

# *Executive Summary*

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Prepared for

**Morris County Department of Planning & Development  
Division of Transportation  
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*In association with*



**NJ 124 Corridor  
Transit Access Improvement Study**

**June 2013**



The *NJ124 Corridor Transit Access Improvement Study* was conducted under the leadership of the 2013 Morris County Board of Chosen Freeholders.

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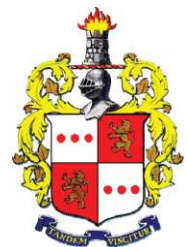
### **About the MCDOT**

The Morris County Division of Transportation (MCDOT) is part of the Morris County Department of Planning & Development.

MCDOT serves the county through regional transportation planning, implementation, and coordination of various modes of transportation. The Division secures federal and state funds for road, bridge, railroad, bicycle, and pedestrian projects. The Division conducts studies and coordinates planning efforts with state agencies, municipalities, county departments, and the North Jersey Transportation Planning Authority. Two Freeholder appointed boards, the Morris County Board of Transportation and the Morris County Freight Rail Advisory Committee, advise the Division on its activities. MCDOT directs efforts toward the best use of transportation resources to benefit the region.

For transportation information in Morris County and beyond, visit [www.MorrisDOT.org](http://www.MorrisDOT.org).

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June 2013



# ES

## Executive Summary

### Background

The NJ 124 Transit Access Improvement Study is a 14-month comprehensive analysis of the current utilization and accessibility of three commuter rail stations – Chatham, Madison, and Convent – along the Morristown branch of NJ TRANSIT’s Morris & Essex Line within the NJ 124 corridor. This study was funded through the North Jersey Transportation Planning Authority’s Subregional Studies Program. The project study area, depicted in Figure ES-1, encompasses six municipalities along NJ 124 including Chatham Borough, Madison Borough, Morris Township, Chatham Township, Florham Park Borough and Harding Township. Chatham Borough, Madison Borough and Morris Township are the host communities for the three rail stations studied in this report. This report examines existing and future transportation conditions in the study area. The potential for properties within the three station areas to redevelop as denser, mixed use residential and commercial land uses (also known as transit-oriented development or TOD) is also studied in this report. Policy and infrastructure recommendations to improve station access for all transportation modes and all users to meet future transit ridership demand are provided.



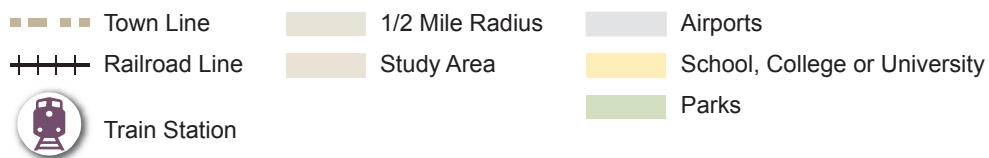
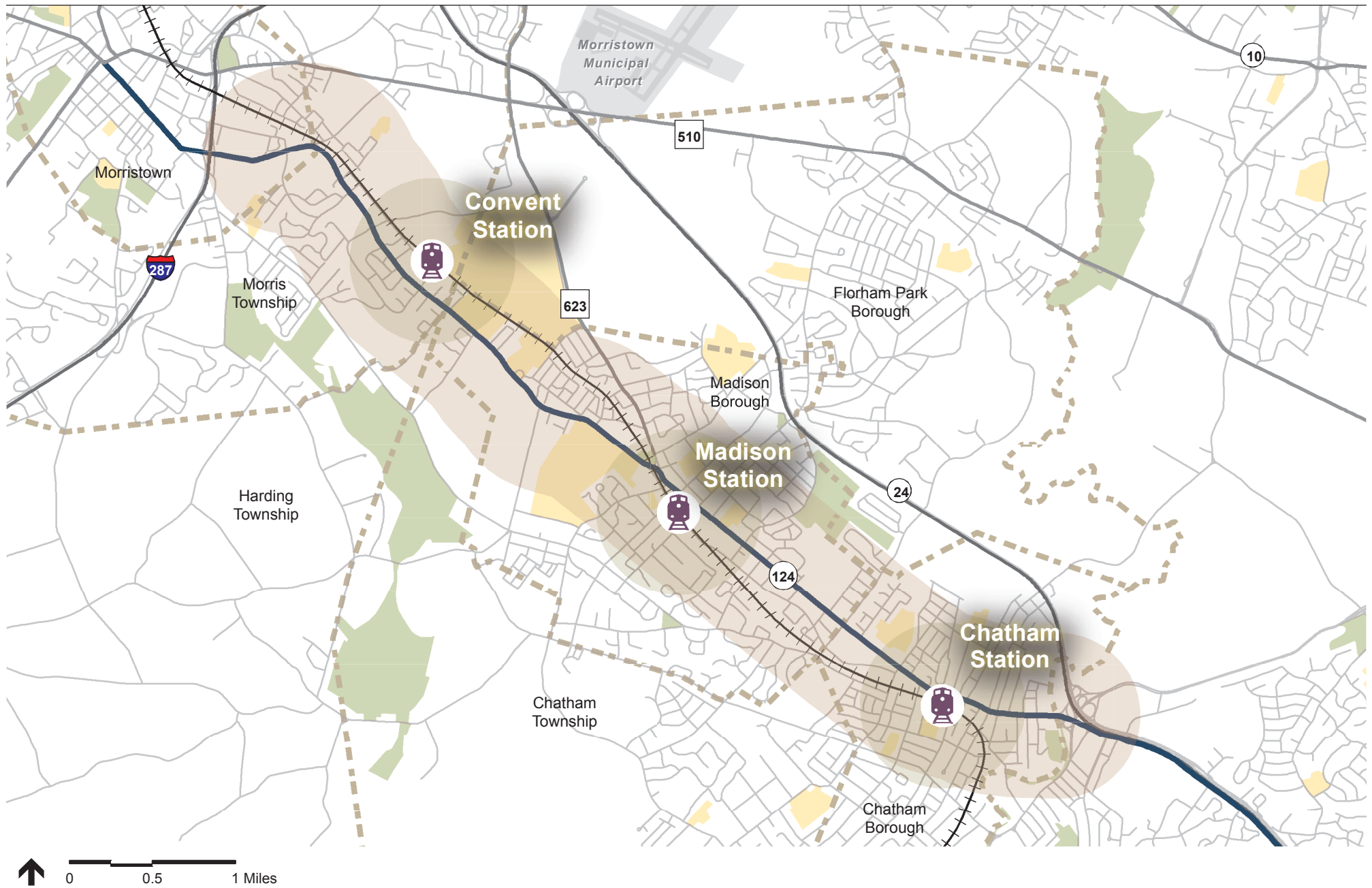


