Final Report:

Route 202 Corridor Assessment and Multi-Modal Mobility Plan

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ROUTE 202 CORRIDOR ASSESSMENT AND MULTI-MODAL MOBILITY PLAN

Prepared for:

Somerset and Hunterdon Counties, New Jersey

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1.0 EXECUTIVE SUMMARY

1.1 OVERVIEW

The Route 202 Corridor Assessment and Multi-Modal Mobility Plan is intended to provide a comprehensive analysis of the Route 202 corridor, looking at not only vehicular traffic flow and constraints, but also reviewing pedestrian, bicycle and multi-modal opportunities along the corridor. The plan identifies and advances a series of roadway and multi-modal mobility improvements for the corridor through extensive and ongoing public and stakeholder outreach and coordination.

This plan was commissioned by Somerset County and Hunterdon County, and was conducted by The Louis Berger Group Inc., in association with CHPlanning, Ltd.; Radin Consulting, Inc.; and The RBA Group, Inc. Starting in February 2008 and concluding in June 2009, the study team carried out an intensive public involvement program, inventoried the existing conditions, identified and researched transportation, land use, and socioeconomic issues, and developed specific strategies to address these items.

The plan consists of the following major elements with supporting documents, graphics, and tables found in the Technical Appendix:

- Traffic Analysis and Improvements
- Transit Conditions and Strategies
- Pedestrian and Bicycle Facilities
- Smart Growth and Transit-Friendly Planning

A mission statement was developed to guide the study. The mission statement is as follows:

"To provide a balanced multi-modal transportation system that includes rail and bus transit, improved roadway, bicycle and pedestrian facilities and associated systems and travel demand management services. This system will provide reliable mobility choices to all of its users; residents and visitors of all ages, incomes and physical abilities, as well as businesses that provide services and produce or sell goods. Users will find it easy to access and it will permit efficient local and statewide connections for people and freight."

1.2 COMMUNITY INVOLVEMENT

Community involvement played an integral part in developing this mobility plan for this corridor. Extensive coordination with various stakeholders and members of the general public occurred to help develop the problem statements and goals of the corridor. Portions of the community involvement process are detailed below.

1.2.1 Steering Advisory Committee

A Steering Advisory Committee (SAC) was established to help identify the needs of the corridor, gather input and develop the goals and objectives for the corridor. The Committee was comprised of representatives from each of the study area municipalities, Hunterdon and Somerset Counties, New Jersey Transit (NJ TRANSIT), the New Jersey Department of Transportation (NJDOT), the North Jersey Transportation Authority (NJTPA), local Transportation Management Associations (TMAs), as well as other interested parties. The Committee supplied valuable information about the existing conditions of the corridor, reviewed various documents prepared by the

project team, and provided input into the development of various elements of the mobility plan. Five (5) meetings were held with the Committee to discuss the progress of the study.

1.2.2 Public Open Houses

Two (2) public meetings were held to inform the public on the progress of the study and gather important information from their experiences on the corridor. Both public meetings were organized as an Open House, with interactive stations set up throughout the room, allowing attendees to review the materials, provide comments and ask questions of the project team. The first meeting introduced the study to the public and displayed information on the existing conditions of the corridor. The second meeting provided a summary of the study and presented the group with the draft recommendations that would make up the mobility improvement plan. Members of the public were encouraged to ask questions about the study and provide comments.

1.2.3 Commuter and Employer Surveys

Commuter and Employer online surveys were conducted as a part of this study to gather information about commuter travel behavior along the corridor, identify consistent problem areas, and determine interest in potential transportation alternatives. The commuter survey was advertised using Variable Message Signs (VMS) along the corridor, media advertisements, community postings and website links. This survey was very successful, receiving over 1,000 responses. The employer survey was completed by four (4) businesses located within the corridor. This survey was able to provide insight into some of the existing employer practices in the area.

1.3 ISSUES AND STRATEGIES

The following section summarizes the key issues and strategies identified in each plan element.

1.3.1 Traffic Analysis and Improvements

Issues:

As indicated by the intersection and operational analyses, the Route 202 corridor experiences extensive delays for both mainline Route 202 traffic and cross streets. Future traffic growth will only exacerbate these conditions. From an operational standpoint, the primary choke points along the corridor are at Church Street/Voorhees Corner Road, Old York Road (CR 637) and First Avenue. The lack of signal coordination along the corridor is also a major contributor to congestion and driver frustration.

Strategies:

In response to the operational deficiencies, a series of improvement concepts was developed to provide an initial vision of potential improvements to improve intersection operations throughout the corridor. These concepts are consistent with the long term goal of NJDOT to eliminate unsignalized median breaks along the corridor and provide for consistent left turn treatments throughout the corridor via jughandles. Descriptions of the proposed improvements by intersection are located in Section 4.0 of this report and are illustrated in the concept plans.

1.3.2 Transit and Travel Demand Management Conditions and Strategies

Issues:

There is minimal local public transportation between Somerset and Hunterdon Counties. One local shuttle, Wheels 884, travels from Clinton Twp (Hunterdon County) to Somerville (Somerset County) along Route 22. Likewise, the Raritan Valley Line commuter rail provides limited train service between counties. The only other passenger services are provided by commuter buses passing through on their way to New York City. An issue with the existing system lies with the fact that the minimal transit service that is provided does not serve the Flemington area and therefore does not address travel needs between the suburban business centers in Hunterdon and Somerset counties. Several factors such as existing and planned transportation improvements, currently available right-of-way, infrastructure and intermodal connections and population and employment trends are already pointing to the need for a viable mass transit system along the corridor.

Strategies:

Implementation efforts should focus on what can be done to improve inter-county passenger transit in the short-, medium- and long-term. In the short-term, commuter and local circulator services should be implemented and planning and design work should begin now for implementation of commuter rail service in the long-term, given the long lead time it requires. This report provides specific recommendations on system continuity and connectivity, park and ride opportunities, expansion of passenger rail, bus system opportunities, and travel demand management opportunities.

1.3.3 Pedestrian and Bicycle Facilities

Issues:

In order to determine the extent of bicycle and pedestrian travel demand in the corridor, a Bicycle Travel Demand and Roadway Suitability Assessment, a Pedestrian Travel Demand and Suitability Assessment, and a field assessment were conducted as a part of this study. The bicycle analysis suggests that the corridor falls within the "travel shed" of bicycle attractors or exhibits travel demand characteristics suggesting high demand for bicycle travel. As such, bicycle travel is a reasonable and appropriate mode of travel throughout the corridor. The corridor currently provides a moderate level of service for bicycle traffic. The pedestrian analysis suggests that pedestrian demand is medium at the northern end of the corridor and low throughout the remainder of the corridor. Certain areas along the corridor are appropriate for pedestrian travel between residences, schools, commercial areas, and recreational and cultural facilities.

Strategies:

Based on the field assessment and evaluation, a number of specific improvements were recommended, primarily at or in the vicinity of the major intersections along Route 202. These include: pedestrian scale lighting, full width shoulders along Route 202, and bicycle treatments at designated intersections.

1.3.4 Smart Growth and Transit-Friendly Planning

Issues:

Research on the land use – transportation linkage clearly demonstrates that the physical configuration, mixture and density of development directly impact the quality and function of the overall transportation system. Current

development along Route 202 is unorganized, sprawling development that contributes to vehicular congestion and unsafe driving conditions, in addition to discouraging pedestrian and bicycle activity. As stated in the project's mission statement, there is a need for a balanced multi-modal transportation system which is partly accomplished through the implementation of smart growth and transit-supportive land use principles. This type of development reduces vehicle trips and improves safety while offering citizens an alternative to the automobile for at least one of their daily trips between home, work, shopping, school or services.

Strategies:

The transit-supportive design guidelines and the transit-friendly checklist detail land use planning techniques that each municipality can use to address the transportation issues along Route 202. The quantity and distribution of commercially zoned land within the study municipalities should be reexamined, with a focus on promoting in-fill, mixed-use and higher intensities within key locations. Restructuring existing commercial areas into nodes of higher-density development along key intersections will help reduce vehicle trips, improve traffic, increase pedestrian activity, utilize public facilities and infrastructure more efficiently, and create more vibrant community centers. These nodes of higher-density development can be interspersed with existing land uses, future low-intensity land uses and open space. Development within the existing nodes can be promoted through public investment, fast track approval, transfer of development rights, business improvement districts and other development incentives. Other strategies include: access management; adjustments to buildings and parking locations; and promoting bicycle, pedestrian and transit use through infrastructure and design improvements.

2.0 INTRODUCTION

Route 202 serves as one of the primary travel corridors linking Somerset and Hunterdon Counties. During peak commuting hours, this corridor suffers from chronic congestion, extensive delays and serious safety issues. Combined with traffic congestion, the corridor lacks mobility choices, despite being surrounded by an extensive, multi-modal transit network. Commuters are unable to easily access these valuable transit services. However, with the appropriate planning and improvements, the study area has the potential to become a more balanced multi-modal transportation system and a unified corridor with coordinated and cohesive land uses.

The Route 202 Corridor Assessment and Multi-Modal Mobility Plan is intended to provide a comprehensive analysis of the Route 202 corridor, looking at not only vehicular traffic flow and constraints, but also reviewing pedestrian, bicycle and multi-modal opportunities along the corridor. The plan identifies and advances a series of roadway and multi-modal mobility improvements for the corridor through extensive and ongoing public and stakeholder outreach and coordination.

This plan was commissioned by Somerset County and Hunterdon County, and was conducted by The Louis Berger Group Inc., in association with CHPlanning, Ltd; Radin Consulting, Inc.; and The RBA Group, Inc. Starting in February 2008 and concluding in June 2009, the study team carried out an intensive public involvement program, inventoried the existing conditions, identified and researched issues, and developed specific strategies to address these items.

The plan consists of the following major elements with supporting documents, graphics and tables found in the Technical Appendix:

- Traffic Analysis and Improvements
- Transit and Travel Demand Management Conditions and Strategies
- Pedestrian and Bicycle Facilities
- Smart Growth and Transit-Friendly Planning

The report contains specific recommendations for each of these elements. A project "Handoff Implementation Matrix" is included which outlines the proposed packages of projects. The matrix details the implementation responsibility for each involved agency. The matrix includes the following agencies:

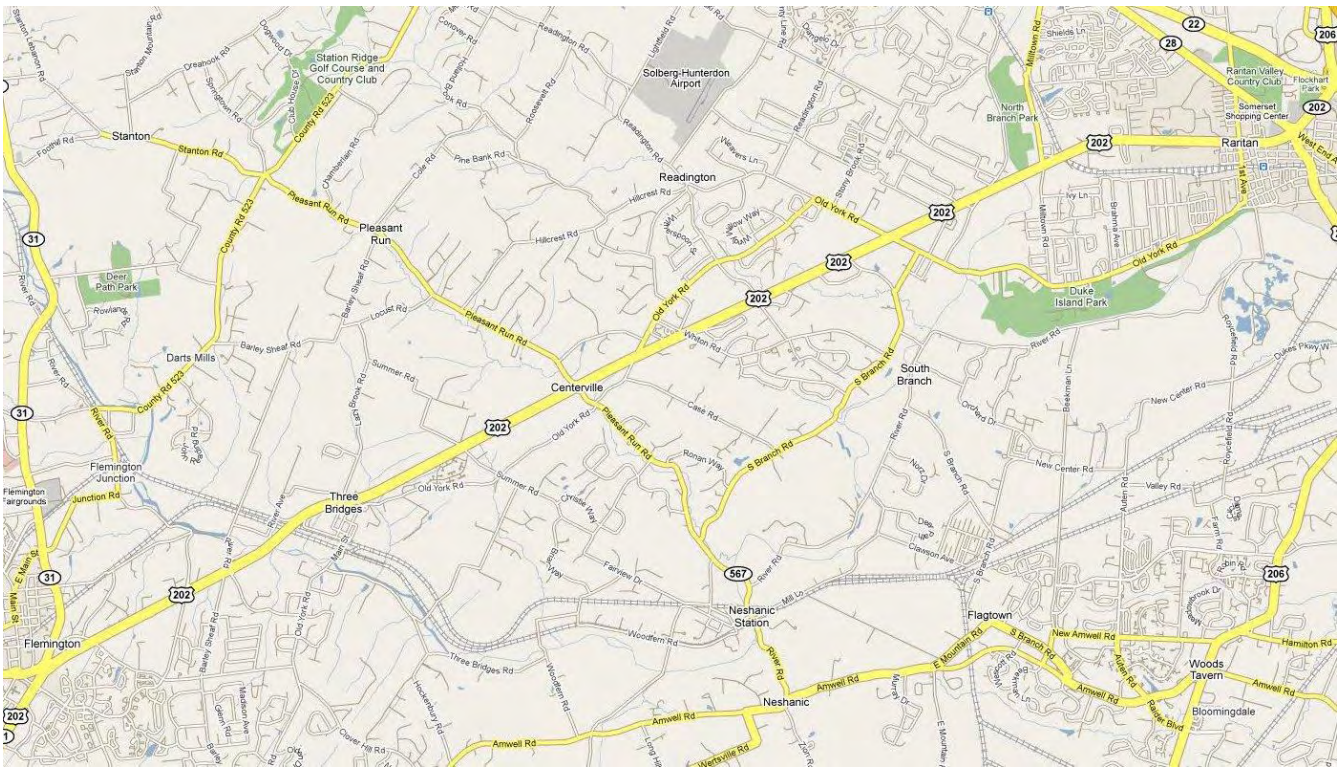
- NJDOT – roadway infrastructure improvements, ITS improvements, pedestrian/bicycle improvements, TDM measures, etc.
- NJ Transit – transit enhancements, ITS improvements, etc
- Local Townships – master plan amendments, zoning and land use adjustments
- Counties – TDM measures, transit enhancements, etc
- MPOs & TMAs – TDM measures

The projects to be implemented include a prioritization and are separated into packages representing short-, medium- and long-term implementation. This plan serves as a guide to all agencies and can be used to monitor progress of the improvements.

Study Area

The Study Area for the Route 202 Corridor Study is an approximately 13-mile corridor connecting the Flemington and Somerville Circles. The study area includes portions of Raritan Borough, Bridgewater Township and Branchburg Township in Somerset County and Readington Township, Raritan Township and Flemington Borough in Hunterdon County. The roadway runs in a general northeast-southwest direction throughout the study area, and typically consists of two travel lanes in each direction with a wide grass center median. There are 13 traffic signals located along the study corridor, plus six unsignalized median breaks. There are also numerous right-in, right-out intersections and driveways throughout the corridor. The posted speed limit on Route 202 is 55 miles per hour in both directions for the majority of its length through the study area. Left and U-turn movements throughout the corridor are accomplished in a myriad of ways, with treatments including advance U-turns, left/U-turn lanes at intersections, as well as nearside and farside jughandle treatments. The study area is shown in Figure 2-1.

Figure 2-1 Study Area



General deficiencies through the corridor include:

- Lack of traffic signal coordination through the corridor
- Lack of adequate mass transit and bike-ped amenities
- Poor access control
- Insufficient storage lengths for turning lanes
- High numbers of cut through traffic on local streets
- Lack of development coordination between neighboring towns
- Antiquated vehicle detection and traffic signal systems
- Sun glare blocking signal visibility

- Excessive speeds
- Undesirable U-turns
- Sight distance limitations

In order to address these issues, Berger worked with the Steering Advisory Committee (SAC) and general public to develop a "Corridor Vision Statement" at the beginning of the project.

Corridor Assessment and Multi-Modal Mobility Plan for Route 202
Project Mission Statement

To provide a balanced multi-modal transportation system that includes rail and bus transit, improved roadway, bicycle and pedestrian facilities and associated systems and travel demand management services. This system will provide reliable mobility choices to all of its users: residents and visitors of all ages, incomes and physical abilities, as well as businesses that provide services and produce or sell goods. Users will find it easy to access and it will permit efficient local and state wide connections for people and freight.

2.1 COMMUNITY INVOLVEMENT

Community involvement played an integral part in developing the mobility plan for this corridor. Extensive coordination with various stakeholders and members of the general public occurred to help develop the problem statements and goals of the corridor. Portions of the community involvement process are detailed below.

2.1.1 Steering Advisory Committee

A Steering Advisory Committee (SAC) was established to help identify the needs of the corridor, gather input and develop the goals and objectives for the corridor. The Committee was comprised of representatives from each of the study area municipalities, Hunterdon and Somerset Counties, New Jersey Transit (NJ TRANSIT), the New Jersey Department of Transportation (NJDOT), the North Jersey Transportation Authority (NJTPA), local Transportation Management Associations (TMAs), as well as other interested parties. The Committee supplied valuable information about the existing conditions of the corridor, reviewed various documents prepared by the project team, and provided input into the development of various elements of the mobility plan. Five (5) meetings were held with the Committee to discuss the progress of the study. Minutes from these meetings are included in the Technical Appendix.

2.1.2 Public Open Houses

Two (2) public meetings were held to inform the public on the progress of the study and gather important information from their experiences on the corridor. Both public meetings were organized as an Open House, with interactive stations set up throughout the room, allowing attendees to review the materials, provide comments and ask questions of the project team. The first meeting introduced the study to the public and displayed information

on the existing conditions of the corridor. The second meeting provided a summary of the study and presented the group with the draft recommendations that would make up the mobility improvement plan. Members of the public were encouraged to ask questions about the study and provide comments. Minutes from these meetings are included in the Technical Appendix.

2.1.3 Commuter and Employer Surveys

Commuter and Employer online surveys were conducted as a part of this study to gather information about commuter travel behavior along the corridor, identify consistent problem areas, and determine interest in potential transportation alternatives. The commuter survey was advertised using Variable Message Signs (VMS) along the corridor, media advertisements, community postings and website links. This survey was very successful, receiving over 1,000 responses. The employer survey was completed by four (4) businesses located within the corridor. This survey was able to provide insight into some of the existing employer practices in the area. A detailed summary of the results of both surveys is included in Section 3.4 of this report.

2.1.4 Municipal Meetings

Meetings were held with each of the study-area municipalities to discuss potential improvements along the corridor. At these meetings, representatives from each of the municipalities met with members of the project team and discussed existing deficiencies at portions of the corridor within their municipality. The project team presented potential roadway and intersection improvements at some of the subject intersections and gathered input from the representatives. Based on these meetings, concept plans were drafted for potential intersection improvements along the corridor.

3.0 EXISTING CONDITIONS AND ANALYSIS

3.1 TRAFFIC CONDITIONS

During peak commuting hours, the Route 202 corridor suffers from chronic congestion and extensive delays, especially on the northern portion of the corridor. The problems are not restricted to New Jersey drivers, as many Pennsylvania residents who work in North and Central New Jersey can been seen utilizing this corridor. Congestion issues are not limited to the peak commuting times. Route 202 is a primary path for weekend destinations, such as the Flemington outlets and New Hope, Pennsylvania. This congestion, coupled with undesirable U-turns and excessive access points, creates safety concerns for motorists. The corridor experiences significant backups during peak periods, i.e. northbound during the morning peak period and southbound during the evening peak period. The northern and southern termini for the corridor have "big box" stores and large amounts of retail space. The middle portion of the study corridor still exhibits rural characteristics.

An existing conditions Level of Service analysis was conducted for the subject intersections along the corridor. The results of this analysis are included in the Technical Appendix and are shown in Figure 3-1. As indicated by the intersection and operational analyses, the Route 202 corridor experiences extensive delays for both mainline Route 202 traffic and cross streets. Future traffic growth will only exacerbate these conditions. From a traffic operational standpoint, the primary choke points along the corridor are at Church Street/Voorhees Corner Road, Old York Road (CR 637), and First Avenue (CR 567). The lack of traffic signal coordination along the corridor is also a major contributor to congestion and driver frustration.

Figure 3-1
Route 202 Corridor Assessment and Multi-Mobility Plan
2008 Existing Peak Hour
Intersection Levels of Service

3.2 SOCIOECONOMICS AND JOURNEY TO WORK

The socioeconomic baseline establishes current conditions for demographic, economic and travel trends for each of the six study area municipalities. This information assists in understanding and appropriately contextualizing current growth and development. The same social and economic indicators have been applied to all six municipalities within the study area and cover the following topics:

- *Population*
- *Racial and Ethnic Characteristics*
- *Age Characteristics*
- *Households and Housing Units*
- *Income and Poverty*
- *Educational Attainment*
- *Employment*

The tables for this section are located in the Technical Appendix and reflect data from the 2000 Census and ESRI-BIS estimates for 2007. For population, racial and ethnic characteristics and income, a 2000-to-2007 comparison is made to show historical trends. For all tables, with the exception of employment by industry sector, employees by place of residence, and residents by place of work, municipal data is shown side by side with data that summarizes characteristics in the municipalities' county overall. As a note of clarification, tables and discussion on racial characteristics deal with Hispanic Origin (of any race) statistics separately because Hispanic is an ethnic classification that overlaps with race.

3.2.1 Bridgewater Township

Population

Bridgewater's population is 45,340 persons, representing approximately 13.8 percent of Somerset County residents. Between 2000 and 2007, Bridgewater's population increased by approximately 5.6 percent while the County experienced an overall increase of 10.2 percent (See Technical Appendix B, Table 1.)

Racial and Ethnic Characteristics

The racial and ethnic composition of Bridgewater is slightly less diverse than that of Somerset County. In 2007, 80.6 percent of Bridgewater residents identified themselves as White alone, a decrease of 4.5 percent from 2000 yet higher than the 75.1 percent of Somerset residents who identify themselves the same. At 14.0 percent, the second largest racial group in Bridgewater is persons who identify themselves as Asian alone. Those who identify themselves as Asian alone and Hispanic (of any race) experienced a population increase between 2000 and 2007, similar to that of the County overall. The presence of those who identify themselves as Black or African American alone in Bridgewater is considerably less than those who identify themselves the same across Somerset County. (See Technical Appendix B, Table 1.)

Age Characteristics

The overall age composition of Bridgewater residents changed slightly between 2000 and 2007. The most significant changes can be seen in those residents aged 10 to 14 and 25 to 34. While those residents aged 25 to 34 experienced a decrease of approximately 4.9 percent between 2000 and 2007, to represent 8.1 percent of all Bridgewater residents, those residents aged 10 to 14 experienced growth in the form of 1.7 percent, to represent 8.4 percent of the Bridgewater population in 2007. (See Technical Appendix B, Table 1.)

Households and Housing Units

There are 15,531 households in Bridgewater, representing approximately 14.3 percent of all Somerset County households. The percentage of zero-car households in Bridgewater, at 4.1 percent, is slightly lower than the County overall. Similar to households, the existing housing stock in Bridgewater constitutes approximately 14.2 percent of the total County housing stock. Bridgewater's occupancy rate, at 98.0 percent, is also similar to that of the County's. Owner occupancy in Bridgewater is 84.2 percent and is much higher than that of the County overall (75.1 percent). (See Technical Appendix B, Table 2.)

Income and Poverty

Bridgewater's per-capita and median household income climbed at rates consistent with the County. From 2000 to 2007, per-capita income remained above and median household income remained below County averages. Poverty levels in Bridgewater are relatively low, at 2.3 percent, compared to 3.5 percent across the County. (See Technical Appendix B, Tables 3 & 4.)

Educational Attainment

Educational attainment in Bridgewater is slightly higher than that of Somerset County. Of Bridgewater residents 25 years of age and over, 22.0 percent have received a master's, professional or doctoral degree, compared to 19.1 percent of Somerset County residents overall. The percentage of those not having received a High School diploma is lower than the County overall. (See Technical Appendix B, Table 5.)

Employment

Wholesale trade, retail trade and service sector employment are the three largest industry sectors in Bridgewater. Combined, they represent 72.0 percent of persons employed within Bridgewater. Only 15.9 percent of Bridgewater employees live in Bridgewater. A large portion of employees (70.2 percent) come from New Jersey outside of the study area. Many more employees come from Somerset County than from Hunterdon County. Approximately 25 percent of Bridgewater Residents work within the study area. The remainder work in other New Jersey counties, with just 1.5 percent coming from Hunterdon County and over 5 percent working outside of New Jersey. (See Technical Appendix B, Tables 6, 7, & 8.)

3.2.2 Raritan Borough

Population

Raritan Borough's population is 6,492 persons, representing approximately 2.0 percent of Somerset County residents. Between 2000 and 2007, Raritan's population increased by 2.4 percent while the County experienced a greater increase of 10.2 percent. (See Technical Appendix B, Table 9.)

Racial and Ethnic Characteristics

The racial and ethnic composition of Raritan is less diverse than that of Somerset County. In 2007, 83.9 percent of Raritan residents identified themselves as White alone, a decrease of 3.8 percent from 2000, yet higher than 75.1 percent of Somerset residents who identify themselves the same. At 10.7 percent, the second largest racial group in Raritan are those who identify themselves as Asian alone. Those who identify themselves as Asian alone and Hispanic (of any race) experienced a population increase between 2000 and 2007, similar to trends throughout the County. In Raritan, the presence of those who identify themselves as Black or African American alone, just 1.1 percent, is considerably less than the 8.0 percent who identify themselves as such across Somerset County. (See Technical Appendix B, Table 9.)

Age Characteristics

The overall age composition of Raritan residents changed slightly between 2000 and 2007. The most significant changes can be seen in those residents aged 25 to 34, 35 to 54, and 55 to 64. While those residents aged 25 to 34 and 55 to 64 experienced a decrease of population share by 4.0 and 3.2 percent, respectively, those residents aged

35 to 54 experienced growth in the form of 4.2 percent to represent 34.8 percent of Raritan's total population. (See Technical Appendix B, Table 9.)

Households and Housing Units

There are 2,556 households in Raritan, representing approximately 2.4 percent of all Somerset County households. The percentage of zero-car households in Raritan, at 8.6 percent, is higher than the County overall. Similar to households, the existing housing stock in Raritan constitutes approximately 2.4 percent of the total County housing stock. Raritan's occupancy rate, at 96.7 percent, is similar to that of the County. Owner occupancy in Raritan is 61.3 percent and is much lower than that of the County overall (75.1 percent). (See Technical Appendix B, Table 10.)

Income and Poverty

From 2000 to 2007, per-capita and median household income remained much lower than the County overall. Because Raritan's per-capita and median household income climbed more slowly than the County's, income disparity between the Borough and the County widened. In addition, poverty levels in Raritan are more than twice as high as the County's. (See Technical Appendix B, Table 11 & 12.)

Educational Attainment

Educational attainment in Raritan is lower than that of Somerset County. Of Raritan residents 25 years of age and over, 22.7 percent have not graduated high school, compared to 10.7 percent across the County. Furthermore, only 27.0 percent of residents have received a Bachelor's degree or higher compared to 46.5 percent of County residents. (See Technical Appendix B, Table 13.)

Employment

The majority of Raritan Borough employees work within the service sector. Manufacturing, retail and FIRE make up the next largest industry employers. Raritan draws 24.0 percent of its employees from within the study area. The remainder commute mainly from New Jersey, with 9.6 percent commuting from Pennsylvania. Many Raritan residents work within the study area (42.3 percent). The remainder work mainly within New Jersey, and a large portion stay within Somerset County. (See Technical Appendix B, Tables 14, 15, & 16.)

3.2.3 Branchburg Township

Population

Branchburg Township's population is 15,091 persons, representing approximately 4.6 percent of Somerset County residents. Between 2000 and 2007, Branchburg's population increased by approximately 3.6 percent, while the County experienced an overall increase of 10.2 percent. (See Technical Appendix B, Table 17.)

Racial and Ethnical Characteristics

The racial and ethnic composition of Branchburg is slightly less diverse than that of Somerset County. In 2007, 87.3 percent of Branchburg residents identified themselves as White alone, a decrease of 3.1 percent from 2000, yet notably higher than 75.1 percent of Somerset residents who identify themselves the same. At 8.0 percent, the second largest racial group in Branchburg is persons who identify themselves as Asian alone. Those who identify themselves as Asian alone and Hispanic (of any race) experienced the greatest population increase between 2000 and 2007, similar to that of the County overall. The presence of those who identify themselves as Black or African American alone in Branchburg is considerably less than those who identify themselves the same across Somerset County. (See Technical Appendix B, Table 17.)

Age Characteristics

The overall age composition of Branchburg residents changed notably between 2000 and 2007. The most significant changes can be seen in those residents aged 25 to 34 and 55 to 64. While those residents aged 25 to 34

experienced a decrease of approximately 5.2 percent between 2000 and 2007, to represent 7.7 percent of all Branchburg residents, those residents aged 55 to 64 experienced growth in the form of 3.1 percent, to represent 12.7 percent of the Branchburg population in 2007. Somerset County overall experienced a similar shift in population. (See Technical Appendix B, Table 17.)

Households and Housing Units

There are 5,272 households in Branchburg, representing approximately 4.8 percent of all Somerset County households. The percentage of zero-car households in Branchburg, at 3.2 percent, is slightly lower than the County overall. Similar to households, the existing housing stock in Branchburg constitutes approximately 4.8 percent of total County housing stock. Both Branchburg and the County have an occupancy rate of slightly more than 97.0 percent. At 86.3 percent, owner occupancy in Branchburg is higher than that of the County overall (75.1 percent). (See Technical Appendix B, Table 18.)

Income and Poverty

Between 2000 and 2007, Branchuburg's per-capita and median household income remained higher than the County's and increased at a greater rate than the County. Poverty levels in Branchburg are relatively low, at 2.1 percent, compared 3.5 percent across the county. (See Technical Appendix B, Tables 19 & 20.)

Educational Attainment

Educational attainment in Branchburg is higher than that of Somerset County. More than 53.0 percent of Branchburg residents 25 years of age and over have received a Bachelor's degree or higher, compared to 46.5 percent of Somerset County residents overall. Furthermore, the percentage of those not having received a High School diploma is lower in Branchburg than the County overall. (See Technical Appendix B, Table 21.)

Employment

Service sector and manufacturing sector jobs make up the majority of employment in Branchburg. Wholesale and retail trade also make up a large portion of employment. Only 10.7 percent of Branchburg's labor force reside in Branchburg. The majority of workers, over 65.0 percent, come from New Jersey outside of the study area. More than 95.0 percent of Branchburg residents have jobs in New Jersey. Approximately 31.3 percent of Branchburg residents work in one of the six study area municipalities. An additional 20.8 percent of Branchburg residents work in municipalities located in Somerset County but outside the study area. (See Technical Appendix B, Tables 22, 23, & 24.)

3.2.4 Readington Township

Population

Readington Township's population is 16,853 persons, representing approximately 12.6 percent of Hunterdon County residents. Between 2000 and 2007, Readington's population increased by 6.6 percent while the County experienced a larger increase of 9.7 percent. (See Technical Appendix B, Table 25.)

Racial and Ethnic Characteristics

The racial and ethnic composition of Readington is fairly similar to that of Hunterdon County. Over 93 percent of Readington residents identified themselves as White alone, compared to 92.3 percent of Hunterdon residents. At 3.6 percent, the second largest racial group in Readington Township is persons who identify themselves as Asian alone. (See Technical Appendix B, Table 25.)

Age Characteristics

The overall age composition of Readington residents changed slightly between 2000 and 2007. The age groups for residents under 25 saw little change. However, residents 25 to 54 saw a decrease in population share, and those 55 and over saw an increase in population share. (See Technical Appendix B, Table 25.)

Households and Housing Units
There are 5,676 households in Readington, representing approximately 13.0 percent of all Hunterdon County households. The percentage of zero-car households in Readington, at 2.8 percent, is slightly lower than the County overall. Similar to households, the existing housing stock in Readington constitutes 12.9 percent of the total County housing stock. Readington's occupancy rate, at 98.0 percent, is similar to that of the County. Owner-occupied units make up a large majority of the units, at 87.5 percent; this is 6.4 percent higher than the County overall. (See Technical Appendix B, Table 26.)

Income and Poverty
From 2000 to 2007, per-capita and median household income in Readington remained higher, and grew at a greater rate than the County overall. In addition to higher incomes, Readington also has a lower poverty rate than Hunterdon County. (See Technical Appendix B, Tables 27 & 28.)

Educational Attainment
Educational attainment in Readington is slightly higher than that of Hunterdon County. Of Readington residents 25 years of age and over, 5.4 percent have not graduated high school, compared to 8.5 percent across the County. Furthermore, 48.2 percent of residents have received a Bachelor's degree or higher, compared to 41.8 percent of County residents. (See Technical Appendix B, Table 29.)

Employment
The top employing industries in Readington are in the manufacturing and service sector. Retail and FIRE industries also make up a large portion of Readington's employment. Readington Township draws 29.5 percent of its employees from the study area municipalities. Out-of-state residents makes up 14.9 percent of employees and the remainder come from within New Jersey, with a greater portion coming from Hunterdon than Somerset County. Readington residents do not follow the same trends as Readington employees. A larger portion come from within the study area (38.2 percent), a larger portion come from Somerset County than Hunterdon County, and only 6.4 percent come from out of state. (See Technical Appendix B, Tables 30, 31, & 32.)

3.2.5 Raritan Township

Population
Raritan Township's population is 22,798 persons, representing approximately 17.0 percent of Hunterdon County residents. Between 2000 and 2007, Raritan's population increased by 15.1 percent while the County experienced a smaller increase of 9.7 percent. (See Technical Appendix B, Table 33.)

Racial and Ethnic Characteristics
The racial and ethnic composition of Raritan is similar to that of Hunterdon County. In 2007, 91.1 percent of Raritan residents identified themselves as White Alone, a decrease of 2.1 percent and lower than the 92.3 percent of Hunterdon residents who identify themselves the same. At 4.8 percent, the second largest racial group in Raritan Township is persons who identify themselves as Asian Alone. In Raritan, the presence of those who identify themselves as Black or African American Alone, just 1.5 percent, is only slightly less than the 2.5 percent who identify themselves as such across Hunterdon County. (See Technical Appendix B, Table 33.)

Age Characteristics
The overall age composition of Raritan residents changed slightly between 2000 and 2007. Similar to the County, Raritan Township saw increased population share among the 55 and older population, and decreases in the 25 to 34 year-old population share. (See Technical Appendix B, Table 33.)

Households and Housing Units

There are 6,939 households in Raritan, representing approximately 15.9 percent of all Hunterdon County households. The percentage of zero-car households in Raritan, at 2.5 percent, is lower than the County overall. Similar to households, the existing housing stock in Raritan constitutes 15.8 percent of the total County housing stock. Raritan's occupancy rate, at 97.8 percent, is similar to that of the County. Owner occupancy in Raritan is 85.9 percent and is slightly higher than that of the County overall (81.1 percent). (See Technical Appendix B, Table 34.)

Income and Poverty

From 2000 to 2007, per-capita and median household income remained higher than the County overall and also grew at a slightly higher rate. Poverty levels within Raritan are 1.2 percent lower than that of the County overall. (See Technical Appendix B, Tables 35 & 36.)

Educational Attainment

Educational attainment in Raritan is higher than that of Hunterdon County. Of Raritan residents 25 years of age and over, 5.7 percent have not graduated high school, compared to 8.5 percent across the County. Furthermore, 48.4 percent of residents have received a Bachelor's degree or higher, compared to 41.8 percent of County residents. (See Technical Appendix B, Table 37.)

Employment

Most Raritan Township employees work within the service sector or in retail trade. Raritan Township draws 39.5 percent of its employees from within the study municipalities. A large portion come from Hunterdon County, as well as other New Jersey counties. Nine percent come from Pennsylvania, which is more than double the number that come from neighboring Somerset County. Place of work trends for Raritan Township's residents differ considerably from employee place of residency. A larger portion lives within Raritan Township or one of the study area municipalities (44.4 percent) and there are a greater portion of residents commuting to Somerset than to Hunterdon. In addition, there is a much lower percentage of residents commuting to Pennsylvania. (See Technical Appendix B, Tables 38, 39, & 40.)

3.2.6 Flemington Borough

Population

Flemington Borough's population is 4,402 persons, representing approximately 3.3 percent of Hunterdon County residents. Between 2000 and 2007, Flemington's population increased by 4.8 percent while the County experienced a larger increase of 9.7 percent. (See Technical Appendix B, Table 41.)

Racial and Ethnic Characteristics

The racial and ethnic composition of Flemington is more diverse than that of Hunterdon County. In 2007, 84.4 percent of Flemington residents identified themselves as White alone, a decrease of 3.3 percent and lower than the 92.3 percent of Hunterdon residents who identify themselves the same. At 4.2 percent, the second largest racial groups in Flemington Borough are persons who identify themselves as Asian alone or some other race alone. Those who identify as Hispanic origin (of any race) have grown in population and represent 14.4 percent of the total population, compared to 3.8 across the County. (See Technical Appendix B, Table 41.)

Age Characteristics

The overall age composition of Flemington residents changed slightly between 2000 and 2007. The age groups for residents under 25 saw little population share change. However, the 25 to 34 and over 65 populations decreased and the 35 to 64 population saw an increase in population share. Residents 55 and older made up a smaller population share than in the County overall. (See Technical Appendix B, Table 41.)

Households and Housing Units

There are 1,804 households in Flemington, representing approximately 4.1 percent of all Hunterdon County households. The percentage of zero-car households in Flemington, at 14.0 percent, is more than four times as high as the County overall. Similar to households, the existing housing stock in Flemington constitutes 4.2 percent of the total County housing stock. Flemington's occupancy rate, at 96.2 percent, is similar to that of the County. Renter-occupied units make up the majority of occupied units, at 58.8 percent, a rate much higher than the 15.9 percent of housing units that are renter-occupied in the County overall. (See Technical Appendix B, Table 42.)

Income and Poverty

From 2000 to 2007, per-capita and median household income in Flemington remained much lower than the County's. Income disparity between Flemington and the County widened during this period because per-capita and median household income in Flemington climbed more slowly than the County overall. In addition, poverty levels in Flemington are 4.8 percent higher than the County's. (See Technical Appendix B, Tables 43 & 44.)

Educational Attainment

Educational attainment in Flemington is lower than that of Hunterdon County. Of Flemington residents 25 years of age and over, 17.4 percent have not graduated high school, compared to 8.5 percent across the County. Furthermore, 27.4 percent of residents have received a Bachelor's degree or higher, compared to 41.8 percent of County residents. (See Technical Appendix B, Table 45.)

Employment

The three main employment sectors within Flemington are service, retail trade and government. Together, they make up 85.7 percent of all Flemington employees. A large portion of Flemington's employees come from within the study area (41.9 percent). Outside of the study area, many more employees come from Hunterdon County than Somerset County. The remainder come from within New Jersey, and a notable 7.4 percent come from Pennsylvania. Many of Flemington's residents work within the Borough or the surrounding study area (59.7 percent). The number of residents working in Hunterdon and Somerset Counties (outside of the study area) is about equal. The few residents who work out of state are primarily traveling to Manhattan or Pennsylvania. (See Technical Appendix B, Tables 46, 47, & 48.)

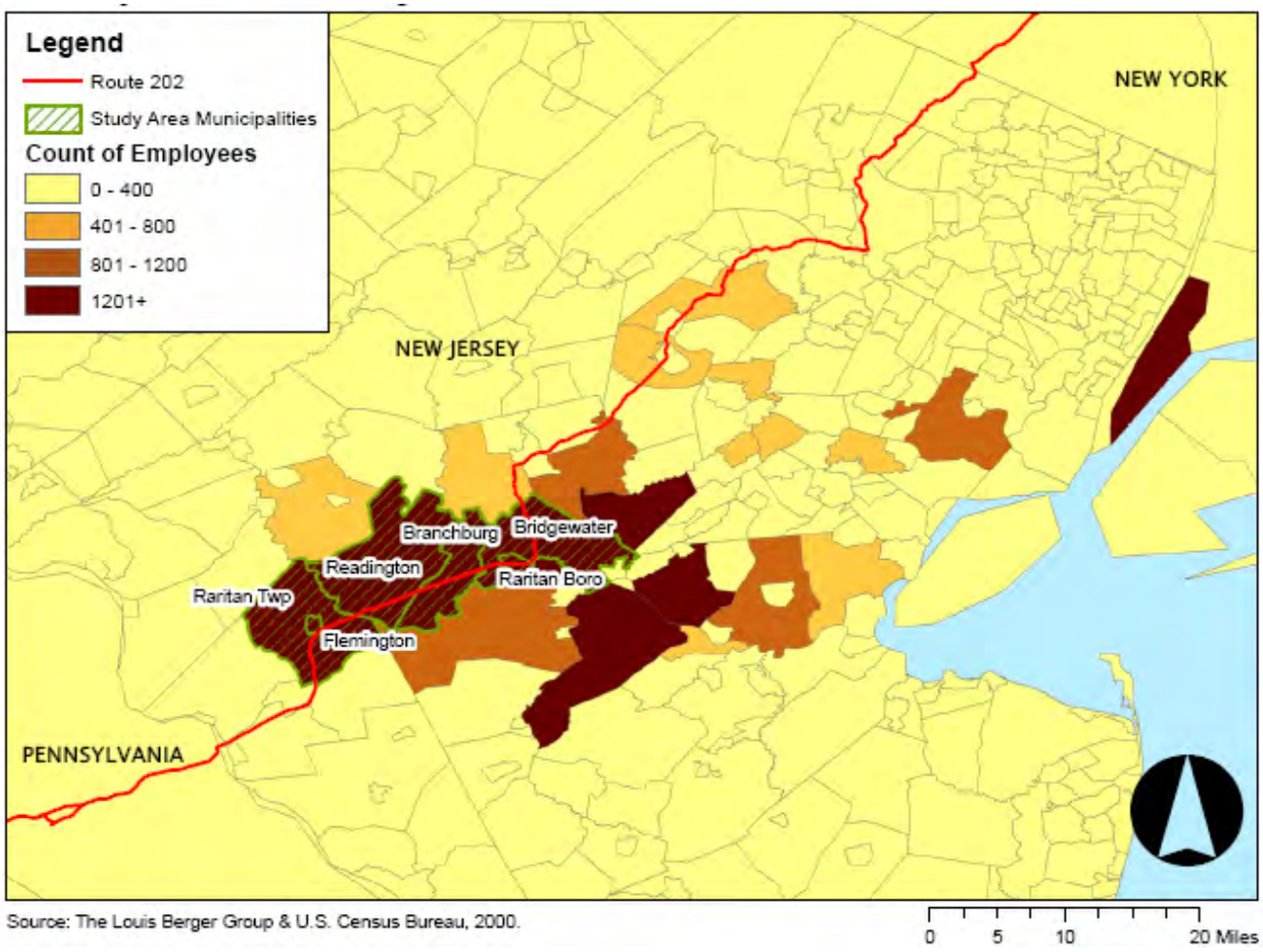
3.2.7 Journey to Work Maps

Data on the workplace of residents and residency of workers for all six municipalities has been described in the previous sections. This information was aggregated to characterize travel behavior related to employment within the study area overall. Maps illustrating the distribution of residents' workplace and residency of study area workers are included below as Figure 3-2 and Figure 3-3, respectively.

The maps reveal that most residents of the study area work in the study area or surrounding towns. The notable exception to this is a high number of residents working in Manhattan, New York. Study area workers, overall, reside largely in the study area and the municipalities that surround it, such as Hillsborough and Franklin Townships.

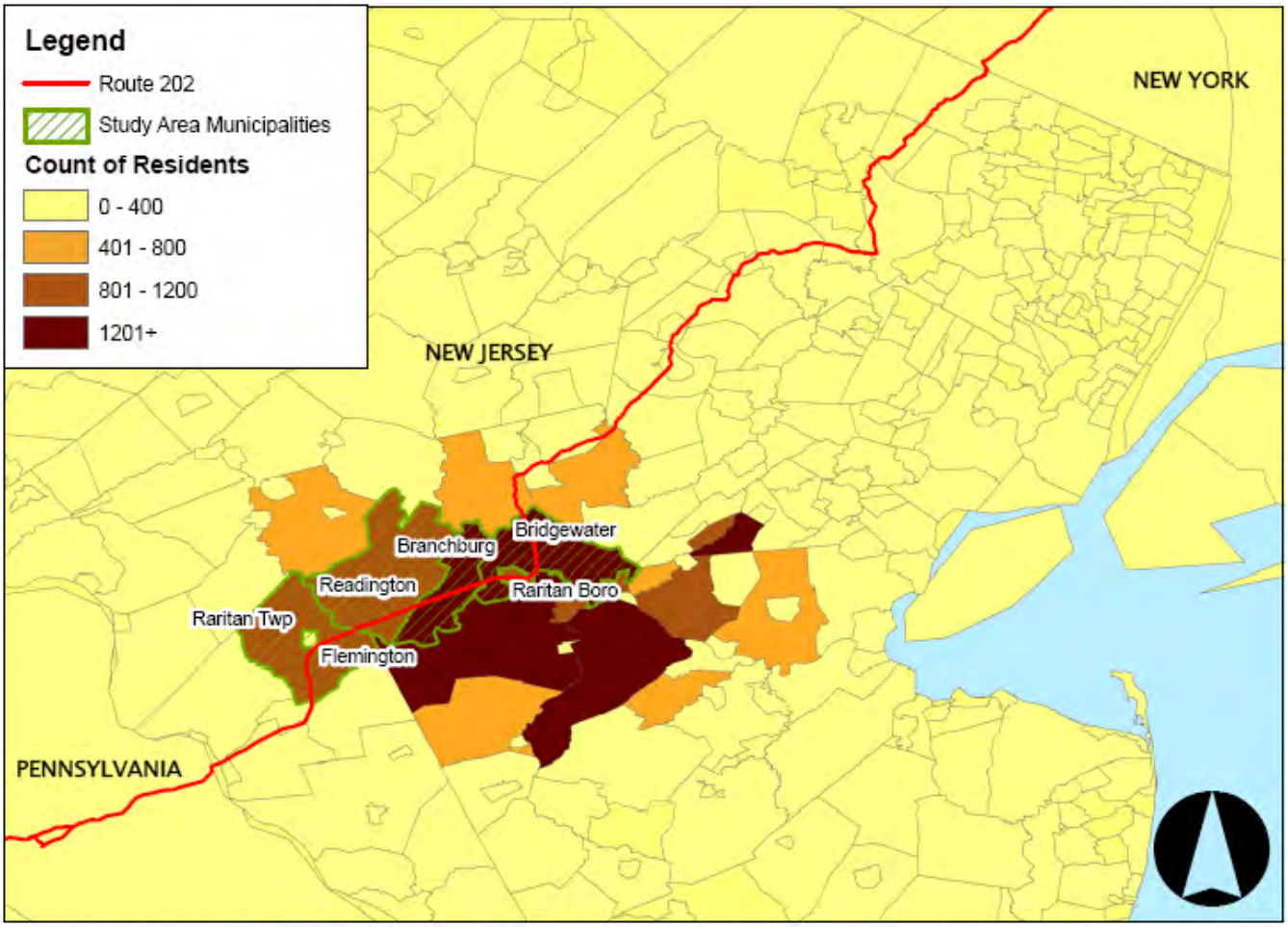
It should be noted that Route 202 traffic is influenced not only by those workers and residents that start and/or end trips within the study area, but also by local and regional through traffic and persons otherwise traveling to the corridor for shopping, healthcare, etc.

