Moving Mindfully: Monmouth/Mercer

THE COMPREHENSIVE FREIGHT RELATED TRANSPORTATION STUDY FOR WESTERN MONMOUTH AND SOUTHERN MERCER COUNTIES

Final Report

September 23, 2019

wsp

NJTPA

COUNTY OF MONMOUTH 1683 NEW JERSEY

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INTRODUCTION

The Moving Mindfully: Monmouth/Mercer study area, comprised of the municipalities of Upper Freehold Township and Allentown Borough in Monmouth County and Robbinsville Township in Mercer County, has experienced particularly high growth in warehousing and distribution and is primarily adjacent to interchanges 7 and 8 along Interstate 195. This includes a large online retail fulfillment center and several distribution centers at the Matrix Business Park that generate a significant amount of freight related travel. Sand and gravel facilities in the region are a source of significant amount of truck trips through the study area. The communities within the study area have a desire to improve quality of life for residents by minimizing conflicts between various modes of travel and minimizing the perceived negative impacts of trucks.

The study area is an incredibly varied place. Allentown Borough is a historic crossroads with structures and stories from before the American Revolution, Robbinsville Township is a suburban and highway adjacent community that has embraced commerce and increased residential density, and Upper Freehold Township is a rural community with a genuine commitment to agriculture and country living.

These three municipalities share borders and roadways, but each has its own distinct identity, and for the purposes of this discussion, its own relationship with freight related traffic. What is a burden for one community is an asset to another. The study team adopted the title "Moving Mindfully" to demonstrate a study approach and philosophy that was used to develop Mitigation Measures that will improve conditions for all users, while reducing the negative effects associated with freight related traffic without placing an undue burden on a single community or interest group.

NEEDS ASSESSMENT

To understand everyone's needs and concerns, and to establish a relevant set of existing and possible future conditions in the study area, various data sources were consulted with a focus on freight and heavy vehicles.. The data analysis included information about current and future land use; demographics; commuting patterns; an infrastructure inventory; traffic counts; and crash data. In addition, a literature review was conducted to understand municipal visions and plans, gather data on key issues that impact the study area, and highlight previous projects and recommendations.

Stakeholders and the public provided important input and were central to understanding the needs and desired solutions. An advisory committee was formed, and three meetings were held with representatives of municipal, regional, and state organizations. In addition, three public meetings were held in the study area to gather input from community members. A website was created that contained a WikiMap, an interactive survey that enabled interested members of the public to communicate their concerns along with a clear geographic reference. Comments were accepted via a web form and email.

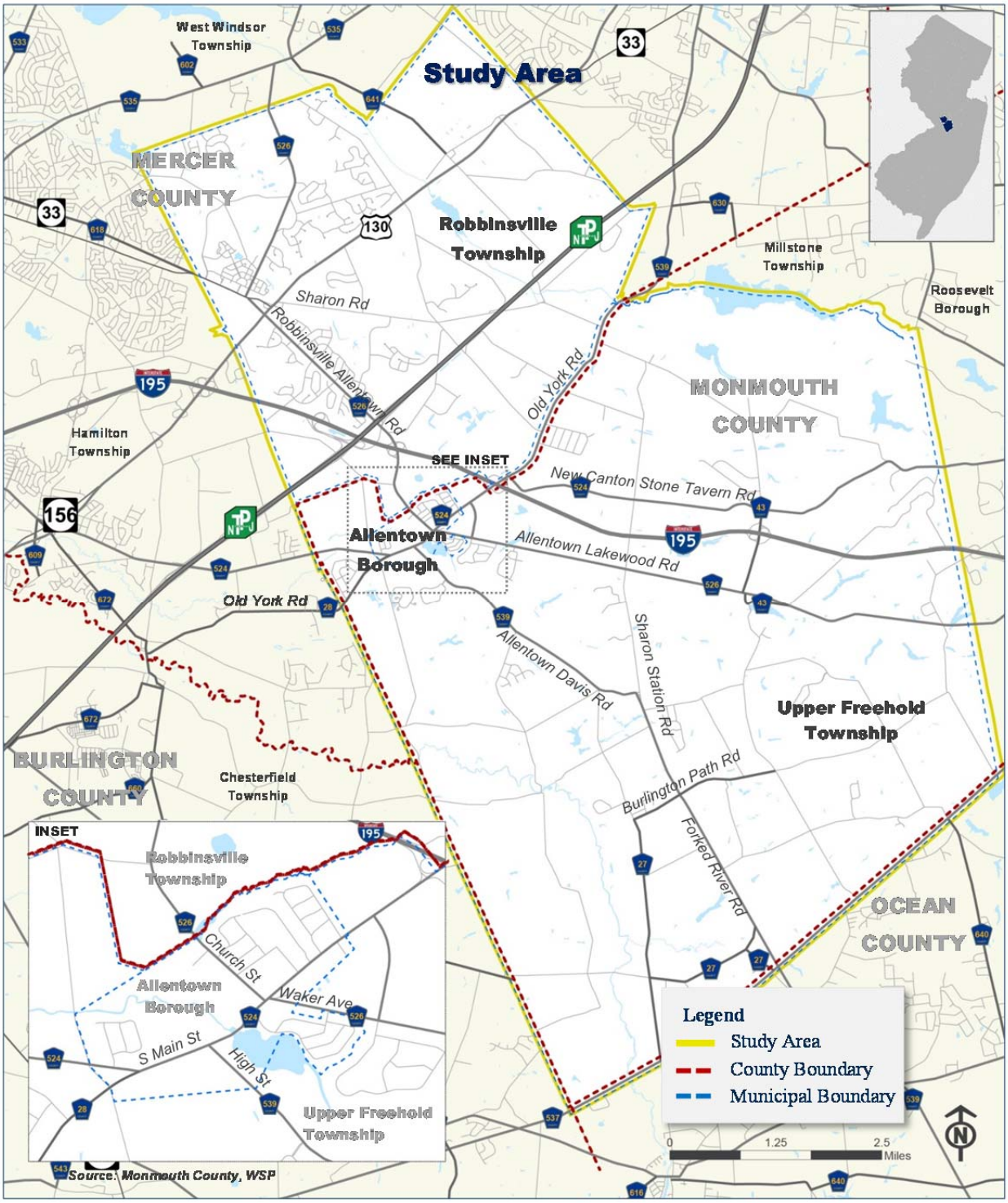


Figure 1 - Study Area

MITIGATION MEASURES

Based on the detailed data analysis and public and stakeholder input key Mitigations Measures for the identified issues are suggested. The Mitigation Measures relate to issues including:

- Truck Movements
- Signage and Wayfinding
- Congestion
- Pedestrian Safety and Mobility

The following pages highlight ways to address these issues at specific locations in the study area. Throughout the study these were referred to as the study's 'Recommendations", however for the final report they have been re-titled, "Mitigation Measures". The study team feels this better reflects their role in the implementation process, as a suggestion for the mitigation of negative effects that respects the rights of all responsible agencies to choose their own path. The final report can be used a reference guide for existing conditions, expected future conditions, and mitigation toolbox.

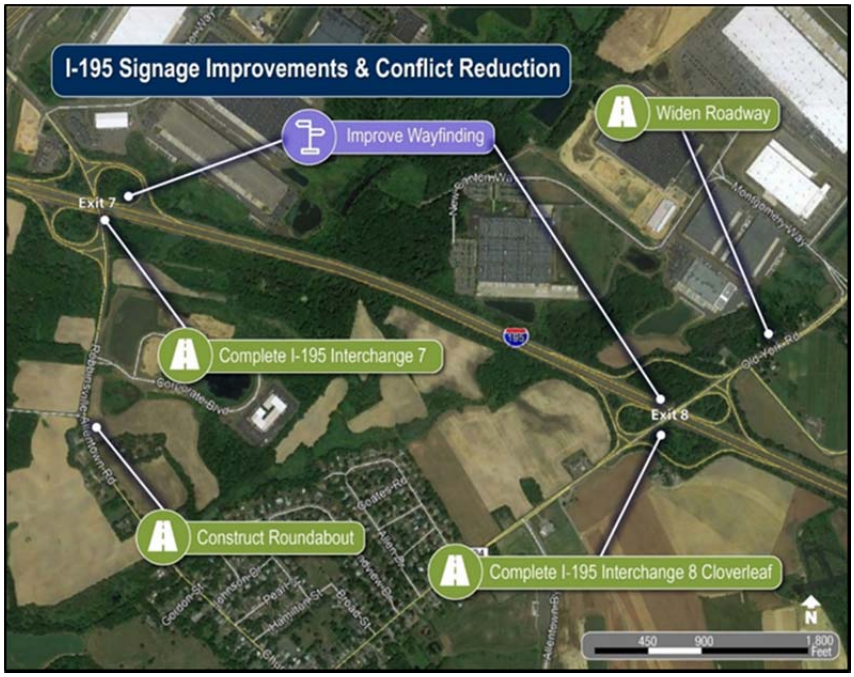
The full set of Mitigation Measures can be found in the body of the Final Report.

Issue: The system of wayfinding signage along county roads lacks clear direction to major interstates and U.S. highways and in several instances existing signs are worn and poorly placed.

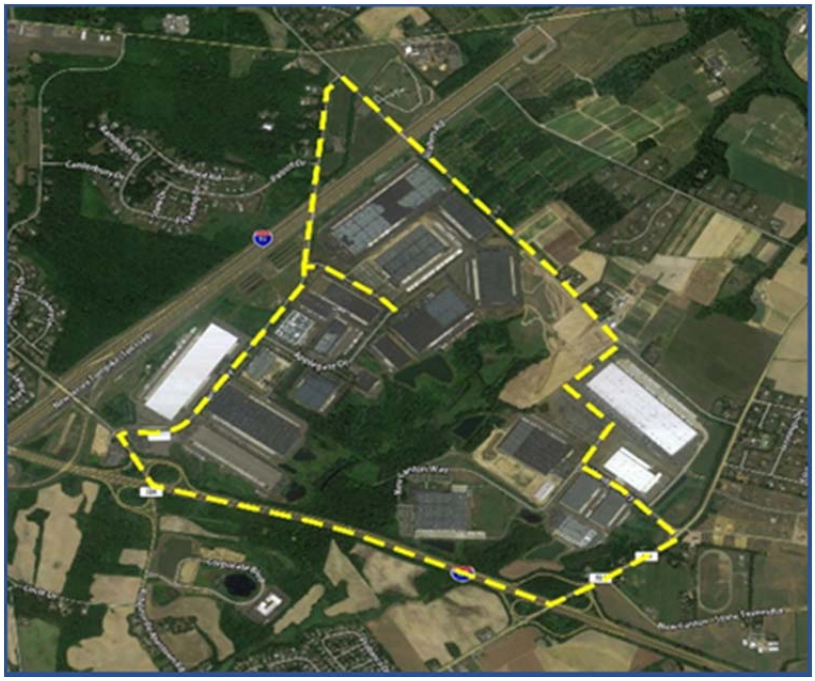
Mitigation Measure: Review and adjust directional signage for I-195, I-95 and the NJ Turnpike on county roads in the study area. Add signs at Sharon Station Road and CR 526 (Allentown Lakewood Road) directing travelers to the Interstate.

Issue: Signage to and from I-195 at Interchanges 7 and 8 is inadequate, particularly for large trucks, many of which are driven by out-of-state drivers. This results in circuitous trips into downtown Allentown due to missed turns.

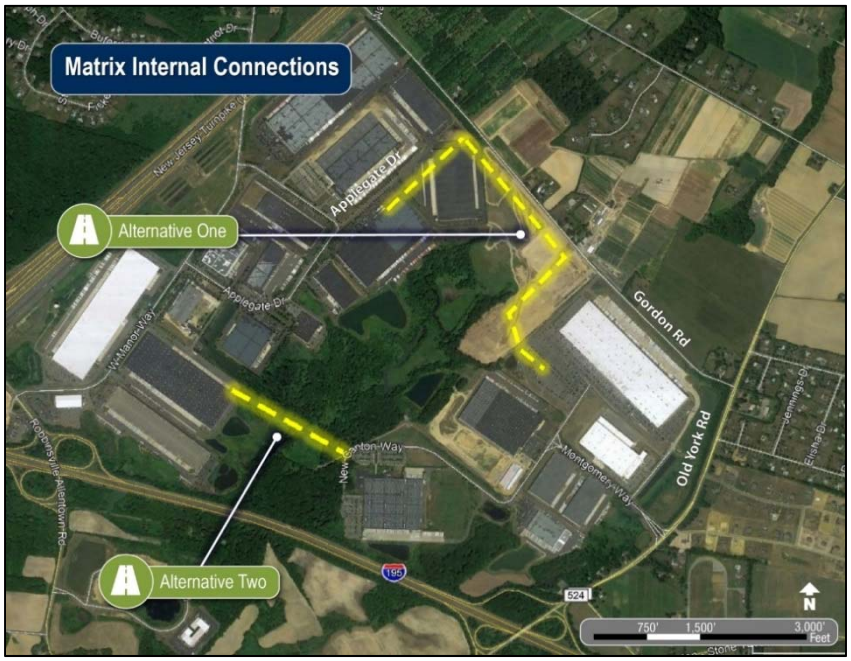
Mitigation Measures: In coordination with NJDOT, complete I-195 Interchange 7 to allow all movements, and the Interchange 8 cloverleaf. Remove Allentown destination signage at Interchange 7. Construct a roundabout at the intersection of Robbinsville Allentown Road and Circle Drive to improve circulation for trucks and to serve as a potential future terminus for a western bypass. Install guidance signs for truckers to follow for warehouse access.



Issue: There is no direct connection between the two Matrix developments. There is currently a construction site and a water body and wetland between the two sites.

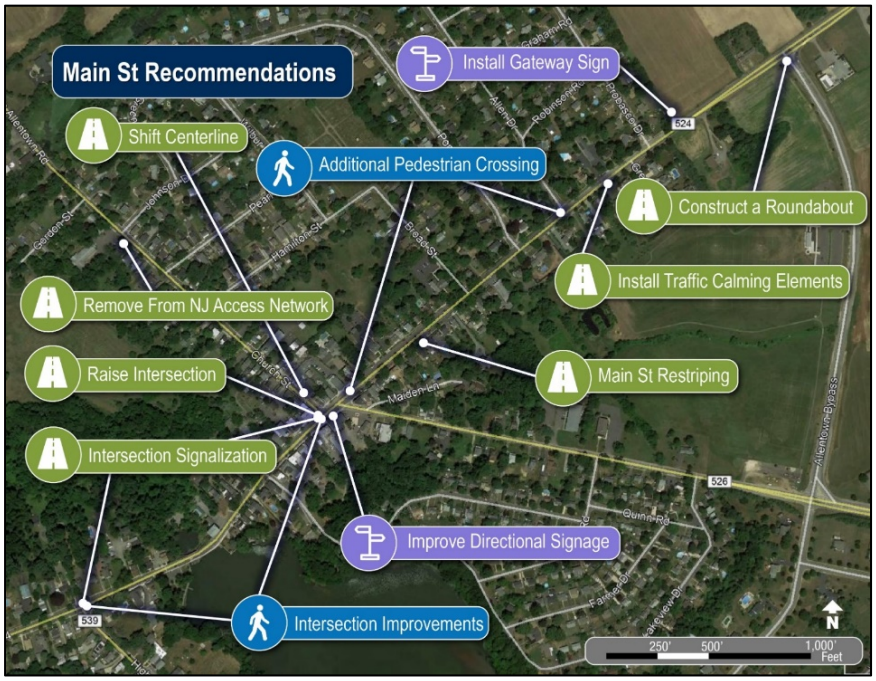


Mitigation Measure: Work with the property owner to create an internal roadway connection between the two Matrix developments.



Issue: During the peak morning and evening rush-hour, the intersections of Main Street and Church Street/Waker Avenue, Main Street and High Street, and Main Street and the eastern bypass experience significant delays, particularly for left turning vehicles.

Mitigation Measure: Add traffic signals at Main Street at High Street and at CR524 (Main Street) and CR526 (Church Street and Waker Avenue), which are crash-prone and congested intersections. Investigate installing a modern roundabout at the intersection of CR524 (Main Street) and CR526 (Spur), the easterly bypass.



Issue: New Canton Stone Tavern Road at Sharon Station Road was identified as a crash hotspot location, with a high number of fatal and severe crashes.

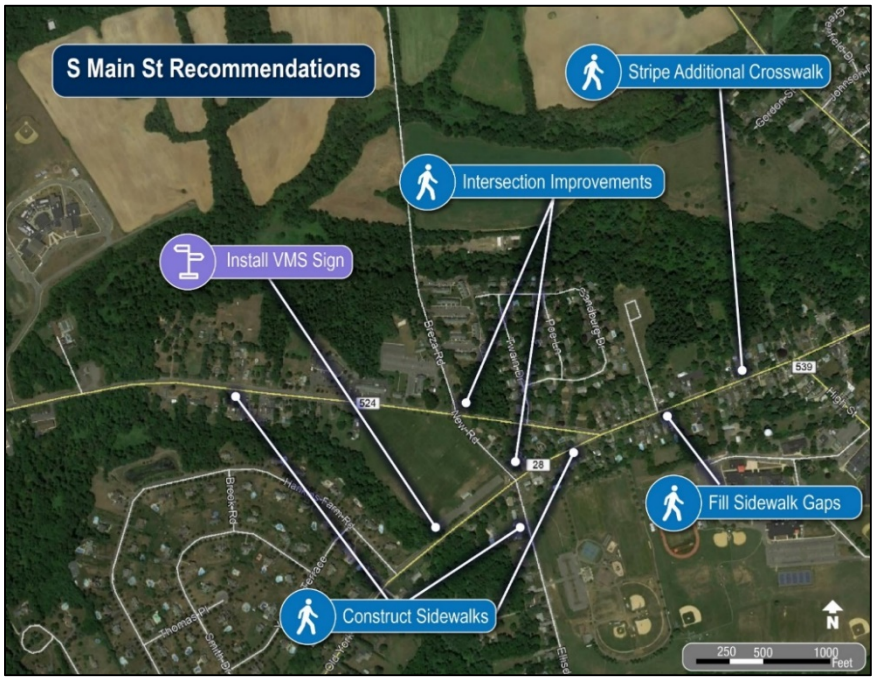
Mitigation Measure: Investigate signalizing the intersection of New Canton Stone Tavern Road and Sharon Station Road. This is the highest crash severity intersection in the study area, with four documented fatalities.

Issue: The Forked River Road corridor has constant volumes travelling at high speeds. Residents expressed difficulty making left turns onto the road from intersecting roads.

Mitigation Measure: Install dedicated left-turn lanes and additional lighting along Forked River Road to improve circulation and safety. Install additional lighting along and wildlife crossing signs along Forked River Road.

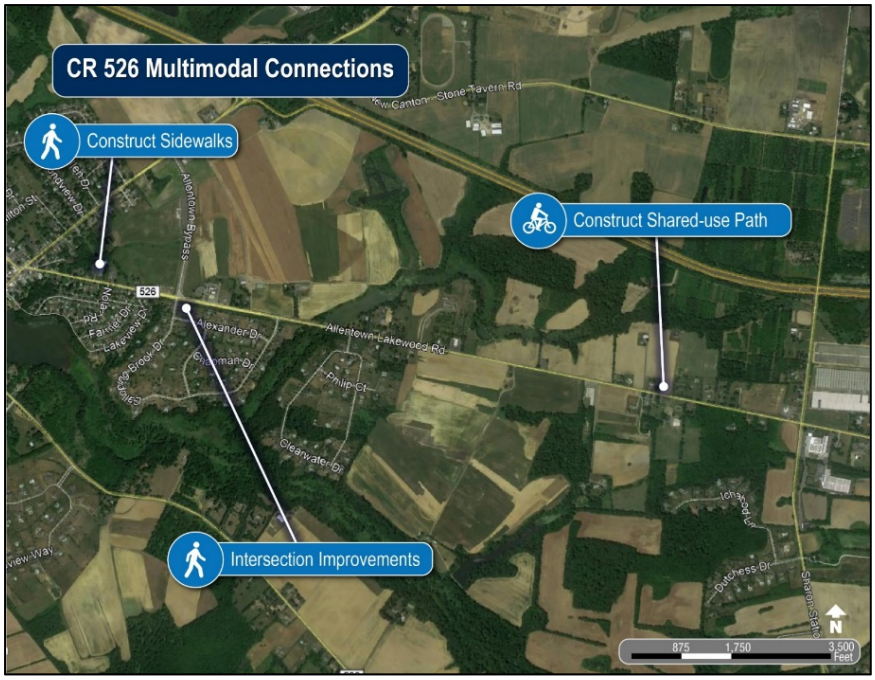
Issue: Residents raised concerns about excessive vehicular speeds along Main Street in Allentown.

Mitigation Measure: Introduce traffic calming measures to slow traffic on Main Street in Allentown, which will create a friendlier pedestrian environment. Strategies include restriping CR524 (Main Street) to narrow travel lanes, installing variable message signs, curb extensions, gateway treatments, and in-road pedestrian crossing signs.



Issue: There are significant gaps in the pedestrian network throughout the study area. These include gaps in the sidewalk network, inadequate crosswalks and pedestrian crossing signage, and curb ramps that do not meet Americans with Disabilities Act (ADA) requirements. In addition there is a lack of connections to the Union Transportation Trail.

Mitigation Measure: Fill in sidewalk gaps and stripe new mid-block crosswalks in high demand locations in Allentown and Upper Freehold. Make pedestrian facilities at intersections conform to ADA standards by constructing compliant curb ramps and pedestrian signal heads where applicable.



IMPLEMENTATION

Each Mitigation Measure will require additional study, engineering, funding and acceptance from various stakeholders and agencies. To further explore these measures, a working group comprised of representatives of the three municipalities, both counties, the North Jersey Transportation Planning Authority, the Delaware Valley Regional Planning Commission, and NJDOT, should be created.

The proposed working group should be a forum for advancing, identifying, and applying for funding for the Mitigation Measures proposed in this study. The implementation matrix, which contains the study's suggested Mitigation Measures and is found in Section 2 of the final report, is a blueprint for investment in the study area. When implemented, these improvements will improve the quality of life for residents, while improving the transportation network for all users.