# **NJ 124 Corridor**

## **Transit Access Improvement Study**

Final Report

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Morris County NJ 124  
Transit Access Study

**NJ 124 Study Corridor**

FIGURE **ES-1**



# **NJ 124 Corridor Transit Access Improvement Study**

## **Final Report**

This report will help the study area's state, regional, county and municipal partners to make informed recommendations as they work to maintain the value of the NJ 124 corridor for years to come.

The NJ 124 Transit Access Improvement Study included a series of Technical Memorandums that informed the findings of this final report. These Technical Memos are detailed below:

- *Literature Search and Review Technical Memo* includes a review of previously prepared reports and studies in the study area that included analysis and recommendations of highway transportation, station parking, bicycle and pedestrian infrastructure, roadway and transit safety, transit infrastructure and operations, and planning and operations data.
- *Stakeholder Interviews and Open House Survey Findings Technical Memo* summarizes the stakeholder interviews and the public open house event that were held as part of the public outreach program for the study.
- *Web Survey Results Technical Memo* presents commute and demographic data of rail riders and non-rail riders from the study area that were collected through a project-specific online survey.
- *ScoreCard Survey Results Technical Memo* presents ridership and commuting characteristics of rail riders using Chatham, Madison, or Convent Stations that were collected by NJ TRANSIT as part of their regular ScoreCard survey efforts.
- *Zoning, Land Use and Market Analysis Technical Memo* investigates study area demographic and land use factors that affect station access.
- *Current and Future Station Access Demand Analysis Technical Memo* provides an analysis of existing and projected rail line patronage for the three stations, enabling an assessment of future access needs. Study area bus patronage is also presented.
- *Parking Capacity Utilization by Station Technical Memo* summarizes the results of a parking utilization and duration study that was conducted at each of the study area rail stations.





# **NJ 124 Corridor Transit Access Improvement Study**

## **Final Report**

- *Access by All Modes Evaluation Technical Memo* evaluates existing and potential station access conditions including transit infrastructure and service, roadway infrastructure and automobile access, bicycle and pedestrian infrastructure and access, and safety analysis.
- *Objectives and Recommendations Technical Memo* recommends strategies and improvements to address the infrastructure, land use, transit service, and other study area station access gaps that were identified previously.

### **Technical Advisory Committee**

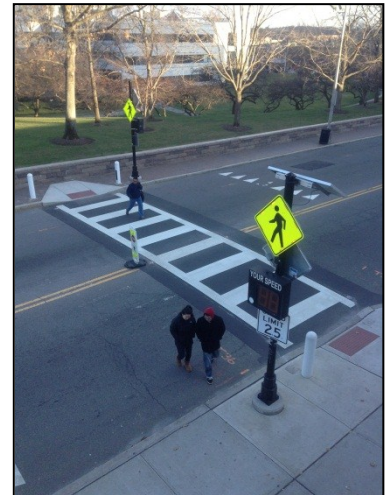
The Technical Advisory Committee for this study included representatives of the following agencies and organizations:

- Chatham Borough
- Chatham Township
- Florham Park Borough
- Harding Township
- Madison Borough
- Morris Township
- Morris County Division of Engineering
- Morris County Division of Transportation
- New Jersey Department of Transportation
- North Jersey Transportation Planning Authority
- NJ TRANSIT
- TransOptions, Inc.



### Key Findings

- The roadways (especially NJ 124) that are used to access the study area rail stations are congested due to geometric constraints, multi-modal usage, parking maneuvers, roadway striping and intersection controls (traffic signals and stop signs).
- Pedestrian and bicycle accessibility to the stations are secondary to automobile traffic. Improvements to the existing pedestrian and bicycle infrastructure could improve the safety, efficiency, and reliability of access by these modes to the NJ TRANSIT stations in the study area. These improvements could result in more commuters accessing the stations without an automobile.
- Drivers typically arrive early on weekday mornings and park for extended periods of time at all three stations. The average parking duration observed in the study corridor exceeds ten hours at nearly all of the commuter lots. There is little opportunity for parking spaces to be reused during the typical weekday.
- Parking at Chatham and Madison Stations is very close to capacity; however, Convent Station has some excess parking capacity in its various lots. Both permit and daily spaces are close to capacity, which results in limited ability to adjust parking policies to improve parking utilization at the stations.
- The existing bus service in the corridor cannot be consistently used to access the eastbound train in the morning (and vice versa in the evening) at the three stations. At Madison and Convent Stations the existing bus service meets westbound trains in the morning (and vice versa in the evening), which allows for commuters to travel the “last mile” from the train stations to the study area’s businesses and corporate parks.
- There are underutilized properties adjacent to all three train stations. Convent and Madison Stations have the highest potential for properties in the station area to re-develop in a transit-supportive manner (increased density and with mixed land uses).
- Commuters indicated that they would take the train more if access to the stations were improved.