Figure 3-2
Workplace of Study Area Residents



Source: The Louis Berger Group & U.S. Census Bureau, 2000.

Figure 3-3
Residency of Study Area Workers



Source: The Louis Berger Group & U.S. Census Bureau, 2000.

3.3 LAND USE AND ENVIRONMENTAL CONSTRAINTS

The study identified existing land uses and potential environmental constraints within the approximately 13-mile long Route 202 Corridor. GIS data and databases were used to identify existing land uses and any known or suspected environmental constraints. A composite land use map of the corridor is shown in Figure 3-4. The environmental screening included the identification of dedicated open space, endangered habitat areas, wetlands, floodplains, community facilities and noise receptors (i.e., residences, schools). The results of the environmental screening were incorporated into a series of graphics, developed on recent aerial photographs, that depict the locations of environmental constraints. The endangered habitat areas noted are considered to be critical, since they represent habitat areas utilized by species on the State Threatened, State Endangered, and Federal Threatened and Endangered Species List. These maps, shown in Figures 3-5 to 3-8, were used in formulating the transportation and land use recommendations to ensure that sensitive environmental areas are not negatively impacted.

Figure 3-4
Composite Land Use Map

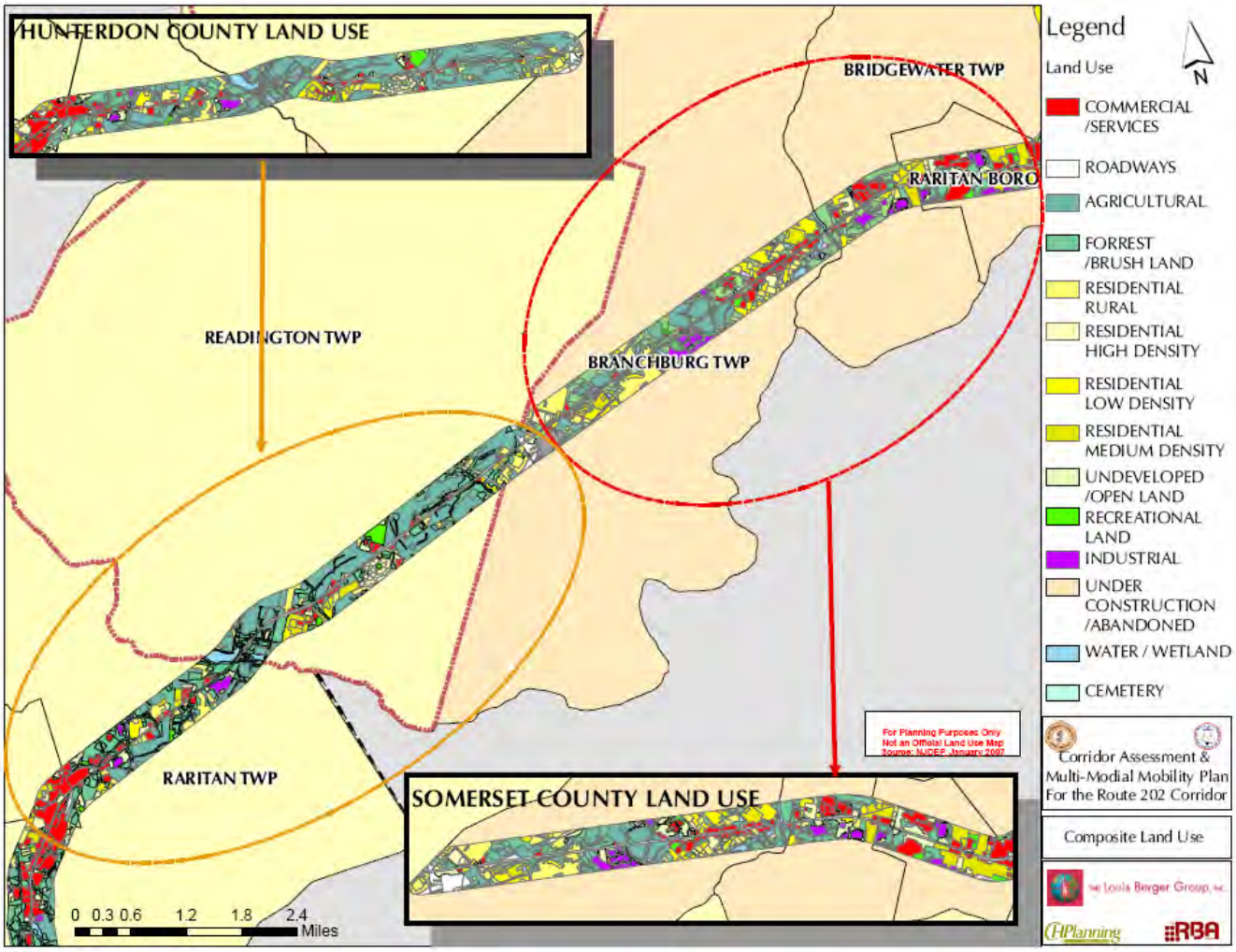


Figure 3-5
Environmental Constraints Map
Bridgewater Township & Raritan Borough

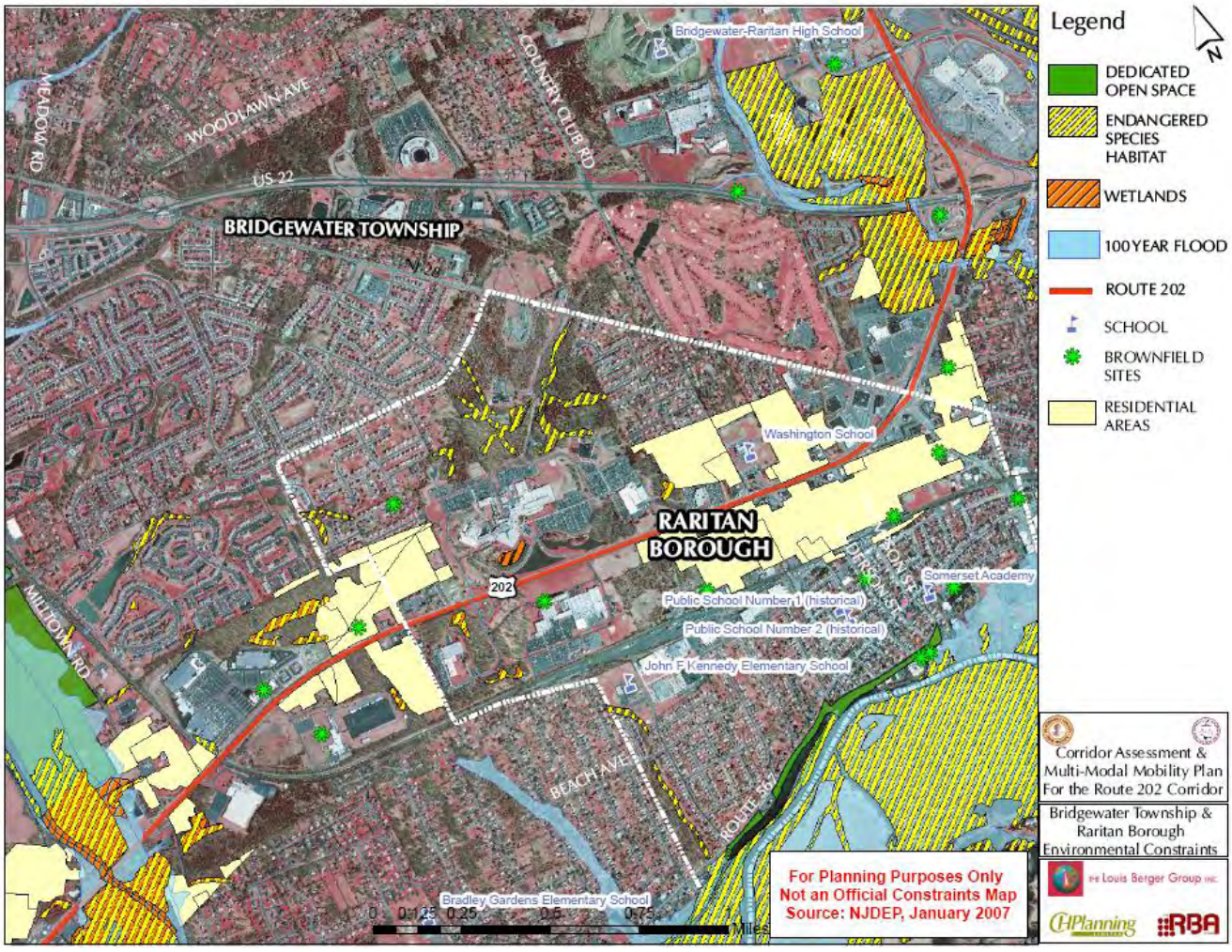


Figure 3-6
Environmental Constraints Map
Branchburg Township

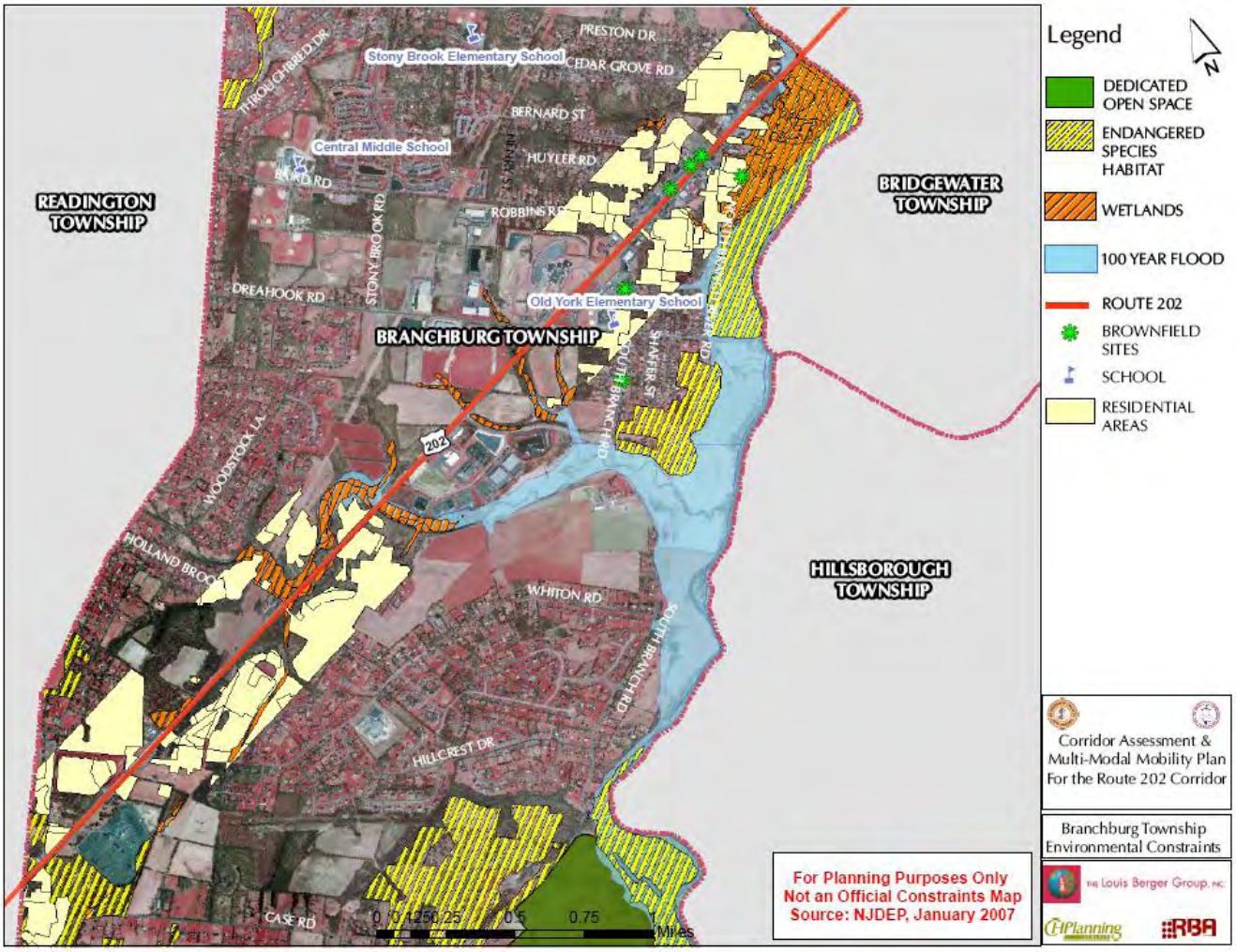


Figure 3-7
Environmental Constraints Map
Readington Township

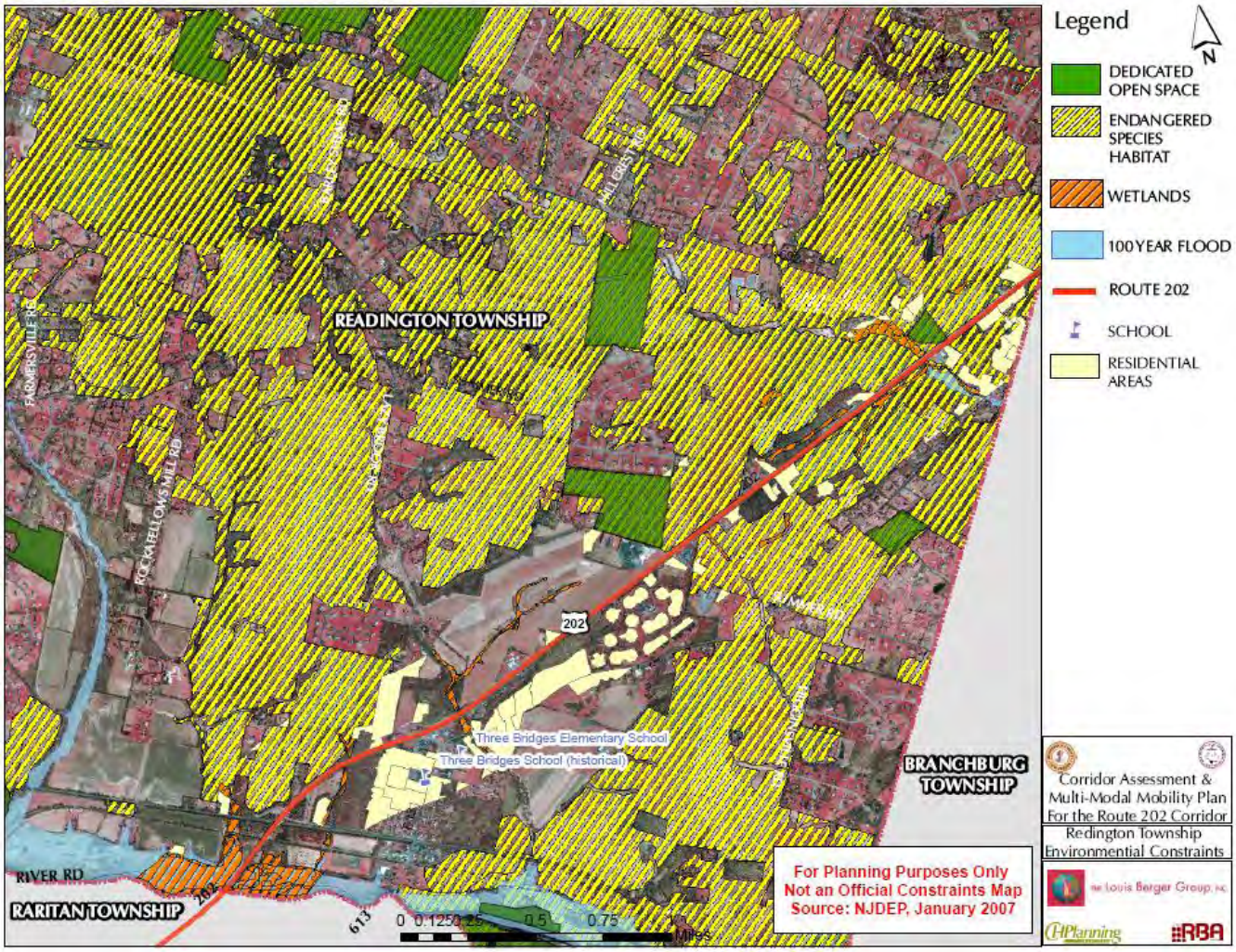
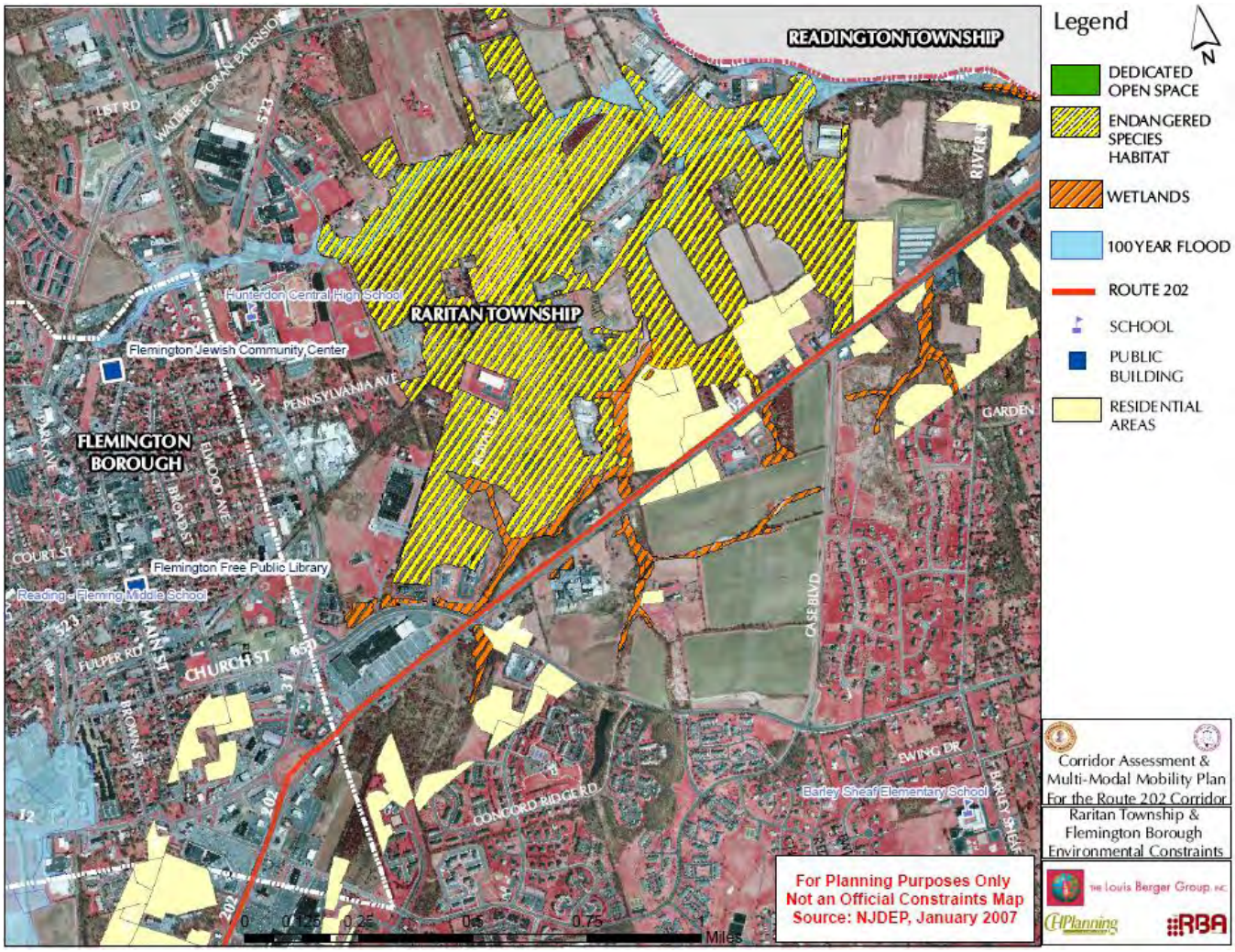


Figure 3-8
Environmental Constraints Map
Raritan Township & Flemington Borough



3.4 SURVEYS

3.4.1 Commuter Survey

A commuter survey was conducted to profile travel behavior along the corridor and to gather input on the overall travel experience of the corridor, identify mobility problems and determine interest in potential transportation alternatives. The following is a summary of the results of the survey. The boundaries of this study are between Church Street/Voorhees Corner in Raritan Township (Hunterdon County) and First Avenue in Raritan Borough (Somerset County). From July to September 2008, the survey was hosted online by Ridewise.org, an affiliate of the Somerset County Business Partnership. The website made the survey accessible and convenient for a wide range of potential respondents and proved to be a successful mechanism for implementing the survey.

The survey was advertised using variable message signs along Route 202, as well as in advertisements, postings and website links, and attracted 1,065 respondents. Figures 3-10 and 3-11 on the following pages show the commute origin and destination of survey respondents. Most respondents reside in the northern half of New Jersey or the Pennsylvanian counties of Bucks and Montgomery, and commute to employment destinations which are concentrated in northeastern New Jersey and New York County in New York.

Figure 3-9
Variable Message Sign

Figure 3-10
Route 202 Commuter Survey - Commuter Origin

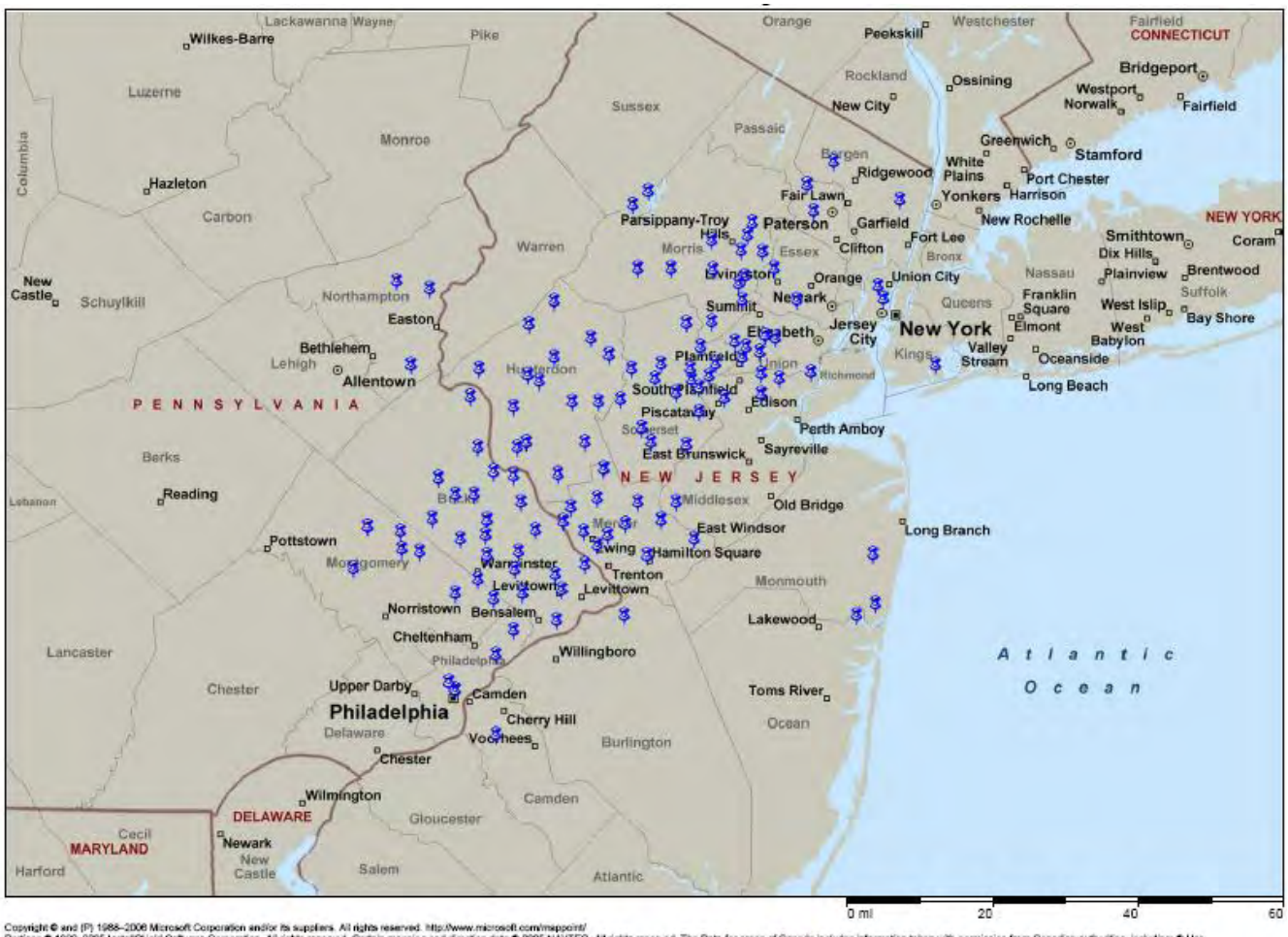
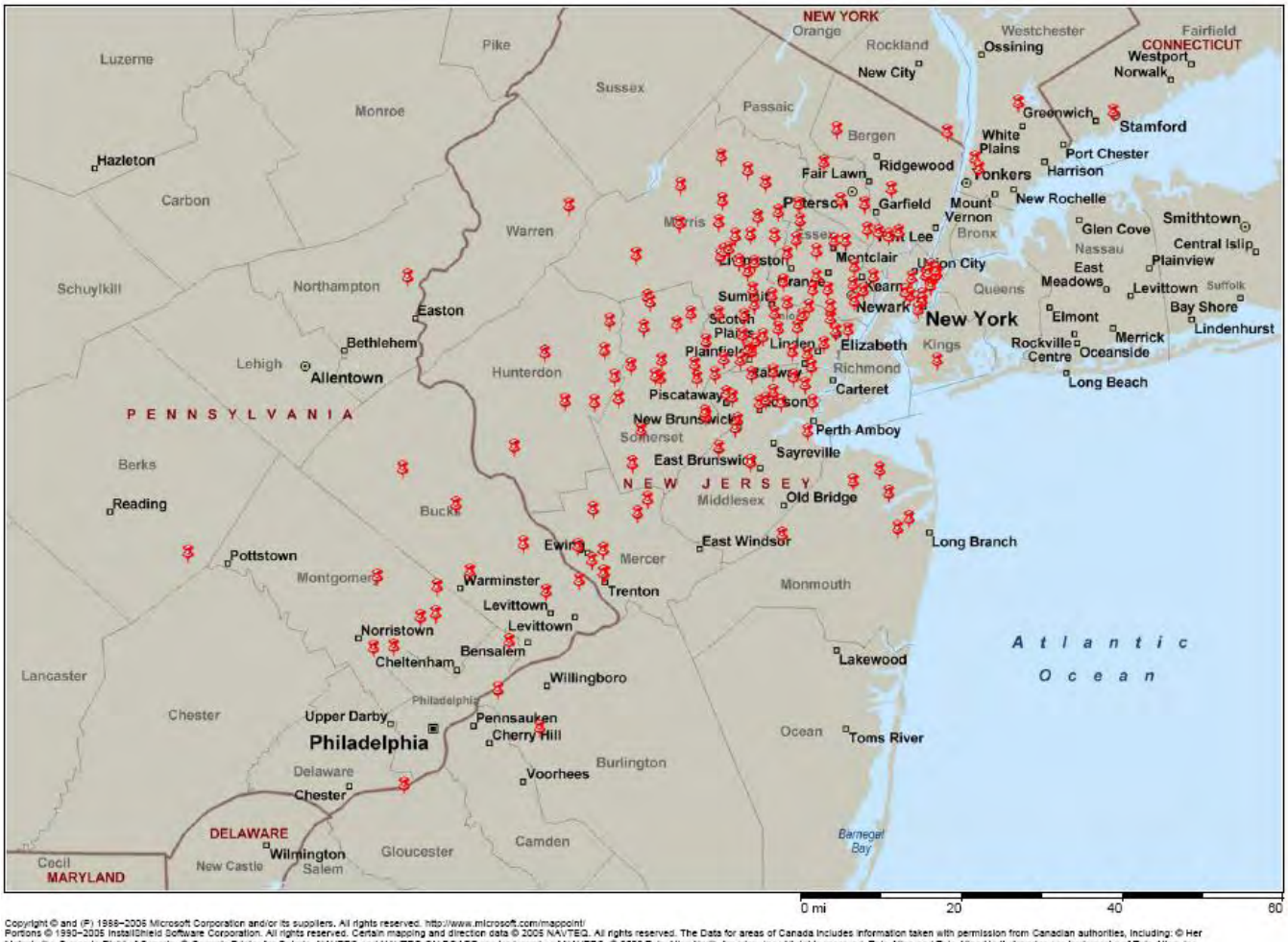


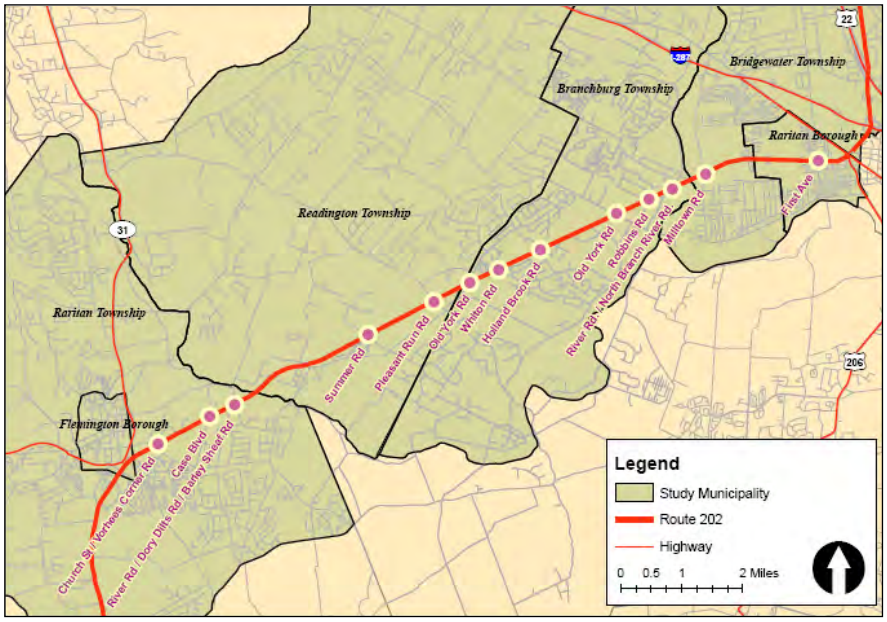
Figure 3-11
Route 202 Commuter Survey - Commuter Destination



Summary of Results

As the commuter survey stated in its introduction, the survey focus was on Route 202 between Church Street/Voorhees Corner Road in Raritan Township, and First Avenue in Raritan Borough. This includes several major intersections, shown at right in Figure 3-12. Survey respondents were asked about their current commuting patterns and given the opportunity to identify needed roadway improvements, and ways to promote transportation alternatives for commuters during peak traffic periods. The information which they provided is summarized below. A copy of the survey questions is provided in the Technical Appendix.

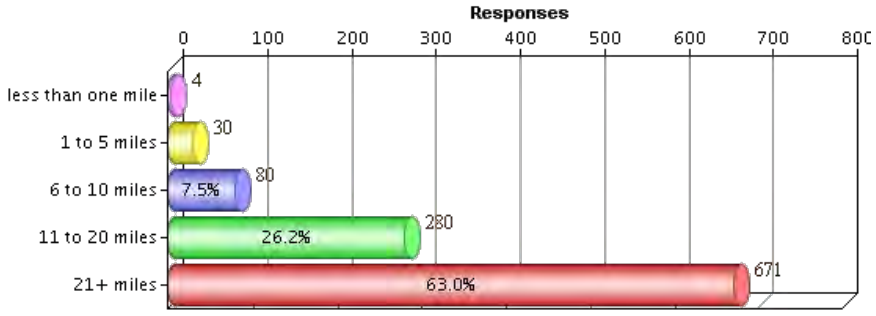
Figure 3-12
Major Intersections along the Corridor



Daily Commute

Based on survey results, commuters displayed typical journey to work travel behavior. The majority of respondents work full-time Monday through Friday, and most indicated that they are not offered flexible work hours (Q.2). Thirty to 60 minutes was the normal one-way daily commute (Q.3) and most indicated that they travel 21 miles or more in each direction (Q.3a, see Figure 3-13).

Figure 3-13
One-Way Travel Distance



The great majority of the commuters surveyed drive alone and arrive at work between the peak commuting hours of 7 A.M. and 9 A.M. and leave from work between the peak commuting hours of 4:30 P.M. and 6 P.M. as shown in Figures 3-14 and 3-15 (Q.4 & Q.5).

Figure 3-14
Work Arrival Time

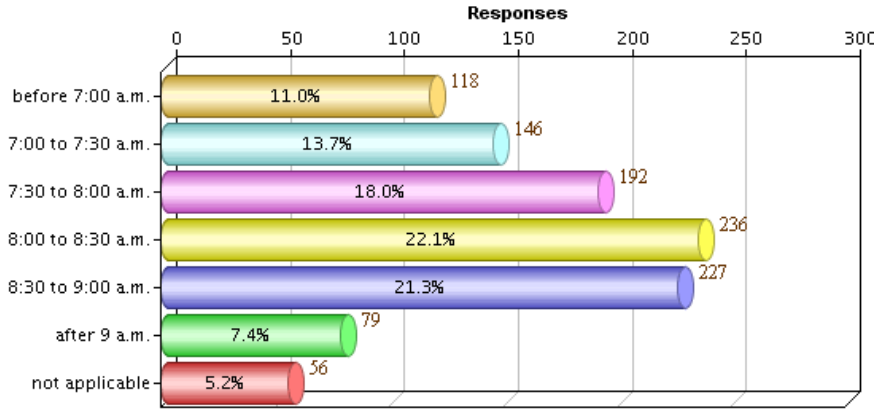
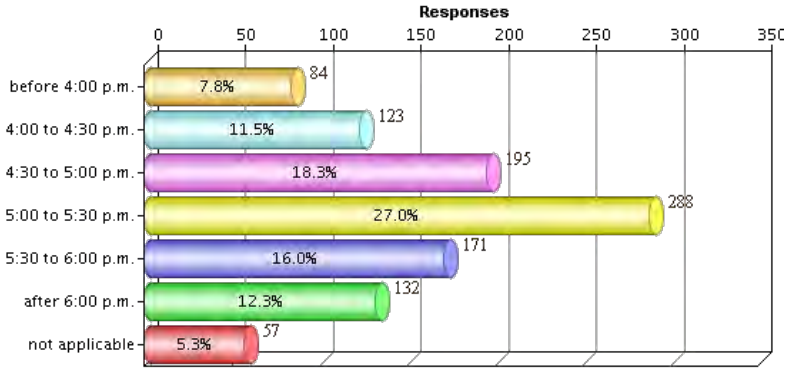


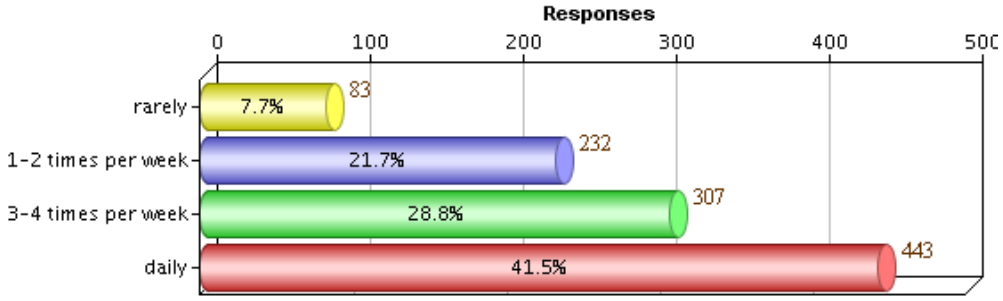
Figure 3-15
Work Departure Time



Route 202 Improvements

Over 95% of survey respondents use Route 202 frequently to travel to and from work, and many respondents use additional routes such as Interstate I-287 (44.6%) and Route 22 (26.3%) (Q.7). While 39.3% of survey respondents find that Route 202 serves their needs well, 29.2% adjust their commute times to avoid traffic, and an additional 29.2% choose to use alternative routes as much as possible to avoid Route 202 traffic (Q.8). Overall, 90% of respondents, as illustrated in Figure 3-16, experience unreasonable congestion on Route 202 at least once a week (Q.3b). When asked the question "What types of intersection or other physical improvements do you believe should be considered along Route 202 to improve traffic flow?" the leading responses were to add more turning lanes followed by more frontage access along the corridor (Q.12). The majority of the commuter survey participants do not have any issues with entering or exiting driveway access at their workplace (Q.11).

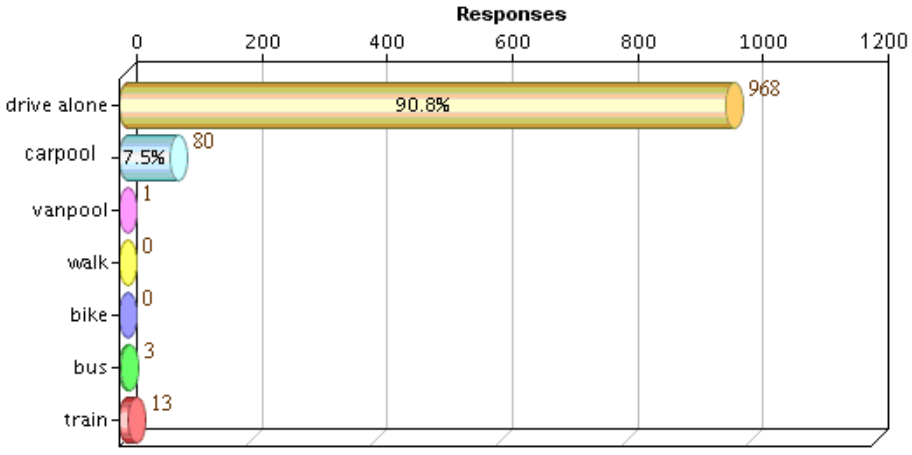
Figure 3-16
Unreasonable Congestion Encountered Per Week



Transit Ridership

Figure 3-17 shows the mode to work breakdown of respondents (Q.6). Over 90% of survey respondents drive alone to work, compared to County averages of 81.7% in Somerset and 82.5% in Hunterdon, according to the 2000 US Census. The majority of survey respondents (67%) indicated the inadequacy of the public transit services as the main reason for not using car/van pooling or public transit (Q.13). Working irregular hours was cited by 32% of respondents as an additional reason why they do not car/vanpool or use public transit.

Figure 3-17
Mode to Work



Over 90% of respondents indicated that they have never used NJ TRANSIT commuter rail services as part of their commute to work (Q.14). These respondents cited inconvenience and inaccessibility of stop locations from places of employment as their reason for not riding NJ TRANSIT. When asked if park and ride service would be useful if one were established along the Route 202 corridor, less than 50% of respondents indicated that they would be inclined to use the service (Q.15). The survey results demonstrate a demand from a portion of commuters for flexible, dependable car/vanpool and public transit service and facilities throughout the study area.

When participants were asked to identify the incentives that would most influence them to use other modes of transportation, the ability to work flexible work schedules, such as telecommuting or four-day, 10-hour

workweeks, was selected by 39.7% of respondents, followed by the incentive of express transit services to specific areas, which 33.5% of respondents felt would influence them (Q.16).

Most of the participants (89%) also indicated that they would not bike or walk to work due to the distance of their commute (Q.17) and 81.4% would not be interested in walking to run errands even if better pedestrian access along Route 202 existed (Q.18). The general consensus and reasoning for lack of interest in walking to shops to run errands was the distance between local shops and the limited pedestrian access that currently exists. Those respondents who were interested in walking if better pedestrian access existed indicated that short lunches and personal errands (e.g., dry cleaners, pharmacy, groceries, banking, etc.) would be the stores/services that they would be most likely to frequent.

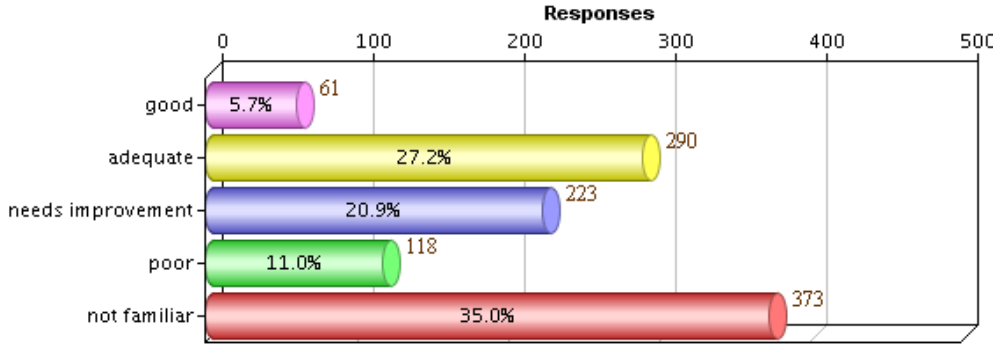
Studied Intersections

Question 10 of the survey asked respondents to rate five major intersections: First Avenue, Old York Road (Route 637), Old York Road, Church Street and Robbins Road. In addition, respondents were given the opportunity to identify specific locations with traffic problems along the corridor and any other intersections that they felt need attention (Q.9 & Q.10). The following is a summary of the intersection ratings and comments received from survey participants, by intersection, from the southern to northern end of the study corridor. A complete list of the comments received can be found in the Technical Appendix. Mileposts are given for most intersections based on NJDOT 2008 Straight Line Diagrams, which can be found in the Technical Appendix.

Church Street (MP 68.40)/ Voorhees Corner Road

As shown in Figure 3-18, 31.9% of respondents rated the intersection of Church Street and Route 202 as poor or inadequate. The general consensus regarding traffic at the Church Street/Voorhees Corner Road intersection is that the traffic signal phases are not timed correctly. A few respondents also suggested that the right lane at Church Street and Route 31 traveling toward Flemington should be RIGHT TURN ONLY.

Figure 3-18
Church Street Intersection Rating



Case Boulevard (MP 12.90)

The majority of the comments regarding Case Boulevard reflected motorists' frustration with the timing of the traffic signals at this intersection. More than half of the two dozen comments received specifically mentioned that the level of traffic congestion has been negatively impacted by the installation of the traffic signal at this intersection.

River Road (MP 66.96) / Dory Dilts Road (MP 13.35) / Barley Sheaf Road (MP 13.31)

The common issue mentioned by survey respondents at Barley Sheaf Road is that traffic signals are not synchronized. One respondent stated that "the intersection of 202 and Dory Dilts/River/Barley Sheaf Roads in

Raritan Township is especially dangerous when travelling north on 202 and turning right on Dory Dilts. The turning lane is inadequate, and cars waiting on Barley Sheaf Road to turn right onto Route 202 North often pull out in front of cars traveling north on 202 and slowing to turn right on Dory Dilts."

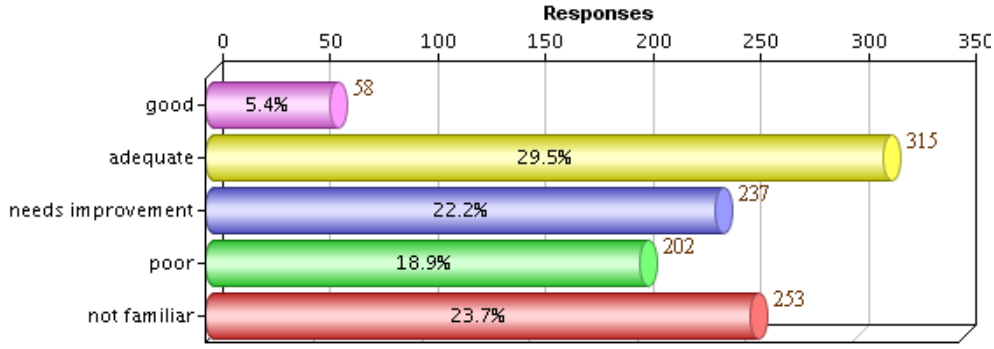
River Avenue (MP 65.58) / Main Street (MP 14.73) / Broad Street (MP 14.73)
Main Street in Three Bridges was noted as an area of major concern. Excessive congestion during the evening hours was noted. Respondents felt that congestion is caused in part by slow timing on the signal that allows traffic to cross Route 202 from Main Street.

Summer Road (MP 15.89)
Respondents felt that timing for the traffic signal at this intersection is not synchronized with traffic flow, noting that there is frequently inadequate time for motorists to clear the intersection.

Pleasant Run Road (CR 629) (MP 17.11)
Respondents expressed a need for sidewalk improvements and the addition of bike routes to make the area more bike- and pedestrian-friendly. Some noted that traffic and congestion is worse just beyond Pleasant Run Road. Several respondents commented that the intersection of Pleasant Run Road and Route 202 should be reopened.

Old York Road (Hunterdon) (MP 17.73)
The majority of survey participants who were familiar with Old York Road rated the intersection between adequate and poor in terms of congestion and ease of use (see Figure 3-19), citing congestion and traffic issues. Comments received about Old York Road in Hunterdon were limited, with a much greater volume of responses mentioning conditions of Old York Road in Branchburg. Some respondents reported driving on Old York Road in order to bypass unpleasant conditions on Route 202, even though the detour did not provide time savings.

Figure 3-19
Old York Road (Hunterdon) Intersection Rating



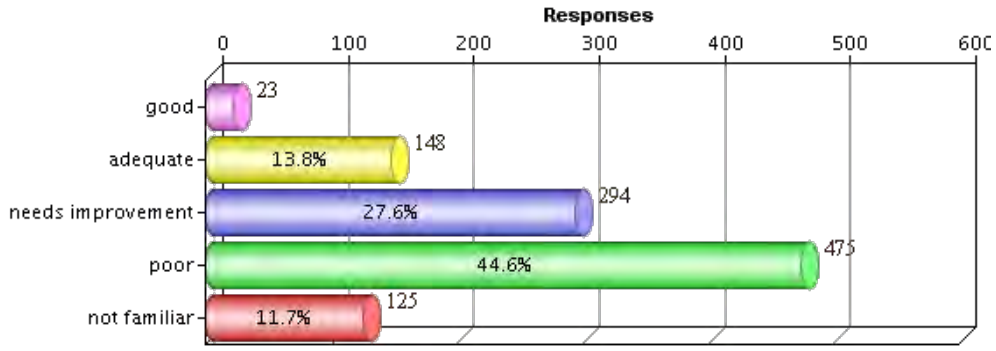
Whiton Road (MP 8.26)
Respondents noted that the area at Whiton Road is where congestion begins. Many respondents stated that "bumper to bumper" traffic begins here at around 7:00 A.M. every morning. One response suggested that the traffic back-ups in this area could be a result of the traffic flow spilling out onto Route 202 from local neighborhoods.