1 INTRODUCTION

The Moving Mindfully: Monmouth/Mercer study area, comprised of the municipalities of Upper Freehold Township and Allentown Borough in Monmouth County and Robbinsville Township in Mercer County, has experienced particularly high growth in warehousing and distribution and is primarily adjacent to interchanges 7 and 8 along Interstate 195. This includes a large online retail fulfillment center and several distribution centers at the Matrix Business Park that generate a significant amount of freight related travel. Sand and gravel facilities in the region are a source of significant amount of truck trips through the study area. The communities within the study area have a desire to improve quality of life for residents by minimizing conflicts between various modes of travel and minimizing the perceived negative impacts of trucks.

The study area is an incredibly varied place. Allentown Borough is a historic crossroads with structures and stories from before the American Revolution, Robbinsville Township is a suburban and highway adjacent community that has embraced commerce and increased residential density, and Upper Freehold Township is a rural community with a genuine commitment to agriculture and country living.

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The final report refers to "Mitigation Measures", however, throughout the study period and in the appendices these are referred to as the study's 'Recommendations". For final report they have been re-titled, "Mitigation Measures" in order to better reflect their role in the implementation process, as a suggestion for the mitigation of negative effects that respects the rights of all responsible agencies to choose their own path. This final report can be used a reference guide for existing conditions, expected future conditions, and mitigation toolbox. The appendices contain documentation of the research and analysis that informed the final report.

1.1 STUDY AREA

The study area is comprised of three municipalities, Allentown Borough and Upper Freehold Township in western Monmouth County, and Robbinsville in southern Mercer County. All three municipalities border each other, with Allentown encompassed by Robbinsville to the north, and by Upper Freehold to the west, south and east. Upper Freehold borders Robbinsville to the southwest on Potts Road, and to the east along a tributary of Indian Run, Interstate 195 (I-195) at Interchange 8, and Monmouth County Route 539 (Old York Road). The entire study area is approximately 68 square miles, however the bulk of the concerns to be addressed by the study were reported in Allentown, the southern part of Robbinsville, and Upper Freehold.

The area has experienced a high growth in warehousing and distribution, primarily adjacent to Interchanges 7 and 8 along I-195. This includes a large Amazon fulfillment center and several distribution centers at the Matrix Business Park. In addition, sand and gravel facilities in the region are generating significant truck trips along county roadways through these communities.

Figure 2 - Study Area

1.2 ALLENTOWN BOROUGH

Allentown Borough is located in what is known locally as the Pandhandle Region of Monmouth County. Allentown is home to one of the largest historic districts in the state that includes 225 homes and buildings, many of which were built before the Civil War. The Borough was founded in 1706, and was a place of significance during the time of the American Revolution. It was a stop on a carriage route between New York and Philadelphia, and home to a mill and a forge, all important features before, during, and after the revolution. Four County routes converge from all directions to form the historic crossroads of Allentown.

Allentown is 0.63 square miles, and is surrounded by Robbinsville and Upper Freehold. The border of Allentown and Robbinsville is defined by tributaries to Indian Run and Indian Lake, and also serves as the border between Monmouth and Mercer Counties. The borders of Allentown and Upper Freehold are irregular, and do not follow a particular roadway or geographic feature.

According to residents and the local government an increase in freight related traffic has become a burden to the municipality and a threat to its historic nature. Residents complain about noise from truck traffic and vibration when trucks hit imperfections in the roadway. Tractor trailers sometimes get stuck at the intersection at CR526 (Church Street) and CR524 (Main Street), tying up traffic and sometimes requiring the assistance of first responders to move parked cars and to help guide them through the intersection. The intersection of CR539 (High Street) and CR524 (South Main Street) experiences significant delays during peak hours, and also serves large vehicles following the shortest route to Interstate 195 (I-195) at Interchanges 7 and 8.

1.3 ROBBINSVILLE TOWNSHIP

Robbinsville Township is a municipality in Southern Mercer County whose website banner reads, "Be at the Center of it All". Formerly known as Washington Township, the municipality has undergone two major developments in recent years. In the early 2000's Robbinsville began a series of projects that would transform an area of farmland into a relatively dense and walkable town, in contrast to a recent history of suburban sprawl development. Around the same time the Matrix Development Group began developing properties in Robbinsville adjacent to Interstate 95 (New Jersey Turnpike) and with access from I-195 Interchanges 7 and 8 at the southern edge of the township. These properties were developed as warehouse, distribution, and light industrial space, and are referred to collectively in this study as the Matrix Site. They are a significant generator of freight related traffic, the vast majority of which moves directly to I-195 via short routes under Monmouth and Mercer County jurisdiction. This proximity and access to the interstate highway significantly limits, but does not eliminate truck and site employee traffic from County and local roadways.

Robbinsville borders Allentown to the south along a boundary delineated by Indian Run and Indian Lake. It borders Upper Freehold along its southern border in two sections. The western section is defined by Potts Road, and the eastern section by the southeastern tributary to Indian Run, I-195, and Monmouth County Route 539 (Old York Road). Robbinsville also shares borders with several other Mercer County municipalities, including East Windsor Township and West Windsor Township to the north and Hamilton Township to the west.

1.4 UPPER FREEHOLD TOWNSHIP

Upper Freehold Township is a rural farming community with sparse residential development, and a desire to remain that way as codified in the township's Country Code policy statement. The Country Code describes a way of life in Upper Freehold that eschews convenience and items such as "perfectly paved roads, water and sewer service, and a local police department", and contains a note that "the supermarket will always be at least a one-half hour ride away." This township policy statement makes it clear that Upper Freehold is willingly and purposefully preserving a "rural atmosphere" and "Country Lifestyle".

The township is served by several County roads including CR27 (Holmes Mill Road and Burlington Path Road), CR524 (New Canton Stone Tavern Road), CR526 (Allentown Lakewood Road), CR526 Spur, CR537 (Monmouth Road), and CR539 (Forked River Road and Allentown Davis Station Road). I-195 runs east-west through the township, and is accessible from Interchanges 8 and 11. Upper Freehold is also host to the Easterly Bypass, a series of roads that have been and are currently being upgraded to carry freight related traffic from the southern part of the township to connect with I-195 at Interchange 8 without entering Allentown Borough. CR526 Spur was constructed to connect CR524 (Allentown Lakewood Road) to CR526 (Old York Road) and provide access to Interstate 195. Sharon Station Road is being upgraded to handle heavier traffic and larger vehicles, and will give travelers an alternate route to reach I-195 as well as points to the north and east of Upper Freehold and Allentown. When complete it is planned to be re-designated as CR539A.

Upper Freehold is the western and southernmost municipality in Monmouth County, and as part of the Panhandle Region shares borders with municipalities in Monmouth, Mercer, Burlington, and Ocean Counties. These include East Windsor Township and Hamilton Township in Mercer County; Allentown, Millstone Township, and Roosevelt Borough in Monmouth County; and Jackson Township, North Hanover Township, and Plumsted Township in Ocean County. In the northwest section of the township Upper Freehold shares an irregular border with Allentown Borough. To the west of Allentown, Upper Freehold's border with Robbinsville is defined by Potts Road. To the east of Allentown, Upper Freehold's border with Robbinsville is defined by Indian Run, I-195, and CR539 (Old York Road).

1.5 STUDY AREA TRANSPORTATION AND FREIGHT FEATURES

The study area is served by interstate, state, and county roads, as well as municipal roads. The majority of these are designated freight routes, either as part of the National Network or the New Jersey (NJ) Access Network for 102-inch wide and double-trailer truck combinations, as shown on the New Jersey Department of Transportation's (NJDOT) Large Truck Map. (see Figure 5) I-95 (NJ Turnpike) and I-195 are part of the National Network, and US Route 130, State Route 33, and CR 524, CR 526, CR 537, and CR 539 are part of the NJ Access Network. Double trailer trucks and 102-inch wide trucks are prohibited in Upper Freehold on CR 524 (New Canton Stone Tavern Road) east of I-195. There is no freight rail in the study area, although one of the nation's first railroads, the Camden & Amboy ran through Robbinsville, and the Pemberton & Hightstown ran through Upper Freehold. The Pemberton & Hightstown rights of way are now the Union Transportation Trail (UTT), a 9 mile multi-use recreation trail.

Significant freight related businesses exist in Robbinsville, and Upper Freehold Township. Robbinsville is home to the Matrix Business Park at 7A. The property, referred to in this study as the Matrix Site, is named for its location adjacent to exit 7A on I-95 (NJ Turnpike). The Matrix Site is over 1,000 acres of land hosting warehousing, distribution, and light manufacturing. Amazon has a significant distribution center there, and other tenants include Mercedes Benz, Falken Tires, and McKesson Pharmaceuticals. While referred to as one site, it exists in two distinct and unconnected parts, a western part with access from CR526 (Allentown Robbinsville Road) and an eastern part with access from CR539 (Old York Road). The site is bordered to the west by I- 95 (NJ Turnpike), and to the south by I-195. The site accesses I-95 (NJ Turnpike) via I-195. Upper Freehold has a variety of agricultural businesses that require the use of large vehicles, as well as several industrial properties that use tractor-trailers and concrete mixers. Additionally, several sand and gravel mines to the south in Ocean County generate a significant amount of single-unit truck traffic, including dump trucks filled with sand, and concrete mixers.

Public transportation in the study area is sparse. The NJ TRANSIT Route 606 bus provides access from Robbinsville Town Center to Hamilton Marketplace, Hamilton Rail Station, Trenton Transit Center, and points north along State Route 206 to Princeton. A connection is available between the Route 606 bus and the Z-Line (shown in Figure 3), a shuttle funded in a public private partnership between Amazon and other business at the Matrix Site, and NJ TRANSIT under the New Jersey Job Access Reverse Commute program (NJ-JARC).

Walking and biking features include a significant sidewalk network throughout Allentown, sidewalks and bike trails in Robbinsville, and the Union Transportation Trail (UTT), a nine mile bicycle rail-trail in Upper Freehold (Figure 4). The UTT runs from the Assunpink Wildlife Refuge in Mercer County, to the border of Monmouth and Ocean

Figure 3 - Z-Line Shuttle

Counties at CR537 (Monmouth Road). There is currently a construction project underway for the trail to cross under CR537 (Monmouth Road) similarly to how the Pemberton & Hightstown railroad crossed under the roadway before it was taken out of service.

Figure 4 - Union Transportation Trail

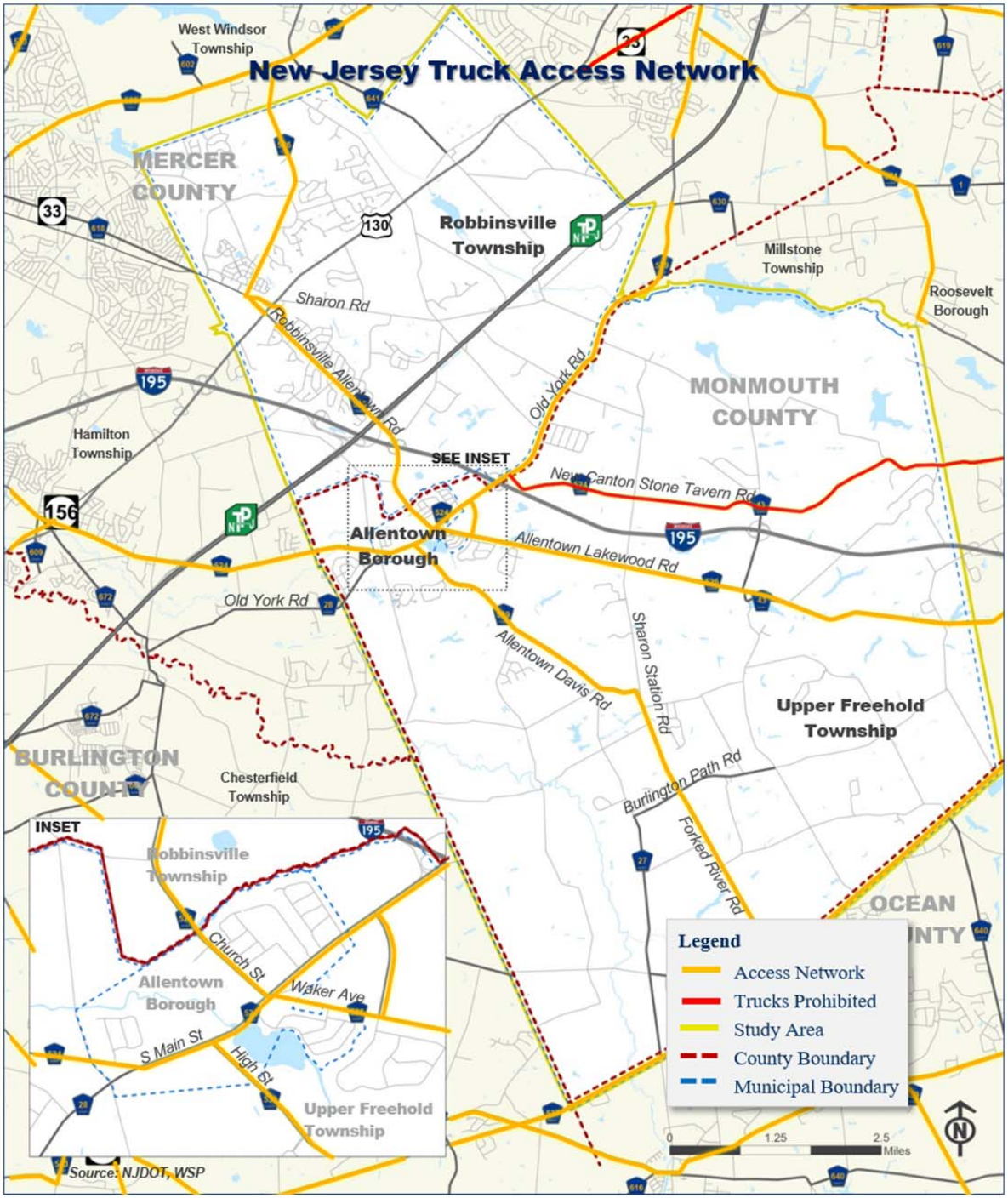

Figure 5 - New Jersey Access Network

1.6 THREE COMMUNITIES IN A REGIONAL CONTEXT

The three communities in the study area do not exist in a vacuum, and are affected by freight related travel originating in or destined to the study area, as well as passing through. The Matrix Site is a significant generator of trips through the study area, although a significant portion of total traffic to or from the site is carried by the interstate system. Construction material manufacturing sites (sand, gravel, concrete, etc…) in Upper Freehold and to the south in Ocean County, and the demand for their products to the north for construction are a major source of loaded dump trucks that travel through the study area. These trips are generated by construction projects and therefore are more frequent when the economy is strong and construction is taking place. Additionally, the trips are tied to individual construction schedules and not spread out evenly over time. This creates surges in truck traffic that are noticeable to residents, hard to measure with traditional methods, and begin and end without warning.

Regional growth and the traffic that accompanies it, as forecast by the Monmouth County Travel Demand Model (MCTDM), will be significant. The MCTDM is a version of the North Jersey Regional Travel Demand Model – Enhanced (NJRTM-E) that includes an expanded road network for Monmouth and Ocean Counties. Delays at intersections are forecast to increase over time due to increasing population and demand for travel in the region, regardless of development activity and patterns in the study area. However, it is possible to mitigate some of the effects.

This study forecasts delays for roadways and intersections in the study area through 2040 in two scenarios. A "Passive" scenario determines the delays in 2040 taking into account only the existing roads and currently planned capital improvements. Alternatively, an "Active" scenario includes the full set of Mitigation Measures in this study, and the reduction in projected delays if all improvements are implemented. [1]

Increased travel and freight related travel have different meanings for the three communities in the study area. Allentown residents are generally concerned with maintaining the historic character of their borough, and see trucks as a threat to that character as they pass through, as well as the potential for irreparable damage to historic structures. During the study period a tractor-trailer, in this case operating out of compliance with the NJ Access Network restrictions, damaged a street sign and private property on a resident's front yard. Prior to the study bollards at CR524 (Main Street) and CR526 (Church Street) had been damaged by a large vehicle. Additionally, residents complain that their historic and older homes suffer from the effects of vibrations from large vehicles when they strike an imperfection in the roadway. Residents are also concerned with the overall effects of traffic, noise, and speeding on their roads.

Robbinsville, as host community to the Matrix Site as well as other freight related businesses sees trucks as both an asset and a burden. They are an asset as the Matrix Site and other freight related businesses are ratables for the municipality, and do not consider them out of character with their town motto of, "The Center of it All". However, trucks are still not always welcome. As of the publication of this report, a truck

[1] During the study period and in the appendices the Active and Passive scenarios were titled "Build" and "No Build, respectively.

prohibition has been proposed for Gordon Road and Sharon Road, municipal roads in close proximity to the Matrix Site.

Upper Freehold Township residents have similar concerns to Allentown Borough residents. While the Upper Freehold Country Code specifically mentions having to live with the noise of farm equipment early in the morning, the noise of large vehicles moving at highway speeds is not normally associated with a rural atmosphere. Residents here are also concerned about overall traffic, truck traffic, and speeding on their roadways.

1.7 STUDY PURPOSE

With this context in mind, Moving Mindfully: Monmouth/Mercer seeks to, where possible, provide suggestions to mitigate the effects of freight travel in and through the study area without unduly burdening any one community or interest group. With three adjacent municipalities with three distinct viewpoints, all subject to influences outside of the study area, this study sought to provide suggestions that consider all viewpoints and will improve travel and quality of life. Residents, business owners, and truck drivers all have rights, and the study's suggested Mitigation Measures seek to provide improvements for everyone, without unduly burdening one community or interest group. This philosophy can be seen in the Mitigation Measures section. Many measures improve conditions through better management of the problem, rather than shifting the problem to another location.

2 STUDY PROCESS

Moving Mindfully: Monmouth/Mercer used a multi-faceted approach to collect information and develop suggested Mitigation Measures. Data collection ranged from one-on-one interviews to research into the origin and destination of freight trips. Documentation of public outreach, as well as data collection and analysis is available in the appendices.

2.1 POLICY DOCUMENTS AND PREVIOUS STUDIES REVIEW

The study team reviewed a wide array of documents from a variety of sources to inform this study. Details of this literature review are available in Appendix B, beginning on page B-12. The list of materials reviewed includes:

Statewide Plans and Studies

- New Jersey Statewide Freight Plan (2017)

Regional Plans and Studies

- Plan 2045: Connecting North Jersey (2017)
- Connections 2045: Plan for Greater Philadelphia (2017)

County Plans and Studies

- Monmouth County Master Plan (2016)
- Mercer County Master Plan (2016)
- Panhandle Regional Plan (2011)
- Upper Freehold Historic Farmland Byway Corridor Management Plan (2010)
- Allentown Regional Transportation Study (1992)

Local Plans and Studies

- Borough of Allentown Master Plan (2018)
- Upper Freehold Township Master Plan and Development Regulations Re-examination Report (2017)
- Robbinsville Township Master Plan (2000)

2.2 EXISTING CONDITIONS

The study team analyzed existing conditions to develop a complete vision of the current state of travel and traffic in the study area. This included reviewing traffic counts from Monmouth County and NJDOT, crash

data from NJDOT's Safety Voyager tool, and StreetLight Data for an origin-destination (O/D) analysis. Streetlight is a location based service (LBS) data provider that uses a variety of sources including but not limited to cellular phone location data in order to provide O/D information. A field inventory was performed that included roadway characteristics such as intersection and roadway conditions. This included road geometry and alignment, location of multimodal facilities, roads with truck restrictions, and signage.

Specific information supporting the study's suggestions is included in the Mitigation Measures section of this report. Documentation of the data collection and field inventory is available in Appendix B.

2.3 STAKEHOLDER AND PUBLIC OUTREACH

Stakeholder and public involvement was critical to this study in order to learn what the communities in the study area experience and to understand the history of travel in the area.

Three public meetings were held at local schools. The format of the meeting was designed to provide information on the study and its progress, and gather feedback in a one-on-one or many-on-one setting. At each meeting, after a presentation was given study team members were available with visual aids, markable large format maps, and comment cards to memorialize public comments. Over 140 total participants signed in over the course of three meetings, and comments submitted at the meeting are in the appendices.

A website, MovingMindfully.net, was developed to share information on upcoming public meetings and documents from the meetings. The site also provided two ways for people to submit feedback on the study. The first mechanism was a feedback form that would allow a member of the public to send a message to the study team. In addition, contact information for Monmouth County staff was posted to the site.

The other feedback mechanism was an interactive WikiMap, hosted on the Moving Mindfully website. A WikiMap is a survey, the first question of which is, "Where is your concern?" After logging in, respondents answer this question by clicking on a map, clearly communicating to the study team where the issue they wish to discuss is located. Respondents then had the option of selecting from several categories of concern, and could leave detailed notes with photographs. All submissions were visible to users of the Wikimap, and to encourage additional feedback, visitors to the site could comment on posts made by other users. For example, a second respondent could provide additional information on the original note. There were 95 unique users and 190 comments shared with the study team via the WikiMap, including those transposed by staff from markable maps at public meetings.

The public outreach effort for the study is summarized in the appendices, along with materials submitted by the public.

An Advisory Committee was formed with local, state, and regional organizations. The Advisory Committee met three times at locations in the study area.

Advisory Committee membership included:

- Municipal Representatives of Allentown, Robbinsville, and Upper Freehold
- Monmouth County Transportation Council
- Monmouth and Mercer Counties

- EZ-Ride and Greater Mercer Transportation Management Association
- Delaware Valley Regional Planning Commission (DVRPC) and the North Jersey Transportation Planning Authority (NJTPA)
- New Jersey Department of Transportation (NJDOT)
- New Jersey State Police (NJSP)

In addition, two focus groups were conducted with participants suggested by local leadership to discuss issues in the study area in a small group setting. Discussions were held with first responders (police, fire, and first aid), and a group of residents and business owners. These discussions were held at locations in the study area, and provided a great deal of insight into daily life in the study area.

One-on-one phone interviews were held with freight haulers and freight related businesses. Originally planned to be a focus group, the study team determined that phone interviews would be a more effective means of discussion with these stakeholders. Two trucking companies and six industrial businesses were contacted regarding how they operate, including scheduling and routing.

Documentation of the Stakeholder and Public Outreach Effort is available in Appendix A.