### **Key Recommendations**

A number of infrastructure improvements are documented in the final study report. These recommendations are based on analysis of existing transportation land use conditions as well as stakeholder and public feedback.

Corridor-wide suggestions include:

- Bicycle and pedestrian route mapping;
- Improved distribution of information about how to use and access the train stations including bicycle and pedestrian maps at stations and parking maps; and
- Improved bicycle lane markings and pedestrian access maintenance.

More localized station-area suggestions include:

- Roadway and intersection improvements;
- Road safety improvements such as signage and striping;
- Bicycle and pedestrian infrastructure improvements such as mid-block pedestrian crossings and added bicycle lockers;
- Parking facility expansions; and
- Implementation of shuttle bus routes.



Policies fostering transit-oriented development and encouraging alternatives to driving such as biking, walking, carpooling and drop-offs (kiss and ride) are also recommended in order to improve access throughout the NJ 124 Corridor.

Table ES-1 lists the study recommendations. The implementation of the recommendations will require the commitment and coordination of all of the stakeholders (Technical Advisory Committee members) in the study area, the dedication of existing funding sources, and the identification of new funding sources (including potential partnerships with the private sector).



# **NJ 124 Corridor**

## **Transit Access Improvement Study**

Final Report

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Table ES-1 - Summary of Recommended Improvements