Holland Brook Road (MP 19.01)
Respondents to the survey stated that Holland Brook Road can be difficult and dangerous to cross during peak work hours. Some noted that the presence of a crosswalk and pedestrian signal would be very helpful. Respondents also pointed out that the left lane U-turn is dangerous and a hamper to traffic flow and suggested its removal.

Old York Road (Somerset County, CR 637) (MP 20.40)

The majority of survey participants rated the intersection of Route 202 and Old York Road between "needing improvement" and "poor" in terms of congestion and ease of use, as illustrated in Figure 3-20. Many felt that the traffic signals in this area are timed poorly. Respondents specifically noted that the signal at Old York Road does not hold long enough for the Route 202 traffic to start up from a dead stop and get through the light. Congestion is said to build up as early as 3:50 P.M. due to poor synchronization of the traffic signal.

Figure 3-20
Old York Road (Somerset) Intersection Rating

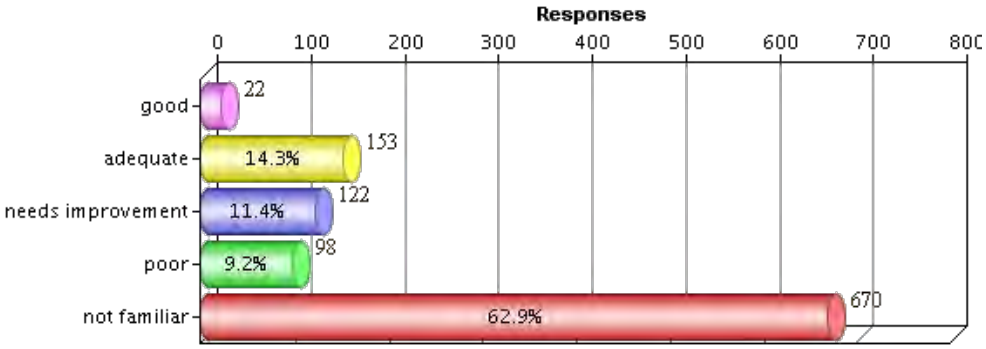


A number of other comments regarding this intersection mentioned that the U-turn access points on Route 202 on either side of Old York Rd (Somerset County; Route 637) cause left-turning traffic to back-up considerably. Respondents suggested the removal of the U-turns or relocation on the median farther away from the intersection. Another issue noted by respondents is that at the exit from Roche Diagnostics onto Route 202 in the vicinity of Old York Road motorists "daringly" cut across two lanes, which can tie up traffic and is a hazard to others. In addition, it was noted that Old York and South Branch River Road close during severe rain due to flooding.

Robbins Road (MP 20.94)

As shown in Figure 3-21, the majority of survey respondents were not familiar with this intersection.

Figure 3-21
Robbins Road Intersection Rating



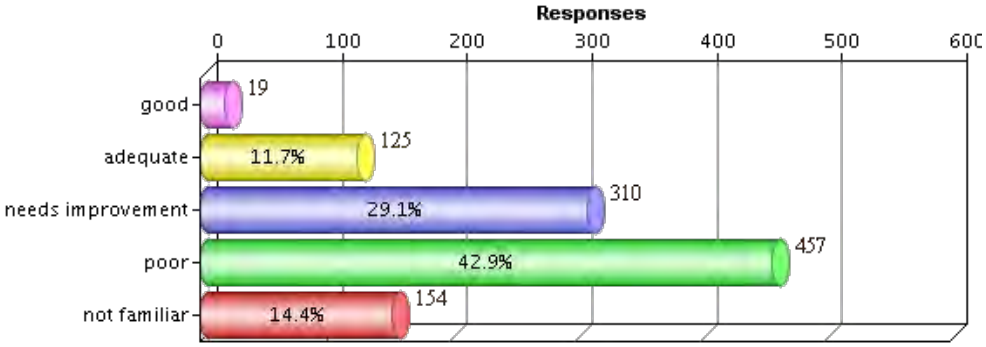
Those who did comment noted that most motorists disregard the "Do Not Block Intersection" signs posted there. Crossover U-turns here were described as very dangerous because they cause cars to block the left hand lane of traffic. One respondent noted that vehicles at Robbins Road take daring chances racing out into traffic from the U-turns and cutting-off oncoming vehicles.

River Road (MP 58.88) / North Branch River Road (MP 21.36)
Survey respondents expressed great concern over the dangerousness of the signalized intersection at North Branch River Road and Old York Road. At both intersections there are U-turn lanes which cause the second car in the U-turn queue to protrude into the fast lane. Some respondents felt that there was sufficient room in the median for a longer lane for the light. U-turns are currently not allowed at the light and respondents have suggested that they should be allowed.

Milltown Road (MP 21.99)
Many respondents identified the section between Milltown Road and Old York Road in Branchburg as the area with the heaviest congestion in the evenings, and the section north of Milltown Road to Route 22 as the area with the heaviest congestion in the mornings. Traffic in these sections was described as "unbearable", "at a standstill", and "constantly tied-up". During peak periods, drivers are not able to make it through the Milltown Road light in a single cycle. They cited traffic signals as the cause of this problem, stating that cars on Route 202 must wait at the light for a very limited number of vehicles on Milltown Road. Some respondents use alternative routes such as Route 22 West to avoid this section of Route 202.

First Avenue (CR 567) (MP 23.90)
The majority of respondents rated First Avenue as a poor intersection in terms of congestion and ease of use (see Figure 3-22). Respondents cited traffic backup from the Branchburg Police Department to First Avenue. The traffic signals in this area are said to be poorly timed. In fact, a few of the comments suggested that motorists tend to speed to beat the light at First Avenue, causing accidents. A repeated concern for the intersection at First Avenue is that trucks cannot accelerate properly after being stopped at a light, slowing down traffic; this is a particular issue because many of the trucks travel in the left lane.

Figure 3-22
First Avenue Intersection Rating



Findings

The most frequent concern of survey participants is related to their overall frustration with traffic congestion. Additional comments supplied indicated that the current timing of traffic signals at Route 202 intersections does not allow traffic to flow at a standard pace. Many respondents also felt that pervasive congestion on the corridor encourages unsafe driving behavior. In addition, respondents mentioned that areas of the corridor are not safe for pedestrian use. Other participants suggested that a light rail or bus route could be incorporated within the center of Route 202 to encourage people to use transit during the day and evening commutes. Respondents also felt that it would be extremely helpful if there were bus routes that arrived and departed from local train stations and made connections to a light rail/bus system that made stops along Route 202.

3.4.2 Employer Survey

Survey Overview

Employer surveys were conducted with businesses within the Route 202 study area, regarding their employees' commute options and patterns as well as their perception of traffic congestion. The boundaries of this study are between Church Street/Voorhees Corner in Raritan Township (Hunterdon County) and First Avenue in Raritan Borough (Somerset County). Four businesses located on Route 202 within the study area completed five surveys regarding the identification of roadway improvements and transportation alternatives for the Route 202 corridor. Table 3-1 below profiles the participating employers. This document provides a summary of the survey, broken down into two categories: employee commute options/patterns and traffic/access on Route 202. A copy of the employer survey is located in the Technical Appendix.

Table 3-1
Surveys Received

Employer	Business Type	Number of Employees	Hours of Operation	Number of Employees Per Shift
A	Bio-Pharmaceutical Manufacturing	1200	24 / 7, 3 shifts	Varies, busiest shift is 8:30A.M. - 5P.M. M -F
B	Medical Diagnostics	1900	24 / 7, 3 shifts	1st shift – 1700 2nd shift – 150 3rd shift-50
C	Data Center	600	24 / 7, 2 shifts	1st shift - 595 2nd shift - 5
D	Medical Devices	380	5A.M. to 11 P.M., 2 shifts	Varies
	Medical Devices	---	5A.M. to 12 A.M., 2 shifts	Varies

Employee Commute Options/Patterns

The Typical Workday

- Respondents reported that most of their employees work full-time Monday through Friday.
- The majority of the respondents' employees arrive between the peak commuting hours of 7 A.M. and 9 A.M. and leave between the peak commuting hours of 4:30 P.M. and 6 P.M.
- The majority of employers provide a flexible work schedule, but less than half encourage telecommuting.

Use of Personal Vehicles During the Workday

- Surveyed employers reported that 40% of employees use a personal vehicle for work-related tasks, and fewer than 10% embark on work-related travel during the day.
- The majority of employers do not offer vehicles to use for work-related travel and are not willing to provide vehicles or car share for travel.
- Respondents reported that many amenities, as summarized in Table 3-2, are available on-site or within walking distance, providing employees with an alternative to driving during work hours for personal needs or errands.

Support for Alternative Transportation

- The majority of employers encourage employers to carpool, but do not have a staff person dedicated to this initiative.
- Only one employer offers bike racks or preferred parking for car/vanpools.
- Almost the entire field of employers surveyed offered commuter subsidies for transit riders and vanpools.
- All of the employers agreed that they would be willing to provide on-site facilities such as a bus shelter or transit schedules/tickets for convenient bus access if the demand by employees for public transportation existed.
- All of the companies surveyed are interested in learning more about providing commuting options to employees and reducing traffic congestion. The activities they are specifically interested in are summarized below in Table 3-3.

Table 3-2
Amenities Within Close Proximity

	Employer			
	A	***B***	***C***	***D***
Coffee shop/breakfast cafe	x	x	x	
ATM	x	x	x	
Cafeteria/lunch room	x	x	x	x
Convenience store				
Vending machines	x	x	x	x
Child care			x	
Post office		x		
Dry cleaning	x	x		x
Other				

Table 3-3
Express Interest in Learning

	Employer			
	A	***B***	***C***	***D***
Flex hours/telecommuting	x	x		x
Vanpool/carpool assistance	x	x	x	x
Emergency ride home	x	x	x	x
Parking management		x		
Legislative/tax incentives to promote commuting options		x	x	x
Transit subsidies	x	x	x	x
Pre-tax deductions	x	x		x
Employee incentives	x	x	x	x
Other				

Traffic/Access on Route 202

- Four out of five respondents report poor traffic/access on First Avenue.
- Four out of five respondents report that traffic/access on Old York (Somerset) either needs improvement or is poor.
- When asked what other intersections needed attention, the majority of respondents mentioned the Route 22 East ramps.
- ImClone Systems noted that many cars use ImClone Drive to get around traffic on Route 202, causing safety issues for pedestrians walking around their campus.
- All respondents agreed that sidewalks and designated pathways should be considered along Route 202 to improve traffic flow.

Findings

The survey does not represent all employers along the corridor, but is useful in providing valuable insight into a sample of the existing employer practices in the study area. Respondents reported practicing innovative and transit-friendly policies, such as assistance in arranging car/vanpools, compressed workweeks, bicycle racks and commuter subsidies. The established precedence of such practices indicates that there is potential for more widespread adoption. As the corridor moves forward with its multi-modal mobility plan, these employers should be further consulted to identify challenges in implementing commuter assistance policies and their associated benefits. Their insight will be a valuable tool in approaching other employers along the corridor and enlisting their help in achieving the goals of the mobility plan for Route 202.

4.0 TRAFFIC ANALYSIS AND IMPROVEMENTS

4.1 INTERSECTION IMPROVEMENTS

This section focuses on the existing and anticipated future traffic conditions throughout the corridor, looking at peak hour vehicular operations and constraints. Since the majority of traffic congestion and crashes occur at intersections, the 19 locations along the corridor where median breaks occur were chosen as key study locations. These 19 locations include the 13 traffic signals along the corridor (including their respective U-turn facilities) and the 6 unsignalized median breaks along the corridor. Specifically, the following intersections with Route 202 were studied:

1. Church Street/Voorhees Corner Road
2. Greenwood Place
3. Case Boulevard
4. River Road/Dory Dilts Road/Barley Sheaf Road
5. Railroad Avenue
6. River Road/Main Street/Broad Street
7. Summer Road
8. Pleasant Run Road (CR 629)
9. Old York Road
10. Whiton Road
11. Holland Brook Road
12. West County Drive (CR 646)
13. Old York Road (CR 637)
14. Robbins Road
15. River Road/North Branch River Road
16. Milltown Road
17. Bridgewater Town Center Drive
18. Ortho-McNeil Driveway
19. First Avenue (CR 567)

A brief description of each of the study locations follows. For consistency, Route 202 is assumed to be the north/south roadway throughout the following descriptions with intersecting streets assumed as east/west.

ROUTE 202 AND CHURCH STREET / VOORHEES CORNER ROAD, Raritan Township, Hunterdon County

The intersection of Route 202 and Church Street/Voorhees Corner Road is a four-way signalized intersection operating on a four-phase traffic signal. The northbound Route 202 approach consists of a shared U/left-turn lane, a dedicated left-turn lane, a dedicated through lane and a shared through/right-turn lane. The southbound Route 202 approach consists of a dedicated left-turn lane, two dedicated through lanes, and a dedicated right-turn lane. The Church Street and Voorhees Corner Road approaches consist of a shared left/through lane and a shared through/right lane. The four-phase signal operation includes a protected only-left-turn phase for Route 202 and a split phase operation on Church Street/Voorhees Corner Road.

ROUTE 202 AND GREENWOOD PLACE, Raritan Township, Hunterdon County

The intersection of Route 202 and Greenwood Place is an unsignalized intersection which accommodates both Route 202 U-turn movements and full access to Greenwood Place. The Route 202 northbound approach consists of a dedicated left-turn lane (also utilized for U-turn movements) and two dedicated through lanes. The southbound Route 202 approach consists of a dedicated U-turn lane, a dedicated through lane and a shared through/right-turn lane. The Greenwood Place eastbound approach consists of a dedicated through lane and a "stop"-controlled right-turn ramp. The Greenwood Place eastbound left-turn movement is accomplished via a straight through movement across Route 202, followed by a merge to Route 202 northbound.

ROUTE 202 AND CASE BOULEVARD, Raritan Township, Hunterdon County

The intersection of Route 202 and Case Boulevard is a four-way signalized intersection operating on a two-phase traffic signal. The Route 202 approaches consist of two dedicated through lanes in each direction. Turning movements to Case Boulevard are accomplished via nearside jughandles. The westbound Case Boulevard approach consists of a dedicated left-turn lane, a dedicated through lane, and a dedicated right-turn lane. The eastbound Case Boulevard approach consists of a dedicated left-turn lane, a dedicated through lane, and a shared through/right-turn lane.

ROUTE 202 AND RIVER ROAD/DORY DILTS ROAD/BARLEY SHEAF ROAD, Raritan Township, Hunterdon County

The intersection of Route 202 and River Road/Dory Dilts Road is a four-way signalized intersection operating on a three-phase traffic signal. The Route 202 northbound approach consists of two dedicated through lanes and a shared through/right lane used exclusively for right turns, and the northbound farside jughandle, which accommodates northbound left turns. The Route 202 southbound approach consists of a dedicated left-turn lane, two dedicated through lanes and a dedicated right-turn lane. The eastbound River Road approach consists of a shared left/through lane and a stop-controlled, dedicated right-turn lane separated from the left/through lane by a raised and striped island. The southbound Dory Dilts Road approach consists of a dedicated left-turn lane and a shared through/right-turn lane. Barley Sheaf Road intersects with Route 202 northbound to form a right-in, right-out "stop"-controlled intersection immediately south of the traffic signal on Route 202.

ROUTE 202 AND RAILROAD AVENUE, Readington Township, Hunterdon County

The intersection of Route 202 and Railroad Avenue is an offset pair of unsignalized intersections. The northern intersection accommodates the westbound railroad approach. The westbound approach provides for right-in, right-out movements with northbound Route 202, as well as providing a

dedicated left-turn lane for the Route 202 southbound to Railroad Avenue movement. The southern intersection accommodates the eastern Railroad Avenue approach. This intersection provides for right-in, right-out movements

along Route 202 southbound. Due to the orientation of the offset, no through movement across Route 202 at this location is possible.

ROUTE 202 AND RIVER ROAD/MAIN STREET/BROAD STREET, Readington Township, Hunterdon County

The intersection of Route 202 and River Road/Main Street/Broad Street is a five-way signalized intersection operating on a three-phase traffic signal. The northbound Route 202 approach consists of a dedicated through lane and a shared through/right lane. The southbound Route 202 approach consists of two dedicated through lanes. Turning movements off Route 202 are accomplished via nearside jughandles, with the exception of the Route 202 northbound to Main Street right-turn movement, which is accomplished from a shared lane. The Broad Street westbound and River Avenue eastbound approaches consist of a single lane to accommodate all movements, and the westbound Main Street approach consists of a shared left/through lane and a "yield"-controlled right-turn lane.

ROUTE 202 AND SUMMER ROAD, Readington Township, Hunterdon County

The intersection of Route 202 and Summer Road is a four-way signalized intersection operating on a three-phase traffic signal. The northbound and southbound Route 202 approaches consist of a dedicated left-turn lane, two dedicated through lanes, and a dedicated right-turn lane. Route 202 U-turn movements are accomplished via advance U-turn median breaks. The westbound Summer Road approach consists of a shared left/through lane and a dedicated left-turn lane. The eastbound approach consists of a single travel lane to accommodate all movements.

ROUTE 202 AND PLEASANT RUN ROAD (CR 629), Readington Township, Hunterdon County

The intersection of Route 202 and Pleasant Run Road is a pair of right-in, right-out intersections. No movements across the median are permitted. Route 202 consists of two travel lanes in each direction, and Pleasant Run Road consists of a single lane in each direction. Based on the existing roadway geometry, it is apparent that at one time the intersection accommodated cross-median movements.

ROUTE 202 AND OLD YORK ROAD, Branchburg Township, Somerset County

The intersection of Route 202 and Old York Road is a four way "stop"-controlled intersection. Old York Road approaches Route 202 at an acute angle, creating, two "stop"-controlled, "T" style intersections. The Route 202 approaches each consist of a dedicated through lane and a shared through/right-turn lane plus a pair of median left-turn lanes. The Old York

Road approaches each consist of dedicated left- and right-turn lanes flared from a single approach lane. Through movements on Old York Road across Route 202 are accomplished via a right turn onto Route 202, a lane change into the left turn lane, and then a left turn back onto Old York Road.

ROUTE 202 AND WHITON ROAD, Branchburg Township, Somerset County

The intersection of Route 202 and Whiton Road is a four-way signalized intersection operating on a two-phase traffic signal. The Route 202 northbound and southbound approaches each consist of two dedicated through lanes. Route 202 turning movements are accomplished via nearside jughandles. The Whiton Road approaches each consist of a shared left/through lane and a dedicated right-turn lane.

ROUTE 202 AND HOLLAND BROOK ROAD, Branchburg Township, Somerset County

The intersection of Route 202 and Holland Brook Road is a four way "stop"-controlled intersection. The Route 202 approaches consist of a dedicated left-turn lane, a dedicated through lane, and a shared through/right-turn lane. Route 202 U-turns are accomplished via advance U-turn median breaks. The eastbound and westbound Holland Brook Road approaches consist of a single approach lane to accommodate all movements.

ROUTE 202 AND WEST COUNTY DRIVE (CR 646), Branchburg Township, Somerset County

The intersection of Route 202 and West County Drive (CR 646) is a three-way signalized intersection operating on a three-phase traffic signal. The northbound Route 202 approach consists of two dedicated through lanes and a dedicated right-turn lane. The southbound Route 202 approach consists of a dedicated left-turn lane and two dedicated through lanes. The westbound West County Drive approach consists of a dedicated left-turn lane and a yield-controlled dedicated right-turn lane.

ROUTE 202 AND OLD YORK ROAD (CR 637), Branchburg Township, Somerset County

The intersection of Route 202 and Old York Road (CR 637) is a four-way signalized intersection operating on a four-phase traffic signal. The northbound Route 202 approach consists of a dedicated left-turn lane, dedicated through lane, and shared through/right-turn lane. The southbound Route 202 approach consists of a dedicated left-turn lane, two dedicated through lanes, and a dedicated right-turn lane. Route 202 U-turn movements are accomplished via advance U-turn median breaks. The eastbound and westbound Old York Road approaches consist of a dedicated left-turn lane, a shared left-turn/through lane, and a channelized dedicated right-turn lane. The signal operates with a protected only Route 202 lead left turn phase, and a split phase operation on Old York Road.

ROUTE 202 AND ROBBINS ROAD, Branchburg Township, Somerset County

The intersection of Route 202 and Robbins Road is a four-way, "stop"-controlled intersection. The Route 202 approaches consist of a dedicated left-turn lane, a dedicated through lane, and a shared through/right-turn lane. Route 202 U-turns are accomplished via advance U-turn median breaks. The eastbound and westbound Robbins Road approaches consist of a single approach lane to accommodate all movements. Channelization islands are provided for flared right-turn movement areas.

ROUTE 202 AND RIVER ROAD/NORTH BRANCH RIVER ROAD, Branchburg Township, Somerset County

The intersection of Route 202 and River Road is an offset four-way intersection with a three-phase traffic signal on the northeastern "leg". The eastbound River Road left-turn movement is controlled by the traffic signal, while the eastbound River Road right-turn movement is "stop"-controlled. The westbound North Branch River Road approach to the intersection is "stop"-controlled for both the left- and right-turn movements. Route 202 consists of a dedicated left-turn lane and two dedicated through lanes at the two component intersections. Driveways are located across from the offset street intersections as well as along Route 202 in the vicinity of the intersection. The 202 southbound U-turn movement can be completed using the North Branch River Road intersection, but the complementary northbound U-turn movement is prohibited.

ROUTE 202 AND MILLTOWN ROAD, Bridgewater Township, Somerset County

Route 202 and Milltown Road is a four-way signalized intersection operating on a three-phase traffic signal. The Route 202 approaches consist of two dedicated through lanes in each direction. Turning movements to Milltown Road are accomplished via nearside jughandles. The Milltown Road approaches each consist of a dedicated left-turn lane, a dedicated through lane, and a dedicated right-turn lane. The traffic signal currently operates with a protected/permitted lead left-turn operation on Milltown Road.

ROUTE 202 AND BRIDGEWATER TOWN CENTER DRIVE, Bridgewater Township, Somerset County

Route 202 and Bridgewater Town Center Drive is a four-way signalized intersection operating on a three-phase traffic signal. The Route 202 northbound approach consists of two dedicated left-turn lanes, a dedicated through lane, and a shared through/right-turn lane. U-turns are not permitted northbound. The Route 202 southbound approach consists of a shared U-turn/left-turn lane, two dedicated through lanes and a shared through/right-turn lane. The outer shared through/right-turn lane is introduced upstream of the signal at a right-turn-out driveway to the shopping center and terminates at a downstream right-turn-in driveway. While through movements are possible at the intersection, this outer lane is designed to service driveway movements

and not mainline throughput capacity. The westbound Fisher Scientific Driveway permits right turns only by use of a raised island. The eastbound Bridgewater Town Center approach consists of two dedicated left-turn lanes and a dedicated right-turn lane.

ROUTE 202 AND THE ORTHO-MCNEIL DRIVEWAY, Raritan Township, Somerset County

Route 202 and the Ortho-McNeil Driveway is a four-way signalized intersection on a two-phase traffic signal. Turning movements to the Ortho-McNeil Driveways are accomplished via a combination of nearside and farside jughandles. The Route 202 northbound and southbound approaches consist of two through lanes in each direction, plus an exit lane for the northbound farside jughandle. The Ortho-McNeil westbound approach consists of a dedicated left-turn lane and a dedicated through lane. Westbound rights are accomplished via slip ramp. The Ortho-McNeil eastbound approach consists of a shared left/through lane and a dedicated through lane. Eastbound rights are accomplished via a slip ramp.

ROUTE 202 AND FIRST AVENUE (CR 567), Raritan Township, Somerset County

Route 202 and First Avenue is a four-way signalized intersection operating on a three-phase traffic signal. Turning movements to First Avenue (CR 567) are accomplished via nearside jughandles. The Route 202 northbound and southbound approaches (Route 202 is signed north/south even though at this location, Route 202 has an east/west orientation) consist of two through lanes in each direction. The First Avenue westbound approach consists of a dedicated left-turn lane, a dedicated through lane, and a shared through/right-turn lane. The eastbound approach consists of a dedicated left-turn lane and a shared through/right-turn lane. The signal currently operates on a split-phase operation for the First Avenue approaches, where the eastbound and westbound directions move separately.

4.1.1 Traffic Data Collection

Existing traffic count data was gathered from various sources to augment new data collection efforts, including NJDOT and Somerset County databases, and supplemented with count data from recent traffic studies prepared along the corridor. Based on this initial data collection effort, the weekday commuter peak hours for the corridor were determined to be from 7:30 A.M. to 8:30 A.M. and 4:30 P.M. to 5:30 P.M..

Based on the commuter peak hour data pulled from the existing data collection process, manual turning movement counts were conducted at each of the study locations, where necessary, during the weekday morning (7:30 A.M. to 8:30 A.M.) and weekday evening (4:30 to 5:30 P.M.) peak hours. Key locations were also counted on Saturday afternoon from 12:00 P.M. to 2:00 P.M. to establish Saturday operations. The locations selected for Saturday counts included those intersections most likely to be influenced by retail shopping trips along the corridor. Details of the manual count program are located in the Technical Appendix.

4.1.2 2008 Existing Peak Hour Volumes

The manual turning movement count data was compiled and balanced to establish baseline corridor volumes for the weekday morning and evening peak hours, as well as the Saturday mid-day peak hour (where available). This data is summarized in Figures 4-1 to 4-5. As the figures show, the predominant traffic flow is northbound on Route 202 in the morning, and southbound in the evening, with peak hour through movements typically exceeding 2,000 vehicles per hour at each study location.

4.1.3 2008 Existing Peak Hour Levels of Service

In order to establish a method of evaluating the operation of various movements and groups of movements at intersections, the concept of Level of Service (LOS) was established. Level of Service utilizes an "A" through "F" rating scale assigned to intersection movements based on seconds of average vehicle delay. An "A" level of service typically represents free flow conditions with little delay, and an "F" level of service represents over-capacity, congested conditions. A Level of Service "E" is considered the limit of acceptable delay for drivers in an urban setting. Tables 4-1 and 4-2 below indicate the various levels of service and the associated delay ranges for both signalized and unsignalized intersections.

Table 4-1 - Levels of Service at Signalized Intersections

Level of Serv	Average Control Delay (in seconds per vehic
A	0.0 to 10.0 seconds
B	10.1 to 20.0 seconds
C	20.1 to 35.0 seconds
D	35.1 to 55.0 seconds
E	55.1 to 80.0 seconds
F	Greater than 80.0 seconds

Table 4-2 - Level of Service at Unsignalized Intersections

Level of Serv	Average Control Delay (in seconds per vehic
A	0.0 to 10.0 seconds
B	10.1 to 15.0 seconds
C	15.1 to 25.0 seconds
D	25.1 to 35.0 seconds
E	35.1 to 50.0 seconds
F	Greater than 50.0 seconds

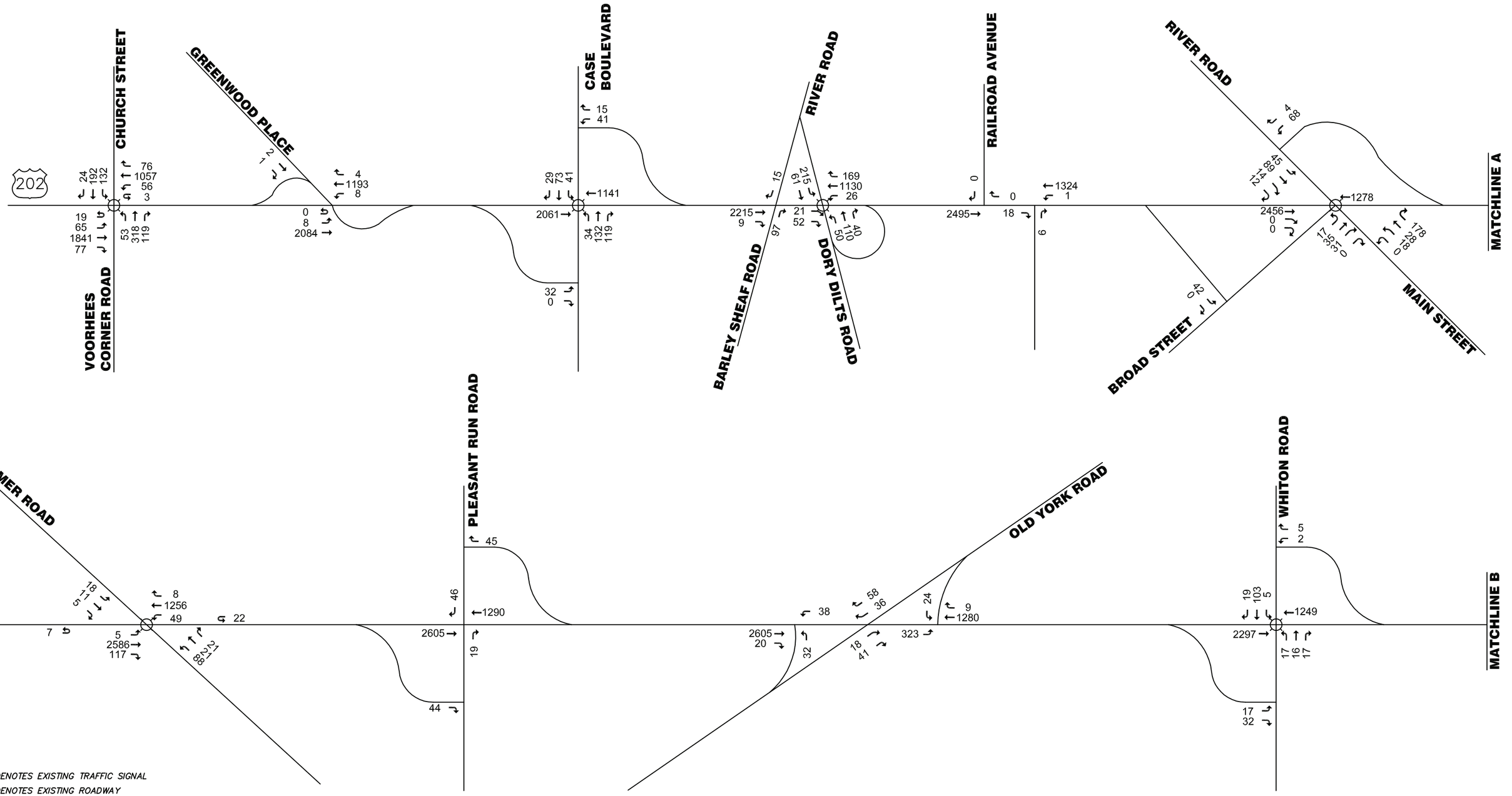
Utilizing the capacity and modeling software program Synchro 7, the existing traffic volumes, along with the current lane geometry and timing directives provided by the New Jersey Department of Transportation, were combined to create a simulation model of the corridor to represent existing conditions. Based on the results of the Synchro model, a Level of Service analysis was prepared for each of the subject intersections. The resulting average delays and Levels of Service for each of the intersections are illustrated in the Technical Appendix, Table 1.

Somerset County

FIGURE 4 - 1

2008 EXISTING MORNING PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY

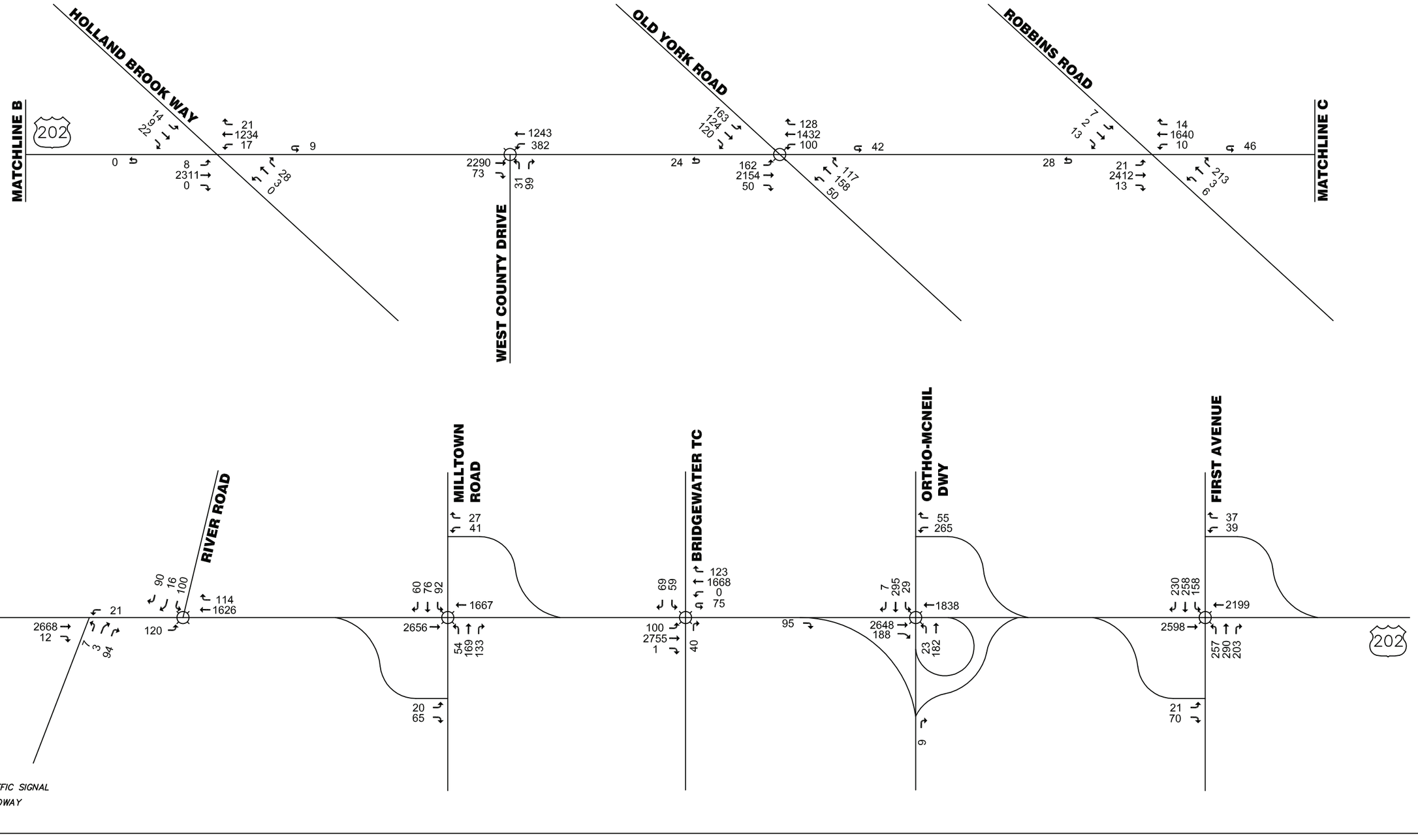


Somerset County

FIGURE 4 - 2

2008 EXISTING MORNING PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY

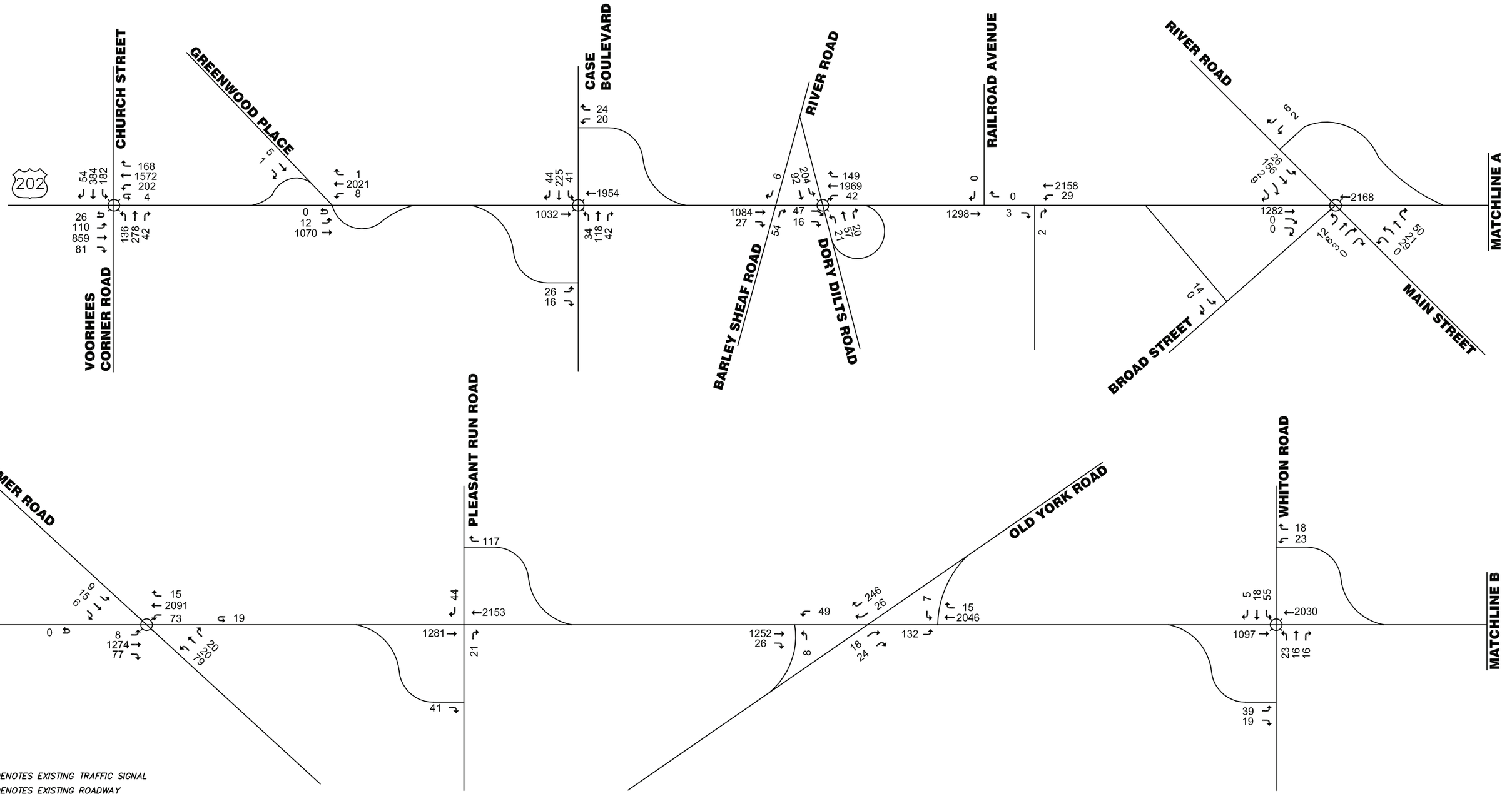


Somerset County

FIGURE 4 - 3

2008 EXISTING EVENING PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY

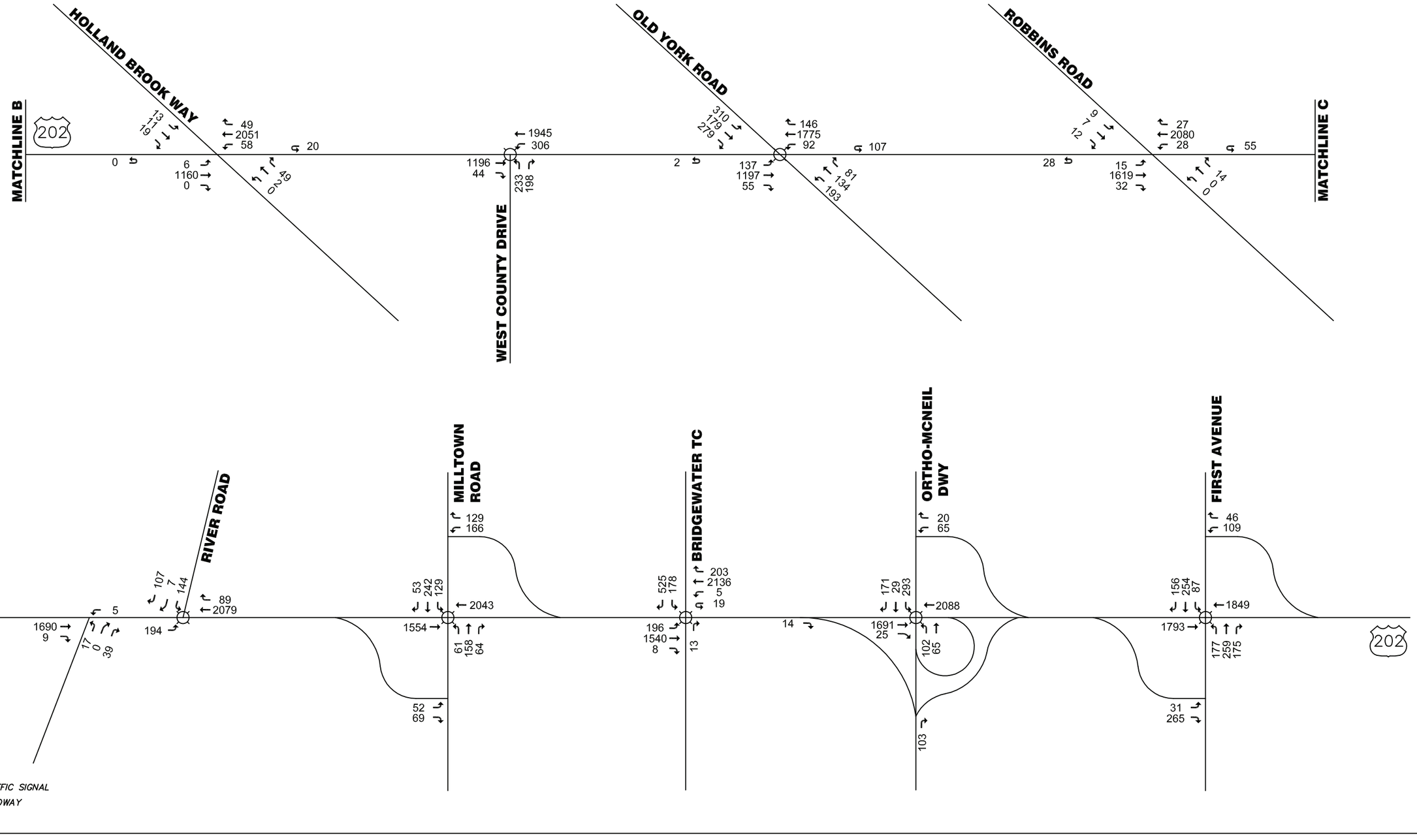


Somerset County

FIGURE 4 - 4

2008 EXISTING EVENING PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY

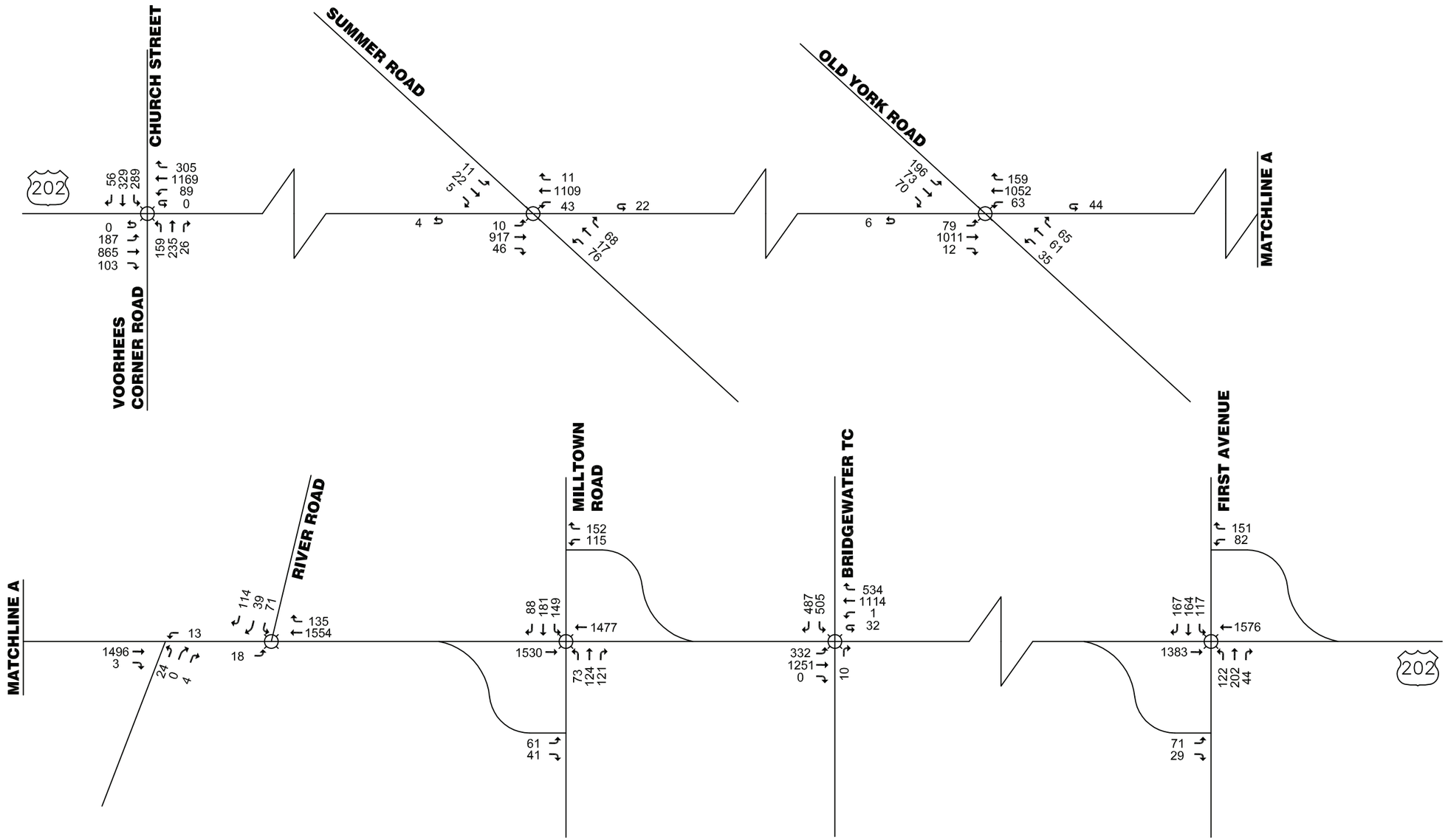


Somerset County

FIGURE 4 - 5

2008 EXISTING SATURDAY MID-DAY PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY



LEGEND:

– DENOTES EXISTING TRAFFIC SIGNAL

– DENOTES EXISTING ROADWAY

4.1.4 Noted Operational Deficiencies

In addition to the levels of service analysis, operational deficiencies were noted at a number of the study intersections. These deficiencies reduce the safety and operational efficiency of the corridor, but are difficult to quantify in relation to intersection delay or level of service. To better identify and illustrate some of these deficiencies, a simulation model for the corridor was developed using Sim-Traffic to illustrate operational deficiencies. This model will also be used in later study efforts to evaluate potential intersection improvements.