2.4 ENVIRONMENTAL JUSTICE

Environmental Justice is defined by the United States Environmental Protection Agency (EPA) as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." It is crucial that study suggestions do not unduly burden a community or interest group. Performing an environmental justice analysis is an important step in determining whether or not these suggestions will have a disparate impact on a historically disadvantaged community.

The EPA has developed and made public an online tool called EJSCREEN, which allows users to compare different geographic areas and identify places with high concentrations of minority residents, low-income residents, and potential environmental quality issues. This type of high level screening is frequently used in studies to determine if there are underlying environmental justice issues.

The findings indicate that the municipalities in the study area have a significantly lower percentage of vulnerable populations than the communities surrounding them, and the state as a whole. Additionally, discussions with the Advisory Committee did not reveal any historically disadvantaged populations that required special outreach or consideration. Figure 6 shows the results of the screening.

More information on the Environmental Justice screening is available in Appendix B, page B-30.

Demographic Indicator	Allentown	Upper Freehold	Robbinsville	Mercer County	Monmouth County	Statewide
Minority Population	10%	10%	23%	48%	24%	43%
Low Income Population	12%	6%	8%	26%	18%	25%
Linguistically Isolated Population	1%	0%	2%	7%	4%	7%
Population with Less than HS Education	7%	3%	4%	12%	7%	11%
Population under 5	8%	6%	4%	6%	5%	6%
Population over 64	13%	17%	9%	14%	16%	15%

Figure 6 - Environmental Justice Indicators

2.5 DATA ANALYSIS

There were several analyses performed for this study, a crash analysis, origin and destination (OD) analysis, and a level of service (LOS) analysis, which measures the performance of an intersection or road segment. Tables, chart, and further description are available in the appendices. The information collected and analyzed was used to inform the development of Mitigation Measures in the study.

2.5.1 CRASH ANALYSIS

Crash data within the study area was collected from the NJDOT Safety Voyager system. Data was downloaded and summarized throughout the study area for the most recent three years available (2015-2017). There were 2,372 crashes in the study area during that time, including 222 that involved trucks. Of these 222 crashes involving trucks, 538 crashes resulted in 731 injuries, and nine crashes resulted in 10 fatalities. Information included the location, type of crash, fatalities and injuries, lighting condition, and if a truck or heavy truck was involved. A table and map of crash clusters is available in *tech memo 1*.

Crash clusters in the study area exist on roadways with high volumes and higher speeds, factors that tend to contribute to higher numbers of crashes.

High crash locations include:

- 211 crashes at US130 and SR33
- 113 crashes on I-95 (NJ Turnpike) south of I-195
- 152 crashes on I-195 west of I-95 (NJ Turnpike)
- 57 crashes on CR539 (Old York Road) near Montgomery Way

Truck crashes mainly occur on major roadways, with key exceptions on CR524 (Main Street) in Allentown and CR539 (Forked River Road) in Upper Freehold. Located just north of the future Easterly Bypass alignment, the intersection of Sharon Station Road and CR 524 (New Canton Stone Tavern Road) in Upper Freehold Township had the most fatal crashes and fatalities in the study area in recent history. Three crashes between 2015 and 2017 resulted in four fatalities, while an additional 18 injuries were recorded at this intersection in the same time period.

Detailed crash related information is available in Appendix B, beginning on page B-68.

2.5.2 TRAFFIC ANALYSIS

Traffic counts were analyzed as part of the process to determine congestion and how traffic flows through the study area. The overall result of the traffic volume analysis is that congestion is minimal throughout the study area, although there are hotspots during peak hours in Allentown and approaching I-195 in Upper Freehold and Robbinsville. The traffic counts also suggest that traffic flows from the south and east into the study area during the morning peak and in the opposite direction during the evening peak.

Some traffic counts include a "class count" that includes the type of vehicle being counted. As with the overall traffic counts, these counts indicate a low average percentage, often under 10 percent, of daily truck traffic on major roadways in the study area, and very few heavy trucks (with three or more axles) pass through Allentown during both peak periods. However, even low levels of truck traffic can be disruptive and affect quality of life, and stakeholders felt that there were high periods of truck traffic and that this was disruptive. This was somewhat validated by interviews with freight business operators, who revealed that trucks carrying construction materials often operate in groups to serve large projects.

The county roads with the highest percentage of truck traffic are:

- CR539A (Sharon Station Road) near the intersection of CR526 (Allentown Lakewood Road)
    - 7.5 percent northbound
    - 4.7 percent southbound
- CR526 (Allentown Lakewood Road) east of CR526 (Spur)
    - 5.3 percent eastbound
    - 9.5 percent westbound
- CR526 (Spur) approaching the intersection of CR524 (North Main Street)
    - 14.7 percent northbound
    - 7.1 percent southbound
- CR539 (Old York Road) near the intersection of Montgomery Way (entrance to the eastern portion of the Matrix site)
    - 8.4 percent eastbound
    - 8.2 percent westbound

Greater detail on the traffic data and analysis are available in Appendix A.12 entitled "Traffic Memorandum", and Appendix B beginning on page B-45. Socio-economic data on commuting patterns is in Appendix B on page B-31.

2.5.3 ORIGIN AND DESTINATION (OD) ANALYSIS

An OD analysis was performed in order to understand the traffic flows coming into, out of, and through the study area. This is an important component of determining the existing conditions. The analysis was conducted using location Based services (LBS) data provided by the StreetLight Data platform. LBS data is anonymously collected from cellular phones and GPS units and applications, and the StreetLight Data platform uses this data to conduct a variety of different types of analyses, including OD.

For this study special attention was given to truck movements. The OD analysis was conducted for two groups of vehicle classes, passenger cars and commercial vehicles. Multiple time periods were studied including yearly (2017), seasonally (Spring, Summer, Fall, and Winter of 2017), as well as different times of day as follows:

- Early morning (12:00 am to 6:00 am)
- Morning peak period (6:00 am to 10:00 am)
- Midday (10:00 am to 3:00 pm)
- Evening peak period (3:00 pm to 7:00 pm)
- Night (7:00 pm to 12:00 am)

The OD analysis was done using a zone system (Figure 7) that was designed by the study team to differentiate between regional and local traffic, with small zones delineated to provide a fine level of detail within the study area.

The OD analysis revealed that 70 percent of daily commercial vehicle movements originate and terminate within a six mile radius around the Matrix site. 21 percent of commercial truck trips that travel through the study area originate or terminate in either Upper Freehold, and 21 percent in a zone adjacent to the study area on its west side. This adjacent west zone includes Hamilton and parts of Burlington County.

In addition to the OD analysis performed with StreetLight Data, commuting data from the United States Census was analyzed to determine the daily work travel pattern in the study area. The data shows that the top three destinations for residents of the study area to commute to are Hamilton Township, Manhattan, and Robbinsville. Workers in the study area are most likely to travel from Hamilton, Trenton, and Robbinsville.

Details on the OD analysis are available in Appendix B, beginning on page B-59.

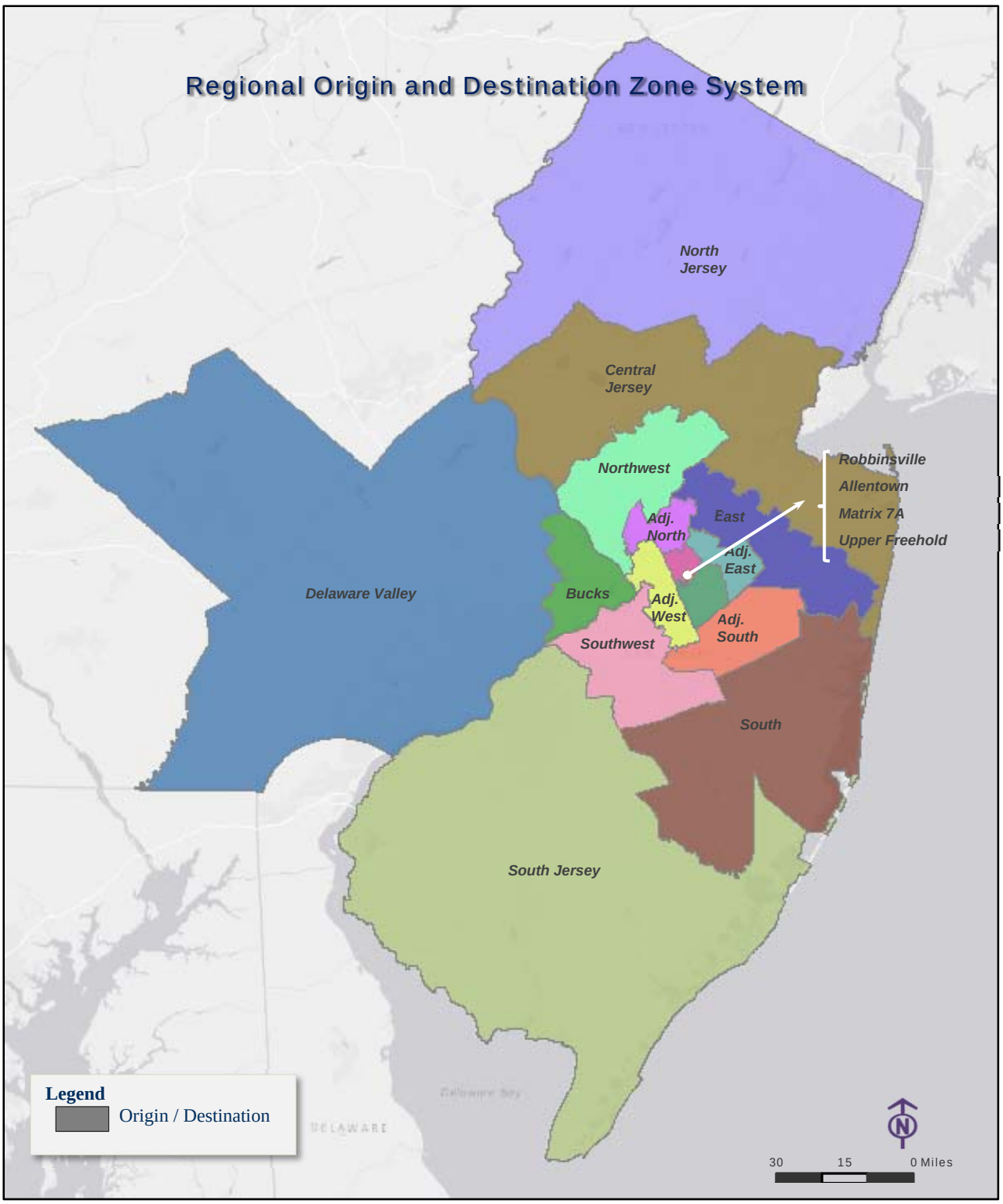

Figure 7 - Regional Origin and Destination Zone System

2.5.4 TRUCK TURNING RADII

Many intersections do not have sufficient space for heavy trucks to turn without encroaching onto a shoulder or opposing lanes. A field survey and turning analysis revealed this, and comments offered at public meetings confirm it. These maneuvers are legal, but can impact traffic flow, and have in some instances upset local residents who do not feel that trucks should be allowed to operate in this manner.

The truck turning analysis was performed using the features of heavy truck that has 67 feet between the front and rear axles and pulls a 53 foot trailer (Figure 8). This configuration is typical, and the largest permitted without an oversize permit. Turns were color coded into three categories:

- Yellow – A truck utilizes the shoulder but does not encroach on opposing traffic
- Orange – A truck encroaches on opposing traffic
- Red – A truck must mount the curb or otherwise leave the roadway

There were a total of 10 intersection approaches in the study area where trucks had to mount the curb or otherwise leave the road to make the turn. The approaches are all at the following four intersections:

- CR539 (Old York Road) and Sharon Road
- CR524 (New Canton Stone Tavern Road) and Sharon Station Road
- CR526 (Allentown Lakewood Road) and Sharon Station Road
- CR524 (Yardville Allentown Road) and CR28 (Old York Road)

The NJ Access Network prohibits large truck travel (double trailer or 102-inch wide) on CR524 (New Canton Stone Tavern Road), and CR28 (Old York Road) is not part of the NJ Access Network. Sharon Station Road is undergoing construction to improve access for larger vehicles (See Easterly Bypass in the Previously Planned and Proposed Projects section). Finally, as of this writing there Robbinsville Township is exploring the concept of a truck prohibition on Gordon and Sharon Roads.

Additional information on the analysis of truck turning radii is available in Appendix B, beginning on page B-42.

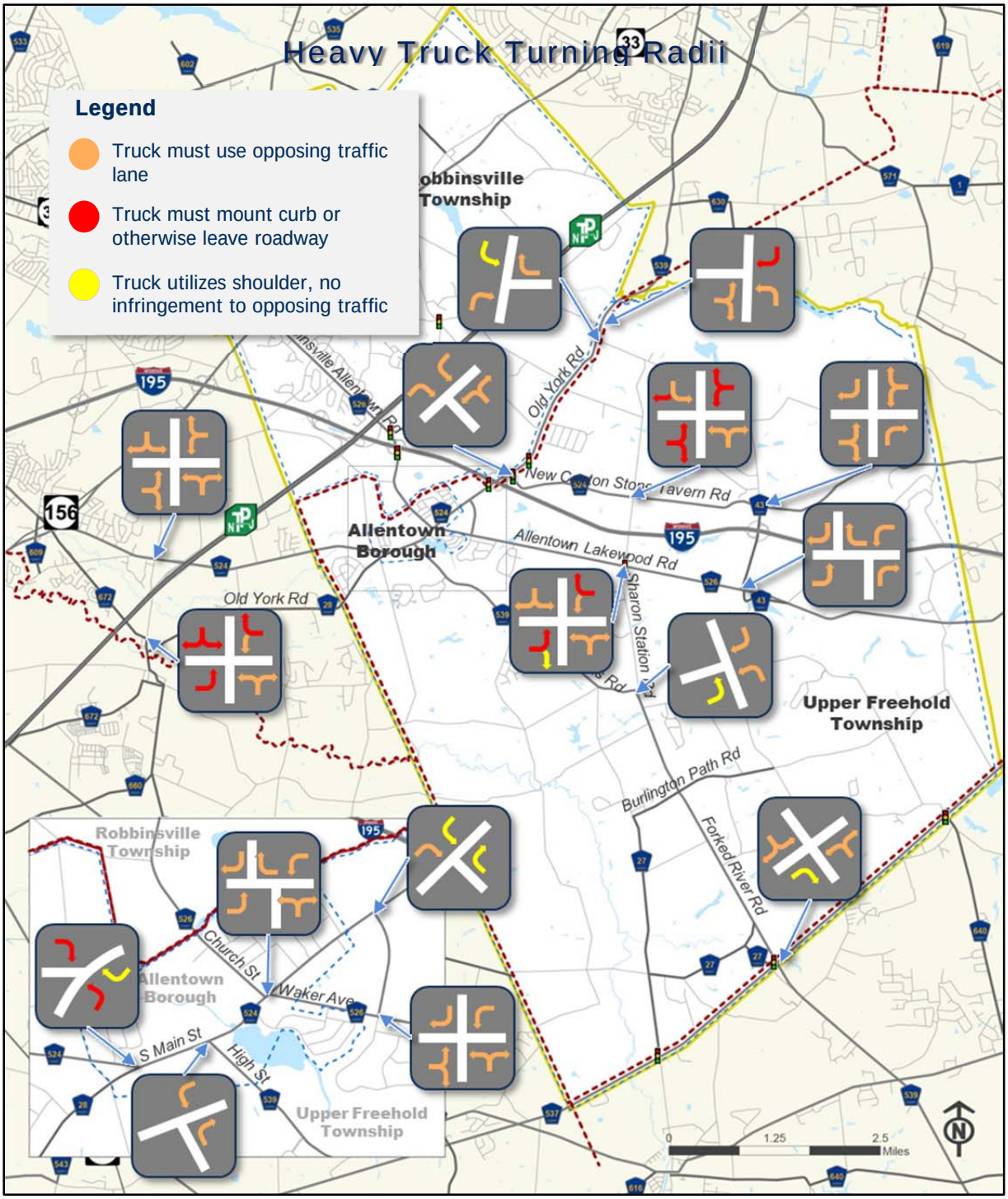

Figure 8 - Heavy Truck Turning Radii

2.5.5 LEVEL OF SERVICE

The LOS measure is an indication of the amount of delay, measured in seconds, experienced by motorists before they can proceed through an intersection during peak travel hours. LOS results for intersections are given a letter grade, 'A' through 'F', with A indicating no delay and F denoting highly congested conditions. Generally, LOS A through C are considered acceptable. For roadway sections LOS is based on the ratio of volume versus roadway capacity, or V/C ratio.

County traffic data was summarized to derive traffic volumes, peak hour adjustment factors, and the percentage of heavy vehicles for the morning and evening peak hours. Then intersections and roadway segments were analyzed through the use of traffic simulation software, Synchro 10 for intersections and Highway Capacity Software (HCS) 7.8 for roadway segments. For this study LOS was calculated for the morning and evening peak hours to evaluate the differences in traffic patterns, and to better quantify the delay along the most congested roadway segments in the study area.

After LOS was determined for the study area's current conditions, the Monmouth County Travel Demand Model (MCTDM) was used to project travel conditions for the year 2040. The MCTDM is a version of the North Jersey Regional Transportation Model – Enhanced (NJRTM-E), and was developed to provide a finer grain of detail for Monmouth County than the NJRTM-E provides. The model uses information on the physical roadway network and traffic counts, in addition to trends in employment, population, and households for the study area and far beyond. The forecasts used in the travel demand model have gone through an approval process where counties have agreed on expected growth rates. Model data was used to project growth in traffic for two scenarios, a "Passive Scenario" with improvements only to CR539A (Sharon Station Road, already in progress), and an "Active Scenario" with the full set of Mitigtaion Measures listed in the study.

Compared to existing conditions, the Passive Scenario shows significant LOS reductions and increased delay throughout the study area, with the worst effects at intersections. The Active Scenario does not maintain 2015 levels of congestion and delay, but is projected to be significantly better than the Passive Scenario. Growth and increased congestion in the region is projected regardless of actions taken by local municipalities.

An average annual growth rate of 0.71 was derived by comparing traffic volumes for base year (2015), 2025, and 2040 model results. Roadways analyzed include I-195, I-95 (NJ Turnpike), US130, NJ 33, CR524 (Main Street), CR526 (Allentown Lakewood Road, Church Street, Waker Avenue), and CR539 (Allentown Davis Station Road, Forked River Road, Old York Road). A similar comparison between population, employment, and household projections for zones inside and outside the study area was also performed. This information was used to project volumes in 2040, and LOS was determined for the Passive and Active Scenarios.

More information on the LOS analysis and projections are available in Appendix B, beginning on page B-64 and Appendix C, beginning on page C-8. During the study period and in the appendices the Active and Passive Scenarios were referred to as the "Build" and "No Build" Scenarios respectively.

2.6 PREVIOUSLY PLANNED AND PROPOSED PROJECTS

Projects to mitigate the effects of travel in the study area have been discussed, proposed, and planned for many years.

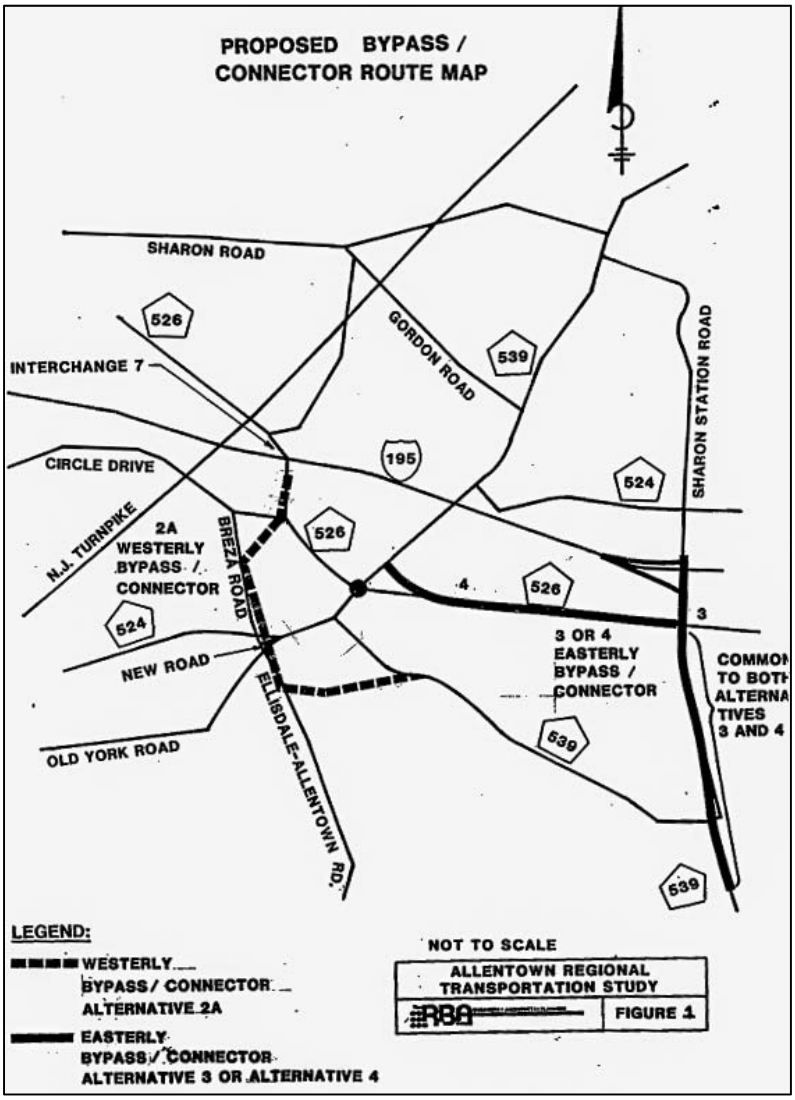

Figure 9 - Easterly and Westerly Bypasses As Proposed in the 1992 Allentown Regional Traffic Study

2.6.1 EASTERLY BYPASS

The Easterly Bypass was first proposed in 1992 in the Allentown Regional Transportation Study and is the locally preferred method for improving access to I-195. It is partially implemented and construction is expected to be complete in 2021. Prior to the completion of this project traffic moving from points north and I-195 (and vice versa) would be required to travel through Allentown borough, and larger vehicles would be forced to navigate tight intersections in the historic downtown. With the addition of CR526 (Spur), completed in 2004, connecting CR524 (Allentown Lakewood Road) with CR539 (Old York Road) access to and from I-195 at Interchange 8 is improved.