| Map Number | Improvement ID | Improvement   | Specific Location                          | Associated NJ TRANSIT Station | Area of Improvement |                 |          |        |         | Implementation Period | Cost                                 |        |        |
|------------|----------------|---|--|-------------------------------|---------------------|-----------------|----------|--------|---------|-----------------------|--------------------------------------|--------|--------|
|            |                |   |  |                               | Roadway             | Parking         | Bike/Ped | Safety | Transit | Short - <1 Year       | Low - <\$25,000 per item             |        |        |
|            |                |   |  |                               |                     |                 |          |        |         | Medium - <3 Years     | Medium \$25,000 - \$100,000 per item |        |        |
|            |                |   |  |                               |                     |                 |          |        |         | Long ->3 Years        | Above \$100,000 per item             |        |        |
| N/A        |                | Improve mapping for all modes   |  | Corridor-Wide                 | X                   | X               | X        |        | X       | Short                 | Low                                  |        |        |
| N/A        |                | Enhance on-line information   |  |                               | X                   | X               | X        |        | X       | Medium                | Medium                               |        |        |
| N/A        |                | Create Preferential parking strategies (carpools etc)   |  |                               |                     | X               |          |        | X       | Medium                | Medium                               |        |        |
| N/A        |                | Create Transit information packages for colleges and universities   |  |                               |                     |                 |          |        | X       | Short                 | Low                                  |        |        |
| N/A        |                | Consolidate NJ TRANSIT fare zones   |  |                               |                     |                 |          |        | X       | Medium                | Medium                               |        |        |
| N/A        |                | Conduct Operation Lifesaver training at area universities and Convent station   |  |                               |                     |                 |          |        | X       | Short                 | Low                                  |        |        |
| N/A        |                | Improve train station pedestrian access maintenance (snow removal, other maintenance issues)  |  |                               |                     |                 |          | X      | X       | Short                 | Low                                  |        |        |
| N/A        |                | Adopt a complete streets policy (Borough of Madison & Morris Township)  |  |                               | X                   | x               | X        | X      | x       | Short                 | Low                                  |        |        |
| N/A        |                | Create a bicycle sharing program with coordinated bicycle maintenance   |  |                               |                     |                 | X        |        |         | Medium                | Medium                               |        |        |
| N/A        |                | Install enhanced wayfinding and bicycle route signage   |  |                               |                     |                 | X        |        |         | Short                 | Low                                  |        |        |
| N/A        |                | Make signage and markings for pedestrians and bicyclists at all three stations consistent with MUTCD and AASHTO Bicycle Guide   |  |                               | X                   |                 | X        | X      |         | Short                 | Low                                  |        |        |
| N/A        |                | Stripe advanced stop bars eight to ten feet from crosswalks in pedestrianized areas.  |  |                               | X                   |                 | X        | X      |         | Short                 | Low                                  |        |        |
| N/A        |                | Create bicycle markings and signage along the shoulders of NJ 124   |  |                               |                     |                 | X        |        |         | Medium                | Low                                  |        |        |
| N/A        |                | Restripe all other bike routes and stencils that are faded and barely visible in Madison  |  |                               | Multiple Locations  | Madison Station |          |        | X       |                       |                                      | Short  | Low    |
| N/A        |                | Develop a bicycle master plan   |  |                               | Chatham Borough     |                 |          |        | X       |                       |                                      | Medium | Medium |
| Ch - 1     | a              | Restripe the eastbound and westbound approaches   | NJ 124 & Hillside Ave.                     |                               | X                   |                 |          |        |         | Short                 | Low                                  |        |        |
|            | b              | Modify the signal timing  |  |                               | X                   |                 |          |        |         |                       |                                      |        |        |
| Ch - 2     | a              | Provide Signal Timing offsets to coordinate traffic signals   | NJ 124 in Chatham                          |                               | X                   |                 |          |        |         | Short                 | Medium                               |        |        |
|            | a              | Restripe the eastbound and westbound approaches   |  |                               | X                   |                 |          |        |         | Short                 | Low                                  |        |        |
|            | b              | Modify the signal timing  |  |                               | X                   |                 |          |        |         |                       |                                      |        |        |
|            | c              | Install signage to increase the “no turn on red restrictions”   |  |                               | X                   |                 | X        | X      |         |                       |                                      |        |        |
|            | d              | Remove “State Law: stop for pedestrians in crosswalk sign”  |  |                               | X                   |                 | X        | X      |         |                       |                                      |        |        |
|            | e              | Install “Turning Vehicles Yield to Pedestrians” sign  |  |                               | X                   |                 | X        | X      |         |                       |                                      |        |        |
|            | f              | Install advanced pedestrian or school crosswalk signage on all approaches of the intersection   |  |                               | X                   |                 | X        | X      |         |                       |                                      |        |        |
|            | g              | Install “Share the Road” bicycle signs  |  |                               | X                   |                 | X        |        |         |                       |                                      |        |        |
| Ch - 3     |                |   | NJ 124 & Passaic Ave.                      |                               |                     |                 | X        |        |         |                       |                                      |        |        |
| Ch-4       | a              | Add a pedestrian crosswalk  | NJ 124 & Washington Ave.                   |                               |                     |                 | X        |        |         | Short                 | Low                                  |        |        |
|            | a              | Restripe the westbound approach of the intersection   |  |                               | X                   |                 |          |        |         | Short                 | Low                                  |        |        |
|            | b              | Modify the signal timing  |  |                               | X                   |                 |          |        |         |                       |                                      |        |        |
|            | c              | Install signage to increase the “No Turn on Red” restrictions to all hours and days and add this restriction to westbound and southbound approaches of the intersection                 |  |                               | X                   |                 | X        | X      |         |                       |                                      |        |        |
|            | d              | Remove “State Law: stop for pedestrians in crosswalk sign”  |  |                               | X                   |                 |          | X      |         |                       |                                      |        |        |
|            | e              | Install “Turning Vehicles Yield to Pedestrians” sign  |  |                               | X                   |                 |          | X      |         |                       |                                      |        |        |
|            | f              | Install “Share the Road” bicycle signs  |  | X                             |                     | X               |          |        |         |                       |                                      |        |        |
|            |                |   |  |                               |                     |                 |          |        |         |                       |                                      | Short  | Low    |
| Ch-6       | a              | Conduct a signal warrant study at this interesection, if signal is not warranted, repair pedestrian warning flashers and install “State Law: Stop for Pedestrians in Crosswalk” signage | NJ 124 & Coleman Ave./Railroad Plaza North | X                             |                     | X               | X        |        |         |                       |                                      |        |        |
| Ch-7       | a              | Conduct a signal warrant study  | Fairmount Ave and Station Driveway         | Chatham Station               | X                   |                 |          |        |         | Short                 | Low                                  |        |        |