4.1.5 Corridor Wide Operational Deficiencies

Signal Coordination

Based on the timing directives provided by the New Jersey Department of Transportation, there is effectively no signal coordination along the corridor. The signals operate on multiple cycle lengths and time periods. Field observations agree with the observation that little coordination between signals is present.

Left Turn Treatments

Within the corridor, mainline (Route 202) left-turn movements are provided for with a combination of jughandle movements and center median left-turn slots. U-turn movements are also provided via a variety of methods, including advance median breaks with bulb out areas and jughandle movements. This inconsistent operation typically leads to driver confusion and the need for additional signage along the corridor.

4.1.6 Intersection Specific Operational Deficiencies

Route 202 and Church Street/Voorhees Corner Road, Raritan Township, Hunterdon County
The Route 202 and Church Street/Voorhees Corner Road intersection experiences extensive queuing on all approaches, particularly on the Route 202 southbound left turn movement.

Route 202 and Old York Road, Branchburg Township, Somerset County
The Route 202 and Old York Road (unsignalized) intersection experiences extensive queuing in both the back-to-back mainline left-turn slots and on the Old York Road approaches.

Route 202 and West County Drive (CR 646), Branchburg Township, Somerset County
During the morning peak hour in particular, the southbound left-turn movement at the intersection of Route 202 and West County Drive queues beyond the storage area, forcing left-turning vehicles to queue into the through lanes.

Route 202 and Old York Road (CR 637), Branchburg Township, Somerset County
Extensive queuing occurs on all approaches to the Route 202 and Old York Road intersection. The storage for the left-turn slots, particularly for the southbound left-turn movement, is inadequate and vehicles queue into the through lanes. There is also insufficient storage area for the U-turn movements, causing vehicles to queue in the leftmost through lane while waiting to execute a U-turn movement.

Route 202 and Milltown Road, Bridgewater Township, Somerset County
Queuing on the Milltown Road approaches routinely back up beyond the nearside jughandles, requiring drivers to rely on "courtesy gaps" to make left turns out of the jughandles during peak time periods.

Route 202 and Bridgewater Town Center Drive, Bridgewater Township, Somerset County
Considerable queuing occurs at the Bridgewater Town Center egress, particularly for the right-turn movement to Route 202 southbound. The configuration of the Bridgewater Town Center development provides a right-turn-in movement south of the signalized intersection, but traffic wishing to turn right out of the site is forced to exit via the signalized intersection.

Route 202 and the Ortho-McNeil Driveway, Raritan Township, Somerset County
The Route 202 and Ortho-McNeil Driveway does not operate in coordination with the First Avenue and Bridgewater Town Center intersections, causing additional delay and frustration for drivers on Route 202.

Route 202 and First Avenue (CR 567), Raritan Township, Somerset County
At the Route 202 and First Avenue intersection, the First Avenue approaches routinely queue beyond the nearside jughandles, forcing drivers wishing to make left turns from the jughandles to rely on "courtesy gaps" in traffic. Traffic is routinely observed making left-turn movements from the dedicated right-turn lane on the jughandles, particularly on the Route 202 southbound movement. Vehicles also routinely make a right-turn at the Route 202 southbound jughandle and turn around on First Avenue in residential and business driveways instead of waiting to make the left-turn movement.

Another problem observed at this intersection is the interaction between the westbound First Avenue right-turn movement and the driveways of the bakery located on the southeast corner of the intersection. Vehicles making the eastbound left-turn from First Avenue who then attempt to enter the bakery driveway conflict with vehicles making right turns on red from the westbound First Avenue approach.

4.1.7 Future Traffic Conditions

Anticipated Background Traffic Growth

Before establishing growth rates for use in the Route 202 Corridor Study, various existing sources were consulted to determine existing recommendations for background growth rates:

NJRTM-E Estimates

Based on information provided by the North Jersey Transportation Planning Authority (NJTPA) from the NJRTM-E (the current regional planning model), little growth is anticipated for the corridor to 2030. Based on the NJRTM-E, background growth is expected to be in the range of 0.3% to 0.5% per year.

NJDOT Access Permit Background Growth Rates

Based on the NJDOT Access Permit Annual Background Growth Rate Table, the appropriate annual growth rate for Route 202 is between 2.0% and 2.25% per year. It is important to note that this background growth table is typically used for short-term growth (up to five years).

4.1.8 2030 Projected Future Traffic Volumes

Based on this information, a short term growth rate of 2% was applied to the existing traffic volumes for the first five years of growth, consistent with the NJDOT growth rate tables. A 0.5% growth rate was applied from 2013 to 2020, and a 0.3% growth rate was applied from 2020 to 2030, both consistent with NJRTM-E estimates. The resulting combined total growth rate from 2008 to 2030 is 17.8%. This growth rate was applied to the existing peak hour volumes along the corridor to establish the 2030 future baseline volumes. These volumes are detailed in Figures 4-6 to 4-10.

4.1.9 2030 Projected Future Levels of Service

Similar to the existing conditions Level of Service analysis, the 2030 volumes were analyzed using Synchro to determine the 2030 baseline levels of service. The results are detailed in the Technical Appendix.

4.1.10 Recommended Improvements

As indicated by the intersection and operational analyses, the Route 202 corridor experiences extensive delays for both mainline Route 202 traffic and cross streets. Future traffic growth will only exacerbate these conditions. From an operational standpoint, the primary choke points along the corridor are at Church Street/Voorhees Corner Road, Old York Road (CR 637) and First Avenue. The lack of signal coordination along the corridor is also a major contributor to congestion and driver frustration.

In response to these operational deficiencies, a series of improvement concepts were developed to provide an initial vision of potential improvements to improve intersection operations throughout the corridor. These concepts pursue the long term goal of NJDOT to eliminate unsignalized median breaks along the corridor and provide for consistent left turn treatments throughout the corridor via jughandles. Descriptions of the proposed improvements by intersection are as follows, and are illustrated in the attached concept plans where appropriate (see Figures 4-11 though 4-24).

Route 202 and Church Street / Voorhees Corner Road, Raritan Township, Hunterdon County
Any improvements at the Route 202 & Church Street/Voorhees Corner Road intersection need to be designed consistent with NJDOT's South Branch Parkway initiative and the proposed redesign of the Flemington Circle. Since these initiatives are currently undergoing a re-evaluation by NJDOT, no roadway improvements are recommended at this time.

Route 202 and Greenwood Place, Raritan Borough, Hunterdon County
In conjunction with the goal to eliminate the unsignalized median breaks along the corridor, the intersection of Route 202 & Greenwood Place would need to be converted to a right-in, right-out operation, with left turns in and out accomplished via jughandle facilities located at the adjacent signalized intersections.

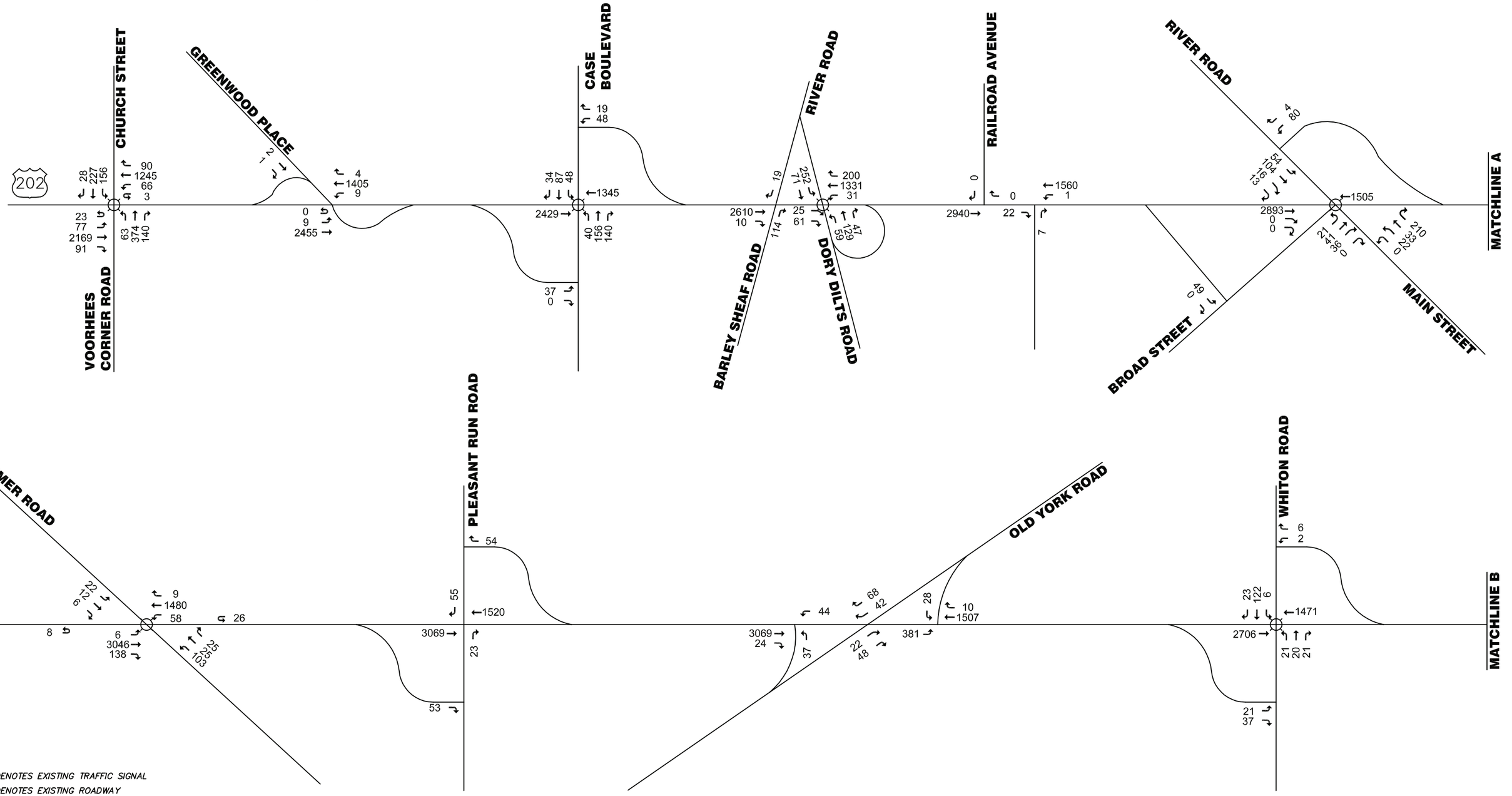
Route 202 and Dory Dilts Road / River Road, Raritan Borough, Hunterdon County
To improve intersection operations in the short term and reduce the potential for southbound rear end crashes, the southbound Route 202 left turn slot should be extended at the intersection of Route 202 and Dory Dilts / River Road. Also, to improve Level of Service operations at the intersection, the eastbound approach should be widened to provide a dedicated left turn lane and dedicated through lane. Medium and Long Term improvements at this intersection include the realignment of the adjacent Barley Sheaf Road intersection to Dory Dilts Road to eliminate the conflict points associated with having a right-in, right-out intersection in close proximity to the traffic signal. Also, in the long term, a southbound nearside jughandle should be constructed to eliminate the southbound left turn lane.

Somerset County

FIGURE 4 - 6

2030 PROJECTED FUTURE MORNING PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY

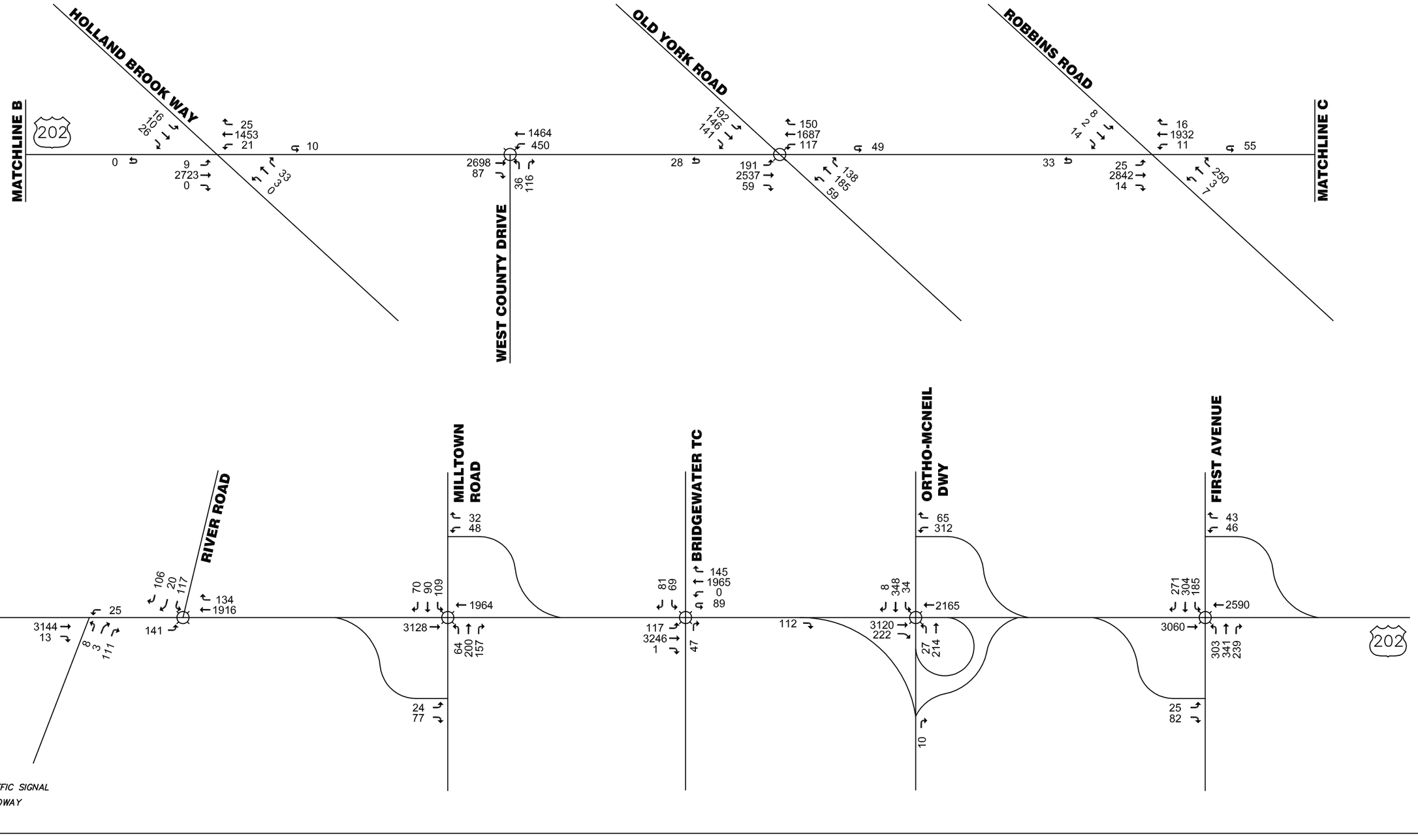


Somerset County

FIGURE 4 - 7

2030 PROJECTED FUTURE MORNING PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY

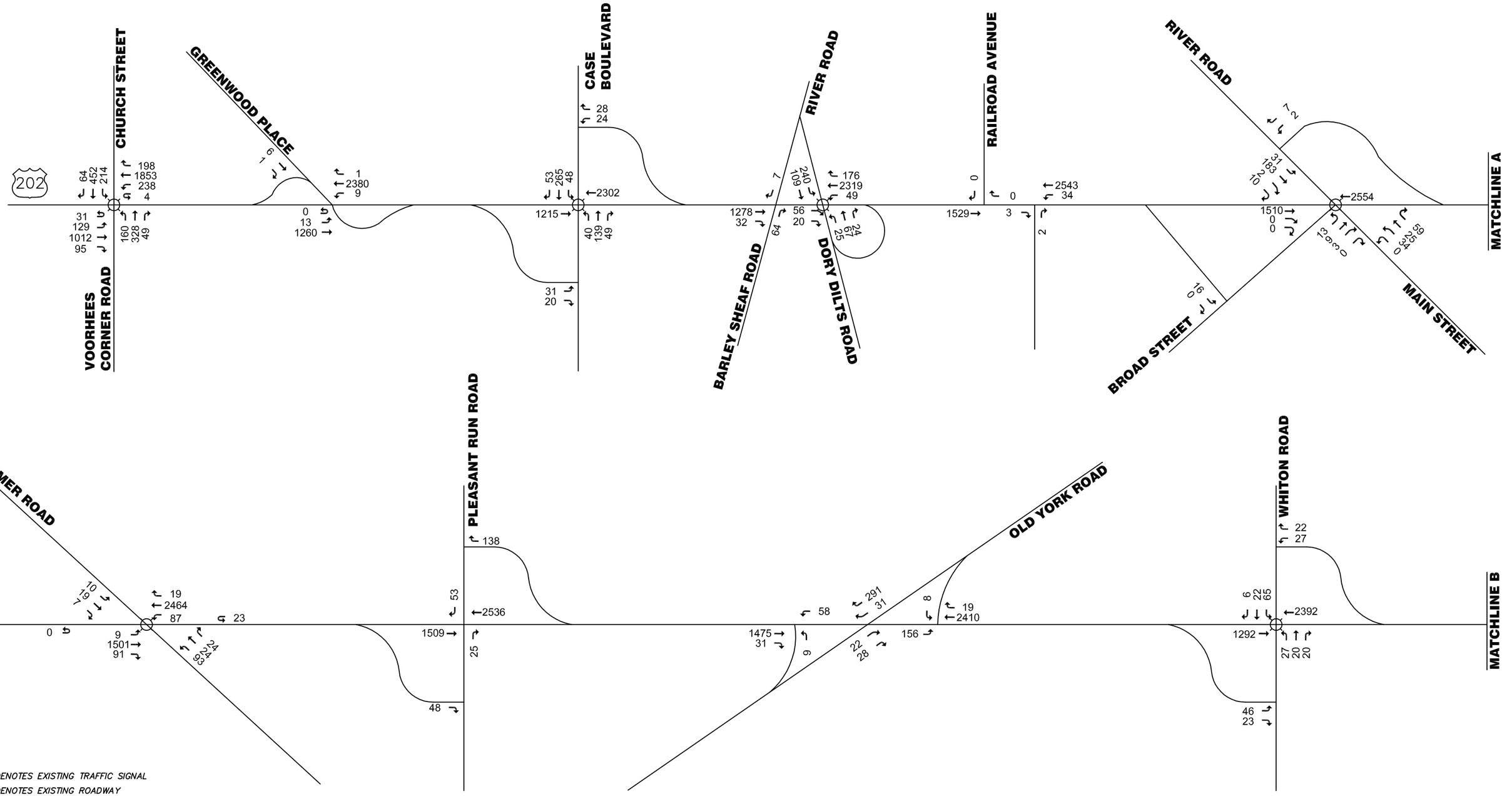


Somerset County

FIGURE 4 - 8

2030 PROJECTED FUTURE EVENING PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY

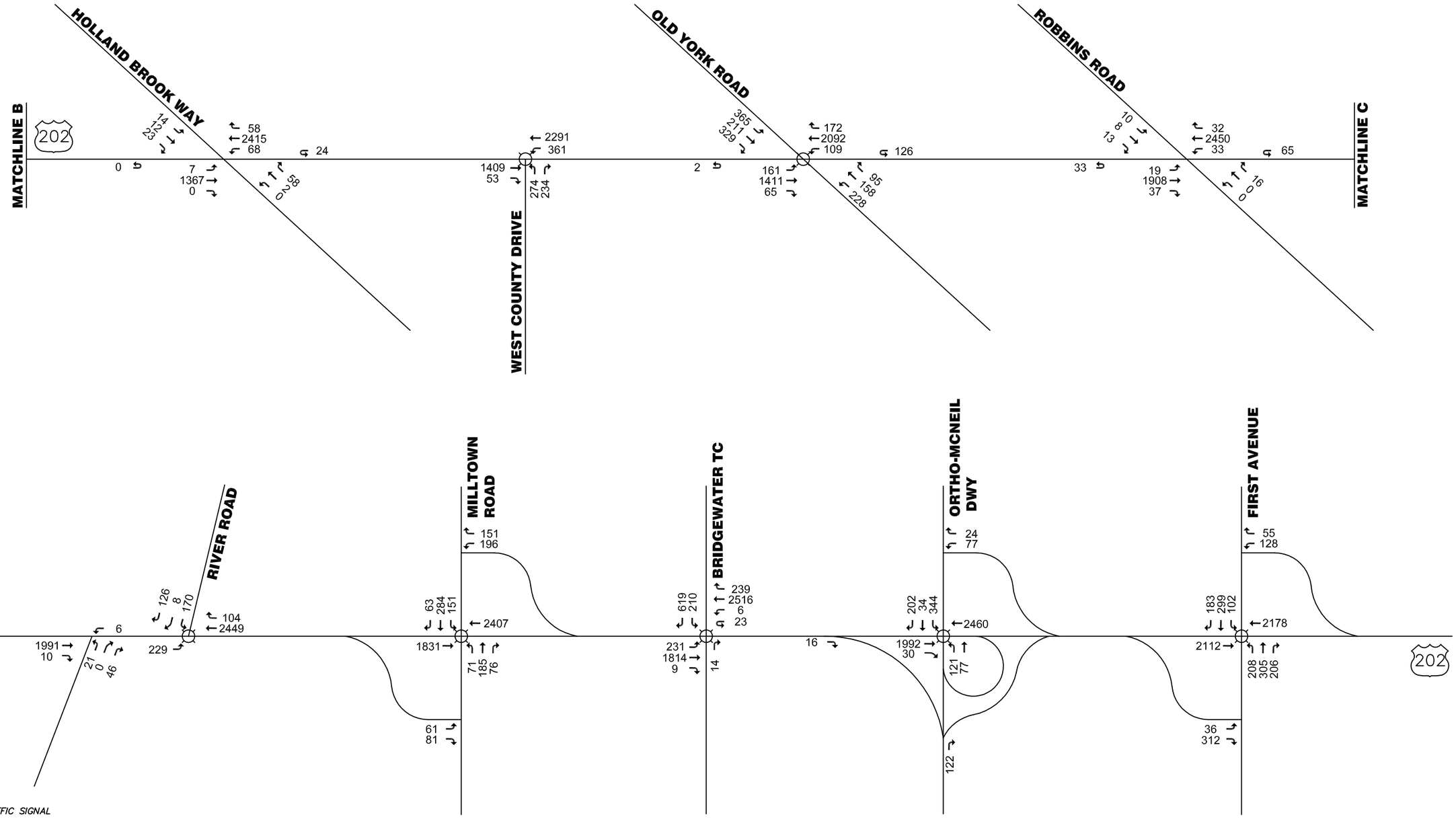


Somerset County

FIGURE 4 - 9

2030 PROJECTED FUTURE EVENING PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY

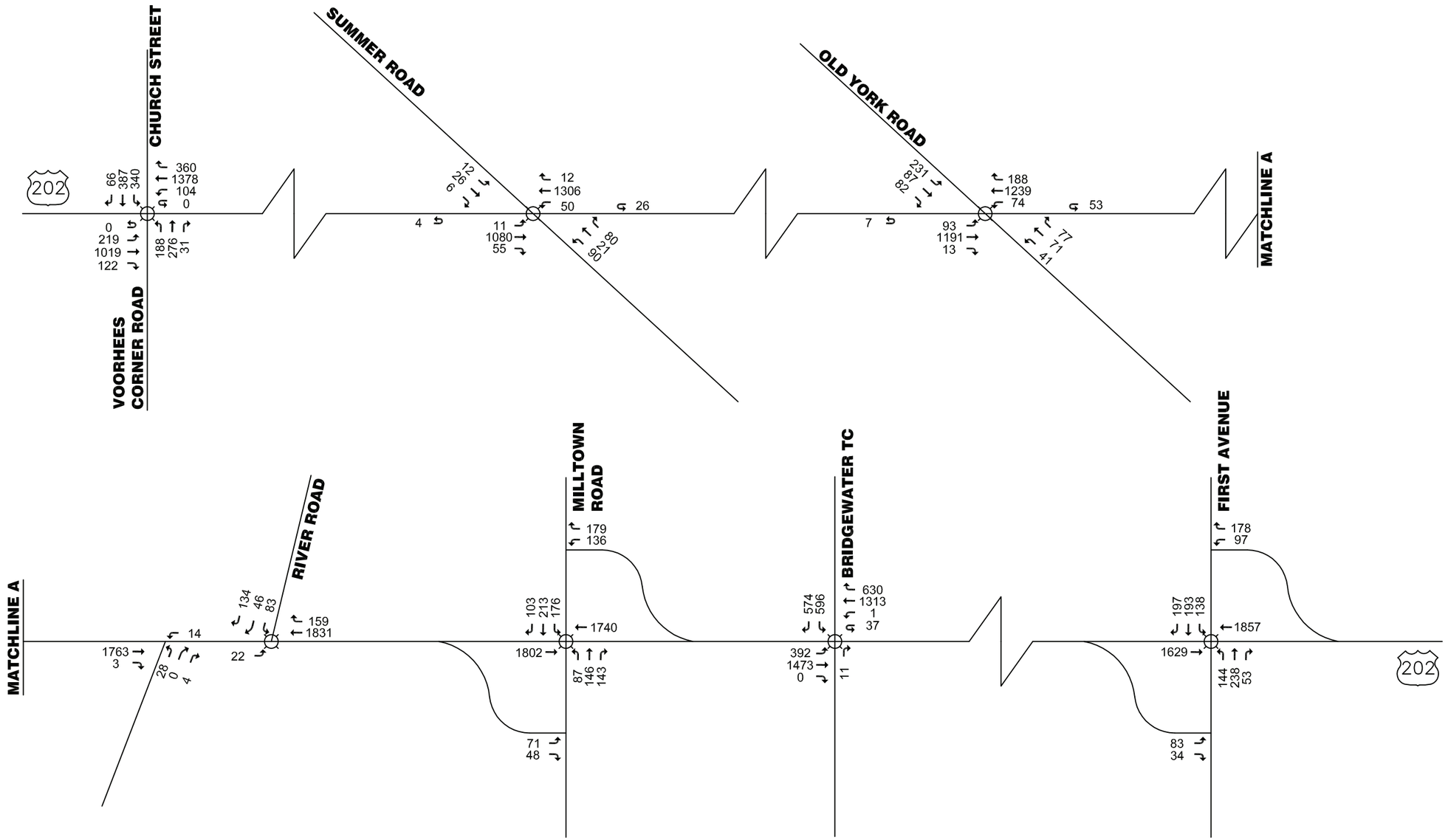


Somerset County

FIGURE 4 - 10

2030 PROJECTED FUTURE SATURDAY MID-DAY PEAK HOUR TRAFFIC VOLUMES
US ROUTE 202 CORRIDOR STUDY

RARITAN BOROUGH, BRIDGEWATER TOWNSHIP, BRANCHBURG TOWNSHIP, READINGTON TOWNSHIP & RARITAN TOWNSHIP
SOMERSET AND HUNTERDON COUNTIES, NEW JERSEY



LEGEND:

– DENOTES EXISTING TRAFFIC SIGNAL

– DENOTES EXISTING ROADWAY

DEFICIENCIES: POOR LEVELS OF SERVICE, COMPLEX SIGNAL PHASING, U & LEFT TURNS IN MEDIAN

RECOMMENDATIONS: RECONFIGURE INTERSECTION CONSISTENT WITH TREATMENTS AT THE FLEMINGTON CIRCLE AND SOUTH BRANCH PARKWAY INTERSECTIONS

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

RARITAN TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & CHURCH STREET

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-11

1" = 120'

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & GREENWOOD PLACE

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-12

1" = 100'

N

DEFICIENCIES: U & LEFT TURNS IN MEDIAN, CLOSELY SPACED INTERSECTIONS

RECOMMENDATIONS: SHORT TERM- WIDEN RIVER ROAD APPROACH
MEDIUM TERM- REDIRECT BARLEY SHEAF ROAD TO DORY DILTS ROAD
LONG TERM- ELIMINATE MEDIAN LEFT TURNS IN FAVOR OF JUGHANDLES

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

RARITAN TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & DORY DILTS ROAD

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-13

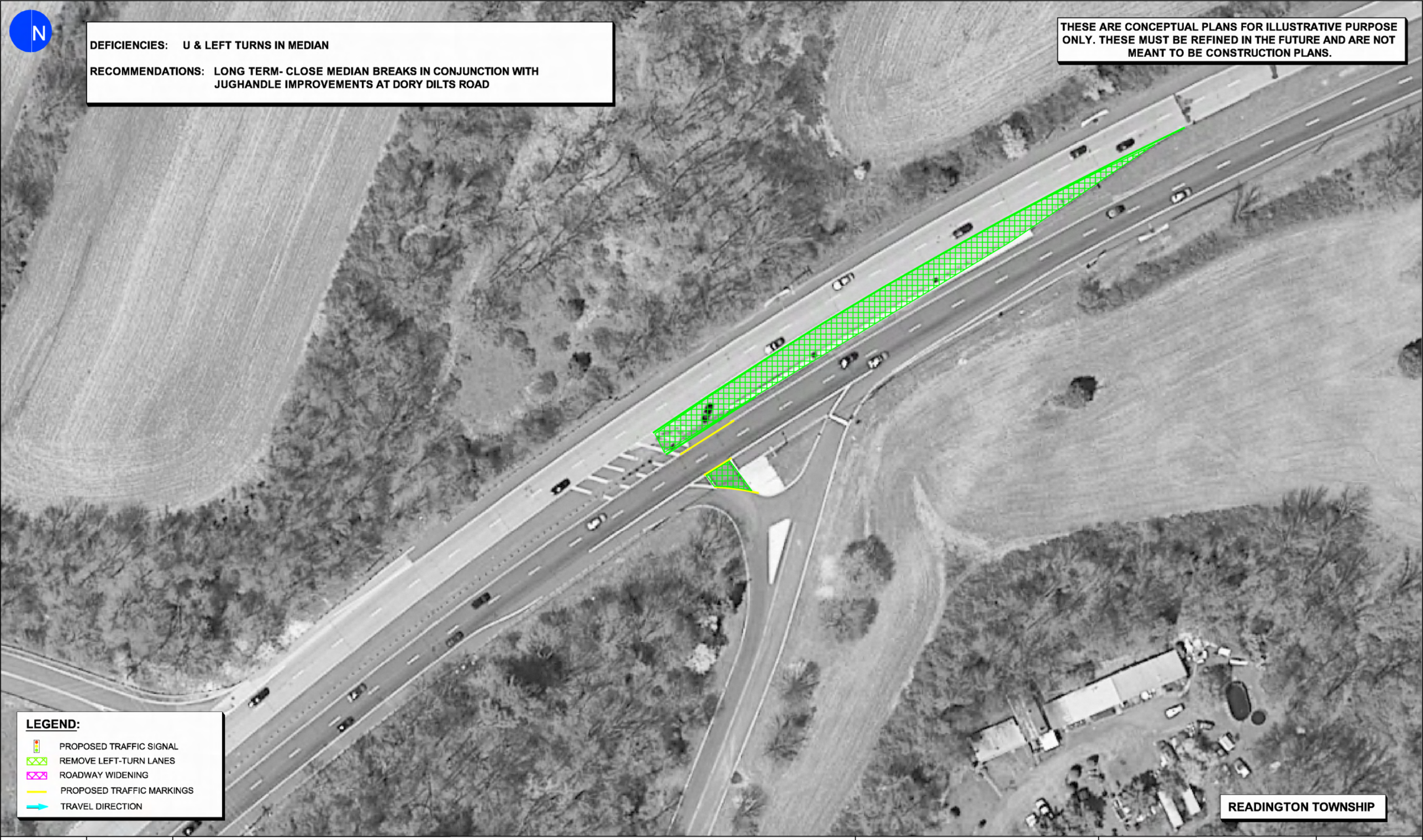
1" = 100'

N

DEFICIENCIES: U & LEFT TURNS IN MEDIAN

RECOMMENDATIONS: LONG TERM- CLOSE MEDIAN BREAKS IN CONJUNCTION WITH JUGHANDLE IMPROVEMENTS AT DORY DILTS ROAD

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.



LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & RAILROAD AVENUE

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-14

1" = 100'

N

DEFICIENCIES: U & LEFT TURNS IN MEDIAN

RECOMMENDATIONS: SHORT TERM- EXTEND U & LEFT TURN STORAGE
LONG TERM- ELIMINATE MEDIAN LEFT TURNS IN FAVOR OF JUGHANDLES

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

READINGTON TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & SUMMER ROAD

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-15

1" = 100'

N

DEFICIENCIES: POOR LEVEL OF SERVICE, HIGH CRASH LOCATION

RECOMMENDATIONS: MEDIUM TERM- RECONFIGURE & SIGNALIZE INTERSECTION

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

BRANCHBURG TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & OLD YORK ROAD (SOUTH)

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-16

1" = 100'

N

DEFICIENCIES: U & LEFT TURNS IN MEDIAN

RECOMMENDATIONS: SHORT TERM- EXTEND U & LEFT TURN STORAGE
LONG TERM- SIGNALIZE AND ELIMINATE MEDIAN LEFT TURNS IN FAVOR OF JUGHANDLES

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

BRANCHBURG TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & HOLLAND BROOK ROAD

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-17

1" = 100'

N

DEFICIENCIES: POOR LEVELS OF SERVICE, LEFT TURNS IN MEDIAN

RECOMMENDATIONS: LONG TERM- ELIMINATE MEDIAN LEFT TURNS IN FAVOR OF JUGHANDLES. INSTALL NORTHBOUND NEARSIDE JUGHANDLE WITH COMPLETION OF WEST COUNTY DRIVE

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

BRANCHBURG TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & WEST COUNTY DRIVE

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-18

1" = 100'

N

DEFICIENCIES: POOR LEVELS OF SERVICE, COMPLEX SIGNAL OPERATION, U & LEFT TURNS IN MEDIAN

RECOMMENDATIONS: SHORT TERM- EXTEND U & LEFT TURN STORAGE
LONG TERM- RECONFIGURE INTERSECTION TO PROVIDE TWO WAY JUGHANDLES AND REDUCE SIGNAL TO A TWO PHASE OPERATION

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

BRANCHBURG TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & OLD YORK ROAD (NORTH)

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-19

1" = 120'

N

DEFICIENCIES: U & LEFT TURNS IN MEDIAN

RECOMMENDATIONS: SHORT TERM- EXTEND U & LEFT TURN STORAGE
LONG TERM- REDUCE/ELIMINATE MEDIAN BREAKS IN CONJUNCTION WITH OLD YORK ROAD AND RIVER ROAD IMPROVEMENTS

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

BRANCHBURG TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & ROBBINS ROAD

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-20

1" = 100'

N

DEFICIENCIES: U & LEFT TURNS IN MEDIAN

RECOMMENDATIONS: LONG TERM- RELOCATE SIGNAL TO PROVIDE JUGHANDLES FOR U TURN MOVEMENTS
CONSIDER ALTERNATIVE PARK-N-RIDE LOT LOCATIONS

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

BRANCHBURG TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & RIVER ROAD

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-21

1" = 125'

N

DEFICIENCIES: JUGHANDLES TOO CLOSE TO SIGNAL

RECOMMENDATIONS: MEDIUM TERM- RECONFIGURE JUGHANDLES TO PROVIDE ADDITIONAL STORAGE

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

BRIDGEWATER TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & MILLTOWN ROAD

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-22

1" = 150'

N

DEFICIENCIES: INCOMPLETE ACCESS SYSTEM, LEFT TURNS IN MEDIAN

RECOMMENDATIONS: SHORT TERM- RESTRIPE TOWN CENTER DRIVE APPROACH TO BETTER ACCOMODATE RIGHT TURNS
MEDIUM TERM- COMPLETE ACCESS RAMPS
LONG TERM- ELIMINATE MEDIAN LEFT TURN LANES IN FAVOR OF JUGHANDLES

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

BRIDGEWATER TOWNSHIP

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & TOWN CENTER DRIVE

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-23

1" = 150'

N

DEFICIENCIES: POOR LEVELS OF SERVICE, JUGHANDLES TOO CLOSE TO SIGNAL, COMPLEX SIGNAL OPERATION

RECOMMENDATIONS: MEDIUM TERM- RELOCATE/RECONFIGURE JUGHANDLES TO PROVIDE ADDITIONAL STORAGE. RECONFIGURE INTERSECTION TO PROVIDE TWO WAY JUGHANDLES AND REDUCE SIGNAL TO A TWO PHASE OPERATION. WIDEN ROUTE 202 TO PROVIDE A THREE LANE SECTION THROUGH THE INTERSECTION

THESE ARE CONCEPTUAL PLANS FOR ILLUSTRATIVE PURPOSE ONLY. THESE MUST BE REFINED IN THE FUTURE AND ARE NOT MEANT TO BE CONSTRUCTION PLANS.

LEGEND:

- PROPOSED TRAFFIC SIGNAL
- REMOVE LEFT-TURN LANES
- ROADWAY WIDENING
- PROPOSED TRAFFIC MARKINGS
- TRAVEL DIRECTION

RARITAN BOROUGH

ROUTE 202 CORRIDOR ASSESSMENT & MULTI-MOBILITY PLAN

Route 202 Conceptual Intersection Improvements

Somerset and Hunterdon Counties, New Jersey

ROUTE 202 & FIRST AVENUE

THE Louis Berger Group, INC.
412 Mount Kemble Ave
Morristown, NJ 07962

FIGURE: 4-24

1" = 100'

Route 202 and Railroad Avenue, Readington Township, Hunterdon County
In conjunction with the goal to eliminate the unsignalized median breaks along the corridor, the southbound left turn at the intersection of Route 202 & Railroad Avenue would need to be eliminated and traffic redirected to Dory Dilts Road to execute a U-turn. This closure will need to be coordinated with the construction of the southbound jughandle at Dory Dilts Road to ensure access to Railroad Avenue is maintained.

Route 202 and Summer Road, Readington Township, Hunterdon County
In the short term, the left/U-turn storage should be extended for both the northbound and southbound approaches at the intersection of Route 202 and Summer Road to reduce the potential for rear end crashes from vehicles queuing in the through lanes waiting to make turn movements. In the long term, elimination of the left turn lanes on Route 202 in favor of jughandles could be accomplished by constructing a southbound farside jughandle and a northbound nearside jughandle.

Route 202 and Old York Road, Branchburg Township, Somerset County
Due to the high propensity of right angle crashes at this intersection, signalization of the intersection is recommended in conjunction with the construction of a series of far side jug handles to accommodate left turn movements.

Route 202 and Holland Brook Road, Branchburg Township, Somerset County
In conjunction with the goal to eliminate the unsignalized median breaks along the corridor, the intersection of Route 202 and Holland Brook Road should be further evaluated for either conversion to right-in, right-out intersections or signalization in conjunction with the construction of a series of nearside jughandles if it is determined that U-turn facilities are still required at the intersection.

Route 202 and West County Drive (CR 646), Branchburg Township, Somerset County
In the short term, the southbound left turn slot at the intersection of Route 202 and West County Drive should be extended to minimize the potential for rear end crashes since the left turn slot typically queues into the left through lane. Long term improvements to this intersection should include the construction of a series of jughandles to accommodate turning movements in conjunction with the completion of West County Drive west of Route 202 to Old York Road.

Route 202 and Old York Road (CR 637), Branchburg Township, Somerset County
In the short term, the Route 202 left/U-turn lanes at the intersection of Route 202 and Old York Road should be extended to minimize the potential for rear end crashes since the left/U-turn lanes routinely block the through lanes. In the long term, the intersection should be reconfigured to simplify the signal operation by creating a series of two-way jughandles to accommodate left-turn movements on both Route 202 and Old York Road, allowing the signal to operate as a two-phase operation.

Route 202 and Robbins Road, Branchburg Township, Somerset County
In the short term, the Route 202 left/U-turn lanes at the intersection of Route 202 and Robbins Road should be extended to minimize the potential for rear end crashes since vehicles waiting to make a U-turn movement block the through lanes. In conjunction with jughandle improvements at the adjacent intersections, the intersection should be evaluated for conversion to right-in, right-out controls in the long term. While signalization is still a potential option, it was not recommended due to the acquisition of developed properties that would be required to accommodate jughandles.

Route 202 and River Road, Branchburg Township, Somerset County
In conjunction with the goal to eliminate median left turns along the corridor, the intersection of Route 202 and River Road is recommended to be reconstructed to the north in an area where property acquisitions for the

necessary jughandles would not require takings of developed properties. One potential concept is to utilize the existing park and ride lot to accommodate a farside jughandle, although a satisfactory alternative park and ride site would need to be found. Southbound U-turn movements would be accomplished using the existing River Road intersection and a connector road between Route 202 and River Road.

Route 202 and Milltown Road, Bridgewater Township, Somerset County
To increase the operational efficiency of the jughandle system at the intersection of Route 202 and Milltown Road, the intersections of the jughandle system with Milltown Road should be relocated farther away from the Route 202 and Milltown Road signal. For southbound traffic, the existing nearside jughandle would remain for right-turn movements only, and the southbound left-turn movement would be accomplished via a farside jughandle. The northbound nearside jughandle would be relocated farther away from the intersection to improve operations as well.

Route 202 and Bridgewater Town Center Drive, Bridgewater Township, Somerset County
In the short term, the Town Center Drive egress should be restriped to provide a single left-turn lane and a double right-turn lane at the intersection of Route 202 and Town Center Drive. In the medium term, to improve operations at the Route 202 and Town Center Drive intersection, a right-turn-in driveway should be constructed north of the signalized intersection and a right-turn-out driveway constructed south of the signal, thus reducing the number of vehicles required to utilize the signal to enter/exit the property. In the long term, a northbound nearside jughandle should be constructed to allow the elimination of the northbound Route 202 left-turn lanes.

Route 202 and the Ortho-McNeil Driveway, Raritan Township, Somerset County
In the immediate term, the timing at the intersection of Route 202 and the Ortho-McNeil Driveway should be reviewed to insure coordination with the traffic signals on either side of the intersection.

Route 202 and First Avenue (CR 567), Raritan Township, Somerset County
As a short-term improvement, a flashing "Red Signal Ahead" sign should be considered for northbound Route 202 in advance of the First Avenue intersection, to better inform drivers of the approaching traffic signal, given the vertical crest on Route 202 northbound in advance of the First Avenue intersection. As a medium- to long-term improvement, to simplify the operation of the traffic signal operation at the intersection of Route 202 and First Avenue, the left-turn movements at First Avenue should be eliminated by relocating and reconfiguring the existing jughandles to accommodate two-way flow. The southbound jughandle would be relocated farther away from the traffic signal to accommodate additional storage. In conjunction with this improvement, widening Route 202 to three through lanes in each direction is recommended to provide additional through capacity on Route 202.

4.2 ITS RECOMMENDATIONS

Intelligent Transport Systems (ITS) is an umbrella term for a range of technologies, including processing, control, communication and electronics, that are applied to a transportation system such as Route 202 Corridor. It also includes an advanced approach to traffic management. The term *intelligent transportation system* (ITS) refers to efforts to add information and communications technology to transport infrastructure and vehicles in an effort to manage factors that typically are at odds with each other, such as vehicles, loads and routes to improve safety and reduce vehicle wear, transportation times and fuel consumption.

Interest in ITS comes from the problems caused by traffic congestion and a synergy of new information technology for simulation, real-time control and communications networks. Traffic congestion has been increasing worldwide as a result of increased motorization, urbanization, population growth and changes in population density. Congestion reduces efficiency of transportation infrastructure and increases travel time, air pollution and fuel consumption.

Intelligent transportation systems vary in technologies applied, from basic management systems such as car navigation; traffic signal control systems; container management systems; variable message signs; automatic number plate recognition or speed cameras to monitoring applications, such as security CCTV systems; and to more advanced applications that integrate live data and feedback from a number of other sources, such as parking guidance and information systems; weather information; bridge deicing systems; and the like. Additionally, predictive techniques are being developed in order to allow advanced modeling and comparison with historical baseline data. Some of the constituent technologies typically implemented in ITS are described in the following sections.

As a part of the Route 202 Study, the Study Team coordinated its efforts with the New Jersey Department of Transportation and its staff at the Traffic Operations North. A number of ITS measures were proposed for the Study Corridor. These measures include the following:

- Traffic signal systems along the Corridor should be coordinated using communications between controllers to move through traffic more efficiently. This can easily be implemented by developing a signal optimization model that would provide signal offsets between adjacent intersections based on desired travel speed. Signal bandwidth along Route 202 should be maximized and a fully responsive signal system should be installed. It was noted during various community outreach efforts that detection at several intersections is not working. NJDOT should verify this and take corrective actions, as necessary.

- Use of advanced driver information signs, such as the Variable Message Signs (VMS) north of the Somerville Circle and south of Flemington Circle advising motorists on the travel conditions along Route 202 would provide real-time travel information. This information can be used by the motorists to seek alternative routes such as Route 31, Route 22, I-78, etc.

- Cameras can be installed at critical locations that experience delays and safety concerns along the corridor to facilitate incident management for NJDOT and local police. Currently, there is only one such camera at the Somerville Circle.

- Additional, "Red Signal Ahead" signs can be provided as discussed in previous sections of the report, where stopping sight distance is limited for motorists. These signs will have communication with adjacent intersections and provide adequate time for motorists to stop at a red light.

- An Incident Management Task Force should be created for the Route 202 Corridor. Working with NJDOT's Traffic Operation Center and the various local first responders (police, fire, EMS), the Counties should develop an Incident Management Plan for the corridor in order to minimize delays created by various incidents that disrupt travel along this critical roadway.

5.0 TRANSIT AND TRAVEL DEMAND MANAGEMENT CONDITIONS AND STRATEGIES

This section describes current transit services and facilities as part of a bi-county assessment of travel conditions along the Route 202 transportation corridor. Public Transit service within the Route 202 Study Area consists of a combination of local bus, commuter bus and commuter rail operations. Local bus operations within the Study Area connect area residents to key trip destinations (e.g., major employers, shopping centers and other commercial concentrations, etc.), and to train stations, park and ride lots or other bus transit nodes. Commuter bus services operate primarily between pick-up points in the Study Area and destinations in Lower and Midtown Manhattan in New York City. Commuter rail operations connect the Study Area to major employment centers such as Newark, Hoboken and New York City. All modes collectively form an interconnected transit network, with the connections more frequent and convenient in the northern portions of the Study Area.

5.1 MULTI-MODAL TRANSIT SERVICES IN THE CORRIDOR

Somerset County comprises the northeastern part of the Study Area and is served primarily by NJ TRANSIT (NJT) bus and rail lines. While there is limited NJT service in Hunterdon County, consisting of some service along the Raritan Valley Rail Line and a mini-bus service along US Highway 22, NJT "Wheels 884", Hunterdon County itself provides extensive service through "The LINK" system. There are also some existing private commuter routes operated by Trans-Bridge Lines and others for commuters traveling out of the two counties to Newark and New York City. The Trans-Bridge Lines commuter bus route from Doylestown, PA travels through the Route 202 Corridor. Several other bus routes also intersect or travel on Route 202 for shorter distances. Figure 5-1 shows existing transit facilities (NJ TRANSIT Raritan Valley Line, freight rails, NJDOT's Park and Rides, and Bus Routes) within the US Route 202 Corridor Study Area.