Access will be further improved by the construction of improvements to CR539A (Sharon Station Road). CR539 (Forked River Road) travels north from Ocean County, and turns northwest as CR539 (Allentown Davis Station Road). CR539A (Sharon Station Road) is the continuation of CR539 (Forked River Road) to the north, however improvements are needed to make it suitable for large vehicles and increased levels of traffic. Widening, intersection improvements, bridge improvements, and the addition of jug handles and a roundabout are all planned for Sharon Station Road and the completion of the Easterly Bypass.

These improvements will enable traffic that currently follows CR539 (Forked River Road, Allentown Davis Station Road, and High Street) in order to travel east and north through Allentown with a more direct and suitable route. When the improvements are complete CR539A (Sharon Station Road) will be recommended for inclusion in the New Jersey Access Network, and CR526 (Church Street and Waker Avenue) be recommended for removal from the network.

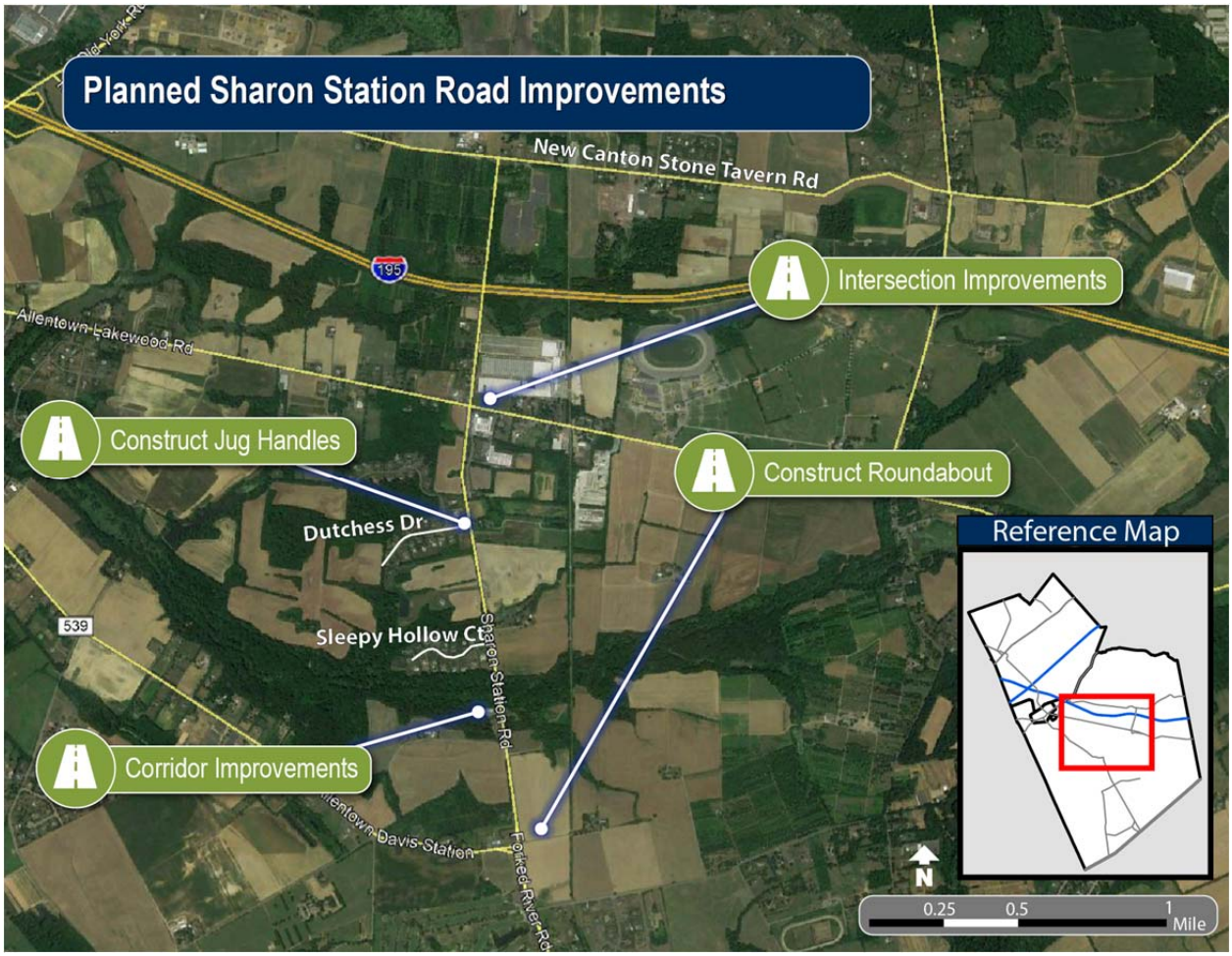

Figure 10 - Planned Sharon Station Road Improvements

2.6.2 WESTERLY BYPASS

The Westerly Bypass was first proposed in 1992 in the Allentown Regional Transportation Study. It has not been implemented, although Monmouth County owns the rights-of-way south of CR524 (Yardville Allentown Road). The northern section of the Westerly Bypass was originally planned to connect CR526 (Robbinsville Allentown Road) just south of I-195 Interchange 8 with Breza Road in Allentown. The southern section, which received several mentions in public comments, was planned to connect Ellisdale Road with CR539 (Allentown Davis Station Road) in between Byron Johnson Park and Heritage Green residential development in Upper Freehold. The Westerly Bypass is often discussed as only including the southern section, which in addition to mitigating the effects of through traffic would also alleviate congestion attributed to the public schools located off of CR539 (Allentown Davis Station Road and High Street). The need for the Westerly Bypass will be determined based on the performance of the completed Easterly Bypass, which is expected to significantly reduce demand at the intersection of CR539 (High Street) and CR524 (South Main Street). The proposal, however, is controversial. Upper Freehold residents generally are not in

favor of shifting traffic to run between their homes and the parks and fields where their children play. Allentown residents are generally in favor of this project that was proposed prior to the development of Heritage Green or Byron Johnson Park.

2.6.3 ALLENTOWN TRAFFIC SIGNAL

An engineering study (traffic signal warrant analysis) of the existing traffic operations and safety, and pedestrian and physical characteristics at the intersection of CR524 (Main Street) and CR526 (Church Street) was recommended to the Borough of Allentown in 2017. This would determine whether installation of a traffic control signal would be justified at this intersection and potentially improve traffic conditions. However, the Borough's governing body passed a resolution (R-179-2017) stating that the Borough did not support a warrant analysis to be performed for intersection. It should be noted that the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

The investigation of the need for a traffic control signal includes an analysis of factors related to the existing traffic conditions at the intersection. Those factors include vehicular and pedestrian volumes, school crossing, crash experience, coordinated signal system, roadway network, and intersection near a grade crossing.

2.6.4 ALLENTOWN TRUCK PROHIBITION

In October of 2016 the Allentown Borough Council revised its traffic ordinance to prohibit trucks over four tons from travelling through the Borough, with the exception of local deliveries. The ordinance (14-2016) included several County roadways and local streets that continue into other municipalities and make up part of the contiguous roadway network. Prohibitions affecting other municipalities must receive resolutions of concurrence to be put into effect. As of June 2019, neither Robbinsville nor Upper Freehold has passed resolutions of support for this prohibition.

3 MITIGATION MEASURES

The study purpose includes developing measures that mitigate the effects of freight related travel and improves conditions for all users, known in this study as Mitigation Measures. However, a suggested Mitigation Measure in this study is not a mandate for action or an implementation plan. All Mitigation Measures suggested in this study, from the simplest to the most complex and expensive, will have a multi-step and layered process to go through before implementation. At the end of this section is a chart that details the responsible parties and the next steps for each of the suggested Mitigation Measures in this study. Most of the measures, regardless of the agency in charge, will require endorsement from local elected officials as well as funding from a government source or public-private partnership.

3.1 I-195 ACCESS AND WAYFINDING

Interstate 195 (I-195) is a limited access highway that runs east-west across almost all of New Jersey, from Interstate 295 in Trenton to SR34 in Wall Township. SR29 serves as a continuation of the route to the west in Trenton, and SR138 continues the route to the East where it intersects the Garden State Parkway, and SR35. I-195 is designated as part of the National Network on the NJ Large Trucks Map, and therefore 102 inch wide tractor trailers are encouraged to operate on this route.

I-195 has four interchanges in the study area. I-195 Interchange 6 with I-95 (NJ Turnpike), Interchange 7 with CR526 (Robbinsville Allentown Road), Interchange 8 with CR539 (Old York Road), and Interchange 11 with CR43 (Imlaystown Hightstown Road), known locally as Coxs Corner. Interchanges 7 and 8 are a focus of the study as they provide almost direct access to the west and east portions of the Matrix Site via short spans of County road.

I-195 Interchanges 7 and 8, as well as the roadways adjacent would benefit from ramp and roadway improvements, as well as improved directional signage. Specifically, Interchange 7 is missing a movement from CR526 North (Allentown Robbinsville Road) to I-195 East , there are no opportunities for a large vehicle to turn around on CR526 (Robbinsville Allentown Road and Church Street), and Interchange 8 and ramps leading up to it on CR539 (Old York Road) would benefit from improved access. As indicated by residents, stakeholders, first responders, and the observations of the study team directional signage leading to and on I-195 is insufficient and potentially confusing.

These improvements will reduce driver confusion and provide improved access to I-195. Driver confusion and lack of access results in longer than necessary trips and unnecessary travel through Allentown and Upper Freehold, causing increased air and noise pollution, vibration, and congestion near residences and businesses. In Allentown, large vehicles sometimes damage private property at corners and get stuck at the intersection of CR524 (Main Street) and CR526 (Church Street) due to the tight configuration. This results in significant congestion and sometimes requires a response from the local police and first responders to get the vehicle moving again.

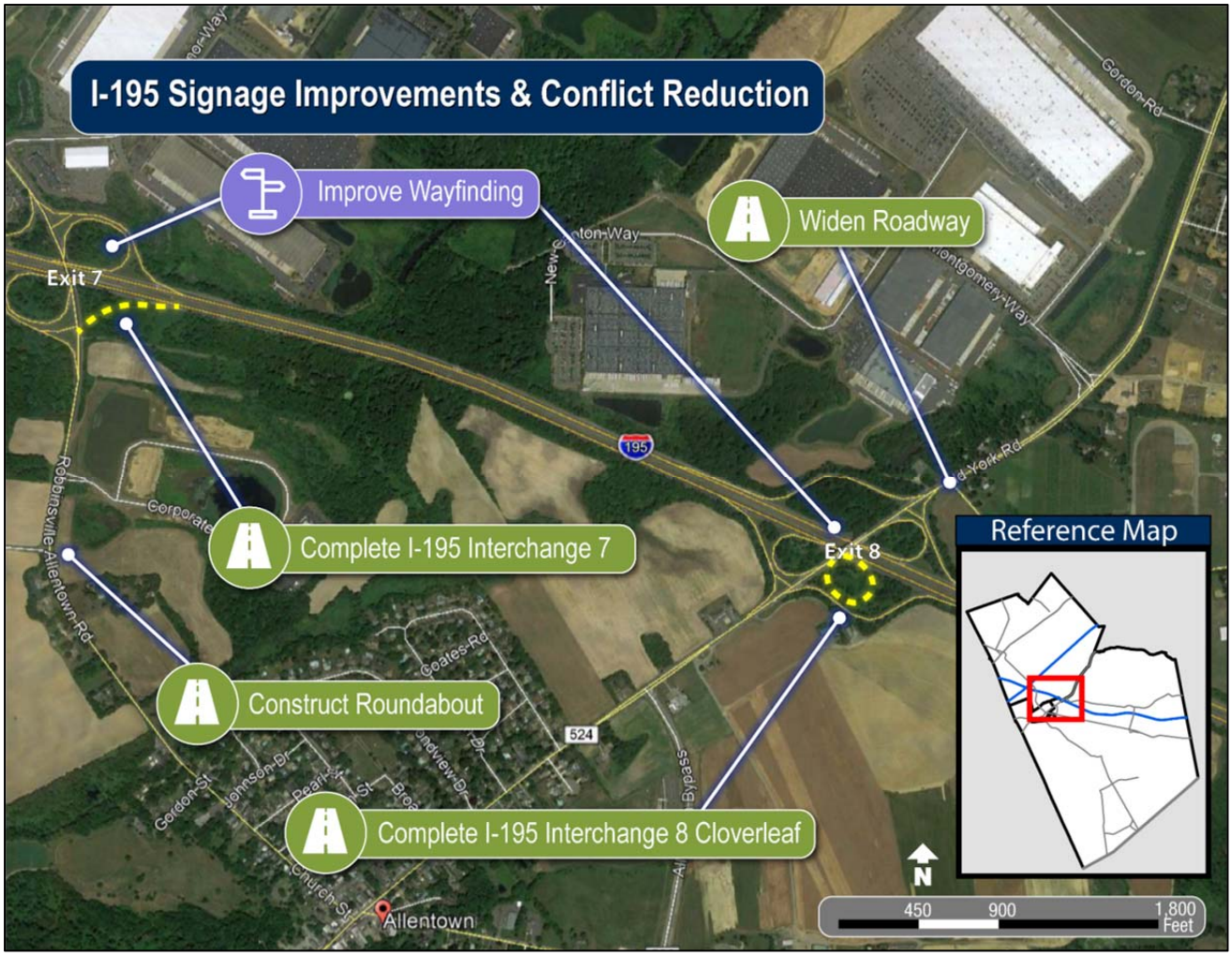

Figure 11 - I-195 Signage Improvements & Conflict Resolution

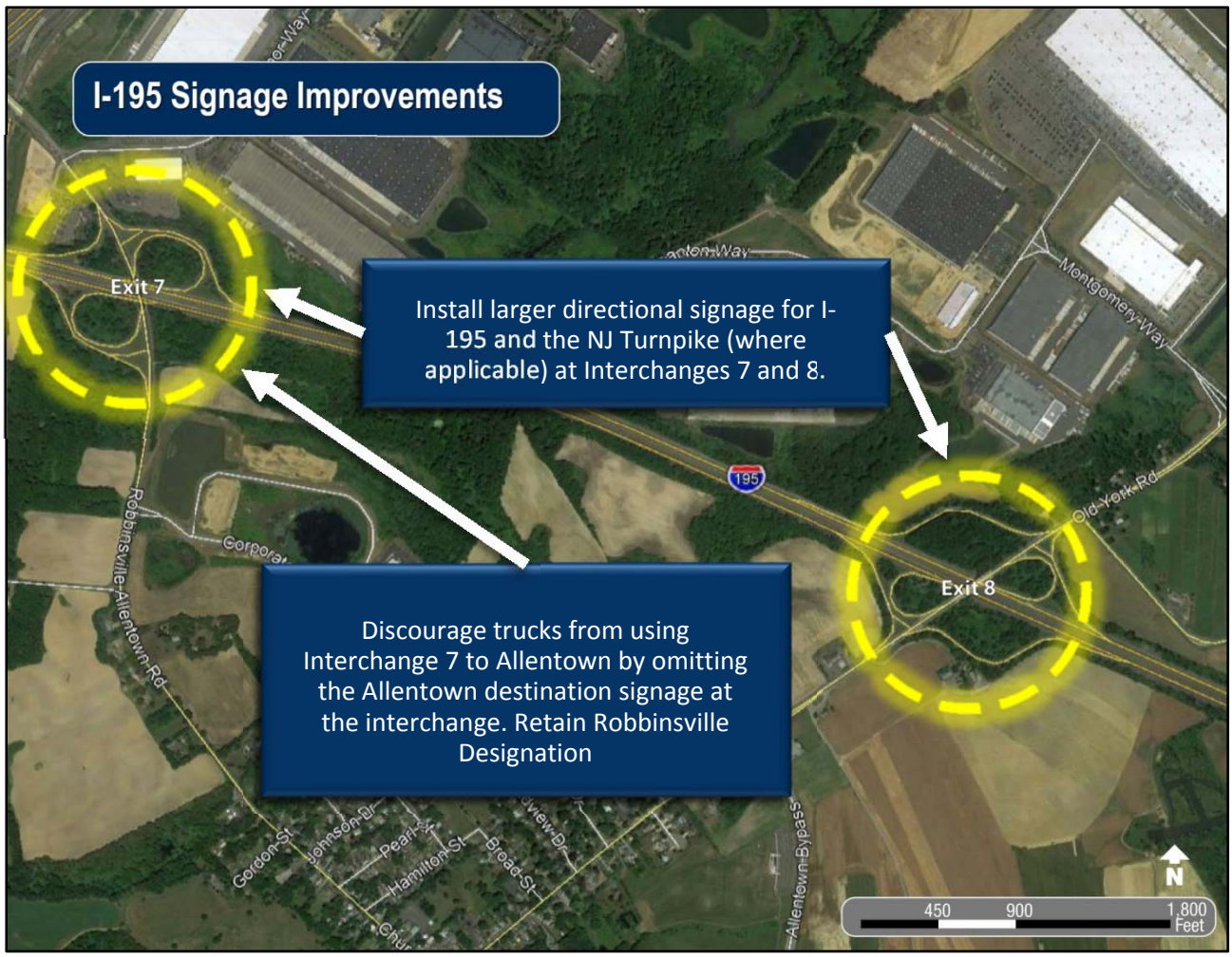

Figure 12 - I-195 Signage Improvements

I-195 Access and Wayfinding Mitigation Measure 1a – Improve Signage

Need: I-195 Interchanges 7 and 8 are both labeled for Allentown, which causes confusion for drivers who are not familiar with the area, and results in their using the wrong interchange. This leads to drivers leaving the shortest and most direct route to their destination and driving unnecessarily through Upper Freehold and Allentown.

Mitigation Measure: The Allentown label and reference should be removed from all signs for Interchange 7, and all signs should be made consistent. Figures 13 and 14 show some of the existing signs. This will result in fewer drivers unnecessarily travelling through Allentown and Upper Freehold to reach their destination. Interchange 8 should remain labeled for Allentown, as it currently is on ground mounted signs on both sides of I-195.

Figure 13 - I-195 East Existing Signage

Figure 14- I-95 West Existing Signage

I-195 Access and Wayfinding Mitigation Measure 1b– Warehouse Wayfinding Signage

Need: Drivers unfamiliar with the area sometimes get lost on the way to the Matrix Site, resulting in unnecessary trips through the study area.

Mitigation Measure: Install signs directing drivers to the different areas of the Matrix Site, similar to tourism and traveler direction signage leading to food, fuel, and lodging.

I-195 Access and Wayfinding Mitigation Measure 2 – Improve Signage on County Roadways Near I-195 interchanges

Need: The roadway proximal to on-ramp from CR526 (Robbinsville Allentown Road) to I-195 lacks sufficient directional signage Truck drivers who miss the on-ramp must either turn around or travel to I-195 Interchange 8 by travelling through Allentown and Upper Freehold. This behavior was observed by a Robbinsville police officer who queried a driver he saw following this route, and shared the story with the study team. The signage on CR539 (Old York Road) proximal to I-195 Interchange 8 is similarly deficient.

Mitigation Measure: Improving signage leading to I-195 will result in fewer drivers missing on-ramps, and fewer unnecessary trips through Allentown and Upper Freehold. When large vehicles are involved, these unnecessary trips lead to increased noise, pollution, vibration, and in some instances property damage and vehicles becoming stuck while turning at CR524 (Main Street) and CR526 (Church Street). Larger, clearer signs that reduce visual clutter will better aid drivers in finding their way to and through the study area. Figures 15 and 17 show signage that may be improved through simplification and a cohesively designed display. Figure 16 shows examples of large, simplified signage that communicates clearly with drivers.

Figure 15 - CR524 (North Main Street) Existing Signage

Figure 16 - Improved Signage Examples

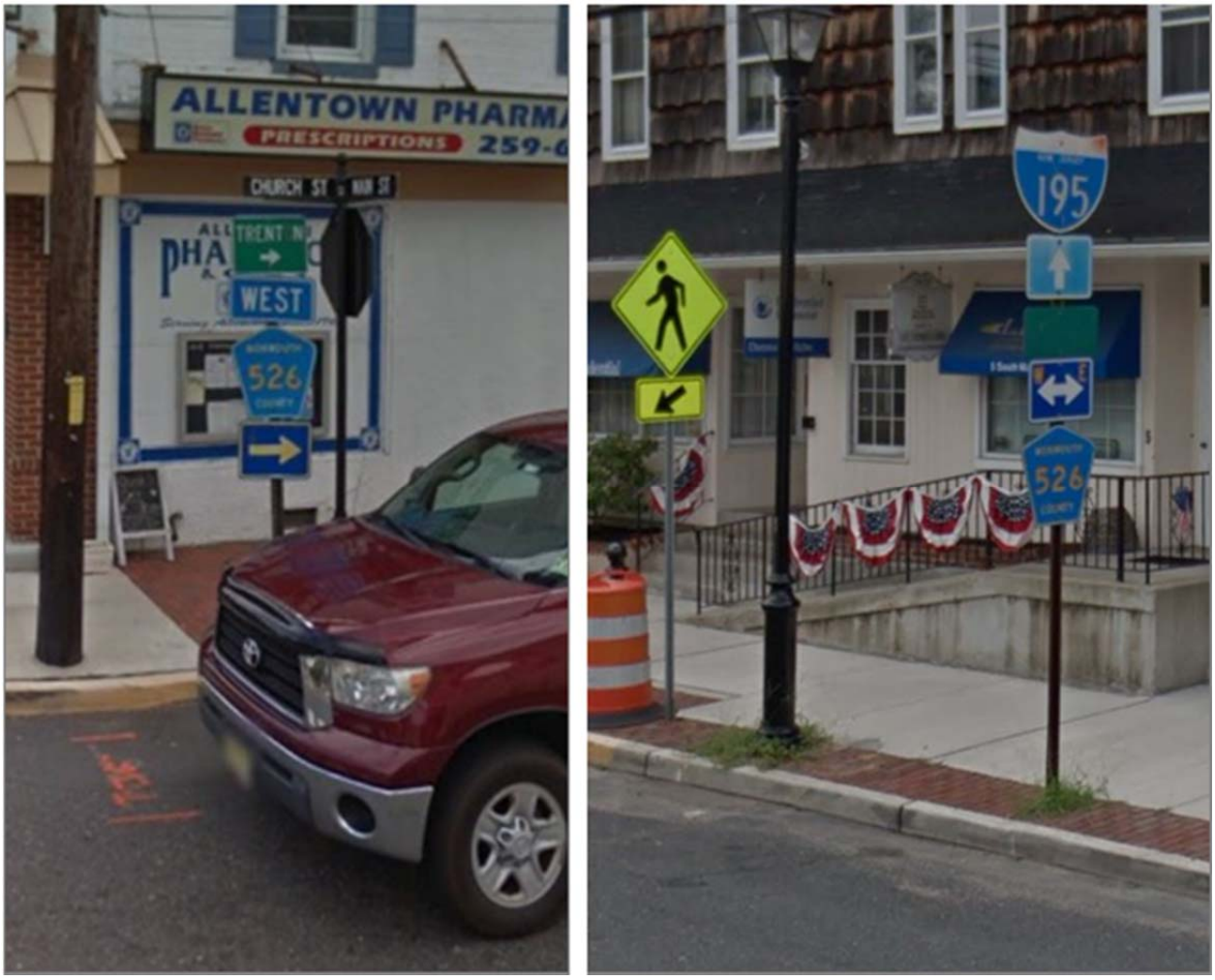

Figure 17 - Existing Signage CR526 (Church Street)

I-195 Access and Wayfinding Mitigation Measure 3 – Complete Interchange 7

Need: I-195 Interchange 7 is missing a movement that would carry vehicles from CR526 North (Robbinsville Allentown Road) to I-195 East. This reduces mobility for all roadway users, and creates a situation where all travelers, including large vehicles, are forced to take an indirect route through Allentown and Upper Freehold to access I-195 East at Interchange 8.