Table ES-1 - Summary of Recommended Improvements

| Map Number | Improvement ID | Improvement  | Specific Location                       | Associated NJ TRANSIT Station | Area of Improvement |         |          |        |         | Implementation Period | Cost                                 |
|------------|----------------|--|---|-------------------------------|---------------------|---------|----------|--------|---------|-----------------------|--------------------------------------|
|            |                |  |   |                               | Roadway             | Parking | Bike/Ped | Safety | Transit | Short - <1 Year       | Low - <\$25,000 per item             |
|            |                |  |   |                               |                     |         |          |        |         | Medium - <3 Years     | Medium \$25,000 - \$100,000 per item |
|            |                |  |   |                               |                     |         |          |        |         | Long ->3 Years        | Above \$100,000 per item             |
| Ch-8       | a              | Install a “No Turn on Red” sign  | Lafayette and Van Doren Avenues         |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Remove "Stop for pedestrians in crosswalk sign" and replace with "Turning Vehicles Yield to Pedestrians"                                       |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | c              | Install a "Share the Road" sign at this intersection   |   |                               | X                   |         | X        | X      |         |                       |                                      |
| Ch-9       | a              | Replace “Stop for Pedestrians in Crosswalk” sign with “Turning Vehicles Yield to Pedestrians”  | Fairmount Ave and Watchung Ave          |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Install “Share the Road” bicycle signage on all approaches of the intersection   |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | c              | Install new crosswalks on north and south legs of the intersection   |   |                               | X                   |         | X        |        |         |                       |                                      |
|            | d              | Install "State Law: Stop for Pedestrians in Crosswalk" at intersection   |   |                               | X                   |         | X        |        |         |                       |                                      |
| Ch - 10    | a              | Install ped ramps on the north and south legs of the intersection  | Fairmount Ave and Watchung Ave          |                               | X                   |         | X        |        |         | Medium                | Medium                               |
| Ch - 11    | a              | Install shared lane markings/sharrows  | Fairmount Ave and Red Road              |                               | X                   |         | X        |        |         | Short                 | Low                                  |
| Ch - 12    | a              | Install a street-light   | Fairmount Ave and Red Road              |                               | X                   |         | X        |        |         | Medium                | Medium                               |
| Ch - 13    | a              | Install a crosswalk at the south leg of the intersection   | Fairmount Avenue and 2nd Street         |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Install an advanced pedestrian or school crosswalk signal on all approaches of the intersection  |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | c              | Install an advanced pedestrian or school crosswalk signal on all approaches of the intersection  |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | d              | Install shared lane markings/sharrows or parking lane stripes  |   |                               | X                   |         | X        | X      |         |                       |                                      |
| Ch - 14    | a              | Install pedestrian ramps at all four corners of the intersection   | Fairmount Avenue and 2nd Street         |                               |                     |         | X        | X      |         | Medium                | Medium                               |
| Ch - 15    | a              | Repair the speed feedback sign   | North Passaic Avenue and Weston Avenue  |                               | X                   |         |          | X      |         | Short                 | Low                                  |
|            | b              | Install shared lane markings/sharrows  |   |                               | X                   |         | X        |        |         |                       |                                      |
| Ch - 16    | a              | Implementation of the Morris County bike map, which includes Fairmount and Watchung Avenues as shared facilities and NJ 124 as a bicycle route | Fairmount and Watchung Avenues          |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Ch - 17    | a              | Develop bicycle facilities   | Kings Road and Woodland Road            |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Ch - 18    | a              | Monitor bike facilities to ensure adequate supply  | Chatham Station                         |                               |                     |         | X        |        |         | Short                 | Low                                  |
| Ch - 19    | a              | Create a pedestrian and bicycle connection across the sports field south of the station to the driveway to connect to Lum Avenue               | Chatham Station                         |                               |                     |         | X        |        | X       | Medium                | Medium                               |
| Ch - 20    | a              | Add coordinated pedestrian signal and lighted crosswalks under the railroad trestle  | Various Locations                       |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Ch - 21    | a              | Install two additional electronic pay parking stations   | Chatham Station Parking Lot             |                               |                     | X       |          |        |         | Medium                | Medium                               |
| Ch - 22    | a              | Provide additional signage to highlight commuter parking availability at nearby municipal lots for Chatham permit holders                      | Chatham Station Parking Lot             |                               |                     | X       |          |        |         | Short                 | Low                                  |
| Ch - 23    | a              | Create a new parking lot adjacent to Lot 1 on the site of the athletic field   | Chatham Station Parking Lot             |                               |                     | X       |          |        |         | Long                  | High                                 |
| Ch - 24    | a              | Construct a three-level parking structure on the site of existing lot 1  | Chatham Station Parking Lot             |                               |                     | X       |          |        |         | Long                  | High                                 |
| Ch - 25    | a              | Create two shuttle bus routes at Chatham Station, serving the northern and southern part of the town   | Various Locations                       | Chatham Station               |                     |         |          |        | X       | Medium                | High                                 |
| Ma - 1     | a              | Restripe the eastbound and westbound approaches of the intersection  | NJ 124 and Rosedale Avenue/Cross Street | Madison Station               | X                   |         |          |        |         | Short                 | Low                                  |
|            | b              | Modify the intersection signal timing  |   |                               | X                   |         |          |        |         |                       |                                      |
|            | c              | Install pedestrian signals or school crosswalk   |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | d              | Install “Turning Vehicles Yield to Pedestrians” and "No Turn on Red" at all approaches   |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | e              | Install “Share the Road” signage on all approaches of the intersection   |   |                               | X                   |         | X        | X      |         |                       |                                      |