Commuter rail service in the Study Area is operated by NJT. There are nine commuter rail stations on the Raritan Valley Line located within Hunterdon and Somerset Counties. There are five New Jersey Department of Transportation (NJDOT) Park and Ride facilities in Somerset County and six in Hunterdon County within a relatively short distance of US Route 202. These Park and Rides are used by commuters who park their vehicles to take the railroad or to take one of the commuter buses making stops at or close to these facilities. Additional parking facilities, operated by either NJT or the Counties, are found at each commuter rail station.

Freight rail service is also in operation within the Study Area. Freight rail lines operated by Conrail Railroad cut across US Route 202 in Bridgewater Township, Somerset County. Rails operated by Norfolk Southern and Black River and Western Railroads cross US Route 202 in Readington Township, Hunterdon County.

5.2 EXISTING RAIL TRANSIT

NJ TRANSIT (NJT) Passenger Rail Service: Rail Passenger Service in the Route 202 Study Corridor is provided only by NJ TRANSIT's Raritan Valley Line (RVL). Other commuter rail service in Somerset County is provided by the Gladstone Branch of the Morris-Essex Line, which runs parallel to Route 202 in the northeastern section of the county. Railroad service has a major impact on the Route 202 transportation corridor simply by the volume of vehicular traffic traveling to and from railroad stations located on or close to this highway. The Raritan Valley Line has about 23,250 average weekday riders.[1]

[1] New Jersey Transit, Quarterly Ridership Trends Report Fourth Quarter, September 2008.

High Bridge
HIGH BRIDGE BORO
Annandale
Annandale Square Park & Ride
LEBANON BORO
Lebanon
CLINTON TOWN
Clinton Twp. Park & Ride
CLINTON TWP
TEWKSBURY TWP
Oldwick/Clinton Pointe Park & Ride
I-78
BEDMINSTER TWP
FAR HILLS BORO
BERNARDS TWP
White House
NJT Raritan Valley Line
Conrail Railroad
North Branch
31
206
202
22
BRIDGEWATER TWP
HUNTERDON
READINGTON TWP
FRANKLIN TWP
Norfolk Southern Railroad
Branchburg Park & Ride
RARITAN BORO
Raritan
BRANCHBURG TWP
Somerville
Somerville Park & Ride
Finderne
Bridgewater
BOUND BROOK
SOUTH BOUND BROOK BORO
RARITAN TWP
MANVILLE BORO
Norfolk Southern Railroad
CSX Railroad
HILLSBOROUGH TWP
FLEMINGTON BORO
Liberty Village Park & Ride
Hillsborough Park & Ride
MILLSTONE BO
EAST AMWELL TWP
SOMERSET

Legend

- Park and Ride
- NJT Railroad Stations
- Somerset CAT Bus Route
- Wheels 884 Bus Route
- Hunterdon LINK Route 3
- TBL Doylestown-NYPA
- TBL Allentown-NYPA
- US Route 202 Corridor
- NJT Raritan Valley Line
- Freight Rail Lines
- Roads
- County Line
- NJ Highlands Boundary
- US Route 202 Study Area Boundary
- Municipal Boundaries
- Other NJ Counties

N

0 0.5 1 2 3 Miles

US Route 202
Corridor Assessment and Multi-Mobility Plan

FIGURE 5-1
Existing Transit Facilities

THE Louis Berger Group, INC.
CHPlanning
Radin Consulting, Inc. RCI
The RBA Group

NJT operates commuter rail service into Somerset and Hunterdon Counties along its Raritan Valley Line. The NJT Raritan Valley Line shares track space (along the shared assets lines) with the Conrail Freight Railroad. The RVL crosses (via an overpass) Route 202 right after its northward turn and just before reaching Milltown Road (around milepost 22.5) on its journey between the Raritan Station and the North Branch Station. This passenger rail service operates from Newark Penn Station/New York Penn Station (NPS/NYPS) to the western terminus at High Bridge, just north of Clinton in Hunterdon County. These 9 passenger railroad stations located in the two counties are of greater significance mainly because of their proximity to the Route 202 Corridor and the rail service offered. Table 5-1 identifies the station stops in the Study Area and their proximity in miles to the Route 202 Corridor. Table 5-2 contains information on the location, number of lots (parking facilities), existing capacity and operation at each station.

Table 5-1
Location of Raritan Valley Line Railroad Stations and Proximity to Route 202 Study Corridor

NJ TRANSIT Passenger Rail System - Raritan Valley Line		
Railroad Statio	**Location**	**roximity to US Route 202 distance in miles)**
omerset County		
ound Brook	Main Street at foot of Hamilton Street; 1/2 mile from Route 18	.28
ridgewater	ast Main Street and Cole Drive	.11
omerville	Urban Drive at foot of Division Street; 1 block west of South Bridge Stree	.04
aritan	Between Thompson Street and Anderson Street, Raritan Borough.	.25
orth Branch	iver Road and Station Road; 1 mile south of Route 22 in Branchburg ownship.	.50
unterdon County		
hitehouse	Main Street; 1/2 mile south of Route 22	.90
ebanon	herry and Central Avenue; 1/2 mile south of Route 22	.84
nnandale	nd of Main Street; North of I-78 and Route 22	.15
igh Bridge	Central Avenue and Bridge Street	0.8

Source: NJ TRANSIT.

The study area's commuter rail service on the Raritan Valley Line is limited to the frequency of trains arriving and departing from the nine above-mentioned train stations. Over a seven-day week, there are a total of 45 eastbound and 45 westbound (including trains added during adjusted service) passenger trains traveling to and from these stations. Train service on this line runs between High Bridge and Newark Penn Station/New York Penn Station (NPS/NYPS). Generally, trains operate at scheduled times between 4:45 A.M. and 2:05 A.M. (next day). Arrival and departure frequency varies depending on whether it is A.M., Peak, P.M. or Late Night hours. The period designation is dependent on the departure time of each train.

For eastbound trains traveling to NPS/NYPS from High Bridge/Raritan, the A.M. period is from 4:45 A.M. until 11:49 A.M.. The A.M. Peak Period is from 6:00 A.M. until 8:28 A.M.. The P.M. Period is from 12:49 P.M. until 11:46 P.M.. For westbound trains traveling from NYPS/NPS to Raritan/High Bridge, the A.M. period is from 5:38 A.M. until 11:37 A.M.. The P.M. Period is from 12:37 P.M. until 12:42 A.M. (next day). The P.M. Peak Period is from 4:17 P.M. until 6:47 P.M.. It should be noted that the trip from NYPS to High Bridge takes approximately two hours and therefore the period designation are staggered relative to real time, depending on the station location. For example, an eastbound train leaving the Raritan station at 7:43 A.M. (during the A.M. Peak) would reach NPS after the last scheduled A.M. Peak train departs. Likewise, a westbound train departing from NYPS during the P.M. Peak period at 6:47 P.M. would reach High Bridge at 8:42 P.M.. The two trips in the example would still be considered 'Peak' period operation. Late night service is trips made after the P.M. Peak period and

Table 5-2
Raritan Valley Line Park and Ride Facilities
Existing Capacity and Operation at Each Railroad Station

RVL Railroad Station			Existing Parking							
Station	Lots #	Location	# of Parking Spaces		Hours of Operation*				Parking Fees	Parking Type
			Standard	ADA	Evenings	Nights	Weekend	On Street	Resident/Non-Resident	Resident/Non-Resident
Whitehouse	1	Main St.	75	2	Free(2)	Allowed	Free	Short Term Limits	No	No Fee
Lebanon	1	Railroad Ave. & Central Ave.	15	0	Free	Allowed	Free	Allowed	No	No Fee
Annandale	1	Main St & East St.	77	0	Free	Not Allowed	Free	Allowed	No	No Fee
High Bridge	1	No Main St.	43	2	Free	$35	Free	Allowed	No	No Fee
North Branch	1	Station Rd.	40	0	Free	Free	Free	Allowed	No fees	
Raritan	1	Thompson St.	142	3	Free after 8:00 P.M.	Free	Free	Short Term Limits	$3/day; $40/mth	Daily & Permit
	2	Railroad Ave. & Thompson St.	46	0					$40/mth	Permit Only
	3		42	0					$40/mth	Permit Only
	4	Anderson St.	28	0					$3/day;	Daily
	5	Thompson St.	30	0					$40/mth	Permit Only
Somerville	1	Veterans Memorial Dr. & Bridge St.	260	7	Yes (Must pay)	Allowed	Free	Not Allowed	$35/mth	Permit Only
	2		156	0					$3/day	Daily
Bridgewater	1	East Main St. & Cole Dr.	467	7				Not Allowed	$4/day; $150/Qtr	Daily & Permit
Bound Brook	1	East Main St.	103	2	Permit Only	Allowed	Permit Required	Short Term Limits	$30/mth	Permit
	2		102	1					$2/day; $30/mth	Daily & Permit
	3		70	0	Yes (Must pay)		Must Pay		$2/day	Daily

1. Hours of Operation indicate the periods when parking is permitted and if there are any associated parking regulations.
2. Free indicates that parking is permitted at no cost.
3. Allowed indicates that parking is permitted but there may be conditions.

Source: NJ TRANSIT

very early morning service. There are a lot of hourly departures but for the most part, wait times can be as short as 15 minutes during Peak hours to as long as two hours during P.M. or Late Night hours. Most westbound trains run on a schedule that permits them to depart earlier than the time posted.

There are 28 scheduled eastbound trains traveling from the Study Area to NPS/NYPS, 15 trains in the A.M. (including eight A.M. Peak) and 13 trains in the P.M. departures. There are 27 scheduled westbound trains traveling from NYPS/NPS to the Study Area, 9 A.M. and 18 P.M. (including 7 P.M. Peak) daily Monday to Friday. Additional service (up to three trains) is added as part of regular schedule adjustments. The majority of commuter rail service originates and terminates at the Raritan Railroad Station in Somerset County. The majority of service (23 eastbound and 20 westbound trains) occurs between the A.M. and P.M. Peak periods.

On weekends and holidays, 17 eastbound (six A.M. and 11 P.M.) and 18 westbound (5 A.M. and 13 P.M.) passenger trains travel to and from the terminus at the Raritan Station. There is no service west of the Raritan stop. Train service to and from NPS/NYPS runs every hour between 6:18 A.M. and 2:10 A.M. (next day). During schedule service adjustments, weekend service operates between Raritan and Newark Penn Station only. For Hoboken service, transfers must be made to and from PATH trains at Newark. The first weekend train to Newark departs Raritan at 6:18 A.M.. The last train to Raritan departs Newark at 1:05 A.M. each day. Schedule adjustments for Major Holidays-Weekend service run on New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas.

NJT operates limited rail service to and from Hunterdon County along its Raritan Valley Line. Service operates between Newark Penn Station and High Bridge, as well as to numerous points in between. From Newark Penn Station, connections can be made to New York City and other NJT rail lines, PATH service, Amtrak and local bus and subway service in Newark. Four stations along the Raritan Valley Line are located in Hunterdon County. They are: High Bridge, Annandale (Clinton Township), Lebanon (Lebanon Borough), and Whitehouse (Readington Township). Average daily boardings between 1999 and 2007 at these four stops are approximately about 252 (see Table 3). This is projected to increase by approximately 5% by the end of 2008 to around 269.

The nine eastbound trains departing High Bridge and travelling to NPS/NYPS serve all four Hunterdon County stations Monday through Friday. There are six A.M. trains, departing at 4:55 A.M., 5:51 A.M., 6:19 A.M., 6:46 A.M., 7:15 A.M., and 8:51 A.M.. There are three P.M. trains, departing at 1:21 P.M., 3:10 P.M. and 4:42 P.M.. Westbound service from NYPS/NPS is provided to all four stations ten times daily. Trains arrive in High Bridge, the final stop along the Raritan Valley Line, at 8:37 A.M., 12:42 P.M., 2:42 P.M., 4:28 P.M., 6:17 P.M., 6:56 P.M., 8:42 P.M., 9:42 P.M., 10:38 P.M. and 12:32 A.M.. During schedule adjustments, there are two additional westbound arrivals, at 7:44 P.M. and 7:59 P.M.. Times shown in italics are for Peak period trains. No weekend service is provided to the Hunterdon County stations. One afternoon and one evening westbound train is added from Newark to the Hunterdon County train stations for the Thanksgiving and Christmas holidays.

Within the Study Area, the bulk of the passenger railroad service on the RVL is provided to four of the five stations in Somerset County, two of which, the Raritan and Somerville stations, are in close proximity to the Route 202 Study Corridor. During weekdays, there are 28 eastbound (nine trains traveling from the High Bridge station) and 27 westbound (10 trains traveling to High Bridge station) trains passing through these stations.

Table 5-3, below, shows reported average weekday boardings on the Raritan Valley Line rail system in Hunterdon and Somerset Counties during A.M. Peak, Midday and P.M. Peak hours. The latest available data is from FY'07. The numbers show a trend in increasing ridership at stations in the Study Area.

The combined average daily boardings for these two stations (Raritan and Somerville) between 1999 and 2007 are about 672 (see Table 5-3). This is projected to increase by approximately 5% by the end of 2008 to around 694. Of the other three stations (Bound Brook, Bridgewater, and North Branch), the station at Bound Brook is used the

Table 5-3
Average Weekday Boardings
Raritan Valley Line Stations

RARITAN VALLEY LINE						
Station		**AVERAGE WEEKDAY BOARDINGS***				
		FY'99	FY'05	FY'07	Percent Change(2)	FY'08(1)
Somerset County						
BOUND BROOK	RVL	624	660	737	11.7%	772
BRIDGEWATER	RVL	53	412	514	24.8%	538
SOMERVILLE	RVL	817	663	745	12.4%	780
RARITAN	RVL	442	660	703	6.5%	736
NORTH BRANCH	RVL	67	71	80	12.7%	84
Hunterdon County						
WHITE HOUSE	RVL	77	103	98	-4.9%	103
LEBANON	RVL	12	17	18	5.9%	19
ANNANDALE	RVL	48	85	113	32.9%	118
HIGH BRIDGE	RVL	48	60	76	26.7%	80
TOTALS		2,188	2,731	3,084	12.9%	3,230

At peak commuting periods
(1) Preliminary data from FY'08 indicates that rail ridership has grown 4.7% compared to last year
(2) The percent change is for ridership between FY'05 and FY'07

Source: NJ TRANSIT Ridership Analysis & Fare Policy

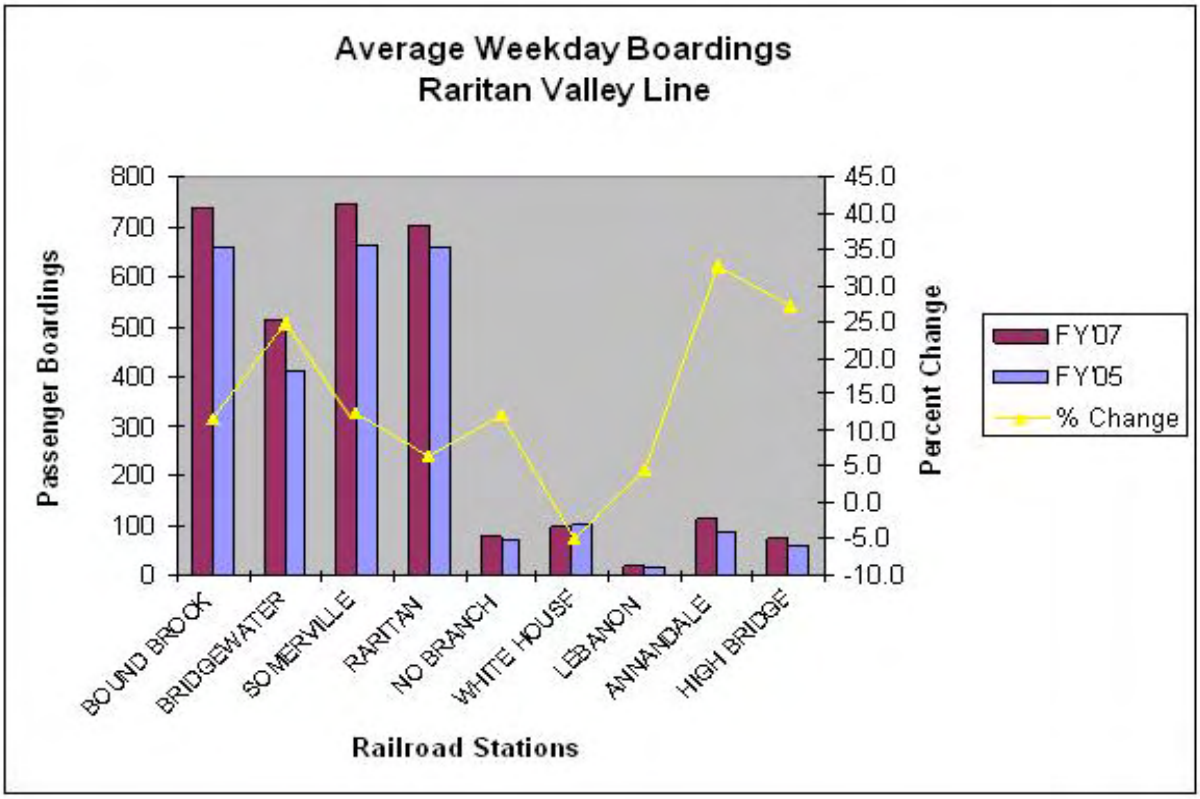
most. This could be the result of two factors, the station's location (close to I-287) and the completion of a new 275-space parking facility. This station is likely seen as an alternative to the overcrowded Bridgewater Station. It should be pointed out that the two averages for these passenger levels are low because they factor in the ridership at North Branch, a smaller station. Taken by themselves, daily ridership for Bridgewater and Bound Brook stations only, averaged 500 passengers between 1999 and 2007 and is expected to increase to about 539 by the end of 2008 (see Table 5-3). The numbers listed in Table 5-3 and displayed in Figure 5-2 are not for total daily train traffic, but are for peak commuting periods. Over the last decade, passenger rail ridership has steadily increased and this trend is expected to continue with the projected future growth of the area. By comparison, railroad ridership in northern Somerset has remained relatively unchanged or has been slightly decreasing. This is said to be as a result of the at-capacity conditions existing at the station area parking lots. Recent growth has been in the area of the RVL stations and this is reflected in the increased congestion along the US Route 202 study corridor. This also spotlights this area as a growing transportation corridor. The number of riders at each station listed under FY'08 in Table 5-3 is based on a projected increase of 4.7 %. Final figures are not available as yet as Fiscal Year 2008 ended on June 30th.

Freight Rail: The state of New Jersey has participated with the Port Authority of New York and New Jersey, neighboring states, and railroads in projects of regional importance. Through several NJDOT initiatives, freight service has grown to be a major factor in reducing truck traffic on state roadways. Since freight line operations usually extend to large geographical areas, there is very little information specifically relevant to the US Route 202 Study Area. Freight rail services generally look at much larger zones encompassing several states when evaluating performance and the existing location of freight services. There are 19 freight railroad services operating on 944 miles (excluding 58 miles owned by AMTRAK) of track in New Jersey (this is excluding trackage rights, when

trackage rights are included, the total miles of track is 2,825 miles) (NJDOT). Of these, there are five (5) freight rail lines (shown in burgundy on Figure 5-1) operating in and around the US Route 202 Study Area. They are:

- Norfolk Southern Corporation
- CSX Corporation
- Consolidated Rail Corporation (Conrail)
- Lehigh Valley Railroad (part of the Conrail System)
- Black River and Western Railroad

Figure 5-2
Average Daily Ridership



Raritan Valley Line Stations
SOURCE: NJ TRANSIT Ridership Analysis & Fare Policy.

The largest line, Conrail, operates almost 471 miles of track in the northern half of New Jersey along the shared assets lines with one or more commuter passenger railroad including the NJ TRANSIT's Raritan Valley Line. Conrail is the terminal and switching agent for CSX Transportation and Norfolk Southern. Figure 5-3 shows the alignment of existing freight rail lines in and around the Study Area.

Table 5-4 shows the totals for rail freight movement statewide in New Jersey in 2003, both by weight and by value of the commodity being transported. The top rows of the table show the totals for freight moved by rail that took place in and around counties across northern New Jersey – i.e., through Warren, Hunterdon, Somerset, Union,

Essex, and Hudson Counties. Figures are not available for Hunterdon and Somerset counties alone. As shown in Table 5-4, in 2003 rail transported freight accounted for 13% by weight and 9% by estimated value in the state of New Jersey. Table 5-4 also indicates that overall freight movement in and around the Study Area is higher than the state average with 21% by weight and 13% by value – almost double the state average. This reflects the high level of activity on Norfolk Southern's (NS) Lehigh Line, which is the main freight rail crossing the US Route 202 corridor traveling to and from the Lehigh Valley, Harrisburg, Pittsburgh, PA areas and beyond. This is also the freight rail service which shares track space with the NJT Raritan Valley Line commuter rail road.

Table 5-4:
Rail Freight Totals Transported in the US Route 202 Study Area and Statewide in 2003

Parameter	Inbound Destination	Outboun (Origins	Inbound (Destinations %	Outbound (Origins %)	Avg. of Inboun and Outbound
			% of Total Freig	% of Total Freig	% of Total Freig
US Route 202 Study Area*					
By Weight (Short Tons)	2,519,364	,044,38	8 %	3 %	1 %
By Value ($ Billions)	5.5	.5	7 %	0 %	3 %
New Jersey					
By Weight (Short Tons)	2,518,946	0,974,3	8 %	%	3 %
By Value ($ Billions)	6.2	6.7	2 %	%	%
includes Warren, Hunterdon, Somerset, Union, Essex, and Hudson Counties					

Source: NJTPA, Freight System Performance Assessment, 2005.

Figure 5-3 shows the five major rail freight lines in the US Route 202 Study Area. The Norfolk Southern (Conrail Railroad) Lehigh Line provides direct access from Harrisburg, PA to the Oak Island Yard, Port Elizabeth Yard, Port Newark Yard and E Rail Terminal via the Elizabeth Industrial Track.[2] This alignment, which is primarily used as a freight corridor, is single-track but with sufficient passing sidings to support bi-directional operation. The northern-most 13 miles of the Lehigh Line consist of a double-track alignment, which is shared with NJ TRANSIT's Raritan Valley Line passenger trains within the US 202 Corridor Study Area. Train movement is controlled by the Norfolk Southern dispatcher as far as Aldene, where control then shifts to the NJ Transit dispatcher. Freight trains move at 40-50 mph along the length of the Lehigh Line. Tracks north of Cranford Junction are shared with 60 weekday NJT RVL commuter passenger trains.[3]

CSX Corporation (CSX Railroad) utilizes the Trenton Line for service from Philadelphia and points south and southwest[4]. The Trenton Line joins with the Lehigh Line at Port Reading Junction, where trains operate either directly to Oak Island Yard or diverge at CP Bound Brook to the Port Reading Secondary Figure 5-3 shows the location of the freight rail yards and connecting tracks. The Trenton Line includes 35 miles of single track and 22 miles of double-track alignments, handling speeds of 40-50 mph.[5] The final leg of the journey to Oak Island Yard is either via the Lehigh Line or the Port Reading Secondary/Chemical Coast Secondary Line. The CSX Main Line

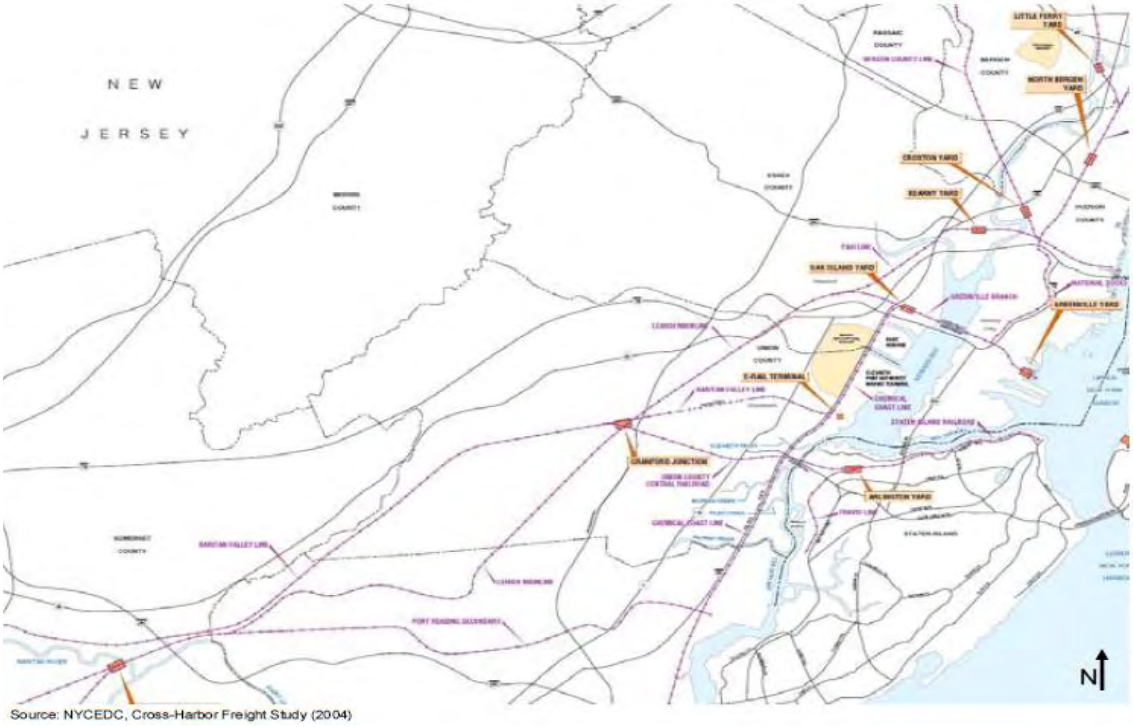
[2] North Jersey Transportation Planning Authority, Inc., *I-78 Corridor Transit Study, Technical Memorandum No. 2: Baseline Transit and Freight Activities*, Dewberry-Goodkind, Inc. and Urbitran Associates, Inc, May 2006.

[3] North Jersey Transportation Planning Authority, Inc., 2006.

[4] CSX Corporation, "Public Project Information for Construction and Improvement Projects That May Involve the Railroad." The Public Projects Group, April 2008.

[5] North Jersey Transportation Planning Authority, Inc., 2006.

Figure 5-3: Location of Freight Rail Yards in Eastern New Jersey (adapted from I-78 Study, NJTPA)[6]



dispatcher controls movements over the Trenton Line, while the Norfolk Southern dispatcher and the NJ Transit dispatcher control movements into Oak Island Yard.

There are in excess of 10 train movements per week serving E-Rail Terminal. Service to Croxton Yard, which is owned by Norfolk Southern, is more frequent, with approximately 40 train movements per week. There are frequent calls by local resident and businesses for more of the freight in the corridor to be handled by rail freight. However, the rail network needs to have the capacity to handle such a shift, above and beyond the otherwise-expected rise in rail demand. Table 5-5 shows the existing demand and capacity of some major rail lines in the Study Area (as of 2003). As can be seen, by year 2025 rail demand is expected to increase.

5.3 EXISTING BUS TRANSIT

The level of local bus transit options varies considerably throughout the Study Area. In the northern part of the Study Area (Somerset County), NJT provides a few local transit routes and other services to Newark. In Hunterdon county, public transport services are provided primarily by "The LINK" System. This is a coordinated blend of fixed route, flexible route and demand response services. Additionally, there are a number of existing commuter services operating between eastern Pennsylvania and western New Jersey locations taking area residents to the Newark/New York City area. These commuter services have several locations within and around the Study Area where they stop to collect or drop off passengers.

[6] North Jersey Transportation Planning Authority, Inc., 2006.

Table 5-5:
Existing and Future Rail Capacity and Demand within the Study Area
(Through-Trains Only)

Year			Trains Per Day		
			NS-Lehigh Line*	Trenton Line*	LV Main Line
2003	Existing Capacity		30 - 40	30	41 (single track)
					80-100 (double track)
2003	Avg. Daily Demand (Freight Trains)		18	13	32
	Avg. Daily Demand (All Trains)		18	13	94
	Peak Demand		23	16	100
2005	Avg. Daily Demand (Freight Trains)		36	23	60
	Avg. Daily Demand (All Trains)		36	23	120
	Peak Demand		45	29	135
2003 - 2025 Future Growth (%	Avg. Daily Demand (Freight Trains)		100 %	77 %	88 %
	Avg. Daily Demand (All Trains)		100 %	77 %	28 %
	Peak Demand		96 %	81 %	35 %
* Includes through-trains only					

Source: NJTPA, Freight System Performance Assessment, 2005.

5.3.1 Somerset County

Like railroad service, bus service can be expected to have a major impact on the Route 202 transportation corridor simply by the volume of riders using bus traffic to travel to and from business centers, rail stations and other locations on and around the US Route 202 highway. A major difference is that buses contribute to the volume of rubber tired traffic on the highway at any given time.

NJ TRANSIT Passenger Bus Service: NJ TRANSIT provides several buses as part of the public transportation system in Somerset County. There are two main routes: Route 65 (66 express service) which provides service to Newark; and Route 114 (NJT 117 is the Somerville-New York Express service) which provides service to the Port Authority Bus Terminal in New York (NYPABT). The others are local routes providing service within the county. Not all of these routes have an impact on US Route 202 travel.

NJT 65/66: NJT 65/66 bus from Bridgewater Commons/Somerville to Newark (Broad Street) by way of Mountainside makes stops throughout the eastern/central part of Somerset County. Scheduled service on this route is relatively limited in the Study Area, the majority of buses servicing this route run between Mountainside (or Dunellen) and Newark. The NJT 65 bus makes one eastbound trip from Bridgewater at 3:05 P.M. during weekdays. The remaining service is all westbound from Newark. During the week, there are two westbound trips to Bridgewater arriving at 8:39 A.M. and 8:59 A.M. and one trip which end at Bound Brook at 8:02 A.M.. Weekend service to the area is limited to one westbound trip on Saturdays to Bound Brook arriving at 8:20 A.M.. Service on holidays consists of one westbound trip to Bound Brook at 7:58 A.M. and one trip to the Bridgewater Commons Mall arriving at 8:55 A.M..

The NJT 65/66 service does not travel on US Route 202. Buses travelling to and from the Bridgewater Commons Mall travel on Mountain Avenue and make connection stops at the Somerville Railroad Station/Park and Ride and in Bound Brook (Tea Street and Union Avenue). The NJT 65/66 buses operate on the same schedule however; there is some variation in route and stops between the two buses. All passenger service to the Bridgewater Commons Mall is provided by the NJT 65 bus. When the NJT 65 is not operating, connections to Newark can be made between the NJT 66 and the eastbound NJT 114 route at one of the eastern stops.

NJT 114/117: NJT 114 bus runs from Bridgewater Commons Mall (bus stop is located near Bloomingdale's) to the NYPABT through eastern portions of the Somerset County by way of Route 22. On entering and exiting the Bridgewater Commons Mall, NJT 114 travels along US Route 202/206 from Route 22 until Clover Leaf Drive. NJT 114 Buses also originate or terminate their trips in Somerville. The Somerville bus stop is located on Main Street at Grove Street. This bus route makes rail service connections at the RVL Somerville Railroad Station. Connections from Newark can be made between the NJT 114 and the NJT 65/66 lines at Springfield (Mountain Avenue at Morris Ave) or at Mountainside (Route 22 at New Providence Road.)

Weekday passenger service consists of the following buses; there are 22 NJT 114 buses traveling eastbound from the Bridgewater Commons Mall/Somerville to New York (NYPABT) each weekday, including 9 A.M. and 13 P.M. trips. There is an additional NJT 114 eastbound A.M. bus departing from Somerville (23 eastbound trips from Somerville each weekday). There are 27 NJT 114 buses traveling westbound from NYPABT to the Bridgewater Commons Mall/Somerville each weekday, including 9 A.M. and 18 P.M. trips. There is an additional NJT 114 westbound P.M. bus arriving at Somerville. There are two additional late night trips to Somerville arriving at 12:43 A.M. and 1:53 A.M. each morning (30 westbound trips to Somerville each weekday). Data shown in Table 5-6 is for trips occurring during the A.M. PEAK, Midday and P.M. PEAK periods and do not reflect trips made off hours.

Table 5-6:
NJ Transit Bus
Number of Bus Trips and Average Daily Ridership (in the Study Area)[10]

Route	Number of Bus Trips per Period						Average Daily Ridership
	A.M. (Peak)		Midday		P.M. (Peak)		
	EB	WB	EB	WB	EB	WB	
65/66	5	5	1	2	4	4	3181
114/117	7	4	8	10	6	10	5675
884	5	5	5	6	4	4	154
986	5	5	0	0	6	7	300
EB= East bound buses, WB = West Bound buses.							

Weekend eastbound service includes 24 buses on Saturdays and 15 buses on Sunday from the Bridgewater Commons Mall to NYPABT. There are five A.M. buses on Saturdays and six A.M. buses on Sundays, as well as 18 P.M. buses on Saturdays and 10 P.M. buses on Sundays. There are 25 NJT 114 buses on Saturdays and 16 buses on Sundays traveling westbound from NYPABT to the Bridgewater Commons Mall. There are seven A.M. buses on Saturdays and five A.M. buses on Sundays, as well as 18 P.M. buses on Saturdays and 11 P.M. buses on Sundays. There is an additional westbound bus to the Somerville stop on both days. There are two additional westbound late night trips to Somerville arriving at 12:46 A.M. and 1:56 A.M. on both Saturdays and Sundays.

Scheduled holiday service includes 22 buses traveling eastbound from the Bridgewater Commons Mall to NYPABT between 5:50 A.M. and 11:10 P.M.. There are 9 buses leaving at various times in the early morning. After 9:45 A.M., all buses, including the 13 P.M. buses, run on an hourly schedule. There are 24 buses (8 A.M. and 16 P.M.) traveling westbound from NYPABT to Bridgewater Commons. Buses run from 5:50 A.M. until 10:39

[10] North Jersey Transportation Planning Authority, Inc., *I-78 Corridor Transit Study, Technical Memorandum No. 2: Baseline Travel and Land Use Patterns*, Dewberry-Goodkind, Inc. and Urbitran Associates, Inc, July 2006.

P.M. arriving at Bridgewater Commons at various times. In addition to the buses traveling to and from The Bridgewater Commons Mall, there is an additional westbound bus to the Somerville stop. There are also two additional westbound late night trips to Somerville arriving at 12:53 A.M. and 1:53 A.M..

A trip making all the stops take approximately two hours to travel between Bridgewater and NYPABT. Weekday Service to and from Bridgewater operates between 5:40 A.M. and 11:10 P.M.. Weekday Service to and from Somerville operates between 5:24 A.M. and 1:53 A.M.. Weekend Service to and from Bridgewater operates between 5:51 A.M. and 11:10 P.M. on Saturdays and 6:59 A.M. and 10:05 P.M. on Sundays. Weekend Service to and from Somerville operates between 5:46 A.M. and 1:56 A.M. on Saturdays and 6:53 A.M. and 1:56 A.M. on Sundays. Holiday service to and from Somerville operates between 5:50 A.M. and 10:39 P.M.. Holiday service to and from Bridgewater operates between 5:24 A.M. and 1:53 A.M.. Frequency of service is some what varied. Buses generally operate every hour, half hour, or twenty minutes during scheduled period of operation.

NJT 117 Express provides service from Somerville to the NYPABT on weekdays only. The NJT 117 bus runs on a similar network of roads as the NJT 114, however, they originate at different locations. The NJT 117 express service does not cross US Route 202 but starts and ends at Mountain Avenue and Route 22 in Somerville. There are a total of 4 eastbound and 4 westbound buses providing passenger service to NYPABT on this route. Eastbound buses depart Somerville at 5:46 A.M., 6:27 A.M., 6:55 A.M. and 7:24 A.M.. Westbound buses arrive at Somerville at 6:13 P.M., 6:43 P.M., 7:13 P.M. and 8:39 P.M. each weekday. There is no weekend or holiday service on this route

Data on the number of buses and average daily ridership included in Table 6 for these NJT routes and Wheels 884 and 986 only consider buses traveling during the listed periods. They do not consider buses traveling before the A.M. PEAK or after the P.M. PEAK periods. Table 5-7 shows more recent average weekday boardings for NJT Route 65/66 and NJT Route 114/117 buses during July 2007 and May 2008.

Table 5-7:
New Jersey Transit Bus Data
Routes 65/66 and 114/117 for FY'08 (fiscal year) through May.[11]

AVERAGE WEEKDAY BOARDINGS**											
JULY 2007 - MAY 2008											
Route	**JUL**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**
65	538	616	713	771	650	578	561	551	545	595	607
66	2,157	2,125	2,556	2,500	2,262	2,022	2,102	2,264	2,325	2,511	2,251
114	5,488	2,358	5,698	5,777	5,484	5,205	5,267	5,207	5,655	5,861	5,730
117	220	222	235	267	236	208	231	238	227	240	250
**Totals represent average weekday boardings based on farebox registrations											

NJT Wheels Suburban Transportation Services: This is a system of routes owned by NJ TRANSIT and operated mostly under contract by private companies primarily in western New Jersey in Hunterdon, western Somerset, and parts of Warren Counties, with some routes operating in urbanized areas. NJT Wheels operate two bus routes, NJT

[11] New Jersey Transit, 2008.

Wheels 884 and NJT Wheels 986, in Somerset County during the weekdays only. Only one of these routes, Wheels 884, is located within the Study Area and is of significance to US Route 202 travel.

The NJT-Wheels 884 Shuttle (Shown in yellow in Figure 5-1) provides passenger bus service between the Clinton Park and Ride in Clinton Township, Hunterdon County and Somerville Railroad Station in Somerset County by way of the Bridgewater Commons Mall. NJT 884 Wheels Shuttle bus makes stops at the Raritan Valley Community College, the Bridgewater Commons Mall, area Industrial Parks, the Whitehouse Railroad Station and the Clinton Park and Ride. The NJT Wheels 884 bus mainly travels along Route 22 and US Route 202 between Route 22 and Commons Way when entering and exiting the Bridgewater Commons Mall.

There are approximately 14 trips, seven in the A.M. period and seven in the P.M. period, between Clinton (Park and Ride) and the Somerville Train Station making a rail connection stop at the Whitehouse Train Station. Connection service from Somerville to Clinton starts at 5:39 A.M. and finishes at 6:23 P.M.. Connection service from Clinton to Somerville starts at 6:25 A.M. and finishes at 6:15 P.M.. All service is provided weekdays only; there is no weekend/holiday service. The frequency of service varies between 35 minutes and one hour with limited service during the midday. NJT Wheels 884 provides connecting rail service at the Whitehouse and Somerville railroad stations. It also offers connecting/transfer bus service to the NJT Routes 65 and 114 at the Bridgewater Commons Mall and to the 65, 114 and 117 at Main Street in Somerville. There are 15 eastbound buses and 14 westbound buses each weekday.

As shown in Table 5-6, there was an average of 300 daily riders using this service during 2006. Current ridership data are not available at the present time.

NJT Wheels 986 Shuttle bus (not shown on the map) runs from the Summit Railroad Station to the Plainfield Railroad Station, serving major employment sites in New Providence, Berkeley Heights and Summit. This service is mainly in the northeastern part of the county and away from the US Route 202 corridor. The latest available ridership figures for this route (see Table 5-6) show an average daily ridership of 154 passengers during 2006. No more recent data is available at this time. It is unlikely this route would impact Route 202 traffic.

Other NJ TRANSIT Bus Service: NJT Route 605 bus serves Orchard Road in Montgomery Township to the Quakerbridge Mall in Lawrence Township. This service is provided for riders in the southern section of Somerset County. This service does not operate close to Route 202.

Plainfield Transit 822 bus runs from North Plainfield to Plainfield, with stops at major regional facilities and the Watchung Square Mall. This service is provided for riders in the eastern section of Somerset County. Service on this line is operated by Academy Express under contract with NJ TRANSIT. This route has daily weekday service and scaled back service on Saturdays. There is also limited weekday service on some non-essential holidays. This service does not operate close to Route 202.

Somerset County CAT: Somerset County Transportation operates a Community Access Transit (CAT) system. The service is provided by the Somerset County Board of Chosen Freeholders and is partly funded by the Senior Citizen and Disabled Resident Transportation Assistance Program (SCDRTAP). The CAT follows a number of fixed routes and schedules. The service mainly consists of five fixed routes covering the county with some deviated ADA service. Two of these routes travel on or across Route 202 at some point of their journey (see Figure 5-1).

The Branchburg /Raritan CAT (show in pink in Figure 5-1) provides passenger service between Whiton Hills and the Raritan railroad station. Buses travel along Route 202 at two locations. The route starts at Whiton Hills at the Hunterdon/Somerset County boundary and travels north along Route 202 until Old York Road. It reconnects on Routes 202/206 at the entrance and exit of the Bridgewater Commons Mall. There are 11 eastbound (10

westbound) buses each weekday making 17 stops. Buses depart approximately every 40 minutes between 9:30 A.M. and 5:00 P.M..

The second route, Bridgewater/Montgomery CAT (show in Figure 5-1), provides service between Montgomery (Route 206 and Washington Street) and the Bridgewater Commons Mall. On the eastbound route, the bus travels along Routes 202/206 between highway 28 and US Route 22 on its way to the Bridgewater Commons Mall. There are eight scheduled daily trips on this route Monday to Friday. Buses depart Montgomery approximately every 30 minutes between 9:30 A.M.. and 3:31 P.M.. Buses outbound from Bridgewater Commons to Montgomery depart approximately every 30 minutes with every other bus departure between 9:30 A.M. and 3:31 P.M.. Alternating buses depart after 70 or 80 minutes intervals. There is no weekend or holiday service on the Somerset CAT. Information on current ridership is unavailable at the moment.

The other three CAT bus routes run between south Bound Brook (Main Street and Montgomery Street) and Bridgewater, Bernard (Ridge Oaks and Lindbergh Lane) and Bridgewater, and Watchung (Watchung Square Mall) and Bridgewater. All routes terminate at the Bridgewater Commons Mall and even though they do not cross Route 202, they serve as conveyors of many riders to the area of the Route 202 highway. Likewise, these three CAT services operate Monday through Friday at fixed, scheduled times. There is no service on weekends and holidays. These routes account for sixteen inbound trips to the area daily. Service is provided between 9:00 A.M. and 5:00 P.M.. The frequency of service varies from 30 wait time during peak hours to more than two hours wait time during off-peak hours.

Shuttles/Paratransit Service:

SCOOT Bus Service: Somerset County's SCOOT operates three bus routes, SCOOT-R1, R2 and the Peak schedule buses that provide transportation to and from Hillsborough, Manville, Somerville, Bridgewater, Bedminster and Bound Brook. The commuter shuttle connects the residential areas of Hillsborough, Manville, Somerville and Bridgewater with popular work destinations, including the County Complex in Somerville, Bridgewater Commons Mall, Somerset Corporate Center, Aventis and AT&T in Bridgewater and Bedminster. The commuter shuttle operates from 6:00 A.M. to 9:30 A.M. and 3:00 P.M. to 7:00 P.M., Monday through Friday. These two routes do not intersect US Route 202 but travel along either Grove Street or North Bridge Street on the inbound trip and along Mountain Avenue on the outbound trip from Bridgewater Commons. Traveling eastward, Mountain Avenue, North Bridge Street and Grove Street are the next streets over from US Route 202 and these three streets are heavily utilized by buses traveling between Bridgewater Commons and Somerville.[12]

Connections to other buses can be made in downtown Somerville. The commuter shuttle stops at the Somerville Railroad Station (Raritan Valley Line) on both its north and south routes. The midday shuttle runs a loop from Bridgewater, Somerville, Hillsborough, Manville and Bound Brook between 9:00 A.M. and 2:00 P.M., Monday through Friday. There is no service on major holidays. During peak periods, SCOOT service crosses US Route 202/206 in Hillsborough and later travels along US Route 202 from Somerville to Bedminster. Information on current ridership is unavailable at the moment.

Davidson Avenue Shuttle (DASH): The DASH shuttle system operates in the southeastern section of Somerset County. The shuttles primarily serve businesses along the Davidson Avenue corridor in the Somerset section of Franklin Township. DASH shuttles travel through Bridgewater, Bound Brook, South Bound Brook and Somerset with stops at the Bridgewater Promenade and Commerce Ballpark, Bound Brook and New Brunswick Railroad Stations, and at businesses including National Telephone Directory, Holiday Inn, Phillips Lighting, Merrill Lynch,

[12] Hunterdon County Planning Department, Hunterdon County Department of Human Services, *United We Ride- Hunterdon County Final Report*, July 2007.

ATT, Merck and hotels located along Davidson Avenue. The closest stop is the Bridgewater Promenade in the vicinity of the Somerville Railroad Station. DASH routes do not intersect with US Route 202 and, therefore, it is unlikely to be impacted by operations on US Route 202; however, this service contributes to increased pedestrian traffic in and around the Somerville and Raritan area. There are approximately eight trips at the Bridgewater Promenade, four outbound in the A.M. and four inbound in the P.M. during rush hour. The service operates for three hours during rush hours in the morning and evening. The frequency of service is approximately every 50 minutes. Information on current ridership is unavailable at the moment.

Paratransit Service: The Somerset County Division of Transportation operates a Paratransit service providing transport to residents to destinations within Somerset County and to some surrounding areas. This service provides regular curb to curb service for persons with disabilities and seniors. Buses run from 6:00 A.M. to 5:30 P.M. Monday to Friday. Weekend and evening hour transportation is also provided by prior arrangement for groups to a variety of destinations. Bus routes are not fixed but are determined by customer request. Due to the proximity of the US Route 202 corridor to major business centers like the Bridgewater Commons Mall, it is very likely that this service utilizes the US 202 highway corridor for destination travel. Information on current ridership is unavailable at the time.[13]

Private Carriers:

Trans-Bridge Lines, Inc.: Trans-Bridge Lines provides daily commuter express service between areas in Northampton and Lehigh counties in eastern Pennsylvania and New York City. Service is provided both into the Port Authority Bus Terminal (NYPABT) in Midtown Manhattan and to the Wall Street area in Lower Manhattan. Some buses continue service to JFK International Airport. In Somerset and Hunterdon counties, buses travel along two main highways, Interstate 78 in the north and US 202 in the south central region. Figure 5-1 shows the location of the routes. Major stops include the Park and Ride lots at Interstate 78 and NJ Route 31 (Clinton Park and Ride) in Clinton, Hunterdon County, and US Route 202 North near Milltown Road (Branchburg Park and Ride) in Somerset County. The locations of the Park and Ride lots are depicted in Figure 5-1. Not all buses make all stops along these routes. No information on ridership levels or trend is available for this service at this time.