Mitigation Measure: Completing the interchange by adding the missing movement from CR526 North (Robbinsville Allentown Road) to I-195 East will result in reduced unnecessary travel by all travelers through Allentown and Upper Freehold. The addition of this missing movement can be accomplished by the completion of the cloverleaf at the southeast corner of the interchange; however this land is preserved by Mercer County and not readily available for highway construction. There are other possible alternative configurations, including the addition of a left turn from CR526 North (Robbinsville Allentown Road) to merge with the existing cloverleaf that provides access from CR526 South (Robbinsville Allentown Road).

Figure 18 - CR539 (Old York Road) at I-195

I-195 Access and Wayfinding Mitigation Measure 4 – Roundabout on CR526 (Robbinsville Allentown Road) at Circle Drive

Need: There is currently no appropriate opportunity for a large vehicle to turn around if the driver misses the on-ramp to I-195, forcing them to travel through Allentown and Upper Freehold to access I-195 at Interchange 8.

Mitigation Measure: A roundabout with a mountable center island on CR 526 (Robbinsville Allentown Road) at Circle Drive would allow for trucks to turn around and access Interchange 7 again.

3.2 I-195 INTERCHANGE 8 CONFLICT REDUCTION

There are significant and increasing demands on I-195 Interchange 8 due to increased freight related traffic in and out of the eastern section of the Matrix site. A major Amazon distribution center and several other large facilities are accessed from this interchange via CR539 (Old York Road) by large vehicles as well as employees.

I-195 Conflict Reduction Mitigation Measure 1 – Expand CR539 South (Old York Road)

Need: There are significant delays leaving the Matrix site and merging onto CR539 (Old York Road)

Mitigation Measure: CR539 South (Old York Road) should be widened by one travel lane between Montgomery Way and the westbound ramp at I-195 Interchange 8, and appropriate directional signage added. The additional lane may be either one of two lanes entering the ramp to I-195 West, or there may be a second lane added for through traffic, depending on the results of a detailed engineering study. The additional lane will increase capacity and provide direct access to the ramp, without interacting with other traffic on CR539 (Old York Road). This will significantly reduce delays for drivers leaving the eastern section of the Matrix site via CR539 (Old York Road) and I-195 West, and improve conditions for all travelers using the interchange during peak periods.

I-195 Conflict Reduction Mitigation Measure 2 – Complete the Interchange 8 Cloverleaf

Need: I-195 Interchange 8 lacks dedicated ramps between I-195 East and CR539 South (Old York Road), and I-195 West and CR539 South (Old York Road). This results in significant backups during times of peak travel, including shift changes at businesses at the Matrix site.I-195 Interchange 8 allows for a complete set of turning movements between the interstate and CR539 (Old York Road).

Mitigation Measure: The addition of dedicated ramps will allow for the removal of existing stop signs and signals, smoothing traffic flows and alleviating peak period congestion.

3.3 CR524 (NEW CANTON STONE TAVERN ROAD)

CR524 (New Canton Stone Tavern Road) is a County road that runs east-west from CR539 (Old York Road) through Upper Freehold Township to its eastern border with Millstone Township. It then turns into CR524 (Stagecoach Road) and runs east-west through Millstone Township, and terminates at the municipal border with Freehold Township and CR537 (Monmouth Road). It is a two lane roadway with no traffic signals and a 50 mph speed limit, and runs through a mostly agricultural and equestrian area, with pockets of housing and a few commercial and industrial properties. It runs parallel and in close proximity to I-195 between Interchanges 8 and 11. Large trucks (102 inch wide and double trailer) are prohibited from utilizing this roadway as per the NJDOT Large Truck Map. There is no weight restriction or prohibition preventing other large vehicles and tractor-trailers traveling there.

CR524 (New Canton Stone Tavern Road) at Sharon Station Road Intersection Improvements

Need: Although it is not specifically a freight traffic concern, the study team discovered during the crash analysis that the intersection of CR524 (New Canton Stone Tavern Road) with Sharon Station Road (north of the Easterly Bypass) in Upper Freehold was the County intersection with the most fatalities in the study area. Between 2015 and 2017 there were four fatalities and 18 injuries at this intersection. Right angle crashes are the most prevalent type, accounting for 38 percent of all crashes at Sharon Station Road and CR 524 (New Canton Stone Tavern Road).

Mitigation Measure: The intersection should be investigated for the addition of a traffic signal in order to make turning movements safer. A traffic analysis should also be performed to determine if the addition of left-turn lanes would benefit the intersection in the future. Pedestrian improvements should also be considered in response to any residential development planned for the area in the future.

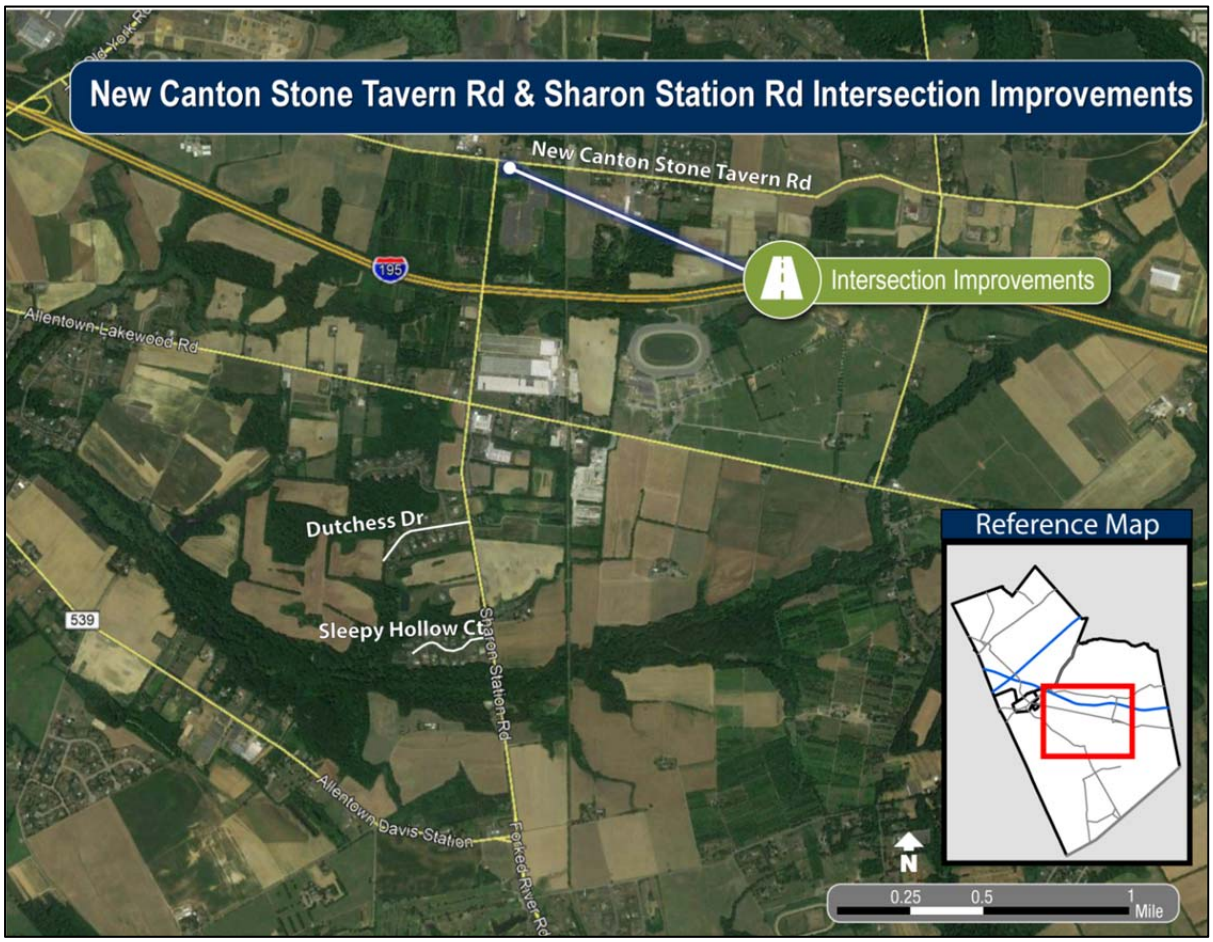

Figure 19 - CR524 (New Canton Stone Tavern Road) Improvements

3.4 CR524 (SOUTH AND NORTH MAIN STREET)

CR524 (South Main Street) in Allentown runs northeast from the intersection of CR524 (Yardville Allentown Road) and CR28 (South Main Street) to its intersection with CR526 (Church Street), where it becomes CR524 (North Main Street). It continues to the border of Allentown and Upper Freehold where it becomes CR539 (Old York Road). It is a two lane roadway with parking lanes in the historic downtown area of Allentown which is comprised of a mix of reside mntial and commercial properties. The roadway is wide (over 40 feet in places) at the southern end near Conines Millpond Bridge , and widens considerably and irregularly north of CR526 (Waker Ave), where it ranges from 50 feet to no less than 40 feet, with 20 foot wide travel lanes. It is part of the NJ Access Network, and leads to I-195 Interchange 8 just over the municipal border in Upper Freehold.

Several factors cause pedestrians and other non-motorized users to find CR524 (South and North Main Street) an uncomfortable place to travel, however attractive it is as a mixed use historic downtown. The proximity of a local elementary school, a regional high school, and athletic fields at Byron Johnson Park also contribute to high pedestrian activity before and after school, and on the weekends. There are no signal controlled intersections along the road, and only stop signs controlling traffic merging from intersecting streets. There are no crosswalks north of CR526 (Church Street) to the municipal border, a distance of almost half a mile of road adjacent to commercial and residential development with frequent curb cuts and side streets. Speeding was reported by many members of the public, and the road's significant width, especially towards the northern end, may contribute to this behavior.

Wide streets, speeding vehicles, frequent curb cuts, no traffic controls, and a lack of crosswalks on CR526 (North Main Street) contribute to an uncomfortable environment for people walking across the street. The addition of trucks running past Allentown's tight building pattern, which at some points forms a street wall, creates a noisy and intimidating situation for non-motorized travelers. Additionally, there have been several pedestrian crashes reported recently, including a young boy on a bicycle struck and injured by an automobile at a crosswalk at the intersection of CR539 (High Street), and several young girls struck, but not injured in a crash with an automobile at the intersection of CR526 (Church Street).

Congestion and congestion related crashes are also an issue along the roadway, with low LOS levels for turning movements at CR539 (High Street) and CR526 (Church Street), as found by analyzing traffic data and as per reports from the public. Between 2015 and 2017, 25 crashes were reported at the intersection of CR526 (Church Street and Waker Avenue) and CR524 (Main Street), and 20 were reported at the intersection of CR539 (High Street) and CR524 (South Main Street). Both intersections showed a high incidence of rear-end crashes, 40 percent and 55 percent respectively, suggesting that congestion is a major contributing factor.

There are several Mitigation Measures for CR524 (North and South Main Street) that have the potential to improve pedestrian safety and comfort, as well as vehicle congestion and crashes. Implementation of these measures is expected to decrease congestion, speeding, crashes, and noise, and improve the overall experience for everyone travelling the road.

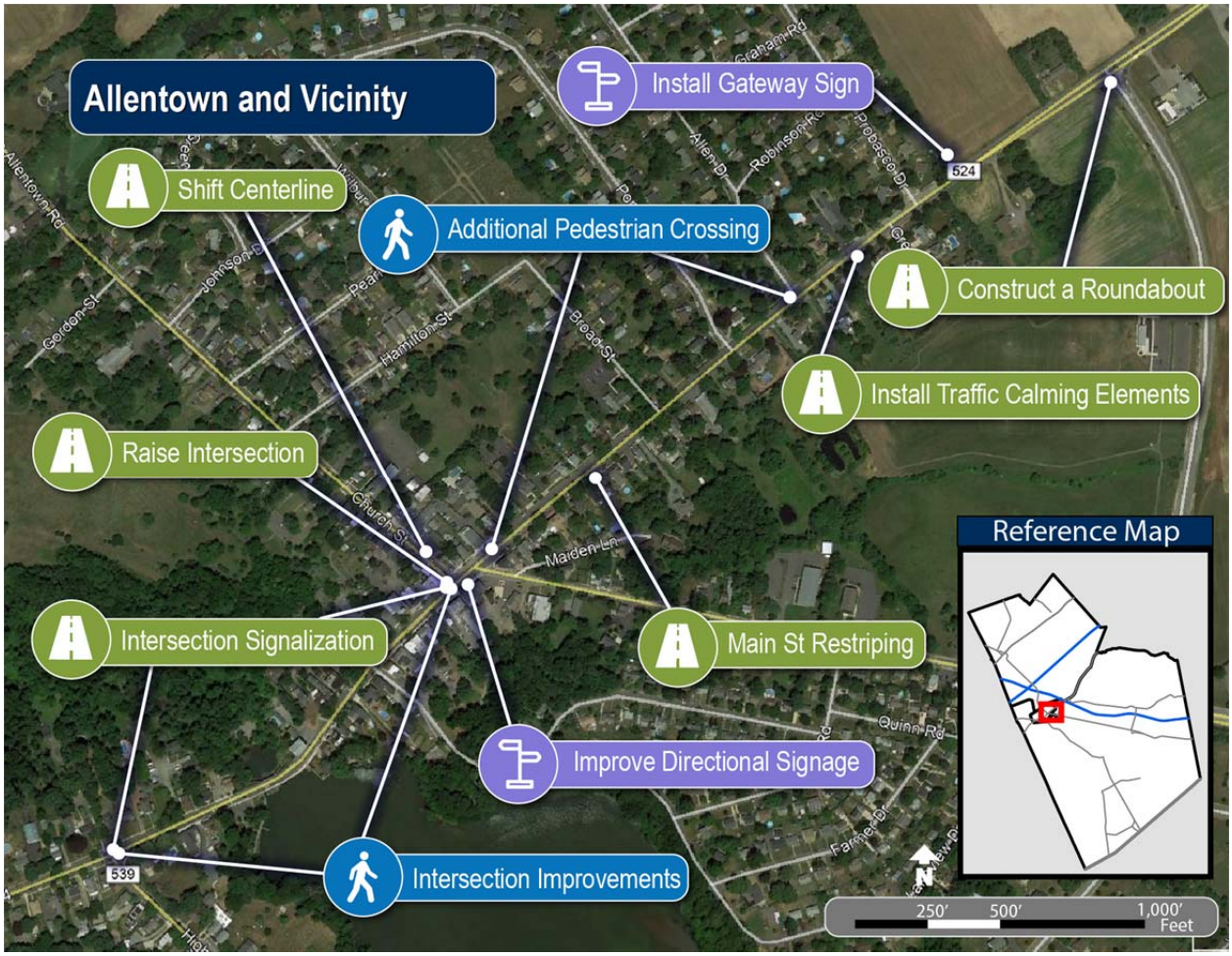

Figure 20 - CR524 (Main Street)

CR524 (North and South Main Street) Mitigation Measure 1 – Traffic Calming

Need: Residents and stakeholders reported that vehicular traffic on CR524 (North and South Main Street) moves too quickly at times, and contributes to an uncomfortable pedestrian environment.

One solution is to implement traffic calming strategies to slow vehicular traffic. This can be accomplished in a variety of ways, including signage to raise driver awareness, features that narrow the roadway to create "visual friction" that encourages drivers to drive more slowly, and grade changes such as raised intersections and speed tables that require a driver to slow down.

For CR524 (North and South Main Street) the study suggests installing in-street, roadway adjacent, as well as variable message signage, narrowing lane widths, constructing a raised intersection and curb extensions, investigating the installation of traffic signals, and the installation of a gateway treatment.

Mitigation Measure 1a – Lane narrowing and delineation

Mitigation Measure: CR524 (North and South Main Street) is comprised of various widths and configurations. The road should be reconfigured to a consistent 11-12 foot travel lane, with the excess width clearly delineated as parking, shoulder, or center lane treatment. Installing curb extensions at crosswalks can also narrow the roadway while providing a shorter crossing distance for pedestrians to travel. This will create visual friction for drivers, keeping unintentional speeding in check and encouraging the perception of Allentown as an active downtown, as opposed to a rural road. This will have the effect of calming traffic, and discouraging cut-through and truck travel. These changes will improve congestion, speeding, pedestrian and vehicular safety, and noise.

- CR524 (North Main Street) between the municipal line and Broad Street (shown in Figure 21)
    - Two 12-foot travel lanes
    - Two 8-foot parking lanes
    - Double yellow center striping

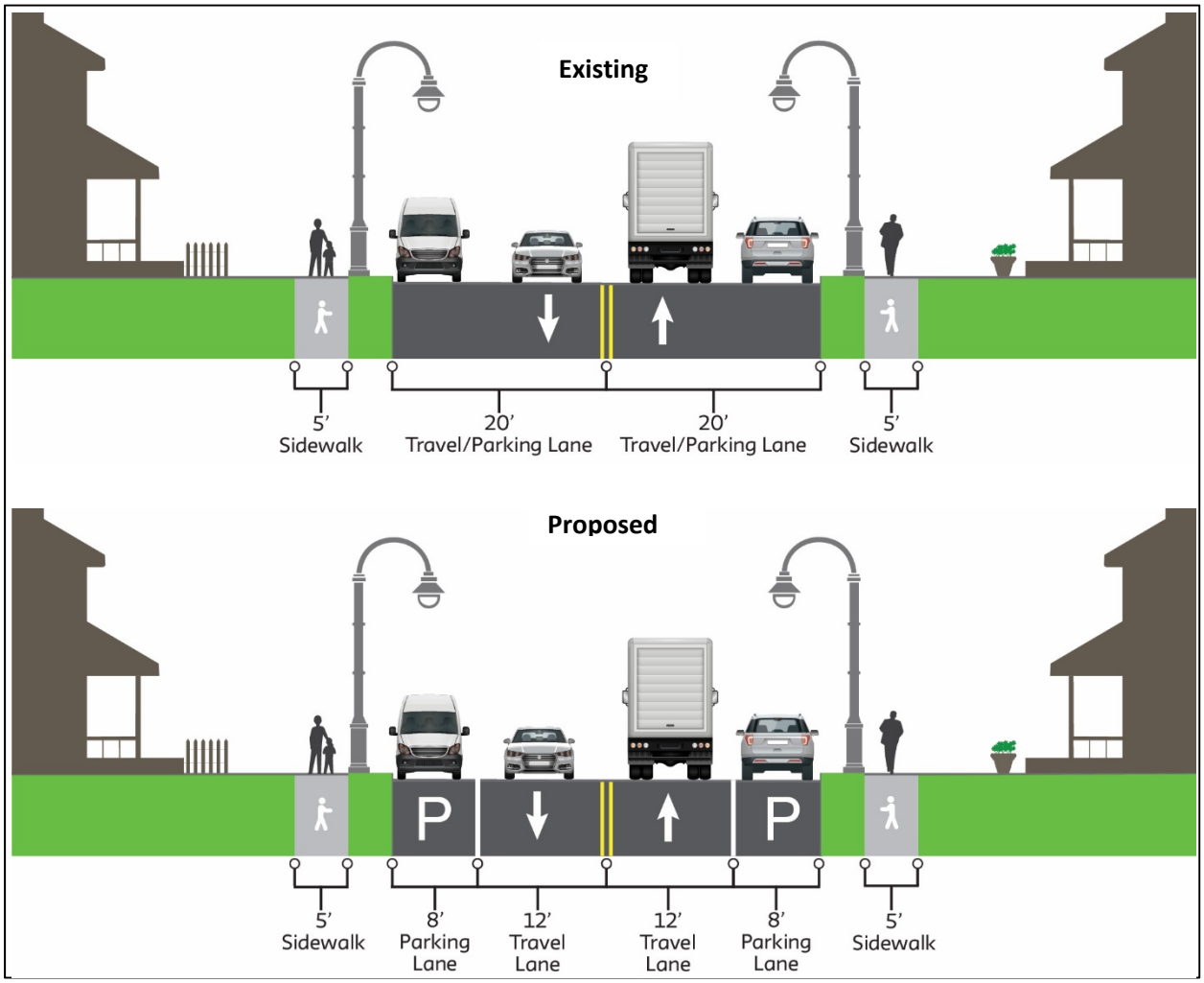

Figure 21 - CR524 (North Main Street) Municipal Line to Broad Street

- CR524 (North and South Main Street) between Broad Street and Conines Millpond Bridge (shown in Figure 22)
    - Two 12-foot travel lanes
    - Two 8-foot parking lanes
    - Center painted median and turn lane (dependent on available width)