Table ES-1 - Summary of Recommended Improvements

| Map Number | Improvement ID | Improvement   | Specific Location  | Associated NJ TRANSIT Station | Area of Improvement |         |          |        |         | Implementation Period | Cost                                 |
|------------|----------------|---|--|-------------------------------|---------------------|---------|----------|--------|---------|-----------------------|--------------------------------------|
|            |                |   |  |                               | Roadway             | Parking | Bike/Ped | Safety | Transit | Short - <1 Year       | Low - <\$25,000 per item             |
|            |                |   |  |                               |                     |         |          |        |         | Medium - <3 Years     | Medium \$25,000 - \$100,000 per item |
|            |                |   |  |                               |                     |         |          |        |         | Long ->3 Years        | Above \$100,000 per item             |
| Ma - 2     | a              | Create eastbound and westbound turn lanes   | NJ 124 and Greenwood Avenue/Prospect Street                        | Madison Station               | X                   |         |          |        |         | Short                 | Low                                  |
|            | b              | Add southbound left turn signal phase   |  |                               | X                   |         |          |        |         |                       |                                      |
|            | c              | Add signal actuation for left-turn movements with pedestrian projection   |  |                               | X                   |         |          |        |         |                       |                                      |
| Ma - 3     | a              | Add pedestrian crosswalk and signal across NJ 124   | NJ 124 between Greenwood Avenue and Waverly Place                  |                               | X                   |         | X        | X      |         | Medium                | Medium                               |
| Ma - 4     | a              | Create eastbound and westbound turn lanes   | NJ 124 and Central Avenue/Waverly Place                            |                               | X                   |         |          |        |         | Short                 | Low                                  |
|            | d              | Install “Turning Vehicles Yield to Pedestrians” and advanced pedestrian signage at all approaches of the intersection                                       |  |                               | X                   |         | X        | X      |         |                       |                                      |
|            | e              | Install “Share the Road” signage at all approaches of the intersection  |  |                               | X                   |         | X        | X      |         |                       |                                      |
| Ma - 5     | a              | Add mid-block pedestrian crossing including crosswalk and signage   | NJ 124 between Waverly Place/Central Avenue and Green Village Road |                               | X                   |         | X        | X      |         | Medium                | Medium                               |
| Ma - 6     | a              | Add signal actuation for left turn movements with pedestrian protection at intersection   | NJ 124 and Central Avenue/Waverly Place                            |                               | X                   |         |          |        |         | Medium                | Medium                               |
| Ma - 7     | a              | Modify the intersection signal timing   | NJ 124 and Park Avenue   |                               | X                   |         |          |        |         | Short                 | Low                                  |
| Ma - 8     | a              | Modify the intersection signal timing   | NJ 124 and Kings Road  |                               | X                   |         |          |        |         | Short                 | Low                                  |
|            | b              | Install a west crosswalk advanced pedestrian or school crosswalks and “Turning Vehicles Yield to Pedestrians” signage on all approaches of the intersection |  |                               | X                   |         | X        | X      |         |                       |                                      |
|            | c              | Install “No turn on red” restrictions on eastbound and northbound approaches of the intersection  |  |                               | X                   |         | X        | X      |         |                       |                                      |
| Ma - 9     | a              | Install pedestrian signals and ramps on all approaches of the intersection  | NJ 124 and Kings Road  |                               |                     |         |          |        |         | Medium                | Medium                               |
|            | b              | Extend the bike lanes on NJ 124 through the intersection of the intersection  |  |                               |                     |         | X        |        |         |                       |                                      |
| Ma - 10    | a              | Install crosswalks on the east and west legs with advanced pedestrian or school crosswalk signage on all approaches of the intersection                     | NJ 124 and Alexander Avenue  |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Install “State Law: Stop for Pedestrians in Crosswalk”  |  |                               | X                   |         | X        | X      |         |                       |                                      |
| Ma - 11    | a              | Install bike lanes  | NJ 124 and Alexander Avenue  |                               | X                   |         | X        |        |         | Medium                | Medium                               |
|            | b              | Install pedestrian signals and ramps on all approaches of the intersection  |  |                               | X                   |         | X        |        |         | Medium                | Medium                               |
| Ma - 12    | a              | Install a north crosswalk   | Central Avenue and Brittin Street                                  |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Install an advanced school crosswalk sign   |  |                               | X                   |         | X        | X      |         |                       |                                      |
|            | c              | Install a “State Law: Stop for Pedestrians in Crosswalk” on the southbound approach   |  |                               | X                   |         | X        | X      |         |                       |                                      |
|            | d              | Install a “share the Road” sign on all approaches of the intersection   |  |                               | X                   |         | X        | X      |         |                       |                                      |
| Ma - 13    | a              | Install a north crosswalk   | Greenwood Avenue and Brittin Street                                |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Remove bike lane markings and install “Share the Road” signs or sharrows. On Street parking should also be prohibited.                                      | Greenwood Avenue and Brittin Street                                |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
| Ma - 14    | a              | Install pedestrian ramps on the north side  |  |                               |                     |         |          |        |         | Medium                | Medium                               |
| Ma - 15    | a              | Relocate the share the road sign to improve its visibility  | Greenwood Avenue north of NJ 124                                   |                               |                     |         | X        | X      |         | Short                 | Low                                  |
| Ma - 16    | a              | Install a bicycle actuated signal   | Danforth Road and NJ 124   |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Ma -17     | a              | Remove the “State Law: Stop for Pedestrians in Crosswalk” sign and replace with “Turning Vehicles Yield to Pedestrians in Crosswalk”                        | Kings Road and Waverly Place                                       |                               |                     |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Implement “No Turn on Red” restrictions on the northbound, southbound, and westbound approaches of the intersection   |  |                               | X                   |         | X        | X      |         |                       |                                      |
|            | c              | Install a “Share the Road” sign at all approaches of the intersection   |  |                               | X                   |         | X        | X      |         |                       |                                      |
|            | d              | Install advanced pedestrian or school crosswalk on all approaches   |  |                               | X                   |         | X        | X      |         |                       |                                      |

