 Corporate Drive, Suite 301,
Lebanon, NJ 08833

Re: Road Owner Response to RSA Springfield Avenue (CR 603) Recommendations
Irvington Township, Essex County

Dear Ms. Steponanko:

The County of Essex County appreciates the Road Safety Audit team for their participation in this important effort to improve traffic safety along Springfield Avenue and make this critical arterial more accommodating to all roadway users. We have reviewed the recommendations within the Draft Report dated August 2018 and generally agree with many of the findings and recommendations with few exceptions, which are detailed below.

Corridor-Wide Recommendations

15. Consider installing a bicycle lane and/or sharrow striping per NJ Complete Streets Design Guide
   a. The County prefers not to install bicycle lanes on County Roads due to the high volume of vehicular traffic and potential for conflicts with bicyclists.

20. Explore ways to deter vehicles from speeding along Springfield Avenue
   a. The County will post speed limit signs along Springfield Avenue as needed to help discourage speeding. A statutory speed limit of 25 mph is assumed based on the urban setting.

Site-Specific Recommendations

The County has no site-specific recommendations.

Should you have any questions concerning the above, please contact Rick Valderrama, Principal Engineer at (973) 226-8500, extension 4014.

Sincerely,

Sanjeev Varghese, PE, PP,
Director & County Engineer

Putting Essex County First
ESSEX COUNTY IS AN EQUAL OPPORTUNITY EMPLOYER