Lakeland Bus Lines, Inc.: This is a privately operated charter/commuter bus operation in Dover, New Jersey. Lakeland operates commuter routes service from the northern part of Somerset County to the Port Authority in New York. Lakeland Route 78 buses traveling eastbound to New York depart nine times Monday through Friday every half hour from three locations in Somerset County starting at 5:45 A.M. from the Bernardsville Train Station. There are two other departures from this station at 8:20 A.M. and 9:20 A.M.. Three buses depart from Bedminster/the Hills at 6:05 A.M., 6:35 A.M. and 7:05 A.M.. Three buses depart from the Valley area at King George Road at 6:32 A.M., 7:02 A.M. and 7:32 A.M.. Six of these buses travel on US Route 202. Buses leaving the Hills area in Bedminster travel along US Route 202 north until Bernardsville, making two stops at Peacock Ave/202 and the Far Hills Train Station. After leaving the Bernardsville Train Station, buses make a right turn at North Finley Avenue for a stop at the Basking Ridge Railroad Station and then continue south. This portion of the route takes it away from the US Route 202 corridor. Information on current ridership is unavailable at the moment.

Martz Trailways: This provides service east to the NYPA and west to central/eastern portions of Pennsylvania. The schedule includes three buses running daily from Hackettstown, New Jersey to New York City departing at 5:45 A.M., 9:20 A.M. and 3:15 P.M.. Service also includes one bus running daily from Hackettstown, New Jersey to Wall Street departing at 5:45 A.M.. Five buses run daily from Panther Valley, New Jersey to New York City. The first bus departs at 5:15 A.M. and then every 20 minutes until 6:50 A.M.. There is a bus on Fridays at 6:20 P.M., and on weekends leaving at 6:10 A.M.. Buses are also scheduled daily at 9:10 A.M., 12:00 P.M., 3:05 P.M.,

[13] Hunterdon County Planning Department, 2007.

5:05 P.M., and 8:10 P.M.. These trips cross US Route 202, but not in the Somerset County corridor, therefore it is unlikely to have any impact on travel within the study corridor. Information on current ridership is unavailable at the moment.

There are three buses running daily from Panther Valley, NJ to Wall Street, NYC, departing at 5:15 A.M., 5:20 A.M. and 6:00 A.M.. Also, two buses run daily from the Panther Valley bus station to 48th street and 6th Avenue, 53rd Street and 48th Street, 48th Street and Madison Avenue in NYC departing at 6:50 A.M. and 9:00 A.M.. These trips cross US Route 202 but not in the Somerset County corridor, therefore it is unlikely to have any impact on travel within the study corridor.

Susquehanna Trailways Bus Lines: This is a private commuter bus line traveling between Lock Haven and Sunbury, PA and New York. There are four buses each weekday. Susquehanna Trailways Bus Lines provide limited service from central Pennsylvania to NYC, with stops in Somerset County. The New York City Express service from Lock Haven, Williamsport and Sunbury runs twice daily leaving Somerville, NJ at 11:15 A.M. and 7:45 P.M.. Buses travel along Route 28 and cross US Route 202 on their journey to the stop at Somerville. Information on current ridership is unavailable at the moment.

5.3.2 Hunterdon County

NJ TRANSIT: There is very limited NJT passenger bus service in Hunterdon County. Service consists mainly of a 'mini-bus Shuttle', "the NJT Wheels 884 Shuttle bus," which travels along US Highway 22 from Clinton to Somerville in Somerset County. The County itself provides the majority of public bus services.

The LINK: The Hunterdon County Department of Human Services (DHS), on behalf of the Hunterdon County Board of Chosen Freeholders, operates a consolidated County transportation system known as "The LINK." Operation of the Hunterdon County LINK System is provided with funding from Hunterdon County, NJ TRANSIT and the Federal Transit Administration. The current LINK service is a countywide service consisting of a blend of fixed-route, flexible-route, and demand-response services. These services, which are relatively extensive service, are provided by three relatively separate but interconnected networks; the Hunterdon County LINK-Paratransit System, the Hunterdon County LINK-Cross County Service and the Hunterdon County LINK-Flemington Shuffles.

The "Loops" transit service operates on a deviated fixed route basis through various types of service delivery methods covering Hunterdon County. Transportation service in Hunterdon is comprehensive, as well as being flexible enough to meet almost every trip need during service hours. Deviations can be up to half mile from general route and flag-down service is available on some routes.

The North-South and East-West Loop Services offered by The LINK provide deviated fixed route service to the major towns in the County, as well as operating along major roadways in the County and stopping at major employment sites. The Loops both operate with two vehicles from approximately 7:00 A.M. to 6:30 P.M. Monday through Friday. Budget constraints do not allow service evenings and weekends, which are significant hours for the target population who may get jobs in the retail and food service industries that maintain shifts beyond The LINK service hours.

Two "Shuffle" services provide local service to persons in Hunterdon County, also on a deviated fixed route basis. The Flemington Shuffle provides service to the major areas in Flemington, the County Seat from 9:00 A.M. to 5:00 P.M., Monday through Friday. One vehicle provides an extended evening service, Monday through Friday from 6:00 P.M. to 11:00 P.M.. There is one Flemington Saturday Shuffle available from 9:00 A.M. to 9:00 P.M.. Due to budgetary constraints, these services do not operate on Sunday, which represent the unmet needs of the Shuffle services.

The Flemington Shuffle Service is a Modified Fixed-Route service providing all day service throughout the Flemington/Raritan area. Scheduling is on the basis of the 'Blue Route' (Route 16) and the 'Tan Route' (Route 19). The Cross County Service is a demand response service serving Alexandria, Bethlehem, Bloomsbury, Califon, Town of Clinton, Clinton Township, Delaware, East Amwell, Flemington, Franklin, Frenchtown, Glen Gardner, Hampton, High Bridge, Holland, Kingwood, Lambertville, Lebanon Borough, Lebanon Township, Milford, Raritan, Readington, Stockton, Tewksbury, Union, and West Amwell. All service is offered on a time, space and bus availability basis between 7:00 A.M. and 7:00 P.M. weekdays Monday to Friday. The Bus travels a designated route with pick up locations and times. The Bus will deviate up to one half mile off of fixed route upon request (deviations limited to not more than twice in one run). There is no service on Saturdays, Sundays and holidays.

The LINK system operates thirteen (13) routes and collectors, Cross County Service and Shuffle services, all of which operate on staggered schedules between the general hours of 7:00 A.M. and 6:00 P.M. on weekdays with some service offered on Wednesday and Friday evenings from 6:00 P.M. to 10:00 P.M.. The Flemington Shuffle also operates an extended evening service Monday through Friday from 6:00 P.M. to 11:00 P.M., as well as Saturday service in the Flemington Area from 8:00 A.M. to 9:00 P.M.. On Saturday, there is no midday service between 12:30 P.M. and 1:45 P.M. on Route 16. For Route 19, there is no midday service between 12:30 P.M. and 1:45 P.M.. There is no service on Sundays and major holiday. These services are operated from a stop at the DHS building in Flemington, which is close to the western end of the US Route 202 study corridor. Of these, The LINK Route 3 operates along US Route 202 from the Main Street/Old York Road junction to the Flemington Circle.

Hunterdon County Routed Services: The LINK also provides deviated route service along ten (10) routes that cover varying geographic regions of Hunterdon County. The LINK operates during various hours of each weekday. Of these, The LINK's Route 3 service which operates from Lambertville to Flemington travels along US Route 202 between Route 613 and Flemington (shown in brown in Figure 5-1). This service has scheduled stops at Ringoes, Three Bridges, the Arc, Hunterdon Medical Center (HMC) and Center for Educational Advancement (CEA). Service on Route 3 is provided Monday through Friday from 7:30 A.M. to 9:30 A.M. and 2:45 P.M. to 5:30 P.M.. On Mondays, Tuesdays and Thursday, midday routes operate between 9:30 A.M. to 11:00 A.M. and 12:30 P.M. to 2:00 P.M. for demand response in the same areas for shopping, and medical uses etc. Transfer points on Route 3 are at CEA at 9:30 A.M. and Educational Services Commission (ESC) at 4:15 P.M.. Information on current ridership is unavailable at the moment.

Other Hunterdon County "LINK" Services: The LINK provides service on the first Wednesday of the month from 6:00 A.M. to 10:00 P.M.. Two vehicles are utilized along Route 31 to the Flemington area. The LINK also provides service on various Fridays from 6:00 P.M.. to 11:00 P.M.. Four vehicles are utilized in various county areas to provide transportation to Echo Hill Lodge and Point Breeze.

The LINK also provides services such as an in-county van/bus service, which provides group trips to agencies in the county and specialized out of county medical services on an as needed basis. Along with these services, the Hunterdon County Department of Human Services coordinates a volunteer driver program to provide medically related transportation for primarily frail elderly who cannot be served by The LINK. Information on current ridership is unavailable at the moment.

Private Carriers: Trans-Bridge Lines operates commuter bus service into Hunterdon County from Pennsylvania to Newark Airport and New York. This service's main transit stops are located at Clinton and Liberty Village in Hunterdon County and Branchburg in Somerset County. Buses travel along either Interstate 78 or the US Route 202 corridor and in Union Township, Clinton, Lambertville, Frenchtown and Flemington. Although frequent service is provided during commuting hours, service is limited during the rest of the day and for reverse commutes (trips during rush hour with destinations in Hunterdon County).

With the exception of the NJT Raritan Valley Line commuter railroad, the NJT Wheels 884 Shuttle bus and a few private commuter (express) bus services, there is no inter-county public transit between Hunterdon and Somerset Counties.

5.3.3 Park and Ride

As detailed in Table 5-8, each of the commuter railroad stations on NJT Raritan Valley Line has customer parking at or close to the station. In addition, several NJDOT Park and Rides, depicted on the map in Figure 5-1 with a brown 'P' symbol, exist close to the Route 202 Corridor.

Table 5-8 lists their names and approximate location. Park and Ride lots are public transport stations that serve bus and rail passengers, as well as those who carpool or vanpool.

Parking at all Hunterdon County Park and Rides is free. However, space is limited and is on a first-come basis. In addition to the modest-sized lots at the four Raritan Valley Line railroad stations in Hunterdon, commuter lots are found in Clinton, Flemington, Union, Kingwood and Tewksbury (see Figure 5-1). In Somerset County, commuter lots are found in Branchburg, Somerville, Hillsborough, and Bernardsville.

There are a total of five Park and Rides that serve the US Route 202 Corridor in Somerset and Hunterdon counties (see Figure 5-1). All the Park and Rides identified in Table 5-8 are operating at full capacity. No individual capacity or percent of usage data exists for each Park and Ride at the moment, however, a visit to several of the listed Park and Ride and railroad station parking facilities found all of them full during a weekday afternoon.

Table 5-8:
NJDOT Park and Rides
Located in Somerset and Hunterdon Counties[14]

Park and Ride	Location
Somerset County:	
Branchburg	US Route 202 North near Milltown Road
Bernards	East Finley Avenue at Lyons Train Station
Hillsborough	US Route 206 and Amwell Road, just south of US Route 202
Hillsborough	US Route 206 and Falcon Road
Somerville	South Bridge Street and 2nd Street (near the Somerville Train station)
Hunterdon County:	
Annandale Square	Beaver Avenue at Old Allerton Road, Clinton Township.
Clinton Township Point	I-78, Route 31 and Route 22 (Center Street), Clinton Township.
Flemington	Route 12 Liberty Village, Flemington Borough
Hunterdon Hills Playhouse	Route 173, Union Township.
Kingwood Township	Intersection of SR 12 and CR 519 (Bank parking lot)
Oldwick/Clinton Pointe	I-78 and Oldwick Road (Dead end street), Tewksbury
In Bold: Park and Ride in the Study Area	

[14] New Jersey Department of Community Affairs, Office of Smart Growth, *Hunterdon County Transportation Plan*, May 2008.

5.4 RECOMMENDATIONS

On any transportation mobility evaluation matrix, the Route 202 corridor would score very low because of the large amount single occupant vehicles using the corridor and the limited modal choices that are available along the corridor. Land use and transportation planning decisions must be coordinated to ensure new development or redevelopment promote improved mobility by ensuring that new land uses in the corridor provide and promote the use of a variety of transportation options and choices.

At the present time, there is minimal local public transportation between the two counties. One local shuttle, Wheels 884, travels from Clinton Twp (Hunterdon County) to Somerville (Somerset County) along route 22. Likewise, the Raritan Valley Line commuter rail provides limited train service between counties. The only other passenger services are provided by commuter buses passing through on their way to New York City. A problem with the existing system lies with the fact that the minimal transit service that is provided does not serve the Flemington area and therefore does not address travel between the suburban business centers in Hunterdon and Somerset counties. As a next step, implementation efforts should focus on what can be done to improve inter-county passenger transit in the short-term, medium and long term. In the short term commuter and local circulator services should be implemented and planning and design work should begin now for implementation of commuter rail service in the long term.

Several factors such as existing and planned transportation improvements, currently available right-of-way, infrastructure and intermodal connections and population and employment trends are already pointing to the need for action.

5.4.1 System Continuity and Connectivity

This recommendation deals with how the Route 202 corridor could better relate to the larger public transportation network. As a first step, the modification and expansion of existing bus routes should be explored, including modifying existing schedules to include more frequent service, additional service runs to accommodate shift workers and to connect better with other transit services, especially trains arriving and departing from Raritan Valley Line rail stations. In addition, the implementation of bus service amenities will help increase the visibility of existing services. Bus service amenities should include the installation of bus stop signs and shelters, posted schedules and route maps, better marketing materials and easier access to service information via the Internet.

5.4.2 Park and Ride Opportunities

Park and Rides in the area are already operating at maximum capacity. In the northern end of the study corridor, there are multiple locations where large commercial and private parking facilities exist. Some of these locations include the Somerville Circle Shopping Center, Somerset Shopping Center, Bridgewater Commons Mall, and the Bridgewater Town Center. Some of the private companies along this route are Johnson & Johnson, Ortho Chemical Diagnostics, Ortho McNeil Pharmaceuticals, ITS (all part of Johnson & Johnson Industries), Thermo-Fisher Scientific and NES Development. At the southern end of the corridor, there is 3M, Liberty Village and the Flemington Business Center close to Voorhees Corner.[15] There may be opportunities for shared partnerships where private entities may be willing to share a percentage of available parking spaces to boost commuter parking.

Very few community facilities (e.g. churches) are located along the corridor. The single church, located in the western section opposite Greenwood Place and US Route 202, has very limited parking. The 11 park and rides in

[15] New Jersey Department of Transportation, "Park and Ride Locator," 2009 <http://www.state.nj.us/transportation/commuter/rideshare/prlocate.shtm>

Hunterdon and Somerset counties and the existing parking facilities at area railroad stations are typically filled to capacity. Where land use permits, the possibility of increasing capacity of these lots should be explored. A consideration is the creation of a new park and ride lot in the area south of Route 202. There is some evidence that suggests that commuters may be driving in from counties in eastern Pennsylvania in order to utilize existing transit facilities in the area.[16] The feasibility of implementing a park and ride further south (near the Route 202 and Route 31 interchange) should also be investigated.

5.4.3 Expansion of Passenger Rail Opportunities

In addition to the package of proposed roadway improvements, the expansion of passenger rail service in the study area is also needed. There are unique opportunities available for the expansion of service on the NJ Transit Raritan Valley line as well as the potential for the dual use of the existing Norfolk Southern Lehigh Valley Line for both freight and passenger service.

Freight Lines

Norfolk Southern, CSX and Conrail have freight line facilities in and around the study area. The Norfolk Southern Lehigh Valley freight rail splits off from the Conrail/Raritan Valley line in the area of Bound Brook, travels south and west through the Hillsborough Township, and continues southwest past Flemington and into southeastern Pennsylvania. This rail line presents provides a tremendous opportunity to be used as a shared resource for both freight and passenger service. The NS Lehigh Valley line has a connection to the Black River and Western Railroad spur, which passes through Flemington, branches off at this location. The Black River and Western Rail line travels through Liberty Village next to the Flemington shopping outlet mall. The use of both of these sections of track for passenger rail service and the development of several new rail stations could provide a very attractive option to traveling the Route 202 corridor via automobile. There is great potential for the development of a train station at several sites along these two sections of track. Potential trains stations could be located in the Borough of Flemington as well as in Hillsborough Township, Three Bridges and the Borough of Manville. There are additional places on this section of track that may be able to support the creation of new train stations. This concept is also being advanced by the Flemington Rail Coalition. As a follow up to this study, a more detailed analysis of this concept should be investigated. This concept, while long term in nature, holds the potential to dramatically improve mobility along the Route 202 corridor.

Raritan Valley Line

In the short-term, an increase in service between Raritan and High Bridge is needed on the Raritan Valley Line, to reduce the pressure at Raritan and Somerville stations. This increased service would help by reducing the need for riders to drive to the eastern stations to catch the train. Within the current system, additional service at the four Hunterdon stations, coupled with a network of flexible feeder routes and/or local collector services would assist commuters in deciding on leaving their vehicles at home. These improvements can create an alternative to drivers traveling to the Raritan or Somerville areas to catch a train and potentially reduce vehicle miles traveled in the Route 202 corridor.

[16] New Jersey Department of Community Affairs

HIGH BRIDGE BORO
Oldwick/Clinton Pointe Park & Ride
Annandale
TEWKSBURY TWP
LEBANON BORO
Lebanon
BEDMINSTER TWP
BERNARDS TWP
Clinton Twp. Park & Ride
White House
CLINTON TWP
NJT Raritan Valley Line
Conrail Railroad
North Branch
BRIDGEWATER TWP
HUNTERDON
READINGTON TWP
FRANKLIN TWP
Proposed Bus Route
Raritan
Branchburg Park & Ride
SOMERVILLE BORO
Somerville
Somerville Park & Ride
Finderne
BOUND BROOK
Bridgewater
SOUTH BOUND BROOK BORO
Norfolk Southern Railroad
US Route 202 Corridor
Manville
MANVILLE BORO
Proposed Commuter Line
Three Bridges
Flagtown
Norfolk Southern Railroad
Neshanic
HILLSBOROUGH TWP
FRANKLIN TWP
FLEMINGTON BORO
Flemington
Hillsborough Park & Ride
MILLSTONE B
Black River & Western Railroad
RARITAN TWP
SOMERSET
EAST AMWELL TWP
DELAWARE TWP
0 0.5 1 2 3 Miles

Legend

- Proposed Commuter Rail
- Proposed Bus Route
- NJT Railroad Stations
- Proposed Railroad Stations
- Park and Ride
- Proposed Park and Ride
- US Route 202 Corridor
- NJT Raritan Valley Line
- Freight Rail Lines
- Roads
- County Line
- NJ Highlands Boundary
- US Route 202 Study Area Boundary
- Municipal Boundaries

US Route 202 Corridor Assessment and Multi-Mobility Plan

FIGURE 5-4

Proposed Transit Facilities

THE Louis Berger Group, INC.

HPlanning · Radin Consulting, Inc. RCI · RBA Group

Bus System Opportunities

The focus of the recommendation of feeder bus service is to create linkages to between existing and new transit services to encourage people to view public transit as a reasonable and viable alternative to using their cars when traveling Route 202 corridor between Flemington and Somerville.

Other bus system improvements include the design of local bus services using the municipal and county roadway networks in the area with limited bus stops along Route 202, and connecting local service to the Raritan Valley Line. Two local service options are to provide a fixed-route bi-county service between Clinton Township and Bridgewater Township (Bridgewater Commons Mall) by way of Somerville and a fixed-route bi-county service between Lambertville and Somerville by way of East Amwell and Hillsborough Townships with stops in Flemington Borough. The creation of a bus rapid transit service along the Route 202 corridor should also be studied. This service could make use of the shoulders to bypass congestion and queue jumps could be added where feasible.

The current LINK system in Hunterdon County has a "spoke in wheel" design. The service operates county-wide to and from a central location in Flemington and branching out in a radial pattern. In the short term, this service could link to a new regional service between Somerville and Flemington that could run along the Route 202 corridor. In the long term, with the creation of a potential railroad station at Liberty Village, this bus service would provide an effective feeder/shuttle service bringing riders from southern and western areas of the county. Additional service could connect to and from the Clinton/Annandale area.

In Somerset County, the majority of local bus routes in operation, including those mentioned above, travel to the Bridgewater Commons Mall or the vicinity of the Somerville Train station. As part of the new design feeder services, riders traveling from the southern districts in Somerset County could travel to the new rail stations without traveling to Somerville. Likewise, with increased rail service at the four Hunterdon RVL stations, feeder buses and shuttles can provide access to those facilities without needing to cross the US Route 202 Corridor. Additionally, the two existing Trans-Bridge Line commuter routes would need no adjustments because these routes already pass through the target areas. Normal local service should remain since feeder buses and shuttles would generally be operating during peak hours.

5.4.4 Travel Demand Management Strategies

The two Travel Demand Management (TDM) agencies in the study area (HART and RideWise) should continue there current car and van pooling initiatives. Carpooling and vanpooling are low cost strategies that can be implemented much faster than shuttle services. There are many opportunities for ridesharing given the sheer number of employers/employers along the corridor. The creation of a dedicated incentive and subsidy program targeted for only employers and employees working or living in the Route 202 corridor should be explored.

Efforts should also be made to encourage the use of TDM strategies as part of the local land development process. This can be done through ordinance revisions that require transit-friendly design and the provision of bicycle and pedestrian facilities and amenities as part of the site development process; passage of voluntary or mandatory trip reduction ordinances; and negotiating travel demand management agreements with developers and/or property owners.

6.0 PEDESTRIAN AND BICYCLE FACILITIES

6.1 INTRODUCTION

Bicycle and pedestrian travel along and in the vicinity of the corridor is part of the vision of Somerset and Hunterdon counties and the integrated land use and transportation plan for the corridor. Therefore, it is appropriate to include bicycle and pedestrian improvements along the corridor where needed to meet the access and safety needs of the modes.

In order to determine the extent of bicycle and pedestrian travel demand in the corridor, several types of analysis have been carried out. These include a Bicycle Travel Demand and Roadway Suitability Assessment and a Pedestrian Travel Demand and Suitability Assessment. These assessments utilized data, modeling tools and modeling results that were developed for the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2. In addition, a field assessment was made of the corridor, focusing on major roadways intersecting Route 202, within the limits of the project. Based on the field assessment and evaluation, a number of specific improvements were recommended, primarily at or in the vicinity of those intersections.

6.2 BICYCLE DEMAND AND SUITABILITY

6.2.1 Bicycle Demand

Bicycle travel demand is an important consideration in selecting and shaping elements of a corridor improvement plan. A bicycle demand analysis was performed for the Route 202 Corridor from Church Street (M.P.11.93) in Raritan Township, Hunterdon County to First Avenue (M.P. 23.9) in Raritan Borough, Somerset County. This analysis made use of data, modeling tools and modeling results developed for the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2. In assessing bicycle travel demand, the Bicycle Demand Model (BDM) was used. The BDM indicates the number of bicycle trips projected for a given census tract using 2000 Census and Journey to Work data. The findings are presented in ranges of high, medium and low demand; where low demand equals 0-200 daily bicycle trips, medium demand equals 201-1000 daily bicycle trips, and high demand equals 1000+ daily bicycle trips.

It should be noted that the BDM is a very conservative estimate of demand that accounts for utilitarian trips only and does not consider recreational trips, where increased demand can be anticipated with the implementation of improved facilities.

In this model:

Total Trips = Utilitarian Trips + (2.0 * Commute Trips).

where:

Commute Trips = (0.025 * Transit Users) * (0.06 * College Students) + (0.05 * School Children) + (Workers * Bicycle Mode Share).
and,
Utilitarian Trips = 3.48 * (0.05 * 0.06 * College Students) + (0.05 * School Children) + (Workers * Bicycle Mode Share).

All features listed in the above formulas correspond to definitions and field headings in Table 6-1.

Table 6-1
Definitions of Features Used in Bicycle Demand Model

Feature	Definition[18]	Field Header
Total Trips	The number of work related bicycle trips plus the non-work related trips in the tract for the year 2000.	TOT_TRP_00
Utilitarian Trips	Bicycle trips other than work-related in the tract for the year 2000.	UTILIT00
Commute Trips	Number of work-related trips in the tract for the year 2000.	COMMUT00
Transit Users	Number of people in the tract who used transit to get to work for the year 2000.	TRANSIT00
College Students	College enrollment in the tract for the year 2000.	ENROLLMENT
School Children	Number of kids between ages 6 and 14 in the tract for the year 2000.	AGE_6_14_0
Workers * Bicycle Mode Share	Number of bicycle-related work trips for the year 2000 (total number of workers by tract* bicycle mode share).	JTW_00

Bicycle Attractor Analysis

Another means of assessing demand utilizes trip attractor data developed as part of the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2. For this analysis, bicycle trip attractors (area and point based) were identified and mapped. These included major trip generators such as parks, commercial areas, schools and key destinations. Buffer areas were superimposed over each point-based attractor to highlight potential bicycle travel sheds for bicycle trips to these attractors. The buffer defines a 2-mile radius area for bicycling trips. This distance is based on the 1990 Nationwide Personal Transportation Survey, which identified an average bicycle trip for all purposes at 1.8 mile and 2.1 miles for bicycle commuting (see Bicycle Demand and Suitability Map, Figure 6-1).

Results of Bicycle Demand Analysis

The results of the bicycle demand analysis are as follows:

- Bicycle demand by census tract is high or medium throughout the Corridor.
- There are a number of Commercial establishments located along Route 202, both northbound and southbound. There are numerous commercial establishments clustered at either end of the study corridor in the vicinity of Flemington and the Somerset Regional Center.
- There are numerous school properties located within a mile of Route 202.
- There is a Bus Park and Ride located along Route 202 in Branchburg Township;. TransBridge Bus Lines offers bus service to Manhattan from the facility.
- This analysis suggests that the corridor falls within the "travel shed" of bicycle attractors or exhibits travel demand characteristics suggesting high demand for bicycle travel. As such, bicycle travel is a reasonable and appropriate mode of travel throughout the corridor.

[18] Data Dictionary, *Final GIS Files, Version 2.1 CD of the NJ Statewide Bicycle and Pedestrian Master Plan, Phase 2*, Revised May 2006.

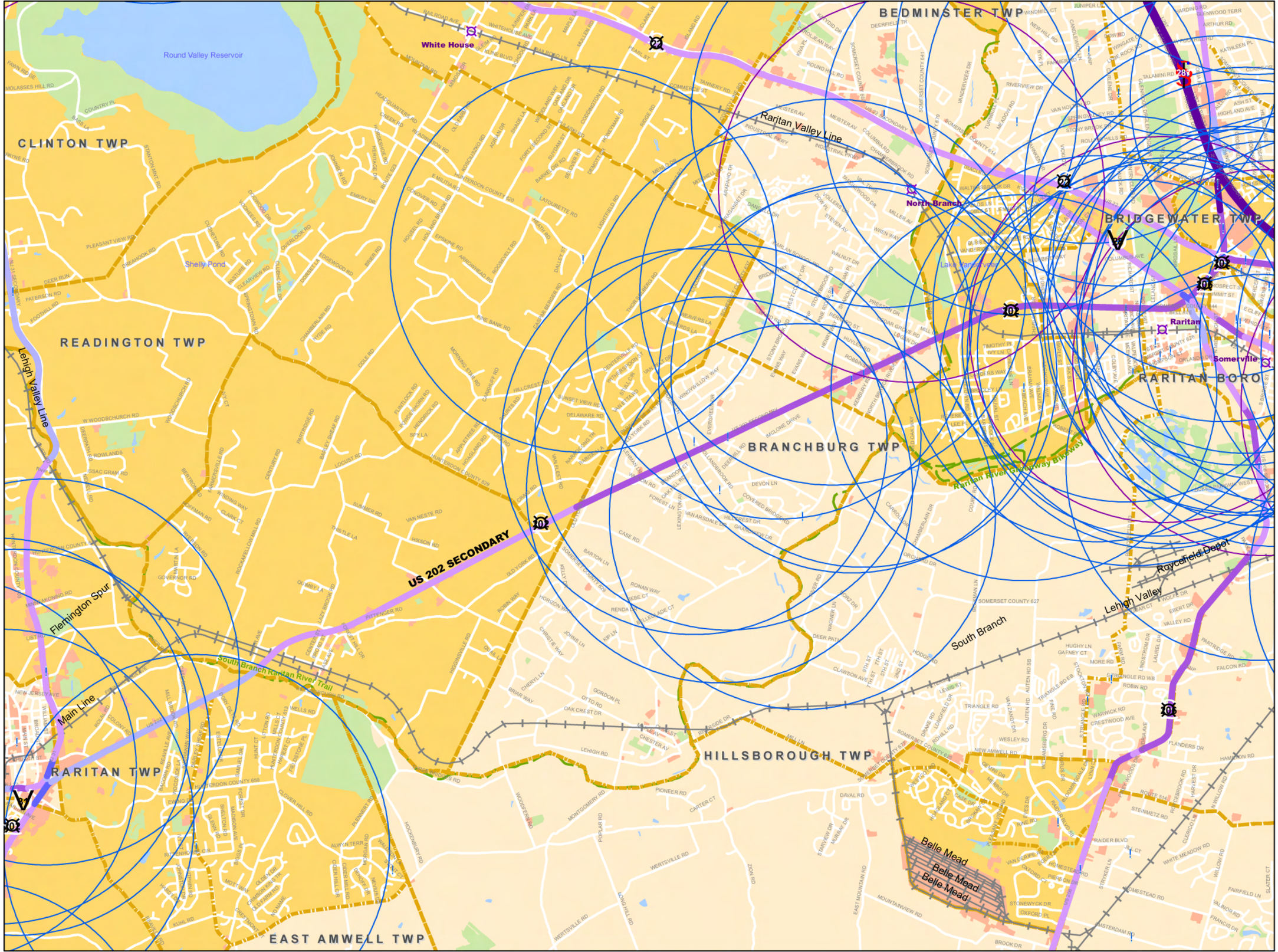


FIGURE 6-1
BICYCLE DEMAND COMPATIBILITY ANALYSIS

9/11/08

Legend

BICYCLE DEMAND (DAILY BIKE TRIPS)

- LOW (0 - 200)
- MEDIUM (201 - 1000)
- HIGH (OVER 1000)

BICYCLE COMPATIBILITY INDEX

- LOS F - LESS COMPATIBLE
- LOS E
- LOS D
- LOS C
- LOS B
- LOS A - MORE COMPATIBLE

BASE LAYERS

- SCHOOL
- TRAIN STATION
- ACTIVE RAILROAD
- NJ TRAILS - EXISTING
- CENSUS TRACT
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- PARK
- COMMERCIAL AREA
- WATER
- 2 MILE RADIUS FROM SCHOOL
- 2 MILE RADIUS FROM TRAIN STATION

Route 202 Corridor Assessment

Somerset and Hunterdon Counties, NJ

0 0.25 0.5 1 1.5 Miles

6.2.2 Bicycle Suitability

The bicycle suitability analysis uses the Bicycle Compatibility Index (BCI) to provide an indication of the "bicycle suitability" of a given roadway segment, i.e., its perceived ability to accommodate bicycle travel. This is the model used to establish roadway suitability in the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2. The BCI evaluates factors influencing the preferences of bicycle riders to use a particular route alternative based on a bicyclist's perception of a route's safety level. The BCI rates the suitability of a roadway for bicyclists based on lane widths, traffic volumes, speed limits, existence of on-street parking, location within a residential area, and roadway classification. The Level of Service (LOS) for the route is then determined based on the value of the BCI. This is a "link level" analysis, i.e. it does not include an assessment of the overall suitability of a corridor nor does it assess the suitability of intersections in terms of their ability to accommodate bicycle traffic.

In this model:

BCI = 3.67 - 0.966 (Bicycle Lane, Shoulder: Yes = 1)
- 0.410 (Bicycle Lane or Shoulder Width)
- 0.498 (Curb Lane Width)
+ 0.002 (Curb Lane Volume)
+ 0.0004 (Other Lane Volume) + 0.022 (Speed)
+ 0.506 (Parking: Yes = 1)
- 0.264 (Area: Residential = 1) + Adjustment Factor

- Lower values indicate a good Level of Service
- Greater values indicate a poor Level of Service
- BCI decreases for greater lane widths, shoulders, and location in a residential area (improves LOS)
- BCI increases with smaller lane and shoulder widths, higher traffic volumes, on-street parking, and higher speed limits (degrades LOS)

The BCI has values and corresponding Level of Service (LOS) are shown below:

BCI Range	LOS
0 to 1.50	A
1.51 to 2.40	B
2.41 to 3.40	C
3.41 to 4.40	D
4.41 to 5.30	E
5.31 & Greater	F

It should be noted that as part of the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2, bicycle suitability modeling was conducted only for existing Congestion Mitigation System (CMS) roadways. In the study corridor, Route 202 is the only CMS roadway. None of the intersecting roadways between the limits of the project are on the CMS, and bicycle suitability (BCI) was not calculated for them.

Results of Bicycle Suitability Analysis

The results of the bicycle suitability analysis are as follows:

- The analysis shows that Route 202 within study corridor limits was identified as providing moderate levels of service for bicycle traffic (see Bicycle Demand & Suitability Map, Figure 6-1).

Calculation of BCI for Non-CMS Intersection Roadways

An interactive spreadsheet tool developed for the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2, was used to hand calculate the BCI of intersecting roadways. The results are shown in Table 6-2, below. The suitability of intersecting roadways is generally moderate or high due primarily to low peak hour traffic volumes and low posted speed limits.

Table 6-2
Route 202 Corridor Intersecting Roadways

			Route 202 East Bound Side				Route 202 West Bound Side		
Intersection #	**Street Name**		**BCI**	**LOS**	**Suitability**		**BCI**	**LOS**	**Suitability**
1	First Ave.		3.66	D	Medium		2.16	B	High
2	Ortho MacNeil Dr.		2.81	C	High		3.57	D	Medium
3	Bridgewater T.C. Dr.		2.74	C	High		3.42	D	Medium
4	Milltown Rd.		3.30	C	High		3.25	C	High
5	River Rd.		2.56	C	High		2.57	C	High
6	Robbins Rd.		3.40	C	High		2.53	C	High
7	Old York Rd.		2.66	C	High		3.74	D	High
8	West County Dr.		3.24	C	High		n.a.	n.a.	n.a.
9	Holland Brook Way		2.09	B	High		2.86	C	High
10	Whiton Rd.		2.52	C	High		2.56	C	High
11	Old York Rd.		2.90	C	High		3.29	C	High
12	Pleasant Run Rd.		2.99	C	High		3.48	D	Medium
13	Summer Rd.		3.75	D	Medium		3.50	D	Medium
14	Broad St.		2.86	C	High		n.a.	n.a.	n.a.
14	Main St.		2.51	C	High		n.a.	n.a.	n.a.
14	River Rd.		n.a.	n.a.	n.a.		3.80	D	Medium
15	Railroad Ave.		3.75	D	Medium		3.95	D	Medium
16	Dory Dilts Rd.		2.70	C	High		n.a.	n.a.	n.a.
16	Barley Sheaf		3.00	C	High		n.a.	n.a.	n.a.
16	River Rd.		n.a.	n.a.	n.a.		3.50	D	Medium
17	Case Blvd.		3.37	C	High		2.58	C	High
18	Greenwood Pl.		n.a.	n.a.	n.a.		2.03	B	High
19	Voorhees Corner Rd.		1.82	B	High		n.a.	n.a.	n.a.
19	Church St.		n.a.	n.a.	n.a.		2.02	B	High

6.3 PEDESTRIAN DEMAND AND SUITABILITY

6.3.1 Pedestrian Demand

Pedestrian Demand is also an important consideration in selecting and shaping elements of a pedestrian network. A pedestrian demand analysis was carried out for the Route 202 Corridor by utilizing the Pedestrian Compatibility Index (PCI) results from the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2. The Pedestrian Compatibility Index (despite its name) is a surrogate measure of pedestrian demand that indicates the census tracts with the greatest potential for pedestrian demand. The potential demand is based on variables generally understood to contribute to environments conducive to pedestrian activity, such as density, employment, and transit accessibility. The PCI is a combination of 4 indices (multiplicative) which yields a score for each census tract, normalized to a range of 0-100, with values Low = < 8, Medium = 8 - 24, and High = 25 - 100.

Pedestrian Attractor Analysis

As with bicycle travel, utilizing trip attractor data developed as part of the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2, pedestrian trip attractors (area and point based) were identified and mapped. These included major trip generators such as parks, commercial areas, schools and key destinations. Buffer areas were superimposed over each point-based attractor to highlight potential pedestrian travel sheds for walking trips to these attractors. The buffer defines a 1/2-mile radius area for pedestrian trips. This distance is based on the 1990 Nationwide Personal Transportation Survey, which identifies an average walk for all purposes at 0.7 and 0.9 miles for commuting purposes.

Results of Pedestrian Demand Analysis

The results of the pedestrian demand analysis are as follows:

- According to the PCI, pedestrian demand by census tract is medium at the eastern end of the corridor and low throughout the remainder of the corridor (see Pedestrian Demand & Crossability Map, Figure 2).
- Using a buffer radius of a 1/2-mile for pedestrians, the pedestrian "travel shed" defined by the buffered areas around schools and key destinations (such as historical, cultural and recreational features), covers portions of the eastern portion of the study area. According to these criteria, this suggests the pedestrian travel is a reasonable and appropriate model of travel to these destinations throughout this part of the study area (see Pedestrian Demand & Crossability Map, Figure 6-2).

6.3.2 Pedestrian Suitability

Pedestrian suitability was evaluated utilizing the Pedestrian Crossability Index. This index evaluates roadway crossing opportunities with high, medium or low opportunity levels corresponding to the estimated percentage of time that sufficient gaps in traffic area available to cross safely. The factors incorporated include speed, traffic volume, number of lanes, median width, median type and presence. The crossability index evaluates factors at the "link level", not a corridor. Therefore, it does not take into consideration either the distance from the nearest intersection or grade separated crossings, the type of traffic control at nearby intersections or sight distance.

It should be noted that pedestrian suitability was conducted only for those roadways that were included in the existing database of information developed for the New Jersey Statewide Bicycle and Pedestrian Master Plan, Phase 2, are included on the CMS.

Results of Pedestrian Suitability Analysis

- Route 202 within the study limits is evaluated as a medium in terms of crossability.

Proposed Bikeway

Branchburg Township has proposed a Township-wide bicycle and pedestrian system consisting of a network of shared use paths and designated on-road facilities. Several links of the network are proposed to intersect with Route 202. These proposed crossings are located in the vicinity of Whiton Road, Club Way, and Dover Road. Specific crossing treatments, at grade or grade separated, have not been specified.

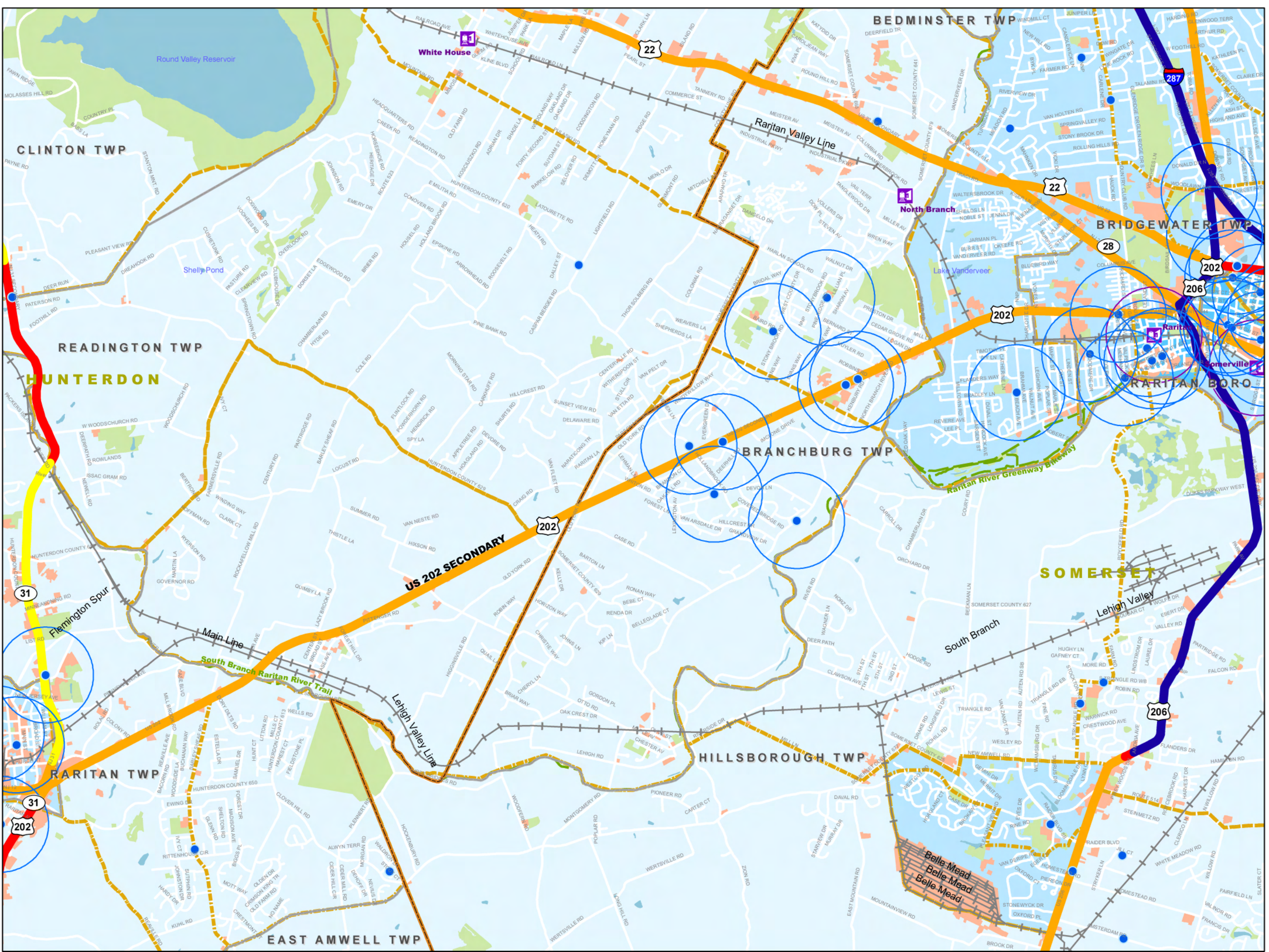


FIGURE 6-2

PEDESTRIAN DEMAND CROSSABILITY ANALYSIS

9/11/08

Legend

PEDESTRIAN DEMAND

- LOW
- MEDIUM
- HIGH

PEDESTRIAN CROSSABILITY INDEX

- UNCROSSABLE
- LOW (0-33) MORE DIFFICULT TO CROSS
- MEDIUM (34-66)
- HIGH (67-100) LESS DIFFICULT TO CROSS

BASE LAYERS

- SCHOOL
- TRAIN STATION
- ACTIVE RAILROAD
- NJ TRAILS - EXISTING
- CENSUS TRACT
- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- PARK
- COMMERCIAL AREA
- WATER
- 1/2 MILE RADIUS FROM SCHOOL
- 1/2 MILE RADIUS FROM TRAIN STATION

Route 202 Corridor Assessment

Somerset and Hunterdon Counties, NJ

0 0.25 0.5 1 1.5 Miles

6.4 RECOMMENDATIONS

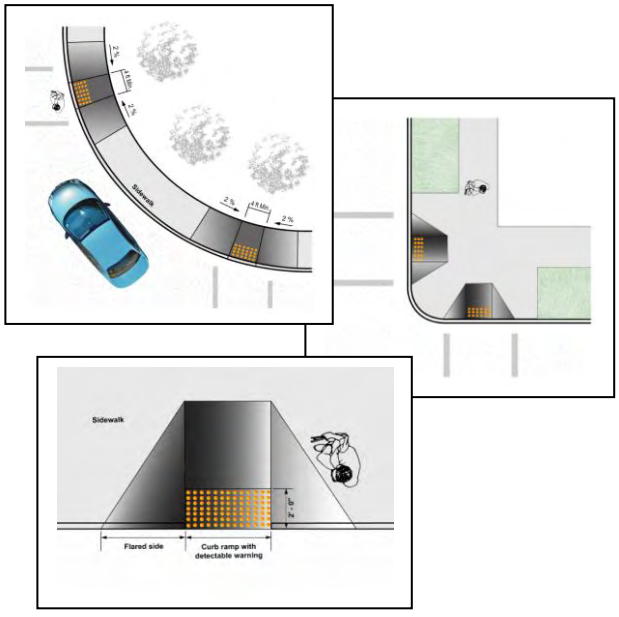
Based on the results of the Demand and Suitability Analyses and field assessments, a number of specific improvements, primarily pedestrian improvements are recommended throughout the corridor. These are identified by intersection in the Implementation Matrix, shown in Section 8.0, and are described in more detail in the Technical Appendix.

Pedestrian scale lighting is recommended to be installed along all existing or proposed sidewalk segments and waiting areas adjacent to the intersections. Roadway lighting is recommended to be installed to illuminate the crosswalk areas.

In addition to the pedestrian accommodations, it is also recommended that full width shoulders be maintained on Route 202 throughout the length of the project to enable the roadway to maintain bicycle compatibility. This requires signing at the approach to a number of intersections, as noted.

Presently, the only intersecting roadway that included a designated bikeway is intersection of Church Street/Voorhees Corner Road. No specific bicycle treatments are recommended for intersecting roads. Installing specific bicycle treatments on intersecting roadways should depend on whether one of those roadways is identified in future circulation plans by the counties and municipalities along Route 202 as (incorporating) a designated bikeway.

Figure 6-3 Typical Curb Ramp Design Treatments



Curb ramp example

7.0 SMART GROWTH AND TRANSIT-FRIENDLY PLANNING

Research on the linkage between land use and transportation clearly demonstrates that the physical configuration and mixture and density of development directly impact the quality and function of the overall transportation system. Current development along Route 202 is unorganized, sprawling development that contributes to vehicular congestion and unsafe driving conditions in addition to discouraging pedestrian and bicycle activity. As stated in the project's mission statement, there is a need for a balanced multi-modal transportation system which is partly accomplished through the implementation of smart growth and transit-supportive land use principles. This type of development reduces vehicle trips and improves safety while enabling citizens an alternative to the automobile for at least one of their daily trips between home, work, shopping, school or services. To promote these goals, this section contains a smart growth audit, transit-friendly checklist, and transit-supportive design guidelines.

7.1 SMART GROWTH AUDIT

7.1.1 Audit Purpose

The purpose of the Smart Growth Audit process is to identify specific areas where deficiencies and obstacles as well as examples and opportunities for smart growth may lie. The audit provides a systematic approach to assess the existing regulatory documents that are currently guiding the Route 202 Study Area's development. The audit results can also be used as the basis for developing recommendations and design guidelines that will support land use, zoning and circulation modifications that can be applied throughout the study area.