Table ES-1 - Summary of Recommended Improvements

| Map Number | Improvement ID | Improvement  | Specific Location                           | Associated NJ TRANSIT Station | Area of Improvement |         |          |        |         | Implementation Period | Cost                                 |
|------------|----------------|--|---|-------------------------------|---------------------|---------|----------|--------|---------|-----------------------|--------------------------------------|
|            |                |  |   |                               | Roadway             | Parking | Bike/Ped | Safety | Transit | Short - <1 Year       | Low - <\$25,000 per item             |
|            |                |  |   |                               |                     |         |          |        |         | Medium - <3 Years     | Medium \$25,000 - \$100,000 per item |
|            |                |  |   |                               |                     |         |          |        |         | Long ->3 Years        | Above \$100,000 per item             |
| Ma - 18    | a              | Install streetlights at the north, east and west crosswalks  | Kings Road and Waverly Place                | Madison Station               |                     |         | X        |        |         | Medium                | Medium                               |
|            | b              | Install a west pedestrian ramp   | Kings Road and Maple Avenue                 |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Ma - 19    | a              | Install a west crosswalk   | Kings Road and Maple Avenue                 |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Install a “State Law: Stop for Pedestrians in Crosswalk”   |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | c              | Move the pedestrian crossing across Kings Road to improve connectivity   |   |                               | X                   |         | X        |        |         |                       |                                      |
| Ma - 20    | a              | Remove “Yield to Pedestrians in Crosswalk”   | Park Avenue and Ridgedale Avenue            |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Install a west crosswalk   |   |                               | X                   |         | X        |        |         |                       |                                      |
|            | c              | Install “Turning Vehicles Yield to Pedestrians”  |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | d              | Install advanced pedestrian or school crosswalk signage  |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | e              | Add “No Turn on Red” restrictions on all approaches  |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | f              | Install “Share the Road” signs on all approaches   |   |                               | X                   |         | X        | X      |         |                       |                                      |
| Ma - 21    | a              | Install west pedestrian ramps and signals  | Park Avenue and Ridgedale Avenue            |                               | X                   |         | X        |        |         | Medium                | Medium                               |
| Ma - 22    | a              | Install crosswalks, and advanced pedestrian signage on all approaches  | Park Avenue and Kinney Street               |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
| Ma - 23    | a              | Install pedestrian ramps on all approaches   | Park Avenue and Kinney Street               |                               | X                   |         | X        |        |         | Medium                | Medium                               |
| Ma - 24    | a              | Extend existing bike routes on Kings Road, Green Village Road, Green Avenue, Prospect Street, Central Avenue, and Greenwood Avenue to the NJ Transit Station | Multiple Locations                          |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Ma - 25    | a              | Replace bike markings east of downtown   | NJ 124                                      |                               |                     |         | X        |        |         | Short                 | Low                                  |
|            | b              | Restripe all bike stencils and install “Share the Road” signs west of downtown   | NJ 124                                      |                               |                     |         | X        |        |         |                       |                                      |
| Ma - 26    | a              | Extend the Traction Line recreation trail to Madison   | Multiple Locations                          |                               |                     |         | X        |        |         | Long                  | High                                 |
| Ma - 27    | a              | Improve pedestrian lighting on NJ 124 between Madison Station and Drew University  | Multiple Locations                          |                               |                     |         | X        | X      |         | Medium                | Medium                               |
| Ma - 28    | a              | Reduce Speed Limit to 25 MPH   | Central Avenue and Elmer Street/Cook Avenue |                               |                     |         |          | X      |         | Short                 | Low                                  |
|            | b              | Install advance pedestrian or school crosswalk signage on all approaches   |   |                               | X                   |         | X        |        |         |                       |                                      |
|            | c              | Add: "State Law: Stop for Pedestrians in Crosswalk" signage  |   |                               | X                   |         | X        |        |         |                       |                                      |
|            | d              | Install "Share the Road signage on all approaches  |   |                               | X                   |         | X        |        |         |                       |                                      |
| Ma - 29    | a              | Relocate the station bicycle lockers from their remote location  | Madison Station                             |                               |                     |         | X        |        |         | Short                 | Low                                  |
| Ma - 30    |                | Improve the pedestrian experience along Kings Road from the parking lot, including wider sidewalks and additional pedestrian lighting                        | Madison Station                             |                               |                     |         | X        |        |         | Medium                | Medium                               |
|            | b              | Install three to four electronic pay parking stations at Lot 3   | Madison Station                             |                               |                     | X       |          |        |         |                       |                                      |
| Ma - 31    | a              | Construct a multi-level parking facility on the site of existing Lot 3   | Madison Station                             |                               |                     | X       |          |        |         | Long                  | High                                 |
|            | b              | Create a formal kiss-and-ride location on the eastbound side of the station  | Madison Station                             |                               |                     | X       |          |        |         |                       |                                      |
| Ma - 32    | a              | Create four shuttle bus route serving Madison Station  | Various Locations                           | Madison Station               |                     |         |          | X      | Medium  | High                  |                                      |