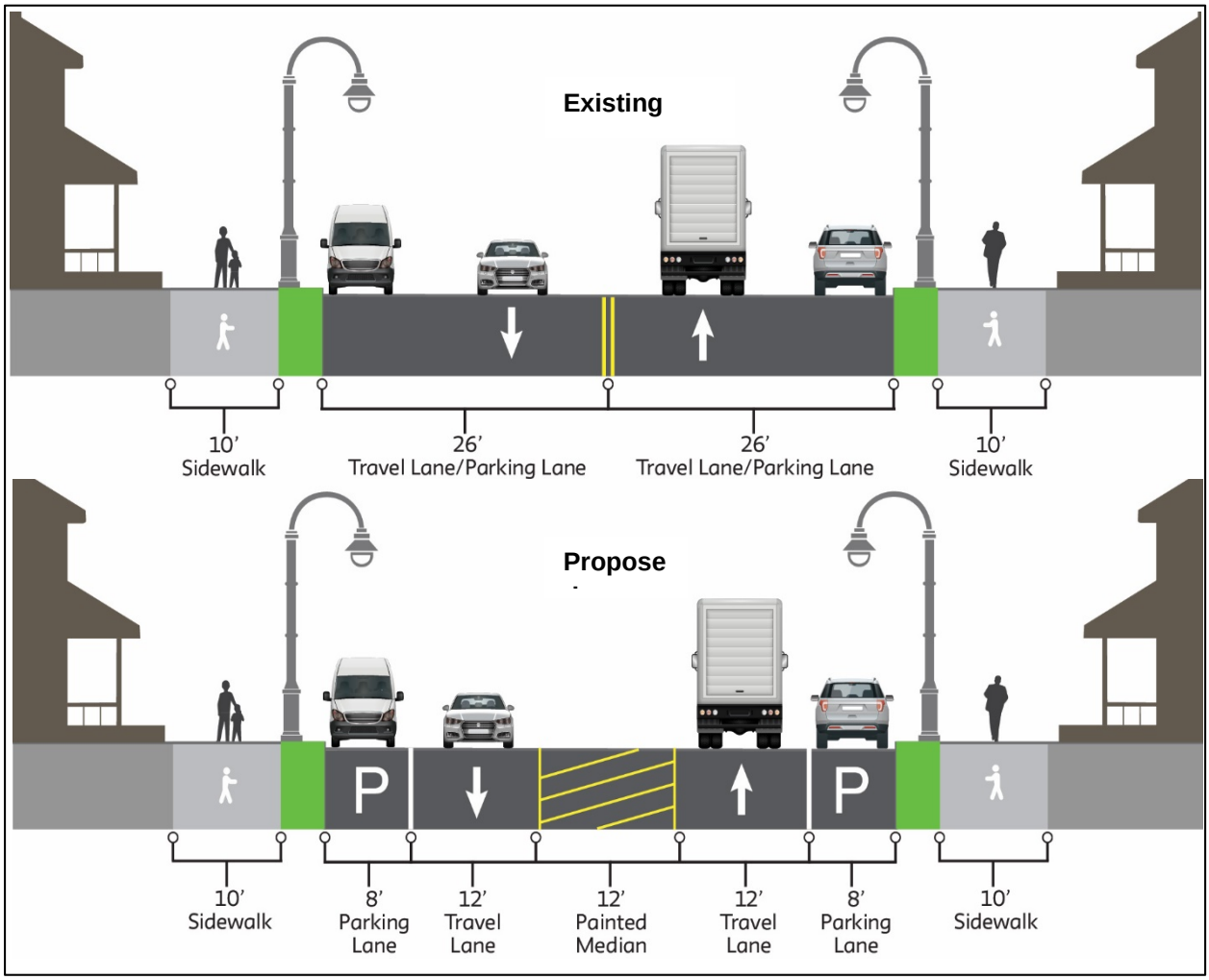

Figure 22 - CR524 (North and South Main Street) Broad Street to Conines Millpond Bridge

- CR524 (South Main Street) between Conines Millpond Bridge and CR524 (Yardville Allentown Road) (shown in Figure 23)
    - Two 12-foot travel lanes
    - Two 3-foot shoulders
    - Double yellow center striping

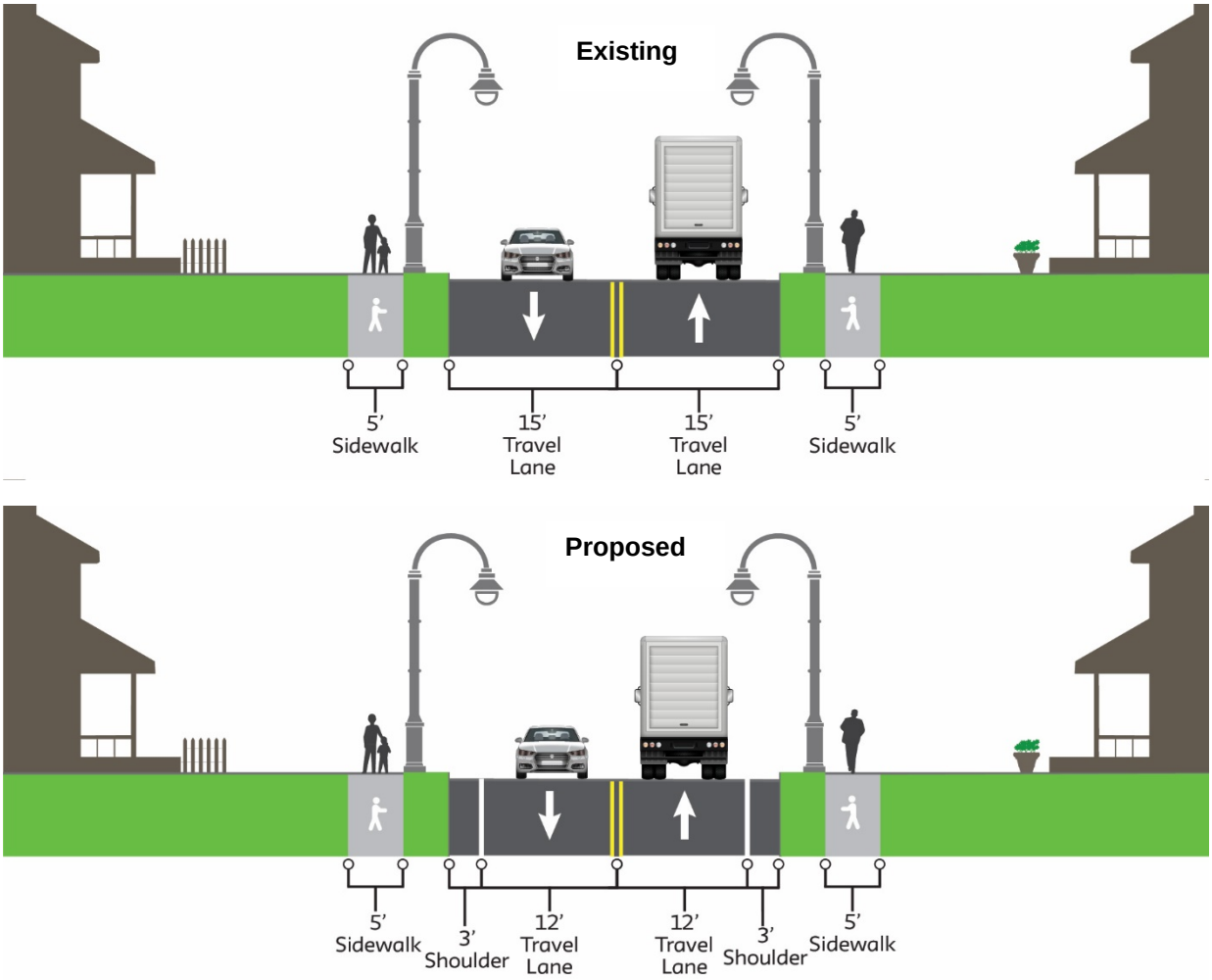

Figure 23 - CR524 (South Main Street) between Conines Millpond Bridge and CR524 (Yardville Allentown Road)

Mitigation Measure 1b – Variable Message Speed Signs

Mitigation Measure: Variable message signs (VMS) showing vehicle speeds are an effective tool for improving driver awareness. Signs should be considered for installations at each end of CR524 (North and South Main Street). These signs will increase awareness for infrequent travelers. Portable signs should be used throughout the corridor at various points to keep frequent travelers aware of their behavior if they become inured to the permanent warnings over time. Figure 24 shows an example of a VMS Speed Sign.

Figure 24 - Example VMS Speed Sign

Mitigation Measure 1c – Gateway Treatment

Additional Need: The intersection of CR524 (North Main Street) and CR526 (Spur) is projected to have significant delays by the year 2040. LOS is projected to be C during the morning, and F during the evening. This intersection is intended to handle freight traffic, and is part of the Easterly Bypass.

Mitigation Measure: One of the most effective traffic calming strategies is the installation of a gateway treatment. This may be in the form of pillars or piers, an archway, or a large welcome sign. An architectural feature combined with speed limit and VMS signage will alert drivers that the character of the roadway is changing and that they should reduce speed accordingly.

One option that would have the same effect, but be located just off of CR524 (North Main Street) would be the construction of a roundabout combined with a gateway feature at the intersection of CR526 (Spur) and CR524 (North Main Street) in Upper Freehold. Construction of a roundabout at this intersection will result in a significant LOS improvement, reducing delays, congestion, and improving safety at this intersection that is intended to efficiently carry freight traffic through the study area as well as portray a change in road character to drivers and encouraging slower travel speeds. Figure 25 shows an example gateway treatment in Interlaken, NJ.

Figure 25 - Example Gateway Treatment, Interlaken, NJ

Mitigation Measure 1d – Raised Intersection at CR526 (Church Street and Waker Avenue)

Additional need: This intersection has awkward ADA access, due to its difficult and uneven grading.

Mitigation Measure: A raised intersection would bring the height of the street up to the height of the sidewalks. It creates traffic calming for drivers traversing the intersection, as vehicles will slow to climb and descend the raised section. This increased driver awareness and reduced speed is beneficial for pedestrians as they cross the street. An alternative to a raised intersection is the installation of curb extensions, widening the sidewalks and shortening the distance a pedestrian must travel to cross CR524 (Main Street).

This feature is expected to improve ADA access, reduce vehicle speeds, improve circulation, and promote pedestrian safety. A raised intersection would create an even grade, allowing for unimpeded ADA access.

Mitigation Measure 1e – Create full featured pedestrian crossings on CR524 (North Main Street)

Mitigation Measure: Residents and stakeholders have expressed the desire to cross CR524 (North Main Street) in Allentown, but the road does not have any crosswalks north of the intersection of CR526 (Church Street).

New crosswalks should be created at the intersection of CR524 (North Main Street) and CR526 (Waker Avenue), and in the vicinity of Allen Drive. These crosswalks should include traffic calming strategies, including but not limited to in-road pedestrian signs, rapid rectangular flashing beacons (RRFB), and curb extensions. These crosswalks will improve pedestrian access and safety, as well as calm all vehicular traffic on CR524 (North Main Street).

Figure 26 - Mid-block Crossing on CR524 (South Main Street)

Mitigation Measure 2 – Investigate Signalization at CR539 (High Street) and CR526 (Church Street)

Mitigation Measure: CR524 (North and South Main Street) flows unopposed through Allentown, with no traffic signals or stop signs to control traffic, and causing delays at intersecting roadways.

Signalization should be investigated at CR539 (High Street) and CR526 (Church Street and Waker Avenue. Signalization is expected to improve safety for all users. It would have the effect of slight delays on CR524 (North and South Main Street), but dramatically improve conditions at the intersections of CR539 (High Street) and CR526 (Church Street and Waker Ave).

More information can be found under the Mitigation Measures sections for those roadways.

Figure 27 - Context Sensitive Signals in a Historic District, Middletown, NJ

Mitigation Measure 3 – Complete Sidewalk Network on CR524 (South Main Streets and Yardville Allentown Road)

Need: Several areas on CR524 (North and South Main Streets, and Yardville Allentown Road) lack sidewalks. This limits mobility for people walking to schools, athletic fields, and residential developments where a safe pedestrian environment away from vehicular traffic, including large trucks, is needed.

Mitigation Measure: The sidewalk network should be completed on both sides of CR524 (South Main Street and Yardville Allentown Road) from the entrance to Stone Bridge Middle School to the intersection of CR28 (Old York Road). This will provide a safer and more comfortable pedestrian environment away from large truck traffic along roads that are part of the NJ Access Network.

Figure 28 - CR526 (Waker Avenue)

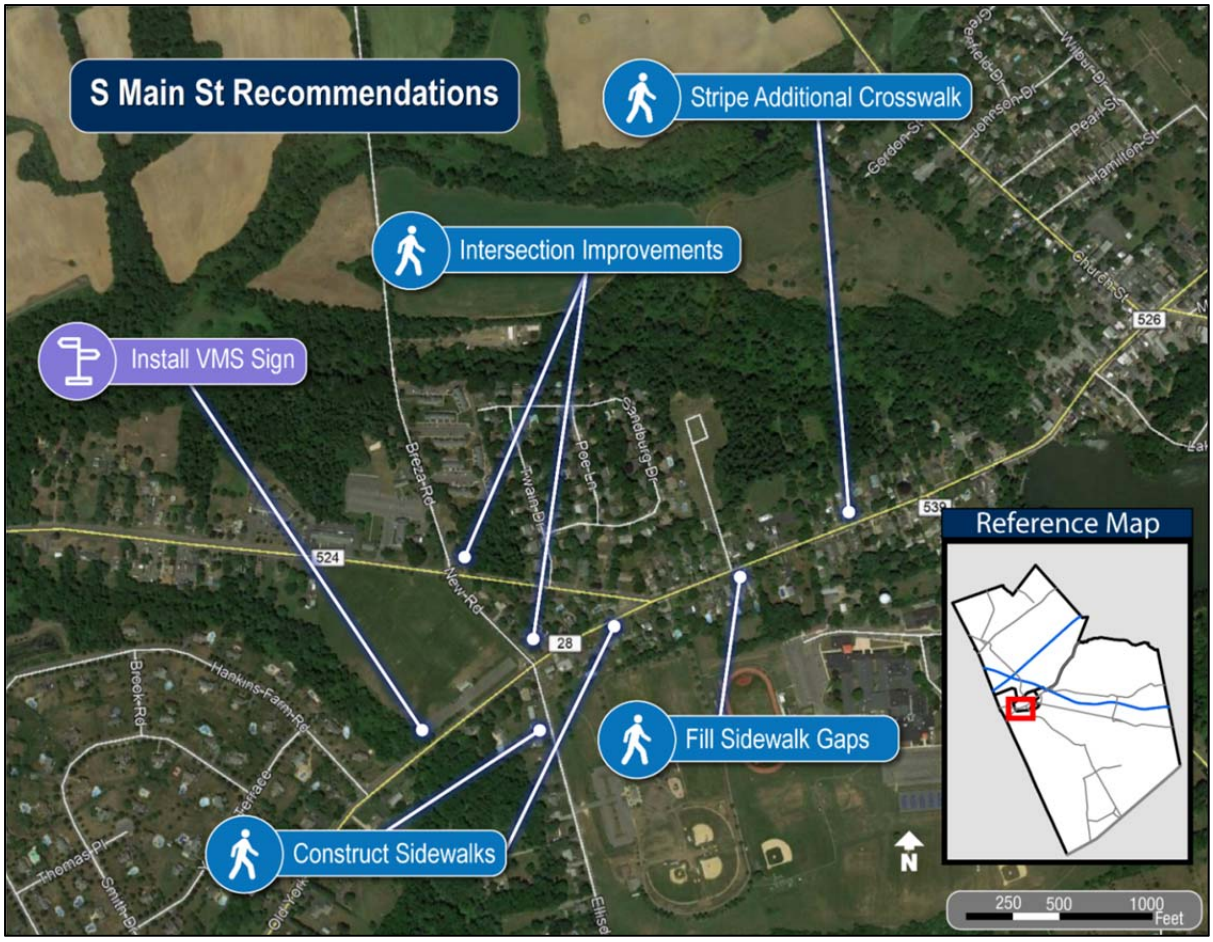

Figure 29 – CR524 (South Main Street)

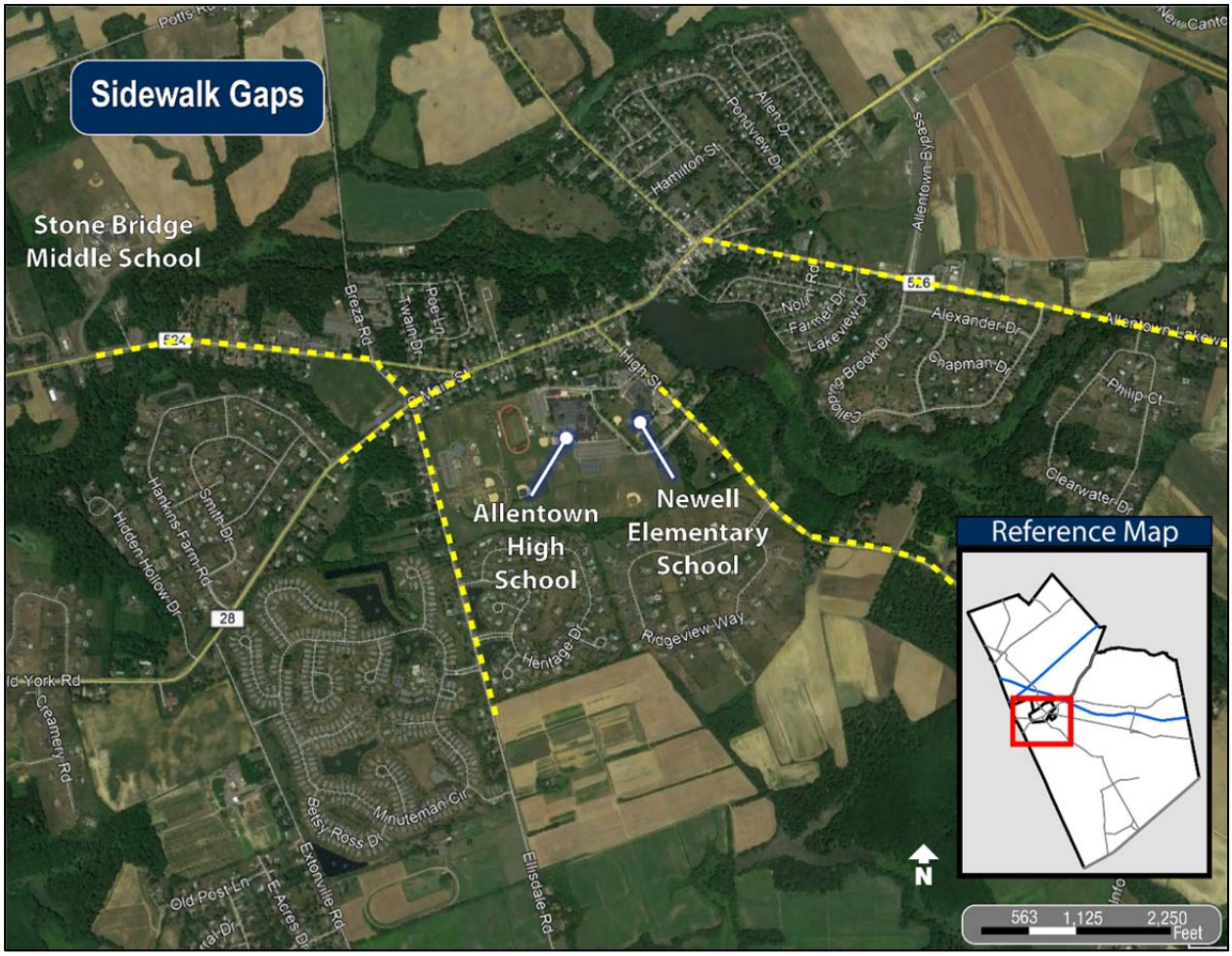

Figure 30 - Sidewalk Gaps

3.5 CR526 (CHURCH STREET, WAKER AVENUE, ALLENTOWN LAKEWOOD ROAD, ROBBINSVILLE ALLENTOWN ROAD, AND TRENTON LAKEWOOD ROAD)

CR526 (Church Street) runs north from CR524 (Main Street) in Allentown to the municipal border with Robbinsville, where it turns into CR526 (Robbinsville Allentown Road). It is two lanes with no shoulders and has a speed limit of 25 mph in Allentown, 40 mph in Robbinsville, and 50 mph in Upper Freehold. The road widens slightly and parking is permitted on the southbound side of CR526 (Church Street) near the intersection with CR524 (Main Street) in Allentown. The intersection with CR524 (Main Street) is controlled

by a stop sign, and CR526 continues as Waker Avenue south of CR524 (Main Street), after moving through an offset intersection.

CR526 (Allentown Lakewood Road) travels east from the Allentown border through Upper Freehold to its border with Millstone Township. The roadway mainly runs alongside farmland, with a few industrial properties, and residential properties and developments. CR524 (Allentown Lakewood Road) intersects the Union Transportation Trail (UTT), a multi-use recreational trail just east of Sharon Station Road.

Mitigation Measure 1 – Investigate Signalization at CR524 (Main Street)

Need: There are significant delays at the intersection of CR526 (Church Street and Waker Avenue) approaching CR524 (Main Street) from both directions. LOS coming from the north is D during the morning and evening peak periods, and from the south LOS is F during the morning and E during the evening peak periods.

Mitigation Measure: Signalization of the intersection should be investigated in order to improve its LOS, reduce delays for left turns onto CR524 (Main Street) and provide improved pedestrian safety controls.

This intersection is in the heart of Allentown's Historic District and great care should be taken in designing and implementing this measure. Prior proposals to signalize this intersection were met with the Borough stating it does not support a warrant analysis for the intersection "due to the failing intersection and the need to preserve the historic character of the Allentown Village." A warrant analysis in this instance would determine if there are safety or congestion issues that would be mitigated through the use of a traffic signal.

Traffic signals exist in historic districts in Monmouth County, and the signal housing and supports are often painted black in order to better blend into the streetscape. Additionally, the State Historic Preservation Office (SHPO) would need to participate in order to ensure that the signal will not harm this significant historic asset.