7.1.2 Audit Synthesis

The principles and criteria used for the audit came primarily from New Jersey Future's *Smart Growth Scorecard – Municipal Review*. The elements within this model were ideal because it is well suited to the type of communities and development that exist throughout New Jersey. Some additional audit items were added to better tailor the audit to the characteristics of the study area and to address the multi-modal issues being addressed by the overarching Mobility Plan for Route 202. The 11 topics covered in the Smart Growth Audit are:

- *Responsive & Inclusive Planning Process*
- *Planned Expansion*
- *Concentrated Density*
- *Linked Land Use & Transportation Planning*
- *Multi-Modal Options*
- *Managed Parking Resources*
- *Preserved Community Character*
- *Designated Open Space*
- *Diverse Housing Stock*
- *Environmental Protection*
- *Proactive Storm Water Management*

7.1.3 Audit Implementation

To implement the audit, the Berger team, in cooperation with the Counties and study area municipalities, gathered land use and zoning ordinances, master plans, and other planning documents for each municipality along the

corridor. These documents were then evaluated to assess the zoning and practices implemented in parcels directly adjacent to the corridor. An audit element is considered not relevant when the element is in place in some other part of the municipality (such as mixed-use in the downtown), or has not been fully adopted into the master plan and zoning practices. Some of the audit criteria, however, are not geographically specific and apply more generally to the municipality such as whether or not planning documents reflect inter-governmental coordination.

7.1.4 Audit Results

The audit results reflect best efforts to thoroughly evaluate the relevant planning documents of each of the six corridor-municipalities and accurately estimate if each audit element/principle is being applied along the study corridor.

Implementation of the audit showed that a limited number of smart growth elements have been applied by all six study area municipalities. The three elements that were in place for all municipalities (impact fees, COAH certification, and storm water management plans) are linked to State policies. In the absence of increased State land use controls, there are many ways that the study area municipalities can voluntarily choose to coordinate the regulation of land uses to meet smart growth principles.

The Route 202 corridor has great potential for smart growth; only nine out of thirty-eight elements/principles were not present in any municipality along the corridor. Coordination of such issues as land use, circulation, environmental control, and aesthetics are at the heart of smart growth. Therefore, the first step is to implement those smart growth elements present within one municipality across all municipalities. While there are certainly exceptions to the applicability of certain smart growth principles, by and large municipalities can look to each other to provide model regulations and effective practices for implementation.

Those elements not present anywhere along the corridor fall into one of two categories, not relevant or in need of consideration. Minimum lot sizes that allow for urban development and on-street parking may not be relevant to the corridor given the character of the study area communities. Transit oriented development may also be irrelevant given the lack of transit service on the corridor, however, it may be in need of consideration in the future. Those elements missing across all municipalities that seem most in need of implementation include energy guidelines and within existing commercial nodes the encouragement of mixed-income development, mixed-use districts, and multi-family dwellings. The first element is linked to sustainability, while the last three influence land use and travel behavior and would specifically impact mobility on the corridor.

It should also be noted that some of the municipalities' Master Plans show a clear commitment to fostering smart growth, however, actual regulatory documents fail to effectively enforce the smart growth principles promoted in their Master Plans. If for instance a Master Plan document stated that all new developments should include sidewalks, but no such regulation existed in the land use ordinance, the element was not considered in-place. Furthermore, many of the plans put little emphasis on how smart growth elements and principles can be applied to highway commercial areas, such as those seen along the corridor throughout much of the study area. Many of the municipal plans focused pedestrian and bicycle improvements and increased densities in the downtown with no expectation that high-speed commercial corridors should also accommodate a range of modes.

The results of the smart growth audit show that while the study area does not currently embody smart growth principles, there is great potential for smart growth along the study area through coordination between the municipalities. Each municipality should look at the practices of other communities, reflect on the vision laid out in their municipal planning documents, and update land use ordinances so that coordinated smart growth principles become practices. Prior to regulatory amendments the study area municipalities can utilize the *Route 202 Transit Supportive Community Design Handbook* as a guiding document in evaluating proposed developments along the corridor.

Table 7-1
Smart Growth Audit

Smart Growth Audit	Raritan Twshp.	Flemington	Readington	Branchburg Township	Bridgewater Township	Raritan Bor.
Responsive & Inclusive Planning Process						
Recent Master Plan or extensive re-examination (five years old or newer)	●			●	●	
Public actively engaged in planning process	●					
Reflects inter-governmental coordination	●	●	●		●	●
Planned Expansion						
Impact fees for new development	●	●	●	●	●	●
Formal process for evaluating infrastructure extensions or extensions prohibited						
Infrastructure capacity data applied to land use planning			●			
Concentrated Density						
Zoning allows for multi-family dwellings of 4 or more units/acre (not age restricted)						
Minimum lot sizes allow for urban development						
Minimum densities to promote efficient land use						●
Higher density near public transit						
Cluster or open space subdivisions are permissible	●		●		●	
Linked Land Use & Transportation Planning						
Stated link between land use and transportation planning	●				●	●
Transit Oriented Development						
Mixed use districts (not age restricted)						
Multi-Modal Options						
Sidewalks required in new development	●			●	●	●
Bike paths considered in planning process	●			●	●	
Recent circulation plan in place	●				●	●
Public transit ridership opportunities are being developed						●
Pedestrian friendly amenities such as benches, lighting, street trees, and trash cans are explicitly provided for					●	
Managed Parking Resources						
On-street parking allowed where applicable						
Provisions for shared parking	●	●	●		●	●
On-site parking regulations allow for reductions where transit is available					●	
Preserved Community Character						
Historic preservation districts or sites	?	?	?	?	?	?
Farmland protection program			●			
Design guidelines accompany zoning	●			●	●	●
View corridors protected	●		●		●	
Designated Open Space						
Minimum open space ratio required	●		●	●	●	
Development considers connecting existing and planned open spaces and greenways	●					
Distinctions made between infill/brownfield and greenfield development		●				
Diverse Housing Stock						
Affordable housing plan submitted for certification by the New Jersey Council on Affordable Housing (COAH)	●	●	●	●	●	●
Mixed-income development encouraged						
Apartments permitted as an accessory use	●					
Environmental Protection						
Water quality ordinances (or reference to NJ standards)	●		●	●	●	
Specific energy efficiency guidelines (such as LEED)						
Use of renewable or passive energy encouraged	●	●	●			
Proactive Storm Water Management						
Development prohibited in floodplains	●		●			●
Porous paving materials encouraged	●		●		●	
Storm water management plan in place	●	●	●	●	●	●

[●] Indicates that the smart growth element/principle is being applied on the corridor
[ ] Indicates that the smart growth element/principle is not being applied on the corridor
[?] Indicates that further investigation as to whether or not the smart growth element/principle is being applied on the corridor is needed

7.2 TRANSIT-FRIENDLY CHECKLIST

7.2.1 Checklist Purpose

The Transit Friendly Checklist is a visual assessment of the existing infrastructure and development and their ability to support transit services. The result of the Transit Friendly Checklist identifies specific areas where deficiencies, obstacles, and opportunities for transit friendly practices exist.

7.2.2 Checklist Synthesis

The definition and principles of "transit-friendly" land use described in NJ TRANSIT's *Planning for Transit-Friendly Land Use – A Handbook for New Jersey Communities* guided the design of the Transit Friendly Checklist for Route 202. Because NJ TRANSIT's handbook is focused on areas surrounding existing transit stations, the checklist items were customized to fit the characteristics of the study corridor. According to the Handbook's guidelines, the Route 202 study corridor falls under "Park and Ride" - one of six transit area types. Keeping in mind the potential for future services, transit-supportive elements for "Suburban Multi-Use" transit areas were also considered. The transit friendly checklist additionally includes transit-supportive elements described in the Somerset County *Elder Mobility Study* which were particularly well suited to the type of communities and development that exist in the local Somerset and Hunterdon County area. The checklist items are separated by level of importance into the following three groups:

- *Essential Features*
- *Highly Desirable Features*
- *Nice Additional Features*

7.2.3 Checklist Implementation

To implement the checklist the Berger team made a series of "windshield" surveys along the corridor noting the presence of checklist elements. Staff also made stops along the corridor to further inspect transit facilities and other areas of interest. A feature was considered in place along the corridor if it is a dominant theme of development. For instance, small-scale buildings exist along the corridor throughout all six municipalities, but were only considered to characterize the majority of buildings for three of the municipalities.

7.2.4 Checklist Results

The checklist results reflect best efforts to visually assess the six corridor-municipalities and accurately estimate if each checklist feature is being applied along the Route 202 corridor.

The six study area municipalities lacked many of the features 'essential' to a Transit Friendly environment, shared two 'highly desirable' features, and had essentially no 'nice additional' features. As it exists currently, Route 202 is neither transit friendly nor transit supportive.

The three elements that were largely in place within the study area are land use characteristics. The existence of dense development, a mix of land uses, and supportive commercial uses influence travel behavior by creating an environment where persons in close proximity share travel destinations. Concentration of origins and destinations can be further enhanced by focusing commercial development in nodes along the corridor. A schematic map of planned commercial nodes for the study corridor is included within the *Route 202 Transit-Friendly Design Guidelines.*

Table 7-2
Transit Friendly Checklist

Transit Friendly Checklist	Raritan Twshp.	Flemington	Readington	Branchburg	Bridgewater	Raritan Bor.
Essential Features						
Medium-to-High Densities	●	●		●	●	●
Mix of Land Uses	●	●	●	●	●	●
Short to Medium Length Blocks						
Transit Routes Every Half-Mile						
Two-or Four-Lane Streets (with Rare Exceptions)	●	●	●	●	●	●
Continuous Sidewalks Wide Enough for Couples						
Safe Crossings						
Appropriate Buffering from Traffic						
Street-Oriented Buildings						
Comfortable and Safe Places to Wait						
Highly Desirable Features						
Supportive Commercial Uses	●	●	●	●	●	●
Grid-like Street Networks						
Traffic Calming along Access Routes						
Closely Spaced Shade Trees along Access Routes						
Parking areas safe and easy to navigate through						
Interior pedestrian paths between commercial sites						
Little Dead Space, or Visible Parking						
Nearby Parks and Other Public Spaces						
Small-Scale Buildings (or Articulated Larger Ones)			●	●	●	
Well-designed Transit Facilities						
Nice Additional Features						
Streetwalls						
Functional Street Furniture						
Coherent, Small-Scale Signage					●	
Special Pavement						
Lovable Objects, Especially Public Art						

[●] Indicates that the transit friendly feature is being applied on the corridor
[ ] Indicates that the transit friendly feature is not being applied on the corridor

Infrastructure that facilitates transit as a viable travel option along the corridor is needed in addition to land use structure modifications along the corridor. Inevitably the municipalities received no checkmarks for features of existing service, such as transit routes every half-mile, because there is minimal transit service on the corridor at present. Where the study area has the most potential is in developing transit supportive infrastructure that can be utilized by bicyclists and pedestrians now and transit riders in the future. Features such as interior pedestrian paths between commercial sites, safe crossings, and continuous sidewalks provide for the possibility of Park and Walk sites and accommodate those without personal vehicles, while creating the foundation for what can become a multi-modal corridor.

In seeking to incorporate Transit Friendly features along the corridor, the study area municipalities should also take into consideration their existing assets. Wide shoulders and frequent traffic pull-over areas can potentially be used for bus service. The existing Branchburg Park and Ride facility can be enhanced so that users have a safer and more comfortable experience.

The Route 202 corridor study area has the potential to become Transit Friendly. *The Route 202 Corridor Assessment and Multi-Modal Mobility Plan* will provide specific guidance in achieving this goal. The plan will provide guidance on the following: fostering the type of concentrated and mixed land uses that can drive transit ridership demand, developing pedestrian and bicycle infrastructure, improving the Park and Ride facility, and maintaining those assets that could potentially become part of a multi-modal network. In addition specific guidelines for how commercial development along the corridor can incorporate the features of the Transit Friendly Checklist are provided in the *Route 202 Transit-Friendly Design Guidelines* located in the Technical Appendix.

7.3 TRANSIT-SUPPORTIVE DESIGN GUIDELINES

The Route 202 study corridor contains many elements for building vibrant commercial areas that combine the convenience of conventional 'strip' developments with employment centers and transportation options. While each town has its own character, there is potential to create a unified corridor that embodies the transit-friendly and smart growth principles being advocated for within Somerset and Hunterdon Counties. Design guidelines can provide the standards necessary to implement change throughout all six municipalities along the corridor. The Route 202 Transit-Supportive Design Guidelines Handbook is located in the Technical Appendix. These guidelines have the potential to reduce vehicle trips, improve safety, decrease travel times, in addition to enhancing the study area's attractiveness.

The Route 202 Transit-Supportive Design Guidelines Handbook is intended to be used by property owners, designers, elected officials, and community members in considering new commercial development and land use planning along the Route 202 corridor. This design manual represents a first step in ensuring improved built outcomes, and renewing an attractive, community and multi-modal focused commercial environment.

7.3.1 Handbook Synthesis

Between Flemington Borough and Raritan Borough, Route 202 passes through six different municipalities, each with their own land use ordinance and zoning guidelines. There is a significant amount of variation between the type of development that has occurred between and within each of the municipalities ranging from preserved agricultural land to big-box retail. Through concentrated and well-designed commercial development, Route 202 has the potential to become a cohesive corridor that meets the needs of residents, consumers and workers while accommodating the significant variations in land use and densities between the six municipalities.

1. Building Location & Orientation
2. Traffic
3. Parking
4. Transit Facilities
5. Sidewalks
6. Crosswalks
7. Bicycle Access

The guiding principles of the Route 202 Transit-Supportive Design Guidelines Handbook are reflective of both community ideals and national models of good design (as cited within the handbook and bibliography). The seven sections within the handbook are meant to affect development along the entire study corridor, but are specifically focused on addressing commercial development. Through concentrating commercial development, the design guidelines combined with open space preservation measures can direct growth and redevelopment to reduce vehicular congestion and increase mobility and accessibility while increasing safety along the corridor.

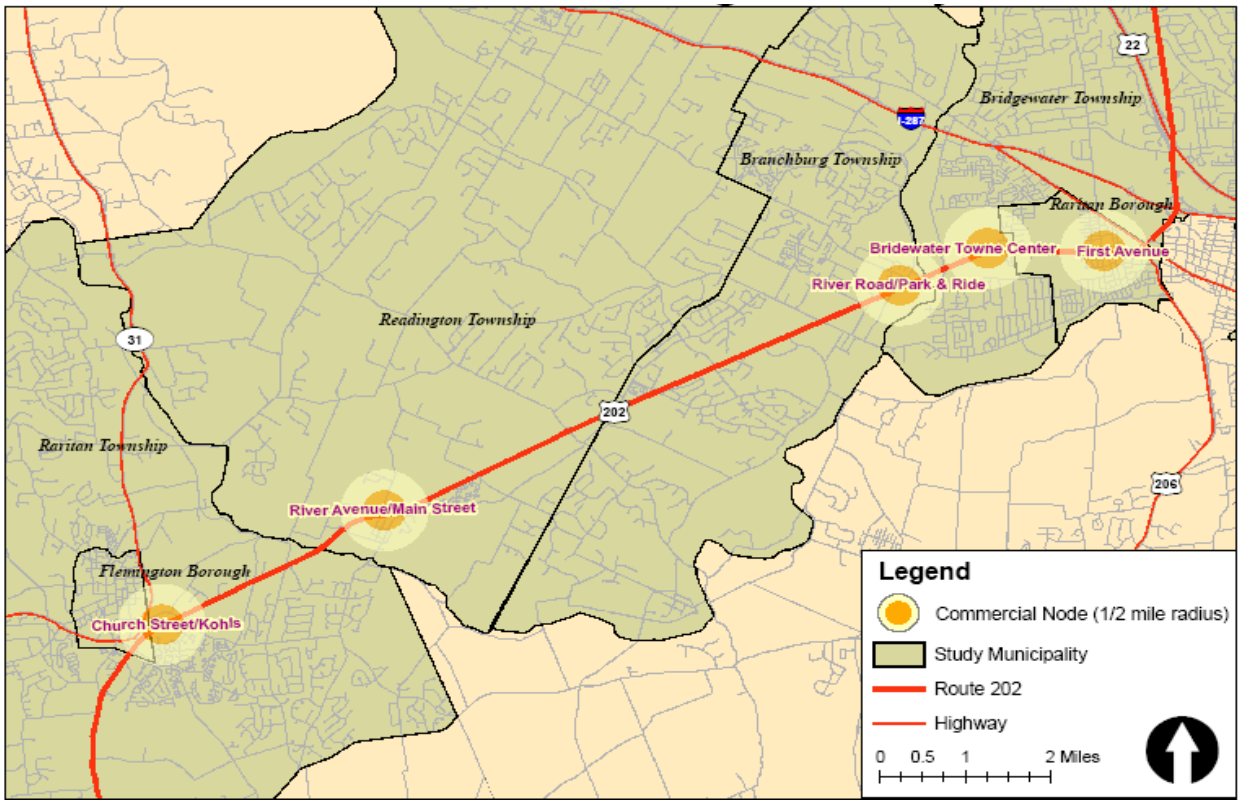
The objectives and guidelines given for each of the 7 handbook topics are accompanied by photographs of current conditions along the study corridor, as well as photographic and illustrative images which highlight key concepts and recommendations.

7.3.2 Handbook Recommendations

The quantity and distribution of commercially zoned land within the study municipalities should be reexamined with a focus on promoting in-fill, mixed-use, and higher intensities within key locations. Restructuring existing commercial areas into nodes of higher density development along key intersections will help reduce vehicle trips, improve traffic, increase pedestrian activity, utilize public facilities and infrastructure more efficiently, and create more vibrant community centers. These nodes of higher-density development can be interspersed with existing land uses, future low-intensity land uses, and open space.

From west to east the existing commercial nodes along the study corridor are at the intersection of Church Street where a large shopping complex with many national retailers including Kohl's exists, River Avenue where Readington Township's limited commercial activity is currently concentrated, River Road which has existing commercial development and is in close proximity to the Branchburg Township's Park and Ride facility, Bridgewater Towne Center where there is a high density of national retailers, and at First Avenue which is in close proximity to downtown Raritan Borough and the Raritan Borough Train Station. Development within the existing nodes can be promoted through public investment, fast track approval, transfer of development rights, business improvement districts, and other development incentives.

Figure 7-1 Existing Commercial Nodes Along the Study Corridor



The key concepts and recommendations to be implemented at these commercial nodes include the following:

Building Location & Orientation - Place entrances along the street, parking behind buildings, and create inviting entrances. Include multi-modal access planning as part of the initial site plan approval process thereby making pedestrian activity a central theme for all development.

Traffic - Preserve vehicular mobility while addressing mounting congestion and safety concerns. Recommended actions include reducing the number of existing access points from the street, adding vegetation to central medians, and providing stub drives to connect to future development in adjacent parcels with shared access ways.

Parking - Minimize the visual dominance of parking, and improving the safety and comfort of pedestrians in parking lots. Guidelines include dividing parking lot rows with landscaped strips and tree islands, clearly defining pedestrian pathways, and combining varied parking uses (i.e. employee parking, patron parking, service vehicle parking, etc.).

Transit Facilities - Anticipate and provide for transit demand growth and improve existing facilities. Focus on inclusion or upgrades to elements such as benches, signage, and landscaping at stations as well as incentives for including transit supportive plazas.

Sidewalks - Promote walking by better accommodating pedestrian access and safety within existing infrastructure. This includes requiring pedestrian circulation plans, connecting adjacent commercial development with interior sidewalks, and making pedestrians feel safe by buffering or screening walkways.

Crosswalks - Consider crosswalks a crucial element of the transportation network on a busy and wide roadway such as Route 202. Boldly marked and sufficiently wide crosswalks are needed in order to promote walking and bicycling. Elements such as pedestrian refuges, curb bulbs and textured pavement can further increase safety for non-motorists of all ages and levels of personal mobility.

Bicycle Access - Accommodate bicyclists both on the road and at their destination. Not only is a safe network of bikeways necessary, bicyclists must also have secure and convenient parking available at shopping plazas and office parks to protect from theft or damage.

7.3.3 Handbook Utilization

The implementation of these design guidelines will occur in three ways. First, private commercial development projects will be prepared and reviewed in accordance with the guidelines. Second, public projects involving improvements to roads, sidewalks, and all aspects of the public domain within commercial districts will incorporate the objectives and guidelines. And lastly, the design principles will be formally incorporated into land use ordinances and master plans within the six municipalities of the study area.

8.0 MOBILITY PLAN AND IMPLEMENTATION MATRIX

A series of recommended improvements have been prepared as part of the Route 202 Mobility Plan to improve both travel and safety conditions along the corridor. The implementation matrix, shown in Table 8-1, summarizes these recommendations, separated into five categories, including Roadway, Intelligent Transportation Systems (ITS), Transit, Bicycle & Pedestrian, and Smart Growth/Transit-Friendly Land-Use Planning. The matrix denotes the type of improvement, location, time frame, and implementing authority for the improvement. It should be noted that the immediate-term time frame is within six months until implementation, short-term is six months to two years, medium-term is two years to five years, and long-term is more than five years.

Table 8-1
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
ROADWAY RECOMMENDATIONS					
Intersection Improvements					
	Route 202 & Church St	Co-ordinate improvements with South Branch Parkway and Flemington Circle improvement initiatives	Long-Term	N/A	NJDOT
	Route 202 & Greenwood Pl	Eliminate median break in conjuction with Church Street improvements	Long-Term	Low	NJDOT
	Route 202 & Dory Dilts Road	Widen River Road Approach	Short-Term	Low	NJDOT
	Route 202 & Dory Dilts Road	Extend Route 202 Left Turn Storage	Short-Term	Low	NJDOT
	Route 202 & Dory Dilts Road	Redirect Barley Sheaf Road to Dory Dilts Road	Medium-Term	Medium	NJDOT
	Route 202 & Dory Dilts Road	Eliminate median left turns in favor of jughandles	Long-Term	Medium	NJDOT

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & Railroad Avenue	Eliminate median break in conjunction with Dory Dilts Road improvements	Long-Term	Low	NJDOT
	Route 202 & Summer Road	Extend Route 202 Left Turn Storage	Short-Term	Low	NJDOT
	Route 202 & Summer Road	Eliminate median left turns in favor of jughandles	Long-Term	High	NJDOT
	Route 202 & Old York Road (South)	Reconfigure and Signalize Intersection	Medium-Term	Medium	NJDOT
	Route 202 & Holland Brook Road	Extend Route 202 Left Turn Storage	Short-Term	Low	NJDOT
	Route 202 & Holland Brook Road	Consider signalization and construction of jughandles	Long-Term	Medium	NJDOT
	Route 202 & West County Drive	Extend Route 202 Left Turn Storage	Short-Term	Low	NJDOT

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & West County Drive	Eliminate median left turns in favor of jughandles	Long-Term	High	NJDOT
	Route 202 & West County Drive	Complete West County Drive to Old York Road	Long-Term	High	Somerset County/Private Developers
	Route 202 & Old York Road	Extend Route 202 Left Turn Storage	Short-Term	Low	NJDOT
	Route 202 & Old York Road	Reconfigure intersection to provide two way jughandles and reduce signal to a two phase operation	Long-Term	High	NJDOT
	Route 202 & Robbins Road	Extend Route 202 Left Turn Storage	Short-Term	Low	NJDOT
	Route 202 & Robbins Road	Eliminate median breaks in conjunction with Old York Road and River Road improvements	Long-Term	Low	NJDOT
	Route 202 and River Road	Relocate signal to provide jughandles and U-Turn movements	Long-Term	High	NJDOT

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & Milltown Road	Reconfigure jughandles to provide additional storage on Milltown Road	Mid-Term	High	NJDOT
	Route 202 & Town Center Drive	Restripe Town Center Drive to better accommodate right turns	Short-Term	Low	NJDOT
	Route 202 & Town Center Drive	Add additional entrance / exit ramps for Town Center Drive	Mid-Term	Medium	NJDOT
	Route 202 & Town Center Drive	Eliminate left turn lanes in favor of jughandles	Long-Term	Medium	NJDOT
	Route 202 & Ortho McNeil Drive	Improve traffic signal coordination between Ortho McNeil Drive and adjacent signals	Immediate-Term	Low	NJDOT
	Route 202 & First Avenue	Reconfigure intersection to provide two way jughandles and reduce signal to a two phase operation	Mid-Term	Medium	NJDOT
	Route 202 & First Avenue	Provide three travel lanes on Route 202 in each direction through the intersection	Long-Term	High	NJDOT

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
INTELLIGENT TRANSPORTATION SYSTEMS (ITS) RECOMMENDATIONS					
Traffic Signal Coordination					
	Along Route 202	Coordinate traffic signal system along corridor to move throught traffic through the corridor more efficiently.	Short-Term	Low	NJDOT
Install Driver Information Signs					
	Along Route 202	Install signs, such as Variable Message Signs, north of Somerville Cirhcle and south of Flemington Circle to provide motorists with real-time travel information.	Short-Term	Low	NJDOT
Install Cameras at Intersections					
	Along Route 202	Install cameras at critical locations that experience delays and safety concerns along the corridor facilitate incident management.	Short-Term	Low	NJDOT

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
Install "Red Signal Ahead" Signs					
	Along Route 202	Install signs at intersections where stopping sight distance is limited to motorists.	Short-Term	Low	NJDOT
TRANSIT RECOMMENDATIONS					
Park And Ride Lots					
	Along Route 202	Opportunities for Counties to share parking facilities with local commercial and private parking facilities	Short-Term	Low-Medium	Hunterdon County / Somerset County
	Route 202/Route 31 Interchange Area	Create a new park and ride(s) lot to benefit local and regional commuters	Mid-Term	Medium-High	NJDOT/NJ TRANSIT / Hunterdon County
Rail Service					
	Raritan Valley Line	Increase service between Raritan and High Bridge Stations to encourage greater use of the stations west of Raritan Station.	Short-Term	Medium-High[2]	NJ TRANSIT / Hunterdon County/Somerset County
	Existing NS Lehigh Valley Freight Line	Implement passenger rail service on the Lehigh Valley Line. Potential for new stations at following locations: a. Manville b. Hillsborough Township c. Flemington Borough	Long-Term	High	NJ TRANSIT / Hunterdon County/Somerset County

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
Bus System					
	Route 202 Corridor	Create new regional and local bus service serving the Route 202 Corridor. Introduction of Bus Rapid Transit service on the Route 202 corridor.	Mid-Term	Low-Medium	NJ TRANSIT / Hunterdon County/Somerset County
	Somerset and Hunterdon Counties	Provide new feeder buses or shuttles for transit users connecting to existing rail stations.	Mid-Term	Medium	NJ TRANSIT / Hunterdon County/Somerset County
	Somerset and Hunterdon Counties	Design local bus service using local roads around Route 202 with limited bus stops along Route 202. Connect local service to the RVL.	Mid-Term	Medium	NJ TRANSIT / Hunterdon County/Somerset County
	Somerset and Hunterdon Counties	Provide for fixed-route bi-county service between Clinton Township and Bridgewater Township (Bridgewater Commons Mall) by way of Somerville.	Mid-Term	High	NJ TRANSIT / Hunterdon County/Somerset County
	Somerset and Hunterdon Counties	Design fixed-route bi-county service between Lambertville and Somerville by way of East Amwell and Hillsborough Townships with stops in Flemington Borough.	Mid-Term	High	NJ TRANSIT / Hunterdon County/Somerset County

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Somerset and Hunterdon Counties	Provide new feeder buses or shuttles for transit users connecting to the rail stations created as part of the implementation of passenger service on the Lehigh Valley Line. Expand LINK bus system to connect to potential rail station in Flemington.	Long-Term	Medium-High	NJ TRANSIT / Hunterdon County/Somerset County
System Connectivity & Continuity					
	Hunterdon County / Somerset County	The modification and expansion of existing bus route should be explored. Modify existing schedules to include more frequent service, additional service runs to accommodate shift workers and to connect better with other transit services, especially trains	Short-Term	Low-Medium	NJ TRANSIT / Hunterdon County / Somerset County
	Hunterdon County / Somerset County	The installation of bus stop signs and shelters, posted schedules and route maps, better marketing materials and easier access to service information via the Internet.	Short-Term	Low	NJ TRANSIT / Hunterdon County / Somerset County

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
Travel Demand Management Strategies					
	Hunterdon County / Somerset County	Ordinance revisions that require transit-friendly design and the provision of bicycle and pedestrian facilities and amenities as part of the site development process; passage of voluntary or mandatory trip reduction ordinances; and negotiating travel demand	Short-Term	Low	Municipalities/TMAs
	Hunterdon County / Somerset County	1. Expand marketing for the car-pool and van-pool programs to attract new users 2. Provide incentives such as preferential parking	Short-Term	Low	Local TMAs / Counties
PEDESTRIAN RECOMMENDATIONS					
New Traffic Signal					
	Route 202 & Robbins Road	Install new traffic signal	Mid-Term	High[3]	NJDOT / Branchburg Township
	Route 202 & Holland Brook Road	Install new traffic signal	Mid-Term	High[3]	NJDOT / Branchburg Township

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
New Crosswalks across Rt 202					
	Route 202 & Ortho McNeil Drive	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT/Raritan Borough
	Route 202 & Milltown Road	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & Robbins Road	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Whiton Road	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Summer Road	Install two (2) crosswalks	Short-Term	Low[3]	NJDOT / Readington Township
	Route 202 & River Road, Main Street & Broad St	Install two (2) crosswalks	Short-Term	Low[3]	NJDOT / Hunterdon County
	Route 202 & Church Street & Voorhees Corner Road	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT / Hunterdon County
Crosswalks across Intersecting Cross Street					
	Route 202 & Ortho McNeil Drive	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT/Raritan Borough

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & Town Center Drive	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & River Road	Install three (3) crosswalks	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Robbins Road	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Old York Road/CR 637	Install one (1) crosswalk	Short-Term	Low[3]	NJDOT / Somerset County
	Route 202 & Whiton Road	Install two (2) crosswalks	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Summer Road	Install two (2) crosswalks	Short-Term	Low[3]	NJDOT / Readington Township
	Route 202 & River Road, Main Street & Broad St	Install two (2) crosswalks	Short-Term	Low[3]	NJDOT / Hunterdon County
	Route 202 & Church Street & Voorhees Corner Road	Install two (2) crosswalks	Short-Term	Low[3]	NJDOT / Hunterdon County

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
Enhance Existing Curb Ramps (color & tactile warning)					
	Route 202 & First Avenue	Enhance eight (8) existing curb ramps	Short-Term	Low[3]	NJDOT / Somerset County
	Route 202 & River Road	Enhance five (5) existing curb ramps	Short-Term	Low[3]	NJDOT / Branchburg Township
Additional Curb Ramps					
	Route 202 & First Avenue	Install four (4) curb ramps	Short-Term	Low[3]	NJDOT / Somerset County
	Route 202 & Ortho McNeil Drive	Install ten (10) curb ramps	Short-Term	Medium[3]	NJDOT / Raritan Borough
	Route 202 & Town Center Drive	Install four (4) curb ramps	Short-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & Milltown Road	Install six (6) curb ramps	Short-Term	Medium[3]	NJDOT / Bridgewater Township
	Route 202 & River Road	Install six (6) curb ramps	Short-Term	Medium[3]	NJDOT / Branchburg Township

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & Robbins Road	Install twelve (12) curb ramps	Short-Term	Medium[3]	NJDOT / Branchburg Township
	Route 202 & Old York Road/CR 637	Install fourteen (14) curb ramps	Short-Term	Medium[3]	NJDOT / Somerset County
	Route 202 & Holland Brook Road	Install six (6) curb ramps	Short-Term	Medium[3]	NJDOT / Branchburg Township
	Route 202 & Whiton Road	Install twelve (12) curb ramps	Short-Term	Medium[3]	NJDOT / Branchburg Township
	Route 202 & Summer Road	Install fourteen (14) curb ramps	Short-Term	Medium[3]	NJDOT / Readington Township
	Route 202 & River Road, Main Street & Broad St	Install eighteen (18) curb ramps	Short-Term	Medium[3]	NJDOT / Hunterdon County
	Route 202 & Church Street & Voorhees Corner Road	Install fourteen (14) curb ramps	Short-Term	Medium[3]	NJDOT / Hunterdon County
Countdown Pedestrian Signal Heads					
	Route 202 & First Avenue	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Somerset County

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & Ortho McNeil Drive	Install pedestrian signals	Short-Term	Low[3]	NJDOT/Raritan Borough
	Route 202 & Town Center Drive	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & Milltown Road	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & River Road	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & Robbins Road	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Old York Road/CR 637	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Somerset County
	Route 202 & Holland Brook Road	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Whiton Road	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Summer Road	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & River Road, Main Street & Broad St	Install pedestrian signals	Short-Term	Medium[3]	NJDOT / Hunterdon County

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & Church Street & Voorhees Corner Road	Install pedestrian signals	Short-Term	Low[3]	NJDOT / Hunterdon County
Refuges on Route 202 Medians					
	Route 202 & First Avenue	Install two (2) refuges	Mid-Term	Low[3]	NJDOT / Somerset County
	Route 202 & Ortho McNeil Drive	Install one (1) refuge	Mid-Term	Low[3]	NJDOT/Raritan Borough
	Route 202 & Milltown Road	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Robbins Road	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Old York Road/CR 637	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Somerset County
	Route 202 & Holland Brook Road	Install two (2) refuges	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Whiton Road	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Summer Road	Install two (2) refuges	Mid-Term	Low[3]	NJDOT / Readington Township

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & River Road, Main Street & Broad St	Install two (2) refuges	Mid-Term	Low[3]	NJDOT / Hunterdon County
	Route 202 & Church Street & Voorhees Corner Road	Install two (2) refuges	Mid-Term	Low[3]	NJDOT / Hunterdon County
Refuges on Cross Street Islands					
	Route 202 & Town Center Drive	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & Milltown Road	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & Robbins Road	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Old York Road/CR 637	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Somerset County
	Route 202 & Whiton Road	Install two (2) refuges	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Summer Road	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Hunterdon County

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & River Road, Main Street & Broad St	Install two (2) refuges	Mid-Term	Low[3]	NJDOT / Hunterdon County
	Route 202 & Church Street & Voorhees Corner Road	Install one (1) refuge	Mid-Term	Low[3]	NJDOT / Hunterdon County
Additional Push Buttons in Median					
	Route 202 & Town Center Drive	Install one (1) push button in median	Mid-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & River Road	Install one (1) push button in median	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Robbins Road	Install one (1) push button in median	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Old York Road/CR 637	Install one (1) push button in median	Mid-Term	Low[3]	NJDOT / Somerset County
	Route 202 & Holland Brook Road	Install two (2) push buttons in median	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Whiton Road	Install one (1) push button in median	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Summer Road	Install two (2) push buttons in median	Mid-Term	Low[3]	NJDOT / Readington Township

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & River Road, Main Street & Broad St	Install two (2) push buttons in median	Mid-Term	Low[3]	NJDOT / Hunterdon County
	Route 202 & Church Street & Voorhees Corner Road	Install two (2) push buttons in median	Mid-Term	Low[3]	NJDOT / Hunterdon County
New Sidewalk Segments (varying lengths)					
	Route 202 & Town Center Drive	Install two (2) sidewalk segments	Mid-Term	Low[3]	NJDOT / Bridgewater Township
	Route 202 & River Road	Install one (1) sidewalk segment	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Robbins Road	Install three (3) sidewalk segments	Mid-Term	Medium[3]	NJDOT / Branchburg Township
	Route 202 & Old York Road/CR 637	Install four (4) sidewalk segments	Mid-Term	Medium[3]	NJDOT / Somerset County
	Route 202 & Holland Brook Road	Install two (2) sidewalk segments	Mid-Term	Medium[3]	NJDOT / Branchburg Township

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & Whiton Road	Install two (2) sidewalk segments	Mid-Term	Medium[3]	NJDOT / Branchburg Township
	Route 202 & Summer Road	Install two (2) sidewalk segments	Mid-Term	Low[3]	NJDOT / Readington Township
BICYCLE RECOMMENDATIONS					
Right Turning Traffic Yield to Bikes Signs					
	Route 202 & First Avenue	Install sign	Mid-Term	Low[3]	NJDOT + Somerset Co.
	Route 202 & Ortho McNeil Drive	Install sign	Mid-Term	Low[3]	NJDOT/Raritan Borough
	Route 202 & Milltown Road	Install sign	Mid-Term	Low[3]	NJDOT + Bridgewater Twp.
	Route 202 & West County Drive	Install sign	Mid-Term	Low[3]	NJDOT / Somerset County
	Route 202 & Whiton Road	Install sign	Mid-Term	Low[3]	NJDOT / Branchburg Township

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Route 202 & Old York Road	Install sign	Mid-Term	Low[3]	NJDOT / Branchburg Township
	Route 202 & Pleasant Run Road	Install sign	Mid-Term	Low[3]	NJDOT / Hunterdon County
	Route 202 & River Road, Main Street & Broad St	Install sign	Mid-Term	Low[3]	NJDOT / Hunterdon County
	Route 202 & Railroad Avenue	Install sign	Mid-Term	Low[3]	NJDOT + Reading Twp.
	Route 202 & Dory Dilts Road	Install sign	Mid-Term	Low[3]	NJDOT/Raritan Township
	Route 202 & Case Boulevard	Install sign	Mid-Term	Low[3]	NJDOT/Raritan Township
Land Use Planning					
	Along Route 202	Create a Route 202 Overlay Zone with restrictions and guidelines for development and infrastructure that promote multiple modes of transportation, address traffic problems, and encourages a cohesive pattern of development along the corridor.	Mid-Term	Low	Study Area Municipalities

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Along Route 202	Adopt Transit-Supportive Design Guidelines and incorporate into overlay zone requirements and development review process.	Mid-Term	Low	Study Area Municipalities
	Major intersections along Route 202	Through overlay zone and guidelines combined with open space preservation measures, focus development in existing commercial nodes.	Long-Term	Low	Study Area Municipalities
	Major intersections along Route 202	Promote in-fill, mixed-use, and higher densities at existing commercial nodes.	Long-Term	Low	Study Area Municipalities
	Along Route 202	Revise parking standards to encourage shared parking and trip reduction.	Mid-Term	Low	Study Area Municipalities
	Along Route 202	Require bicycle and pedestrian circulation and access in all new development and redevelopment.	Mid-Term	Low	Study Area Municipalities
	Existing commercial centers	Redevelop strip shopping malls into internal street-fronting shops with a mixture of residential, recreational and commercial uses.	Long-Term	High	Study Area Municipalities

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

Table 8-1 (Continued)
Implementation Matrix

IMPROVEMENT TYPE	LOCATION/ROUTE	IMPROVEMENT	TIME FRAME	COST[1]	IMPLEMENTING AUTHORITY
	Along Route 202	Build on existing project steering advisory committee to create a corridor management stewardship group to ensure implementation and coordination of improvements.	Short-Term	Low	Hunterdon County / Somerset County

[1] Cost Classification - Low (Less than $200,000); Medium ($200,000 - $1 Million); High (Greater than $1 Million)
[2] Rail Service expansion costs would depend on level of increase in service, operations and maintenance (O&M) costs and additional equipment required
[3] Cost Classification - Low (Less than $10,000); Medium ($10,000 - $250,000); High (Greater than $250,000)

9.0 APPENDICES

APPENDIX A STEERING ADVISORY COMMITTEE MEMBERS

APPENDIX B PROBLEM STATEMENTS

APPENDIX C TRANSIT-SUPPORTIVE DESIGN GUIDELINES

APPENDIX A – STEERING ADVISORY COMMITTEE MEMBERS

Steering Advisory Committee

Somerset County
Freeholder Peter S. Palmer
Robert Bzik
Walter Lane
Kenneth Wedeen
Joseph A. Fishinger

Hunterdon County
Freeholder Matt Holt
Sue Dziamara
Kenneth Bogen
Kyle Zenlea
Thomas Matthews

Raritan Borough
Mayor Joann Liptak
Council President Joe Licht
David Maski
Stan Schreck

Bridgewater Township
Robert Bogart
Scarlett Doyle
Chip Mills

Branchburg
James Melitski
Linda Weber

Raritan Township
Fred Coppola
Jaime Sunyak

Readington
Mayor Julia C. Allen
Committeeman Gerard J. Shamey

Flemington
Mayor Robert Hauck
Councilwoman Erica Edwards
Todd Cook
Jeff Doshna
Mark Legato

NJDOT
Gary Leach

NJ Transit
Mike Viscardi

NJTPA
Hamou Meghdir

Ridewise
Donna Allison

HART Commuter Information Services
Tara Shepherd

APPENDIX B – PROBLEM STATEMENTS

New Jersey Department of Transportation

Transportation Problem Statement
Traffic Signal Coordination

The following information is to be completed by the Bureau of Capital Program Development:

DB Number _____
Legislative District_____
Congressional District_____
CIS Text and CIS No._____
Program Category_____
Information contained on this form has been verified by_____

LOCATION

Route (if applicable): Route 202

Mileposts (if applicable): 11.9 – 23.9

Structure number (if applicable):

Limits: Church Street/Voorhees Corner Road in Raritan Township and First Avenue in Raritan Borough

County(s): Somerset, Hunterdon

Municipality(s): Raritan Township, Readington Township, Branchburg Township, Bridgewater Township, Raritan Borough

DESCRIPTION OF PROBLEM

Check those items that best describe the problem:

Existing Highway
__X__Capacity problem
__X__Operational problem
____Physical condition problem
____Safety problem
____Other (specify)

Existing Bridge
____ Capacity problem
____ Physical condition problem
____ Safety problem

Corridor/area Capacity Problem
___Need for corridor study
___Possible highway on new alignment
___Possible new transit line
___Need for park and ride development

Describe the problem:

There is effectively no coordination between the signalized intersections along the Route 202 Corridor. The signals operate on multiple cycle lengths and time periods. These conditions contribute to long queues, poor levels of service and delay at traffic signals along the Corridor. It is recommended that the traffic signal systems along the Corridor be coordinated using communications between controllers to move through traffic more efficiently. This can easily be implemented by developing a signal optimization model that would provide signal offsets between adjacent intersections based on desired travel speed. Signal bandwidth along Route 202 should be maximized and a fully responsive signal system should be installed. This is a short term and easily implementable improvement that can be implemented by the New Jersey Department of Transportation with coordination with local and County traffic engineers.

If an outside group actively supports this problem, please identify:
The recommendation described here emerged from the public involvement process that informed the Route 202 Corridor Assessment and Multi-modal Mobility Plan study. The study was guided by a Steering Committee consisting of:

- *Counties:* Somerset County, Hunterdon County;
- *Municipalities*: Flemington Borough, Raritan Township, Readington Township; Branchburg Township, Bridgewater Township, Raritan Borough
- *State Agencies*: New Jersey Department of Transportation, New Jersey Transit, North Jersey Transportation Planning Authority;
- *Other Organizations*: Ridewise, HART Commuter Information Services

Other comments (if any) by initiator:

Initiator:

Division:

Date of Initiation:
Signature_____
Concurrence by Division Director (Signature)_____

Date of Concurrence_____

The following information is to be completed by the Bureau of Capital Program Development:

Date Received by Capital Program Development_____

Date presented to Capital Program Committee_____

Disposition

_____
_____
_____
_____

New Jersey Department of Transportation

Transportation Problem Statement
Roadway Improvements

The following information is to be completed by the Bureau of Capital Program Development:

DB Number _____
Legislative District_____
Congressional District_____
CIS Text and CIS No._____
Program Category_____
Information contained on this form has been verified by_____

LOCATION

Route (if applicable): Route 202

Mileposts (if applicable): 11.9 – 23.9

Structure number (if applicable):

Limits: Church Street/Voorhees Corner Road in Raritan Township and First Avenue in Raritan Borough

County(s): Somerset, Hunterdon

Municipality(s): Raritan Township, Readington Township, Branchburg Township, Bridgewater Township, Raritan Borough

DESCRIPTION OF PROBLEM

Check those items that best describe the problem:

Existing Highway
_X_Capacity problem
_X_Operational problem
___Physical condition problem
_X_Safety problem
___Other (specify)

Existing Bridge
____ Capacity problem
____ Physical condition problem
____ Safety problem

Corridor/area Capacity Problem
___Need for corridor study
___Possible highway on new alignment
___Possible new transit line
___Need for park and ride development

Describe the problem:

The Route 202 Corridor experiences extensive delays for both mainline Route 202 traffic and cross streets. Future traffic growth will only exacerbate these conditions. In response to these operational deficiencies, a series of improvement concepts were developed during the *Route 202 Corridor Assessment and Multi-Modal Mobility Plan* to provide an initial vision of potential improvements to improve intersection operations throughout the corridor. These concepts pursue the long term goal of the New Jersey Department of Transportation (NJDOT) to eliminate unsignalized median breaks along the corridor and provide for consistent left-turn treatments throughout the corridor via jughandles. Descriptions of the proposed improvements by intersection are below. Figures depicting the proposed improvements are located in Section 4 of the *Route 202 Corridor Assessment and Multi-Modal Mobility Plan*. It should be noted that during the public outreach process, there were numerous comments regarding the potential grade separation at major intersections such as First Avenue, Old York Road (CR 637) and Church Street/Voorhees Corner Road.

- Route 202 and Greenwood Place**,** Raritan Borough, Hunterdon County: In conjunction with the goal to eliminate the unsignalized median breaks along the corridor, the intersection of Route 202 & Greenwood Place would need to be converted to a right-in, right-out operation, with left turns in and out accomplished via jughandle facilities located at the adjacent signalized intersections.

- Route 202 and Dory Dilts Road / River Road, Raritan Borough, Hunterdon County: To improve intersection operations in the short term and reduce the potential for southbound rear end crashes, the southbound Route 202 left turn slot should be extended at the intersection of Route 202 and Dory Dilts / River Road. Also, to improve Level of Service operations at the intersection, the eastbound approach should be widened to provide a dedicated left turn lane and dedicated through lane. Medium and Long Term improvements at this intersection include the realignment of the adjacent Barley Sheaf Road intersection to Dory Dilts Road to eliminate the conflict points associated with having a right-in, right-out intersection in close proximity to the traffic signal. Also, in the long term, a

southbound nearside jughandle should be constructed to eliminate the southbound left turn lane.

- Route 202 and Railroad Avenue, Readington Township, Hunterdon County: In conjunction with the goal to eliminate the unsignalized median breaks along the corridor, the southbound left turn at the intersection of Route 202 & Railroad Avenue would need to be eliminated and traffic redirected to Dory Dilts Road to execute a U-turn. This closure will need to be coordinated with the construction of the southbound jughandle at Dory Dilts Road to ensure access to Railroad Avenue is maintained.