Table ES-1 - Summary of Recommended Improvements

| Map Number | Improvement ID | Improvement  | Specific Location   | Associated NJ TRANSIT Station | Area of Improvement |         |          |        |         | Implementation Period | Cost                                 |
|------------|----------------|--|---|-------------------------------|---------------------|---------|----------|--------|---------|-----------------------|--------------------------------------|
|            |                |  |   |                               | Roadway             | Parking | Bike/Ped | Safety | Transit | Short - <1 Year       | Low - <\$25,000 per item             |
|            |                |  |   |                               |                     |         |          |        |         | Medium - <3 Years     | Medium \$25,000 - \$100,000 per item |
|            |                |  |   |                               |                     |         |          |        |         | Long ->3 Years        | Above \$100,000 per item             |
| Co - 1     | a              | Modify the intersection signal timing  | NJ 124 and Convent Road   | Convent Station               | X                   |         |          |        |         | Short                 | Low                                  |
|            | b              | Correct and clarify the mismatched sidewalks and crosswalks  | NJ 124 and Convent Road   |                               | X                   |         | X        | X      |         |                       |                                      |
| Co - 2     | a              | Install new pedestrian signals with countdown timers   | NJ 124 and Convent Road   |                               | X                   |         |          |        |         | Medium                | Medium                               |
| Co - 3     | a              | Conduct a signal warrant study and safety assessment   | Old Turnpike Road and Punch Bowl Road                             |                               | X                   |         |          |        |         | Short                 | Low                                  |
|            | b              | Assess the effect of restricting left turns from westbound Old Turnpike Road to southbound Punch Bowl Road   |   |                               | X                   |         |          |        |         |                       |                                      |
|            | c              | Relocate the existing south crosswalk to the intersection  |   |                               | X                   |         | X        |        |         |                       |                                      |
|            | d              | Install bike lanes or “Share the Road” signage   |   |                               | X                   |         | X        | X      |         |                       |                                      |
| Co - 4     | a              | Install new traffic signal, realign the northbound approach, and reconstruct the bus turnouts  | NJ 124 and Punch Bowl Road  |                               | X                   |         |          |        | X       | Long                  | High                                 |
| Co - 5     | a              | Install a pedestrian ramp on the south leg of the southwest corner and install crosswalk   | Old Turnpike Road and Punch Bowl Road                             |                               | X                   |         | X        | X      |         | Medium                | Medium                               |
| Co - 6     | a              | Install sidewalk on the east side of the south and north legs, on the west side of the north leg, and on the north and south sides of the west leg of the intersection | Old Turnpike Road and Convent Road                                |                               | X                   |         | X        | X      |         | Medium                | Medium                               |
|            | b              | Install pedestrian ramps on all approaches   |   |                               | X                   |         | X        | X      |         |                       |                                      |
|            | c              | Install sidewalks and other pedestrian amenities   |   |                               |                     |         | X        |        |         |                       |                                      |
| Co - 7     | a              | Install crosswalks on all four legs  | Old Turnpike Road and Convent Road                                |                               | X                   |         | X        | X      |         | Short                 | Low                                  |
|            | b              | Install advanced pedestrian signage on all approaches  |   |                               |                     |         |          |        |         |                       |                                      |
|            | c              | Place the eastbound approach under stop control  |   |                               | X                   |         |          | X      |         |                       |                                      |
|            | d              | Install “Share the Road” signs on all approaches   |   |                               | X                   |         | X        | X      |         |                       |                                      |
| Co - 8     | a              | Extend the bike lane beyond the border of Madison Borough and Morris Township  | NJ 124  |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Co - 9     | a              | Create a bike route between the Traction Line Recreation Trail and NJ 124  | Convent Road  |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Co - 10    | a              | Implement a bike connection from NJ 124 to Woodlawn Avenue and the Loantaka Reservation  | Various Locations   |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Co - 11    | a              | Install bike markings and signage  | Old Turnpike Road   |                               |                     |         | X        |        |         | Short                 | Low                                  |
| Co - 12    | a              | Install a bike route and sidewalks   | Punchbowl Road  |                               |                     |         | X        |        |         | Long                  | High                                 |
| Co - 13    | a              | Provide a direct connection between Convent Station and Park Avenue through the College of St. Elizabeth   | Various Locations   |                               |                     |         | X        |        |         | Long                  | High                                 |
| Co - 14    | a              | Restripe the bike stencils south of Convent Station  | Woodlawn Avenue   |                               |                     |         | X        |        |         | Short                 | Low                                  |
| Co - 15    | a              | Eliminate the stairs along the trail   | Traction Line Recreation Trail and Normandy Parkway               |                               |                     |         | X        |        |         | Medium                | Medium                               |
| Co - 16    | a              | Add additional bike lockers  | Convent Station   |                               |                     |         | X        |        |         | Short                 | Low                                  |
| Co - 17    | a              | Create an additional bike/ped connection   | Traction Line Recreation Trail and Pilgrim Court/Constitution Way |                               |                     |         | X        |        |         | Medium                | Medium                               |

Table ES-1 - Summary of Recommended Improvements

| Map Number | Improvement ID | Improvement  | Specific Location | Associated NJ TRANSIT Station | Area of Improvement  |   |   |  |  | Implementation Period | Cost                                 |
|------------|----------------|--|-------------------|-------------------------------|--|---|---|--|--|-----------------------|--------------------------------------|
|            |                |  |                   |                               | <div>Roadway</div> <div>Parking</div> <div>Bike/Ped</div> <div>Safety</div> <div>Transit</div> |   |   |  |  | Short - <1 Year       | Low - <\$25,000 per item             |
|            |                |  |                   |                               |  |   |   |  |  | Medium - <3 Years     | Medium \$25,000 - \$100,000 per item |
|            |                |  |                   |                               |  |   |   |  |  | Long ->3 Years        | Above \$100,000 per item             |
| Co - 18    | b              | Improve lighting between the station and the Fairleigh Dickinson campus                              | Convent Station   | Convent Station               |  |   | X |  |  | Medium                | Medium                               |
| Co - 19    | a              | Connect the two segments of the sidewalk at the west end of the parking lot.                         | Convent Station   |                               |  |   | X |  |  | Short                 | Low                                  |
|            | b              | Review and simplify parking regulations  | Convent Station   |                               |  | X |   |  |  |                       |                                      |
| Co - 20    | a              | Conduct a review of resident and non-resident waiting lists to possibly re-allocate spaces           | Convent Station   |                               |  |   | X |  |  | Medium                | Medium                               |
| Co - 21    | a              | Construct a multi-level parking structure on the site of Lot 1                                       | Convent Station   |                               |  |   | X |  |  | Long                  | High                                 |
| Co - 22    | a              | Create two shuttle bus routes at Convent Station, serving the northern and southern part of the town | Various Locations |                               | Convent Station  |   |   |  |  | X                     | Medium                               |