Figure 31 - Context Sensitive Signals in a Historic District, Tinton Falls, NJ

Mitigation Measure 2 – Provide Non-motorized Access to the UTT and Community Facilities

Need: CR526 (Waker Avenue and Allentown Lakewood Road) lacks bicycle and pedestrian facilities, and provides access to several features attractive to non-motorized users. The UTT, several community buildings, and public athletic fields are all served by this roadway. Residents have expressed a specific desire to access the UTT without using a car from Allentown and Upper Freehold, but cite heavy vehicles and fast moving traffic as creating a high level of stress along CR524 (Waker Ave and Allentown Lakewood Road). The Easterly Bypass will increase travel on this roadway by all users between CR526 (Spur) and Sharon Station Road.

Mitigation Measure: Bike and pedestrian facilities, including an off-road shared use path, should be constructed alongside CR526 (Waker Avenue and Allentown Lakewood Road). Sidewalks should be on both sides of the roadway between the western end of CR526 (Waker Avenue) in Allentown and the eastern intersection of Galloping Brook Drive in Upper Freehold. An off road bicycle facility is suggested on the South side of CR526 (Waker Avenue and Allentown Lakewood Road). Shared lane marking are suggested between the intersection of CR524 (Main Street) and Nolan Drive, and a ten-food wide non-motorized shared use path should be constructed from Nolan Drive to the UTT. The construction of bicycle lanes along county roads requires municipalities to have a completed Bicycle Master Plan outlining the desired infrastructure as per the County Bicycle Policy.

A full featured crosswalk with all appropriate traffic calming and safety measures (in-road signage, RRFBs, and curb extensions, etc…) would be appropriate for the intersection of CR526 (Waker Avenue) and CR526 (Spur) on the west side of the intersection to provide access to the athletic fields.

These improvements would provide less stressful, and safer bicycle and pedestrian access to community assets.

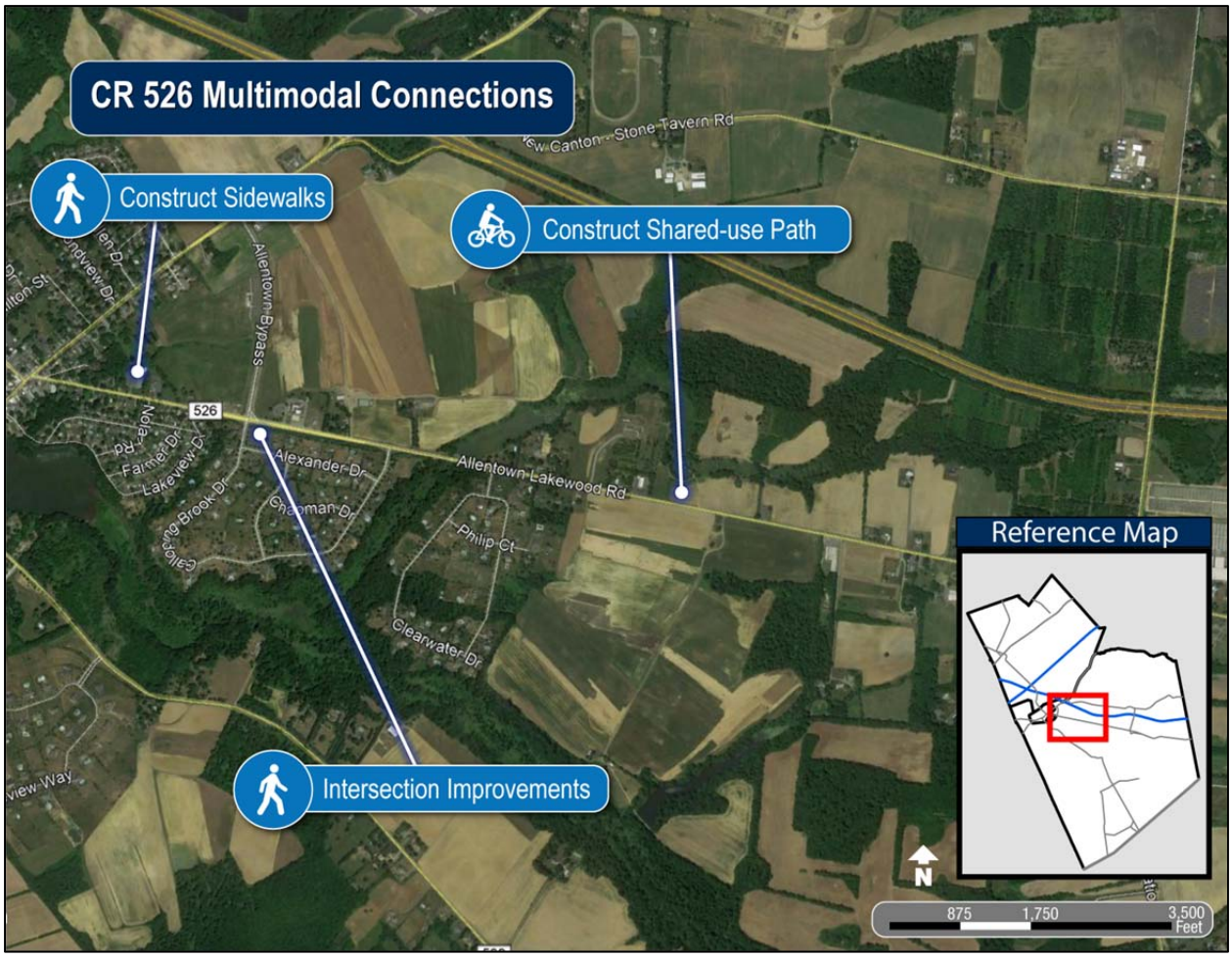

Figure 32 CR 526 Multimodal Connections

Mitigation Measure 3 – Improve Visibility and Turning Radius at the Intersection of CR526 (Church Street) and CR524

Need: Drivers on CR526 (Church Street) south of Hamilton Street approaching CR524 (Main Street) often have insufficient space along the southbound lane, where a total of 15 feet is allocated for the travel lane and parking lane combined. When parking is used this leaves roughly eight to nine feet for the travel lane, forcing drivers to encroach on the southbound lane when passing parked cars. This also creates an obstacle for larger

vehicles with larger than average turning radii, and may contribute to incidents of stuck vehicles at this intersection.

Mitigation Measure: Shift the centerline in the southern area of CR526 (Church Street) two feet in order to better accommodate travel and parking, reducing the northbound lane. The northbound lane is the same width as the southbound lane but does not permit parking. "No Parking Anytime" sign should be installed 50 feet north of the intersection.

These improvements will ease travel for all drivers, especially drivers of vehicles with larger than average turning radii. They will also improve visibility at the intersection, creating a safer environment for drivers and pedestrians.

Mitigation Measure 4 – Remove CR526 (Church Street and Waker Avenue) from the New Jersey Access Network

Need: Residents and stakeholders in Allentown have complained that truck traffic on CR526 (Church Street and Waker Avenue) is a nuisance. They report noise, vibration, and incidents of speeding and property damage.

Mitigation Measure: With the completion of the Easterly Bypass, heavy trucks will no longer need to travel this route to complete regional trips. CR526 (Church Street and Waker Avenue) should be removed from the NJ Access Network, limiting access to 102-inch wide, and double trailer trucks. This will mitigate the effects of noise, vibration, speeding, and property damage by these larger trucks, and provide guidance to all truck drivers that this is no longer a preferred route by NJDOT.

3.6 CR539 (FORKED RIVER ROAD, ALLENTOWN DAVIS STATION ROAD, HIGH STREET)

CR539 (Forked River Road) is a two lane, 50 mph road with wide shoulders that runs from Upper Freehold's (Monmouth County) border with Plumsted (Ocean County) perfectly straight northwest until it intersects with CR539 (Allentown Davis Station Road). CR539 (Allentown Davis Station Road) turns west (and Sharon Station Road continues north) in a similar two lane configuration until it reaches the Allentown border where it becomes CR539 (High Street). In Upper Freehold the roadway frontage is mainly agriculture, with some sparse residential development and a few commercial sites, including a post office, feed store, and a winery. CR539 (High Street) in Allentown terminates at CR524 (South Main Street), and along with the northernmost section of CR539 (Allentown Davis Station Road) provides access to Newell Elementary and Allentown High School, both part of the Upper Freehold Regional School District. The speed limit on CR539 (High Street) is 30 mph, with a school zone speed limit of 25 mph as indicated by a flashing signal.

CR539 (Forked River Road, Allentown Davis Station Road, High Street) carries traffic into Upper Freehold and Allentown from the south in Ocean County. This roadway plays a vital role in connecting the study area and points northwest with Ocean County. The roadway experiences significant truck traffic, primarily dump trucks destined for construction sites to the north and other 3-axle trucks. There were six crashes between CR539 (Allentown Davis Station Road) and the Ocean County Border at CR537 (Monmouth Road) from

2015 through 2017. The bulk of these occurred south of CR27 (Burlington Path Road), and many involved wildlife. Additionally, a substantial number of crashes took place in the dark, with no streetlights present.

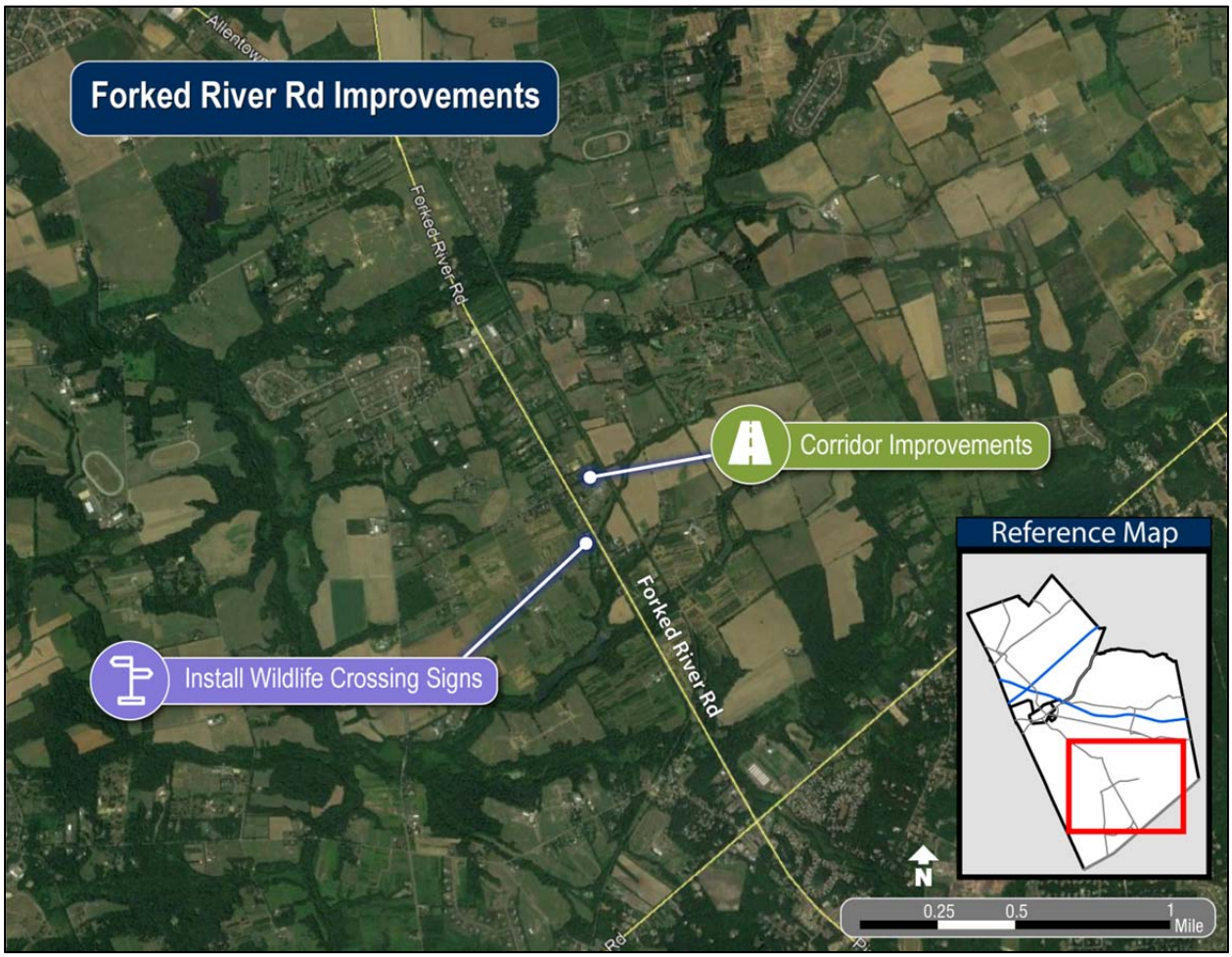

Figure 33 - CR539 (Forked River Road)

Mitigation Measure 1 – Investigate Signalization at CR539 (High Street)

Need: There are significant delays at the intersection of CR539 (High Street) approaching CR524 (South Main Street).

Mitigation Measure: Signalization of the intersection should be investigated in order to improve its LOS, improve turns onto CR524 (South Main Street), and provide improved pedestrian safety controls. LOS moving north from CR539 (High Street) to CR524 (South Main Street) will improve from F to D during both the morning and evening peak periods, with only a slight increase in delay on CR524 (South Main Street).

This intersection is in Allentown's Historic District and great care should be taken in designing and implementing this measure. Traffic signals exist in historic districts in Monmouth County, and the signal

housing and supports are often painted black in order to better blend into the streetscape. Additionally, the State Historic Preservation Office (SHPO) would need to participate in order to ensure that the signal will not harm this significant historic asset.

Mitigation Measure 2 – Improvements to CR539 (Forked River Road)

Need: There were 71 crashes reported on CR539 (Forked River Road) between 2015 and 2017. Six involved heavy trucks (3 or more axles), and a substantial amount involved wildlife, or took place in dark conditions, with no streetlights present. Additionally, residents report that vehicles exceed the speed limit on this road, and it is difficult to make left-hand turns out of driveways or from intersecting streets.

Mitigation Measure: There are several suggested Mitigation Measures to improve conditions and reduce crashes on CR539 (Forked River Road). Left hand turn lanes will improve safety for turning vehicles to and from adjacent roadways, as well as circulation for through movements. Improvements to visibility at intersections such as CR27 (Burlington Path Road) will also improve safety. Street lighting on this roadway is almost non-existent, and installing additional streetlights to improve visibility at night would have a positive effect on safety. Additional deer crossing signage would warn drivers about the presence of wildlife.

3.7 CR539 (OLD YORK ROAD)

CR539 (Old York Road) is a two lane roadway in Upper Freehold and Robbinsville, and forms the border between the two townships north of I-195. North of I-195 Interchange 8 CR524 (North Main Street) turns 90 degrees to the right and becomes CR524 (New Canton Stone Tavern Road). CR539 (Old York Road) continues in the same direction as CR524 (North Main Street), past the entrance to the eastern portion of the Matrix site in Robbinsville, and residential developments in Upper Freehold.

See also: I-195 Conflict Reduction Mitigation Measure 1 – Expand CR539 South (Old York Road)

3.8 MATRIX SITE

Mitigation Measure 1 – Improve Internal Circulation at the Matrix Site

Need: The Matrix site contains a network of internal roadways that for all practical purposes are split down the middle, with no connection between its western half and eastern half. The shortest path between the western entrance at West Manor Way and the eastern entrance at Montgomery Way is approximately two miles and utilizes I-195 Interchanges 7 and 8. This lack of internal connectivity inhibits efficient access by the Z-Line, and forces drivers who may need to traverse the site to take a long trip on public roadways.

Mitigation Measure: An internal connection should be constructed on the Matrix site on vacant property, north of Indian Run or on the southern end if environmental conditions permit (Figure 34). This will allow internal circulation between the two halves of the site, allowing automobiles, trucks, and transit to traverse the site without using public roads. The effect on transit may be significant as trips would be able to be scheduled between the two sites without significant delays to the journey. Currently the Z-Line shuttle connects NJ TRANSIT bus riders at Hamilton Marketplace to the eastern half of the site.

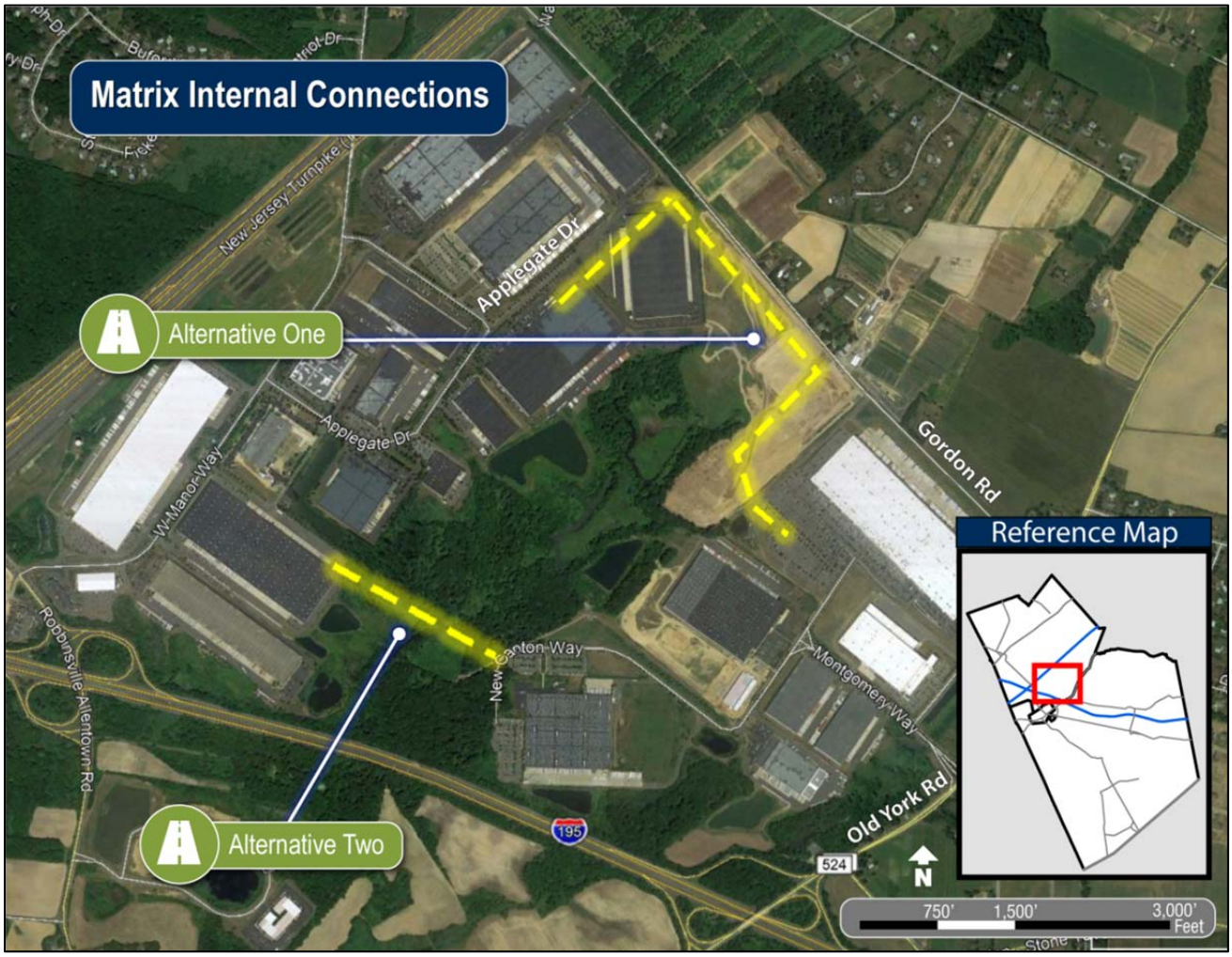

Figure 34 - Matrix Internal Connections

Figure 35 - Signage and Trucks at the Matrix Site

3.9 GENERAL MITIGATION MEASURES

There are several general suggested Mitigation Measures related to policy and practice that are not location specific.

Local Truck Ordinances and Signage

Need: Truck traffic has been reported to use municipal roads as "shortcuts" or to avoid congestion, disrupting quiet neighborhoods and sometimes causing property damage.

Mitigation Measure: Municipalities should consider regulating truck traffic on municipal roads as appropriate, and install accompanying advisory signage. These regulations and accompanying signs, combined with enforcement will clearly communicate the regulations and reduce cut-through travel by large vehicles on local roads. There were two instances reported by the public during the study period of trucks travelling on local roads in Allentown. In one instance the driver damaged private property and was later tracked down by the police and issued a citation.

Engine braking ordinances are also a suggested Mitigation Measure for the municipalities in the study area. Engine braking is a useful tool for truck drivers. It allows them to slow their vehicles in a more controllable manner than using traditional brakes alone, however, it creates significant engine exhaust noise. Mufflers are capable of significantly mitigating this noise. Regulating un-muffled engine braking and posting signs at strategic locations is suggested for Allentown and Robbinsville. Upper Freehold should expand its existing signage.

Figure 36 - No Engine Braking Sign on CR526 (Spur)

Complete the Sidewalk Network

Need: The sidewalk network in the area of the Mark Harbourt Soccer Complex on CR28 (Old York Road) and Johnson Byron Park on Ellisdale Road, as well as significant residential development proximal to all three Upper Freehold Regional Schools, is incomplete.

Mitigation Measure: Sidewalks should be constructed on CR524 (North and South Main Street, Allentown Lakewood Road), which is part of the NJ Access Network and can therefore expect truck traffic. The addition of pedestrian facilities to mitigate the effects of truck traffic on pedestrians falls within the scope of this study. However, it was recognized during the course of the study that portions of CR28 (Old York Road) and Ellisdale Road, which contain significant attractors for pedestrians, lack a complete sidewalk network. While completing the sidewalk network on these roads is not related to freight and was outside the scope of this study, it should be noted that additional sidewalk would improve access and safety for pedestrians, often students, who regularly travel from residential developments in the area to the three schools, athletic fields and parks, and downtown Allentown.