- Route 202 and Summer Road, Readington Township, Hunterdon County: In the short term, the left/U-turn storage should be extended for both the northbound and southbound approaches at the intersection of Route 202 and Summer Road to reduce the potential for rear end crashes from vehicles queuing in the through lanes waiting to make turn movements. In the long term, elimination of the left turn lanes on Route 202 in favor of jughandles could be accomplished by constructing a southbound farside jughandle and a northbound nearside jughandle.

- Route 202 and Old York Road, Branchburg Township, Somerset County: Due to the high propensity of right angle crashes at this intersection, signalization of the intersection is recommended in conjunction with the construction of a series of far side jug handles to accommodate left turn movements.

- Route 202 and Holland Brook Road, Branchburg Township, Somerset County: In conjunction with the goal to eliminate the unsignalized median breaks along the corridor, the intersection of Route 202 and Holland Brook Road should be further evaluated for either conversion to right-in, right-out intersections or signalization in conjunction with the construction of a series of nearside jughandles if it is determined that U-turn facilities are still required at the intersection.

- Route 202 and West County Drive (CR 646), Branchburg Township, Somerset County: In the short term, the southbound left turn slot at the intersection of Route 202 and West County Drive should be extended to minimize the potential for rear end crashes since the left turn slot typically queues into the left through lane. Long term improvements to this intersection should include the construction of a series of jughandles to accommodate turning movements in conjunction with the completion of West County Drive west of Route 202 to Old York Road.

- Route 202 and Old York Road (CR 637), Branchburg Township, Somerset County: In the short term, the Route 202 left/U-turn lanes at the intersection of Route 202 and Old York Road should be extended to minimize the potential for rear end crashes since the left/U-turn lanes routinely block the through lanes. In the long term, the intersection should be reconfigured to simplify the signal operation by creating a series of two-way jughandles to accommodate left-turn

movements on both Route 202 and Old York Road, allowing the signal to operate as a two-phase operation.

- Route 202 and Robbins Road, Branchburg Township, Somerset County: In the short term, the Route 202 left/U-turn lanes at the intersection of Route 202 and Robbins Road should be extended to minimize the potential for rear end crashes since vehicles waiting to make a U-turn movement block the through lanes. In conjunction with jughandle improvements at the adjacent intersections, the intersection should be evaluated for conversion to right-in, right-out controls in the long term. While signalization is still a potential option, it was not recommended due to the acquisition of developed properties that would be required to accommodate jughandles.

- Route 202 and River Road, Branchburg Township, Somerset County: In conjunction with the goal to eliminate median left turns along the corridor, the intersection of Route 202 and River Road is recommended to be reconstructed to the north in an area where property acquisitions for the necessary jughandles would not require takings of developed properties. One potential concept is to utilize the existing park and ride lot to accommodate a farside jughandle, although a satisfactory alternative park and ride site would need to be found. Southbound U-turn movements would be accomplished using the existing River Road intersection and a connector road between Route 202 and River Road.

- Route 202 and Milltown Road, Bridgewater Township, Somerset County: To increase the operational efficiency of the jughandle system at the intersection of Route 202 and Milltown Road, the intersections of the jughandle system with Milltown Road should be relocated farther away from the Route 202 and Milltown Road signal. For southbound traffic, the existing nearside jughandle would remain for right-turn movements only, and the southbound left-turn movement would be accomplished via a farside jughandle. The northbound nearside jughandle would be relocated farther away from the intersection to improve operations as well.

- Route 202 and Bridgewater Town Center Drive, Bridgewater Township, Somerset County: In the short term, the Town Center Drive egress should be restriped to provide a dedicated left tuern lane, shared left/right turn land and a dedicated right-turn lane at the intersection of Route 202 and Town Center Drive. In the medium term, to improve operations at the Route 202 and Town Center Drive intersection, a right-turn-in driveway should be constructed north of the signalized intersection and a right-turn-out driveway constructed south of the signal, thus reducing the number of vehicles required to utilize the signal to enter/exit the property. In the long term, a northbound nearside jughandle should be constructed to allow the elimination of the northbound Route 202 left-turn lanes.

- Route 202 and the Ortho-McNeil Driveway, Raritan Township, Somerset County: In the immediate term, the timing at the intersection of Route 202 and the Ortho-

McNeil Driveway should be reviewed to insure coordination with the traffic signals on either side of the intersection.

- Route 202 and First Avenue (CR 567), Raritan Township, Somerset County: As a short-term improvement, a flashing "Red Signal Ahead" sign should be considered for northbound Route 202 in advance of the First Avenue intersection, to better inform drivers of the approaching traffic signal, given the vertical crest on Route 202 northbound in advance of the First Avenue intersection. As a medium- to long-term improvement, to simplify the operation of the traffic signal operation at the intersection of Route 202 and First Avenue, the left-turn movements at First Avenue should be eliminated by relocating and reconfiguring the existing jughandles to accommodate two-way flow. The southbound jughandle would be relocated farther away from the traffic signal to accommodate additional storage. In conjunction with this improvement, widening Route 202 to three through lanes in each direction is recommended to provide additional through capacity on Route 202.

If an outside group actively supports this problem, please identify:
The recommendation described here emerged from the public involvement process that informed the *Route 202 Corridor Assessment and Multi-modal Mobility Plan* study. The study was guided by a Steering Committee consisting of:

- *Counties:* Somerset County, Hunterdon County;
- *Municipalities*: Flemington Borough, Raritan Township, Readington Township; Branchburg Township, Bridgewater Township, Raritan Borough
- *State Agencies*: New Jersey Department of Transportation, New Jersey Transit, North Jersey Transportation Planning Authority;
- *Other Organizations*: Ridewise, HART Commuter Information Services

Other comments (if any) by initiator:

Initiator:

Division:

Date of Initiation:
Signature_____
Concurrence by Division Director (Signature)_____

Date of Concurrence_____

The following information is to be completed by the Bureau of Capital Program Development:

Date Received by Capital Program Development_____

Date presented to Capital Program Committee_____

Disposition

_____
_____
_____
_____

New Jersey Department of Transportation

Transportation Problem Statement
Transit Service Enhancements

The following information is to be completed by the Bureau of Capital Program Development:

DB Number _____
Legislative District_____
Congressional District_____
CIS Text and CIS No._____
Program Category_____
Information contained on this form has been verified by_____

LOCATION

Route (if applicable): *Route 202 corridor*

Mileposts (if applicable):

Structure number (if applicable):

Limits:

County(s): Somerset, Hunterdon

Municipality(s): Flemington Borough, Raritan Township, Readington Township, Branchburg Township, Bridgewater Township, Raritan Borough

DESCRIPTION OF PROBLEM

Check those items that best describe the problem:

Existing Highway
_X_ Capacity problem
___ Operational problem
___ Physical condition problem
____ Safety problem
_X_ Other (specify) Poor transit connectivity

Existing Bridge

____ Capacity problem
____ Physical condition problem
____ Safety problem

Corridor/area Capacity Problem
___Need for corridor study
___Possible highway on new alignment
__X_Possible new transit line
__X__Need for park and ride development

Describe the problem:

The Route 202 Corridor currently has limited modal choices resulting in the increased use of single occupant vehicles. This has aggravated traffic congestion and delays. The *Route 202 Corridor Assessment and Multi-Mobility Plan* recommends the following transit related improvements to help move commuters from single occupant vehicles to mass transit.

1. Rail System Improvements

The Raritan Valley Line (RVL) provides commuter rail service limited service between Raritan/Somerville and High Bridge and requires many commuters to drive to Raritan/Somerville stations; increasing traffic along Route 202. Additionally, there is limited transit connectivity between the two counties. Hence, an expansion of passenger rail service is an opportunity to increase transit ridership and reduce vehicular congestion on Route 202.

- Expansion of service on the NJ Transit Raritan Valley Line: An increase in service between Raritan and High Bridge with additional service at the four Hunterdon stations, coupled with a network of flexible feeder routes and/or local collector services.

- The potential for the dual use of the existing Norfolk Southern Lehigh Valley Line for both freight and passenger service: Norfolk Southern (NS), CSX and Conrail have freight line facilities in and around the Route 202 Corridor. The Norfolk Southern Lehigh Valley freight rail splits off from the Conrail/Raritan Valley line in the area of Bound Brook, travels south and west through the Hillsborough Township, and continues southwest past Flemington and into southeastern Pennsylvania. This rail line presents a tremendous opportunity to be used as a shared resource for both freight and passenger service. The NS Lehigh Valley line has a connection to the Black River and Western Railroad spur, which passes through Flemington and then branches off at this location. The Black River and Western Rail line travels through Liberty Village next to the Flemington shopping outlet mall. The use of both of these sections of track for passenger rail service and the development of several new rail stations could provide a very attractive option to commuters traveling the Route 202 corridor via automobile.

Potential trains stations could be located in the Borough of Flemington as well as in Hillsborough Township, Three Bridges and the Borough of Manville.

2. Bus system improvements

In addition to rail transit improvements, additional bus service could improve travel conditions on Route 202. These improvements include:

- A feeder bus service linking existing and new transit services between the Borough of Flemington and the Borough of Somerville (could use the LINK system in Hunterdon County). Implementation of bus rapid transit service along the Route 202 corridor.

- Feeder buses connecting the four Hunterdon RVL stations without crossing the Route 202 Corridor.

- Local bus service using the municipal and county roadway networks in the area with limited bus stops along Route 202, and connecting local service to the Raritan Valley Line. Two local service options are to provide a fixed-route bi-county service between Clinton Township and Bridgewater Township (Bridgewater Commons Mall) by way of Somerville Borough and a fixed-route bi-county service between Lambertville City and Somerville by way of East Amwell and Hillsborough Townships with stops in Flemington Borough.

- Long-term recommendation for expanding LINK services in Hunterdon County to connect with a potential railroad station at Liberty Village. Additional service could connect to and from the Clinton Township / Annandale area.

- Long-term recommendation to implement bus connections to and from the southern districts in Somerset County to the recommended new rail stations.

3. Park and Ride Lots Improvements

Park and Rides in the area are already operating at their maximum capacity. In the northern end of the study corridor, there are multiple locations where large commercial and private parking facilities exist and could be utilized as potential park and rides facilities. Some of these locations include the Somerville Circle Shopping Center, Somerset Shopping Center, Bridgewater Commons Mall, and the Bridgewater Town Center. Some of the private companies along this route are Johnson & Johnson, Ortho Chemical Diagnostics, Ortho McNeil Pharmaceuticals, ITS (all part of Johnson & Johnson Industries), Thermo-Fisher Scientific and NES Development. At the southern end of the corridor, there is 3M, Liberty Village and the Flemington Business Center close to Voorhees Corner. There may be shared partnerships where private entities may be willing to share a percentage of available parking spaces to boost commuter parking.

Where land use permits, the possibility of increasing capacity of existing park and ride lots should be explored. Potential locations for new park and ride lots are shown in Section 5 or the *Route 202 Corridor Assessment and Multi-Mobility Plan*.

4. Travel Demand Management Strategies:

In addition to the current programs and initiatives underway by the local TMA's, additional efforts focused on the Route 202 corridor could help relieve congestion. The creation of a dedicated incentive and subsidy program (by HART and RideWise) targeted for only employers and employees working or living in the Route 202 corridor should be explored.

The use of TDM strategies as part of the local land development process. This can be done through ordinance revisions that require transit-friendly design and the provision of bicycle and pedestrian facilities and amenities as part of the site development process; passage of voluntary or mandatory trip reduction ordinances; and negotiating travel demand management agreements with developers and/or property owners.

If an outside group actively supports this problem, please identify:

The recommendation described here emerged from the public involvement process that informed the Route 202 Corridor Assessment and Multi-modal Mobility Plan study. The study was guided by a Steering Committee consisting of:

- *Counties:* Somerset County, Hunterdon County;
- *Municipalities*: Flemington Borough, Raritan Township, Readington Township; Branchburg Township, Bridgewater Township, Raritan Borough
- *State Agencies*: New Jersey Department of Transportation, New Jersey Transit, North Jersey Transportation Planning Authority;
- *Other Organizations*: Ridewise, HART Commuter Information Services

Other comments (if any) by initiator:

Initiator:

Division:

Date of Initiation:
Signature_____
Concurrence by Division Director (Signature)_____

Date of Concurrence_____

The following information is to be completed by the Bureau of Capital Program Development:

Date Received by Capital Program Development_____

Date presented to Capital Program Committee_____

Disposition

_____
_____
_____
_____

New Jersey Department of Transportation

Transportation Problem Statement
Intelligent Transportation Systems (ITS)

The following information is to be completed by the Bureau of Capital Program Development:

DB Number _____
Legislative District_____
Congressional District_____
CIS Text and CIS No._____
Program Category_____
Information contained on this form has been verified by_____

LOCATION

Route (if applicable): Route 202

Mileposts (if applicable): 11.9 – 23.9

Structure number (if applicable):

Limits: Church Street/Voorhees Corner Road in Raritan Township and First Avenue in Raritan Borough

County(s): Somerset, Hunterdon

Municipality(s): Raritan Township, Readington Township, Branchburg Township, Bridgewater Township, Raritan Borough

DESCRIPTION OF PROBLEM

Check those items that best describe the problem:

Existing Highway
__X__Capacity problem
___Operational problem
___Physical condition problem
___Safety problem
___Other (specify)

Existing Bridge
____ Capacity problem
____ Physical condition problem
____ Safety problem

Corridor/area Capacity Problem
___Need for corridor study
___Possible highway on new alignment
___Possible new transit line
___Need for park and ride development

Describe the problem:

There are currently no Intelligent Transportation System (ITS) measures installed within the Route 202 Corridor. A number of ITS measures are proposed for the study corridor as detailed in the *Route 202 Corridor Assessment and Multi-modal Mobility Plan*. These measures include the following:

- Use of advanced driver information signs, such as the Variable Message Signs (VMS) north of the Somerville Circle and south of Flemington Circle to advise motorists of the real-time travel conditions along Route 202. This information can be used by the motorists to seek alternative routes such as Routes 31, 206, 28, 22, I-78, and I-287.

- An Incident Management Task Force should be created for the Route 202 Corridor. Working with NJDOT's Traffic Operation Center and the various local first responders (police, fire, EMS) the Counties should develop an Incident Management Plan for the corridor in order to minimize delays created by various incidents that disrupt travel along this critical roadway.

- Cameras should be installed at critical locations that experience delays and safety concerns along the corridor to facilitate incident management for NJDOT and local police. Currently, there is only one such camera at the Somerville Circle.

- Additional, "Red Signal Ahead" signs can be provided where stopping sight distance is limited for motorists including the Route 202 northbound approach to First Avenue. These signs will have communication with adjacent intersections and provide adequate time for motorists to stop at the red light.

If an outside group actively supports this problem, please identify:
The recommendation described here emerged from the public involvement process that informed the Route 202 Corridor Mobility Plan study. The study was guided by a Steering Committee consisting of:

- *Counties:* Somerset County, Hunterdon County;

- *Municipalities*: Flemington Borough, Raritan Township, Readington Township; Branchburg Township, Bridgewater Township, Raritan Borough
- *State Agencies*: New Jersey Department of Transportation, New Jersey Transit, North Jersey Transportation Planning Authority;
- *Other Organizations*: Ridewise, HART Commuter Information Services

Other comments (if any) by initiator:

Initiator:

Division:

Date of Initiation:
Signature_____
Concurrence by Division Director (Signature)_____

Date of Concurrence_____

The following information is to be completed by the Bureau of Capital Program Development:

Date Received by Capital Program Development_____

Date presented to Capital Program Committee_____

Disposition
_____
_____
_____
_____

APPENDIX C – TRANSIT-SUPPORTIVE DESIGN GUIDELINES

Route 202
Transit-Supportive Design Guidelines

Prepared for:

Somerset and Hunterdon Counties, New Jersey

Prepared by:

The Louis Berger Group Inc.

2009

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INTRODUCTION

The Route 202 study corridor contains many elements for building vibrant commercial areas that combine the convenience of conventional 'strip' developments with employment centers and transportation options. While each town has its own character, there is potential to create a unified corridor that embodies the transit-friendly and smart growth principles being advocated for within Somerset and Hunterdon Counties. Careful planning is required to ensure that Route 202 realizes its potential as an attractive environment for people to shop, work, and live near no matter what their choice of transportation to and from the corridor. Currently, the majority of commercial development along the corridor has evolved into a sprawling development pattern that primarily serves automobiles. This form of 'strip' development, which is seen across the country, lacks sensitivity to both movement and interaction at the human scale and the character and aesthetic quality of the community.

Today's residents and consumers are realizing that the physical configuration, mixture and density, and appearance of land development impact the quality and function of a transportation system. Residents, consumers, and workers are currently experiencing severe congestion in the Route 202 study corridor and demand a more balanced transportation system that provides opportunities for an easier commute or a more enjoyable trip to the store.

In order to provide a more distinct and appealing atmosphere within existing commercial areas and improve mobility for all modes of travel, municipalities along the corridor must encourage a more balanced approach to development that promotes a high quality living environment while continuing to accommodate all transportation users. Design guidelines can provide the standards necessary to implement change throughout all six municipalities along the corridor. These guidelines have the potential to reduce vehicle trips, improve safety, decrease travel times, in addition to enhancing the study area's attractiveness.

This handbook provides guidelines and standards to ensure that Route 202's commercial development is tailored to community and regional transportation needs. This process involves incremental steps that address each area of the development process and all modes of travel. The design handbook is divided into 7 sections which contain specific objectives and design guidelines. In approving any application for development along the Corridor, the Municipal Planning Boards must be satisfied that the stated objectives for each section are achieved.

The Route 202 Transit-Supportive Design Guidelines Handbook is intended to be used by property owners, designers, elected officials, and community members in considering new commercial development and land use planning along the Route 202 corridor. This design manual represents a first step in ensuring improved built outcomes, and renewing an attractive, community and multi-modal focused commercial environment.

1. Building Location & Orientation
2. Traffic
3. Parking
4. Transit Facilities
5. Sidewalks
6. Crosswalks
7. Bicycle Access

The implementation of these design guidelines will occur in three ways. First, private commercial development projects will be prepared and reviewed in accordance with the guidelines. Second, public projects involving improvements to roads, sidewalks, and all aspects of the public domain within commercial districts will incorporate the objectives and guidelines. And lastly, the design principles herein will be formally incorporated into land use ordinances and master plans within the six municipalities of the study area.

Route 202 Vision Statement: To provide a balanced multimodal transportation system that includes rail and bus transit, improved roadway, bicycle and pedestrian facilities and associated systems and travel demand management services. This system will provide reliable mobility choices to all of its users; residents and visitors of all ages, incomes and physical abilities, as well as businesses that provide services and produce or sell goods. Users will find it easy to access and it will permit efficient local and state wide connections for people and freight.

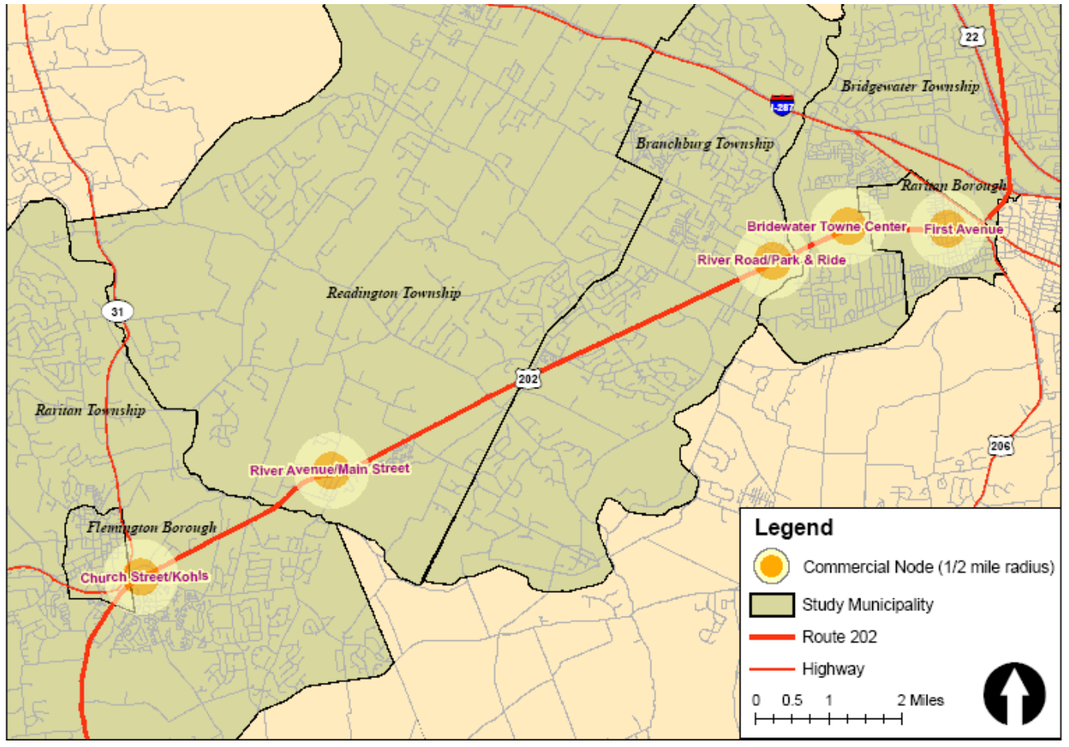
INTRODUCTION

Between Flemington Borough and Raritan Borough, Route 202 passes through six different municipalities, each with their own land use ordinance and zoning guidelines. There is a significant amount of variation between the type of development that has occurred between and within each of the municipalities ranging from preserved agricultural land to big-box retail. Through concentrated and well-designed commercial development, Route 202 has the potential to become a cohesive corridor that meets the needs of residents, consumers and workers while accommodating the significant variations in land use and densities between the six municipalities.

The 7 sections within the *Route 202 Transit-Supportive Design Guidelines Handbook* are meant to affect development along the entire study corridor, but are specifically focused on addressing commercial development. Through concentrating commercial development, the design guidelines combined with open space preservation measures can direct growth and redevelopment to reduce vehicular congestion and increase mobility and accessibility while increasing safety along the corridor.

Commercial development in Branchburg Township contrasts with preserved agricultural land in Readington Township highlighting the different land uses along the study corridor.

Existing Commercial Nodes Along the Study Corridor



The quantity and distribution of commercially zoned land within the study municipalities should be reexamined with a focus on promoting in-fill, mixed-use, and higher intensities within key locations. Restructuring existing commercial areas into nodes of higher density development along key intersections will help reduce vehicle trips, improve traffic, increase pedestrian activity, utilize public facilities and infrastructure more efficiently, and create more vibrant community centers. These nodes of higher-density development can be interspersed with existing land uses, future low-intensity land uses, and open space.

From west to east the existing commercial nodes along the study corridor are at the intersection of Church Street where a large shopping complex with many national retailers including Kohl's exists, River Avenue where Readington Township's limited commercial activity is currently concentrated, River Road which has existing commercial development and is in close proximity to the Branchburg Township's Park and Ride facility, Bridgewater Towne Center where there is a high density of national retailers, and at First Avenue which is in close proximity to downtown Raritan Borough and the Raritan Borough Train Station.

Development within the existing nodes can be promoted through public investment, fast track approval, transfer of development rights, business improvement districts, and other development incentives.

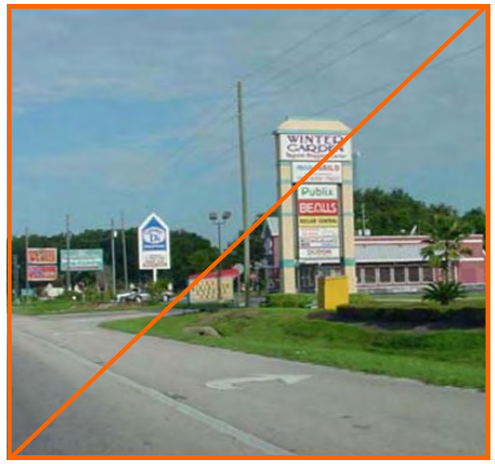
Introduction

Route 202's design has the potential to create a cohesive corridor with a more balanced transportation system. To this end the guiding principles of the corridor are reflective of alternative approaches to land development which promote a more sustainable and balanced transportation system.

During the *Hunterdon County Growth Management Plan's* visioning phase, the County conducted internet surveys which documented residents' preferences for various design styles, including highway corridor design. The below left image depicts typical highway retail development with no pedestrian access, poor landscaping, and cluttered signage. This image received a low rating (1.4 out of 4). An image at bottom right received a high rating (3.4 out of 4) for its tree-lined median, pedestrian access, and incorporation of transit stops. It should be noted that trees planted in the median are not permissible for Route 202.

In contrast to the existing form of development which has followed the type of "strip" development that community members find unattractive, the Route 202 Somerset and Hunterdon County design guidelines aim towards a more desirable type of highway that incorporates transit, access management, and improved aesthetics.

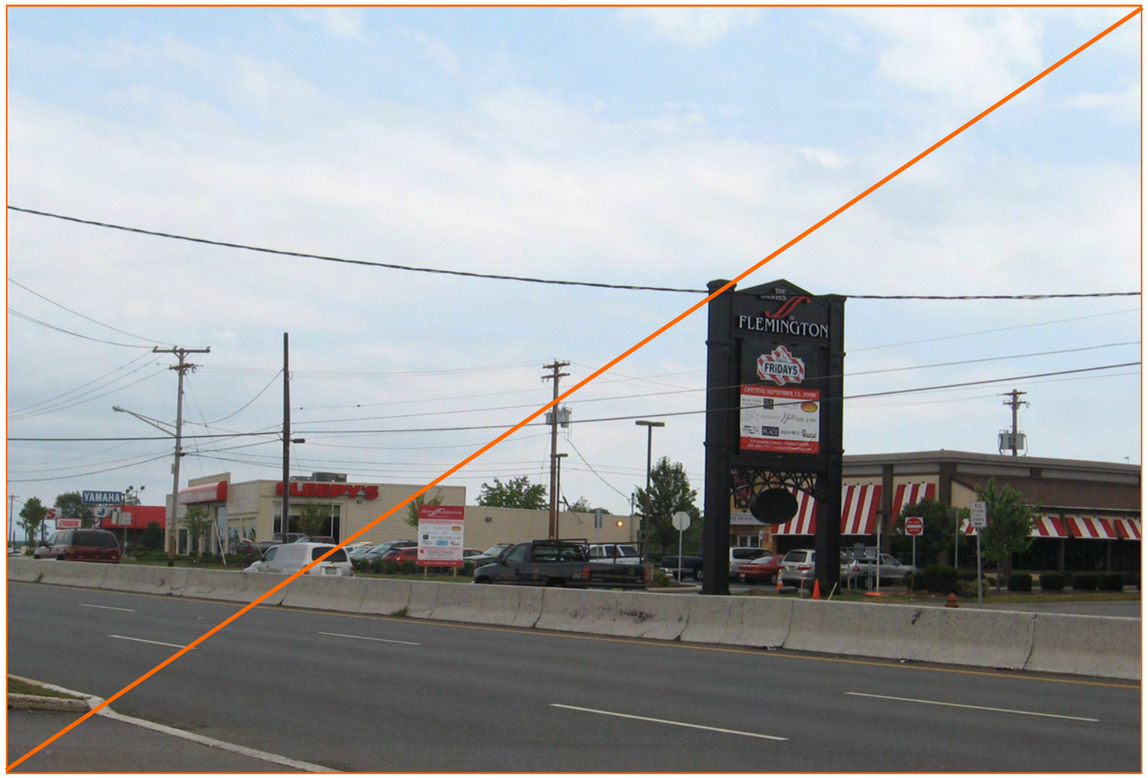
Undesirable versus desirable highway development. *(Hunterdon County Growth Management Plan)*



Hunterdon County voted Undesirable.

Hunterdon County voted Desirable.

Undesirable.



Illustrative images on the following page demonstrate the type of drastic transformation that can occur within commercial developments. These images depict increases in commercial density, safety improvements within parking lots, access management, pedestrian amenities, and improved building aesthetics. A combination of such elements is possible for Route 202.

In the sections that follow, specific objectives and guidelines are provided to guide the municipalities of Flemington Borough, Raritan Township, Readington Township, Branchburg Township, Bridgewater Township, and Raritan Borough in taking control of Route 202's development and making improvements to mobility, accessibility, and safety through design changes, infrastructure improvements, and regional land use planning.

Introduction

Illustrative infill development transforms a declining strip shopping mall into a lively center of activity. Street-fronting shops replace a sea of parked cars, and landscaping, and pedestrian and bicycle amenities further [illegible]. (*Urban Advantage*)

1

2

3

Strip shopping malls can be redeveloped into walkable, mixed-use activity centers through implementing planning and design concepts and strategies presented in the guidelines. The sidewalks in the commercial center should be connected to a network of paths and sidewalks providing access to and from surrounding uses. (*Urban Advantage*)

1

2

3

Building Location and Orientation

Objectives:

- Include multi-modal access planning in initial site plan;
- Make pedestrian activity a central theme for development;
- Create a townscape with identity, character, and livelihood;
- Develop an appropriate sense of enclosure; and
- Use design techniques that promote vitality, safety, and efficiency.

Guidelines:

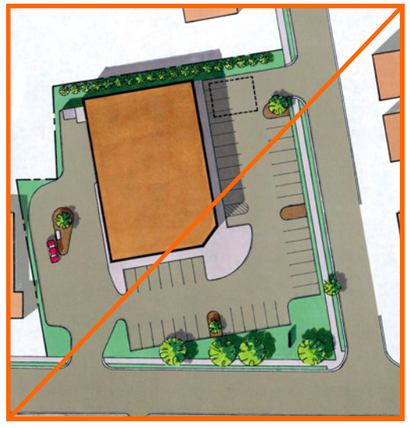
1. **Building Location**

   - Buildings should be sited to maximize street frontage and parking areas should be positioned away from street.
   - Using a building setback ration of 1:3 for building height to right of way width can achieve a visual enclosure of the streetscape. This ratio ensures that pedestrians are never farther away from the street edge than three times the height of the adjacent buildings.
   - Use existing street-fronting parking lots for redevelopment.

2. **Building Orientation**

   - Buildings should front all streets with an entrance and attractive facade.
   - Major roof ridges must be either parallel or perpendicular to the street.

Building sites can be made more compact and pedestrian-oriented by locating the parking to the side or rear of the building. (*Dutchess County, NY Department of Planning and Development*)



Undesirable.

Desirable.

Avoid buildings set back from the street behind large expanses of parking.

- Buildings do not address the street.
- Difficult to access buildings from the street.
- Parking dominates the landscape.

Buildings that are oriented towards the street add enclosure and character to the townscape.

- Parking in the rear of the building.
- Multi-story.
- Inviting entrance at the street.
- Small set-back from street.

TRAFFIC

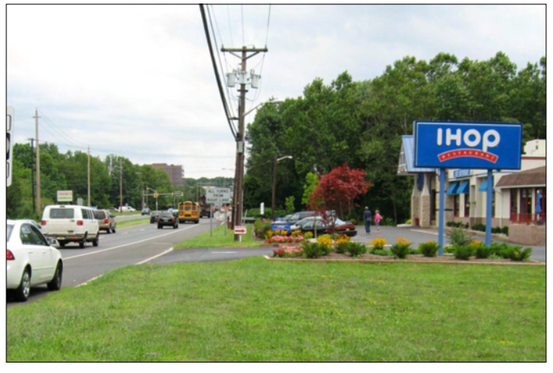
Objectives:

- Decrease automobile congestion;
- Continue to provide mobility for corridor residents and workers;
- Continue to provide mobility for regional travelers and through traffic; and
- Decrease vehicle and pedestrian/vehicle conflicts.

Guidelines:

- Limit the number of access points from the street. Sharing entrance drives and parking lots with internal service roads based on the block system should be pursued wherever possible.
- Raise and vegetate central medians on streets and designate left turn only lanes.
- Provide temporary stub drives to connect to future development in adjacent parcels with shared access ways.

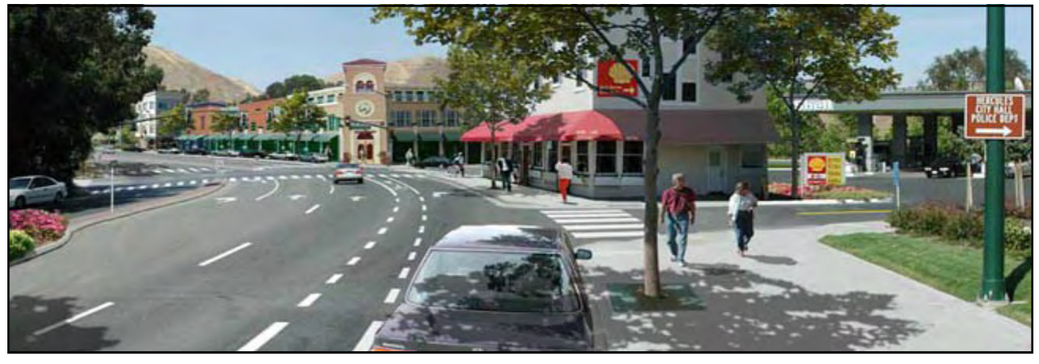
Currently there are frequent and unmarked access points along the corridor from side streets, stores, offices, and private residences. As drivers travel in and out and between these entryways they contribute to congestion and pose safety risks.



The following images demonstrate how improved access and traffic management can be part of a commercial area's transformation. This progression of images depicts the use of vegetation as a buffer on both the median and sidewalks, reduced roadway conflicts between turning motor vehicles and bicyclists, and the creation of shared entryways. The picture is completed by street-focused development and the creation of a continuous pedestrian network.

1

2



3

Source: Urban Advantage

PARKING

Objectives:

- Decrease visual dominance of parking areas;
- Decrease amount of land devoted to parking; and
- Define pedestrian ways.

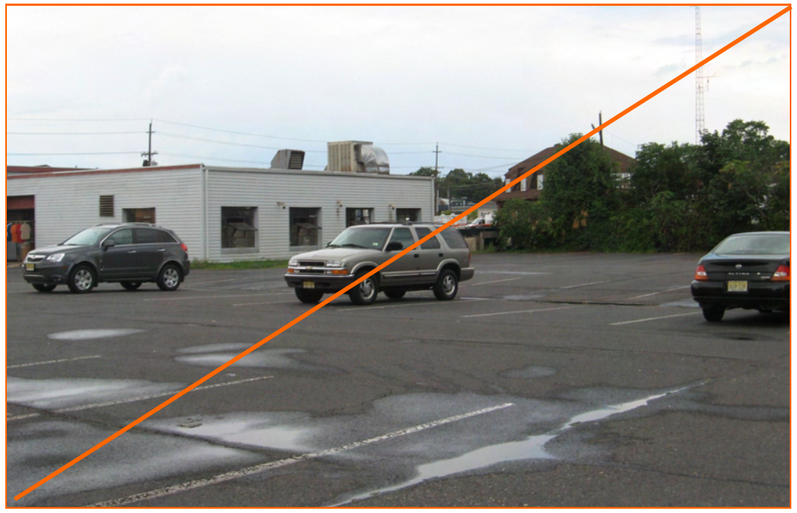
Guidelines:

- Design parking areas to the rear of buildings or in certain cases to the side.
- Divide parking lot rows with landscaping strips and tree islands.
- Clearly define pedestrian pathways.
- Parking facilities should accommodate a range of daily uses including designated employee parking, patron parking, errand parking of 15 to 20 minute maximum, service vehicle parking, and bicycle storage.
- All development shall conform to maximum parking ratios outlined in the Urban Land Institute's parking standards (see bibliography).
- Parking provisions may be phased in line with staged developments.
- Encourage internal circulation between parking lots.
- Incorporate shared parking where two or more land uses with different parking demand requirements share parking spaces.

Lost opportunity for internal circulation between parking lots in Flemington Borough.

An asphalt desert, this parking lot in Flemington Borough puddles with water and does not consider pedestrian movements.

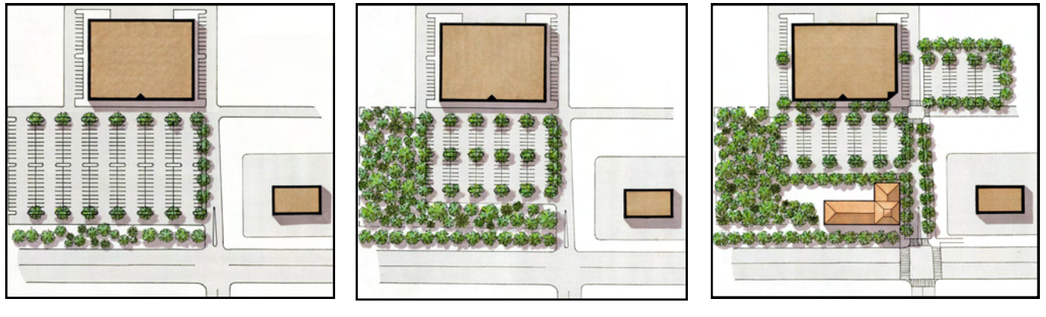
- Aesthetically unattractive.
- Pedestrian movement not defined.



Landscaped medians serve multiple purposes such as pedestrian refuge, shade, buffering, and attractive scenery.

- Defined pedestrian pathway with landscaping.
- Aesthetically pleasing.

Through the use of updated parking standards, parking lots can be reduced in size and incorporate trees and smaller stores along the street front. (*Dutchess County, NY Department of Planning and Development*)



Transit Facilities

Objectives:

- Make transit facilities safe and attractive;
- Encourage multi-modal connectivity; and
- Anticipate and provide for transit demand growth.

Guidelines:

- Make facilities easily recognizable and attractive by including:
  - Benches
  - Signage
  - Trash receptacles
  - Shelters
  - Natural landscaping
- Integrate bicycle racks into vehicle parking areas.
- Within sites provide internal walkway systems that feature landscaping and weather protection at entrances.
- Respond to demand increases with parking capacity increases at Park and Ride facilities by practicing context sensitive solutions.
- Allow transit supportive plazas to be substituted for up to 10% of required parking spaces.

Transit stop is safe and comfortable. Transit is prioritized within the streetscape. (*Urban Advantage*)

- Transit shelter with bench.
- Curb extension / bump-outs.

Branchburg Townships 's Park & Ride sign is generic.

Plainfield Station sign is attractive and promotes community identity. (*Transit Oriented Development: For Small Communities*)

Branchburg Township Park & Ride bus shelter placement forces riders to cross in front of the bus.

SIDEWALKS

Objectives:

- Promote walking as a viable alternative to driving;
- Create new pedestrian linkages between developments; and
- Better accommodate pedestrian access and safety within existing infrastructure.

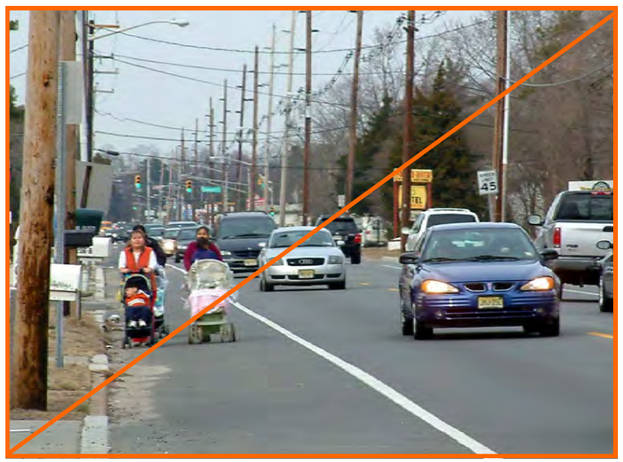
Guidelines:

- Require pedestrian circulation plans in new developments that show connections to the larger pedestrian system and provide pedestrian facilities within parking areas and direct pedestrian connections into the site.
- Connect adjacent commercial developments with interior sidewalks.
- Locate sidewalks at least 4 feet back from curb, where adequate ROW is available, and use vegetation buffers to screen walkways.
- Allow room for street trees and snow storage, and prevent side slopes at driveways.

A separated sidewalk allows for direct and safe pedestrian access to offices. (*Design Standards for Pedestrian Circulation*)

A rare section of sidewalk at a shopping plaza in Branchburg Township is well intentioned but underutilized because it lacks connections to other walkways and shopping areas and does not have an accessible curb ramp.

A lack of sidewalks forces pedestrians to walk along the road's shoulder. (*Design Inside the Box*)

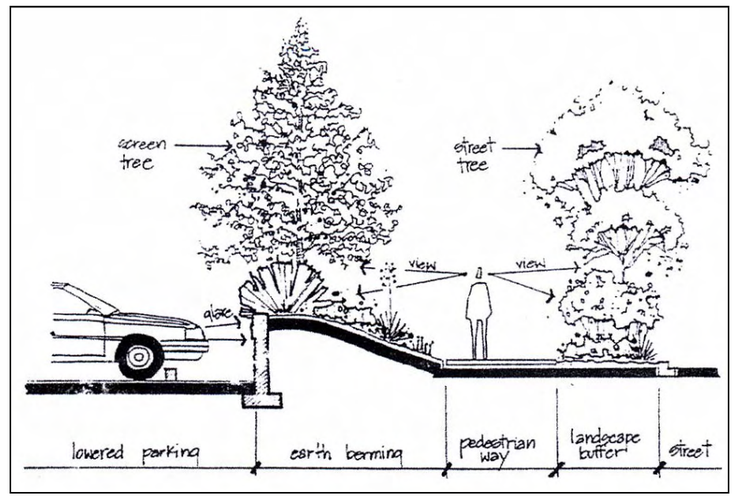


Undesirable.

Wide sidewalks within commercial developments create an environment for shopping, strolling, or sitting. (*Linking Land Use & Transportation: NJ's Experience*)

Desirable.

Trees and other foliage can provide screening for pedestrian pathways and contribute to storm water management.. (*Veterans Parkway Design Guidelines*)



CROSSWALKS

Objectives:

- Promote walking and bicycling as a viable alternative to driving; and
- Better accommodate pedestrian and bicyclist safety within existing infrastructure.

Guidelines:

- Crosswalks should be 10 feet wide whenever possible (and a minimum of six feet in order to comply with Manual on Uniform Traffic Control Devices Section 7C.03).
- Crosswalks should be well lit, boldly marked with bar stripes or textured surface.
- Include pedestrian refuges in congested areas.
- At crosswalks, create bulb outs or curb extensions to shorten distance and increase visibility.
- Meet ADA accessibility standards.

Exemplary crosswalk design on a busy corridor. (*Context Sensitive Solutions)*

- Mid-walk refuges
- Signage
- Striping

Pedestrian signals ought to be combined with marked crosswalks.

Pedestrian linkages at Bridgewater Commons. (*Somerset County Regional Center Vision Initiative*)

Infrequent crosswalks cause mid-block crossing issues and potential conflicts as seen here in Readington Township.

Bicycle Access

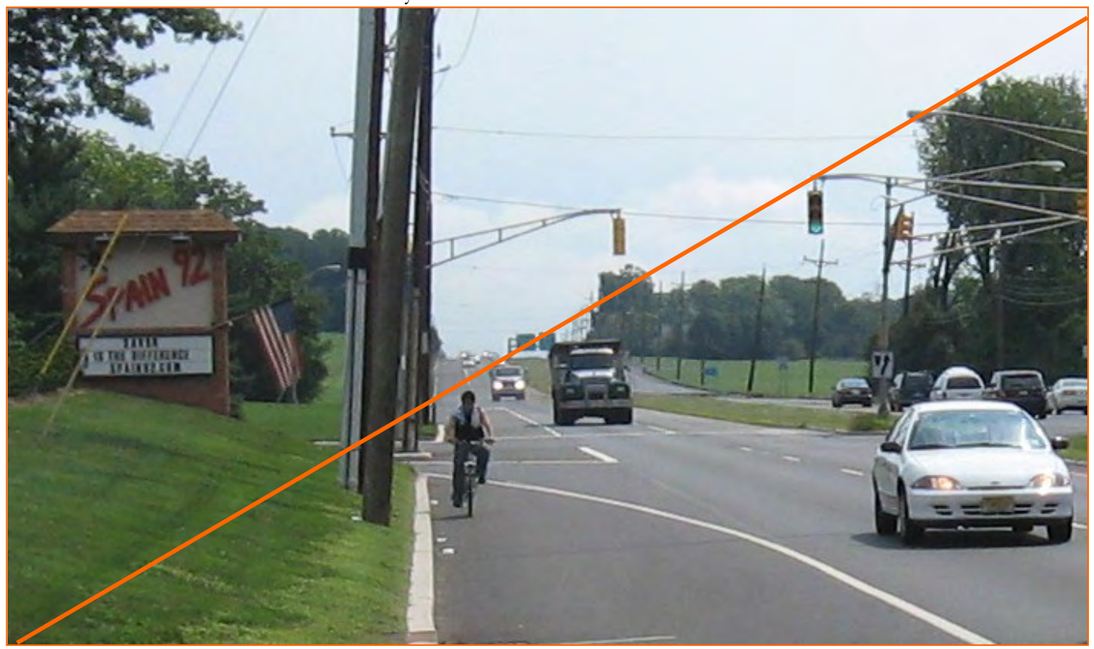
Objectives:

- Promote bicycling as a viable alternative to driving;
- Better accommodate bicyclist safety within existing infrastructure; and
- Develop a bicycle network within new and existing development.

Guidelines:

- Preserve shoulder for bike lane use.
- Require new developments to provide bicycle parking and circulation which connects to community bicycle and pedestrian network.
- Implement signage to promote public awareness of road sharing.
- Use bike-safe grates in all roadway construction or improvements.
- Provide bicycle parking that is in proximity to building entrances for convenience and security.

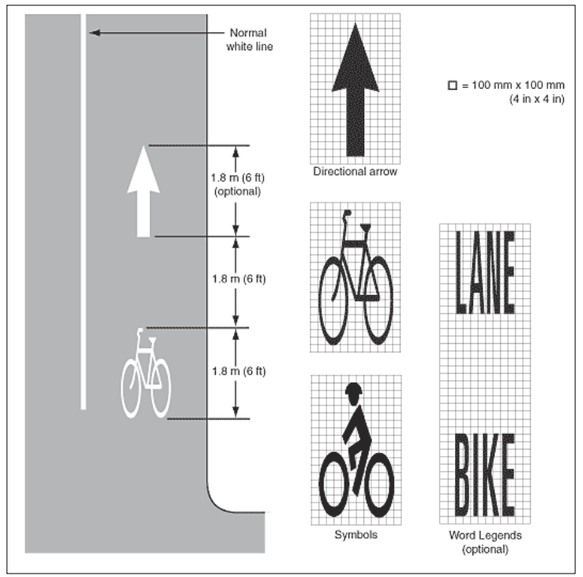
Wide shoulders create a network for bicycle circulation.



Bicycle parking should be located at convenient and secure locations. (*Design Standards for Pedestrian Circulation*)

Roadway construction/ improvements should include bike-safe grates. (*Flickr*)

Bicycle lane markings approved by the Manual on Uniform Traffic Control Devices (MUTCD) can be used to designate bicycle lanes. In the absence of or in conjunction with dedicated lanes, MUTCD approved signs can remind drivers to share the road.



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