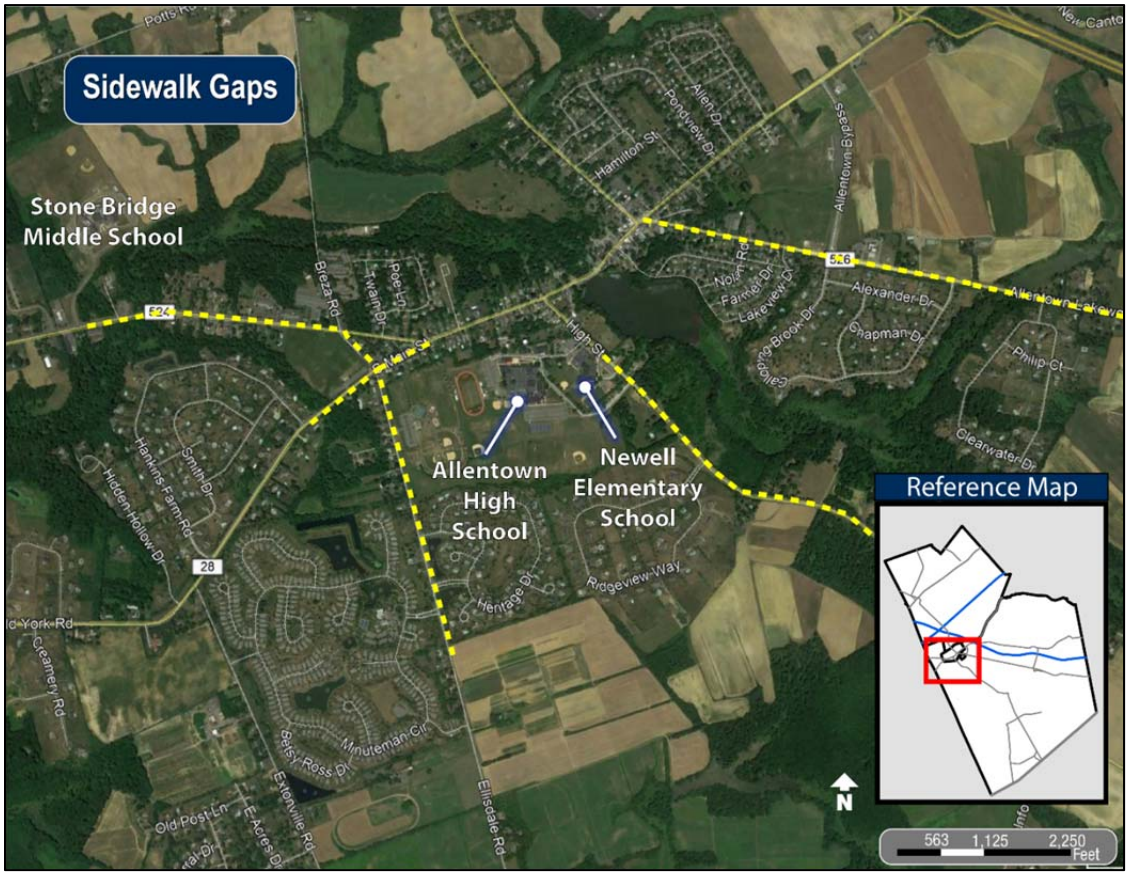

Figure 37 - Sidewalk Gaps

Directional Signage

Need: Residents, stakeholders, and members of the study team all noted that directional signage requires maintenance, reconfiguration, and replacement in several places in the study area. Signage that is hard to read and understand results in lost drivers, and indirect routes travelled through the study area.

Mitigation Measure: County and interstate route directional signage, and destination signage should be reviewed, and maintained or replaced as necessary throughout the study area. This will result in fewer lost drivers, and fewer unnecessary and indirect trips through the study area.

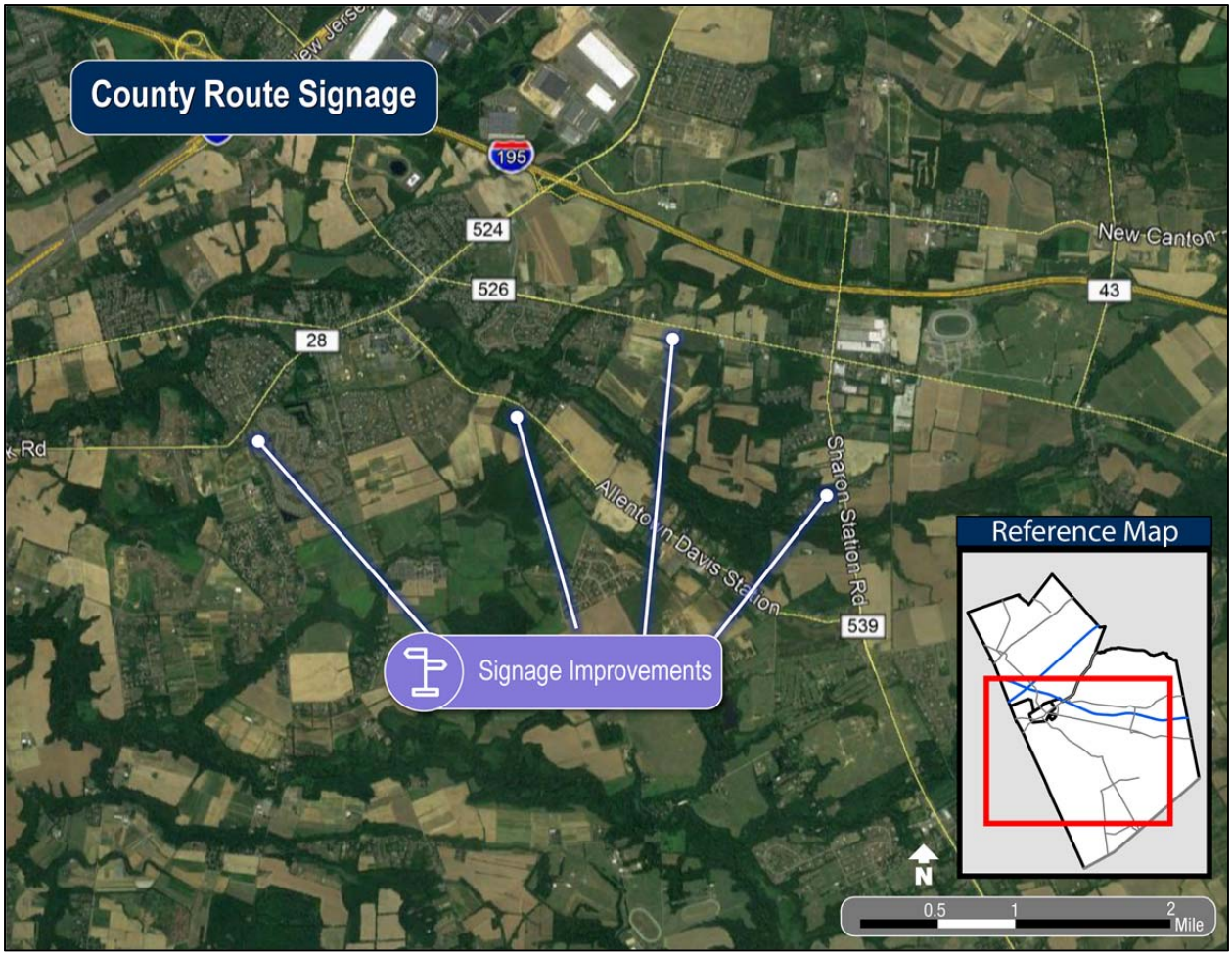

Figure 38 - County Route Signage Improvement Locations

Multi-jurisdictional Working Group

Need: There are transportation issues, such as truck prohibitions, that can only be addressed with consensus of the communities affected and involved. These communities and stakeholders need a forum to regularly discuss and address issues.

Mitigation Measure: Municipalities, counties, and MPOs in the study area, along with NJDOT should form a multi-jurisdictional working group to discuss issues pertinent to the region. The group should meet on a regular basis, and discuss any and all shared issues that affect the area, including transportation, air quality, water quality, land development, and tourism.

Maintenance Issue Reporting

Need: The study revealed that a contributing factor to noise and vibration caused by large vehicles is the condition of the roadway. All roadways operators in the study area maintain their roadways to a high standard, but may not know when problems occur.

Mitigation Measure: There should be a campaign to encourage people to report maintenance issues in the entire study area.

Driver Map Distribution

Need: Large warehousing and distribution sites are often visited by drivers who are unfamiliar with the area, its roads, and its most appropriate routes. This can lead to drivers taking unnecessary trips through the study area.

Mitigation Measure: Freight drivers who are unfamiliar with the area would benefit from access to maps showing preferred routes for large vehicles. These maps can be made available in print at freight related locations for drivers who will be leaving the area, and made available for download for drivers expecting to come through the area.

Street Smart NJ

Need: The public and stakeholders often raised concerns about pedestrian safety.

Mitigation Measure: Interested municipalities should implement a Street Smart NJ pedestrian safety campaign. Street Smart NJ is a public education, awareness and behavioral change campaign developed by the NJTPA. The program uses high visibility enforcement, education, and public awareness to address pedestrian safety issues. Since its creation in 2013, more than 100 communities have participated in Street Smart NJ.

Street Smart NJ emphasizes educating drivers, pedestrians and bicyclists through mass media, as well as targeted enforcement. Police officers focus on engaging and educating, rather than simply issuing citations. Street Smart NJ complements, but doesn't replace, other state and local efforts to build safer streets and sidewalks, enforce laws and train better roadway users.

The campaign is coordinated by the NJTPA and is supported by federal and state funds, with additional funding/in-kind contributions from local partners, including the state's eight Transportation Management Associations. This study recommends Allentown participate in the program in order to address pedestrian safety issues raised during data collection and public outreach. However, all three municipalities may benefit from a Street Smart NJ campaign, and are encouraged to participate.

More information is available at BeStreetSmartNJ.org.

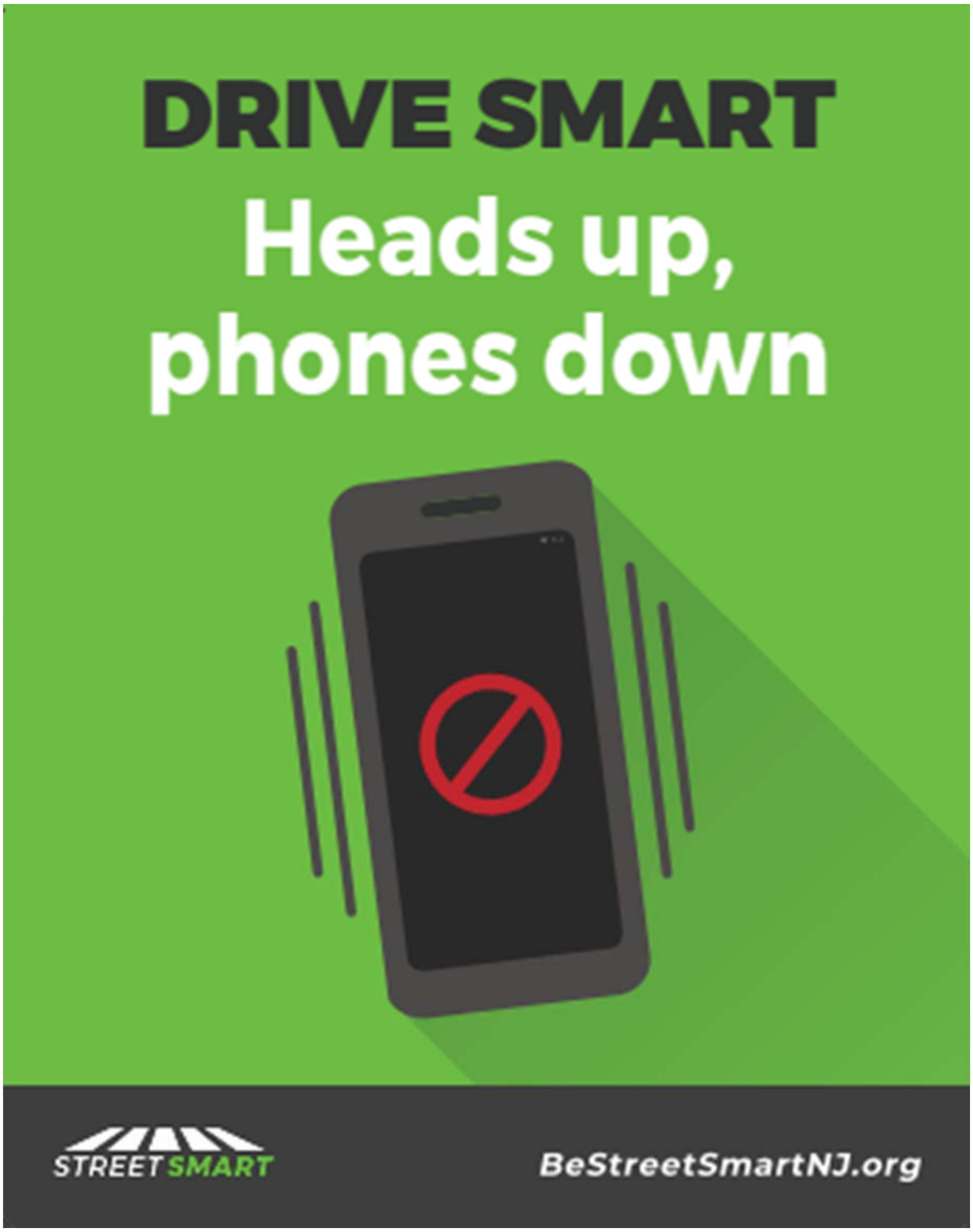

Figure 39 - Street Smart NJ Campaign Poster

4 NEXT STEPS

With the conclusion of the study period and release of this report stakeholders and operating agencies are armed with a new tool with which to mitigate the negative effects of freight traffic in the study area. Collected data, public input, and projected conditions were powerful guides for the Mitigation Measures presented in Section 3. However, the contents of this study are not a mandate for implementation. The Mitigation Measures represent the best thinking of the study team for the most appropriate remedies for the area. They consider the safety of all travelers, the comfort of the study area's residents, and the needs of people and businesses to ship and receive goods.

The inevitable growth of the region will create increased travel demand and traffic regardless of development in the study area. The application of the study's Mitigation Measures is projected to improve congestion and mitigate the negative effects of freight traffic. However, it is not the end of the process. Local leaders and operating agencies at all levels of government will have to work together to fund, design, and implement the Mitigation Measures, or any measures that are determined to be appropriate and effective. The following section contains an Implementation Matrix that can help guide Mitigation Measures to their next steps.

5 IMPLEMENTATION MATRIX

Section	Mitigation Measure	Project Location	Municipality	Concern(s) Addressed	Responsible Agency	Participating Agency	Next Step	Timeline	Cost Estimate	Notes
2.6	Add the Easterly Bypass to the NJ Access Network	Sharon Station Road from CR526 to CR524	Allentown Upper Freehold Robbinsville	Truck Movements Circulation	Monmouth Co.	NJDOT All Municipalities Mercer Co	Complete Easterly Bypass	Short-term	$	Written under previously planned projects
3.1	I-195 Access and Wayfinding Mitigation Measure 1a – Improve Signage	I-195 Interchanges 7 & 8	Robbinsville Upper Freehold	Wayfinding Circulation Truck Movements	NJDOT Monmouth Co. Mercer County	NJDOT Robbinsville Upper Freehold	Submit NJDOT Problem Statement with Recommendations	Medium-term	$$$	
3.1	I-195 Access and Wayfinding Mitigation Measure 1b– Warehouse Wayfinding Signage	I-195 Proximal to Interchances 7 & 8	Robbinsville	Truck Movements	NJDOT	NA	Contact NJDOT	Short-term	$	
3.1	I-195 Access and Wayfinding Mitigation Measure 2 – Improve signage on County roadways near I-195 interchanges	All County roadways in study area	Allentown Upper Freehold Robbinsville	Wayfinding Circulation	NJDOT Monmouth Co. Mercer County	All Municipalities	Design & Submit Request	Short-term	$	County Agencies Lead and NJDOT Constructs
3.1	I-195 Access and Wayfinding Mitigation Measure 3 – Complete Interchange 7	I-195 Interchange 7	Robbinsville Upper Freehold	Circulation Congestion	NJDOT	Monmouth Co. Mercer Co. Upper Freehold Robbinsville	Submit NJDOT Problem Statement with Recommendations	Long-term	$$$$	
3.1	I-195 Access and Wayfinding Mitigation Measure 4 – Roundabout on CR526 (Robbinsville Allentown Road) at Circle Drive	CR526 (Robbinsville Allentown Road) at Circle Drive	Robbinsville	Circulation Congestion Truck Movements	Mercer County	Robbinsville DVRPC	Apply for Concept Development Program	Long-term	$$$	
3.2	I-195 Conflict Reduction Mitigation Measure 1 – Expand CR539 South (Old York Road)	Between Montgomery Way and I-195 Interchange 8	Robbinsville Upper Freehold	Circulation Safety Truck Movements	Mercer County Monmouth County	Robbinsville	Concept Development	Mid-Term	$$$	
3.2	I-195 Conflict Reduction Mitigation Measure 2 – Complete the Interchange 8 Cloverleaf	I-195 Interchange 8	Robbinsville Upper Freehold	Circulation Congestion	NJDOT	Monmouth Co. Mercer Co. Upper Freehold Robbinsville	Submit NJDOT Problem Statement with Recommendations	Long-term	$$$$	

Section	Mitigation Measure	Project Location	Municipality	Concern(s) Addressed	Responsible Agency	Participating Agency	Next Step	Timeline	Cost Estimate	Notes
3.3	CR524 (New Canton Stone Tavern Road) at Sharon Station Road Intersection Improvements	CR524 and Sharon Station Road	Upper Freehold	Safety	Monmouth Co.	Upper Freehold	Design	Medium-term	$$	Currently in Monmouth CIP
3.4	CR524 (North and South Main Street) Mitigation Measure 1 – Traffic Calming	CR524 in Allentown and Upper Freehold	Allentown Upper Freehold	Safety Pedestrian Safety Circulation Wayfinding	Monmouth Co.	Allentown	Preliminary Design	Short-term Mid-Term	$$ $$$	
3.4	Mitigation Measure 2 – Investigate Signalization at CR539 (High Street) and CR526 (Church Street)	CR524 (Main Street) and CR539 (High Street)	Allentown	Safety Congestion	Monmouth Co.	Allentown SHPO	Concept Development	Long-term	$$	
3.4	Mitigation Measure 3 – Complete Sidewalk Network on CR524 (South Main Streets and Yardville Allentown Road)	CR 524 (South Main Street and Yardville Allentown Road) from Stone Bridge Middle School to CR28 (Old York Road)	Allentown Upper Freehold	Safety Mobility	Allentown Upper Freehold	Monmouth Co.	Preliminary Design	Mid-term	$$	
3.5	Mitigation Measure 1 – Investigate Signalization at CR524 (Main Street)	CR524 (Main Street) and CR526 (Church Street and Waker Ave)	Allentown	Safety Congestion	Monmouth Co.	Allentown, SHPO	Concept Development	Long-term	$$	
3.5	Mitigation Measure 2 – Provide Non-motorized Access to the UTT and Community Facilities	Parallel to CR 526 (Allentown Lakewood Road) between Nolan Rd and the Union Transportation Trail	Allentown Upper Freehold	Safety Circulation Wayfinding	Allentown Upper Freehold	Monmouth Co.	Preliminary Design	Mid-term	$$$	

Section	Mitigation Measure	Project Location	Municipality	Concern(s) Addressed	Responsible Agency	Participating Agency	Next Step	Timeline	Cost Estimate	Notes
3.5	Mitigation Measure 3 – Improve Visibility and Turning Radius at the Intersection of CR526 (Church Street) and CR524	CR526 (Church Street) between CR524 (Main Street) and Hamilton Street	Allentown	Safety	Monmouth Co.	Allentown	Implementation	Short-term	$	Town to Revise Parking Ordinance
3.5	Mitigation Measure 4 – Remove CR526 (Church Street and Waker Avenue) from the New Jersey Access Network	CR526 from CR526 to CR526S to the vicinity of I-195	All	Truck Movements Circulation	Monmouth Co.	NJDOT All Municipalities Mercer Co.	Complete Easterly Bypass	Short-term	$	
3.6	Mitigation Measure 1 – Investigate Signalization at CR539 (High Street)	Intersection of CR524 and CR539	Allentown	Safety Congestion	Monmouth Co.	Allentown SHPO	Concept Development	Long-term	$$	
3.6	Mitigation Measure 2 – Improvements to CR539 (Forked River Road)	CR539 (Forked River Road) between CR537 (Monmouth Road) and CR539 (Allentown Davis Station Road)	Upper Freehold	Safety Circulation	Monmouth Co.	Upper Freehold	Concept Development	Long-term	$$$	
3.7	See also: I-195 Conflict Reduction Mitigation Measure 1 – Expand CR539 South (Old York Road)	Between Montgomery Way and I-195 Interchange 8	Robbinsville Upper Freehold	Congestion Truck Movements Safety	Monmouth Co. Mercer County	Upper Freehold Robbinsville NJDOT	Public Private Partnership to Initiate Design	Long-term	$$$$	Involve Matrix Facility Tenants
3.8	Mitigation Measure 1 – Improve Internal Circulation at the Matrix Site	Matrix Business Park	Robbinsville	Circulation Congestion Truck Movements	Private Owners	Robbinsville GMTMA Mercer Co.	Meet With Private Owners	Short-term	$	
3.9	Multi-jurisdictional Working Group	Study Area	All	Building consensus to address existing and future concerns	TBD	All	Formation of Group	Continuous	$	
3.9	Street Smart NJ	Walkable areas throughout the study area	Allentown Robbinsville Upper Freehold	Pedestrian Safety	Municipalities NJTPA	Monmouth Co.	Municipality Discusses with NJTPA	Short-term	$	

Section	Mitigation Measure	Project Location	Municipality	Concern(s) Addressed	Responsible Agency	Participating Agency	Next Step	Timeline	Cost Estimate	Notes
3.9	Complete the Sidewalk Network	CR28 (Old York Rd), Ellisdale Road, other roadways proximal to Byron Johnson Park and the Upper Freehold Regional Schools	Allentown Upper Freehold	Pedestrian Safety	Municipalities	NA	Preliminary Design	Mid-term	$$$	
3.9	Maintenance Issue Reporting	Study Area Wide	Allentown Robbinsville Upper Freehold	Safety Truck Movements	Municipalities	NA	Develop Communications for Municipal Residents	Short-term	$	
3.9	Driver Map Distribution	Study Area Wide	Allentown Robbinsville Upper Freehold	Truck Movements	Monmouth Co.	NA	Contact Freight Related Businesses	Short-term	$	